REPORT No. : SZ16020003E03

FCC TEST REPORT

APPLICANT	:	Shanghai Mobvoi Information Technology Company Limited
PRODUCT NAME	:	Wireless charger
MODEL NAME	:	WE20016
TRADE NAME	:	ticwatch
BRAND NAME	:	ticwatch
FCC ID	:	2AHEA-WE20016
STANDARD(S)	:	47 CFR Part 18
TEST DATE	:	2016-04-11 to 2016-04-25
ISSUE DATE	:	2016-05-04

SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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DIRECTORY

Change History		
Issue	Date	Reason for change
1.0	2016-05-04	First edition

Test Report Declaration

Applicant	Shanghai Mobvoi Information Technology Company Limited
Applicant Address	Building 2-106，1690 Cailun Road，China (Shanghai) free trade area，China
Manufacturer	Shanghai Mobvoi Information Technology Company Limited
Manufacturer Address	Building 2-106，1690 Cailun Road，China (Shanghai) free trade area，China
Product Name	Wireless charger
Model Name	WE20016
Brand Name	ticwatch
HW Version	2.0
SW Version	5.1
Test Standards	47 CFR Part 18
Test Result	PASS

Tested by : Peng Shiqing
Peng Shiqing (Test Engineer)

Reviewed by : Xiao Xiong
Xiao Xiong (EMC Manager)

Approved by : Zeng Dexin
Zeng Dexin (Chief Engineer)

1. Technical Information

Note： Provided by applicant

1.1. Applicant Information

Company： Shanghai Mobvoi Information Technology Company Limited
Address： Building 2-106，1690 Cailun Road，China (Shanghai) free trade area，China

1.2. Equipment under Test (EUT) Description

EUT Type:	Wireless charger
Serial No:	(n.a., marked #1 by test site)
Hardware Version:	2.0
Software Version:	5.1
Working Frequency:	110KHz-205KHz

NOTE:

1. The Smart Watch is supplied by applicant for test purpose.
2. The EUT is equipped with a Micro-B USB for charging itself when it is connected with other device.
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 18:

No.	Identity	Document Title
1	47 CFR Part 18(April 29, 2016 Edition)	INDUSTRIAL, SCIENTIFIC, AND MEDICAL EQUIPMENT

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

No.	Section	Description	Test Date	Result
1	18.307(a)	Conducted Emission	2016.04.21	PASS
2	18.305(b)	Radiated Emission	2016.04.21	PASS

NOTE: The tests were performed according to the method of measurements prescribed in ANSI C63.4-2014 and FCC Measurement Procedure MP-5, “Methods of Measurements of Radio Noise Emissions from ISM equipment”.

