

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ADVANCED MICRO DEVICES INC.,
Petitioner,

v.

REALTEK SEMICONDUCTOR CORPORATION,
Patent Owner.

IPR2023-00789
Patent 7,936,245 B2

Before KRISTINA M. KALAN, KIMBERLY McGRAW, and
BRIAN D. RANGE, *Administrative Patent Judges*.

McGRAW, *Administrative Patent Judge*.

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

I. INTRODUCTION

Advanced Micro Devices, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–5, 8, and 9 of U.S. Patent No. 7,936,245 B2 (Ex. 1001, “the ’245 patent”). Realtek Semiconductor Corporation (“Patent Owner”) filed a Preliminary Response to the Petition (Paper 6, “Prelim. Resp.”).

To institute an *inter partes* review, we must determine that the information presented in the Petition shows “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(a). For the reasons discussed below, after considering the parties’ submissions and the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one claim of the ’245 patent. Thus, we institute an *inter partes* review.

A. Real Parties-In-Interest

The parties identify themselves as the real parties-in-interest. Pet. 8; Paper 5, 1.

B. Related Proceedings

The parties identify *Realtek Semiconductor Corp. v. Advanced Micro Devices, Inc.*, Case No. 4:22-cv-04769-JSW (N.D. Cal.) and *Certain Integrated Circuits, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-1350 (U.S. International Trade Commission) (“the ITC investigation”) as related matters. Pet. 8; Paper 5, 1. The parties state that the ’245 patent, U.S. Patent No. 8,006,218 B2, and U.S. Patent No. 9,590,582 B2 are asserted in these matters. *Id.*

C. The '245 Patent

The '245 patent, titled “Stacked Structure of a Spiral Inductor,” “relates to a stacked structure of a spiral inductor, and more particularly, to a stacked structure for improving quality factor by making use of metal layers of a crossover region as shunt windings.” Ex. 1001, code (54), 1:7–10.

The '245 patent states that integrated chip (“IC”) “manufacturing processes are developing with a trend for system on chip (SOC) design” and “passive elements such as integrated inductors or integrated transformers have been widely integrated in high-frequency integrated circuits.” *Id.* at 1:12–15.

The '245 patent explains that silicon substrates are usually implemented in these processes, which leads to substrate loss and metal loss of integrated inductors/integrated transformers. *Id.* at 1:15–19. According to the '245 patent, common integrated inductors use the top metal layer (or top two metal layers) as a winding and the next metal layer as vias and a crossover region. *Id.* at 1:21–25. The '245 patent states that such inductors function as a parasitic resistor that is restricted by the single metal layer, the conductivity of the crossover region, the number of vias, and the resistance of the vias. *Id.* at 1:25–28. The '245 patent further describes structures having multiple metal layers in parallel with one another but states that the metal layers of crossover regions are different from the metal layers of the windings, which prevents optimization of an inductor’s quality factor. *Id.* at 1:31–41.

The '245 patent describes a spiral inductor having a stacked structure that it asserts solves these problems. *Id.* at 1:45–47. Figure 1A of the '245 patent is reproduced below.

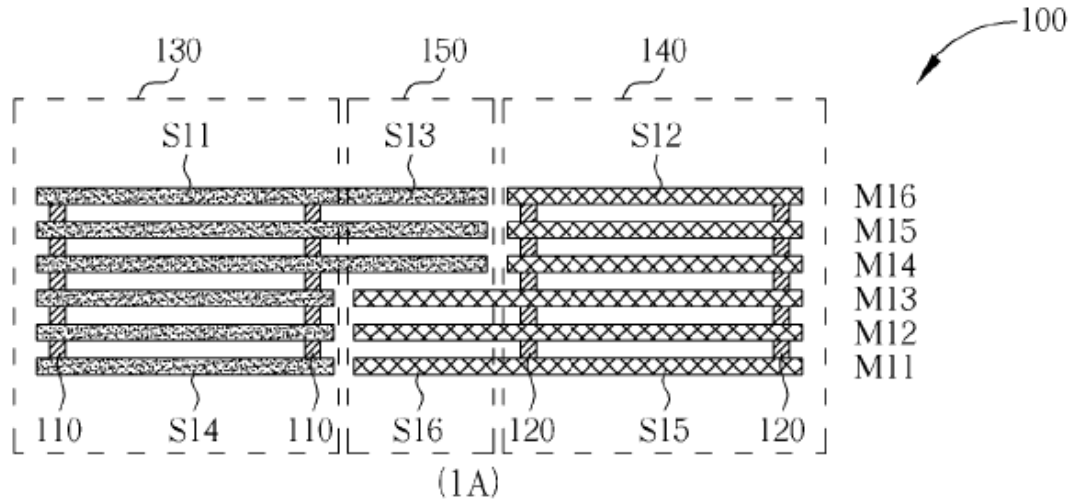


Figure 1A of the '245 patent depicts a stacked structure of a spiral inductor

Spiral inductor 100 includes six metal layers M16–M11, a first set of vias 110, and a second set of vias 120. *Id.* at 3:30–32. Metal layers M16–M14 respectively have segments S11, S12, S13 and metal layers M13–11 respectively have segments S14, S15, 16. *Id.* at 3:33–38. The '245 patent describes segment S11 of metal layers M16–14, segment S14 of metal layers M13–M11, and vias 110 as forming a first shunt winding 130; segment S12 of metal layers M16–M14, segment S15 of metal layers M13–M11, and vias 120 as forming a second shunt winding 140; and segment S13 of metal layers M16–M14 with segment S16 of metal layers M13–M11 as forming a crossover region 150. *Id.* at 3:43–53.

Figure 2 of the '245 patent is reproduced below.

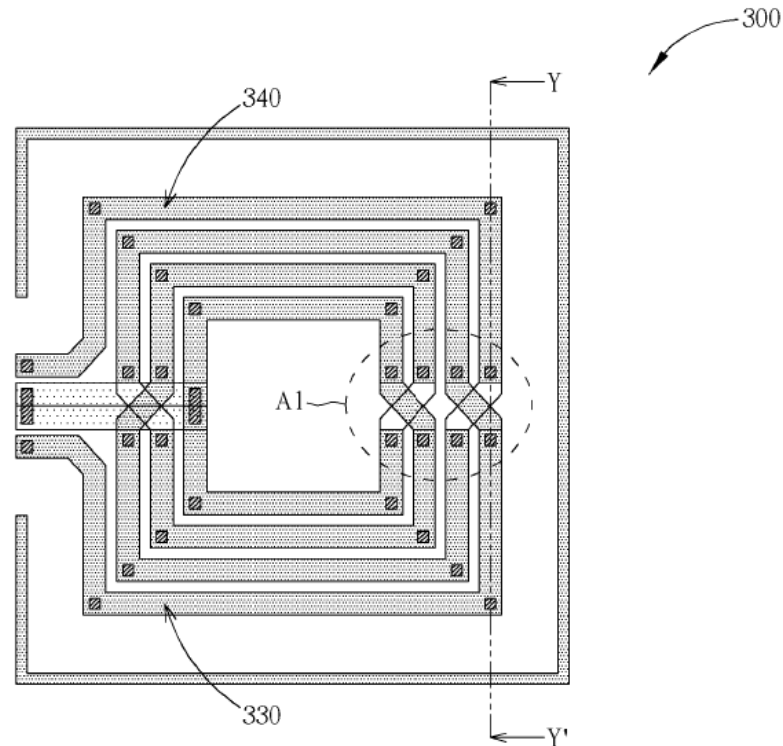


FIG. 2

Figure 2 is a top view of a spiral inductor

Figure 2 depicts a symmetric spiral inductor 300 that includes a first shunt winding 330, a second shunt winding 340, and a crossover region labeled by the notation A1. *Id.* at 4:22–25.

D. Illustrative Claim

Of the challenged claims, only claim 1 is independent. Claim 1 is reproduced below with bracketed material and formatting added for clarity.

1. [i] A structure of a spiral inductor, comprising:
 - [ii] a first metal layer, comprising:
 - [iii] a first segment;
 - [iv] a second segment; and
 - [v] a third segment, connected to the first segment,
- wherein a layout direction of the third segment is different from a layout direction of the first segment and a layout direction of the second segment;

[vi] a second metal layer, being positioned under the first metal layer,
the second metal layer comprising:
[vii] a fourth segment;
[viii] a fifth segment; and
[ix] a sixth segment, connected to the fifth segment, wherein a layout direction of the sixth segment is different from a layout direction of the fourth segment and a layout direction of the fifth segment;
[x] a first set of vias, for connecting the first segment with the fourth segment; and
[xi] a second set of vias, for connecting the second segment with the fifth segment;
[xii] wherein the first segment, the fourth segment and the first set of vias construct a first shunt winding;
[xiii] the second segment, the fifth segment and the second set of vias construct a second shunt winding; and
[xiv] the third segment and the sixth segment construct a crossover region.

Ex. 1001, 9:38–63.

E. The Asserted Grounds of Unpatentability

Petitioner contends claims 1–5, 8, and 9 of the '245 patent are unpatentable on the following grounds. Pet. 26.

Reference(s)	Basis	Claim(s) Challenged
Ho-Hsiang ¹	§ 103	1, 2, 5, 8, 9
Christensen ²	§ 103	1, 2, 8, 9
Yang ³	§ 103	1–4, 8, 9

¹ Ho-Hsiang, US Patent No. 7,821,372 B2, issued Oct. 26, 2010 (Ex. 1005).

² Christensen, US Patent No. 6,794,977 B2, issued Sept. 21, 2004 (Ex. 1006).

³ Yang et al., US Patent Application Pub. No. 2009/0002114 A1, published Jan. 1, 2009 (Ex. 1007).

In support of its unpatentability arguments, Petitioner relies on the declaration of Dr. Paul R. Prucnal. Ex. 1003 (“Prucnal Declaration”).

II. ANALYSIS

A. Principles of Law

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable as obvious under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence,⁴ objective indicia of non-obviousness (i.e., secondary considerations). *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). “To satisfy its burden of proving obviousness, a

⁴ At this stage of the proceeding, neither party has provided any evidence or argument regarding objective indicia of non-obviousness.

petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

We analyze the asserted grounds of unpatentability in accordance with these principles to determine whether Petitioner has met its burden to establish a reasonable likelihood of success at trial.

B. Level of Ordinary Skill in the Art

We consider the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art (sometimes abbreviated herein as “POSITA”). *Graham*, 383 U.S. at 17–18. Petitioner argues that “[a]s of May 19, 2009, a person of ordinary skill in the art (“POSITA”) would have had a B.S.E.E. and at least 3-4 years of professional experience in the field of integrated circuit design; or an M.S.E.E. and 1-2 years of professional experience in the field of integrated circuit design; or a Ph.D. in electrical engineering.” Pet. 25–26 (citing Ex. 1003 ¶ 4).

