FCC RF Test Report

APPLICANT	: Assured Wireless Corporation
EQUIPMENT	: Cellular Wi-Fi Router
BRAND NAME	: Assured Wireless
MODEL NAME	: AW12Fi
FCC ID	: 2A7ABAW12FI
STANDARD	: 47 CFR Part 2, 22(H), 24(E), 27(L), 27(H)
CLASSIFICATION	: PCS Licensed Transmitter (PCB)
TEST DATE(S)	: Dec. 08, 2022

This product installed a RF module (Brand Name: Assured Wireless, Model Name: AW12-HP, FCC ID: 2AUZ8AW12HP) during the test, only ERP/EIRP and RSE test items are tested in this report, all the other test results are leveraged from module RF report.

We, Sporton International Inc. (ShenZhen), would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (ShenZhen), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED Cert #5145.01

Sporton International Inc. (ShenZhen)

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055

People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG292702B	Rev. 01	Initial issue of report	Dec. 26, 2022

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	-	Report Only	-
	§22.913(a)(5)	Effective Radiated Power (Band 5)	ERP < 7 Watt	PASS	-
	§27.50(c)(10)	Effective Radiated Power (Band 12)	ERP < 3 Watt		-
	§24.232(c)	Equivalent Isotropic Radiated Power (Band 2)	EIRP < 2Watt		-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4) (Band 66)	EIRP < 1Watt		-
-	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	1
-	§2.1049	Occupied Bandwidth	-	Report Only	1
-	§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Conducted Band Edge Measurement (Band 2) (Band 5) (Band 12) (Band 4) (Band 66)	< 43+10log10(P[Watts])	PASS	1
-	§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Conducted Spurious Emission (Band 2) (Band 5) (Band 12) (Band 4) (Band 66)	< 43+10log10(P[Watts])	PASS	1
-	§2.1055 §22.355	Frequency Stability Temperature & Voltage	< 2.5 ppm for Part 22	PASS	1
	§2.1055 §24.235 §27.54		Within Authorized Band		
4.4	§2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Radiated Spurious Emission (Band 2) (Band 5) (Band 12) (Band 4) (Band 66)	< 43+10log$_{10}$(P[Watts])	PASS	Under limit 44.63 dB at 7484.36 MHz

Remark 1:
The conducted test items were leveraged from module RF report which can refer to Report No. FG9N0606B.

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Applicant

Assured Wireless Corporation
16885 W. Bernardo Dr., Suite 300, San Diego, CA 92127

1.2 Manufacturer

Assured Wireless Corporation
16885 W. Bernardo Dr., Suite 300, San Diego, CA 92127

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Cellular Wi-Fi Router
Brand Name	Assured Wireless
Model Name	AW12Fi
FCC ID	2A7ABAW12FI
HW Version	P2
SW Version	CPEWT_AW12Fi_v1.0.8
EUT Stage	Identical Prototype

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	LTE Band 2 : 1850 MHz ~ 1910 MHz LTE Band 4 : 1710 MHz ~ 1755 MHz LTE Band 5 : 824 MHz ~ 849 MHz LTE Band 12 : 699 MHz ~ 716 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz
Rx Frequency	LTE Band 2 : 1930 MHz ~ 1990 MHz LTE Band 4 : 2110 MHz ~ 2155 MHz LTE Band 5 : 869 MHz ~ 894 MHz LTE Band 12 : 729 MHz ~ 746 MHz LTE Band 66 : 2110 MHz~ 2180 MHz
Bandwidth	LTE Band 2 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 5 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 12 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 66 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz
Maximum Output Power to Antenna	LTE Band 2 : 22.20 dBm LTE Band 4 : 22.94 dBm LTE Band 5 : 23.03 dBm LTE Band 12 : 23.34 dBm LTE Band 66 : 22.95 dBm
Antenna Gain	LTE Band 2 : 3.0 dBi LTE Band 4 : 3.0 dBi

	LTE Band 5 : 1.0 dBi LTE Band 12 : 1.0 dBi LTE Band 66 : 3.0 dBi
Type of Modulation	QPSK / 16QAM / 64QAM

Remark: Verify that the power is less than the module power, so the module power is used when calculating ERP/EIRP in this report.

