

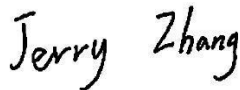
FCC PART 15 B TEST REPORT

For

XIAMEN RONGTA TECHNOLOGY CO.,LTD.

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Huli District, Xiamen City, China

FCC ID: 2AD6G-IMACHINE-A1

Report Type: Original Report	Product Type: ALL IN ONE
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Report Date:	2018-05-21
Reviewed By:	Jerry Zhang EMC Manager 
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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

EUT Name:		ALL IN ONE
EUT Model:		iMachine A1
Multiple Model:		iMachine B1, iMachine C1, iMachine D1, iMachine E1, iMachine F1, iMachine G1, iMachine H1, iMachine I1, iMachine J1
FCC ID:		2AD6G-IMACHINE-A1
Rated Input Voltage:		DC 24V from adapter
Adapter Information	Model:	DJ-240250-SA
	Input:	AC 100-240V~ 50/60Hz 1.5A MAX
	Output:	DC 24V , 2.5A MAX
External Dimension:		Length (353.2 mm)*Width (207.1 mm)*High (402.7 mm)
Serial Number:		180419050
EUT Received Date:		2018.04.19
The highest operation frequency:		2480MHz

Note: The series product, models iMachine A1, iMachine B1, iMachine C1, iMachine D1, iMachine E1, iMachine F1, iMachine G1, iMachine H1, iMachine I1, iMachine J1 are electrically identical, we selected iMachine A1 for full test, and please refer to the declaration letter for details.

Objective

This test report is prepared on behalf of **XIAMEN RONGTA TECHNOLOGY CO.,LTD.** in accordance with Part 2, Subpart J, and Part 15-Subparts A and B of the Federal Communications Commission's rules.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 15 B Class B.

Related Submittal(s)/Grant(s)

FCC Part 15C DSS submissions with FCC ID: 2AD6G-IMACHINE-A1.

FCC Part 15C DTS submissions with FCC ID: 2AD6G-IMACHINE-A1.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Dongguan).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Unwanted Emissions, radiated	30M~200MHz: 4.55 dB,200M~1GHz: 5.92 dB,1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB,18G~26.5G:5.47 dB,26.5G~40G:5.63 dB
Temperature	±1℃
Humidity	±5%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218,the FCC Designation No. : CN1220.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062D.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in typical operation mode.

In this mode, the Router was transmitting data to EUT, and the EUT was playing video in the display, transmitting data from USB HDD to U-Disk, printing the paper

EUT Exercise Software

The software “Lan test.exe” was used during test.

Equipment Modifications

No modification was made to the EUT tested.

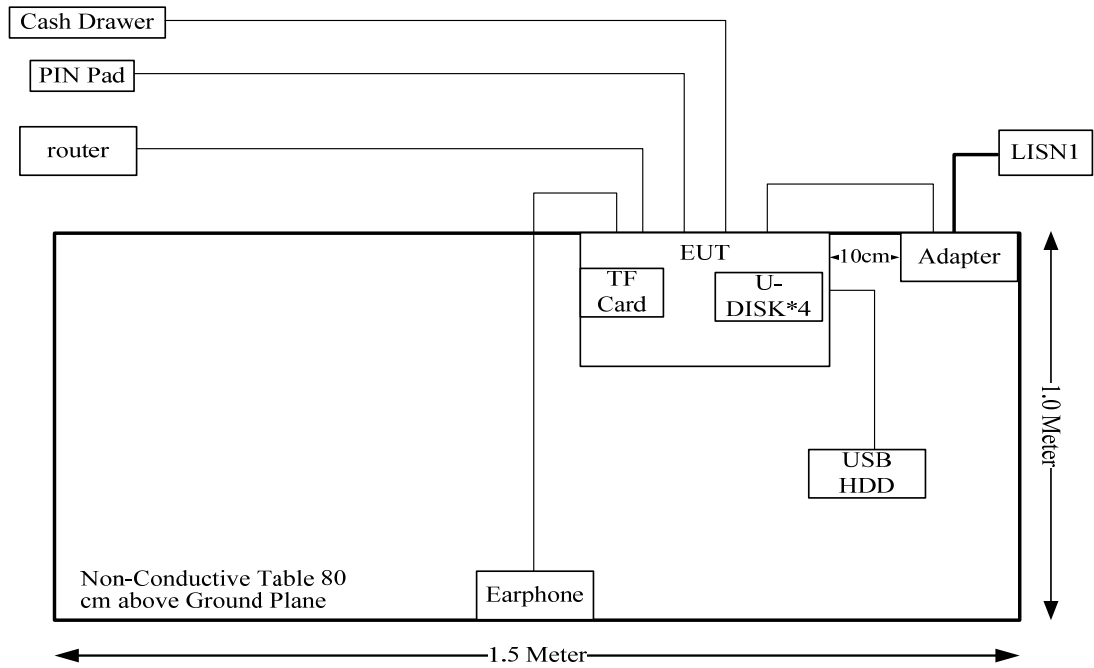
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
HUAWEI	Earphone	/	/
TOSHIBA	USB HDD	v63700-A	62J5P3USTN69
Sandisk	U-DISK	4GB	001
Sandisk	U-DISK	4GB	002
Sandisk	U-DISK	4GB	003
Sandisk	U-DISK	4GB	004
Tenda	Router	D301	E3941017710003629
MAKEN	Cash Drawer	MT-350T	/
YD	PIN Pad	YD511DA-RJ	/
Sandisk	TF Card	4GB	008

