



September 07, 2011

Mr. Tommy Fung
Spectra Technologies Holding Co., Ltd
Unit 1301-09, 19-20,
Tower 2, Grand Century Place,
193 Prince Edward Road West
Kowloon
Hong Kong

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

EMV Application Kernel: T1000-EMVDLL V1.0

Approval Number(s):
2-02134-1-1C-BCT-0911-4.2.c
2-02134-1-2C-BCT-0911-4.2.c
2-02134-1-3C-BCT-0911-4.2.c
2-02134-1-4C-BCT-0911-4.2.c
2-02134-1-1OS-BCT-0911-4.2.c

The EMV Application Kernel has been tested on the following terminal

Terminal: T1000
PinPad: n/a
Operating System: 1OS = SPECTRARM9 Version V1.0

Report ID Session 1: TEMV1102024 - Beijing Unionpay Card technology Co., Ltd (Bank Card Test Center)

Approved Configurations:

Config	Vendor Config ID	Terminal	Checksum
1C	CFG_112	22	1a4d3c77
2C	CFG_113	22	1acd4e1e
3C	CFG_114	22	1a4c0f46
4C	CFG_C115	22	1acc7d2f

Renewal Date: **07-Sep-2014**

Dear Mr. Fung:

EMVCo, LLC ("EMVCo"), a Delaware limited liability company, has received your request for Level 2 terminal type approval for the EMV Application Kernel (hereafter referred to as Application) identified above. 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 Kernel sufficiently conform to EMV Integrated Circuit Card Specifications for Payment Systems, Version 4.2 of June 2008.

EMVCo hereby (a) grants your Application EMVCo Type Approval for Terminal Level 2, based on the requirements stated in the EMV 4.2 Specifications, and (b) agrees to include your Application Kernel in EMVCo's approved Application list.

EMVCo's grant to your Application Kernel 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 Application Kernels published on the EMVCo website (www.emvco.com).

Spectra Technologies Holding Co., Ltd

This Letter of Approval is effective on dispatch from EMVCo.

EMVCo, LLC, a Delaware limited liability company

By:

Name: Arnaud du Chéné

Title: EMVCo Terminal Type Approval

Terminal Capabilities	1C	2C	3C	4C						
Card Data Input Capability										
Terminal Type	22	22	22	22						
Manual Key Entry	Yes	Yes	Yes	Yes						
Magnetic Stripe	Yes	Yes	Yes	Yes						
IC with Contacts	Yes	Yes	Yes	Yes						
CVM Capability										
Plaintext PIN	Yes	Yes	Yes	Yes						
Online Enciphered PIN	Yes	No	Yes	No						
Signature (Paper)	Yes	Yes	Yes	Yes						
Offline Enciphered PIN	Yes	Yes	Yes	Yes						
No CVM	No	No	No	No						
Security Capability										
SDA and DDA	Yes	Yes	Yes	Yes						
Card Capture	No	No	No	No						
CDA	Yes	Yes	Yes	Yes						
Transaction Type Capability										
Tran Type - Cash	Yes	Yes	Yes	Yes						
Tran Type - Goods	Yes	Yes	Yes	Yes						
Tran Type - Services	Yes	Yes	Yes	Yes						
Tran Type - Cash Back	Yes	Yes	Yes	Yes						
Tran Type - Inquiry	No	No	No	No						
Tran Type - Transfer	No	No	No	No						
Tran Type - Payment	No	No	No	No						
Tran Type - Admin	No	No	No	No						
Tran Type - Cash Deposit	No	No	No	No						
Terminal Data Input Capability										
Keypad	Yes	Yes	Yes	Yes						
Numeric Keys	Yes	Yes	Yes	Yes						
Alpha and Special Character Keys	Yes	Yes	Yes	Yes						
Command Keys	Yes	Yes	Yes	Yes						
Function Keys	Yes	Yes	Yes	Yes						
Terminal Data Output Capability										
Print, Attendant	Yes	Yes	Yes	Yes						
Print, Cardholder	No	No	No	No						
Display, Attendant	Yes	Yes	Yes	Yes						
Display, Cardholder	No	No	No	No						
Code Table 10	No	No	No	No						
Code Table 9	No	No	No	No						
Code Table 8	No	No	No	No						
Code Table 7	No	No	No	No						
Code Table 6	No	No	No	No						
Code Table 5	No	No	No	No						
Code Table 4	No	No	No	No						
Code Table 3	No	No	No	No						
Code Table 2	No	No	No	No						
Code Table 1	Yes	Yes	Yes	Yes						