3. Test Conditions Setting

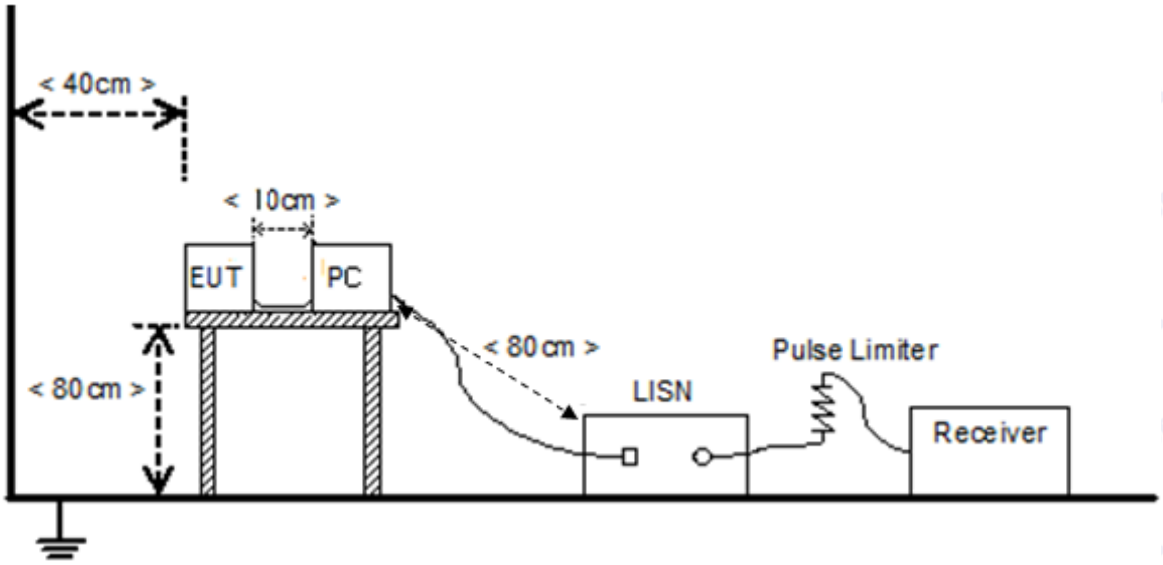
3.1. Test Mode

1	**The first test mode (Charging)**
	The EUT configuration of the emission tests is EUT +PC+ Smart Watch. Before the test, the EUT the EUT was connected with Smart Watch. During the test, the EUT was connected to a PC via the Micro-B USB, the EUT was charged by the PC maintain to the test end.

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 50Ω/50μH 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.

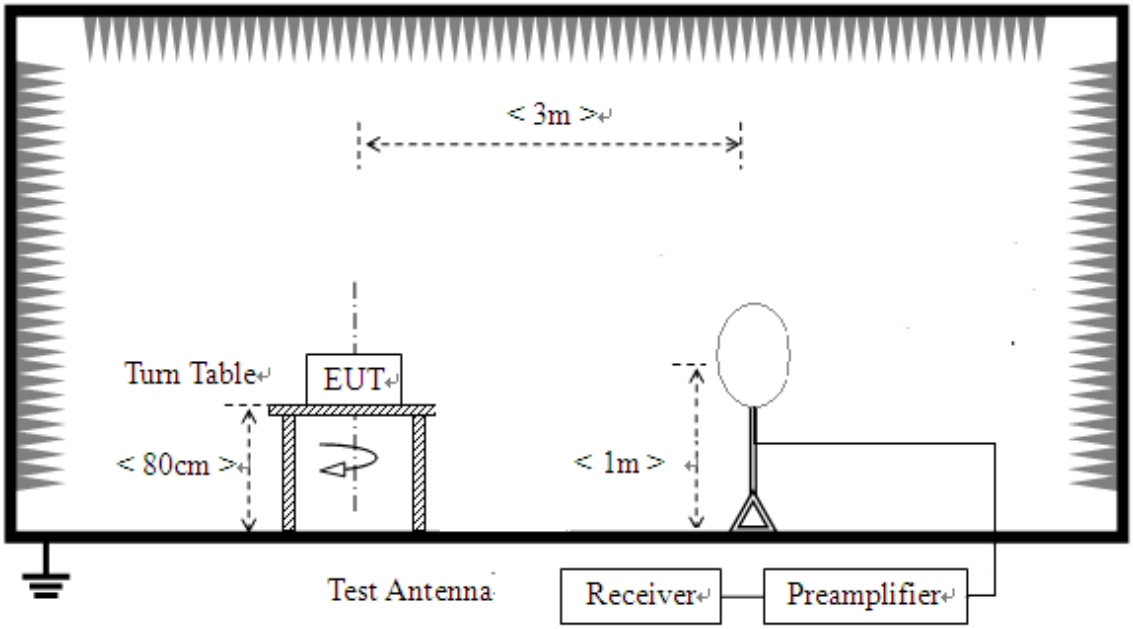
B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
Receiver	Narda	PMM 9010	595WX11007	2015.5.07	2016.5.06
LISN	Schwarzbeck	NSLK 8127	812744	2015.6.18	2016.6.17
Pulse Limiter (20dB)	VTSD	9561D	9537	2015.5.07	2016.5.06
PC	Apple	A1370	C02FQ2PYDDQW	(n.a.)	(n.a.)

