

IPR2025-00645
Patent No. 11,270,174

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD., and
SAMSUNG ELECTRONICS AMERICA, INC.,

Petitioners,

v.

ICASHE, INC.,

Patent Owner.

Case IPR2025-00645

Patent No. 11,270,174

**PATENT OWNER'S PRELIMINARY RESPONSE
UNDER 35 U.S.C. §313 AND 37 C.F.R. §42.107**

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PATENT OWNER'S EXHIBIT LIST

Ex. 2001	Complaint for Patent Infringement, <i>iCashe, Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.</i> , Civil Action No. 2:24-cv-00429, Dkt. 1 (June 6, 2024)
Ex. 2002	Defendants Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.'s Answer and Defenses to Plaintiff's Complaint for Patent Infringement, <i>iCashe, Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.</i> , Civil Action No. 2:24-cv-00429, Dkt. 25 (October 1, 2024)
Ex. 2003	Defendants Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.'s Invalidity Contentions, <i>iCashe, Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.</i> , Civil Action No. 2:24-cv-00429, (November 20, 2024)
Ex. 2004	Order, <i>iCashe, Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America</i> , Civil Action No. 2:24-cv-00429, Dkt. 38 (May 1, 2025)
Ex. 2005	Affidavit of Service of Complaint, <i>iCashe, Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.</i> , Civil Action No. 2:24-cv-00429, Dkt. 11 (June 17, 2024)
Ex. 2006	Plaintiff iCashe, Inc.'s Notice of P.R. 3-1 Disclosures and P.R. 3-2 Production, <i>iCashe, Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.</i> , Civil Action No. 2:24-cv-00429, Dkt. 16 (September 5, 2024)
Ex. 2007	Notice of Compliance, <i>iCashe, Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.</i> , Civil Action No. 2:24-cv-00429, Dkt. 36 (November 20, 2024)
Ex. 2008	Defendants' Ineligibility Contentions, <i>iCashe, Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.</i> , Civil Action No. 2:24-cv-00429, (November 20, 2024)
Exs. 2009	<i>Reserved</i>

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Ex. 2020	Defendants’ Invalidity Contentions, Exhibits E-E9, <i>iCashe, Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.</i> , Civil Action No. 2:24-cv-00429, (November 20, 2024)
Ex. 2021	<i>Reserved</i>
Ex. 2022	<i>Reserved</i>
Ex. 2023	Defendants’ Invalidity Contentions, Exhibits H, <i>iCashe, Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.</i> , Civil Action No. 2:24-cv-00429, (November 20, 2024)
Exs. 2024 – 2027	<i>Reserved</i>
Ex. 2028	Defendants’ Ineligibility Contentions, Appendix E, <i>iCashe, Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.</i> , Civil Action No. 2:24-cv-00429, (November 20, 2024)
Ex. 2029	<i>Reserved</i>
Ex. 2030	<i>Reserved</i>
Ex. 2031	Declaration of Marc E. Levitt, Ph.D.
Ex. 2032	Silicon Labs, <i>AN148: Magnetic Stripe Reader</i> , Rev. 1.3 8/08 (2008)
Ex. 2033	<i>Reserved</i>

I. PRELIMINARY STATEMENT

Pursuant to 37 C.F.R. § 42.107, Patent Owner iCashe, Inc. (“iCashe”) submits this Preliminary Response to the Petition for *Inter Partes* Review (“IPR”) of U.S. Patent No. 11,270,174 (the “’174 patent”). Paper 2 (“Petition”). Petitioners Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, “Petitioners”) challenge the validity of claims 1-9 of the ’174 patent. For the reasons identified in Patent Owner’s Memorandum in Support of Discretionary Denial, institution should be discretionarily denied pursuant to 35 U.S.C. § 314. Paper 7 (“Discretionary Denial Memorandum”). Namely, (1) the district court trial in the related litigation will precede a final written decision by five months; (2) Samsung waited more than nine months to file its petitions for *inter partes* review; (3) the district court denied Samsung’s motion to stay and will likely reject a renewed motion; (4) *inter partes* review will not moot the district court proceedings; (5) the petition relies on extensive expert testimony; and (6) the ’174 patent has been in force since 2009.

In addition to the reasons identified in Patent Owner’s Discretionary Denial Memorandum, *inter partes* review should not be instituted because the Petition fails to established a reasonable likelihood that any of the challenged claims are unpatentable. The combinations asserted in the Petition do not disclose all of the limitations of the challenged claims, as discussed below and confirmed in the

Declaration of Marc E. Levitt, Ph.D.—who worked as a POSITA in the field at the time of the inventions. In addition, the Petition advances unsupported arguments that a POSITA would have been motivated to combine references that address different technical issues and defeat each other’s goals. Accordingly, Patent Owner requests that the Board deny institution of *inter partes* review.

II. FACTUAL BACKGROUND OF THE ’174 PATENT

The inventors of the ’174 patent developed an innovative technology that advanced the state of the art when filed. In 2005, with the prevalence of mobile phones growing rapidly across the world, inventors Dr. Narendra, Mr. Tadepalli, and Mr. Spitzer envisioned a future in which mobile phones would replace consumers’ wallets. They set out to invent a mechanism for consumers to use their phones, instead of cash, checks, or credit cards, to complete point-of-sale transactions. The ’174 patent claims are directed to circuitry for high-performance communications between mobile devices and point-of-sale payment terminals to facilitate speedy mobile contactless payments—a technology that is today commonly referred to as “tap to” functionality. Ex. 2031, ¶ 37.

The ’174 patent inventors also recognized that their solution would need to interface with existing point-of-sale infrastructure in order to maximize adoption. Ex. 2031, ¶ 38. In 2005, point-of-sale terminals relied primarily on magnetic stripe readers through which consumers would physically swipe a credit card with a

magnetic stripe.¹ Ex 1001, 1:64-67; Ex. 2031, ¶ 39. The inventors therefore sought to develop apparatuses, systems, and methods through which a mobile phone could securely communicate with a traditional magnetic stripe reader to affect a transaction in a contactless manner and without a physical card swipe. *See, e.g.*, Ex. 1001, 3:45-48, 4:60-65, 5:41-44; Ex. 2031, ¶ 41.

The '174 patent, entitled “Mobile phone with magnetic card emulation,” was filed as U.S. Pat. App. No. 17/218,733 on March 8, 2022. The '174 patent claims priority to the original patent in the priority chain, U.S. Pat. No. 7,581,678, the application for which was filed on February 22, 2005 as U.S. Pat. App. No. 11/063,291.

The Petition challenges 9 claims of the '174 patent: 1 independent claim (claim 1) and 8 dependent claims (claims 2-9). Claim 1 of the '174 patent recites: [1.pre] A mobile phone comprising:

[1.a] a memory to hold transaction data for use in a plurality of transactions;

¹ In 2005, while magnetic stripe cards and readers were prevalent, smartcards, i.e., those that were the shape and form of a magnetic stripe card, but were embedded with a small microprocessor that interacted with a different type of coordinating reader, were also becoming more common. Ex. 2031, ¶ 40; Ex. 1001, 4:17-27.

[1.b] a current carrying conductor capable of producing a time-varying magnetic field that represents the transaction data in the plurality of transactions;

[1.c] a network interface for connecting the mobile phone to a network, wherein one or more parts of the transaction data are downloadable to the mobile phone via the network;

[1.d] a driver to excite the current carrying conductor; and

[1.e] a processor coupled to control the driver.

Ex. 1001, 17:9-20.

The inventions claimed in the '174 patent improved the process of effectuating financial transactions by integrating an electronic transaction card into a mobile device. Ex. 1001, 2:58-64. Prior to the '174 patent, financial transactions required an electronic transaction card, like a credit card, to be swiped through a card reader, such that “[w]hen the card is swiped through a magnetic card reader, the information is transferred to the magnetic card reader to perform a transaction.” *Id.*, 1:64-67. Rather than requiring a physical swipe, the '174 patent contemplates implementing the invention by “emulat[ing] the swipe of a credit card.” *E.g., id.*, 3:45-48.

To do this, the invention of the '174 patent includes a stripe on an electronic transaction card from which “one or more time-varying magnetic fields may emanate.” *Id.*, 3:39-42. These communications are used to effectuate transactions,

including financial transactions, among other types. *See id.*, 3:45-48. For example, the time-varying magnetic field may communicate with a point-of-sale device by representing transaction data. *See id.*, 11:34-38. In this way, “intelligent device 102 may program electronic transaction card 104 to operate as a credit card, a debit card, or the like.” *Id.*, 4:28-30.

