

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

SCRAMOGE TECHNOLOGY LTD.,
Patent Owner.

IPR2022-00120
Patent 9,997,962 B2

Before JAMESON LEE, KARL D. EASTHOM, and
AARON W. MOORE, *Administrative Patent Judges*.

EASTHOM, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Apple Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) supported by the Declaration of Dr. Joshua Phinney (Ex. 1003) requesting an *inter partes* review of claims 1–4, 7, 8, 18, and 19 (“challenged claims”) of U.S. Patent No. 9,997,962 B2 (Ex. 1001, the “’962 patent”). Scramoge Technology Ltd. (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”).¹

After the Institution Decision (Paper 9, “Inst. Dec.”), Patent Owner filed a Response (Paper 14, “PO Resp.”), and a Declaration of Dr. David S. Ricketts (Ex. 2016); Petitioner filed a Reply (Paper 19); and Patent Owner filed a Sur-reply (Paper 21). Thereafter, the parties presented oral arguments via a video Oral Hearing, and a transcript thereof is in the record. Paper 29 (“Tr.”). For the reasons set forth in this Final Written Decision pursuant to 35 U.S.C. § 318(a), we determine that Petitioner demonstrates by a preponderance of evidence that the challenged claims are unpatentable.

II. BACKGROUND

A. *Real Parties in Interest*

The parties identify themselves as real parties in interest. Pet. 62; Paper 4, 2.

B. *Related Matters*

The parties identify the following proceedings as related matters involving the ’962 patent: *Scramoge Tech. Ltd. v. Apple Inc.*, No. 6:21-cv-0579-ADA (W.D. Tex.); *Scramoge Tech. Ltd. v. Samsung Electronics Co.*,

¹ The parties also filed additional briefing authorized by the Board to address a discretionary denial issue not relevant to this Final Written Decision. Papers 7, 8.

Ltd., No. 6:21-cv-0454-ADA (W.D. Tex.); *Scramoge Tech. Ltd. v. Google LLC*, No. 6:21-cv-0616-ADA (W.D. Tex.). *See* Paper 4, 2; Pet. 62.

The following *inter partes* review proceeding involves the '962 patent: *Samsung Electronics Co., Ltd. vs Scramoge Technology Ltd.*, IPR2022-00284 (PTAB December 7, 2021). The following *inter partes* review proceedings involve related patents: *Apple Inc. v. Scramoge Tech. Ltd.*, IPR2022-00117, Paper 9 (PTAB May 22, 2022) (institution decision); *Apple Inc. v. Scramoge Tech. Ltd.*, IPR2022-00118, Paper 9 (PTAB May 22, 2022) (institution decision); *Apple Inc. v. Scramoge Tech. Ltd.*, IPR2022-00119, Paper 8 (PTAB Jan. 31, 2022) (terminated). *See* Paper 4, 2.

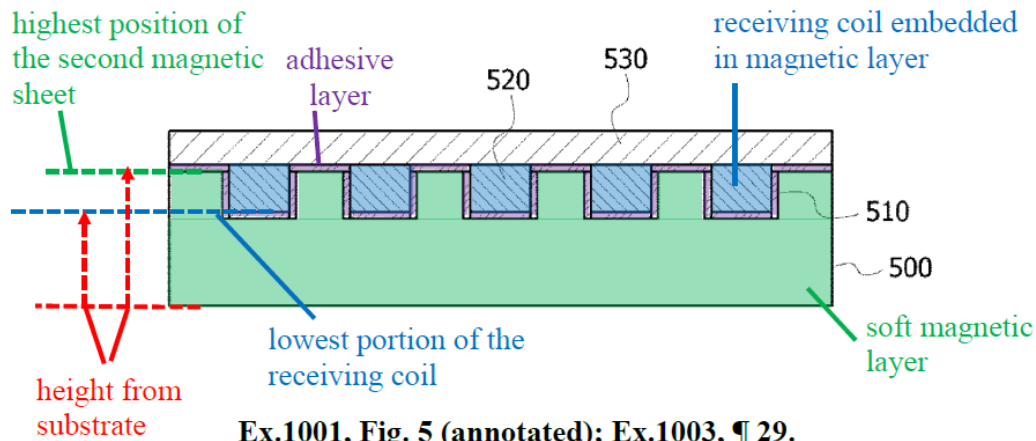
C. The '962 Patent

The '962 patent relates to a wireless secondary coil device that receives electromagnetic energy from a primary coil for charging a power supply in household electronic products and other products. *See* Ex. 1001, code (57), 1:24–31.

[A]n embodiment of the present invention includes a substrate, a soft magnetic layer stacked on the substrate, and a receiving coil configured to receive electromagnetic energy emitted from a wireless power transmission device, wound in parallel with a plane of the soft magnetic layer, and formed inside of the soft magnetic layer, and an insulating layer is formed between the soft magnetic layer and the receiving coil.

Id. at code (57).

Figure 5 of the '962 patent, as annotated by Petitioner, follows
(Pet. 8):



Annotated Figure 5 of the '962 patent, above, illustrates a secondary (receiving) antenna coil and magnetic layer configuration, including “adhesive layer 510 . . . formed on a soft magnetic layer 500 [and] a receiving coil 520 . . . formed on the adhesive layer 510,” with “receiving coil 520 . . . disposed on the upper surface of the soft magnetic layer 500.” Ex. 1001, 6:11–30. “[T]he adhesive layer 510 may include a first adhesive layer 512, an insulating layer 514 formed [on] the first adhesive layer 512, and a second adhesive layer 516 formed on the insulating layer.” *Id.* at 6:42–45. As depicted and annotated by Petitioner, the highest position of a second magnetic sheet (shown above as soft magnetic layer 500) is higher relative to a substrate (not depicted but located at the bottom of the figure) than the lowest portion of receiving coil 520. *See infra* § II.D, claim 1, limitation 1.6.

An example of the insulating layer between the two adhesive layers is “polyethylene terephthalate (PET) material.” Ex. 1001, 6:47. The '962

specification refers to the multi-layer adhesive as “double-sided.” *Id.* at 6:37–38.

Figure 6 of the '962 patent, as annotated by Petitioner, follows (Pet. 8–9):

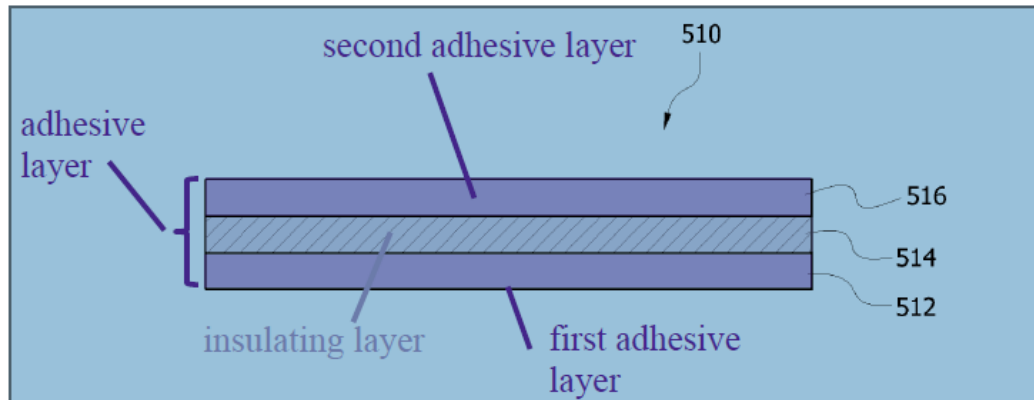


Figure 6 above illustrates a double-sided adhesive tape with first 512 and second 516 adhesive layers sandwiching insulating layer 514. *See* Ex. 1001, 6:42–45.

D. Illustrative Claim

Independent claim 1 follows:

- [1.0] A wireless power receiving antenna comprising:
 - [1.1] a substrate;
 - [1.2] a soft magnetic layer comprising a first magnetic sheet disposed on the substrate and a second magnetic sheet disposed on the first magnetic sheet;
 - [1.3] a receiving coil disposed on the second magnetic sheet; and
 - [1.4] an adhesive layer formed between the second magnetic sheet and the receiving coil,
 - [1.5] wherein the adhesive layer includes a first adhesive layer in contact with the second magnetic sheet, a second adhesive layer in contact with the receiving coil, and an

insulating layer disposed between the first adhesive layer and the second adhesive layer, and

[1.6] wherein a height of a highest position of the second magnetic sheet from the substrate is higher than a height of a lowest position of the receiving coil from the substrate.

Ex. 1001, 8:54–9:4 (bracketed information added to conform to the Petition).

E. Asserted Grounds of Unpatentability

Petitioner contends that claims 1–4, 7, 8, 18, and 19 are unpatentable as follows:²

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 18, 19	103	Suzuki, ³ Lee ⁴
2–4, 7	103	Suzuki, Lee, Sawa ⁵
8	103	Suzuki, Lee, Sawa, Park ⁶

Pet. 16.

III. ANALYSIS

A. Legal Standards

A patent claim is unpatentable “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole

² The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103 (effective Mar. 16, 2013). Because the ’962 patent’s effective filing date is after the date of the applicable AIA amendment (*see* Pet. 9; Ex. 1001, codes (22, 30), the AIA version of § 103 applies.

³ US Pat. No. 8,421,574 B2, issued Apr. 16, 2013 (Ex. 1005).

⁴ US Pat. No. 9,252,611 B2, issued Feb. 2, 2016 (Ex. 1006).

⁵ US Pat. No. 9,443,648 B2, issued Sept. 13, 2016 (Ex. 1008).

⁶ US Pat. No. 8,922,162 B2, issued Dec. 30, 2014 (Ex. 1007).

would have been obvious before the effective filing date of the invention to a person having ordinary skill in the art to which the claimed invention pertains.” 35 U.S.C. § 103; *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (similar language albeit with respect to the pre-AIA version of 35 U.S.C. § 103). “[W]hen a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.” *KSR*, 550 U.S. at 416 (citing *United States v. Adams*, 383 U.S. 39, 50–51 (1966)). The question of obviousness involves resolving 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 ordinary skill in the art; and, if in evidence, (4) objective evidence of non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Determining whether an invention would have been obvious under 35 U.S.C. § 103 requires resolving the level of ordinary skill in the pertinent art at the time of the effective filing date of the claimed invention. *Graham*, 383 U.S. at 17. The person of ordinary skill in the art is a hypothetical person who knows the relevant art. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Factors in determining the level of ordinary skill in the art include the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* One or more factors may predominate. *Id.*

Petitioner contends

[a] Person of Ordinary Skill in The Art (“POSITA”) in June 2013 would have had a working knowledge of the network

communication art that is pertinent to the '962 patent. That person would have a bachelor's degree in electrical engineering, or equivalent training, and approximately two years of experience working in the field of wireless power transmission. Lack of work experience can be remedied by additional education, and vice versa.

Pet. 10 (citing Ex. 1003 ¶¶ 18–20).

Patent Owner neither disputes Petitioner's proposed level of ordinary skill in the art, nor proposes a different level. *See generally* PO Resp.

Based on a review of the record, we adopt Petitioner's proposed level of ordinary skill in the art because it is consistent with the evidence of record, including the asserted prior art and '962 patent specification.

C. Claim Construction

In *inter partes* reviews, the Board interprets claim language using the district-court-type standard, as described in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b) (2020). Under this standard, claim terms have their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history. *See Phillips*, 415 F.3d at 1313–14.

Neither party provides an explicit claim construction for any claim term here. We determine that it is not necessary to construe any claim terms explicitly, because doing so would have no effect in the analyses below of Petitioner's asserted grounds. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (stating that “we need only construe 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))).

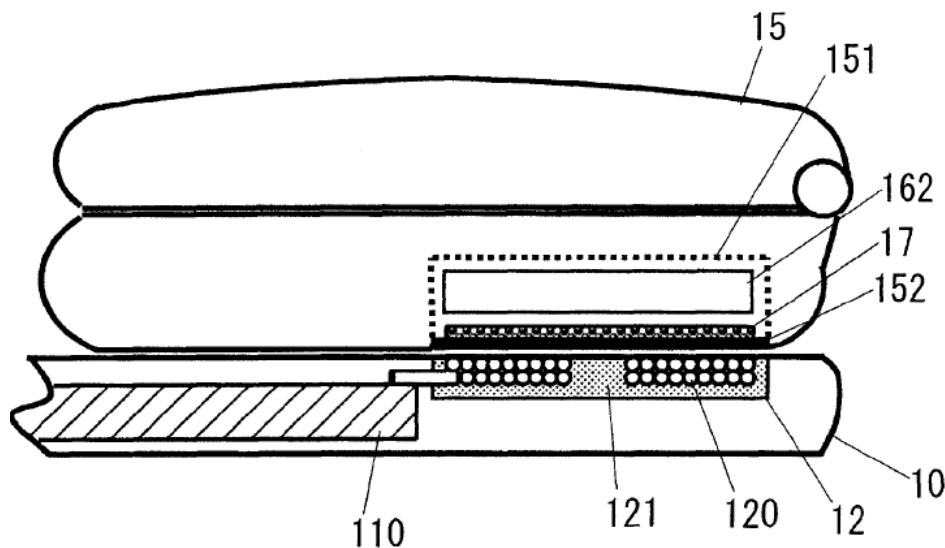
D. Ground 1: Asserted Obviousness Based on Suzuki and Lee

Petitioner asserts that claims 1, 18 and 19 are unpatentable under 35 U.S.C. § 103(a) based on the combined teachings of Suzuki and Lee. Pet. 17–46.

