UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,

Petitioner,

v.

BILLJCO LLC,

Patent Owner

CASE: IPR2022-00427
U.S. PATENT NO. 10,292,011

# PATENT OWNER RESPONSE

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## I. INTRODUCTION

Patent Owner BillJCo, LLC submits that Petitioner Apple, Inc. has not met its burden in demonstrating that the challenged claims of U.S. Patent No. 10,292,011 ("the '011 patent") are more likely than not invalid as obvious.

## II. PETITIONER'S UNPATENTABILITY GROUNDS

Petitioner alleges the following grounds of unpatentability under 35 U.S.C. § 103 against independent claims 1, 11 and 20 and dependent claims 2-3, 9, 12-13 and 19 of the '011 patent. Pet. at 3.

| | Grounds | Reference(s) | Challenged Claims |
|---|---|---|---|
| 1. | § 103 | Ribaudo[1] in view of Lorincz[2] | 1-3, 9, 11-13 and 19-20 |
| 2. | § 103 | Ribaudo in view of Wrappe[3] | 1-3, 9, 11-13 and 19-20 |
| 3. | § 103 | Ribaudo in view of Evans[4] | 1-3, 9, 11-13 and 19-20 |

All of the grounds in the Petition are deficient in showing the challenged claims unpatentable. The challenged claims of the '011 patent are not obvious over

[1] EX1005.

[2] EX1006.

[3] EX1008.

[4] EX1007.

Ribaudo (EX1005) in view of Lorincz (EX1006) as alleged in Ground 1, which affects and is dispositive of all remaining grounds in the Petition.

Ribaudo fails to disclose "periodically beaconing outbound a broadcast unidirectional wireless data record for physically locating … one or more receiving user carried mobile data processing systems," as recited by independent claims 1, 11, and 20 of the '011 patent. It would not have been obvious to a person of ordinary skill in the art to combine the periodic beaconing feature in Lorincz with the system disclosed in Ribaudo. Ribaudo also fails to disclose a wireless data record including "application context identifier data identifying location based content for presenting by a location based application of the receiving user". Ribaudo additionally fails to disclose a location based application that "presents … location based content to the user interface of the receiving user". Lastly, evidence of secondary considerations support a finding the Petition has not shown the challenged claims obvious.

Petitioner has failed to provide an articulated reasoning with a rational underpinning to support a legal conclusion of obviousness. (*KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).) Accordingly, the Petition must be denied.

Grounds 2 and 3 do not affect the deficiencies present in Ground 1. None of the remaining grounds affect the deficiencies in the Petition.

## III. THE '011 PATENT

The '011 Patent is titled "System and Method for Location based Exchange Network." EX1001. The invention "relates generally to location based services for mobile data processing systems, and more particularly to location based exchanges of data between distributed mobile data processing systems for locational applications." EX1001 at 1:36-40.

### A. Written Specification

The '011 patent describes the need for a method for "enabling users to get location dependent features and functionality through having their mobile locations known, regardless of whether or not their MS [or Mobile data processing System] is equipped for being located. Also, new and modern location dependent features and functionality can be provided to a MS unencumbered by a connected service." EX1001 at 3:65-4:3. The patent discloses new terminology, system and, method referred to as Location Based Exchange (LBX) which "provide server-free and server-less location dependent features and functionality." EX1001 at 4:29-31. The '011 Patent also discloses that "[i]t is an advantage [] enabling useful distributed applications without the necessity of having a service, and without the necessity of users and/or systems registering with a service. MSs interact as peers in preferred embodiments, rather than as clients to a common service (e.g. internet connected web service)." EX1001 at 4:62-67); see also EX1001 at 1:40-44.

## B. The Claim Language

Independent claim 1 of the ’011 patent recites:

1. (a)[5] A system including one or more sending data processing systems wherein each sending data processing system of the one or more sending data processing systems comprise:

(b) one or more processors; and

(c) memory coupled to the one or more processors and storing instructions, wherein the one or more processors, based on the instructions, perform operations comprising:

(d) ***periodically*** **beaconing outbound a broadcast unidirectional wireless data record for physically locating** in a region of the sending data processing system one or more receiving user carried mobile data processing systems, the broadcast unidirectional wireless data record received directly from the sending data processing system in each receiving user carried mobile data processing system of the one or more receiving user carried mobile data processing systems, and including:

(e) no physical location coordinates of the sending data processing system;

[5] Element labeling, e.g., “(a),” has been added to the claim for ease of reference.

(f) a data field containing a signal strength of the sending data processing system, and

(g) **application context identifier data identifying location based content for presenting by a location based application of the receiving user** carried mobile data processing system to a user interface of the receiving user carried mobile data processing system

(h) upon the receiving user carried mobile data processing system determining with a local memory maintained location based configuration monitored with background processing of the receiving user carried mobile data processing system during mobility of the receiving user carried mobile data processing system anticipating receipt of the broadcast unidirectional wireless data record having the application context identifier data in response to a user activating the location based application with the user interface of the receiving user carried mobile data processing system wherein the location based application:

(i) invokes a location based API of the receiving user carried mobile data processing system for the location based configuration anticipating the receipt of the broadcast unidirectional wireless data record having the application context identifier data,

(j) is notified upon the receipt of the broadcast unidirectional wireless data record having the application context identifier data configured in the location based configuration, and

(k) **presents the location based content to the user** interface of the receiving user carried mobile data processing system, the location based content **originating from another data processing system that is remote to both the sending data processing system and the receiving user** carried mobile data processing system.