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Maximum ERP/EIRP and Emission Designator

LTE Band 2		QPSK		16QAM/64QAM	
BW (MHz)	**Frequency Range (MHz)**	**Maximum EIRP(W)**	**Emission Designator (99%OBW)**	**Maximum EIRP(W)**	**Emission Designator (99%OBW)**
1.4	1850.7 ~ 1909.3	0.3083	1M09G7D	0.2642	1M09W7D
3	1851.5 ~ 1908.5	0.3126	2M72G7D	0.2667	2M73W7D
5	1852.5 ~ 1907.5	0.3148	4M51G7D	0.2710	4M51W7D
10	1855.0 ~ 1905.0	0.3221	9M05G7D	0.2793	9M03W7D
15	1857.5 ~ 1902.5	0.3311	13M5G7D	0.2793	13M4W7D
20	1860.0 ~ 1900.0	0.3311	18M3G7D	0.2793	18M4W7D
LTE Band 4		**QPSK**		**16QAM/64QAM**	
BW (MHz)	**Frequency Range (MHz)**	**Maximum EIRP(W)**	**Emission Designator (99%OBW)**	**Maximum EIRP(W)**	**Emission Designator (99%OBW)**
1.4	1710.7 ~ 1754.3	0.3573	1M09G7D	0.3055	1M10W7D
3	1711.5 ~ 1753.5	0.3681	2M73G7D	0.3170	2M73W7D
5	1712.5 ~ 1752.5	0.3715	4M51G7D	0.3090	4M50W7D
10	1715.0 ~ 1750.0	0.3715	9M03G7D	0.3177	9M03W7D
15	1717.5 ~ 1747.5	0.3811	13M5G7D	0.3199	13M5W7D
20	1720.0 ~ 1745.0	0.3936	18M4G7D	0.3266	18M5W7D

LTE Band 5		QPSK		16QAM/64QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
1.4	824.7 ~ 848.3	0.1435	1M09G7D	0.1233	1M10W7D
3	825.5 ~ 847.5	0.1439	2M72G7D	0.1239	2M73W7D
5	826.5 ~ 846.5	0.1466	4M49G7D	0.1282	4M50W7D
10	829.0 ~ 844.0	0.1542	9M05G7D	0.1274	9M07W7D
LTE Band 12		**QPSK**		**16QAM/64QAM**	
BW (MHz)	**Frequency Range (MHz)**	**Maximum ERP(W)**	**Emission Designator (99%OBW)**	**Maximum ERP(W)**	**Emission Designator (99%OBW)**
1.4	699.7 ~ 715.3	0.1633	1M09G7D	0.1422	1M09W7D
3	700.5 ~ 714.5	0.1641	2M72G7D	0.1426	2M73W7D
5	701.5 ~ 713.5	0.1656	4M51G7D	0.1403	4M51W7D
10	704.0 ~ 711.0	0.1652	9M03G7D	0.1429	9M05W7D
LTE Band 66		**QPSK**		**16QAM/64QAM**	
BW (MHz)	**Frequency Range (MHz)**	**Maximum EIRP(W)**	**Emission Designator (99%OBW)**	**Maximum EIRP(W)**	**Emission Designator (99%OBW)**
1.4	1710.7 ~ 1779.3	0.3573	1M09G7D	0.3055	1M10W7D
3	1711.5 ~ 1778.5	0.3681	2M73G7D	0.3170	2M73W7D
5	1712.5 ~ 1777.5	0.3715	4M51G7D	0.3090	4M50W7D
10	1715.0 ~ 1775.0	0.3715	9M03G7D	0.3177	9M03W7D
15	1717.5 ~ 1772.5	0.3811	13M5G7D	0.3199	13M5W7D
20	1720.0 ~ 1770.0	0.3936	18M4G7D	0.3266	18M5W7D

Note:

1. The ERP/EIRP details refer to Appendix A.
2. LTE Band 66 overlaps the entire frequency range of LTE Band 4. Therefore, the test results provided in this report covers Band 66 as well as Band 4.
3. All modulations have been tested, and only the worst test results of PSK & QAM are shown in the report.

1.7 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 2, 22(H), 24(E), 27(L), 27(H)
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

1.8 Testing Location

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province China 518103 TEL: +86-755-33202398		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH03-SZ	CN1256	421272

1.9 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH03-SZ	AUDIX	E3	6.2009-8-24

1.10 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 2, 22(H), 24(E), 27(L), 27(H), 27(M), 27(N)
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

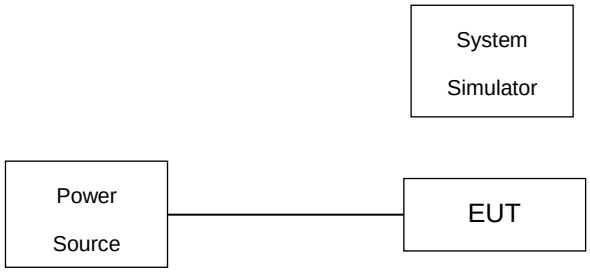
2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas License Digital Systems v03r01 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission. (X plane)

Test Items	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
E.R.P / E.I.R.P	2	v	v	v	v	v	v	v	v	v	v			v	v	v
	4	v	v	v	v	v	v	v	v	v	v			v	v	v
	5	v	v	v	v	-	-	v	v	v	v			v	v	v
	12	v	v	v	v	-	-	v	v	v	v			v	v	v
	66	v	v	v	v	v	v	v	v	v	v			v	v	v
Radiated Spurious Emission	2	Worst Case													v	
	5	Worst Case													v	
	12	Worst Case													v	
	66	Worst Case													v	
Note	1. The mark "**v** " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.															

