I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted today via the Office electronic filing system (EFS-Web) in accordance with 37 CFR §1.6 (a)(4).

Date: September 14, 2012. Signature: /Andrea S. Beck /
Printed Name: Andrea S. Beck

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Inventors: Baliarda et al.

Patent No.: 7,123,208

Filed: April 8, 2005

For: Multilevel Antennae

REQUEST FOR REEXAMINATION UNDER
35 U.S.C. §§ 311 *ET SEQ.*, AND
37 C.F.R. §§ 1.913 AND 1.915

Mail Stop *Inter Partes* Reexamination
ATTN: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR *INTER PARTES* REEXAMINATION OF U.S. PATENT 7,123,208

TABLE OF CONTENTS

TABLE OF EXHIBITS

LIST OF EXHIBITS

The exhibits to the present Request are arranged in four groups: prior art ("PA"), relevant patent prosecution file history, patents, and claim dependency relationships ("PAT"), claim charts ("CC"), and other ("OTH").

A. PRIOR ART (PA)

PA-SB08A/B	USPTO Form SB/08A/B
PA-A	U.S. Patent No. 6,133,879 to Grangeat *et al.* issued on October 17, 2000 ("Grangeat")
PA-B	U.S. Patent No. 5,995,064 to Yanagisawa *et al.* issued on November 30, 1999 ("Yanagisawa '064")
PA-C	U.S. Patent No. 6,140,966 to Pankinaho issued on October 31, 2000 ("Pankinaho")
PA-D	U.S. Patent No. 6,300,914 to Yang issued on October 9, 2001 ("Yang")

B. RELEVANT PATENT MATERIALS (PAT)

PAT-A	U.S. Patent No. 7,123,208 ("the '208 patent")

C. CLAIM CHARTS (CC)

CC-A	Claim Chart comparing Claims 1, 7, 10, 11, and 12 of the '208 patent to the disclosure of Grangeat.
CC-B	Claim Chart comparing Claim 7 of the '208 patent to the disclosure of Grangeat in view of the knowledge of a person of ordinary skill in the art.
CC-C	Claim Chart comparing Claims 1, 7, 10, 11, and 12 of the '208 patent to the disclosure of Yanagisawa '064.
CC-D	Claim Chart comparing Claim 7 of the '208 patent to the disclosure of Yanagisawa '064 in view of the knowledge of a person of ordinary skill in the art.
CC-E	Claim Chart comparing Claims 1, 7, 10, 11, and 12 of the '208 patent to the disclosure of Pankinaho.
CC-F	Claim Chart comparing Claims 1, 7, 10, 11, and 12 of the '208 patent to the disclosure of Yang.

D. OTHER DOCUMENTS (OTH)

OTH-A	Second Amended Complaint filed December 2, 2009 in the case of *Fractus S.A. v. Samsung Electronics Co. Ltd. et al.,* Case No. 6:09cv203 (E.D. Tex.)

OTH-B	Preliminary Infringement Contentions for the '208 patent in the case of *Fractus S.A. v. Samsung Electronics Co. Ltd. Et al.,* Case No. 6:09cv203 (E.D. Tex.)[1]
OTH-C	Infringement Trial Demonstrative presented by Patent Owner's expert, Dr. Long, in the case of *Fractus S.A. v. Samsung Electronics Co. Ltd. Et al.,* Case No. 6:09cv203 (E.D. Tex.)
OTH-D	Action Closing Prosecution of co-pending reexamination of the '208 patent.
OTH-E	Court Claim Construction in the case of *Fractus S.A. v. Samsung Electronics Co. Ltd. Et al.,* Case No. 6:09cv203 (E.D. Tex.).
OTH-F	Deposition of Dr. Jaggard taken August 27, 2010 (Public Version with pages 151 to 159 redacted)

[1] Only a subset of the Preliminary Infringement Contentions is provided to avoid overloading the Patent Office with material in this Request for Reexamination.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Inventors: Baliarda et al.

Patent No.: 7,123,208

Filed: April 8, 2005

For: Multilevel Antennae

REQUEST FOR REEXAMINATION UNDER 35 U.S.C. §§ 311 *ET SEQ.*, AND 37 C.F.R. §§ 1.913 AND 1.915

Mail Stop *Inter Partes* Reexamination
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REQUEST FOR *INTER PARTES* REEXAMINATION OF U.S. PATENT 7,123,208

Dear Sir:

Pursuant to 37 C.F.R. § 1.915(b)(8), the Real Party in Interest, Samsung Electronics Co. Ltd. (hereinafter "Requester") hereby respectfully requests reexamination pursuant to 35 U.S.C. §§ 311 *et seq.* and 37 C.F.R. § 1.902 *et seq.*, of Original Claims 1, 7, 10, 11, and 12 of U.S. Patent No. 7,123,208 ("the '208 patent") filed April 8, 2005 and issued October 17, 2006 to Puente Baliarda, *et al. See* Exhibit PAT-A.

Although Samsung has a co-pending *inter partes* reexamination proceeding against the '208 patent, this reexamination request is being filed concurrently with a petition that the Director permit Samsung to file a second *inter partes* reexamination proceeding. As discussed in more detail in the concurrently filed petition, pursuant to the Leahy-Smith America Invents Act ("AIA"), effective September 16, 2012, Requestor-Petitioner will no longer be able to file a request for *inter partes reexamination* of the '431 Patent. Furthermore, because Requester-Petitioner was served with a complaint for infringement of the '431 Patent more than one year ago, Requester-Petitioner does not have the automatic right to seek *inter partes* review of the '431 Patent. *See* 35 U.S.C. §

314(a) (effective September 16, 2012). Accordingly, unless the Director authorizes this subsequent request for *inter partes* reexamination, Requester-Petitioner will not have any avenue for a further *inter partes* challenge to the patentability of the '431 Patent. Requester-Petitioner submits that these extraordinary circumstances, where both additional *inter partes* reexamination and *inter partes* review may be unavailable for Requester-Petitioner as of September 16, 2012, the Director should exercise discretion to authorize this subsequent *inter partes* reexamination request, as permitted by 35 U.S.C. § 317(a) and 37 C.F.R. § 1.907(a).

I. STATEMENT UNDER 37 C.F.R. § 1.915(B)(3) OF A REASONABLE LIKELIHOOD TO PREVAIL

This Request is based on the cited prior art documents set forth herein and on the accompanying Form PTO-SB/08A/B. *See* Exhibit PA-SB/08A/B. All of the cited prior art patents and publications constitute effective prior art as to the claims of the '208 patent under 35 U.S.C. § 102 and 35 U.S.C. § 103.

Pursuant to 37 C.F.R. § 1.915(b)(8), Requester hereby respectfully requests reexamination pursuant to 35 U.S.C. §§ 311 *et seq.* and 37 C.F.R. § 1.902 *et. seq*., of Original Claims 1, 7, 10, 11, and 12 of the '208 patent. Reexamination is requested in view of the reasonable likelihood of establishing that the Requester will prevail with respect to at least one claim (hereinafter "RLP"), and which is supported in the detailed proposed rejections found thereafter, as well as in the accompanying claim charts in which specific prior art citations are made relative to the claims' recitations. Requester reserves all rights and defenses available including, without limitation, defenses as to invalidity and unenforceability. By simply filing this Request in compliance with applicable statutes, rules, and regulations, Requester does not represent, agree or concur that the '208 patent is enforceable. As alleged by Patent Owner in the below defined Underlying Litigation, and as required by 37 C.F.R. § 1.913, the '208 patent is still within its period of enforceability for reexamination purposes, to the extent that the '208 patent has not lapsed for failure to pay maintenance fees, has not been the subject of any Terminal Disclaimer, and has not yet been held unenforceable in a court of competent jurisdiction. By asserting the RLPs herein, Requester specifically asserts that Original Claims 1, 7, 10, 11, and 12 of the '208 patent are in fact not patentable.

Accordingly, the U.S. Patent and Trademark Office ("the Office") should reexamine and find Original Claims 1, 7, 10, 11, and 12 of the '208 patent unpatentable and cancel these claims, rendering them null, void, and otherwise unenforceable.

II. REQUIREMENTS FOR *INTER PARTES* REEXAMINATION UNDER 37 C.F.R. § 1.915

Requester satisfies each requirement for *Inter Partes* reexamination of the '208 patent pursuant to 37 C.F.R. § 1.915. A full copy of the '208 patent is submitted herein as Exhibit PAT-A in accordance with 37 C.F.R. § 1.915(b)(5).

Pursuant to 37 C.F.R. § 1.915(b)(7), Requester certifies that the estoppel provisions of 37 C.F.R. § 1.907 do not prohibit the filing of this *Inter Partes* reexamination.

Pursuant to 37 C.F.R. §1.915(b)(4), a copy of every patent or printed publication relied upon to present an RLP is submitted herein at Exhibits PA-A through PA-D, citation of which may be found on the accompanying Form PTO-SB/08A as Exhibit PTO-SB/08A in accordance with 37 C.F.R. § 1.915(b)(2). Each of the cited prior art publications constitute effective prior art as to the claims of the '208 patent under 35 U.S.C. § 102 and 35 U.S.C. § 103. Furthermore, each piece of prior art submitted was either not considered by the Office during the prosecution of the '208 patent or is being presented in a new light under MPEP § 2642 as set forth in the detailed explanation below and in the attached claim charts.

A statement pointing out each RLP based on the cited patents and printed publications, and a detailed explanation of the pertinency and manner of applying the patents and printed publications to Claims 1, 7, 10, 11, and 12 of the '208 patent, is presented below and in attached claim charts in accordance with 37 C.F.R. § 1.915 (b)(3).

A copy of this request has been served in its entirety on the patent owner in accordance with 37 C.F.R. § 1.915(b)(6) at the following address:

EDELL, SHAPIRO & FINNAN, LLC
1901 RESEARCH BOULEVARD
SUITE 400
ROCKVILLE MD 20850

In accordance with 37 C.F.R. § 1.915(a), a credit card authorization to cover the Fee for reexamination of $8,800.00 is attached. If this authorization is missing or defective, please charge the Fee to the Novak Druce and Quigg Deposit Account No. 14-1437.

III. OVERVIEW OF THE '208 PATENT AND PROSECUTION HISTORY

A. INTRODUCTION

The '208 patent is directed to a multilevel antenna structure formed by a set of similar geometric elements. '208 patent at Abstract. In particular, a multilevel antenna may operate at several frequency bands simultaneously and purportedly result in a size reduction when compared to a conventional antenna. '208 patent at Col. 6, lines 25-31. The '208 patent, in its specification, describes that "fractal or multifractal type antenna" exhibit a multifrequency behavior and in certain cases can be done in a "small size." '208 patent at Col. 1, lines 14-22. Patent Owner admits that the prior art discloses fractal antennae ("US Patent number 9,501,019") and multitriangular antennae ("US Patent number 9,800,954") which operate in multiple frequency bands simultaneously. '208 patent at Col. 1, lines 42-47. Given that the US Patent Office has not issued patents in the 9 million range, the Requester believes that the Patent Owner is referring to Spanish patents as recited in a related patent, US Patent 7,015,868 at Col. 1, lines 36-41. Furthermore, the Patent Owner suggests that the problem with those antennae was of a "practical nature which limit the behaviour of said antennae and reduce their applicability in real environments." '208 patent at Col. 1, lines 42-46. The Patent Owner has not shown, in any form, how its alleged invention is novel over the antennae of the prior art. Accordingly, as will be set forth in detail below, claims 1, 7, 10, 11, and 12 of the '208 patent are not patentable, and should be rejected in view of the proposed RLPs raised in this Request, rendering these claims, null, void, and otherwise unenforceable.

1. THE '208 PATENT APPLICATION PROSECUTION HISTORY

On April 8, 2005, the Patent Owner filed Application No. 11/102,390 ("the '390 Application") which is a continuation of Application No. 10/963,080, now Patent No. 7,015,868, which is a continuation of Application 10/102,568, now abandoned, which is a continuation of PCT/ES99/00296. A Preliminary Amendment was filed on April 8, 2005, canceling claims 1-38 and adding new claims 39-155. No Office Actions issued. A Notice of Allowance issued on July 6, 2006. Claims 39, 53, 67, 86, 100, 114, 128, and 142 were indicated as allowable because:

> Claims 39 and 53 are allowable over the art of record because the prior art does not teach the perimeter of the multilevel structure has a different number of sides than the polygons that compose the antenna region, and further wherein a plurality of polygons of the antenna region are generally identifiable as a

geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within the region necessary to from the generally distinguishable elements where the polygon perimeters are interconnected, and in combination with the remaining claimed limitations.[2]

Claim 67 is allowable over the art of record because the prior art does not teach the region or area of interconnection between the polygonal or polyhedral elements is such that at least 50% of their respective perimeter portions are exposed and without physical connection to another polygon and less than 50% of the respective perimeters extend into the region an area of interconnection forming the generally identifiable polygons by extension of ones of the longest exposed perimeters thereof to define the least number of polygons within the region, and in combination with the remaining claimed limitations.[3]

Claims 86, 100 and 114 are allowable over the art of record because the prior art does not teach the perimeter of the multilevel structure has a different number of sides that the polygons that compose the antenna region, and further where a plurality of polygons in contact or overlap with the contiguous polygons are geometrically identifiable by extension of the exposed perimeters of the generally identifiable geometrical shaped into the region or area of contact or overlap and wherein a polygon with the curved perimeter portion is geometrically identifiable by a linear perimeter approximating the shape of the curved perimeter portion, and in combination with the remaining claimed limitations.[4]

Claims 128 and 142 are allowable over the art of record because the prior art does not teach the region or area of contact or overlap between the polygonal or polyhedral elements is less than 50% of the perimeter or area of the elements, wherein not all of the polygonal or polyhedral elements have the same size, and wherein the perimeter of the multilevel structure has a different number of sides than the polygons that compose the antenna region, and further wherein a plurality of overlapping polygonal or polyhedral elements, having one or both of linear and curved perimeter portions, defined identifiable geometrical shapes in the at least one antenna region with the same number of sides or faces as those otherwise generally identifiable therein, and in combination with the remaining claimed limitations.

Notice of Allowance, pp. 2-3. The '208 patent issued on October 17, 2006. On October 17, 2006, a Certificate of Correction was issued correcting the priority chain to the prior-filed PCT Application.

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[2] Allowed claims 39 and 53 correspond to issued claims 1 and 15.

[3] Allowed claim 67 corresponds to issued claim 29.

[4] Allowed claim 86 corresponds to issued claim 48.

2. OVERVIEW OF THE CLAIMS

Requester is presently requesting reexamination of one independent claim of the '208 herein. Independent Claim 1 reads:

> 1. A multi-band antenna including at least one multilevel structure wherein the multilevel structure includes at least one antenna region comprising a set of polygonal or polyhedral elements having the same number of sides or faces, wherein each of said elements in said antenna region is electromagnetically coupled to at least one other of said elements in said region either directly through at least one point of contact or through a small separation providing said coupling, wherein for at least 75% of said polygonal or polyhedral elements, the region or area of contact between said polygonal or polyhedral elements is less than 50% of the perimeter or area of said elements, wherein not all of the polygonal or polyhedral elements have the same size, and wherein the perimeter of the multilevel structure has a different number of sides than the polygons that compose said antenna region, and further wherein a plurality of polygons of said antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within said region necessary to form said generally distinguishable elements where said polygon perimeters are interconnected.

Dependent claims 7, 10, 11, and 12 read as follows:

> 7. The multi-band antenna set forth in claim 1, wherein the level of impedance and radiation pattern of said antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.
>
> 10. The multi-band antenna set forth in claim 1, wherein said antenna is included in a portable communications device.
>
> 11. The multi-level antenna set forth in claim 10, wherein said portable communication device is a handset.
>
> 12. The multi-level antenna set forth in claim 11, wherein said antenna operates at multiple frequency bands, and where in at least one of said frequency bands is operating within the 800 MHz-3600 MHz frequency range

B. RELATED *INTER PARTES* REEXAMINATION OF THE '208 PATENT

On July 1, 2010, the Real Party in Interest, Samsung Electronics Co. Ltd. filed an *inter partes* reexamination request against claims 1, 5, 7, 10-12, 14, 15, 18, 21, 24-26, 28, 29, 33, 37,

40, 43-48, 54, 57-59, and 61 of the '208 patent which was granted as Control No. 95/001,389 ("the 1389 reexamination"). On December 3, 2010, HTC filed a request for *inter partes* reexamination of the same claims of the '208 Patent, which was granted as Control No. 95/001,501 ("the '1501 reexamination"). On December 14, 2010, Kyocera filed a request for reexamination of claims 1, 5, 7, 10-12, 14-15, 21, 24-26, 28-29, 33, 37, 40, 43-45, 48 54, 57-59, 61 of the '208 Patent, which was granted as Control No. 95/000,591 ("the '591 reexamination" or "the Kyocera reexamination"). On June 1, 2011, the Patent and Trademark Office ("the Office") merged the '591, '1389, and '1501 reexaminations.

Subsequent to this merger, Patent Owner attained a final and non-appealable consent judgment against HTC. Patent Owner then filed a petition to terminate the '1501 reexamination, which was granted on December 12, 2011, leading to the severance of the '1501 reexamination from the merged proceedings. HTC is no longer involved in these reexamination proceedings. Additionally, Patent Owner attained a final and non-appealable consent judgment against Kyocera, which dismissed with prejudice Kyocera's counterclaims of invalidity of Patent Owner's patents including the claims raised in the '591 reexamination. Kyocera Final Consent Judgment at ¶¶ 6, 9, 11, 14. On July 31, 2012, Patent Owner filed a petition to the Office to terminate the '591 reexamination. The petition to terminate the '591 reexamination is currently pending. Moreover, Kyocera is presently not participating in the merged reexamination proceedings. *See* Kyocera's Notice of Non-Participation and Notice of Litigation Settlement, filed December 22, 2011.

As of the time of filing of this reexamination request, the latest correspondance received from the Patent Office was an Action Closing Prosection mailed on July 26, 2012 rejecting all claims 1, 5, 7, 10-12, 14, 15, 18, 21, 24-26, 28, 29, 33, 37, 40, 43-48, 54, 57-59, and 61 in the merged '1389 and '591 reexamination proceeding. Attached as OTH-D, ACP issued July 26, 2012.

C. Related Co-Pending Litigation Requires Treatment with Special Dispatch and Priority Over All Other Cases

The '208 patent is presently the subject of *Fractus S.A. v. Samsung Electronics Co. Ltd. et al.,* Case No. 6:09cv203 (E.D. Tex.) ("the Underlying Litigation"). *See* Exhibit OTH-A. Pursuant to 35 U.S.C. § 314, the Requester respectfully urges that this Request be granted and reexamination conducted not only with "**special dispatch**," but also with "**priority over all**

other cases" in accordance with MPEP § 2661, due to the ongoing nature of the Underlying Litigation.

Further, pursuant to the policy of the Office concerning revised reexamination procedures to provide for a scheduling-type order of expected substantive action dates in Requests ordered after the Office's 2005 fiscal year, Requester respectfully seeks such a scheduling order upon the granting of this Request.

D. CLAIM CONSTRUCTION

For purposes of this Request, the claim terms are presented by the Requester in accordance with the Patent Owners broad infringement contentions and claim construction positions from litigation and in accordance with 37 C.F.R. § 1.555(b) and MPEP § 2111. Specifically, Patent Owner has asserted an extremely broad scope for the claims of the '208 patent. *See* OTH-B, Patent Owner's Infringement Contentions and OTC-C, Patent Owner's infringement demonstrative presented during trial. While Requester does not agree with the reasonableness of the Patent Owner's Infringement Contentions, the Infringement Contentions provide admissions by the Patent Owner regarding its belief on the scope of the claims. *See* OTH-B and OTH-C. Furthermore, each term of the claims in the '208 patent is to be given its "broadest reasonable construction" consistent with the specification. MPEP § 2111; *In re Swanson*, No. 07-1534 (Fed. Cir. 2008); *In re Trans Texas Holding Corp.*, 498 F.3d 1290, 1298 (Fed. Cir. 2007) (citing *In re Yamamoto*, 740 F.2d 1569, 1571 (Fed. Cir. 1984)).

