IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of:	David Wyatt	
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Issue Date:	July 2, 2019	
Appl. Serial No.:	15/701,261	
Filing Date:	September 11, 2017	
Title:	MULTI-FUNCTIONAL CREDIT CARD TYPE PORTABLE ELECTRONIC DEVICE	

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PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT NO. 10,339,520 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42

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EXHIBITS

SAMSUNG-1001 U.S. Patent No. 10,339,520 to Wyatt ("the '520 patent")

SAMSUNG-1002 Excerpts from the Prosecution History of the '520 patent ("the Prosecution History")

SAMSUNG-1003 Expert Declaration of Dr. Michael Shamos

SAMSUNG-1004 Curriculum Vitae of Dr. Michael Shamos

SAMSUNG-1005 U.S. Patent No. 9,600,808 ("Gomez")

SAMSUNG-1006 U.S. Patent App. Pub. No. 2008/0319905 ("Carlson")

SAMSUNG-1007 PCT Pub. WO2012/154915 ("Mullen-915")

SAMSUNG-1008 U.S. Patent App. Pub. No. 2013/0262305 ("Jones")

SAMSUNG-1009 U.S. Patent App. Pub. No. 2013/0124410 ("Kay")

SAMSUNG-1010 U.S. Patent No. 9,098,846 ("Gill")

SAMSUNG-1011 U.S. Patent App. Pub. No. 2013/0232083 ("Smith")

SAMSUNG-1012 U.S. Patent App. Pub. No. 2012/0317035 ("Royyuru")

SAMSUNG-1013 U.S. Patent App. Pub. No. 2009/0159701 ("Mullen-701")

SAMSUNG-1014 U.S. Provisional Patent Application Serial No. 61/794,891

SAMSUNG-1015 John Wenninger et al., *The Electronic Purse*, Federal Reserve Bank of New York, Current Issues in Economics and Finance, Vol. 1, No. 1 (April 1995)

SAMSUNG-1016 Tim Noonan, Barriers to Using Automatic Teller Machines: A Review of the Usability of Self-Service Banking Facilities for Australians with Disabilities (Feb. 2000)

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SAMSUNG-1017 U.S. Patent No. 5,594,233 ("Kenneth")

SAMSUNG-1018 U.S. Patent No. 5,528,222 ("Moskowitz")

SAMSUNG-1019 Martha E. Haykin et al., Computer Science and Technology, NIST Special Publication 500-157, Smart Card Technology: New Methods for Computer Access Control (1988)

SAMSUNG-1020 EMV2000 Integrated Circuit Card Specification for Payment Systems, Book 2 – Security and Key Management, Version 4.0 (December 2000)

SAMSUNG-1021 Maximum value for accelerometer reading, *https://discussions.apple.com* (October 2008)

SAMSUNG-1022 PCI Data Security Standard (PCI DSS), Information Supplement: PCI DSS E-commerce Guidelines (January 2013)

SAMSUNG-1023 Z. Honig, *A week with Google Wallet*, Engadget (September 19, 2011)

SAMSUNG-1024 Jason D. O'Grady, *Inside the iPhone 4's Vibrational Gyroscope*, ZDNET (June 30, 2010)

SAMSUNG-1025 Kadambi et al., *Near-Field Communication-Based Secure Mobile Payment Service*, ACM 11th International Conference on Electronic Commerce 2009

SAMSUNG-1026 PCI Data Security Standard, Navigating PCI DSS: Understanding the Intent of the Requirements, Version 2.0 (October 2010)

SAMSUNG-1027 PDA Software Manual for the Windows CE and Mobile Operating Systems, Global Water Instrumentation, Inc. (2012)

SAMSUNG-1028 The Sensors used in an iPhone®, Oct. 18, 2012, retrieved October 20, 2022 from *https://www.azosensors.com/article.aspx?ArticleID=66*

SAMSUNG-1029 Todd Wasserman, *New Credit Card has LCD Screen, Touch-Sensitive Buttons* (Nov. 9, 2012)

SAMSUNG-1030 PCI Data Security Standard (PCI DSS), Information Supplement: PCI DSS Tokenization Guidelines, Version 2.0 (August 2011)

SAMSUNG-1031 EMV® Contactless Specifications for Payment Systems, Book A, Architecture and General Requirements, Version 2.1 (March 2011)

SAMSUNG-1032 U.S. Patent App. Pub. No. 2005/0043997 ("Sahota")

SAMSUNG-1033 U.S. Patent App. Pub. No. 2013/0128238 ("Estevez")

SAMSUNG-1034 U.S. Patent App. Pub. No. 2006/0146011 ("Pihlaja")

SAMSUNG-1035 U.S. Patent App. Pub. No. 2011/0006971 ("Ebey")

SAMSUNG-1036—1099 [RESERVED]

SAMSUNG-1100 Complaint for Patent Infringement, *Cardware Inc. v. Samsung Electronics Co., Ltd. et al.*, Case No. 2:22-cv-00141 (E.D. Tex. May 11, 2022)

SAMSUNG-1101 Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (June 21, 2022)

SAMSUNG-1102 Exhibit A to CardWare Inc.'s P.R. 3-1 Disclosure of Asserted Claims and Infringement Contentions, *Cardware Inc. v. Samsung Electronics Co., Ltd. et al.*, Case No. 2:22-cv-00141 (E.D. Tex. (Sept. 8, 2022)

SAMSUNG-1103 United States District Courts National Judicial Caseload Profile, *available at* https://www.uscourts.gov/sites/default/files/fcms_na_distprofile0630.2022_0.pdf (retrieved November 11, 2022)

SAMSUNG-1104 Sample Docket Control Order for Patent Cases, *Cardware Inc. v. Samsung Electronics Co., Ltd. et al.*, Case No. 2:22-cv-00141 (E.D. Tex.)

SAMSUNG-1105 Plaintiff CardWare Inc's Disclosure of Asserted Claims and Infringement Contentions, *Cardware Inc. v. Samsung Electronics Co., Ltd. et al.*, Case No. 2:22-cv-00141 (E.D. Tex. (Sept. 8, 2022)

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CLAIM LISTING

Element	Claim Language
[1pre]	An electronic device comprising:
[1a]	a near-field communication (NFC) unit;
[1b]	a touch sensor array;
[1c]	a display;
[1d]	a motion rate detection array;
[1e]	a memory for storing a user data and a currency amount;
[1f]	a processor operatively coupled to the NFC unit, the touch sensor array, the display, the motion rate detection array, and the memory;
[1g]	a computer readable medium having instructions stored thereon that, responsive to execution by the electronic device, cause the electronic device to perform operations comprising:
[1h]	accepting a user input of issued payments information input at a touch screen display of the electronic device, wherein the information comprising an issuer provided payment information;
[1i]	wherein the memory comprises device-specific and user-specific information; and,
[1j]	wherein the user provided payment information is communicated wirelessly; and,
[1k]	wirelessly receiving a static device account number payment information for storage on the electronic device; and
[1l]	wherein at least a portion of the payment information is a limited-use number for limited-use by the device, in place of a issuer provided payment information; and,

Element	Claim Language
[1m]	dynamically-generating a one-time limited-use numbers based on at least one of a set of information including: user-identifying information; user secrets; device information; device secrets; time; merchant; facility location; sequence count; payment information; account information; amount; and transaction information; and
[1n]	using said static device account number and said dynamically generated one-time limited-use number together in the place of issuer provided payment information for making a payment transaction.
[4]	The electronic device of claim 1, wherein the user input comprises one or more of: an introduction of a transaction-specific identifier; a confirmation or a denial of an indicated transaction; and a lock/unlock command determining operation of the electronic device according to an input sequence or a gesture across the plurality of touch sensors.
[5]	The electronic device of claim 1, further comprising a sequence counter which generates a sequential parameter when the processor initiates a transaction, wherein the sequential parameter is combined with any of a user information, a transaction identifier, a user secret, and a credit card authority secret and the processor is operable to generate a limited-duration credit card number therefrom.
[6]	The electronic device of claim 1, wherein the limited-use number has a limited recurrence, and is limited in scope of use to a predetermined number of authorized transactions.
[7]	The electronic device of claim 1, wherein the display enables information to be displayed regarding the limited-use number, the time, a passcode, a sequence code, a currency amount, and other credit card transaction information of the user, a merchant, a bank or a credit card authority.
[8]	The electronic device of claim 1, wherein the payment transaction comprises a cryptographic hash of the transaction unit, wherein the cryptographic hash is processed and stored in said memory.

Element	Claim Language
[9]	The electronic device of claim 1, further comprising a USB connector for connection to a standard computing device.
[10pre]	A method of storing and generating payment information in an electronic device, the method comprising:
[10a]	accepting a user input of issued payment information input at a touch screen display of the electronic device,
[10b]	wherein the information comprises an issuer provided payment information;
[10c]	wherein the electronic device comprises device-specific and user-specific information; and,
[10d]	wherein the issuer provided payment information is communicated wirelessly; and,
[10e]	receiving wirelessly a static device account number payment information for storage on the electronic device; and
[10f]	wherein at least a portion of the payment information is a limited-use number for limited use by the device, in place of a issuer provided payment information; and,
[10g]	dynamically generating a one-time limited-use number based on at least one of a set of information including: user-identifying information; user secrets; device information; device secrets; time; merchant; facility location; sequence count; payment information; account information; amount; and transaction information; and
[10h]	using said static device account number and said dynamically generated one-time limited-use number together in the place of issuer provided payment information for making a payment transaction.
[11]	The method of claim 10, wherein the electronic device is configured to accept the user input by at least one of a means comprising: a touch sensor array; a touch screen; a keypad; buttons; device motion;

Element	Claim Language
	an accelerometer; a biometric input; a proximity contact sensor; optical sensors; an NFC unit; a wireless interface; a wired connection; a USB connection; an RF antenna; an inductor assembly.
[12]	The method of claim 10, wherein the device-specific information comprises at least one of a set including: device identifiers; device secrets; devices keys; device usage sequence counters; and device account numbers.
[13]	The method of claim 10, wherein the user-specific information comprises at least one of a set comprising: an email address; a username; a password; a PIN; a passcode; gestures; user information; bank accounts; payment information; device account numbers; merchant accounts; online accounts; currency amount; currency type; cryptocurrency address; cryptocurrency keys; private/public keys; signature information; and user secrets.
[14]	The method of claim 10, further comprising rendering on the display of the electronic device the payment method types stored in the electronic device, wherein said rendering comprises rendering with images, alphanumeric characters and iconography including at least one of a set comprising: a bank logo; an issuer logo; card network icons; payment network icons; a portion of the account number; and a cardholder name.
[15]	The method of claim 14, further comprising accepting a user selection of a payment method type for use in a transaction responsive to a user selection from a list of payment method images rendered the display and using a touch screen interface for the user selection.
[16]	The method of claim 15, wherein the user selection is a default payment method to be used in transactions.
[17]	The method of claim 15, wherein the issuer provided payment information is selected from at least one of a set comprising: account number; card number; device account number; expiration date; card security codes; card validation values; card identification numbers; cardholder name; payment method type; merchant account; online

Element	Claim Language
	account; an account type; a direction of transaction; the payment issuing authority; the amount of currency; the unit of currency; a funds type; cryptocurrency address; cryptocurrency key; cryptocurrency network; and card-type information.

Samsung Electronics Co., Ltd. ("Petitioner" or "Samsung") petitions for *Inter Partes* Review ("IPR") of claims 1 and 4-17 ("the Challenged Claims") of U.S. Patent No. 10,339,520 ("the '520 patent").

I. REQUIREMENTS FOR IPR

A. Grounds for Standing

Petitioner certifies that the '520 patent is available for IPR. This petition is being filed within one year of service of a complaint against Samsung. SAMSUNG-1100. Samsung is not barred or estopped from requesting review of the Challenged Claims on the below-identified grounds.

B. Challenge and Relief Requested

Petitioner requests IPR of the Challenged Claims on the grounds set forth in the table shown below. Additional explanation and support for each ground is set forth in the expert declaration of Dr. Michael Shamos (SAMSUNG-1003), referenced throughout this Petition.

Ground	Claim(s)	Basis Under 35 U.S.C. §103
1A	10-13	Gomez in view of Carlson
1B	14-17	Gomez in view of Carlson and Mullen-915
1C	1, 4-6, 8	Gomez in view of Carlson and Jones
1D	7	Gomez in view of Carlson, Jones, and Kay

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Ground	Claim(s)	Basis Under 35 U.S.C. §103
1E	9	Gomez in view of Carlson, Jones, and Mullen-701
2A	10-13	Carlson in view of Gomez
2B	14-17	Carlson in view of Gomez and Mullen-915
2C	1, 4-6, 8	Carlson in view of Gomez and Jones
2D	7	Carlson in view of Gomez, Jones, and Kay
2E	9	Carlson in view of Gomez, Jones, and Mullen-701

The ’520 patent claims priority to a provisional application filed on March 15, 2013 (“Critical Date”). Petitioner has applied prior art that predates this date and has used the Critical Date as the date of invention for purposes of this IPR.[1] Each of the prior art references applied in Grounds 1A-2E qualifies as prior art to the ’520 patent as shown below:

[1] Petitioner does not concede that any of the Challenged Claims enjoy priority to the March 15, 2013, filing date of the provisional application. Indeed, multiple claims of the ’520 patent recite features that are plainly not described in the provisional application. SAMSUNG-1003, ¶¶24-26. The analysis presented in this petition remains the same regardless of whether March 15, 2013 or March 17, 2014 is used as the date of invention.

Reference	Filed	Published	AIA Prior Art Basis
Gomez	06/22/2012	03/21/2017	§102(a)(2)
Carlson	06/24/2008	12/25/2008	§102(a)(1)-(2)
Jones	03/27/2012	10/03/2013	§102(a)(2)
Kay	11/15/2011	05/16/2013	§102(a)(2)
Mullen-915	05/10/2012	11/15/2012	§102(a)(1)-(2)
Mullen-701	12/19/2008	06/25/2009	§102(a)(1)-(2)

C. Claim Construction

All claim terms should be construed according to the *Phillips* standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); 37 C.F.R. §42.100. No formal claim constructions are presently necessary since "claim terms need only be construed to the extent necessary to resolve the controversy." *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011); SAMSUNG-1003, ¶¶93-95.

Petitioner reserves the right to respond to any constructions offered by Patent Owner or adopted by the Board in accordance with due process. Furthermore, Petitioner is not conceding that the Challenged Claims satisfy all statutory requirements including those under 35 U.S.C. § 112.

