FCC TEST REPORT

FOR

Shanghai SmartPeak Technology Co.,Ltd.
POS Terminal
Model No.: P2000L
Additional Model: /

Prepared for	:	Shanghai SmartPeak Technology Co.,Ltd.
Address	:	Room 1, No.3 Builiding, NO.295, Qianqiao Road, Fengxian District, Shanghai
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
Tel	:	(+86)755-82591330
Fax	:	(+86)755-82591332
Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com
Date of receipt of test sample	:	September 13, 2017
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	September 13, 2017~ October 10, 2017
Date of Report	:	October 10, 2017

FCC TEST REPORT
FCC CFR 47 PART 15 C (15.225)

Report Reference No.	**:**	**LCS170906103AE6**
Date of Issue.....	**:**	**October 10, 2017**
Testing Laboratory Name	**:**	**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure ...	:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name	**:**	**Shanghai SmartPeak Technology Co.,Ltd.**
Address	:	Room 1, No.3 Builiding, NO.295, Qianqiao Road, Fengxian District, Shanghai
Test Specification		
Standard.....	:	FCC CFR 47 PART 15 C(15.225)-2015
Test Report Form No.....	**:**	LCSEMC-1.0
TRF Originator	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	:	Dated 2011-03

Test Item Description.....	**:**	POS Terminal
Trade Mark.....	:	SmartPeak
Test Model	:	P2000L
		DC 7.40 V by Li-ion Battery(2000mAh)
Ratings.....	:	Input: AC 100-240 V 50/60HZ 0.45A
		Output: DC5V/2A
Result	**:**	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Peter Xiao / Administrators	Dick Su / Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS170906103AE6	October 10, 2017 Date of issue

Test Model.....	: P2000L
EUT.....	: POS Terminal
Applicant.....	**:** Shanghai SmartPeak Technology Co.,Ltd.
Address.....	: Room 1, No.3 Builiding, NO.295, Qianqiao Road, Fengxian District, Shanghai
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**:** Shanghai SmartPeak Technology Co.,Ltd.
Address.....	: Room 1, No.3 Builiding, NO.295, Qianqiao Road, Fengxian District, Shanghai
Telephone.....	: /
Fax.....	: /
Factory.....	: Shanghai SmartPeak Technology Co.,Ltd.
Address.....	: Room 1, No.3 Builiding, NO.295, Qianqiao Road, Fengxian District, Shanghai
Telephone.....	: /
Fax.....	: /

Test Result	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
00	2017-10-10	Initial Issue	Gavin Liang

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	POS Terminal
Model Number	:	P2000L
Model Declaration	:	/
Test Model	:	/
Hardware Version	:	BSTB16014
Software Version	:	V1.0
Power Supply	:	DC 7.40V by Li-ion Battery(2000mAh) Input: AC 100-240 V 50/60HZ 0.45A Output: DC5V/2A
Radios Application	:	RFID
RFID Technology	:	
Operating Frequency	:	13.56MHz
Channel Number	:	1
Modulation Technology	:	ASK
Antenna Description	:	PIFA Antenna, 0.5dBi (Max.)

1.2 Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate
AQUIL STAR PRECISION INDUSTRIAL (SHENZHEN) CO.,LTD.	Adapter	ASSA65w-050200	---	FCC VoC

1.3 External I/O

I/O Port Description	Quantity	Cable
Charging Port	1	1.2m, unshielded
USB Port	1	N/A
TF Port	1	N/A

1.4 Description of Test Facility

CNAS Registration Number. is L4595.
FCC Registration Number. is CN5024.
Industry Canada Registration Number. is 9642A-1.
ESMD Registration Number. is ARCB0108.
UL Registration Number. is 100571-492.
TUV SUD Registration Number. is SCN1081.
TUV RH Registration Number. is UA 50296516-001
NVLAP Registration Code is 600167-0
The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.5 Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.6 Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	±3.10dB	(1)
		30MHz~200MHz	±2.96dB	(1)
		200MHz~1000MHz	±3.10dB	(1)
		1GHz~26.5GHz	±3.80dB	(1)
		26.5GHz~40GHz	±3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±1.63dB	(1)
Power disturbance	:	30MHz~300MHz	±1.60dB	(1)

(1) The uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.7 Description Of Test Modes

This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position.

