

FCC

EMC

TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.



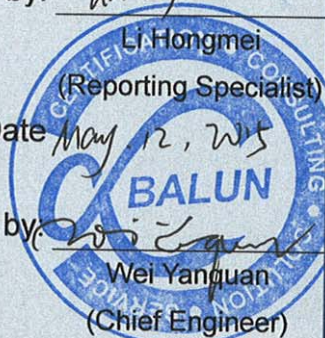
FOR
Mobile Phone

ISSUED TO
Shenzhen Huadoo Bright Group Limited

Room 13E, jinsong Buiding, Tai ran 4th Rood, chegong miao, Futian
District, Shenzhen



Prepared by: Li Hongmei
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(Reporting Specialist)
Date May 12, 2015
Approved by: Wei Yanguan
Wei Yanguan
(Chief Engineer)
Date May 12, 2015



Report No.: BL-SZ1550013-401
EUT Type: Mobile Phone
Model Name: Huadoo HG04
Brand Name: Huadoo
Test Standard: 47 CFR Part 15 Subpart B
FCC ID: 2ACXS-HG04

Test conclusion: Pass
Test Date: May. 5, 2015 ~ May. 11, 2015
Date of Issue: May. 12, 2015

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Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>May. 12, 2015</u>	<u>Initial Issue</u>

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1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6683 3402
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory has been listed by US Federal Communications Commission to perform electromagnetic emission measurements. The recognition numbers of test site are 832625. The laboratory has met the requirements of the IAS Accreditation Criteria for Testing Laboratories (AC89), has demonstrated compliance with ISO/IEC Standard 17025:2005. The accreditation certificate number is TL-588. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Announce

- (1) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (2) The test report is invalid if there is any evidence and/or falsification.
- (3) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (4) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant

Applicant	Shenzhen Huadoo Bright Group Limited
Address	Room 13E, jinsong Buiding, Tai ran 4th Rood, chegong miao, Futian Distrct, Shenzhen

2.2 Manufacturer

Manufacturer	Shenzhen Huadoo Bright Group Limited
Address	Room 13E, jinsong Buiding, Tai ran 4th Rood, chegong miao, Futian Distrct, Shenzhen

2.3 General Description for Equipment under Test (EUT)

EUT Type	Mobile Phone
Model Name	HG04
Hardware Version	N/A
Software Version	Huadoo V1_Chinas_ENGLISH_13_V0.1_V2_20140708
The Highest Speed of Processor	1.2 GHz
Network and Wireless connectivity	2G Network GSM/ GPRS/ EDGE 850/900/1800/1900MHz 3G Network WCDMA/ HSDPA/ HSUPA Band I/II/V/VIII 4G Network Band 1/3/7/20 Bluetooth, GPS, WIFI.
About the Product	The equipment is mobile phone, intended for used with information technology equipment.

2.4 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	N/A
	Model No.	HG04
	Serial No.	N/A
	Capacitance	3800 mAh
	Rated Voltage	3.8 V
	Extreme Voltage	Low: 3.3 V / High:4.2 V
Ancillary Equipment 2	Charger	
	Brand Name	HJ-0501000
	Rated Input	~ 100-240 V, 0.15 A, 50/60 Hz
	Rated Output	= 5 V, 1 A
Ancillary Equipment 3	USB Cable	
	Length	1.0 m

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	FCC 47 CFR Part 15 Subpart B (10-1-14 Edition)	Unintentional Radiators
2	ANSI C63.4-2009	American National Standard for 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

3.2 Verdict

No.	Description	FCC Rule	Test Verdict	Result
1	Radiated Emission	15.109	Pass	Annex A .1
2	Conducted Emission, AC Ports	15.107	Pass	Annex A .2

3.3 Test Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Measurement	Value
Conducted emissions (9 KHz-30 MHz)	2.79 dB
Radiated emissions (30 MHz-1 GHz)	3.45 dB
Radiated emissions (1 GHz-18 GHz)	3.67 dB

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

Environment Parameter	Selected Values During Tests			
	Temperature	Voltage	Relative Humidity	Ambient Pressure
Normal Temperature, Normal Voltage (NTNV)	23°C~26°C	AC 110 V/60 Hz	50%-55%	100 to 102 kPa

4.2 Test Equipment List

Radiated Emission Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2014.07.07	2015.07.06	☒
Test Antenna-Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2013.07.02	2015.07.01	☐
Test Antenna-Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2013.07.03	2015.07.02	☒
Test Antenna-Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2013.07.02	2015.07.01	☒
Test Antenna-Horn(15-26.5 GHz)	SCHWARZBECK	BBHA 9170	9170-305	2013.07.02	2015.07.01	☐
Anechoic Chamber	RAINFORD	9 m*6 m*6 m	N/A	2015.02.28	2016.02.27	☒

Conducted disturbance Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2014.07.07	2015.07.06	☒
LISN	SCHWARZBECK	NSLK 8127	8127-687	2014.07.07	2015.07.06	☒
AMN	SCHWARZBECK	NNBM8124	8124-509	2014.07.07	2015.07.06	☐
AMN	SCHWARZBECK	NNBM8124	8124-510	2014.07.07	2015.07.06	☐
ISN	TESEQ	ISN T800	34449	2014.07.07	2015.07.06	☐
Shielded Enclosure	ChangNing	CN-130701	130703	N/A	N/A	☒

