



REPORT No. : SZ17020049E01

FCC TEST REPORT

APPLICANT : Hoperun mMax Digital Inc.

PRODUCT NAME : CDMA 3G Mobile Phone

MODEL NAME : H460

TRADE NAME : Jabrbox

BRAND NAME : Jabrbox

FCC ID : 2AKQN-H460

STANDARD(S) : 47 CFR Part 15 Subpart B

TEST DATE : 2017-02-25 to 2017-03-08

ISSUE DATE : 2017-03-16

SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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DIRECTORY

<u>1. TECHNICAL INFORMATION</u>	5
1.1. APPLICANT INFORMATION	5
1.2. EQUIPMENT UNDER TEST (EUT) DESCRIPTION	5
<u>2. TEST RESULTS</u>	6
2.1. APPLIED REFERENCE DOCUMENTS	6
<u>3. TEST CONDITIONS SETTING</u>	7
3.1. TEST MODE	7
3.2. TEST SETUP AND EQUIPMENTS LIST	10
3.2.1. CONDUCTED EMISSION	10
3.2.2. RADIATED EMISSION	11
<u>4. 47 CFR PART 15B REQUIREMENTS</u>	13
4.1. CONDUCTED EMISSION	13
4.1.1. REQUIREMENT	13
4.1.2. TEST DESCRIPTION	13
4.1.3. TEST RESULT	13
4.2. RADIATED EMISSION	16
4.2.1. REQUIREMENT	16
4.2.2. TEST DESCRIPTION	16
4.2.3. FREQUENCY RANGE OF MEASUREMENT	16
4.2.4. TEST RESULT	17
<u>ANNEX A TEST SETUP PHOTOS</u>	20
<u>ANNEX B TEST UNCERTAINTY</u>	24
<u>ANNEX C TESTING LABORATORY INFORMATION</u>	25



REPORT No. : SZ17020049E01

1. IDENTIFICATION OF THE RESPONSIBLE TESTING LABORATORY	25
2. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION.....	25
3. ACCREDITATION CERTIFICATE	25
4. TEST ENVIRONMENT CONDITIONS	25

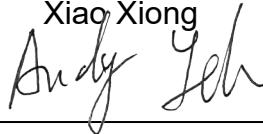
Change History

Issue	Date	Reason for change
1.0	2017-03-16	First edition



Test Report Declaration

Applicant	Hoperun mMax Digital Inc.
Applicant Address	4790 Irvine Blvd., Ste. 105-431 Irvine, CA 92620
Manufacturer	Hoperun mMax Digital Inc.
Manufacturer Address	4790 Irvine Blvd., Ste. 105-431 Irvine, CA 92620
Product Name	CDMA 3G Mobile Phone
Model Name	H460
Brand Name	Jabrbox
HW Version	S408_MB_V3.0
SW Version	HMD-H460JB
Test Standards	47 CFR Part 15 Subpart B
Test Result	PASS

Reviewed by : Xiao Xiong

Approved by : Andy Yeh
Andy Yeh



1. Technical Information

Note: Provided by applicant

1.1. Applicant Information

Company: Hoperun mMax Digital Inc.
Address: 4790 Irvine Blvd., Ste. 105-431 Irvine, CA 92620

1.2. Equipment under Test (EUT) Description

EUT Type:	CDMA 3G Mobile Phone
Serial No:	(N/A, marked #1 by test site)
Hardware Version:	S408_MB_V3.0
Software Version:	HMD-H460JB
Power supply:	Battery Brand Name: Jabrbox Model No.: LCE6000A Serial No.: (N/A, marked #1 by test site) Capacity: 1650mAh Rated Voltage: 3.7V Charge Limit: 4.2±0.03V
Ancillary Equipment1:	AC Adapter (Charger for Battery) Brand Name: Jabrbox Model No.: Rc051057 Serial No.: (N/A, marked #1 by test site) Rated Input: ~ 100-240V, 50/60Hz, 200mA Rated Output: == 5V, 1A

NOTE:

1. The EUT is a CDMA 3G Mobile Phone which supports CDMA,CDMA 1X,EVDO ,EVDO Rev A,EVDO Rev B, ISM 2.4GHz Bluetooth band and WIFI (802.11b/g/n) band.
2. It is equipped with a Micro-B USB port which can be connected to the ancillary equipments.
3. For a more detailed description, please refer to specification or user's manual supplied by the applicant and/or manufacturer.



2. Test Results

2.1. Applied Reference Documents

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

No.	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Result
1	15.107	Conducted Emission	2017.03.02	PASS
2	15.109	Radiated Emission	2016.03.03	PASS

NOTE: The tests were performed according to the method of measurements prescribed in ANSI C63.4-2014.