Although phrased slightly differently, Patent Owner provides essentially the same definition of a POSITA. In particular, Patent Owner asserts that “[a] person of ordinary skill in the art of this technology at the time of the invention would have had at least a bachelor’s degree in electrical engineering or an equivalent field and at least 3–4 years of professional experience in the field of integrated circuit design.” Prelim. Resp. 14. Patent Owner further argues that “[s]omeone with additional education but less professional experience may qualify as a POSITA, such as someone with a master’s degree in electrical engineering and 1–2 years of professional experience in the field of integrated circuit design or someone with a Ph.D. in electrical engineering.” *Id.*

In light of the record before us, we adopt the parties' proposal regarding the level of one of ordinary skill in the art. We also note that this definition of a POSITA appears to be consistent with the level of ordinary skill in the art that is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

We interpret a claim “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).” 37 C.F.R. § 42.100(b). Under this standard, we construe 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.” *Id.*

“[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention” and “after reading the entire patent” and its prosecution history. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313, 1321 (Fed. Cir. 2005) (en banc). Although extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises can be consulted, extrinsic evidence is less significant than the intrinsic record. *Id.* at 1312–17. Usually, the specification is dispositive, and is the single best guide to the meaning of a disputed term. *Id.* at 1315.

The determination of whether a preamble limits a claim is made on a case-by-case basis in light of the facts in each case; there is no litmus test defining when a preamble limits the scope of a claim. *Catalina Mktg. Int'l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). A preamble should be construed as limiting the scope of the claim if “the claim preamble, when read in the context of the entire claim, recites limitations of

the claim, or, if the claim preamble is ‘necessary to give life, meaning, and vitality’ to the claim.” *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999). A preamble is not limiting, for example, if the patentee “defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.” *Catalina Mktg. Int’l*, 289 F.3d at 808. A preamble can be limiting, however, if it recites “additional structure or steps underscored as important by the specification,” is “essential to understand limitations or terms in the claim body,” or provides necessary structure absent from the claim body. *Id.* at 808–09.

Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *see also Nidec Motor Corp. v. Zhongshan Board Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (applying *Vivid Techs.* in the context of an *inter partes* review).

1. Preamble – “A structure of a spiral indicator”

The preamble of claim 1 recites “[a] structure of a spiral indicator.” Claim 8 depends from claim 1 and further recites “wherein the spiral inductor is a symmetric spiral inductor.” Ex. 1001, 10:39–40. Petitioner does not expressly construe the preamble as limiting but does provide evidence and argument that the asserted art discloses or suggests the language recited in the preamble. *See, e.g.*, Pet. 31–34.

Patent Owner asserts that preamble, which recites “a structure of a spiral inductor,” is limiting in Patent Owner’s view “because: (1) it provides antecedent basis for the claims, and (2) it recites an important structural limitation - “a spiral inductor” - that the ’245 Patent identifies as critical to the invention.” Prelim. Resp. 15; *see also id.* at 15–16 (stating that the

Administrative Law Judge in the ITC investigation “construed ‘[a] structure of a spiral inductor’ in claim 1 of the ’245 Patent as limiting” and the Board should do so as well and citing Ex. 2001, 13–16).

Patent Owner further argues that the preamble “is limiting because the body of independent claim 1 of the ’245 Patent does not recite a structurally complete invention.” *Id.* at 16–17. According to Patent Owner, claim 1 recites generic limitations and claim 1’s body “does not specify whether it is part of a spiral inductor, a generator, a transformer, or some other structure” and the preamble’s “spiral inductor” gives life, meaning, and vitality to the claim. *Id.* at 17 (citing Ex. 1001, claim 1). Patent Owner asserts that the preamble also provides antecedent basis for the dependent claims, such as claim 8 (*id.* at 17–18). Patent Owner also contends that “the ’245 patent repeatedly identifies the spiral inductor, recited in the preamble, as the ‘invention.’” *Id.* at 18–21 (citing Ex. 1001, 1:7–10, 1:45–47, 2:2–6, 2:21–22, 2:29–3:3, 3:7–12, 5:54–57, 6:1–7, 9:14–16; 9:20–21, 9:24–26).

Based on the present record, we agree with Patent Owner that the term “spiral inductor” recited in the preamble is limiting.

Without the preamble, the body of claim 1 does not recite a structurally complete invention. The body of claim 1 recites a number of “metal layers” having a collection of “segments,” number of via sets, and limitations requiring certain segments and vias to construct a number of shunt windings and a crossover region. Without the preamble, it is unclear from just the recitations in the body of claim 1 what field of art the claim relates to. The preamble is therefore necessary to provide context as to which field of art the recited limitations pertain so as to understand limitations in the claim body. As such, the term “spiral inductor” recited in the preamble is necessary to give life, meaning, and vitality to the claim.

Additionally, the term “spiral inductor” is recited in the body of dependent claim 8, thus further indicating that the preamble of claim 1 is a necessary component of the claimed invention. *See Pitney Bowes*, F.3d at 1305 (stating that a preamble claim should be construed as limiting the scope of the claim “[i]f the claim preamble, when read in the context of the entire claim, recites limitations of the claim”); *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1358 (Fed. Cir. 2012) (“a preamble phrase that provides antecedent basis for a claim limitation generally limits the scope of the claim”).

2. “*shunt windings*”

Claim elements 1[xii-xiii] recite “wherein the first segment, fourth segment and the first set of vias construct a *first shunt winding*; the second segment, the fifth segment and the second set of vias construct a *second shunt winding*.” Ex. 1001, 9:59–62 (emphasis added). Petitioner argues that one of ordinary skill in the art would have understood that “shunt windings,” as claim 1 recites, means “windings in parallel.” Pet. 27.

Petitioner contends that the ’245 patent describes a first segment, a fourth segment, and a first set of vias as constructing a first shunt winding and a second segment, fifth segment, and a second set of vias as constructing a second shunt winding, which are depicted in the drawings. *Id.* at 27–28 (citing Ex. 1001, 1:64–67, 4:22–24, 6:27–28, Figs. 2, 6B).

According to Petitioner, “[t]he 245 patent distinguishes a ‘shunt winding’ from a ‘serial winding’” because the ’245 patent states “symmetric spiral inductor 500 is a multi-layer stacked spiral inductor combining the first inductor 510 (i.e., the *serial* winding) with the second inductor 610 (i.e., the *shunt* winding). . .” *Id.* at 28–29 (citing Ex. 1001, 6:14–17, Figs. 6A, 6B). Petitioner asserts that “[t]his distinction is consistent with how a

POSITA would have understood the term ‘shunt winding’ because “[t]he common understanding of ‘shunt’ is to place components in parallel.” *Id.* at 29 (citing Ex. 1020; Ex. 1021; Ex. 1003 ¶¶ 89, 113–116). Petitioner further argues that “patents and technical articles confirm this understanding.” *Id.* at 29–30 (citing Ex. 1018 ¶ 6, 22, 23; Ex. 1030, 1, 7, 9). Petitioner also contends that this is consistent with how Patent Owner interprets the claim language due to the interchangeable use of “shunt winding” and “parallel winding” in the Taiwanese priority application. *Id.* at 30 (citing Ex. 1023, 9, 23; Ex. 1003 ¶¶ 117–120).

Patent Owner does not dispute Petitioner’s claim construction. At this stage of the proceeding, we agree with Petitioner’s undisputed contentions and construe “shunt windings” to mean windings in parallel.

We determine that no other terms require expression construction to resolve any issue in dispute. We also note that these claim constructions are preliminary and may be modified after a review of the complete record.

D. Asserted Obviousness over Ho-Hsiang (Ground 1)

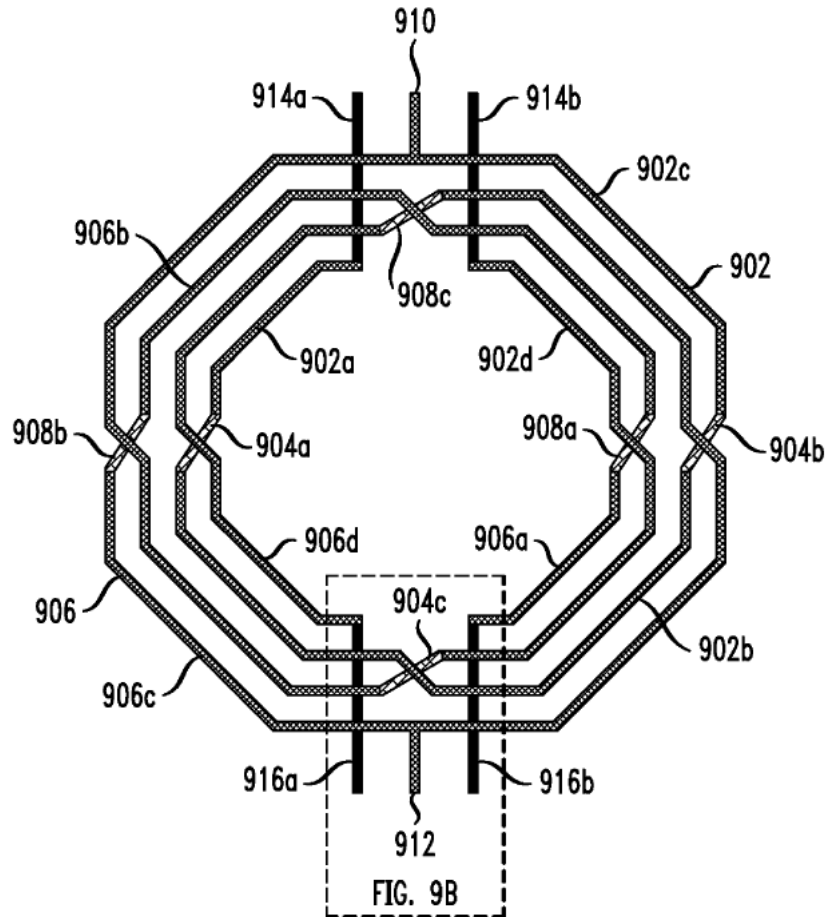
Petitioner argues that claims 1, 2, 5, 8, and 9 are unpatentable under 35 U.S.C. § 103 over Ho-Hsiang. Pet. 30–65.

1. Ho-Hsiang

Ho-Hsiang is a patent titled “On-Chip Transformer BALUN Structures.” Ex. 1005, code (54). Ho-Hsiang relates “to transformers and balanced-to-unbalanced (BALUN) devices” and more specifically “to on-chip symmetrical transformers and BALUN devices.” *Id.* at 1:6–9. Ho-Hsiang states that transformers and BALUN devices are commonly used in wireless communications, but conventional coplanar interleaved transformers suffer from low qualify factors and small coupling coefficients. *Id.* at 1:13–14, 1:38–41.

