FCC/ISED RF TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

Rugged Smart Phone

ISSUED TO
Sonim Technologies, Inc.

6836 Bee Cave Road, Building 1, Suite 279, Austin, Texas 78746, USA

Tested by: Wu Huihui
Wu Huihui
Date: Apr. 14, 2021

Approved by:
Wei Yanquan
(Chief Engineer)
Date: Apr. 14, 2021

Report No.:	BL-EC2120331-501
EUT Name:	Rugged Smart Phone
Model Name:	RS60
Brand Name:	Sonim
Test Standard:	47 CFR Part 2 RSS-Gen (Issue 5, March 2019) (Others refer to chapter 3.1)
FCC ID:	WYPRS60
ISED Number:	8090A-RS60
Test Conclusion:	Pass
Test Date:	Feb. 20, 2021 ~ Feb. 24, 2021
Date of Issue:	Apr. 14, 2021

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Revision History

Version	Issue Date	Revisions Content
Rev. 01	Apr. 14, 2021	Initial Issue

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1 ADMINISTRATIVE DATA (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

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 an accredited testing laboratory. The designation number is CN1196.
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 35 °C
Ambient Relative Humidity	30 % to 60 %
Ambient Pressure	98 kPa to 102 kPa

1.4 Announce

(1) The test report reference to the report template version v2.8.
(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.
(7) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant. The applicant is responsible for the impact of the information provided on the validity of the results.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Sonim Technologies, Inc.
Address	6836 Bee Cave Road, Building 1, Suite 279, Austin, Texas 78746, USA

2.2 Manufacturer Information

Manufacturer	Sonim Technologies, Inc.
Address	6836 Bee Cave Road, Building 1, Suite 279, Austin, Texas 78746, USA

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	Rugged Smart Phone
Model Name Under Test	RS60
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	V1.0
Software Version	60.0.0-01-10.0.0-00.01.01
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Technical Information

All Network and Wireless connectivity for EUT	2G Network GSM/GPRS/EGPRS 850/900/1800/1900 MHz; 3G Network WCDMA/HSDPA/HSUPA Band 1/2/4/5/8; 4G Network FDD LTE Band 1/2/3/4/5/7/8/12/13/14/20/25/26/28/66; TDD LTE Band 38/39/40/41; WLAN; Bluetooth; GPS; GLONASS; NFC
About the Product	The equipment is Rugged Smart Phone, intended for used with information technology equipment.

The requirement for the following technical information of the EUT was tested in this report:

Operating Bands	FDD LTE Band 14/ 26	
Modulation Type	LTE	QPSK
		16QAM
TX Frequency Range	FDD LTE Band 14: 788 MHz ~ 798 MHz FDD LTE Band 26: 814 MHz ~ 849 MHz	
Rx Frequency Range	FDD LTE Band 14: 758 MHz ~ 768 MHz FDD LTE Band 26: 859 MHz ~ 894 MHz	
Power Class	FDD LTE Band 14: 3 FDD LTE Band 26: 3	
Multislot Class	N/A	
Antenna Type	PIFA Antenna	
Antenna Gain	FDD LTE Band 14: 1.05 dBi FDD LTE Band 26: 1.45 dBi	
The Max RF Output Power (EIRP/ERP)	FDD LTE Band 14: 22.38 dBm FDD LTE Band 26: 22.81 dBm	

Note 1: The EUT information are declared by manufacturer. For more detailed features description, please refer to the manufacturer's specifications or user's manual.

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 Subpart H	Cellular Radiotelephone Service
3	47 CFR Part 90 Subpart S	Regulations Governing Licensing and Use of Frequencies in the 806-824, 851-869, 896-901, and 935-940 MHz Bands
4	47 CFR Part 90 Subpart R	Regulations Governing Licensing and Use of Frequencies in the 758-775 and 788-805 MHz Bands
5	RSS-Gen Issue5	General Requirements and Information for the Certification of Radio Apparatus
6	RSS-132 Issue3	Cellular Telephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz
7	RSS-140 Issue1	Equipment Operating in the Public Safety Broadband Frequency Bands 758‑768 MHz and 788‑798 MHz
8	ANSI/TIA-603-E-2016	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
9	KDB 971168 D01 v03	Measurement Guidance for Certification of Licensed Digital Transmitters

3.2 Test Verdict

No.	Description	FCC Part No.	ISED Part No.	Test Result	Verdict
1	Conducted RF Output Power	2.1046	RSS-Gen 6.12 RSS-132 5.4 RSS-140 4.3	Reporting only (ANNEX A.1)	Pass
2	Effective (Isotropic) Radiated Power	22.913 90.542(a)	RSS-Gen 6.12 RSS-132 5.4 RSS-140 4.3	ANNEX A.1	Pass
3	Peak to Average Radio	2.1046	RSS-132 5.4 RSS-140 4.3	ANNEX A.2	Pass
4	Occupied Bandwidth	2.1049 22.917 90.209	RSS-Gen 6.7	ANNEX A.3	Pass
5	Frequency Stability	2.1055 22.355 90.213	RSS-Gen 6.11 RSS-132 5.3 RSS-140 4.2	ANNEX A.4	Pass
6	Spurious Emission at Antenna Terminals	2.1051 22.917 90.691 90.543	RSS-Gen 6.13 RSS-132 5.5 RSS-140 4.4	ANNEX A.5	Pass
7	Band Edge	2.1051 22.917 90.691 90.543	RSS-132 5.5 RSS-140 4.4	ANNEX A.6	Pass
8	Field Strength of Spurious Radiation	2.1053 22.917 90.691 90.543	RSS-Gen 6.13 RSS-132 5.5 RSS-140 4.4	ANNEX A.7	Pass
9	Receiver Spurious Emissions	N/A	RSS-Gen 7 RSS-132 5.6	ANNEX A.8	Pass
10	AC Power-line Conducted Emissions	N/A	RSS-Gen 8.8	ANNEX A.9	Pass

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the environmental conditions were within the listed ranges:

Test Voltage of the EUT	NV (Normal Voltage)	3.8 V
	LV (Low Voltage)	3.7 V
	HV (High Voltage)	4.35 V
Test Temperature of the EUT	NT (Normal Temperature)	+25 °C
	LT (Low Temperature)	-20 °C
	HT (High Temperature)	+55 °C

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Software /Firmware Version	Cal. Date	Cal. Due
Conducted Test System						
Test Software 1	R&S	CMUgo	N/A	V2.0.1	N/A	N/A
Test Software 2	R&S	CMWRun	N/A	V1.9.8	N/A	N/A
Test Software 3	BALUN	BL410R	N/A	V2.1.1.488	N/A	N/A
Universal Radio Communication Tester	R&S	CMU 200	119280	V5.13	2021.01.14	2022.01.13
Wideband Radio Communication Tester	R&S	CMW 500	127794	V3.5.137	2020.06.08	2021.06.07
Wideband Radio Communication Tester	R&S	CMW 500	120598	V3.5.137	2021.01.14	2022.01.13
Spectrum Analyzer	R&S	FSV-30	103118	2.30.SP1	2020.06.08	2021.06.07
Spectrum Analyzer	Agilent	E4440A	MY45304434	A.11.21	2020.09.25	2021.09.24
Spectrum Analyzer	Agilent	E4440A	MY46181663	A.11.21	2020.10.21	2021.10.20
Temperature Chamber	AHK	SP20	1412	N/A	2020.06.10	2021.06.09
DC Power Supply	ITECH	IT6863A	600014010687210020	N/A	2020.06.12	2021.06.11
Power Sensor	Agilent	E9304A H18	MY41497164	N/A	2020.09.25	2021.09.24
Power Splitter	KMW	DCPD-LDC	1305003215	N/A	N/A	N/A
Attenuator (20 dB)	KMW	ZA-S1-201	110617091	N/A	N/A	N/A

Description	Manufacturer	Model	Serial No.	Software /Firmware Version	Cal. Date	Cal. Due
Attenuator (6 dB)	KMW	ZA-S1-61	1305003189	N/A	N/A	N/A
Radiated Test System						
Test Software	BALUN	BL410_E	N/A	V16.921	N/A	N/A
Test Antenna-Bi-Log(30 MHz-3 GHz)	Schwarzbeck	VULB 9163	9163-624	N/A	2019.07.02	2021.07.01
Test Antenna-Horn(1-18 GHz)	Schwarzbeck	BBHA 9120D	9120D-1148	N/A	2019.07.02	2021.07.01
Test Antenna-Horn(18-40 GHz)	A-INFO	LB-180400 KF	J211060273	N/A	2021.01.04	2023.01.03
Anechoic Chamber	YIHENG	9m*6m*6m	#3	N/A	2018.07.18	2021.07.17
Shielded Enclosure	ChangNing	CN-130701	130703	N/A	N/A	N/A
EMI Receiver	KEYSIGHT	N9038A	MY53220118	A.14.16	2020.09.18	2021.09.17
Spectrum Analyzer	R&S	FSV-30	103118	2.30.SP1	2020.06.08	2021.06.07
Wideband Radio Communication Tester	R&S	CMW 500	127794	V3.2.73	2020.06.08	2021.06.07

4.3 Test Configurations

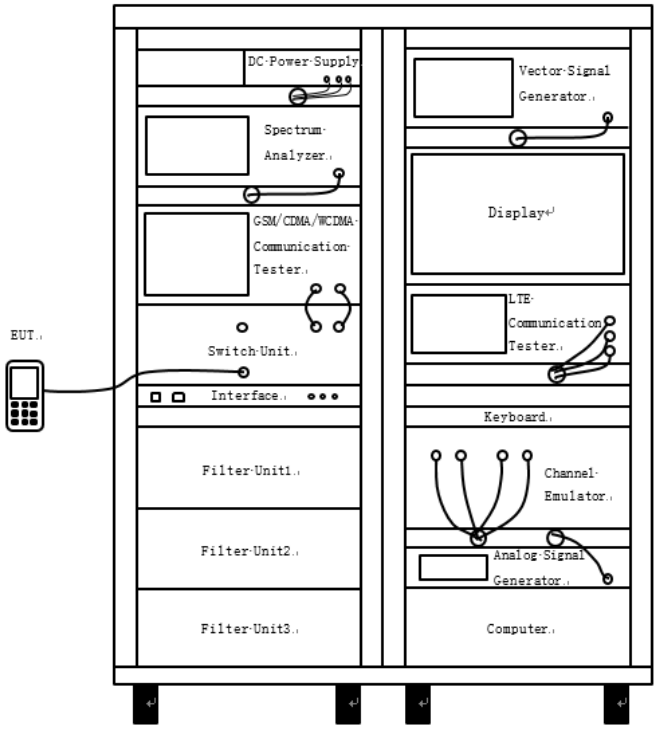
LTE Band	Bandwidth (MHz)						Modulation Type		RB#			Test Channel		
	1.4	3	5	10	15	20	QPSK	16-QAM	1	Half	Full	LCH	MCH	HCH
Effective (Isotropic) Radiated Power														
14	n	n	v	v	n	n	v	v	v	v	v	v	v	v
26(Part22)	v	v	v	v	v	n	v	v	v	v	v	v	v	v
26(Part90)	v	v	v	v	v	n	v	v	v	v	v	v	v	v
Peak to Average Ratio														
14	n	n	--	v	n	n	v	v	v	--	v	v	v	v
26(Part22)	--	--	--	--	v	n	v	v	v	--	v	v	v	v
26(Part90)	--	--	--	v	--	n	v	v	v	--	v	--	v	--
Occupied Bandwidth														
14	n	n	v	v	n	n	v	v	--	--	v	v	v	v
26(Part22)	v	v	v	v	v	n	v	v	--	--	v	v	v	v
26(Part90)	v	v	v	v	v	n	v	v	--	--	v	v	v	v
Frequency Stability														
14	n	n	--	v	n	n	v	v	--	--	v	--	v	--
26(Part22)	--	--	--	v	--	n	v	v	--	--	v	--	v	--
26(Part90)	--	--	--	v	--	n	v	v	--	--	v	--	v	--
Spurious Emission at Antenna Terminals														
14	n	n	v	v	n	n	v	v	v	--	--	v	v	v
26(Part22)	v	v	v	v	v	n	v	v	v	--	--	v	v	v
26(Part90)	v	v	v	v	v	n	v	v	v	--	--	v	v	v
Band Edge														
14	n	n	v	v	n	n	v	v	v	--	v	v	--	v
26(Part22)	v	v	v	v	v	n	v	v	v	--	v	v	--	v
26(Part90)	v	v	v	v	v	n	v	v	v	--	v	v	--	v
Field Strength of Spurious Radiation														
14	n	n	v	v	n	n	v	--	v	--	--	--	v	--
26(Part22)	v	v	v	v	v	n	v	--	v	--	--	--	v	--
26(Part90)	v	v	v	v	--	n	v	--	v	--	--	--	v	--

Note 1: The mark “v” means that this configuration is chosen for testing.
Note 2: The mark “n” means that this bandwidth is not supported.

