

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION,
Petitioner,

v.

TELEFONAKTIEBOLAGET LM ERICSSON (publ),
Patent Owner.

IPR2024-00728
Patent 7,151,430 B2

Before NATHAN A. ENGELS, SHARON FENICK, and
SCOTT RAEVSKY, *Administrative Patent Judges*.

ENGELS, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background

Intel Corporation (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–21 of U.S. Patent No. 7,151,430 B2 (Ex. 1001, “the ’430 patent”). Paper 2, 1 (“Pet.”). Patent Owner filed a Preliminary Response (Paper 7 (“Prelim. Resp.”)) and a statutory disclaimer under 37 C.F.R. 1.321(a) of claims 20 and 21 (Ex. 2001).

With our authorization, Petitioner filed a Reply to Patent Owner’s Preliminary Response (Paper 8 (“Prelim. Reply”)) and Patent Owner filed a Sur-reply to Preliminary Response (Paper 9 (“Prelim. Sur-reply”)).

An *inter partes* review may not be instituted unless it is determined that “the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314 (2018). For the reasons below, we determine the information presented in the Petition shows a reasonable likelihood that Petitioner will prevail in showing the unpatentability of at least one claim of the ’430 patent, and we institute *inter partes* review.

B. Real Parties in Interest

Petitioner states that the real parties in interest “include [Intel Corporation], as well as Lenovo (United States), Inc., Lenovo (Shanghai) Electronics Technology Co. Ltd., Lenovo Beijing, Ltd., Lenovo Group, Ltd., Motorola (Wuhan) Mobility Technologies Communication Co., and Motorola Mobility LLC.”¹ Pet. 107–108. Patent Owner states that

¹ While Petitioner states that the real parties in interest “include” the listed entities, we assume that this list includes “*all* real parties in interest,” as per

Telefonaktiebolaget L M Ericsson, Ericsson AB, and Ericsson Inc. are the real parties in interest. Paper 6, 2.

C. Related Proceedings

The parties state that the '430 patent is the subject of *Electronic Devices, Including Mobile Phones, Tablets, Laptops, Components Thereof, and Products Containing Same*, No. 337-TA-1376 (ITC) and *Telefonaktiebolaget LM Ericsson v. Lenovo (United States), Inc.*, No. 5:23-cv-00570 (E.D.N.C.). Pet. 108; Paper 6, 2.

D. The '430 Patent (Ex. 1001)

Titled “Method of and Inductor Layout for Reduced VCO Coupling,” the '430 patent describes “an improved inductor design” in voltage-controlled oscillators (“VCO”) of the type used in radio frequency (“RF”) transceivers. Ex. 1001, 1:19–22, code (54). Among other things, the '430 patent describes using two inductors “that are substantially symmetrical about their horizontal and/or vertical axes and providing current to the inductors in a way so that the resulting magnetic field components tend to cancel each other by virtue of the symmetry.” Ex. 1001, 1:61–66.

Copied below is Figure 2 of the '430 patent, depicting an 8-shaped inductor.

the statutory requirements for a petition to be considered. 35 U.S.C. § 312(a)(2) (emphasis added).

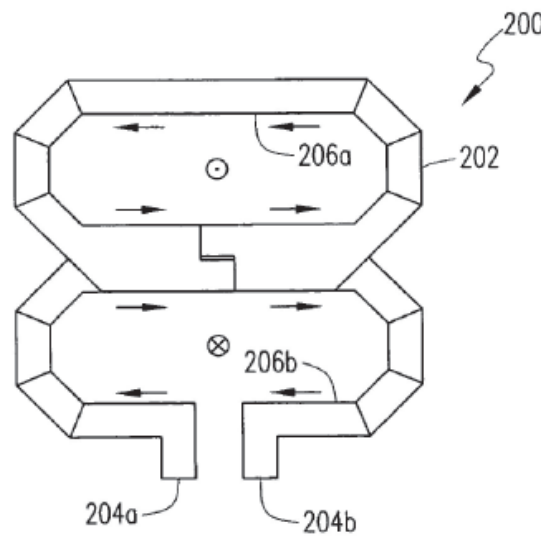


FIG. 2

Figure 2 depicts inductor 200 having inductor coil 202 in the form of a single-turn 8-shaped structure with upper loop 206a and lower loop 206b. Ex. 1001, 4:5–14. According to the '430 patent, “[b]y virtue of the figure-8 shape, current in the upper loop 206a travels in a direction (e.g., counterclockwise, see arrows) that is opposite to current in the lower loop 206b (e.g., clockwise).” Ex. 1001, 4:10–14. “As a result, the EM field components emanating at a certain distance from the two substantially symmetrical loops 206a and 206b also have opposite directions and tend to counteract each other.” Ex. 1001, 4:14–17. “Consequently, the inductor 200 has been found to have a significantly reduced far field at a certain distance from the inductor coil 202. Thus, by making the two loops 206a and 206b substantially symmetrical, cancellation of a significant amount of far field on either side of the horizontal symmetry axis X may be achieved.” Ex. 1001, 4:19–25. The '430 patent also states: “In addition, the positioning of the terminals 204a and 204b may help minimize the far field. For example, positioning the two terminals 204a and 204b as close to each other

as possible helps make the field contributions from the two parts of the inductor 200 identical.” Ex. 1001, 4:28–32.

