

May 09, 2025

Mr. Allan YY Huang

Universal Global Scientific Industrial Co., Ltd.

Rm. 6, 3F., Sanchong Rd., Nangang Dist

Teipei 115602

Taiwan, Province of China

Re: EMVCo Letter of Approval - Contact Terminal Level 2

EMV Application Kernel: CBM-EMV Version v1.0.10

Approval Number(s):
2-05582-1-1C-ICTK-0525-4.4c
2-05582-1-2C-ICTK-0525-4.4c
2-05582-1-3C-ICTK-0525-4.4c
2-05582-1-4C-ICTK-0525-4.4c
2-05582-1-5C-ICTK-0525-4.4c
2-05582-1-6C-ICTK-0525-4.4c
2-05582-1-7C-ICTK-0525-4.4c
2-05582-1-8C-ICTK-0525-4.4c
2-05582-1-9C-ICTK-0525-4.4c
2-05582-1-10C-ICTK-0525-4.4c
2-05582-2-11C-ICTK-0525-4.4c
2-05582-2-12C-ICTK-0525-4.4c
2-05582-2-13C-ICTK-0525-4.4c
2-05582-2-14C-ICTK-0525-4.4c
2-05582-2-15C-ICTK-0525-4.4c
2-05582-2-16C-ICTK-0525-4.4c
2-05582-1-1P-ICTK-0525-4.4c
2-05582-1-1OS-ICTK-0525-4.4c

The EMV Application Kernel has been tested on the following terminal

Terminal: TPA-8800

PinPad: 1P = TPA-8800, CTOS v1.0.0 - PIN pad is valid for configuration(s): 1C, 2C, 3C, 4C, 5C, 6C, 7C, 8C, 9C, 10, 11, 14, 15, 16

Operating System: 1OS = CTOS, 32-bit Version v1.0.0

Renewal Date: 07-May-2029

Report ID

Session 1: **EDT25020_1 Version 1.0 - ICTK Co., Ltd.**

Session 2: **EDT25020_2 Version 1.0 - ICTK Co., Ltd.**

Kernel Checksum:

4EE5EB6A8957B38089AF9E6E0BDC9931D8FE66F2
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Configurations Checksums:

Config	Vendor Config ID	Terminal	Checksum
1C	Cfg12F8-1	12	61754985934F9E17DBC84884D12F091AAD859600
2C	Cfg22B8-3	22	956F2B42C4B1D04A51906BB6B69EC187CBE91693
3C	Cfg11F8-1	11	83D3955A73E6B8B137C5B85708FD4A9A0F8AC047
4C	Cfg2558-3	25	CD45BCBFF4A499BD3275ACEFF6E374DBB76E708D
5C	Cfg22F8-1	22	E8974A9DCCF7D45D48BD4DA818E2848576816FDE
6C	Cfg22B0-2	22	BE8433AA8EFD2A06A06482766081DA7353C5C4CD
7C	Cfg22F0-2	22	DADFD1586287E9E109B47193348F7DCF9FBD6D3
8C	Cfg2558-1	25	7C77AB9C85D5AFE710B0FA74F7398910ABBF1CEC
9C	Cfg2550-1	25	23E5B8B9EFD0436E74CCF5989B274B000D10778E
10C	Cfg2558-2	25	BB03D9293A09BFB9F883724AB17C328B2233BF75
11C	Cfg22F0-3	22	801225097B77040174E7DB88D81CD98B932301A7
12C	Cfg2208-1	22	DAAF8B677616112CCBCE17E58ACC22F4531C2CF4
13C	Cfg2228-1	22	6EED3E51C3E2FEA9020062166EBB9C69D6D735EB
14C	Cfg12F0-1	12	5167DDB61403F3E2B15E236D1FE61B4801D69E08
15C	Cfg2298-1	22	C711F6C359854A76C196BD956A6E5E431360378B
16C	Cfg22B8-4	22	AC26DCE0596784C569E74436444C58279B8DAB12

PIN Pads Checksums:

PinPad	Checksum
1P	

Dear Mr. Huang:

EMVCo, LLC ("EMVCo"), a Delaware limited liability company, has received your request for Level 2 terminal type approval for the EMV Application Kernel identified above (hereafter referred to as the "Application"). In connection with your request, we have reviewed all test file number(s) listed above.

After assessing such file(s), EMVCo has found reasonable evidence that the submitted samples of the above referenced Application sufficiently conform to EMV Integrated Circuit Card Specifications for Payment Systems, Version 4.4 of October 2022.