EX1001 at 448:10-451:23 (bold and italics added).

Independent claim 11 and 20 recite elements similar to claim 1. Claim 11 requires a method and claim 20 calls for a non-transitory computer readable medium for performing a method similar to the system in claim 1.

### C. Persons of Ordinary Skill in the Art

Petitioner proposes that a person of ordinary skill in the art ("POSITA") "would have had a bachelor's degree in computer science, computer engineering, or an equivalent, and two years of professional experience," and a [POSITA] "would have had a working knowledge of hardware and software for location tracking of mobile devices." Further, "a person with additional education but less professional experience may still qualify as a [POSITA], and a person with additional professional experience but less education may still qualify as a

[POSITA]." EX1004 ¶ 41. Patent Owner does not contest this proposal. EX2025, Sharony Decl. ¶ 36.

## IV. PRIOR ART RELIED ON IN THE PETITION

The Petition is based on the disclosures U.S. Publication No. 2007/0030824A1 to Ribaudo, titled "System and Method for Providing Communication Services to Mobile Device Users Incorporating Proximity Determination" (EX1005), in combination with Lorincz's MoteTrack article (EX1006). See Ground 1, Pet. at 25-26.

### A. Ribaudo Patent Publication

The Petition is based primarily on the disclosures of Ribaudo. Ribaudo generally relates to "a system and method for providing communication services to mobile device users incorporating proximity determination" by receiving network identifiers from mobile devices (e.g., first and second mobile devices). EX1005 ¶ [0002]. Based on the received network identifiers, the system determines (by comparing the network identifiers) if the first and second mobile devices are in proximity to one another. EX2025, Sharony Decl. ¶ 39.

Ribaudo also discloses embodiments where a mobile device broadcasts its client ID that may be used by other mobile devices to detect a match (of another person) in proximity. EX1005 ¶ [0046]. Further, "[received] signal strength may be used to narrow the range of other users in proximity, filtering out matches that are

farther away." Id. ¶ [0076]. Another example of using Bluetooth technology for proximity determination is described in [0149]. In this example, information regarding Bluetooth detection is sent to a data center that notifies users that they are in proximity. EX2025, Sharony Decl. ¶ 40.

In sum, Ribaudo is not directed to location determination but rather to proximity determination. EX2025, Sharony Decl. ¶ 41. That is, the determination of being in proximity to other people rather than determining one's location based on a beaconing device broadcasting a unidirectional wireless data record including location information – as taught by the asserted patents. Id.

**B. Lorincz "MoteTrack" Paper**

Lorincz is titled "MoteTrack: A Robust, Decentralized Approach to RF-Based Location Tracking." EX1006. MoteTrack is based on low-power radio transceivers coupled with a modest amount of computation and storage capabilities. EX2025, Sharony Decl. ¶ 43. It does not rely upon any back-end server or network infrastructure, and the location of each mobile node is computed using a received radio signal strength signature from numerous beacon nodes to a database of signatures that is replicated across the beacon nodes. Id. The MoteTrack location system is depicted below. Id.

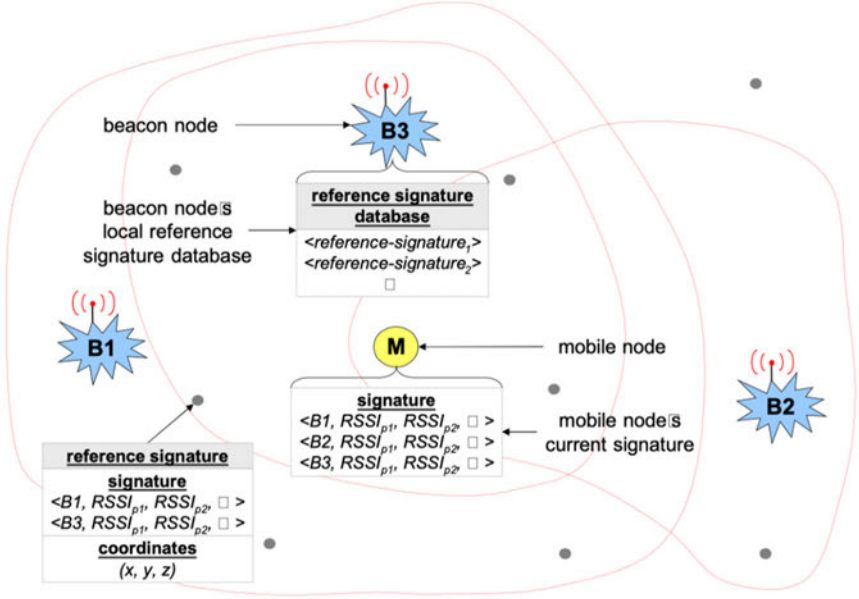



**Fig. 1. The MoteTrack location system.** B1, B2, *and* B3 *are beacon nodes, which broadcast beacon messages at various transmission powers (*p1, p2, *etc.). Each beacon node stores a subset of all reference signatures.* M *is a mobile node that can hear from all three beacon nodes. It aggregates beacon messages received over some time period into a signature. The areas marked by red perimeters indicate the reachability of beacon messages from the corresponding beacon node.*