3. Test Conditions Setting

3.1. Test Mode

1	The first test mode (CDMA BC0) The EUT configuration of the emission tests is EUT + Battery + Charger. In this test mode, a communication link was established between the EUT and a System Simulator (SS); data was transmitted between EUT and System Simulator (SS), and maintained during the measurement.
2	The second test mode (CDMA BC0 with earphone) The EUT configuration of the emission tests is EUT + Battery + Charger+ Earphone. In this test mode, a communication link was established between the EUT and a System Simulator (SS); data was transmitted between EUT and System Simulator (SS), and maintained during the measurement.
3	The third test mode (CDMA BC0 with Bluetooth and WIFI) The EUT configuration of the emission tests is EUT + Battery + Charger+ Bluetooth earphone+ Wireless network. In this test mode, a communication link was established between the EUT and a System Simulator (SS); data was transmitted between EUT and System Simulator (SS), and maintained during the measurement. A communication link was established between the EUT and the Bluetooth earphone, and maintained until test end, and the EUT was connected with a wireless network, and transmitting data via the WIFI.
4	The fourth test mode (CDMA BC1) The EUT configuration of the emission tests is EUT + Battery + Charger. In this test mode, a communication link was established between the EUT and a System Simulator (SS); Data was transmitted between EUT and System Simulator (SS), and maintained during the measurement.
5	The fifth test mode (CDMA BC1 with earphone) The EUT configuration of the emission tests is EUT + Battery + Charger+ Earphone. In this test mode, a communication link was established between the EUT and a System Simulator (SS); Data was transmitted between EUT and System Simulator (SS), and maintained during the measurement.
6	The sixth test mode (CDMA BC1 with Bluetooth and WIFI) The EUT configuration of the emission tests is EUT + Battery + Charger+ Bluetooth earphone + Wireless network.



	<p>In this test mode, a communication link was established between the EUT and a System Simulator (SS); Data was transmitted between EUT and System Simulator (SS), and maintained during the measurement.</p> <p>A communication link was established between the EUT and the Bluetooth earphone, and maintained until test end, and the EUT was connected with a wireless network, and transmitting data via the WIFI.</p>
7	<p>The seventh test mode (CDMA BC10)</p> <p>The EUT configuration of the emission tests is EUT + Battery + Charger.</p> <p>In this test mode, a communication link was established between the EUT and a System Simulator (SS); data was transmitted between EUT and System Simulator (SS), and maintained during the measurement.</p>
8	<p>The eighth test mode (CDMA BC10 with earphone)</p> <p>The EUT configuration of the emission tests is EUT + Battery + Charger+ Earphone.</p> <p>In this test mode, a communication link was established between the EUT and a System Simulator (SS); data was transmitted between EUT and System Simulator (SS), and maintained during the measurement.</p>
9	<p>The ninth test mode (CDMA BC10 with Bluetooth and WIFI)</p> <p>The EUT configuration of the emission tests is EUT + Battery + Charger + Bluetooth earphone + Wireless network.</p> <p>In this test mode, a communication link was established between the EUT and a System Simulator (SS); data was transmitted between EUT and System Simulator (SS), and maintained during the measurement.</p> <p>A communication link was established between the EUT and the Bluetooth earphone, and maintained until test end, and the EUT was connected with a wireless network, and transmitting data via the WIFI.</p>
10	<p>The tenth test mode (Idle)</p> <p>The EUT configuration of the emission tests is EUT + Battery + Charger.</p> <p>During the test, The EUT was synchronized to the BCCH, listening to the CCCH and able to respond to paging message. Periodic location updating was disabled.</p>
11	<p>The eleventh test mode (Data Transmitting)</p> <p>The EUT configuration of the emission tests is EUT + Battery + T-Flash Card + PC.</p> <p>In this test mode, the EUT with a T-Flash Card embedded was connected to a PC via the Micro-B USB port. During the measurement, the data is transmitting between the PC and the T-Flash Card of the EUT.</p>
12	<p>The twelfth test mode (Standby)</p> <p>The EUT configuration of the emission tests is EUT + Battery + Charger.</p>



REPORT No. : SZ17020049E01

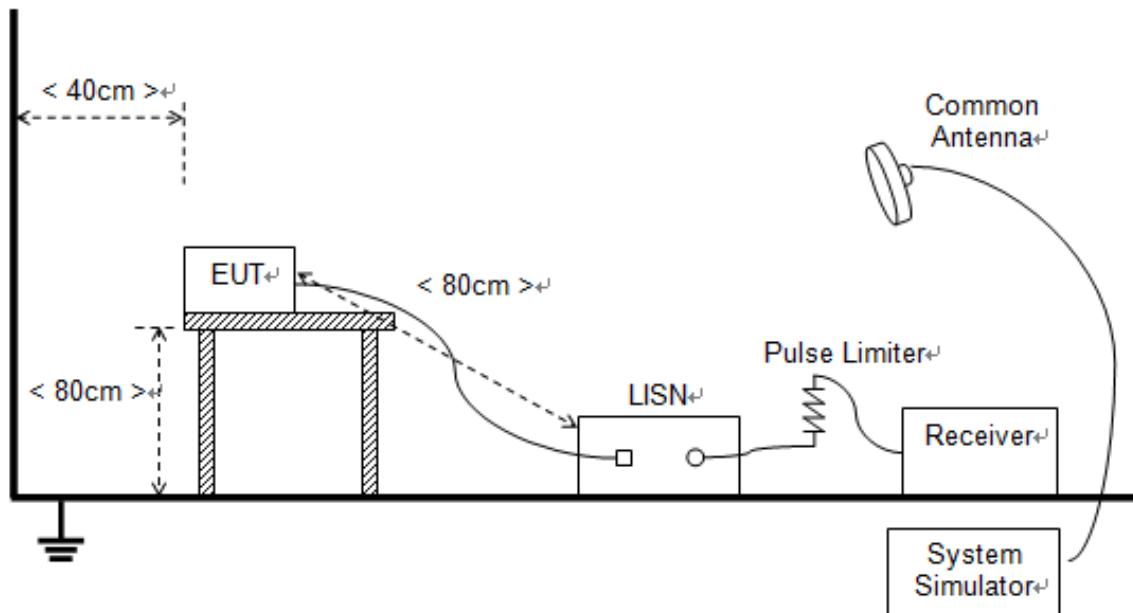
During the measurement, the wireless communication function of the EUT was off, the EUT was charged by its adapter and turned on.

