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Paper 11
Entered: August 12, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
SAMSUNG RESEARCH AMERICA, INC.,
Petitioner,

v.

DYNAMICS INC.,
Patent Owner.

IPR2020-00505
Patent 10,255,545 B2

Before TREVOR M. JEFFERSON, GEORGIANNA W. BRADEN, and JON M. JURGOVAN, *Administrative Patent Judges.*

JURGOVAN, *Administrative Patent Judge.*

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

I. INTRODUCTION

A. Background and Summary

Petitioner, Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Research America, Inc., filed a Petition requesting *inter partes* review of claims 1–16 of U.S. Patent No. 10,255,545 B2 (Ex. 1001, the "'545 Patent"). Paper 1 ("Petition" or "Pet."). The Petition was accorded a filing date of January 31, 2020. Paper 5 (Notice of Filing Date). Patent Owner, Dynamics Inc., filed a Preliminary Response to the Petition on May 15, 2020. Paper 8 ("Prelim. Resp.").

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in a petition and the preliminary response "shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Upon consideration of the Petition and Preliminary Response, and accompanying exhibits and evidence, we determine Petitioner has established a reasonable likelihood that it would prevail with respect to at least one challenged claim in the *inter partes* review. Therefore, we grant institution of an *inter partes* review as to all of the challenged claims of the '545 Patent on all challenges in the Petition.

B. Real Parties in Interest

Petitioner identifies Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Research America, Inc. as the real parties in interest. Pet. 76 (Petitioner's Mandatory Notices).

Patent Owner identifies itself as the real party in interest. Paper 6, 2 (Patent Owner's Mandatory Notices).

C. Related Matters

Patent Owner has asserted the '545 Patent in the following cases:

Case Name	Case Number	Court	Case Filed
In re Certain Mobile Devices with Multifunction Emulators	337-TA-1170	U.S. International Trade Commission (ITC)	7/12/2019
Dynamics Inc. v. Samsung Elecs. Co., Ltd., et al.	1:19-cv-6479	Southern District of New York	7/12/2019
Samsung Elecs. Co., Ltd, et al. v. Dynamics Inc.	IPR2020-00499	PTAB	1/31/2020
Samsung Elecs. Co., Ltd, et al. v. Dynamics Inc.	IPR2020-00502	PTAB	1/31/2020
Samsung Elecs. Co., Ltd, et al. v. Dynamics Inc.	IPR2020-00504	PTAB	1/31/2020

Paper 6, 2–3 (Patent Owner's Mandatory Notices).

D. The '545 Patent

1. Summary of Specification

The '545 Patent is titled "Cards and Devices with Multifunction Magnetic Emulators and Methods for Using the Same." Ex. 1001, code (54). A payment device of the '545 patent generally includes (a) circuitry for communicating with a cellular network; (b) radio frequency identification (RFID) circuitry for electrically coupling and communicating with a payment terminal; (c) a coil for electrically coupling and communicating with the payment terminal; and (d) a processor for controlling operation of the coil. *Id.* at 14:46–59 (claim 1).

The coil may be controlled by the processor to emit fields emulating the swiping of a magnetic stripe card through a reader. *Id.* at 5:45–61. The coil may also receive a signal to encode a static magnetic track. *Id.* at 7:23–31. Thus, the magnetic emulator may both transmit data to a magnetic stripe reader, and receive data from the magnetic stripe reader. *Id.* at 7:28–35.

Figure 4 of the '545 Patent is shown below.

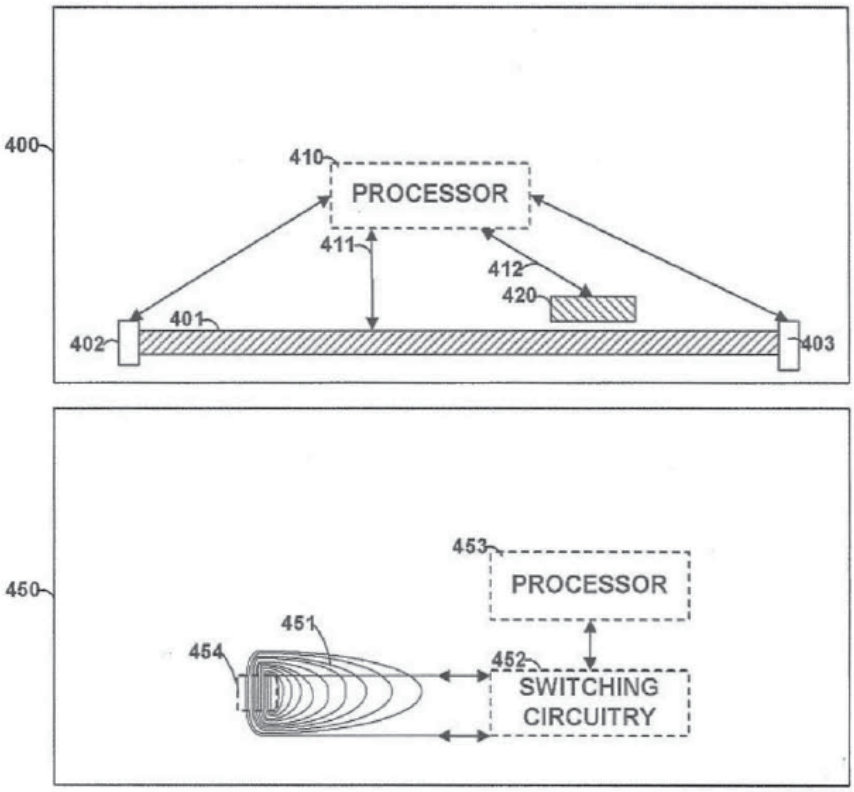

FIG. 4

Figure 4 illustrates cards 400 and 450 of the '545 patent. *Id.* at 3:17–18. Card 450 includes processor 453, switch circuitry 452 and emulator 451. *Id.* at 7:36–39. Emulator 451 includes active region 454 to communicate with a magnetic stripe reader or encoder. *Id.* Processor 453 may drive emulator 451 via switching circuitry 453 including one or more transistors, causing

the emulator to transmit an electromagnetic signal to the magnetic stripe reader. *Id.* at 7:47–52.

Figure 7 of the '454 Patent is shown below.

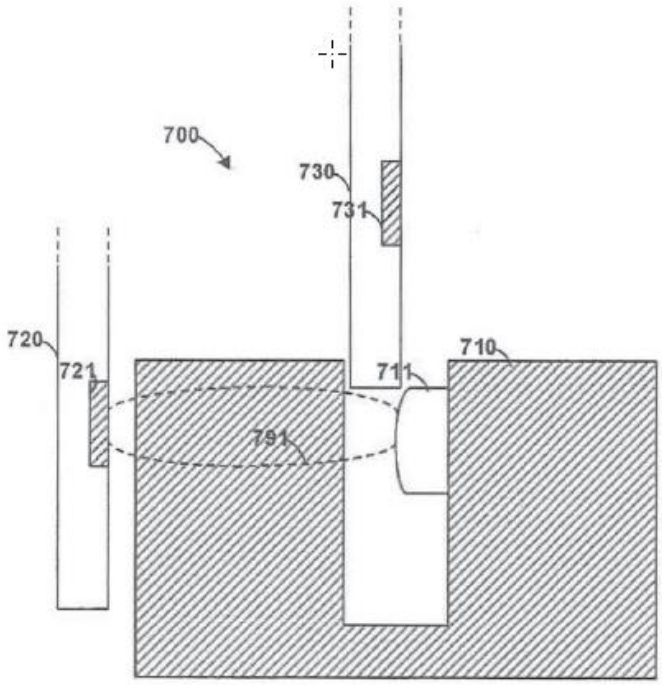

FIG. 7

Figure 7 illustrates electrical coupling between a card and reader. *Id.* at 3:24–26. Card 720 includes emulator 721 that provides electromagnetic field 791 that may transmit through a portion of the housing of magnetic stripe reader 710. *Id.* at 8:29–32. Accordingly, card 720 may be located outside of reader 710 and yet communicate information to reader 710. *Id.* at 8:33–39. The emulator may be located at a surface of a card or beneath a surface of a device. *Id.* at 9:21–24.

Figure 2 of the '545 Patent is shown below.

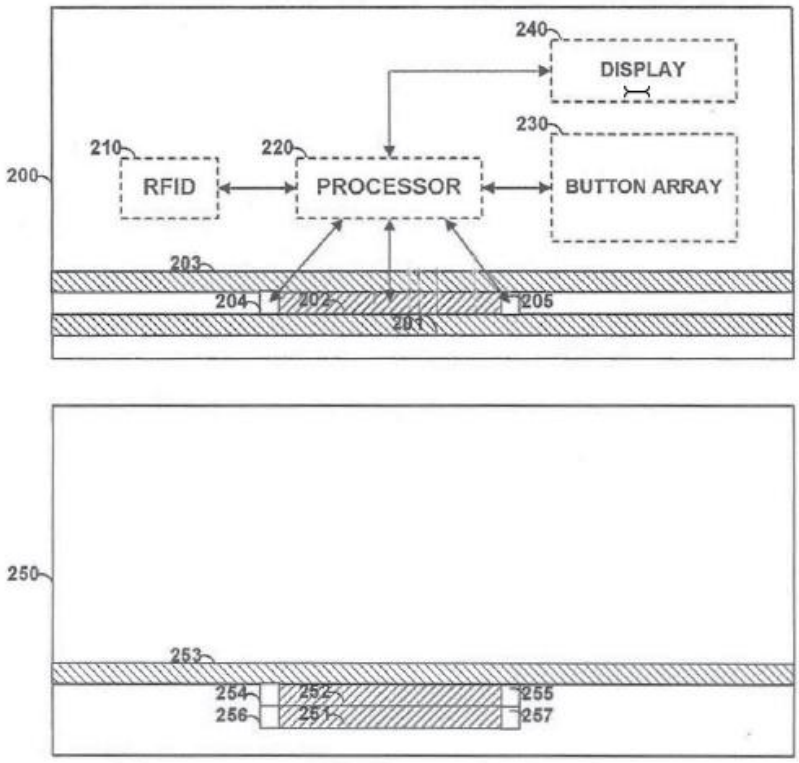

FIG. 2

Figure 2 illustrates cards 200 and 250. *Id.* at 3:13–14. Card 200 includes static magnetic track 201, magnetic emulator 202, and static magnetic track 203 sandwiched between read-head detectors 204 and 205. *Id.* at 5:45–48. Processor 220 receives information from read-head detectors 204 and 205, and controls current flow through a coil of emulator 202 to generate electromagnetic fields sensed by a magnetic stripe reader. *Id.* at 5:51–61.

Figure 2 also shows a RFID antenna 210 on card 200. *Id.* at 5:62. Processor 220 may use RFID antenna 210 to transmit information to an RFID device, or may use magnetic emulator 204 to communicate information to a magnetic stripe reader. *Id.* at 5:62–67. Both RFID antenna

210 and magnetic emulator 204 may be used to communicate payment card information (e.g., credit card information) to a reader. *Id.* at 5:67–6:3.

Processor 240 may also be coupled to display 240 to display dynamic information. *Id.* at 6:3–5. The dynamic information may include a credit card number, debit card number, payment card number and/or payment verification code. *Id.* at 2:62–65. Button array 230 may be coupled to processor 220 so that operation of card 200 may be controlled, at least in part, by manual input received by button array 230. *Id.* at 6:5–8.

Other embodiments of the device include a personal electronic device, which may be a portable telephonic device, portable media player, or other type of electronic device. *Id.* at 12:32–34, Fig. 12. The device may include a touch-sensitive display. *Id.* at 12:40–42. The device may communicate with a cellular network. *Id.* at 14:46–48; 15:10. The device may be thicker than a card. *Id.* at 2:44–48.

E. Challenged Claims

Claims 1 and 9 of the '545 Patent are independent. Claims 2–8 depend directly from claim 1, and claims 10–16 depend directly from claim 9. Claim 1 is set forth below with annotated numbering of steps:

1. [preamble] A device comprising:
   [1a] circuitry operable to communicate with a cellular network;
   [1b] RFID circuitry operable to electrically couple the device to a payment terminal and to communicate RFID data to the payment terminal;
   [1c] a coil; and
   [1d] a processor for controlling the operation of the coil such that the coil is operable to electrically couple the device to the payment terminal and to communicate data in magnetic stripe data format to the payment terminal,
   [1e] wherein the coil is operable to electrically couple the device to the payment terminal from a position beneath a surface of the device.

Ex. 1001, 14:46–59.

F. Evidence of Record

Petitioner relies upon the following prior art references[1]:

Doughty	US 2006/0161789 A1	Published July 20, 2006	Ex. 1012
Zellner	US 7,097,108 B1	Issued August 29, 2006	Ex. 1008
Moullette	US 7,114,652 B1	Issued October 3, 2006	Ex. 1007
Pitroda	US 6,769,607 B1	Issued August 3, 2004	Ex. 1015

Petitioner also supports its challenges with a declaration from Stephen G. Halliday (Ex. 1002). Pet. 9. Patent Owner does not rely on any declarant to support its contentions at this time.