E. Representative Claim

Of the remaining challenged claims, claims 1 and 11 are independent claims. Claim 1 is reproduced below with labels added corresponding to those referenced in the Petition.

- [1p]. An inductor layout having reduced mutual electromagnetic coupling, comprising:
 - [1A] a first inductor having a reduced far field, said first inductor comprising:
 - [1A.1] a first loop having a shape that is substantially symmetrical about a first predefined axis;
 - [1A.2a] a second loop connected to the first loop, [1A.2b] said second loop having a size and shape substantially identical to the first loop, [1A.2c] said second loop arranged such that a magnetic field emanating therefrom tends to cancel a magnetic field emanating from the first loop; and
 - [1A.3] two closely spaced terminals connected to the first loop for supplying electrical current to the first and second loops while minimizing magnetic field contributions from the terminals; and
 - [1B.1] a second inductor positioned at a predetermined distance from the first inductor, [1B.2] wherein a mutual electromagnetic coupling between the first inductor and the second inductor is reduced as a result of the first inductor having a reduced electromagnetic field.

Ex. 1001, 10:11–30.

F. Asserted Challenges to Patentability

Petitioner challenges the patentability of claims 1–19 of the '430 patent on the following grounds (Pet. 2):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 3–5, 7, 10, 11, 13–15, 17, 19	103 ²	Taniguchi ³
2, 8, 11, 12–15, 17–19	103	Taniguchi, Rostoker ⁴
1, 3–6, 9, 11–16	103	Midya, ⁵ Raghavan ⁶
2, 11–16	103	Midya, Raghavan, Gardner ⁷
1, 3–5, 7, 10, 11, 13–15, 17, 19	103	Taniguchi, Brooks ⁸
2, 8, 11, 12–15, 17–19	103	Taniguchi, Rostoker, Brooks
1, 3–6, 9, 11–16	103	Midya, Raghavan, Brooks
2, 11–16	103	Midya, Raghavan, Gardner, Brooks

II. DISCUSSION

A. Obviousness

Under 35 U.S.C. § 103, a claim is unpatentable as obvious if “the differences between the claimed invention and the prior art are such that the

² The '430 patent's earliest priority date falls before the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (2011), took effect. Thus, we apply the pre-AIA version of § 103.

³ US 2003/0063034 A1; published Apr. 3, 2003. Ex. 1005.

⁴ US 6,373,447 B1; issued Apr. 16, 2002. Ex. 1006.

⁵ WO 98/05048; published Feb. 5, 1998. Ex. 1007.

claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). We resolve the question of obviousness based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the prior art and the claims; (3) the level of skill in the art; and (4) when in evidence, objective indicia of nonobviousness. *See Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of the invention. *Graham*, 383 U.S. at 13, 17. Petitioner contends a person of ordinary skill would have had “a master’s degree in electrical engineering, physics, or similar discipline and at least two years’ experience in designing integrated circuits or inductors or a bachelor’s degree in electrical engineering, physics, or a similar discipline and at least four years’ experience in designing integrated circuits or inductors.” Pet. 2–3. Petitioner also states that additional education might compensate for less experience and vice versa. Pet. 3 (citing Ex. 1003 ¶ 58).

Patent Owner disputes Petitioner’s description of the level of ordinary skill and states that a person of ordinary skill “would have had a bachelor’s

⁶ US 2005/0077992 A1; published Apr. 14, 2005. Ex. 1008.

⁷ US 2001/0030591 A1; published Oct. 18, 2001. Ex. 1009.

⁸ Brooks, Douglas, “Signal Integrity Issues and Printed Circuit Board Design,” Prentice Hall Modern Semiconductor Design Series (2003). Ex. 1010.

degree in electrical engineering, physics, or a similar discipline, and either a master's degree in one of these fields of study or a minimum of two years of experience working in the wireless communications industry.” Prelim. Resp. 15–16 (citing Ex. 2002 ¶ 24).

On the current record, Patent Owner's reference to “experience working in the wireless communications industry” (Prelim. Resp. 16; Ex. 2002 ¶ 24) appears potentially overbroad, as compared to Petitioner's reference to “experience in designing integrated circuits or inductors” (Pet. 2–3), which appears to better reflect the subject of the '430 patent and asserted prior art. At this stage, we apply Petitioner's articulation of the level of ordinary skill in the art, but our Decision would not change under Patent Owner's articulation. *See* Ex. 2002 ¶ 25 (Dr. Prucnal stating that his opinions would not change under Petitioner's proposed articulation).

C. Claim Construction

We construe claims using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2023).

