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

PROXENSE, LLC, *Plaintiffs*, v. LG ELECTRONICS, INC, and LG ELECTRONICS U.S.A., INC. *Defendants*.	Civil Action No. 6:24-cv-302 **JURY TRIAL REQUESTED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Proxense, LLC ("Proxense" or "Plaintiff") files this original Complaint for patent infringement against LG Electronics, Inc. ("LGE") and LG Electronics U.S.A., Inc. ("LGEUS") (collectively, "LG" or "Defendants"), and states as follows:

NATURE OF THE CASE

1. This action is for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 1, et seq. As further stated herein, Proxense alleges that LG infringes one or more claims of patents owned by Proxense. Accordingly, Proxense seeks monetary damages and injunctive relief in this action.

THE PARTIES

2. Plaintiff Proxense, LLC is a Delaware company with its principal place of business at 689 NW Stonepine Drive, Bend, Oregon 97703.

3. Defendant LGE is a corporation formed under the laws of the Republic of Korea, with its principal place of business at LG Twin Towers 20, Yeouido-Dong, Yeongdeungpo-Gu, Seoul, South Korea 150-721. Upon information and belief, LGE does business in Texas, directly and through intermediaries, and offers its products, and services, including those accused herein

of infringement, to customers and potential customers located in Texas, including in the judicial Western District of Texas.

4. On information and belief, Defendant LGEUS is a Delaware corporation with a principal place of business located at 111 Sylvan Ave, Englewood Cliffs, NJ 07632 and has regular and established places of business throughout this District, conducting business from at least its locations at: 21251-2155 Eagle Parkway, Fort Worth, Texas 76177.

5. On information and belief, Defendant LGEUS is a wholly owned subsidiary of Defendant LGE. Defendant LGEUS may be served with process through its Texas registered agent, United States Corporation Co.

6. Defendants have authorized sellers and sales representatives that offer and sell products pertinent to this Complaint through the State of Texas, including in this Judicial District, and to consumers throughout this Judicial District.

7. LG develops, designs, manufactures, distributes, markets, offers to sell and/or sells (or has previously done so) infringing products and services in the United States, including consumer electronics, mobile phones, handheld devices, tablets, laptops and other personal computers, televisions, and electronic devices.

JURISDICTION AND VENUE

8. This Court has exclusive subject matter jurisdiction over this case pursuant to 28 U.S.C. §§ 1331 and 1338(a) on the grounds that this action arises under the Patent Laws of the United States, 35 U.S.C. § 1 et seq., including, without limitation, 35 U.S.C. §§ 271, 281, 284, and 285.

9. This Court has personal jurisdiction over LG because it has conducted and continues to regularly conduct business within the State of Texas and this District. LG has

purposefully and voluntarily availed itself of the privileges of conducting business in the United States, the State of Texas, and this District by continuously and systematically placing goods into the stream of commerce through an established distribution channel with the expectation that they will be purchased by consumers in this District. LG directly and/or through intermediaries (including distributors, sales agents, and others), ships, distributes, sells, offers to sell, imports, advertises, makes, and/or uses its products (including but not limited to the products accused of infringement herein) in the United States, the State of Texas, and this District.

10. On information and belief, LG has various subsidiaries (or related companies) registered to do business in Texas and maintains an agent for service of process in Texas. For example, LG Electronics U.S.A., Inc., which was registered on April 3, 1984 (Texas SOS File Number 00061714106) lists a registered office street address at 211 E. 7th Street, Suite 620, Austin, TX 78701. LG Electronics Mobile Research U.S.A., LLC was registered on April 22, 2005 (Texas SOS File Number 0800484955) utilizes the same registered office address. The same office address is also listed under the registration for LG Electronics Mobilecomm U.S.A., Inc., which was registered on April 4, 2005 (SOS File Number 0800476376).

11. Upon information and belief, LG has authorized retailers that offer and sell products on its behalf in this District, including products accused of infringement herein. Upon information and belief, these include Walmart, *e.g.*, Supercenter #939, 4230 Franklin Ave., Waco, TX 76710; Target, *e.g.*, at 5401 Bosque Blvd., Waco, TX 76710; Best Buy, *e.g.*, at 4627 S. Jack Kultgen Expy., Waco, TX 76706; T-Mobile Store, *e.g.,* at 1107 N Valley Mills Dr., Bldg 1, Waco, TX 76710; and Verizon, *e.g.*, at 1820 S Valley Mills Dr., Waco, TX 76711, among many others.

12. Proxense's causes of action arise directly from LG's business contacts and other activities in the State of Texas and this District.

13. LG has derived substantial revenues from its infringing acts within the State of Texas and this District.

14. Venue is proper in this District as to SEC pursuant to 28 U.S.C. § 1391(c)(3) because it is not a resident of the United States and may therefore be sued in any judicial district.

15. LG has committed acts of infringement in this District and does business in this District, including making sales and/or providing service and support for customers and/or end-users in this District. LG purposefully and voluntarily sold one or more infringing products with the expectation they would be purchased in this District. These infringing products have been and continue to be purchased in this District. Thus, LG has committed acts of infringement within the United States, the State of Texas, and this District.

PATENTS-IN-SUIT

16. On January 8, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,352,730 (the "730 Patent") entitled "Biometric Personal Data Key (PDK) Authentication." A true and correct copy of the 730 Patent is attached hereto as **Exhibit 1**.

17. On March 26, 2016, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 9,298,905 (the "905 Patent") entitled "Biometric Personal Data Key (PDK) Authentication." A true and correct copy of the 905 Patent is attached hereto as **Exhibit 2**.

18. On June 30, 2020, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 10,698,989 (the "989 Patent") entitled "Biometric personal data key (PDK) authentication." A true and correct copy of the 989 Patent is attached hereto as **Exhibit 3**.

19. On February 2, 2016, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 9,251,332 (the "332 Patent") entitled "Security System and Method

for Controlling Access to Computing Resources." A true and correct copy of the 332 Patent is attached hereto as **Exhibit 4**.

20. On November 5, 2019, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 10,469,456 (the "456 Patent") entitled "Security System and Method for Controlling Access to Computing Resources." A true and correct copy of the 456 Patent is attached hereto as **Exhibit 5**.

21. On August 10, 2021, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 11,086,979 (the "979 Patent") entitled "Security System and Method for Controlling Access to Computing Resources." A true and correct copy of the 979 Patent is attached hereto as **Exhibit 6**.

22. On October 11, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,036,152 (the "152 Patent") entitled "Integrated Power Management of a Client Device Via System Time Slot Assignment." A true and correct copy of the 152 Patent is attached hereto as **Exhibit 7**.

23. Proxense is the sole and exclusive owner of all right, title and interest to and in, or is the exclusive licensee with the right to sue for, the 730, 905, 989, 332, 456, 979, and 152 Patents (together, the "Patents-in-Suit"), and holds the exclusive right to take all actions necessary to enforce its rights to the Patents-in-Suit, including the filing of this patent infringement lawsuit. Proxense also has the right to recover all damages for past, present, and future infringement of the Patents-in-Suit and to seek injunctive relief as appropriate under the law.

24. The technologies of the Patents-in-Suit were invented by John Giobbi and David L. Brown. The 730 and 905 Patents generally cover systems and methods for an integrated device that persistently stores biometric data for a user in a tamper-resistant format. Subsequently, scan

data collected from a user (*e.g.*, a fingerprint) can be compared against the stored biometric data. Once the user has been biometrically verified by the integrated device, a code can be wirelessly transmitted for authentication.

25. The 989 Patent generally covers systems and methods of verifying a user during authentication of an integrated device.

26. The 332, 456, and 979 Patents relate to a system and method for controlling access to computing resources. More specifically, these patents relate to a security system that requires the presence of a personal digital key (PDK) before secure computing resources can be accessed.

27. The 152 Patent generally covers apparatus and methods for network devices that alternate between active and sleep modes based on assignment information.

FACTUAL ALLEGATIONS

I. TECHNOLOGY BACKGROUND

28. Mobile payments, or transactions initiated on mobile devices such as cell phones or tablet computers, have become increasingly popular as applications like LG Pay, launched in 2017, came bundled with LG's phones beginning with the LG G8 ThinQ. According to LG, "consumers have relied on LG Pay to make billions of transactions." Mobile payments can include payments for goods and services purchased over the internet (*e.g.,* through merchant websites or applications), payments at a point of sale, which are payments initiated from a mobile device at a physical location, and the use of Automated Teller Machines (ATMs) to withdraw funds.

29. Near Field Communication ("NFC") is a form of contactless communication between devices that allows two NFC-equipped devices placed within a few centimeters of each other to exchange data. NFC technology provides power consumption and ease-of-use advantages as compared to other methods of close-proximity wireless communication (*e.g.*, Bluetooth). NFC

can be used to facilitate mobile payments when an NFC-equipped device (such as a smartphone or electronic wearable like a watch) is placed near a contactless merchant terminal or ATM, allowing the devices to exchange payment data.

30. Contactless merchant terminal adoption in the U.S. has been expedited by card issuer security requirements. Card issuers in the United States set an October 2015 deadline for merchants to upgrade payment terminals capable of accepting credit cards with embedded chips for security, and many of these upgraded terminals have NFC capability built in. In December 2015, approximately 2.36 million contactless terminals were in service in the United States. As a result of the COVID-19 pandemic, there has been a sharp rise in adoption of contactless payment all over the globe.

31. A similar trend is seen with respect to contactless ATMs. Chase, Bank of America, PNC, Wells Fargo and most major banks have provided this option for several years. Bank of America launched contactless ATM service in 2016, while Chase added contactless ATMs access in 2018. Between March 2020 and September 2020, Bank of America noted a 25% increase in use of contactless ATMs.

32. Magnetic Secure Transmission ("MST") is a technology that emits a magnetic signal to mimic the magnetic strip on a traditional payment card. MST technology can be used to facilitate mobile payments when an MST-equipped device is placed near a merchant terminal, allowing the devices to exchange data. MST does not generally require merchants to upgrade payment terminal software or hardware. The technology was developed to facilitate contactless payments on point-of-sale terminals that can accept only conventional magnetic stripe cards. LoopPay, a contactless payments company that utilized MST (and was acquired by Samsung),

claimed a 90% merchant acceptance rate. In 2017, LG launched its competing LG Pay service, which uses a similar technology called Wireless Magnetic Communication (WMC).

II. PROXENSE AND ITS INNOVATIVE TECHNOLOGIES

33. Proxense was founded in 2001 as a limited venture. The company was formally incorporated in 2005 as an LLC. From approximately 2004-2012, Proxense developed, *inter alia*, mobile payment technologies and commercial products, employing over thirty engineers, and investing many millions of dollars in product development and other research and development efforts. Foundational capabilities of Proxense's technologies included a secure element, biometrics captured and stored thereon, retrieval of biometrics and token passing to a trusted third party, and completion of a mobile payment transaction.

