



JianYan Testing Group Shenzhen Co., Ltd.

Report No: JYTSZB-R12-2102383

FCC REPORT

Applicant:	PAX Technology Limited
Address of Applicant:	Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong
Equipment Under Test (E	EUT)
Product Name:	Integrated Smart Terminal
Model No.:	E600Mini
Trade mark:	PAX
FCC ID:	V5PE600MINI
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.225
Date of sample receipt:	03 Nov., 2021
Date of Test:	04 Nov., to 14 Dec., 2021
Date of report issue:	15 Dec., 2021
Test Result:	PASS*

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang

Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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Version 2

Version No.	Date	Description
00	15 Dec., 2021	Original

 Tested by:
 Mike.OU
 Date:
 15 Dec., 2021

 Test Engineer
 Date:
 15 Dec., 2021

 Reviewed by:
 Winner thang
 Date:
 15 Dec., 2021

 Project Engineer
 Date:
 15 Dec., 2021

Date: _____15 Dec., 2021

Project No.: JYTSZE2110022



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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
Field strength of the fundamental signal	15.225 (a)	Pass
Spurious emissions	15.225(d)& 15.209	Pass
20dB Bandwidth	15.215(c)	Pass
Frequency tolerance	15.225 (e)	Pass
Conducted Emission	15.207	Pass
Remark: 1. Pass: The EUT complies with the essential re-		

2. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).

Test Method:	ANSI C63.4-2014
Test Method.	ANSI C63.10-2013



5 General Information

5.1 Client Information

Applicant:	PAX Technology Limited
Address:	Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong
Manufacturer:	PAX Computer Technology (Shenzhen) Co., Ltd.
Address:	4/F, No.3 Building, Software Park, Second Central Science-Tech Road, High-Tech industrial Park, Shenzhen, Guangdong, P.R.C.

5.2 General Description of E.U.T.

Product Name:	Integrated Smart Terminal
Model No.:	E600Mini
Operation Frequency:	13.56MHz
Channel numbers:	1
Modulation type:	ASK
Antenna Type:	PCB Antenna
Power supply:	Rechargeable Li-ion Battery DC3.8V, 6100mAh
AC adapter:	Model: TPD-71A120150UU01
	Input: AC100-240V, 50/60Hz, 0.6A
	Output: DC 3.6-6.0V, 3.0A, 18.0W
	DC 6.0-9.0V, 2.0A, 18.0W
	DC 9.0-12.0V, 1.5A, 18.0W
Test Sample Condition:	The test samples were provided in good working order with no visible defects.



5.3 Test mode

Transmitting mode:	Keep the EUT in transmitting mode with modulation					
Pre-Test Mode:	Pre-Test Mode:					
CCIS has verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:						
Axis	Axis X Y Z					
Field Strength(dBuV/m) 58.63 61.85 59.87						
Final Test Mode:						
According to ANSI C63.4 standards, the test results are both the "worst case" and "worst setup": Y axis (see						

the test setup photo).

5.4 Description of Support Units

Manufacturer Description		Model	Serial Number	FCC ID/DoC
N/A	N/A	N/A	N/A	N/A

5.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 150KHz) for V-AMN	3.11 dB
Conducted Emission (150kHz ~ 30MHz) for V-AMN	2.62 dB
Radiated Emission (9kHz ~ 30MHz electric field) for 3m SAC	3.13 dB
Radiated Emission (9kHz ~ 30MHz magnetic field) for 3m SAC	3.13 dB
Radiated Emission (30MHz ~ 1GHz) for 3m SAC	4.45 dB

5.6 Additions to, deviations, or exclusions from the method

No

5.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

• FCC - Designation No.: CN1211

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

ISED – CAB identifier.: CN0021

The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

• CNAS - Registration No.: CNAS L15527

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

A2LA - Registration No.: 4346.01

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

5.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd. Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xingiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China. Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info-JYTee@lets.com, Website: http://www.ccis-cb.com



