FCC/ISED EMC TEST REPORT

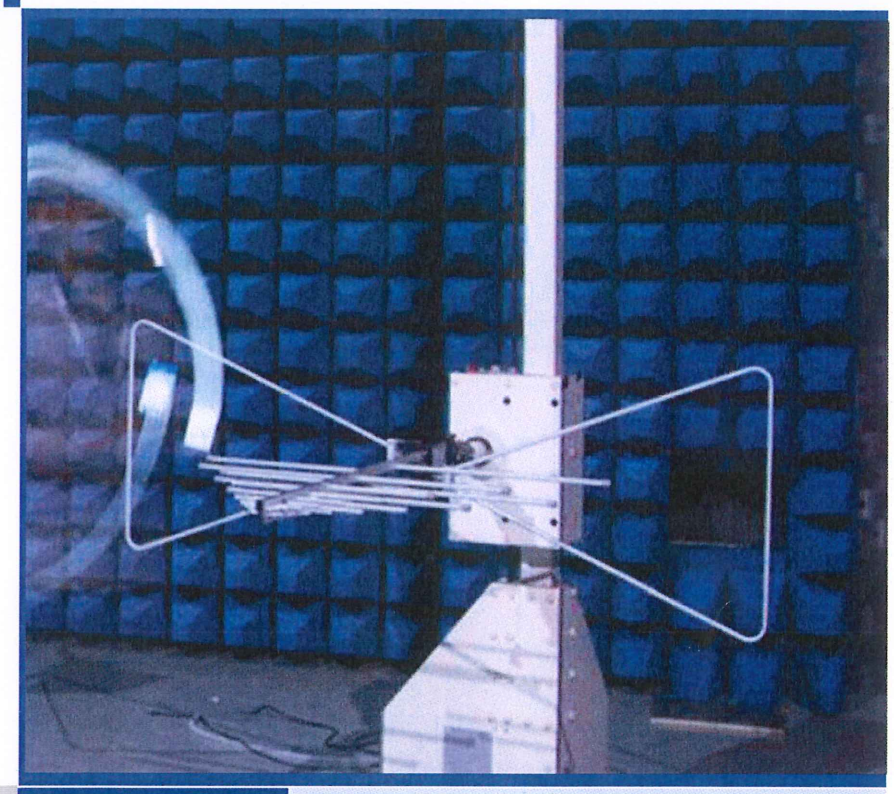
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

Rugged Smart Phone

ISSUED TO
Shenzhen UniStrong Science & Technology Co.,Ltd.

B,4-4Factory, Zhengcheng Road, FuyongBaoan District, Shenzhen, China



Report No.:	BL-EC18B0146-401
EUT Name:	Rugged Smart Phone
Model Name:	UT12
Brand Name:	UniStrong
Test Standard:	47 CFR Part 15 Subpart B ICES-003 (Issue 6, January 2016)
Test Conclusion:	Pass
Test Date:	Oct. 25, 2018 ~ Nov. 09, 2018
Date of Issue:	Nov. 28, 2018

Tested by: Xia Long
Xia Long
(Engineer)
Date Nov. 28, 2018

Approved by:
Wei Yanquan
(Chief Engineer)
Date Nov. 28, 2018

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Revision History

Version	Issue Date	Revisions Content
Rev. 01	Nov. 20, 2018	Initial Issue
Rev. 02	Nov. 28, 2018	Fixed data title on page 28

TABLE OF CONTENTS

1 GENERAL INFORMATION 4

1.1 Identification of the Testing Laboratory 4

1.2 Identification of the Responsible Testing Location 4

1.3 Laboratory Condition 4

1.4 Announce 4

2 PRODUCT INFORMATION 5

2.1 Applicant Information 5

2.2 Manufacturer Information 5

2.3 Factory Information 5

2.4 General Description for Equipment under Test (EUT) 5

2.5 Ancillary Equipment 6

2.6 Technical Information 6

3 SUMMARY OF TEST RESULTS 7

3.1 Test Standards 7

3.2 Verdict 7

3.3 Test Uncertainty 7

4 GENERAL TEST CONFIGURATIONS 8

4.1 Test Environments 8

4.2 Test Equipment List 8

4.3 Test Enclosure list 9

4.4 Test Configurations 10

4.5 Test Setups 12

4.6 Test Conditions 14

5 TEST ITEMS 15

5.1 Emission Tests 15

ANNEX A TEST RESULTS 17

A.1 Radiated Emission 17
A.2 Conducted Emission 29
ANNEX B TEST SETUP PHOTOS 30
ANNEX C EUT EXTERNAL PHOTOS 30
ANNEX D EUT INTERNAL PHOTOS 30

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 6685 0100
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 is a testing organizatin accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory is a testing organization accredited by American Association for Laboratory Accreditation(A2LA) according to ISO/IEC 17025.The accreditation certificate is 4344.01. 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 Laboratory Condition

Ambient Temperature	20℃ to 25℃
Ambient Relative Humidity	45% to 55%
Ambient Pressure	100 kPa to 102 kPa

1.4 Announce

(1) The test report refer to the BALUN report mode v6.7.

(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

(3) The test report is invalid if there is any evidence and/or falsification.

(4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.

(5) 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.

(6) 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 Information

Applicant	Shenzhen UniStrong Science & Technology Co.,Ltd.
Address	B,4-4Factory, Zhengcheng Road, FuyongBaoan District, Shenzhen, China

2.2 Manufacturer Information

Manufacturer	Shenzhen UniStrong Science & Technology Co.,Ltd.
Address	B,4-4Factory, Zhengcheng Road, FuyongBaoan District, Shenzhen, China

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	Rugged Smart Phone
Model Name Under Test	UT12
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	SJYEnergy
	Model No.	BA7800
	Serial No.	N/A
	Capacity	8000 mAh
	Rated Voltage	3.8 V
	Limit Charge Voltage	4.35 V
Ancillary Equipment 2	Adapter	
	Brand Name	N/A
	Model No.	ASUC71W
	Serial No.	N/A
	Rated Input	100-240 V~, 0.7 A, 50/60 Hz
	Rated Output	5 V⎓ 3 A
Ancillary Equipment 3	USB Cable	
	Model No.	N/A
	Length (Approx.)	1 m

2.6 Technical Information

Network and Wireless connectivity	GSM/GPRS/EGPRS 850/900/1800/1900 MHz; CDMA Band Class 0; EVDO Rel. 0/Rev. A Band Class 0; WCDMA/HSDPA/HSUPA Band 1/2/5/8; LTE FDD Band 1/2/3/4/5/7/8/17/20/28; LTE TDD Band 38/40/41; Bluetooth, WIFI, GPS, GLONASS, NFC, BDS, 5.8G SRD

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	FCC 47 CFR Part 15 Subpart B (10-1-17 Edition)	Unintentional Radiators
2	ICES-003 (Issue 6, January 2016)	Information Technology Equipment (Including Digital Apparatus) — Limits and Methods of Measurement
3	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

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

Note: The only difference between the EUT (test samples in this report) and test sample in report BL-EC17C0360-401, which was issued by Shenzhen BALUN Technology Co., Ltd. on Mar. 20, 2018, is product information. Just changed the information as below:

1. Difference WIFI and 4G antenna;
2. Difference size of shell and appearance;
3. Difference camera;
4. Difference LCD screen;

And others hardware circuit and software were all the same. So just Radiated Emission was retested in this report, Other test items please refer to the BL-EC17C0360-401, which was issued by Shenzhen BALUN Technology Co., Ltd. on Mar. 20, 2018.