The EUT was operated in the engineering mode. All X, Y, Z axis had been tested and the worst case(X axis) was record.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10: 2013, FCC CFR PART 15C 15.225.

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.225 under the FCC Rules Part 15 Subpart C.

2.3. General Test Procedures

2.3.1. Conducted Emissions

According to the requirements in Section 6.2 of ANSI C63.10: 2013, AC power-line conducted emissions shall be measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2. Radiated Emissions

The EUT is placed on a turn table and the turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10: 2013.

3. SYSTEM TEST CONFIGURATION

3.1. Justification

The system was configured for testing in a continuous transmit condition.

3.2. EUT Exercise Software

The system was configured for RF ID testing in a continuous transmits condition and change test channels by software (SecureCRT) provided by application.

3.3. Special Accessories

No.	Equipment	Manufacturer	Model No.	Serial No.	Length	shielded/ unshielded	Notes
1	PC	Lenovo	Ideapad	A131101550	/	/	DOC
2	Power adapter	Lenovo	CPA-A090	36200414	1.00m	unshielded	DOC

3.4. Block Diagram/Schematics

Please refer to the related document

3.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6. Test Setup

Please refer to the test setup photo.

4. SUMMARY OF TEST RESULT

Test Items	FCC Rules	Result
Line Conducted Emissions	§15.207(a)	PASS
Field Strength of Fundamental Emissions	§15.225(a)(b)(c)	PASS
Radiated Emissions	§15.225(d) & §15.209	PASS
20dB Bandwidth	§ 2.1049	PASS
Frequency Stability	§15.225(e)	PASS
Antenna Requirement	§15.203	PASS

5. RADIATED MEASUREMENT

5.1. Radiated Emission

5.1.1. Standard Applicable

15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
\1\ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293.	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(\2\)
13.36-13.41			

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

According to §15.247 (d): 20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

5.1.2. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB/VB 120kHz/1MHz for QP

5.1.3. Test Procedures

1) Sequence of testing 9 kHz to 30 MHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna height is 0.8 meter.

--- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

--- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1 GHz to 18 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height scan range is 1 meter to 2.5 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 18 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 1 meter.

--- The EUT was set into operation.

Premeasurement:

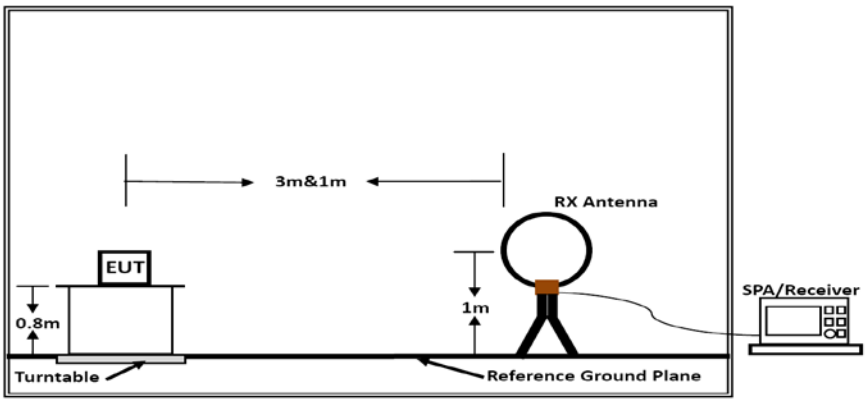
--- The antenna is moved spherical over the EUT in different polarizations of the antenna.

Final measurement:

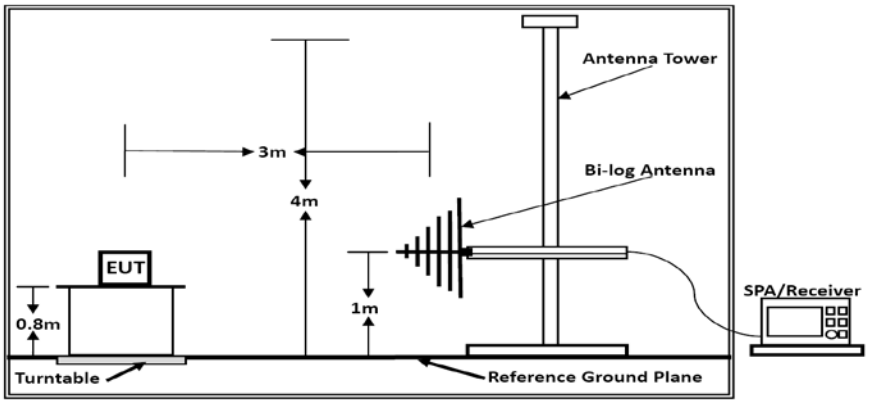
--- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