5.9 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	ETS	RFD-100	Q1984	04-14-2021	04-13-2024
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-044	03-07-2021	03-06-2022
BiConiLog Antenna	SCHWARZBECK	VULB9163	9163-1246	03-07-2021	03-06-2022
Biconical Antenna	SCHWARZBECK	VUBA 9117	9117#359	06-17-2021	06-17-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	912D-916	03-07-2021	03-06-2022
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	1067	04-02-2021	04-01-2022
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	1068	04-02-2021	04-01-2022
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-03-2021	03-02-2022
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-03-2021	03-02-2022
Spectrum analyzer	Keysight	N9010B	MY60240202	10-27-2021	10-26-2022
Low Pre-amplifier	SCHWARZBECK	BBV9743B	00305	03-07-2021	03-06-2022
High Pre-amplifier	SKET	LNPA_0118G-50	MF280208233	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-1G-NN-8M	JYT3M-1	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-18G-NN-8M	JYT3M-2	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-1G-BB-5M	JYT3M-3	03-07-2021	03-06-2022
Cable	Bost	JYT3M-40G-SS-8M	JYT3M-4	04-02-2021	04-01-2022
EMI Test Software	Tonscend	TS+		Version:3.0.0.1	

Conducted Emission:						
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)	
EMI Test Receiver	Rohde & Schwarz	ESCI 3	101189	03-03-2021	03-02-2022	
LISN	Rohde & Schwarz	ENV432	101602	04-06-2021	04-05-2022	
LISN	Rohde & Schwarz	ESH3-Z5	843862/010	06-18-2020	06-17-2022	
ISN	Schwarzbeck	CAT3 8158	#96	03-03-2021	03-02-2022	
ISN	Schwarzbeck	CAT5 8158	#166	03-03-2021	03-02-2022	
ISN	Schwarzbeck	NTFM 8158	#126	03-03-2021	03-02-2022	
RF Switch	TOP PRECISION	RSU0301	N/A	03-03-2021	03-02-2022	
Cable	Bost	JYTCE-1G-NN-2M	JYTCE-1	03-03-2021	03-02-2022	
Cable	Bost	JYTCE-1G-BN-3M	JYTCE-2	03-03-2021	03-02-2022	
EMI Test Software	AUDIX	E3	Version: 6.110919b			



6 Test results and Measurement Data

6.1 Antenna requirement

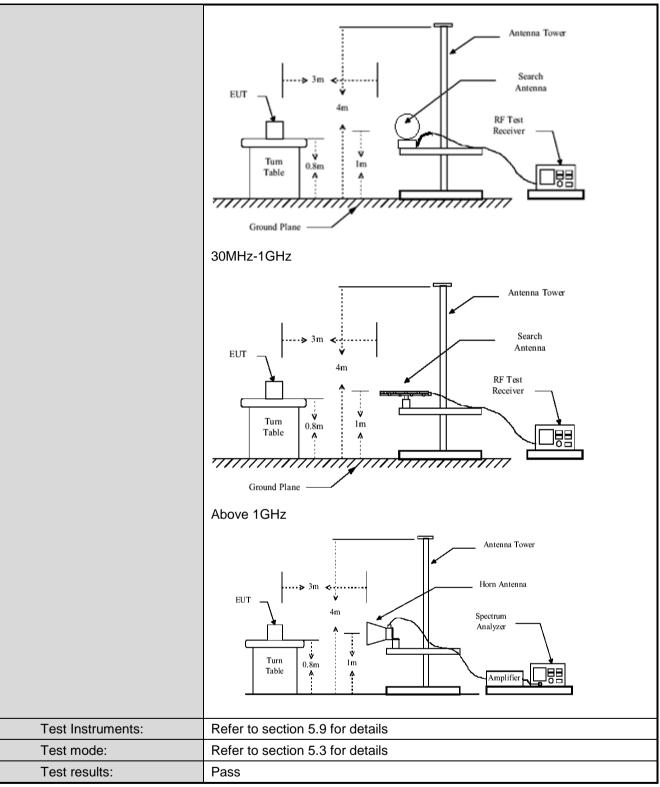
Standard requirement:	FCC Part15 C Section 15.203		
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrica connector is prohibited.			
E.U.T Antenna:			
The NFC antenna is an intern	al antenna which cannot replace by end-user.		