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)	3.23 dB
Radiated emissions (30 MHz-1 GHz)	4.30 dB
Radiated emissions (1 GHz-18 GHz)	4.81 dB
Radiated emissions (18 GHz-40 GHz)	5.71 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 to 25°C	AC 120 V/60 Hz or DC 3.7 V from Battery	50% to 55%	100 kPa to 102 kPa

4.2 Test Equipment List

Radiated Emission Test For Frequency Below 1 GHz						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2018.06.13	2019.06.12	☒
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	9163-977	2017.07.22	2019.07.21	☒
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	9120D-1600	2018.07.11	2020.07.10	☐
Anechoic Chamber	EMC Electronic Co., Ltd	9m*6m*6m	N/A	2017.02.21	2019.02.20	☒
Test Software	BALUN	BL410_E	V18.626	--	--	☒

Radiated Emission Test For Frequency Above 1 GHz						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2018.11.07	2019.11.06	☒
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	9163-624	2017.07.22	2019.07.21	☐
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	9120D-1148	2018.07.11	2020.07.10	☒
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2019.02.20	☒
Test Software	BALUN	BL410_E	V18.626	--	--	☒

Conducted Emission Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2018.06.13	2019.06.12	☐
LISN	SCHWARZBECK	NSLK 8127	8127-687	2018.06.13	2019.06.12	☐
LISN	SCHWARZBECK	NNLK 8129	8129-462	2018.11.07	2019.11.06	☐
ISN	TESEQ	ISN T800	34449	2017.12.05	2019.12.04	☐
Shielded Enclosure	ChangNing	CN-130701	130703	N/A	N/A	☐
Test Software	BALUN	BL410_E	V18.626	--	--	☐

4.3 Test Enclosure list

Description	Manufacturer	Model	Serial No.	Length	Description	Use
PC	N/A	N/A	N/A	N/A	Special Handled	☐
Laptop	Apple	A1465	N/A	N/A	N/A	☒
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	☐
Audio Cable	N/A	N/A	N/A	0.5 m	Shielded with core	☐
iPhone	Apple	A1586	N/A	N/A	N/A	☐
Bluetooth Earphone	SAMSUNG	Gear Circle	N/A	N/A	N/A	☒
Wireless Communications Test Set	R&S	CMW500	142028	N/A	Cal. Due 2018.06.11	☒
WIFI Router	TP-LINK	TL-WDR7500	N/A	N/A	N/A	☒
GPS/GLONASS Vector signal generator	R&S	N5172B EXG	N/A	N/A	N/A	☒
Car Battery	Camel	55530	N/A	N/A	12 V/55 Ah	☐
Artificial load	N/A	N/A	N/A	N/A	2.5 Ω/100 W	☐
Artificial load	N/A	N/A	N/A	N/A	5 Ω/100 W	☐
Electronic Load	ITECH	IT8511	N/A	N/A	N/A	☐
USB Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
DC Power Supply	ITECH	IT6863A	60001401068 7210006	N/A	N/A	☐
LCD Monitor	SAMSUNG	UA32C4000P	N/A	N/A	N/A	☐
RJ45 Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
IC Card	N/A	N/A	N/A	N/A	N/A	☒

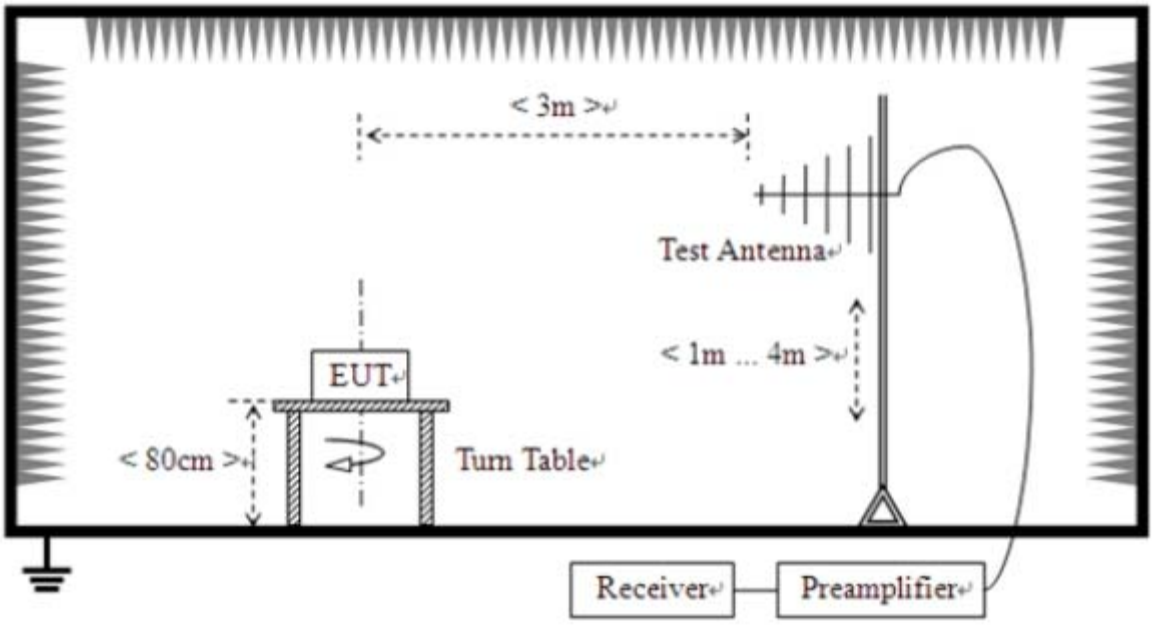
4.4 Test Configurations

Test Configurations (TC) No.	Description
Traffic Test Mode	
TC01	The GSM 850 MHz Test Mode GSM 850 Link + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GPS RX
TC02	The EDGE 850 MHz Test Mode EDGE 850 Link + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GLONASS RX
TC03	The GSM 1900 Test Mode GSM 1900 Link + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GPS RX
TC04	The EDGE 1900 MHz Test Mode EDGE 1900 Link + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GLONASS RX
TC05	The WCDMA Band 2 Test Mode WCDMA Band 2 + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GPS RX
TC06	The WCDMA Band 5 Test Mode WCDMA Band 5 + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GLONASS RX
TC07	The CDMA Test Mode CDMA + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GPS RX
TC08	The EVDO Test Mode EVDO + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GLONASS RX
TC09	The FDD LTE Band 2 Test Mode LTE Band 2 Link + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GPS RX
TC10	The FDD LTE Band 4 Test Mode LTE Band 4 Link + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GLONASS RX
TC11	The FDD LTE Band 5 Test Mode LTE Band 5 Link + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GPS RX
TC12	The FDD LTE Band 7 Test Mode LTE Band 7 Link + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GLONASS RX
TC13	The FDD LTE Band 17 Test Mode LTE Band 17 Link + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GPS RX
TC14	The FDD LTE Band 41 Test Mode LTE Band 41 Link + Adapter + USB Cable + Battery + Bluetooth Link + WIFI Link + GLONASS RX
TC15	The BDS Test Mode EUT+ Adapter + USB Cable + Battery + BDS RX
TC16	The Idle Test Mode GSM 850(Idle) + Adapter + Battery + USB Cable
Amusement Test Mode	
TC17	The Camera Test Mode

	EUT + Adapter + USB Cable + Battery + TF Card
TC18	The Video Play Test Mode EUT + Adapter + USB Cable + Battery + TF Card
TC19	The USB Test Mode EUT + USB Cable + Battery + Laptop+ TF Card
TC20	The NFC Test Mode EUT + Adapter + Battery + USB Cable+ NFC Link+ IC Card