The Examiner in the copending '1389 reexamination has look at the claims and made findings regarding broadest reasonable interpretation of many claim terms. *See* OTH-C at 5-15. The claims as interpreted by the Examiner read on the prior art presented in this reexamination request. In addition, the prior art still renders the claims unpatentable even under the improperly narrow interpretations presented by the Patent Owner in the '1389 reexamination. Further, while not binding on the Office, the Claim Construction Order from the underlying litigation is also provided for completeness. *See* OTH-E.

E. PATENT OWNER'S INFRINGEMENT CONTENTIONS

The Requester has considered the specification of the '208 patent for determining the scope of the claim elements, however, where the specification is unclear or does not provide sufficient claim support, the Requester identifies excerpts of Patent Owner's Infringement

Contentions to demonstrate Patent Owner's broad construction of the claim elements. *See* OTH-B and OTH-C. Testimony from the Patent Owner's litigation expert also exemplifies the broadness of Patent Owner's interpretation of the claims, and in particular its assertion that the claimed multilevel structure reads on a branched antenna that shares a common feed portion. *See* OTH-F. The Patent Owner's interpretation of the claims are quite broad and the Patent Owner reads the claims to cover antennas that are not described, or even similar to antennas described, in the specification of the '208 patent. The Requester does not agree with the Patent Owner's claim interpretation and/or claim construction as applied by Patent Owner and shown in the Patent Owner's infringement contentions, but the Requester requests that the Office follows the Patent Owner's infringement contentions for purposes of the reexamination because such contentions constitute an admission by the Patent Owner. 37 CFR 1.104(c)(3), MPEP § 2617(III).

As seen in the infringement contentions, the Patent Owner's application of some of the claim language to product details appears arbitrary and no explanation is given. For instance, the Patent Owner has drawn its own subjectively-determined lines on antennas in order to divide a single metal strip into multiple "polygonal elements." In other instances, the Patent Owner draws an arrow from certain claim elements to parts of the accused device without providing any rationale how the part of the accused device pointed to would read on the claim element. Additionally, in some instances, as discussed in further detail in this Request, the specification of the '208 patent does not provide a clear definition of the elements of the claims. As a result, the Requester is relying on the Patent Owner's Infringement Contentions to attempt to interpret the elements.

Although the Requester does not agree with the Patent Owner's infringement allegations, Requester nonetheless provides the infringement contentions to provide the Examiner with examples of how the Patent Owner views its own claims.

I. STATEMENT ESTABLISHING A REASONABLE LIKELIHOOD THAT THE REQUESTER WILL PREVAIL WITH RESPECT TO AT LEAST ONE CLAIM UNDER 37 C.F.R. § 1.915 (B)

During the debates that lead to the passage of the America Invents Act (AIA) Senator Kyl characterized the "reasonable likelihood of prevailing" (RLP) standard in order to initiate an *inter partes* review, germane to *inter partes* reexamination current standard for granting a request

for inter partes reexamination. Senator Kyl explained that the RLP standard "is currently used in evaluating whether a party is entitled to a preliminary injunction." 157 Cong. Rec. S1375 (daily ed. Mar. 8, 2011).

It is well settled that a patent owner seeking a preliminary injunction must show that a reasonable likelihood exists that the party will achieve success in its claim. However, this does not require the party prove ultimate success on the merits at the preliminary injunction stage, only a reasonable probability of success. *Brill v. Peckman Motor Truck & Wheel Co.*, 189 U.S. 57, 63 (1903) ("If complainants in every case must understand that a motion for a preliminary injunction requires the same showing as on final hearing very few motion of that sort would be made.") and *see also Univ. of Texas v. Camenisch*, 451 U.S. 390, 395 (1981)

> The purpose of a preliminary injunction is merely to preserve the relative positions of the parties until a trial on the merits can be held. Given this limited purpose, and given the haste that is often necessary if those positions are to be preserved, a preliminary injunction is customarily granted on the basis of procedures that are less formal and evidence that is less complete than in a trial on the merits. A party thus is not required to prove his case in full at a preliminary-injunction hearing."

As such, the requester for an *inter partes* reexamination only has to present a prima facie case justifying a rejection of at least one claim in the patent in order for the request to be granted by the examiner. *See* 35 U.S.C. § 312 (2011) ("the information presented in the request shows that there is a reasonable likelihood that the requester would prevail with respect to at least 1 of the claims challenged in the request") and 157 Cong. Rec. S1375 (daily ed. Mar. 8, 2011) ("present a prima facie case justifying a rejection of the claims in the patent").

A. GRANGEAT PRESENTS AN RLP WITH RESPECT TO CLAIMS 1, 7, 10, 11, AND 12 OF THE '208 PATENT

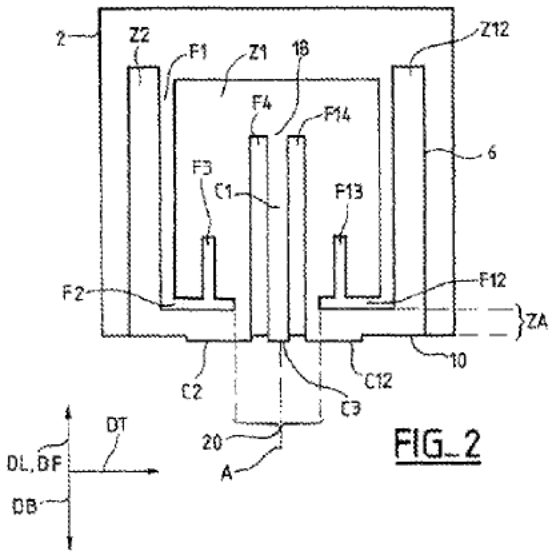
Grangeat is a U.S. Patent filed on December 11, 1998 and issued October 17, 2000. Accordingly, Grangeat constitutes effective prior art under 35 U.S.C. § 102(a). Grangeat was not cited in the '208 patent and is not cumulative to any prior art previously considered. Moreover, this reference teaches the alleged reason for patentability of the '208 patent and is not cumulative to any prior art previously considered.

During examination of the '208 patent, the Examiner asserted that:

> Claims 1 and 15 are allowable over the art of record because the prior art does not teach the perimeter of the multilevel structure has a different number of sides than the polygons that compose the antenna region, and further wherein a plurality of polygons of the antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within the region necessary to from the generally distinguishable elements where the polygon perimeters are interconnected, and in combination with the remaining claimed limitations.

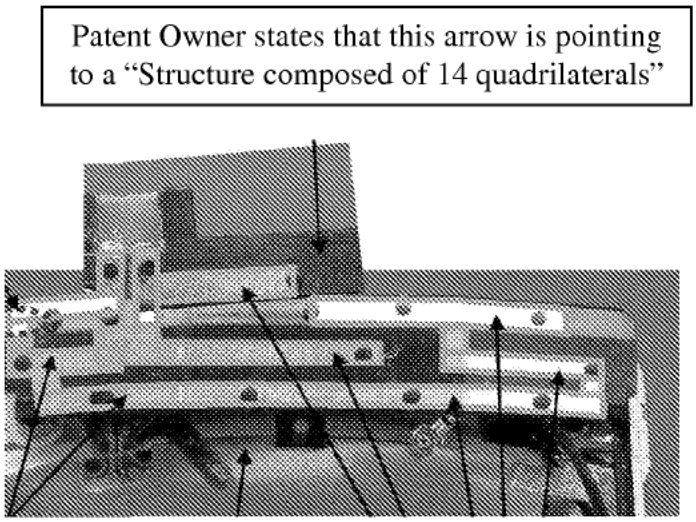
Because Grangeat discloses the above technical feature, along with each element of claims 1, 7, 10, 11, and 12, an Examiner would consider Grangeat important in deciding the patentability of the '208 patent.

Specifically, Grangeat discloses a multifrequency microstrip antenna that enables two resonances to be established in two respective different areas. Grangeat at col. 4, lines 41-64; Abstract; and FIG. 2. Specifically, "[o]ne operating mode of the antenna then constitutes a primary mode in which a standing wave is established by virtue of propagation of traveling waves both ways in the longitudinal direction or a direction near the longitudinal direction, the waves propagating in an area including the primary zone and the rear region and substantially excluding the secondary zone Z2. Another operating mode constitutes a secondary mode in which a standing wave is established by virtue of propagation of traveling waves both ways (the same as before) in another area including the primary and secondary zones and the rear region." Grangeat at col. 6, lines 52-64.



Grangeat at FIG 2.

While the specification of the '208 patent does not provide a clear definition of the elements of this claim, the Patent Owner has provided Infringement Contentions that will be used to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.



Infringement Contentions for the Samsung Instinct M800 at p. 2 (annotated by the Patent Owner to show four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is a random assortment of same-sided polygons; in the Infringement Contentions it is a group of various shaped four-sided polygons subjectively superimposed on to the antenna. Therefore, Grangeat discloses all the limitations as defined by the Patent Owner. Specifically, Figure 2 discloses this. As shown, there is a multilevel structure having an overall shape of more than four sides that is composed of various four-sided polygons. Grangeat at FIG. 2. Moreover, Grangeat discloses that the plurality of polygons of said antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within said region necessary to form said generally distinguishable elements where said polygon perimeters are interconnected.

The multilevel structure comprises a set of polygonal or polyhedral elements having the same number of sides or faces. Specifically, Grangeat discloses at least one multilevel structure wherein the multilevel structure includes at least one antenna region (*i.e.*, zones Z1 and Z2

shown in FIG. 2) comprising a set of polygonal or polyhedral elements (*i.e.,* four sided polygons as shown below) having the same number of sides or faces (*i.e.,* four sides). Grangeat at col. 6, lines 52-64; and FIG. 2.

The elements of the antenna are electromagnetically coupled to each other through at least one point of contact. Specifically, "the coupling line that constitutes the coupling device of the antenna includes a conductor that is part of the top conductive layer" to "enable the antenna to be coupled by means of an electromagnetic signal." Grangeat at col. 7, line 62 – col. 8, line 28. For at least 75% of said polygonal elements, the region of contact between the polygonal elements is less than 50% of the perimeter or area of said elements. For example, starting with the first polygonal element of Figure 2 (*e.g.,* the polygonal element with the tip labeled as Z2 in Figure 2), the only contact area is on one of the two shorter sides of the polygonal element. Thus, given that there is only one contact area on one of the two shorter sides of the polygonal element, this polygonal element clearly meets the 50% limitation. The next polygonal element (*e.g.,* the short horizontal polygonal element) has two contact areas with both contact areas on one of the longer sides. Thus, as shown, the contact areas of this polygonal element clearly meet the 50% limitation. Following this approach to analyzing Figure 2, it is clear that Grangeat discloses this claim limitation. Specifically, given that there is only one contact area on one of the two shorter sides of the polygonal element, this polygonal element clearly meets the 50% limitation.

Grangeat further discloses the final limitation of claim 1 wherein a plurality of polygons of the antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within the region necessary to form the generally distinguishable elements where the polygon perimeters are interconnected. Specifically, Figure 2 disclose this. As shown, there is a fundamental shape, in this case a four-sided polygon, which is used as a building block to create an antenna that is composed of similar shapes and creates the overall antenna structure that is a different shape than the original building block. Grangeat at Figure 2.

In view of the above, and the detailed application of the prior art against the claims presented below and the attached claim charts, Grangeat raises an RLP with respect to claims 1, 7, 10, 11, and 12 of the '208 patent since Grangeat teaches the technical feature of the '208 patent in a new and non-cumulative manner. Accordingly, the Examiner should order reexamination

against claims 1, 7, 10, 11, and 12 of the '208 patent, cancel these claims, rendering them null, void, and otherwise unenforceable.

("present a prima facie case justifying a rejection of the claims in the patent").

B. GRANGEAT IN VIEW OF THE KNOWLEDGE OF A PERSON OF ORDINARY SKILL IN THE ART PRESENTS AN RLP WITH RESPECT TO CLAIM 7 OF THE '208 PATENT

As discussed above, Grangeat constitutes effective prior art under 35 U.S.C. § 102(a). Grangeat was not cited in the '208 patent and is not cumulative to any prior art previously considered. Moreover, this reference teaches the alleged reason for patentability of the '208 patent and is not cumulative to any prior art previously considered. As discussed above, Grangeat raises an RLP with respect to claims 1, 7, 10, 11, and 12 of the '208 patent since Grangeat teaches the technical feature of the '208 patent in a new and non-cumulative manner. Grangeat is presented in this RLP in combination with the knowledge of a person of ordinary skill in the art to show that it would have been obvious to one of ordinary skill in the art, based on Grangeat's teachings, that the level of impedance and radiation pattern of the antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in the bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.

Specifically, Grangeat teaches that the level of impedance and radiation pattern of the antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in the bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services. Grangeat at col. 6, lines 52-64; and col. 10, lines 24-30. Specifically, "[o]ne operating mode of the antenna then constitutes a primary mode in which a standing wave is established by virtue of propagation of traveling waves both ways in the longitudinal direction or a direction near the longitudinal direction, the waves propagating in an area including the primary zone and the rear region and substantially excluding the secondary zone Z2. Another operating mode constitutes a secondary mode in which a standing wave is established by virtue of propagation of traveling waves both ways (the same as before) in another area including the primary and secondary zones and the rear region." Grangeat at col. 6, lines 52-64. If the Examiner does not agree that the disclosure that similar patch antennas that radiate over the same ground plane explicitly discloses

similar radiation patterns, then it would have been understood by one of ordinary skill in the art that similar patch antennas that radiate over the same ground plane would produce similar radiation patterns.

In view of the above, and the detailed application of the prior art against the claims presented below and the attached claim charts, Grangeat in view of the knowledge of a person of ordinary skill in the art raises an RLP with respect to claim 7 of the '208 patent since Grangeat in view of the knowledge of a person of ordinary skill in the art teaches the technical feature of the '208 patent in a new and non-cumulative manner. Accordingly, the Examiner should order reexamination against claim 7 of the '208 patent, cancel this claims, rendering them null, void, and otherwise unenforceable.

C. YANAGISAWA '064 PRESENTS AN RLP WITH RESPECT TO CLAIMS 1, 7, 10, 11, AND 12 OF THE '208 PATENT

Yanagisawa '064 was filed on November 25, 1996 and issued on November 30, 1999. Accordingly, Yanagisawa '064 constitutes effective prior art under 35 U.S.C. § 102(e). Yanagisawa '064 was not cited in the '208 patent and is not cumulative to any prior art previously considered.

During examination of the '208 patent, the Examiner asserted that:

> Claims 1 and 15 are allowable over the art of record because the prior art does not teach the perimeter of the multilevel structure has a different number of sides than the polygons that compose the antenna region, and further wherein a plurality of polygons of the antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within the region necessary to from the generally distinguishable elements where the polygon perimeters are interconnected, and in combination with the remaining claimed limitations.

Because Yanagisawa '064 discloses the above technical feature, along with each element of claims 1, 7, 10, 11, and 12, an Examiner would consider Yanagisawa '064 important in deciding the patentability of the '208 patent.

Specifically, Yanagisawa '064 discloses a multi-band antenna (*i.e.*, an antenna operating in two frequency bands). Yanagisawa '064 at Abstract, 1:8-15, FIGS. 1 and 22. Figure 1, below, illustrates an embodiment of the antenna. Figure 22, below, illustrates that the antenna is formed

on a circuit board housed in the radio apparatus. Yanagisawa '064 at FIG. 22, 12:15-19, 31:56-63.

Yanagisawa '064 discloses that "it is possible to transmit and receive signals of multi-frequency bands of even-number relationship (e.g., 900 MHz and 1800 MHz as with the case of the portable telephone sets) by use of a single antenna." Yanagisawa '064 at 4:15-25. Yanagisawa '064 discloses: "the first antenna portion 10 can of course receive radio signals not only for a call signal but also for communications." Yanagisawa '064 at 16:22-25. Yanagisawa '064 further discloses: "when the antenna as shown in FIG. 1 is used as the whole or a part of the antenna of the radio apparatus, it is possible to obtain a small-sized radio apparatus which can transmit and receive multi-frequency bands at a high sensitivity." Yanagisawa '064 at 17:52-57. Thus, Yanagisawa '064 discloses that the multi-band antenna includes at least one multilevel structure because the entire antenna structure 10 of embodiment 1 radiates at multi-frequency bands. Yanagisawa '064 at Abstract, 16:22-25, 17:52-57. Moreover, a plurality of polygons of said antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within said region necessary to form said generally distinguishable elements where said polygon perimeters are interconnected.

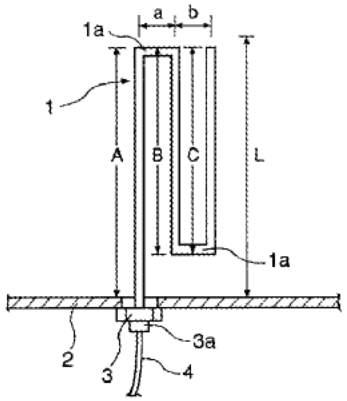


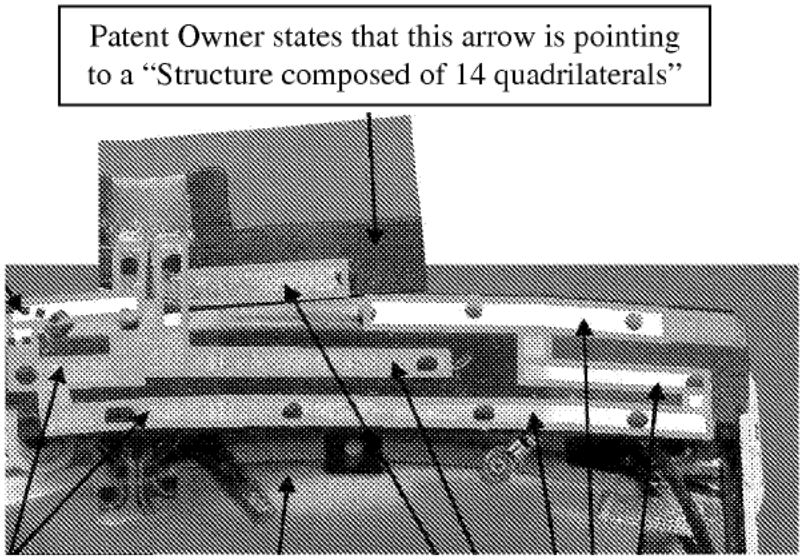
FIG.1

Yanagisawa '064 at FIG. 1

The multilevel structure comprises a set of polygonal or polyhedral elements having the same number of sides or faces. Figure 1, below, illustrates an antenna 1 with more than one polygonal elements. For example, using the notations in Figure 1, there is a first polygon that

spans the length of "A," a second polygon that spans the length of "a," a third polygon that spans the length of "B," a fourth polygon that spans the length of "b," and a fifth polygon that spans the length of "C." The polygonal elements have the same number of sides or faces (*e.g.*, 4 sides).

While the specification of the '208 patent does not provide a clear definition of the multilevel structure, the Patent Owner has provided Infringement Contentions that will be used to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.



Infringement Contentions for the SCH-R500 at 2 (annotated by the Patent Owner to show four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is a random assortment of same-sided polygons; in the Infringement Contentions it is a group of various shaped four-sided polygons subjectively superimposed onto the antenna. Therefore, Yanagisawa '064 discloses all the limitations as defined by the Patent Owner. Specifically, Figure 1 shown above, discloses this. As shown, there is a multilevel structure having an overall shape that is composed of various same-sided polygons. Yanagisawa '064 at FIG. 1.

