

TEST REPORT

Applicant: Guangzhou Navigatoworx Technologies Co., Limited

Address of Applicant: Room 608, North Side, 6th Floor, Building No. 5, Guangzhou Sciencetech Park, No.9 Lan Yu No.4 Street, Huangpu District, Guangzhou City, Guangdong Province, China

Manufacturer/Factory: Guangzhou Navigatoworx Technologies Co., Limited

Address of Manufacturer/Factory: Room 608, North Side, 6th Floor, Building No. 5, Guangzhou Sciencetech Park, No.9 Lan Yu No.4 Street, Huangpu District, Guangzhou City, Guangdong Province, China

Equipment Under Test (EUT)

Product Name: NR500 Industrial Cellular VPN Router

Model No.: NR500-P4G, NR500-P3G, NR500-PNC, NR500-S4G, NR500-S3G, NR500-SNC

Trade Mark: 

FCC ID: 2A9WP-NR500

Applicable standards: FCC CFR Title 47 Part 2
FCC CFR Title 47 Part 22
FCC CFR Title 47 Part 24
FCC CFR Title 47 Part 27
FCC CFR Title 47 Part 90

Date of sample receipt: November 23, 2022

Date of Test: November 24, 2022-December 12, 2022

Date of report issued: December 12, 2022

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Luo

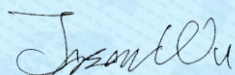
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	December 12, 2022	Original

Prepared By:

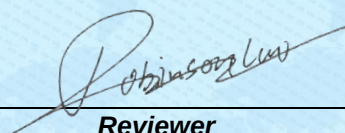


Date:

December 12, 2022

Project Engineer

Check By:



Date:

December 12, 2022

Reviewer

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
5 GENERAL INFORMATION	5
5.1 GENERAL DESCRIPTION OF EUT	5
5.2 RELATED SUBMITTAL(S) / GRANT (S)	8
5.3 TEST METHODOLOGY	8
5.4 TEST FACILITY	8
5.5 TEST LOCATION	8
6 TEST INSTRUMENTS LIST	9
7 SYSTEM TEST CONFIGURATION	10
7.1 TEST MODE	10
7.2 CONFIGURATION OF TESTED SYSTEM	10
7.3 E.R.P. & E.I.R.P.	11
7.4 SPURIOUS RADIATION EMISSIONS	27
8 TEST SETUP PHOTO	38
9 EUT CONSTRUCTIONAL DETAILS	38

4 Test Summary

Test Item	Section in CFR 47	Result
RF Output Power	Part 2.1046 Part 22.913 (a) Part 24.232 (c) Part 27.50(h) Part 90.635(b)	Pass*
ERP & EIRP	Part 2.1046 Part 22.913 (a) Part 24.232 (c) Part 27.50(h) Part 90.635(b)	Pass
Peak-to-Average Ratio	Part 22.913 FCC part24.232 FCC Part 27.50	Pass*
Modulation Characteristics	Part 2.1047	N/A
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917(b) Part 24.238 Part 27.53(h) Part 90.209	Pass*
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 Part 24.238 (a) Part 27.53(m) Part 90.691	Pass*
Spurious Radiation Emissions	Part 2.1053 Part 22.917 Part 24.238 (a) Part 27.53(m) Part 90.691	Pass
Out of band emission, Band Edge	Part 22.917 Part 24.238 (a) Part 27.53(m) Part 90.691/543	Pass*
Frequency stability vs. temperature	Part 2.1055(a)(1)(b) Part 90.213	Pass*
Frequency stability vs. voltage	Part 2.1055(d)(1)(2) Part 90.213	Pass*

Remarks:

1. Pass*: This device has installed a certified modular which FCC ID: XMR2020008EC25AFXD, so these conducted test data directly reference the modular's data..
2. N/A: Not applicable.

