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

MOBILEPAY LLC, Plaintiff v. **PAYPAL, INC.,** Defendant	**Case No. 6:18-cv-287** **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff MobilePay LLC ("Plaintiff' or "MobilePay") hereby asserts the following claims for patent infringement against Defendant PayPal, Inc. ("Defendant" or "PayPal"), and alleges, on information and belief, as follows:

THE PARTIES

1. MobilePay is a limited liability company organized and existing under the laws of the Texas with its principal place of business at 17330 Preston Road, Ste 200, Dallas, Texas 75252.

2. Defendant is a Delaware corporation with its principal place of business located at 2211 North First Street, San Jose, California, 95121.

JURISDICTION AND VENUE

3. This action arises under the patent laws of the United States, 35 U.S.C. § 1, *et seq*. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

4. Defendant has committed acts of infringement in this judicial district.

5. Defendant has a regular and established place of business in this judicial district at 7700 West Parmer Lane, Building D, Suite 300, Austin, Texas 78729.

6. On information and belief, the Court has personal jurisdiction over Defendant because Defendant has committed, and continues to commit, acts of infringement in the state of Texas, has conducted business in the state of Texas, and/or has engaged in continuous and systematic activities in the state of Texas.

7. On information and belief, Defendant's instrumentalities that are alleged herein to infringe were and continue to be used, imported, offered for sale, and/or sold in the Western District of Texas.

8. Venue is proper in the Western District of Texas pursuant to 28 U.S.C. § 11400(b).

PAYPAL

9. Upon information and belief, Defendant PayPal makes, uses, imports, sells, and/or offers for sale the PayPal Mobile Card Reader. The PayPal Mobile Card Reader is described by the PayPal website (www.paypal.com) and is exemplified by the following references:

- "PayPal Mobile Card Reader - PayPal Here - US" ("**Mobile Card Reader**"), *available at* https://us.paypal-here.com/paypal-mobile-card-reader/ (last accessed September 18, 2018);

- "EFM32 Tiny Gecko Series 1 Family EFM32TG11 Family Data Sheet ("**EFM32**"), Preliminary Rev. 0.5, *available at* https://www.silabs.com/documents/public/data-sheets/efm32tg11-datasheet.pdf (last accessed September 18, 2018);

- "audio - How does the phone detect if 3.5 mm jack circuit is closed? - Electrical Engineering Stack Exchange" ("**3.5 mm jack circuit**"), *available at* https://electronics.stackexchange.com/questions/95575/how-does-the-phone-detect-if-3-5-mm-jack-circuit-is-closed (last accessed September 18, 2018);

- "My PayPal Here Card Reader is not working. Can you help me?" ("**Card Reader**"), *available at* https://www.paypal.com/us/smarthelp/article/my-paypal-here-card-reader-is-not-working.-can-you-help-me-faq3429 (last accessed September 18, 2018);

- "PayPal Here - POS, Credit Card Reader - Apps on Google Play" ("**PayPal Here**"), *available at* https://play.google.com/store/apps/details?id=com.paypal.here&hl=en_US (last accessed September 18, 2018);

- Mobile Point of Scam: Attacking the Square Reader" ("**Blackhat**"), *available at* https://www.blackhat.com/docs/us-15/materials/us-15-Mellen-Mobile-Point-Of-Scam-Attacking-The-Square-Reader-wp.pdf (last accessed September 18, 2018); and
- "PayPal Security: Email confirmations, Encryption and other protections" ("**PayPal Security**"), *available at* https://www.paypal.com/us/webapps/mpp/security/security-protections (last accessed September 18, 2018).

COUNT I
(Infringement of U.S. Patent No. 9,800,706)

10. Plaintiff incorporates paragraphs 1-9 herein by reference.

11. Plaintiff is the owner, by assignment, of U.S. Patent No. 9,800,706 (the "'706 Patent"), entitled ELECTRONIC DEVICE INPUT/OUTPUT SYSTEM AND METHOD, which issued on October 24, 2017. A copy of the '706 Patent is attached as **Exhibit A**.

12. The '706 Patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code.

13. Upon information and belief, Defendant has infringed and continues to infringe one or more claims, including Claim 1, of the '706 Patent by making, using, importing, selling, and/or, offering for sale the PayPal Mobile Card Reader. Defendant has infringed and continues to infringe the '706 Patent either directly or through the acts of contributory infringement or inducement in violation of 35 U.S.C. § 271. Defendant has been on notice of the '706 Patent at least as early as the date it received service of this complaint.

14. Defendant sells, offers to sell, and/or uses the PayPal Mobile Card Reader, and any similar products, which infringe at least Claim 1 of the '706 Patent. The PayPal Mobile Card Reader is designed to connect to and work with a mobile device. (collectively "**the MCR System**").

