IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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U.S. Patent No. 7,027,418 Issued: April 21, 2006	Examiner: Pokrzywa, Joseph R. Art Unit: 3992
For: APPROACH FOR SELECTING COMMUNICATIONS CHANNELS BASED ON PERFORMANCE	

Mail Stop *INTER PARTES* REEXAM
Central Reexamination Unit
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO OFFICE ACTION IN *INTER PARTES* REEXAMINATION

Sir:

Patent Owner Bandspeed, Inc. ("Bandspeed") responds as follows to the Office Action mailed October 3, 2013 in the above-captioned *inters partes* reexamination of Bandspeed's U.S. Pat. No. 7,027,418 filed September 6, 2001 (the "Bandspeed Patent").

A response to the Office Action was initially due November 3, 2013. By Bandspeed's petition for extension of time to reply dated October 10, 2013, that was granted-in-part by petition decision dated October 16, 2013, a response to the Office Action is now due December 3, 2013. Accordingly, this response is timely filed. Reconsideration and allowance of the claims under examination, in light of the amendments and remarks presented herein, are respectfully requested.

INTRODUCTION

As of the filing of the application resulting in the Bandspeed Patent, Bandspeed was an industry leader in radio-frequency (RF) interference detection, classification, and avoidance and management technologies. The Bandspeed Patent discloses techniques, invented by Hongbing Gan, Bijan Treister, and Efstratios Skafidas while employees of Bandspeed, for managing radio interference in frequency hopping communication systems, such as the interference caused by

non-frequency hopping communication systems that use the same frequency band as the frequency hopping communication systems. The techniques disclosed by Bandspeed overcome the limitations of prior approaches that inadequately or inefficiently dealt with the transient nature of some types of radio interference such as, for example, radio interference generated by non-frequency hopping IEEE 802.11b Wireless Local Area Network (WLAN) communication devices that share the 2.4 GHz ISM band with frequency-hopping Bluetooth/IEEE 802.15.1 Wireless Personal Area Network (WPAN) devices. As supported below in detail, the claimed techniques are not taught or suggested by the cited art. Reconsideration and allowance of the claims under reexamination, in light of the amendments and remarks presented herein, are respectfully requested.

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REMARKS

As of the Office Action, Claims 1, 19, 25-27, 79-82, 107, 111-113 were canceled, Claims 2, 3, 5-12, 15, 21, 22, 43, 45, 46, 50, 75, 78, 85, 95 were amended, and Claims 129-598 were added. Upon entry of this amendment, Claims 1, 19, 25-27, 79-82, 107, 111-113 are canceled, Claims 2, 3, 5-12, 15, **18**, 21, 22, **43**, 45, 46, **50**, **56**, 75, 78, 85, 95, **106**, **108**, **109** are amended, and Claims 129-434, 436-598 are added. The claims highlighted in bold and underlined in the previous sentence indicate original patent claims that are amended or canceled since the Office Action. Of new Claims 129-434 and 436-598, Claims 297-299, 301-303, 360, 592 are amended since the Office Action and Claim 435 is canceled since the Office Action.

The amendments since the Office Action are limited to cancellation of claims, amendments complying with a requirement expressly set forth in the Office Action, and amendments presenting rejected claims in better form for consideration on appeal. Accordingly, entry of these amendments is respectfully requested under 37 C.F.R. § 1.116(b).

A complete listing of the pending claims with amendments showing changes relative to the Bandspeed Patent as required by 37 C.F.R. § 1.530(f) is provided below in Section XXII.

Pursuant to 37 C.F.R. § 1.530(e), a description of the status of the claims and support for claim changes is set forth in the attached Appendix A.

Bandspeed notes that the Office Action has not adopted all rejections and rationales proposed by the Third Party Requesters (the "TPR") during this reexamination. For the sake of brevity, rejections and rationales of the TPR not adopted by the Office Action are not addressed herein. However, Bandspeed's silence on the non-adopted rejections and rationales should not be taken as acquiescence that the non-adopted rejections and rationales are true or meritorious. Rather, Bandspeed expressly reserves the right to address the non-adopted rejections and rationales should they be adopted in a later Office Action. In this regard, Bandspeed must be given an opportunity to adequately address any change in the Examiner's position adverse to Bandspeed. *See MPEP* § 2673.01. Therefore, prosecution must be reopened if the Examiner later adopts any currently non-adopted rejections and rationales.

Further, with respect to all claim features that are not expressly discussed herein, Bandspeed has not acquiesced to any adopted or non-adopted rejection of such claim features or that any such claims features are taught or suggested by the cited art. Rather, due to the fundamental differences identified below, a separate discussion of those claim features is not

necessary and hence is not included at this time. However, Bandspeed expressly reserves the right to explicitly distinguish any and all claim features from the prior art at a later date.

I. CLAIMS 2-5, 7, 8, 10-13, 75-77, 85-92, 129-137, 176-191, 232-242

Claims 2-5, 7, 8, 10-13, 75-77, 85-92, 129-137, 176-191, 232-242 stand rejected variously under 35 U.S.C. § 102 as anticipated by U.S. Pat. No. 6,115,407 ("*Gendel*"), under 35 U.S.C. § 102 as anticipated by U.S. Pat. No. 7,440,484 ("*Schmidl*"), and under 35 U.S.C. § 103 as unpatentable over U.S. Pat. No. 6,272,353 ("*Dicker*") and U.S. Pat. No. 6,418,317 ("*Cuffaro*"). These are the only prior art rejections of these claims in the Office Action. Bandspeed respectfully submits that *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination, do not teach or suggest each and every element of any of these rejected claims.

In light of the response to arguments in the Office Action, Bandspeed hereby addresses the patentability of Claim 2, before turning to the remaining rejected claims.

A. Claim 2

Claim 2 recites:

> A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:
>
> selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel;
>
> selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
>
> wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
>
> wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

In Claim 2, voting is used to select frequency hopping communications channels to be used for communications. More specifically, frequency-hopping communications channels are selected for use based on channel selection criteria that "specifies that for a particular

communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel".

A person skilled in the art would understand in light of the specification and consistent with ordinary meaning of the claim terms that, in order to select the particular communications channel based on the channel selection criteria, a method of Claim 2 must determine whether the particular communications channel "(a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants" and must also determine whether the particular communications channel "(b) does not receive a negative vote from a particular participant to not use the particular communications channel".

Thus, the channel selection criteria of Claim 2 include an "affirmative vote" component and a negative vote component. A particular communications channel may be selected if it receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants AND if it does not receive a negative vote to not use the particular communications channel from a particular participant. In order for prior art to teach the method of Claim 2, they must teach both components of the channel selection criteria of Claim 2.

1. Broadest reasonable interpretation of "vote"

One of the terms in Claim 2 is the term "vote". In order to properly determine whether Claim 2 is anticipated or rendered obvious by prior art, the term "vote" must be properly interpreted. While it is true that the term can be given its broadest reasonable interpretation, that does not mean that any interpretation can be used. Rather, the meaning attributed to the term "vote" must be reasonable in view of the Specification of the Bandspeed Patent and the relevant technology, and must not be inconsistent with ordinary meaning of the term.

With these constraints in mind, Bandspeed asserts that a "vote" must represent a choice that has been made. A measurement of the performance of a communications channel is not a vote because the measurement does not represent a choice that has been made. This interpretation is consistent with the claims and the Specification. For example, a participant may submit an affirmative vote to use a communications channel or a negative vote to not use the communications channel. In both cases, a choice has been made, and the vote represents that

choice that has been made. This interpretation of a "vote" is also consistent with the discussion in the Office Action that *Dicker's* description of using error rates to select communications links does not constitute either affirmative votes to use a particular communications channel or a negative vote to not use the particular communications channel, "However, Dicker fails to expressly disclose if the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel." *Quoting Office Action* at page 217.

2. Gendel

Gendel describes a frequency hopping communications system where an available spectrum of frequencies to be used for communications is divided into segments and each segment corresponds to a subset of frequencies in the available spectrum of frequencies. Sets of used segments and unused segments are selected from the plurality of segments. The used segments are used for communications and the unused segments are reserved to replace used segments that are later determined to no longer be suitable for use. The number of used segments is selected to be less than the number of unused segments to provide a suitable number of unused segments that can later be used as replacement segments.

Fig. 3 of *Gendel* depicts a block diagram of a communication subsystem 300, representative of the segment handling and replacement subsystems 122, 124, 132, 134 of Fig. 1 of *Gendel*, for performing frequency hopping communications. In operation, as depicted by the flowchart in Fig. 5 of *Gendel*, the communication subsystem 300 receives a data packet (e.g., received data) and checks for an occurrence or non-occurrence of a reception error over a hopping frequency of the currently used segment. If a reception error has occurred, the subsystem 300 checks whether the current reception error was preceded by a prior reception error. If so, the subsystem 300 adds a penalty value to the error value for the currently used segment. If not, the subsystem 300 adds an increment value to the error value for the currently used segment. The subsystem 300 determines whether the error value for the currently used segment is greater than or equal to a predetermined threshold value. If the error value for the currently used segment is greater or equal than the threshold, the subsystem 300 marks the currently used segment as a candidate for segment replacement. The subsystem 300 then initiates

the segment replacement process with the other party, which is depicted in steps 608 and 614 of Fig. 5 and Fig. 6 of *Gendel* and described at column 11:24 – 12:48.

According to the segment replacement process, the communication subsystem 300 selects one of the previously-designated unused segments to replace the currently used segment. The communication subsystem 300 transmits to the other party a replacement request to request that the currently used segment be replaced with the selected unused segment. The replacement request includes the segment number of the currently used segment that is to be replaced and the segment number of the selected unused segment that is to replace the currently used segment. When the communication subsystem 300 receives an acknowledgment from the other party, the communication subsystem 300 updates the segment hopping table by replacing the currently used segment with the selected unused segment.

Bandspeed asserts that *Gendel* fails to disclose, explicitly or inherently, a method of Claim 2 under the broadest reasonable construction discussed above. The Office Action cites to *Gendel* at column 4, lines 14-45 for disclosure of the claimed channel selection criteria, based on *Gendel's* selection of erred and unused channel segments. *Office Action* at pages 87-88. *Gendel's* selection of erred and unused channel segments is not based on criteria that "specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel", as recited in Claim 2.

In *Gendel*, channel segments are selected in three situations that include: selecting an initial set of unused channel segments at startup, selecting erred channel segments that are to be replaced and selecting unused channel segments to replace erred channel segments. None of these selections of segments involves the use of voting in the manner recited in Claim 2. In fact, *Gendel* is devoid of any mention or suggestion of voting in any context.

Gendel does not describe how the initial set of unused segments is assigned to the primary system 102 and secondary systems 104, 106 and there is no teaching or suggestion in *Gendel* that votes are used to select the initial set of used segments. *Gendel* describes only that the available spectrum is divided into segments in a manner such that the number of used segments for frequency hopping communications is less than the number of unused segments to

provide a sufficient number of unused segments to replace used segments that need to be replaced. *Gendel*, column 7, lines 52-59.

In *Gendel*, selection of an erred channel segment is based on "when an error value for the erred segment has reached at least a predetermined threshold" and there is no teaching or suggestion in *Gendel* that erred channel segments are selected for replacement using voting. *Gendel*, column 4, lines 21-22. The selection of an unused segment in *Gendel* is based merely on whether an unused segment "is not in use in the performance of FH communications" *Gendel*, column 3, lines 60-62. The only other description in *Gendel* of how unused segments are selected is that an unused segment that is selected to replace an erred segment preferably has the same number of frequencies as the erred segment being replaced. *Gendel*, column 4, lines 31-37.

Selecting an erred channel segment for replacement based on a corresponding error value reaching a predetermined threshold and selecting an unused channel segment to replace and erred channel segment based on whether the unused channel segment is currently in use and the number of frequencies in the unused channel segment are substantially different than the approach of Claim 2 in which a particular communications channel is selected based on whether the particular communications channel receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and does not receive a negative vote from a particular participant to not use the particular communications channel. This is consistent with the discussion in the Office Action that *Dicker's* description of using error rates to select communications links does not constitute either affirmative votes to use a particular communications channel or a negative vote to not use the particular communications channel. *Office Action* at page 217.

Gendel describes that after one of the transceivers 102, 104, 106 has selected an erred segment to be replaced and an unused segment to replace the erred segment, the replacement of the erred segment with the selected unused segment is accomplished using a replacement request. The replacement request is transmitted by the transceiver 102, 104, 106 that completed the replacement determination to another transceiver 102, 104, 106 and specifies the erred segment that has been selected for replacement and the unused segment selected to replace the erred segment. The transceiver 102, 104, 106 that receives a replacement request transmits an acknowledgment to the transceiver 102, 104, 106 that sent the replacement request. *Gendel*, column 12, lines 36-57.

The Office Action applies the *Gendel* reference to Claim 2 by asserting that the replacement request of *Gendel* is the "negative vote" recited in Claim 2 and the acknowledgment of the replacement request of *Gendel* is the "affirmative vote" recited in Claim 2. Office Action, Pages 243-245. The replacement request of *Gendel* is merely a notification from one transceiver 102, 104, 106 to another transceiver 102, 104, 106 of a decision that has previously been made to replace an erred segment with an unused segment. The replacement request identifies the erred segment that has been selected for replacement and the unused segment that has been selected to replace the erred segment. Notably, the replacement request is generated and transmitted only after the erred segment and the unused segment have already been selected and the replacement determination has been completed. The purpose of the replacement request and acknowledgment are to coordinate the handover of communications from the erred segment to the unused segment selected to replace the erred segment.

The replacement request and acknowledgement cannot be considered to be the "negative vote" and "affirmative votes", respectively, of Claim 2 as asserted in the Office Action, because in *Gendel* the replacement request and the acknowledgment are not used to select the erred segment to be replaced or the unused segment to replace the erred segment. The replacement request merely communicates the results of the decision that has already been made, i.e., the erred segment to be replaced and the unused segment to replace the erred segment, and requests that the recipient communicate on the designated unused segment instead of the erred segment. The acknowledgment merely informs the transceiver 102, 104, 106 that transmitted the replacement request that the replacement request has been received so that the transceiver 102, 104, 106 can update the frequency hopping sequence. Furthermore, it is not possible for the replacement request and acknowledgement to be the "negative vote" and "affirmative votes", respectively, of Claim 2, and used to select the erred segment and the unused segment, since the replacement request and the acknowledgement do not even exist until after the erred segment and the unused segment have been selected. In contrast, Claim 2 requires that the affirmative votes and the negative vote be used to determine whether the particular communications channel should be selected for communications.

Furthermore, even if, for purposes of discussion only, the replacement request of *Gendel* was considered to be the "negative vote" of Claim 2 and the acknowledgement of the replacement request of *Gendel* was considered to be the "affirmative votes" of Claim 2 as

asserted in the Office Action, then the limitations of Claim 2 are still not taught or suggested by *Gendel*, because the replacement request of *Gendel* specifies an erred segment to be replaced and the unused segment to replace the erred segment, which are two different segments, while in Claim 2, both the affirmative votes and the negative vote pertain to the same communications channel, i.e., the particular communications channel.

Accordingly, Bandspeed asserts that *Gendel* fails to expressly or inherently teach or suggest a method for selecting communications channels based on channel selection criteria that "specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel", as recited in Claim 2.

It should be noted the above is entirely consistent with the TPR's reading of *Gendel*. In particular, the TPR recognizes that the *Gendel's* criteria for selecting a segment is "[w]hen the error value of a particular segment exceeds a predetermined threshold". Thus, by TPR's own admission, *Gendel* does not disclose channel selection criteria that "specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel", as recited in Claim 2.

The TPR in the TPR's First Comments focuses myopically on what in *Gendel* could possibly be a vote, while ignoring whether *Gendel* discloses selecting a channel segment using the affirmative and negative voting channel selection criteria recited in Claim 2. As explained above, *Gendel* does not in any way teach or suggest selecting channel segments using the channel selection criteria of Claim 2.

3. Schmidl

Schmidl describes that a master device determines which channels of a frequency hopping system contain a strong interferer and then communicates to one or more slaves the channels that are to be avoided, thus creating a reduced hopping sequence. *Schmidl*, column 2, lines 34-45. The master device measures the quality of radio frequency channels in the frequency

hopping system and identifies which of those channels are not suitable for use. The two methods described in *Schmidl* for choosing the reduced hopping sequence are: 1) the master tests each of the channels in the frequency hopping system; and 2) the master determines whether to use predetermined groups of channels (frequency groups). *Schmidl*, column 3, lines 25-50. *Schmidl* also describes that these tasks performed by the master could be assigned to a slave unit. *Schmidl*, column 4, lines 24-28.

As an initial matter, the frequency hopping system of *Schmidl* does not using voting to select RF channels and *Schmidl* is devoid of any mention or suggestion of voting. Moreover, the frequency hopping system of *Schmidl* does not select individual RF channels to use for communications. Instead, the system of *Schmidl* initially uses a standard set of Bluetooth RF channels, without knowing *a priori* the suitability of any of those RF channels for communications. The master then establishes a reduced frequency hopping sequence by removing RF channels that are determined to contain a strong interferer. The master then communicates the reduced frequency hopping sequence to the slave(s). Alternatively, when an interferer is detected, instead of establishing a reduced frequency hopping sequence to avoid the interferer, the master can instruct the slave(s) to use a predetermined frequency group that is in a different frequency band than the interferer. The predetermined frequency groups are pre-programmed into the master and slave units and the master and slave units do not select the particular RF channels in the predetermined frequency groups. *Schmidl*, Column 2, line 13-Column 3, line 50. In neither approach do the master or slave units select individual RF channels to use for communications.

The Office Action cites to *Schmidl* at column 2, line 34 – column 3, line 50 for allegedly teaching the use of affirmative and negative votes as recited in Claim 2 based on *Schmidl's* avoiding of RF channels based on channel quality measurements. *Office Action* at page 149. *Schmidl's* avoiding of RF channels is not based on criteria that "specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel", as recited in Claim 2.

As described above, the frequency hopping system of *Schmidl* does not select individual RF channels to use for communications. Instead, *Schmidl* discloses determining RF channels to

avoid, by removal from the frequency hopping sequence, based on "a probing technique that measures the quality of RF channels." *Schmidl*, column 2, lines 21-22. In one instance, RF channel quality is measured using the measurement '$[E_b/(N_0 + I_0)]$ where "Eb" stands for bit error, "N" stands for noise and "I" stands for interference, the RSSI (received signal strength indicator) or some other signal quality indicator is measured for each of the RF channels in the standard hopping sequence…. Alternatively, the master radio can simply monitor the [Packet Error Rate] on each channel to find which RF channels in the standard hopping sequence have a large PER and should be avoided.' *Schmidl*, column 2, lines 25-28. Removing an RF channel from a frequency hopping sequence based on measured or monitored channel quality is entirely different than selecting a communications channel to use based on whether the communications channel receives a specified number of affirmative votes to use the communications channel from a plurality of participants and does not receive a negative vote from a particular participant to not use the communications channel.

Schmidl makes clear that its removal of RF channels from the frequency hopping sequence is based on "determin[ing], using one of the previously discussed techniques, if interference is present in any of the Bluetooth RF channels." *Schmidl*, column 3, lines 52-55. The "previously discussed techniques" in the quoted portion of *Schmidl* refer to the RF channel quality measurement and monitoring techniques discussed above. *See Schmidl*, column 2, lines 13-33. *Schmidl* says nothing about selecting communications channel to use for communications based on whether the RF channel receives a specified number of affirmative votes to use the RF channel from a plurality of participants and does not receive a negative vote from a particular participant to not use the RF channel.

Given the clarity of *Schmidl's* description of criteria for removing RF channels from the initial standard set of Bluetooth RF channels based on channel quality measurements, *Schmidl's* disclosure of removing RF channels based on large packet error rate is simply one example criterion for avoiding RF channels based on channel quality measurements, in this case packet error rate, and is not a disclosure of channel selection criteria that "specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel", as recited in Claim 2.

The Office Action asserts that the channel quality measurements performed in *Schmidl* are considered to be the "affirmative votes" and the "negative vote" recited in Claim 2. *Office Action*, at pages 245-246. The channel quality measurements of *Schmidl*, which are described in *Schmidl* to include a received signal strength indicator (RSSI) and bit error rate (BER) cannot be the "affirmative votes" and the "negative vote" recited in Claim 2, because Claim 2 recites that the "affirmative votes" are "to use the particular communications channel" and the "negative vote" is "to not use the particular communications channel". The channel quality measurements of *Schmidl* do not specify that a particular RF channel should be used or not used for communications. Furthermore, even when the channel quality measurements used to make a determination of whether an RF channel should be removed from the frequency hopping sequence, the channel quality measurements themselves do not specify whether an RF channel should be removed from the frequency hopping sequence. The channel quality measurements of *Schmidl* cannot specify that a particular RF channel should be removed from the frequency hopping sequence until the channel quality measurements are compared to a reference or threshold. *Schmidl* describes that "the master radio can simply monitor the PER on each channel to find which RF channels in the standard hopping sequence have a large PER and should be avoided". *Schmidl* at column 2, lines 32-34. Determining whether a PER for an RF channel is large necessarily requires comparing the PER to a reference or threshold. The channel quality measurements of *Schmidl* cannot therefore be considered to be the "affirmative votes to use the particular communications channel" or the "negative vote from a particular participant to not use the particular communications channel" recited in Claim 2. This is consistent with the discussion in the Office Action that *Dicker's* description of communications link quality in the form of error rates does not constitute either affirmative votes to use a particular communications channel or a negative vote to not use the particular communications channel. *Office Action* at page 217.

Accordingly, Bandspeed asserts that *Schmidl* fails to expressly or inherently disclose a method involving selecting communications channels based on channel selection criteria that "specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel", as recited in Claim 2.

The TPR notes that *Schmidl* states "the previous available RF channel in the sequence is substituted for these avoided frequencies." *TPR's First Comments* at page 24 *quoting Schmidl* at column 2, lines 53-55. The previous available RF channel in the frequency hopping sequence may, or may not, have yet been tested by the master. For example, the master may test the first RF channel in the frequency hopping sequence and determine that the first RF channel should be removed from the frequency hopping sequence. In this situation, the master may replace the RF channel that has been removed with another available RF channel that has not yet been tested. Even in the situation where the master replaces the RF channel with an RF channel that has previously been tested for removal, the previous testing is based on measured channel quality metrics (*see Schmidl* at column 2, lines 13-33) which, as previously described herein, are not affirmative votes and a negative vote as recited in Claim 2. Thus, the portion of *Schmidl* cited by the TPR does not disclose selecting a communications channel to use for communications based on the channel section criteria of Claim 2.

4. Dicker and Cuffaro

Dicker describes a mobile communications system 10 that has a base station 12 with logic that is operable to evaluate parameters including long-term and short-term errors rates relating to quality of communications links between the base station 12 and mobile units 14-17. *Dicker*, Fig. 1, column 3, lines 25-27. The base station 12 logic is operable to determine the quality of each communication link in response to the evaluated parameters and to determine frequencies to use for each communication link that optimizes the quality of the communication link. *Dicker*, column 3, lines 27-45. *Dicker* describes that a dynamic frequency hopping scheme, in which devices are allowed to communicate at a particular frequency only with a defined bandwidth for a defined period of time and within a defined signal power level, allows the system 10 to operate within the ISM band within then FCC regulation guidelines. *Dicker*, column 3, line 46 – column 4, line 9. *Dicker* describes that the base station 12 may communicate with each mobile unit 14-17 utilizing the best quality frequencies. *Dicker*, column 4, lines 29-67. Under *Dicker*'s frequency hopping scheme, the ISM band is divided into a range of ninety-six frequencies. The range is sub-divided into twelve subsets of eight frequencies each. The two worst quality subsets may be avoided. *Dicker*, column 5, lines 22-32; column 6, lines 11-21; column 6, line 63 – column 7, line 3. *Dicker* describes that the base station 12 may monitor the communication link between the base station 12 and a mobile unit at predetermined intervals.

Dicker, column 7, lines 15-51. *Dicker* describes that its algorithm of Fig. 4 for excluding the worst quality subsets of the ISM band may be changed dynamically to varying conditions encountered by the system 10 so that the system 10 can continue to optimize the quality of communication links. *Dicker*, column 7, line 64 – column 8, line 6.

Dicker selects communication links based on "monitoring the individual communication link" and "measur[ing]" "error rates reflect[ing] conditions encountered on the communication link such as (a) bad packet data, indicated by bad synchronization word or (b) bad cyclic redundancy code (CRC)". *Dicker*, column 3, lines 22-27. Selecting a channel based on measured or monitored channel quality is entirely different than selecting a channel based on whether the channel receives a specified number of affirmative votes to use the channel from a plurality of participants and does not receive a negative vote from a particular participant to not use the channel. The Office Action agrees, noting that *Dicker* fails to expressly disclose channel selection criteria that "specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel", as recited in Claim 2. *Office Action*, page 217.

The Office Action instead relies upon *Cuffaro* for allegedly teaching the aforementioned features of Claim 2. *Cuffaro* describes an approach for allocating frequencies to base stations in a cellular telephony system. The quality of frequencies is determined and the best unassigned frequency is swapped for the worst assigned frequency. *Cuffaro*, column 2, lines 30-38. *Cuffaro* describes that a base station 14 reports signal strength measurements on a per idle timeslot basis to either a processor 24 of the base station or a mobile switching center 18 for processing. The processor 24 or the switching station 18 compares quality metrics of the received measurements and swaps high signal quality unassigned frequencies with low signal quality assigned frequencies to the transceivers 20 in the base station 14. *Cuffaro*, column 6, lines 58-67.

In *Cuffaro*, each unused frequency channel allocated to a base station 14 serving a cell 10 is measured to obtain a quality metric. The type of measurements made may be uplink and downlink frequency channel measurements. The quality metrics include signal strength measurements and interference strength measurements. *Cuffaro*, column 7, lines 23-33. For downlink frequency channel measurements, mobile stations 16 may be used to measure the

signal strength on each frequency and report back to the base station 14. *Cuffaro*, column 7, lines 33-47. For uplink frequency channel measurements, a locating verification module (LVM) 30 of the base station 14 scans frequencies allocated to the cell 10. *Cuffaro*, column 7, lines 47-50. Thus, *Cuffaro* describes two types of frequency channel measurements: downlink frequency channel measurements and uplink frequency channel measurements. Downlink frequency channel measurements are made by the mobile stations 16. Uplink frequency channel measurements are made by the base station 14. The measurements are then compared to determine whether the quality metrics of any unassigned frequency channel is better than the quality metrics of any assigned idle frequency channel. *Cuffaro*, column 7, lines 62 – column 8, lines 9.

Cuffaro describes a voting step in which a vote is made for the unassigned frequency channel or the assigned idle frequency channels based upon results of the measurement comparisons. As explained in *Cuffaro*, "the step of voting 315 basically adds and subtracts numerical values in a virtual frequency exchange (VFE) matrix or memory location after each measurement sample. Each of these numeric values may be a fixed value (e.g., the value 1), the actual difference value in decibels, a difference of the average value over a number of sample periods or time interval, or a percentage difference in the number of times a certain unassigned frequency has a better signal quality than an assigned allocated frequency." *Cuffaro*, column 8, lines 12-21. The voting step is performed by the processor 24 of the base station 14. *Cuffaro*, column 6, lines 58 – column 7, lines 2; column 8, lines 21-29.

The Office Action cites refers to *Cuffaro* at column 2, lines 44-58, column 9, line 30 – column 10, line 18; and column 12, lines 20-20, for allegedly teaching the aforementioned features of Claim 2, based on *Cuffaro's* selection of a currently unassigned frequency to replace a currently assigned frequency based on the number of votes the currently unassigned frequency receives relative to the currently assigned frequency over a sample period. *Cuffaro*'s selection of frequencies is not based on channel selection criteria that specifies "specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel", as recited in Claim 2.

The approach of *Cuffaro* compares the performance of unassigned frequencies to assigned frequencies on a pair-by-pair basis and selects the pair for which the performance of the unassigned frequency is better relative to the corresponding assigned frequency, "the best m-n unassigned frequency is then swapped for the worst n assigned frequency in response to a positive vote for that particular unassigned frequency." *Cuffaro*, column 2, lines 52-56. Selecting one channel over another channel based only upon the relative number of positive votes the channels receive as described in *Cuffaro* is substantially different from selecting a particular communications channel based on whether the particular communications channel both receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and does not receive a negative vote from a particular participant to not use the particular communications channel.

Cuffaro describes that a vote is made "for the unassigned frequency channel or the assigned idle frequency channels based on the results of the [signal quality] measurements". *Cuffaro*, column 8, lines 9-12. *Cuffaro* further clarifies that '[t]he step of voting 315 basically adds and subtracts numerical values in a virtual frequency exchange (VFE) matrix or memory location after each measurement sample." *Cuffaro*, column 8, lines 12-15. In instances where the signal interference of the unassigned frequency channel is lower than the signal interference of the assigned idle frequency, "then a vote <u>for</u> the unassigned frequency [] is indicated as a +1". In instances where the signal interference of the unassigned frequency channel is higher than the signal interference of the assigned idle frequency, "then a vote is made <u>for</u> the assigned idle frequency and indicated as a -1." *Cuffaro*, col, 9, lines 39-56 (emphases added). In other words, *Cuffaro* discloses only votes "for" frequencies and does not disclose votes to not use frequencies. *Cuffaro* makes no mention or suggestion of selecting a channel based on whether or not the channel receives a negative vote from a particular participant to not use the channel. This is also consistent whether the description of selecting a frequency pair with the "most positive result" of the voting process: "[a]s can be seen, the f43 and f15 frequency pair 520 has the <u>most positive result</u> (i.e., +8 or 90% probability that f43 has a higher quality metric than f15) of the voting process for the ten sample measurements." *Cuffaro*, column 10, lines 34-47 (emphasis added).

In view of *Cuffaro's* unequivocal disclosure of positive vote criteria for selecting frequency pairs, *Cuffaro's* description of "a vote is made for the assigned idle frequency and indicated as a -1" is merely a disclosure of an affirmative vote for the assigned idle frequency

without being a disclosure of a negative vote to not use the unassigned frequency. Significantly, the unassigned frequency is selected to replace the assigned idle frequency when the frequency pair has the most positive result, as is completely clear from the positive vote criteria for selecting a frequency pair described in *Cuffaro*. *See Cuffaro*, column 9, line 30 – column 12, line 19.

Even if, for purposes of discussion only, the assignment of a -1 to a frequency pair when the signal interference of the unassigned frequency is higher than the signal interference of the assigned idle frequency were to be considered to be a "negative vote" as recited in Claim 2, then *Cuffaro* still does not teach or suggest the "negative vote" feature of Claim 2 because in *Cuffaro*, a particular frequency pair may receive several -1 values and still be selected. This is because in *Cuffaro*, the frequency pair having the greatest ending value in the VFE matrix is selected, even if that frequency pair received several -1 values during the sample interval. In *Cuffaro*, a particular frequency may receive several -1 values and still be selected for use, so long as the ending value for the frequency pair is greater than the other frequency pairs. In contrast, Claim 2 precludes selection of the particular communications channel for use when a negative vote is received from a particular participant to not use the particular communications channel. Thus, *Cuffaro* does not teach or suggest the negative vote feature of Claim 2.

Nothing in *Cuffaro* or the Office Action suggests modifying the system of *Dicker* to arrive at a method involving selecting communications channels based on channel selection criteria that "specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel", as recited in Claim 2.

5. Conclusion

Because *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination, do not teach or suggest all of the features of Claim 2, confirmation of the patentability of Claim 2 is respectfully requested.

B. Claims 3-5, 7, 8, 10-13, 75-77, 85-92, 129-137, 176-191, 232-242

Similar to independent claim 2, independent claim 75 and independent claim 85 require consideration of a negative vote from a particular participant when selecting a particular communications channel based on channel selection criteria, except that the requirement is in the context of a communications channel selector apparatus and a computer-readable medium carrying instructions, respectively. Thus, claims 75 and 85 are allowable over *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination, for at least the same reasons given above in Section I.A that Claim 2 is allowable over *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination.

Claims 3-5, 7, 8, 10-13, 76-77, 86-92, 129-137, 176-191, 232-242 are each dependent claims dependent on one of allowable independent claims 2, 75, or 85 and are, therefore, allowable over *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination, at least by virtue of their dependency on an allowable independent claim.

C. Claims 137, 191, 242

The Office Action contends that Claims 137, 191, and 242 are indefinite under 35 U.S.C. § 112, second paragraph because, as the Office Action states, it is "not clear [] how the second participant [has] at least one affirmative vote, and also the second participant not have a vote". *Office Action* at Page 14, Point 31. The Office Action appears to be conflating the particular communications channel and the second particular communications channel as the same channel, which is unreasonable because it would render the claim meaningless. There are two different channels involved in Claims 137, 191, and 242: (1) "the particular communications channel" and (2) "a second particular communications channel." Claims 137, 191, and 242 clearly require the particular communications channel receive at least one affirmative vote from the second particular participant and also clearly require the second particular communications channel not receive a vote from the second particular participant. This is not contradictory. The Bandspeed Patent clearly discloses that a participant need not vote on each channel under consideration. *Bandspeed Patent* at column 17, lines 5-6. As such, Claims 137, 191, and 242 are not indefinite as asserted in the Office Action.

With respect to Claims 137, 191, and 242, the Office Action cites to *Gendel*, column 7, lines 19-34 which says nothing of participant voting, let alone a participant voting on one channel but not another channel. The Office Action then cites a large portion of *Gendel* from column 12, line 36 through column 14, line 30 which discusses two separate embodiments of

Gendel. In particular, *Gendel* at column 12, line 36 – column 12, line 59 discusses with respect to a first embodiment, among other things, whether a request to modify the hopping pattern between two parties has been made by either one of the parties, but does not disclose a participant voting on one channel but not another channel. *Gendel* at column 12, lines 60 – column 14, line 30 relates to the second embodiment pertaining to automatic transmission power level control or controlling the transmission strength of channel segments. Bandspeed can discern nothing this cited portion that is supposed to be the claimed second participant that votes on the particular communications channel but does not vote on the second particular communications channel as required by Claims 137, 191, and 242.

II. CLAIMS 6, 138-156, 192-211, 243-262

Claims 6, 138-156, 192-211, 243-262 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Gendel*, under 35 U.S.C. § 102 as anticipated by *Schmidl*, and under 35 U.S.C. § 103 as unpatentable over a combination of *Dicker* and *Cuffaro*. Bandspeed respectfully submits that *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination, do not teach or suggest each and every element of any of these rejected claims.

In light of the response to arguments in the Office Action, Bandspeed hereby addresses the patentability of Claim 6, before turning to the remaining rejected claims.

A. Claim 6

Claim 6 recites:

A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein:

the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes;

each participant in a plurality of participants except for a particular participant casts one vote of the plurality of votes; and

the particular participant casts a second specified number of votes;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

1. Requirements of Claim 6

Bandspeed asserts that a method of Claim 6, in order to select the particular communications channel based on the channel selection criteria, must determine whether the particular communications channel "receives a first specified number of votes to use the particular communications channel from among a plurality of votes", rather than just determining whether channel quality measurements for the particular communications channel satisfy channel selection metrics (i.e., as in *Gendel*, *Schmidl*, and *Dicker*) and rather than just determining whether the particular communications channel receives more votes than another channel (i.e., as in *Cuffaro*). In addition, Claim 6 requires "each participant in a plurality of participants except for a particular participant casts one vote of the plurality of votes" and "the particular participant casts a second specified number of votes," so in Claim 6, at least two participants, including the particular participant and at least one other participant from the plurality of participants, must cast votes to use the particular communications channel.

A person skilled in the art would recognize the significance of channel selection criteria that specifies that in order for a particular communications channel to be selected it must receive a "passing mark" in the form of a specified number of votes to use the channel from among a plurality of votes. *See Original Specification* at Page 30, Lines 11-23 stating '[a] certain number of votes (e.g., a "passing mark") is required for the channel to be judged "good" and therefore available for us by the FH communications system'. Unlike channel selection criteria that allows a particular communications channel to be selected based on the particular communications channel receiving more votes than another communications channel (i.e., as in *Cuffaro*), the channel selection criteria of Claim 6 requires the particular communications channel to receive, from at least two different participants, a specified number of votes to use the particular communications channel in order to be selected. During performance, the method of Claim 6 would not select a particular communications channel if the particular communications channel does not receive, from at least two different participants, the specified number of votes to use the

particular communications channel, even if the particular communications channel receives more votes than another channel.

In summary, a method of Claim 6 that selects a particular communications channel based on the channel selection criteria must include consideration of whether of the particular communications channel "receives a first specified number of votes to use the particular communications channel from among a plurality of votes" and based upon "each participant in a plurality of participants except for a particular participant casts one vote of the plurality of votes" and "the particular participant casts a second specified number of votes," the first specified number of votes must be cast by at least two different participants.

2. Broadest reasonable interpretation of "vote"

The broadest reasonable construction of vote discussed above with respect to Claim 2 applies equally to the term vote as recited in Claim 6.

3. Gendel, Schmidl, Dicker, and Cuffaro

In *Gendel*, *Schmidl* and *Dicker*, the criteria used for selecting communications channels does not require a communications channel to receive a specified number of votes to use a communications channel from among a plurality of votes cast by at least two different participants.

As discussed above, *Gendel* selects a segment based on "when an error value for the erred segment has reached at least a predetermined threshold" (*Gendel*, column 4, lines 21-22), in the case of selecting an erred segment, or based on whether an unused segment "is not in use in the performance of FH communications" (*Gendel*, column 3, lines 60-62), and has a specified number of frequencies. Clearly, *Gendel's* channel selection criteria does not include whether a segment receives a specified number of votes to use the segment. In addition, Claim 6 requires that at least two participants cast votes. In *Gendel*, each transceiver 102, 104, 106 individually determines whether an erred segment needs to be replaced based upon the error count maintained by the spreading control circuit 317 in the local memory of the transceiver. *Gendel*, column 8, lines 50-63. In *Gendel*, a transceiver does not select an erred segment for replacement based upon an error count maintained by another transceiver.

As discussed above with respect to Claim 2, *Schmidl* clearly discloses determining RF channels to avoid based on "a probing technique that measures the quality of RF channels"

(*Schmidl*, column 2, lines 21-22), which is not a disclosure of channel selection criteria that specifies that for a channel to be selected it must receive a specified number of votes to use the channel from among a plurality of votes. In addition, in *Schmidl* only the master, or a single slave assigned to performed the tasks of the master, implements the probing technique to determine the RF channels that are to be avoided. Thus, even if, for purposes of discussion only, the results of the probing technique of *Schmidl* was considered to be a "vote" as recited in Claim 6, Claim 6 is still not taught or suggested by *Schmidl* because in *Schmidl* there are not at least two different participants that perform the probing.

As discussed above, *Dicker* selects communication links based on "monitoring the individual communication link" and "measur[ing]" "error rates reflect[ing] conditions encountered on the communication link such as (a) bad packet data, indicated by bad synchronization word or (b) bad cyclic redundancy code (CRC)" (*Dicker*, column 3, lines 22-27). Criteria for selecting communications channels based on measured error rate or measured channel quality is not criteria that specifies that "for a particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes", as required in Claim 6.

Accordingly, Bandspeed asserts that *Gendel*, *Schmidl*, and *Dicker* fail to expressly or inherently disclose a method involving selecting communications channels based on channel selection criteria that "specifies that for a particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes", "each participant in a plurality of participants except for a particular participant casts one vote of the plurality of votes" and "the particular participant casts a second specified number of votes," as recited in Claim 6.

Bandspeed asserts that *Cuffaro* fails to overcome the deficiencies of *Gendel*, *Schmidl*, and *Dicker*. The Office Action cites to *Cuffaro* at column 2, lines 30-58 and at column 9, lines 47-67 for disclosure of the claimed channel selection criteria of Claim 6, based on *Cuffaro's* voting procedure for selecting and swapping the worst assigned frequency for the best unassigned frequency. *Office Action* at page 222. *Cuffaro's* selection of the best unassigned frequency is not based on criteria "that specifies that for a particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes", as recited in Claim 6.

