



February 05, 2014

Igor Soukhostavsky  
TT, Ltd (Terminal Technologies)  
8 Yunosty  
Zelenograd  
124482 Moscow  
Russia

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

**EMV Application Kernel: emvlib Version 1.6**  
**Approval Number(s): 2-02720-1-1C-UTS-0214-4.3.c**  
**2-02720-1-2C-UTS-0214-4.3.c**  
**2-02720-1-1OS-UTS-0214-4.3.c**

---

The EMV Application Kernel has been tested on the following terminal

**Terminal: YARUS P2100**  
**PinPad: n/a**  
**Operating System: 1OS = Linux Version 2.6**

---

**Renewal Date: 05-Feb-2017**

**Report ID Session 1: 2TETE-RP10163110JD01A-UTS - Underwriters Laboratories Verification Services LTD**

**Approved Configurations:**

Config	Vendor Config ID	Terminal	Checksum
1C	POS	22	E1CA642B
2C	UPT	25	E856A923

Dear Igor Soukhostavsky:

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 4.3 of November 2011 and all the applicable specification bulletins at the date of the test session.

EMVCo hereby (a) grants your Application EMVCo Type Approval for Terminal Level 2, based on the requirements stated in the EMV 4.3 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](http://www.emvco.com)).

TT, Ltd (Terminal Technologies)

***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: Arnaud du Chéné

Title: EMVCo Terminal Type Approval

<b>Terminal Capabilities</b>	<b>1C</b>	<b>2C</b>								
<b>Card Data Input Capability</b>										
Terminal Type	22	25								
Manual Key Entry	Yes	Yes								
Magnetic Stripe	Yes	Yes								
IC with Contacts	Yes	Yes								
<b>CVM Capability</b>										
Plaintext PIN	Yes	No								
Online Enciphered PIN	Yes	Yes								
Signature (Paper)	Yes	No								
Offline Enciphered PIN	Yes	No								
No CVM	No	No								
<b>Security Capability</b>										
SDA and DDA	Yes	Yes								
Card Capture	No	No								
CDA	Mode 3	Mode 3								
<b>Transaction Type Capability</b>										
Tran Type - Cash	Yes	Yes								
Tran Type - Goods	Yes	Yes								
Tran Type - Services	Yes	Yes								
Tran Type - Cash Back	Yes	No								
Tran Type - Inquiry	Yes	Yes								
Tran Type - Transfer	Yes	Yes								
Tran Type - Payment	Yes	Yes								
Tran Type - Admin	Yes	Yes								
Tran Type - Cash Deposit	Yes	Yes								
<b>Terminal Data Input Capability</b>										
Keypad	Yes	Yes								
Numeric Keys	Yes	Yes								
Alpha and Special Character Keys	Yes	Yes								
Command Keys	Yes	Yes								
Function Keys	Yes	Yes								
<b>Terminal Data Output Capability</b>										
Print, Attendant	Yes	No								
Print, Cardholder	No	Yes								
Display, Attendant	Yes	No								
Display, Cardholder	No	Yes								
Code Table 10	No	No								
Code Table 9	No	No								
Code Table 8	No	No								
Code Table 7	No	No								
Code Table 6	No	No								
Code Table 5	No	No								
Code Table 4	No	No								
Code Table 3	No	No								
Code Table 2	No	No								
Code Table 1	Yes	Yes								

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

<b>(continued)</b>	<b>1C</b>	<b>2C</b>								
<b>Completion Processing</b>										
Forced Online	Yes	No								
Forced Acceptance	Yes	No								
Advices	Yes	Yes								
Issuer Referrals	Yes	No								
Batch Data Capture	Yes	Yes								
Online Data Capture	Yes	Yes								
Default TDOL	Yes	Yes								
<b>Exception Handling</b>										
POS Entry Mode	80	80								
<b>Miscellaneous</b>										
PIN Pad	Yes	Yes								
Amount and PIN on same keypad	Yes	Yes								
ICC/Magstripe Reader Combined	No	Yes								
If Combined, is Magstripe read first?	No	No								
Supports account type selection	Yes	Yes								
Supports 'on fly' script processing	No	No								
Issuer Script device limit > 128 bytes	Yes	Yes								
If limit > 128, value supported?	256	256								
Internal Date Management	Yes	Yes								

# **Attachment 1**

## **Specific Terms and Conditions to the Letter of Approval**

Restriction:

**None**