Note: All test modes are performed, only the worse case (Data Transmitting) is recorded in this report.

3.2. Test Setup and Equipments List

3.2.1. Conducted Emission

A. Test Setup:



The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides $50\Omega/50\mu\text{H}$ of coupling impedance for the measuring instrument. A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

The power strip or extension cord has been investigated to make sure that the LISN integrity is maintained with respect to the impedance characteristics as prescribed in ANSI C63.4-2014 at Clause 4.3.

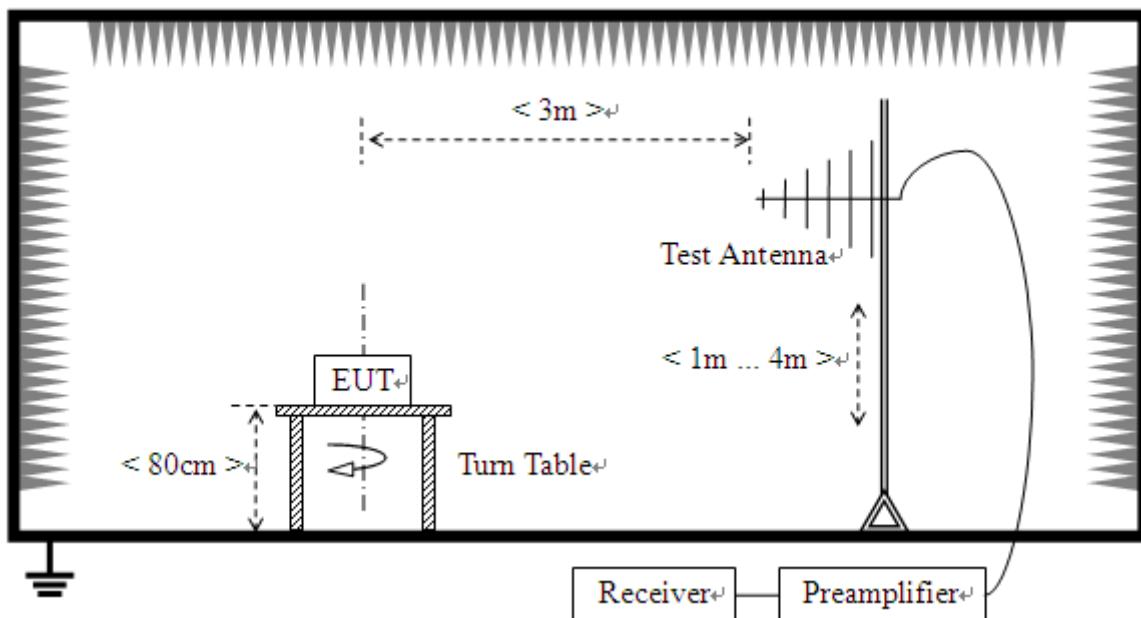
B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
Receiver	Narda	PMM 9010	595WX11007	2016.06.02	2017.06.01
LISN	Schwarzbeck	NSLK 8127	812744	2016.06.02	2017.06.01
Pulse Limiter (20dB)	VTSD	9561D	9537	2016.07.05	2017.07.04
PC	Apple	A1370	C02FQ2PYD DQW	N/A	N/A

