FCC/ISED EMC TEST REPORT

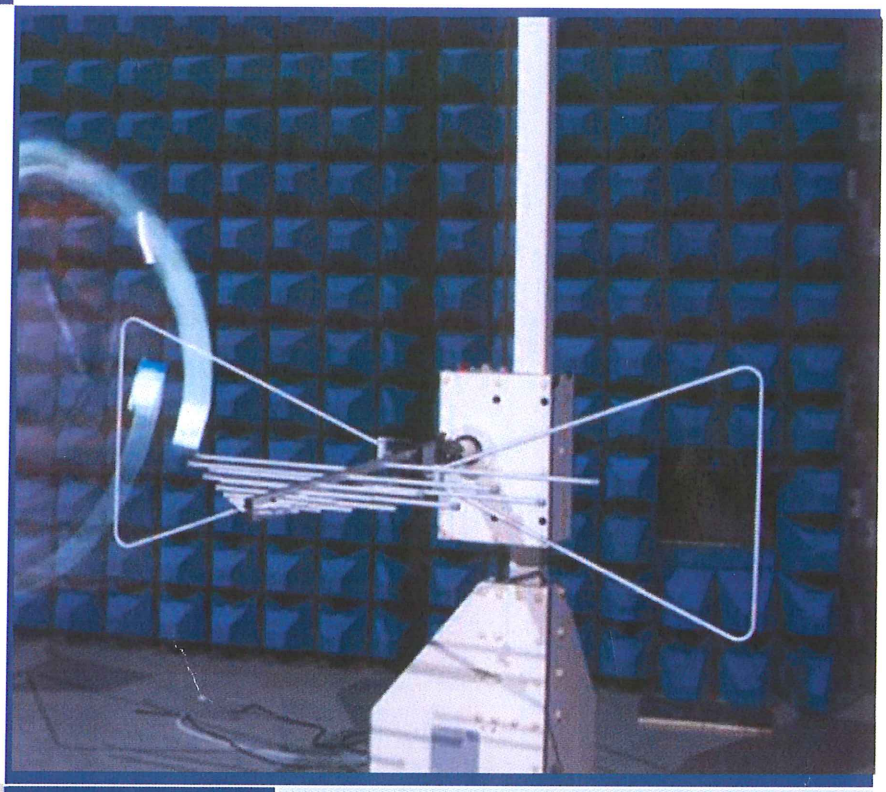
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

Fully Rugged Windows Tablet

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

B, 4-4Factory, Zhengcheng Road, Fuyong Baoan District, Shenzhen, China



Report No.:	BL-EC1830163-401
EUT Name:	Fully Rugged Windows Tablet
Model Name:	UT50
Brand Name:	UniStrong
Test Standard:	47 CFR Part 15 Subpart B
	ICES-003 (Issue 6, January 2016)
FCC ID:	2AOPD-UT50
ISED Number:	11546A-UT50
Test Conclusion:	Pass
Test Date:	Mar. 29, 2018 ~ Apr. 03, 2018
Date of Issue:	May 11, 2018

Tested by: Xia Long
Xia Long
(Engineer)
Date May 11. 2018

Approved by:
Liao Jianming
(Technical Director)
Date May 11, 2018

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Revision History

Version	Issue Date	Revisions Content
Rev. 01	Apr. 20, 2018	Initial Issue
Rev. 02	May. 11, 2018	Add the FCC/IC ID number on the home page.

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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 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 v6.6.

(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, Fuyong Baoan District, Shenzhen, China

2.2 Manufacturer Information

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

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	Fully Rugged Windows Tablet
Model Name Under Test	UT50
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	V4.0
Software Version	BIOS: R.AA.00.03.00/EC: R.AA.00.03.00/OS: R.AA.00.30.00
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	SJYEnergy
	Model No.	BA900
	Serial No.	N/A
	Capacity	2900 mAh
	Rated Voltage	11.4 V
	Limit Charge Voltage	13.05 V
Ancillary Equipment 2	Adapter	
	Brand Name	AK
	Model No.	AK65WG-1900342W1
	Serial No.	N/A
	Rated Input	100-240 V~, 1.5 A, 50/60 Hz
	Rated Output	19 V⎓ 3.42 A
Ancillary Equipment 3	Power Line	
	Length (Approx.)	1.5 m

2.6 Technical Information

Network and Wireless connectivity	3G Network WCDMA/HSDPA/HSUPA Band 1/2/3/4/5/8 4G Network FDD LTE Band 1/2/3/4/5/7/8/12/13/20/25/26/30 TDD LTE Band 41 Bluetooth, WIFI, NFC, GPS, GLONASS, BDS

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	FCC 47 CFR Part 15 Subpart B (10-1-16 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	ISED Rule	Test Verdict	Result
1	Radiated Emission	15.109	ICES-003 6.1	Pass	Annex A .1
2	Conducted Emission, AC Ports	15.107	ICES-003 6.2	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)	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 26°C	AC 120 V/60 Hz or DC 11.4 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	2017.06.22	2018.06.21	☒
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	9163-977	2016.07.19	2018.07.18	☒
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	9120D-1600	2016.07.12	2018.07.11	☐
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2019.02.20	☒

Radiated Emission Test For Frequency Above 1 GHz						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2017.11.08	2018.11.07	☒
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	9163-624	2017.07.22	2019.07.21	☐
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	9120D-1148	2016.07.12	2018.07.11	☒
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2019.02.20	☒

Conducted Emission Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2017.06.22	2018.06.21	☒
LISN	SCHWARZBECK	NSLK 8127	8127-687	2017.06.22	2018.06.21	☒
LISN	SCHWARZBECK	NNLK 8129	8129-462	2017.11.08	2018.11.07	☐
AMN	SCHWARZBECK	NNBM8124	8124-509	2017.06.22	2018.06.21	☐
AMN	SCHWARZBECK	NNBM8124	8124-510	2017.06.22	2018.06.21	☐
ISN	TESEQ	ISN T800	34449	2017.06.22	2018.06.21	☐
Shielded Enclosure	ChangNing	CN-130701	130703	N/A	N/A	☒

4.3 Test Enclosure list

Description	Manufacturer	Model	Serial No.	Length	Description	Use
PC	Dell	015K3N	N/A	N/A	Special Handled	☐
Laptop	Lenovo	E31-80	R3026PU9	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	☐
iPhone	Apple	A1586	N/A	N/A	N/A	☐
Phone	MI	M4	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	☒
Earphone	N/A	OPPO	N/A	1.1 m	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	600014010687210006	N/A	N/A	☐
LCD Monitor	SAMSUNG	UA32C4000P	N/A	N/A	N/A	☐
LCD Monitor	Dell	U241HB	N/A	N/A	N/A	☐
RJ45 Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☒
Viewing Screen	Dell	N/A	N/A	N/A	N/A	☒