34. Proxense also developed sophisticated, proprietary, proximity-based detection, authentication, and automation technology, built on the concept of utilizing small electronic sensors, or receiver-decoder circuits ("RDCs"), capable of wirelessly detecting, authenticating, and communicating with personal digital keys ("PDKs"). Proxense's technology enabled PDKs to run for as long as two years on tiny batteries. "ProxPay" technology also included biometrically-based user and device authentication options, the ability to conduct biometric-verified transactions without sending or exposing the underlying biometric data or storing it anywhere except the PDK, and the incorporation of a registration for maintaining or verifying the PDK. Significant financial and engineering resources were deployed to make this possible. The resulting developments became primary differentiators of Proxense's product line, and significant elements on which its business was built.

35. John Giobbi is the founder and CEO of Proxense. He is an experienced product designer and prolific inventor (a named inventor on approximately 200 patents, including three of

the asserted patents), with over 35 years of experience as an entrepreneur and product development executive. For example, Mr. Giobbi was a Senior Vice President at WMS Gaming, and managed over 200 staff; in his six-year tenure at that company, its market capitalization soared from approximately $80 million to about $1 billion. Mr. Giobbi was also the founder and President of Prelude Technology Corp. and InPen.

36. The innovative, visionary nature of Proxense's technology was recognized in the media, beginning in mid-2008, when, The Bulletin featured a story on Proxense's mobile payment technology, titled "A pint-sized virtual wallet." Andrew Moore, The Bulletin (May 7, 2008), **Exhibit 8**. The story describes a future that greatly resembles the present-day, including a "wireless wallet" and "fingerprint" verification, including the use of such technology to pay for goods using such wireless methods protected by biometric measures like a fingerprint. In 2009, Trend Hunter ran a similar story titled "Virtual Biometric Wallets," featuring Proxense and Mr. Giobbi. Michael Plishka, Trend Hunter (January 4, 2009), **Exhibit 9**.

37. Another 2009 article, ran in DARKReading, a publication in InformationWeek's IT Network, also featured the company and Mr. Giobbi in an article titled "Startup May Just Digitize Your Wallet." George V. Hulme, DARKReading (February 8, 2009), **Exhibit 10**. The DARKReading article described that Proxense was "in the process of bringing to market a proximity-based communications device that aims to provide a way to securely share information and conduct payments." Proxense's Personal Digital Keys (PDKs) were described as "carried by users, perhaps even within a cell phone, and can security hold data and manage authentication." Mr. Giobbi explained that "the data within the PDK also can be protected by additional layers of authentication, such as biometric…"

38. It would be years until products like Apple Pay (2014),Samsung Pay (2015) , and LG Pay (2017) were launched and became mainstream; Apple's TouchID, which involves fingerprint recognition technology, and LG's fingerprint scanner on its own phones (in the V10 smartphone), were introduced in 2013 and 2015, respectively. Accordingly, Proxense's technology was years ahead of the industry.

39. After the launch of services like LG Pay, and its inextricable link to the some of the most popular smartphone hardware devices in the United States, and the world, Proxense would find itself unable to compete with companies like LG, even though Proxense invented the technology utilized in these solutions.

40. Today, Proxense holds at least 65 patents on related technology, including digital content distribution, digital rights management, personal authentication, biometric data management and mobile payments. Proxense continues to prosecute new patents on its proprietary technology.

III. INFRINGEMENT ALLEGATIONS

1. Proxense's Interactions with LG

41. On August 10, 2016 counsel for Proxense sent a letter to Mr. Wayne Park advising LG as to Proxense's "over 30 patents" included as an attachment, including the 905 patent, and further advising of "another 20+ US patent applications pending." A copy of the letter is attached as **Exhibit A**.

42. Since at least that time, i.e. on or about August 10, 2016, LG has had actual notice of the Patents-in-Suit and the scope of their claims as of at least their dates of issue. Proxense has also provided LG actual notice of the Patents-in-Suit, and also placed LG on notice of the Patents-in-Suit as of the date of public filing of this Complaint.

43. LG has also had knowledge of the infringing nature of its activities, or at least a willful blindness regarding the infringing nature of its activities, since at least Proxense's making LG aware of the Patents-in-Suit as early as August 10, 2016, but at least as of the public filing of this Complaint. This follows where Proxense included with its August 10, 2016 correspondence examples of the relationship between Proxense's claimed inventions and LG's products, including details of LG's infringing activity.

44. Despite LG's knowledge of the Patents-in-Suit, and its knowledge of its infringing actions, LG continued to infringe the claims of the Patents-in-Suit. LG's infringement has been and continues to be willful since at least the date of the public filing of this Complaint. Samsung released LG Pay with the intent it would be used to infringe the Patents-in-Suit. has manufactured, used, marketed, distributed, sold, offered for sale, and exported from and imported into the United States devices and software that infringe the Patents-in-Suit.

2. The Accused Products

45. LG has manufactured, used, marketed, distributed, sold, offered for sale, and exported from and imported into the United States devices and software that infringe the Patents-in-Suit. LG has distributed variants of LG Pay, LG PayQuick, and or LG Pay Perks that include functionality to emulate a payment card and settle a transaction via NFC and/or MST at least since July, 2017.[1] LG Pay is operable on a range of LG devices, including at least all variants of the following LG devices: G7, G8, G8X, V35, V40, V50, V60, Velvet and all LG devices released since July, 2017.[2] LG Pay and devices running LG Pay, alone and together, are non-limiting instances of the Accused Products. The Accused Products include, for example, the representative LG G8 ThinQ running LG Pay. The Accused Products practiced the claims of the Patents-in-Suit

[1] **Exhibit 11**
[2] See **Exhibit 12, Exhibit 13**

to improve the shopping experience of their users, and to improve LG's position in the market. The Accused Products practice the claims of the Patents-in-Suit to improve the shopping experience of their users, and to improve LG's position in the market.

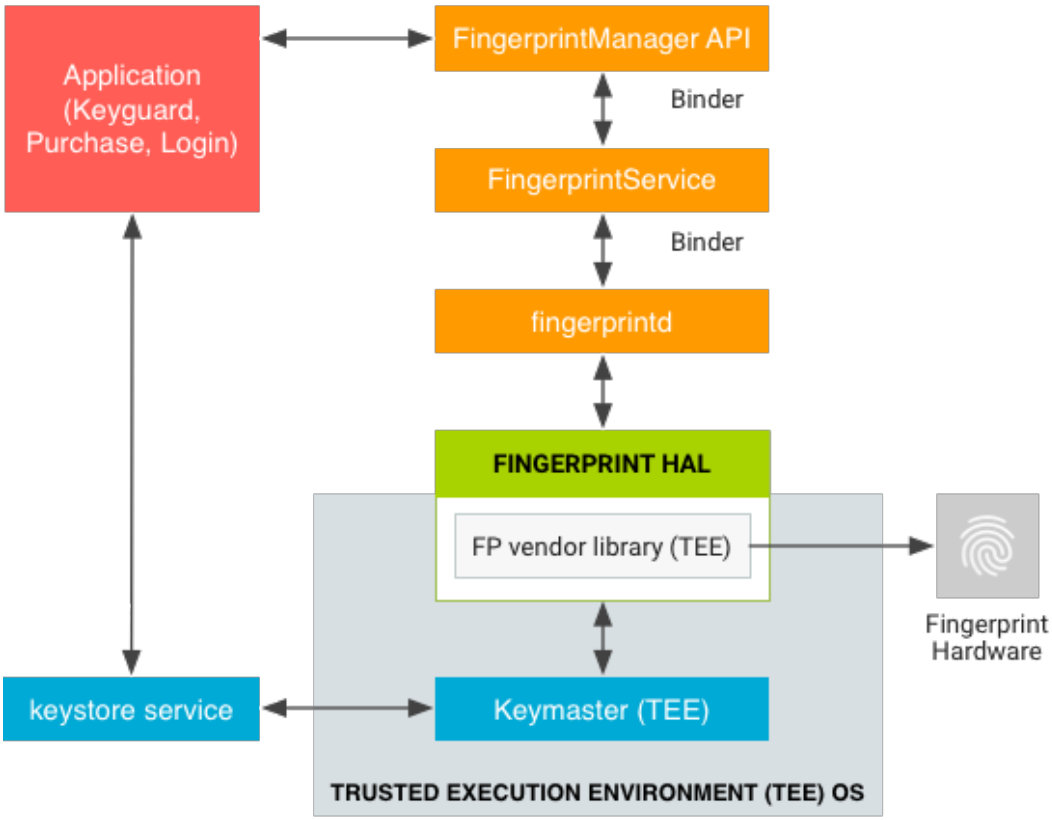
3. LG's Direct Infringement of the Patents-in-Suit

a) Infringement by LG Pay

46. LG Pay is described by LG as "a digital wallet that lets you put your credit/debit, gift and loyalty cards into one simple-to-use app." See **Exhibit 13** "LG Pay is compatible with most NFC readers and Magstripe payment terminals, so you can use it virtually everywhere." LG Pay was able to "[a]uthenticate by using your registered fingerprints…"**Exhibit 14**. Additionally, LG developed, manufactured, and sold the first smartwatch in Google's Android Wear lineup supporting NFC payments. See e.g. **Exhibit 15**

47. On information and belief, LG phones utilized Android's Fingerprint Hardware Interface Definition Language ("HIDL") to connect to its vendor-specific library and fingerprint hardware (e.g., a fingerprint sensor); to implement the Fingerprint HIDL, LG implements IBiometricsFingerprint.hal (the "Fingerprint HAL") in its vendor-specific library. Biometric data is protected because fingerprint templates must be signed with a private, device-specific key under the Fingerprint HIDL implemented by LG.