4.3 Test Enclosure list

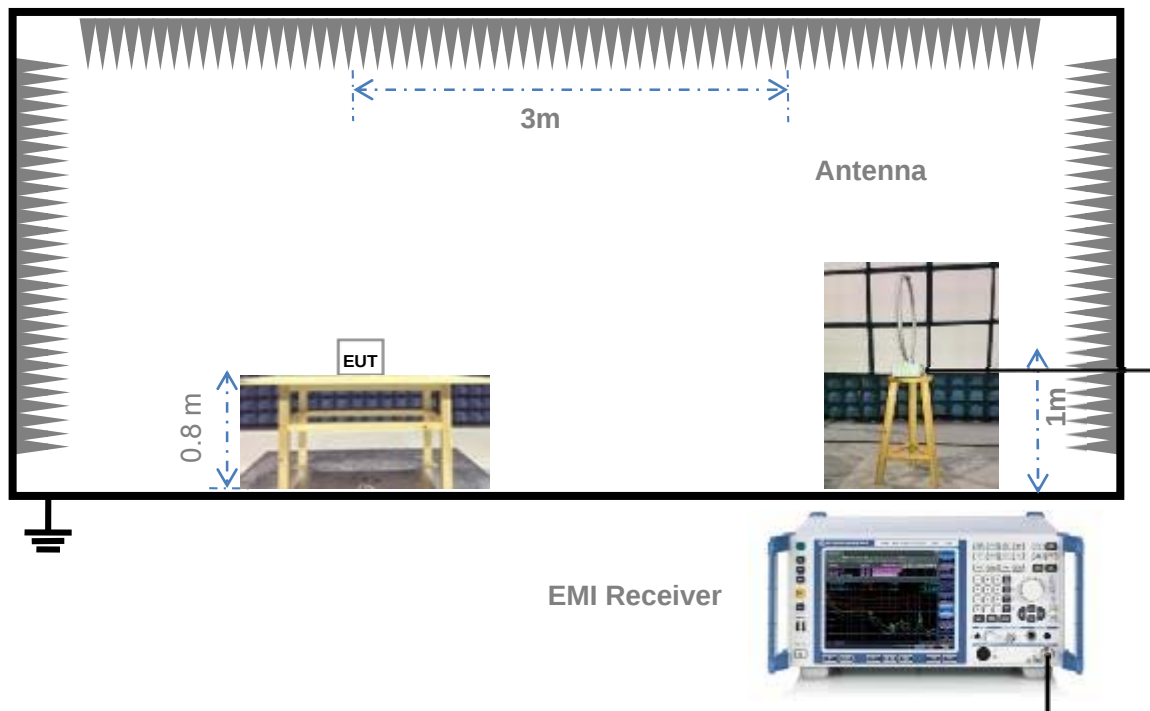
Description	Manufacturer	Model	Serial No.	Length	Description	Use
PC	N/A	N/A	N/A	N/A	Special Handled	☐
Printer	HP	DESKJET 1000	N/A	N/A	N/A	☐
Keyboard	Logitech	Y-BP62a	N/A	N/A	N/A	☐
Mouse	Logitech	M100	N/A	N/A	N/A	☐
USB disk	Kingston	N/A	N/A	N/A	N/A	☐
TF Card	Kingston	N/A	N/A	N/A	N/A	☒
VGA Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
HDMI Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
DVI Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
Coaxial video cable	N/A	N/A	N/A	2.0 m	Shielded with core	☐
Phone	BBK	HCD007TSD	N/A	N/A	N/A	☐
laptop	LENOVO	K29	N/A	N/A	N/A	☒
Earphone	N/A	N/A	N/A	1.5 m	N/A	☒

4.4 Test Configurations

Test Configurations (TC) No.	Description
TC01	<u>The USB Test mode</u> The EUT configuration of the emission tests is TransFlash Card + EUT + Battery + Laptop + Earphone. During the measurement, the EUT with a TransFlash Card is connected with the laptop via a USB cable, the data is transmitted between the laptop and the TransFlash Card of the EUT.
TC02	<u>The Camera test mode</u> The EUT configuration of the emission tests is EUT + Battery + Charger + Earphone. During the measurement, the EUT working by way of the Camera.
TC03	<u>The FM test mode</u> The EUT configuration of the emission tests is EUT + Battery + Charger + Earphone. During the measurement, the FM function is active.
TC04	<u>The Idle test mode</u> The EUT configuration of the emission tests is EUT + Battery + Charger + Earphone. During the measurement, the EUT is in the idle test mode and recharged by the AC power.