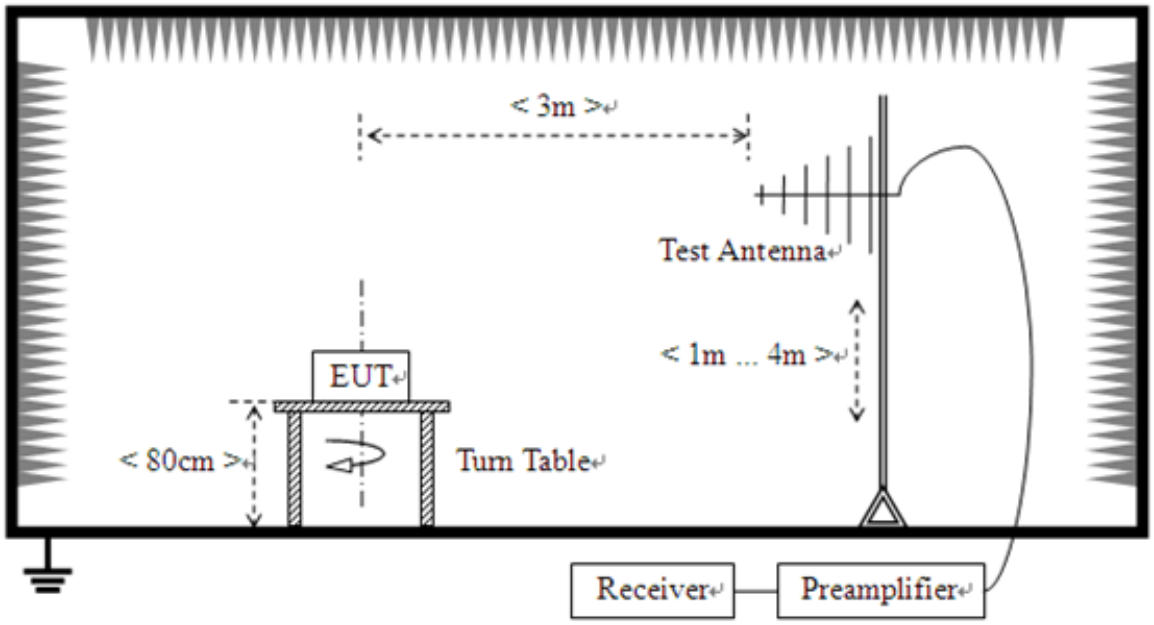
4.4 Test Configurations

Test Configurations (TC) No.	Description
Traffic Test Mode	
TC01	The WCDMA Band 1 Test Mode WCDMA Band 1 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (2.4G) + GPS RX
TC02	The WCDMA Band 2 Test Mode WCDMA Band 2 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (5G) + GLONASS RX
TC03	The WCDMA Band 3 Test Mode WCDMA Band 3 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (2.4G) + GPS RX
TC04	The WCDMA Band 4 Test Mode WCDMA Band 4 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (5G) + GLONASS RX
TC05	The WCDMA Band 5 Test Mode WCDMA Band 5 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (2.4G) + GPS RX
TC06	The WCDMA Band 8 Test Mode WCDMA Band 8 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (5G) + GLONASS RX
TC07	The FDD LTE Band 1 Test Mode FDD LTE Band 1 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (2.4G) + GPS RX
TC08	The FDD LTE Band 2 Test Mode FDD LTE Band 2 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (5G) + GLONASS RX
TC09	The FDD LTE Band 3 Test Mode FDD LTE Band 3 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (2.4G) + GPS RX
TC10	The FDD LTE Band 4 Test Mode FDD LTE Band 4 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (5G) + GLONASS RX
TC11	The FDD LTE Band 5 Test Mode FDD LTE Band 5 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (2.4G) + GPS RX
TC12	The FDD LTE Band 7 Test Mode FDD LTE Band 7 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (5G) + GLONASS RX
TC13	The FDD LTE Band 8 Test Mode FDD LTE Band 8 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (2.4G) + GPS RX

TC14	The FDD LTE Band 12 Test Mode FDD LTE Band 12 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (5G) + GLONASS RX
TC15	The FDD LTE Band 13 Test Mode FDD LTE Band 13 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (2.4G) + GPS RX
TC16	The FDD LTE Band 20 Test Mode FDD LTE Band 20 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (5G) + GLONASS RX
TC17	The FDD LTE Band 25 Test Mode FDD LTE Band 25 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (2.4G) + GPS RX
TC18	The FDD LTE Band 26 Test Mode FDD LTE Band 26 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (5G) + GLONASS RX
TC19	The FDD LTE Band 30 Test Mode FDD LTE Band 30 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (2.4G) + GPS RX
TC20	The TDD LTE Band 41 Test Mode TDD LTE Band 41 Link + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BT Link + WIFI Link (5G) + GLONASS RX
TC21	The BDS Test Mode EUT+Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + BDS RX
TC22	The Idle Test Mode GSM 850(Idle) + Battery + Keyboard + Mouse + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop
Amusement Test Mode	
TC23	The Camera Test Mode EUT + Battery + Mouse + Keyboard + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + NFC TX
TC24	The Video Play Test Mode EUT + Battery + Mouse + Keyboard + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop + NFC TX
TC25	The USB Test Mode EUT + Battery + Mouse + USB Disk + Earphone + HDMI Cable + Viewing Screen + RJ45 Cable + Laptop