1. Suzuki

Suzuki generally describes a wireless charging device using a primary coil coupled via electromagnetic induction to a secondary coil in consumer items such as “a cordless phone, a shaver, an electric toothbrush, a personal digital assistance [sic] or the like (hereinafter referred to as a ‘secondary device’).” Ex. 1005, 1:17–26.

Suzuki’s Figure 1A follows:



Suzuki’s Figure 1A above shows primary coil 120 in charger device 10 for charging cell phone 15 via electromagnetic induction with cell phone secondary coil 17[0].⁷ See Ex. 1005, 4:48–59.

⁷ In describing Figures 1A and 3, the specification refers to “secondary coil[] . . . 170” and “secondary coil 170,” respectively, so “17” in those figures is a misprint. See Ex. 1005, 4:48–59, 6:34.

With respect to the secondary device (e.g., cell phone 15), “a secondary side of contactless power transmission apparatus” includes “a holding member which is physically separated from a primary side; a magnetic layer; a shield layer for shielding [the] electromagnetic noise; and a heat insulation layer.” *Id.* at code (57). The holding member supports a planar secondary coil. *Id.* “[T]he magnetic layer is laminated on one side of the planar coil and unified with the planar coil.” *Id.* “[T]he secondary side of the apparatus includes a plurality of magnetic layers.” *Id.*

2. *Lee*

Similar to Suzuki, Lee also discloses a secondary coil in a portable mobile terminal (e.g., cell phone) for wirelessly charging the terminal. *See* Ex. 1006, code (57), Fig. 17. In Lee, a “receiving-side secondary coil 6 of the wireless charger is attached on an upper portion of a protective film of a magnetic field shield sheet 10 by using a double-sided tape 30b.” *Id.* at 16:31–40.

3. *Claims 1, 18 and 19*

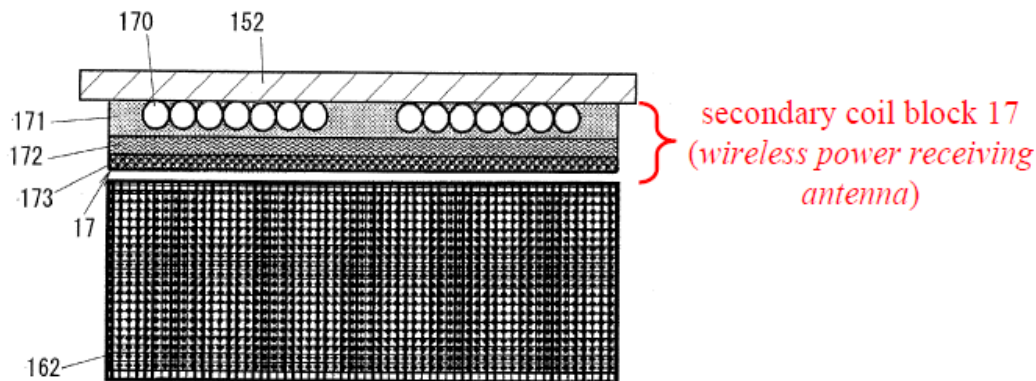
Petitioner contends that the combined teachings of Suzuki and Lee would have rendered independent claims 1 and 18 and dependent claim 19 obvious. Pet. 17–46. Patent Owner disagrees, focusing on limitation 1.5 of claim 1. PO Resp. 2–19.

a) *Claim 1*

i. *Preamble and Limitations 1.1–1.3*

The preamble of claim 1 recites “[a] wireless power receiving antenna comprising.” Petitioner contends that to the extent the preamble is limiting, “Suzuki renders [it] obvious,” “because Suzuki teaches a contactless power transmission apparatus that includes a power receiver with a secondary coil

block antenna.” Pet. 32 (citing Ex. 1005, Fig. 3; Ex. 1003 ¶ 57). To support the showing, Petitioner annotates Suzuki’s Figure 3 as follows:



Annotated Figure 3 of Suzuki above shows secondary coil block 17 (identified by Petitioner in red text) as the “wireless power receiving antenna” as recited in the preamble of claim 1.⁸ Pet. 31. Petitioner explains that Suzuki’s “power receiver includes a ‘secondary coil block 17’ . . . with multiple layers, including ‘a magnetic layer 171, a shield layer 172 for shielding electromagnetic noise, and a heat insulation layer 173, which together are unified with the secondary coil 170.’” *Id.* at 31–32 (quoting Ex. 1005, 6:29–33).

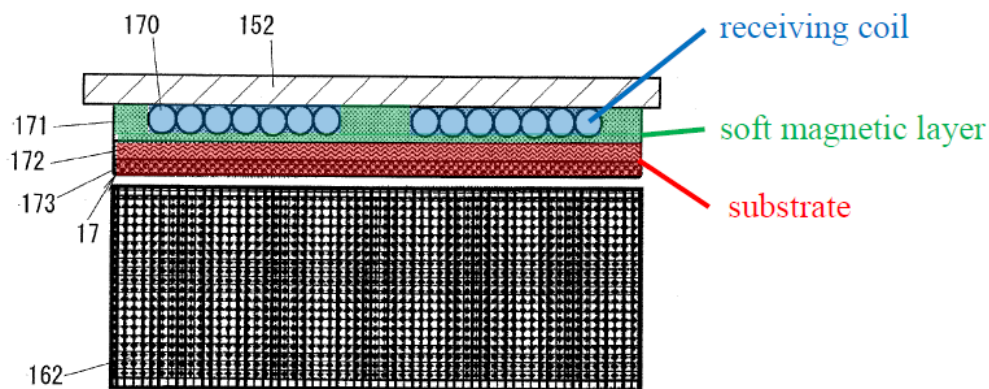
Petitioner’s showing as to the preamble is persuasive as supported by the record. Patent Owner does not challenge Petitioner’s showing as to the preamble. *See generally* PO Resp.

Limitation 1.1 recites “a substrate.” Petitioner reads “a substrate” on Suzuki’s “shield layer 172 and/or insulation layer 173.” Pet. 33 (citing Ex. 1003 ¶ 59; annotating Ex. 1005, Fig. 3).

⁸ Figure 3 represents an upside-down view of an embodiment of secondary coil block 17 of cell phone 15 as depicted in Figure 1 above.

Petitioner's showing as to limitation 1.1 is persuasive as supported by the record. Patent Owner does not challenge Petitioner's showing as to limitation 1.1. *See generally* PO Resp.

Limitation 1.2 recites “a soft magnetic layer comprising a first magnetic sheet disposed on the substrate and a second magnetic sheet disposed on the first magnetic sheet.” To address this limitation, Petitioner begins with the following annotated version of Suzuki's Figure 3 (Pet. 34):



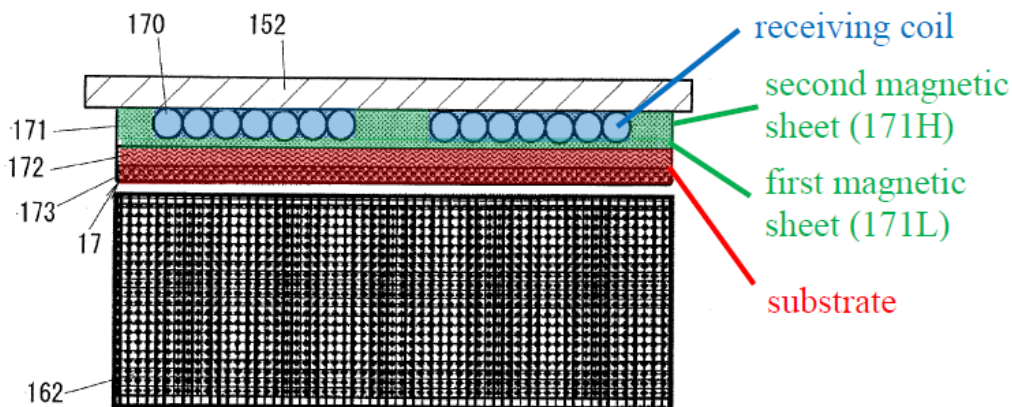
Annotated Figure 3 above shows receiving coil 170 (blue) embedded in soft magnetic layer 171 (green) on substrate 171/172 (red). *See* Pet. 34 (citing Ex. 1005, 6:29–46; Ex. 1003 ¶ 62).

To address the first and second **magnetic** sheets (not depicted in Figure 3 above), Petitioner relies on Suzuki's teaching with respect to another embodiment (*see* Figure 17A). Pet. 25. Describing the invention in general and the embodiment associated with Figure 17A, Suzuki states that “in order to further reduce the influence of noise, at least secondary side of the present invention includes a plurality of magnetic layers.” *Id.* (quoting Ex. 1005, 10:63–65). Further addressing this plurality of magnetic layers, Petitioner quotes Suzuki as follows:

[T]he plurality of magnetic layers of the secondary side are magnetic layers 171H and 171L that are laminated on one side

of the secondary coil 170. Specifically, the magnetic layer (first magnetic layer) 171H is laminated on the one side of the primary [sic: secondary] coil 170, and the magnetic layer (second magnetic layer) 171L is laminated on the magnetic layer 171H.

Pet. 35 (second alteration by Petitioner (quoting Ex. 1005, 11:14–17); citing Ex. 1003 ¶ 66). Petitioner combines Suzuki’s teachings related to these two embodiments, annotating Suzuki’s Figure 3 to include the two magnetic layers 171L and 171H (as described in connection with Suzuki’s embodiment as illustrated with respect to Figure 17A), as follows (Pet. 36):



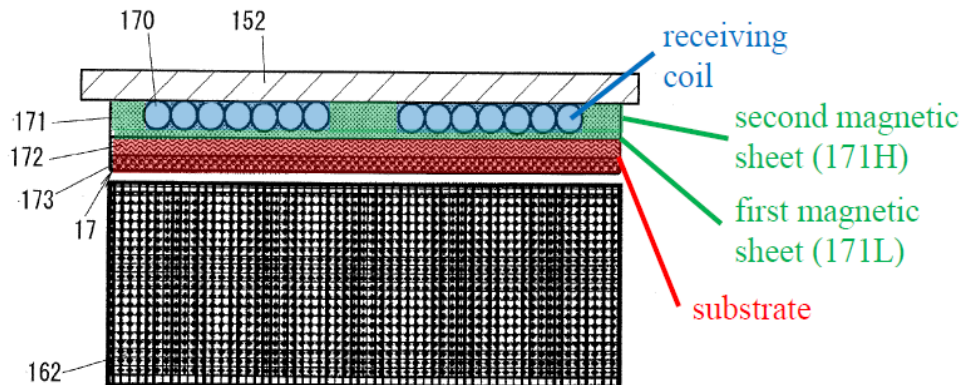
As annotated by Petitioner, Suzuki’s Figure 3 above shows substrate 172, 173 (red), first magnetic sheet 171L (green), second magnetic sheet 171H (green), and secondary receiving coil 170 (blue). Pet. 36 (citing Ex. 1005, Fig. 3; Ex. 1003 ¶ 68).

Petitioner relies on the following advantages of employing two magnetic layers instead of just one as described in Suzuki: “[P]ower transmission efficiency between primary and secondary sides **can be enhanced with the two magnetic layers.**” Pet. 35 (quoting Ex. 1005, 10:51–56) (emphasis by Petitioner). “[I]n order to **further reduce the influence of noise**, at least secondary side of the present invention includes a plurality of magnetic layers.” *Id.* (quoting Ex. 1005, 10:63–65) (emphasis by Petitioner). Petitioner reasons that these advantages (enhanced power

transmission efficiency and noise reduction) would have rendered it obvious to employ Suzuki's dual magnetic layers (171L, 171H) as described in connection with Figure 17A instead of using Suzuki's single magnetic layer 170 as described in connection with Figure 3. *See id.* (citing Ex. 1003 ¶ 67).