EMVCo hereby grants your Application EMVCo Type Approval for Terminal Level 2, based on the requirements stated in the EMV 4.4 Specifications. Please note that EMVCo may publish this letter and publicly identify your Application as an approved Application, including in EMVCo's published list of approved Applications.

EMVCo's grant to your Application is subject to and specifically incorporates (i) the General Terms and Conditions to the Letter of Approval enclosed as Exhibit A, and (ii) the Specific Terms and Conditions to the Letter of Approval attached hereto as Attachment 1. Because EMVCo's grant is subject to such limitations, including certain events of termination, you and any third parties should confirm that such approval is current and has not been terminated by referring to the list of approved Applications published on the EMVCo website (www.emvco.com).

Please note that EMVCo makes certain logos available for use in connection with an Application that has received EMVCo approval. To obtain permission to use the "EMV Approved" certification mark, please contact EMVCo to request a license agreement.

This Letter of Approval is valid while the approval number is posted on the EMVCo website.

Authorised by Frédéric Fortin
Terminal Testing Group Chair
EMVCo, LLC

Note:

The Random Number Generator and the Cryptographic Functions are part of the EMV specifications. This Contact Level 2 Kernel utilizes a specific Hardware component in the tested terminal to generate random numbers and/or Cryptographic Functions. To be EMV compliant, this Contact Level 2 Kernel shall be used in conjunction with terminals having this specific Hardware component.

Terminal Capabilities	1C	2C	3C	4C	5C	6C	7C	8C	9C	10C
Card Data Input Capability										
Terminal Type	12	22	11	25	22	22	22	25	25	25
Manual Key Entry	Yes	No								
Magnetic Stripe	Yes									
IC with Contacts	Yes									
CVM Capability										
Plaintext PIN	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No
Online Enciphered PIN	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Signature (Paper)	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No
Offline Enciphered PIN (RSA)	Yes									
No CVM	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes
Offline Enciphered PIN (ECC)	No									
Biometric	No									
Offline Finger	No									
Online Finger	No									
Offline Facial	No									
Online Facial	No									
Offline Palm	No									
Online Palm	No									
Offline Iris	No									
Online Iris	No									
Offline Voice	No									
Online Voice	No									
Security Capability										
SDA & DDA	Yes									
Card Capture	No									
CDA	Mode 3	Mode 1	Mode 3	Mode 1						
XDA	No									
Transaction Type Capability										
Tran Type - Cash	Yes	Yes	Yes	No	Yes	No	No	No	No	No
Tran Type - Goods	Yes									
Tran Type - Services	Yes									
Tran Type - Cash Back	Yes	Yes	Yes	No	Yes	No	No	No	No	No
Tran Type - Inquiry	Yes	No	Yes	No						
Tran Type - Transfer	Yes	No	Yes	No						
Tran Type - Payment	Yes	No	Yes	No						
Tran Type - Admin	Yes	No								
Tran Type - Cash Deposit	Yes	No	Yes	No						
Terminal Data Input Capability										
Keypad	Yes									
Numeric Keys	Yes									
Alpha and Special Character Keys	Yes									
Command Keys	Yes									
Function Keys	Yes									

(continued)	1C	2C	3C	4C	5C	6C	7C	8C	9C	10C
Terminal Data Output Capability										
Print	Yes	No	No	No						
Display	Yes									
Code Table 10	No									
Code Table 9	No									
Code Table 8	No									
Code Table 7	No									
Code Table 6	No									
Code Table 5	No									
Code Table 4	No									
Code Table 3	No									
Code Table 2	No									
Code Table 1	Yes									
Application Selection										
PSE	Yes									
Cardholder Confirmation	Yes									
Preferred display order	Yes	No								
Partial AID Selection	Yes									
Multi language	Yes									
EMV Language Selection method	Yes									
Common Character Set	Yes									
Data Authentication										
Revocation of Issuer PK Certificate	Yes	No								
Certificate Revocation List Format	RID(5B)+CA PKI(1B)+CS N(3B)									
Default DDOL	Yes									
Cardholder Verification Method										
Bypass PIN Entry	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No
Subsequent Bypass PIN Entry	No	Yes	No							
Get Data for PIN Try Counter	Yes									
Fail CVM	Yes									
Amount known before CVM proces.	Yes									
Terminal Risk Management										
Floor Limit Checking	Yes									
Random Transaction Selection	Yes									
Velocity Checking	Yes									
Transaction Log	Yes									
Exception File	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No
TRM irrespective of AIP setting (expected behavior)	Yes									

