UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

CARDWARE, INC. *Plaintiff*, v. APPLE INC., *Defendant*.	Case No. 1:25-cv-00446-ADA

APPLE'S PRELIMINARY INVALIDITY CONTENTIONS

CARDWARE EXHIBIT 2010
APPLE v. CARDWARE IPR2025-01152
Page 1 of 258

Pursuant to the Parties Joint Motion for Entry of Scheduling Order and Agreed Scheduling Order (Dkt. 39) and the Court's Standing Order Governing Proceedings (OGP) 4.4 – Patent Cases, Defendant Apple Inc. ("Apple") hereby provides its Preliminary Invalidity Contentions for U.S. Patent Nos. 10,339,520 ("the '520 Patent"); 10,628,820 ("the '820 Patent"); 10,810,579 ("the '579 Patent"); 11,176,538 ("the '538 Patent"); 11,328,286 ("the '286 Patent"); and 11,620,634 ("the '634 Patent") (collectively, the "Asserted Patents"). In addition, based on its investigation to date, Apple hereby produces the prior art references on which these Invalidity Contentions are based, as well as other documents that the OGP mandates.

The prior art asserted against the Asserted Patents is provided in response to the infringement contentions provided by CardWare, Inc. ("CardWare") on February 10, 2025, ("Infringement Contentions"), in which CardWare asserted:

Asserted Patent	Asserted Claims
U.S. Patent No. 10,339,520	1-20, 22, 23
U.S. Patent No. 10,628,820	1, 2, 4, 10-20
U.S. Patent No. 10,810,579	1-23
U.S. Patent No. 11,176,538	1-30
U.S. Patent No. 11,328,286	1-27
U.S. Patent No. 11,620,634	1-13, 15-53, 55-70, 72

(collectively, "Asserted Claims"). By providing these contentions, Apple in no way admits to the adequacy of CardWare's Infringement Contentions.

I. GENERAL RESERVATIONS

Apple reserves the right to revise or supplement these contentions in light of party and third-party discovery (such as discovery from third-party system developers), CardWare's infringement contentions, any claim construction order issued by the Court, review and analysis by expert witnesses, and further investigation and discovery regarding the defenses asserted by Apple. For example, Apple expressly reserves the right to amend these contentions if CardWare

is granted leave to amend its infringement contentions, after issuance of the claim construction order, in the event CardWare provides any information that it failed to provide in its disclosures, or if CardWare amends its disclosures in any way. Further, because discovery is ongoing, Apple reserves the right to revise, amend, and/or supplement the information provided herein, including identifying, charting, and relying on additional references. Further, Apple reserves the right to revise, amend, or supplement when CardWare provides additional discovery. Further, Apple reserves the right to revise their ultimate contentions concerning the invalidity of the asserted claims, which may change depending upon further and ongoing investigation, the construction of the asserted claims and/or positions that CardWare or expert witnesses may take concerning claim construction, infringement, and/or invalidity issues.

Prior art not included in this disclosure, whether known or not known to Apple, may become relevant. In particular, Apple is currently unaware of the extent, if any, to which CardWare will contend that limitations of the asserted claims are not disclosed in the prior art identified by Apple. To the extent that such an issue arises, Apple reserves the right to identify other references that would anticipate and/or render obvious the allegedly missing limitations of the claims. Apple reserves the right to rely on any reference found in the prosecution histories of the applications leading to the asserted patents or otherwise identified in connection with this action.

To the extent that the following contentions reflect constructions of claim limitations consistent with or implicit in CardWare's infringement allegations or proposed claim constructions, no inference is intended nor should any be drawn that Apple agrees with CardWare's infringement allegations or claim constructions, and Apple expressly reserves the right to contest such allegations and claim constructions. Apple offers such contentions in

response to CardWare's Infringement Contentions and proposed claim constructions and without prejudice to any position that Apple may ultimately take as to any claim construction issues. Specifically, Apple bases these invalidity contentions at least in part upon the claim scope and certain claim constructions that are implicitly or explicitly asserted by CardWare, and nothing herein should be construed or represented as evidencing any express or implied agreement with any of CardWare's claim constructions or infringement positions.

Apple intends to rely on admissions concerning the scope of the prior art relevant to the asserted patents found in, *inter alia*: the asserted patents and related patents and/or patent applications; the patent prosecution histories for the asserted patents and related patents and/or patent applications (including all prior art cited therein); any deposition testimony of the named inventors on the asserted patent and related patents and/or patent applications in this matter or any other matter; evidence and testimony relating to the level of skill in the art; and the papers filed and any evidence submitted by CardWare in connection with this matter.

Apple's claim charts cite to particular teachings and disclosures of the prior art as applied to features of the asserted claims. However, persons of ordinary skill in the art ("POSITA") generally may view an item of prior art in the context of other publications, literature, products, and understanding. As such, the cited portions are only examples, and Apple reserves the right to rely on uncited portions of the prior art references and on other publications, expert testimony, and other evidence as aids in understanding and interpreting the cited portions, as providing context thereto, and as additional evidence that the prior art discloses a claim limitation or any of the asserted claims as a whole. Apple further reserves the right to rely on uncited portions of the prior art references, other publications, and testimony, including expert testimony, to establish bases for combinations of certain cited references that render the asserted claims obvious.

The references discussed in the claim charts may disclose the elements of the asserted claims explicitly and/or inherently, and/or they may be relied upon to show the state of the art in the relevant timeframe. The suggested obviousness combinations are provided in addition to and/or in the alternative to Apple's anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not by itself anticipatory.

The following discussion and exhibits provide exemplary prior art citations and obviousness positions. The citations and discussion in the charts are organized by claim (and claim limitation) for convenience, but each limitation or claim section applies to the larger context of each claim, to any related dependent or independent claims, as well as all claims containing similar limitations or elements. For example, citations as to any recited limitation, step, or component in the claims apply wherever each such limitation, step, or component is repeated elsewhere in the claim or patent. Where Apple cites to a particular drawing or figure in the attached claim charts, the citation encompasses the description of the drawing or figure, as well as any text associated with the drawing or figure. Similarly, where Apple cites to particular text concerning a drawing or figure, the citation encompasses that drawing or figure as well. Relatedly, certain portions of patent or other prior art disclosures build upon other disclosures, even if they are referred to as a separate or alternative embodiment. Thus, Apple's citations to structures or functions incorporate by references all disclosures to related structures or functions, including any additional detail provided as to the operation or design of those structures or functions.

Discovery, including discovery relating to inventorship, is ongoing. Apple reserves the right to assert that the asserted claims are invalid under 35 U.S.C. § 102(f) in the event Apple obtain additional evidence that the inventors of the asserted patents did not invent the subject

matter claimed therein. Should Apple obtain such evidence, they will provide the name of the person(s) from whom and the circumstances under which the alleged invention or any part of it was derived.

Apple also reserves its rights to challenge any of the claim terms herein under 35 U.S.C. § 112 beyond the grounds outlined in their responses to interrogatories related to invalidity, including by arguing that they are indefinite, not supported by the written description, or not enabled. Nothing stated herein shall be construed as a waiver of any argument available under 35 U.S.C. §§ 101, 102, 103, and/or 112.

II. U.S. PATENT NO. 10,339,520

A. Priority Date

Despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of the '520 patent is entitled to a priority date earlier than the filing date of the patent, *i.e.* September 11, 2017.

CardWare contends that every asserted claim is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application No. 61/794,891 (the "'891 provisional"). CardWare Preliminary Infringement Contentions (February 10, 2025) at Section II. However, CardWare provides no evidence or analysis to demonstrate that the asserted claims of the '520 patent are entitled to the priority date of the '891 provisional application. In this regard, a patent claim is entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides both written description support and an enabling disclosure for the patent claim as required by 35 U.S.C. § 112, ¶ 1. CardWare provides no such showing.

Nor has Cardware demonstrated that the asserted claims are entitled to the priority date of the earlier filed applications listed on the face of the patent. CardWare provides no evidence or

analysis demonstrating that the asserted claims of the '520 patent are entitled to the priority date of any of the applications to which the '520 patent claims priority.

CardWare has not alleged that the asserted claims of the '520 patent are entitled to a priority date earlier than the March 15, 2013 filing date of the '891 Provisional application. Although CardWare produced a handful of documents, which appear to be related to conception and/or reduction to practice, CardWare's document production to date fails to demonstrate that the asserted claims of the '520 patent were conceived and/or diligently reduced to practice prior to the filing of the '520 patent. Apple expressly reserves the right to amend its contentions if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice.

B. Relevant Prior Art

Apple contends that the prior art references identified in Apple's contentions anticipate and/or render obvious the Asserted Claims. Below, Apple lists some of the prior art cited in these contentions:

1. Patents and Patent Application Publications

Patent or Pub. No.	Filing Date	Publication/Issue Date
EP 0 949 595 A2	March 26, 1999	Oct. 13, 1999
EP 1 004 992 A2	March 24, 1998	May 31, 2000
EP 1 223 565 A1	Jan. 12, 2001	July 17, 2002
EP 2 302 882 A1	Sept. 24, 2009	March 30, 2011
EP 2 407 919 A1	March 30, 2007	Jan. 18, 2012
JP 2004-13728		Jan. 15, 2004
KR 20110039946A	Oct. 13, 2009	April 20, 2011
KR 20120076502A	Nov. 27, 2010	July 9, 2012
US 5,744,787	Sept. 25, 1995	April 28, 1998
US 5,883,810	Sept. 24, 1997	March 16, 1999
US 5,963,924	April 26, 1996	Oct. 5, 1999
US 6,005,942	March 24, 1998	Dec. 21, 1999
US 6,076,075	March 30, 1998	June 13, 2000
US 6,105,008	April 30, 1998	Aug. 15, 2000
US 6,119,946	March 3, 1998	Sept. 19, 2000

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 6,233,683	March 24, 1998	May 15, 2001
US 6,282,522 B1	Oct. 16, 1997	Aug. 28, 2001
US 6,330,978 B1	April 27, 1998	Dec. 18, 2001
US 6,450,407 B1	April 21, 2000	Sept. 17, 2002
US 6,481,632 B2	Oct. 26, 1999	Nov. 19, 2002
US 6,748,367 B1	Sept. 21, 2000	June 8, 2004
US 6,776,332 B2	Dec. 26, 2002	Aug. 17, 2004
US 7,127,236 B2	Dec. 18, 2002	Oct. 24, 2006
US 7,177,848 B2	June 22, 2001	Feb. 13, 2007
US 7,725,369 B2	Jan. 23, 2009	May 25, 2010
US 7,908,216 B1	July 22, 1999	March 15, 2011
US 8,095,113 B2	Feb. 4, 2009	Jan. 10, 2012
US 8,255,323 B1	Jan. 9, 2009	Aug. 28, 2012
US 8,930,274 B1	Dec. 18, 2013	Jan. 6, 2015
US 9,008,616 B2	Dec. 9, 2011	April 14, 2015
US 9,600,808 B1	June 22, 2012	March 21, 2017
US 9,721,319 B2	March 28, 2012	Aug. 1, 2017
US 9,898,728 B2	April 16, 2012	Feb. 20, 2018
US 10,121,144 B2	Sept. 2, 2014	Nov. 6, 2018
US 10,380,573 B2	Sept. 30, 2008	Aug. 13, 2019
US 10,445,723 B2	May 14, 2013	Oct. 15, 2019
US 10,510,056 B2	Nov. 2, 2011	Dec. 17, 2019
US 11,042,846 B2	Sept. 2, 2014	June 22, 2021
US 11,068,875 B2	Sept. 30, 2014	July 20, 2021
US 11,392,937 B2	Sept. 2, 2014	July 19, 2022
US 2003/0222152 A1	May 28, 2003	Dec. 4, 2003
US 2004/0127256 A1	July 23, 2003	July 1, 2004
US 2007/0095892 A1	Oct. 27, 2005	May 3, 2007
US 2008/0040285 A1	Feb. 16, 2007	Feb. 14, 2008
US 2009/0030845 A1	June 25, 2008	Jan. 29, 2009
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2005/0043997 A1	Aug. 18, 2003	Feb. 24, 2005
US 2005/0252961 A1	May 13, 2004	Nov. 17, 2005
US 2007/0045403 A1	Aug. 31, 2005	March 1, 2007
US 2007/0114274 A1	Nov. 21, 2006	May 24, 2007
US 2007/0208671 A1	Dec. 30, 2006	Sept. 6, 2007
US 2007/0244811 A1	March 30, 2007	Oct. 18, 2007
US 2008/0078831 A1	Sept. 29, 2006	April 3, 2008
US 2008/0222047 A1	July 27, 2007	Sept. 11, 2008
US 2008/0275779 A1	Feb. 7, 2008	Nov. 6, 2008
US 2009/0070272 A1	Sept. 11, 2008	March 12, 2009
US 2009/0144161 A1	Nov. 30, 2007	June 4, 2009
US 2009/0200371 A1	Feb. 4, 2009	Aug. 13, 2009

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 2009/0210308A1	Feb. 15, 2008	Aug. 20, 2009
US 2009/0276347 A1	May 1, 2009	Nov. 5, 2009
US 2009/0291634 A1	April 24, 2006	Nov. 26, 2009
US 2010/0078471 A1	Sept. 30, 2008	April 1, 2010
US 2010/0078472 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082481 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082490 A1	Sept. 30, 2008	April 1, 2010
US 2010/0088227 A1	Nov. 16, 2007	April 8, 2010
US 2010/0125508 A1	Nov. 17, 2009	May 20, 2010
US 2010/0125509 A1	June 1, 2009	May 20, 2010
US 2010/0127083 A1	Nov. 26, 2008	May 27, 2010
US 2011/0010277 A1	July 9, 2009	Jan. 13, 2011
US 2011/0022472 A1	Feb. 25, 2010	Jan. 27, 2011
US 2011/0078031 A1	Sept. 30, 2009	March 31, 2011
US 2011/0082772 A1	Nov. 12, 2009	April 7, 2011
US 2011/0101093 A1	Feb. 18, 2010	May 5, 2011
US 2011/0112918 A1	Oct. 29, 2010	May 12, 2011
US 2011/0140841 A1	Aug. 19, 2009	June 16, 2011
US 2011/0153498A1	Dec. 7, 2010	June 23, 2011
US 2011/0173060 A1	Jan. 10, 2011	July 14, 2011
US 2011/0173121 A1	March 28, 2011	July 14, 2011
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2011/0191161 A1	Jan. 31, 2011	Aug. 4, 2011
US 2011/0191177 A1	Jan. 25, 2011	Aug. 4, 2011
US 2011/0238573 A1	March 15, 2011	Sept. 29, 2011
US 2012/0116902 A1	March 11, 2011	May 10, 2012
US 2012/0116976 A1	Jan. 10, 2012	May 10, 2012
US 2012/0143754 A1	Dec. 5, 2011	June 7, 2012
US 2012/0150687 A1	Dec. 13, 2011	June 14, 2012
US 2012/0191612 A1	April 3, 2012	July 26, 2012
US 2012/0191615 A1	Jan. 27, 2012	July 26, 2012
US 2012/0205443 A1	April 3, 2012	Aug. 16, 2012
US 2012/0310760 A1	Sept. 1, 2011	Dec. 6, 2012
US 2013/0013499 A1	July 5, 2012	Jan. 10, 2013
US 2013/0024371 A1	Sept. 27, 2012	Jan. 24, 2013
US 2013/0085941 A1	Sept. 30, 2011	April 4, 2013
US 2013/0159186 A1	April 16, 2012	June 20, 2013
US 2013/0166441 A1	Dec. 21, 2012	June 27, 2013
US 2013/0232083 A1	March 1, 2013	Sept. 5, 2013
US 2013/0262317 A1	March 14, 2013	Oct. 3, 2013
US 2013/0297509 A1	May 6, 2013	Nov. 7, 2013
US 2014/0229375 A1	Feb. 11, 2013	Aug. 14, 2014
US 2014/0344153 A1	May 15, 2014	Nov. 20, 2014

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 2015/0058191 A1	Nov. 27, 2013	Feb. 26, 2015
US 2015/0073983 A1	Nov. 12, 2014	March 12, 2015
US 2015/0178724 A1	Dec. 19, 2014	June 25, 2015
US 2015/0180836A1	Dec. 19, 2014	June 25, 2015
US 2015/0348002 A1	Sept. 30, 2014	Dec. 3, 2015
US 2016/0042356 A1	Aug. 11, 2014	Feb. 11, 2016
US 2016/0057619 A1	Aug 24, 2015	Feb. 25, 2016
US 2016/0253669 A1	Feb. 26, 2016	Sept. 1, 2016
US 2016/0275505 A1	March 17, 2015	Sept. 22, 2016
US 2016/0321653 A1	April 29, 2016	Nov. 3, 2016
WO 2010/037218 A1	Sept. 29, 2009	April 8, 2010
WO 2010/039337 A2	Aug. 11, 2009	April 8, 2010
WO 2012/011054 A1	July 19, 2011	Jan. 26, 2012
WO 2012/154915 A1	May 10, 2012	Nov. 15, 2012
WO 2013/155627 A1	April 16, 2013	Oct. 24, 2013
Patent Application 61/899,734	Nov. 4, 2013	
Patent Application 61/905,035	Nov. 15, 2013	
Patent Application 61/921,688	Dec. 30, 2013	

2. Printed Publications

Title	Author/Publisher	Date
"A Primer to the Implementation of Smrt Card Management and Related Systems," Version 1.0	GlobalPlatform	Aug. 2000
About Us | Venmo	Venmo.com	2012
"An Introduction to Java Card Technology – Part 1"	C. Enrique Ortiz Sun Developer Network	May 29, 2003
"An Introduction to Java Card Technology – Part 2, The Java Card Applet"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Introduction to Java Card Technology – Part 3, The Smart Card Host Application"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Investigation into Electronic Commerce Frauds and their Security Implications"	Kevin Boardman	Nov. 7, 2004
Apple Press Release: "Apple Announces Apple Pay"	Apple	Sept. 9, 2014
Card on File Tokenization | Mastercard Developers	Mastercard.com	
"Contactless Payment Security Questions & Answers"	Smart Card Alliance, Inc.	2016

Title	Author/Publisher	Date
E-ink on Credit Cards will do Away with PINs (video)	The Digital Reader	Sept. 2, 2011
Emue – a Revolution in Authentication	EMUE	May 13, 2009
"EMV Card Personalization Specification," Version 1.0	EMVCo, LLC	June 2003
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 1, Application Independent ICC to Terminal Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.3	EMVCo, LLC	Nov 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.3	EMVCo, LLC	Nov. 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 4, Cardholder, Attendant, and Acquirer Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011
For Businesses: Payment Technologies – Products & Platforms	Visa	2004
For Businesses: Payment Technologies – Visa Cash	Visa	2004
For Businesses: Payment Technologies – Visa Smart debit and Visa Smart Credit	Visa	2004
GlobalPlatform: a Dynamic and Secure	Marc Kekiheff GlobalPlatform	
GlobalPlatform Card Security Requirements Specification	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Card Specification Tutorial	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Technical Overview	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform – Global Consensus for a Connected Planet	GlobalPlatform	
GlobalPlatform – Implementations – Financial	GlobalPlatform	2006
GlobalPlatform – Implementations – Mobile Telecom	GlobalPlatform	2006

Title	Author/Publisher	Date
GlobalPlatform – Implementations – Retail	GlobalPlatform	2006
GlobalPlatform – Implementations – Transit	GlobalPlatform	2006
GlobalPlatform – Interoperability and Security with GlobalPlatform	March Kekicheff, GlobalPlatform	Feb. 2, 2004
GlobalPlatform – Introduction to GlobalPlatform Technology	GlobalPlatform	
GlobalPlatform – Overview	GlobalPlatform	June 2004
GlobalPlatform – The Cross-Industry Approach to Smart Card Standards	GlobalPlatform	2000
GlobalPlatform – The Platform for a Multi-application Environment	March Kekicheff, GlobalPlatform	April 2005
GlobalPlatform – Towards the Next Generation of GlobalPlatform Specifications	Pierre-Francois Solere, GLobalPlatform	
GlobalPlatform Specifications: The Solution for an Emerging Market	GlobalPlatform	
GlobalPlatform Specifications Archive – Technology Document Library	GlobalPlatform	2024
GlobalPlatform: a Dynamic and Secure Pre and Post Issuance Solution – Cartes 2002	Marc Kekiheff GlobalPlatform	2002
Google Wallet and the New Retail Ecosystem	David W. Schropfer	Oct. 3, 2011
Government Smart Card Handbook	GSA	Feb. 2004
Government Smart Card Handbook	GSA	Feb. 2004
Implementing Electronic Card Payment Systems	Cristian Radu	2003
"Interoperability in Electronic Payments: Lessons and Opportunities"	Carol Coye Benson CGAP	2012
"Investigating Mobile Payment: Supporting Technologies, Methods, and Use"	Valcourt, et al.; IEEE	2005
"Java Card™ 2.2 Off-Card Verifier" White Paper	Sun Microsystems	June 2002
Java Card for ePayment Applications	Vesna. Hassler	2002
"Java Card™ Platform Security" Technical White Paper	Sun Microsystems	2001
Java Card Platform: A Week in the Life of Jack Link	Sun Microsystems	2004
Java Card Questions and Answers with Zhiqun Chen	Ed Ort Sun Microsystems	Oct. 2000
Java Card Technology Datasheet	Sun Microsystems	2005
Java Card Technology Examples	Sun Microsystems	2004
Java Card Technology FAQs	Sun Microsystems	2005
Java Card Technology for Smart Cards: Architecture and Programmer's Guide	Zhiqun Chen	2000

Title	Author/Publisher	Date
Java Card Technology for Smart Cards: Architecture and Programmer's Guide Book information	Zhiqun Chen Sun Microsystems	Sept. 18, 2000
"Java Card Technology Overview," Chapter 3		
Java Card1_Fig-3	Sun.com	2005
Java Card1_Fig-4	Sun.com	2005
Java Card1_Fig-5	Sun.com	2006
Java Card1_Fig-7	Sun.com	2004
Java Card1_Fig-9	Sun.com	2004
Java Card1_Fig-12	Sun.com	2006
Java on Smart Cards: Programming and Security: First International Workshop, JavaCard 2000		2000
JavaCard – From Hyper to Reality	Michael Baentsch IEEE	1999
JavaCard – Redistribution and Use in Source and Binary Forms License	Sun Microsystems	2004
JCOP V2.4.1 Secure Smart Card Controller, Rev. 3.2	NXP	Sept. 2, 2009
JCOP20 Technical Brief, Revision 2.3	IBM	
JCOP30 Technical Brief, Revision 2.3		
MagTek CEO: "Dynamic Data is the Core of Security" [Transcript]	David Evans Pymnts	March 8, 2012
MagTek Launches QwickPAY, the Innovative Secure Mobile Payments Service, Into the Android Marketplace	Magtek	March 29, 2011
MagTek Introduces Qwick Code Mobile Wallet		Jan. 15, 2012
Mastercard Virtual Card Tokens	Mastercard	March 7, 2025
MDES Token Connect | Mastercard Developers	Mastercard	
Mobile Payment Services in South Africa	Matthias Beland	Jan. 31, 2013
NXP – News Center – Infocus Archive	NXP	2006
One-Click Payments by 2030 With Tokenization	Jorn Lambert Mastercard	March 12, 2025
PCI Data Security Standard (PCI DSS), Version 2.0	Scoping SIG, Tokenization Taskforce PCI Security Standards Council	Aug. 2011
PCI – Payment Card Industry (PCI) Data Security Standard, Version 2.0	PCI	Oct. 2010
PHB Development, Kurt Salmon, "Mobile Payments … a 'Southern' Revolution!"	PHB Development	2011
Qwick Codes Mobile Wallet for IOS	CNET	

Title	Author/Publisher	Date
"Radio-Frequency Identification (RFID): A Focus on Information Security and Privacy," OECD Digital Economy Papers, No. 138	OECD Publishing	Jan. 14, 2008
"SE vs. HCE: What is More Secure for NFC Mobile Payments?"	Finextra	Oct. 17, 2014
Techie Visa Card Features Buttons and Screen to Generate CCV Dynamically	Mark Wilson	Nov. 11, 2008
The Complete Guide to Payments Tokenization		
The Rise of Async Work [Podcast] – Fast Company	Loom Atlassian	Feb. 10, 2025
Venmo, Just Say "Venmo Me"	Venmo	2021
Venmo – Wikipedia	Wikipedia	
Visa and Emue Technologies deploy cards with built-in one-time password generator	Finextra	Feb. 9, 2009
Visa Best Practices for Tokenization Version 1.0	Visa Best Practices	July 14, 2010
Visa CodeSure Gets Commercial Green Light	Finextra	June 2, 2010
Visa Invests in Authentication Outfit Emue	Finextra	Nov. 18, 2009
Visa Token Service Momentum, Annual Update 2022	Visa	2022
Visa Token Service – Product Fact Sheet	Visa	2022
Visa Token Service – Visa	Visa	2025
What is Venmo, how does it work, and is it safe to use?	Ben Luthi Yahoo Finance	May 31, 2024
What is Venmo? – NerdWallet	Chanelle Bessette NerdWallet	June 24, 2024
What is Venmo: How it Works	Nicole Symon Money	May 18, 2023
Qwick Codes Demo video		
Wi Wallet Mobile Payments video		
Visa Pin System 2 Credit Cards video		
Smart Dongle Credit Card With e-ink Display video		
Credit Card with E-ink Display Keep You Safe While Online Shopping video		
Mastercard Token Authentication Service lets Shoppers Create Passkeys for Secure Authentication video		
Mastercard Tokenization video		

3. Prior Art Systems

The table below lists prior art systems and products identified that reveal the state of the art and/or render the Asserted Claims invalid under pre- or post-AIA 35 U.S.C. §§ 102 and/or 103. Some or all of the supporting references for these systems may also qualify as prior art publications under 35 U.S.C. § 102 and may be used as invalidating prior art under 35 U.S.C. §§ 102 and 103. In particular, the manuals for these products, patents filed to cover these products, and any other publicly available information.

Each of the prior art systems were publicly known or used or offered for sale prior to the critical date of the '520 patent, as described in each system's respective claim chart. Apple continues to investigate the systems and products and reserves the right to supplement the contentions and accompanying claim charts after further discovery and investigation. Apple also reserves the right to rely on fact or expert witness testimony to establish the public knowledge, use, availability, sale, or offer for sale of any systems described below. Although additional information and prior art systems may be obtained through discovery, such prior art systems include at least the following:

Prior Art System	Person/Entity	Date
Apple Pay	Apple	At least as early as 2012
Google Wallet	Google	At least as early as September 20, 2011
Venmo	Venmo	At least as early as 2009
Visa Payment Tokens	Visa	At least as early as July 2010
Mastercard Payment Tokens	Mastercard	At least as early as 2013
Qwick Codes Mobile Wallet	Magtek	At least as early as October 2012
wiWallet	wiWallet Mobile Payments (Pty) Ltd.	At least as early as July 08, 2010
emue Smart Card	emue	At least as early as February 11, 2010
Smart Dongle Credit Card	E-ink	At least as early as November 11, 2011

Prior Art System	Person/Entity	Date
VivoTech systems	VivoTech	At least as early as 2005
Square Systems	Square	At least as early as 2009
Starbucks Mobile Application	Starbucks	At least as early as 2009
PayPal and PayPal Mobile	PayPal	At least as early as 2006
Venmo	Venmo	At least as early as 2010
Cake POS and payment systems	Cake Corp.	At least as early as 2013
Toast POS and payment systems	Toast, Inc.	At least as early as 2012
MiFare	Philips	At least as early as 2004
SmartMX	Philips	At least as early as 2004
JCOP OS	Philips/NXP	At least as early as 2004
Global Platform	GlobalPlatform	At least as early as 2004
JavaCard	Sun Microsystems	At least as early as 2004
LevelUp	SCVNGR dba LevelUp	At least as early as 2011

C. <u>Anticipation and Obviousness</u>

1. Non-limiting Claim Elements

The asserted claims of the '520 patent include numerous limitations that have no functional or structural relationship to the claimed payment system and thus do not affect the scope of the claims. For example, at least the limitations listed below are directed to printed matter and thus entitled to no patentable weight:

- "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." ('520 patent, claim 7)
- "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." ('520 patent, claim 14)

The Federal Circuit has repeatedly held that limitations directed to printed matter, such as those listed above, are not entitled to patentable weight. *See, e.g.*, *CR Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020) ("[P]rinted matter encompasses any information claimed for its communicative content, and the doctrine prohibits patenting such printed matter unless it is 'functionally related' to its 'substrate' which encompasses the structural elements of the claimed invention."); *Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prop. IP Ltd.*, 890 F.3d 1024, 1031 (Fed. Cir. 2018) ("Claim limitations directed to printed matter are not entitled to patentable weight unless the printed matter is functionally related to the substrate on which the printed matter is applied."); *In re Distefano*, 808 F.3d 845, 848 (Fed. Cir. 2015) ("[I]f a limitation claims (a) printed matter that (b) is not functionally or structurally related to the physical substrate holding the printed matter, it does not lend any patentable weight to the patentability analysis.").

2. Claim Charts

Apple attaches Exhibits 520-1 to 520-12, which provide exemplary disclosures showing how the prior art anticipates and/or renders obvious the asserted claims of the '520 patent. Apple also attaches Exhibit 520-103, which provides exemplary disclosures in secondary references to combine with the prior art identified in these contentions to render obvious the asserted claims of the '520 patent. Apple may rely on any of the primary references identified in Exhibits 520-1 to 520-12 in combination with any secondary reference identified in those exhibits, in exhibit 520-103, or in this cover pleading. The table below identifies the primary reference addressed in each of Exhibits 520-1 to 520-12, each of which describes anticipation and/or obviousness of one or more claims of the '520 patent:

Exhibit	Prior Art Reference
520-1	U.S. Pub. No. 2012/0116902 ("Cardina '902")

Exhibit	Prior Art Reference
520-2	U.S. Pub. No. 2013/0262317 ("Collinge '317")
520-3	U.S. Patent No. 9,098,846 ("Gill '846")
520-4	U.S. Patent No. 9,600,808 ("Gomez, Sr. '808")
520-5	U.S. Pub. No. 2009/0030845 ("Hurry '845")
520-6	U.S. Pub. No. 2013/0124410 ("Kay '410")
520-7	U.S. Pub. No. 2009/0200371 ("Kean '371")
520-8	WIPO Pub. No. WO2010/039337A2 ("Lin '337")
520-9	U.S. Pub. No. 2013/0232083 ("Smith '083")
520-10	U.S. Pub. No. 2009/0210308 ("Toomer '308")
520-11	U.S. Pub. No. 2011/0238573 ("Varadarajan '573")
520-12	Apple Pay Products ("Apple Pay")

The U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id*. at 1732, 1738, 1742–1743, 1746. A patent claim may be obvious if the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id*. at 1740. The Court stated that courts should "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id*. at 1740–41. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See TGIP, Inc. v. AT&T Corp*., 527 F. Supp. 2d 561, 580–81 (E.D. Tex. 2007). "[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ" to resolve the question of obviousness. *KSR*, 127 S. Ct. at 1741.

Based on all of these considerations, as further detailed in Exhibits 520-1 to 520-12 and 520-103, a POSITA would have combined the teachings of the prior art references discussed and charted in those exhibits. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the asserted claims of the '520 patent. The references identified in Exhibits 520-1 to 520-12 and 520-103 are analogous prior art to the subject matter of the asserted claims and, for at least the reasons set forth below, are properly combinable. Because these prior art references exist within a single field of art, particularly one in which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the '520 patent.

By way of example only, the following combinations render obvious claims 1-20, 22, and 23 of the '520 patent:

- Cardina '902 in combination with one or more of Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 520-103.

- Collinge '317 in combination with one or more of Cardina '902, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 520-103.

- Gill '846 in combination with one or more of Cardina '902, Collinge '317, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 520-103.

- Gomez, Sr. '808 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 520-103.

- Hurry '845 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 520-103.

- Kay '410 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 520-103.

- Kean '371 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 520-103.

- Lin '337 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 520-103.

- Smith '083 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 520-103.

- Toomer '308 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 520-103.

- Varadarajan '573 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Apple Pay, and/or Secondary References in Ex. 520-103.

- Apple Pay in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, and/or Secondary References in Ex. 520-103.

Numerous prior art references, including those identified in the attached exhibits, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the '520 patent. As it would be unduly burdensome to create detailed claim charts for all of the invalidating combinations, for at least the reasons described in these invalidity contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in the attached exhibits, to meet the limitations of the asserted claims of the '520 patent. Apple's inclusion of exemplary

combinations, in view of the factors and motivations identified here, does not preclude Apple from identifying other invalidating combinations and/or motivations as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, because each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1739–40 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 1742. Nevertheless, in addition to the information contained herein, Apple hereby identifies additional motivations and reasons to combine the cited art.

One or more combinations of the prior art references identified herein, including the exemplary combinations above, would have been obvious because these references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to combine the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market forces either in the same field or a different one. In addition, the combinations of the prior art references identified above would have been obvious because the combinations represent the known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation or reason to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution; the existence of a known need or problem in the field of endeavor at the time of the invention; and the background knowledge that would have been possessed by a person having ordinary skill in the art. For example, the prior art references are generally directed to the same problems. Thus, a skilled artisan seeking to solve these problems would look to these cited references in combination.

Thus, the motivation or reason to combine the teachings of the prior art references disclosed herein is found in the references themselves and in: (1) the nature of the problems being solved; (2) the express, implied, and inherent teachings of the prior art; (3) the knowledge of a POSITA; (4) the fact that the prior art is generally directed towards the same problems; and/or (5) the predictable results obtained in combining the different elements of the prior art; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Apple incorporates by reference prior art from the prosecution histories and background sections of the '520 patent. Apple expects to rely on the testimony of one or more expert witnesses and documents referenced by those expert witnesses in support of these contentions and incorporate those forthcoming expert reports as if fully set forth herein.

Apple contends that there are no secondary considerations of non-obviousness evidencing the validity of any of the asserted claims. Secondary considerations of non-obviousness, also referred to as objective indicia of non-obviousness, "can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans before the invention." *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc*., 711 F.3d 1348, 1368 (Fed. Cir. 2013). "A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision." *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists, secondary considerations of non-obviousness "simply cannot overcome [a] strong prima facie showing of obviousness." *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008). CardWare has not established the existence of any objective indicia of non-obviousness or secondary considerations. Apple reserves the right to supplement their contentions to respond to any such arguments or evidence should CardWare be permitted to raise them in the future. While discovery in this case is ongoing, and Apple's investigation continues (which will include expert discovery), to the extent CardWare contends that one or more asserted claims is not obvious based on secondary considerations recognized by relevant authority Apple contends such allegations are without merit. Apple reserves the right to supplement their contentions to respond to any such evidence should CardWare be permitted to raise it in the future.

D. <u>The Accused Products Predate the '520 Patent</u>

As discussed above, despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of any asserted patent is entitled to a priority date earlier than the

respective filing dates of the asserted patents. CardWare contends that "every asserted claim of each asserted patent is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application no. 61/794,891." *See* February 10, 2025 Infringement Contentions at 2. Apple disagrees with CardWare's contention, and CardWare has failed to establish that any asserted patent is entitled to an earlier priority date.

The accused products were announced publicly on or around September 9, 2014. https://www.apple.com/newsroom/2014/09/09Apple-Announces-Apple-Pay/. The public announcement of Apple Pay predates the filing date of the '520 patent, *i.e.*, September 11, 2017, and therefore, Apple Pay is prior art to the '520 patent. Apple Pay anticipates and/or renders obvious the asserted claims of the '520 patent. *See* Ex. 520-12.

To the extent CardWare is able to establish that any asserted claim is entitled to a March 15, 2013 priority date, then the accused products are nonetheless invalidating prior art at least under pre-AIA 35 U.S.C. § 102(g). Apple conceived of Apple Pay before the earliest invention date to which CardWare claims the asserted patents are entitled to priority. Apple exercised reasonable diligence from the time of its conception of Apple Pay and did not abandon, suppress, or conceal its invention. In the event any claim is entitled to a March 15, 2013 priority date, each limitation of that claim would be invalid under at least pre-AIA 35 U.S.C. § 102(g) for the same reasons CardWare claims that the accused products meet that limitation. *See* Ex. 520-12.

Apple expressly reserves the right to amend its contentions if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice. Apple expressly reserves the right to amend its contentions as discovery commences in this matter and additional relevant information and documentation relating to Apple's conception and reduction to practice of the accused products is uncovered.

E. Other Invalidity Grounds

Apple hereby identifies grounds of invalidity based on (1) lack of written description under 35 U.S.C. § 112; (2) lack of enablement under 35 U.S.C. § 112; (3) indefiniteness under 35 U.S.C. § 112; and (4) ineligible subject matter under 35 U.S.C. § 101. These contentions shall not be construed as an admission that any claim construction advanced by Apple in this case is in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Apple from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to CardWare's purported construction of the claim language or of other positions advanced by CardWare during the course of this litigation. Apple's Invalidity Contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as CardWare's alleged scope of the asserted claims of the '520 patent. Consequently, Apple only identifies the issues under 35 U.S.C. § 112 of which they are presently aware.

1. Lack of Written Description under 35 U.S.C. § 112

The asserted claims are invalid under 35 U.S.C. § 112, because the '520 patent does not provide sufficient written description to establish that the alleged inventors were in possession of the full scope of the alleged inventions recited in the asserted claims at the time the '520 patent was filed. *See e.g. Ariad v. Lilly*, 598 F.3d 1336 (Fed. Cir. 2010) (en banc); *LizardTech Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005) (finding claims invalid under 35 U.S.C. § 112 where the specification failed to include a written description of the full scope of the claimed invention); *In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1320 (Fed. Cir. 2011) ("[W]hen analyzing whether a patent meets the written description requirement, one cannot 'bootstrap' the knowledge of a person of ordinary skill in the art ('POSITA') into the analysis and fill the gap in the disclosure through obviousness.").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of written description under 35 U.S.C. § 112, as the specification of the '520 patent does not demonstrate that the inventors were in possession of the claimed subject matter:

Claim Terms	Claim(s)
a computer readable medium having instructions stored thereon that, responsive to execution by the electronic device, cause the electronic device to perform operations comprising	1
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	1
wherein the memory comprises device-specific and user-specific information	1
wherein the user provided payment information is communicated wirelessly	1
wirelessly receiving a static device account number payment information for storage on the electronic device	1
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	1
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	1
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	1
The electronic device of claim 1, wherein the motion rate detection array comprises a set of motion rate detection units, wherein the set comprises: a plurality of inductor coils and companion magnetic-field pickup coils; an optical sensor array; and a plurality of accelerometers, and wherein a detected proximity between the electronic device and a second electronic device is determined from at least one of the set of motion rate detection units	2
The electronic device of claim 2, wherein the plurality of accelerometers generate an indication of the detected proximity in response to a contact between said electronic device and said second electronic device	3
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	4
The electronic device of claim 1, further comprising a sequence counter which generates a sequential parameter when the processor initiates a	5

Claim Terms	Claim(s)
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	
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	7
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	8
accepting a user input of issued payment information input at a touch screen display of the electronic device, wherein the information comprises an issuer provided payment information	10
wherein the electronic device comprises device-specific and user-specific information	10
wherein the issuer provided payment information is communicated wirelessly	10
receiving wirelessly a static device account number payment information for storage on the electronic device; and wherein	10
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	10
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	10
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	10
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; 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	11
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	12
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	13

Claim Terms	Claim(s)
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	14
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	15
The method of claim 15, wherein the user selection is a default payment method to be used in transactions	16
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 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	17
providing, by the electronic device, at least one of account information; identification; and authorization, for the ATM transaction	18
recording a user selection from the user interface of the electronic device of a user selected account operation, wherein said user selected account operation is selected from a list of funds transfer operations	18
wherein user input information from the user interface includes at least one of a set comprising: identification, account, amount of currency, operation and authorizing information	18
wherein the identification, selection, information and authorizing operations are exchanged wirelessly between the electronic device and the ATM via NFC	18
wherein the ATM is configured for performing the user selected account operation using the identification and authorizing information	18
wherein the identification and authorizing information exchanged wirelessly between the electronic device and the ATM comprises: statically and dynamically generated limited-use number portions	18
wherein said static and dynamic information is combined to perform the user selected ATM operation	18
A method of claim 18, wherein the identification and authorizing information is generated from at least one of a set identification and data comprising: ATM accounts; user identification; biometric user identification; device-identifiers; email address; username; transactional information; merchant identifiers; facility location; user accounts; cryptocurrency address; cryptocurrency keys; merchant accounts; online	19

Claim Terms	Claim(s)
accounts; bank accounts; device account numbers; payment numbers; card issuing authority; and payment-issuer	
wherein further the data includes at least one of time; duration; passwords; passcodes; device position; device motion; device-specifics; secrets; keys; a currency; currency amounts; cryptocurrency amount; transaction limits; transaction records; usage duration; and usage sequence counts	19
A method of claim 18, wherein user entered identification and authorizing information is recorded through the user interface of the electronic device from at least one of set including: a plurality of button-press actions; a swipe gesture received at a touch sensor of the electronic device; a key press sequence received at the touch sensor; a passcode sequence received at the buttons; a plurality of swipe gestures received at a touch sensor of the electronic device; a key press PIN sequence received at the touch sensor; a passcode sequence received at the touch sensor; an accelerometer sensor indicating a user motion of the electronic device; an action and sequence of motions of the electronic device as performed by a user; an action of the user to move the electronic device into a specific orientation; a biometric sensor confirming the electronic device is in a grip of the user; and a biometric sensor confirming the electronic device has remained in the possession of the user from activation to transaction	20
The method of claim 18, wherein the limited-use number dynamically generated in the device is based on cryptographically combining data selected from the group consisting of an ATM information, the locality of an ATM reader facility, information regarding the facility performing the transaction, bank information, a time of day, a date, a transaction amount, a count of past transactions, a sequence count, a historical record of transactions, a merchant account, a user's location, an online address, a device-internal secret, a device unique identifier, a payment authority key, a payment issuer authority secret, a method and direction of payment, deposit, transfer and receipt, a cryptocurrency server, a cryptocurrency type, a cryptocurrency private key, a cryptocurrency public key, a cryptocurrency address, a touch gesture, a biometrically sensed user information, a user's private information, a user key, a user email, password, passcode, a PIN, a user secret, and a user input	22
The method of claim of 18, wherein the payment information comprises combining a plurality of static portions, and a plurality of dynamically generated limited-use portions, and wherein the static portion is a token account number with a limited-duration expiration date, to be used in place of issuer provided information	23

2. Lack of Enablement under 35 U.S.C. § 112(a)

The asserted claims are also invalid under 35 U.S.C. § 112, because the '520 patent does not enable one of ordinary skill in the art to make and/or use the full scope of certain recited

elements of the asserted claims of the '520 patent without undue experimentation. *See, e.g.*, *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988) ("The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation."); *Trustees of Bos. Univ. v. Everlight Elecs. Co.*, 896 F.3d 1357, 1362 (Fed. Cir. 2018) ("to be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of enablement under 35 U.S.C. § 112, as the claims, specification, and prosecution histories would not enable one of skill in the art to practice the claimed invention(s) without undue experimentation:

Claim Terms	Claim(s)
a motion rate detection array	1
wherein the memory comprises device-specific and user-specific information	1
wherein the user provided payment information is communicated wirelessly	1
wirelessly receiving a static device account number payment information for storage on the electronic device	1
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	1
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	1
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	1
The electronic device of claim 1, wherein the motion rate detection array comprises a set of motion rate detection units, wherein the set comprises: a plurality of inductor coils and companion magnetic-field pickup coils; an optical sensor array; and a plurality of accelerometers, and wherein a detected proximity between the electronic device and a second electronic	2

Claim Terms	Claim(s)
device is determined from at least one of the set of motion rate detection units	
The electronic device of claim 2, wherein the plurality of accelerometers generate an indication of the detected proximity in response to a contact between said electronic device and said second electronic device	3
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	4
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	5
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	6
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	7
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	8
The electronic device of claim 1, further comprising a USB connector for connection to a standard computing device	9
accepting a user input of issued payment information input at a touch screen display of the electronic device, wherein the information comprises an issuer provided payment information	10
wherein the electronic device comprises device-specific and user-specific information	10
wherein the issuer provided payment information is communicated wirelessly	10
receiving wirelessly a static device account number payment information for storage on the electronic device; and wherein	10
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	10
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	10

Claim Terms	Claim(s)
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	10
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; 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	11
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	12
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	13
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	14
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	15
The method of claim 15, wherein the user selection is a default payment method to be used in transactions	16
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 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	17
A method of facilitating and authorizing an automated teller machine (ATM) transaction involving an electronic device, wherein an electronic device transacts wirelessly with an ATM, the method comprising	18
providing, by the electronic device, at least one of account information; identification; and authorization, for the ATM transaction	18
wherein the electronic device comprises a user interface comprising: displays; touch sensors; and buttons	18

Claim Terms	Claim(s)
recording a user selection from the user interface of the electronic device of a user selected account from which the electronic device is operable to wirelessly convey with an ATM	18
recording a user selection from the user interface of the electronic device of a user selected account operation, wherein said user selected account operation is selected from a list of funds transfer operations	18
wherein user input information from the user interface includes at least one of a set comprising: identification, account, amount of currency, operation and authorizing information	18
wherein the identification, selection, information and authorizing operations are exchanged wirelessly between the electronic device and the ATM via NFC	18
wherein the ATM is configured for performing the user selected account operation using the identification and authorizing information	18
wherein the identification and authorizing information exchanged wirelessly between the electronic device and the ATM comprises: statically and dynamically generated limited-use number portions	18
wherein said static and dynamic information is combined to perform the user selected ATM operation	18
A method of claim 18, wherein the identification and authorizing information is generated from at least one of a set identification and data comprising: ATM accounts; user identification; biometric user identification; device-identifiers; email address; username; transactional information; merchant identifiers; facility location; user accounts; cryptocurrency address; cryptocurrency keys; merchant accounts; online accounts; bank accounts; device account numbers; payment numbers; card issuing authority; and payment-issuer	19
wherein further the data includes at least one of time; duration; passwords; passcodes; device position; device motion; device-specifics; secrets; keys; a currency; currency amounts; cryptocurrency amount; transaction limits; transaction records; usage duration; and usage sequence counts	19
A method of claim 18, wherein user entered identification and authorizing information is recorded through the user interface of the electronic device from at least one of set including: a plurality of button-press actions; a swipe gesture received at a touch sensor of the electronic device; a key press sequence received at the touch sensor; a passcode sequence received at the buttons; a plurality of swipe gestures received at a touch sensor of the electronic device; a key press PIN sequence received at the touch sensor; a passcode sequence received at the touch sensor; an accelerometer sensor indicating a user motion of the electronic device; an action and sequence of motions of the electronic device as performed by a user; an action of the user to move the electronic device into a specific orientation; a biometric sensor confirming the electronic device is in a grip of the user; and a biometric sensor confirming the electronic device has remained in the possession of the user from activation to transaction	20

Claim Terms	Claim(s)
The method of claim 18, wherein the limited-use number dynamically generated in the device is based on cryptographically combining data selected from the group consisting of an ATM information, the locality of an ATM reader facility, information regarding the facility performing the transaction, bank information, a time of day, a date, a transaction amount, a count of past transactions, a sequence count, a historical record of transactions, a merchant account, a user's location, an online address, a device-internal secret, a device unique identifier, a payment authority key, a payment issuer authority secret, a method and direction of payment, deposit, transfer and receipt, a cryptocurrency server, a cryptocurrency type, a cryptocurrency private key, a cryptocurrency public key, a cryptocurrency address, a touch gesture, a biometrically sensed user information, a user's private information, a user key, a user email, password, passcode, a PIN, a user secret, and a user input	22
The method of claim of 18, wherein the payment information comprises combining a plurality of static portions, and a plurality of dynamically generated limited-use portions, and wherein the static portion is a token account number with a limited-duration expiration date, to be used in place of issuer provided information	23

3. Indefiniteness under 35 U.S.C. § 112

The asserted claims of the '520 patent are also invalid because they fail to inform those skilled in the art about the scope of the alleged invention with reasonable certainty and are indefinite under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter the applicants regard as their alleged invention. *See, e.g.*, *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901, (2014) ("a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention."). The following terms render one or more claims of the patent-in-suit indefinite under 35 U.S.C. § 112:

Claim Terms	Claim(s)
a touch sensor array	1
a motion rate detection array	1

Claim Terms	Claim(s)
a computer readable medium having instructions stored thereon that, responsive to execution by the electronic device, cause the electronic device to perform operations comprising	1
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	1
wherein the memory comprises device-specific and user-specific information	1
wherein the user provided payment information is communicated wirelessly	1
wirelessly receiving a static device account number payment information for storage on the electronic device	1
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	1
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	1
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	1
The electronic device of claim 1, wherein the motion rate detection array comprises a set of motion rate detection units, wherein the set comprises: a plurality of inductor coils and companion magnetic-field pickup coils; an optical sensor array; and a plurality of accelerometers, and wherein a detected proximity between the electronic device and a second electronic device is determined from at least one of the set of motion rate detection units	2
The electronic device of claim 2, wherein the plurality of accelerometers generate an indication of the detected proximity in response to a contact between said electronic device and said second electronic device	3
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	4
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	5

Claim Terms	Claim(s)
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	6
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	8
The electronic device of claim 1, further comprising a USB connector for connection to a standard computing device	9
accepting a user input of issued payment information input at a touch screen display of the electronic device, wherein the information comprises an issuer provided payment information	10
wherein the electronic device comprises device-specific and user-specific information	10
wherein the issuer provided payment information is communicated wirelessly	10
receiving wirelessly a static device account number payment information for storage on the electronic device; and wherein	10
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	10
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	10
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	10
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	12
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	13
The method of claim 15, wherein the user selection is a default payment method to be used in transactions	16
A method of facilitating and authorizing an automated teller machine (ATM) transaction involving an electronic device, wherein an electronic device transacts wirelessly with an ATM, the method comprising	18
providing, by the electronic device, at least one of account information; identification; and authorization, for the ATM transaction	18

Claim Terms	Claim(s)
wherein user input information from the user interface includes at least one of a set comprising: identification, account, amount of currency, operation and authorizing information	18
wherein the identification, selection, information and authorizing operations are exchanged wirelessly between the electronic device and the ATM via NFC	18
wherein the identification and authorizing information exchanged wirelessly between the electronic device and the ATM comprises: statically and dynamically generated limited-use number portions	18
wherein said static and dynamic information is combined to perform the user selected ATM operation	18
A method of claim 18, wherein the identification and authorizing information is generated from at least one of a set identification and data comprising: ATM accounts; user identification; biometric user identification; device-identifiers; email address; username; transactional information; merchant identifiers; facility location; user accounts; cryptocurrency address; cryptocurrency keys; merchant accounts; online accounts; bank accounts; device account numbers; payment numbers; card issuing authority; and payment-issuer	19
wherein further the data includes at least one of time; duration; passwords; passcodes; device position; device motion; device-specifics; secrets; keys; a currency; currency amounts; cryptocurrency amount; transaction limits; transaction records; usage duration; and usage sequence counts	19
A method of claim 18, wherein user entered identification and authorizing information is recorded through the user interface of the electronic device from at least one of set including: a plurality of button-press actions; a swipe gesture received at a touch sensor of the electronic device; a key press sequence received at the touch sensor; a passcode sequence received at the buttons; a plurality of swipe gestures received at a touch sensor of the electronic device; a key press PIN sequence received at the touch sensor; a passcode sequence received at the touch sensor; an accelerometer sensor indicating a user motion of the electronic device; an action and sequence of motions of the electronic device as performed by a user; an action of the user to move the electronic device into a specific orientation; a biometric sensor confirming the electronic device is in a grip of the user; and a biometric sensor confirming the electronic device has remained in the possession of the user from activation to transaction	20
The method of claim 18, wherein the limited-use number dynamically generated in the device is based on cryptographically combining data selected from the group consisting of an ATM information, the locality of an ATM reader facility, information regarding the facility performing the transaction, bank information, a time of day, a date, a transaction amount, a count of past transactions, a sequence count, a historical record of transactions, a merchant account, a user's location, an online address, a device-internal secret, a device unique identifier, a payment authority key, a	22

Claim Terms	Claim(s)
payment issuer authority secret, a method and direction of payment, deposit, transfer and receipt, a cryptocurrency server, a cryptocurrency type, a cryptocurrency private key, a cryptocurrency public key, a cryptocurrency address, a touch gesture, a biometrically sensed user information, a user's private information, a user key, a user email, password, passcode, a PIN, a user secret, and a user input	
The method of claim of 18, wherein the payment information comprises combining a plurality of static portions, and a plurality of dynamically generated limited-use portions, and wherein the static portion is a token account number with a limited-duration expiration date, to be used in place of issuer provided information	23

4. Ineligible Subject Matter under 35 U.S.C. § 101

Each Asserted Claim of the '520 patent is directed to ineligible subject matter under 35 U.S.C. § 101. Specifically, the Asserted Claims are fatally abstract under the U.S. Supreme Court's decision in *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2345 (2014) and progeny.