In the invention of the ’174 patent, the intelligent electronic device is a mobile phone. *Id.*, 5:10-12; 17:9 (claim 1). The electronic transaction card of the ’174 patent need not have a particular form factor, as long as it is compliant with integration into the “add-on slot” within the phone. *Id.*, 4:51-65. The stripe on the card need not be visible, such as where “circuitry may be included within electronic transaction card 106 to produce the time-varying magnetic field and no visible indication may be present on an external face of electronic transaction card 104.” *Id.*, 3:55-58. Indeed, “in some embodiments of the present invention, transactions may utilize smartcard interfaces on electronic transaction cards in addition to, or in lieu of, stripes that emit time-varying magnetic fields.” *Id.*, 4:24-27.

Additionally, the ’174 patent contemplates that portions of the transaction data may be downloadable to the mobile phone via a network. *Id.*, 17:9-20. “Intelligent electronic device 202 may include a mechanism to allow intelligent electronic device 202 to communicate with a wired or wireless network.

For example, intelligent electronic device 202 may include circuitry to communicate with a cellular phone network.” *Id.*, 5:8-10. “In some embodiments, communications over a network may play a role in the transaction,” such as receiving authorization for the transaction or reporting the transaction to an entity.” *Id.*, 5:30-37. Transaction data may be, for example, “periodically downloaded via a cellular phone network or other network connectivity.” *Id.*, 6:6-8; *see also id.*, 17:16-18.

III. CLAIM CONSTRUCTION

Petitioners do not request construction of any claim terms from the ’174 patent. Pet. at 19-20. Patent Owner does not believe that any claim terms require express construction to deny institution. Accordingly, the claims should be given their ordinary and customary meaning in light of the specification and prosecution history, as understood by a person of ordinary skill in the art. 37 C.F.R. § 100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005).

IV. PERSON OF ORDINARY SKILL IN THE ART

For the purposes of these preliminary proceedings, Patent Owner does not dispute the level of skill for a person of ordinary skill in the art (“POSITA”) other than Petitioner’s assertion that a POSITA must have specific experience in “the field of electronic devices used for transactions” rather than electronic devices more generally. Pet. at 19. Patent Owner does not waive, however, any argument

regarding the proper level of skill, and further reserves the right to later advance additional arguments.

**V. THE PETITION DOES NOT ESTABLISH A REASONABLE
LIKELIHOOD THAT THE APPLIED REFERENCES RENDER THE
CHALLENGED CLAIMS UNPATENTABLE**

The Petition does not establish a reasonable likelihood that Doughty in view of Abe (Ground 1) or Doughty in view of Abe in further view of Fox (Ground 2) discloses all of the limitations of any '174 patent claim, or that a POSITA would be motivated to combine the references. Nor do any of Petitioner's other grounds including additional references demonstrate a reasonable likelihood that any challenged claim is unpatentable. The Board should not institute trial for many reasons including, but not limited to:

- A. The Petition Does Not Establish that a POSITA Would Have Had Either a Reason to Combine Doughty and Abe or an Expectation of Success from the Combination. *See* Section V.A.3.
- B. Doughty alone or in combination with skill in the art does not enable a "mobile phone." *See* Section V.A.4.a.i.
- C. Doughty does not disclose "[t]he mobile phone of claim 1 wherein the time-varying magnetic field emulates a swipe of a magnetic card." *See* Section V.A.4.c.i.

- D. The Petition Does Not Establish that a POSITA Would Have Either a Reason to Combine Doughty and Fox or an Expectation of Success from the Combination. *See* Section V.B.2.
- E. None of The Additional References Asserted in Grounds 3-8 Remedy the Fundamental Disclosure Deficiencies of Doughty, Abe, and Fox. *See* Section C.

The Board should not institute trial on any Ground.

A. The Petition Does Not Establish a Reasonable Likelihood that Doughty in View of Abe Renders Unpatentable Claims 1-9 (Ground 1)

The Petition has not demonstrated a reasonable likelihood of success that Petitioner will prevail on any claim challenged in Ground 1 for the following reasons, summarized in section V and described in detail below.

1. Overview of Doughty

Petitioners primarily rely on U.S. Patent App. Pub. 2004/0133787 to Doughty, et al., dated July 8, 2004 and entitled “System, Method and Apparatus for Enabling, Transactions Using A Biometrically Enabled Programmable Magnetic Stripe” (Ex. 1005, “Doughty”). Unlike the ’174 patent claims, Doughty does not seek to replace consumers’ credit cards with mobile phones. Rather, Doughty purports to provide for an improved magnetic stripe credit card with a programmable stripe and biometric security. Ex. 1005, [0008] (“The present

invention provides a system, method and apparatus for a practical and secure card or device that has the advantages of a smart card and will interface with existing world-wide magnetic stripe readers without the use of adapters or bridges.”).

Doughty is directed to “authentication and processing of commercial and security related transactions and, more particularly, to a system, method and apparatus for enabling transactions using biometrically enabled programmable magnetic stripes.” Ex. 1005, [0002]; Ex 2031, ¶ 44. As Doughty explains, “security of current magnetic stripe cards is suspect due to the ease of card theft and ‘skimming’ of card data for creating and using fake cards.” *Id.*, [0003]; Ex 2031, ¶ 45. Personal financial information is “typically stored in three data tracks within the magnetic stripe” of the credit card, which “are easily created, read, and damaged.” *Id.* As a result, security for these types of cards “is low and renders their use in applications involving highly sensitive information suspect.” *Id.*

Doughty further explains that smart cards, which “primarily rely on an integrated circuit,” are “a viable way to improve the effectiveness and security of a given card or device.” *Id.* at [0004]; Ex 2031, ¶ 46. But smart cards require a “special reader” and are not compatible with traditional magnetic stripe card readers. *Id.* at [0004]; Ex 2031, ¶ 46. As a result, adoption of smart cards without a magnetic stripe “has been slow.” *Id.* at [0004]; Ex 2031, ¶ 46. Thus, Doughty identified a need for a “practical and secure card”—one that was both usable with

“magnetic stripe readers,” but also included “proper authentication ... to reduce the risk to the device holder in the event of loss or fraudulent capture” *Id.*, [0007]; Ex 2031, ¶ 46.

Doughty purports to solve this problem with (1) a programmable magnetic stripe, and (2) on-card biometric authentication. *Id.*, [0008]-[0009], [0039].

Doughty’s solution and primary teaching was to add biometric authentication to enable physical card transactions. Ex 2031, ¶ 48. Doughty described that its solution “provides stringent protections for magnetic stripe cards and devices through the use of on-card/device biometric authentication of the user and programmable magnetic stripes such that the data within the tracks of the stripe can be spatially manipulated and managed by the logic within the processor/controller of the card or device.” Ex. 1005, [0009]; Ex 2031, ¶ 48. The programmable stripe “allows magnetic stripe data to be modified or completely erased for protection,” and the on-card biometric authentication allows features to be disabled until the owner of the card enables them,” thus ensuring that the card “cannot be used if it is lost or stolen.” Ex. 1005, [0009]; Ex 2031, ¶ 48.

Doughty’s invention, which seeks to provide a secure card that “will interface with existing world-wide magnetic stripe readers without the use of adapters or bridges” (*id.* at [0008]), takes the same form as a traditional magnetic stripe card. *Id.*, [0048] (“shown in the form of a credit or debit card”); Ex 2031, ¶

49. Likewise, Doughty explains that its invention is typically mounted on a substrate that “will be a semi-flexible material such as plastic, or a laminate material,” where “[t]he substrate can then be integrated into a card, such as an access card, a credit card, a debit card, an identification card, a mini-card, a security card, a stored value card and a vendor-specific card, etc.” Ex. 1005, [0046]; Ex 2031, ¶ 49. When interacting with magnetic readers, the system of Doughty requires that secure card to be swiped through a magnetic reader to effectuate a transaction. Ex. 1005, [0051]-[0052] (noting repeatedly that “the card is swiped through the reader”); Ex. 2031 ¶ 49.² Doughty also includes a laundry

² While Doughty does contain references to “contactless” operations, those aspects of Doughty are irrelevant here. First, Petitioners do not rely on those portions of Doughty, instead relying on portions of Doughty that require a “swipe through the reader.” *See* Pet. at 55-57 (claim 5). Second, those aspects of Doughty relate to an alternative system reliant on RF communications and entirely separate from the time-varying magnetic field claimed in the ’156 patent. *See, e.g.*, Ex. 1005, [0056]-[0061] (“contactless” embodiments involving “RF field”); [0084]-[0085] (“contactless” embodiment involving card “placed into the RF field.”); Ex. 2031 ¶ 50. There is no teaching of Doughty that a transaction can be effectuated in a contactless manner that produces a time-varying magnetic field claimed in the ’156

list of various devices that could allegedly house its invention, without explaining how it would be integrated or used, including “a travel credential, such as a passport, an immigration card and a visa, etc., ... a personal communication device, such as a personal data assistant (PDA), a telecommunications device, a pager, a computer and an electronic mail transceiver, etc., ... a personal device/belonging, such as a watch, a jewelry, a key ring, a tag and eye glasses, etc.” Ex. 1005, [0046]. Despite identifying a variety of specific devices, Doughty does not explicitly identify a mobile phone. Ex 2031, ¶ 51.