(continued)	1C	2C	3C	4C	5C	6C	7C	8C	9C	10C
Terminal Action Analysis										
Terminal Action Codes supported	Yes									
TAC can be deleted or disabled	Yes									
How does offline only Terminal process Default Action Codes?	N/A									
How does online only terminal process TAC/IAC-Default when unable to go online?	N/A	N/A	Normal	N/A						
Completion Processing										
Forced Online	Yes	Yes	Yes	No	Yes	No	No	No	No	No
Forced Acceptance	Yes	Yes	Yes	No	Yes	No	No	No	No	No
Voice Referrals Initiated by Issuer	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No
Default TDOL	Yes									
Default TDOL not configured	Yes									
Exception Handling										
POS Entry Mode	8x									
Miscellaneous										
Amount and PIN on same keypad	Yes									
ICC/Magstripe Reader Combined	No									
Supports account type selection	No	Yes	No							
Supports 'on fly' script processing	No									
Issuer Script device limit > 128 bytes	Yes									
If limit > 128, value supported?	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024
Internal Date Management	Yes									
Does the terminal support Receipt?	Yes	No								

Terminal Capabilities	11C	12C	13C	14C	15C	16C				
Card Data Input Capability										
Terminal Type	22	22	22	12	22	22				
Manual Key Entry	Yes	Yes	Yes	Yes	Yes	Yes				
Magnetic Stripe	Yes	Yes	Yes	Yes	No	No				
IC with Contacts	Yes	Yes	Yes	Yes	Yes	Yes				
CVM Capability										
Plaintext PIN	Yes	No	No	Yes	Yes	Yes				
Online Enciphered PIN	Yes	No	No	Yes	No	No				
Signature (Paper)	Yes	No	Yes	Yes	No	Yes				
Offline Enciphered PIN (RSA)	Yes	No	No	Yes	Yes	Yes				
No CVM	No	Yes	Yes	No	Yes	Yes				
Offline Enciphered PIN (ECC)	No	No	No	No	No	No				
Biometric	No	No	No	No	No	No				
Offline Finger	No	No	No	No	No	No				
Online Finger	No	No	No	No	No	No				
Offline Facial	No	No	No	No	No	No				
Online Facial	No	No	No	No	No	No				
Offline Palm	No	No	No	No	No	No				
Online Palm	No	No	No	No	No	No				
Offline Iris	No	No	No	No	No	No				
Online Iris	No	No	No	No	No	No				
Offline Voice	No	No	No	No	No	No				
Online Voice	No	No	No	No	No	No				
Security Capability										
SDA & DDA	Yes	Yes	Yes	Yes	Yes	Yes				
Card Capture	No	No	No	No	No	No				
CDA	Mode 3	Mode 1								
XDA	No	No	No	No	No	No				
Transaction Type Capability										
Transaction Type - Cash	Yes	Yes	Yes	Yes	Yes	Yes				
Transaction Type - Goods	Yes	Yes	Yes	Yes	Yes	Yes				
Transaction Type - Services	Yes	Yes	Yes	Yes	Yes	Yes				
Transaction Type - Cash Back	Yes	Yes	Yes	Yes	Yes	Yes				
Transaction Type - Inquiry	No	No	No	Yes	No	No				
Transaction Type - Transfer	No	No	No	Yes	No	No				
Transaction Type - Payment	No	No	No	Yes	No	No				
Transaction Type - Admin	No	No	No	Yes	No	No				
Transaction Type - Cash Deposit	No	No	No	Yes	No	No				
Terminal Data Input Capability										
Keypad	Yes	Yes	Yes	Yes	Yes	Yes				
Numeric Keys	Yes	Yes	Yes	Yes	Yes	Yes				
Alpha and Special Character Keys	Yes	Yes	Yes	Yes	Yes	Yes				
Command Keys	Yes	Yes	Yes	Yes	Yes	Yes				
Function Keys	Yes	Yes	Yes	Yes	Yes	Yes				