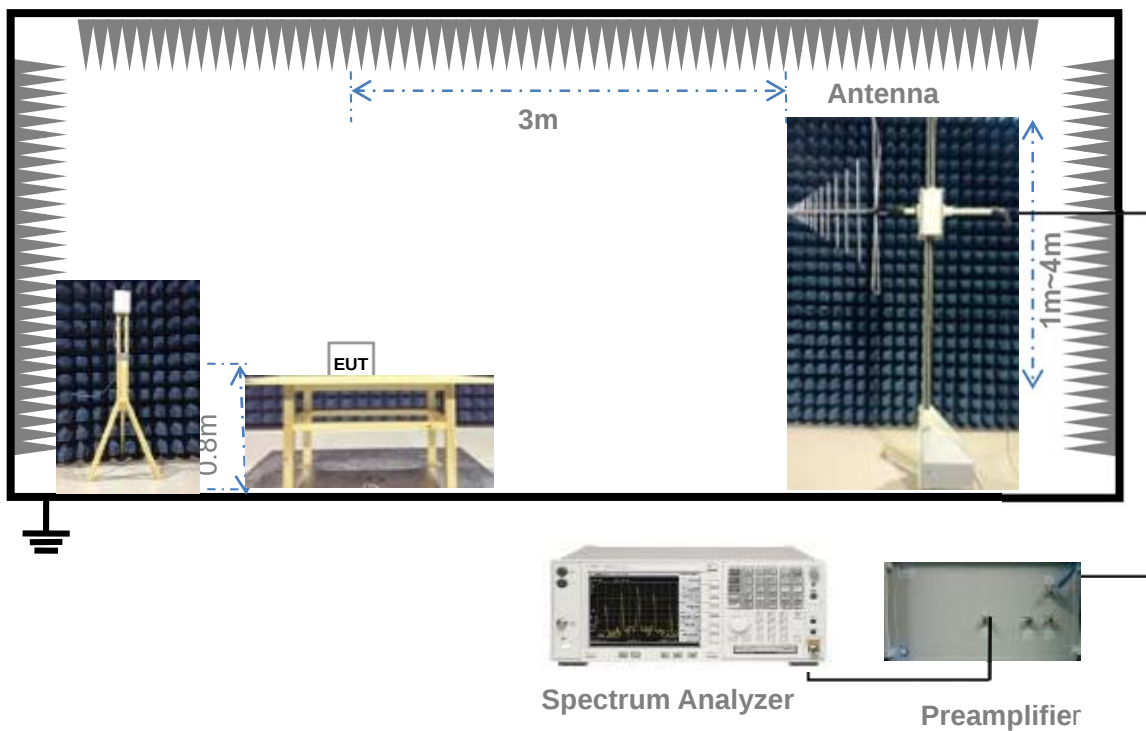
4.5 Test Setups

Test Setup 1



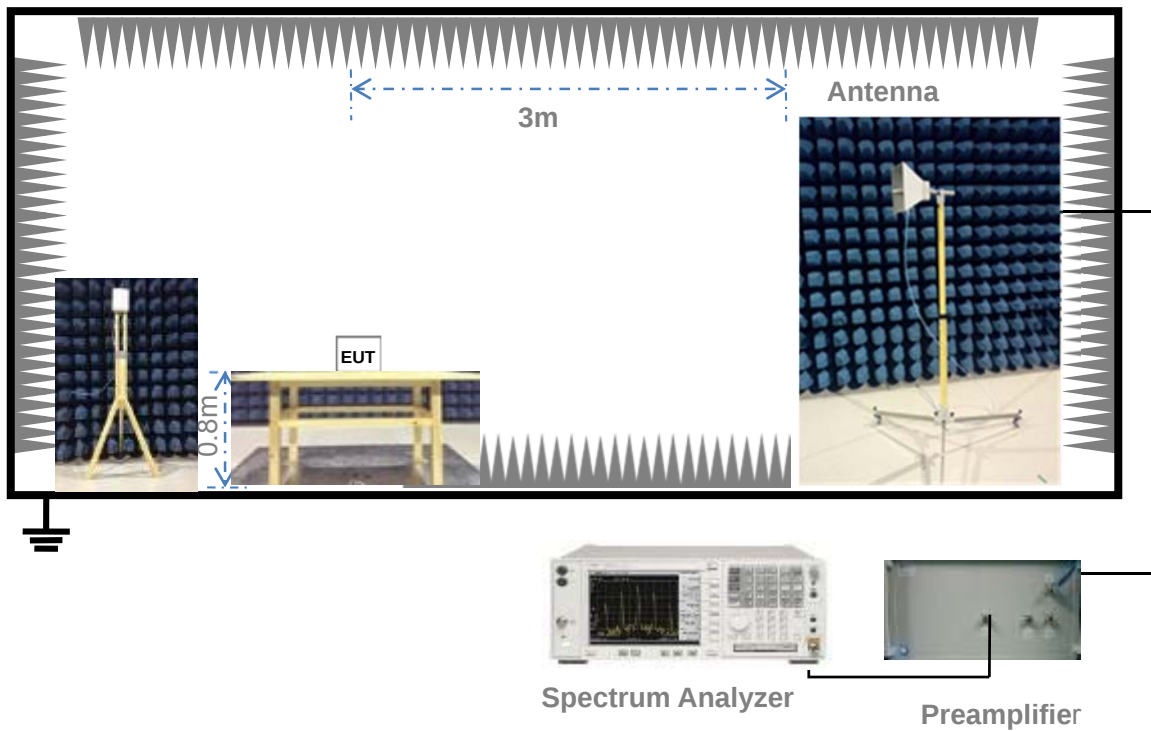
For Radiated Emission Test (Below 30 MHz))