Test Mode	UL Channel	Channel Bandwidth (MHz)	UL Channel No.	UL Frequency (MHz)
LTE Band 14	Low Range	5	23305	790.5
		10	23330	793
	Middle Range	5/10	23330	793
	High Range	5	23355	795.5
		10	23330	793
LTE Band 26 (Part90)	Low Range	1.4	26697	814.7
		3	26705	815.5
		5	26715	816.5
		10	---	---
		15	---	---
	Middle Range	1.4/3/5/10	26740	819
	High Range	1.4	26783	823.3
		3	26775	822.5
		5	26765	821.5
		10	---	---
		15	---	---
LTE Band 26 (Part22)	Low Range	1.4	26797	824.7
		3	26805	825.5
		5	26815	826.5
		10	26840	829
		15	26865	831.5
	Middle Range	1.4/3/5/10/15	26915	836.5
	High Range	1.4	27033	848.3
		3	27025	847.5
		5	27015	846.5
		10	26990	844
		15	26965	841.5

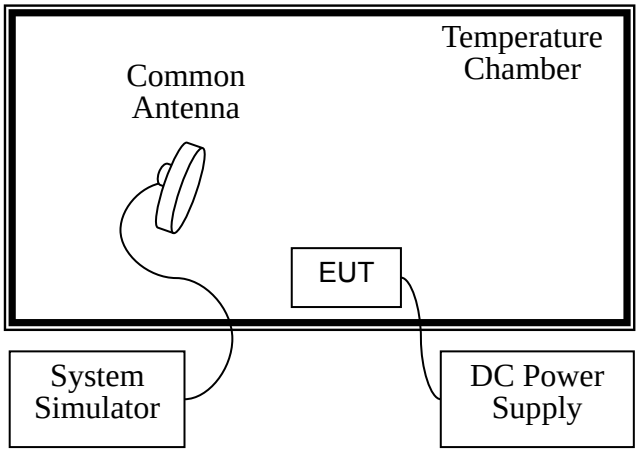
4.4 Test Setup

4.4.1 For Antenna Port Test



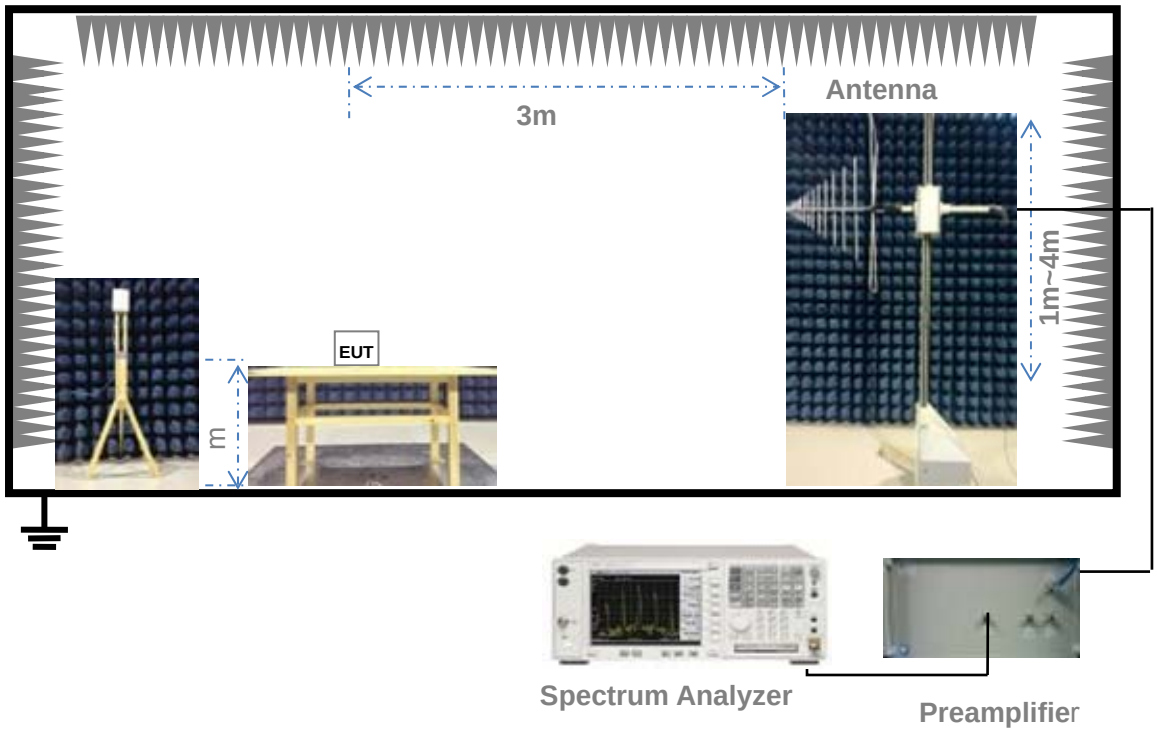
(Diagram 1)

4.4.2 For Frequency Stability Test



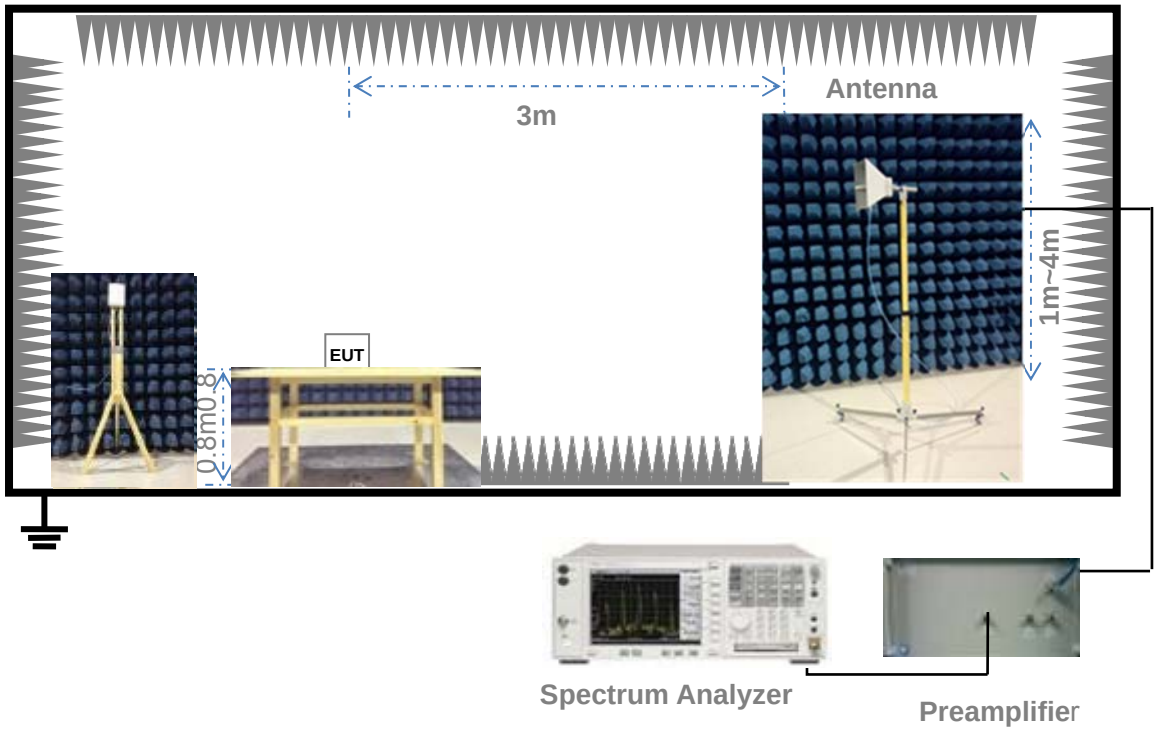
(Diagram 2)

4.4.3 For Radiated Test (30 MHz ~ 1 GHz)



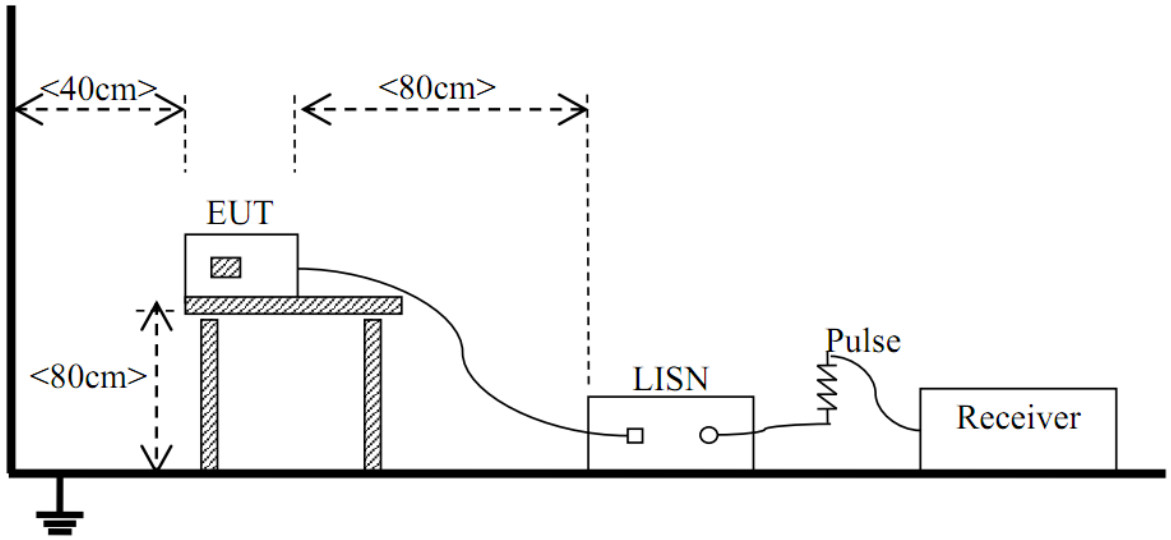
(Diagram 3)

4.4.4 For Radiated Test (Above 1 GHz)



(Diagram 4)

4.4.5 For AC Power-line Conducted Emissions



(Diagram 5)

5 TEST ITEMS

5.1 Transmitter Radiated Power (EIRP/ERP)

5.1.1 Limit

FCC § 2.1046 & 22.913(a) & 24.232(c) & 27.50(b) & 27.50(c) & 27.50(d) & 27.50(h) & 90.635(b) & 90.542(a)

According to FCC section 22.913(a) (5), the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC section 24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to FCC section 27.50(b) (10), portable stations (hand-held devices) transmitting in the 746-757MHz, 776-788MHz, and 805-806MHz bands are limited to 3 watts ERP.

FCC section 27.50(c) (10), portable stations (hand-held devices) in the 600MHz uplink band and the 698-746MHz band, and fixed and mobile stations in the 600MHz uplink band are limited to 3 watts ERP.

FCC section 27.50(d) (4), fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(7) Fixed, mobile, and portable (hand-held) stations operating in the 2000-2020 MHz band are limited to 2 watts EIRP.

And FCC section 27.50(h) (2), for mobile and other user stations, mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

According to FCC section 90.635(b), the maximum output power of the transmitter for mobile stations is 100 watts (20dBW).

According to FCC section 90.542(a) (7), portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.

RSS-Gen § 6.12 & RSS-130 § 4.6 & RSS-132 § 5.4 & RSS-133 § 6.4 & RSS-139 § 6.5 & RSS-199 § 4.4 & RSS-140 § 4.3

According to RSS-130 § 4.6.3, The e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

According to RSS-132 § 5.4, the Effective Radiated Power (ERP) for mobile equipment shall not exceed 11.5 watts.

According to RSS-133 § 6.4 (SRSP 510), mobile stations and hand-held portables are limited to 2 watts maximum EIRP.

According to RSS-139 § 6.5, the EIRP for mobile and portable transmitters shall not exceed 1 watt.

According to RSS-199 § 4.4, for mobile subscriber equipment, the EIRP shall not exceed 2 watts.

According to RSS-140 § 4.3, the equivalent radiated power (e.r.p.) for control and mobile equipment shall not exceed 30 W. The e.r.p. for portable equipment including handheld devices shall not exceed 3 W.

5.1.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description is used for conducted test, and the section 4.4.3 and 4.4.4 (Diagram 3, 4) test setup description is used for radiated test. The photo of test setup please refer to ANNEX B.

5.1.3 Test Procedure

Description of the Conducted Output Power Measurement

The EUT is coupled to the SS with attenuator through power splitter; the RF load attached to EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. A system simulator is used to establish communication with the EUT, and its parameters are set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The relevant equation for determining the conducted measured value is:

Conducted Output Power Value (dBm) = Measured Value (dBm) + Path Loss (dB)

where:
Conducted Output Power Value = final conducted measured value in the conducted power test, in dBm;
Measured Value = measured conducted power received by spectrum analyzer or power meter, in dBm;
Path Loss = signal attenuation in the connecting cable between the transmitter and spectrum analyzer or power meter, including external cable loss, in dB;

During the test, the data of Path Loss (dB) is added in the spectrum analyzer or power meter, so Measured Value (dBm) is the final values which contains the data of Path Loss (dB).

For example:

In the conducted output power test, when measured value for GSM850 is 24.7 dBm, and path loss is 8.5 dB, then final conducted output power value is:

Conducted Output Power Value (dBm) = 24.7 dBm + 8.5 dB = 33.2 dBm

Description of the Transmitter Radiated Power Measurement

In many cases, the RF output power limits for licensed digital transmission devices is specified in terms of effective radiated power (ERP) or equivalent isotropic radiated power (EIRP). Typically, ERP is specified when the operating frequency is less than or equal to 1 GHz and EIRP is specified when the operating frequency is greater than 1 GHz. Both are determined by adding the transmit antenna gain to the conducted RF output

power with the primary difference between the two being that when determining the ERP, the transmit antenna gain is referenced to a dipole antenna (i.e., dBd) whereas when determining the EIRP, the transmit antenna gain is referenced to an isotropic antenna (dBi).

Final measurement calculation as below:

The relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

ERP/EIRP = P_{Meas} + GT − LC

where:
ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as P_{Meas}, typically dBW or dBm);
P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;
GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
dBd (ERP)=dBi (EIRP) -2.15 dB
LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

For example:
In the EIRP test, when P_{Meas} value for GSM1900 is 30.2 dBm, LC is 0.6 dB, and GT is -3.4 dB, then final EIRP value is:
EIRP for GSM1900 = 30.2 dBm - 3.4 dBi - 0.6 dB = 26.2 dBm

The relevant equation for determining the ERP/EIRP from the radiated RF output power is:
ERP/EIRP (dBm) = SA Read Value (dBm) + Correction Factor (dB)

where:
ERP/EIRP = effective or equivalent radiated power, in dBm;
SA Read Value = measured transmitter power received by EMI receiver or spectrum analyzer, in dBm;
Correction Factor = total correction factor including cable loss, in dB;

During the test, the data of Correction Factor (dB) is added in the EMI receiver or spectrum analyzer, so SA Read Value (dBm) is the final values which contains the data of Correction Factor (dB).

For example:

In the ERP test, when SA read value for GSM850 is 21dBm, and correction factor is 8dB, then final ERP value for GSM850 is:

ERP (dBm) = 21dBm + 8dB = 29dBm

5.1.4 Test Result

Please refer to ANNEX A.1.