Petitioner's showing as to limitation 1.2 is persuasive as supported by the record. Patent Owner does not challenge Petitioner's showing as to limitation 1.2. *See generally* PO Resp.

Limitation 1.3 recites "a receiving coil disposed on the second magnetic sheet." Petitioner again relies on an annotated version of Figure 3, as modified via the teachings with respect to the dual magnetic layers addressed in connection with limitation 1.2, as follows (Pet. 37):



Suzuki's Figure 3, as annotated and modified by Petitioner, shows receiving coil 170 (blue) embedded in second magnetic sheet/layer 171H (green) based on Petitioner's obviousness contention of employing two magnetic layers 171H and 171L instead of a single magnetic layer/layer 171. *See* Pet. 36–37. Petitioner states that Suzuki teaches that "when the magnetic layer 171 comprises two layers, the magnetic layer 171H is laminated on the one side of the coil 170." *Id.* at 36 (citing Ex. 1005, 11:9–33; Ex. 1003 ¶ 69). As noted above in addressing the two magnetic layers of limitation 1.2, Petitioner quotes Suzuki as follows: "Specifically, the magnetic layer

(first magnetic layer) 171H is laminated on the one side of the primary [*sic*: secondary] coil 170, and the magnetic layer (second magnetic layer) 171L is laminated on the magnetic layer 171H.” *Id.* at 35 (quoting Ex. 1005, 11:9–33; citing Ex. 1003 ¶ 66).

Petitioner’s showing as to limitation 1.3 is persuasive as supported by the record. Patent Owner does not challenge Petitioner’s showing as to limitation 1.3. *See generally* PO Resp.

Limitation 1.4 recites “an adhesive layer formed between the second magnetic sheet and the receiving coil.” Petitioner relies on Suzuki’s teaching that “[t]he secondary coil 170 is then stuck on the other side (a lower surface) of the magnetic layer 171 with adhesive or pressure sensitive adhesive.” Pet. 37 (quoting Ex. 1005, 8:8–10). Petitioner adds that after using layers 171H and 171L instead of single layer 171 to create a multi-sheet layer 171 for the reasons set forth with respect to limitation 1.2, “the adhesive would connect the coil 170 to the top layer 171H,” rendering obvious limitation 1.4. *See id.* at 37–38 (citing Ex. 1003 ¶¶ 71–72).

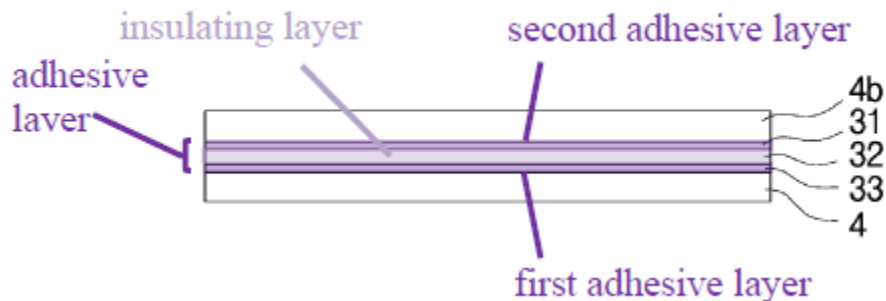
Petitioner’s showing as to limitation 1.4 is persuasive as supported by the record. Patent Owner does not challenge Petitioner’s showing as to limitation 1.4. *See generally* PO Resp.

ii. Limitation 1.5

Limitation 1.5 modifies the adhesive layer of limitation 1.4, which Suzuki discloses, and generally reads on a double-sided adhesive tape replacing the adhesive layer of limitation 1.4 so that the double-sided adhesive tape is in contact with the receiving coil and second magnetic sheet. *See* Pet. 38–39 (discussing Lee, Ex. 1006). In particular, limitation 1.5 recites “wherein the adhesive layer includes a first adhesive layer in contact with the second magnetic sheet, a second adhesive layer in contact

with the receiving coil, and an insulating layer disposed between the first adhesive layer and the second adhesive layer.” Relying on its showing for limitation 1.4, Petitioner states that “Suzuki generally describes the use of an adhesive to connect the coil 170 to the magnetic layer 171.” *Id.* at 38 (citing Ex. 1006, 8:8–10; Ex. 1003 ¶ 73).

Petitioner turns to Lee as teaching “an example of a ‘double-sided tape’ adhesive used to connect a coil to a magnetic layer.” Pet. 38 (citing Ex. 1006, 9:29–38). Petitioner annotates Lee’s Figure 5, as follows:

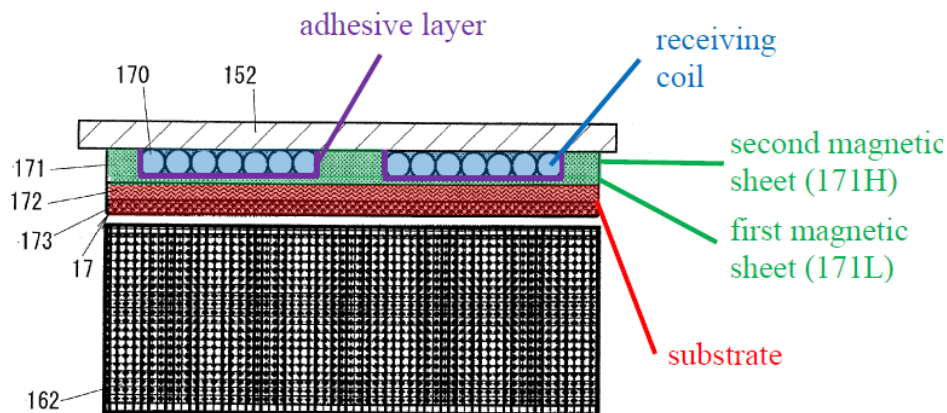


Lee’s Figure 5 as annotated by Petitioner shows insulating layer 32 sandwiched between adhesive layers 31, 33. *See* Pet. 38–39 (citing Ex. 1006, 9:29–38; Ex. 1003 ¶¶ 74–75); Ex. 1006, 9:29–33 (“[D]ouble-sided tape 3 is formed of a base member 32 made of a fluorine resin based film, for example, a PET (Polyethylene Terephthalate) film, on both sides of which second and third adhesive layers 31 and 33 are formed.”).

Petitioner quotes Lee for its teaching of using the double-sided tape to attach a secondary coil to a magnetic sheet: “[R]eceiving-side secondary coil 6 of the wireless charger is attached on an upper portion of a protective film of a magnetic field shield sheet 10 by using a double-sided tape 30b.” Pet. 39 (quoting Ex. 1006, 16:31–36). Petitioner asserts that a person of ordinary skill in the art “would have found it obvious to use such a double-

sided tape to connect Suzuki's magnetic layer 171 and coil 170" for several reasons. *See id.* at 39 (citing Pet. § X.C.3 (listing reasons); Ex. 1003 ¶¶ 76–77). Petitioner provides evidence that “beyond Lee, the patent literature is replete with examples of utilizing double-sided tape” “to adhere a power-receiving coil to a magnetic layer.” *Id.* at 24 (citing Ex. 1003 ¶ 44; Ex. 1013, 22:19–26 (“[T]he receiver coil L2 may be disposed and affixed on top of the magnetic shielding material 41 using double-sided adhesive tape with adhesive applied on both sides thereof.”); Ex. 1014, 5:44–48 (“An insulative double-faced tape or adhesive or the like is used . . . to adhere the upper face of first magnetic sheet 44 and the lower face of the charging coil 41”); Ex. 1017, 25:21–25, 26:15–26, Fig. 13 (describing a protective layer that is “double-sided tape” between a magnetic sheet and a coil)).

Petitioner provides the following modified and annotated version of Suzuki's Figure 3 (Pet. 38):



Petitioner's modified and annotated version of Suzuki's Figure 3 above illustrates coil 170 embedded and attached via Lee's double-sided adhesive tape (purple), which replaces Suzuki's adhesive layer, in second magnetic sheet 171H (green) above substrate 172, 173 (red). *See* Pet. 37–40.

In addition to noting that the prior art is replete with examples of using double-sided adhesive tape for adhering a secondary coil to a magnetic layer as indicated above, Petitioner asserts that “when considering the description of the adhesive in Suzuki, a [person of ordinary skill in the art] would have naturally considered Lee, as it more fully describes known adhesives intended for use in adhering a power-receiving coil to a magnetic layer.” Pet. 24 (citing Ex. 1003 ¶ 43). Petitioner also contends that “Suzuki explains that in its method, the layers are stuck together ‘collectively by pressing,’ and that the adhesive may be a ‘pressure sensitive adhesive.’” *Id.* at 25 (citing Ex. 1005, 8:66–9:1, 8:8–10). According to Petitioner, “[i]t was known in the electronics manufacturing art that double-sided tape may be a pressure sensitive adhesive (PSA).” *Id.* at 25 (citing Ex. 1003 ¶ 46; Ex. 1009 ¶ 140).

The Petition provides evidence that artisans of ordinary skill knew that for PSA double-sided tape applications, “optimum thickness is dependent on the (opto)electronic construction, on the end application, [and] on the nature of the embodiment of the PSA.” *Id.* at 25–26 (quoting Dollase (Ex. 1009 ¶ 141)). The Petition further relies on Dollase’s explanation that “high . . . thicknesses” for a PSA double-sided tape “achieve improved adhesion to the substrate and/or a damping effect,” and “low . . . thicknesses . . . reduce the permeation cross section, and hence the lateral permeation and the overall thickness of the (opto)electronic construction.” *Id.* at 26 (quoting Ex. 1009 ¶ 141). Dr. Phinney also relies on Dollase to support his testimony that “[i]t was . . . known that pressure sensitive, double-sided tape may be configured to have a desired thickness depending on the particular application.” Ex. 1003 ¶ 46 (citing Ex. 1009 ¶¶ 141–142). At cited paragraph 141, Dollase explains that “there is a good compromise between a

low thickness of composition and the consequent low permeation cross section, which reduces the lateral permeation, and a sufficiently thick film of composition to produce a sufficiently adhering bond.” Ex. 1009 ¶ 141; *see also* Inst. Dec. 28 (same).

Citing other evidence, Petitioner asserts that “it was well known that ‘by adjusting the height of the double-sided tape,’ it was possible to form a gap of predetermined height between adjacent elements.” Pet. 26 (quoting Ex. 1012, 4:50–51; citing *id.* at 4:42–54; Ex. 1003 ¶ 46). In summary, in addition to Lee, as indicated above, Petitioner relies on and cites other prior art references of record that show using double-sided tape for attaching coils, or more generally, for electronic applications, was common at the time of the invention and known to provide benefits involving controlling thickness and damping effects, while adjusting for adhesion and permeability. *See* Pet. 23–26 (citing Ex. 1009 ¶¶ 141–142; Ex. 1012, 4:42–54; Ex. 1013, 22:19–26; Ex. 1014, 5:44–48; Ex. 1017, 25:21–25, 26:15–26, Fig. 13; Ex. 1003 ¶¶ 44–47).

Based on the evidence as summarized above, including the testimony of Dr. Phinney, the Petition asserts that the record evidence shows a reasonable expectation of success and also shows a predictable and advantageous application of adhering a secondary coil to a magnetic layer with no change in function to Suzuki’s device or Lee’s adhesive. *See* Pet. 23–26. Petitioner summarizes by stating that “the combination of Suzuki and Lee simply represents the combination of a known element (Lee’s double-sided tape) with Suzuki’s known contactless power transmission apparatus according to known methods to yield a predictable result (the adhesion of Suzuki’s coil to its magnetic layer).” *Id.* at 26–27 (citing Ex. 1003 ¶ 47).

Patent Owner responds that Petitioner's showing rests on "improper hindsight." PO Resp. 2. Patent Owner asserts that "the Petition looks to Lee for its disclosure of an adhesive *structure*, not for the *material composition* of the specific adhesive used," but Dr. Phinney testified during his deposition that "he did not 'recall citing anything specific about what adhesives were used or disclosed in Lee.'" *Id.* at 3–4 (quoting Ex. 29:9–11; citing Pet. 23–27, 38–40). Patent Owner maintains that a person of ordinary skill in the art "would not have looked to the structure of Lee's double-sided tape in view of Suzuki, because Suzuki already discusses its adhesive structure at length." *Id.* at 5 (citing Ex. 2016 ¶¶ 34–40).

Patent Owner also asserts that in some of Suzuki's "embodiments, no adhesive other than layer 171 itself is necessary to adhere shield layer 172 to coil 170, because magnetic layer 171 already has adhesive properties." PO Resp. 6 (citing Ex. 2016 ¶¶ 35–36). Patent Owner asserts that in other embodiments "where magnetic layer 171 may not itself include adhesive, Suzuki teaches that layer 171 is stuck to coil 170 "with adhesive or pressure sensitive adhesive *which is mixed with magnetic filler or magnetic powder*." *Id.* at 8 (quoting Ex. 1005, 8:8–12; citing Pet. 23).

