



Contactless Operating Mode Requirements Clarification Whitepaper

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U.S. Payments Forum

191 Clarksville Road
Princeton Junction, NJ 08550

www.uspaymentsforum.org

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The U.S. Payments Forum, formerly the EMV Migration Forum, is a cross-industry body focused on supporting the introduction and implementation of EMV chip and other new and emerging technologies that protect the security of, and enhance opportunities for payment transactions within the United States. The Forum is the only non-profit organization whose membership includes the entire payments ecosystem, ensuring that all stakeholders have the opportunity to coordinate, cooperate on, and have a voice in the future of the U.S. payments industry. Additional information can be found at <http://www.uspaymentsforum.org>.

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Table of Contents

1. Introduction	4
2. Contactless Operating Modes.....	5
2.1 Impact of Contactless Operating Mode on Debit Routing Options	6
3. Contactless Issuance Requirements	7
4. Contactless Acceptance Requirements.....	8
5. Legal Notice.....	10

1. Introduction

Payment network rules supporting contactless operating modes for both issuing and accepting contactless payments are complex and vary by payment network.

This white paper attempts to provide an overview of each payment network's current contactless requirements for issuers, acquirers and acceptance partners electing to implement the technology for both magnetic stripe data (a.k.a. MSD, magstripe, magnetic stripe) and EMV mode contactless support.

This white paper does not discuss details of contactless MSD and contactless EMV mode technologies, contact chip (EMV) technologies, or each payment network's specifications for these technologies. The white paper does not make predictions about the future of these technologies.

The white paper also does not discuss other contactless technologies such as Magnetic Stripe Transmission/Induction (MST/MSI).

2. Contactless Operating Modes

In the U.S., contactless payments emerged several years before the EMV migration. As a result, the technology used magnetic stripe data (pre-EMV) functionality while injecting dynamic contactless chip data as part of the existing Track 2 and Track 1 data fields. This pre-EMV contactless mode is known as contactless magnetic stripe data (MSD) operating mode. In contactless MSD mode, contactless transaction data is provided to the issuer using magnetic stripe format with contactless-specific components and does not include EMV-level data.

The global version of contactless technology, that leverages full EMV cryptogram and enriched data capabilities, is the contactless EMV operating mode. Contactless EMV mode transactions are full EMV transactions processed through a contactless interface using full EMV-level transaction data.

The white paper uses the terms “contactless MSD” and “contactless EMV” to refer to these modes. Table 1 shows the payment network product names for contactless MSD and contactless EMV.

Network	Contactless MSD Product Name	Contactless EMV Product
American Express	Expresspay Magstripe Mode	Expresspay EMV Mode
China UnionPay	N/A	QuickPass
Discover	Discover Zip	Contactless D-PAS
JCB	N/A	JCB Contactless
Mastercard	Mastercard Contactless Magstripe Mode (formerly known as PayPass – Mag Stripe)	Mastercard Contactless EMV Mode (formerly known as PayPass M/Chip)
Visa	Magnetic-stripe data (MSD)	Quick Visa Smart Debit/Credit (qVSDC)

Table 1. Payment Network Contactless Operating Mode Product Names

With the introduction of EMV technology and the upgrade of the payment infrastructure, contactless MSD is being phased out as merchants, acquirers and issuers are now capable of processing full EMV chip data. As of the publication date of this white paper, the U.S. is in a transitional period where both contactless MSD and contactless EMV modes coexist.

Contactless EMV operating mode offers a number of advantages, such as:

- Global interoperability. Contactless MSD mode is not supported outside of the U.S. for issued cards/devices, nor is it supported for POS contactless acceptance.
- More reliable debit routing capabilities within the U.S. Contactless MSD mode is not supported in implementations of the U.S. Common Debit AID. (See Section 3 and Section 4 for additional details.)
- Offline data authentication (ODA) is supported by the contactless EMV mode.
- Contactless EMV mode provides a better foundation for innovation and new technologies.
- Improved security of the payments infrastructure (EMV-strength cryptograms).

2.1 Impact of Contactless Operating Mode on Debit Routing Options

Contactless EMV debit transactions are processed similar to contact EMV transactions. The U.S. Common Debit AID is available on the contactless interface of debit payment devices and similar application selection and debit network routing mechanisms apply.

In the U.S., contactless readers are still in the field that support contactless MSD only. MSD is a legacy contactless method that predates migration to EMV in the United States. It is also less secure than EMV contactless. Each brand may have alternative debit network routing options for contactless MSD transactions. As of white paper publication, Table 2 lists the payment network options for contactless MSD debit routing.