2. Overview of Abe

U.S. Patent App. Pub. 2005/0086171 to Abe, et al. (Ex. 1011, or “Abe”) is entitled “Information processing system, information communication terminal and method, information processing device and method, recording medium, and program.” Unlike the contactless point-of-sale transactions contemplated by the claims of the ’174 patent, Abe relates to remote transactions whereby merchandise is ordered for subsequent pickup. Ex. 2031, ¶ 53. Abe proposes solutions for a

patent. Ex. 2031 ¶ 50. Doughty requires contact (a card swipe) for its disclosures with respect to the time-varying magnetic field; otherwise, there would be no need for Doughty’s invention to include a programmable magnetic stripe itself if contactless RF were pervasive. Ex. 1005, [0007]-[0009]; Ex. 2031, ¶ 50.

particular type of commercial transaction: transactions in which merchandise is ordered in advance (for example, using the Internet) and subsequently picked up from the merchant. Ex. 1011, [0002] (describing “cases of a purchaser making a reservation in advance in order to purchase merchandise, or in cases where a purchaser receives merchandise purchased by an electronic commercial transaction via the internet at a shop such as their nearest convenience store . . .”). In such situations, “the shop assistant in the shop that is handing over the merchandise” must confirm that the individual who arrives to physically retrieve the purchased item is authorized to do so. *Id.* As such, Abe describes, the merchant may either “ask[] the purchaser to disclose personal information” to verify their identify or “distribut[e] prescribed reservation tokens and exchange tokens to purchasers beforehand on the sales side.” *Id.* Neither the request for personal information nor the token exchange system is ideal, Abe describes, because personal information “may be misappropriated” and tokens “may be fraudulently made or may be copied.” *Id.* at [0002]-[0003]; Ex. 2031, ¶ 53.

Abe seeks to solve this problem by providing a system whereby a user can use a mobile phone 11 to “order merchandise” from a store 20 via a network 10 and an authentication service provider 40 manages “trustworthiness relating to the commercial transactions between the user of the mobile telephone 11 and the store 20.” *Id.* at [0091]-[0098], Fig. 1; Ex. 2031, ¶ 54.

According to Abe, a user of a mobile phone orders merchandise over a network such as the Internet, which is received by a point-of-purchase server of a store. Ex. 1005, [0092]. “The point-of-purchase server 21 then carries out sales processing for the merchandise requested by the mobile phone 11, and charge processing is carried out with respect to the user of the mobile telephone 11. Purchase information for the requested merchandise is then provided to the point-of-receipt server 31.” *Id.*, [0094]. The point-of-receipt server 31 “compares information relating to the commercial transaction acquired from the point-of-purchaser server 21 . . . and information provided by the mobile telephone 11” to determine whether the mobile phone user is a “legitimate purchaser of the merchandise.” *Id.* at [0095]. Finally, the mobile phone user “visits the point of receipt 30 in order to receive the merchandise.” *Id.* at [0097]; Ex 2031, ¶ 55.

3. The Petition Does Not Establish that a POSITA Would Have Either a Reason to Combine Doughty and Abe or an Expectation of Success from the Combination

To support an obviousness challenge, “[t]he petitioner must . . . articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). The petitioner must demonstrate both that a POSITA (1) would have had a reason to combine the asserted references, and (2) would have had a reasonable expectation of success from doing so. *Honeywell Int’l Inc. v. Mexichem Amanco*

Holding S.A. DE C.V., 865 F.3d 1348, 1355 (Fed. Cir. 2017) (quoting *Redline Detection, LLC v. Star Envirotech, Inc.*, 811 F.3d 435, 449 (Fed. Cir. 2015)).

Additionally, a petitioner has not made out a *prima facie* case of obviousness where the proposed combination would change the principle of operation of the modified reference. *See Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 F. App'x 755, 758 (Fed. Cir. 2015) (citing *In re Ratti*, 46 CCPA 976, 270 F.2d 810, 813 (1959). (combinations that change the “basic principles under which the [prior art] was designed to operate,” fail to support a conclusion of obviousness); *Trove Brands v. Camelbak Prods. LLC*, No. IPR2025-00146, 2025 WL 1475475, at *9 (PTAB May 22, 2025) (denying institution where petitioners’ asserted combination “fundamentally change[d] [the modified reference]’s principle of operation”).

Here, Petitioners cannot articulate a plausible basis for a POSITA to have combined Doughty with Abe. Specifically, the Petition contends that “[a] POSITA would have been motivated to apply Abe’s teachings of downloading transaction data, such as a card identification number, from an authentication server over a network to Doughty’s telecommunications device to advantageously improve security of transactions as described by Doughty.” Pet. at 26. Petitioners further assert that “a POSITA would have been motivated to apply Abe’s teachings of downloading temporary rewriting keys to Doughty’s telecommunications device to advantageously limit unauthorized tampering or use of sensitive information.” *Id.*

at 27. But Petitioners fail to address several fundamental, contradictory differences between the references that would discourage a POSITA from making the proposed combination. Instead, Petitioners rely on impermissible hindsight, using the '174 claims as a roadmap. *See Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1069 (Fed. Cir. 2018) (finding that a reference's "statements regarding preferences are relevant to a finding regarding whether a skilled artisan would be motivated to combine that reference with another reference" and must be considered to avoid hindsight bias).

First, the remote authentication of Abe is not applicable to the point-of-sale, close-range system of Doughty and thus would not have been considered by a POSITA. Ex. 2031, ¶ 58. As described above, Doughty sought to fill a need for "a practical and secure card that has the advantages of a smart card and ***will interface with magnetic stripe readers*** without the use of adapters." Ex. 1005, [0007] (emphasis added). Doughty contemplates a close-range device that communicates while positioned near a traditional magnetic stripe reader. In fact, Doughty ***requires a swipe*** to trigger certain steps of its process. *See id.*, [0051] ("a time-varying signal can be transmitted to the heads of the magnetic card reader ***as the card is swiped through the reader***"); *id.* ("The data rate is determined based on the minimum and maximum swipe speeds that standard readers can accommodate."); *id.*, [0052] ("***Once the card is alerted that it is being swiped through the***

reader 330 (FIG. 3), it begins transmission of the emulated time-varying data from the device processor....”); *see also id.*, [0008] (“The present invention provides ... a practical and secure card or device that has the advantages of a smart card and will ***interface with existing world-wide magnetic stripe readers*** without the use of adapters or bridges”) (emphasis added); Ex. 2031, ¶ 59.

In stark contrast, Abe relates to authentication for remote purchases. Ex 2031, ¶ 60. Abe contemplates remote transactions and addresses problems that are not present during a magnetic stripe reader point-of-sale transaction. Abe uses an authentication server to “calculate[] user trustworthiness and store trustworthiness” for a cellular phone user and a store. Ex. 1011, Abstract, [0092]; Ex. 2031, ¶ 60. The calculated trustworthiness allows a purchaser to determine if the store “where a commercial transaction is to be made is trustworthy” and further allows a merchant to determine whether the “user of the mobile phone” is “trustworthy as a person.” Ex. 1011, at [0193], [0196], [0220].

These are determinations that would only need to be made in the context of the remote ordering of Abe and not the in-person point-of-sale purchasing of Doughty. Ex. 2031, ¶ 61. A purchaser standing in a store and making a purchase via a magnetic stripe reader would have no reason to determine the trustworthiness of the store in which they are standing. Likewise, a merchant would have no reason to determine whether the user of the biometrically secured credit card of

Doughty—standing in the store—is an authentic purchaser. Abe further contemplates a post-transaction determination of “whether or not the user coming to pick-up the merchandise is the rightful purchaser of the merchandise:” another problem not present during a magnetic stripe reader point-of-sale transaction. Ex. 1011 at [0306].³ Abe simply addresses an entirely different commercial environment than Doughty and, for this reason, a POSITA would not have thought to combine the references. Ex. 2031, ¶ 61.