In MoteTrack, beacon nodes broadcast periodic beacon messages, which consist of a tuple of the format {sourceID, powerLevel}. EX2025, Sharony Decl. ¶ 44. sourceID is the unique identifier of the beacon node, and powerLevel is the transmission power level used to broadcast the message. Id. Each mobile node that wishes to use MoteTrack to determine its location listens for some period of time to acquire a signature, consisting of the set of beacon messages received over some time interval. Id. This signature is compared to reference signatures in a database, where each reference signature is associated with a known three-dimensional location (x, y, z). Id.

The location estimation problem consists of a two-phase process: an offline collection of reference signatures followed by online location estimation. EX2025, Sharony Decl. ¶ 45. As in other signature-based systems, the reference signature database is acquired manually by a user with a laptop and a radio receiver. Id. Each reference signature, shown as gray dots in Fig. 1 above, consists of a set of signature tuples of the form {sourceID, powerLevel, meanRSSI}. Id. sourceID is the beacon node ID, powerLevel is the transmit power level of the beacon message, and meanRSSI is the mean received signal strength indication (RSSI) of a set of beacon messages received over some time interval. Id. Each signature is mapped to a known location by the user acquiring the signature database. Id. The location estimation is performed based on a mobile node's received signature **s** and the reference signature set **R** by computing the signature distances, from **s** to each reference signature $\mathbf{r_i}$ in the set **R**. Id.

In contrast to the system and method described in the '011 patent, the MoteTrack system does not transmit an application context identifier (e.g., parameters Par1, Par2) based on which mobile user can determine its location (e.g., if the application context identifier is Par1=3 and Par2=4, then the mobile user is in a department store in Madrid (Par1=3) in the shoes section (Par2=4)). EX2025, Sharony Decl. ¶ 46. Rather, the mobile user of Lorincz has to estimate its location based on distance computations of its received signature from a reference signature

set. Id. Therefore, the two methods are fundamentally different. Id. In addition, for MoteTrack to work properly, several beacon nodes (three or more) are required. For example, one or two beacon nodes would not suffice as it would result in locationing ambiguity. Id. This is in stark contrast to the '011 patent where a single beacon node is used to determine location. Id.

## V. ALL GROUNDS AND ALL CHALLENGED CLAIMS: PETITIONER HAS FAILED TO SHOW THAT RIBAUDO IN COMBINATION WITH LORINCZ RENDERS OBVIOUS THE CHALLENGED CLAIMS OF THE '011 PATENT

Petitioner's analysis suffers from several fundamental flaws, and Petitioner has failed to show that any of the challenged claims are more likely than not unpatentable for obviousness. The Petition asserts in Ground 1 that Ribaudo in view of Lorincz renders obvious each challenged claim. Pet. at 22-53. The Petition, however, fails to demonstrate Ribaudo's disclosure of multiple elements recited by independent claims 1, 11 and 20 of the '011 patent. EX2025, Sharony Decl. ¶ 48. Nor have Petitioners demonstrated that it would have been obvious to a POSITA to combine Ribaudo with Lorincz. Id.

### A. Claim Construction

In an IPR, patent claims are interpreted as they would be in a civil action. 37 C.F.R. § 42.100(b). Claim terms are generally given "their ordinary and customary meaning" — i.e., "the meaning that the terms would have to a person of ordinary

skill in the art at the time of the invention." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc).

There are only two exceptions to this rule: "1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). "To act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning." *Id*. (internal quotations and citation omitted). "The inventor's written description of the invention, for example, is relevant and controlling insofar as it provides clear lexicography…." *Id*. at 1365-66 (internal quotations and citation omitted).

Petitioner does not contend any lexicography or disavowal, and instead asserts that "the Challenged Claims do not require construction for the purpose of evaluating the prior art in this Petition." Pet. at 13. Patent Owner agrees the terms and phrases in the challenged claims should be interpreted according to their plain and ordinary meanings. However, in view of Petitioner's arguments, certain wireless transmission terms of art at issue here require clarification.

In determining the ordinary and customary meaning, the claim language "provide[s] substantial guidance as to the meaning of particular claim terms." *Phillips*, 415 F.3d at 1314. A patent's specification "is always highly relevant to the

claim construction analysis" and usually "dispositive." Id. at 1315. The construction that "stays true to the claim language and most naturally aligns with the patent's description of the invention" governs. Id.

Courts may also consider extrinsic evidence, such as technical dictionaries and expert testimony, "if the court deems it helpful in determining the 'true meaning of language used in the patent claims'" and it does not contradict the intrinsic evidence. *Id*. at 1318. Technical dictionaries, can be helpful resources during claim construction by providing insight into commonly accepted meanings of a term to those of skill in the art. *Phillips*, 415 F.3d at 1318.

