



# VP8800 User Manual



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ID TECH  
10721 Walker Street, Cypress, CA 90630-4720  
Tel: (714) 761-6368 Fax (714) 761-8880  
[www.idtechproducts.com](http://www.idtechproducts.com)

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ID TECH  
10721 Walker Street  
Cypress, CA 90630  
USA

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## FCC Regulatory Compliance

### FCC warning statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The user manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.




**Note:** The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter and must be installed to provide a separation distance of at least 20cm from all persons.

### Cautions and Warnings

	<b>Caution:</b> The VP8800 should be mounted at least 1 foot (30 cm) away from other VP8800. Can be adjusted based on lane setup.
	<b>Caution:</b> Danger of Explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
	<b>Warning:</b> Avoid close proximity to radio transmitters which may reduce the capability of the reader.

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# 1. Getting Started

The VP8800 is an all-in-one card reader that can accommodate contact EMV, magstripe, and contactless (NFC) payments and offers PIN pad (chip-and-PIN) capability and electronic signature capture. It is designed to integrate easily with existing POS systems and requires minimal counter space at checkout stands.

The VP8800 is a PCI-certified, SRED-compliant counter-top reader featuring RS-232 (serial), Ethernet, and USB 2.0 communications to POS systems.

The VP8800 includes support for the following contactless payment applications:

- Support for Apple Pay, including VAS protocol
- Support for Google Pay, including Smart Tap
- Support for Samsung Pay
- Support for Mifare Suite
- Support for Secure SoftSAM(s)
- Support for Payment Card Brands:
  - VISA VCPS
  - MasterCard MCL
  - AMEX Expresspay
  - Discover DPAS
  - Interac Flash
  - UPI Global (Formerly CUP)

This document assumes that users are familiar with their host POS systems and all related functions.

# 2. Features

The VP8800 supports the following features:




- PCI 5.X certified
- SRED (Secure Reading and Exchange of Data) compliant, with tamper detection and fulltime encryption\*
- ANSI X.9-24 DUKPT key management
- ISO14443 type A/B and Mifare based contactless payment transactions
- ISO 18092 support for peer-to-peer NFC devices and smartphones
- Support for contactless transactions via NFC devices
- PIN entry for PIN/debit and chip-and-PIN transactions
- Magnetic stripe card transactions
- Electronic signature capture
- Three SAM card slots provided
- One SD card slot provided
- RJ-45 cable and Ethernet support

\*Note that for encryption to be enabled, the VP8800 must be key-injected. ID TECH is a certified Key Injection Facility. Contact your ID TECH representative for details.

### 3. Getting Started

#### 3.1. Unpacking the VP8800

The VP8800 requires a data cable and, if the data cable does not supply power, a 5VDC 1.2A power supply. The data cable is not included with the VP8800 and must be purchased separately from ID TECH. Verify that you have all the required components for the installation:

VP8800 (PN: IDPP-1881)	
Interface Cables: <ul style="list-style-type: none"><li>• Serial Data Cable (PN 80143236-001)</li><li>• USB Data Cable (PN 80143234-001)</li><li>• Ethernet Cable (PN 80143235-001)</li></ul>	
Power supply (included)	

You may also need a contactless test card (ViVO Contactless Test Card P/N 241-0015-03).

#### 3.2. Data on production and personalization

The device has been loaded with a serial number, MAC address, data encryption key, and PIN encryption key by the factory.

## 4. Installing the VP8800

Before connecting and mounting the VP8800, plan the installation to conform to PCI 5.X requirements and minimize radio frequency interference. After determining the location and mounting of the VP8800, connect it to power and the POS terminal. Finally, test the VP8800 to make sure the installation is successful.

### 4.1. Site Planning

Two environmental considerations affect VP8800 installation. PCI certification has specific restrictions on how the reader is positioned to prevent PIN theft. Also consider objects and devices near the reader that may affect the performance of the contactless radio frequency antenna.

### 4.2. PCI PED Compliance

The VP8800 is a PCI 5.x certified PIN/Debit payment device. PCI 5.x certification requires that sufficient protection be provided to ensure that entering a PIN number CANNOT be viewed by a third party (such as another customer standing nearby, the cashier, or a security camera).