5 General Information

5.1 General Description of EUT

Product Name:	NR500 Industrial Cellular VPN Router
Model No.:	NR500-P4G, NR500-P3G, NR500-PNC, NR500-S4G, NR500-S3G, NR500-SNC
Test Model No.:	NR500-P4G
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The only difference is model name for commercial purpose.	
Serial No.:	22115147330006
Hardware Version:	V1.0.0
Software Version:	3.0.0
Tested Sample(s) ID:	GTS202211000233-1
Sample(s) Status:	Engineer sample
Support Networks:	LTE
Support Bands:	LTE Band 2/4/5/12/13/14/66/71
Channel 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 13: 5MHz; 10MHz LTE Band 14: 5MHz; 10MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz; 10MHz, 15MHz; 20MHz LTE Band 71: 5MHz; 10MHz, 15MHz; 20MHz
TX Frequency:	LTE band 2: 1850~1910MHz LTE band 4: 1710~1755MHz LTE band 5: 824~849MHz LTE band 12: 699~716MHz LTE band 13: 777~787MHz LTE band 14: 788~798MHz LTE band 66: 1710~1780MHz LTE band 71: 663~698MHz
Modulation type:	QPSK, 16QAM
Antenna type:	ANT type 1: Terminal Antenna ANT type 2: Mobile Antenna The product includes two types of antennas. Each type of antenna includes ANT1 and ANT2 antennas respectively.
Antenna gain:	ANT type 1: 3dBi(ANT1 & ANT2) ANT type 2: 2dBi(ANT1 & ANT2)
Power supply:	AC/DC ADAPTER Model: SK02T-1200150U Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 12V, 1.5A

Test Frequency

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 2	1.4M	1850.7	1882.5	1914.3
	3M	1851.5	1882.5	1913.5
	5M	1852.5	1882.5	1912.5
	10M	1855.0	1882.5	1910.0
	15M	1857.5	1882.5	1907.5
	20M	1860.0	1882.5	1905.0

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 4	1.4M	1710.7	1732.5	1754.3
	3M	1711.5	1732.5	1753.5
	5M	1712.5	1732.5	1752.5
	10M	1715.0	1732.5	1750.0
	15M	1717.5	1732.5	1747.5
	20M	1720.0	1732.5	1745.0

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 5	1.4M	824.7	736.5	848.3
	3M	825.5	836.5	847.5
	5M	826.5	836.5	846.5
	10M	829.0	836.5	844.0

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 12	1.4M	699.7	707.5	715.3
	3M	700.5	707.5	714.5
	5M	701.5	707.5	713.5
	10M	704.0	707.5	711.0

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 13	5M	779.5	782.0	784.5
	10M	/	782.0	/

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 14	5M	790.5	793.0	795.5
	10M	/	793.0	/

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 66	1.4M	1710.7	1745	1779.3
	3M	1711.5	1745	1778.5
	5M	1712.5	1745	1777.5
	10M	1715.0	1745	1775
	15M	1717.5	1745	1772.5
	20M	1720.0	1745	1770

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 71	5M	665.5	680.5	695.5
	10M	668	680.5	693
	15M	670.5	680.5	690.5
	20M	673	680.5	688

5.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 22/24/27/90 of the FCC CFR 47 Rules.

5.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on ANSI C63.26:2015 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383.

- **IC —Registration No.: 9079A**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A.

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 02, 2020	July 01, 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 22, 2022	April 21, 2023
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 21, 2022	March 20, 2023
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June 12, 2022	June 11, 2023
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 23, 2022	June 22, 2023
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	April 22, 2022	April 21, 2023
9	Coaxial Cable	GTS	N/A	GTS211	April 22, 2022	April 21, 2023
10	Coaxial cable	GTS	N/A	GTS210	April 22, 2022	April 21, 2023
11	Coaxial Cable	GTS	N/A	GTS212	April 22, 2022	April 21, 2023
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	April 22, 2022	April 21, 2023
13	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 23, 2022	June 22, 2023
14	Band filter	Amindeon	82346	GTS219	June 23, 2022	June 22, 2023
15	Power Meter	Anritsu	ML2495A	GTS540	June 23, 2022	June 22, 2023
16	Power Sensor	Anritsu	MA2411B	GTS541	June 23, 2022	June 22, 2023
17	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 22, 2022	April 21, 2023
18	Splitter	Agilent	11636B	GTS237	June 23, 2022	June 22, 2023
19	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 29, 2022	Nov. 28, 2023
20	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 22, 2022	April 21, 2023
21	Breitband hornantenna	SCHWARZBECK	BBHA 9170	GTS579	Oct. 16, 2022	Oct. 15, 2023
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 16, 2022	Oct. 15, 2023
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 16, 2022	Oct. 15, 2023
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June 23, 2022	June 22, 2023
25	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 22, 2022	April 21, 2023