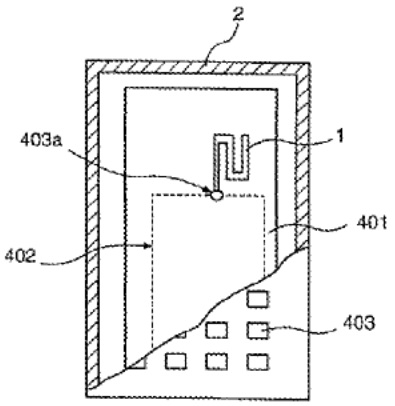


FIG.22

Yanagisawa '064 at FIG. 22

Figure 1, illustrates that the elements of the antenna are electromagnetically coupled to each other through at least one point of contact. For example, the first polygon that spans the length of "A" has one point of contact with the second polygon that spans the length of "a." As illustrated in Figure 1, for at least 75% of said polygonal elements, the region of contact between the polygonal elements is less than 50% of the perimeter or area of said elements. Moreover, not all the polygonal elements have the same size. For example, the first polygon that spans the length of A has a different size than the polygons that spans the lengths of "a," "B," "b," and "C." Lastly, the perimeter of the multilevel structure has a different number of sides than the polygons that compose said antenna region. For example, each of the polygons has 4 sides, and the multilevel structure illustrated below has more than 4 sides.

In view of the above, and the detailed application of the prior art against the claims presented below and the attached claim charts, Yanagisawa '064 raises an RLP with respect to claims 1, 7, 10, 11, and 12 of the '208 patent since Yanagisawa '064 teaches the technical feature of the '208 patent in a new and non-cumulative manner. Accordingly, the Examiner should order reexamination against claims 1, 7, 10, 11, and 12 of the '208 patent, cancel these claims, rendering them null, void, and otherwise unenforceable.

D. YANAGISAWA '064 IN VIEW OF THE KNOWLEDGE OF A PERSON OF ORDINARY SKILL IN THE ART PRESENTS AN RLP WITH RESPECT TO CLAIM 7 OF THE '208 PATENT

As discussed above, Yanagisawa '064 constitutes effective prior art under 35 U.S.C. § 102(e). Yanagisawa '064 was not cited in the '208 patent and is not cumulative to any prior art previously considered. Moreover, this reference teaches the alleged reason for patentability of the '208 patent and is not cumulative to any prior art previously considered. As discussed above, Yanagisawa '064 raises an RLP with respect to claims 1, 7, 10, 11, and 12 of the '208 patent since Yanagisawa '064 teaches the technical feature of the '208 patent in a new and non-cumulative manner. Yanagisawa '064 is presented in this RLP in combination with the knowledge of a person of ordinary skill in the art to show that it would have been obvious to one of ordinary skill in the art, based on Yanagisawa '064's teachings, that the level of impedance and radiation pattern of the antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in the bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.

Specifically, Yanagisawa discloses that "it is possible to transmit and receive signals of multi-frequency bands of even-number relationship (e.g., 900 MHz and 1800 MHz as with the case of the portable telephone sets) by use of a single antenna." Yanagisawa '064 at 4:15-25. Yanagisawa '064 discloses: "the first antenna portion 10 can of course receive radio signals not only for a call signal but also for communications." Yanagisawa '064 at 16:22-25. Yanagisawa '064 further discloses: "when the antenna as shown in FIG. 1 is used as the whole or a part of the antenna of the radio apparatus, it is possible to obtain a small-sized radio apparatus which can transmit and receive multi-frequency bands at a high sensitivity." Yanagisawa '064 at 17:52-57. Thus, the level of impedance and radiation pattern of said antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services. If the Examiner does not agree that the disclosure that using the same antenna structure to radiate at multiple frequencies without deteriorating the radiation characteristics explicitly discloses similar radiation patterns, then it would have been understood by one of ordinary skill in the art that using the same antenna

structure to radiate at multiple frequencies without deteriorating the radiation characteristics would produce similar radiation patterns.

In view of the above, and the detailed application of the prior art against the claims presented below and the attached claim charts, Yanagisawa '064 in view of the knowledge of a person of ordinary skill in the art raises an RLP with respect to claim 7 of the '208 patent since Yanagisawa '064 in view of the knowledge of a person of ordinary skill in the art teaches the technical feature of the '208 patent in a new and non-cumulative manner. Accordingly, the Examiner should order reexamination against claim 7 of the '208 patent, cancel this claims, rendering them null, void, and otherwise unenforceable.

E. PANKINAHO PRESENTS AN RLP WITH RESPECT TO CLAIMS 1, 7, 10, 11, AND 12 OF THE '208 PATENT

Pankinaho was filed on July 2, 1998 and issued on October 31, 2000. Accordingly, Pankinaho constitutes effective prior art under 35 U.S.C. § 102(a). Pankinaho was not cited in the '208 patent and is not cumulative to any prior art previously considered.

During examination of the '208 patent, the Examiner asserted that:

> Claims 1 and 15 are allowable over the art of record because the prior art does not teach the perimeter of the multilevel structure has a different number of sides than the polygons that compose the antenna region, and further wherein a plurality of polygons of the antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within the region necessary to from the generally distinguishable elements where the polygon perimeters are interconnected, and in combination with the remaining claimed limitations.

Because Pankinaho discloses the above technical feature, along with each element of claims 1, 7, 10, 11, and 12, an Examiner would consider Pankinaho important in deciding the patentability of the '208 patent.

Specifically, Pankinaho discloses small-sized antenna systems, especially planar antenna structures operating on several frequency bands. Pankinaho at col. 1, lines 5-7. Wherein, an antenna with separate radiating elements connected by a common feed point is a multilevel structure. Pankinaho also discloses at least one multilevel structure including at least one antenna region (*i.e.,* radiating element 100 in Figure 1) comprising a set of polygonal or polyhedral

elements (*i.e.,* four sided polygons as shown below) having the same number of sides or faces (*i.e.,* four sides). Pankinaho at col. 3, lines 24-39; and FIG. 1.

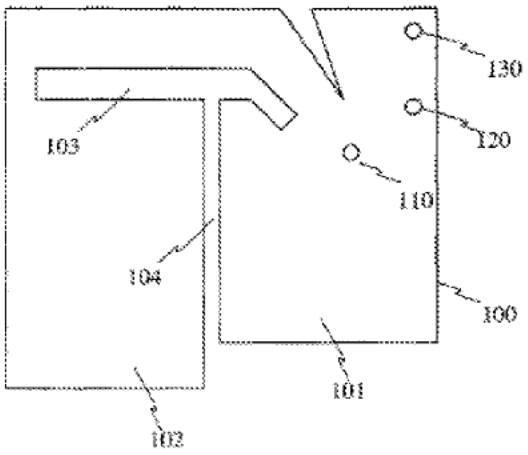
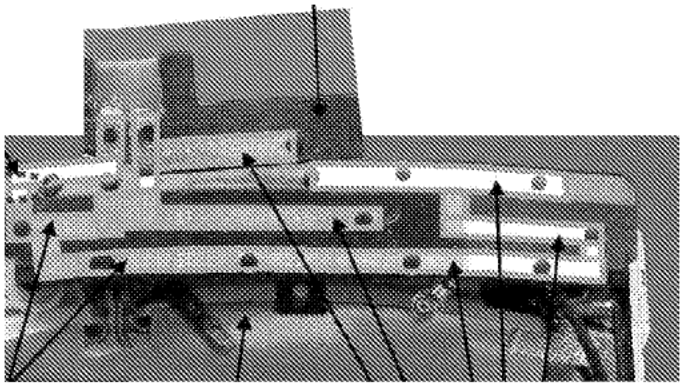


Fig. 1

Pankinaho at FIG. 1.

While the specification of the '208 patent does not provide a clear definition of the multilevel structure, the Patent Owner has provided Infringement Contentions that will be used to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.

Patent Owner states that this arrow is pointing to a "Structure composed of 14 quadrilaterals"



Infringement Contentions for the SCH-R500 at 2 (annotated by the Patent Owner to show four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is a random assortment of same-sided polygons; in the Infringement Contentions it is a group of various shaped four-sided polygons subjectively superimposed onto the antenna. Therefore, Pankinaho discloses all the limitations as defined by the Patent Owner. Specifically, Figure 1 shown above, discloses this. As shown, there is a multilevel structure having an overall shape that is composed of various same-sided polygons.

Pankinaho discloses wherein at least 75% of the polygonal or polyhedral elements (*i.e.,* the polygons shown in Figure 1), the region or area of contact between the polygonal or polyhedral elements is less than 50% of the perimeter or area of the elements (*i.e.,* as shown in Figure 1). Pankinaho at col. 3, lines 24-39; and FIG. 1. For example, starting with the first polygonal element of Figure 1 (*e.g.,* the polygonal element labeled as 102 in Figure 1), the only contact area is on part of one of the two shorter sides of the polygonal element. Thus, given that there is only one contact area on part of one of the two shorter sides of the polygonal element, this polygonal element clearly meets the 50% limitation. The next polygonal element (*e.g.,* the horizontal polygonal element above section 102) has two contact areas with one contact area on one of the longer sides and a small partial contact area on one of the longer sides. Thus, as shown, the contact areas of this polygonal element clearly meet the 50% limitation. Following this approach to analyzing Figure 1, it is clear that Pankinaho discloses this claim limitation. Specifically, given that there is only one contact area on one of the two shorter sides of the polygonal element, this polygonal element clearly meets the 50% limitation.

Pankinaho further discloses the final limitation of claim 1 wherein a plurality of polygons of the antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within the region necessary to form the generally distinguishable elements where the polygon perimeters are interconnected. Specifically, Figure 1 discloses this. As shown, there is a fundamental shape, in this case a four-sided polygon, which is used as a building block to create an antenna that is composed of similar shapes and creates the overall antenna structure that is a different shape than the original building block. Pankinaho at col. 3, lines 24-39; and FIG. 1.

In view of the above, and the detailed application of the prior art against the claims presented below and the attached claim charts, Pankinaho raises an RLP with respect to claims 1, 7, 10, 11, and 12 of the '208 patent since Pankinaho teaches the technical feature of the '208 patent in a new and non-cumulative manner. Accordingly, the Examiner should order reexamination against claims 1, 7, 10, 11, and 12 of the '208 patent, cancel these claims, rendering them null, void, and otherwise unenforceable.

F. YANG PRESENTS AN RLP WITH RESPECT TO CLAIMS 1, 7, 10, 11, AND 12 OF THE '208 PATENT

Yang is a U.S. Patent filed on August 12, 1999 and issued October 9, 2001. Accordingly, Yang constitutes effective prior art under 35 U.S.C. § 102(e). Yang is listed on the face of the '208 patent, but was not used in any rejection by the Office nor substantively considered during prosecution. Yang is presented, herein, in new light pursuant to MPEP § 2642. Moreover, this reference teaches the alleged reason for patentability of the '208 patent and is not cumulative to any prior art previously considered.

In addition, while in the related proceeding the Examiner agreed with the Patent Owner's argument that the claims do not read on fractal antenna, the Patent Owner later retracted that position and stated that there is no disclaimer of fractal antenna.[5] Further, Yang is not directed to a fractal antenna but to an antenna "substantially" related to fractals just as the the '208 specification claims multilevel antennas are substantially related to fractal antenna. Yang discloses: "FIG. 4 illustrates a simple two fractal element antenna 38 including a first

[5] The '208 patent is presently subject to a merged reexamination proceeding – Control Nos. 95/001,389 and 95/000,591. In that proceeding, Patent Owner argued that fractal antennas were disclaimed from the multilevel structure antenna; Patent Owner argued that "the inventors clearly and unmistakably disclaimed or excluded by definition fractal antennas from their claimed invention." *See* Control Nos. 95/001,389 and 95/000,591, Patent Owner's Response to Office Action, filed Oct. 3, 2001 at 33. The Examiner disagreed that fractal antennas in general are not disclaimed. *See* Control Nos. Control Nos. 95/001,389 and 95/000,591, ACP issued Jul. 26, 2012 at 11-12. In its Response to the ACP, Patent Owner now argues that "'multilevel structure' is a coined term and that the doctrine of disclaimer does not apply," and in the alternative, "if 'multilevel structure" did have an ordinary meaning in the art at the time of the invention, such ordinary meaning was disclaimed per the doctrine of disclaimer." *See* Control Nos. Control Nos. 95/001,389 and 95/000,591, Patent Owner's Reply to Action Closing Prosecution, filed Aug. 27, 2012 at 10 fn. 2. Importantly, in a related reexamination proceeding of related U.S. Patent No. 7,397,431 – Control Nos. 95/001,482 and 95/000,586 – Fractus stated: "Patent Owner hereby ***rescinds any disclaimer of claim scope*** made in the parent patent/application or any predecessor or related patent/application. The Examiner is advised that any previous disclaimer of claim scope, if any in the parent patent/application or any predecessor or related patent/application, and the alleged prior art that was made to allegedly avoid, may need to be revisited." *See* Control Nos. 95/001,482 and 95/000,586, Patent Owner's Response to Action Closing Prosecution, filed Jan. 3, 2012 at 1 fn. 1 (emphasis added).

substantially square fractal element 40 having sides L3, L4 that are ten centimeters in length." Yang at 3:22-29.

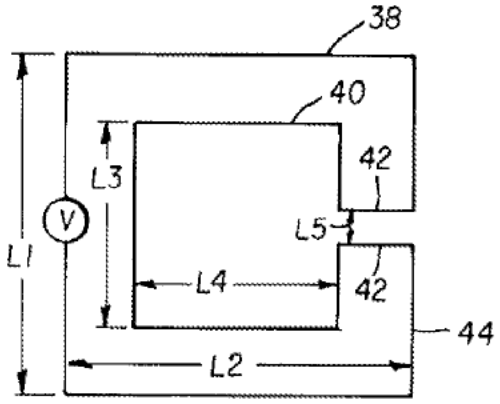


FIG. 4

Yang at FIG. 4

During examination of the '208 patent, the Examiner asserted that:

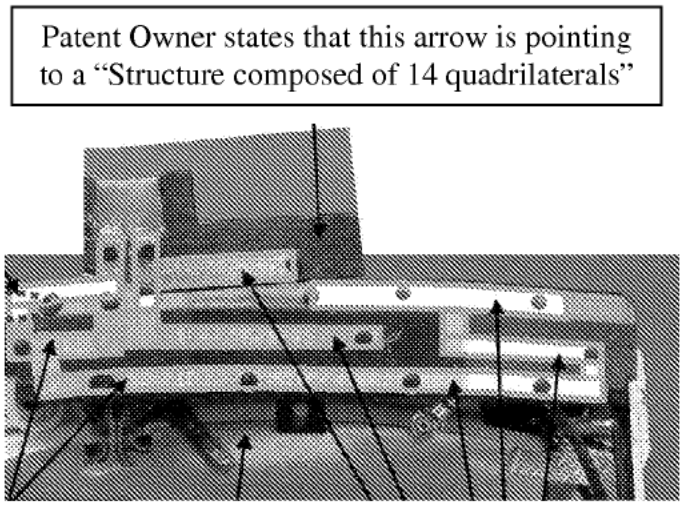
> Claims 1 and 15 are allowable over the art of record because the prior art does not teach the perimeter of the multilevel structure has a different number of sides than the polygons that compose the antenna region, and further wherein a plurality of polygons of the antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within the region necessary to from the generally distinguishable elements where the polygon perimeters are interconnected, and in combination with the remaining claimed limitations.

Because Yang discloses the above technical feature, along with each element of claims 1 and 7, an Examiner would consider Yang important in deciding the patentability of the '208 patent.

Specifically, Yang discloses "a reduced size wideband antenna, in which a single compact antenna structure operates at multiple frequency bands." Yang at 1:37-43, FIG. 4. Yang also discloses that it was well known in the art that "[mu]lti-band and wideband antennas are desirable for personal communication systems" and that Yang's "invention relates in general to reduced size broadband antennas for wireless communication systems and other wireless applications." Yang at 1:4-9, 1:12-25. Yang's multi-band antenna includes at least one multilevel structure. Specifically, the Figure 4 embodiment illustrated below is "substantially" fractal. Yang

discloses: "FIG. 4 illustrates a simple two fractal element antenna 38 including a first substantially square fractal element 40 having sides L3, L4 that are ten centimeters in length." Yang at 3:22-29.

While the specification of the '868 patent does not provide a clear definition of the elements of this claim, the Patent Owner has provided Infringement Contentions that will be used to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.



Infringement Contentions for the Samsung Instinct M800 at p. 2 (annotated by the Patent Owner to show four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is a random assortment of same-sided polygons; in the Infringement Contentions it is a group of various shaped four-sided polygons subjectively superimposed on to the antenna. Therefore, Yang discloses all the limitations as defined by the Patent Owner. Specifically, Figure 4 discloses this. As shown, there is a multilevel structure having an overall shape of more than four sides that is composed of various four-sided polygons. Yang at FIG. 4. Moreover, Yang discloses that the plurality of polygons of said antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of

polygons within said region necessary to form said generally distinguishable elements where said polygon perimeters are interconnected.

The multilevel structure comprises a set of polygonal or polyhedral elements having the same number of sides or faces. Figure 4, below, illustrates an antenna with more than one polygonal elements. The antenna depicted in Figure 4 comprises at least 5 polygonal elements. For example, one polygonal element has a side labeled "L2" and a second polygonal element has a side labeled "L3." Yang at FIG. 4; *see also* Yang at 3:22-29.

The elements of the antenna are electromagnetically coupled to each other through at least one point of contact. For example, the polygon with the side labeled "L2" has one point of contact with a second polygon that has the side labeled "L3." Yang at FIG. 4; *see also*, 3:22-29. For at least 75% of said polygonal elements, the region of contact between the polygonal elements is less than 50% of the perimeter or area of said elements. Not all the polygonal elements have the same size. For example, the polygonal element having a side labeled "L2" has a different size than the polygonal element having a side labeled "L3." Further, the perimeter of the multilevel structure has a different number of sides than the polygons that compose the multilevel structure. For example, the polygonal element that has a side labeled "L2" has four sides, whereas the perimeter of the multilevel structure has more than four sides.

In view of the above, and the detailed application of the prior art against the claims presented below and the attached claim charts, Yang raises an RLP with respect to claims 1, 7, 10, 11, and 12 of the '208 patent since Yang teaches the technical feature of the '208 patent in a new and non-cumulative manner. Accordingly, the Examiner should order reexamination against claims 1, 7, 10, 11, and 12 of the '208 patent, cancel these claims, rendering them null, void, and otherwise unenforceable.

IV. MANNER OF APPLYING THE CLAIMS AS REQUIRED BY 37 CFR § 1.915 (B)

Claims 1, 7, 10, 11, and 12 of the '208 patent are fully anticipated under 35 U.S.C. § 102 and/or are unpatentable under 35 U.S.C. § 103 in view of the several different prior art references cited herein, which were not previously considered by the Examiner during the examination of the '208 patent application or which are discussed in a new light from the prosecution of the '208 patent application. Claims 1, 7, 10, 11, and 12 of the '208 patent are set

forth in detail in the attached claim charts (Exhibits CC-A through CC-F) that compare the limitations of the claims of the '208 patent to the pertinent prior art references. As the claim charts demonstrate, claims 1, 7, 10, 11, and 12 are unpatentable under 35 U.S.C. § 102 and/or 35 U.S.C. § 103 in view of the prior art references presented herein.

A. CLAIMS 1, 7, 10, 11, AND 12 ARE ANTICIPATED BY GRANGEAT UNDER 35 U.S.C. § 102

Requester respectfully submits that claims 1, 7, 10, 11, and 12 of the '208 patent are rendered anticipated by Grangeat under 35 U.S.C. § 102. A claim chart applying Grangeat is submitted herewith as Exhibit CC-A.