G. The Asserted Challenges to Patentability

Petitioner asserts the following challenges to patentability:

Challenged Claims	35 U.S.C. §	Reference(s)/Basis
1–16	103(a)[2]	Doughty, Zellner
1–16	103(a)	Zellner, Moullette
1–16	103(a)	Pitroda

[1] Petitioner alleges that all of the prior art references were filed, issued or published before the '545 Patent's earliest alleged priority date of December 24, 2007. Pet. 4, 8. Petitioner contends that all of these prior art references are prior art under 35 U.S.C. §§ 102(a), (b), and (e) (pre-Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA")). *Id.* at 8. Patent Owner does not refute these assertions at this time. Accordingly, we will treat these references as prior art for purposes of this decision.

[2] Because the claims at issue have an effective filing date prior to the effective date of the AIA's amendments to 35 U.S.C. § 112 (September 16, 2012) and 35 U.S.C. §§ 102 and 103 (March 16, 2013), we apply the pre-AIA versions of §§ 102, 103, and 112 in this Decision.

II. PRELIMINARY MATTERS

A. Analysis of Discretionary Denial Under 35 U.S.C. § 314(a)

Patent Owner states that the '545 patent is the subject of a pending ITC proceeding and a stayed district court litigation. Prelim. Resp. 7–9. Patent Owner argues we should exercise discretion under 35 U.S.C. § 314(a) and deny institution based on the ITC proceeding because it involves the same parties, independent claim and prior art, and is at an advanced stage. Prelim. Resp. 3–10; Patent Owner's Sur-Reply ("PO Sur-Reply") 1–10. To the contrary, Petitioner argues that evaluation of the *Apple v. Fintiv* factors demonstrates we should *not* exercise discretion to deny institution of *inter partes* review. Petitioner's Reply ("Pet. Reply") 1–10.

Petitioner filed a Reply to address this issue from Patent Owner's Preliminary Response ("Pet. Reply," Paper 9) and, per our email authorization (Ex. 3001), Patent Owner filed a Sur-Reply to Petitioner's Reply ("PO Sur-Reply," Paper 10). For the reasons stated below we are not persuaded to exercise discretion to deny institution.

Institution of an *inter partes* review is discretionary. *See* 35 U.S.C. § 314(a) (authorizing institution of an *inter partes* review under particular circumstances, but not requiring institution under any circumstances); 37 C.F.R. § 42.108(a) ("[T]he Board may authorize the review to proceed"). *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) ("[T]he agency's decision to deny a petition is a matter committed to the Patent Office's discretion."); *SAS*, 138 S. Ct. at 1356 ("[Section] 314(a) invests the Director with discretion on the question whether to institute review . . . ." (emphasis omitted)); *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367

(Fed. Cir. 2016) ("[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.").

In the *NHK* case, the Board denied institution relying, in part, on § 314(a), because a parallel district court proceeding was scheduled to finish before the Board reached a final decision. *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential). "Thus, *NHK* applies to the situation where the district court has set a trial date to occur earlier than the Board's deadline to issue a final written decision in an instituted proceeding." *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11, 3 (PTAB March 20, 2020) (precedential) (Order). When determining whether to exercise discretion to deny institution due to an earlier trial date in a parallel proceeding, we consider the following factors ("*Fintiv* factors"):

> 1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
>
> 2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
>
> 3. investment in the parallel proceeding by the court and the parties;
>
> 4. overlap between issues raised in the petition and in the parallel proceeding;
>
> 5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
>
> 6. other circumstances that impact the Board's exercise of discretion, including the merits.

Id. at 6. "These factors relate to whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding." *Id.* In evaluating these factors, we take "a

holistic view of whether efficiency and integrity of the system are best served by denying or instituting review." *Id.* (citing Patent Trial and Appeal Board Consolidated Trial Practice Guide 58 (November 2019), https://www.uspto.gov/TrialPracticeGuideConsolidated). We address the *Fintiv* factors *in seriatim* and discuss in detail our reasons for not exercising discretion to deny institution based on § 314(a).

1. Whether a Stay Exists or Is Likely to Be Granted if a Proceeding Is Instituted

The district court has stayed its proceeding since September 4, 2019, pending an outcome of the ITC proceeding. PO Sur-Reply 2 (citing Ex. 2024). This factor weighs against exercising discretion to deny institution. The stay of the proceeding allays concerns about inefficiency and duplication of efforts as it relates to this proceeding. *See Fintiv*, Paper 11 at 6. In the event that there may be duplicative efforts with the ITC proceeding, we continue our analysis and inquire further as to whether the ITC would render a decision before this proceeding as examined below under *Fintiv* factor 2, and the degree of overlap of the proceedings under *Fintiv* factor 4. *Id.* (explaining that there is some overlap among the factors).

2. Proximity of the Court's Trial Date to the Board's Projected Statutory Deadline

In the ITC proceeding, trial was set to be held on June 22–26, 2020 but was adjourned until further notice due to COVID-19 concerns. PO Sur-Resp. 8 (citing Ex. 2001; Ex. 2002; Ex. 2025). Additionally, the ITC issued a new document timeline on June 29, 2020, that includes a witness statement deadline of August 14, 2020, and an objection deadline of August 21, 2020. *See* Ex. 3002, *In re Certain Mobile Devices With Multifunction Emulators*,

Inv. No. 337-TA-1170, Order No. 21 at 2 (June 29, 2020). The Board's Institution Decision is due by August 15, 2020, which is before the ITC's initial determination (ID) that has been postponed indefinitely. Pet. Reply 2; Ex. 3002. Yet, even given the uncertainties involved with COVID-19, it is unlikely that the ITC trial would be postponed by 14 months such that our final written decision would issue prior to the ITC trial. Accordingly, we weigh this factor in favor of discretionary denial.

3. Investment in the Parallel Proceeding by the Court and Parties

The parties have significant investments in both this proceeding and the ITC proceeding. Specifically, in the ITC proceeding, a *Markman* hearing was held November 26, 2019; an order construing only some of claims issued on January 31, 2020; fact discovery was completed January 17, 2020; expert reports were exchanged and experts deposed; and motions for summary determination were filed on March 11, 2020. Prelim. Resp. 8.

In this proceeding, the parties have submitted a Petition (Paper 1), an Expert Declaration (Exhibit 1002), a Preliminary Response (Paper 8), a Reply (Paper 9), and a Sur-Reply (Paper 10) in addition to numerous other papers and exhibits. We note the instant proceeding here is further along than those in either the *Fintiv* case or the *Sand Revolution* case, where the parties in both cases had filed only one substantive paper each (i.e., the Petition and the Preliminary Response). *See*, *Fintiv*, Paper 11 at 6; *Sand Revolution II LLC v. Continental Intermodal Group*, IPR 2019-01393, Paper 24, 10-11 (PTAB June 16, 2020) (informative, designated July 13, 2020). Thus, these case are distinguishable.

It is clear the parties' investments in both proceedings are substantial. Thus, we find this factor is neutral in our analysis regarding institution.

4. Overlap Between Issues Raised in the Petition and in the Parallel Proceeding

The ITC proceeding involves only claims 1, 3 and 5 of the '545 Patent whereas Petitioner's challenges here involve claims 1–16 of the '545 Patent. Therefore, resolution of the ITC proceeding would not resolve the parties' dispute concerning patentability of claims 2, 4 and 6–16 of the '545 Patent.[3] Looking at the challenges before us, independent claim 9, which is broader than independent claim 1 by omitting the coil as a claim element, is not present in the ITC proceeding. Ex. 1001, 14:46–59, 15:9–19. Furthermore, the dependent claims at issue in Petitioner's challenge to the '545 Patent address limitations not present in the ITC proceeding. In particular, the claims recite that (1) the device is thicker than a payment card, (2) the device is a portable media player, (4) the device has a touch-sensitive display to display a virtual payment card, (5) the RFID circuitry includes an RFID antenna, and (5) the RFID circuitry electrically couples the device when outside and in proximity to the payment terminal. *See* Ex. 1001, 14:60–67, 15:1–8, 16:1–17. These limitations are at issue in Petitioner's challenges before the Board, but are not at issue in the ITC proceeding.

Although there is overlap between the prior art challenges asserted before the Board and the ITC proceeding, the challenge to claims that do not overlap combined with the lack of definitive resolution of these claims before the stayed district court, in balance, weigh in favor of institution.

[3] We further note that the ITC does not have authority to invalidate patent claims in a manner that is binding upon the Board or district courts. *See Texas Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558 (Fed. Cir. 1996).

5. Whether the Petitioner and the Defendant in the Parallel Proceeding Are the Same Party

The parties in the ITC proceeding, the district court proceeding, and this proceeding are the same. Prelim. Resp. 10. Petitioner does not dispute this fact. Reply 9. This factor weighs against institution.

6. Other Circumstances that Impact the Board's Exercise of Discretion, Including the Merits

We find the merits of this case weigh in favor of Petitioner on the evidence presented thus far. Petitioner presents evidence and argument regarding claims 2, 4 and 6–16 that are not at issue in the ITC proceeding. Pet. 26–29, 33–39, 51–59, 65–72. For example, claim 4 recites that the device is a portable media player. Ex. 1001, 14:64–65. On the present record, Petitioner contends Doughty and Zellner, or Zellner and Moullette, or Pitroda alone, teaches the limitation of claim 4. Pet. 28–29, 52–53, 66–67. Petitioner contends Zellner teaches that the graphical user interface of its "PDA, cell phone or other portable electronic device" can include a "video player." Pet. 29 (citing Ex. 1008, 11:3–8, 11:15–21, 11:31–33; Ex. 1002 ¶ 91. Claim 8 recites that the RFID circuitry is operable to electronically couple the device to a payment terminal when outside and within proximity of the payment terminal. Ex. 1001, 15:5–8. Doughty indicates that the user may hold a device within the RF field generated by a RF reader at a distance of six inches from the reader. Pet. 36 (citing Ex. 1012 ¶ 105). At this stage of the proceeding and based on the record before us currently, we find Petitioner's arguments and evidence on the merits persuasive.

Petitioner further contends a person of ordinary skill in the art would have combined the teachings of Doughty and Zellner, and Zellner and

Moullette, given their similarities in design and purpose, and to improve the functionality and flexibility of Doughty's and Zellner's devices. Pet. 16–19, 40–43. On the evidence produced thus far, Petitioner shows rationales to combine the references with reasonable expectations of success, and the combined references teach all elements of claims 4 and 8.

Accordingly, we find this factor weighs in favor of institution.

7. Balancing the Fintiv Factors

The only case that Patent Owner relies upon that involves denial of institution of *inter partes* review based on a parallel ITC proceeding is *Bio-Rad Labs., Inc. v. 10X Genomics, Inc.*, IPR2019-00568, Paper 22 at 2 (PTAB Aug. 8, 2019). *See, e.g.*, Sur-Reply 3. In *Bio-Rad*, the Board denied institution based on the ITC's initial determination (ID) that the challenged patent claims were not invalid. *Bio-Rad*, Paper 22 at 22–24. The ID issued before the Board rendered its institution decision. *Id.* In this case, our institution decision will precede the ITC's ID, so *Bio-Rad*'s holding is inapposite to the facts of this case.

We have considered the circumstances and facts before us in view of the *Apple v. Fintiv* factors. Because our analysis is fact driven, no single factor is determinative of whether we exercise our discretion to deny institution under § 314(a). Evaluating the *Apple v. Fintiv* factors with a holistic view of whether the efficiency and integrity of the system are best served by denying or instituting review, we determine that the specific facts of this case weigh against exercising discretion under § 314(a) to deny institution of *inter partes* review.

B. Legal Standards for Obviousness

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) where present, objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

C. Burden of Proof

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review). Furthermore, Petitioner cannot satisfy its burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Thus, to prevail in an *inter partes* review, Petitioner must explain how the proposed prior art or combinations of prior art would have rendered the

challenged claims unpatentable. At this preliminary stage, we determine whether the information presented in the Petition shows there is a reasonable likelihood that Petitioner would prevail in establishing that one of the challenged claims is unpatentable. Additionally, the Supreme Court held that a decision to institute under 35 U.S.C. § 314(b) may not institute review on less than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355–56 (2018). Moreover, in accordance with USPTO Guidance, "if the PTAB institutes a trial, the PTAB will institute on all challenges raised in the petition." *Guidance on the Impact of SAS on AIA Trial Proceedings* (April 26, 2018) (available at https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/trials/guidance-impact-sas-aia-trial) ("USPTO Guidance").

D. Level of Ordinary Skill in the Art

Petitioner contends a person of ordinary skill in the art ("POSITA" or "POSA") of the '545 Patent on December 24, 2007, the earliest alleged priority date of the patent, "would have had at least a Bachelor's degree in Electrical Engineering, or an equivalent technical degree or equivalent work experience, and knowledge regarding the use of magnetic fields to transmit or otherwise convey information." Pet. 14; Ex. 1002 ¶ 33. Petitioner contends "[a]dditional education might supplement practical experience and vice-versa." Pet. 14.

