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EMC

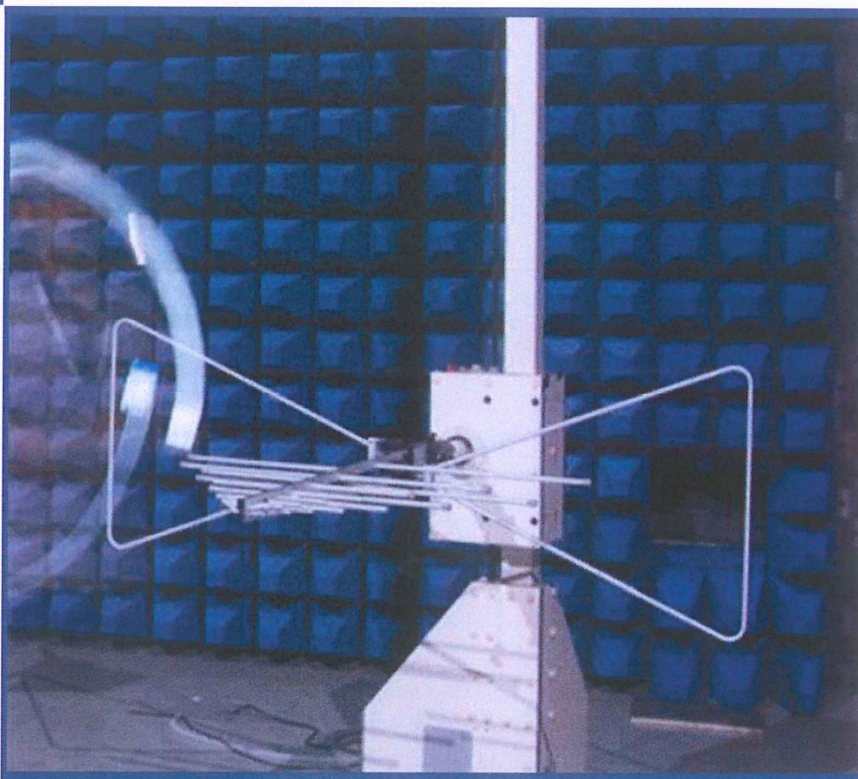
TEST REPORT

ISSUED BY  
Shenzhen BALUN Technology Co., Ltd.



FOR  
**Mobile Phone**

ISSUED TO  
Realme Chongqing Mobile Telecommunications Corp., Ltd.  
No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China



Tested by: Xia Long  
Xia Long  
Date: Jan. 16, 2020

Approved by: Wei Yanquan  
Wei Yanquan  
(Chief Engineer)  
Date: Jan. 16, 2020



Report No.: BL-SZ19C0360-401  
EUT Name: Mobile Phone  
Model Name: RMX2001  
Brand Name: realme  
Test Standard: 47 CFR Part 15 Subpart B  
FCC ID: 2AUYFRMX2001

Test Conclusion: Pass  
Test Date: Dec. 13, 2019 ~ Dec. 25, 2019  
Date of Issue: Jan. 16, 2020

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**Revision History**

<u>Version</u>	<u>Issue Date</u>	<u>Revisions Content</u>
<u>Rev. 01</u>	<u>Jan. 16, 2020</u>	<u>Initial Issue</u>

**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 .....	8
3	SUMMARY OF TEST RESULTS .....	9
3.1	Test Standards .....	9
3.2	Verdict .....	9
3.3	Test Uncertainty .....	9
4	GENERAL TEST CONFIGURATIONS .....	10
4.1	Test Environments .....	10
4.2	Test Equipment List .....	10
4.3	Test Enclosure list .....	12
4.4	Test Configurations .....	13
4.5	Test Setups .....	15
4.6	Test Conditions .....	17
5	TEST ITEMS .....	18
5.1	Emission Tests .....	18
ANNEX A	TEST RESULTS .....	20

A.1 Radiated Emission ..... 20

A.2 Conducted Emission ..... 28

ANNEX B TEST SETUP PHOTOS ..... 32

ANNEX C EUT EXTERNAL PHOTOS ..... 32

ANNEX D EUT INTERNAL PHOTOS ..... 32

# 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	<p>The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1.</p> <p>The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.</p> <p>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.</p> <p>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.</p>
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.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China

### 2.2 Manufacturer Information

Manufacturer	Realme Chongqing Mobile Telecommunications Corp., Ltd.
Address	No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China

### 2.3 Factory Information

Factory	Realme Chongqing Mobile Telecommunications Corp., Ltd.
Address	No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China

### 2.4 General Description for Equipment under Test (EUT)

EUT Name	Mobile Phone
Model Name Under Test	RMX2001
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	11
Software Version	Color OS 7.0
Dimensions (Approx.)	162.1*74.8*9.6mm
Weight (Approx.)	191g(with battery)

## 2.5 Ancillary Equipment

Ancillary Equipment 1	Li-Polymer Battery 1	
	Brand Name	realme
	Model No.	BLP757
	Serial No.	N/A
	Capacitance	Rated: 4210mAh/16.29Wh Typical: 4300mAh/16.64Wh
	Rated Voltage	3.87 V
	Limited Voltage	4.45 V
	Manufacturer	Sunwoda Electronic Co., Ltd.
Ancillary Equipment 2	Li-Polymer Battery (alternative)2	
	Brand Name	realme
	Model No.	BLP757
	Serial No.	N/A
	Capacitance	Rated: 4210mAh/16.29Wh Typical: 4300mAh/16.64Wh
	Rated Voltage	3.87 V
	Limited Voltage	4.45 V
	Manufacturer	Dongguan NVT Technology Co., Ltd.
Ancillary Equipment 3	Li-Polymer Battery (alternative)3	
	Brand Name	realme
	Model No.	BLP757
	Serial No.	N/A
	Capacitance	Rated: 4210mAh/16.29Wh Typical: 4300mAh/16.64Wh
	Rated Voltage	3.87 V
	Limited Voltage	4.45 V
	Manufacturer	TWS TECHNOLOGY (GUANGZHOU) LIMITED
Ancillary Equipment 4	Li-Polymer Battery (alternative)4	
	Brand Name	realme
	Model No.	BLP757
	Serial No.	N/A
	Capacitance	Rated: 4210mAh/16.29Wh Typical: 4300mAh/16.64Wh
	Rated Voltage	3.87 V
	Limited Voltage	4.45 V
	Manufacturer	SUNWODA ELECTRONIC INDIA PRIVATE LIMITED
Ancillary Equipment 5	Li-Polymer Battery (alternative)5	
	Brand Name	realme
	Model No.	BLP757
	Serial No.	N/A

	Capacitance	Rated: 4210mAh/16.29Wh Typical: 4300mAh/16.64Wh
	Rated Voltage	3.87 V
	Limited Voltage	4.45 V
	Manufacturer	Navitasys India Private Limited
Ancillary Equipment 6	Li-Polymer Battery (alternative)6	
	Brand Name	realme
	Model No.	BLP757
	Serial No.	N/A
	Capacitance	Rated: 4210mAh/16.29Wh Typical: 4300mAh/16.64Wh
	Rated Voltage	3.87 V
	Limited Voltage	4.45 V
	Manufacturer	PT.BATTERY TECHNOLOGY INDONESIA
Ancillary Equipment 7	Power Supply Unit 1	
	Brand Name	realme
	Model No.	VC56HAUH
	Serial No.	N/A
	Rated Input	100-240VAC 50-60Hz 1.2A
	Rated Output	5.0VDC 2A or 5.0VDC 6A(US Plug)
Ancillary Equipment 8	Power Supply Unit (alternative) 2	
	Brand Name	realme
	Model No.	VC56JAUH
	Serial No.	N/A
	Rated Input	100-240VAC 50-60Hz 1.2A
	Rated Output	5.0VDC 2A or 5.0VDC 6A(US Plug)
Ancillary Equipment 9	Power Supply Unit (alternative) 3	
	Brand Name	realme
	Model No.	VC56GAUH
	Serial No.	N/A
	Rated Input	100-240VAC 50-60Hz 1.2A
	Rated Output	5.0VDC 2A or 5.0VDC 6A(US Plug)
Ancillary Equipment 10	USB Cable	
	Model No.	DL129
	Length (Approx.)	1.0 m
<p>Note 1: Letter in () means plug type.</p> <p>Note 2: All adapters are tested, only the worst data of VC56HAUH (US Plug) shown in this report.</p> <p>Note 3: All batteries are tested, only the worst data of BLP757 (Sunwoda Electronic Co., Ltd.) shown in this report.</p>		