5.2 Peak to Average Ratio

5.2.1 Limit

FCC § 2.1046 & 24.232(d) & 27.50(d)

RSS-130 § 4.6 & RSS-132 § 5.4 & RSS-133 § 6.4 & RSS-139 § 6.5 & RSS-199 § 4.4 & RSS-140 § 4.3

In addition, when the transmitter power is measured in terms of average value, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

According to FCC section 24.232(d), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with 24.232 (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of § 24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

FCC section 24.232(e), peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

According to FCC section 27.50(d) (5), in measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

5.2.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description is used for this test. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

Here the lowest, middle and highest channels are selected to perform testing to verify the peak-to-average ratio.

According to KDB 971168 D01, there is CCDF procedure for PAPR:

a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;

b) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;

c) Set the number of counts to a value that stabilizes the measured CCDF curve;

d) Set the measurement interval as follows:

1) for continuous transmissions, set to 1 ms,

2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.

e) Record the maximum PAPR level associated with a probability of 0.1%.

Alternate procedure for PAPR:

Use one of the procedures presented in 4.1 to measure the total peak power and record as P_{Pk}. Use one of the applicable procedures presented 4.2 to measure the total average power and record as P_{Avg}. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

PAPR (dB) = P_{Pk} (dBm) - P_{Avg} (dBm).

5.2.4 Test Result

Please refer to ANNEX A.2.

5.3 Occupied Bandwidth

5.3.1 Limit

FCC § 2.1049

RSS-Gen § 6.7

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Many of the individual rule parts specify a relative OBW in lieu of the 99% OBW. In such cases, the OBW is defined as the width of the signal between two points, one below the carrier center frequency and on above the carrier center frequency, outside of which all emissions are attenuated by at least X dB below the transmitter power, where the value of X is typically specified as 26.

5.3.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description is used for this test. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

The following procedure shall be used for measuring power bandwidth.

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the anticipated OBW).

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.

c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.

d) NOTE—Steps a) through c) may require iteration to adjust within the specified tolerances.

e) For -26 dB OBW, the dynamic range of the spectrum analyzer at the selected RBW shall be at least 10dB below the target “-X dB down” requirement, e.g. -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be 36dB below the reference value.

f) Set the detection mode to peak, and the trace mode to max hold.

g) For 99% OBW, use the 99 % power bandwidth function of the spectrum analyzer (if available) and report the measured bandwidth.

If the instrument does not have a 99 % power bandwidth function, the trace data points are to be recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency.

The 99 % power bandwidth is the difference between these two frequencies.

h) For -26 dB OBW, determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).

Determine the “-X dB down amplitude” as equal to (reference value -X). Alternatively, this calculation can be performed by the analyzer by using the marker-delta function.

Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below “-X dB down amplitude” determined in step g). If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.

i) The OBW shall be reported by providing plot(s) of the measuring instrument display. The frequency and amplitude axes and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

j) Change variable modulations, coding, or channel bandwidth settings, then repeat above test procedures.

5.3.4 Test Result

Please refer to ANNEX A.3.

5.4 Frequency Stability

5.4.1 Limit

FCC § 2.1055 & 22.355 & 24.235 & 27.54 & 90.213

RSS-Gen § 6.11 & RSS-130 § 4.5 & RSS-132 § 5.3 & RSS-133 § 6.3 & RSS-139 § 6.4 & RSS-199 § 4.3 & RSS-140 § 4.2

FCC § 2.1055 & RSS-Gen § 6.11

The frequency stability shall be measured with variation of ambient temperature as follows:

(1) The temperature is varied from -30°C to +50°C.

(2) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10°C through the range.

The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating and point which shall be specified by the manufacture.

(3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

FCC § 22.355

Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Table C-1—Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency range (MHz)	Base, fixed (ppm)	Mobile > 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

FCC § 24.235

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

FCC § 27.54

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

FCC § 90.213

The frequency stability shall not depart from the reference frequency in excess of ±2.5ppm for mobile stations.

RSS-130 § 4.5

The frequency stability shall be sufficient to ensure that the occupied bandwidth remains within each frequency block range when tested at the temperature and supply voltage variations specified in RSS-Gen.

RSS-132 § 5.3

The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations and ±1.5 ppm for base stations.

RSS-133 § 6.3

The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations and ±1.0 ppm for base stations.

RSS-139 § 6.4

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS-199 § 4.3

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS-140 § 4.2

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested at the temperature and supply voltage variations specified in RSS-Gen.

5.4.2 Test Setup

The section 4.4.2 (Diagram 2) test setup description is used for this test. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

1. The EUT is placed in a temperature chamber.

2. The temperature is set to 25°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured.

3. The temperature is increased by not more than 10 degrees, allowed to stabilize and soak, and then repeat the frequency error measurement.

4. Repeat procedure 3 until +50°C and -30°C is reached.

5. Change supply voltage, and repeat measurement until extreme voltage is reached.

5.4.4 Test Result

Please refer to ANNEX A.4.

5.5 Spurious Emission at Antenna Terminals

5.5.1 Limit

FCC § 2.1051 & 22.917(a) & 24.238(a) & 27.53(c) & 27.53(f) & 27.53(g) & 27.53(h) & 27.53(m) & 90.691 & 90.543

RSS-Gen § 6.13 & RSS-130 § 4.7 & RSS-132 § 5.5 & RSS-133 § 6.5 & RSS-139 § 6.6 & RSS-199 § 4.5 & RSS-140 § 4.4

In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

FCC § 22.917(a) & 24.238(a) & RSS-132 § 5.5 & RSS-133 § 6.5

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P) dB. This is calculated to be -13 dBm.

FCC § 27.53(c)

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee’s frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater.

However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC § 27.53(f)

For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to - 70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC § 27.53(g)

For operations in the 600MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43+10*log(P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC § 27.53(h) (1) & RSS-139 § 6.6

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 $\log_{10}$ (P) dB.

FCC § 27.53(m) (4) & RSS-199 § 4.5

For mobile digital stations (BRS and EBS stations), the attenuation factor shall be not less than:

• 40+10logP dB (−10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge.

• 43+10logP dB (−13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge,

• 55+10logP dB (−25 dBm, 3 nW) on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz or the actual emission bandwidth (26 dB).

In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

FCC § 90.691

(a) Out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log_{10}(f/6.1) decibels or 50 + 10 Log_{10}(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log_{10}(P) decibels or 80

decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

FCC § 90.543

(e) For operations in the 758–768 MHz and the 788–798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations.

(2) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.

(3) On any frequency between 775–788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(f) For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics in the band 1559– 1610 MHz shall be limited to -70 dBW/ MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

RSS-130 § 4.7

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10Log_{10}(P) (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

In addition to the limit outlined above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

(a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:

(i) 76 + 10 log10 p (watts), dB, for base and fixed equipment and

(ii) 65 + 10 log10 p (watts), dB, for mobile and portable equipment

(b) The e.i.r.p. in the band 1559-1610 MHz shall not exceed −70 dBW/MHz for wideband signal and −80 dBW for discrete emission with bandwidth less than 700 Hz.

RSS-140 § 4.4

The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

For any frequency between 769-775 MHz and 799-806 MHz:

76 + 10 log (p), dB in a 6.25 kHz band for fixed and base station equipment

65 + 10 log (p), dB in a 6.25 kHz band for mobile and portable/hand-held equipment

For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: 43 + 10 log (p), dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed −70 dBW/MHz for wideband emissions, and −80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

5.5.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency blocks a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

1. The EUT is coupled to the system simulator and spectrum analyzer; the RF load attached to EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

2. CMW500 is used to establish communication with the EUT, and its parameters are set to force the EUT transmitting at maximum output power.

3. The RF output of the transmitter is connected to the input of the spectrum analyzer through sufficient attenuation.

4. Spurious emissions are tested with 0.001MHz RBW for frequency less than 150kHz, 0.01MHz RBW for frequency less than 30MHz, 0.1MHz RBW for frequency less than 1GHz, and 1MHz RBW for frequency above

1GHz. And sweep point number are at least 401, referring to following formula.

Sweep point number = Span/RBW

VBW=3*RBW

Detector Mode=mean or average power

5. Record the frequencies and levels of spurious emissions.

5.5.4 Test Result

Please refer to ANNEX A.5.

5.6 Band Edge

5.6.1 Limit

FCC § 2.1051 & 22.917(a) & 24.238(a) & 27.53(c) & 27.53(g) & 27.53(h) & 27.53(m) & 90.691 & 90.543

RSS-130 § 4.7 & RSS-132 § 5.5 & RSS-133 § 6.5 & RSS-139 § 6.6 & RSS-199 § 4.5 & RSS-140 § 4.4

In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

FCC § 22.917(a) & 24.238(a) & RSS-132 § 5.5 & RSS-133 § 6.5

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P) dB. This is calculated to be -13 dBm.

FCC § 27.53(c)

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee’s frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater.

However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC § 27.53(g)

For operations in the 600MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43+10*log(P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC § 27.53(h) (1) & RSS-139 § 6.6

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

FCC § 27.53(m) (4) & RSS-199 § 4.5

For mobile digital stations (BRS and EBS stations), the attenuation factor shall be not less than:

• 40+10logP dB (−10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge.

• 43+10logP dB (−13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge,

• 55+10logP dB (−25 dBm, 3 nW) on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz or the actual emission bandwidth (26 dB).

In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

FCC § 90.691

(a) Out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{ Log}_{10}(f/6.1)$ decibels or $50 + 10 \text{ Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10\text{Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

FCC § 90.543

(e) For operations in the 758–768 MHz and the 788–798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations.

(2) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.

(3) On any frequency between 775–788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

RSS-130 § 4.7

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10Log_{10}(P) (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

In addition to the limit outlined above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

(a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:

(i) 76 + 10 log10 p (watts), dB, for base and fixed equipment and

(ii) 65 + 10 log10 p (watts), dB, for mobile and portable equipment

(b) The e.i.r.p. in the band 1559-1610 MHz shall not exceed −70 dBW/MHz for wideband signal and −80 dBW for discrete emission with bandwidth less than 700 Hz.

RSS-140 § 4.4

The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

For any frequency between 769-775 MHz and 799-806 MHz:

76 + 10 log (p), dB in a 6.25 kHz band for fixed and base station equipment

65 + 10 log (p), dB in a 6.25 kHz band for mobile and portable/hand-held equipment

For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: 43 + 10 log (p), dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed −70 dBW/MHz for wideband emissions, and −80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

5.6.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading.

1.The EUT is coupled to the system simulator and spectrum analyzer; the RF load attached to EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

2. CMW500 is used to establish communication with the EUT, and its parameters are set to force the EUT transmitting at maximum output power.

3. The RF output of the transmitter is connected to the input of the spectrum analyzer through sufficient attenuation.

4. The center of the spectrum analyzer was set to block edge frequency.

5. Band edge are tested with 1%*cBW (RBW), and sweep point number referred to following formula.

Sweep point number = 2*Span/RBW

VBW=3RBW

6. Record the frequencies and levels of spurious emissions.

For mobile and portable stations, on all frequencies between 763–775 MHz and 793–806 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment. Since it was not possible to set the resolution bandwidth to 6.25 kHz with the available equipment, a bandwidth of 10 kHz was used instead to show compliance. By using a 10 kHz bandwidth on the spectrum analyzer.

10*log(10 kHz / 6.25 kHz) = 2.04 dB
Limit Line = -35 dBm + 2.04 dB = -32.96dBm

5.6.4 Test Result

Please refer to ANNEX A.6.

5.7 Field Strength of Spurious Radiation

5.7.1 Limit

FCC § 2.1053 & 22.917(a) & 24.238(a) & 27.53(c) & 27.53(f) & 27.53(g) & 27.53(h) & 27.53(m) & 90.691 & 90.543

RSS-Gen § 6.13 & RSS-130 § 4.7 & RSS-132 § 5.5 & RSS-133 § 6.5 & RSS-139 § 6.6 & RSS-199 § 4.5 & RSS-140 § 4.4

FCC § 22.917(a) & 24.238(a) & RSS-132 § 5.5 & RSS-133 § 6.5

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P) dB. This is calculated to be -13 dBm.

FCC § 27.53(c)

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater.

However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC § 27.53(f)

For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to - 70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC § 27.53(g)

For operations in the 600MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43+10*log(P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC § 27.53(h) (1) & RSS-139 § 6.6

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

FCC § 27.53(m) (4) & RSS-199 § 4.5

For mobile digital stations (BRS and EBS stations), the attenuation factor shall be not less than:

• 40+10logP dB (−10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge.

• 43+10logP dB (−13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge,

• 55+10logP dB (−25 dBm, 3 nW) on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz or the actual emission bandwidth (26 dB).

In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

FCC § 90.691

(a) Out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{ Log}_{10}(f/6.1)$ decibels or $50 + 10 \text{ Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10\text{Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

FCC § 90.543

(e) For operations in the 758–768 MHz and the 788–798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations.

(2) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.

(3) On any frequency between 775–788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(f) For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics in the band 1559– 1610 MHz shall be limited to -70 dBW/ MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

RSS-130 § 4.7

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10Log_{10}(P) (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

In addition to the limit outlined above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

(a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:

(i) 76 + 10 log10 p (watts), dB, for base and fixed equipment and

(ii) 65 + 10 log10 p (watts), dB, for mobile and portable equipment

(b) The e.i.r.p. in the band 1559-1610 MHz shall not exceed −70 dBW/MHz for wideband signal and −80 dBW for discrete emission with bandwidth less than 700 Hz.

RSS-140 § 4.4

The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

For any frequency between 769-775 MHz and 799-806 MHz:

76 + 10 log (p), dB in a 6.25 kHz band for fixed and base station equipment

65 + 10 log (p), dB in a 6.25 kHz band for mobile and portable/hand-held equipment

For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: 43 + 10 log (p), dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed −70 dBW/MHz for wideband emissions, and −80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

5.7.2 Test Setup

The section 4.4.3 and 4.4.4 (Diagram 3, 4) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

1. On a test site, the EUT shall be placed at 80cm height on a turn table, and in the position close to normal use as declared by the applicant.

2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.

3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.