2.2 Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

For detail, please refer to test mode configuration and setup photographs for each test item.

2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	WWAN Antenna	N/A	N/A	N/A	N/A	N/A

2.4 Frequency List of Low/Middle/High Channels

LTE Band 2 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	18700	18900	19100
	Frequency	1860	1880	1900
15	Channel	18675	18900	19125
	Frequency	1857.5	1880	1902.5
10	Channel	18650	18900	19150
	Frequency	1855	1880	1905
5	Channel	18625	18900	19175
	Frequency	1852.5	1880	1907.5
3	Channel	18615	18900	19185
	Frequency	1851.5	1880	1908.5
1.4	Channel	18607	18900	19193
	Frequency	1850.7	1880	1909.3

LTE Band 4 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	20050	20175	20300
	Frequency	1720	1732.5	1745
15	Channel	20025	20175	20325
	Frequency	1717.5	1732.5	1747.5
10	Channel	20000	20175	20350
	Frequency	1715	1732.5	1750
5	Channel	19975	20175	20375
	Frequency	1712.5	1732.5	1752.5
3	Channel	19965	20175	20385
	Frequency	1711.5	1732.5	1753.5
1.4	Channel	19957	20175	20393
	Frequency	1710.7	1732.5	1754.3

LTE Band 5 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
10	Channel	20450	20525	20600
	Frequency	829	836.5	844
5	Channel	20425	20525	20625
	Frequency	826.5	836.5	846.5
3	Channel	20415	20525	20635
	Frequency	825.5	836.5	847.5
1.4	Channel	20407	20525	20643
	Frequency	824.7	836.5	848.3

LTE Band 12 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
10	Channel	23060	23095	23130
	Frequency	704	707.5	711
5	Channel	23035	23095	23155
	Frequency	701.5	707.5	713.5
3	Channel	23025	23095	23165
	Frequency	700.5	707.5	714.5
1.4	Channel	23017	23095	23173
	Frequency	699.7	707.5	715.3

LTE Band 66 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	132072	132322	132572
	Frequency	1720	1745	1770
15	Channel	132047	132322	132597
	Frequency	1717.5	1745	1772.5
10	Channel	132022	132322	132622
	Frequency	1715	1745	1775
5	Channel	131997	132322	132647
	Frequency	1712.5	1745	1777.5
3	Channel	131987	132322	132657
	Frequency	1711.5	1745	1778.5
1.4	Channel	131979	132322	132665
	Frequency	1710.7	1745	1779.3

3 Conducted Test Items

3.1 Conducted Output Power and ERP/EIRP

3.1.1 Description of the Conducted Output Power Measurement and ERP/EIRP Measurement

A system simulator was used to establish communication with the EUT. Its parameters were 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 ERP of mobile transmitters must not exceed 7 Watts for LTE Band 5.

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 12.

The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 2.

The EIRP of mobile transmitters must not exceed 1 Watts for LTE Band 4 and Band 66.

According to KDB 412172 D01 Power Approach,

EIRP = $P_T + G_T – L_C$, ERP = EIRP -2.15, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.1.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the system simulator.
3. Set EUT at maximum power through the system simulator.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure and record the power level from the system simulator.

3.1.3 Test Result

Please refer to Appendix A.

