

Exhibit E to CardWare Inc.'s P.R. 3-1 Disclosure of Asserted Claims and Infringement Contentions
Infringement of U.S. Patent No. 11,328,286

This claim chart is based on publicly available literature. Plaintiff will be seeking internal documentation, including technical documentation such as schematics and datasheets, and source code in discovery and therefore Plaintiff reserves the right to amend or further supplement this claim chart.

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (“Defendants”) directly infringe U.S. Patent No. 11,328,286 (the “’286 patent”)—either literally or under the doctrine of equivalents—by making, using, selling, offering for sale, and/or importing into the United States Samsung Money by SoFi card alone and/or with Samsung Pay-enabled products and/or technology, including Samsung mobile phones and watches, covered by one or more claims of the ’286 patent. Unless otherwise noted, Plaintiff’s allegations include Samsung Money by SoFi card alone and/or with Samsung Pay and all Samsung Pay-enabled products, as well as any products or cards with similar functionality, including as might be contained within Samsung Wallet (collectively, “the ’286 Accused Products”).

Defendants indirectly infringe the ’286 patent by inducing others to infringe and/or by contributing to others’ infringement of the ’286 patent—either literally or under the doctrine of equivalents. Defendants, having actual knowledge of the ’286 patent, actively and knowingly induced and contributed to their customers’ and/or other third parties’ infringement by (1) supplying the ’286 Accused Products; (2) encouraging, aiding, or otherwise causing third parties to import, sell, offer for sale, and use the ’286 Accused Products; and (3) providing information and technical support to customers, including promotional materials, product manuals, brochures, videos, demonstrations, and website materials encouraging customers to purchase the ’286 Accused Products and instructing their customers on how to use the ’286 Accused Products. In addition, Defendants knowingly supply to its customer and/or other third parties the ’286 Accused Products, which products are then used in an infringing manner, and which products are not a staple article of commerce suitable for non-infringing use.

Specifically, for example, Defendants’ and/or end-users’ direct infringement includes (1) using the accused systems by putting the system into service and (2) making the accused systems by combining the elements. To the extent Defendants’ end-users directly infringe, Defendants induce and/or contribute to that infringement as described above.

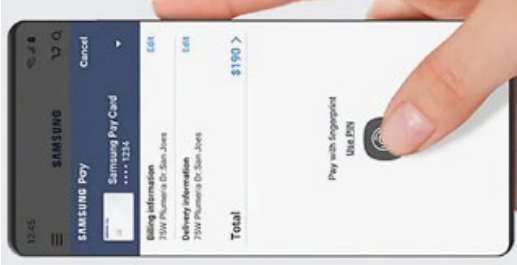
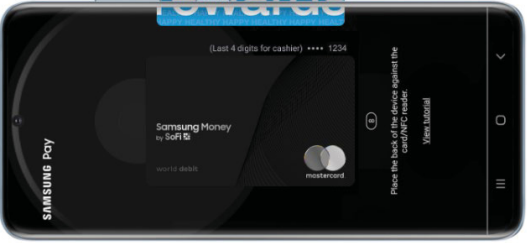
To the extent certain acts or steps constituting part of the infringement are performed by another entity besides Defendants (*e.g.*, a third party payment processor or token service provider), those acts may be attributed to Defendants because Defendants and the other entity, or entities, are acting in a joint enterprise with respect to the infringement, or, in the alternative, Defendants direct or control the other entity or entities’ performance, such as by conditioning their participation in the accused system or method on their performance of certain steps and establishing the manner and/or timing of that performance.

Examples of how the ’286 Accused Products infringe the asserted claims of the ’286 patent are detailed in this claim chart. To the extent any limitation is not literally present, it is present under the doctrine of equivalents. The products included in this claim chart are representative; other ’286 Accused Products function in generally the same manner as one or more of the examples provided herein, and contain generally the same components. Plaintiff reserves its right to amend these contentions under the procedures set forth in P.R. 3-6.

I. Claim 1 and Dependent Claims 2-14

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
1[Pre]: A payment system comprising:	To the extent the preamble is limiting, a Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, meets this limitation based on at least the following information:  One card. Two ways to pay. Sign up to receive a digital card in Samsung Pay and a physical card in the mail. Use your card wherever you are worldwide with Samsung Pay. <i>Samsung Money by SoFi</i>, Samsung, https://www.samsung.com/us/samsung-pay/samsung-money-by-sofi/ (last visited Aug. 29, 2022). A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information:
1[a]: a payment card device free of any fixed payment numbers visible thereon and wherein said payment card device is operable for use in payment card reader equipment; and	

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	 Samsung Knox. The physical debit card will not display the card number, expiration date, or CVC. Should users need that information, they can easily find it within the "Money" tab of the Samsung Pay app, which is further protected by biometric or PIN authentication. Users assume zero liability should an unauthorized transaction occur. <i>Introducing Samsung Money by SoFi: Do More With Your Money</i>, Samsung Newsroom U.S. (May 27, 2020) https://news.samsung.com/us/introducing-samsung-money-samsung-pay-sofi/. Can I use my Samsung Money by SoFi debit card at locations without a chip-enabled terminal? Yes, you can use the magnetic stripe on the physical debit card at merchants and ATMs that don't have chip-enabled terminals. You can also use your digital card at contactless-pay-enabled terminals. How do I use my Samsung Money by SoFi debit card to make purchases at a chip-enabled terminal? Insert the chip end of your debit card into the terminal with the chip facing upwards. Follow the prompts on the terminal screen, and if necessary, either sign or enter your PIN. Keep the card in the terminal until you are prompted to remove it. Otherwise, the transaction will be canceled. <i>Frequently asked questions about Samsung Money by SoFi in Samsung Pay</i>, Samsung, https://www.samsung.com/us/support/answer/ANS00087025/ (last visited Aug. 29, 2022). A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information:
1[b]: a computing device comprising:	

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	 <i>Samsung Pay</i>, Samsung, https://www.samsung.com/us/samsung-pay/ (last visited Aug. 29, 2022); <i>Commonly-asked questions about Samsung Pay</i>, Samsung, https://www.samsung.com/us/support/answer/ANS00080583/ (last visited Aug. 29, 2022). See also Lexy Savvides, <i>Samsung Pay: Everything you need to know (FAQ)</i>, CNET (July 21, 2021 3:00 a.m. PT), https://www.cnet.com/how-to/samsung-pay-everything-you-need-to-know-faq-mobile-wallet/. Samsung Pay just got even better. Samsung Pay is now part of Samsung Wallet. Upgrade to Samsung Wallet now to get all the new features and the simplified app experience. Get Wallet 

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	Before using Samsung Pay Note: Samsung Wallet is available for devices running Android 9 or higher. Here's what you'll need before you can use Samsung Pay: • A compatible Samsung phone or watch • NFC or MST support on your phone or watch • A Samsung account • A supported credit, debit, or gift card from a participating bank, credit union, or vendor • A registered fingerprint or Samsung Pay PIN • Be located in the country of the participating bank, so the bank can verify your card  <i>Set up Samsung Pay on your phone or watch, Samsung, https://www.samsung.com/us/support/answer/ANS00045081/ (last visited Aug. 28, 2022).</i>
1[c]: a processor;	A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: As the name suggests, the Octa-core processor is made up of eight processor cores that power Galaxy smartphones. The processor enables Galaxy smartphones to carry out more advanced tasks such as handling high resolution videos and graphic-heavy games without draining the battery, making the devices capable and efficient. The Octa-core processor also gives Galaxy devices faster load times. *Samsung's Galaxy smartphones run on either Octa-core (2.3GHz Quad + 1.6GHz Quad) or Quad-core (2.15GHz + 1.6GHz Dual) processors, depending on the country or carrier. <i>What is an Octa-core processor?, Samsung, https://www.samsung.com/global/galaxy/what-is/octa-core-processor/ (last visited Aug. 29, 2022).</i>  Smartphone Samsung Exynos processors for smartphone is designed to deliver superior experience with powerful performance, energy efficiency and fast internet connection. Galaxy S22 Ultra Exynos 2200 View all

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	Smartwatch Samsung Exynos Processors specifically designed for smartwatch has realized the ultra-low power consumption in ultra-mini size with ultra-advanced functionalities. Galaxy Watch4 Exynos W920 View all  <i>Showcase</i>, Samsung, https://semiconductor.samsung.com/processor/showcase/?wcmode=disabled (last visited Aug. 29, 2022); <i>Wearable Processor</i>, Samsung, https://semiconductor.samsung.com/processor/wearable-processor/ (last visited Aug. 29, 2022). A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: • built-in storage on Galaxy S20 phones comes in handy with its massive capacities. Galaxy S20 5G offers 128GB storage with 12GB RAM, and the LTE version has 128GB storage with 8GB RAM. Galaxy S20+ 5G offers your choice of 512, 256, or 128GB storage with 12GB RAM, and the LTE version has 128GB storage with 8GB RAM. Then Galaxy S20 Ultra has three choices on built-in storage: 512GB and LTE versions: 512GB storage with 16GB RAM, 256GB with 12GB RAM, or 128GB with 12GB RAM. Even though some models come with storage that rivals most laptops, you can take your memory to the next level with the addition of a microSD card. Adding up to 1TB with expandable memory means your Galaxy S20, S20+, or S20 Ultra can hold up to 1.5TB of memory. That's a lot of photos, videos, and more! <i>What are storage options on Galaxy devices?</i>, Samsung, https://www.samsung.com/global/galaxy/what-is-storage/ (last visited Aug. 29, 2022). Stop apps that are running in the background, so your watch has room to breathe. 1. From your phone, open the Galaxy Wearable app, and then tap About watch or About Gear. Note: On the Galaxy Watch3, tap Watch settings after opening the app. 2. Tap Memory. 3. Deselect the apps you want to keep running, and then tap Clean now.  <i>Keep your Samsung smart watch running in top shape</i>, Samsung, https://www.samsung.com/us/support/answer/ANS00078033/ (last visited Aug. 29, 2022).