Rather, *Cuffaro* makes clear that selection of a "frequency pair" is based on the relative number of votes for the best unassigned frequency compared to the number of votes for the worst assigned frequency, without regard to whether the best unassigned frequency received a specified number of votes. See *Cuffaro*, column 9, line 30 – column 10, line 17. For example, referring to FIG. 5B of *Cuffaro*, unassigned frequency f43 is selected as the best unassigned frequency to swap with the worst assigned frequency f15 because, relative to frequency f15, frequency f43 "has the most positive result" of the voting process over a ten sample period. *See also Cuffaro*, column 10, lines 31-41. Selecting a frequency pair that has the greatest relative number of votes is substantially different that selecting a frequency based on whether a frequency receives a specified number of votes to use the frequency. Significantly, a frequency pair in *Cuffaro* is selected if it has the "most positive result" of the voting process compared to other frequency pairs and without consideration of whether a frequency receives a specified number of votes to use the frequency. *Cuffaro* is devoid of any teaching or suggestion that the selected frequency pair must receive a specified number of votes to be selected.

In view of *Cuffaro's* unequivocal disclosure of selecting a frequency pair with the greatest relative result compared to other frequency pairs, *Cuffaro's* description of "the number of votes for a given frequency pair" at column 9, lines 60-61 is merely a disclosure of the relative number of votes for the unassigned and assigned frequencies of the given pair, and not a disclosure of channel selection criteria that specifies that "for a particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes", as recited in Claim 6. Notably, a frequency pair in *Cuffaro* is selected if it has the most positive relative result of the voting process compared to other frequency pairs, irrespective of whether a frequency receives a specified number of votes to use the frequency. This is contrary to the channel selection criteria of Claim 6 which specifies that "for a particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes".

Nothing in *Cuffaro* or the Office Action suggests modifying the system of *Dicker*, or for that matter *Gendel* or *Schmidl*, to arrive at a method of Claim 6 involving selecting communications channels based on channel selection criteria that "specifies that for a particular communications channel to be selected, the particular communications channel receives a first

specified number of votes to use the particular communications channel from among a plurality of votes."

The TPR cites to *Gendel* at column 7, lines 13-18 equating *Gendel's* "predetermined threshold" with Claim 6's "specified number of votes". *TPR's First Comments* at page 27. However, *Gendel's* predetermined threshold is an "error value" threshold. An error value threshold is not a specified number of votes by any reasonable construction of "a specified number of votes".

Also with respect to Claim 6, the TPR notes the "voting step" of *Cuffaro*. *TPR's First Comments* at page 29-30. As explained above, contrary to the channel selection criteria of Claim 6, *Cuffaro's* voting step selects frequency pairs based on the "most positive result" over a sampling period relative to other frequency pairs, irrespective of whether a frequency receives a specified number of votes to use the frequency over the sampling period. *Cuffaro*, column 10, lines 31-41.

4. Conclusion

Because *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination, do not teach or suggest all of the features of Claim 6, confirmation of the patentability of Claim 6 is respectfully requested.

B. Claims 138-156, 192-211, 243-262

Similar to independent claim 6, independent claim 192 and independent claim 243 require consideration of whether "the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes" in order to select the particular communications channel based on the channel selection criteria, except that the requirement is in the context of a communications channel selector apparatus and a computer-readable medium carrying instructions, respectively. Thus, claims 192 and 243 are allowable over *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination, for at least the same reasons given above that Claim 6 is allowable over *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination.

Claims 138-156, 193-211, 244-262 are each dependent claims dependent on one of allowable independent claims 6, 192, or 243 and are, therefore, allowable over *Gendel*, *Schmidl*,

Dicker, and *Cuffaro*, individually and in any combination, at least by virtue of their dependency on an allowable independent claim.

III. CLAIMS 9, 157-175, 212-231, 263-282

Claims 9, 159, 162-175, 212, 215, 218-231, 263, 266, 269-282 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Gendel*, under 35 U.S.C. § 102 as anticipated by *Schmidl*, and under 35 U.S.C. § 103 as unpatentable over a combination of *Dicker* and *Cuffaro*. Bandspeed respectfully submits that *Gendel*, *Schmidl*, *Dicker* and *Cuffaro*, individually or in any combination, do not teach or suggest each element of any of these rejected claims.

Claim 9 recites:

> A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:
> selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein:
> the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives a specified number of votes to use the particular communications channel from among a plurality of votes; and
> each participant in a plurality of participants casts one vote of the plurality of votes;
> selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
> wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
> wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

Similar to Claim 6, in Claim 9, frequency hopping communications channels are selected based on channel selection criteria that "specifies that for a particular communications channel to be selected, the particular communications channel receives a specified number of votes to use the particular communications channel from among a plurality of votes". Also, "each participant in a plurality of participants casts one vote of the plurality of votes." Thus, at least two different participants must cast votes. For reasons similar to those given above for why *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in combination, do not teach or suggest selecting frequency hopping communications channels based on the channel selection criteria of Claim 6, *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in combination, do not teach or suggest

selecting frequency hopping communications channels based on the channel selection criteria of Claim 9.

Similar to independent claim 9, independent claim 212 and independent claim 263 require consideration of whether "the particular communications channel receives a specified number of votes to use the particular communications channel from among a plurality of votes" in order to select the particular communications channel based on the channel selection criteria, except that the requirement is in the context of a communications channel selector apparatus and a computer-readable medium carrying instructions, respectively. Thus, claims 212 and 263 are allowable over *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination, for at least the same reasons that Claim 9 is allowable over *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination.

Claims 9, 157-175, 213-231, 264-282 are each dependent claims dependent on one of allowable independent claims 9, 212, or 263 and are, therefore, allowable over *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, individually and in any combination, at least by virtue of their dependency on an allowable independent claim.

III. CLAIMS 14, 15-18, 20, 23, 24, 28-40, 78, 83, 84, 95-106, 108-110, 114-119, 284, 286, 289, 291, 293, 296, 593, 594, 595, 596, 597, 598

Claims 15-18, 20, 23, 24, 28-40, 78, 83, 84, 95-106, 108-110, 114-119, 284, 286, 289, 291, 293, 296, 593, 594, 595, 596, 597, 598 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Dicker*, under 35 U.S.C. § 102 as anticipated by U.S. Pat. 6,760,319 ("*Gerten*"), under 35 U.S.C. § 102 as anticipated by Kostic et al., "Dynamic Frequency Hopping in Wireless Cellular Systems – Simulations of Full-Replacement and Reduced-Overhead Methods." 1999 IEEE 49th Vehicular Technology Conference, 1999 ("*Kostic*"), under 35 U.S.C. § 102 as anticipated by *Gendel*, under 35 U.S.C. § 102 as anticipated by *Schmidl*, under 35 U.S.C. § 103 as unpatentable over *Dicker* and U.S. Pat. No. 5,956,642 ("*Larsson*"), and under 35 U.S.C. § 103 as unpatentable over *Dicker* and *Gendel*. These are the only prior art rejections of these claims in the Office Action.

In light of the response to arguments in the Office Action, Bandspeed hereby addresses the patentability of Claim 15, before turning to the remaining rejected claims.

A. Claim 15

Claim 15 stands rejected under 35 U.S.C. § 102 as anticipated by *Dicker*, *Kostic*, *Gendel*, and *Schmidl*. Claim 15 recites:

15. A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:
selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;
generating first identification data that identifies the first set of two or more communications channels;
providing the first identification data to the participant;
communicating with the participant over the first set of two or more communications channels;
wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;
wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;
determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion; and
if the number of communications channels from the first set of two or more communications channels is less than a specified number, then:
selecting, based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;
generating second identification data that identifies the second set of two or more communications channels;
providing the second identification data to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and
communicating with the participant over the second set of two or more communications channels.

1. Distinction in Claim 15

There is a distinction in Claim 15 between when the second set of communications channels is selected and selecting communications channels for inclusion in the second set of communications channels when it has been determined that the second set of communications

channels should be selected. It is important for a proper understanding of Claim 15 that this distinction not be confused. Claim 15 makes the distinction very clear. In particular, Claim 15 recites, among other things:

> determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion; and
> if the number of communications channels from the first set of two or more communications channels is less than a specified number, then:
> selecting, based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;

Thus, the second set of communications channels is selected in Claim 15 when it has been determined, based on the second performance data, that there are less than a specified number of communications channels from the first set of communications channels that satisfy at least the second performance criterion. Then, if the second set of communications channels should be selected because the recited channel selection condition is satisfied, communications channels from the plurality of communications channels are selected for inclusion in the second set of communications channels based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion.

A person of ordinary skill in the art would understand that selection of the second set of communications channels is conditional on there being, based on the second performance data, less than a specified number of communications channels from the first set of communications channels from the first set of communications channels that satisfy at least the second performance criterion. Further, one skilled in the art would understand that incidentally selecting a second set of communications channels, based on a different channel selection condition, is neither an express nor inherent disclosure of recited channel selection condition of Claim 15.

2. Dicker's channel selection condition is not the channel selection condition of Claim 15.

Claim 15 is rejected as anticipated by *Dicker*. However, *Dicker* does not disclose the complete detail of Claim 15.

When comparing *Dicker* to Claim 15, the TPR ignores the clear distinction in Claim 15. In particular, the TPR states with respect to *Dicker* that "if *Dicker* discovers that the currently active subset of frequencies is performing poorly, then the number of subsets that satisfy the selection criteria is less than a specified number". *TPR's First Comments* at page 44. What, in fact, *Dicker* states as its condition on "selecting the two subsets for the communication links that will yield the worst quality" is "identifying at least [] one subset as a bad subset that should not be used if its error rate is higher than a currently active subset." *Dicker* at column 6, lines 59-65. Thus, *Dicker* will select the two worst quality subsets when at least one currently active subset is bad. In contrast, the second set of communications channels are selected when it has been determined, based on the second performance data, that there are less than a specified number of communications channels from the first set of communications channels that satisfy at least the second performance criterion.

Dicker will select new subsets when identifying at least one currently active subset is bad, not when identifying that less than a specified number of currently active subsets are good and not when identifying less than a specified number of currently active subsets are bad. The TPR implies that *Dicker's* disclosure of selecting new subsets when identifying at least one currently active subset as bad is the same as selecting new subsets when identifying less than a specified number of currently active subsets as bad. *TPR's First Comments* at pages 44-45. They are not the same. Assuming the specified number of Claim 15 can only reasonably be greater than zero[1], then selecting new subsets when identifying less than a specified number of currently active subsets as bad would mean that *Dicker* would select new subsets when identifying no currently active subsets as bad (the number zero is necessarily less than a number greater than zero). As the TPR correctly notes with respect to *Dicker* "if the active subset is not providing poor quality, it is not replaced". *TPR's First Comments* at page 44. Thus, selecting new subsets when identifying less than a specified number of currently active subsets as bad would be directly contrary to the mandate of *Dicker* to not select new subsets when no currently active subsets are bad. *See Dicker* at column 6, lines 59-62. Thus, *Dicker* does not disclose selecting new subsets when identifying less than a specified number of subsets as bad.

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[1] Bandspeed submits that it would be unreasonable to construe the specified number in Claim 15 to be zero as then there would never be less than the specified number of communications channels from the first set of two or more communications channels that satisfy at least the second performance criterion.

The Office Action contends that *Dicker* at column 6, line 63 – column 7, line 14 "is seen to expressly disclose that a second set of channels will be selected when the number of short term error rates is greater than a threshold". *Office Action* at page 251. However, the Office Action ignores the clear distinction in Claim 15 between when the second set of communications channels is selected and selecting communications channels for inclusion in the second set of communications channels when it has been determined that the second set of communications channels should be selected. In particular, *Dicker* at column 6, lines – column 7, line 14 states that the two worst quality subsets (i.e., those with the highest error rates) will be selected "[a]fter such identification has been performed" (emphasis added). The "identification" referred to in the quoted portion of *Dicker* refers to identifying at least one currently active subsets as bad. *See Dicker* at column 6, lines 59-62. Thus, the portion of *Dicker* cited by the Office Action pertaining to selecting the two worst quality subsets refers to selecting new subsets after it has already been determined that new subsets should be selected. As discussed above, *Dicker's* condition on whether the two worst quality subsets should be selected is not the channel selection condition of Claim 15.

Based on the foregoing, it is respectfully submitted that *Dicker* does not disclose, expressly or inherently, at least the following features of Claim 15:

> determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion; and
>
> if the number of communications channels from the first set of two or more communications channels is less than a specified number, then:
>
> selecting, based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;

Claim 15 also requires the following features pertaining to providing the participant with identification data for the second set of communications channels that are also not disclosed by *Dicker*:

> generating second identification data that identifies the second set of two or more communications channels;
>
> providing the second identification data to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

With respect to these features of Claim 15 and *Dicker*, the Office Action cites to column 7, lines 25-35 of *Dicker* which states in relevant part that "informing may be accomplished in a variety of ways known to those skilled in the art. For example, transmission attributes, such as a new set of blocked subsets representing the worst-quality channels, may be communicated to the mobile unit as data or control parameters. They may also be encoded or passed to the mobile unit as tabular data." However, there is no evidence of record that one skilled in the art would understand from this general description in *Dicker* that identification data could be provided to a participant "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 15.

Accordingly, *Dicker* does not disclose each and every limitation of Claim 15 in the detail recited in Claim 15. *Dicker*, therefore, does not anticipate Claim 15.

3. Like Dicker, Kostic's channel selection condition is not the channel selection condition of Claim 15

Claim 15 is also rejected as anticipated by *Kostic*. Like *Dicker*, *Kostic* does not disclose the complete detail of Claim 15. In particular, like *Dicker*, *Kostic* also does not disclose, expressly or inherently, at least the following channel selection features of Claim 15:

> determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion; and
>
> if the number of communications channels from the first set of two or more communications channels is less than a specified number, then:
>
> selecting, based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;

The TPR refers to the threshold based method of *Kostic* as a disclosure of the channel selection condition of Claim 15. While *Kostic* does disclose changing frequencies in poor conditions. *Kostic* describes determining frequencies that "[do] not achieve the required threshold" (emphasis added). In contrast, Claim 15 requires "determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels

from the first set of two or more communications channels that satisfy at least a second performance criterion" (emphasis added).

Contrary to the TPR's assertion, this is a significant distinction between *Kostic* and Claim 15 and not merely a semantic difference. In Claim 15, the second set of communications channel is selected "if the number of communications channels from the first set of two or more communications channels [that satisfy at least the second performance criterion] is less than a specified number". The channel selection condition in Claim 15 is not if the number of communications channels from the first set that do not satisfy the performance criterion is less than a specified number. *Kostic* changes frequencies "if the measured SIR does not achieve the required threshold on at least one of [the six used frequencies]" (emphasis added). Thus, *Kostic* would change frequencies even if the number of currently used frequencies that meet the SIR threshold is equal to or more than a specified number. In contrast, Claim 15 requires "if the number of communications channels from the first set of two or more communications channels [that satisfy at least the second performance criterion] is less than a specified number, then: selecting [the second set of communications channels". Thus, *Kostic* does not disclose the conditional channel selection features of Claim 15.

Kostic is similar to *Dicker* in that *Kostic*, like *Dicker*, changes frequencies when identifying at least one currently used frequency as bad. As explained above with respect to *Dicker*, changing frequencies when identifying at least one currently used frequency as bad is not the same as changing frequencies when identifying less than a specified number of currently used frequencies as bad. They are not the same because changing frequencies when identifying less than a specified number of currently used frequencies as bad would mean changing frequencies when identifying no currently used frequencies as bad. This would be directly contrary to *Kostic's* mandate that under the threshold based method "[o]nly the frequency in poor conditions is changed." *Kostic* at page 915.

The Office Action argues that *Kostic* teaches that "if less than six channels meet a required SIR threshold, then a new set of channel is selected". *Office Action* at page 251. Contrary to the Office Action's assertion, this is not what *Kostic* teaches. Instead, *Kostic* states "SIR is measured on the six used frequencies and the current hopping pattern is changed if the measured SIR does not achieve the required threshold on at least one of them". *Kostic* at page 915. Thus, *Kostic* teaches that the current hopping pattern is changed if at least one of the six

currently used frequencies is identified as not meeting an SIR threshold. *Kostic* does not teach changing frequencies when identifying that less than six of the currently used frequencies meet the threshold because the frequencies are changed in *Kostic* when at least one currently used frequency is identified as not meeting the threshold. *Kostic* does not teach changing frequencies when identifying that less than six of the currently frequencies do not meet the threshold because *Kostic* would not change frequencies when none of the six currently used frequencies do not meet the threshold.

Based on the foregoing, it is respectfully submitted that *Kostic* does not disclose, expressly or inherently, at least the following features of Claim 15:

> determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion; and
>
> if the number of communications channels from the first set of two or more communications channels is less than a specified number, then:
>
> selecting, based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;

Claim 15 also requires the following features pertaining to providing the participant with identification data for the second set of communications channels that are also not disclosed by *Kostic*, expressly or inherently:

> generating second identification data that identifies the second set of two or more communications channels;
>
> providing the second identification data to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

Kostic states on page 915 that "considerable amounts of data need to be sent between a base station and each of its users whenever pattern modifications are done", which does not disclose the specifics of the providing step of Claim 15 "providing the second identification data to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol".

Accordingly, *Kostic* does not disclose each and every limitation of Claim 15 in the detail recited in Claim 15. *Kostic*, therefore, does not anticipate Claim 15.

4. Gendel does not disclose the conditional channel selection of Claim 15

Claim 15 is also rejected as anticipated by *Gendel*. *Gendel* does not disclose the complete detail of Claim 15.

As an initial matter, it should be noted that the TPR mischaracterizes *Gendel*. In particular, the TPR states while citing to *Gendel* at column 12, lines 18-39 that "replacement [in *Gendel*] does not occur as soon as the first subsystem has identified a candidate for replacement (at the second item) but only after the second subsystem has evaluated the performance of the channels (at the third time)." *TPR's First Comments* at page 48. The "only after" characterization by the TPR is an overstatement of what *Gendel* discloses. What *Gendel* discloses is that its segment replacement process begins "by [subsystem 300] locating a candidate segment for replacement" (column 12, lines 20-21; figure 6, step 650) and "[i]f a candidate segment S_{error} for replacement is located, subsystem 300 transmits a signal (e.g., a replacement request) to the other party requesting that segment S_{error} is to be replaced with unused segment S_{unused} (Step 654)". The subsystem 300 than checks whether the correct acknowledgement to the replacement request is received from the other party. *Gendel* at figure 6, step 665. If so, subsystem 300 updates its segment hopping table. *Gendel* at figure 6, step 662. If not, subsystem 300 checks whether a replacement request was received from the other party. *Gendel* at figure 6, step 658. However, contrary to the TPR's assertion and as clear from steps 650, 654, 656, and 662 in the flowchart of *Gendel* at figure 6, segment replacement can occur in *Gendel* with only one party evaluating channel performance.

With respect to the conditional channel selection features of Claim 15, the TPR cites to *Gendel* at column 7, line 60 – column 8, line 7, which discloses replacing a used segment with an unused segment when the used segment has an error value greater than or equal to a threshold. *TPR's First Comments* at page 48. Thus, while *Gendel* discloses selecting an unused segment when the number of erred segments equals one, Claim 15 requires "if the number of communications channels from the first set of two or more communications channels [that satisfy at least a second performance criterion] is less than a specified number" (emphasis added). This is not merely a semantic difference as the TPR contends. Once again, as explained above with respect to *Dicker* and *Kostic*, a disclosure of selecting a new channel when identifying a currently used channel as having errors is not a disclosure of selecting a new channel when identifying that less than a specified number of currently used channels have

errors. If it were, then *Gendel* would describe replacing segments when there are no erred segments. *Gendel* does not disclose this. As such, *Gendel* does not disclose:

> determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion; and
> if the number of communications channels from the first set of two or more communications channels is less than a specified number, then:
> selecting, based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;

Claim 15 also requires "providing the second identification data to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", which also is not disclosed by *Gendel*. For this Claim 15 feature, the Office Action at page 102 cites to *Gendel*, column 12, lines 7-10 which states "[i]n either case, subsystem 300 then determines whether all hopping frequencies in all used segments have been visited at least once, e.g., whether one hopping cycle has elapsed (Step 620)." This does appear to have anything do with providing channel identification data to a participant "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol". *Gendel* does disclose "a request to modify the frequency hopping pattern" (*Gendel*, column 12, line 24), but *Gendel* does not describe the request being sent "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 15.

Accordingly, *Gendel* does not disclose each and every limitation of Claim 15 in the detail recited in Claim 15. *Gendel*, therefore, does not anticipate Claim 15.

5. Consideration of Schmidl

Claim 15 is also rejected as anticipated by *Schmidl*. *Schmidl* does not disclose the complete detail of Claim 15.

The TPR argues in its comments that *Schmidl* "indicates that the monitoring of channels used in the hopping sequence is on-going and, thus, that the currently selected group of channels is monitored and if interference is detected on any of the currently selected channels, that

channel is replaced in the hopping sequence. *TPR's First Comments* at page 49. The TPR is careful here not to state that *Schmidl* monitors the reduced hopping sequence on an on-going basis because that is not what *Schmidl* discloses. Instead, *Schmidl* discloses that a master or a slave unit determines if interference is present on any channel of a normal hopping sequence. *Schmidl* at figure, step 202. If so, the master or slave sends a reduced hopping sequence message to the other that identifies channels in the normal hopping sequence to avoid. *Schmidl* at figure, step 206. The master and slave then communicate with each over the reduced hopping sequence. *Schmidl* at figure 2, step 208. Thus, *Schmidl* discloses selecting only one reduced hopping sequence and does not disclose selecting a second reduced hopping sequence. In contrast, Claim 15 requires selecting a first set of two or more communications channels from the plurality of communications channels and selecting a second set of two or more communications channels from the plurality of communications channels.

The TPR ignores the distinction in Claim 15 when it states the Claim 15 merely requires that a second set of communications channels be selected. *TPR's First Comments* at page 49. As discussed above, Claim 15 requires the following conditional channel selection features that are not disclosed by *Schmidl's* description of selecting a reduced hopping sequence from a normal hopping sequence:

> determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion; and
>
> if the number of communications channels from the first set of two or more communications channels is less than a specified number, then:
>
> selecting, based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;

With respect to the Claim 15 feature of "providing the second identification data to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", *Schmidl* does state that "[t]he master can then send a packet with 79 information bits to indicate whether each one is to be used or not." However, *Schmidl* does not state that the master sends the packet "over one

communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 15.

Accordingly, *Schmidl* does not disclose each and every limitation of Claim 15 in the detail recited in Claim 15. *Schmidl*, therefore, does not anticipate Claim 15.

6. Conclusion

Because none of *Dicker*, *Kostic*, *Gendel*, and *Schmidl* teaches each and every feature of Claim 15 in the full detail as recited in Claim 15, confirmation of the patentability of Claim 15 is respectfully requested.

B. Claims 16-17, 20, 23, 24, 28-40, 78, 83, 84, 95-105, 108-110, 114-119, 284, 286, 289, 291, 293, 296, 593, 594, 595, 596, 597, 598

Similar to independent claim 15, independent claim 78 and independent claim 95 require conditional selection of the second set of communications channels based on determining less than a specified number of communications channels from the first set of communications channels that satisfy performance criterion, except that the requirement is in the context of a communications apparatus and a computer-readable medium carrying instructions, respectively. Thus, Claims 78 and 95 are allowable over *Dicker*, *Kostic*, *Gendel*, and *Schmidl* for at least the same reasons given above that Claim 15 is allowable over *Dicker*, *Kostic*, *Gendel*, and *Schmidl*.

Claims 16-17, 20, 23, 24, 28-40, 83, 84, 96-105, 108-110, 114-119, 284, 286, 289, 291, 293, 296, 593, 594, 595, 596, 597, 598 are each dependent claims dependent on one of allowable independent claims 15, 78, or 95 and are, therefore, allowable over *Dicker*, *Kostic*, *Gendel*, and *Schmidl*, individually and in any combination, at least by virtue of their dependency on an allowable independent claim.

Accordingly, confirmation of the patentability of Claims 16-17, 20, 23, 24, 28-40, 78, 83, 84, 95-105, 108-110, 114-119, 284, 286, 289, 291, 293, 296, 593, 594, 595, 596, 597, and 598 is respectfully requested.

C. Independent Claims 18, 106

Claim 18 has been rewritten in independent form to include all the limitations of independent patent claim 15. Thus, the scope of Claim 18 as amended is identical to the scope of patent claim 18. As a result, no new search or examination of Claim 18 is required. In particular, amended claim 18 does not present any new limitation or any new combination of limitations

that the TPR or the Examiner has not already had opportunity to address. Accordingly, entry of the amendment to Claim 18 is warranted.

Claim 106 has been rewritten in independent form to include all the limitations of independent patent claim 95. Thus, the scope of Claim 106 as amended is identical to the scope of patent claim 106. As a result, no new search or examination of Claim 106 is required. In particular, amended claim 106 does not present any new limitation or any new combination of limitations that the TPR or the Examiner has not already had opportunity to address. Accordingly, entry of the amendment to Claim 106 is warranted.

Claims 18 and 106 stand rejected in the Office Action under 35 U.S.C. § 102 as anticipated by *Dicker*, under 35 U.S.C. § 102 as anticipated by *Gendel*, and under 35 U.S.C. § 102 as anticipated by *Schmidl.*

As recited in Claims 18 and 106, first identification data is generated that "identifies the first set of two or more communications channels" selected "based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion". The first identification data is also provided to a participant "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol".

Claims 18 and 106 recite the following features pertaining to the first identification data that render Claims 18 and 106 patentable over *Dicker*, *Gendel*, and *Schmidl*:

> encrypting the first identification data; and
> providing the encrypted first identification data to the participant.

As explained in the Bandspeed Patent at column 18, lines 15-34, additional security protection may be included by sending the good channel information in an encrypted format to the other participants in the communications network. By encrypting the good channel information, even if the MAC addresses of the master is known, derivation of the frequency hopping sequence used by the master and the participant by surreptitious network entities is prevented.

With respect to *Dicker*, the Office Action at page 24 cites to column 7, lines 25-51 of *Dicker*, which describes that transmission data sent to the mobile unit can be "encoded or passed to the mobile unit as tabular data". However, encoding data is entirely different from encrypting data and one does not necessarily imply the other. One skilled in the art would recognize that

while *Dicker* describes encoding data, it does not say anything about encrypting data. As such, *Dicker* does not anticipate Claim 18 or Claim 106.

Gendel speaks of encoding like *Dicker*, but not encrypting. *Gendel* notes in its Background of the Invention section at column 1, lines 39-45 that a frequency modulation scheme such as frequency shift keying (frequency shift keying) or phase shifty keying (PSK) can be used to transmit digitally encoded information through discrete frequency changes. Again, digitally encoded information has nothing necessarily to do with encryption. Further, one skilled in the art would recognize that the reference in *Gendel* to "keying" refers to signal modulation forms and is not a reference to encryption keys. In any event, the cited portion nor the balance of *Gendel* says nothing about "encrypting the first identification data; and providing the encrypted first identification data to the participant", as recited in Claim 18 and Claim 106.

The Office Action rejects Claim 106 under 35 U.S.C. § 102 as anticipated by *Schmidl*. *Office Action* at page 148. However, the Office Action does not cite to any particular portion of *Schmidl* that is supposed to disclose the encryption features of Claim 106. *See Office Action* at page 157 and 174. In any event, Bandspeed has reviewed *Schmidl* and cannot find anything that discloses the encryption features of Claim 18 and Claim 106. For example, *Schmidl* does not even mention "encrypt", "encryption", or "encrypting". Accordingly, *Schmidl* does not anticipate Claim 18 or Claim 106.

Based on the foregoing, confirmation of the patentability of Claims 18 and 106 is respectfully requested.

D. Claims 22, 109

Dependent claims 22 and 109, of independent claims 15 and 95 respectively, stand rejected under 35 U.S.C. § 102 as anticipated by *Dicker*, under 35 U.S.C. § 102 as anticipated by *Gendel*, and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of these claims in the Office Action.

Dependent claims 12 and 109 recite the following features that independently render them patentable over *Dicker*, *Gendel*, and *Schmidl*:

> the second set of two or more communications channels is different than the first set of two or more communications channels; and
> the first performance criterion is different than the second performance criterion.

In base claim 15 and base claim 95, the first set of communications channels to use for frequency hopping communications with a participant is selected "based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion" (emphasis added). Also, the second set of communications channels to use for frequency hopping communications with the participant is selected based on "determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, [less than a specified] number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion" (emphasis added).

Claim 22 and Claim 109 require that "the first performance criterion is different than the second performance criterion". As noted in the Bandspeed Patent at column 10, lines 7-11, "[d]ifferent methods may be used for testing channels to select a set of communications channels and to monitor the performance of the selected set of communications channels". For example, selecting a set of communications channels can be based on a channel performance testing criterion such as a performance criterion based on special test packets (*Bandspeed Patent*, column 10, line 16 – column 12, 20) or a performance criterion based on received signal strength indicators (RSSI) (*Bandspeed Patent*, column 12, lines 21-53), while monitoring performance of the selected set of communications channels can be based on a channel performance monitoring criterion such as a performance criterion based on preamble correlation (*Bandspeed Patent*, column 12, line 65 – column 13, line 3), header error check (*Bandspeed Patent*, column 13, lines 19-24), cyclically redundancy check (*Bandspeed Patent*, column 13, lines 39-44), packet loss ratio (*Bandspeed Patent*, column 13, lines 59-61), or forward error correction (*Bandspeed Patent*, column 14, lines 7-12).

As an initial matter, it should be noted that Claim 109 (and Claim 108 similarly) is amended herein to address the claim dependency informality identified in the Office Action on page 12 (Point 25). Bandspeed graciously thanks the Examiner for identification of the informality.

With respect to the Claim 22 and Claim 109 limitation of "the first performance criterion is different than the second performance criterion", the Office Action cites to column 3, lines 1-45 of *Dicker*. There, *Dicker* explains that its base stations "have logic operable to evaluate parameters relating to the quality of individual communication links". "Such parameters may

include those that indicate that signal bursts or parts of signal bursts are lost or corrupted over the communications link, or the strength of the signal over the communication link. Other parameters are known to those skilled in art." *Id.* However, what *Dicker* does not disclose is evaluating one type of parameter when selecting a set of communications links and evaluating a different type of parameter when monitoring the performance of the selected set of communications links. For example, *Dicker* does not disclose evaluating parameters "that indicate that signal bursts or parts of signal bursts are lost or corrupted" when selecting a set of communications links and evaluating different parameters that indicate "the strength of the signal" when monitoring the performance of the selected set of communications links.

A general disclosure such as in *Dicker* that channels may be evaluated according to different performance criteria is not a disclosure of the specific requirements of Claim 22 and Claim 109 which require "selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels" and require "determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion" that is different from the first performance criterion. Thus, *Dicker* does not disclose the complete detail of Claim 22 and Claim 109.

Gendel discloses selecting channel segments based on detected reception errors. Even if *Gendel* discloses that different performance criteria may be used to detect reception errors, this is not a disclosure of the specific requirements of Claim 22 and Claim 109 which require "selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels" and require "determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion" that is different from the first performance

criterion. Thus, *Gendel*, like *Dicker*, also does not disclose the complete detail of Claim 22 and Claim 109.

The Office Action at page 106 cites to column 7, line 38 – column 8, line 12 of *Gendel* and also cites to column 4, lines 26-45 of *Gendel*. It is unclear what in these cited portions the Office Action means to equate with the first performance criterion and the second performance criterion that is different than the first performance criterion, as recited in Claim 22 and Claim 109. At best, the Office Action seems to equate the criteria for detecting reception errors as disclosed in *Gendel* with the recited the first performance criterion is different than the second performance criterion. However, as discussed above, a general disclosure that channels may be evaluated according to different performance criteria is not a disclosure of the specific requirements of Claim 22 and Claim 109.

Schmidl discloses that the quality of RF channels can be measured using "one of a number of channel quality measurements." *Schmidl*, column 2, lines 22-28. Again, a disclosure that channels may be evaluated in different ways is not a disclosure of selecting a set of communications channels based on a first performance criterion and then later determining a number of the selected set of communications channels that satisfy a second performance criterion that is different than the first performance criterion, as required in Claim 22 and Claim 109. Thus, *Schmidl* also does not disclose the complete detail of Claim 22 and Claim 109.

Based on the foregoing, confirmation of the patentability of Claims 22 and 109 is respectfully requested.

E. Claims 30, 116

Claim 30 and Claim 116 stand rejected under 35 U.S.C. § 102 as anticipated by *Gendel*, under 35 U.S.C. § 102 as anticipated by *Schmidl*, and under 35 U.S.C. § 103 as unpatentable over *Dicker* and *Gendel*. These are the only prior art rejections of these claims in the Office Action.

Claim 30 and Claim 116 requires that the first performance data in Claim 15 and Claim 95 that serves as a basis for selecting the first set of communications channels be determined by:

> transmitting first data to the participant over at least one communications channel of the plurality of communications channels, wherein the first data includes one or more copies of a specified data string;
>
> receiving, from the participant, second data that indicates a measurement of performance of the at least one communications channel based on whether errors occur in the one or

> more copies of the specified data string of the first data as a result of transmitting the first data to the participant over the at least one communications channel; and
> determining the first performance data based on at least the second data.

With respect to the recited "one or more copies of a specified data string" included in the "first data" transmitted to the participant in Claim 30 and Claim 116, the Bandspeed Patent at column 11, lines 21-32 explains:

> By including copies of known preamble 370, 372, 374 in the payload of master test packet 360, the slave that receives master test packet 360 may calculate the number of error bits (NEB) that occur in copies of known preamble 370, 372, 374 and in known preamble 340. For example, in a Bluetooth based FH communications system, such as Bluetooth or IEEE 802.15.1, the known preamble is referred to as the channel access code, which has a length of 72 bits. Based on the channel access code at the start of a packet and the three copies of the channel access code in the packet payload sent from the master to the slave, there are 288 bits of data to test channel performance based on the NEB.

And with respect to the recited "second data that indicates a measurement of performance of the at least one communications channel based on whether errors occur in the one or more copies of the specified data string of the first data as a result of transmitting the first data to the participant over the at least one communications channel", the Bandspeed Patent at column 11, lines 49-55 explains:

> Slave test packet 380 includes the NEB of last received packet 388 that contains the NEB calculated by the slave for the last packet sent by the master to the slave, such as master test packet 360. The NEB of last received packet 388 is used to pass back from the slave to the master the information on the performance of the master to slave transmission over the particular channel used to send master test packet 360.

The Office Action cites to various portions of *Gendel*; all apparently to equate *Gendel's* per-segment "error value" with the "second data that indicates a measurement of performance of the at least one communications channel based on whether errors occur in the one or more copies of the specified data string of the first data as a result of transmitting the first data to the participant over the at least one communications channel", as recited in Claim 30 and Claim 116. However, *Gendel* does not describe receiving its error value from a participant.

Gendel does describe a "processing unit [that] identifies a reception error in [] received data". In particular, "a decoding circuit 312 performs data expansion of the received encoded data, analyzes the received data to detect for the occurrence or non-occurrence of error signal, and informs spreading code control unit 317 of the occurrence or non-occurrence of reception

errors." *Gendel*, column 8, lines 44-49. *Gendel* at column 6, line 65 – column 7, line 37 further explains that a "subsystem" of a "primary system" or a "secondary system" is adapted:

> (a) to detect the occurrence or non-occurrence of a reception error from received data, (b) to identify a used segment from the hopping pattern in which the reception error occurred, and (c) to store and modify an error value for each used segment according to the number and/or type of reception errors affecting each used segment or the non-occurrence of reception errors over a predetermined period (e.g., one hopping period). When the error value of a particular used segment reaches or exceeds a predetermined threshold, subsystems 122, 124, 132, 134 replace the particular used segment (e.g., an erred segment) and all of its hopping frequencies with an unused segment. Subsystems 122, 124, 132, 134 then notify the other communicating party (e.g., the transmitting-side apparatus) of the replacement in the hopping pattern. Thereafter, primary system 102 and secondary systems 104, 106 may resume FH communication with the modified hopping pattern.

However, in *Gendel*, the error values are not communicated between the primary system and secondary system. Thus, neither the primary system nor the secondary system can receive error values from the other. In contrast, Claim 30 and Claim 116 feature "receiving, from the participant, second data that indicates a measurement of performance of the at least one communications channel based on whether errors occur in the one or more copies of the specified data string of the first data as a result of transmitting the first data to the participant over the at least one communications channel" (emphasis added).

Further, the notification in *Gendel* to the other party of the "replacement in the hopping pattern" cannot be the second data of Claim 30 and Claim 116 that is received from the participant because the notification in *Gendel* is received after the replacement in the hopping pattern has been selected. *See Gendel* at figure 5. In contrast, in Claim 30 and Claim 116, the received second data is used to determine the first performance data on which selection of the first set of communications channel is based, as recited in base claim 15 and base claim 95, respectively. Thus, the second data in Claim 30 and Claim 116 is necessarily received before the first set of communications channels are selected.

Schmidl is no different than *Gendel* with regard to Claim 30 and Claim 116. *Schmidl* explains that "a Bluetooth piconet master determines which frequency bands contain a strong interferer … by a probing technique that measures the quality of the RF channels … using one of a number of channel quality measurements …. Alternatively, the master radio can simply monitor the PER on each channel to find which RF channels in the standard hopping sequence

have a large PER and should be avoided." *Schmidl*, column 2, lines 13-33. However, *Schmidl* does not describe the master receiving channel quality measurements from slaves or slaves receiving channel quality measurements from the mater.

Bandspeed recognizes that *Schmidl* does state "that one or more of the slave units in the system could be assigned to perform these tasks", when referring to the tasks, described as being performed by the master, of monitoring for interferers and transmitting messages to the slave units. *Schmidl* at column 4, lines 24-28. However, with respect to messages transmitted by the master in *Schmidl*, there is only reference to a "RHS message" that "allows the slave units to determine the reduced hopping sequence that will be used and what channels will be omitted from the sequence". *Schmidl*, column 3, lines 51-67. In other words, the RHS message transmitted in *Schmidl* is received after the channels to be omitted and the channels to use have been selected. Therefore, regardless of whether the master or the slave in *Schmidl* transmits the RHS message, the RHS message cannot be the second data of Claim 30 and Claim 116 that is necessarily received before the first set of communications channels are selected.

As the Office Action notes, *Dicker* does not disclose the claim features specific to Claims 30 and 116. *See Office Action* at page 233. As such and based on the discussion of *Gendel* above, one skilled in the art would not understand a combination of *Dicker* and *Gendel* to disclose the specific features of Claim 30 or Claim 116.

Based on the foregoing, confirmation of the patentability of Claims 30 and 116 is respectfully requested.

F. Claims 31, 117

Dependent claims 31 and 117 depend directly from claims 30 and 116, respectively. Claims 30 and 116, in turn, depend directly from independent claims 15 and 95, respectively. Claim 31 and Claim 117 stand rejected under 35 U.S.C. § 102 as anticipated by *Gendel*, under 35 U.S.C. § 102 as anticipated by *Schmidl*, and under 35 U.S.C. § 103 as unpatentable over *Dicker* and *Gendel*.

Claim 31 and Claim 117 require that the first data of Claim 30 and Claim 116 to be "a data packet" and also require the one or more copies of the specified data string in Claim 30 and Claim 116 to be "included in a portion of the data packet selected from the group consisting of a payload portion of the data packet and a preamble portion of the data packet."

Recall that in Claim 30 and Claim 116 the received second data "indicates a measurement of performance of the at least one communications channel based on whether errors occur in the one or more copies of the specified data string of the first data as a result of transmitting the first data to the participant over the at least one communications channel". Thus, Claim 31 and Claim 117 do not merely require a data packet that includes one or more copies of a specified data string in a payload portion and/or a preamble portion of the data packet, but also require that second data be received that indicates a measurement of performance of the at least one communications channel based on whether errors occur in the one or more copies of the specified data string of the first data as a result of transmitting the first data that includes one or more copies of a specified data string in a payload portion and/or a preamble portion of the data packet to the participant over the at least one communications channel.

Both *Gendel* and *Schmidl* disclose data packets. However, again, Claim 31 and Claim 117 do not merely claim a data packet or a data packet containing one or more copies of a specified data string. While *Gendel* and *Schmidl* disclose data packets, *Gendel* and *Schmidl* do not disclose "receiving, from the participant, second data that indicates a measurement of performance of the at least one communications channel based on whether errors occur in the one or more copies of the specified data string [included in the preamble portion or payload portion] of the first data as a result of transmitting the first data to the participant over the at least one communications channel", as required in Claim 31 and Claim 117.