(continued)	11C	12C	13C	14C	15C	16C				
Terminal Data Output Capability										
Print	Yes	Yes	Yes	Yes	No	Yes				
Display	Yes	Yes	Yes	Yes	Yes	Yes				
Code Table 10	No	No	No	No	No	No				
Code Table 9	No	No	No	No	No	No				
Code Table 8	No	No	No	No	No	No				
Code Table 7	No	No	No	No	No	No				
Code Table 6	No	No	No	No	No	No				
Code Table 5	No	No	No	No	No	No				
Code Table 4	No	No	No	No	No	No				
Code Table 3	No	No	No	No	No	No				
Code Table 2	No	No	No	No	No	No				
Code Table 1	Yes	Yes	Yes	Yes	Yes	Yes				
Application Selection										
PSE	Yes	Yes	Yes	Yes	Yes	Yes				
Cardholder Confirmation	Yes	Yes	Yes	Yes	Yes	Yes				
Preferred display order	No	No	No	No	No	No				
Partial AID Selection	Yes	Yes	Yes	Yes	Yes	Yes				
Multi language	Yes	Yes	Yes	Yes	Yes	Yes				
EMV Language Selection method	Yes	Yes	Yes	Yes	Yes	Yes				
Common Character Set	Yes	Yes	Yes	Yes	Yes	Yes				
Data Authentication										
Revocation of Issuer PK Certificate	Yes	Yes	Yes	Yes	Yes	Yes				
Certificate Revocation List Format	RID(5B)+CA PKI(1B)+CS N(3B)	RID(5B)+CA PKI(1B)+CS N(3B)	RID(5B)+CA PKI(1B)+CS N(3B)	RID(5B)+CA PKI(1B)+CS N(3B)	RID(5B)+CA PKI(1B)+CS N(3B)	RID(5B)+CA PKI(1B)+CS N(3B)				
Default DDOL	Yes	Yes	Yes	Yes	Yes	Yes				
Cardholder Verification Method										
Bypass PIN Entry	Yes	No	No	Yes	Yes	Yes				
Subsequent Bypass PIN Entry	No	No	No	No	Yes	Yes				
Get Data for PIN Try Counter	Yes	No	No	Yes	Yes	Yes				
Fail CVM	Yes	Yes	Yes	Yes	Yes	Yes				
Amount known before CVM proces.	Yes	Yes	Yes	Yes	Yes	Yes				
Terminal Risk Management										
Floor Limit Checking	Yes	Yes	Yes	Yes	Yes	Yes				
Random Transaction Selection	Yes	Yes	Yes	Yes	Yes	Yes				
Velocity Checking	Yes	Yes	Yes	Yes	Yes	Yes				
Transaction Log	Yes	Yes	Yes	Yes	Yes	Yes				
Exception File	Yes	Yes	Yes	Yes	Yes	Yes				
TRM irrespective of AIP setting (expected behavior)	Yes	Yes	Yes	Yes	Yes	Yes				

(continued)	11C	12C	13C	14C	15C	16C				
Terminal Action Analysis										
Terminal Action Codes supported	Yes	Yes	Yes	Yes	Yes	Yes				
TAC can be deleted or disabled	Yes	Yes	Yes	Yes	Yes	Yes				
How does offline only Terminal process Default Action Codes?	N/A	N/A	N/A	N/A	N/A	N/A				
How does online only terminal process TAC/IAC-Default when unable to go online?	N/A	N/A	N/A	N/A	N/A	N/A				
Completion Processing										
Forced Online	Yes	Yes	Yes	Yes	Yes	Yes				
Forced Acceptance	Yes	Yes	Yes	Yes	Yes	Yes				
Voice Referrals Initiated by Issuer	Yes	Yes	Yes	Yes	Yes	Yes				
Default TDOL	Yes	Yes	Yes	Yes	Yes	Yes				
Default TDOL not configured	Yes	Yes	Yes	Yes	Yes	Yes				
Exception Handling										
POS Entry Mode	8x	8x	8x	8x	8x	8x				
Miscellaneous										
Amount and PIN on same keypad	Yes	Yes	Yes	Yes	Yes	Yes				
ICC/Magstripe Reader Combined	No	No	No	No	No	No				
Supports account type selection	No	No	No	No	Yes	Yes				
Supports 'on fly' script processing	No	No	No	No	No	No				
Issuer Script device limit > 128 bytes	Yes	Yes	Yes	Yes	Yes	Yes				
If limit > 128, value supported?	1024	1024	1024	1024	1024	1024				
Internal Date Management	Yes	Yes	Yes	Yes	Yes	Yes				
Does the terminal support Receipt?	Yes	Yes	Yes	Yes	Yes	Yes				

Attachment 1

Specific Terms and Conditions to the Letter of Approval

Restriction:

None