15. Claim 1 of the '706 Patent recites:

> 1. A system for coupling a credit card reader to a mobile device, the system comprising:

a hardware component that connects to the mobile device and the credit card reader, the hardware component including:

a first mechanism configured to receive data provided by the credit card reader;

a communication controller for buffering the data received from the credit card reader prior to conversion by a first circuit;

the first circuit configured to convert the data to an analog audio signal;

a connector to couple the hardware component to an audio input port of the mobile device, wherein:

the connector bridges a microphone pin of the audio input port such that the mobile device detects a presence of the connector in the audio input port; and

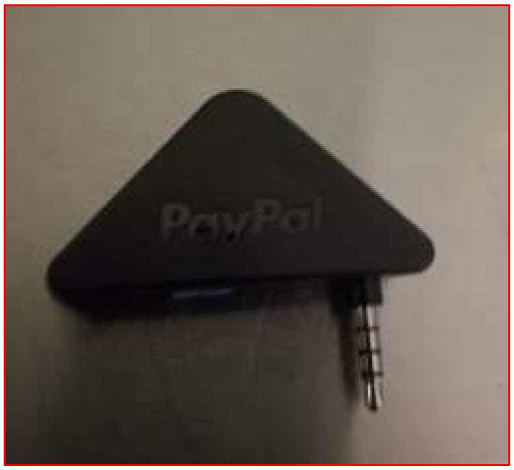
the connector provides an audio communication between the hardware component and the mobile device and communicates the analog audio signal from the hardware component to the mobile device;

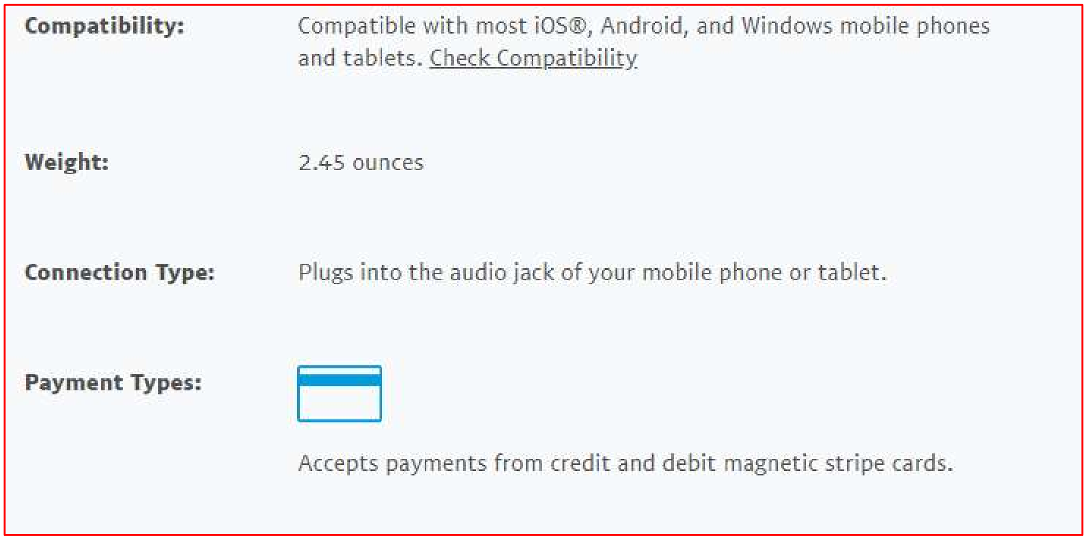
a second mechanism on the mobile device configured to receive the analog audio signal and convert the analog audio signal into binary data; and

a third mechanism on the mobile device configured to upload the binary data to a cloud service for decoding.

16. The MCR System is a system for coupling a credit card reader to a mobile device. *See*, e.g., **Mobile Card Reader**. An example is illustrated below:

PayPal Here.