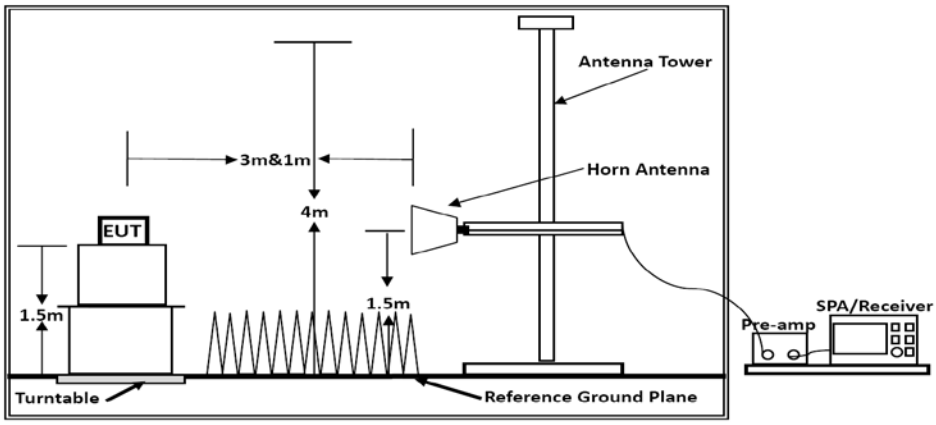
5.1.4. Test Setup Layout



Below 30MHz



Below 1GHz



Above 1GHz

Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1m.

Distance extrapolation factor = 20 log (specific distanc [3m] / test distance [1m]) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

5.1.5. Test Results

PASS.

The test data please refer to following page:

9 KHz~30MHz

Note: Only recorded the worst test result.

Freq. MHz	Antenna Pol.	Reading dBuV	Factor dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark
0.18	H	--	--	--	96.72	--	--
0.57	H	--	--	--	67.6	--	--
4.45	H	32.27	20.30	52.57	69.5	16.93	QP
11.26	H	30.29	20.32	50.61	69.5	18.89	QP
13.56	H	30.55	20.18	50.73	124.0	73.27	QP
14.77	H	32.33	20.12	52.45	69.5	17.05	QP
23.40	H	31.26	19.94	51.20	69.5	18.30	QP
27.39	H	31.12	19.95	51.07	69.5	18.43	QP

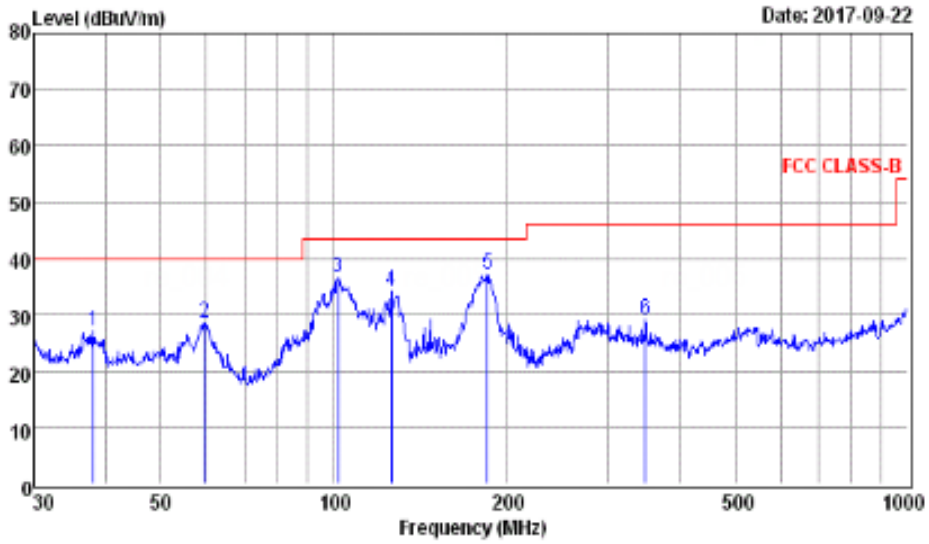
*Note: Emission Level= Reading Level + Antenna Factor + Cable Loss

Margin = Emission Limit – Emission Values

"--" means noise floor.

