

March 21, 2024

Ms. Hyejung Kim
Zoa Electronics Co.,Ltd.
2F, 203, 53 Jeonpa-ro, Manan-gu
Anyang-si 14084
Korea, Republic of

Re: *EMVCo Letter of Approval - Contact Terminal Level 2*

EMV Application Kernel: ZEC MP EMV KERNEL Version Version 4.4.b

Approval Number(s):
2-05390-1-1S-ICTK-0324-4.4b
2-05390-1-1P-ICTK-0324-4.4b
2-05390-1-1OS-ICTK-0324-4.4b

The EMV Application Kernel has been tested on the following terminal

Terminal: TP-2000N
PinPad: 1P = ZEC PINPAD simulator on Desktop Dell inspiron 3671, ZEC MP PINPAD V2.0
Operating System: 1OS = ZEC MP OS 32bit Version Version 2.0

Renewal Date: 19-Mar-2028

Report ID Session 1: EDT24025 Version 2.0 - ICTK Co., Ltd.

Kernel Checksum:

1A838627

Configuration Checksum:

Config	Vendor Config ID	Terminal	Checksum
1S		21	21082C14

PIN Pads Checksums:

PinPad	Checksum
1P	

Dear Ms. Kim:

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.

EMVCo, LLC, a Delaware limited liability company

By:

Name: Frédéric Fortin

Title: EMVCo Terminal Testing Group Chair

Terminal Capabilities		Value Supported
Card Data Input Capability		
Manual Key Entry		No
Magnetic Stripe		Yes
IC with Contacts		Yes
CVM Capability		
Plaintext PIN for ICC Verification		No
Enciphered PIN for online Verification		Yes
Signature (Paper)		Yes
Enciphered PIN for offline Verification (RSA ODE)		No
No CVM Required		Yes
Enciphered PIN for offline Verification (ECC ODE)		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		
Static Data Authentication and Dynamic Data Authentication		No
Card Capture		No
Combined Dynamic Data Authentication / Application Cryptogram Generation		No
Extended Data Authentication (XDA)		No
Transaction Type Capability		
Cash		No
Goods		Yes
Services		Yes
Cash Back		No
Inquiry		No
Transfer		No
Payment		No
Administrative		No
Cash Deposit		No
Terminal Data Input Capability		
Does terminal have keypad		Yes
Numeric Keys		Yes
Alphabetic and Special Character Keys		No
Command Keys		Yes
Function Keys		Yes
Terminal Data Output Capability		
Print, Attendant (Mandatory for terminals supporting signature)		Yes
Print, Cardholder		No
Display, Attendant (Mandatory for Attended terminals)		Yes
Display Cardholder		No

Terminal Capabilities		Value Supported
Terminal Data Output Capability		
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		No
Application Selection		
Support PSE selection Method		Yes
Support Cardholder Selection & Confirmation		Yes
Does Terminal have a preferred order of displaying applications		No
Does terminal perform partial AID selection		Yes
Does the terminal have multi language support		No
Does the terminal support the EMV Language Selection method		No
Does the terminal support the Common Character Set as defined in Annex B table 20 Book 4		Yes
Selectable Kernel Configurations		
Is your Multi-Configuration Kernel capable of dynamically selecting a configuration at the time of transaction		No
Data Authentication		
What is the maximum supported Certificate Authority Public Key Size (Mandatory for terminals supporting Data Authentication with minimal support for 248 bytes)		N/A
What exponents does the terminal support (Mandatory for terminals supporting Data Authentication, 3 and $2^{16}+1$)		N/A
During data authentication does the terminal check validity for revocation of Issuer Public Key Certificate		No
When supporting certificate revocation, what is the Certificate Revocation List format?		
Does the terminal contain a default DDOL (Mandatory for terminals supporting DDA)		No
Cardholder Verification Method		
Terminal supports bypass PIN Entry		Yes
Terminal supports Subsequent bypass PIN Entry		Yes
Terminal supports Get Data for PIN Try Counter		No
Terminal supports Fail CVM		Yes
Are amounts known before CVM processing		Yes
Terminal Risk Management		
Floor Limit Checking (Mandatory for offline only terminals and offline terminals with online capability)		No
Random Transaction Selection (Mandatory for offline terminals with online capability, except when cardholder controlled)		No
Velocity Checking (Mandatory for offline only terminals and offline terminals with online capability)		No
Transaction Log		No
Exception File		No
Terminal Risk Management performed irrespective of AIP setting (expected behavior)		Yes