Patent Owner agrees with ALJ Elliott's determination in his Claim Construction Order issued on January 31, 2020 in the ITC case, which states that a POSITA would have had an undergraduate degree in computer science, electrical engineering, or the equivalent (including computer engineering) and at least three years of experience with point of sale systems

and the use of magnetic fields to convey information. Prelim. Resp. 26; Ex. 2012, 10–11.[4]

To establish the level of ordinary skill in the art, we look to various factors including "the types of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and education level of active workers in the field." *In re GPAC*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)). Problems encountered in the art are identified in the background sections of Doughty, Zellner, Moullette, and Pitroda. *See* Ex. 1012 ¶ 7; Ex. 1008, 1:13–42; Ex. 1007, 2:38–47; Ex. 1015, 3:22–48. Solutions proposed for these problems are also disclosed in these references. *See* Ex. 1012 ¶ 8; Ex. 1008, 1:44–3:45; Ex. 1007, 2:49–3:30; Ex. 1015, 3:22–48. We observe that innovations were made at a slow to moderate rate in this art at the time of the invention. *See, e.g.*, Ex. 1001, code (56); Ex. 1012 ¶ 4; Ex. 1008, 1:22–42; Ex. 1007, 2:38–47; Ex. 1015, 3:21–48. We find the sophistication of the technology to be moderate based on the evidence presented. *See* Ex. 1002 ¶¶ 35–48. The education level of active workers in the field is a bachelor's degree in electrical or computer engineering. Ex. 1002 ¶ 33; Ex. 2012, 6–7.

Considering these factors, for purposes of this decision, we determine that a POSITA would have had a bachelor's degree in electrical or computer engineering, and three years of experience working with technologies

[4] Patent Owner incorrectly cites Exhibit 2012 because the level of ordinary skill in the art is discussed at pages 6 to 7, not pages 10 to 11.

including magnetic stripe cards and emulators, RFID systems, and cellular network communications. We apply this level of ordinary skill in the art in our obviousness analysis.

E. Claim Construction

We construe the challenged claims under the same standard used by a federal court in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b). This standard is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc) and its progeny, and includes "construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. § 42.100(b); *see* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,341 (Oct. 11, 2018) (now codified at 37 C.F.R. pt. 42 (2019)).

Only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

"Petitioner does not believe any terms need to be construed to resolve the issues presented in this Petition." Pet. 15–16. Although Patent Owner indicates certain terms were construed by the ALJ in the ITC proceeding in a claim construction order dated January 31, 2020, Patent Owner does not offer any construction of any claim term for purposes of this proceeding at this time. Prelim. Resp. 23–25; Ex. 2012, 34–36.

As Petitioner and Patent Owner do not dispute the meaning of any claim term at this time, we decline to construe any claim term, and instead apply the ordinary and customary meanings consistent with 37 C.F.R.

§ 42.100(b). We address claim interpretation to the extent necessary in our obviousness analysis below.

III. ANALYSIS AND DISCUSSION

A. Asserted Obviousness of Claims 1–16 over the Combination of Doughty and Zellner

1. Doughty (Ex. 1012)

Doughty is titled "System, Method and Apparatus for Enabling Transactions Using a User Enabled Programmable Magnetic Stripe." Ex. 1012, code (54). Doughty's Figure 3 is shown below.

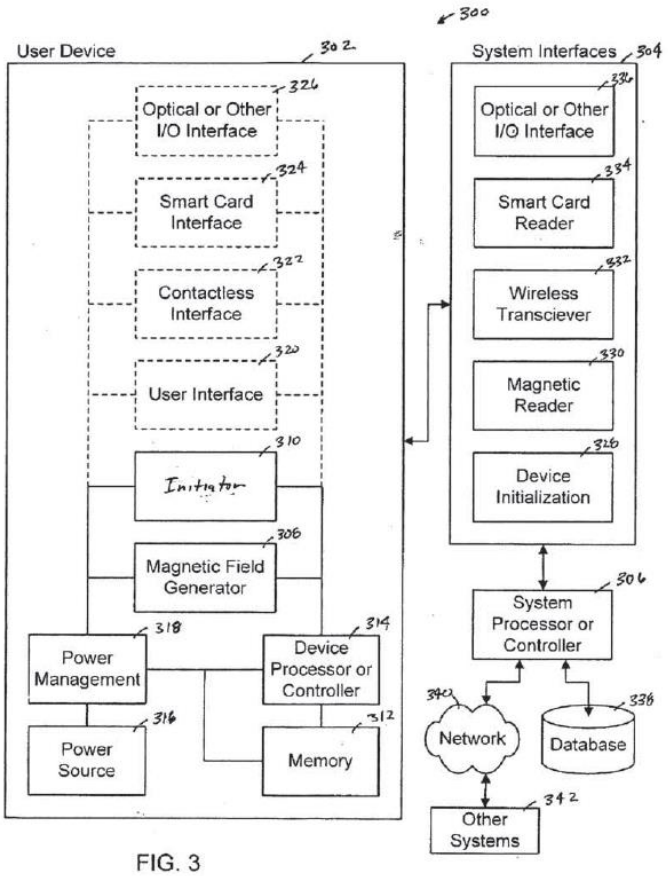

FIG. 3

In Figure 3, Doughty depicts a system 300 with user device 302 and system interface 304 used for security and/or commercial transactions. *Id.* ¶¶ 8, 41. User device 302 includes memory 312, processor 314, magnetic field

generator 306, user interface 320, contactless interface 322, smart card interface 324, and optical or other I/O interface 326. *Id.* Magnetic field generator 306 is coupled to device processor 314 and emulates a programmable magnetic stripe using inductive coils. *Id.* ¶¶ 10, 43. The contactless interface 322 is coupled to the device processor 314 and includes an antenna for wireless communication. *Id.* ¶ 47. Smartcard interface 324 is coupled to device processor 314. *Id.* The components of user device 302 are disposed within or mounted on a substrate, and may be integrated into a personal communication device such as a telecommunications device. *Id.* ¶¶ 47–48. The interfaces of user device 302 communicate with respective magnetic reader 330, wireless transceiver 332, smart card reader 334, and I/O interface 336 of system interface 304. *Id.* ¶ 49.

2. Zellner (Ex. 1008)

Zellner is titled "Multiple Function Electronic Cards." Ex. 1008, code (54). Zellner's electronic card includes first and second opposing faces, and is similar in dimensions to a standard credit card. *Id.* at code (57). A flat panel display extends over the first face of the card, and a dynamic magnetic encoder is provided on the second face of the card. *Id.* The dynamic magnetic encoder provides magnetic stripe information for a selected credit card. *Id.*

Zellner's Figure 6 is shown below.

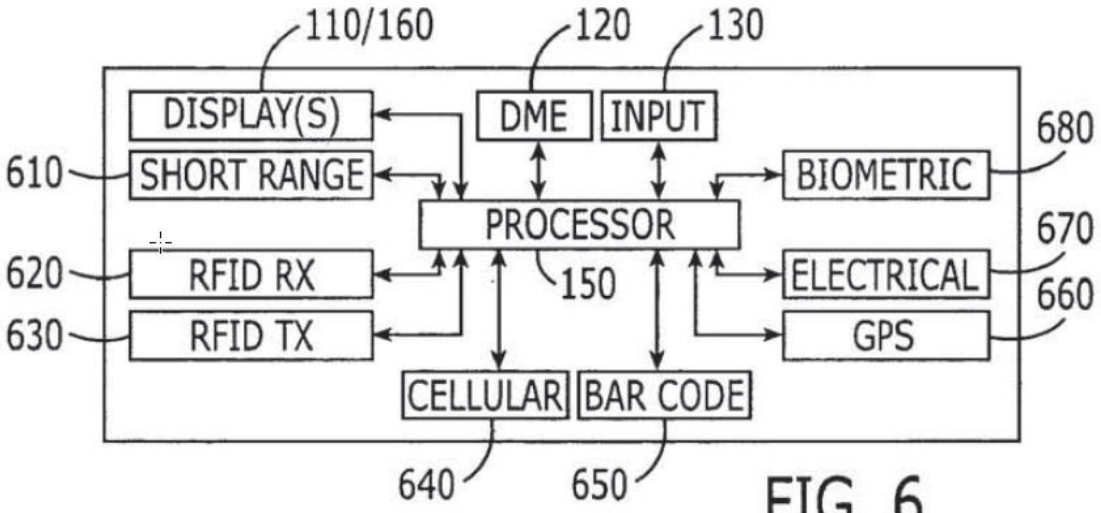

FIG. 6

Zellner's Figure 6 shows an electronic card including display(s) 110/160, dynamic magnetic encoder (DME) 120, input device 130, and processor 150. *Id.* at 7:42–46. The electronic card further includes short range wireless transceiver 610 for Bluetooth, WiFi or other communications. *Id.* at 7:46–50. The electronic card also includes Radio Frequency ID (RFID) receiver 620, RFID transmitter 630, and cellular transceiver 640. *Id.* at 7:50–53. Zellner further discloses a PDA, cell phone or other portable electronic device, which "may be combined with any or all of the embodiments" described earlier in the reference. *Id.* at 11:6–8.

3. Rationale to Combine Doughty and Zellner

Petitioner contends the similarities in design and purpose of Doughty and Zellner would have led a person of ordinary skill in the art to modify Doughty with Zellner's teachings to improve Doughty's functionality and flexibility. Pet. 16–19. Petitioner also contends Zellner makes clear that Doughty's telecommunication device would include a cellular transceiver as taught by Zellner. *Id.* at 17–18; Ex. 1008, 7:42–58; Ex. 1012 ¶ 48; Ex. 1002 ¶ 68. Petitioner further contends that a person of ordinary skill in the art

would have had reason to modify Doughty's RF capabilities to include Zellner's RFID functionality with a reasonable expectation of success. Pet. 18–19; Ex. 1012 ¶¶ 62, 63, 65; Ex. 1008, 7:42–58, 9:47–50; Ex. 1002 ¶¶ 69, 70.

Patent Owner argues that Doughty discloses using RFID circuitry for power generation, but uses non-RFID circuitry for communications, and thus teaches away from using RFID circuitry for communication purposes. Prelim. Resp. 28; Ex. 1012 ¶ 46. Patent Owner's argument, however, does not address Petitioner's evidence that Doughty's RF antenna may be used for two-way communication in addition to power generation. *See, e.g.*, Ex. 1012 ¶¶ 63, 65, 67. Patent Owner's argument also falls short of showing that Doughty "criticizes, discredits or otherwise discourages" use of RFID circuitry for communication. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). In addition, Patent Owner's argument does not address Petitioner's evidence that Zellner's device includes RFID receiver 620 and RFID transmitter 630. Ex. 1008, 9:47–50.

Accordingly, at this stage of the proceeding and based on the current record, we are persuaded Petitioner has shown sufficiently that a person of ordinary skill in the art at the time of the '545 patent would have had reason to modify Doughty's RF capabilities to include Zellner's RFID functionality. Patent Owner's argument does not refute Petitioner's evidence. Thus, we proceed to analyze Petitioner's reading of claim 1 on the combination of Doughty and Zellner.

4. Claim 1

Petitioner reads claim 1 on the combination of Doughty and Zellner as follows.

[preamble] A device comprising:

Petitioner contends that, to the extent the preamble is limiting, Doughty's user device teaches the preamble of claim 1. Pet. 19; Ex. 1012 ¶¶ 10, 48; Ex. 1002 ¶ 71. Based on the current record, we need not resolve whether the preamble is limiting, because we are persuaded Petitioner's evidence is sufficient for the purpose of institution to show that Doughty teaches the device of claim 1's preamble.

[1a] circuitry operable to communicate with a cellular network;

Petitioner further contends Doughty teaches this limitation because it discloses that its personal communication device may be a PDA or telecommunications device with the necessary circuitry to communicate with a cellular network. Pet. 19–20; Ex. 1012 ¶ 48; Ex. 1002 ¶¶ 72–75. To the extent Doughty does not disclose this limitation, Petitioner also contends that Zellner's device may include RF system 920 including cellular system 640 as shown in Figure 6, as well as the cell phone shown in Figure 12. Pet. 19–20; Ex. 1008, 9:38–39, 9:47–50, 7:42–58, 10:67–11:8, Figs. 6, 12.

Based on the current record before us, we are persuaded Petitioner makes a sufficient showing that the combination of Doughty and Zellner teaches the circuitry of limitation [1a] of claim 1.

[1b] RFID circuitry operable to electrically couple the device to a payment terminal and to communicate RFID data to the payment terminal;

Petitioner contends that Doughty teaches an RF antenna and controller that may capture RF energy, and that its controller may support two-way communications with a reader/ writer device (i.e., a POS device) via the RF antenna to conduct commercial and security related transactions. Pet. 21–22; Ex. 1012 ¶¶ 2, 62, 63, 65, 69, 105; Ex. 1002 ¶¶ 76–80.