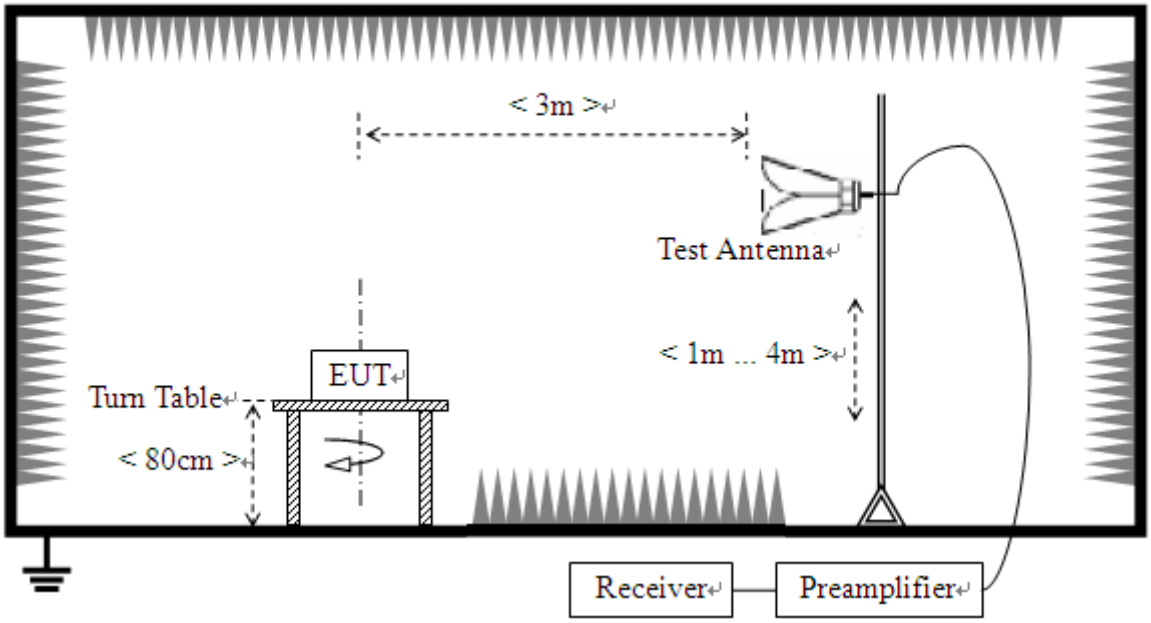
4.5 Test Setups

Test Setup 1



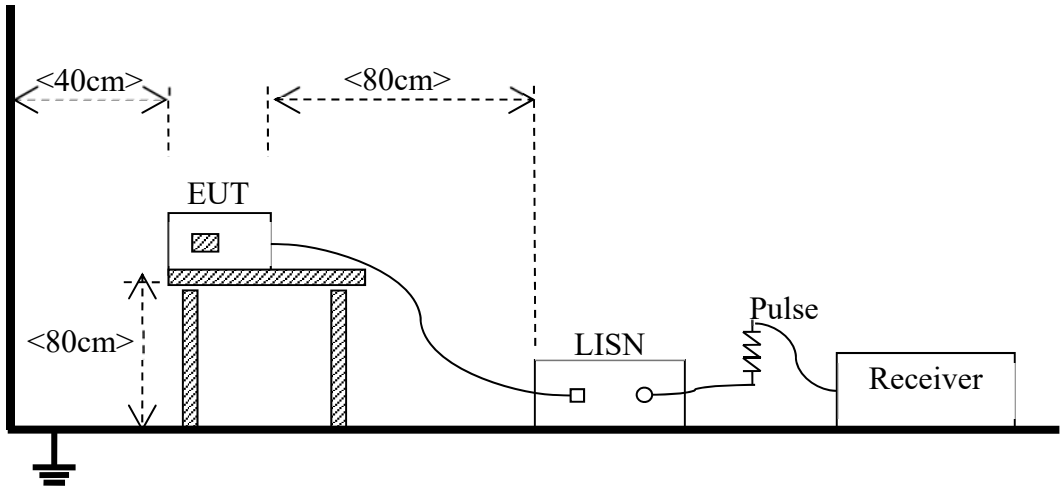
(For Radiated Emission Test (30 MHz-1 GHz))

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~TC25 Note
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 3
	Test Configuration	TC01~TC25 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 WCDMA Band 5 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.

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.
3) The limit using ANSI C63.4.

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

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.

ANNEX A TEST RESULTS

A.1 Radiated Emission

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

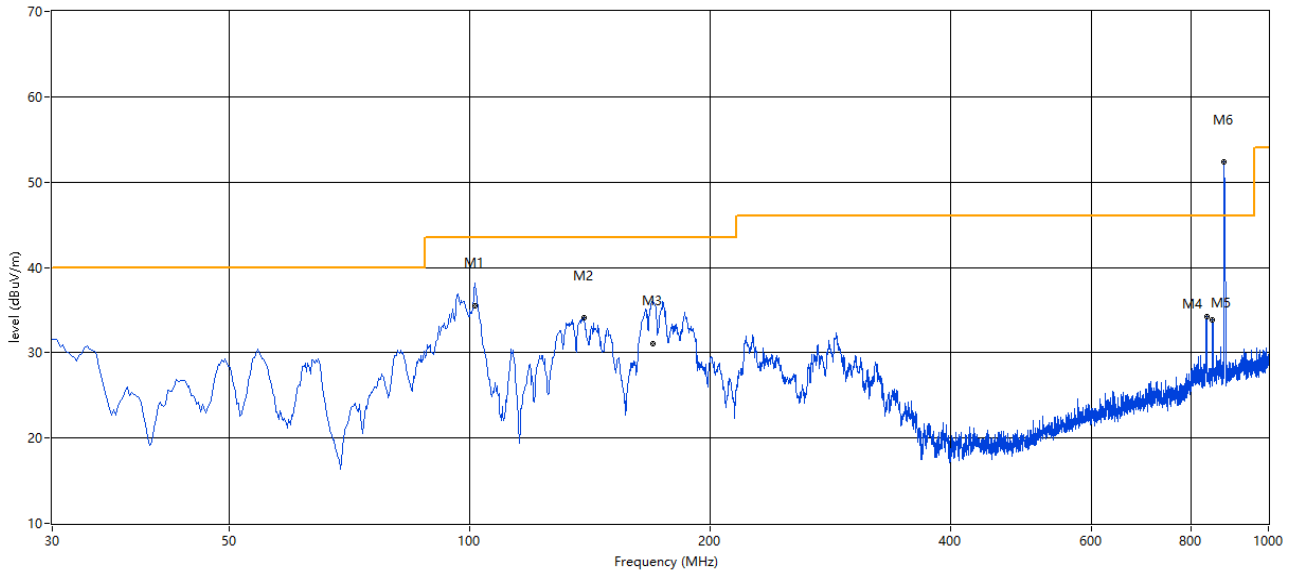
Note 2: For the test data above 1 GHz, according the ANSI C63.4-2014, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 3: This frequency which near 850 MHz with circle should be ignored because they are MS and SS carrier frequency.