In *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014), the Supreme Court established a two-part test for determining whether a claim recites patent-eligible subject matter. First, the court must determine whether the claims at issue are directed to any of the following patentable ineligible subject matter: laws of nature, natural phenomena, or abstract ideas. *Id.* at 2355. Second, if the claims are directed to ineligible subject matter, the court must then consider the claim elements—both individually and as an ordered combination—to determine whether they add an "inventive concept." *Id.* Merely claiming a generic "computer" to implement an abstract idea is not sufficient to transform the computer into a patent-eligible invention. *Id.* at 2357-50. Software claims may be abstract if "[t]hey do not claim a particular way of programming [to accomplish the claimed functionality], but instead merely claim the resulting systems" or if they "are not directed to a specific improvement in the way computers operate." *Apple Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1241 (Fed. Cir. 2016). "[M]erely presenting the

results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation), is abstract as an ancillary part of such collection and analysis." *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016).

The Asserted Claims of the '520 patent are directed to the abstract idea of facilitating secure payment transactions by, *e.g.*, storing, displaying, analyzing, generating, and transmitting payment information, using generic and conventional computer components. For example, claim 1 recites "an electronic device" comprising a "near-field communication (NFC) unit," "a touch sensor array," "a display," "a motion rate detection array," "a memory," "a processor," and "a computer readable medium having instructions stored thereon that, responsive to execution by the electronic device, cause the electronic device to perform operations" including "accepting a user input of issued payments information," "wirelessly receiving a static device account number payment information," "dynamically-generating a one-time limited-use numbers," and "using said static device account number and said dynamically generated one-time limited-use number together … for making a payment transaction." '520 patent at claim 1; *see also* claims 10, 18. Although the claims are directed to the use of "limited-use number" in place of a provider (e.g., bank) issued payment number, the patent discloses no formulas or algorithms for how to generate the limited-use number, nor does the patent include any limitation or explanation that would render the claims non-abstract. The dependent claims do not add anything that would remove the claims from the realm of abstract ideas. For example, the dependent claims require generic components to determine proximity between electronic devices (claims 2, 3); accepting a user input (claims 4, 11, 15, 16, 17); maintaining a sequence counter and combining the count with other information (claim 5); limiting the recurrence and scope of the limited-use payment information (claim 6); displaying specific transaction information on the display (claim 7); using

a cryptographic hash (claim 8); using a USB connector (claim 9); storing device-specific information (claims 12, 13); displaying specific payment information on the display (claim 14); generating identification and authorization information (claim 19); recording identification and authorization information through a user interface (claim 20); or using specific information to generate limited-use number (claims 22, 23).

Under *Alice* Step 1, those ideas are abstract, as they relate to a fundamental long-prevalent practice. *See, e.g., Universal Secure Registry v. Apple, Inc.*, 10 F.4th 1342, 1349 (Fed. Cir. 2021) (holding as abstract claims directed to "enabl[ing] a transaction between a user and a merchant, where the merchant is given a time-varying code instead of the user's secure (credit card) information" thereby allowing for the "purchasing [of] goods or services without revealing personal financial information to a merchant…"); *Prism Techs. LLC v. T-Mobile USA, Inc.*, 696 F.App'x 1014, 1016 (Fed. Cir. 2017) (holding as abstract claims directed to "receiving" identity data of a client computer, "authenticating" the identity of the data, "authorizing" the client computer and "permitting" access to the client computer). Limiting the invention to a particular technological environment, e.g., generic computer hardware, "do[es] not render an otherwise abstract concept any less abstract." *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340 (Fed Cir. 2017).

Furthermore, under *Alice* Step 2 the Asserted Claims do not contain any inventive concept. The Asserted Claims employ well-known components or functionality (as shown in Apple's invalidity contentions involving anticipation and/or obviousness in this case), which is not enough to impart patent eligibility of an abstract idea. *See, e.g., Alice,* 134 S. Ct. at 2359 (holding that limitations describing "'well-understood, routine, conventional activit[ies]' previously known to the industry" were insufficient to supply an inventive concept (quoting

Mayo, 132 S. Ct. at 1294)). For example, the Asserted Claims are directed to components that comprise generic hardware such as "a near-field communication (NFC) unit," "a touch sensor array," "a display," "a memory," "a processor," and "a computer readable medium," and claim generic wireless communications between components. Moreover, the lack of written description for numerous claim elements and minimal disclosure in the specification of many claimed components and functions further demonstrates the Asserted Claims rely on conventional components and features.

Apple reserves the right to supplement these disclosures based on further investigation and discovery.

III. U.S. PATENT NO. 10,628,820

A. Priority Date

Despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of the '820 patent is entitled to a priority date earlier than the filing date of the patent, *i.e.* July 2, 2018.

CardWare contends that every asserted claim is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application No. 61/794,891 (the "'891 provisional"). CardWare Preliminary Infringement Contentions (February 10, 2025) at Section II. However, CardWare provides no evidence or analysis to demonstrate that the asserted claims of the '820 patent are entitled to the priority date of the '891 provisional application. In this regard, a patent claim is entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides both written description support and an enabling disclosure for the patent claim as required by 35 U.S.C. § 112, ¶ 1. CardWare provides no such showing.

Nor has Cardware demonstrated that the asserted claims are entitled to the priority date of the earlier filed applications listed on the face of the patent. The '820 patent purports to be one of a chain of continuations to the U.S. Patent No. 9,022,286 (the "'286 parent patent"), filed on March 17, 2014. However, the '820 patent includes new matter not disclosed in the '286 parent patent (or any of the other patents in the chain of continuations listed on the fact of the '820 patent), including at least Figs. 8A-8B and 9-12. These Figures do not represent the purported invention, but rather are clear graphical depictions of Apple products, such as the Apple iPhone, Apple Watch, and Apple Card publicly available prior to the issuance of the '820 patent, with the iconic Apple logo replaced with a depiction of another fruit (e.g. a banana or strawberry). *See* '820 patent at Figs. 8A-8B and 9-12; *see also* https://www.apple.com/newsroom/2019/03/introducing-apple-card-a-new-kind-of-credit-card-created-by-apple/ (announcing release of Apple Card in March 2019); https://www.apple.com/newsroom/2014/09/09Apple-Unveils-Apple-Watch-Apples-Most-Personal-Device-Ever/ (announcing release of Apple Watch in September, 2014); https://www.apple.com/newsroom/2014/09/09Apple-Announces-iPhone-6-iPhone-6-Plus-The-Biggest-Advancements-in-iPhone-History/ (announcing release of Apple iPhone with Apple Pay in September 2014). The '820 patent was therefore incorrectly filed as a continuation and should have been filed as a continuation in part. And, CardWare provides no evidence or analysis demonstrating that the asserted claims of the '820 patent are entitled to the priority date of any of the applications to which the '820 patent claims priority.

CardWare has not alleged that the asserted claims of the '820 patent are entitled to a priority date earlier than the March 15, 2013 filing date of the '891 Provisional application. Although CardWare produced a handful of documents, which appear to be related to conception

and/or reduction to practice, CardWare's document production to date fails to demonstrate that the asserted claims of the '820 patent were conceived and/or diligently reduced to practice prior to the filing of the '820 patent. Apple expressly reserves the right to amend its contentions if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice.

B. Relevant Prior Art

Apple contends that the prior art references identified in Apple's contentions anticipate and/or render obvious the Asserted Claims. Below, Apple lists some of the prior art cited in these contentions:

1. Patents and Patent Application Publications

Patent or Pub. No.	Filing Date	Publication/Issue Date
EP 0 949 595 A2	March 26, 1999	Oct. 13, 1999
EP 1 004 992 A2	March 24, 1998	May 31, 2000
EP 1 223 565 A1	Jan. 12, 2001	July 17, 2002
EP 2 302 882 A1	Sept. 24, 2009	March 30, 2011
EP 2 407 919 A1	March 30, 2007	Jan. 18, 2012
JP 2004-13728		Jan. 15, 2004
KR 20110039946A	Oct. 13, 2009	April 20, 2011
KR 20120076502A	Nov. 27, 2010	July 9, 2012
US 5,744,787	Sept. 25, 1995	April 28, 1998
US 5,883,810	Sept. 24, 1997	March 16, 1999
US 5,963,924	April 26, 1996	Oct. 5, 1999
US 6,005,942	March 24, 1998	Dec. 21, 1999
US 6,076,075	March 30, 1998	June 13, 2000
US 6,105,008	April 30, 1998	Aug. 15, 2000
US 6,119,946	March 3, 1998	Sept. 19, 2000
US 6,233,683	March 24, 1998	May 15, 2001
US 6,282,522 B1	Oct. 16, 1997	Aug. 28, 2001
US 6,330,978 B1	April 27, 1998	Dec. 18, 2001
US 6,450,407 B1	April 21, 2000	Sept. 17, 2002
US 6,481,632 B2	Oct. 26, 1999	Nov. 19, 2002
US 6,748,367 B1	Sept. 21, 2000	June 8, 2004
US 6,776,332 B2	Dec. 26, 2002	Aug. 17, 2004
US 7,127,236 B2	Dec. 18, 2002	Oct. 24, 2006
US 7,177,848 B2	June 22, 2001	Feb. 13, 2007

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 7,725,369 B2	Jan. 23, 2009	May 25, 2010
US 7,908,216 B1	July 22, 1999	March 15, 2011
US 8,095,113 B2	Feb. 4, 2009	Jan. 10, 2012
US 8,255,323 B1	Jan. 9, 2009	Aug. 28, 2012
US 8,930,274 B1	Dec. 18, 2013	Jan. 6, 2015
US 9,008,616 B2	Dec. 9, 2011	April 14, 2015
US 9,600,808 B1	June 22, 2012	March 21, 2017
US 9,721,319 B2	March 28, 2012	Aug. 1, 2017
US 9,898,728 B2	April 16, 2012	Feb. 20, 2018
US 10,121,144 B2	Sept. 2, 2014	Nov. 6, 2018
US 10,380,573 B2	Sept. 30, 2008	Aug. 13, 2019
US 10,445,723 B2	May 14, 2013	Oct. 15, 2019
US 10,510,056 B2	Nov. 2, 2011	Dec. 17, 2019
US 11,042,846 B2	Sept. 2, 2014	June 22, 2021
US 11,068,875 B2	Sept. 30, 2014	July 20, 2021
US 11,392,937 B2	Sept. 2, 2014	July 19, 2022
US 2003/0222152 A1	May 28, 2003	Dec. 4, 2003
US 2004/0127256 A1	July 23, 2003	July 1, 2004
US 2007/0095892 A1	Oct. 27, 2005	May 3, 2007
US 2008/0040285 A1	Feb. 16, 2007	Feb. 14, 2008
US 2009/0030845 A1	June 25, 2008	Jan. 29, 2009
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2005/0043997 A1	Aug. 18, 2003	Feb. 24, 2005
US 2005/0252961 A1	May 13, 2004	Nov. 17, 2005
US 2007/0045403 A1	Aug. 31, 2005	March 1, 2007
US 2007/0114274 A1	Nov. 21, 2006	May 24, 2007
US 2007/0208671 A1	Dec. 30, 2006	Sept. 6, 2007
US 2007/0244811 A1	March 30, 2007	Oct. 18, 2007
US 2008/0078831 A1	Sept. 29, 2006	April 3, 2008
US 2008/0222047 A1	July 27, 2007	Sept. 11, 2008
US 2008/0275779 A1	Feb. 7, 2008	Nov. 6, 2008
US 2009/0070272 A1	Sept. 11, 2008	March 12, 2009
US 2009/0144161 A1	Nov. 30, 2007	June 4, 2009
US 2009/0200371 A1	Feb. 4, 2009	Aug. 13, 2009
US 2009/0210308A1	Feb. 15, 2008	Aug. 20, 2009
US 2009/0276347 A1	May 1, 2009	Nov. 5, 2009
US 2009/0291634 A1	April 24, 2006	Nov. 26, 2009
US 2010/0078471 A1	Sept. 30, 2008	April 1, 2010
US 2010/0078472 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082481 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082490 A1	Sept. 30, 2008	April 1, 2010
US 2010/0088227 A1	Nov. 16, 2007	April 8, 2010
US 2010/0125508 A1	Nov. 17, 2009	May 20, 2010

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 2010/0125509 A1	June 1, 2009	May 20, 2010
US 2010/0127083 A1	Nov. 26, 2008	May 27, 2010
US 2011/0010277 A1	July 9, 2009	Jan. 13, 2011
US 2011/0022472 A1	Feb. 25, 2010	Jan. 27, 2011
US 2011/0078031 A1	Sept. 30, 2009	March 31, 2011
US 2011/0082772 A1	Nov. 12, 2009	April 7, 2011
US 2011/0101093 A1	Feb. 18, 2010	May 5, 2011
US 2011/0112918 A1	Oct. 29, 2010	May 12, 2011
US 2011/0140841 A1	Aug. 19, 2009	June 16, 2011
US 2011/0153498A1	Dec. 7, 2010	June 23, 2011
US 2011/0173060 A1	Jan. 10, 2011	July 14, 2011
US 2011/0173121 A1	March 28, 2011	July 14, 2011
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2011/0191161 A1	Jan. 31, 2011	Aug. 4, 2011
US 2011/0191177 A1	Jan. 25, 2011	Aug. 4, 2011
US 2011/0238573 A1	March 15, 2011	Sept. 29, 2011
US 2012/0116902 A1	March 11, 2011	May 10, 2012
US 2012/0116976 A1	Jan. 10, 2012	May 10, 2012
US 2012/0143754 A1	Dec. 5, 2011	June 7, 2012
US 2012/0150687 A1	Dec. 13, 2011	June 14, 2012
US 2012/0191612 A1	April 3, 2012	July 26, 2012
US 2012/0191615 A1	Jan. 27, 2012	July 26, 2012
US 2012/0205443 A1	April 3, 2012	Aug. 16, 2012
US 2012/0310760 A1	Sept. 1, 2011	Dec. 6, 2012
US 2013/0013499 A1	July 5, 2012	Jan. 10, 2013
US 2013/0024371 A1	Sept. 27, 2012	Jan. 24, 2013
US 2013/0085941 A1	Sept. 30, 2011	April 4, 2013
US 2013/0159186 A1	April 16, 2012	June 20, 2013
US 2013/0166441 A1	Dec. 21, 2012	June 27, 2013
US 2013/0232083 A1	March 1, 2013	Sept. 5, 2013
US 2013/0262317 A1	March 14, 2013	Oct. 3, 2013
US 2013/0297509 A1	May 6, 2013	Nov. 7, 2013
US 2014/0229375 A1	Feb. 11, 2013	Aug. 14, 2014
US 2014/0344153 A1	May 15, 2014	Nov. 20, 2014
US 2015/0058191 A1	Nov. 27, 2013	Feb. 26, 2015
US 2015/0073983 A1	Nov. 12, 2014	March 12, 2015
US 2015/0178724 A1	Dec. 19, 2014	June 25, 2015
US 2015/0180836A1	Dec. 19, 2014	June 25, 2015
US 2015/0348002 A1	Sept. 30, 2014	Dec. 3, 2015
US 2016/0042356 A1	Aug. 11, 2014	Feb. 11, 2016
US 2016/0057619 A1	Aug 24, 2015	Feb. 25, 2016
US 2016/0253669 A1	Feb. 26, 2016	Sept. 1, 2016
US 2016/0275505 A1	March 17, 2015	Sept. 22, 2016

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 2016/0321653 A1	April 29, 2016	Nov. 3, 2016
WO 2010/037218 A1	Sept. 29, 2009	April 8, 2010
WO 2010/039337 A2	Aug. 11, 2009	April 8, 2010
WO 2012/011054 A1	July 19, 2011	Jan. 26, 2012
WO 2012/154915 A1	May 10, 2012	Nov. 15, 2012
WO 2013/155627 A1	April 16, 2013	Oct. 24, 2013
Patent Application 61/899,734	Nov. 4, 2013	
Patent Application 61/905,035	Nov. 15, 2013	
Patent Application 61/921,688	Dec. 30, 2013	

2. Printed Publications

Title	Author/Publisher	Date
"A Primer to the Implementation of Smrt Card Management and Related Systems," Version 1.0	GlobalPlatform	Aug. 2000
About Us | Venmo	Venmo.com	2012
"An Introduction to Java Card Technology – Part 1"	C. Enrique Ortiz Sun Developer Network	May 29, 2003
"An Introduction to Java Card Technology – Part 2, The Java Card Applet"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Introduction to Java Card Technology – Part 3, The Smart Card Host Application"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Investigation into Electronic Commerce Frauds and their Security Implications"	Kevin Boardman	Nov. 7, 2004
Apple Press Release: "Apple Announces Apple Pay"	Apple	Sept. 9, 2014
Card on File Tokenization | Mastercard Developers	Mastercard.com	
"Contactless Payment Security Questions & Answers"	Smart Card Alliance, Inc.	2016
E-ink on Credit Cards will do Away with PINs (video)	The Digital Reader	Sept. 2, 2011
Emue – a Revolution in Authentication	EMUE	May 13, 2009
"EMV Card Personalization Specification," Version 1.0	EMVCo, LLC	June 2003
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 1, Application Independent ICC to Terminal Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011

Title	Author/Publisher	Date
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.3	EMVCo, LLC	Nov 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.3	EMVCo, LLC	Nov. 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 4, Cardholder, Attendant, and Acquirer Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011
For Businesses: Payment Technologies – Products & Platforms	Visa	2004
For Businesses: Payment Technologies – Visa Cash	Visa	2004
For Businesses: Payment Technologies – Visa Smart debit and Visa Smart Credit	Visa	2004
GlobalPlatform: a Dynamic and Secure	Marc Kekiheff GlobalPlatform	
GlobalPlatform Card Security Requirements Specification	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Card Specification Tutorial	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Technical Overview	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform – Global Consensus for a Connected Planet	GlobalPlatform	
GlobalPlatform – Implementations – Financial	GlobalPlatform	2006
GlobalPlatform – Implementations – Mobile Telecom	GlobalPlatform	2006
GlobalPlatform – Implementations – Retail	GlobalPlatform	2006
GlobalPlatform – Implementations – Transit	GlobalPlatform	2006
GlobalPlatform – Interoperability and Security with GlobalPlatform	March Kekicheff, GlobalPlatform	Feb. 2, 2004
GlobalPlatform – Introduction to GlobalPlatform Technology	GlobalPlatform	
GlobalPlatform – Overview	GlobalPlatform	June 2004
GlobalPlatform – The Cross-Industry Approach to Smart Card Standards	GlobalPlatform	2000

Title	Author/Publisher	Date
GlobalPlatform – The Platform for a Multi-application Environment	March Kekicheff, GlobalPlatform	April 2005
GlobalPlatform – Towards the Next Generation of GlobalPlatform Specifications	Pierre-Francois Solere, GLobalPlatform	
GlobalPlatform Specifications: The Solution for an Emerging Market	GlobalPlatform	
GlobalPlatform Specifications Archive – Technology Document Library	GlobalPlatform	2024
GlobalPlatform: a Dynamic and Secure Pre and Post Issuance Solution – Cartes 2002	Marc Kekiheff GlobalPlatform	2002
Google Wallet and the New Retail Ecosystem	David W. Schropfer	Oct. 3, 2011
Government Smart Card Handbook	GSA	Feb. 2004
Government Smart Card Handbook	GSA	Feb. 2004
Implementing Electronic Card Payment Systems	Cristian Radu	2003
"Interoperability in Electronic Payments: Lessons and Opportunities"	Carol Coye Benson CGAP	2012
"Investigating Mobile Payment: Supporting Technologies, Methods, and Use"	Valcourt, et al.; IEEE	2005
"Java Card™ 2.2 Off-Card Verifier" White Paper	Sun Microsystems	June 2002
Java Card for ePayment Applications	Vesna. Hassler	2002
"Java Card™ Platform Security" Technical White Paper	Sun Microsystems	2001
Java Card Platform: A Week in the Life of Jack Link	Sun Microsystems	2004
Java Card Questions and Answers with Zhiqun Chen	Ed Ort Sun Microsystems	Oct. 2000
Java Card Technology Datasheet	Sun Microsystems	2005
Java Card Technology Examples	Sun Microsystems	2004
Java Card Technology FAQs	Sun Microsystems	2005
Java Card Technology for Smart Cards: Architecture and Programmer's Guide	Zhiqun Chen	2000
Java Card Technology for Smart Cards: Architecture and Programmer's Guide Book information	Zhiqun Chen Sun Microsystems	Sept. 18, 2000
"Java Card Technology Overview," Chapter 3		
Java Card1_Fig-3	Sun.com	2005
Java Card1_Fig-4	Sun.com	2005
Java Card1_Fig-5	Sun.com	2006
Java Card1_Fig-7	Sun.com	2004
Java Card1_Fig-9	Sun.com	2004
Java Card1_Fig-12	Sun.com	2006

Title	Author/Publisher	Date
Java on Smart Cards: Programming and Security: First International Workshop, JavaCard 2000		2000
JavaCard – From Hyper to Reality	Michael Baentsch IEEE	1999
JavaCard – Redistribution and Use in Source and Binary Forms License	Sun Microsystems	2004
JCOP V2.4.1 Secure Smart Card Controller, Rev. 3.2	NXP	Sept. 2, 2009
JCOP20 Technical Brief, Revision 2.3	IBM	
JCOP30 Technical Brief, Revision 2.3		
MagTek CEO: "Dynamic Data is the Core of Security" [Transcript]	David Evans Pymnts	March 8, 2012
MagTek Launches QwickPAY, the Innovative Secure Mobile Payments Service, Into the Android Marketplace	Magtek	March 29, 2011
MagTek Introduces Qwick Code Mobile Wallet		Jan. 15, 2012
Mastercard Virtual Card Tokens	Mastercard	March 7, 2025
MDES Token Connect | Mastercard Developers	Mastercard	
Mobile Payment Services in South Africa	Matthias Beland	Jan. 31, 2013
NXP – News Center – Infocus Archive	NXP	2006
One-Click Payments by 2030 With Tokenization	Jorn Lambert Mastercard	March 12, 2025
PCI Data Security Standard (PCI DSS), Version 2.0	Scoping SIG, Tokenization Taskforce PCI Security Standards Council	Aug. 2011
PCI – Payment Card Industry (PCI) Data Security Standard, Version 2.0	PCI	Oct. 2010
PHB Development, Kurt Salmon, "Mobile Payments … a 'Southern' Revolution!"	PHB Development	2011
Qwick Codes Mobile Wallet for IOS	CNET	
"Radio-Frequency Identification (RFID): A Focus on Information Security and Privacy," OECD Digital Economy Papers, No. 138	OECD Publishing	Jan. 14, 2008
"SE vs. HCE: What is More Secure for NFC Mobile Payments?"	Finextra	Oct. 17, 2014
Techie Visa Card Features Buttons and Screen to Generate CCV Dynamically	Mark Wilson	Nov. 11, 2008
The Complete Guide to Payments Tokenization		
The Rise of Async Work [Podcast] – Fast Company	Loom Atlassian	Feb. 10, 2025
Venmo, Just Say "Venmo Me"	Venmo	2021

Title	Author/Publisher	Date
Venmo – Wikipedia	Wikipedia	
Visa and Emue Technologies deploy cards with built-in one-time password generator	Finextra	Feb. 9, 2009
Visa Best Practices for Tokenization Version 1.0	Visa Best Practices	July 14, 2010
Visa CodeSure Gets Commercial Green Light	Finextra	June 2, 2010
Visa Invests in Authentication Outfit Emue	Finextra	Nov. 18, 2009
Visa Token Service Momentum, Annual Update 2022	Visa	2022
Visa Token Service – Product Fact Sheet	Visa	2022
Visa Token Service – Visa	Visa	2025
What is Venmo, how does it work, and is it safe to use?	Ben Luthi Yahoo Finance	May 31, 2024
What is Venmo? – NerdWallet	Chanelle Bessette NerdWallet	June 24, 2024
What is Venmo: How it Works	Nicole Symon Money	May 18, 2023
Qwick Codes Demo video		
Wi Wallet Mobile Payments video		
Visa Pin System 2 Credit Cards video		
Smart Dongle Credit Card With e-ink Display video		
Credit Card with E-ink Display Keep You Safe While Online Shopping video		
Mastercard Token Authentication Service lets Shoppers Create Passkeys for Secure Authentication video		
Mastercard Tokenization video		

3. Prior Art Systems

The table below lists prior art systems and products identified that reveal the state of the art and/or render the Asserted Claims invalid under pre- or post-AIA 35 U.S.C. §§ 102 and/or 103. Some or all of the supporting references for these systems may also qualify as prior art publications under 35 U.S.C. § 102 and may be used as invalidating prior art under 35 U.S.C. §§ 102 and 103. In particular, the manuals for these products, patents filed to cover these products, and any other publicly available information.

Each of the prior art systems were publicly known or used or offered for sale prior to the critical date of the '820 patent, as described in each system's respective claim chart. Apple continues to investigate the systems and products and reserves the right to supplement the contentions and accompanying claim charts after further discovery and investigation. Apple also reserves the right to rely on fact or expert witness testimony to establish the public knowledge, use, availability, sale, or offer for sale of any systems described below. Although additional information and prior art systems may be obtained through discovery, such prior art systems include at least the following:

Prior Art System	Person/Entity	Date
Apple Pay	Apple	At least as early as 2012
Google Wallet	Google	At least as early as September 20, 2011
Venmo	Venmo	At least as early as 2009
Visa Payment Tokens	Visa	At least as early as July 2010
Mastercard Payment Tokens	Mastercard	At least as early as 2013
Qwick Codes Mobile Wallet	Magtek	At least as early as October 2012
wiWallet	wiWallet Mobile Payments (Pty) Ltd.	At least as early as July 08, 2010
emue Smart Card	emue	At least as early as February 11, 2010
Smart Dongle Credit Card	E-ink	At least as early as November 11, 2011
VivoTech systems	VivoTech	At least as early as 2005
Square Systems	Square	At least as early as 2009
Starbucks Mobile Application	Starbucks	At least as early as 2009
PayPal and PayPal Mobile	PayPal	At least as early as 2006
Venmo	Venmo	At least as early as 2010
Cake POS and payment systems	Cake Corp.	At least as early as 2013
Toast POS and payment systems	Toast, Inc.	At least as early as 2012
MiFare	Philips	At least as early as 2004
SmartMX	Philips	At least as early as 2004
JCOP OS	Philips/NXP	At least as early as 2004
Global Platform	GlobalPlatform	At least as early as 2004
JavaCard	Sun Microsystems	At least as early as 2004
LevelUp	SCVNGR dba LevelUp	At least as early as 2011

C. Anticipation and Obviousness

1. Non-limiting Claim Elements

The asserted claims of the '820 patent include numerous limitations that have no functional or structural relationship to the claimed payment system and thus do not affect the scope of the claims. For example, at least the limitations listed below are directed to printed matter and thus entitled to no patentable weight:

- "having no fixed payment numbers disposed thereon" ('820 patent, claim 1)
- "wherein the fixed payment information includes only: a card-holder name; a payment issuing logo; and a card payment network logo" ('820 patent, claim 2)
- "wherein, further, the body is free of any account numbers, expiration dates, card security codes, or other fixed payment numbers, disposed thereon" ('820 patent, claim 2)
- "comprising no fixed payment numbers visible thereon" ('820 patent, claim 11)
- "bears no fixed payment numbers, and bears only: the cardholders name; a brand logo; and the card payment network logo" ('820 patent, claim 12)
- "bears no fixed payment numbers on the card device" ('820 patent, claim 15)
- "bears no fixed payment numbers, and bears only: the cardholders name; a brand logo; and the card payment network logo" ('820 patent, claim 16)

The Federal Circuit has repeatedly held that limitations directed to printed matter, such as those listed above, are not entitled to patentable weight. *See, e.g., CR Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020) ("[P]rinted matter encompasses any information claimed for its communicative content, and the doctrine prohibits patenting such printed matter unless it is 'functionally related' to its 'substrate' which encompasses the

structural elements of the claimed invention."); *Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prop. IP Ltd.*, 890 F.3d 1024, 1031 (Fed. Cir. 2018) ("Claim limitations directed to printed matter are not entitled to patentable weight unless the printed matter is functionally related to the substrate on which the printed matter is applied."); *In re Distefano*, 808 F.3d 845, 848 (Fed. Cir. 2015) ("[I]f a limitation claims (a) printed matter that (b) is not functionally or structurally related to the physical substrate holding the printed matter, it does not lend any patentable weight to the patentability analysis.").

2. Claim Charts

Apple attaches Exhibits 820-1 to 820-17, which provide exemplary disclosures showing how the prior art anticipates and/or renders obvious the asserted claims of the '820 patent. Apple also attaches Exhibit 820-103, which provides exemplary disclosures in secondary references to combine with the prior art identified in these contentions to render obvious the asserted claims of the '820 patent. Apple may rely on any of the primary references identified in Exhibits 820-1 to 820-17 in combination with any secondary reference identified in those exhibits, in Exhibit 820-103, or in this cover pleading. The table below identifies the primary reference addressed in each of Exhibits 820-1 to 820-17, each of which describes anticipation and/or obviousness of one or more claims of the '820 patent:

Exhibit	Prior Art Reference
820-1	U.S. Pub. No. 2008/0302876 ("Mullen '876")
820-2	U.S. Pub. No. 2008/0222047 ("Boalt '047")
820-3	U.S. Patent No. 9,600,808 ("Gomez '808")
820-4	U.S. Pub. No. 2007/0208671 ("Brown '671")
820-5	U.S. Pub. No. 2010/0127083 ("Brown '083")
820-6	"A Guide to EMV" ("EMV Guide")
820-7	U.S. Pub. No. 2013/0232083 ("Smith '083")
820-8	U.S. Pub. No. 2013/0262317 ("Collinge '317")
820-9	U.S. Pub. No. 2012/0150687 ("Hart '687")
820-10	U.S. Pub No. 2010/0088227 ("Belament '227")
820-11	U.S. Patent No. 7,177,848 ("Hogan '848")

Exhibit	Prior Art Reference
820-12	U.S. Pub. No. 2007/0114274 ("Gibbs '274")
820-13	U.S. Patent Pub. No. 2008/0319905 ("Carlson '905")
820-14	U.S. Patent Pub. No. 2013/0124410 ("Kay '410")
820-15	U.S. Patent Pub. No. 2010/0082481 ("Lin '481")
820-16	U.S. Patent Pub. No. 2006/0122931 ("Walker '931")
820-17	Apple Pay Products ("Apple Pay")

The U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id*. at 1732, 1738, 1742–1743, 1746. A patent claim may be obvious if the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id*. at 1740. The Court stated that courts should "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id*. at 1740–41. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See TGIP, Inc. v. AT&T Corp*., 527 F. Supp. 2d 561, 580–81 (E.D. Tex. 2007). "[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ" to resolve the question of obviousness. *KSR*, 127 S. Ct. at 1741.

Based on all of these considerations, as further detailed in Exhibits 820-1 to 820-17 and 820-103, a POSITA would have combined the teachings of the prior art references discussed and

charted in those exhibits. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the asserted claims of the '820 patent. The references identified in Exhibits 820-1 to 820-17 and 820-103 are analogous prior art to the subject matter of the asserted claims and, for at least the reasons set forth below, are properly combinable. Because these prior art references exist within a single field of art, particularly one in which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the '820 patent.

By way of example only, the following combinations render obvious claims 1, 2, 4, 10-20 of the '820 patent:

- Mullen '876 in combination with one or more of Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Boalt '047 in combination with one or more of Mullen '876, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Gomez '808 in combination with one or more of Mullen '876, Boalt '047, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Brown '671 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Brown '083 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament

'227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- EMV Guide in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Smith '083 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Collinge '317 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Hart '687 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Belament '227 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Hogan '848 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament '227, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Gibbs '274 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Carlson '905 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Kay '410 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Lin '481 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Walker '931, Apple Pay and/or Secondary References in Ex. 820-103.

- Walker '931 in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Apple Pay and/or Secondary References in Ex. 820-103.

- Apple Pay in combination with one or more of Mullen '876, Boalt '047, Gomez '808, Brown '671, Brown '083, EMV Guide, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931 and/or Secondary References in Ex. 820-103.

Numerous prior art references, including those identified in the attached exhibits, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the '820 patent. As it would be unduly burdensome to create detailed claim charts for all of the invalidating combinations, for at least the reasons described in these invalidity contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in the attached exhibits, to meet the limitations of the asserted claims of the '820 patent. Apple's inclusion of exemplary combinations, in view of the factors and motivations identified here, does not preclude Apple from identifying other invalidating combinations and/or motivations as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, because each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1739–40 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person

of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 1742. Nevertheless, in addition to the information contained herein, Apple hereby identifies additional motivations and reasons to combine the cited art.

One or more combinations of the prior art references identified herein would have been obvious because these references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to combine the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market forces either in the same field or a different one. In addition, the combinations of the prior art references identified above would have been obvious because the combinations represent the known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation or reason to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution; the existence of a known need or problem in the field of endeavor at the time of the invention; and the background knowledge that would have been possessed by a person having ordinary skill in the art. For example, the prior art references are generally directed to the same problems. Thus, a skilled artisan seeking to solve these problems would look to these cited references in combination.

Thus, the motivation or reason to combine the teachings of the prior art references disclosed herein is found in the references themselves and in: (1) the nature of the problems being solved; (2) the express, implied, and inherent teachings of the prior art; (3) the knowledge of a POSITA; (4) the fact that the prior art is generally directed towards the same problems; and/or (5) the predictable results obtained in combining the different elements of the prior art; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Apple incorporates by reference prior art from the prosecution histories and background sections of the '820 patent. Apple expects to rely on the testimony of one or more expert witnesses and documents referenced by those expert witnesses in support of these contentions and incorporate those forthcoming expert reports as if fully set forth herein.

Apple contends that there are no secondary considerations of non-obviousness evidencing the validity of any of the asserted claims. Secondary considerations of non-obviousness, also referred to as objective indicia of non-obviousness, "can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans before the invention." *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013). "A nexus between the merits of the claimed invention and evidence

of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision." *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists, secondary considerations of non-obviousness "simply cannot overcome [a] strong prima facie showing of obviousness." *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008). CardWare has not established the existence of any objective indicia of non-obviousness or secondary considerations. Apple reserves the right to supplement their contentions to respond to any such arguments or evidence should CardWare be permitted to raise them in the future. While discovery in this case is ongoing, and Apple's investigation continues (which will include expert discovery), to the extent CardWare contends that one or more asserted claims is not obvious based on secondary considerations recognized by relevant authority Apple contends such allegations are without merit. Apple reserves the right to supplement their contentions to respond to any such evidence should CardWare be permitted to raise it in the future.

D. <u>The Accused Products Predate the '820 Patent</u>

As discussed above, despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of any asserted patent is entitled to a priority date earlier than the respective filing dates of the asserted patents. CardWare contends that "every asserted claim of each asserted patent is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application no. 61/794,891." *See* February 10, 2025 Infringement Contentions at 2. Apple disagrees with CardWare's contention, and CardWare has failed to establish that any asserted patent is entitled to an earlier priority date.

The accused products were announced publicly on or around September 9, 2014. https://www.apple.com/newsroom/2014/09/09Apple-Announces-Apple-Pay/. The public announcement of Apple Pay predates the filing date of the '820 patent, *i.e.*, July 2, 2018, and

therefore, Apple Pay is prior art to the '820 patent. Apple Pay anticipates and/or renders obvious the asserted claims of the '820 patent. *See* Ex. 820-17.

To the extent CardWare is able to establish that any asserted claim is entitled to a March 15, 2013 priority date, then the accused products are nonetheless invalidating prior art at least under pre-AIA 35 U.S.C. § 102(g). Apple conceived of Apple Pay before the earliest invention date to which CardWare claims the asserted patents are entitled to priority. Apple exercised reasonable diligence from the time of its conception of Apple Pay and did not abandon, suppress, or conceal its invention. In the event any claim is entitled to a March 15, 2013 priority date, each limitation of that claim would be invalid under at least pre-AIA 35 U.S.C. § 102(g) for the same reasons CardWare claims that the accused products meet that limitation. *See* Ex. 820-17.

Apple expressly reserves the right to amend its contentions if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice. Apple expressly reserves the right to amend its contentions as discovery commences in this matter and additional relevant information and documentation relating to Apple's conception and reduction to practice of the accused products is uncovered.

E. <u>Other Invalidity Grounds</u>

Apple hereby identifies grounds of invalidity based on (1) lack of written description under 35 U.S.C. § 112; (2) lack of enablement under 35 U.S.C. § 112; (3) indefiniteness under 35 U.S.C. § 112; and (4) ineligible subject matter under 35 U.S.C. § 101. These contentions shall not be construed as an admission that any claim construction advanced by Apple in this case is in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Apple from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to CardWare's purported construction of the claim language or of other positions

advanced by CardWare during the course of this litigation. Apple's Invalidity Contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as CardWare's alleged scope of the asserted claims of the '820 patent. Consequently, Apple only identifies the issues under 35 U.S.C. § 112 of which they are presently aware.

1. Lack of Written Description under 35 U.S.C. § 112

The asserted claims are invalid under 35 U.S.C. § 112, because the '820 patent does not provide sufficient written description to establish that the alleged inventors were in possession of the full scope of the alleged inventions recited in the asserted claims at the time the '820 patent was filed. *See e.g. Ariad v. Lilly*, 598 F.3d 1336 (Fed. Cir. 2010) (en banc); *LizardTech Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005) (finding claims invalid under 35 U.S.C. § 112 where the specification failed to include a written description of the full scope of the claimed invention); *In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1320 (Fed. Cir. 2011) ("[W]hen analyzing whether a patent meets the written description requirement, one cannot 'bootstrap' the knowledge of a person of ordinary skill in the art ('POSITA') into the analysis and fill the gap in the disclosure through obviousness.").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of written description under 35 U.S.C. § 112, as the specification of the '820 patent does not demonstrate that the inventors were in possession of the claimed subject matter:

Claim Terms	Claim(s)
"thin shaped body having no fixed payment numbers disposed thereon"	1
"cryptographic processor"	1
"a reader interface including at least one interface selected from a set comprising: a magnetic stripe, a smart card reader interface, a mag-stripe inductor interface, an RF interface, an NFC interface and a wireless interface"	1
"wherein payment information is operable to be conveyed via the reader interface and comprises limited-use payment information, and wherein further the limited-use payment information is to be used in place of card	1

Claim Terms	Claim(s)
issuer payment information for payment transactions by said device at payment card reader facilities"	
"wherein the fixed payment information includes only: a card-holder name; a payment issuing logo; and a card payment issuing logo"	2
"wherein further the body is free of any account numbers, expiration dates, card security codes, or other fixed payment numbers, disposed thereon"	2
"wherein said limited-use payment information is provided by a card issuing authority for use by the payment device"	4
"the card processing authority rejects as invalid, any use of said limited-use payment information obtained via any means other than: a payment card reader reading said limited-use payment information from the reader interface"	4
"the processor cryptographically dynamically generates a one-time limited-use number based on combination of a card device transaction sequence count, and at least one of a set of information including: a user information; a user card account number; a device account number; device secret keys; card issuer keys; a time; a merchant; a location; an online address; a payment information; a card reader information; an account information; an amount; a transaction information; and a cryptographic combination of at least two of the above set of information, and wherein the processor increments the card device transaction sequence count on each transaction."	10
"an online payment system, the system comprising: a thin payment device…; and a personal computing device…"	11
"thin payment device comprising no fixed payment numbers visible thereon" / "a thin card-shaped payment card device that bears no fixed payment numbers on the card device"	11, 15
"wirelessly obtain card device payment account information" / "wherein card issuer provided payment card information is wirelessly downloaded into the computing device"	11, 15
"wherein the processor is operable to generate limited-use payment information based on the card device payment account information" / "wherein at least one of the set comprising: the computing device; and the card-shaped payment device, is configured to dynamically generate a limited-use payment information"	11, 15
"wherein the personal computing device is operable to generate complete payment information, including the limited-use payment information"	11
"wherein the personal computing device is operable… to convey said complete payment information via at least one interface of a set comprising: said display; and the wireless interface"	11
"wherein the limited-use payment information is configured to be used in place of a card issuer payment information." / "wherein the payment	11, 15

Claim Terms	Claim(s)
information provided by the computing device is used in online transactions in place of a card issuers payment card information"	
"the [thin payment/card] device bears no fixed payment numbers, and bears only: the cardholders name; a brand logo; and the card payment network logo"	12, 16
"wherein the personal computing device is configured for presenting on the display a limited-use card security code number for use in payments in place of card issuer payment information"	13
"wherein the personal computing device is further configured to generate said limited-use card security code responsive to an input request from a valid user, via said user-interface"	13
"wherein said limited-use number is generated on the personal computing device from at least one information from a set comprising: a payment device user information; a payment device account number; a payment device sequence counter; a payment device identifier; payment device secrets; a payment device key; computing device secrets; computing device keys; payment device issuer secrets; payment device issuer keys; a time; an expiration date; an amount; a merchant locality; an online location; a transaction information; and a cryptographic combination of at least two of the above"	13
"wherein the personal computing device is configured for presenting on the display, a limited-use card account number, and a limited-duration expiration date, for use in payments in place of a card issuer payment information"	14
"wherein said personal computing device is further configured to generate said limited-use card payment information responsive to an input request from a valid user"	14
"wherein the personal computing device conveys the limited-use payment information through the user interface"	14
"wherein the dynamically generated limited-use payment information is displayable on a display of the computing device"	17
"wherein the limited-use payment information includes a static limited-use card account number, a limited-duration card expiration date, and a limited-use card security code and, wherein the dynamically generated limited-use payment information is conveyed by the computing device to complete an online transaction."	18
"generate a limited-use card security code number, for use in place of a card issuers card security code by generating said limited-use number via cryptographically combining information from at least one of a set comprising: a user information; an internet address; an email address; a device transaction sequence counter; a device account number; device identifiers; device secrets; device keys; issuer secrets; issuer keys; a payment card account number; a payment card security code; a time; an	19

Claim Terms	Claim(s)
expiration date; an amount; a merchant locality; a transaction information; and a cryptographic combination of at least two of the above set,"	
"wherein the computing device is operable to display the generated limited-use card security code on the display"	19
"wherein the computing device is further operable to obtain a user payment approval through at least one user-interface element of the computing device, from a set comprising: a display interface, a touch-screen interface, a touch ID button, input buttons, a touch key-pad, a key-pad, a key-board, an optical sensor array, a motion detection unit, an accelerometer, the swiping of a recognized user skin over a device sensor array, a biometric sensor, a wireless interface, an NFC interface, an RF interface, a device biometric sensing the device is continuously remaining in contact with a valid user"	20
"wherein the computing device is operable to display at least one of a set comprising: the transaction information, the merchant information, the time, the location of the transaction, the payment bank logo, the card issuer icon, the payment card image, and the amount, on a display of the computing device" a user input providing for at least one user action from a set comprising: an approving of a transaction, a denying of a transaction, and an adjusting of a transaction, via the user-interface	20
"a user input providing for at least one user action from a set comprising: an approving of a transaction, a denying of a transaction, and an adjusting of a transaction, via the user-interface"	20

2. Lack of Enablement under 35 U.S.C. § 112(a)

The asserted claims are also invalid under 35 U.S.C. § 112, because the '820 patent does not enable one of ordinary skill in the art to make and/or use the full scope of certain recited elements of the asserted claims of the '820 patent without undue experimentation. *See, e.g.*, *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988) ("The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation."); *Trustees of Bos. Univ. v. Everlight Elecs. Co.*, 896 F.3d 1357, 1362 (Fed. Cir. 2018) ("to be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of enablement under 35 U.S.C. § 112, as the claims, specification, and prosecution histories would not enable one of skill in the art to practice the claimed invention(s) without undue experimentation:

Claim Terms	Claim(s)
"thin shaped body having no fixed payment numbers disposed thereon"	1
"cryptographic processor"	1
"a reader interface including at least one interface selected from a set comprising: a magnetic stripe, a smart card reader interface, a mag-stripe inductor interface, an RF interface, an NFC interface and a wireless interface"	1
"wherein payment information is operable to be conveyed via the reader interface and comprises limited-use payment information, and wherein further the limited-use payment information is to be used in place of card issuer payment information for payment transactions by said device at payment card reader facilities"	1
"wherein the fixed payment information includes only: a card-holder name; a payment issuing logo; and a card payment issuing logo"	2
"wherein further the body is free of any account numbers, expiration dates, card security codes, or other fixed payment numbers, disposed thereon"	2
"wherein said limited-use payment information is provided by a card issuing authority for use by the payment device"	4
"the card processing authority rejects as invalid, any use of said limited-use payment information obtained via any means other than: a payment card reader reading said limited-use payment information from the reader interface"	4
"the processor cryptographically dynamically generates a one-time limited-use number based on combination of a card device transaction sequence count, and at least one of a set of information including: a user information; a user card account number; a device account number; device secret keys; card issuer keys; a time; a merchant; a location; an online address; a payment information; a card reader information; an account information; an amount; a transaction information; and a cryptographic combination of at least two of the above set of information, and wherein the processor increments the card device transaction sequence count on each transaction."	10
"an online payment system, the system comprising: a thin payment device…; and a personal computing device…"	11

Claim Terms	Claim(s)
"thin payment device comprising no fixed payment numbers visible thereon" / "a thin card-shaped payment card device that bears no fixed payment numbers on the card device"	11, 15
"wirelessly obtain card device payment account information" / "wherein card issuer provided payment card information is wirelessly downloaded into the computing device"	11, 15
"wherein the processor is operable to generate limited-use payment information based on the card device payment account information" / "wherein at least one of the set comprising: the computing device; and the card-shaped payment device, is configured to dynamically generate a limited-use payment information"	11, 15
"wherein the personal computing device is operable to generate complete payment information, including the limited-use payment information"	11
"wherein the personal computing device is operable… to convey said complete payment information via at least one interface of a set comprising: said display; and the wireless interface"	11
"wherein the limited-use payment information is configured to be used in place of a card issuer payment information." / "wherein the payment information provided by the computing device is used in online transactions in place of a card issuers payment card information"	11, 15
"the [thin payment/card] device bears no fixed payment numbers, and bears only: the cardholders name; a brand logo; and the card payment network logo"	12, 16
"wherein the personal computing device is configured for presenting on the display a limited-use card security code number for use in payments in place of card issuer payment information"	13
"wherein the personal computing device is further configured to generate said limited-use card security code responsive to an input request from a valid user, via said user-interface"	13
"wherein said limited-use number is generated on the personal computing device from at least one information from a set comprising: a payment device user information; a payment device account number; a payment device sequence counter; a payment device identifier; payment device secrets; a payment device key; computing device secrets; computing device keys; payment device issuer secrets; payment device issuer keys; a time; an expiration date; an amount; a merchant locality; an online location; a transaction information; and a cryptographic combination of at least two of the above"	13
"wherein the personal computing device is configured for presenting on the display, a limited-use card account number, and a limited-duration expiration date, for use in payments in place of a card issuer payment information"	14

Claim Terms	Claim(s)
"wherein said personal computing device is further configured to generate said limited-use card payment information responsive to an input request from a valid user"	14
"wherein the personal computing device conveys the limited-use payment information through the user interface"	14
"wherein the dynamically generated limited-use payment information is displayable on a display of the computing device"	17
"wherein the limited-use payment information includes a static limited-use card account number, a limited-duration card expiration date, and a limited-use card security code and, wherein the dynamically generated limited-use payment information is conveyed by the computing device to complete an online transaction."	18
"generate a limited-use card security code number, for use in place of a card issuers card security code by generating said limited-use number via cryptographically combining information from at least one of a set comprising: a user information; an internet address; an email address; a device transaction sequence counter; a device account number; device identifiers; device secrets; device keys; issuer secrets; issuer keys; a payment card account number; a payment card security code; a time; an expiration date; an amount; a merchant locality; a transaction information; and a cryptographic combination of at least two of the above set,"	19
"wherein the computing device is operable to display the generated limited-use card security code on the display"	19
"wherein the computing device is further operable to obtain a user payment approval through at least one user-interface element of the computing device, from a set comprising: a display interface, a touch-screen interface, a touch ID button, input buttons, a touch key-pad, a key-pad, a key-board, an optical sensor array, a motion detection unit, an accelerometer, the swiping of a recognized user skin over a device sensor array, a biometric sensor, a wireless interface, an NFC interface, an RF interface, a device biometric sensing the device is continuously remaining in contact with a valid user"	20
"wherein the computing device is operable to display at least one of a set comprising: the transaction information, the merchant information, the time, the location of the transaction, the payment bank logo, the card issuer icon, the payment card image, and the amount, on a display of the computing device" a user input providing for at least one user action from a set comprising: an approving of a transaction, a denying of a transaction, and an adjusting of a transaction, via the user-interface	20
"a user input providing for at least one user action from a set comprising: an approving of a transaction, a denying of a transaction, and an adjusting of a transaction, via the user-interface"	20

3. Indefiniteness Pursuant to 35 U.S.C. § 112

The asserted claims of the '820 patent are also invalid because they fail to inform those skilled in the art about the scope of the alleged invention with reasonable certainty and are indefinite under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter the applicants regard as their alleged invention. *See, e.g.*, *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901, (2014) ("a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention."). The following terms render one or more claims of the patent-in-suit indefinite under 35 U.S.C. § 112:

Claim Terms	Claim(s)
"thin shaped body" / "thin payment device" / "thin card-shaped payment card device"	1, 11, 12, 15
"fixed payment information" / "fixed payment numbers"	2, 12, 16
"the card processing authority"	4
"device secret keys" / "payment device secrets" / "computing device secrets" / "payment device issuer secrets" / "device secrets" / "issuer secrets"	10, 13, 14, 19
"complete payment information"	11
"convey said complete payment information via at least on interface of a set comprising: said display"	11
"wherein the limited-use payment information is configured to be used in place of a card issuer payment information"	11
"valid user" / "valid computing device user"	13, 14, 15
"said limited-use card payment information"	14
"said user-interface" / "the user interface"	13, 14
"valid sequence of a user tapping of the device detectable by device accelerometer"	14
"valid sequence of user motioning of the device"	14
"a skin contact sensing identifying a valid user on a device contact sensor"	14
"a touching of an identified user's skin"	14
"device remaining continuously in the proximity possession of a valid user"	14
"the payment information"	15
"static limited use card account number"	18
"the swiping of a recognized user skin"	20

Claim Terms	Claim(s)
"a device biometric sensing the device is continuously remaining in contact with a valid user"	20
"the transaction information" / "the merchant information" / "the time" / "the location of the transaction" / "the payment back logo" / "the card issuer icon" / "the payment card image" / "the amount"	20
"a user input providing for at least one user action…"	20

4. Ineligible Subject Matter under 35 U.S.C. § 101

Each Asserted Claim of the '820 patent is directed to ineligible subject matter under 35 U.S.C. § 101. Specifically, the Asserted Claims are fatally abstract under the U.S. Supreme Court's decision in *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2345 (2014) and progeny.

