TEST REPORT

Applicant:	Tri Cascade Inc.
Address:	19200 Von Karman Ave, Ste 400, Irvine, CA 92612
Equipment Type:	WiFi 7 5G Router
Model Name:	VOSIO 7G
Brand Name:	VOSIO
FCC ID:	2ACARVOSIOX7A
Test Standard:	47 CFR Part 2 (Others refer to chapter 3.1)
Sample Arrival Date:	Apr. 23, 2025
Test Date:	Apr. 25, 2025 - Jun.22, 2025
Date of Issue:	Jul. 5, 2025

ISSUED BY:

Shanghai Tejet Communications Technology Co., Ltd. Testing Center

Prepared by: Yan Jun

Reviewed by: Zhu Feng

Approved by: Chen Zidong

(Technical Director)

Revision History

Version	Issue Date	Revisions Content
Rev. 01	Jun. 24, 2025	Initial Issue
Rev. 02	Jul. 5, 2025	Add the test data of Transmitter Radiated Power (EIRP/ERP). The initial report is invalid.

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shanghai Tejet Communications Technology Co., Ltd. Testing Center
Address	1-2/F., Building 1, No.222, Xuanlan Road, Xuanqiao, Pudong New District, Shanghai, China

1.2 Test Location

Name	Shanghai Tejet Communications Technology Co., Ltd. Testing Center
Location	1-2/F., Building 1, No.222, Xuanlan Road, Xuanqiao, Pudong New District, Shanghai, China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory.The designation number is CN1352

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Tri Cascade Inc.
Address	19200 Von Karman Ave, Ste 400, Irvine, CA 92612

2.2 Manufacturer Information

Manufacturer	Tri Cascade Inc.
Address	19200 Von Karman Ave, Ste 400, Irvine, CA 92612

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	WiFi 7 5G Router
Model Name Under Test	VOSIO 7G
Series Model Name	N/A
Description of Model name differentiation	N/A
Sample No	SC-SZ2530890-S12
Hardware Version	FG18_MB_PCB_V1.3
Software Version	X7_PA _1.01.000008
Dimensions (Approx.)	L109mm*W109mm*H212mm
Weight (Approx.)	N/A

2.5 Technical Information

All Network and Wireless connectivity for EUT	4G Network FDD-LTE:B2/4/5/12/13/29/30/66/71 LTE CA Uplink (UL): CA_41C/CA_12A_66A/CA_13A_66A/CA_2A_12A/CA_2A_13A/CA_4A_13A 5G Network NR SA: n2/n5/n12/n14/n25/n30/n41/n48/n66/n70/n71/n77 ENDC: DC_5A_N2A/ DC_12A_N2A/ DC_13A_N2A/ DC_30A_N2A/DC_66A_N2A/ DC_2A_N5A/DC_12A_N5A/DC_13A_N5A/DC_30A_N5A/DC_48A_N5A/DC_66A_N5A/DC_12A_N25A/DC_48A_N25A/DC_66A_N25A/DC_2A_N30A/DC_5A_N30A/ DC_12A_N30A/DC_66A_N30A/DC_2A_N41A/DC_66A_N41A/DC_2A_N66A/DC_5A_N66A/DC_12A_N66A/DC_13A_N66A/DC_30A_N66A/DC_48A_N66A/DC_2A_N71A/DC_66A_N71A/DC_2A_N77A/DC_5A_N77A/DC_12A_N77A/DC_13A_N77A/DC_66A_N77A WiFi 7 Tri-band 2.4GHz + 5GHz +6GHz 802.11 a/b/g/n/ac/ax/be
About the Product	The equipment is WiFi 7 5G Router, intended for used with information technology equipment.

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

Operating Bands	4G Network TDD-LTE: B48 5G Network NR SA: n48	
Modulation Type	LTE	UL: QPSK/16QAM/64QAM DL: QPSK/16QAM/64QAM
	NR	CP-OFDM: QPSK/16QAM/64QAM/256QAM
		DFT-s-OFDM:PI/2BPSK/QPSK/16QAM/64QAM/256QAM
Antenna Type	PCB Antenna	
Antenna Gain	TDD LTE Band 48: -0.74 dBi（ANT0) -0.37 dBi(ANT1) -0.07 dBi(ANT2) -0.27 dBi(ANT3) NR Band n48: -0.74 dBi(ANT0) -0.48 dBi(ANT1) -0.07 dBi(ANT2) -0.27 dBi(ANT3)	
The Max RF Output Power	TDD Band 48:22.0 dBm NR Band n48:20.24dBm	

(EIRP/ERP)			
SCS and Channel Bandwidths		N48_SCS 30kHz: 10 MHz, 20 MHz, 40 MHz,	
Band	Power Class	Tx Frequency Range	Rx Frequency Range
LTE B48	3	3550 MHz ~ 3700 MHz	3550 MHz ~ 3700 MHz
NR n48	3	3550 MHz~3700 MHz	3550 MHz~3770 MHz

Note1: The EUT information provided by the applicant, except for The Max RF Conducted Power. For more detailed band specifications and features description, please refer to the manufacturer's specifications or user's manual.

Note2: All ENDC bands support Power Class 3 only.

Note3: These frequency ranges are only applicable in the United States.

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 96	CITIZENS BROADBAND RADIO SERVICE
3	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
4	KDB 971168 D01 v03	Measurement Guidance for Certification of Licensed Digital Transmitters

3.2 Test Verdict

No.	Test Description	FCC Part No.	Test Result	Test Verdict
1	Conducted RF Output Power	2.1046	Reporting only (ANNEX A.1)	Pass
2	Effective (Isotropic) Radiated Power	2.1046 96.41(b)	ANNEX A.1	Pass
3	Peak to Average Radio	2.1046	ANNEX A.2	Pass
4	Occupied Bandwidth	2.1049	ANNEX A.3	Pass
5	Frequency Stability	2.1055	ANNEX A.4	Pass
6	Spurious Emission at Antenna Terminals	2.1051 96.41(e)	ANNEX A.5	Pass
7	Band Edge	2.1051 96.41(e)	ANNEX A.6	Pass
8	Field Strength of Spurious Radiation	2.1053 96.41(e)	ANNEX A.7	Pass
Note :The RF module installed in the EUT is electronically and mechanically identical to the originally certified modules in the following test reports (all issued by SGS-CSTC Standards Technical Services (Suzhou) Co. Ltd. with original FCC ID:ZMOFM160NA): Report No. FYCR220400010001 (issued May 20, 2022) Therefore, this report only includes the results of out put power and LTE Band 48 spot check of the following item: Field Strength of Spurious Radiation.				