The VP8800 has design elements, such as a recessed keypad, that meet some of these requirements. However, to fully implement PCI 5.x, be sure to consider the following:

1. The VP8800 must be in a location that will NOT force a customer to enter a PIN that can be viewed by a third party (for example, a customer must tilt or rotate the device for better accessibility due to objects blocking a card swipe).
2. If the VP8800 is elevated on a mounting stand, shielding must be provided on the mount to prevent a PIN being viewed by a third party.
3. If the VP8800 is mounted on a counter top, additional shielding (which can include other devices such as a cash register as long as conditions in (1) above are met) must be provided to ensure that the PIN cannot be viewed by a third party (including cashier and security camera).

**WARNING:** PCI requires that the device be mounted so that manual PIN entry cannot be observed by a third party (such as another customer standing in line, the cashier at the counter, or a security camera mounted in the ceiling to observe the cash register area). If the PIN entry can be observed, the store owner may be responsible for any losses incurred by the customer if it can be determined that the customer's PIN was stolen at this location.

### 4.3. Verifying PCI Compliance

Before completing the installation, verify that the VP8800 is positioned so that the PIN entry is not visible to other customers, the cashier behind the counter, or video surveillance cameras. If PIN entry is visible, the VP8800 must be repositioned or shielding added until none of the above parties can observe PIN entry.

These tests usually require at least two people—one to simulate entering the PIN while the other attempts to view the keypad:

- **Can Another Customer View the PIN:** While one person stands at the VP8800 with their hand positioned to enter the PIN, the other tester should try to observe the keypad from behind and beside the first person.

- **Can the Cashier View the PIN:** While one person stands at the VP8800 with their hand positioned to enter the PIN, the other tester should stand behind the counter and try to observe the PIN keypad. The second tester should move around a little to see if there is a position where they can observe PIN entry.
- **Can the Video Camera View the PIN:** While one person stands at the VP8800 with their hand positioned to enter the PIN, the other tester should observe what is being recorded by any video camera with a view of the VP8800. This may require playing back a recording to see if PIN entry is visible. If the video camera is moveable, the second person should move the video camera to determine if there is a position where PIN entry can be observed.

#### 4.3.1. Retesting Requirements

If PIN entry on the VP8800 is observable in any of the above tests, reposition the VP8800 and completely retest all locations to verify that PIN entry is not visible. Consider placing a display to block observation from that position.

Repositioning the VP8800 to block observance of PIN entry at one location may expose PIN entry to observation at another location. PCI requires repositioning the VP8800 and retesting until PIN entry is secure from observation.

## 4.4. Radio Frequency Interference

To perform contactless transactions, the VP8800 uses a radio frequency antenna. The range (reading distance) and performance of the reader can be affected by other radio frequency emitters and proximity to metal.

For best performance, adhere to the following guidelines:

1. Do not position the VP8800 closer than 1 foot (30 cm) to other RF-emitting devices. Some environments may require greater separation distances.
2. Avoid placing the VP8800 near large metal objects.
3. Do not position the VP8800 near radio transmitters.

## 4.5. Installation

This section describes how to install the VP8800. The basic steps are:

- Connect to power and POS
- Mount if required
- Test the installation

## 4.6. Connecting the VP8800

### 4.6.1. Accessing the Connectors

The VP8800 connectors are beneath a cover on the bottom of the reader.



To access the connectors:

1. Turn over the VP8800 so that the connector cover is visible.
2. Remove the cover.



3. Insert the data cable into the HDMI connector and route the cable through the recesses provided.



4. Replace the cover.



5. Turn the VP8800 keypad right side up.
6. Place the stylus in the holder along the side of the VP8800.
7. Attach the data cable from the VP8800 to the appropriate port on the POS.
8. Plug in the power supply. The left LED illuminates.



**Note:** The VP8800 may take up to 30 seconds to finish booting.

The VP8800 displays the opening set of screens before it displays the Welcome screen. The opening screens include:

- ViVOpay logo screen
- Copyright screen
- Firmware version screen

It should then display **Welcome** or **Please present card** or similar wording, depending upon the

POS application.

If the unit fails to power up, try reseating the power connector (or change to a different power outlet). If the unit still fails to power up, try replacing the power supply. If the unit still fails to power up, and the power supply is definitely good, contact your local support representative. For more troubleshooting information, see [Troubleshooting and Maintenance](#) below.

