EMVS Kernel Capabilities

Version: 1.00 (20-Aug-2008)

VERSION HISTORY

Version	Date	Author	Comments
1.00	20/Aug/2008	Wilson F. Martins	First release.

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1. Introduction

The **EMVS Kernel** is a software module for EMV chip card processing, designed to be used over different platforms, such as PIN-pads, POS Terminals and ATMs. In this way, the module is configurable for working over different situations, depending on the customer need.

This document describes all the **EMVS Kernel** different capabilities, helping the **ICS** (Implementation Conformance Statement) form fulfillment required for the 'EMV Type Approval Level 2' certification.

2. EMVS Kernel Capabilities

2.1. Terminal Capabilities

The '**Terminal Capabilities**' is an input parameter and may receive any value.

	Value	Comment
Card Data Input Capabilty		
Manual Key Entry	Yes/No	Not used by the kernel
Magnetic Stripe	Yes/No	Not used by the kernel
IC with contacts	Yes/No	Not used by the kernel
CVM Capability		
Plaintext PIN for ICC Verification	Yes/No	Used during Cardholder Verification step
Enciphered PIN for Online Verification	Yes/No	Used during Cardholder Verification step
Signature (Paper)	Yes/No	Used during Cardholder Verification step
Enciphered PIN for Offline Verification	Yes/No	Used during Cardholder Verification step
No CVM	Yes/No	Used during Cardholder Verification step
Security Capability		
Static Data Authentication	Yes/No	Used during Offline Authentication step
Dynamic Data Authentication	Yes/No	Used during Offline Authentication step
Card Capture	Yes/No	Not used by the kernel
Combined DDA	Yes/No	Used during Offline Authentication step

2.2. Additional Terminal Capabilities

The '**Addition Terminal Capabilities**' is an input parameter and may receive any value.

	Value	Comment
Transaction Type Capabilty		
Cash	Yes/No	Not used by the kernel
Goods	Yes/No	Not used by the kernel
Services	Yes/No	Not used by the kernel

	Value	Comment
Cash Back	Yes/No	Not used by the kernel
Inquiry	Yes/No	Not used by the kernel
Transfer	Yes/No	Not used by the kernel
Payment	Yes/No	Not used by the kernel
Administrative	Yes/No	Not used by the kernel
Cash Deposit	Yes/No	Not used by the kernel
Terminal Data Input Capability		
Numeric Keys	Yes/No	Not used by the kernel
Alphabetic and Special Character Keys	Yes/No	Not used by the kernel
Command Keys	Yes/No	Not used by the kernel
Function Keys	Yes/No	Not used by the kernel
Terminal Data Output Capability		
Print, Attendant	Yes/No	Not used by the kernel
Print, Cardholder	Yes/No	Not used by the kernel
Display, Attendant	Yes/No	Not used by the kernel
Display, Cardholder	Yes/No	Not used by the kernel
Code Table 10	Yes/No	Used to match with Issuer Code Table Index
Code Table 9	Yes/No	Used to match with Issuer Code Table Index
Code Table 8	Yes/No	Used to match with Issuer Code Table Index
Code Table 7	Yes/No	Used to match with Issuer Code Table Index
Code Table 6	Yes/No	Used to match with Issuer Code Table Index
Code Table 5	Yes/No	Used to match with Issuer Code Table Index
Code Table 4	Yes/No	Used to match with Issuer Code Table Index
Code Table 3	Yes/No	Used to match with Issuer Code Table Index
Code Table 2	Yes/No	Used to match with Issuer Code Table Index
Code Table 1	Yes/No	Used to match with Issuer Code Table Index

2.3. Application Selection

	Value	Comment
Support PSE Selection Method	Yes	The EMVS Kernel always tries PSE method first.
Support Cardholder Confirmation	Yes/No	This feature is managed by the payment application.
Does the terminal have a preferred order of displaying applications?	No	When priorities are not defined (or are the same), applications are displayed in the same sequence they are provided to the EMVS Kernel.
Does the terminal support partial AID selection?	Yes/No	The EMVS Kernel may be configured for exact match only.
Does the terminal have multi language support?	Yes/No	Payment application manages all display and printer messages.
Does the terminal support the common character set as defined in Annex B Table 20 Book 4?	Yes/No	

2.4. Data Authentication

	Value	Comment
Maximum supported Certification Authority Public Key size in bytes	248	In fact, it depends on the RSA implementation of each device.
What exponents does the terminal support?	3 $2^{16}+1$	
During data authentication does the terminal check validity for revocation of Issuer Public Key Certificate?	Yes/No	Payment application may manage a list of certificate serial numbers.
When supporting certificate revocation, what is the Certificate Revocation List format?	RID, CAPK Index and CSN	
Does the terminal contain a DDOL?	Yes/No	Payment application may provide a 'Default DDOL' to EMVS Kernel.
Is operator action required when loading of CA Public Key fails?	Yes/No	Payment application manages a database of CA Public Keys, providing them to EMVS Kernel when requested.
CA Public Key verified with CA Public Key Check Sum?	Yes/No	Payment application may check the CA Public Keys checksum (it's outside the scope of EMVS Kernel).