II. SUMMARY OF THE '520 PATENT

A. Brief Description

The ’520 patent specification describes an electronic payment card capable of generating a “***limited-duration number***”[2] for use in contactless payment transactions. SAMSUNG-1001, 2:24-29, 2:50-62, 10:3:11-55, FIG. 7; SAMSUNG-1003, ¶¶29-32. Figure 7 illustrates a process for generating and using a limited-duration number in a transaction:

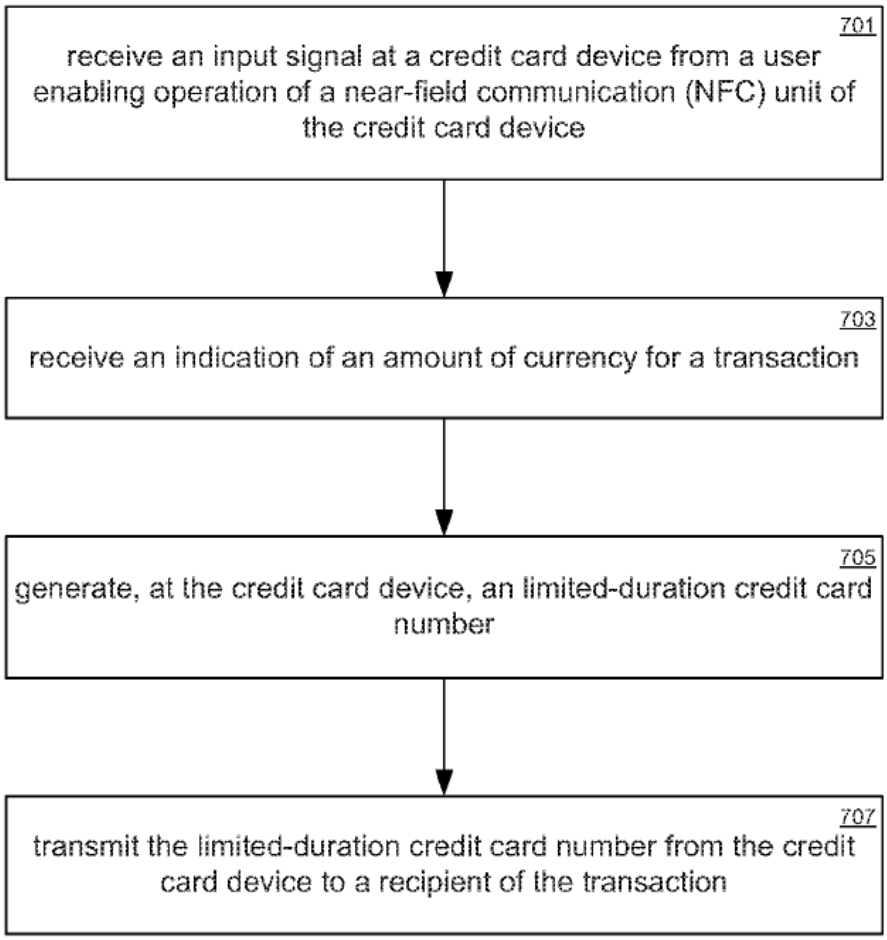

FIG. 7

[2] All emphasis added unless otherwise noted.

SAMSUNG-1001, FIG. 7.

B. Summary of the Prosecution History

The only rejection made during original examination was based on statutory double patenting. SAMSUNG-1002, 147; SAMSUNG-1003, ¶¶33-38. The applicant responded by substantially amending independent claim 1 and adding new claims 10-24. SAMSUNG-1002, 107-127. No further rejections ensued, and the application was allowed on February 5, 2019. The file history includes no indication that Examiner considered any of the prior art cited in this Petition. If this art had been considered—and particularly the combinations described in Grounds 1A-2E—the application never should have been allowed.

C. Level of Ordinary Skill in the Art

A person of ordinary skill as of the Critical Date ("POSITA") would have had (1) a bachelor's degree in computer science, computer engineering, electrical engineering, or a related field, and (2) one to two years of experience working with payment processing and/or digital authentication systems, including familiarity with short-range wireless technology. SAMSUNG-1003, ¶¶39-44. Graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education. *Id*.

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III. THE CHALLENGED CLAIMS ARE UNPATENTABLE[3]

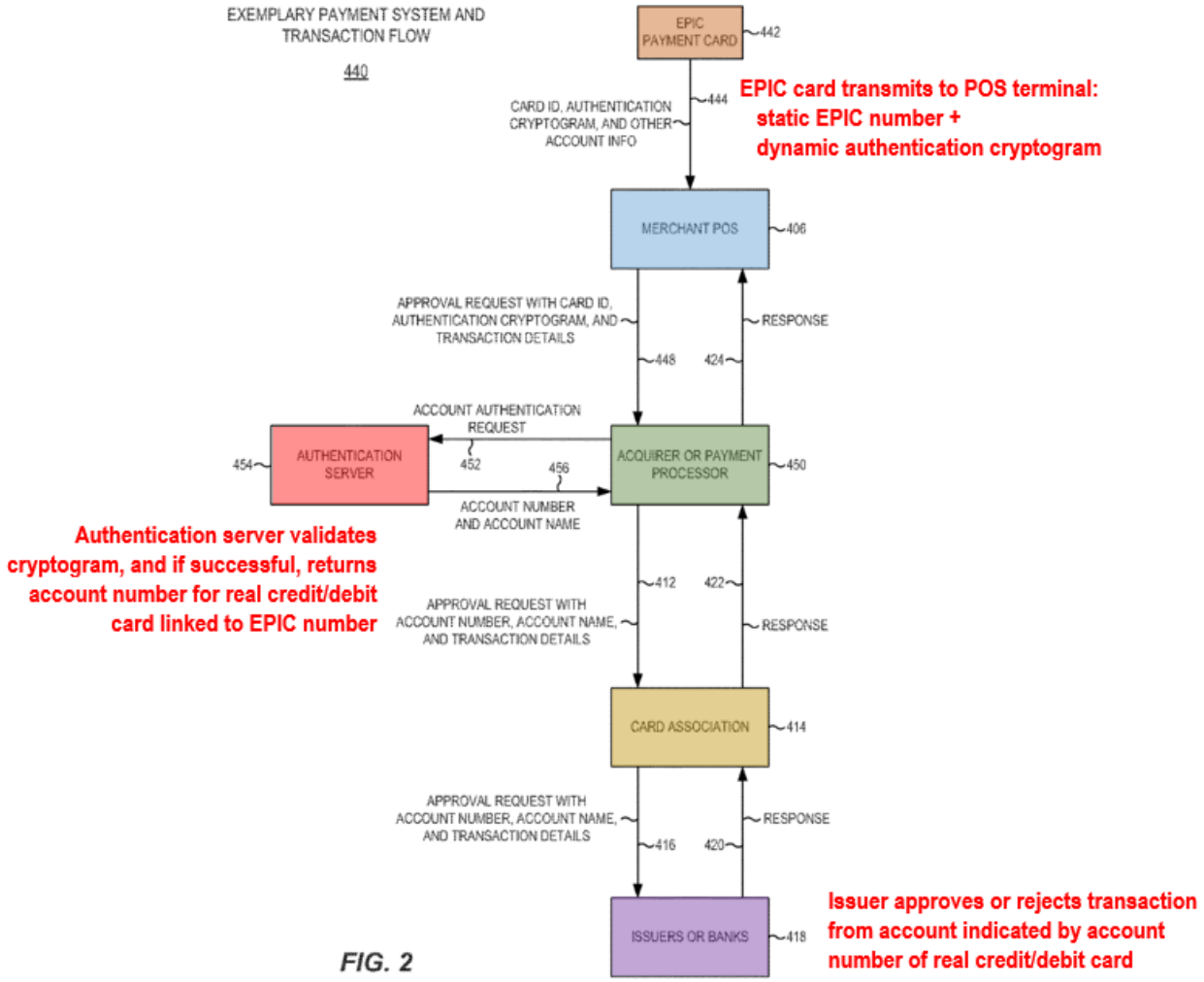
A. [GROUND 1A] – Obviousness based on Gomez and Carlson (Claims 10-13)

1. Overview of Gomez

Gomez describes a contactless payment card having a substitute account number (also referred to as an "EPIC" number) and circuitry configured to generate a unique authentication cryptogram for each transaction based on a securely-stored seed value and a value of a dynamically-changing temporal signal. SAMSUNG-1005, 1:58-2:13, 5:25-60, 8:25-9:11; SAMSUNG-1003, ¶¶96-104. In Gomez, transaction requests are routed from the merchant or an acquirer to a payment processor. The transaction request includes, among other details necessary to complete a transaction, (i) the EPIC number of the card presented to the point-of-sale terminal and (ii) an authentication cryptogram generated by the card for the particular transaction. SAMSUNG-1005, FIG. 2 (444). The payment processor evaluates the cryptogram, and if successfully validated, substitutes the EPIC number from the original request with a real, card issuer-provided account number linked to the EPIC number. *Id.*, 18:20-25, FIGS. 17-18. The payment processor then forwards the modified request with the real account number to the card issuer

[3] Dr. Shamos addresses background technology as of the Critical Date at SAMSUNG-1003, ¶¶45-92.

for approval. Gomez's techniques can reduce "[t]he problems of fraud and identity theft that result from the use of payment cards," especially when a new cryptogram is used for each transaction. SAMSUNG-1005, 1:32-48; *see also id.*, 2:19-39, 5:7-11, 7:17-48, FIGS. 7, 17-18.



SAMSUNG-1005, FIG. 2 (annotated).

2. Overview of Carlson

Carlson describes techniques for "conducting transactions using pseudo primary account identifiers." SAMSUNG-1006, [0012], [0029], [0083]; SAMSUNG-

1003, ¶¶105-110. The pseudo account identifier (PAI), like Gomez's EPIC number, is linked to a real, issuer-provided payment account number so that the PAI can be provided to the POS terminal in lieu of the real account number. SAMSUNG-1006, [0032]-[0034]. Carlson suggests updating the PAI from time-to-time to prevent exploitation of expired PAIs. *Id.*, [0044], [0083].

3. Obviousness Analysis

The teachings of Gomez in view of Carlson ("Gomez-Carlson") would have rendered obvious and provided each element of claims 10-13 for the reasons discussed in detail below. SAMSUNG-1003, ¶¶134-137. Gomez describes contactless transactions with a payment card, but other types of contactless payment devices were well-known by the Critical Date, including mobile phones or PDAs like those taught in Carlson. *See* [10pre]; SAMSUNG-1003, ¶¶141-143. It would have been obvious to implement the payment device as a mobile phone or PDA in the Gomez-Carlson combination for the reasons discussed in [10pre]. *Id.* Additionally, in Gomez, the substitute account number (i.e., the EPIC number) is associated with the EPIC card upon issuance. SAMSUNG-1005, 20:1-21:3. Carlson teaches an improved option for obtaining substitute account numbers by retrieving such numbers from time-to-time over a wireless network, and it would have been obvious to apply Carlson's teachings in this regard to obtain new/updated EPIC numbers wirelessly from time-to-time for the reasons described below with respect to

[10e]-[10f]. SAMSUNG-1003, ¶¶170-181.

Element [10pre]

Gomez-Carlson renders obvious [10pre], to the extent it is a limitation. SAMSUNG-1003, ¶138; *see also id.*, ¶¶138-146; *supra*, Sections III.A.1-III.A.3. Gomez discloses an electronic payment device in the form of an "EPIC payment card." SAMSUNG-1005, 10:34-57, FIGS. 13-14 (reproduced below); *generally id.*, FIGS. 7-17.

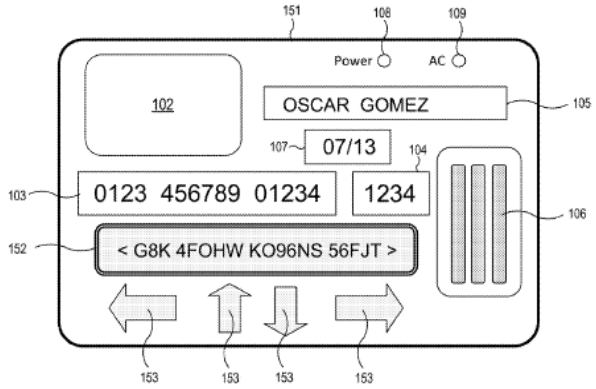


FIG. 13

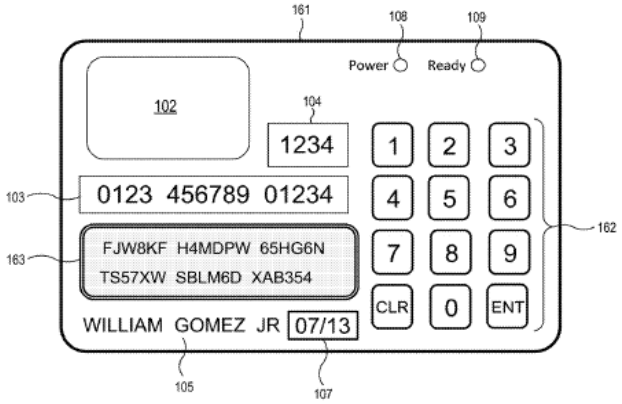


FIG. 14

SAMSUNG-1005, FIGS. 13-14.

Gomez's EPIC card stores payment information including an EPIC number and a seed value, and generates payment information including an authentication cryptogram. SAMSUNG-1005, Abstract, 22:48-50, 2:56-69, 5:25-29, 7:42-48, FIG. 3 (260); SAMSUNG-1003, ¶140.