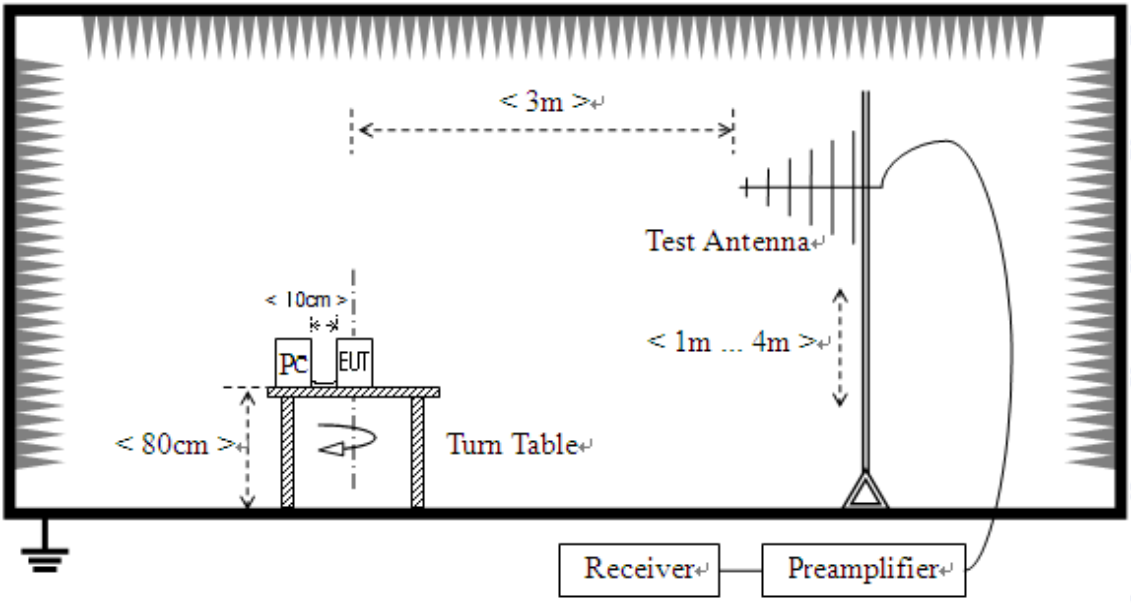
3.2.2. Radiated Emission

A. Test Setup:

1. For radiated emissions from 9kHz to 30MHz



2. For radiated emissions from 30MHz to1GHz



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:

1) In the frequency range of 9KHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.

2) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 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	2015.5.07	2016.5.06
Semi-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2015.5.14	2016.5.13
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2015.6.23	2016.6.22
Test Antenna – Loop	Schwarzbeck	FMZB 1519	1519-022	2015.6.23	2016.6.22
PC	Apple	A1370	C02FQ2PYDDQW	(n.a.)	(n.a.)

4. 47 CFR Part 18 Requirements

4.1. Conducted Emission

4.1.1. Requirement

According to FCC section 18.307(a), 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 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	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 lower limit shall apply at the band edges.