4. During the measurement of the EUT, the resolution bandwidth was to 1 MHz and the average bandwidth was set to 1 MHz.

5. The transmitter shall be switched on; the measuring receiver shall be tuned to the frequency of the transmitter under test.

6. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.

7. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

8. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.

9. The maximum signal level detected by the measuring receiver shall be noted.

10. The EUT was replaced by half-wave dipole (824 ~ 849 MHz) or horn antenna (1 850 ~ 1 910 MHz) connected to a signal generator.

11. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase

the sensitivity of the measuring receiver.

12. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.

13. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring received, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.

14. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

15. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

Final measurement calculation as below:

The relevant equation for determining the ERP/EIRP from the radiated RF output power is:

ERP/EIRP (dBm) = SA Read Value (dBm) + Correction Factor (dB)

where:
ERP/EIRP = effective or equivalent radiated power, in dBm;
SA Read Value = measured transmitter power received by EMI receiver or spectrum analyzer, in dBm;
Correction Factor = total correction factor including cable loss, in dB;

During the test, the data of Correction Factor (dB) is added in the EMI receiver or spectrum analyzer, so SA Read Value (dBm) is the final values which contains the data of Correction Factor (dB).

For example:

In the ERP test, when SA read value for GSM850 is 21dBm, and correction factor is 8dB, then final ERP value for GSM850 is:

ERP (dBm) = 21dBm + 8dB = 29dBm

5.7.4 Test Result

Please refer to ANNEX A.7.

5.8 Receiver Spurious Emissions

5.8.1 Limit

RSS-Gen § 7.3/4 & RSS-132 § 5.6 & RSS-133 § 6.6

For emissions at frequencies below 1 GHz, measurements shall be performed using a CISPR quasi-peak detector and the related measurement bandwidth. At frequencies above 1 GHz, measurements shall be performed using a linear average detector with a minimum resolution bandwidth of 1 MHz.

As an alternative to CISPR quasi-peak or average measurements, compliance with the emission limit can be demonstrated using measuring equipment employing a peak detector function properly adjusted for factors such as pulse desensitization, as required, with a measurement bandwidth equal to, or greater than, the applicable CISPR quasi-peak bandwidth or 1 MHz bandwidth, respectively.

Receiver Radiated Limits

Radiated emission measurements shall be performed with the receiver antenna connected to the receiver antenna ports. The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is higher, to at least five times the highest tunable or local oscillator frequency, whichever is higher, without exceeding 40 GHz.

Spurious emissions from receivers shall not exceed the radiated emissions limits shown in Table 2 below.

Table 2 –Receiver radiated emissions limits

Frequency (MHz)	Field Strength (μV/m at 3 metres)
30 - 88	100
88 - 216	150
216 - 960	200
Above 960	500

Receiver Conducted Limits

If the receiver has a detachable antenna of known impedance, an antenna-conducted spurious emissions measurement is permitted as an alternative to radiated measurement. However, the radiated method is preferred.

The antenna-conducted test shall be performed with the antenna disconnected and with the receiver antenna port connected to a measuring instrument having equal input impedance to that specified for the antenna. The RF cable connecting the receiver under test to the measuring instrument shall also have the same impedance to that specified for the receiver’s antenna.

The spurious emissions from the receiver at any discrete frequency, measured at the antenna port by the antenna-conducted method, shall not exceed 2 nW in the frequency range 30-1000 MHz and 5 nW above 1 GHz.

5.8.2 Test Setup

The section 4.4.3 and 4.4.4 (Diagram 3, 4) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.8.3 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.

5.8.4 Test Result

Please refer to ANNEX A.8.

5.9 AC Power-line Conducted Emissions

5.9.1 Limit

RSS-Gen § 8.8

For AC power-line conducted emissions, both quasi-peak and average detectors having the characteristics specified in CAN/CSA-CISPR 16-1-1:15 for the 150 kHz to 30 MHz frequency range shall be employed.

Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in table 3, as measured using a 50 μH / 50 Ω line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in table 3 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

Table 3 –AC power-line conducted emissions limits

Frequency (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56[Note1]	56 to 46 [Note1]
0.5 - 5	56	46
5 - 30	60	50

Note 1: The level decreases linearly with the logarithm of the frequency.

5.9.2 Test Setup

The section 4.4.5 (Diagram 5) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.9.3 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.

5.9.4 Test Result

Please refer to ANNEX A.9.

ANNEX A TEST RESULTS

A.1 Transmitter Radiated Power (EIRP/ERP)

