

FCC

EMC

TEST REPORT

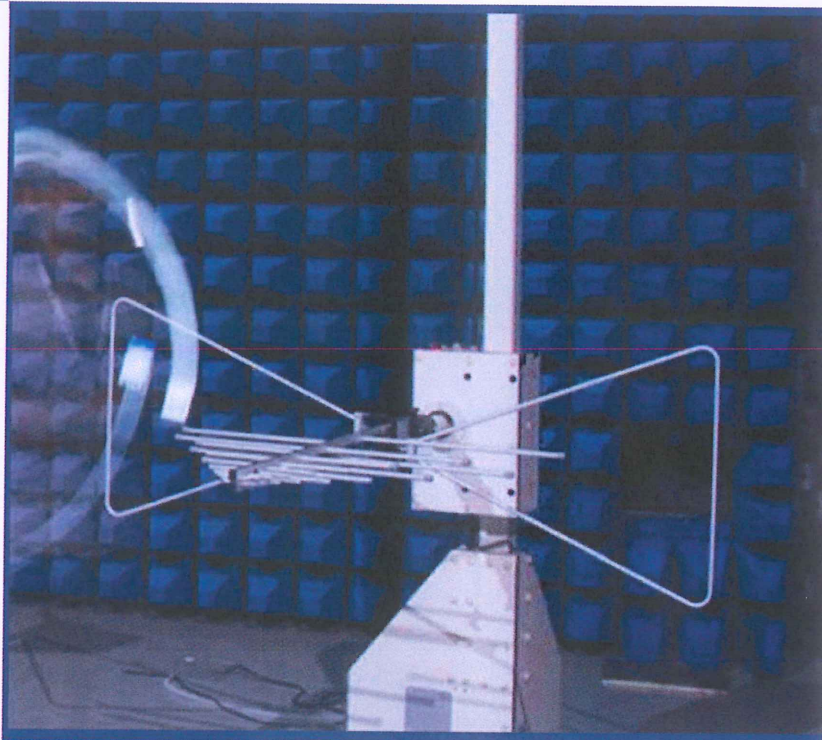
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.



FOR
Mobile Phone

ISSUED TO
Realme Chongqing Mobile Telecommunications Corp., Ltd

No.2 Building, No.24 Nchang Boulevard, Huixing Block, Yubei District,
Chongqing, China



Tested by: Xia Long
Xia Long

(Engineer)

Date: Dec. 06, 2019

Approved by: Wei Yanquan

Wei Yanquan
(Chief Engineer)

Date: Dec. 06, 2019

Report No.: BL-SZ19A0431-401

EUT Name: Mobile Phone

Model Name: RMX1921

Brand Name: realme

Test Standard: 47 CFR Part 15 Subpart B

FCC ID: 2AUYFRMX1921

Test Conclusion: Pass

Test Date: Oct. 25, 2019 ~ Oct. 30, 2019

Date of Issue: Dec. 06, 2019

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Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Dec. 06, 2019</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 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 organization 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°C to 25°C
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 v6.8.
- (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	Realme Chongqing Mobile Telecommunications Corp., Ltd
Address	No.2 Building, No.24 Nichang Boulevard, Huixing Block, Yubei District, Chongqing, China

2.2 Manufacturer Information

Manufacturer	Realme Chongqing Mobile Telecommunications Corp., Ltd
Address	No.2 Building, No.24 Nichang Boulevard, Huixing Block, Yubei District, Chongqing, China

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	Mobile Phone
Model Name Under Test	RMX1921
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	2RA133
Software Version	ColorOS V6.0.1
Dimensions (Approx.)	158.7*75.2*8.6mm
Weight (Approx.)	183g(with battery)

2.5 Ancillary Equipment

Ancillary Equipment 1	Li-Polymer Battery 1	
	Brand Name	realme
	Model No.	BLP741
	Serial No.	N/A
	Capacitance	Rated: 3920mAh/15.17Wh Typical: 4000mAh/15.48Wh
	Rated Voltage	3.87 V
	Limited Voltage	4.45 V
	Manufacturer	Ningde Ampere Technology Limited
Ancillary Equipment 2	Power Supply Unit 1	
	Brand Name	realme
	Model No.	AK779GB
	Serial No.	N/A
	Rated Input	100-240VAC 50-60Hz 0.6A
	Rated Output	5.0VDC 4A (US Plug)
Ancillary Equipment 3	Power Supply Unit(alternative) 2	
	Brand Name	realme
	Model No.	VC54JAUH
	Serial No.	N/A
	Rated Input	100-240VAC 50-60Hz 0.6A
	Rated Output	5.0VDC 4A (US Plug)
Ancillary Equipment 4	USB Cable	
	Model No.	DL129
	Length (Approx.)	1.0 m
Note 1: Letter in () means plug type.		
Note 2: All adapters are tested, only the worst data of VC54JAUH (US Plug) shown in this report.		

2.6 Technical Information

Network and Wireless connectivity	2G Network GSM/ GPRS/ EDGE 850/ 900/ 1800/ 1900 MHz 3G Network WCDMA/ HSDPA/ HSUPA/ HSPA+ Band 1/ 2/ 4/ 5/ 8 4G Network LTE FDD Band 1/ 2/ 3/ 4/ 5/ 7/ 8/ 20/ 28 LTE TDD Band 38/ 39/ 40/ 41 LTE CA Downlink (DL): 1C/ 3C/ 7C/ 38C/ 39C/ 40C/ 41C Bluetooth 5.0 (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20) 5G WIFI 802.11a, 802.11n(HT20/ 40) and 802.11ac(VHT20/ 40/ 80) GPS, GLONASS, BDS, NFC
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3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	FCC 47 CFR Part 15 Subpart B (10-1-18 Edition)	Unintentional Radiators
2	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

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)	2.96 dB
Radiated emissions (30 MHz-1 GHz)	3.66 dB
Radiated emissions (1 GHz-18 GHz)	5.57 dB
Radiated emissions (18 GHz-40 GHz)	6.12 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 AC 230 V/50 Hz or DC 3.87 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	2019.07.04	2020.07.03	☒
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	9163-624	2018.08.22	2020.08.21	☒
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	9120D-1600	2018.07.11	2020.07.10	☐
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2020.02.20	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

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	2018.08.22	2020.08.21	☐
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	2020.02.20	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

Conducted Emission Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2019.06.13	2020.06.12	☒
LISN	SCHWARZBECK	NSLK 8127	8127-687	2019.07.04	2020.07.03	☒
ISN	TESEQ	ISN T800	34449	2018.11.16	2019.11.15	☐
Shielded Enclosure	ChangNing	CN-130701	130703	N/A	N/A	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

4.3 Test Enclosure list

Description	Manufacturer	Model	Serial No.	Length	Description	Use
PC	Dell	015K3N	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	☐
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 Communication s Test Set	R&S	CMW500	142028	N/A	Cal. Due 2019.06.14	☒
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	60001401068 7210006	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	☐