In *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014), the Supreme Court established a two-part test for determining whether a claim recites patent-eligible subject matter. First, the court must determine whether the claims at issue are directed to any of the following patentable ineligible subject matter: laws of nature, natural phenomena, or abstract ideas. *Id.* at 2355. Second, if the claims are directed to ineligible subject matter, the court must then consider the claim elements—both individually and as an ordered combination—to determine whether they add an "inventive concept." *Id.* Merely claiming a generic "computer" to implement an abstract idea is not sufficient to transform the computer into a patent-eligible invention. *Id.* at 2357-50. Software claims may be abstract if "[t]hey do not claim a particular way of programming [to accomplish the claimed functionality], but instead merely claim the resulting systems" or if they "are not directed to a specific improvement in the way computers operate." *Apple Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1241 (Fed. Cir. 2016). "[M]erely presenting the results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation), is abstract as an ancillary part of such collection and analysis." *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016).

The Asserted Claims of the '820 patent are directed to the abstract idea of facilitating secure payment transactions by, *e.g.*, storing, analyzing and transmitting payment information, using generic and conventional computer components. For example, claim 15 recites "an online payment system" comprising a "payment card device" and a "computing device operable for completing an online payment transaction comprising" "a display," "a user interface," "a processor," and "a memory for storing payment card information…," at least one of which "is configured to dynamically generate… a limited-use payment information" "used in online transactions in place of a card issuers payment card information." '820 patent, claim 15; *see also* claims 1, 11. Although the claims are directed to the use "limited-use card payment information" in place of a bank issued payment number, the patent discloses no formulas or algorithms for how to generate the limited-use number, nor does the patent include any limitation or explanation that would render the claims non-abstract. The dependent claims do not add anything that would remove the claims from the realm of abstract ideas. For example, the dependent claims require specific information printed on the card device (claims 2, 12, 16); enable the card issuing authority to reject invalid transactions (claim 3); specify information used to generate limited-use number (claims 10, 13, 19); display payment information (claim 13, 14, 17), authenticate the user (claims 14, 20), transmit payment information (claims 18), or approve or deny a transaction (claim 20).

Under *Alice* Step 1, those ideas are abstract, as they relate to a fundamental long-prevalent practice. *See, e.g.*, *Universal Secure Registry v. Apple, Inc.*, 10 F.4th 1342, 1349 (Fed. Cir. 2021) (holding as abstract claims directed to "enabl[ing] a transaction between a user and a merchant, where the merchant is given a time-varying code instead of the user's secure (credit card) information" thereby allowing for the "purchasing [of] goods or services without revealing

personal financial information to a merchant…"); *Prism Techs. LLC v. T-Mobile USA, Inc.*, 696 F.App'x 1014, 1016 (Fed. Cir. 2017) (holding as abstract claims directed to "receiving" identity data of a client computer, "authenticating" the identity of the data, "authorizing" the client computer and "permitting" access to the client computer). Limiting the invention to a particular technological environment, e.g., generic computer hardware, "do[es] not render an otherwise abstract concept any less abstract." *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340 (Fed Cir. 2017).

Furthermore, under *Alice* Step 2 the Asserted Claims do not contain any inventive concept. The Asserted Claims employ well-known components or functionality (as shown in Apple's invalidity contentions involving anticipation and/or obviousness in this case), which is not enough to impart patent eligibility of an abstract idea. *See, e.g., Alice,* 134 S. Ct. at 2359 (holding that limitations describing "'well-understood, routine, conventional activit[ies]' previously known to the industry" were insufficient to supply an inventive concept (quoting *Mayo,* 132 S. Ct. at 1294)). For example, the Asserted Claims are directed to components that comprise generic hardware such as "a display," "a user interface," "a processor," and "a memory and claim generic wireless communications between components. Moreover, the lack of written description for numerous claim elements and minimal disclosure in the specification of many claimed components and functions further demonstrates the Asserted Claims rely on conventional components and features.

Apple reserves the right to supplement these disclosures based on further investigation and discovery.

IV. U.S. PATENT NO. 10,810,579

A. Priority Date

Despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of the '579 patent is entitled to a priority date earlier than the filing date of the patent, *i.e.* July 1, 2019.

CardWare contends that every asserted claim is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application No. 61/794,891 (the "'891 provisional"). CardWare Preliminary Infringement Contentions (February 10, 2025) at Section II. However, CardWare provides no evidence or analysis to demonstrate that the asserted claims of the '579 patent are entitled to the priority date of the '891 provisional application. In this regard, a patent claim is entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides both written description support and an enabling disclosure for the patent claim as required by 35 U.S.C. § 112, ¶ 1. CardWare provides no such showing.

Nor has CardWare demonstrated that the asserted claims are entitled to the priority date of the earlier filed applications listed on the face of the patent. CardWare provides no evidence or analysis demonstrating that the asserted claims of the '579 patent are entitled to the priority date of any of the applications to which the '579 patent claims priority.

CardWare has not alleged that the asserted claims of the '579 patent are entitled to a priority date earlier than the March 15, 2013 filing date of the '891 Provisional application. Although CardWare produced a handful of documents, which appear to be related to conception and/or reduction to practice, CardWare's document production to date fails to demonstrate that the asserted claims of the '579 patent were conceived and/or diligently reduced to practice prior to the filing of the '579 patent. Apple expressly reserves the right to amend its contentions

if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice.

B. Relevant Prior Art

Apple contends that the prior art references identified in Apple's contentions anticipate and/or render obvious the Asserted Claims. Below, Apple lists some of the prior art cited in these contentions:

1. Patents and Patent Application Publications

Patent or Pub. No.	Filing Date	Publication/Issue Date
EP 0 949 595 A2	March 26, 1999	Oct. 13, 1999
EP 1 004 992 A2	March 24, 1998	May 31, 2000
EP 1 223 565 A1	Jan. 12, 2001	July 17, 2002
EP 2 302 882 A1	Sept. 24, 2009	March 30, 2011
EP 2 407 919 A1	March 30, 2007	Jan. 18, 2012
JP 2004-13728		Jan. 15, 2004
KR 20110039946A	Oct. 13, 2009	April 20, 2011
KR 20120076502A	Nov. 27, 2010	July 9, 2012
US 5,744,787	Sept. 25, 1995	April 28, 1998
US 5,883,810	Sept. 24, 1997	March 16, 1999
US 5,963,924	April 26, 1996	Oct. 5, 1999
US 6,005,942	March 24, 1998	Dec. 21, 1999
US 6,076,075	March 30, 1998	June 13, 2000
US 6,105,008	April 30, 1998	Aug. 15, 2000
US 6,119,946	March 3, 1998	Sept. 19, 2000
US 6,233,683	March 24, 1998	May 15, 2001
US 6,282,522 B1	Oct. 16, 1997	Aug. 28, 2001
US 6,330,978 B1	April 27, 1998	Dec. 18, 2001
US 6,450,407 B1	April 21, 2000	Sept. 17, 2002
US 6,481,632 B2	Oct. 26, 1999	Nov. 19, 2002
US 6,748,367 B1	Sept. 21, 2000	June 8, 2004
US 6,776,332 B2	Dec. 26, 2002	Aug. 17, 2004
US 7,127,236 B2	Dec. 18, 2002	Oct. 24, 2006
US 7,177,848 B2	June 22, 2001	Feb. 13, 2007
US 7,725,369 B2	Jan. 23, 2009	May 25, 2010
US 7,908,216 B1	July 22, 1999	March 15, 2011
US 8,095,113 B2	Feb. 4, 2009	Jan. 10, 2012
US 8,255,323 B1	Jan. 9, 2009	Aug. 28, 2012
US 8,930,274 B1	Dec. 18, 2013	Jan. 6, 2015
US 9,008,616 B2	Dec. 9, 2011	April 14, 2015

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 9,600,808 B1	June 22, 2012	March 21, 2017
US 9,721,319 B2	March 28, 2012	Aug. 1, 2017
US 9,898,728 B2	April 16, 2012	Feb. 20, 2018
US 10,121,144 B2	Sept. 2, 2014	Nov. 6, 2018
US 10,380,573 B2	Sept. 30, 2008	Aug. 13, 2019
US 10,445,723 B2	May 14, 2013	Oct. 15, 2019
US 10,510,056 B2	Nov. 2, 2011	Dec. 17, 2019
US 11,042,846 B2	Sept. 2, 2014	June 22, 2021
US 11,068,875 B2	Sept. 30, 2014	July 20, 2021
US 11,392,937 B2	Sept. 2, 2014	July 19, 2022
US 2003/0222152 A1	May 28, 2003	Dec. 4, 2003
US 2004/0127256 A1	July 23, 2003	July 1, 2004
US 2007/0095892 A1	Oct. 27, 2005	May 3, 2007
US 2008/0040285 A1	Feb. 16, 2007	Feb. 14, 2008
US 2009/0030845 A1	June 25, 2008	Jan. 29, 2009
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2005/0043997 A1	Aug. 18, 2003	Feb. 24, 2005
US 2005/0252961 A1	May 13, 2004	Nov. 17, 2005
US 2007/0045403 A1	Aug. 31, 2005	March 1, 2007
US 2007/0114274 A1	Nov. 21, 2006	May 24, 2007
US 2007/0208671 A1	Dec. 30, 2006	Sept. 6, 2007
US 2007/0244811 A1	March 30, 2007	Oct. 18, 2007
US 2008/0078831 A1	Sept. 29, 2006	April 3, 2008
US 2008/0222047 A1	July 27, 2007	Sept. 11, 2008
US 2008/0275779 A1	Feb. 7, 2008	Nov. 6, 2008
US 2009/0070272 A1	Sept. 11, 2008	March 12, 2009
US 2009/0144161 A1	Nov. 30, 2007	June 4, 2009
US 2009/0200371 A1	Feb. 4, 2009	Aug. 13, 2009
US 2009/0210308A1	Feb. 15, 2008	Aug. 20, 2009
US 2009/0276347 A1	May 1, 2009	Nov. 5, 2009
US 2009/0291634 A1	April 24, 2006	Nov. 26, 2009
US 2010/0078471 A1	Sept. 30, 2008	April 1, 2010
US 2010/0078472 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082481 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082490 A1	Sept. 30, 2008	April 1, 2010
US 2010/0088227 A1	Nov. 16, 2007	April 8, 2010
US 2010/0125508 A1	Nov. 17, 2009	May 20, 2010
US 2010/0125509 A1	June 1, 2009	May 20, 2010
US 2010/0127083 A1	Nov. 26, 2008	May 27, 2010
US 2011/0010277 A1	July 9, 2009	Jan. 13, 2011
US 2011/0022472 A1	Feb. 25, 2010	Jan. 27, 2011
US 2011/0078031 A1	Sept. 30, 2009	March 31, 2011
US 2011/0082772 A1	Nov. 12, 2009	April 7, 2011

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 2011/0101093 A1	Feb. 18, 2010	May 5, 2011
US 2011/0112918 A1	Oct. 29, 2010	May 12, 2011
US 2011/0140841 A1	Aug. 19, 2009	June 16, 2011
US 2011/0153498A1	Dec. 7, 2010	June 23, 2011
US 2011/0173060 A1	Jan. 10, 2011	July 14, 2011
US 2011/0173121 A1	March 28, 2011	July 14, 2011
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2011/0191161 A1	Jan. 31, 2011	Aug. 4, 2011
US 2011/0191177 A1	Jan. 25, 2011	Aug. 4, 2011
US 2011/0238573 A1	March 15, 2011	Sept. 29, 2011
US 2012/0116902 A1	March 11, 2011	May 10, 2012
US 2012/0116976 A1	Jan. 10, 2012	May 10, 2012
US 2012/0143754 A1	Dec. 5, 2011	June 7, 2012
US 2012/0150687 A1	Dec. 13, 2011	June 14, 2012
US 2012/0191612 A1	April 3, 2012	July 26, 2012
US 2012/0191615 A1	Jan. 27, 2012	July 26, 2012
US 2012/0205443 A1	April 3, 2012	Aug. 16, 2012
US 2012/0310760 A1	Sept. 1, 2011	Dec. 6, 2012
US 2013/0013499 A1	July 5, 2012	Jan. 10, 2013
US 2013/0024371 A1	Sept. 27, 2012	Jan. 24, 2013
US 2013/0085941 A1	Sept. 30, 2011	April 4, 2013
US 2013/0159186 A1	April 16, 2012	June 20, 2013
US 2013/0166441 A1	Dec. 21, 2012	June 27, 2013
US 2013/0232083 A1	March 1, 2013	Sept. 5, 2013
US 2013/0262317 A1	March 14, 2013	Oct. 3, 2013
US 2013/0297509 A1	May 6, 2013	Nov. 7, 2013
US 2014/0229375 A1	Feb. 11, 2013	Aug. 14, 2014
US 2014/0344153 A1	May 15, 2014	Nov. 20, 2014
US 2015/0058191 A1	Nov. 27, 2013	Feb. 26, 2015
US 2015/0073983 A1	Nov. 12, 2014	March 12, 2015
US 2015/0178724 A1	Dec. 19, 2014	June 25, 2015
US 2015/0180836A1	Dec. 19, 2014	June 25, 2015
US 2015/0348002 A1	Sept. 30, 2014	Dec. 3, 2015
US 2016/0042356 A1	Aug. 11, 2014	Feb. 11, 2016
US 2016/0057619 A1	Aug 24, 2015	Feb. 25, 2016
US 2016/0253669 A1	Feb. 26, 2016	Sept. 1, 2016
US 2016/0275505 A1	March 17, 2015	Sept. 22, 2016
US 2016/0321653 A1	April 29, 2016	Nov. 3, 2016
WO 2010/037218 A1	Sept. 29, 2009	April 8, 2010
WO 2010/039337 A2	Aug. 11, 2009	April 8, 2010
WO 2012/011054 A1	July 19, 2011	Jan. 26, 2012
WO 2012/154915 A1	May 10, 2012	Nov. 15, 2012
WO 2013/155627 A1	April 16, 2013	Oct. 24, 2013

Patent or Pub. No.	Filing Date	Publication/Issue Date
Patent Application 61/899,734	Nov. 4, 2013	
Patent Application 61/905,035	Nov. 15, 2013	
Patent Application 61/921,688	Dec. 30, 2013	

2. Printed Publications

Title	Author/Publisher	Date
"A Primer to the Implementation of Smrt Card Management and Related Systems," Version 1.0	GlobalPlatform	Aug. 2000
About Us | Venmo	Venmo.com	2012
"An Introduction to Java Card Technology – Part 1"	C. Enrique Ortiz Sun Developer Network	May 29, 2003
"An Introduction to Java Card Technology – Part 2, The Java Card Applet"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Introduction to Java Card Technology – Part 3, The Smart Card Host Application"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Investigation into Electronic Commerce Frauds and their Security Implications"	Kevin Boardman	Nov. 7, 2004
Apple Press Release: "Apple Announces Apple Pay"	Apple	Sept. 9, 2014
Card on File Tokenization | Mastercard Developers	Mastercard.com	
"Contactless Payment Security Questions & Answers"	Smart Card Alliance, Inc.	2016
E-ink on Credit Cards will do Away with PINs (video)	The Digital Reader	Sept. 2, 2011
Emue – a Revolution in Authentication	EMUE	May 13, 2009
"EMV Card Personalization Specification," Version 1.0	EMVCo, LLC	June 2003
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 1, Application Independent ICC to Terminal Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.3	EMVCo, LLC	Nov 2011

Title	Author/Publisher	Date
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.3	EMVCo, LLC	Nov. 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 4, Cardholder, Attendant, and Acquirer Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011
For Businesses: Payment Technologies – Products & Platforms	Visa	2004
For Businesses: Payment Technologies – Visa Cash	Visa	2004
For Businesses: Payment Technologies – Visa Smart debit and Visa Smart Credit	Visa	2004
GlobalPlatform: a Dynamic and Secure	Marc Kekiheff GlobalPlatform	
GlobalPlatform Card Security Requirements Specification	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Card Specification Tutorial	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Technical Overview	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform – Global Consensus for a Connected Planet	GlobalPlatform	
GlobalPlatform – Implementations – Financial	GlobalPlatform	2006
GlobalPlatform – Implementations – Mobile Telecom	GlobalPlatform	2006
GlobalPlatform – Implementations – Retail	GlobalPlatform	2006
GlobalPlatform – Implementations – Transit	GlobalPlatform	2006
GlobalPlatform – Interoperability and Security with GlobalPlatform	March Kekicheff, GlobalPlatform	Feb. 2, 2004
GlobalPlatform – Introduction to GlobalPlatform Technology	GlobalPlatform	
GlobalPlatform – Overview	GlobalPlatform	June 2004
GlobalPlatform – The Cross-Industry Approach to Smart Card Standards	GlobalPlatform	2000
GlobalPlatform – The Platform for a Multi-application Environment	March Kekicheff, GlobalPlatform	April 2005
GlobalPlatform – Towards the Next Generation of GlobalPlatform Specifications	Pierre-Francois Solere, GLobalPlatform	

Title	Author/Publisher	Date
GlobalPlatform Specifications: The Solution for an Emerging Market	GlobalPlatform	
GlobalPlatform Specifications Archive – Technology Document Library	GlobalPlatform	2024
GlobalPlatform: a Dynamic and Secure Pre and Post Issuance Solution – Cartes 2002	Marc Kekiheff GlobalPlatform	2002
Google Wallet and the New Retail Ecosystem	David W. Schropfer	Oct. 3, 2011
Government Smart Card Handbook	GSA	Feb. 2004
Government Smart Card Handbook	GSA	Feb. 2004
Implementing Electronic Card Payment Systems	Cristian Radu	2003
"Interoperability in Electronic Payments: Lessons and Opportunities"	Carol Coye Benson CGAP	2012
"Investigating Mobile Payment: Supporting Technologies, Methods, and Use"	Valcourt, et al.; IEEE	2005
"Java Card™ 2.2 Off-Card Verifier" White Paper	Sun Microsystems	June 2002
Java Card for ePayment Applications	Vesna. Hassler	2002
"Java Card™ Platform Security" Technical White Paper	Sun Microsystems	2001
Java Card Platform: A Week in the Life of Jack Link	Sun Microsystems	2004
Java Card Questions and Answers with Zhiqun Chen	Ed Ort Sun Microsystems	Oct. 2000
Java Card Technology Datasheet	Sun Microsystems	2005
Java Card Technology Examples	Sun Microsystems	2004
Java Card Technology FAQs	Sun Microsystems	2005
Java Card Technology for Smart Cards: Architecture and Programmer's Guide	Zhiqun Chen	2000
Java Card Technology for Smart Cards: Architecture and Programmer's Guide Book information	Zhiqun Chen Sun Microsystems	Sept. 18, 2000
"Java Card Technology Overview," Chapter 3		
Java Card1_Fig-3	Sun.com	2005
Java Card1_Fig-4	Sun.com	2005
Java Card1_Fig-5	Sun.com	2006
Java Card1_Fig-7	Sun.com	2004
Java Card1_Fig-9	Sun.com	2004
Java Card1_Fig-12	Sun.com	2006
Java on Smart Cards: Programming and Security: First International Workshop, JavaCard 2000		2000
JavaCard – From Hyper to Reality	Michael Baentsch IEEE	1999

Title	Author/Publisher	Date
JavaCard – Redistribution and Use in Source and Binary Forms License	Sun Microsystems	2004
JCOP V2.4.1 Secure Smart Card Controller, Rev. 3.2	NXP	Sept. 2, 2009
JCOP20 Technical Brief, Revision 2.3	IBM	
JCOP30 Technical Brief, Revision 2.3		
MagTek CEO: "Dynamic Data is the Core of Security" [Transcript]	David Evans Pymnts	March 8, 2012
MagTek Launches QwickPAY, the Innovative Secure Mobile Payments Service, Into the Android Marketplace	Magtek	March 29, 2011
MagTek Introduces Qwick Code Mobile Wallet		Jan. 15, 2012
Mastercard Virtual Card Tokens	Mastercard	March 7, 2025
MDES Token Connect | Mastercard Developers	Mastercard	
Mobile Payment Services in South Africa	Matthias Beland	Jan. 31, 2013
NXP – News Center – Infocus Archive	NXP	2006
One-Click Payments by 2030 With Tokenization	Jorn Lambert Mastercard	March 12, 2025
PCI Data Security Standard (PCI DSS), Version 2.0	Scoping SIG, Tokenization Taskforce PCI Security Standards Council	Aug. 2011
PCI – Payment Card Industry (PCI) Data Security Standard, Version 2.0	PCI	Oct. 2010
PHB Development, Kurt Salmon, "Mobile Payments … a 'Southern' Revolution!"	PHB Development	2011
Qwick Codes Mobile Wallet for IOS	CNET	
"Radio-Frequency Identification (RFID): A Focus on Information Security and Privacy," OECD Digital Economy Papers, No. 138	OECD Publishing	Jan. 14, 2008
"SE vs. HCE: What is More Secure for NFC Mobile Payments?"	Finextra	Oct. 17, 2014
Techie Visa Card Features Buttons and Screen to Generate CCV Dynamically	Mark Wilson	Nov. 11, 2008
The Complete Guide to Payments Tokenization		
The Rise of Async Work [Podcast] – Fast Company	Loom Atlassian	Feb. 10, 2025
Venmo, Just Say "Venmo Me"	Venmo	2021
Venmo – Wikipedia	Wikipedia	
Visa and Emue Technologies deploy cards with built-in one-time password generator	Finextra	Feb. 9, 2009
Visa Best Practices for Tokenization Version 1.0	Visa Best Practices	July 14, 2010
Visa CodeSure Gets Commercial Green Light	Finextra	June 2, 2010

Title	Author/Publisher	Date
Visa Invests in Authentication Outfit Emue	Finextra	Nov. 18, 2009
Visa Token Service Momentum, Annual Update 2022	Visa	2022
Visa Token Service – Product Fact Sheet	Visa	2022
Visa Token Service – Visa	Visa	2025
What is Venmo, how does it work, and is it safe to use?	Ben Luthi Yahoo Finance	May 31, 2024
What is Venmo? – NerdWallet	Chanelle Bessette NerdWallet	June 24, 2024
What is Venmo: How it Works	Nicole Symon Money	May 18, 2023
Qwick Codes Demo video		
Wi Wallet Mobile Payments video		
Visa Pin System 2 Credit Cards video		
Smart Dongle Credit Card With e-ink Display video		
Credit Card with E-ink Display Keep You Safe While Online Shopping video		
Mastercard Token Authentication Service lets Shoppers Create Passkeys for Secure Authentication video		
Mastercard Tokenization video		

3. Prior Art Systems

The table below lists prior art systems and products identified that reveal the state of the art and/or render the Asserted Claims invalid under pre- or post-AIA 35 U.S.C. §§ 102 and/or 103. Some or all of the supporting references for these systems may also qualify as prior art publications under 35 U.S.C. § 102 and may be used as invalidating prior art under 35 U.S.C. §§ 102 and 103. In particular, the manuals for these products, patents filed to cover these products, and any other publicly available information.

Each of the prior art systems were publicly known or used or offered for sale prior to the critical date of the '579 patent, as described in each system's respective claim chart. Apple continues to investigate the systems and products and reserves the right to supplement the contentions and accompanying claim charts after further discovery and investigation. Apple also

reserves the right to rely on fact or expert witness testimony to establish the public knowledge, use, availability, sale, or offer for sale of any systems described below. Although additional information and prior art systems may be obtained through discovery, such prior art systems include at least the following:

Prior Art System	Person/Entity	Date
Apple Pay	Apple	At least as early as 2012
Google Wallet	Google	At least as early as September 20, 2011
Venmo	Venmo	At least as early as 2009
Visa Payment Tokens	Visa	At least as early as July 2010
Mastercard Payment Tokens	Mastercard	At least as early as 2013
Qwick Codes Mobile Wallet	Magtek	At least as early as October 2012
wiWallet	wiWallet Mobile Payments (Pty) Ltd.	At least as early as July 08, 2010
emue Smart Card	emue	At least as early as February 11, 2010
Smart Dongle Credit Card	E-ink	At least as early as November 11, 2011
VivoTech systems	VivoTech	At least as early as 2005
Square Systems	Square	At least as early as 2009
Starbucks Mobile Application	Starbucks	At least as early as 2009
PayPal and PayPal Mobile	PayPal	At least as early as 2006
Venmo	Venmo	At least as early as 2010
Cake POS and payment systems	Cake Corp.	At least as early as 2013
Toast POS and payment systems	Toast, Inc.	At least as early as 2012
MiFare	Philips	At least as early as 2004
SmartMX	Philips	At least as early as 2004
JCOP OS	Philips/NXP	At least as early as 2004
Global Platform	GlobalPlatform	At least as early as 2004
JavaCard	Sun Microsystems	At least as early as 2004
LevelUp	SCVNGR dba LevelUp	At least as early as 2011

C. <u>Anticipation and Obviousness</u>

1. Non-limiting Claim Elements

The asserted claims of the '579 patent include numerous limitations that have no functional or structural relationship to the claimed payment system and thus do not affect the

scope of the claims. For example, at least the limitations listed below are directed to printed matter and thus entitled to no patentable weight:

- "displaying, on the touch-screen display, images of: a card issuer payment method selection, including a last 4-digit partial number of a card issuer supplied account number of a payment card; a card logo; and other iconography of the payment card." ('579 patent, claim 1)
- "visually conveying a status of said transaction via a user-interface displayed on said touch-screen display" ('579 patent, claim 1)
- "displaying the limited-use security number on the user-interface of the display" ('579 patent, claim 5)
- "displaying, on the display, at least one information of a set of information comprising: a priming status of the electronic device for payment; a default payment method; a plurality of selectable payment accounts; a payment request; transaction information; a payment amount; a merchant identification; a time; an expiration date; a location; an account balance; a payment bank logo; a card image; a payment card issuer icon; a payment card network icon; the last 4-digits of the primary account number; the last 4-digits of the device account number; and other payment iconography" ('579 patent, claim 9)
- "displaying a summary of selectable payment account options at a touch-screen display user-interface of the electronic device" ('579 patent, claim 15)
- "displaying on said display at least one of a set of information comprising: transaction information; merchant information; a time; a location of the

transaction; a payment bank logo; a card issuer icon; a payment card image; an amount" ('579 patent, claim 15)

- "visually conveying on the touch-screen display user-interface, information regarding the transaction, including at least one of: a payment amount requested; an indication requesting an authorization input; an indication of an authorization success; an indication of an authorization failure; an option to retry a transaction; an option to retry a user authorization; an option to retry validating a user identity; an indication of a payment successfully completed; an indication of a payment failure; and an indication of a payment retry option" ('579 patent, claim 16)
- "displaying a summary of selectable payment account options on the display" and "wherein further the processor is operable to cause the display to visually convey a status of the transaction" ('579 patent, claim 19)

The Federal Circuit has repeatedly held that limitations directed to printed matter, such as those listed above, are not entitled to patentable weight. *See, e.g.*, *CR Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020) ("[P]rinted matter encompasses any information claimed for its communicative content, and the doctrine prohibits patenting such printed matter unless it is 'functionally related' to its 'substrate' which encompasses the structural elements of the claimed invention."); *Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prop. IP Ltd.*, 890 F.3d 1024, 1031 (Fed. Cir. 2018) ("Claim limitations directed to printed matter are not entitled to patentable weight unless the printed matter is functionally related to the substrate on which the printed matter is applied."); *In re Distefano*, 808 F.3d 845, 848 (Fed. Cir. 2015) ("[I]f a limitation claims (a) printed matter that (b) is not functionally or structurally

related to the physical substrate holding the printed matter, it does not lend any patentable weight to the patentability analysis.").

2. Claim Charts

Apple attaches Exhibits 579-1 to 579-11, which provide exemplary disclosures showing how the prior art anticipates and/or renders obvious the asserted claims of the '579 patent. Apple also attaches Exhibit 579-103, which provides exemplary disclosures in secondary references to combine with the prior art identified in these contentions to render obvious the asserted claims of the '579 patent. Apple may rely on any of the primary references identified in Exhibits 579-1 to 579-11 in combination with any secondary reference identified in those exhibits, in exhibit 579-103, or in this cover pleading. The table below identifies the primary reference addressed in each of Exhibits 579-1 to 579-11, each of which describes anticipation and/or obviousness of one or more claims of the '579 patent:

Exhibit	Prior Art Reference
579-1	U.S. Patent No. 8,255,323 ("Casey '323")
579-2	U.S. Patent Publication No. 2013/0262317 ("Collinge '317")
579-3	U.S. Patent No. 11,042,846 ("Dicker '846")
579-4	U.S. Patent No. 9,600,808 ("Gomez '808")
579-5	U.S. Patent Publication No. 2010/0125509("Kranzley '509")
579-6	U.S. Patent No. 11,836,706 ("Law '706")
579-7	U.S. Patent Publication No. 2010/0082481 ("Lin '481")
579-8	U.S. Patent Publication No. 2012/0310760 ("Phillips '760")
579-9	U.S. Patent Publication No. 2010/0185545 ("Royyuru '545")
579-10	U.S. Patent Publication No. 2015/0180836 ("Wong '836")
579-11	Apple Pay Products ("Apple Pay")

The U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id*. at 1732, 1738, 1742–1743, 1746. A patent claim may be obvious if the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims.

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id*. at 1740. The Court stated that courts should "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id*. at 1740–41. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See TGIP, Inc. v. AT&T Corp*., 527 F. Supp. 2d 561, 580–81 (E.D. Tex. 2007). "[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ" to resolve the question of obviousness. *KSR*, 127 S. Ct. at 1741.

Based on all of these considerations, as further detailed in Exhibits 579-1 to 579-11 and 579-103, a POSITA would have combined the teachings of the prior art references discussed and charted in those exhibits. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the asserted claims of the '579 patent. The references identified in Exhibits 579-1 to 579-11 and 579-103 are analogous prior art to the subject matter of the asserted claims and, for at least the reasons set forth below, are properly combinable. Because these prior art references exist within a single field of art, particularly one in which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide

interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the '579 patent.

By way of example only, the following combinations render obvious claims 1-23 of the '579 patent:

- Casey '323 combined with one or more of Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 579-103;
- Collinge '317 combined with one or more of Casey '323, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 579-103;
- Dicker '846 combined with one or more of Casey '323, Collinge '317, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 579-103;
- Gomez '808 combined with one or more of Casey '323, Collinge '317, Dicker '846, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 579-103;
- Kranzley '509 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 579-103;
- Law '706 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 579-103;
- Lin '481 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 579-103;
- Phillips '760 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 579-103;
- Royyuru '545 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Wong '836, Apple Pay, and/or the Secondary References in Ex. 579-103;
- Wong '836 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Apple Pay, and/or the Secondary References in Ex. 579-103;

- Apple Pay combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836 , and/or the Secondary References in Ex. 579-103.

Numerous prior art references, including those identified in the attached exhibits, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the '579 patent. As it would be unduly burdensome to create detailed claim charts for all of the invalidating combinations, for at least the reasons described in these invalidity contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in the attached exhibits, to meet the limitations of the asserted claims of the '579 patent. Apple's inclusion of exemplary combinations, in view of the factors and motivations identified here, does not preclude Apple from identifying other invalidating combinations and/or motivations as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, because each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1739–40 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 1742. Nevertheless, in addition to the information contained herein, Apple hereby identifies additional motivations and reasons to combine the cited art.

One or more combinations of the prior art references identified herein would have been obvious because these references would have been combined using: known methods to yield

predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to combine the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market forces either in the same field or a different one. In addition, the combinations of the prior art references identified above would have been obvious because the combinations represent the known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation or reason to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution; the existence of a known need or problem in the field of endeavor at the time of the invention; and the background knowledge that would have been possessed by a person having ordinary skill in the art. For example, the prior art references are generally directed to the same problems. Thus, a skilled artisan seeking to solve these problems would look to these cited references in combination.

Thus, the motivation or reason to combine the teachings of the prior art references disclosed herein is found in the references themselves and in: (1) the nature of the problems being solved; (2) the express, implied, and inherent teachings of the prior art; (3) the knowledge of a POSITA; (4) the fact that the prior art is generally directed towards the same problems; and/or (5) the predictable results obtained in combining the different elements of the prior art; (6) the use of a known technique to improve similar devices, methods, or products in the same

way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Apple incorporates by reference prior art from the prosecution histories and background sections of the '579 patent. Apple expects to rely on the testimony of one or more expert witnesses and documents referenced by those expert witnesses in support of these contentions and incorporate those forthcoming expert reports as if fully set forth herein.

Apple contends that there are no secondary considerations of non-obviousness evidencing the validity of any of the asserted claims. Secondary considerations of non-obviousness, also referred to as objective indicia of non-obviousness, "can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans before the invention." *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc*., 711 F.3d 1348, 1368 (Fed. Cir. 2013). "A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision." *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists, secondary considerations of non-obviousness "simply cannot overcome [a] strong prima facie showing of obviousness." *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008). CardWare has not established the existence of any objective indicia of non-obviousness or secondary considerations. Apple

reserves the right to supplement their contentions to respond to any such arguments or evidence should CardWare be permitted to raise them in the future. While discovery in this case is ongoing, and Apple's investigation continues (which will include expert discovery), to the extent CardWare contends that one or more asserted claims is not obvious based on secondary considerations recognized by relevant authority Apple contends such allegations are without merit. Apple reserves the right to supplement their contentions to respond to any such evidence should CardWare be permitted to raise it in the future.

D. <u>The Accused Products Predate the '579 Patent</u>

As discussed above, despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of any asserted patent is entitled to a priority date earlier than the respective filing dates of the asserted patents. CardWare contends that "every asserted claim of each asserted patent is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application no. 61/794,891." *See* February 10, 2025 Infringement Contentions at 2. Apple disagrees with CardWare's contention, and CardWare has failed to establish that any asserted patent is entitled to an earlier priority date.

The accused products were announced publicly on or around September 9, 2014. https://www.apple.com/newsroom/2014/09/09Apple-Announces-Apple-Pay/. The public announcement of Apple Pay predates the filing date of the '579 patent, *i.e.*, July 1, 2019, and therefore, Apple Pay is prior art to the '579 patent. Apple Pay anticipates and/or renders obvious the asserted claims of the '579 patent. *See* Ex. 579-11

To the extent CardWare is able to establish that any asserted claim is entitled to a March 15, 2013 priority date, then the accused products are nonetheless invalidating prior art at least under pre-AIA 35 U.S.C. § 102(g). Apple conceived of Apple Pay before the earliest invention date to which CardWare claims the asserted patents are entitled to priority. Apple exercised

reasonable diligence from the time of its conception of Apple Pay and did not abandon, suppress, or conceal its invention. In the event any claim is entitled to a March 15, 2013 priority date, each limitation of that claim would be invalid under at least pre-AIA 35 U.S.C. § 102(g) for the same reasons CardWare claims that the accused products meet that limitation. *See* Ex. 579-11.

Apple expressly reserves the right to amend its contentions if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice. Apple expressly reserves the right to amend its contentions as discovery commences in this matter and additional relevant information and documentation relating to Apple's conception and reduction to practice of the accused products is uncovered.

E. <u>Other Invalidity Grounds</u>

Apple hereby identifies grounds of invalidity based on (1) lack of written description under 35 U.S.C. § 112; (2) lack of enablement under 35 U.S.C. § 112; (3) indefiniteness under 35 U.S.C. § 112; and (4) ineligible subject matter under 35 U.S.C. § 101. These contentions shall not be construed as an admission that any claim construction advanced by Apple in this case is in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Apple from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to CardWare's purported construction of the claim language or of other positions advanced by CardWare during the course of this litigation. Apple's Invalidity Contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as CardWare's alleged scope of the asserted claims of the '579 patent. Consequently, Apple only identifies the issues under 35 U.S.C. § 112 of which they are presently aware.