Second, a POSITA would not have combined Abe and Doughty in the manner proposed by Petitioners because such modification of Doughty would fundamentally change Doughty’s principle of operation. Ex 2031, ¶ 62; *See Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 F. App’x 755, 758 (Fed. Cir. 2015) (citing *In re Ratti*, 46 CCPA 976, 270 F.2d 810, 813 (1959)). (combinations that change the “basic principles under which the [prior art] was designed to operate,”

³ While Abe makes reference to some close-range point-of-receipt communications that **do** occur at a store, these communications are for purposes of authentication such that the purchaser can retrieve the previously purchased merchandise. *See, e.g.*, Ex. 1011, Fig. 20. Abe does not disclose, or even relate to, the type of in-person point-of-sale transactions contemplated by Doughty or those contemplated by the ’174 claims. Ex 2031, ¶ 61.

fail to support a conclusion of obviousness). Doughty purports to provide a “**biometrically enabled**” programmable card whereby transaction data is transmitted to a reader “**upon valid biometric authentication** of the card user.” Ex. 1005, Title, [0002], [0052] (emphasis added). Petitioners’ purported combination would fundamentally alter Doughty and, contrary to Doughty’s stated purpose, would not permit a purchaser to **enable a transaction** through biometric authentication.

Instead, the modification that Petitioners assert would require the addition of “an authentication service provider 40 for managing trustworthiness relating to commercial transactions between the user of the mobile telephone 11 and the store 20,” as well as an “authentication server 41.” Ex. 1011, [0092]-[0093]; Ex. 2031, ¶ 64. The combination would require a purchaser to “access the authentication server 41” to permit a transaction. Ex. 1011, [0092]-[0093]; Ex. 2031, ¶ 64. More, the purchaser would then, according to Petitioners’ combination, be required to await the comparing of information, calculation of trustworthiness, and thus determination of “whether or not the user of the mobile telephone 11 is the legitimate purchaser of the merchandise.” *See, e.g.*, Ex. 1011, [0095]. This added server-based authentication of Abe, in addition to the biometric authentication of Doughty, would fundamentally shift the principle of operation of Doughty. And would prevent a purchaser from the ability to **enable a transaction** through the

user's own biometric information. A POSITA therefore would not have made the combination on which Petitioners rely. Ex. 2031, ¶ 64.

Third, Petitioners do not demonstrate that a POSITA would have had a reasonable expectation of success in combining Abe and Doughty. Ex. 2031, ¶ 65. Even if Doughty disclosed and enabled a mobile phone, which it does not (*see infra*), neither reference provides any guidance as to how a POSITA would have made such combination. Ex. 2031, ¶ 64. In particular, neither reference provides any teaching regarding the integration of a biometrically secured card with a phone's networking capabilities. Indeed, there is no reason for Doughty or Abe to describe how a POSITA could make the purported combination, as they are each standalone secure systems that do not require such integration. The invention of Doughty provides for securely authenticated transactions and does not require the authentication of Abe. *See supra*. Ex. 2031, ¶ 65.

The combination of the two references requires experimentation based on the physical form factors of both technologies – a credit card substrate and a phone. Ex. 2031, ¶ 66. Additionally, it requires undue experimentation for the integration of the circuits of Doughty which are magnetic data emulation with minor processing and those required for Abe inside the phone including remote server communications and significant data processing. *Id.* This is especially true with respect to ensuring they work properly and do not interfere with each other

which would cause failure during the transaction and render the combination useless. *Id.*

Nor does Petitioner's expert's conclusory testimony fill this gap. Conclusory expert testimony is not sufficient to demonstrate a "reasonable expectation of success." *See, e.g., Juniper Networks, Inc. v. Correct Transmission, LLC*, IPR2021-00682, 2022 WL 5061984, at *11 (PTAB Oct. 3, 2022) (petitioner's reliance on "conclusory" expert testimony alone was "not persuasive" and failed to demonstrate a reasonable expectation of success), *aff'd*, No. 2023-1046, 2024 WL 3517862, at *4 (Fed. Cir. July 24, 2024) (affirming Board's determination that expert testimony that was "conclusory," "not credible," and did not evidence a reasonable expectation of success). As to the combination of Abe and Doughty, Samsung and its expert merely assert that a POSITA would have found such combination "straightforward" and "would predictably work and provide the expected functionality." Pet. at 27-28, Ex. 1003. These conclusory statements are inadequate to demonstrate a reasonable expectation of success.

4. The Petition Does Not Establish that Doughty in View of Abe Discloses All Limitations of the Challenged Claims⁴

a. Claim 1

i. Doughty alone or in combination with skill in the art does not enable a “mobile phone”

The Petition has not established a reasonable likelihood that Doughty alone or in combination with skill in the art enables “a mobile device comprising....” *See* Pet. at 28-30.

⁴ Petitioners extensively describe that, during the prosecution the '174 patent, the examiner issued a non-final rejection its claims over a continuation of Doughty, U.S. Patent App. Pub. 2011/0240748 (“Doughty-CON,” Ex. 1004). *See* Pet. at 9-11; *see also* Ex. 1002, 1451-57 ('174 patent file history). Petitioners make no direct argument regarding the determination on Doughty-CON in the prosecution—nor could they. Not only did the patent owner overcome the rejection, the patent owner’s silence regarding the substance of the rejection is not determinative. *See, e.g., Astra Aktiebolag v. Andrx Pharms., Inc.*, 222 F. Supp. 2d 423, 578 (S.D.N.Y. 2002) (holding that silence in response to adverse determination during prosecution is not conclusive), *aff’d sub nom. In re Omeprazole Pat. Litig.*, 84 F. App’x 76 (Fed. Cir. 2003). Indeed, “positions are often taken during patent prosecution out of convenience and expedience, and, therefore, such positions should not be given

In order to invalidate a claimed invention, a prior art reference must enable one of ordinary skill in the art to make the invention without undue experimentation.” *Impax Lab’ys, Inc. v. Aventis Pharms., Inc.*, 545 F.3d 1312, 1314 (Fed. Cir. 2008). “Undue experimentation” may involve an examination of the following set of factors: “(1) the quantity of experimentation; (2) the amount of direction or guidance present; (3) the presence or absence of working examples; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of the claims.” *Id.* at 1314-1315 (citing *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988)). However, “all of the factors need not be reviewed when determining whether a disclosure is enabling,” as the factors are “illustrative, not mandatory,” and “[w]hat is relevant depends on the facts.” *Enzo Biochem, Inc. v. Calgene, Inc.*, 188 F.3d 1362, 1371 (Fed. Cir. 1999) (quoting *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1213 (Fed. Cir. 1991)).

There is no enablement where “[t]here is no disclosure that the authors had achieved a [claimed element] and the record does not indicate that it would have been routine to do so.” *Apple v. Int’l Trade Comm’n*, 725 F.3d 1356, 1364 (Fed.

conclusive effect.” *Id.* (citing *Quad Envtl. Techs. v. Union Sanitary Dist.*, 946 F.2d 870, 873–74 (Fed.Cir.1991)).

Cir. 2013); *see also, e.g., Forest Lab 'ys. Inc. v. Ivax Pharms., Inc.*, 501 F.3d 1263, 1268 (Fed. Cir 2007) (no enablement where reference “does not state how to obtain” a result). Indeed, “[i]t is insufficient to name or describe the desired subject matter, if it cannot be produced without undue experimentation.” *Elan Pharms., Inc. v. Mayo Found. for Med. Educ. & Rsch.*, 346 F.3d 1051, 1055 (Fed. Cir. 2003).

All challenged claims of the '174 patent require a mobile phone. *See* Ex. 1001, 17:9 (sole independent claim reciting “A mobile phone comprising...”). Indeed, it was the '174 patent inventors' goal to create a mechanism for completing consumer transactions using only the consumers' mobile phone. Ex. 2031, ¶ 68. They set out to invent a mechanism for consumers to use their phones, instead of cash, checks, or credit cards, to complete point-of-sale transactions. *Id.* The '174 patent claims are directed to circuitry for high-performance communications between mobile devices and point-of-sale payment terminals to facilitate mobile contactless payments—a technology that is today commonly referred to as “tap to” functionality. *See, e.g.,* Ex. 1001, 17:9-20; Ex. 2031, ¶ 69.