Carlson describes a range of known alternatives to cards, including mobile phones and PDAs. SAMSUNG-1006, [0003]-[0004], [0009]; *see also id.*, [0029],

[0053], [0077], [0084]-[0086], FIGS. 5-6. It would have been obvious, and a POSITA would have been motivated by multiple reasons, to apply the functionality of an EPIC payment device like Gomez's payment card in a multi-functional device such as a mobile phone or PDA as taught in Carlson. SAMSUNG-1003, ¶¶141-142. For example, among other considerations, use of a multi-functional payment device in lieu of a card was known to be desirable to increase the convenience of retail and other payment transactions to users. *Id.* By the Critical Date of the '520 Patent in March 2013, consumers commonly carried smartphones and similar devices on their person while shopping or otherwise moving about in public. *Id.*

Moreover, by the Critical Date, predictable benefits stemming from the use of such multi-functional wireless devices in contactless payment transactions were widely recognized. SAMSUNG-1003, 142. Integrating contactless transaction capabilities onto a user's phone or PDA, for example, would free users of the need to carry contactless payment card(s) in addition to his/her phone or similar device for payment transactions. *Id.*; SAMSUNG-1006, [0003] ("In today's society the presence of portable wireless devices carried by consumers has become almost ubiquitous."), [0006] ("the use of contactless card readers provides for increased convenience to the user"). A POSITA would have sought to achieve this added convenience by not only mitigating the need for users to carry other payment, but also to

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mitigate the need to carry a separate proxy card such as the EPIC card described in Gomez. *See* SAMSUNG-1005, 2:30-39; SAMSUNG-1003, ¶¶141-146. A POSITA would have expected a high likelihood of success in expanding Gomez's techniques from a payment card to multi-functional payment devices like those disclosed in Carlson, especially in light of the enhanced capabilities of mobile phones, PDAs, and similar devices over a card and the well-known use of such devices for contactless payment transactions by the Critical Date. *Id.*

Elements [10a]-[10b]

Gomez teaches that "[a]n EPIC account may be established online to link one or more actual payment card accounts with the EPIC account." SAMSUNG-1005, 20:2-3; *generally id.*, 20:1-28; SAMSUNG-1003, ¶¶147-149. Through this process, the user "enter[s] all credit cards information" for cards that are to be linked to the EPIC account. SAMSUNG-1005, 20:12-13. This setup allows an EPIC authentication server later to look up the "actual payment card account number" and "account name" linked to the EPIC account number while processing a transaction. SAMSUNG-1005, 18:20-25, 18:54-59. A POSITA thus would have understood that the information entered by the user to link issued payment cards to his/her EPIC account would include, for each card, at least the "actual payment card account number" and the "account name" (i.e., issued payment information). SAMSUNG-1003, ¶149.

Accepting a user input "at a touch screen display of [an] electronic device" was not innovative by the relatively late Critical Date of the '520 patent (e.g., March 15, 2013). SAMSUNG-1003, ¶150. Gomez's original card already included a display, and Carlson further describes the option of "touch screen entry" as was commonly provided on smartphones and PDAs by the Critical Date. SAMSUNG-1005, 10:34-40, FIG. 7; SAMSUNG-1006, [0033], [0082] ("touch screens").

In the context of the Gomez-Carlson combination in which the payment device is not just a card but instead a more sophisticated multi-functional device such as a smartphone or PDA, it would have been obvious for the proposed "online" EPIC account setup to be performed through a website or app on the same device that would be used in contactless payment transactions. SAMSUNG-1005, 20:43-48; *supra*, [10pre]; SAMSUNG-1003, ¶150. In so doing, the user would predictably input the account information for the live/actual accounts desired to be linked to the EPIC account (i.e., issued payment information) at a touch screen display of the electronic payment device consistent with the teachings of Gomez. *Id.* A POSITA would have been motivated to configure the device to accept user inputs in this manner to make ordinary use of available touch screen capabilities that were commonly available on multi-functional wireless devices at the time. *Id.* This approach also would have provided a convenient method for the user to setup or

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modify his/her EPIC account on the mobile device itself without requiring the user to access a separate PC or other device. SAMSUNG-1003, ¶150.

As another example of the user inputting issued payments information at a touch screen of the electronic payment device, Gomez discloses that the payment device can receive a user input "to scroll through available card accounts sequentially displayed on the card, and select one of the accounts" in order to "manually ***select the actual credit card*** that he/she wishes to use during a purchase transaction." SAMSUNG-1005, 20:30-42. In the combination, it would have been obvious for this input to be accepted at a touch screen display as taught in Carlson for similar reasons to those discussed above. SAMSUNG-1006, [0033], [0082]; SAMSUNG-1003, ¶151.

As yet another example, Gomez discloses that "a customer may select the desired account using a mobile phone, either using a browser interface to the EPIC system, or using a native application … ." SAMSUNG-1005, 20:43-48. "[A] customer may [] view all credit cards in their EPIC account …, and select the card they wish to use on their next transaction." SAMSUNG-1005, 20:50-53. In the combination, the user input for these operations would be accepted at a touch screen of the device based on Carlson. SAMSUNG-1006, [0033], [0082]; SAMSUNG-1003, ¶¶152-153.

In each of the above examples, the user's input pertains to a live/actual payment card that was issued by an issuer and linked to the EPIC number. The input therefore renders obvious "issued" payment information that was issued by an issuer (and is hence also "issuer" payment information). SAMSUNG-1005, 2:19-21 ("The static payment card identifying number may represent a live (i.e., 'actual') credit card number or other payment card (e.g., debit card) account number."), 2:41 ("card issuer"), 4:32-37 ("card issuer who actually provides the underlying credit for the payment card account"); SAMSUNG-1003, ¶¶154-157.

Element [10c]

The payment device according to Gomez stores in memory a "seed value," a "customer key," and a "reference credential." SAMSUNG-1003, ¶¶158-159. The "seed value," which the device uses to generate an authentication cryptogram, "is ***unique for each payment card***, and corresponds to the payment card identifying number." SAMSUNG-1005, 7:27-34. "A ***unique seed value*** for each payment card may be achieved by using a sufficiently long pseudo-random bit string, such as a 1024-bit string." *Id.*; *see also id.*, FIG. 3 (258) ("retrieve seed value from payment card memory"), FIG. 6 (314), FIG. 7 (memory 344), 12:27-30. The seed value is thus unique to each payment device (*see* [10pre]), and renders obvious "device-specific information" as recited in [10c]. SAMSUNG-1003, ¶159. The sequence value/number is also unique to the EPIC number and device, and renders

obvious "device-specific information." SAMSUNG-1005, 7:24-26, 8:36-41, 10:64-11:6.

Additionally, "the seed value may include certain non-random ***customer specific information***, such as a ***unique customer key***." SAMSUNG-1005, 7:34-41. The unique customer key is unique to each customer, and renders obvious "user-specific information" as recited in [10c]. SAMSUNG-1003, ¶160.

Gomez further describes how the device can store "***reference credentials***" against which user-entered credentials are compared for authentication. SAMSUNG-1005, 9:30-39. The reference credentials limit use of the device to a specific user and provide another example of "user-specific information" stored in memory of the electronic payment device. SAMSUNG-1003, ¶¶161-162; *see also* SAMSUNG-1005, 10:34-36 (describing memory for storage of information on the device), 10:43-46, 11:7-9; SAMSUNG-1006, [0081] ("memory 510"), [0086]-[0087], FIGS. 5-6 (depicting device memories).

Element [10d]

As described in detail above with respect to [10a] and [10b], a user in the Gomez-Carlson combination sets up an EPIC account by entering at a touch screen of the electronic device "all credit cards information" for the user's actual payment cards that the user desires to link to his/her particular EPIC account. *Supra*, [10a]-[10b]; SAMSUNG-1005, 20:1-21:3; SAMSUNG-1006, [0033], [0082] (describing

touch screen inputs). The entered information includes issuer provided payment information including an "actual payment card account number" and "account name" for each entered payment card. *Id.* The user can also input issuer provided payment information such as a selection of an "actual credit card" to be used in the next transaction. *Id.*; SAMSUNG-1003, ¶¶163-164.

Gomez further describes an "online" account portal that allows a user to enter and submit information about his/her EPIC account through a "browser interface" or a "native application." SAMSUNG-1005, 20:2, 20:43-59. The online account portal specifically allows the user to enter and submit information about each of the live/actual payment cards that he/she desires to link (or has linked) to his/her EPIC account (e.g., an account name/number for a live/actual payment card during account setup, or a user's selection of a particular live/actual payment card previously linked to the EPIC account that the user desires to use in a given transaction). SAMSUNG-1005, 20:1-21:3; *supra*, [10a]-[10b]. In the Gomez-Carlson combination, the multi-function payment device such as a mobile phone or PDA would allow a user to enter such information through a touch screen as described above with respect to [10a] and [10b]. SAMSUNG-1003, ¶165.

In this context, a POSITA would have understood that information that the user enters and submits through a native application or browser interface of the

payment device for online account setup and configuration—i.e., information constituting and rendering obvious "issuer provided payment information" (*supra*, [10a]-[10b])—would be communicated wirelessly to an EPIC server. *Id.* This would have been apparent at least from Gomez's description of EPIC server(s) that later use information entered by the user during account setup and configuration to process transaction requests (thereby implying that the entered data must is communicated from the device and ultimate received by the servers), and from the fact that the multi-function device of the combination is configured to communicate wirelessly as taught in Carlson. SAMSUNG-1005, 18:14-25, 18:55-65, 20:2-13, 20:60-63, FIGS. 17-18; SAMSUNG-1006, [0034], [0053]-[0054], [0077]-[0078], FIG. 5 (504); *supra*, [10pre]. At the very least, it would have been obvious for such issuer-provided payment information as described in Gomez to be communicated wirelessly from the payment device so as to make ordinary and beneficial use of existing wireless communication capabilities of the device, as well as to obviate need for the alternative but more burdensome and less convenient option of physically connecting the device to a wired network for communication. SAMSUNG-1003, ¶¶166-169.

Element [10e]

Gomez describes a "static payment card identifying number"—also referred to as an "EPIC" number—stored on the electronic device. SAMSUNG-1005,

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2:25-39; *see also id.*, 1:63-64, 13:45-14:2, 22:49-51, 6:10-12, 18:57-59, Claim 10. The EPIC number "identifies the payment card, but does not represent a live account." *Id.*, 5:13-18; *see also id.*, 13:49-56 ("A fully static (16-digit) account number"). SAMSUNG-1003, ¶170

To the extent Gomez does not expressly disclose that the EPIC number is received wirelessly, such features would have been obvious in view of Carlson's teachings. SAMSUNG-1003, ¶171. Carlson describes a so-called "pseudo-account identifier" (PAI) that, like Gomez's EPIC number, is static; it remains unchanged across transactions for its period of use as a substitute for a live/actual account number (referred to in Carlson as a "primary account identifier" or "primary account number") so that merchant access to the live/actual account number is impeded. SAMSUNG-1006, [0029]. Carlson discloses that the payment device receives the pseudo account identifier wirelessly. *Id.*; *see also id.*, [0068], (PAI returned through "communications network 220"), [0032] ("cellular telephone network"), [0034] ("Bluetooth, WiFi, and the like"), [0051], [0078], FIG. 2 (220), FIG. 5 (504).

It would have been obvious to configure the payment device of the Gomez-Carlson combination to receive the static EPIC device account number wirelessly for storage as suggested in Carlson, and multiple reasons would have motivated a

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POSITA to do so. SAMSUNG-1003, ¶172. Wireless reception of the EPIC number would have enabled the device to more readily obtain new or updated EPIC numbers from time-to-time, such as when the current EPIC number expires or in the event the EPIC account is compromised (e.g., if the unique seed value stored on the device is leaked or derived by an unauthorized actor). *Id.* An updated or otherwise newly received EPIC number could then be associated with the user's existing EPIC account or used for a new EPIC account on the same device (e.g., rather than requiring an entirely new payment device for a new EPIC number). SAMSUNG-1003, ¶172.

To this point, Carlson expressly recognizes security protections that would be realized by updating the PAI from time-to-time—i.e., a capability made possible by configuring the device to receive wirelessly new PAIs. SAMSUNG-1006, [0044] ("protected from unscrupulous merchants because the merchant only receives the transitory pseudo primary account identifier and never receives the real primary account identifier"); *see also id.*, [0036] ("amount of damage that can be done is limited due to the limited lifetime of the pseudo primary account number"). A POSITA would have sought to implement such capabilities to update the EPIC number in the Gomez-Carlson combination for similar reasons. SAMSUNG-1003, ¶173.

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Wireless reception of the EPIC number likewise would have been obvious by the Critical Date, especially since wireless networks were widely deployed by that time and the conveniences that rise from wireless communications were exceedingly well known. SAMSUNG-1003, ¶168. Indeed, wireless reception would have been useful to enable the device to obtain an updated EPIC number as needed, regardless of location so long as the device is connected to a wireless network. *Id.*; SAMSUNG-1006, [0077]-[0078], FIG. 5; *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (a supposed invention that "simply arranges old elements with each performing the same function it had been known to perform" is obvious); SAMSUNG-1003, ¶174. A POSITA would have expected a high likelihood of success, especially as Carlson already confirms that the types of multi-function payment devices applied in the combination have wireless interfaces that allow wireless reception of data similar to a static EPIC device account number (e.g., a PAI). SAMSUNG-1003, ¶¶174-176.

Element [10f]

Gomez discloses that the EPIC number (i.e., at least a portion of the payment information)[4] is limited to use by a single device, and thus renders obvious a

[4] Claim 10 refers to "payment information" in several contexts before reciting in [10f] "at least a portion of ***the*** payment information." For purposes of this Petition,

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"limited-use number for limited use by the device," as recited in [10f]. SAMSUNG-1005, 2:25-27 ("the static payment card identifying number ***identifies the payment card***"), 7:27-29 ("seed value is ***unique for each payment card***, and ***corresponds to the payment card identifying number***"); SAMSUNG-1003, ¶¶177. Gomez also describes how the EPIC number is used in place of a live/actual card number of an issued payment card linked to the EPIC account (i.e., "a issuer provided payment information"). SAMSUNG-1005, 2:19-20; *see also id.*, 6:29-30, 18:57-59 ("determines a first payment card account number (and corresponding actual account name) which is linked to the EPIC account"), 18:20-25, 2:25-39. SAMSUNG-1003, ¶177

In the combination, and based on Carlson's teachings, the EPIC number (i.e., at least a portion of the payment information) is also a limited-use number for

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Samsung treats the "static device account number payment information" recited in [10e] as the antecedent for "the payment information" in [10f]. This treatment is informed in part by proximity of the limitations and the requirement in [10f] for "at least a portion of the payment information" to be used "***in place of a issuer provided payment information***"—i.e., a requirement at odds with [10a]'s description of "a user input of ***issued*** payment information" and [10b]'s "***issuer*** provided payment information."