Patent Owner asserts that "no matter whether Suzuki's adhesive is magnetic layer 171, Suzuki teaches a structure for its adhesive, such that a [person of ordinary skill in the art] would not need to look to Lee for further disclosure of adhesive structure." PO Resp. 9 (citing Ex. 2016 ¶¶ 35–40). Patent Owner also asserts that the Petition "lack[s] . . . identified benefits" for the combination of Suzuki and Lee. *Id.* at 10. Patent Owner also asserts that a person of ordinary skill "would have recognized significant drawbacks to using [Lee's] double-sided tape as an adhesive in Suzuki's design," because double-sided tape "would *increase* the thickness of Suzuki's

designs.” *Id.* at 16. In addition, Patent Owner asserts that “Lee’s double-sided tape would reduce the proximity of Suzuki’s magnetic layer 171 to its coil 170,” thereby reducing the magnetic flux concentration. *Id.* (citing Ex. 2016 ¶ 45). Based on the above reasons, Patent Owner argues that “the Petition necessarily arrives at its proposed combination through the impermissible use of hindsight.” *Id.* at 17.

Contrary to Patent Owner’s arguments, the Petition applies persuasive rationale to combine the teachings of Suzuki and Lee, as summarized above. For example, the Petition asserts that a person of ordinary skill in that art “would have . . . found it straightforward and predictable given that the combination utilizes Lee’s multilayer adhesive precisely as it was intended—for attaching a power-receiving coil to a magnetic layer.” Pet. 24–25 (citing Ex. 1003 ¶ 45). Patent Owner does not dispute that Lee employs double-sided adhesive tape to attach power receiving coils to a magnetic layer—the same purpose for the adhesive in Suzuki. *See generally* PO Resp. As the Petition argues, using Lee’s double-sided adhesive tape in place of Suzuki’s adhesive for the same purpose of adhering a secondary coil to a magnetic layer is “the predictable use of prior art elements according to their established functions.” *See* Pet. 25 (citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007)).

As Petitioner also persuasively argues, “the ’962 patent presents the situation *KSR* calls ‘a principal reason for declining to allow patents for what is obvious.’ 550 U.S. at 416. Specifically, it presents a ‘combination of familiar elements according to known methods . . . [that] does no more than yield predictable results.’” Reply 13 (quoting *KSR*, 550 U.S. at 416). Other than advancing what amounts to teaching away arguments, which the record does not support for the reasons discussed below, Patent Owner does not

dispute this rationale. As indicated above, the Petition supplies numerous examples, in addition to Lee, of the prior art using a double-sided adhesive to attach a coil to a magnetic layer. Pet. 24 (citing Ex.1013, 22:19–26 (“[T]he receiver coil L2 may be disposed and affixed on top of the magnetic shielding material 41 using double-sided adhesive tape with adhesive applied on both sides thereof.”); Ex. 1014, 5:44–48 (“An insulative double-faced tape or adhesive or the like is used . . . to adhere the upper face of first magnetic sheet 44 and the lower face of the charging coil 41”); Ex.1017, 25:21–25, 26:15–26, Fig. 13 (describing a protective layer that is “double-sided tape” between a magnetic sheet and a coil)).

Moreover, as indicated above, the Petition states that “it was known that pressure sensitive, double-sided tape may be configured to have a desired thickness depending on the particular application.” Pet. 25 (citing Ex. 1009 ¶¶ 141–142). As summarized above, the Petition establishes that artisans of ordinary skill would have considered double-sided tape as an adhesive structure to secure a secondary coil to a magnetic layer, allowing for control of thickness, adhesion, damping, and permeability. *See* Pet. 23–26 (citing Ex. 1009 ¶¶ 141–142; Ex. 1012, 4:42–54; Ex. 1013, 22:19–26; Ex. 1014, 5:44–48; Ex. 1017, 25:21–25, 26:15–26, Fig. 13; Ex. 1003 ¶¶ 44–47).

Patent Owner’s argument that an artisan of ordinary skill would have ignored Lee’s teachings after reading Suzuki because “Suzuki already discusses its adhesive structure at length” (PO Resp. 5), runs contrary to *KSR*’s rationale that a proper obviousness analysis often involves determining whether the claimed invention involves no more than a “combination of familiar elements according to known methods . . . [that] does no more than yield predictable results.” *See* Reply 13 (quoting *KSR*, 550 U.S. at 416); PO Resp. 8 (“A [person of ordinary skill in the art] would

not look to Lee . . . for guidance as to how to structure Suzuki’s adhesive, in view of Suzuki’s existing disclosures for how to structure its adhesive.”), 11 (“Suzuki *already* provides numerous details regarding how to implement the structure of its adhesive.”). Moreover, Patent Owner admits that “a POSITA *looking to Lee to fill in the gaps in Suzuki’s disclosure would potentially implement Suzuki’s adhesive as acrylic adhesive.*” *Id.* at 9 (emphasis added). There is no principled reason on this record to separate Lee’s teachings regarding the specifics of the “*material composition*” (PO Resp. 5) of adhesives from Lee’s teachings regarding the “structure” thereof, even if one assumes that Suzuki “*already* provides numerous details regarding how to implement the structure of its adhesive.” *See* PO Resp. 11.

Moreover, with respect to structure, as the Petition shows, artisans of ordinary skill knew that “[h]igh layer thicknesses [for double-sided tape] . . . are employed when the aim is to achieve improved adhesion to the substrate,” whereas “[l]ow layer thicknesses . . . reduce the permeation cross section, and hence the lateral permeation and the overall thickness of the (opto)electronic construction.” Pet. 26 (quoting Ex. 1009 ¶¶ 141–142). Similarly, the Petition states that “it was well known that ‘by adjusting the height of the double-sided tape,’ it was possible to form a gap of predetermined height between adjacent elements.” *Id.* (quoting Ex. 1012, 4:42–54; citing Ex. 1003 ¶ 46). The Petition cites other benefits such as increased adhesion and decreased damping that depend on tape thickness. *See id.* at 25–26.

In other words, Petitioner asserts it would have been obvious to employ Lee’s double-sided tape to secure Suzuki’s coil to its magnetic layer as required by claim 1 not only because others routinely and successfully did it, but also because it allows for adjustment of the adhesive thickness

depending on the intended application with tradeoffs involving adhesive strength and damping versus permeability. Even if tape thickness is a concern for relatively smaller devices (*see* PO Resp. 16), Suzuki describes a wide variety of commercial devices and varying magnetic layer thicknesses, and the challenged claims do not impose a size limit on the claimed device or the thicknesses of any layers within it. *See* Ex. 1005, 1:21–23 (disclosing use of the secondary coil assembly in a “cordless phone, a shaver, an electric toothbrush, a personal digital assistant, or the like”), Fig. 5, 7:17–23 (showing and describing magnetic layer thicknesses A, B, C varying by a factor of three (0.05–0.15 mm) in terms of coupling efficiency and permeability).

Moreover, Patent Owner does not respond to the stated rationale in the Petition related to selecting tape thickness to adjust for gaps between layers or to control for adhesion, damping, and permeability. *See generally* PO Resp. Asked about the Petition’s asserted benefits of using adhesive tape to control thickness at the Oral Hearing, Patent Owner candidly acknowledged that it did not respond to it as “it wasn’t necessary because Suzuki already has the adhesive in use . . . as part of its magnetic layer, [so] that there is simply no need regardless of the thickness to use a tape in addition to what Suzuki describes.” *See* Tr. 25:9–18.

Acknowledging that Suzuki discloses an adhesive does not undermine Petitioner’s rationale. Rather, as indicated above, it supports Petitioner because Lee also discloses adhesive. Petitioner asserts that “one of ordinary skill in the art when considering the teachings of Suzuki would have also considered the teachings of Lee” (Pet. 23) because both references and the inventors employ an adhesive for the same purpose, adhering a coil to a magnetic layer in wireless chargers. *See* Pet. 26 (quoting *Tokai Corp. v.*

Easton Enters. Inc., 632 F.3d 1358, 1371 (Fed. Cir. 2011) (“[T]he nature of the mechanical arts is such that ‘identified, predictable solutions’ to known problems may be within the technical grasp of a skilled artisan.” (quoting *KSR*, 550 U.S. at 421)), 20–27 (advancing reasons for the modification)).

Accordingly, even without the stated benefits related to varying adhesive tape thickness, which the record supports and Patent Owner does not challenge, Petitioner’s rationale is also persuasive because “[t]he motivation to combine references can be inferred from the fact that they address the same problem.” *In re Kurzweil*, 4 F. App’x 823, 826 (Fed. Cir. 2001); accord *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1380 (Fed. Cir. 2007) (“One skilled in the art would naturally look to prior art addressing the same problem as the invention at hand, and in this case would find an appropriate solution.”) (emphasis added); *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996) (“[The motivation to combine references] may also come from the nature of the problem to be solved, leading inventors to look to the references relating to possible solutions to that problem.”); *Uber Techs., Inc. v. XOne, Inc.*, 957 F.3d 1334, 1341 (Fed. Cir. 2020) (reversing Board’s finding that motivation was lacking where the two prior art references taught “two known, finite, predictable solutions for solving the same problem which, consistent with precedent, renders obvious the challenged limitation”); *Intel Corp. v. PACTXPP Schweiz AG*, 2023 WL 2198649 at *4 (Fed. Cir. Feb. 24, 2023) (citing and/or quoting *Kurzweil*, *ICON Health & Fitness*, *Pro-Mold & Tool Co.*, and *Uber Techs., Inc.* for the same propositions) (“*Intel Corp. I*”).

With respect to alleged “significant drawbacks to using double-sided tape as an adhesive in Suzuki’s design” based on increased thickness (PO Resp. 16), Patent Owner stated at the Oral Hearing that using double-sided

tape amounts to about a 4–5 % increase in thickness of the device relative to the thickness of the magnetic layers. *See* Tr. 35:9–19. Even if a 4–5 % increase in thickness is somehow a significant increase in thickness, Patent Owner’s estimation at the Oral Hearing does not account for the thickness of all the layers in Suzuki’s device and corresponding prior art devices on the market described by Suzuki. *See id.*⁹ The increase in double-sided tape thickness relative to the total thickness of devices on the market within the scope of the claimed device is a factor in considering Patent Owner’s allegation that an increased thickness due to use of Lee’s tape teaches away from Suzuki’s “recognition of a general desire in the art to ‘miniaturize[]’ and ‘thin[]’ power-receiving devices.” *See* PO Resp. 16 (quoting Ex. 1005, 1:38–41; citing Ex. 2016 ¶ 44). And the increase in tape thickness by itself

⁹ The record does not support Patent Owner’s arguments as to a 4–5 percent increase in thickness even if one only accounts for the two magnetic layers and double-sided adhesive tape as claimed and disclosed in the prior art, i.e. ignoring the thickness (unclaimed) of the insulating layer in challenged claim 1 or other layers in Suzuki’s device relied upon in the Petition. During the Oral Hearing, the Board noted that the thickness of Suzuki’s two magnetic layers (171H, 171L) totals 0.3 millimeters, and asked Patent Owner “how is that compared to thickness of any adhesive tape? Is there any evidence about that?” Tr. 35:9–14; *see also* Ex. 1005, 11:45–50 (disclosing thicknesses of 171H, 171L, as 0.2 mm, 0.1 mm, respectively). Patent Owner answered that Lee “describes a preferred thickness of its double-sided tape as .01 millimeters.” Tr. 35:16–17. The Board then asked Patent Owner “[s]o that’s not going to add much [thickness] at all; right?,” and Patent Owner answered that this “could add 4 to 5 percent in thickness.” *Id.* at 35:18–19. However, with the thicknesses described during this exchange, the increase in thickness is 1/30, i.e., a 3.3 percent increase in thickness—if one only accounts for the two magnetic layers and the adhesive layer and does not account for the thickness of Suzuki’s shield layer 172, heat insulating layer 173, and layer 162. *See* Ex. 1005, Fig. 3; Pet. 32–33, 36 (annotating Fig. 3 to show Suzuki’s layers as modified according to Petitioner’s showing (citing Ex. 1005, 6:29–46)).

(i.e., regardless of the total device thickness) is a factor in considering Patent Owner’s allegation that the increased thickness (due to the double-sided tape) increases the distance between the magnetic layer and coil, which results in decreased flux coupling. *See id.* at 16 (citing Ex. 2016 ¶¶ 44–45).