Despite Petitioners' assertion, Doughty's disclosure of a “telecommunications device” would not have enabled a person of ordinary skill in the art to make the claimed invention without undue experimentation. *See* Pet. at

30-33, 52, 61. Ex. 2031, ¶ 70. Doughty discloses a swipeable card with biometric authentication. *See, e.g.*, Ex. 1005, [009], [0051], [0052].

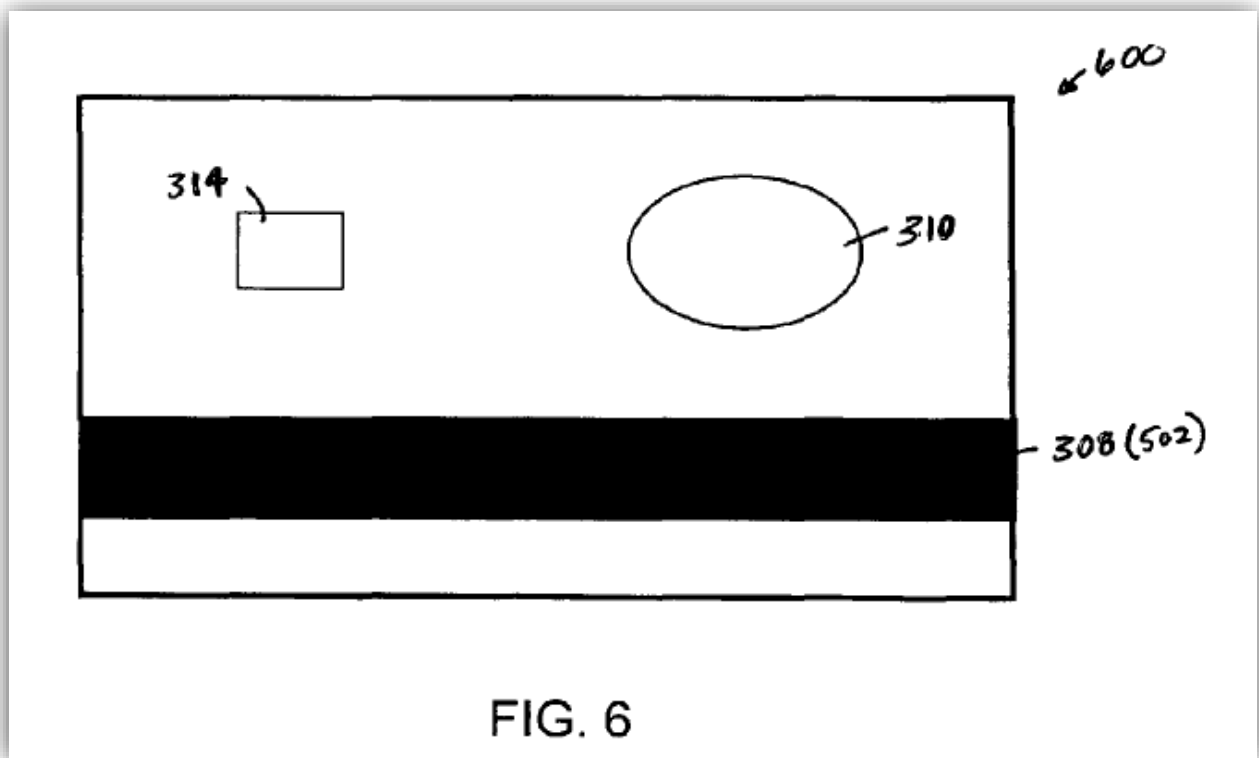
At most, Doughty discloses the mere idea—without explanation—of incorporating a swipeable card with biometric authentication into a variety of diverse devices, including “jewelry,” “eye glasses,” or “a passport.”⁵ Ex. 1005, [0046]; Ex. 2031, ¶ 71. Included in Doughty’s list of ideas is a “telecommunications device,” and does not explicitly state a mobile phone, even though other devices such as pagers are listed. Ex. 1005, [0046]. However, even assuming that a person of skill in the art would understand a telecommunications device to include a mobile phone, nothing in Doughty explains how to achieve the integration of its invention, which requires biometric authentication and a physical swipe, into a mobile phone such that it would be workable and, most important, swipeless. Ex. 2031, ¶ 72.

⁵ In fact, a POSITA would understand these devices to function, if at all, only with Doughty’s “contactless” embodiments that function with an RF-field, and not the time-varying magnetic field, as claimed by the ’156 patent. Ex. 1005, [0056]-[0061] (“contactless” embodiments involving “RF field”); [0084]-[0085] (“contactless” embodiment involving card “placed into the RF field.”); Ex. 2031 ¶ 71.

A goal of the invention of Doughty is to “interface with existing world-wide magnetic stripe readers without the use of adapters or bridges.” *Id.*, [0008]. As acknowledged by Doughty, those commonplace magnetic stripe readers require a device “the size of a credit card so that the [device] can be swiped through the magnetic stripe reader.” *Id.*, [0005]. Indeed, the requirement to swipe through the reader is the reason Doughty can avoid the “adapters or bridges” required by smart cards while providing security, the main focus of Doughty. *Id.*; Ex. 2031 ¶ 73.

Rather than use an adapter, Doughty teaches a solution that incorporates security features into the format of a substrate that can be swiped through the reader, and where the functionality of Doughty *requires a swipe* to trigger certain steps of its process. *See* Ex. 1005, [0051] (“a time-varying signal can be transmitted to the heads of the magnetic card reader *as the card is swiped through the reader*”); *id.* (“The data rate is determined based on the minimum and maximum swipe speeds that standard readers can accommodate.”); *id.*, [0052] (“*Once the card is alerted that it is being swiped through the reader 330* (FIG. 3), it begins transmission of the emulated time-varying data from the device processor....”); *see also id.*, [0008] (“The present invention provides ... a practical and secure card or device that has the advantages of a smart card and will interface with existing world-wide magnetic stripe readers without the use of adapters or bridges”). Ex. 2031 ¶ 74.

Doughty discloses extensive detail to enable its invention in a credit card shaped format. For example, Doughty describes to a POSITA how to “transmit the time-varying signal from the card to the card reader” during the course of a swipe. Ex. 1005, [0051]; *see also, e.g., id.*, [0048]-[0049]; [0052]; [0064]-[0068]; Figs. 4A, 4B, 6, 11. Throughout its disclosure, Doughty discloses and enables a thin, swipeable substrate, such as the programmable magnetic card 600 depicted in Figure 6.



Programmable magnetic card 600 includes on-card biometrics sensor 310 on-card control processor 314, and critically, programmable magnetic stripe 308 (magnetic field generator 502). *Id.* at [0053]; Ex. 2031 ¶ 75.

Doughty does not explain at all how its programmable magnetic stripe 308(502) can function if it is integrated into a device that cannot be swiped through a magnetic card reader created to receive a credit card, such as “jewelry,” “eye glasses,” or a “telecommunications device.” Nor does Doughty explain how to incorporate the on-card biometrics sensor into such devices. As to these formats, Doughty does no more than name an idea, without having achieved it, and without explaining how to achieve the result, only that the complete swipeable substrate as disclosed is somehow used. Ex. 1005, [0046]; Ex. 2031 ¶ 76. This is not enablement. *Apple*, 725 F.3d at 1364; *Forest Lab ’ys. Inc.*, 501 F.3d at 1268; *Elan Pharms.*, 346 F.3d at 1055. “Tossing out the mere germ of an idea does not constitute enabling disclosure.” *Enzo Biochem, Inc.*, 188 F.3d at 1374.