Ho-Hsiang's Figure 9A is reproduced below.

FIG. 9A



Ho-Hsiang's Figure 9A, reproduced above, depicts a top view of transformer 900 having a 2:2 turn ratio that uses three metal layers. *Id.* at 2:64–65, 6:10–13.

Transformer 900 includes primary winding 902 having winding segments 902a, 902b, 902c, which may be formed on first metal layer 920 and second metal layer 930. *Id.* at 6:13–17. Ho-Hsiang describes primary winding segments 902a–902c as connected by bridges 904a, 904b, 904c, which may be formed on second metal layer 930. *Id.* at 6:17–19. Transformer 900 further includes secondary winding 906, which is also formed on first metal layer 920 and second metal layer 930. *Id.* at 6:20–21. Ho-Hsiang describes

secondary winding segments 906a–906d as connected by bridges 908a, 908b, 908c, which are formed on second metal layer 930. *Id.* at 6:21–23. Transformer also includes third metal layer 940, which “may be formed below the first metal layer 920 and second metal layer 930.” *Id.* at 6:27–29.

2. *Analysis for Claims 1, 2, 5, 8, and 9*

a) *Whether Ho-Hsiang is Analogous Prior Art*

In order for a reference to be proper for use in an obviousness rejection, the reference must be analogous art to the claimed invention. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). A reference is analogous art to the claimed invention if either: (1) the reference is from the same field of endeavor as the claimed invention (even if it addresses a different problem) or (2) the reference is reasonably pertinent to the problem faced by the inventor (even if it is not in the same field of endeavor as the claimed invention). *See In re Clay*, 966 F.2d 656, 658–59 (Fed. Cir. 1992).

Patent Owner asserts that Ho-Hsiang is not analogous art to the ’245 patent because Ho-Hsiang is directed to transformers, which are power transfer devices, while the ’245 patent is directed to stacked spiral inductors, which are inductive storage elements. *See* Prelim. Resp. 3 (stating Ho-Hsiang “is directed to on-chip transformer balun (balanced to unbalanced transformer) structures that are fundamentally different from stacked spiral inductors”). Patent Owner also asserts that Ho-Hsiang’s “on-chip transformer BALUN structures (i.e., power transfer devices)” are directed to a “different field of endeavor with fundamentally different design objectives that teaches away from the stacked spiral inductor (i.e., inductive storage elements) of the ’245 Patent.” *Id.* at 36. Patent Owner further asserts Ho-Hsiang is “not reasonably pertinent to the particular problem identified and addressed in the ’245 Patent, and a POSITA would not be motivated to

utilize its non-analogous teachings to achieve the inductor design objectives of the '245 Patent.” *Id.* at 36–37. Finally, Patent Owner asserts that a “POSITA simply would not consider the teachings of the transformer arts to achieve the objective of designing a stacked spiral inductor to optimize qualify factor.” *Id.* at 4.

Patent Owner’s argument is not persuasive at this stage of the proceeding. Although we agree with Patent Owner that Ho-Hsiang discloses transformers, Petitioner has provided sufficient evidence that a POSITA would have understood that a transformer is made up of two or more inductors. Pet. 31, n.5 (stating that Petitioner’s analysis “is directed to one of the inductors in the Ho-Hsiang transformer embodiment”); Ex. 1003 ¶¶ 53–57 (asserting a transformer is just two magnetically coupled inductors), 122. Patent Owner does not dispute this assertion, nor provide any persuasive evidence or argument that would exclude inductors that are part of a transformer from the relevant field of endeavor.

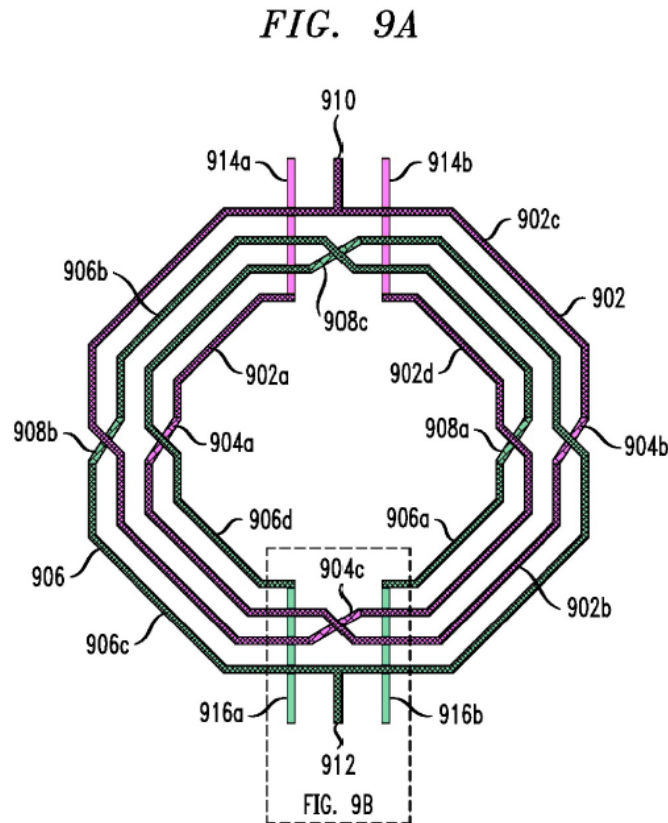
Thus, based on the present record, Petitioner has sufficiently shown that Ho-Hsiang is in the same field of endeavor as the '245 patent, thereby satisfying the first prong of the Bigio test, and is therefore analogous art to the '245 patent. The parties are free to address this issue further at trial if they choose.

b) Claim 1

(1) Claim element 1[i] - preamble: A structure of a spiral inductor, comprising:

Petitioner asserts that Ho-Hsiang discloses the structure of a “spiral inductor” as recited in the preamble. Pet. 31–34 (citing Ex. 1005, 4:42–46, 6:10–29, Fig. 9A; Ex. 1003 ¶¶ 122–125; Ex. 1022, 7). In particular, Petitioner asserts that Figure 9A of Ho-Hsiang (reproduced below) discloses

a transformer having two inductors 902 (purple), 906 (green) (both referred to as “windings” in Ho-Hsiang) and that a POSITA would have understood that both windings (i.e., 902, 906) are spiral inductors. Pet. 32 (citing Ex. 1003 ¶¶ 122–125).



Ho-Hsiang Figure 9A, with color annotations added by Petitioner, depicts transformer 900 having windings 902, 906.

Patent Owner responds that Ho-Hsiang does not teach a spiral inductor, but rather discloses a transformer BALUN structure. Prelim. Resp. 31–33.

As noted above, Petitioner has provided argument and evidence that Ho-Hsiang’s transformer is made up of two spiral inductors. *See, e.g.*, Pet. 31; Ex. 1003 ¶ 122. Thus, based on the current record before us, Petitioner

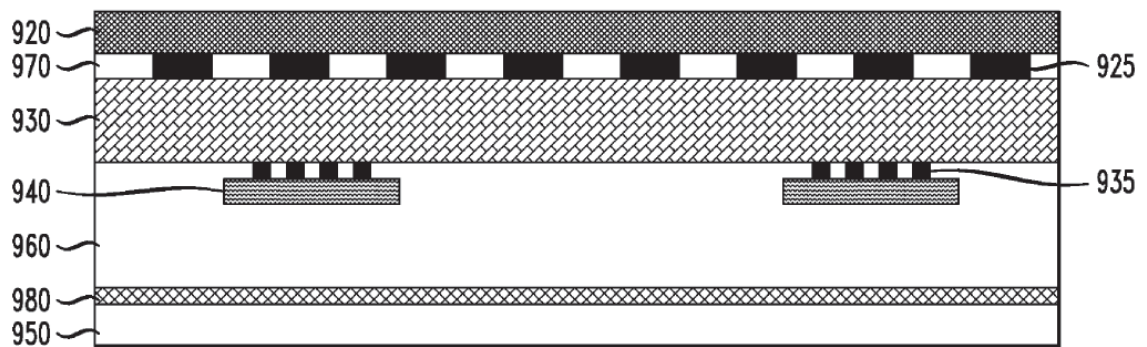
sufficiently shows that Ho-Hsiang teaches the structure of a spiral inductor as recited in the preamble.

(2) Claim elements 1[ii]–[xi]

Petitioner asserts that Ho-Hsiang discloses the limitations recited in claim elements 1[ii]–[xi]. Pet. 34–52. For example, Petitioner asserts that Ho-Hsiang’s balun transformer 900 comprises a spiral inductor (e.g., inductor/primary winding 902) that has a first metal layer (first metal layer 920), as well as a second metal layer (second metal layer 930) that is positioned under the first metal layer, as recited in claim elements 1[ii] and 1[iv]. Pet. 34–35 (citing Ex. 1005, 6:13–17 (stating “primary winding 902 comprises winding segments 902a, 902b, and 902c, which may be formed on a first metal layer 920 and a second metal layer 930”), 6:30–32 (stating “metal layers 920, 930 are vertically stacked over one another”), Fig. 9C)).

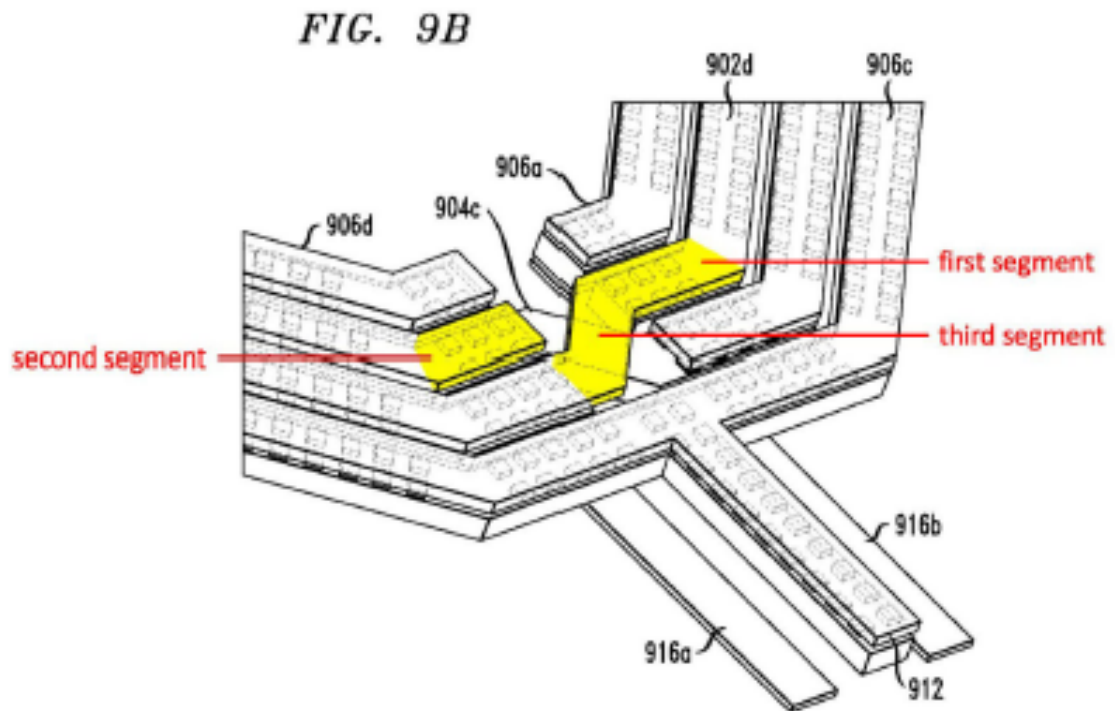
Ho-Hsiang’s Figure 9C, depicting metal layers 920 and 930, is reproduced below.