1. A multi-band antenna including

Grangeat discloses a multi-band antenna (e.g., "multifrequency microstrip antenna"). Grangeat at col. 4, lines 41-64; and FIG. 2. Specifically, "[o]ne operating mode of the antenna then constitutes a primary mode in which a standing wave is established by virtue of propagation of traveling waves both ways in the longitudinal direction or a direction near the longitudinal direction, the waves propagating in an area including the primary zone and the rear region and substantially excluding the secondary zone Z2. Another operating mode constitutes a secondary mode in which a standing wave is established by virtue of propagation of traveling waves both ways (the same as before) in another area including the primary and secondary zones and the rear region." Grangeat at col. 6, lines 52-64.

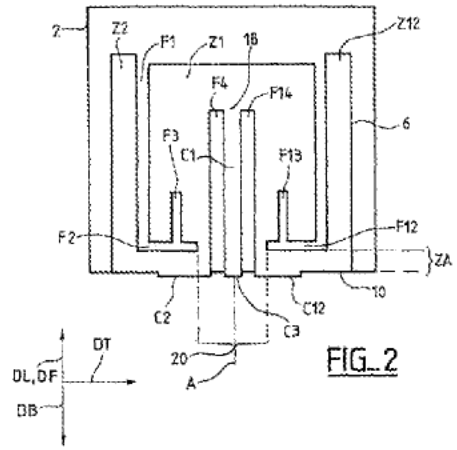


FIG. 2

Grangeat at FIG 2.

at least one multilevel structure wherein the multilevel structure includes at least one antenna region comprising a set of polygonal or polyhedral elements having the same number of sides or faces,

Grangeat discloses at least one multilevel structure wherein the multilevel structure includes at least one antenna region (*i.e.*, zones Z1 and Z2 shown in FIG. 2) comprising a set of polygonal or polyhedral elements (*i.e.*, four sided polygons as shown below) having the same number of sides or faces (*i.e.*, four sides). Grangeat at col. 6, lines 52-64; and FIG. 2.

In related proceedings, the Patent Owner has asserted that the claimed multilelevel structure requires the same portion of the antenna to be active for multiple resonant frequency bands.[6] As disclosed in Grangeat, the primary portion of the antenna, Z1, is active and shared for both resonant frequencies. Grangeat at col. 6, lines 52-64; and FIG. 2. While secondary portion Z1 is only active for the second resonant frequency. *Id.* Therefore, Grangeat anticipates the claimed multilevel structure even under the Patent Owner's improperly narrow interpretation of the claim

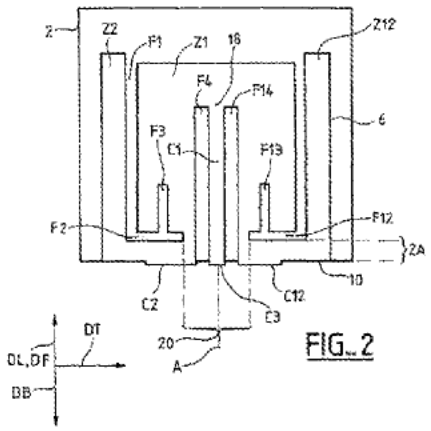


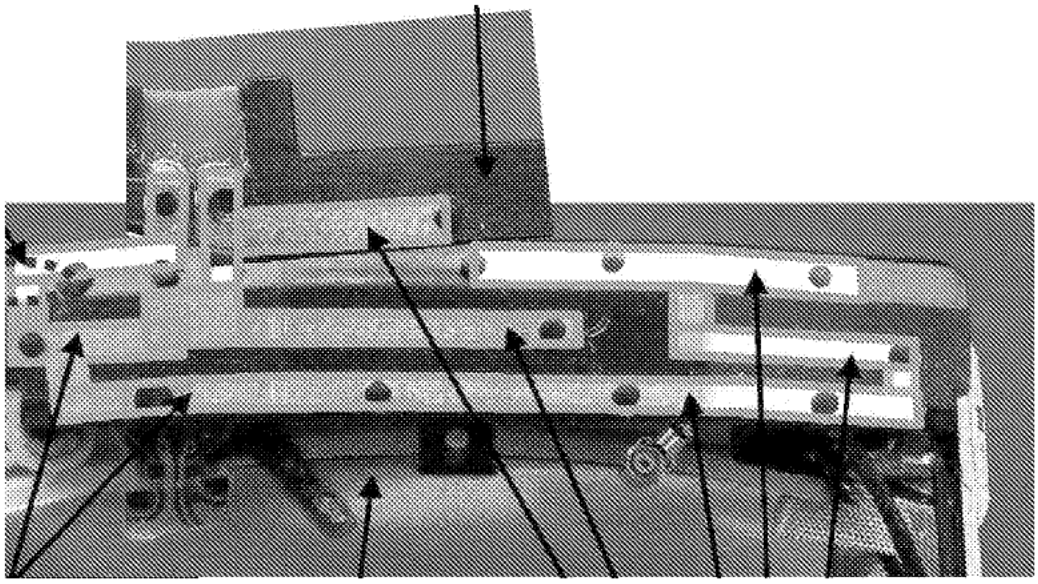
FIG. 2

Grangeat at FIG 2.

While the specification of the '208 patent does not provide a clear definition of the multilevel structure, the Patent Owner has provided Infringement Contentions that will be used to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.

Patent Owner states that this arrow is pointing to a "Structure composed of 14 quadrilaterals"

[6] Requester does not agree that Patent Owner's interpretation is correct, but presents it here to show that the prior art renders the claim unpatentable even under such an improper interpretation.



Infringement Contentions for the SCH-R500 at 2 (annotated by the Patent Owner to show four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is a random assortment of same-sided polygons; in the Infringement Contentions it is a group of various shaped four-sided polygons subjectively superimposed onto the antenna. Therefore, Grangeat discloses all the limitations as defined by the Patent Owner. Specifically, Figure 2 shown above, discloses this. As shown, there is a multilevel structure having an overall shape that is composed of various same-sided polygons. Grangeat at Figure 2.

wherein each of said elements in said antenna region is electromagnetically coupled to at least one other of said elements in said region either directly through at least one point of contact or through a small separation providing coupling,

Grangeat discloses that each of the elements in the antenna region is electromagnetically coupled to at least one other of the elements in the region either directly through at least one point of contact or through a small separation providing the coupling. Grangeat at col. 7, line 62 – col. 8, line 28. Specifically, "the coupling line that constitutes the coupling device of the antenna includes a conductor that is part of the top conductive layer" to "enable the antenna to be coupled by means of an electromagnetic signal." Grangeat at col. 7, line 62 – col. 8, line 28.

wherein for at least 75% of said polygonal or polyhedral elements, the region or area of contact between said polygonal or polyhedral elements is less than 50% of the perimeter or area of said elements,

Grangeat discloses that at least 75% of the polygonal or polyhedral elements (*i.e.,* the polygons shown in Figure 2 above), the region or area of contact between the polygonal or polyhedral elements is less than 50% of the perimeter or area of the elements (*i.e.,* as shown in Figure 2 above). Grangeat at Figure 2; 7:42-61; 9:57-10:13.

For example, starting with the first polygonal element of Figure 2 (*e.g.,* the polygonal element with the tip labeled as Z2 in Figure 2), the only contact area is on one of the two shorter sides of the polygonal element. Thus, given that there is only one contact area on one of the two shorter sides of the polygonal element, this polygonal element clearly meets the 50% limitation. The next polygonal element (*e.g.,* the short horizontal polygonal element) has two contact areas with both contact areas on one of the longer sides. Thus, as shown, the contact areas of this polygonal element clearly meet the 50% limitation. Following this approach to analyzing Figure 2, it is clear that Grangeat discloses this claim limitation. Specifically, given that there is only one contact area on one of the two shorter sides of the polygonal element, this polygonal element clearly meets the 50% limitation.

wherein not all the polygonal or polyhedral elements have the same size and

Grangeat discloses that not all of the polygonal or polyhedral elements have the same size. Specifically, Figure 2 illustrates and the specification discloses that the Z2 and Z1 regions clearly have different sizes. Grangeat at FIG 2; 7:42-61; 9:57-10:13.

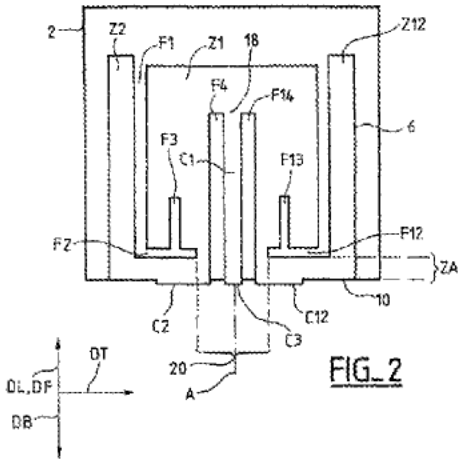


FIG_2

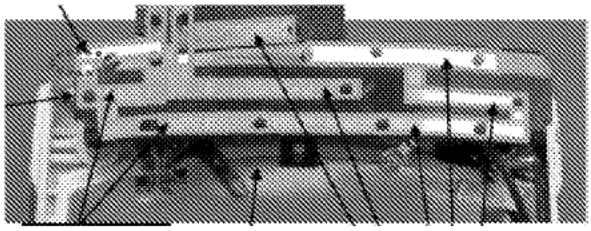
Grangeat at FIG 2.

wherein the perimeter of the multilevel structure has a different number of sides than the polygons that compose said antenna region, and

Grangeat discloses that the perimeter of the multilevel structure has a different number of sides (*i.e.,* as shown above in Figure 2, the multilevel structure has 32 sides) than the polygons that compose the antenna region (*e.g.,* as shown in Figure 2, each multilevel structure comprises 4 sided polygons). Grangeat at FIG 2; 7:42-61; 9:57-10:13.

further wherein a plurality of polygons of said antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within said region necessary to form said generally distinguishable elements where said polygon perimeters are interconnected.

While the specification of the '208 patent does not provide a clear definition of the elements of this claim, the Patent Owner has provided Infringement Contentions that will be used to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.



Patent Owner states that these arrows are pointing to elements that meet this claim limitation

Infringement Contentions for the SCH-R500 at 2 (annotated by the Patent Owner to show four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is an antenna composed of similar shapes; in the Infringement Contentions it is a group of four-sided polygons subjectively superimposed onto the antenna. Therefore, Grangeat discloses all the limitations as defined by the Patent Owner. Specifically, Figure 2 shown above and the specification disclose this. Grangeat at FIG 2; 7:42-

61; 9:57-10:13. As shown, there is a fundamental shape, in this case a four-sided polygon, which is used as a building block to create an antenna that is composed of similar shapes and creates the overall antenna structure that is a different shape than the original building block. Grangeat at Figure 2.[7]

7. The multi-band antenna set forth in claim 1, wherein the level of impedance and radiation pattern of said antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.

Grangeat discloses the multi-band antenna set forth in claim 1. See above.

Grangeat discloses the connection point is chooses so that "the same antenna impedance value for the various operating frequencies." Grangeat at col. 7, lines 14-17; see also Fig. 4. Furthermore, Grangeat discloses that both the first and second resonant frequency bands would be similar radiating patch elements over the same ground plane so they would have a similar radiation pattern. The primary portion radiates at all resonant frequency bands, so the only change between bands is that the outer arms radiate at other bands. Grangeat at col. 6, lines 52-64; and FIG. 2. In addition, Grangeat discloses operation at atleast 940 and 870 MHZ which is useable at least by the GSM and PDC[8] ccommunication services. Grangeat at col. 9, lines 57-58.

Therefore, Grangeat discloses that the level of impedance and radiation pattern of the antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in the bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.

10. The multi-band antenna set forth in claim 1, wherein said antenna is included in a portable communications device.

Grangeat discloses the multi-band antenna set forth in claim 1. See above.

Grangeat discloses that the antenna is included in a portable communications device. Grangeat at Abstract; and col. 4, lines 33-35. Specifically, the "invention applies in particular to

[7] Furthermore, while not for the purposes of raising an RLP, this claim limitation is further rendered indiscernible by the lack of antecedent basis for "the free perimeter," "the projection," "the longest exposed perimeters," "the least number of polygons," and "said generally distinguishable elements," thereby limiting the ability of a person of skill in the art to determine the metes and bounds of this claim. Therefore, Requestor merely proposes this argument as presumably within the broadest reasonable interpretation, and reserves the right to change this argument should the Patent Owner render the claim more comprehensible.

[8] See e.g., Yanagisawa '064 at 2:34-35.

portable telephones." Grangeat at Abstract.

11. The multi-level antenna set forth in claim 10, wherein said portable communication device is a handset.

Grangeat discloses the multi-band antenna set forth in claim 10. See above.

Grangeat discloses that the portable communication device is a handset. Grangeat at Abstract; and col. 4, lines 33-35. Specifically, the "invention applies in particular to portable telephones." Grangeat at Abstract.

12. The multi-level antenna set forth in claim 11, wherein said antenna operates at multiple frequency bands, and where in at least one of said frequency bands is operating within the 800 MHz - 3600 MHz frequency range.

Grangeat discloses the multi-band antenna set forth in claim 12. See above.

Grangeat discloses that the antenna operates at multiple frequency bands, and where in at least one of said frequency bands is operating within the 800 MHz 3600 MHz frequency range. Grangeat at col. 9, lines 52-59. Specifically, Grangeat discloses a primary operating frequency of 940 MHz and a secondary operating frequency of 870 MHz. Grangeat at col. 9, lines 52-59.

B. Claim 7 is Rendered Obvious by Grangeat in view of the Knowledge of a Person of Ordinary Skill in the Art Under 35 U.S.C. § 103

Requester respectfully submits that claim 7 of the '208 patent is rendered obvious by Grangeat in view of the knowledge of a person of ordinary skill in the art under 35 U.S.C. § 103. A claim chart applying Grangeat in view of the knowledge of a person of ordinary skill in the art is submitted herewith as Exhibit CC-B.

7. The multi-band antenna set forth in claim 1, wherein the level of impedance and radiation pattern of said antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.

Grangeat discloses the multi-band antenna set forth in claim 1. See above.

Although Requester asserts the disclosure of Grangeat anticipates claim 7, if the Examiner does not agree that the disclosure that similar patch antennas that radiate over the same ground plane explicitly discloses similar radiation patterns, then it would have been obvious to one of ordinary skill in the art. The primary portion radiates at all resonant frequency bands, so

the only change between bands is that the outer arms radiate at other bands. Grangeat at col. 6, lines 52-64; and col. 10, lines 24-30. One of ordinary skill in the art would understand the radiation pattern at the different frequency bands would be substantially similar given similiarity in radiation portions and that the ground plane is the same for all bands.

In addition, Grangeat discloses the connection point is chooses so that "the same antenna impedance value for the various operating frequencies." Grangeat at col. 7, lines 14-17; see also Fig. 4. Finally, Grangeat discloses operation at atleast 940 and 870 MHZ which one of ordinary skill in the art would understand is useable at least by the GSM and PDC[9] ccommunication services. Grangeat at col. 9, lines 57-58.

C. CLAIMS 1, 7, 10, 11, AND 12 ARE ANTICIPATED BY YANAGISAWA '064 UNDER 35 U.S.C. § 102

Requester respectfully submits that Claims 1, 7, 10, 11, and 12 of the '208 patent are rendered anticipated by Yanagisawa '064 under 35 U.S.C. § 102. A claim chart applying Yanagisawa '064 is submitted herewith as Exhibit CC-C.

1. A multi-band antenna including

Yanagisawa '064 discloses a multi-band antenna (*i.e.*, an antenna operating in two frequency bands). Yanagisawa '064 at Abstract, 1:8-15, FIGS. 1 and 22. Figure 1, below, illustrates an embodiment of the antenna. Figure 22, below, illustrates that the antenna is formed on a circuit board housed in the radio apparatus. Yanagisawa '064 at FIG. 22, 12:15-19, 31:56-63.

Yanagisawa '064 discloses that "it is possible to transmit and receive signals of multi-frequency bands of even-number relationship (e.g., 900 MHz and 1800 MHz as with the case of the portable telephone sets) by use of a single antenna." Yanagisawa '064 at 4:15-25. Yanagisawa '064 discloses: "the first antenna portion 10 can of course receive radio signals not only for a call signal but also for communications." Yanagisawa '064 at 16:22-25. Yanagisawa '064 further discloses: "when the antenna as shown in FIG. 1 is used as the whole or a part of the antenna of the radio apparatus, it is possible to obtain a small-sized radio apparatus which can transmit and receive multi-frequency bands at a high sensitivity." Yanagisawa '064 at 17:52-57.

[9] See e.g., Yanagisawa '064 at 2:34-35.

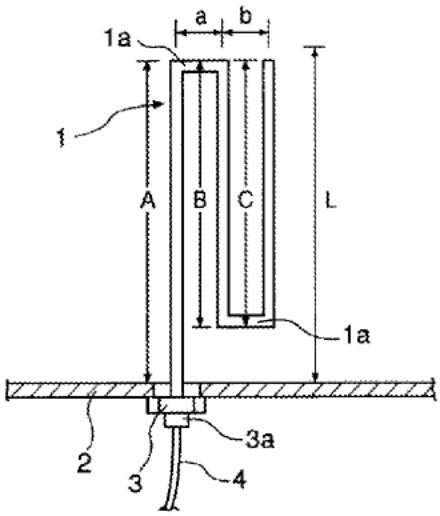


FIG.1

Yanagisawa '064 at FIG. 1

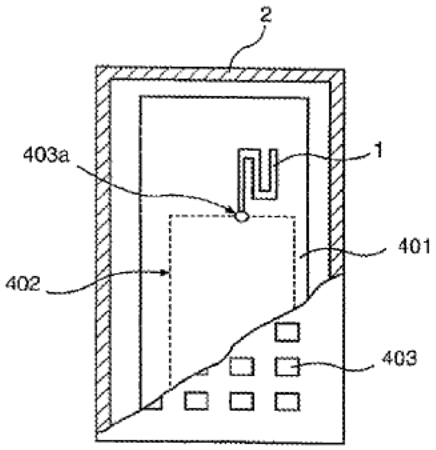


FIG.22

Yanagisawa '064 at FIG. 22

at least one multilevel structure wherein the multilevel structure includes at least one antenna region comprising a set of polygonal or polyhedral elements having the same number of sides or faces,

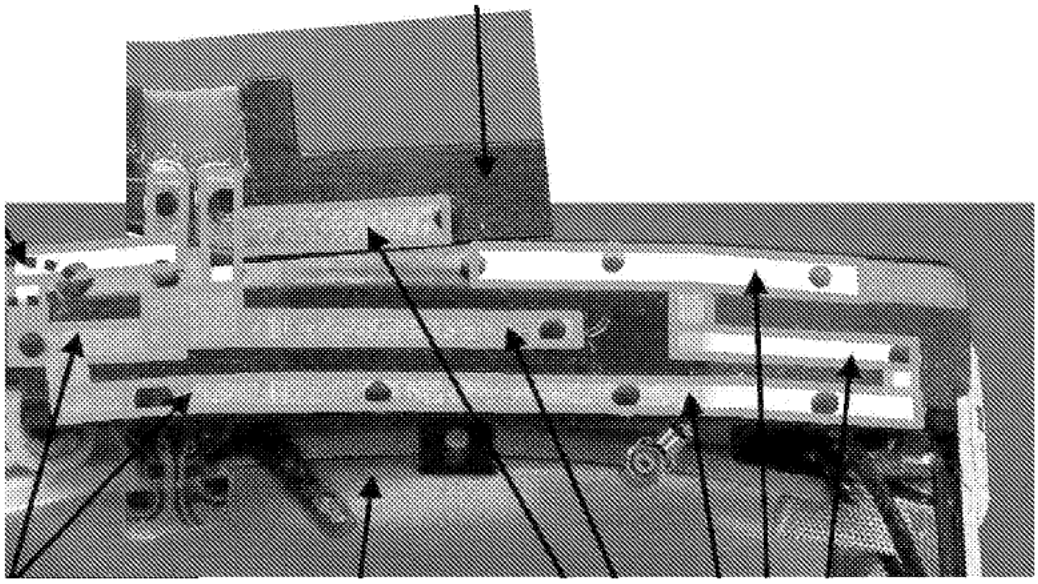
Yanagisawa '064 discloses that the multi-band antenna includes at least one multilevel structure. Yanagisawa '064 at Abstract, 16:22-25, 17:52-57. Yanagisawa '064 discloses that "it is possible to transmit and receive signals of multi-frequency bands of even-number relationship

(e.g., 900 MHz and 1800 MHz as with the case of the portable telephone sets) by use of a single antenna." Yanagisawa '064 at 4:15-25. Yanagisawa '064 discloses: "the first antenna portion 10 can of course receive radio signals not only for a call signal but also for communications." Yanagisawa '064 at 16:22-25. Yanagisawa '064 further discloses: "when the antenna as shown in FIG. 1 is used as the whole or a part of the antenna of the radio apparatus, it is possible to obtain a small-sized radio apparatus which can transmit and receive multi-frequency bands at a high sensitivity." Yanagisawa '064 at 17:52-57. Thus, the entire antenna structure 10 of embodiment 1 radiates at multi-frequency bands. *See also*, OTH-B and OTH-C, Patent Owner's infringement contention that the exact same portions of the antenna are responsible for different resonant frequency bands.