The parties present no express claim interpretations (Pet. 3; Prelim. Resp. 15), and at this stage, we determine no claim terms require express construction. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’”)

(quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

D. Taniguchi-based Grounds

Petitioner includes a limitation-by-limitation comparison of Taniguchi to each of claims 1, 3–5, 7, 10, 11, 13–15, 17, 19. Pet. 16–55. Below, we review Petitioner’s showing for claim 1, which we determine to be sufficient at this stage and on the current record.

*1. Petitioner’s Arguments Regarding Claim 1 as Allegedly Obvious in View of Taniguchi*⁹

Citing the embodiments of Taniguchi’s Figures 3, 7, 8, and 9/10, Petitioner cites Taniguchi’s “eight-shaped antenna 1” as the claimed “first inductor” and “rectangular antenna 2 (Figure 7–8 embodiments) and eight-shaped antenna 2 (Figure 9/10 embodiment)” as the claimed “second inductor.” Pet. 31–32; *see* Pet. 36–38, 39–40. According to Petitioner, because Taniguchi’s loop antennas generate magnetic flux to communicate inductively with tags, the “antennas” are inductors, as claimed. Pet. 8–11 (citing Ex. 1003 ¶¶ 88–90, 93; Ex. 1005 ¶¶ 63, 64, 96).

Petitioner also contends that “the flux lines of the magnetic field generated by the two loops of the eight-shaped antenna are equal and have opposite directions such that the magnetic flux lines from the two loops cancel each other, reducing the electromagnetic field generated by antenna/inductor 1.” Pet. 15 (citing Ex. 1003 ¶ 96; Ex. 1005 ¶¶ 57–59, 73–75; Ex. 1010, 157). Arguing that Taniguchi teaches the claimed “reduced

⁹ The Petition’s discussion of claim 1 refers to and incorporates portions of the Petition’s discussion of now-disclaimed claim 20. Accordingly, our analysis of Petitioner’s showings for claim 1 also refers to portions of Petitioner’s showings for claim 20.

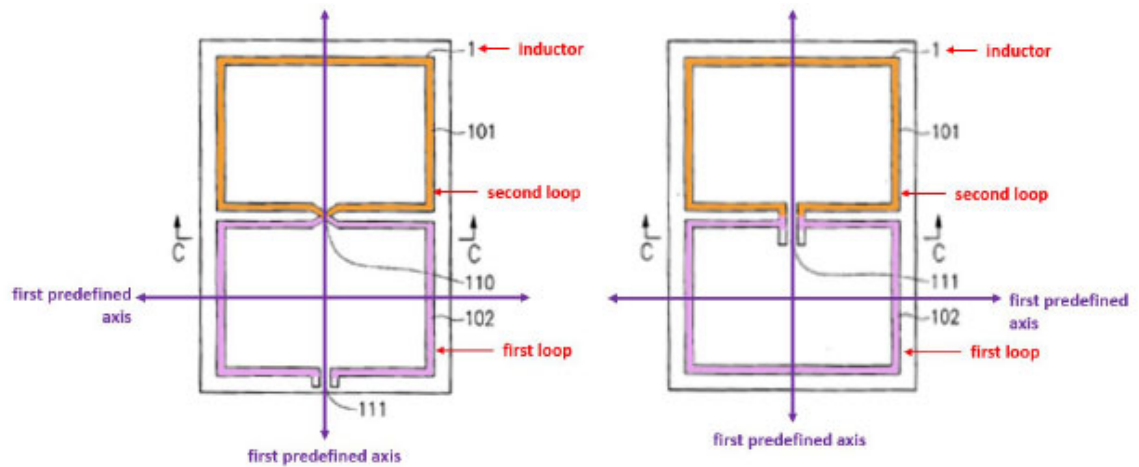
far field,” Petitioner argues that Taniguchi “stresses that since ‘the current flowing to the two loops defining the 8-shape is well balanced’ and as a result ‘the remote electromagnetic-field intensity is much suppressed by the figure eight-shaped antenna.’” Pet. 15–16 (quoting Ex. 1005 ¶ 94; citing Ex. 1005 ¶¶ 55, 59, 95; Ex. 1001, 4:5–25, Fig. 2) (emphases omitted).