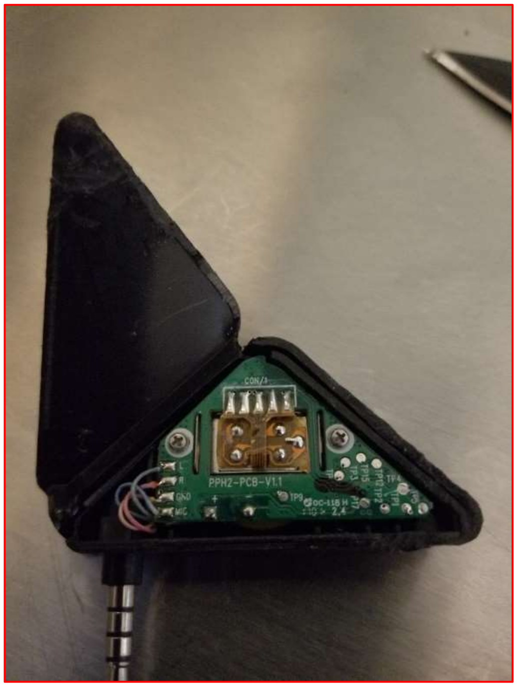




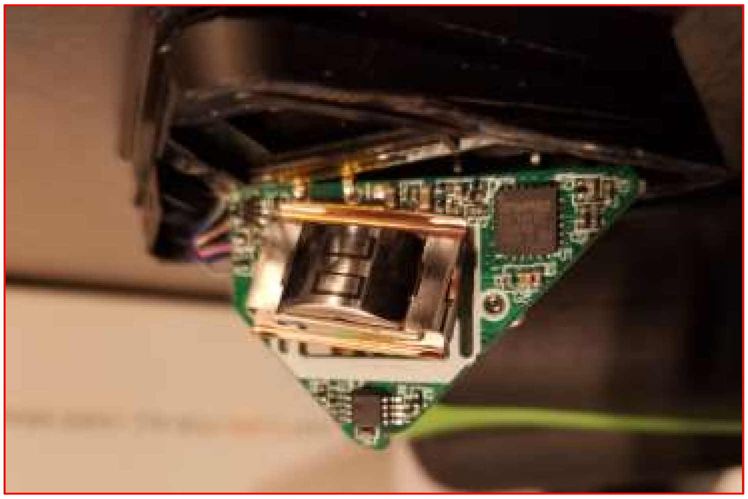
Compatibility:	Compatible with most iOS®, Android, and Windows mobile phones and tablets. Check Compatibility
Weight:	2.45 ounces
Connection Type:	Plugs into the audio jack of your mobile phone or tablet.
Payment Types:	▭ Accepts payments from credit and debit magnetic stripe cards.

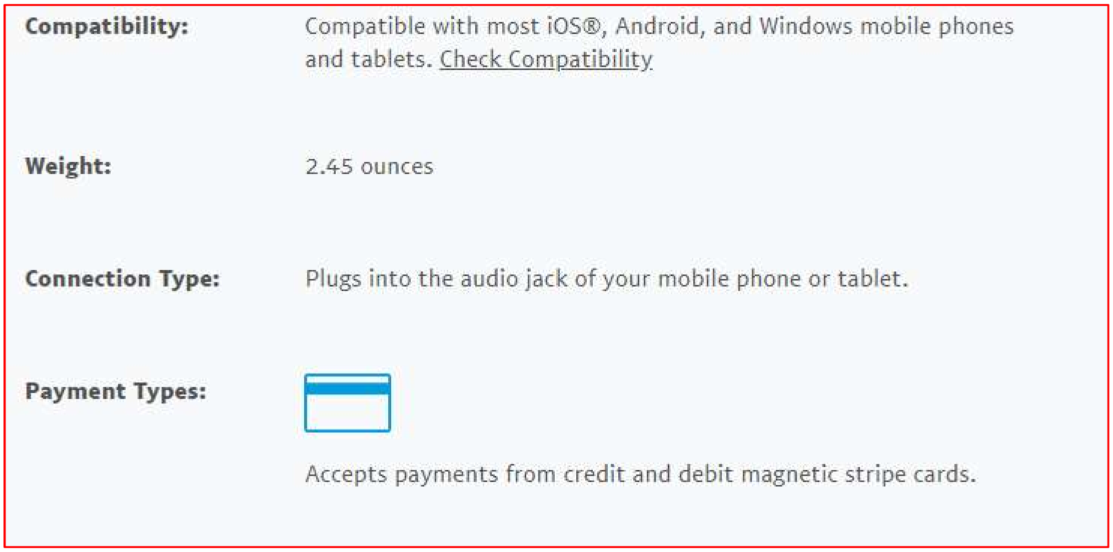
Mobile Card Reader.

17. The MCR System is a hardware component that connects to a mobile device and a credit card reader. An example is illustrated below:



18. The MCR System includes a first mechanism configured to receive data provided by the credit card reader. *See*, e.g., **Mobile Card Reader**. An example is illustrated below:

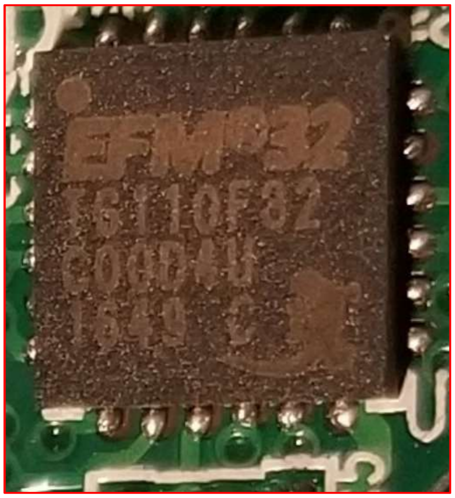


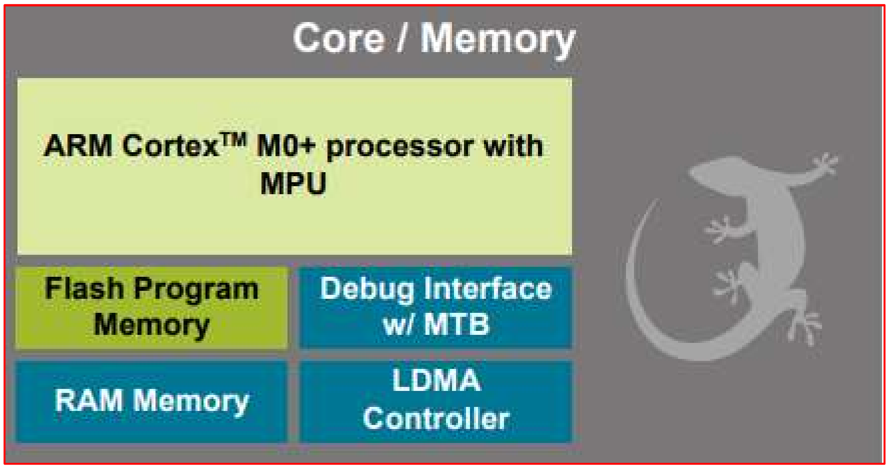


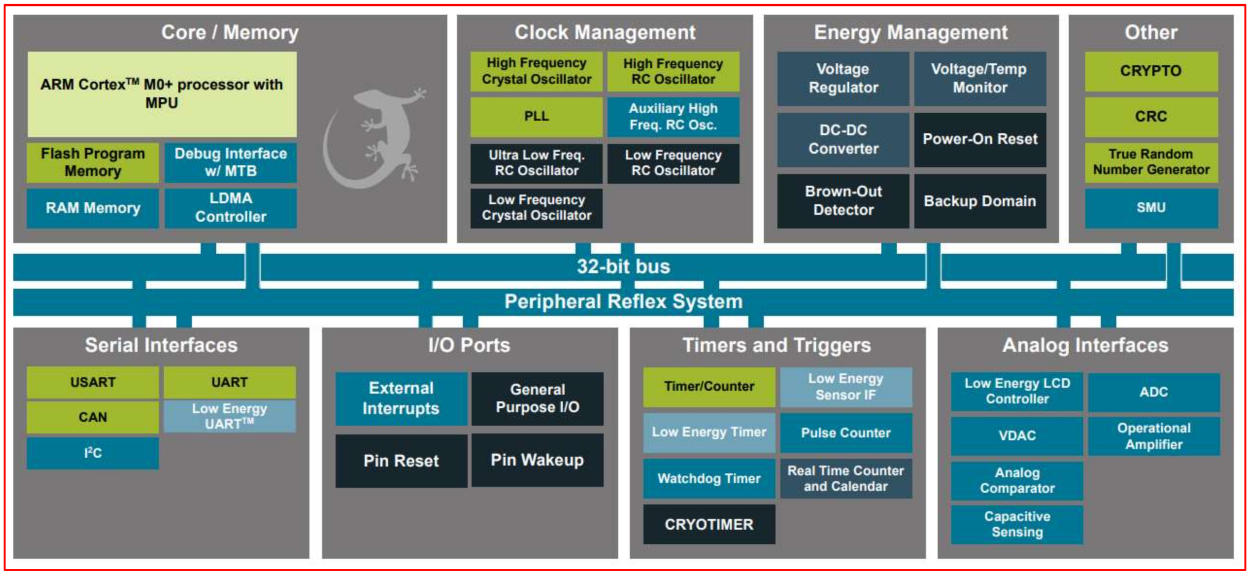
Compatibility:	Compatible with most iOS®, Android, and Windows mobile phones and tablets. Check Compatibility
Weight:	2.45 ounces
Connection Type:	Plugs into the audio jack of your mobile phone or tablet.
Payment Types:	💳 Accepts payments from credit and debit magnetic stripe cards.

Mobile Card Reader.

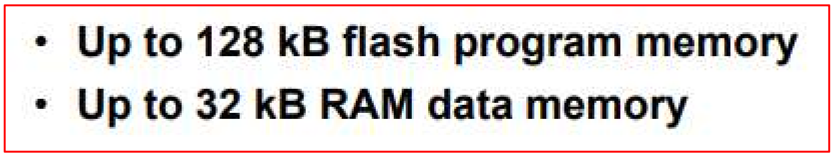
19. The MCR System includes a communication controller for buffering the data received from the credit card reader prior to conversion by a first circuit. *See*, e.g., **EFM32**. An example is illustrated below:


EFM32
TG110F32


Core / Memory
ARM Cortex™ M0+ processor with MPU
Flash Program Memory
Debug Interface w/ MTB
RAM Memory
LDMA Controller