Claim No. l[e]: a wireless interface;	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: Wi-Fi is a wireless connection that uses radio frequency signals to connect your devices instead of wires. Meaning you can take your Galaxy into various rooms in your house—even if the router isn't in that room—and still have internet access. It can also be faster than a data connection and is especially useful if you don't have an unlimited data plan. Galaxy S20, S20+, and S20 Ultra support Wi-Fi 802.11 a/b/g/n/ac/ax (2.4/5GHz), VHT80 MU-MIMO, and 1024QAM wireless networking. When connected to Wi-Fi, apps and features on your Galaxy phone that need an internet connection can be used with ease, such as Live Translation and Bixby Vision. Galaxy S20, S20+, and S20 Ultra have strong network capabilities to be able to connect to a diverse range of routers with a quick and stable connection. <i>What is Wi-Fi and what type of network do Galaxy S20, S20+, and S20 Ultra support?</i>, Samsung, https://www.samsung.com/global/galaxy/what-is/network/ (last visited Aug. 29, 2022). Wi-Fi on a watch? Yes, it's possible with your Samsung smart watch. You can sync Wi-Fi profiles from your phone, so your watch will automatically connect to Wi-Fi networks that your phone has used before. With the Remote Connection feature, your watch can sync with your phone over the cloud. All of your watch's functions will be available, except for transferring music and images from your phone. <i>Use Remote connection features on your Samsung smart watch</i>, Samsung, https://www.samsung.com/us/support/answer/ANS00061431/ (last visited Aug. 29, 2022).  <i>Samsung Pay</i>, Samsung, https://www.samsung.com/us/samsung-pay/ (last visited Aug. 29, 2022); <i>Samsung Money by SoFi</i>, Samsung, https://www.samsung.com/us/samsung-pay/samsung-money-by-sofi/ (last visited Aug. 29, 2022).
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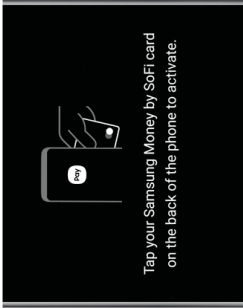
Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device Make a payment using the app
	With Samsung Pay, you can purchase things without digging through your wallet. When you're ready to pay, open Samsung Pay on your phone. Tap Pay, and select your preferred card. Tap PIN or IRIS, and then enter the required security information. Or if you have fingerprint security set up, simply place your finger on your phone's fingerprint scanner. Next, hold the back of the phone up to the contactless reader and perform your desired actions to complete your purchase. Make a payment using a Galaxy watch Samsung Pay can also be used on your Galaxy watch when you'd like to make quick in-store payments. Just make sure you have the Samsung Pay feature set up on your watch before you start making in-store purchases. 1. On your watch, press and hold the Back button to launch Samsung Pay. 2. Then, either rotate the bezel or swipe on the screen to locate your desired card. 3. Next, hold your wrist that's wearing the watch near an NFC reader or payment terminal. If you're having trouble, make sure to place the watch one inch or less from the terminal. <i>Make an in-store payment with Samsung Pay, Samsung, https://www.samsung.com/us/support/answer/ANS00045102/ (last visited Aug. 29, 2022).</i> A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: Touchscreen issues on a Galaxy phone or tablet Your Galaxy phone's or tablet's touchscreen is the main way of navigating your device, so we understand how worrisome it can be when the touch function isn't working properly. However, there are some simple ways to get the touchscreen working again when it's frozen, unresponsive, or acting funny. <i>Touchscreen issues on a Galaxy phone or tablet, Samsung, https://www.samsung.com/us/support/troubleshooting/TSG01213974/ (last visited Aug. 29, 2022).</i>
1[f]: a touch-screen user interface operable to provide a visual user-interface for user payment interactions; and	

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	Samsung smart watch does not turn on when using waking-up gestures Your watch is smart enough to know when to turn itself on and off. You can also manually change these wake-up settings to fit your preferences. However, if certain silent modes are turned on, such as Good night mode, the watch screen may not wake up when the wrist you're wearing the watch on is raised. Please follow the guidelines below to learn how to use wake-up gestures and adjust the feature's settings. <i>Samsung smart watch does not turn on when using waking-up gestures, Samsung, https://www.samsung.com/us/support/troubleshooting/TSG01003202/ (last visited Aug. 29, 2022).</i> A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: Make a payment using the app
1[g]: a user-input device coupled to the processor, and	With Samsung Pay, you can purchase things without digging through your wallet. When you're ready to pay, open Samsung Pay on your phone. Tap Pay, and select your preferred card. Tap PIN or IRIS, and then enter the required security information. Or if you have fingerprint security set up, simply place your finger on your phone's fingerprint scanner. Next, hold the back of the phone up to the contactless reader and perform your desired actions to complete your purchase. Make a payment using a Galaxy watch Samsung Pay can also be used on your Galaxy watch when you'd like to make quick in-store payments. Just make sure you have the Samsung Pay feature set up on your watch before you start making in-store purchases. 1. On your watch, press and hold the Back button to launch Samsung Pay. 2. Then, either rotate the bezel or swipe on the screen to locate your desired card. 3. Next, hold your wrist that's wearing the watch near an NFC reader or payment terminal. If you're having trouble, make sure to place the watch one inch or less from the terminal.

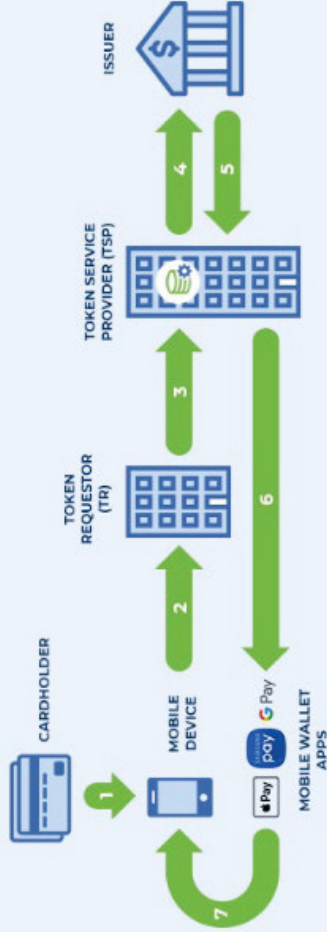
Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device <i>Make an in-store payment with Samsung Pay, Samsung, https://www.samsung.com/us/support/answer/ANS00045102/ (last visited Aug. 29, 2022).</i>
l[h]: wherein the processor is operable to store a transaction sequence count, a device account number and secrets limited to the computing device, and	 Iris scanner  Fingerprint scanner  User authentication Every transaction is authenticated by your fingerprint, PIN or facial recognition. If your phone is lost or stolen, you can remotely lock or erase your Samsung Pay account with Find My Mobile.* <i>Samsung Pay, Samsung, https://www.samsung.com/us/samsung-pay/ (last visited Aug. 29, 2022).</i> A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information. For example, the below explains that the processor is operable to store a digital token (device account number), an application transaction counter, ATC (transaction sequence count) and a secret key (secrets).
	1. How does Samsung Pay work? Each time Samsung Pay is used for a transaction, the Samsung Pay handset sends at least three pieces of information. The first is a digital token that represents the credit or debit card information. The digital token is a surrogate credit or debit card number. The digital token's primary purpose is to route transactions to the correct payment network and to the correct issuer. The second piece of information is the application transaction counter (ATC). The ATC is a counter that is updated for every transaction. Its purpose is to help ensure that the same transaction information cannot be replayed to make multiple purchases. Payment networks use this number to track the sequence of transactions and determine whether an attempted transaction is older than the last one approved or is otherwise out of sequence. If so, it is an indication that something is amiss, and appropriate action can be taken. The third piece of information is the cryptogram. The cryptogram is an authentication code generated using, at a minimum, a secret key, the digital token and the ATC. Cryptograms serve to validate that the transaction information has not been modified and that it was generated by the expected user's handset.

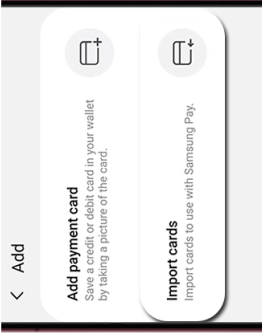
Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	3. How is a cryptogram generated? A cryptogram is generated using at least three pieces of information: the digital token, the application transaction counter (ATC), and a secret key. The cryptogram is designed to appear fully random to anyone that does not have the secret key. This works to prevent a cryptogram from being guessed. The secret key is generated by the payment networks and is protected, end to end, between the payment networks and TrustZone on the device. Only one cryptogram can be generated per explicit user authorization. The cryptograms are used to tie an ATC to a digital token and help to prevent modification of the ATC. This in turn helps to prevent transaction information used for one purchase from being reused for multiple purchases. FAQs, Samsung (Aug. 7, 2016) <i>available at</i> https://security.samsungmobile.com/doc/Press_Guidance_Samsung_Pay.pdf. What is tokenization? Tokenization is a method of protecting payment card information by substituting the card's number with a unique alphanumeric identifier, generated using proprietary algorithms. The unique identifier, or token, is then used for sending the transaction to the card's payment network, where it is decrypted and the transaction is authorized. The actual card number is stored in a secure vault (with the payment processor or bank), and does not reside on the merchant's or Samsung's systems. Tokenization is being used to reduce security risks inherent in the collection and transfer of highly sensitive data between merchants and the card's payment network. Tokenized data is not mathematically reversible, and is useless unless you have the original key used to create the token, limiting the chance of your payment information being stolen or compromised. The transaction is seamless and requires no changes on the part of the merchant or consumer. <i>Commonly-asked questions about Samsung Pay, Samsung,</i> https://www.samsung.com/us/support/answer/ANS00080583/ (last visited Aug. 28, 2022). A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: Card payment information is not visible on a Samsung Money by SoFi card.
l[i]: wherein the computing device is operable to receive, store and transmit a card payment information not visible on the payment card device, and	

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	Samsung Knox. The physical debit card will not display the card number, expiration date, or CVC. Should users need that information, they can easily find it within the "Money" tab of the Samsung Pay app, which is further protected by biometric or PIN authentication. Users assume zero liability should an unauthorized transaction occur. <i>Introducing Samsung Money by SoFi: Do More With Your Money</i>, Samsung (May 27, 2020), https://news.samsung.com/us/introducing-samsung-money-samsung-pay-sofi/. <i>Samsung Money by SoFi</i>, Samsung, https://www.samsung.com/us/samsung-pay/samsung-money-by-sofi/ (last visited Aug. 29, 2022). A Samsung Pay- and/or Samsung Wallet-enabled computing device is operable to receive and store card payment information (e.g., PAN or digital token) connected with (but not visible on) a Samsung Money by SoFi Card. Set up a Samsung Money by SoFi account Setting up a Samsung Money by SoFi account is pretty similar to setting up any other debit or credit account. You'll need to provide some information and then wait to be approved. But it's nowhere near as scary as it sounds. Once you have been approved, you can transfer money from an existing bank account to your new Samsung Money by SoFi account. [...]