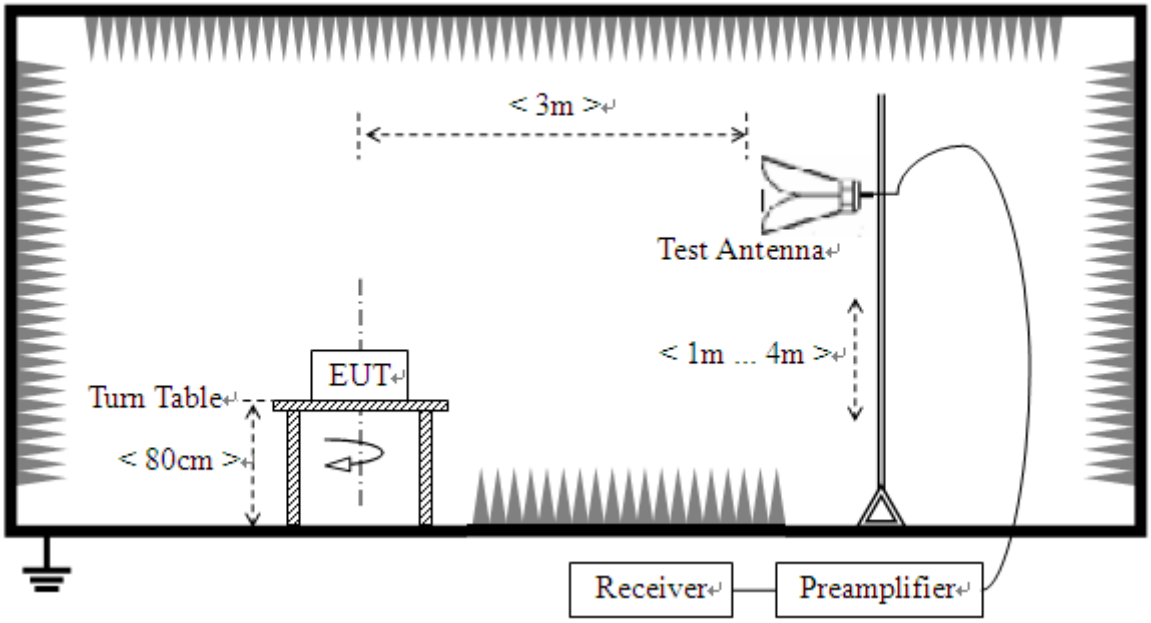
4.5 Test Setups

Test Setup 1



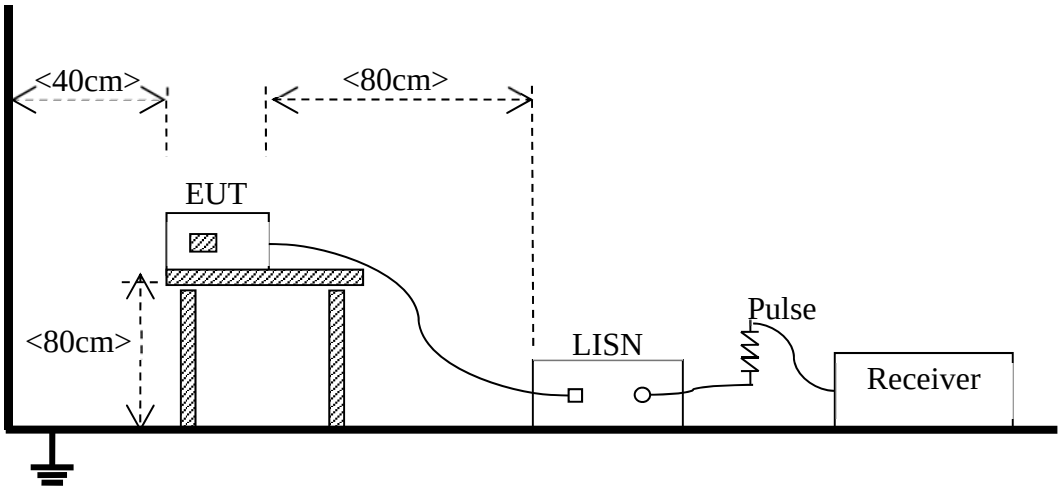
(For Radiated Emission Test (30 MHz-1 GHz))

Test Setup 2



(For Radiated Emission Test (above 1 GHz))

Test Setup 3



(For Conducted Emission, AC Ports Test)

4.6 Test Conditions

Test Case	Test Conditions	
Radiated Emission	Test Env.	NTNV
	Test Setup	Test Setup 1&2
	Test Configuration	TC01~TC20 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 GSM 850 MHz 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 range (MHz)	Class B (at 3 m)		Class B (at 10 m)	Class A (at 10 m)	
	Field Strength (μV/m)	Field Strength (dBμV/m)	Field Strength (dBμV/m)	Field Strength (μV/m)	Field Strength (dBμV/m)
30 - 88	100	40	30	90	39
88 - 216	150	43.5	33.5	150	43.5
216 - 960	200	46	36	210	46.4
Above 960	500	54	44	300	49.5

NOTE:

1) Field Strength (dBμV/m) = 20*log [Field Strength (μV/m)].
2) In the emission tables above, the tighter limit applies at the band edges.
3) The limits using ANSI C63.4.

5.1.1.2 Test Setup

Refer to 4.5 section (test setup 1 to test setup 2) for radiated emission test, the photo of test setup please refer to ANNEX B.

5.1.1.3 Test Procedure

The test employing the methods of measurement described in the publication referenced in Section 3(b) (ANSI C63.4);

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.

5.1.1.4 Test Result

Please refer to ANNEX A.1.

NOTE**:**

1. Results (dBuV/m) = Reading (dBuV) + Factor (dB/m)

The reading level is calculated by software which is not shown in the sheet

2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain (dB)

3. Over limit = Results – Limit.

5.1.2 Conducted Emission

5.1.2.1 Test Limit

Frequency range (MHz)	Class A	
	Quasi-peak (dBμV)	Average (dBμV)
0.15 - 0.50	79	66
0.50 - 30	73	60

Frequency range (MHz)	Class B	
	Quasi-peak (dBμV)	Average (dBμV)
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

1) The lower limit shall apply at the band edges.
2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50 MHz.

5.1.2.2 Test Setup

Refer to 4.5 section test (test setup 3) for conducted emission, the photo of test setup please refer to ANNEX B.

5.1.2.3 Test Procedure

The EUT is connected to the power mains through a LISN which provides 50 Ω/50 μH 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.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.1.2.4 Test Result

Please refer to ANNEX A.2.

NOTE:

1. Results (dBuV/m) = Reading (dBuV) + Factor (dB/m)

The reading level is calculated by software which is not shown in the sheet

2. Factor = Insertion loss + Cable loss

3. Over limit = Results – Limit.

ANNEX A TEST RESULTS

A.1 Radiated Emission

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

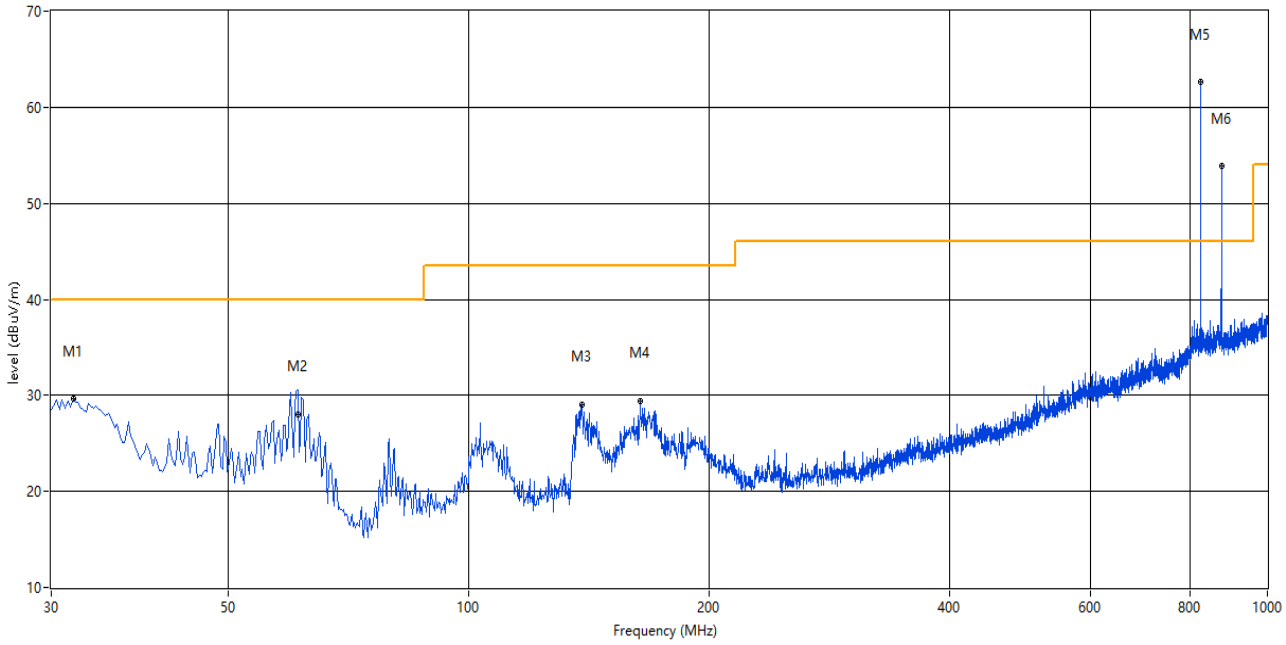
Note 2: For the test data above 1 GHz, according the ANSI C63.4-2014, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 3: This frequency which near 850 MHz with circle should be ignored because they are MS and SS carrier frequency, the marked spikes near 2400 MHz with circle should be ignored because they are Bluetooth or WIFI carrier frequency.