LTE Mode Test Data

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND14									
5 MHz	LCH	QPSK	RB1#0	23.13	1.05	22.03	0.16	3.00	Pass
			RB1#13	23.15	1.05	22.05	0.16	3.00	Pass
			RB1#24	23.07	1.05	21.97	0.16	3.00	Pass
			RB12#0	22.26	1.05	21.16	0.13	3.00	Pass
			RB12#6	22.18	1.05	21.08	0.13	3.00	Pass
			RB12#13	22.02	1.05	20.92	0.12	3.00	Pass
			RB25#0	22.03	1.05	20.93	0.12	3.00	Pass
		16-QAM	RB1#0	22.37	1.05	21.27	0.13	3.00	Pass
			RB1#13	22.38	1.05	21.28	0.13	3.00	Pass
			RB1#24	22.31	1.05	21.21	0.13	3.00	Pass
			RB12#0	21.35	1.05	20.25	0.11	3.00	Pass
			RB12#6	21.24	1.05	20.14	0.10	3.00	Pass
			RB12#13	21.09	1.05	19.99	0.10	3.00	Pass
			RB25#0	21.08	1.05	19.98	0.10	3.00	Pass
	MCH	QPSK	RB1#0	23.18	1.05	22.08	0.16	3.00	Pass
			RB1#13	23.1	1.05	22	0.16	3.00	Pass
			RB1#24	23.11	1.05	22.01	0.16	3.00	Pass
			RB12#0	22.07	1.05	20.97	0.13	3.00	Pass
			RB12#6	22.2	1.05	21.1	0.13	3.00	Pass
			RB12#13	22.24	1.05	21.14	0.13	3.00	Pass
			RB25#0	22.06	1.05	20.96	0.12	3.00	Pass
		16-QAM	RB1#0	22.31	1.05	21.21	0.13	3.00	Pass
			RB1#13	22.29	1.05	21.19	0.13	3.00	Pass
			RB1#24	22.33	1.05	21.23	0.13	3.00	Pass
			RB12#0	21.17	1.05	20.07	0.10	3.00	Pass
			RB12#6	21.24	1.05	20.14	0.10	3.00	Pass
			RB12#13	21.2	1.05	20.1	0.10	3.00	Pass
			RB25#0	21.16	1.05	20.06	0.10	3.00	Pass
	HCH	QPSK	RB1#0	23.14	1.05	22.04	0.16	3.00	Pass
			RB1#13	23.11	1.05	22.01	0.16	3.00	Pass
			RB1#24	23.12	1.05	22.02	0.16	3.00	Pass
			RB12#0	22.12	1.05	21.02	0.13	3.00	Pass
			RB12#6	22.18	1.05	21.08	0.13	3.00	Pass
			RB12#13	22.15	1.05	21.05	0.13	3.00	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND14									
			RB25#0	22.19	1.05	21.09	0.13	3.00	Pass
		16-QAM	RB1#0	22.61	1.05	21.51	0.14	3.00	Pass
			RB1#13	22.64	1.05	21.54	0.14	3.00	Pass
			RB1#24	22.62	1.05	21.52	0.14	3.00	Pass
			RB12#0	21.29	1.05	20.19	0.10	3.00	Pass
			RB12#6	21.22	1.05	20.12	0.10	3.00	Pass
			RB12#13	21.25	1.05	20.15	0.10	3.00	Pass
			RB25#0	21.24	1.05	20.14	0.10	3.00	Pass
10 MHz	MCH	QPSK	RB1#0	23.48	1.05	**22.38**	0.17	3.00	Pass
			RB1#25	23.07	1.05	21.97	0.16	3.00	Pass
			RB1#49	23.17	1.05	22.07	0.16	3.00	Pass
			RB25#0	22.15	1.05	21.05	0.13	3.00	Pass
			RB25#13	22.08	1.05	20.98	0.13	3.00	Pass
			RB25#25	22.11	1.05	21.01	0.13	3.00	Pass
			RB50#0	22.14	1.05	21.04	0.13	3.00	Pass
		16-QAM	RB1#0	22.38	1.05	21.28	0.13	3.00	Pass
			RB1#25	22.04	1.05	20.94	0.12	3.00	Pass
			RB1#49	22.09	1.05	20.99	0.13	3.00	Pass
			RB25#0	21.19	1.05	20.09	0.10	3.00	Pass
			RB25#13	21.14	1.05	20.04	0.10	3.00	Pass
			RB25#25	21.21	1.05	20.11	0.10	3.00	Pass
			RB50#0	21.17	1.05	20.07	0.10	3.00	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND26 (Part90)									
1.4 MHz	LCH	QPSK	RB1#0	22.98	1.45	22.28	0.17	100	Pass
			RB1#3	23	1.45	22.3	0.17	100	Pass
			RB1#5	23.03	1.45	22.33	0.17	100	Pass
			RB3#0	23.01	1.45	22.31	0.17	100	Pass
			RB3#2	23.04	1.45	22.34	0.17	100	Pass
			RB3#3	23.04	1.45	22.34	0.17	100	Pass
			RB6#0	22.04	1.45	21.34	0.14	100	Pass
		16-QAM	RB1#0	22.07	1.45	21.37	0.14	100	Pass
			RB1#3	22.12	1.45	21.42	0.14	100	Pass
			RB1#5	22.04	1.45	21.34	0.14	100	Pass
			RB3#0	22.03	1.45	21.33	0.14	100	Pass
			RB3#2	22.13	1.45	21.43	0.14	100	Pass
			RB3#3	22.04	1.45	21.34	0.14	100	Pass
			RB6#0	21.21	1.45	20.51	0.11	100	Pass
	MCH	QPSK	RB1#0	23.04	1.45	22.34	0.17	100	Pass
			RB1#3	23.11	1.45	22.41	0.17	100	Pass
			RB1#5	23.05	1.45	22.35	0.17	100	Pass
			RB3#0	22.96	1.45	22.26	0.17	100	Pass
			RB3#2	23.08	1.45	22.38	0.17	100	Pass
			RB3#3	23.03	1.45	22.33	0.17	100	Pass
			RB6#0	22.08	1.45	21.38	0.14	100	Pass
		16-QAM	RB1#0	22.46	1.45	21.76	0.15	100	Pass
			RB1#3	22.45	1.45	21.75	0.15	100	Pass
			RB1#5	22.42	1.45	21.72	0.15	100	Pass
			RB3#0	22.23	1.45	21.53	0.14	100	Pass
			RB3#2	22.26	1.45	21.56	0.14	100	Pass
			RB3#3	22.22	1.45	21.52	0.14	100	Pass
			RB6#0	21	1.45	20.3	0.11	100	Pass
	HCH	QPSK	RB1#0	23	1.45	22.3	0.17	100	Pass
			RB1#3	23.26	1.45	22.56	0.18	100	Pass
			RB1#5	23.13	1.45	22.43	0.17	100	Pass
			RB3#0	23.11	1.45	22.41	0.17	100	Pass
			RB3#2	23.17	1.45	22.47	0.18	100	Pass
			RB3#3	23.08	1.45	22.38	0.17	100	Pass
			RB6#0	22.08	1.45	21.38	0.14	100	Pass
		16-QAM	RB1#0	22.09	1.45	21.39	0.14	100	Pass
			RB1#3	22.16	1.45	21.46	0.14	100	Pass
			RB1#5	22.13	1.45	21.43	0.14	100	Pass
			RB3#0	22.31	1.45	21.61	0.14	100	Pass
			RB3#2	22.37	1.45	21.67	0.15	100	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND26 (Part90)									
			RB3#3	22.31	1.45	21.61	0.14	100	Pass
			RB6#0	21.3	1.45	20.6	0.11	100	Pass
3 MHz	LCH	QPSK	RB1#0	23.07	1.45	22.37	0.17	100	Pass
			RB1#7	23.07	1.45	22.37	0.17	100	Pass
			RB1#14	22.99	1.45	22.29	0.17	100	Pass
			RB8#0	22.12	1.45	21.42	0.14	100	Pass
			RB8#4	22.17	1.45	21.47	0.14	100	Pass
			RB8#7	22.11	1.45	21.41	0.14	100	Pass
			RB15#0	22.11	1.45	21.41	0.14	100	Pass
		16-QAM	RB1#0	21.97	1.45	21.27	0.13	100	Pass
			RB1#7	21.96	1.45	21.26	0.13	100	Pass
			RB1#14	21.9	1.45	21.2	0.13	100	Pass
			RB8#0	21.21	1.45	20.51	0.11	100	Pass
			RB8#4	21.2	1.45	20.5	0.11	100	Pass
			RB8#7	21.2	1.45	20.5	0.11	100	Pass
			RB15#0	21.14	1.45	20.44	0.11	100	Pass
	MCH	QPSK	RB1#0	23.05	1.45	22.35	0.17	100	Pass
			RB1#7	23.03	1.45	22.33	0.17	100	Pass
			RB1#14	23.03	1.45	22.33	0.17	100	Pass
			RB8#0	22.14	1.45	21.44	0.14	100	Pass
			RB8#4	22.16	1.45	21.46	0.14	100	Pass
			RB8#7	22.09	1.45	21.39	0.14	100	Pass
			RB15#0	22.13	1.45	21.43	0.14	100	Pass
		16-QAM	RB1#0	22.48	1.45	21.78	0.15	100	Pass
			RB1#7	22.49	1.45	21.79	0.15	100	Pass
			RB1#14	22.42	1.45	21.72	0.15	100	Pass
			RB8#0	21.16	1.45	20.46	0.11	100	Pass
			RB8#4	21.21	1.45	20.51	0.11	100	Pass
			RB8#7	21.16	1.45	20.46	0.11	100	Pass
			RB15#0	21.16	1.45	20.46	0.11	100	Pass
	HCH	QPSK	RB1#0	23.07	1.45	22.37	0.17	100	Pass
			RB1#7	23.09	1.45	22.39	0.17	100	Pass
			RB1#14	23.01	1.45	22.31	0.17	100	Pass
			RB8#0	22.08	1.45	21.38	0.14	100	Pass
			RB8#4	22.15	1.45	21.45	0.14	100	Pass
			RB8#7	22.06	1.45	21.36	0.14	100	Pass
			RB15#0	22.11	1.45	21.41	0.14	100	Pass
		16-QAM	RB1#0	22.23	1.45	21.53	0.14	100	Pass
			RB1#7	22.21	1.45	21.51	0.14	100	Pass
			RB1#14	22.16	1.45	21.46	0.14	100	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND26 (Part90)									
			RB8#0	21.23	1.45	20.53	0.11	100	Pass
			RB8#4	21.31	1.45	20.61	0.12	100	Pass
			RB8#7	21.23	1.45	20.53	0.11	100	Pass
			RB15#0	21.1	1.45	20.4	0.11	100	Pass
5 MHz	LCH	QPSK	RB1#0	23.16	1.45	22.46	0.18	100	Pass
			RB1#13	23.13	1.45	22.43	0.17	100	Pass
			RB1#24	23.14	1.45	22.44	0.18	100	Pass
			RB12#0	22.12	1.45	21.42	0.14	100	Pass
			RB12#6	22.09	1.45	21.39	0.14	100	Pass
			RB12#13	22.14	1.45	21.44	0.14	100	Pass
			RB25#0	22.1	1.45	21.4	0.14	100	Pass
		16-QAM	RB1#0	22.22	1.45	21.52	0.14	100	Pass
			RB1#13	22.28	1.45	21.58	0.14	100	Pass
			RB1#24	22.24	1.45	21.54	0.14	100	Pass
			RB12#0	21.26	1.45	20.56	0.11	100	Pass
			RB12#6	21.26	1.45	20.56	0.11	100	Pass
			RB12#13	21.24	1.45	20.54	0.11	100	Pass
			RB25#0	21.18	1.45	20.48	0.11	100	Pass
	MCH	QPSK	RB1#0	23.14	1.45	22.44	0.18	100	Pass
			RB1#13	23.08	1.45	22.38	0.17	100	Pass
			RB1#24	23.11	1.45	22.41	0.17	100	Pass
			RB12#0	22.16	1.45	21.46	0.14	100	Pass
			RB12#6	22.16	1.45	21.46	0.14	100	Pass
			RB12#13	22.12	1.45	21.42	0.14	100	Pass
			RB25#0	22.18	1.45	21.48	0.14	100	Pass
		16-QAM	RB1#0	22.62	1.45	21.92	0.16	100	Pass
			RB1#13	22.61	1.45	21.91	0.16	100	Pass
			RB1#24	22.59	1.45	21.89	0.15	100	Pass
			RB12#0	21.3	1.45	20.6	0.11	100	Pass
			RB12#6	21.25	1.45	20.55	0.11	100	Pass
			RB12#13	21.26	1.45	20.56	0.11	100	Pass
			RB25#0	21.22	1.45	20.52	0.11	100	Pass
	HCH	QPSK	RB1#0	23.1	1.45	22.4	0.17	100	Pass
			RB1#13	23.07	1.45	22.37	0.17	100	Pass
			RB1#24	23.06	1.45	22.36	0.17	100	Pass
			RB12#0	22.09	1.45	21.39	0.14	100	Pass
			RB12#6	22.1	1.45	21.4	0.14	100	Pass
			RB12#13	22.14	1.45	21.44	0.14	100	Pass
			RB25#0	22.11	1.45	21.41	0.14	100	Pass
		16-QAM	RB1#0	22.26	1.45	21.56	0.14	100	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND26 (Part90)									
			RB1#13	22.22	1.45	21.52	0.14	100	Pass
			RB1#24	22.24	1.45	21.54	0.14	100	Pass
			RB12#0	21.21	1.45	20.51	0.11	100	Pass
			RB12#6	21.15	1.45	20.45	0.11	100	Pass
			RB12#13	21.14	1.45	20.44	0.11	100	Pass
			RB25#0	21.1	1.45	20.4	0.11	100	Pass
10 MHz	MCH	QPSK	RB1#0	23.29	1.45	22.59	0.18	100	Pass
			RB1#25	23.04	1.45	22.34	0.17	100	Pass
			RB1#49	23.28	1.45	22.58	0.18	100	Pass
			RB25#0	22.16	1.45	21.46	0.14	100	Pass
			RB25#13	22.18	1.45	21.48	0.14	100	Pass
			RB25#25	22.16	1.45	21.46	0.14	100	Pass
			RB50#0	22.22	1.45	21.52	0.14	100	Pass
		16-QAM	RB1#0	22.3	1.45	21.6	0.14	100	Pass
			RB1#25	22.09	1.45	21.39	0.14	100	Pass
			RB1#49	22.37	1.45	21.67	0.15	100	Pass
			RB25#0	21.17	1.45	20.47	0.11	100	Pass
			RB25#13	21.21	1.45	20.51	0.11	100	Pass
			RB25#25	21.22	1.45	20.52	0.11	100	Pass
			RB50#0	21.18	1.45	20.48	0.11	100	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND26 (Part22)									
1.4 MHz	LCH	QPSK	RB1#0	23.13	1.45	22.43	0.17	7.0	Pass
			RB1#3	23.14	1.45	22.44	0.18	7.0	Pass
			RB1#5	23.07	1.45	22.37	0.17	7.0	Pass
			RB3#0	23.1	1.45	22.4	0.17	7.0	Pass
			RB3#2	23.2	1.45	22.5	0.18	7.0	Pass
			RB3#3	23.16	1.45	22.46	0.18	7.0	Pass
			RB6#0	22.15	1.45	21.45	0.14	7.0	Pass
		16-QAM	RB1#0	22.13	1.45	21.43	0.14	7.0	Pass
			RB1#3	22.19	1.45	21.49	0.14	7.0	Pass
			RB1#5	22.22	1.45	21.52	0.14	7.0	Pass
			RB3#0	22.25	1.45	21.55	0.14	7.0	Pass
			RB3#2	22.32	1.45	21.62	0.15	7.0	Pass
			RB3#3	22.26	1.45	21.56	0.14	7.0	Pass
			RB6#0	21.33	1.45	20.63	0.12	7.0	Pass
	MCH	QPSK	RB1#0	23.03	1.45	22.33	0.17	7.0	Pass
			RB1#3	23.05	1.45	22.35	0.17	7.0	Pass
			RB1#5	23.01	1.45	22.31	0.17	7.0	Pass
			RB3#0	23.02	1.45	22.32	0.17	7.0	Pass
			RB3#2	23.12	1.45	22.42	0.17	7.0	Pass
			RB3#3	23.01	1.45	22.31	0.17	7.0	Pass
			RB6#0	22.11	1.45	21.41	0.14	7.0	Pass
		16-QAM	RB1#0	22.14	1.45	21.44	0.14	7.0	Pass
			RB1#3	22.21	1.45	21.51	0.14	7.0	Pass
			RB1#5	22.18	1.45	21.48	0.14	7.0	Pass
			RB3#0	22.16	1.45	21.46	0.14	7.0	Pass
			RB3#2	22.18	1.45	21.48	0.14	7.0	Pass
			RB3#3	22.15	1.45	21.45	0.14	7.0	Pass
			RB6#0	21.28	1.45	20.58	0.11	7.0	Pass
	HCH	QPSK	RB1#0	23.01	1.45	22.31	0.17	7.0	Pass
			RB1#3	22.98	1.45	22.28	0.17	7.0	Pass
			RB1#5	22.94	1.45	22.24	0.17	7.0	Pass
			RB3#0	22.99	1.45	22.29	0.17	7.0	Pass
			RB3#2	23.03	1.45	22.33	0.17	7.0	Pass
			RB3#3	22.95	1.45	22.25	0.17	7.0	Pass
			RB6#0	22.06	1.45	21.36	0.14	7.0	Pass
		16-QAM	RB1#0	22.38	1.45	21.68	0.15	7.0	Pass
			RB1#3	22.44	1.45	21.74	0.15	7.0	Pass
			RB1#5	22.36	1.45	21.66	0.15	7.0	Pass
			RB3#0	22.22	1.45	21.52	0.14	7.0	Pass
			RB3#2	22.23	1.45	21.53	0.14	7.0	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND26 (Part22)									
			RB3#3	22.15	1.45	21.45	0.14	7.0	Pass
			RB6#0	20.95	1.45	20.25	0.11	7.0	Pass
3 MHz	LCH	QPSK	RB1#0	23.17	1.45	22.47	0.18	7.0	Pass
			RB1#7	23.22	1.45	22.52	0.18	7.0	Pass
			RB1#14	23.15	1.45	22.45	0.18	7.0	Pass
			RB8#0	22.2	1.45	21.5	0.14	7.0	Pass
			RB8#4	22.22	1.45	21.52	0.14	7.0	Pass
			RB8#7	22.17	1.45	21.47	0.14	7.0	Pass
			RB15#0	22.22	1.45	21.52	0.14	7.0	Pass
		16-QAM	RB1#0	22.03	1.45	21.33	0.14	7.0	Pass
			RB1#7	22.1	1.45	21.4	0.14	7.0	Pass
			RB1#14	22.03	1.45	21.33	0.14	7.0	Pass
			RB8#0	21.28	1.45	20.58	0.11	7.0	Pass
			RB8#4	21.27	1.45	20.57	0.11	7.0	Pass
			RB8#7	21.26	1.45	20.56	0.11	7.0	Pass
			RB15#0	21.2	1.45	20.5	0.11	7.0	Pass
	MCH	QPSK	RB1#0	23.11	1.45	22.41	0.17	7.0	Pass
			RB1#7	23.07	1.45	22.37	0.17	7.0	Pass
			RB1#14	23.17	1.45	22.47	0.18	7.0	Pass
			RB8#0	22.2	1.45	21.5	0.14	7.0	Pass
			RB8#4	22.19	1.45	21.49	0.14	7.0	Pass
			RB8#7	22.14	1.45	21.44	0.14	7.0	Pass
			RB15#0	22.18	1.45	21.48	0.14	7.0	Pass
		16-QAM	RB1#0	22.56	1.45	21.86	0.15	7.0	Pass
			RB1#7	22.54	1.45	21.84	0.15	7.0	Pass
			RB1#14	22.55	1.45	21.85	0.15	7.0	Pass
			RB8#0	21.2	1.45	20.5	0.11	7.0	Pass
			RB8#4	21.21	1.45	20.51	0.11	7.0	Pass
			RB8#7	21.22	1.45	20.52	0.11	7.0	Pass
			RB15#0	21.21	1.45	20.51	0.11	7.0	Pass
	HCH	QPSK	RB1#0	23.11	1.45	22.41	0.17	7.0	Pass
			RB1#7	23.04	1.45	22.34	0.17	7.0	Pass
			RB1#14	22.97	1.45	22.27	0.17	7.0	Pass
			RB8#0	22.13	1.45	21.43	0.14	7.0	Pass
			RB8#4	22.13	1.45	21.43	0.14	7.0	Pass
			RB8#7	22.04	1.45	21.34	0.14	7.0	Pass
			RB15#0	22.12	1.45	21.42	0.14	7.0	Pass
		16-QAM	RB1#0	22.15	1.45	21.45	0.14	7.0	Pass
			RB1#7	22.16	1.45	21.46	0.14	7.0	Pass
			RB1#14	22.01	1.45	21.31	0.14	7.0	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND26 (Part22)									
			RB8#0	21.19	1.45	20.49	0.11	7.0	Pass
			RB8#4	21.18	1.45	20.48	0.11	7.0	Pass
			RB8#7	21.11	1.45	20.41	0.11	7.0	Pass
			RB15#0	21.07	1.45	20.37	0.11	7.0	Pass
5 MHz	LCH	QPSK	RB1#0	23.19	1.45	22.49	0.18	7.0	Pass
			RB1#13	23.17	1.45	22.47	0.18	7.0	Pass
			RB1#24	23.12	1.45	22.42	0.17	7.0	Pass
			RB12#0	22.21	1.45	21.51	0.14	7.0	Pass
			RB12#6	22.2	1.45	21.5	0.14	7.0	Pass
			RB12#13	22.18	1.45	21.48	0.14	7.0	Pass
			RB25#0	22.21	1.45	21.51	0.14	7.0	Pass
		16-QAM	RB1#0	22.32	1.45	21.62	0.15	7.0	Pass
			RB1#13	22.35	1.45	21.65	0.15	7.0	Pass
			RB1#24	22.37	1.45	21.67	0.15	7.0	Pass
			RB12#0	21.31	1.45	20.61	0.12	7.0	Pass
			RB12#6	21.31	1.45	20.61	0.12	7.0	Pass
			RB12#13	21.28	1.45	20.58	0.11	7.0	Pass
			RB25#0	21.23	1.45	20.53	0.11	7.0	Pass
	MCH	QPSK	RB1#0	23.22	1.45	22.52	0.18	7.0	Pass
			RB1#13	23.11	1.45	22.41	0.17	7.0	Pass
			RB1#24	23.17	1.45	22.47	0.18	7.0	Pass
			RB12#0	22.21	1.45	21.51	0.14	7.0	Pass
			RB12#6	22.19	1.45	21.49	0.14	7.0	Pass
			RB12#13	22.21	1.45	21.51	0.14	7.0	Pass
			RB25#0	22.15	1.45	21.45	0.14	7.0	Pass
		16-QAM	RB1#0	22.73	1.45	22.03	0.16	7.0	Pass
			RB1#13	22.63	1.45	21.93	0.16	7.0	Pass
			RB1#24	22.64	1.45	21.94	0.16	7.0	Pass
			RB12#0	21.38	1.45	20.68	0.12	7.0	Pass
			RB12#6	21.28	1.45	20.58	0.11	7.0	Pass
			RB12#13	21.34	1.45	20.64	0.12	7.0	Pass
			RB25#0	21.23	1.45	20.53	0.11	7.0	Pass
	HCH	QPSK	RB1#0	23.22	1.45	22.52	0.18	7.0	Pass
			RB1#13	23.13	1.45	22.43	0.17	7.0	Pass
			RB1#24	23.02	1.45	22.32	0.17	7.0	Pass
			RB12#0	22.2	1.45	21.5	0.14	7.0	Pass
			RB12#6	22.1	1.45	21.4	0.14	7.0	Pass
			RB12#13	22.07	1.45	21.37	0.14	7.0	Pass
			RB25#0	22.13	1.45	21.43	0.14	7.0	Pass
		16-QAM	RB1#0	22.3	1.45	21.6	0.14	7.0	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND26 (Part22)									
			RB1#13	22.23	1.45	21.53	0.14	7.0	Pass
			RB1#24	22.16	1.45	21.46	0.14	7.0	Pass
			RB12#0	21.28	1.45	20.58	0.11	7.0	Pass
			RB12#6	21.17	1.45	20.47	0.11	7.0	Pass
			RB12#13	21.07	1.45	20.37	0.11	7.0	Pass
			RB25#0	21.09	1.45	20.39	0.11	7.0	Pass
10 MHz	LCH	QPSK	RB1#0	23.39	1.45	22.69	0.19	7.0	Pass
			RB1#25	23.08	1.45	22.38	0.17	7.0	Pass
			RB1#49	23.38	1.45	22.68	0.19	7.0	Pass
			RB25#0	22.25	1.45	21.55	0.14	7.0	Pass
			RB25#13	22.25	1.45	21.55	0.14	7.0	Pass
			RB25#25	22.27	1.45	21.57	0.14	7.0	Pass
			RB50#0	22.31	1.45	21.61	0.14	7.0	Pass
		16-QAM	RB1#0	22.45	1.45	21.75	0.15	7.0	Pass
			RB1#25	22.1	1.45	21.4	0.14	7.0	Pass
			RB1#49	22.25	1.45	21.55	0.14	7.0	Pass
			RB25#0	21.27	1.45	20.57	0.11	7.0	Pass
			RB25#13	21.26	1.45	20.56	0.11	7.0	Pass
			RB25#25	21.27	1.45	20.57	0.11	7.0	Pass
			RB50#0	21.26	1.45	20.56	0.11	7.0	Pass
	MCH	QPSK	RB1#0	23.37	1.45	22.67	0.18	7.0	Pass
			RB1#25	23.07	1.45	22.37	0.17	7.0	Pass
			RB1#49	23.48	1.45	**22.78**	0.19	7.0	Pass
			RB25#0	22.25	1.45	21.55	0.14	7.0	Pass
			RB25#13	22.18	1.45	21.48	0.14	7.0	Pass
			RB25#25	22.3	1.45	21.6	0.14	7.0	Pass
			RB50#0	22.26	1.45	21.56	0.14	7.0	Pass
		16-QAM	RB1#0	22.77	1.45	22.07	0.16	7.0	Pass
			RB1#25	22.49	1.45	21.79	0.15	7.0	Pass
			RB1#49	22.84	1.45	22.14	0.16	7.0	Pass
			RB25#0	21.32	1.45	20.62	0.12	7.0	Pass
			RB25#13	21.22	1.45	20.52	0.11	7.0	Pass
			RB25#25	21.31	1.45	20.61	0.12	7.0	Pass
			RB50#0	21.27	1.45	20.57	0.11	7.0	Pass
	HCH	QPSK	RB1#0	23.45	1.45	22.75	0.19	7.0	Pass
			RB1#25	23.16	1.45	22.46	0.18	7.0	Pass
			RB1#49	23.27	1.45	22.57	0.18	7.0	Pass
			RB25#0	22.26	1.45	21.56	0.14	7.0	Pass
			RB25#13	22.27	1.45	21.57	0.14	7.0	Pass
			RB25#25	22.23	1.45	21.53	0.14	7.0	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND26 (Part22)									
			RB50#0	22.35	1.45	21.65	0.15	7.0	Pass
		16-QAM	RB1#0	22.4	1.45	21.7	0.15	7.0	Pass
			RB1#25	22.24	1.45	21.54	0.14	7.0	Pass
			RB1#49	22.32	1.45	21.62	0.15	7.0	Pass
			RB25#0	21.34	1.45	20.64	0.12	7.0	Pass
			RB25#13	21.36	1.45	20.66	0.12	7.0	Pass
			RB25#25	21.28	1.45	20.58	0.11	7.0	Pass
			RB50#0	21.32	1.45	20.62	0.12	7.0	Pass
15 MHz	LCH	QPSK	RB1#0	23.46	1.45	22.76	0.19	7.0	Pass
			RB1#38	23.14	1.45	21.65	0.15	7.0	Pass
			RB1#74	23.6	1.45	21.7	0.15	7.0	Pass
			RB36#0	22.45	1.45	21.75	0.15	7.0	Pass
			RB36#19	22.18	1.45	21.48	0.14	7.0	Pass
			RB36#39	22.15	1.45	21.45	0.14	7.0	Pass
			RB75#0	22.3	1.45	21.6	0.14	7.0	Pass
		16-QAM	RB1#0	22.33	1.45	21.63	0.15	7.0	Pass
			RB1#38	22.06	1.45	21.36	0.14	7.0	Pass
			RB1#74	22.54	1.45	21.84	0.15	7.0	Pass
			RB36#0	21.45	1.45	20.75	0.12	7.0	Pass
			RB36#19	21.26	1.45	20.56	0.11	7.0	Pass
			RB36#39	21.07	1.45	20.37	0.11	7.0	Pass
			RB75#0	21.34	1.45	20.64	0.12	7.0	Pass
	MCH	QPSK	RB1#0	23.41	1.45	22.71	0.19	7.0	Pass
			RB1#38	23.06	1.45	22.36	0.17	7.0	Pass
			RB1#74	23.51	1.45	22.81	0.19	7.0	Pass
			RB36#0	22.45	1.45	21.75	0.15	7.0	Pass
			RB36#19	22.21	1.45	21.51	0.14	7.0	Pass
			RB36#39	22.1	1.45	21.4	0.14	7.0	Pass
			RB75#0	22.28	1.45	21.58	0.14	7.0	Pass
		16-QAM	RB1#0	22.84	1.45	22.14	0.16	7.0	Pass
			RB1#38	22.48	1.45	21.78	0.15	7.0	Pass
			RB1#74	22.97	1.45	22.27	0.17	7.0	Pass
			RB36#0	21.49	1.45	20.79	0.12	7.0	Pass
			RB36#19	21.24	1.45	20.54	0.11	7.0	Pass
			RB36#39	21.14	1.45	20.44	0.11	7.0	Pass
			RB75#0	21.3	1.45	20.6	0.11	7.0	Pass
	HCH	QPSK	RB1#0	23.44	1.45	22.74	0.19	7.0	Pass
			RB1#38	23.16	1.45	22.46	0.18	7.0	Pass
			RB1#74	23.46	1.45	22.76	0.19	7.0	Pass
			RB36#0	22.5	1.45	21.8	0.15	7.0	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Limit (W)	Verdict
LTE BAND26 (Part22)									
			RB36#19	22.26	1.45	21.56	0.14	7.0	Pass
			RB36#39	22.08	1.45	21.38	0.14	7.0	Pass
			RB75#0	22.31	1.45	21.61	0.14	7.0	Pass
		16-QAM	RB1#0	22.8	1.45	22.1	0.16	7.0	Pass
			RB1#38	22.49	1.45	21.79	0.15	7.0	Pass
			RB1#74	22.81	1.45	22.11	0.16	7.0	Pass
			RB36#0	21.47	1.45	20.77	0.12	7.0	Pass
			RB36#19	21.24	1.45	20.54	0.11	7.0	Pass
			RB36#39	21.13	1.45	20.43	0.11	7.0	Pass
			RB75#0	21.36	1.45	20.66	0.12	7.0	Pass