The Office Action does not rely on, and *Dicker* does not disclose, the claim features specific to Claims 31 and 117. *See Office Action* at page 234, 235. As such and based on the discussion of *Gendel* above, one skilled in the art would not understand a combination of *Dicker* and *Gendel* to disclose the specific features of Claim 31 or Claim 117.

Based on the foregoing, confirmation of the patentability of Claims 31 and 117 is respectfully requested.

G. Claim 14

Claim 14 stands rejected under 35 U.S.C. § 102 as anticipated by *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl*. Claim 14 recites:

> 14. A method for selecting communications channels for a frequency hopping communications system, the method comprising the computer-implemented steps of:
>
> selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from

the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, and wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;

determining, based upon performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy the channel selection criteria; and

if the number of communications channels from the first set of two or more communications channels that satisfy the channel selection criteria at the second time is less than a specified number, then

selecting, based upon performance of the plurality of communications channels at a third time that is later than the second time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels in the frequency hopping communications system.

Thus, Claim 14 makes a similar distinction to that of Claim 15 discussed above between when the first set of between when the second set of communications channels is selected and selecting communications channels for inclusion in the second set of communications channels when it has been determined that the second set of communications channels should be selected. As such, Claim 14 is patentable over *Dicker*, *Kostic*, *Gendel*, and *Schmidl* for reasons similar to those provided above for which Claim 15 is patentable over *Dicker*, *Kostic*, *Gendel*, and *Schmidl*. *Gerten* does not overcome the deficiencies of *Dicker*, *Kostic*, *Gendel*, and *Schmidl*.

Gerten does not conditionally select channels as in Claim 14. The Office Action refers to the text at column 6:60 – column 7:5 of *Gerten* for teaching the approach of conditionally re-selecting communications channels recited in Claim 14. This portion of *Gerten* describes that if, after the scan of the seventy-nine (79) Bluetooth channels, the Level 2 list does not contain four channels, then channels adjacent to the channels already on the Level 2 list can be added to fill out the Level 2 list. If, after adding adjacent channels, there still are not four channels in the Level 2 list, then Level 1 list channels can be added to fill out the Level 2 list. Thus, in response to determining that the Level 2 contains less than four channels, *Gerten* adds adjacent channels and Level 1 list channels to fill out the Level 2 list. *Gerten* does not, in response to determining that the Level 2 contains less than four channels, select channels from the seventy-nine (79) Bluetooth channels based on the performance of the seventy-nine (79) Bluetooth at a time that is after determining the performance of the less than four channels on Level 2 list. Thus, *Gerten* does not teach or suggest determining, based upon performance of a first set of two or more

communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy channel selection criteria; and if the number of communications channels from the first set of two or more communications channels that satisfy the channel selection criteria at the second time is less than a specified number, then selecting, based upon performance of a plurality of communications channels at a third time that is later than the second time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels.

Based on the foregoing, confirmation of the patentability of Claim 14 over *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl* is respectfully requested.

IV. CLAIMS 41, 42, 93, 285, 287, 292, 294

Claims 41, 42, 93, 285, 287, 292, 294 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl*. These are the only prior art rejections of these claims in the Office Action.

In light of the response to arguments in the Office Action, Bandspeed hereby addresses the patentability of Claim 41, before turning to the remaining rejected claims.

A. Claim 41

Claim 41 stands rejected under 35 U.S.C. § 102 as anticipated by *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl*. Claim 41 recites:

41. A method for communicating among a network of communications devices according to a frequency hopping protocol, the method comprising the computer-implemented steps of:

determining first performance data for a plurality of communications channels based on one or more performance measurements of the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to the frequency hopping protocol, and wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of communications devices;

determining classifications, based on the first performance data and at least a first performance criterion, of at least two communications channels of the plurality of communications channels;

selecting, based upon the classifications of the at least two communications channels, a first set of two or more communications channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to a communications device of the network of communications devices over one communications channel of the plurality of

communications channels based on the hopping sequence according to the frequency hopping protocol;
communicating with the communications device over the first set of two or more communications channels according to the frequency hopping protocol;
determining performance data for the first set of two or more communications channels; and
if the performance data indicates that at least a specified number of communications channels of the first set of two or more communications channels do not satisfy specified performance criteria, then
determining second performance data for the plurality of communications channels based on one or more additional performance measurements of the plurality of communications channels;
determining additional classifications, based on the second performance data and at least a second performance criterion, of at least two communications channels of the plurality of communications channels;
selecting, based upon the additional classifications of the at least two communications channels, a second set of two or more communications channels from the plurality of communications channels;
generating second identification data that identifies the second set of two or more communications channels;
providing the second identification data to the communications device of the network of communications devices over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and
communicating with the communications device over the second set of two or more communications channels according to the frequency hopping protocol;

Claim 41 does not involve merely determining performance data for frequency hopping communications channels and then selecting communications channels based on a performance criterion. Instead, before both the first set of communications channels are selected from the plurality of communications channels and the second set of communications channels are selected from the plurality of communications channels, communications channels in the plurality of communications channels are classified based on performance data and a performance criterion. The first set of communications channels and the second set of communications channels are both then selected based upon the determined classifications of communications channels in the plurality of communications channels. Thus, according to claim 41, there is a "determining classifications" operation and a "selecting" operation. In fact, the selecting operation is performed based upon the classifications.

It is not disputed that the descriptions in *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl* mention "good" channels, "bad" channels, "low quality" channels, "high quality" channels, etc.

Significantly, however, these references do not provide a description of "determining classifications, based on the first performance data and at least a first performance criterion, of at least two communications channels of the plurality of communications channels" and then "selecting, based upon the classifications of the at least two communications channels, a first set of two or more communications channels", as recited in Claim 41. (Emphasis added)
A person of ordinary skill in the art would recognize the significance of first classifying communications channels based on channel performance data and a performance criterion, and then selecting communications channels based on their classification. Unlike selecting communications channels based on performance data and a performance criterion, which does not distinguish between classifying communications channels and selecting communications channels based upon the classifications, the method of Claim 41 separates the concerns of classifying communications channels based on channel performance and selecting communications channels based upon the classifications. *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl* do not disclose a method that separates the classifying and selecting steps as in the method of Claim 41. Bandspeed asserts that, even under the broadest reasonable interpretation, a person of ordinary skill in the art would understand that incidentally achieving a similar result, by selecting channels based on performance data and a performance criterion, is neither an express nor inherent disclosure of the "determining classifications" and "selecting" steps of Claim 41.

1. Dicker does not disclose classifying channels and then selecting channels based upon the classifications

Claim 41 is rejected as anticipated by *Dicker*. However, *Dicker* does not disclose the complete detail of Claim 41.

The TPR cites to *Dicker* at column 6, lines 63-67 and column 7, lines 15-24. *TPR's First Comments* at page 54. Here, *Dicker* describes selecting the two subsets for the communication link that will yield the "worst quality". *Dicker* goes on to explain that "[i]n this embodiment, these subsets will have the highest error rates." *Dicker* at column 6, lines 65-66. Thus, *Dicker* selects the two subsets based on those subsets having the highest error rates. Before selecting the two subsets, *Dicker* does not describe classifying the subsets based on their error rates. One skilled in the art would understand that a statement in a patent description that the worst quality subsets have the highest error rates is not a description of actually classifying the subsets based

on their error rates. As such, *Dicker* does not describe the "determining classifications" and "determining additional classifications" steps of claim 41. Furthermore, *Dicker* does not disclose the "selecting" steps of claim 41, both of which are performed based upon classifications.

Claim 41 also requires the following features pertaining to providing a communications device with identification data for the selected first set of communications channels:

> generating first identification data that identifies the first set of two or more communications channels;
> providing the first identification data to a communications device of the network of communications devices over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

Dicker states that "informing may be accomplished in a variety of ways known to those skilled in the art. For example, transmission attributes, such as a new set of blocked subsets representing the worst-quality channels, may be communicated to the mobile unit as data or control parameters. They may also be encoded or passed to the mobile unit as tabular data." However, there is no evidence of record that one skilled in the art would understand from this general description in *Dicker* that identification data could be provided to a participant "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 41.

Accordingly, *Dicker* does not disclose each and every limitation of Claim 41 in the detail recited in Claim 41. *Dicker*, therefore, does not anticipate Claim 41.

2. *Gerten does not disclose classifying channels based on performance data and a performance criterion*

Claim 41 is also rejected as anticipated by *Gerten*. Like *Dicker*, *Gerten* does not disclose the complete detail of Claim 41.

The TPR refers to *Gerten's* description of determining N-M channels to avoid based on signal strength measurements obtained for the N channels. *TPR's First Comments* at page 57. Again, the TPR ignores that Claim 41 does not involve merely selecting channels based on performance. Rather, Claim 41 requires, among other things, "determining classifications" and "determining additional classifications". Claim 41 further recites "selecting" communications channels based upon the classifications and "selecting" communications channels based upon the additional classifications. These aspects of Claim 41 are not disclosed by Gerten. The patent

description of *Gerten* does explain that there can be "bad channels". *See*, *e.g.*, *Gerten*, column 8, line 55. However, *Gerten* selects those channels not based on a classification of those channels as bad, but based on whether signal strength measurements are above a threshold. *Gerten*, column 5, line 19 – column 6, line 59. Again, one skilled in the art would understand that a statement in a patent description that a channel that does not meet a performance threshold is a "bad" channel is not a description of actually classifying the channel based on the performance and then selecting the channel based on the classification. Accordingly, *Gerten* does not describe the "determining classifications" and "determining additional classifications" steps of claim 41. Furthermore, *Gerten* does not disclose the "selecting" steps of claim 41, both of which are performed based upon classifications.

Claim 41 also requires the following features pertaining to providing a communications device with identification data for the selected first set of communications channels:

> generating first identification data that identifies the first set of two or more communications channels;
> providing the first identification data to a communications device of the network of communications devices over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

With respect to the above limitation of Claim 41, the Office Action cites to *Gerten* at col. 9, lines 51-58 which notes "[o]nce a Bluetooth connection has been established and the master has identified the slave's capability to engage in an interference avoidance hop sequence, a link can be initiated to convey the number of channels to be avoided … [e]ach time the master decides to update the channels to be avoided a new packet is sent that follows the same format and procedure as the first packet." Thus, while *Gerten* does state that a "link can be initiated", *Gerten* does not describe providing the number of channels to be avoided "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 41. Indeed, *Gerten* states "[t]he master device establishes a link to communicate channels to be avoided" (column 4, lines 51-52) and "[if]the master does update the channels to be avoided (YES), the master returns to step 140 to create another link and communicate the new channels to the remote device" (column 4, lines 62-65). The fact that *Gerten* "establish[es] a link" and "creat[es] another link" to communicate the new channels strongly teaches against providing the new channels to the

remote device "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 41.

Based on the foregoing, *Gerten* does not disclose each and every limitation of Claim 41 in the detail recited in Claim 41. *Gerten*, therefore, does not anticipate Claim 41.

3. Kostic does not disclose classifying channels and then selecting channels based upon the classifications

Claim 41 is also rejected as anticipated by *Kostic*. Like *Dicker* and *Gerten*, *Kostic* does not disclose the complete detail of Claim 41.

Among other dynamic frequency hopping methods, *Kostic* discloses a method in which a hopping pattern is changed based upon an SIR threshold. Specifically, SIR is measured on a set of used frequencies that are part of a current hopping pattern. If a used frequency has a measured SIR that does not achieve a required threshold, then the frequency is replaced with a different frequency. Any frequency that meets the threshold can be used as a replacement. *Kostic* at page 915, left column. From this excerpt, it can be seen that *Kostic* discloses selecting a replacement frequency based upon that frequency meeting a threshold. However, one of ordinary skill in the art would recognize that selecting a replacement frequency based upon that frequency meeting a threshold is not the same as determining classifications for channels and then selecting channels based upon the classifications. In *Kostic*, there is no description of determining classifications for channels and then selecting channels based upon the classifications. Hence, K*ostic* does not describe the "determining classifications" and "determining additional classifications" steps of claim 41, nor does *Kostic* disclose the "selecting" steps of claim 41, both of which are performed based upon classifications.

Again, Claim 41 requires the following features pertaining to providing a communications device with identification data for the selected first set of communications channels:

> generating first identification data that identifies the first set of two or more communications channels;
>
> providing the first identification data to a communications device of the network of communications devices over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

Kostic states on page 915 that "considerable amounts of data need to be sent between a base station and each of its users whenever pattern modifications are done". Beyond this, little additional detail is provided on how the data is provided to the users. Thus, *Kostic* does not disclose the specifics of the providing step of Claim 41: "providing the first identification data to a communications device of the network of communications devices over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol".

Accordingly, *Kostic* does not disclose each and every limitation of Claim 41 in the detail recited in Claim 41. *Kostic*, therefore, does not anticipate Claim 41.

4. Gendel does not disclose classifying channels and then selecting channels based upon the classifications

Claim 41 is also rejected as anticipated by *Gendel*. Like *Dicker*, *Gerten*, and *Kostic*, *Gendel* does not disclose the complete detail of Claim 41.

The TPR cites to *Gendel* at column 12, lines 36-39. *TPR's First Comments* at page 58. The cited portion describes a segment replacement process after a segment has already been selected for replacement based on detection of reception errors. Thus, the cited portion of Gendel is irrelevant to "selecting, based upon the classifications of the at least two communications channels, a first set of two or more communications channels", as recited in Claim 41.

Moreover, with respect to selecting a segment for replacement, *Gendel* expressly states "[if]the error value of segment $S_{CURRENT}$ is greater or equal than the threshold, system 300 marks the segment $S_{CURRENT}$ as a candidate for segment replacement." Thus, segment $S_{CURRENT}$ is selected in *Gendel* based on whether the error value of the segment equals or exceeds a threshold, not based on any classification of segment $S_{CURRENT}$ and a subsequent selection based upon the classification. Thus, in contrast to Claim 41, *Gendel* does not disclose determining classifications for channels and then selecting channels based upon the classifications. Hence, *Gendel* does not disclose the "determining classifications" and "determining additional classifications" steps of claim 41, nor does *Gendel* disclose the "selecting" steps of claim 41, both of which are performed based upon classifications.

Claim 41 also requires "providing the first identification data to a communications device of the network of communications devices over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping

protocol", which also is not disclosed by *Gendel*. *Gendel* at column 12, line 24 does disclose "a request to modify the frequency hopping pattern" (*Gendel*, column 12, line 24), but *Gendel* does not describe the request being sent "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 41.

Accordingly, *Gendel* does not disclose each and every limitation of Claim 41 in the detail recited in Claim 41. *Gendel*, therefore, does not anticipate Claim 41.

5. Schmidl does not disclose classifying channels and then selecting channels based upon the classifications

Claim 41 is also rejected as anticipated by *Schmidl*. Like *Dicker*, *Gerten*, *Kostic*, and *Gendel*, *Schmidl* does not disclose the complete detail of Claim 41.

With respect to classifying communications channels, the TPR cites to *Schmidl* at column 3, line 58 – column 4, line 16 and asserts that "Schmidl [] discloses every limitation of claim 41." *TPR's First Comments* at page 59. The TPR is incorrect. The cited portion describes that channels can be omitted from a hopping sequence to form a reduced hopping sequence. However, *Schmidl* selects channels to be omitted based on the detected level of interference the channels have. *Schmidl* at column 2, lines 13-33. Channels in *Schmidl* are not first classified based on level of interference and then selected based on channel classifications. Instead, channels are selected in *Schmidl* based on measured channel quality without first classifying the channels based on measured channel quality. As such, *Schmidl* does not describe the "determining classifications" and "determining additional classifications" steps of claim 41, nor does *Schmidl* disclose the "selecting" steps of claim 41, both of which are performed based upon classifications.

With respect to the Claim 41 feature of "providing the first identification data to a communications device of the network of communications devices over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", *Schmidl* does state that "[t]he master can then send a packet with 79 information bits to indicate whether each one is to be used or not." However, *Schmidl* does not state that the master sends the packet "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 41.

Accordingly, *Schmidl* does not disclose each and every limitation of Claim 41 in the detail recited in Claim 15. *Schmidl*, therefore, does not anticipate Claim 41.

6. Conclusion

Because none of *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl* teaches each and every feature of Claim 41 in the full detail as recited in Claim 41, confirmation of the patentability of Claim 41 is respectfully requested.

B. Claims 42, 93, 285, 287, 292, 294

Independent claim 93 recites features analogous to those of independent method claim 41, except in the context of a computer-readable medium carrying instructions. Thus, Claim 93 is allowable over *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl* for at least the same reasons given above that Claim 41 is allowable over *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl*.

Claims 42, 285, 287, 292, 294 are each dependent claims dependent on one of allowable independent claims 41 or 93 and are, therefore, allowable over *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl*, individually and in any combination, at least by virtue of their dependency on an allowable independent claim.

C. Claim 42

Dependent claim 42 of independent claim 41 requires:

> wherein the classifications include good and bad, and wherein the step of selecting the first set of two or more communications channels includes selecting the first set of two or more communications channels from communications channels that are determined to have classifications of good, and wherein the step of selecting the second set of two or more communications channels includes selecting the second set of two or more communications channels from communications channels that are determined to have classifications of good.

As explained above with respect to Claim 1, none of *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl* describes "determining classifications, based on the first performance data and at least a first performance criterion, of at least two communications channels of the plurality of communications channels; selecting, based upon the classifications of the at least two communications channels, a first set of two or more communications channels", as recited in Claim 41. For the same reasons, none of *Dicker*, *Gerten*, *Kostic*, *Gendel*, and *Schmidl* teaches those features of Claim 1 where channels are classified as good and bad, and channels are selected based on their classification as good.

V. CLAIMS 50-74, 298, 300, 302

Claims 50-74, 298, 300, 302 stand rejected variously under 35 U.S.C. § 102 as anticipated by U.S. Pat. No. 7,280,580 ("*Haartsen*"), under 35 U.S.C. § 103 as unpatentable over *Gerten* and *Haartsen*, under 35 U.S.C. § 103 as unpatentable over *Gendel* and *Haartsen*, and under 35 U.S.C. § 103 as unpatentable over *Haartsen* and Japanese Patent Publication 10-107693 ("*Imamura*"). These are the only prior art rejections of these claims in the Office Action.

Claims 50-74, 298, 300, and 302 also stand rejected under 35 U.S.C. § 112, first paragraph for failing to comply with the written description requirement.

A. Written Description Issue

As an initial matter, now independent claim 56 and dependent claims 57 and 58 thereof no longer recite "hop selection mechanism".

The Office Action contends there is inadequate written description support for the "hop selection mechanism" as featured in Claims 50-74, 298, 300, and 302. *Office Action* at page 13. Bandspeed disagrees. However, to further reexamination, Claims 50, 298, and 302 are amended herein to recite "hop selection kernel" instead of "hop selection mechanism". Adequate written description support for "hop selection kernel" as recited in Claims 50-74, 298, 300, and 302 exists in the Original Specification at page 34, line 18 through page 37, line 8. *See also Bandspeed Patent* at column 19, line 1 – column 20, line 42; Figure 5A; Figure 5B. Removal of the written description rejection is respectfully requested. By making the amendments to Claims 50, 298, and 302, no new matter is added and there is no enlargement of the scope of the Bandspeed Patent claims in any respect. Further, Bandspeed has not acquiesced the written description rejection or any characterization of the claims in the Office Action.

B. Claim 50

Claim 50 stands rejected under 35 U.S.C. § 102 as anticipated by *Haartsen*, under 35 U.S.C. § 103 as unpatentable over *Gerten* and *Haartsen*, under 35 U.S.C. § 103 as unpatentable over *Gendel* and *Haartsen*, and under 35 U.S.C. § 103 as unpatentable over *Haartsen* and *Imamura*. These are the only prior art rejections are this claim in the Office Action.

1. Requirements of Claim 50

Claim 50 requires, among other things, that the first identification data that identifies the first set of communications channels be "transmitted to the other communications device over

one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol". Thus, it is not sufficient to meet this feature of Claim 50 that the prior art merely disclose transmitting data that identifies communications channels. According to Claim 50, the identification data must be transmitted "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol". Significantly, no out-of-band communications link or channel is required in Claim 50 to transmit the identification data to the other communications devices.

2. Haartsen

With respect to Claim 50 and *Haartsen*, the Office Action states "see the discussion with respect to Haartsen teaching the limitations found in independent claim 43." *Office Action* at page 204. However, Claim 50 recites features that are not recited in Claim 43. For example, Claim 50 recites "the first identification data is transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", which is not recited in Claim 43. Thus, the Office Action's rejection of Claim 43 is inadequate with respect to Claim 50.

Bandspeed has reviewed *Haartsen* and cannot find anything that discloses "the first identification data is transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 50.

3. Gerten and Haartsen

Gerten at column 9, lines 51-58 notes "[o]nce a Bluetooth connection has been established and the master has identified the slave's capability to engage in an interference avoidance hop sequence, a link can be initiated to convey the number of channels to be avoided … [e]ach time the master decides to update the channels to be avoided a new packet is sent that follows the same format and procedure as the first packet." Thus, while *Gerten* does state that a "link can be initiated", *Gerten* does not describe providing the number of channels to be avoided "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 50. Indeed, *Gerten* states "[t]he master device establishes a link to communicate channels to be

avoided" (column 4, lines 51-52) and "[f]the mater does update the channels to be avoided (YES), the master returns to step 140 to create another link and communicate the new channels to the remote device" (column 4, lines 62-65). The fact that *Gerten* "establish[es] a link" and "creat[es] another link" to communicate the new channels strongly teaches against providing the new channels to the remote device "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 50.

Based on the foregoing, it is respectfully submitted that one skilled in the art would not recognize a combination of *Haartsen* and *Gerten* as teaching or suggesting "the first identification data is transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 50.

4. Gendel and Haartsen

Gendel at column 12, line 24 does disclose "a request to modify the frequency hopping pattern" (*Gendel*, column 12, line 24), but *Gendel* does not describe the request being sent "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 50. Accordingly, it is respectfully submitted that one skilled in the art would not recognize a combination of *Haartsen* and *Gendel* as teaching or suggesting "the first identification data is transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 50.

5. Imamura and Haartsen

With respect to *Imamura* and Claim 50, the Office Action refers to the Prior Office Action dated January 12, 2013. *Office Action* at page 240. With respect to *Imamura* and Claim 50, the Prior Office Action refers to Claim 15 as rejected in the Prior Office Action under 35 U.S.C. § 102 as anticipated by *Imamura*. *See Prior Office Action* at page 165-185. The Prior Office Action alleges that the Claim 15 feature of "wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol" is

disclosed in paragraph 47 of *Imamura*. *Prior Office Action* at page 170. There, *Imamura* notes that a base station and a mobile station can each maintain a table storing communication quality values for frequency channels. *Imamura* at paragraph 47 also states "checking of the communication quality can be carried out automatically by calculating errors and so forth in ordinary communications, and where the contents of the table [] are changed by change of the communication quality, a message representing this is transmitted every time from the base station or the like to the mobile stations and so forth." Thus, *Imamura* discloses that a message representing a change to the table can be transmitted every time the table is changed, which is not a disclosure of "the first identification data is transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 50. Accordingly, it is respectfully submitted that one skilled in the art would not recognize a combination of *Haartsen* and *Imamura* as teaching or suggesting "the first identification data is transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 50.

6. Conclusion

Because *Haartsen*, *Gerten*, *Gendel*, and *Imamura*, do not teach or suggest all features of Claim 50, confirmation of the patentability of Claim 50 is respectfully requested.

C. Claim 55

Claim 55 stands rejected under 35 U.S.C. § 103 as unpatentable over *Gendel* and *Haartsen*. This is the only prior art rejection of this claim in the Office Action.

Claim 55 is a dependent claim of independent claim 50. Like Claim 106 discussed above, Claim 55 requires, among other things, processor-executable instructions that:

> encrypt the first identification data; and
> cause the encrypted first identification data to be transmitted to the other communications device.

As explained in the Bandspeed Patent at column 18, lines 15-34, additional security protection may be included by sending the good channel information in an encrypted format to the other participants in the communications network. By encrypting the good channel

information, even if the MAC addresses of the master is known, derivation of the frequency hopping sequence used by the master and the participant by surreptitious network entities is prevented.

1. Gendel

As explained above in Section III.C with respect to Claim 18 and Claim 106, *Gendel* notes in its Background of the Invention section at column 1, lines 39-45 that a frequency modulation scheme such as frequency shift keying (frequency shift keying) or phase shifty keying (PSK) can be used to transmit digitally encoded information through discrete frequency changes. However, digitally **encoded** information has nothing necessarily to do with **encryption**. Further, one skilled in the art would recognize that the reference in *Gendel* to "keying" refers to signal modulation forms and is not a reference to encryption keys. In any event, the cited portion nor the balance of *Gendel* says nothing about a communications device with processor executable instructions configured to "encrypt the first identification data; and cause the encrypted first identification data to be transmitted to the other communications device", as recited in Claim 55.

2. Haartsen

Bandspeed has reviewed *Haartsen* and cannot find anything that discloses the encryption features of Claim 55. For example, *Haartsen* does not even mention "encrypt", "encryption", or "encrypting".

3. Conclusion

Based on the fact that neither *Gendel* nor *Haartsen* disclose the encryption features of Claim 55, one skilled in the art would not understand a combination of *Gendel* and *Haartsen* to teach or suggest the encryption features. As such, confirmation of the patentability of Claim 55 is respectfully requested.

D. Independent Claim 56

Claim 56 has been rewritten in independent form to include all the limitations of independent patent claim 50. Thus, the scope of Claim 56 as amended is identical to the scope of patent claim 56. As a result, no new search or examination of Claim 56 is required. In particular, amended claim 56 does not present any new limitation or any new combination of limitations

that the TPR or the Examiner has not already had opportunity to address. Accordingly, entry of the amendment to Claim 56 is warranted.

Claim 56 stands rejected under 35 U.S.C. § 102 as anticipated by *Haartsen*, under 35 U.S.C. § 103 as unpatentable over *Gerten* and *Haartsen*, and under 35 U.S.C. § 103 as unpatentable over *Gendel* and *Haartsen*.

Like Claim 50 requires for "first identification data that identifies the first set of two or more communications channels", Claim 56 requires, for "second identification data that identifies the second set of two or more communications channels", that the second identification data be transmitted to the other communications device "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol". As such, *Gendel*, *Gerten*, and *Haartsen* do not teach or suggest all of the claim features specific to Claim 56 for reasons similar to those given above why *Gendel*, *Gerten*, and *Haartsen* do not teach or suggest all of the claim features specific to Claim 50. In particular, *Gendel*, *Gerten*, and *Haartsen*, individually and in any combination, do not teach or suggest "cause the second identification data to be transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 56.

E. Claim 58

Claim 58 stands rejected under 35 U.S.C. § 102 as anticipated by *Haartsen*, under 35 U.S.C. § 103 as unpatentable over *Gerten* and *Haartsen*, and under 35 U.S.C. § 103 as unpatentable over *Gendel* and *Haartsen*. These are the only prior art rejections of this claim in the Office Action.

Claim 58 depends from independent claim 56 discussed above. Claim 58 requires, among other things:

> the second set of two or more communications channels is different than the first set of two or more communications channels; and
> the first performance criterion is different than the second performance criterion.

1. Haartsen

Haartsen does not teach or suggest "the first performance criterion is different than the second performance criterion", as recited in Claim 58. With respect to *Haartsen* and the Claim

58 feature of "the first performance criterion is different than the second performance criterion", the Office Action cites to large portions of *Haartsen* at Abstract; column 7, line 63 – column 8, line 55; column 11, lines 4-48; and column 12, lines 20-61. *Office Action* at page 206.

Haartsen does disclose a "forbidden hop" which is a "hop channel that should be avoided during communication for any of a number of reasons." *Haartsen* at column 8, lines 5-10. One of the reasons can be "detection of interference" on a hop channel. *Haartsen* at column 8, lines 28-29. However, a general disclosure that channel performance can be measured according to different criteria is not a disclosure of the specific requirements of Claim 58 which require that a first set of channels be selected from a plurality of communications channels based on performance of the plurality of communications channels at a first time and a performance criterion and require that a second set of channels be selected from the plurality of communications channels based on performance of the plurality of communications channels at a different time and a different performance criterion. Thus, *Haartsen's* general disclosure that a forbidden hop should be avoided for any number of reasons does not teach or suggest the specific channel selection features of Claim 58. In particular, *Haartsen* does not teach or suggest "the first performance criterion is different than the second performance criterion", as recited in Claim 58 and taking into account the recitations of "first performance criterion" and "second performance criterion" in base claims 58 and 56.

2. Gerten

Gerten does not teach or suggest "the first performance criterion is different than the second performance criterion", as recited in Claim 58 and taking into account the recitations of "first performance criterion" and "second performance criterion" in base claims 58 and 56.

Gerten does describe determining M channels to avoid from among N channels. In particular embodiment for determining M channels to avoid, *Gerten* describes a Level_1_List and a Level_2_List. *Gerten*, column 6, lines 41 – column 7, line 5. The Level_1_List identifies channels of the N channels that exceed a first threshold level of interference over a period of time 3.125 milliseconds in length. *Id.* The Level_2_List identifies the channels in the Level_1_list that exceed a second threshold level of interference that is higher than the first threshold level of interference over the period of time. *Id.* If, after the N channels have been scanned and the Level_2_list does not have four channels, then the N channels can be scanned

again or other channels can be selected, for example, from the Level_1_List to obtain four channels. *Gerten*, column 6, line 57 – column 7, line 5.

It is important to recognize that in Claim 58 not just that different performance criterion are used to select different sets of communications channels, but also that data identifying the selected sets of communications channels is caused to be transmitted to another communications device. In other words, the different sets of communications channels selected based on the different performance criterion are identified to the other communications device. Therefore, channels that are selected based on different performance criterion but that are not identified to another communications device cannot be the recited first or second set of communications channels of Claim 58.

Gerten does describe "the mater device establishes a link to communication the channels to be avoided." *Gerten*, column 4, lines 53-54. However, in contrast to Claim 58, the criterion for selecting the channels to be avoid in *Gerten* is same each time. *Gerten's* description of its Level_1_List and Level_2_list is merely a disclose of determining M channels to avoid, without being a disclosure of "the first performance criterion is different than the second performance criterion", as recited in Claim 58 and taking into account the recitations of "first performance criterion" and "second performance criterion" in base claims 58 and 56. While *Gerten* may describe different criterion for selecting M channels to avoid, *Gerten* does not describe selecting a first set of M channels to avoid based on first performance criterion, transmitting data that identifies the first set to another communications device, selecting a set of M channels to avoid based on second performance criterion that is different than the first performance criterion, and transmitting data that identifies the second set of the other communications device. In other words, *Gerten* does not describe the following features of Claim 58:

* * *

select, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

generate and store in the memory first identification data that identifies the first set of two or more communications channels;

cause the first identification data to be transmitted to another communications device;

* * *

select, based on second performance data that indicates performance of the plurality of communications channels at a second time that is different than the first time and at least

a second performance criterion, a second set of two or more communications channels from the plurality of communications channels;

generate and store in the memory second identification data that identifies the second set of two or more communications channels;

cause the second identification data to be transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

* * *

wherein:

* * *

the first performance criterion is different than the second performance criterion

3. Gendel

As explained above with respect to Claim 22 and Claim 109, *Gendel* discloses selecting channel segments based on detected reception errors. In particular, a general disclosure such as in *Gendel* that channels may be evaluated according to different performance criteria is not a disclosure of selecting a first set of channels from a plurality of communications channels based on a performance criterion and selecting a second set of channels from the plurality of communications channels based on a different performance criterion.

Even if *Gendel* discloses that different performance criteria may be used to detect reception errors, this is not a disclosure of the specific requirements of Claim 58 which requires instructions stored in memory of a device configured to "select, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels" (Claim 56) and requires "select, based on second performance data that indicates performance of the plurality of communications channels at a second time that is different than the first time and at least a second performance criterion, a second set of two or more communications channels from the plurality of communications channels" (Claim 56) where "the first performance criterion is different than the second performance criterion" (Claim 58). Thus, *Gendel* does not disclose the complete detail of Claim 58.

4. Haartsen, Gerten, and Gendel

Because, as explained above, none of *Haartsen*, *Gerten*, and *Gendel* teach or suggest "the first performance criterion is different than the second performance criterion", as recited in Claim 58 and taking into account the recitations of "first performance criterion" and "second

performance criterion" in base claims 58 and 56, it is respectfully submitted that one skilled in the art would not recognize the complete detail of Claim 58 from any combination of *Haartsen*, *Gerten*, and *Gendel*.

F. Claim 70

Claim 70 stands rejected under 35 U.S.C. § 102 as anticipated by *Haartsen*, under 35 U.S.C. § 103 as unpatentable over *Gerten* and *Haartsen*, and under 35 U.S.C. § 103 as unpatentable over *Gendel* and *Haartsen*. These are the only prior art rejections of these claims in the Office Action.

1. Requirements of Claim 70

Claim 70 is a dependent claim of Claim 50 and requires that the first performance data that serves as a basis for selecting the first set of communications channels in base claim 50 be determined based on results of "a specified number of communications channel performance tests on each communication channel in the plurality of communications channels". "For example, a master may test each channel for a specified number of times, such as 10 tests per channel." *Bandspeed Patent* at column 14, lines 48-50. Also, performing a specified number of communications channel performance tests (e.g., ten) on each communication channel in the plurality of communications channels as required in Claim 70 provides more accurate performance data for basing channel selection on. *Bandspeed Patent* at column 14, lines 50-62 stating:

> The use of multiple tests provides a more accurate determination of channel performance because each individual test may be influenced by factors that produce results that do not accurately reflect the overall performance of the channel. For example, an isolated instance of interference may cause a poor channel performance measurement even though the channel generally performs well. Conversely, a channel with heavy interference may have an acceptable channel performance measurement during a temporary break in the interference, even though most of the time there is interference from the interference source, such as another communications system.

2. Haartsen

With respect to Claim 70, the Office Action cites to the large portions of *Haartsen*. In particular, the Office Action cites to *Haartsen* at the Abstract, at column 7, line 63 – column 8, line 55, at column 11, lines 4-48, and at column 12, lines 20-61.

None of the cited portions, nor the balance of *Haartsen*, teaches or suggests the communications device of Claim 70 with instructions configured to "perform a specified number of communications channel performance tests on each communication channel in the plurality of communications channels; and determine the first performance data based on results of the specified number of communications channel performance tests".

The Abstract of *Haartsen* describes "forbidden hop channels" and "allowable hop channels" of a "sequence of hop channels", but does not disclose performing a specified number of communications channel performance tests on each communications channel in the sequence of hop channels and determining performance data based on results of the specified number of communications channel performance tests.

Haartsen at column 7, line 63 – column 8, line 55 describes a "forbidden" hop channel of a hop sequence as "a hop channel that should be avoided during communications for any number of reasons." *Haartsen* goes on to explain that "the detection of a substantial amount of interference on a hop channel may make it desirable to avoid use of that hop channel." However, *Haartsen* does not disclose detecting a substantial amount of interference on a hop channel by performing a specified number of communications channel performance tests on each communications channel in the hop sequence and determining performance data based on results of the specified number of communications channel performance tests.

Haartsen at column 11, lines 4-48 describes a post-processing function for avoiding a forbidden hop output by a Bluetooth hop selection function, but does not disclose performing a specified number of communications channel performance tests on each Bluetooth communications channel and determining performance data based on results of the specified number of communications channel performance tests.

Haartsen at column 12, lines 20-61 describes an aspect of the post-processing function in which a set of allowable hop channels are stored in-memory as a table. Again, *Haartsen* does not describe performing a specified number of communications channel performance tests on each Bluetooth communications channel and determining performance data based on results of the specified number of communications channel performance tests.

Based on the foregoing, it is respectfully submitted that *Haartsen* does not teach or suggest "perform a specified number of communications channel performance tests on each communication channel in the plurality of communications channels; and determine the first

performance data based on results of the specified number of communications channel performance tests", as recited in Claim 70.

3. Gerten and Gendel

Gerten and *Gendel* do not overcome the deficiencies of *Haartsen*. The Office Action rejects Claim 70 under 35 U.S.C. § 103 as unpatentable over *Gerten* and *Haartsen* and under 35 U.S.C. § 103 as unpatentable over *Gendel* and *Haartsen*, without citing to any particular portions of *Gerten* and *Gendel*.

Gerten describes a method for identifying channels with fixed interferers. *Gerten* at column 5, lines 19-63. The method involves scanning a list of channels. However, the scan completes when "the level two list is full." *Gerten* at column 5, lines 58-60. This level two list in *Gerten* can become full before each channel in the list of channels is tested. *Gerten* at Fig. 4, steps 255 and 270. In contrast, Claim 70 requires "a specified number of communications channel performance tests on each communication channel in the plurality of communications channels". Thus, *Gerten's* method for identifying fixed interferers does not teach or suggest the channel selection features of Claim 70 involving a communications device configured with instructions to select the first set of communications channels based on performance data that is determined based performing "a specified number of communications channel performance tests on each communication channel in the plurality of communications channels".

Gendel does describe detecting occurrence or non-occurrence of reception errors from received data on a per-segment basis. *Gendel* at column 7, lines 20-32. *Gendel* states "[w]hen the error value of a particular used segment reaches or exceeds a predetermined threshold, [the] particular used segment [is replaced] with an unused segment". *Id.* Thus, Gendel discloses detecting multiple reception errors for the same segment (*see*, *e.g.*, *Gendel* at column 8, lines 44-49) which is not a disclosure of performing "a specified number of communications channel performance tests on each communication channel in the plurality of communications channels", as required in Claim 70. Simply put, there is no specified number of channel performance tests in *Gendel*. And one skilled in the art would understand that a disclosure of incidentally achieving a similar result by detecting a number of reception errors until an error value meets or exceeds a threshold is not a disclosure of performing "a specified number of communications channel performance tests on each communication channel in the plurality of communications channels", as required in Claim 70.

In addition, *Gendel* does not disclose "perform a specified number of communications channel performance tests on each communication channel in the plurality of communications channels; and determine the first performance data based on results of the specified number of communications channel performance tests" (emphasis added), as recited in Claim 70. In Claim 70, the first set of communications channels is selected from the plurality of communications channels based on performance data determined based on performing "a specified number of communications channel performance tests on each communication channel in the plurality of communications channels; and determine the first performance data based on results of the specified number of communications channel performance tests" (emphasis added). In contrast, *Gendel* divides the available spectrum into subsets and replaces error prone segments "at once, without the need to replace many frequencies one at a time." *Gendel* at column 4, lines 38-45. The "at once" segment replacement of *Gendel* is directly in contrast to performing a specified number of communications channel performance tests on each communication channel in the plurality of communications channels as required in Claim 70. *Gendel* selects used segments for replacement "when the error value of a particular used segment reaches or exceeds a predetermined threshold". *Gendel* at column 7, lines 28-30. In contrast, Claim 70 selects the first set of communications channels based on performance data that is determined based performing "a specified number of communications channel performance tests on each communication channel in the plurality of communications channels".

Because none of *Haartsen*, *Gerten*, and *Gendel* teach or suggest "perform a specified number of communications channel performance tests on each communication channel in the plurality of communications channels; and determine the first performance data based on results of the specified number of communications channel performance tests" as required in Claim 70, it is respectfully submitted that one skilled in the art would not recognize a combination of *Haartsen*, *Gerten*, and *Gendel* to teach or suggest the complete detail of Claim 70.

G. Claims 50-55, 57-74, 298, 300, 302

Claims 50-55, 57-74, 298, 300, 302 are each dependent claims dependent on one of allowable independent claims 50 or 56 and are, therefore, allowable over *Haartsen, Gerten, Gendel,* and *Imamura*, individually and in any combination, at least by virtue of their dependency on an allowable independent claim.

VI. Claims 85-92, 232-242

Claims 85-92, 232-242 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Gendel*, under 35 U.S.C. § 102 as anticipated by *Schmidl*, and under 35 U.S.C. § 103 as unpatentable over *Dicker* and *Cuffaro*. These are the only prior art rejections of these claims in the Office Action.

A. Claims 85-92, 232-242

Claims 85-92, 232-242 are patentable over *Gendel*, *Schmidl*, *Dicker* and *Cuffaro* for at least the reasons discussed above in Section 1.B.

B. Claim 242

Dependent claim 242 of independent claim 85 is patentable over *Gendel*, *Schmidl*, *Dicker* and *Cuffaro* for at least the reasons discussed above in Section 1.B and Section 1.C.