Expert testimony can be useful "to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field." *Id*. "However, conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court. Similarly, a court should discount any expert testimony 'that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.'" *Id*.

**1. "Periodic beaconing"**

The claim term "periodic beaconing" is found in each of the challenged claims. Referring to claim 1, "period beaconing" is recited as:

> ***periodically** beaconing outbound a broadcast unidirectional wireless data record* for physically locating in a region of the sending data processing system one or more receiving user carried mobile data processing systems, the broadcast unidirectional wireless data record received directly from the sending data processing system in each receiving user carried mobile data processing system of the one or more receiving user carried mobile data processing systems, and including*:*

EX1001 at 448:19-28 (bold, underline added).

While Petitioner states that the claim terms should be afforded their plain and ordinary meaning, Petitioner offers no explanation as to what these plain and ordinary meanings may be, especially with respect to the "periodic beaconing" related term.

The standard meaning of a "*periodic"* in the context of "periodic beaconing" a broadcast wireless data record between carrier mobile data processing systems means beaconing occurring or reoccurring at regular intervals.[6]

The intrinsic evidence is commensurate with this plain and ordinary meaning. The claims' use the term "periodic beaconing" consists of broadcasting in regularly

[6] https://www.merriam-webster.com/dictionary/periodic (periodic: "1 a. occurring or recurring at regular intervals, b. occurring repeatedly from time to time, 2 a. …repeated … cyclic b. … recurs at regular intervals");
https://www.britannica.com/dictionary/periodic (periodic: "happening regularly over a period of time").

reoccurring intervals. See e.g., claim 1 ("periodically beaconing outbound a broadcast unidirectional wireless data record from at least one sending data processing system for physically locating"); EX1001 at 449:35-37.

Consistent with the plain and ordinary meaning, the '011 patent specification uses "periodic beaconing" consist with meaning broadcasting in regularly reoccurring intervals. EX1001 at 118:19-27. "FIG. 20 depicts a flowchart for describing a preferred embodiment of MS [mobile data processing systems] whereabouts broadcast processing . . . Thread(s) 1902 purpose is for the MS of FIG. 20 processing (e.g. a first, or sending, MS) to ***periodically*** **transmit whereabouts information** to other MSs (e.g. at least a second, or receiving, MS) to use in locating themselves." Id. (italics, bold added).

Extrinsic evidence, in the form of expert testimony, further establishes that a "periodic beaconing" would have been understood by a POSITA to means beaconing occurring or reoccurring at regular intervals. Patent Owner's expert, Dr. Sharony, explains that "A POSITA would have understood the 'periodic beaconing' required by the '011 patent in accord with the plain and ordinary meaning of the term: beaconing occurring or reoccurring at regular intervals. EX2025, Sharony Decl. ¶ 50. Dr. Sharony's expert testimony is also consistent with the plain and ordinary meaning of "periodic beaconing."; see also EX2026, Michalson Dep. at

51:3-5 ("periodic really means regularly enough to be useful in the environment that it's deployed in.").

This plain and ordinary meaning of "periodic beaconing" should be applied in this matter.

### B. All Grounds: Ribaudo fails to disclose "periodic beaconing" and it would not be obvious to combine Ribaudo with Lorincz

The challenged claims of the '011 patent are not obvious over Ribaudo (EX1005) in view of Lorincz (EX1006). Ribaudo fails to disclose "periodically beaconing outbound a broadcast unidirectional wireless data record for physically locating … one or more receiving user carried mobile data processing systems," as recited by independent claims 1, 11, and 20 of the '011 patent. It would not have been obvious to a person of ordinary skill in the art to combine the periodic beaconing feature in Lorincz with the system disclosed in Ribaudo.

#### 1. Ribaudo Fails to Disclose "Periodic Beaconing"

The Petition contends "a [POSITA] would have understood from Ribaudo that the beaconed signal containing … client ID and availability level of the user … would be periodically beaconed, since the purpose of the beacon is to broadcast signals that can be received by receivers in the beacon's proximity, and those receivers can enter and leave the beacon's coverage area without querying the beacon to initiate a broadcast." EX1004 ¶ 77. However, Petitioner's expert

acknowledged in his deposition that Ribaudo does not expressly disclose periodic beaconing. EX2026 Michalson Dep. at 39:9-42:2.

Petitioner's expert notes that Ribaudo discloses that a "client ID may include a public ID that may be broadcast from mobile device 12 and used by mobile devices 12 to detect a match in proximity." EX1004 ¶ 76, quoting EX1005, ¶[0046] and citing ¶¶[0057], [0065]. Ribaudo also discloses the beaconed signal may contain availability level of the user of the sending mobile device. EX1004 ¶ 76, citing EX1005, ¶[0084]. However, the '011 patent recites "***periodically*** beaconing outbound a broadcast unidirectional wireless data record …" EX1001, claim 1; see also claims 11 and 20. A POSITA would have understood the "periodic beaconing" required by the '011 patent in accord with the plain and ordinary meaning of the term: beaconing occurring or reoccurring at regular intervals. EX2025, Sharony Decl. ¶ 50; see also ¶¶ 49, 51, 52. Ribaudo does not disclose outbound *periodic* broadcast of a wireless data record. Id.