Terminal Capabilities		Value Supported
Terminal Action Analysis		
Does the terminal support Terminal Action Codes		Yes
Can the Terminal Action Codes be deleted or disabled?		No
If yes what are the default TAC values supported? (according to Book 3 Section 10.7)	TAC Denial:	
	TAC Online:	
	TAC Default:	
How does Offline Only Terminal process Default Action Codes prior to First Generate AC? (Offline Only Terminal shall support one option)		N/A
How does online only terminal process TAC/IAC-Default when unable to go online?		Normal
Completion Processing		
Transaction Forced Online Capability		No
Transaction Forced Acceptance Capability		No
Does the terminal support Issuer initiated Voice Referrals		Yes
Does the terminal support a Default TDOL		Yes
If a Default TDOL is supported, can this default TDOL be not configured (or not loaded) in the terminal		No
Default TDOL TVR bit set before or after the 1st Generate AC Terminal Action Analysis		Before
Exception Handling		
What is the POS Entry Mode value when IC cannot be read and the transaction falls back using Magstripe (Mandatory for attended terminals)		02
Miscellaneous		
Is the terminal equipped with a PIN Pad		Yes
Is the amount and PIN entered at the same keypad		Yes
Is the ICC/Magstripe Reader combined		No
Does the terminal support account type selection		No
Does the terminal support 'on fly' script processing (not recommended behavior)		No
Is the Issuer Script device limit greater than 128 bytes		No
If the Issuer Script device limit is greater than 128 bytes, what is the value supported		
Does the terminal support Internal Date Management		No
Is the Level 2 Contact Kernel Random Generator using the algorithm described in Book2, section 11.3		No
If the Level 2 Contact Kernel Random Generator is not using the algorithm described in Book2, section 11.3, is this function PCI approved		No
If the Level 2 Contact Kernel Random Generator is not using the algorithm described in Book2, section 11.3, describe the function (such as algorithm used, etc)		The terminal uses Well Equidistributed Long-period Linear (WELL) pseudo-random number generator. And when initializing the terminal uses the chip's timer count register value as the seed value. It is a form of linear-feedback shift register optimized for software implementation on a 32-bit machine.
Is the Level 2 Contact Kernel Software dependent on the Terminal Hardware		No
If answer to previous question is Yes, describe the function and the Hardware		
Are the Cryptographic functions (RSA, Hash, etc) of the Level 2 Contact Kernel Software dependent on the Terminal Hardware		No
If answer to previous question is Yes, describe the Hardware		
Is any other functions of the Level 2 Contact Kernel Software dependent on the Terminal Hardware		No
If answer to previous question is Yes, describe the functions and the Hardware		

Terminal Capabilities		Value Supported
Miscellaneous		
Does the terminal support Receipt (by printing or any electronic means)?	Yes	
List the Currency Codes supported as for ISO 4217 If Kernel supports multiple currency codes, at least one per currency exponent supported shall be listed and at a minimum 10 regardless of the actual number supported.	036 124 156 344 356 392 410 826 840 978	
Does the terminal support the Application Selection Registered Proprietary Data (ASRPD)?	No	
List the Language(s) supported as for ISO 639 (minimum one shall be declared, and up to 10 if Multiple Languages are supported)	eng	
Can the Kernel be configured so the data object 'Terminal Risk Management Data' '9F1D' is absent or configured with no value (00 is a value)?	No	
Can the Transaction Sequence Counter (TSC) be personalized to any value?	No	
If answer to previous question is Yes, what is the Maximum Value of the Transaction Sequence Counter?	N/A	
Checksum		
Does the product comply with the Checksum rules as defined in Contact Terminal Level 2 administrative process	Yes	
This is an Initial submission or Subsequent submission or renewal of the original approved product prior to the effective date of checksum rules (cf Terminal Type Approval Bulletin No. 134)	n/a	
Configuration Checksum (Static Kernel only)	21082C14	

Attachment 1

Specific Terms and Conditions to the Letter of Approval

Restriction:

None