1. Lack of Written Description under 35 U.S.C. § 112

The asserted claims are invalid under 35 U.S.C. § 112, because the '579 patent does not provide sufficient written description to establish that the alleged inventors were in possession of the full scope of the alleged inventions recited in the asserted claims at the time the '579 patent was filed. *See e.g. Ariad v. Lilly*, 598 F.3d 1336 (Fed. Cir. 2010) (en banc); *LizardTech Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005) (finding claims invalid under 35 U.S.C. § 112 where the specification failed to include a written description of the full scope of the claimed invention); *In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1320 (Fed. Cir. 2011) ("[W]hen analyzing whether a patent meets the written description requirement, one cannot 'bootstrap' the knowledge of a person of ordinary skill in the art ('POSITA') into the analysis and fill the gap in the disclosure through obviousness.").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of written description under 35 U.S.C. § 112, as the specification of the '579 patent does not demonstrate that the inventors were in possession of the claimed subject matter:

Claim Terms	Claim(s)
receiving an input at an electronic device, wherein the input corresponds to a priming operation of the electronic device by an identified user	1
displaying, on the touch-screen display, images of: a card issuer payment method selection, including a last 4-digit partial number of a card issuer supplied account number of a payment card; a card logo; and other iconography of the payment card;	1
generating, by the processor, a limited-use payment information, and using said limited-use payment information in place of said card issuer supplied payment information	1
transmitting said limited-use payment information from said electronic device to an NFC recipient of the transaction via said NFC interface	1
The method of claim 1, wherein the generating the limited-use payment information utilizes at least one information from a set of information comprising: a device transaction sequence counter; a device account number; device secret keys;	2

Claim Terms	Claim(s)
card issuer keys; merchant information; NFC recipient information; payment reader information; a time; a timestamp; an amount; a location; an online location; transaction information; payment information; device information; user information; an email address; and a user identification entry	
The method of claim 1, further comprising: dynamically generating a cryptogram number for use by the electronic device in place of a card validation value originated from the card issuer, and wherein the dynamically generating the cryptogram number comprises cryptographically combining a device transaction sequence counter count and at least one information of a set of information comprising: a device account number; device identifiers; device secrets; device keys; payment issuer secrets; payment issuer keys; user information; a time; and transaction information; and wherein further, said dynamically generating the cryptogram number results in a one-time limited-use number via the device incrementing said device transaction sequence counter count on a transaction.	3
The method of claim 1, wherein a limited-use number comprises a device account number, and wherein the device account number is of a limited time-duration of valid use, and wherein further a card issuing authority provides said device account number for use only by the electronic device, in place of card issuer information in performing payment transactions by the electronic device, and further comprising: performing payment transactions by the electronic device including the limited-use number; combining the limited-use number and said device account number within a device generated payment information; and	4

Claim Terms	Claim(s)
conveying said device generated payment information, in place of card issuer information, when the device is performing payment transactions.	
The method of claim 1, further comprising: generating a limited-use security number for use in place of a card issuer card security code by cryptographically combining information from at least one of a set of information comprising: user information; an internet address; an email address; a device transaction sequence counter; a device account number; device identifiers; device secrets; device keys; issuer secrets; issuer keys; a payment card account number; a payment card security code; a time; an expiration date; an amount; a merchant locality; transaction information; and displaying the limited-use security number on the user-interface of the display.	5
6. The method of claim 1, wherein a payment processing authority verifies a limited-use number based on at least one information of the set of information comprising: a transaction sequence count information; a device account number; user account information; issuer secrets; issuer keys; issuer-provided device keys; transaction information; and a time of use, and further comprising: authorizing said transaction, by the payment processing authority, responsive to verifying a valid limited-use number appearing in place of card issuer information; and rejecting a limited-use number, by the payment processing authority, on at least one unverifiable condition, of a set of unverifiable conditions comprising: an invalid number generation;	6

Claim Terms	Claim(s)
an invalid device account number; a use outside of a valid time window; an invalid re-use of a limited-use number; and an invalid use of an expired limited-duration number.	
The method of claim 1, wherein the receiving an input at an electronic device comprises receiving an input via a user interface from one of the set of user interfaces comprising: a device button; a device touch-screen interface; a device touch ID button interface; a device optical sensor array; a device skin touch sensor; a skin-contact sensor; a device motion detection interface; a device biometric sensor interface; and a device user-interface selection.	7
The method of claim 1, wherein the priming operation comprises one operation of the set of operations comprising: a button press; a touch ID button press; a button double-press; a touch ID sensor touch; a touch-screen touch; a touch-input sequence; a gesture or swipe over a sensor-array; a skin-contact sense; an optical-sensor array sense; an electronic device tap; a sequence of motions of the electronic device; a user-interface selection of a payment method; and a user-interface selection initiating a payment-operation; and, further comprising enabling the electronic device for payment via successfully completing at least one of a set of user-validations comprising: a touching from an identified valid user; a user entry of a valid passcode; a user entry of a valid PIN; swiping of a recognized user skin over a device sensor array; a correct user swiping or gesturing on the electronic device; a correct sequence of user taps on the electronic device; a correct user sequence of user motioning of the electronic device; a skin-contact sensing of an identified user; a device biometric sensing of a valid user identity; and	8

Claim Terms	Claim(s)
a device biometric sensing the electronic device is continuously remaining in the proximity possession of a valid user.	
The method of claim 1, further comprising: obtaining, by the electronic device, a user payment approval, through at least one device user interface of a set of interfaces comprising: a device display interface; a device touch-screen display interface; a device touch interface; device input buttons; device key-pad inputs, a device optical sensor array; a device motion detection unit; a device accelerometer; a device biometric user-sensor; and a device biometric sensing the electronic device is continuously remaining in the proximity contact of a valid user; and	9
displaying, on the display, at least one information of a set of information comprising: a priming status of the electronic device for payment; a default payment method; a plurality of selectable payment accounts; a payment request; transaction information; a payment amount; a merchant identification; a time; an expiration date; a location; an account balance; a payment bank logo; a card image; a payment card issuer icon; a payment card network icon; the last 4-digits of the primary account number; the last 4-digits of the device account number; and other payment iconography; and receiving a user input of at least one user action, from a set of actions comprising: a payment method selection; a payment approval authorization; a payment denial; and an adjustment of a transaction payment.	9

Claim Terms	Claim(s)
The method of claim 1, further comprising: activating an NFC communication for a limited duration of time responsive to the electronic device priming; and responsive to the preset duration being exceeded, terminating the NFC communications and aborting the transaction.	10
The method of claim 1, further comprising completing the transaction on the electronic device, wherein the completing further comprises: receiving an authorization input on the electronic device from a valid device user, in response to at least one of a set of exceptional conditions comprising: the electronic device leaving the proximity of the NFC recipient; the incomplete identifying of a valid device user; the electronic device leaving the user's possession; the electronic device leaving the proximity contact of the user; the electronic device leaving the grasp of the user; a biometric sensing the electronic device leaving the possession of a user since a last user validation; the transaction exceeding a pre-set amount limit; the transaction interval exceeding a pre-set time duration; a card issuing authority requesting a security check; and presenting the user with at least one of a set of selectable options comprising: requesting a transaction payment; continuing with the default payment method; selecting an alternate payment account; inputting an approval authorization; inputting a transaction denial; and inputting an adjustment of the transaction payment.	11
The method of claim 1, further comprising: subsequent to the priming operation, offering a user selection of payment options for user input selection by presenting a selection of payment options in graphical format on said touch-screen display, including at least one of: a last four digits of a payment account number portion; a last four digits of a device account number portion; an expiration date; a card issuer icon; a bank logo; a card processing network logo; a card image; a card payment network icon; graphical images associated with the payment account;	12
proceeding with a default payment option in said device payment transaction responsive to a user not selecting any of said payment options	12

Claim Terms	Claim(s)
A method of claim 1, wherein the priming operation comprises: a button double press; and a biometric sense of the device continuously remaining in the proximity contact of a valid user, since a last validation; and further comprising: denying the priming operation for payment when the electronic device is not sensed as being continuously within the proximity contact of a valid user, until after successfully re-validating a user; and wherein re-validating a user requires a correct user passcode re-entry; disabling a device priming operation on further button pressing; disabling a payment priming operation after the expiration of a pre-set time duration from a successful priming action; and disabling a device priming operation responsive to completing a transaction.	13
A method of claim 1, wherein the priming operation is input after at least one of: a biometric sense of a touch contact of a valid user's skin on a touch ID button of the electronic device, and validating a user passcode entry on the touch-screen display of the electronic device; disabling a device priming operation on further button pressing; disabling a payment priming operation after the expiration of a pre-set time duration from a successful priming action; and disabling a device priming operation responsive to completing a transaction.	14
A method of performing a transaction, the method comprising: receiving an input signal at an electronic device, the input signal corresponding to a request for payment of a transaction at said electronic device, via a recipient proximity communication request to an NFC interface of the electronic device;	15
displaying a summary of selectable payment account options at a touch-screen display user-interface of the electronic device;	15
receiving, from a valid device user, a payment selection and approval authorization input on the electronic device;	15
generating a limited-use number at said electronic device, and using said limited-use number in place of at least a portion of selected account issuer payment information; and	15
transmitting said limited-use number from said electronic device to a transaction recipient via the NFC interface;	15
obtaining a user payment approval through at least one user-interface of the electronic device, of a set of user-interfaces comprising: a touch-screen interface of the touch-screen display user-interface; a touch ID button;	15

Claim Terms	Claim(s)
input buttons; a touch key-pad; an optical sensor array; a sensor array operable to recognize a swiping of a recognized user skin over the sensor array; a motion detection unit; an accelerometer; a biometric user-sensor; a device biometric sensor operable to determine the electronic device continuously remains in contact with a valid user while the electronic device is coming within proximity contact of an NFC recipient;	
displaying on said display at least one of a set of information comprising: transaction information; merchant information; a time; a location of the transaction; a payment bank logo; a card issuer icon; a payment card image; an amount; and receiving a user input providing for at least one transaction action, from a set of actions comprising: approving a transaction; denying a transaction; and adjusting a transaction.	15
The method of claim 15, further comprising: visually conveying on the touch-screen display user-interface, information regarding the transaction, including at least one of: a payment amount requested; an indication requesting an authorization input; an indication of an authorization success; an indication of an authorization failure; an option to retry a transaction; an option to retry a user authorization; an option to retry validating a user identity; an indication of a payment successfully completed; an indication of a payment failure; and an indication of a payment retry option.	16
The method of claim 15, further comprising: visually presenting on the touch-screen display user-interface, a plurality of payment options, including at least one of a set of payment method information for each payment option, the set comprising:	17

Claim Terms	Claim(s)
a card image; a payment issuer logo; partial payment account numbers; a card payment network icon; a graphical image-encoding of a users payment account information; an amount of currency; an account balance; a credit limit; an amount of remaining credit; an amount of cryptocurrency; a cryptocurrency server network; and receiving a user-selection of a payment method for a transaction via said touch-screen display user-interface.	
The method of claim 15, further comprising: receiving a priming operation at the electronic device for priming the electronic device for imminent payment, wherein the priming operation causes the electronic device to successfully identify the user through completing at least one user-validation, of a set of user validations comprising: a touching of the device by an identified user; a user entry of a valid passcode; a user entry of a valid PIN; a swiping of a recognized user skin over a sensor array of the electronic device; a correct user swiping or gesturing on a touch sensor array of the electronic device; a correct sequence of user taps on the electronic device; a correct user sequence of user motions of the electronic device; a skin-contact sense of a valid user; and a device biometric recognition of a valid user.	18
An electronic device comprising: at least one processor; a memory coupled to the at least one processor; a display operable to present a visual user-interface comprising device inputs; display output; a device input; an NFC interface operable to receive a transaction request when in proximity to an NFC recipient; wherein the processor is operable to execute a program to implement a method comprising:	19

Claim Terms	Claim(s)
accepting a priming action of the electronic device by an identified device user, from the device input;	19
enabling the electronic device for imminent performance of a payment operation responsive to the priming action of a valid user;	19
receiving a payment selection and approval authorization from a valid device user via the device input; and	19
responsive to receiving an NFC transaction payment request, generating a limited-use payment information for use in place of card issuer payment information, wherein the NFC interface is operable to transmit said payment information from said electronic device to the NFC recipient of the transaction; and wherein further the processor is operable to cause the display to visually convey a status of the transaction.	19
The electronic device of claim 19, wherein the method further comprises: receiving the priming action of a valid user via the device input, wherein the device input comprises at least one of a set of device inputs comprising: a button; a touch ID button; a touch sensor array; a touch key-pad; a motion detection unit; an accelerometer; an optical sensor array; and identifying a valid device user through an input detection, selected from at least one of a set comprising: a correct passcode entry sequence: a touch ID recognition of a known user; a biometric recognition of a valid user; a biometric sensing of a valid users skin; a biometric detection that the electronic device continuously remains in contact with a valid user; and receiving a correct user response input, from a security challenge presented on the display.	20
wherein said memory comprises a static device-specific device account number of limited-use that originates from a card issuing authority and is limited to use by the electronic device in place of a card issuer account information, wherein further said static device-specific device account number has an expiration date of limited duration of validity, and	21

Claim Terms	Claim(s)
wherein the generating a limited-use payment information comprises the processor generating said limited-use payment information by combining said static device-specific device account number, said device account expiration date, when said issuer payment account method is selected.	21
a static device-specific device account information including a device account number of limited-use; and keys, wherein said device-specific device account information originates from a card issuing authority and is for limited-use by the specific electronic device only; and wherein said static device-specific device account information is valid for a limited duration,	22
and wherein the generating a limited-use payment information comprises the processor generating a one-time limited-use cryptogram number and combining said limited-use static device account information and said one-time use cryptogram number to produce the limited-use payment information.	22
The electronic device of claim 19 further comprising a cryptographic processor operable to dynamically generate a one-time limited-use cryptogram number by cryptographically combining of at least one information accessible on the electronic device, selected from a set comprising: a sequence counter; a device account number; a device secret; device keys; card issuer keys; a time; an amount; an expiration date; a card security code; a location; merchant information; NFC recipient information; payment reader information; an online location; transaction information; payment information; device information; user information; an email address;	23

Claim Terms	Claim(s)
a user identification entry; a hash of transaction information; and a hashed record of transactions, and wherein said cryptogram number is operable to be used in place of at least a portion of a card issuer payment information, in a payment transaction.	

2. Lack of Enablement under 35 U.S.C. § 112(a)

The asserted claims are also invalid under 35 U.S.C. § 112, because the '579 patent does not enable one of ordinary skill in the art to make and/or use the full scope of certain recited elements of the asserted claims of the '579 patent without undue experimentation. *See, e.g.*, *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988) ("The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation."); *Trustees of Bos. Univ. v. Everlight Elecs. Co.*, 896 F.3d 1357, 1362 (Fed. Cir. 2018) ("to be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of enablement under 35 U.S.C. § 112, as the claims, specification, and prosecution histories would not enable one of skill in the art to practice the claimed invention(s) without undue experimentation:

Claim Terms	Claim(s)
generating, by the processor, a limited-use payment information, and using said limited-use payment information in place of said card issuer supplied payment information;	1
The method of claim 1, wherein the generating the limited-use payment information utilizes at least one information from a set of information comprising: a device transaction sequence counter;	2

Claim Terms	Claim(s)
a device account number; device secret keys; card issuer keys; merchant information; NFC recipient information; payment reader information; a time; a timestamp; an amount; a location; an online location; transaction information; payment information; device information; user information; an email address; and a user identification entry.	
The method of claim 1, further comprising: dynamically generating a cryptogram number for use by the electronic device in place of a card validation value originated from the card issuer, and wherein the dynamically generating the cryptogram number comprises cryptographically combining a device transaction sequence counter count and at least one information of a set of information comprising: a device account number; device identifiers; device secrets; device keys; payment issuer secrets; payment issuer keys; user information; a time; and transaction information; and wherein further, said dynamically generating the cryptogram number results in a one-time limited-use number via the device incrementing said device transaction sequence counter count on a transaction.	3
wherein the device account number is of a limited time-duration of valid use, and wherein further a card issuing authority provides said device account number for use only by the electronic device, in place of card issuer information in performing payment transactions by the electronic device, and further comprising: performing payment transactions by the electronic device including the limited-use number;	4

Claim Terms	Claim(s)
combining the limited-use number and said device account number within a device generated payment information; and conveying said device generated payment information, in place of card issuer information, when the device is performing payment transactions.	
The method of claim 1, further comprising: generating a limited-use security number for use in place of a card issuer card security code by cryptographically combining information from at least one of a set of information comprising: user information; an internet address; an email address; a device transaction sequence counter; a device account number; device identifiers; device secrets; device keys; issuer secrets; issuer keys; a payment card account number; a payment card security code; a time; an expiration date; an amount; a merchant locality; transaction information; and displaying the limited-use security number on the user-interface of the display.	5
The method of claim 1, wherein a payment processing authority verifies a limited-use number based on at least one information of the set of information comprising: a transaction sequence count information; a device account number; user account information; issuer secrets; issuer keys; issuer-provided device keys; transaction information; and a time of use, and further comprising: authorizing said transaction, by the payment processing authority, responsive to verifying a valid limited-use number appearing in place of card issuer information; and	6

Claim Terms	Claim(s)
rejecting a limited-use number, by the payment processing authority, on at least one unverifiable condition, of a set of unverifiable conditions comprising: an invalid number generation; an invalid device account number; a use outside of a valid time window; an invalid re-use of a limited-use number; and an invalid use of an expired limited-duration number.	
The method of claim 1, wherein the receiving an input at an electronic device comprises receiving an input via a user interface from one of the set of user interfaces comprising: a device button; a device touch-screen interface; a device touch ID button interface; a device optical sensor array; a device skin touch sensor; a skin-contact sensor; a device motion detection interface; a device biometric sensor interface; and a device user-interface selection.	7
The method of claim 1, wherein the priming operation comprises one operation of the set of operations comprising: a button press; a touch ID button press; a button double-press; a touch ID sensor touch; a touch-screen touch; a touch-input sequence; a gesture or swipe over a sensor-array; a skin-contact sense; an optical-sensor array sense; an electronic device tap; a sequence of motions of the electronic device; a user-interface selection of a payment method; and a user-interface selection initiating a payment-operation; and,	8
further comprising enabling the electronic device for payment via successfully completing at least one of a set of user-validations comprising: a touching from an identified valid user; a user entry of a valid passcode; a user entry of a valid PIN; swiping of a recognized user skin over a device sensor array; a correct user swiping or gesturing on the electronic device;	8

Claim Terms	Claim(s)
a correct sequence of user taps on the electronic device; a correct user sequence of user motioning of the electronic device; a skin-contact sensing of an identified user; a device biometric sensing of a valid user identity; and a device biometric sensing the electronic device is continuously remaining in the proximity possession of a valid user.	
The method of claim 1, further comprising: obtaining, by the electronic device, a user payment approval, through at least one device user interface of a set of interfaces comprising: a device display interface; a device touch-screen display interface; a device touch interface; device input buttons; device key-pad inputs, a device optical sensor array; a device motion detection unit; a device accelerometer; a device biometric user-sensor; and a device biometric sensing the electronic device is continuously remaining in the proximity contact of a valid user; and	9
displaying, on the display, at least one information of a set of information comprising: a priming status of the electronic device for payment; a default payment method; a plurality of selectable payment accounts; a payment request; transaction information; a payment amount; a merchant identification; a time; an expiration date; a location; an account balance; a payment bank logo; a card image; a payment card issuer icon; a payment card network icon; the last 4-digits of the primary account number; the last 4-digits of the device account number; and other payment iconography; and receiving a user input of at least one user action, from a set of actions comprising: a payment method selection;	9

Claim Terms	Claim(s)
a payment approval authorization; a payment denial; and an adjustment of a transaction payment.	
The method of claim 1, further comprising: activating an NFC communication for a limited duration of time responsive to the electronic device priming; and responsive to the preset duration being exceeded, terminating the NFC communications and aborting the transaction.	10
The method of claim 1, further comprising completing the transaction on the electronic device, wherein the completing further comprises: receiving an authorization input on the electronic device from a valid device user, in response to at least one of a set of exceptional conditions comprising: the electronic device leaving the proximity of the NFC recipient; the incomplete identifying of a valid device user; the electronic device leaving the user's possession; the electronic device leaving the proximity contact of the user; the electronic device leaving the grasp of the user; a biometric sensing the electronic device leaving the possession of a user since a last user validation; the transaction exceeding a pre-set amount limit; the transaction interval exceeding a pre-set time duration; a card issuing authority requesting a security check; and presenting the user with at least one of a set of selectable options comprising: requesting a transaction payment; continuing with the default payment method; selecting an alternate payment account; inputting an approval authorization; inputting a transaction denial; and inputting an adjustment of the transaction payment.	11
The method of claim 1, further comprising: subsequent to the priming operation, offering a user selection of payment options for user input selection by presenting a selection of payment options in graphical format on said touch-screen display, including at least one of: a last four digits of a payment account number portion; a last four digits of a device account number portion; an expiration date; a card issuer icon; a bank logo; a card processing network logo; a card image; a card payment network icon;	12

Claim Terms	Claim(s)
graphical images associated with the payment account; accepting a user input selection of a payment option, from said payment options, via said touch-screen display; and proceeding with a default payment option in said device payment transaction responsive to a user not selecting any of said payment options.	
A method of claim 1, wherein the priming operation comprises: a button double press; and a biometric sense of the device continuously remaining in the proximity contact of a valid user, since a last validation; and further comprising: denying the priming operation for payment when the electronic device is not sensed as being continuously within the proximity contact of a valid user, until after successfully re-validating a user; and wherein re-validating a user requires a correct user passcode re-entry; disabling a device priming operation on further button pressing; disabling a payment priming operation after the expiration of a pre-set time duration from a successful priming action; and disabling a device priming operation responsive to completing a transaction.	13
A method of claim 1, wherein the priming operation is input after at least one of: a biometric sense of a touch contact of a valid user's skin on a touch ID button of the electronic device, and validating a user passcode entry on the touch-screen display of the electronic device; disabling a device priming operation on further button pressing; disabling a payment priming operation after the expiration of a pre-set time duration from a successful priming action; and disabling a device priming operation responsive to completing a transaction.	14
generating a limited-use number at said electronic device, and using said limited-use number in place of at least a portion of selected account issuer payment information; and	15
obtaining a user payment approval through at least one user-interface of the electronic device, of a set of user-interfaces comprising: a touch-screen interface of the touch-screen display user-interface; a touch ID button; input buttons; a touch key-pad; an optical sensor array;	15

Claim Terms	Claim(s)
a sensor array operable to recognize a swiping of a recognized user skin over the sensor array; a motion detection unit; an accelerometer; a biometric user-sensor; a device biometric sensor operable to determine the electronic device continuously remains in contact with a valid user while the electronic device is coming within proximity contact of an NFC recipient;	
displaying on said display at least one of a set of information comprising: transaction information; merchant information; a time; a location of the transaction; a payment bank logo; a card issuer icon; a payment card image; an amount; and receiving a user input providing for at least one transaction action, from a set of actions comprising: approving a transaction; denying a transaction; and adjusting a transaction.	15
visually conveying on the touch-screen display user-interface, information regarding the transaction, including at least one of: a payment amount requested; an indication requesting an authorization input; an indication of an authorization success; an indication of an authorization failure; an option to retry a transaction; an option to retry a user authorization; an option to retry validating a user identity; an indication of a payment successfully completed; an indication of a payment failure; and an indication of a payment retry option.	16
visually presenting on the touch-screen display user-interface, a plurality of payment options, including at least one of a set of payment method information for each payment option, the set comprising: a card image; a payment issuer logo; partial payment account numbers; a card payment network icon;	17

Claim Terms	Claim(s)
a graphical image-encoding of a users payment account information; an amount of currency; an account balance; a credit limit; an amount of remaining credit; an amount of cryptocurrency; a cryptocurrency server network; and receiving a user-selection of a payment method for a transaction via said touch-screen display user-interface.	
receiving a priming operation at the electronic device for priming the electronic device for imminent payment, wherein the priming operation causes the electronic device to successfully identify the user through completing at least one user-validation, of a set of user validations comprising: a touching of the device by an identified user; a user entry of a valid passcode; a user entry of a valid PIN; a swiping of a recognized user skin over a sensor array of the electronic device; a correct user swiping or gesturing on a touch sensor array of the electronic device; a correct sequence of user taps on the electronic device; a correct user sequence of user motions of the electronic device; a skin-contact sense of a valid user; and a device biometric recognition of a valid user.	18
responsive to receiving an NFC transaction payment request, generating a limited-use payment information for use in place of card issuer payment information, wherein the NFC interface is operable to transmit said payment information from said electronic device to the NFC recipient of the transaction;	19
receiving the priming action of a valid user via the device input, wherein the device input comprises at least one of a set of device inputs comprising: a button; a touch ID button; a touch sensor array; a touch key-pad; a motion detection unit; an accelerometer; an optical sensor array; and identifying a valid device user through an input detection, selected from at least one of a set comprising: a correct passcode entry sequence: a touch ID recognition of a known user;	20

Claim Terms	Claim(s)
a biometric recognition of a valid user; a biometric sensing of a valid users skin; a biometric detection that the electronic device continuously remains in contact with a valid user; and receiving a correct user response input, from a security challenge presented on the display.	
wherein said memory comprises a static device-specific device account number of limited-use that originates from a card issuing authority and is limited to use by the electronic device in place of a card issuer account information, wherein further said static device-specific device account number has an expiration date of limited duration of validity, and	21
wherein the generating a limited-use payment information comprises the processor generating said limited-use payment information by combining said static device-specific device account number, said device account expiration date, when said issuer payment account method is selected.	21
a static device-specific device account information including a device account number of limited-use; and keys, wherein said device-specific device account information originates from a card issuing authority and is for limited-use by the specific electronic device only; and wherein said static device-specific device account information is valid for a limited duration, and	22
wherein the generating a limited-use payment information comprises the processor generating a one-time limited-use cryptogram number and combining said limited-use static device account information and said one-time use cryptogram number to produce the limited-use payment information.	22
The electronic device of claim 19 further comprising a cryptographic processor operable to dynamically generate a one-time limited-use cryptogram number by cryptographically combining of at least one information accessible on the electronic device, selected from a set comprising: a sequence counter; a device account number; a device secret; device keys; card issuer keys; a time; an amount;	23

Claim Terms	Claim(s)
an expiration date; a card security code; a location; merchant information; NFC recipient information; payment reader information; an online location; transaction information; payment information; device information; user information; an email address; a user identification entry; a hash of transaction information; and a hashed record of transactions, and wherein said cryptogram number is operable to be used in place of at least a portion of a card issuer payment information, in a payment transaction.	

3. Indefiniteness Pursuant to 35 U.S.C. § 112

The asserted claims of the '579 patent are also invalid because they fail to inform those skilled in the art about the scope of the alleged invention with reasonable certainty and are indefinite under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter the applicants regard as their alleged invention. *See, e.g.*, *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901, (2014) ("a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention."). The following terms render one or more claims of the patent-in-suit indefinite under 35 U.S.C. § 112:

Claim Terms	Claim(s)
receiving an input at an electronic device, wherein the input corresponds to a priming operation of the electronic device by an identified user	1
receiving a request for a transaction payment at said electronic device via the NFC interface	1

Claim Terms	Claim(s)
generating, by the processor, a limited-use payment information	1
using said limited-use payment information in place of said card issuer supplied payment information	1
transmitting said limited-use payment information from said electronic device to an NFC recipient of the transaction via said NFC interface	1
wherein the generating the limited-use payment information utilizes at least one information from a set of information comprising: a device transaction sequence counter; a device account number; device secret keys; card issuer keys; merchant information; NFC recipient information; payment reader information; . . . an online location; . . . a user identification entry	2
dynamically generating a cryptogram number for use by the electronic device in place of a card validation value originated from the card issuer, and wherein the dynamically generating the cryptogram number comprises cryptographically combining a device transaction sequence counter count and at least one information of a set of information comprising: a device account number; device identifiers; device secrets; device keys; payment issuer secrets; payment issuer keys; . . . and wherein further, said dynamically generating the cryptogram number results in a one-time limited-use number via the device incrementing said device transaction sequence counter count on a transaction.	3
4. The method of claim 1, wherein a limited-use number comprises a device account number, .	4
and wherein the device account number is of a limited time-duration of valid use,	4
and wherein further a card issuing authority provides said device account number for use only by the electronic device, in place of card issuer information in performing payment transactions by the electronic device,	4

Claim Terms	Claim(s)
performing payment transactions by the electronic device including the limited-use number; combining the limited-use number and said device account number within a device generated payment information; and conveying said device generated payment information, in place of card issuer information, when the device is performing payment transactions	4
generating a limited-use security number for use in place of a card issuer card security code by cryptographically combining information from at least one of a set of information comprising: . . . a device transaction sequence counter; a device account number; device identifiers; device secrets; device keys; issuer secrets; issuer keys; a payment card account number; a payment card security code; . . .	5
wherein a payment processing authority verifies a limited-use number based on at least one information of the set of information comprising: a transaction sequence count information; a device account number; user account information; issuer secrets; issuer keys; issuer-provided device keys; . . .	6
authorizing said transaction, by the payment processing authority, responsive to verifying a valid limited-use number appearing in place of card issuer information; and	6
rejecting a limited-use number, by the payment processing authority, on at least one unverifiable condition, of a set of unverifiable conditions comprising: an invalid number generation; an invalid device account number; a use outside of a valid time window; an invalid re-use of a limited-use number; and an invalid use of an expired limited-duration number.	6

Claim Terms	Claim(s)
wherein the receiving an input at an electronic device comprises receiving an input via a user interface from one of the set of user interfaces comprising: . . . a device optical sensor array; a device skin touch sensor; a skin-contact sensor; a device motion detection interface; a device biometric sensor interface; and a device user-interface selection.	7
wherein the priming operation comprises one operation of the set of operations comprising: a button press; a touch ID button press; a button double-press; a touch ID sensor touch; . . . a skin-contact sense; an optical-sensor array sense; an electronic device tap; a sequence of motions of the electronic device; a user-interface selection of a payment method; and a user-interface selection initiating a payment-operation;	8
enabling the electronic device for payment via successfully completing at least one of a set of user-validations comprising: . . . swiping of a recognized user skin over a device sensor array; a correct user swiping or gesturing on the electronic device; . . . a correct user sequence of user motioning of the electronic device; a skin-contact sensing of an identified user; . . . a device biometric sensing the electronic device is continuously remaining in the proximity possession of a valid user.	8
obtaining, by the electronic device, a user payment approval, through at least one device user interface of a set of interfaces comprising: . . . a device optical sensor array; a device motion detection unit; a device accelerometer; a device biometric user-sensor; and	9

Claim Terms	Claim(s)
a device biometric sensing the electronic device is continuously remaining in the proximity contact of a valid user;	
displaying, on the display, at least one information of a set of information comprising: a priming status of the electronic device for payment; a default payment method; . . . the last 4-digits of the primary account number; the last 4-digits of the device account number; and other payment iconography; and	9
receiving a user input of at least one user action, from a set of actions comprising: a payment method selection; a payment approval authorization; a payment denial; and an adjustment of a transaction payment.	9
activating an NFC communication for a limited duration of time responsive to the electronic device priming; and	10
responsive to the preset duration being exceeded, terminating the NFC communications and aborting the transaction.	10
completing the transaction on the electronic device, wherein the completing further comprises: receiving an authorization input on the electronic device from a valid device user, in response to at least one of a set of exceptional conditions comprising: the electronic device leaving the proximity of the NFC recipient; the incomplete identifying of a valid device user; the electronic device leaving the user's possession; the electronic device leaving the proximity contact of the user; the electronic device leaving the grasp of the user; a biometric sensing the electronic device leaving the possession of a user since a last user validation; the transaction exceeding a pre-set amount limit; the transaction interval exceeding a pre-set time duration; a card issuing authority requesting a security check; and presenting the user with at least one of a set of selectable options comprising: requesting a transaction payment;	11

Claim Terms	Claim(s)
continuing with the default payment method; selecting an alternate payment account; inputting an approval authorization; inputting a transaction denial; and inputting an adjustment of the transaction payment.	
offering a user selection of payment options for user input selection by presenting a selection of payment options in graphical format on said touch-screen display, including at least one of: a last four digits of a payment account number portion; a last four digits of a device account number portion; . . . graphical images associated with the payment account;	12
wherein the priming operation comprises: . . . a biometric sense of the device continuously remaining in the proximity contact of a valid user, since a last validation; and further comprising:	13
denying the priming operation for payment when the electronic device is not sensed as being continuously within the proximity contact of a valid user, until after successfully re-validating a user; and wherein re-validating a user requires a correct user passcode re-entry;	13
disabling a device priming operation on further button pressing;	13
disabling a payment priming operation after the expiration of a pre-set time duration from a successful priming action; and	13
disabling a device priming operation responsive to completing a transaction.	13
wherein the priming operation is input after at least one of: a biometric sense of a touch contact of a valid user's skin on a touch ID button of the electronic device, . . .	14
disabling a device priming operation on further button pressing;	14
disabling a payment priming operation after the expiration of a pre-set time duration from a successful priming action; and	14
disabling a device priming operation responsive to completing a transaction.	14
15. A method of performing a transaction, the method comprising:	15

Claim Terms	Claim(s)
receiving an input signal at an electronic device, the input signal corresponding to a request for payment of a transaction at said electronic device, via a recipient proximity communication request to an NFC interface of the electronic device;	
receiving, from a valid device user, a payment selection and approval authorization input on the electronic device;	15
generating a limited-use number at said electronic device, and using said limited-use number in place of at least a portion of selected account issuer payment information; and	15
transmitting said limited-use number from said electronic device to a transaction recipient via the NFC interface;	15
obtaining a user payment approval through at least one user-interface of the electronic device, of a set of user-interfaces comprising: . . . an optical sensor array; a sensor array operable to recognize a swiping of a recognized user skin over the sensor array; a motion detection unit; . . . a biometric user-sensor; a device biometric sensor operable to determine the electronic device continuously remains in contact with a valid user while the electronic device is coming within proximity contact of an NFC recipient;	15
visually presenting on the touch-screen display user-interface, a plurality of payment options, including at least one of a set of payment method information for each payment option, the set comprising: . . . a graphical image-encoding of a users payment account information; . . . an amount of cryptocurrency; a cryptocurrency server network; and	17
18. The method of claim 15, further comprising: receiving a priming operation at the electronic device for priming the electronic device for imminent payment, wherein the priming operation causes the electronic device to successfully identify the user through completing at least one user-validation, of a set of user validations comprising: a touching of the device by an identified user;	18

Claim Terms	Claim(s)
. . . a swiping of a recognized user skin over a sensor array of the electronic device; a correct user swiping or gesturing on a touch sensor array of the electronic device; . . . a skin-contact sense of a valid user; . . .	
display output;	19
a device input;	19
enabling the electronic device for imminent performance of a payment operation responsive to the priming action of a valid user;	
responsive to receiving an NFC transaction payment request, generating a limited-use payment information for use in place of card issuer payment information,	19
receiving the priming action of a valid user via the device input, wherein the device input comprises at least one of a set of device inputs comprising: . . . a touch sensor array; . . . a motion detection unit; . . . an optical sensor array; and	20
identifying a valid device user through an input detection, selected from at least one of a set comprising: . . . a biometric sensing of a valid users skin; a biometric detection that the electronic device continuously remains in contact with a valid user; and . . .	20
wherein said memory comprises a static device-specific device account number of limited-use that originates from a card issuing authority and is limited to use by the electronic device in place of a card issuer account information,	21
wherein further said static device-specific device account number has an expiration date of limited duration of validity, and	21

Claim Terms	Claim(s)
wherein the generating a limited-use payment information comprises the processor generating said limited-use payment information by combining said static device-specific device account number, said device account expiration date,	21
wherein said memory comprises: a static device-specific device account information including a device account number of limited-use; and keys,	22
wherein said device-specific device account information originates from a card issuing authority and is for limited-use by the specific electronic device only;	22
wherein said static device-specific device account information is valid for a limited duration, and	22
wherein the generating a limited-use payment information comprises the processor generating a one-time limited-use cryptogram number and combining said limited-use static device account information and said one-time use cryptogram number to produce the limited-use payment information.	22
a cryptographic processor operable to dynamically generate a one-time limited-use cryptogram number by cryptographically combining of at least one information accessible on the electronic device, selected from a set comprising: a sequence counter; a device account number; a device secret; device keys; card issuer keys; . . . NFC recipient information; payment reader information; an online location; . . . a user identification entry; a hash of transaction information; and a hashed record of transactions,	23
wherein said cryptogram number is operable to be used in place of at least a portion of a card issuer payment information, in a payment transaction.	23

4. Ineligible Subject Matter under 35 U.S.C. § 101

Each Asserted Claim of the '579 patent is directed to ineligible subject matter under 35 U.S.C. § 101. Specifically, the Asserted Claims are fatally abstract under the U.S. Supreme Court's decision in *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2345 (2014) and progeny.

In *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014), the Supreme Court established a two-part test for determining whether a claim recites patent-eligible subject matter. First, the court must determine whether the claims at issue are directed to any of the following patentable ineligible subject matter: laws of nature, natural phenomena, or abstract ideas. *Id.* at 2355. Second, if the claims are directed to ineligible subject matter, the court must then consider the claim elements—both individually and as an ordered combination—to determine whether they add an "inventive concept." *Id.* Merely claiming a generic "computer" to implement an abstract idea is not sufficient to transform the computer into a patent-eligible invention. *Id.* at 2357-50. Software claims may be abstract if "[t]hey do not claim a particular way of programming [to accomplish the claimed functionality], but instead merely claim the resulting systems" or if they "are not directed to a specific improvement in the way computers operate." *Apple Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1241 (Fed. Cir. 2016). "[M]erely presenting the results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation), is abstract as an ancillary part of such collection and analysis." *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016).

The asserted claims of the '579 patent are directed to the abstract ideas of facilitating secure payment transactions by, *e.g.*, storing, analyzing and transmitting payment information, using generic and conventional computer components. For example, claim 1 recites a "method for performing a transaction" using an "electronic device" comprising "a processor," "a touch screen display," "a near field communications (NFC) interface." '579 patent, claim 1; *see also*

claims 15, 19. The method of claim 1 includes "receiving an input" corresponding to a "priming operation" on the device, "receiving a request for . . . payment . . . via the NFC interface," "displaying" images of a selected card issuer payment method including at least 4 digits of the account number, a card logo, and other iconography, "generating . . . a limited-use payment information," "transmitting said limited-use payment information . . . via said NFC interface," and "visually conveying a status of said transaction via . . . [the] touch-screen display." *Id.* at claim 1; *see also id.* at claims 15 (also reciting "displaying a summary of selectable payment account options," "receiving . . . a payment selection," "obtaining a user payment approval" via user interface, displaying transaction information, and "receiving user input for at least one transaction"), 19 (also reciting "enabling the electronic device for imminent performance of a payment"). Although the claims are directed to the abstract idea of using "limited-use card payment information" in place of a bank issued payment number, the patent discloses no formulas or algorithms for how to generate the limited-use number, nor does the patent include any limitation or explanation that would render the claims non-abstract. The dependent claims do not add anything that would remove the claims from the realm of abstract ideas. For example, the dependent claims require generating the limited-use payment information from specific data (claims 2, 3, 4, 5, 21, 22, 23), time constraining the limited-use payment information (claim 4, 21, 22), displaying specific information (claims 5, 9, 12, 16, 17), verifying the limited-use payment information based on specific data (claim 6), receiving user input via specific user interfaces (claims, 7, 8, 9, 13, 14, 18, 20), receiving user input regarding a specific action (claim 9), activating and terminating NFC communication (claim 10), receiving authorization input in response to specific conditions (claim 11, 13, 14, 18, 20), and displaying transaction-related options (claim 11).

Under *Alice* Step 1, those ideas are abstract, as they relate to a fundamental long prevalent practice. *See Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1314 (Fed. Cir. 2016). Limiting the invention to a particular technological environment, e.g., generic computer hardware, "do[es] not render an otherwise abstract concept any less abstract." *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340 (Fed Cir. 2017).

Furthermore, under *Alice* Step 2 the Asserted Claims do not contain any inventive concept. The Asserted Claims employ well-known components or functionality (as shown in Apple's invalidity contentions involving anticipation and/or obviousness in this case), which is not enough to impart patent eligibility of an abstract idea. *See, e.g., Alice,* 134 S. Ct. at 2359 (holding that limitations describing "'well-understood, routine, conventional activit[ies]' previously known to the industry" were insufficient to supply an inventive concept (quoting *Mayo,* 132 S. Ct. at 1294)). For example, the asserted claims recite a "processor," however the specification admits that "microprocessors with cryptographic capabilities" were known and used in credit cards and other financial instruments and operated "in a similar manner to a cell phone having a chip comprising a cryptographic processor." ('579 patent at 1:41-45). Moreover, the lack of written description for numerous claim elements and minimal disclosure in the specification of many claimed components and functions further demonstrates the Asserted Claims rely on conventional components and features.

Apple reserves the right to supplement these disclosures based on further investigation and discovery.

V. U.S. PATENT NO. 11,176,538

A. Priority Date

Despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of the '538 patent is entitled to a priority date earlier than the filing date of the patent, *i.e.* October 20, 2020.

CardWare contends that every asserted claim is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application No. 61/794,891 (the "'891 provisional"). CardWare Preliminary Infringement Contentions (February 10, 2025) at Section II. However, CardWare provides no evidence or analysis to demonstrate that the asserted claims of the '538 patent are entitled to the priority date of the '891 provisional application. In this regard, a patent claim is entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides both written description support and an enabling disclosure for the patent claim as required by 35 U.S.C. § 112, ¶ 1. CardWare provides no such showing.

Nor has Cardware demonstrated that the asserted claims are entitled to the priority date of the earlier filed applications listed on the face of the patent. CardWare provides no evidence or analysis demonstrating that the asserted claims of the '538 patent are entitled to the priority date of any of the applications to which the '538 patent claims priority.

CardWare has not alleged that the asserted claims of the '538 patent are entitled to a priority date earlier than the March 15, 2013 filing date of the '891 Provisional application. Although CardWare produced a handful of documents, which appear to be related to conception and/or reduction to practice, CardWare's document production to date fails to demonstrate that the asserted claims of the '538 patent were conceived and/or diligently reduced to practice prior to the filing of the '538 patent. Apple expressly reserves the right to amend its contentions

if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice.

B. Relevant Prior Art

Apple contends that the prior art references identified in Apple's contentions anticipate and/or render obvious the Asserted Claims. Below, Apple lists some of the prior art cited in these contentions:

1. Patents and Patent Application Publications

Patent or Pub. No.	Filing Date	Publication/Issue Date
EP 0 949 595 A2	March 26, 1999	Oct. 13, 1999
EP 1 004 992 A2	March 24, 1998	May 31, 2000
EP 1 223 565 A1	Jan. 12, 2001	July 17, 2002
EP 2 302 882 A1	Sept. 24, 2009	March 30, 2011
EP 2 407 919 A1	March 30, 2007	Jan. 18, 2012
JP 2004-13728		Jan. 15, 2004
KR 20110039946A	Oct. 13, 2009	April 20, 2011
KR 20120076502A	Nov. 27, 2010	July 9, 2012
US 5,744,787	Sept. 25, 1995	April 28, 1998
US 5,883,810	Sept. 24, 1997	March 16, 1999
US 5,963,924	April 26, 1996	Oct. 5, 1999
US 6,005,942	March 24, 1998	Dec. 21, 1999
US 6,076,075	March 30, 1998	June 13, 2000
US 6,105,008	April 30, 1998	Aug. 15, 2000
US 6,119,946	March 3, 1998	Sept. 19, 2000
US 6,233,683	March 24, 1998	May 15, 2001
US 6,282,522 B1	Oct. 16, 1997	Aug. 28, 2001
US 6,330,978 B1	April 27, 1998	Dec. 18, 2001
US 6,450,407 B1	April 21, 2000	Sept. 17, 2002
US 6,481,632 B2	Oct. 26, 1999	Nov. 19, 2002
US 6,748,367 B1	Sept. 21, 2000	June 8, 2004
US 6,776,332 B2	Dec. 26, 2002	Aug. 17, 2004
US 7,127,236 B2	Dec. 18, 2002	Oct. 24, 2006
US 7,177,848 B2	June 22, 2001	Feb. 13, 2007
US 7,725,369 B2	Jan. 23, 2009	May 25, 2010
US 7,908,216 B1	July 22, 1999	March 15, 2011
US 8,095,113 B2	Feb. 4, 2009	Jan. 10, 2012
US 8,255,323 B1	Jan. 9, 2009	Aug. 28, 2012
US 8,930,274 B1	Dec. 18, 2013	Jan. 6, 2015
US 9,008,616 B2	Dec. 9, 2011	April 14, 2015

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 9,600,808 B1	June 22, 2012	March 21, 2017
US 9,721,319 B2	March 28, 2012	Aug. 1, 2017
US 9,898,728 B2	April 16, 2012	Feb. 20, 2018
US 10,121,144 B2	Sept. 2, 2014	Nov. 6, 2018
US 10,380,573 B2	Sept. 30, 2008	Aug. 13, 2019
US 10,445,723 B2	May 14, 2013	Oct. 15, 2019
US 10,510,056 B2	Nov. 2, 2011	Dec. 17, 2019
US 11,042,846 B2	Sept. 2, 2014	June 22, 2021
US 11,068,875 B2	Sept. 30, 2014	July 20, 2021
US 11,392,937 B2	Sept. 2, 2014	July 19, 2022
US 2003/0222152 A1	May 28, 2003	Dec. 4, 2003
US 2004/0127256 A1	July 23, 2003	July 1, 2004
US 2007/0095892 A1	Oct. 27, 2005	May 3, 2007
US 2008/0040285 A1	Feb. 16, 2007	Feb. 14, 2008
US 2009/0030845 A1	June 25, 2008	Jan. 29, 2009
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2005/0043997 A1	Aug. 18, 2003	Feb. 24, 2005
US 2005/0252961 A1	May 13, 2004	Nov. 17, 2005
US 2007/0045403 A1	Aug. 31, 2005	March 1, 2007
US 2007/0114274 A1	Nov. 21, 2006	May 24, 2007
US 2007/0208671 A1	Dec. 30, 2006	Sept. 6, 2007
US 2007/0244811 A1	March 30, 2007	Oct. 18, 2007
US 2008/0078831 A1	Sept. 29, 2006	April 3, 2008
US 2008/0222047 A1	July 27, 2007	Sept. 11, 2008
US 2008/0275779 A1	Feb. 7, 2008	Nov. 6, 2008
US 2009/0070272 A1	Sept. 11, 2008	March 12, 2009
US 2009/0144161 A1	Nov. 30, 2007	June 4, 2009
US 2009/0200371 A1	Feb. 4, 2009	Aug. 13, 2009
US 2009/0210308A1	Feb. 15, 2008	Aug. 20, 2009
US 2009/0276347 A1	May 1, 2009	Nov. 5, 2009
US 2009/0291634 A1	April 24, 2006	Nov. 26, 2009
US 2010/0078471 A1	Sept. 30, 2008	April 1, 2010
US 2010/0078472 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082481 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082490 A1	Sept. 30, 2008	April 1, 2010
US 2010/0088227 A1	Nov. 16, 2007	April 8, 2010
US 2010/0125508 A1	Nov. 17, 2009	May 20, 2010
US 2010/0125509 A1	June 1, 2009	May 20, 2010
US 2010/0127083 A1	Nov. 26, 2008	May 27, 2010
US 2011/0010277 A1	July 9, 2009	Jan. 13, 2011
US 2011/0022472 A1	Feb. 25, 2010	Jan. 27, 2011
US 2011/0078031 A1	Sept. 30, 2009	March 31, 2011
US 2011/0082772 A1	Nov. 12, 2009	April 7, 2011

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 2011/0101093 A1	Feb. 18, 2010	May 5, 2011
US 2011/0112918 A1	Oct. 29, 2010	May 12, 2011
US 2011/0140841 A1	Aug. 19, 2009	June 16, 2011
US 2011/0153498A1	Dec. 7, 2010	June 23, 2011
US 2011/0173060 A1	Jan. 10, 2011	July 14, 2011
US 2011/0173121 A1	March 28, 2011	July 14, 2011
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2011/0191161 A1	Jan. 31, 2011	Aug. 4, 2011
US 2011/0191177 A1	Jan. 25, 2011	Aug. 4, 2011
US 2011/0238573 A1	March 15, 2011	Sept. 29, 2011
US 2012/0116902 A1	March 11, 2011	May 10, 2012
US 2012/0116976 A1	Jan. 10, 2012	May 10, 2012
US 2012/0143754 A1	Dec. 5, 2011	June 7, 2012
US 2012/0150687 A1	Dec. 13, 2011	June 14, 2012
US 2012/0191612 A1	April 3, 2012	July 26, 2012
US 2012/0191615 A1	Jan. 27, 2012	July 26, 2012
US 2012/0205443 A1	April 3, 2012	Aug. 16, 2012
US 2012/0310760 A1	Sept. 1, 2011	Dec. 6, 2012
US 2013/0013499 A1	July 5, 2012	Jan. 10, 2013
US 2013/0024371 A1	Sept. 27, 2012	Jan. 24, 2013
US 2013/0085941 A1	Sept. 30, 2011	April 4, 2013
US 2013/0159186 A1	April 16, 2012	June 20, 2013
US 2013/0166441 A1	Dec. 21, 2012	June 27, 2013
US 2013/0232083 A1	March 1, 2013	Sept. 5, 2013
US 2013/0262317 A1	March 14, 2013	Oct. 3, 2013
US 2013/0297509 A1	May 6, 2013	Nov. 7, 2013
US 2014/0229375 A1	Feb. 11, 2013	Aug. 14, 2014
US 2014/0344153 A1	May 15, 2014	Nov. 20, 2014
US 2015/0058191 A1	Nov. 27, 2013	Feb. 26, 2015
US 2015/0073983 A1	Nov. 12, 2014	March 12, 2015
US 2015/0178724 A1	Dec. 19, 2014	June 25, 2015
US 2015/0180836A1	Dec. 19, 2014	June 25, 2015
US 2015/0348002 A1	Sept. 30, 2014	Dec. 3, 2015
US 2016/0042356 A1	Aug. 11, 2014	Feb. 11, 2016
US 2016/0057619 A1	Aug 24, 2015	Feb. 25, 2016
US 2016/0253669 A1	Feb. 26, 2016	Sept. 1, 2016
US 2016/0275505 A1	March 17, 2015	Sept. 22, 2016
US 2016/0321653 A1	April 29, 2016	Nov. 3, 2016
WO 2010/037218 A1	Sept. 29, 2009	April 8, 2010
WO 2010/039337 A2	Aug. 11, 2009	April 8, 2010
WO 2012/011054 A1	July 19, 2011	Jan. 26, 2012
WO 2012/154915 A1	May 10, 2012	Nov. 15, 2012
WO 2013/155627 A1	April 16, 2013	Oct. 24, 2013

Patent or Pub. No.	Filing Date	Publication/Issue Date
Patent Application 61/899,734	Nov. 4, 2013	
Patent Application 61/905,035	Nov. 15, 2013	
Patent Application 61/921,688	Dec. 30, 2013	

2. Printed Publications

Title	Author/Publisher	Date
"A Primer to the Implementation of Smrt Card Management and Related Systems," Version 1.0	GlobalPlatform	Aug. 2000
About Us | Venmo	Venmo.com	2012
"An Introduction to Java Card Technology – Part 1"	C. Enrique Ortiz Sun Developer Network	May 29, 2003
"An Introduction to Java Card Technology – Part 2, The Java Card Applet"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Introduction to Java Card Technology – Part 3, The Smart Card Host Application"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Investigation into Electronic Commerce Frauds and their Security Implications"	Kevin Boardman	Nov. 7, 2004
Apple Press Release: "Apple Announces Apple Pay"	Apple	Sept. 9, 2014
Card on File Tokenization | Mastercard Developers	Mastercard.com	
"Contactless Payment Security Questions & Answers"	Smart Card Alliance, Inc.	2016
E-ink on Credit Cards will do Away with PINs (video)	The Digital Reader	Sept. 2, 2011
Emue – a Revolution in Authentication	EMUE	May 13, 2009
"EMV Card Personalization Specification," Version 1.0	EMVCo, LLC	June 2003
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 1, Application Independent ICC to Terminal Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.3	EMVCo, LLC	Nov 2011

Title	Author/Publisher	Date
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.3	EMVCo, LLC	Nov. 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 4, Cardholder, Attendant, and Acquirer Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011
For Businesses: Payment Technologies – Products & Platforms	Visa	2004
For Businesses: Payment Technologies – Visa Cash	Visa	2004
For Businesses: Payment Technologies – Visa Smart debit and Visa Smart Credit	Visa	2004
GlobalPlatform: a Dynamic and Secure	Marc Kekiheff GlobalPlatform	
GlobalPlatform Card Security Requirements Specification	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Card Specification Tutorial	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Technical Overview	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform – Global Consensus for a Connected Planet	GlobalPlatform	
GlobalPlatform – Implementations – Financial	GlobalPlatform	2006
GlobalPlatform – Implementations – Mobile Telecom	GlobalPlatform	2006
GlobalPlatform – Implementations – Retail	GlobalPlatform	2006
GlobalPlatform – Implementations – Transit	GlobalPlatform	2006
GlobalPlatform – Interoperability and Security with GlobalPlatform	March Kekicheff, GlobalPlatform	Feb. 2, 2004
GlobalPlatform – Introduction to GlobalPlatform Technology	GlobalPlatform	
GlobalPlatform – Overview	GlobalPlatform	June 2004
GlobalPlatform – The Cross-Industry Approach to Smart Card Standards	GlobalPlatform	2000
GlobalPlatform – The Platform for a Multi-application Environment	March Kekicheff, GlobalPlatform	April 2005
GlobalPlatform – Towards the Next Generation of GlobalPlatform Specifications	Pierre-Francois Solere, GLobalPlatform	

Title	Author/Publisher	Date
GlobalPlatform Specifications: The Solution for an Emerging Market	GlobalPlatform	
GlobalPlatform Specifications Archive – Technology Document Library	GlobalPlatform	2024
GlobalPlatform: a Dynamic and Secure Pre and Post Issuance Solution – Cartes 2002	Marc Kekiheff GlobalPlatform	2002
Google Wallet and the New Retail Ecosystem	David W. Schropfer	Oct. 3, 2011
Government Smart Card Handbook	GSA	Feb. 2004
Government Smart Card Handbook	GSA	Feb. 2004
Implementing Electronic Card Payment Systems	Cristian Radu	2003
"Interoperability in Electronic Payments: Lessons and Opportunities"	Carol Coye Benson CGAP	2012
"Investigating Mobile Payment: Supporting Technologies, Methods, and Use"	Valcourt, et al.; IEEE	2005
"Java Card™ 2.2 Off-Card Verifier" White Paper	Sun Microsystems	June 2002
Java Card for ePayment Applications	Vesna. Hassler	2002
"Java Card™ Platform Security" Technical White Paper	Sun Microsystems	2001
Java Card Platform: A Week in the Life of Jack Link	Sun Microsystems	2004
Java Card Questions and Answers with Zhiqun Chen	Ed Ort Sun Microsystems	Oct. 2000
Java Card Technology Datasheet	Sun Microsystems	2005
Java Card Technology Examples	Sun Microsystems	2004
Java Card Technology FAQs	Sun Microsystems	2005
Java Card Technology for Smart Cards: Architecture and Programmer's Guide	Zhiqun Chen	2000
Java Card Technology for Smart Cards: Architecture and Programmer's Guide Book information	Zhiqun Chen Sun Microsystems	Sept. 18, 2000
"Java Card Technology Overview," Chapter 3		
Java Card1_Fig-3	Sun.com	2005
Java Card1_Fig-4	Sun.com	2005
Java Card1_Fig-5	Sun.com	2006
Java Card1_Fig-7	Sun.com	2004
Java Card1_Fig-9	Sun.com	2004
Java Card1_Fig-12	Sun.com	2006
Java on Smart Cards: Programming and Security: First International Workshop, JavaCard 2000		2000
JavaCard – From Hyper to Reality	Michael Baentsch IEEE	1999

Title	Author/Publisher	Date
JavaCard – Redistribution and Use in Source and Binary Forms License	Sun Microsystems	2004
JCOP V2.4.1 Secure Smart Card Controller, Rev. 3.2	NXP	Sept. 2, 2009
JCOP20 Technical Brief, Revision 2.3	IBM	
JCOP30 Technical Brief, Revision 2.3		
MagTek CEO: "Dynamic Data is the Core of Security" [Transcript]	David Evans Pymnts	March 8, 2012
MagTek Launches QwickPAY, the Innovative Secure Mobile Payments Service, Into the Android Marketplace	Magtek	March 29, 2011
MagTek Introduces Qwick Code Mobile Wallet		Jan. 15, 2012
Mastercard Virtual Card Tokens	Mastercard	March 7, 2025
MDES Token Connect | Mastercard Developers	Mastercard	
Mobile Payment Services in South Africa	Matthias Beland	Jan. 31, 2013
NXP – News Center – Infocus Archive	NXP	2006
One-Click Payments by 2030 With Tokenization	Jorn Lambert Mastercard	March 12, 2025
PCI Data Security Standard (PCI DSS), Version 2.0	Scoping SIG, Tokenization Taskforce PCI Security Standards Council	Aug. 2011
PCI – Payment Card Industry (PCI) Data Security Standard, Version 2.0	PCI	Oct. 2010
PHB Development, Kurt Salmon, "Mobile Payments … a 'Southern' Revolution!"	PHB Development	2011
Qwick Codes Mobile Wallet for IOS	CNET	
"Radio-Frequency Identification (RFID): A Focus on Information Security and Privacy," OECD Digital Economy Papers, No. 138	OECD Publishing	Jan. 14, 2008
"SE vs. HCE: What is More Secure for NFC Mobile Payments?"	Finextra	Oct. 17, 2014
Techie Visa Card Features Buttons and Screen to Generate CCV Dynamically	Mark Wilson	Nov. 11, 2008
The Complete Guide to Payments Tokenization		
The Rise of Async Work [Podcast] – Fast Company	Loom Atlassian	Feb. 10, 2025
Venmo, Just Say "Venmo Me"	Venmo	2021
Venmo – Wikipedia	Wikipedia	
Visa and Emue Technologies deploy cards with built-in one-time password generator	Finextra	Feb. 9, 2009
Visa Best Practices for Tokenization Version 1.0	Visa Best Practices	July 14, 2010
Visa CodeSure Gets Commercial Green Light	Finextra	June 2, 2010

Title	Author/Publisher	Date
Visa Invests in Authentication Outfit Emue	Finextra	Nov. 18, 2009
Visa Token Service Momentum, Annual Update 2022	Visa	2022
Visa Token Service – Product Fact Sheet	Visa	2022
Visa Token Service – Visa	Visa	2025
What is Venmo, how does it work, and is it safe to use?	Ben Luthi Yahoo Finance	May 31, 2024
What is Venmo? – NerdWallet	Chanelle Bessette NerdWallet	June 24, 2024
What is Venmo: How it Works	Nicole Symon Money	May 18, 2023
Qwick Codes Demo video		
Wi Wallet Mobile Payments video		
Visa Pin System 2 Credit Cards video		
Smart Dongle Credit Card With e-ink Display video		
Credit Card with E-ink Display Keep You Safe While Online Shopping video		
Mastercard Token Authentication Service lets Shoppers Create Passkeys for Secure Authentication video		
Mastercard Tokenization video		

3. Prior Art Systems

The table below lists prior art systems and products identified that reveal the state of the art and/or render the Asserted Claims invalid under pre- or post-AIA 35 U.S.C. §§ 102 and/or 103. Some or all of the supporting references for these systems may also qualify as prior art publications under 35 U.S.C. § 102 and may be used as invalidating prior art under 35 U.S.C. §§ 102 and 103. In particular, the manuals for these products, patents filed to cover these products, and any other publicly available information.