30 MHz – 1 GHz

Horizontal

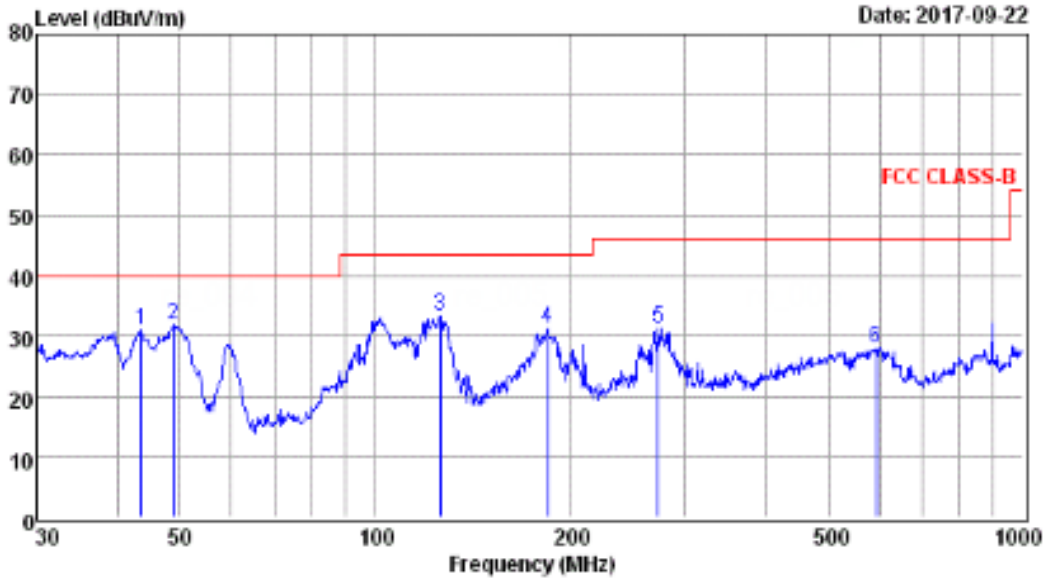


pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	38.08	13.46	0.38	13.09	26.93	40.00	-13.07	QP
2	59.44	15.26	0.49	12.73	28.48	40.00	-11.52	QP
3	101.64	22.98	0.60	13.01	36.59	43.50	-6.91	QP
4	125.89	23.95	0.71	9.57	34.23	43.50	-9.27	QP
5	185.14	26.46	0.70	10.13	37.29	43.50	-6.21	QP
6	349.25	13.90	1.13	14.26	29.29	46.00	-16.71	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported

Vertical



pol: VERTICAL

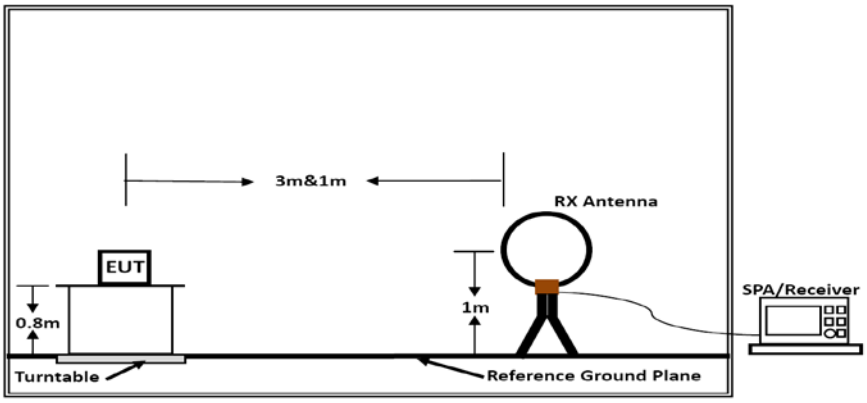
	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	43.51	16.81	0.41	13.56	30.78	40.00	-9.22	QP
2	48.84	18.08	0.35	13.32	31.75	40.00	-8.25	QP
3	125.89	23.08	0.71	9.57	33.36	43.50	-10.14	QP
4	184.49	20.35	0.70	10.08	31.13	43.50	-12.37	QP
5	273.23	17.77	1.04	12.46	31.27	46.00	-14.73	QP
6	593.05	8.22	1.51	18.32	28.05	46.00	-17.95	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported

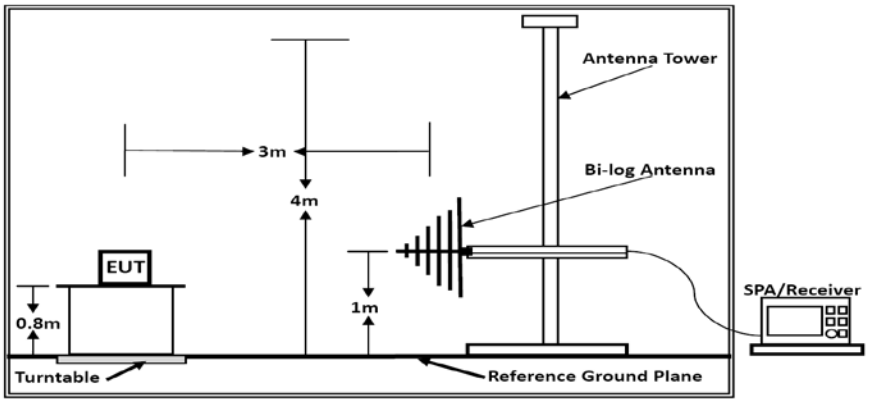
Note:
Pre-scan all modes and recorded the worst case results in this report.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

5.2. Field Strength of Fundamental Emissions and Mask Measurement

5.2.1. Block Diagram of Test Setup



Below 30MHz



Below 1GHz

5.2.2. Field strength of fundamental emissions limit and Mask limit

The field strength of fundamental emissions shall not exceed 15848 microvolts/meter at 30 meters. The emissions limit in this paragraph is based on measurement instrumentation employing a QP detector.

Frequencies (MHz)	Field Strength (microvolts/meter)	Field Strength (dBμV/m) at 10m	Field Strength (dBμV/m) at 3m
13.553 ~ 13.567MHz	15848 at 30m	103.08 (QP)	124 (QP)

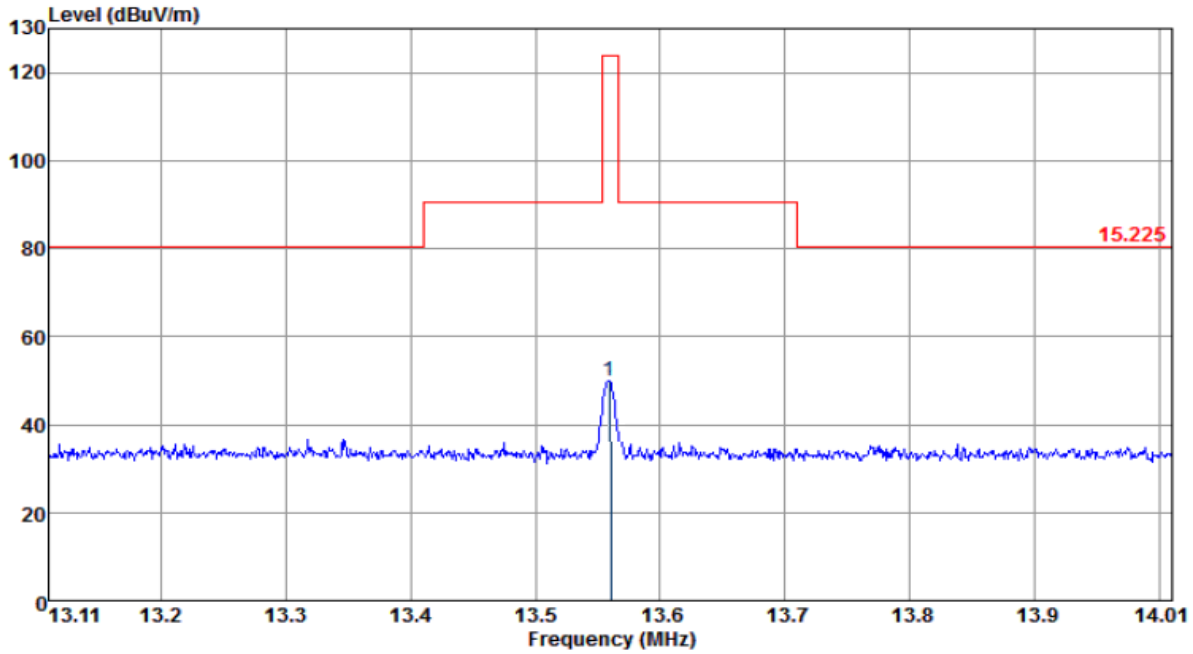
Mask Limit:

Frequency (MHz)	Limit (dBuV/m)	Distance (m)
1.705-13.110	69.5	3
13.110-13.410	80.5	3
13.410-13.553	90.5	3
13.553-13.567	124.0	3
13.567-13.710	90.5	3
13.710-14.010	80.5	3
14.010-30.000	69.5	3

5.2.3. Test Results

PASS.

The test data please refer to following page:



	Freq.(MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Pol.	Remark
1	13.56	52.69	10.86	63.55	124.00	H	QP

*Note: Factor= Antenna Factor + Cable Loss

Emission level (dBμV/m) = 20 log Emission level (μV/m).

Measured distance is 3m.

All emissions emit from non-NFC function of digital unintentional emissions. All NFC's spurious emissions are below 20dB of limits.

6. BANDWIDTH OF THE OPERATING FREQUENCY

6.1. Standard Applicable

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band (13.553 ~ 13.567MHz).

6.2. Test Result

EUT	POS Terminal
RBW	100Hz
VBW	100Hz
SPAN	500Hz
Carrier Freq. (MHz)	20dBBandwidth (KHz)
13.56	0.252

Please refer to the test plot

7. FREQUENCY STABILITY MEASUREMENT

7.1 Standard Applicable

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% (100ppm) of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

7.2 Test Result

Voltage vs. Frequency Stability

Voltage(V)	Measurement Frequency (MHz)
DC 6.70V	13.56032
DC 7.40V	13.56040
DC 8.40V	13.56039
Max. Deviation (MHz)	0.00040
Max. Deviation (ppm)	29.4985

Temperature vs. Frequency Stability

Temperature (℃)	Measurement Frequency (MHz)
-20	13.56045
-10	13.56052
0	13.56040
10	13.56047
20	13.56044
30	13.56043
40	13.56040
50	13.56057
Max. Deviation (MHz)	0.00057
Max. Deviation (ppm)	42.0354

8. LINE CONDUCTED EMISSIONS

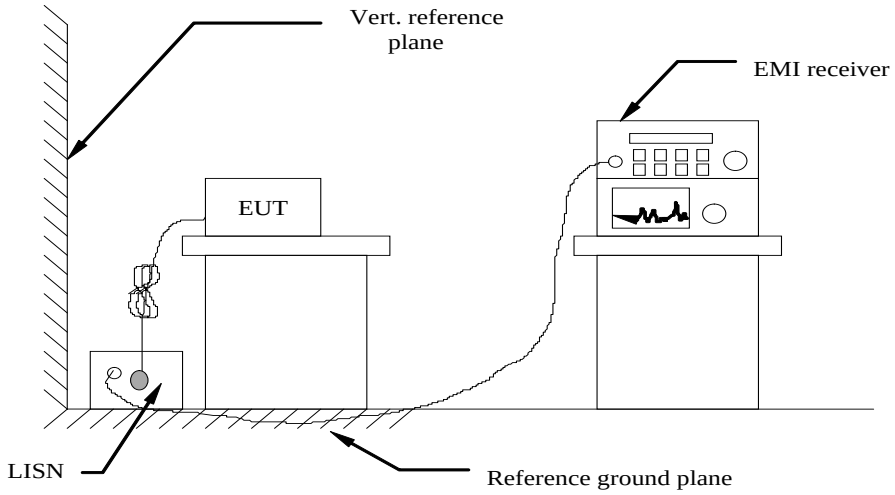
8.1. Standard Applicable

According to §15.207 (a): For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