## 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 38/40/41 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) Band 1/2/3/4 SRD, GPS, GLONASS, BDS, Galileo, SBAS, FM, 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 (10 m)						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2019.07.04	2020.07.03	<input type="checkbox"/>
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9168	9168-0883	2018.05.11	2020.05.10	<input type="checkbox"/>
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60*7.35m	N/A	2018.08.08	2021.08.07	<input type="checkbox"/>

Radiated Emission Test For Frequency Below 1 GHz (3 m)						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2019.10.29	2020.10.28	<input checked="" type="checkbox"/>
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	9163-624	2018.08.22	2020.08.21	<input checked="" type="checkbox"/>
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	9120D-1600	2018.07.12	2020.07.11	<input type="checkbox"/>
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2020.02.20	<input checked="" type="checkbox"/>

Radiated Emission Test For Frequency 1 GHz-18 GHz						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2019.10.29	2020.10.28	<input checked="" type="checkbox"/>
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	9163-624	2017.07.22	2019.07.21	<input type="checkbox"/>
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	9120D-1148	2018.07.11	2020.07.10	<input checked="" type="checkbox"/>
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2020.02.20	<input checked="" type="checkbox"/>

Radiated Emission Test For Frequency Above 18 GHz						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE & SCHWARZ	FSV40	101544	2019.02.15	2020.02.14	<input checked="" type="checkbox"/>

Radiated Emission Test For Frequency Above 18 GHz						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
Test Antenna-Horn	A-INFOMW	LB-180400KF	J211060273	2019.01.05	2020.01.04	<input checked="" type="checkbox"/>
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2020.02.20	<input checked="" type="checkbox"/>

Conducted disturbance Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2019.06.13	2020.06.12	<input checked="" type="checkbox"/>
LISN	SCHWARZBECK	NSLK 8127	8127-687	2019.07.04	2020.07.03	<input checked="" type="checkbox"/>
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.4m*3.1m*2.8m	N/A	2018.08.16	2021.08.15	<input checked="" type="checkbox"/>

### 4.3 Test Enclosure list

Description	Manufacturer	Model	Serial No.	Length	Description	Use
PC	Dell	015K3N	N/A	N/A	Special Handled	<input type="checkbox"/>
Laptop	Apple	A1465	N/A	N/A	N/A	<input checked="" type="checkbox"/>
Printer	HP	DESKJET 1000	N/A	N/A	N/A	<input type="checkbox"/>
Keyboard	Logitech	Y-BP62a	N/A	N/A	N/A	<input type="checkbox"/>
Mouse	Logitech	M100	N/A	N/A	N/A	<input type="checkbox"/>
USB disk	Kingston	N/A	N/A	N/A	N/A	<input type="checkbox"/>
TF Card	Kingston	N/A	N/A	N/A	N/A	<input checked="" type="checkbox"/>
VGA Cable	N/A	N/A	N/A	1.5 m	Shielded with core	<input type="checkbox"/>
HDMI Cable	N/A	N/A	N/A	1.5 m	Shielded with core	<input type="checkbox"/>
DVI Cable	N/A	N/A	N/A	1.5 m	Shielded with core	<input type="checkbox"/>
Coaxial video cable	N/A	N/A	N/A	2.0 m	Shielded with core	<input type="checkbox"/>
iPhone	Apple	A1586	N/A	N/A	N/A	<input type="checkbox"/>
Phone	MI	M4	N/A	N/A	N/A	<input type="checkbox"/>
Bluetooth Earphone	SAMSUNG	Gear Circle	N/A	N/A	N/A	<input checked="" type="checkbox"/>
Wireless Communications Test Set	R&S	CMW500	142028	N/A	Cal. Due 2019.06.14	<input checked="" type="checkbox"/>
WIFI Router	TP-LINK	TL-WDR7500	N/A	N/A	N/A	<input checked="" type="checkbox"/>
Earphone	N/A	OPPO	N/A	1.1 m	N/A	<input checked="" type="checkbox"/>
Car Battery	Camel	55530	N/A	N/A	12 V/55 Ah	<input type="checkbox"/>
Artificial load	N/A	N/A	N/A	N/A	2.5 Ω/100 W	<input type="checkbox"/>
Artificial load	N/A	N/A	N/A	N/A	5 Ω/100 W	<input type="checkbox"/>
Electronic Load	ITECH	IT8511	N/A	N/A	N/A	<input type="checkbox"/>
USB Cable	N/A	N/A	N/A	1.5 m	Shielded with core	<input type="checkbox"/>
DC Power Supply	ITECH	IT6863A	60001401068 7210006	N/A	N/A	<input type="checkbox"/>
LCD Monitor	SAMSUNG	UA32C4000P	N/A	N/A	N/A	<input type="checkbox"/>
LCD Monitor	Dell	U241HB	N/A	N/A	N/A	<input type="checkbox"/>
RJ45 Cable	N/A	N/A	N/A	1.5 m	Shielded with core	<input type="checkbox"/>

## 4.4 Test Configurations

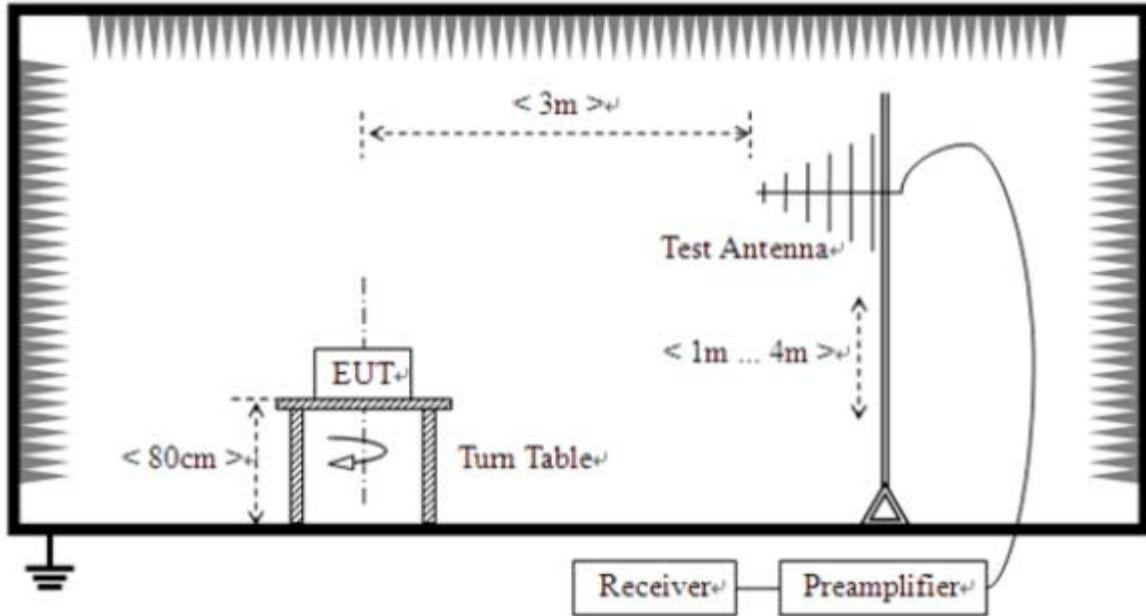
Test Configurations (TC) No.	Description
Traffic Test Mode	
TC01	<u>The GSM 850 MHz Test Mode</u> GSM 850 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI Link (2.4G) + GPS RX
TC02	<u>The EDGE 850 MHz Test Mode</u> EDGE 850 Link + Adapter + USB Cable + Battery + Earphone + BT Link + WIFI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

	+ GLONASS RX
TC15	<u>The NFC Test Mode</u> EUT + Adapter + USB Cable + Battery + NFC
TC16	<u>The Idle Test Mode</u> GSM 850(Idle) + Adapter + Battery + Earphone + USB Cable + NFC RX
Amusement Test Mode	
TC17	<u>The Camera Test Mode</u> EUT + Adapter + USB Cable + Battery + Earphone + TF Card
TC18	<u>The Video Play Test Mode</u> EUT + Adapter + USB Cable + Battery + Earphone + TF Card
TC19	<u>The USB Test Mode</u> EUT + USB Cable + Battery + Earphone + Laptop+ TF Card