Test Data and Plots

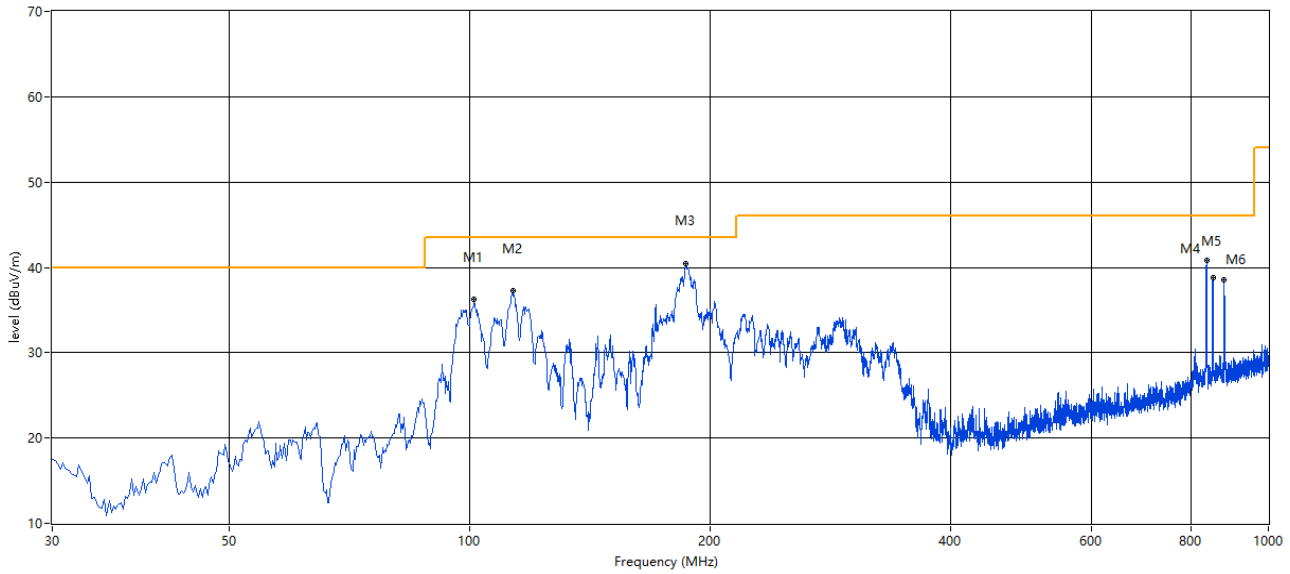
The WCDMA Band 5 Test Mode

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



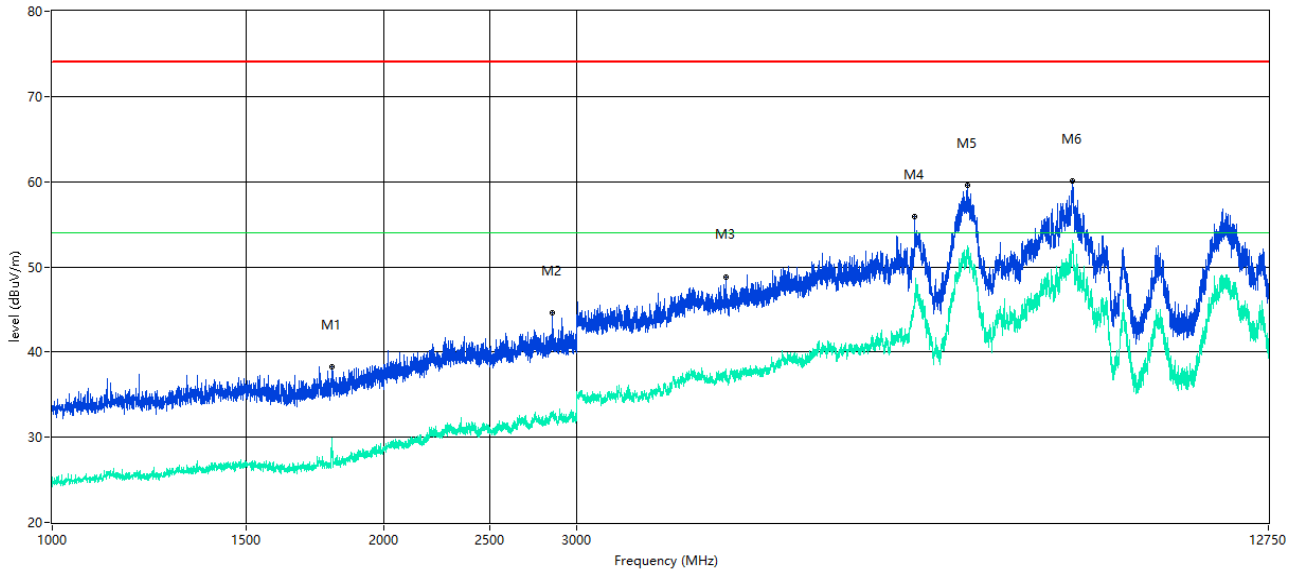
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
101.471	38.18	35.54	--	-28.57	--	43.5	--	7.96	246.10	100	Vertical	Pass
138.855	34.07	--	--	-31.77	--	43.5	--	9.43	360.00	200	Vertical	Pass
169.691	35.93	31.07	--	-30.83	--	43.5	--	12.43	298.20	101	Vertical	Pass
838.050	34.17	--	--	-13.19	--	46.0	--	11.83	360.00	200	Vertical	N.A
851.627	33.79	--	--	-13.23	--	46.0	--	12.21	360.00	200	Vertical	N.A
879.993	52.33	--	--	-13.46	--	46.0	--	-6.33	360.00	200	Vertical	N.A

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



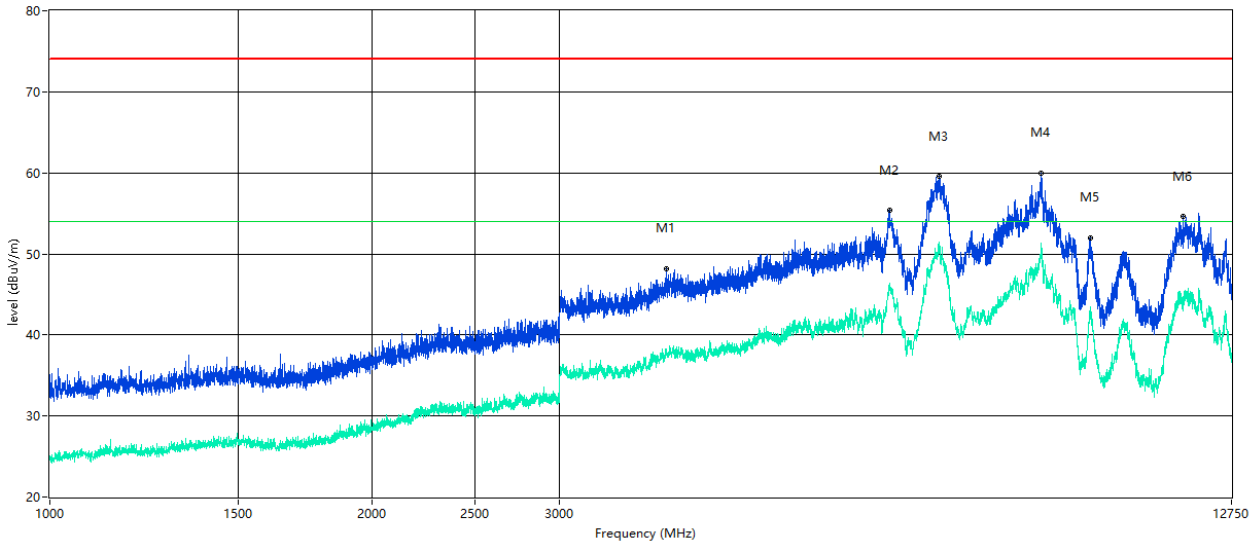
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
101.277	36.23	--	--	-28.58	--	43.5	--	7.27	149.40	200	Horizontal	Pass
113.157	37.24	--	--	-28.91	--	43.5	--	6.26	38.40	200	Horizontal	Pass
186.616	40.46	--	--	-29.47	--	43.5	--	3.04	326.00	100	Horizontal	Pass
838.050	40.79	--	--	-13.19	--	46.0	--	5.21	360.00	200	Horizontal	N.A
851.870	38.82	--	--	-13.24	--	46.0	--	7.18	360.00	200	Horizontal	N.A
880.477	38.60	--	--	-13.46	--	46.0	--	7.40	318.70	200	Horizontal	N.A