Test Setup 2



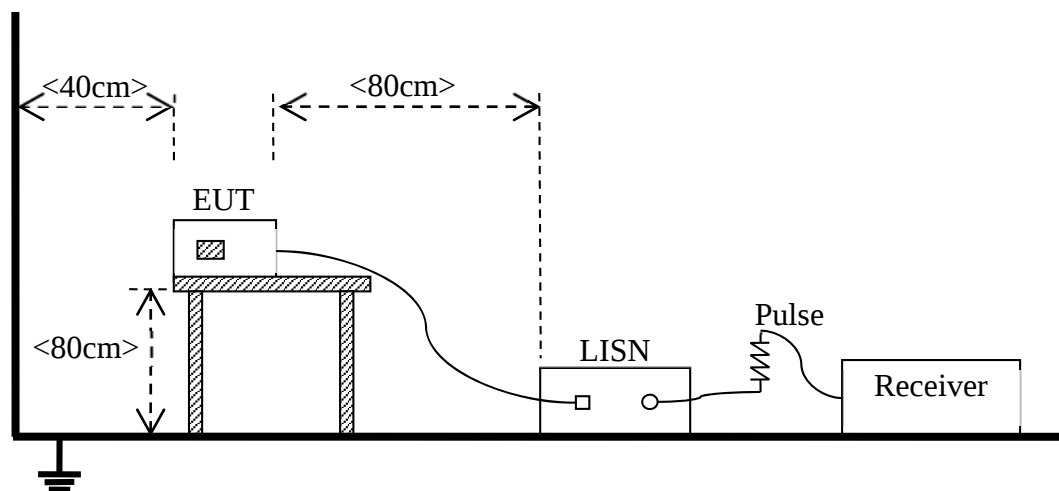
(For Radiated Emission Test (30 MHz-1 GHz))

Test Setup 3



(For Radiated Emission Test (above 1 GHz))

Test Setup 4



(For Conducted Emission, AC Ports Test)

4.6 Test Conditions

Test Case	Test Conditions	
Radiated Emission	Test Env.	NTNV
	Test Setup	Test Setup 1&3
	Test Configuration	TC01~TC04 ^{Note}
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 4
	Test Configuration	TC01~TC04 ^{Note}

Note: Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report. The USB test mode is the worst mode in this report.

5 TEST ITEMS

5.1 Emission Tests

5.1.1 Radiated Emission

5.1.1.1 Limit

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
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

NOTE:

- 1) Field Strength (dB $\mu\text{V/m}$) = $20 \cdot \log [\text{Field Strength } (\mu\text{V/m})]$.
- 2) In the emission tables above, the tighter limit applies at the band edges.
- 3) For above 1000 MHz, limit field strength of harmonics: 54 dB $\mu\text{V/m}$ @3 m (AV) and 74 dB $\mu\text{V/m}$ @3 m (PK)

5.1.1.2 Test Procedure

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

An initial pre-scan was performed in the chamber using the EMI Receiver in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bi-Log antenna with 2 orthogonal polarities.

5.1.2 Conducted Emission

5.1.2.1 Test Limit

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:

- 1) The limit is applicable to Class B ITE.
- 2) The lower limit shall apply at the band edges.
- 3) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50 MHz.

5.1.2.2 Test Procedure

The EUT is connected to the power mains through a LISN which provides 50 Ω /50 μ H of coupling impedance for the measuring instrument. The test frequency range is from 150 kHz to 30 MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are 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.

ANNEX A TEST RESULTS

A.1 Radiated Emission

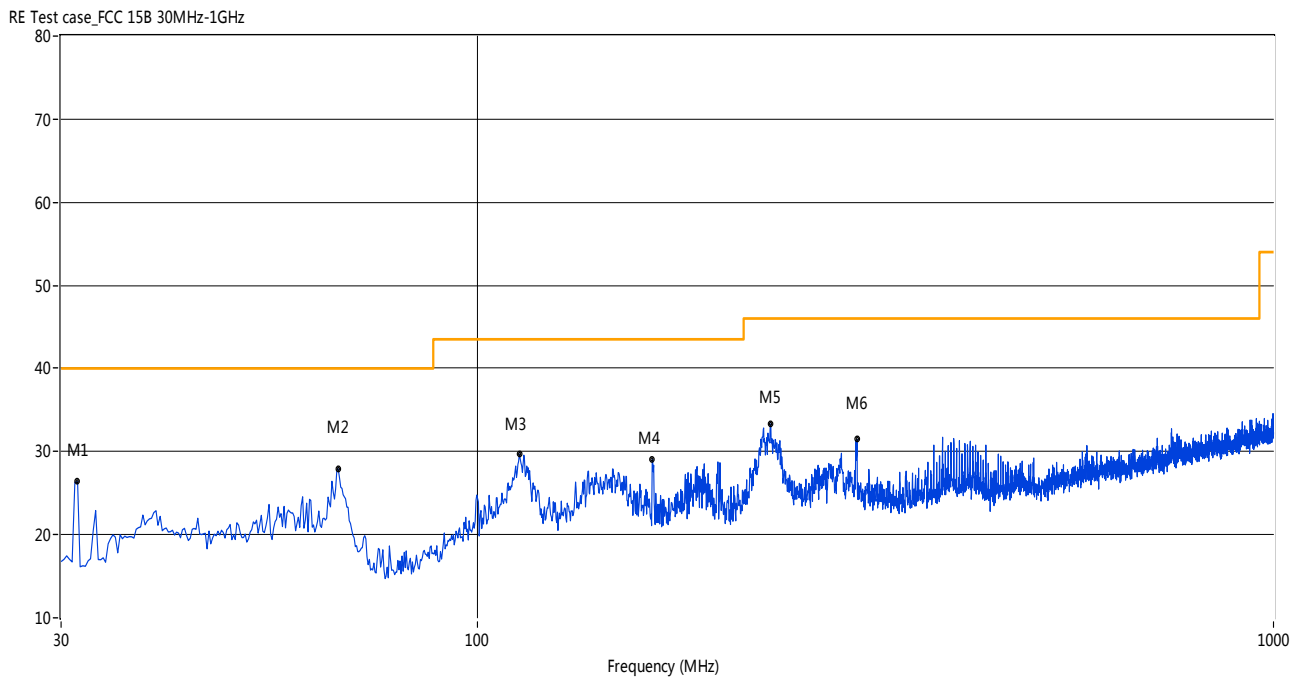
Note 1: The symbol of “--” in the table which means not application.