Each of the prior art systems were publicly known or used or offered for sale prior to the critical date of the '538 patent, as described in each system's respective claim chart. Apple continues to investigate the systems and products and reserves the right to supplement the contentions and accompanying claim charts after further discovery and investigation. Apple also

reserves the right to rely on fact or expert witness testimony to establish the public knowledge, use, availability, sale, or offer for sale of any systems described below. Although additional information and prior art systems may be obtained through discovery, such prior art systems include at least the following:

Prior Art System	Person/Entity	Date
Apple Pay	Apple	At least as early as 2012
Google Wallet	Google	At least as early as September 20, 2011
Venmo	Venmo	At least as early as 2009
Visa Payment Tokens	Visa	At least as early as July 2010
Mastercard Payment Tokens	Mastercard	At least as early as 2013
Qwick Codes Mobile Wallet	Magtek	At least as early as October 2012
wiWallet	wiWallet Mobile Payments (Pty) Ltd.	At least as early as July 08, 2010
emue Smart Card	emue	At least as early as February 11, 2010
Smart Dongle Credit Card	E-ink	At least as early as November 11, 2011
VivoTech systems	VivoTech	At least as early as 2005
Square Systems	Square	At least as early as 2009
Starbucks Mobile Application	Starbucks	At least as early as 2009
PayPal and PayPal Mobile	PayPal	At least as early as 2006
Venmo	Venmo	At least as early as 2010
Cake POS and payment systems	Cake Corp.	At least as early as 2013
Toast POS and payment systems	Toast, Inc.	At least as early as 2012
MiFare	Philips	At least as early as 2004
SmartMX	Philips	At least as early as 2004
JCOP OS	Philips/NXP	At least as early as 2004
Global Platform	GlobalPlatform	At least as early as 2004
JavaCard	Sun Microsystems	At least as early as 2004
LevelUp	SCVNGR dba LevelUp	At least as early as 2011

C. <u>Anticipation and Obviousness</u>

1. Non-limiting Claim Elements

The asserted claims of the '538 patent include numerous limitations that have no functional or structural relationship to the claimed payment system and thus do not affect the

scope of the claims. For example, at least the limitations listed below are directed to printed matter and thus entitled to no patentable weight:

- "displaying, on a display of the device, the request and at least a portion of an original static issuer-supplied payment account information associated with a selected payment method" ('538 patent, claim 1)
- "visually conveying the transaction payment authorization status via a user-interface displayed on said display" ('538 patent, claim 1)
- "a conveying of said validation result as a declining or accepting of said transaction payment" ('538 patent, claim 6)
- "a conveying of original issuer payment information to an original payment method issuer, for a settlement of said transaction" ('538 patent, claim 6)
- "the visual conveying of the transaction status is further comprising at least one, of a set of visual information including: a confirmation result of payment authority authenticating said device-transmitted limited-use payment information, a confirmation result of payment authority authenticating said device-transmitted complete device payment information, an NFC transaction status, a transaction payment amount, a payment facility wherein the transaction was performed, a merchant information, an original issuer payment account information, an original payment issuer information, a request for an authorized-user approval of the transaction, a payment processing status, an issuer payment approval status, and a payment completion status." ('538 patent, claim 7)
- "a displaying of the payment request notification at a touch-screen display user-interface of the electronic device" ('538 patent, claim 19)

- "displaying on said display at least a portion of information comprising: the payment request, the merchant, the amount, and the transaction information" ('538 patent, claim 19)
- "conveying said device-generated complete payment information, in place of a selected payment issuer information, when the device is performing payment transactions" ('538 patent, claim 21)
- "displaying the limited-use security code number on the user-interface of the device display" ('538 patent, claim 22)
- "display a summary of online purchase information including the merchant information and the purchase amount" ('538 patent, claim 25)
- "cause the display to visually convey a status of the online purchase transaction" ('538 patent, claim 25)
- "visually convey said transaction status in the user-interface on the display disposed of the device" ('538 patent, claim 29)
- "visually convey said transaction status in the user-interface on the display disposed of the device" ('538 patent, claim 30)

The Federal Circuit has repeatedly held that limitations directed to printed matter, such as those listed above, are not entitled to patentable weight. *See, e.g., CR Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020) ("[P]rinted matter encompasses any information claimed for its communicative content, and the doctrine prohibits patenting such printed matter unless it is 'functionally related' to its 'substrate' which encompasses the structural elements of the claimed invention."); *Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prop. IP Ltd.*, 890 F.3d 1024, 1031 (Fed. Cir. 2018) ("Claim limitations directed to printed

matter are not entitled to patentable weight unless the printed matter is functionally related to the substrate on which the printed matter is applied."); *In re Distefano*, 808 F.3d 845, 848 (Fed. Cir. 2015) ("[I]f a limitation claims (a) printed matter that (b) is not functionally or structurally related to the physical substrate holding the printed matter, it does not lend any patentable weight to the patentability analysis.").

2. Claim Charts

Apple attaches Exhibits 538-1 to 538-12, which provide exemplary disclosures showing how the prior art anticipates and/or renders obvious the asserted claims of the '538 patent. Apple also attaches Exhibit 538-103, which provides exemplary disclosures in secondary references to combine with the prior art identified in these contentions to render obvious the asserted claims of the '538 patent. Apple may rely on any of the primary references identified in Exhibits 538-1 to 538-12 in combination with any secondary reference identified in those exhibits, in exhibit 538-103, or in this cover pleading. The table below identifies the primary reference addressed in each of Exhibits 538-1 to 538-12, each of which describes anticipation and/or obviousness of one or more claims of the '538 patent:

Exhibit	Prior Art Reference
538-1	U.S. Pub. No. 2012/0116902 ("Cardina '902")
538-2	U.S. Pub. No. 2013/0262317 ("Collinge '317")
538-3	U.S. Patent No. 9,098,846 ("Gill '846")
538-4	U.S. Patent No. 9,600,808 ("Gomez, Sr. '808")
538-5	U.S. Pub. No. 2009/0030845 ("Hurry '845")
538-6	U.S. Pub. No. 2013/0124410 ("Kay '410")
538-7	U.S. Pub. No. 2009/0200371 ("Kean '371")
538-8	WIPO Pub. No. WO2010/039337A2 ("Lin '337")
538-9	U.S. Pub. No. 2013/0232083 ("Smith '083")
538-10	U.S. Pub. No. 2009/0210308 ("Toomer '308")
538-11	U.S. Pub. No. 2011/0238573 ("Varadarajan '573")
538-12	Apple Pay Products ("Apple Pay")

The U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id*. at 1732, 1738, 1742–1743, 1746. A patent claim may be obvious if the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id*. at 1740. The Court stated that courts should "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id*. at 1740–41. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See TGIP, Inc. v. AT&T Corp*., 527 F. Supp. 2d 561, 580–81 (E.D. Tex. 2007). "[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ" to resolve the question of obviousness. *KSR*, 127 S. Ct. at 1741.

Based on all of these considerations, as further detailed in Exhibits 538-1 to 538-12 and 538-103, a POSITA would have combined the teachings of the prior art references discussed and charted in those exhibits. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the asserted claims of the ' 538 patent. The references identified in Exhibits 538-1 to 538-12 and 538-103 are analogous prior art to the subject matter of the asserted claims and, for at least the reasons set forth below, are properly

combinable. Because these prior art references exist within a single field of art, particularly one in which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the '538 patent.

By way of example only, the following combinations render obvious claims 1-30 of the '538 patent:

- Cardina '902 in combination with one or more of Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 538-103.

- Collinge '317 in combination with one or more of Cardina '902, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 538-103.

- Gill '846 in combination with one or more of Cardina '902, Collinge '317, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 538-103.

- Gomez, Sr. '808 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 538-103.

- Hurry '845 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 538-103.

- Kay '410 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 538-103.

- Kean '371 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Lin '337, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 538-103.

- Lin '337 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Smith '083, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 538-103.

- Smith '083 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Toomer '308, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 538-103.

- Toomer '308 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Varadarajan '573, Apple Pay, and/or Secondary References in Ex. 538-103.

- Varadarajan '573 in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Apple Pay, and/or Secondary References in Ex. 538-103.

- Apple Pay in combination with one or more of Cardina '902, Collinge '317, Gill '846, Gomez, Sr. '808, Hurry '845, Kay '410, Kean '371, Lin '337, Smith '083, Toomer '308, Varadarajan '573, and/or Secondary References in Ex. 538-103.

Numerous prior art references, including those identified in the attached exhibits, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the '538 patent. As it would be unduly burdensome to create detailed claim charts for all of the invalidating combinations, for at least the reasons described in these invalidity contentions, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in the attached exhibits, to meet the limitations of the asserted claims of the '538 patent. Apple's inclusion of exemplary combinations, in view of the factors and motivations identified here, does not preclude Apple from identifying other invalidating combinations and/or motivations as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, because each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1739–40 (rejecting the Federal Circuit's "rigid"

application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 1742. Nevertheless, in addition to the information contained herein, Apple hereby identifies additional motivations and reasons to combine the cited art.

One or more combinations of the prior art references identified herein would have been obvious because these references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to combine the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market forces either in the same field or a different one. In addition, the combinations of the prior art references identified above would have been obvious because the combinations represent the known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation or reason to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution; the existence of a known need or problem in the field of endeavor at the time of the invention; and the background knowledge that would have been possessed by a person having ordinary skill in the art. For

example, the prior art references are generally directed to the same problems. Thus, a skilled artisan seeking to solve these problems would look to these cited references in combination.

Thus, the motivation or reason to combine the teachings of the prior art references disclosed herein is found in the references themselves and in: (1) the nature of the problems being solved; (2) the express, implied, and inherent teachings of the prior art; (3) the knowledge of a POSITA; (4) the fact that the prior art is generally directed towards the same problems; and/or (5) the predictable results obtained in combining the different elements of the prior art; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Apple incorporates by reference prior art from the prosecution histories and background sections of the '538 patent. Apple expects to rely on the testimony of one or more expert witnesses and documents referenced by those expert witnesses in support of these contentions and incorporate those forthcoming expert reports as if fully set forth herein.

Apple contends that there are no secondary considerations of non-obviousness evidencing the validity of any of the asserted claims. Secondary considerations of non-obviousness, also referred to as objective indicia of non-obviousness, "can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans

before the invention." *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013). "A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision." *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists, secondary considerations of non-obviousness "simply cannot overcome [a] strong prima facie showing of obviousness." *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008). CardWare has not established the existence of any objective indicia of non-obviousness or secondary considerations. Apple reserves the right to supplement their contentions to respond to any such arguments or evidence should CardWare be permitted to raise them in the future. While discovery in this case is ongoing, and Apple's investigation continues (which will include expert discovery), to the extent CardWare contends that one or more asserted claims is not obvious based on secondary considerations recognized by relevant authority Apple contends such allegations are without merit. Apple reserves the right to supplement their contentions to respond to any such evidence should CardWare be permitted to raise it in the future.

D. <u>The Accused Products Predate the '538 Patent</u>

As discussed above, despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of any asserted patent is entitled to a priority date earlier than the respective filing dates of the asserted patents. CardWare contends that "every asserted claim of each asserted patent is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application no. 61/794,891." *See* February 10, 2025 Infringement Contentions at 2. Apple disagrees with CardWare's contention, and CardWare has failed to establish that any asserted patent is entitled to an earlier priority date.

The accused products were announced publicly on or around September 9, 2014. https://www.apple.com/newsroom/2014/09/09Apple-Announces-Apple-Pay/. The public announcement of Apple Pay predates the filing date of the '538 patent, *i.e.*, October 20, 2020, and therefore, Apple Pay is prior art to the '538 patent. Apple Pay anticipates and/or renders obvious the asserted claims of the '538 patent. *See* Ex. 538-12.

To the extent CardWare is able to establish that any asserted claim is entitled to a March 15, 2013 priority date, then the accused products are nonetheless invalidating prior art at least under pre-AIA 35 U.S.C. § 102(g). Apple conceived of Apple Pay before the earliest invention date to which CardWare claims the asserted patents are entitled to priority. Apple exercised reasonable diligence from the time of its conception of Apple Pay and did not abandon, suppress, or conceal its invention. In the event any claim is entitled to a March 15, 2013 priority date, each limitation of that claim would be invalid under at least pre-AIA 35 U.S.C. § 102(g) for the same reasons CardWare claims that the accused products meet that limitation. *See* Ex. 538-12.

Apple expressly reserves the right to amend its contentions if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice. Apple expressly reserves the right to amend its contentions as discovery commences in this matter and additional relevant information and documentation relating to Apple's conception and reduction to practice of the accused products is uncovered.

E. <u>Other Invalidity Grounds</u>

Apple hereby identifies grounds of invalidity based on (1) lack of written description under 35 U.S.C. § 112; (2) lack of enablement under 35 U.S.C. § 112; (3) indefiniteness under 35 U.S.C. § 112; and (4) ineligible subject matter under 35 U.S.C. § 101. These contentions shall not be construed as an admission that any claim construction advanced by Apple in this case is in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Apple from

advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to CardWare's purported construction of the claim language or of other positions advanced by CardWare during the course of this litigation. Apple's Invalidity Contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as CardWare's alleged scope of the asserted claims of the '538 patent. Consequently, Apple only identifies the issues under 35 U.S.C. § 112 of which they are presently aware.

1. Lack of Written Description under 35 U.S.C. § 112

The asserted claims are invalid under 35 U.S.C. § 112, because the '538 patent does not provide sufficient written description to establish that the alleged inventors were in possession of the full scope of the alleged inventions recited in the asserted claims at the time the '538 patent was filed. *See e.g. Ariad v. Lilly*, 598 F.3d 1336 (Fed. Cir. 2010) (en banc); *LizardTech Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005) (finding claims invalid under 35 U.S.C. § 112 where the specification failed to include a written description of the full scope of the claimed invention); *In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1320 (Fed. Cir. 2011) ("[W]hen analyzing whether a patent meets the written description requirement, one cannot 'bootstrap' the knowledge of a person of ordinary skill in the art ('POSITA') into the analysis and fill the gap in the disclosure through obviousness.").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of written description under 35 U.S.C. § 112, as the specification of the '538 patent does not demonstrate that the inventors were in possession of the claimed subject matter:

Claim Terms	Claim(s)
receiving an input at an electronic device corresponding to a priming operation of the electronic device by an authorized user	1

Claim Terms	Claim(s)
wherein authorizing of a user of the electronic device comprises recognizing a user input using a human input sensor, and wherein the human input sensor is any one of a touch sensor, a touch-screen display interface, a gesture sensor, a motion sensor, and a biometric sensor	1
receiving a request for a transaction payment at said electronic device via an NFC interface of the device	1
displaying, on a display of the device, the request and at least a portion of an original static issuer-supplied payment account information associated with a selected payment method, for a user selection in paying the request	1
retrieving from a memory attached to a processor of the device, a device-specific static limited-use payment information, associated with said selected payment method	1
dynamically generating, by a processor of the device, device-specific limited-use payment information, for said selected payment method	1
using said limited-use payment informations in place of at least a portion of said selected original issuer-supplied payment information for the transaction	1
combining said dynamically-generated limited-use payment information with said static limited-use payment information, to generate a complete device payment information	1
transmitting said complete device payment information from said electronic device to a recipient reader via said NFC interface to the recipient NFC reader for a processing of the payment transaction	1
receiving information at said electronic device corresponding to a transaction status of the payment transaction, wherein such transaction status is at least partly dependent on validation of the complete device payment information by a payment processor authority and a payment issuer authority	1
visually conveying the transaction payment authorization status via a user-interface displayed on said display	1
The method of claim 1, further comprising receiving confirmation via said NFC interface of the validity of said complete device payment information from an NFC payment reader facility	2
The method of claim 1, further comprising receiving said confirmation result of said complete device payment information authentication status from a payment processing authority via at least one interface of a set of interfaces comprising: said device NFC interface, a wireless interface of said device	3
The method of claim 3, wherein the generating the limited-use payment information utilizes a unique device generated information limited-in-use to said selected issuer-payment method, in payment transactions performed by said device, in place of said selected issuer-payment information	4
wherein said device account information will be rejected as invalid when not including a valid device generated limited-use information	4

Claim Terms	Claim(s)
The method of claim 3, wherein the generating of the limited-use payment information utilizes a secure combination of a device transaction sequence counter count, a device account number, a device-unique information, and a payment processing authority recognizable information	5
wherein said generating of said limited-use payment information, is authorizable for a payment, for the singular counted transaction, for said selected payment method, by said device, in said transaction	5
wherein an authorizing by said payment processing authority, is a comparing of said device-generated limited-use payment information, to a valid transaction payment information generated by said payment processing authority using same secure combination method, and same information elements of a valid payment transaction by said device	5
a generating at said valid payment information at a payment processing authority includes a processing authority storing of expected device transaction sequence counter count, expected issuer payment information, an expected a device user information, and the device account number	5
an adjusting of said transaction sequence counter count on a per transaction basis	5
an authorizing of a payment information as valid when said processing authority is verifying the limited-use transaction payment information generated by the device, and the processing authority generated valid limited-use payment transaction information, are matching	5
The method of claim 3, wherein the generating the limited-use payment information further utilizes a secure combination of said information with a device account number, a device sequence counter count, device-specific information, payment processing authority specific information	6
a verifying of said combination by a payment processing authority, performing same secure combination of same information as retained at the authority	6
a payment processing authority comparing said device generated payment information, and said payment processing authority generated payment information, for a verifying of a limited-use payment as valid	6
a conveying of said validation result as a declining or accepting of said transaction payment	6
upon a proper validating of said result, a conveying of original issuer payment information to an original payment method issuer, for a settlement of said transaction	6
The method of claim 3, wherein the visual conveying of the transaction status is further comprising at least one, of a set of visual information including: a confirmation result of payment authority authenticating said device-transmitted limited-use payment information, a confirmation result of payment authority authenticating said device-transmitted complete device payment information, an NFC transaction status, a transaction payment amount, a payment facility wherein the transaction was performed, a merchant information, an original issuer payment account information, an	7

Claim Terms	Claim(s)
original payment issuer information, a request for an authorized-user approval of the transaction, a payment processing status, an issuer payment approval status, and a payment completion status	
a device-specific account number	8
a device-internal transaction sequence counter count	8
an information unique to the user and device which does not pass in the transaction	8
at least one payment authority-supplied information which does not pass in the transaction, wherein the complete device payment information is only valid for use in place of an issuer payment method in authorizable payments when comprising all valid device generated limited-use information elements, and	8
wherein said generating is limiting in-scope-of-use said generated payment information, for said user-selected issuer payment method option, to a unique-per-device unique-per-use one-time transacting by said combining device; by combining said information elements including: said transaction-specific sequence count information, said device-specific information, said user-specific information, and said authority-specific information	8
The method of claim 8, wherein the generating the limited-use payment information further utilizes a secure combining of said information, by at least one processor of the device, into a singular cryptogram number, capable of passing in at least a portion of the device transaction payment information	9
The method of claim 9, wherein the generating the limited-use payment information further utilizes a secure combination with a device key, and a payment issuer secret	10
The method of claim 1, wherein the generating the limited-use payment information further comprises securely combining by at least one processor of the device of: a device payment transaction sequence counter count, and at least one of a set comprising: a device-specific internal information associated with said device and also known to a payment processing authority; and, at least one payment processing authority-specific information provided by a payment processing authority; and, a payment issuer specific information provided by a payment issuer	11
The method of claim 1, wherein the generating the limited-use payment information utilizes a recipient NFC facility provided information	12
The method of claim 1, wherein the generating the limited-use payment information utilizes a merchant identifying information	13
The method of claim 1, wherein the generating the limited-use payment information utilizes a transaction facility information	14
The method of claim 1, wherein the generating the limited-use payment information utilizes a payment amount	15
The method of claim 1, wherein the generating the limited-use payment information utilizes a payment facility type	16

Claim Terms	Claim(s)
The method of claim 1, wherein the generating the limited-use payment information utilizes an online transaction information	17
dynamically generating a cryptogram number for use by the electronic device in place of a card validation value originated from the payment issuer, and wherein the dynamically generating the cryptogram number comprises cryptographically combining a transaction sequence counter count, payment processing authority secrets, and a device account number	18
wherein further, said dynamically generating of said cryptogram results in a one-time limited-use card validation value number, via the incrementing of said transaction sequence counter count on a per-transaction basis, and using said updated transaction sequence counter count in said generation of said cryptogram	18
wherein said cryptogram is used in place of issuer supplied card validation value number, in performing said transaction payment by the device	18
receiving an input signal at an electronic device, the input signal corresponding to a request for payment of an online payment transaction by said electronic device, via a wireless interface of the electronic device	19
a displaying of the payment request notification at a touch-screen display user-interface of the electronic device	19
upon an authorizing of a valid device user, displaying at least one user-selectable payment account option, and requesting a user approval of payment, via the touch-screen display user-interface	19
receiving, from a valid device user, a payment selection and authorization approval input on the electronic device	19
generating at least one limited-use numbers at said electronic device, and using said limited-use number in place of at least a portion of selected account issuer payment information	19
combining said at least one limited-use numbers, with said selected account information, to form a complete payment information	19
wherein the receiving of a user payment approval authorization through the user-interface of the electronic device, is comprising a displaying on said display at least a portion of information comprising: the payment request, the merchant, the amount, and the transaction information	19
receiving a user input providing for at least one transaction authorization actions, from a set of actions including: approving a transaction, denying a transaction, selecting a user information, a payment amount adjustment, and selecting a transaction payment method	19
on receiving said user payment approval authorization input, a transmitting by the wireless interface of the approved complete payment information for the online transaction	19
dynamically generating a cryptogram number for use by the electronic device in place of a card validation value originated from the payment issuing authority, and wherein dynamically generating the cryptogram number comprises cryptographically combining a device transaction	20

Claim Terms	Claim(s)
sequence counter count, a user information, a payment account number, information and secrets known to a payment processing authority	
wherein further, said dynamically generating said card validation value number results in a one-time limited-use payment information, on incrementing the device transaction sequence counter count on each transaction payment, and said device combining said current transaction sequence count at the instant of generating said cryptogram number	20
The method of claim 19, wherein at least a portion of said limited-use number comprises a static device account number,	21
and wherein the static device account number is of a limited scope of valid use to a specific device,	21
and wherein further a payment processing authority provides said device account number unique for the specific electronic device, in place of payment issuer information, in performing payment transactions by the electronic device, and further comprising	21
performing a payment transaction by the electronic device including the dynamically generated limited-use number	21
combining the dynamically-generated number and the static device account number within a device-generated complete payment information	21
conveying said device-generated complete payment information, in place of a selected payment issuer information, when the device is performing payment transactions	21
wherein a using of said static device account number without a valid dynamically generated limited-use number, shall be deniable as invalid, and outside a valid scope of device-limited usage	21
generating a limited-use security code number for use in place of a card issuer card security code, by cryptographically combining information from at least one of a set of information comprising: a device transaction sequence counter; a device account number; a payment account information, device secrets; payment processing authority secrets	22
displaying the limited-use security code number on the user-interface of the device display	22
The method of claim 19, wherein a payment processing authority verifying and authorizing a transmitted limited-use number based on a time of use, and cryptographically combining a transaction sequence count information; a device account number; a user account information; a payment issuer information; a payment processing authority secrets; a transaction information	23
further comprising: receiving an authorization of said transaction, responsive to verifying a valid limited-use number appearing in a transaction information in place of the payment issuer information	23
a rejecting by the payment processing authority, on a detecting as invalid at least one verification test, from a set of tests comprising: a mis-matching of the transacted limited-use number, and the authority cryptographically-combined number; a transactional use of a device account number outside	23

Claim Terms	Claim(s)
of its limited scope of valid payment reader facility use; a transactional use outside of a valid time window; a transactional re-use of a number limited to a one-time use; and, a transactional use of an expired number outside of a limited time-of-use	
The method of claim 19, wherein the user selecting of a payment method at an electronic device comprises receiving a user touch input selection, via the user interface, of a displayed payment method option, on the device touch-screen display interface	24
accept a priming action of the electronic device by an identified valid device user, identified from the device inputs	25
enable the electronic device for imminent performance of a payment operation responsive to the priming action of said valid user	25
display a summary of online purchase information including the merchant information and the purchase amount	25
display at least one selectable issuer payment account methods on a display	25
receive a payment selection and approval authorization from said valid device user via a human input sensing at the device	25
responsive to receiving a valid user transaction payment approval, generate a device-specific limited-use payment information for use in place of at least a portion of said selected issuer payment account information on the device,	25
form a complete combined device payment information from a dynamically generated portion and a statically generated portions stored in a memory of the device,	25
wherein the communication interface is operable to transmit said complete device payment information from said electronic device to the recipient of the online purchase transaction	25
wherein further the processor is operable to receive an approval and a denial confirmation from an online payment facility of the complete device payment information, and cause the display to visually convey a status of the online purchase transaction	25
The non-transitory, computer-readable medium of claim 25, wherein the executable instructions further cause the one or more processors to	26
receive the priming action of a user via the device human input sensors	26
identify an authorized valid device user through a human to device inputs, selected from at least one security challenge, of a set of human to device input challenges comprising: a correct passcode touch entry sequence, a correct touch gesture, a touch input of a known device user, a biometric recognition of a valid user, a biometric sensing of a valid user's skin touch, a touch input sensor recognition of a unique customer identifier, a security question which a valid user could answer correctly, and	26
receiving a correct user response input, from a security challenge presented on the device display	26

Claim Terms	Claim(s)
responsive to receiving an incorrect user response input, offer a reduced number of additional challenge attempts before failing the user authorization at the device, and denying the payment authorization	26
The non-transitory, computer-readable medium of claim 25, wherein the one or more processors include a cryptographic processor, and wherein the executable instructions further cause the one or more processors to	27
cryptographically compute a dynamically generated one-time-use cryptogram number,	27
and combine said dynamically generated portion with a static device-specific account number known to a payment processing authority and limited in use to the device use in place of an issuer payment method	27
wherein further said cryptogram number is created by said device processor cryptographic combination of device transaction sequence counter count, a payment account information, a user information, and information stored in the device and specific to the device and which is not communicated in the transaction	27
wherein said transaction sequence counter, said information and said secrets are known to both said device, and to said payment processing authority	27
wherein further said static device-specific device account number is known to a payment issuer, and has a device-specific expiration date of limited duration of validity	27
wherein the generating said complete combined device payment information comprises a device combining said static device-specific device account number, said device account expiration date, said user information, said payment account information, and said dynamically generated cryptogram,	27
and transmitting said complete device payment information when said issuer payment account method is selected	27
The non-transitory, computer-readable medium of claim 25, wherein the executable instructions further causes the one or more processors to perform	28
a combining of a static device-specific payment account information, a device generated information, and other user and account information stored on the device which is uniquely identifying the specific user, specific selected account, and the specific device	28
a generating of a limited-use payment information by the one or more device processors cryptographically generating at least one one-time limited-use cryptogram numbers	28
wherein the one or more device processors are further operable to combine said limited-use static device account information and said one-time use cryptogram number(s) to produce the complete combined device payment information	28
wherein the one or more device processors are further operable to transmit said complete payment information in place of said user-selected payment account information in a device payment transaction	28

Claim Terms	Claim(s)
wherein the one or more device processors are further operable to display at least a portion of said user-specific selected account information associated with said complete device payment information used during said transaction, via a user interface disposed of the device	28
The non-transitory, computer-readable medium of claim 25, wherein the executable instructions further cause the one or more processors to dynamically generate a one-time limited-use cryptogram number, via a known cryptographic combination of at least one information unique to the electronic device, and also known to at least one of a payment processing authority and a payment issuer authority, and selected from a set of information known and stored at both said payment authorities, and on said device, including: a transaction sequence counter, a device account number, a device account expiration date, a device secret, a payment processing authority secret, a user information, a payment account information, a payment issuer information, a payment amount, transactional information	29
wherein said one or more processors uses said one-time limited-use cryptogram number in place of at least a portion of an issuer's static payment information, in a payment transaction using said payment account	29
wherein said payment authorities are operable to recognize from the transactional payment information, the correct set of user, device and account specific information to be cryptographically combined into an authority computed cryptogram, for comparing with device transmitted limited-use payment information	29
wherein said payment processing authorities are operable to deny as invalid a transaction including a cryptogram not matching an authority computed cryptogram	29
wherein said payment authorities are operable to approve as valid a transaction including a cryptogram matching the payment processing authority computed cryptogram	29
wherein said device is operable to receive an approval and a denial status of said transaction, from said payment authorities, and visually convey said transaction status in the user-interface on the display disposed of the device	29
The electronic device of claim 25, further comprising a processor and a non-transitory, computer-readable medium storing computer executable instructions that when executed by the one or more processors, cause the one or more device processors to dynamically generate a one-time limited-use cryptogram number by a cryptographic combination, of at least one information known to: the device, the payment issuer authority, and a payment processing authority, and unique to the electronic device, and selected from a set of information including: a transaction sequence counter; a user payment account number; a device payment account number; a device secret; device keys; a payment issuer original account information; a payment issuer device account information; a payment processing authority secret; a transaction information; and a user private information	30

Claim Terms	Claim(s)
wherein said cryptogram is operable to be used in place of at least a portion of an issuer's static payment information, in a payment transaction for said selected payment account	30
wherein said payment processing authority is operable to deny as invalid, a transaction including a cryptogram not matching a payment processing authority computed cryptogram	30
wherein said payment processing authority is operable to approve as valid, a transaction including a cryptogram matching the payment processing authority computed cryptogram	30
wherein said user device is operable to receive an approval and a denial status of said transaction information validation, and visually convey said transaction status in the user-interface on the display disposed of the device	30
wherein said user device is operable to emulate the behavior of an issuer account payment transaction, when said complete device payment information is used in electronic payment facilities	30

2. Lack of Enablement under 35 U.S.C. § 112(a)

The asserted claims are also invalid under 35 U.S.C. § 112, because the '538 patent does not enable one of ordinary skill in the art to make and/or use the full scope of certain recited elements of the asserted claims of the '538 patent without undue experimentation. *See, e.g.*, *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988) ("The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation."); *Trustees of Bos. Univ. v. Everlight Elecs. Co.*, 896 F.3d 1357, 1362 (Fed. Cir. 2018) ("to be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of enablement under 35 U.S.C. § 112, as the claims, specification, and prosecution histories would not enable one of skill in the art to practice the claimed invention(s) without undue experimentation:

Claim Terms	Claim(s)
receiving an input at an electronic device corresponding to a priming operation of the electronic device by an authorized user	1
wherein authorizing of a user of the electronic device comprises recognizing a user input using a human input sensor, and wherein the human input sensor is any one of a touch sensor, a touch-screen display interface, a gesture sensor, a motion sensor, and a biometric sensor	1
receiving a request for a transaction payment at said electronic device via an NFC interface of the device	1
displaying, on a display of the device, the request and at least a portion of an original static issuer-supplied payment account information associated with a selected payment method, for a user selection in paying the request	1
retrieving from a memory attached to a processor of the device, a device-specific static limited-use payment information, associated with said selected payment method	1
dynamically generating, by a processor of the device, device-specific limited-use payment information, for said selected payment method	1
using said limited-use payment informations in place of at least a portion of said selected original issuer-supplied payment information for the transaction	1
combining said dynamically-generated limited-use payment information with said static limited-use payment information, to generate a complete device payment information	1
transmitting said complete device payment information from said electronic device to a recipient reader via said NFC interface to the recipient NFC reader for a processing of the payment transaction	1
receiving information at said electronic device corresponding to a transaction status of the payment transaction, wherein such transaction status is at least partly dependent on validation of the complete device payment information by a payment processor authority and a payment issuer authority	1
The method of claim 1, further comprising receiving confirmation via said NFC interface of the validity of said complete device payment information from an NFC payment reader facility	2
The method of claim 1, further comprising receiving said confirmation result of said complete device payment information authentication status from a payment processing authority via at least one interface of a set of interfaces comprising: said device NFC interface, a wireless interface of said device	3
The method of claim 3, wherein the generating the limited-use payment information utilizes a unique device generated information limited-in-use to said selected issuer-payment method, in payment transactions performed by said device, in place of said selected issuer-payment information	4
wherein said device account information will be rejected as invalid when not including a valid device generated limited-use information	4

Claim Terms	Claim(s)
The method of claim 3, wherein the generating of the limited-use payment information utilizes a secure combination of a device transaction sequence counter count, a device account number, a device-unique information, and a payment processing authority recognizable information	5
wherein said generating of said limited-use payment information, is authorizable for a payment, for the singular counted transaction, for said selected payment method, by said device, in said transaction	5
wherein an authorizing by said payment processing authority, is a comparing of said device-generated limited-use payment information, to a valid transaction payment information generated by said payment processing authority using same secure combination method, and same information elements of a valid payment transaction by said device	5
a generating at said valid payment information at a payment processing authority includes a processing authority storing of expected device transaction sequence counter count, expected issuer payment information, an expected a device user information, and the device account number	5
an adjusting of said transaction sequence counter count on a per transaction basis	5
an authorizing of a payment information as valid when said processing authority is verifying the limited-use transaction payment information generated by the device, and the processing authority generated valid limited-use payment transaction information, are matching	5
The method of claim 3, wherein the generating the limited-use payment information further utilizes a secure combination of said information with a device account number, a device sequence counter count, device-specific information, payment processing authority specific information	6
a verifying of said combination by a payment processing authority, performing same secure combination of same information as retained at the authority	6
a payment processing authority comparing said device generated payment information, and said payment processing authority generated payment information, for a verifying of a limited-use payment as valid	6
upon a proper validating of said result, a conveying of original issuer payment information to an original payment method issuer, for a settlement of said transaction	6
The method of claim 3, wherein the visual conveying of the transaction status is further comprising at least one, of a set of visual information including: a confirmation result of payment authority authenticating said device-transmitted limited-use payment information, a confirmation result of payment authority authenticating said device-transmitted complete device payment information, an NFC transaction status, a transaction payment amount, a payment facility wherein the transaction was performed, a merchant information, an original issuer payment account information, an original payment issuer information, a request for an authorized-user	7

Claim Terms	Claim(s)
approval of the transaction, a payment processing status, an issuer payment approval status, and a payment completion status	
a device-specific account number	8
a device-internal transaction sequence counter count	8
an information unique to the user and device which does not pass in the transaction	8
at least one payment authority-supplied information which does not pass in the transaction, wherein the complete device payment information is only valid for use in place of an issuer payment method in authorizable payments when comprising all valid device generated limited-use information elements, and	8
wherein said generating is limiting in-scope-of-use said generated payment information, for said user-selected issuer payment method option, to a unique-per-device unique-per-use one-time transacting by said combining device; by combining said information elements including: said transaction-specific sequence count information, said device-specific information, said user-specific information, and said authority-specific information	8
The method of claim 8, wherein the generating the limited-use payment information further utilizes a secure combining of said information, by at least one processor of the device, into a singular cryptogram number, capable of passing in at least a portion of the device transaction payment information	9
The method of claim 9, wherein the generating the limited-use payment information further utilizes a secure combination with a device key, and a payment issuer secret	10
The method of claim 1, wherein the generating the limited-use payment information further comprises securely combining by at least one processor of the device of: a device payment transaction sequence counter count, and at least one of a set comprising: a device-specific internal information associated with said device and also known to a payment processing authority; and, at least one payment processing authority-specific information provided by a payment processing authority; and, a payment issuer specific information provided by a payment issuer	11
The method of claim 1, wherein the generating the limited-use payment information utilizes a recipient NFC facility provided information	12
The method of claim 1, wherein the generating the limited-use payment information utilizes a merchant identifying information	13
The method of claim 1, wherein the generating the limited-use payment information utilizes a transaction facility information	14
The method of claim 1, wherein the generating the limited-use payment information utilizes a payment amount	15
The method of claim 1, wherein the generating the limited-use payment information utilizes a payment facility type	16
The method of claim 1, wherein the generating the limited-use payment information utilizes an online transaction information	17

Claim Terms	Claim(s)
dynamically generating a cryptogram number for use by the electronic device in place of a card validation value originated from the payment issuer, and wherein the dynamically generating the cryptogram number comprises cryptographically combining a transaction sequence counter count, payment processing authority secrets, and a device account number	18
wherein further, said dynamically generating of said cryptogram results in a one-time limited-use card validation value number, via the incrementing of said transaction sequence counter count on a per-transaction basis, and using said updated transaction sequence counter count in said generation of said cryptogram	18
wherein said cryptogram is used in place of issuer supplied card validation value number, in performing said transaction payment by the device	18
A method of performing an online payment transaction, the method comprising	19
receiving an input signal at an electronic device, the input signal corresponding to a request for payment of an online payment transaction by said electronic device, via a wireless interface of the electronic device	19
a displaying of the payment request notification at a touch-screen display user-interface of the electronic device	19
upon an authorizing of a valid device user, displaying at least one user-selectable payment account option, and requesting a user approval of payment, via the touch-screen display user-interface	19
receiving, from a valid device user, a payment selection and authorization approval input on the electronic device	19
generating at least one limited-use numbers at said electronic device, and using said limited-use number in place of at least a portion of selected account issuer payment information	19
combining said at least one limited-use numbers, with said selected account information, to form a complete payment information	19
wherein the receiving of a user payment approval authorization through the user-interface of the electronic device, is comprising a displaying on said display at least a portion of information comprising: the payment request, the merchant, the amount, and the transaction information	19
receiving a user input providing for at least one transaction authorization actions, from a set of actions including: approving a transaction, denying a transaction, selecting a user information, a payment amount adjustment, and selecting a transaction payment method	19
on receiving said user payment approval authorization input, a transmitting by the wireless interface of the approved complete payment information for the online transaction	19
dynamically generating a cryptogram number for use by the electronic device in place of a card validation value originated from the payment issuing authority, and wherein dynamically generating the cryptogram number comprises cryptographically combining a device transaction	20

Claim Terms	Claim(s)
sequence counter count, a user information, a payment account number, information and secrets known to a payment processing authority	
wherein further, said dynamically generating said card validation value number results in a one-time limited-use payment information, on incrementing the device transaction sequence counter count on each transaction payment, and said device combining said current transaction sequence count at the instant of generating said cryptogram number	20
The method of claim 19, wherein at least a portion of said limited-use number comprises a static device account number,	21
and wherein the static device account number is of a limited scope of valid use to a specific device,	21
and wherein further a payment processing authority provides said device account number unique for the specific electronic device, in place of payment issuer information, in performing payment transactions by the electronic device, and further comprising	21
performing a payment transaction by the electronic device including the dynamically generated limited-use number	21
combining the dynamically-generated number and the static device account number within a device-generated complete payment information	21
conveying said device-generated complete payment information, in place of a selected payment issuer information, when the device is performing payment transactions	21
wherein a using of said static device account number without a valid dynamically generated limited-use number, shall be deniable as invalid, and outside a valid scope of device-limited usage	21
generating a limited-use security code number for use in place of a card issuer card security code, by cryptographically combining information from at least one of a set of information comprising: a device transaction sequence counter; a device account number; a payment account information, device secrets; payment processing authority secrets	22
displaying the limited-use security code number on the user-interface of the device display	22
The method of claim 19, wherein a payment processing authority verifying and authorizing a transmitted limited-use number based on a time of use, and cryptographically combining a transaction sequence count information; a device account number; a user account information; a payment issuer information; a payment processing authority secrets; a transaction information	23
further comprising: receiving an authorization of said transaction, responsive to verifying a valid limited-use number appearing in a transaction information in place of the payment issuer information	23
a rejecting by the payment processing authority, on a detecting as invalid at least one verification test, from a set of tests comprising: a mis-matching of the transacted limited-use number, and the authority cryptographically-combined number; a transactional use of a device account number outside	23

Claim Terms	Claim(s)
of its limited scope of valid payment reader facility use; a transactional use outside of a valid time window; a transactional re-use of a number limited to a one-time use; and, a transactional use of an expired number outside of a limited time-of-use	
The method of claim 19, wherein the user selecting of a payment method at an electronic device comprises receiving a user touch input selection, via the user interface, of a displayed payment method option, on the device touch-screen display interface	24
accept a priming action of the electronic device by an identified valid device user, identified from the device inputs	25
enable the electronic device for imminent performance of a payment operation responsive to the priming action of said valid user	25
display a summary of online purchase information including the merchant information and the purchase amount	25
display at least one selectable issuer payment account methods on a display	25
receive a payment selection and approval authorization from said valid device user via a human input sensing at the device	25
responsive to receiving a valid user transaction payment approval, generate a device-specific limited-use payment information for use in place of at least a portion of said selected issuer payment account information on the device,	25
form a complete combined device payment information from a dynamically generated portion and a statically generated portions stored in a memory of the device,	25
wherein the communication interface is operable to transmit said complete device payment information from said electronic device to the recipient of the online purchase transaction	25
wherein further the processor is operable to receive an approval and a denial confirmation from an online payment facility of the complete device payment information, and cause the display to visually convey a status of the online purchase transaction	25
The non-transitory, computer-readable medium of claim 25, wherein the executable instructions further cause the one or more processors to	26
receive the priming action of a user via the device human input sensors	26
identify an authorized valid device user through a human to device inputs, selected from at least one security challenge, of a set of human to device input challenges comprising: a correct passcode touch entry sequence, a correct touch gesture, a touch input of a known device user, a biometric recognition of a valid user, a biometric sensing of a valid user's skin touch, a touch input sensor recognition of a unique customer identifier, a security question which a valid user could answer correctly, and	26
receiving a correct user response input, from a security challenge presented on the device display	26

Claim Terms	Claim(s)
responsive to receiving an incorrect user response input, offer a reduced number of additional challenge attempts before failing the user authorization at the device, and denying the payment authorization	26
The non-transitory, computer-readable medium of claim 25, wherein the one or more processors include a cryptographic processor, and wherein the executable instructions further cause the one or more processors to	27
cryptographically compute a dynamically generated one-time-use cryptogram number,	27
and combine said dynamically generated portion with a static device-specific account number known to a payment processing authority and limited in use to the device use in place of an issuer payment method	27
wherein further said cryptogram number is created by said device processor cryptographic combination of device transaction sequence counter count, a payment account information, a user information, and information stored in the device and specific to the device and which is not communicated in the transaction	27
wherein said transaction sequence counter, said information and said secrets are known to both said device, and to said payment processing authority	27
wherein further said static device-specific device account number is known to a payment issuer, and has a device-specific expiration date of limited duration of validity	27
wherein the generating said complete combined device payment information comprises a device combining said static device-specific device account number, said device account expiration date, said user information, said payment account information, and said dynamically generated cryptogram,	27
and transmitting said complete device payment information when said issuer payment account method is selected	27
The non-transitory, computer-readable medium of claim 25, wherein the executable instructions further causes the one or more processors to perform	28
a combining of a static device-specific payment account information, a device generated information, and other user and account information stored on the device which is uniquely identifying the specific user, specific selected account, and the specific device	28
a generating of a limited-use payment information by the one or more device processors cryptographically generating at least one one-time limited-use cryptogram numbers	28
wherein the one or more device processors are further operable to combine said limited-use static device account information and said one-time use cryptogram number(s) to produce the complete combined device payment information	28
wherein the one or more device processors are further operable to transmit said complete payment information in place of said user-selected payment account information in a device payment transaction	28

Claim Terms	Claim(s)
wherein the one or more device processors are further operable to display at least a portion of said user-specific selected account information associated with said complete device payment information used during said transaction, via a user interface disposed of the device	28
The non-transitory, computer-readable medium of claim 25, wherein the executable instructions further cause the one or more processors to dynamically generate a one-time limited-use cryptogram number, via a known cryptographic combination of at least one information unique to the electronic device, and also known to at least one of a payment processing authority and a payment issuer authority, and selected from a set of information known and stored at both said payment authorities, and on said device, including: a transaction sequence counter, a device account number, a device account expiration date, a device secret, a payment processing authority secret, a user information, a payment account information, a payment issuer information, a payment amount, transactional information	29
wherein said one or more processors uses said one-time limited-use cryptogram number in place of at least a portion of an issuer's static payment information, in a payment transaction using said payment account	29
wherein said payment authorities are operable to recognize from the transactional payment information, the correct set of user, device and account specific information to be cryptographically combined into an authority computed cryptogram, for comparing with device transmitted limited-use payment information	29
wherein said payment processing authorities are operable to deny as invalid a transaction including a cryptogram not matching an authority computed cryptogram	29
wherein said payment authorities are operable to approve as valid a transaction including a cryptogram matching the payment processing authority computed cryptogram	29
wherein said device is operable to receive an approval and a denial status of said transaction, from said payment authorities, and visually convey said transaction status in the user-interface on the display disposed of the device	29
The electronic device of claim 25, further comprising a processor and a non-transitory, computer-readable medium storing computer executable instructions that when executed by the one or more processors, cause the one or more device processors to dynamically generate a one-time limited-use cryptogram number by a cryptographic combination, of at least one information known to: the device, the payment issuer authority, and a payment processing authority, and unique to the electronic device, and selected from a set of information including: a transaction sequence counter; a user payment account number; a device payment account number; a device secret; device keys; a payment issuer original account information; a payment issuer device account information; a payment processing authority secret; a transaction information; and a user private information	30