A.2 Peak to Average Ratio

Note 1: For average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB. For GSM, GPRS and EGPRS, there are peak power to demonstrate compliance, PAR measurements are not required.

Note 2: Test plots please refer to the document "Annex No.: BL-EC2120331-501 Data Part 1.pdf".

LTE Mode Test Data

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	Peak to Average Ratio (dB)	Limit (dB)	Refer to Plot[Note2]	Verdict
LTE Band 14	10 MHz	MCH	QPSK	RB1#0	6.41	13	1.1	Pass
				RB50#0	4.79	13	1.2	Pass
			16-QAM	RB1#0	7.02	13	1.3	Pass
				RB50#0	5.78	13	1.4	Pass
LTE Band 26 (Part22)	15 MHz	LCH	QPSK	RB1#0	4.69	13	2.1	Pass
				RB75#0	5.51	13	2.2	Pass
			16-QAM	RB1#0	5.53	13	2.3	Pass
				RB75#0	6.42	13	2.4	Pass
		MCH	QPSK	RB1#0	4.63	13	2.5	Pass
				RB75#0	5.42	13	2.6	Pass
			16-QAM	RB1#0	5.49	13	2.7	Pass
				RB75#0	6.40	13	2.8	Pass
		HCH	QPSK	RB1#0	4.53	13	2.9	Pass
				RB75#0	5.50	13	2.10	Pass
			16-QAM	RB1#0	5.36	13	2.11	Pass
				RB75#0	6.47	13	2.12	Pass
LTE Band 26 (Part90)	10 MHz	MCH	QPSK	RB1#0	6.11	13	3.1	Pass
				RB50#0	4.81	13	3.2	Pass
			16-QAM	RB1#0	6.74	13	3.3	Pass
				RB50#0	5.71	13	3.4	Pass

A.3 Occupied Bandwidth

Note 1: All modes were tested, but only the typical data were reported in this report.

Note 2: Test plots please refer to the document “Annex No.: BL-EC2120331-501 Data Part 2.pdf”.

LTE Mode Test Data

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	Measured 99% Occupied Bandwidth (MHz)	Measured -26 dB Occupied Bandwidth (MHz)	Refer to Plot[Note2]
Band 14	5 MHz	LCH	QPSK	RB25#0	4.49	4.98	1.1
			16-QAM	RB25#0	4.49	4.97	1.2
		MCH	QPSK	RB25#0	4.49	5.01	1.3
			16-QAM	RB25#0	4.50	5.00	1.4
		HCH	QPSK	RB25#0	4.49	4.96	1.5
			16-QAM	RB25#0	4.51	5.02	1.6
	10 MHz	MCH	QPSK	RB50#0	8.95	9.9	1.7
			16-QAM	RB50#0	8.96	9.83	1.8

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	Measured 99% Occupied Bandwidth (MHz)	Measured -26 dB Occupied Bandwidth (MHz)	Refer to Plot[Note2]
Band 26 (Part22)	1.4 MHz	LCH	QPSK	RB6#0	1.09	1.28	2.1
			16-QAM	RB6#0	1.09	1.3	2.2
		MCH	QPSK	RB6#0	1.09	1.3	2.3
			16-QAM	RB6#0	1.08	1.28	2.4
		HCH	QPSK	RB6#0	1.09	1.27	2.5
			16-QAM	RB6#0	1.09	1.28	2.6
	3 MHz	LCH	QPSK	RB15#0	2.7	2.99	2.7
			16-QAM	RB15#0	2.7	3	2.8
		MCH	QPSK	RB15#0	2.71	2.99	2.9
			16-QAM	RB15#0	2.7	2.99	2.10
		HCH	QPSK	RB15#0	2.71	3.01	2.11
			16-QAM	RB15#0	2.7	3	2.12
	5 MHz	LCH	QPSK	RB25#0	4.51	5.04	2.13
			16-QAM	RB25#0	4.5	4.99	2.14
		MCH	QPSK	RB25#0	4.49	5.03	2.15
			16-QAM	RB25#0	4.5	5.01	2.16
		HCH	QPSK	RB25#0	4.5	4.96	2.17
			16-QAM	RB25#0	4.5	5.02	2.18
	10 MHz	LCH	QPSK	RB50#0	8.98	10.01	2.19
			16-QAM	RB50#0	8.96	9.84	2.20
		MCH	QPSK	RB50#0	8.95	9.91	2.21
			16-QAM	RB50#0	8.95	9.91	2.22
		HCH	QPSK	RB50#0	8.97	9.91	2.23
			16-QAM	RB50#0	8.95	9.91	2.24
	15 MHz	LCH	QPSK	RB75#0	13.45	14.74	2.25
			16-QAM	RB75#0	13.46	14.68	2.26
		MCH	QPSK	RB75#0	13.4	14.69	2.27
			16-QAM	RB75#0	13.45	14.69	2.28
		HCH	QPSK	RB75#0	13.44	14.79	2.29
			16-QAM	RB75#0	13.45	14.74	2.30

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	Measured 99% Occupied Bandwidth (MHz)	Measured -26 dB Occupied Bandwidth (MHz)	Refer to Plot[Note2]
Band 26 (Part90)	1.4 MHz	LCH	QPSK	RB6#0	1.09	1.28	3.1
			16-QAM	RB6#0	1.09	1.3	3.2
		MCH	QPSK	RB6#0	1.09	1.29	3.3
			16-QAM	RB6#0	1.09	1.28	3.4
		HCH	QPSK	RB6#0	1.09	1.27	3.5
			16-QAM	RB6#0	1.09	1.28	3.6
	3 MHz	LCH	QPSK	RB15#0	2.71	2.98	3.7
			16-QAM	RB15#0	2.7	3	3.8
		MCH	QPSK	RB15#0	2.71	2.98	3.9
			16-QAM	RB15#0	2.7	3	3.10
		HCH	QPSK	RB15#0	2.7	3	3.11
			16-QAM	RB15#0	2.7	3	3.12
	5 MHz	LCH	QPSK	RB25#0	4.51	5	3.13
			16-QAM	RB25#0	4.5	4.97	3.14
		MCH	QPSK	RB25#0	4.49	5.01	3.15
			16-QAM	RB25#0	4.51	4.98	3.16
		HCH	QPSK	RB25#0	4.5	4.98	3.17
			16-QAM	RB25#0	4.51	5.01	3.18
	10 MHz	MCH	QPSK	RB50#0	8.96	9.97	3.19
			16-QAM	RB50#0	8.95	9.83	3.20