b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

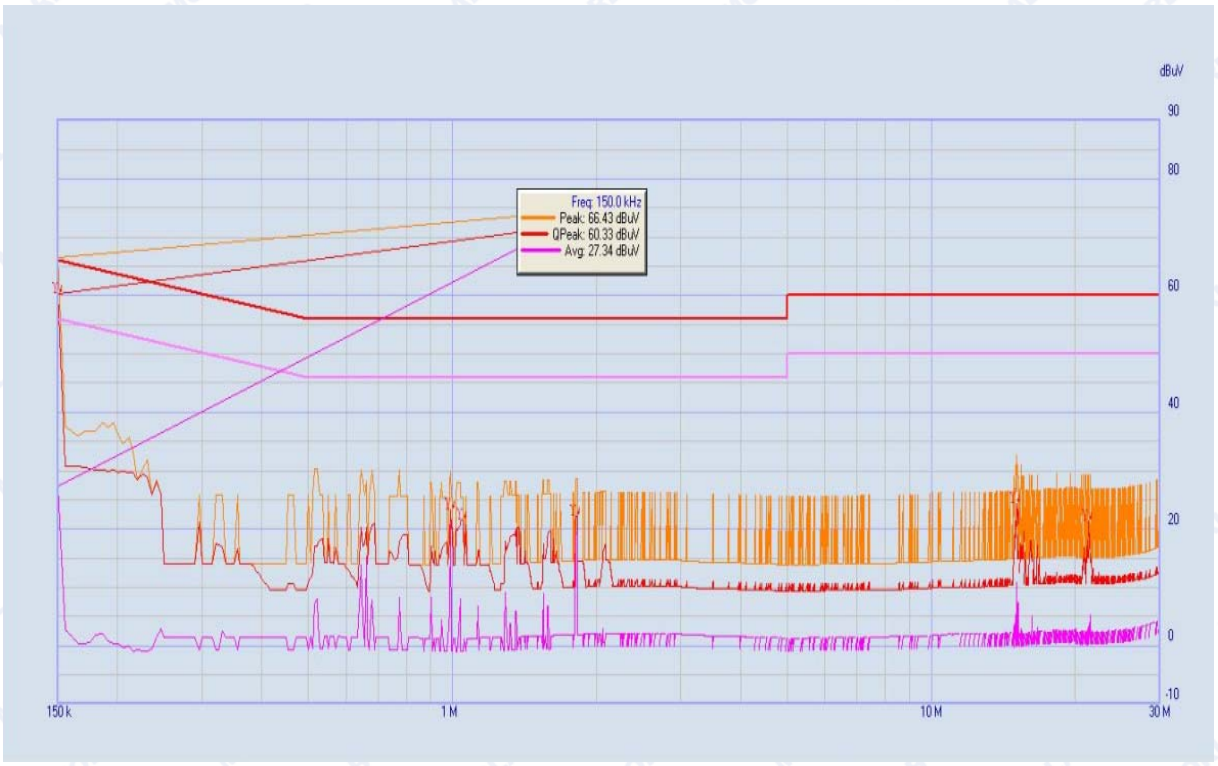
4.1.2. Test Description

See section 3.2.1 of this report.

4.1.3. Test Result

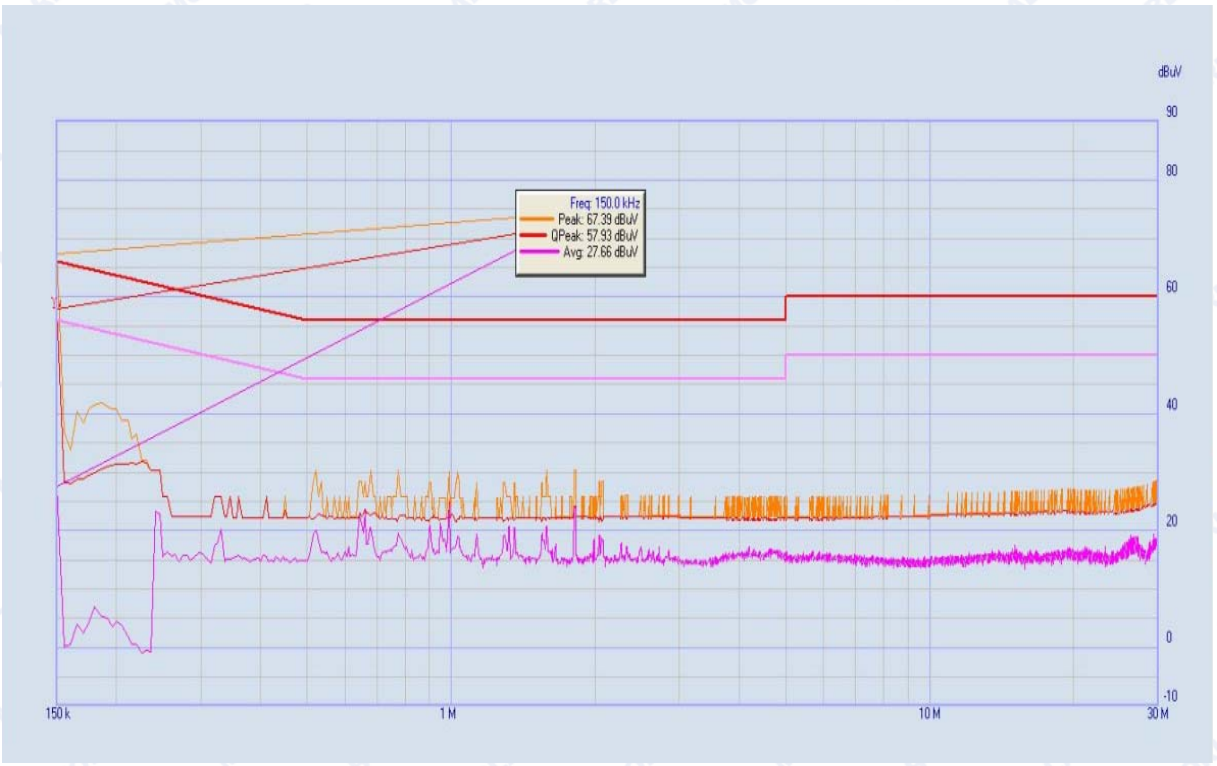
The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines 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	60.33	27.34	66.00	56.00	Line	PASS
2	0.99	23.21	21.11	56.00	46.00		PASS
3	1.05	21.46	4.92	56.00	46.00		PASS
4	1.805	21.79	18.33	56.00	46.00		PASS
5	15.00	23.49	10.58	60.00	50.00		PASS
6	21.225	16.97	2.84	60.00	50.00		PASS