FIG. 9C



Ho-Hsiang’s Figure 9C, shown above, is a cross-sectional view of transformer 900 illustrated in Figure 9A depicting first metal layer 920 and second metal layer 930. Ex. 1005, 6:15–23.

Petitioner also asserts that Ho-Hsiang's first metal layer 920 has first, second, and third segments, that the third segment is connected to the first segment, and that the layout direction of the third segment is different from the layout direction of the first and second segments, as required by claim elements 1[ii-v]. For example, Petitioner asserts that the claimed first, second and third segments are shown in Ho-Hsiang's Figure 9B, which is reproduced below with annotations by Petitioner added.

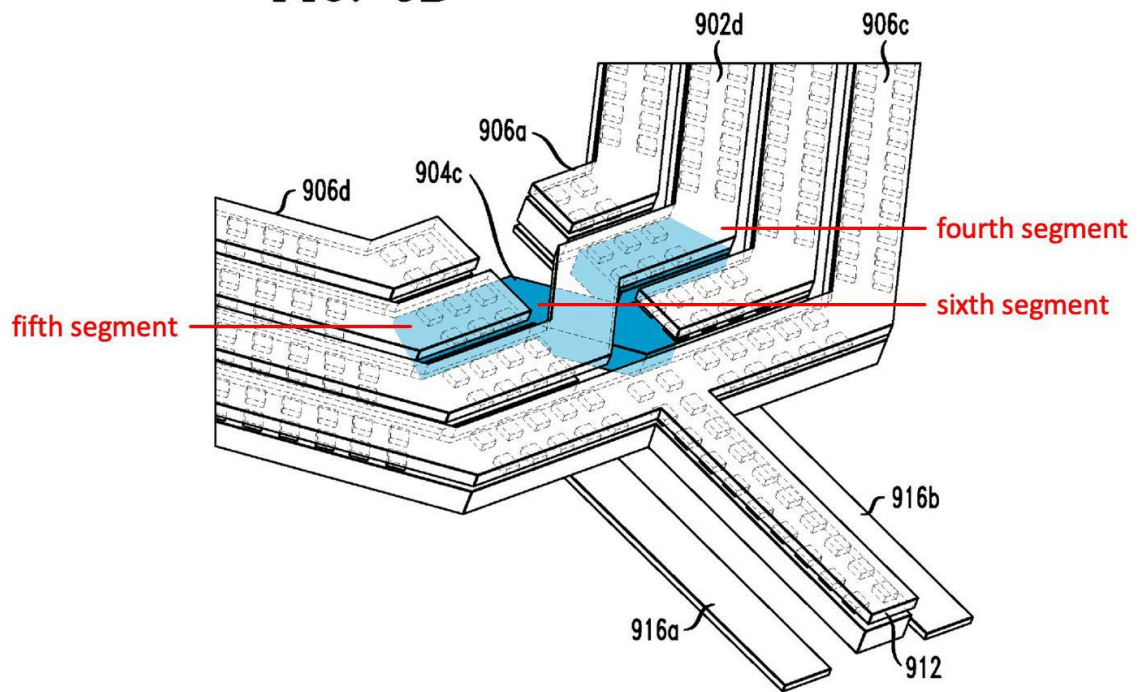


Ho-Hsiang's Figure 9B, with annotations added by Petitioner, depicts an isometric cross-sectional view of the transformer shown in Figure 9A. Ex. 1005, 3:66–67. Petitioner's annotations label and highlight in yellow the portions of the transformer that Petitioner asserts constitute the claimed first, second, and third segments. Pet. 37–39.

Petitioner further explains that the direction of the third segment is different from the layout direction of the first and second segments, because the third segment is at roughly a 45° angle relative to the first and second segments. Pet. 39 (citing Ex. 1003 ¶ 133; Ex. 1005, Fig. 9B).

Petitioner also asserts that Ho-Hsiang's second metal layer (metal layer 930) comprises fourth, fifth, and sixth segments, that the sixth segment is connected to the fifth segment, and that the layout direction of the sixth segment is different from the layout direction of the fourth and fifth segments, as required by claim elements 1[vi]–[ix]. Pet. 40–45. For example, Petitioner asserts that the claimed fourth, fifth, and sixth segments are shown in Ho-Hsiang's Figure 9B, which is reproduced below with annotations by Petitioner added. Pet. 45.

FIG. 9B



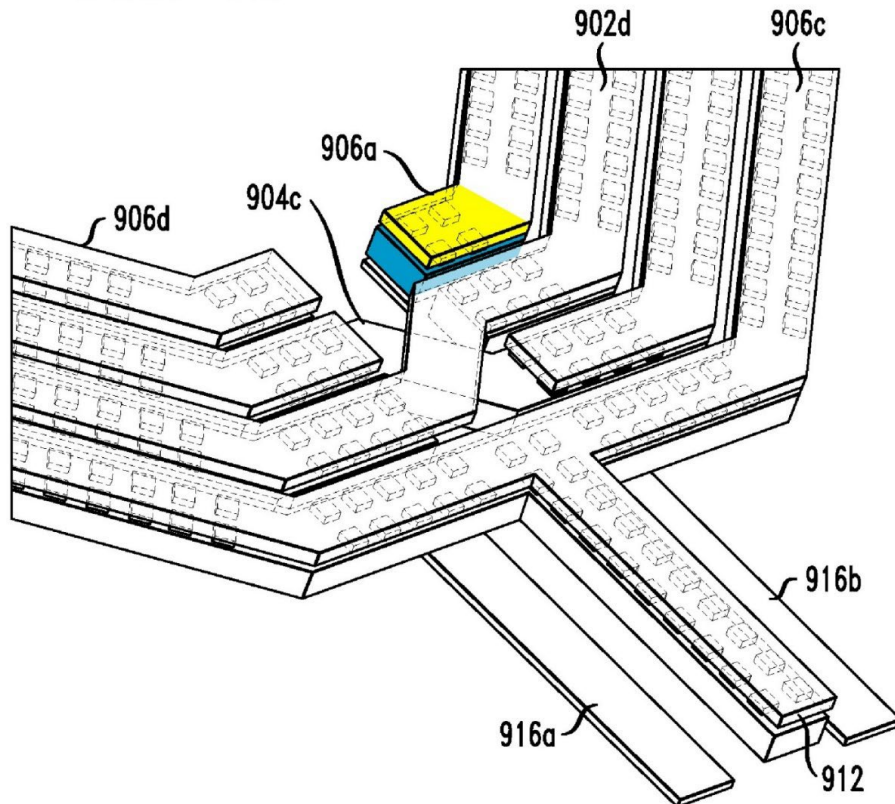
Ho-Hsiang's Figure 9B, with annotations added by Petitioner, depicts an isometric cross-sectional view of the transformer shown in Figure 9A. Ex. 1005, 3:66–67. Petitioner's annotations label and highlight in blue the portions of the transformer that Petitioner asserts constitute the claimed fourth, fifth, and sixth segments. Pet. 42–45.

Petitioner asserts that the direction of the sixth segment is different from the layout direction of the fourth and fifth segments. Pet. 44–45 (citing Ex. 1003 ¶¶ 147–150; Ex. 1005, Fig. 9B); *see also* Ex. 1003 ¶ 147 (stating

that the sixth segment is angled in a different direction than the fourth and fifth segment (e.g., the axis of the sixth segment is offset from the fourth and fifth segment), and thus, the sixth segment has a different layout direction than the fourth and fifth segments).

Petitioner also provides another annotation of Ho-Hsiang's Figure 9B, reproduced below, to illustrate that the stacked structure shown in Figure 9B includes the second metal layer 930 (blue) below the first layer 920 (yellow) as required by claim element 1[vi]. Pet. 41 (citing Ex. 1003 ¶¶ 139–142).

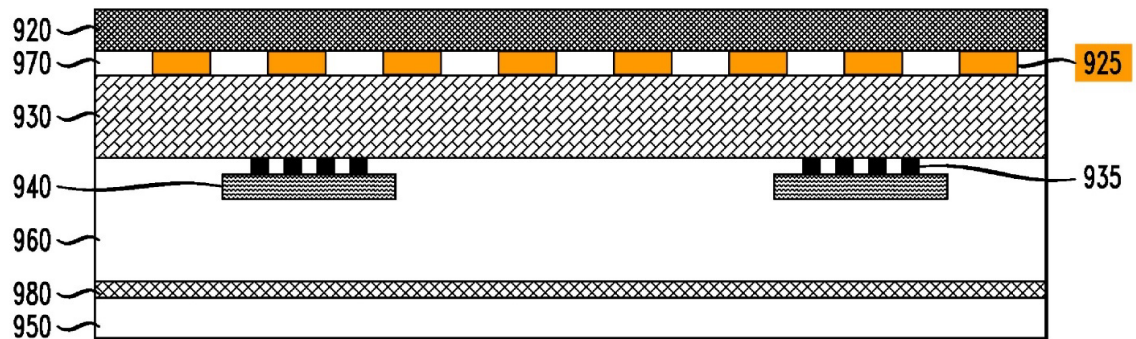
FIG. 9B



Ho-Hsiang's Figure 9B, shown above, depicts an isometric cross-sectional view of the transformer shown in 9A with Petitioner's color annotations added to identify first metal layer 920 (yellow) and second metal layer 930 (blue). Pet. 41 (citing Ex. 1003 ¶¶ 141–142).

Claim element 1[x] requires a first set of vias for connecting the first segment with the fourth segment. Petitioner asserts that Ho-Hsiang's vias 925 depicted in Figures 9B and 9C are a first set of vias for connecting the first segment with the fourth segment. Pet. 46–49 (citing Ex. 1005, 6:30–35, Fig. 9C (element 925); Ex. 1003 ¶¶ 151–156). For example, Petitioner points to elements 925 (orange) Ho-Hsiang's Figure 9C, reproduced below with Petitioner's color highlighting added, as depicting the first set of vias recited in claim element 1[x].