A.1.3 Test Antenna Vertical, 1 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
1796.301	38.24	--	29.9	-14.18	74.0	--	54.0	24.10	81.00	100	Vertical	Pass
2849.038	44.63	--	32.8	-7.02	74.0	--	54.0	21.20	26.00	100	Vertical	Pass
4094.726	48.80	--	37.4	-2.30	74.0	--	54.0	16.60	104.00	100	Vertical	Pass
6082.667	55.90	--	46.9	6.64	74.0	--	54.0	7.10	58.00	100	Vertical	Pass
6786.178	59.56	--	51.8	12.10	74.0	--	54.0	2.20	135.00	100	Vertical	Pass
8461.447	60.09	--	53.1	9.77	74.0	--	54.0	0.90	25.00	100	Vertical	Pass

A.1.4 Test Antenna Horizontal, 1 GHz – 12.75 GHz

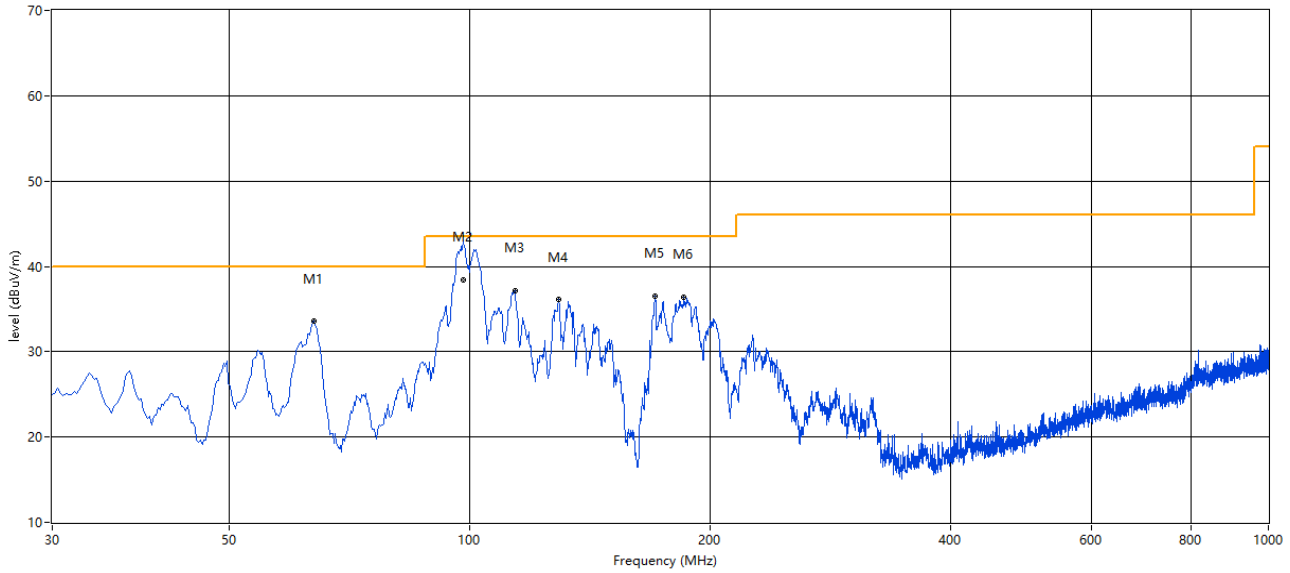


Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
3773.807	48.20	--	37.6	-2.50	74.0	--	54.0	16.40	3.00	100	Horizontal	Pass
6104.599	55.39	--	45.4	7.76	74.0	--	54.0	8.60	9.00	100	Horizontal	Pass
6791.240	59.58	--	51.5	12.21	74.0	--	54.0	2.50	6.00	100	Horizontal	Pass
8463.134	60.01	--	51.3	9.74	74.0	--	54.0	2.70	14.00	100	Horizontal	Pass
9404.524	52.02	--	42.8	6.33	74.0	--	54.0	11.20	15.00	100	Horizontal	Pass
11476.256	54.58	--	44.8	9.22	74.0	--	54.0	9.20	0.00	100	Horizontal	Pass