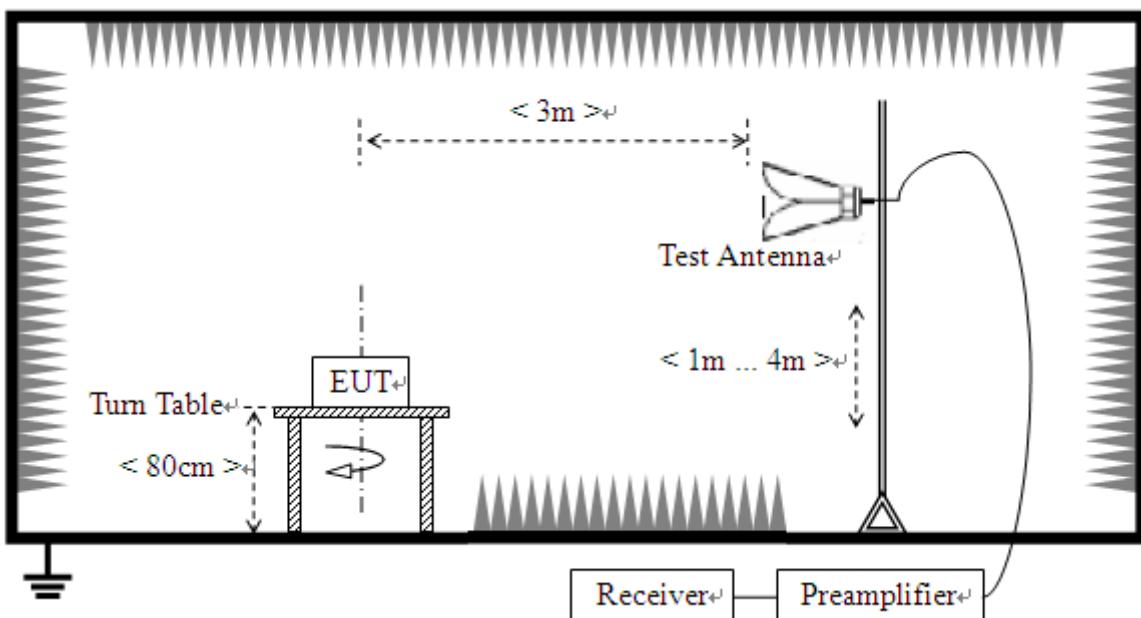
3.2.2. Radiated Emission

A. Test Setup:

1. For radiated emissions from 30MHz to1GHz



2. For radiated emissions above 1GHz





The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
MXE EMI Receiver	Agilent	N9038A	MY54130016	2016.06.03	2017.06.02
Semi-Anechoic Chamber	Changning	9m*6m*6m	N/A	2017.01.11	2018.01.10
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2016.12.09	2017.12.08
Test Antenna - Horn	Schwarzbeck	BBHA9120C	9120C-384	2016.07.05	2017.07.04
PC	Apple	A1370	C02FQ2PYD DQW	N/A	N/A



4. 47 CFR Part 15B Requirements

4.1. Conducted Emission

4.1.1. Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- a) The limit subjects to the Class B digital device.
- b) The lower limit shall apply at the band edges.
- c) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

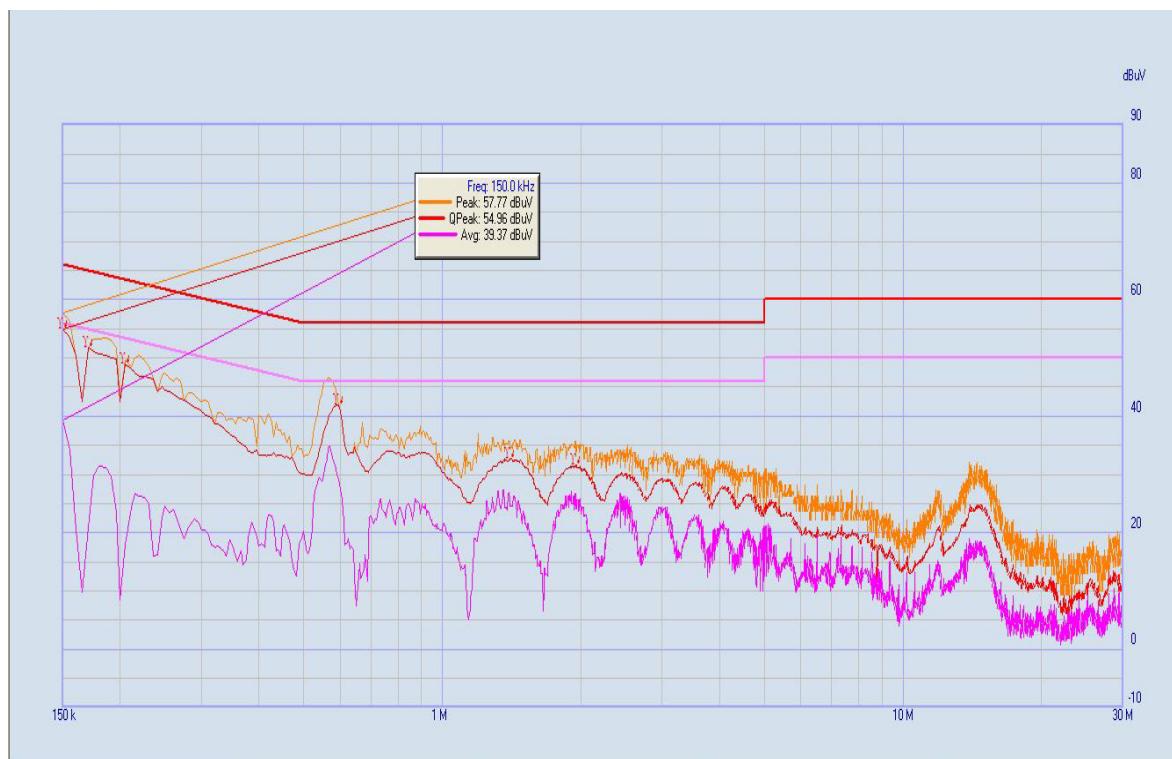
4.1.2. Test Description

See section 3.2.1 of this report.