## 4.7. Key Replacement

Cryptographic keys can always be replaced by sending the unit back to the manufacturer if necessary (ID TECH is a certified Key Injection Facility). ID TECH also provides several choices for users who need to rotate or replace a cryptographic key in the field:

1. PKI-RKI Client utility, which can replace keys in the field. It requires an internet connection and a host computer.
2. ID TECH's Universal SDK has the RKI API built in. With proper software, a key can be updated programmatically via API (this also requires an internet connection).
3. ID TECH can provide PKI-RKI integration instructions; in this case, the integrator implements the ID TECH RKI feature within custom software.

## 4.8. Loss or theft

Report the serial number of any lost or stolen product to the vendor from whom it was obtained.

## 4.9. Testing the Installation

After completing the installation and checking for PCI conformance, run the Onboard Diagnostic program as described in [Onboard Diagnostics](#). Then check that the VP8800 and the POS are communicating correctly by performing a sample transaction. The following test assumes that the host POS is already programmed to communicate with the VP8800.

### 4.9.1. Transaction Test

The exact wording that appears on the VP8800 screen will depend on the POS application. Consult the documentation for your POS (or payment app) for details.

### 4.9.2. LED Behavior

- **Solid blue light:** Waiting for card presentation.
- **Solid green light (with one long beep):** Successful card presentation.
- **Solid red (with two short beeps):** Unsuccessful card presentation.

### 4.9.3. To test a transaction

Follow the steps below to test a transaction:

1. Begin a transaction on the POS. Present a card, fob, or phone in close proximity to the reader or swipe a magnetic stripe card.
2. A single beep and LED flash indicates that the card has been validated. The VP8800 may display "Processing" or similar wording while the transaction is being processed.
3. If the POS software requires a PIN entry, the screen displays "Please enter PIN". Use the keypad to enter the PIN.

4. If the POS application requires a signature, the screen displays “Please sign below”. Use the stylus to enter a signature on the touch screen.
5. A receipt is printed by the POS with the purchase amount. The VP8800 may show “Thank You” or similar wording for a successful transaction.

## 5. Decommissioning SRED Devices

All PCI devices require proper decommissioning prior to device disposal in order to ensure the protection of all sensitive financial card data. For instructions on decommissioning your device, see [Decommissioning of SRED Devices](#) on the ID TECH Knowledge Base.

## 6. Troubleshooting and Maintenance

The VP8800 is designed for reliability and ease of troubleshooting. The components that may require troubleshooting include the power supply, the reader, and the data cable.

Symptom	Possible Cause	Probable Cause and Remedy
<b>General Issues</b>		
Reader does not appear to be powered on—no LEDs lit, no LCD display.	<ul style="list-style-type: none"> <li>• Reader not powered on.</li> <li>• Incorrect power supply used.</li> </ul>	<ul style="list-style-type: none"> <li>• Check cable connections.</li> <li>• Verify that power is on and correct voltage and current are present.</li> <li>• Replace the power supply.</li> <li>• Verify that power cable plug is fully inserted.</li> <li>• Replace the power supply.</li> <li>• Replace the reader.</li> </ul>
<b>Reading Cards/Fobs/Phones</b>		
LEDs do not light up, and beeper is not audible when card, fob, or phone is presented.	<ul style="list-style-type: none"> <li>• Card/fob/phone not properly presented.</li> <li>• Metal or RF interference.</li> <li>• Wrong Firmware issue (contact your local support representative).</li> <li>• Reader not powered on or incorrect voltage.</li> <li>• Incorrect power supply used.</li> <li>• Unsupported card, fob, or phone used.</li> </ul>	<ul style="list-style-type: none"> <li>• Present card, fob, or phone closer to the reader and ensure it's parallel to the reader touch screen.</li> <li>• Verify that the card, fob, or phone is valid/current.</li> <li>• Test with "ViVOCARD Contactless Test Card" P/N241-0015-03.</li> <li>• Try a different card, fob, or phone.</li> <li>• Verify that the unit is not near any large metal objects.</li> <li>• Verify that correct firmware is loaded (local support representative only).</li> <li>• Verify that power is on and correct voltage and current are present.</li> <li>• Verify that power cable plug is fully inserted.</li> <li>• Replace the reader.</li> </ul>
Some cards/fobs/phones read, but not all.	<ul style="list-style-type: none"> <li>• Wrong firmware (contact your local support representative).</li> <li>• Possible bad card, fob, or phone.</li> <li>• Unsupported card used.</li> </ul>	<ul style="list-style-type: none"> <li>• Verify that correct firmware is loaded on reader (local support representative only).</li> <li>• Check to see if card, fob, or phone is damaged.</li> <li>• Try a different card, fob, or phone.</li> </ul>
On power-up, display sticks on firmware version.	<ul style="list-style-type: none"> <li>• SAM card isn't seated properly.</li> </ul>	<ul style="list-style-type: none"> <li>• Remove power from unit, remove back cover and reseal SAM card. If unsure, contact ID TECH Support for assistance.</li> </ul>