Instead, Doughty leaves it to a person of skill in the art to experiment and determine on their own how to incorporate the invention into a non-card-shaped device. As relevant here, a person of skill in the art would be required to figure out how to swipe a mobile phone (of 2005 vintage) through a credit card reader after performing biometric authentication based on the same substrate. Ex. 2031 ¶¶ 76-79. Alternatively, a person of skill in the art would have to determine how to recreate the invention of Doughty without using a physical swipe to activate the magnetic field generator or to trigger the transfer of data from the user device to the reader. *Id.*

The experimentation would involve phone form factors, useability, comfort, durability, and compatibility with a wide range of card readers due to their physical differences of the swipe mechanism. *Id.* Additionally, the experimentation would have to be performed across multiple mobile phone devices as the shape and functionally varied widely in 2004-2005 timeframe. *Id.* Full swipe emulation experimentation would involve determining how to remove all physical contact with the reader, something not contemplated by Doughty at all, and would involve overcoming many obstacles based on incompatible protocols, differences in device shielding, differences in position of the magnetic stripe reader within the point-of-sale terminal, and differences in electronics and software making up the magnetic stripe reader of the point-of-sale terminal. *Id.*

The level of experimentation required to incorporate Doughty's invention into a phone easily meets the "undue" standard. The first three factors, "(1) the quantity of experimentation; (2) the amount of direction or guidance present; (3) the presence or absence of working examples," point strongly toward a need for undue experimentation. *Impax Lab 'ys, Inc.*, 545 F.3d at 1314. There is no "direction or guidance present" as to how to force the invention of Doughty into a form that is not compatible with a conventional magnetic card reader, including no explanation in the text of the specification and no figures that illustrate non-card form factors. Moreover, there is a complete absence of working examples. In

effect, a person of skill in the art would have to create an entirely new invention that worked in a different manner from that taught by Doughty. Ex. 2031 ¶¶ 76-79. These factors together weigh in favor of non-enablement. Where there is “virtually no guidance, direction, or working examples were provided for practicing the invention in” a particular form, and where “the teachings set forth in the specifications provide no more than a ‘plan’ or ‘invitation’ for those of skill in the art to experiment practicing [in that form]; they do not provide sufficient guidance or specificity as to how to execute that plan” and are not enabled. *Enzo Biochem, Inc.*, 188 F.3d at 1374.

Similarly, the nature of the invention points in favor of undue experimentation. As explained, the goal of the Doughty invention is to create a secure card that would function with conventional magnetic card readers. Ex. 1005, [0007]-[0008]. To modify the invention of Doughty to work without or separate from a conventional magnetic card reader would be contrary to the nature of the invention and would require extensive experimentation. Ex. 2031 ¶¶ 76-79. The remainder of the factors are at best neutral, but do not demonstrate that a person of skill in the art could arrive at the invention of Doughty within a mobile phone without undue experimentation.

Therefore, Doughty cannot invalidate the invention of the '174 patent, because, regardless of whether it discloses all the other limitations of the '174

patent's claims (it does not), it does not disclose an enabled system that functions in a mobile phone.

Nor does skill in the art fill in the gap. Petitioners argue that “[a] POSITA would have understood that a telecommunications device used as a ‘personal communication device’ is a mobile phone.” Pet. at 28. Petitioners’ expert similarly does not engage with the lack of enablement or level of experimentation required, stating only exactly the argument made in the Petition. Ex. 1003, ¶ 88. But whether a POSITA would have understood a telecommunications device to be a mobile phone does not explain how a person of skill in the art could have achieved the invention of Doughty in any telecommunications device that does not take the form of a credit card. In fact, Petitioners’ expert does not explain how a POSITA would have understood to undertake this implementation without extensive experimentation, nor does he explain how a complete swipe would be emulated, and not just the data for security purposes, as disclosed by Doughty. Ex. 2031 ¶ 80.

Petitioners have not demonstrated a reasonable likelihood that Doughty alone or combined with skill in the art enables its use in a mobile phone.

b. Claims 2-4 and 6-9

Claims 2-4 and 6-9 are dependent claims that depend from claim 1. Ex. 1001, 16:27-39. Because Doughty does not disclose claim 1, it cannot disclose the

more specific claims 2-4 and 6-9. *See, e.g., Ortho-McNeil Pharm., Inc. v. Mylan Lab'ys, Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.” (quoting *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992))).

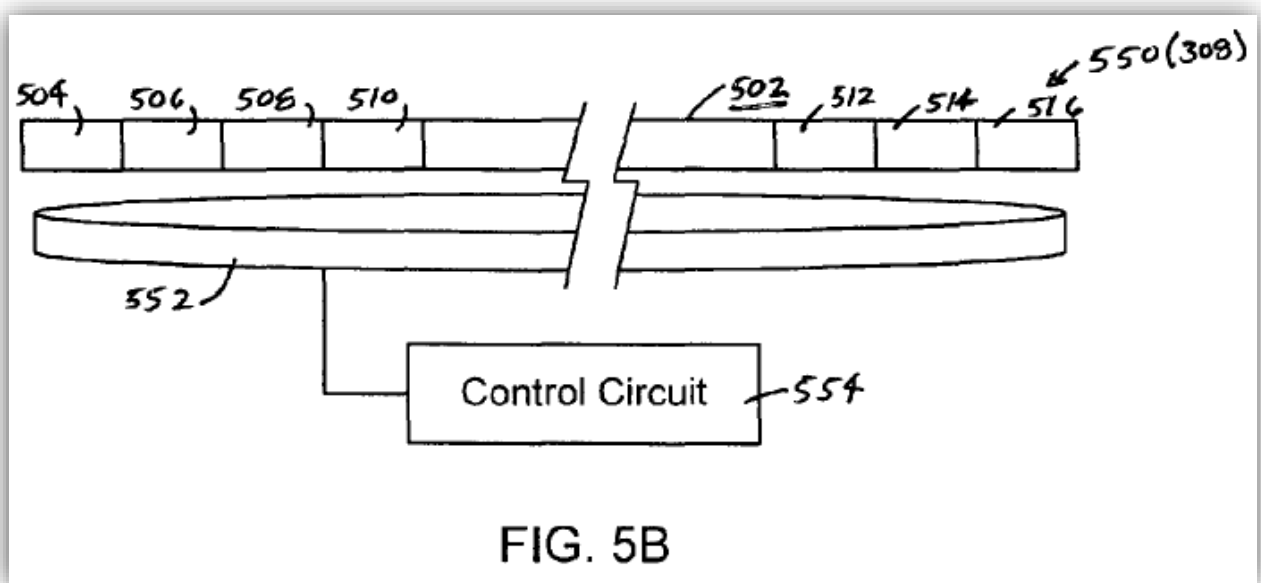
c. Claim 5

i. Doughty does not disclose “[t]he mobile phone of claim 1 wherein the time-varying magnetic field emulates a swipe of a magnetic card”

Claim 5 is a dependent claims that depends from claim 1. Ex. 1001, 16:27-39. Because Doughty does not disclose claim 1, it cannot disclose the more specific claim 5. *See, e.g., Ortho-McNeil Pharm., Inc. v. Mylan Lab'ys, Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.” (quoting *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992))). Additionally, the Petition has not established a reasonable likelihood that Doughty alone or in combination with skill in the art discloses “wherein the time-varying magnetic field *emulates a swipe of a magnetic card.*” *See* Pet. at 55-57.

The invention of Doughty does not *emulate* a card swipe; rather, Doughty *requires* a card swipe. Doughty’s programmable magnetic stripe, which Doughty

also calls a magnetic field generator,⁶ operates by generating a magnetic field during a card swipe. The programmable magnetic stripe creates either “a spatial magnetic signal or a time-varying magnetic signal.” Ex. 1005, [0041]. Figure 5B of Doughty illustrates a programmable magnetic stripe 550 (308) for generating a time-varying magnetic field. *Id.* at [0020], [0051].



As Doughty explains, the programmable magnetic stripe 550 (308) operates to generate a time-varying magnetic signal while the card is physically swiped through a reader. The programmable magnetic stripe 550 (308) includes: a

⁶ See, e.g., Ex. 1005, [0053] (“programmable magnetic stripe 308 (magnetic field generator; see also 502 Figs. 5A and 5B)”; [0055] (“[T]he device outputs may include a magnetic field generator 308 (programmable magnetic stripe).”)

magnetic stripe 502 having one or more sets of magnetic data cells 504-516; a single inductive coil 552; and a control circuit 554. *Id.* at [0051]. “The long inductive coil 552 is mounted immediately beneath the entire length of the magnetic stripe 502 and its corresponding binary magnetic data cells 504-516 such that a time-varying signal can be transmitted to the heads of the magnetic card reader ***as the card is swiped through the reader.***” *Id.* (emphasis added). “The data rate is determined based on the minimum and maximum swipe speeds that standard readers can accommodate. In other words, the single inductive coil 552 is long enough for it to be in the ***physical proximity of the card reader*** heads for the entire time period required to transmit the time-varying signal from the card to the card reader.” *Id.*

Doughty describes that the individual data cells 504-516 are “normally empty of data,” e.g., for security purposes. *Id.* at [0052]. Transmission of the *time-varying* data may only begin upon “valid biometric authentication of the card user, followed by a detection of the card that ***it is in the presence of the reader head and the reader*** 330 (FIG. 3) has recognized the start sentinel on the card.” *Id.* (emphasis added) “***Once the card is alerted that it is being swiped*** through the reader 330 (FIG. 3), it begins transmission of the emulated time-varying data from the device processor to the inductive coils 552, thereby generating an exact emulation and transmission to the reader 330 (FIG. 3) of the data that would have

been produced by swiping the card through the reader 330 (FIG. 3) with *spatially varying* data included in the individual data cells 504-516.” *Id.* (emphasis added).