Claim Terms	Claim(s)
wherein said cryptogram is operable to be used in place of at least a portion of an issuer's static payment information, in a payment transaction for said selected payment account	30
wherein said payment processing authority is operable to deny as invalid, a transaction including a cryptogram not matching a payment processing authority computed cryptogram	30
wherein said payment processing authority is operable to approve as valid, a transaction including a cryptogram matching the payment processing authority computed cryptogram	30
wherein said user device is operable to receive an approval and a denial status of said transaction information validation, and visually convey said transaction status in the user-interface on the display disposed of the device	30
wherein said user device is operable to emulate the behavior of an issuer account payment transaction, when said complete device payment information is used in electronic payment facilities	30

3. Indefiniteness Pursuant to 35 U.S.C. § 112

The asserted claims of the '538 patent are also invalid because they fail to inform those skilled in the art about the scope of the alleged invention with reasonable certainty and are indefinite under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter the applicants regard as their alleged invention. *See, e.g.*, *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901, (2014) ("a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention."). The following terms render one or more claims of the patent-in-suit indefinite under 35 U.S.C. § 112:

Claim Terms	Claim(s)
receiving an input at an electronic device corresponding to a priming operation of the electronic device by an authorized user	1
wherein authorizing of a user of the electronic device comprises recognizing a user input using a human input sensor, and wherein the human input sensor is any one of a touch sensor, a touch-screen display interface, a gesture sensor, a motion sensor, and a biometric sensor	1
receiving a request for a transaction payment at said electronic device via an NFC interface of the device	1

Claim Terms	Claim(s)
displaying, on a display of the device, the request and at least a portion of an original static issuer-supplied payment account information associated with a selected payment method, for a user selection in paying the request	1
retrieving from a memory attached to a processor of the device, a device-specific static limited-use payment information, associated with said selected payment method	1
dynamically generating, by a processor of the device, device-specific limited-use payment information, for said selected payment method	1
using said limited-use payment informations in place of at least a portion of said selected original issuer-supplied payment information for the transaction	1
combining said dynamically-generated limited-use payment information with said static limited-use payment information, to generate a complete device payment information	1
transmitting said complete device payment information from said electronic device to a recipient reader via said NFC interface to the recipient NFC reader for a processing of the payment transaction	1
receiving information at said electronic device corresponding to a transaction status of the payment transaction, wherein such transaction status is at least partly dependent on validation of the complete device payment information by a payment processor authority and a payment issuer authority	1
The method of claim 3, wherein the generating the limited-use payment information utilizes a unique device generated information limited-in-use to said selected issuer-payment method, in payment transactions performed by said device, in place of said selected issuer-payment information	4
wherein said device account information will be rejected as invalid when not including a valid device generated limited-use information	4
The method of claim 3, wherein the generating of the limited-use payment information utilizes a secure combination of a device transaction sequence counter count, a device account number, a device-unique information, and a payment processing authority recognizable information	5
wherein said generating of said limited-use payment information, is authorizable for a payment, for the singular counted transaction, for said selected payment method, by said device, in said transaction	5
wherein an authorizing by said payment processing authority, is a comparing of said device-generated limited-use payment information, to a valid transaction payment information generated by said payment processing authority using same secure combination method, and same information elements of a valid payment transaction by said device	5
a generating at said valid payment information at a payment processing authority includes a processing authority storing of expected device transaction sequence counter count, expected issuer payment information, an expected a device user information, and the device account number	5

Claim Terms	Claim(s)
an authorizing of a payment information as valid when said processing authority is verifying the limited-use transaction payment information generated by the device, and the processing authority generated valid limited-use payment transaction information, are matching	5
The method of claim 3, wherein the generating the limited-use payment information further utilizes a secure combination of said information with a device account number, a device sequence counter count, device-specific information, payment processing authority specific information	6
a verifying of said combination by a payment processing authority, performing same secure combination of same information as retained at the authority	6
a payment processing authority comparing said device generated payment information, and said payment processing authority generated payment information, for a verifying of a limited-use payment as valid	6
upon a proper validating of said result, a conveying of original issuer payment information to an original payment method issuer, for a settlement of said transaction	6
a device-specific account number	8
a device-internal transaction sequence counter count	8
an information unique to the user and device which does not pass in the transaction	8
at least one payment authority-supplied information which does not pass in the transaction, wherein the complete device payment information is only valid for use in place of an issuer payment method in authorizable payments when comprising all valid device generated limited-use information elements, and	8
wherein said generating is limiting in-scope-of-use said generated payment information, for said user-selected issuer payment method option, to a unique-per-device unique-per-use one-time transacting by said combining device; by combining said information elements including: said transaction-specific sequence count information, said device-specific information, said user-specific information, and said authority-specific information	8
The method of claim 8, wherein the generating the limited-use payment information further utilizes a secure combining of said information, by at least one processor of the device, into a singular cryptogram number, capable of passing in at least a portion of the device transaction payment information	9
The method of claim 9, wherein the generating the limited-use payment information further utilizes a secure combination with a device key, and a payment issuer secret	10
The method of claim 1, wherein the generating the limited-use payment information further comprises securely combining by at least one processor of the device of: a device payment transaction sequence counter count, and at least one of a set comprising: a device-specific internal information associated with said device and also known to a payment processing	11

Claim Terms	Claim(s)
authority; and, at least one payment processing authority-specific information provided by a payment processing authority; and, a payment issuer specific information provided by a payment issuer	
The method of claim 1, wherein the generating the limited-use payment information utilizes a recipient NFC facility provided information	12
The method of claim 1, wherein the generating the limited-use payment information utilizes a merchant identifying information	13
The method of claim 1, wherein the generating the limited-use payment information utilizes a transaction facility information	14
The method of claim 1, wherein the generating the limited-use payment information utilizes a payment amount	15
The method of claim 1, wherein the generating the limited-use payment information utilizes a payment facility type	16
The method of claim 1, wherein the generating the limited-use payment information utilizes an online transaction information	17
dynamically generating a cryptogram number for use by the electronic device in place of a card validation value originated from the payment issuer, and wherein the dynamically generating the cryptogram number comprises cryptographically combining a transaction sequence counter count, payment processing authority secrets, and a device account number	18
wherein further, said dynamically generating of said cryptogram results in a one-time limited-use card validation value number, via the incrementing of said transaction sequence counter count on a per-transaction basis, and using said updated transaction sequence counter count in said generation of said cryptogram	18
wherein said cryptogram is used in place of issuer supplied card validation value number, in performing said transaction payment by the device	18
receiving an input signal at an electronic device, the input signal corresponding to a request for payment of an online payment transaction by said electronic device, via a wireless interface of the electronic device	19
generating at least one limited-use numbers at said electronic device, and using said limited-use number in place of at least a portion of selected account issuer payment information	19
combining said at least one limited-use numbers, with said selected account information, to form a complete payment information	19
dynamically generating a cryptogram number for use by the electronic device in place of a card validation value originated from the payment issuing authority, and wherein dynamically generating the cryptogram number comprises cryptographically combining a device transaction sequence counter count, a user information, a payment account number, information and secrets known to a payment processing authority	20
wherein further, said dynamically generating said card validation value number results in a one-time limited-use payment information, on incrementing the device transaction sequence counter count on each	20

Claim Terms	Claim(s)
transaction payment, and said device combining said current transaction sequence count at the instant of generating said cryptogram number	
The method of claim 19, wherein at least a portion of said limited-use number comprises a static device account number,	21
and wherein the static device account number is of a limited scope of valid use to a specific device,	21
and wherein further a payment processing authority provides said device account number unique for the specific electronic device, in place of payment issuer information, in performing payment transactions by the electronic device, and further comprising	21
performing a payment transaction by the electronic device including the dynamically generated limited-use number	21
combining the dynamically-generated number and the static device account number within a device-generated complete payment information	21
conveying said device-generated complete payment information, in place of a selected payment issuer information, when the device is performing payment transactions	21
wherein a using of said static device account number without a valid dynamically generated limited-use number, shall be deniable as invalid, and outside a valid scope of device-limited usage	21
generating a limited-use security code number for use in place of a card issuer card security code, by cryptographically combining information from at least one of a set of information comprising: a device transaction sequence counter; a device account number; a payment account information, device secrets; payment processing authority secrets	22
The method of claim 19, wherein a payment processing authority verifying and authorizing a transmitted limited-use number based on a time of use, and cryptographically combining a transaction sequence count information; a device account number; a user account information; a payment issuer information; a payment processing authority secrets; a transaction information	23
further comprising: receiving an authorization of said transaction, responsive to verifying a valid limited-use number appearing in a transaction information in place of the payment issuer information	23
a rejecting by the payment processing authority, on a detecting as invalid at least one verification test, from a set of tests comprising: a mis-matching of the transacted limited-use number, and the authority cryptographically-combined number; a transactional use of a device account number outside of its limited scope of valid payment reader facility use; a transactional use outside of a valid time window; a transactional re-use of a number limited to a one-time use; and, a transactional use of an expired number outside of a limited time-of-use	23
A non-transitory, computer-readable medium storing computer executable instructions that when executed by one or more processors, cause the one or more processors to	25

Claim Terms	Claim(s)
accept a priming action of the electronic device by an identified valid device user, identified from the device inputs	25
enable the electronic device for imminent performance of a payment operation responsive to the priming action of said valid user	25
display a summary of online purchase information including the merchant information and the purchase amount	25
display at least one selectable issuer payment account methods on a display	25
receive a payment selection and approval authorization from said valid device user via a human input sensing at the device	25
responsive to receiving a valid user transaction payment approval, generate a device-specific limited-use payment information for use in place of at least a portion of said selected issuer payment account information on the device,	25
form a complete combined device payment information from a dynamically generated portion and a statically generated portions stored in a memory of the device,	25
wherein the communication interface is operable to transmit said complete device payment information from said electronic device to the recipient of the online purchase transaction	25
The non-transitory, computer-readable medium of claim 25, wherein the executable instructions further cause the one or more processors to	26
receive the priming action of a user via the device human input sensors	26
identify an authorized valid device user through a human to device inputs, selected from at least one security challenge, of a set of human to device input challenges comprising: a correct passcode touch entry sequence, a correct touch gesture, a touch input of a known device user, a biometric recognition of a valid user, a biometric sensing of a valid user's skin touch, a touch input sensor recognition of a unique customer identifier, a security question which a valid user could answer correctly, and	26
receiving a correct user response input, from a security challenge presented on the device display	26
responsive to receiving an incorrect user response input, offer a reduced number of additional challenge attempts before failing the user authorization at the device, and denying the payment authorization	26
The non-transitory, computer-readable medium of claim 25, wherein the one or more processors include a cryptographic processor, and wherein the executable instructions further cause the one or more processors to	27
cryptographically compute a dynamically generated one-time-use cryptogram number,	27
and combine said dynamically generated portion with a static device-specific account number known to a payment processing authority and limited in use to the device use in place of an issuer payment method	27
wherein further said cryptogram number is created by said device processor cryptographic combination of device transaction sequence counter count, a payment account information, a user information, and information stored in	27

Claim Terms	Claim(s)
the device and specific to the device and which is not communicated in the transaction	
wherein said transaction sequence counter, said information and said secrets are known to both said device, and to said payment processing authority	27
wherein further said static device-specific device account number is known to a payment issuer, and has a device-specific expiration date of limited duration of validity	27
wherein the generating said complete combined device payment information comprises a device combining said static device-specific device account number, said device account expiration date, said user information, said payment account information, and said dynamically generated cryptogram,	27
and transmitting said complete device payment information when said issuer payment account method is selected	27
The non-transitory, computer-readable medium of claim 25, wherein the executable instructions further causes the one or more processors to perform	28
a combining of a static device-specific payment account information, a device generated information, and other user and account information stored on the device which is uniquely identifying the specific user, specific selected account, and the specific device	28
a generating of a limited-use payment information by the one or more device processors cryptographically generating at least one one-time limited-use cryptogram numbers	28
wherein the one or more device processors are further operable to combine said limited-use static device account information and said one-time use cryptogram number(s) to produce the complete combined device payment information	28
wherein the one or more device processors are further operable to transmit said complete payment information in place of said user-selected payment account information in a device payment transaction	28
wherein the one or more device processors are further operable to display at least a portion of said user-specific selected account information associated with said complete device payment information used during said transaction, via a user interface disposed of the device	28
The non-transitory, computer-readable medium of claim 25, wherein the executable instructions further cause the one or more processors to dynamically generate a one-time limited-use cryptogram number, via a known cryptographic combination of at least one information unique to the electronic device, and also known to at least one of a payment processing authority and a payment issuer authority, and selected from a set of information known and stored at both said payment authorities, and on said device, including: a transaction sequence counter, a device account number, a device account expiration date, a device secret, a payment processing authority secret, a user information, a payment account information, a payment issuer information, a payment amount, transactional information	29

Claim Terms	Claim(s)
wherein said one or more processors uses said one-time limited-use cryptogram number in place of at least a portion of an issuer's static payment information, in a payment transaction using said payment account	29
wherein said payment authorities are operable to recognize from the transactional payment information, the correct set of user, device and account specific information to be cryptographically combined into an authority computed cryptogram, for comparing with device transmitted limited-use payment information	29
wherein said payment processing authorities are operable to deny as invalid a transaction including a cryptogram not matching an authority computed cryptogram	29
wherein said payment authorities are operable to approve as valid a transaction including a cryptogram matching the payment processing authority computed cryptogram	29
wherein said device is operable to receive an approval and a denial status of said transaction, from said payment authorities, and visually convey said transaction status in the user-interface on the display disposed of the device	29
The electronic device of claim 25, further comprising a processor and a non-transitory, computer-readable medium storing computer executable instructions that when executed by the one or more processors, cause the one or more device processors to dynamically generate a one-time limited-use cryptogram number by a cryptographic combination, of at least one information known to: the device, the payment issuer authority, and a payment processing authority, and unique to the electronic device, and selected from a set of information including: a transaction sequence counter; a user payment account number; a device payment account number; a device secret; device keys; a payment issuer original account information; a payment issuer device account information; a payment processing authority secret; a transaction information; and a user private information	30
wherein said cryptogram is operable to be used in place of at least a portion of an issuer's static payment information, in a payment transaction for said selected payment account	30
wherein said payment processing authority is operable to deny as invalid, a transaction including a cryptogram not matching a payment processing authority computed cryptogram	30
wherein said payment processing authority is operable to approve as valid, a transaction including a cryptogram matching the payment processing authority computed cryptogram	30
wherein said user device is operable to receive an approval and a denial status of said transaction information validation, and visually convey said transaction status in the user-interface on the display disposed of the device	30
wherein said user device is operable to emulate the behavior of an issuer account payment transaction, when said complete device payment information is used in electronic payment facilities	30

4. Ineligible Subject Matter under 35 U.S.C. § 101

Each Asserted Claim of the '538 patent is directed to ineligible subject matter under 35 U.S.C. § 101. Specifically, the Asserted Claims are fatally abstract under the U.S. Supreme Court's decision in *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2345 (2014) and progeny.

In *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014), the Supreme Court established a two-part test for determining whether a claim recites patent-eligible subject matter. First, the court must determine whether the claims at issue are directed to any of the following patentable ineligible subject matter: laws of nature, natural phenomena, or abstract ideas. *Id.* at 2355. Second, if the claims are directed to ineligible subject matter, the court must then consider the claim elements—both individually and as an ordered combination—to determine whether they add an "inventive concept." *Id.* Merely claiming a generic "computer" to implement an abstract idea is not sufficient to transform the computer into a patent-eligible invention. *Id.* at 2357-50. Software claims may be abstract if "[t]hey do not claim a particular way of programming [to accomplish the claimed functionality], but instead merely claim the resulting systems" or if they "are not directed to a specific improvement in the way computers operate." *Apple Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1241 (Fed. Cir. 2016). "[M]erely presenting the results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation), is abstract as an ancillary part of such collection and analysis." *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016).

The Asserted Claims of the '538 patent are directed to the abstract idea of facilitating secure payment transactions by, *e.g.*, storing, displaying, analyzing, generating, and transmitting payment information, using generic and conventional computer components. For example, claim 1 recites "an electronic device," "user input using a human input sensor," "an NFC interface," "a

display," "a memory," "a processor," to "generate a complete device payment information," "transmit[] said complete device payment information…via NFC…," "receiv[e] information," and "visually convey the transaction payment authorization via a user-interface displayed on said display." '538 patent at claim 1; *see also* claims 8, 19, 25. Although the claims are directed to the use of "limited-use payment information" in place of a provider (e.g., bank) issued payment number, the patent discloses no formulas or algorithms for how to generate the limited-use number, nor does the patent include any limitation or explanation that would render the claims non-abstract. The dependent claims do not add anything that would remove the claims from the realm of abstract ideas. For example, the dependent claims require receiving and displaying information (claims 2, 3); using specific information to generate and validate a limited-use number (claims 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 28); displaying specific transaction information on the display (claims 7, 22, 28, 29, 30); using specific information to generate a cryptogram number (claims 18, 20, 27, 28, 29, 30); using specific information to generate a card validation value number (claim 20); verifying and authorizing a transmitted limited-use number (claims 23, 29); receiving user inputs to select a payment method (claims 24, 26); or validating a user's identity (claim 26).

Under *Alice* Step 1, those ideas are abstract, as they relate to a fundamental long-prevalent practice. *See, e.g.*, *Universal Secure Registry v. Apple, Inc.*, 10 F.4th 1342, 1349 (Fed. Cir. 2021) (holding as abstract claims directed to "enabl[ing] a transaction between a user and a merchant, where the merchant is given a time-varying code instead of the user's secure (credit card) information" thereby allowing for the "purchasing [of] goods or services without revealing personal financial information to a merchant…"); *Prism Techs. LLC v. T-Mobile USA, Inc.*, 696 F.App'x 1014, 1016 (Fed. Cir. 2017) (holding as abstract claims directed to "receiving" identity

data of a client computer, "authenticating" the identity of the data, "authorizing" the client computer and "permitting" access to the client computer). Limiting the invention to a particular technological environment, e.g., generic computer hardware, "do[es] not render an otherwise abstract concept any less abstract." *Intellectual Ventures I LLC v. Capital One Fin. Corp.,* 850 F.3d 1332, 1340 (Fed Cir. 2017).

Furthermore, under *Alice* Step 2 the Asserted Claims do not contain any inventive concept. The Asserted Claims employ well-known components or functionality (as shown in Apple's invalidity contentions involving anticipation and/or obviousness in this case), which is not enough to impart patent eligibility of an abstract idea. *See, e.g., Alice,* 134 S. Ct. at 2359 (holding that limitations describing "'well-understood, routine, conventional activit[ies]' previously known to the industry" were insufficient to supply an inventive concept (quoting *Mayo,* 132 S. Ct. at 1294)). For example, the Asserted Claims are directed to components that comprise generic hardware such as "a human input sensor," "an NFC interface," "a display," "a memory," and "a processor," and claim generic wireless communications between components. Moreover, the lack of written description for numerous claim elements and minimal disclosure in the specification of many claimed components and functions further demonstrates the Asserted Claims rely on conventional components and features.

Apple reserves the right to supplement these disclosures based on further investigation and discovery.

VI. U.S. PATENT NO. 11,328,286

A. Priority Date

Despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of the '286 patent is entitled to a priority date earlier than the filing date of the patent, *i.e.* April 21, 2020.

CardWare contends that every asserted claim is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application No. 61/794,891 (the "'891 provisional"). CardWare Preliminary Infringement Contentions (February 10, 2025) at Section II. However, CardWare provides no evidence or analysis to demonstrate that the asserted claims of the '286 patent are entitled to the priority date of the '891 provisional application. In this regard, a patent claim is entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides both written description support and an enabling disclosure for the patent claim as required by 35 U.S.C. § 112, ¶ 1. CardWare provides no such showing.

Nor has Cardware demonstrated that the asserted claims are entitled to the priority date of the earlier filed applications listed on the face of the patent. The '286 patent purports to be one of a chain of continuations to the U.S. Patent No. 9,022,286 (the "'286 parent patent"), filed on March 17, 2014. However, the '286 patent includes new matter not disclosed in the '286 parent patent, including at least Figs. 8A-8B and 9-12. These Figures do not represent the purported invention, but rather are clear graphical depictions of Apple products, such as the Apple iPhone, Apple Watch, and Apple Card publicly available prior to the issuance of the '286 patent, with the iconic Apple logo replaced with a depiction of another fruit (e.g. a banana or strawberry). *See* '286 patent at Figs. 8A-8B and 9-12; *see also* https://www.apple.com/newsroom/2019/03/introducing-apple-card-a-new-kind-of-credit-card-created-by-apple/ (announcing release of Apple Card in March 2019); https://www.apple.com/newsroom/2014/09/09Apple-Unveils-Apple-Watch-Apples-Most-Personal-Device-Ever/ (announcing release of Apple Watch in September, 2014); https://www.apple.com/newsroom/2014/09/09Apple-Announces-iPhone-6-iPhone-6-Plus-The-

Biggest-Advancements-in-iPhone-History/ (announcing release of Apple iPhone with Apple Pay in September 2014). The '286 patent was therefore incorrectly filed as a continuation and should have been filed as a continuation in part. And, CardWare provides no evidence or analysis demonstrating that the asserted claims of the '286 patent are entitled to the priority date of any of the applications to which the '286 patent claims priority.

CardWare has not alleged that the asserted claims of the '286 patent are entitled to a priority date earlier than the March 15, 2013 filing date of the '891 Provisional application. Although CardWare produced a handful of documents, which appear to be related to conception and/or reduction to practice, CardWare's document production to date fails to demonstrate that the asserted claims of the '286 patent were conceived and/or diligently reduced to practice prior to the filing of the '286 patent. Apple expressly reserves the right to amend its contentions if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice.

B. Relevant Prior Art

Apple contends that the prior art references identified in Apple's contentions anticipate and/or render obvious the Asserted Claims. Below, Apple lists some of the prior art cited in these contentions:

1. Patents and Patent Application Publications

Patent or Pub. No.	Filing Date	Publication/Issue Date
EP 0 949 595 A2	March 26, 1999	Oct. 13, 1999
EP 1 004 992 A2	March 24, 1998	May 31, 2000
EP 1 223 565 A1	Jan. 12, 2001	July 17, 2002
EP 2 302 882 A1	Sept. 24, 2009	March 30, 2011
EP 2 407 919 A1	March 30, 2007	Jan. 18, 2012
JP 2004-13728		Jan. 15, 2004
KR 20110039946A	Oct. 13, 2009	April 20, 2011
KR 20120076502A	Nov. 27, 2010	July 9, 2012
US 5,744,787	Sept. 25, 1995	April 28, 1998

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 5,883,810	Sept. 24, 1997	March 16, 1999
US 5,963,924	April 26, 1996	Oct. 5, 1999
US 6,005,942	March 24, 1998	Dec. 21, 1999
US 6,076,075	March 30, 1998	June 13, 2000
US 6,105,008	April 30, 1998	Aug. 15, 2000
US 6,119,946	March 3, 1998	Sept. 19, 2000
US 6,233,683	March 24, 1998	May 15, 2001
US 6,282,522 B1	Oct. 16, 1997	Aug. 28, 2001
US 6,330,978 B1	April 27, 1998	Dec. 18, 2001
US 6,450,407 B1	April 21, 2000	Sept. 17, 2002
US 6,481,632 B2	Oct. 26, 1999	Nov. 19, 2002
US 6,748,367 B1	Sept. 21, 2000	June 8, 2004
US 6,776,332 B2	Dec. 26, 2002	Aug. 17, 2004
US 7,127,236 B2	Dec. 18, 2002	Oct. 24, 2006
US 7,177,848 B2	June 22, 2001	Feb. 13, 2007
US 7,725,369 B2	Jan. 23, 2009	May 25, 2010
US 7,908,216 B1	July 22, 1999	March 15, 2011
US 8,095,113 B2	Feb. 4, 2009	Jan. 10, 2012
US 8,255,323 B1	Jan. 9, 2009	Aug. 28, 2012
US 8,930,274 B1	Dec. 18, 2013	Jan. 6, 2015
US 9,008,616 B2	Dec. 9, 2011	April 14, 2015
US 9,600,808 B1	June 22, 2012	March 21, 2017
US 9,721,319 B2	March 28, 2012	Aug. 1, 2017
US 9,898,728 B2	April 16, 2012	Feb. 20, 2018
US 10,121,144 B2	Sept. 2, 2014	Nov. 6, 2018
US 10,380,573 B2	Sept. 30, 2008	Aug. 13, 2019
US 10,445,723 B2	May 14, 2013	Oct. 15, 2019
US 10,510,056 B2	Nov. 2, 2011	Dec. 17, 2019
US 11,042,846 B2	Sept. 2, 2014	June 22, 2021
US 11,068,875 B2	Sept. 30, 2014	July 20, 2021
US 11,392,937 B2	Sept. 2, 2014	July 19, 2022
US 2003/0222152 A1	May 28, 2003	Dec. 4, 2003
US 2004/0127256 A1	July 23, 2003	July 1, 2004
US 2007/0095892 A1	Oct. 27, 2005	May 3, 2007
US 2008/0040285 A1	Feb. 16, 2007	Feb. 14, 2008
US 2009/0030845 A1	June 25, 2008	Jan. 29, 2009
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2005/0043997 A1	Aug. 18, 2003	Feb. 24, 2005
US 2005/0252961 A1	May 13, 2004	Nov. 17, 2005
US 2007/0045403 A1	Aug. 31, 2005	March 1, 2007
US 2007/0114274 A1	Nov. 21, 2006	May 24, 2007
US 2007/0208671 A1	Dec. 30, 2006	Sept. 6, 2007
US 2007/0244811 A1	March 30, 2007	Oct. 18, 2007

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 2008/0078831 A1	Sept. 29, 2006	April 3, 2008
US 2008/0222047 A1	July 27, 2007	Sept. 11, 2008
US 2008/0275779 A1	Feb. 7, 2008	Nov. 6, 2008
US 2009/0070272 A1	Sept. 11, 2008	March 12, 2009
US 2009/0144161 A1	Nov. 30, 2007	June 4, 2009
US 2009/0200371 A1	Feb. 4, 2009	Aug. 13, 2009
US 2009/0210308A1	Feb. 15, 2008	Aug. 20, 2009
US 2009/0276347 A1	May 1, 2009	Nov. 5, 2009
US 2009/0291634 A1	April 24, 2006	Nov. 26, 2009
US 2010/0078471 A1	Sept. 30, 2008	April 1, 2010
US 2010/0078472 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082481 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082490 A1	Sept. 30, 2008	April 1, 2010
US 2010/0088227 A1	Nov. 16, 2007	April 8, 2010
US 2010/0125508 A1	Nov. 17, 2009	May 20, 2010
US 2010/0125509 A1	June 1, 2009	May 20, 2010
US 2010/0127083 A1	Nov. 26, 2008	May 27, 2010
US 2011/0010277 A1	July 9, 2009	Jan. 13, 2011
US 2011/0022472 A1	Feb. 25, 2010	Jan. 27, 2011
US 2011/0078031 A1	Sept. 30, 2009	March 31, 2011
US 2011/0082772 A1	Nov. 12, 2009	April 7, 2011
US 2011/0101093 A1	Feb. 18, 2010	May 5, 2011
US 2011/0112918 A1	Oct. 29, 2010	May 12, 2011
US 2011/0140841 A1	Aug. 19, 2009	June 16, 2011
US 2011/0153498A1	Dec. 7, 2010	June 23, 2011
US 2011/0173060 A1	Jan. 10, 2011	July 14, 2011
US 2011/0173121 A1	March 28, 2011	July 14, 2011
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2011/0191161 A1	Jan. 31, 2011	Aug. 4, 2011
US 2011/0191177 A1	Jan. 25, 2011	Aug. 4, 2011
US 2011/0238573 A1	March 15, 2011	Sept. 29, 2011
US 2012/0116902 A1	March 11, 2011	May 10, 2012
US 2012/0116976 A1	Jan. 10, 2012	May 10, 2012
US 2012/0143754 A1	Dec. 5, 2011	June 7, 2012
US 2012/0150687 A1	Dec. 13, 2011	June 14, 2012
US 2012/0191612 A1	April 3, 2012	July 26, 2012
US 2012/0191615 A1	Jan. 27, 2012	July 26, 2012
US 2012/0205443 A1	April 3, 2012	Aug. 16, 2012
US 2012/0310760 A1	Sept. 1, 2011	Dec. 6, 2012
US 2013/0013499 A1	July 5, 2012	Jan. 10, 2013
US 2013/0024371 A1	Sept. 27, 2012	Jan. 24, 2013
US 2013/0085941 A1	Sept. 30, 2011	April 4, 2013
US 2013/0159186 A1	April 16, 2012	June 20, 2013

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 2013/0166441 A1	Dec. 21, 2012	June 27, 2013
US 2013/0232083 A1	March 1, 2013	Sept. 5, 2013
US 2013/0262317 A1	March 14, 2013	Oct. 3, 2013
US 2013/0297509 A1	May 6, 2013	Nov. 7, 2013
US 2014/0229375 A1	Feb. 11, 2013	Aug. 14, 2014
US 2014/0344153 A1	May 15, 2014	Nov. 20, 2014
US 2015/0058191 A1	Nov. 27, 2013	Feb. 26, 2015
US 2015/0073983 A1	Nov. 12, 2014	March 12, 2015
US 2015/0178724 A1	Dec. 19, 2014	June 25, 2015
US 2015/0180836A1	Dec. 19, 2014	June 25, 2015
US 2015/0348002 A1	Sept. 30, 2014	Dec. 3, 2015
US 2016/0042356 A1	Aug. 11, 2014	Feb. 11, 2016
US 2016/0057619 A1	Aug 24, 2015	Feb. 25, 2016
US 2016/0253669 A1	Feb. 26, 2016	Sept. 1, 2016
US 2016/0275505 A1	March 17, 2015	Sept. 22, 2016
US 2016/0321653 A1	April 29, 2016	Nov. 3, 2016
WO 2010/037218 A1	Sept. 29, 2009	April 8, 2010
WO 2010/039337 A2	Aug. 11, 2009	April 8, 2010
WO 2012/011054 A1	July 19, 2011	Jan. 26, 2012
WO 2012/154915 A1	May 10, 2012	Nov. 15, 2012
WO 2013/155627 A1	April 16, 2013	Oct. 24, 2013
Patent Application 61/899,734	Nov. 4, 2013	
Patent Application 61/905,035	Nov. 15, 2013	
Patent Application 61/921,688	Dec. 30, 2013	

2. Printed Publications

Title	Author/Publisher	Date
"A Primer to the Implementation of Smrt Card Management and Related Systems," Version 1.0	GlobalPlatform	Aug. 2000
About Us | Venmo	Venmo.com	2012
"An Introduction to Java Card Technology – Part 1"	C. Enrique Ortiz Sun Developer Network	May 29, 2003
"An Introduction to Java Card Technology – Part 2, The Java Card Applet"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Introduction to Java Card Technology – Part 3, The Smart Card Host Application"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Investigation into Electronic Commerce Frauds and their Security Implications"	Kevin Boardman	Nov. 7, 2004

Title	Author/Publisher	Date
Apple Press Release: "Apple Announces Apple Pay"	Apple	Sept. 9, 2014
Card on File Tokenization | Mastercard Developers	Mastercard.com	
"Contactless Payment Security Questions & Answers"	Smart Card Alliance, Inc.	2016
E-ink on Credit Cards will do Away with PINs (video)	The Digital Reader	Sept. 2, 2011
Emue – a Revolution in Authentication	EMUE	May 13, 2009
"EMV Card Personalization Specification," Version 1.0	EMVCo, LLC	June 2003
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 1, Application Independent ICC to Terminal Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.3	EMVCo, LLC	Nov 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.3	EMVCo, LLC	Nov. 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 4, Cardholder, Attendant, and Acquirer Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011
For Businesses: Payment Technologies – Products & Platforms	Visa	2004
For Businesses: Payment Technologies – Visa Cash	Visa	2004
For Businesses: Payment Technologies – Visa Smart debit and Visa Smart Credit	Visa	2004
GlobalPlatform: a Dynamic and Secure	Marc Kekiheff GlobalPlatform	
GlobalPlatform Card Security Requirements Specification	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Card Specification Tutorial	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Technical Overview	Marc Kekiheff	Jan. 22, 2003

Title	Author/Publisher	Date
	GlobalPlatform	
GlobalPlatform – Global Consensus for a Connected Planet	GlobalPlatform	
GlobalPlatform – Implementations – Financial	GlobalPlatform	2006
GlobalPlatform – Implementations – Mobile Telecom	GlobalPlatform	2006
GlobalPlatform – Implementations – Retail	GlobalPlatform	2006
GlobalPlatform – Implementations – Transit	GlobalPlatform	2006
GlobalPlatform – Interoperability and Security with GlobalPlatform	March Kekicheff, GlobalPlatform	Feb. 2, 2004
GlobalPlatform – Introduction to GlobalPlatform Technology	GlobalPlatform	
GlobalPlatform – Overview	GlobalPlatform	June 2004
GlobalPlatform – The Cross-Industry Approach to Smart Card Standards	GlobalPlatform	2000
GlobalPlatform – The Platform for a Multi-application Environment	March Kekicheff, GlobalPlatform	April 2005
GlobalPlatform – Towards the Next Generation of GlobalPlatform Specifications	Pierre-Francois Solere, GLobalPlatform	
GlobalPlatform Specifications: The Solution for an Emerging Market	GlobalPlatform	
GlobalPlatform Specifications Archive – Technology Document Library	GlobalPlatform	2024
GlobalPlatform: a Dynamic and Secure Pre and Post Issuance Solution – Cartes 2002	Marc Kekiheff GlobalPlatform	2002
Google Wallet and the New Retail Ecosystem	David W. Schropfer	Oct. 3, 2011
Government Smart Card Handbook	GSA	Feb. 2004
Government Smart Card Handbook	GSA	Feb. 2004
Implementing Electronic Card Payment Systems	Cristian Radu	2003
"Interoperability in Electronic Payments: Lessons and Opportunities"	Carol Coye Benson CGAP	2012
"Investigating Mobile Payment: Supporting Technologies, Methods, and Use"	Valcourt, et al.; IEEE	2005
"Java Card™ 2.2 Off-Card Verifier" White Paper	Sun Microsystems	June 2002
Java Card for ePayment Applications	Vesna. Hassler	2002
"Java Card™ Platform Security" Technical White Paper	Sun Microsystems	2001
Java Card Platform: A Week in the Life of Jack Link	Sun Microsystems	2004
Java Card Questions and Answers with Zhiqun Chen	Ed Ort Sun Microsystems	Oct. 2000
Java Card Technology Datasheet	Sun Microsystems	2005

Title	Author/Publisher	Date
Java Card Technology Examples	Sun Microsystems	2004
Java Card Technology FAQs	Sun Microsystems	2005
Java Card Technology for Smart Cards: Architecture and Programmer's Guide	Zhiqun Chen	2000
Java Card Technology for Smart Cards: Architecture and Programmer's Guide Book information	Zhiqun Chen Sun Microsystems	Sept. 18, 2000
"Java Card Technology Overview," Chapter 3		
Java Card1_Fig-3	Sun.com	2005
Java Card1_Fig-4	Sun.com	2005
Java Card1_Fig-5	Sun.com	2006
Java Card1_Fig-7	Sun.com	2004
Java Card1_Fig-9	Sun.com	2004
Java Card1_Fig-12	Sun.com	2006
Java on Smart Cards: Programming and Security: First International Workshop, JavaCard 2000		2000
JavaCard – From Hyper to Reality	Michael Baentsch IEEE	1999
JavaCard – Redistribution and Use in Source and Binary Forms License	Sun Microsystems	2004
JCOP V2.4.1 Secure Smart Card Controller, Rev. 3.2	NXP	Sept. 2, 2009
JCOP20 Technical Brief, Revision 2.3	IBM	
JCOP30 Technical Brief, Revision 2.3		
MagTek CEO: "Dynamic Data is the Core of Security" [Transcript]	David Evans Pymnts	March 8, 2012
MagTek Launches QwickPAY, the Innovative Secure Mobile Payments Service, Into the Android Marketplace	Magtek	March 29, 2011
MagTek Introduces Qwick Code Mobile Wallet		Jan. 15, 2012
Mastercard Virtual Card Tokens	Mastercard	March 7, 2025
MDES Token Connect | Mastercard Developers	Mastercard	
Mobile Payment Services in South Africa	Matthias Beland	Jan. 31, 2013
NXP – News Center – Infocus Archive	NXP	2006
One-Click Payments by 2030 With Tokenization	Jorn Lambert Mastercard	March 12, 2025
PCI Data Security Standard (PCI DSS), Version 2.0	Scoping SIG, Tokenization Taskforce PCI Security Standards Council	Aug. 2011
PCI – Payment Card Industry (PCI) Data Security Standard, Version 2.0	PCI	Oct. 2010

Title	Author/Publisher	Date
PHB Development, Kurt Salmon, "Mobile Payments … a 'Southern' Revolution!"	PHB Development	2011
Qwick Codes Mobile Wallet for IOS	CNET	
"Radio-Frequency Identification (RFID): A Focus on Information Security and Privacy," OECD Digital Economy Papers, No. 138	OECD Publishing	Jan. 14, 2008
"SE vs. HCE: What is More Secure for NFC Mobile Payments?"	Finextra	Oct. 17, 2014
Techie Visa Card Features Buttons and Screen to Generate CCV Dynamically	Mark Wilson	Nov. 11, 2008
The Complete Guide to Payments Tokenization		
The Rise of Async Work [Podcast] – Fast Company	Loom Atlassian	Feb. 10, 2025
Venmo, Just Say "Venmo Me"	Venmo	2021
Venmo – Wikipedia	Wikipedia	
Visa and Emue Technologies deploy cards with built-in one-time password generator	Finextra	Feb. 9, 2009
Visa Best Practices for Tokenization Version 1.0	Visa Best Practices	July 14, 2010
Visa CodeSure Gets Commercial Green Light	Finextra	June 2, 2010
Visa Invests in Authentication Outfit Emue	Finextra	Nov. 18, 2009
Visa Token Service Momentum, Annual Update 2022	Visa	2022
Visa Token Service – Product Fact Sheet	Visa	2022
Visa Token Service – Visa	Visa	2025
What is Venmo, how does it work, and is it safe to use?	Ben Luthi Yahoo Finance	May 31, 2024
What is Venmo? – NerdWallet	Chanelle Bessette NerdWallet	June 24, 2024
What is Venmo: How it Works	Nicole Symon Money	May 18, 2023
Qwick Codes Demo video		
Wi Wallet Mobile Payments video		
Visa Pin System 2 Credit Cards video		
Smart Dongle Credit Card With e-ink Display video		
Credit Card with E-ink Display Keep You Safe While Online Shopping video		
Mastercard Token Authentication Service lets Shoppers Create Passkeys for Secure Authentication video		
Mastercard Tokenization video		

3. Prior Art Systems

The table below lists prior art systems and products identified that reveal the state of the art and/or render the Asserted Claims invalid under pre- or post-AIA 35 U.S.C. §§ 102 and/or 103. Some or all of the supporting references for these systems may also qualify as prior art publications under 35 U.S.C. § 102 and may be used as invalidating prior art under 35 U.S.C. §§ 102 and 103. In particular, the manuals for these products, patents filed to cover these products, and any other publicly available information.

Each of the prior art systems were publicly known or used or offered for sale prior to the critical date of the '286 patent. Apple continues to investigate the systems and products and reserves the right to supplement the contentions and accompanying claim charts after further discovery and investigation. Apple also reserves the right to rely on fact or expert witness testimony to establish the public knowledge, use, availability, sale, or offer for sale of any systems described below. Although additional information and prior art systems may be obtained through discovery, such prior art systems include at least the following:

Prior Art System	Person/Entity	Date
Apple Pay	Apple	At least as early as 2012
Google Wallet	Google	At least as early as September 20, 2011
Venmo	Venmo	At least as early as 2009
Visa Payment Tokens	Visa	At least as early as July 2010
Mastercard Payment Tokens	Mastercard	At least as early as 2013
Qwick Codes Mobile Wallet	Magtek	At least as early as October 2012
wiWallet	wiWallet Mobile Payments (Pty) Ltd.	At least as early as July 08, 2010
emue Smart Card	emue	At least as early as February 11, 2010
Smart Dongle Credit Card	E-ink	At least as early as November 11, 2011
VivoTech systems	VivoTech	At least as early as 2005
Square Systems	Square	At least as early as 2009

Prior Art System	Person/Entity	Date
Starbucks Mobile Application	Starbucks	At least as early as 2009
PayPal and PayPal Mobile	PayPal	At least as early as 2006
Venmo	Venmo	At least as early as 2010
Cake POS and payment systems	Cake Corp.	At least as early as 2013
Toast POS and payment systems	Toast, Inc.	At least as early as 2012
MiFare	Philips	At least as early as 2004
SmartMX	Philips	At least as early as 2004
JCOP OS	Philips/NXP	At least as early as 2004
Global Platform	GlobalPlatform	At least as early as 2004
JavaCard	Sun Microsystems	At least as early as 2004
LevelUp	SCVNGR dba LevelUp	At least as early as 2011

C. Anticipation and Obviousness

1. Non-limiting Claim Elements

The asserted claims of the '286 patent include numerous limitations that have no functional or structural relationship to the claimed payment system and thus do not affect the scope of the claims. For example, at least the limitations listed below are directed to printed matter and thus entitled to no patentable weight:

- "free of any fixed payment numbers visible thereon" ('286 patent, claim 1)
- "payment information not visible on the payment card device" ('286 patent, claim 1)
- "absent a payment number information" ('286 patent, claim 5)
- "free of any fixed payment numbers disposed thereon" ('286 patent, claim 15)
- "fixed payment information disposed thereon, and wherein the fixed payment information comprises only: a card-holder name; a payment issuing logo; a card payment network logo and a card reader interface icon, and wherein the payment card device is free of any account numbers, expiration dates, card security codes, or other fixed payment numbers, disposed thereon" ('286 patent, claim 19)

- "free of any depictions of fixed payment numbers thereon" ('286 patent, claim 20)
- "issuer-provided payment information, associated with, but not depicted on, the payment card device" ('286 patent, claim 20)

The Federal Circuit has repeatedly held that limitations directed to printed matter, such as those listed above, are not entitled to patentable weight. *See, e.g.*, *CR Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020) ("[P]rinted matter encompasses any information claimed for its communicative content, and the doctrine prohibits patenting such printed matter unless it is 'functionally related' to its 'substrate' which encompasses the structural elements of the claimed invention."); *Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prop. IP Ltd.*, 890 F.3d 1024, 1031 (Fed. Cir. 2018) ("Claim limitations directed to printed matter are not entitled to patentable weight unless the printed matter is functionally related to the substrate on which the printed matter is applied."); *In re Distefano*, 808 F.3d 845, 848 (Fed. Cir. 2015) ("[I]f a limitation claims (a) printed matter that (b) is not functionally or structurally related to the physical substrate holding the printed matter, it does not lend any patentable weight to the patentability analysis.").

2. Claim Charts

Apple attaches Exhibits 286-1 to 286-12, which provide exemplary disclosures showing how the prior art anticipates and/or renders obvious the asserted claims of the '286 patent. Apple also attaches Exhibit 286-103, which provides exemplary disclosures in secondary references to combine with the prior art identified in these contentions to render obvious the asserted claims of the '286 patent. Apple may rely on any of the primary references identified in Exhibits 286-1 to 286-12 in combination with any secondary reference identified in those

exhibits, in Exhibit 286-103, or in this cover pleading. The table below identifies the primary reference addressed in each of Exhibits 286-1 to 286-12, each of which describes anticipation and/or obviousness of one or more claims of the '286 patent:

Exhibit	Prior Art Reference
286-1	U.S. Patent No. 9,600,808 ("Gomez '808")
286-2	U.S. Pub. No. 2013/0232083 ("Smith '083")
286-3	U.S. Pub. No. 2013/0262317 ("Collinge '317")
286-4	U.S. Pub. No. 2012/0150687 ("Hart '687")
286-5	U.S. Pub No. 2010/0088227 ("Belament '227")
286-6	U.S. Patent No. 7,177,848 ("Hogan '848")
286-7	U.S. Pub. No. 2007/0114274 ("Gibbs '274")
286-8	U.S. Patent Pub. No. 2008/0319905 ("Carlson '905")
286-9	U.S. Patent Pub. No. 2013/0124410 ("Kay '410")
286-10	U.S. Patent Pub. No. 2010/0082481 ("Lin '481")
286-11	U.S. Patent Pub. No. 2006/0122931 ("Walker '931")
286-12	Apple Pay Products ("Apple Pay")

The U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id*. at 1732, 1738, 1742–1743, 1746. A patent claim may be obvious if the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id*. at 1740. The Court stated that courts should "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by

the patent at issue." *Id*. at 1740–41. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See TGIP, Inc. v. AT&T Corp*., 527 F. Supp. 2d 561, 580–81 (E.D. Tex. 2007). "[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ" to resolve the question of obviousness. *KSR*, 127 S. Ct. at 1741.

Based on all of these considerations, as further detailed in Exhibits 286-1 to 286-12 and 286-103, a POSITA would have combined the teachings of the prior art references discussed and charted in those exhibits. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the asserted claims of the '286 patent. The references identified in Exhibits 286-1 to 286-12 and 286-103 are analogous prior art to the subject matter of the asserted claims and, for at least the reasons set forth below, are properly combinable. Because these prior art references exist within a single field of art, particularly one in which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the '286 patent.

By way of example only, the following combinations render obvious claims 1-27 of the '286 patent:

- Gomez '808 in combination with one or more of Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 286-103.
- Smith '083 in combination with one or more of Gomez '808, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 286-103.

- Collinge '317 in combination with one or more of Gomez '808, Smith '083, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 286-103.

- Hart '687 in combination with one or more of Gomez '808, Smith '083, Collinge '317, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 286-103.

- Belament '227 in combination with one or more of Gomez '808, Smith '083, Collinge '317, Hart '687, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 286-103.

- Hogan '848 in combination with one or more of Gomez '808, Smith '083, Collinge '317, Hart '687, Belament '227, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 286-103.

- Gibbs '274 in combination with one or more of Gomez '808, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Carlson '905, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 286-103.

- Carlson '905 in combination with one or more of Gomez '808, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Kay '410, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 286-103.

- Kay '410 in combination with one or more of Gomez '808, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Lin '481, Walker '931, Apple Pay and/or Secondary References in Ex. 286-103.

- Lin '481 in combination with one or more of Gomez '808, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Walker '931, Apple Pay and/or Secondary References in Ex. 286-103.

- Walker '931 in combination with one or more of Gomez '808, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Apple Pay and/or Secondary References in Ex. 286-103.

- Apple Pay in combination with one or more of Gomez '808, Smith '083, Collinge '317, Hart '687, Belament '227, Hogan '848, Gibbs '274, Carlson '905, Kay '410, Lin '481, Walker '931, and/or Secondary References in Ex. 286-103.

Numerous prior art references, including those identified in the attached exhibits, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the '286 patent. As it would be unduly burdensome to create detailed claim charts for all of the invalidating combinations, for at least the reasons described in these invalidity contentions, it

would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in the attached exhibits, to meet the limitations of the asserted claims of the '286 patent. Apple's inclusion of exemplary combinations, in view of the factors and motivations identified here, does not preclude Apple from identifying other invalidating combinations and/or motivations as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, because each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1739–40 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 1742. Nevertheless, in addition to the information contained herein, Apple hereby identifies additional motivations and reasons to combine the cited art.

One or more combinations of the prior art references identified herein would have been obvious because these references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to combine the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market forces either in the same field or a different one. In

addition, the combinations of the prior art references identified above would have been obvious because the combinations represent the known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation or reason to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution; the existence of a known need or problem in the field of endeavor at the time of the invention; and the background knowledge that would have been possessed by a person having ordinary skill in the art. For example, the prior art references are generally directed to the same problems. Thus, a skilled artisan seeking to solve these problems would look to these cited references in combination.