C. Claim 88

Dependent claim 88 of independent claim 85 stands rejected under 35 U.S.C. § 102 as anticipated by *Gendel*, under 35 U.S.C. § 102 as anticipated by *Schmidl*, and under 35 U.S.C. § 103 as unpatentable over *Dicker* and *Cuffaro*. These are the only prior art rejections of this claim in the Office Action.

Dependent claim 88 is patentable over *Gendel*, *Schmidl*, *Dicker* and *Cuffaro* for at least the reasons discussed above in Section 1.B. In addition, Claim 88 recites features that independently render it patentable over *Gendel*, *Schmidl*, *Dicker* and *Cuffaro*. In particular, Claim 88 recites the follow features which are not disclosed by *Gendel*, *Schmidl*, *Dicker* and *Cuffaro*, individually and in any combination:

* * *

transmitting the first channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

* * *

transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

1. Gendel

With respect to *Gendel* and Claim 88, the Office Action refers to the rejection of Claim 5 based on *Gendel*. *Office Action* at page 118. With respect to the transmitting channel

identification data "to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol" as recited in Claim 5, the Office Action cites to *Gendel* at column 12, lines 7-10 and column 12, lines 36-48. *Gendel* does state at column 12, lines 36-39 that "[i]f a candidate segment S_{error} for replacement is located, subsystem 300 transmits a signal (e.g., a replacement request) to the other party request that segment S_{error} is to be replaced with unused segment S_{unused}." However, *Gendel* does require that the signal or replacement request be transmitted "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 88. Notably, in Claim 88, the one communications channel over which the channel identification data is transmitted is from the plurality of communications channels from which the second set of communications channels is selected. *Gendel* does not describe transmitting its replacement request or other channel identification data over a channel segment from which a candidate segment S_{error} or an unused segment S_{unused} is selected. As such, *Gendel* does not teach or suggest transmitting the channel identification data to one or more participants in a communications system over "one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 88.

2. Schmidl

Like the rejection of Claim 88 based on *Gendel*, the Office Action refers to the rejection of Claim 5 based on *Schmidl* with respect to the rejection of Claim 88 based on *Schmidl*. *Office Action* at page 118. With respect to transmitting channel identification data to one or more participants in a communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol, as recited in Claim 5, the Office Action cites *Schmidl* at column 3, lines 32-67.

Here, *Schmidl* explains that the master unit can send a message to slave units that allows the slave units to determine the reduced hopping sequence that will be used and what channels will be omitted from the sequence. *Schmidl* at column 3, lines 55-60. However, *Schmidl* does not describe the message as transmitted "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 88. Indeed, *Schmidl* states that "information as to what channel to

use for the excluded channel(s) … can be sent in other packets by the unit transmitting the RHS message." Thus, while *Schmidl* states that channel identification information can be transmitted in packets, it does not teach or suggest transmitting channel identification information "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 88. For example, one skilled in the art may understand *Schmidl's* master device as transmitting packets containing channel identification information to slaves over a non-Bluetooth channel (i.e., not a channel from which the reduced hopping sequence is selected) or not based on a Bluetooth hopping sequence. Thus, even under the broadest reasonable construction, one skilled in the art would not understand *Schmidl* to disclose transmitting channel identification data to one or more participants in a communications system "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 88.

3. Dicker and Cuffaro

The Office Action relies solely on *Dicker* to satisfy the features specific to Claim 88. *See Office Action* at page 218, 219, 228.

Dicker states in relevant part that "informing may be accomplished in a variety of ways known to those skilled in the art. For example, transmission attributes, such as a new set of blocked subsets representing the worst-quality channels, may be communicated to the mobile unit as data or control parameters. They may also be encoded or passed to the mobile unit as tabular data." *Dicker* at column 7, lines 30-36. However, there is no evidence of record that one skilled in the art would understand from this general description in *Dicker* that channel identification data could be provided to a participant "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 88. As such, one skilled in the art would not understand a combination of *Dicker* and *Cuffaro* to provide transmitting channel identification data to one or more participants in the communications system "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 88.

4. Conclusion

Because *Gendel*, *Schmidl*, *Dicker*, and *Cuffaro*, do not teach or suggest "transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 88, confirmation of the patentability of Claim 88 is respectfully requested.

VII. Claims 95-106, 108-110, 114-119, 289, 296, 597, 598

Claims 95-106, 108-110, 114-119, 289, 296, 597, 598 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Dicker*, under 35 U.S.C. § 102 as anticipated by *Gerten*, under 35 U.S.C. § 102 as anticipated by *Kostic*, under 35 U.S.C. § 102 as anticipated by *Gendel*, under 35 U.S.C. § 102 as anticipated by *Schmidl*, under 35 U.S.C. § 103 as unpatentable over *Dicker* and *Larsson*, and under 35 U.S.C. § 103 as unpatentable over *Dicker* and *Gendel*. These are the only prior art rejections of these claims in the Office Action.

A. Claims 95-106, 108-110, 114-119, 289, 296, 597, 598

Claims 95-106, 108-110, 114-119, 289, 296, 597, 598 are patentable over *Dicker*, *Gerten*, *Kostic*, *Gendel*, *Schmidl*, and *Larsson*, individually and in any combination, for at least the reasons discussed above in Section III.B.

B. Dependent Claim 98

Claim 98 stands rejected under 35 U.S.C. § 102 as anticipated by *Dicker*, under 35 U.S.C. § 102 as anticipated by *Kostic*, under 35 U.S.C. § 102 as anticipated by *Gendel*, and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of this claim in the Office Action.

1. Requirements of Claim 98

Claim 98 requires, among other things:

> A computer-readable medium carrying one or more sequences of instructions for communicating with a participant in a communications arrangement, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:
>
> * * *
>
> classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and

selecting at least two communications channels of the plurality of communications channels that are classified as good.

Thus, in Claim 98, the processor-executable instructions are configured to select communications channels to use for frequency hopping communications not based merely on their performance with respect to a performance criterion. Instead, the processor-executable instructions are configured to first classify communications channels as good or bad based on the communications channels performance and a performance criterion. The processor-executable instructions are also configured to then select communications channels based on the communications channels classification as good.

A person of ordinary skill in the art would understand that processor-executable instructions which, when executed, incidentally achieve a classification, based on performance data satisfying or not satisfying a performance criterion, is neither an express nor inherent disclosure of the processor-executable instructions of Claim 98 configured for selecting communications channels based on their classification as good. *Dicker*, *Kostic*, *Gendel*, and *Schmidl* fail to disclose, explicitly or inherently, the processor-executable instructions of Claim 98 for "classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and selecting at least two communications channels of the plurality of communications channels that are classified as good".

A person of ordinary skill in the art would recognize the significance of processor-executable instructions configured to first classify communications channels as good or bad based on channel performance data and a performance criterion and configured to then select communications channels based on their classification as good. Unlike selecting communications channels based on performance data and a performance criterion, which does not distinguish between classifying communications channels and selecting communications channels, the processor-executable instructions of Claim 98 separates the concerns of classifying communications channels based on channel performance and selecting good communications channels to use for communications. *Dicker*, Kostic, *Gendel*, and *Schmidl* do not disclose processor-executable instructions that implement the separation of concerns implemented by the processor-executable instructions of Claim 98.

2. Dicker

With respect to *Dicker* and Claim 98, the Office Action cites to *Dicker* at column 4, lines 20-67; column 3, lines 23-25; column 5, lines 16-32; column 6, lines 14-45; and column 6, line 59 – column 7, line 35. *Office Action* at pages 30, 36.

With respect to *Dicker* and the Claim 98 step of "selecting at least two communications channels of the plurality of communications channels that are classified as good", the Office Action cites to *Dicker* at column 6, line 59 – column 7, line 35. *See Office Action* at pages 30, 36. There, the *Dicker* patent description describes excluding the "worst quality" frequencies and selecting "best frequencies or carriers". However, *Dicker* does not describe processor-executable instructions selecting frequencies based on their classification as good. Instead, frequencies in *Dicker* are selected based on error rates exceeding thresholds or exceeding the error rates of other frequencies. In particular, *Dicker* describes identifying a "poor quality" active subset when "in a one second period any of the short-term error rates for [the] active subset has a count that is greater than some predetermined threshold (e.g. nine); or (b) in a five second period any of the long-term error rates for [the] active subset is greater than that for one of the blocked subsets." *Dicker* at column 7, lines 5-10. Thus, *Dicker's* description of selecting subsets based on short-term and long-term error rates is not a disclosure of the processor-executable instructions of Claim 98 for "classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and selecting at least two communications channels of the plurality of communications channels that are classified as good".

The *Dicker* patent description does describe selecting two subsets for a communication link that will yield the "worst quality". However, *Dicker* goes onto explain that "[i]n this embodiment, these subsets will have the highest error rates." *Dicker* at column 6, lines 65-66. Thus, *Dicker* selects the two subsets based on those subsets having the highest error rates. Before selecting the two subsets, *Dicker* does not describe processor-executable instructions for classifying the subsets as good or bad based on their error rates. One skilled in the art would understand that a statement in a patent description that the worst quality subsets have the highest error rates is not a description of a processor-executable instructions for actually classifying the subsets as good or bad based on their error rates and the selecting subsets based on their classification as good. As such, *Dicker* does not describe "classifying, based on the first

performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and selecting at least two communications channels of the plurality of communications channels that are classified as good", as recited in Claim 98.

3. Kostic

With respect to *Kostic* and Claim 98, the Office Action refers to pages 480-482 of the TPR's Request which refers to the three measurement based frequency-hopping methods described in *Kostic* at page 915. *See Office Action* at pages 82, 85.

Kostic does describe using the "best quality" frequencies and avoiding the "worst quality" frequencies. However, *Kostic* describes selecting such frequencies based on measurements of interference such as signal-to-interference ratio (SIR), not based on classifications of those frequencies as good. *Kostic* at page 915. In particular, with respect to the first of the three measurement based frequency-hopping methods, *Kostic* states "[r]apid measurements of interference, SIR, or other quality variables are required for all 64 available channels" to replace all six currently used frequencies in each frame. Thus, with respect to the first of the three measurement based frequency-hopping methods, *Kostic* selects frequencies based on results of interference measurements, not based on classifications of those frequencies as good.

With respect to the second of the three measurement based frequency-hopping methods, *Kostic* states "it may be enough to periodically change only one (or an arbitrary number) of the six used frequencies – the one with the worst quality (highest interference, lowest SIR, …)." *Kostic* at page 915. In other words, *Kostic* incidentally selects the "worst quality" frequency with the highest interference or lowest SIR, which is not a disclosure of the processor-executable instructions of Claim 98 for "classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and selecting at least two communications channels of the plurality of communications channels that are classified as good".

With respect to the third of the three measurement based frequency-hopping methods, *Kostic* states "[i]n each frame, SIR is measured on the six used frequencies and the current hopping patterns is changed if the measured SIR does not achieve the required threshold on at least one of them.…Any frequency that meets the threshold can be used as a replacement".

Kostic at page 915. Again, here, *Kostic* discloses selecting frequencies based on comparing measured SIR of the frequencies to a threshold, which is not a disclosure of the processor-executable instructions of Claim 98 for "classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and selecting at least two communications channels of the plurality of communications channels that are classified as good".

Thus, all of the three measurement based frequency-hopping methods described in *Kostic* select frequencies based on measured interference or measured SIR, not based on their classification as good. *Kostic's* description of its three measurement based frequency-hopping methods is not a disclosure of the processor-executable instructions of Claim 98 for "classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and selecting at least two communications channels of the plurality of communications channels that are classified as good".

4. Gendel

With respect to *Gendel* and Claim 98, the Office Action cites to *Gendel* at column 6, lines 38-43; column 4, lines 26-45; column 7, lines 20-32; column 7, lines 53-59; and column 12, lines 36-42. *Office Action* at pages 112, 121.

In *Gendel*, "when the error value of a particular used segment reaches or exceeds a predetermined threshold, subsystems [] replace the particular used segment … with an unused segment." *Gendel*, column 7, lines 27-33. Thus, the replacement segment in *Gendel* is selected based on whether it is used or not, not based on its classification as good. That an unused segment selected to replace an erred segment may be considered a better quality segment relative to the erred segment does not mean that *Gendel* selects the unused segment based on its classification as good. Rather, *Gendel* selects the replacement segment based on its status as unused. *Gendel* at column 8, lines 5-8. Thus, *Gendel's* disclosure of selecting unused segments to replace erred segments is not a disclosure of the processor-executable instructions of Claim 98 for "classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and selecting at least two communications channels of the plurality of communications channels that are classified as good".

Similarly, *Gendel's* disclosure of selection of erred segments is not a disclosure of the classification-based channel selection of Claim 98. Significantly, *Gendel* selects erred segments as candidates for replacement based on an associated error value meeting or exceeding a threshold. *Gendel* at column 11, lines 53. *Gendel* does not disclose processor-executable instructions configured to classify erred segments as bad based on the error value and the error value threshold. Also, *Gendel* does not disclose processor-executable instructions configured to select erred segments based on their classification as good. As such, *Gendel* does not disclose the processor-executable instructions of Claim 98 configured for "classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and selecting at least two communications channels of the plurality of communications channels that are classified as good".

5. Schmidl

With respect to *Schmidl* and Claim 98, the Office Action cites to *Schmidl* at column 4, lines 1-17; column 2, lines 18-61; column 4, lines 1-17; and column 2, lines 18-61. *Office Action* at pages 164, 172.

Schmidl describes selecting frequencies to avoid based on interference measurements. *Schmidl* at column 2, lines 13-35. *Schmidl* does not describe selecting frequencies to use based on interference measurements. Thus, *Schmidl* cannot possibly disclose processor-executable instructions for "selecting at least two communications channels of the plurality of communications channels that are classified as good" (emphasis added), as recited in Claim 98.

Further, *Schmidl* does not disclose processor-executable instructions classifying frequencies. Instead, *Schmidl* discloses determining frequency bands that have a strong interferer based on channel quality measurements. *See Schmidl* at column 2, lines 13-35. Recall that Claim 98 does not merely claim processor-executable instructions for selecting communications channels based on performance data and a performance criterion. Instead, Claim 98 requires that processor-executable instructions, when executed, first classify communications channels as good or bad based on channel performance data and a performance criterion and then select communications channels based on their classification as good. At best, *Schmidl* discloses selecting communications channels to avoid based on channel quality measurements. Thus, *Schmidl* does not disclose processor-executable instructions for "classifying, based on the first

performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad", as recited in Claim 98.

Schmidl does disclose a reduced hopping sequence message in which a "1" in a corresponding bit section informs a receiving radio that a particular channel is in the reduced hopping sequence and a "0" in a corresponding bit section informs the receiving radio that a particular channel is excluded from the reduced hopping sequence. *Schmidl* at column 4, lines 1-17. However, the reduced hopping sequence message of *Schmidl* is irrelevant to the features of Claim 98 because the reduced hopping sequence message of *Schmidl* is sent to the receiving radio after the reduced hopping sequence and the channels to be excluded have already been selected. *See Schmidl* at Fig. 2, steps 202, 204; at column 3, lines 51-58.

Based on the foregoing, *Schmidl's* disclosure of determining a reduced hopping sequence and channels excluded from the reduced hopping sequence is not a disclosure of the processor-executable instructions of Claim 98 for "classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and selecting at least two communications channels of the plurality of communications channels that are classified as good".

6. Conclusion

Because none of *Dicker*, *Kostic*, *Gendel*, and *Schmidl* teach or suggest the processor-executable instructions of Claim 98 for "classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and selecting at least two communications channels of the plurality of communications channels that are classified as good", confirmation of the patentability of Claim 98 is respectfully requested.

C. Claim 106

Dependent Claim 106 is patentable over *Dicker*, *Gerten*, *Kostic*, *Gendel*, *Schmidl*, and *Larsson*, individually and in any combination, for at least the reasons discussed above in Section III.C.

D. Claim 109

Dependent Claim 109 is patentable over *Dicker*, *Gerten*, *Kostic*, *Gendel*, *Schmidl*, and *Larsson*, individually and in any combination, for at least the reasons discussed above in Section III.D.

E. Claim 116

Dependent Claim 116 is patentable over *Dicker*, *Gerten*, *Kostic*, *Gendel*, *Schmidl*, and *Larsson*, individually and in any combination, for at least the reasons discussed above in Section III.E.

F. Claim 117

Dependent Claim 117 is patentable over *Dicker*, *Gerten*, *Kostic*, *Gendel*, *Schmidl*, and *Larsson*, individually and in any combination, for at least the reasons discussed above in Section III.F.

VIII. Claims 120-122, 125-128

Claims 120-122 and 125-128 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Gerten*, under 35 U.S.C. § 102 as anticipated by *Gendel*, under 35 U.S.C. § 102 as anticipated by *Imamura*, and under 35 U.S.C. § 103 as unpatentable over *Gerten* and U.S. Pat. No. 5,323,447 ("*Gillis*"). These are the only prior art rejections of these claims in the Office Action. Claims 123 and 124 are not subject to reexamination.

A. Claim 120

Claim 120 stands rejected under 35 U.S.C. § 102 as anticipated by *Gerten*, under 35 U.S.C. § 102 as anticipated by *Gendel*, and under 35 U.S.C. § 102 as anticipated by *Imamura*. These are the only prior art rejections of this claim in the Office Action.

Claim 120 recites:

> A method for selecting communications channels for a frequency hopping communications system, the method comprising the computer-implemented steps of:
>
> selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels;
>
> after selecting the first set of two or more communications channels, causing the first set of two or more communications channels to be loaded into a first register of a first participant and a second register of a second participant;
>
> causing the first participant and the second participant to communicate over the first set of two or more communications channels based on a hopping sequence according to a frequency hopping protocol;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
after selecting the second set of two or more communications channels, causing the second set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant; and
causing the first participant and the second participant to communicate over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

Thus, in the method Claim 120, after selecting the first set of communications channels, the first set is caused to be loaded "into a first register of a first participant and a second register of a second participant" and the first participant and the second participant communicate over the first set of communications channels. In addition, after selecting the second set of communications channels, the second set is caused to be loaded "into the first register of the first participant and the second register of the second participant" and the first participant and the second participant communicate over the second set of communications channels.

For example, in a Bluetooth or IEEE 802.15.1 FH communications system, each participant has a selection kernel that addresses a register. The output of the kernel is a set of addresses for each slot in the register, while the content of the slot in the register is a channel number. Instead of modifying the selection kernel, which is usually complicated, the register is loaded using only the selected set of communications channels. As a result, when the kernel addresses the register, only the selected set of channels are used. *See*, *e.g.*, *Bandspeed Patent* at column 19, lines 1-14.

The Bandspeed Patent discloses an example embodiment of loading a set of channels into a channel register with respect to Figures 5A. As shown in Figure 5A, a table of good channels 570, which corresponds to the first set or the second set of communications channels in an embodiment of Claim 120, is loaded 572 into register 550. Register 550 is then addressed by the selection kernel 510 during frequency hopping communications by applying an index to output of the selection kernel 510. *See also Bandspeed Patent* at column 19, lines 28-62.

Figure 5A of the Bandspeed Patent illustrating loading good channels into register:

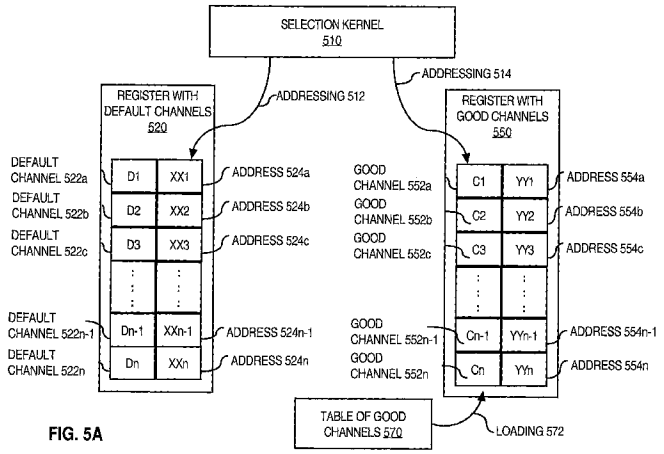

FIG. 5A

Claim 120 expressly requires that the communications channels selected to use for frequency hopping communications between the first participant and the second participant (i.e., the recited first and second set of communications channels) "to be loaded" into a register of the first participant and a register the second participant. Thus, the limitations of Claim 120 are not met by a description merely disclosing using selected channels for frequency hopping communications.

Gerten does not disclose "after selecting the second set of two or more communications channels, causing the second set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant; and causing the first participant and the second participant to communicate over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 120.

In the method of Claim 120, the second set of two or more communications channels is caused to be loaded into the first register of the first participant and the second register of the second participant "after selecting the second set of two or more communications channels". The second set of communications channels are used in the method of Claim 120 by the first participant and the second participant to communicate based on the hopping sequence according to the frequency hopping protocol. Thus, the channels loaded in the first and second register of Claim 120 are channels that are used for communications, not channels that are avoided.

With respect to Claim 120 and *Gerten*, the Office Action cites to *Gerten* at column 9, lines 64-67 which describes what happens "[e]each time the master decides to update the channels to be avoided" (emphasis added). However, the Claim 120 step of "causing the second

set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant" is performed "after selecting the second set of two or more communications channels". In contrast to *Gendel*, the second set of communications channels in *Gerten* are not channels to be avoided. Claim 120 recites "causing the first participant and the second participant to communicate over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol". Because the first participant and the second participant communicate over the second set of communications channels, they cannot possibly be avoided channels. Thus, *Gerten* does not disclose "after selecting the second set of two or more communications channels, causing the second set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant; and causing the first participant and the second participant to communicate over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 120.

The balance of *Gerten* makes clear that *Gerten* determines channels to be avoided. In particular, Figure 1 of *Gerten* shows steps 130 and steps 180 are determined channels to avoid. In contrast, the second set of communications channels in Claim 120 are channels that are not to be avoided, but in fact, channels to use for frequency hopping communications.

With respect to the following features of Claim 120, the Office Action cites to *Gendel* at column 14, lines 6-30; column 12, lines 7-39; column 4, lines 4-22; figure 3; and figure 6:

> after selecting the second set of two or more communications channels, causing the second set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant; and
> causing the first participant and the second participant to communicate over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

Gendel does not disclose the above-features of Claim 120. *Gendel* does describe a "register bank" which includes "two received signal strength indication (RSSI) registers." *Gendel*, column 14, lines 6-30. However, unlike the first register and the second register of Claim 120, communications channels are not loaded into the register bank of *Gendel*. Instead, the register bank of *Gendel* stores "a maximum RSSI value for which a reception error has occurred for a used segment" and stores a minimum RSSI value for which a reception error has

not occurred for a used segment." *Id.* An RSSI value is a value reflecting received signal strength, not a channel. Thus, the register bank of *Gendel* cannot be the first register or the second register of Claim 120.

Bandspeed has reviewed the balance of *Gendel* and cannot determine anything in *Gendel* that could be the first "register" or the second "register" of Claim 120.

With respect to Claim 120 and *Imamura*, the Office Action cites to paragraphs 27, 39, and 47 of *Imamura*. *Office Action* at pages 197, 198. None of the cited portions appears to disclose "after selecting the second set of two or more communications channels, causing the second set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant; and causing the first participant and the second participant to communicate over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 120.

Paragraph 27 of *Imamura* describes communicating over two different subgroups of frequencies. One subgroup "having high communication quality" and another subgroup "having low communication quality". Paragraph 27 of *Imamura* does not describe registers or describe causing the frequency subgroups to be loaded into registers.

Paragraph 39 of *Imamura* describes a table which maintains a list of all channels in order of quality. Paragraph 47 of *Imamura* states that this table "is retained not only by a base station but also by a mobile station". However, the table in *Imamura* is, at best, loaded once with the same set of communications channels and the table always stores the same set of frequency channels thereafter, albeit the frequency channels in the set can be ordered differently within the table at different times based on current communication quality. Thus, while the table in *Imamura* may have a different ordering of frequency channels at different times, it always has the same set of frequency channels. Thus, *Imamura* does not disclose "after selecting the second set of two or more communications channels, causing the second set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant; and causing the first participant and the second participant to communicate over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 120.

Imamura explains that an error rate of each frequency channel is detected and a table is produced in which the frequency channels are arranged within the table in descending order of communication quality. *Imamura* at paragraph 39. Thereafter, *Imamura* does not describe loading the table with a selected set of communications channels. To be sure, the frequency channels in the table of *Imamura* can be reordered from time to time based on rechecking the error rate of each frequency channel. *Imamura* at paragraph 47. However, this change to the table as described in *Imamura* is not a disclosure of "after selecting the second set of two or more communications channels, causing the second set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant; and causing the first participant and the second participant to communicate over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 120. It is not such a disclosure because *Imamura* merely reorders existing frequency channels within the table and does not load two selected sets of frequency channels into the table at different times.

One skilled in the art would not confuse reordering an existing set of frequency channels within a table at different times as in *Imamura* with loading two selected sets of frequency channels into a register at different times as in Claim 120. For one, when reordering an existing set of frequency channels within a table at different times as in *Imamura*, there is only one set of channels loaded into the table. Namely, the set of frequency channels that is reordered. In contrast, in Claim 120, there are two sets of channels loaded into the first register and the second register: the recited first set of communications channels and the recited second set of communications channels. Second, there is only one set of frequency channels stored in the table of *Imamura*. Thus, there is at most only one selection of a set frequency channels in *Imamura*. In contrast, in Claim 120, two sets are selected: the recited first set of communications channels and the recited second set of communications channels. Thus, *Imamura* does not anticipated Claim 120.

Gillis is not relied upon for, and does not disclose, any of the features of Claim 120.

Based on the foregoing, because none of *Gerten*, *Gendel*, *Imamura*, or *Gillis* anticipates Claim 120, confirmation of the patentability of Claim 120 is respectfully requested.

B. Claims 121-122, 125-128

Claims 121-122, 125-128 are each dependent claims dependent on allowable independent claims 120, and are therefore allowable over, *Gerten, Gendel, Imamura,* and *Gillis*, individually and in any combination, at least by virtue of their dependency on an allowable independent claim.

IX. Claims 304-325, 588

Claims 304-325, 588 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Dicker*, under 35 U.S.C. § 102 as anticipated by *Gerten*, and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of these claims in the Office Action.

A. Claim 304

Claim 304 stands rejected under 35 U.S.C. § 102 as anticipated by *Dicker*, under 35 U.S.C. § 102 as anticipated by *Gerten*, and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of this claim in the Office Action.

Claim 304 recites:

A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:

selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant by sending a data packet comprising the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and

wherein the data packet comprising the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

Thus, in the method of Claim 304, the data packet comprising the first identification data "that identifies the first set of two or more communications channels" is provided to the

participant "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol".

For example, Figure 4 of the Bandspeed Patent (reproduced below) illustrates the data packet of Claim 304 according to an embodiment. As illustrated, data packet 400 includes good channel data 450, which corresponds to the first identification data of Claim 304 in an embodiment.

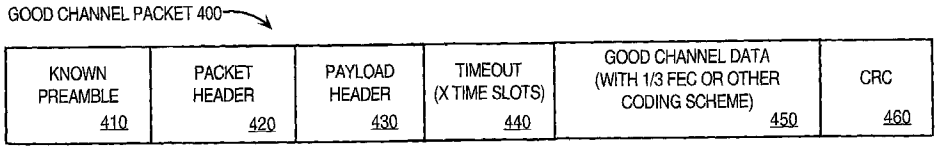

FIG. 4

Bandspeed Patent at Figure 4.

With the approach of Claim 304, no out-of-band channel is required and the hop sequence for communicating with the participant need not be modified to provide the channel identification data to the participant.

With respect to *Dicker* and Claim 304, the Office Action states that *Dicker* "inherently uses a data packet" to provide channel identification information. *Office Action* at page 40. Even assuming, without conceding, that *Dicker* does use a data packet, a data packet comprising channel identification information is not all that is claimed in Claim 304. Notably, the data packet of Claim 304 comprising the first identification data is provided to a participant "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol". Significantly, the communications channel in Claim 304 over which the data packet is provided to the participant based on the hopping sequence according to the frequency hopping protocol is one of the plurality of communications channels from which the first set and the second set of communications channels are selected. Thus, in Claim 304, a communications channel selected for frequency hopping communications with a participant based on the hopping sequence according to the frequency hopping protocol can also be a channel over which channel identification data is provided to the participant based on the hopping sequence according to the frequency hopping

protocol. With the approach of Claim 304 for providing the channel identification data, no out-of-band channel is required and the hop sequence for communicating with the participant need not be modified to provide the channel identification data to the participant.

With respect to communicating "transmission attributes, such as a new set of blocked subsets representing the worst-quality channels", *Dicker* states that such communicating "may be accomplished in a variety ways known to those skilled in the art. *See Dicker* at column 7, lines 28-36. However, there is not sufficient evidence of record that one skilled in the art would understand from *Dicker* that channel identification information could be provided to a participant "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 304. *Dicker* states that transmission attributes may be communicated to a mobile unit "as data or control parameters", which is not a disclosure of communicating the transmission attributes "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 304. *Dicker* also states that transmission attributes "may also be encoded or passed to the mobile unit as tabular data". The "tabular data" refers to an encoded form of the transmission attributes, not that the transmission attributes, in whatever form, are communicated "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 304.

As such, *Dicker's* description of a base station that "informs the mobile unit associated with the communication link of the transmission attributes" and associated description in *Dicker* is not a disclosure of "wherein the data packet comprising the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 304.

The Office Action cites to *Gerten* at Fig. 3, Step 150; column 4, lines 51-65; column 9, line 51 – column 10, line 5, column 2, lines 63-65; and column 3, lines 8-39 with respect to the following feature of Claim 304:

> wherein the data packet comprising the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

Gerten explain that a master device communicates channels to be avoided to a remote device. *Gerten* at column 4, lines 51-65. In contrast, the first identification data in Claim 304 identifies channels used for communications with a participant.

Gerten does state that "[e]ach time the master decides to update the channels to be avoided, a new packet is sent that follows the same format and procedure as the first packet." *Gendel* at column 9, line 51 – column 10, line 5. Again, the first identification data in Claim 304 identifies channels used for communications with a participant, not channels to be avoided.

Because *Gerten* describes data packets with only channels to be avoided, such data packets cannot be the data packet of Claim 304.

Gerten at column 9, lines 51-58 notes "[o]nce a Bluetooth connection has been established and the master has identified the slave's capability to engage in an interference avoidance hop sequence, a link can be initiated to convey the number of channels to be avoided … [e]ach time the master decides to update the channels to be avoided a new packet is sent that follows the same format and procedure as the first packet." Thus, while *Gerten* does state that a "link can be initiated", *Gerten* does not describe providing the number of channels to be avoided "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 304. Indeed, *Gerten* states "[t]he master device establishes a link to communicate channels to be avoided" (column 4, lines 51-52) and "[f]the mater does update the channels to be avoided (YES), the master returns to step 140 to create another link and communicate the new channels to the remote device" (column 4, lines 62-65). The fact that *Gerten* "establish[es] a link" and "creat[es] another link" to communicate the new channels strongly teaches against providing the new channels to the remote device "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 304.

With respect to the following feature of Claim 304, the Office Action cites to *Schmidl* at column 2, lines 1-45 and at column 1, lines 49-51:

> wherein the data packet comprising the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

Schmidl explains that the master unit can send a message to slave units that allows the slave units to determine the reduced hopping sequence that will be used and what channels will be omitted from the sequence. *Schmidl* at column 3, lines 55-60. However, *Schmidl* does not describe the message as transmitted "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 304. Indeed, *Schmidl* states that "information as to what channel to use for the excluded channel(s) … can be sent in other packets by the unit transmitting the RHS message." *Schmidl* at column 4, lines 10-14. Thus, while *Schmidl* states that channel identification information can be transmitted in packets, it does not teach or suggest providing channel identification information "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as required in Claim 304. For example, one skilled in the art may understand *Schmidl's* master device as transmitting packets containing channel identification information to slaves over a non-Bluetooth channel (i.e., not a channel from which the reduced hopping sequence is selected) or not based on a Bluetooth hopping sequence. Thus, even under the broadest reasonable construction, one skilled in the art would not understand *Schmidl* to disclose providing a data packet comprising channel identification data to a participant "over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol", as recited in Claim 304.

Based on the foregoing, it is respectfully submitted that Claim 304 is patentable over *Dicker*, *Gerten*, and *Schmidl*. Confirmation of the patentability of Claim 304 is respectfully requested.

B. Claims 305-325, 588

Similar to independent claim 304, independent claims 315 and 588 require the data packet comprising the first identification data to be provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol, except that the requirement is in the context of a computer-readable medium carrying instructions and a communications apparatus, respectively. Thus, claims 315 and 588 are allowable over *Dicker*, *Gerten*, and *Schmidl*,

individually and in any combination, for at least the same reasons given above in that Claim 304 is allowable over *Dicker, Gerten,* and *Schmidl*, individually and in any combination.

Claims 305-314 and 316-326 are each dependent claims dependent on one of allowable independent claims 304 and 315, and are therefore allowable over *Dicker, Gerten,* and *Schmidl*, individually and in any combination, at least by virtue of their dependency on an allowable independent claim.

C. Claims 308, 319

Claims 308 and 319 stand rejected under 35 U.S.C. § 102 as anticipated by *Dicker*. This is the only prior art rejection of these claims in the Office Action.

Claims 308 and 319 require, by virtue of base claims 306 and 317 respectively, that the data packet provided to the participant specify:

> a number of time slots the participant is to wait before communicating over the first set of two or more communications channels

Claims 308 and 319 further require:

> determining a number of slave participants; and
> determining the number of time slots to wait based on the number of slave participants.

Contrary to the TPR's assertion, the specific features of Claims 308 and 319 are not disclosed by *Dicker*.

The TPR notes that *Dicker* at column 7, lines 44-48 states "base station 12 may notify the mobile unit that it will change carrier frequencies after a number of (e.g., four) frames". *TPR's First Comments* at page 98. However, what *Dicker* does not disclose is the base station determining the number of frames based on a determined number of mobile units. If anything, the number of frames in *Dicker* is fixed (e.g., at four) irrespective of how many mobile units the base station is communicating with. As such, *Dicker* does not fairly disclose "determining a number of slave participants; and determining the number of time slots to wait based on the number of slave participants", as recited in Claim 308 and Claim 319.

Accordingly, confirmation of the patentability of Claim 308 and Claim 319 is respectfully requested.

D. Claims 309, 320

Claims 309 and 320 stand rejected under 35 U.S.C. § 102 as anticipated by *Dicker*. This is the only prior art rejection of these claims in the Office Action.

Claims 309 and 320 require that the determined number of time slots to wait of Claims 308 and 319 "is at least twice the number of slave participants".

Contrary to the TPR's assertion, the specific features of Claims 309 and 320 are not disclosed by *Dicker*.

The TPR again notes that *Dicker* at column 7, lines 44-48 states "base station 12 may notify the mobile unit that it will change carrier frequencies after a number of (e.g., four) frames". *TPR's First Comments* at page 99. However, what *Dicker* does not disclose is the base station determining the number of frames based on a determined number of mobile units. If anything, the number of frames in *Dicker* is fixed (e.g., at four) irrespective of how many mobile units the base station is communicating with. As such, *Dicker* does not fairly disclose "determining a number of slave participants; and determining the number of time slots to wait based on the number of slave participants", as recited in Claim 308 and Claim 319.

That *Dicker's* number of frames can incidentally be at least twice the number of mobile units does not fairly disclose the requirements of Claims 308 and 319 that require "determining a number of slave participants; and determining the number of time slots to wait based on the number of slave participants". As explained, *Dicker* does not describe "determining a number of slave participants; and determining the number of time slots to wait based on the number of slave participants", as recited in Claims 308 and 319.

Accordingly, confirmation of the patentability of Claim 309 and Claim 320 is respectfully requested.

X. Claims 326-333, 589

Claims 326-333 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Gerten*, and under 35 U.S.C. § 102 as anticipated by *Haartsen*. These are the only prior art rejections of these claims in the Office Action.

A. Claim 326

Claim 326 stands rejected under 35 U.S.C. § 102 as anticipated by *Gerten*, and under 35 U.S.C. § 102 as anticipated by *Haartsen*. These are the only prior art rejections of this claim in the Office Action.

Claims 326 recites:

A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:

loading information that identifies a plurality of communications channels into a first register;

communicating with the participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;

wherein communicating with the participant over the plurality of communications channels comprises addressing the first register based on output of a hop selection kernel;

selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

loading information that identifies the first set of two or more communications channels into a second register that is not the first register;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels;

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein communicating with the participant over the first set of two or more communications channels comprises applying an index to output of the hop selection kernel to address the second register instead of the first register.

Thus, Claim 326 involves two different registers, a first register and a second register. The first register is loaded with information that identifies a plurality of communications channel. The second register is loaded within information that identifies a first set of communications channels selected from the plurality of communications channels. Output of a hop selection kernel are used to address the first register and the second register when communicating with the participant over the plurality of communications channels and the first set of communications channels respectively. When communicating with the participant over the first set of communications channels an index is applied to output of the hop selection kernel to address the second register. Thus, no modification to the hop selection kernel itself is needed to address the second register.

The TPR alleges there is substantially similarity between Claim 15 and Claim 326. *TPR's First Comments* at page 105. However, Claim 15 does not recite "a second register that is not the first register", "hop selection kernel", or "applying an index to output of the hop selection kernel to address the second register instead of the first register". Thus, the TPR is incorrect that Claim 15 and Claim 326 are substantially similar.

With respect to the Claim 326 feature of "loading information that identifies the first set of two or more communications channels into a second register that is not the first register", the Office Action cites to *Haartsen* at column 17, lines 4-54; figure 14. *Office Action* at page 212. In particular, the Office Action notes with respect to figure 14 of *Haartsen* that a "gap count 1415 is loaded, which is a different register than the hop indices 1411". *Id.* A gap count in *Haartsen* is not a channel. Instead, it is a number representing a relative number of forbidden hops. Haartsen at column 15, lines 11-27. As such, that *Haartsen's* gap count can or cannot be stored in a different register is completely irrelevant to the information identifying communications channels stored in the first and second register of Claim 326.

With respect to the Claim 326 feature of "wherein communicating with the participant over the first set of two or more communications channels comprises applying an index to output of the hop selection kernel to address the second register instead of the first register", the TPR alleges that this feature of Claim 326 is disclosed in *Haartsen* at column 12, lines 19-28. *TPR's First Comments* at page 105. The cited portion does describe an index into a table of allowable channels. However, as stated in *Haartsen*, the generated index is used to address an entry in the table of allowable channels. *Haartsen* at column 12, lines 44-47. *Haartsen* does not describe applying the generated index to output of a hop selection kernel to address the table of allowable channels. As such, the TPR is incorrect that *Haartsen* discloses "wherein communicating with the participant over the first set of two or more communications channels comprises applying an index to output of the hop selection kernel to address the second register instead of the first register", as recited in Claim 326.

With respect to *Gerten* and the Claim 326 feature of "loading information that identifies the first set of two or more communications channels into a second register that is not the first register", the Office Action cites to *Gerten* at column 7, lines 35 – column 8, line 28. *Office Action* at page 60. The cited portion discusses a single register bank in the context of modifications to the hop selection kernel so that the modified kernel addresses 75 channels in the

register bank instead of 79 channels in the register bank that the unmodified kernel would normally address. In contrast, Claim 326 requires two registers. Further, the fact that *Gerten* requires modification to the hop selection kernel teaches against Claim 326 in which modifications to the hop selection kernel are not required by "applying an index to output of the hop selection kernel to address the second register instead of the first register", as recited in Claim 326. *See also Bandspeed Patent* at column 19, lines 1-62; figure 5A.

Because *Haartsen* and *Gerten* do not teach or suggest "loading information that identifies the first set of two or more communications channels into a second register that is not the first register" and "applying an index to output of the hop selection kernel to address the second register instead of the first register", as recited in Claim 326, and because *Gerten's* description of modifying the hop selection kernel teaches against the method of Claim 326 which avoid modifying the hop selection kernel, one skilled in the art would not recognize *Haartsen* and *Gerten* to provide the complete detail of Claim 326.

B. Claims 327-333, 589

Independent claims 330 and 589 recite features analogous to those of independent claim 326 discussed above, except in the context of a computer-readable medium carrying instructions and a communications apparatus, respectively. Thus, independent claims 330 and 589 are allowable over *Haartsen* and *Gerten*, individually and in any combination, for at least reasons analogous to those given above why independent claim 330 is allowable over *Haartsen* and *Gerten*, individually and in any combination.