Test Data and Plots

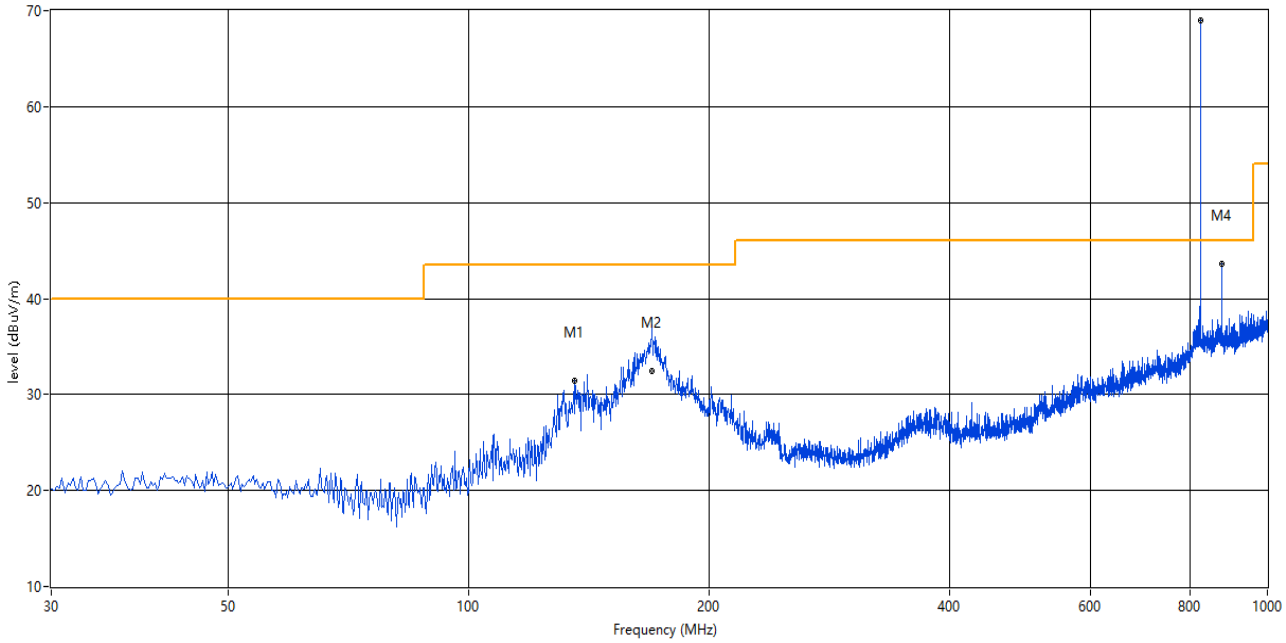
The GSM 850 MHz Test Mode

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



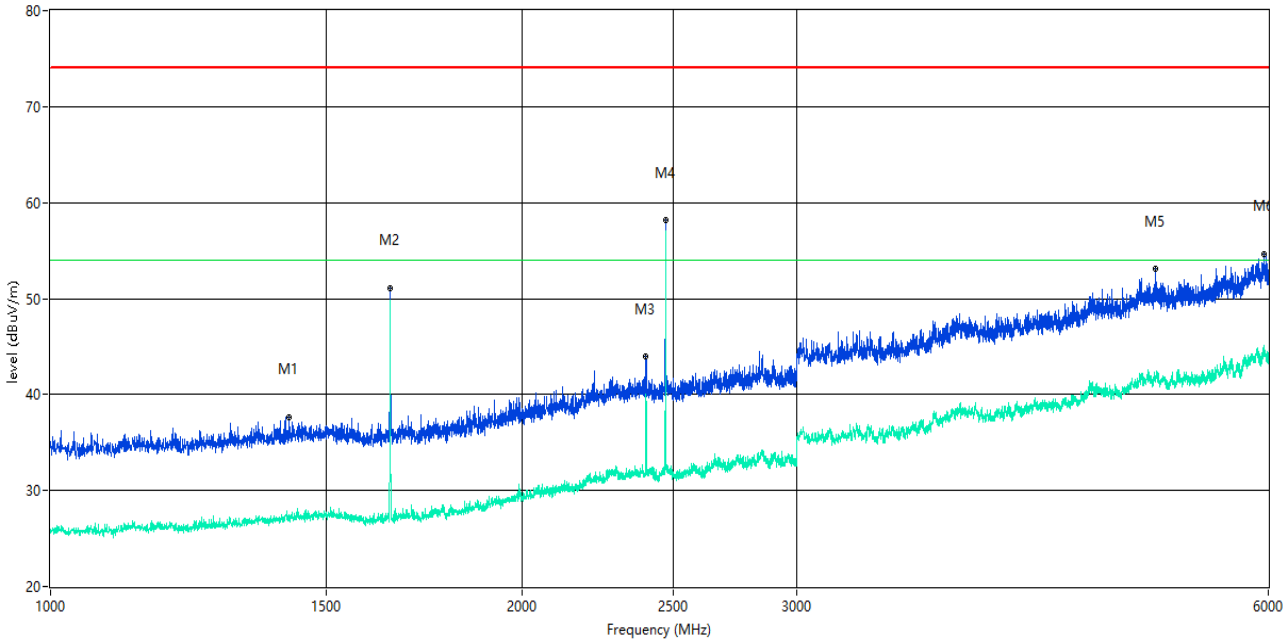
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
31.940	29.61	--	--	-28.85	--	40.0	--	10.39	360.00	200	Vertical	Pass
61.032	30.52	28.07	--	-28.23	--	40.0	--	11.93	360.00	200	Vertical	Pass
138.613	29.04	--	--	-31.76	--	43.5	--	14.46	360.00	200	Vertical	Pass
163.827	29.47	--	--	-30.92	--	43.5	--	14.03	111.70	200	Vertical	Pass
823.989	62.69	--	--	-13.10	--	46.0	--	-16.69	270.40	100	Vertical	N.A
875.871	53.87	--	--	-13.29	--	46.0	--	-7.87	141.00	100	Vertical	N.A