3.3 Decision Rule

☐ No Need

☑ Use General conformity decision rule (Consider uncertainty or not ☑ No ☐ Yes)

☐ Use Special Conformity Decision Rule (Consider uncertainty or not ☐ No ☐ Yes)

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

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

Relative Humidity		5% to 95%
Test Voltage of the EUT	NV (Normal Voltage)	12 V
	LV (Low Voltage)	10.8V
	HV (High Voltage)	13.2V
Test Temperature of the EUT	NT (Normal Temperature)	25 °C
	LT (Low Temperature)	0 °C
	HT (High Temperature)	+40 °C

4.2 Test Equipment List

Description	Manufacturer	Model	Equipment No.	Software /Firmware Version	Cal. Date	Cal. Due
BL410 2G/3G/4G/5G RF Test System						
Wideband Radio Communication Tester	R&S	CMW 500	BH-EMC-L064	V3.7.60	2025/2/12	2026/2/12
PSA Spectrum Analyzer	Agilent	E4440A	TJEMC013	A.11.07	2025/4/6	2026/4/6
Signal Generator	Keysight	N5173B	BH-EMC-L074	B.01.90	2025/2/12	2026/2/12
DC Power Supply	ITECH	IT6863A	BH-EMC-L113	N/A	2025/2/12	2026/2/12
Filter unit	BALUN	SU319F	BH-EMC-L077	N/A	N/A	N/A
Filter unit	BALUN	SU319F	BH-EMC-L078	N/A	N/A	N/A
Filter unit	BALUN	SU319F	BH-EMC-L122	N/A	N/A	N/A
Switch unit	BALUN	SU319	BH-EMC-L076	N/A	N/A	N/A
Wireless Communication Comprehensive Tester	Starpoint	SP9500-CTS	BH-EMC-L093	NA	2025/2/12	2026/2/12
Test Software	BALUN	BL410R	NA	V3.0.1.539	N/A	N/A
Radiated Test System						

Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	BH-EMC-L008	NA	2024/3/11	2027/3/10
Test Antenna-Horn	Schwarzbeck	BBHA 9120D	BH-EMC-L044	NA	2024/3/11	2027/3/10
Anechoic Chamber	YIHENG	9m*6m*6m	BH-EMC-L001	NA	2024/4/14	2027/4/13
EMI Receiver	KEYSIGHT	N9038A	BH-EMC-L015	A.21.06	2024/7/9	2025/7/9
Wideband Radio Communication Tester	R&S	CMW 500	BH-EMC-L094	V3.7.172	2025/2/12	2026/2/11
Radio Communication Analyzer	Anritsu	MT8000A	TJOTA080	N/A	2025/4/23	2026/4/23
Test Software	BALUN	BL410-E	NA	V21.919	N/A	N/A

4.3 Test Configurations

LTE Band	Bandwidth (MHz)						Modulation Type			RB#	Test Channel				
	1.4	3	5	10	15	20	QPSK	16-QAM	64-QAM	1	Half	Full	LCH	MCH	HCH
Effective (Isotropic) Radiated Power															
48	n	n	v	v	v	v	v	v	v	v	v	v	v	v	v
Peak to Average Ratio															
48	n	n	--	v	--	--	v	v	--	v	--	v	v	v	v
Occupied Bandwidth															
48	n	n	v	v	v	v	v	v	v	--	--	v	v	v	v
Frequency Stability															
48	n	n	--	v	--	--	v	v	--	--	--	v	--	v	--
Spurious Emission at Antenna Terminals															
48	n	n	v	v	v	v	v	v	--	v	--	--	v	v	v
Band Edge															
48	n	n	v	v	v	v	v	v	--	v	--	v	v	--	v
Field Strength of Spurious Radiation															
48	Worst case														

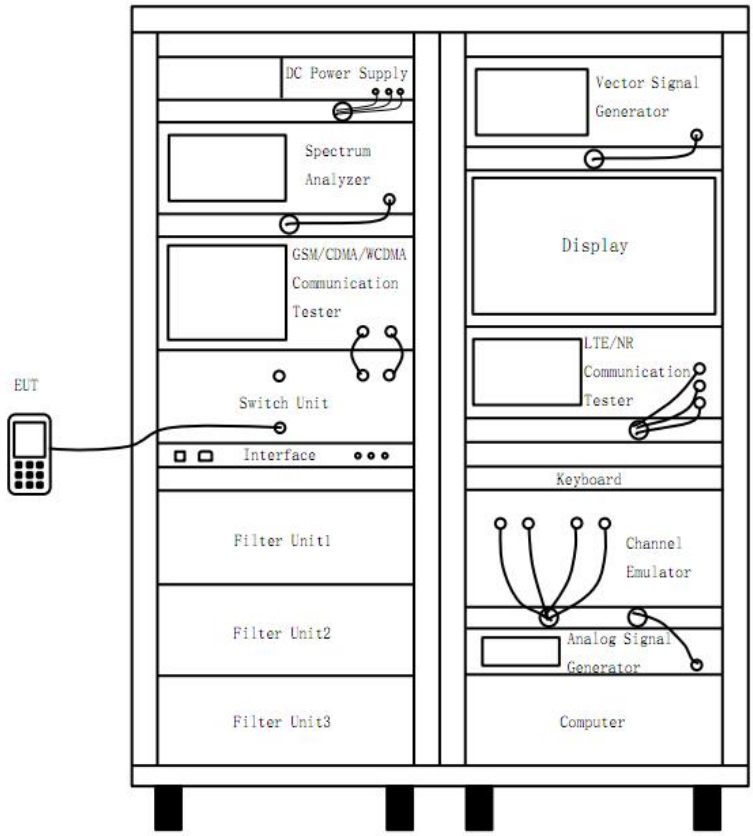
Note 1: The mark “v” means that this configuration is chosen for testing.
Note 2: The mark “n” means that this bandwidth is not supported.

Test Mode	UL Channel	Channel Bandwidth (MHz)	UL Channel No.	UL Frequency (MHz)
LTE Band 48	Low Range	5	55265	3552.5
		10	55290	3555
		15	55315	3557.5
		20	55340	3560
	Middle Range	5/10/15/20	55990	3625
	High Range	5	56715	3697.5
		10	56690	3695
		15	56665	3692.5
		20	56640	3690

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
NR Band n48	20	Low Range	637334	3560.01
		Middle Range	641666	3624.99
		High Range	646000	3690