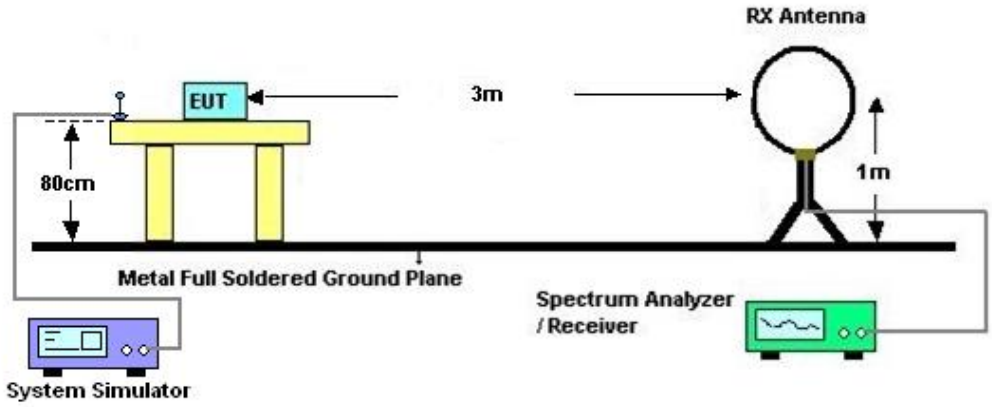
4 Radiated Test Items

4.1 Measuring Instruments

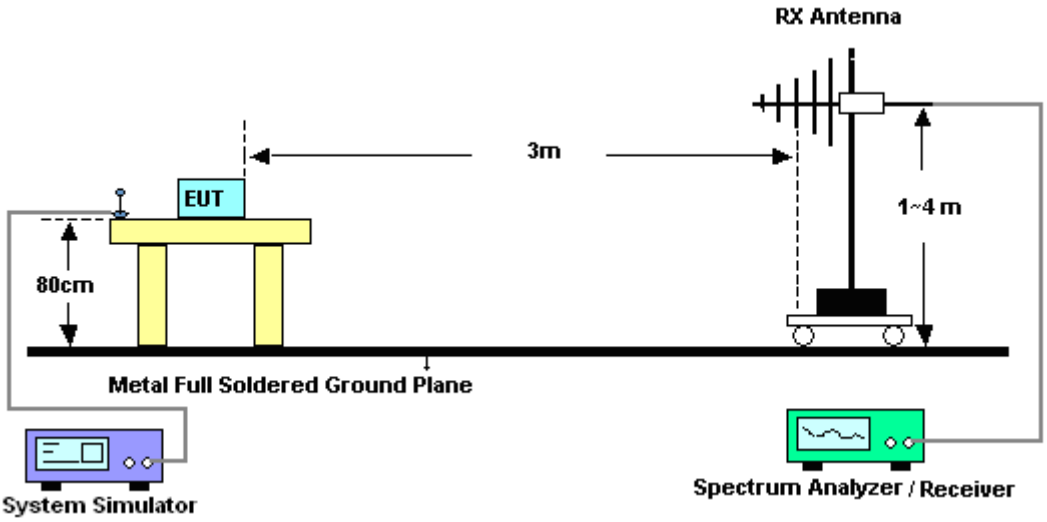
See list of measuring instruments of this test report.

4.2 Test Setup

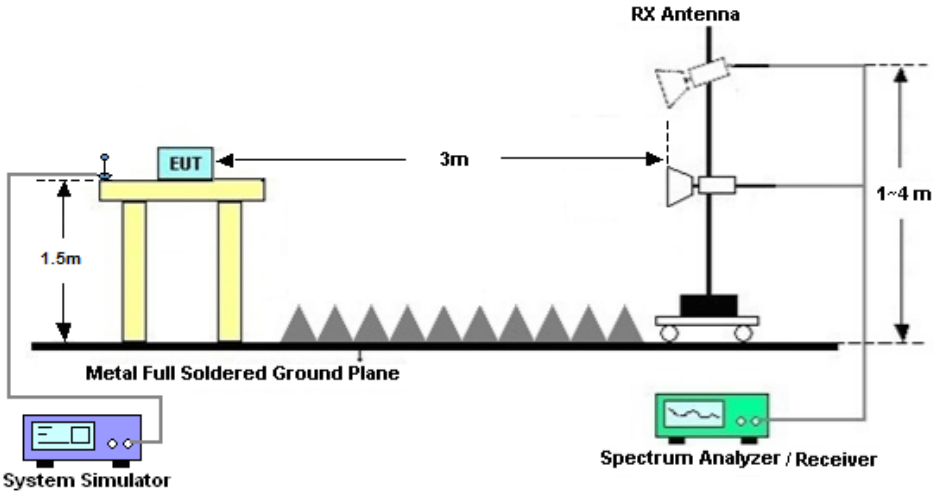
4.2.1 For radiated test below 30MHz



4.2.2 For radiated test from 30MHz to 1GHz



4.2.3 For radiated test above 1GHz



4.3 Test Result of Radiated Test

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

4.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (dBm) = EIRP - 2.15
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 06, 2022	Dec. 08, 2022	Apr. 05, 2023	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jun. 28, 2022	Dec. 08, 2022	Jun. 27, 2024	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 06, 2022	Dec. 08, 2022	Apr. 05, 2023	Radiation (03CH03-SZ
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Aug. 09, 2021	Dec. 08, 2022	Aug. 08, 2023	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Apr. 08, 2022	Dec. 08, 2022	Apr. 07, 2023	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 19, 2022	Dec. 08, 2022	Oct. 18, 2023	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 06, 2022	Dec. 08, 2022	Jul. 05, 2023	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 10, 2022	Dec. 08, 2022	Apr. 09, 2023	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 27, 2021	Dec. 08, 2022	Dec. 26, 2022	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010002729	N/A	Nov. 10, 2022	Dec. 08, 2022	Nov. 09, 2023	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Dec. 08, 2022	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Dec. 08, 2022	NCR	Radiation (03CH03-SZ)

NCR: No Calibration Required

6 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.0dB**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.6dB**