Thus, the motivation or reason to combine the teachings of the prior art references disclosed herein is found in the references themselves and in: (1) the nature of the problems being solved; (2) the express, implied, and inherent teachings of the prior art; (3) the knowledge of a POSITA; (4) the fact that the prior art is generally directed towards the same problems; and/or (5) the predictable results obtained in combining the different elements of the prior art; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Apple incorporates by reference prior art from the prosecution histories and background sections of the '286 patent. Apple expects to rely on the testimony of one or more expert witnesses and documents referenced by those expert witnesses in support of these contentions and incorporate those forthcoming expert reports as if fully set forth herein.

Apple contends that there are no secondary considerations of non-obviousness evidencing the validity of any of the asserted claims. Secondary considerations of non-obviousness, also referred to as objective indicia of non-obviousness, "can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans before the invention." *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc*., 711 F.3d 1348, 1368 (Fed. Cir. 2013). "A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision." *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists, secondary considerations of non-obviousness "simply cannot overcome [a] strong prima facie showing of obviousness." *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008). CardWare has not established the existence of any objective indicia of non-obviousness or secondary considerations. Apple reserves the right to supplement their contentions to respond to any such arguments or evidence should CardWare be permitted to raise them in the future. While discovery in this case is ongoing, and Apple's investigation continues (which will include expert discovery), to the extent CardWare contends that one or more asserted claims is not obvious based on secondary considerations recognized by relevant authority Apple contends such allegations are without

merit. Apple reserves the right to supplement their contentions to respond to any such evidence should CardWare be permitted to raise it in the future.

D. The Accused Products Predate the '286 Patent

As discussed above, despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of any asserted patent is entitled to a priority date earlier than the respective filing dates of the asserted patents. CardWare contends that "every asserted claim of each asserted patent is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application no. 61/794,891." *See* February 10, 2025 Infringement Contentions at 2. Apple disagrees with CardWare's contention, and CardWare has failed to establish that any asserted patent is entitled to an earlier priority date.

The accused products were announced publicly on or around September 9, 2014. https://www.apple.com/newsroom/2014/09/09Apple-Announces-Apple-Pay/. The public announcement of Apple Pay predates the filing date of the '286 patent, *i.e.*, April 21, 2020, and therefore, Apple Pay is prior art to the '286 patent. Apple Pay anticipates and/or renders obvious the asserted claims of the '286 patent. *See* Ex. 286-12.

To the extent CardWare is able to establish that any asserted claim is entitled to a March 15, 2013 priority date, then the accused products are nonetheless invalidating prior art at least under pre-AIA 35 U.S.C. § 102(g). Apple conceived of Apple Pay before the earliest invention date to which CardWare claims the asserted patents are entitled to priority. Apple exercised reasonable diligence from the time of its conception of Apple Pay and did not abandon, suppress, or conceal its invention. In the event any claim is entitled to a March 15, 2013 priority date, each limitation of that claim would be invalid under at least pre-AIA 35 U.S.C. § 102(g) for the same reasons CardWare claims that the accused products meet that limitation. *See* Ex. 286-12.

Apple expressly reserves the right to amend its contentions if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice. Apple expressly reserves the right to amend its contentions as discovery commences in this matter and additional relevant information and documentation relating to Apple's conception and reduction to practice of the accused products is uncovered.

E. Other Invalidity Grounds

Apple hereby identifies grounds of invalidity based on (1) lack of written description under 35 U.S.C. § 112; (2) lack of enablement under 35 U.S.C. § 112; (3) indefiniteness under 35 U.S.C. § 112; and (4) ineligible subject matter under 35 U.S.C. § 101. These contentions shall not be construed as an admission that any claim construction advanced by Apple in this case is in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Apple from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to CardWare's purported construction of the claim language or of other positions advanced by CardWare during the course of this litigation. Apple's Invalidity Contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as CardWare's alleged scope of the asserted claims of the '286 patent. Consequently, Apple only identifies the issues under 35 U.S.C. § 112 of which they are presently aware.

1. Lack of Written Description under 35 U.S.C. § 112

The asserted claims are invalid under 35 U.S.C. § 112, because the '286 patent does not provide sufficient written description to establish that the alleged inventors were in possession of the full scope of the alleged inventions recited in the asserted claims at the time the '286 patent was filed. *See e.g. Ariad v. Lilly*, 598 F.3d 1336 (Fed. Cir. 2010) (en banc); *LizardTech Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005) (finding claims invalid

under 35 U.S.C. § 112 where the specification failed to include a written description of the full scope of the claimed invention); *In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1320 (Fed. Cir. 2011) ("[W]hen analyzing whether a patent meets the written description requirement, one cannot 'bootstrap' the knowledge of a person of ordinary skill in the art ('POSITA') into the analysis and fill the gap in the disclosure through obviousness.").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of written description under 35 U.S.C. § 112, as the specification of the '286 patent does not demonstrate that the inventors were in possession of the claimed subject matter:

Claim Terms	Claim(s)
"a payment system comprising: a payment card device…; and a computing device" / "a payment system comprising: a payment card device…; and a card-users personal computing device"	1, 15, 20
"a payment card device [that is] free of any [depictions of] fixed payment numbers visible thereon" /	1, 15, 20
"a touch-screen user interface operable to provide a visual user-interface for user payment interactions"	1, 20
"wherein the processor is operable to store a transaction sequence count, a device account number and secrets limited to the computing device"	1
"wherein the computing device is operable to receive, store and transmit a card payment information not visible on the payment card device" / "wherein the computing device is operable to receive, store, display and transmit issuer-provided payment information, associated with, but not depicted on, the payment card device"	1, 20
"wherein the processor is operable to generate at least a portion of a limited-use card payment information for use by an authenticated card user"	1
"wherein a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use"	1, 15
"wherein a card issuer authority is operable to validate a card payment information as authentic when received from at least one of: an authenticated users payment card; and an authenticated users computing device" / "wherein a card issuing authority is operable to validate generated limited-use payment information provided by the computing device in an authorized transaction completed by the computing device"	1, 15
"wherein the card issuer authority is operable to permit the authentic transactions to complete."	1
"wherein the touch-screen user interface is operable to control an access for payment transactions by the card device, and is operable to enable as authentic payment transactions by the card device"	2

Claim Terms	Claim(s)
"wherein the touch-screen user interface is operable to control an access of the card device for payment transactions at an NFC Card Reader facility, and is operable to enable and disable NFC payment transactions by the card device"	3
"wherein the touch-screen user-interface is configurable for a locking and unlocking of payment transactions"	4
"wherein a card issuer authority is further operable for denying a payment transaction from at least one of: a locked card device; and a locked card-users computing device"	4
"a card issuer authority is further operable to permit as authorized, a card payment transaction from an unlocked device"	4
"wherein the information presented on an interface of said card device, are limited to an in-store merchant card reader facility use only"	5
"the card issuer authority is operable to receive said transacted payment information"	6
"wherein a card issuer authority is operable to compute a limited-use payment information from a transaction information, a merchant, a facility information, a sequence counter, a payment card account information, secrets and an information limited to said card device and to said computing device"	6
"wherein a card issuer authority is operable to compare said computed payment information to said device transacted information"	6
"wherein a card issuer authority is operable to reject as invalid a device transaction used outside of a valid range of device limitations"	6
"wherein a card issuer authority is operable to authenticate as valid, a device transaction use within valid range of device limitations"	6
"wherein the computing device is further operable to transceive the card payment information via the wireless interface for completing an online transaction"	7
"wherein the computing device is further operable to transceive the limited-use card payment information via an NFC interface of the computing device in an in-store NFC reader facility transaction"	8
"wherein the computing device is further operable to transceive the limited-use payment information wirelessly with another device via a wireless interface of the computing device, in a device-to-device transaction"	9
"wherein the computing device is further operable to transmit a payment information visually, in alphanumeric, graphical and iconography via the touch screen user interface"	10
"The system of claim 1, further comprising a touch-screen user interface control for a user approving and denying a transaction"	11
"wherein a card issuer authority is further operable to deny as authentic, a card payment transaction from a user-denied transaction, and to approve as authentic a card payment transaction from a user-approved transaction"	11
"wherein the computing device is further operable to present at least one challenge, of a set of security challenges comprising: a card user personal	12

Claim Terms	Claim(s)
information question, a card issuer authority security question, a user touch-screen entry, a user touch-screen swipe, a user gesture of a device, a user passcode entry, a biometric sensing of a user touch, a biometric sensing of a recognized user proximity, and a biometric sensing of a recognized user"	
"wherein the computing device is operable to reject and accept a user authorization to use the device based on the security challenge response"	12
"wherein the computing device is operable to decline performing a payment transaction in the possession of an unauthorized user"	12
"wherein the computing device is operable to perform a payment transaction while in the possession of a user correctly passing the at least one challenge"	12
"wherein a payment issuing authority is operable to decline transactions performed by the computing device when a user fails the at least one security challenge"	13
"wherein a payment issuing authority is operable to decline transactions performed by the payment card device when a user fails at least one security challenge presented to a user by the computing device"	14
"a touch-screen display interface"	15
"wherein the computing device is configured to dynamically generate limited-use payment information"	15
"wherein the computing device is configured to convey the limited-use payment information on a computing device interface upon the authorization of a valid user"	15
"wherein the limited-use payment information provided by at least one or both of: the payment card device, and the computing device, is validated by a card issuing authority when used in merchant in-store facility transactions"	15
"wherein the touch-screen user interface is operable for displaying the limited-use payment information"	16
"wherein a merchant is operable to accept the displayed payment card information in a transaction at a merchant facility"	16
"wherein the touch-screen display interface is operable to display a merchant facility transaction"	17
"wherein a card issuer authority is further operable to deny a card payment transaction from a user-denied merchant facility transaction, and to approve as authentic a card payment transaction from a user-approved facility transaction"	17
"wherein a plurality of issuer-provided payment information is wirelessly downloaded into the personal computing device"	18
"wherein the user-interface is operable for a user selection, of at least one of issuer-provided payment methods via the touch-screen display interface"	18
"wherein the payment card device is operable for a transaction with a user-selected payment method"	18
"wherein the payment card device comprises fixed payment information disposed thereon, and wherein the fixed payment information comprises	19

Claim Terms	Claim(s)
only: a card-holder name; a payment issuing logo; a card payment network logo, and a card reader interface icon, and wherein the payment card device is free of any account numbers, expiration dates, card security codes, or other fixed payment numbers, disposed thereon"	
"wherein the processor is operable to dynamically generate at least a portion of a limited-use payment information for use by an authenticated card user, and to combine said limited-use payment information with at least said static device account number to create combined payment information"	20
"wherein the computing device is operable to convey said combined payment information via an interface disposed of the computing device"	20
"wherein the computing device is operable to receive information, from an issuer, in response to the conveyed combined payment information, indicating that a payment transaction is valid"	20
"wherein the computing device is operable to wirelessly receive the static device account number"	21, 25, 27
"wherein the processor is operable to dynamically generate the at least a portion of a limited-use payment information based on a transaction sequence counter count, and further wherein the generated limited-use payment information is valid for a single use."	22
"wherein the processor is operable to dynamically generate the at least a portion of a limited-use payment information further based on payment processing authority secrets"	23

2. Lack of Enablement under 35 U.S.C. § 112(a)

The asserted claims are also invalid under 35 U.S.C. § 112, because the '286 patent does not enable one of ordinary skill in the art to make and/or use the full scope of certain recited elements of the asserted claims of the '286 patent without undue experimentation. *See, e.g.*, *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988) ("The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation."); *Trustees of Bos. Univ. v. Everlight Elecs. Co.*, 896 F.3d 1357, 1362 (Fed. Cir. 2018) ("to be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of enablement under 35 U.S.C. § 112, as the claims, specification, and prosecution histories would not enable one of skill in the art to practice the claimed invention(s) without undue experimentation:

Claim Terms	Claim(s)
"a payment system comprising: a payment card device…; and a computing device" / "a payment system comprising: a payment card device…; and a card-users personal computing device"	1, 15, 20
"a payment card device [that is] free of any [depictions of] fixed payment numbers visible thereon" /	1, 15, 20
"a touch-screen user interface operable to provide a visual user-interface for user payment interactions"	1, 20
"wherein the processor is operable to store a transaction sequence count, a device account number and secrets limited to the computing device"	1
"wherein the computing device is operable to receive, store and transmit a card payment information not visible on the payment card device" / "wherein the computing device is operable to receive, store, display and transmit issuer-provided payment information, associated with, but not depicted on, the payment card device"	1, 20
"wherein the processor is operable to generate at least a portion of a limited-use card payment information for use by an authenticated card user"	1
"wherein a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use"	1, 15
"wherein a card issuer authority is operable to validate a card payment information as authentic when received from at least one of: an authenticated users payment card; and an authenticated users computing device" / "wherein a card issuing authority is operable to validate generated limited-use payment information provided by the computing device in an authorized transaction completed by the computing device"	1, 15
"wherein the card issuer authority is operable to permit the authentic transactions to complete."	1
"wherein the touch-screen user interface is operable to control an access for payment transactions by the card device, and is operable to enable as authentic payment transactions by the card device"	2
"wherein the touch-screen user interface is operable to control an access of the card device for payment transactions at an NFC Card Reader facility, and is operable to enable and disable NFC payment transactions by the card device"	3
"wherein the touch-screen user-interface is configurable for a locking and unlocking of payment transactions"	4

Claim Terms	Claim(s)
"wherein a card issuer authority is further operable for denying a payment transaction from at least one of: a locked card device; and a locked card-users computing device"	4
"a card issuer authority is further operable to permit as authorized, a card payment transaction from an unlocked device"	4
"wherein the information presented on an interface of said card device, are limited to an in-store merchant card reader facility use only"	5
"the card issuer authority is operable to receive said transacted payment information"	6
"wherein a card issuer authority is operable to compute a limited-use payment information from a transaction information, a merchant, a facility information, a sequence counter, a payment card account information, secrets and an information limited to said card device and to said computing device"	6
"wherein a card issuer authority is operable to compare said computed payment information to said device transacted information"	6
"wherein a card issuer authority is operable to reject as invalid a device transaction used outside of a valid range of device limitations"	6
"wherein a card issuer authority is operable to authenticate as valid, a device transaction use within valid range of device limitations"	6
"wherein the computing device is further operable to transceive the card payment information via the wireless interface for completing an online transaction"	7
"wherein the computing device is further operable to transceive the limited-use card payment information via an NFC interface of the computing device in an in-store NFC reader facility transaction"	8
"wherein the computing device is further operable to transceive the limited-use payment information wirelessly with another device via a wireless interface of the computing device, in a device-to-device transaction"	9
"wherein the computing device is further operable to transmit a payment information visually, in alphanumeric, graphical and iconography via the touch screen user interface"	10
"The system of claim 1, further comprising a touch-screen user interface control for a user approving and denying a transaction"	11
"wherein a card issuer authority is further operable to deny as authentic, a card payment transaction from a user-denied transaction, and to approve as authentic a card payment transaction from a user-approved transaction"	11
"wherein the computing device is further operable to present at least one challenge, of a set of security challenges comprising: a card user personal information question, a card issuer authority security question, a user touch-screen entry, a user touch-screen swipe, a user gesture of a device, a user passcode entry, a biometric sensing of a user touch, a biometric sensing of a recognized user proximity, and a biometric sensing of a recognized user"	12
"wherein the computing device is operable to reject and accept a user authorization to use the device based on the security challenge response"	12

Claim Terms	Claim(s)
"wherein the computing device is operable to decline performing a payment transaction in the possession of an unauthorized user"	12
"wherein the computing device is operable to perform a payment transaction while in the possession of a user correctly passing the at least one challenge"	12
"wherein a payment issuing authority is operable to decline transactions performed by the computing device when a user fails the at least one security challenge"	13
"wherein a payment issuing authority is operable to decline transactions performed by the payment card device when a user fails at least one security challenge presented to a user by the computing device"	14
"a touch-screen display interface"	15
"wherein the computing device is configured to dynamically generate limited-use payment information"	15
"wherein the computing device is configured to convey the limited-use payment information on a computing device interface upon the authorization of a valid user"	15
"wherein the limited-use payment information provided by at least one or both of: the payment card device, and the computing device, is validated by a card issuing authority when used in merchant in-store facility transactions"	15
"wherein the touch-screen user interface is operable for displaying the limited-use payment information"	16
"wherein a merchant is operable to accept the displayed payment card information in a transaction at a merchant facility"	16
"wherein the touch-screen display interface is operable to display a merchant facility transaction"	17
"wherein a card issuer authority is further operable to deny a card payment transaction from a user-denied merchant facility transaction, and to approve as authentic a card payment transaction from a user-approved facility transaction"	17
"wherein a plurality of issuer-provided payment information is wirelessly downloaded into the personal computing device"	18
"wherein the user-interface is operable for a user selection, of at least one of issuer-provided payment methods via the touch-screen display interface"	18
"wherein the payment card device is operable for a transaction with a user-selected payment method"	18
"wherein the payment card device comprises fixed payment information disposed thereon, and wherein the fixed payment information comprises only: a card-holder name; a payment issuing logo; a card payment network logo, and a card reader interface icon, and wherein the payment card device is free of any account numbers, expiration dates, card security codes, or other fixed payment numbers, disposed thereon"	19
"wherein the processor is operable to dynamically generate at least a portion of a limited-use payment information for use by an authenticated card user,	20

Claim Terms	Claim(s)
and to combine said limited-use payment information with at least said static device account number to create combined payment information"	
"wherein the computing device is operable to convey said combined payment information via an interface disposed of the computing device"	20
"wherein the computing device is operable to receive information, from an issuer, in response to the conveyed combined payment information, indicating that a payment transaction is valid"	20
"wherein the computing device is operable to wirelessly receive the static device account number"	21, 25, 27
"wherein the processor is operable to dynamically generate the at least a portion of a limited-use payment information based on a transaction sequence counter count, and further wherein the generated limited-use payment information is valid for a single use."	22
"wherein the processor is operable to dynamically generate the at least a portion of a limited-use payment information further based on payment processing authority secrets"	23

3. Indefiniteness Pursuant to 35 U.S.C. § 112

The asserted claims of the '286 patent are also invalid because they fail to inform those skilled in the art about the scope of the alleged invention with reasonable certainty and are indefinite under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter the applicants regard as their alleged invention. *See, e.g.*, *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901, (2014) ("a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention."). The following terms render one or more claims of the patent-in-suit indefinite under 35 U.S.C. § 112:

Claim Terms	Claim(s)
"payment card reader equipment"	1
"a touch-screen user interface operable to provide a visual user-interface"	1
"secrets limited to the computing device"	1
"wherein a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use"	1, 15
"the authentic transactions"	1

"wherein the payment card device is absent a payment number information necessary for completing an online transaction"	5
"wherein the information presented on an interface of said card device, are limited to an in-store merchant card reader facility use only"	5
"said transacted payment information"	6
"secrets" / "secrets limited to the computing device" / "payment processing authority secrets"	6, 20, 23
"an information limited to said card device and to said computing device"	6
"said device transacted information"	6
"said computed payment information"	6
"valid range of device limitations"	6
"transceive"	7, 8, 9
"transmit a payment information visually, in alphanumeric, graphical and iconography via the touch screen user interface"	10
"The system of claim 1, further comprising a touch-screen user interface control for a user approving and denying a transaction"	11
"wherein the computing device is operable to reject and accept a user authorization to use the device based on the security challenge response"	12
"valid user"	15
"wherein a merchant is operable to receive a payment information provided by a personal computing device"	15
"the displayed payment card information"	16
"via an interface disposed of the computing device"	20

4. Ineligible Subject Matter under 35 U.S.C. § 101

Each Asserted Claim of the '286 patent is directed to ineligible subject matter under 35 U.S.C. § 101. Specifically, the Asserted Claims are fatally abstract under the U.S. Supreme Court's decision in *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2345 (2014) and progeny.

In *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014), the Supreme Court established a two-part test for determining whether a claim recites patent-eligible subject matter. First, the court must determine whether the claims at issue are directed to any of the following patentable ineligible subject matter: laws of nature, natural phenomena, or abstract ideas. *Id.* at 2355. Second, if the claims are directed to ineligible subject matter, the court must then consider the claim elements—both individually and as an ordered combination—to determine whether they add an "inventive concept." *Id.* Merely claiming a generic "computer" to implement an

abstract idea is not sufficient to transform the computer into a patent-eligible invention. *Id.* at 2357-50. Software claims may be abstract if "[t]hey do not claim a particular way of programming [to accomplish the claimed functionality], but instead merely claim the resulting systems" or if they "are not directed to a specific improvement in the way computers operate." *Apple Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1241 (Fed. Cir. 2016). "[M]erely presenting the results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation), is abstract as an ancillary part of such collection and analysis." *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016).

The Asserted Claims of the '286 patent are directed to the abstract idea of facilitating secure payment transactions by, *e.g.*, storing, analyzing and transmitting payment information, using generic and conventional computer components. For example, claim 1 recites "a payment system" comprising a "payment card device… operable for use in payment card reader equipment," a "computing device comprising" "a processor," "a memory," "a wireless interface" "a touch-screen user interface" and "a user-input device," which is "operable to receive, store, and transmit a card payment information," "generate… a limited-use card payment information" and "convey said limited-use card payment information to a card issuer authority," which is "operable to reject as invalid," "validate… as authentic" and "permit… authentic transactions to complete." '286 patent, claim 1; *see also* claims 15, 20. Although the claims are directed to the use "limited-use card payment information" in place of a bank issued payment number, the patent discloses no formulas or algorithms for how to generate the limited-use number, nor does the patent include any limitation or explanation that would render the claims non-abstract. The dependent claims do not add anything that would remove the claims from the realm of abstract ideas. For example, the dependent claims require a "touch-screen interface" to display payment

information (claim 10, 16), enable, lock or unlock transactions (claims 2, 4), authenticate the user via a security challenge (claims 12-14), or approve or deny a transaction (claims 11, 17); enable NFC or online transactions (claims 3, 5, 8), authenticate transmitted payment information (claim 6), transmit or download payment information wirelessly (claims 7, 9, 18, 21, 25, 27), specify information printed on the card device (claim 19), or specify information used to generate limited-use number (claims 22, 23, 24, 26).

Under *Alice* Step 1, those ideas are abstract, as they relate to a fundamental long-prevalent practice. *See, e.g.*, *Universal Secure Registry v. Apple, Inc.*, 10 F.4th 1342, 1349 (Fed. Cir. 2021) (holding as abstract claims directed to "enabl[ing] a transaction between a user and a merchant, where the merchant is given a time-varying code instead of the user's secure (credit card) information" thereby allowing for the "purchasing [of] goods or services without revealing personal financial information to a merchant…"); *Prism Techs. LLC v. T-Mobile USA, Inc.*, 696 F.App'x 1014, 1016 (Fed. Cir. 2017) (holding as abstract claims directed to "receiving" identity data of a client computer, "authenticating" the identity of the data, "authorizing" the client computer and "permitting" access to the client computer). Limiting the invention to a particular technological environment, e.g., generic computer hardware, "do[es] not render an otherwise abstract concept any less abstract." *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340 (Fed Cir. 2017).

Furthermore, under *Alice* Step 2 the Asserted Claims do not contain any inventive concept. The Asserted Claims employ well-known components or functionality (as shown in Apple's invalidity contentions involving anticipation and/or obviousness in this case), which is not enough to impart patent eligibility of an abstract idea. *See, e.g., Alice,* 134 S. Ct. at 2359 (holding that limitations describing "'well-understood, routine, conventional activit[ies]'

previously known to the industry" were insufficient to supply an inventive concept (quoting *Mayo*, 132 S. Ct. at 1294)). For example, the Asserted Claims are directed to components that comprise generic hardware such as "a processor," "a memory," "a wireless interface" "a touch-screen user interface" and "a user-input device," and claim generic wireless communications between components. Moreover, the lack of written description for numerous claim elements and minimal disclosure in the specification of many claimed components and functions further demonstrates the Asserted Claims rely on conventional components and features.

Apple reserves the right to supplement these disclosures based on further investigation and discovery.

VII. U.S. PATENT NO. 11,620,634

A. Priority Date

Despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of the '634 patent is entitled to a priority date earlier than the filing date of the patent, *i.e.* November 16, 2021.

CardWare contends that every asserted claim is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application No. 61/794,891 (the "'891 provisional"). CardWare Preliminary Infringement Contentions (February 10, 2025) at Section II. However, CardWare provides no evidence or analysis to demonstrate that the asserted claims of the '634 patent are entitled to the priority date of the '891 provisional application. In this regard, a patent claim is entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides both written description support and an enabling disclosure for the patent claim as required by 35 U.S.C. § 112, ¶ 1. CardWare provides no such showing.

Nor has CardWare demonstrated that the asserted claims are entitled to the priority date of the earlier filed applications listed on the face of the patent. CardWare provides no evidence or analysis demonstrating that the asserted claims of the '634 patent are entitled to the priority date of any of the applications to which the '634 patent claims priority.

CardWare has not alleged that the asserted claims of the '634 patent are entitled to a priority date earlier than the March 15, 2013 filing date of the '891 Provisional application. Although CardWare produced a handful of documents, which appear to be related to conception and/or reduction to practice, CardWare's document production to date fails to demonstrate that the asserted claims of the '634 patent were conceived and/or diligently reduced to practice prior to the filing of the '634 patent. Apple expressly reserves the right to amend its contentions if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice.

B. <u>Relevant Prior Art</u>

Apple contends that the prior art references identified in Apple's contentions anticipate and/or render obvious the Asserted Claims. Below, Apple lists some of the prior art cited in these contentions:

1. Patents and Patent Application Publications

Patent or Pub. No.	Filing Date	Publication/Issue Date
EP 0 949 595 A2	March 26, 1999	Oct. 13, 1999
EP 1 004 992 A2	March 24, 1998	May 31, 2000
EP 1 223 565 A1	Jan. 12, 2001	July 17, 2002
EP 2 302 882 A1	Sept. 24, 2009	March 30, 2011
EP 2 407 919 A1	March 30, 2007	Jan. 18, 2012
JP 2004-13728		Jan. 15, 2004
KR 20110039946A	Oct. 13, 2009	April 20, 2011
KR 20120076502A	Nov. 27, 2010	July 9, 2012
US 5,744,787	Sept. 25, 1995	April 28, 1998
US 5,883,810	Sept. 24, 1997	March 16, 1999
US 5,963,924	April 26, 1996	Oct. 5, 1999

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 6,005,942	March 24, 1998	Dec. 21, 1999
US 6,076,075	March 30, 1998	June 13, 2000
US 6,105,008	April 30, 1998	Aug. 15, 2000
US 6,119,946	March 3, 1998	Sept. 19, 2000
US 6,233,683	March 24, 1998	May 15, 2001
US 6,282,522 B1	Oct. 16, 1997	Aug. 28, 2001
US 6,330,978 B1	April 27, 1998	Dec. 18, 2001
US 6,450,407 B1	April 21, 2000	Sept. 17, 2002
US 6,481,632 B2	Oct. 26, 1999	Nov. 19, 2002
US 6,748,367 B1	Sept. 21, 2000	June 8, 2004
US 6,776,332 B2	Dec. 26, 2002	Aug. 17, 2004
US 7,127,236 B2	Dec. 18, 2002	Oct. 24, 2006
US 7,177,848 B2	June 22, 2001	Feb. 13, 2007
US 7,725,369 B2	Jan. 23, 2009	May 25, 2010
US 7,908,216 B1	July 22, 1999	March 15, 2011
US 8,095,113 B2	Feb. 4, 2009	Jan. 10, 2012
US 8,255,323 B1	Jan. 9, 2009	Aug. 28, 2012
US 8,930,274 B1	Dec. 18, 2013	Jan. 6, 2015
US 9,008,616 B2	Dec. 9, 2011	April 14, 2015
US 9,600,808 B1	June 22, 2012	March 21, 2017
US 9,721,319 B2	March 28, 2012	Aug. 1, 2017
US 9,898,728 B2	April 16, 2012	Feb. 20, 2018
US 10,121,144 B2	Sept. 2, 2014	Nov. 6, 2018
US 10,380,573 B2	Sept. 30, 2008	Aug. 13, 2019
US 10,445,723 B2	May 14, 2013	Oct. 15, 2019
US 10,510,056 B2	Nov. 2, 2011	Dec. 17, 2019
US 11,042,846 B2	Sept. 2, 2014	June 22, 2021
US 11,068,875 B2	Sept. 30, 2014	July 20, 2021
US 11,392,937 B2	Sept. 2, 2014	July 19, 2022
US 2003/0222152 A1	May 28, 2003	Dec. 4, 2003
US 2004/0127256 A1	July 23, 2003	July 1, 2004
US 2007/0095892 A1	Oct. 27, 2005	May 3, 2007
US 2008/0040285 A1	Feb. 16, 2007	Feb. 14, 2008
US 2009/0030845 A1	June 25, 2008	Jan. 29, 2009
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2005/0043997 A1	Aug. 18, 2003	Feb. 24, 2005
US 2005/0252961 A1	May 13, 2004	Nov. 17, 2005
US 2007/0045403 A1	Aug. 31, 2005	March 1, 2007
US 2007/0114274 A1	Nov. 21, 2006	May 24, 2007
US 2007/0208671 A1	Dec. 30, 2006	Sept. 6, 2007
US 2007/0244811 A1	March 30, 2007	Oct. 18, 2007
US 2008/0078831 A1	Sept. 29, 2006	April 3, 2008
US 2008/0222047 A1	July 27, 2007	Sept. 11, 2008

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 2008/0275779 A1	Feb. 7, 2008	Nov. 6, 2008
US 2009/0070272 A1	Sept. 11, 2008	March 12, 2009
US 2009/0144161 A1	Nov. 30, 2007	June 4, 2009
US 2009/0200371 A1	Feb. 4, 2009	Aug. 13, 2009
US 2009/0210308A1	Feb. 15, 2008	Aug. 20, 2009
US 2009/0276347 A1	May 1, 2009	Nov. 5, 2009
US 2009/0291634 A1	April 24, 2006	Nov. 26, 2009
US 2010/0078471 A1	Sept. 30, 2008	April 1, 2010
US 2010/0078472 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082481 A1	Sept. 30, 2008	April 1, 2010
US 2010/0082490 A1	Sept. 30, 2008	April 1, 2010
US 2010/0088227 A1	Nov. 16, 2007	April 8, 2010
US 2010/0125508 A1	Nov. 17, 2009	May 20, 2010
US 2010/0125509 A1	June 1, 2009	May 20, 2010
US 2010/0127083 A1	Nov. 26, 2008	May 27, 2010
US 2011/0010277 A1	July 9, 2009	Jan. 13, 2011
US 2011/0022472 A1	Feb. 25, 2010	Jan. 27, 2011
US 2011/0078031 A1	Sept. 30, 2009	March 31, 2011
US 2011/0082772 A1	Nov. 12, 2009	April 7, 2011
US 2011/0101093 A1	Feb. 18, 2010	May 5, 2011
US 2011/0112918 A1	Oct. 29, 2010	May 12, 2011
US 2011/0140841 A1	Aug. 19, 2009	June 16, 2011
US 2011/0153498A1	Dec. 7, 2010	June 23, 2011
US 2011/0173060 A1	Jan. 10, 2011	July 14, 2011
US 2011/0173121 A1	March 28, 2011	July 14, 2011
US 2011/0184867 A1	Jan. 25, 2011	July 28, 2011
US 2011/0191161 A1	Jan. 31, 2011	Aug. 4, 2011
US 2011/0191177 A1	Jan. 25, 2011	Aug. 4, 2011
US 2011/0238573 A1	March 15, 2011	Sept. 29, 2011
US 2012/0116902 A1	March 11, 2011	May 10, 2012
US 2012/0116976 A1	Jan. 10, 2012	May 10, 2012
US 2012/0143754 A1	Dec. 5, 2011	June 7, 2012
US 2012/0150687 A1	Dec. 13, 2011	June 14, 2012
US 2012/0191612 A1	April 3, 2012	July 26, 2012
US 2012/0191615 A1	Jan. 27, 2012	July 26, 2012
US 2012/0205443 A1	April 3, 2012	Aug. 16, 2012
US 2012/0310760 A1	Sept. 1, 2011	Dec. 6, 2012
US 2013/0013499 A1	July 5, 2012	Jan. 10, 2013
US 2013/0024371 A1	Sept. 27, 2012	Jan. 24, 2013
US 2013/0085941 A1	Sept. 30, 2011	April 4, 2013
US 2013/0159186 A1	April 16, 2012	June 20, 2013
US 2013/0166441 A1	Dec. 21, 2012	June 27, 2013
US 2013/0232083 A1	March 1, 2013	Sept. 5, 2013

Patent or Pub. No.	Filing Date	Publication/Issue Date
US 2013/0262317 A1	March 14, 2013	Oct. 3, 2013
US 2013/0297509 A1	May 6, 2013	Nov. 7, 2013
US 2014/0229375 A1	Feb. 11, 2013	Aug. 14, 2014
US 2014/0344153 A1	May 15, 2014	Nov. 20, 2014
US 2015/0058191 A1	Nov. 27, 2013	Feb. 26, 2015
US 2015/0073983 A1	Nov. 12, 2014	March 12, 2015
US 2015/0178724 A1	Dec. 19, 2014	June 25, 2015
US 2015/0180836A1	Dec. 19, 2014	June 25, 2015
US 2015/0348002 A1	Sept. 30, 2014	Dec. 3, 2015
US 2016/0042356 A1	Aug. 11, 2014	Feb. 11, 2016
US 2016/0057619 A1	Aug 24, 2015	Feb. 25, 2016
US 2016/0253669 A1	Feb. 26, 2016	Sept. 1, 2016
US 2016/0275505 A1	March 17, 2015	Sept. 22, 2016
US 2016/0321653 A1	April 29, 2016	Nov. 3, 2016
WO 2010/037218 A1	Sept. 29, 2009	April 8, 2010
WO 2010/039337 A2	Aug. 11, 2009	April 8, 2010
WO 2012/011054 A1	July 19, 2011	Jan. 26, 2012
WO 2012/154915 A1	May 10, 2012	Nov. 15, 2012
WO 2013/155627 A1	April 16, 2013	Oct. 24, 2013
Patent Application 61/899,734	Nov. 4, 2013	
Patent Application 61/905,035	Nov. 15, 2013	
Patent Application 61/921,688	Dec. 30, 2013	

2. Printed Publications

Title	Author/Publisher	Date
"A Primer to the Implementation of Smrt Card Management and Related Systems," Version 1.0	GlobalPlatform	Aug. 2000
About Us | Venmo	Venmo.com	2012
"An Introduction to Java Card Technology – Part 1"	C. Enrique Ortiz Sun Developer Network	May 29, 2003
"An Introduction to Java Card Technology – Part 2, The Java Card Applet"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Introduction to Java Card Technology – Part 3, The Smart Card Host Application"	C. Enrique Ortiz Sun Developer Network	Sept. 2003
"An Investigation into Electronic Commerce Frauds and their Security Implications"	Kevin Boardman	Nov. 7, 2004
Apple Press Release: "Apple Announces Apple Pay"	Apple	Sept. 9, 2014

Title	Author/Publisher	Date
Card on File Tokenization | Mastercard Developers	Mastercard.com	
"Contactless Payment Security Questions & Answers"	Smart Card Alliance, Inc.	2016
E-ink on Credit Cards will do Away with PINs (video)	The Digital Reader	Sept. 2, 2011
Emue – a Revolution in Authentication	EMUE	May 13, 2009
"EMV Card Personalization Specification," Version 1.0	EMVCo, LLC	June 2003
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 1, Application Independent ICC to Terminal Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 2, Security and Key Management, Version 4.3	EMVCo, LLC	Nov 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.1	EMVCo, LLC	May 2004
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 3, Application Specification, Version 4.3	EMVCo, LLC	Nov. 2011
"EMV Integrated Circuit Card Specifications for Payment Systems," Book 4, Cardholder, Attendant, and Acquirer Interface Requirements, Version 4.3	EMVCo, LLC	Nov. 2011
For Businesses: Payment Technologies – Products & Platforms	Visa	2004
For Businesses: Payment Technologies – Visa Cash	Visa	2004
For Businesses: Payment Technologies – Visa Smart debit and Visa Smart Credit	Visa	2004
GlobalPlatform: a Dynamic and Secure	Marc Kekiheff GlobalPlatform	
GlobalPlatform Card Security Requirements Specification	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Card Specification Tutorial	Marc Kekiheff GlobalPlatform	Jan. 22, 2003
GlobalPlatform Technical Overview	Marc Kekiheff GlobalPlatform	Jan. 22, 2003

Title	Author/Publisher	Date
GlobalPlatform – Global Consensus for a Connected Planet	GlobalPlatform	
GlobalPlatform – Implementations – Financial	GlobalPlatform	2006
GlobalPlatform – Implementations – Mobile Telecom	GlobalPlatform	2006
GlobalPlatform – Implementations – Retail	GlobalPlatform	2006
GlobalPlatform – Implementations – Transit	GlobalPlatform	2006
GlobalPlatform – Interoperability and Security with GlobalPlatform	March Kekicheff, GlobalPlatform	Feb. 2, 2004
GlobalPlatform – Introduction to GlobalPlatform Technology	GlobalPlatform	
GlobalPlatform – Overview	GlobalPlatform	June 2004
GlobalPlatform – The Cross-Industry Approach to Smart Card Standards	GlobalPlatform	2000
GlobalPlatform – The Platform for a Multi-application Environment	March Kekicheff, GlobalPlatform	April 2005
GlobalPlatform – Towards the Next Generation of GlobalPlatform Specifications	Pierre-Francois Solere, GLobalPlatform	
GlobalPlatform Specifications: The Solution for an Emerging Market	GlobalPlatform	
GlobalPlatform Specifications Archive – Technology Document Library	GlobalPlatform	2024
GlobalPlatform: a Dynamic and Secure Pre and Post Issuance Solution – Cartes 2002	Marc Kekiheff GlobalPlatform	2002
Google Wallet and the New Retail Ecosystem	David W. Schropfer	Oct. 3, 2011
Government Smart Card Handbook	GSA	Feb. 2004
Government Smart Card Handbook	GSA	Feb. 2004
Implementing Electronic Card Payment Systems	Cristian Radu	2003
"Interoperability in Electronic Payments: Lessons and Opportunities"	Carol Coye Benson CGAP	2012
"Investigating Mobile Payment: Supporting Technologies, Methods, and Use"	Valcourt, et al.; IEEE	2005
"Java Card™ 2.2 Off-Card Verifier" White Paper	Sun Microsystems	June 2002
Java Card for ePayment Applications	Vesna. Hassler	2002
"Java Card™ Platform Security" Technical White Paper	Sun Microsystems	2001
Java Card Platform: A Week in the Life of Jack Link	Sun Microsystems	2004
Java Card Questions and Answers with Zhiqun Chen	Ed Ort Sun Microsystems	Oct. 2000
Java Card Technology Datasheet	Sun Microsystems	2005
Java Card Technology Examples	Sun Microsystems	2004

Title	Author/Publisher	Date
Java Card Technology FAQs	Sun Microsystems	2005
Java Card Technology for Smart Cards: Architecture and Programmer's Guide	Zhiqun Chen	2000
Java Card Technology for Smart Cards: Architecture and Programmer's Guide Book information	Zhiqun Chen Sun Microsystems	Sept. 18, 2000
"Java Card Technology Overview," Chapter 3		
Java Card1_Fig-3	Sun.com	2005
Java Card1_Fig-4	Sun.com	2005
Java Card1_Fig-5	Sun.com	2006
Java Card1_Fig-7	Sun.com	2004
Java Card1_Fig-9	Sun.com	2004
Java Card1_Fig-12	Sun.com	2006
Java on Smart Cards: Programming and Security: First International Workshop, JavaCard 2000		2000
JavaCard – From Hyper to Reality	Michael Baentsch IEEE	1999
JavaCard – Redistribution and Use in Source and Binary Forms License	Sun Microsystems	2004
JCOP V2.4.1 Secure Smart Card Controller, Rev. 3.2	NXP	Sept. 2, 2009
JCOP20 Technical Brief, Revision 2.3	IBM	
JCOP30 Technical Brief, Revision 2.3		
MagTek CEO: "Dynamic Data is the Core of Security" [Transcript]	David Evans Pymnts	March 8, 2012
MagTek Launches QwickPAY, the Innovative Secure Mobile Payments Service, Into the Android Marketplace	Magtek	March 29, 2011
MagTek Introduces Qwick Code Mobile Wallet		Jan. 15, 2012
Mastercard Virtual Card Tokens	Mastercard	March 7, 2025
MDES Token Connect | Mastercard Developers	Mastercard	
Mobile Payment Services in South Africa	Matthias Beland	Jan. 31, 2013
NXP – News Center – Infocus Archive	NXP	2006
One-Click Payments by 2030 With Tokenization	Jorn Lambert Mastercard	March 12, 2025
PCI Data Security Standard (PCI DSS), Version 2.0	Scoping SIG, Tokenization Taskforce PCI Security Standards Council	Aug. 2011
PCI – Payment Card Industry (PCI) Data Security Standard, Version 2.0	PCI	Oct. 2010

Title	Author/Publisher	Date
PHB Development, Kurt Salmon, "Mobile Payments … a 'Southern' Revolution!"	PHB Development	2011
Qwick Codes Mobile Wallet for IOS	CNET	
"Radio-Frequency Identification (RFID): A Focus on Information Security and Privacy," OECD Digital Economy Papers, No. 138	OECD Publishing	Jan. 14, 2008
"SE vs. HCE: What is More Secure for NFC Mobile Payments?"	Finextra	Oct. 17, 2014
Techie Visa Card Features Buttons and Screen to Generate CCV Dynamically	Mark Wilson	Nov. 11, 2008
The Complete Guide to Payments Tokenization		
The Rise of Async Work [Podcast] – Fast Company	Loom Atlassian	Feb. 10, 2025
Venmo, Just Say "Venmo Me"	Venmo	2021
Venmo – Wikipedia	Wikipedia	
Visa and Emue Technologies deploy cards with built-in one-time password generator	Finextra	Feb. 9, 2009
Visa Best Practices for Tokenization Version 1.0	Visa Best Practices	July 14, 2010
Visa CodeSure Gets Commercial Green Light	Finextra	June 2, 2010
Visa Invests in Authentication Outfit Emue	Finextra	Nov. 18, 2009
Visa Token Service Momentum, Annual Update 2022	Visa	2022
Visa Token Service – Product Fact Sheet	Visa	2022
Visa Token Service – Visa	Visa	2025
What is Venmo, how does it work, and is it safe to use?	Ben Luthi Yahoo Finance	May 31, 2024
What is Venmo? – NerdWallet	Chanelle Bessette NerdWallet	June 24, 2024
What is Venmo: How it Works	Nicole Symon Money	May 18, 2023
Qwick Codes Demo video		
Wi Wallet Mobile Payments video		
Visa Pin System 2 Credit Cards video		
Smart Dongle Credit Card With e-ink Display video		
Credit Card with E-ink Display Keep You Safe While Online Shopping video		
Mastercard Token Authentication Service lets Shoppers Create Passkeys for Secure Authentication video		
Mastercard Tokenization video		

3. Prior Art Systems

The table below lists prior art systems and products identified that reveal the state of the art and/or render the Asserted Claims invalid under pre- or post-AIA 35 U.S.C. §§ 102 and/or 103. Some or all of the supporting references for these systems may also qualify as prior art publications under 35 U.S.C. § 102 and may be used as invalidating prior art under 35 U.S.C. §§ 102 and 103. In particular, the manuals for these products, patents filed to cover these products, and any other publicly available information.

Each of the prior art systems were publicly known or used or offered for sale prior to the critical date of the '634 patent. Apple continues to investigate the systems and products and reserves the right to supplement the contentions and accompanying claim charts after further discovery and investigation. Apple also reserves the right to rely on fact or expert witness testimony to establish the public knowledge, use, availability, sale, or offer for sale of any systems described below. Although additional information and prior art systems may be obtained through discovery, such prior art systems include at least the following:

Prior Art System	Person/Entity	Date
Apple Pay	Apple	At least as early as 2012
Google Wallet	Google	At least as early as September 20, 2011
Venmo	Venmo	At least as early as 2009
Visa Payment Tokens	Visa	At least as early as July 2010
Mastercard Payment Tokens	Mastercard	At least as early as 2013
Qwick Codes Mobile Wallet	Magtek	At least as early as October 2012
wiWallet	wiWallet Mobile Payments (Pty) Ltd.	At least as early as July 08, 2010
emue Smart Card	emue	At least as early as February 11, 2010
Smart Dongle Credit Card	E-ink	At least as early as November 11, 2011
VivoTech systems	VivoTech	At least as early as 2005
Square Systems	Square	At least as early as 2009

Prior Art System	Person/Entity	Date
Starbucks Mobile Application	Starbucks	At least as early as 2009
PayPal and PayPal Mobile	PayPal	At least as early as 2006
Venmo	Venmo	At least as early as 2010
Cake POS and payment systems	Cake Corp.	At least as early as 2013
Toast POS and payment systems	Toast, Inc.	At least as early as 2012
MiFare	Philips	At least as early as 2004
SmartMX	Philips	At least as early as 2004
JCOP OS	Philips/NXP	At least as early as 2004
Global Platform	GlobalPlatform	At least as early as 2004
JavaCard	Sun Microsystems	At least as early as 2004
LevelUp	SCVNGR dba LevelUp	At least as early as 2011

C. Anticipation and Obviousness

1. Non-limiting Claim Elements

The asserted claims of the '634 patent include numerous limitations that have no functional or structural relationship to the claimed payment system and thus do not affect the scope of the claims. For example, at least the limitations listed below are directed to printed matter and thus entitled to no patentable weight:

- "displaying, on the touch-screen display, information reflecting the payment request, and an image representing a selected issued payment account" and "displaying the status of said payment transaction via said touch-screen display" ('634 patent, claim 1)
- "visually presenting information of the payment transaction on the touch screen display of said electronic device; visually presenting a request for user approval of the payment transaction via touch input at said electronic device" ('634 patent, claim 16)
- "wherein the electronic device is operable to cause the display of information reflecting device-readiness, the payment request, and an image representing at least one selected issued payment account" and "wherein the touch-screen display

is operable to display as indication of said status information" ('634 patent, claim 29)

- "cause the display of information associated with the payment request; cause the display of an image representing at least one user-selectable issued payment account" ('634 patent, claim 39)
- "cause the display of information associated with the payment request; cause the display of an image representing the user-selectable issued payment account" ('634 patent, claim 56)

The Federal Circuit has repeatedly held that limitations directed to printed matter, such as those listed above, are not entitled to patentable weight. *See, e.g.*, *CR Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020) ("[P]rinted matter encompasses any information claimed for its communicative content, and the doctrine prohibits patenting such printed matter unless it is 'functionally related' to its 'substrate' which encompasses the structural elements of the claimed invention."); *Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prop. IP Ltd.*, 890 F.3d 1024, 1031 (Fed. Cir. 2018) ("Claim limitations directed to printed matter are not entitled to patentable weight unless the printed matter is functionally related to the substrate on which the printed matter is applied."); *In re Distefano*, 808 F.3d 845, 848 (Fed. Cir. 2015) ("[I]f a limitation claims (a) printed matter that (b) is not functionally or structurally related to the physical substrate holding the printed matter, it does not lend any patentable weight to the patentability analysis.").

2. Claim Charts

Apple attaches Exhibits 634-1 to 634-11, which provide exemplary disclosures showing how the prior art anticipates and/or renders obvious the asserted claims of the '634 patent. Apple

also attaches Exhibit 634-103, which provides exemplary disclosures in secondary references to combine with the prior art identified in these contentions to render obvious the asserted claims of the '634 patent. Apple may rely on any of the primary references identified in Exhibits 634-1 to 634-11 in combination with any secondary reference identified in those exhibits, in exhibit 634-103, or in this cover pleading. The table below identifies the primary reference addressed in each of Exhibits 634-1 to 634-11, each of which describes anticipation and/or obviousness of one or more claims of the '634 patent:

Exhibit	Prior Art Reference
634-1	U.S. Patent No. 8,255,323 ("Casey '323")
634-2	U.S. Patent Publication No. 2013/0262317 ("Collinge '317")
634-3	U.S. Patent No. 11,042,846 ("Dicker '846")
634-4	U.S. Patent No. 9,600,808 ("Gomez '808")
634-5	U.S. Patent Publication No. 2010/0125509("Kranzley '509")
634-6	U.S. Patent No. 11,836,706 ("Law '706")
634-7	U.S. Patent Publication No. 2010/0082481 ("Lin '481")
634-8	U.S. Patent Publication No. 2012/0310760 ("Phillips '760")
634-9	U.S. Patent Publication No. 2010/0185545 ("Royyuru '545")
634-10	U.S. Patent Publication No. 2015/0180836 ("Wong '836")
634-11	Apple Pay Products ("Apple Pay")

The U.S. Supreme Court in *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) emphasized that inventions arising from ordinary innovation, ordinary skill, or common sense should not be patentable. *Id*. at 1732, 1738, 1742–1743, 1746. A patent claim may be obvious if the combination of elements was obvious to try or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, Section 103 likely bars its patentability. *Id*. at 1740. The Court stated that courts should "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background

knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id*. at 1740–41. *KSR* does not mandate evidence of a motivation or suggestion to combine prior art references. *See TGIP, Inc. v. AT&T Corp*., 527 F. Supp. 2d 561, 580–81 (E.D. Tex. 2007). "[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ" to resolve the question of obviousness. *KSR*, 127 S. Ct. at 1741.