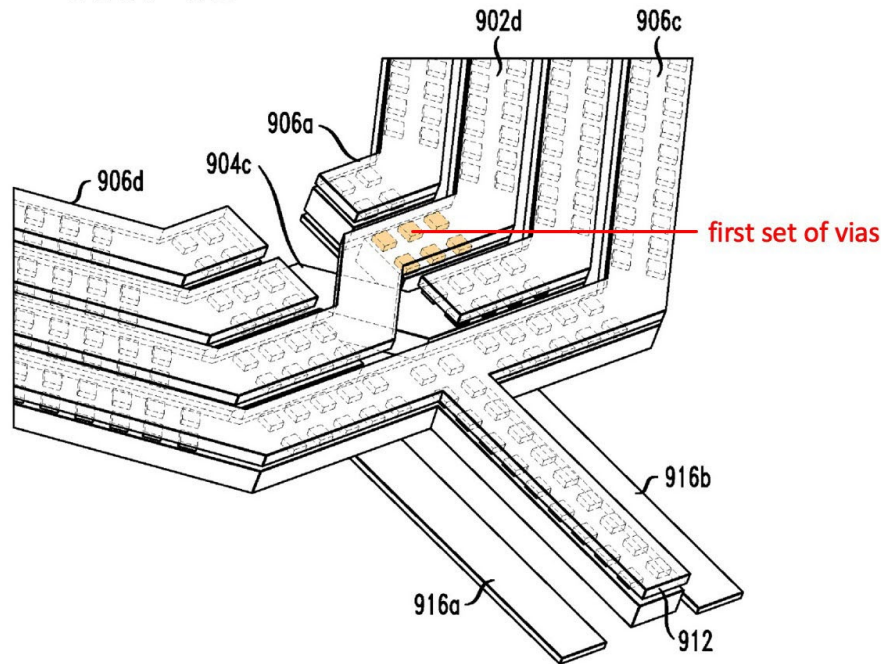
FIG. 9C



Ho-Hsiang's Figure 9C, shown above, is a "cross-sectional view of . . . transformer 900 illustrated in Figure 9A," depicting vias 925 (with orange highlighting added). Ex. 1005, 6:30–35; Pet. 46.

Petitioner further asserts the first set of vias are also depicted in Ho-Hsiang's Figure 9B, which is reproduced below. Pet. 46–49.

FIG. 9B



Ho-Hsiang's Figure 9B, shown above, depicts an isometric cross-sectional view of the transformer shown in 9A with Petitioner's color annotations added to identify the first set of vias (orange) connecting the first segment with the fourth segment.

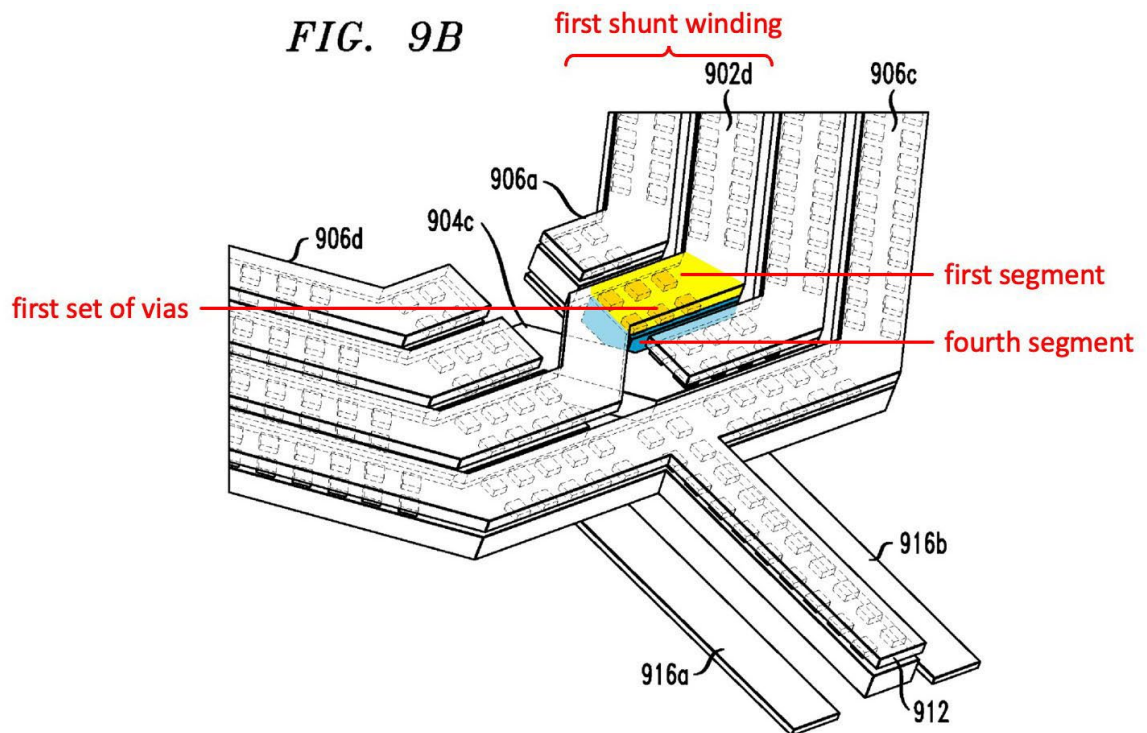
Patent Owner does not dispute Petitioner's contention that Ho-Hsiang discloses or suggests claim elements 1[ii]–[xi] at this stage of the proceeding. We have reviewed Petitioner's contentions and determine Petitioner has sufficiently shown that Ho-Hsiang teaches the limitations recited in claim element ss 1[ii]–[xi].

(3) Claim elements 1[xii]–[xiv]

Claim element 1[xii] requires that the first segment, the fourth segment, and the first set of vias construct a first shunt winding. Claim element 1[xiii] requires that the second segment, the fifth segment and the second set of vias construct a second shunt winding. As noted above in

Section II.C.2., Petitioner asserts that a “shunt winding” means windings in parallel. Pet. 53 (citing, *inter alia*,⁵ Ex. 1003 ¶¶ 163–164).

Petitioner asserts that Ho-Hsiang discloses these limitations because Ho-Hsiang’s Figure 9B shows the windings running in parallel, with vias (in orange) connecting the two metal layers at the first (in yellow) and fourth (in blue) segments. Pet. 53 (citing Ex. 1003 ¶¶ 165–166; Ex. 1005, Fig. 9B).



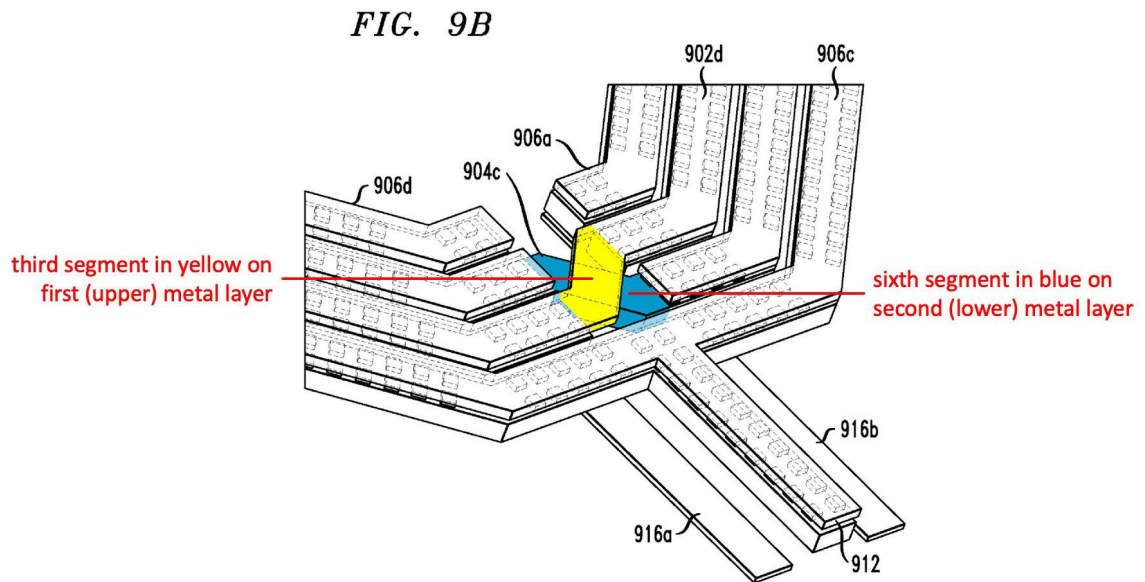
Ho-Hsiang’s Figure 9B, shown above, depicts an isometric cross-sectional view of the transformer shown in 9A with Petitioner’s color annotations added to identify the first set of vias (orange) connecting the first segment (yellow) with the fourth segment (blue).

Petitioner asserts that a POSITA would have recognized that Ho-Hsiang’s first and fourth segments, connected by the vias, construct a first shunt

⁵ Citing to Ex. 1022.013, Petitioner also contends that Patent Owner has asserted that first and fourth segments connected by vias on two metal layers forms a shunt winding. Pet. 53; Ex. 1003 ¶ 163 (quoting Ex. 1022.013). The document uploaded as Ex. 1022, however, is labelled Ex. 1021 and appears to be excerpts from the *Encyclopedia of Electronics*.

winding, explaining “that the two windings, which are in parallel on the first and second metal layers, are connected together by vias, and therefore form shunt windings. Pet. 54 (citing Ex. 1003 ¶¶ 168–169). Similarly, Petitioner asserts that a POSITA would have recognized that Ho-Hsiang discloses the second shunt winding recited in claim element 1[xiii] because Ho-Hsiang’s two metal layers having the second and fifth segments are in parallel and a second set of vias connects them, creating a second shunt winding. Pet. 54–55 (citing Ex. 1003 ¶¶ 170–172; Ex. 1005, Fig. 9B).

Petitioner also asserts that Ho-Hsiang discloses claim element 1[xiv], which recites that “the third segment and the sixth segment construct a crossover region.” To support this argument, Petitioner points to its annotations of Ho-Hsiang’s Figure 9B, reproduced below, as showing that the third segment in first metal layer “crosses over” the sixth segment in the second metal layer. Pet. 55–56.



Ho-Hsiang’s Figure 9B, shown above, depicts an isometric cross-sectional view of the transformer shown in 9A with Petitioner’s color annotations added to identify the third segment (yellow) on the first (upper) metal layer and the sixth segment (blue) on the second (lower) metal layer.