Further, Petitioner contends that

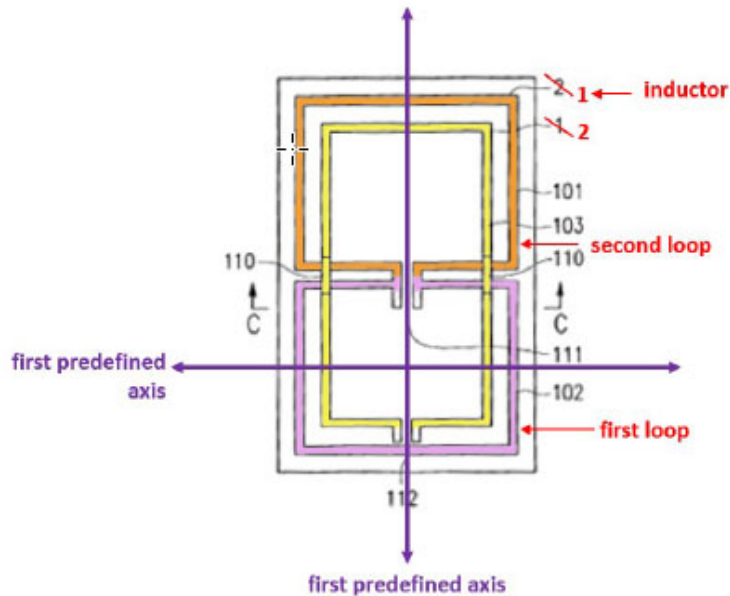
because the conductors are arranged relative to one another so that current flows through them in opposite directions, the generated fields are equal and opposite and therefore the magnetic field emanating from conductor 101 (“*second loop*”) tends to cancel the magnetic field emanating from conductor 102 (“*first loop*”).

Pet. 23 (citing Ex. 1003 ¶¶ 116, 122, 123; Ex. 1005 ¶¶ 55–57, 73–75; Ex. 1010, 157; Ex. 1023, 2:33–53, 4:3–11, 4:22–28, 6:19–23).

Petitioner also contends that the embodiments depicted in Taniguchi’s Figures 7, 8, and 9/10 include an eight-shaped antenna/inductor having upper and lower loops that have the same size and shape and are substantially symmetrical about a predefined axis. Pet. 18–20. Petitioner’s annotated versions of Taniguchi’s Figures 7B, 8B, and 10B, copied below, illustrate Petitioner’s contentions:



Taniguchi, Annotated Figure 8B (left), Annotated Figure 10B (right)



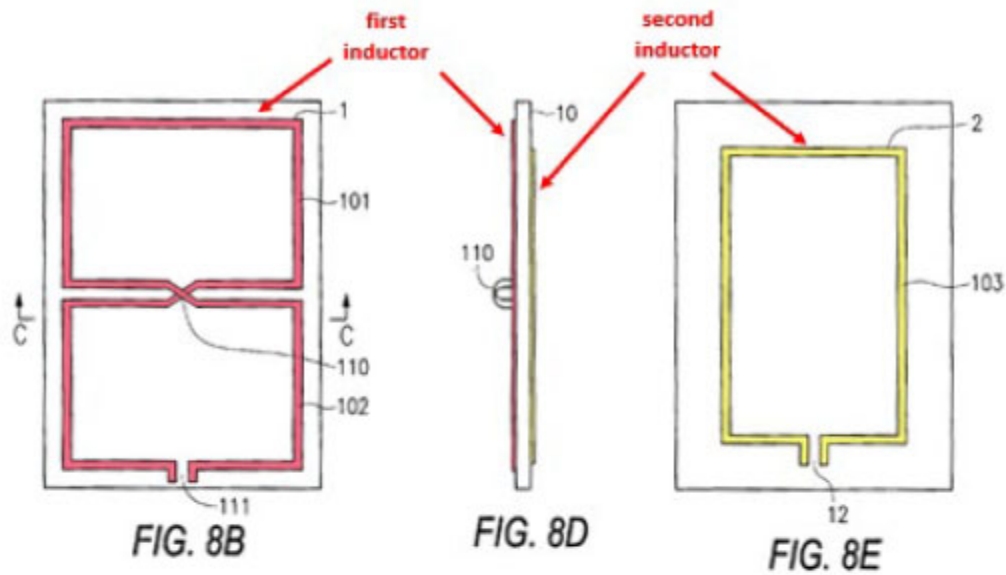
Taniguchi, Annotated Figure 7B

Pet. 19. Petitioner’s annotated versions of Taniguchi’s Figures 7B, 8B, and 10B depict an inductor having a lower “first loop” colored pink and an upper “second loop” colored orange, with lines labeled “first predefined axis” added to illustrate symmetry. Pet. 18–22.

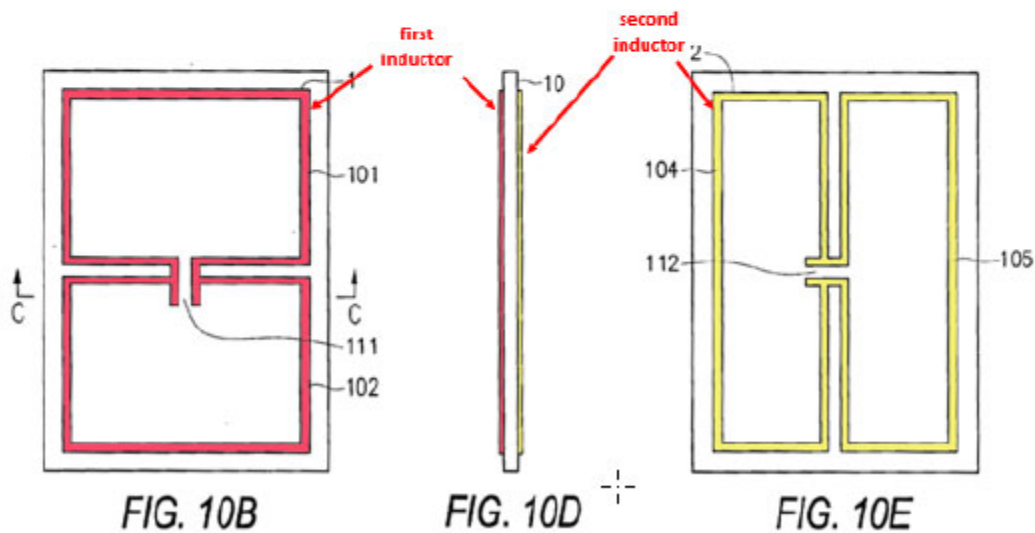
Petitioner also contends that in Figure 8B, for example, the eight-shaped antenna/inductor 1 includes two closely spaced terminals for