Petitioner's expert opines a POSITA would have understood that continuous broadcast caused "significant, and unnecessary power drain." EX1004 ¶ 77. However, a beacon can transmit a signal either continuously or periodically, or even according to some deterministic or random distribution. EX2025, Sharony Decl. ¶ 51. Saving on battery power does not necessitate *periodic* transmission. Id. For example, the beacon can transmit a burst of beacons when the channel is clear (not

busy) and then backoff for a random time and start again if the channel is clear. Beaconing at irregular intervals--non-periodic beaconing—could be used to reduce power. Id. In other words, beaconing repeatedly (e.g., at irregular intervals due to busy channel, especially when many beacon devices are in the same area) does not mean or require beaconing periodically. Id.

Petitioner's expert argues that a POSITA would have understood periodically beaconing also reduces the risk of beacons interfering with one another because periodic beaconing reduces the amount of time than any particular beacon occupies a radio channel. EX1004 ¶ 77. However, in a busy channel (e.g., with many beacons active) periodicity might result in beacons stepping on each other, and therefore, some randomness is required to avoid collisions. EX2025, Sharony Decl. ¶ 52. This is a common practice in data networks where multiple nodes share the same channel. Id. Thus, a POSITA would avoid periodic beaconing within a network with many nodes sharing a channel. Id. For example, if there are 10's of users beaconing in the same area (like in Ribaudo's matching application) then periodic beaconing might result in collisions and interference. Id. Opportunistic beaconing would work better, where beaconing is performed when the channel is observed to be free. Id.

### 2. A POSITA Would Not Have Combined Ribaudo with Lorincz

The Petition argues a POSITA would have been motivated to modify Ribaudo's system with Lorincz's teaching of periodic beaconing, in order to use less

power from a device and reduce risk of interference. Pet. at 29-31; EX1004 ¶ 80; see also ¶ 70.

As discussed above, Lorincz describes a RF-based location tracking system (called MoteTrack) where the location of each mobile node is computed using a received radio signal strength signature from numerous beacon nodes to a database of signatures that is replicated across the beacon nodes. EX1006; EX2025, Sharony Decl. ¶ 54.

Ribaudo and Lorincz teach fundamentally different methods of proximity determination (Ribaudo) and location determination (Lorincz). EX2025, Sharony Decl. ¶ 55. In Lorincz's MoteTrack, each mobile node that wishes to determine its location is searching for a reference location (that is associated with a reference signature) in the database such that the distance between the reference signature $r_i$ (as part of a set R of reference signatures) to its collected signature s is minimized. Lorincz's beacon nodes define a reference signature based on a known location and utilizes a reference signature database. EX1006 at 5; EX2025, Sharony Decl. ¶ 55.

For MoteTrack to work properly, several beacon nodes are required. EX2025, Sharony Decl. ¶ 56. This is in stark contrast to Ribaudo where a single beacon node is used to determine proximity, and to the '011 Patent where a single beacon node is used to determine location. Id.

A POSITA would not consider the Lorincz's MoteTrack suitable for implementing in connection with the system taught by Ribaudo because, among other reasons, MoteTrack "needs to be installed and calibrated before it can be used. . . . For scenarios where an offline calibration is infeasible (e.g. because the emergency is in a remote location such as a field, highway, etc.), our scheme as described in the paper is not appropriate." EX1006 at 1; EX2025, Sharony Decl. ¶ 57. Ribaudo's single-node system for determining proximity is inappropriate for use in conjunction with Lorincz's multi-node MoteTrack that requires substantial offline calibration. Id.; EX2026, Michalson Dep. at 46:2-10; see also 44:5-46:9. A POSITA would consider MoteTrack infeasible for implementation with Ribaudo.

The Petition's obviousness argument concerning the "periodic beaconing" requirement in independent claims 1, 11, and 20 is limited to Lorincz's disclosure of periodic beaconing combined with Ribaudo's beaconing system. Pet. at 30-31. EX2025, Sharony Decl. ¶ 58. The Petition offers no other prior art combination argument for this claim element.

### C. All Grounds: Ribaudo Fails To Disclose "Application Context Identifier Data Identifying Location Based Content"

Ribaudo does not satisfy the requirements of Elements [1.5], [11.5] and [20.5] because Ribaudo does not disclose "application context identifier data identifying location based content." EX2025, Sharony Decl. ¶ 59.

Petitioner's expert opines that Ribaudo's broadcast of availability and client ID satisfies requirement of "application context identifier data identifying location based content for presenting by a location based application of the receiving user." EX1004 ¶ 96. He opines that user availability and client ID identifies location-based content for presentation by the application in Ribaudo's system. Id.

User availability and client ID do not provide data "identifying location based content" for presenting to a receiving user; it constitutes information about the sender (who) but not location (where). EX2025, Sharony Decl. ¶ 61. To start with, Ribaudo's client ID is used for proximity determination and not location determination, and user availability provides status of the proximate matched person. Id. There is no indication about the location (of two matched people) and no content that is associated with that location. Id. In fact, in Ribaudo, the content (user availability status) is the same no matter what is the location (if they were matched in New York or Paris). Id.