4.1.3. Test Result

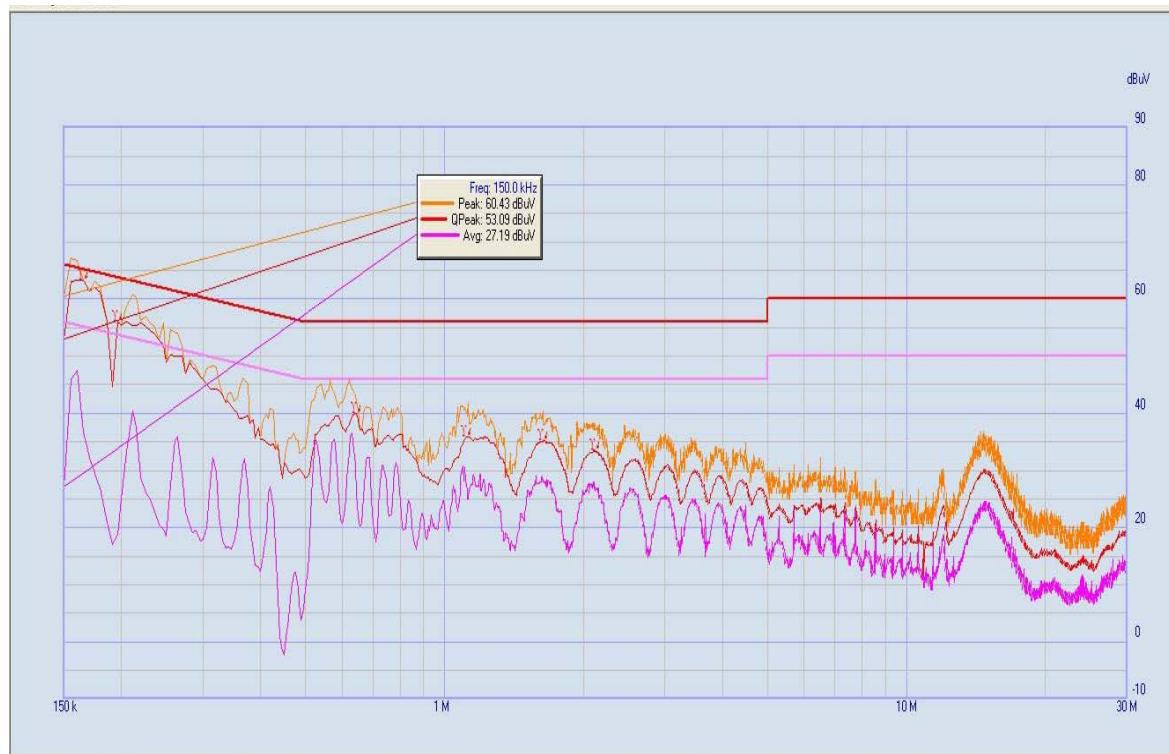
The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

A. Test Plot and Suspicious Points:



(Plot A: L Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.15	54.96	39.37	66.00	56.00	Line	PASS
2	0.17	51.78	20.87	65.43	55.43		PASS
3	0.205	48.96	17.88	64.43	54.43		PASS
4	0.595	41.92	28.95	56.00	46.00		PASS
5	1.40	32.49	26.05	56.00	46.00		PASS
6	1.945	31.47	26.78	56.00	46.00		PASS



(Plot B: N Phase)

No.	Fre. (MHz)	Emission Level (dB μ V)		Limit (dB μ V)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.165	63.38	36.85	65.57	55.57	Neutral	PASS
2	0.195	56.05	18.84	64.71	54.71		PASS
3	0.645	40.06	25.80	56.00	46.00		PASS
4	1.12	35.86	24.90	56.00	46.00		PASS
5	1.635	35.01	28.33	56.00	46.00		PASS
6	2.125	33.37	26.46	56.00	46.00		PASS

Result: Pass



4.2. Radiated Emission

4.2.1. Requirement

According to FCC section 15.109 (a), the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency range (MHz)	Field Strength Limitation at 3m Measurement Dist	
	(μ V/m)	(dB μ V/m)
30.0 - 88.0	100	20log 100
88.0 - 216.0	150	20log 150
216.0 - 960.0	200	20log 200
Above 960.0	500	20log 500

As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Note:

- 1) The tighter limit shall apply at the boundary between two frequency range.
- 2) Limitation expressed in dB μ V/m is calculated by 20log Emission Level(μ V/m).

4.2.2. Test Description

See section 3.2.2 of this report.

4.2.3. Frequency range of measurement

According to 15.33(b)(1), the frequency range of radiated measurement for the EUT is listed in the following table:



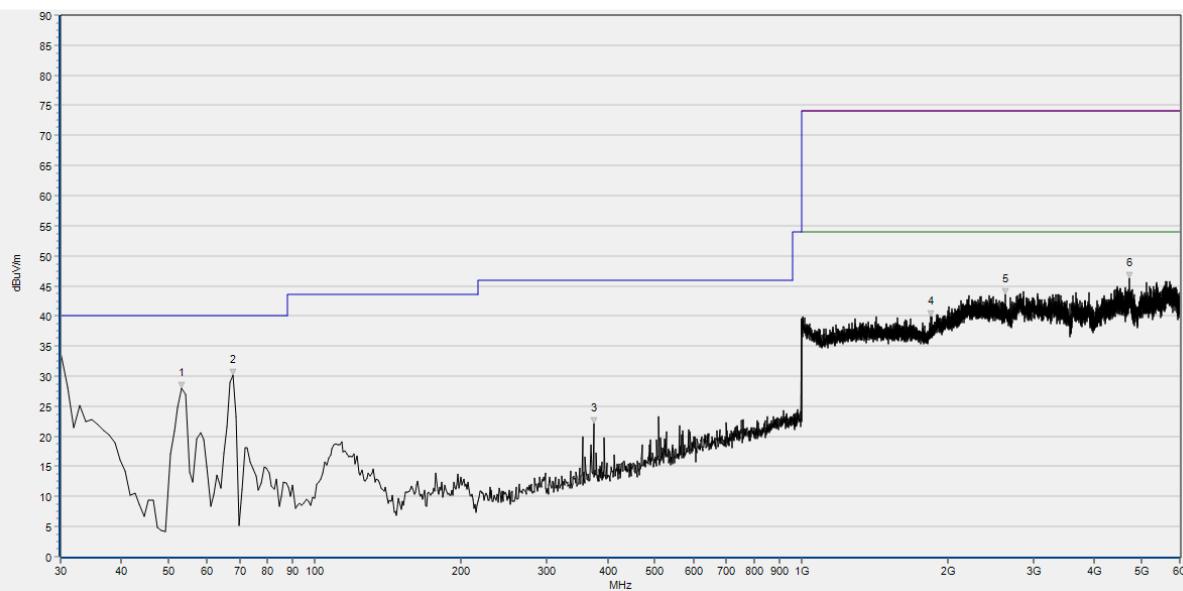
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705–108	1000.
108–500	2000.
500–1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