(Plot B: N Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.15	57.93	27.66	66.00	56.00	Neutral	PASS
2	0.56	22.32	14.75	56.00	46.00		PASS
3	1.46	22.17	14.58	56.00	46.00		PASS
4	5.38	22.20	15.54	60.00	50.00		PASS
5	13.98	22.93	15.89	60.00	50.00		PASS
6	20.79	23.16	15.29	60.00	50.00		PASS

Result: Pass

4.2. Radiated Emission

4.2.1. Requirement

According to FCC section 18.305(b), 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 limit (uV/m)	Distance (meters)	F.S Limitation at 3m(dBμV/m)
0.009 - 1000	15	300	103.52

Note:

1) The Equipment is for 18.305(b) any type unless otherwise specified(miscellaneous)operating frequency in any non-ISM frequency.
2) Distance extrapolation factor=40log(specific distance/test distance)(dB);
   Limit line= specific limits(dBuV/m)+ distance extrapolation factor.

4.2.2. Test Description

See section 3.2.2 of this report.

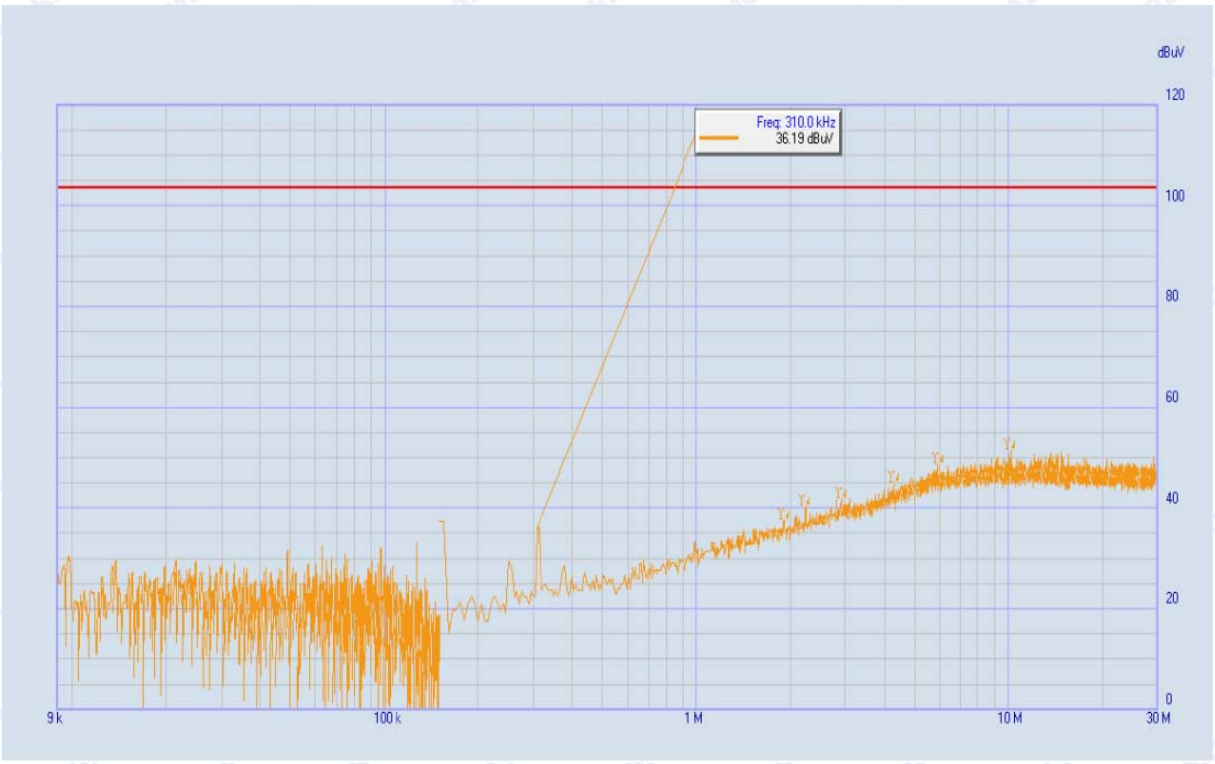
4.2.3. Test Result

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 which are attenuated more than 20 dB below the permissible value need not be reported.