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	April 25, 2022	April 24, 2023
2	Barometer	KUMAO	SF132	GTS647	July 26, 2022	July 25, 2023

7 System test configuration

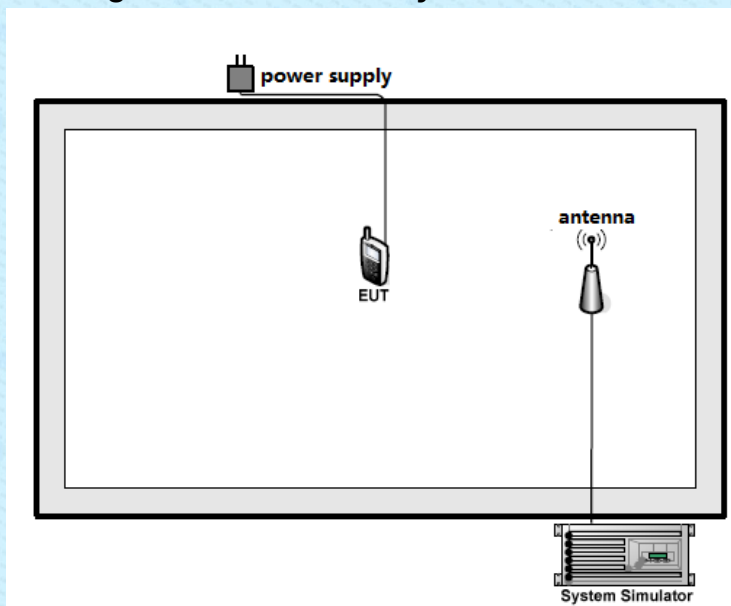
7.1 Test mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

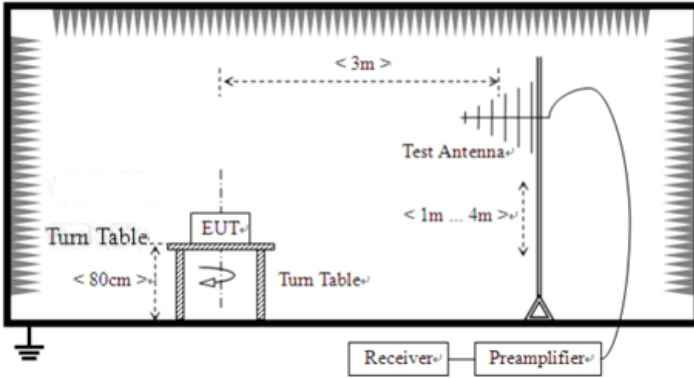
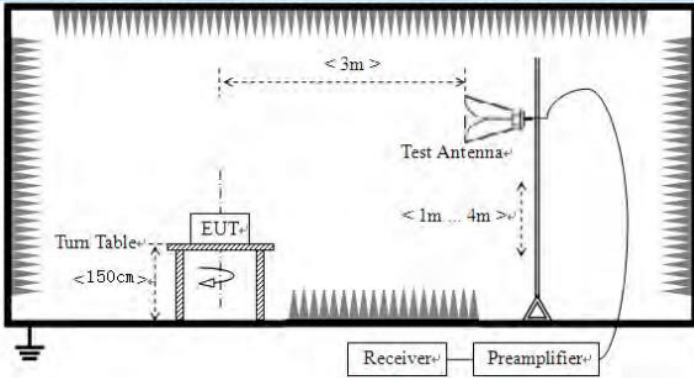
Test modes are chosen to be reported as the worst case configuration below:

Band	Test Mode
LTE Band 2	QPSK @20M, Middle channel
LTE Band 4	QPSK @20M, Middle channel
LTE Band 5	QPSK @10M, Middle channel
LTE Band 12	QPSK @10M, Middle channel
LTE Band 13	QPSK @10M, Middle channel
LTE Band 14	QPSK @10M, Middle channel
LTE Band 66	QPSK @5M, Middle channel
LTE Band 71	QPSK @5M, Middle channel

7.2 Configuration of Tested System



7.3 E.R.P. & E.I.R.P.

Test Requirement:	FCC part 22.913; Part 24.232; Part 27.50; Part 90.635
Test Method:	FCC part2.1046
Limit:	LTE Band 2: 2W LTE Band 4: 1W LTE Band 5: 7W LTE Band 12: 3W LTE Band 13: 3W LTE Band 14: 1W LTE Band 66: 1W LTE Band 71: 3W
Test setup:	For radiated emissions from 30MHz to1GHz  For radiated emissions above 1GHz 
Test Procedure:	Below 1GHz test procedure as below: 1.The EUT was powered ON and placed on a 0.8m high table in the chamber. The antenna of the transmitter was extended to its maximum length. 2.The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made. 3.Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization. 4.The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.

	5.A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions. 6.The output power into the substitution antenna was then measured. 7.Steps 5) and 6) were repeated with both antennas polarized. 8.Calculate power in dBm by the following formula: $\text{ERP (dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBd)}$ Where: Pg is the generator output power into the substitution antenna. Above 1GHz test procedure as below: 1.Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber 2.Calculate power in dBm by the following formula: $\text{EIRP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$ $\text{EIRP} = \text{ERP} + 2.15\text{dB}$ Where: Pg is the generator output power into the substitution antenna. 3.Test the EUT in the lowest channel, the middle channel the Highest channel 4.The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report. 5.Repeat above procedures until all frequencies measured was complete.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

ANT type 1:

LTE Band 2						
Bandwidth	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	Low	1850.7	Horizontal	23.92	33	Pass
	Mid	1880	Horizontal	23.71	33	Pass
	High	1909.3	Horizontal	24.00	33	Pass
3 MHz (QPSK)	Low	1851.5	Horizontal	22.76	33	Pass
	Mid	1880	Horizontal	22.99	33	Pass
	High	1908.5	Horizontal	23.17	33	Pass
5 MHz (QPSK)	Low	1852.5	Horizontal	22.55	33	Pass
	Mid	1880	Horizontal	22.67	33	Pass
	High	1907.5	Horizontal	23.02	33	Pass
10 MHz (QPSK)	Low	1855	Horizontal	23.90	33	Pass
	Mid	1880	Horizontal	23.86	33	Pass
	High	1905	Horizontal	23.91	33	Pass
15 MHz (QPSK)	Low	1857.5	Horizontal	23.64	33	Pass
	Mid	1880	Horizontal	23.81	33	Pass
	High	1902.5	Horizontal	24.30	33	Pass
20 MHz (QPSK)	Low	1860	Horizontal	23.17	33	Pass
	Mid	1880	Horizontal	22.72	33	Pass
	High	1900	Horizontal	22.83	33	Pass
1.4 MHz (16QAM)	Low	1850.7	Horizontal	23.49	33	Pass
	Mid	1880	Horizontal	23.08	33	Pass
	High	1909.3	Horizontal	23.65	33	Pass
3 MHz (16QAM)	Low	1851.5	Horizontal	22.52	33	Pass
	Mid	1880	Horizontal	22.58	33	Pass
	High	1908.5	Horizontal	23.01	33	Pass
5 MHz (16QAM)	Low	1852.5	Horizontal	21.97	33	Pass
	Mid	1880	Horizontal	22.30	33	Pass
	High	1907.5	Horizontal	22.61	33	Pass
10 MHz (16QAM)	Low	1855	Horizontal	23.66	33	Pass
	Mid	1880	Horizontal	23.44	33	Pass
	High	1905	Horizontal	23.68	33	Pass
15 MHz (16QAM)	Low	1857.5	Horizontal	23.26	33	Pass
	Mid	1880	Horizontal	23.67	33	Pass
	High	1902.5	Horizontal	24.06	33	Pass
20 MHz (16QAM)	Low	1860	Horizontal	22.88	33	Pass
	Mid	1880	Horizontal	22.20	33	Pass
	High	1900	Horizontal	22.39	33	Pass