Petitioner also contends that Zellner teaches its device has RFID circuitry including RFID receiver 620 and RFID transmitter 630. Pet. 22–23; Ex. 1008, 7:42–58, 9:47–50, Fig. 6; Ex. 1002 ¶¶ 79–80. Based on the current record and at this stage of the proceeding, we are persuaded Petitioner makes a sufficient showing that the combination of Doughty and Zellner teaches limitation [1b] of claim 1.

[1c] a coil; and

Petitioner contends Doughty teaches the use of an induction coil to send emulated time-varying magnetic stripe data to a magnetic card reader. Pet. 24; Ex. 1012, code (57), ¶¶ 21, 53, Fig. 5B; Ex. 1002 ¶ 81.

Based on the current record and at this stage of the proceeding, we are persuaded Petitioner makes a sufficient showing that the combination of Doughty and Zellner teaches limitation [1c] of claim 1.

[1d] a processor for controlling the operation of the coil such that the coil is operable to electrically couple the device to the payment terminal and to communicate data in magnetic stripe data format to the payment terminal,

Petitioner contends Doughty teaches that inductive coil 552 may connected to control circuit 554 integrated into device processor 314, and that the coil may be pulsed with varying current to generate a magnetic signal provided to reader heads of a magnetic stripe reader, which thus emulates the swipe of a magnetic stripe card. Pet. 24–25; Ex. 1012 ¶ 53, Fig. 3; Ex. 1002 ¶¶ 82–83.

Based on the current record and at this stage of the proceeding, we are persuaded Petitioner makes a sufficient showing that limitation [1d] is taught by the combination of Doughty and Zellner.

[1e] wherein the coil is operable to electrically couple the device to the payment terminal from a position beneath a surface of the device.

Petitioner contends Doughty teaches that the coil of magnetic field generator 308 is operable to electrically couple to a payment terminal, and that Doughty teaches that magnetic field generator 308 can be mounted on or disposed within the substrate, which may be integrated into a personal communication device such as a PDA, telecommunications device, or pager. Pet. 25–26; Ex. 1012 ¶ 48; Ex. 1002 ¶ 84. Petitioner contends that Doughty thus teaches that the substrate's coil electrically couples the device with the payment terminal from a position beneath the surface of the device. Pet. 25–26.

Based on the current record and at this stage of the proceeding, we are persuaded Petitioner makes a sufficient showing that limitation [1e] is taught by the combination of Doughty and Zellner.

5. Patent Owner's Arguments for Claim 1

Patent Owner argues Doughty does not disclose coupling with or transmitting to an RFID receiver, and that Doughty only discloses receiving power, rather than data, through a RFID interface. Prelim. Resp. 27; Ex. 1012 ¶ 46. Patent Owner, however, does not address Petitioner's evidence that Doughty's RF antenna may be used for two-way communication, in addition to power generation. *See, e.g.*, Ex. 1012 ¶¶ 63, 65, 67. Moreover, claim 1 does not recite an "RFID receiver" but instead recites "*RFID circuitry.*" Accordingly, Patent Owner's arguments are not commensurate with the scope of claim 1. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982).

Similarly, Patent Owner argues that RFID requires a handshake protocol and Doughty is silent regarding the handshake protocol. Prelim. Resp. 28. Again, claim 1 recites nothing concerning a RFID handshake

protocol. Thus, at this stage of the proceeding, we are not persuaded that Patent Owner's arguments sufficiently refute Petitioner's evidence that the combined teachings of Doughty and Zellner read on claim 1.

6. Claims 2–16

Claim 2 depends from claim 1 and recites "*wherein the device is thicker than a payment card*." Ex. 1001, 14:60–61. Petitioner contends that Doughty's magnetic field generator 308 is disposed within or mounted on a substrate which is integrated into a personal communication device, such as a PDA or telecommunications device. Pet. 26–27; Ex. 1012 ¶¶ 41, 48. Petitioner contends that these devices are thicker than a payment card. Pet. 27; Ex. 1002 ¶ 85. Patent Owner does not argue against Petitioner's evidence for claim 2, but instead relies upon its arguments for claim 1. Prelim. Resp. 29. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. As we find Patent Owner's arguments for claim 1 unpersuasive for reasons explained, we similarly are unpersuaded at this stage of the proceeding that Patent Owner demonstrates sufficient deficiency in Petitioner's evidence that the combined teachings of Doughty and Zellner teaches or suggests the limitation of claim 2.

Claim 3 depends from claim 1 and recites "*wherein the device is a portable electronic device*." Ex. 1001, 14:62–63. Petitioner contends Doughty teaches that its device may be a "telecommunications device." Pet. 27; Ex. 1012 ¶ 48; Ex. 1002 ¶¶ 86–89. Petitioner also contends Zellner teaches RF subsystem 920 that includes cellular system 640 and describes its device as a "cell phone, or other portable electronic device." Pet. 27; Ex. 1008, 7:42–58, 9:38–39, 9:47–50, 10:67–11:8, Fig. 12.

Patent Owner argues that none of Doughty's embodiments discloses a portable telephone device. Prelim. Resp. 29–31. Although Patent Owner acknowledges that Doughty discloses its substrate can be integrated into other components such as a pager or telecommunications device, Patent Owner argues one of ordinary skill in the art would not have known what to make of these statements because Doughty does not explain how a telecommunications device would fit into a card. *Id.* at 29–30. Petitioner's evidence, however, is that components of Doughty's device 302 may be disposed within or mounted on a substrate, and the substrate can be integrated into a personal communication device, such as a PDA, telecommunications device or pager. *See* Ex. 1012 ¶ 48, Fig. 3. Thus, we do not understand Petitioner to assert that Doughty's telecommunications device should be fitted into a card.

Patent Owner further argues that Doughty's disclosure of a single coil does not teach a functioning embodiment for providing more than one track of magnetic stripe data. Prelim. Resp. 30–31; Ex. 1012 ¶¶ 8, 52. Claim 3 does not recite that the device has multiple coils for multiple tracks, and thus, Patent Owner's argument is not commensurate in scope with the limitation of claim 3. Limitations not appearing in the claims cannot be relied upon for patentability. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982).

Patent Owner further argues the "other main embodiment" of Doughty with a contactless communication system fails to disclose a portable telephone device. Prelim. Resp. 31; Ex. 1012 ¶¶ 48, 49, Figs. 8, 9. Again, Patent Owner's argument overlooks that Doughty states "[t]he components of the device 302 are typically disposed within or mounted on a

substrate" and "the substrate may be integrated into a personal communication device, such as a personal data assistant (PDA), a telecommunications device, a pager, a computer and an electronic mail transceiver, etc." Ex. 1012 ¶ 48.

Furthermore, Patent Owner does not address Petitioner's evidence that Zellner describes embodiments that include RF subsystem 920 with cellular system 640, and that the embodiments of Zellner's Figure 12 include a "cell phone, or other portable electronic device." Pet. 27–28; Ex. 1008, 7:42–58, 9:38–39, 9:47–50, 10:67–11:8, Figs. 6, 12; Ex. 1002 ¶¶ 87–89.

Accordingly, at this stage of the proceeding and based on the current record, we are not persuaded that Patent Owner's arguments expose sufficient deficiency in Petitioner's evidence that the combination of Doughty and Zellner teaches or suggests the limitation of claim 3.

Claim 4 depends from claim 1 and recites "*wherein the device is a portable media player*." Ex. 1001, 14:64–65. Petitioner contends that Doughty describes that its device may be a personal communication device, such as a PDA, telecommunications device, or computer, and that a person of ordinary skill in the art would have understood that a personal communication device may include a portable media player. Pet. 28–29; Ex. 1012 ¶ 48; Ex. 1002 ¶¶ 90–92. Petitioner also contends that Zellner teaches that its invention may be used with a PDA, cell phone or other portable electronic device, which may include applications for games, videos and music. Pet. 29; Ex. 1008, 11:3–8, 11:15–21, 11:31–33; Ex. 1002 ¶¶ 91–92. Patent Owner does not argue against Petitioner's evidence at this time, instead relying on its arguments presented for claim 1. Prelim. Resp. 32. As we find Patent Owner's arguments for claim 1 unpersuasive, based on the

current record, we similarly are unpersuaded that Patent Owner demonstrates sufficient deficiency in Petitioner's evidence that the combination of Doughty and Zellner teaches or suggests the limitation of claim 4.

Claim 5 depends from claim 1 and recites that the device "*further compris[es] a display operable to display a virtual payment card*." Ex. 1001, 14:66–67. Petitioner contends that Doughty teaches that its device has user interface 320 with a display information that may include a credit card number. Pet. 30–31; Ex. 1012 ¶¶ 42, 47, 66, 84, Fig. 3; Ex. 1002 ¶¶ 93–96. Petitioner also contends Zellner teaches that its device is configured to display a credit card image. Pet. 31–33; Ex. 1008, 1:53–64, 7:17–21, Figs. 2A–3B; Ex. 1002 ¶¶ 95–97. Patent Owner contends that Doughty does not teach display of a virtual payment card, and argues a POSA would not combine Doughty's and Zellner's displays because Doughty's display is not sufficiently large. Prelim. Resp. 33–34. This argument appears to overlook that Doughty teaches that the components of its device can be integrated into a personal communication device, such as a PDA, telecommunications device, pager or computer, which have larger displays. Ex. 1012 ¶ 48. Thus, based on the current record we similarly are unpersuaded that Patent Owner's argument shows sufficient deficiency in Petitioner's evidence for claim 5.

Claim 6 depends from claim 1 and recites that the device "*further compris[es] a touch-sensitive display operable to display a virtual payment card*." Ex. 1001, 15:1–2. Petitioner contends that Doughty describes its user interface 320 may include a touch pad and display, which a POSITA would have found obvious to replace with a single touch-sensitive display.

Pet. 33; Ex. 1012 ¶ 47; Ex. 1002 ¶¶ 98–101. To the extent Doughty does not disclose a touch-sensitive display, Petitioner relies on Zellner which teaches "various touch-screen areas may be provided on the flat panel displays 110 and/or 160, to allow user access to the credit card images (FIGS. 2A–3B)." Pet. 34; Ex. 1008, 7:17–21; Ex. 1002 ¶¶ 100–101. Patent Owner presents the same arguments for claim 6 as for claim 5. Prelim. Resp. 32–34. Therefore, based on the current record, we similarly are unpersuaded that Patent Owner's arguments shows sufficient deficiency in Petitioner's evidence for claim 6 for the same reasons stated for claim 5.

Claim 7 depends from claim 1 and recites "wherein the RFID circuitry comprises an RFID antenna." Ex. 1001, 15:3–4. Petitioner contends that Doughty teaches that device 800 includes RF antenna 804, and controller 806 may support two-way communications with an associated reader/writer device via RF antenna 804. Pet. 34–35; Ex. 1012 ¶¶ 62, 65, 67; Ex. 1002 ¶¶ 102–103. To the extent that Doughty does not disclose an RFID antenna, Petitioner contends that Zellner discloses RFID receiver 620 and RFID transmitter 630, which a person of ordinary skill in the art would have understood to require an RFID antenna. Pet. 35; Ex. 1008, 7:42–58, 9:47–50; Ex. 1002 ¶ 103. Patent Owner does not dispute directly Petitioner's evidence but instead relies on its arguments presented for claim 1. Prelim. Resp. 32. As we find Patent Owner's arguments for claim 1 unpersuasive based on the current record, we similarly are unpersuaded at this stage of the proceeding that Patent Owner shows sufficient deficiency in Petitioner's evidence that the combination of Doughty and Zellner teaches or suggests the limitation of claim 7.

Claim 8 depends from claim 1 and recites "*wherein the RFID circuitry is further operable to electrically couple the device to the payment terminal when the device is outside and within proximity of the payment terminal*." Ex. 1001, 15:5–8. Petitioner contends Doughty teaches that its device has an RF antenna to support two-way communication with an associated reader/writer device at a distance of approximately six inches. Pet. 35–37; Ex. 1012 ¶¶ 62, 65, 67, 105; Ex. 1002 ¶¶ 104–106. Petitioner further contends to the extent Doughty's RF antenna does not include RFID circuitry, Zellner teaches this feature for reasons explained above. Pet. 36. Patent Owner does not dispute Petitioner's evidence for claim 8 but relies on its argument for claim 1. Prelim. Resp. 34. As we find Patent Owner's argument for claim 1 unpersuasive based on the current record, we similarly are unpersuaded at this stage of the proceeding that Patent Owner shows sufficient deficiency in Petitioner's evidence that the combination of Doughty and Zellner teaches or suggests the limitation of claim 8.

Independent claim 9 is nearly identical to claim 1 except for the omission of the "*coil*" as a claim element. Ex. 1001, 15:9–19. Petitioner relies on the same evidence presented for the limitations of claim 1 for the corresponding limitations of claim 9. Pet. 37. Patent Owner likewise relies on the same argument for claim 9 as for claim 1. Prelim. Resp. 35. For reasons explained above with respect to claim 1, we are persuaded based on the current record that Petitioner presents sufficient evidence demonstrating the combination of Doughty and Zellner teaches or suggests all of the limitations of claim 9, and, at this stage of the proceeding, Patent Owner does not sufficiently refute that evidence.