A.1.2 Test Antenna Horizontal, 30 MHz – 1 GHz



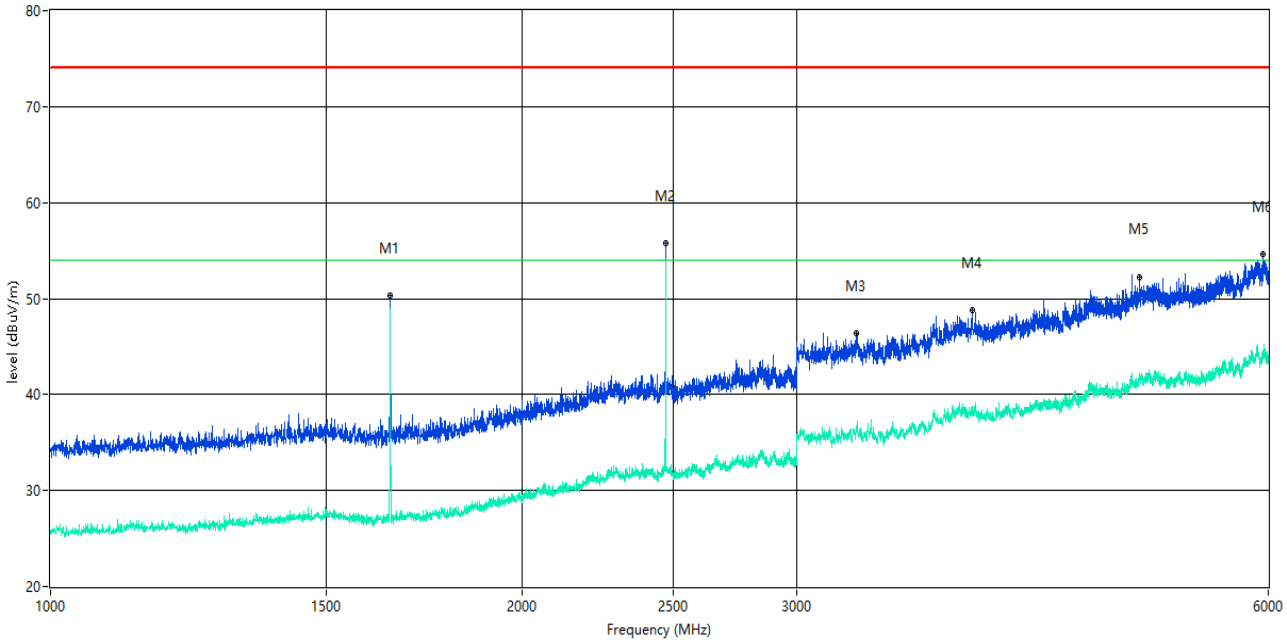
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
135.461	31.47	--	--	-31.60	--	43.5	--	12.03	30.20	200	Horizontal	Pass
169.668	36.64	32.43	--	-30.83	--	43.5	--	11.07	54.20	163	Horizontal	Pass
823.989	68.99	--	--	-13.10	--	46.0	--	-22.99	311.80	100	Horizontal	N.A
875.871	43.63	--	--	-13.29	--	46.0	--	2.37	336.00	100	Horizontal	N.A

A.1.3 Test Antenna Vertical, 1 GHz – 6 GHz



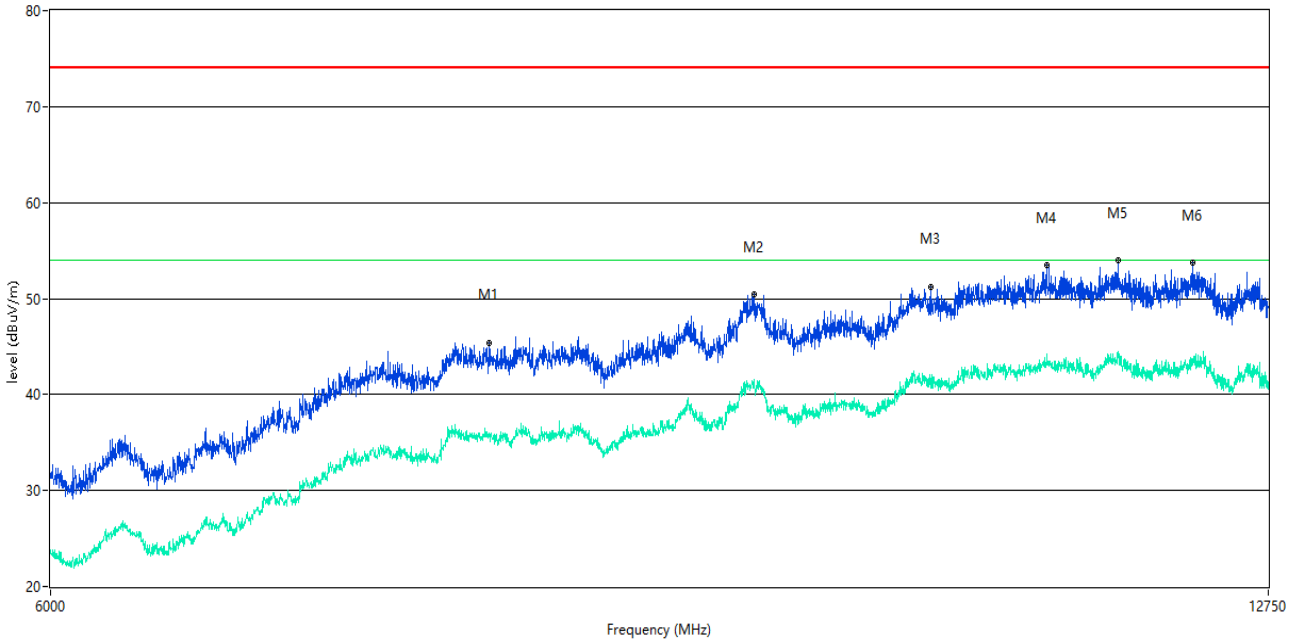
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1420.895	37.67	--	27.2	-14.76	74.0	--	54.0	26.80	309.40	100	Vertical	Pass
1648.338	51.11	--	49.5	-14.76	74.0	--	54.0	4.50	3.20	100	Vertical	N/A
2401.650	43.96	--	40.0	-9.07	74.0	--	54.0	14.00	318.30	100	Vertical	N/A
2472.132	58.17	--	57.0	-8.83	74.0	--	54.0	-3.00	309.40	100	Vertical	N/A
5085.979	53.07	--	41.7	1.36	74.0	--	54.0	12.30	62.60	100	Vertical	Pass
5958.010	54.66	--	44.6	4.56	74.0	--	54.0	9.40	298.10	100	Vertical	Pass

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



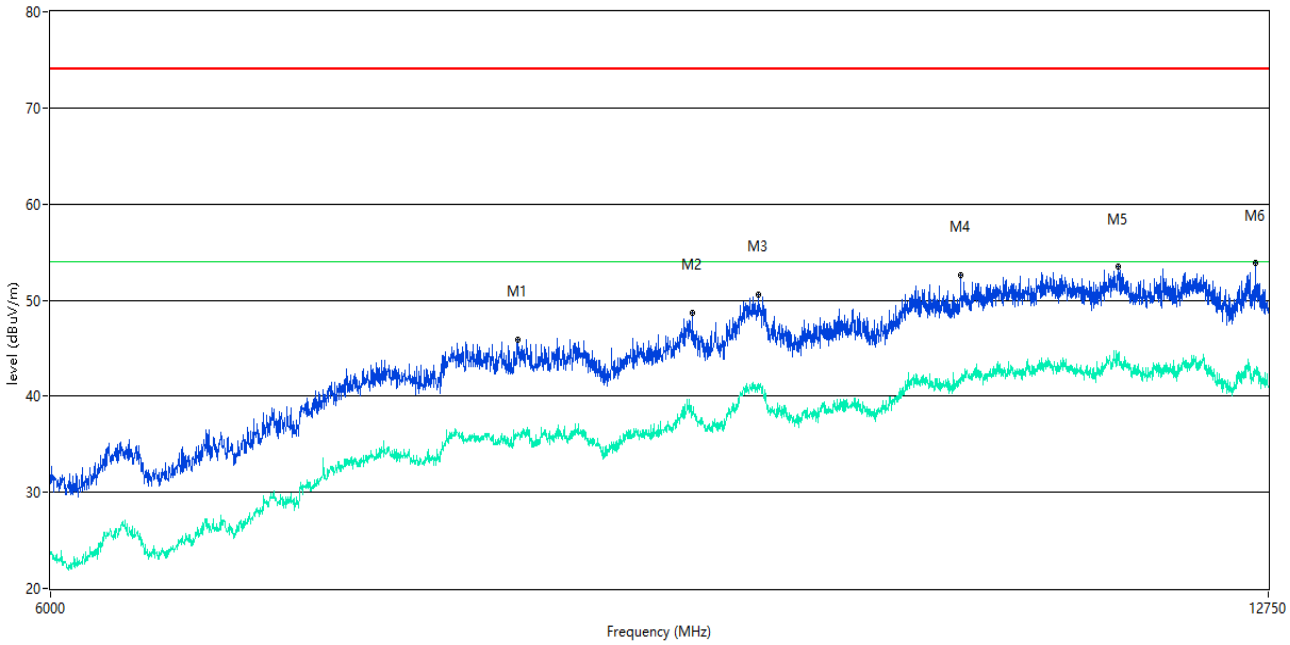
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1648.338	50.27	--	48.9	-14.76	74.0	--	54.0	5.10	107.20	100	Horizontal	N/A
2472.632	50.05	--	48.2	-8.81	74.0	--	54.0	5.80	15.30	100	Horizontal	N/A
3272.932	46.36	--	36.6	-3.85	74.0	--	54.0	17.40	238.30	100	Horizontal	Pass
3879.530	48.77	--	38.7	-2.95	74.0	--	54.0	15.30	266.00	100	Horizontal	Pass
4966.758	52.24	--	41.4	1.27	74.0	--	54.0	12.60	231.40	100	Horizontal	Pass
5955.761	54.59	--	44.4	4.10	74.0	--	54.0	9.60	119.70	100	Horizontal	Pass