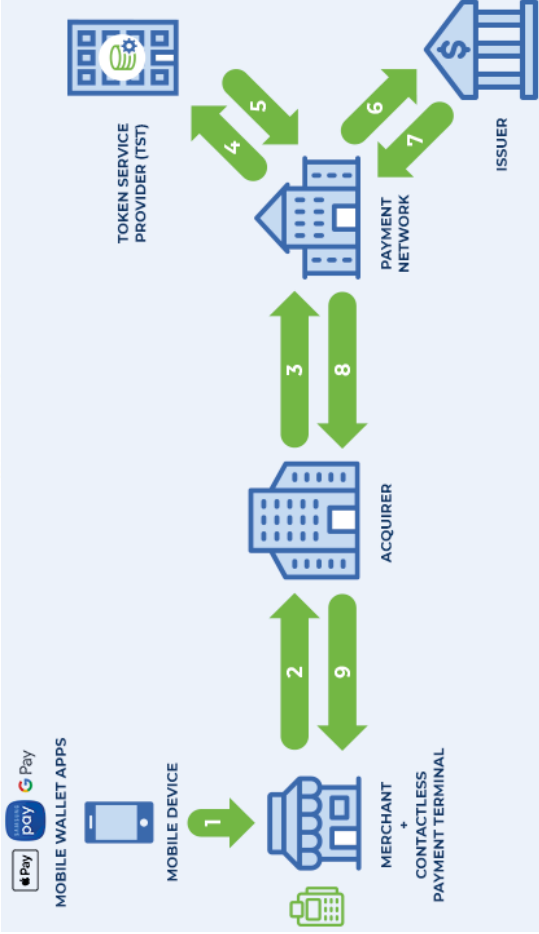
Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	3. Tap your card on the back of the phone to activate. Here are some helpful tips if your phone doesn't register your card: • Remove any covering, like protective cases or card holder pouches, from the back of the phone. • Make sure NFC is turned on. Navigate to and open Settings, and then tap Connections. Tap NFC and payment, and then tap the switch to enable or disable the option. • When tapping, place the upper portion of your phone (the camera area) onto the card's chip. If you have a Galaxy Flip, tap your card towards the bottom of your phone instead.  <i>Set up and use Samsung Money by SoFi in Samsung Pay</i>, Samsung, https://www.samsung.com/us/support/answer/ANS00087024/ (last visited September 8, 2022). 2. What is a token and how is it generated? A digital token is created to represent consumers' payment credentials. By substituting the real card number with a token, Samsung Pay avoids putting the real card numbers at risk of theft and misuse. Like credit and debit card numbers, the purpose of the digital token is to route transactions to the correct payment network and issuer. Samsung Pay does not store credit or debit card numbers. Instead, Samsung Pay uses tokens for transactions. Tokens are generated by the payment network, and not by the Samsung Pay handset. The card issuers and payment networks set the rules and parameters of the tokenization service, conduct account verification and cardholder authorization during the token request stage (when the token is provisioned), and authorize transactions. FAQs, Samsung (Aug. 7, 2016) <i>available at</i> https://security.samsungmobile.com/doc/Press_Guidance_Samsung_Pay.pdf. 3.1 In-Store EMV Contactless Payments with Device-Centric Digital Wallets Apple, Google, and Samsung were among the first to implement EMV payment tokens in digital wallets that hold credentials for several payments use cases. These device-centric digital wallets play the role of a token requestor; they may capture the cardholder's PAN and request that it be replaced with a payment token from a TSP. Tokenization of payment credentials in digital wallets enables issuers to establish a secure presence on a wallet. US Payments Forum, <i>EMV Payment Tokenization Primer and Lessons Learned</i> at 12 (June 2019) <i>available at</i> https://www.uspaymentsforum.org/wp-content/uploads/2019/06/EMV-Payment-Tokenization-Primer-Lessons-Learned-FINAL-June-2019.pdf.

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	5.1.3.2 Token Generation Token Generation is the process of creating a Payment Token and its associated Token Expiry Date and mapping it to a specific underlying PAN, for use by a specific Token Requestor and Token Domain(s), as identified the Token Requestor ID. The Token Service Provider SHALL facilitate the generation of a Payment Token and related data. This may be in response to a Token Request from a registered Token Requestor with a valid Token Requestor ID or an existing Payment Token may be mapped to an underlying PAN in response to a Token Request from a registered Token Requestor with a valid Token Requestor ID. 5.1.3.3 Token Issuance Token Issuance is the process of issuing a Payment Token and related data in preparation for Token Provisioning. The Token Service Provider SHALL manage Token Requests based on the Token Requestor ID. Token Service Providers SHALL manage the issuance of Payment Tokens. Payment Tokens SHALL only be issued through the response to a Token Request from a registered Token Requestor with a valid Token Requestor ID. 5.1.3.4 Token Provisioning Token Provisioning is the process of delivering a Payment Token and related data to the Token Location. Token Provisioning SHOULD be carried out by the Token Service Provider or by other authorised entities on its behalf. The methodologies associated with Token Provisioning may be proprietary to each Token Programme and are outside the scope of this technical framework. EMVCo, <i>EMV® Payment Tokenisation Specification – Technical Framework v2.1</i> at 35–36 (Jun. 14, 2019) available at https://www.emvco.com/emv-technologies/payment-tokenisation/. The process flow below shows how the digital token is generated and how it is received at the Samsung-Pay enabled computing device.

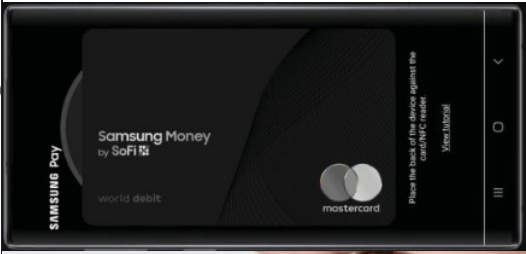
Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	1. The cardholder uses a device that supports the digital wallet application and registers a card, entering the data into the application. 2. The application sends the data to a <i>Token Requestor</i> (TR). 3. The TR sends the data to the <i>Token Service Provider</i> (TSP) with which it is registered and makes a registration request for a new token. 4. The TSP verifies the data with the card issuer. 5. If everything is correct, the TSP registers the PAN and links it to a new token in a secure database (<i>Token Vault</i>). Along with the TR identifier, the token expiration date, and a number of additional security features called <i>Token Domain</i>, including restrictions on the use of the new token on certain channels, use by a particular merchant, limitation on the number of permitted uses, and verification of the cryptogram. 6. The TSP notifies the application of the newly generated token. 7. The application stores the generated token (<i>Device Account Number</i> (DAN) for Apple Pay or Digitized PAN (DPAN) for Samsung Pay) in a secure location (Secure Element (SE) or Host Card Emulation (HCE)).  <i>Mobile payments with digital wallets and tokenization: How Google Pay, Apple Pay and Samsung Pay protect your card details</i>, Advantio (Feb. 22, 2021), https://www.advantio.com/blog/mobile-payments-with-digital-wallets-and-tokenization-how-google-pay-apple-pay-and-samsung-pay-protect-your-card-details. US Payments Forum, <i>EMV Payment Tokenization Primer and Lessons Learned</i> at 8 (June 2019) available at https://www.uspaymentsforum.org/wp-content/uploads/2019/06/EMV-Payment-Tokenization-Primer-Lessons-Learned-FINAL-June-2019.pdf (“typically there is a unique token for each device”); <i>id.</i> at Fig. 5 (showing token provisioning flow); <i>id.</i> at 23 & 25 (referring to Samsung Pay).

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	Import Samsung Pay cards on your Galaxy Watch Importing cards is an easy way to transfer your registered debit or credit cards to Samsung Pay on your smart watch. 1. Open Samsung Pay on your watch by holding the Back key. If you have not set up Samsung Pay on your new watch, follow the on screen prompts to complete the setup. 2. Swipe to and then tap Add card. You'll be directed to use the connected phone for the rest of the process. 3. Tap Import cards on the connected phone, and you'll see a list of cards that can be imported. 4. Select the card that you want to import, and then follow the prompts to finish importing your card.  <i>Import your Samsung Pay cards to a new Samsung smart watch, Samsung, https://www.samsung.com/us/support/answer/ANS00084463/ (last visited Sept. 8, 2022).</i> Source: Internal Testing To the extent a watch's receipt of payment information does not meet this limitation literally, Plaintiff contends that the limitation is met under the doctrine of equivalents because it performs the same function in the same way to achieve the same result (<i>i.e.</i>, as set out above, the phone and watch are designed to be used together for purposes of using Samsung Pay. The watch and phone combined perform the same function (receiving and storing card payment information), in the same way (over a wireless connection) to achieve the same result (setting up a secure environment and receiving specific information from a TSP)). A Samsung Pay- and/or Samsung Wallet-enabled computing device is also operable to transmit (<i>e.g.</i>, by MST or NFC) card payment information (<i>e.g.</i>, PAN or digital token) connected with (but not visible on) a Samsung Money by SoFi Card. Magnetic Secure Transmission, or MST, is an advanced technology that helps power Samsung Pay. It generates a magnetic signal similar to that of a traditional payment card when swiped, providing the added convenience of being able to pay quickly on the go without having to reach for your wallet. It then transmits that magnetic signal from your device to the payment terminal's card reader for further processing. <i>What is MST?</i>, Samsung, https://www.samsung.com/global/galaxy/what-is/mst/ (last visited Sept. 4, 2022).

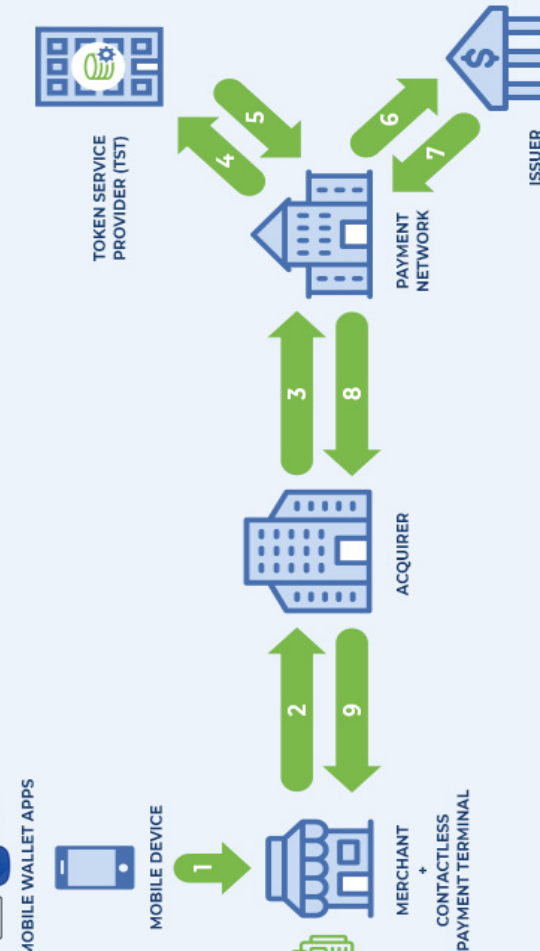
Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	Make a payment using the app  With Samsung Pay, you can purchase things without digging through your wallet. When you're ready to pay, open Samsung Pay on your phone. Tap Pay, and select your preferred card. Tap PIN or IRIS, and then enter the required security information. Or if you have fingerprint security set up, simply place your finger on your phone's fingerprint scanner. Next, hold the back of the phone up to the contactless reader and perform your desired actions to complete your purchase. Make a payment using a Galaxy watch Samsung Pay can also be used on your Galaxy watch when you'd like to make quick in-store payments. Just make sure you have the Samsung Pay feature set up on your watch before you start making in-store purchases.  1. On your watch, press and hold the Back button to launch Samsung Pay. 2. Then, either rotate the bezel or swipe on the screen to locate your desired card. 3. Next, hold your wrist that's wearing the watch near an NFC reader or payment terminal. If you're having trouble, make sure to place the watch one inch or less from the terminal. <i>Make an in-store payment with Samsung Pay, Samsung, https://www.samsung.com/us/support/answer/ANS00045102/ (last visited Aug. 29, 2022).</i>