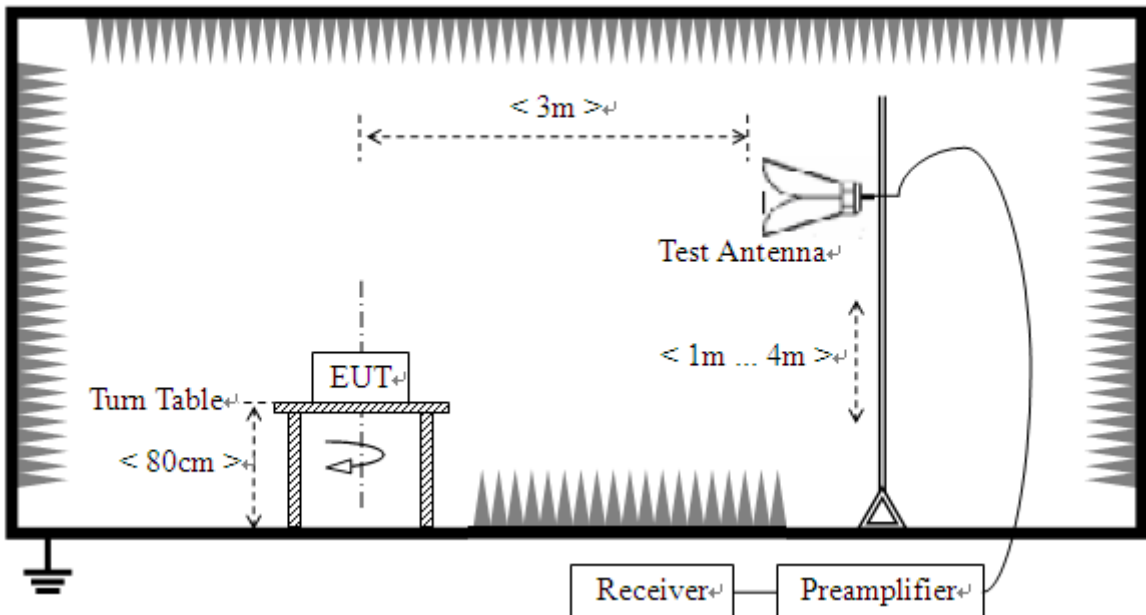
## 4.5 Test Setups

### Test Setup 1



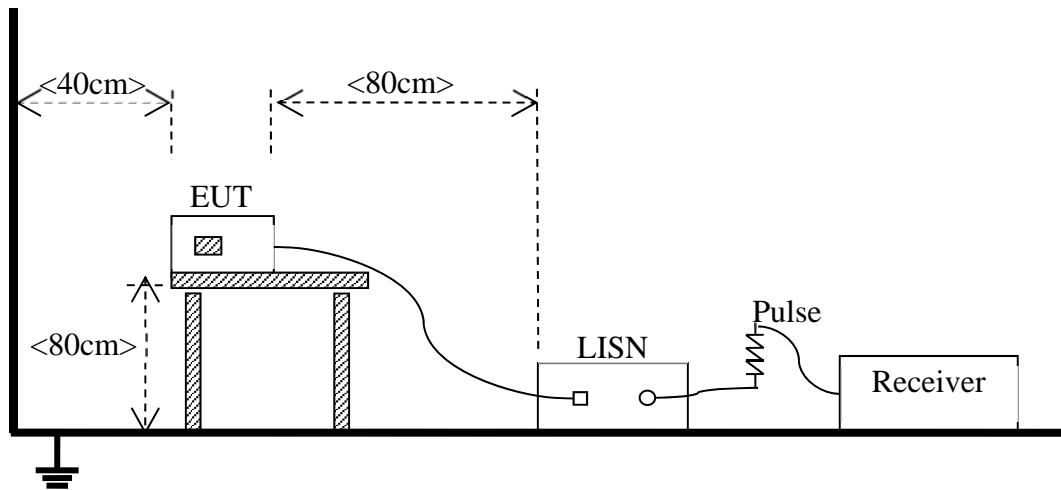
(For Radiated Emission Test (30 MHz-1 GHz))

### 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~TC19 <sup>Note</sup>
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 3
	Test Configuration	TC01~TC19 <sup>Note</sup>

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 ( $\text{dB}\mu\text{V/m}$ )	Field Strength ( $\text{dB}\mu\text{V/m}$ )	Field Strength ( $\mu\text{V/m}$ )	Field Strength ( $\text{dB}\mu\text{V/m}$ )
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 ( $\text{dB}\mu\text{V/m}$ ) =  $20 \cdot \log$  [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 ( $\text{dB}\mu\text{V/m}$ ) = Reading ( $\text{dB}\mu\text{V}$ ) + Factor ( $\text{dB/m}$ )

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

2. Factor ( $\text{dB/m}$ ) = Antenna Factor ( $\text{dB/m}$ ) + Cable Factor ( $\text{dB}$ ) – Amplifier Gain ( $\text{dB}$ )

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:

$$1. \text{ Results (dBuV/m)} = \text{Reading (dBuV)} + \text{Factor (dB/m)}$$

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

$$2. \text{ Factor} = \text{Insertion loss} + \text{Cable loss}$$

$$3. \text{ Over limit} = \text{Results} - \text{Limit.}$$

# 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.

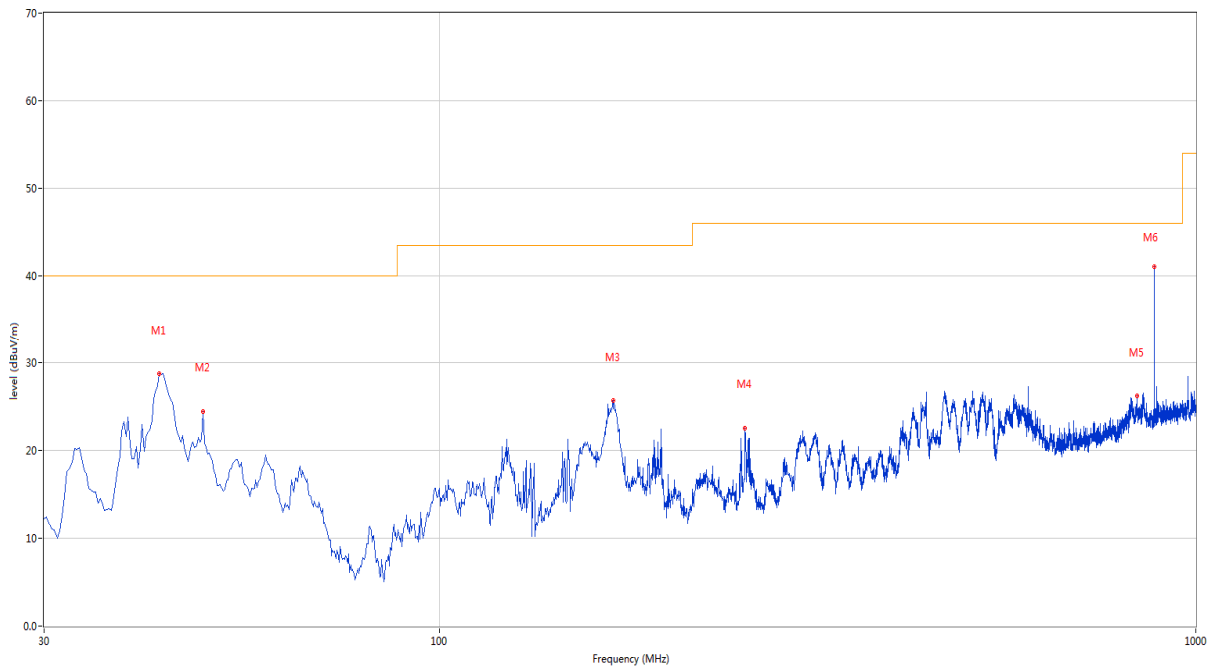
Note 3: This frequency which near 850 MHz with circle should be ignored because they are MS and SS carrier frequency, the marked spikes near 2400 MHz with circle should be ignored because they are Bluetooth or WIFI carrier frequency.

Note 4: The spurious from 18G-40G is noise only, do not show on the report.