LTE Band4						
Bandwidth	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
1.4MHz(QPSK)	Low	1710.7	Horizontal	22.34	30	Pass
	Mid	1732.5	Horizontal	22.05	30	Pass
	High	1754.3	Horizontal	22.25	30	Pass
3MHz(QPSK)	Low	1711.5	Horizontal	21.08	30	Pass
	Mid	1732.5	Horizontal	21.56	30	Pass
	High	1753.5	Horizontal	21.79	30	Pass
5MHz(QPSK)	Low	1712.5	Horizontal	20.87	30	Pass
	Mid	1732.5	Horizontal	21.01	30	Pass
	High	1752.5	Horizontal	21.64	30	Pass
10MHz(QPSK)	Low	1715	Horizontal	22.32	30	Pass
	Mid	1732.5	Horizontal	22.20	30	Pass
	High	1750	Horizontal	22.16	30	Pass
15MHz(QPSK)	Low	1717.5	Horizontal	21.96	30	Pass
	Mid	1732.5	Horizontal	22.38	30	Pass
	High	1747.5	Horizontal	22.92	30	Pass
20MHz(QPSK)	Low	1720	Horizontal	21.49	30	Pass
	Mid	1732.5	Horizontal	21.06	30	Pass
	High	1745	Horizontal	21.45	30	Pass
1.4MHz(16QAM)	Low	1710.7	Horizontal	21.91	30	Pass
	Mid	1732.5	Horizontal	21.42	30	Pass
	High	1754.3	Horizontal	21.90	30	Pass
3MHz(16QAM)	Low	1711.5	Horizontal	20.84	30	Pass
	Mid	1732.5	Horizontal	21.15	30	Pass
	High	1753.5	Horizontal	21.63	30	Pass
5MHz(16QAM)	Low	1712.5	Horizontal	20.29	30	Pass
	Mid	1732.5	Horizontal	20.64	30	Pass
	High	1752.5	Horizontal	21.23	30	Pass
10MHz(16QAM)	Low	1715	Horizontal	22.08	30	Pass
	Mid	1732.5	Horizontal	21.78	30	Pass
	High	1750	Horizontal	21.93	30	Pass
15MHz (16QAM)	Low	1717.5	Horizontal	21.58	30	Pass
	Mid	1732.5	Horizontal	22.24	30	Pass
	High	1747.5	Horizontal	22.68	30	Pass
20MHz (16QAM)	Low	1720	Horizontal	21.20	30	Pass
	Mid	1732.5	Horizontal	20.54	30	Pass
	High	1745	Horizontal	21.01	30	Pass