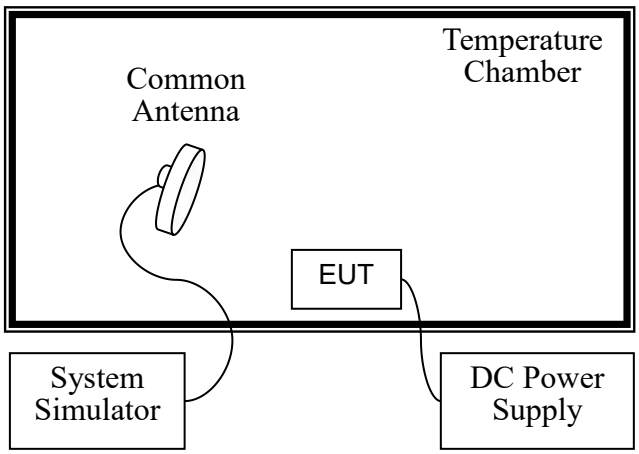
4.4 Test Setup

4.4.1 For Antenna Port Test



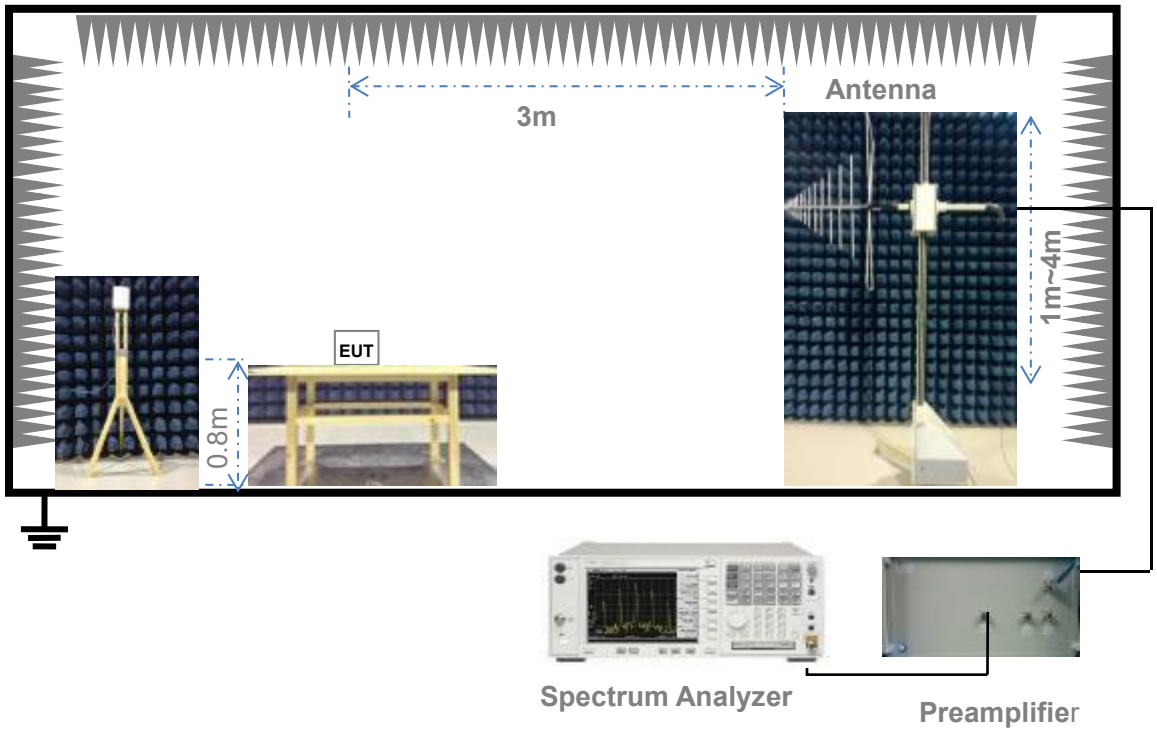
(Diagram 1)

4.4.2 For Frequency Stability Test



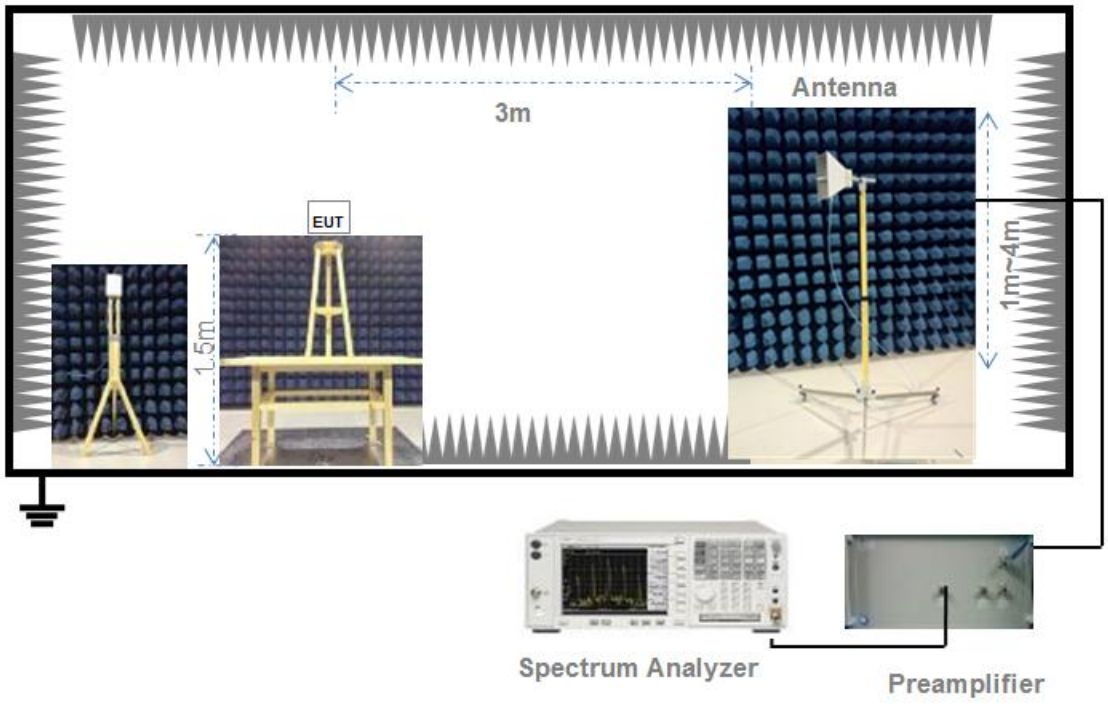
(Diagram 2)

4.4.3 For Radiated Test (30 MHz ~ 1 GHz)



(Diagram 3)

4.4.4 For Radiated Test (Above 1 GHz)



(Diagram 4)

5 TEST ITEMS

5.1 Transmitter Radiated Power (EIRP/ERP)

5.1.1 Limit

FCC § 2.1046 & 96.41(b)

According to FCC section 96.41(b), the maximum effective isotropic radiated power (EIRP) and maximum Power Spectral Density (PSD) of any CBSD and End User Device must comply with the limits shown in the table in this paragraph below:

Device	Maximum EIRP (dBm/10 megahertz)	Maximum PSD (dBm/MHz)
End User Device	23	N/A
Category A CBSD	30	20
Category B CBSD[note1]	47	37
Note1: Category B CBSDs will only be authorized for use after an ESC is approved and commercially deployed consistent with §§ 96.15 and 96.67.		

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

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.

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

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

FCC § 2.1055

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.

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 & 96.41(e)

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 § 96.41(e)

The conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed-25 dBm/MHz.The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed-40 dBm/MHz.

Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than1GHz.However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolutionbandwidth 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 emission are attenuated at least26 dB below the transmitter power.

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 & 96.41(e)

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 § 96.41(e)

The conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed-25 dBm/MHz.The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed-40 dBm/MHz.

Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than1GHz.However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolutionbandwidth 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 emission are attenuated at least26 dB below the transmitter power.