6.2 Radiated Emission

Test site: Meas	to 1000M				FCC Part15 C Section 15.225(a) and 15.209				
	9 kHz to 1000MHz								
	urement D	istance: 3	3m(Se	emi-Anechoic	Cham	ber)			
Receiver setup: Fre	quency	Detect	or	RBW	V	BW	Remark		
	z-150kHz	Quasi-p	eak	200Hz	60	00Hz Quasi-peak Value			
150kl	Hz-30MHz	Quasi-p	eak	9kHz	30	kHz	Quasi-peak Value		
30M	Hz-1GHz	Quasi-p	eak	120kHz	300)KHz	Quasi-peak Value		
Abo	ve 1GHz	Peak	(1MHz	31	ЛНz	Peak Value		
Limit:	Frequency		Li	mit (uV/m @30n	n)	Lim	it (dBuV/m @3m)		
(Tiola baoligat of the	53MHz-13.5			15848			124.0		
· · · · · · · · · · · · · · · · · · ·	0MHz-13.55 67MHz-13.7			334			90.5		
	0MHz-13.41 10MHz-14.0			106			80.5		
than s distan 40 dB, this pa	Per FCC part 15.31, when performing measurements at a distance which is than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor 40 dB/decade) in conjunction with the slant-range distance defined in §15.3(this part. Frequency (MHz) Limit (uV/m @3m) Distance (m)					the specified polation factor (i.e.,			
(Spurious Emissions)	0.009-0.49	0	2400/F(kHz)		300				
	0.490-1.705		24000/F(kHz)		30				
	1.705-30			30		30			
	30-88			100			3		
	88-216			150			3		
			on th		ting to		-		
b. T a b. T a tc c. T g h m d. F a a fil e. T S f. If t t	 antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst cas and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 				table was rotated radiation. e-receiving e-height antenna meters above the strength. Both re set to make the d to its worst case eter to 4 meters 360 degrees to action and DdB lower than the peak values ons that did not ing peak, quasi-				
Test setup: QkHz.	-30MHz								







Measurement Data:

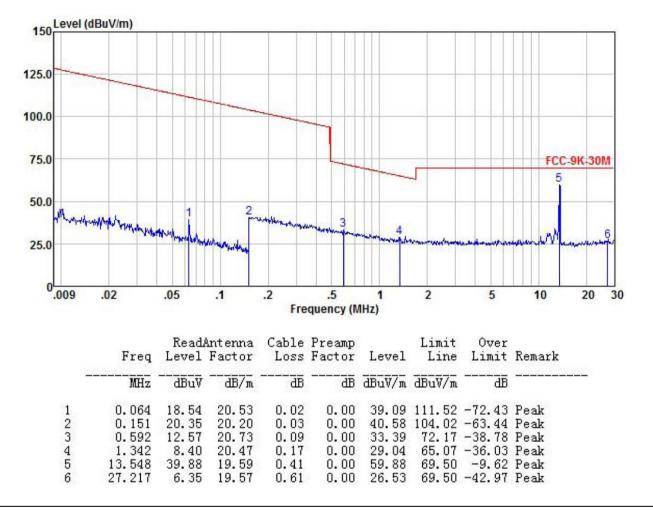
Field Strength of fundamental signal:

Product Name	3 1 1 1 1 1		P	Product Model:			E600Mini			
est By:			Mike Test mode: NFC Tx			Mike		Test mode:		k mode
Fest Voltage:		AC 120V/6	60Hz		Environment: Ter		Temp.:	24 °C	Humi.: 57%	
110 Level	(dBuV/m)									
91.7										
								15.22	5 POWER	LIMIT
73.3										
					2 3	1				
55.0			1						_	
		MAMMA	Manner	write		Merce	mma	5		
36.7	runnad	U.,	ע אינע				www	" Mulh	Manufar	m
18.3						3				
013.11	13.2			13.						14.01
13.11	13.2				o quency (Mi	Hz)				14.01
		P J	Antenna	Cable	D		Limit	Over		
	Freq		Factor	Loss	Factor	Level			Remarl	z
<u>1150</u>	MHz			āB	āB	dBuV/m	dBuV/m	āā		
1	13.335	28.88	19.63	0.40	0.00	48.91	80.50	-31.59	Peak	
2	13.515	39.59		0.41		59.59		-30.91		
3	13.558	41.85		0.41			124.00			
3	13.602	39.68	19.59 19.54	0.41		59.68 45.31		-30.82		
2 3 4 5	13.795	25.34	14 60							



Spurious Emissions: Test frequency range: 9 kHz- 30 MHz

Product Name:	Integrated Smart Terminal	Product Model:	E600Mini
Test By:	Mike	Test mode:	NCF Tx mode
Test Frequency:	150 kHz ~ 30 MHz	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Environment:	Temp.: 24℃ Humi.: 57%