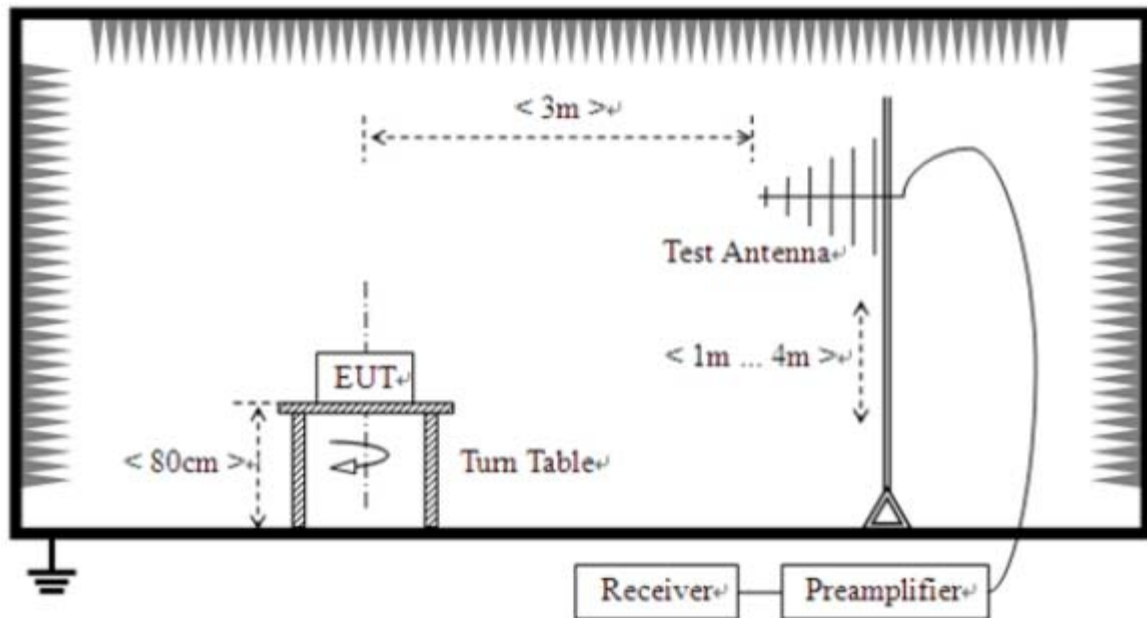
4.4 Test Configurations

Test Configurations (TC) No.	Description
Traffic Test Mode	
TC01	<u>The GSM 850 MHz Test Mode</u> GSM 850 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (2.4G) + GPS RX
TC02	<u>The EDGE 850 MHz Test Mode</u> EDGE 850 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (5G) + GLONASS RX
TC03	<u>The GSM 1900 MHz Test Mode</u> GSM 1900 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (2.4G) + BDS RX
TC04	<u>The EDGE 1900 MHz Test Mode</u> GPRS 1900 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (5G) + GPS RX
TC05	<u>The WCDMA Band 2 Test Mode</u> WCDMA Band 2 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (2.4G) + GLONASS RX
TC06	<u>The WCDMA Band 4 Test Mode</u> WCDMA Band 4 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (5G) + BDS RX
TC07	<u>The WCDMA Band 5 Test Mode</u> WCDMA Band 5 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (2.4G) + GPS RX
TC08	<u>The FDD LTE Band 2 Test Mode</u> LTE Band 2 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (5G) + GLONASS RX
TC09	<u>The FDD LTE Band 4 Test Mode</u> LTE Band 4 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (2.4G) + BDS RX
TC10	<u>The FDD LTE Band 5 Test Mode</u> LTE Band 5 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (5G) + GPS RX
TC11	<u>The FDD LTE Band 7 Test Mode</u> LTE Band 7 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (2.4G) + GLONASS RX
TC12	<u>The FDD LTE Band 38 Test Mode</u> LTE Band 38 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (5G) + BDS RX
TC13	<u>The FDD LTE Band 41 Test Mode</u> LTE Band 41 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (2.4G) + GPS RX
TC14	<u>The NFC Test Mode</u>

	EUT + Adapter + USB Cable + Battery + NFC RX
TC15	<u>The Idle Test Mode</u> GSM 900(Idle) + Adapter + Battery + Earphone + USB Cable + NFC RX
Amusement Test Mode	
TC16	<u>The Camera Test Mode</u> EUT + Adapter + USB Cable + Battery + Earphone + TF Card
TC17	<u>The Video Play Test Mode</u> EUT + Adapter + USB Cable + Battery + Earphone + TF Card
TC18	<u>The USB Test Mode</u> EUT + USB Cable + Battery + Earphone + Laptop+ TF Card

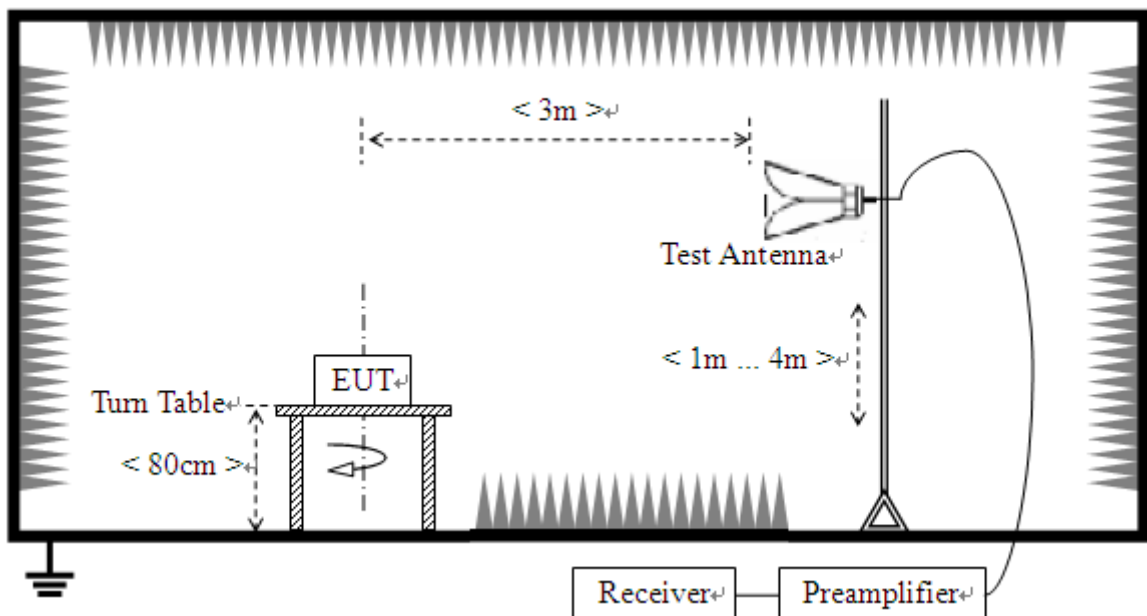
4.5 Test Setups

Test Setup 1



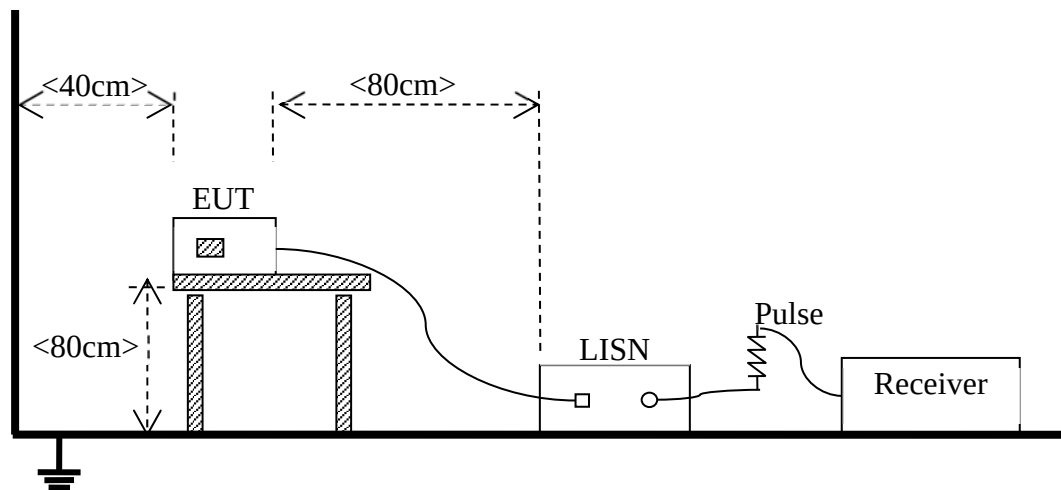
(For Radiated Emission Test (30 MHz-1 GHz))

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~TC18 ^{Note}
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 3
	Test Configuration	TC01~TC18 ^{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 ($\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)	Field Strength ($\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)
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 (dB $\mu\text{V/m}$) = $20 \cdot \log$ [Field Strength ($\mu\text{V/m}$)].
- 2) In the emission tables above, the tighter limit applies at the band edges.