Core / Memory
ARM Cortex™ M0+ processor with MPU
Flash Program Memory
Debug Interface w/ MTB
RAM Memory
LDMA Controller
Clock Management
High Frequency Crystal Oscillator
High Frequency RC Oscillator
PLL
Auxiliary High Freq. RC Osc.
Ultra Low Freq. RC Oscillator
Low Frequency RC Oscillator
Low Frequency Crystal Oscillator
Energy Management
Voltage Regulator
Voltage/Temp Monitor
DC-DC Converter
Power-On Reset
Brown-Out Detector
Backup Domain
Other
CRYPTO
CRC
True Random Number Generator
SMU
32-bit bus
Peripheral Reflex System
Serial Interfaces
USART
UART
CAN
Low Energy UART™
I²C
I/O Ports
External Interrupts
General Purpose I/O
Pin Reset
Pin Wakeup
Timers and Triggers
Timer/Counter
Low Energy Sensor IF
Low Energy Timer
Pulse Counter
Watchdog Timer
Real Time Counter and Calendar
CRYOTIMER
Analog Interfaces
Low Energy LCD Controller
ADC
VDAC
Operational Amplifier
Analog Comparator
Capacitive Sensing

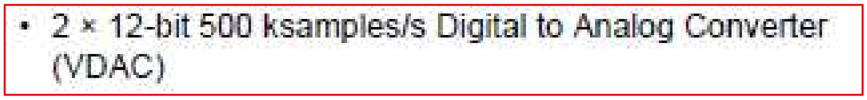
EFM32 at p. 1.



- Up to 128 kB flash program memory
- Up to 32 kB RAM data memory

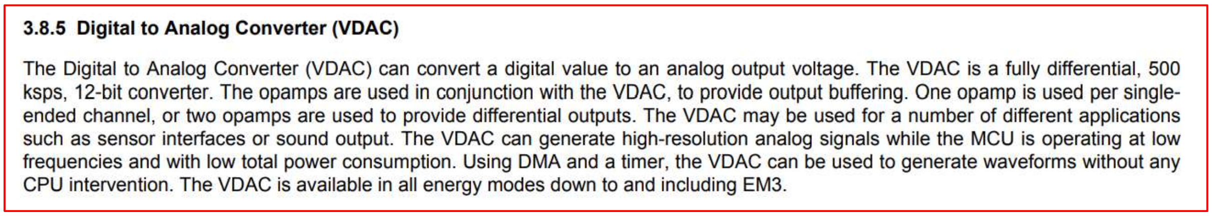
EFM32 at p. 2.

20. The first circuit in the MCR System is configured to convert the data to an analog audio signal. *See*, e.g., **EFM32**. An example is illustrated below:



- 2 × 12-bit 500 ksamples/s Digital to Analog Converter (VDAC)

EFM32 at p. 2.

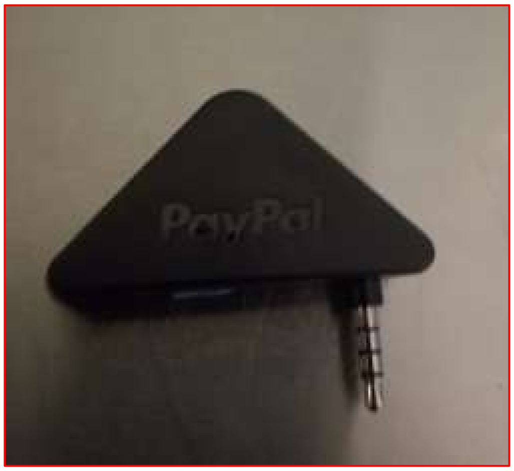


3.8.5 Digital to Analog Converter (VDAC)

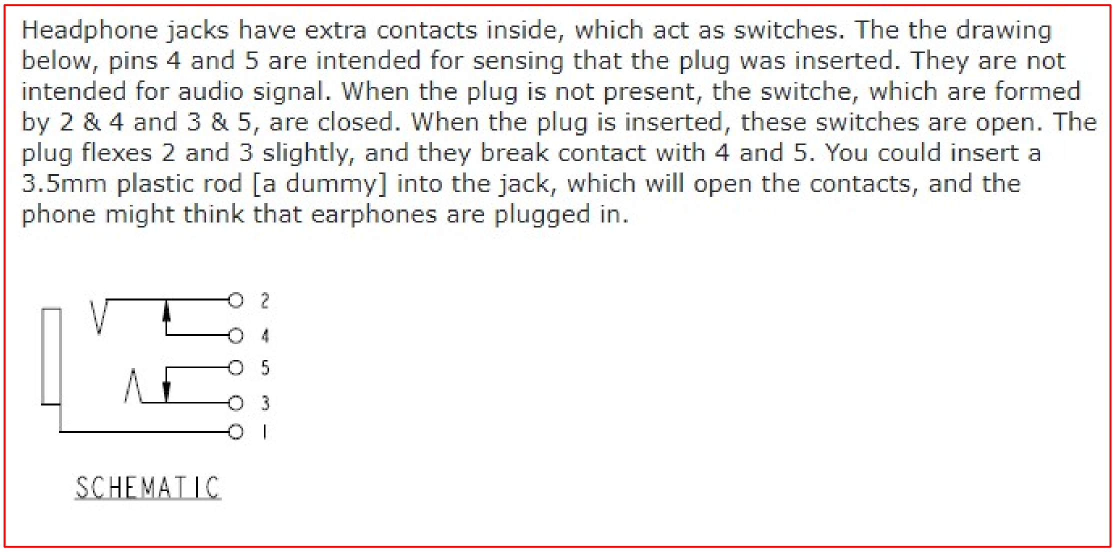
The Digital to Analog Converter (VDAC) can convert a digital value to an analog output voltage. The VDAC is a fully differential, 500 ksps, 12-bit converter. The opamps are used in conjunction with the VDAC, to provide output buffering. One opamp is used per single-ended channel, or two opamps are used to provide differential outputs. The VDAC may be used for a number of different applications such as sensor interfaces or sound output. The VDAC can generate high-resolution analog signals while the MCU is operating at low frequencies and with low total power consumption. Using DMA and a timer, the VDAC can be used to generate waveforms without any CPU intervention. The VDAC is available in all energy modes down to and including EM3.