Likewise, dependent claims 10–16 are nearly identical to claims 2–8 and Petitioner relies on the same evidence to show that the combination of Doughty and Zellner teaches or suggests the limitations of each of these claims, and Patent Owner relies on the same arguments to dispute Petitioner's evidence. Pet. 38–39; Prelim. Resp. 35–37. For the reasons explained with respect to claims 2–8, we are persuaded based on the current record that Petitioner presents sufficient evidence demonstrating the combination of Doughty and Zellner teaches or suggests all of the limitations of claims 10–16. At this stage of the proceeding, we are not persuaded that Patent Owner's arguments show sufficient deficiency in Petitioner's evidence that the combination of Doughty and Zellner teaches or suggests all of the limitations of claims 10–16.

7. Objective Indicia of Nonobviousness

Patent Owner argues that its evidence of objective indicia of nonobviousness shows that the '545 Patent's claims would not have be obvious to a person of ordinary skill in the art at the time of the alleged invention. Prelim. Resp. 54–59. Petitioner contends that Patent Owner has not provided evidence sufficient to establish a nexus between the alleged evidence of nonobviousness and the claims of the '545 Patent. Pet. 72–73.

For objective indicia of nonobviousness to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention. *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 33 at 32 (PTAB January 24, 2020) (precedential, designated April 14, 2020) (citing *ClassCo, Inc., v. Apple, Inc.*, 838 F.3d 1214, 1220 (Fed. Cir. 2016)). "[T]here is no nexus unless the evidence presented is 'reasonably commensurate with the scope of the claims.'"

ClassCo, 838 F.3d at 1220 (quoting *Rambus Inc. v. Rea*, 731 F.3d 1248, 1257 (Fed. Cir. 2013)). The nexus also must be attributable to some aspect of the claim that is not already in the prior art. *In re Kao*, 639 F.3d 1057, 1068–69 (Fed. Cir. 2011). A patentee is entitled to a presumption of nexus "when the patentee shows that the asserted objective evidence is tied to a specific product and that product 'embodies the claimed features, and is coextensive with them.'" *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (quoting *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1072 (Fed. Cir. 2018) (quoting *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1130 (Fed. Cir. 2000))). Although we do not require the patent[owner] to prove perfect correspondence to meet the coextensiveness requirement, what we do require is that the patent[owner] demonstrate that the product is essentially the claimed invention." *Fox Factory*, 944 F.3d at 1374.

At this stage of the proceeding, Patent Owner has not shown sufficiently that the objective evidence presented here is tied to a specific product, and that the product embodies the claimed features. *See generally* Prelim. Resp. 54–59. Accordingly, Patent Owner has not shown that it is entitled to a presumption of nexus. We proceed to analyze Patent Owner's evidence to determine whether it has a nexus to the merits of the claimed invention.

Patent Owner argues it has evidence of commercial success because it sold a significant number of payment cards employing magnetic stripe emulation and successfully licensed this technology. *Id.* at 55; Ex. 2013. Patent Owner does not show, however, that the magnetic stripe emulation used in its cards was unknown in the prior art. Nor does Patent Owner show

that magnetic stripe emulation was the source of its cards' commercial success, as opposed to other factors that could have contributed to it, such as extensive advertising or market conditions. Accordingly, at this stage of the proceeding and based on the current record Patent Owner has not shown a nexus between the claims of the '545 Patent and the commercial access alleged to have been achieved by its cards.

Patent Owner argues Petitioner's products, including the Galaxy "S" and "Note" series smartphones and Gear S3 series smartwatches, implement the technologies protected by the '545 Patent. Prelim. Resp. 55–56. Patent Owner alleges Petitioner has sold billions of dollars of these products in the United States in 2018 alone. Ex. 2015, 3–4. Based on the current record, Patent Owner has not shown sufficiently that Petitioner's commercial success stems from the features claimed in the '545 Patent, and not from other features that these devices possess. Nor has Patent Owner provided sufficient evidence that these products infringed the '545 Patent. Prelim. Resp. 55–56.

Patent Owner further argues there was a long-felt need in the art to provide dynamic information for purchase transactions without requiring a system wide change of hardware associated with common purchase transactions, which remained unsolved until Patent Owner developed the claimed inventions. Prelim. Resp. 56–57. Patent Owner has not shown how the claims relate to providing dynamic information, which is nowhere mentioned in the claims of the '545 Patent. Accordingly, at this stage of the proceeding and based on the current record Patent Owner has not shown sufficiently that the asserted long-felt need in the art has a nexus to the merits of the '545 Patent's claims.

Patent Owner alleges numerous commercial entities attempted but failed to provide payment cards including magnetic stripe emulators. Prelim. Resp. 57; Ex. 1016, 2; Ex. 2018, 2; Ex. 2019, 2. Again, Patent Owner has not shown that the magnetic stripe emulators or cards were unknown in the prior art, but were instead non-obvious features protected by the claims of the '545 Patent. Patent Owner also does not establish that its magnetic stripe emulators were combined with other claimed elements, such as the cellular communication circuitry and RFID circuitry, to produce a combination elements not known in the prior art.

Patent Owner alleges it has received praise from others in the field for its inventions, and lists a number of awards it has won. Prelim. Resp. 57–58. There is no indication in the current record, however, that these awards have a nexus to what is claimed in the '545 Patent.

Patent Owner asserts that several prior art references teach away from its invention. *Id.* at 58–59. For instance, Patent Owner alleges that Cox teaches that direct contact is required between a mobile device and a magnetic stripe card reader to scan a magnetic stripe. Ex. 2020 ¶ 66. Patent Owner has not shown in the current record, however, that this reference "criticizes, discredits or otherwise discourages" use of magnetic stripe emulation. *See Fulton*, 391 F.3d at 1201. To the contrary, Cox envisions that future versions of its device would be made without programmable magnetic stripes, which would be phased out in favor of contactless transaction devices. Ex. 2020 ¶ 46.

Patent Owner further alleges that competitors have copied its invention. Prelim. Resp. 59. Specifically, Patent Owner asserts that after it disclosed the claimed inventions to Petitioner under a non-disclosure

agreement, Petitioner searched for companies that had the ability to utilize Patent Owner's claimed inventions. Patent Owner does not identify in the current record sufficient evidence that supports its contention.

Accordingly, we preliminarily determine based on the current record, Patent Owner has not shown sufficiently that the evidence of secondary considerations of nonobviousness have a nexus to the claimed invention.

8. Conclusion

In light of the foregoing discussion, we determine that the information presented in the Petition and Preliminary Response, and accompanying exhibits and testimony, shows that there is a reasonable likelihood that Petitioner would prevail with respect to claims 1–16. Petitioner makes a sufficient showing that each limitation of claims 1–16 is taught or suggested by the combination of Doughty and Zellner, and that a person of ordinary skill in the art have had reason to combine the teachings of the references, with a reasonable expectation of success in arriving at the claimed invention.

B. Asserted Obviousness of Claims 1–16 over the Combination of Zellner and Moullette

Petitioner contends claims 1–16 would have been obvious over the combination of Zellner and Moullette. Pet. 40–59. Patent Owner argues claims 1–16 would not have been obvious. Prelim. Resp. 37–47.

1. Moullette (Ex. 1007)

Moullette is titled "External Adaptor for Magnetic Stripe Card Reader." Ex. 1007, code (54). Moullette purports to address a need in the art for a portable personal device to interact with older legacy POS card acceptance systems. *Id.* at 2:38–47, 2:51–55. Consumer pod portion 16 of Moullette's adaptor 14 includes a radio frequency proximity transceiver

conforming to ISO 14443 and ISO 15963 standards, and a wireless transceiver configured for wireless or cellular protocols such as CDMA, CDPD, GPRS, GSM, SMS and others. *Id.* at 4:8–10, 4:41–60, Fig. 1.

Moullette's Figure 1 is shown below.

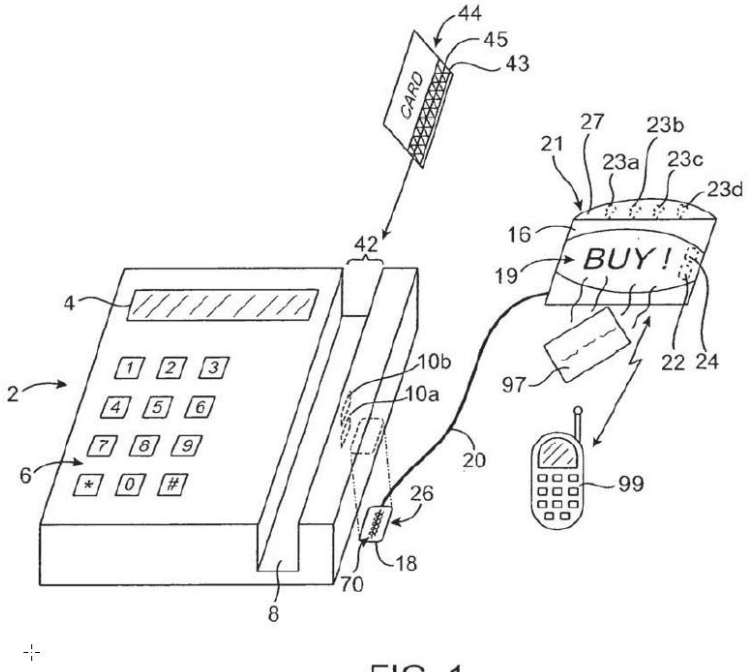

FIG. 1

Figure 1 shows conventional POS magnetic stripe card reader 2 with magneto-inductive reader heads 10, and adaptor 14 with consumer pod portion 16 communicating with merchant pod portion 18 through cable 20. *Id.* at 4:1–10. Consumer pod portion 16 is positioned at a location convenient for a customer, who may interact with adaptor 14 using personal trusted device (PTD) 99 (shown as a wireless telephone in Figure 1) by bringing PTD 99 in proximity to wireless transceiver 22 of adaptor 14. *Id.* at 4:10–15, 4:46–49. Merchant pod portion 18 is affixed beneath the external housing of reader device 2 and communicates with its reader heads 10a, 10b. *Id.* at 5:21–31.

2. Motivation to Combine Zellner and Moullette

Petitioner contends a person of ordinary skill in the art at the time of the '545 patent would have had reason to incorporate Moullette's teachings into Zellner's device to communicate with legacy payment terminals directly from a personal communication device, such as a cell phone. Pet. 40–43. Petitioner contends the similarities of Zellner and Moullette would have led a person of ordinary skill in the art to combine the references. Pet. 40–41; Ex. 1007, 2:42–47, 2:51–65, 3:55–59, 4:10–18; Ex. 1008, 1:6–9, 1:60–64, 5:34–39, 7:42–58, 9:38–51, 10:63–11:13, 11:50–55; Ex. 1002 ¶¶ 119–124. Petitioner contends a person of ordinary skill in the art would have recognized that Moullette's inductors would be sufficiently powerful for Zellner's device to communicate with the magnetic card reader through the device. Pet. 42. Petitioner also contends the commercial advantages of a cell phone that could communicate with legacy payment terminals would have motivated a person of ordinary skill in the art to modify Zellner's device to include Moullette's inductors to avoid the need for an intermediary device, with a reasonable expectation of success in doing so. *Id.* at 42–43; Ex. 1007, 1:56–2:21, 2:38–47, 2:51–55; Ex. 1008, 1:60–2:2, 11:3–8; Ex. 1002 ¶ 124.

Patent Owner argues there is no need for Moullette's coil in Zellner's device because Zellner's device has a programmable magnetic stripe, and is already equipped to communicate with existing card readers and RFID terminals without any modification. Prelim. Resp. 37–38. Patent Owner's argument does not address, however, Petitioner's reasons to combine. According to Petitioner, those reasons are that a person of ordinary skill in the art would have recognized that Moullette's inductors are sufficiently

powerful to communicate through the housing of a reader to the magnetic heads, and that the combination eliminates the intermediary device (Moullette's adaptor 14) so that the cell phone can communicate directly with the card reader. Pet. 42–43. At this stage of the proceeding and based on the current record, Patent Owner's argument does not address sufficiently, let alone refute, Petitioner's reasons to combine Zellner and Moullette. Thus, we proceed to analyze Petitioner's evidence for each element of the claims.

3. Claim 1

Petitioner reads claim 1 on the combination of Zellner and Moullette as follows.

[preamble] A device comprising:

Petitioner contends that, to the extent the preamble is limiting, Zellner discloses a "portable package" such as "a PDA, cell phone or other portable electronic device" that can "interface with credit card readers." Pet. 43; Ex. 1008, 10:63–11:13, Fig. 12; Ex. 1002 ¶ 125.

Based on the current record, we need not resolve whether the preamble is limiting, because Petitioner shows sufficiently for the purpose of institution that the combination of Zellner and Moullette teaches the preamble of claim 1.