Note 2: For the test data above 1 GHz, According the ANSI C63.4-2009, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Test Data and Plots (USB test mode)

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31 (o) was not reported.

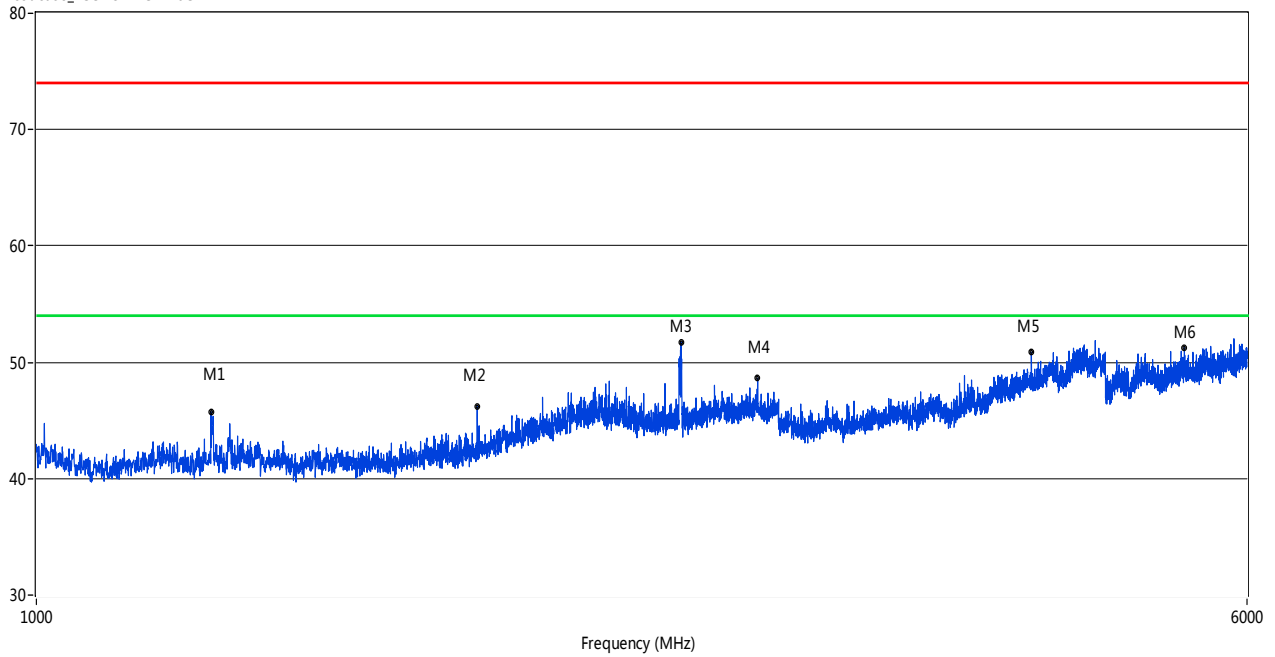
A.1.1 Test Antenna Vertical, 30 MHz – 1 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	31.45	26.38	-21.95	40.0	13.62	Peak	0.80	100	Vertical	Pass
2	66.85	27.94	-21.28	40.0	12.06	Peak	319.60	100	Vertical	Pass
3	112.91	29.71	-20.67	43.5	13.79	Peak	38.10	100	Vertical	Pass
4	165.77	28.98	-22.91	43.5	14.52	Peak	137.50	100	Vertical	Pass
5	233.41	33.32	-19.48	46.0	12.68	Peak	71.20	100	Vertical	Pass
6	299.84	31.44	-17.63	46.0	14.56	Peak	132.00	100	Vertical	Pass