* Decreasing linearly with the logarithm of the frequency

8.2. Block Diagram of Test Setup



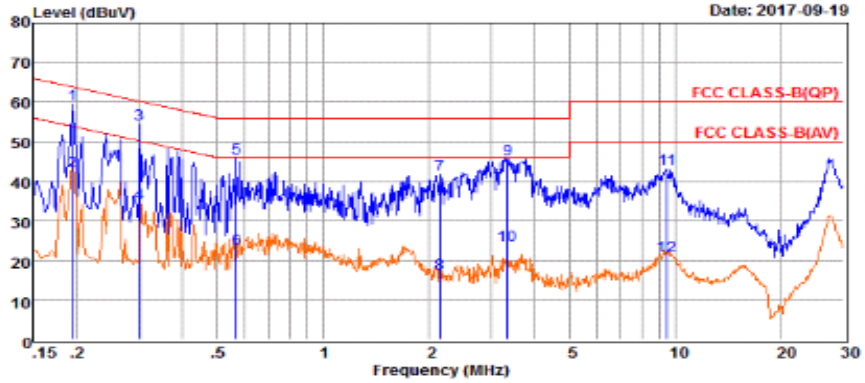
8.3. Test Results

PASS.

The test data please refer to following page.

AC Conducted Emission of power adapter @ AC 120V/60Hz (worst case)

Line

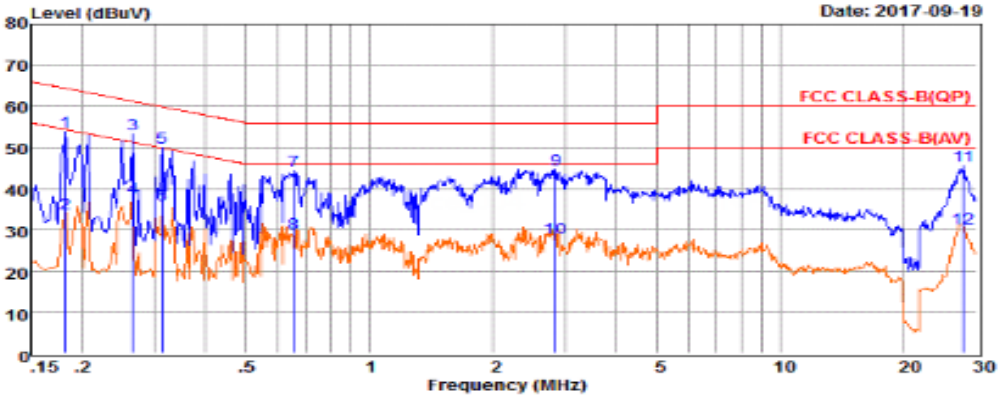


Pol: LINE

	Freq	Reading	LISNFac	CabLos	Aux2Fac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dB	dB	dBuV	dBuV	dB
1	0.19	39.95	9.62	0.02	10.00	59.59	63.84	-4.25	QP
2	0.19	22.97	9.62	0.02	10.00	42.61	63.84	-21.23	Average
3	0.30	34.71	9.63	0.03	10.00	54.37	60.19	-5.82	QP
4	0.30	14.92	9.63	0.03	10.00	34.58	60.19	-25.61	Average
5	0.57	25.98	9.63	0.04	10.00	45.65	56.00	-10.35	QP
6	0.57	3.20	9.63	0.04	10.00	22.87	56.00	-33.13	Average
7	2.14	22.05	9.64	0.05	10.00	41.74	56.00	-14.26	QP
8	2.14	-3.13	9.64	0.05	10.00	16.56	56.00	-39.44	Average
9	3.33	25.82	9.65	0.06	10.00	45.53	56.00	-10.47	QP
10	3.33	4.10	9.65	0.06	10.00	23.81	56.00	-32.19	Average
11	9.45	23.30	9.69	0.08	10.00	43.07	60.00	-16.93	QP
12	9.45	1.36	9.69	0.08	10.00	21.13	60.00	-38.87	Average

Remarks: 1. Measured = Reading + LISNFac + Cable Loss + Aux2 Fac.
2. The emission levels that are 20dB below the official limit are not reported.

Neutral



Pol: NEUTRAL

	Freq	Reading	LISNFac	CabLos	Aux2Fac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dB	dB	dBuV	dBuV	dB
1	0.18	34.15	9.63	0.02	10.00	53.80	64.42	-10.62	QP
2	0.18	14.16	9.63	0.02	10.00	33.81	64.41	-30.60	Average
3	0.27	33.75	9.60	0.03	10.00	53.38	61.25	-7.87	QP
4	0.27	18.28	9.60	0.03	10.00	37.91	61.24	-23.33	Average
5	0.31	30.34	9.60	0.03	10.00	49.97	59.88	-9.91	QP
6	0.31	16.34	9.60	0.03	10.00	35.97	59.88	-23.91	Average
7	0.66	24.64	9.63	0.04	10.00	44.31	56.00	-11.69	QP
8	0.66	9.42	9.63	0.04	10.00	29.09	56.00	-26.91	Average
9	2.84	24.99	9.64	0.06	10.00	44.69	56.00	-11.31	QP
10	2.84	8.13	9.64	0.06	10.00	27.83	56.00	-28.17	Average
11	27.86	25.47	9.84	0.14	10.00	45.45	60.00	-14.55	QP
12	27.86	10.47	9.84	0.14	10.00	30.45	60.00	-29.55	Average