Test Data and Plots

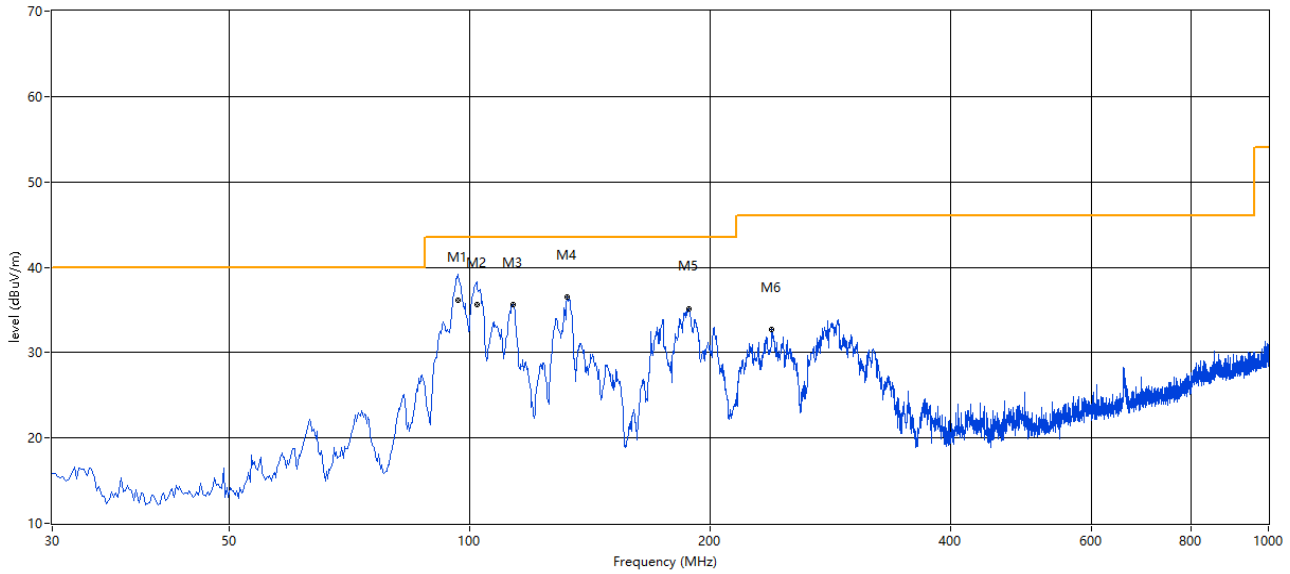
The USB Test Mode

A.1.5 Test Antenna Vertical, 30 MHz – 1 GHz



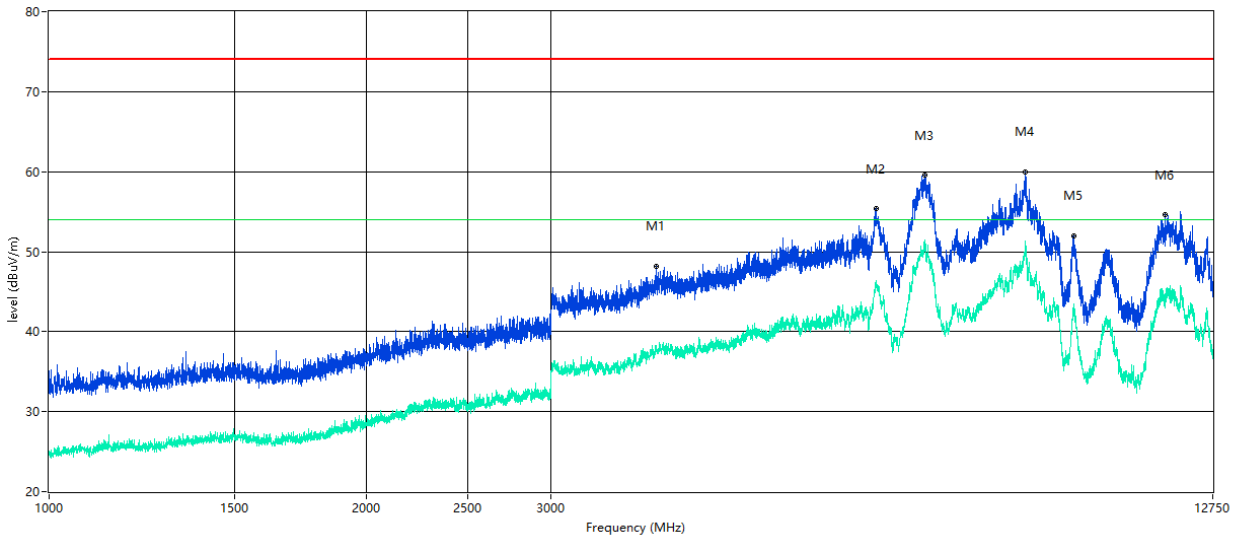
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
63.699	33.54	--	--	-28.50	--	40.0	--	6.46	99.60	100	Vertical	Pass
98.125	42.92	38.43	--	-28.87	--	43.5	--	5.07	1.30	100	Vertical	Pass
113.884	37.18	37.15	--	-29.05	--	43.5	--	6.35	196.50	100	Vertical	Pass
129.158	36.07	--	--	-31.23	--	43.5	--	7.43	199.40	100	Vertical	Pass
170.372	36.57	--	--	-30.79	--	43.5	--	6.93	0.00	100	Vertical	Pass
185.404	36.40	--	--	-29.54	--	43.5	--	7.10	56.60	100	Vertical	Pass

A.1.6 Test Antenna Horizontal, 30 MHz – 1 GHz



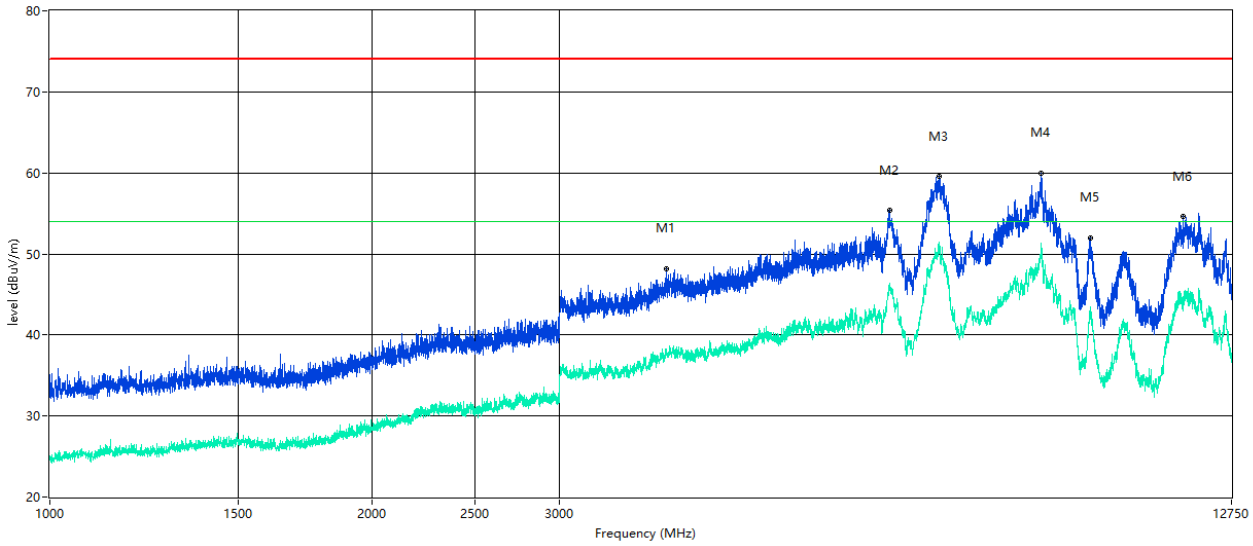
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
96.671	39.22	36.12	--	-29.08	--	43.5	--	7.38	104.40	200	Horizontal	Pass
102.004	38.35	35.64	--	-28.56	--	43.5	--	7.86	110.10	200	Horizontal	Pass
113.157	35.59	--	--	-28.91	--	43.5	--	7.91	92.60	100	Horizontal	Pass
132.552	36.51	--	--	-31.45	--	43.5	--	6.99	87.40	200	Horizontal	Pass
188.313	35.13	--	--	-29.36	--	43.5	--	8.37	309.80	200	Horizontal	Pass
238.983	32.65	--	--	-27.39	--	46.0	--	13.35	337.30	100	Horizontal	Pass

A.1.7 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
2310.672	40.55	--	31.0	-10.04	74.0	--	54.0	23.00	10.00	100	Vertical	Pass
3822.544	47.79	--	38.2	-2.93	74.0	--	54.0	15.80	6.00	100	Vertical	Pass
6141.715	54.87	--	45.6	6.38	74.0	--	54.0	8.40	5.00	100	Vertical	Pass
6787.866	60.20	--	50.4	12.12	74.0	--	54.0	3.60	13.00	100	Vertical	Pass
8456.386	59.09	--	50.2	9.81	74.0	--	54.0	3.80	15.00	100	Vertical	Pass
11533.617	54.70	--	44.9	9.38	74.0	--	54.0	9.10	10.00	100	Vertical	Pass