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

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 (dB $\mu\text{V/m}$) = Reading (dB μV) + 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.

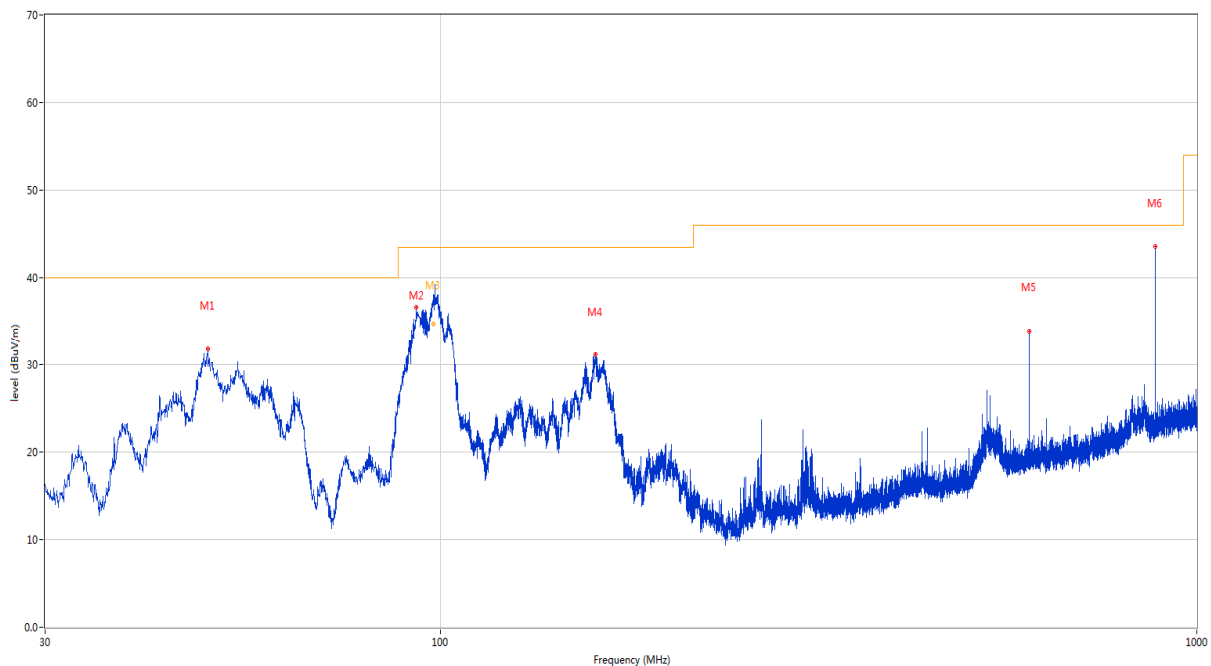
Note 2: For the test data above 1 GHz, according the ANSI C63.4-2014, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