4.2.4. Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

The amplitude of spurious emissions (6GHz-12.5GHz) which are attenuated more than 20 dB below the permissible value need not be reported.

Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.

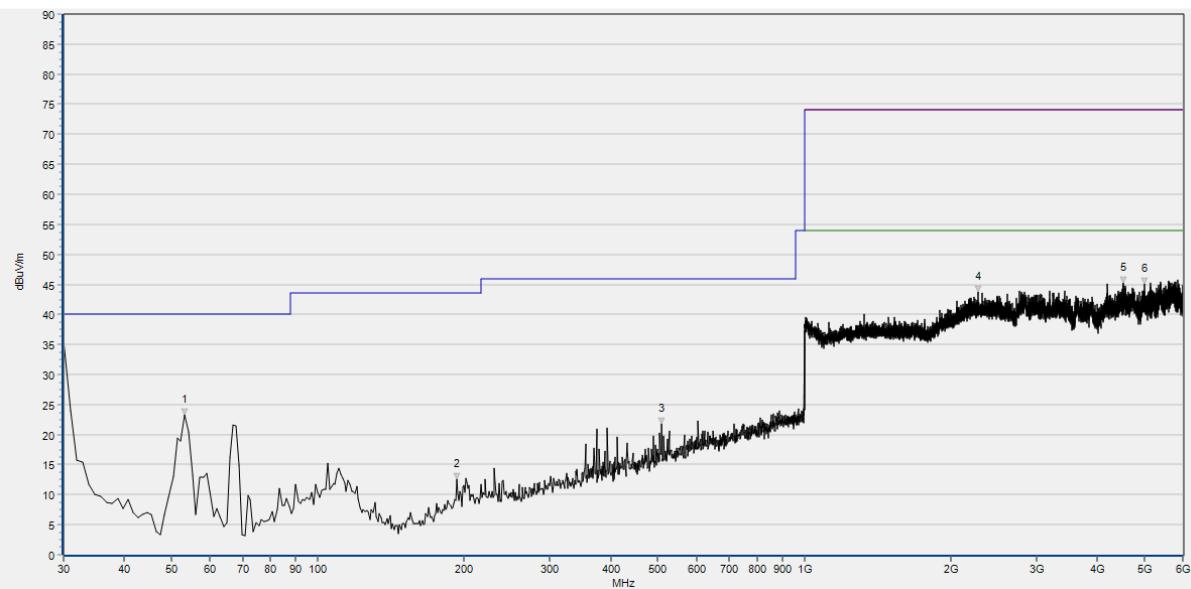
A. Test Plots and Suspicious Points:


(Plot A: 30MHz – 6GHz, Test Antenna Vertical)

No.	Fre. MHz	Pk dB μ V/m	QP dB μ V/m	AV dB μ V/m	Limit-PK dB μ V/m	Limit-QP dB μ V/m	Limit-AV dB μ V/m	ANT	Verdict
1	53.280	N.A.	27.95	N.A.	N.A.	40.00	N.A.	V	PASS
2	67.830	N.A.	30.18	N.A.	N.A.	40.00	N.A.	V	PASS
3	374.350	N.A.	22.19	N.A.	N.A.	46.00	N.A.	V	PASS
4	1842.133	39.84	N.A.	33.25	74.00	N.A.	54.00	V	PASS
5	2630.720	43.53	N.A.	37.62	74.00	N.A.	54.00	V	PASS
6	4723.520	46.18	N.A.	40.21	74.00	N.A.	54.00	V	PASS



REPORT No. : SZ17020049E01



(Plot B: 30MHz – 6GHz, Test Antenna Horizontal)

No.	Fre. MHz	Pk dB μ V/m	QP dB μ V/m	AV dB μ V/m	Limit-PK dB μ V/m	Limit-QP dB μ V/m	Limit-AV dB μ V/m	ANT	Verdict
1	53.280	N.A.	23.35	N.A.	N.A.	40.00	N.A.	H	PASS
2	192.960	N.A.	12.63	N.A.	N.A.	43.50	N.A.	H	PASS
3	509.180	N.A.	21.73	N.A.	N.A.	46.00	N.A.	H	PASS
4	2275.733	43.79	N.A.	37.51	74.00	N.A.	54.00	H	PASS
5	4522.560	45.30	N.A.	39.62	74.00	N.A.	54.00	H	PASS
6	5011.520	45.03	N.A.	39.21	74.00	N.A.	54.00	H	PASS