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limited use by the device in terms of having a limited lifetime. SAMSUNG-1006, [0044] ("may have a limited lifetime"), [0036] ("set to expire after a certain number of transactions or after a certain time period"). A POSITA would have found it obvious and would have been motivated based on Carlson to limit the life of the EPIC number in the Gomez-Carlson combination for the reasons described above in [10e]; *Supra*, [10e]; SAMSUNG-1003, ¶¶178-179.[5]

Gomez also teaches an "authentication cryptogram" generated uniquely for each transaction, which is paired with the EPIC number and communicated in place of conventional payment information including the live/actual issuer-provided account number, and the account name and/or security code. SAMSUNG-1005, 1:58-2:13, 5:25-60; *generally id.*, 14:36-17:13; *infra*, [10g]-[10h]. This also

[5] To the extent that "the payment information" in [10f] is the "static device account number payment information" (*see* FN4), at least a portion of the static device account number payment information is a "limited-use number for limited use by the device." Under this treatment, the static device account number payment information is not required to have an unlimited lifetime. Indeed, with respect to similar language in claim 1, dependent claim 6 specifically recites that the "limited use number" has "a limited recurrence, and is limited in scope of use to a predetermined number of authorized transactions." SAMSUNG-1001, 16:60-62.

aligns with the [10f] limitation, according to PO, which advances infringement contentions that identify a cryptogram as [10f]'s "limited-use number" (in addition to [10g]'s "one-time limited-use number"). SAMSUNG-1102, 29 ("Samsung Pay-enabled computing devices transmit[] payment information having two parts, the DAN/DPAN and a transaction-specific security code (also known as the cryptogram), ***the latter of which is the limited-use number, also known as the one-time limited use number***."). To the extent PO's interpretation applies, the cryptogram in the Gomez-Carlson combination would also provide [10f]'s limited-use number. SAMSUNG-1003, ¶¶180-181.

Element [10g]

In the combination, the payment device dynamically generates an "authentication cryptogram" (i.e., "a one-time limited-use number") for each transaction as taught by Gomez. SAMSUNG-1005, 7:41-43 ("the card generates an authentication cryptogram …"), 8:6-9, FIG. 3 (260), FIG. 4 (282); *see also id.*, 1:58-63 ("generated uniquely for each attempted use"), 5:15-16 ("generates an authentication cryptogram for each attempted transaction"), 8:36-39, 14:3-4; SAMSUNG-1003, ¶¶182-183.

According to Gomez, the authentication cryptogram is generated from a "seed value" and a "temporal signal." SAMSUNG-1005, 5:25-47, 7:17-48; SAMSUNG-1003, ¶184-185. The "seed value" is "unique for each payment card," and

provides combinations of bit values that render obvious "device secrets." SAMSUNG-1005, 7:27-34; *see also id.*, 12:30-34, 16:31-34, 16:64-17:13. The "seed value" further includes user-identifying information and/or user secrets in the form of "non-random customer specific information, such as a unique customer key." *Id.*, 7:34-41. Gomez also describes that "a temporal signal value may reflect the date/time of the attempted use [of the card]," and hence the authentication cryptogram can be generated based on time information as recited in [10g]. *Id.*, 7:19-20. The temporal signal can also include a sequence count. *Id.*, 7:24-26 ("a temporal signal value may reflect the sequence value (or sequential number) of the attempted use"), 8:36-38, 10:66-11:6.

Element [10h]

As taught in Gomez, the payment device of the Gomez-Carlson combination renders obvious use of the static EPIC device account number and authentication cryptogram (i.e., the dynamically generated one-time limited-use number) in making a payment transaction. The EPIC number alone or together with the cryptogram is communicated in place of a live/actual issuer-provided account number for a payment card linked to the customer's EPIC account. SAMSUNG-1005, 2:25-35 ("the static payment card identifying number identifies the payment card, but does not represent a live account"), 5:20-24, 2:29-39, 7:49-65, 8:16-24, FIGS. 3-4. The

cryptogram is also communicated in place of the account holder's name and/or security code associated with an issuer-provided account. *Id.*, 2:4-13, 5:19-24, 5:29-32, 2:50-54 ("communicating the authentication cryptogram in a payment card account name field to the payment processing system."). Gomez shows in FIG. 2, for example, how the EPIC number or card ID and cryptogram are transmitted (444) by the device (442) in place of an account number and name (404) that would otherwise be used in a traditional transaction like that illustrated in FIG. 1. SAMSUNG-1005, FIGS. 1-2; SAMSUNG-1003, ¶¶186-189.

Claim [11]

As discussed with respect to [10a], the Gomez-Carlson payment device renders obvious accepting the user input at a touch screen display. *Supra*, [10a]; SAMSUNG-1003, ¶190. Gomez further discloses that the device can accept user inputs via an "input keypad," a "fingerprint sensor" (i.e., a biometric input), and "scroll buttons." SAMSUNG-1005, 13:23-33, 13:40-44, 7:10-15, 11:30-38; *see also* SAMSUNG-1006, [0033] ("keypad entry, touch screen entry, with or without a stylus, keyboard entry, voice response entry, and the like"), [0082]. SAMSUNG-1003, ¶¶190-192

Claim [12]

The seed value (***device-specific information***), which is specific to and maintained in confidence on individual payment devices per Gomez, is comprised of

values constituting and rendering obvious "***device secrets***" as recited in [12]. SAMSUNG-1005, 12:27-30, 16:67-17:1-4, 7:27-34 ("This seed value is unique for each payment card"); *supra*, [10c], [10g]; SAMSUNG-1003, ¶¶193-195. The seed value is maintained in secrecy to prevent unauthorized use of the seed value in fraudulent transactions. *Id.*

The EPIC number likewise provides device-specific information whose values constitute and render obvious "***device identifiers***." *Id.*

Gomez further discloses a sequence value that indicates a number of uses or attempted uses of the device, and constitutes and renders obvious a "***device usage sequence counter***." SAMSUNG-1005, 7:24-26, 8:36-41, 10:64-11:6; SAMSUNG-1003, ¶¶195-196.

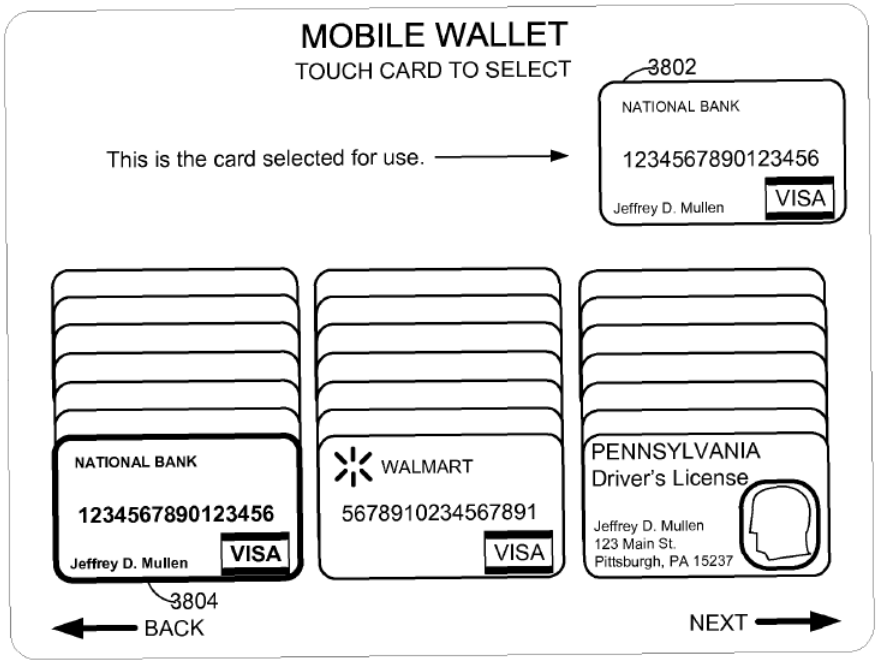
Claim [13]

The unique customer key (***user-specific information***) according to Gomez uniquely identifies the customer or user of the device, and constitutes and renders obvious ***user information*** and/or ***user secrets***. *Supra*, [10c], [10g]; SAMSUNG-1003, ¶¶197-199. Gomez discloses that "the seed value may include certain non-random customer specific information, such as a unique customer key … to frustrate attempted hacking of the payment card." SAMSUNG-1005, 7:34-41.

B. [GROUND 1B] – Obviousness based on Gomez, Carlson, and Mullen-915 (Claims 14-17)

1. Overview of Mullen-915

Mullen-915 describes a mobile device that implements a mobile wallet containing a collection of virtual payment card(s). SAMSUNG-1007, [0326], [0328], [0353], FIG. 38. The device provides a user interface through which a user can select a virtual payment card for use in a contactless transaction. *Id.*; SAMSUNG-1003, ¶¶119-121.



SAMSUNG-1007, FIG. 38; SAMSUNG-1003, ¶¶119-121.

2. Obviousness Analysis

The combined teachings of Gomez, Carlson, and Mullen-915 would have rendered obvious each element of claims 14-17 for the reasons discussed below. SAMSUNG-1003, ¶¶200-201.

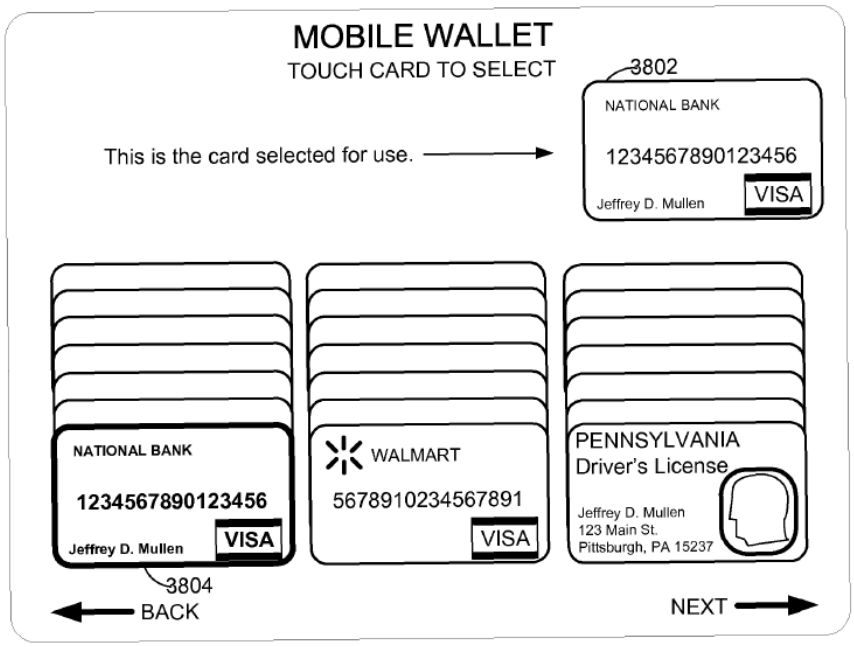
Claim [14]

As an initial matter, the additional features recited in claim 14 constitute printed matter and are entitled to no patentable weight. *In re DiStefano*, 808 F. 3d 845, 848-851 (Fed. Cir. 2015). Indeed, these features have no structural or functional relationship to the underlying display or other recited elements.

Even if these features were afforded weight, Gomez describes how a user can "scroll through available card accounts sequentially displayed on the card, and select[ing] one of the accounts." SAMSUNG-1005, 20:37-42; *see also id.*, 20:30-37 ("manually select the actual credit card"). By displaying available card accounts linked to the EPIC account, along with information about the EPIC account itself, the payment device renders on the display the payment method types stored in the electronic device. SAMSUNG-1003, ¶¶202-203. The displayed accounts can represent cards for different payment methods (e.g., credit or debit cards) and cards from different payment networks (e.g., VISA, MasterCard, Discover, AMEX, etc.). SAMSUNG-1005, 2:19-39; *see also id.*, 11:19-27, 12:64-67; SAMSUNG-1003, ¶¶202-203.

To the extent Gomez does not expressly disclose all of the recited features, it would have been obvious for the displayed card accounts in the combination to be rendered with images, alphanumeric characters, and iconography including at least one of the set recited in claim 14. SAMSUNG-1003, ¶¶204-205. For example,

Mullen-915 discloses a user interface that allows a user to "select (e.g., touch) in order to select a method of payment to be used by the mobile device[.]" SAMSUNG-1007, [0353]; *see also id.*, [0326]-[0328]. As shown in FIG. 38, the user selection can be made from a list of payment method images rendered on the display that include images, alphanumeric characters, and iconography (and including at least one of a bank logo, issuer logo, card network icons, cardholder name, and account number):



SAMSUNG-1007, FIG. 38.

It would have been obvious to render virtual cards including the features recited in claim 14 on the display of the device in the resulting combination as taught in Mullen-915 to provide an intuitive and convenient user interface by which the

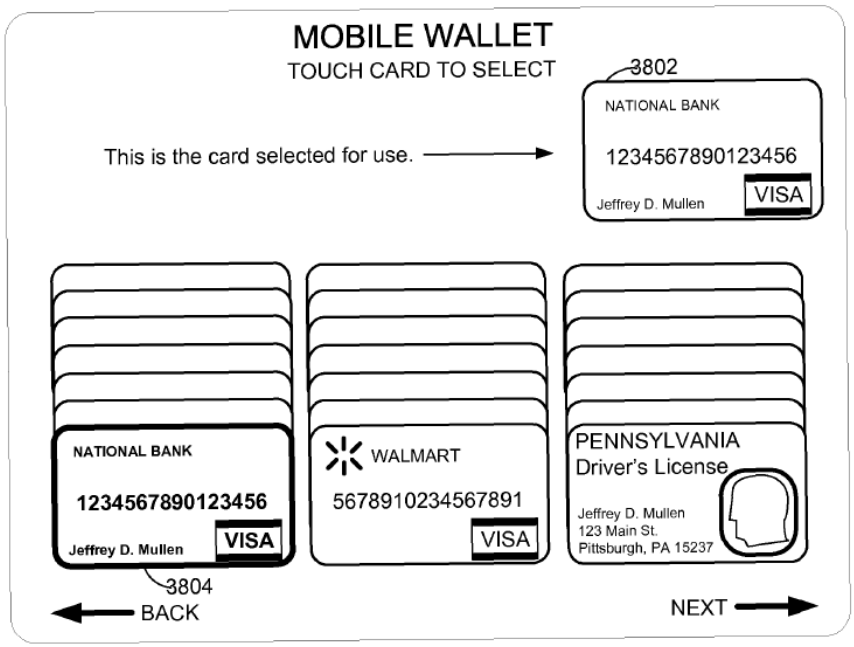
user could more readily associate different payment card accounts and their payment method types with visual depictions of cards for those accounts. SAMSUNG-1003, ¶¶205-208.

Claim [15]

Gomez discloses how a user can select a payment method type by selecting a particular payment card linked to an EPIC account to be used in a payment transaction. SAMSUNG-1005, 20:30-42; *generally id.*, 20:17-63; *supra*, [14]; SAMSUNG-1003, ¶¶209-212.

Carlson further discloses accepting a user selection of a payment method type for use through a "touch screen entry". SAMSUNG-1006, [0033], [0066]. SAMSUNG-1003, ¶¶211-212

Mullen-915 also discloses a user interface that allows a user to "select (e.g., touch) in order to select a method of payment to be used by the mobile device[.]" SAMSUNG-1007, [0353]; *see also id.*, [0326]-[0328]. As shown in FIG. 38, the user selection can be made from a list of payment method images rendered on the display: SAMSUNG-1003, ¶¶211-212



SAMSUNG-1007, FIG. 38.