Claims 327-329 and 331-333 are each dependent claims dependent on one of allowable independent claims 326 or 330, and are therefore allowable over *Haartsen* and *Gerten*, individually and in any combination, at least by virtue of their dependency on an allowable independent claim 326 or 330. In addition, Claims 327-329 and 331-333 each recite additional features that independently render them patentable over *Haartsen* and *Gerten*, individually and in any combination. However, due to the fundamental issues identified above with respect to independent claims 326 and 330, a separate discussion of the additional features is not provided at this time. Bandspeed expressly reserves the right to separately argue the additional features at a later date.

XI. Claims 334-343, 590

Claims 334-343, 590 stand rejected under 35 U.S.C. § 102 as anticipated by *Gerten*. This is the only prior art rejection of these claims in the Office Action.

A. Claim 334

Claim 334 recites:

A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:

loading information that identifies a plurality of communications channels into a register;

communicating with the participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;

wherein communicating with the participant over the plurality of communications channels comprises selecting channels in the register based on outputs of a hop selection kernel;

selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

storing information that identifies the first set of two or more communications channels in a table of good channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels;

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein communicating with the participant over the first set of two or more communications channels comprises, in response to obtaining an output from the hop selection kernel that selects a channel in the register that is not classified as good, selecting a channel from the table of good channels to use to communicate with the participant instead of the channel selected by the output of the hop selection kernel that is not classified as good.

Thus, in the method of Claim 334, information that identifies the first set of communications channels is stored in a table of good channels. Further, when communicating with the participant over the first set of communications channels, in response to obtaining an output from a hop selection kernel that selects a channel that is not classified as good, a channel from the table of good channels is selected to use to communicate with the participant instead of the channel selected by the output of the hop selection kernel that is not classified as good. Thus,

no modification to the hop selection kernel itself is needed to communicate with the participant over the first set of communications channels. *See Bandspeed Patent* at column 19, line 1 – 27; *see also Bandspeed patent* at column 19, line 63 – column 20, line 42; figure 5B.

Significantly, in the method of Claim 334, a channel is selected from the table of good channels "in response to obtaining an output from the hop selection kernel that selects a channel in the register that is not classified as good". Thus, with the approach of Claim 334, all of the good channels in the plurality of communications channels are kept in the register, while all the bad channels in the plurality of communications channels are replaced by good channels from the table of good channels. Further, the approach of Claim 334 is dynamic meaning that the same bad channel can be replaced by another selected good channel when, at a later time, the select kernel address the bad channel. *See Bandspeed Patent* at column 20, lines 34-42.

With respect to Claim 334 feature of "wherein communicating with the participant over the first set of two or more communications channels comprises, in response to obtaining an output from the hop selection kernel that selects a channel in the register that is not classified as good, selecting a channel from the table of good channels to use to communicate with the participant instead of the channel selected by the output of the hop selection kernel that is not classified as good", the Office Action cites to *Gerten* at column 8, line 29 – column 10, line 5.

The cited portion of *Gerten* describes various techniques for modifying the hopping sequence, none of which disclose "wherein communicating with the participant over the first set of two or more communications channels comprises, in response to obtaining an output from the hop selection kernel that selects a channel in the register that is not classified as good, selecting a channel from the table of good channels to use to communicate with the participant instead of the channel selected by the output of the hop selection kernel that is not classified as good", as recited in Claim 334.

In particular, *Gerten* clearly discloses that the hop selection kernel is modified to address an alternative bank of registers. *Gerten* at column 7, line 35 – column 8, line 28. In contrast, the hop selection kernel in Claim 334 is not modified to address a different register. Instead, when communicating with the participant over the first set of communications channels, the hop selection kernel of Claim 334 addresses the register storing the plurality of communications channels. However, if the output from the hop selection kernel that selects a channel in the register that is not classified as good, then a channel from the table of good channels to is

selected use to communicate with the participant instead of the channel selected by the output of the hop selection kernel that is not classified as good. As a result, no modifications of the hop selection kernel are required by the method of Claim 334. As such, *Gerten's* modifications to a hop selection kernel teach against the method of Claim 334.

Further, as explained in *Gerten*, "the address scheme is reconfigured for addressing the alternate register bank". *Gerten* at column 7, lines 18-20. No such address reconfiguration is required in the method of Claim 334. Indeed, the method of Claim 334 continues to address the register identifying the plurality of communications channels when communicating with the participant over the first set of communications channels. *Gerten's* address reconfiguration requirement teaches against the method of Claim 334 that addresses the register identifying the plurality of communications channels when communicate with the participant over both the plurality of communications channels and the first set of communications channels. As such, *Gerten* does not disclose "wherein communicating with the participant over the first set of two or more communications channels comprises, in response to obtaining an output from the hop selection kernel that selects a channel in the register that is not classified as good, selecting a channel from the table of good channels to use to communicate with the participant instead of the channel selected by the output of the hop selection kernel that is not classified as good", as recited in Claim 334.

B. Claims 335-343, 590

Independent claims 339 and 590 recite features analogous to those of independent claim 334 discussed above, except in the context of a computer-readable medium carrying instructions and a communications apparatus, respectively. Thus, independent claims 339 and 590 are allowable over *Gerten* for at least reasons analogous to those given above why independent claim 334 is allowable over *Gerten*.

Claims 335-338 and 340-343 are each dependent claims dependent on one of allowable independent claims 334 or 339, and are therefore allowable over *Gerten* at least by virtue of their dependency on an allowable independent claim 334 or 339. In addition, Claims 335-338 and 340-343 each recite additional features that independently render them patentable over *Gerten*. However, due to the fundamental issues identified above with respect to independent claims 334 and 339, a separate discussion of the additional features is not provided at this time. Bandspeed expressly reserves the right to separately argue the additional features at a later time.

XII. Claims 344-351, 591

Claims 344-351, 591 stand rejected under 35 U.S.C. § 102 as anticipated by *Gerten*. This is the only prior art rejection of these claims in the Office Action.

A. Claim 344

Claim 344 recites:

A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:

loading information that identifies a plurality of communications channels into a number of slots of a register;

communicating with the participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;

wherein communicating with the participant over the plurality of communications channels comprises addressing slots of the register based on outputs of a hop selection kernel;

selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

wherein the number of communications channels in the first set of two or more communications channels is less than the number of slots;

loading the first set of two or more communications channels into the number of slots of the register so that each of the number of slots of the register identifies a channel from the first set of two or more communications channels;

wherein, after loading the first set of two or more communications channels into the register, at least one channel of the first set of two or more communications channels is identified by at least two different slots of the number of slots;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels;

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein communicating with the participant over the first set of two or more communications channels comprises addressing slots of the register based on outputs of the hop selection kernel.

Thus, in the method of Claim 344, after the first set of communications channels is selected, the first set of communications channels replaces the plurality of communications

channels in the register. The number of channels in the first set of communications channels is less than the number of slots in the register. Nevertheless, the first set of communications channels are loaded into the register in such a way that at least one channel of the first set of two or more communications channels is identified by at least two different slots of the register.

As explained in the Bandspeed Patent, one approach for filing up the register is to cyclically load the register using first set of communications channels until the register is full. Another approach is to replace in the register bad channels in the plurality of communications channels with good channels in the first set of communications channels. By doing so, modification to the hop selection kernel is not required. *See Bandspeed* patent at column 19, lines 1-27.

With respect to the Claim 344 feature of "wherein, after loading the first set of two or more communications channels into the register, at least one channel of the first set of two or more communications channels is identified by at least two different slots of the number of slots", the Office Action cites to *Gerten* at column 8, line 29 – column 10, line 5.

Again, *Gerten* clearly discloses that the hop selection kernel is modified to address an alternative bank of registers. *Gerten* at column 7, line 35 – column 8, line 28. In contrast, the hop selection kernel in Claim 344 is not modified to address a different register. Instead, the hop selection kernel in Claim 344 need not be modified when communicating with the participant over the first set of communications channels because, after loading the first set of two or more communications channels into the register, at least one channel of the first set of two or more communications channels is identified by at least two different slots of the number of slots. *Gerten's* modifications to a hop selection kernel teach against the method of Claim 344.

Further, as explained in *Gerten*, "the alternate register bank is loaded with N-M synthesizer code words for the N-M channels with the synthesizer code words for the M channels to be avoided removed". *Gerten* at column 7, lines 15-18. Thus, as described *Gerten*, after loading the alternate register bank with the N-M synthesizer code words, each of the N-M channels are identified at most once in the alternate register bank. In contrast, the method of Claim 334 requires, after loading the first set of two or more communications channels into the register, the "at least one channel of the first set of two or more communications channels is identified by at least two different slots of the number of slots" (emphasis added). As such, in addition to teaching against the method of Claim 344, *Gerten* does not disclose "wherein, after

loading the first set of two or more communications channels into the register, at least one channel of the first set of two or more communications channels is identified by at least two different slots of the number of slots", as recited in Claim 344.

B. Claims 345-351, 591

Independent claims 348 and 591 recite features analogous to those of independent claim 344 discussed above, except in the context of a computer-readable medium carrying instructions and a communications apparatus, respectively. Thus, independent claims 348 and 591 are allowable over *Gerten* for at least reasons analogous to those given above why independent claim 344 is allowable over *Gerten*.

Claims 346-347 and 349-351 are each dependent claims dependent on one of allowable independent claims 344 or 348, and are therefore allowable over *Gerten* at least by virtue of their dependency on an allowable independent claim 344 or 348. In addition, Claims 346-347 and 349-351 and 340-343 each recite additional features that independently render them patentable over *Gerten*. However, due to the fundamental issues identified above with respect to independent claims 344 and 348, a separate discussion of the additional features is not provided at this time. Bandspeed expressly reserves the right to separately argue the additional features at a later time.

XIII. Claims 352-371, 592

Claims 352-371, 592 stand rejected under 35 U.S.C. § 102 as anticipated by *Gerten*. This is the only prior art rejection of these claims in the Office Action.

A. Claim 352

Claim 352 recites:

A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:

while communicating with a participant over a plurality of communications channels, determining first performance data that indicates performance of each of the plurality of communications channels at a first time based on one or more channel performance testing techniques selected from the group consisting of (a) special test packets and (b) received signal strength indicator;

selecting, based on the first performance data that indicates performance of a plurality of communications channels at the first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

generating first identification data that identifies the first set of two or more communications channels;
providing the first identification data to the participant;
while communicating with the participant over the first set of two or more communications channels, determining second performance data that indicates performance of each of the first set of two or more communications channels at a second time that is later than the first time based on one or more channel performance monitoring techniques selected from the group consisting of (a) preamble correlation, (b) header error check, (c) cyclic redundancy check and (d) forward error correction;
wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and
wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

Thus, in Claim 352, different techniques are used to test the performance of each of the plurality of communications channels that are different from the techniques used to monitor the performance of each the first set of communications channels. In particular, the performance of each of the plurality of communications channel is tested "based on one or more channel performance testing techniques selected from the group consisting of (a) special test packets and (b) received signal strength indicator". On the other hand, the performance of each of the first set of communications channels is monitored "based on one or more channel performance monitoring techniques selected from the group consisting of (a) preamble correlation, (b) header error check, (c) cyclic redundancy check and (d) forward error correction".

As disclosed in the Bandspeed Patent at column 10, line 1 – column 14, line 31, the special test packets and received signal strength indicator (RSSI) techniques are useful for accurately and reliably testing the performance of a default set of communications channels and the preamble correlation, header error check, cyclic redundancy check, and forward error correction techniques, because of their lower overhead, are useful for continuous monitoring of channel performance, such as the ongoing monitoring of a selected set of communications channels.

1. Objection to Claim 360

Claim 360 is amended herein to correct the typographical error identified in the Office Action. *Office Action* at page 12 (point 25). Amended Claim 360 now properly depends from Claim 352. Removal of the claim objection to Claim 360 is respectfully requested.

2. Section 112 Issues

Before discussing the prior art rejections of Claims 352-371, the Section 112 Issues with Claims 352, 360, 362, and 379 will be addressed first.

The Office Action alleges two separate deficiencies under 35 U.S.C. § 112 with respect to Claims 352, 360, 362, and 370. The deficiencies alleged with respect to Claims 362 and 370 mirror those alleged against Claims 352 and 360. Therefore, the discussion in this section will focus on the alleged deficiencies with respect to Claims 352 and 360 with the expectation that the Examiner will also apply the following discussion to Claims 362 and 370.

First, the Office Action contends under 35 U.S.C. § 112, second paragraph that Claim 360, which is a dependent claim of independent claim 352, is indefinite because the Markush group in Claim 360 of "(a) preamble correlation, (b) header error check, and (c) cyclic redundancy check" does not include "(d) forward error correction" that is included in the corresponding Markush group in Claim 352. *Office Action* at pages 14-15 (point 32). The Office Action is incorrect. The Markush group of Claim 360 narrows the corresponding Markush group of Claim 352 because the Markush group of Claim 360 includes a strict subset of the items in the corresponding Markush group of Claim 352. In other words, since the Markush group in Claim 360 and the corresponding Markush group in Claim 352 are closed groups, the one or more channel performance monitoring techniques in Claim 360 can include all of the techniques enumerated in the corresponding Markush group in Claim 352 except forward error correction. Thus, the Markush group of Claim 360 further limits the corresponding Markush group of Claim 352 by excluding forward error correction.

Second, the Office Action contends under 35 U.S.C. § 112, fourth paragraph, that Claim 360 fails to further limit base claim 352 or fails to include all limitations of base claim 352. Again, the Office Action is incorrect. Because the Markush group in Claim 360 and the corresponding Markush group in Claim 352 are closed groups, the one or more channel performance monitoring techniques in Claim 360 cannot include forward error correction as is

possible in Claim 352. Thus, the Markush group of Claim 360 further limits the corresponding Markush group of Claim 352.

Further, Claim 360 does not fail the so called "infringement test" for a proper dependent claim. In particular, the infringement test states that a proper dependent claim shall not conceivably be infringed by anything which would not also infringe the base claim. *See Manual of Patent Examining Procedure* (MPEP) § 608.01(n).III. In particular, since the Markush group in Claim 360 includes only items that are also included in the corresponding Markush group of Claim 352, there is no conceivable item in the Markush group of Claim 360 that is not also in the corresponding Markush group of Claim 352. As such, Claim 360 does not fail the so called infringement test.

Based on the foregoing, Claims 360 and 370 are not indefinite under 35 U.S.C. § 112, second paragraph and are not improper dependent claims under 35 U.S.C. § 112, fourth paragraph. Removal of the Section 112 rejections of Claims 360 and 370 is respectfully requested.

3. Gerten

With respect to the Claim 352 feature of "while communicating with a participant over a plurality of communications channels, determining first performance data that indicates performance of each of the plurality of communications channels at a first time based on one or more channel performance testing techniques selected from the group consisting of (a) special test packets and (b) received signal strength indicator", the Office Action cites to *Gerten* at column 9, lines 22-42.

And with respect to the Claim 352 feature of "while communicating with the participant over the first set of two or more communications channels, determining second performance data that indicates performance of each of the first set of two or more communications channels at a second time that is later than the first time based on one or more channel performance monitoring techniques selected from the group consisting of (a) preamble correlation, (b) header error check, (c) cyclic redundancy check and (d) forward error correction", the Office Action cites to *Gerten* at column 5, lines 34-35; column 8, lines 29 – column 10, line 5.

Gerten does describe avoiding channels with high interference, but does not disclose testing each of a plurality of channels "based on one or more channel performance testing techniques selected from the group consisting of (a) special test packets and (b) received signal

strength indicator" and then monitoring each channel in a selected set of channels "based on one or more channel performance monitoring techniques selected from the group consisting of (a) preamble correlation, (b) header error check, (c) cyclic redundancy check and (d) forward error correction" that were selected from the plurality of channels based on results of the one or more channel performance testing techniques, as recited in Claim 352.

Gerten does describe that the master device "performs a channel scan … and determines which channels have strongest interference." *Gerten* at column 4, lines 48-51. *Gerten* also describes that the master "periodically updates the channels to be avoided." *Gerten* at column 4, lines 58, 59. However, *Gerten* does not describe performing different techniques for testing channel performance during the channel scan that are different from the techniques for updating the channels to be avoided. By all accounts, *Gerten* performs the same technique when scanning for channels to avoid and for updating the channels to be avoided. In any event, *Gerten* does not appear to teach or suggest at least the following features of Claim 352 which involve performing different techniques to test the performance of each of the plurality of communications channels that are different from the techniques used to monitor the performance of each the first set of communications channels.

* * *

while communicating with a participant over a plurality of communications channels, determining first performance data that indicates performance of each of the plurality of communications channels at a first time based on one or more channel performance testing techniques selected from the group consisting of (a) special test packets and (b) received signal strength indicator;

* * *

while communicating with the participant over the first set of two or more communications channels, determining second performance data that indicates performance of each of the first set of two or more communications channels at a second time that is later than the first time based on one or more channel performance monitoring techniques selected from the group consisting of (a) preamble correlation, (b) header error check, (c) cyclic redundancy check and (d) forward error correction;

* * *

B. Claims 353-371, 592

Independent claims 362 and 592 recite features analogous to those of independent claim 352 discussed above, except in the context of a computer-readable medium carrying instructions and a communications apparatus, respectively. Thus, independent claims 362 and 592 are allowable

over *Gerten* for at least reasons analogous to those given above why independent claim 352 is allowable over *Gerten*.

Claims 353-361 and 363-371 are each dependent claims dependent on one of allowable independent claims 352 or 362, and are therefore allowable over *Gerten* at least by virtue of their dependency on an allowable independent claim 352 or 362. In addition, Claims 353-361 and 363-371 each recite additional features that independently render them patentable over *Gerten*. However, due to the fundamental issues identified above with respect to independent claims 352 and 362, a separate discussion of the additional features is not provided at this time. Bandspeed expressly reserves the right to separately argue the additional features at a later time.

XIV. Claims 372-383, 444-455, 516-527

Claims 372-383, 444-455, 516-527 stand rejected under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of these claims in the Office Action.

A. Claim 372

Claim 372 stands rejected under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of this claim in the Office Action.

Claim 372 recites:

A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives, from one or more participants, at least a specified number of votes, wherein each vote indicates a qualitative classification of the particular communications channel;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

Thus, the channel selection criteria of Claim 372 specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives, from one or more participants, at least a specified number of votes, wherein each vote indicates a qualitative classification of the particular communications channel. *Gendel* and *Schmidl* do not select channels based on participant voting.

1. Gendel

In *Gendel*, channel segments are selected in three situations that include: selecting an initial set of unused channel segments at startup, selecting erred channel segments that are to be replaced and selecting unused channel segments to replace erred channel segments. None of these selections of segments involves the use of voting in the manner recited. In fact, *Gendel* is devoid of any mention or suggestion of voting in any context. *Gendel* does not describe how the initial set of unused segments is assigned to the primary system 102 and secondary systems 104, 106 and there is no teaching or suggestion in *Gendel* that votes are used to select the initial set of used segments. *Gendel* describes only that the available spectrum is divided into segments in a manner such that the number of used segments for frequency hopping communications is less than the number of unused segments to provide a sufficient number of unused segments to replace used segments that need to be replaced. *Gendel*, column 7, lines 52-59.

In *Gendel*, selection of an erred channel segment is based on "when an error value for the erred segment has reached at least a predetermined threshold". *Gendel*, column 4, lines 21-22. There is no teaching or suggestion in *Gendel* that erred channel segments are selected for replacement using voting. The selection of an unused segment in *Gendel* is based merely on whether an unused segment "is not in use in the performance of FH communications" *Gendel*, column 3, lines 60-62. The only other description in *Gendel* of how unused segments are selected is that an unused segment that is selected to replace the erred segment preferably has the same number of frequencies as the erred segment being replaced. *Gendel*, column 4, lines 31-37.

Selecting an erred channel segment for replacement based on a corresponding error value reaching a predetermined threshold and selecting an unused channel segment to replace an erred channel segment based on whether the unused channel segment is currently in use is substantially different than an approach that selects channels based on participant voting.

Gendel describes that after one of the transceivers 102, 104, 106 has selected an erred segment to be replaced and an unused segment to replace the erred segment, the replacement of

the erred segment with the selected unused segment is accomplished using a replacement request. The replacement request is sent from the transceiver that completed the replacement determination to another transceiver and specifies the erred segment that has been selected for replacement and the unused segment selected to replace the erred segment. The transceiver 102, 104, 106 that receives a replacement request transmits an acknowledgment to the transceiver 102, 104, 106 that sent the replacement request. *Gendel*, column 12, lines 36-57.

The Office Action applies the *Gendel* reference by asserting that the replacement request and the acknowledgment of the replacement request of *Gendel* are votes. *Office Action*, Pages 243-245. The replacement request of *Gendel* is merely a notification from one transceiver 102, 104, 106 to another transceiver of a final decision that has previously been made to replace an erred segment with an unused segment. The replacement request identifies the erred segment that has been selected for replacement and the unused segment that has been selected to replace the erred segment. Notably, the replacement request is generated and transmitted only after the erred segment and the unused segment have already been selected and the replacement determination has been completed. The purpose of the replacement request and acknowledgment are to coordinate the handover of communications from the erred segment to the unused segment.

The replacement request and acknowledgement in *Gendel* cannot be considered to be votes, because the replacement request and the acknowledgment in *Gendel* are not used to select the erred segment to be replaced or the unused segment to replace the erred segment. Furthermore, it is not possible for the replacement request and acknowledgement to be votes and used to select the erred segment and the unused segment, since the replacement request and the acknowledgement do not exist until after the erred segment and the unused segment have been selected. In contrast, in Claim 372, participant votes are used to determine whether the particular communications channel should be selected for communications.

Accordingly, Bandspeed asserts that *Gendel* fails to expressly or inherently disclose a method for selecting communications channels based on channel selection criteria that specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives, from one or more participants, at least a specified number of votes, wherein each vote indicates a qualitative classification of the particular communications channel, as recited in Claim 372.

The TPR asserts that *Gendel* discloses the channel selection criteria of Claim 372. *TPR's First Comments* at page 135. As explained above, *Gendel* does not select channels based on participant voting. As noted by the TPR, instead, *Gendel* identifies a bad segment for replacement when the error value for the segment exceeds a predetermined threshold. Thus, by the TPR's own admission, the criteria for selecting a channel in *Gendel* is when an error value exceeds a predetermined threshold, not whether the channel does or does not receive vote from a participant. As such, *Gendel* does not select channels based on participant voting.

Based on the foregoing, it is respectfully submitted that *Gendel* does not anticipate Claim 372.

2. Schmidl

Schmidl describes that a master device determines which channels of a frequency hopping system contain a strong interferer and then communicates to one or more slaves the channels that are to be avoided, thus creating a reduced hopping sequence. *Schmidl*, column 2:34-45. The master device measures the quality of radio frequency channels in the frequency hopping system and identifies which of those channels are not suitable for use. The two methods described in *Schmidl* for choosing the reduced hopping sequence are: 1) the master tests each of the channels in the frequency hopping system; and 2) the master determines whether to use predetermined groups of channels (frequency groups). *Schmidl*, column 3:25-50. *Schmidl* also describes that these tasks performed by the master could be assigned to a slave unit. *Schmidl*, column 4:24-28.

The frequency hopping system of *Schmidl* does not using voting to select RF channels to avoid. *Schmidl* is devoid of any mention or suggestion of voting. Instead, *Schmidl* clearly discloses determining RF channels to avoid, by removal from the frequency hopping sequence, based on "a probing technique that measures the quality of RF channels." *Schmidl*, column 2, lines 21-22 (emphasis added). In one instance, RF channel quality is measured using the measurement '$[E_b/(N_0 + I_0)]$ where "Eb" stands for bit error, "N" stands for noise and "I" stands for interference, the RSSI (received signal strength indicator) or some other signal quality indicator is measured for each of the RF channels in the standard hopping sequence…. Alternatively, the master radio can simply monitor the [Packet Error Rate] on each channel to find which RF channels in the standard hopping sequence have a large PER and should be avoided.' *Schmidl*, column 2, lines 25-28 (emphasis added). Removing an RF channel from a

frequency hopping sequence based on measured or monitored channel quality is entirely different than selecting channels based on participant voting.

Schmidl makes clear that its removal of RF channels from the frequency hopping sequence is based on "determin[ing], using one of the previously discussed techniques, if interference is present in any of the Bluetooth RF channels." *Schmidl*, column 3, lines 52-55. The "previously discussed techniques" in the quoted portion of *Schmidl* refer to the RF channel quality measurement and monitoring techniques discussed above. *See Schmidl*, column 2, lines 13-33. *Schmidl* says nothing about selecting communications channel based on whether the RF channel receives or does not receive votes from participants.

Given the clarity of *Schmidl's* description of criteria for removing RF channels from the frequency hopping sequence based on channel quality measurements, *Schmidl's* disclosure of removing RF channels based on large packet error rate is simply one example criterion for avoiding RF channels based on channel quality measurements, in this case packet error rate, and is not a disclosure of the recited channel selection criteria. The channel quality measurements of *Schmidl*, which are described in *Schmidl* to include a received signal strength indicator (RSSI) and bit error rate (BER) cannot be the recited votes because the channel quality measurements of *Schmidl* do not specify that a particular RF channel should or should not be selected for communications. Even when used to determine whether an RF channel should be removed from the frequency hopping sequence, the channel quality measurements do not specify whether an RF channel should be removed from the frequency hopping sequence. The channel quality measurements of *Schmidl* cannot therefore be considered to be votes.

Accordingly, Bandspeed asserts that *Schmidl* fails to expressly or inherently disclose a method involving selecting communications channels based on channel selection criteria that specifies that for a particular communications channel to be selected from the plurality of communications channels, "the particular communications channel receives, from one or more participants, at least a specified number of votes, wherein each vote indicates a qualitative classification of the particular communications channel", as recited in Claim 372.

The TPR asserts that *Schmidl* discloses the channel selection criteria of Claim 372. *TPR's First Comments* at page 135. As explained above, *Schmidl* selects frequencies based on measured channel quality, not based on votes by participants. The portions of *Schmidl* cited by the TPR do not say anything about voting or participant voting or channel selection criteria based

on participant voting. Instead, the cited portions describe determining frequencies having strong interferers based on channel quality measurements and avoiding the frequencies that have strong interferers when frequency hopping. Contrary to the TPR's contention, there is nothing about participant voting in *Schmidl*.

Based on the foregoing, it is respectfully submitted that *Schmidl* does not anticipate Claim 372.

3. Conclusion

Because neither *Gendel* nor *Schmidl* anticipates Claim 372, confirmation of the patentable of Claim 372 is respectfully requested.

B. Claims 373-383, 444-455, 516-527

Independent claims 444 and 516 recite features analogous to those of independent claim 372 discussed above, except in the context of a computer-readable medium carrying instructions and a communications channel selector apparatus, respectively. Thus, independent claims 444 and 516 are allowable over *Gendel* and *Schmidl* for at least reasons analogous to those given above why independent claim 372 is allowable over *Gendel* and *Schmidl*.

Claims 373-383, 445-455, 517-527 are each dependent claims dependent on one of allowable independent claims 372, 444, and 516, and are therefore allowable over *Gendel* and *Schmidl* at least by virtue of their dependency on an allowable independent claim 372, 444, or 516. In addition, Claims 373-383, 445-455, 517-527 each recite additional features that independently render them patentable over *Gendel* and *Schmidl*. However, due to the fundamental issues identified above with respect to independent claims 372, 444, and 516, a separate discussion of the additional features is not provided at this time. Bandspeed expressly reserves the right to separately argue the additional features at a later time.

XV. Claims 384-395, 456-467, 528-539

Claims 384-395, 456-467, 528-539 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of these claims in the Office Action.

A. Claim 384

Claim 384 stands rejected under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of this claim in the Office Action.

Claim 384 recites:

A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives, from one or more participants not performing the selecting, at least a specified number of votes to use the particular communications channel, wherein each vote indicates a qualitative classification of the particular communications channel;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

Thus, the channel selection criteria of Claim 384 specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives, from one or more participants not performing the selecting, at least a specified number of votes to use the particular communications channel, wherein each vote indicates a qualitative classification of the particular communications channel. *Gendel* and *Schmidl* do not select channels based on participant voting.

Bandspeed submits that *Gendel* and *Schmidl* do not teach or suggest selecting channels based on participant voting for at least the reasons explained above in Section XIV.A with respect to Claim 372. Thus, *Gendel* and *Schmidl* do not teach or suggest selecting channels based on the particular participant voting-based channel selection criteria of Claim 384.

Bandspeed also notes that, with respect to Claim 384, the specified number of votes to use the particular communications channel are not received from the participant selecting the first set of communications channels. Thus, even if, without conceding, *Gendel's* identification of an erred segment based on an associated error value exceeding a threshold is considered to be

a vote to use a channel (it cannot be since the erred segment is replaced and not used), *Gendel* still does not meet the requirements of Claim 384 because in *Gendel* the subsystem that compares the segment's error value to the threshold is the same subsystem that identifies the segment as erred. *See Gendel* at column 11, lines 44-52 (stating "subsystem 300 determines whether the error value of segment $S_{current}$ is greater than or equal to a predetermined threshold value (e.g., if ERR(S)>threshold value) (Step 618). If the error value of segment $S_{current}$ is greater than the threshold, then subsystem 300 marks the segment $S_{current}$ as a candidate for segment replacement (Step 616)." (emphasis added)). Note that *Gendel* describes the same subsystem, subsystem 300, as performing both the comparing and the marking steps (i.e., steps 616 and 618 of Gendel, Fig. 5). *Gendel* does not describe one subsystem performing the comparing step (i.e., Step 618) and another different subsystem performing the marking step (i.e., Step 616) based on the results of the comparing step.

Similarly, even if, without conceding, *Schmidl's* identification of a channel to avoid based on channel quality measurements is considered to be a vote to use a channel (it cannot be because the avoided channel is not used), *Schmidl* still does not meet the requirements of Claim 384 because in *Schmidl* the master or slave that makes the channel quality measurements is the same communications entity that determines the channels to avoid. *See Schmidl* at column 4, lines 24-29 (stating "Although the above discussion has focused on the Bluetooth master as the device in the Bluetooth system that monitors for interferers, and transmits messages to the slave units, in an alternate embodiment, one or more of the slave units in the system could be assigned to perform these tasks.). *Schmidl* does not describe the master making channel quality measurements and a slave determining channels to avoid based on the channel quality measurements made by the master. Similarly, *Schmidl* does not describe a slave making channel quality measurements and the master determining channels to avoid based on the channel quality measurements made by the slave.

Because neither *Gendel* nor *Schmidl* anticipates Claim 384, confirmation of the patentable of Claim 384 is respectfully requested.

B. Claims 385-395, 456-467, 528-539

Independent claims 456 and 528 recite features analogous to those of independent claim 384 discussed above, except in the context of a computer-readable medium carrying instructions and a communications channel selector apparatus, respectively. Thus, independent claims 456

and 528 are allowable over *Gendel* and *Schmidl* for at least reasons analogous to those given above why independent claim 384 is allowable over *Gendel* and *Schmidl*.

Claims 385-395, 457-467, 529-539 are each dependent claims dependent on one of allowable independent claims 384, 456, and 528, and are therefore allowable over *Gendel* and *Schmidl* at least by virtue of their dependency on an allowable independent claim 384, 456, or 528. In addition, Claims 385-395, 457-467, 529-539 each recite additional features that independently render them patentable over *Gendel* and *Schmidl*. However, due to the fundamental issues identified above with respect to independent claims 384, 456, and 528, a separate discussion of the additional features is not provided at this time. Bandspeed expressly reserves the right to separately argue the additional features at a later time.

XVI. Claims 396-407, 468-479, 540-551

Claims 396-407, 468-479, 540-551 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of these claims in the Office Action.

A. Claim 396

Claim 396 stands rejected under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of this claim in the Office Action.

Claim 396 recites:

A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:

a participant receiving, from one or more other participants, one or more votes for a particular communications channel from a plurality of communications channels, wherein each vote indicates a qualitative classification of the particular communications channel;

the participant selecting, based upon performance of the plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the first set of two or more communications channels includes the particular communications channel and the channel selection criteria specifies that for the particular communications channel to be selected, the particular communications channel receives at least a specified number of votes;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

Thus, the channel selection criteria of Claim 396 specifies that for a particular communications channel to be selected, the particular communications channel receives at least a specified number of votes. *Gendel* and *Schmidl* do not select channels based on participant voting.

Bandspeed submits that *Gendel* and *Schmidl* do not teach or suggest selecting channels based on participant voting for at least the reasons explained above in Section XIV.A with respect to Claim 372. Thus, *Gendel* and *Schmidl* do not teach or suggest selecting channels based on the particular participant voting-based channel selection criteria of Claim 396.

Bandspeed also notes that, with respect to Claim 396, the one or more votes received by the participant are from one or more participants other than the participant that selects the first set of communications channels. Thus, even if, without conceding, *Gendel's* identification of an erred segment based on an associated error value exceeding a threshold is considered to be a vote to use a channel (it cannot be since the erred segment is replaced and not used), *Gendel* still does not meet the requirements of Claim 396 because in *Gendel* the subsystem that compares the segment's error value to the threshold is the same subsystem that identifies the segment as erred. *See Gendel* at column 11, lines 44-52 (stating "subsystem 300 determines whether the error value of segment $S_{current}$ is greater than or equal to a predetermined threshold value (e.g., if ERR(S)>threshold value) (Step 618). If the error value of segment $S_{current}$ is greater than the threshold, then subsystem 300 marks the segment $S_{current}$ as a candidate for segment replacement (Step 616)." (emphasis added)). Note that *Gendel* describes the same subsystem, subsystem 300, as performing both the comparing and the marking steps (i.e., steps 616 and 618 of Gendel, Fig. 5). *Gendel* does not describe one subsystem performing the comparing step (i.e., Step 618) and another different subsystem performing the marking step (i.e., Step 616) based on the results of the comparing step.

Similarly, even if, without conceding, *Schmidl's* identification of a channel to avoid based on channel quality measurements is considered to be a vote to use a channel (it cannot be because the avoided channel is not used), *Schmidl* still does not meet the requirements of Claim

396 because in *Schmidl* the master or slave that makes the channel quality measurements is the same communications entity that determines the channels to avoid. *See Schmidl* at column 4, lines 24-29 (stating "Although the above discussion has focused on the Bluetooth master as the device in the Bluetooth system that monitors for interferers, and transmits messages to the slave units, in an alternate embodiment, one or more of the slave units in the system could be assigned to perform these tasks.). *Schmidl* does not describe the master making channel quality measurements and a slave determining channels to avoid based on the channel quality measurements made by the master. Similarly, *Schmidl* does not describe a slave making channel quality measurements and the master determining channels to avoid based on the channel quality measurements made by the slave.

Because neither *Gendel* nor *Schmidl* anticipates Claim 396, confirmation of the patentable of Claim 396 is respectfully requested.

B. 397-407, 468-479, 540-551

Independent claims 468 and 540 recite features analogous to those of independent claim 396 discussed above, except in the context of a computer-readable medium carrying instructions and a communications channel selector apparatus, respectively. Thus, independent claims 468 and 540 are allowable over *Gendel* and *Schmidl* for at least reasons analogous to those given above why independent claim 396 is allowable over *Gendel* and *Schmidl*.

Claims 397-407, 469-479, 541-551 are each dependent claims dependent on one of allowable independent claims 396, 468, and 540, and are therefore allowable over *Gendel* and *Schmidl* at least by virtue of their dependency on an allowable independent claim 396, 468, or 540. In addition, Claims 397-407, 469-479, 541-551 each recite additional features that independently render them patentable over *Gendel* and *Schmidl*. However, due to the fundamental issues identified above with respect to independent claims 396, 468, and 540, a separate discussion of the additional features is not provided at this time. Bandspeed expressly reserves the right to separately argue the additional features at a later time.

XVII. Claims 408-419, 480-491, 552-563

Claims 408-419, 480-491, 552-563 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of these claims in the Office Action.

A. Claim 408

Claim 408 stands rejected under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of this claim in the Office Action.

Claim 408 recites:

A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:

receiving, from one or more participants, one or more votes to use a particular communications channel from a plurality of communications channels;

selecting, based upon performance of a plurality of communications channels at a first time, the one or more votes to use the particular communications channel and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the first set of two or more communications channels includes the particular communications channel and the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives at least a specified number of votes to use the particular communications channel from one or more participants;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

Thus, the channel selection criteria of Claim 408 specifies that for a particular communications channel to be selected, the particular communications channel receives at least a specified number of votes to use the particular communications channel from one or more participants. *Gendel* and *Schmidl* do not select channels based on participant voting.

Bandspeed submits that *Gendel* and *Schmidl* do not teach or suggest selecting channels based on participant voting for at least the reasons explained above in Section XIV.A with respect to Claim 372. Thus, *Gendel* and *Schmidl* do not teach or suggest selecting channels based on the particular participant voting-based channel selection criteria of Claim 408.

Because neither *Gendel* nor *Schmidl* anticipates Claim 408, confirmation of the patentable of Claim 408 is respectfully requested.

B. Claims 409-419, 480-491, 552-563

Independent claims 480 and 552 recite features analogous to those of independent claim 408 discussed above, except in the context of a computer-readable medium carrying instructions and a communications channel selector apparatus, respectively. Thus, independent claims 480 and 552 are allowable over *Gendel* and *Schmidl* for at least reasons analogous to those given above why independent claim 408 is allowable over *Gendel* and *Schmidl*.

Claims 409-419, 481-491, 553-563 are each dependent claims dependent on one of allowable independent claims 408, 480, and 552, and are therefore allowable over *Gendel* and *Schmidl* at least by virtue of their dependency on an allowable independent claim 408, 480, or 552. In addition, Claims 409-419, 481-491, 553-563 each recite additional features that independently render them patentable over *Gendel* and *Schmidl*. However, due to the fundamental issues identified above with respect to independent claims 408, 480, and 552, a separate discussion of the additional features is not provided at this time. Bandspeed expressly reserves the right to separately argue the additional features at a later time.

XVIII. Claims 420-431, 492-503, 564-575

Claims 420-431, 492-503, 564-575 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of these claims in the Office Action.

A. Claim 420

Claim 420 stands rejected under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of this claim in the Office Action.

Claim 420 recites:

> A method for selecting communications channels for a communications system that supports the Bluetooth communications protocol, the method comprising the computer-implemented steps of:
>
> selecting, based upon performance of seventy nine communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the seventy nine communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the seventy nine communications channels, the particular communications channel receives at least a specified number of votes from one or more participants, wherein each vote indicates a qualitative classification of the particular communications channel;

selecting, based upon performance of the seventy nine communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the seventy nine communications channels;
wherein the communications system is a frequency hopping communications system and the seventy nine communications channels correspond to a set of frequencies to be used based on a hopping sequence according to the Bluetooth frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

Thus, the channel selection criteria of Claim 420 specifies that for a particular communications channel to be selected from the seventy nine communications channels, the particular communications channel receives at least a specified number of votes from one or more participants, wherein each vote indicates a qualitative classification of the particular communications channel. *Gendel* and *Schmidl* do not select channels based on participant voting.

Bandspeed submits that *Gendel* and *Schmidl* do not teach or suggest selecting channels based on participant voting for at least the reasons explained above in Section XIV.A with respect to Claim 372. Thus, *Gendel* and *Schmidl* do not teach or suggest selecting channels based on the particular participant voting-based channel selection criteria of Claim 420.

Because neither *Gendel* nor *Schmidl* anticipates Claim 420, confirmation of the patentable of Claim 420 is respectfully requested.

B. Claims 421-431, 492-503, 564-575

Independent claims 492 and 564 recites features analogous to those of independent claim 420 discussed above, except in the context of a computer-readable medium carrying instructions and a communications channel selector apparatus, respectively. Thus, independent claims 492 and 564 are allowable over *Gendel* and *Schmidl* for at least reasons analogous to those given above why independent claim 420 is allowable over *Gendel* and *Schmidl*.

Claims 421-431, 493-503, 565-575 are each dependent claims dependent on one of allowable independent claims 420, 492, and 564, and are therefore allowable over *Gendel* and *Schmidl* at least by virtue of their dependency on an allowable independent claim 420, 492, or 564. In addition, Claims 421-431, 493-503, 565-575 each recite additional features that independently render them patentable over *Gendel* and *Schmidl*. However, due to the fundamental issues identified above with respect to independent claims 420, 492, and 564, a separate discussion of the additional features is not provided at this time. Bandspeed expressly reserves the right to separately argue the additional features at a later time.