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.8dB**

---------- THE END ----------

Appendix A. Test Results of Conducted Test

ERP/EIRP

LTE Band 2 (GT - LC = 3.0 dB) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	18607	18900	19193	18615	18900	19185	18625	18900	19175
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1850.7	1880	1909.3	1851.5	1880	1908.5	1852.5	1880	1907.5
Conducted Power (dBm)	21.67	21.88	21.89	21.73	21.90	21.95	21.71	21.96	21.98
Conducted Power (Watts)	0.1469	0.1542	0.1545	0.1489	0.1549	0.1567	0.1483	0.1570	0.1578
EIRP(dBm)	24.67	24.88	24.89	24.73	24.90	24.95	24.71	24.96	24.98
EIRP(Watts)	0.2931	0.3076	0.3083	0.2972	0.3090	0.3126	0.2958	0.3133	0.3148

LTE Band 2 (GT - LC = 3.0 dB) QPSK									
Bandwidth	10M			15M			20M		
Channel	18650	18900	19150	18675	18900	19125	18650	18900	19100
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1855	1880	1905	1857.5	1880	1902.5	1860	1880	1900
Conducted Power (dBm)	21.78	21.85	22.08	21.86	21.98	22.20	21.83	21.88	22.20
Conducted Power (Watts)	0.1507	0.1531	0.1614	0.1535	0.1578	0.1660	0.1524	0.1542	0.1660
EIRP(dBm)	24.78	24.85	25.08	24.86	24.98	25.20	24.83	24.88	25.20
EIRP(Watts)	0.3006	0.3055	0.3221	0.3062	0.3148	0.3311	0.3041	0.3076	0.3311

LTE Band 2 (GT - LC = 3.0 dB) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	18607	18900	19193	18615	18900	19185	18625	18900	19175
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1850.7	1880	1909.3	1851.5	1880	1908.5	1852.5	1880	1907.5
Conducted Power (dBm)	20.91	21.12	21.22	20.88	21.26	21.16	21.08	21.27	21.33
Conducted Power (Watts)	0.1233	0.1294	0.1324	0.1225	0.1337	0.1306	0.1282	0.1340	0.1358
EIRP(dBm)	23.91	24.12	24.22	23.88	24.26	24.16	24.08	24.27	24.33
EIRP(Watts)	0.2460	0.2582	0.2642	0.2443	0.2667	0.2606	0.2559	0.2673	0.2710

LTE Band 2 (GT - LC = 3.0 dB) 16QAM									
Bandwidth	10M			15M			20M		
Channel	18650	18900	19150	18675	18900	19125	18650	18900	19100
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1855	1880	1905	1857.5	1880	1902.5	1860	1880	1900
Conducted Power (dBm)	21.18	21.26	21.46	21.31	21.31	21.46	21.28	21.17	21.46
Conducted Power (Watts)	0.1312	0.1337	0.1400	0.1352	0.1352	0.1400	0.1343	0.1309	0.1400
EIRP(dBm)	24.18	24.26	24.46	24.31	24.31	24.46	24.28	24.17	24.46
EIRP(Watts)	0.2618	0.2667	0.2793	0.2698	0.2698	0.2793	0.2679	0.2612	0.2793

LTE Band 2 (GT - LC = 3.0 dB) 64QAM									
Bandwidth	1.4M			3M			5M		
Channel	18607	18900	19193	18615	18900	19185	18625	18900	19175
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1850.7	1880	1909.3	1851.5	1880	1908.5	1852.5	1880	1907.5
Conducted Power (dBm)	19.96	20.13	20.03	19.89	20.22	20.16	19.97	20.23	20.23
Conducted Power (Watts)	0.0991	0.1030	0.1007	0.0975	0.1052	0.1038	0.0993	0.1054	0.1054
EIRP(dBm)	22.96	23.13	23.03	22.89	23.22	23.16	22.97	23.23	23.23
EIRP(Watts)	0.1977	0.2056	0.2009	0.1945	0.2099	0.2070	0.1982	0.2104	0.2104

LTE Band 2 (GT - LC = 3.0 dB) 64QAM									
Bandwidth	10M			15M			20M		
Channel	18650	18900	19150	18675	18900	19125	18650	18900	19100
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1855	1880	1905	1857.5	1880	1902.5	1860	1880	1900
Conducted Power (dBm)	20.05	20.06	20.29	20.21	20.18	20.40	20.09	20.13	20.43
Conducted Power (Watts)	0.1012	0.1014	0.1069	0.1050	0.1042	0.1096	0.1021	0.1030	0.1104
EIRP(dBm)	23.05	23.06	23.29	23.21	23.18	23.40	23.09	23.13	23.43
EIRP(Watts)	0.2018	0.2023	0.2133	0.2094	0.2080	0.2188	0.2037	0.2056	0.2203