supplying in the form of the right and left portions of feeding point 111 on the lower side of conductor 102, with feeding point 111 having a left portion and a right portion for supplying electrical current to the loops. Pet. 27–28. Further, Petitioner contends that the right and left portions of feeding point 11 supply electrical current that a person of ordinary skill would understand to minimize magnetic field contributions relative to terminals that are placed farther apart. Pet. 28–30 (citing Ex. 1003 ¶¶ 127–131, 134; Ex. 1001, 4:29–32).

Finally, regarding the claimed “second inductor,” Petitioner contends each of the embodiments of Taniguchi’s Figures 7, 8, and 9/10 teaches that antenna/inductor 2 is formed on the opposite surface of insulation 10 and is thus separated from antenna/inductor 1 by a predetermined distance, the thickness of insulation 10. Pet. 39–41 (citing Ex. 1003 ¶¶ 153, 158; Ex. 1005 ¶¶ 55, 68, 70–73, 76, 77, 85, 86, Figs. 7B, 8B, 8D, 8E, 10B, 10D, 10E). Petitioner’s annotated versions of Taniguchi’s Figures 8 and 10 are copied below:



Taniguchi, Annotated Figures 8B and 8D-8E



Taniguchi, Annotated Figures 10B, 10D-10E

Pet. 40. Petitioner's annotated versions of Figures 8 and 10 depict a first inductor colored red and a second inductor colored yellow. The annotated versions of Figures 8D and 10D depict the first inductor connected to the left side of insulation 10 and the second inductor connected to the right side of insulation 10. According to Petitioner, as explained above, the two loops of

the figure-eight configuration of Taniguchi's antenna/inductor 1 generate repulsive magnetic flux that reduces the intensity of the remote EM field and also reduce the EM coupling between the first and second antenna/inductors. Pet. 42–43.

2. Patent Owner's Arguments Regarding Claim 1 as Allegedly Obvious in view of Taniguchi

Patent Owner argues Taniguchi is non-analogous art that teaches away from the '430 patent. Prelim. Resp. 2–3, 20–23. According to Patent Owner, Taniguchi is directed to a radio antenna system for detecting RFID tags and does not mention inductors or inductor layouts. Prelim. Resp. 20–21. Further, Patent Owner contends that Taniguchi's antennas use inductance coupling between antennas for transmission and reception of loop antennas in the RFID tags, which, according to Patent Owner, is opposite to, and teaches away from, the '430 patent's inductors that reduce mutual electromagnetic coupling between a first inductor and second inductor as a result of the first inductor having a reduced electromagnetic field. Prelim. Resp. 21–22. Patent Owner also contends that a person of ordinary skill in the art would not have been motivated to substitute either of Taniguchi's first or second antennas for the first or second inductors of the '430 patent spaced apart at a predetermined distance because neither of Taniguchi's antennas by itself would provide the desired level of coupling. Prelim. Resp. 23.

Further, Patent Owner argues Taniguchi does not disclose or render obvious a first inductor having a reduced far field. Prelim. Resp. 23–26. According to Patent Owner, the antennas in Taniguchi work because the second antenna is arranged so that the sum of mutual inductances between

the first and second antenna is minimized and complete overlap of Taniguchi's two antennas is the only way the antennas can be in close proximity without electromagnetic coupling with each other. Prelim. Resp. 24–25.

Patent Owner also argues Taniguchi does not disclose or render obvious cancellation of the magnetic field emanating from the first antenna 1 at a predetermined distance away from the first antenna. Prelim. Resp. 26 (citing Ex. 2002, XI(A)(60)). According to Patent Owner, “[e]very embodiment of a non-contact identification apparatus in Taniguchi provides the magnetic-field intensity necessary for mutual inductance coupling between antenna 1 and the coils 203, 204 in tags 201, 202.” Prelim. Resp. 26. As one example, Patent Owner argues that Taniguchi's Figure 4 depicts tag 211 “that is relatively far away” while making interlinkage with many lines of magnetic flux from antenna 1. Prelim. Resp. 26 (citing Ex. 1005 ¶ 64).