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	The original PAN of the card is never stored on the end user's device. Instead, the payment token with which subsequent transactions are made is securely stored. Let's walk through this: 1. The cardholder (in this case, the same user of the digital wallet application) makes use of the payment application, presenting the payment token to the merchant from his/her device using any of the following channels: • EMV Contactless: If the Point of Sale (POS) terminal supports contactless payments via NFC (Near Field Communication), the EMV contactless specification is used to perform the data transfer. • Contactless MSD: If the payment terminal does not support contactless payments under the EMV specification, then the device can employ the contactless MSD (magnetic stripe data) mode that emulates a magnetic stripe transaction.  <i>Mobile payments with digital wallets and tokenization: How Google Pay, Apple Pay and Samsung Pay protect your card details</i>, Advantio (Feb. 22, 2021), https://www.advantio.com/blog/mobile-payments-with-digital-wallets-and-tokenization-how-google-pay-apple-pay-and-samsung-pay-protect-your-card-details. A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information:
1[]]: wherein the processor is operable to generate at least a portion of a limited-use card payment information for use by an authenticated card user, and	

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device Specifically, the processor of a Samsung Pay- and/or Samsung Wallet-enabled computing device is operable to generate at least a portion of a limited-use card payment information for use by an authenticated user (e.g., cryptogram). 1. How does Samsung Pay work? Each time Samsung Pay is used for a transaction, the Samsung Pay handset sends at least three pieces of information. The first is a digital token that represents the credit or debit card information. The digital token is a surrogate credit or debit card number. The digital token's primary purpose is to route transactions to the correct payment network and to the correct issuer. The second piece of information is the application transaction counter (ATC). The ATC is a counter that is updated for every transaction. Its purpose is to help ensure that the same transaction information cannot be replayed to make multiple purchases. Payment networks use this number to track the sequence of transactions and determine whether an attempted transaction is older than the last one approved or is otherwise out of sequence. If so, it is an indication that something is amiss, and appropriate action can be taken. The third piece of information is the cryptogram. The cryptogram is an authentication code generated using, at a minimum, a secret key, the digital token and the ATC. Cryptograms serve to validate that the transaction information has not been modified and that it was generated by the expected user's handset. FAQs, Samsung (Aug. 7, 2016) available at https://security.samsungmobile.com/doc/Press_Guidance_Samsung_Pay.pdf. What is tokenization? Tokenization is a method of protecting payment card information by substituting the card's number with a unique alphanumeric identifier, generated using proprietary algorithms. The unique identifier, or token, is then used for sending the transaction to the card's payment network, where it is decrypted and the transaction is authorized. The actual card number is stored in a secure vault (with the payment processor or bank), and does not reside on the merchant's or Samsung's systems. Tokenization is being used to reduce security risks inherent in the collection and transfer of highly sensitive data between merchants and the card's payment network. Tokenized data is not mathematically reversible, and is useless unless you have the original key used to create the token, limiting the chance of your payment information being stolen or compromised. The transaction is seamless and requires no changes on the part of the merchant or consumer. <i>Commonly-asked questions about Samsung Pay, Samsung, https://www.samsung.com/us/support/answer/ANS00080583/ (last visited Aug. 28, 2022).</i> A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: Specifically, the Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, is operable to convey limited-use card payment information via an NFC or MST interface.
	1[k]: wherein the computing device is operable to convey said limited-use card payment information via an interface of the computing device, and

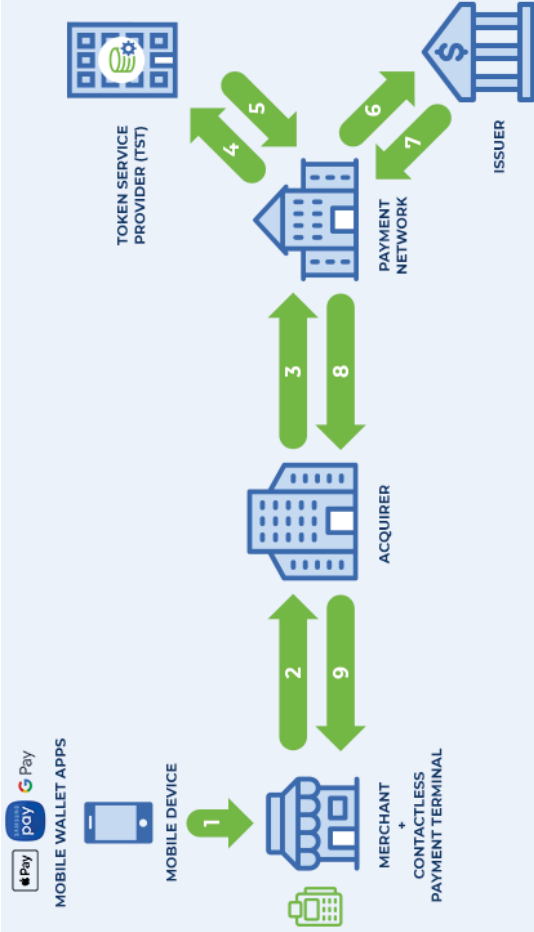
Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	  <i>Samsung Pay</i>, Samsung, https://www.samsung.com/us/samsung-pay/ (last visited Apr. 20, 2022); <i>Samsung Money by SoFi</i>, Samsung, https://www.samsung.com/us/samsung-pay/samsung-money-by-sofi/ (last visited Apr. 20, 2022). Make a payment using the app With Samsung Pay, you can purchase things without digging through your wallet. When you're ready to pay, open Samsung Pay on your phone. Tap Pay, and select your preferred card. Tap PIN or IRIS, and then enter the required security information. Or if you have fingerprint security set up, simply place your finger on your phone's fingerprint scanner. Next, hold the back of the phone up to the contactless reader and perform your desired actions to complete your purchase. 

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device Make a payment using a Galaxy watch Samsung Pay can also be used on your Galaxy watch when you'd like to make quick in-store payments. Just make sure you have the Samsung Pay feature set up on your watch before you start making in-store purchases. 1. On your watch, press and hold the Back button to launch Samsung Pay. 2. Then, either rotate the bezel or swipe on the screen to locate your desired card. 3. Next, hold your wrist that's wearing the watch near an NFC reader or payment terminal. If you're having trouble, make sure to place the watch one inch or less from the terminal.  <i>Make an in-store payment with Samsung Pay, Samsung, https://www.samsung.com/us/support/answer/ANS00045102/ (last visited Apr. 20, 2022); see also Tech With Brett, <i>How to Setup and Use Samsung Pay</i>, YouTube (Oct. 1, 2018), https://youtu.be/zR3xz6GYlzc?t=389; Jessica Dolcourt, <i>How Samsung Pay works (pictures)</i>, CNET (Mar. 3, 2015 8:57 a.m. PT), https://www.cnet.com/pictures/how-samsung-pay-works-pictures/2/.</i> The original PAN of the card is never stored on the end user's device. Instead, the payment token with which subsequent transactions are made is securely stored. Let's walk through this: 1. The cardholder (in this case, the same user of the digital wallet application) makes use of the payment application, presenting the payment token to the merchant from his/her device using any of the following channels: • EMV Contactless: If the Point of Sale (POS) terminal supports contactless payments via NFC (Near Field Communication), the EMV contactless specification is used to perform the data transfer. • Contactless MSD: If the payment terminal does not support contactless payments under the EMV specification, then the device can employ the contactless MSD (magnetic stripe data) mode that emulates a magnetic stripe transaction.
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Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
1[]: wherein a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use,	 The diagram illustrates the payment flow for Samsung Pay using a mobile device. The process involves a Mobile Device, Merchant + Contactless Payment Terminal, Acquirer, Payment Network, and Issuer, with a Token Service Provider (TST) for tokenization. Steps 1-9 show the sequence from payment initiation to settlement. <i>Mobile payments with digital wallets and tokenization: How Google Pay, Apple Pay and Samsung Pay protect your card details</i>, Advantio (Feb. 22, 2021), https://www.advantio.com/blog/mobile-payments-with-digital-wallets-and-tokenization-how-google-pay-apple-pay-and-samsung-pay-protect-your-card-details. A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: For example, a digital token is limited in use Samsung Pay transactions and a cryptogram may only be used for one transaction and cannot be used again.

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	1. How does Samsung Pay work? Each time Samsung Pay is used for a transaction, the Samsung Pay handset sends at least three pieces of information. The first is a digital token that represents the credit or debit card information. The digital token is a surrogate credit or debit card number. The digital token's primary purpose is to route transactions to the correct payment network and to the correct issuer. The second piece of information is the application transaction counter (ATC). The ATC is a counter that is updated for every transaction. Its purpose is to help ensure that the same transaction information cannot be replayed to make multiple purchases. Payment networks use this number to track the sequence of transactions and determine whether an attempted transaction is older than the last one approved or is otherwise out of sequence. If so, it is an indication that something is amiss, and appropriate action can be taken. The third piece of information is the cryptogram. The cryptogram is an authentication code generated using, at a minimum, a secret key, the digital token and the ATC. Cryptograms serve to validate that the transaction information has not been modified and that it was generated by the expected user's handset. 3. How is a cryptogram generated? A cryptogram is generated using at least three pieces of information: the digital token, the application transaction counter (ATC), and a secret key. The cryptogram is designed to appear fully random to anyone that does not have the secret key. This works to prevent a cryptogram from being guessed. The secret key is generated by the payment networks and is protected, end to end, between the payment networks and TrustZone on the device. Only one cryptogram can be generated per explicit user authorization. The cryptograms are used to tie an ATC to a digital token and help to prevent modification of the ATC. This in turn helps to prevent transaction information used for one purchase from being reused for multiple purchases. 4. Is it possible for a hacker to steal a token and make a payment? Samsung Pay uses tokenization to substitute card numbers with tokens provided by payment networks. These tokens cannot be converted back to the original card numbers except by the payment networks, and so stolen tokens have no impact on the underlying cards. The tokens that Samsung Pay receives can also be distinguished from regular credit and debit card numbers by the payment networks. Use of a Samsung Pay token indicates to the payment network that a valid cryptogram is required before the transaction can be processed. Since cryptograms can only be generated using a secret key, and since the secret key is known only to TrustZone and the payment networks, stolen tokens alone cannot be used to make payments. FAQs, Samsung (Aug. 7, 2016) available at https://security.samsungmobile.com/doc/Press_Guidance_Samsung_Pay.pdf.
1[m]: wherein a card issuer authority is operable to validate a card payment information as authentic when received from at least one of: an authenticated users payment card; and an	A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information:

Claim No.	authenticated users computing device, and  One card. Two ways to pay. Sign up to receive a digital card in Samsung Pay and a physical card in the mail. Use your card wherever you are worldwide with Samsung Pay. <i>Samsung Money by SoFi</i>, Samsung, https://www.samsung.com/us/samsung-pay/samsung-money-by-sofi/ (last visited Aug. 29, 2022). Specifically, as discussed below, a card issuer authority (e.g., issuer) validates a card payment information as authentic when from an authenticated user's payment card device. Can I use my Samsung Money by SoFi debit card at locations without a chip-enabled terminal? Yes, you can use the magnetic stripe on the physical debit card at merchants and ATMs that don't have chip-enabled terminals. You can also use your digital card at contactless-pay-enabled terminals. How do I use my Samsung Money by SoFi debit card to make purchases at a chip-enabled terminal? Insert the chip end of your debit card into the terminal with the chip facing upwards. Follow the prompts on the terminal screen, and if necessary, either sign or enter your PIN. Keep the card in the terminal until you are prompted to remove it. Otherwise, the transaction will be canceled. <i>Frequently asked questions about Samsung Money by SoFi in Samsung Pay</i>, Samsung, https://www.samsung.com/us/support/answer/ANS00087025/ (last visited Aug. 29, 2022).
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Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device As shown in the process flow below, a card issuer authority (e.g., TSP or Issuer) validates a card payment information as authentic when from an authenticated user's computing device. - The TSP validates the token, the related cryptogram, the Token Requestor (TR) identifier and the Token Domain usage restrictions. If everything is correct, proceed with de-tokenization and sends the original PAN data to the payment network. - The payment network sends the original PAN data to the sender. - The issuer validates the transaction with the original PAN data and sends the response to the payment network.
	 <i>Mobile payments with digital wallets and tokenization: How Google Pay, Apple Pay and Samsung Pay protect your card details</i>, Advantio (Feb. 22, 2021), https://www.advantio.com/blog/mobile-payments-with-digital-wallets-and-tokenization-how-google-pay-apple-pay-and-samsung-pay-protect-your-card-details. A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information:
1[n]: wherein the card issuer authority is operable to permit the authentic transactions to complete.	

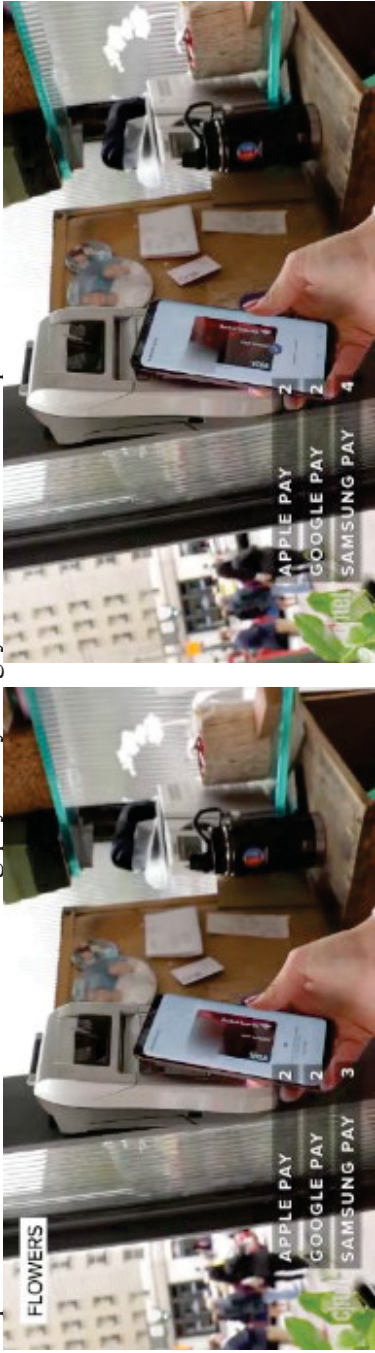
Claim No. Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device



You'll see a transaction notification pop up at the top of the screen.
Lexy Savvides/CNET

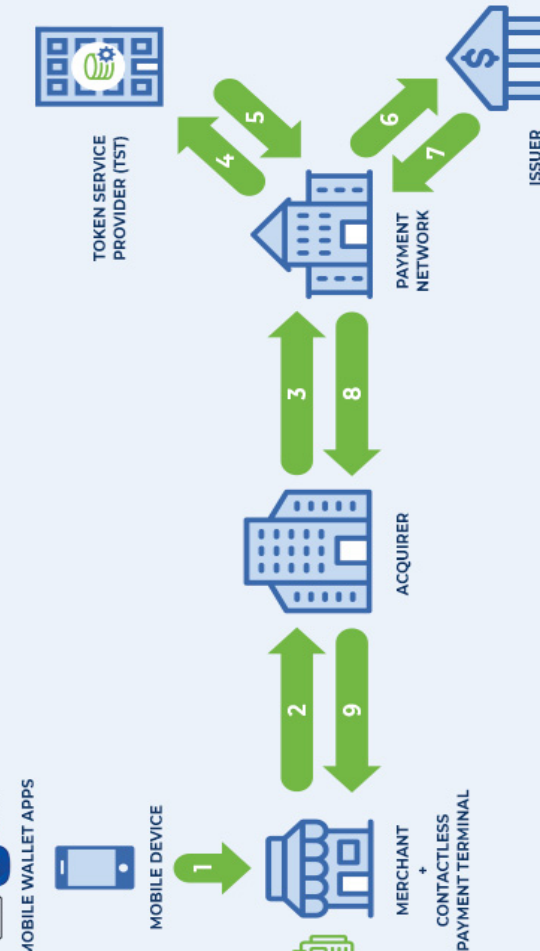
If you're using a debit card through Samsung Pay, you may still need to enter the card PIN on the terminal. Once the payment is made you'll get a notification that confirms the merchant name and the amount. It's also listed in the Samsung Pay app.

Lexy Savvides, *Samsung Pay: Everything you need to know (FAQ)*, CNET (July 21, 2021 3:00 a.m. PT), <https://www.cnet.com/how-to/samsung-pay-everything-you-need-to-know-faq-mobile-wallet/>.



CNET, *Apple Pay vs. Samsung Pay vs. Google Pay: Which is best?*, YouTube (Jun. 12, 2018), https://www.youtube.com/watch?v=LkM_Z3o8T4g.

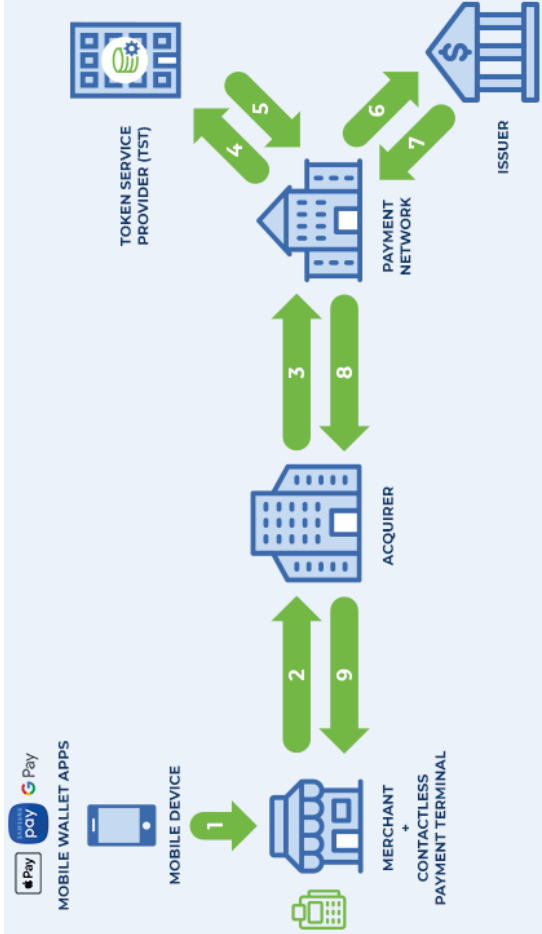
Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	<i>Pay with Samsung Pay on your Gear smartwatch</i>, Samsung, https://www.samsung.com/au/getstarted/advanced/samsungpay-on-gear-smartwatch/ (last visited Aug. 28, 2022). The process flow below shows how the digital token and the cryptogram are used in a payment transaction involving the Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch. 7. The issuer validates the transaction with the original PAN data and sends the response to the payment network. 8. The payment network replaces the original PAN with the payment token initially received and sends it to the acquirer. 9. The acquirer notifies the merchant of the result of the transaction.

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
2: The system of claim 1, wherein the touch-screen user interface is operable to control an access for payment transactions by the card device, and is operable to enable as authentic payment transactions by the card device.	 <i>Mobile payments with digital wallets and tokenization: How Google Pay, Apple Pay and Samsung Pay protect your card details</i>, Advantio (Feb. 22, 2021), https://www.advantio.com/blog/mobile-payments-with-digital-wallets-and-tokenization-how-google-pay-apple-pay-and-samsung-pay-protect-your-card-details. A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: My Samsung Money by SoFi Debit Card has been misplaced, lost, or stolen. What should I do? If you have misplaced or lost your Samsung Money by SoFi debit card or if your card has been stolen, you should go ahead and freeze your card by logging into your Samsung Money by SoFi cash management account, and then follow these steps. This freezes both your digital and physical card. 1. From the Samsung Money by SoFi cash management account dashboard, click the ellipses in the top right corner. 2. Click Debit card. 3. To freeze the debit card, click the button next to Freeze my card. Please note, you can freeze or unfreeze your card at any time. When frozen, your digital and physical card will not process purchases, ATM withdrawals, or any online or in-store transactions that require your card number. <i>Frequently asked questions about Samsung Money by SoFi in Samsung Pay</i>, Samsung, https://www.samsung.com/us/support/answer/ANS00087025/ (last visited Sept. 3, 2022). See Claim 2. Further, the card device is capable of completing NFC payment transactions.
3: The system of claim 1, wherein the touch-screen user interface is operable to control an access of	

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
the card device for payment transactions at an NFC Card Reader facility, and is operable to enable and disable NFC payment transactions by the card device.	Can I use my Samsung Money by SoFi debit card at locations without a chip-enabled terminal? Yes, you can use the magnetic stripe on the physical debit card at merchants and ATMs that don't have chip-enabled terminals. You can also use your digital card at contactless-pay-enabled terminals. <i>Introducing Samsung Money by SoFi: Do More With Your Money</i>, Samsung Newsroom U.S. (May 27, 2020) https://news.samsung.com/us/introducing-samsung-money-samsung-pay-sofi/; <i>Frequently asked questions about Samsung Money by SoFi in Samsung Pay</i>, Samsung, https://www.samsung.com/us/support/answer/ANS00087025/ (last visited Aug. 29, 2022).
4[a]: The system of claim 3, wherein the touch-screen user-interface is configurable for a locking and unlocking of payment transactions, and wherein a card issuer authority is further operable for denying a payment transaction from at least one of: a locked card device; and a locked card-users computing device, and wherein a card issuer authority is further operable to permit as authorized, a card payment transaction from an unlocked device.	See Claim 2. Specifically, the card device or other payment information can be frozen (<i>i.e.</i>, locked) via the touch-screen user-interface of the computing device, meaning that the digital card on the computing device and the physical card will not process payments (<i>i.e.</i>, payments are denied) until the card device is unfrozen (<i>i.e.</i>, unlocked)
5[a]: The system of claim 1, wherein the payment card device is absent a payment number information necessary for completing an online transaction, and	See Claim 1[a]. The card device is absent a payment number necessary for completing an online transaction.
5[b]: wherein the information presented on an interface of said card device, are limited to an in-store merchant card reader facility use only.	A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: The card verification value presented via the magnetic stripe of the Samsung Money by SoFi card (CVV1) and the card verification value presented via the chip of the Samsung Money by SoFi card (CVV3) are limited to an in-store merchant card reader facility use only.