48. Fingerprint HAL interacted with Keystore Application Programming Interface ("API") and Keymaster components which provide hardware-backed cryptography for secure key storage in a secure environment, such as the Trusted Execution Environment ("TEE"). A high-level data flow for fingerprint authentication is produced below:



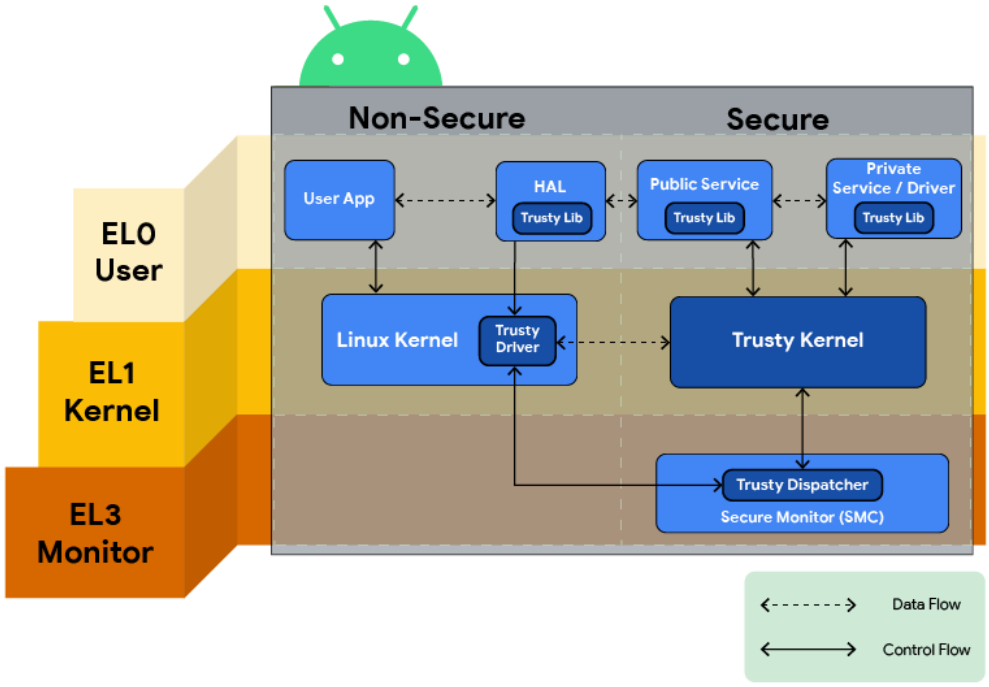
49. Keymaster functions include private key operations (*e.g.*, KeyPurpose:DECYPT and KeyPurpose::SIGN), e.g. a secret decryption value.

50. The Fingerprint HAL guidelines are described in the Android documentation as being designed to ensure that fingerprint data is not leaked and is removed when a user is removed from a device: Raw fingerprint data or derivatives (for example, templates) must never be accessible from outside the sensor driver or TEE. If the hardware supports a TEE, hardware access must be limited to the TEE and protected by an SELinux policy. The Serial Peripheral Interface (SPI) channel must be accessible only to the TEE and there must be an explicit SELinux policy on all device files. Fingerprint acquisition, enrollment, and recognition must occur inside the TEE.

51. "Trusty" is a secure Operating System ("OS") that provides a Trusted Execution Environment for Android, the operating system run on LG's smartphone devices. On information and belief, on LG's smartphone products, the Trusty OS ran on the same processor as the Android

OS, and the two OS's run parallel to each other. Trusty has access to the full power of a device's main processor and memory but is completely isolated from the rest of the system by both hardware and software. Trusty's isolation protects it from malicious apps installed by the user and potential vulnerabilities that may be discovered in Android.

52. On ARM systems, like LG's devices, Trusty uses ARM's Trustzone™ to virtualize the main processor and create a secure TEE. An overview diagram of Trusty is reproduced below:



53. Uses for a TEE like Trusty include mobile payments, secure banking, multi-factor authentication, device reset protection, replay-protected persistent storage, and secure PIN and fingerprint processing.

54. EMV, which originally stood for "Europay, Mastercard, and Visa", the three companies which created the standard, is a payment method based upon a technical standard for smart payment cards, for payment terminals, and automated teller machines which can accept them.

55. EMVCo, LLC ("EMVCo") facilitates worldwide interoperability and acceptance of secure payment transactions. EMVCo is supported by dozens of banks, merchants, processors, vendors and other industry stakeholders, including LG. EMVCo manages and evolves the EMV Specifications and related testing processes. This includes, but is not limited to, card and terminal evaluation, security evaluation, and management of interoperability issues. Notably, EMV Tokenisation Specification was first published in 2014, years after the priority dates of all of the Patents-in-Suit.

56. One means of promoting payment security is "tokenization," an approach that substitutes sensitive data like account numbers and other personally identifiable information with a non-sensitive equivalent that has no intrinsic or exploitable meaning or value.

57. EMV payment tokens are open-loop tokens provisioned by a token service provider ("TSP"). Like other tokens, EMV payment tokens are used to replace the actual payment credential (*e.g.*, primary account number "PAN") with another numeric value.

58. The U.S. Payments Forum (formerly the EMV Migration Forum) is a cross-industry body focused on supporting the introduction and implementation of EMV chip and other new and emerging technologies that protect the security of and enhance opportunities for payment transactions.

59. On information and belief, through a process called "provisioning", EMV payment tokens were issued to LG Pay equipped devices in exchange for a credit card number by a TSP such as Visa, Mastercard, American Express or Discover. On information and belief, device-specific payment tokens were stored by LG Pay-equipped devices.

60. The device-specific EMV payment tokens may be stored in three locations, one of them being a secure element / integrated circuit card ("ICC"). On information and belief, the LG

G8 ThinQ and subsequent devices equipped with LG Pay use ICC elements. Secure elements like ICCs are, according to the U.S. Payments Forum, "a dynamic environment to store data securely, process data securely and perform communication with external entities securely," that "will not allow unauthorized access." **Exhibit 19**, page 41

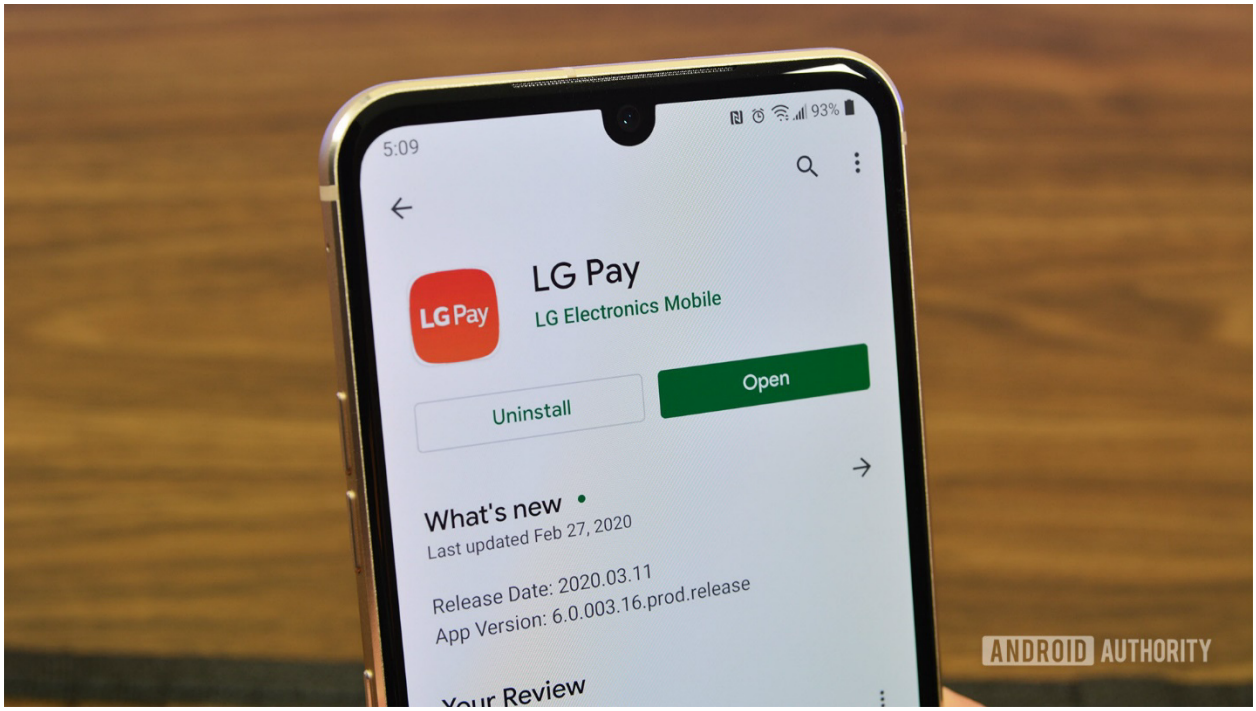
61. LG Pay requests biometric verification before providing payment credentials to merchants. The location/type of the purchase determines how the request is initiated.

62. LG Pay operated using NFC and/or MST, similarly to Samsung Pay, to mimic real debit and credit cards. *See e.g.* **Exhibit 16**. LG Pay let its users place an LG device near a payment terminal, approve of the purchase with a fingerprint, and wait for the transaction to be completed, thereby infringing the patents-in-suit. *Id.* Apart from using NFC, LG Pay also used Wireless Magnetic Communication (WMC) technology that let its users utilize payment terminals that had not been updated to modern standards. *Id*.

63. A representative screenshot of LG Pay, which shows that the feature permitted users to "[p]ay with fingerprint" is shown below:

64. LG Pay worked similarly to other mobile payment services. A user's payment card information was stored in a secure. Various forms of biometrics were available, including, on information and belief, face unlock or fingerprint. The LG Pay app used a virtual card number at the payment terminal in place of a user's actual card number.

65. LG Pay was made available for download on the Google Play and, on information and belief, shipped pre-loaded with the Accused Products. A picture of the install screen for LG Pay on the Google Play store is shown below:



66. Users could add payment cards, gift cards, and loyalty cards to LG Pay directly through the app. For example, the following steps were used to add a debit or credit card to LG Pay:

- Open the LG Pay app on an LG device (or download and install it from Google Play per the above).
- Hit the Plus button in the top right corner.
- Line up a credit or debit card with the camera rectangle for LG Pay to automatically enter the card number and expiration date. On the next screen, add the CVC/CVV code and hit Next.
- Optional – Tap Enter manually to enter card details via on-screen keyboard. Hit Next when finished.
- LG Pay will then ask for a billing address and zip code. The information as requested by the app was to be filled in. When completed, hit Next.

- Note – If LG Pay didn't support a user's bank, the user would receive a notice at this point letting the user know that the card could not be added to LG Pay with a link to the supported issuers. If this notice was not received, the user would continue forward.
- The app would then show a terms of service agreement. The user had to scroll all the way to the bottom at least once before the user could tap the Agree button.
- LG Pay would then do a card verification step. The user would select whether to receive the code via email, SMS, or by calling the bank.
- The verification would be entered in code box in the app and the user would tap the Verify button.
- Finally, the user would make sure the Add to LG PayQuick option is toggled if the user wanted to access the card quickly in the future and tapped the Done button.

At this point, a user could use a card for purchases through LG Pay. *See e.g.* **Exhibit 16**.

67. LG PayQuick was a software add-on that comes native with LG Pay. It allowed users to pull a software tab from the bottom or sides of their screen to quickly activate LG Pay. The user would simply slide the tab out, enter a fingerprint, and complete their purchase.

68. To do so, a user would open the LG Pay app, tap on their credit or debit card, tap the 3-dot menu button, and select Add to LG PayQuick. From here, the software pull tab was activated on the bottom of the screen by default and was available in any app, the lock screen, and the home screen.

69. LG PayQuick could also be configured by opening the LG Pay app, tapping the 3-dot menu on the home page, selecting Settings, and then finally, tapping on LG PayQuick. From there, the user could move the tab to the side of the screen instead of the bottom.

70. The above steps were only needed one time as a preliminary set up and users would never have to do it again to make purchases.

71. Moving on to the use of LG Pay. Two methods were available, (1) use of LG PayQuick outside of the app and (2) LG. PayQuick inside the app.