### Test Data and Plots

#### The GSM 850 MHz Test Mode

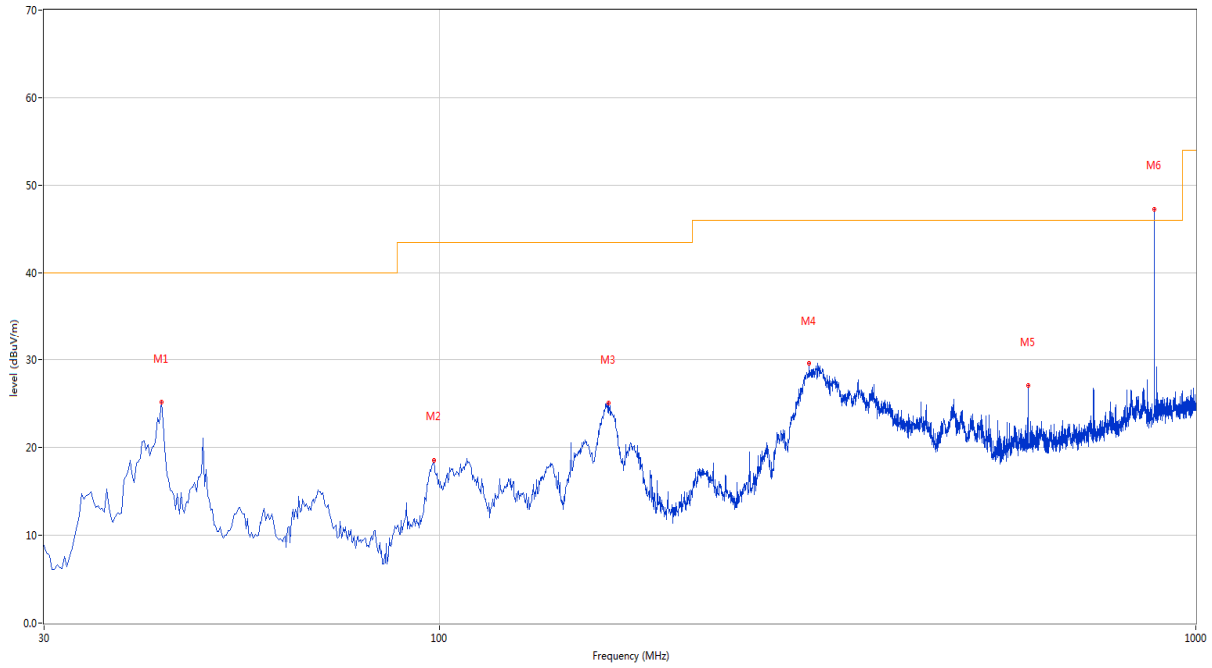
##### A.1.1 Test Antenna Vertical, 30 MHz – 1 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.610	28.74	-23.23	40.0	-11.26	Peak	177.80	100	Vertical	Pass
2	48.672	24.44	-22.44	40.0	-15.56	Peak	160.60	100	Vertical	Pass
3	169.922	25.66	-26.77	43.5	-17.84	Peak	143.10	100	Vertical	Pass
4	253.585	22.55	-22.38	46.0	-23.45	Peak	331.80	100	Vertical	Pass
5	836.070	26.23	-8.01	46.0	-19.77	Peak	0.60	100	Vertical	N/A
6	881.660	41.06	-10.33	46.0	-4.94	Peak	247.90	100	Vertical	N/A

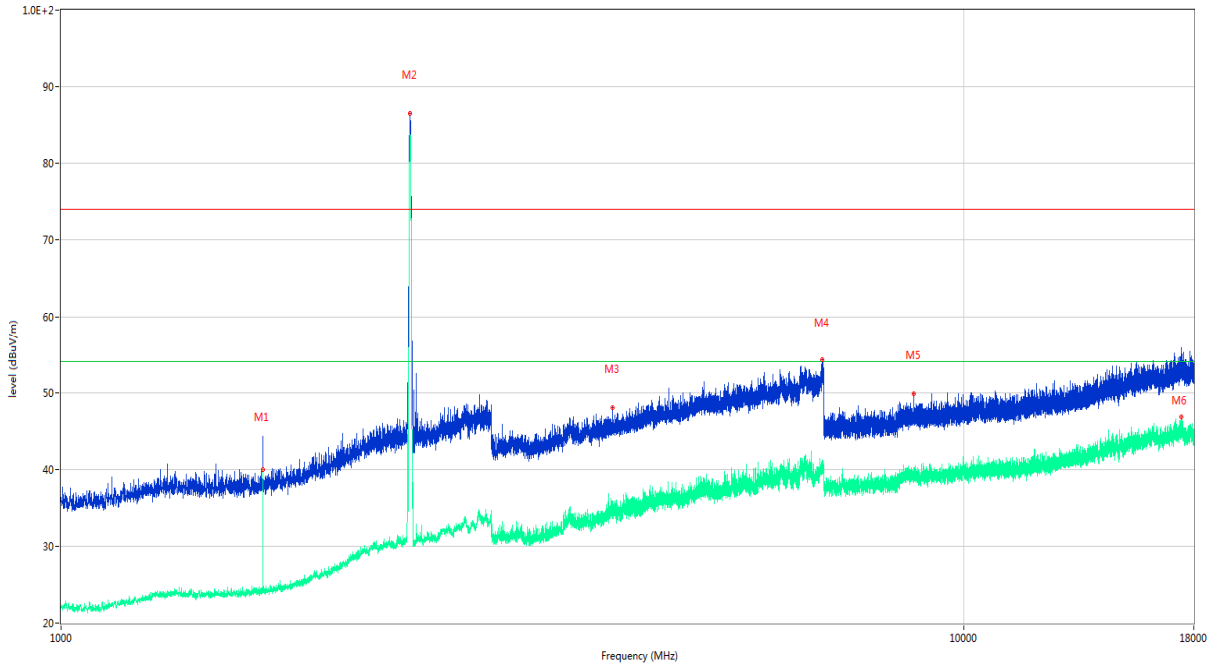


A.1.2 Test Antenna Horizontal, 30 MHz – 1 GHz



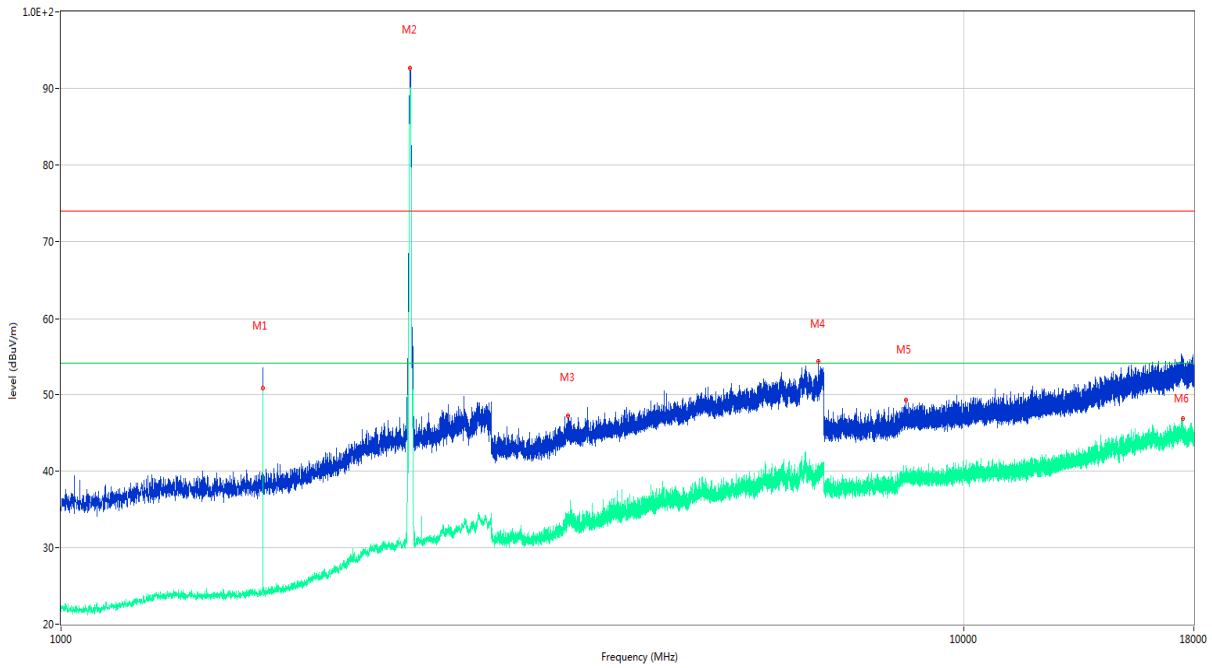
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.852	25.14	-23.19	40.0	-14.86	Peak	0.00	200	Horizontal	Pass
2	98.385	18.56	-24.62	43.5	-24.94	Peak	268.90	200	Horizontal	Pass
3	167.498	25.05	-27.19	43.5	-18.45	Peak	0.00	200	Horizontal	Pass
4	308.147	29.53	-21.68	46.0	-16.47	Peak	43.70	100	Horizontal	Pass
5	600.118	27.02	-14.40	46.0	-18.98	Peak	79.50	200	Horizontal	Pass
6	881.660	47.30	-10.33	46.0	1.30	Peak	288.30	100	Horizontal	N/A