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	Can I use my chip card outside the US? Yes, chip technology is already supported in over 130 countries around the world, including India, Australia, Japan, Canada, and the United Kingdom. Can I use my Samsung Money by SoFi debit card at locations without a chip-enabled terminal? Yes, you can use the magnetic stripe on the physical debit card at merchants and ATMs that don't have chip-enabled terminals. You can also use your digital card at contactless-pay-enabled terminals. <i>Frequently asked questions about Samsung Money by SoFi in Samsung Pay, Samsung, https://www.samsung.com/us/support/answer/ANS00087025/ (last visited Sept. 3, 2022); see Rachel Morey, <i>Shimming Is a New and Serious Threat in The World of Credit Card Fraud</i>, Credit Card Reviews (Apr. 7, 2017), https://www.creditcardreviews.com/blog/shimming-is-a-new-and-serious-threat-in-the-world-of-credit-card-fraud (“The CVV has three versions. CVV1 is the information encoded into the magnetic strip on the card. CVV2 is the three-digit number next to the signature line on the back of the card. CVV3 is the information encoded into the chip on the card.”).</i> See Claim 1[m]. A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: Specifically, a card issuer authority (e.g., the TSP) computes a limited-use payment information (e.g., a cryptogram) from a sequence counter (e.g., the application transaction counter (ATC)), a payment card account information (e.g., digital token), secrets (e.g., secret key) and, on information and belief, a transaction information, a merchant, a facility information, and an information limited to said card device and to said computing device. Plaintiff reserves the right to supplement these contentions following Samsung’s production of technical information including source code.
6[a]: A system of claim 1, wherein: the card issuer authority is operable to receive said transacted payment information, and	
6[b]: wherein a card issuer authority is operable to compute a limited-use payment information from a transaction information, a merchant, a facility information, a sequence counter, a payment card account information, secrets and an information limited to said card device and to said computing device, and	

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	3. How is a cryptogram generated? A cryptogram is generated using at least three pieces of information: the digital token, the application transaction counter (ATC), and a secret key. The cryptogram is designed to appear fully random to anyone that does not have the secret key. This works to prevent a cryptogram from being guessed. The secret key is generated by the payment networks and is protected, end to end, between the payment networks and TrustZone on the device. Only one cryptogram can be generated per explicit user authorization. The cryptograms are used to tie an ATC to a digital token and help to prevent modification of the ATC. This in turn helps to prevent transaction information used for one purchase from being reused for multiple purchases. 4. Is it possible for a hacker to steal a token and make a payment? Samsung Pay uses tokenization to substitute card numbers with tokens provided by payment networks. These tokens cannot be converted back to the original card numbers except by the payment networks, and so stolen tokens have no impact on the underlying cards. The tokens that Samsung Pay receives can also be distinguished from regular credit and debit card numbers by the payment networks. Use of a Samsung Pay token indicates to the payment network that a valid cryptogram is required before the transaction can be processed. Since cryptograms can only be generated using a secret key, and since the secret key is known only to TrustZone and the payment networks, stolen tokens alone cannot be used to make payments. FAQs, Samsung (Aug. 7, 2016) <i>available at</i> https://security.samsungmobile.com/doc/Press_Guidance_Samsung_Pay.pdf.
6[c]: wherein a card issuer authority is operable to compare said computed payment information to said device transacted information, and	A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: Specifically, a card issuer authority (e.g., the TSP) compares the computed payment information (e.g., cryptogram) to said device transacted information (e.g., cryptogram). 1. How does Samsung Pay work? Each time Samsung Pay is used for a transaction, the Samsung Pay handset sends at least three pieces of information. The first is a digital token that represents the credit or debit card information. The digital token is a surrogate credit or debit card number. The digital token's primary purpose is to route transactions to the correct payment network and to the correct issuer. The second piece of information is the application transaction counter (ATC). The ATC is a counter that is updated for every transaction. Its purpose is to help ensure that the same transaction information cannot be replayed to make multiple purchases. Payment networks use this number to track the sequence of transactions and determine whether an attempted transaction is older than the last one approved or is otherwise out of sequence. If so, it is an indication that something is amiss, and appropriate action can be taken. The third piece of information is the cryptogram. The cryptogram is an authentication code generated using, at a minimum, a secret key, the digital token and the ATC. Cryptograms serve to validate that the transaction information has not been modified and that it was generated by the expected user's handset.

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device 3. How is a <u>cryptogram</u> generated? A cryptogram is generated using at least three pieces of information: the digital token, the application transaction counter (ATC), and a secret key. The cryptogram is designed to appear fully random to anyone that does not have the secret key. This works to prevent a cryptogram from being guessed. The secret key is generated by the payment networks and is protected, end to end, between the payment networks and TrustZone on the device. Only one cryptogram can be generated per explicit user authorization. The cryptograms are used to tie an ATC to a digital token and help to prevent modification of the ATC. This in turn helps to prevent transaction information used for one purchase from being reused for multiple purchases. 4. Is it possible for a hacker to steal a token and make a payment? Samsung Pay uses tokenization to substitute card numbers with tokens provided by payment networks. These tokens cannot be converted back to the original card numbers except by the payment networks, and so stolen tokens have no impact on the underlying cards. The tokens that Samsung Pay receives can also be distinguished from regular credit and debit card numbers by the payment networks. Use of a Samsung Pay token indicates to the payment network that a valid cryptogram is required before the transaction can be processed. Since cryptograms can only be generated using a secret key, and since the secret key is known only to TrustZone and the payment networks, stolen tokens alone cannot be used to make payments. FAQs, Samsung (Aug. 7, 2016) <i>available at</i> https://security.samsungmobile.com/doc/Press_Guidance_Samsung_Pay.pdf. As shown in the process flow below, the payment processing authority (e.g., TSP) validates the token and related cryptogram. 5. The TSP validates the token, the related cryptogram, the Token Requestor (TR) identifier and the Token Domain usage restrictions. If everything is correct, proceed with de-tokenization and sends the original PAN data to the payment network. 
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Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	<i>Mobile payments with digital wallets and tokenization: How Google Pay, Apple Pay and Samsung Pay protect your card details</i> , Advantio (Feb. 22, 2021), https://www.advantio.com/blog/mobile-payments-with-digital-wallets-and-tokenization-how-google-pay-apple-pay-and-samsung-pay-protect-your-card-details .
6[d]: wherein a card issuer authority is operable to reject as invalid a device transaction used outside of a valid range of device limitations, and	See Claim 1[I].
6[e]: wherein a card issuer authority is operable to authenticate as valid, a device transaction use within valid range of device limitations.	See Claim 6[c]. Specifically, use of the cryptogram ensures that a transaction is limited to a device, for example because it is generated using a digital token.
7: The system of claim 1, wherein the computing device is further operable to transceive the card payment information via the wireless interface for completing an online transaction.	A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: Make a payment using the app With Samsung Pay, you can purchase things without digging through your wallet. When you're ready to pay, open Samsung Pay on your phone. Tap Pay, and select your preferred card. Tap PIN or IRIS, and then enter the required security information. Or if you have fingerprint security set up, simply place your finger on your phone's fingerprint scanner. Next, hold the back of the phone up to the contactless reader and perform your desired actions to complete your purchase. 

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device Make a payment using a Galaxy watch
	Samsung Pay can also be used on your Galaxy watch when you'd like to make quick in-store payments. Just make sure you have the Samsung Pay feature set up on your watch before you start making in-store purchases.  1. On your watch, press and hold the Back button to launch Samsung Pay. 2. Then, either rotate the bezel or swipe on the screen to locate your desired card. 3. Next, hold your wrist that's wearing the watch near an NFC reader or payment terminal. If you're having trouble, make sure to place the watch one inch or less from the terminal. <i>Make an in-store payment with Samsung Pay, Samsung, https://www.samsung.com/us/support/answer/ANS00045102/ (last visited Apr. 20, 2022);</i> <i>See Claim 7.</i>
8: The system of claim 1, wherein the computing device is further operable to transceive the limited-use card payment information via an NFC interface of the computing device in an in-store NFC reader facility transaction.	
9: The system of claim 1, wherein the computing device is further operable to transceive the limited-use payment information wirelessly with another device via a wireless interface of the computing device, in a device-to-device transaction.	A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: Specifically, the computing device (<i>e.g.</i>, a Samsung Pay- and/or Samsung Wallet-enabled computing device) is operable to transceive limited-use payment information (<i>e.g.</i>, cryptogram) wirelessly with another device (<i>e.g.</i>, a Mobee-wave-enabled device) via a wireless interface of the computing device (<i>e.g.</i>, NFC), in a device-to-device transaction.

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device Samsung Electronics today announced that in partnership with Mobeewave, a pioneer in contactless mobile card payment acceptance, the company will deploy NFC-enabled contactless payment acceptance on mobile devices worldwide starting October 15, 2019. Over the past several months, the two companies have worked together on a pilot in Canada, testing Samsung POS a secure, mobile-based, Point Of Sale (POS) solution. Samsung POS enables merchants to accept debit and credit payments by tapping contactless cards, Samsung Pay, Apple Pay, and Google Pay wallets onto Samsung NFC-enabled devices – without dongles, cables or other additional hardware. The pilot generated over 10,000 downloads of Samsung POS, driven by transactions micro-merchants and small businesses in a variety of industries looking to grow their revenue by accepting card payments. Merchants who want to accept mobile payments can easily download the Samsung POS app from the Galaxy Store or Google Play Store and go through a simple sign-up process within the app to register as a merchant. Samsung also provides simple payment solutions for consumers through the Samsung Pay digital wallet, enabling them to pay with their device in Samsung Pay launched countries. Samsung POS now allows the company to provide a frictionless and cost-effective POS solution to businesses. <i>Samsung and Mobeewave Partner to Deploy mPOS Payments Worldwide, Samsung Newsroom (Oct. 15, 2019), https://news.samsung.com/global/samsung-and-mobeewave-partner-to-deploy-mpos-payments-worldwide.</i>
10: The system of claim 1, wherein the computing device is further operable to transmit a payment information visually, in alphanumeric, graphical and iconography via the touch screen user interface.	A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information:    <i>Samsung Pay, Samsung, https://www.samsung.com/us/samsung-pay/ (last visited Sept. 4, 2022).</i>

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	Make a payment using the app With Samsung Pay, you can purchase things without digging through your wallet. When you're ready to pay, open Samsung Pay on your phone. Tap Pay, and select your preferred card. Tap PIN or IRIS, and then enter the required security information. Or if you have fingerprint security set up, simply place your finger on your phone's fingerprint scanner. Next, hold the back of the phone up to the contactless reader and perform your desired actions to complete your purchase. Make a payment using Favorite Cards If you have the Favorite Cards feature activated on your phone, you can access your cards even faster.   1. To make a payment with your Favorite Cards, swipe up from the bottom of the screen. Then, swipe through and select your preferred card. 2. Select your preferred card. Tap Pay, and then choose your desired security option, such as entering your PIN or fingerprints. 3. Enter the required security information or simply place your finger on your phone's fingerprint scanner. 4. Next, hold the back of the phone up to the contactless reader and perform your desired actions to complete your purchase. Make a payment using a Galaxy watch Samsung Pay can also be used on your Galaxy watch when you'd like to make quick in-store payments. Just make sure you have the Samsung Pay feature set up on your watch before you start making in-store purchases.  1. On your watch, press and hold the Back button to launch Samsung Pay. 2. Then, either rotate the bezel or swipe on the screen to locate your desired card. 3. Next, hold your wrist that's wearing the watch near an NFC reader or payment terminal. If you're having trouble, make sure to place the watch one inch or less from the terminal.