Method 1 – LG PayQuick outside of the app

- Pull the LG PayQuick tab out from the side or bottom of the screen as configured in the previous steps. Select the card to use if there are multiple payment cards.
- Enter fingerprint authentication, as shown on the screen.
- From here, users had 50 seconds to actually use LG Pay. Users could tap their device to the NFC icon on any terminal with an NFC icon or hold their device over the magnetic stripe reader on non-NFC payment terminals until the app completes the transaction.
- After that, a user could stop using the LG PayQuick app and use the payment terminal to complete the purchase as usual.

Method 2 – LG PayQuick inside the app

- A user would initialize LG Pay within the app without adding the pull tab as described above. The user would oopen the LG Pay app, tap the card you want to use, and then tap the blue LG PayQuick button in the bottom right.
- Enter your fingerprint as requested by the app.
- From here, the user had 50 seconds to actually use LG Pay. Users could tap it to the NFC icon on any terminal with an NFC icon or hold the phone over the magnetic stripe reader on non-NFC payment terminals until the app completes the transaction.

72. LG Pay equipped devices utilize the Android OS, as noted above. "Android 4.4 introduce[d] a new platform support for secure NFC-based transactions through Host Card Emulation (HCE), for payments, loyalty programs, card access, transit passes, and other custom services." **Exhibit 17**. When a user taps a phone to contactless payment terminals or ATMs, "Android uses Application Identifiers (AIDs) as defined in ISO/IEC 7816-4 as the basis for routing transactions to the correct Android applications", such as the equipped LG Pay on LG's devices. When paying with LG Pay instore, "the app reads the transaction data and can use any local or network-based services to verify and then complete the transaction." *Id*. When opened in response to AID routing,

73. Whether through AID routing, functions call between apps, or push notifications, regardless of where a user is shopping LG Pay equipped devices receive a request for biometric verification to authorize payment.

74. On Android devices like LG's devices, "the fingerprint sensor of [the] device is generally idle", but "in response to a call to authenticate . . . the fingerprint sensor listens for a touch". **Exhibit 18**. After the user places their fingerprint on the sensor, a "vendor-specific library determines if there is a fingerprint match in the current set of enrolled fingerprint templates." *Id*.

75. LG Pay equipped devices wirelessly transmit EMV tokens to provide payment to merchants. When shopping online at a website, LG Pay equipped devices receive a push notification requesting authorization by the user, as detailed *supra*. "After user authenticates payment data is encrypted with partner's public key in user device, and will be sent it to LG server" and made available to the merchant's website. **Exhibit 19**, page 12.

76. The series of requests and responses permitting the merchant to receive payment, as summarized in Figure 10.1 of the EMV Payment Tokenisation Specification: Technical

Framework, v2.2 (2020), begins with the merchant submitting a Token Payment Request for transaction routing. **Exhibit 20**. The data included within the Token Payment Request, as detailed in Table 10.1 of **Exhibit 20**, is required to contain the payment token.

77. During transaction routing within the payment network, the Token Payment Request is transformed to a Token Authorization Request, as detailed in Figure 10.1 of **Exhibit 20**. As detailed in Table 10.3 of **Exhibit 20**, a required field of the Token Authorization Request generated by routing the Token Payment Request through payment network is a payment token. Accordingly, the payment token sent in the Token Payment Request from the merchant continues to persist during the token authorization request process. EMV payment tokens uniquely identifying LG Pay equipped devices and are provided during card enrollment, and thus are an identified embodiment of device ID codes specifically mentioned in at least the 730, 905, and 989 Patents.

78. "The Token Authorisation request process continues until De-Tokenisation has been completed." **Exhibit 20**, page 86. De-Tokenisation is performed by the token service provider. Visa, MasterCard, American Express and Discover each take on the role as TSPs. **Exhibit 19** , page 23 (Figure 5 – identifying Visa, MasterCard, American Express and Discover as Token Service Providers). "Token Service Providers are responsible for a number of discrete functions which may include, but are not limited to: Maintenance and operation of a Token Vault . . . [and] De-Tokenisation". **Exhibit 20**, page 19.

79. Maintaining the token vault and providing de-tokenisation, token service providers keep a list of device ID codes uniquely identifying legitimate integrated devices. The token vault maintained by Visa, MasterCard, and other token service providers is a "repository that maintains the established Payment Token / Token Expiry Date mapping to the underlying PAN / PAN Expiry

Date and includes Payment Token related data". Maintaining the mapping between payment tokens and underlying primary account numbers, the token vault represents a list of legitimate tokens. EMV payment tokens, as detailed above, are values uniquely identifying LG Pay-equipped devices provided during card enrollment, and thus are an identified embodiment of device ID codes. As tokens are embodiments of device ID codes, the listing of legitimate payment tokens maintained by token service providers as part of the token vault is an identified embodiment of a list of device ID codes uniquely identifying legitimate integrated devices. TSPs are therefore one embodiment of a third-party trusted authority possessing a list of device ID codes uniquely identifying legitimate integrated devices.

80. Opening the token vault to perform de-tokenisation occurs in response to receiving the token authorization request containing the payment token. De-Tokenisation is "the process of converting a Payment Token and Token Expiry Date to its underlying PAN and PAN Expiry Date based on the Payment Token / Token Expiry Date mapping to the underlying PAN / PAN Expiry Date stored in the Token Vault." **Exhibit 20** at 6. "The Payment Token SHALL be de-tokenised to the underlying PAN in the incoming Token Authorisation prior to sending the PAN Authorisation to the Card Issuer." *Id*., at 91. Detokenizing in response to an incoming token authorization requests requires the token service provider be sent the token authorization. As noted above, the token authorization sent to the TSP contains the payment token wirelessly sent from a LG Pay-equipped smartphone after successful biometric authentication. Authenticating a user via biometrics, as noted above, entails a vendor-specific library on the LG Pay-equipped devices comparing scan data from a sensor to biometric data to determine whether the scan data matches the biometric data.

81. When providing payment for in-app purchases, LG Pay equipped devices wirelessly transmit EMV tokens to merchants as payment.

82. In addition to providing payment information via virtual terminals, LG Pay equipped devices "combin[e] NFC with LG's proprietary MST technologies [to provide] consumers a way to pay almost anywhere you can swipe or tap a card at millions of merchant locations." Tapping a credit card is an example of contactless payment. "In a contactless payment transaction, the consumer holds the contactless card, device, or mobile phone in close proximity (less than 2-4 inches) to the terminal and the payment account information is communicated wirelessly (via radio frequency [RF]) or NFC." **Exhibit 19**, page 39. By utilizing NFC, LG Pay-equipped devices can wirelessly transmit payment information to in-store terminals.

83. After the purchase has been authorized, on information and belief, LG Pay equipped devices receive a push notification with details of [the] transaction after each purchase. As the purchase can only be made after the primary account number mapped to the token was released from the token vault and placed in an authorization request sent to the card issuer, the push notification received indicates allowed access to the file containing the account number. As shown in Figures 6, 7 and 11 of **Exhibit 19**, this confirmation of access is either sent directly from the token service provider or indirectly from the token service provider as one of series messages flowing back to the LG Pay equipped smartphone.

b) Infringement by LG's CCC Digital Key Component(s)

84. LG's wholly owned subsidiary LG Innotek Co., Inc. is a "core" member of the Car Connectivity Consortium (CCC). The CCC consists of over 150 technology companies and automobile manufacturers worldwide. The CCC aims to establish global standards and solutions for smartphone and in-vehicle connectivity. One of the key initiatives of the CCC is the

development of the "Digital Key" standard, which facilitates the use of smartphones as digital keys to access and operate vehicles securely.

85. The Digital Key Release 1.0 specification that was first enacted in 2018 involved tagging a card key or smartphone key in close proximity using NFC. The Digital Key Release 2.0 specification enabled NFC or BLE to send control signals remotely and share a digital key with other drivers. Then, in 2021, the CCC enacted the Digital Key Release 3.0 specification that added location-aware features using NFC, UWB, and BLE to get more accurate locations of smartphone devices.

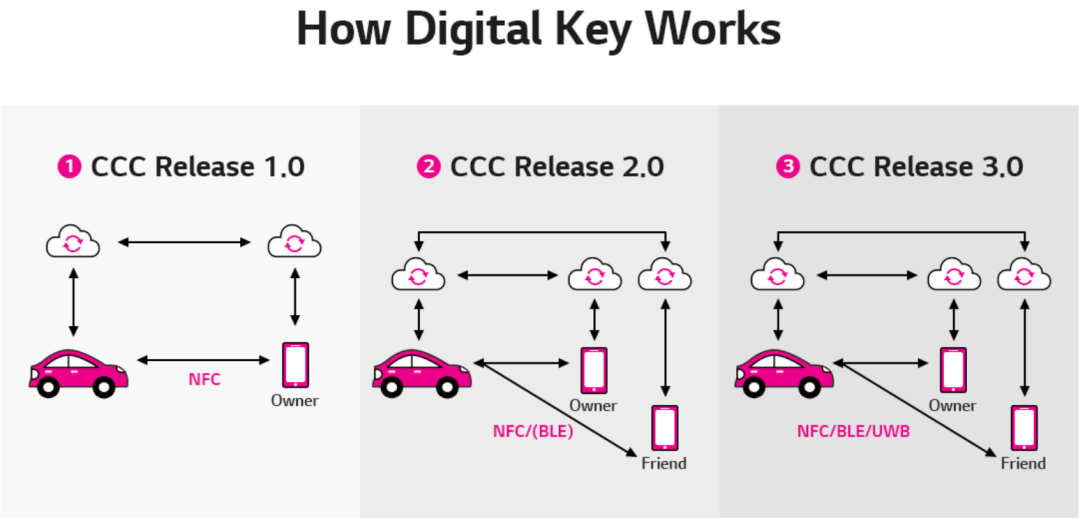
86. LG has summarized the advances in the Digital Key Specification as follows:

Advances in Digital Key Specification

	Smart Key	Digital Key		
		CCC Release 1.0 June 2018	CCC Release 2.0 April 2020	CCC Release 3.0 May 2021
Wireless Communication	LF / RF	NFC	NFC / BLE (Optional)	**NFC / BLE / UWB**
Positioning System	LF	Not Supported	Not Supported	**UWB (ToF)**
Positioning Accuracy	High	-	-	**High**
Security	Low	High	High	**High**
Location-based Services	Available	Unavailable	Unavailable	**Available**
Personalization Services	Unavailable	Available	Available	**Available**
Key Sharing	Physical Key	Remote Share (App)	Remote Share (App)	**Remote Share (App) + Per-user permission (Grant partial access to doors, trunk, etc.)**

Exhibit 21

87. LG also provides the following diagram to illustrate how the Digital Key works in each version of the Specification:



(Source: LG Innotek)

Exhibit 21

88. LG describes that the "digital key was initially a safety and convenience feature for high-end luxury cars but is now becoming available to mainstream vehicles." *Id*. "Market research firm Strategy Analytics predicts that the number of digital key-applied vehicles will increase more than 4.5 times, from 6.3 million in 2020 to 28.9 million in 2025."