Based on all of these considerations, as further detailed in Exhibits 634-1 to 634-11 and 634-103, a POSITA would have combined the teachings of the prior art references discussed and charted in those exhibits. The combinations of these references would have rendered obvious to one of ordinary skill in the art the subject matter of the asserted claims of the '634 patent. The references identified in Exhibits 634-1 to 634-11 and 634-103 are analogous prior art to the subject matter of the asserted claims and, for at least the reasons set forth below, are properly combinable. Because these prior art references exist within a single field of art, particularly one in which individuals in the field often shared and/or collaborated on their work, it would have been obvious for a person of skill in the art to look from one piece of prior art to another in order to find any missing functionality they desired to implement. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the '634 patent.

By way of example only, the following combinations render obvious claims 1–13, 15–53, 55–70, and 72 of the '634 patent:

- Casey '323 combined with one or more of Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 634-103;

- Collinge '317 combined with one or more of Casey '323, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 634-103;

- Dicker '846 combined with one or more of Casey '323, Collinge '317, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 634-103;

- Gomez '808 combined with one or more of Casey '323, Collinge '317, Dicker '846, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 634-103;

- Kranzley '509 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 634-103;

- Law '706 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Lin '481, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 634-103;

- Lin '481 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Phillips '760, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 634-103;

- Phillips '760 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Royyuru '545, Wong '836, Apple Pay, and/or the Secondary References in Ex. 634-103;

- Royyuru '545 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Wong '836, Apple Pay, and/or the Secondary References in Ex. 634-103;

- Wong '836 combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Apple Pay, and/or the Secondary References in Ex. 634-103;

- Apple Pay combined with one or more of Casey '323, Collinge '317, Dicker '846, Gomez '808, Kranzley '509, Law '706, Lin '481, Phillips '760, Royyuru '545, Wong '836 , and/or the Secondary References in Ex. 634-103.

Numerous prior art references, including those identified in the attached exhibits, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the '634 patent. As it would be unduly burdensome to create detailed claim charts for all of the invalidating combinations, for at least the reasons described in these invalidity contentions, it

would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in the attached exhibits, to meet the limitations of the asserted claims of the '634 patent. Apple's inclusion of exemplary combinations, in view of the factors and motivations identified here, does not preclude Apple from identifying other invalidating combinations and/or motivations as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, because each combination of art would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1739–40 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 1742. Nevertheless, in addition to the information contained herein, Apple hereby identifies additional motivations and reasons to combine the cited art.

One or more combinations of the prior art references identified herein would have been obvious because these references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to combine the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market forces either in the same field or a different one. In

addition, the combinations of the prior art references identified above would have been obvious because the combinations represent the known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation or reason to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution; the existence of a known need or problem in the field of endeavor at the time of the invention; and the background knowledge that would have been possessed by a person having ordinary skill in the art. For example, the prior art references are generally directed to the same problems. Thus, a skilled artisan seeking to solve these problems would look to these cited references in combination.

Thus, the motivation or reason to combine the teachings of the prior art references disclosed herein is found in the references themselves and in: (1) the nature of the problems being solved; (2) the express, implied, and inherent teachings of the prior art; (3) the knowledge of a POSITA; (4) the fact that the prior art is generally directed towards the same problems; and/or (5) the predictable results obtained in combining the different elements of the prior art; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Apple incorporates by reference prior art from the prosecution histories and background sections of the '634 patent. Apple expects to rely on the testimony of one or more expert witnesses and documents referenced by those expert witnesses in support of these contentions and incorporate those forthcoming expert reports as if fully set forth herein.

Apple contends that there are no secondary considerations of non-obviousness evidencing the validity of any of the asserted claims. Secondary considerations of non-obviousness, also referred to as objective indicia of non-obviousness, "can include copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, awards or other industry praise for the invention, and skepticism of skilled artisans before the invention." *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc*., 711 F.3d 1348, 1368 (Fed. Cir. 2013). "A nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness decision." *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000). Moreover, even if a nexus exists, secondary considerations of non-obviousness "simply cannot overcome [a] strong prima facie showing of obviousness." *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1368 (Fed. Cir. 2008). CardWare has not established the existence of any objective indicia of non-obviousness or secondary considerations. Apple reserves the right to supplement their contentions to respond to any such arguments or evidence should CardWare be permitted to raise them in the future. While discovery in this case is ongoing, and Apple's investigation continues (which will include expert discovery), to the extent CardWare contends that one or more asserted claims is not obvious based on secondary considerations recognized by relevant authority Apple contends such allegations are without

merit. Apple reserves the right to supplement their contentions to respond to any such evidence should CardWare be permitted to raise it in the future.

D. The Accused Products Predate the '634 Patent

As discussed above, despite having the burden of proof, CardWare fails to demonstrate that any asserted claim of any asserted patent is entitled to a priority date earlier than the respective filing dates of the asserted patents. CardWare contends that "every asserted claim of each asserted patent is entitled to a priority date no later than March 15, 2013, the filing date of U.S. Provisional Application no. 61/794,891." *See* February 10, 2025 Infringement Contentions at 2. Apple disagrees with CardWare's contention, and CardWare has failed to establish that any asserted patent is entitled to an earlier priority date.

The accused products were announced publicly on or around September 9, 2014. https://www.apple.com/newsroom/2014/09/09Apple-Announces-Apple-Pay/. The public announcement of Apple Pay predates the filing date of the '634 patent, *i.e.*, November 16, 2021, and therefore, Apple Pay is prior art to the '634 patent. Apple Pay anticipates and/or renders obvious the asserted claims of the '634 patent. *See* Ex. 634-11.

To the extent CardWare is able to establish that any asserted claim is entitled to a March 15, 2013 priority date, then the accused products are nonetheless invalidating prior art at least under pre-AIA 35 U.S.C. § 102(g). Apple conceived of Apple Pay before the earliest invention date to which CardWare claims the asserted patents are entitled to priority. Apple exercised reasonable diligence from the time of its conception of Apple Pay and did not abandon, suppress, or conceal its invention. In the event any claim is entitled to a March 15, 2013 priority date, each limitation of that claim would be invalid under at least pre-AIA 35 U.S.C. § 102(g) for the same reasons CardWare claims that the accused products meet that limitation. *See* Ex. 634-11.

Apple expressly reserves the right to amend its contentions if/when CardWare amends its priority date contentions and/or produces evidence relating to alleged conception and/or reduction to practice. Apple expressly reserves the right to amend its contentions as discovery commences in this matter and additional relevant information and documentation relating to Apple's conception and reduction to practice of the accused products is uncovered.

E. Other Invalidity Grounds

Apple hereby identifies grounds of invalidity based on (1) lack of written description under 35 U.S.C. § 112; (2) lack of enablement under 35 U.S.C. § 112; (3) indefiniteness under 35 U.S.C. § 112; and (4) ineligible subject matter under 35 U.S.C. § 101. These contentions shall not be construed as an admission that any claim construction advanced by Apple in this case is in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Apple from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, invalidity positions. Further, these contentions shall not be construed as an admission of or acquiescence to CardWare's purported construction of the claim language or of other positions advanced by CardWare during the course of this litigation. Apple's Invalidity Contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as CardWare's alleged scope of the asserted claims of the '634 patent. Consequently, Apple only identifies the issues under 35 U.S.C. § 112 of which they are presently aware.

1. Lack of Written Description under 35 U.S.C. § 112

The asserted claims are invalid under 35 U.S.C. § 112, because the '634 patent does not provide sufficient written description to establish that the alleged inventors were in possession of the full scope of the alleged inventions recited in the asserted claims at the time the '634 patent was filed. *See e.g. Ariad v. Lilly*, 598 F.3d 1336 (Fed. Cir. 2010) (en banc); *LizardTech Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005) (finding claims invalid

under 35 U.S.C. § 112 where the specification failed to include a written description of the full scope of the claimed invention); *In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1320 (Fed. Cir. 2011) ("[W]hen analyzing whether a patent meets the written description requirement, one cannot 'bootstrap' the knowledge of a person of ordinary skill in the art ('POSITA') into the analysis and fill the gap in the disclosure through obviousness.").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of written description under 35 U.S.C. § 112, as the specification of the '634 patent does not demonstrate that the inventors were in possession of the claimed subject matter:

Claim Terms	Claim(s)
responsive to said priming operation, readying said device to perform a payment transaction by an identified user;	1
displaying, on the touch-screen display, information reflecting the payment request, and an image representing a selected issued payment account;	1
dynamically generating, by the processor, limited-use payment information; wherein said limited-use payment information is dynamically generated based on a per-transaction sequential parameter originating from the electronic device;	1
using said limited-use payment information in connection with the payment transaction in place of issued payment information associated with said selected issued payment account;	1
responsive to the transmitting the limited-use payment information, receiving via the NFC interface information reflecting a status of said payment transaction; and	1
2. The method of claim 1, wherein the limited-use payment information comprises a cryptogram number.	2
3. The method of claim 2, further comprising: prior to the priming operation, transmitting the issued payment information for receipt by a payment processing authority; and, in response to said transmitting issued payment information, receiving a static device account information that is unique to the electronic device.	3
4. The method of claim 3 further comprising:	4

Claim Terms	Claim(s)
combining said limited-use payment information and said static device account information, to reduce a combined payment information; transmitting said combined payment information, in place of the issued payment account information, via said NFC for receipt by an NFC recipient; and receiving, via the NFC interface, and in response to transmitting said combined payment information, transaction processing information reflecting a status of said payment transaction.	
5. The method of claim 3, wherein the dynamically generating Lather comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	5
6. The method of claim 5, wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority.	6
7. The method of claim 1, wherein the priming operation comprises bringing the electronic device within receiving proximity of an NFC recipient.	7
8. The method of claim 7, wherein said readying said device to perform a payment transaction comprises: identifying said proximity NFC recipient is an NFC payment facility; successfully validating the identified user as authorized to perform the payment transaction via said electronic device; and receiving a user approval for performing the payment transaction.	8
9. The method of claim 8, wherein said user approval for performing a payment transaction comprises displaying a request for user input at said electronic device, for both said identifying and said user approval of said payment transaction, and further comprising: the processor identifying that said user input matches a known authorized user of the electronic device, before said readying said device to perform a payment transaction; and, disallowing the payment transaction by the device until said readying said device to perform the payment transaction is successfully completed.	9
10. The method of claim 8, wherein said successfully validating the identified user comprises the processor successfully determining a match between: firstly, a user input received via at least one of a set of user input sensors of the electronic device; and,	10

Claim Terms	Claim(s)
secondly, at least one of the set consisting of: predetermined user characteristics, and challenge-responses of an authorized user, as stored in the electronic device.	
11. The method of claim 10, wherein said user input received via at least one of a set of user input sensors of the electronic device comprises a passcode entry sequence performed by a user input via the touch-screen display.	11
12. The method of claim 10, wherein said predetermined user characteristics stored within the electronic device comprise known user biometric touch characteristics.	12
13. The method of claim 10, wherein said predetermined user characteristics stored within the electronic device comprise a known user touch gesture.	13
16. The method of claim 15, wherein said readying said device to perform a payment transaction comprises: successfully identifying said identified user from said user input; and, wherein said user input further comprises a user approval for performing the payment transaction received from said identified user; and, wherein said successfully identifying further comprises said electronic device validating an authorized user of said electronic device by comparing a user-touch input received via a touch input sensor on the electronic device with a recognized valid user-touch, stored in a memory of the electronic device; . . .	16
17. The method of claim 1, further comprising: prior to the priming operation, transmitting the issued payment information for receipt by a payment processing authority; and, in response to said transmitting issued payment information, receiving a static device account information that is unique to the electronic device.	17
18. The method of claim 17 further comprising: combining said limited-use payment information and said static device account information, to produce a combined payment information; transmitting said combined payment information, in place of the issued payment account information said NFC interface for receipt by an NFC recipient; and receiving, via the NFC interface, and in response to transmitting said combined payment information, transaction processing information reflecting a status of said payment transaction.	18

Claim Terms	Claim(s)
19. The method of claim 18, wherein the dynamically generating further comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	19
20. The method of claim 19, wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority.	20
21. The method of claim 17, wherein the dynamically generating further comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	21
22. The method of claim 21, wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority.	22
23. The method of claim 1, further comprising: prior to the priming operation, transmitting the issued payment information, user information and device-specific information; and, in response to transmitting said issued payment information, user information and device-specific information, receiving a payment processing authority supplied secret information.	23
24. The method of claim 23 wherein said payment processing authority supplied secret information comprises static device account information.	24
25. The method of claim 24 wherein said static device account information comprises a static device account number and a static device-specific expiration date.	25
26. The method of claim 25 wherein the static device account number is associated with the selected issued payment account on said electronic device.	26
27. The method of claim 1, wherein the dynamically generating further comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	27
28. The method of claim 27 wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority; and further wherein the at least one secret information is not exchanged when preforming the payment transaction.	28
29. A system for completing a payment transaction, the system comprising:	29

Claim Terms	Claim(s)
. . . wherein the electronic device is operable to cause the display of information reflecting device-readiness, the payment request, and an image representing at least one selected issued payment account;	
wherein the electronic device is operable to dynamically generate limited-use payment information based on a sequential counter count from the electronic device;	29
wherein the electronic device is operable to store a static device-specific user account information;	29
wherein the electronic device is operable to transmit a combination of said dynamically generated limited-use payment information and said static device-specific user account information to an NFC recipient via, said NFC interface for use in connection with payment transaction in place of information associated with said selected issued payment account;	29
30. The system of claim 29, wherein the dynamically generated limited-use payment information comprises a cryptogram number.	30
31. The system of claim 29, wherein the device-specific user account information comprises static device account information.	31
32. The system of claim 31, wherein the static device account information comprises a static device account number that is unique to the electronic device.	32
33. The system of claim 32 wherein the static device account information further comprises a static device account expiration date.	33
34. The system of claim 32 wherein the sequential counter count is changed per payment transaction.	34
35. The system of claim 34 wherein the electronic device is operable to transmit issued payment account information and in response thereto, to receive the static device account information.	35
36. The system of claim 29 wherein the electronic device is further operable to dynamically generate the limited-use payment information based on a shared information: from said user, information associated with said electronic device, information associated with said selected, issued payment account, and at least one secret; and, wherein said shared information is shared by both the electronic device and a payment processing authority.	36

Claim Terms	Claim(s)
37. The system of claim 36 wherein the electronic device is further operable to dynamically generate the limited-use payment information based on payment processing authority secrets.	37
38. The system of claim 29 wherein the electronic device is further operable to dynamically generate the limited-use payment information based on payment processing authority secrets.	38
to the processor, wherein the memory is operable to store information associated with use of an issued payment account and wherein the payment authority information comprises a secret information;	39
responsive to a priming operation, wherein the priming operation is operable to ready the device to perform the payment transaction, cause the display of information associated with the payment request; cause the display of an image representing at least one user-selectable issued payment account; and	39
dynamically generate a limited-use payment information based on a per-transaction sequential parameter originating from the electronic device, and secret information associated with a selected issued payment account; and, cause the transmission, via said NFC interface, a payment information combination comprising the dynamically generated limited-use payment information and said payment authority information, for receipt by an NFC recipient;	39
wherein the NFC interface is operable, in response to transmitting said payment information combination, to receive status information reflecting a transaction processing status of said payment transaction; and wherein the user interface is operable to provide an indication of the status information.	39
40. The device of claim 39 wherein the payment authority information comprises information that is unique to the electronic device.	40
41. The device of claim 39 wherein the payment authority information comprises a secret information shared by both the electronic device and a payment processing authority.	41
42. The device of claim 41 wherein the processing authority information comprises a static device account number.	42
43. The device of claim 42 wherein the processing authority information further comprises a static device account expiration date.	43

Claim Terms	Claim(s)
44. The device of claim 39 wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, to receive the processing authority information.	44
45. The device of claim 39 wherein the dynamically generated limited-use payment information comprises a cryptogram number, and further wherein the processor is operable to cause transmission, via said NFC interface, of a payment information combination comprising the dynamically generated limited-use payment information and at least a portion of said payment authority information in connection with the payment transaction in place of at least a portion of the payment information associated with said selected issued payment account.	45
46. The device of claim 45 wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, receive the processing authority information.	46
47. The device of claim 46 wherein the processing authority information comprises a static device account number.	47
48. The device of claim 47 wherein the processing authority information further comprises a static device account expiration date.	48
49. The device of claim 39, wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed adjacent to said display and wherein further the processor is operable to identify an authorized user by validating a valid user passcode input to the touch panel.	49
50. The device of claim 39, wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed adjacent to said display and wherein further the processor is operable to identify an authorized user by displaying a security challenge question presented on the display and receiving a correct user response thereto.	50
51. The device of claim 39, wherein said user input device comprises a biometric sensor operable to detect a user touch of said electronic device and wherein further the processor is operable to identify an authorized user by biometric sensing of a continuous user touch.	51
52. The device of claim 39, wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed	52

Claim Terms	Claim(s)
adjacent to said display and wherein further the processor is operable to identify an authorized user by biometric sensing of a user touch at the touch panel.	
53. The device of claim 39, wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed adjacent to said display and wherein further the processor is operable to identify an authorized user by biometric recognition of a valid user identification.	53
55. The device of claim 39, wherein the processor is operable to: receive a user-selection of an issued payment account presented on the user interface, received the user input device coupled to the processor, and responsive thereto, select from the memory a specific processing authority information corresponding to the user-selected issued payment account information, and use at least a portion of said specific processing authority information in place of at least a portion of the issued payment account information to generate a combined payment information to complete a payment transaction per the input user-selection.	55
a memory coupled to the processor, wherein the memory stores a payment authority information associated with a user-selectable issued payment account, and wherein the payment authority information includes a secret information;	56
responsive to a priming operation, wherein the priming operation is operable to ready the device to perform the payment transaction, cause the display of information associated with the payment request; cause the display of an image representing the user-selectable issued payment account; and,	56
dynamically generate a limited-use payment information based on a per-transaction sequential parameter originating from the electronic device, and the secret information associated with the user-selectable issued payment account; and,	56
cause the transmission, via said NFC interface, of a payment information combination comprising, the dynamically generated limited-use payment information and at least a portion of said payment authority information, for receipt by an NFC recipient;	56

Claim Terms	Claim(s)
wherein the NFC interface is operable, in response to transmitting said payment information combination, to receive status information reflecting a transaction processing status of said payment transaction; and wherein the user interface is operable to provide an indication of the transaction status information.	56
57. The device of claim 56, wherein the payment authority information comprises information that is unique to the electronic device.	57
58. The device of claim 57, wherein the payment authority information comprises a static device account number.	58
59. The device of claim 58, wherein the payment authority information further comprises a static device account expiration date.	59
60. The device of claim 56, wherein the secret information is shared by both the electronic device and a payment processing authority.	60
61. The device of claim 56, wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, to receive the payment authority information.	61
62. The device of claim 56, wherein the dynamically generated limited-use payment information comprises a cryptogram number, and further payment information combination is used in place of at least a portion of fixed payment information associated with said user-selectable issued payment account.	62
63. The device of claim 62, wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, receive the payment authority information.	63
64. The device of claim 63, wherein the payment authority information comprises a static device account number.	64
65. The device of claim 64, wherein the payment authority information further comprises a static device account expiration date.	65
66. The device of claim 56, wherein said user interface comprises a display and wherein said user input device comprises a touch screen interface of the display, and wherein further the processor is operable to identify an authorized user by validating a valid user passcode input to the touch screen interface.	66

Claim Terms	Claim(s)
67. The device of claim 56, wherein said user interface comprises a display and wherein said user input device comprises a touch screen interface of the display, and wherein further the processor is operable to identify an authorized user by displaying a security challenge question presented on the display and receiving a correct user response via said touch screen interface of the display.	67
68. The device of claim 56, wherein said user input device comprises a biometric sensor operable to detect a user touch of said electronic device and wherein further the processor is operable to identify an authorized user by biometric sensing of said user touch.	68
69. The device of claim 56, wherein said user interface comprises a display and wherein said user input device comprises a touch screen interface of the display and wherein further the processor is operable to identify an authorized user by biometric sensing of a user touch at the touch screen interface.	69
70. The device of claim 56, wherein said user interface comprises a display and wherein said user input device comprises a touch input of the electronic device and wherein further the processor is operable to identify an authorized user by biometric recognition of a valid user identification via the touch input.	70
72. The device of claim 56, wherein the processor is operable to receive, via the user input device, a user-selection of said user-selectable issued payment account presented on the user interface, and in response thereto, is further operable to select from memory the payment authority information corresponding to selected user-selectable issued payment account, and is further operable to use said payment information combination in place of at least a portion of fixed payment information associated with said selected user-selectable issued payment account.	72

2. Lack of Enablement under 35 U.S.C. § 112(a)

The asserted claims are also invalid under 35 U.S.C. § 112, because the '634 patent does not enable one of ordinary skill in the art to make and/or use the full scope of certain recited elements of the asserted claims of the '634 patent without undue experimentation. *See, e.g.*, *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988)

("The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation."); *Trustees of Bos. Univ. v. Everlight Elecs. Co.*, 896 F.3d 1357, 1362 (Fed. Cir. 2018) ("to be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'").

The following terms render one of more of the claims of the patent-in-suit invalid for lack of enablement under 35 U.S.C. § 112, as the claims, specification, and prosecution histories would not enable one of skill in the art to practice the claimed invention(s) without undue experimentation:

Claim Terms	Claim(s)
dynamically generating, by the processor, limited-use payment information; wherein said limited-use payment information is dynamically generated based on a per-transaction sequential parameter originating from the electronic device; using said limited-use payment information in connection with the payment transaction in place of issued payment information associated with said selected issued payment account;	1
transmitting said limited-use payment information from said electronic device via said NFC interface for receipt by an NFC recipient; responsive to the transmitting the limited-use payment information, receiving via the NFC interface information reflecting a status of said payment transaction;	1
2. The method of claim 1, wherein the limited-use payment information comprises a cryptogram number.	2
3. The method of claim 2, further comprising: prior to the priming operation, transmitting the issued payment information for receipt by a payment processing authority; and, in response to said transmitting issued payment information, receiving a static device account information that is unique to the electronic device.	3
4. The method of claim 3 further comprising: combining said limited-use payment information and said static device account information, to reduce a combined payment information;	4

Claim Terms	Claim(s)
transmitting said combined payment information, in place of the issued payment account information, via said NFC for receipt by an NFC recipient; and receiving, via the NFC interface, and in response to transmitting said combined payment information, transaction processing information reflecting a status of said payment transaction.	
5. The method of claim 3, wherein the dynamically generating Lather comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	5
6. The method of claim 5, wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority.	6
7. The method of claim 1, wherein the priming operation comprises bringing the electronic device within receiving proximity of an NFC recipient.	7
8. The method of claim 7, wherein said readying said device to perform a payment transaction comprises: identifying said proximity NFC recipient is an NFC payment facility; successfully validating the identified user as authorized to perform the payment transaction via said electronic device; and receiving a user approval for performing the payment transaction.	8
9. The method of claim 8, wherein said user approval for performing a payment transaction comprises displaying a request for user input at said electronic device, for both said identifying and said user approval of said payment transaction, and further comprising: the processor identifying that said user input matches a known authorized user of the electronic device, before said readying said device to perform a payment transaction; and, disallowing the payment transaction by the device until said readying said device to perform the payment transaction is successfully completed.	9
10. The method of claim 8, wherein said successfully validating the identified user comprises the processor successfully determining a match between: firstly, a user input received via at least one of a set of user input sensors of the electronic device; and, secondly, at least one of the set consisting of: predetermined user characteristics, and challenge-responses of an authorized user, as stored in the electronic device.	10

Claim Terms	Claim(s)
11. The method of claim 10, wherein said user input received via at least one of a set of user input sensors of the electronic device comprises a passcode entry sequence performed by a user input via the touch-screen display.	11
12. The method of claim 10, wherein said predetermined user characteristics stored within the electronic device comprise known user biometric touch characteristics.	12
13. The method of claim 10, wherein said predetermined user characteristics stored within the electronic device comprise a known user touch gesture.	13
successfully identifying said identified user from said user input; and, wherein said user input further comprises a user approval for performing the payment transaction received from said identified user; and, wherein said successfully identifying further comprises said electronic device validating an authorized user of said electronic device by comparing a user-touch input received via a touch input sensor on the electronic device with a recognized valid user-touch, stored in a memory of the electronic device; and,	16
wherein said user approval for performing the payment transaction further comprises: visually presenting information of the payment transaction on the touch screen display of said electronic device; visually presenting a request for user approval of the payment transaction via touch input at said electronic device; and,	16
17. The method of claim 1, further comprising: prior to the priming operation, transmitting the issued payment information for receipt by a payment processing authority; and, in response to said transmitting issued payment information, receiving a static device account information that is unique to the electronic device.	17
18. The method of claim 17 further comprising: combining said limited-use payment information and said static device account information, to produce a combined payment information;	18
transmitting said combined payment information, in place of the issued payment account information said NFC interface for receipt by an NFC recipient; and	18
receiving, via the NFC interface, and in response to transmitting said combined payment information, transaction processing information reflecting a status of said payment transaction.	18

Claim Terms	Claim(s)
19. The method of claim 18, wherein the dynamically generating further comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	19
20. The method of claim 19, wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority.	20
21. The method of claim 17, wherein the dynamically generating further comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	21
22. The method of claim 21, wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority.	22
23. The method of claim 1, further comprising: prior to the priming operation, transmitting the issued payment information, user information and device-specific information; and, in response to transmitting said issued payment information, user information and device-specific information, receiving a payment processing authority supplied secret information.	23
24. The method of claim 23 wherein said payment processing authority supplied secret information comprises static device account information.	24
25. The method of claim 24 wherein said static device account information comprises a static device account number and a static device-specific expiration date.	25
26. The method of claim 25 wherein the static device account number is associated with the selected issued payment account on said electronic device.	26
27. The method of claim 1, wherein the dynamically generating further comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	27
28. The method of claim 27 wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority; and further wherein the at least one secret information is not exchanged when preforming the payment transaction.	28

Claim Terms	Claim(s)
wherein the electronic device is operable to dynamically generate limited-use payment information based on a sequential counter count from the electronic device;	29
wherein the electronic device is operable to store a static device-specific user account information;	29
wherein the electronic device is operable to transmit a combination of said dynamically generated limited-use payment information and said static device-specific user account information to an NFC recipient via, said NFC interface for use in connection with payment transaction in place of information associated with said selected issued payment account;	29
30. The system of claim 29, wherein the dynamically generated limited-use payment information comprises a cryptogram number.	30
31. The system of claim 29, wherein the device-specific user account information comprises static device account information.	31
32. The system of claim 31, wherein the static device account information comprises a static device account number that is unique to the electronic device.	32
33. The system of claim 32 wherein the static device account information further comprises a static device account expiration date.	33
34. The system of claim 32 wherein the sequential counter count is changed per payment transaction.	34
35. The system of claim 34 wherein the electronic device is operable to transmit issued payment account information and in response thereto, to receive the static device account information.	35
36. The system of claim 29 wherein the electronic device is further operable to dynamically generate the limited-use payment information based on a shared information: from said user, information associated with said electronic device, information associated with said selected, issued payment account, and at least one secret; and, wherein said shared information is shared by both the electronic device and a payment processing authority.	36
37. The system of claim 36 wherein the electronic device is further operable to dynamically generate the limited-use payment information based on payment processing authority secrets.	37

Claim Terms	Claim(s)
38. The system of claim 29 wherein the electronic device is further operable to dynamically generate the limited-use payment information based on payment processing authority secrets.	38
a memory coupled to the processor, wherein the memory is operable to store information associated with use of an issued payment account and wherein the payment authority information comprises a secret information;	39
dynamically generate a limited-use payment information based on a per-transaction sequential parameter originating from the electronic device, and secret information associated with a selected issued payment account; and,	39
cause the transmission, via said NFC interface, a payment information combination comprising the dynamically generated limited-use payment information and said payment authority information, for receipt by an NFC recipient; wherein the NFC interface is operable, in response to transmitting said payment information combination, to receive status information reflecting a transaction processing status of said payment transaction; and wherein the user interface is operable to provide an indication of the status information.	39
40. The device of claim 39 wherein the payment authority information comprises information that is unique to the electronic device.	40
41. The device of claim 39 wherein the payment authority information comprises a secret information shared by both the electronic device and a payment processing authority.	41
42. The device of claim 41 wherein the processing authority information comprises a static device account number.	42
43. The device of claim 42 wherein the processing authority information further comprises a static device account expiration date.	43
44. The device of claim 39 wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, to receive the processing authority information.	44
45. The device of claim 39 wherein the dynamically generated limited-use payment information comprises a cryptogram number, and further wherein the processor is operable to cause transmission, via said NFC interface, of a payment information combination comprising the dynamically generated limited-use payment information and at least a portion of said payment	45

Claim Terms	Claim(s)
authority information in connection with the payment transaction in place of at least a portion of the payment information associated with said selected issued payment account.	
46. The device of claim 45 wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, receive the processing authority information.	46
47. The device of claim 46 wherein the processing authority information comprises a static device account number.	47
48. The device of claim 47 wherein the processing authority information further comprises a static device account expiration date.	48
49. The device of claim 39, wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed adjacent to said display and wherein further the processor is operable to identify an authorized user by validating a valid user passcode input to the touch panel.	49
50. The device of claim 39, wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed adjacent to said display and wherein further the processor is operable to identify an authorized user by displaying a security challenge question presented on the display and receiving a correct user response thereto.	50
51. The device of claim 39, wherein said user input device comprises a biometric sensor operable to detect a user touch of said electronic device and wherein further the processor is operable to identify an authorized user by biometric sensing of a continuous user touch.	51
52. The device of claim 39, wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed adjacent to said display and wherein further the processor is operable to identify an authorized user by biometric sensing of a user touch at the touch panel.	52
53. The device of claim 39, wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed adjacent to said display and wherein further the processor is operable to identify an authorized user by biometric recognition of a valid user identification.	53

Claim Terms	Claim(s)
use at least a portion of said specific processing authority information in place of at least a portion of the issued payment account information to generate a combined payment information to complete a payment transaction per the input user-selection.	55
a memory coupled to the processor, wherein the memory stores a payment authority information associated with a user-selectable issued payment account, and wherein the payment authority information includes a secret information;	56
dynamically generate a limited-use payment information based on a per-transaction sequential parameter originating from the electronic device, and the secret information associated with the user-selectable issued payment account; and,	56
cause the transmission, via said NFC interface, of a payment information combination comprising, the dynamically generated limited-use payment information and at least a portion of said payment authority information, for receipt by an NFC recipient;	56
wherein the NFC interface is operable, in response to transmitting said payment information combination, to receive status information reflecting a transaction processing status of said payment transaction; and wherein the user interface is operable to provide an indication of the transaction status information.	56
57. The device of claim 56, wherein the payment authority information comprises information that is unique to the electronic device.	57
58. The device of claim 57, wherein the payment authority information comprises a static device account number.	58
59. The device of claim 58, wherein the payment authority information further comprises a static device account expiration date.	59
60. The device of claim 56, wherein the secret information is shared by both the electronic device and a payment processing authority.	60
61. The device of claim 56, wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, to receive the payment authority information.	61
62. The device of claim 56, wherein the dynamically generated limited-use payment information comprises a cryptogram number, and further payment	62

Claim Terms	Claim(s)
information combination is used in place of at least a portion of fixed payment information associated with said user-selectable issued payment account.	
63. The device of claim 62, wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, receive the payment authority information.	63
64. The device of claim 63, wherein the payment authority information comprises a static device account number.	64
65. The device of claim 64, wherein the payment authority information further comprises a static device account expiration date.	65
66. The device of claim 56, wherein said user interface comprises a display and wherein said user input device comprises a touch screen interface of the display, and wherein further the processor is operable to identify an authorized user by validating a valid user passcode input to the touch screen interface.	66
67. The device of claim 56, wherein said user interface comprises a display and wherein said user input device comprises a touch screen interface of the display, and wherein further the processor is operable to identify an authorized user by displaying a security challenge question presented on the display and receiving a correct user response via said touch screen interface of the display.	67
68. The device of claim 56, wherein said user input device comprises a biometric sensor operable to detect a user touch of said electronic device and wherein further the processor is operable to identify an authorized user by biometric sensing of said user touch.	68
69. The device of claim 56, wherein said user interface comprises a display and wherein said user input device comprises a touch screen interface of the display and wherein further the processor is operable to identify an authorized user by biometric sensing of a user touch at the touch screen interface.	69
70. The device of claim 56, wherein said user interface comprises a display and wherein said user input device comprises a touch input of the electronic device and wherein further the processor is operable to identify an authorized user by biometric recognition of a valid user identification via the touch input.	70

Claim Terms	Claim(s)
is further operable to use said payment information combination in place of at least a portion of fixed payment information associated with said selected user-selectable issued payment account.	72

3. Indefiniteness Pursuant to 35 U.S.C. § 112

The asserted claims of the '634 patent are also invalid because they fail to inform those skilled in the art about the scope of the alleged invention with reasonable certainty and are indefinite under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter the applicants regard as their alleged invention. *See, e.g.*, *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901, (2014) ("a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention."). The following terms render one or more claims of the patent-in-suit indefinite under 35 U.S.C. § 112:

Claim Terms	Claim(s)
dynamically generating, by the processor, limited-use payment information; wherein said limited-use payment information is dynamically generated based on a per-transaction sequential parameter originating from the electronic device;	1
using said limited-use payment information in connection with the payment transaction in place of issued payment information associated with said selected issued payment account;	1
2. The method of claim 1, wherein the limited-use payment information comprises a cryptogram number.	2
3. The method of claim 2, further comprising: prior to the priming operation, transmitting the issued payment information for receipt by a payment processing authority; and,	3
in response to said transmitting issued payment information, receiving a static device account information that is unique to the electronic device.	3

Claim Terms	Claim(s)
combining said limited-use payment information and said static device account information, to reduce a combined payment information;	4
transmitting said combined payment information, in place of the issued payment account information, via said NFC for receipt by an NFC recipient; and	4
receiving, via the NFC interface, and in response to transmitting said combined payment information, transaction processing information reflecting a status of said payment transaction.	4
wherein the dynamically generating Lather comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	5
wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority.	6
wherein the priming operation comprises bringing the electronic device within receiving proximity of an NFC recipient.	7
identifying said proximity NFC recipient is an NFC payment facility;	8
successfully validating the identified user as authorized to perform the payment transaction via said electronic device; and	8
the processor identifying that said user input matches a known authorized user of the electronic device, before said readying said device to perform a payment transaction; and, disallowing the payment transaction by the device until said readying said device to perform the payment transaction is successfully completed.	9
wherein said successfully validating the identified user comprises the processor successfully determining a match between: firstly, a user input received via at least one of a set of user input sensors of the electronic device; and, secondly, at least one of the set consisting of: predetermined user characteristics, and challenge-responses of an authorized user, as stored in the electronic device.	10
wherein said user input received via at least one of a set of user input sensors of the electronic device comprises a passcode entry sequence performed by a user input via the touch-screen display.	11

Claim Terms	Claim(s)
wherein said predetermined user characteristics stored within the electronic device comprise known user biometric touch characteristics.	12
wherein said predetermined user characteristics stored within the electronic device comprise a known user touch gesture.	13
wherein said successfully identifying further comprises said electronic device validating an authorized user of said electronic device by comparing a user-touch input received via a touch input sensor on the electronic device with a recognized valid user-touch, stored in a memory of the electronic device; and,	16
prior to the priming operation, transmitting the issued payment information for receipt by a payment processing authority; and,	17
in response to said transmitting issued payment information, receiving a static device account information that is unique to the electronic device.	17
combining said limited-use payment information and said static device account information, to produce a combined payment information; transmitting said combined payment information, in place of the issued payment account information said NFC interface for receipt by an NFC recipient; and	18
receiving, via the NFC interface, and in response to transmitting said combined payment information, transaction processing information reflecting a status of said payment transaction.	18
wherein the dynamically generating further comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	19
wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority.	20
wherein the dynamically generating further comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	21
wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority.	22

Claim Terms	Claim(s)
prior to the priming operation, transmitting the issued payment information, user information and device-specific information; and, in response to transmitting said issued payment information, user information and device-specific information, receiving a payment processing authority supplied secret information.	23
wherein said payment processing authority supplied secret information comprises static device account information.	24
wherein said static device account information comprises a static device account number and a static device-specific expiration date.	25
wherein the static device account number is associated with the selected issued payment account on said electronic device.	26
wherein the dynamically generating further comprises dynamically generating the limited-use payment information based on payment processing authority secret information.	27
wherein the limited-use payment information is based on at least one secret information shared by both the electronic device and the payment processing authority; and further wherein the at least one secret information is not exchanged when preforming the payment transaction.	28
wherein the electronic device is operable to dynamically generate limited-use payment information based on a sequential counter count from the electronic device;	29
wherein the electronic device is operable to store a static device-specific user account information;	29
wherein the electronic device is operable to transmit a combination of said dynamically generated limited-use payment information and said static device-specific user account information to an NFC recipient via, said NFC interface for use in connection with payment transaction in place of information associated with said selected issued payment account;	29
wherein the dynamically generated limited-use payment information comprises a cryptogram number.	30
wherein the device-specific user account information comprises static device account information.	31

Claim Terms	Claim(s)
wherein the static device account information comprises a static device account number that is unique to the electronic device.	32
wherein the static device account information further comprises a static device account expiration date.	33
wherein the sequential counter count is changed per payment transaction.	34
wherein the electronic device is operable to transmit issued payment account information and in response thereto, to receive the static device account information.	35
wherein the electronic device is further operable to dynamically generate the limited-use payment information based on a shared information: from said user, information associated with said electronic device, information associated with said selected, issued payment account, and at least one secret; and, wherein said shared information is shared by both the electronic device and a payment processing authority.	36
wherein the electronic device is further operable to dynamically generate the limited-use payment information based on payment processing authority secrets.	37
wherein the electronic device is further operable to dynamically generate the limited-use payment information based on payment processing authority secrets.	38
a memory coupled to the processor, wherein the memory is operable to store information associated with use of an issued payment account and wherein the payment authority information comprises a secret information;	39
dynamically generate a limited-use payment information based on a per-transaction sequential parameter originating from the electronic device, and secret information associated with a selected issued payment account; and,	39
cause the transmission, via said NFC interface, a payment information combination comprising the dynamically generated limited-use payment information and said payment authority information, for receipt by an NFC recipient;	39
40. The device of claim 39 wherein the payment authority information comprises information that is unique to the electronic device.	40

Claim Terms	Claim(s)
wherein the payment authority information comprises a secret information shared by both the electronic device and a payment processing authority.	41
wherein the processing authority information comprises a static device account number.	42
wherein the processing authority information further comprises a static device account expiration date.	43
wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, to receive the processing authority information.	44
wherein the dynamically generated limited-use payment information comprises a cryptogram number, and further wherein the processor is operable to cause transmission, via said NFC interface, of a payment information combination comprising the dynamically generated limited-use payment information and at least a portion of said payment authority information in connection with the payment transaction in place of at least a portion of the payment information associated with said selected issued payment account.	45
wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, receive the processing authority information.	46
wherein the processing authority information comprises a static device account number.	47
wherein the processing authority information further comprises a static device account expiration date.	48
wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed adjacent to said display and wherein further the processor is operable to identify an authorized user by validating a valid user passcode input to the touch panel.	49
wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed adjacent to said display and wherein further the processor is operable to identify an authorized user by displaying a security challenge question presented on the display and receiving a correct user response thereto.	50

Claim Terms	Claim(s)
wherein said user input device comprises a biometric sensor operable to detect a user touch of said electronic device and wherein further the processor is operable to identify an authorized user by biometric sensing of a continuous user touch.	51
wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed adjacent to said display and wherein further the processor is operable to identify an authorized user by biometric sensing of a user touch at the touch panel.	52
wherein said user interface comprises a display and wherein said user input device comprises a touch panel disposed adjacent to said display and wherein further the processor is operable to identify an authorized user by biometric recognition of a valid user identification.	53
use at least a portion of said specific processing authority information in place of at least a portion of the issued payment account information to generate a combined payment information to complete a payment transaction per the input user-selection.	55
a memory coupled to the processor, wherein the memory stores a payment authority information associated with a user-selectable issued payment account, and wherein the payment authority information includes a secret information;	56
dynamically generate a limited-use payment information based on a per-transaction sequential parameter originating from the electronic device, and the secret information associated with the user-selectable issued payment account; and,	56
cause the transmission, via said NFC interface, of a payment information combination comprising, the dynamically generated limited-use payment information and at least a portion of said payment authority information, for receipt by an NFC recipient;	56
wherein the payment authority information comprises information that is unique to the electronic device.	57
wherein the payment authority information comprises a static device account number.	58
wherein the payment authority information further comprises a static device account expiration date.	59

Claim Terms	Claim(s)
wherein the secret information is shared by both the electronic device and a payment processing authority.	60
wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, to receive the payment authority information.	61
wherein the dynamically generated limited-use payment information comprises a cryptogram number, and further payment information combination is used in place of at least a portion of fixed payment information associated with said user-selectable issued payment account.	62
wherein the processor is operable to cause the transmission of issued payment account information and in response thereto, receive the payment authority information.	63
wherein the payment authority information comprises a static device account number.	64
wherein the payment authority information further comprises a static device account expiration date.	65
wherein said user interface comprises a display and wherein said user input device comprises a touch screen interface of the display, and wherein further the processor is operable to identify an authorized user by validating a valid user passcode input to the touch screen interface.	66
wherein said user interface comprises a display and wherein said user input device comprises a touch screen interface of the display, and wherein further the processor is operable to identify an authorized user by displaying a security challenge question presented on the display and receiving a correct user response via said touch screen interface of the display.	67
wherein said user input device comprises a biometric sensor operable to detect a user touch of said electronic device and wherein further the processor is operable to identify an authorized user by biometric sensing of said user touch.	68
wherein said user interface comprises a display and wherein said user input device comprises a touch screen interface of the display and wherein further the processor is operable to identify an authorized user by biometric sensing of a user touch at the touch screen interface.	69
wherein said user interface comprises a display and wherein said user input device comprises a touch input of the electronic device and wherein further	70

Claim Terms	Claim(s)
the processor is operable to identify an authorized user by biometric recognition of a valid user identification via the touch input.	
is further operable to use said payment information combination in place of at least a portion of fixed payment information associated with said selected user-selectable issued payment account.	72

4. Ineligible Subject Matter under 35 U.S.C. § 101

Each Asserted Claim of the '634 patent is directed to ineligible subject matter under 35 U.S.C. § 101. Specifically, the Asserted Claims are fatally abstract under the U.S. Supreme Court's decision in *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2345 (2014) and progeny.

In *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014), the Supreme Court established a two-part test for determining whether a claim recites patent-eligible subject matter. First, the court must determine whether the claims at issue are directed to any of the following patentable ineligible subject matter: laws of nature, natural phenomena, or abstract ideas. *Id.* at 2355. Second, if the claims are directed to ineligible subject matter, the court must then consider the claim elements—both individually and as an ordered combination—to determine whether they add an "inventive concept." *Id.* Merely claiming a generic "computer" to implement an abstract idea is not sufficient to transform the computer into a patent-eligible invention. *Id.* at 2357-50. Software claims may be abstract if "[t]hey do not claim a particular way of programming [to accomplish the claimed functionality], but instead merely claim the resulting systems" or if they "are not directed to a specific improvement in the way computers operate." *Apple Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1241 (Fed. Cir. 2016). "[M]erely presenting the results of abstract processes of collecting and analyzing information, without more (such as

identifying a particular tool for presentation), is abstract as an ancillary part of such collection and analysis." *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016).

The asserted claims of the '634 patent are directed to the abstract ideas of facilitating secure payment transactions by, *e.g.*, storing, analyzing and transmitting payment information, using generic and conventional computer components. For example, claim 1 recites a "method for generating and using limited-use payment information" using an "electronic device" comprising "a processor," "a touch screen display," "a near field communications (NFC) interface." '634 patent, claim 1; *see also* claims 29, 39 (also reciting "memory" and "user input device"), 56 (same). The method of claim 1 includes "readying" the device for a payment, "receiving a payment request," "displaying" information about the request and selected payment account, "generating . . . limited-use payment information," "using" the limited-use payment information, "transmitting" the limited-use payment information via NFC, "receiving" via NFC payment transaction status information, and "displaying the status." *Id.* at claim 1; *see also id.* at claims 29 (also reciting storing "device-specific user account information"), 39, 56. Although the claims are directed to the abstract idea of using "limited-use card payment information" in place of a bank issued payment number, the patent discloses no formulas or algorithms for how to generate the limited-use number, nor does the patent include any limitation or explanation that would render the claims non-abstract.

The dependent claims do not add anything that would remove the claims from the realm of abstract ideas. For example, the dependent claims require generating the limited-use payment information from specific data (claims 2, 4, 5, 6, 18, 19, 20, 21, 22, 27, 28, 30, 34, 36, 37, 38, 45, 62), receiving, storing, and using device-specific account information (claims 3, 17, 23, 24, 25, 26, 31, 32, 33, 35), readying the device based on specific conditions (claims 7, 8, 9, 10, 15, 16),

receiving, storing, and using specific types of user input (claims 11, 12, 13), receiving, storing, and transmitting payment authority information (claims 40, 41, 42, 43, 44, 46, 47, 48, 55, 57, 58, 59, 60, 61, 63, 64, 65, 73), validating a user via specific means (claims 49, 50, 51, 52, 53, 66, 67, 68, 69, 70).

Under *Alice* Step 1, those ideas are abstract, as they relate to a fundamental long prevalent practice. *See Intellectual Ventures I LLC v. Symantec Corp.,* 838 F.3d 1307, 1314 (Fed. Cir. 2016). Limiting the invention to a particular technological environment, e.g., generic computer hardware, "do[es] not render an otherwise abstract concept any less abstract." *Intellectual Ventures I LLC v. Capital One Fin. Corp.,* 850 F.3d 1332, 1340 (Fed Cir. 2017).

Furthermore, under *Alice* Step 2 the Asserted Claims do not contain any inventive concept. The Asserted Claims employ well-known components or functionality (as shown in Apple's invalidity contentions involving anticipation and/or obviousness in this case), which is not enough to impart patent eligibility of an abstract idea. *See, e.g., Alice,* 134 S. Ct. at 2359 (holding that limitations describing "'well-understood, routine, conventional activit[ies]' previously known to the industry" were insufficient to supply an inventive concept (quoting *Mayo,* 132 S. Ct. at 1294)). For example, the asserted claims recite a "processor," however the specification admits that "microprocessors with cryptographic capabilities" were known and used in credit cards and other financial instruments and operated "in a similar manner to a cell phone having a chip comprising a cryptographic processor." ('634 patent at 1:46-50). Moreover, the lack of written description for numerous claim elements and minimal disclosure in the specification of many claimed components and functions further demonstrates the Asserted Claims rely on conventional components and features.

Apple reserves the right to supplement these disclosures based on further investigation and discovery.

VIII. DOCUMENT PRODUCTION ACCOMPANYING PRELIMINARY INVALIDITY CONTENTIONS

Pursuant to the Parties Joint Motion for Entry of Scheduling Order and Agreed Scheduling Order (Dkt. 39) and OGP Version 4.4 paragraph 4, Apple has produced documentation sufficient to show the operation of aspects or elements of the Accused Instrumentalities identified by the patent claimant in Plaintiff's initial infringement contentions, to the extent the Apple could understand those contentions. Apple is also producing prior art references and corroborating evidence concerning prior art systems. Apple's search for prior art references, additional documentation, and/or corroborating evidence concerning prior art systems is ongoing. Accordingly, Apple reserves the right to continue to supplement its production as Apple obtains additional prior art references, documentation, and/or corroborating evidence concerning invalidity during the course of discovery.

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Respectfully submitted,

/s/ Nandan R. Padmanabhan

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CERTIFICATE OF SERVICE

I hereby certify that all counsel of record who are deemed to have consented to electronic service are being served this 7th day of April, 2025.

/s/ Nandan R. Padmanabhan