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	No	No	0.45	USB HDD	EUT
RJ45 Cable	No	No	5.00	Router	EUT
RJ11 Cable	No	No	5.00	Cash Drawer	EUT
RS232 Cable	No	No	5.00	PIN Pad	EUT
Earphone	No	No	1.2	EUT	Earphone
DC Cable	No	No	1.2	Adapter	EUT

Configuration of Test Setup

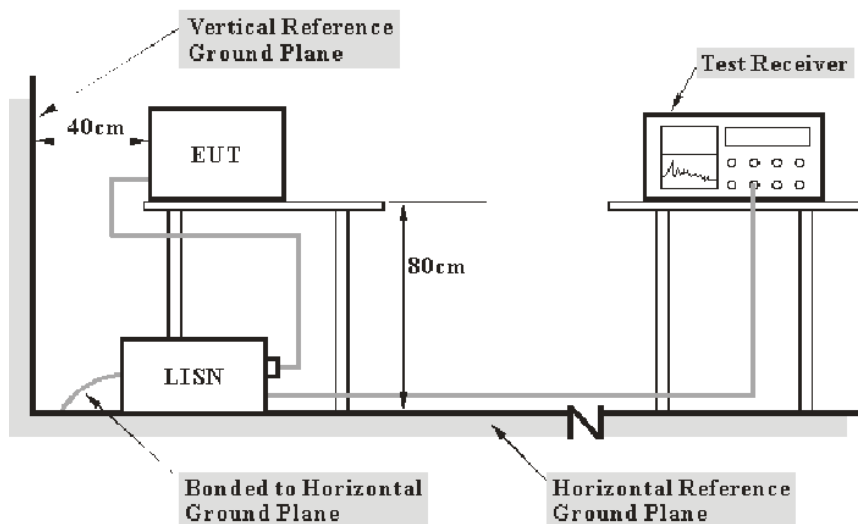


SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	Conducted Emissions	Compliant
§15.109	Radiated Emissions	Compliant

FCC§15.107 - CONDUCTED EMISSIONS

EUT Setup



Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The adapter was connected to the Main LISN with 120V/60Hz AC power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2017-12-11	2018-12-11
R&S	Two-line V-network	ENV 216	101614	2017-12-08	2018-12-08
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-01	2017-09-05	2018-09-05
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed traceable to National Primary Standards and International System of Units (SI).

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 B Class B.