Remarks: 1. Measured = Reading + LISNFac + Cable Loss + Aux2 Fac.
2. The emission levels that are 20dB below the official limit are not reported.

***Note: Pre-scan all mode and recorded the worst case results in this report.

9. ANTENNA REQUIREMENTS

9.1 Standard Applicable

According to antenna requirement of §15.203.

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 shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

9.2 Antenna Connected Construction

9.2.1. Standard Applicable

According to § 15.203, 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.

9.2.2. Antenna Connector Construction

The gains of antenna used for transmitting is 0.5 dBi, and the antenna is a Loop antenna connect to PCB board and no consideration of replacement. Please see EUT photo for details.

9.2.3. Results: Compliance.

9. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal Date	Due Date
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	June 18,2016	June 16, 2018
Signal analyzer	Agilent	E4448A(External mixers to 40GHz)	US44300469	9kHz~40GHz	July 17, 2017	July 14, 2018
LISN	MESS Tec	NNB-2/16Z	99079	9KHz-30MHz	June 18,2016	June 16, 2018
LISN (Support Unit)	EMCO	3819/2NM	9703-1839	9KHz-30MHz	June 18,2016	June 16, 2018
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9KHz-30MHz	June 18,2016	June 16, 2018
ISN	SCHAFFNER	ISN ST08	21653	9KHz-30MHz	June 18,2016	June 16, 2018
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30M-1GHz 3m	June 18,2016	June 16, 2018
Amplifier	SCHAFFNER	COA9231A	18667	9kHz-2GHzz	June 18,2016	June 16, 2018
Amplifier	Agilent	8449B	3008A02120	1GHz-26.5GHz	July 17, 2017	July 14, 2018
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5GHz-40GHz	July 17, 2017	July 14, 2018
Spectrum Analyzer	Agilent	E4407B	MY41440292	9k-26.5GHz	July 17, 2017	July 14, 2018
MAX Signal Analyzer	Agilent	N9020A	MY50510140	20Hz~26.5GHz	Oct. 27, 2016	Oct. 26, 2017
Loop Antenna	SCHWARZBECK	1519 B	00005	9k-30MHz	June 18,2016	June 16, 2018
By-log Antenna	SCHWARZBECK	VULB9163	9163-470	30MHz-1GHz	June 09, 2017	June 08, 2018
Horn Antenna	EMCO	3115	6741	1GHz-18GHz	June 09, 2017	June 08, 2018
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz-40GHz	June 09, 2017	June 08, 2018
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz-1GHz	June 18,2016	June 16, 2018
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz-40GHz	June 18,2016	June 16, 2018
Power Meter	R&S	NRVS	100444	DC-40GHz	June 18,2016	June 16, 2018
RF CABLE-1m	JYE Bao	RG142	CB034-1m	20MHz-7GHz	June 18,2016	June 16, 2018
Power Sensor	R&S	NRV-Z51	100458	DC-30GHz	June 18,2016	June 16, 2018
Power Sensor	R&S	NRV-Z32	10057	30MHz-6GHz	June 18,2016	June 16, 2018
RF CABLE-1m	JYE Bao	RG142	CB034-1m	20MHz-7GHz	June 18,2016	June 16, 2018
RF CABLE-2m	JYE Bao	RG142	CB035-2m	20MHz-1GHz	June 18,2016	June 16, 2018
DC power Source	GW	GPC-6030D	C671845	/	June 18,2016	June 16, 2018
Temperature & Humidity Chamber	Wuhuan	HTP205	/	/	June 18,2016	June 16, 2018
Note: All equipment through GRGT EST calibration						

10. PHOTOGRAPHS OF TEST SETUP

Please refer to separated files for Test Setup Photos of the EUT.

11. EXTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

12. INTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

----------THE END OF REPORT----------