Patent Owner also argues “the opposing fields of Taniguchi's antenna 1 are not designed to cancel at a distance, but rather are designed to induce opposing currents in Taniguchi's antenna 2, which is concentric with antenna 1.” Prelim. Resp. 26–27. Further, citing paragraph 95 of Taniguchi, Patent Owner characterizes Taniguchi as stating that the “opposing fields of antenna 1 inducing opposing currents in antenna 2 enables electric power to be efficiently converted to an electromagnetic field.” Prelim. Resp. 27.

Next, Patent Owner argues Taniguchi does not disclose or suggest two closely spaced terminals because Taniguchi does not state that the ends are closely spaced and “[b]ecause the dimensions of Taniguchi's radio guidance antenna are on the order of a large fraction of a meter, or one or more

meters, the ends of Taniguchi's antenna conductor 102 at feeding point 111 are not closely spaced relative to the semiconductor-die/chip environment described in the '430 [p]atent." Prelim. Resp. 27–28. Patent Owner also argues Taniguchi fails to teach that the spacing between the ends of antenna conductor 102 at feeding point 111 minimizes the magnetic field contributions from conductors at the feeding point. Prelim. Resp. 28. Patent Owner argues that "[t]he stated reason [for the placement of feeding point 111 in Taniguchi] is 'the two feeding points 111, 112 are nearer to each other, which is favorable in wiring,'" not to minimize magnetic field contributions from the combination. Prelim. Resp. 28.

Patent Owner also argues that Taniguchi's antenna 2 is not an inductor, is not positioned at a predetermined distance from a first inductor to reduce the electromagnetic field at a certain distance, and there is no reduction of mutual electromagnetic coupling between a first and second inductor as a result of a first inductor having a reduced electromagnetic field. Prelim. Resp. 29. According to Patent Owner, "[i]n the '430 [p]atent, the first and second inductors in the inductor layout on a semiconductor die are 'positioned at a predetermined distance from' each other, *i.e.*, the 'center distance' between the two inductors is far enough away to reduce the electromagnetic coupling between them." Prelim. Resp. 29 (citing Ex. 1001, 2:19–24). Patent Owner argues that in Taniguchi, "both antennas are formed on the same plane or a parallel plane and must have their center points exactly coinciding or overlapping" so that the sum of the two antenna's mutual inductances is minimized. Prelim. Resp. 29–30.

3. *Analysis of Alleged Obviousness of Claim 1 in view of Taniguchi*

At this stage and on the record before us, we preliminarily determine Petitioner to have shown Taniguchi is within the '430 patent's field of endeavor and that one of ordinary skill would have found claim 1 obvious over Taniguchi.

The '430 patent describes its field of endeavor as inductor design in a VCO. Ex. 1001, 1:19–22. Patent Owner does not specifically state what Patent Owner considers the field of endeavor of the '430 patent to be, but Patent Owner highlights portions of the '430 patent specification that describe implementations on a single semiconductor chip. Prelim. Sur-reply 2 (citing Ex. 1001, 1:59–61). Even though portions of the '430 patent refer to semiconductor die or chip applications (e.g., Ex. 1001, 1:27–61), neither the specification nor the claims are limited to such specific applications. Also, Patent Owner acknowledges a relatively broad field of endeavor with its proposed definition of a person of ordinary skill in the art, arguing that a person of ordinary skill would have had “two years of experience working in the wireless communications industry.” *See* Prelim. Resp. 15–16. Thus, on the present record, we preliminarily agree with Petitioner that the '430 patent's field of endeavor is inductor design. *See* Prelim. Reply 1–2.

Similarly, although parts of Taniguchi describe an RFID system, on the current record, we are persuaded by Petitioner's arguments that a person of ordinary skill would understand Taniguchi's teachings to be applicable to the design of inductors generally. *See* Prelim. Reply 4–5. Among other things, on the present record, Petitioner sufficiently shows that the electromagnetic field created by a structure is not dependent upon it being labeled an antenna or an inductor. Prelim. Reply 2–3 (citing Ex. 1003

¶¶ 85–93), 4–5 (citing Ex. 1003 ¶¶ 69–73, 138–166, 203). Further, on this record, we disagree with Patent Owner’s arguments that Taniguchi teaches away from the claimed invention; notwithstanding the reference’s discussion of specific applications in RFID systems, the structures depicted and described in Taniguchi are similar to those described and claimed in the ’430 patent, as discussed further below. Notably, the ’430 patent attributes many of the characteristics of the EM field to the symmetrical, 8-shaped inductor having current flowing in opposite directions in each of the inductor’s loops (Ex. 1001, 4:5–32), which is structurally similar to the structures depicted in Taniguchi, e.g. Figures 3, 7, and 8.