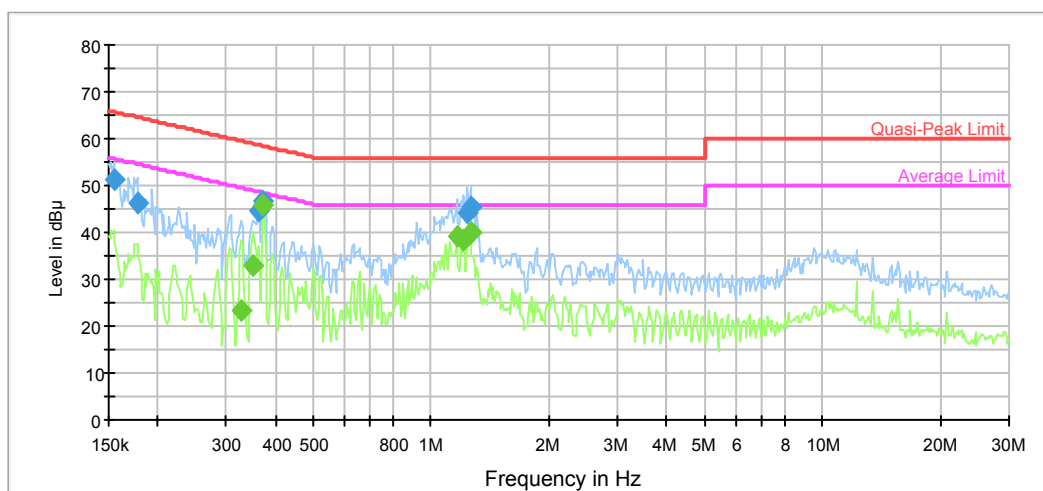
Test Data**Environmental Conditions**

Temperature:	26.6 °C
Relative Humidity:	57 %
ATM Pressure:	100.5kPa

The testing was performed by Sider Huang on 2018-05-16.

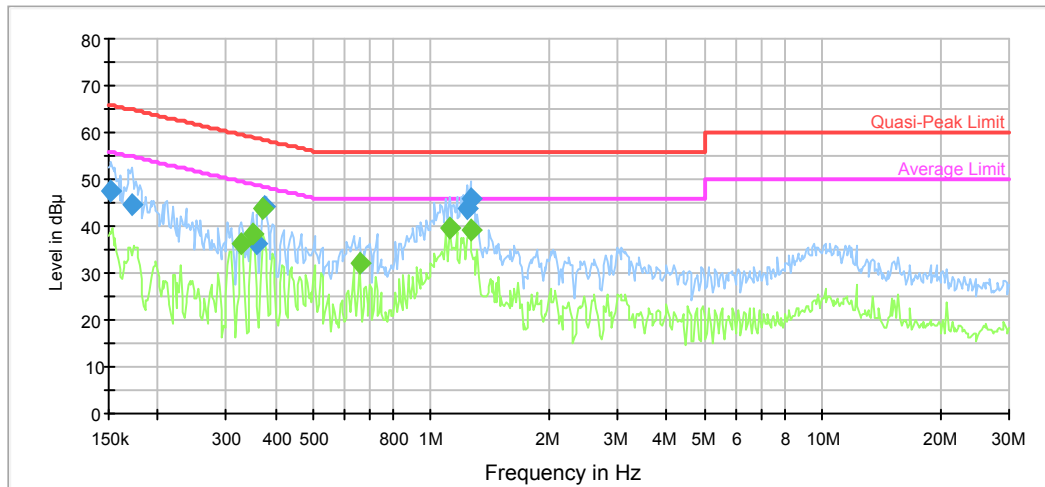
Test Mode: Operation

AC120V, 60Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.154858	51.1	9.000	L1	11.1	14.6	65.7	Compliance
0.177322	46.2	9.000	L1	10.8	18.4	64.6	Compliance
0.363254	44.5	9.000	L1	10.0	14.2	58.7	Compliance
0.372042	46.8	9.000	L1	10.0	11.7	58.5	Compliance
1.239175	44.3	9.000	L1	9.8	11.7	56.0	Compliance
1.259081	45.5	9.000	L1	9.8	10.5	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.327509	23.3	9.000	L1	10.1	26.2	49.5	Compliance
0.351859	32.7	9.000	L1	10.0	16.2	48.9	Compliance
0.372042	45.8	9.000	L1	10.0	2.7	48.5	Compliance
1.162648	39.3	9.000	L1	9.8	6.7	46.0	Compliance
1.209904	38.2	9.000	L1	9.8	7.8	46.0	Compliance
1.259081	40.0	9.000	L1	9.8	6.0	46.0	Compliance