A POSITA would understand that Doughty’s programmable magnetic stripe only emulates time-varying magnetic data during a physical card swipe and does not, itself, emulate a swipe. Ex. 2031 ¶ 86. Where there is an actual swipe, there is no emulation. *Id.* Doughty does not contemplate simulating or imitating a swipe. In stark contrast, Doughty relies on the time and proximity of an actual, physical swipe.

At most, Doughty discloses *data* emulation, not *swipe* emulation. Ex. 2031 ¶¶ 82. Doughty describes emulating card data, including “binary data to enable a transaction, such as a user name, user number, device expiration date, transaction approval/denial, etc.” using a time-varying magnetic field. Ex. 1005, [0041]. This is further evidenced throughout Doughty’s disclosure:

- Ex. 1005, [0010] (“The magnetic field generator can create a spatial magnetic signal using a magnetic stripe and one or more induction coils, or create a time-varying magnetic signal *for emulating data obtained from swiping a magnetic stripe card* through a magnetic card reader. As a result, the magnetic field generator emulates a programmable magnetic stripe.”).

- *Id.*, [0041] (“The magnetic field generator **308** emulates a programmable magnetic stripe by either creating a spatial magnetic signal or a time-varying magnetic signal *for emulating data obtained from swiping a magnetic stripe card* through a magnetic card reader (See FIG. 5B).”).
- *Id.*, [0051] (“Now referring to FIG. 5B, a block diagram of a programmable magnetic stripe **550** (**308** FIG. 3) using a single induction coil **552** for *sending emulated time-varying magnetic stripe data* to a magnetic card reader By establishing the configuration in this manner, the inductive coil **552** can be pulsed with varying currents and current directions so that *the time-varying data stream of a card being swiped through the reader is emulated, thus providing the same magnetic data stream to the reader heads of the magnetic stripe reader as would be seen if a card with binary data in multiple spatially distributed data cells 504-516 in the magnetic stripe 502 were swiped through the reader. This magnetic signal will, therefore, emulate the data that would be generated by the swipe of a magnetic stripe card* with the desired information embedded in the individual data cells **504-516** of the stripe **502**.”).

Petitioners improperly conflate Doughty’s data emulation with swipe emulation. Petitioners point to the portions of Doughty quoted above, discussing data emulation, as evidence of emulating a swipe. Pet. at 55. A POSITA would understand, however, that card data emulation is not enough to emulate a swipe: rather, a swipe involves additional aspects, such as clocking zeros, start sentinel character, data characters, end sentinel character, and a longitudinal redundancy check character. *See* Ex. 2031, ¶ 88; Ex. 2032 (Silicon Labs AN148 Magnetic Stripe Reader), § 2.2. Doughty only addresses the data characters from a security perspective. Ex. 2031, ¶ 88. Thus, the exchange that occurs between a card and a reader during a swipe involves more than transmission of card data. *Id.* Indeed, though ignored by Petitioners, Doughty acknowledges the difference between a swipe and emulated data: “All such transmission of emulated card data is contingent upon valid biometric authentication of the card user, followed by detection of the card that it is in the presence of the reader head and the reader 330 (FIG. 3) ***has recognized the start sentinel on the card*** so that the reader 330 (FIG. 3) is ***ready to accept the stream of emulated data*** provided by the device processor.” Ex. 1005, [0052] (emphasis added); Ex. 2031, ¶ 88.

In contrast to Doughty, the ’174 patent claims “time-varying magnetic field that emulates a swipe” and that is not dependent upon biometric authentication. Ex. 1001, 17:27-28. As explained in the ’174 patent specification, the “stripe” is

not a visible magnetic stripe on the face of a card, like that of Doughty. *Id.* at 3:53-54 (“stripe 106 may not be visible”); 3:59-67. Rather, “circuitry may be included within electronic transaction card 106 to produce the time-varying magnetic field and no visible indication may be present on an external face of electronic transaction card 104.” *Id.* at 3:54-58.

Indeed, the ’174 specification distinguishes between embodiments that produce a time-varying magnetic field by *emulating* a card swipe—and thus do not require physical swiping—and embodiments that instead rely on a physical swipe operation to produce a time-varying magnetic field. *Compare* Ex. 1001, 3:54-58 (“circuitry may be included within electronic transaction card 106 to produce the time-varying magnetic field and no visible indication may be present on an external face of electronic transaction card 104”) *with id.* at 8:57-59 (referring to FIG. 4, “[d]uring the swiping operation, electronic transaction card 420 produces one or more time-varying magnetic fields to emulate the swiping of a magnetic card.”). *See* Ex. 2031 ¶¶ 89-90.

Because Doughty discloses an utterly different process (emulating data from a swipe during a swipe after successful biometric authentication) from that claimed in the ’174 patent (emulating the entirety of a swipe without performing a swipe), Doughty does not disclose “a time-varying magnetic field that emulates a swipe of a magnetic card.” Ex. 2031 ¶ 91.

B. The Petition Does Not Establish a Reasonable Likelihood that Doughty in View of Abe in Further View of Fox Renders Unpatentable Claims 1-9 (Ground 2)

The Petition has not demonstrated a reasonable likelihood of success that Petitioner will prevail on any claim challenged in Ground 2 for the following reasons, summarized in section V and described in detail below.

1. Overview of Fox

U.S. Patent No. 5,943,624 to Fox (Ex. 1009 or “Fox”) is entitled “Contactless Smartcard for Use in Cellular Telephone.” The invention of Fox incorporates electronics associated with a smartcard into the housing of a cellular telephone. Ex. 1009 at Abstract. Unlike Doughty and the ’156 patent, Fox does not contemplate use with traditional magnetic stripe readers. *E.g.*, Ex. 1009, 1:50-52; Ex. 2031 ¶ 94. Nor does Fox disclose magnetic stripe data emulation or swipe emulation. Ex. 2031 ¶ 94. Rather, Fox merely contemplates passive smartcard circuitry housed within a phone and operable to communicate with a smartcard reader. *See, e.g.*, Ex. 1009, Abstract, 3:26-4:2; Ex. 2031 ¶ 94. Accordingly, contrary to Petitioners’ argument, Fox is not combinable with Doughty, and Fox does not fill the fundamental disclosure gaps of Doughty.

Fox articulates a number of disadvantages associated with traditional plastic smartcards. As articulated in the Fox specification, it is disadvantageous to need to insert a smartcard into an external reader such as a point-of-sale system or an

ATM. *Id.* at 1:9-30. Fox describes that smartcard functionality in a “plastic-type credit card presents additional problems.” *Id.* at 1:31-45. For example, the flexibility required to prevent breakage of the card in a wallet may lead to damage to incorporated electronics necessary for the smartcard functionality. *Id.* Further, smartcards in the form of a credit card may be easily lost. Fox therefore explains that its advantage is to “incorporate the electronics associated with a smart card into an alternative housing arrangement so as to overcome problems and disadvantages associated with flexible plastic smartcards,” and that “[a]dditionally, it would be desirable to provide a smartcard that does not require contact with an external reader in order to perform a transaction.” *Id.*, at 1:46-1:52. Ex. 2031 ¶¶ 95-96.

Thus, Fox teaches smartcard functionality incorporated into a cellular phone that communicates with an RF-based point-of-sale system. Ex. 2031 ¶ 97. In particular, Fox contemplates passive RF communication wherein the smartcard circuitry is powered by an RF signal received from a smartcard reader. *See id.* at 3:26-4:8; 5:1-25.

Fox’s smartcard system is limited to RF communications. Fox does not at all mention or address the creation of a time-varying magnetic field for communications via magnetic swipe or emulating a magnetic swipe. Ex. 2031 ¶ 98. Nor does Fox teach swiping its invention through a card reader, and in fact

discourages card-based transactions. Ex. 2031 ¶ 98. In particular, Fox says nothing about swiping the mobile phone of Fox through a card reader—something that would be physically impossible, given the form factor of the mobile phone contemplated by Fox. *See* Ex. 1009, Fig. 1 (depicting the “cellular phone 10” of Fox); Ex. 2031 ¶ 99.