2.5. Cardholder Verification Method

	Value	Comments
Terminal supports bypass PIN Entry	Yes/No	EMVS Kernel supports bypass if properly informed by payment application.
Terminal supports GET DATA for PIN Try Counter	Yes	EMVS Kernel always checks PIN Try Counter.
Terminal supports Fail CVM	Yes	Always, not configurable.
Are amounts known before CVM processing?	Yes/No	It depends on payment application to provide amount information before the Cardholder Verification step.

2.6. Terminal Risk Management

	Value	Comment
Floor Limit Checking	Yes/No	It may be configured by payment application.
Random Transaction Selection	Yes/No	Payment application may bypass the Risk Management step.
Velocity Checking	Yes/No	
Transaction Log	Yes/No	Payment application may manage a transaction log in order to provide extra amounts for risk management.
Exception File	Yes/No	Payment application may manage an exception file.
Terminal Risk Management based on AIP setting	Yes	Always, not configurable.

2.7. Terminal Action Analysis

	Value	Comments
It supports Terminal Action Codes	Yes	Always, not configurable.
Offline Only terminal processes Default Action Codes prior to First Generate AC	Yes	When Terminal Type is 'offline only', EMVS Kernel uses TAC/IAC-Default instead of TAC/IAC-Online, prior to 1st Generate AC.
Offline Only terminal processes Default Action Codes after First Generate AC	No	
Online Only terminal skips processing TAC/IAC-Default and automatically request AAC	Yes	EMVS Kernel always ignores TAC/IAC-Default when Terminal Type is 'online only'.
Online Only terminal processes TAC/IAC-Default as normal when unable to go online	No	

Device capable of detecting CDA failure before Terminal Action Analysis	Yes	
CDA is always requested in a 1st Generate AC, ARQC request	Yes	Always, not configurable.
CDA is never requested in a 1st Generate AC, ARQC request	No	
When successfully going online, CDA is always requested in a 2nd Generate AC, TC request	No	Always, not configurable.
CDA is never requested in a 2nd Generate AC when successful host response is received, with TC request	Yes	

2.8. Completion Processing

	Value	Comments
Transaction Forced Online Capability	Yes/No	Payment application may provide this parameter to EMVS Kernel.
Transaction Forced Acceptance Capability	Yes/No	It depends on payment application (it's outside the scope of EMVS Kernel).
Does Terminal Support Advices	Yes/No	It depends on payment application (it's outside the scope of EMVS Kernel).
Does Terminal Support Issuer imitated voice referrals	Yes/No	It depends on payment application (it's outside the scope of EMVS Kernel).
Does Terminal Support Batch Data Capture	Yes/No	It depends on payment application (it's outside the scope of EMVS Kernel).
Does Terminal Support Online Data Capture	Yes/No	It depends on payment application (it's outside the scope of EMVS Kernel).
Does Terminal Support a Default TDOL	Yes/No	Payment application may provide a 'Default TDOL' to EMVS Kernel.

2.9. Exception Handling

	Value	Comment
POS Entry Mode value when IC cannot be read and the transaction fall back using magstripe	---	It depends on payment application (it's outside the scope of EMVS Kernel).

2.10.Miscellaneous

	Value	Comment
Is the terminal equipped with a PINPAD?	---	It's outside the scope of EMVS Kernel
Is the amount and PIN entered at the same keypad?	---	It's outside the scope of EMVS Kernel
Is the ICC/Magstripe reader combined?	---	It's outside the scope of EMVS Kernel
If combined, is Magstripe read first?	---	It's outside the scope of EMVS Kernel
Does the terminal support account type selection?	---	It's outside the scope of EMVS Kernel
Is Issuer Script device limit greater than 128 bytes?	Yes/No	It depends on payment application (there's no limit inside the EMVS Kernel).
If greater than 128 bytes, what is the value supported?	---	