EFM32 at p. 15.

21. The MCR System includes a 3.5 mm headphone connector to couple the hardware component to an audio input port of the mobile device. An example is illustrated below:



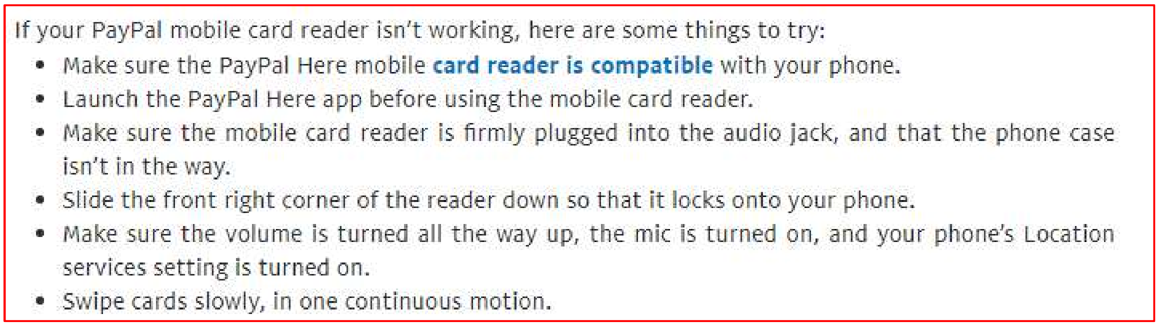
22. The connector in the MCR System bridges a microphone pin of the audio input port such that the mobile device detects a presence of the connector in the audio input port. *See*, e.g., **3.5 mm jack circuit**. An example is illustrated below:



Headphone jacks have extra contacts inside, which act as switches. The the drawing below, pins 4 and 5 are intended for sensing that the plug was inserted. They are not intended for audio signal. When the plug is not present, the switche, which are formed by 2 & 4 and 3 & 5, are closed. When the plug is inserted, these switches are open. The plug flexes 2 and 3 slightly, and they break contact with 4 and 5. You could insert a 3.5mm plastic rod [a dummy] into the jack, which will open the contacts, and the phone might think that earphones are plugged in.

3.5 mm jack circuit.

23. The connector in the MCR System provides an audio communication between the hardware component and the mobile device and communicates the analog audio signal from the hardware component to the mobile device. *See*, e.g., **Card Reader**. An example is illustrated below:

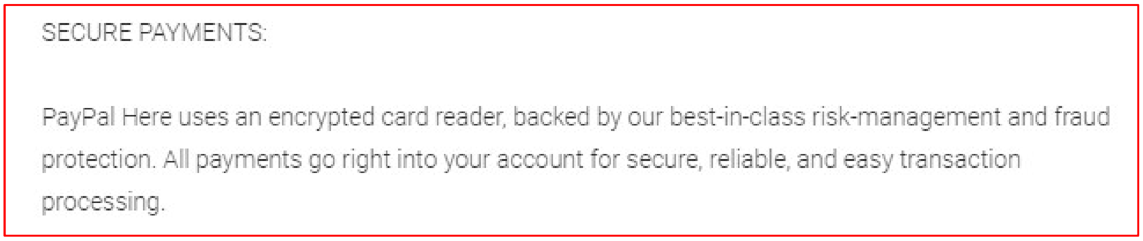


If your PayPal mobile card reader isn't working, here are some things to try:

- Make sure the PayPal Here mobile **card reader is compatible** with your phone.
- Launch the PayPal Here app before using the mobile card reader.
- Make sure the mobile card reader is firmly plugged into the audio jack, and that the phone case isn't in the way.
- Slide the front right corner of the reader down so that it locks onto your phone.
- Make sure the volume is turned all the way up, the mic is turned on, and your phone's Location services setting is turned on.
- Swipe cards slowly, in one continuous motion.