	Contactless MSD Debit Routing Available?
American Express	Not applicable
Discover	Yes
Mastercard	Yes
Visa	Not applicable (Contactless MSD is sunset as of April 2019)

Table 2. Payment Network Contactless MSD Debit Routing Options

3. Contactless Issuance Requirements

Contactless MSD-only card issuance is not allowed by payment networks. Contactless operating mode requirements apply to all cardholder devices regardless of form factor (card vs. mobile).

The payment-network-specific contactless operating mode requirements that are applicable to card issuance are included in the table below.

	U.S. Issuance	Non-U.S. Issuance
American Express	Contactless EMV mode is required and contactless MSD mode is recommended in addition to EMV. The issuer can configure the card to contactless EMV mode only or both.	Contactless EMV mode is required and contactless MSD mode is recommended in addition to EMV. The issuer can configure the card to contactless EMV mode only or both.
China Union Pay	Only contactless EMV mode is allowed on contactless cards. China UnionPay does not have a contactless MSD product.	Only contactless EMV mode is allowed on contactless cards. China UnionPay does not have a contactless MSD product.
Discover	Both contactless EMV and MSD modes must be supported. U.S. Common Debit AID is not applicable for contactless MSD mode.	Contactless EMV mode is required. Contactless MSD mode is optional.
JCB	N/A	Only contactless EMV mode is allowed on contactless cards.
Mastercard	Both contactless EMV and MSD modes must be supported on the global Mastercard AID. Cirrus and Maestro AID must support contactless EMV mode and must not support contactless MSD mode. Contactless EMV mode must be supported and contactless MSD mode must not be supported on the U.S. Common Debit AID.	Contactless EMV mode must be supported and contactless MSD mode support is optional on the global Mastercard AID. Cirrus and Maestro AID must support contactless EMV mode and must not support contactless MSD mode.
Visa	Contactless EMV is required and contactless MSD is recommended.	Contactless EMV mode is required. Contactless MSD is not allowed.

4. Contactless Acceptance Requirements

The payment-network-specific contactless operating mode requirements that are applicable to acceptance for the U.S. are included in the table below. Merchants are advised to consult with their acquirers or payment networks on contactless implementations and requirements.

	New Terminal Deployment*	Existing Terminals
American Express	All new and replaced Expresspay-enabled POS systems must support Expresspay contactless EMV mode by April 10, 2020. Contactless MSD mode may be turned off.	All existing Expresspay-enabled POS systems must support Expresspay contactless EMV mode by April 9, 2021. Contactless MSD mode may be turned off.
China UnionPay	Only contactless EMV mode is allowed.	Only contactless EMV mode is allowed.
Discover	Effective October 18, 2019, newly deployed contactless chip EMV technology terminals must support contactless EMV mode and must not support contactless MSD mode.	Existing terminals, in use as of October 18, 2019 that support contactless EMV and MSD modes, may continue to do so. Terminals that only support contactless MSD mode must not remove contactless MSD mode support until they migrate to contactless EMV mode support. Migration to contactless EMV support must be done at the same time as contactless EMV migration for the other payment networks. Note: Discover contactless MSD mode is managed by a separate AID. This means adding and removing the contactless MSD AID manages support of contactless MSD. No additional configuration is necessary.
JCB	Only contactless EMV mode is allowed.	Only contactless EMV mode is allowed.
Mastercard	Only contactless EMV mode is allowed for new terminals (as of October 2019).	EMV-enabled terminals that support contactless must support contactless EMV mode. Only contactless EMV mode will be allowed for all terminals (including existing) on April 2023. Contactless MSD mode must be removed from terminals by that date. Contactless MSD mode may be turned off. The U.S. Common Debit AID only supports contactless EMV mode.
Visa	As of April 13, 2019, contactless EMV mode is required for new terminals. Contactless MSD mode must be disabled if the terminal is contactless EMV-enabled.	As of April 13, 2019, contactless EMV mode is required for existing terminals and effective October 19, 2019, contactless MSD mode must be disabled if the terminal is contactless EMV-enabled.

- * For purposes of this document, “New Terminal Deployment” is defined as any new terminal installations, contactless enablement on existing terminals, or upgrades on terminals which require new Level 3 testing for each payment network. Repaired terminals are not considered new or replacements. Merchants should contact their acquirer or payment network to discuss whether their implementation is considered a new terminal deployment.

5. Legal Notice

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