A.1.5 Test Antenna Vertical, 6 GHz – 12.75 GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7870.970	45.42	--	35.6	-3.82	74.0	--	54.0	18.40	66.00	100	Vertical	Pass
9276.306	50.42	--	41.1	1.59	74.0	--	54.0	12.90	204.90	100	Vertical	Pass
10345.914	51.24	--	41.5	4.56	74.0	--	54.0	12.50	26.00	100	Vertical	Pass
11115.221	53.44	--	43.6	6.11	74.0	--	54.0	10.40	153.50	100	Vertical	Pass
11617.971	54.00	--	43.9	7.21	74.0	--	54.0	10.10	33.90	100	Vertical	Pass
12166.271	53.70	--	43.2	6.50	74.0	--	54.0	10.80	332.60	100	Vertical	Pass

A.1.6 Test Antenna Horizontal, 6 GHz – 12.75 GHz

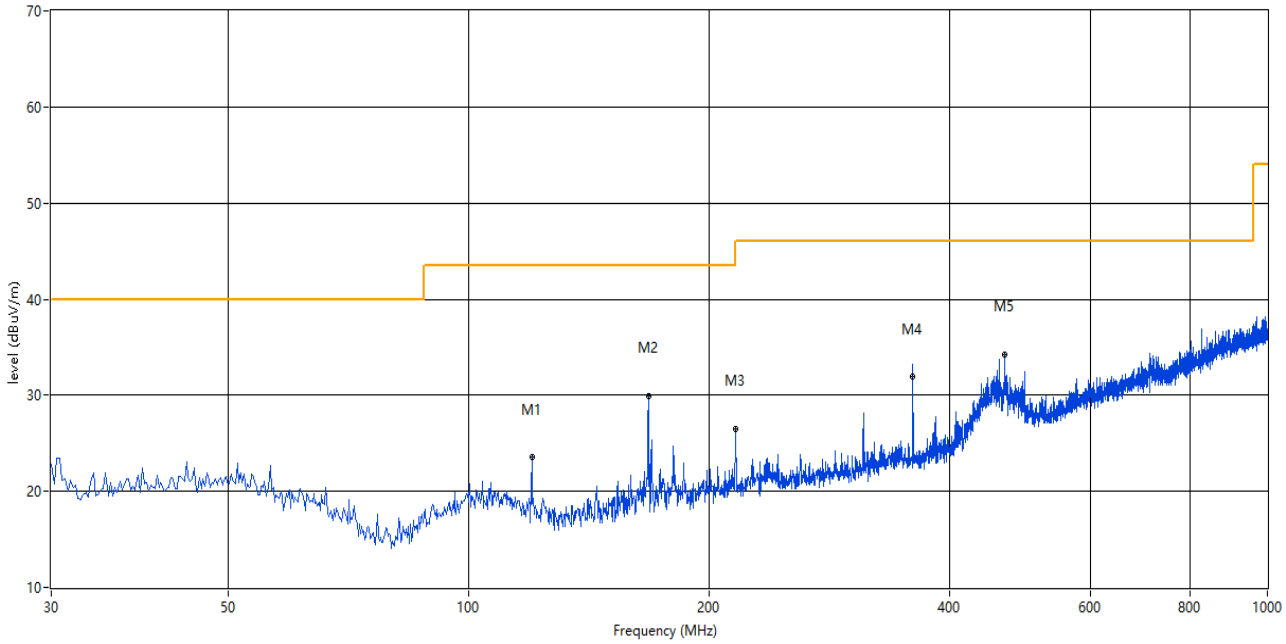


Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8010.997	45.89	--	35.9	-3.94	74.0	--	54.0	18.10	183.10	100	Horizontal	Pass
8927.081	48.71	--	38.4	-0.79	74.0	--	54.0	15.60	79.00	100	Horizontal	Pass
9301.612	50.61	--	41.3	1.71	74.0	--	54.0	12.70	47.20	100	Horizontal	Pass
10538.240	52.66	--	41.5	5.09	74.0	--	54.0	12.50	246.80	100	Horizontal	Pass
11621.345	53.47	--	43.7	7.09	74.0	--	54.0	10.30	154.90	100	Horizontal	Pass
12647.088	53.82	--	42.3	6.89	74.0	--	54.0	11.70	123.00	100	Horizontal	Pass