LTE Band 5 (GT - LC = 1.0 dB) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	20407	20525	20643	20415	20525	20635	20425	20525	20625
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	824.7	836.5	848.3	825.5	836.5	847.5	826.5	836.5	846.5
Conducted Power (dBm)	22.39	22.37	22.72	22.26	22.42	22.73	22.51	22.57	22.81
Conducted Power (Watts)	0.1734	0.1726	0.1871	0.1683	0.1746	0.1875	0.1782	0.1807	0.1910
ERP(dBm)	21.24	21.22	21.57	21.11	21.27	21.58	21.36	21.42	21.66
ERP(Watts)	0.1330	0.1324	0.1435	0.1291	0.1340	0.1439	0.1368	0.1387	0.1466

LTE Band 5 (GT - LC = 1.0 dB) QPSK			
Bandwidth	10M		
Channel	20450	20525	20600
	(Low)	(Mid)	(High)
Frequency (MHz)	829	836.5	844
Conducted Power (dBm)	22.59	22.68	23.03
Conducted Power (Watts)	0.1816	0.1854	0.2009
ERP(dBm)	21.44	21.53	21.88
ERP(Watts)	0.1393	0.1422	0.1542

LTE Band 5 (GT - LC = 1.0 dB) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	20407	20525	20643	20415	20525	20635	20425	20525	20625
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	824.7	836.5	848.3	825.5	836.5	847.5	826.5	836.5	846.5
Conducted Power (dBm)	21.75	21.61	22.06	21.66	21.74	22.08	21.74	21.92	22.23
Conducted Power (Watts)	0.1496	0.1449	0.1607	0.1466	0.1493	0.1614	0.1493	0.1556	0.1671
ERP(dBm)	20.60	20.46	20.91	20.51	20.59	20.93	20.59	20.77	21.08
ERP(Watts)	0.1148	0.1112	0.1233	0.1125	0.1146	0.1239	0.1146	0.1194	0.1282

LTE Band 5 (GT - LC = 1.0 dB) 16QAM			
Bandwidth	10M		
Channel	20450	20525	20600
	(Low)	(Mid)	(High)
Frequency (MHz)	829	836.5	844
Conducted Power (dBm)	21.93	22.14	22.20
Conducted Power (Watts)	0.1560	0.1637	0.1660
ERP(dBm)	20.78	20.99	21.05
ERP(Watts)	0.1197	0.1256	0.1274

LTE Band 5 (GT - LC = 1.0 dB) 64QAM									
Bandwidth	1.4M			3M			5M		
Channel	20407	20525	20643	20415	20525	20635	20425	20525	20625
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	824.7	836.5	848.3	825.5	836.5	847.5	826.5	836.5	846.5
Conducted Power (dBm)	20.58	20.54	20.98	20.69	20.79	21.01	20.59	20.84	21.05
Conducted Power (Watts)	0.1143	0.1132	0.1253	0.1172	0.1199	0.1262	0.1146	0.1213	0.1274
ERP(dBm)	19.43	19.39	19.83	19.54	19.64	19.86	19.44	19.69	19.90
ERP(Watts)	0.0877	0.0869	0.0962	0.0899	0.0920	0.0968	0.0879	0.0931	0.0977

LTE Band 5 (GT - LC = 1.0 dB) 64QAM			
Bandwidth	10M		
Channel	20450	20525	20600
	(Low)	(Mid)	(High)
Frequency (MHz)	829	836.5	844
Conducted Power (dBm)	20.83	21.09	21.19
Conducted Power (Watts)	0.1211	0.1285	0.1315
ERP(dBm)	19.68	19.94	20.04
ERP(Watts)	0.0929	0.0986	0.1009

LTE Band 12 (GT - LC = 1.0 dB) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	23017	23095	23173	23025	23095	23165	23035	23095	23155
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	699.7	707.5	715.3	700.5	707.5	714.5	701.5	707.5	713.5
Conducted Power (dBm)	22.97	23.17	23.28	23.09	23.16	23.30	23.09	23.16	23.34
Conducted Power (Watts)	0.1982	0.2075	0.2128	0.2037	0.2070	0.2138	0.2037	0.2070	0.2158
ERP(dBm)	21.82	22.02	22.13	21.94	22.01	22.15	21.94	22.01	22.19
ERP(Watts)	0.1521	0.1592	0.1633	0.1563	0.1589	0.1641	0.1563	0.1589	0.1656

LTE Band 12 (GT - LC = 1.0 dB) QPSK			
Bandwidth	10M		
Channel	23060	23095	23130
	(Low)	(Mid)	(High)
Frequency (MHz)	704	707.5	711
Conducted Power (dBm)	23.15	23.21	23.33
Conducted Power (Watts)	0.2065	0.2094	0.2153
ERP(dBm)	22.00	22.06	22.18
ERP(Watts)	0.1585	0.1607	0.1652