It would have been obvious based on Gomez, Carlson, and Mullen-915 to configure the electronic payment device in the resulting combination to accept a user selection of a payment method type for use in a transaction responsive to a user selection from a list of payment method images rendered on the display and using a touch screen interface for the user selection to achieve predictable benefits, including to provide an intuitive and convenient user interface by which the user could more readily associate different payment card accounts and their payment method types with visual depictions of cards for those accounts. SAMSUNG-1003, ¶213.

Claim [16]

Based on Gomez, a POSITA would have found it obvious for a user to select a default payment card to use in transactions with the electronic payment device: "After entering all credit cards information, the customer may establish the default credit usage selection process." SAMSUNG-1005, 20:12-13; *see also id.*, 20:63-21:3 ("[T]he current selection may remain active for subsequent purchases until changed by the customer, or the EPIC system may default back to the pre-established credit card selection order defined in the EPIC account."); SAMSUNG-1003, ¶¶214-215.

Claim [17]

Based on Gomez, the static EPIC device account number (and authentication cryptogram) are used in place of issuer-provided payment information for one or more cards linked to the EPIC account, where the issuer-provided payment information includes a "live" or "actual" issued card number (i.e., card number and/or card identification numbers) for each linked card and an account name (i.e., a cardholder name). SAMSUNG-1005, 5:19-20, 18:56-69, 2:31-40, 20:1-13; SAMSUNG-1003, ¶¶216-218.

C. [GROUND 1C] – Obviousness based on Gomez, Carlson, and Jones (Claims 1, 4-6, 8)

1. Overview of Jones

Jones' disclosure "relates generally to financial transaction security, and

more particularly to authentication in financial transactions in which near field communication (NFC) is used." SAMSUNG-1008, [0001]; *see also id.*, Abstract, [0006], [0013]; SAMSUNG-1003, ¶¶111-114.

2. Obviousness Analysis

Gomez-Carlson-Jones would have rendered obvious each element of claims 1, 4-6, and 8 for the reasons described in further detail below. SAMSUNG-1003, ¶¶219-220. In the combination, the payment device from the Gomez-Carlson combination of Ground 1A is further modified in view of Jones to include a motion rate detection array as discussed with respect to [1d]. *Id.*

Element [1pre]

To the extent the preamble is a limitation, the combination provides an electronic payment device such as a mobile phone, PDA, or other multi-functional device as discussed above with respect to [10pre]. *Supra*, Ground 1A at [10pre][6]; SAMSUNG-1003, ¶¶221-224.

Element [1a]

Gomez and Carlson each disclose NFC units in the payment device. SAMSUNG-1005, 7:49-54 ("accomplished using near field communication (NFC) using an appropriate transmitter or transceiver circuit"), 10:53-57; SAMSUNG-1006,

[6] The analysis of claim 10 in Ground 1A is further integrated into the analysis of claim 1.

[0040] ("shorter range wireless communication (e.g. near field communication)"), [0089] ("near field communications ('NFC') capability"); SAMSUNG-1003, ¶¶225-228.

Element [1b]

Gomez discloses a numeric keypad on the payment device that allows a user to enter a PIN number or other relevant data. SAMSUNG-1005, 7:13-15, 13:40-44. Gomez also discloses "a fingerprint sensor" at which a user may present his/her fingerprint for authentication. *Id.*, 7:10-13, 11:30-38. Carlson further discloses that the device can include a "touch screen." SAMSUNG-1006, [0033]; *see also* SAMSUNG-1008, [0041]. A POSITA would have understood and/or found obvious that a touch screen includes an array of touch sensors to provide location-dependent detection of user inputs contacting the touch screen. SAMSUNG-1003, ¶¶229-231; *supra* [10a].

Element [1c]

The payment device would include a display as taught in both Gomez and Carlson. SAMSUNG-1005, 10:34-38 ("one or more displays 354"), 12:49-63 ("card 131 includes a display 132"), 12:64-13:4 ("[i]f the display 132 is sufficiently large, a great variety of useful information may be displayed"), 13:22-33, 20:35-40, FIGS. 9-14; SAMSUNG-1006, [0090] ("display 610"), FIG. 6; SAMSUNG-1008, [0042]; SAMSUNG-1003, ¶¶232-233.

Element [1d]

Gomez discloses snap sensors in the payment device to detect motion/manipulations adapted to activate the device. SAMSUNG-1005, 7:4-8.

To the extent Gomez and Carlson do not expressly disclose a "motion rate detection array," this feature would have been obvious in the combination based on Jones. SAMSUNG-1003, ¶¶234-237. Jones discloses "an NFC-enabled" device equipped with "a GPS receiver or GPS speed sensor," "an accelerometer that measures the rate of change of the velocity of NFC device," and "a gyroscope … capable of calculating orientation and rotation of NFC device." SAMSUNG-1008, [0017]-[0018]; *see also id.*, [0014]-[0016], [0031]-[0034], FIG. 1. Jones's sensors produce signals indicative of a rate of motion of the device, and constitutes and renders obvious a motion rate detection array. SAMSUNG-1003, ¶238; *cf.* SAMSUNG-1102, 6 (PO's infringement contentions characterizing an "accelerometer, gyroscope, and a light sensor" as a "motion rate detection array").

It would have been obvious to integrate a motion rate detection array like that in Jones in the payment device of the Gomez-Carlson-Jones combination. SAMSUNG-1003, ¶239. A POSITA would have sought to configure the payment device to process signals produced by sensors in the motion rate detection array to authenticate a user who desires to use the device to initiate a payment transaction, and to create a reference user profile for said authentication. SAMSUNG-1008,

[0001] ("authentication in financial transactions in which near field communication (NFC) is used."), [0006] ("establishing a profile for an authorized user of the NFC device based on data received from one or more sensors of the NFC device over a first period of time."); SAMSUNG-1003, ¶239. Jones's solution would also have been beneficial to provide a passive method of authenticating the user even before transmitting payment/transaction data to a reader (e.g., a point-of-sale terminal). *id*. Passive authentication would have been advantageous to increase the convenience and efficiency of authentication relative to traditional methods (e.g., PIN entry). SAMSUNG-1008, [0013]. Integrating the sensors in the motion rate detection array also would have been obvious and beneficial to include in the device so that they would be available for use by additional apps/services in other contexts beyond just payment transactions. *Id.* The combination also amounts to an obvious use of known techniques to improve a similar type of NFC-enabled device in a similar way as taught in Jones to achieve predictable results. *KSR*, 550 U.S. at 417; SAMSUNG-1003, ¶¶239-240.

Element [1e]

Gomez and Carlson describe a memory of the device. SAMSUNG-1005, 10:34-36 ("The card 340 includes a processor 342 coupled to a memory 344"), *see also id.*, 10:43-46, 11:7-9; SAMSUNG-1006, [0081] ("memory 510"), [0086]-[0087], FIGS. 5-6 (depicting device memories); SAMSUNG-1003, ¶¶241-243.

Gomez further discloses that the memory is adapted to store a user data, such as "a unique customer key" and "a reference credential stored within the card" for authenticating the user. SAMSUNG-1005, 7:34-41, 12:24-30, 9:30-39.

Carlson discloses storage of "account balance information" (i.e., a currency amount) in memory. SAMSUNG-1006, [0086] ("The memory also preferably stores information such as financial information …" that includes "account balance information"). It would have been obvious to apply Carlson's suggestion to store account balance information in memory of the electronic payment device to permit any number of known and predictable uses of account balance information by the device or a user of the device. SAMSUNG-1003, ¶¶243-247. For example, storing account balance information in memory would allow the user of the device to readily access such information as desired to check his/her account balance(s), such as to monitor the account for planning or tracking purposes or to assess whether an impending or contemplated transaction might exceed the user's current account balance. *Id.*

Element [1f]

Gomez discloses a payment device having a processor operatively coupled to major components of the device including an interface device (e.g., NFC unit), input device (e.g., keypad), display(s), and a memory. SAMSUNG-1005, 10:34-42, 11:7-18, FIG. 7. In a Gomez-Carlson-Jones combination, it would have been

obvious to extend the processor-centric architecture of Gomez to operatively couple the processor to each of the components recited in [1f]. *Supra*, [1a]-[1e]; SAMSUNG-1003, ¶¶248-249. The Gomez "Snap Switch" motion detector is likewise operatively coupled to the processor. SAMSUNG-1005, 6:65-7:8; SAMSUNG-1003, ¶250. A POSITA would have understood each of the recited components to exchange control and/or data signals with a processor to carry out their respective functions, and it would have been obvious to couple the processor to these components to permit communication of such signals to and from the processor to enable proper function of the device. *id.*, ¶¶251-253.

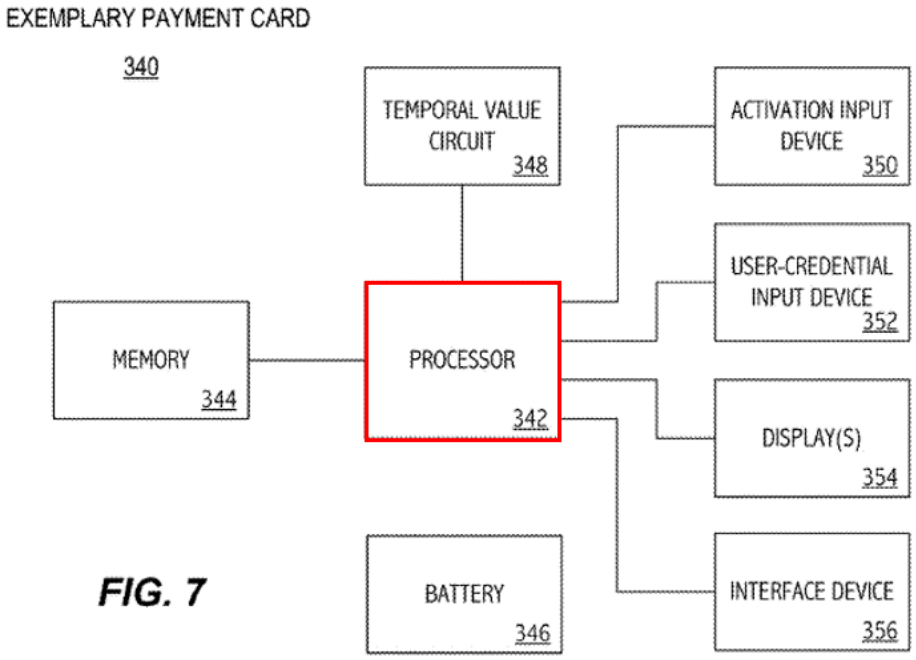


FIG. 7

SAMSUNG-1005, FIG. 7 (annotated).

Element [1g]

Gomez discloses a "memory 912" and a "memory 344 [] coupled to the processor 342, which executes instructions to cause the device to perform operations in payment transactions and other contexts. SAMSUNG-1005, 10:44-46, FIGS. 7-8. Carlson provides similar teachings. SAMSUNG-1006, [0086]-[0091] ("portable consumer device 602 … may comprise a computer readable medium"); SAMSUNG-1003, ¶¶254-256.

Element [1h]

Supra, Ground 1A at [10a], [10b]; SAMSUNG-1003, ¶¶257-259.

Element [1i]

Supra, Ground 1A at [10c]; SAMSUNG-1003, ¶¶260-261.

Element [1j]

Supra, Ground 1A at [10d]. As described above in Ground 1A with respect to [10a]-[10b] and [10d], the issuer-provided payment information communicated wirelessly by the device in the combination includes user-provided payment information that the user inputs to the device (e.g., an issuer-provided payment card account number and account name for an issued card account that the user links to his/her EPIC account). SAMSUNG-1005, 20:1-54; *supra*, [10a]-[10b], [10d], SAMSUNG-1003, ¶¶262-264.

Element [1k]

Supra, Ground 1A at [10e]; SAMSUNG-1003, ¶¶265-266.

Element [1l]

Supra, Ground 1A at [10f]; SAMSUNG-1003, ¶¶267-268.

Element [1m]

Supra, Ground 1A at [10g]. The authentication cryptogram also comprises multiple one-time limited-use numbers to the extent required by [1m]. SAMSUNG-1005, 7:44-45 ("authentication cryptogram is 20-26 characters in length"), 8:52-9:11, 9:65-10:17, SAMSUNG-1003, ¶¶269-271.

Element [1n]

Supra, Ground 1A at [10h]; SAMSUNG-1003, ¶¶272-274.

Claim [4][7]

Gomez discloses a user input to the payment device to select a particular account to use in a next transaction. SAMSUNG-1005, 20:30-32 ("manually select the actual credit card that he/she wishes to use during a purchase transaction."), 20:43-48. The user's selection renders obvious an introduction of a transaction-specific identifier in that it identifies a parameter to apply to a specific transaction (i.e., the account to use for the "next" transaction). *Id.*; SAMSUNG-1003, ¶¶275-277.

[7] The additional features recited in this claim are not limiting as they do not define further limitations of the recited device; they are nonetheless obvious.

Gomez additionally discloses that the payment device can be configured to require presentation of a valid credential such as a fingerprint or PIN from a user to unlock the device for a particular transaction. SAMSUNG-1005, 7:9-15, 2:59-64, 5:13-18, 7:9-16. In a device implemented with a touch screen as taught in Carlson (*see* Ground 1A, [10pre]-[10a]), a POSITA would have understood and/or it would have been obvious for the user to enter a PIN as an input sequence across a plurality of touch sensors of the touch screen (or alternatively the PIN could be entered on a physical keypad in which each key corresponds to a touch sensor). SAMSUNG-1006, [0065]; SAMSUNG-1003, ¶278; *supra*, [1b].

Gomez discloses a user input to deny an indicated transaction: "the customer can control the recurrence schedule … at any time may 'Stop', 'Pause' or 'Cancel' such payments." SAMSUNG-1005, 21:21-36. Gomez describes that "[s]uch recurring payments may be 'pushed' to the service providers." *Id*. SAMSUNG-1003, ¶¶279-280

<u>Claim [5]</u>

Gomez discloses a sequence counter that generates a sequential parameter when the processor initiates a transaction. SAMSUNG-1003, ¶¶281-283. In particular, the temporal signal can indicate a "sequence value (or sequential number) of the attempted use." SAMSUNG-1005, 7:17-20. A "sequential instance circuit" within a "temporal value circuit" of the device generates the sequential parameter

when the user attempts to initiate a transaction. SAMSUNG-1005, 10:64-11:6, FIG. 7 (348).