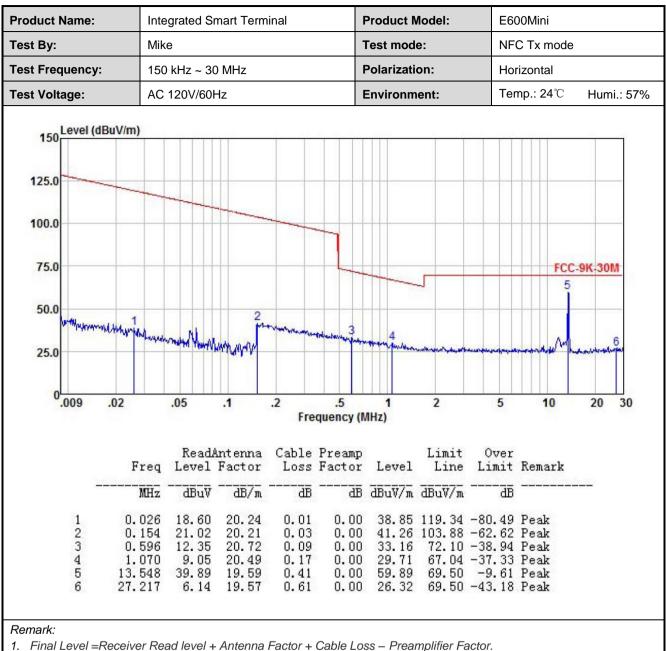


Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

2. The emission levels of 9 kHz~150 kHz are background noise and very lower than the limit, not show in test report.





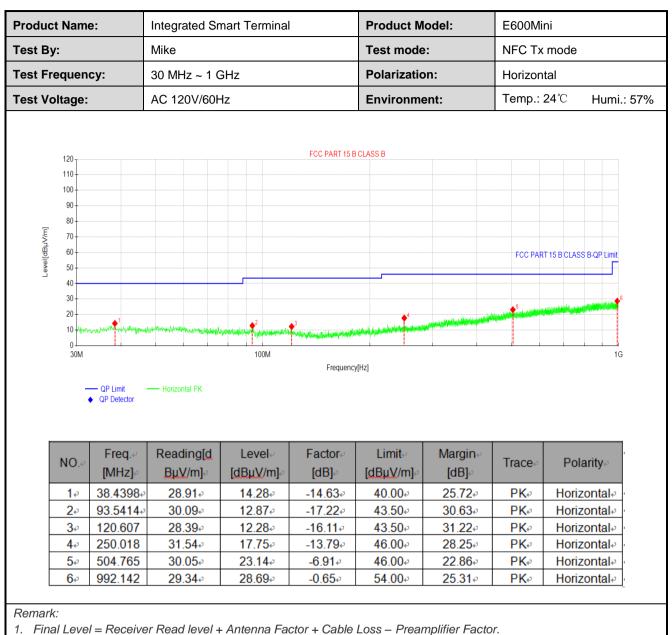
The emission levels of 9 kHz~150 kHz are background noise and very lower than the limit, not show in test report. 2.