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

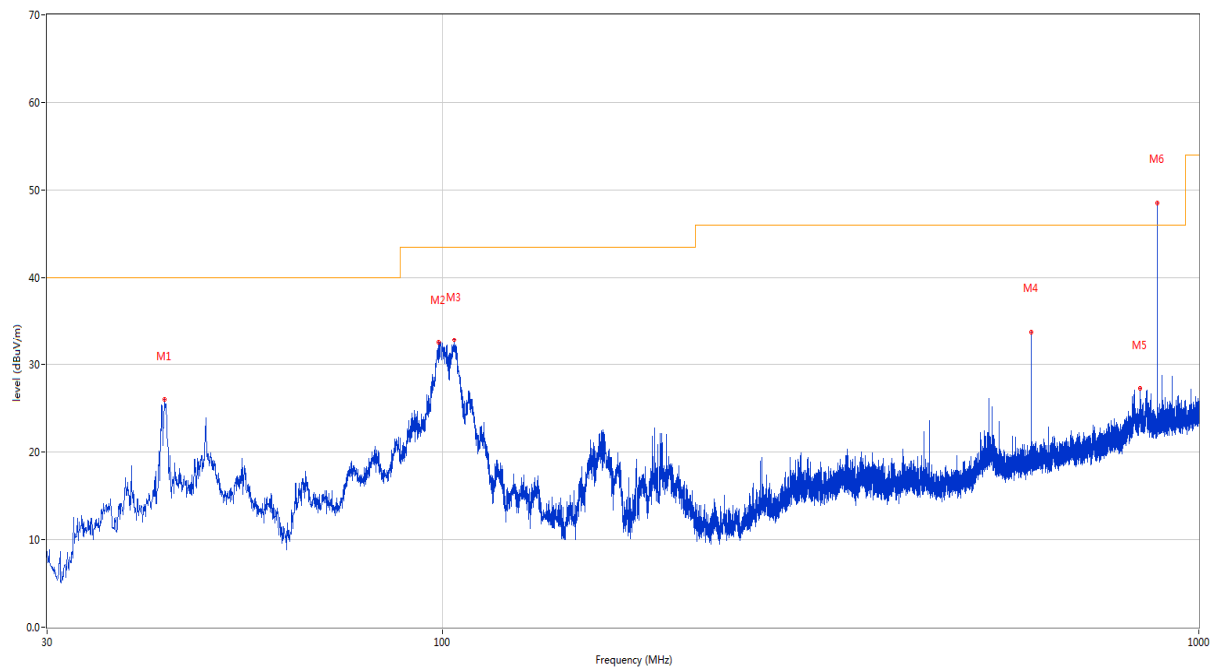
The GSM 850 MHz Test Mode

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



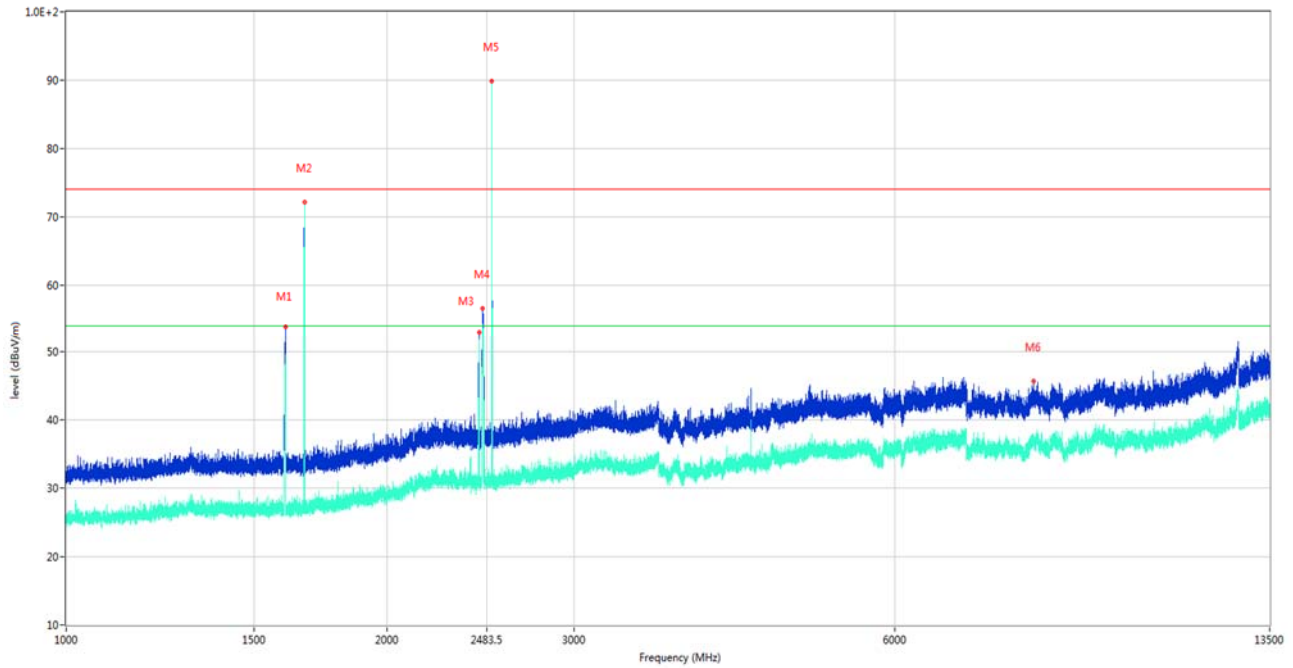
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	49.255	31.75	-22.45	40.0	-8.25	Peak	90.70	100	Vertical	Pass
2	92.808	36.60	-25.37	43.5	-6.90	Peak	291.80	100	Vertical	Pass
3	97.808	38.06	-24.63	43.5	-5.44	Peak	333.30	101	Vertical	N/A
3*	97.808	34.70	-24.63	43.5	-8.80	QP	333.30	101	Vertical	Pass
4	160.416	31.18	-27.28	43.5	-12.32	Peak	321.00	100	Vertical	Pass
5	600.020	33.84	-14.39	46.0	-12.16	Peak	355.40	200	Vertical	Pass
6	881.612	43.53	-10.33	46.0	-2.47	Peak	7.40	100	Vertical	N/A

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



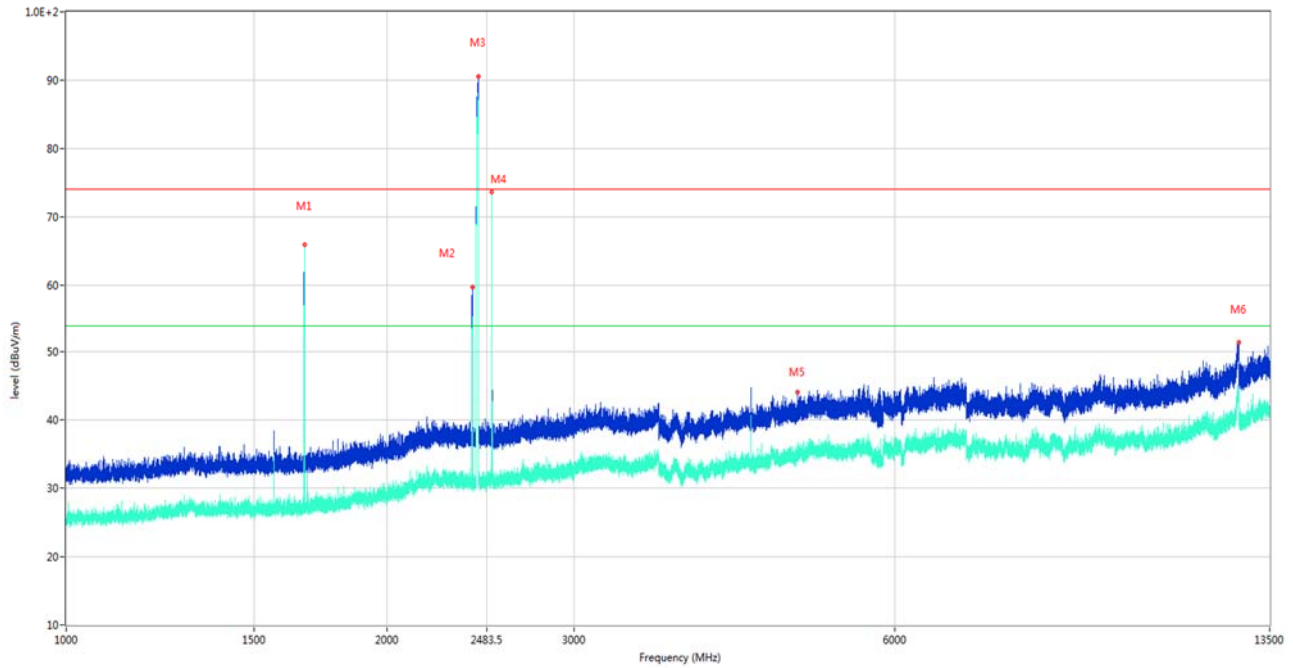
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.901	26.03	-23.19	40.0	-13.97	Peak	148.60	200	Horizontal	Pass
2	98.773	32.53	-24.57	43.5	-10.97	Peak	119.50	200	Horizontal	Pass
3	103.575	32.80	-24.31	43.5	-10.70	Peak	119.50	200	Horizontal	Pass
4	600.020	33.80	-14.39	46.0	-12.20	Peak	0.50	100	Horizontal	Pass
5	836.555	27.27	-8.08	46.0	-18.73	Peak	0.00	100	Horizontal	N/A
6	881.612	48.57	-10.33	46.0	2.57	Peak	104.20	100	Horizontal	N/A

A.1.3 Test Antenna Vertical, 1 GHz – 13.5 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1606.500	53.88	-17.71	74.0	-20.12	Peak	297.80	100	Vertical	Pass
1**	1606.500	47.83	-17.71	54.0	-6.17	AV	297.80	100	Vertical	Pass
2	1673.900	72.29	-17.76	74.0	-1.71	Peak	0.50	100	Vertical	N/A
2**	1673.900	71.08	-17.76	54.0	17.08	AV	0.50	100	Vertical	N/A
3	2443.000	53.03	-13.23	74.0	-20.97	Peak	36.20	100	Vertical	N/A
3**	2443.000	51.78	-13.23	54.0	-2.22	AV	36.20	100	Vertical	N/A
4	2462.900	56.53	-13.34	74.0	-17.47	Peak	354.70	100	Vertical	N/A
4**	2462.900	54.10	-13.34	54.0	0.10	AV	354.70	100	Vertical	N/A
5	2510.800	89.84	-12.80	74.0	15.84	Peak	8.10	100	Vertical	N/A
5**	2510.800	87.20	-12.80	54.0	33.20	AV	8.10	100	Vertical	N/A
6	8102.725	45.69	16.00	74.0	-28.31	Peak	180.20	100	Vertical	Pass
6**	8102.725	36.78	16.00	54.0	-17.22	AV	180.20	100	Vertical	Pass