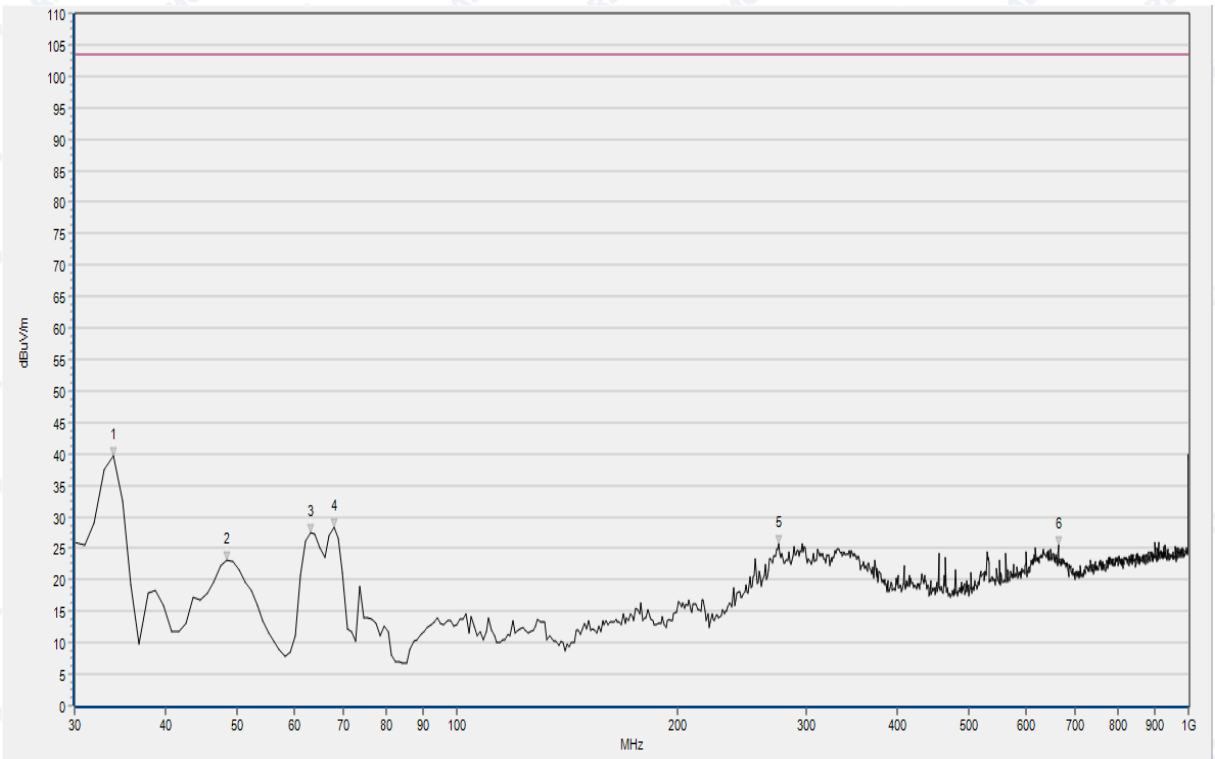
Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.