The multilevel structure comprises a set of polygonal or polyhedral elements having the same number of sides or faces. Figure 1, below, illustrates an antenna 1 with more than one polygonal elements. For example, using the notations in Figure 1, there is a first polygon that spans the length of "A," a second polygon that spans the length of "a," a third polygon that spans the length of "B," a fourth polygon that spans the length of "b," and a fifth polygon that spans the length of "C." The polygonal elements have the same number of sides or faces (*e.g.,* 4 sides).

While the specification of the '208 patent does not provide a clear definition of the multilevel structure, the Patent Owner has provided Infringement Contentions that will be used to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.

Patent Owner states that this arrow is pointing to a "Structure composed of 14 quadrilaterals"



Infringement Contentions for the SCH-R500 at 2 (annotated by the Patent Owner to show four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is a random assortment of same-sided polygons; in the Infringement Contentions it is a group of various shaped four-sided polygons subjectively superimposed onto the antenna. Therefore, Yanagisawa '064 discloses all the limitations as defined by the Patent Owner. Specifically, Figure 1 shown above, discloses this. As shown, there is a multilevel structure having an overall shape that is composed of various same-sided polygons. Yanagisawa '064 at FIG. 1.

> **wherein each of said elements in said antenna region is electromagnetically coupled to at least one other of said elements in said region either directly through at least one point of contact or through a small separation providing coupling,**

As illustrated in Figure 1 and described in the specification the elements of the antenna are electromagnetically coupled to each other through at least one point of contact. For example, the first polygon that spans the length of "A" has one point of contact with the second polygon that spans the length of "a." Yanagisawa at Figure 1; 13:1-62.

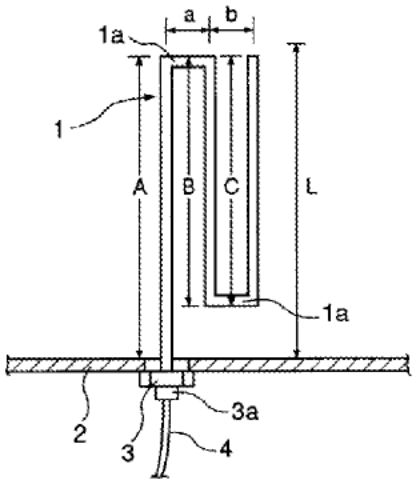


FIG.1

Yanagisawa '064 at FIG. 1

wherein for at least 75% of said polygonal or polyhedral elements, the region or area of contact between said polygonal or polyhedral elements is less than 50% of the perimeter or area of said elements,

As illustrated in Figure 1 and described in the specification, for at least 75% of said polygonal elements, the region of contact between the polygonal elements is less than 50% of the perimeter or area of said elements. Yanagisawa at Figure 1; 13:1-62.

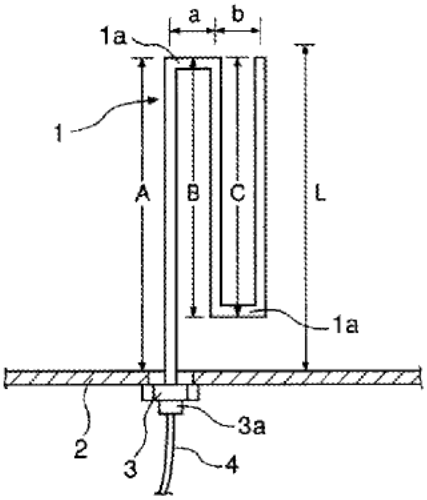


FIG.1

Yanagisawa '064 at FIG. 1

wherein not all the polygonal or polyhedral elements have the same size and

As illustrated in Figure 1 and described in the specification, not all the polygonal elements have the same size. For example, the first polygon that spans the length of A has a different size than the polygons that spans the lengths of "a," "B," "b," and "C." Yanagisawa at Figure 1; 13:1-62.

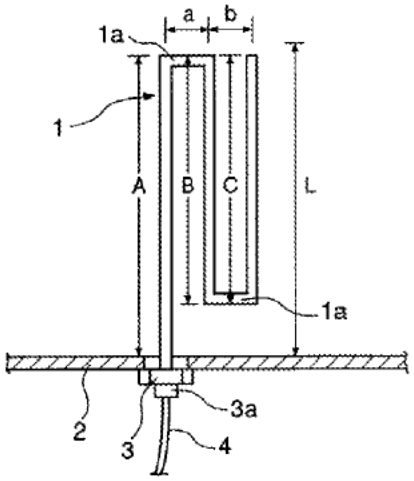


FIG.1

Yanagisawa '064 at FIG. 1

wherein the perimeter of the multilevel structure has a different number of sides than the polygons that compose said antenna region, and

As illustrated in Figure 1 and described in the specification, the perimeter of the multilevel structure has a different number of sides than the polygons that compose said antenna region. For example, each of the polygons has 4 sides, and the multilevel structure illustrated below has more than 4 sides. Yanagisawa at Figure 1, 13:1-62.

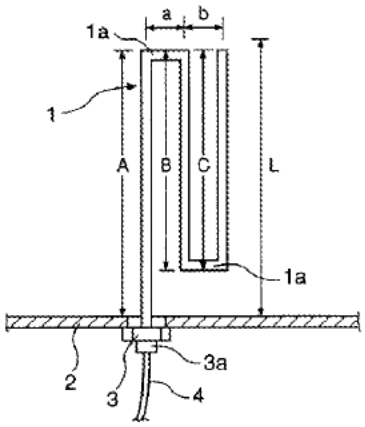
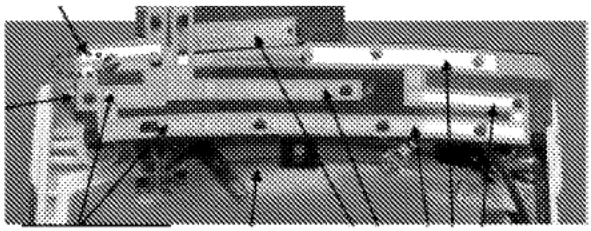


FIG.1

Yanagisawa '064 at FIG. 1

further wherein a plurality of polygons of said antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within said region necessary to form said generally distinguishable elements where said polygon perimeters are interconnected.

While the specification of the '208 patent does not provide a clear definition of the elements of this claim, the Patent Owner has provided Infringement Contentions that will be used to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.



Patent Owner states that these arrows are pointing to elements that meet this claim limitation

Infringement Contentions for the SCH-R500 at 2 (annotated by the Patent Owner to show

four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is the organized chaos of an antenna composed of similar shapes; in the Infringement Contentions it is a group of four-sided polygons subjectively superimposed onto the antenna. Therefore, Yanagisawa '064 discloses all the limitations as defined by the Patent Owner. Specifically, Figure 1 shown below, discloses this. As shown, there is a fundamental shape, in this case a four-sided polygon, which is used as a building block to create an antenna that is composed of similar shapes and creates the overall antenna structure that is a different shape than the original building block. Yanagisawa '064 at FIG. 1.[10]

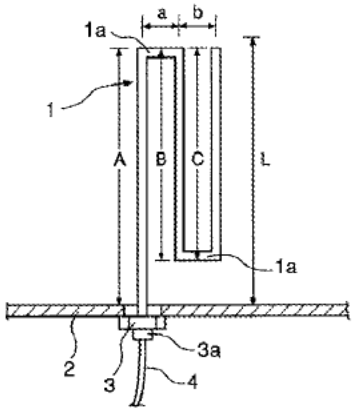


FIG.1

Yanagisawa '064 at FIG. 1

7. The multi-band antenna set forth in claim 1, wherein the level of impedance and radiation pattern of said antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.

Yanagisawa '064 discloses the multi-band antenna set forth in claim 1. See above.

Yanagisawa '064 discloses that when the "antenna as shown in Fig. 1 is used as the

[10] Furthermore, while not for the purposes of raising an RLP, this claim limitation is further rendered indiscernible by the lack of antecedent basis for "the free perimeter," "the projection," "the longest exposed perimeters," "the least number of polygons," and "said generally distinguishable elements," thereby limiting the ability of a person of skill in the art to determine the metes and bounds of this claim. Therefore, Requestor merely proposes this argument as presumably within the broadest reasonable interpretation, and reserves the right to change this argument should the Patent Owner render the claim more comprehensible.

whole or a part of the antenna of the radio apparatus, it is possible to obtain a small-sized radio apparatus which can transmit and receive multi-frequency bands at high sensitivity…without deteriorating the radiation characteristics of the antenna." Yanagisawa '064 at 17:52-63. Thus, there is no detroriation of radioelectic characteristics, such as impedance or radiation patterns, for multiple frequency bands which can be used for communication services such as GSM, PDC, DCS, and PHS. Yanagisawa '064 at 2:33-38. In addition, since the entire antenna of Figure 1 radiates for both resonant frequency bands, the radiation pattern that results would be the same. Further, Yanagisaw teaches "a matching circuit is attached to the feeder portion" which would be used to maintain impedance levels across multiple frequency bands. Yanagisawa at col. 14, lines 9-12.

10. The multi-band antenna set forth in claim 1, wherein said antenna is included in a portable communications device.

Yanagisawa '064 discloses that the "present invention relates to an antenna for transmitting and receiving radio signals which is suitable for use with a portable apparatus (e.g., portable telephone set) and a radio (AM and FM) and TV apparatus using the same antenna, and more specifically to a small-sized antenna for transmitting and receiving radio signals of two or more frequency bands and a radio apparatus using the same small-sized antenna." Yanagisawa '064 at 1:8-15. In addition, "when the antnne as shown in Fig. 1 is sued as the whole or a part of the antenna os the radio apparatus, it is possible to obtain a small-sized radio apparatus which can transmit and receive multi-frequency bands at high sensitivity." Yanagisawa '064 at 17:52-63.

11. The multi-level antenna set forth in claim 10, wherein said portable communication device is a handset.

Yanagisawa '064 discloses that the "present invention relates to an antenna for transmitting and receiving radio signals which is suitable for use with a portable apparatus (e.g., portable telephone set) and a radio (AM and FM) and TV apparatus using the same antenna, and more specifically to a small-sized antenna for transmitting and receiving radio signals of two or more frequency bands and a radio apparatus using the same small-sized antenna." Yanagisawa '064 at 1:8-15. A "portable telephone set" is a "handset."

12. The multi-level antenna set forth in claim 11, wherein said antenna operates at multiple frequency bands, and where in at least one of said frequency bands is operating within the 800 MHz - 3600 MHz frequency

range.

Yanagisawa '064 discloses that "it is possible to transmit and receive signals of multi-frequency bands of even-number relationship (e.g., 900 MHz and 1800 MHz as with the case of the portable telephone sets) by use of a single antenna." Yanagisawa '064 at 4:15-25. The example frequencies provided above are within the recited 800 MHz-3600 MHz frequency range.

D. CLAIM 7 IS RENDERED OBVIOUS BY YANAGISAWA '064 IN VIEW OF THE KNOWLEDGE OF A PERSON OF ORDINARY SKILL IN THE ART UNDER 35 U.S.C. § 103

Requester respectfully submits that claim 7 of the '208 patent is rendered obvious by Yanagisawa '064 in view of the knowledge of a person of ordinary skill in the art under 35 U.S.C. § 103. A claim chart applying Yanagisawa '064 in view of the knowledge of a person of ordinary skill in the art is submitted herewith as Exhibit CC-D.

> **7. The multi-band antenna set forth in claim 1, wherein the level of impedance and radiation pattern of said antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.**

Yanagisawa '064 discloses discloses the multi-band antenna set forth in claim 1. See above.

Although Requester asserts the disclosure of Yanagisawa '064 anticipates claim 7, if the Examiner does not agree that the disclosure that using the same antenna structure to radiate at multiple frequencies without deteriorating the radiation characteristics explicitly discloses similar radiation patterns and impedance, then it would have been obvious to one of ordinary skill in the art. One of ordinary skill in the art would understand that using the exact same antenna structure to radiate at multiple resonant frequency bands without deteriorating the radiation characteristics would produce similar radiation patterns and impedance levels. Further, Yanagisaw teaches "a matching circuit is attached to the feeder portion" which would be used to maintain impedance levels across multiple frequency bands. Yanagisawa at col. 14, lines 9-12.

E. CLAIMS 1, 7, 10, 11, AND 12 ARE ANTICIPATED BY PANKINAHO UNDER 35 U.S.C. § 102

Requester respectfully submits that Claims 1, 7, 10, 11, and 12 of the '208 patent are rendered anticipated by Pankinaho under 35 U.S.C. § 102. A claim chart applying Pankinaho is submitted herewith as Exhibit CC-E.

1. A multi-band antenna including

Pankinaho discloses a multi-band antenna as illustrated in figure 1. Pankinaho at col. 1, lines 5-7; and FIG. 1. Specifically, the "present invention relates to small-sized antenna systems, especially planar antenna structures operating on several frequency bands." Pankinaho at col. 1, lines 5-7. Further, an antenna with separate radiating elements connected by a common feed point is a multilevel structure.

at least one multilevel structure wherein the multilevel structure includes at least one antenna region comprising a set of polygonal or polyhedral elements having the same number of sides or faces,

Pankinaho discloses at least one multilevel structure including at least one antenna region (*i.e.,* radiating element 100 in Figure 1) comprising a set of polygonal or polyhedral elements (*i.e.,* four sided polygons as shown below) having the same number of sides or faces (*i.e.,* four sides). Pankinaho at col. 3, lines 24-39; and FIG. 1.

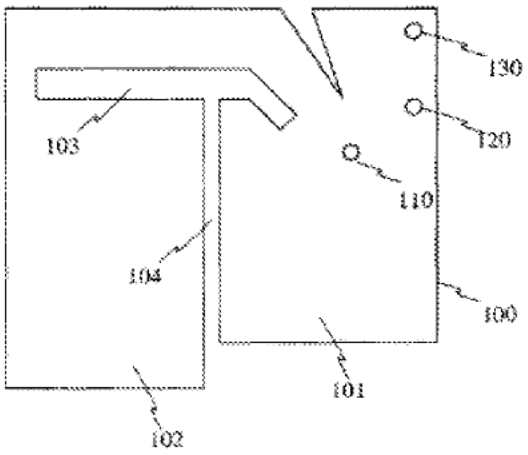


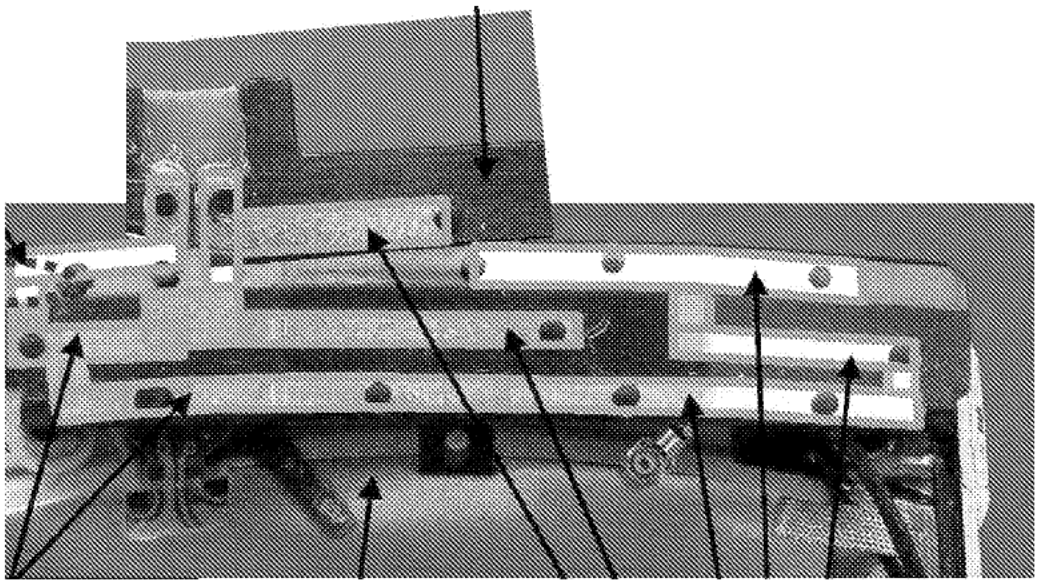
Fig. 1

Pankinaho at FIG. 1.

While the specification of the '208 patent does not provide a clear definition of the multilevel structure, the Patent Owner has provided Infringement Contentions that will be used

to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.

Patent Owner states that this arrow is pointing to a "Structure composed of 14 quadrilaterals"



Infringement Contentions for the SCH-R500 at 2 (annotated by the Patent Owner to show four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is a random assortment of same-sided polygons; in the Infringement Contentions it is a group of various shaped four-sided polygons subjectively superimposed onto the antenna. Therefore, Pankinaho discloses all the limitations as defined by the Patent Owner. Specifically, Figure 1 shown above, discloses this. As shown, there is a multilevel structure having an overall shape that is composed of various same-sided polygons.

wherein each of said elements in said antenna region is electromagnetically coupled to at least one other of said elements in said region either directly through at least one point of contact or through a small separation providing coupling,

Pankinaho discloses that each of the elements in the antenna region is electromagnetically coupled to at least one other of the elements in the region directly through at least one point of contact as illustrated in Figure 1. Pankinaho at col. 3, lines 24-39; and FIG. 1. Specifically, the

"element 100 comprises a shorter side 101 and a longer side 102 with gaps 103, 104 inbetween." Pankinaho at col. 3, lines 24-39.

wherein for at least 75% of said polygonal or polyhedral elements, the region or area of contact between said polygonal or polyhedral elements is less than 50% of the perimeter or area of said elements,

Pankinaho discloses wherein at least 75% of the polygonal or polyhedral elements (*i.e.,* the polygons shown in Figure 1), the region or area of contact between the polygonal or polyhedral elements is less than 50% of the perimeter or area of the elements (*i.e.,* as shown in Figure 1). Pankinaho at col. 3, lines 24-39; and FIG. 1.