XIX. Claims 432-443, 504-515, 576-587

Claims 432-443, 504-515, 576-587 stand rejected variously under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of these claims in the Office Action.

A. Claim 432

Claim 432 stands rejected under 35 U.S.C. § 102 as anticipated by *Gendel* and under 35 U.S.C. § 102 as anticipated by *Schmidl*. These are the only prior art rejections of this claim in the Office Action.

Claim 432 recites:

> A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:
>
> selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least a specified number of votes to use the particular communications channel from one or more participants not performing the selecting and the particular communications channel is not designated to not be used;
>
> selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
>
> wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
>
> wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

The channel selection criteria of Claim 432 specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least a specified number of votes to use the particular communications channel from one or more participants not performing the selecting and the particular communications channel is not designated to not be used. *Gendel* and *Schmidl* do not select channels based on participant voting.

Bandspeed submits that *Gendel* and *Schmidl* do not teach or suggest selecting channels based on participant voting for at least the reasons explained above in Section XIV.A with

respect to Claim 372. Thus, *Gendel* and *Schmidl* do not teach or suggest selecting channels based on the particular participant voting-based channel selection criteria of Claim 432.

The TPR incorrectly interprets the portion of channel selection criteria of Claim 432 of "the particular communications channel is not designated to not be used" as "the particular communications is designated to be used". *TPR's First Comments* at page 155. In doing so, the TPR ignores the literal language of Claim 432 that requires that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel is not designated to not be used. Claim 432 requires that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel must both receive at least a specified number of votes to use the particular communications channel from one or more participants not performing the selecting and the particular communications channel is not designated to not be used.

Bandspeed also notes that, with respect to Claim 432, the specified number of votes to use the particular communications channel is received from one or more participants not selecting the first set of communications channels. Thus, even if, for purposes of discussion only, *Gendel's* identification of an erred segment based on an associated error value exceeding a threshold is considered to be a vote to use a channel, *Gendel* still does not teach or suggest the requirements of Claim 384 because in *Gendel* the subsystem that compares the segment's error value to the threshold is the same subsystem that identifies the segment as erred. *See Gendel* at column 11, lines 44-52 (stating "subsystem 300 determines whether the error value of segment $S_{current}$ is greater than or equal to a predetermined threshold value (e.g., if ERR(S)>threshold value) (Step 618). If the error value of segment $S_{current}$ is greater than the threshold, then subsystem 300 marks the segment $S_{current}$ as a candidate for segment replacement (Step 616)." (emphasis added)). Note that *Gendel* describes the same subsystem, subsystem 300, as performing both the comparing and the marking steps (i.e., steps 616 and 618 of Gendel, Fig. 5). *Gendel* does not describe one subsystem performing the comparing step (i.e., Step 618) and another different subsystem performing the marking step (i.e., Step 616) based on the results of the comparing step.

Similarly, even if, for purposes of discussion only, *Schmidl's* identification of a channel to avoid based on channel quality measurements was considered to be a vote to use a channel, *Schmidl* still does not teach or suggest the requirements of Claim 432 because in *Schmidl* the

master or slave that makes the channel quality measurements is the same communications entity that determines the channels to avoid. *See Schmidl* at column 4, lines 24-29 (stating "Although the above discussion has focused on the Bluetooth master as the device in the Bluetooth system that monitors for interferers, and transmits messages to the slave units, in an alternate embodiment, one or more of the slave units in the system could be assigned to perform these tasks.). *Schmidl* does not describe, for example, the master making channel quality measurements and a slave determining channels to avoid based on the channel quality measurements made by the master. Similarly, *Schmidl* does not describe a slave making channel quality measurements and the master determining channels to avoid based on the channel quality measurements made by the slave.

Because neither *Gendel* nor *Schmidl* anticipates Claim 432, confirmation of the patentable of Claim 432 is respectfully requested.

B. Claims 433-443, 504-515, 576-587

Independent claims 504 and 576 recites features analogous to those of independent claim 432 discussed above, except in the context of a computer-readable medium carrying instructions and a communications channel selector apparatus, respectively. Thus, independent claims 504 and 576 are allowable over *Gendel* and *Schmidl* for at least reasons analogous to those given above why independent claim 432 is allowable over *Gendel* and *Schmidl*.

Claims 433-443, 505-515, 577-587 are each dependent claims dependent on one of allowable independent claims 432, 504, and 576, and are therefore allowable over *Gendel* and *Schmidl* at least by virtue of their dependency on an allowable independent claim 432, 504, or 576. In addition, Claims 433-443, 505-515, 577-587 each recite additional features that independently render them patentable over *Gendel* and *Schmidl*. However, due to the fundamental issues identified above with respect to independent claims 432, 504, and 576, a separate discussion of the additional features is not provided at this time. Bandspeed expressly reserves the right to separately argue the additional features at a later time.

XX. Claim Objections

Claims 108, 109, and 360 are objected to for various informalities. *See Office Action* at point 25, page 12. It is respectfully submitted that the identified informalities are corrected by this amendment.

XXI. Section 112 Rejections

Pages 13-17 of the Office Action contain various rejections of claims under 35 U.S.C. § 112. In particular:

- At Office Action, point 29, pages 13-14, Claims 43-74, 297-303 are rejected under 35 U.S.C. § 112, first paragraph for the recitation of "hop selection mechanism".
- At Office Action, point 31, page 14, Claims 137, 146, 165, 191, 201, 221, 242, 252, 272, 381, 393, 405, 417, 429, 441, 453, 465, 477, 489, 501, 513, 525, 537, 549, 561, 573, 585 are rejected under 35 U.S.C. § 112, second paragraph for lack of clarity.
- At Office action, point 32, pages 14-15, Claims 360 and 370 are rejected under 35 U.S.C. § 112, second paragraph for lack of clarity.
- At Office Action, point 34, page 15, Claims 360 and 370 are rejected under 35 U.S.C. § 112, fourth paragraph as improper dependent claims.
- At Office Action, point 35, page 15, Claim 435 is rejected under 35 U.S.C. § 112, fourth paragraph as an improper dependent claim.

A. Point 29

It is respectfully submitted that this rejection is overcome by the amendments herein to Claims 43, 50, 297, 298, 299, 301, 302, and 303 that replace the recitations of "hop selection mechanism" in those claims with "hop selection kernel". Sufficient written description support for "hop selection kernel" exists in the Specification. *See, e.g., Bandspeed Patent* at column 19, lines 1 – column 20, line 42; figures 5A, 5B. Removal of this rejection is respectfully requested.

B. Point 31

It is respectfully submitted that Claims 137, 146, 165, 191, 201, 221, 242, 252, 272, 381, 393, 405, 417, 429, 441, 453, 465, 477, 489, 501, 513, 525, 537, 549, 561, 573, 585 do not lack clarity for at least the reasons provided above in Section I.A.C. Removal of this rejection is respectfully requested.

C. Point 32

It is respectfully submitted that Claims 360 and 370 do not lack clarity for at least the reasons provided above in Section XIII.A.2. Removal of this rejection is respectfully requested.

D. Point 34

It is respectfully submitted that Claims 360 and 370 are proper dependent claims for at least the reasons provided above in Section XIII.A.2. Removal of this rejection is respectfully requested.

E. Point 35

Claim 435 is canceled rendering this rejection moot. Removal of this rejection is respectfully requested.

XXII. Amendments to the Claims

1. (Canceled)

2. (Amended) [The method as recited in claim 1]A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

3. (Amended) The method as recited in claim [1]2, wherein the plurality of communications channels communicatively couple at least a plurality of wireless devices.

4. The method as recited in claim 3, wherein the plurality of wireless devices includes one or more mobile devices.

5. (Amended) The method as recited in claim [1]2, further comprising the steps of:

generating first channel identification data that identifies the first set of two or more communications channels;

transmitting the first channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

generating second channel identification data that identifies the second set of two or more communications channels; and

transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

6. (Amended) [The method as recited in claim 1,]A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein:

the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes;

each participant in a plurality of participants except for a particular participant casts one vote of the plurality of votes; and

the particular participant casts a second specified number of votes;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

7. (Amended) The method as recited in claim [1]2, wherein the channel selection criteria include a channel performance threshold.

8. (Amended) The method as recited in claim [1]2, further comprising the steps of:

generating first channel performance data that indicates the performance of the plurality of communications channels at the first time; and

generating second channel performance data that indicates the performance of the plurality of communications channels at the second time.

9. (Amended) [The method as recited in claim 1,]A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein:

the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives a specified number of votes to use the particular communications channel from among a plurality of votes; and

each participant in a plurality of participants casts one vote of the plurality of votes;
selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

10. (Amended) The method as recited in claim [1]2, further comprising the steps of:
communicating, prior to the second time, over the first set of two or more communications channels, according to the frequency hopping protocol; and
communicating, after a third time that is not earlier than the second time, over the second set of two or more communications channels, according to the frequency hopping protocol.

11. (Amended) The method as recited in claim [1]2, further comprising the steps of:
determining the performance of the plurality of communications channels at the first time; and
determining the performance of the plurality of communications channels at the second time.

12. (Amended) The method as recited in claim [1]2, wherein the performance of the plurality of communications channels is based on channel performance data that is transmitted over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

13. The method as recited in claim 12, wherein the performance of the plurality of communications channels is based on additional channel performance data that is based on transmitting the channel performance data over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

14. A method for selecting communications channels for a frequency hopping communications system, the method comprising the computer-implemented steps of:
selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, and wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;
determining, based upon performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy the channel selection criteria; and

if the number of communications channels from the first set of two or more communications channels that satisfy the channel selection criteria at the second time is less than a specified number, then

selecting, based upon performance of the plurality of communications channels at a third time that is later than the second time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels in the frequency hopping communications system.

15. (Amended) A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:

selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels[,];

wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;[and]

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion; and

if the number of communications channels from the first set of two or more communications channels is less than a specified number, then:

selecting, based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;

generating second identification data that identifies the second set of two or more communications channels;

providing the second identification data to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

communicating with the participant over the second set of two or more communications channels.

16. The method of claim 15, wherein the participant is selected from the group consisting of a wireless device and a mobile device.

17. The method of claim 15, wherein the first performance data indicates performance for each communications channel of the plurality of communications channels.

18. (Amended) [The method of claim 15,]A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:
selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;
generating first identification data that identifies the first set of two or more communications channels;
providing the first identification data to the participant;
communicating with the participant over the first set of two or more communications channels;
wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and
wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;
wherein the step of providing the first identification data to the participant comprises the computer-implemented steps of:
encrypting the first identification data; and
providing the encrypted first identification data to the participant.

19. (Canceled)

20. The method as recited in claim 15, further comprising the computer-implemented step of:
after selecting the first set of two or more communications channels, causing the first set of two or more communications channels to be loaded into a register of the participant.

21. (Amended) The method of claim [19]15, wherein the participant is a first participant, and wherein the method further comprises the computer-implemented steps of:
providing the first identification data to a second participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and
communicating with the second participant over the first set of two or more communications channels while communicating with the first participant over the second set of two or more communications channels.

22. (Amended) The method of claim [19]15, wherein:
the second set of two or more communications channels is different than the first set of two or more communications channels; and

the first performance criterion is different than the second performance criterion.

23. The method as recited in claim 15, wherein the participant is a first participant, wherein a default set of two or more communications channels is associated with the hopping sequence and is not changed based on the performance of the plurality of communications channels, and the method further comprises the computer-implemented steps of:

communicating with a second participant over the default set of two or more communications channels while communicating with the first participant over the first set of two or more communications channels.

24. The method of claim 15, wherein the step of selecting the first set of two or more communications channels comprises the computer-implemented steps of:

classifying the performance of at least one communications channel of the plurality of communications channels based on the first performance data and one or more classification criteria that includes at least the first performance criterion; and

selecting the first set of two or more communications channels based on the at least one classified communications channel and one or more selection criteria.

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. The method of claim 15, wherein the first performance data for the plurality of communications channels is determined by the computer-implemented steps of:

transmitting first data to the participant over at least one communications channel of the plurality of communications channels;

receiving, from the participant, second data that indicates a measurement of performance of the at least one communications channel, wherein the measurement is based on transmitting the first data over the at least one communications channel; and

determining the first performance data based on at least the second data.

29. The method of claim 15, wherein the first performance data for the plurality of communications channels is determined by the computer-implemented steps of:

transmitting first data to the participant over at least one communications channel of the plurality of communications channels;

receiving, from the participant over at least one additional communications channel of the plurality of communications channels, second data that indicates a measurement of performance of the at least one communications channel based on transmitting the first data over the at least one communications channel;

generating an additional measurement of performance of the at least one additional communications channel based on receiving the second data over the at least one additional communications channel; and

determining the first performance data based on at least the second data and the additional measurement.

30. The method of claim 15, wherein the first performance data for the plurality of communications channels is determined by the computer-implemented steps of:

transmitting first data to the participant over at least one communications channel of the plurality of communications channels, wherein the first data includes one or more copies of a specified data string;

receiving, from the participant, second data that indicates a measurement of performance of the at least one communications channel based on whether errors occur in the one or more copies of the specified data string of the first data as a result of transmitting the first data to the participant over the at least one communications channel; and

determining the first performance data based on at least the second data.

31. The method of claim 30, wherein the first data is a data packet and wherein the one or more copies of the specified data string are included in a portion of the data packet selected from the group consisting of a payload portion of the data packet and a preamble portion of the data packet.

32. The method of claim 15, wherein:

the participant is designated to be a slave; and

a master performs the steps of selecting, generating, providing, and communicating.

33. The method of claim 15, wherein the first performance data for the plurality of communications channels is based on a channel performance testing technique selected from the group consisting of a received signal strength indicator, a header error check, a cyclic redundancy check, a packet loss ratio, a number of error bits, and forward error correction.

34. The method of claim 15, wherein the first performance data for the plurality of communications channels is determined by the computer-implemented steps of:

performing a specified number of communications channel performance tests on each communication channel in the plurality of communications channels; and

determining the first performance data based on results of the specified number of communications channel performance tests.

35. The method of claim 15, wherein the first performance data for the plurality of communications channels is determined by the computer-implemented steps of:

performing a specified number of communications channel performance tests on each communication channel in the plurality of communications channels;

receiving channel performance data from the participant;

determining the first performance data based on results of the specified number of communications channel performance tests and the channel performance data from the participant.

36. The method of claim 15, wherein the participant is a first participant, and wherein the method further comprises the computer-implemented steps of:

providing the first identification data to a second participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

communicating with the second participant over the first set of two or more communications channels.

37. The method of claim 15, wherein the participant is a first participant, and wherein the method further comprises the computer-implemented steps of:

communicating with a second participant over the plurality of communications channels.

38. The method of claim 15, wherein the step of communicating with the participant over the first set of two or more communications channels includes communicating with the participant over the first set of two or more communications channels according to a frequency hopping protocol defined by Institute of Electrical and Electronics Engineers 802.15.1 Wireless Personal Area Network Standard.

39. The method of claim 15, wherein the step of communicating with the participant over the first set of two or more communications channels includes communicating with the participant over the first set of two or more communications channels according to a frequency hopping protocol that conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

40. The method of claim 15, wherein the step of selecting the first set of two or more communications channels comprises the computer-implemented steps of:

classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and

selecting at least two communications channels of the plurality of communications channels that are classified as good.

41. A method for communicating among a network of communications devices according to a frequency hopping protocol, the method comprising the computer-implemented steps of:

determining first performance data for a plurality of communications channels based on one or more performance measurements of the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to the frequency hopping protocol, and wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of communications devices;

determining classifications, based on the first performance data and at least a first performance criterion, of at least two communications channels of the plurality of communications channels;

selecting, based upon the classifications of the at least two communications channels, a first set of two or more communications channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to a communications device of the network of communications devices over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

communicating with the communications device over the first set of two or more communications channels according to the frequency hopping protocol;

determining performance data for the first set of two or more communications channels; and

if the performance data indicates that at least a specified number of communications channels of the first set of two or more communications channels do not satisfy specified performance criteria, then

determining second performance data for the plurality of communications channels based on one or more additional performance measurements of the plurality of communications channels;

determining additional classifications, based on the second performance data and at least a second performance criterion, of at least two communications channels of the plurality of communications channels;

selecting, based upon the additional classifications of the at least two communications channels, a second set of two or more communications channels from the plurality of communications channels;

generating second identification data that identifies the second set of two or more communications channels;

providing the second identification data to the communications device of the network of communications devices over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

communicating with the communications device over the second set of two or more communications channels according to the frequency hopping protocol.

42. The method of claim 41, wherein the classifications include good and bad, and wherein the step of selecting the first set of two or more communications channels includes selecting the first set of two or more communications channels from communications channels that are determined to have classifications of good, and wherein the step of selecting the second set of two or more communications channels includes selecting the second set of two or more communications channels from communications channels that are determined to have classifications of good.

43. (Twice Amended) A communications device for use in a network of devices, comprising:

a memory containing identification data that identifies a first set of two or more communications channels from a plurality of communications channels, wherein channel performance of the first set of two or more communications channels and at least one performance criterion are used to select the first set of two or more communications channels;

a transceiver that is communicatively coupled to the memory and that is configured to transmit and receive, based on the identification data, over the first set of two or more communications channels, according to a frequency hopping protocol;

a hop selection kernel configured to output channel identification information identifying a channel of the plurality of communications channels;
a processor that is communicatively coupled to the memory, wherein the memory includes one or more sequences of instructions which, when executed by the processor, cause the processor to:
determine whether the channel identification information output by the hop selection kernel identifies a channel of the plurality of communications channels that is not in the first set of two or more communications channels; and
in response to determining that the channel identification information identifies a channel of the plurality of communications channels that is not in the first set of two or more communications channels, select a channel from the first set of two or more communications channels to use for frequency hopping communications in place of the channel identified by the channel identification information;
wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to the frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

44. The communications device of claim 43, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

45. (Amended) The communications device of claim 43, wherein the transceiver receives a transmission of first data from another device, and [wherein the communications device further comprises:
a processor that is communicatively coupled to the memory,]wherein the memory includes one or more sequences of instructions which, when executed by the processor, cause the processor to:
generate a measurement of channel performance based on the transmission of the first data;
wherein the transceiver transmits, to another communications device, second data that includes performance data that indicates the measurement of channel performance; and
wherein the first set of two or more communications channels is selected based at least in part on the measurement of channel performance.

46. (Amended) The communications device of claim 43, wherein the transceiver receives a transmission of first data from another device, wherein the first data includes one or more copies of a specified data string, and [wherein the communications device further comprises:
a processor that is communicatively coupled to the memory,]wherein the memory includes one or more sequences of instructions which, when executed by the processor, cause the processor to:
generate a measurement of channel performance based on whether errors occur in the one or more copies of the specified data string of the first data as a result of the transmission of the first data;
wherein the transceiver transmits second data, to another communications device, that includes performance data that indicates the measurement of channel performance; and

wherein the first set of two or more communications channels is selected based at least in part on the measurement of channel performance.

47. The communications device of claim 43, wherein: the communications device is designated to be a slave.

48. The communications device of claim 43, wherein:
the communications device is selected from the group consisting of a wireless communications device and a mobile communications device.

49. The communications device of claim 43, wherein the frequency hopping protocol is defined by Institute of Electrical and Electronics Engineers 802.15.1 Wireless Personal Area Network Standard.

50. (Twice Amended) A communications device for use in a network of devices, comprising:
a memory for storing one or more sequences of instructions;
a processor that is communicatively coupled to the memory, wherein the memory includes one or more sequences of instructions which, when executed by the processor, cause the processor to:
select, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;
generate and store in the memory first identification data that identifies the first set of two or more communications channels;
cause the first identification data to be transmitted to another communications device; and
responsive to obtaining channel identification information output by a hop selection kernel that identifies a channel of the plurality of communications channels,
determine whether the channel identification information output by the hop selection kernel identifies a channel of the plurality of communications channels that is not in the first set of two or more communications channels; and
use the channel identified by the channel identification information for frequency hopping communications with the other communications device, if the channel is in the first set of two or more communications channels, or else if the channel is not in the first set of two or more communications channels, then select a channel from the first set of two or more communications channels to use for frequency hopping communications with the other communications device instead of the channel identified by the channel identification information output by the hop selection kernel;
a transceiver that is communicatively coupled to the memory and that is configured to transmit to and receive from the other communications device, based on the first identification data, over the first set of two or more communications channels, according to a frequency hopping protocol, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and
the first identification data is transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

51. The communications device of claim 50, wherein:
the communications device is designated to be a first mobile device; and
the other communications device is designated to be a second mobile device.

52. The communications device of claim 50, wherein:
the communications device is designated to be a first wireless device; and
the other communications device is designated to be a second wireless device.

53. The communications device of claim 50, wherein:
the communications device is designated to be a master; and
the other communications device is designated to be a slave.

54. The communications device of claim 50, wherein the first performance data indicates performance for each communications channel of the plurality of communications channels.

55. The communications device of claim 50, wherein the memory includes one or more additional sequences of instructions which, when executed by the processor, cause the processor to:
encrypt the first identification data; and
cause the encrypted first identification data to be transmitted to the other communications device.

56. [The communications device of claim 50,]A communications device for use in a network of devices, comprising:
a memory for storing one or more sequences of instructions;
a processor that is communicatively coupled to the memory, wherein the memory includes one or more sequences of instructions which, when executed by the processor, cause the processor to:
select, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;
generate and store in the memory first identification data that identifies the first set of two or more communications channels;
cause the first identification data to be transmitted to another communications device;
a transceiver that is communicatively coupled to the memory and that is configured to transmit to and receive from the other communications device, based on the first identification data, over the first set of two or more communications channels, according to a frequency hopping protocol, wherein the plurality of communications channels

correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and

the first identification data is transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

wherein the memory includes one or more additional sequences of instructions which, when executed by the processor, cause the processor to:

select, based on second performance data that indicates performance of the plurality of communications channels at a second time that is different than the first time and at least a second performance criterion, a second set of two or more communications channels from the plurality of communications channels;

generate and store in the memory second identification data that identifies the second set of two or more communications channels;

cause the second identification data to be transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein the transceiver is configured to transmit to and receive from the other communications device, based on the second identification data, over the second set of two or more communications channels.

57. The communications device of claim 56, wherein the other communications device is a first communications device, and wherein the memory includes one or more additional sequences of instructions which, when executed by the processor, cause the processor to:

cause the first identification data to be transmitted to a second communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein the transceiver communicates with the second communications device over the first set of two or more communications channels while communicating with the first communications device over the second set of two or more communications channels.

58. The communications device of claim 56, wherein:

the second set of two or more communications channels is different than the first set of two or more communications channels; and

the first performance criterion is different than the second performance criterion.

59. The communications device of claim 50, wherein the one or more sequences of instructions that cause the processor to select the first set of two or more communications channels comprises one or more additional sequences of instructions which, when executed by the processor, cause the processor to:

classify, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels are good or bad; and

select at least two communications channels of the plurality of communications channels that are classified as good.

60. The communications device of claim 50, wherein the one or more sequences of instructions that cause the processor to select the first set of two or more communications channels comprises one or more additional sequences of instructions which, when executed by the processor, cause the processor to:

classify the performance of at least one communications channel of the plurality of communications channels based on the first performance data and one or more classification criteria that includes at least the first performance criterion; and

select the first set of two or more communications channels based on the at least one classified communications channel and one or more selection criteria.

61. The communications device of claim 50, wherein the memory includes one or more additional sequences of instructions which, when executed by the processor, cause the processor to:

after expiration of a specified amount of time,

select, based on second performance data that indicates performance of the plurality of communications channels and at least a second performance criterion, a second set of two or more communications channels from the plurality of communications channels;

generate and store in the memory second identification data that identifies the second set of two or more communications channels;

cause the second identification data to be transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein the transceiver is configured to transmit to and receive from the other communications device, based on the second identification data, over the second set of two or more communications channels.

62. The communications device of claim 50, wherein the memory includes one or more additional sequences of instructions which, when executed by the processor, cause the processor to:

determine, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion;

if the number of communications channels from the first set of two or more communications channels is less than a specified number, then:

select, based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;

generate second identification data that identifies the second set of two or more communications channels; and

cause the second identification data to be transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein the transceiver is configured to transmit to and receive from the other communications device, based on the second identification data, over the second set of two or more communications channels.

63. The communications device of claim 50, wherein the memory includes one or more additional sequences of instructions which, when executed by the processor, cause the processor to:

if performance data for at least one communications channel of the first set of two or more communications channels satisfies at least a second performance criterion, then:

select, based on second performance data that indicates performance of the plurality of communications channels at a different time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;

generate and store in the memory second identification data that identifies the second set of two or more communications channels;

cause the second identification data to be transmitted to the other communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein the transceiver is configured to transmit to and receive from the other communications device, based on the second identification data, over the second set of two or more communications channels.

64. The communications device of claim 50, wherein the transceiver is configured to:

transmit first data to the other communications device over at least one communications channel of the plurality of communications channels;

receive, from the other communications device, second data that indicates a measurement of performance of the at least one communications channel based on transmitting the first data over the at least one communications channel; and

wherein the memory includes one or more additional sequences of instructions which, when executed by the processor, cause the processor to: determine the first performance data based on at least the second data.

65. The communications device of claim 50, wherein the transceiver is configured to:

transmit first data to the other communications device over at least one communications channel of the plurality of communications channels;

receive from the other communications device over at least one additional communications channel of the plurality of communications channels, second data that indicates a measurement of performance of the at least one communications channel based on transmitting the first data over the at least one communications channel; and

wherein the memory includes one or more additional sequences of instructions which, when executed by the processor, cause the processor to:

generate an additional measurement of performance of the at least one additional communications channel based on receiving the second data over the at least one additional communications channel; and

determine the first performance data based on at least the second data and the additional measurement.

66. The communications device of claim 50, wherein the transceiver is configured to:
transmit first data to the other communications device over at least one communications channel of the plurality of communications channels,
wherein the first data includes one or more copies of a specified data string;
receive, from the other communications device, second data that indicates a measurement of performance of the at least one communications channel based on whether errors occur in the one or more copies of the specified data string of the first data as a result of transmitting the first data to the other communications device over the at least one communications channel; and
wherein the memory includes one or more additional sequences of instructions which, when executed by the processor, cause the processor to: determine the first performance data based on at least the second data.

67. The communications device of claim 66, wherein:
the first data is a data packet; and
the one or more copies of the specified data string are included in a portion of the data packet selected from the group consisting of a payload portion of the data packet and a preamble portion of the data packet.

68. The communications device of claim 50, wherein the transceiver is configured to transmit and receive over the first set of two or more communications channels according to a frequency hopping protocol that conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

69. The communications device of claim 50, wherein the first performance data for the plurality of communications channels is based on a channel performance testing technique selected from the group consisting of a received signal strength indicator, a header error check, a cyclic redundancy check, a packet loss ratio, a number of error bits, and forward error correction.

70. The communications device of claim 50, wherein the first performance data for the plurality of communications channels is determined by one or more additional sequences of instructions which, when executed by the processor, cause the processor to:
perform a specified number of communications channel performance tests on each communication channel in the plurality of communications channels; and
determine the first performance data based on results of the specified number of communications channel performance tests.

71. The communications device of claim 50, wherein the first performance data for the plurality of communications channels is determined by one or more additional sequences of instructions which, when executed by the processor, cause the processor to:
perform a specified number of channel performance tests on each communication channel in the plurality of communications channels;
receive channel performance data from the other communications device;

determine the first performance data based on results of the specified number of communications channel performance tests and the channel performance data from the other communications device.

72. The communications device of claim 50, wherein the transceiver is configured to:
transmit the first identification data to a third communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and
transmit to and receive from the third communications device, based on the first identification data, over the first set of two or more communications channels.

73. The communications device of claim 50, wherein the transceiver is configured to:
transmit to and receive from a third communications device over the plurality of communications channels.

74. The communications device of claim 50, wherein the transceiver is configured to transmit and receive over the first set of two or more communications channels according to a frequency hopping protocol defined by Institute of Electrical and Electronics Engineers 802.15.1 Wireless Personal Area Network Standard.

75. (Amended) A communications channel selector apparatus comprising:
means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel;
means for selecting, based upon the performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

76. The communications channel selector apparatus of claim 75, wherein the plurality of communications channels is associated with a communications system and wherein the communications channel selector apparatus further comprises:
means for generating first channel identification data that identifies the first set of two or more communications channels;
means for transmitting the first channel identification data to one or more participants in the communications system over one communications channel of the plurality of

communications channels based on the hopping sequence according to the frequency hopping protocol;

means for generating second channel identification data that identifies the second set of two or more communications channels; and

means for transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

77. The communications channel selector apparatus of claim 75, wherein the communications channel selector apparatus further comprises:

means for determining the performance of the plurality of communications channels at the first time; and

means for determining the performance of the plurality of communications channels at the second time.

78. (Amended) A communications apparatus comprising:

means for selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

means for generating first identification data that identifies the first set of two or more communications channels;

means for providing the first identification data to a participant;

means for communicating with the participant over the first set of two or more communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;

means for determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion;

means for selecting, when the number of communications channels from the first set of two or more communications channels is less than a specified number and based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;

means for generating, when the number of communications channels from the first set of two or more communications channels is less than the specified number, second identification data that identifies the second set of two or more communications channels;

means for providing, when the number of communications channels from the first set of two or more communications channels is less than the specified number, the second identification data to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

means for communicating, when the number of communications channels from the first set of two or more communications channels is less than the specified number, with the participant over the second set of two or more communications channels;
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and
wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

79. (Canceled)

80. (Canceled)

81. (Canceled)

82. (Canceled)

83. The communications device apparatus of claim 78, further comprising:
means for transmitting first data to the participant over at least one communications channel of the plurality of communications channels;
means for receiving, from the participant, second data that indicates a measurement of performance of the at least one communications channel based on transmitting the first data over the at least one communications channel; and
means for determining the first performance data based on at least the second data.

84. The communications device apparatus of claim 78, further comprising:
means for transmitting first data to the participant over at least one communications channel of the plurality of communications channels;
means for receiving, from the participant over at least one additional communications channel of the plurality of communications channels, second data that indicates a measurement of performance of the at least one communications channel based on transmitting the first data over the at least one communications channel;
means for generating an additional measurement of performance of the at least one additional communications channel based on receiving the second data over the at least one additional communications channel; and
means for determining the first performance data based on at least the second data and the additional measurement.

85. (Amended) A computer-readable medium carrying one or more sequences of instructions for selecting communications channels for a communications system, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:
selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected, the particular

communications channel (a) receives a specified number of affirmative votes to use the particular communications channel from a plurality of participants and (b) does not receive a negative vote from a particular participant to not use the particular communications channel;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

86. The computer-readable medium as recited in claim 85, wherein the plurality of communications channels communicatively couple at least a plurality of wireless devices.

87. The computer-readable medium as recited in claim 86, wherein the plurality of wireless devices includes one or more mobile devices.

88. The computer-readable medium as recited in claim 85, further comprising one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of:

generating first channel identification data that identifies the first set of two or more communications channels;

transmitting the first channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

generating second channel identification data that identifies the second set of two or more communications channels; and

transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

89. The computer-readable medium as recited in claim 85, wherein the channel selection criteria include a channel performance threshold.

90. The computer-readable medium as recited in claim 85, further comprising one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of:

generating first channel performance data that indicates the performance of the plurality of communications channels at the first time; and

generating second channel performance data that indicates the performance of the plurality of communications channels at the second time.

91. The computer-readable medium as recited in claim 85, further comprising one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of:

communicating, prior to the second time, over the first set of two or more communications channels, according to the frequency hopping protocol; and

communicating, after a third time that is not earlier than the second time, over the second set of two or more communications channels, according to the frequency hopping protocol.

92. The computer-readable medium as recited in claim 85, further comprising one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of:

determining the performance of the plurality of communications channels at the first time; and

determining the performance of the plurality of communications channels at the second time.

93. A computer-readable medium carrying one or more sequences of instructions for communicating among a network of communications devices according to a frequency hopping protocol, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

determining first performance data for a plurality of communications channels based on one or more performance measurements of the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to the frequency hopping protocol, and wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of communications devices;

determining classifications, based on the first performance data and at least a first performance criterion, of at least two communications channels of the plurality of communications channels;

selecting, based upon the classifications of the at least two communications channels, a first set of two or more communications channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to a communications device of the network of communications devices over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; communicating with the communications device over the first set of two or more communications channels according to the frequency hopping protocol;

determining performance data for the first set of two or more communications channels; and

if the performance data indicates that at least a specified number of communications channels of the first set of two or more communications channels do not satisfy specified performance criteria, then

determining second performance data for the plurality of communications channels based on one or more additional performance measurements of the plurality of communications channels;

determining additional classifications, based on the second performance data and at least a second performance criterion, of at least two communications channels of the plurality of communications channels;

selecting, based upon the additional classifications of the at least two communications channels, a second set of two or more communications channels from the plurality of communications channels;

generating second identification data that identifies the second set of two or more communications channels;

providing the second identification data to the communications device over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

communicating with the communications device over the second set of two or more communications channels according to the frequency hopping protocol.

94. A computer-readable medium carrying one or more sequences of instructions for selecting communications channels for a frequency hopping communications system, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, and wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;

determining, based upon performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy the channel selection criteria; and

if the number of communications channels from the first set of two or more communications channels that satisfy the channel selection criteria at the second time is less than a specified number, then

selecting, based upon performance of the plurality of communications channels at a third time that is later than the second time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels in the frequency hopping communications system.

95. (Amended) A computer-readable medium carrying one or more sequences of instructions for communicating with a participant in a communications arrangement, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

generating first identification data that identifies the first set of two or more communications channels;
providing the first identification data to the participant;
communicating with the participant over the first set of two or more communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and
wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;
determining, based on second performance data that indicates performance of the first set of two or more communications channels at a second time that is later than the first time, a number of communications channels from the first set of two or more communications channels that satisfy at least a second performance criterion;
if the number of communications channels from the first set of two or more communications channels is less than a specified number, then:
selecting, based on third performance data that indicates performance of the plurality of communications channels at a third time that is at or later than the second time and at least a third performance criterion, a second set of two or more communications channels from the plurality of communications channels;
generating second identification data that identifies the second set of two or more communications channels;
providing the second identification data to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and
communicating with the participant over the second set of two or more communications channels.

96. The computer-readable medium of claim 93, wherein: the classifications include good and bad;
the instructions that cause the one or more processors to perform the step of selecting the first set of two or more communications channels includes one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the step of selecting the first set of two or more communications channels from communications channels that are determined to have classifications of good; and
the instructions that cause the one or more processors to perform the step of selecting the second set of two or more communications channels includes one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the step of selecting the second set of two or more communications channels from communications channels that are determined to have classifications of good.

97. The computer-readable medium of claim 95, wherein: the participant is designated to be a slave; and

at least one processor in a master performs executes the instructions to perform the steps of selecting, generating, providing, and communicating.

98. The computer-readable medium of claim 95, wherein the instructions that cause the one or more processors to perform the step of selecting the first set of two or more communications channels comprises one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of:

classifying, based on the first performance data and at least the first performance criterion, at least two communications channels of the plurality of communications channels as good or bad; and

selecting at least two communications channels of the plurality of communications channels that are classified as good.

99. The computer-readable medium of claim 95, wherein the instructions that cause the one or more processors to perform the step of communicating with the participant over the first set of two or more communications channels includes one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the step of communicating with the participant over the first set of two or more communications channels according to a frequency hopping protocol that conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

100. The computer-readable medium of claim 95, wherein the instructions that cause the one or more processors to perform the step of communicating with the participant over the first set of two or more communications channels includes one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the step of communicating with the participant over the first set of two or more communications channels according to a frequency hopping protocol defined by Institute of Electrical and Electronics Engineers 802.15.1 Wireless Personal Area Network Standard.

101. The computer-readable medium of claim 95, wherein the participant is a first participant, and wherein the computer-readable medium further comprises one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the step of:

communicating with a second participant over the plurality of communications channels.

102. The computer-readable medium of claim 95, wherein the participant is a first participant, and wherein the computer-readable medium further comprises one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of:

providing the first identification data to a second participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

communicating with the second participant over the first set of two or more communications channels.

103. The computer-readable medium of claim 95, wherein the first performance data for the plurality of communications channels is determined by one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of:

performing a specified number of communications channel performance tests on each communication channel in the plurality of communications channels;

receiving channel performance data from the participant;

determining the first performance data based on results of the specified number of communications channel performance tests and the channel performance data from the participant.

104. The computer-readable medium of claim 95, wherein the first performance data indicates performance for each communications channel of the plurality of communications channels.

105. The computer-readable medium of claim 95, wherein the participant is selected from the group consisting of a wireless device and a mobile device.

106. (Amended) [The computer-readable medium of claim 95,]A computer-readable medium carrying one or more sequences of instructions for communicating with a participant in a communications arrangement, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

wherein the one or more sequences of instructions that cause the one or more processors to perform the step of providing the first identification data to the participant comprises one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the computer-implemented steps of:

encrypting the first identification data; and

providing the encrypted first identification data to the participant.

107. (Canceled)

108. (Amended) The computer-readable medium of claim [107]95, wherein the participant is a first participant, and wherein the computer-readable medium further comprises one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the computer-implemented steps of:

providing the first identification data to a second participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

communicating with the second participant over the first set of two or more communications channels while communicating with the first participant over the second set of two or more communications channels.

109. (Amended) The computer-readable medium of claim [107]95, wherein:

the second set of two or more communications channels is different than the first set of two or more communications channels; and

the first performance criterion is different than the second performance criterion.

110. The computer-readable medium of claim 95, wherein the one or more sequences of instructions that cause the one or more processors to perform the step of selecting the first set of two or more communications channels comprises one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the computer-implemented steps of:

classifying the performance of at least one communications channel of the plurality of communications channels based on the first performance data and one or more classification criteria that includes at least the first performance criterion; and

selecting the first set of two or more communications channels based on the at least one classified communications channel and one or more selection criteria.

111. (Canceled)

112. (Canceled)

113. (Canceled)

114. The computer-readable medium of claim 95, wherein the first performance data for the plurality of communications channels is determined by one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of:

transmitting first data to the participant over at least one communications channel of the plurality of communications channels;

receiving, from the participant, second data that indicates a measurement of performance of the at least one communications channel, wherein the measurement is based on transmitting the first data over the at least one communications channel; and

determining the first performance data based on at least the second data.

115. The computer-readable medium of claim 95, wherein the first performance data for the plurality of communications channels is determined by one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of:

transmitting first data to the participant over at least one communications channel of the plurality of communications channels;

receiving, from the participant over at least one additional communications channel of the plurality of communications channels, second data that indicates a measurement of performance of the at least one communications channel based on transmitting the first data over the at least one communications channel;

generating an additional measurement of performance of the at least one additional communications channel based on receiving the second data over the at least one additional communications channel; and

determining the first performance data based on at least the second data and the additional measurement.

116. The computer-readable medium of claim 95, wherein the first performance data for the plurality of communications channels is determined by one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of:

transmitting first data to the participant over at least one communications channel of the plurality of communications channels, wherein the first data includes one or more copies of a specified data string;

receiving, from the participant, second data that indicates a measurement of performance of the at least one communications channel based on whether errors occur in the one or more copies of the specified data string of the first data as a result of transmitting the first data to the participant over the at least one communications channel; and

determining the first performance data based on at least the second data.

117. The computer-readable medium of claim 116, wherein the first data is a data packet and wherein the one or more copies of the specified data string are included in a portion of the data packet selected from the group consisting of a payload portion of the data packet and a preamble portion of the data packet.

118. The computer-readable medium of claim 95, wherein the first performance data for the plurality of communications channels is based on a channel performance testing technique selected from the group consisting of a received signal strength indicator, a header error check, a cyclic redundancy check, a packet loss ratio, a number of error bits, and forward error correction.

119. The computer-readable medium of claim 95, wherein the first performance data for the plurality of communications channels is determined by one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of:

performing a specified number of communications channel performance tests on each communication channel in the plurality of communications channels; and

determining the first performance data based on results of the specified number of communications channel performance tests.