A.1.3 Test Antenna Vertical, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1673.500	43.61	-16.98	74.0	-30.39	Peak	86.00	100	Vertical	Pass
1**	1673.500	40.01	-16.98	54.0	-13.99	AV	86.00	100	Vertical	Pass
2	2436.000	86.56	-11.50	74.0	12.56	Peak	289.00	100	Vertical	N/A
2**	2436.000	83.64	-11.50	54.0	29.64	AV	289.00	100	Vertical	N/A
3	4088.500	48.03	-5.24	74.0	-25.97	Peak	12.00	100	Vertical	Pass
3**	4088.500	35.90	-5.24	54.0	-18.10	AV	12.00	100	Vertical	Pass
4	6976.000	54.28	1.47	74.0	-19.72	Peak	0.00	100	Vertical	Pass
4**	6976.000	40.49	1.47	54.0	-13.51	AV	0.00	100	Vertical	Pass
5	8802.500	49.88	-0.73	74.0	-24.12	Peak	69.00	100	Vertical	Pass
5**	8802.500	38.26	-0.73	54.0	-15.74	AV	69.00	100	Vertical	Pass
6	17430.499	54.64	4.53	74.0	-19.36	Peak	210.00	100	Vertical	Pass
6**	17430.499	46.82	4.53	54.0	-7.18	AV	210.00	100	Vertical	Pass

## A.1.4 Test Antenna Horizontal, 1 GHz – 18 GHz

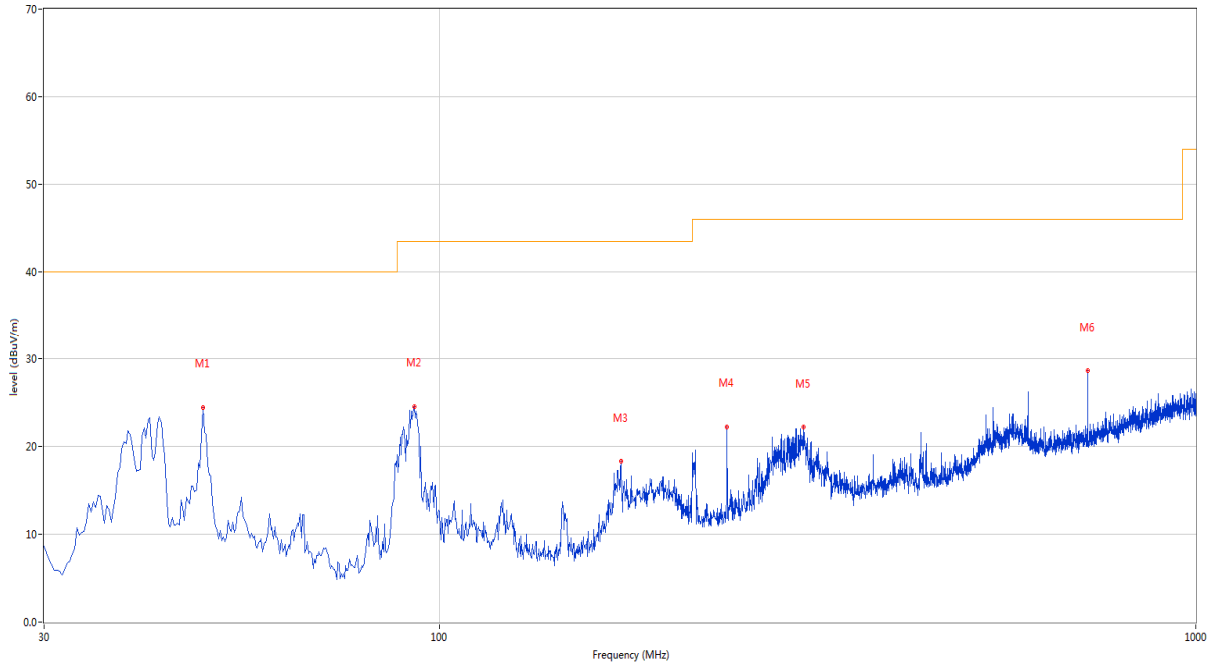


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1673.500	51.16	-16.98	74.0	-22.84	Peak	136.00	100	Horizontal	Pass
1**	1673.500	48.36	-16.98	54.0	-5.64	AV	136.00	100	Horizontal	Pass
2	2438.000	92.06	-11.68	74.0	18.06	Peak	21.00	100	Horizontal	N/A
2**	2438.000	89.17	-11.68	54.0	35.17	AV	21.00	100	Horizontal	N/A
3	3642.500	47.21	-6.42	74.0	-26.79	Peak	360.00	100	Horizontal	Pass
3**	3642.500	33.12	-6.42	54.0	-20.88	AV	360.00	100	Horizontal	Pass
4	6899.500	54.33	-0.96	74.0	-19.67	Peak	333.00	100	Horizontal	Pass
4**	6899.500	39.53	-0.96	54.0	-14.47	AV	333.00	100	Horizontal	Pass
5	8630.000	49.19	-1.42	74.0	-24.81	Peak	147.00	100	Horizontal	Pass
5**	8630.000	39.14	-1.42	54.0	-14.86	AV	147.00	100	Horizontal	Pass
6	17513.001	52.08	3.10	74.0	-21.92	Peak	216.00	100	Horizontal	Pass
6**	17513.001	46.77	3.10	54.0	-7.23	AV	216.00	100	Horizontal	Pass