Importantly, however, Patent Owner does not quantify how an increase of 4–5 % (or more accurately, 3 %, *see supra* note 9) in the tape thickness relative to Suzuki’s magnetic layers amounts to a teaching away of using Lee’s double-sided tape based on a measurable level of decreased flux coupling—i.e., due to an increased distance between the secondary coil and magnetic layer in Suzuki’s modified device. *See* PO Resp. 16 (arguing that “magnetic flux concentration resulting from magnetic layer 171 would be detrimentally reduced” without quantifying any reduction (citing Ex. 2016 ¶ 45)).

Dr. Ricketts’ cited testimony on this point is conclusory as it also fails to quantify the reduction in flux coupling versus an increase in distance between Suzuki’s magnetic layer and coil layer due to the double-sided tape thickness (which separates the two layers). *See* Ex. 2016 ¶ 45; Pet. 39 (annotating Suzuki’s Fig. 3 showing structure, reproduced above). As indicated above (note 9), Patent Owner does not provide any evidence that quantifies even the thickness of the double-sided tape in its briefing.¹⁰

Absent this type of quantifiable evidence or other objective evidence indicating how the costs of reduced flux coupling outweigh the benefits of increasing adhesion by increasing thickness or generally controlling for thickness to suit the application (e.g., size of the device), Patent Owner’s

¹⁰ Patent Owner only quantified the thickness increase in percentage during the Oral Hearing after questioning by the Board.

teaching away arguments, supported only by the conclusory testimony of Dr. Ricketts, fail to undermine Petitioner’s rationale. *See Intel Corp. I* at *4 (reversing the Board and finding patent owner’s expert’s testimony did not support the Board’s finding of a lack of motivation where the “expert does not opine *how much the modification would increase latency* or whether the latency introduced by the additional arbitration logic would be offset by the ability for the cache cores to operate as a single large cache” or “[i]n other words, . . . *merely opines that there is an unspecified processing speed ‘cost’* associated with implementing Arimilli’s L3 caches in King’s bus system but *does not opine on whether the benefits of the implementation outweigh the cost*” (emphasis added)).¹¹

Patent Owner also fails to explain why an increase in 3–5 % in thickness (which overstates the overall increase in thickness if one accounts for other layers in the claimed (open-ended) secondary device such as the insulative layer) amounts to teaching away from Suzuki’s description of a desire in the prior art to miniaturize devices on the market. *See* PO Resp. 16 (quoting Ex. 1005, 1:38–41; citing Ex. 2016 ¶ 44); Ex. 1005, 1:38–57. Immediately above the cited passage of Suzuki expressing this desire, Suzuki lists a wide variety of secondary devices, which imply different sizes and thicknesses to one of ordinary skill in the art, including “a cordless

¹¹ It is indisputable that the ultimate burden of establishing unpatentability lies with Petitioner. However, requiring Patent Owner to support its teaching away arguments with quantifiable evidence is not a shift of that burden. *See Idemitsu Kosan Co., Ltd., v. SFC Co., Ltd.*, 870 F.3d 1376, 1381 (Fed. Cir. 2017) (“[Petitioner], of course, bears the ultimate burden of establishing unpatentability, but it is not required as a matter of law to rebut mere *attorney argument* with *expert testimony* in order to satisfy that burden.”). Moreover, Petitioner establishes with supporting evidence that there is no teaching away, as discussed herein.

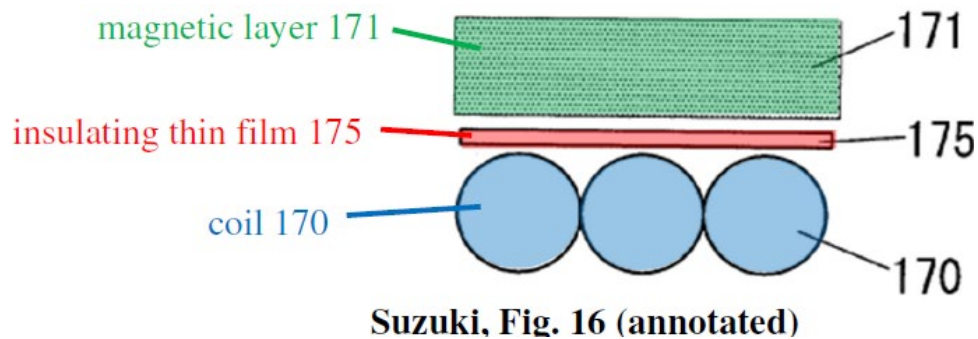
phone, a shaver, an electric toothbrush, a personal digital assistance or the like (hereinafter referred to as a ‘secondary device’).” Ex. 1005, 1:17–26. And as indicted above with respect to limitation 1.2, Suzuki teaches increasing the thickness by implementing multiple magnetic layers, which reduces noise. *See* Pet. 35 (citing Ex. 1005, 10:63–65). This indicates that increasing thickness is not a paramount concern in Suzuki or involves a trade-off for which the benefits outweigh the costs, at least with respect to the scope of the challenged claims and Suzuki’s disclosure of a wide variety of devices.

In other words, because none of the challenged claims recite any thickness or size limitation, Patent Owner’s “teaching away argument is of questionable relevance” because any argument (or evidence) based on layer thickness does not “relate to and is” not “commensurate in scope with the ultimate claims at issue.” *See Idemitsu Kosan*, 870 F.3d at 1381 (“Idemitsu’s teaching away argument is of questionable relevance anyway. Evidence concerning whether the prior art teaches away from a given invention must relate to and be commensurate in scope with the ultimate claims at issue.”).

Moreover, as Petitioner argues in its Reply, one of Suzuki’s embodiments (Figure 16) employs an insulative layer with an adhesive between the coil and the magnetic layer, essentially increasing the thickness of that embodiment relative to other embodiments, and suggesting, as Lee and other prior art references show, that artisans of ordinary skill knew that secondary coils adhered to magnetic layers by double-sided adhesive tapes provide sufficient magnetic coupling for the intended purpose of charging. *See* Reply 8–10, 10 (“[B]ecause [a person of ordinary skill in the art] had successfully made the combination proposed in the Petition many times

over, [such a person] evaluating Suzuki had the background knowledge necessary to overcome potential problems related to reduced magnetic flux.” (citing Ex. 1003 ¶ 46)).

To illustrate its point that Suzuki does not teach away from using Lee’s double-sided adhesive tape, Petitioner annotates Suzuki’s Figure 16 as follows (Reply 7):



As annotated above by Petitioner, Suzuki’s Figure 16 embodiment includes coil 170 (blue), insulating thin film 175 (pink), and magnetic layer 171 (green). Reply 7 (citing Ex.1005, 10:22–26). Petitioner shows that Suzuki discloses that an (undepicted) “adhesive” laminates magnetic layer 171 to insulating thin film 175 and coil 170. *Id.* (citing Ex. 1005, 10:31–34 (“[T]he magnetic layer 171 [of Figure 16] may be formed by casting or molding to be laminated on the secondary coil 170 by integral processing (pressing), adhesive (e.g., adhesive resin), or the like.”)). Petitioner further shows that “Suzuki notes that the insulating thin film 175 may be ‘PET film,’ which is the same insulating thin film used in Lee’s doubled-sided tape.” *Id.* (quoting Ex.1005, 10:22–26; citing Ex.1006, 9:29–31 (“[T]he double-sided tape 3 is formed of a base member 32 made of a fluorine resin-based 30 film, for example, a PET (Polyethylene Terephthalate) film”).

Therefore, contrary to Patent Owner's arguments and as Petitioner argues, Suzuki does not teach away from using an adhesive with a PET insulator to adhere a coil to a magnetic layer; rather, Suzuki "*affirmatively teaches*" that option. Reply 9. As Petitioner also argues, Suzuki's PET insulator with adhesive is essentially the same structure as, or at least suggests, Lee's double-sided tape. *See id.* at 7 ("Suzuki discloses using **PET film and adhesive** between the coil 170 and magnetic layer 171. The combination proposed in the Petition uses **PET film and adhesive** between Suzuki's coil 170 and magnetic layer 171 in the form of Lee's double-sided tape.")

Referring further to Suzuki's Figure 16 embodiment, Petitioner persuasively argues that "the fact that Suzuki . . . adds such a layer to its device *illustrates that the benefits outweigh the downsides.*" Reply 9 (emphasis added). Petitioner notes that "Suzuki further explains that positioning an insulating film between the coil and magnetic layer is *beneficial* rather than detrimental." *Id.* In particular, as Petitioner argues, Suzuki explicitly states that one benefit of the Figure 16 embodiment is that Suzuki's "insulating thin film . . . 'prevent[s] the magnetic material from leaking from a spiral gap of the secondary coil 170.'" *Id.* (quoting Ex.1005, 10:26–30). Petitioner also points out that Dr. Ricketts confirmed during his deposition that a person of ordinary skill in the art "would not add additional thickness to a structure such as this ***unless there was a benefit.***" *Id.* (quoting Ex. 1019, 69:5–15); *see also id.* at 10 ("[B]ecause [a person of ordinary skill in the art] had successfully made the combination proposed in the Petition many times over, [such a person] evaluating Suzuki had the background knowledge necessary to overcome potential problems related to reduced magnetic flux." (citing Ex. 1003 ¶ 46)). As also indicated above, Suzuki

teaches adding magnetic layers for some embodiments, which increases thickness but reduces noise.

Based on the summary above, Petitioner persuasively shows, from the teachings of Suzuki, Lee, and the numerous references showing successful use of double-sided tape for the same purpose as the claimed invention, that an artisan of ordinary skill would have understood from these similar teachings that using double sided tape presented an implicit engineering trade-off between costs and benefits that generally weighed in favor of using double-sided tape within the scope of the broadly claimed invention. *See Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016) (“[A] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine.” (internal quotation omitted)); *In re Mouttet*, 686 F.3d 1322, 1330 (Fed. Cir. 2012) (noting that the Board found adequate reasons to combine the cited references because, among other things, the Board found that “the relative advantages and disadvantages in selecting electrical circuitry in lieu of optical circuitry amounts to an engineering tradeoff—a decision well within the level of ordinarily skilled artisans”).

Patent Owner replies that Petitioner’s reliance on Suzuki’s Figure 16 embodiment in its Reply represents “new arguments that should be stricken.” Sur-reply 7. According to Patent Owner, “the Petition does not even cite to Figure 16 of Suzuki.” *Id.* Contrary to these arguments, as Patent Owner itself characterizes the issue and Petitioner’s arguments,

Petitioner *attacks Patent Owner’s demonstration of the detrimental effect of combining the double-sided tape of Lee with the disclosures of Suzuki*: “This argument should be rejected out of hand given that Suzuki affirmatively teaches the use of an insulating film, as discussed above. Fig. 16 of Suzuki illustrates

the introduction of an ‘insulating thin film 175 (e.g., a PET film)’ between the secondary coil 170 and magnetic material of the magnetic layer 171.”

Sur-reply 8 (quoting Reply 9) (emphasis added). In other words, there is no dispute on this record that the Reply responds directly to Patent Owner’s arguments, including its teaching away argument, that there is a “detrimental effect of combining the double-sided tape of Lee with the disclosures of Suzuki.” Sur-reply 8.¹² That is, Patent Owner “first raised this issue” in its Response and Petitioner “was entitled to” respond to it. *See Idenitsu Kosan*, 870 F.3d at 1381 (“This back-and-forth shows that what Idemitsu characterizes as an argument raised ‘too late’ is simply the by-product of one party necessarily getting the last word. If anything, Idemitsu is the party that first raised this issue, by arguing—at least implicitly—that Arakane teaches away from non-energy-gap combinations. SFC simply countered, as it was entitled to do. To the extent Idemitsu suggests that the Board could not reach a counterargument because it was not preemptively addressed by the petition or institution decision, Idemitsu is plainly mistaken.”) (citing *Genzyme Therapeutic Prod. Ltd. P’ship v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1366 (Fed. Cir. 2016) (“There is no requirement, either in the Board’s regulations, in the APA, or as a matter of due process, for the institution decision to anticipate and set forth every legal or factual issue that might arise in the course of the trial.”)).

¹² Although the Reply quotes Suzuki’s stated benefit of reducing magnetic material leakage via use of the insulator and it is a proper reply argument as indicated above, we do not reach the issue of whether it is proper to credit this particular benefit as another reason to combine Suzuki and Lee in order to support Petitioner’s ultimate burden. As determined herein, the Petition persuasively provides other reasons to combine teachings in the two references without relying on this additional reason.