[1a] circuitry operable to communicate with a cellular network;

Petitioner contends that Zellner discloses a "portable package" that can be a "cell phone" and states that the device may include "cellular transceiver 640 (including conventional cellular, PCD, wideband cellular, and/or other conventional cellular device)." Pet. 44; Ex. 1008, 7:42–58, 10:63–11:6, Fig. 6; Ex. 1002 ¶ 126.

Based on the current record, we are persuaded Petitioner makes a sufficient showing that the combination of Zellner and Moullette teaches limitation [1a] of claim 1.

[1b] RFID circuitry operable to electrically couple the device to a payment terminal and to communicate RFID data to the payment terminal;

Petitioner contends that Zellner discloses that its device shares credit card information with a purchasing system through a radio interface, and includes an RF subsystem 920 having an RFID receiver 620 and RFID transmitter 630. Pet. 44–45; Ex. 1008, 3:22–26, 9:47–50, Figs. 6, 9; Ex. 1002 ¶ 127.

Based on the current record, we are persuaded Petitioner makes a sufficient showing that the combination of Zellner and Moullette teaches limitation [1b] of claim 1.

[1c] a coil; and

Petitioner contends that Zellner teaches that its device can emulate the magnetic card information that would be provided by a credit card, and that its device can interface with credit card reader. Pet. 45–46; Ex. 1008, 1:60–64; 10:63–11:13; Ex. 1002 ¶¶ 128–130. Petitioner further contends that Zellner teaches a well-known dynamic magnetic encoder that may be used to provide variable magnetic stripe information that emulates a magnetic stripe of a conventional credit card. Pet. 46; Ex. 1008, 5:34–39.

Petitioner contends that Moullette teaches an adaptor that includes an inductor for generating a magnetic field and that its magnetic field-generating element 70 comprises ferrite core 72 encircled within separate inner coil 74 and output coil 76. Pet. 46; Ex. 1007, code (57), 5:32–36; Fig. 2; Ex. 1002 ¶¶ 129–130.

Petitioner makes a sufficient showing that the combination of Zellner and Moullette teaches limitation [1c] of claim 1.

[1d] a processor for controlling the operation of the coil such that the coil is operable to electrically couple the device to the payment terminal and to communicate data in magnetic stripe data format to the payment terminal,

Petitioner contends Moullette teaches that its inductor is capable of generating a magnetic field of sufficient power to couple with a head of a magnetic stripe card reader through the housing of the reader device. Pet. 47; Ex. 1007, code (57); Ex. 1002 ¶¶ 131–135. Petitioner argues Moullette also teaches that when communication is desired with the magnetic head of a reader device, current flows through outer coil 76, causing inductor element 72 to generate a magnetic field that is sufficiently powerful to activate the card present circuit and communicate with the Track 1 data recovery circuit. Pet. 47; Ex. 1007, 6:49–6:56. Petitioner further argues Moullette teaches that once module 26 successfully communicates with track 1 head 10b, the flow of current through outer coil 76 is halted and current flows through inner coil 74 resulting in a magnetic field recognizable by the Track 2 data recovery circuit. Pet. 47; Ex. 1007, 6:60–66. Petitioner thus contends that a person of ordinary skill in the art would understand Moullette to teach a coil both electrically coupling and communicating in magnetic stripe data format to a payment terminal. Pet. 47–48; Ex. 1002 ¶ 132.

Petitioner further contends Zellner teaches that a processor controls its dynamic magnetic encoder to provide magnetic stripe information for the credit card. Pet. 48; Ex. 1008, code (57), 1:60–64, 5:54–59, 10:63–11:13; Ex. 1002 ¶ 133–135.

Petitioner makes a sufficient showing that that the combination of Zellner and Moullette teaches the limitation [1d] of claim 1.

[1e] wherein the coil is operable to electrically couple the device to the payment terminal from a position beneath a surface of the device.

Petitioner contends that a POSITA would have been motivated to incorporate Moullette's inductor into the dynamic magnetic encoder of Zellner's portable device. Pet. 49; Ex. 1002 ¶¶ 136–137. Petitioner contends that Zellner teaches that "any or all of the embodiments" may be implemented in a cell phone, such that the magnetic encoder would be within and below the surface of Zellner's device. Pet. 49–50; Ex. 1008, 10:67–11:8; Ex. 1002 ¶ 136. Petitioner contends that Moullette's inductor is sufficiently powerful to couple with a head of a magnetic stripe card reader through the housing of the reader device. Pet. 50; Ex. 1007, code (57). Petitioner contends a person of ordinary skill in the art would have understood that Moullette's inductor could electrically couple Zellner's device to the payment terminal from beneath the Zellner device's surface because Moullette's inductor has sufficient power to couple with a magnetic card reader through Zellner's device. Pet. 50; Ex. 1002 ¶ 136. Petitioner further contends current through Moullette's inductor could be modified to create a stronger magnetic field to couple Zellner's device with the payment terminal. Pet. 50; Ex. 1002 ¶ 137.

Based on the current record, we are persuaded Petitioner makes a sufficient showing that the combination of Zellner and Moullette teaches the limitation [1e] of claim 1.

4. Patent Owner's Arguments for Claim 1

Patent Owner argues that Zellner lacks a coil operable to electrically couple the device to the payment terminal and communicate data in

magnetic stripe format, and discloses no process for controlling operation of a coil as recited in claim 1. Prelim. Resp. 37–38. Patent Owner further argues Zellner already has the features needed to communicate with existing magnetic stripe card readers and RFID terminals, so there is no reason to add anything to Zellner. *Id.*

We previously addressed these arguments under the section addressing the motivation to combine Zellner and Moullette. For the reasons stated in that section, at this stage of proceeding, we do not find these arguments persuasive to show a deficiency in Petitioner's evidence that the combination of Zellner and Moullette teaches or suggests all limitations of claim 1.

5. Claims 2–16

Claim 2 depends from claim 1 and recites "*wherein the device is thicker than a payment card*." Ex. 1001, 14:60–61. Petitioner contends that Zellner's cellphone meets this limitation, and further that Zellner explicitly states that its device "may be thicker than a standard plastic credit card." Pet. 51; Ex. 1008, 5:21–23, 10:63–11:13; Ex. 1002 ¶ 138. Patent Owner does not argue against this evidence, but instead relies on the same argument it gave for claim 1, which at this stage of the proceeding we find unpersuasive for the reasons stated above. Prelim. Resp. 38. Thus, based on the current record, we are not persuaded that Patent Owner demonstrates sufficient deficiency in Petitioner's evidence that the combination of Zellner and Moullette teaches or suggests the limitation of claim 2.

Claim 3 depends from claim 1 and recites "*wherein the device is a portable electronic device*." Ex. 1001, 14:62–63. Petitioner contends that Zellner teaches its device may be a cell phone, which is a portable electronic

device as claimed. Pet. 51–52; Ex. 1008 11:3–6, Fig. 12; Ex. 1002 ¶¶ 139–140.

Patent Owner argues that Zellner discloses cellular phones, but not ones that could communicate magnetic stripe data to a read-head of a magnetic stripe reader. Prelim. Resp. 39; Ex. 1008, 7:43–58. Petitioner noted, however, that Zellner teaches that its device may include a well-known dynamic magnetic encoder incorporated into a cell phone, which could communicate magnetic stripe data to a read-head of a magnetic stripe reader. Pet. 49–50; Ex. 1008, 5:34–39, 11:3–8.

Patent Owner generally argues Moullette does not teach that its adaptor 14 with consumer pod portion 16 is a portable telephonic device, or that consumer pod portion 16 should be incorporated into a cell phone. Prelim. Resp. 40–42; Ex. 1007, Figs. 3A, 4A; Ex. 1008, 4:10–15, 7:43–58, Fig. 1. Petitioner, however, does not propose the combinations which Patent Owner argues. Instead, Petitioner's proposed combination is to use Moullette's inductors in Zellner's cell phone. Pet. 42. Accordingly, Patent Owner's arguments at this stage of the proceeding do not show sufficient deficiency in Petitioner's evidence that the combination of Zellner and Moullette teaches the limitation of claim 3.

Claim 4 depends from claim 1 and recites "*wherein the device is a portable media player*." Ex. 1001, 14:64–65. Petitioner contends that Zellner teaches that its invention may be used with a PDA, cell phone or other portable electronic device, which may include applications such as games, videos and music. Pet. 52; Ex. 1008, 11:3–8, 11:15–21. Petitioner further notes the device's graphical user interfaces may include a display, touch screen, speaker and video player. Pet. 52–53; Ex. 1008, 11:31–33.

Petitioner contends a person of ordinary skill in the art would have understood Zellner's device to be a portable media player. Pet. 53; Ex. 1002 ¶ 141.

Patent Owner presents the same arguments for claim 4 as for claim 3. Prelim. Resp. 39–42. For reasons explained, at this stage of the proceeding, we are unpersuaded that Patent Owner's arguments show sufficient deficiency in Petitioner's evidence that the combination of Zellner and Moullette teaches claim 4.

Claim 5 depends from claim 1 and recites that the device "*further compris[es] a display operable to display a virtual payment card*." Ex. 1001, 14:66–67. Petitioner contends that Zellner teaches its device is configured to display a full size image of a credit card. Pet. 53–54; Ex. 1008, 1:53–64, 7:17–21, Figs. 2A–3B; Ex. 1002 ¶¶ 142–143. Patent Owner argues that scrolling through Zellner's credit cards on Moullette's public device (i.e., Moullette's adaptor 14 with consumer pod portion 16) would be a significant privacy and security violation, and that no one would consider storing their personal credit cards or allowing them to be displayed on a public device. Prelim. Resp. 42–43; Ex. 1008, 6:38–42.

Patent Owner's argument does not address Petitioner's evidence that a person of ordinary skill in the art would have incorporated Moullette's inductor coil into Zellner's device to arrive at the limitation of claim 5. Patent Owner's argument assumes combinations that Petitioner does not propose. Accordingly, Patent Owner's arguments, at this stage of the proceeding and on this record, do not show sufficient deficiency in Petitioner's evidence that the combination of Zellner and Moullette teaches the limitation of claim 5.

Claim 6 depends from claim 1 and recites that the device "*further compris[es] a touch-sensitive display operable to display a virtual payment card*." Ex. 1001, 15:1–2. Petitioner relies on the same evidence provided for claim 5 to teach the claimed limitation, further noting that Zellner teaches that its device's graphical user interface can include a display and touch screen, and that various touch-screen areas may be provided on a flat panel display to allow user access to credit card images. Pet. 54; Ex. 1008, 7:15–19, 11:31–33; Ex. 1002 ¶ 144.

Patent Owner presents the same argument for claim 6 as for claim 5, arguing that Moullette fails to disclose a touch-sensitive display. Prelim. Resp. 42–43; Ex. 1008, 6:38–41. Petitioner relies not on Moullette but on Zellner to teach the limitation of claim 6. *See* Pet. 54. Accordingly, at this stage of the proceeding, we are unpersuaded that Patent Owner's arguments show sufficient deficiency in Petitioner's evidence that the combination of Zellner and Moullette teaches the limitation of claim 6.

Claim 7 depends from claim 1 and recites "*wherein the RFID circuitry comprises an RFID antenna*." Ex. 1001, 15:3–4. Petitioner contends that Zellner teaches that its device includes a short range RF system 610, an RFID receiver 620, and an RFID transmitter 630. Pet. 54–55; Ex. 1008, 7:42–58, 9:47–50; Ex. 1002 ¶ 145. Petitioner contends that a person of ordinary skill in the art would have understood that RFID receivers and RFID transmitters require an antenna, and that Zellner thus discloses an RFID antenna. Pet. 55; Ex. 1002 ¶ 145. Patent Owner does not dispute Petitioner's evidence at this time but instead relies on its arguments presented for claim 1, which we find unpersuasive. Accordingly, we are not persuaded that Patent Owner's arguments show sufficient deficiency in

Petitioner's evidence that Pitroda teaches or suggests the limitation of claim 7.

Claim 8 depends from claim 1 and recites "*wherein the RFID circuitry is further operable to electrically couple the device to the payment terminal when the device is outside and within proximity of the payment terminal*." Ex. 1001, 15:5–8. Petitioner contends that Zellner teaches a portable cell phone that can communicate credit card information to a payment terminal through a radio, magnetic and/or other interface, which, according to Petitioner, means that Zellner's device can be electrically coupled to the payment terminal from outside and within proximity of the payment terminal. Pet. 55–56; Ex. 1008, 3:22–25, 10:63–11:13; Ex. 1002 ¶¶ 146–149. Petitioner further contends Moullette teaches that its consumer pod portion 16 interacts at short range with an RF proximity chip card, and that it can interact with adaptor 14 by bringing an RF proximity chip card in proximity to a wireless transceiver. Pet. 56; Ex. 1007, 4:10–18; Ex. 1002 ¶ 148.