Patent Owner asserts that Ho-Hsiang does not disclose these limitations, because Petitioner's arguments are based on the "unreasonable position that any teaching of two metal layers connected with vias would render obvious the above noted combination of features . . . regardless of whether a spiral inductor is disclosed." Prelim. Resp. 34 (citing Pet. 53–54). Patent Owner also asserts that Ho-Hsiang does not describe the construction of "shunt windings" or "crossover region" in a stacked spiral inductor and that Petitioner failed to provide any reason a POSITA would have modified Ho-Hsiang's on-chip BALUN structures to arrive at the spiral inductor recited in the claims. Prelim. Resp. 33–37.

These arguments are not persuasive at this stage of the proceeding. Contrary to Patent Owner's assertions, Petitioner's argument is not based on "any teaching of two metal layers connected with vias." Rather, Petitioner points to specific teachings of Ho-Hsiang, including structures shown in Figure 9B, as would be understood by a person skilled in the art, to support its argument that Ho-Hsiang teaches the claimed shunt windings and crossover regions. Petitioner's contentions, which we summarize above, sufficiently show at this stage of the proceeding that Ho-Hsiang teaches or suggests the limitations recited in claim elements 1[xii–xiv].

Patent Owner also asserts that Petitioner improperly relies on expert testimony as a substitute for disclosures in the prior art. Prelim. Resp. 35–36. This argument is not persuasive at this stage of the proceeding. Dr. Prucnal testifies how one of skill in the art would have understood the teachings of Ho-Hsiang. The sufficiency of Petitioner's evidence, including Dr. Prucnal's testimony, is a matter best resolved on a full record.

Thus, for the foregoing reasons, Petitioner has sufficiently shown a reasonable likelihood that it would prevail in showing that at least claim 1 of

the '245 would have been obvious over Ho-Hsiang. Accordingly, we institute *inter partes* review on all grounds asserted in the Petition.

37 C.F.R. § 42.108(a) (“When instituting . . . review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”).

c) Claims 2, 5, 8, and 9

We have reviewed Petitioner’s arguments and evidence that dependent claims 2, 5, 8, and 9 would have been obvious over Ho-Hsiang. Pet. 57–65. Patent Owner does not separately argue the patentability of these claims at this stage in the proceeding. *See generally* Prelim. Resp. Based on the preliminary record before us, we find that Petitioner’s arguments and evidence are sufficient to show a reasonable likelihood Petitioner would prevail in proving unpatentability of dependent claims 2, 5, 8, and 9. *See* Pet. 57–65.

E. Asserted Obviousness over Christensen (Ground 2)

Petitioner argues that claims 1, 2, 8, and 9 are unpatentable over Christensen. Pet. 65–101.

1. Christensen

Christensen is a patent titled “Planar Transformers” and “relates to transformer structures suitable for integrated circuits.” Ex. 1006, code (54), 1:5–6. Christensen states that on-chip transformers are relatively rare in silicon radio frequency integrated circuits and they use well-known layout techniques, such as placing primary and secondary windings one above the other in different interconnect layers. *Id.* at 1:10–13. Christensen explains that, although the primary and secondary windings may be identical, generally they are not balanced. *Id.* at 1:13–16. According to Christensen, a more symmetrical layout includes inward and outward spiraling paths that

“cross twice in all but the outer and inner turns which contain only one crossing.” *Id.* at 1:17–19. However, Christensen states that such transformers can have a complex layout, be “undesirably lossy,” and present challenges in matching the electrical properties of the windings. *Id.* at 1:26–28.

Christensen’s Figure 1 is reproduced below.

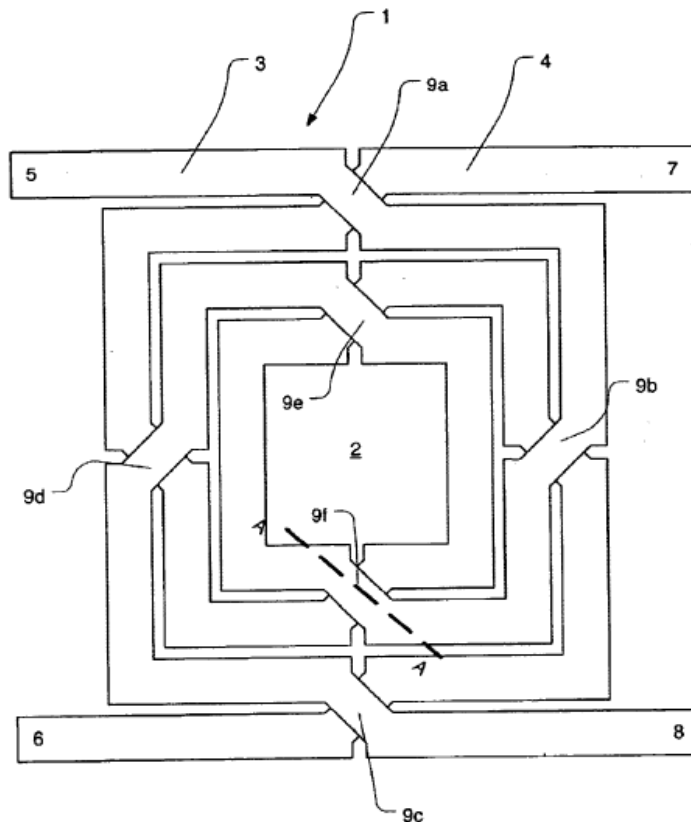


Figure 1

Figure 1 shows an on-chip planar transformer 1 formed in the metal interconnect layers of silicon integrated circuit 2. *Id.* at 2:53–55.

Transformer 1 includes primary winding 3 and secondary winding 4 that each have approximately one and a half turns. *Id.* at 2:55–58. Ends of the windings function as terminals 5, 6, 7, 8. *Id.* at 2:59–62. Primary winding 3 spirals in from terminal 5 and out to terminal 6 whereas secondary winding 4

spirals in from terminal 7 and out to terminal 8. *Id.* at 2:65–3:2. Windings 3, 4 further form crossovers 9a–9f. *Id.* at 3:6–9.

Christensen's Figure 5 is reproduced below.

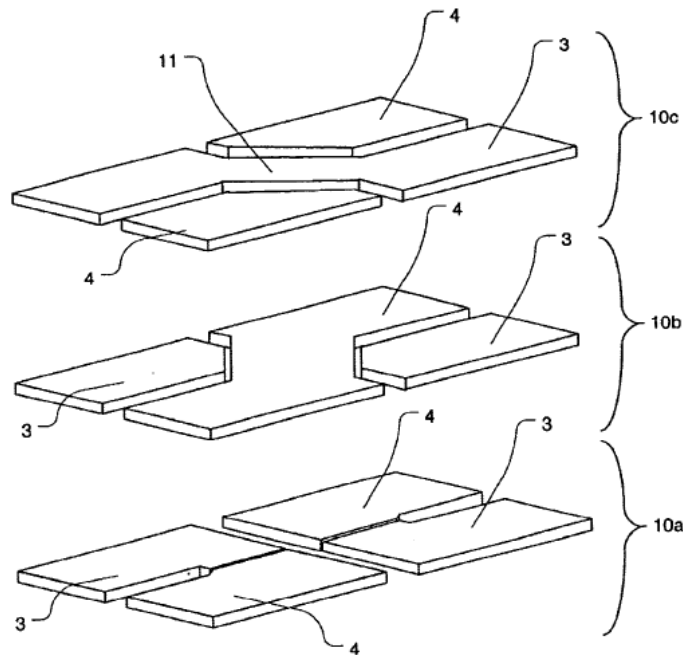


Figure 5

Figure 5 illustrates sixth crossover 9f of windings 3, 4 that are formed from tracks in conductor layers 10a, 10b, 10c. *Id.* at 3:43–46.

2. Analysis for Claims 1, 2, 8, and 9

a) Whether Christensen is Analogous Prior Art

Patent Owner asserts that Christensen is directed to planar transformers, not inductors, and thus is not analogous prior art. *See* Prelim. Resp. 37–39; *see also id.* at 38 (stating “a POSITA would readily appreciate that transformers and inductors are not in the same field of endeavor”).

This argument is not persuasive at this stage of the proceeding. Petitioner has provided sufficient evidence that a POSITA would have understood that a transformer is made up of two or more inductors and that a

POSITA would have understood that Christensen’s windings are inductors. *See, e.g.*, Pet. 67–71; Ex. 1003 ¶¶ 53–57 (asserting a transformer is just two magnetically coupled inductors), ¶ 194 (asserting Christensen uses the terms “inductor” and “winding” interchangeably), ¶¶ 200–202. Indeed, even Patent Owner refers to the single primary winding shown in Christensen Figure 2 as an inductor. Prelim. Resp. 47 (discussing the “primary winding inductor” shown in Christensen Figure 2).

Thus, based on the present record, Petitioner has sufficiently shown that Christensen discloses spiral inductors, meeting the first prong of the *Bigio* test, and is thus analogous art to the ’245 patent. The parties are free to address this issue further at trial if they desire.

b) Claim 1

Petitioner provides evidence and argument that Christensen discloses or suggests each of the limitations recited in claim 1. Pet. 69–64. For example, with respect to the preamble, Petitioner asserts that Christensen’s winding 3, highlighted in pink in Figure 1 reproduced below, is a spiral inductor. Pet. 69–70 (citing Ex. 1003 ¶¶ 200–202; Ex. 1006, 2:65–3:2, 3:6–9).

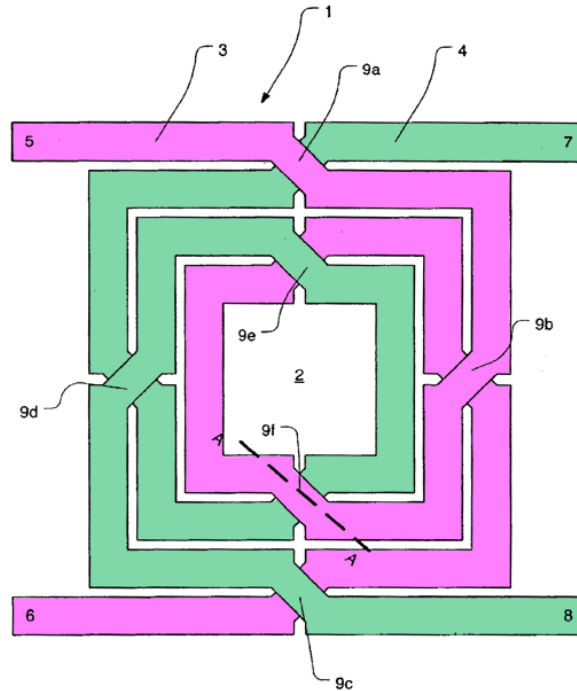


Figure 1

Christensen Figure 1 above, with Petitioner's color annotations added, depicts a plan view of a 1:1 ratio transformer that comprises primary winding 3 (pink) and secondary winding 4 (green). Ex. 1006, 2:19–20, 2:53–58.

