

## Technical Considerations for Contactless EMV

Proximity to metal, durability of design and NFC compliance all key technical design considerations for contactless EMV terminals.

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**W**e live in a fast track world. We want what we want, now. Having the ability to complete a credit card transaction at a retail payment terminal or ATM is included in that make it happen fast mentality.

When payment terminal operators eliminate the requirement of removing a credit card from a wallet or purse, consumers complete transactions nearly 53 percent faster than when utilizing traditional credit card payment methods, according to an American Express report.

Though it requires an infrastructure overhaul, contactless EMV (Europay, Mastercard, Visa) offers a more efficient, secure method of handling credit card transactions. This white paper, sponsored by Frankfurt, Germany-based Feig Electronic, a leading manufacturer of door controls, detectors and radio frequency identification (RFID) readers, will discuss three technical considerations for full performance contactless EMV in unattended payment terminals, including metal's impact on performance, durable design elements and NFC compliance.

### Contactless EMV defined

What exactly does contactless EMV entail?

“Contactless EMV is a chip-based credit card system that utilizes RFID rather than magnetic stripes to obtain credit card information without coming into contact with the card,” said Pete Kuzma, payment and ticketing solutions coordinator at Feig Electronic.



Contactless payment cards are identified with a symbol on the card consisting of four curved lines.

RFID readers are not a new phenomenon. The technology has been used in capacities other than contactless payment for more than a decade, including door openers, cordless phones and transit system turnstiles.

While the technology's use at attended contactless payment terminals is becoming more commonplace, a void in the marketplace exists with full-performance, contactless EMV at unattended, metal-skinned terminals, such as an ATM, for instance.

Furthermore, in addition to being a communications protocol, EMV also represents certified testing against a set of performance targets to ensure secure, reliable transactions. As a result of the enhanced security of EMV transactions, major credit card companies, including Visa, MasterCard and Discover will implement new EMV capability standards in the U.S. during the 2013 to 2015 time frame.

The initiative will focus on retail point-of-sale systems, however, will begin to make inroads in all credit card terminals, such as ATMs, vending machines, parking meters and fuel station pumps. The EMV capable terminals will allow the use of more secure EMV-based cards as well as NFC-capable smartphones. The security and convenience of the contactless payment option is expected to be popular with consumers.

Payment terminals equipped with EMV technology are the next step in credit card transactions, however, several technical design requirements make it impossible to simply transfer the infrastructure used in attended terminals to unattended terminals.

***“When the RFID reader is mounted directly onto metal, the read distance goes from several inches to nearly zero.”***

— Pete Kuzma, payment and ticketing solutions coordinator,  
Feig Electronic

### **Metal's impact on EMV**

Metal dramatically impacts the performance of a contactless EMV terminal. An RFID reader mounted directly on metal results in reduced read distance, which creates a longer perceived transaction time by the card user and negates the technological advances of contactless EMV.

“When the RFID reader is mounted directly onto metal, the read distance goes from several inches to nearly zero,” said Kuzma.

Credit card users should be able to complete a transaction at a contactless EMV terminal without removing the credit card from their wallet and without touching the card to the RFID reader.

The typical design approach for a contactless reader on metal is to add a nearly two-inch thick air gap between the reader antennae and the metal terminal. This creates a raised shelf on the payment terminal and a prime target for vandalism as well as a debris gathering surface.

### **Durable, clean design**

The nature of an unattended terminal, including exposure to unknown weather elements and the threat of vandalism, necessitates unique design elements. Design components that extend beyond the main body of the terminal, such as the previously discussed two-inch thick housing, simply do not work in the unattended setting. A neat,

clean appearance is a critical element of the unattended terminal design.

Keeping these issues in mind, Feig Electronic developed the patent-pending OBID myAXXESS flatOne reader that maintains an EMV targeted minimum read distance of 1.57 inches while mounted flush against a metal terminal. In effect, the OBID myAXXESS flatOne removes the metal on metal issue, while maintaining the design qualities necessary for an unattended terminal. The OBID myAXXESS flatOne is the only RFID reader of its kind to sit directly on a metal surface and still maintain EMV certified read distance, solving both the metal on metal and vandalism-resistant technical considerations.

### NFC compliance

An area of continued growth is credit card payment via mobile phone. Consumers now have the capability of using a smartphone as a means of payment, and they are embracing it. Beyond mere online payments, mobile phones equipped with near field communication (NFC) hardware are also gaining popularity. Smartphones with NFC hardware can communicate and exchange data with a payment terminal containing the same hardware when the two are in close proximity.

According to Gartner, Inc., worldwide mobile payments will top the \$170 billion mark in 2012. Though NFC standards currently remain in flux, an unattended contactless EMV terminal that lacks NFC capability goes against the trajectory of technology.

The key to the success of unattended contactless EMV terminals is recognizing and delivering on the specialized technical con-



Contactless EMV-enabled credit cards and NFC-capable smartphones can communicate and exchange data with a payment terminal when the two are in close proximity.

siderations that are necessary aspects of the design and utilize the technology to its fullest extent. Feig's OBID myAXXESS flatOne supports the current defined NFC standards and will be firm-wear upgradable regards future NFC standards.

***About the sponsor:** Feig Electronic, based in Frankfurt, Germany, is a leading manufacturer of door controls, detectors and RFID readers. Feig's internally developed readers enable relatively seamless software driver integration from one reader family to the next. Feig supports its business partners with technical specialists in the development and design of products and solutions and maintains a worldwide network of qualified distribution and service partners.*