A.1.4 Test Antenna Horizontal, 1 GHz – 13.5 GHz

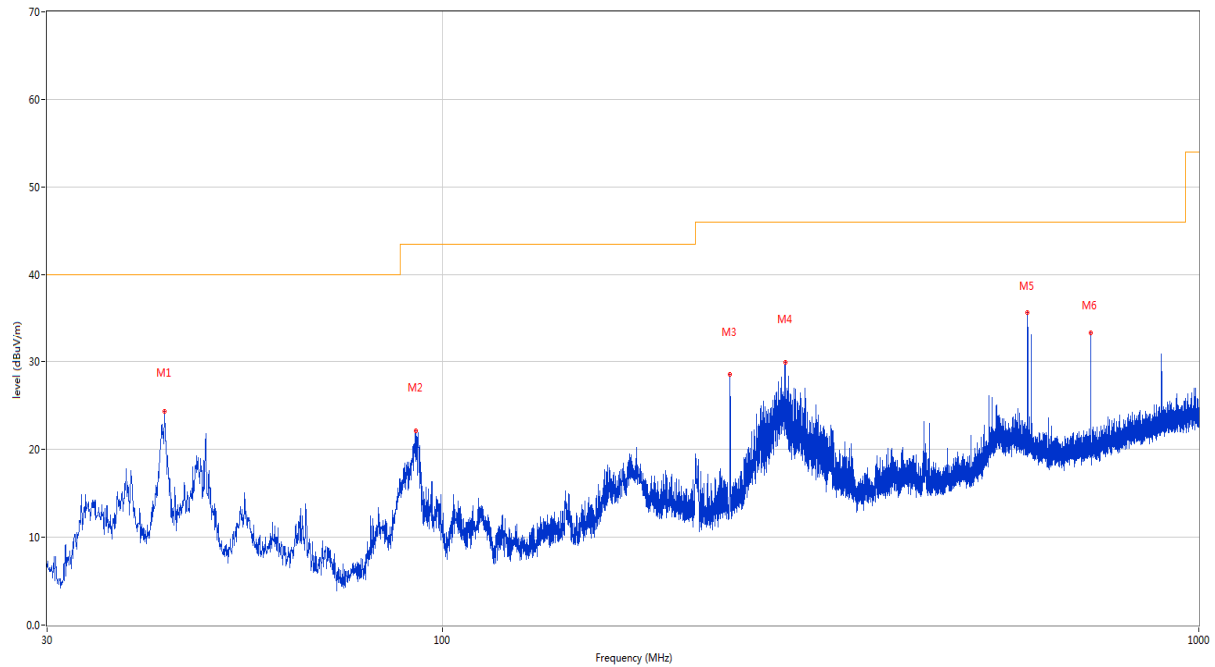


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1673.900	66.04	-17.76	74.0	-7.96	Peak	127.00	100	Horizontal	N/A
1**	1673.900	64.53	-17.76	54.0	10.53	AV	127.00	100	Horizontal	N/A
2	2406.500	59.61	-13.24	74.0	-14.39	Peak	28.00	100	Horizontal	N/A
2**	2406.500	55.21	-13.24	54.0	1.21	AV	28.00	100	Horizontal	N/A
3	2439.800	90.49	-13.40	74.0	16.49	Peak	269.10	100	Horizontal	N/A
3**	2439.800	87.03	-13.40	54.0	33.03	AV	269.10	100	Horizontal	N/A
4	2510.700	73.95	-12.79	74.0	-0.05	Peak	127.00	100	Horizontal	N/A
4**	2510.700	71.32	-12.79	54.0	17.32	AV	127.00	100	Horizontal	N/A
5	4864.200	44.10	-5.52	74.0	-29.90	Peak	297.90	100	Horizontal	Pass
5**	4864.200	34.04	-5.52	54.0	-19.96	AV	297.90	100	Horizontal	Pass
6	12621.850	51.42	20.89	74.0	-22.58	Peak	68.90	100	Horizontal	Pass
6**	12621.850	42.82	20.89	54.0	-11.18	AV	68.90	100	Horizontal	Pass

Test Data and Plots

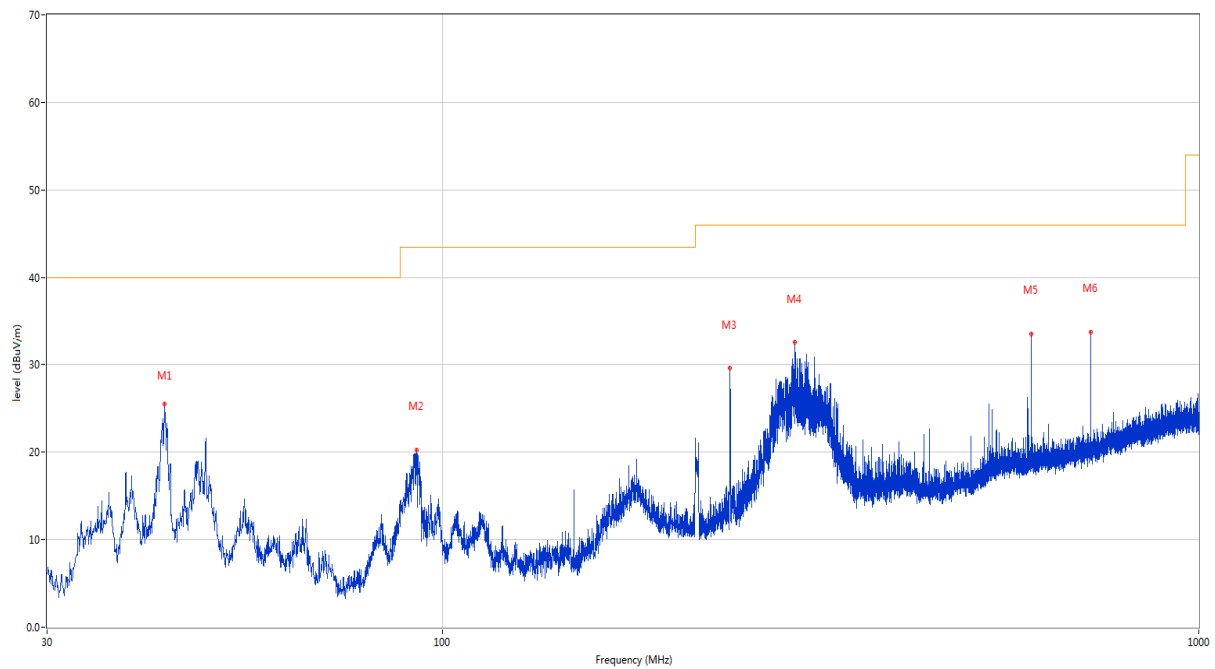
The USB Test Mode

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



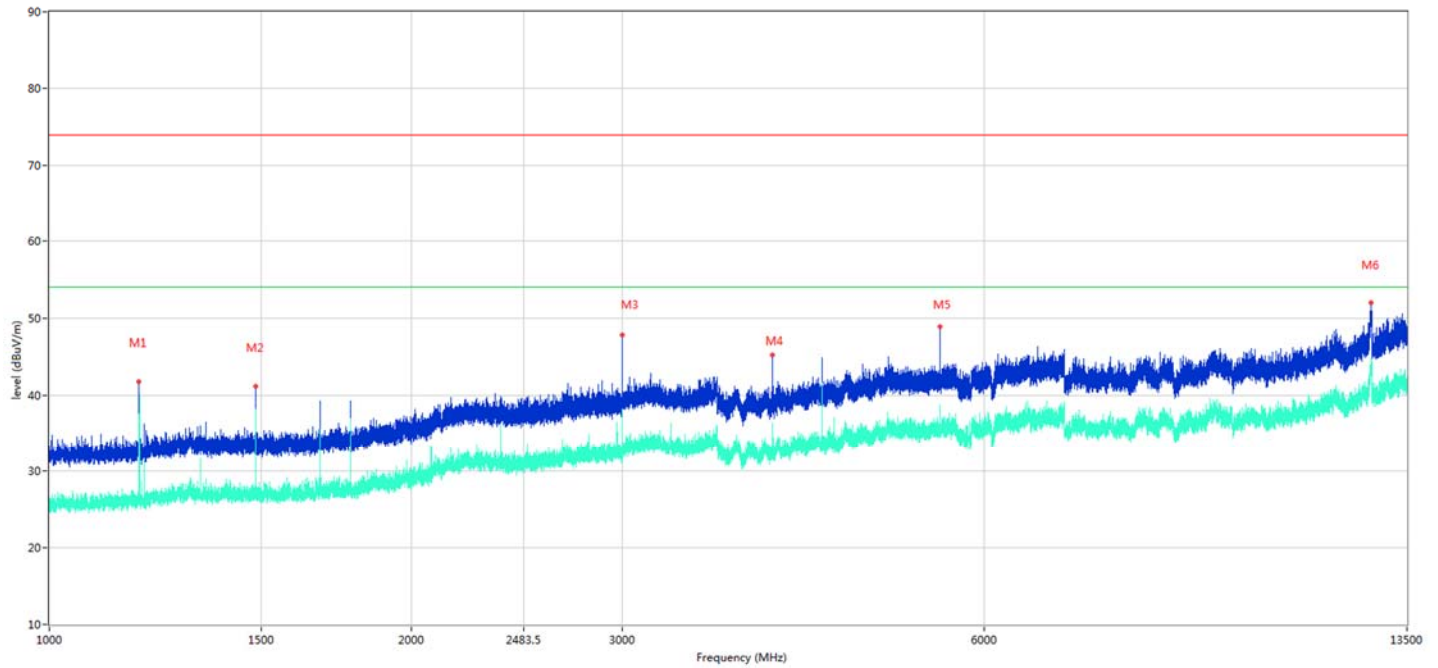
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.901	24.34	-23.39	40.0	-15.66	Peak	119.60	200	Vertical	Pass
2	92.129	22.06	-25.62	43.5	-21.44	Peak	198.90	100	Vertical	Pass
3	240.005	28.49	-23.06	46.0	-17.51	Peak	291.00	100	Vertical	Pass
4	283.703	29.91	-21.94	46.0	-16.09	Peak	10.50	200	Vertical	Pass
5	594.006	35.70	-14.68	46.0	-10.30	Peak	178.70	200	Vertical	Pass
6	720.010	33.42	-13.49	46.0	-12.58	Peak	0.00	200	Vertical	Pass