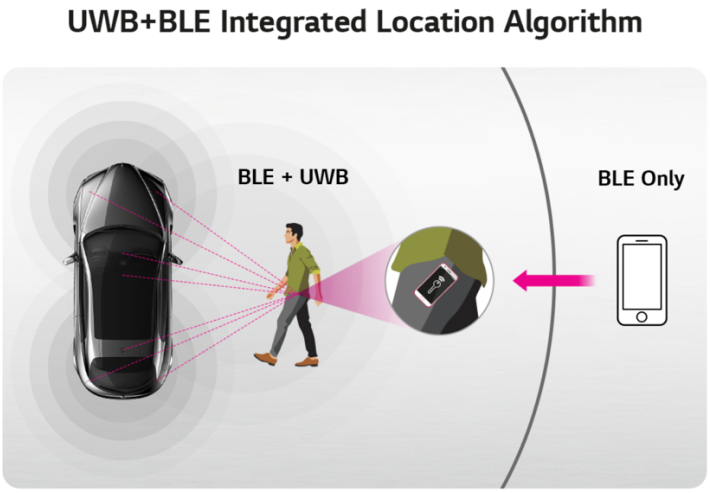


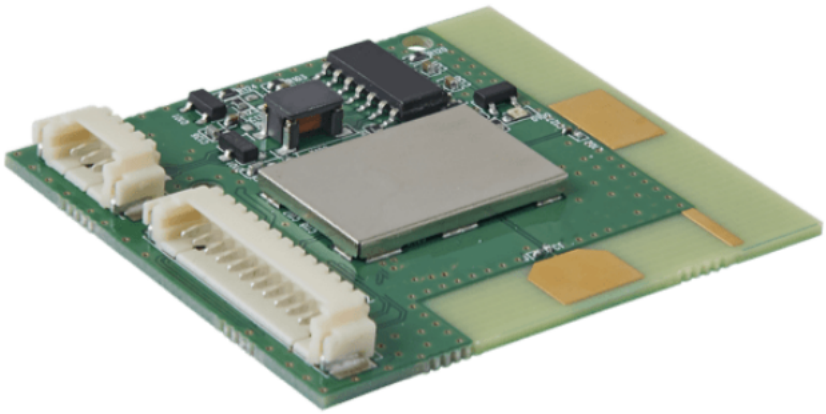
Exhibit 21

89. LG is an active member of the CCC and touts that its Ultra-Small "Digital Key Module" (the "Accused Digital Key System") improves accuracy by five times:

> Essentially, the success of digital-key technology centers on improving positioning accuracy to capture the exact location of smartphone devices. LG Innotek's digital-key module uses UWB/BLE-based high-precision positioning algorithm to reduce the error range significantly (to a matter of centimeters rather than meters), improving its positioning accuracy by five times. For instance, the LG Innotek module can detect the location of a smartphone five meters away within a 10 cm error range, while other modules would have an error range of 50 cm.

Exhibit 21

90. LG describes that the Accused Digital Key System is "paper clip-sized … [and] is packed with over 60 components, such as radio frequency and power block, and can be installed anywhere inside and outside the vehicle." *Id*. A link to the Accused Digital Key System is available at: **Exhibit 22**. A picture of the device as shown on the website is reproduced below:



91. On information and belief, the Accused Digital Key System includes or otherwise interfaces with a cellular/V2X module and a Bluetooth/Wi-Fi module. See e.g. **Exhibit 23**

92. Accordingly, the Accused Digital Key System is adapted for wireless communication within a predefined range (i.e., using UWB and BLE) to establish a link and

send/receive data. The Accused Digital Key System is associated with the user's smartphone and, on information and belief, includes security data to access a particular computing resource (e.g., a vehicle's controls). In particular, the Accused Digital Key System detects the presence of a user's smartphone and establishes a link using UWB and BLE. Signals to the vehicle system for operations like lock/unlock and start are allowed based on the presence of the digital key.

4. LG's Wi-Fi 6 (and Later) Compatible Devices

93. LG develops and manufactures devices, ranging from televisions to laptops, which are compatible with various wireless networking standards. Wi-Fi is a family of wireless network protocols based on the IEEE 802.11 family of standards, which are commonly used for local area networking of devices and Internet access. Wi-Fi 6 is also known as IEEE 802.11ax. Wi-Fi 7 is also known as IEEE 802.11be.

94. The Wi-Fi Alliance is a non-profit organization that owns the Wi-Fi trademark. Manufacturers may use the trademark to brand products certified for Wi-Fi interoperability. It is based in Austin, Texas. Defendant LGE is a member of the Wi-Fi Alliance.

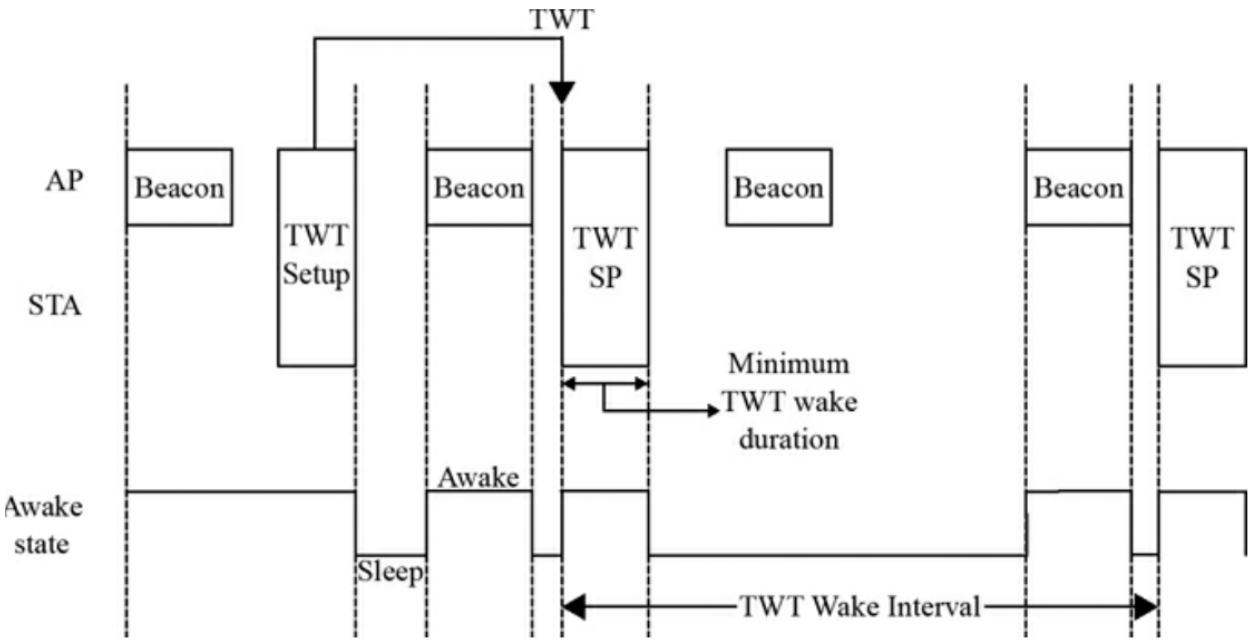
95. In addition to its router-side business, LG has manufactured, used, marketed, sold, offered for sale, and exported from and imported into the United States televisions and laptops utilizing the Wi-Fi 6, Wi-Fi 6E, and/or Wi-Fi 7 wireless standards ("LG's Accused WiFi Products"). Wi-Fi 6 or 6E, also known as IEEE 802.11ax, is an IEEE standard from the Wi-Fi Alliance, of which LG is a member. Wi-Fi 7 is also an IEEE standard, otherwise known as IEEE 802.11be. LG's Accused WiFi Products include its C3 Series OLED evo 4K UHD TVs and its B3 series OLED 4K UHD TVs. LG's Accused WiFi Products further include its entire line of LG gram and LG UltraPC laptops, including but not limited to:

- LG gram 17" Lightweight Laptop (17Z90R-A.AAB7U1, 17Z90R-A.ADB9U1, 17Z90R-K.AAB8U1, 17Z90R-K.ADS9U1, 17ZB90R-K.AAB6U1)
- LG gram 16" Lightweight Laptop (16Z90R-K.ADB9U1, 16Z90SP-A.ADB9U1)
- LG gram 15.6" OLED Laptop (15Z90RT-K.AAB8U1)
- LG gram 14" Lightweight Laptop (14T90R-K.AAB6U1, 14T90R-K.AAB8U1, 14T90R-K.ADB9U1)
- LG gram 16" Ultra-Lightweight Laptop (16Z90P-K.AAS8U1)
- LG gram 16" 2-in-1 Ultra-Lightweight Laptop (16T90P-K.AAB8U1)
- LG gram 17" Ultra-Lightweight Laptop (17Z90S-G.AAB6U1, 17Z90SP-E.AAB6U1)

96. LG's Accused WiFi Products also include its Bluetooth/Wi-Fi Modules, for use in automobiles. See e.g. **Exhibit 22**.

97. LG's devices support Target Wake Time (TWT), which is a feature included in Wi-Fi 6 and later standards (e.g., Wi-Fi 7). TWT is a specific time or set of times for individual stations (STAs), such as a laptop, smartphone, or any internet of things device, to awaken in order to exchange frames with other STAs. A STA has a transceiver cycling between an active, or awake, mode in which power is consumed to exchange information, and a sleep mode in which power is conserved.

98. The operation of TWT is shown in the figure below:



99. As shown above, an access point (AP), such as a Wi-Fi 6 router, sends TWT setup information to a STA transceiver (such as on a laptop, phone, or other device) when to switch from sleep mode to active mode. This information is used to set a timer within the device. When the time goes off, at the beginning of each TWT session or service period (TWT SP), the STA wakes up so it can transmit or receive data.

100. As also seen on the figure, the device transceiver is also active during a beacon period. If no beacon is detected, the wi-fi router may have switched the network's channel. To facilitate reconnecting devices that were asleep during a channel switch, Wi-Fi 6 (and later) is configured such that a STA can efficiently move their activity when the absence of a beacon change is noticed. Accordingly, when a STA connects to a network, it receives a future channel guidance element informing it about the likely future channel if the router changes channels of operation. As such, when the transceiver wakes up, it will monitor the first channel for a beacon. If no beacon is detected, it utilizes future channel guidance to increase the channel number to the

second likely channel. It will then reset its timer and wait for the next expected transmission from the router.

101. With previous wireless standards, devices were either connected or they were not. Wi-Fi 6 (and later) alternates a transceiver between active and sleep modes, which frees up bandwidth and saves power.