For example, starting with the first polygonal element of Figure 1 (*e.g.,* the polygonal element labeled as 102 in Figure 1), the only contact area is on part of one of the two shorter sides of the polygonal element. Thus, given that there is only one contact area on part of one of the two shorter sides of the polygonal element, this polygonal element clearly meets the 50% limitation. The next polygonal element (*e.g.,* the horizontal polygonal element above section 102) has two contact areas with one contact area on one of the longer sides and a small partial contact area on one of the longer sides. Thus, as shown, the contact areas of this polygonal element clearly meet the 50% limitation. Following this approach to analyzing Figure 1, it is clear that Pankinaho discloses this claim limitation. Specifically, given that there is only one contact area on one of the two shorter sides of the polygonal element, this polygonal element clearly meets the 50% limitation.

wherein not all the polygonal or polyhedral elements have the same size and

Pankinaho discloses that not all of the polygonal or polyhedral elements have the same size (*i.e.,* as shown in Figure 1 below with different sized polygonal elements). Pankinaho at col. 3, lines 24-39; and FIG. 1.

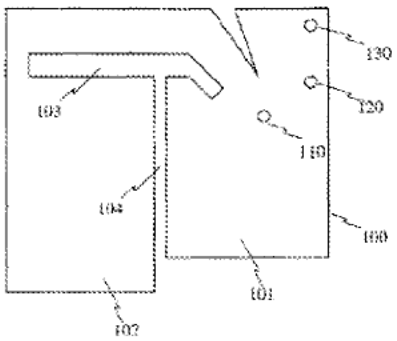


Fig. 1

Pankinaho at FIG. 1.

wherein the perimeter of the multilevel structure has a different number of sides than the polygons that compose said antenna region, and

Pankinaho discloses the perimeter of the multilevel structure has a different number of sides (*i.e.,* as shown above in Figure 1, element 100 has 17 sides) than the polygons that compose the multilevel structure (*i.e.,* as shown in Figure 1, each multilevel structure comprises 4 sided polygons). Pankinaho at FIG. 1.

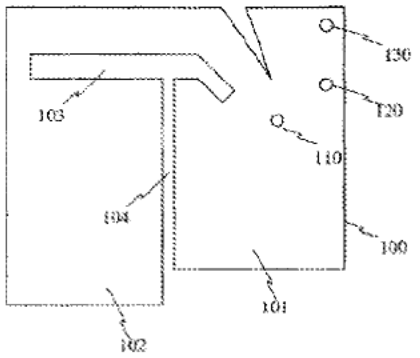
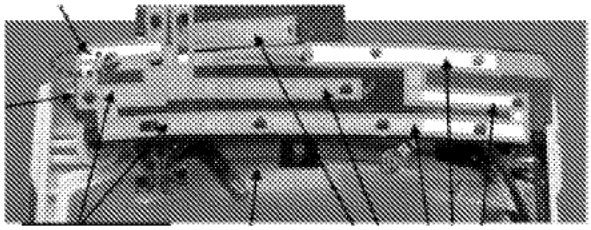


Fig. 1

Pankinaho at FIG. 1.

further wherein a plurality of polygons of said antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within said region necessary to form said generally distinguishable elements where said polygon perimeters are interconnected.

While the specification of the '208 patent does not provide a clear definition of the elements of this claim, the Patent Owner has provided Infringement Contentions that will be used to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.



Patent Owner states that these arrows are pointing to elements that meet the claim limitation

Infringement Contentions for the SCH-R500 at 2 (annotated by the Patent Owner to show four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is the organized chaos of an antenna composed of similar shapes; in the Infringement Contentions it is a group of four-sided polygons subjectively superimposed onto the antenna. Therefore, Pankinaho discloses all the limitations as defined by the Patent Owner. Specifically, Figure 1 shown below, discloses this. As shown, there is a fundamental shape, in this case a four-sided polygon, which is used as a building block to create an antenna that is composed of similar shapes and creates the overall antenna structure that is a different shape than the original building block. Pankinaho at col. 3, lines 24-39; and FIG. 1.

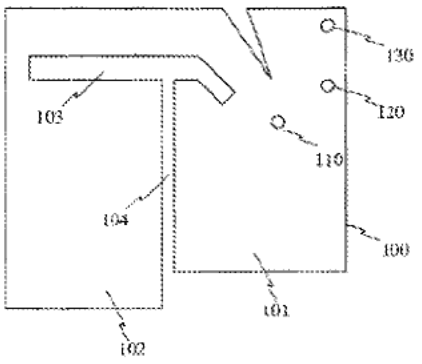


Fig. 1

Pankinaho at FIG. 1.

7. The multi-band antenna set forth in claim 1, wherein the level of impedance and radiation pattern of said antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.

Pankinaho discloses the multi-band antenna set forth in claim 1.

Pankinaho discloses that the level of impedance and radiation pattern of the antenna are

similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in the bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services. Pankinaho at col. 4, lines 28-57; col. 3, lines 40-47; and col. 5, lines 5-19. Specifically, "the resonance frequencies of the antenna element 100 (not shown in FIG. 4) cover the transmission and reception frequencies of both the AMPS and DCS 1800 systems. The antenna can also be tuned in on the frequency bands of the GSM 900 system and the PCS 1900 system by tuning elements C3, C4, C4 and C6. The dimensioning of the tuning elements C3, C4, C5 and C6 depends i.a. on the length of the transmission lines supplying the antenna, the impedances of the switches and the transmitter and reception filters, and on the tuning of the antenna element." Pankinaho at col. 5, lines 5-19. Since the level of impedance and radiation pattern of the antenna are similar in several frequency bands, the antenna maintains basically the same radio-characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several services.

10. The multi-band antenna set forth in claim 1, wherein said antenna is included in a portable communications device.

Pankinaho discloses the multi-band antenna set forth in claim 1. See above.

Pankinaho discloses that the antenna is included in a portable communications device. Pankinaho at col. 6, lines 6-37; and FIG. 6. Specifically, the "antenna system of the invention is especially adapted for carrying out of internal multifrequency antenna systems for small mobile stations and other small-sized devices." Pankinaho at col. 6, lines 32-37.

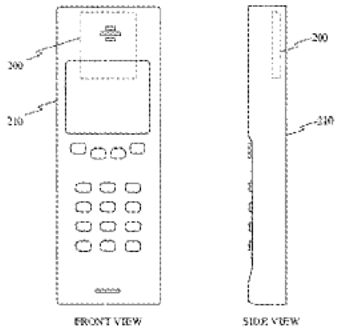


Fig. 6

Pankinaho at FIG. 6.

11. The multi-level antenna set forth in claim 10, wherein said portable communication device is a handset.

Pankinaho discloses the multi-band antenna set forth in claim 10. See above.

Pankinaho discloses that the portable communication device is a handset. Pankinaho at col. 6, lines 6-37; and FIG. 6. Specifically, the "antenna system of the invention is especially adapted for carrying out of internal multifrequency antenna systems for small mobile stations and other small-sized devices." Pankinaho at col. 6, lines 32-37.

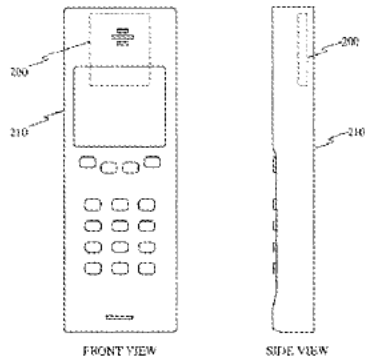


Fig. 6

Pankinaho at FIG. 6.

12. The multi-level antenna set forth in claim 11, wherein said antenna operates at multiple frequency bands, and where in at least one of said frequency bands is operating within the 800 MHz - 3600 MHz frequency range.

Pankinaho discloses the multi-level antenna set forth in claim 11.

Pankinaho discloses that the antenna operates at multiple frequency bands, and where in at least one of the frequency bands is operating within the 800 MHz -3600 MHz frequency range. Pankinaho at col. 6, lines 24-31. Specifically, the "antenna system of the present invention is adapted for use especially in mobile stations of several frequency ranges, an advantageous example of which is a combined dual mode phone operable in the 900 MHz GSM and 1800 MHz DCS systems." Pankinaho at col. 6, lines 24-31.

F. CLAIMS 1, 7, 10, 11, AND 12 ARE ANTICIPATED BY YANG UNDER 35 U.S.C. § 102

Requester respectfully submits that Claims 1, 7, 10, 11, and 12 of the '208 patent are anticipated by Yang under 35 U.S.C. § 102. A claim chart applying Yang is submitted herewith as Exhibit CC-F.

1. A multi-band antenna including

Yang discloses "a reduced size wideband antenna, in which a single compact antenna structure operates at multiple frequency bands." Yang at 1:37-43, FIG. 4. Thus, Yang discloses a multi-band antenna.

at least one multilevel structure wherein the multilevel structure includes at least one antenna region comprising a set of polygonal or polyhedral elements having the same number of sides or faces,

Yang discloses a multi-band antenna that includes at least one multilevel structure. Specifically, the Figure 4 embodiment illustrated below is "substantially" fractal. [11] Yang discloses: "FIG. 4 illustrates a simple two fractal element antenna 38 including a first substantially square fractal element 40 having sides L3, L4 that are ten centimeters in length." Yang at 3:22-29.

The multilevel structure comprises a set of polygonal or polyhedral elements having the same number of sides or faces. Figure 4, below, illustrates an antenna with more than one polygonal elements. The antenna depicted in Figure 4 comprises at least 5 polygonal elements. For example, one polygonal element has a side labeled "L2" and a second polygonal element has a side labeled "L3." Yang at FIG. 4; *see also* Yang at 3:22-29.

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[11] The '208 patent is presently subject to a merged reexamination proceeding – Control Nos. 95/001,389 and 95/000,591. In that proceeding, Patent Owner argued that fractal antennas were disclaimed from the multilevel structure antenna; Patent Owner argued that "the inventors clearly and unmistakably disclaimed or excluded by definition fractal antennas from their claimed invention." *See* Control Nos. 95/001,389 and 95/000,591, Patent Owner's Response to Office Action, filed Oct. 3, 2001 at 33. The Examiner disagreed that fractal antennas in general are not disclaimed. *See* Control Nos. Control Nos. 95/001,389 and 95/000,591, ACP issued Jul. 26, 2012 at 11-12. In its Response to the ACP, Patent Owner now argues that "'multilevel structure' is a coined term and that the doctrine of disclaimer does not apply," and in the alternative, "if 'multilevel structure" did have an ordinary meaning in the art at the time of the invention, such ordinary meaning was disclaimed per the doctrine of disclaimer." *See* Control Nos. Control Nos. 95/001,389 and 95/000,591, Patent Owner's Reply to Action Closing Prosecution, filed Aug. 27, 2012 at 10 fn. 2. Importantly, in a related reexamination proceeding of related U.S. Patent No. 7,397,431 – Control Nos. 95/001,482 and 95/000,586 – Fractus stated: "Patent Owner hereby ***rescinds any disclaimer of claim scope*** made in the parent patent/application or any predecessor or related patent/application. The Examiner is advised that any previous disclaimer of claim scope, if any in the parent patent/application or any predecessor or related patent/application, and the alleged prior art that was made to allegedly avoid, may need to be revisited." *See* Control Nos. 95/001,482 and 95/000,586, Patent Owner's Response to Action Closing Prosecution, filed Jan. 3, 2012 at 1 fn. 1 (emphasis added).

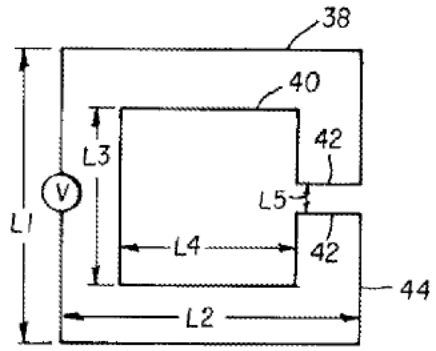
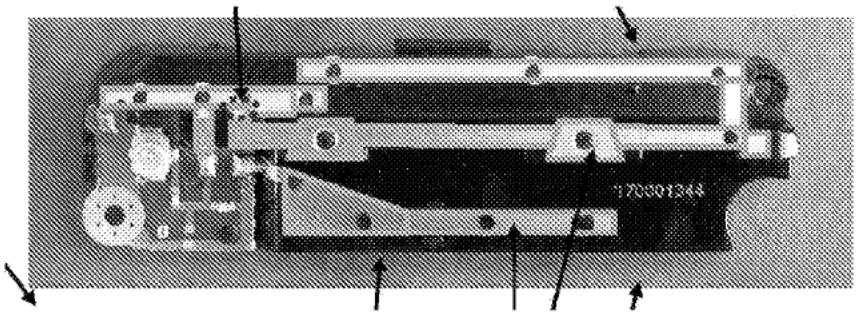


FIG. 4

Yang at FIG. 4

While the specification of the '868 patent does not provide a clear definition of the elements of this claim, the Patent Owner has provided Infringement Contentions that will be used to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.



Patent Owner states that these arrows are pointing to elements that meet this claim limitation

Infringement Contentions for the Samsung Instinct M800 at p. 2 (annotated by the Patent Owner to show four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is a random assortment of same-sided polygons; in the Infringement Contentions it is a group of various shaped four-sided polygons subjectively superimposed on to the antenna. Therefore, Yang discloses all the limitations as defined by the

Patent Owner. Specifically, Figure 4 discloses this. As shown, there is a multilevel structure having an overall shape of more than four sides that is composed of various four-sided polygons. Yang at FIG. 4.

wherein each of said elements in said antenna region is electromagnetically coupled to at least one other of said elements in said region either directly through at least one point of contact or through a small separation providing coupling,

Figure 4, below, illustrates that the elements of the antenna are electromagnetically coupled to each other through at least one point of contact. For example, the polygon with the side labeled "L2" has one point of contact with a second polygon that has the side labeled "L3." Yang at FIG. 4; *see also*, 3:22-29.

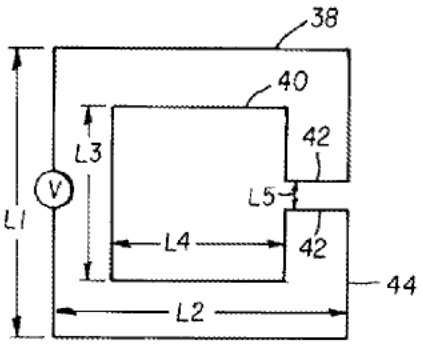


FIG. 4

Yang at FIG. 4

wherein for at least 75% of said polygonal or polyhedral elements, the region or area of contact between said polygonal or polyhedral elements is less than 50% of the perimeter or area of said elements,

As illustrated in Figure 4, for at least 75% of said polygonal elements, the region of contact between the polygonal elements is less than 50% of the perimeter or area of said elements.

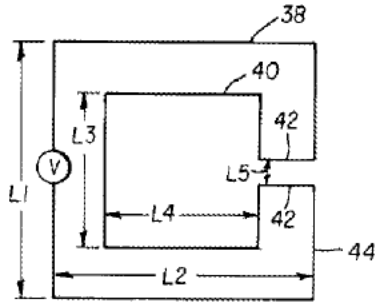


FIG. 4

Yang at FIG. 4

wherein not all the polygonal or polyhedral elements have the same size and

As illustrated in Figure 4, not all the polygonal elements have the same size. For example, the polygonal element having a side labeled "L2" has a different size than the polygonal element having a side labeled "L3."

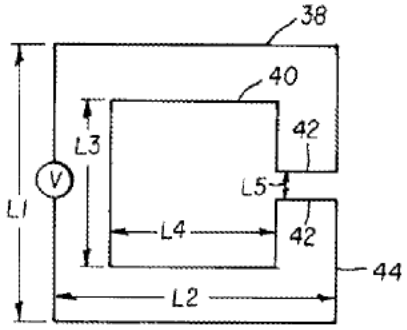


FIG. 4

Yang at FIG. 4

wherein the perimeter of the multilevel structure has a different number of sides than the polygons that compose said antenna region, and

As illustrated in Figure 4, the perimeter of the multilevel structure has a different number of sides than the polygons that compose the multilevel structure. For example, the polygonal element that has a side labeled "L2" has four sides, whereas the perimeter of the multilevel structure has more than four sides.

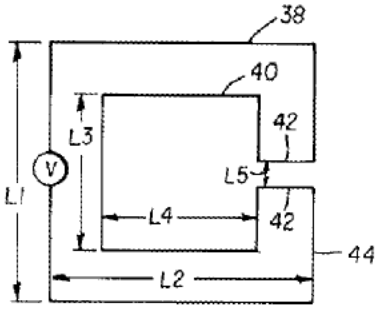
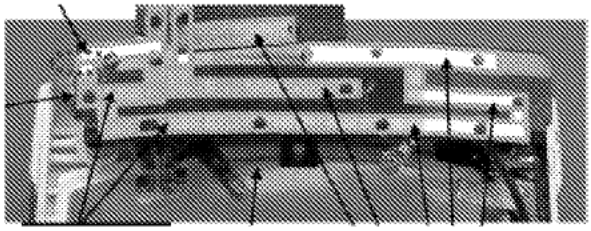


FIG 4

Yang at FIG. 4

further wherein a plurality of polygons of said antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within said region necessary to form said generally distinguishable elements where said polygon perimeters are interconnected.

While the specification of the '208 patent does not provide a clear definition of the elements of this claim, the Patent Owner has provided Infringement Contentions that will be used to interpret this clause, since the Infringement Contentions are presumably within the broadest reasonable interpretation, at least from the Patent Owner's viewpoint.



Patent Owner states that these arrows are pointing to elements that meet this claim limitation

Infringement Contentions for the SCH-R500 at 2 (annotated by the Patent Owner to show four-sided polygons)

With this being the guidance offered by the Patent Owner as to the meaning of this claim limitation, apparently all that is required is the organized chaos of an antenna composed of similar shapes; in the Infringement Contentions it is a group of four-sided polygons subjectively

superimposed onto the antenna. Therefore, Yang discloses all the limitations as defined by the Patent Owner. Specifically, Figure 4 shown below, discloses this. As shown, there is a fundamental shape, in this case a four-sided polygon, which is used as a building block to create an antenna that is composed of similar shapes and creates the overall antenna structure that is a different shape than the original building block. Yang at FIG. 4.[12]

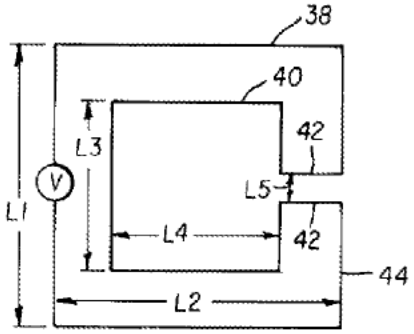


FIG. 4

Yang at FIG. 4

7. The multi-band antenna set forth in claim 1, wherein the level of impedance and radiation pattern of said antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.

Yang discloses a reduced size wideband antenna, in which a single compact antenna structure operates at multiple frequency bands. Yang at 1:37-43. Yang also discloses that it was well known in the art that "[mu]lti-band and wideband antennas are desirable for personal communication systems" and that Yang's "invention relates in general to reduced size broadband antennas for wireless communication systems and other wireless applications." Yang at 1:4-9, 1:12-25.

Yang discloses that "input impedance of the antenna 38 over a desired frequency bandwidth is illustrated in FIGS. 5(a) and 5(b). The radiation pattern for the antenna 38 at a

[12] Furthermore, while not for the purposes of raising an RLP, this claim limitation is further rendered indiscernible by the lack of antecedent basis for "the free perimeter," "the projection," "the longest exposed perimeters," "the least number of polygons," and "said generally distinguishable elements," thereby limiting the ability of a person of skill in the art to determine the metes and bounds of this claim. Therefore, Requestor merely proposes this argument as presumably within the broadest reasonable interpretation, and reserves the right to change this argument should the Patent Owner render the claim more comprehensible.

frequency of 1 GHz is shown in FIGS. 6(a), (b) and (c), at a frequency of 2 GHz is shown in FIGS. 7(a),(b) and (c), and at a frequency of 3 GHz is shown in FIGS. 8(a), (b) and (c).” Yang at 3:22-35. Figures 5-8 are illustrated below.