LTE Band 5						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	Low	824.7	Horizontal	20.73	38.45	Pass
	Mid	836.5	Horizontal	20.54	38.45	Pass
	High	848.3	Horizontal	20.77	38.45	Pass
3 MHz (QPSK)	Low	825.5	Horizontal	20.65	38.45	Pass
	Mid	836.5	Horizontal	20.93	38.45	Pass
	High	847.5	Horizontal	21.20	38.45	Pass
5 MHz (QPSK)	Low	826.5	Horizontal	20.56	38.45	Pass
	Mid	836.5	Horizontal	20.67	38.45	Pass
	High	846.5	Horizontal	21.32	38.45	Pass
10 MHz (QPSK)	Low	829	Horizontal	20.65	38.45	Pass
	Mid	836.5	Horizontal	20.66	38.45	Pass
	High	844	Horizontal	20.96	38.45	Pass
1.4 MHz (16QAM)	Low	824.7	Horizontal	20.20	38.45	Pass
	Mid	836.5	Horizontal	20.31	38.45	Pass
	High	848.3	Horizontal	20.59	38.45	Pass
3 MHz (16QAM)	Low	825.5	Horizontal	20.12	38.45	Pass
	Mid	836.5	Horizontal	20.25	38.45	Pass
	High	847.5	Horizontal	20.60	38.45	Pass
5 MHz (16QAM)	Low	826.5	Horizontal	20.11	38.45	Pass
	Mid	836.5	Horizontal	20.10	38.45	Pass
	High	846.5	Horizontal	20.41	38.45	Pass
10 MHz (16QAM)	Low	829	Horizontal	20.04	38.45	Pass
	Mid	836.5	Horizontal	20.34	38.45	Pass
	High	844	Horizontal	20.72	38.45	Pass

LTE Band12						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
1.4MHz(QPSK)	Low	699.7	Horizontal	17.38	34.77	Pass
	Mid	707.5	Horizontal	18.65	34.77	Pass
	High	715.3	Horizontal	18.51	34.77	Pass
3MHz(QPSK)	Low	700.5	Horizontal	17.87	34.77	Pass
	Mid	707.5	Horizontal	18.47	34.77	Pass
	High	714.5	Horizontal	18.78	34.77	Pass
5MHz(QPSK)	Low	701.5	Horizontal	17.43	34.77	Pass
	Mid	707.5	Horizontal	18.38	34.77	Pass
	High	713.5	Horizontal	19.10	34.77	Pass
10MHz(QPSK)	Low	704	Horizontal	17.63	34.77	Pass
	Mid	707.5	Horizontal	17.67	34.77	Pass
	High	711	Horizontal	18.08	34.77	Pass
1.4MHz(16QAM)	Low	699.7	Horizontal	16.98	34.77	Pass
	Mid	707.5	Horizontal	18.34	34.77	Pass
	High	715.3	Horizontal	18.59	34.77	Pass
3MHz(16QAM)	Low	700.5	Horizontal	17.51	34.77	Pass
	Mid	707.5	Horizontal	17.90	34.77	Pass
	High	714.5	Horizontal	18.54	34.77	Pass
5MHz(16QAM)	Low	701.5	Horizontal	17.31	34.77	Pass
	Mid	707.5	Horizontal	18.27	34.77	Pass
	High	713.5	Horizontal	18.63	34.77	Pass
10MHz(16QAM)	Low	704	Horizontal	16.87	34.77	Pass
	Mid	707.5	Horizontal	17.14	34.77	Pass
	High	711	Horizontal	17.92	34.77	Pass

LTE Band13						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
5MHz(QPSK)	Low	779.5	Horizontal	21.68	34.77	Pass
	Mid	782	Horizontal	21.59	34.77	Pass
	High	784.5	Horizontal	21.61	34.77	Pass
10MHz (QPSK)	Mid	782	Horizontal	21.95	34.77	Pass
5MHz(16QAM)	Low	779.5	Horizontal	21.22	34.77	Pass
	Mid	782	Horizontal	21.51	34.77	Pass
	High	784.5	Horizontal	21.10	34.77	Pass
10MHz (16QAM)	Mid	782	Horizontal	21.60	34.77	Pass

LTE Band14						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
5MHz (QPSK)	Low	790.5	Horizontal	26.19	34.77	Pass
	Mid	793	Horizontal	26.08	34.77	Pass
	High	795.5	Horizontal	26.18	34.77	Pass
10MHz (QPSK)	Mid	793	Horizontal	26.62	34.77	Pass
5MHz (16QAM)	Low	790.5	Horizontal	25.62	34.77	Pass
	Mid	793	Horizontal	25.51	34.77	Pass
	High	795.5	Horizontal	25.64	34.77	Pass
10MHz (16QAM)	Mid	793	Horizontal	26.01	34.77	Pass