102. LG's Accused WiFi Products infringe the 152 Patent in connection with TWT functionality.

103. Proxense has at all times complied with the marking provisions of 35 U.S.C. § 287 with respect to the Patents-in-Suit. On information and belief, any prior assignees and licensees have also complied with the marking provisions of 35 U.S.C. § 287.

CLAIM 1
(Infringement of the 730 Patent)

104. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

105. Proxense has not licensed or otherwise authorized LG to make, use, offer for sale, sell, or important any products that embody the inventions of the 730 Patent.

106. LG infringed at least claims 1, 2, 5, 6, 8, and 9 of the 730 Patent in violation of 35 U.S.C. § 271 with respect to LG Pay with the Accused Products. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

107. For example, LG directly infringed at least claim 1 and 8 of the 730 Patent by making, using (*e.g.*, performing/executing), selling, and/or offering to sell within the United States the software application LG Pay and products including LG Pay. That software performed/executed, and those products provided, a method for verifying a user during authentication of the device.

108. As described *supra*, LG devices with LG Pay persistently stored biometric user data, *e.g.*, a fingerprint and/or iris profile of a user, and codes and other data values comprising a device ID code uniquely identifying the integrated device and a secret decryption value, in a tamper proof format written to a storage element on the integrated device that is unable to be subsequently altered. LG devices may have utilized Fingerprint Hardware Interface Definition Language (HIDL) provided by Android which limits access to, and the ability to alter, biometric data.

109. LG devices with LG Pay safeguarded financial information, *e.g.*, credit card information, with EMV payment tokens as described *supra*. Indeed, LG was among the first to implement EMV payment tokens in digital wallets that hold credentials. On information and belief, the EMV payment tokens utilized by LG Pay uniquely identify the LG device. On further information and belief, the payment tokens were stored in a secure element that is tamper proof. Secure elements are recognized as "a dynamic environment to store data securely, process data securely and perform communication with external entities securely," that "will not allow…unauthorized access." **Exhibit 19**, page 41

110. LG devices with LG Pay also contained a secret decryption value, also called a "private key," which is used for, *inter alia*, decrypting, as specified in Android's keymaster functions, which provide hard-backed cryptography for secure key storage in a secure environment, such as the TEE, described *supra*. The secret decryption value, like the biometric data of the user and plurality of codes and other data values comprising a device idea, is tamper-proof as a result of being securely stored by the LG devices.

111. As described *supra*, LG devices with LG Pay may have utilized biometric data, such as fingerprint and/or retina scan data from a biometric scan, and verified (*e.g.*, authenticated) biometric data of a user. The location of a purchase may have determined how the request for

verification is received (*e.g.*, a push notification received from a merchant's website, an API call from a merchant apps installed on the device, or direct prompt for LG Pay when using NFC (or MST) in stores). When a LG device utilized and verified fingerprint biometric data, for example, scan data is compared with the fingerprint data on the device to determine whether there is a match.

112. After receiving the determination that the scan data matches the biometric data, LG devices with LG Pay wirelessly send one or more codes, including device ID codes, regardless of where the user is shopping. For example, LG devices wirelessly transmitted EMV payment tokens. EMV payment tokens, as detailed *supra*, are values uniquely identifying LG Pay preloaded smartphones provided during card enrollment, and thus are an identified embodiment of device ID codes. The payment tokens may be authenticated by an agent, *e.g.*, a token service provider.

113. LG devices with LG Pay are also responsive to an access message from agents that are a third-party trusted authority, e.g., token service providers which are responsible for, *inter alia*, de-tokenization. These providers also maintain a token vault, which is a "repository that maintains the established Payment Token / Token Expiry Date mapping to the underlying PAN / PAN Expiry Date and includes Payment Token related data." The providers compare the token, which includes one or more codes from a plurality of codes and other data values including a device ID device, wirelessly transmitted by a LG device to the tokens stored in its repository for authenticated.

114. LG devices with LG Pay are further responsive to authentication by the agent, *e.g.*, token service providers, of the one or more codes and the other data values. For example, LG devices with LG Pay "receive a push notification with details of [the] transaction after each purchase," *e.g.*, an access message. The push notification from the agent indicates that the user

has been allowed access to an application, for example, an ATM machine, computer software, a web site and/or a file, *e.g.* which permits payment to occur.

115. LG has induced infringement, and continues to induce infringement, of one or more claims of the 730 Patent under 35 U.S.C. § 271(b), by sellers, resellers and end-user customers who use, make, accept, and/or process payments made using LG Pay via the Accused Products.

116. LG also contributes to infringement by others of one or more claims of the 730 Patent under 35 U.S.C. § 271(c), such as sellers, resellers and end-user customers who directly infringe the 730 Patent when they use, make, accept, and/or process payments made using LG Pay via the Accused Products.

117. LG received actual and constructive notice of the 730 Patent at least as early as August 10, 2016. LG performed acts that constitute direct and/or indirect infringement, with knowledge or willful blindness that the acts would constitute direct and/or indirect infringement of the 730 Patent.

118. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 730 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

119. Upon information and belief, LG will continue to infringe the 730 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 730 Patent by LG.

CLAIM 2
(Infringement of 905 Patent)

120. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

121. Proxense has not licensed or otherwise authorized LG to make, use, offer for sale, sell, or important any products that embody the inventions of the 905 Patent.

122. LG infringed at least claims 1, 4, 5, 7, 9, 10, and 12 of the 905 Patent in violation of 35 U.S.C. § 271 with respect to LG Pay with the Accused Products. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

123. For example, LG directly infringed at least claim 1 of the 905 Patent by making, using (*e.g.*, performing/executing), selling, and/or offering to sell within the United States software applications including, but not limited to, LG Pay and products that come with LG Pay. That software performed/executed, and those products provided, the method of claim 1, for example.

124. As described *supra*, LG devices with LG Pay persistently stored biometric user data, *e.g.*, a fingerprint or retina data, and an ID code, *e.g.*, a device-specific code that uniquely identifies a specific LG device. LG devices may have utilized Fingerprint Hardware Interface Definition Language (HIDL) provided by Android which limits access to, and the ability to alter, biometric data.

125. As for the device specific code, on information and belief, payment tokens are unique for each device, as required by EMV. "LG [was] among the first to implement EMV payment tokens in digital wallets that hold credentials for several payments use cases." **Exhibit 19**, page 12. "EMV payment tokens are open-loop tokens provisioned by a TSP and, like other tokens, are used to replace the actual payment credential (e.g., PAN) with another numeric value." *Id.*, at 8. Payment tokens, accordingly, are issued ("provisioned") to LG Pay preload smartphones in exchange for a credit card number by a token service provider (TSP), such as Visa, MasterCard, Discover, and American Express. *Id.*, at 23 (Figure 5 – identifying Visa, MasterCard, American Express and Discover as Token Service Providers).

126. As described *supra*, LG devices with LG Pay may have received biometric data, such as fingerprint and/or iris-scanning, to verify a user. The location of a purchase may determine how the request for verification is received (*e.g.*, a direct prompt for LG Pay when using NFC (or MST) in stores).

127. By receiving a push notification prompting the user to authenticate by paying with their fingerprint, LG Pay preloaded smartphones therefore received a request for biometric verification. Furthermore, LG devices with LG Pay received scan data from a biometric scan carried out on a biometric sensor in response to receiving a request for biometric verification of a user.

128. When an LG device utilized and authenticated fingerprint biometric data, for example, scan data from the fingerprint sensor of the device, is compared with the existing fingerprint data on the device to determine whether there is a match.

129. After authenticating a user, LG devices with LG Pay wirelessly transmitted one or more codes, including device specific ID code, regardless of where the user is shopping. For example, LG devices wirelessly transmitted EMV payment tokens which contain codes uniquely identifying the LG Pay device provided during card enrollment.

130. LG devices with LG Pay were also responsive to an access message from agents that are a third-party trusted authority, *e.g.*, token service providers which are responsible for, *inter alia*, de-tokenization. These providers also maintain a token vault, which is a "repository that maintains the established Payment Token / Token Expiry Date mapping to the underlying PAN / PAN Expiry Date and includes Payment Token related data." The providers compare the token wirelessly transmitted by the LG device to the tokens stored in its repository, which include previously registered ID codes.

131. After an ID code has been authenticated by a third-party trusted authority, LG devices with LG Pay "receive a push notification with details of [the] transaction after each purchase," *e.g.*, an access message. At this point, whereby the third-party trusted authority has confirmed that it successfully authenticated the token (*e.g.*, including the ID code), the user is allowed to complete a financial transaction.

132. LG has induced infringement of one or more claims of the 905 Patent under 35 U.S.C. § 271(b), by sellers, resellers and end-user customers who use, make, accept, and/or process payments made using LG Pay via the Accused Products.

133. LG also contributes to infringement by others of one or more claims of the 905 Patent under 35 U.S.C. § 271(c), such as sellers, resellers and end-user customers who directly infringe the 905 Patent when they use, make, accept, and/or process payments made using LG Pay via the Accused Products.

134. LG received actual and constructive notice of the 905 Patent on or around August 10, 2016. LG performed acts that constitute direct and/or indirect infringement, with knowledge or willful blindness that the acts would constitute direct and/or indirect infringement of the 905 Patent.

135. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 905 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

136. Upon information and belief, Defendants will continue to infringe the 905 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 905 Patent by Defendants.

CLAIM 3
(Infringement of 989 Patent)

137. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

138. Proxense has not licensed or otherwise authorized LG to make, use, offer for sale, sell, or important any products that embody the inventions of the 989 Patent.

139. LG infringed at least claims 1-6 of the 989 Patent in violation of 35 U.S.C. § 271 with respect to LG Pay with the Accused Products. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

140. For example, LG directly infringed at least claim 1 of the 989 Patent by making, using (*e.g.*, performing/executing), selling, and/or offering to sell within the United States software applications including, but not limited to, LG Pay and products that have LG Pay. That software performed/executed, and those products provided, a method for verifying a user during authentication of a device.

141. As described *supra*, LG devices are approved by EMVCo. "LG [was] among the first to implement EMV payment tokens in digital wallets that hold credentials for several payments use cases." **Exhibit 19**, page 12. "EMV payment tokens are open-loop tokens provisioned by a TSP and, like other tokens, are used to replace the actual payment credential (*e.g.*, PAN) with another numeric value." *Id.*, p. 8. "As a part of provisioning an individual account or PAN, the token service generates a token, maps it to the PAN, and sends it to the token requestor." *Id.*, at page 16. "[T]he TSP acts as a trusted service manager (TSM), delivering the token over the air or over an Internet connection to a device," *e.g.*, LG devices with LG Pay. *Id.*, p. 12. "As a part of provisioning an individual account or PAN, the token service generates a token, maps it to the PAN, and sends it to the token requestor." *Id.*, at page 16. This token,

received by the LG devices, therefore contains an ID code that uniquely identifies the smartphone among a plurality of smartphones.