Test Data and Plots

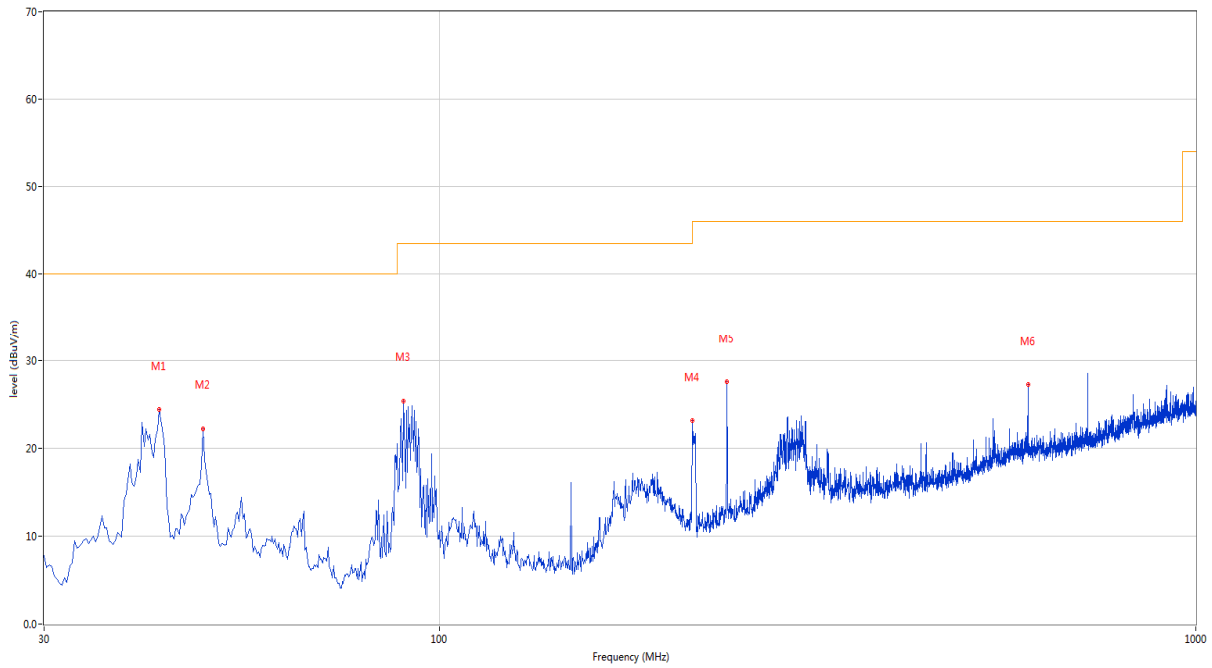
The USB Test Mode

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



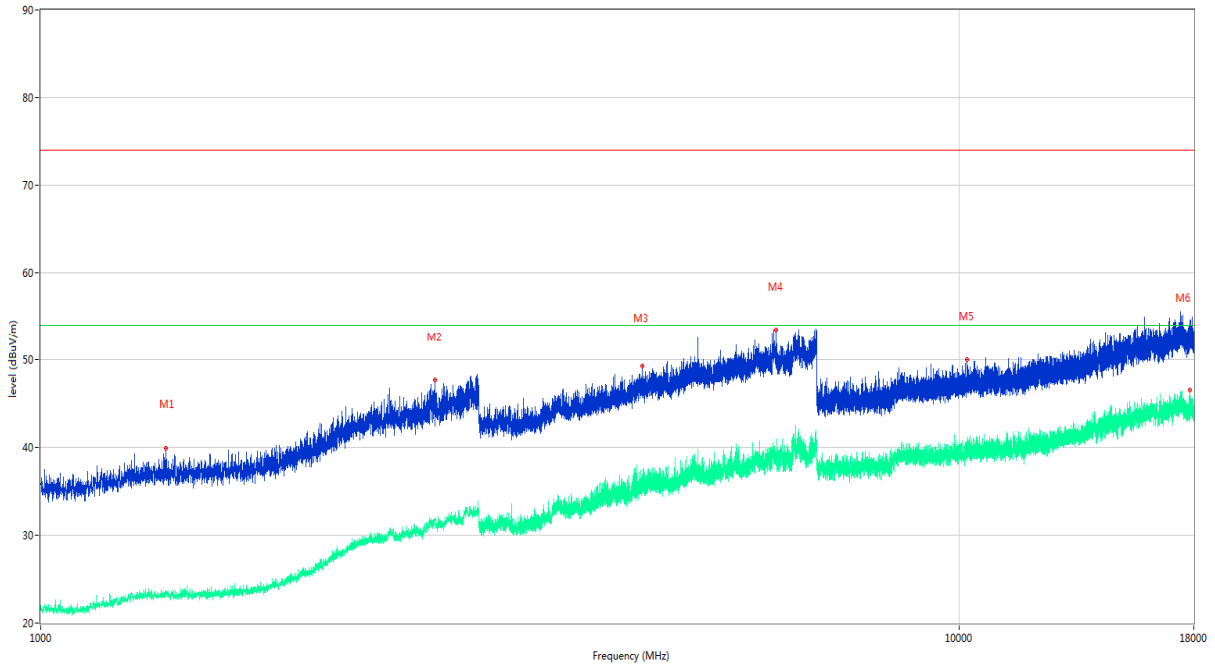
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	48.672	24.43	-22.50	40.0	-15.57	Peak	69.30	100	Vertical	Pass
2	92.565	24.53	-25.56	43.5	-18.97	Peak	1.20	200	Vertical	Pass
3	173.803	18.28	-26.51	43.5	-25.22	Peak	251.40	100	Vertical	Pass
4	240.005	22.21	-23.06	46.0	-23.79	Peak	220.90	200	Vertical	Pass
5	302.570	22.20	-21.29	46.0	-23.80	Peak	0.00	200	Vertical	Pass
6	719.912	28.64	-13.45	46.0	-17.36	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	42.610	24.38	-23.41	40.0	-15.62	Peak	0.00	200	Horizontal	Pass
2	48.672	22.25	-22.50	40.0	-17.75	Peak	0.00	200	Horizontal	Pass
3	89.655	25.40	-26.23	43.5	-18.10	Peak	290.70	200	Horizontal	Pass
4	215.998	23.17	-23.92	43.5	-20.33	Peak	94.10	100	Horizontal	Pass
5	240.005	27.54	-23.06	46.0	-18.46	Peak	333.30	100	Horizontal	Pass
6	600.118	27.24	-14.57	46.0	-18.76	Peak	187.90	200	Horizontal	Pass

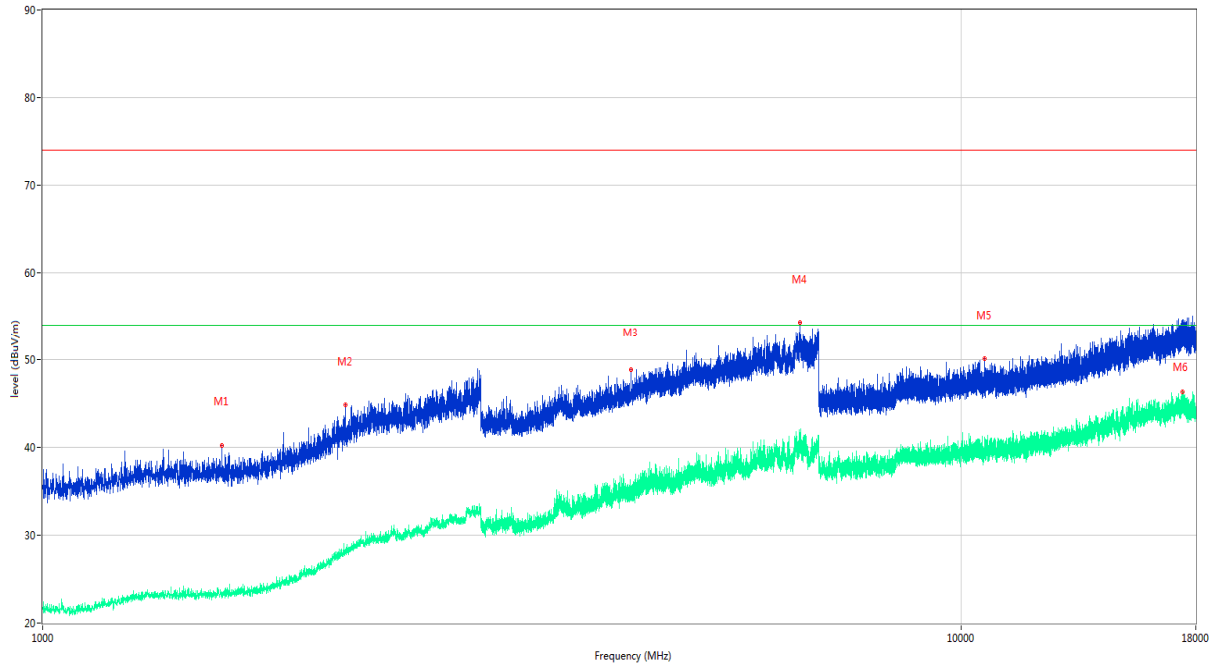
A.1.7 Test Antenna Vertical, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1369.500	39.86	-17.45	74.0	-34.14	Peak	73.00	100	Vertical	Pass
1**	1369.500	23.06	-17.45	54.0	-30.94	AV	73.00	100	Vertical	Pass
2	2687.000	47.63	-11.06	74.0	-26.37	Peak	49.00	100	Vertical	Pass
2**	2687.000	31.66	-11.06	54.0	-22.34	AV	49.00	100	Vertical	Pass
3	4521.500	49.23	-3.57	74.0	-24.77	Peak	-1.00	100	Vertical	Pass
3**	4521.500	35.83	-3.57	54.0	-18.17	AV	-1.00	100	Vertical	Pass
4	6316.500	53.47	-1.27	74.0	-20.53	Peak	354.00	100	Vertical	Pass
4**	6316.500	38.50	-1.27	54.0	-15.50	AV	354.00	100	Vertical	Pass
5	10197.000	50.03	0.81	74.0	-23.97	Peak	75.00	100	Vertical	Pass
5**	10197.000	40.11	0.81	54.0	-13.89	AV	75.00	100	Vertical	Pass
6	17824.000	52.21	4.21	74.0	-21.79	Peak	261.00	100	Vertical	Pass
6**	17824.000	46.49	4.21	54.0	-7.51	AV	261.00	100	Vertical	Pass