Patent Owner argues that Zellner only describes a card with a programmable magnetic stripe that allows multiple credit cards to be stored and selected, and which is swiped through a reader. Prelim. Resp. 43–44; Ex. 1008, 1:64–2:2, 6:38–42, 11:31–37. Patent Owner's argument does not address, however, Zellner's cell phone embodiments. *See, e.g.*, Ex. 1008, 10:63–11:13, Fig. 12. Petitioner's evidence shows that Zellner is not limited to cards that can be swiped through a reader, as Patent Owner argues.

Patent Owner argues that Zellner does not disclose that its devices can communicate from outside a reader. Prelim. Resp. 44. Patent Owner's argument does not explain how Zellner's cell phone would communicate

other than from outside of the reader, as Zellner's cell phone does not appear to have a configuration that would allow it to be swiped through a card reader. *See* Ex. 1008, Fig. 12.

Patent Owner further argues that Moullette's inductive component is affixed to its reader, and is therefore a non-portable device. Prelim. Resp. 44–45; Ex. 1007, Figs. 3A, 4A. Claim 8 does not recite that the device is portable. A limitation that does not appear in a claim cannot be relied upon for patentability. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982).

Accordingly, Patent Owner's arguments, at this stage of the proceeding and on this record, do not show sufficient deficiency in Petitioner's evidence that the combination of Zellner and Moullette teaches the limitation of claim 8.

Independent claim 9 is nearly identical to claim 1 except for the omission of the "coil" as a claim element. Ex. 1001, 15:9–19. Petitioner relies on the same evidence presented for the limitations of claim 1 for the corresponding limitations of claim 9. Pet. 57. Patent Owner likewise relies on the same argument for claim 9 as for claim 1. Prelim. Resp. 45–46. For reasons explained with respect to claim 1, at this stage of the proceeding and based on the current record, we are persuaded that Petitioner presents sufficient evidence that Zellner and Moullette teaches or suggests all limitations of claim 9, and we are unpersuaded at this time that Patent Owner sufficiently refutes that evidence.

Dependent claims 10–16 are nearly identical to claims 2–8 and Petitioner relies on the same evidence to show that the combination of Zellner and Moullette teaches or suggests the limitations of these claims, and Patent Owner relies on the same arguments to dispute Petitioner's evidence.

Pet. 58–59; Prelim. Resp. 46–47. For the reasons explained with respect to claims 2–8, at this stage of the proceeding and based on the current record, we are persuaded that Petitioner presents sufficient evidence that the combination of Zellner and Moullette teaches or suggests all limitations of claims 10–16, and we are not persuaded at this time that Patent Owner sufficiently refutes that evidence.

6. Objective Indicia of Nonobviousness

Patent Owner argues that its objective indicia of nonobvious render the claims of the '545 Patent non-obvious. Prelim. Resp. 54–59. For the reasons previously stated, at this stage of the proceeding and based on the current record, we are unpersuaded that Patent Owner has shown sufficiently a nexus between the alleged objective indicia of nonobvious and the claims of the '545 Patent.

7. Conclusion

In light of the foregoing discussion, we determine that the information presented in the Petition and Preliminary Response, and accompanying exhibits and testimony, shows that there is a reasonable likelihood that Petitioner would prevail with respect to claims 1–16. Specifically, based on the current record, we are persuaded Petitioner makes a sufficient showing that each limitation of claims 1–16 is taught or suggested by the combination of Zellner and Moullette, and that a person of ordinary skill in the art would have had reason to combine the teachings of the references, with a reasonable expectation of success in arriving at the claimed invention.

C. Asserted Obviousness of Claims 1–16 over Pitroda

Petitioner contends claims 1–16 would have been obvious under 35 U.S.C. § 103(a) based on Pitroda. Pet. 60–72.

1. Pitroda (Ex. 1015)

Pitroda is titled "Point of Sale and Display Adapter for Electronic Transaction Device." Ex. 1015, code (54). Pitroda discloses "[a]n adapter for use with a conventional POS card reader to interface with PDA's, Wireless Phones, and other Handheld devices, through Infrared or RF media, such that signals received from the devices can be converted to conventional magnetic stripe and/or smart card format, as required by the conventional POS card readers." *Id.* at code (57). In one embodiment, Pitroda describes that the adapter is an "extension" of the electronic transaction device, which may be a PDA or wireless telephone. *Id.* at 2:3–6, 11:11–14. Pitroda describes the wireless telephones as including dialing, transmitting and receiving circuitry. *Id.* at 1:27–28. Pitroda further describes that its device has proximity radio frequency devices. *Id.* at 11:14–28. Pitroda's adaptor may include a point-of-sale (POS) interface including a magnetic stripe emulator, smart card emulator or both. *Id.* at 3:57–66. Pitroda's magnetic stripe emulator may include an electromagnet with one or more coils. *Id.* at 3:66–67, 8:16–17, Figs. 12, 14.

Pitroda's Figure 20 is reproduced below.

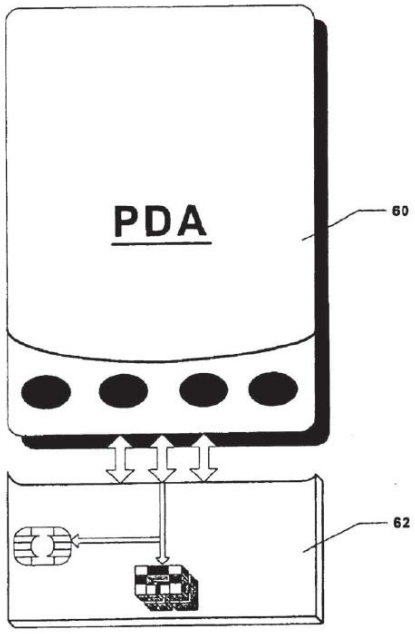

FIG. 20

Figure 20 is an illustration of an example of Pitroda's electronic transaction device 60 with extension 62. *Id.* at 5:35–36, 11:11–14.

Pitroda's Figure 21 is reproduced below.

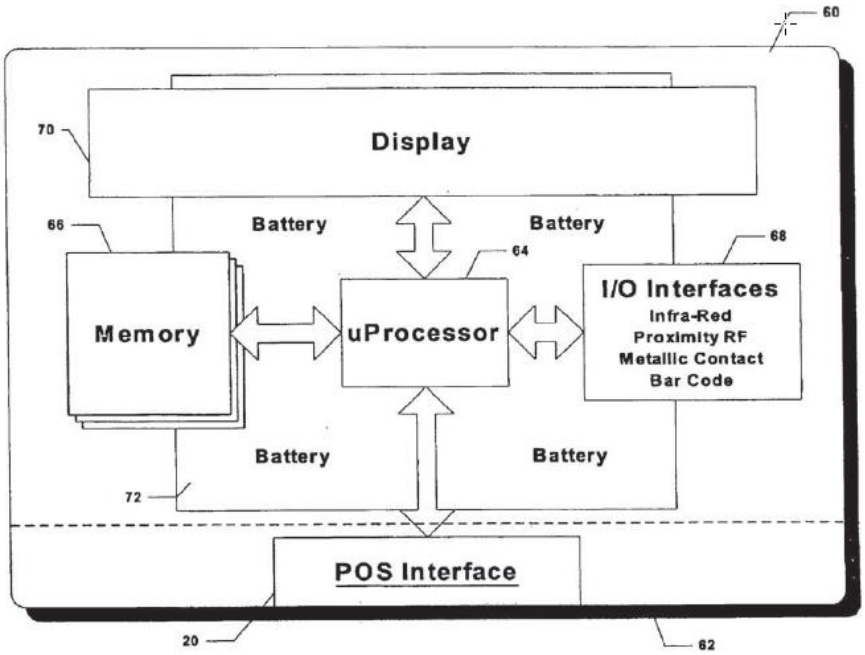

FIG. 21

Figure 21 is a block diagram of electronic transaction device 60, which includes extension 62. *Id.* at 5:37–38. Electronic transaction device 60 comprises microprocessor 64 coupled to memory 66, I/O interfaces 68, display 70, which may be a touch sensitive liquid crystal display, and battery 72. *Id.* at 11:11–21. The extension 62 includes POS interface 20. *Id.* at 11:11–14. Microprocessor 64 controls data flow to POS interface 20. *Id.* at 11:29–31.

2. Claim 1

Petitioner reads claim 1 on Pitroda as follows.

[preamble] A device comprising:

Petitioner contends that, to the extent the preamble is limiting, Pitroda discloses a device, namely, electronic transaction device 60 with extension 62 including POS interface circuit 20. Pet. 60; Ex. 1015, 11:12–14, Figs. 20, 21; Ex. 1002 ¶ 162.

At this stage of the proceeding and based on the current record, we need not resolve whether the preamble is limiting, because Petitioner makes a sufficient showing for the purpose of institution that Pitroda teaches the preamble of claim 1.

[1a] circuitry operable to communicate with a cellular network;

Petitioner contends that Pitroda discloses that its electronic transaction device 60 may be a wireless telephone containing circuitry that communication with various cellular network protocols, including AMPS, GSM, CDMA and TDMA. Pet. 60–61; Ex. 1015, 1:28–32, 2:3–6; Ex. 1002 ¶ 163.

At this stage of the proceeding and based on the current record, we are persuaded Petitioner makes a sufficient showing that Pitroda's electronic

transaction device 60, which may be a wireless telephone, teaches limitation [1a] of claim 1.

[1b] RFID circuitry operable to electrically couple the device to a payment terminal and to communicate RFID data to the payment terminal;

Petitioner contends that Pitroda discloses that its POS interface comprises a magnetic stripe emulator, a smart card emulator, or both. Pet. 61, Ex. 1015, 3:65–66. Petitioner contends the term "smart card" refers to devices governed by the ISO 14443 standard, and that this is an RFID standard. Pet. 61; Ex. 1015, 2:46–49; Ex. 1002 ¶ 164. Petitioner also states that Pitroda describes that is device may be used to perform transactions with a POS using a "proximity RF link." Pet. 61; Ex. 1015, 3:7–12, 11:22–27. Petitioner contends a person of ordinary skill in the art would have understood that proximity RF-based communications conforming to ISO 14443 referred to RFID. Pet. 61; Ex. 1002 ¶ 164.

Petitioner further contends that a person of ordinary skill in the art would have been motivated to modify Pitroda to include RFID circuitry because it was a standard technology in POS terminals, and the components were readily available and could have been incorporated into Pitroda's device with little or no experimentation. Pet. 61–62; Ex. 1002 ¶ 165.

At this stage of the proceeding and based on the current record, we are persuaded Petitioner makes a sufficient showing that Pitroda teaches or suggests limitation [1b] of claim 1.

[1c] a coil;

Petitioner contends that Pitroda discloses a POS interface comprises a magnetic stripe emulator, which may comprise an electromagnet with a coil. Pet. 62; Ex. 1015, 3:65–67, 8:16–17, 8:32–34, Figs. 12, 14, 20; Ex. 1002 ¶ 166.

At this stage of the proceeding and based on the current record, we are persuaded Petitioner makes a sufficient showing that Pitroda teaches limitation [1c] of claim 1.

[1d] a processor for controlling the operation of the coil such that the coil is operable to electrically couple the device to the payment terminal and to communicate data in magnetic stripe data format to the payment terminal,

Petitioner contends Pitroda teaches a processor that controls the POS interface, including the coil. Pet. 64; Ex. 1015, 9:48–56, 9:58–61; Ex. 1002 ¶¶ 167, 168. Petitioner contends Pitroda's magnetic stripe emulation conforms to the data format requirements of magnetic stripe payment cards, including ISO 7810, 7811, and 7813. Pet. 64; Ex. 1015, 7:23–28. Petitioner contends because Pitroda's processor drives the electromagnets to emulate magnetic stripe data by inducing flux changes in the reading sensor, a POSITA would have understood that the coil operates to electrically couple to a payment terminal, and communicate data in magnetic strip data format to the payment terminal. Pet. 64–65; Ex. 1002 ¶ 168.

At this stage of the proceeding and based on the current record, we are persuaded Petitioner makes a sufficient showing that Pitroda teaches the limitation [1d] of claim 1.

[1e] wherein the coil is operable to electrically couple the device to the payment terminal from a position beneath a surface of the device.

Petitioner contends Pitroda describes that housing 12 encloses POS interface circuit 20 and that electromagnets 30 are embedded in the housing in the approximate position of one or more tracks of a magnetic stripe. Pet. 65; Ex. 1015, 5:42–44, 8:26–32, Figs. 13, 14, 20; Ex. 1002 ¶ 169. Petitioner contends that because the POS interface and electromagnets 30 are enclosed or embedded in the housing, they are beneath the surface of the device.

At this stage of the proceeding and based on the current record, we are persuaded Petitioner makes a sufficient showing that limitation [1e] is taught by Pitroda.