Test Data and Plots

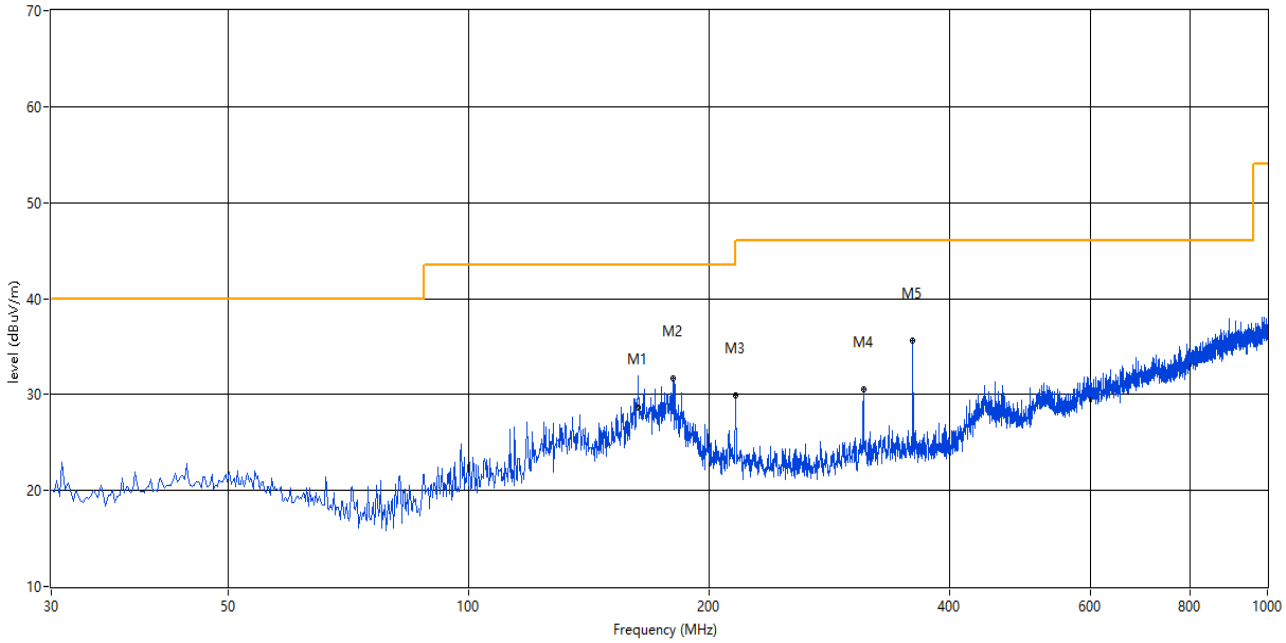
The USB Test Mode

A.1.7 Test Antenna Vertical, 30 MHz – 1 GHz



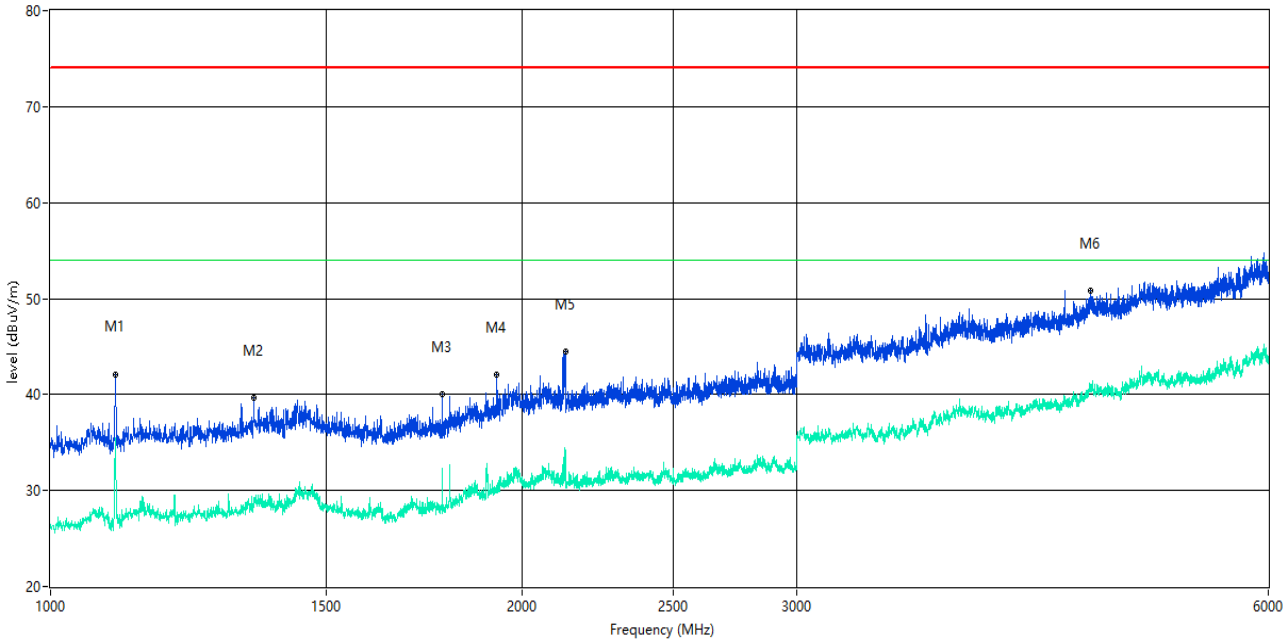
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
119.945	23.52	--	--	-30.30	--	43.5	--	19.98	240.60	100	Vertical	Pass
167.948	29.97	--	--	-31.22	--	43.5	--	13.53	278.40	100	Vertical	Pass
215.951	26.55	--	--	-28.38	--	43.5	--	16.95	235.40	100	Vertical	Pass
360.000	33.19	31.92	--	-25.15	--	46.0	--	14.08	0.00	159	Vertical	Pass
468.815	34.27	--	--	-22.50	--	46.0	--	11.73	146.70	100	Vertical	Pass

A.1.8 Test Antenna Horizontal, 30 MHz – 1 GHz



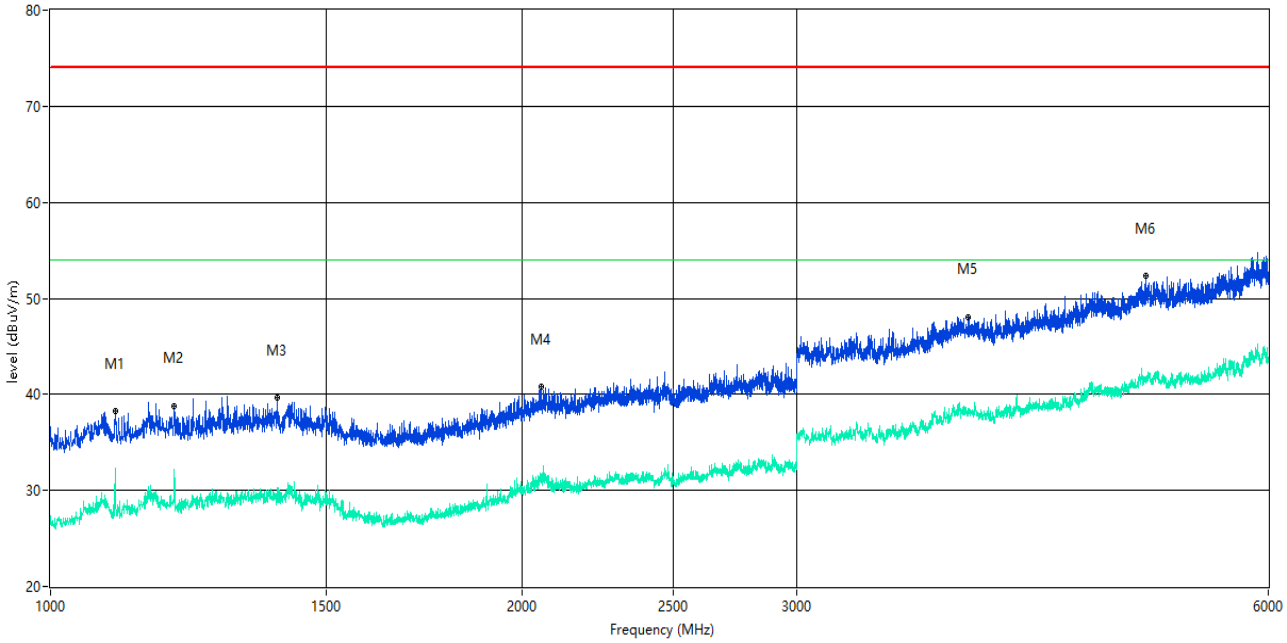
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
162.968	30.12	28.60	--	-31.41	--	43.5	--	14.90	360.00	173	Horizontal	Pass
180.312	31.65	--	--	-30.53	--	43.5	--	11.85	6.50	200	Horizontal	Pass
215.951	29.91	--	--	-28.38	--	43.5	--	13.59	59.10	100	Horizontal	Pass
311.957	30.49	--	--	-26.44	--	46.0	--	15.51	80.40	100	Horizontal	Pass
359.960	35.60	--	--	-25.15	--	46.0	--	10.40	104.60	100	Horizontal	Pass