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 793–805 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 & 96.41(e)

FCC § 96.41(e)

The conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed-25 dBm/MHz.The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed-40 dBm/MHz.

Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than1GHz.However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolutionbandwidth 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 emission are attenuated at least26 dB below the transmitter power.

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.

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)	EIRP (dBm)	EIRP (W)	Limit (W)	Verdict
LTE BAND 48									
5 MHz	LCH	QPSK	RB1#0	20.89	-0.07	20.82	0.121	0.200	Pass
			RB1#13	21.03	-0.07	20.96	0.125	0.200	Pass
			RB1#24	21.11	-0.07	21.04	0.127	0.200	Pass
			RB12#0	19.96	-0.07	19.89	0.097	0.200	Pass
			RB12#6	19.96	-0.07	19.89	0.097	0.200	Pass
			RB12#13	20.06	-0.07	19.99	0.100	0.200	Pass
			RB25#0	19.99	-0.07	19.92	0.098	0.200	Pass
		16-QAM	RB1#0	20.12	-0.07	20.05	0.101	0.200	Pass
			RB1#13	20.23	-0.07	20.16	0.104	0.200	Pass
			RB1#24	20.34	-0.07	20.27	0.106	0.200	Pass
			RB12#0	18.96	-0.07	18.89	0.077	0.200	Pass
			RB12#6	18.95	-0.07	18.88	0.077	0.200	Pass
			RB12#13	19.05	-0.07	18.98	0.079	0.200	Pass
			RB25#0	18.98	-0.07	18.91	0.078	0.200	Pass
		64-QAM	RB1#0	18.9	-0.07	18.83	0.076	0.200	Pass
			RB1#12	19.05	-0.07	18.98	0.079	0.200	Pass
			RB1#24	19.08	-0.07	19.01	0.080	0.200	Pass
			RB12#0	17.91	-0.07	17.84	0.061	0.200	Pass
			RB12#6	17.92	-0.07	17.85	0.061	0.200	Pass
			RB12#13	18	-0.07	17.93	0.062	0.200	Pass
			RB25#0	17.98	-0.07	17.91	0.062	0.200	Pass
	MCH	QPSK	RB1#0	21.76	-0.07	21.69	0.148	0.200	Pass
			RB1#12	21.8	-0.07	21.73	0.149	0.200	Pass
			RB1#24	21.84	-0.07	21.77	0.150	0.200	Pass
			RB12#0	20.73	-0.07	20.66	0.116	0.200	Pass
			RB12#6	20.73	-0.07	20.66	0.116	0.200	Pass
			RB12#13	20.75	-0.07	20.68	0.117	0.200	Pass
			RB25#0	20.76	-0.07	20.69	0.117	0.200	Pass
		16-QAM	RB1#0	20.99	-0.07	20.92	0.124	0.200	Pass
			RB1#12	21	-0.07	20.93	0.124	0.200	Pass
			RB1#24	21.04	-0.07	20.97	0.125	0.200	Pass
			RB12#0	19.73	-0.07	19.66	0.092	0.200	Pass
			RB12#6	19.73	-0.07	19.66	0.092	0.200	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Limit (W)	Verdict
LTE BAND 48									
			RB12#13	19.77	-0.07	19.70	0.093	0.200	Pass
			RB25#0	19.75	-0.07	19.68	0.093	0.200	Pass
		64-QAM	RB1#0	20.23	-0.07	20.16	0.104	0.200	Pass
			RB1#12	20.28	-0.07	20.21	0.105	0.200	Pass
			RB1#24	20.29	-0.07	20.22	0.105	0.200	Pass
			RB12#0	18.82	-0.07	18.75	0.075	0.200	Pass
			RB12#6	18.85	-0.07	18.78	0.076	0.200	Pass
			RB12#13	18.86	-0.07	18.79	0.076	0.200	Pass
			RB25#0	18.71	-0.07	18.64	0.073	0.200	Pass
	HCH	QPSK	RB1#0	22	-0.07	21.93	0.156	0.200	Pass
			RB1#12	21.98	-0.07	21.91	0.155	0.200	Pass
			RB1#24	21.95	-0.07	21.88	0.154	0.200	Pass
			RB12#0	21	-0.07	20.93	0.124	0.200	Pass
			RB12#6	20.97	-0.07	20.90	0.123	0.200	Pass
			RB12#13	20.98	-0.07	20.91	0.123	0.200	Pass
			RB25#0	21.02	-0.07	20.95	0.124	0.200	Pass
		16-QAM	RB1#0	21.34	-0.07	21.27	0.134	0.200	Pass
			RB1#12	21.35	-0.07	21.28	0.134	0.200	Pass
			RB1#24	21.3	-0.07	21.23	0.133	0.200	Pass
			RB12#0	20.09	-0.07	20.02	0.100	0.200	Pass
			RB12#6	20.08	-0.07	20.01	0.100	0.200	Pass
			RB12#13	20.1	-0.07	20.03	0.101	0.200	Pass
			RB25#0	20.01	-0.07	19.94	0.099	0.200	Pass
		64-QAM	RB1#0	20.24	-0.07	20.17	0.104	0.200	Pass
			RB1#12	20.32	-0.07	20.25	0.106	0.200	Pass
			RB1#24	20.22	-0.07	20.15	0.104	0.200	Pass
			RB12#0	18.93	-0.07	18.86	0.077	0.200	Pass
			RB12#6	18.94	-0.07	18.87	0.077	0.200	Pass
			RB12#13	18.91	-0.07	18.84	0.077	0.200	Pass
			RB25#0	18.93	-0.07	18.86	0.077	0.200	Pass
10 MHz	LCH	QPSK	RB1#0	20.48	-0.07	20.41	0.110	0.200	Pass
			RB1#24	21.01	-0.07	20.94	0.124	0.200	Pass
			RB1#49	21.27	-0.07	21.20	0.132	0.200	Pass
			RB25#0	19.93	-0.07	19.86	0.097	0.200	Pass
			RB25#12	20.04	-0.07	19.97	0.099	0.200	Pass
			RB25#25	20.16	-0.07	20.09	0.102	0.200	Pass
			RB50#0	20.08	-0.07	20.01	0.100	0.200	Pass
		16-QAM	RB1#0	20.13	-0.07	20.06	0.101	0.200	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Limit (W)	Verdict
LTE BAND 48									
			RB1#24	20.29	-0.07	20.22	0.105	0.200	Pass
			RB1#49	20.56	-0.07	20.49	0.112	0.200	Pass
			RB25#0	18.93	-0.07	18.86	0.077	0.200	Pass
			RB25#12	19.05	-0.07	18.98	0.079	0.200	Pass
			RB25#25	19.15	-0.07	19.08	0.081	0.200	Pass
			RB50#0	19.04	-0.07	18.97	0.079	0.200	Pass
		64-QAM	RB1#0	18.69	-0.07	18.62	0.073	0.200	Pass
			RB1#24	18.9	-0.07	18.83	0.076	0.200	Pass
			RB1#49	19.13	-0.07	19.06	0.081	0.200	Pass
			RB25#0	17.94	-0.07	17.87	0.061	0.200	Pass
			RB25#12	18.03	-0.07	17.96	0.063	0.200	Pass
			RB25#25	18.16	-0.07	18.09	0.064	0.200	Pass
			RB50#0	18.03	-0.07	17.96	0.063	0.200	Pass
	MCH	QPSK	RB1#0	21.79	-0.07	21.72	0.149	0.200	Pass
			RB1#24	21.83	-0.07	21.76	0.150	0.200	Pass
			RB1#49	21.91	-0.07	21.84	0.153	0.200	Pass
			RB25#0	20.72	-0.07	20.65	0.116	0.200	Pass
			RB25#12	20.73	-0.07	20.66	0.116	0.200	Pass
			RB25#25	20.79	-0.07	20.72	0.118	0.200	Pass
			RB50#0	20.73	-0.07	20.66	0.116	0.200	Pass
		16-QAM	RB1#0	21.1	-0.07	21.03	0.127	0.200	Pass
			RB1#24	21.13	-0.07	21.06	0.128	0.200	Pass
			RB1#49	21.23	-0.07	21.16	0.131	0.200	Pass
			RB25#0	19.69	-0.07	19.62	0.092	0.200	Pass
			RB25#12	19.7	-0.07	19.63	0.092	0.200	Pass
			RB25#25	19.75	-0.07	19.68	0.093	0.200	Pass
			RB50#0	19.74	-0.07	19.67	0.093	0.200	Pass
		64-QAM	RB1#0	20.19	-0.07	20.12	0.103	0.200	Pass
			RB1#24	20.26	-0.07	20.19	0.104	0.200	Pass
			RB1#49	20.31	-0.07	20.24	0.106	0.200	Pass
			RB25#0	18.66	-0.07	18.59	0.072	0.200	Pass
			RB25#12	18.67	-0.07	18.60	0.072	0.200	Pass
			RB25#25	18.72	-0.07	18.65	0.073	0.200	Pass
			RB50#0	18.68	-0.07	18.61	0.073	0.200	Pass