Card Reader.

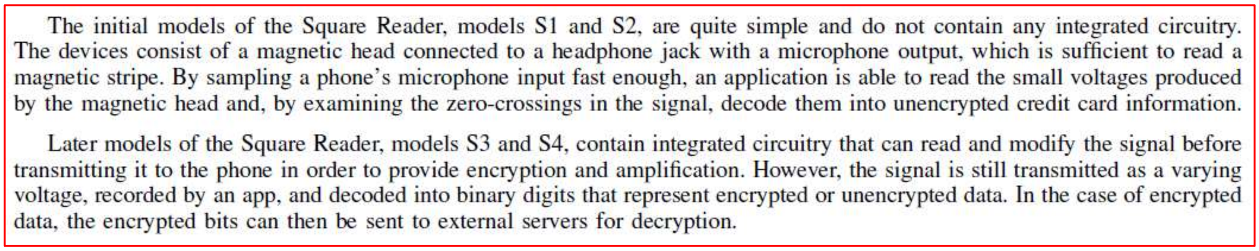
24. The MCR System includes a second mechanism on the mobile device configured to receive the analog audio signal and convert the analog audio signal into binary data. *See*, e.g., **PayPal Here and Blackhat**. An example is illustrated below:



SECURE PAYMENTS:

PayPal Here uses an encrypted card reader, backed by our best-in-class risk-management and fraud protection. All payments go right into your account for secure, reliable, and easy transaction processing.

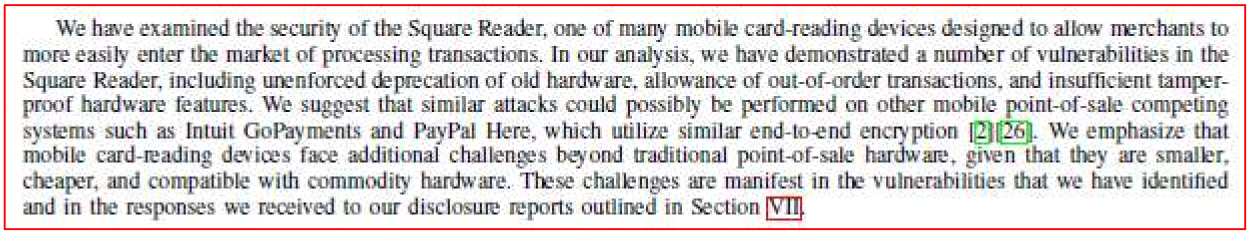
PayPal Here.



The initial models of the Square Reader, models S1 and S2, are quite simple and do not contain any integrated circuitry. The devices consist of a magnetic head connected to a headphone jack with a microphone output, which is sufficient to read a magnetic stripe. By sampling a phone's microphone input fast enough, an application is able to read the small voltages produced by the magnetic head and, by examining the zero-crossings in the signal, decode them into unencrypted credit card information.

Later models of the Square Reader, models S3 and S4, contain integrated circuitry that can read and modify the signal before transmitting it to the phone in order to provide encryption and amplification. However, the signal is still transmitted as a varying voltage, recorded by an app, and decoded into binary digits that represent encrypted or unencrypted data. In the case of encrypted data, the encrypted bits can then be sent to external servers for decryption.