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device <i>Make an in-store payment with Samsung Pay, Samsung, https://www.samsung.com/us/support/answer/ANS00045102/ (last visited Aug. 28, 2022).</i> A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: Make a payment using the app With Samsung Pay, you can purchase things without digging through your wallet. When you're ready to pay, open Samsung Pay on your phone. Tap Pay, and select your preferred card. Tap PIN or IRIS, and then enter the required security information. Or if you have fingerprint security set up, simply place your finger on your phone's fingerprint scanner. Next, hold the back of the phone up to the contactless reader and perform your desired actions to complete your purchase. Make a payment using a Galaxy watch Samsung Pay can also be used on your Galaxy watch when you'd like to make quick in-store payments. Just make sure you have the Samsung Pay feature set up on your watch before you start making in-store purchases. 1. On your watch, press and hold the Back button to launch Samsung Pay. 2. Then, either rotate the bezel or swipe on the screen to locate your desired card. 3. Next, hold your wrist that's wearing the watch near an NFC reader or payment terminal. If you're having trouble, make sure to place the watch one inch or less from the terminal. <i>Make an in-store payment with Samsung Pay, Samsung, https://www.samsung.com/us/support/answer/ANS00045102/ (last visited Aug. 28, 2022).</i> <i>See Claim 1[m].</i>
11[a]: The system of claim 1, further comprising a touch-screen user interface control for a user approving and denying a transaction, and	 
11[b]: wherein a card issuer authority is further operable to deny as authentic, a card payment transaction from a user-denied transaction, and to approve as authentic a card payment	

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
transaction from a user-approved transaction. 12: The system of claim 1, wherein the computing device is further operable to present at least one challenge, of a set of security challenges comprising: a card user personal information question, a card issuer authority security question, a user touch-screen entry, a user touch-screen swipe, a user gesture of a device, a user passcode entry, a biometric sensing of a user touch, a biometric sensing of a recognized user proximity, and a biometric sensing of a recognized device is wherein the computing device is operable to reject and accept a user authorization to use the device based on the security challenge response, and wherein the computing device is operable to decline performing a payment transaction in the possession of an unauthorized user, and wherein the computing device is operable to perform a payment transaction while in the possession of a user correctly passing the at least one challenge.	A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: The challenges are, for example, a user touch-screen entry (e.g., freezing the Samsung Money card), a user passcode entry (i.e., PIN entry), a biometric sensing of a user touch (i.e., fingerprint scanner), a biometric sensing of a recognized user proximity (i.e., iris scanner), and a biometric sensing of a recognized user (i.e., facial recognition). Performance of the payment transaction depends on the result of the challenge. My Samsung Money by SoFi Debit Card has been misplaced, lost, or stolen. What should I do? If you have misplaced or lost your Samsung Money by SoFi debit card or if your card has been stolen, you should go ahead and freeze your card by logging into your Samsung Money by SoFi cash management account, and then follow these steps. This freezes both your digital and physical card. 1. From the Samsung Money by SoFi cash management account dashboard, click the ellipses in the top right corner. 2. Click Debit card. 3. To freeze the debit card, click the button next to Freeze my card. Please note, you can freeze or unfreeze your card at any time. When frozen, your digital and physical card will not process purchases, ATM withdrawals, or any online or in-store transactions that require your card number. <i>Frequently asked questions about Samsung Money by SoFi in Samsung Pay, Samsung, https://www.samsung.com/us/support/answer/ANS00087025/ (last visited Sept. 3, 2022).</i> Get an extra layer of security. With Samsung Pay, each transaction is covered by your bank's fraud protection and authenticated by your fingerprint, PIN or iris scan. Plus, Samsung Knox and tokenization add extra layers of security.   Iris scanner Fingerprint scanner User authentication Every transaction is authenticated by your fingerprint, PIN or facial recognition. If your phone is lost or stolen, you can remotely lock or erase your Samsung Pay account with Find My Mobile.*

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device <i>Samsung Pay</i> , Samsung, https://www.samsung.com/us/samsung-pay/ (last visited Aug. 28, 2022).
	8 Set up Samsung Pay. Once Samsung Pay is installed, add a payment card or import a card you previously added. If you're prompted to create a watch PIN, do so. Samsung Pay will not work without a PIN set as a security measure. Cannot connect <i>Samsung Pay</i> to <i>Samsung smartwatch</i>, Samsung, https://www.samsung.com/us/support/troubleshooting/TSG01003065/ (last visited Aug. 28, 2022).
13: The user computing device of claim 12, wherein a payment issuing authority is operable to decline transactions performed by the computing device when a user fails the at least one security challenge.	See Claim 2.
14: The system of claim 1, wherein a payment issuing authority is operable to decline transactions performed by the payment card device when a user fails at least one security challenge presented to a user by the computing device.	See Claim 2.

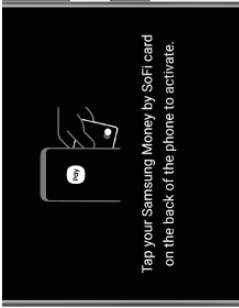
II. Claim 15 and Dependent Claims 16-19

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
15[pre]: A payment system comprising:	See Claim 1[Pre].
15[a]: a payment card device that is free of any fixed payment numbers disposed thereon and wherein said payment card device is operable for use in a merchant card-reader equipment; and	See Claim 1[a].

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
15[b]: a card-users personal computing device operable for completing a payment transaction and comprising:	See Claim 1[b].
15[c]: a processor;	See Claim 1[c].
15[d]: a touch-screen display interface;	See Claim 1[f].
15[e]: a user-interface;	See Claim 1[g].
15[f]: a wireless interface; and	See Claim 1[e].
15[g]: a memory for storing a payment information accessible to the processor,	See Claim 1[d].
15[h]: wherein the computing device is configured to dynamically generate limited-use payment information, and	A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: 1. How does Samsung Pay work? Each time Samsung Pay is used for a transaction, the Samsung Pay handset sends at least three pieces of information. The first is a digital token that represents the credit or debit card information. The digital token is a surrogate credit or debit card number. The digital token's primary purpose is to route transactions to the correct payment network and to the correct issuer. The second piece of information is the application transaction counter (ATC). The ATC is a counter that is updated for every transaction. Its purpose is to help ensure that the same transaction information cannot be replayed to make multiple purchases. Payment networks use this number to track the sequence of transactions and determine whether an attempted transaction is older than the last one approved or is otherwise out of sequence. If so, it is an indication that something is amiss, and appropriate action can be taken. The third piece of information is the cryptogram. The cryptogram is an authentication code generated using, at a minimum, a secret key, the digital token and the ATC. Cryptograms serve to validate that the transaction information has not been modified and that it was generated by the expected user's handset. FAQs, Samsung (Aug. 7, 2016) <i>available at</i> https://security.samsungmobile.com/doc/Press_Guidance_Samsung_Pay.pdf.

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	What is tokenization? Tokenization is a method of protecting payment card information by substituting the card's number with a unique alphanumeric identifier, generated using proprietary algorithms. The unique identifier, or token, is then used for sending the transaction to the card's payment network, where it is encrypted and the transaction is authorized. The actual card number is stored in a secure vault (with the payment processor or bank), and does not reside on the merchant's or Samsung's systems. Tokenization is being used to reduce security risks inherent in the collection and transfer of highly sensitive data between merchants and the card's payment network. Tokenized data is not mathematically reversible, and is useless unless you have the original key used to create the token, limiting the chance of your payment information being stolen or compromised. The transaction is seamless and requires no changes on the part of the merchant or consumer. <i>Commonly-asked questions about Samsung Pay, Samsung,</i> https://www.samsung.com/us/support/answer/ANS00080583/ (last visited Aug. 28, 2022).
15[j]: wherein the computing device is configured to convey the limited-use payment information on a computing device interface upon the authorization of a valid user, and	See Claim 1[k].
15[j]: wherein a merchant is operable to receive a payment information provided by a personal computing device, and	See Claim 1[k].
15[k]: wherein the limited-use payment information provided by at least one or both of: the payment card device, and the computing device, is validated by a card issuing authority when used in merchant in-store facility transactions, and	See Claim 1[m].
15[l]: wherein a card issuing authority is operable to reject as invalid, a payment information used outside of its valid limitations of use, and	See Claim 1[l].