AC120V, 60Hz, Neutral:

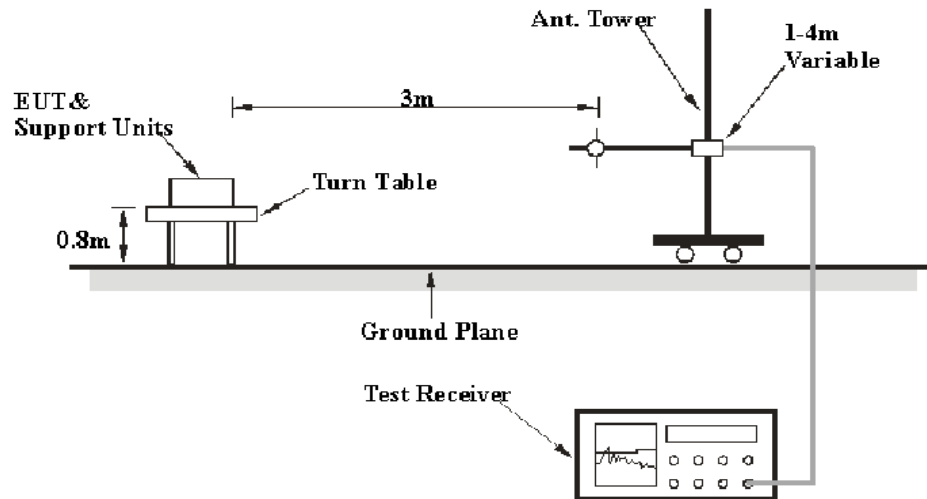
Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.152410	47.6	9.000	N	11.1	18.3	65.9	Compliance
0.171759	44.4	9.000	N	10.9	20.5	64.9	Compliance
0.360371	36.3	9.000	N	10.0	22.4	58.7	Compliance
0.375019	44.0	9.000	N	10.0	14.4	58.4	Compliance
1.239175	43.8	9.000	N	9.8	12.2	56.0	Compliance
1.259081	46.0	9.000	N	9.8	10.0	56.0	Compliance

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.327509	36.4	9.000	N	10.1	13.1	49.5	Compliance
0.349066	38.3	9.000	N	10.0	10.7	49.0	Compliance
0.372042	43.7	9.000	N	10.0	4.8	48.5	Compliance
0.655073	32.0	9.000	N	9.8	14.0	46.0	Compliance
1.117238	39.5	9.000	N	9.8	6.5	46.0	Compliance
1.259081	39.1	9.000	N	9.8	6.9	46.0	Compliance

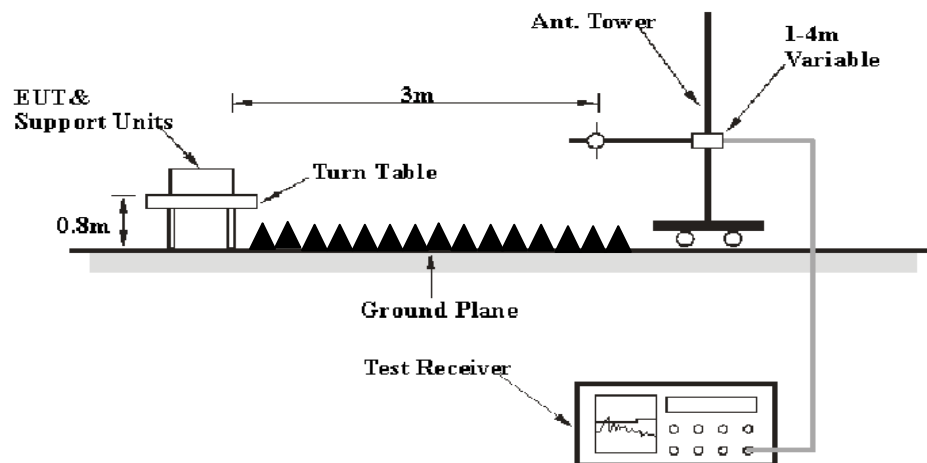
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission Below 1GHz tests were performed in the 3 meters chamber test site A, above 1GHz tests were performed in the 3 meters chamber test site B, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 13 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	10 Hz	/	AVG