A.1.2 Test Antenna Vertical, 1 GHz – 6 GHz

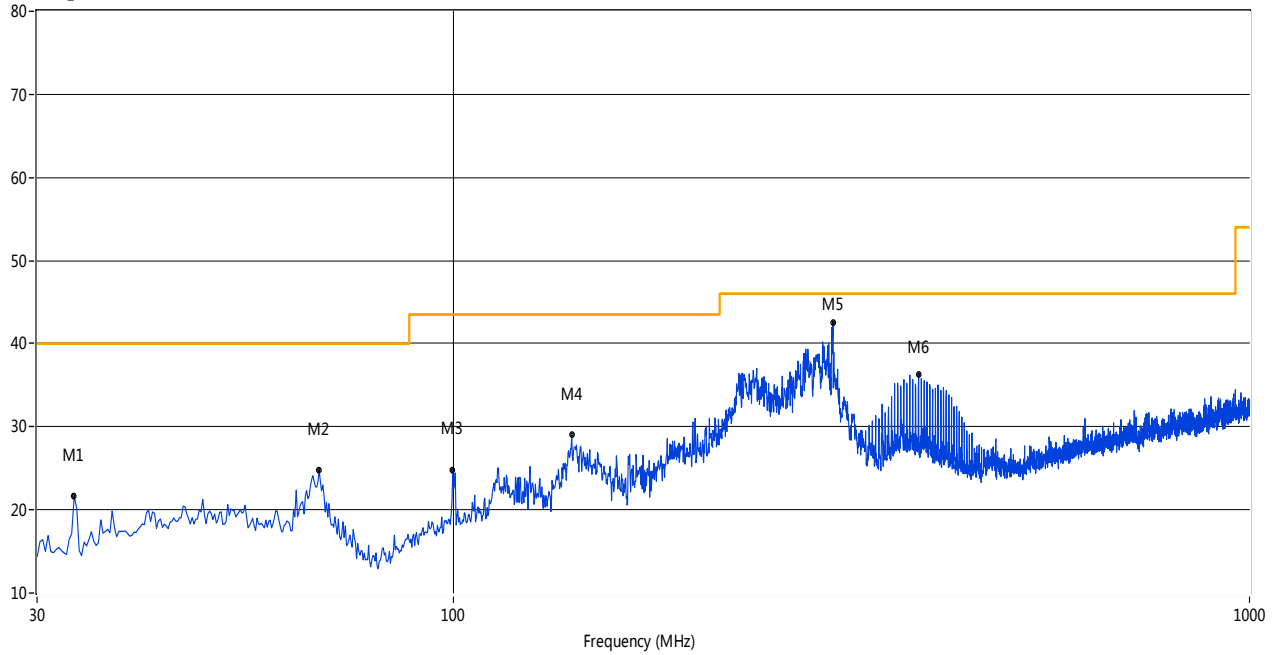
RE Test case_FCC 15B 1GHz-6GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1294.93	45.75	-4.81	74.0	28.25	Peak	337.60	100	Vertical	Pass
2	1920.27	46.20	-2.46	74.0	27.80	Peak	0.60	100	Vertical	Pass
3	2596.10	51.73	0.56	74.0	22.27	Peak	221.60	100	Vertical	Pass
4	2908.02	48.62	2.61	74.0	25.38	Peak	242.60	100	Vertical	Pass
5	4359.41	50.87	12.18	74.0	23.13	Peak	39.40	100	Vertical	Pass
6	5468.38	51.28	14.89	74.0	22.72	Peak	360.30	100	Vertical	Pass