LTE Band 12 (GT - LC = 1.0 dB) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	23017	23095	23173	23025	23095	23165	23035	23095	23155
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	699.7	707.5	715.3	700.5	707.5	714.5	701.5	707.5	713.5
Conducted Power (dBm)	22.36	22.54	22.68	22.35	22.55	22.69	22.56	22.49	22.62
Conducted Power (Watts)	0.1722	0.1795	0.1854	0.1718	0.1799	0.1858	0.1803	0.1774	0.1828
ERP(dBm)	21.21	21.39	21.53	21.20	21.40	21.54	21.41	21.34	21.47
ERP(Watts)	0.1321	0.1377	0.1422	0.1318	0.1380	0.1426	0.1384	0.1361	0.1403

LTE Band 12 (GT - LC = 1.0 dB) 16QAM			
Bandwidth	10M		
Channel	23060	23095	23130
	(Low)	(Mid)	(High)
Frequency (MHz)	704	707.5	711
Conducted Power (dBm)	22.52	22.61	22.70
Conducted Power (Watts)	0.1786	0.1824	0.1862
ERP(dBm)	21.37	21.46	21.55
ERP(Watts)	0.1371	0.1400	0.1429

LTE Band 12 (GT - LC = 1.0 dB) 64QAM									
Bandwidth	1.4M			3M			5M		
Channel	23017	23095	23173	23025	23095	23165	23035	23095	23155
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	699.7	707.5	715.3	700.5	707.5	714.5	701.5	707.5	713.5
Conducted Power (dBm)	21.17	21.40	21.62	21.39	21.42	21.63	21.34	21.43	21.60
Conducted Power (Watts)	0.1309	0.1380	0.1452	0.1377	0.1387	0.1455	0.1361	0.1390	0.1445
ERP(dBm)	20.02	20.25	20.47	20.24	20.27	20.48	20.19	20.28	20.45
ERP(Watts)	0.1005	0.1059	0.1114	0.1057	0.1064	0.1117	0.1045	0.1067	0.1109

LTE Band 12 (GT - LC = 1.0 dB) 64QAM			
Bandwidth	10M		
Channel	23060	23095	23130
	(Low)	(Mid)	(High)
Frequency (MHz)	704	707.5	711
Conducted Power (dBm)	21.43	21.44	21.61
Conducted Power (Watts)	0.1390	0.1393	0.1449
ERP(dBm)	20.28	20.29	20.46
ERP(Watts)	0.1067	0.1069	0.1112

LTE Band 66 (GT - LC = 3.0 dB) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	131979	132322	132665	131987	132322	132657	131997	132322	132647
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1710.7	1745	1779.3	1711.5	1745	1778.5	1712.5	1745	1777.5
Conducted Power (dBm)	22.53	22.44	22.19	22.66	22.53	22.33	22.70	22.54	22.35
Conducted Power (Watts)	0.1791	0.1754	0.1656	0.1845	0.1791	0.1710	0.1862	0.1795	0.1718
EIRP(dBm)	25.53	25.44	25.19	25.66	25.53	25.33	25.70	25.54	25.35
EIRP(Watts)	0.3573	0.3499	0.3304	0.3681	0.3573	0.3412	0.3715	0.3581	0.3428

LTE Band 66 (GT - LC = 3.0 dB) QPSK									
Bandwidth	10M			15M			20M		
Channel	132022	132322	132622	132047	132322	132597	132072	132322	132572
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(Mid)
Frequency (MHz)	1715	1745	1775	1717.5	1745	1772.5	1720	1745	1770
Conducted Power (dBm)	22.70	22.59	22.55	22.81	22.66	22.67	22.95	22.70	22.54
Conducted Power (Watts)	0.1862	0.1816	0.1799	0.1910	0.1845	0.1849	0.1972	0.1862	0.1795
EIRP(dBm)	25.70	25.59	25.55	25.81	25.66	25.67	25.95	25.70	25.54
EIRP(Watts)	0.3715	0.3622	0.3589	0.3811	0.3681	0.3690	0.3936	0.3715	0.3581

LTE Band 66 (GT - LC = 3.0 dB) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	131979	132322	132665	131987	132322	132657	131997	132322	132647
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1710.7	1745	1779.3	1711.5	1745	1778.5	1712.5	1745	1777.5
Conducted Power (dBm)	21.85	21.79	21.52	22.01	21.77	21.62	21.90	21.90	21.72
Conducted Power (Watts)	0.1531	0.1510	0.1419	0.1589	0.1503	0.1452	0.1549	0.1549	0.1486
EIRP(dBm)	24.85	24.79	24.52	25.01	24.77	24.62	24.90	24.90	24.72
EIRP(Watts)	0.3055	0.3013	0.2831	0.3170	0.2999	0.2897	0.3090	0.3090	0.2965