A.4 Frequency Stability

LTE Band 14 QPSK 10 MHz

Test Conditions		Frequency Deviation		Verdict
Power (VDC)	Temperature (°C)	MCH 793 MHz		
		Value (Hz)	Limits (Hz)	
3.8	-30	-0.73	±2091.25	Pass
	-20	-0.76		
	-10	-0.62		
	0	-0.89		
	+10	-0.81		
	+20	-0.86		
	+30	-0.82		
	+40	-0.77		
	+50	-0.95		
4.35	+25	-0.91		
3.7	+25	-0.81		

LTE Band 14 16QAM 10 MHz

Test Conditions		Frequency Deviation		Verdict
Power (VDC)	Temperature (°C)	MCH 793 MHz		
		Value (Hz)	Limits (Hz)	
3.8	-30	-1.71	±2091.25	Pass
	-20	-1.82		
	-10	-1.73		
	0	-0.32		
	+10	-1.76		
	+20	-2.14		
	+30	-1.68		
	+40	-1.82		
	+50	-1.71		
4.35	+25	-2.02		
3.7	+25	-1.46		

LTE Band 26 (Part90) QPSK 10 MHz

Test Conditions		Frequency Deviation		Verdict
Power (VDC)	Temperature (°C)	MCH 819 MHz		
		Value (Hz)	Limits (Hz)	
3.8	-15	-0.62	±2047.5	Pass
	-10	-0.44		
	0	-0.33		
	10	-0.31		
	20	-0.56		
	30	-0.57		
	40	-0.68		
	50	-0.24		
	55	-0.53		
4.35	+25	-0.76		
3.7	+25	-0.52		

LTE Band 26 (Part90) 16QAM 10 MHz

Test Conditions		Frequency Deviation		Verdict
Power (VDC)	Temperature (°C)	MCH 819 MHz		
		Value (Hz)	Limits (Hz)	
3.8	-15	-0.51	±2047.5	Pass
	-10	-0.35		
	0	-0.22		
	10	-0.54		
	20	-0.64		
	30	-0.33		
	40	-0.43		
	50	-0.36		
	55	-0.27		
4.35	+25	-0.42		
3.7	+25	-0.33		

LTE Band 26 (Part22) QPSK 10 MHz

Test Conditions		Frequency Deviation		Verdict
Power (VDC)	Temperature (°C)	MCH 836.5 MHz		
		Value (Hz)	Limits (Hz)	
3.8	-30	1.41	±2091.25	Pass
	-20	1.15		
	-10	1.37		
	0	1.43		
	+10	1.43		
	+20	1.29		
	+30	1.48		
	+40	1.35		
	+50	1.36		
4.35	+25	1.39		
3.7	+25	1.36		

LTE Band 26 (Part22) 16QAM 10 MHz

Test Conditions		Frequency Deviation		Verdict
Power (VDC)	Temperature (°C)	MCH 836.5 MHz		
		Value (Hz)	Limits (Hz)	
3.8	-30	-0.47	±2091.25	Pass
	-20	-0.30		
	-10	-0.51		
	0	-0.42		
	+10	-0.54		
	+20	-0.31		
	+30	-0.41		
	+40	-0.53		
	+50	-0.31		
4.35	+25	-0.21		
3.7	+25	-0.36		

A.5 Spurious Emission at Antenna Terminals

Note 1: Only the worst data with different bandwidth for LTE are shown here.
Note 2: The frequencies of verdict which are marked by "N/A" should be ignored because they are UE carrier frequency.

Note 3: Test plots please refer to the document “Annex No.: BL-EC2120331-501 Data Part 3.pdf”.

LTE Mode Test Verdict

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	Refer to Plot[Note3]	Verdict
Band 14	5 MHz	LCH	QPSK	RB1#0	1.1	Pass
			16-QAM	RB1#0	1.2	Pass
		MCH	QPSK	RB1#0	1.3	Pass
			16-QAM	RB1#0	1.4	Pass
		HCH	QPSK	RB1#0	1.5	Pass
			16-QAM	RB1#0	1.6	Pass
	10 MHz	MCH	QPSK	RB1#0	1.7	Pass
			16-QAM	RB1#0	1.8	Pass

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	Refer to Plot[Note3]	Verdict
Band 26 (Part22)	1.4 MHz	LCH	QPSK	RB1#0	2.1	Pass
			16-QAM	RB1#0	2.2	Pass
		MCH	QPSK	RB1#0	2.3	Pass
			16-QAM	RB1#0	2.4	Pass
		HCH	QPSK	RB1#0	2.5	Pass
			16-QAM	RB1#0	2.6	Pass
	3 MHz	LCH	QPSK	RB1#0	2.7	Pass
			16-QAM	RB1#0	2.8	Pass
		MCH	QPSK	RB1#0	2.9	Pass
			16-QAM	RB1#0	2.10	Pass
		HCH	QPSK	RB1#0	2.11	Pass
			16-QAM	RB1#0	2.12	Pass
	5 MHz	LCH	QPSK	RB1#0	2.13	Pass
			16-QAM	RB1#0	2.14	Pass
		MCH	QPSK	RB1#0	2.15	Pass
			16-QAM	RB1#0	2.16	Pass
		HCH	QPSK	RB1#0	2.17	Pass
			16-QAM	RB1#0	2.18	Pass
	10 MHz	LCH	QPSK	RB1#0	2.19	Pass
			16-QAM	RB1#0	2.20	Pass
		MCH	QPSK	RB1#0	2.21	Pass
			16-QAM	RB1#0	2.22	Pass
		HCH	QPSK	RB1#0	2.23	Pass
			16-QAM	RB1#0	2.24	Pass
	15 MHz	LCH	QPSK	RB1#0	2.25	Pass
			16-QAM	RB1#0	2.26	Pass
		MCH	QPSK	RB1#0	2.27	Pass
			16-QAM	RB1#0	2.28	Pass
		HCH	QPSK	RB1#0	2.29	Pass
			16-QAM	RB1#0	2.30	Pass

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	Refer to Plot[Note3]	Verdict
Band 26 (Part90)	1.4 MHz	LCH	QPSK	RB1#0	3.1	Pass
			16-QAM	RB1#0	3.2	Pass
		MCH	QPSK	RB1#0	3.3	Pass
			16-QAM	RB1#0	3.4	Pass
		HCH	QPSK	RB1#0	3.5	Pass
			16-QAM	RB1#0	3.6	Pass
	3 MHz	LCH	QPSK	RB1#0	3.7	Pass
			16-QAM	RB1#0	3.8	Pass
		MCH	QPSK	RB1#0	3.9	Pass
			16-QAM	RB1#0	3.10	Pass
		HCH	QPSK	RB1#0	3.11	Pass
			16-QAM	RB1#0	3.12	Pass
	5 MHz	LCH	QPSK	RB1#0	3.13	Pass
			16-QAM	RB1#0	3.14	Pass
		MCH	QPSK	RB1#0	3.15	Pass
			16-QAM	RB1#0	3.16	Pass
		HCH	QPSK	RB1#0	3.17	Pass
			16-QAM	RB1#0	3.18	Pass
	10 MHz	MCH	QPSK	RB1#0	3.19	Pass
			16-QAM	RB1#0	3.20	Pass

A.6 Band Edge

Note 1: Test plots please refer to the document “Annex No.: BL-EC2120331-501 Data Part 4.pdf”.

LTE Mode Test Verdict

	Emission Mask						
Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	In-band	Out-of-band	Verdict
Band 14	5 MHz	LCH	QPSK	RB1#0	1.1	2.1	Pass
				RB6#0	1.2	2.2	Pass
			16-QAM	RB1#0	1.3	2.3	Pass
				RB5#0	1.4	2.4	Pass
		HCH	QPSK	RB1#5	1.5	2.5	Pass
				RB6#0	1.6	2.6	Pass
			16-QAM	RB1#5	1.7	2.7	Pass
				RB5#1	1.8	2.8	Pass
	10 MHz	MCH (left)	QPSK	RB1#0	1.9	2.9	Pass
				RB6#0	1.10	2.10	Pass
			16-QAM	RB1#0	1.11	2.11	Pass
				RB5#0	1.12	2.12	Pass
		MCH (right)	QPSK	RB1#5	1.13	2.13	Pass
				RB6#0	1.14	2.14	Pass
			16-QAM	RB1#5	1.15	2.15	Pass
				RB5#1	1.16	2.16	Pass

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	Refer to Plot[Note1]	Verdict
Band 26 (Part22)	1.4 MHz	LCH	QPSK	RB1#0	3.1	Pass
				RB6#0	3.2	Pass
			16-QAM	RB1#0	3.3	Pass
				RB6#0	3.4	Pass
		HCH	QPSK	RB1#5	3.5	Pass
				RB6#0	3.6	Pass
			16-QAM	RB1#5	3.7	Pass
				RB6#0	3.8	Pass
	3 MHz	LCH	QPSK	RB1#0	3.9	Pass
				RB15#0	3.10	Pass
			16-QAM	RB1#0	3.11	Pass
				RB15#0	3.12	Pass
		HCH	QPSK	RB1#14	3.13	Pass
				RB15#0	3.14	Pass
			16-QAM	RB1#14	3.15	Pass
				RB15#0	3.16	Pass
	5 MHz	LCH	QPSK	RB1#0	3.17	Pass
				RB25#0	3.18	Pass
			16-QAM	RB1#0	3.19	Pass
				RB25#0	3.20	Pass
		HCH	QPSK	RB1#24	3.21	Pass
				RB25#0	3.22	Pass
			16-QAM	RB1#24	3.23	Pass
				RB25#0	3.24	Pass
	10 MHz	LCH	QPSK	RB1#0	3.25	Pass
				RB50#0	3.26	Pass
			16-QAM	RB1#0	3.27	Pass
				RB50#0	3.28	Pass
		HCH	QPSK	RB1#49	3.29	Pass
				RB50#0	3.30	Pass
			16-QAM	RB1#49	3.31	Pass
				RB50#0	3.32	Pass
	15 MHz	LCH	QPSK	RB1#0	3.33	Pass
				RB75#0	3.34	Pass
			16-QAM	RB1#0	3.35	Pass
				RB75#0	3.36	Pass
		HCH	QPSK	RB1#74	3.37	Pass
				RB75#0	3.38	Pass
			16-QAM	RB1#74	3.39	Pass
				RB75#0	3.40	Pass

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	Refer to Plot[Note1]		Verdict
					In-band	Out-of-band	
Band 26 (Part90)	1.4 MHz	LCH	QPSK	RB1#0	4.1	5.1	Pass
				RB6#0	4.2	5.2	Pass
			16-QAM	RB1#0	4.3	5.3	Pass
				RB6#0	4.4	5.4	Pass
		HCH	QPSK	RB1#5	4.5	5.5	Pass
				RB6#0	4.6	5.6	Pass
			16-QAM	RB1#5	4.7	5.7	Pass
				RB6#0	4.8	5.8	Pass
	3 MHz	LCH	QPSK	RB1#0	4.9	5.9	Pass
				RB15#0	4.10	5.10	Pass
			16-QAM	RB1#0	4.11	5.11	Pass
				RB15#0	4.12	5.12	Pass
		HCH	QPSK	RB1#14	4.13	5.13	Pass
				RB15#0	4.14	5.14	Pass
			16-QAM	RB1#14	4.15	5.15	Pass
				RB15#0	4.16	5.16	Pass
	5 MHz	LCH	QPSK	RB1#0	4.17	5.17	Pass
				RB25#0	4.18	5.18	Pass
			16-QAM	RB1#0	4.19	5.19	Pass
				RB25#0	4.20	5.20	Pass
		HCH	QPSK	RB1#24	4.21	5.21	Pass
				RB25#0	4.22	5.22	Pass
			16-QAM	RB1#24	4.23	5.23	Pass
				RB25#0	4.24	5.24	Pass
	10 MHz	MCH	QPSK	RB1#0	4.25	5.25	Pass
				RB50#0	4.26	5.26	Pass
			16-QAM	RB1#0	4.27	5.27	Pass
				RB50#0	4.28	5.28	Pass
		MCH	QPSK	RB1#49	4.29	5.29	Pass
				RB50#0	4.30	5.30	Pass
			16-QAM	RB1#49	4.31	5.31	Pass
				RB50#0	4.32	5.32	Pass

A.7 Field Strength of Spurious Radiation

Note 1: GSM and EGPRS modes have been verified, only the worst data with different transmit bandwidth for LTE are shown here.

Note 2: The frequencies of verdict which are marked by "N/A" should be ignored because they are UE carrier frequency.

Note 3: Test plots please refer to the document “Annex No.: BL-EC2110186-501 Data Part 5.pdf”.