LTE Band66						
Band width	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
1.4MHz (QPSK)	Low	1710.70	Horizontal	25.59	30	Pass
	Mid	1745.00	Horizontal	25.44	30	Pass
	High	1779.30	Horizontal	24.30	30	Pass
3MHz(QPSK)	Low	1711.50	Horizontal	25.83	30	Pass
	Mid	1745.00	Horizontal	25.63	30	Pass
	High	1778.50	Horizontal	24.63	30	Pass
5 MHz(QPSK)	Low	1712.50	Horizontal	25.24	30	Pass
	Mid	1745.00	Horizontal	25.12	30	Pass
	High	1777.50	Horizontal	24.60	30	Pass
10MHz(QPSK)	Low	1715.00	Horizontal	25.67	30	Pass
	Mid	1745.00	Horizontal	25.64	30	Pass
	High	1775.00	Horizontal	24.38	30	Pass
15MHz(QPSK)	Low	1717.50	Horizontal	25.33	30	Pass
	Mid	1745.00	Horizontal	25.69	30	Pass
	High	1772.50	Horizontal	25.05	30	Pass
20MHz(QPSK)	Low	1720.00	Horizontal	25.30	30	Pass
	Mid	1745.00	Horizontal	25.36	30	Pass
	High	1770.00	Horizontal	24.93	30	Pass
1.4MHz (16QAM)	Low	1710.70	Horizontal	24.96	30	Pass
	Mid	1745.00	Horizontal	24.61	30	Pass
	High	1779.30	Horizontal	23.75	30	Pass
3MHz(16QAM)	Low	1711.50	Horizontal	25.19	30	Pass
	Mid	1745.00	Horizontal	24.82	30	Pass
	High	1778.50	Horizontal	24.07	30	Pass
5MHz(16QAM)	Low	1712.50	Horizontal	24.46	30	Pass
	Mid	1745.00	Horizontal	24.55	30	Pass
	High	1777.50	Horizontal	23.99	30	Pass
10MHz (16QAM)	Low	1715.00	Horizontal	25.03	30	Pass
	Mid	1745.00	Horizontal	24.82	30	Pass
	High	1775.00	Horizontal	23.75	30	Pass
15MHz (16QAM)	Low	1717.50	Horizontal	24.95	30	Pass
	Mid	1745.00	Horizontal	25.55	30	Pass
	High	1772.50	Horizontal	24.81	30	Pass
20MHz (16QAM)	Low	1720.00	Horizontal	25.11	30	Pass
	Mid	1745.00	Horizontal	24.94	30	Pass
	High	1770.00	Horizontal	24.59	30	Pass

LTE Band71						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
5MHz(QPSK)	Low	665.5	Horizontal	19.72	34.77	Pass
	Mid	680.5	Horizontal	21.06	34.77	Pass
	High	695.5	Horizontal	20.79	34.77	Pass
10MHz(QPSK)	Low	668	Horizontal	19.47	34.77	Pass
	Mid	680.5	Horizontal	20.99	34.77	Pass
	High	693	Horizontal	20.79	34.77	Pass
15MHz(QPSK)	Low	670.5	Horizontal	19.64	34.77	Pass
	Mid	680.5	Horizontal	20.08	34.77	Pass
	High	690.5	Horizontal	21.06	34.77	Pass
20MHz(QPSK)	Low	673	Horizontal	19.83	34.77	Pass
	Mid	683	Horizontal	21.00	34.77	Pass
	High	688	Horizontal	20.77	34.77	Pass
5MHz(16QAM)	Low	665.5	Horizontal	18.94	34.77	Pass
	Mid	680.5	Horizontal	20.82	34.77	Pass
	High	695.5	Horizontal	20.65	34.77	Pass
10MHz(16QAM)	Low	668	Horizontal	18.93	34.77	Pass
	Mid	680.5	Horizontal	20.04	34.77	Pass
	High	693	Horizontal	20.26	34.77	Pass
15MHz(16QAM)	Low	670.5	Horizontal	19.06	34.77	Pass
	Mid	680.5	Horizontal	19.64	34.77	Pass
	High	690.5	Horizontal	20.15	34.77	Pass
20MHz(16QAM)	Low	673	Horizontal	19.24	34.77	Pass
	Mid	683	Horizontal	20.51	34.77	Pass
	High	688	Horizontal	20.50	34.77	Pass