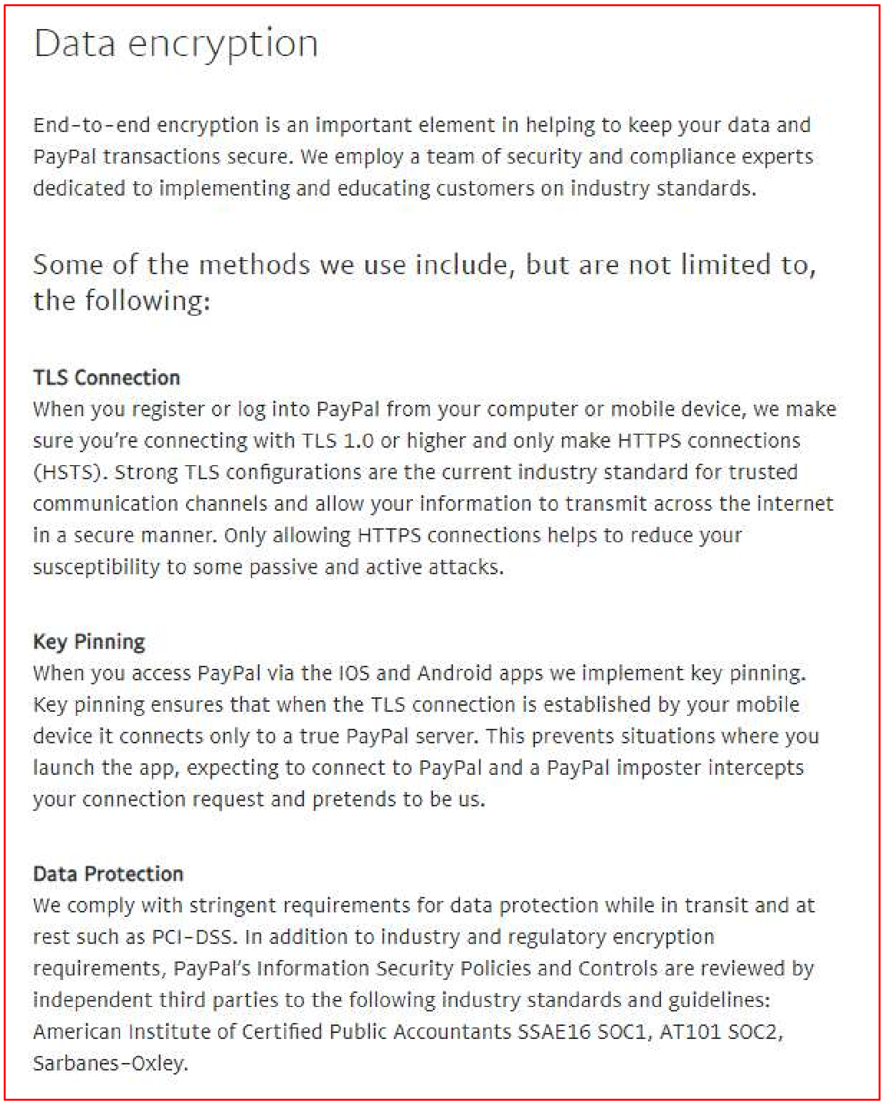
Blackhat at p. 2.



We have examined the security of the Square Reader, one of many mobile card-reading devices designed to allow merchants to more easily enter the market of processing transactions. In our analysis, we have demonstrated a number of vulnerabilities in the Square Reader, including unenforced deprecation of old hardware, allowance of out-of-order transactions, and insufficient tamper-proof hardware features. We suggest that similar attacks could possibly be performed on other mobile point-of-sale competing systems such as Intuit GoPayments and PayPal Here, which utilize similar end-to-end encryption [2][26]. We emphasize that mobile card-reading devices face additional challenges beyond traditional point-of-sale hardware, given that they are smaller, cheaper, and compatible with commodity hardware. These challenges are manifest in the vulnerabilities that we have identified and in the responses we received to our disclosure reports outlined in Section VII.

Blackhat at p. 7.

25. The MCR System includes a third mechanism on the mobile device configured to upload the binary data to a cloud service for decoding. *See*, e.g., **PayPal Security**. An example is illustrated below:



Data encryption

End-to-end encryption is an important element in helping to keep your data and PayPal transactions secure. We employ a team of security and compliance experts dedicated to implementing and educating customers on industry standards.

Some of the methods we use include, but are not limited to, the following:

TLS Connection
When you register or log into PayPal from your computer or mobile device, we make sure you're connecting with TLS 1.0 or higher and only make HTTPS connections (HSTS). Strong TLS configurations are the current industry standard for trusted communication channels and allow your information to transmit across the internet in a secure manner. Only allowing HTTPS connections helps to reduce your susceptibility to some passive and active attacks.

Key Pinning
When you access PayPal via the IOS and Android apps we implement key pinning. Key pinning ensures that when the TLS connection is established by your mobile device it connects only to a true PayPal server. This prevents situations where you launch the app, expecting to connect to PayPal and a PayPal imposter intercepts your connection request and pretends to be us.

Data Protection
We comply with stringent requirements for data protection while in transit and at rest such as PCI-DSS. In addition to industry and regulatory encryption requirements, PayPal's Information Security Policies and Controls are reviewed by independent third parties to the following industry standards and guidelines: American Institute of Certified Public Accountants SSAE16 SOC1, AT101 SOC2, Sarbanes-Oxley.

PayPal Security.

26. Plaintiff has been damaged by Defendant's infringement of the '706 Patent.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests the Court enter judgment against Defendant:

1. declaring that the Defendant has infringed the '706 Patent;
2. awarding Plaintiff its damages suffered as a result of Defendant's infringement of the '706 Patent;

3. awarding Plaintiff its costs, attorneys' fees, expenses, and interest; and

4. granting Plaintiff such further relief as the Court finds appropriate.

JURY DEMAND

Plaintiff demands trial by jury, Under Fed. R. Civ. P. 38.

Dated: September 28, 2018

Respectfully Submitted

/s/ Raymond W. Mort, III
Raymond W. Mort, III
Texas State Bar No. 00791308
raymort@austinlaw.com

THE MORT LAW FIRM, PLLC
106 E. Sixth Street, Suite 900
Austin, Texas 78701
Tel/Fax: (512) 865-7950

ATTORNEYS FOR PLAINTIFF