Symptom	Possible Cause	Probable Cause and Remedy
<b>Communication to POS/ECR</b>		
No data is received, or data is garbled.	<ul style="list-style-type: none"> <li>Faulty or incorrect cable connections.</li> <li>Unsupported card used.</li> <li>Contactless application is not installed on terminal (for serial connections only).</li> <li>Magstripe card not swiped correctly.</li> <li>Magstripe card not level during card swipe.</li> <li>The POS application is not using the correct communications parameters.</li> </ul>	<ul style="list-style-type: none"> <li>Check that the cable connection is secure and in the correct port on the POS/ECR.</li> <li>Check that the POS/ECR has the correct software application to accept data from the contactless reader (may need assistance from the POS vendor).</li> <li>Try a different card, fob, or phone or magstripe card if testing the magstripe reader.</li> <li>If testing with the magstripe card, try turning the card around; make sure that the card is level during the card swipe.</li> <li>Contact the payment processor for an application upgrade.</li> <li>Check that the cable is correctly attached to the back of the VP8800.</li> <li>Check the POS application.</li> </ul>

## 6.1. Onboard Diagnostics

Onboard diagnostics (OBD) are available to test the following components of the VP8800.

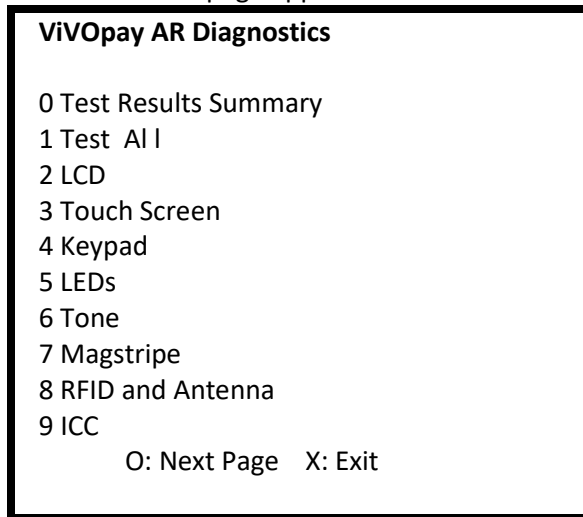
Test	Possible Results
<b>LCD Test</b>	Pass/Fail
<b>TouchScreen Test</b>	Pass/Fail
<b>Keypad Test</b>	Pass/Fail 1234567890<cancel><backspace><enter>* #
<b>LEDs Test</b>	Pass/Fail virtual LEDs MSR ICC Keypad backlight
<b>Tone Test</b>	Pass/Fail
<b>Magstripe Test</b>	Pass Tracks 1 or 2 or 3/Fail
<b>RFID Test</b>	Pass Type A or B/Fail
<b>ICC Test</b>	Pass T = 0 or T = 1/Fail
<b>Ethernet Test</b>	Pass/Fail
<b>SAMs Test</b>	Pass SAM1 SAM2 SAM3/Fail

## 6.2. Accessing the Onboard Diagnostic Tests

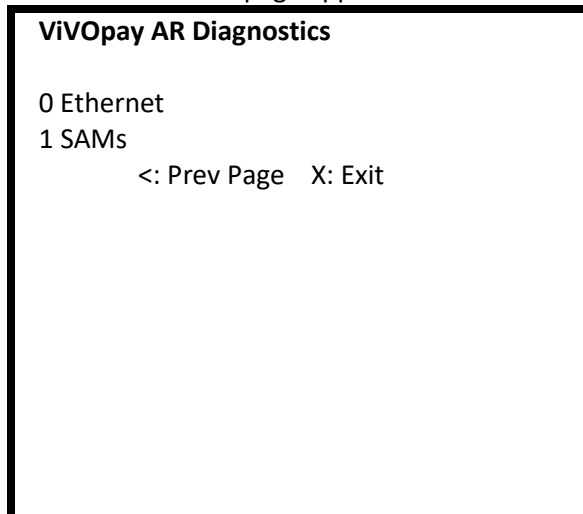
To enter the onboard diagnostics:

1. Power off the VP8800 by removing the power supply from the power receptacle.
2. Plug the power supply into the power receptacle again.
3. After applying power, press the **1** key and then the **#** key within three seconds after the LCD screen displays "Welcome". When entered correctly, The ViVOPay AR Diagnostics screen appears and the prompt alarm sounds.

The menu's first page appears as below:



The menu's second page appears as below:



## 6.3. Maintenance

The VP8800 contains no user-serviceable parts within its enclosure. Do not open the VP8800 main enclosure.

**WARNING:** Attempting to open the VP8800 enclosure will trigger PCI security measures and the unit will stop functioning even after reassembly, requiring its return to the factory.

It is possible to replace the stylus without violating PCI security measures. It is also possible to upgrade the VP8800 firmware if required.

### 6.3.1. Replacing the Stylus

It is important that only the stylus be used for writing on the touch screen. If the stylus is lost or the lanyard broken, obtain a replacement from your VP8800 distributor.

To replace the stylus:

1. Turn the VP8800 upside down and unscrew the screw for the tether wire of stylus.
2. Replace the old stylus with the new one. Then fasten the screw.
3. Turn the VP8800 back and place the new stylus in its holder.

## 6.4. Upgrading Firmware

VP8800 firmware is upgradable, if required for applications. Upgrade firmware using the [ID TECH USDK Demo](#), which is available for free. Obtain the following from your VP8800 distributor:

- Firmware for the VP8800
- USB data cable

Firmware upgrades also require a PC with a USB port. The PC will likely already have the required USB driver HID.DLL file. If not, download that file from Microsoft's website.

To upgrade the firmware:

1. Install and run the USDK Demo.
2. Extract the firmware ZIP file to a directory of your choice.



- Connect the USB data cable to the VP8800 and PC (see [Connecting the VP8800](#) above). When the VP8800 powers on it appears under the USB devices in the USDK Demo.

**USB**

- UniPay
- Vendi
- Vend III
- Kiosk III/IV
- MiniSmart II
- Spectrum Pro
- L100
- CM100
- Augusta
- Augusta KB
- UniPay 1.5
- VP3300
- VP8800
- SecureMag

- Select the **Update Device Firmware** command under **Commands > Device > Update Device Firmware**.

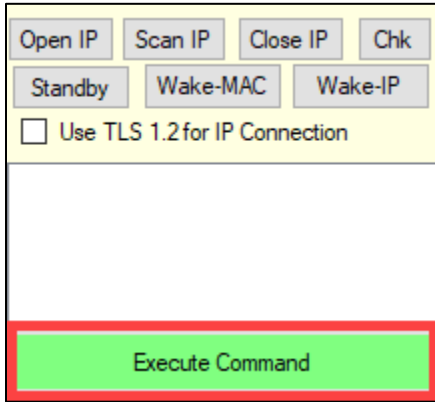
The screenshot shows the IDTECH software interface. On the left, there are two panels: 'USB' and 'Serial'. The 'USB' panel has a list of device models, with 'VP8800' selected. The 'Serial' panel has a list of device models, with 'VP8800' also selected. Below these panels are settings for 'Port', 'Baud', and 'Close'. The main area is titled 'IDTECH Value through Innovation' and contains a 'COMMANDS' section. Under 'COMMANDS', there is a 'Device' category, and under 'Device', the 'Update Device Firmware' command is highlighted with a red box. To the right of the 'COMMANDS' section is a 'Log' window with a 'Close All' button and a 'Discover' button. The log window contains the following text:

```

16:03:54.289 OUT:
5669564f74656368320029000000dea0
16:03:54.308 IN:
5669564f7465636832002900002354455354204f
4e4c59204b483020415220332e302e3020427569
6c643a3235333238001ae2
  
```

At the bottom of the interface, there are buttons for 'Open IP', 'Scan IP', 'Close IP', 'Chk', 'Standby', 'Wake-MAC', 'Wake-IP', and a checkbox for 'Use TLS 1.2 for IP Connection'. There are also buttons for 'Start Capture To Disk', 'Stop Capture To Disk', 'Clear Logs', 'Show Log Folder', and 'Email Logs to Support'.