Gomez further describes how the device combines the sequential parameter (i.e., a temporal signal) with a seed value to generate a message and ultimately an authentication cryptogram, where the seed value includes user information and/or a user secret, including "non-random customer specific information, such as a unique customer key." SAMSUNG-1005, 7:26-47 ("the card generates an authentication cryptogram based at least upon the seed value and the temporal signal value"), 8:25-28; *generally id.*, 8:25-9:11. The message and/or authentication cryptogram renders obvious a limited-duration credit card number for the reasons discussed above in Ground 1A with respect to [10g]. SAMSUNG-1003, ¶¶284-285.

Claim [6][8]

In the Gomez-Carlson-Jones combination, the EPIC number has a limited recurrence and is limited in scope of use to a predetermined number of authorized transactions as taught in Carlson, whose teachings would have been obvious to apply in the combination for the reasons previously addressed in Ground 1A with respect to [10d] and [10f]. SAMSUNG-1006, [0036] ("the pseudo primary account number may be set to expire after a certain number of transactions or after a certain

[8] *Supra*, FN6.

time period"), [0044] ("the pseudo primary account identifier can be transitory and may have a limited lifetime"); SAMSUNG-1003, ¶¶286-290.

The authentication cryptogram likewise has a limited recurrence and is limited in scope of use to a predetermined number of authorized transactions (i.e., one transaction) as taught in Gomez. SAMSUNG-1005, 1:61-63 ("generated uniquely for each attempted use of the payment card, and which expires within a short period of time thereafter"), 5:15-16 ("generates an authentication cryptogram for each attempted transaction"), 8:36-39, 14:3-4; SAMSUNG-1003, ¶¶291-292.

Claim [8]

Gomez discloses use of a cryptographic hash function to generate a message digest, from which the authentication cryptogram is ultimately derived for a payment transaction. SAMSUNG-1005, 8:42-43. The hash function is "a deterministic procedure that takes an arbitrary block of data, known as a 'message,' and returns a fixed-size string, known as a hash value or 'message digest[]'". *Id.*, 8:42-48; *see also id.*, 9:58-10:3, 21:55-59. The message input to the hash function provides a transaction unit, and the digest produced by the hash function provides a cryptographic hash. SAMSUNG-1003, ¶¶293-297. Alternatively, the cryptogram as an encoded version of the digest provides a cryptographic hash.

A POSITA would have understood and it would have been obvious that the message digest would be stored in a memory of the device for at least some time to

allow further processing to form the cryptogram. SAMSUNG-1005, 11:7-9, *supra*, [1e]; SAMSUNG-1003, ¶¶298-301. The cryptogram itself would also be processed and stored on the device for at least some time to permit its inclusion in the payment message(s) transmitted from the device to a terminal in a transaction. *Id.*

D. [GROUND 1D] – Obviousness based on Gomez, Carlson, Jones, and Kay (Claim 7)

1. Overview of Kay

Kay generally describes techniques to "allow greater access to a banking platform via a mobile device." SAMSUNG-1009, Abstract. For example, "the customer can initiate a financial transaction using a mobile device," and the mobile device provides a user interface with which the user can interact to facilitate the transaction. *Id.*; *see also id.*, [0038]-[0043], FIGs. 4A-4E; SAMSUNG-1003, ¶¶115-118.

2. Obviousness Analysis

The combined teachings of Gomez, Carlson, Jones, and Kay would have rendered obvious and provided the additional features recited in claim 7 of the '520 patent for the reasons described in further detail below. SAMSUNG-1003, ¶¶302-303.

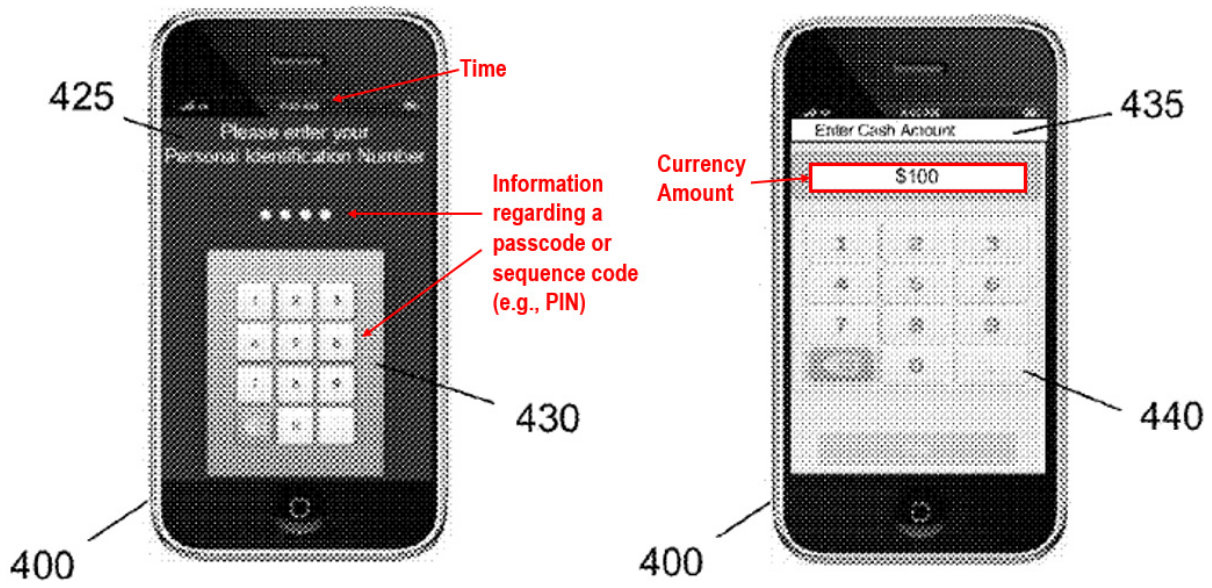
<u>Claim [7]</u>

The additional features recited in claim 7 are directed to printed matter and have no patentable weight. *In re DiStefano*, 808 F. 3d 845, 848-851 (Fed. Cir.

2015). Indeed, these features have no structural or functional relationship to the underlying display or other recited elements.

Still, and even if these features were afforded weight, they would have been obvious. SAMSUNG-1003, ¶¶304-306. Gomez discloses that "the generated authentication cryptogram" (***a limited-use number***) can be presented on the display. SAMSUNG-1005, 13:1-3. Further, Gomez discloses that the display enables information to be displayed regarding a ***passcode*** (e.g., an indication that the entered passcode is valid), a ***sequence code*** (e.g., a barcode or a telephone number), and ***other credit card transaction information of a user, a merchant, a bank or a credit card authority*** (e.g., "an indication that the card is activated", "secure messages, alarms, and other notifications" or "available card accounts" that can be selected for use in a transaction). SAMSUNG-1005, 10:18-20 ("provides an indication that the entered use credential is valid"), 12:64-67 ("a great variety of useful information may be displayed, including barcodes"), 12:58-61, 20:30-42, FIGS. 9-10.

Kay discloses the remaining display elements recited in [7]. For example, Kay discloses display of a ***time*** on a mobile phone payment interface, in addition to information regarding entry of a ***passcode*** or ***sequence code*** (e.g., a PIN), and a ***currency amount*** for a transaction. SAMSUNG-1009, [0038]-[0043], FIGs. 4A-4E. SAMSUNG-1003, ¶307



...

SAMSUNG-1009, FIG. 4C (left), FIG. 4D (right) (annotations added).

It would have been obvious to a POSITA to combine the teachings of Kay with Gomez-Carlson-Jones to enable the display to present additional information regarding a time, a passcode or sequence code such as a PIN, and a currency amount. SAMSUNG-1003, ¶308. Each of these display elements including the cash amount would have been beneficial to permit the user to perform a cash withdrawal or deposit transaction from the electronic payment device (e.g., a smartphone) as taught in Kay. SAMSUNG-1009, [0038]-[0043]. Displaying the time also would have been obvious to allow the user to conveniently refer to the display on the device when he/she wants to know the current time. SAMSUNG-1003, ¶¶308-309. Displaying information regarding input of a PIN would have

been obvious to allow the user to enter the PIN and to provide visual feedback to the user regarding such entry. *Id.*

E. [GROUND 1E] – Obviousness based on Gomez, Carlson, Jones, and Mullen-701 (Claim 9)

1. Overview of Mullen-701

Mullen-701 describes an electronic payment card having a USB interface to facilitate data transfer between the card and another device. SAMSUNG-1013, [0017]; SAMSUNG-1003, ¶¶122-124.

2. Obviousness Analysis

The teachings of Gomez, Carlson, Jones, and Mullen-701 would have rendered obvious and provided the additional features recited in claim 9 for the reasons described in further detail below. SAMSUNG-1003, ¶¶310-311.

Claim [9]

To the extent Gomez/Carlson/Jones do not expressly disclose a USB connector for connection to a standard computing device, a POSITA would have known that smartphones and PDAs like the multi-function payment device of the combination commonly included a USB connector by the Critical Date of the ’520 patent. SAMSUNG-1003, ¶¶312-315.

The provision of a USB connector as recited in [9] also would have been obvious based on Mullen-701. SAMSUNG-1003, ¶¶315-316. Mullen-701 discloses a payment device equipped with a USB interface that enables data transfer between

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it and another computer. SAMSUNG-1013, [0017] ("[A] USB port … may be provided on a card" to "allow a user to communicate with stationary computer, laptop, or other device"); *cf.* SAMSUNG-1001, 11:57-63, FIG. 5. A POSITA would have found it obvious to implement a USB connector in payment device of the combination to realize known and predictable benefits of such connectors, including to facilitate high-speed communication between the device and a standard computing device over a wired connection. SAMSUNG-1003, ¶¶315-316. Such communication would have been desirable for a range of purposes, including to obtain software or firmware updates for the device from the computer, to acquire new information used in payment transactions (e.g., a new EPIC number or seed value), and/or to load "transactional or account information" onto the device as taught in Mullen-701. SAMSUNG-1013, [0017]; SAMSUNG-1003, ¶¶315-318.

F. [Ground 2A] – Obviousness based on Carlson and Gomez (Claims 10-13)

1. Obviousness Analysis

Carlson describes a portable wireless device configured to conduct contactless payment transactions using a "pseudo" account identifier (PAI) in place of a "real" account identifier (RAI). SAMSUNG-1006, [0012]; *supra*, Section III.A.2. On the backend of the payment infrastructure, a "payment processor" links the PAI to the RAI so that the PAI presented by the user's device can later be exchanged for the RAI as needed to complete the transaction. SAMSUNG-1006, [0029]-

[0030], [0047]; SAMSUNG-1003, ¶¶319-320.

Carlson further discloses that PAIs have a limited lifetime, and that the system can map new PAIs to the same RAI on a regular basis (e.g., when the current or prior PAI expires). SAMSUNG-1006, [0036], [0044]. The limited lifetime of PAIs "provides a level of protection to the consumer's account" since an expired PAI "would be of limited or no use to a person wishing to use it for conducting unauthorized transactions." *Id.*, [0044]. The level of protection afforded by a PAI thus turns insignificant part on how often it is updated; if not updated frequently, attackers will be left with more time and greater opportunity to exploit a compromised PAI. SAMSUNG-1003, ¶¶320-321. More frequent PAI updates (e.g., for every transaction), however, burden the payment processing infrastructure, especially since updated PAIs must be generated by a server and downloaded to a user's device in embodiments where the PAI is retrieved from a server. SAMSUNG-1006, [0035]. This would not only yield a substantial load for the servers in the payment processing network that would need to return PAIs to a potentially large number of user devices on a frequent basis, but just-in-time retrieval of PAIs would also be impractical or unreliable in circumstances where the user's device might not be able to readily obtain a connection with the server (e.g., due to poor wireless service or a lack of wireless service). SAMSUNG-1003, ¶321, ¶334. Carlson's approach further lacks explicit assurances that the PAI submitted in a

transaction legitimately originated from an authorized user's device. *Id.*

In light of these concerns, it would have been obvious and beneficial to augment the payment information communicated by the portable wireless device in a contactless transaction as taught in Carlson with an authentication cryptogram dynamically generated for each transaction like that taught in Gomez (such that the presented payment information would include both a PAI and cryptogram). SAMSUNG-1003, ¶¶321-322; SAMSUNG-1005, 1:58-63, 6:23-38, 7:17-65, FIGS. 2-5, 17-18; *supra*, Section III.A.1. Multiple reasons would have led a POSITA to apply Gomez's suggested use of an authentication cryptogram in combination with Carlson before the Critical Date of the '520 patent. SAMSUNG-1003, ¶¶321-327.

First, the addition of a Gomez-like cryptogram would have improved transaction security by preventing fraudulent use of a substituted account number like Carlson's PAI. SAMSUNG-1003, ¶324. By requiring a valid cryptogram that changes for each transaction, unauthorized actors would be unable to successfully exploit a compromised PAI (even while the PAI is unexpired) without also generating a new and valid cryptogram to pair with the PAI—i.e., a generally impractical feat without knowledge of the confidential seed value and the precise method of generating the temporal signal on the device. SAMSUNG-1005, 5:43-47 ("extremely difficult for an unauthorized party[] … to generate a new authentication cryptogram"), 2:21-25 ("any attempted transaction would not be approved without

an appropriate authentication cryptogram generated uniquely for such transaction"), 1:58-63, 13:63-14:2.

Second, with the additional security afforded by the cryptogram, the frequency of PAI updates would be capable of being substantially reduced without loss of security since overall security of the system would no longer hinge on frequent cycling through new PAIs. SAMSUNG-1003, ¶325. This reduction in the frequency of PAI updates would be beneficial to lessen the load on payment processor servers, which would no longer be required to issue new PAIs to user devices with each transaction or otherwise as frequently as Carlson's original proposal to achieve acceptable security. *Id.*; SAMSUNG-1005, [0037]-[0038]. The reduction in the frequency of PAI updates would also reduce the burden on the user's payment device constantly retrieving new PAIs from a server, thereby conserving battery power and generally increasing user satisfaction (e.g., especially since there would be fewer opportunities for transactions to fail at the point of sale if the device is unable to connect to a wireless network to update the PAI in time for an impending transaction). *Id.*

Third, a POSITA would have seen the addition of a Gomez-like cryptogram in the combination as a useful technique to improve security in a manner that would still be compatible with existing merchant payment infrastructure, particularly since the cryptogram would be capable of transmission in ordinary account

name fields, security code fields, or both. SAMSUNG-1005, 2:4-13. 2:40-44, 7:52-57; SAMSUNG-1006, [0010] ("integrates easily with existing payment processing networks"); SAMSUNG-1003, ¶326.