In addition to the above-noted reasons to combine the references' teachings, the Petition relies on Suzuki's specific disclosure of using "*pressure sensitive adhesives*" and provides evidence that "it was known that *pressure sensitive, double-sided tape* may be configured to have a desired thickness depending on the particular application." Pet. 25 (emphasis added) (citing Ex.1003 ¶ 46; Ex.1009 ¶¶ 140–143). And as noted above, Patent Owner contends that "Suzuki does not specifically teach the type of material used for its adhesive," yet acknowledges that "a POSITA looking to Lee to fill in the gaps in Suzuki's disclosure would potentially implement Suzuki's adhesive as acrylic adhesive." See PO Resp. 9. This argument supports Petitioner. Nevertheless, Patent Owner contends that "a POSITA would not understand Suzuki's teachings to be consistent with the use of a double-sided tape, because POSITAs do not typically refer to 'mix[ing]' tape with magnetic filler or magnetic powder." *Id.* at 8–9 (citing Ex. 2016 ¶ 40).

Contrary to this latter argument, however, Petitioner provides evidence showing that artisans of ordinary skill knew that forming tape could include mixing magnetic and other powders for some applications. See Reply 5 (citing Ex. 1030 ¶ 12 (describing a "***magnetic adhesive tape*** . . . made from a ***mixture of a magnetizable material*** 10" such as "***ferric oxide powder***"); Ex.1031, 3576 (describing the use of "***double-sided magnetic adhesive tape***")). Petitioner also relies on admissions by Dr. Ricketts during his deposition testimony showing that mixing adhesive and magnetic powders to form tape was known. *Id.* (quoting Dr. Rickett's testimony that "I am familiar with adhesive that is mixed with magnetic powders so that the tape itself has magnetic properties from the magnetic material that's embedded in the adhesive" (quoting Ex. 1019, 67:13–17)).

As Petitioner argues, “Suzuki broadly teaches adhering its secondary coil to its magnetic layer with ‘adhesive or pressure sensitive adhesive’ . . . , and Lee illustrates that it was well known that insulated double-sided tape is a common adhesive for that specific application.” Reply 2 (quoting Ex. 1005, 8:7–10; citing Ex. 1006, 16:33–36). Petitioner points to evidence that shows that “adhesive tape is the ‘*quintessential*’ pressure sensitive adhesive.” *Id.* at 3–4 (quoting Ex. 1020, 438 (“[T]he quintessential PSA application is adhesive tape.”)). Petitioner points to other evidence that “[t]he *major application area for all pressure-sensitive adhesives is in tapes.*” *Id.* at 4 (quoting Ex. 1027, 832). Petitioner provides additional evidence that “PSA compositions have been used as tapes, in particular as double-sided tapes used to adhere two articles together.” *Id.* (quoting Ex. 1032, 1:25–26).

In other words, as Petitioner argues, “to a [person of ordinary skill in the art], a disclosure of pressure sensitive adhesive *is* a disclosure of adhesive tape.” Reply 4. In essence, Petitioner shows that an artisan of ordinary skill would have recognized that the genus of pressure sensitive adhesives (PSAs) at least suggests, if not includes, the quintessential PSA species, double-sided pressure sensitive adhesive tape. *See VirnetX Inc. v. Apple Inc.*, 665 F. App’x 880, 884–85, 888 (Fed. Cir. 2016) (nonprecedential) (holding that “[s]ubstantial evidence supports the PTAB’s finding that Wesinger’s disclosure of the genus ‘computer’ encompasses the ‘notebook computer’ species”). As Petitioner persuasively argues, “[w]hen Suzuki explains that a ‘pressure sensitive adhesive’ may adhere the coil to the magnetic layer, it is, *at worst*, rendering obvious the use of an adhesive tape, and, at best, explicitly teaching the use of an adhesive tape.” Reply 4.

Summarizing its reply to Patent Owner’s teaching away arguments, Petitioner argues that Patent Owner “overlooks (i) that the most common ‘pressure sensitive adhesive’ is tape, and (ii) that Suzuki teaches using the same insulating layer as Lee’s tape (i.e., PET film) between its secondary coil and its magnetic layer to achieve specific benefits.” Reply 2. As Petitioner demonstrates, as noted above, an adhesive tape is not too thick for Suzuki’s applications, because Suzuki employs an insulating layer with adhesive between its coil and magnetic layer. *See id.* at 1–2.

The Petition also persuasively shows that “implementing Suzuki’s adhesive layer as a pressure-sensitive, double-sided tape and configuring it as needed to align with Suzuki’s manufacturing goals would have been well within the skill of a person of ordinary skill in the art in 2014.” Pet. 26 (citing Ex.1003 ¶ 46; *Tokai Corp. v. Easton Enters. Inc.*, 632 F.3d 1358, 1371 (Fed. Cir. 2011) (reasoning that “the nature of the mechanical arts is such that ‘identified, predictable solutions’ to known problems may be within the technical grasp of a skilled artisan”) (quoting *KSR*, 550 U.S. at 421)).

Contrary to Patent Owner’s arguments that Petitioner must show a benefit in using Lee’s double-sided tape in Suzuki’s similar device to show obviousness (PO Resp. 10–15), there is no such requirement “in a categorical sense” including under the circumstances here. *See Intel Corporation v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1381 (Fed. Cir. March 13, 2023) (“*Intel Corp. II*”). In *Intel Corp. II*, the court reversed the Board because “contrary to the Board’s suggestion, Intel never had to show that replacing Kabemoto’s secondary cache with Bauman’s secondary cache was an ‘improvement’ in a categorical sense.” *Id.* Rather, “Intel just had to show that Bauman’s secondary cache was a ‘suitable option’ to replace

Kabemoto’s secondary cache.” *Id.* (quoting *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 800 (Fed. Cir. 2021)).

As discussed above, Petitioner demonstrates that Lee’s double-sided tape is at least a “suitable [adhesive] option” for Suzuki’s adhesive (if not a beneficial option). *See Intel Corp. II* at 1381. As Petitioner also persuasively demonstrates, a person of ordinary skill would have “found it [utilizing Lee’s double-sided tape in Suzuki’s wireless power receiver] straightforward and predictable given that the combination utilizes Lee’s multilayer adhesive precisely as it was intended—for attaching a power-receiving coil to a magnetic layer.” Pet. 24–25 (citing Ex. 1003 ¶ 45). Petitioner also demonstrates persuasively that a person of ordinary skill in the art “would have had a reasonable expectation of success because the combination does not change the intended functionality of either Suzuki’s power receiver or Lee’s adhesive.” *Id.* at 25 (citing Ex. 1003 ¶ 45).

In its Sur-reply, Patent Owner contends that in all of Suzuki’s embodiments, “Suzuki’s magnetic layer 171 is formed of adhesive and magnetic material, with the secondary coil 170 laminated directly to the magnetic layer.” Sur-reply 6. Therefore, according to Patent Owner, a person of ordinary skill “would . . . not be motivated to . . . replace the adhesive components of Suzuki’s magnetic layer 171 with the double-sided tape of Lee,” because “magnetic layer 171 already has adhesive properties.” *Id.* Even if the premise is correct (i.e., that Suzuki does not disclose a separate adhesive layer), the argument fails for all of the reasons outlined above.

Additionally, the premise is not correct. In relevant part, Patent Owner relies on the following passage in Suzuki to support its contention that Suzuki does not disclose a separate adhesive layer:

Subsequently, the other side (a lower surface) of the shield layer 172 is stuck to one side (an upper surface) of the magnetic layer 171 (e.g., the nickel ferrite sheet) formed into one shape of FIGS. 6A-6E with adhesive or pressure sensitive adhesive. The secondary coil 170 is then stuck on the other side (a lower surface) of the magnetic layer 171 with adhesive or pressure sensitive adhesive which is mixed with magnetic filler or magnetic powder, so that the secondary coil block 17 is obtained. *However, not limited to this, the magnetic layer 171 may be formed of the above-mentioned magnetic material, and adhesive or pressure sensitive adhesive, which is mixed with magnetic filler or magnetic powder.*

Sur-reply 3 (quoting Ex. 1005, 8:4–8:16) (the “relied-upon passage”). The parties agree that Petitioner relies on the underlined sentence above, which shows that “secondary coil 170 is . . . stuck on . . . magnetic layer 171,” thereby indicating a separate adhesive layer in Suzuki. *See* Sur-reply 4 (“In its Reply, Petitioner relies on the underlined sentence.”); Reply 3 (asserting the Petition relies on “a *separate* adhesive layer is placed between the secondary coil 170 and the magnetic layer 171” (citing Pet. 23, 37; Ex. 1005, 8:8–10)); Pet. 37 (asserting that “Suzuki teaches that an adhesive is used to connect the coil 170 to the magnetic layer 171” based on Suzuki’s disclosure that “[t]he **secondary coil 170 is then stuck on the other side (a lower surface) of the magnetic layer 171 with adhesive or pressure sensitive adhesive.**” (quoting Ex.1005, 8:8–10)).

The citations above show that the Petition clearly relies on the “stuck on” embodiment and alleges a separate adhesive layer in Suzuki, as outlined above. Pet. 23, 37; Reply 4. Therefore, Patent Owner’s Sur-reply argument that Suzuki does not disclose a separate adhesive layer is untimely and improper. Even if we consider the untimely and improper argument, the Response contradicts the Sur-reply, because the Response states that “*in*

instances where magnetic layer 171 may not itself include adhesive, Suzuki teaches that layer 171 is stuck to coil 170 ‘with adhesive or pressure sensitive adhesive ***which is mixed with magnetic filler or magnetic powder.***’” PO Resp. 8 (first emphasis added) (quoting Ex. 1005, 8:8–12); *accord id.* at 22 (“And in *Suzuki’s* embodiment where magnetic layer 171 is not itself adhesive, magnetostriction would cause the magnetic layer to change size, which could negatively impact the operation of Suzuki’s system.” (emphasis added)). In other words, the Response recognizes that Suzuki discloses a separate adhesive layer for this “stuck on” embodiment.

Even if we consider Patent Owner’s untimely Sur-reply argument further, the relied-upon passage does not support Patent Owner. Patent Owner argues that the first sentence in that passage, which Patent Owner quotes as “**the magnetic layer 171 (e.g., the nickel ferrite sheet) formed into one shape of FIGS. 6A-6E with adhesive or pressure sensitive adhesive,**” “introduces the concept that the combination of magnetic material and adhesive are used to form the magnetic layer 171.” Sur-reply 4 (quoting Ex. 1005, 8:6–8). This argument is misleading as it ignores the context of the full sentence and surrounding language in the relied-upon passage of Suzuki. Contrary to Patent Owner’s argument, the first sentence in the relied-upon passage indicates that “shield layer 172 *is stuck* to one side (an upper surface) of the magnetic layer 171 (e.g., the nickel ferrite sheet) . . . *with adhesive or pressure sensitive adhesive.*” Ex. 1005, 8:5–8 (emphasis added).

And the last sentence (italicized) in the relied-upon passage, which Patent Owner argues also supports its interpretation (Sur-reply 4), implicitly but clearly supports disclosure of a separate adhesive layer in the previous sentence: “However, *not limited to this* [separate adhesive layer as

described in the previous (underlined) sentence], the magnetic layer 171 may be formed of the above-mentioned magnetic material, and adhesive or pressure sensitive adhesive, which is mixed with magnetic filler or magnetic powder.” Ex. 1005, 8:12–16 (emphasis added). Patent Owner’s remaining arguments largely rely and build on its erroneous reading of Suzuki’s passage as quoted above and do not support Patent Owner’s narrow interpretation of Suzuki’s disclosure. *See* Sur-reply 5–6.

Moreover, Patent Owner’s equivocation as to what Suzuki describes as the adhesive structure, evidenced by its differing positions in the Response and Sur-reply, undermines its argument that Suzuki’s description of an adhesive structure precludes an artisan of ordinary skill from investigating Lee’s alternative adhesive structure. In the face of ambiguity, it is natural to consider other teachings.

Patent Owner’s argument that double-sided tape prevents electrical shorts in bare coil wires and provides a benefit recognized in the ’962 patent that is not applicable to Suzuki does not undermine the other reasons relied upon in the Petition for employing Lee’s double-sided tape. *See* PO Resp. 11; *In re Beattie*, 974 F.2d 1309, 1312 (Fed.Cir.1992) (“As long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor.”). In addition, the challenged claims do not require bare coil wires. Accordingly, the stated benefit is of limited relevance because it is not commensurate in scope with the claimed invention.