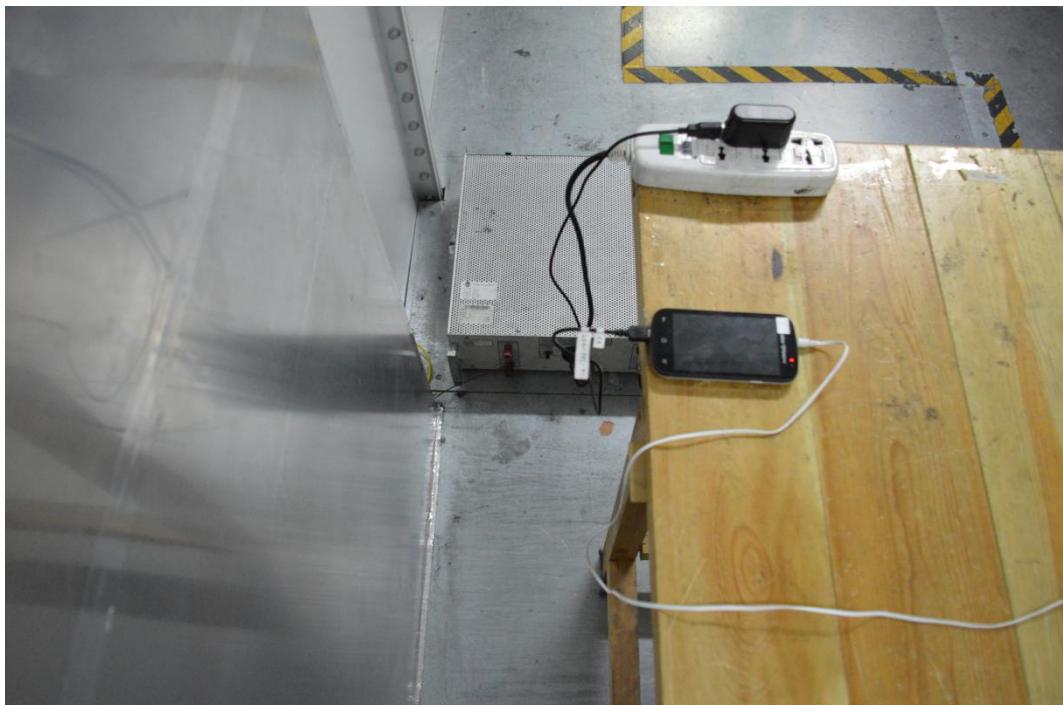
Result: Pass

Annex A Test Setup Photos

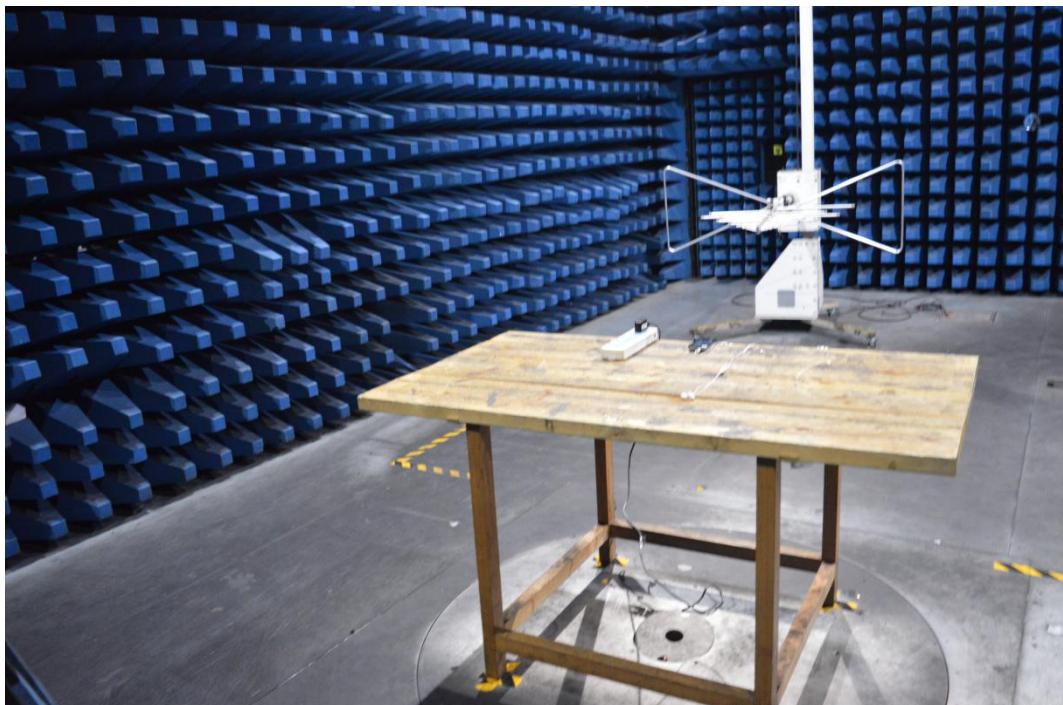
1. Conducted emission main's port front view