## A.1.8 Test Antenna Horizontal, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1566.500	40.23	-17.80	74.0	-33.77	Peak	53.00	100	Horizontal	Pass
1**	1566.500	22.90	-17.80	54.0	-31.10	AV	53.00	100	Horizontal	Pass
2	2137.000	44.80	-13.97	74.0	-29.20	Peak	226.00	100	Horizontal	Pass
2**	2137.000	28.02	-13.97	54.0	-25.98	AV	226.00	100	Horizontal	Pass
3	4373.000	48.83	-3.88	74.0	-25.17	Peak	-1.00	100	Horizontal	Pass
3**	4373.000	34.69	-3.88	54.0	-19.31	AV	-1.00	100	Horizontal	Pass
4	6679.500	54.31	0.05	74.0	-19.69	Peak	240.00	100	Horizontal	Pass
4**	6679.500	40.72	0.05	54.0	-13.28	AV	240.00	100	Horizontal	Pass
5	10607.000	50.14	-1.02	74.0	-23.86	Peak	179.00	100	Horizontal	Pass
5**	10607.000	39.00	-1.02	54.0	-15.00	AV	179.00	100	Horizontal	Pass
6	17405.000	51.52	4.43	74.0	-22.48	Peak	311.00	100	Horizontal	Pass
6**	17405.000	46.31	4.43	54.0	-7.69	AV	311.00	100	Horizontal	Pass

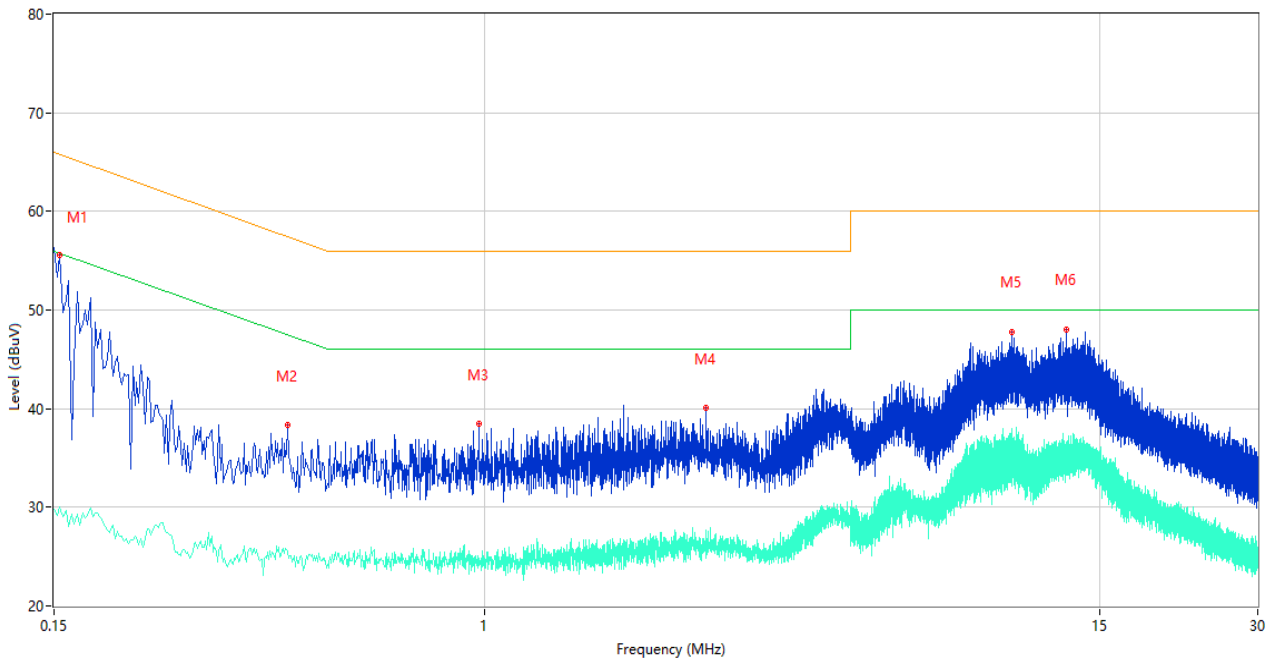
## A.2 Conducted Emission

### Test Data and Plots

#### The GSM 850 MHz Test Mode

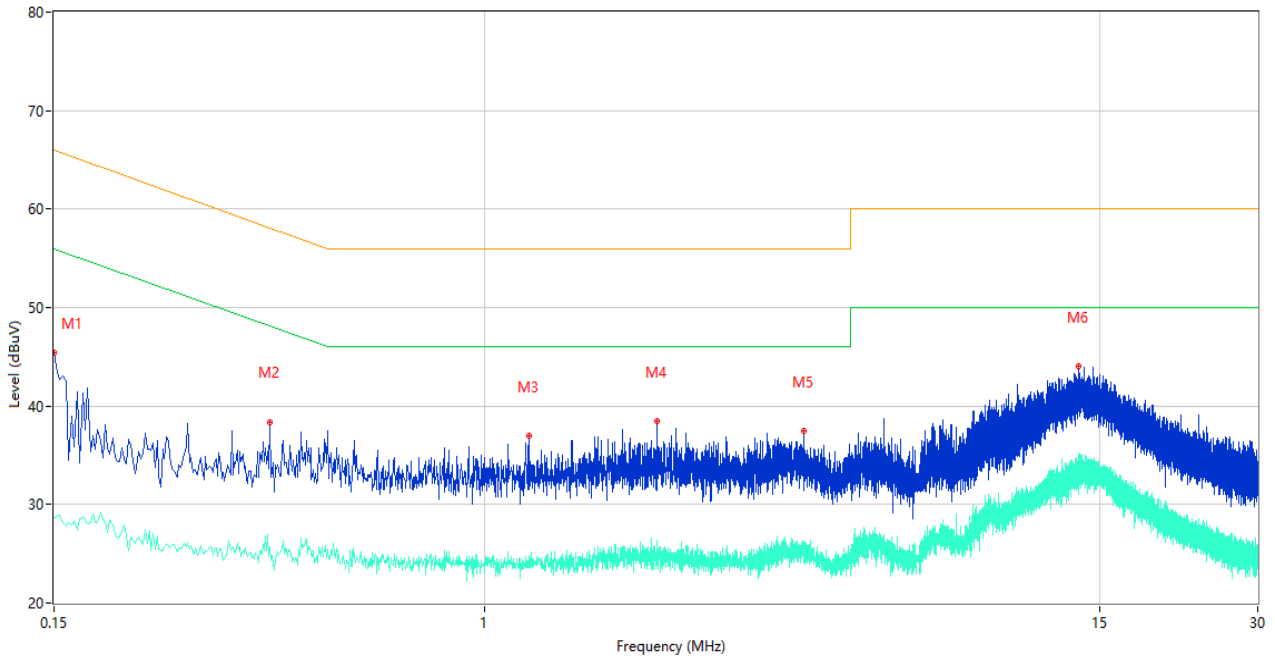
Note: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst 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	0.154	55.58	10.41	65.78	-10.20	Peak	L	Pass
1**	0.154	30.00	10.41	55.78	-25.78	AV	L	Pass
2	0.420	38.34	10.31	57.45	-19.11	Peak	L	Pass
2**	0.420	25.60	10.31	47.45	-21.85	AV	L	Pass
3	0.974	38.48	10.23	56.00	-17.52	Peak	L	Pass
3**	0.974	24.87	10.23	46.00	-21.13	AV	L	Pass
4	2.640	40.03	10.28	56.00	-15.97	Peak	L	Pass
4**	2.640	25.59	10.28	46.00	-20.41	AV	L	Pass
5	10.180	47.77	10.37	60.00	-12.23	Peak	L	Pass
5**	10.180	37.94	10.37	50.00	-12.06	AV	L	Pass
6	12.946	48.01	10.39	60.00	-11.99	Peak	L	Pass
6**	12.946	34.71	10.39	50.00	-15.29	AV	L	Pass