Next, we disagree with Patent Owner’s arguments that Taniguchi does not teach or suggest a first inductor having a reduced far field. *See* Prelim. Resp. 23–26. As cited by Petitioner (Pet. 15–16), Taniguchi states that the “remote electromagnetic-field intensity” is suppressed with its two-loop 8-shaped antenna (e.g., Ex. 1005 ¶ 94). Similarly, we are currently persuaded that Taniguchi teaches or suggests that the magnetic field emanating from the second loop tends to cancel the magnetic field emanating from the first loop as a result of the current flowing through the loops in opposite directions. *See* Ex. 1003 ¶¶ 116, 122, 123; Ex. 1005 ¶¶ 55–57, 73–75. At this stage, Patent Owner’s arguments to the contrary (e.g., Prelim. Resp. 26–27) do not substantively undermine Taniguchi’s teachings regarding suppression of the “remote” electromagnetic field. *See* Ex. 1001, 4:5–27 (describing characteristics of the EM field emanating from a symmetrical, single-turn, 8-shaped structure).

On the current record, we preliminarily disagree with Patent Owner’s arguments that Taniguchi does not teach or suggest closely spaced terminals.

See Prelim. Resp. 27–28. We preliminarily agree with Petitioner that a person of ordinary skill would have recognized the relative placement of Taniguchi’s right and left portions of feeding point 111 as closely spaced terminals that would minimize magnetic field contributions similar to the terminals disclosed in the ’430 patent. *See* Pet. 28–29; Ex. 1001, 4:28–32.

Finally, on the current record, we preliminarily disagree with Patent Owner’s arguments that Taniguchi does not disclose a second inductor positioned at a predetermined distance from the first inductor such that mutual EM coupling is reduced as a result of the first inductor having a reduced EM field. We preliminarily agree with Petitioner that Taniguchi teaches that its loop structures are spaced apart by a predetermined distance (the width of insulation 10) and, as noted above, Taniguchi recognizes suppression of the remote EM field. Ex. 1005 ¶ 94.

To the extent that the parties’ declarants disagree regarding what a person of ordinary skill would have understood regarding the characteristics of the EM fields emanating from Taniguchi’s loop structures, the parties are encouraged to develop the record during trial. At this stage, however, we are persuaded that Petitioner has sufficiently established that Taniguchi teaches or reasonably suggests each limitation of claim 1.

4. Conclusion Regarding Claim 1

On the current record, we are persuaded that Petitioner has shown a reasonable likelihood that claim 1 is unpatentable as obvious in view of Taniguchi. Accordingly, we institute *inter partes* review of all challenged claims on all grounds asserted in the Petition. Below, we address certain showings and arguments primarily as guidance.

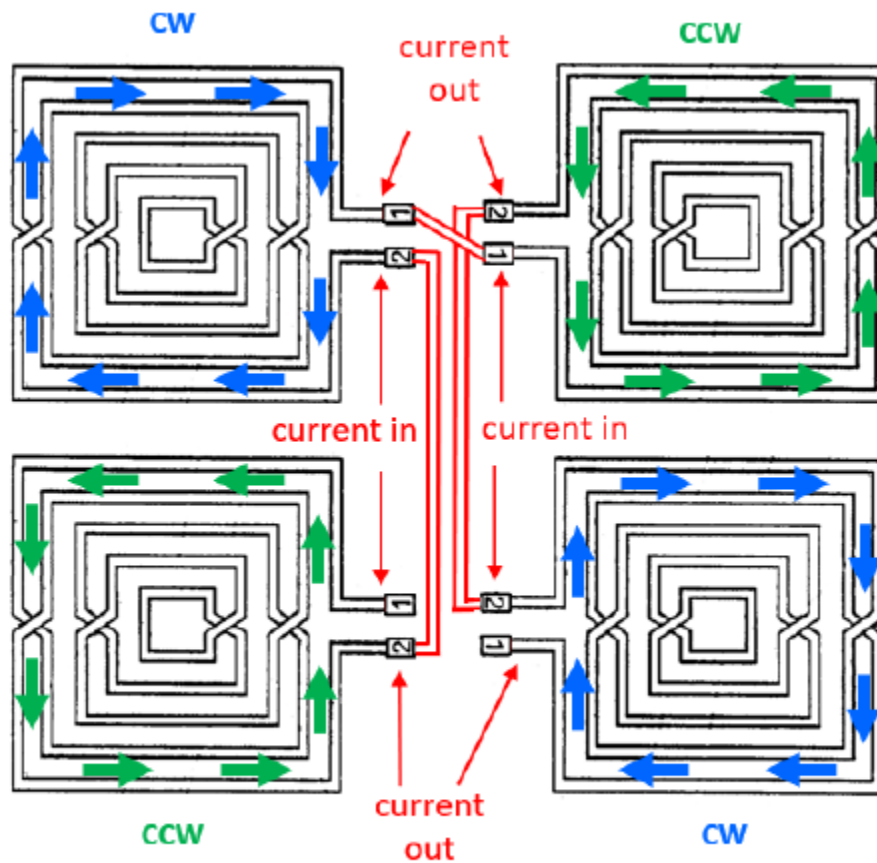
E. Additional Guidance Regarding Taniguchi-based Grounds

Petitioner challenges claims 2, 8, 11, 13–15, and 17–19 as obvious in view of the combined teachings of Taniguchi and Rostoker, with Rostoker cited for its teachings of stacked antennas formed on a semiconductor chip, among other things. Pet. 53–64. Patent Owner argues a person of ordinary skill would not have had motivation to combine the teachings of Taniguchi and Rostoker. Prelim. Resp. 31–36.