(continued)	1C	2C	3C	4C						
Application Selection										
PSE	Yes	Yes	Yes	Yes						
Cardholder Confirmation	Yes	Yes	Yes	Yes						
Preferred display order	No	No	No	No						
Partial AID Selection	Yes	Yes	Yes	Yes						
Multi language	No	No	No	No						
EMV Language Selection method	No	No	No	No						
Common Character Set	Yes	Yes	Yes	Yes						
Data Authentication										
MAX CA Public key	248	248	248	248						
Exponents	3 and 2 ¹⁶ +1	3 and 2 ¹⁶ +1	3 and 2 ¹⁶ +1	3 and 2 ¹⁶ +1						
Revocation of Issuer PK Certificate	Yes	Yes	Yes	Yes						
Certificate Revocation List Format	RID, CA Public Key Index, Certificate Serial	RID, CA Public Key Index, Certificate Serial	RID, CA Public Key Index, Certificate Serial	RID, CA Public Key Index, Certificate Serial						
Default DDOL	Yes	Yes	Yes	Yes						
Manual act. when CA PK loading fails	Yes	Yes	Yes	Yes						
CA PK verified with check sum	No	No	No	No						
Cardholder Verification Method										
Bypass PIN Entry	Yes	Yes	Yes	Yes						
Subsequent Bypass PIN Entry	Yes	Yes	Yes	Yes						
Get Data for PIN Try Counter	Yes	Yes	Yes	Yes						
Fail CVM	Yes	Yes	Yes	Yes						
Amount known before CVM proces.	Yes	Yes	Yes	Yes						
Terminal Risk Management										
Floor Limit Checking	Yes	Yes	Yes	Yes						
Random Transaction Selection	Yes	Yes	Yes	Yes						
Velocity Checking	Yes	Yes	Yes	Yes						
Transaction Log	Yes	Yes	Yes	Yes						
Exception File	No	No	No	No						
TRM irrespective of AIP setting (expected behavior)	Yes	Yes	Yes	Yes						
Terminal Action Analysis										
Terminal Action Codes supported	Yes	Yes	Yes	Yes						
TAC can be changed	No	No	No	No						
TAC can be deleted or disabled	No	No	No	No						
Default Act. Codes prior to 1stGenAC	No	No	No	No						
Default Action Codes after 1stGenAC	No	No	No	No						
TAC/IAC-Default skipped	No	No	No	No						
TAC/IAC-Default normal processing	Yes	Yes	Yes	Yes						
CDA failure detected prior TA Analysis	Yes	Yes	Yes	Yes						
Mode 1	Yes	Yes	Yes	Yes						
Mode 2	No	No	No	No						
Mode 3	No	No	No	No						
Mode 4	No	No	No	No						

(continued)	1C	2C	3C	4C						
Completion Processing										
Forced Online	Yes	Yes	No	No						
Forced Acceptance	No	No	No	No						
Advices	Yes	Yes	Yes	Yes						
Issuer Referrals	Yes	Yes	Yes	Yes						
Batch Data Capture	Yes	Yes	Yes	Yes						
Online Data Capture	Yes	Yes	Yes	Yes						
Default TDOL	Yes	Yes	Yes	Yes						
Exception Handling										
POS Entry Mode	92	92	92	92						
Miscellaneous										
PIN Pad	No	No	Yes	Yes						
Amount and PIN on same keypad	Yes	Yes	No	No						
ICC/Magstripe Reader Combined	No	No	No	No						
If Combined, is Magstripe read first?	No	No	No	No						
Supports account type selection	No	No	No	No						
Issuer Script device limit > 128 bytes	Yes	Yes	Yes	Yes						
If limit > 128, value supported?	256	256	256	256						
Internal Date Management	Yes	Yes	Yes	Yes						
Selectable Kernel Configurations										
Selectable Kernel Configurations	No	No	No	No						
(1) AID Amount Selection Criteria (CVM variation)										
Range Criteria X	n/a	n/a	n/a	n/a						
Range Criteria X and Y	n/a	n/a	n/a	n/a						
Range Criteria X per AID	n/a	n/a	n/a	n/a						
Range Criteria X and Y per AID	n/a	n/a	n/a	n/a						
(2) AID, Amount and Transaction Type Selection (CVM variation)										
Range Criteria X	n/a	n/a	n/a	n/a						
Range Criteria X and Y	n/a	n/a	n/a	n/a						
Range Criteria X per AID	n/a	n/a	n/a	n/a						
Range Criteria X and Y per AID	n/a	n/a	n/a	n/a						
(3) AID, Amount Selection (CVM and Terminal Type variation)										
Range Criteria X	n/a	n/a	n/a	n/a						
Range Criteria X and Y	n/a	n/a	n/a	n/a						
Range Criteria X per AID	n/a	n/a	n/a	n/a						
Range Criteria X and Y per AID	n/a	n/a	n/a	n/a						

Attachment 1

Specific Terms and Conditions to the Letter of Approval

Restriction:

None