Fourth, the combination amounts to a predictable use of a known technique for improving transaction security (i.e., Gomez's cryptograms) to improve a similar system as taught in Carlson in a similar way, and would have achieved predictable results. *KSR*, 550 U.S. at 417; SAMSUNG-1003, ¶327. Carlson and Gomez thus would have rendered obvious and provided each of the features recited in claims 10-13 of the '520 patent for the reasons described in further detail below. *Id*.

Element [10pre]

To the extent the preamble is a limitation, Carlson-Gomez renders obvious [10pre]. SAMSUNG-1003, ¶328. For example, Carlson discloses methods of storing account identifiers and other payment information in a portable wireless device (i.e., electronic device). SAMSUNG-1006, [0081] ("memory 510 may also include code to store one or more primary account identifiers"), Abstract ("method for conducting a transaction"), [0086] ("memory also preferably stores … financial information"), [0012], [0033]. In the combination, Gomez further discloses generating an authentication cryptogram in the device. SAMSUNG-1005, 7:41-43, 8:6-9.

Elements [10a]-[10b]

Based on Carlson, the user "select[s] which account he wishes to use to perform the transaction by ***selecting from among the one or more primary account identifiers*** that have been stored in the device." SAMSUNG-1006, [0033]. "Selection of a primary account on the portable wireless device can occur using any suitable input mechanism," including by "***touch screen entry***." *Id.* The selected "primary account identifier" comprises issued issuer payment information such as a "real primary account number (PAN)" issued by an issuer of a payment card account (e.g., rather than a pseudo identifier)—a fact that is evident, for example, from Carlson's explanation that the device subsequently "retrieve[s] a pseudo primary account identifier ***that corresponds to the primary account identifier that was previously selected***"); *see also id.*, [0029] (distinguishing the "pseudo" identifier from a user's real "primary account identifier" or "primary account number (PAN)"); [0048] ("An ***issuer*** is typically a business entity (e.g., a bank) that ***issues accounts***, such as a credit or debit card to a consumer. ***These accounts are generally identified by a primary account identifier***."); SAMSUNG-1003, ¶¶329-331.

Element [10c]

Based on Carlson, the payment device memory stores ***user-specific information*** including the cardholder's name and account number and the user's encrypted PIN. SAMSUNG-1006, [0087] ("Information in the memory may also be

in the form of data tracks that are traditionally associated with credits cards. Such tracks include Track 1 and Track 2. Track 1 … contains the ***cardholder's name*** as well as ***account number*** … [Track 2] contains the ***cardholder's account***, ***encrypted PIN***, plus other discretionary data.").

In the combination, Gomez further renders obvious that the device can store in memory a "seed value" (i.e., device-specific information) and "customer-specific information, such as a unique customer key" (i.e., user-specific information) for generating the authentication cryptogram. SAMSUNG-1005, 7:27-41, 12:27-30, FIG. 3 (258), FIG. 6 (314), FIG. 7 (memory 344); *supra*, Ground 1A at [10c]; SAMSUNG-1003, ¶¶332-333.

Element [10d]

Based on Carlson, the portable wireless device communicates the user-selected primary account identifier (***issuer-provided payment information***) wirelessly to a service provider to obtain a pseudo-account identifier (PAI) corresponding to the user's selected account. SAMSUNG-1006, [0035] ("[T]he ***portable wireless device may send a request through the communications network*** to a payment processing network in order to retrieve a pseudo primary account identifier … . … In the simplest case, ***this request message may include the primary account identifier***."), [0032] ("[T]he pseudo primary account identifier may be re-

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ceived by the portable wireless device through the use of any suitable communications network. ***Examples of such networks may include the cellular telephone network, networks provided by wireless e-mail service providers, and the like***."), [0034]. SAMSUNG-1003, ¶334

Element [10e]

Based on Carlson, the portable wireless device wirelessly receives a pseudo-account identifier (***static device account number payment information***) that can be stored on the device for use over a defined number of transactions or period of time. SAMSUNG-1006, [0035] ("The payment processing network can respond to the request from the portable wireless device with a ***response message that contains a pseudo primary account identifier***. ***The response can be sent over the communications network back to the portable wireless device***."); *see also id.*, [0015], [0032], [0034] (describing communication over various wireless networks), [0037]. According to Carlson, "the pseudo primary account number may be set to expire after a certain number of transactions or after a certain time period"—during which time a POSITA would have understood and it would have been obvious that the PAI would be stored on the device for its unexpired lifetime to permit access to and use of the PAI when conducting transactions.[9] *Id.*, [0036]; SAMSUNG-1003, ¶335.

[9] *Supra*, Footnote 4.

Element [10f]

Based on Carlson, the pseudo-account identifier (PAI) is a limited use-number for limited use by the device over a certain time period or for a certain number of transactions.[10] SAMSUNG-1006, [0036] ("the pseudo primary account number may be set to expire after a certain number of transactions or after a certain time period"). The PAI is used in place of a real account identifier (RAI) such as a real primary account number (PAN) of an issuer-provided account (i.e., issuer provided payment information). *Id.*, [0029] ("capable of wireless transmission of a pseudo primary account identifier, ***in lieu of a user's real account identifier*** such as a primary account identifier (PAI) or a user's real primary account number (PAN)"), [0048] ("An issuer is typically a business entity (e.g., a bank) that issues accounts, such as a credit or debit card to a consumer. These accounts are generally identified by a primary account identifier."), [0029]-[0030].

In the combination, Gomez further renders obvious that the authentication cryptogram is a one-time limited use number that is valid for just a single transaction. The cryptogram is paired with a substituted account number, i.e., the PAI in the Carlson-Gomez combination, for communication in place of issuer-provided payment information including the real account identifier (e.g., real PAN) and an account name and/or security code. SAMSUNG-1005, 2:4-13; *generally id.*,

[10] *Supra*, Footnotes 4-5.

14:36-17:13; *infra*, [10g]-[10h]; *supra*, Ground 1A at [10f] (addressing Patent Owner's treatment of "limited-use" number in [10f] as the "one-time limited use numbers" in [10g]); SAMSUNG-1102, 29 SAMSUNG-1003, ¶¶336-337.

Element [10g]

In the combination, Gomez renders obvious that the electronic device dynamically generates an authentication cryptogram (i.e., a one-time limited-use number) based on a seed value and a temporal signal. SAMSUNG-1005, 1:64-2:1 ("The authentication cryptogram is generated based upon a seed value stored within the payment card, and further based upon a temporal signal which ***changes for each attempted use of the payment card***[] …"); *see also id.*, 1:58-63, 2:21-25, 5:43-47, 7:17-27, 13:63-14:2. The seed value contains user-identifying information and/or user secrets including "certain non-random customer specific information, such as a unique customer key," and the seed value further renders obvious "device secrets" since it is securely stored on the user's payment device and is restricted from access by others. *Id.*, 5:25-47, 7:27-34; *see also id.*, 12:30-34, 16:31-34, 16:64-17:13. The cryptogram is further generated based on "time" indicated by a "temporal signal." *Id.*; *supra*, Ground 1A at [10g]; SAMSUNG-1003, ¶338.

Element [10h]

Carlson-Gomez renders obvious communicating the pseudo-account identi-

fier (PAI) (i.e., said static device account number) and the authentication cryptogram (i.e., said dynamically generated one-time limited-use number) together for making a payment transaction in the place of issuer provided payment information including a real issuer-provided account number, and a cardholder's name and/or security code. SAMSUNG-1006, [0029] ("wireless transmission of a pseudo primary account identifier, ***in lieu of a user's real account identifier*** such as a primary account identifier (PAI) or a user's real primary account number (PAN)"); SAMSUNG-1005, 2:4-13; *generally id.*, 14:36-17:13; *infra*, [10g]-[10h]; SAMSUNG-1003, ¶¶339-341. For example, Gomez shows in FIG. 2 how the substituted account number or card ID (i.e., the PAI in the Carlson-Gomez combination) and authentication cryptogram are transmitted (444) by the user's payment device (442) in place of an account number and account name (404) as represented by traditional systems in FIG. 1. *Id.,* SAMSUNG-1005, FIGS. 1-2.

Claim [11]

Based on Carlson, the wireless device is configured to accept the user input through a touch screen, keypad, buttons, and/or other suitable input capabilities. SAMSUNG-1006, [0033], [0082]; SAMSUNG-1003, ¶¶342-346.

Claim [12]

In the combination, and based on Gomez, the device stores device-specific

information including ***device secrets*** and ***devices keys*** (e.g., customer keys). *Supra*, [10c], [10g]. For example, as described in Gomez, the device generates "an authentication cryptogram" based in part on the seed value—a unique, static value stored on the device and maintained in secrecy to prevent unauthorized actors from generating fraudulent cryptograms. SAMSUNG-1005, 12:27-30, 16:67-17:1-4, 7:27-34 ("This seed value is unique for each payment card"); SAMSUNG-1003, ¶¶347-350.

Claim [13]

As discussed at [10c], Carlson discloses that the memory stores user-specific information including the cardholder's name and account number, and the user's encrypted PIN. SAMSUNG-1006, [0087]; *supra*, [10c]; SAMSUNG-1003, ¶¶351-353.

G. [Ground 2B] – Obviousness based on Carlson, Gomez, and Mullen-915 (Claims 14-17)

1. Obviousness Analysis

The teachings of Carlson, Gomez, and Mullen-915 would have rendered obvious and provided the additional features recited in claims 14-17 for the reasons described in further detail below. SAMSUNG-1003, ¶354.

Claim [14]

The additional features recited in claim 14 are directed to printed matter and are entitled to no weight. *In re DiStefano*, 808 F. 3d 845, 848-851 (Fed. Cir.

2015). Indeed, these features have no structural or functional relationship to the underlying display or other recited elements.

Nonetheless, and even if these features were afforded patentable weight, Carlson renders obvious a display capable of rendering "information and messages." SAMSUNG-1006, [0090]. Carlson further renders obvious that the user "select[s] which account he wishes to use to perform [a] transaction by selecting from among [] one or more primary account identifiers that have been stored in the device." *Id.*, [0033]; *see also id.*, (selection from "touch screen"). The user may select from among primary account identifiers for accounts associated with different payment method types (e.g., credit, debit, stored value). *See id.*, [0085], [0030], [0039]; SAMSUNG-1003, ¶¶355-357.

To the extent Carlson does not expressly disclose details as to how the primary account identifiers are rendered on the display, Mullen-915 provides the additional features in claim 14. SAMSUNG-1007, [0353]; *see also id.*, [0326]-[0328]; *supra*, Ground 1B at [14]. It would have been obvious to integrate these features from Mullen-915 in the combination for the reasons discussed above with respect to claim [14] in Ground 1B. *Id.*; SAMSUNG-1003, ¶¶358-360.

<u>Claim [15]</u>

Based on Carlson, the user "select[s] which account he wishes to use to per-

form [a] transaction by selecting from among [] one or more primary account identifiers that have been stored in the device." *Id.*, [0033]; *see also id.*, (selection made from "touch screen"). The user may select from among primary account identifiers for accounts associated with different payment method types (e.g., credit, debit, stored value). *See id.*, [0085], [0030], [0039]. Further, based on Mullen-915, it would have been obvious for the device to accept a user selection of a primary account identifier for a particular payment method type for use in a transaction responsive to a user selection from a list of payment method images like those shown in FIG. 38 of Mullen-915. SAMSUNG-1007, [0326]-[0328], [0353]; *supra*, Claim 14; SAMSUNG-1003, ¶¶361-363.

Claim [16]

Based on Gomez, the user can select a default payment method to use in a transaction. SAMSUNG-1005, 20:15-23 ("establish the default credit card"). It would have been obvious based on Gomez to allow a user to select a default payment method to be used in transactions in the Carlson-Gomez-Mullen-915 combination to simplify the process of initiating/conducting a contactless transaction, especially since the device could simply apply the default payment method rather than requiring the user to manually select a specific account identifier for each transaction. SAMSUNG-1003, ¶¶364-365.

Claim [17]

Based on Carlson, the issuer provided payment information selected by the user can be a primary account identifier (i.e., an account number, card number, card identification numbers, payment method type, and/or card-type information). SAMSUNG-1006, [0033], [0029]; *supra*, Ground 2A at [10a]-[10b]; SAMSUNG-1003, ¶¶366-368.

H. [Ground 2C] – Obviousness based on Carlson, Gomez, and Jones (Claims 1, 4-6, 8)

1. Obviousness Analysis

Carlson, Gomez, and Jones would have rendered obvious and provided each of the features recited in claims 1, 4-6, and 8 for the reasons described in further detail below. SAMSUNG-1003, ¶369.

Element [1pre]

To the extent the preamble is a limitation, Carlson discloses and the combination provides a portable wireless payment device (***electronic device***). SAMSUNG-1006, [0053], [0077], [0085]-[0086], FIGS. 5-6; SAMSUNG-1003, ¶¶370-371.

Element [1a]

Carlson discloses an NFC unit in the electronic device. SAMSUNG-1006, [0088]-[0089], FIG. 6 (618); SAMSUNG-1003, ¶¶372-373.

Element [1b]

Based on Carlson, the device can receive user inputs via "touch screen entry." SAMSUNG-1006, [0033] ("user interface module 512" can include interface such as "keypads, keyboards, touch screens"). A POSITA would have understood and/or it would have been obvious that a touch screen would include a touch sensor array to enable position-dependent touch detection. SAMSUNG-1003, ¶374.

Element [1c]

Carlson discloses a display. SAMSUNG-1009, [0090], FIG. 6 (610); SAMSUNG-1003, ¶375.

Element [1d]

Jones discloses "an NFC-enabled" portable payment device that includes a GPS speed sensor, an accelerometer, and a gyroscope. SAMSUNG-1008, [0014]-[0016], FIG. 1. Jones's sensors produce signals indicative of a rate of motion of the device, and renders obvious a motion rate detection array. *Id.*, [0017]-[0018] SAMSUNG-1003, ¶¶376-378; *see also* SAMSUNG-1102, 6 (PO's infringement contentions characterizing an "accelerometer, gyroscope, and a light sensor" as a "motion rate detection array"); *supra*, Ground 1C at [1d]. It would have been obvious to integrate a GPS sensor, accelerometer, and gyroscope like those in Jones in the payment device of the Carlson-Gomez-Jones combination for substantially the same reasons described above in Ground 1C with respect to Element [1d]. SAMSUNG-1008, [0013], [0034], FIG. 3; SAMSUNG-1003, ¶378.