Petitioner further asserts that Christensen's conductive metal layer 10c is a "first metal layer" having first, second, and third segments meeting the claim limitations of claim elements 1[ii–v] and that conductive metal layer 10b is a second metal layer, below first layer 10c, having the fourth, fifth, and sixth segments as required by claim elements 1[vi–ix]. Pet. 71–82 (citing, *inter alia*, Ex. 1003 ¶¶ 208–211; Ex. 1006, Figs. 2, 5). For example, Petitioner points to Christensen's Figure 2 (reproduced below), with annotations added to identify the first, second, and third segments on the top first metal layer. Pet. 75; *see also id.* at 81 (providing an annotated version of Christensen Fig. 2 to identify the fourth, fifth, and sixth segments on the lower second metal layer).

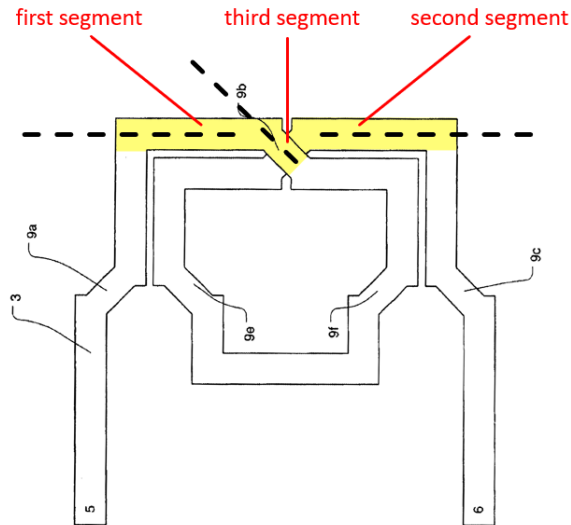
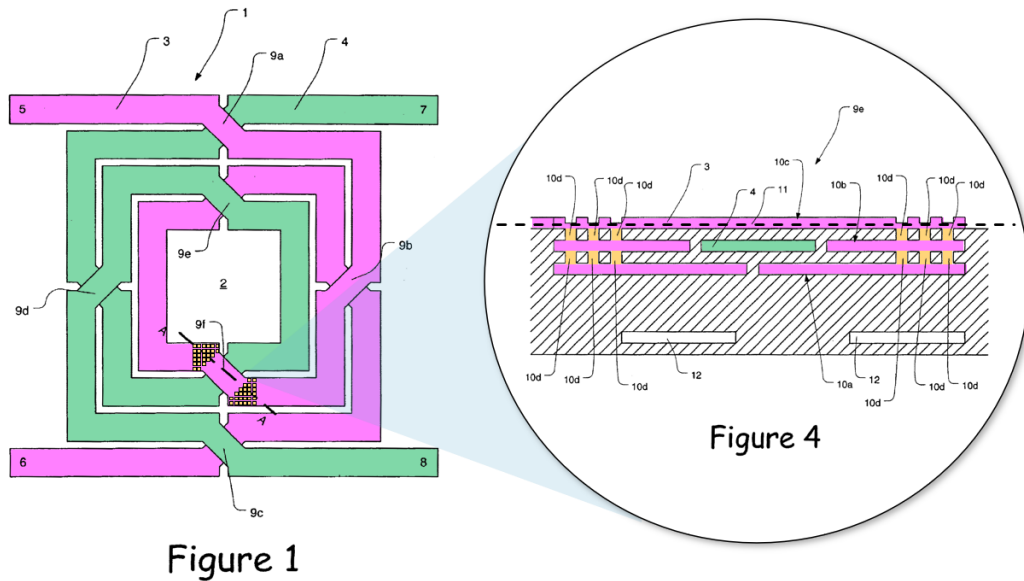


Figure 2

Christensen's Figure 2, with Petitioner's color annotations added, depicts a plan view showing the primary winding only of a transformer according to the invention.

Petitioner also asserts Christensen discloses the first and second set of vias recited in claim elements 1[x-xi]. Pet. 82–90 (citing Ex. 1003 ¶¶ 231–241; Ex. 1006, 2:1–2, 3:43–51, Figs. 1, 2, 4, 5). For example, Petitioner asserts that a POSITA would have understood that Christensen discloses a first set of vias that are used to connect the first segment on first metal layer with the fourth segment on the second metal layer. *Id.* 82–88. Petitioner also points to Christensen's Figures 4 and 6, which show the use of vias to connect metal layers near crossover 9f and to Christensen's teachings that such vias are also present at "other locations." *See e.g., id.* at 85 (stating that although the labels in Figure 4, 5, and 6 refer to crossover 9f, a POSITA would have understood that the disclosed structures of Figures 4, 5, and 6 applies to the other crossovers as well, including crossover 9b depicted in Figure 2); *see also id.* at 88–90 (making similar arguments regarding the "second set of vias"); *see also* Ex. 1003 ¶¶ 234–236.



Petitioner also asserts that Christensen teaches that the first segment, the fourth segment, and the first set of vias construct a first shunt winding and that the second segment, the fifth segment and the second set of vias construct a second shunt windings required by claim elements 1[xii–xiii] and that the third and sixth segments construct a crossover region as required by claim element 1[xiv]. Pet. 89–94 (citing Ex. 1003 ¶¶ 242–249; Ex. 1006, Figs. 2, 5, 6a; Ex. 1022.13⁶).

For example, Petitioner asserts Christensen’s Figures 2 and 6(a), reproduced below, depict the first shunt winding of claim element 1[xii] where the first segment (yellow) and fourth segment (blue) are in parallel with vias (orange) connecting the first and second metal layers. Pet. 91 (citing Ex. 1003 ¶¶ 242–244); *see also id.* at 92 (providing similar annotations for the second shunt winding of claim element 1[xiii]).

⁶ See n.5 *supra*.

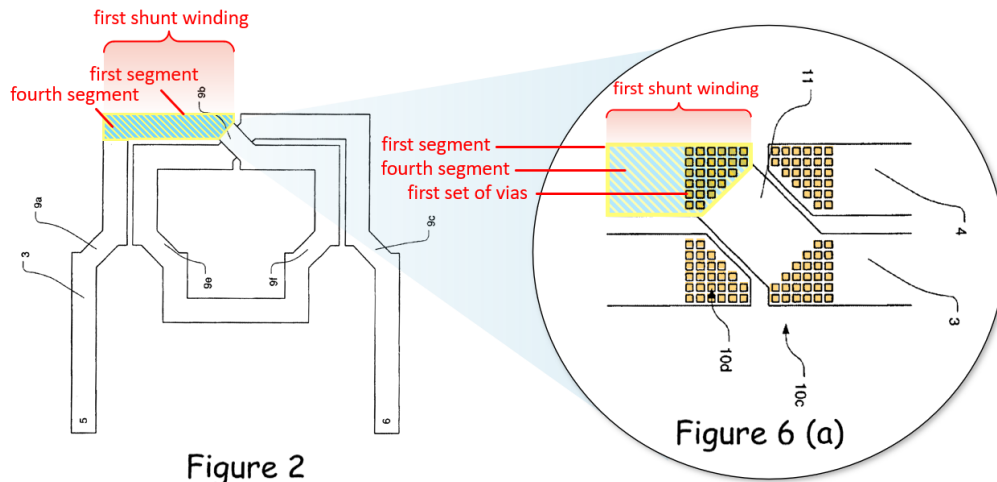
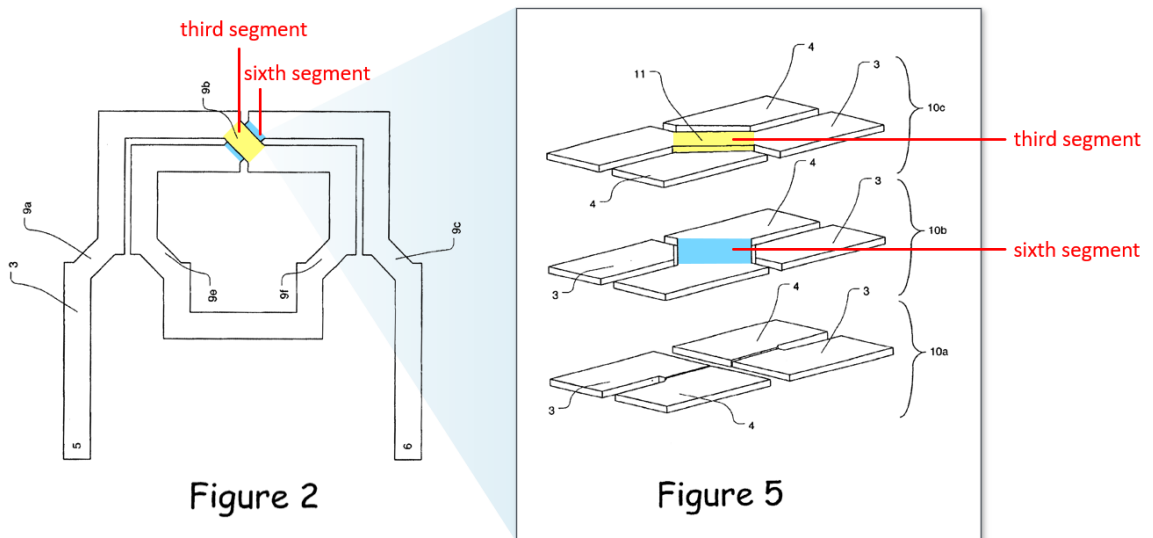


Figure 2

Christensen's Figure 2, shown left above, is a plan view of a primary winding of the transformer of Figure 1 with Petitioner's color annotations and labeling of the first segment (yellow), fourth segment (blue), and first shunt winding added. Christensen's Figure 6(a), shown right above, illustrates a crossover of the transformer of Figure 1 with Petitioner's color annotations and labelling, including of the first segment (yellow), fourth segment (blue), vias (orange) and first shunt winding, added. Ex. 1006, 2:21–22, 2:30–31; Pet. 91.

Petitioner also points to an annotated version of Christensen’s Figures 2 and 5 (reproduced below) to show that the third and sixth segments construct a crossover region as recited in claim element 1[xiv]. Pet. 92–93.



Christensen's Figure 2, shown left above, is a plan view of a primary winding of the transformer of Figure 1 depicting crossover 9b. Ex. 1006, 2:21–22, 3:12–14. Christensen's Figure 5, shown right above, is an exploded view of cross-over 9f of the transformer of Figure 1. *Id.* at 2:28–29, 3:44–45. In both Figures, Petitioner adds color annotations and labeling of the third segment (yellow) and sixth segment (blue). Pet. 92–93.