Test frequency range: 30MHz-1000MHz

	e:	Integrated Smart Terminal		I	Product Model:		E600Mini		
est By:		Mike			Test mode	:	NFC Tx	mode	
st Frequen	st Frequency: 30 M		30 MHz ~ 1 GHz Polarizat		Hz Polarization:				
est Voltage:		AC 120V/6	60Hz		Environment:		Temp.: 2	24℃ Hum	i.: 57º
120 110 100 90 80 70 60 50 40 30 20 10 10 40 30 20 30M		deserting to prove they	2 ²	FCC PART 15 B			FCC PAR	T 15 B CLASS B-OP Limit	¢ G
	OD Limit	Votical DK							
NO.*	QP Limit QP Detector	Vertical PK Reading[Factor.	Limit. [dRu)//m]-	Margin.e	Trace	Polarity∞	
	©P Detector Freq.≁ [MHz].₽	Reading[<u>BµV</u> /m]	₀ [dBµV/m]₀	[dB]₽	[dBµV/m]∂	[dB]			
1 ₽	©P Detector Freq [MHz] 30.0970	Reading[BµV/m] 34.26+ ³	<pre> [dBµV/m] 18.12 </pre>	[dB]∂ -16.14₽	[dBµV/m]⊮ 40.00⊮	[dB]⊮ 21.88⊮	PK⊷	Vertical.₀	
1.0 2.0	QP Detector Freq.₄ [MHz]₄ 30.0970₄ 78.6019₄	Reading[BµV/m]- 34.26+ 30.18+	(dBµV/m). 18.12. 12.90.	[dB]. -16.14. -17.28.	[dBµV/m].₀ 40.00.₀ 40.00.₀	[dB]₀ 21.88₊ 27.10₊	PK. PK.	Vertical₀ Vertical₀	
1.₽ 2.₽ 3.₽	 QP Detector Freq [MHz] 30.0970 78.6019 120.898 	Reading[BµV/m]- 34.26+ 30.18+ 28.85+	[dBµV/m]. 18.12. 12.90. 12.70.	[dB] -16.14 -17.28 -16.15	[dBµV/m] 40.00 40.00 43.50	[dB] 21.88 27.10 30.80	PK. PK.	Verticalℯ Verticalℯ Verticalℯ	
1.0 2.0	QP Detector Freq.₄ [MHz]₄ 30.0970₄ 78.6019₄	Reading[BµV/m]- 34.26+ 30.18+	 [dBµV/m]. 18.12. 12.90. 12.70. 16.21. 	[dB]. -16.14. -17.28.	[dBµV/m].₀ 40.00.₀ 40.00.₀	[dB]₀ 21.88₊ 27.10₊	PK. PK.	Vertical₀ Vertical₀	
1 ₽	©P Detector Freq [MHz] 30.0970	Reading[BµV/m] 34.26+ ³	<pre> [dBµV/m] 18.12 </pre>	[dB]∂ -16.14₽	[dBµV/m]⊮ 40.00⊮	[dB]⊮ 21.88⊮	PK⊷	Vertical.₀	





2. The emission levels of other frequencies are very lower than the limit and not show in test report.



6.3 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.215 (c)		
Receiver setup:	RBW=200Hz, VBW=300Hz, detector: Peak		
Limit:	The fundamental emission be kept within at least the central 80% of the permitted band		
Test Procedure:	 According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. Set the EUT to proper test channel. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points. Read 20dB bandwidth. 		
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane		
Test Instruments:	Refer to section 5.9 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Passed		

Measurement Data

20dB bandwidth (kHz)	Limit (kHz)	Results			
0.806	11.2	Passed			
Note: For 13.56MHz, permitted Band is 14 kHz, so the Limit is 11.2 kHz.					



Test plot as follows:





6.4 Frequency Tolerance

Test Requirement:	FCC Part15 C Section 15.225 (e)
Receiver setup:	RBW=200Hz, VBW=300Hz, span=14kHz, detector: Peak
Limit:	±0.01% of the operating frequency
Test mode:	Transmitting mode
Test Procedure:	Frequency stability V.S. Temperature measurement
	 The equipment under test was powered by a fresh battery. RF output was connected to spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached Frequency stability V.S. Voltage measurement Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed



Measurement Data:

a) Frequency stability V.S. Temperature measurement

Voltage (Vdc)	Temperature (℃)	Frequency Tolerance (Hz)	Frequency Error (%)	Limit (%)	Results
	-20	0.026	0.0019	±0.01	Pass
	-10	0.085	0.0063	±0.01	Pass
	0	-0.069	-0.0051	±0.01	Pass
3.80	+10	0.025	0.0018	±0.01	Pass
3.00	+20	-0.047	-0.0035	±0.01	Pass
	+30	-0.035	-0.0026	±0.01	Pass
	+40	0.039	0.0029	±0.01	Pass
	+50	0.087	0.0064	±0.01	Pass

b) Frequency stability V.S. Voltage measurement

Temperature (℃)	Voltage (Vdc)	Frequency Tolerance (Hz)	Frequency Error (%)	Limit (%)	Results
	3.50	0.045	0.0033	±0.01	Pass
25.0	3.80	-0.089	-0.0066	±0.01	Pass
	4.35	0.088	0.0065	±0.01	Pass