A.1.3 Test Antenna Horizontal, 30 MHz – 1 GHz

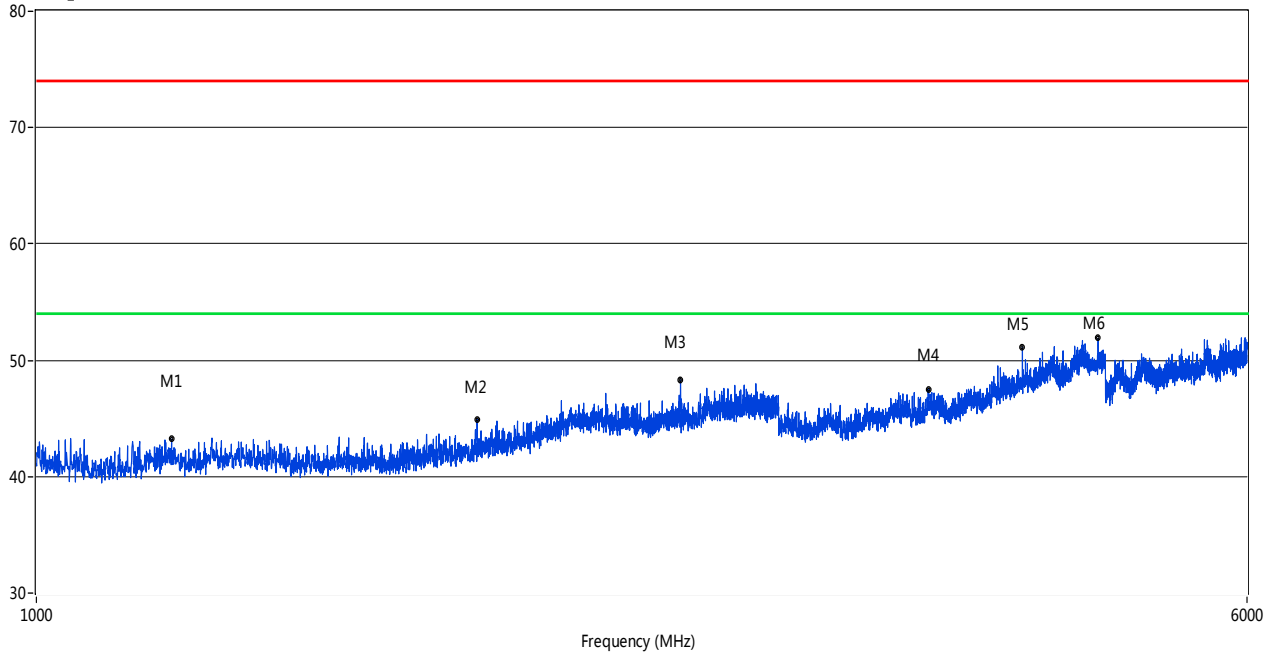
RE Test case_FCC 15B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	33.39	21.63	-21.71	40.0	18.37	Peak	259.80	100	Horizontal	Pass
2	67.82	24.80	-21.75	40.0	15.20	Peak	355.80	100	Horizontal	Pass
3	99.82	24.83	-20.20	43.5	18.67	Peak	358.40	100	Horizontal	Pass
4	140.79	29.03	-23.61	43.5	14.47	Peak	358.40	100	Horizontal	Pass
5	299.84	42.61	-17.63	46.0	3.39	Peak	193.50	100	Horizontal	Pass
6	383.96	36.28	-15.58	46.0	9.72	Peak	93.90	100	Horizontal	Pass

A.1.4 Test Antenna Horizontal, 1 GHz – 6 GHz

RE Test case_FCC 15B 1GHz-6GHz



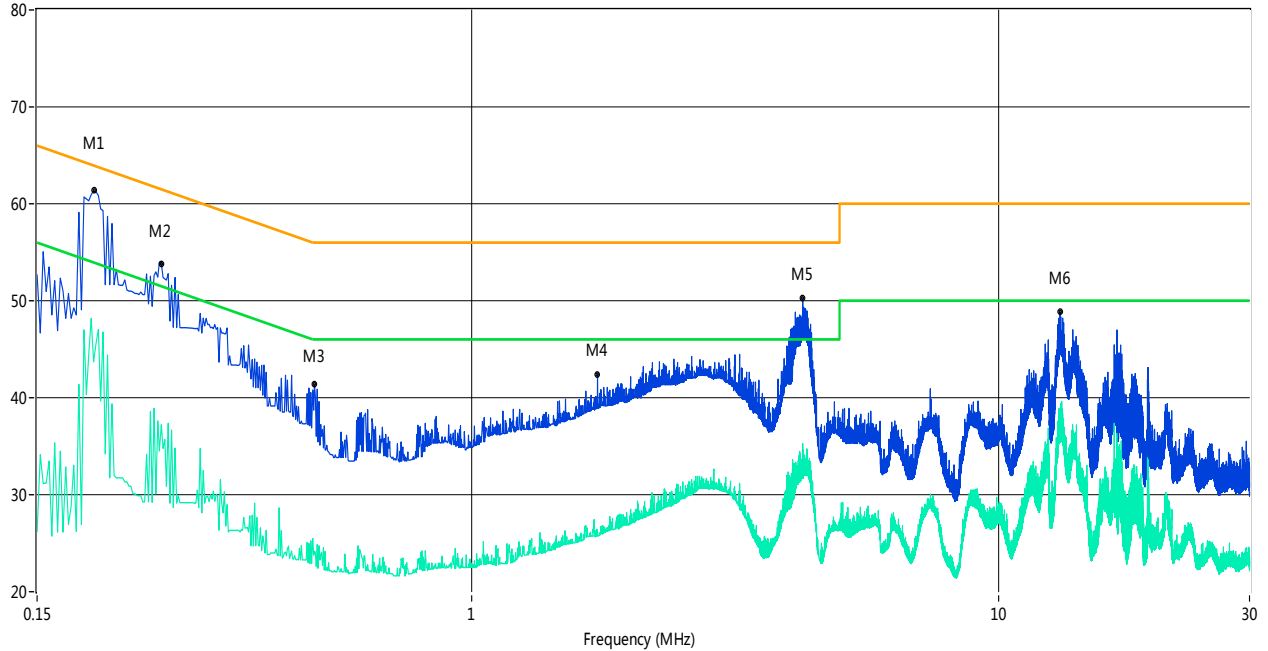
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1221.44	43.22	-5.17	74.0	30.78	Peak	317.00	100	Horizontal	Pass
2	1919.77	44.94	-2.42	74.0	29.06	Peak	279.80	100	Horizontal	Pass
3	2594.10	48.28	0.60	74.0	25.72	Peak	327.60	100	Horizontal	Pass
4	3745.31	47.51	10.69	74.0	26.49	Peak	57.40	100	Horizontal	Pass
5	4303.17	51.13	11.93	74.0	22.87	Peak	154.90	100	Horizontal	Pass
6	4813.05	51.89	13.95	74.0	22.11	Peak	128.90	100	Horizontal	Pass