A. Test Plots and Suspicious Points:



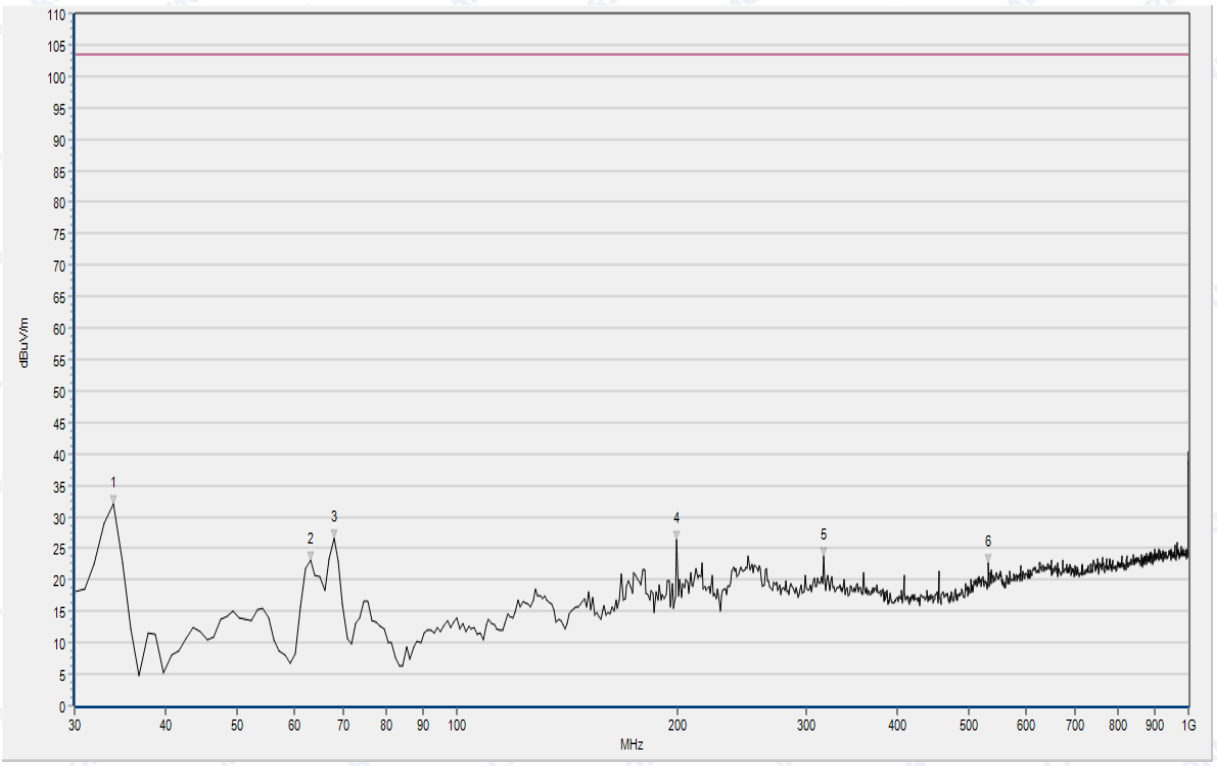
(Plot A: 9KHz – 30MHz)

No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	Verdict
1	1.9	N.A	37.65	N.A	N.A	103.52	N.A	PASS
2	2.22	N.A	40.25	N.A	N.A	103.52	N.A	PASS
3	2.9	N.A	41.87	N.A	N.A	103.52	N.A	PASS
4	4.28	N.A	44.93	N.A	N.A	103.52	N.A	PASS
5	5.9	N.A	48.69	N.A	N.A	103.52	N.A	PASS
6	10.105	N.A	51.56	N.A	N.A	103.52	N.A	PASS



(Plot B: 30MHz – 1GHz, Test Antenna Vertical)

No.	Fre. MHz	Pk dBμV/m	QP dBμV/m	AV dBμV/m	Limit-PK dBμV/m	Limit-QP dBμV/m	Limit-AV dBμV/m	ANT	Verdict
1	33.880	N.A	39.64	N.A	N.A	103.52	N.A	V	PASS
2	48.430	N.A	23.13	N.A	N.A	103.52	N.A	V	PASS
3	62.980	N.A	27.60	N.A	N.A	103.52	N.A	V	PASS
4	67.830	N.A	28.29	N.A	N.A	103.52	N.A	V	PASS
5	275.410	N.A	25.70	N.A	N.A	103.52	N.A	V	PASS
6	664.380	N.A	25.59	N.A	N.A	103.52	N.A	V	PASS



(Plot C: 30MHz – 1GHz, Test Antenna Horizontal)