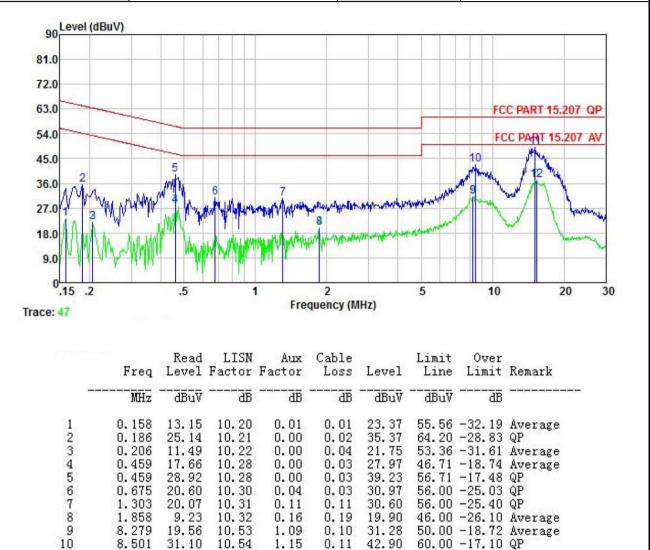
6.5 Conducted Emission

Test Requirement:	FCC Part15 B Section 15.207			
TestFrequencyRange:	150kHz to 30MHz			
Class / Severity:	Class B			
Receiver setup:	RBW=9kHz, VBW=30kHz			
Limit:	Frequency range (MHz)			
		Quasi-peak	Average	
	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	0.5-30	60	50	
	* Decreases with the loga	rithm of the frequency.		
Test setup:	AUX E.U.T Equipment E.U.T Test table/Insulation plane Remark: E.U.T. Equipment Under Test LISN: Line Impedence Stabilization Nets Test table height=0.8m	80cm LISN Filter AC EMI Receiver	power	
Test procedure	 The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.).It provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement. 			
Test Instruments:	Refer to section 5.9 for de	etails		
Test mode:	Refer to section 5.3 for de	etails		
Test results:	Pass			



Measurement Data:

Product name:	Integrated Smart Terminal	Product model:	E600Mini
Test by:	Mike	Test mode:	NFC Tx mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp.: 22.5℃ Humi.: 55%



Notes:

11 12

1. An initial pre-scan was performed on the line and neutral lines with peak detector.

10.73

10.74

2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.

3.04

2.95

3. Final Level =Receiver Read level + LISN Factor + Cable Loss.

35.17

23.32

15.146

15.307

60.00 -10.92 QP

50.00 -12.84 Average

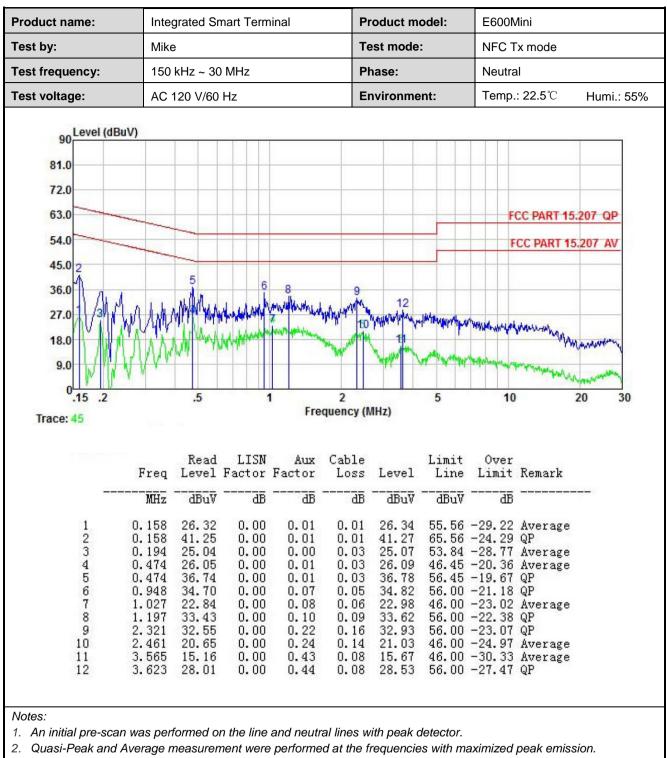
49.08

37.16

0.14

0.15





3. Final Level =Receiver Read level + LISN Factor + Cable Loss.

-----End of report-----

Project No.: JYTSZE2110022