

May 25, 2023

Jun Liu

Wuhan Tianyu Information Industry Co., Ltd.

Huazhong University of Sci. & Tech., East Lake Dev. Zone, Wuhan
430223, Hubei, China

Wuhan 430223

China

Re: EMVCo Letter of Approval - Contact Terminal Level 2

EMV Application Kernel: TYEmvKernel Version V2.01

**Approval Number(s): 2-05202-1-1C-BCTC-0523-4.3k
2-05202-1-1OS-BCTC-0523-4.3k**

The EMV Application Kernel has been tested on the following terminal

Terminal: P30
PinPad: n/a
Operating System: 1OS = TYOS Version V1.00

Renewal Date: 15-May-2027

**Report ID Session 1: TEMV231YN1T Version V1.0 - Beijing Unionpay Card Technology Co., Ltd
(Bank Card Test Center)**

Kernel Checksum:

425244BD7C642724CC6E

Configurations Checksums:

Config	Vendor Config ID	Terminal	Checksum
1C	C1	22	4469269400593D84E929

Dear Jun Liu:

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 4.3 of November 2011.

EMVCo hereby grants your Application EMVCo Type Approval for Terminal Level 2, based on the requirements stated in the EMV 4.3 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.

EMVCo, LLC, a Delaware limited liability company

By:

Name: Frédéric Fortin

Title: EMVCo Terminal Type Approval Chair

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									
Card Data Input Capability										
Terminal Type	22									
Manual Key Entry	No									
Magnetic Stripe	Yes									
IC with Contacts	Yes									
CVM Capability										
Plaintext PIN	Yes									
Online Enciphered PIN	Yes									
Signature (Paper)	Yes									
Offline Enciphered PIN	Yes									
No CVM	No									
SB185	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 1									
Transaction Type Capability										
Tran Type - Cash	No									
Tran Type - Goods	Yes									
Tran Type - Services	Yes									
Tran Type - Cash Back	Yes									
Tran Type - Inquiry	Yes									
Tran Type - Transfer	Yes									
Tran Type - Payment	Yes									
Tran Type - Admin	Yes									
Tran Type - Cash Deposit	No									
Terminal Data Input Capability										
Keypad	Yes									
Numeric Keys	Yes									
Alpha and Special Character Keys	No									
Command Keys	Yes									
Function Keys	Yes									

(continued)	1C									
Terminal Data Output Capability										
Print, Attendant	Yes									
Print, Cardholder	No									
Display, Attendant	Yes									
Display, Cardholder	No									
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									
Partial AID Selection	Yes									
Multi language	No									
EMV Language Selection method	No									
Common Character Set	Yes									
Data Authentication										
MAX CA Public key	248									
Exponents	3 and 2 ¹⁶ +1									
Revocation of Issuer PK Certificate	Yes									
Certificate Revocation List Format	RID+CAPKI+CSN									
Default DDOL	Yes									
Manual act. when CA PK loading fails	Yes									
CA PK verified with check sum	Yes									
Cardholder Verification Method										
Bypass PIN Entry	Yes									
Subsequent Bypass PIN Entry	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	No									
Exception File	Yes									
TRM irrespective of AIP setting (expected behavior)	Yes									

(continued)		1C									
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?	Normal										
Completion Processing											
Forced Online	No										
Forced Acceptance	No										
Advices	No										
Voice Referrals Initiated by Issuer	Yes										
Batch Data Capture	Yes										
Online Data Capture	Yes										
Default TDOL	Yes										
Default TDOL not configured	No										
Exception Handling											
POS Entry Mode	80										
Miscellaneous											
Amount and PIN on same keypad	Yes										
ICC/Magstripe Reader Combined	No										
If Combined, is Magstripe read first?	No										
Supports account type selection	No										
Supports 'on fly' script processing	No										
Issuer Script device limit > 128 bytes	No										
If limit > 128, value supported?											
Internal Date Management	Yes										
Does the terminal support Receipt?	Yes										

Attachment 1

Specific Terms and Conditions to the Letter of Approval

Restriction:

None