A.1.9 Test Antenna Vertical, 1 GHz – 6 GHz



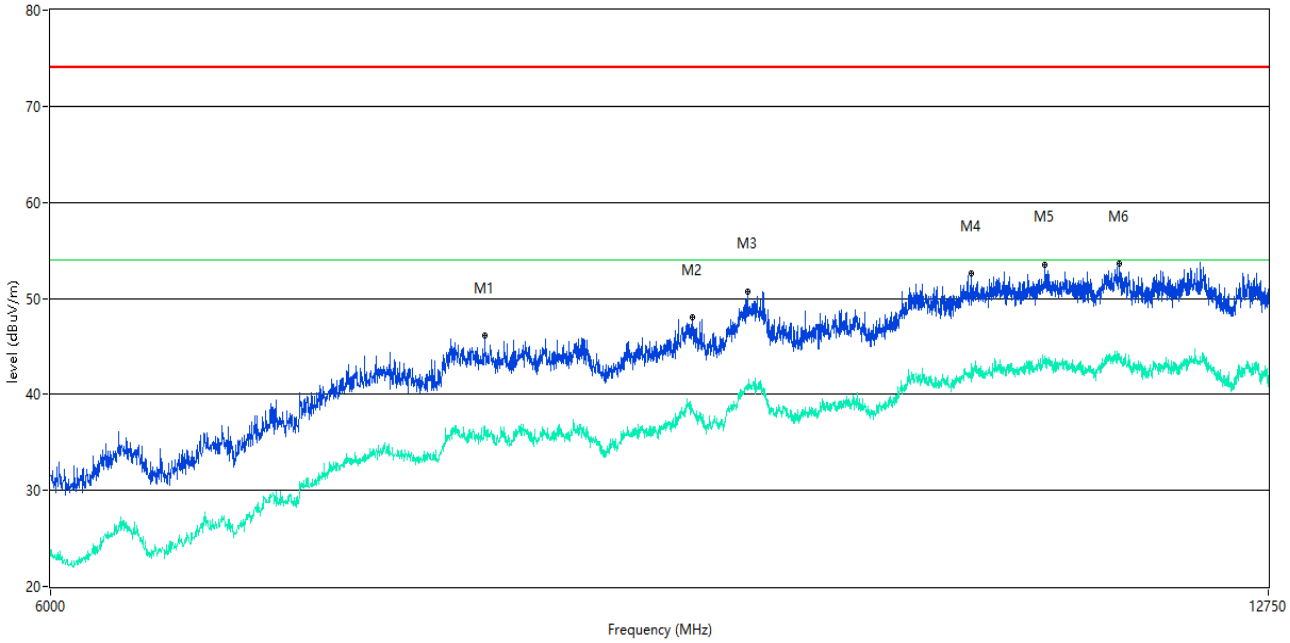
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1099.975	42.08	--	34.9	-14.67	74.0	--	54.0	19.10	185.40	100	Vertical	Pass
1348.913	39.62	--	28.4	-15.32	74.0	--	54.0	25.60	42.80	100	Vertical	Pass
1778.805	39.99	--	32.4	-14.75	74.0	--	54.0	21.60	2.40	100	Vertical	Pass
1928.768	42.05	--	30.4	-13.36	74.0	--	54.0	23.60	0.50	100	Vertical	Pass
2132.717	44.43	--	34.2	-11.57	74.0	--	54.0	19.80	185.40	100	Vertical	Pass
4621.845	50.83	--	40.7	0.25	74.0	--	54.0	13.30	196.60	100	Vertical	Pass

A.1.10 Test Antenna Horizontal, 1 GHz – 6 GHz



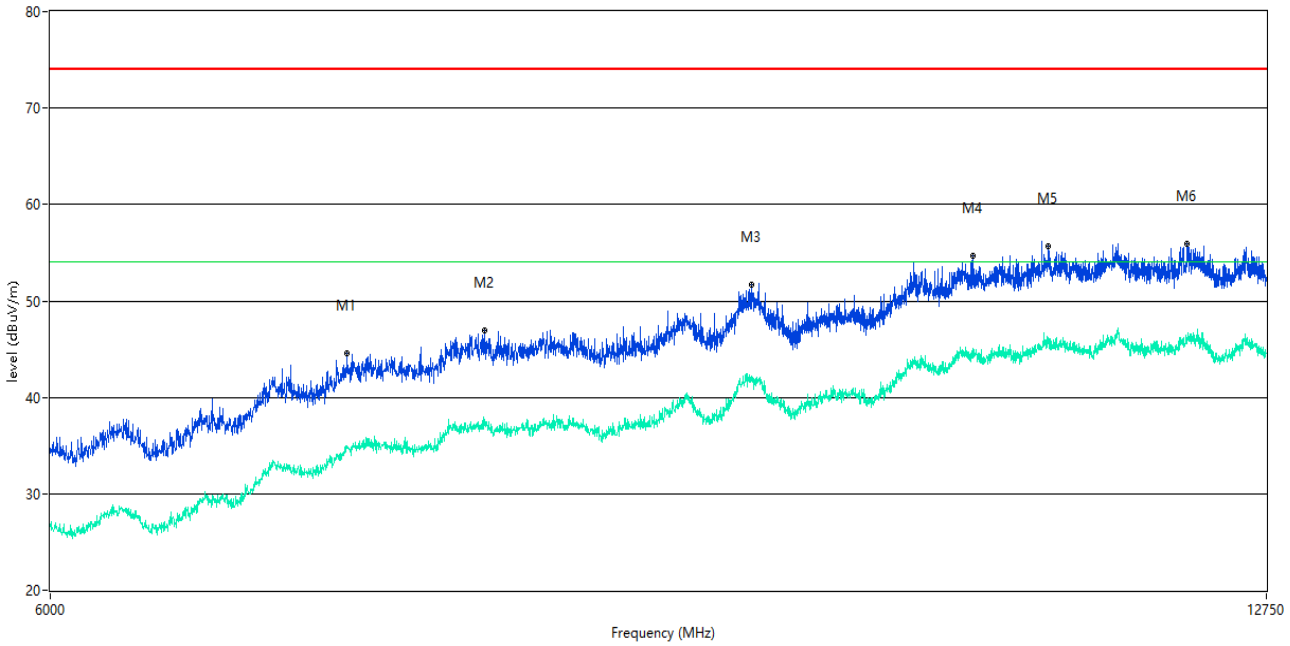
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1099.475	38.27	--	32.3	-14.68	74.0	--	54.0	21.70	23.70	100	Horizontal	Pass
1199.950	38.82	--	32.2	-15.15	74.0	--	54.0	21.80	8.90	100	Horizontal	Pass
1395.401	39.62	--	30.3	-15.23	74.0	--	54.0	23.70	53.10	100	Horizontal	Pass
2059.235	40.76	--	31.7	-12.21	74.0	--	54.0	22.30	47.20	100	Horizontal	Pass
3859.285	48.09	--	37.9	-3.11	74.0	--	54.0	16.10	263.50	100	Horizontal	Pass
5011.747	52.32	--	41.5	0.79	74.0	--	54.0	12.50	1.00	100	Horizontal	Pass

A.1.11 Test Antenna Vertical, 6 GHz – 12.75 GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7850.725	46.07	--	36.7	-3.73	74.0	--	54.0	17.30	184.60	100	Vertical	Pass
8928.768	48.04	--	38.2	-0.84	74.0	--	54.0	15.80	144.80	100	Vertical	Pass
9237.503	50.74	--	40.7	1.06	74.0	--	54.0	13.30	264.70	100	Vertical	Pass
10612.472	52.56	--	43.2	5.89	74.0	--	54.0	10.80	129.00	100	Vertical	Pass
11105.099	53.55	--	43.2	6.21	74.0	--	54.0	10.80	308.40	100	Vertical	Pass
11624.719	53.61	--	44.3	7.02	74.0	--	54.0	9.70	77.40	100	Vertical	Pass

A.1.12 Test Antenna Horizontal, 6 GHz – 12.75 GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7211.322	44.61	--	35.0	-5.55	74.0	--	54.0	19.00	281.50	100	Horizontal	Pass
7855.786	46.91	--	37.8	-3.77	74.0	--	54.0	16.20	59.10	100	Horizontal	Pass
9267.871	51.66	--	42.2	1.57	74.0	--	54.0	11.80	360.00	100	Horizontal	Pass
10629.343	54.62	--	44.9	5.84	74.0	--	54.0	9.10	360.00	100	Horizontal	Pass
11135.466	55.62	--	46.2	5.98	74.0	--	54.0	7.80	147.00	100	Horizontal	Pass
12137.591	55.88	--	45.6	6.26	74.0	--	54.0	8.40	344.70	100	Horizontal	Pass

A.2 Conducted Emission

Note: Conducted Emission result reference from original test report: BL-EC17C0360-401 (issued by Shenzhen BALUN Technology Co., Ltd. On Mar. 20, 2018) A.2 Conducted Emission.

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-EC18B0146-AE.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-EC18B0146-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-EC18B0146-AI.PDF”.

--END OF REPORT--