3. Patent Owner's Arguments for Claim 1

Patent Owner argues that Pitroda fails to teach or suggest the features of claim 1 because it is silent regarding RFID receivers. Prelim. Resp. 48. According to Patent Owner, Pitroda instead describes a general class of RF transceivers having no specific protocols or data formats. *Id.* at 48; Ex. 1015, 6:50–52; 11:22–27. Patent Owner argues that RFID devices require "a specific handshake protocol not disclosed by Pitroda that enables RFID transceivers to recognize each other and establish communication in accordance with this limitation." Prelim. Resp. 48. Patent Owner argues that "Pitroda, as a [person of ordinary skill in the art], did not find it obvious to add RFID capabilities to his device." *Id.* Patent Owner further argues "[a]dding RFID circuitry to Pitroda will not make the Pitroda adapter into a device with all the attributes of claim 1 of the '545 patent." Patent Owner closes its argument by stating "Pitroda does not determine presence of RFID receiver, couple with/transmit to RFID receiver, and thus, fails to teach or suggest the device as claimed in claim 1." *Id.* at 48.

Patent Owner's argument appears to overlook that claim 1 does not recite an RFID receiver, let alone determining its presence, or electrically coupling with it, or transmitting data to it. Instead, claim 1 recites in limitation [1b] "*RFID circuitry operable to electrically couple the device to a payment terminal and to communicate RFID data to the payment terminal*." Ex. 1001, 14:49–51 (emphasis added). A limitation that does not

appear in a claim cannot be relied upon for patentability. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982).

Also, Patent Owner's argument does not appear to address Petitioner's contentions that Pitroda's POS interface includes a smart card emulator operating under ISO 14443, which Petitioner alleges is an RFID standard. Pet. 61; Ex. 1015, 2:46–49, 3:65–66; Ex. 1002 ¶ 164. Patent Owner does not explain sufficiently why Pitroda's smart card emulator, operating under an RFID standard, would not have the same RFID receiver functionality, and perform the same handshake, that Patent Owner associates with the RFID feature of claim 1.

At this stage of the proceeding and based on the current record, we are persuaded that Petitioner presents sufficient evidence that Pitroda teaches or suggests all limitations of claim 1, and we are unpersuaded at this time that Patent Owner sufficiently refutes that evidence.

4. Claims 2–16

Claim 2 depends from claim 1 and recites "*wherein the device is thicker than a payment card*." Ex. 1001, 14:60–61. Petitioner contends that Pitroda's electronic transaction device may be a PDA or wireless telephone that is thicker than a payment card. Pet. 65; Ex. 1015, 2:3–6, 11:12–14, 5:52–56; Ex. 1002 ¶ 170. Patent Owner does not argue against this evidence, but relies on its argument for claim 1, which we find unpersuasive. Prelim. Resp. 49. Thus, at this stage of the proceeding and based on the current record, Petitioner presents sufficient evidence that Pitroda teaches or suggests the limitation of claim 2, and we are unpersuaded at this time that Patent Owner sufficiently refutes Petitioner's evidence.

Claim 3 depends from claim 1 and recites "*wherein the device is a portable electronic device*." Ex. 1001, 14:62–63. Petitioner contends Pitroda's electronic transaction device includes wireless telephones which are "portable telephonic devices" as claimed. Pet. 66; Ex. 1015, 2:3–6, 2:19–20; Ex. 1002 ¶ 171. Patent Owner argues Pitroda does not disclose a "portable telephonic device" because Pitroda's device is an adapter, not a telephonic device. Prelim. Resp. 49–50; Ex. 1015, 3:7–14, 3:52–64. Patent Owner, however, does not address that Pitroda teaches that "[t]he present invention is not limited to stand-alone adapters." Ex. 1015, 11:11–12. Pitroda further teaches that electronic transaction device 60 includes extension 62 that includes POS interface circuit 20. Ex. 1015, 11:11–14. Accordingly, at this stage of the proceeding and based on the current record, Petitioner presents sufficient evidence for purposes of institution to show that Pitroda teaches or suggests the limitation of claim 3. Patent Owner's arguments do not sufficiently refute Petitioner's evidence.

Claim 4 depends from claim 1 and recites "*wherein the device is a portable media player*." Ex. 1001, 14:64–65. Petitioner contends Pitroda's electronic transaction devices include "computing devices programmed to perform electronic transactions, such as PDAs and wireless telephones." Pet. 66; Ex. 1015, 2:3–6. Petitioner contends that "[a] POSITA would have understood that PDAs, wireless telephones, and other hand-held computer devices could constitute portable media players." Ex. 1002 ¶¶ 172–173. Patent Owner does not contest Petitioner's evidence but instead relies on its arguments presented for claim 1, which we find unpersuasive for the stated reasons. Accordingly, at this stage of the proceeding and based on the current record, Petitioner has presented sufficient evidence for purposes of

institution that Pitroda teaches or suggests the limitation of claim 4. Patent Owner's arguments do not sufficiently refute Petitioner's evidence.

Claim 5 depends from claim 1 and recites that the device "*further compris[es] a display operable to display a virtual payment card*." Ex. 1001, 14:66–67. Petitioner contends that Pitroda teaches the limitation of claim 5. Ex. 1002 ¶ 174. Specifically, Petitioner contends Pitroda's device may include a "display," including a "touch sensitive liquid crystal display." Pet. 67; Ex. 1015, 11:14–21. Petitioner contends that Pitroda teaches that "[e]xisting credit card (and other plastic card) images may be electronically stored and reproduced on the electronic transaction device display." Pet. 67 (alteration in original); Ex. 1015, 2:11–17. Petitioner contends Pitroda describes a display that is "adapted to display the account information." Pet. 67; Ex. 1015, 4:37–39. Patent Owner does not argue against Petitioner's evidence but instead reasserts the arguments it made for claim 1. Prelim. Resp. 50. At this stage of the proceeding and based on the current record, Petitioner has presented sufficient evidence that Pitroda teaches or suggests the limitation of claim 5. Patent Owner's arguments do not sufficiently refute Petitioner's evidence.

Claim 6 depends from claim 1 and recites that the device "*further compris[es] a touch-sensitive display operable to display a virtual payment card*." Ex. 1001, 15:1–2. Petitioner relies on the same evidence provided for claim 5 to teach the claimed limitation. Pet. 67–68; Ex. 1015, 11:18–21; Ex. 1002 ¶ 175.

Patent Owner acknowledges Pitroda's electronic device may be a PDA, wireless phone or other handheld device, but argues that Pitroda "does not disclose the touch sensitive display is operable to display a visual

representation of a payment card and the electronic transaction devices do not communicate with the read head of the card reader by an electromagnetic field." Prelim. Resp. 51; Ex. 1015, 11:17–20.

As Petitioner noted with respect to claim 5, however, Pitroda's background discloses that it was known in the art to display a visual representation of a payment card on the display of an electronic transaction device, and Pitroda further teaches that its electronic transaction device includes a touch sensitive liquid crystal display. Ex. 1015, 2:15–17, 11:17–20. Putting these teachings together, Petitioner provides sufficient evidence that the limitation of claim 6 was taught by Pitroda, and Patent Owner's argument does not persuade us otherwise.

Regarding Patent Owner's assertion that Pitroda does not communicate with the read-head of a card reader by an electromagnetic field, we note that claim 6 recites no such feature. In any case, Pitroda uses "POS interface 20" in the embodiments of both the adapter and electronic transaction device. Ex. 1015, 5:40–49, 11:11–14. Pitroda describes "POS interface 20" as capable of communicating electromagnetically with card reader 44. Ex. 1015, 6:56–7:9. Thus, at this stage of the proceeding and based on the current record, Petitioner presents sufficient evidence that Pitroda teaches, or at least suggests, the limitation of claim 6, and Patent Owner does not sufficiently refute Petitioner's evidence.

Claim 7 depends from claim 1 and recites "*wherein the RFID circuitry comprises an RFID antenna*." Ex. 1001, 15:3–4. Petitioner contends that Pitroda teaches the limitation of claim 7. Pet. 68; Ex. 1002 ¶¶ 176–177. Specifically, Petitioner contends that Pitroda describes a "smart card emulator" adhering to the ISO 14443 standards for "[c]ontactless-type

smart cards. Pet. 68; Ex. 1015, 2:46–49. Petitioner contends that a POSITA would have understood that Pitroda's smart card emulator requires an RFID antenna to communication using ISO 14443, which is an RFID standard. Pet. 68; Ex. 1002 ¶ 176. Petitioner contends that a POSITA would have been motivated to modify Pitroda's device to include an RFID antenna. Pet. 68; Ex. 1002 ¶ 177. Patent Owner does not dispute Petitioner's evidence but instead relies on its arguments presented for claim 1, which we find unpersuasive for reasons explained. Accordingly, at this stage of the proceeding and based on the current record, Petitioner presents sufficient evidence that Pitroda teaches or suggests the limitation of claim 7, and Patent Owner does not sufficiently refute Petitioner's evidence.

Claim 8 depends from claim 1 and recites "*wherein the RFID circuitry is further operable to electrically couple the device to the payment terminal when the device is outside and within proximity of the payment terminal*." Ex. 1001, 15:5–8. Petitioner contends that Pitroda teaches the limitation of claim 8. Pet. 69; Ex. 1002 ¶ 178. Specifically, Petitioner contends that Pitroda teaches a smart card emulator adhering to ISO 14443 which is an RFID standard for "[c]ontactless-type smart cards." Pet. 69 (citing Ex. 1015, 2:46–49). Petitioner contends "[a] POSITA would have understood that RFID circuitry enables contactless transmission of data and is inherently operable to electrically couple the device to the payment terminal when the device is outside and within proximity of the payment terminal." Pet. 69; Ex. 1002 ¶ 178. Petitioner further contends that "[d]evices complying with the ISO 14443 standard are designed to communicate data to a compatible reader at distances of up to 10 cm (3.9 in)." Pet. 69; Ex. 1002 ¶ 178; Ex. 1009 ¶ 88; Ex. 1007 1:28–39. Petitioner

contends "a POSITA would have understood that Pitroda discloses RFID circuitry operable to electrically couple to the payment terminal when outside and within proximity of the terminal." Pet. 69; Ex. 1002 ¶ 178. Patent Owner does not dispute Petitioner's evidence for claim 8 but relies on its argument for claim 1, which we find unpersuasive for the reasons stated. Accordingly, at this stage of the proceeding and based on the current record, Patent Owner's evidence shows sufficiently that Pitroda teaches or suggests the limitation of claim 8, and Patent Owner's arguments do not sufficiently refute Petitioner's evidence.

Independent claim 9 is nearly identical to claim 1 except for the omission of the "coil" as a claim element. Ex. 1001, 15:9–19. Petitioner relies on the same evidence presented for the limitations of claim 1 for the corresponding limitations of claim 9. Pet. 69–70. Patent Owner likewise relies on the same argument for claim 9 as for claim 1. Prelim. Resp. 52–53. For reasons explained with respect to claim 1, at this stage of the proceeding we are persuaded Petitioner presents sufficient evidence that Pitroda teaches or suggests all limitations of claim 9, whereas we are unpersuaded based on the current that Patent Owner sufficiently refutes that evidence.

Likewise, dependent claims 10–16 are nearly identical to claims 2–8 and Petitioner relies on the same evidence to show Pitroda teaches or suggests the limitations of each of these claims, and Patent Owner relies on the same arguments to dispute Petitioner's evidence. Pet. 70–72; Prelim. Resp. 53–54. For the reasons explained with respect to claims 10–16, at this stage of the proceeding and based on the current record, we are persuaded that Petitioner presents sufficient evidence that Pitroda teaches or suggests

all limitations of claims 10–16, whereas Patent Owner does not sufficiently refute that evidence at this time.

5. Objective Indicia of Nonobviousness

Patent Owner argues that its objective indicia of nonobviousness render the claims of the '545 Patent non-obvious. Prelim. Resp. 54–59. For the reasons previously stated, based on the current record, we are unpersuaded that Patent Owner has shown sufficiently a nexus between the alleged objective indicia of nonobviousness and the claims of the '545 Patent.

6. Conclusion

In light of the foregoing discussion, we determine that the information presented in the Petition and Preliminary Response, and accompanying exhibits and testimony, shows that there is a reasonable likelihood that Petitioner would prevail with respect to claims 1–16. Based on the current record and at this stage of the proceeding, we are persuade Petitioner makes a sufficient showing that each limitation of claims 1–16 is taught or suggested by Pitroda, and that a person of ordinary skill in the art had reason to combine the teachings of the reference, with a reasonable expectation of success in arriving at the claimed invention.

IV. CONCLUSION

In light of the foregoing, based on the current record and at this stage of the proceeding, we are persuade Petitioner has demonstrated a reasonable likelihood of prevailing on its assertions that claims 1–16 would have been obvious under 35 U.S.C. § 103 based on (1) the combination of Doughty and Zellner, (2) the combination of Zellner and Moullette and (3) Pitroda.

Accordingly, we institute trial on claims 1–16 on all challenges to patentability asserted by Petitioner.

Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. At this stage of the proceeding, we have not made a final determination with respect to the patentability of the challenged claims or to the construction of any claim term.

V. ORDER

For the foregoing reasons, it is

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–16 of the '545 Patent is hereby instituted on all challenges to patentability set forth in the Petition; and

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

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