Test Procedure

During the radiated emissions, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in the Quasi-peak detection mode for below 1 GHz, peak and average detection mode above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-12-11	2018-12-11
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2017-12-08	2018-12-08
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
MITEQ	Amplifier	AFS42-00101800-2 5-S-42	2001271	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-01	2017-06-27	2018-06-27
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Data

Environmental Conditions

Temperature:	24.1~24.9 °C
Relative Humidity:	34~43 %
ATM Pressure:	100.9~101.1 kPa

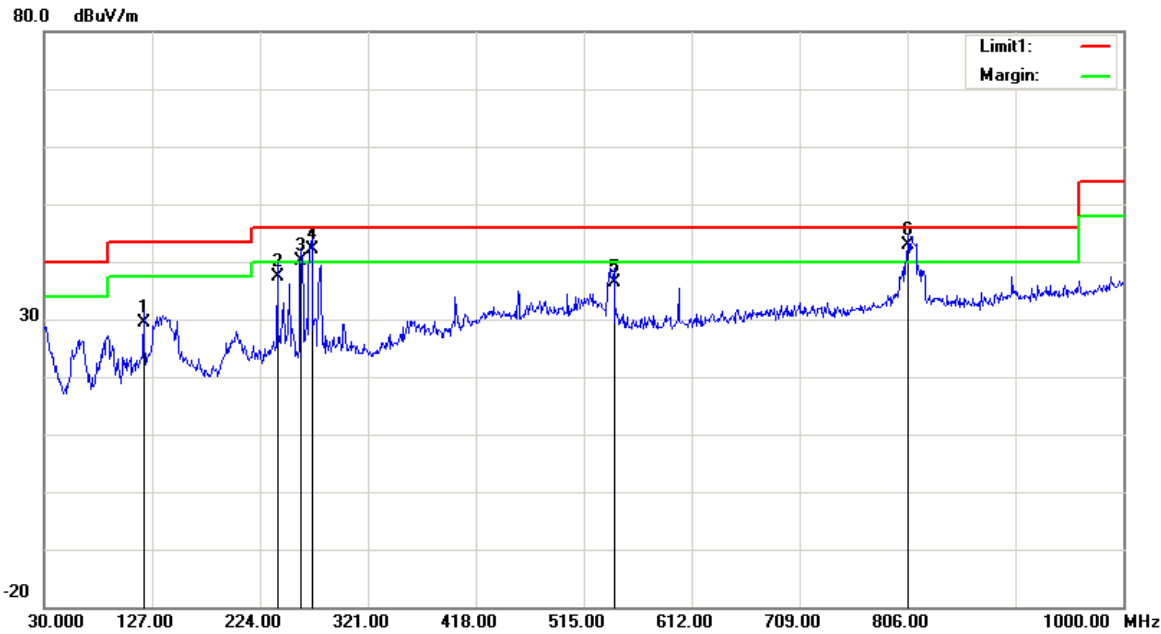
* The testing was performed by Blake Yang&Sunny Cen on 2018-05-15 and 2018-05-18.