## A.2.2 N Phase

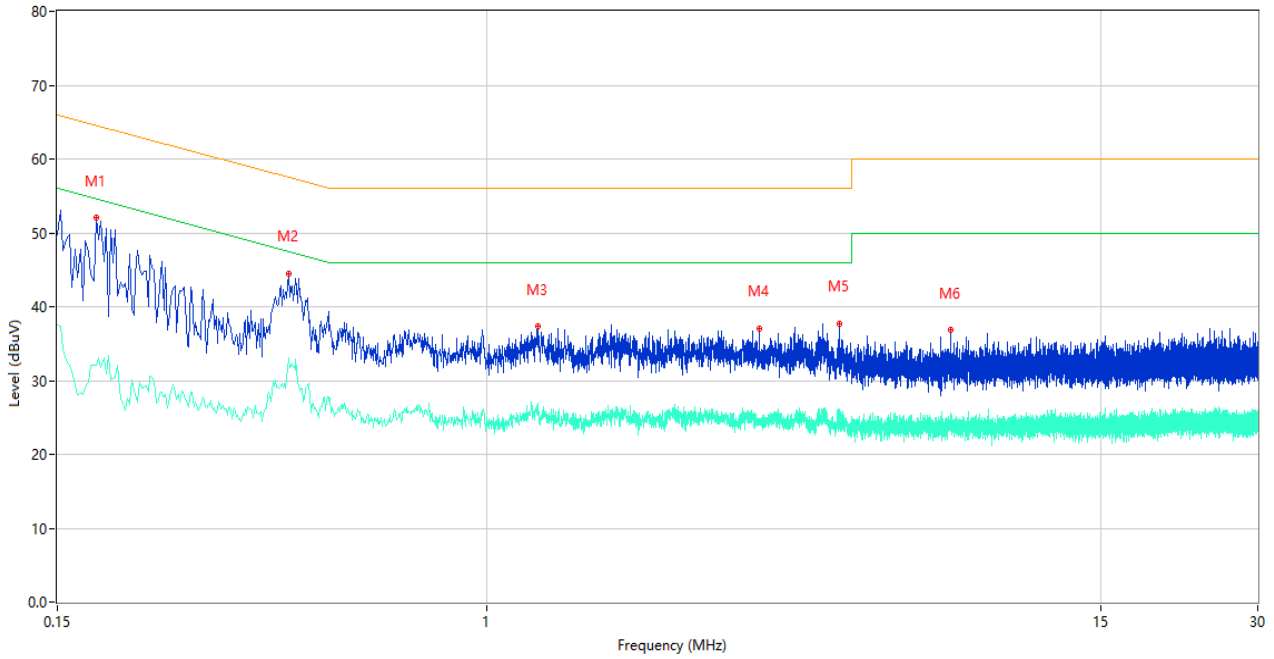


No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.150	45.39	10.41	66.00	-20.61	Peak	N	Pass
1**	0.150	28.67	10.41	56.00	-27.33	AV	N	Pass
2	0.388	38.40	10.30	58.11	-19.71	Peak	N	Pass
2**	0.388	25.69	10.30	48.11	-22.42	AV	N	Pass
3	1.216	37.00	10.25	56.00	-19.00	Peak	N	Pass
3**	1.216	24.05	10.25	46.00	-21.95	AV	N	Pass
4	2.128	38.52	10.26	56.00	-17.48	Peak	N	Pass
4**	2.128	26.27	10.26	46.00	-19.73	AV	N	Pass
5	4.066	37.42	10.31	56.00	-18.58	Peak	N	Pass
5**	4.066	25.80	10.31	46.00	-20.20	AV	N	Pass
6	13.648	44.10	10.40	60.00	-15.90	Peak	N	Pass
6**	13.648	33.34	10.40	50.00	-16.66	AV	N	Pass

Test Data and Plots

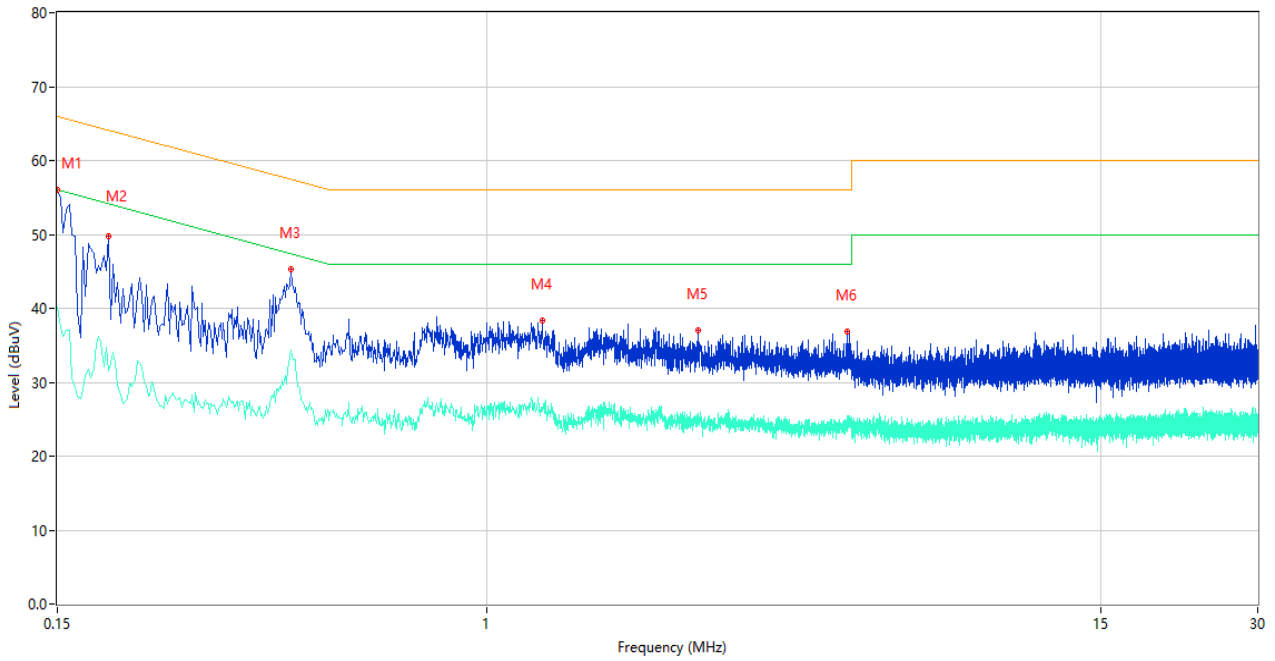
The USB Test Mode

A.2.3 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.178	52.07	10.39	64.58	-12.51	Peak	L	Pass
1**	0.178	32.03	10.39	54.58	-22.55	AV	L	Pass
2	0.416	44.53	10.31	57.53	-13.00	Peak	L	Pass
2**	0.416	33.09	10.31	47.53	-14.44	AV	L	Pass
3	1.250	37.30	10.25	56.00	-18.70	Peak	L	Pass
3**	1.250	26.79	10.25	46.00	-19.21	AV	L	Pass
4	3.324	37.08	10.30	56.00	-18.92	Peak	L	Pass
4**	3.324	24.81	10.30	46.00	-21.19	AV	L	Pass
5	4.724	37.71	10.29	56.00	-18.29	Peak	L	Pass
5**	4.724	25.91	10.29	46.00	-20.09	AV	L	Pass
6	7.742	36.90	10.35	60.00	-23.10	Peak	L	Pass
6**	7.742	23.42	10.35	50.00	-26.58	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	55.97	10.41	66.00	-10.03	Peak	N	Pass
1**	0.150	40.20	10.41	56.00	-15.80	AV	N	Pass
2	0.188	49.78	10.38	64.12	-14.34	Peak	N	Pass
2**	0.188	31.52	10.38	54.12	-22.60	AV	N	Pass
3	0.420	45.22	10.31	57.45	-12.23	Peak	N	Pass
3**	0.420	34.35	10.31	47.45	-13.10	AV	N	Pass
4	1.274	38.37	10.25	56.00	-17.63	Peak	N	Pass
4**	1.274	26.18	10.25	46.00	-19.82	AV	N	Pass
5	2.536	36.98	10.28	56.00	-19.02	Peak	N	Pass
5**	2.536	25.77	10.28	46.00	-20.23	AV	N	Pass
6	4.912	36.79	10.32	56.00	-19.21	Peak	N	Pass
6**	4.912	24.54	10.32	46.00	-21.46	AV	N	Pass

## **ANNEX B TEST SETUP PHOTOS**

Please refer the document "BL-SZ19C0360-AE-1.PDF".

## **ANNEX C EUT EXTERNAL PHOTOS**

Please refer the document "BL-SZ19C0360-AW.PDF".

## **ANNEX D EUT INTERNAL PHOTOS**

Please refer the document "BL-SZ19C0360-AI.PDF".

--END OF REPORT--