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



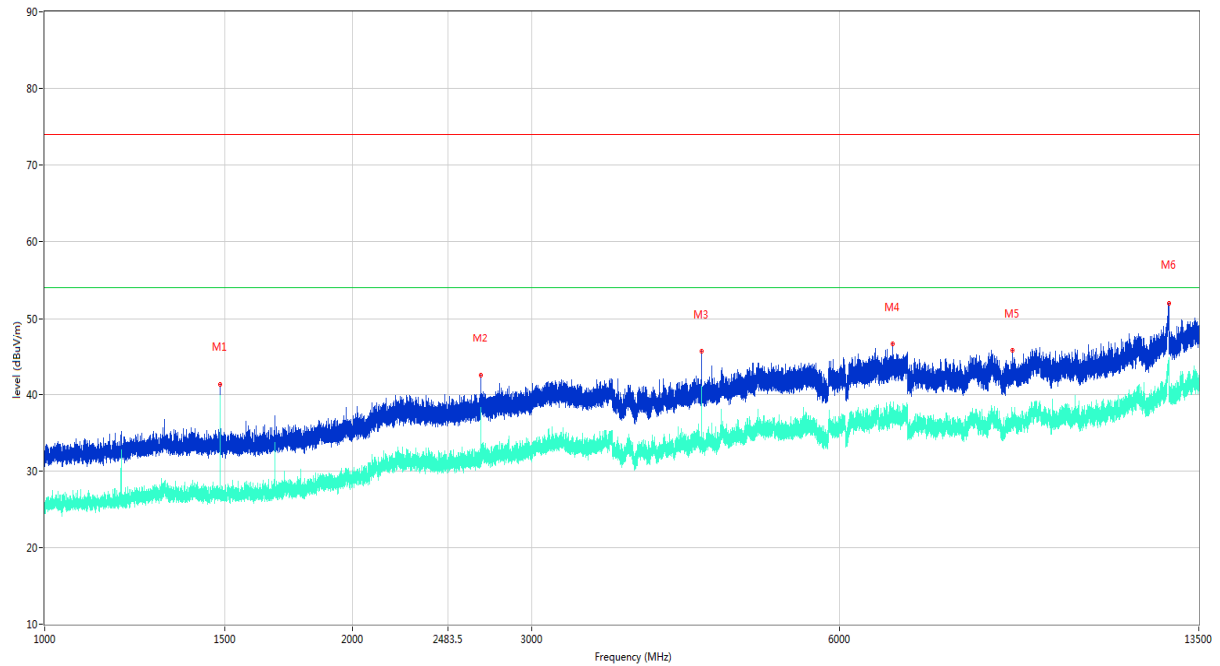
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.852	25.45	-23.39	40.0	-14.55	Peak	66.70	200	Horizontal	Pass
2	92.517	20.23	-25.56	43.5	-23.27	Peak	100.40	200	Horizontal	Pass
3	240.005	29.61	-23.06	46.0	-16.39	Peak	223.20	100	Horizontal	Pass
4	292.239	32.53	-21.64	46.0	-13.47	Peak	285.10	100	Horizontal	Pass
5	600.020	33.53	-14.57	46.0	-12.47	Peak	28.80	200	Horizontal	Pass
6	719.961	33.78	-13.47	46.0	-12.22	Peak	260.20	100	Horizontal	Pass

A.1.7 Test Antenna Vertical, 1 GHz – 13.5 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1187.800	41.78	-18.71	74.0	-32.22	Peak	155.60	100	Vertical	Pass
1**	1187.800	35.04	-18.71	54.0	-18.96	AV	155.60	100	Vertical	Pass
2	1485.100	41.20	-18.12	74.0	-32.80	Peak	150.70	100	Vertical	Pass
2**	1485.100	37.57	-18.12	54.0	-16.43	AV	150.70	100	Vertical	Pass
3	2999.900	47.78	-10.64	74.0	-26.22	Peak	141.60	100	Vertical	Pass
3**	2999.900	38.12	-10.64	54.0	-15.88	AV	141.60	100	Vertical	Pass
4	4000.000	45.26	-7.40	74.0	-28.74	Peak	211.20	100	Vertical	Pass
4**	4000.000	34.17	-7.40	54.0	-19.83	AV	211.20	100	Vertical	Pass
5	5513.000	48.80	-5.59	74.0	-25.20	Peak	66.10	100	Vertical	Pass
5**	5513.000	36.28	-5.59	54.0	-17.72	AV	66.10	100	Vertical	Pass
6	12606.250	52.00	21.74	74.0	-22.00	Peak	13.70	100	Vertical	Pass
6**	12606.250	43.11	21.74	54.0	-10.89	AV	13.70	100	Vertical	Pass

A.1.8 Test Antenna Horizontal, 1 GHz – 13.5 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1484.800	41.24	-18.13	74.0	-32.76	Peak	46.40	100	Horizontal	Pass
1**	1484.800	38.07	-18.13	54.0	-15.93	AV	46.40	100	Horizontal	Pass
2	2672.800	42.43	-12.15	74.0	-31.57	Peak	84.80	100	Horizontal	Pass
2**	2672.800	32.30	-12.15	54.0	-21.70	AV	84.80	100	Horizontal	Pass
3	4400.000	45.58	-6.51	74.0	-28.42	Peak	249.10	100	Horizontal	Pass
3**	4400.000	39.63	-6.51	54.0	-14.37	AV	249.10	100	Horizontal	Pass
4	6764.000	46.52	-4.49	74.0	-27.48	Peak	236.10	100	Horizontal	Pass
4**	6764.000	37.02	-4.49	54.0	-16.98	AV	236.10	100	Horizontal	Pass
5	8866.800	45.71	15.92	74.0	-28.29	Peak	247.00	100	Horizontal	Pass
5**	8866.800	36.34	15.92	54.0	-17.66	AV	247.00	100	Horizontal	Pass
6	12618.925	52.01	21.64	74.0	-21.99	Peak	237.60	100	Horizontal	Pass
6**	12618.925	43.30	21.64	54.0	-10.70	AV	237.60	100	Horizontal	Pass