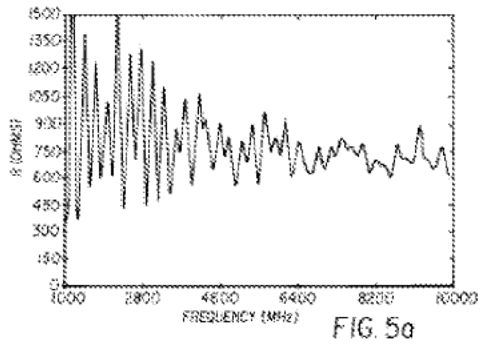


FIG. 5a

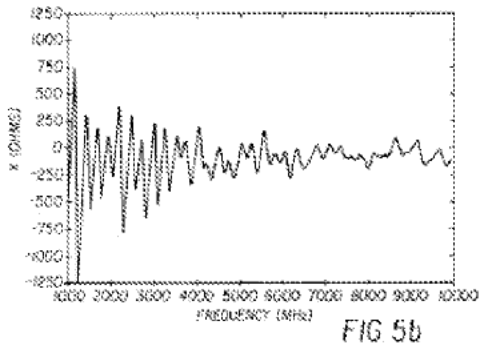


FIG 5b

Yang at FIGS. 5a and 5b

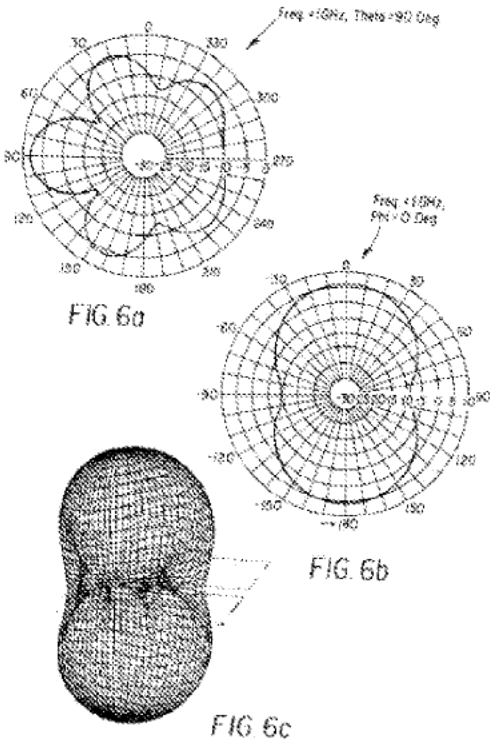


FIG. 6a

FIG. 6b

FIG. 6c

Yang at FIGS. 6a-6c

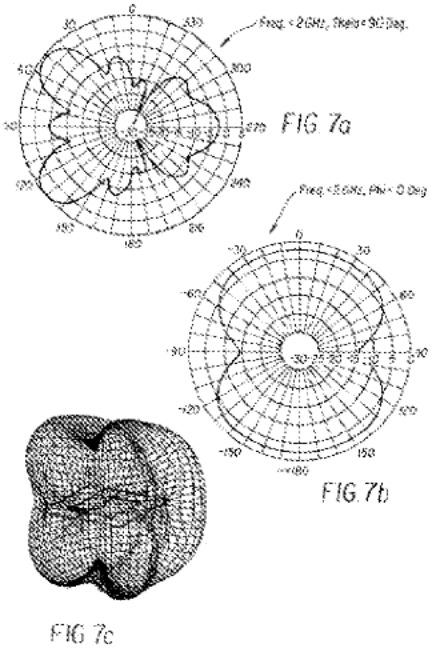


FIG 7a

FIG 7b

FIG 7c

Yang at FIGS. 7a-7c

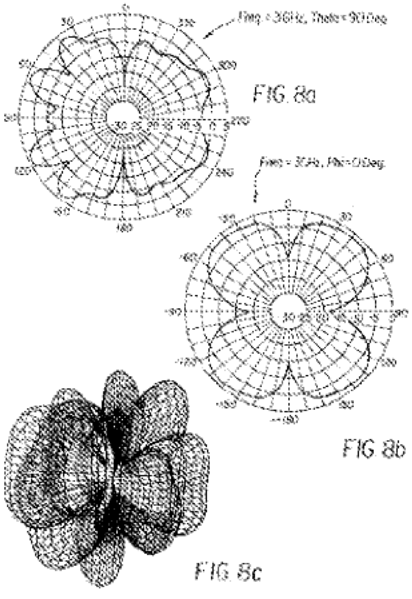


FIG 8a

FIG 8b

FIG 8c

Yang at FIGS. 8a-8c

Thus, based on the above disclosure, Yang discloses a multi-band antenna wherein the level of impedance and radiation pattern of said antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.

10. The multi-band antenna set forth in claim 1, wherein said antenna is included in a portable communications device.

Yang discloses a reduced size wideband antenna, in which a single compact antenna structure operates at multiple frequency bands. Yang at 1:37-43. Yang also discloses that it was well known in the art that "[mu]lti-band and wideband antennas are desirable for ***personal communication systems***" and that Yang's "invention relates in general to ***reduced size*** broadband antennas ***for wireless communication systems*** and other wireless applications." Yang at 1:4-9, 1:12-34 (emphasis added).

Further, Yang discloses that the antenna is suitable for inclusion in a portable communications device. The disclosure of Yang describes that one of its objects is small antenna for "personal mobile use." In particular, Yang discloses:

> Traditionally, wideband antennas in wireless low frequency band can only be achieved with heavily loaded wire antennas, which means that a different antenna is needed for each frequency band. As a result, these antennas are large in size and they are cumbersome and bulky for ***personal mobile use***. ***It would therefore be desirable to provide an antenna structure that overcomes the deficiencies of conventional antenna structures***.
>
> Yang at 1:26-34 (emphasis added).

Thus, based on the above disclosure that the antenna is improved for "personal mobile use," Yang's antenna is included in a portable communications device.

11. The multi-level antenna set forth in claim 10, wherein said portable communication device is a handset.

Yang discloses a reduced size wideband antenna, in which a single compact antenna structure operates at multiple frequency bands. Yang at 1:37-43. Yang also discloses that it was well known in the art that "[mu]lti-band and wideband antennas are desirable for ***personal communication systems***" and that Yang's "invention relates in general to ***reduced size*** broadband antennas ***for wireless communication systems*** and other wireless applications." Yang at 1:4-9, 1:12-25 (emphasis added).

Further, Yang discloses that the antenna is suitable for inclusion in a portable

communications device. The disclosure of Yang describes that one of its objects is small antenna for "personal mobile use." In particular, Yang discloses:

> Traditionally, wideband antennas in wireless low frequency band can only be achieved with heavily loaded wire antennas, which means that a different antenna is needed for each frequency band. As a result, these antennas are large in size and they are cumbersome and bulky for ***personal mobile use***. ***It would therefore be desirable to provide an antenna structure that overcomes the deficiencies of conventional antenna structures***.
>
> Yang at 1:26-34 (emphasis added).

Thus, based on the above disclosure that the antenna is improved for "personal mobile use," Yang's antenna is included in a portable communications device such as a handset.

> **12. The multi-level antenna set forth in claim 11, wherein said antenna operates at multiple frequency bands, and where in at least one of said frequency bands is operating within the 800 MHz - 3600 MHz frequency range.**

Yang discloses an antenna wherein the "input impedance of the antenna 38 over a desired frequency bandwidth is illustrated in FIGS. 5(a) and 5(b). The radiation pattern for the antenna 38 at a frequency of 1 GHz is shown in FIGS. 6(a), (b) and (c), at a frequency of 2 GHz is shown in FIGS. 7(a),(b) and (c), and at a frequency of 3 GHz is shown in FIGS. 8(a), (b) and (c)." Yang at 3:22-35.

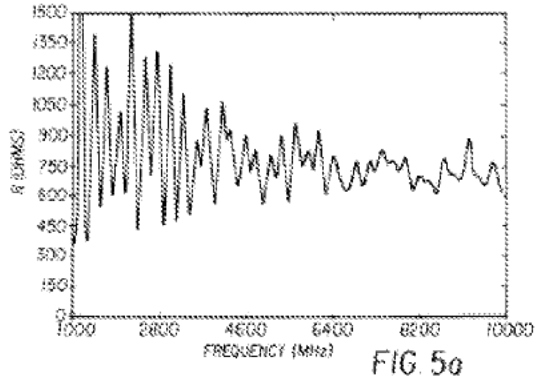


FIG. 5a

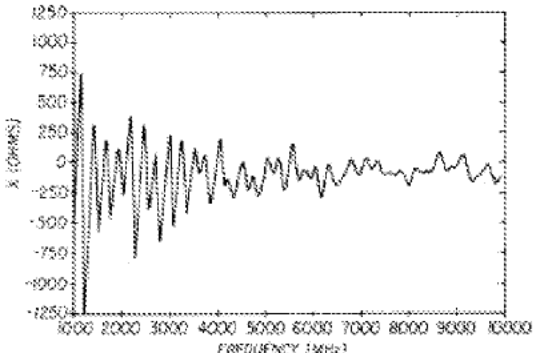


FIG. 5b

Yang at FIGS. 5a and 5b

As demonstrated above, Yang discloses an antenna operating within the 800 MHz-3600 MHz frequency range.

V. CONCLUSION

The prior art documents presented in the above Request were either not previously considered by the Office or are now being presented in a new light pursuant to MPEP § 2642(II)(A). Claims 1, 7, 10, 11, and 12 of the '208 patent are not patentable over the prior art documents cited herein. The prior art documents teach the subject matter of the '208 patent in a manner such that substantial new questions of patentability for all claims are raised by this Request.

In view of the foregoing, it is respectfully submitted that substantial new questions of patentability of claims 1, 7, 10, 11, and 12 of the '208 patent have been raised by this Request. Accordingly, the Office is requested to grant this Request and to initiate reexamination with special dispatch.

As an aid to the application of the presented prior art to claims of the '208 patent, corresponding claim charts are provided at Exhibit CC-A through CC-F attached hereto.

Enclosed is a credit card authorization to cover the Fee for reexamination. If this authorization is missing or defective, please charge the Fee to the Novak Druce Deposit Account No. 14-1437.

Respectfully submitted,

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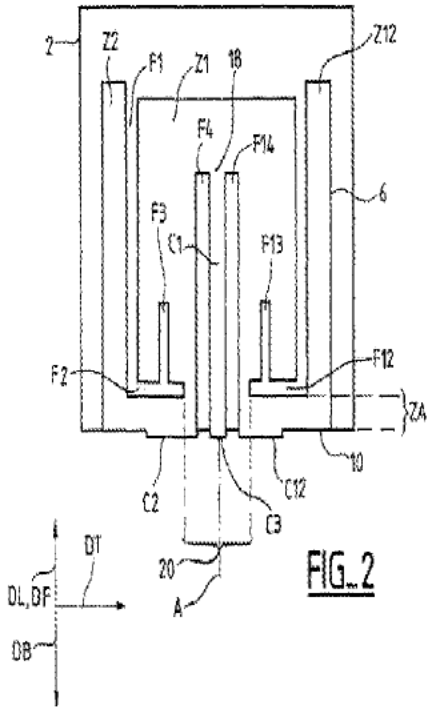
EXHIBIT CC-A

Claim Chart comparing Claims 1, 7, 10, 11, and 12 of the '208 patent to the disclosure of Grangeat.

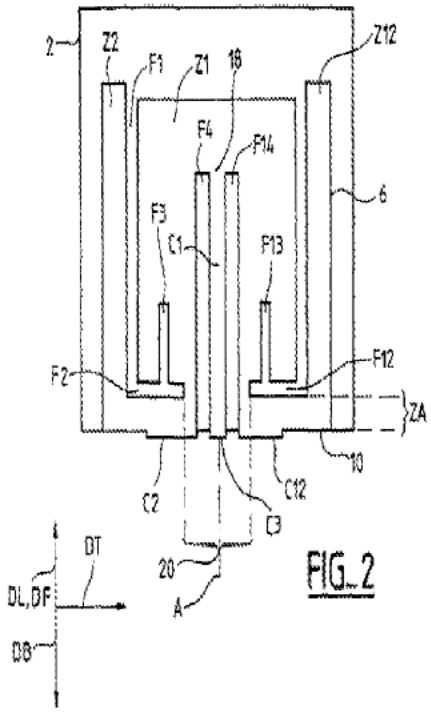
Claim Chart Comparing claims 1, 7, 10, 11, and 12 of US Patent 7,123,208 to Grangeat *et al.*

Prior art cited in this chart:

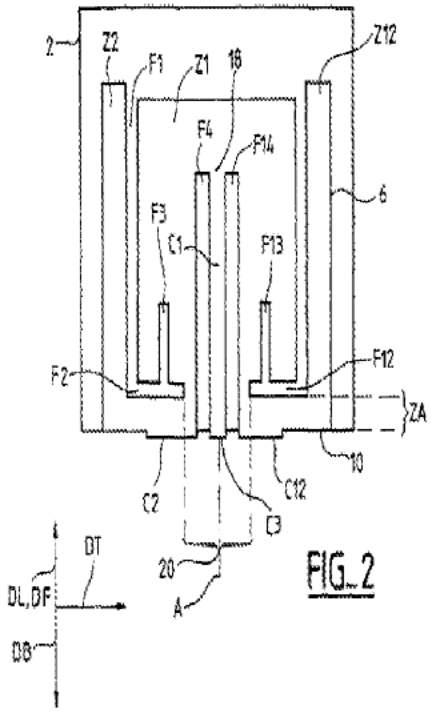
• U.S. Patent No. 6,133,879 "Multifrequency microstrip antenna and a device including said antenna" to Grangeat, *et al.*, Filed December 11, 1998. ("Grangeat")

Claims of the '208 Patent	Disclosure of the Prior Art
Claim 1	
1. A multi-band antenna including	 FIG_2 **Grangeat at FIG 2.** "With the above aims in view, the present invention consists in a multifrequency microstrip antenna comprising: a plane dielectric substrate; a conductor constituting a ground plane on the bottom surface of said substrate; a plurality of conductive zones on the top surface of the substrate and each having an elongate shape imparting a candlestick shape to the antenna; an antenna coupling device common to all the conductive zones; and wherein said conductive zones are separated from each other by slots the widths of which are very much less than the operating wavelengths of the antenna; wherein said conductive zones are sufficiently decoupled from each other to enable various resonances to occur, respectively, in various areas formed by said zones, said resonances being at least approximately of the quarter-wave type;

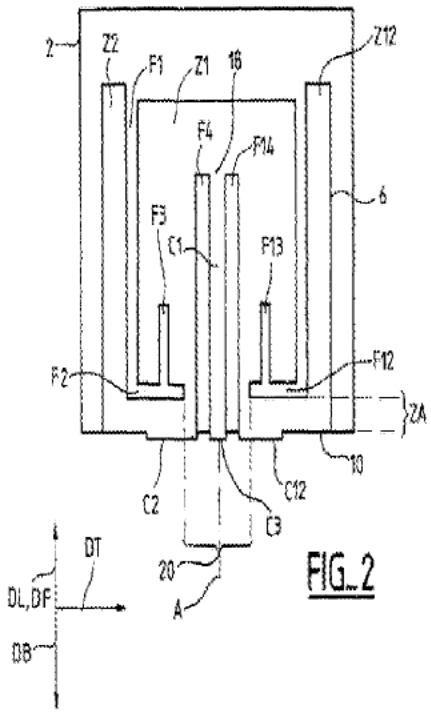
	and wherein each of said zones has an electric field node fixed by at least one short-circuit to the ground plane and said short-circuit is in the vicinity of the base of the candlestick." **Grangeat at col. 4, lines 41-64.** "The signal processing unit is adapted to operate at the resonant frequencies that constitute said operating frequencies of the antenna. It can be a composite unit in which case it includes a component tuned permanently to each operating frequency. It can equally include a tunable component." **Grangeat at col. 6, lines 30-34.** "The internal connection point 18 is outside the secondary zone and is preferably in the primary zone Z1. One operating mode of the antenna then constitutes a primary mode in which a standing wave is established by virtue of propagation of traveling waves both ways in the longitudinal direction or a direction near the longitudinal direction, the waves propagating in an area including the primary zone and the rear region and substantially excluding the secondary zone Z2. Another operating mode constitutes a secondary mode in which a standing wave is established by virtue of propagation of traveling waves both ways (the same as before) in another area including the primary and secondary zones and the rear region." **Grangeat at col. 6, lines 52-64.**

at least one multilevel structure wherein the multilevel structure includes at least one antenna region comprising a set of polygonal or polyhedral elements having the same number of sides or faces,	 FIG. 2 **Grangeat at FIG 2.** "The internal connection point 18 is outside the secondary zone and is preferably in the primary zone Z1. One operating mode of the antenna then constitutes a primary mode in which a standing wave is established by virtue of propagation of traveling waves both ways in the longitudinal direction or a direction near the longitudinal direction, the waves propagating in an area including the primary zone and the rear region and substantially excluding the secondary zone Z2. Another operating mode constitutes a secondary mode in which a standing wave is established by virtue of propagation of traveling waves both ways (the same as before) in another area including the primary and secondary zones and the rear region." **Grangeat at col. 6, lines 52-64.**
wherein each of said elements in said antenna region is electromagnetically coupled to at least one other of said elements in said region either directly through at least one point of contact or	"In an advantageous arrangement the coupling line that constitutes the coupling device of the antenna includes a conductor that is part of the top conductive layer. To be more precise, a section C1 of said main conductor enters the area of the patch 6 in the longitudinal direction DL. It extends between a rear end near the rear edge 10 and a front end consisting of the internal connection point 18. This main conductor section is in the

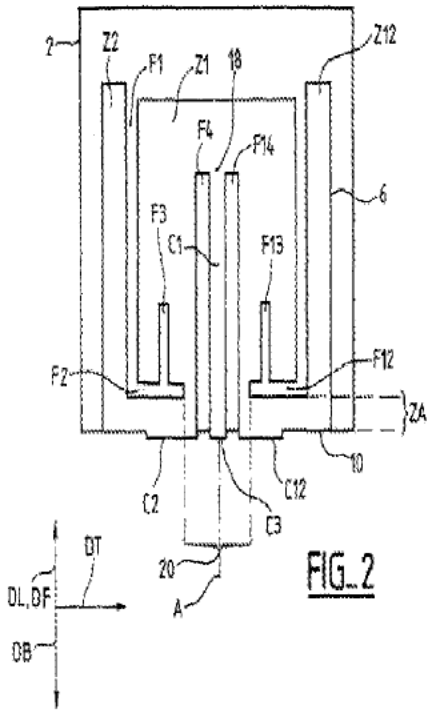
through a small separation providing said coupling,	form of a strip and might be called the horizontal coupling strip. As known in itself the strip is limited laterally by two notches. However, in the antenna of the present invention the two notches are sufficiently narrow in the direction DT and sufficiently long in the direction DL to be respectively regarded as two longitudinal slots F4 and F14. The two slots separate the strip from the patch 6 and are referred to as coupling slots hereinafter. Their width allows for the fact that the parameters of the line of which the coupling strip constitutes the main conductor can advantageously be determined in designing the line as a coplanar line adapted to excite the antenna in a distributed fashion along the length of the line rather than as a microstrip line adapted to excite the antenna only at the end of the line, the ground conductor of the coplanar line then consisting primarily, like a coplanar line, of the parts of the patch on respective opposite lateral sides of the strip beyond the two slots F4 and E14 and not of the antenna ground as in a microstrip line. This line is referred to hereinafter as the horizontal coplanar line." **Grangeat at col. 7, line 62 – col. 8, line 21.** "It would enable the antenna to be coupled by means of an electromagnetic signal applied to or picked up by the external connection line at the rear end of the horizontal coplanar line between two terminals common to the horizontal coplanar line and the antenna, the two terminals respectively comprising the ground conductor of the line and the rear end of the strip." **Grangeat at col. 8, lines 22-28.**

wherein for at least 75% of said polygonal or polyhedral elements, the region or area of contact between said polygonal or polyhedral elements is less than 50% of the perimeter or area of said elements,	 FIG. 2 **Grangeat at FIG 2.** "The antenna preferably has a plane of symmetry extending in the longitudinal directional DL and the vertical direction DV, the trace of this plane in the top surface of the substrate constituting an axis of symmetry A of the patch 6. If two components are symmetrical to each other about the axis or plane of symmetry the number included in the reference symbols for that on the right in the figures is equal to the corresponding number for that on the left increased by 10. The coupling device and the primary zone Z1 extend to the vicinity of the axis A and the configuration of the patch forms said two longitudinal separator slots F1, F11 on respective opposite sides of the primary zone. The secondary zone then includes two parts Z2, Z12 beyond the respective slot. Given the above, the set of separator slots F1, F2, F11, F12 is U-shaped. The branches and the base of the U are respectively longitudinal and transverse. The base has an axial gap 20 extending either side of the axis for connecting the primary zone Z1 to the short-circuit C2, C12 by means of an axial part of the rear region ZA." **Grangeat at col. 7, lines 42-61.** "primary operating frequency: 940 MHz,