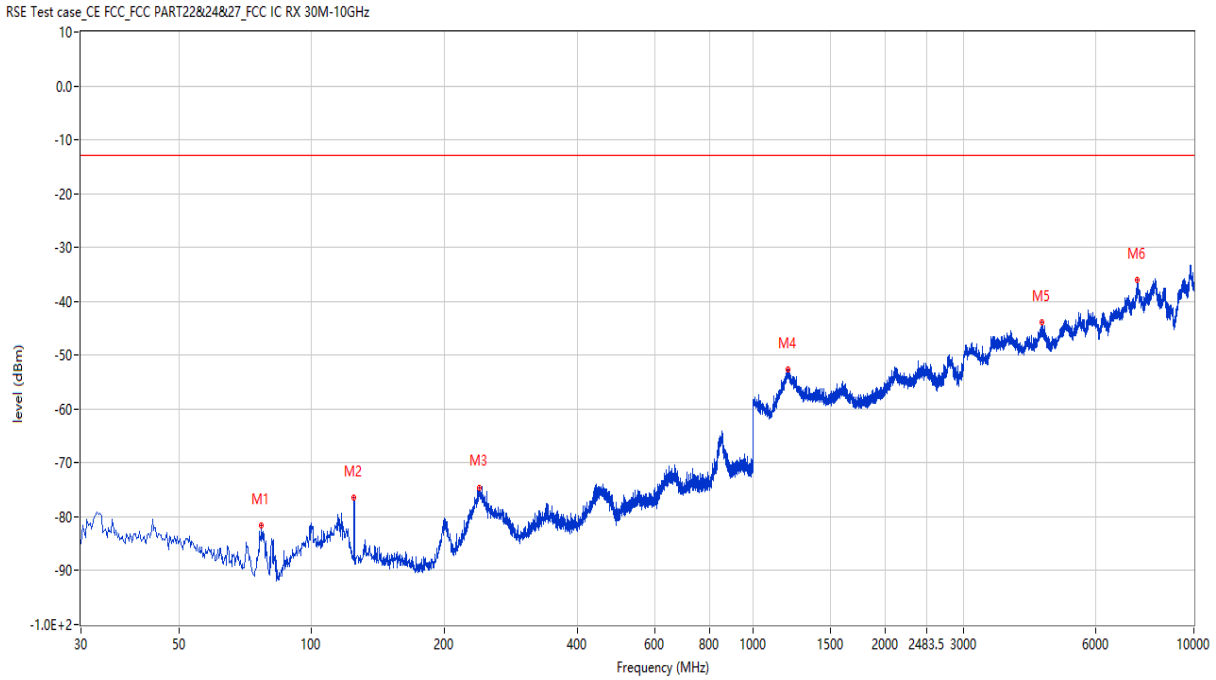
LTE Mode Test Verdict

Test Band	Test Bandwidth	Test Channel	Test Mode	Test RB (Size#Offset)	Refer to Plot[Note3]	Verdict
Band 14	5 MHz	MCH	QPSK	RB1#0	1.1	Pass
	10 MHz	MCH	QPSK	RB1#0	1.2	Pass
Band 26 (Part90)	1.4 MHz	MCH	QPSK	RB1#0	3.1	Pass
	3 MHz	MCH	QPSK	RB1#0	3.2	Pass
	5 MHz	MCH	QPSK	RB1#0	3.3	Pass
	10 MHz	MCH	QPSK	RB1#0	3.4	Pass
Band 26 (Part22)	1.4 MHz	MCH	QPSK	RB1#0	2.1	Pass
	3 MHz	MCH	QPSK	RB1#0	2.2	Pass
	5 MHz	MCH	QPSK	RB1#0	2.3	Pass
	10 MHz	MCH	QPSK	RB1#0	2.4	Pass
	15 MHz	MCH	QPSK	RB1#0	2.5	Pass

A.8 Receiver Spurious Emissions

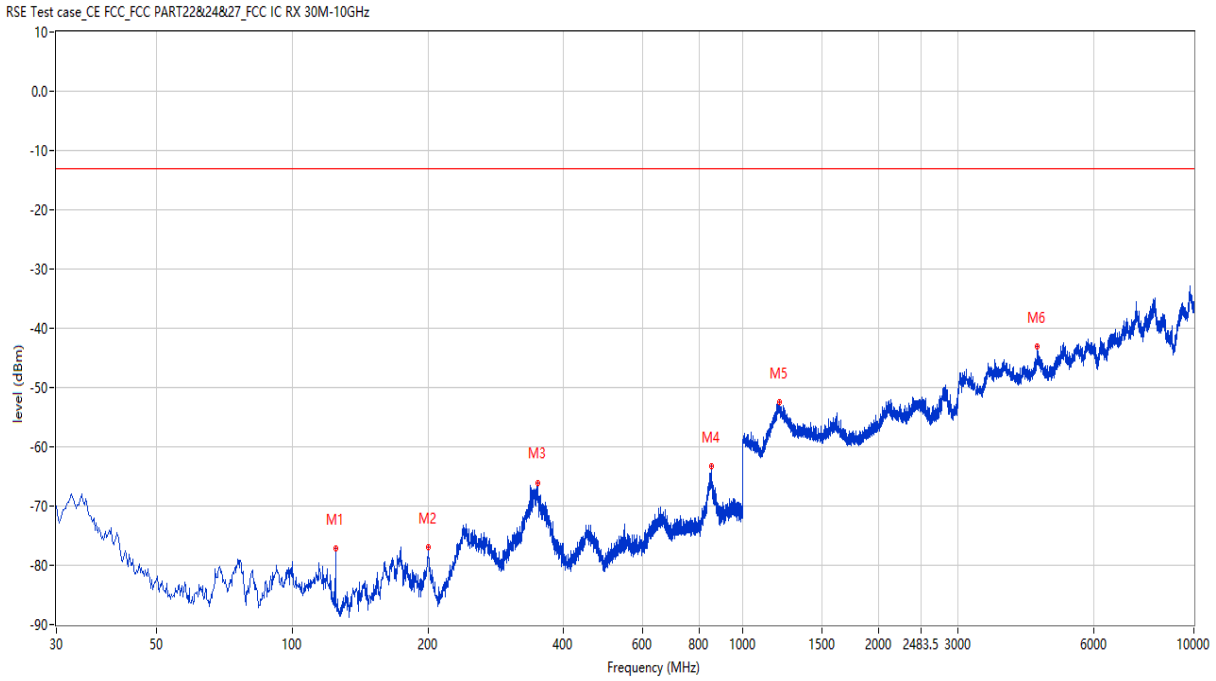
Note: Only the worst test results were recorded in this report.

30MHz to 10GHz, ANT V



Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
77.033	-81.62	-18.90	-13.0	-68.62	92.30	Vertical	Horizontal	Pass
124.794	-76.47	-14.25	-13.0	-63.47	342.40	Vertical	Horizontal	Pass
239.953	-74.54	-2.23	-13.0	-61.54	150.40	Vertical	Horizontal	Pass
1199.950	-52.66	2.33	-13.0	-39.66	74.00	Vertical	Horizontal	Pass
4534.366	-43.91	10.68	-13.0	-30.91	330.30	Vertical	Horizontal	Pass
7454.386	-36.08	17.88	-13.0	-23.08	143.10	Vertical	Horizontal	Pass

30MHz to 10GHz, ANT H

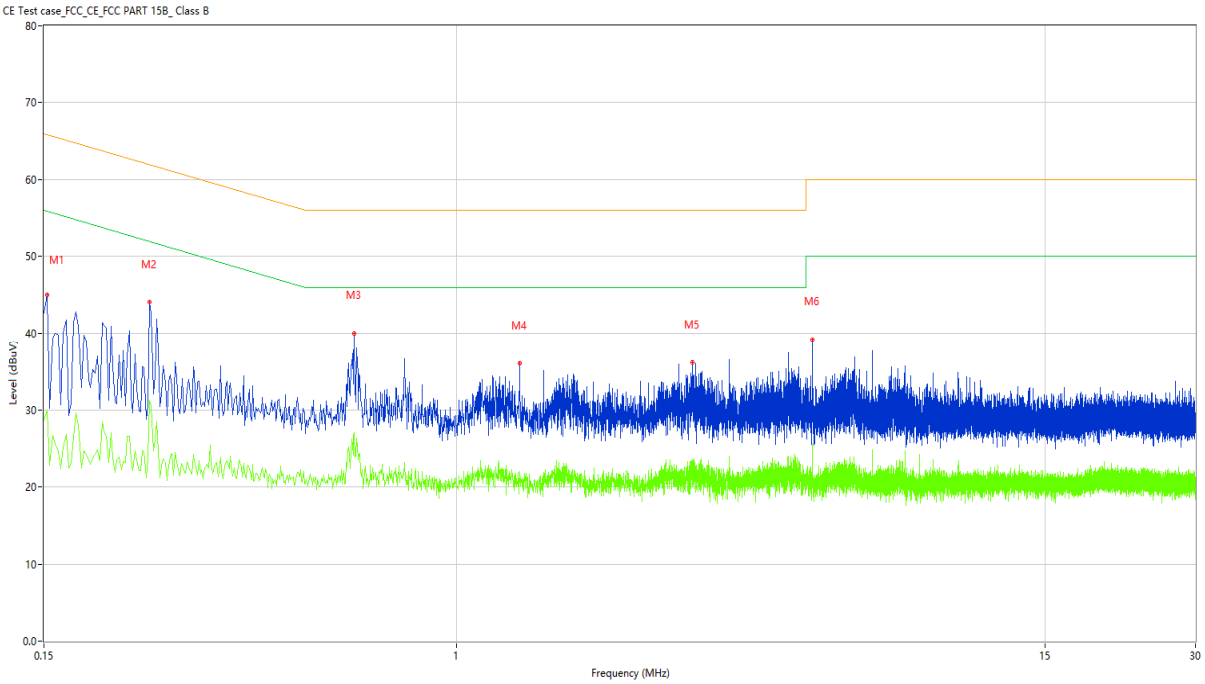


Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
124.794	-77.17	-14.25	-13.0	-64.17	359.40	Horizontal	Horizontal	Pass
200.920	-77.01	-8.36	-13.0	-64.01	153.50	Horizontal	Horizontal	Pass
350.262	-66.13	-6.40	-13.0	-53.13	110.40	Horizontal	Horizontal	Pass
852.354	-63.34	9.74	-13.0	-50.34	65.00	Horizontal	Horizontal	Pass
1205.449	-52.49	2.08	-13.0	-39.49	158.50	Horizontal	Horizontal	Pass
4485.379	-43.06	10.64	-13.0	-30.06	0.70	Horizontal	Horizontal	Pass

A.9 AC Power-line Conducted Emissions

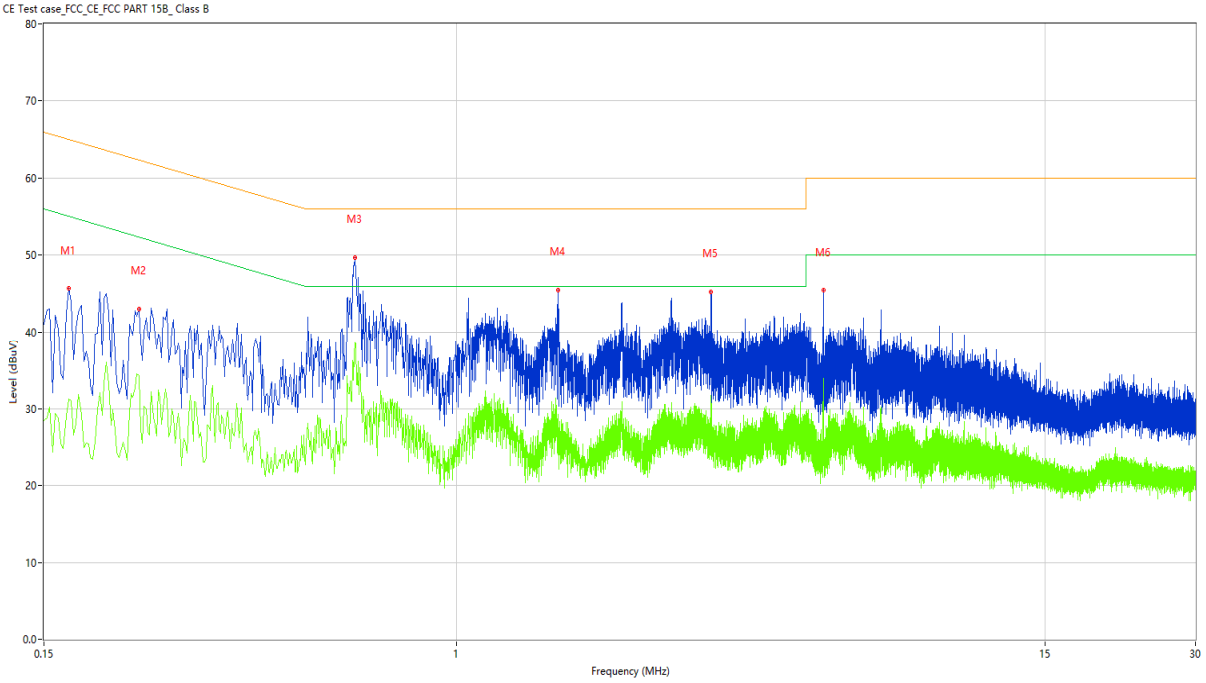
Note: Only the worst test results were recorded in this report.

L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.152	45.07	10.19	65.89	-20.82	Peak	L	Pass
1**	0.152	29.97	10.19	55.89	-25.92	AV	L	Pass
2	0.244	44.06	10.35	61.96	-17.90	Peak	L	Pass
2**	0.244	31.18	10.35	51.96	-20.78	AV	L	Pass
3	0.626	39.97	10.10	56.00	-16.03	Peak	L	Pass
3**	0.626	27.07	10.10	46.00	-18.93	AV	L	Pass
4	1.338	36.00	10.30	56.00	-20.00	Peak	L	Pass
4**	1.338	21.98	10.30	46.00	-24.02	AV	L	Pass
5	2.964	36.15	10.34	56.00	-19.85	Peak	L	Pass
5**	2.964	23.54	10.34	46.00	-22.46	AV	L	Pass
6	5.150	39.14	10.33	60.00	-20.86	Peak	L	Pass
6**	5.150	24.27	10.33	50.00	-25.73	AV	L	Pass

N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.166	42.43	10.13	65.16	-22.73	Peak	N	Pass
1**	0.166	28.95	10.13	55.16	-26.21	AV	N	Pass
2	0.232	43.05	10.34	62.38	-19.33	Peak	N	Pass
2**	0.232	34.25	10.34	52.38	-18.13	AV	N	Pass
3	0.628	49.73	10.11	56.00	-6.27	Peak	N	Pass
3**	0.628	38.58	10.11	46.00	-7.42	AV	N	Pass
4	1.596	45.55	10.19	56.00	-10.45	Peak	N	Pass
4**	1.596	29.29	10.19	46.00	-16.71	AV	N	Pass
5	3.230	45.27	10.40	56.00	-10.73	Peak	N	Pass
5**	3.230	31.40	10.40	46.00	-14.60	AV	N	Pass
6	5.416	45.50	10.27	60.00	-14.50	Peak	N	Pass
6**	5.416	31.12	10.27	50.00	-18.88	AV	N	Pass

ANNEX B TEST SETUP PHOTOS

Please refer to the document “BL-EC2120331-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer to the document “BL-EC2120331-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer to the document “BL-EC2120331-AI.PDF”.

--END OF REPORT--