	HCH	QPSK	RB1#0	22.01	-0.07	21.94	0.156	0.200	Pass
			RB1#24	21.95	-0.07	21.88	0.154	0.200	Pass
			RB1#49	21.96	-0.07	21.89	0.155	0.200	Pass
			RB25#0	20.98	-0.07	20.91	0.123	0.200	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Limit (W)	Verdict
LTE BAND 48									
			RB25#12	20.98	-0.07	20.91	0.123	0.200	Pass
			RB25#25	20.94	-0.07	20.87	0.122	0.200	Pass
			RB50#0	20.96	-0.07	20.89	0.123	0.200	Pass
		16-QAM	RB1#0	21.32	-0.07	21.25	0.133	0.200	Pass
			RB1#24	21.25	-0.07	21.18	0.131	0.200	Pass
			RB1#49	21.28	-0.07	21.21	0.132	0.200	Pass
			RB25#0	19.99	-0.07	19.92	0.098	0.200	Pass
			RB25#12	19.98	-0.07	19.91	0.098	0.200	Pass
			RB25#25	19.96	-0.07	19.89	0.097	0.200	Pass
			RB50#0	19.99	-0.07	19.92	0.098	0.200	Pass
		64-QAM	RB1#0	20.16	-0.07	20.09	0.102	0.200	Pass
			RB1#24	20.13	-0.07	20.06	0.101	0.200	Pass
			RB1#49	20.14	-0.07	20.07	0.102	0.200	Pass
			RB25#0	18.88	-0.07	18.81	0.076	0.200	Pass
			RB25#12	18.85	-0.07	18.78	0.076	0.200	Pass
			RB25#25	18.84	-0.07	18.77	0.075	0.200	Pass
			RB50#0	18.94	-0.07	18.87	0.077	0.200	Pass
15 MHz	LCH	QPSK	RB1#0	20.43	-0.07	20.36	0.109	0.200	Pass
			RB1#37	21.12	-0.07	21.05	0.127	0.200	Pass
			RB1#74	21.39	-0.07	21.32	0.136	0.200	Pass
			RB36#0	19.98	-0.07	19.91	0.098	0.200	Pass
			RB36#19	20.11	-0.07	20.04	0.101	0.200	Pass
			RB36#39	20.29	-0.07	20.22	0.105	0.200	Pass
			RB75#0	20.16	-0.07	20.09	0.102	0.200	Pass
		16-QAM	RB1#0	20.15	-0.07	20.08	0.102	0.200	Pass
			RB1#37	20.41	-0.07	20.34	0.108	0.200	Pass
			RB1#74	20.66	-0.07	20.59	0.115	0.200	Pass
			RB36#0	18.99	-0.07	18.92	0.078	0.200	Pass
			RB36#19	19.13	-0.07	19.06	0.081	0.200	Pass
			RB36#39	19.33	-0.07	19.26	0.084	0.200	Pass
			RB75#0	19.19	-0.07	19.12	0.082	0.200	Pass
		64-QAM	RB1#0	18.74	-0.07	18.67	0.074	0.200	Pass
			RB1#37	19.02	-0.07	18.95	0.079	0.200	Pass
			RB1#74	19.26	-0.07	19.19	0.083	0.200	Pass
			RB36#0	18.05	-0.07	17.98	0.063	0.200	Pass
			RB36#19	18.17	-0.07	18.10	0.065	0.200	Pass
			RB36#39	18.36	-0.07	18.29	0.067	0.200	Pass
			RB75#0	18.15	-0.07	18.08	0.064	0.200	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Limit (W)	Verdict
LTE BAND 48									
	MCH	QPSK	RB1#0	21.76	-0.07	21.69	0.148	0.200	Pass
			RB1#37	21.9	-0.07	21.83	0.152	0.200	Pass
			RB1#74	21.93	-0.07	21.86	0.153	0.200	Pass
			RB36#0	20.66	-0.07	20.59	0.115	0.200	Pass
			RB36#19	20.7	-0.07	20.63	0.116	0.200	Pass
			RB36#39	20.79	-0.07	20.72	0.118	0.200	Pass
			RB75#0	20.73	-0.07	20.66	0.116	0.200	Pass
		16-QAM	RB1#0	21.08	-0.07	21.01	0.126	0.200	Pass
			RB1#37	21.19	-0.07	21.12	0.129	0.200	Pass
			RB1#74	21.28	-0.07	21.21	0.132	0.200	Pass
			RB36#0	19.67	-0.07	19.60	0.091	0.200	Pass
			RB36#19	19.71	-0.07	19.64	0.092	0.200	Pass
			RB36#39	19.79	-0.07	19.72	0.094	0.200	Pass
			RB75#0	19.77	-0.07	19.70	0.093	0.200	Pass
		64-QAM	RB1#0	20.14	-0.07	20.07	0.102	0.200	Pass
			RB1#37	20.28	-0.07	20.21	0.105	0.200	Pass
			RB1#74	20.35	-0.07	20.28	0.107	0.200	Pass
			RB36#0	18.73	-0.07	18.66	0.073	0.200	Pass
			RB36#19	18.77	-0.07	18.70	0.074	0.200	Pass
			RB36#39	18.84	-0.07	18.77	0.075	0.200	Pass
			RB75#0	18.78	-0.07	18.71	0.074	0.200	Pass
	HCH	QPSK	RB1#0	22.04	-0.07	21.97	0.157	2.000	Pass
			RB1#37	22.06	-0.07	21.99	0.158	2.000	Pass
			RB1#74	21.99	-0.07	21.92	0.156	2.000	Pass
			RB36#0	20.98	-0.07	20.91	0.123	2.000	Pass
			RB36#19	20.98	-0.07	20.91	0.123	2.000	Pass
			RB36#39	20.96	-0.07	20.89	0.123	2.000	Pass
			RB75#0	20.99	-0.07	20.92	0.124	2.000	Pass
		16-QAM	RB1#0	21.29	-0.07	21.22	0.132	2.000	Pass
			RB1#37	21.3	-0.07	21.23	0.133	2.000	Pass
			RB1#74	21.26	-0.07	21.19	0.132	2.000	Pass
			RB36#0	20.03	-0.07	19.96	0.099	2.000	Pass
			RB36#19	20	-0.07	19.93	0.098	2.000	Pass
			RB36#39	20	-0.07	19.93	0.098	2.000	Pass
			RB75#0	20.01	-0.07	19.94	0.099	2.000	Pass
		64-QAM	RB1#0	20.08	-0.07	20.01	0.100	2.000	Pass
			RB1#37	20.11	-0.07	20.04	0.101	2.000	Pass
			RB1#74	20.04	-0.07	19.97	0.099	2.000	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Limit (W)	Verdict
LTE BAND 48									
			RB36#0	18.95	-0.07	18.88	0.077	2.000	Pass
			RB36#19	18.96	-0.07	18.89	0.077	2.000	Pass
			RB36#39	18.92	-0.07	18.85	0.077	2.000	Pass
			RB75#0	18.98	-0.07	18.91	0.078	2.000	Pass
20 MHz	LCH	QPSK	RB1#0	20.41	-0.07	20.34	0.108	2.000	Pass
			RB1#49	21.31	-0.07	21.24	0.133	2.000	Pass
			RB1#99	21.57	-0.07	21.50	0.141	2.000	Pass
			RB50#0	20.1	-0.07	20.03	0.101	2.000	Pass
			RB50#25	20.27	-0.07	20.20	0.105	2.000	Pass
			RB50#50	20.43	-0.07	20.36	0.109	2.000	Pass
			RB100#0	20.31	-0.07	20.24	0.106	2.000	Pass
		16-QAM	RB1#0	20.18	-0.07	20.11	0.103	2.000	Pass
			RB1#49	20.58	-0.07	20.51	0.112	2.000	Pass
			RB1#99	20.81	-0.07	20.74	0.119	2.000	Pass
			RB50#0	19.06	-0.07	18.99	0.079	2.000	Pass
			RB50#25	19.25	-0.07	19.18	0.083	2.000	Pass
			RB50#50	19.42	-0.07	19.35	0.086	2.000	Pass
			RB100#0	19.26	-0.07	19.19	0.083	2.000	Pass
		64-QAM	RB1#0	19.42	-0.07	19.35	0.086	2.000	Pass
			RB1#49	19.79	-0.07	19.72	0.094	2.000	Pass
			RB1#99	20.05	-0.07	19.98	0.100	2.000	Pass
			RB50#0	18.09	-0.07	18.02	0.063	2.000	Pass
			RB50#25	18.29	-0.07	18.22	0.066	2.000	Pass
			RB50#50	18.44	-0.07	18.37	0.069	2.000	Pass
			RB100#0	18.27	-0.07	18.20	0.066	2.000	Pass
	MCH	QPSK	RB1#0	21.75	-0.07	21.68	0.147	2.000	Pass
			RB1#49	21.89	-0.07	21.82	0.152	2.000	Pass
			RB1#99	22.01	-0.07	21.94	0.156	2.000	Pass
			RB50#0	20.72	-0.07	20.65	0.116	2.000	Pass
			RB50#25	20.77	-0.07	20.70	0.117	2.000	Pass
			RB50#50	20.84	-0.07	20.77	0.119	2.000	Pass
			RB100#0	20.76	-0.07	20.69	0.117	2.000	Pass
		16-QAM	RB1#0	20.75	-0.07	20.68	0.117	2.000	Pass
			RB1#49	20.92	-0.07	20.85	0.122	2.000	Pass
			RB1#99	21.02	-0.07	20.95	0.124	2.000	Pass
			RB50#0	19.7	-0.07	19.63	0.092	2.000	Pass
			RB50#25	19.76	-0.07	19.69	0.093	2.000	Pass
			RB50#50	19.82	-0.07	19.75	0.094	2.000	Pass