- Click **Execute Command**.



- A File Explorer window will open; navigate to the directory where you extracted the firmware ZIP, then open **images\_for\_VLoader > pisces\_signed\_r25680.bin**.
- Wait for the USDK Demo to complete the firmware update.
- After the USDK Demo applies the firmware, the VP8800 will reboot and validate the firmware file. **Please note that this can take up to five minutes to complete.**

After restarting, the VP8800 will have updated firmware and display its Welcome screen.

## 7. Appendix A: Specifications

### VP8800 Specifications

RF Interface	
<b>Frequency</b>	13.56 MHz
<b>Standard</b>	ISO 14443 Type A&B, Mifare, ISO 18092
<b>Reading distance</b>	MAX 4cm
Physical	
<b>Length</b>	175 mm
<b>Width</b>	95 mm maximum
<b>Depth</b>	58 mm maximum
<b>Weight</b>	0.4Kg
<b>Storage</b>	128 MB RAM + 64MB Flash + 32GB of Micro-SD, with 3 SAM slots
Environmental	
<b>Operating Temp.</b>	0 to 55° C (32 to 131° F)
<b>Storage Temp.</b>	-25 to 65° C (-13 to 149° F)
<b>Relative Humidity</b>	10 to 95% non-condensing
<b>Operating Environment</b>	Indoor only
<b>Power</b>	
<b>Voltage</b>	5 VDC regulated, +/- 10%
<b>Consumption</b>	6 W maximum
<b>Power supply</b>	The VP8800 shall be powered by an external power source (P/N AC005R) (power-pack AC 85-265)
Touch Screen	
<b>LCD</b>	Capacitive 3.5" TN TFT Backlit Color Display
<b>Signature Capture</b>	Yes
<b>Resolution</b>	HVGA 480X320 Pixels

<b>Glass Hardness Rating</b>	7H
<b>Power supply</b>	The VP8800 is powered by an external 5VDC power source (P/N AC005R) (power-pack AC 85-265)

## 8. Glossary

<b>Electronic Cash Register (ECR)</b>	The combination of a traditional cash register and a POS terminal, often PC-based.
<b>ExpressPay from American Express</b>	American Express contactless payment product that utilizes contactless technology.
<b>Firmware</b>	Software that is embedded in a hardware device that allows reading and executing the software, but does not allow modification, e.g., writing or deleting data by an end user. <b>Example:</b> Firmware is a computer program in a read-only memory (ROM) integrated circuit chip. A hardware configuration is usually used to represent the software. <b>Example:</b> Firmware is a program embedded in an erasable programmable read-only memory (EPROM) chip, which program may be modified by special external hardware, but not by an application program.
<b>Fob</b>	A key chain device or other non-standard credit card sized form factor that has an embedded radio frequency (RF) chip.
<b>MasterCard PayPass</b>	MasterCard's contactless payment product that utilizes contactless technology.
<b>NFC</b>	Near Field Communications.
<b>NFC Phone</b>	Near Field Communications (NFC) phone. A technology that enables communication between a secure element in a mobile device and a contactless reader to make credit/debit payments. Also see UICC.
<b>PCI 5.x</b>	The Payment Card Industry Security Standards Council (PCI SSC) mission is to enhance payment account data security. PCI 5.x is a set of standards created by PCI SSC to increase the security of card data.
<b>Point of Sale (POS)</b>	Refers to terminals used in retail stores with a magnetic stripe reader, keyboard, display and autodialer modem or IP connection, connected to the telephone/internet network and used for on-line credit/debit authorization. Can also be connected to a host computer, which handles all transaction processing including item price look-up, data collection, and credit/debit authorization.
<b>Proximity Payments</b>	Payment method utilizing contactless technology such as RF, Infrared (IrDA), or Near Field Communications (NFC).
<b>Radio Frequency (RF)</b>	Any frequency that corresponds to radio signals, including those used by cellular telephones and wireless networks.
<b>RF Reader</b>	The Point of Sale device that receives the RF transmission from a card, fob or NFC phone.
<b>Visa Contactless</b>	Visa's contactless payment product that utilizes contactless technology.

### Symbol Explanations



EMV Contactless Symbol