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
15[m]: wherein a card issuing authority is operable to validate generated limited-use payment information provided by the computing device in an authorized transaction completed by the computing device.	<i>See</i> Claim 6[b], 6[c].
16[a]: The system of claim 15, wherein the touch-screen user interface is operable for displaying the limited-use payment information, and wherein a merchant is operable to accept the displayed payment card information in a transaction at a merchant facility.	<i>See</i> Claim 10. On information and belief, the touch-screen user interface displays the last 4 digits of the digital token for use by the cashier (<i>i.e.</i> , at a merchant facility), which is limited in use to transactions using the computing device. Plaintiff reserves the right to supplement these contentions following Samsung's production of technical information including source code.
17[a]: The system of claim 15, wherein the touch-screen display interface is operable to display a merchant facility transaction, and	<i>See</i> Claim 11[a].
17[b]: wherein the touch-screen display interface is operable to accept a user approval and denial of a payment transaction, and	<i>See</i> Claim 11[a].
17[c]: wherein a card issuer authority is further operable to deny a card payment transaction from a user-denied merchant facility transaction, and to approve as authentic a card payment transaction from a user-approved facility transaction.	<i>See</i> Claim 11[b].
18[a]: The system of claim 15, wherein a plurality of issuer-provided payment information is wirelessly downloaded into the personal computing device, and	A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: Specifically, when a user taps the card device (<i>e.g.</i> , a Samsung Money by SoFi card) on the back of a personal computing device (<i>e.g.</i> , a Samsung Pay- and/or Samsung Wallet-enabled computing device) to activate the

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	card device, issuer provided payment information is wirelessly downloaded into the computing device via the wireless interface (e.g., NFC). 3. Tap your card on the back of the phone to activate. Here are some helpful tips if your phone doesn't register your card: • Remove any covering, like protective cases or card holder pouches, from the back of the phone. • Make sure NFC is turned on. Navigate to and open Settings, and then tap Connections. Tap NFC and payment, and then tap the switch to enable or disable the option. • When tapping, place the upper portion of your phone (the camera area) onto the card's chip. If you have a Galaxy Flip, tap your card towards the bottom of your phone instead.  Got more questions about your SoFi Debit card? Check out the Frequently asked questions! <i>Set up and use Samsung Money by SoFi in Samsung Pay, Samsung, https://www.samsung.com/us/support/answer/ANS00087024/ (last visited Sept. 8, 2022).</i> See Claim 1[a].
18[b]: wherein the user-interface is operable for a user selection, of at least one of issuer-provided payment methods via the touch-screen display interface, and	
18[c]: wherein the payment card device is operable for a transaction with a user-selected payment method.	See Claims 1[Pre], 1[a].
19: The card device of claim 15, wherein the payment card device comprises fixed payment information disposed thereon, and wherein the fixed payment information comprises only: a card-holder name; a payment	See Claim 1[a]. The Samsung Money by SoFi card bears the card-holder name (e.g., David Smith), a payment issuing logo (e.g., Samsung, SoFi, or Bancorp Bank), a card payment network logo (e.g., MasterCard), and a card reader interface icon (e.g., the EMVCo contactless indicator). The Samsung Money by SoFi card is free of any account numbers, expiration dates, card security codes, or other fixed payment numbers.

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
issuing logo; a card payment network logo, and a card reader interface icon, and wherein the payment card device is free of any account numbers, expiration dates, card security codes, or other fixed payment numbers, disposed thereon.	

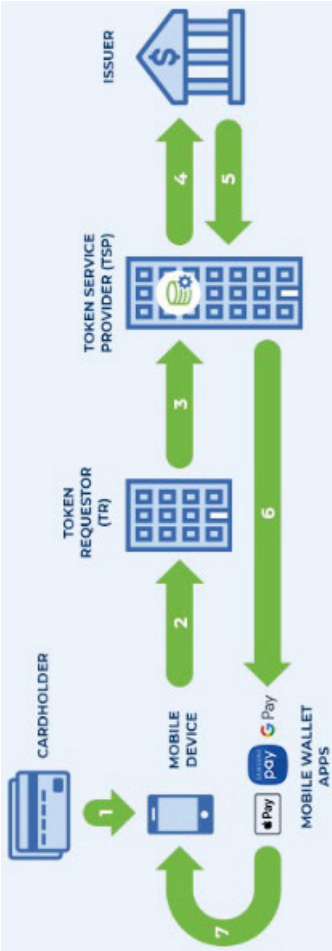
III. Claim 20 and Dependent Claims 21-27

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
20[pre]: A payment system comprising:	See Claim 1[Pre].
20[a]: a payment card device, free of any depictions of fixed payment numbers thereon, and operable for use in payment card reader equipment; and	See Claim 1[a].
20[b]: a computing device comprising:	See Claim 1[b].
20[c]: a processor;	See Claim 1[c].
20[d]: a memory;	See Claim 1[d].
20[e]: a wireless interface;	See Claim 1[e].
20[f]: a touch-screen user interface operable to provide a visual user-interface for user payment interactions; and	See Claim 1[f].
20[g]: a user-input device coupled to the processor, and	See Claim 1[g].

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
20[h]: wherein the memory is operable to store a transaction sequence count, a static device account number and secrets limited to the computing device;	See Claim 1[h].
20[i]: wherein the computing device is operable to receive, store, display and transmit issuer-provided payment information, associated with, but not depicted on, the payment card device;	See Claim 1[i].
20[j]: wherein the processor is operable to dynamically generate at least a portion of a limited-use payment information for use by an authenticated card user, and to combine said limited-use payment information with at least said static device account number to create combined payment information;	See Claim 15[h].
20[k]: wherein the computing device is operable to convey said combined payment information via an interface disposed of the computing device; and	See Claim 1[k].
20[l]: wherein the computing device is operable to receive information, from an issuer, in response to the conveyed combined payment information, indicating that a payment transaction is valid.	See Claim 1[n].

Claim No. 21: The system of claim 20 wherein the computing device is operable to wirelessly receive the static device account number.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information: 2. What is a token and how is it generated? A digital token is created to represent consumers' payment credentials. By substituting the real card number with a token, Samsung Pay avoids putting the real card numbers at risk of theft and misuse. Like credit and debit card numbers, the purpose of the digital token is to route transactions to the correct payment network and issuer. Samsung Pay does not store credit or debit card numbers. Instead, Samsung Pay uses tokens for transactions. Tokens are generated by the payment network, and not by the Samsung Pay handset. The card issuers and payment networks set the rules and parameters of the tokenization service, conduct account verification and cardholder authorization during the token request stage (when the token is provisioned), and authorize transactions. FAQs, Samsung (Aug. 7, 2016) <i>available at</i> https://security.samsungmobile.com/doc/Press_Guidance_Samsung_Pay.pdf. The discussion below shows how the Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, is operable to wirelessly receive the digital token. 3.1 In-Store EMV Contactless Payments with Device-Centric Digital Wallets Apple, Google, and Samsung were among the first to implement EMV payment tokens in digital wallets that hold credentials for several payments use cases. These device-centric digital wallets play the role of a token requestor; they may capture the cardholder's PAN and request that it be replaced with a payment token from a TSP. Tokenization of payment credentials in digital wallets enables issuers to establish a secure presence on a wallet. US Payments Forum, <i>EMV Payment Tokenization Primer and Lessons Learned</i> at 12 (June 2019) <i>available at</i> https://www.uspaymentsforum.org/wp-content/uploads/2019/06/EMV-Payment-Tokenization-Primer-Lessons-Learned-FINAL-June-2019.pdf.
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Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	5.1.3.2 Token Generation Token Generation is the process of creating a Payment Token and its associated Token Expiry Date and mapping it to a specific underlying PAN, for use by a specific Token Requestor and Token Domain(s), as identified the Token Requestor ID. The Token Service Provider SHALL facilitate the generation of a Payment Token and related data. This may be in response to a Token Request from a registered Token Requestor with a valid Token Requestor ID or an existing Payment Token may be mapped to an underlying PAN in response to a Token Request from a registered Token Requestor with a valid Token Requestor ID. 5.1.3.3 Token Issuance Token Issuance is the process of issuing a Payment Token and related data in preparation for Token Provisioning. The Token Service Provider SHALL manage Token Requests based on the Token Requestor ID. Token Service Providers SHALL manage the issuance of Payment Tokens. Payment Tokens SHALL only be issued through the response to a Token Request from a registered Token Requestor with a valid Token Requestor ID. 5.1.3.4 Token Provisioning Token Provisioning is the process of delivering a Payment Token and related data to the Token Location. Token Provisioning SHOULD be carried out by the Token Service Provider or by other authorised entities on its behalf. The methodologies associated with Token Provisioning may be proprietary to each Token Programme and are outside the scope of this technical framework. Tokenisation Specification – Technical Framework v2.1 at 35–36 (Jun. 14, 2019) available at https://www.emvco.com/emv-technologies/payment-tokenisation/. EMVCo, EMV® Payment

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
	1. The cardholder uses a device that supports the digital wallet application and registers a card, entering the data into the application. 2. The application sends the data to a <i>Token Requestor</i> (TR). 3. The TR sends the data to the <i>Token Service Provider</i> (TSP) with which it is registered and makes a registration request for a new token. 4. The TSP verifies the data with the card issuer. 5. If everything is correct, the TSP registers the PAN and links it to a new token in a secure database (<i>Token Vault</i>). Along with the TR identifier, the token expiration date, and a number of additional security features called <i>Token Domain</i>, including restrictions on the use of the new token on certain channels, use by a particular merchant, limitation on the number of permitted uses, and verification of the cryptogram. 6. The TSP notifies the application of the newly generated token. 7. The application stores the generated token (<i>Device Account Number</i> (DAN) for Apple Pay or Digitized PAN (DPAN) for Samsung Pay) in a secure location (Secure Element (SE) or Host Card Emulation (HCE)).  <i>Mobile payments with digital wallets and tokenization: How Google Pay, Apple Pay and Samsung Pay protect your card details</i>, Advantio (Feb. 22, 2021), https://www.advantio.com/blog/mobile-payments-with-digital-wallets-and-tokenization-how-google-pay-apple-pay-and-samsung-pay-protect-your-card-details. A Samsung Money by SoFi card with a Samsung Pay- and/or Samsung Wallet-enabled computing device, such as a phone or watch, meets this limitation based on at least the following information:
22: The system of claim 20, wherein the processor is operable to dynamically generate the at least a portion of a limited-use	

Claim No.	Samsung Money by SoFi card with a Samsung Pay and/or Samsung Wallet-enabled computing device
payment information based on a transaction sequence counter count, and further wherein the generated limited-use payment information is valid for a single use.	3. How is a cryptogram generated? A cryptogram is generated using at least three pieces of information: the digital token, the application transaction counter (ATC), and a secret key. The cryptogram is designed to appear fully random to anyone that does not have the secret key. This works to prevent a cryptogram from being guessed. The secret key is generated by the payment networks and is protected, end to end, between the payment networks and TrustZone on the device. Only one cryptogram can be generated per explicit user authorization. The cryptograms are used to tie an ATC to a digital token and help to prevent modification of the ATC. This in turn helps to prevent transaction information used for one purchase from being reused for multiple purchases. FAQs, Samsung (Aug. 7, 2016) <i>available at</i> https://security.samsungmobile.com/doc/Press_Guidance_Samsung_Pay.pdf.
23: The system of claim 22 wherein the processor is operable to dynamically generate the at least a portion of a limited-use payment information further based on payment processing authority secrets.	See Claim 22. The cryptogram is further generated using payment processing authority secrets (<i>i.e.</i> , the secret key).
24: The system of claim 23 wherein the processor is operable to dynamically generate the at least a portion of a limited-use payment information further based on the static device account number.	See Claim 22. The cryptogram is further generated using the static device account number (<i>i.e.</i> , the digital token).
25: The system of claim 24 wherein the computing device is operable to wirelessly receive the static device account number.	See Claim 21.
26: The system of claim 22 wherein the processor is operable to dynamically generate the at least a portion of a limited-use payment information further based on the static device account number.	See Claim 24.
27: The system of claim 26 wherein the computing device is	See Claim 21.

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operable to wirelessly receive the static device account number.	