Citing *Adams*, 383 U.S. at 86, *KSR* announced that “[t]he Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known

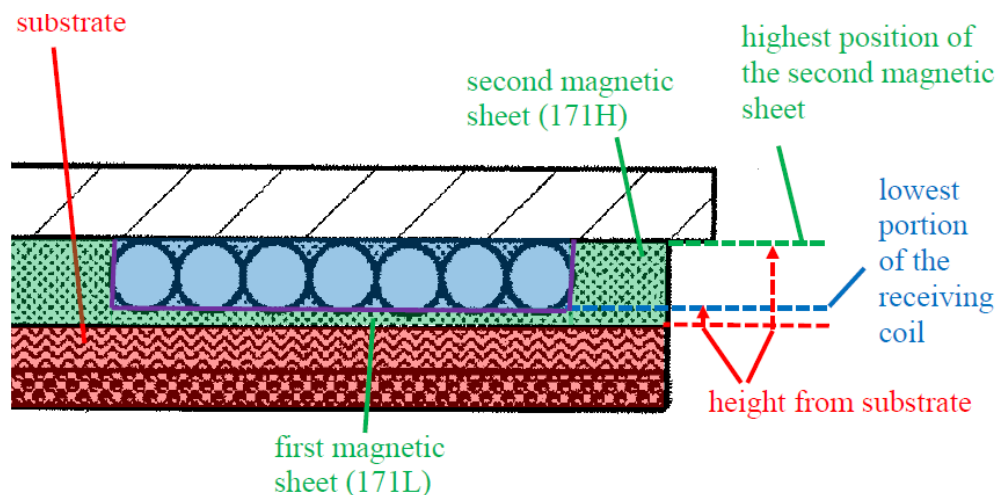
in the field, the combination must do more than yield a predictable result.” *KSR*, 550 U.S. at 416. On this record and as summarized above, Petitioner shows that substituting Lee’s double-sided adhesive tape for Suzuki’s adhesive is “the mere substitution of one element for another known in the field” yielding the predictable result of adhering a secondary coil to a magnetic layer with benefits including the ability to control the thickness of the device, adhesion, and damping.

Based on the foregoing discussion, Petitioner’s showing for limitation 1.5 is persuasive as supported by the record.

iii. Limitation 1.6

Finally, limitation 1.6 recites “wherein a height of a highest position of the second magnetic sheet from the substrate is higher than a height of a lowest position of the receiving coil from the substrate.”

Petitioner modifies and annotates Suzuki’s Figure 3 as follows (Pet. 40):



Petitioner’s modified and annotated version of Suzuki’s Figure 3 above illustrates Suzuki’s coil (blue) embedded in second magnetic sheet 171H (green), with the lowest portion of the coil relative to the substrate (red) illustrated as lower than the highest position of the second magnetic

sheet relative to the substrate. *See* Pet. 40–41 (citing Ex. 1003 ¶¶ 80–81). In essence, limitation 1.6 requires the coil to be at least partially embedded in the second magnetic sheet.

Petitioner’s showing as to limitation 1.6 is persuasive as supported by the record. Patent Owner does not challenge Petitioner’s showing as to limitation 1.6. *See generally* PO Resp.

iv. Summary for Claim 1

Based on the foregoing discussion, the record supports Petitioner’s persuasive showing as to claim 1. Petitioner shows by a preponderance of evidence that claim 1 would have been obvious over the combined teachings of Suzuki and Lee.

b) Claims 18 and 19

Independent claims 1 and 18 are materially similar with the only difference appearing in the respective preambles. To the extent the preamble of claim 18 is limiting, Petitioner relies on Suzuki to teach it. *See* Pet. 41–42 (annotating Ex. 1005, Fig. 2). Petitioner relies on its showing with respect to claim 1 for the remaining limitations of claim 18. *See id.* at 43–44.

Claim 19 depends from claim 18 and recites “[t]he wireless power receiving apparatus of claim 18, further comprising a NFC [near field communications] coil disposed to surround a side portion of the receiving coil.” Petitioner explains that “NFC is a protocol designed for data transmission.” Pet. 27 (citing Ex. 1003 ¶ 48; Ex. 1010, 2:11–15). Petitioner relies partly on Suzuki’s “coil for data transmission 154,” which is “used to send and receive a signal (information) representing charging start, charging completion or the like.” *Id.* (quoting Ex. 1005, 12:51–64).

Petitioner also contends that “Lee describes ‘a dual antenna structure in which an antenna for near field communications (NFC) and an antenna for a wireless charger are integrally formed by using a flexible printed circuit board (FPCB).’” Pet. 27 (quoting Ex. 1006, 17:32–35). Petitioner persuasively argues that it would have been obvious to implement Lee’s data transmission data coil as a well-known NFC protocol coil, because, for example “NFC technology provides an advantage of fast communication setup between communication devices.” *Id.* at 28 (quoting Ex. 1007, 1:33–36). Petitioner persuasively provides other reasons and evidence to support the combination, including that NFC technology would “allow Suzuki’s contactless power transmission apparatus to be easily used by consumers in a variety of commercial applications.” *Id.* at 29 (citing Ex. 1003 ¶ 50), 28 (arguing that “familiar applications of NFC protocol technology [were] electronic pass keys used in building security systems, mass transit fare card systems, and Smart credit cards which need only to be brought close to a point of sale reader to complete a transaction” (quoting Ex. 1011, 4:7–11)).

Patent Owner argues claims 1, 18, and 19 together. *See* PO Resp. 1–19. The arguments do not undermine Petitioner’s showing for the reasons noted in the previous section addressing claim 1. Based on the record, and as summarized above, Petitioner demonstrates by a preponderance of evidence that claims 18 and 19 would have been obvious over Suzuki and Lee.

E. Ground 2: Asserted Obviousness Based on Suzuki, Lee, and Sawa

Petitioner contends that Suzuki, Lee, and Sawa would have rendered dependent claims 2–4 and 7 obvious. Pet. 46–54. In support, Petitioner relies on the testimony of Dr. Phinney. *Id.* Patent Owner disagrees. PO

Resp. 19–29. As discussed below, these challenged claims require the soft magnetic layer of claim 1 to include an Fe-Si based alloy.

1. Sawa

Similar to Suzuki and Lee, Sawa relates to a non-contact power receiving device with a “a magnetic sheet 1 provided between the spiral coil (power receiving coil) 16 and the secondary battery 18.” Ex. 1008, 1:19–20, 15:15–54.

Similar to Suzuki, Sawa provides an exemplary list of alloys for forming a magnetic layer in a contactless power apparatus, with both references describing Fe alloys, including an Fe-Ni alloy as a magnetic material, “or the like.” Ex. 1005, 6:66–7:12; Ex. 1008, 8:59–9:11. Sawa’s list also specifically includes Fe-Si:

The composing material of the first magnetic thin plate 2 is not limited in particular as long as the composing material satisfies the above described characteristic, but it is preferable to apply an alloy based on Fe or Ni. Note that “based” means being contained most as a constituent element in view of a mass ratio. As the composing material of the first magnetic thin plates 2, there can be cited an *Fe alloy of an Fe—Cr system, an Fe—Ni system, an Fe—Si system, or the like*. As concrete examples of the Fe alloy, there can be cited a stainless steel, a silicon steel, a permalloy, an Invar, a Kovar, and so on.

Ex. 1008, 8:59–9:2 (emphasis added).

2. Claims 2–4 and 7

Claim 2 recites “[t]he wireless power receiving antenna of claim 1, wherein the soft magnetic layer includes an Fe-Si based alloy.”¹³ Petitioner

¹³ The parties’ briefs include various styles of “dashes” for Fe-Si and other alloys, including for example, Fe—Si and Fe—Si. This Final Written Decision employs the former style.

relies on the combined teachings of Suzuki and Sawa to reach the recited Fe-Si based alloy limitation.

Petitioner explains that Suzuki provides examples to form its soft magnetic layer, including an Fe alloy, such as “Fe-Ni alloy (Permalloy).” *See* Pet. 49–50 (quoting Ex. 1005, 6:66–7:12; citing Ex. 1003 ¶¶ 105–106). Petitioner relies on the following passage in Suzuki:

The magnetic layer 171 can be made of a nickel ferrite sheet (magnetic material) However, **not limited to this**, the magnetic material of the magnetic layer 171 may be a sheet made from manganese ferrite, amorphous magnetic alloy, Fe-Ni alloy (Permalloy), nanocrystalline magnetic material **or the like**. Or the magnetic material may be magnetic coating, or a magnetic mixture of resin and magnetic filler or magnetic powder, each of which contains nickel ferrite, manganese ferrite, amorphous magnetic alloy, Fe-Ni alloy, nanocrystalline magnetic material **or the like**.

Pet. 47–48 (quoting Ex. 1005, 6:66–7:12).

To address the recited Fe–Si alloy in claim 2 to replace or supplement Suzuki’s Fe-Ni alloy in its magnetic sheet, Petitioner turns to Sawa’s “examples of materials that may be used for a magnetic sheet of a wireless charging device: ‘The composing material of the first magnetic thin plate 2 . . . **can be cited an Fe alloy of an Fe-Cr system, an Fe-Ni system, an Fe-Si system, or the like.**’” Pet. 50 (quoting Ex. 1008, 8:64–66).

In other words, Petitioner relies on Suzuki’s express disclosure that its soft magnetic layer 171 includes “Fe-Ni alloy . . . or the like,” and turns to Sawa’s express disclosure, which establishes that “the like” here includes an “an Fe-Si system” with respect to “an Fe-Ni system.” *Compare* Ex. 1005, 7:4–8, *with* Ex. 1008, 8:64–66; *see* Pet. 47–48, 60.

Petitioner explains further that Suzuki and Sawa “are analogous prior art pertaining to the same field of endeavor, namely, contactless charging via

electromechanical induction” and “both Suzuki and Sawa describe a power-receiving coil adjacent a magnetic layer.” Pet. 47 (citing Ex. 1005, code (57), 4:46–55, 6:33–35; Ex. 1008, 1:19–20, 1:57–60, 15:51–54; Ex. 1003 ¶ 100). Petitioner also explains that an Fe-Si alloy would have been obvious to use in a magnetic sheet in Suzuki’s wireless charging system, where Sawa teaches that the “Fe alloy of the Fe-Cr system, the Fe Ni system, and the **Fe-Si system is easy to be adjusted in plate thickness by rolling**.” *Id.* at 46 (quoting Ex. 1008, 9:4–9).

Patent Owner generally responds that “a [person of ordinary skill in the art] seeking to improve Suzuki and Lee would not look to Sawa for disclosure of magnetic materials, because (1) Suzuki already discloses magnetic materials, and (2) Sawa discloses high magnetostriction materials which a [person of ordinary skill in the art] would recognize would provide drawbacks and no benefits to Suzuki’s system.” PO Resp. 20 (citing Ex. 2016 ¶¶ 48–51).

However, the fact that “Suzuki already discloses magnetic materials” supports Petitioner’s obviousness showing. As summarized above, Petitioner relies on evidence in Suzuki and Sawa that shows that Suzuki envisions using an Fe-Ni alloy “or the like” and Fe-Si falls in that category. As Petitioner explains,

Suzuki teaches that Fe-Ni alloy or an alloy “like” Fe-Ni may be used—*thus motivating [a person of ordinary skill in the art] to seek out materials “like” Fe-Ni*. *Id.* This explicit teaching is the “reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *KSR*, 550 U.S. at 418.

Reply 20 (“The phrase ‘or the like’ would have informed [persons of ordinary skill in the art] that materials ‘like’ those listed are also contemplated.” (citing Ex. 1003 ¶ 101)).

Nevertheless, Patent Owner argues that “the Petition does not allege any advantage to its proposed modification of Suzuki’s magnetic layer 171 that would not *already* exist in Suzuki.” PO Resp. 25. As set forth above, however, Petitioner demonstrates that Fe-Si is a “suitable option” for “Fe-Ni.” *See Intel Corp. II* at 1380 (quoting *Intel Corp.*, 21 F.4th at 800). Under these circumstances, Petitioner need not show an “‘improvement’ in a categorical sense.” *See id.* at 1381. Moreover, a suitable option under these circumstances implies a benefit, namely, if Fe-Ni is not available based on “market forces” or otherwise, the availability of Fe-Si as a suitable option is an implicit benefit. *See KSR*, 550 U.S. at 417. As *KSR* instructs, “[w]hen a work is available in one field of endeavor, design incentives and other *market forces can prompt variations of it, either in the same field or a different one.*” *Id.* (emphasis added). Petitioner persuasively shows that the combined teachings of Sawa and Suzuki as summarized above show that an Fe-Si alloy is a predictable variation of an Fe-Ni alloy for forming an Fe alloy magnetic sheet, and the references are in the same field of contactless power devices. *See* Ex. 1005, 7:4–8; Ex. 1008, 8:64–9:6; Pet. 48–49. According to *KSR*, “[i]f a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.” *KSR*, 550 U.S. at 417.

Referring to *Adams*, 383 U.S. at 86, *KSR* announced that “[t]he Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.”