At this stage, each party relies largely on the testimony of its respective declarant regarding whether a person of ordinary skill would have had reason to combine the teachings of Taniguchi and Rostoker and regarding what a person of ordinary skill would or would not have understood from the combined teachings Taniguchi and Rostoker. We encourage the parties to develop the record regarding these issues during trial.

F. Midya-based Grounds

Petitioner cites Midya as teaching an inductor having a 4-loop embodiment with loops sized and shaped to minimize the EM field, and Petitioner contends a person of ordinary skill “would have been motivated to use Raghavan’s symmetric inductor winding as each loop in Midya’s non-interacting multiloop inductor.” Pet. 68–69. Petitioner provides the Figure copied below to depict Petitioner’s proposed combination of Midya and Raghavan:



Midya-Raghavan Combination

Pet. 71. Petitioner's Figure illustrating the Midya-Raghavan Combination depicts an inductor having four loops with blue arrows representing clockwise flow of current in the upper left and lower right loops and green arrows representing counterclockwise flow in the upper right and lower left loops. According to Petitioner, "[t]his arrangement 'provide[s] total cancellation of a magnetic field on N axes' and 'maximize[s] overall cancellation of the magnetic field.'" Pet. 75 (quoting Ex. 1007, 10:17–11:1); *see* Pet. 76–77 (citing Midya's Figures 11, 12 (representing a figure-8 inductor), and 13 for depictions of EM fields produced by different inductor configurations).

Without directly addressing claim construction, Patent Owner argues the claims require that the first and second inductor are “planar inductors, to be part of the same ‘inductor layout’ in claim 1 and on the same ‘semiconductor die’ in claim 11.” Prelim. Resp. 40; *see* Prelim. Resp. 40 (“Every drawing, table, graph, embodiment, and description in the ‘430 patent specification makes clear that the two inductors must be on the same layer and that the distance measured between them is a lateral distance on the same semiconductor die.”). According to Patent Owner, “Midya teaches the so-called ‘second’ inductor is directly above the ‘first’ inductor[] on a completely different layer of a printed circuit board” and Midya’s examples include inductors on a printed circuit board that would have been “typically several orders of magnitude larger than the dimensions of an inductor on a semiconductor die.” Prelim. Resp. 40–41. Patent Owner also argues that each of Midya’s two terminals 102 is connected to a different loop, not the same loop as required by claims 1 and 11, such that Midya does not teach or suggest two closely spaced terminals connected to the first loop, as claimed. Prelim. Resp. 42–43. Further, Patent Owner argues it “might not make sense” for a person of ordinary skill in the art to combine the teachings of Midya and Raghavan to implement the second inductor as claimed. Prelim. Resp. 44–45. According to Patent Owner, Raghavan teaches a particular design for a spiral inductor and there would be no reduction in mutual EM coupling between the symmetric spiral inductors shown in Figures 2 and 3 of Raghavan. Prelim. Resp. 45–46.

At this stage, it is not clear that Patent Owner’s arguments regarding “planar inductors” and a lateral distance between inductors are properly directed to elements the challenged claims. *See* Prelim. Resp. 41 (citing the

'430 patent's specification without providing directly addressing claim construction). Further, Patent Owner's arguments addressing Midya and Raghavan individually do not substantively address Petitioner's proposed combination of Midya and Raghavan. Also, the parties again rely on declarant testimony to argue for and against the proposed combination; to the extent that the parties present conflicting declarant testimony or arguments regarding claim construction, the parties are encouraged to develop the record during trial.

G. Conclusion

On the current record, we determine Petitioner has shown a reasonable likelihood that it will prevail in its challenge to at least one claim of the '430 patent. Accordingly, we institute an *inter partes* review of the '430 patent.

ORDER

In consideration of the foregoing, it is hereby:

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted as to claims 1–19 of the '430 patent on all grounds asserted in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is given of the institution of a trial, which commences on the entry date of this Decision.

IPR2024-00728
Patent 7,151,430 B2

For PETITIONER:

Lori Gordon
Sanjeet Dutta
Christie Larochelle
Filippos Papadatos
GOODWIN PROCTER LLP
gordon-ptab@goodwinlaw.com
sdutta@goodwinlaw.com
clarochelle@goodwinlaw.com
fpapadatos@goodwinlaw.com

For PATENT OWNER:

Alastair Warr
Bryan Santarelli
FISHERBROYLES, LLP
alastair.warr@fisherbroyles.com
bryan.santarelli@fisherbroyles.com