Petitioner's expert opines that Ribaudo's disclosure of determining the amount of user profile to share based on location of the detected match also constitutes "location based content." EX1004 ¶ 98. Similar to data about availability and client ID, sharing more user profile information based on a location match does not provide "location based content"; it constitutes information about the sender (who) but not location (where). EX2025, Sharony Decl. ¶ 62. This is because the

shared information is tied to the specific user. Id. In other words, a matched user would share more of his/her profile information that could be different from the amount shared by another matched user at the same location. Id. This shows that the information shared is not location based but rather user based. Id.; see also ¶ 63.

Nothing in Ribaudo teaches beaconing outbound a data record including an "application context identifier data identifying location based contents for presenting by a location based application of the receiving user," as required by the '011 patent. EX2025, Sharony Decl. ¶ 64. Ribaudo does not disclose this element.

The Petition does not propose combining Ribaudo with another prior art reference to address this deficiency. The Petition make no other obvious argument regarding Elements [1.5], [11.5] and [20.5]. Pet. at 39-41. Accordingly, the Petition has failed to show that this element is disclosed by Ribaudo alone.

### D. All Grounds: Ribaudo Fails to Disclose a Location Based Application that "Presents the Location Based Content to the User Interface of the Receiving User"

Ribaudo does not satisfy the requirements of Elements [1.10], [11.10] and [20.10] because Ribaudo does not disclose location based application that "presents the location based content to the user interface of the receiving user". EX2025, Sharony Decl. ¶ 66.

Ribaudo discloses broadcast of a client ID to detect a match in proximity. EX1005 ¶ [0046]. If a match is detected, data can be distributed inside a match ID

to other, matched user's receiving mobile device. Id. ¶ [0047]. For example, a matched user's mobile device might display a user's identified university if users come within range of another in a systems using schools for determining proximity. Id.; EX2025, Sharony Decl. ¶ 67.

Petitioner's expert opines that Ribaudo's disclosure of sending notice to a receiving user of a match and including additional, matched-based information (e.g., identified university) constitutes "present[ation of] the location based content to the user interface of the receiving user". EX1004 ¶ 112. However, broadcast network identifier (or client ID) in Ribaudo is used for proximity determination and not for physically locating another user in a region of the sending user. EX2025, Sharony Decl. ¶ 68. Therefore, the information broadcast by Ribaudo does not "present the location based content to the user interface of the receiving user". Id. In the above university identification example, the identified university is tied to a specific user and not to location. In other words, a matched user would have "Harvard" in the identified university information that is different from that of another matched user ("Columbia") at the very same location (e.g., in the same conference room). Id. This shows that the information identified (e.g., university) is not location based but rather user based. Id.

Nothing in Ribaudo teaches beaconing outbound a location based application that "present the location based content to the user interface of the

receiving user," as recited by independent claims 1, 11, and 20 of the '011 patent. Therefore, Ribaudo does not disclose this element. EX2025, Sharony Decl. ¶ 69.

The Petition does not propose combining Ribaudo with another prior art reference to address this deficiency. The Petition make no other obvious argument regarding Elements [1.10], [11.10] and [20.10]. Pet. at 50-51. Accordingly, the Petition has failed to show that this element is disclosed by Ribaudo alone.

### E. OBJECTIVE EVIDENCE OF NON-OBVIOUSNESS

Objective indicia of non-obviousness, or "secondary considerations," guard against hindsight reasoning in an obviousness analysis, and are often "the most probative and cogent evidence in the record." *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016) (citations omitted). As such, objective indicia of non-obviousness must be considered in every case in which they are presented. *Id.* (citing *Transocean Offshore Deepwater Drilling Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012)). Objective evidence of non-obviousness "may often be the most probative and cogent evidence in the record." *Id*.

Here, the substantial and compelling objective evidence of non-obviousness, which includes copying, commercial success, and licensing, more than outweighs any *prima facie* case of obviousness, even if Petitioner had established one, which it did not. Petitioner's devices that implement the iBeacon protocol embody the

challenged claims were successful commercially. Also, several major companies have entered into licenses for the '011 patent, among others.

### A. Copying

"Copying may indeed be another form of flattering praise for inventive features, and thus evidence of copying tends to show nonobviousness." *WBIP*, 829 F.3d at 1336 (internal quotation and citation omitted); *see also Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 1099 (Fed. Cir. 1985).

Copying can be shown inferentially based on evidence of access to information about the patented invention and subsequent developed of a product embodying the claims. *Liqwd, Inc. v. L'Oreal USA, Inc.*, 941 F.3d 1133, 1138 (Fed. Cir. 2019). Here, the evidence of copying is shown by Petitioner's access to the '011 patent and its subsequent development of infringing devices.

#### 1. Petitioner's Access to the '011 Patented Technology

In or around 2007, the managing partner of the Patent Owner and inventor of the '011 patent, William Johnson, [redacted] EX2027, EX. G. [redacted]

[redacted] Id.

Mr. Johnson continued to communicate with Petitioner in 2010 [redacted] Id., EX. H [redacted] Id.

In another communication dated June 14, 2010, [redacted] Id., EX. I.