142. As described *supra*, LG devices with LG Pay persistently stored biometric user data, *e.g.*, a fingerprint or iris profile of a user, and an ID code, *e.g.*, a device-specific code that uniquely identifies a specific LG device. LG devices may have utilized Fingerprint Hardware Interface Definition Language (HIDL) which limits access to, and the ability to alter, biometric data.

143. As for the device specific code, on information and belief, payment tokens are unique for each device, as required by EMV. Payment tokens are issued ("provisioned") to LG devices with LG Pay in exchange for a credit card number by a token service provider (TSP), such as Visa, MasterCard, Discover, and American Express. *Id.*, at 23 (Figure 5 – identifying Visa, MasterCard, American Express and Discover as Token Service Providers).

144. As described *supra*, LG devices with LG Pay have received biometric data, such as fingerprint and retina data, and authenticate such biometric data. The location of the purchase determines the type of verification carried out (*e.g.*, a merchant's website, merchant apps installed on the device, or use of NFC (or MST) that provides a "way to pay almost anywhere you can swipe or tap a card at millions of merchant locations."

145. As part of the authentication, LG devices with LG Pay received scan data from a biometric scan using the smartphone.

146. Where an LG device utilized and authenticated fingerprint biometric data, for example, scan data is compared with the fingerprint data on the device to determine whether there is a match.

147. After authenticating a user (*e.g.*, making a determination that the scan data matches the biometric data), a LG device with LG Pay wirelessly sent one or more codes, including a device specific ID code, regardless of where the user is shopping, to a third-party trusted authority, *e.g.*, token service providers. For example, LG devices wirelessly transmitted EMV payment tokens which contain codes uniquely identifying the LG Pay device provided during card enrollment.

148. Token service providers also maintain a token vault, which is a "repository that maintains the established Payment Token / Token Expiry Date mapping to the underlying PAN / PAN Expiry Date and includes Payment Token related data." The providers compared the token wirelessly transmitted by the LG device to the tokens stored in its repository, which include previously registered ID codes.

149. In response to a purchase having been authorized (e.g., after successful comparison of the token sent by the LG device to the token(s) stored in the repository) by the provider, the transaction is completed and the LG device "receive[s] a push notification with details of [the] transaction after each purchase." The transaction includes either access to an ATM machine or a financial account (e.g., a credit card).

150. LG has induced infringement, and continues to induce infringement, of one or more claims of the 989 Patent under 35 U.S.C. § 271(b), by sellers, resellers and end-user customers who use, make, accept, and/or process payments made using LG Pay via the Accused Products.

151. LG also contributes to infringement by others of one or more claims of the 989 Patent under 35 U.S.C. § 271(c), such as sellers, resellers and end-user customers who directly infringe the 989 Patent when they use, make, accept, and/or process payments made using LG Pay via the Accused Products.

152. LG received constructive notice of the application that led to the 989 Patent at least as early as August 10, 2016 and actual notice of the 989 Patent at least as early as the filing of this Complaint. LG performed acts that constitute direct and/or indirect infringement, with knowledge or willful blindness that the acts would constitute direct and/or indirect infringement of the 989 Patent.

153. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 989 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

154. Upon information and belief, Defendants will continue to infringe the 989 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 989 Patent by Defendants.

CLAIM 4
(INFRINGEMENT OF THE 332 PATENT)

155. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

156. Proxense has not licensed or otherwise authorized LG to make, use, offer for sale, sell, or import any products that embody the inventions of the 332 Patent.

157. Defendants infringe at least claim 12 of the 332 Patent in violation of 35 U.S.C. § 271(a) with respect to LG's Accused Digital Key System. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

158. For example, Defendants directly infringe at least claim 12 of the 332 Patent by making, using, selling, and/or offering to sell LG's Accused Digital Key System within the United States. The Accused Digital Key System is specifically designed to interface with a vehicle's

system, which continuously monitors for the presence of the Accused Digital Key System to detect events such as approaching the vehicle or attempting to unlock/start the vehicle.

159. The Accused Digital Key System is configured to interface with a vehicle that detects the event, such as the approach of a user's phone, using UWB and BLE.

160. The Accused Digital Key System is further configured to determine the presence and proximity of a user's phone using UWB or BLE within a predefined range.

161. Access to vehicle functions is granted based on the security data stored in the digital key and the vehicle's encrypted security setup. The Accused Digital Key System is configured to interface with the vehicle's memory contains setup records for controlling access without storing actual security data.

162. The vehicle further terminates access (e.g., locking doors or disabling the engine) when the digital key moves out of range based on information received from the Accused Digital Key System. The Accused Digital Key System allows customization of security actions, such as seat adjustments or other preferences, with biometric confirmation on a user's phone, such as an LG phone or other phone with a biometric reader (e.g. a fingerprint reader).

163. LG received actual and constructive notice of the 332 Patent at least as early as August 10, 2016. LG performed and continues to perform the acts that constitute direct and/or indirect infringement, with knowledge or willful blindness that the acts would constitute direct and/or indirect infringement of the 332 Patent.

164. Defendants do so knowingly and with intent to commit these infringing acts. Defendants also continue to make, use, offer for sale, sell, and/or import the accused product(s), despite its knowledge of the 332 Patent, thereby specifically intending to infringe the 332 Patent.

165. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 332 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

166. Upon information and belief, LG will continue to infringe the 332 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 332 Patent by LG.

CLAIM 5
(INFRINGEMENT OF THE 456 PATENT)

167. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

168. Proxense has not licensed or otherwise authorized LG to make, use, offer for sale, sell, or import any products that embody the inventions of the 456 Patent.

169. Defendants infringe at least claim 11 of the 456 Patent in violation of 35 U.S.C. § 271(a) with respect to LG's Accused Digital Key System. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

170. For example, Defendants directly infringe at least claim 11 of the 456 Patent by making, using, selling, and/or offering to sell LG's Accused Digital Key System within the United States. The Accused Digital Key System is specifically designed to interface with a vehicle's system, which receives security data to access vehicle functions based on encrypted data stored a user's phone, such as an LG phone or other phone with a biometric reader (e.g. a fingerprint reader).

171. The Accused Digital Key System, as well as a user's phone with which it interfaces, determines how to use the security data stored in the encrypted memory of the vehicle's computing system. This is done with respect to various secured computing resources, including for example

access to certain functionality of vehicles. On information and belief, the Accused Digital Key System and associated phone and vehicles, support various security actions defined by the user.

172. The Accused Digital Key System is configured to interface with a vehicle that allows access to its functions based on the received security data and the predefined security setup.

173. The Accused Digital Key System is further configured to determine the presence and proximity of a user's phone using UWB or BLE within a predefined range.

174. LG received constructive notice of the 456 Patent at least as early as August 10, 2016 and actual notice of the 456 Patent as of the date of this Complaint. LG performed and continues to perform the acts that constitute direct and/or indirect infringement, with knowledge or willful blindness that the acts would constitute direct and/or indirect infringement of the 456 Patent.

175. Defendants do so knowingly and with intent to commit these infringing acts. Defendants also continue to make, use, offer for sale, sell, and/or import the accused product(s), despite its knowledge of the 456 Patent, thereby specifically intending to infringe the 456 Patent.

176. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 456 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

177. Upon information and belief, LG will continue to infringe the 456 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 456 Patent by LG.

CLAIM 6
(INFRINGEMENT OF THE 979 PATENT)

178. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

179. Proxense has not licensed or otherwise authorized LG to make, use, offer for sale, sell, or import any products that embody the inventions of the 979 Patent.

180. Defendants infringe at least claim 12 of the 979 Patent in violation of 35 U.S.C. § 271(a) with respect to LG's Accused Digital Key System. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

181. For example, Defendants directly infringe at least claim 12 of the 979 Patent by making, using, selling, and/or offering to sell LG's Accused Digital Key System within the United States. The Accused Digital Key System is specifically designed to interface with a vehicle's system, which detects the presence of the digital key using UWB or BLE within a predefined range.

182. The Accused Digital Key System enables a vehicle (protected item) to retrieve security setup data corresponding to the detected digital key. On information and belief, the storage utilized by the Accused Digital Key System and/or the phone it is configured to recognize is vault storage.

183. The Accused Digital Key System is configured to utilize the vehicle system to automatically performs actions like unlocking doors or starting the engine based on the presence of the digital key. Access to vehicle functions is allowed based on the successful performance of the specific security actions determined by the security setup data.

184. LG received constructive notice of the 979 Patent at least as early as August 10, 2016 and actual notice of the 979 Patent as of the date of this Complaint. LG performed and continues to perform the acts that constitute direct and/or indirect infringement, with knowledge

or willful blindness that the acts would constitute direct and/or indirect infringement of the 456 Patent.

185. Defendants do so knowingly and with intent to commit these infringing acts. Defendants also continue to make, use, offer for sale, sell, and/or import the accused product(s), despite its knowledge of the 456 Patent, thereby specifically intending to infringe the 979 Patent.

186. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 979 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

187. Upon information and belief, LG will continue to infringe the 979 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 456 Patent by LG.

CLAIM 7
(INFRINGEMENT OF THE 152 PATENT)

188. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

189. Proxense has not licensed or otherwise authorized LG to make, use, offer for sale, sell, or import any products that embody the inventions of the 152 Patent.

190. Defendants infringe at least claims 1 and 7 of the 152 Patent in violation of 35 U.S.C. § 271(a) with respect to LG's Accused WiFi Products. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

191. For example, Defendants directly infringe at least claims 1 and 7 of the 152 Patent by making, using (e.g., performing/executing), selling, and/or offering to sell LG's Accused WiFi Products within the United States. A key feature of the Wi-Fi 6 and later standards is target wake time (TWT), which is a specific time or set of times for individual stations (STAs), such as a

laptop, smartphone, or other device, to awaken in order to exchange frames with other STAs. A STA has a transceiver cycling between an active and a sleep mode. An access point (AP), such as a wireless router, sends TWT setup information to a STA transceiver when to switch from sleep mode to active mode. This information is used to set a timer within the device. When the time goes off, at the beginning of each TWT session or service period (TWT SP), the STA wakes up so it can transmit or receive data. The device transceiver is also active during a beacon period. If no beacon is detected, the wi-fi router may have switched the network's channel. To facilitate reconnecting devices that were asleep during a channel switch, Wi-Fi 6 (and later) is configured such that a STA can efficiently move their activity when the absence of a beacon change is noticed. Accordingly, when a STA connects to a network, it receives a future channel guidance element informing it about the likely future channel if the router changes channels of operation. As such, when the transceiver wakes up, it will monitor the first channel for a beacon. If no beacon is detected, it utilizes future channel guidance to increase the channel number to the second likely channel. It will then reset its timer and wait for the next expected transmission from the router.

192. By virtue of their compatibility with Wi-Fi 6 and later standards, LG's Accused Wi-Fi Products allow for a target wake time (TWT) which is a specific time or set of times for individual stations (STAs) to wake in order to exchange frames with other STAs. Accordingly, LG's Accused Wi-Fi Products have a transceiver cycling between an awake active mode in which power is to exchange information and a sleep mode in which power is conserved.