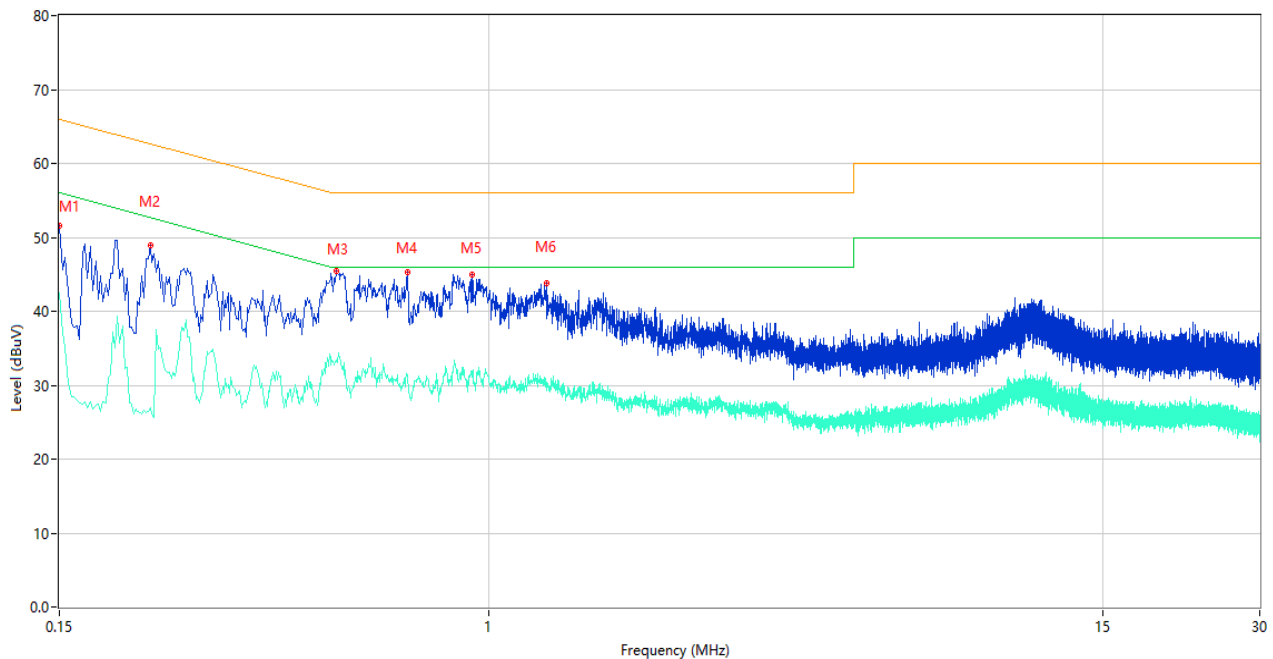
A.2 Conducted Emission

Test Data and Plots

The GSM 850 MHz Test Mode

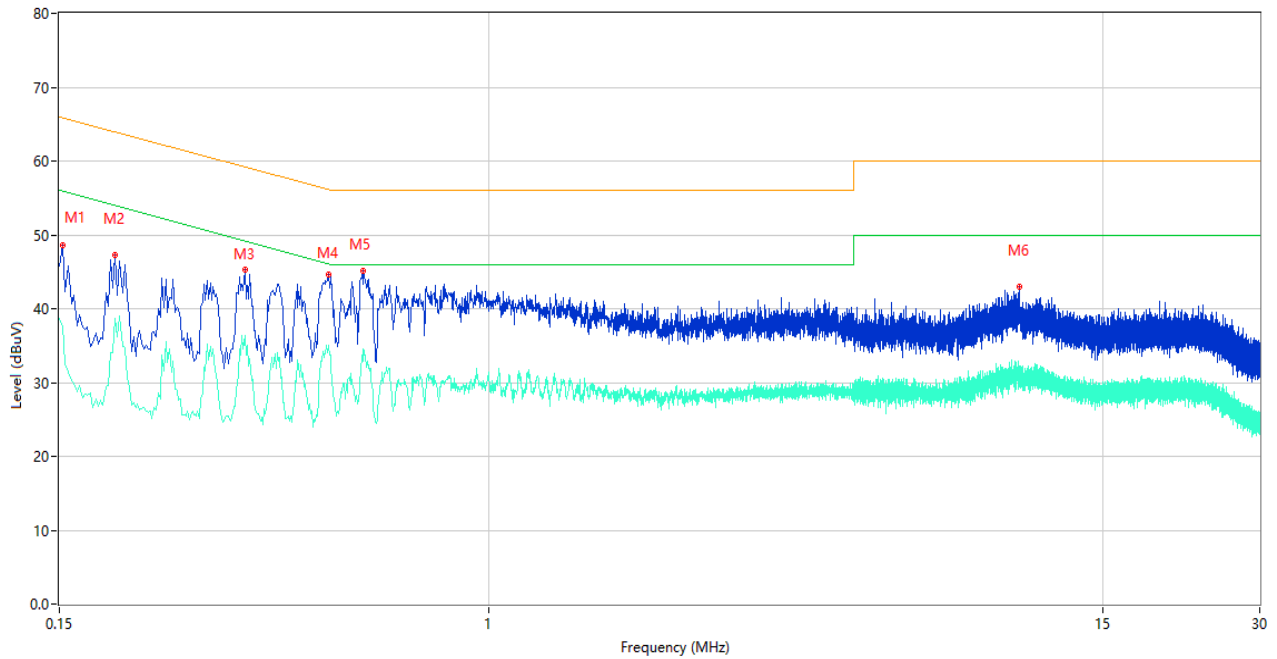
Note: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst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

A.2.1 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.150	51.50	10.41	66.00	-14.50	Peak	L	Pass
1**	0.150	42.41	10.41	56.00	-13.59	AV	L	Pass
2	0.224	48.90	10.37	62.67	-13.77	Peak	L	Pass
2**	0.224	26.97	10.37	52.67	-25.70	AV	L	Pass
3	0.510	45.45	10.30	56.00	-10.55	Peak	L	Pass
3**	0.510	33.33	10.30	46.00	-12.67	AV	L	Pass
4	0.696	45.33	10.26	56.00	-10.67	Peak	L	Pass
4**	0.696	31.45	10.26	46.00	-14.55	AV	L	Pass
5	0.928	44.94	10.24	56.00	-11.06	Peak	L	Pass
5**	0.928	31.88	10.24	46.00	-14.12	AV	L	Pass
6	1.286	43.86	10.25	56.00	-12.14	Peak	L	Pass
6**	1.286	30.35	10.25	46.00	-15.65	AV	L	Pass