Test Result: Compliance

Test Mode: *Operation*

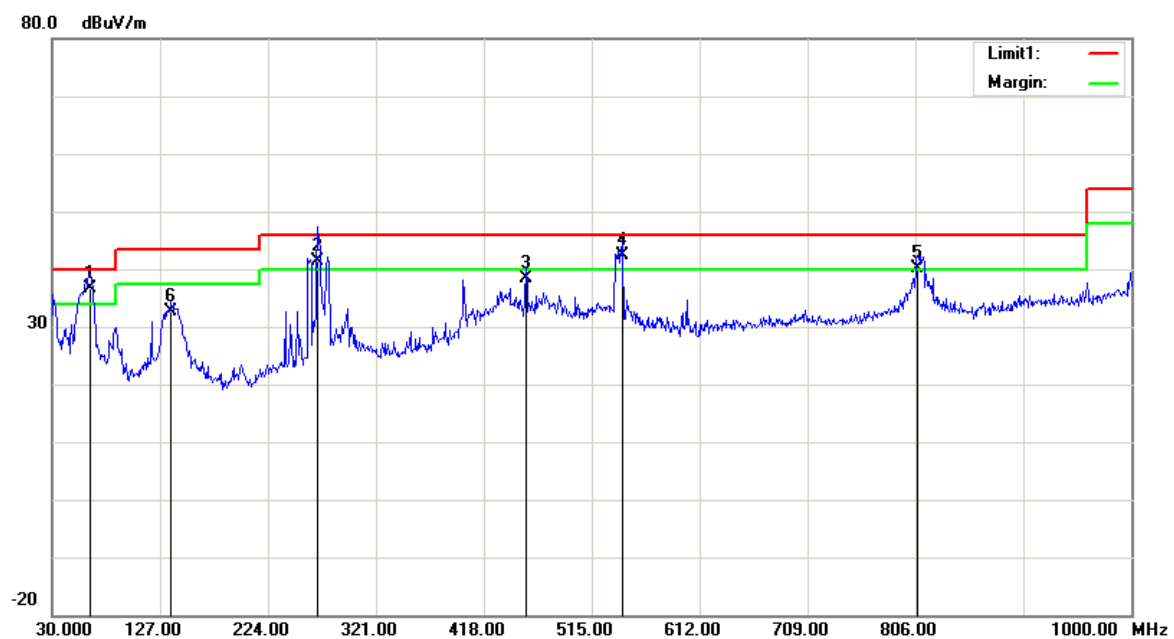
1) Below 1GHz:

Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
119.2400	34.44	QP	-5.04	29.40	43.50	14.10
239.5200	43.60	QP	-6.10	37.50	46.00	8.50
260.8600	45.36	QP	-5.16	40.20	46.00	5.80
270.5600	46.38	QP	-4.28	42.10	46.00	3.90
542.1600	36.25	QP	0.25	36.50	46.00	9.50
806.9700	37.95	QP	4.85	42.80	46.00	3.20