In another communication dated April 9, 2012, [redacted] Id., EX. M. [redacted] Id., EX. N, O, P. [redacted] Id., EX. Q.

On November 11, 2014, [redacted] Id., EX. R. [redacted]

[redacted] Id., EX. R.

Thus, Petitioner had access to the technology covered by the challenged claims of the '011 patent.

**2. Petitioner's Devices Embody The Challenged Claims**

Petitioner's devices embody at least one of the Challenged Claims of the '011 patent.

In or around June 2013, and in the midst of the discussions between Mr. Johnson and Petitioner regarding the LBX portfolio, Petitioner publicly announced its rollout of it iOS7 and its BLE iBeacon initiative. This iBeacon initiative included the commercialization of an ecosystem including Petitioner's iBeacon protocol for use by application developers, parties deploying devices with iBeacon technology, and parties making devices with iBeacon technology.

Central to this ecosystem is Petitioner's iBeacon protocol, a technology standard for enabling location awareness for interaction of devices, such as Petitioner's iPhones and other iOS devices, with beacon transmitters and various applications which can be used, for example, to determine a device's physical location, track customers, or trigger location-based action on a device. Through its

iBeacon protocol, Petitioner has standardized the technology data packet consisting of at least the following pieces of information of iBeacon prefix, universally unique identifier (UUID), Major, Minor, and Tx Power:

| Field | Size | Description |
|---|---|---|
| UUID | 16 bytes | Application developers should define a UUID specific to their app and deployment use case. |
| Major | 2 bytes | Further specifies a specific iBeacon and use case. For example, this could define a sub-region within a larger region defined by the UUID. |
| Minor | 2 bytes | Allows further subdivision of region or use case, specified by the application developer. |

The UUID, major and minor values provide the identifying information for the iBeacon. Generally speaking, this information is hierarchical in nature with the major and minor fields allowing for subdivision of the identity established by the UUID. UUIDs can be generated by using the `uuidgen` command line utility in OS X, or programmatically using the NSUUID Foundation class.

The following table shows examples of how these values may be used for a nationwide retail store. The UUID is shared by all locations. This allows an iOS device to use a single identifier to recognize *any* of the stores with a single region. Each specific store, San Francisco, Paris, and London, is then assigned a unique major value, allowing a device to identify which specific store it is in. Within each individual store, departments are given separate minor values, although these are the same across stores to make it easier for an app on a device to readily identify departments.

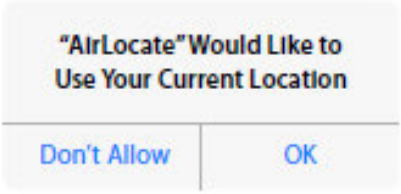
| Store Location | | San Francisco | Paris | London |
|---|---|---|---|---|
| UUID | | D9B9EC1F-3925-43D0-80A9-1E39D4CEA95C | | |
| Major | | 1 | 2 | 3 |
| Minor | Clothing | 10 | 10 | 10 |
| | Housewares | 20 | 20 | 20 |
| | Automotive | 30 | 30 | 30 |

Using this information, an iOS device could identify when it has entered or left one of the stores, which specific store it is, and what department the user might be standing in. These values are determined by the person or organization deploying the beacon device. UUIDs, and major & minor values are not registered with Apple.

EX2035.

Indeed, Petitioner's iPhone and iPad products each implement Apple's iOS and iPadOS operating systems that implement Location Services. Location Services reflect privilege data ("permissions" in Apple's vernacular) that are managed and stored by the iOS and iPadOS operating systems.

**Privacy and Location**
Because iBeacon is part of Core Location, the same user authorization is required in order to be used. Users will see the same location authorization alert when an application attempts to use the iBeacon APIs:




Applications that use beacon region APIs in CoreLocation will appear in the Settings app under Privacy > Location Services and users can allow or deny an application's access to iBeacon functionality at any time. Furthermore, any Bluetooth packets that are associated with iBeacon are excluded from the CoreBluetooth APIs.

https://developer.apple.com/ibeacon/Getting-Started-with-iBeacon.pdf

## How your device uses Location Services

With your permission, Location Services allows apps and websites (including Maps, Camera, Weather, and other apps) to use information from cellular[1], Wi-Fi[2], Global Positioning System (GPS)[3] networks, and Bluetooth[4] to determine your approximate location[5].

https://support.apple.com/en-us/HT203033

In addition to the UUID, an application can optionally supply the major and minor fields to further specify a beacon region to be monitored. Continuing with our retail chain example, if the app only specifies a UUID for the beacon region then it will be notified when the user enters or leaves *any* of the retail stores. Since the major field is being used to determine specific stores, if the user only wanted to be notified when entering a specific store, the application could configure the beacon region using the UUID + major value. Or perhaps the user is only interested in being notified when they have entered a specific department in that store. In that case the app would configure the beacon using UUID + major + minor values. This level of granularity is up to the app developer and can be specified dynamically at runtime.