LTE Band 66 (GT - LC = 3.0 dB) 16QAM									
Bandwidth	10M			15M			20M		
Channel	132022	132322	132622	132047	132322	132597	132072	132322	132572
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(Mid)
Frequency (MHz)	1715	1745	1775	1717.5	1745	1772.5	1720	1745	1770
Conducted Power (dBm)	22.02	21.93	21.91	22.03	22.04	22.05	22.14	22.14	21.99
Conducted Power (Watts)	0.1592	0.1560	0.1552	0.1596	0.1600	0.1603	0.1637	0.1637	0.1581
EIRP(dBm)	25.02	24.93	24.91	25.03	25.04	25.05	25.14	25.14	24.99
EIRP(Watts)	0.3177	0.3112	0.3097	0.3184	0.3192	0.3199	0.3266	0.3266	0.3155

LTE Band 66 (GT - LC = 3.0 dB) 64QAM									
Bandwidth	1.4M			3M			5M		
Channel	131979	132322	132665	131987	132322	132657	131997	132322	132647
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1710.7	1745	1779.3	1711.5	1745	1778.5	1712.5	1745	1777.5
Conducted Power (dBm)	20.75	20.70	20.47	20.93	20.74	20.58	20.85	20.79	20.66
Conducted Power (Watts)	0.1189	0.1175	0.1114	0.1239	0.1186	0.1143	0.1216	0.1199	0.1164
EIRP(dBm)	23.75	23.70	23.47	23.93	23.74	23.58	23.85	23.79	23.66
EIRP(Watts)	0.2371	0.2344	0.2223	0.2472	0.2366	0.2280	0.2427	0.2393	0.2323

LTE Band 66 (GT - LC = 3.0 dB) 64QAM									
Bandwidth	10M			15M			20M		
Channel	132022	132322	132622	132047	132322	132597	132072	132322	132572
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(Mid)
Frequency (MHz)	1715	1745	1775	1717.5	1745	1772.5	1720	1745	1770
Conducted Power (dBm)	20.87	20.78	20.72	21.00	20.93	20.92	21.07	21.00	20.98
Conducted Power (Watts)	0.1222	0.1197	0.1180	0.1259	0.1239	0.1236	0.1279	0.1259	0.1253
EIRP(dBm)	23.87	23.78	23.72	24.00	23.93	23.92	24.07	24.00	23.98
EIRP(Watts)	0.2438	0.2388	0.2355	0.2512	0.2472	0.2466	0.2553	0.2512	0.2500

Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

Test Engineer :	HuaCong Liang	Temperature :	22~25℃
		Relative Humidity :	48~52%

LTE Band 2 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3742.18	-62.36	-13	-49.36	-76.79	-69.11	5.85	12.60	H
	5613.27	-62.43	-13	-49.43	-79.27	-68.23	7.30	13.10	H
	7484.36	-57.88	-13	-44.88	-80.26	-61.03	8.35	11.50	H
	3742.18	-61.66	-13	-48.66	-76.3	-68.41	5.85	12.60	V
	5613.27	-62.18	-13	-49.18	-78.93	-67.98	7.30	13.10	V
	7484.36	-57.63	-13	-44.63	-79.94	-60.78	8.35	11.50	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 5 / 10MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1664.18	-66.91	-13	-53.91	-73.02	-70.16	4.00	9.40	H
	2496.27	-64.25	-13	-51.25	-74.44	-67.82	4.88	10.60	H
	3328.36	-64.27	-13	-51.27	-76.24	-69.20	5.52	12.60	H
	1664.18	-67.26	-13	-54.26	-73.14	-70.51	4.00	9.40	V
	2496.27	-64.25	-13	-51.25	-74.78	-67.82	4.88	10.60	V
	3328.36	-63.77	-13	-50.77	-76.15	-68.70	5.52	12.60	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 12 / 10MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1406	-64.02	-13	-51.02	-71.98	-67.27	4.00	9.40	H
	2109	-60.66	-13	-47.66	-70.32	-64.23	4.88	10.60	H
	2812	-63.21	-13	-50.21	-75.07	-68.14	5.52	12.60	H
	1406	-64.53	-13	-51.53	-72.57	-67.78	4.00	9.40	V
	2109	-64.45	-13	-51.45	-74.48	-68.02	4.88	10.60	V
	2812	-63.21	-13	-50.21	-75.31	-68.14	5.52	12.60	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 66 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3492	-63.73	-13	-50.73	-76.58	-70.58	5.65	12.50	H
	5238	-63.16	-13	-50.16	-79.89	-68.83	7.13	12.80	H
	6984	-59.50	-13	-46.50	-80.29	-62.90	8.40	11.80	H
	3492	-62.81	-13	-49.81	-76.19	-69.66	5.65	12.50	V
	5238	-62.89	-13	-49.89	-79.56	-68.56	7.13	12.80	V
	6984	-59.19	-13	-46.19	-80.14	-62.59	8.40	11.80	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.