120. A method for selecting communications channels for a frequency hopping communications system, the method comprising the computer-implemented steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels;

after selecting the first set of two or more communications channels, causing the first set of two or more communications channels to be loaded into a first register of a first participant and a second register of a second participant;

causing the first participant and the second participant to communicate over the first set of two or more communications channels based on a hopping sequence according to a frequency hopping protocol;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

after selecting the second set of two or more communications channels, causing the second set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant; and

causing the first participant and the second participant to communicate over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

121. The method of claim 120, wherein the frequency hopping protocol is defined by Institute of Electrical and Electronics Engineers 802.15.1 Wireless Personal Area Network Standard.

122. The method of claim 120, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

123. The method as recited in claim 120, wherein:

a first number of communications channels in the first set of two or more communications channels is less than a first number of slots in the first register and a second number of slots in the second register;

causing the first set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant further comprises:

causing the first set of two or more communications channels to be loaded into the first number of slots of the first register of the first participant and the second number of slots of the second register of the second participant; and

causing a third number of communications channels of the first set of two or more communications channels to be loaded into the third number of slots following the first number of slots of the first register of the first participant;

wherein the third number is equal to the first number of slots in the first register minus the first number of communications channels in the first set of two or more communications channels;

causing a fourth number of communications channels of the first set of two or more communications channels to be loaded into the fourth number of slots following the second number of slots of the second register of the second participant; and

wherein the fourth number is equal to the second number of slots in the second register minus the second number of communications channels in the first set of two or more communications channels.

124. The method as recited in claim 123, wherein:

a second number of communications channels in the second set of two or more communications channels is less than the first number of slots in the first register and the second number of slots in the second register;

causing the second set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant further comprises:

causing the second set of two or more communications channels to be loaded into the first number of slots of the first register of the first participant and the second number of slots of the second register of the second participant; and

causing a fifth number of communications channels of the second set of two or more communications channels to be loaded into the fifth number of slots following the first number of slots of the first register of the first participant;

wherein the fifth number is equal to the first number of slots in the first register minus the second number of communications channels in the second set of two or more communications channels; and

causing a sixth number of communications channels of the second set of two or more communications channels to be loaded into the sixth number of slots following the second number of slots of the second register of the second participant; and

wherein the sixth number is equal to the second number of slots in the second register minus the second number of communications channels in the second set of two or more communications channels.

125. The method as recited in claim 120, wherein:

prior to selecting the first set of two or more communications channels, the first register of the first participant and the second register of the second participant are loaded with a default set of two or more communications channels;

causing the first set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant further comprises causing one or more communications channels of the default set of two or more communications channels to be replaced by one or more communications channels of the first set of two or more communications channels; and

causing the second set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant further comprises causing one or more communications channels of the default set of two or more communications channels to be replaced by one or more

communications channels of the second set of two or more communications channels.

126. The method as recited in claim 125, wherein:

causing the one or more communications channels of the default set of two or more communications channels to be replaced by the one or more communications channels of the first set of two or more communications channels further comprises:

randomly selecting the one or more communications channels of the first set of two or more communications channels;

causing the one or more communications channels of the default set of two or more communications channels to be replaced by the one or more randomly selected communications channels of the first set of two or more communications channels;

causing the one or more communications channels of the default set of two or more communications channels to be replaced by the one or more communications channels of the second set of two or more communications channels further comprises:

randomly selecting the one or more communications channels of the second set of two or more communications channels;

causing the one or more communications channels of the default set of two or more communications channels to be replaced by the one or more randomly selected communications channels of the second set of two or more communications channels.

127. The method as recited in claim 120, wherein prior to selecting the first set of two or more communications channels, the first register and the second register are loaded with a default set of two or more communications channels, and the method further comprises the computer-implemented steps of:

after causing the first participant and the second participant to communicate over the first set of two or more communications channels and prior to selecting the second set of two or more communications channels, causing the first register of the first participant and the second register of the second participant to be loaded with the default set of two or more communications channels; and

causing the first participant and the second participant to communicate over the default set of two or more channels.

128. The method as recited in claim 127, wherein causing the first register of the first participant and the second register of the second participant to be loaded with the default set of two or more communications channels further comprises the computer-implemented step of:

after expiration of a specified amount of time after causing the first set of two or more communications channels to be loaded into the first register of the first participant and the second register of the second participant, causing the first register of the first participant and the second register of the second participant to be loaded with the default set of two or more communications channels.

129. The method as recited in claim 2, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a quantitative value.

130. The method as recited in claim 2, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a qualitative value.

131. The method as recited in claim 2, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel indicate a qualitative classification of the particular communications channel.

132. The method as recited in claim 2, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are one or more weighted votes.

133. The method as recited in claim 132, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

134. The method as recited in claim 2, further comprising classifying the particular communications channel based upon one or more of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel.

135. The method as recited in claim 2, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are received from the particular participant.

136. The method as recited in claim 2, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are made by the particular participant.

137. The method as recited in claim 2, wherein:
the plurality of participants includes a second particular participant,

at least one of the specified number of affirmative votes to use the particular communications channel are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes to use the second particular communications channel, and
the at least the specified number of votes to use the second particular communications channel do not include a vote from the second particular participant.

138. The method as recited in claim 6, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a quantitative value.

139. The method as recited in claim 6, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a qualitative value.

140. The method as recited in claim 6, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel indicate a qualitative classification of the particular communications channel.

141. The method as recited in claim 6, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are one or more weighted votes.

142. The method as recited in claim 141, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

143. The method as recited in claim 6, further comprising classifying the particular communications channel based upon one or more of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel.

144. The method as recited in claim 6, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are received from the particular participant.

145. The method as recited in claim 6, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels

from the plurality of communications channels is performed by a particular participant from the plurality of participants, and

at least one of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are made by the particular participant.

146. The method as recited in claim 6, wherein:

the plurality of participants includes a second particular participant,

at least one of the specified number of affirmative votes to use the particular communications channel are received from the second particular participant,

a second particular communications channel receives at least the specified number of votes to use the second particular communications channel, and

the at least the specified number of votes to use the second particular communications channel do not include a vote from the second particular participant.

147. The method as recited in claim 6, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes and the particular communications channel does not receive a vote to not use the particular communications channel.

148. The method as recited in claim 6, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes and the particular communications channel is not designated to not be used.

149. The method as recited in claim 6, wherein the plurality of participants is a plurality of wireless devices.

150. The method as recited in claim 6, further comprising the steps of:

generating first channel identification data that identifies the first set of two or more communications channels;

transmitting the first channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

generating second channel identification data that identifies the second set of two or more communications channels; and

transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

151. The method as recited in claim 6, wherein the channel selection criteria include a channel performance threshold.

152. The method as recited in claim 6, further comprising the steps of:
generating first channel performance data that indicates the performance of the plurality of communications channels at the first time; and
generating second channel performance data that indicates the performance of the plurality of communications channels at the second time.

153. The method as recited in claim 6, further comprising the steps of:
communicating, prior to the second time, over the first set of two or more communications channels, according to the frequency hopping protocol; and
communicating, after a third time that is not earlier than the second time, over the second set of two or more communications channels, according to the frequency hopping protocol.

154. The method as recited in claim 6, further comprising the steps of:
determining the performance of the plurality of communications channels at the first time; and
determining the performance of the plurality of communications channels at the second time.

155. The method as recited in claim 6, wherein the performance of the plurality of communications channels is based on channel performance data that is transmitted over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

156. The method as recited in claim 155, wherein the performance of the plurality of communications channels is based on additional channel performance data that is based on transmitting the channel performance data over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

157. The method as recited in claim 9, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a quantitative value.

158. The method as recited in claim 9, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a qualitative value.

159. The method as recited in claim 9, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel indicate a qualitative classification of the particular communications channel.

160. The method as recited in claim 9, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are one or more weighted votes.

161. The method as recited in claim 160, wherein:

the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

162. The method as recited in claim 9, further comprising classifying the particular communications channel based upon one or more of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel.

163. The method as recited in claim 9, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are received from the particular participant.

164. The method as recited in claim 9, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are made by the particular participant.

165. The method as recited in claim 9, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of affirmative votes to use the particular communications channel are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes to use the second particular communications channel, and
the at least the specified number of votes to use the second particular communications channel do not include a vote from the second particular participant.

166. The method as recited in claim 9, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes and the particular communications channel does not receive a vote to not use the particular communications channel.

167. The method as recited in claim 9, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel

from among a plurality of votes and the particular communications channel is not designated to not be used.

168. The method as recited in claim 9, wherein the plurality of participants is a plurality of wireless devices.

169. The method as recited in claim 9, further comprising the steps of:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

170. The method as recited in claim 9, wherein the channel selection criteria include a channel performance threshold.

171. The method as recited in claim 9, further comprising the steps of:
generating first channel performance data that indicates the performance of the plurality of communications channels at the first time; and
generating second channel performance data that indicates the performance of the plurality of communications channels at the second time.

172. The method as recited in claim 9, further comprising the steps of:
communicating, prior to the second time, over the first set of two or more communications channels, according to the frequency hopping protocol; and
communicating, after a third time that is not earlier than the second time, over the second set of two or more communications channels, according to the frequency hopping protocol.

173. The method as recited in claim 9, further comprising the steps of:
determining the performance of the plurality of communications channels at the first time; and
determining the performance of the plurality of communications channels at the second time.

174. The method as recited in claim 9, wherein the performance of the plurality of communications channels is based on channel performance data that is transmitted over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

175. The method as recited in claim 9, wherein the performance of the plurality of communications channels is based on additional channel performance data that is based on transmitting the channel performance data over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

176. The communications channel selector apparatus as recited in claim 75, wherein the plurality of communications channels communicatively couple at least a plurality of wireless devices.

177. The communications channel selector apparatus as recited in claim 176, wherein the plurality of wireless devices includes one or more mobile devices.

178. The communications channel selector apparatus as recited in claim 75, wherein the channel selection criteria include a channel performance threshold.

179. The communications channel selector apparatus as recited in claim 75, further comprising:

means for communicating, prior to the second time, over the first set of two or more communications channels, according to the frequency hopping protocol; and

means for communicating, after a third time that is not earlier than the second time, over the second set of two or more communications channels, according to the frequency hopping protocol.

180. The communications channel selector apparatus as recited in claim 75, further comprising:

means for determining the performance of the plurality of communications channels at the first time; and

means for determining the performance of the plurality of communications channels at the second time.

181. The communications channel selector apparatus as recited in claim 75, wherein the performance of the plurality of communications channels is based on channel performance data that is transmitted over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

182. The communications channel selector apparatus as recited in claim 181, wherein the performance of the plurality of communications channels is based on additional channel performance data that is based on transmitting the channel performance data over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

183. The communications channel selector apparatus as recited in claim 75, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a quantitative value.

184. The communications channel selector apparatus as recited in claim 75, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a qualitative value.

185. The communications channel selector apparatus as recited in claim 75, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel indicate a qualitative classification of the particular communications channel.

186. The communications channel selector apparatus as recited in claim 75, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are one or more weighted votes.

187. The communications channel selector apparatus as recited in claim 186, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

188. The communications channel selector apparatus as recited in claim 75, further comprising means for classifying the particular communications channel based upon one or more of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel.

189. The communications channel selector apparatus as recited in claim 75, wherein:
a particular participant of the plurality of participants includes the means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, and
none of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are received from the particular participant.

190. The communications channel selector apparatus as recited in claim 75, wherein:
a particular participant of the plurality of participants includes the means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, and
at least one of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are made by the particular participant.

191. The communications channel selector apparatus as recited in claim 75, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of affirmative votes to use the particular communications channel are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes to use the second particular communications channel, and

the at least the specified number of votes to use the second particular communications channel do not include a vote from the second particular participant.

192. A communications channel selector apparatus comprising:
means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels;
means for selecting, based upon the performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;
wherein:
the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes;
each participant in a plurality of participants except for a particular participant casts one vote of the plurality of votes; and
the particular participant casts a second specified number of votes.

193. The communications channel selector apparatus as recited in claim 192, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a quantitative value.

194. The communications channel selector apparatus as recited in claim 192, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a qualitative value.

195. The communications channel selector apparatus as recited in claim 192, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel indicate a qualitative classification of the particular communications channel.

196. The communications channel selector apparatus as recited in claim 192, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are one or more weighted votes.

197. The communications channel selector apparatus as recited in claim 196, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

198. The communications channel selector apparatus as recited in claim 192, further comprising means for classifying the particular communications channel based upon one or more

of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel.

199. The communications channel selector apparatus as recited in claim 192, wherein:
a particular participant from the plurality of participants includes the means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, and
none of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are received from the particular participant.

200. The communications channel selector apparatus as recited in claim 192, wherein:
a particular participant from the plurality of participants includes the means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, and
at least one of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are made by the particular participant.

201. The communications channel selector apparatus as recited in claim 192, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of affirmative votes to use the particular communications channel are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes to use the second particular communications channel, and
the at least the specified number of votes to use the second particular communications channel do not include a vote from the second particular participant.

202. The communications channel selector apparatus as recited in claim 192, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes and the particular communications channel does not receive a vote to not use the particular communications channel.

203. The communications channel selector apparatus as recited in claim 192, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes and the particular communications channel is not designated to not be used.

204. The communications channel selector apparatus as recited in claim 192, wherein the plurality of participants is a plurality of wireless devices.

205. The communications channel selector apparatus as recited in claim 192, further comprising:

means for generating first channel identification data that identifies the first set of two or more communications channels;

means for transmitting the first channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

means for generating second channel identification data that identifies the second set of two or more communications channels; and

means for transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

206. The communications channel selector apparatus as recited in claim 192, wherein the channel selection criteria include a channel performance threshold.

207. The communications channel selector apparatus as recited in claim 192, further comprising:

means for generating first channel performance data that indicates the performance of the plurality of communications channels at the first time; and

means for generating second channel performance data that indicates the performance of the plurality of communications channels at the second time.

208. The communications channel selector apparatus as recited in claim 192, further comprising:

means for communicating, prior to the second time, over the first set of two or more communications channels, according to the frequency hopping protocol; and

means for communicating, after a third time that is not earlier than the second time, over the second set of two or more communications channels, according to the frequency hopping protocol.

209. The communications channel selector apparatus as recited in claim 192, further comprising:

means for determining the performance of the plurality of communications channels at the first time; and

means for determining the performance of the plurality of communications channels at the second time.

210. The communications channel selector apparatus as recited in claim 192, wherein the performance of the plurality of communications channels is based on channel performance data that is transmitted over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

211. The communications channel selector apparatus as recited in claim 210, wherein the performance of the plurality of communications channels is based on additional channel performance data that is based on transmitting the channel performance data over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

212. A communications channel selector apparatus comprising:
means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels;
means for selecting, based upon the performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;
wherein:
the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives a specified number of votes to use the particular communications channel from among a plurality of votes; and
each participant in a plurality of participants casts one vote of the plurality of votes.

213. The communications channel selector apparatus as recited in claim 212, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a quantitative value.

214. The communications channel selector apparatus as recited in claim 212, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a qualitative value.

215. The communications channel selector apparatus as recited in claim 212, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel indicate a qualitative classification of the particular communications channel.

216. The communications channel selector apparatus as recited in claim 212, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are one or more weighted votes.

217. The communications channel selector apparatus as recited in claim 216, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

218. The communications channel selector apparatus as recited in claim 212, further comprising means for classifying the particular communications channel based upon one or more of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel.

219. The communications channel selector apparatus as recited in claim 212, wherein:
a particular participant from the plurality of participants includes the means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, and
none of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are received from the particular participant.

220. The communications channel selector apparatus as recited in claim 212, wherein:
a particular participant from the plurality of participants includes the means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, and
at least one of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are made by the particular participant.

221. The communications channel selector apparatus as recited in claim 212, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of affirmative votes to use the particular communications channel are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes to use the second particular communications channel, and
the at least the specified number of votes to use the second particular communications channel do not include a vote from the second particular participant.

222. The communications channel selector apparatus as recited in claim 212, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes and the particular communications channel does not receive a vote to not use the particular communications channel.

223. The communications channel selector apparatus as recited in claim 212, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes and the particular communications channel is not designated to not be used.

224. The communications channel selector apparatus as recited in claim 212, wherein the plurality of participants is a plurality of wireless devices.

225. The communications channel selector apparatus as recited in claim 212, further comprising:

means for generating first channel identification data that identifies the first set of two or more communications channels;

means for transmitting the first channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

means for generating second channel identification data that identifies the second set of two or more communications channels; and

means for transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

226. The communications channel selector apparatus as recited in claim 212, wherein the channel selection criteria include a channel performance threshold.

227. The communications channel selector apparatus as recited in claim 212, further comprising:

means for generating first channel performance data that indicates the performance of the plurality of communications channels at the first time; and

means for generating second channel performance data that indicates the performance of the plurality of communications channels at the second time.

228. The communications channel selector apparatus as recited in claim 212, further comprising:

means for communicating, prior to the second time, over the first set of two or more communications channels, according to the frequency hopping protocol; and

means for communicating, after a third time that is not earlier than the second time, over the second set of two or more communications channels, according to the frequency hopping protocol.

229. The communications channel selector apparatus as recited in claim 212, further comprising:

means for determining the performance of the plurality of communications channels at the first time; and

means for determining the performance of the plurality of communications channels at the second time.

230. The communications channel selector apparatus as recited in claim 212, wherein the performance of the plurality of communications channels is based on channel performance data

that is transmitted over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

231. The communications channel selector apparatus as recited in claim 212, wherein the performance of the plurality of communications channels is based on additional channel performance data that is based on transmitting the channel performance data over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

232. The computer-readable medium as recited in claim 85, wherein the performance of the plurality of communications channels is based on channel performance data that is transmitted over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

233. The computer-readable medium as recited in claim 232, wherein the performance of the plurality of communications channels is based on additional channel performance data that is based on transmitting the channel performance data over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

234. The computer-readable medium as recited in claim 85, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a quantitative value.

235. The computer-readable medium as recited in claim 85, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a qualitative value.

236. The computer-readable medium as recited in claim 85, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel indicate a qualitative classification of the particular communications channel.

237. The computer-readable medium as recited in claim 85, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are one or more weighted votes.

238. The computer-readable medium as recited in claim 237, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

239. The computer-readable medium as recited in claim 85, further comprising one or more sequences of instructions that, when executed by the one or more processors, cause the one or more processors to perform the step of classifying the particular communications channel based upon one or more of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel.

240. The computer-readable medium as recited in claim 85, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are received from the particular participant.

241. The computer-readable medium as recited in claim 85, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are made by the particular participant.

242. The computer-readable medium as recited in claim 85, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of affirmative votes to use the particular communications channel are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes to use the second particular communications channel, and
the at least the specified number of votes to use the second particular communications channel do not include a vote from the second particular participant.

243. A computer-readable medium carrying one or more sequences of instructions for selecting communications channels for a communications system, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform a method comprising the steps of:
selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels;
wherein:
the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes;
each participant in a plurality of participants except for a particular participant casts one vote of the plurality of votes; and
the particular participant casts a second specified number of votes;
selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

244. The computer-readable medium as recited in claim 243, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a quantitative value.

245. The computer-readable medium as recited in claim 243, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a qualitative value.

246. The computer-readable medium as recited in claim 243, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel indicate a qualitative classification of the particular communications channel.

247. The computer-readable medium as recited in claim 243, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are one or more weighted votes.

248. The computer-readable medium as recited in claim 247, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

249. The computer-readable medium as recited in claim 243, the method further comprising the step of classifying the particular communications channel based upon one or more of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel.

250. The computer-readable medium as recited in claim 243, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are received from the particular participant.

251. The computer-readable medium as recited in claim 243, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and

at least one of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are made by the particular participant.

252. The computer-readable medium as recited in claim 243, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of affirmative votes to use the particular communications channel are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes to use the second particular communications channel, and
the at least the specified number of votes to use the second particular communications channel do not include a vote from the second particular participant.

253. The computer-readable medium as recited in claim 243, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes and the particular communications channel does not receive a vote to not use the particular communications channel.

254. The computer-readable medium as recited in claim 243, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes and the particular communications channel is not designated to not be used.

255. The computer-readable medium as recited in claim 243, wherein the plurality of participants is a plurality of wireless devices.

256. The computer-readable medium as recited in claim 243, the method further comprising the steps of:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

257. The computer-readable medium as recited in claim 243, wherein the channel selection criteria include a channel performance threshold.

258. The computer-readable medium as recited in claim 243, the method further comprising the steps of:

generating first channel performance data that indicates the performance of the plurality of communications channels at the first time; and

generating second channel performance data that indicates the performance of the plurality of communications channels at the second time.

259. The computer-readable medium as recited in claim 243, the method further comprising the steps of:

communicating, prior to the second time, over the first set of two or more communications channels, according to the frequency hopping protocol; and

communicating, after a third time that is not earlier than the second time, over the second set of two or more communications channels, according to the frequency hopping protocol.

260. The computer-readable medium as recited in claim 243, the method further comprising the steps of:

determining the performance of the plurality of communications channels at the first time; and

determining the performance of the plurality of communications channels at the second time.

261. The computer-readable medium as recited in claim 243, wherein the performance of the plurality of communications channels is based on channel performance data that is transmitted over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

262. The computer-readable medium as recited in claim 261, wherein the performance of the plurality of communications channels is based on additional channel performance data that is based on transmitting the channel performance data over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

263. A computer-readable medium carrying one or more sequences of instructions for selecting communications channels for a communications system, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform a method comprising the steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels;

wherein:

the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives a specified number of votes to use the particular communications channel from among a plurality of votes; and

each participant in a plurality of participants casts one vote of the plurality of votes;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

264. The computer-readable medium as recited in claim 263, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a quantitative value.

265. The computer-readable medium as recited in claim 263, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are represented as a qualitative value.

266. The computer-readable medium as recited in claim 263, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel indicate a qualitative classification of the particular communications channel.

267. The computer-readable medium as recited in claim 263, wherein one or more of the affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are one or more weighted votes.

268. The computer-readable medium as recited in claim 267, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

269. The computer-readable medium as recited in claim 263, the method further comprising the step of classifying the particular communications channel based upon one or more of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel.

270. The computer-readable medium as recited in claim 263, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are received from the particular participant.

271. The computer-readable medium as recited in claim 263, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and

at least one of the specified number of affirmative votes to use the particular communications channel or the negative vote to not use the particular communications channel are made by the particular participant.

272. The computer-readable medium as recited in claim 263, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of affirmative votes to use the particular communications channel are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes to use the second particular communications channel, and
the at least the specified number of votes to use the second particular communications channel do not include a vote from the second particular participant.

273. The computer-readable medium as recited in claim 263, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes and the particular communications channel does not receive a vote to not use the particular communications channel.

274. The computer-readable medium as recited in claim 263, wherein the channel selection criteria further specifies that for the particular communications channel to be selected, the particular communications channel receives a first specified number of votes to use the particular communications channel from among a plurality of votes and the particular communications channel is not designated to not be used.

275. The computer-readable medium as recited in claim 263, wherein the plurality of participants is a plurality of wireless devices.

276. The computer-readable medium as recited in claim 263, the method further comprising the steps of:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

277. The computer-readable medium as recited in claim 263, wherein the channel selection criteria include a channel performance threshold.

278. The computer-readable medium as recited in claim 263, the method further comprising the steps of:

generating first channel performance data that indicates the performance of the plurality of communications channels at the first time; and

generating second channel performance data that indicates the performance of the plurality of communications channels at the second time.

279. The computer-readable medium as recited in claim 263, the method further comprising the steps of:

communicating, prior to the second time, over the first set of two or more communications channels, according to the frequency hopping protocol; and

communicating, after a third time that is not earlier than the second time, over the second set of two or more communications channels, according to the frequency hopping protocol.

280. The computer-readable medium as recited in claim 263, the method further comprising the steps of:

determining the performance of the plurality of communications channels at the first time; and

determining the performance of the plurality of communications channels at the second time.

281. The computer-readable medium as recited in claim 263, wherein the performance of the plurality of communications channels is based on channel performance data that is transmitted over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

282. The computer-readable medium as recited in claim 263, wherein the performance of the plurality of communications channels is based on additional channel performance data that is based on transmitting the channel performance data over one or more of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

283. The method of claim 14, wherein the plurality of communications channels consists of seventy-nine communications channels.

284. The method of claim 15, wherein the plurality of communications channels consists of seventy-nine communications channels.

285. The method of claim 41, wherein the plurality of communications channels consists of seventy-nine communications channels.

286. The communications apparatus of claim 78, wherein the plurality of communications channels consists of seventy-nine communications channels.

287. The computer-readable medium of claim 93, wherein the plurality of communications channels consists of seventy-nine communications channels.

288. The computer-readable medium of claim 94, wherein the plurality of communications channels consists of seventy-nine communications channels.

289. The computer-readable medium of claim 95, wherein the plurality of communications channels consists of seventy-nine communications channels.

290. The method of claim 14, wherein the specified number is greater than one.

291. The method of claim 15, wherein the specified number is greater than one.

292. The method of claim 41, wherein the specified number is greater than one.

293. The communications apparatus of claim 78, wherein the specified number is greater than one.

294. The computer-readable medium of claim 93, wherein the specified number is greater than one.

295. The computer-readable medium of claim 94, wherein the specified number is greater than one.

296. The computer-readable medium of claim 95, wherein the specified number is greater than one.

297. The communications device of claim 43, wherein the channel identification information output by the hop selection kernel indirectly identifies a channel of the plurality of communications channels by an address of a slot in a register at which data that directly identifies the channel is stored.

298. The communications device of claim 50, wherein the channel identification information output by the hop selection kernel indirectly identifies a channel of the plurality of communications channels by an address of a slot in a register at which data that directly identifies the channel is stored.

299. The communications device of claim 43, wherein the hop selection kernel is configured to select the channel from the first set of two or more communications channels to use for frequency hopping communications in place of the channel identified by the channel identification information by randomly selecting a channel from the first set of two or more communications channels.

300. The communications device of claim 50, wherein the one or more sequences of instructions that cause the processor to select the channel from the first set of two or more communications channels to use for frequency hopping communications in place of the channel identified by the channel identification information comprise one or more sequences of instructions which, when executed by the processor, cause the processor to randomly select a channel from the first set of two or more communications channels.

301. The communications device of claim 43, wherein the hop selection kernel is configured to determine whether the channel identification information output by the hop selection kernel identifies a channel of the plurality of communications channels that is not in the first set of two or more communications channels by determining whether the channel identified by the channel identification information is classified as bad.

302. The communications device of claim 50, wherein the one or more sequences of instructions that cause the processor to determine whether the channel identification information output by the hop selection kernel identifies a channel of the plurality of communications channels that is not in the first set of two or more communications channels comprises one or more sequences of instructions which, when executed by the processor, cause the processor to determine whether the channel identified by the channel identification information is classified as bad.

303. The communications device of claim 43, wherein the hop selection kernel is further configured to use the channel identified by the channel identification information for frequency hopping communications in response to determining that the channel identified by the channel identification information is in the first set of two or more communications channels.

304. A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:

selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant by sending a data packet comprising the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and

wherein the data packet comprising the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

305. The method of claim 304, wherein the data packet comprises a timeout that specifies a particular time at which the participant is to begin communicating over the first set of two or more communications channels, or an amount of time that the participant is to wait before communicating over the first set of two or more communications channels.

306. The method of claim 304, wherein the data packet specifies a number of time slots the participant is to wait before communicating over the first set of two or more communications channels.

307. The method of claim 306, wherein the participant is a first slave participant, the method further comprising:

after providing the first identification data to the first slave participant, providing the first identification data to a second slave participant that is not the first slave participant; and

wherein the number of time slots to wait is greater than or equal to four.

308. The method of claim 306, further comprising:

determining a number of slave participants; and

determining the number of time slots to wait based on the number of slave participants.

309. The method of claim 308, wherein the determined number of time slots to wait is at least twice the number of slave participants.

310. The method of claim 304, wherein providing the first identification data to the participant comprises broadcasting the data packet to a plurality of participants.

311. The method of claim 304, wherein generating the first identification data comprises applying a forward error correction (FEC) coding to data that identifies the first set of two or more communications channels.

312. The method of claim 311, wherein the forward error correction (FEC) coding is a 1/3 forward error correction (FEC) coding.

313. The method of claim 304, wherein the data packet comprises a known preamble, a packet header, a payload header, a timeout, the first identification data, and a cyclic redundancy check (CRC) value.

314. The method of claim 304, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

315. A computer-readable medium carrying one or more sequences of instructions for communicating with a participant in a communications arrangement, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform a method comprising the steps of:

selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant by sending a data packet comprising the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and

wherein the data packet comprising the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

316. The computer-readable medium of claim 315, wherein the data packet comprises a timeout that specifies a particular time at which the participant is to begin communicating over the first set of two or more communications channels, or an amount of time that the participant is to wait before communicating over the first set of two or more communications channels.

317. The computer-readable medium of claim 315, wherein the data packet specifies a number of time slots the participant is to wait before communicating over the first set of two or more communications channels.

318. The computer-readable medium of claim 317, wherein the participant is a first slave participant, the method further comprising:

after providing the first identification data to the first slave participant, providing the first identification data to a second slave participant that is not the first slave participant; and

wherein the number of time slots to wait is greater than or equal to four.

319. The computer-readable medium of claim 317, the method further comprising:

determining a number of slave participants; and

determining the number of time slots to wait based on the number of slave participants.

320. The computer-readable medium of claim 319, wherein the determined number of time slots to wait is at least twice the number of slave participants.

321. The computer-readable medium of claim 315, wherein providing the first identification data to the participant comprises broadcasting the data packet to a plurality of participants.

322. The computer-readable medium of claim 315, wherein generating the first identification data comprises applying a forward error correction (FEC) coding to data that identifies the first set of two or more communications channels.

323. The computer-readable medium of claim 322, wherein the forward error correction (FEC) coding is a 1/3 forward error correction (FEC) coding.

324. The computer-readable medium of claim 315, wherein the data packet comprises a known preamble, a packet header, a payload header, a timeout, the first identification data, and a cyclic redundancy check (CRC) value.

325. The computer-readable medium of claim 315, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

326. A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:

loading information that identifies a plurality of communications channels into a first register;

communicating with the participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;

wherein communicating with the participant over the plurality of communications channels comprises addressing the first register based on output of a hop selection kernel;

selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

loading information that identifies the first set of two or more communications channels into a second register that is not the first register;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels;

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein communicating with the participant over the first set of two or more communications channels comprises applying an index to output of the hop selection kernel to address the second register instead of the first register.

327. The method of claim 326, wherein the first register and the second register each comprise a plurality of addressable slots; wherein, after loading the first register, each channel of the plurality of communications channels is identified by information stored in one slot of the plurality of addressable slots of the first register; and wherein, after loading the second register, each channel of the first set of two or more communications channels is identified by information stored in one slot of the plurality of addressable slots of the second register.

328. The method of claim 326, further comprising:

after communicating with the participant over the first set of two or more communications channels, switching back to communicating with the participant over the plurality of communications channels;

wherein communicating with the participant over the plurality of communications channels after communicating with the participant over the first set of two or more

communications channels comprises not applying the index to output of the hop selection kernel.

329. The method of claim 326, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

330. A computer-readable medium carrying one or more sequences of instructions for communicating with a participant in a communications arrangement, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform a method comprising the steps of:

loading information that identifies a plurality of communications channels into a first register;

communicating with the participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;

wherein communicating with the participant over the plurality of communications channels comprises addressing the first register based on output of a hop selection kernel;

selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

loading information that identifies the first set of two or more communications channels into a second register that is not the first register;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels;

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein communicating with the participant over the first set of two or more communications channels comprises applying an index to output of the hop selection kernel to address the second register instead of the first register.

331. The computer-readable medium of claim 330, wherein the first register and the second register each comprise a plurality of addressable slots; wherein, after loading the first register, each channel of the plurality of communications channels is identified by information stored in one slot of the plurality of addressable slots of the first register; and wherein, after loading the second register, each channel of the first set of two or more communications channels is identified by information stored in one slot of the plurality of addressable slots of the second register.

332. The computer-readable medium of claim 330, the method further comprising:

after communicating with the participant over the first set of two or more communications channels, switching back to communicating with the participant over the plurality of communications channels;

wherein communicating with the participant over the plurality of communications channels after communicating with the participant over the first set of two or more communications channels comprises not applying the index to output of the hop selection kernel.

333. The computer-readable medium of claim 330, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

334. A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:

loading information that identifies a plurality of communications channels into a register;

communicating with the participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;

wherein communicating with the participant over the plurality of communications channels comprises selecting channels in the register based on outputs of a hop selection kernel;

selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

storing information that identifies the first set of two or more communications channels in a table of good channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels;

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein communicating with the participant over the first set of two or more communications channels comprises, in response to obtaining an output from the hop selection kernel that selects a channel in the register that is not classified as good, selecting a channel from the table of good channels to use to communicate with the participant instead of the channel selected by the output of the hop selection kernel that is not classified as good.

335. The method of claim 334, wherein selecting the channel from the table of good channels to use to communicate with the participant comprises randomly selecting the channel from the table of good channels to use to communicate with the participant.

336. The method of claim 334, wherein communicating with the participant over the first set of two or more communications channels comprises replacing information in the register that identifies the channel that is not classified as good with information that identifies the channel from the table of good channels selected to use to communicate with the participant.

337. The method of claim 334, wherein the output from the hop selection kernel that selects the channel that is not classified as good comprises an address of a slot in the register.

338. The method of claim 334, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

339. A computer-readable medium carrying one or more sequences of instructions for communicating with a participant in a communications arrangement, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform a method comprising the steps of:

loading information that identifies a plurality of communications channels into a register;

communicating with the participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;

wherein communicating with the participant over the plurality of communications channels comprises selecting channels in the register based on outputs of a hop selection kernel;

selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

storing information that identifies the first set of two or more communications channels in a table of good channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels;

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein communicating with the participant over the first set of two or more communications channels comprises, in response to obtaining an output from the hop selection kernel that selects a channel in the register that is not classified as good, selecting a channel from the table of good channels to use to communicate with the participant instead of the channel selected by the output of the hop selection kernel that is not classified as good.

340. The computer-readable medium of claim 339, wherein selecting the channel from the table of good channels to use to communicate with the participant comprises randomly selecting the channel from the table of good channels to use to communicate with the participant.

341. The computer-readable medium of claim 339, wherein communicating with the participant over the first set of two or more communications channels comprises replacing information in the register that identifies the channel that is not classified as good with information that identifies the channel from the table of good channels selected to use to communicate with the participant.

342. The computer-readable medium of claim 339, wherein the output from the hop selection kernel that selects the channel that is not classified as good comprises an address of a slot in the register.

343. The computer-readable medium of claim 339, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

344. A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:

loading information that identifies a plurality of communications channels into a number of slots of a register;

communicating with the participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;

wherein communicating with the participant over the plurality of communications channels comprises addressing slots of the register based on outputs of a hop selection kernel;

selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

wherein the number of communications channels in the first set of two or more communications channels is less than the number of slots;

loading the first set of two or more communications channels into the number of slots of the register so that each of the number of slots of the register identifies a channel from the first set of two or more communications channels;

wherein, after loading the first set of two or more communications channels into the register, at least one channel of the first set of two or more communications channels is identified by at least two different slots of the number of slots;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels;

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein communicating with the participant over the first set of two or more communications channels comprises addressing slots of the register based on outputs of the hop selection kernel.

345. The method of claim 344, wherein loading the first set of two or more communications channels into the number of slots of the register comprises cyclically loading the first set of two or more communications channels into the number of slots of the register until the number of slots are full.

346. The method of claim 344, wherein outputs of the hop selection kernel comprise addresses of the slots of the register.

347. The method of claim 344, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

348. A computer-readable medium carrying one or more sequences of instructions for communicating with a participant in a communications arrangement, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform a method comprising the steps of:

loading information that identifies a plurality of communications channels into a number of slots of a register;

communicating with the participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;

wherein communicating with the participant over the plurality of communications channels comprises addressing slots of the register based on outputs of a hop selection kernel;

selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

wherein the number of communications channels in the first set of two or more communications channels is less than the number of slots;

loading the first set of two or more communications channels into the number of slots of the register so that each of the number of slots of the register identifies a channel from the first set of two or more communications channels;

wherein, after loading the first set of two or more communications channels into the register, at least one channel of the first set of two or more communications channels is identified by at least two different slots of the number of slots;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

communicating with the participant over the first set of two or more communications channels;

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and

wherein communicating with the participant over the first set of two or more communications channels comprises addressing slots of the register based on outputs of the hop selection kernel.

349. The computer-readable medium of claim 348, wherein loading the first set of two or more communications channels into the number of slots of the register comprises cyclically loading the first set of two or more communications channels into the number of slots of the register until the number of slots are full.

350. The computer-readable medium of claim 348, wherein outputs of the hop selection kernel comprise addresses of the slots of the register.

351. The computer-readable medium of claim 348, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

352. A method for communicating with a participant in a communications arrangement, the method comprising the computer-implemented steps of:

while communicating with a participant over a plurality of communications channels, determining first performance data that indicates performance of each of the plurality of communications channels at a first time based on one or more channel performance testing techniques selected from the group consisting of (a) special test packets and (b) received signal strength indicator;

selecting, based on the first performance data that indicates performance of a plurality of communications channels at the first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

while communicating with the participant over the first set of two or more communications channels, determining second performance data that indicates performance of each of the first set of two or more communications channels at a second time that is later than the first time based on one or more channel performance monitoring techniques selected from the group consisting of (a) preamble correlation, (b) header error check, (c) cyclic redundancy check and (d) forward error correction;

wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

353. The method of claim 352, further comprising:

determining, based on the second performance data, whether to switch back to communicating with the participant over the plurality of communications channels from communicating with the participant over the first set of two or more communications channels; and

after switching back to communicating with the participant over the plurality of communications channels from communicating with the participant over the first set of two or more communications channels, determining third performance data that indicates performance of each of the plurality of communications channels at a third time that is later than the second time based on one or more channel performance testing techniques selected from the group consisting of (a) special test packets and (b) received signal strength indicator.

354. The method of claim 352, wherein determining the first performance data comprises determining the first performance data based on a special test packets channel performance monitoring technique comprising the steps of:

sending a first packet to the participant over a first communications channel of the plurality of communications channels, the first packet comprising a channel access code and at least three copies of the channel access code;

receiving a second packet from the participant over a return communications channel of the plurality of communications channels, the second packet comprising data that specifies a number of error bits in the first packet as detected by the participant; and

generating performance data for the first communications channel based on the number of error bits.

355. The method of claim 352, wherein determining the first performance data comprises determining the first performance data based on a received signal strength indicator channel performance testing technique comprising the steps of:

sending a NULL packet to the participant over a first communications channel of the plurality of communications channels; and

determining a received signal strength indicator of a return communications channel of the plurality of communications channels to generate performance data for the return communications channel.

356. The method of claim 352, wherein determining the second performance data comprises determining the second performance data based on a preamble correlation channel performance monitoring technique comprising the steps of:

receiving a packet from the participant over a particular communications channel of the plurality of communications channels, the packet comprising a preamble; and

comparing the preamble received in the packet to a known copy of a channel access code to generate performance data for the particular communications channel.

357. The method of claim 352, wherein determining the second performance data comprises determining the second performance data based on a header error check channel performance monitoring technique comprising the steps of:

receiving a packet from the participant over a particular communications channel of the plurality of communications channels, the packet comprising a packer header; and

performing a header error check on contents of the packet header to generate performance data for the particular communications channel.

358. The method of claim 352, wherein determining the second performance data comprises determining the second performance data based on a cyclic redundancy check channel performance monitoring technique comprising the steps of:

receiving a packet from the participant over a particular communications channel of the plurality of communications channels, the packet comprising a packer header; and

performing a cyclic redundancy check on contents of the packet to generate performance data for the particular communications channel.

359. The method of claim 352, wherein determining the second performance data comprises determining the second performance data based on a forward error correction channel performance monitoring technique comprising the steps of:

receiving a packet from the participant over a particular communications channel of the plurality of communications channels, the packet comprising a packer header; and

performing forward error correction on contents of the packet to generate performance data for the particular communications channel.

360. The method of claim 352, further comprising:

while communicating with the participant over the plurality of communications channels, determining the first performance data that indicates performance of each of the plurality of communications channels at the first time based on the special test packets channel performance testing technique; and

while communicating with the participant over the first set of two or more communications channels, determining the second performance data that indicates performance of each of the first set of two or more communications channels at the second time that is later than the first time based on one or more channel performance monitoring techniques selected from the group consisting of (a) preamble correlation, (b) header error check, and (c) cyclic redundancy check.