A.2 Conducted Emission

Test Data and Plots (USB test mode)

A.2.1 L Phase

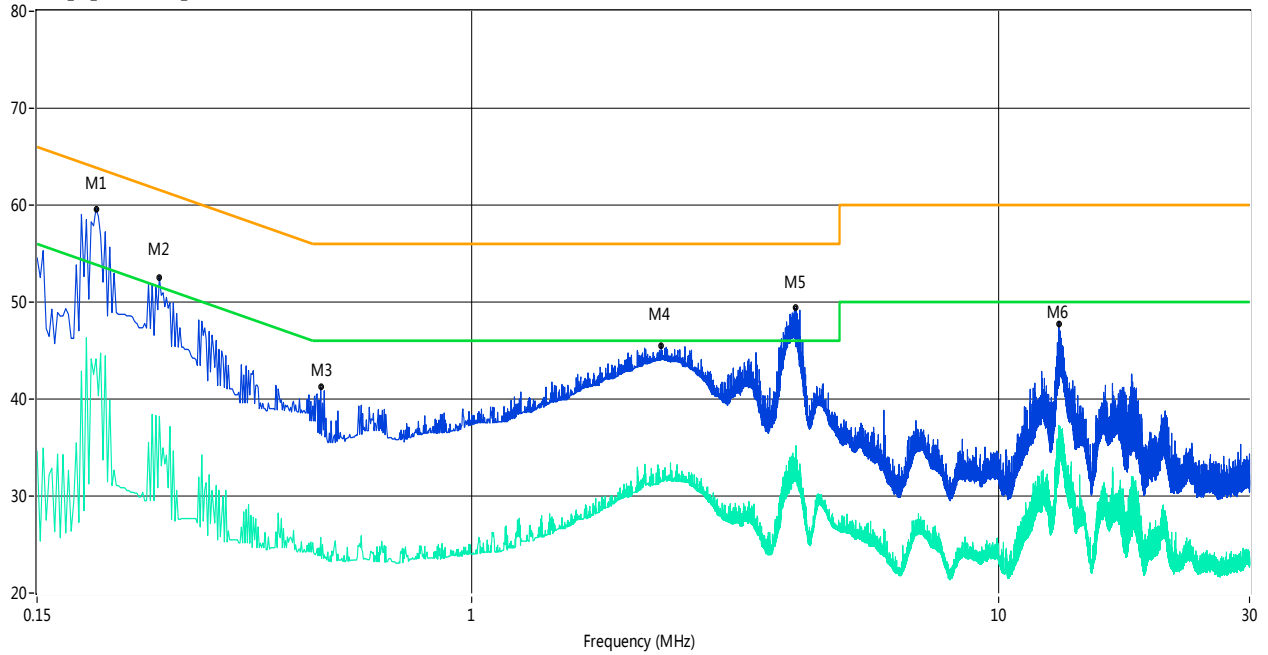
CE Test case_CE_FCC PART 15_Class B



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.19	61.4	13.00	64.8	3.40	Peak	L Line	Pass
1**	0.19	43.7	13.00	54.8	11.10	AV	L Line	Pass
2	0.26	53.9	13.00	62.9	9.00	Peak	L Line	Pass
2**	0.26	37.2	13.00	52.9	15.70	AV	L Line	Pass
3	0.50	41.4	13.00	56.0	14.60	Peak	L Line	Pass
3**	0.50	24.2	13.00	46.0	21.80	AV	L Line	Pass
4	1.74	42.4	13.00	56.0	13.60	Peak	L Line	Pass
4**	1.74	25.8	13.00	46.0	20.20	AV	L Line	Pass
5	4.26	50.3	13.00	56.0	5.70	Peak	L Line	Pass
5**	4.26	35.3	13.00	46.0	10.70	AV	L Line	Pass
6	13.10	48.9	13.00	60.0	11.10	Peak	L Line	Pass
6**	13.10	38.5	13.00	50.0	11.50	AV	L Line	Pass

A.2.2 N Phase

CE Test case_CE_FCC PART 15_ Class B



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.19	59.6	13.00	64.7	5.10	Peak	N Line	Pass
1**	0.19	44.1	13.00	54.7	10.60	AV	N Line	Pass
2	0.26	52.5	13.00	63.0	10.50	Peak	N Line	Pass
2**	0.26	38.2	13.00	53.0	14.80	AV	N Line	Pass
3	0.52	41.2	13.00	56.0	14.80	Peak	N Line	Pass
3**	0.52	25.7	13.00	46.0	20.30	AV	N Line	Pass
4	2.29	45.5	13.00	56.0	10.50	Peak	N Line	Pass
4**	2.29	30.4	13.00	46.0	15.60	AV	N Line	Pass
5	4.13	49.4	13.00	56.0	6.60	Peak	N Line	Pass
5**	4.13	33.9	13.00	46.0	12.10	AV	N Line	Pass
6	13.04	47.8	13.00	60.0	12.20	Peak	N Line	Pass
6**	13.04	37.3	13.00	50.0	12.70	AV	N Line	Pass

--END OF REPORT--