Test BW	Test Channel	Test Mode	Test RB (Size#Offset)	Conducted Output AV Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Limit (W)	Verdict
LTE BAND 48									
			RB100#0	19.76	-0.07	19.69	0.093	2.000	Pass
		64-QAM	RB1#0	19.71	-0.07	19.64	0.092	2.000	Pass
			RB1#49	19.89	-0.07	19.82	0.096	2.000	Pass
			RB1#99	19.98	-0.07	19.91	0.098	2.000	Pass
			RB50#0	18.72	-0.07	18.65	0.073	2.000	Pass
			RB50#25	18.78	-0.07	18.71	0.074	2.000	Pass
			RB50#50	18.83	-0.07	18.76	0.075	2.000	Pass
			RB100#0	18.75	-0.07	18.68	0.074	2.000	Pass
	HCH	QPSK	RB1#0	21.99	-0.07	21.92	0.156	2.000	Pass
			RB1#49	**22.07**	-0.07	22.00	0.158	2.000	Pass
			RB1#99	22.03	-0.07	21.96	0.157	2.000	Pass
			RB50#0	21	-0.07	20.93	0.124	2.000	Pass
			RB50#25	21.01	-0.07	20.94	0.124	2.000	Pass
			RB50#50	21	-0.07	20.93	0.124	2.000	Pass
			RB100#0	20.97	-0.07	20.90	0.123	2.000	Pass
		16-QAM	RB1#0	21.38	-0.07	21.31	0.135	2.000	Pass
			RB1#49	21.47	-0.07	21.40	0.138	2.000	Pass
			RB1#99	21.43	-0.07	21.36	0.137	2.000	Pass
			RB50#0	20.03	-0.07	19.96	0.099	2.000	Pass
			RB50#25	20.03	-0.07	19.96	0.099	2.000	Pass
			RB50#50	20.03	-0.07	19.96	0.099	2.000	Pass
			RB100#0	19.98	-0.07	19.91	0.098	2.000	Pass
		64-QAM	RB1#0	20.26	-0.07	20.19	0.104	2.000	Pass
			RB1#49	20.37	-0.07	20.30	0.107	2.000	Pass
			RB1#99	20.3	-0.07	20.23	0.105	2.000	Pass
			RB50#0	19.02	-0.07	18.95	0.079	2.000	Pass
			RB50#25	19.04	-0.07	18.97	0.079	2.000	Pass
			RB50#50	19.04	-0.07	18.97	0.079	2.000	Pass
			RB100#0	19.03	-0.07	18.96	0.079	2.000	Pass