A.1.8 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
3773.807	48.20	--	37.6	-2.50	74.0	--	54.0	16.40	3.00	100	Horizontal	Pass
6104.599	55.39	--	45.4	7.76	74.0	--	54.0	8.60	9.00	100	Horizontal	Pass
6791.240	59.58	--	51.5	12.21	74.0	--	54.0	2.50	6.00	100	Horizontal	Pass
8463.134	60.01	--	51.3	9.74	74.0	--	54.0	2.70	14.00	100	Horizontal	Pass
9404.524	52.02	--	42.8	6.33	74.0	--	54.0	11.20	15.00	100	Horizontal	Pass
11476.256	54.58	--	44.8	9.22	74.0	--	54.0	9.20	0.00	100	Horizontal	Pass

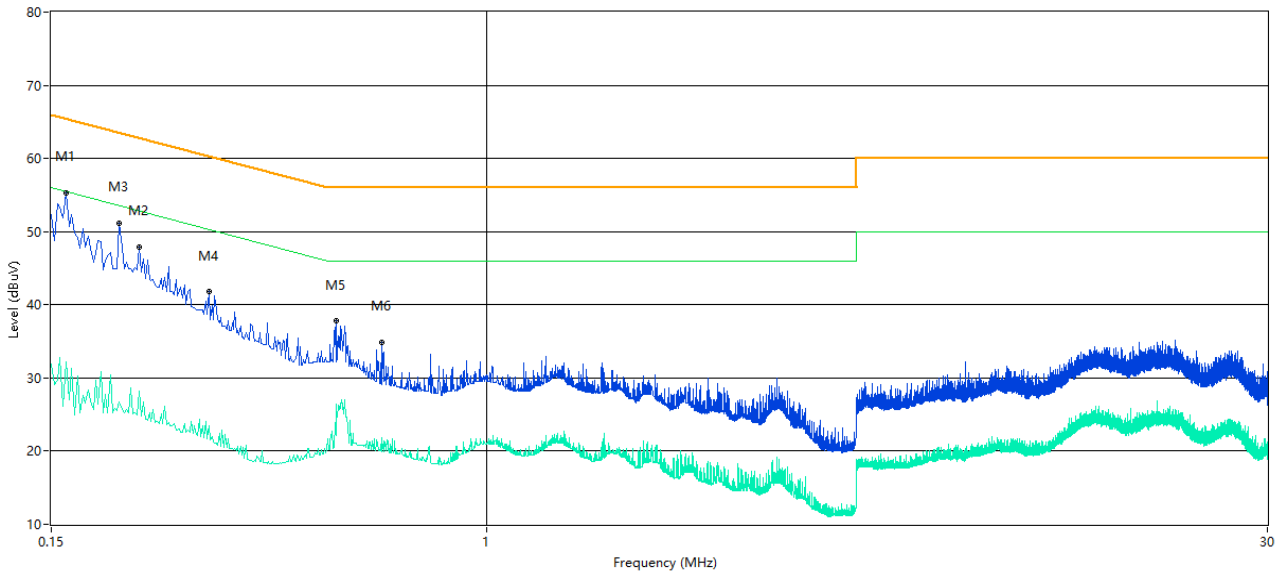
A.2 Conducted Emission

Test Data and Plots

The WCDMA Band 5 Test Mode

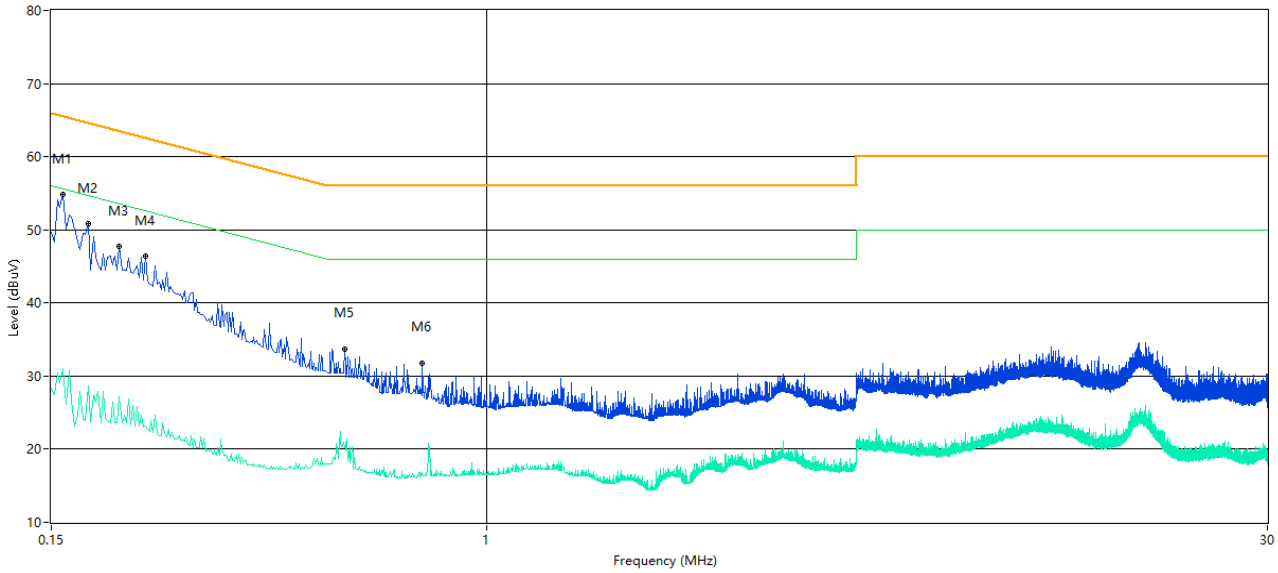
Note: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

A.2.1 L Phase



Frequency (MHz)	Peak Level (dBuV)	Q-peak Level (dBuV)	Average Level (dBuV)	Factor (dB)	QP Limit (dBuV)	AV Limit (dBuV)	Margin (dB)	Line	Verdict
0.160	55.3	--	32.2	10.01	65.5	55.5	10.20	L Line	Pass
0.220	47.8	--	28.2	10.01	62.8	52.8	15.00	L Line	Pass
0.202	51.1	--	26.8	10.01	63.5	53.5	12.40	L Line	Pass
0.298	41.7	--	23.4	10.01	60.3	50.3	18.60	L Line	Pass
0.520	37.8	--	26.5	10.02	56.0	46.0	18.20	L Line	Pass
0.632	34.9	--	21.8	10.02	56.0	46.0	21.10	L Line	Pass