361. The method of claim 352, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

362. A computer-readable medium carrying one or more sequences of instructions for communicating with a participant in a communications arrangement, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform a method comprising the steps of:

while communicating with a participant over a plurality of communications channels, determining first performance data that indicates performance of each of the plurality of communications channels at a first time based on one or more channel performance

testing techniques selected from the group consisting of (a) special test packets and (b) received signal strength indicator;

selecting, based on the first performance data that indicates performance of a plurality of communications channels at the first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;

generating first identification data that identifies the first set of two or more communications channels;

providing the first identification data to the participant;

while communicating with the participant over the first set of two or more communications channels, determining second performance data that indicates performance of each of the first set of two or more communications channels at a second time that is later than the first time based on one or more channel performance monitoring techniques selected from the group consisting of (a) preamble correlation, (b) header error check, (c) cyclic redundancy check and (d) forward error correction;

wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and

wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

363. The computer-readable medium of claim 362, the method further comprising:

determining, based on the second performance data, whether to switch back to communicating with the participant over the plurality of communications channels from communicating with the participant over the first set of two or more communications channels; and

after switching back to communicating with the participant over the plurality of communications channels from communicating with the participant over the first set of two or more communications channels, determining third performance data that indicates performance of each of the plurality of communications channels at a third time that is later than the second time based on one or more channel performance testing techniques selected from the group consisting of (a) special test packets and (b) received signal strength indicator.

364. The computer-readable medium of claim 362, wherein determining the first performance data comprises determining the first performance data based on a special test packets channel performance monitoring technique comprising the steps of:

sending a first packet to the participant over a first communications channel of the plurality of communications channels, the first packet comprising a channel access code and at least three copies of the channel access code;

receiving a second packet from the participant over a return communications channel of the plurality of communications channels, the second packet comprising data that specifies a number of error bits in the first packet as detected by the participant; and

generating performance data for the first communications channel based on the number of error bits.

365. The computer-readable medium of claim 362, wherein determining the first performance data comprises determining the first performance data based on a received signal strength indicator channel performance testing technique comprising the steps of:

sending a NULL packet to the participant over a first communications channel of the plurality of communications channels; and

determining a received signal strength indicator of a return communications channel of the plurality of communications channels to generate performance data for the return communications channel.

366. The computer-readable medium of claim 362, wherein determining the second performance data comprises determining the second performance data based on a preamble correlation channel performance monitoring technique comprising the steps of:

receiving a packet from the participant over a particular communications channel of the plurality of communications channels, the packet comprising a preamble; and

comparing the preamble received in the packet to a known copy of a channel access code to generate performance data for the particular communications channel.

367. The computer-readable medium of claim 362, wherein determining the second performance data comprises determining the second performance data based on a header error check channel performance monitoring technique comprising the steps of:

receiving a packet from the participant over a particular communications channel of the plurality of communications channels, the packet comprising a packer header; and

performing a header error check on contents of the packet header to generate performance data for the particular communications channel.

368. The computer-readable medium of claim 362, wherein determining the second performance data comprises determining the second performance data based on a cyclic redundancy check channel performance monitoring technique comprising the steps of:

receiving a packet from the participant over a particular communications channel of the plurality of communications channels, the packet comprising a packer header; and

performing a cyclic redundancy check on contents of the packet to generate performance data for the particular communications channel.

369. The computer-readable medium of claim 362, wherein determining the second performance data comprises determining the second performance data based on a forward error correction channel performance monitoring technique comprising the steps of:

receiving a packet from the participant over a particular communications channel of the plurality of communications channels, the packet comprising a packer header; and

performing forward error correction on contents of the packet to generate performance data for the particular communications channel.

370. The computer-readable medium of claim 362, the method further comprising:

while communicating with the participant over the plurality of communications channels, determining the first performance data that indicates performance of each of the plurality of communications channels at the first time based on the special test packets channel performance testing technique; and

while communicating with the participant over the first set of two or more communications channels, determining the second performance data that indicates performance of each of the first set of two or more communications channels at the second time that is later than the first time based on one or more channel performance monitoring techniques selected from the group consisting of (a) preamble correlation, (b) header error check, and (c) cyclic redundancy check.

371. The computer-readable medium of claim 362, wherein the frequency hopping protocol conforms to a Bluetooth communications standard for transmissions over a 2.4 GHz band.

372. A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives, from one or more participants, at least a specified number of votes, wherein each vote indicates a qualitative classification of the particular communications channel;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

373. The method as recited in claim 372, wherein:

each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

374. The method as recited in claim 372, wherein:

each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular

communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

375. The method as recited in claim 372, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

376. The method as recited in claim 372, wherein one or more of the votes are weighted votes.

377. The method as recited in claim 376, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

378. The method as recited in claim 372, further comprising classifying the particular communications channel based upon one or more of the specified number of votes.

379. The method as recited in claim 372, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

380. The method as recited in claim 372, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

381. The method as recited in claim 372, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

382. The method as recited in claim 372, wherein the one or more participants are wireless devices.

383. The method as recited in claim 372, further comprising the steps of:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

384. A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:
selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives, from one or more participants not performing the selecting, at least a specified number of votes to use the particular communications channel, wherein each vote indicates a qualitative classification of the particular communications channel;
selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

385. The method as recited in claim 384, wherein:
each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

386. The method as recited in claim 384, wherein:
each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular

communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

387. The method as recited in claim 384, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

388. The method as recited in claim 384, wherein one or more of the votes are weighted votes.

389. The method as recited in claim 388, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

390. The method as recited in claim 384, further comprising classifying the particular communications channel based upon one or more of the specified number of votes.

391. The method as recited in claim 384, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

392. The method as recited in claim 384, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

393. The method as recited in claim 384, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

394. The method as recited in claim 384, wherein the one or more participants are wireless devices.

395. The method as recited in claim 384, further comprising the steps of:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

396. A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:
a participant receiving, from one or more other participants, one or more votes for a particular communications channel from a plurality of communications channels, wherein each vote indicates a qualitative classification of the particular communications channel;
the participant selecting, based upon performance of the plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the first set of two or more communications channels includes the particular communications channel and the channel selection criteria specifies that for the particular communications channel to be selected, the particular communications channel receives at least a specified number of votes;
selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

397. The method as recited in claim 396, wherein:
each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

398. The method as recited in claim 396, wherein:
each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

399. The method as recited in claim 396, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

400. The method as recited in claim 396, wherein one or more of the votes are weighted votes.

401. The method as recited in claim 400, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

402. The method as recited in claim 396, further comprising classifying the particular communications channel based upon one or more of the specified number of votes.

403. The method as recited in claim 396, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

404. The method as recited in claim 396, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

405. The method as recited in claim 396, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

406. The method as recited in claim 396, wherein the one or more participants are wireless devices.

407. The method as recited in claim 396, further comprising the steps of:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

408. A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:
receiving, from one or more participants, one or more votes to use a particular communications channel from a plurality of communications channels;
selecting, based upon performance of a plurality of communications channels at a first time, the one or more votes to use the particular communications channel and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the first set of two or more communications channels includes the particular communications channel and the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives at least a specified number of votes to use the particular communications channel from one or more participants;
selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

409. The method as recited in claim 408, wherein:
each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

410. The method as recited in claim 408, wherein:

each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

411. The method as recited in claim 408, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

412. The method as recited in claim 408, wherein one or more of the votes are weighted votes.

413. The method as recited in claim 412, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

414. The method as recited in claim 408, further comprising classifying the particular communications channel based upon one or more of the specified number of votes.

415. The method as recited in claim 408, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

416. The method as recited in claim 408, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

417. The method as recited in claim 408, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and

the at least the specified number of votes do not include a vote from the second particular participant.

418. The method as recited in claim 408, wherein the one or more participants are wireless devices.

419. The method as recited in claim 408, further comprising the steps of:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

420. A method for selecting communications channels for a communications system that supports the Bluetooth communications protocol, the method comprising the computer-implemented steps of:
selecting, based upon performance of seventy nine communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the seventy nine communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the seventy nine communications channels, the particular communications channel receives at least a specified number of votes from one or more participants, wherein each vote indicates a qualitative classification of the particular communications channel;
selecting, based upon performance of the seventy nine communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the seventy nine communications channels;
wherein the communications system is a frequency hopping communications system and the seventy nine communications channels correspond to a set of frequencies to be used based on a hopping sequence according to the Bluetooth frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

421. The method as recited in claim 420, wherein:
each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

422. The method as recited in claim 420, wherein:
each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

423. The method as recited in claim 420, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

424. The method as recited in claim 420, wherein one or more of the votes are weighted votes.

425. The method as recited in claim 424, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

426. The method as recited in claim 420, further comprising classifying the particular communications channel based upon one or more of the specified number of votes.

427. The method as recited in claim 420, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

428. The method as recited in claim 420, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

429. The method as recited in claim 420, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and

the at least the specified number of votes do not include a vote from the second particular participant.

430. The method as recited in claim 420, wherein the one or more participants are wireless devices.

431. The method as recited in claim 420, further comprising the steps of:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

432. A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:
selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least a specified number of votes to use the particular communications channel from one or more participants not performing the selecting and the particular communications channel is not designated to not be used;
selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

433. The method as recited in claim 432, wherein:
each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

434. The method as recited in claim 432, wherein:
each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

435. (Canceled)

436. The method as recited in claim 432, wherein one or more of the votes are weighted votes.

437. The method as recited in claim 436, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

438. The method as recited in claim 432, further comprising classifying the particular communications channel based upon one or more of the specified number of votes.

439. The method as recited in claim 432, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

440. The method as recited in claim 432, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

441. The method as recited in claim 432, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

442. The method as recited in claim 432, wherein the one or more participants are wireless devices.

443. The method as recited in claim 432, further comprising the steps of:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

444. A computer-readable medium carrying one or more sequences of instructions for selecting communications channels for a communications system, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:
selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives, from one or more participants, at least a specified number of votes, wherein each vote indicates a qualitative classification of the particular communications channel;
selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

445. The computer-readable medium as recited in claim 444, wherein:
each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

446. The computer-readable medium as recited in claim 444, wherein:

each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

447. The computer-readable medium as recited in claim 444, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

448. The computer-readable medium as recited in claim 444, wherein one or more of the votes are weighted votes.

449. The computer-readable medium as recited in claim 448, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

450. The computer-readable medium as recited in claim 444, further comprising additional instructions which, when processed by the one or more processors causes classifying the particular communications channel based upon one or more of the specified number of votes.

451. The computer-readable medium as recited in claim 444, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

452. The computer-readable medium as recited in claim 444, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

453. The computer-readable medium as recited in claim 444, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,

a second particular communications channel receives at least the specified number of votes, and

the at least the specified number of votes do not include a vote from the second particular participant.

454. The computer-readable medium as recited in claim 444, wherein the one or more participants are wireless devices.

455. The computer-readable medium as recited in claim 444, further comprising additional instructions which, when processed by the one or more processors causes:

generating first channel identification data that identifies the first set of two or more communications channels;

transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;

generating second channel identification data that identifies the second set of two or more communications channels; and

transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

456. A computer-readable medium carrying one or more sequences of instructions for selecting communications channels for a communications system, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives, from one or more participants not performing the selecting, at least a specified number of votes to use the particular communications channel, wherein each vote indicates a qualitative classification of the particular communications channel;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

457. The computer-readable medium as recited in claim 456, wherein:

each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

458. The computer-readable medium as recited in claim 456, wherein:
each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

459. The computer-readable medium as recited in claim 456, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

460. The computer-readable medium as recited in claim 456, wherein one or more of the votes are weighted votes.

461. The computer-readable medium as recited in claim 460, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

462. The computer-readable medium as recited in claim 456, further comprising additional instructions which, when processed by the one or more processors causes classifying the particular communications channel based upon one or more of the specified number of votes.

463. The computer-readable medium as recited in claim 456, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

464. The computer-readable medium as recited in claim 456, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and

at least one of the specified number of votes are made by the particular participant.

465. The computer-readable medium as recited in claim 456, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

466. The computer-readable medium as recited in claim 456, wherein the one or more participants are wireless devices.

467. The computer-readable medium as recited in claim 456, further comprising additional instructions which, when processed by the one or more processors causes:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

468. A computer-readable medium carrying one or more sequences of instructions for selecting communications channels for a communications system, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:
a participant receiving, from one or more other participants, one or more votes for a particular communications channel from a plurality of communications channels, wherein each vote indicates a qualitative classification of the particular communications channel;
the participant selecting, based upon performance of the plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the first set of two or more communications channels includes the particular communications channel and the channel selection criteria specifies that for the particular communications channel to be selected, the particular communications channel receives at least a specified number of votes;
selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

469. The computer-readable medium as recited in claim 468, wherein:
each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

470. The computer-readable medium as recited in claim 468, wherein:
each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

471. The computer-readable medium as recited in claim 468, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

472. The computer-readable medium as recited in claim 468, wherein one or more of the votes are weighted votes.

473. The computer-readable medium as recited in claim 472, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

474. The computer-readable medium as recited in claim 468, further comprising additional instructions which, when processed by the one or more processors causes classifying the particular communications channel based upon one or more of the specified number of votes.

475. The computer-readable medium as recited in claim 468, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels

from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

476. The computer-readable medium as recited in claim 468, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

477. The computer-readable medium as recited in claim 468, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

478. The computer-readable medium as recited in claim 468, wherein the one or more participants are wireless devices.

479. The computer-readable medium as recited in claim 468, further comprising additional instructions which, when processed by the one or more processors causes:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

480. A computer-readable medium carrying one or more sequences of instructions for selecting communications channels for a communications system, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:
receiving, from one or more participants, one or more votes to use a particular communications channel from a plurality of communications channels;
selecting, based upon performance of a plurality of communications channels at a first time, the one or more votes to use the particular communications channel and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the first set of two or more communications channels

includes the particular communications channel and the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives at least a specified number of votes to use the particular communications channel from one or more participants;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

481. The computer-readable medium as recited in claim 480, wherein:

each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

482. The computer-readable medium as recited in claim 480, wherein:

each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

483. The computer-readable medium as recited in claim 480, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

484. The computer-readable medium as recited in claim 480, wherein one or more of the votes are weighted votes.

485. The computer-readable medium as recited in claim 484, wherein:

the one or more weighted votes includes two or more weighted votes, and

at least two of the two or more weighted votes have the same weights.

486. The computer-readable medium as recited in claim 480, further comprising additional instructions which, when processed by the one or more processors causes classifying the particular communications channel based upon one or more of the specified number of votes.

487. The computer-readable medium as recited in claim 480, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

488. The computer-readable medium as recited in claim 480, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

489. The computer-readable medium as recited in claim 480, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

490. The computer-readable medium as recited in claim 480, wherein the one or more participants are wireless devices.

491. The computer-readable medium as recited in claim 480, further comprising additional instructions which, when processed by the one or more processors causes:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

492. A computer-readable medium carrying one or more sequences of instructions for selecting communications channels for a communications system, wherein execution of the one

or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

selecting, based upon performance of seventy nine communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the seventy nine communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the seventy nine communications channels, the particular communications channel receives at least a specified number of votes from one or more participants, wherein each vote indicates a qualitative classification of the particular communications channel;

selecting, based upon performance of the seventy nine communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the seventy nine communications channels;

wherein the communications system is a frequency hopping communications system and the seventy nine communications channels correspond to a set of frequencies to be used based on a hopping sequence according to the Bluetooth frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

493. The computer-readable medium as recited in claim 492, wherein:

each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

494. The computer-readable medium as recited in claim 492, wherein:

each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

495. The computer-readable medium as recited in claim 492, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

496. The computer-readable medium as recited in claim 492, wherein one or more of the votes are weighted votes.

497. The computer-readable medium as recited in claim 496, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

498. The computer-readable medium as recited in claim 492, further comprising additional instructions which, when processed by the one or more processors causes classifying the particular communications channel based upon one or more of the specified number of votes.

499. The computer-readable medium as recited in claim 492, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

500. The computer-readable medium as recited in claim 492, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

501. The computer-readable medium as recited in claim 492, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

502. The computer-readable medium as recited in claim 492, wherein the one or more participants are wireless devices.

503. The computer-readable medium as recited in claim 492, further comprising additional instructions which, when processed by the one or more processors causes:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and

transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

504. A computer-readable medium carrying one or more sequences of instructions for selecting communications channels for a communications system, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least a specified number of votes to use the particular communications channel from one or more participants not performing the selecting and the particular communications channel is not designated to not be used;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

505. The computer-readable medium as recited in claim 504, wherein:

each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

506. The computer-readable medium as recited in claim 504, wherein:

each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

507. The computer-readable medium as recited in claim 504, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

508. The computer-readable medium as recited in claim 504, wherein one or more of the votes are weighted votes.

509. The computer-readable medium as recited in claim 508, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

510. The computer-readable medium as recited in claim 504, further comprising additional instructions which, when processed by the one or more processors causes classifying the particular communications channel based upon one or more of the specified number of votes.

511. The computer-readable medium as recited in claim 504, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

512. The computer-readable medium as recited in claim 504, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

513. The computer-readable medium as recited in claim 504, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

514. The computer-readable medium as recited in claim 504, wherein the one or more participants are wireless devices.

515. The computer-readable medium as recited in claim 504, further comprising additional instructions which, when processed by the one or more processors causes:

generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

516. A communications channel selector apparatus comprising:
means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives, from one or more participants, at least a specified number of votes, wherein each vote indicates a qualitative classification of the particular communications channel;
means for selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

517. The communications channel selector apparatus as recited in claim 516, wherein:
each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

518. The communications channel selector apparatus as recited in claim 516, wherein:
each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the

one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

519. The communications channel selector apparatus as recited in claim 516, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

520. The communications channel selector apparatus as recited in claim 516, wherein one or more of the votes are weighted votes.

521. The communications channel selector apparatus as recited in claim 520, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

522. The communications channel selector apparatus as recited in claim 516, further comprising means for classifying the particular communications channel based upon one or more of the specified number of votes.

523. The communications channel selector apparatus as recited in claim 516, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

524. The communications channel selector apparatus as recited in claim 516, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

525. The communications channel selector apparatus as recited in claim 516, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

526. The communications channel selector apparatus as recited in claim 516, wherein the one or more participants are wireless devices.

527. The communications channel selector apparatus as recited in claim 516, further comprising means for:

generating first channel identification data that identifies the first set of two or more communications channels;

transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;

generating second channel identification data that identifies the second set of two or more communications channels; and

transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

528. A communications channel selector apparatus comprising:

means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives, from one or more participants not performing the selecting, at least a specified number of votes to use the particular communications channel, wherein each vote indicates a qualitative classification of the particular communications channel;

means for selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

529. The communications channel selector apparatus as recited in claim 528, wherein:

each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

530. The communications channel selector apparatus as recited in claim 528, wherein:

each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular

communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

531. The communications channel selector apparatus as recited in claim 528, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

532. The communications channel selector apparatus as recited in claim 528, wherein one or more of the votes are weighted votes.

533. The communications channel selector apparatus as recited in claim 532, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

534. The communications channel selector apparatus as recited in claim 528, further comprising means for classifying the particular communications channel based upon one or more of the specified number of votes.

535. The communications channel selector apparatus as recited in claim 528, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

536. The communications channel selector apparatus as recited in claim 528, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

537. The communications channel selector apparatus as recited in claim 528, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

538. The communications channel selector apparatus as recited in claim 528, wherein the one or more participants are wireless devices.

539. The communications channel selector apparatus as recited in claim 528, further comprising means for:

generating first channel identification data that identifies the first set of two or more communications channels;

transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;

generating second channel identification data that identifies the second set of two or more communications channels; and

transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

540. A communications channel selector apparatus comprising:

means for a participant receiving, from one or more other participants, one or more votes for a particular communications channel from a plurality of communications channels, wherein each vote indicates a qualitative classification of the particular communications channel;

means for the participant selecting, based upon performance of the plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the first set of two or more communications channels includes the particular communications channel and the channel selection criteria specifies that for the particular communications channel to be selected, the particular communications channel receives at least a specified number of votes;

means for selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

541. The communications channel selector apparatus as recited in claim 540, wherein:

each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and

the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

542. The communications channel selector apparatus as recited in claim 540, wherein:
each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

543. The communications channel selector apparatus as recited in claim 540, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

544. The communications channel selector apparatus as recited in claim 540, wherein one or more of the votes are weighted votes.

545. The communications channel selector apparatus as recited in claim 544, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

546. The communications channel selector apparatus as recited in claim 540, further comprising means for classifying the particular communications channel based upon one or more of the specified number of votes.

547. The communications channel selector apparatus as recited in claim 540, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

548. The communications channel selector apparatus as recited in claim 540, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

549. The communications channel selector apparatus as recited in claim 540, wherein:
the plurality of participants includes a second particular participant,

at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

550. The communications channel selector apparatus as recited in claim 540, wherein the one or more participants are wireless devices.

551. The communications channel selector apparatus as recited in claim 540, further comprising means for:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

552. A communications channel selector apparatus comprising:
means for receiving, from one or more participants, one or more votes to use a particular communications channel from a plurality of communications channels;
means for selecting, based upon performance of a plurality of communications channels at a first time, the one or more votes to use the particular communications channel and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the first set of two or more communications channels includes the particular communications channel and the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives at least a specified number of votes to use the particular communications channel from one or more participants;
means for selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;
wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

553. The communications channel selector apparatus as recited in claim 552, wherein:

each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

554. The communications channel selector apparatus as recited in claim 552, wherein:
each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

555. The communications channel selector apparatus as recited in claim 552, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

556. The communications channel selector apparatus as recited in claim 552, wherein one or more of the votes are weighted votes.

557. The communications channel selector apparatus as recited in claim 556, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

558. The communications channel selector apparatus as recited in claim 552, further comprising means for classifying the particular communications channel based upon one or more of the specified number of votes.

559. The communications channel selector apparatus as recited in claim 552, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

560. The communications channel selector apparatus as recited in claim 552, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels

from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

561. The communications channel selector apparatus as recited in claim 552, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

562. The communications channel selector apparatus as recited in claim 552, wherein the one or more participants are wireless devices.

563. The communications channel selector apparatus as recited in claim 552, further comprising means for:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

564. A communications channel selector apparatus comprising:
means for selecting, based upon performance of seventy nine communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the seventy nine communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the seventy nine communications channels, the particular communications channel receives at least a specified number of votes from one or more participants, wherein each vote indicates a qualitative classification of the particular communications channel;
means for selecting, based upon performance of the seventy nine communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the seventy nine communications channels;
wherein the communications system is a frequency hopping communications system and the seventy nine communications channels correspond to a set of frequencies to be used based on a hopping sequence according to the Bluetooth frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

565. The communications channel selector apparatus as recited in claim 564, wherein:
each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

566. The communications channel selector apparatus as recited in claim 564, wherein:
each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

567. The communications channel selector apparatus as recited in claim 564, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

568. The communications channel selector apparatus as recited in claim 564, wherein one or more of the votes are weighted votes.

569. The communications channel selector apparatus as recited in claim 568, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

570. The communications channel selector apparatus as recited in claim 564, further comprising means for classifying the particular communications channel based upon one or more of the specified number of votes.

571. The communications channel selector apparatus as recited in claim 564, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

572. The communications channel selector apparatus as recited in claim 564, wherein:

the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

573. The communications channel selector apparatus as recited in claim 564, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

574. The communications channel selector apparatus as recited in claim 564, wherein the one or more participants are wireless devices.

575. The communications channel selector apparatus as recited in claim 564, further comprising means for:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

576. A communications channel selector apparatus comprising:
means for selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels, wherein the channel selection criteria specifies that for a particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least a specified number of votes to use the particular communications channel from one or more participants not performing the selecting and the particular communications channel is not designated to not be used;
means for selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

577. The communications channel selector apparatus as recited in claim 576, wherein:
each vote indicates that the particular communications channel should be selected for use or that the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use.

578. The communications channel selector apparatus as recited in claim 576, wherein:
each vote indicates that the particular communications channel should be selected for use or the particular communications channel should not be selected for use, and
the channel selection criteria specifies that for the particular communications channel to be selected for use from the plurality of communications channels, the particular communications channel receives, from the one or more participants, at least a specified number of votes that indicate that the particular communications channel should be selected for use and the particular communications channel does not receive, from the one or more participants, a vote that indicates that the particular communications channel should not be selected for use.

579. The communications channel selector apparatus as recited in claim 576, wherein the channel selection criteria further specifies that for the particular communications channel to be selected from the plurality of communications channels, the particular communications channel receives at least the specified number of votes and the particular communications channel is not designated to not be used.

580. The communications channel selector apparatus as recited in claim 576, wherein one or more of the votes are weighted votes.

581. The communications channel selector apparatus as recited in claim 580, wherein:
the one or more weighted votes includes two or more weighted votes, and
at least two of the two or more weighted votes have the same weights.

582. The communications channel selector apparatus as recited in claim 576, further comprising means for classifying the particular communications channel based upon one or more of the specified number of votes.

583. The communications channel selector apparatus as recited in claim 576, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels

from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
none of the specified number of votes are received from the particular participant.

584. The communications channel selector apparatus as recited in claim 576, wherein:
the selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels is performed by a particular participant from the plurality of participants, and
at least one of the specified number of votes are made by the particular participant.

585. The communications channel selector apparatus as recited in claim 576, wherein:
the plurality of participants includes a second particular participant,
at least one of the specified number of votes are received from the second particular participant,
a second particular communications channel receives at least the specified number of votes, and
the at least the specified number of votes do not include a vote from the second particular participant.

586. The communications channel selector apparatus as recited in claim 576, wherein the one or more participants are wireless devices.

587. The communications channel selector apparatus as recited in claim 576, further comprising means for:
generating first channel identification data that identifies the first set of two or more communications channels;
transmitting the first channel identification data to the one or more participants over the first set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol;
generating second channel identification data that identifies the second set of two or more communications channels; and
transmitting the second channel identification data to the one or more participants over the second set of two or more communications channels based on the hopping sequence according to the frequency hopping protocol.

588. A communications apparatus comprising:
means for selecting, based on first performance data that indicates performance of a plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;
means for generating first identification data that identifies the first set of two or more communications channels;
means for providing a data packet comprising the first identification data to a participant;
means for communicating with the participant over the first set of two or more communications channels, wherein the plurality of communications channels correspond

to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and
wherein the data packet comprising the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

589. A communications apparatus comprising:
means for loading information that identifies a plurality of communications channels into a first register;
means for communicating with a participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;
wherein communicating with the participant over the plurality of communications channels comprises addressing the first register based on output of a hop selection kernel;
means for selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;
means for loading information that identifies the first set of two or more communications channels into a second register that is not the first register;
means for generating first identification data that identifies the first set of two or more communications channels;
means for providing the first identification data to the participant;
means for communicating with the participant over the first set of two or more communications channels;
wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and
wherein communicating with the participant over the first set of two or more communications channels comprises applying an index to output of the hop selection kernel to address the second register instead of the first register.

590. A communications apparatus comprising:
means for loading information that identifies a plurality of communications channels into a register;
means for communicating with a participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;
wherein communicating with the participant over the plurality of communications channels comprises selecting channels in the register based on outputs of a hop selection kernel;

means for selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;
means for storing information that identifies the first set of two or more communications channels in a table of good channels;
means for generating first identification data that identifies the first set of two or more communications channels;
means for providing the first identification data to the participant;
means for communicating with the participant over the first set of two or more communications channels;
wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and
wherein communicating with the participant over the first set of two or more communications channels comprises, in response to obtaining an output from the hop selection kernel that selects a channel in the register that is not classified as good, selecting a channel from the table of good channels to use to communicate with the participant instead of the channel selected by the output of the hop selection kernel that is not classified as good.

591. A communications apparatus comprising:
means for loading information that identifies a plurality of communications channels into a number of slots of a register;
means for communicating with a participant over the plurality of communications channels, wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol, wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants;
wherein communicating with the participant over the plurality of communications channels comprises addressing slots of the register based on outputs of a hop selection kernel;
means for selecting, based on first performance data that indicates performance of the plurality of communications channels at a first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;
wherein the number of communications channels in the first set of two or more communications channels is less than the number of slots;
means for loading the first set of two or more communications channels into the number of slots of the register so that each of the number of slots of the register identifies a channel from the first set of two or more communications channels;
wherein, after loading the first set of two or more communications channels into the register, at least one channel of the first set of two or more communications channels is identified by at least two different slots of the number of slots;
means for generating first identification data that identifies the first set of two or more communications channels;
means for providing the first identification data to the participant;

means for communicating with the participant over the first set of two or more communications channels;
wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol; and
wherein communicating with the participant over the first set of two or more communications channels comprises addressing slots of the register based on outputs of the hop selection kernel.

592. A communications apparatus comprising:
means for determining, while communicating with a participant over a plurality of communications channels, first performance data that indicates performance of each of the plurality of communications channels at a first time based on one or more channel performance testing techniques selected from the group consisting of (a) special test packets and (b) received signal strength indicator;
means for selecting, based on the first performance data that indicates performance of a plurality of communications channels at the first time and at least a first performance criterion, a first set of two or more communications channels from the plurality of communications channels;
means for generating first identification data that identifies the first set of two or more communications channels;
means for providing the first identification data to the participant;
means for determining, while communicating with the participant over the first set of two or more communications channels, second performance data that indicates performance of each of the first set of two or more communications channels at a second time that is later than the first time based on one or more channel performance monitoring techniques selected from the group consisting of (a) preamble correlation, (b) header error check, (c) cyclic redundancy check and (d) forward error correction;
wherein the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol;
wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants; and
wherein the first identification data is provided to the participant over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

593. The method of claim 15, wherein**:**
the second set of two or more communications channels is different than the first set of two or more communications channels; and
the first performance criterion is different than the third performance criterion.

594. The method of claim 15, wherein:
the second set of two or more communications channels is different than the first set of two or more communications channels; and
the first performance criterion, the second performance criterion, and the third performance criterion are different from each other.

595. The communications apparatus of claim 78, wherein:
the second set of two or more communications channels is different than the first set of two or more communications channels; and
the first performance criterion is different than the third performance criterion.

596. The communications apparatus of claim 78, wherein:
the second set of two or more communications channels is different than the first set of two or more communications channels; and
the first performance criterion, the second performance criterion, and the third performance criterion are different from each other.

597. The computer-readable medium of claim 95, wherein:
the second set of two or more communications channels is different than the first set of two or more communications channels; and
the first performance criterion is different than the third performance criterion.

598. The computer-readable medium of claim 95, wherein:
the second set of two or more communications channels is different than the first set of two or more communications channels; and
the first performance criterion, the second performance criterion, and the third performance criterion are different from each other.

XXIII. Conclusion and Certificate of Service

In view of the preceding, Bandspeed believes that each of the claims under reexamination is in immediate condition for allowance. Accordingly, Bandspeed respectfully requires that the Examiner withdraw the outstanding rejections of the claims and issue a reexamination certificate.

The undersigned hereby certifies that this a copy of this paper including all attachments and appendices has been served on the Third Party Requestor as required by 37 C.F.R. § 1.903. Pursuant to 37 C.F.R. § 1.248(a)(4), a copy was sent via first class mail on December 3, 2013 to the following persons:

- Kenneth N. Nigon, Esq., Ratner/Prestia, P.O. Box 980, Valley Forge, PA 19482; and
- John S. Pratt, Esq., Kilpatrick Townsend & Stockton LLP, 1100 Peachtree Street, Suite 2800 Atlanta, GA 30309.

DATED: December 3, 2013

Respectfully Submitted,

HICKMAN PALERMO TRUONG
BECKER BINGHAM WONG LLP

By:_____
Adam Stone (Reg. No. 60,531)

1 Almaden Boulevard, 12th Floor
San Jose, CA 95113
Telephone: (408) 414-1231
Facsimile: (408) 414-1076

Attorneys for Patent Owner, Bandspeed, Inc.

APPENDIX A

CLAIM	STATUS	EXPLANATION OF SUPPORT
1.	Canceled	
2.	Amended	Claim 2 has been amended to include all features of Claim 1.
3.	Amended	Claim 3 has been amended to depend directly on Claim 2.
4.	Maintained	
5.	Amended	Claim 5 has been amended to depend directly on Claim 2.
6.	Amended	Claim 6 has been amended to include all features of Claim 1.
7.	Amended	Claim 7 has been amended to depend directly on Claim 2.
8.	Amended	Claim 8 has been amended to depend directly on Claim 2.
9.	Amended	Claim 9 has been amended to include all features of Claim 1.
10.	Amended	Claim 10 has been amended to depend directly on Claim 2.
11.	Amended	Claim 11 has been amended to depend directly on Claim 2.
12.	Amended	Claim 12 has been amended to depend directly on Claim 2.
13-14.	Maintained	
15.	Amended	Claim 15 has been amended to include features of Claim 26.
16-17.	Maintained	
18.	Amended	Claim 18 has been amended to include all features of original patent claim 15. Thus, amended claim 18 is identical in scope of original patent claim 18.

CLAIM	STATUS	EXPLANATION OF SUPPORT
19.	Canceled	
20.	Maintained	
21.	Amended	Claim 21 has been amended to depend directly on Claim 15.
22.	Amended	Claim 22 has been amended to depend directly on Claim 15.
23-24.	Maintained	
25-27.	Canceled	
28-42.	Maintained	
43.	Amended	*See*, *e.g.*, *Bandspeed Patent*, Claim 43; column 19:63 – column 20:42; Fig. 5B.
44.	Maintained	
45.	Amended	*See*, *e.g.*, *Bandspeed Patent*, Claim 45.
46.	Amended	*See*, *e.g.*, *Bandspeed Patent*, Claim 46.
47-49.	Maintained	
50.	Amended	*See*, *e.g.*, *Bandspeed Patent*, Claim 50; column 19:63 – column 20:42; Fig. 5B.
51-55.	Maintained	
56.	Amended	Claim 56 has been amended to include all features of original patent claim 50. Thus, amended claim 56 is identical in scope of original patent claim 56.

CLAIM	STATUS	EXPLANATION OF SUPPORT
57-74.	Maintained	
75.	Amended	Claim 75 has been amended to include features of Claim 2.
76-77.	Maintained	
78.	Amended	Claim 78 has been amended to include features of Claim 81.
79-82.	Canceled	
83-84.	Maintained	
85.	Amended	Claim 85 has been amended to include features of Claim 2.
86-94.	Maintained	
95.	Amended	Claim 95 has been amended to include features of Claim 112.
96-105.	Maintained	
106.	Amended	Claim 106 has been amended to include all features of original patent claim 95. Thus, amended claim 106 is identical in scope of original patent claim 106.
107.	Canceled	
108.	Amended	Claim 108 has been amended to depend directly on Claim 95.
109.	Amended	Claim 109 has been amended to dependent directly on Claim 95.
110.	Maintained	
111-113.	Canceled	
114-128.	Maintained	

CLAIM	STATUS	EXPLANATION OF SUPPORT
129-175.	New	*See, e.g., Bandspeed Patent*, Claim 1, column 16:18 – column 17:10.
176-231.	New	*See, e.g., Bandspeed Patent*, Claim 75, column 16:18 – column 17:10.
232-282.	New	*See, e.g., Bandspeed Patent*, Claim 85, column 16:18 – column 17:10.
283-289.	New	*See, e.g., Bandspeed Patent*, column 2:9-11; column 7:51-53; column 7:60-61.
290-296.	New	*See, e.g., Bandspeed Patent*, column 21:31-35; column 23:34-37.
297-298.	New	*See, e.g., Bandspeed Patent*, column 19:7-10.
299-300.	New	*See, e.g., Bandspeed Patent*, column 8:4-6; column 19:22-24; column 20:8-42; Fig. 5B.
301-302.	New	*See, e.g., Bandspeed Patent*, column 19:24-27; column 20:3-6.
303.	New	*See, e.g., Bandspeed Patent*, column 20:18-22.
304-314.	New	*See, e.g., Bandspeed Patent*, Claim 15; column 17:35 – 18:14; Fig. 4.
315-325.	New	*See, e.g., Bandspeed Patent*, Claim 95; column 17:35 – 18:14; Fig. 4.
326-329.	New	*See, e.g., Bandspeed Patent*, Claim 15; column 19:28-62; Fig. 5A.
330-333.	New	*See, e.g., Bandspeed Patent*, Claim 95; column 19:28-62; Fig. 5A.
334-338.	New	*See, e.g., Bandspeed Patent*, Claim 15; column 20:8-42; Fig. 5B.
339-343.	New	*See, e.g., Bandspeed Patent*, Claim 95; column 20:8-42; Fig. 5B.

CLAIM	STATUS	EXPLANATION OF SUPPORT
344-347.	New	*See, e.g., Bandspeed Patent*, Claim 15; column 19:15-27.
348-351.	New	*See, e.g., Bandspeed Patent*, Claim 95; column 19:15-27.
352.	New	*See, e.g., Bandspeed Patent*, Claim 15, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27.
353.	New	*See, e.g., Bandspeed Patent*, Claim 15, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 23:28 – 24:10.
354.	New	*See, e.g., Bandspeed Patent*, Claim 15, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 10:16 – 12:20.
355.	New	*See, e.g., Bandspeed Patent*, Claim 15, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 12:21-53.
356.	New	*See, e.g., Bandspeed Patent*, Claim 15, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 12:54 – column 13:11.
357.	New	*See, e.g., Bandspeed Patent*, Claim 15, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 13:12-27.
358.	New	*See, e.g., Bandspeed Patent*, Claim 15, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 13:29-52.
359.	New	*See, e.g., Bandspeed Patent*, Claim 15, column 10:1 – 14:31; column

CLAIM	STATUS	EXPLANATION OF SUPPORT
		21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 13:61 – column 14:16.
360.	New	*See, e.g.*, *Bandspeed Patent*, Claim 15, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27.
361.	New	*See, e.g.*, *Bandspeed Patent*, Claim 15, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27.
362.	New	*See, e.g.*, *Bandspeed Patent*, Claim 95, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27.
363.	New	*See, e.g.*, *Bandspeed Patent*, Claim 95, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 23:28 – 24:10.
364.	New	*See, e.g.*, *Bandspeed Patent*, Claim 95, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 10:16 – 12:20.
365.	New	*See, e.g.*, *Bandspeed Patent*, Claim 95, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 12:21-53.
366.	New	*See, e.g.*, *Bandspeed Patent*, Claim 95, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 12:54 – column 13:11.
367.	New	*See, e.g.*, *Bandspeed Patent*, Claim 95, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 13:12-27.

CLAIM	STATUS	EXPLANATION OF SUPPORT
368.	New	*See, e.g., Bandspeed Patent*, Claim 95, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 13:29-52.
369.	New	*See, e.g., Bandspeed Patent*, Claim 95, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27; column 13:61 – column 14:16.
370.	New	*See, e.g., Bandspeed Patent*, Claim 95, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27.
371.	New	*See, e.g., Bandspeed Patent*, Claim 95, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27.
372-443.	New	*See, e.g., Bandspeed Patent*, Claim 1, column 16:18 – column 17:10.
435.	Canceled	
436-443.	New	*See, e.g., Bandspeed Patent*, Claim 1, column 16:18 – column 17:10.
444-515.	New	*See, e.g., Bandspeed Patent*, Claim 85, column 16:18 – column 17:10.
516-587.	New	*See, e.g., Bandspeed Patent*, Claim 75, column 16:18 – column 17:10.
588.	New	*See, e.g., Bandspeed Patent*, Claim 78; column 17:35 – 18:14; Fig. 4.
589.	New	*See, e.g., Bandspeed Patent*, Claim 78; column 19:28-62; Fig. 5A.
590.	New	*See, e.g., Bandspeed Patent*, Claim 78 column 20:8-42; Fig. 5B.
591.	New	*See, e.g., Bandspeed Patent*, Claim 78; column 19:15-27.

CLAIM	STATUS	EXPLANATION OF SUPPORT
592.	New	*See*, *e.g.*, *Bandspeed Patent*, Claim 78, column 10:1 – 14:31; column 21:36 – 49; column 22:18 – 30; column 23:16 – 27.
593-598.	New	*See*, *e.g.*, *Bandspeed Patent*, column 6:63 – 7:2; column 8:21-23; column 10:7-15; column 14:18-31; column 15:40-52; column 16:49-59; column 17:1-10; column 18:55-67; column 22:4-17.