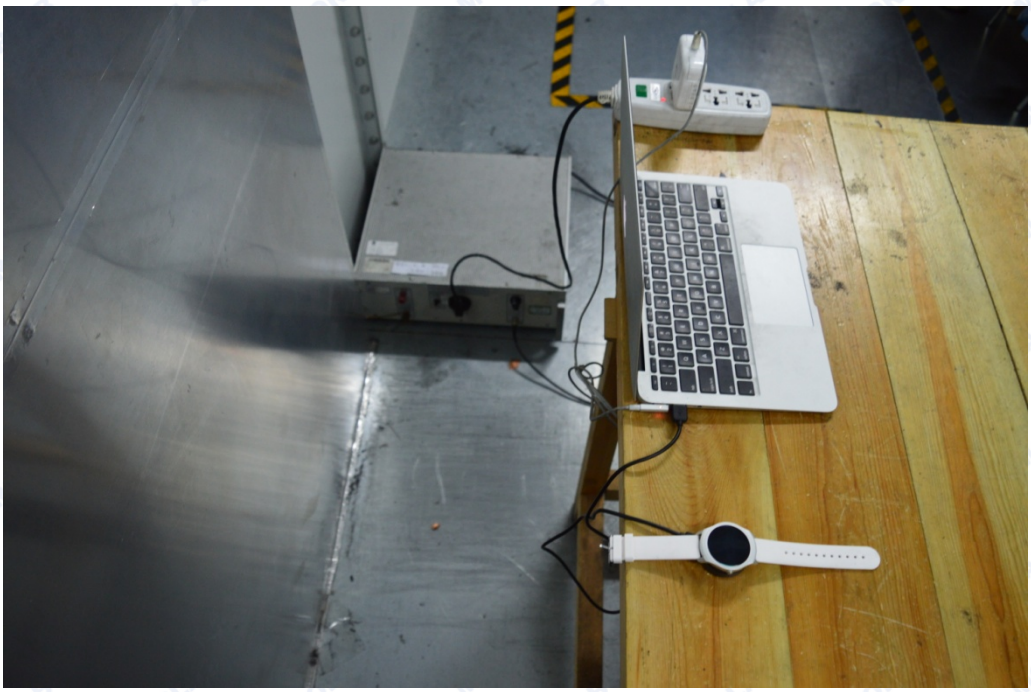
No.	Fre. MHz	Pk dBμV/m	QP dBμV/m	AV dBμV/m	Limit-PK dBμV/m	Limit-QP dBμV/m	Limit-AV dBμV/m	ANT	Verdict
1	33.880	N.A	32.04	N.A	N.A	103.52	N.A	H	PASS
2	62.980	N.A	23.13	N.A	N.A	103.52	N.A	H	PASS
3	67.830	N.A	26.58	N.A	N.A	103.52	N.A	H	PASS
4	199.750	N.A	26.43	N.A	N.A	103.52	N.A	H	PASS
5	317.120	N.A	23.83	N.A	N.A	103.52	N.A	H	PASS
6	532.460	N.A	22.71	N.A	N.A	103.52	N.A	H	PASS

Result: Pass

Annex A Test Setup Photos

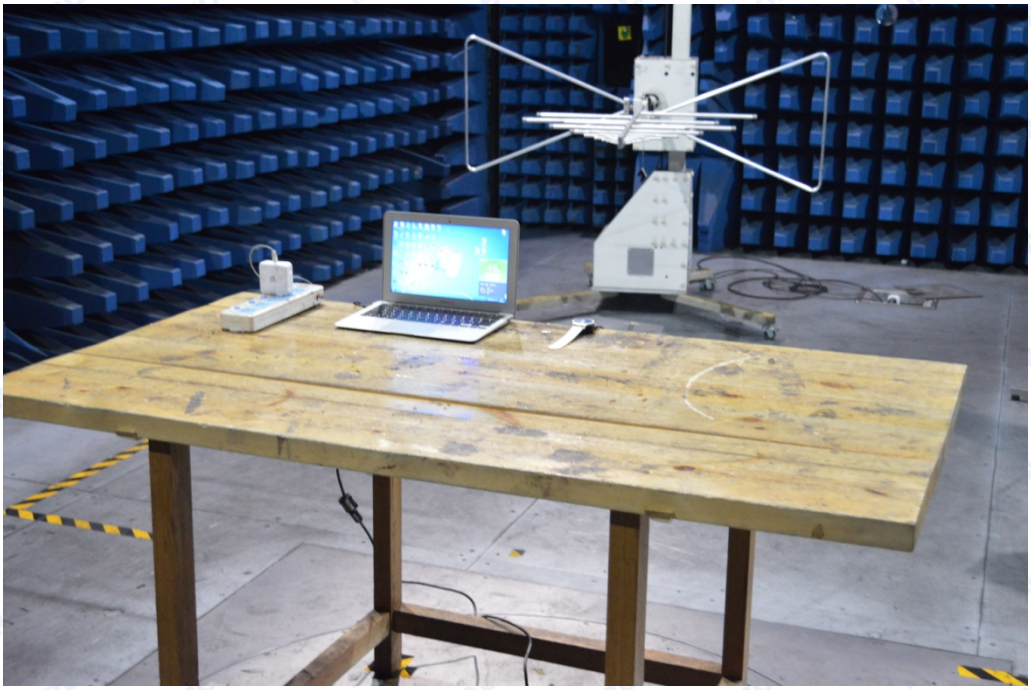
1. Conducted emission main's port front view

2. Conducted emission main's port side view



3. Radiated emission (9KHz-30MHz)

4. Radiated emission (30MHz-1GHz)



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 *****