A.2.2 N Phase

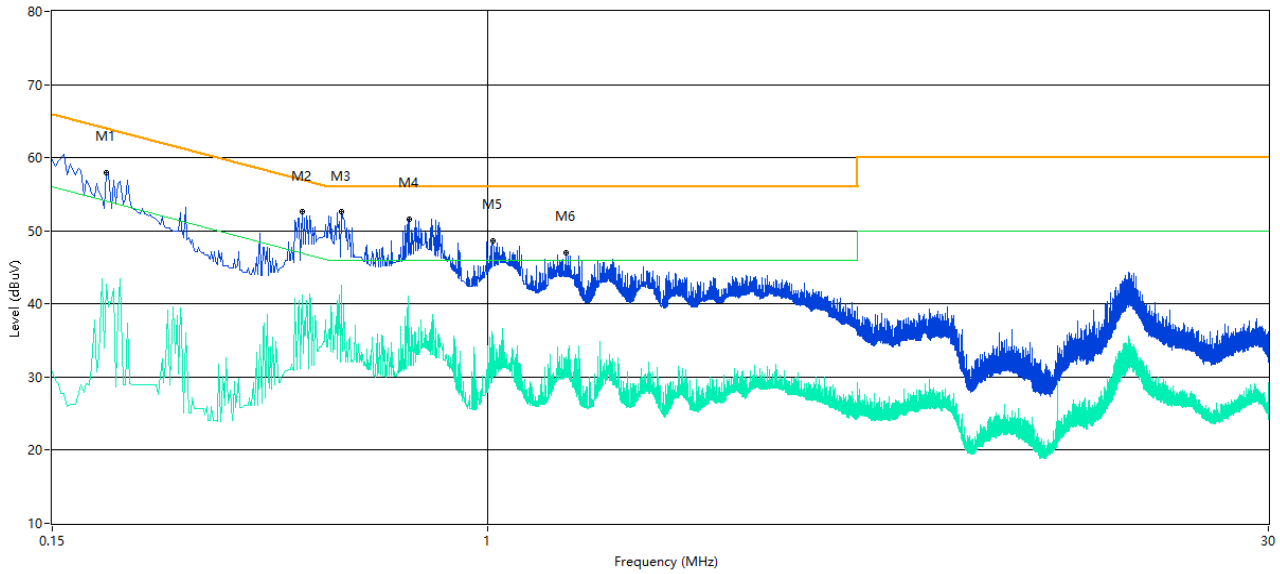


Frequency (MHz)	Peak Level (dBuV)	Q-peak Level (dBuV)	Average Level (dBuV)	Factor (dB)	QP Limit (dBuV)	AV Limit (dBuV)	Margin (dB)	Line	Verdict
0.158	55.75	47.02	29.48	10.01	65.6	55.6	18.58	N Line	Pass
0.176	53.53	45.20	28.02	10.01	64.7	54.7	19.50	N Line	Pass
0.202	50.96	42.10	25.97	10.01	63.5	53.5	21.40	N Line	Pass
0.226	48.21	39.15	24.20	10.01	62.6	52.6	23.45	N Line	Pass
0.538	34.34	27.65	21.36	10.02	56.0	46.0	24.64	N Line	Pass
0.756	33.18	22.24	16.53	10.02	56.0	46.0	29.47	N Line	Pass

Test Data and Plots

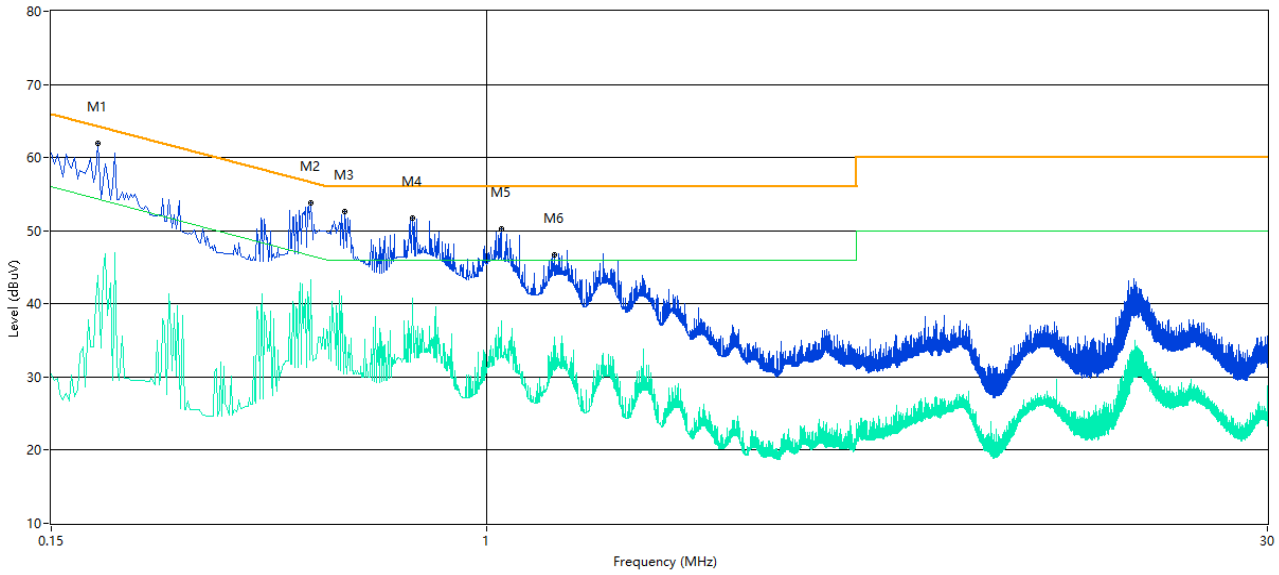
The USB Test Mode

A.2.3 L Phase



Frequency (MHz)	Peak Level (dBuV)	Q-peak Level (dBuV)	Average Level (dBuV)	Factor (dB)	QP Limit (dBuV)	AV Limit (dBuV)	Margin (dB)	Line	Verdict
0.190	60.51	52.76	41.34	10.01	64.0	54.0	11.24	L Line	Pass
0.446	53.66	49.48	38.53	10.01	56.9	46.9	7.42	L Line	Pass
0.528	53.70	49.67	38.13	10.02	56.0	46.0	6.33	L Line	Pass
0.710	52.27	46.17	31.82	10.02	56.0	46.0	9.83	L Line	Pass
1.022	49.42	45.46	33.67	10.03	56.0	46.0	10.54	L Line	Pass
1.404	47.75	41.64	28.50	10.05	56.0	46.0	14.36	L Line	Pass

A.2.4 N Phase



Frequency (MHz)	Peak Level (dBuV)	Q-peak Level (dBuV)	Average Level (dBuV)	Factor (dB)	QP Limit (dBuV)	AV Limit (dBuV)	Margin (dB)	Line	Verdict
0.184	62.38	56.43	41.93	10.01	64.3	54.3	7.87	N Line	Pass
0.464	55.63	50.73	38.64	10.02	56.6	46.6	5.87	N Line	Pass
0.538	53.88	48.79	34.43	10.02	56.0	46.0	7.21	N Line	Pass
0.724	52.80	48.25	36.21	10.02	56.0	46.0	7.75	N Line	Pass
1.066	50.41	45.36	34.12	10.04	56.0	46.0	10.64	N Line	Pass
1.346	48.15	42.55	32.04	10.04	56.0	46.0	13.45	N Line	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-EC1830163-AE.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-EC1830163-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-EC1830163-AI.PDF”.

--END OF REPORT--