Element [1e]

Carlson discloses a memory in the wireless device for storing a user data (e.g., a cardholder's name, the cardholder's account, and the user's encrypted PIN). SAMSUNG-1006, [0081] ("memory 510 …"), [0087] ("Track 1 … contains the cardholder's name as well as account number … . [Track 2] contains the cardholder's account, encrypted PIN, plus other discretionary data."). Carlson also discloses that the memory stores "account balance information" (i.e., a currency amount). *Id.*, [0086]. Also in the combination, Gomez renders obvious a memory that stores customer/user-specific information such as a customer's key for a seed value used to calculate the cryptogram. SAMSUNG-1005, 7:34-41 ("the seed value may include certain non-random customer specific information"). SAMSUNG-1003, ¶¶379-380

Element [1f]

Carlson discloses a central processor coupled to each major component of the payment device, including a display 610, an NFC unit 618, and a memory 606. SAMSUNG-1006, [0088]-[0089], FIG. 6. In the Carlson-Gomez-Jones combination, it would have been obvious to extend the processor-centric architecture of Carlson to operatively couple the processor to each of the components recited in [1f]. *Supra*, [1a]-[1e]; SAMSUNG-1003, ¶¶381-382. A POSITA would have understood each of the recited components to exchange control and/or data signals

with a processor to carry out their respective functions, and it would have been obvious to couple the processor to these components to permit communication of such signals to and from the processor so as to implement a functioning device. *Id*.

Element [1g]

Carlson-Gomez renders obvious [1g]. SAMSUNG-1006, [0086], [0091]; SAMSUNG-1003, ¶¶383-384.

Element [1h]

Supra, Ground 2A at [10a], [10b]; SAMSUNG-1003, ¶¶385-386.

Element [1i]

Supra, Ground 2A at [10c]; SAMSUNG-1003, ¶387.

Element [1j]

Supra, Ground 2A at [10d]; SAMSUNG-1003, ¶388.

Element [1k]

Supra, Ground 2A at [10e]; SAMSUNG-1003, ¶389.

Element [1l]

Supra, Ground 2A at [10f]; SAMSUNG-1003, ¶390.

Element [1m]

Supra, Ground 2A at [10g]. The authentication cryptogram also comprises multiple one-time limited-use numbers to the extent required by [1m]. SAMSUNG-1005, 7:44-45 ("20-26 characters"), 8:52-9:11, 9:65-10:17; SAMSUNG-1003, ¶391.

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Element [1n]

Supra, Ground 2A at [10h]; SAMSUNG-1003, ¶¶392-393.

Claim [4][11]

As discussed with respect to [1h], and based on Carlson, the device accepts a user input across a plurality of touch sensors (e.g., "touch screen entry" or key-pad/keyboard entry). SAMSUNG-1006, [0033], [0082]. The user input can include a selection of a primary account identifier that the user wishes to use to perform a specific transaction (i.e., an introduction of a transaction-specific identifier). *Id.*, [0033] ("select which account he wishes to use"). The user input can also include entry of a PIN to unlock the device, i.e., "a lock/unlock command determining operation of the electronic device according to an input sequence." *Id.*, [0009], [0033], [0065]; SAMSUNG-1003, ¶¶394-397.

Claim [5]

Gomez discloses, and the combination provides, a sequence counter (e.g., a sequential instance circuit) configured to generate a sequential parameter that, in turn, is combined with a seed value to generate a message and ultimately an authentication cryptogram—each of which renders obvious a limited-duration credit card number. SAMSUNG-1003, ¶400; *supra,* [10g]. The seed value includes a user secret such as a unique customer key or other non-random customer specific

[11] *Supra*, FN6.

information. SAMSUNG-1005, 10:64-11:6 (describing the "sequential instance circuit"), 7:17-20, FIG. 7 (348); *see also id.*, 7:26-47; *supra*, Ground 1B at [5]; SAMSUNG-1003, ¶¶398-401.

Claim [6][12]

Based on Carlson, the pseudo-account identifier (PAI) has a limited recurrence and is limited in scope of use to a predetermined number of authorized transactions. SAMSUNG-1006, [0036] ("the pseudo primary account number may be set to expire after a certain number of transactions or after a certain time period"), [0044] ("the pseudo primary account identifier can be transitory and may have a limited lifetime"); SAMSUNG-1003, ¶¶402-404.

In the combination, Gomez further renders obvious that the authentication cryptogram has a limited recurrence and is limited in scope of use to a predetermined number of authorized transactions (i.e., one transaction). SAMSUNG-1005, 1:61-63 ("generated uniquely for each attempted use of the payment card, and which expires within a short period of time thereafter"), 5:15-16, 8:36-39, 14:3-4; SAMSUNG-1003, ¶¶405-406.

Claim [8]

Supra, Ground 1C at [8]; SAMSUNG-1003, ¶¶407-410.

[12] *Supra*, FN6.

I. [Ground 2D] – Obviousness based on Carlson, Gomez, Jones, and Kay (Claim 7)

1. Obviousness Analysis

The teachings of Carlson, Gomez, Jones, and Kay would have rendered obvious and provided the additional features recited in claim 7 for the reasons described in further detail below. SAMSUNG-1003, ¶411.

Claim [7]

The additional features recited in claim 7 are directed to printed matter and are entitled to no weight. *In re DiStefano*, 808 F. 3d 845, 848-851 (Fed. Cir. 2015).

Still, and even if these features were afforded patentable weight, they would have been obvious based on the teachings of Carlson, Gomez, Jones, and Kay. SAMSUNG-1003, ¶¶412-413. Gomez and Kay disclose each of the display elements recited in claim 7, as discussed in detail above. *Supra*, Ground 1D at [7]; *Id*. As a general matter, it would have been obvious to integrate Gomez's and Kay's teachings for display of the recited features into the combination to enable the user/customer to conveniently review pertinent information about his/her transaction(s) and/or financial account(s). *Id*. Displaying a limited-use number including the cryptogram also would have been obvious to allow a user to enter it into a form for an online transaction. SAMSUNG-1005, 13:1-4, 14:3-7, 21:5-48; SAMSUNG-1003, ¶413. Displaying an indication that an entered passcode is valid would have

been obvious and beneficial to provide feedback to a user when he/she attempts to authenticate himself/herself. *Id.* Displaying a barcode (e.g., sequence code) would have been obvious to facilitate use of the barcode in online or retail transactions. *Id.* Displaying other credit card transaction information further would have aided a user's review of such information for any purpose that the user desires. *Id.* Displaying the time, passcode or sequence code, and currency amount as taught in Kay also would have been obvious and a POSITA would have been motivated to display these elements in the combination for the reasons discussed above. *Supra*, Ground 1D at [7]; SAMSUNG-1003, ¶¶413-414.

J. [Ground 2E] – Obviousness based on Carlson, Gomez, Jones, and Mullen-701 (Claim 9)

1. Obviousness Analysis

The teachings of Carlson, Gomez, Jones, and Mullen-701 would have rendered obvious and provided the additional features recited in claim 9 for the reasons described in further detail below. SAMSUNG-1003, ¶415.

<u>Claim [9]</u>

Carlson discloses that the payment device can be implemented as a "computer apparatus[]" that includes various ports for connection to peripherals and other devices. SAMSUNG-1006, [0091]. Mullen-701 further describes a payment device having a USB interface that enables data transfer between it and another computer. SAMSUNG-1013, [0017]; *cf.* SAMSUNG-1001, 11:57-63, FIG. 5. It

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would have been obvious to further modify Carlson in view of Mullen-701 so as to provide a USB connector in the wireless device for at least the reasons discussed above with respect to claim 9 in Ground 1E, including to facilitate fast wired communication between the wireless payment device and a standard computing device. SAMSUNG-1003, ¶¶415-418; *supra*, Ground 1E at [9].

IV. DISCRETIONARY CONSIDERATIONS

A. The Petition's New Prior Art and Arguments Warrant Institution—35 U.S.C. § 325(d)

This Petition presents new prior art and arguments for which there is no indication in the file history that the Office ever previously considered in connection with the '520 patent. Indeed, none of Gomez, Carlson, Mullen-915, Jones, Kay, or Mullen-701 were previously cited or applied in a rejection during prosecution of the '520 patent.

Because the '520 patent's prosecution did not involve negotiation between the applicant and the Examiner regarding the teachings of the prior art applied in the instant Petition, the instant Petition's art and arguments cannot be said to be the same as, or substantially similar to, any art or arguments previously presented to the Office in connection with the '520 patent. Under these circumstances, Petitioner submits that exercise of the Board's discretion under § 325(d) is unwarranted. *See* IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020) (precedential) (citing IPR2017-01586 Pap. 8 (PTAB Dec. 15 2017) (precedential)).

B. The *Fintiv* Factors Favor Institution

On May 11, 2022, Patent Owner filed an action against Samsung in the Eastern District of Texas ("the Court"). SAMSUNG-1100. The action, which alleges infringement of five patents including the '520 patent, was assigned Case No. 2:22-cv-00141 ("the Related Litigation"), and is pending before the Honorable Judge Rodney Gilstrap. Samsung respectfully submits that the factors enumerated in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 2-3 (PTAB "precedential" Mar. 20, 2020), strongly favor institution.

Factor 1 (Stay)—This factor is neutral because Samsung has not yet moved to stay the Related Litigation, and no inference should be drawn as to how the Court would rule should a stay be requested. *Sand Revolution II LLC v. Continental Intermodal Group – Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative).

Factor 2 (Trial Date)—In June, Director Vidal issued clear guidance that "when considering the proximity of the district court's trial date to the date when the PTAB final written decision will be due, the PTAB ***will*** consider the median time from filing to disposition of the civil trial for ***the district*** in which the parallel litigation resides." SAMSUNG-1101, 3. The median time-to-trial in E.D. Tex. is 24.5 months. SAMSUNG-1103, 35. Measured from the May 11, 2022 filing of Patent Owner's complaint, the median time-to-trial statistic predicts that trial in the Related

Litigation will not occur until late May 2024. This is exactly the same period of time in which the Board would be expected to issue its FWD in an IPR instituted from this petition (e.g., around late May to early June 2024). Given the close proximity of the predicted dates of trial in the Related Litigation and the FWD, Factor 2 is, at worst, neutral. *Fintiv*, 9; *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12, 15 (2020); *Apple Inc. et al. v. Arigna Tech. Ltd.*, IPR 2022-00651, Paper 12, at 9-12 (PTAB Oct. 6, 2022) (analyzing Factor 2 based on trial date predicted from median time-to-trial statistic over PO's use of scheduled trial date).

Even if the currently-scheduled trial date is considered, Factor 2 does not tip much—if at all—against institution, especially since the actual course of the Related Litigation cannot be predicted with certainty at this early stage of the proceeding. In this context, and with a gap of just over three and a half months between the expected FWD and start of trial (*see* SAMSUNG-1104), the "efficiency and system integrity concerns that animate the *Fintiv* analysis are not as strong all other things being equal." *Google LLC v. Parus Holdings, Inc.*, IPR2020-00846, Paper 9 at 14 (PTAB Oct. 21, 2020).

Factor 3 (Investment)—The Related Litigation is currently in early stages, and the bulk of investment in the Related Litigation by the parties and court has yet to occur. Patent Owner has served preliminary infringement contentions, while Samsung recently served preliminary invalidity contentions on November 7, 2022.

SAMSUNG-1104. Significantly, no part of claim construction and no document production has yet occurred. The parties are still months away from even initiating the claim construction process, with the exchange of claim terms proposed for construction not set to occur until late March 2023. *Id.*

The "informative" guidance in *Sand Revolution* is applicable here. By the time of institution in this proceeding, the Related Litigation will be at a similar posture where "much of the district court's investment relates to ancillary matters untethered to the validity issue itself." *Sand Revolution*, IPR2019-01393, Paper 24 at 10-11. Given the fact that the district court has invested minimal time on the Related Litigation, and the bulk of investment by the parties is yet to occur, Factor 3 weighs significantly against discretionary denial. *Id.*

Factor 4 (Overlap)—Should IPR be instituted based on this Petition, Petitioner stipulates that it will not pursue in the Related Litigation any invalidity grounds against the Challenged Claims of the '520 patent that are the same as those raised in this Petition.[13] Thus, if IPR is instituted, there will be no overlap or concerns of duplicative efforts. *See Sand Revolution*, Paper 24 at 11-12. Factor 4 thus weighs against discretionary denial. *Id.*; *Coolit Systems, Inc. v. Asetek Danmark*

[13] Petitioner reserves all rights to pursue these invalidity grounds in the Related Litigation if IPR based on this Petition is not instituted.

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A/S, IPR2021-01995, Paper 10 at 12-13 (PTAB Dec. 28, 2021).

Factor 5 (whether Petitioner is also the defendant in district court)—This factor is neutral.

Factor 6 (Merits and Other Circumstances)—The merits of this Petition are compelling as demonstrated by the analysis of Grounds 1A-2E. The strength of the merits alone is enough to justify institution in the public interest, and outweighs any inefficiencies born of parallel litigation. *See Fintiv* at 15; SAMSUNG-1101, 1 ("the PTAB will not rely on the *Fintiv* factors to discretionarily deny institution … where a petition presents compelling evidence of unpatentability"). Furthermore, Petitioner has been diligent in filing this Petition just over two months after service of Patent Owner's preliminary infringement contentions and identification of asserted claims on September 12, 2022.

For all these reasons, Factor 6 and the *Fintiv* Factors as a whole strongly favor institution.

V. MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1)

A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)

Petitioner Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, "Samsung") are the real parties-in-interest. No other parties had access to or control over this Petition, and no other parties funded this Petition.

B. Related Matters Under 37 C.F.R. § 42.8(b)(2)

The ’520 patent is the subject of a civil action in *CardWare Inc. v. Samsung Electronics Co., Ltd.*, 2:22-cv-00141 (E.D. Tex.). *See* SAMSUNG-1100. Petitioner is not aware of any other disclaimers, reexamination certificates, or IPR petitions addressing the ’520 patent. Samsung is concurrently filing a second petition challenging a different subset of claims of the ’520 patent in IPR2023-00211.

C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation of counsel.

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D. Service Information

Please address all correspondence and service to the address listed above. Petitioner consents to electronic service by email at IPR39843-0143IP1@fr.com (referencing No. 39843-0143IP1 and cc'ing PTABInbound@fr.com, axf-ptab@fr.com, jjm@fr.com, nstephens@fr.com, and skim@fr.com).

VI. FEES

Petitioner authorizes charge of Deposit Account No. 06-1050 for any fees.

VII. CONCLUSION

Petitioner requests IPR and cancellation of the Challenged Claims.

Respectfully submitted,

Dated: November 15, 2022

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CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,974 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated: November 15, 2022

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on November 15, 2022, a complete and entire copy of this Petition for *Inter Partes* Review and all supporting exhibits were provided via Federal Express, to the Patent Owner, by serving the correspondence address of record as follows:

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