NR Mode Test Data

Test BW	Test Channel	Test Mode	UL RB Number	UL RB Position	Conducted Output AV Power(dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (W)	Limit (W)	Verdict
NR Band n48										
10	LCH	PI/2 BPSK	12	6	19.78	-0.07	19.71	0.094	0.200	Pass
			1	1	19.93	-0.07	19.86	0.097	0.200	Pass
			1	22	19.95	-0.07	19.88	0.097	0.200	Pass
		QPSK	12	6	19.73	-0.07	19.66	0.092	0.200	Pass
			1	1	20.01	-0.07	19.94	0.099	0.200	Pass
			1	22	19.97	-0.07	19.90	0.098	0.200	Pass
		16QAM	12	6	18.95	-0.07	18.88	0.077	0.200	Pass
			1	1	19.05	-0.07	18.98	0.079	0.200	Pass
			1	22	19.08	-0.07	19.01	0.080	0.200	Pass
		64QAM	12	6	17.29	-0.07	17.22	0.053	0.200	Pass
			1	1	17.13	-0.07	17.06	0.051	0.200	Pass
			1	22	16.46	-0.07	16.39	0.044	0.200	Pass
		256QAM	12	6	17.25	-0.07	17.18	0.052	0.200	Pass
			1	1	17.13	-0.07	17.06	0.051	0.200	Pass
			1	22	17.09	-0.07	17.02	0.050	0.200	Pass
	MCH	PI/2 BPSK	12	6	20.09	-0.07	20.02	0.100	0.200	Pass
			1	1	20.09	-0.07	20.02	0.100	0.200	Pass
			1	22	20.24	-0.07	20.17	0.104	0.200	Pass
		QPSK	12	6	20.05	-0.07	19.98	0.100	0.200	Pass
			1	1	20.16	-0.07	20.09	0.102	0.200	Pass
			1	22	20.26	-0.07	20.19	0.104	0.200	Pass
		16QAM	12	6	19.17	-0.07	19.10	0.081	0.200	Pass
			1	1	19.1	-0.07	19.03	0.080	0.200	Pass
			1	22	19.23	-0.07	19.16	0.082	0.200	Pass
		64QAM	12	6	17.54	-0.07	17.47	0.056	0.200	Pass
			1	1	17.36	-0.07	17.29	0.054	0.200	Pass
			1	22	16.75	-0.07	16.68	0.047	0.200	Pass
		256QAM	12	6	17.49	-0.07	17.42	0.055	0.200	Pass
			1	1	17.36	-0.07	17.29	0.054	0.200	Pass
			1	22	17.34	-0.07	17.27	0.053	0.200	Pass
	HCH	PI/2 BPSK	12	6	19.82	-0.07	19.75	0.094	0.200	Pass
			1	1	19.72	-0.07	19.65	0.092	0.200	Pass
			1	22	19.79	-0.07	19.72	0.094	0.200	Pass
		QPSK	12	6	19.78	-0.07	19.71	0.094	0.200	Pass
			1	1	19.95	-0.07	19.88	0.097	0.200	Pass
			1	22	19.97	-0.07	19.90	0.098	0.200	Pass
		16QAM	12	6	18.62	-0.07	18.55	0.072	0.200	Pass

			1	1	18.79	-0.07	18.72	0.074	0.200	Pass
			1	22	18.9	-0.07	18.83	0.076	0.200	Pass
		64QAM	12	6	17.19	-0.07	17.12	0.052	0.200	Pass
			1	1	17.33	-0.07	17.26	0.053	0.200	Pass
			1	22	17.41	-0.07	17.34	0.054	0.200	Pass
		256QAM	12	6	17.17	-0.07	17.10	0.051	0.200	Pass
			1	1	16.96	-0.07	16.89	0.049	0.200	Pass
			1	22	17	-0.07	16.93	0.049	0.200	Pass
20	LCH	PI/2 BPSK	25	12	20.03	-0.07	19.96	0.099	0.200	Pass
			1	1	19.91	-0.07	19.84	0.096	0.200	Pass
			1	49	19.84	-0.07	19.77	0.095	0.200	Pass
		QPSK	25	12	19.96	-0.07	19.89	0.097	0.200	Pass
			1	1	19.87	-0.07	19.80	0.095	0.200	Pass
			1	49	19.82	-0.07	19.75	0.094	0.200	Pass
		16QAM	25	12	19.19	-0.07	19.12	0.082	0.200	Pass
			1	1	19.02	-0.07	18.95	0.079	0.200	Pass
			1	49	18.99	-0.07	18.92	0.078	0.200	Pass
		64QAM	25	12	17.5	-0.07	17.43	0.055	0.200	Pass
			1	1	17.41	-0.07	17.34	0.054	0.200	Pass
			1	49	17.47	-0.07	17.40	0.055	0.200	Pass
		256QAM	25	12	17.57	-0.07	17.50	0.056	0.200	Pass
			1	1	17.15	-0.07	17.08	0.051	0.200	Pass
			1	49	17.01	-0.07	16.94	0.049	0.200	Pass
	MCH	PI/2 BPSK	25	12	20.21	-0.07	20.14	0.103	0.200	Pass
			1	1	19.93	-0.07	19.86	0.097	0.200	Pass
			1	49	20.13	-0.07	20.06	0.101	0.200	Pass
		QPSK	25	12	20.09	-0.07	20.02	0.100	0.200	Pass
			1	1	19.96	-0.07	19.89	0.097	0.200	Pass
			1	49	20.09	-0.07	20.02	0.100	0.200	Pass
		16QAM	25	12	18.63	-0.07	18.56	0.072	0.200	Pass
			1	1	18.96	-0.07	18.89	0.077	0.200	Pass
			1	49	19.21	-0.07	19.14	0.082	0.200	Pass
		64QAM	25	12	17.65	-0.07	17.58	0.057	0.200	Pass
			1	1	17.06	-0.07	16.99	0.050	0.200	Pass
			1	49	17.29	-0.07	17.22	0.053	0.200	Pass
		256QAM	25	12	17.68	-0.07	17.61	0.058	0.200	Pass
			1	1	16.99	-0.07	16.92	0.049	0.200	Pass
			1	49	17.19	-0.07	17.12	0.052	0.200	Pass
	HCH	PI/2 BPSK	25	12	19.92	-0.07	19.85	0.097	0.200	Pass
			1	1	19.87	-0.07	19.80	0.095	0.200	Pass
			1	49	19.76	-0.07	19.69	0.093	0.200	Pass
		QPSK	25	12	19.93	-0.07	19.86	0.097	0.200	Pass
			1	1	19.96	-0.07	19.89	0.097	0.200	Pass