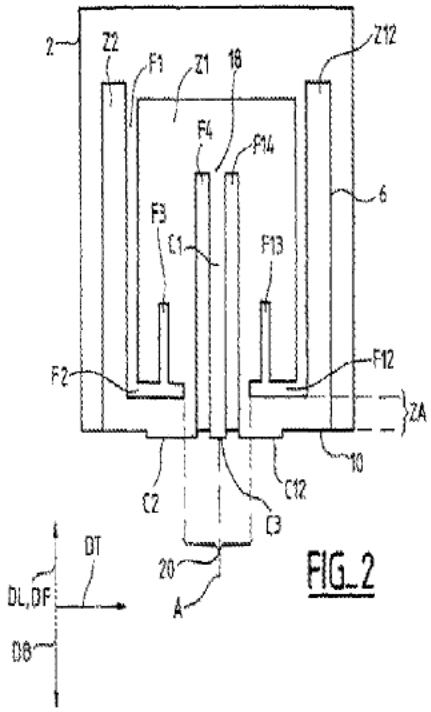
	secondary operating frequency: 870 MHz, input impedance: 50 ohms, composition and thickness of substrate: epoxy resin having a relative permittivity e.sub.r =4.3 and a dissipation factor tan d=0.02, thickness 1.6 mm, composition and thickness of conductive layers: copper, 17 microns, length of primary zone Z1: 26 mm, width of zone Z1: 29 mm, length of secondary zones Z2 and Z12: 30 mm, width of each of these zones: 5.5 mm, length of rear region Z3: 2.5 mm, length of conductor C1 of horizontal coplanar line: 25 mm, width of conductor C1 and main conductor C3 of vertical coplanar line: 2.1 mm, height of conductor C3: 0.8 mm, common width of all slots, in horizontal direction for transverse slots F2 and F12: 0.5 mm, length of frequency reducing slots F3 and F13: 5 mm, width of axial gap 20: 7 mm,

	width of each short-circuit conductor C2 and C12: 5 mm." **Grangeat at col. 9, line 57 – col. 10, line 13.**
wherein not all of the polygonal or polyhedral elements have the same size, and	 **Grangeat at FIG 2.** "The antenna preferably has a plane of symmetry extending in the longitudinal directional DL and the vertical direction DV, the trace of this plane in the top surface of the substrate constituting an axis of symmetry A of the patch 6. If two components are symmetrical to each other about the axis or plane of symmetry the number included in the reference symbols for that on the right in the figures is equal to the corresponding number for that on the left increased by 10. The coupling device and the primary zone Z1 extend to the vicinity of the axis A and the configuration of the patch forms said two longitudinal separator slots F1, F11 on respective opposite sides of the primary zone. The secondary zone then includes two parts Z2, Z12 beyond the respective slot. Given the above, the set of separator slots F1, F2, F11, F12 is U-shaped. The branches and the base of the U are respectively longitudinal and transverse. The base has an axial gap 20 extending either side of the axis for connecting the primary zone Z1 to the short-circuit C2, C12 by means of an axial part of the rear region ZA."

	Grangeat at col. 7, lines 42-61. "primary operating frequency: 940 MHz, secondary operating frequency: 870 MHz, input impedance: 50 ohms, composition and thickness of substrate: epoxy resin having a relative permittivity e.sub.r =4.3 and a dissipation factor tan d=0.02, thickness 1.6 mm, composition and thickness of conductive layers: copper, 17 microns, length of primary zone Z1: 26 mm, width of zone Z1: 29 mm, length of secondary zones Z2 and Z12: 30 mm, width of each of these zones: 5.5 mm, length of rear region Z3: 2.5 mm, length of conductor C1 of horizontal coplanar line: 25 mm, width of conductor C1 and main conductor C3 of vertical coplanar line: 2.1 mm, height of conductor C3: 0.8 mm, common width of all slots, in horizontal direction for transverse slots F2 and F12: 0.5 mm, length of frequency reducing slots F3 and F13: 5 mm,

	width of axial gap 20: 7 mm, width of each short-circuit conductor C2 and C12: 5 mm." **Grangeat at col. 9, line 57 – col. 10, line 13.**
wherein the perimeter of the multilevel structure has a different number of sides than the polygons that compose said antenna region, and	 FIG. 2 **Grangeat at FIG 2.** "The antenna preferably has a plane of symmetry extending in the longitudinal directional DL and the vertical direction DV, the trace of this plane in the top surface of the substrate constituting an axis of symmetry A of the patch 6. If two components are symmetrical to each other about the axis or plane of symmetry the number included in the reference symbols for that on the right in the figures is equal to the corresponding number for that on the left increased by 10. The coupling device and the primary zone Z1 extend to the vicinity of the axis A and the configuration of the patch forms said two longitudinal separator slots F1, F11 on respective opposite sides of the primary zone. The secondary zone then includes two parts Z2, Z12 beyond the respective slot. Given the above, the set of separator slots F1, F2, F11, F12 is U-shaped. The branches

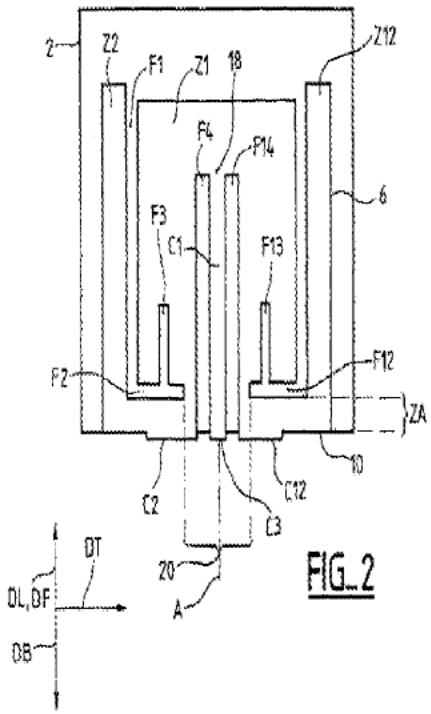
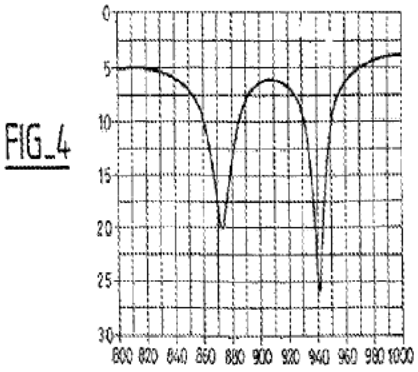
	and the base of the U are respectively longitudinal and transverse. The base has an axial gap 20 extending either side of the axis for connecting the primary zone Z1 to the short-circuit C2, C12 by means of an axial part of the rear region ZA." **Grangeat at col. 7, lines 42-61.** "primary operating frequency: 940 MHz, secondary operating frequency: 870 MHz, input impedance: 50 ohms, composition and thickness of substrate: epoxy resin having a relative permittivity e.sub.r =4.3 and a dissipation factor tan d=0.02, thickness 1.6 mm, composition and thickness of conductive layers: copper, 17 microns, length of primary zone Z1: 26 mm, width of zone Z1: 29 mm, length of secondary zones Z2 and Z12: 30 mm, width of each of these zones: 5.5 mm, length of rear region Z3: 2.5 mm, length of conductor C1 of horizontal coplanar line: 25 mm, width of conductor C1 and main conductor C3 of vertical coplanar line: 2.1 mm, height of conductor C3: 0.8 mm, common width of all slots, in horizontal direction for transverse slots F2 and F12: 0.5

	mm, length of frequency reducing slots F3 and F13: 5 mm, width of axial gap 20: 7 mm, width of each short-circuit conductor C2 and C12: 5 mm." **Grangeat at col. 9, line 57 – col. 10, line 13.**
further wherein a plurality of polygons of said antenna region are generally identifiable as a geometrical element defined by the free perimeter thereof and the projection of ones of the longest exposed perimeters thereof to define the least number of polygons within said region necessary to form said generally distinguishable elements where said polygon perimeters are interconnected.	 FIG_2 **Grangeat at FIG 2.** "The antenna preferably has a plane of symmetry extending in the longitudinal directional DL and the vertical direction DV, the trace of this plane in the top surface of the substrate constituting an axis of symmetry A of the patch 6. If two components are symmetrical to each other about the axis or plane of symmetry the number included in the reference symbols for that on the right in the figures is equal to the corresponding number for that on the left increased by 10. The coupling device and the primary zone Z1 extend to the vicinity of the axis A and the configuration of the patch forms said two

	longitudinal separator slots F1, F11 on respective opposite sides of the primary zone. The secondary zone then includes two parts Z2, Z12 beyond the respective slot. Given the above, the set of separator slots F1, F2, F11, F12 is U-shaped. The branches and the base of the U are respectively longitudinal and transverse. The base has an axial gap 20 extending either side of the axis for connecting the primary zone Z1 to the short-circuit C2, C12 by means of an axial part of the rear region ZA." **Grangeat at col. 7, lines 42-61.** "primary operating frequency: 940 MHz, secondary operating frequency: 870 MHz, input impedance: 50 ohms, composition and thickness of substrate: epoxy resin having a relative permittivity e.sub.r =4.3 and a dissipation factor tan d=0.02, thickness 1.6 mm, composition and thickness of conductive layers: copper, 17 microns, length of primary zone Z1: 26 mm, width of zone Z1: 29 mm, length of secondary zones Z2 and Z12: 30 mm, width of each of these zones: 5.5 mm, length of rear region Z3: 2.5 mm, length of conductor C1 of horizontal coplanar line: 25 mm, width of conductor C1 and main conductor C3 of vertical coplanar line: 2.1 mm,

	height of conductor C3: 0.8 mm, common width of all slots, in horizontal direction for transverse slots F2 and F12: 0.5 mm, length of frequency reducing slots F3 and F13: 5 mm, width of axial gap 20: 7 mm, width of each short-circuit conductor C2 and C12: 5 mm." **Grangeat at col. 9, line 57 – col. 10, line 13.**
Claim 7	
7. The multi-band antenna set forth in claim 1, wherein the level of impedance and radiation pattern of said antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.	"The internal connection point 18 is outside the secondary zone and is preferably in the primary zone Z1. One operating mode of the antenna then constitutes a primary mode in which a standing wave is established by virtue of propagation of traveling waves both ways in the longitudinal direction or a direction near the longitudinal direction, the waves propagating in an area including the primary zone and the rear region and substantially excluding the secondary zone Z2. Another operating mode constitutes a secondary mode in which a standing wave is established by virtue of propagation of traveling waves both ways (the same as before) in another area including the primary and secondary zones and the rear region." **Grangeat at col. 6, lines 52-64.** "This is why the position of the connection point preferably gives substantially the same antenna impedance value for the various operating frequencies." **Grangeat at col. 7, lines 14-17.** "primary operating frequency: 940 MHz, secondary operating frequency: 870 MHz,

	input impedance: 50 ohms, composition and thickness of substrate: epoxy resin having a relative permittivity e.sub.r =4.3 and a dissipation factor tan d=0.02, thickness 1.6 mm, composition and thickness of conductive layers: copper, 17 microns, length of primary zone Z1: 26 mm, width of zone Z1: 29 mm, length of secondary zones Z2 and Z12: 30 mm, width of each of these zones: 5.5 mm, length of rear region Z3: 2.5 mm, length of conductor C1 of horizontal coplanar line: 25 mm, width of conductor C1 and main conductor C3 of vertical coplanar line: 2.1 mm, height of conductor C3: 0.8 mm, common width of all slots, in horizontal direction for transverse slots F2 and F12: 0.5 mm, length of frequency reducing slots F3 and F13: 5 mm, width of axial gap 20: 7 mm, width of each short-circuit conductor C2 and C12: 5 mm." **Grangeat at col. 9, line 57 – col. 10, line 13.**

	"First of all, it caters for the fact that three operating frequencies are needed. The patch 106 therefore additionally includes two mutually symmetrical tertiary zones. A first U-shaped slot F101 partly separates the primary zone Z101 from the two secondary zones Z102 and Z112. It lies within a second slot F105 the same shape separating the secondary zones from the tertiary zones Z103 and Z113." **Grangeat at col. 10, lines 24-30.**  FIG_2 **Grangeat at FIG 2.**  FIG_4

	Grangeat at FIG 4.
Claim 10	
10. The multi-band antenna set forth in claim 1, wherein said antenna is included in a portable communications device.	"A multifrequency microstrip antenna in accordance with the present invention includes two zones connected to a short-circuit consisting of two conductive strips. These zones are sufficiently decoupled from each other to enable two resonances to be established in two respective different areas formed by the zones. The resonances are at least approximately of the quarter-wave type and each has an electric field node fixed by the short-circuit. The same coupling device is used to excite the two resonances. The invention applies in particular to portable telephones and to their base stations." **Grangeat at Abstract.** "The present invention has the following aims in particular: to limit the dimensions of a multifrequency antenna," **Grangeat at col. 4, lines 33-35.**
Claim 11	
11. The multi-level antenna set forth in claim 10, wherein said portable communication device is a handset.	"A multifrequency microstrip antenna in accordance with the present invention includes two zones connected to a short-circuit consisting of two conductive strips. These zones are sufficiently decoupled from each other to enable two resonances to be established in two respective different areas formed by the zones. The resonances are at least approximately of the quarter-wave type and each has an electric field node fixed by the short-circuit. The same coupling device is used to excite the two resonances. The invention applies in particular to portable telephones and to their base stations." **Grangeat at Abstract.** "The present invention has the following aims in particular: to limit the dimensions of a multifrequency antenna," **Grangeat at col. 4, lines 33-35.**

Claim 12	
12. The multi-level antenna set forth in claim 11, wherein said antenna operates at multiple frequency bands, and where in at least one of said frequency bands is operating within the 800 MHz 3600 MHz frequency range.	"In the context of one embodiment of the first antenna, various compositions and values are given below by way of numerical example. The lengths and widths are respectively indicated in the longitudinal direction DL and the transverse direction DT. primary operating frequency: 940 MHz, secondary operating frequency: 870 MHz," **Grangeat at col. 9, lines 52-59.**

EXHIBIT CC-B

Claim Chart comparing Claim 7 of the '208 patent to the disclosure of Grangeat in view of the knowledge of a person of ordinary skill in the art.

Claim Chart Comparing claim 7 of US Patent 7,123,208 to Grangeat *et al.* in view of the Knowledge of a Person of Ordinary Skill in the Art

Prior art cited in this chart:

• U.S. Patent No. 6,133,879 "Multifrequency microstrip antenna and a device including said antenna" to Grangeat, *et al.*, Filed December 11, 1998. ("Grangeat")

Claims of the '208 Patent	Disclosure of the Prior Art
Claim 7	
7. The multi-band antenna set forth in claim 1, wherein the level of impedance and radiation pattern of said antenna are similar in several frequency bands so that the antenna maintains basically the same radio-electric characteristics and functionality in said bands to allow it to operate simultaneously in several frequencies and thereby be able to be shared by several communication services.	"The internal connection point 18 is outside the secondary zone and is preferably in the primary zone Z1. One operating mode of the antenna then constitutes a primary mode in which a standing wave is established by virtue of propagation of traveling waves both ways in the longitudinal direction or a direction near the longitudinal direction, the waves propagating in an area including the primary zone and the rear region and substantially excluding the secondary zone Z2. Another operating mode constitutes a secondary mode in which a standing wave is established by virtue of propagation of traveling waves both ways (the same as before) in another area including the primary and secondary zones and the rear region." **Grangeat at col. 6, lines 52-64.** "This is why the position of the connection point preferably gives substantially the same antenna impedance value for the various operating frequencies." **Grangeat at col. 7, lines 14-17.** "primary operating frequency: 940 MHz, secondary operating frequency: 870 MHz, input impedance: 50 ohms, composition and thickness of substrate: epoxy resin having a relative permittivity e.sub.r =4.3 and a dissipation factor tan d=0.02, thickness 1.6 mm, composition and thickness of conductive layers: copper, 17 microns, length of primary zone Z1: 26 mm,

	width of zone Z1: 29 mm, length of secondary zones Z2 and Z12: 30 mm, width of each of these zones: 5.5 mm, length of rear region Z3: 2.5 mm, length of conductor C1 of horizontal coplanar line: 25 mm, width of conductor C1 and main conductor C3 of vertical coplanar line: 2.1 mm, height of conductor C3: 0.8 mm, common width of all slots, in horizontal direction for transverse slots F2 and F12: 0.5 mm, length of frequency reducing slots F3 and F13: 5 mm, width of axial gap 20: 7 mm, width of each short-circuit conductor C2 and C12: 5 mm." **Grangeat at col. 9, line 57 – col. 10, line 13.** "First of all, it caters for the fact that three operating frequencies are needed. The patch 106 therefore additionally includes two mutually symmetrical tertiary zones. A first U-shaped slot F101 partly separates the primary zone Z101 from the two secondary zones Z102 and Z112. It lies within a second slot F105 the same shape separating the secondary zones from the tertiary zones Z103 and Z113." **Grangeat at col. 10, lines 24-30.**

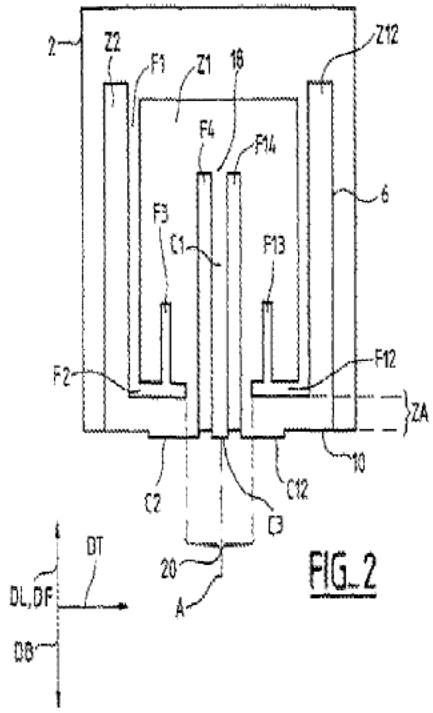


FIG_2

Grangeat at FIG 2.

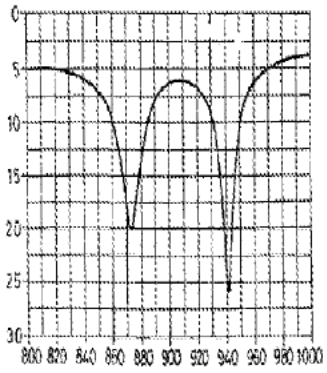


FIG_4

Grangeat at FIG 4.