193. TWT setup information is received by the station (STA) transceiver in LG's Accused Wi-Fi Products utilizing Wi-Fi 6 and beyond, and indicate to the device when to switch from the sleep mode to the active mode. This information is used to set a timer within LG's Accused Wi-Fi Products.

194. When the timer goes, at the beginning of each TWT session period or service period (TWT SP) the STA is expected to wake up so it can transmit or receive data.

195. LG's Accused Wi-Fi Products are also active during a beacon period. If no beacon is detected, the Wi-Fi 6 router may have switched the network's channel. To facilitate reconnecting devices that were asleep for a channel switch, Wi-Fi 6 utilizes so that a STA can efficiently move their activity when the absence of beacon change is noticed. Accordingly, when a STA such as LG's Accused Wi-Fi Products connect to a network, it receives an future channel guidance element informing it about the likely future channel if the sending router changes channels of operation. As such, when the transceiver of the device wakes up, it will monitor the first channel for beacon, as shown in the above, figure. If no beacon is detected, it utilizes future channel guidance to increase the channel number to the second likely channel. It will then reset its timer and wait for the next expected transmission from the router.

196. Defendants received actual notice of the 152 Patent at least as early as the filing of this Complaint. Defendants performed and continue to perform the acts that constitute infringement, with knowledge or willful blindness that the acts would constitute infringement of the 152 Patent.

197. Defendants do so knowingly and with intent to commit these infringing acts. Defendants also continue to make, use, offer for sale, sell, and/or import the accused products, despite its knowledge of the 152 Patent, thereby specifically intending to infringe the 152 Patent.

198. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 152 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

111. Upon information and belief, LG will continue to infringe the 152 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 152 Patent by LG.

5. LG's Induced Infringement of the Patents-in-Suit

199. LG actively induces infringement of the patents-in-suit by taking active steps to encourage direct infringement, despite knowing about the patents-in-suit and that the induced acts would amount to infringement of the patents-in-suit.

a) Induced Direct Infringement of the Patents-in-Suit

CLAIM 8
(Induced Infringement of the 730 Patent)

200. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

201. LG induced direct infringement of at least claims 1, 2, 5, 6, 8 and 9 of the 730 Patent in violation of 35 U.S.C. § 271 by providing the LG Pay App either pre-installed or available for download. For example, LG induces infringement of at least claim 1 and 8 of the 730 Patent by making the software application LG Pay available for use on LG Mobile Phones. When downloaded and installed, the software created an integrated device in accordance with claim 8. When executed by a user for its intended and advertised purpose, the software performed/executed a method in accordance with claim 1. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

202. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 730 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

203. Upon information and belief, Defendants will continue to induce infringement of the 730 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 188 Patent by Defendants.

CLAIM 9
(Induced Direct Infringement of 905 Patent)

204. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

205. LG induced direct infringement of at least claims 1, 4, 5, 7, 9, 10, and 12 of the 905 by providing the LG Pay App either pre-installed or available for download. For example, LG induced infringement of at least claim 1 and 9 of the 905 Patent by making the software application LG Pay available for use on LG Mobile Phones. When downloaded and installed, the software created an integrated device in accordance with claim 9. When executed by a user for its intended and advertised purpose, the software performed/executed a method in accordance with claim 1. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

206. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 905 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

207. Upon information and belief, Defendants will continue to induce infringement of the 905 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 188 Patent by Defendants.

CLAIM 10
(Induced Infringement of 989 Patent)

208. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

209. LG induced direct infringement of at least claims 1-6 of the 989 by providing the LG Pay App either pre-installed or available for download. For example, LG induces infringement of at least claim 1 and 5 of the 989 Patent by making the software application LG Pay available for use on LG Mobile Phones. When downloaded and installed, the software creates smartphone in accordance with claim 5. When executed by a user for its intended and advertised purpose, the software performs/executes a method in accordance with claim 1. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

210. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 989 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

211. Upon information and belief, Defendants will continue to induce infringement of the 989 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 188 Patent by Defendants.

CLAIM 11
(Induced Infringement of 332 Patent)

212. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

213. LG induced direct infringement of at least claim 12 of the 332 Patent by providing the Accused Digital Key System. For example, LG induces infringement of at least claim 12 by making the Accused Digital Key System available for integration into vehicles. When installed, the software creates the system in accordance with the claims of the 332 Patent. When utilized by a user for its intended and advertised purpose, the Accused Digital Key System performs/executes

a method in accordance with claim 12. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

214. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 332 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

215. Upon information and belief, Defendants will continue to induce infringement of the 332 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 332 Patent by Defendants.

CLAIM 12
(Induced Infringement of 456 Patent)

216. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

217. LG induced direct infringement of at least claim 11 of the 456 Patent by providing the Accused Digital Key System. For example, LG induces infringement of at least claim 11 by making the Accused Digital Key System available for integration into vehicles. When installed, the software creates the system in accordance with the claims of the 456 Patent. When utilized by a user for its intended and advertised purpose, the Accused Digital Key System performs/executes a method in accordance with claim 11. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

218. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 456 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

219. Upon information and belief, Defendants will continue to induce infringement of the 456 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 456 Patent by Defendants.

CLAIM 13
(Induced Infringement of 979 Patent)

220. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

221. LG induced direct infringement of at least claim 12 of the 979 Patent by providing the Accused Digital Key System. For example, LG induces infringement of at least claim 12 by making the Accused Digital Key System available for integration into vehicles. When installed, the software creates the system in accordance with the claims of the 979 Patent. When utilized by a user for its intended and advertised purpose, the Accused Digital Key System performs/executes a method in accordance with claim 12. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

222. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 979 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

223. Upon information and belief, Defendants will continue to induce infringement of the 979 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 456 Patent by Defendants.

6. LG Contributed to Infringement of the Patents-in-Suit

224. LG actively contributes to infringement of the patents-in-suit by providing LG Pay to practice the methods and construct the devices of the patents-in-suit, as LG Pay has no substantial non-infringing use, and especially made for such infringement.

CLAIM 14
(Contributory Infringement of the 730 Patent)

225. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

226. LG contributed to direct infringement of at least claims 1, 2, 5, 6, 8 and 9 of the 730 Patent in violation of 35 U.S.C. § 271 by providing the LG Pay App either pre-installed or available for download. For example, LG contributed to infringement of at least claim 1 and 8 of the 730 Patent by making the software application LG Pay available for use on LG Mobile Phones. When downloaded and installed, the software creates an integrated device in accordance with claim 8. When executed by a user for its intended and advertised purpose, the software performs/executes a method in accordance with claim 1. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

227. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 730 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

228. Upon information and belief, Defendants will continue to contribute infringement of the 730 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 188 Patent by Defendants.

CLAIM 15
(Contributory of Infringement of 905 Patent)

229. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

230. LG contributes to direct infringement of at least claims 1, 4, 5, 7, 9, 10, and 12 of the 905 by providing the LG Pay App either pre-installed or available for download. For example, LG contributes to infringement of at least claim 1 and 9 of the 905 Patent by making the software application LG Pay available for use on LG Mobile Phones. When downloaded and installed, the software creates an integrated device in accordance with claim 9. When executed by a user for its intended and advertised purpose, the software performs/executes a method in accordance with claim 1. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

231. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 905 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

232. Upon information and belief, Defendants will continue to contribute to infringement of the 905 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 188 Patent by Defendants.

CLAIM 16
(Contributory of Infringement of 989 Patent)

233. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

234. LG contributes to direct infringement of at least claims 1-6 of the 989 by providing the LG Pay App either pre-installed or available for download. For example, LG contributes to infringement of at least claim 1 and 5 of the 989 Patent by making the software application LG

Pay available for use on LG Mobile Phones. When downloaded and installed, the software creates smartphone in accordance with claim 5. When executed by a user for its intended and advertised purpose, the software performs/executes a method in accordance with claim 1. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

235. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 989 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

236. Upon information and belief, Defendants will continue to contribute to infringement of the 989 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 188 Patent by Defendants.

CLAIM 17
(Contributory of Infringement of 332 Patent)

237. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

238. LG contributes to direct infringement of at least claim 12 of the 332 Patent by providing the LG Accused Digital Key System for integration into a vehicle. When integrated into a vehicle, the Accused Digital Key System creates a system. When utilized by a user for its intended and advertised purpose, the Accused Digital Key System performs/executes a method in accordance with claim 12. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

239. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 332 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

240. Upon information and belief, Defendants will continue to contribute to infringement of the 332 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 332 Patent by Defendants.

CLAIM 18
(Contributory of Infringement of 456 Patent)

241. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

242. LG contributes to direct infringement of at least claim 11 of the 456 Patent by providing the LG Accused Digital Key System for integration into a vehicle. When integrated into a vehicle, the Accused Digital Key System creates a system. When utilized by a user for its intended and advertised purpose, the Accused Digital Key System performs/executes a method in accordance with claim 11. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

243. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 456 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

244. Upon information and belief, Defendants will continue to contribute to infringement of the 456 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 456 Patent by Defendants.

CLAIM 19
(Contributory of Infringement of 979 Patent)

245. Proxense repeats and realleges all preceding paragraphs, as if fully set forth herein.

246. LG contributes to direct infringement of at least claim 12 of the 979 Patent by providing the LG Accused Digital Key System for integration into a vehicle. When integrated into a vehicle, the Accused Digital Key System creates a system. When utilized by a user for its intended and advertised purpose, the Accused Digital Key System performs/executes a method in accordance with claim 12. Proxense contends each limitation is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

247. Proxense has been injured and seeks damages to adequately compensate it for LG's infringement of the 979 Patent. Such damages should be no less than a reasonable royalty under 35 U.S.C. § 284.

248. Upon information and belief, Defendants will continue to contribute to infringement of the 979 Patent unless permanently enjoined by this Court. Pursuant to 35 U.S.C. § 283, Proxense is entitled to a permanent injunction against further infringement of the 979 Patent by Defendants.

DEMAND FOR JURY TRIAL

Plaintiff hereby requests a jury trial of all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for relief against Defendants as follows:

a. Entry of judgment declaring that Defendants infringe one or more claims of each of the Patents-in-Suit;

b. Entry of judgment declaring that Defendants' infringement of the Patents-in-Suit is willful;

c. An order awarding damages sufficient to compensate Plaintiff for Defendants' infringement of the Patents-in-Suit, but in no event less than a reasonable royalty, including supplemental damages post-verdict, together with pre-judgment and post-judgment interest and costs;

d. Enhanced damages pursuant to 35 U.S.C. § 284;

e. Entry of judgment declaring that this case is exceptional and awarding Plaintiff its costs and reasonable attorney fees pursuant to 35 U.S.C. § 285;

f. An accounting for acts of infringement;

g. Such other equitable relief which may be requested and to which the Plaintiff is entitled; and

h. Such other and further relief as the Court deems just and proper.

Dated: May 31, 2024

Respectfully submitted,

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