A.2.2 N Phase

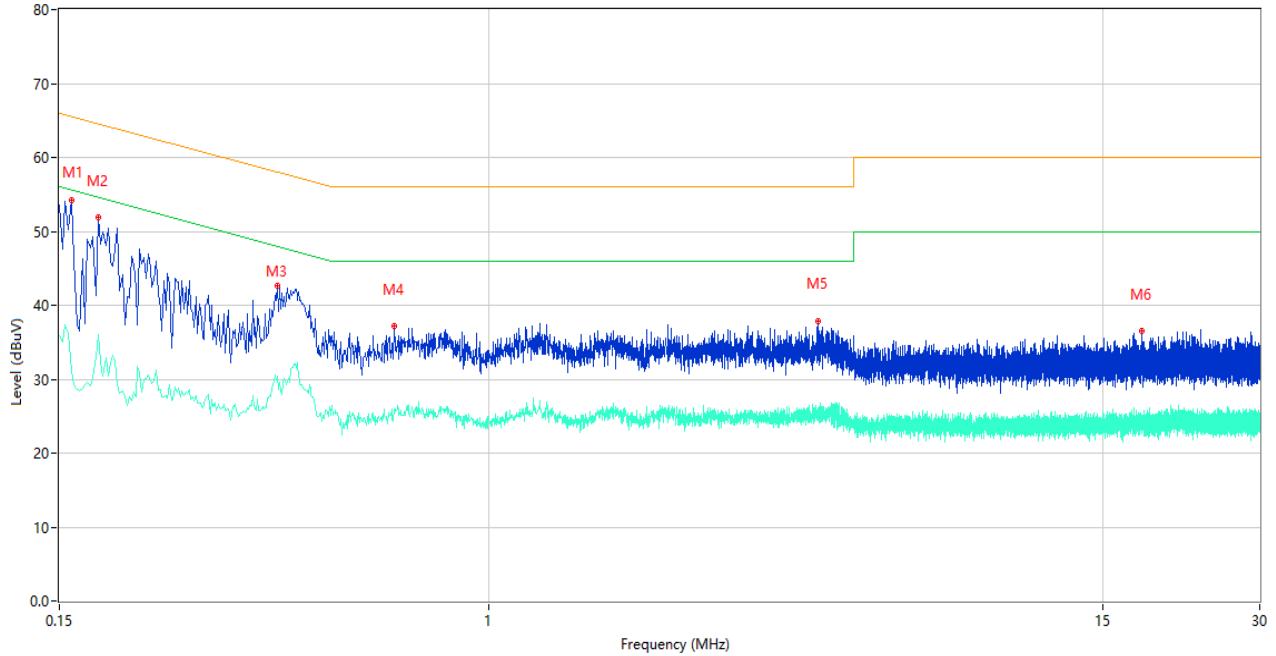


No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.152	48.52	10.41	65.89	-17.37	Peak	N	Pass
1**	0.152	37.68	10.41	55.89	-18.21	AV	N	Pass
2	0.192	47.26	10.38	63.95	-16.69	Peak	N	Pass
2**	0.192	38.75	10.38	53.95	-15.20	AV	N	Pass
3	0.340	45.30	10.32	59.20	-13.90	Peak	N	Pass
3**	0.340	36.30	10.32	49.20	-12.90	AV	N	Pass
4	0.492	44.57	10.29	56.13	-11.56	Peak	N	Pass
4**	0.492	34.98	10.29	46.13	-11.15	AV	N	Pass
5	0.572	45.10	10.27	56.00	-10.90	Peak	N	Pass
5**	0.572	34.53	10.27	46.00	-11.47	AV	N	Pass
6	10.404	42.96	10.38	60.00	-17.04	Peak	N	Pass
6**	10.404	30.68	10.38	50.00	-19.32	AV	N	Pass

Test Data and Plots

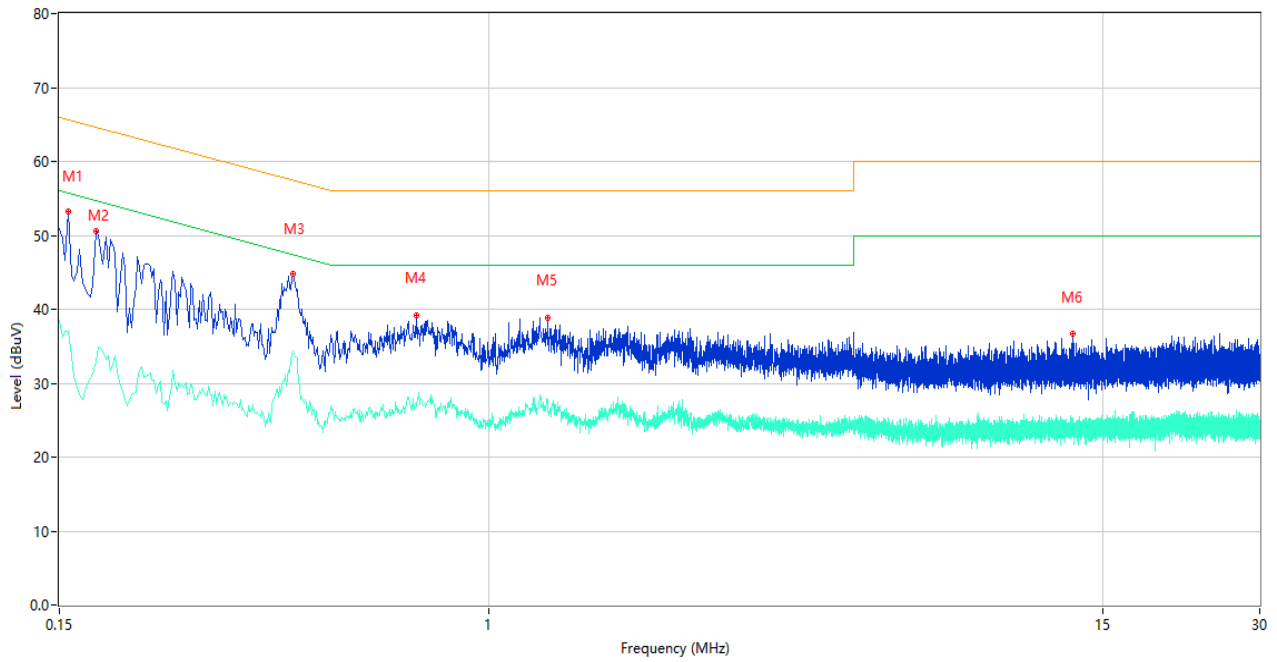
The USB Test Mode

A.2.3 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.158	54.21	10.40	65.57	-11.36	Peak	L	Pass
1**	0.158	31.19	10.40	55.57	-24.38	AV	L	Pass
2	0.178	51.86	10.39	64.58	-12.72	Peak	L	Pass
2**	0.178	35.99	10.39	54.58	-18.59	AV	L	Pass
3	0.392	42.58	10.30	58.02	-15.44	Peak	L	Pass
3**	0.392	30.46	10.30	48.02	-17.56	AV	L	Pass
4	0.658	37.27	10.28	56.00	-18.73	Peak	L	Pass
4**	0.658	25.92	10.28	46.00	-20.08	AV	L	Pass
5	4.264	37.82	10.30	56.00	-18.18	Peak	L	Pass
5**	4.264	26.03	10.30	46.00	-19.97	AV	L	Pass
6	17.824	36.50	10.49	60.00	-23.50	Peak	L	Pass
6**	17.824	24.94	10.49	50.00	-25.06	AV	L	Pass

A.2.4 N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.150	50.94	10.41	66.00	-15.06	Peak	N	Pass
1**	0.150	38.48	10.41	56.00	-17.52	AV	N	Pass
2	0.176	50.56	10.39	64.67	-14.11	Peak	N	Pass
2**	0.176	32.82	10.39	54.67	-21.85	AV	N	Pass
3	0.420	44.82	10.31	57.45	-12.63	Peak	N	Pass
3**	0.420	34.37	10.31	47.45	-13.08	AV	N	Pass
4	0.724	39.20	10.27	56.00	-16.80	Peak	N	Pass
4**	0.724	27.32	10.27	46.00	-18.68	AV	N	Pass
5	1.294	38.91	10.25	56.00	-17.09	Peak	N	Pass
5**	1.294	27.82	10.25	46.00	-18.18	AV	N	Pass
6	13.154	36.64	10.39	60.00	-23.36	Peak	N	Pass
6**	13.154	25.12	10.39	50.00	-24.88	AV	N	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ19A0431-AE-1.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ19A0431-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ19A0431-AI.PDF”.

--END OF REPORT--