			1	49	19.89	-0.07	19.82	0.096	0.200	Pass
		16QAM	25	12	18.77	-0.07	18.70	0.074	0.200	Pass
			1	1	18.86	-0.07	18.79	0.076	0.200	Pass
			1	49	18.76	-0.07	18.69	0.074	0.200	Pass
		64QAM	25	12	17.38	-0.07	17.31	0.054	0.200	Pass
			1	1	17.21	-0.07	17.14	0.052	0.200	Pass
			1	49	16.73	-0.07	16.66	0.046	0.200	Pass
		256QAM	25	12	17.36	-0.07	17.29	0.054	0.200	Pass
			1	1	16.99	-0.07	16.92	0.049	0.200	Pass
			1	49	16.83	-0.07	16.76	0.047	0.200	Pass
40	LCH	PI/2 BPSK	50	25	19.99	-0.07	19.92	0.098	0.200	Pass
			1	1	20.14	-0.07	20.07	0.102	0.200	Pass
			1	104	19.98	-0.07	19.91	0.098	0.200	Pass
		QPSK	50	25	20	-0.07	19.93	0.098	0.200	Pass
			1	1	20.15	-0.07	20.08	0.102	0.200	Pass
			1	104	20.01	-0.07	19.94	0.099	0.200	Pass
		16QAM	50	25	18.97	-0.07	18.90	0.078	0.200	Pass
			1	1	19.14	-0.07	19.07	0.081	0.200	Pass
			1	104	19.24	-0.07	19.17	0.083	0.200	Pass
		64QAM	50	25	17.49	-0.07	17.42	0.055	0.200	Pass
			1	1	17.04	-0.07	16.97	0.050	0.200	Pass
			1	104	16.96	-0.07	16.89	0.049	0.200	Pass
		256QAM	50	25	17.49	-0.07	17.42	0.055	0.200	Pass
			1	1	17.27	-0.07	17.20	0.052	0.200	Pass
			1	104	17.04	-0.07	16.97	0.050	0.200	Pass
	MCH	PI/2 BPSK	50	25	20.18	-0.07	20.11	0.103	0.200	Pass
			1	1	20.14	-0.07	20.07	0.102	0.200	Pass
			1	104	**20.31**	-0.07	20.24	0.106	0.200	Pass
		QPSK	50	25	20.14	-0.07	20.07	0.102	0.200	Pass
			1	1	19.96	-0.07	19.89	0.097	0.200	Pass
			1	104	20.31	-0.07	20.24	0.106	0.200	Pass
		16QAM	50	25	19.03	-0.07	18.96	0.079	0.200	Pass
			1	1	19.1	-0.07	19.03	0.080	0.200	Pass
			1	104	13.96	-0.07	13.89	0.024	0.200	Pass
		64QAM	50	25	17.59	-0.07	17.52	0.056	0.200	Pass
			1	1	17.29	-0.07	17.22	0.053	0.200	Pass
			1	104	17.39	-0.07	17.32	0.054	0.200	Pass
		256QAM	50	25	17.64	-0.07	17.57	0.057	0.200	Pass
			1	1	17.19	-0.07	17.12	0.052	0.200	Pass
			1	104	17.36	-0.07	17.29	0.054	0.200	Pass
	HCH	PI/2 BPSK	50	25	19.98	-0.07	19.91	0.098	0.200	Pass
			1	1	19.84	-0.07	19.77	0.095	0.200	Pass
			1	104	19.97	-0.07	19.90	0.098	0.200	Pass

		QPSK	50	25	19.96	-0.07	19.89	0.097	0.200	Pass
			1	1	19.93	-0.07	19.86	0.097	0.200	Pass
			1	104	20	-0.07	19.93	0.098	0.200	Pass
		16QAM	50	25	18.88	-0.07	18.81	0.076	0.200	Pass
			1	1	18.9	-0.07	18.83	0.076	0.200	Pass
			1	104	19.15	-0.07	19.08	0.081	0.200	Pass
		64QAM	50	25	17.4	-0.07	17.33	0.054	0.200	Pass
			1	1	18.32	-0.07	18.25	0.067	0.200	Pass
			1	104	17.04	-0.07	16.97	0.050	0.200	Pass
		256QAM	50	25	17.42	-0.07	17.35	0.054	0.200	Pass
			1	1	16.89	-0.07	16.82	0.048	0.200	Pass
			1	104	16.94	-0.07	16.87	0.049	0.200	Pass

A.2 **Peak to Average Ratio**

Note:The test results of this item please refer to the report in the following test reports (all issued by SGS-CSTC Standards Technical Services (Suzhou) Co. Ltd with original FCC ID:ZMOFM160NA):
Report No. FYCR220400010001 (issued May 20, 2022)

A.3 **Occupied Bandwidth**

Note:The test results of this item please refer to the report in the following test reports (all issued by SGS-CSTC Standards Technical Services (Suzhou) Co. Ltd with original FCC ID:ZMOFM160NA):
Report No. FYCR220400010001 (issued May 20, 2022)

A.4 **Frequency Stability**

Note:The test results of this item please refer to the report in the following test reports (all issued by SGS-CSTC Standards Technical Services (Suzhou) Co. Ltd with original FCC ID:ZMOFM160NA):
Report No. FYCR220400010001 (issued May 20, 2022)

A.5 **Spurious Emission at Antenna Terminals**

Note:The test results of this item please refer to the report in the following test reports (all issued by SGS-CSTC Standards Technical Services (Suzhou) Co. Ltd with original FCC ID:ZMOFM160NA):
Report No. FYCR220400010001 (issued May 20, 2022)

A.6 **Band Edge**

Note:The test results of this item please refer to the report in the following test reports (all issued by SGS-CSTC Standards Technical Services (Suzhou) Co. Ltd with original FCC ID:ZMOFM160NA):
Report No. FYCR220400010001 (issued May 20, 2022)

A.7 **Field Strength of Spurious Radiation**

Note 1: All modes have been tested, and only the worst case data 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: Only LTE Band 48 executed spot check,and other Bands please refer to the report in the following test reports (all issued by SGS-CSTC Standards Technical Services (Suzhou) Co. Ltd with original FCC ID:ZMOFM160NA):
Report No. FYCR220400010001 (issued May 20, 2022)
Note 4: Test plots please refer to the document “Annex No.:BL-SZ2541209-502 Data Part 1.pdf”.

LTE Mode Test Verdict

Test Band	Test Bandwidth	Test Channel	Refer to PlotNote3	Verdict
Band 48	5 MHz	HCH	1.1	Pass

ANNEX B TEST SETUP PHOTOS

Please refer to the document “BL-SZ2541209-AR RF.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer to the document “BL-SZ2541209-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer to the document “BL-SZ2541209-AI.PDF”.

Statement

1. The Testing Center guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
2. For the report with Accreditation Symbol,the items marked with "☆" are not within the accredited scope.
3. This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the test report stamp.
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6. Any objection shall be raised to the Testing Center within 30 days after receiving the report.

--END OF REPORT--