KSR, 550 U.S. at 416. Relying on this “mere substitution” rationale, the Federal Circuit affirmed findings of unpatentability in several nonprecedential cases without requiring any described benefit resulting from the substitution. *In re Holness*, 612 F. App’x. 999, 1006 (2015) (“The asserted claim merely substitutes the optical shaft encoder in Voris for the mechanical snap action switch in Burrell. However, the . . . Court has established that ‘[w]hen a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.’” (quoting *KSR*, 550 U.S. at 416)); *Daikin Indus. v. Chemours Co. FC*, 846 F. App’x 907, 911–14, (Fed. Cir. Feb. 24, 2021) (affirming the Board’s finding that “[w]ith respect to substitution, the Board held that a skilled artisan would have considered Collier’s HFO-1234yf, containing up to 0.5 wt. percent CFC-115 and/or HCC-40, a reasonable, interchangeable substitute for the HFO-1234yf in Van Horn’s refrigerant mixture”); *In re Lackey*, 371 F. App’x 80, 82 (Fed. Cir. 2010) (“In this case, the claimed invention may be obtained merely by making Ericson’s valve out of either copper, black steel or cast iron as taught by Kohn. This is simply the substitution of one known material for a generic metal to obtain predictable results.”)

In other words, as Petitioner demonstrates, Sawa “merely describes additional material options” that are “predictable.” Pet. 48–49 (citing Ex. 1003 ¶ 102). Patent Owner contends that Sawa does not present a “predictable substitution” because “Petitioner’s expert . . . could **not** testify to the equivalence of materials.” PO Resp. 28. But Petitioner demonstrates that “[t]he fact that Sawa lists Fe-Si and Fe-Ni as ‘like’ options in the same open-ended list without further explanation illustrates that [persons of

ordinary skill in the art] knew how to interchange and configure these materials in the magnetic layer application used by Sawa and Suzuki.”

Reply 20–21 (citing Ex. 1003 ¶ 102; Ex. 1008, 9:4–9).

Patent Owner also argues that complications arise in using Sawa’s Fe-Si alloy, because it “has a ‘magnetostriction constant exceeding 5 ppm.’” See PO Resp. 21 (citing Ex. 2016 ¶¶ 50–51; Ex. 1008, 5:24–28, 5:64–6:10, 6:32–34). Patent Owner explains that “[m]agnetostriction’ is the property that ‘indicates a range of expansion or contraction of a magnetic substance in a magnetic field direction at a time that the magnetic substance is magnetized by an external magnetic field.’” *Id.* (quoting Ex. 1008, 5:34–38). That is, “a material with magnetostriction changes size in response to an external magnetic field.” *Id.* (citing Ex. 2016 ¶ 51).

Patent Owner contends that an artisan of ordinary skill “would understand that high magnetostriction would not be beneficial in Suzuki’s system, and would further understand that high magnetostriction would create additional complications and difficulties in Suzuki’s system.” PO Resp. 22 (citing Ex. 2016 ¶ 51). Patent Owner contends that “as the magnetic layer increases or decreases in size, it could pull up adhesive, stress other components, or dislocate or disconnect other components.” *Id.* (citing Ex. 2016 ¶ 51).

However, as Petitioner argues, Patent Owner and Dr. Ricketts do not support with quantifiable evidence a relationship between the amount of magnetostriction to the alleged problems of dislocation or disconnections, so that Dr. Rickett’s testimony is “entitled to little weight.” See Reply 16 (citing PO Resp. 22; Ex. 2016 ¶¶ 50–51); *Intel Corp. I* at *4 (reversing the Board and finding patent owner’s expert’s testimony did not support the Board’s finding of a lack of motivation where the “expert does not opine

how much the modification would increase latency” or weigh the costs versus benefits (emphasis added)). Patent Owner’s arguments about “additional complications and difficulties” are essentially teaching away arguments. *See* PO Resp. 22. In addition, Patent Owner’s “teaching away argument is of questionable relevance,” because “[e]vidence concerning whether the prior art teaches away from a given invention must relate to and be commensurate in scope with the ultimate claims at issue.” *Idemitsu Kosan*, 870 F.3d at 1381. The challenged claims are not commensurate in scope with the magnetostriction evidence because they do not require a magnetostriction constant of less than 5 ppm. Accordingly, Patent Owner’s magnetostriction evidence is of little relevance.¹⁴

Petitioner also persuasively argues that Sawa and Suzuki both disclose using an Fe-Ni alloy, Dr. Rickets agrees that Fe-Ni has a “large magnetostriction constant,” so “it is simply not true that a [person of ordinary skill in the art] would have avoided Sawa’s alloys for Suzuki’s magnetic layer due to high magnetostriction.” Reply 17 (citing Ex. 1005, 7:4–8; Ex. 1019, 24:22–25:3). In any event, as discussed further below, Petitioner also demonstrates that an artisan of ordinary skill easily would

¹⁴ Patent Owner’s allegation that “the magnetic layer . . . could pull up adhesive, stress other components, or dislocate or disconnect other components” (PO Resp. 22 (citing Ex. 2016)) is not commensurate in scope with the challenged claims for an additional reason—the challenged claims recite mere “contact” without actually requiring any adhesive bond, let alone a lower threshold of adhesion. *See* claims 1, 18 (reciting “the adhesive layer includes a first adhesive layer *in contact* with the second magnetic sheet, [and] a second adhesive layer *in contact* with the receiving coil.” (emphasis added)). In any event, as discussed below, Petitioner shows that even if the arguments are relevant, an artisan of ordinary skill readily would have controlled for magnetostriction.

have been able to overcome any alleged complications attributable to magnetostriction by minimizing it. *See id.* at 16–18.

Even though, as indicated above, there is no requirement that Petitioner must demonstrate a beneficial result on the facts here, including Petitioner’s showing of a suitable option for obviousness purposes, *see Intel Corp. II* at 1381, Petitioner cites an explicit benefit described by Sawa, namely “the **Fe-Si system is easy to be adjusted in plate thickness by rolling**.” Pet. 46 (quoting Ex. 1008, 9:4–6).¹⁵ Patent Owner contends this is not a benefit relative to Suzuki because “the purported benefit of easy adjustment of plate thickness by rolling is equally applicable to an ‘Fe alloy of’ an ‘Fe-Ni system,’” which Suzuki already employs. PO Resp. 26. Contrary to this argument, there is no requirement that a suitable option is the best option for purposes of obviousness. *See In re Mouttet*, 686 F.3d at 1334 (“This court has further explained that just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes.”).

Intel Corp. II is analogous to the facts here. In that case, the Federal Circuit held that the two prior art references at issue in the obviousness combination, Kabemoto and Bauman, both serve the same purpose by solving the same problem related to cache coherency in a processor system. *See Intel Corp. II* at 1375 (Fed. Cir. March 13, 2023) (finding that Kabemoto “maintain[s] cache coherency . . . by ‘snooping’ along a shared ‘bus’,”

¹⁵ Given that “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton,” *KSR*, 550 U.S. at 421, such a person also would have recognized that an implicit benefit is the existence of options in the face of market forces such as supply issues that may restrict one or more of the options.

Bauman “us[es] a global, segmented secondary cache,” and both “use a shared entity between processors to detect changes between, and ultimately make changes to, local data copies”). Similarly, here, both Sawa and Suzuki serve the same purpose and solve the same problem of providing a suitable secondary coil made from a magnetic iron alloy sheet or layer with easily adjusted thickness.

Even though both references in *Intel Corp. II* served the same purpose by solving the same cache coherency problem, the Federal Circuit rejected the Board’s reasoning, quoting the rejected reasoning as follows: “If . . . Kabemoto already addresses [the] problem [of cache coherency] through the use of a known technique similar to that of Bauman’s, we fail to see why one of ordinary skill in the art would regard Bauman’s technique as an obvious improvement to Kabemoto.” *Id.* (alterations in original) (quoting the Board’s final written decision). This Board reasoning rejected in *Intel Corp. II* is similar to the reasoning that Patent Owner advances here—namely that motivation is lacking because Sawa’s Fe-Si magnetic alloy layer is not an improvement over Suzuki’s Fe-Ni magnetic alloy layer. In rejecting the Board’s similar reasoning in *Intel Corp. II*, the Federal Circuit explained as follows: “That Kabemoto and Bauman address the same problem and that Bauman’s cache was a known way to address that problem *is precisely the reason that there’s a motivation to combine under KSR and our precedent.*” *Intel Corp. II* at 1380 (emphasis added). And as noted above, the court stated that “contrary to the Board’s suggestion, Intel never had to show that replacing Kabemoto’s secondary cache with Bauman’s secondary cache was an ‘improvement’ in a categorical sense.” *Id.* at 1381. Therefore, following the guidance of *Intel Corp. II*, that Suzuki and Sawa “address the same problem” of providing a suitable magnetic layer for a

secondary coil for charging devices and Sawa's Fe-Si alloy "was a known way to address that problem is precisely the reason that there's a motivation to combine under *KSR* and our precedent." *See id.* at 1380.

Even if Patent Owner's arguments and evidence alleging problems with magnetostriction were relevant and commensurate in scope with the challenged claims, Petitioner persuasively argues that Sawa discloses that "its magnetic thin plates may be 'adjusted in composition ratio in correspondence with a required magnetic characteristic such as a magnetic permeability, a *magnetostriction constant*, a magnetic flux density, and an iron loss.'" Reply 18 (quoting Ex.1008, 11:28–32). Petitioner also points out that Dr. Ricketts testified during his deposition that "[a] magnetostriction can be adjusted by adjusting the composition of the elements and also by adjusting the manufacturing process." *Id.* (quoting Ex.1019, 27:4–6). And Petitioner notes that Sawa specifically teaches how to create a "small" magnetostriction constant for an Fe-Si alloy by stating that "in the Fe-Si system with a composition of an Si amount in a neighborhood of 6.5 mass %, a magnetostriction constant becomes small." *Id.* at 18–19 (quoting Ex. 1008, 10:50–54). Therefore, Petitioner shows persuasively that an artisan of ordinary skill readily would have handled any alleged complications and difficulties associated with substituting an Fe-Si layer for an Fe-Ni layer resulting in a small magnetostriction constant.

Based on the foregoing discussion, the record supports Petitioner's persuasive showing as to the unpatentability of claim 2.

Claims 3, 4 and 7 directly or indirectly depend from claim 2. Claim 3 recites "[t]he wireless power receiving antenna of claim 2, further comprising a support means stacked on the receiving coil." Claim 4 recites "[t]he wireless power receiving antenna of claim 3, further comprising an

NFC coil disposed so as to surround a side portion of the receiving coil.”

Claim 7 recites “[t]he wireless power receiving antenna of claim 4, wherein a portion of the receiving coil is embedded in a portion of the second magnetic sheet.”

Petitioner persuasively maps the added limitations of claims 3, 4, and 7 to the prior art with reasons supported by a rationale underpinning to combine the reference teachings with a reasonable expectation of success. Pet. 50–54. Patent Owner does not separately argue claims 3, 4, and 7, grouping these claims with claim 2. PO Resp. 19–30.

Based on the foregoing discussion, Petitioner shows by a preponderance of evidence that claims 2–4 and 7 would have been obvious over the combined teachings of Suzuki, Lee, and Sawa.

F. Ground 3: Asserted Obviousness Based on Suzuki, Lee, Sawa, and Park

Petitioner contends that Suzuki, Lee, Sawa, and Park would have rendered dependent claim 8 obvious. Pet. 54–61. In support, Petitioner relies on the testimony of Dr. Phinney. *Id.* Petitioner persuasively maps the limitations of claim 8 to the prior art with reasons supported by a rationale underpinning to combine the reference teachings with a reasonable expectation of success. *See id.*

Patent Owner does not separately address Petitioner’s showing with respect to claim 8. *See* PO Resp. 29–30 (grouping “Grounds 2–3” together). Based on the foregoing discussion, Petitioner shows by a preponderance of evidence that claim 8 would have been obvious over the combined teachings of Suzuki, Lee, Sawa, and Park.

IV. CONCLUSION

For the reasons discussed above, Petitioner has shown by a preponderance of the evidence that claims 1–4, 7, 8, 18, and 19 of the '962 patent are unpatentable as summarized in the table below.

Claims	A. 35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 18, 19	103	Suzuki, Lee	1, 18, 19	
2–4, 7	103	Suzuki, Lee, Sawa	2–4, 7	
8	103	Suzuki, Lee, Sawa, and Park	8	
Overall Outcome			1–4, 7, 8, 18, 19	

V. ORDER

In consideration of the foregoing, it is hereby

ORDERED that Petitioner establishes by a preponderance of evidence that challenged claims 1–4, 7, 8, 18, and 19 are unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.¹⁶

¹⁶ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. *See* 84 Fed. Reg. 16654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent

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Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).