As with the existing region monitoring, when the user enters or exits the beacon region, the application will be notified. If the application is not currently running (for example, if it was terminated due to memory pressure on the device), then the application is launched in the background and the notification delivered. One important consideration is in iOS 7 if the user explicitly disallows Background App Refresh (either globally or specifically for your app) then your app will no longer receive region monitoring notifications. It can continue to use the ranging APIs, however.

https://developer.apple.com/ibeacon/Getting-Started-with-iBeacon.pdf

EX2035.

At least challenged claims independent claims 1, 11 and 20 of the '011 patent cover Petitioner devices. EX2027, EX OO (mapping independent claim 11). This

includes devices that operate in compliance with BLE implementing IOS 7 and higher such as: 1) iPhone 4s, iPhone 5, iPhone 5s, iPhone 6, iPhone 6 Plus, iPhone 6s, iPhone 6s Plus, iPhone SE, iPhone 7, iPhone 7 Plus, iPhone 8, iPhone 8 Plus, iPhone X, iPhone XR, iPhone XS, iPhone XS Max, iPhone 11, iPhone 11 Pro, iPhone 11 Pro Max, iPhone 12 mini, iPhone 12, iPhone 12 Pro, and iPhone 12 Pro Max and 2) iPad (3rd, 4th, 5th, 6th, 7th, and 8th generation), iPad 2, iPad Mini, iPad Mini 2, iPad Mini 3, iPad mini 4, iPad Pro, iPad Air, and iPad Air 2.

Taken together, the evidence of Petitioner's access to the patented technology and implementation of devices that embody the challenged claims, is substantial evidence of the challenged claims nonobviousness.

### B. Commercial Success

Commercial success is strong evidence of non-obviousness. "When 'a product attains a high degree of commercial success, there is a basis for inferring that [attempts to a solution] have been made and have failed.'" *WBIP*, 829 F.3d at 1337 (citation omitted).

Petitioner touted the claimed features of the invention in connection with products using the iBeacon technology covered by the '011 patent. EX2027, EX. OO. The location based services touted by Petitioner, is as discussed above, a key factor of the '011 patent claims. According to Petitioner's own documents discussed above, the user cannot make assumptions in an application-based system about what

the application will or will not do with the relevant iBeacon. Instead, the user can customize the user interface for its application according to specific rights, privileges. This commercial success is directly attributable to the combination of features and the benefits of the iBeacon technology covered by the challenged claims of the '011 patent.

### C. Licensing

Evidence that competitors or customers have licensed a patent may provide probative and cogent evidence of non-obviousness of the claims at issue. *Institut Pasteur & Universite Pierre Et Marie Curie v. Focarino*, 738 F.3d 1337, 1347 (Fed. Cir. 2013). Several well-known companies [redacted]. This fact factors against a finding of obviousness.

[redacted] EX2028. According to the agreement, [redacted] Id. [redacted] Id.

[redacted] EX2029. [redacted] . EX20230. [redacted] Id. Again, the Licensed Patents include *inter alia*, the ’011 patent.

This is a further indicator of the value of the ’011 patent technology and non-obviousness of the invention.

### D. The Nexus Between The Challenged Claims And The Objective Evidence of Non-Obviousness

A patent owner may prove nexus “by showing that the evidence of secondary considerations is the ‘direct result of the unique characteristics of the claimed invention.’“ *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019). This may be accomplished by demonstrating that “the evidence of secondary considerations is attributable to the claimed combination of [features], as opposed to, for example, prior art features in isolation or unclaimed features.” *Id*. at 1378. In making this determination, it is necessary to look at the device as a whole, not elements or features in isolation. *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129,

Paper 33 at 33 (PTAB Jan. 24, 2020) (precedential). A presumption of nexus exists "when the patentee shows that the asserted objective evidence is tied to a specific product and that product 'is the invention disclosed and claimed in the patent.'" *WBIP*, 829 F.3d at 1329 (quoting *J.T. Eaton & Co. v. ATl. Paste & Glue Co.*, 106 F.3d 1563, 1571 (Fed. Cir. 1997)).

As discussed above, the location based services, which is a key feature of the '011 patent claims, is touted as an advantage of Petitioner's products. EX2027, EX. OO (claim 11). As shown, Petitioner's products periodically beacon a unidirectional wireless data record contributing to physical location determination, including (a) no physical location coordinates, (b) a data field containing signal strength, and (c) application identifier data.

The objective evidence of non-obviousness discussed above is the direct result of the combination of features claimed in the challenged claims.

Date: October 13, 2022 Respectfully Submitted,

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## Certification of Word Count Compliance

Pursuant to 37 C.F.R. § 42.24(d), the undersigned hereby certifies that Patent Owner, BillJCo, LLC's Patent Owner Response complies with the type-volume limitations of 37 C.F.R. § 42.24(b). The word count application of the word processing program used to prepare this Patent Owner Response indicates that it contains 7,748 words, excluding the parts exempted by 37 C.F.R. § 42.24.

Date: October 13, 2022

/Joseph M. Kuo/
(Reg. No. 65,816)

## Certification of Service Under 37 C.F.R. § 42.6(e))

The undersigned hereby certifies that Patent Owner, BillJCo, LLC's Patent Owner Response was served electronically via e-mail on October 13, 2022 in its entirety on the following counsel of record for the Petitioner:

| | |
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