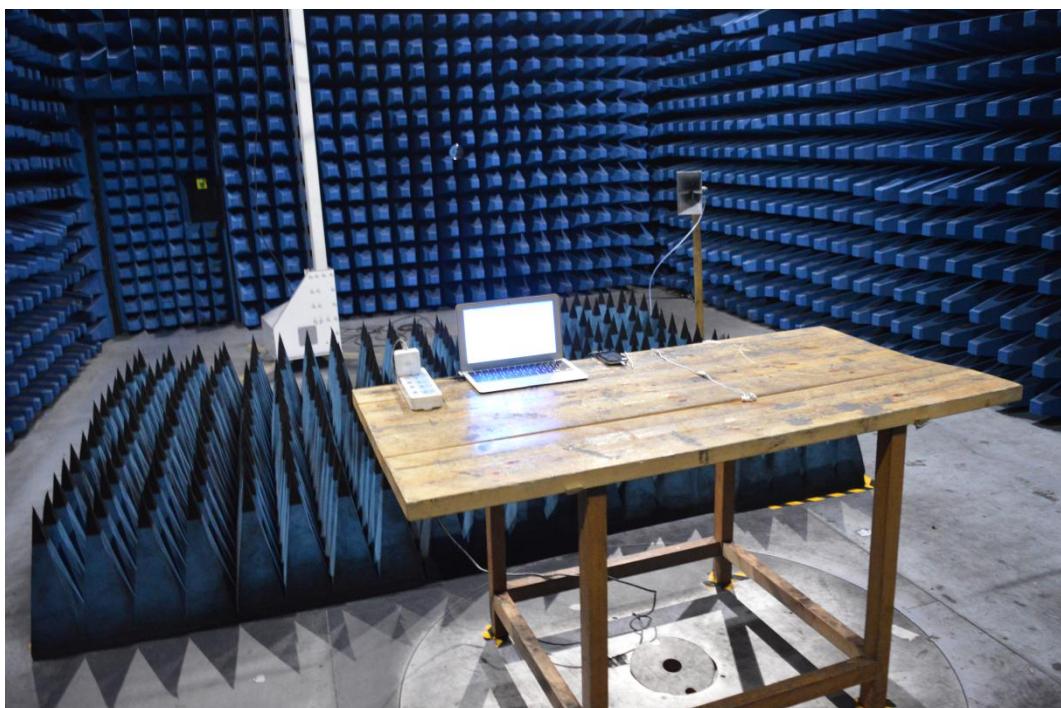
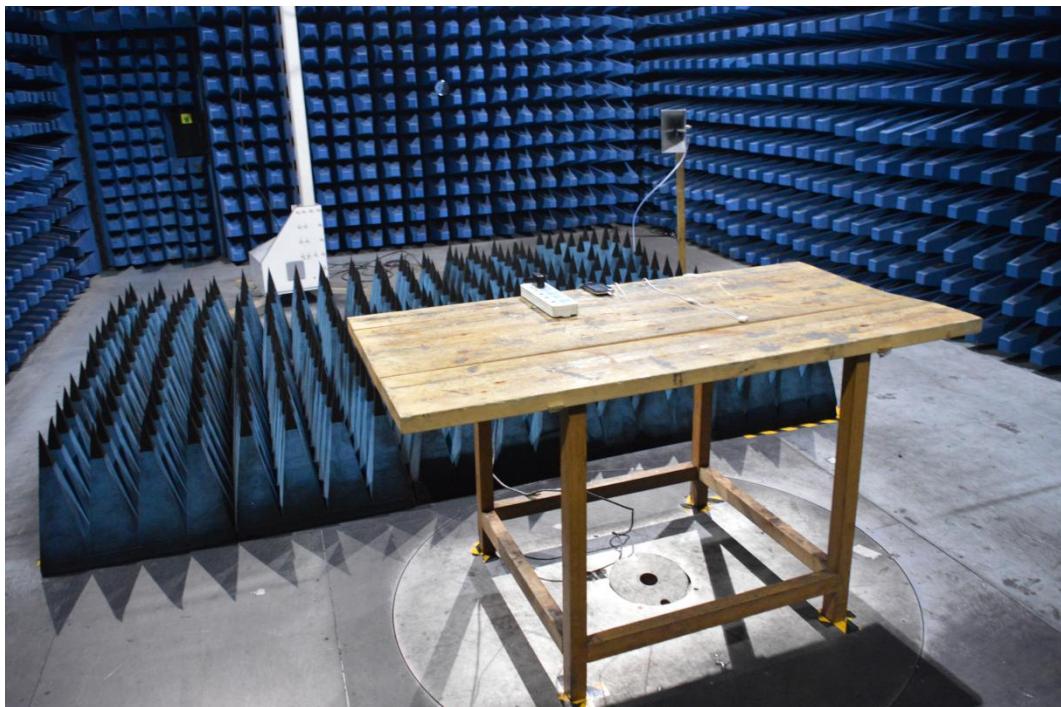
2. Conducted emission main's port side view



3. Radiated emission (30MHz-1GHz)



4. Radiated emission (above 1GHz)





REPORT No. : SZ17020049E01

Annex B Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Conducted Emission:	±1.8dB
Uncertainty of Radiated Emission:	±3.1dB



Annex C Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Accreditation Certificate

Accredited Testing Laboratory: The FCC registration number is 695796.
(Shenzhen Morlab Communications Technology Co., Ltd.)

4. Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 - 60
Atmospheric Pressure (kPa):	86 - 106

***** END OF REPORT *****