2. The Petition Does Not Establish that a POSITA Would Have Either a Reason to Combine Doughty and Fox or an Expectation of Success from the Combination

As described above, to support an obviousness challenge, “[t]he petitioner must . . . articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d at 1380. The petitioner must demonstrate both that a POSITA (1) would have had a reason to combine the asserted references, and (2) would have had a reasonable expectation of success from doing so. *Honeywell Int’l Inc.*, 865 F.3d at 1355.

As with Doughty and Abe, Petitioners do not articulate any basis for combining Doughty (in view of Abe) with Fox. Petitioners again fail to demonstrate both (1) any motivation a POSITA would have had to combine the references, and (2) that a POSITA would have had a reasonable expectation of success. Specifically, the Petition contends that “[t]o the extent it is argued that further disclosure is required of ‘a (current) driver to excite the current carrying conductor,’ and ‘a processor coupled to control the driver,’ ([1.d], [1.e], and [6]),

Doughty in view of **Fox** renders obvious these limitations.” Pet., 68. To make these arguments, Petitioner relies on the fact that “**Fox** discloses a ‘cellular telephone 10’ that includes a ‘smartcard function’ including an ‘RF interface’ providing a ‘contactless interface between the smartcard logic function circuitry in telephone 10 and an external reader/system.’” Pet., 68 (citing Ex. 1009, 2:10-29). Petitioners further acknowledge that Doughty “does not explicitly provide details of how the coil is driven” to produce a time-varying magnetic field, and that, to fill this gap, “a POSITA would have looked to **Fox** for such implementation details.” Pet., 70-71. But Petitioners fail to address several fundamental, contradictory differences between the references that would discourage a POSITA from making the proposed combination. Instead, Petitioners rely solely on impermissible hindsight, using the ’174 patent’s claims as a roadmap, instead of demonstrating how or why a POSITA would have combined Doughty and Fox. *See Polaris Indus., Inc.*, 882 F.3d at 1069.

In particular, Petitioners fail to acknowledge that Doughty and Fox represent two different, incompatible technologies. Fox is a passive RF system utilizing standard protocols, technologies, and interfaces to effectuate communication between a point of sale system and a smartcard housed within a cellular phone, and which explicitly discourages contact between the cellular phone and a card reader. Ex. 2031 ¶ 107; Ex. 1009, 1:31-52; 3:26-4:8; 5:1-25. In contrast, Doughty teaches

magnetic stripe data emulation to effectuate a transaction, where all enabled embodiments take the form of a credit card that is required to physically swipe a magnetic card reader. A POSITA would understand that these different protocols and technologies are fundamentally incompatible, both because the communication of information is done through different technologies. Ex. 2031 ¶ 107; *see also In re Urbanski*, 809 F.3d 1243 (Fed. Cir. 2016) (“[I]f references taken in combination would produce a ‘seemingly inoperative device,’ ... such references teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness.”).

Additionally, a POSITA would not be motivated to combine Fox and Doughty because the cellular phone of Fox cannot be swiped through the magnetic card reader required by Doughty. In fact, Doughty teaches the opposite of Fox. Doughty encourages “a semi-flexible material such as plastic, or a laminate material” taking the form of a credit card that “will interface with existing world-wide magnetic stripe readers without the use of adapters or bridges.” Ex. 1005, [0008], [0046]. This semi-flexible plastic card then must be swiped through a typical magnetic stripe reader. *Id.*, [0051] (“a time-varying signal can be transmitted to the heads of the magnetic card reader ***as the card is swiped through the reader***”); [0052] (“Once the card is alerted that it is being swiped through the reader....”). Fox, on the other hand, teaches the exact opposite. Fox is a system

directed to an “alternate housing arrangement so as to overcome problems and disadvantages associated with flexible plastic smartcards” both by avoiding the plastic card format and by instituting a contactless, swipeless protocol to avoid interaction with an “external reader.” Ex 1009, 1:46-52. A POSITA would not be motivated to combine a system seeking to improve a card and its swipe through typical machinery and a system seeking to avoid the card form and the associated typical readers entirely. Ex. 2031 ¶ 108; *see also In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984) (where a reference, if modified as suggested, “would be rendered inoperable for its intended purpose,” there is no obviousness).

Because the two systems of Doughty and Fox function on two different and incompatible technologies and protocols, the combination would fail technically, and a POSITA would not be motivated to combine these two references. Ex. 2031 ¶ 109.

Nor does Petitioner’s expert’s conclusory testimony fill this gap. Conclusory expert testimony is not sufficient to demonstrate a “reasonable expectation of success.” *See, e.g., Juniper Networks, Inc. v. Correct Transmission, LLC*, IPR2021-00682, 2022 WL 5061984, at *11 (PTAB Oct. 3, 2022) (petitioner’s reliance on “conclusory” expert testimony alone was “not persuasive” and failed to demonstrate a reasonable expectation of success), *aff’d*, No. 2023-1046, 2024 WL 3517862, at *4 (Fed. Cir. July 24, 2024) (affirming Board’s

determination that expert testimony that was “conclusory,” “not credible,” and did not evidence a reasonable expectation of success). As to the combination of Fox and Doughty, the Petition and Petitioners’ expert merely assert that a POSITA would have found such combination “straightforward and advantageous” and “would have known such a combination . . . would predictably work.” Pet. at 71-72, Ex. 1003, ¶ 167. These conclusory statements are inadequate to demonstrate a reasonable expectation of success, especially given the specific testimony from Patent Owner’s expert explaining that a POSITA would have been discouraged from combining the references based on the different protocols, technologies, and form factors used, and that, if combined, the two references would create an inoperable device that did not serve the purpose of either reference. Ex. 2031 ¶ 109.

Altogether, Petitioners have failed to meet its burden to show that a POSITA would have combined the mobile phone of Fox with the telecommunications device of Doughty to arrive at the claims of the ’174 patent. This combination is inoperable and could only be based on hindsight.

C. None of The Additional References Asserted in Grounds 3-8 Remedy the Fundamental Disclosure Deficiencies of Doughty, Abe, and Fox

The Petition does not demonstrate a likelihood of success on any of Grounds 3-8 asserted with respect to claim 7, 8, and 9. Claims 7-9 are dependent claims that

depend from claim 1. Ex. 1001, 16:27-39. Because Doughty does not disclose claim 1, it cannot disclose the more specific claims 7-9. *See, e.g., Ortho-McNeil Pharm., Inc. v. Mylan Lab 'ys, Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.” (quoting *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992))). Additionally, none of Dua (Ex. 1012), Flitcroft (Ex. 1013), or Bursch (Ex. 1010) cure the fundamental disclosure deficiencies discussed above with respect to Doughty, Abe, and Fox. Ex. 2031 ¶ 110. Accordingly, the Petition does not demonstrate that claim 7 is rendered unpatentable by Doughty in view of Abe in further view of Dua and, or in further view of Fox and Dua. The Petition does not demonstrate that claim 8 is rendered unpatentable by Doughty in view of Abe in further view of Flitcroft, or in further view of Fox and Flitcroft. The Petition does not demonstrate that claim 9 is rendered unpatentable by Doughty in view of Abe in further view of Bursch, or in view of Fox and Bursch. Patent Owner further reserves the right to later advance additional arguments with respect to these references.

VI. SECONDARY CONSIDERATIONS

For the foregoing reasons, Petitioners have failed to establish a reasonable likelihood that any challenged claim is unpatentable, and institution should be denied on the basis of those reasons alone. Patent Owner acknowledges that

Petitioners have attempted to rebut arguments regarding secondary considerations, also known as objective indicia of nonobviousness. *See* Pet. at 69. Patent Owner does not waive its rights to address objective indicia of nonobviousness later in these proceedings.

VII. CONCLUSION

The Petition does not establish a reasonable likelihood that any of the challenged claims are unpatentable. Institution should be denied.

Dated: July 16, 2025

Respectfully Submitted,

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WORD-COUNT CERTIFICATE

The undersigned certifies that the foregoing Patent Owner's Preliminary Response complies with the type-volume limitation of 37 C.F.R. § 42.24(a) and (b) and contains 10,320 words in 14-point Times New Roman font as calculated by the word count feature of Microsoft Office. This word count is inclusive of all text and footnotes but does not include the table of contents, table of authorities, certificates or service or word count, or appendix of exhibits or claim listing.

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Patent Owner's Preliminary Response was served on July 16, 2025, by electronic mail to Petitioners' counsel at the following addresses indicated in Petitioners' Mandatory Notices:

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