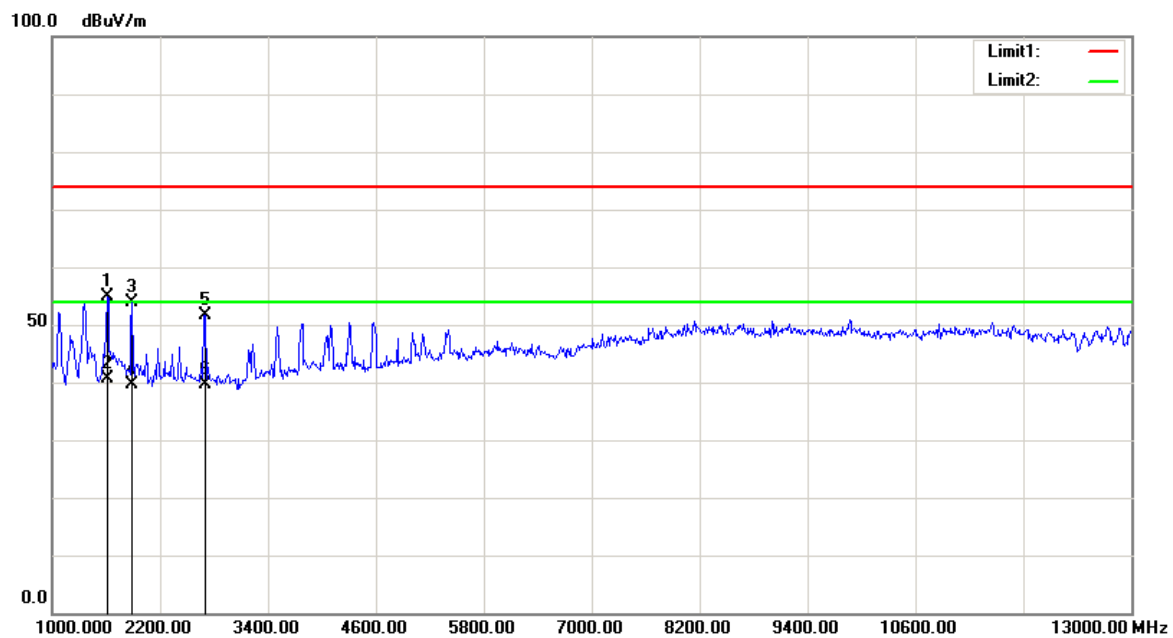
Vertical



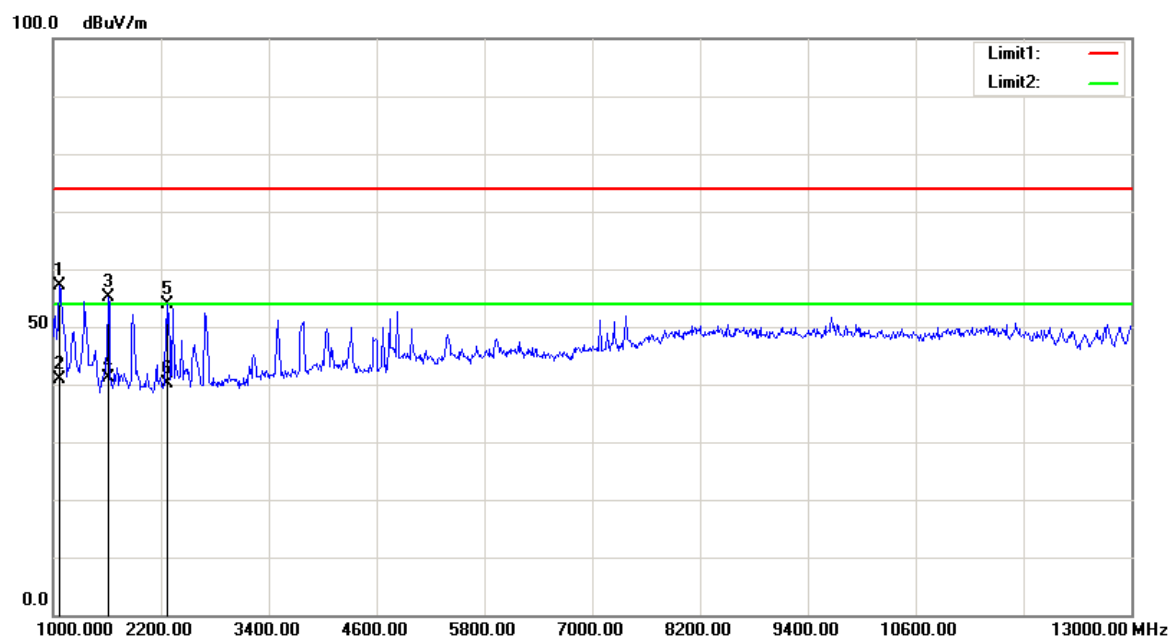
Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
63.9500	48.59	QP	-11.89	36.70	40.00	3.30
268.6200	45.88	QP	-4.38	41.50	46.00	4.50
455.8300	39.57	QP	-1.07	38.50	46.00	7.50
542.1600	42.05	QP	0.25	42.30	46.00	3.70
807.9400	35.33	QP	4.87	40.20	46.00	5.80
136.7000	38.09	QP	-5.39	32.70	43.50	10.80

2) Above 1GHz:

Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1618.000	63.68	peak	-8.68	55.00	74.00	19.00
1618.000	49.24	AVG	-8.68	40.56	54.00	13.44
1888.000	61.52	peak	-7.57	53.95	74.00	20.05
1888.000	47.28	AVG	-7.57	39.71	54.00	14.29
2710.000	57.11	peak	-5.53	51.58	74.00	22.42
2710.000	45.17	AVG	-5.53	39.64	54.00	14.36

Vertical

Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1078.000	67.60	peak	-10.39	57.21	74.00	16.79
1078.000	51.32	AVG	-10.39	40.93	54.00	13.07
1618.000	63.83	peak	-8.68	55.15	74.00	18.85
1618.000	49.83	AVG	-8.68	41.15	54.00	12.85
2272.000	60.67	peak	-6.76	53.91	74.00	20.09
2272.000	46.87	AVG	-6.76	40.11	54.00	13.89

END OF REPORT