Patent Owner responds that Christensen does not disclose a stacked inductor, the construction of shunt windings from metal layers, or the crossover region required by claim 1. Prelim. Resp. at 37–47. Patent Owner contends that Petitioner improperly relies on Christensen's teaching regarding the crossover area of *two* intermingled primary windings 3 and 4 (e.g., crossover 9f depicted in Figures 4, 5, and 6) to satisfy limitations directed to the crossover region of a *single* stacked inductor (i.e., crossover 9b depicted in Figure 1). *Id.* at 47. Patent Owner asserts that in an “attempt to backfill these deficiencies,” Petitioner improperly relies on expert testimony as a substitute for a teaching of the prior art. *Id.*

We disagree with Patent Owner's argument. Petitioner provides evidence and argument that a POSITA would have applied the teachings of crossover 9f to crossover 9b. *See, e.g.*, Pet. 85 (explaining that a POSITA would have understood the crossovers depicted in Figures 4, 5, and 6 are exemplary and that the disclosed structure applies to other crossovers as well); Ex. 1003 ¶¶ 196–198, 233–236, 248; Ex. 1006, 2:1–2, 2:25–2:34, 3:47–51. Thus, Petitioner has provided sufficient argument and evidence at this stage of the proceeding that a POSITA would have understood that Christensen's windings are stacked inductors and that the description of crossover 9f is illustrative of other crossover structures, including crossover 9b.

Whether Petitioner has sufficiently supported its contention that a POSITA would have understood that the teachings of Figures 4, 5, and 5 apply to the other crossovers as well is a matter best left for resolution on a full record.

c) Claims 2, 8, and 9

We have reviewed Petitioner’s arguments and evidence that dependent claims 2, 8, and 9 would have been obvious over Christensen. Pet. 94–101. Patent Owner does not separately argue the patentability of these claims at this stage in the proceeding. *See generally* Prelim. Resp. Based on the preliminary record before us, we find that Petitioner’s arguments and evidence are sufficient to show a reasonable likelihood Petitioner would prevail in proving unpatentability of dependent claims 2, 8, and 9. Pet. 94–101.

F. Asserted Obviousness over Yang (Ground 3)

Petitioner argues that claims 1–4, 8, and 9 are unpatentable over Yang. Pet. 101–139.

1. Yang

Yang is a publication of a US patent application titled “Integrated Inductor.” Ex. 1007, code (54). Yang “generally relates to the field of semiconductor integrated circuit design, and more particularly, to an on-chip high-Q (high quality factor) integrated inductor structure that is cost-effective and is especially suited for RF applications.” *Id.* ¶ 2. Yang explains that resistance within an inductor should be kept to a minimum to achieve a high quality factor. *Id.* ¶ 6. To achieve this, a thick top metal layer can be used for an integrated inductor, but this can make manufacture more complicated and costly. *Id.* ¶ 7.

Yang’s Figure 1 is reproduced below.

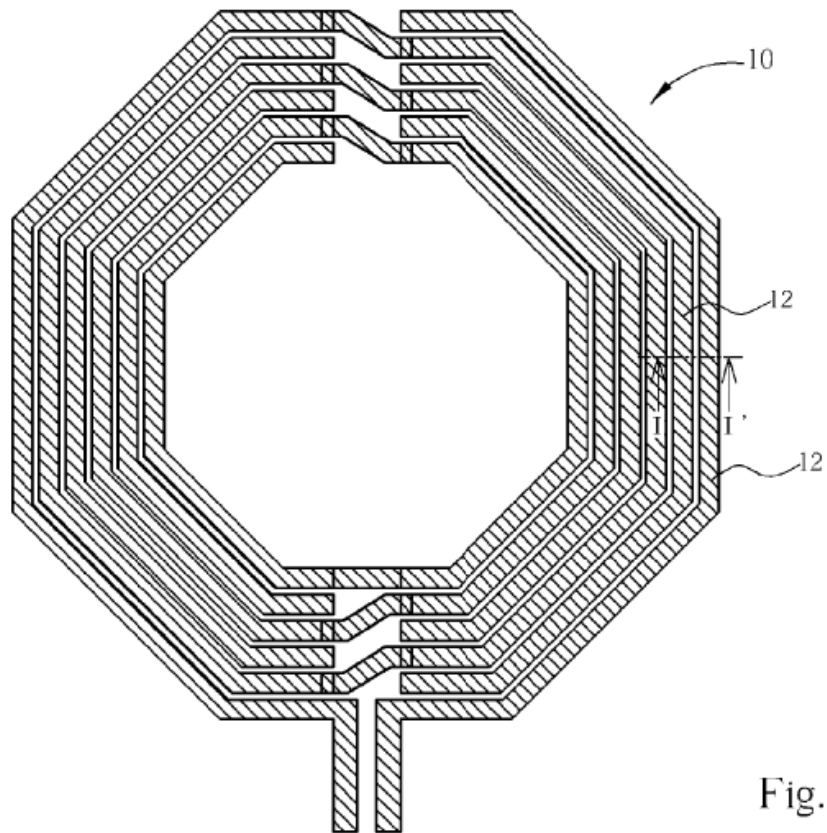


Fig. 1

Figure 1 depicts a top view of differential inductor 10 that has multi-turn windings 12. *Id.* ¶ 18. Yang's Figure 2, which is reproduced below, shows a sectional view along Figure 1's line I-I'. *Id.*

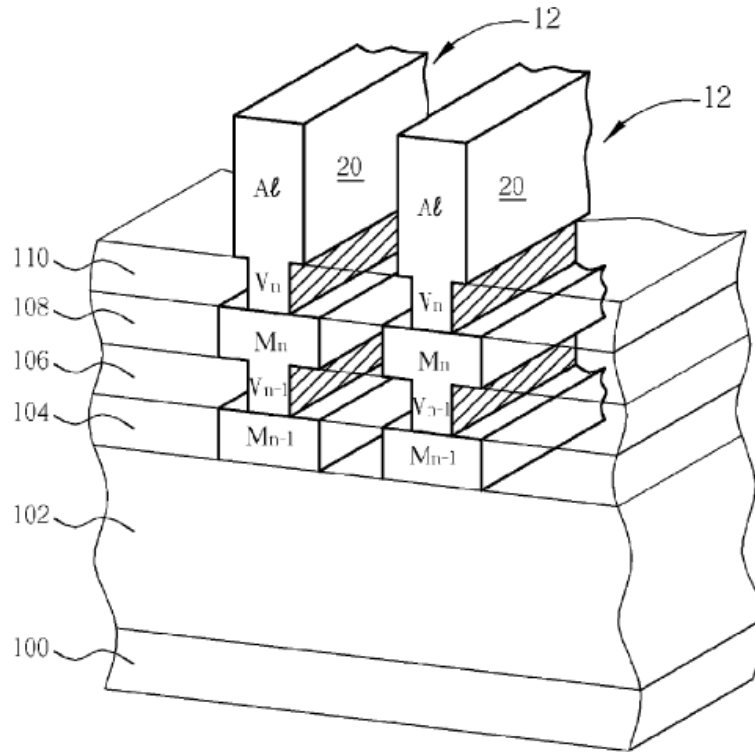


Fig. 2

Yang describes each winding 12 as including a vertical metal stack that in turn includes metal layer M_{n-1} , via plug layer V_{n-1} , metal layer M_n , via plug layer V_n , and aluminum layer 20. *Id.* ¶ 20.

2. Analysis for Claim 1

Petitioner asserts that Yang discloses or suggests all of the limitations recited in claim 1. *See* Pet. 101–129.

Patent Owner asserts that Yang does not disclose the “sixth segment” as recited in claim 1. Prelim. Resp. 49–54. Patent Owner asserts that Petitioner’s annotations of Yang Figure 1 improperly depict a second metal layer that is not illustrated in Yang and also improperly add the missing “sixth segment” of the “second metal layer” to the figure. Prelim. Resp. 50. Patent Owner further asserts that because Yang does not disclose the sixth segment, Yang cannot disclose (1) a sixth segment having a layout direction

different from the layout direction of the fourth and fifth segments as required by claim element 1[ix] or that the third and sixth segments construct a cross over region as required by claim element 1[xiv].

Additionally, Patent Owner asserts that Petitioner's arguments that a POSITA would have understood Yang to teach these limitations is improper because there are many ways to connect the metal layers of Yang and it is not inherent or necessary that the different parts of the winding be connected as asserted by Petitioner. Prelim. Resp. 51–53. Patent Owner also asserts Yang does not disclose the “shunt windings” from the metal layers form a “crossover region” and improperly relies on expert testimony to fill this gap. *See* Prelim. Resp. 54–55.

Patent Owner's arguments are not persuasive because Petitioner has provided sufficient evidence and argument at this stage of the proceeding that a POSITA would have understood Yang to teach a sixth segment that is physically connected to the fifth segment in order to maintain proper electrical conductivity among the windings and to avoid having an open circuit. *See, e.g.*, Pet. 113–117; Ex. 1003 ¶¶ 293–299; Ex. 1007, Figs. 1, 2. Additionally, with respect to whether it is inherent or necessary that Yang be connected as asserted by Petitioner, Petitioner does not assert that there is only one way to connect the metal layers of Yang, but rather, asserts that a POSITA would have expected, based on the teachings of Yang, that Yang would have a symmetrical crossover pattern. *See, e.g.*, Pet. 115–117; Ex. 1003 ¶¶ 296–299. Petitioner also provides sufficient evidence and argument that Yang discloses or teaches the shunt windings recited in claim 1. *See* Pet. 124–129; Ex. 1003 ¶¶ 309–316; Ex. 1007, Fig. 1, 2.

3. *Analysis for Claims 2–4, 8, and 9*

We have reviewed Petitioner’s arguments and evidence that dependent claims 2–4, 8, and 9 would have been obvious over Yang. Pet. 129–139. Patent Owner does not separately argue the patentability of these claims at this stage in the proceeding. *See generally* Prelim. Resp. Based on the preliminary record before us, we find that Petitioner’s arguments and evidence are sufficient to show a reasonable likelihood Petitioner would prevail in proving unpatentability of dependent claims 2–4, 8, and 9.

III. CONCLUSION

For the reasons set forth above, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one challenged claim of the ’245 patent. Thus, we institute an *inter partes* review on all challenged claims and on all grounds presented.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that an *inter partes* review is instituted on each of the 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 hereby given of the institution of a trial, which shall commence on the entry date of this decision.

IPR2023-00789
Patent 7,936,245 B2

FOR PETITIONER:

Brian Ferguson
Louis Campbell
Chaoxuan Liu
WINSTON & STRAWN LLP
beferguson@winston.com
llcampbell@winston.com
ccliu@winston.com

FOR PATENT OWNER:

Jason Engel
Jay Chiu
Katherine Allor
Steven Baik
Erik Halverson
K&L GATES LLP
Ason.engel.ptab@klgates.com
Jay.chiu@klgates.com
Katy.allor@klgates.com
Erik.halverson@klgates.com

Steven Baik
WHITE HAT LEGAL
sbaik@whitenhat.legal