ANT type 2:

LTE Band 2						
Bandwidth	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	Low	1850.7	Horizontal	22.89	33	Pass
	Mid	1880	Horizontal	22.56	33	Pass
	High	1909.3	Horizontal	23.01	33	Pass
3 MHz (QPSK)	Low	1851.5	Horizontal	21.67	33	Pass
	Mid	1880	Horizontal	22.02	33	Pass
	High	1908.5	Horizontal	22.01	33	Pass
5 MHz (QPSK)	Low	1852.5	Horizontal	21.41	33	Pass
	Mid	1880	Horizontal	21.72	33	Pass
	High	1907.5	Horizontal	21.91	33	Pass
10 MHz (QPSK)	Low	1855	Horizontal	22.87	33	Pass
	Mid	1880	Horizontal	22.71	33	Pass
	High	1905	Horizontal	22.92	33	Pass
15 MHz (QPSK)	Low	1857.5	Horizontal	22.55	33	Pass
	Mid	1880	Horizontal	22.84	33	Pass
	High	1902.5	Horizontal	23.14	33	Pass
20 MHz (QPSK)	Low	1860	Horizontal	22.03	33	Pass
	Mid	1880	Horizontal	21.77	33	Pass
	High	1900	Horizontal	21.72	33	Pass
1.4 MHz (16QAM)	Low	1850.7	Horizontal	22.46	33	Pass
	Mid	1880	Horizontal	21.93	33	Pass
	High	1909.3	Horizontal	22.66	33	Pass
3 MHz (16QAM)	Low	1851.5	Horizontal	21.43	33	Pass
	Mid	1880	Horizontal	21.61	33	Pass
	High	1908.5	Horizontal	21.85	33	Pass
5 MHz (16QAM)	Low	1852.5	Horizontal	20.83	33	Pass
	Mid	1880	Horizontal	21.35	33	Pass
	High	1907.5	Horizontal	21.50	33	Pass
10 MHz (16QAM)	Low	1855	Horizontal	22.63	33	Pass
	Mid	1880	Horizontal	22.29	33	Pass
	High	1905	Horizontal	22.69	33	Pass
15 MHz (16QAM)	Low	1857.5	Horizontal	22.17	33	Pass
	Mid	1880	Horizontal	22.70	33	Pass
	High	1902.5	Horizontal	22.90	33	Pass
20 MHz (16QAM)	Low	1860	Horizontal	21.74	33	Pass
	Mid	1880	Horizontal	21.25	33	Pass
	High	1900	Horizontal	21.28	33	Pass

LTE Band4						
Bandwidth	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
1.4MHz(QPSK)	Low	1710.7	Horizontal	21.31	30	Pass
	Mid	1732.5	Horizontal	20.90	30	Pass
	High	1754.3	Horizontal	21.26	30	Pass
3MHz(QPSK)	Low	1711.5	Horizontal	19.99	30	Pass
	Mid	1732.5	Horizontal	20.59	30	Pass
	High	1753.5	Horizontal	20.63	30	Pass
5MHz(QPSK)	Low	1712.5	Horizontal	19.73	30	Pass
	Mid	1732.5	Horizontal	20.06	30	Pass
	High	1752.5	Horizontal	20.53	30	Pass
10MHz(QPSK)	Low	1715	Horizontal	21.29	30	Pass
	Mid	1732.5	Horizontal	21.05	30	Pass
	High	1750	Horizontal	21.17	30	Pass
15MHz(QPSK)	Low	1717.5	Horizontal	20.87	30	Pass
	Mid	1732.5	Horizontal	21.41	30	Pass
	High	1747.5	Horizontal	21.76	30	Pass
20MHz(QPSK)	Low	1720	Horizontal	20.35	30	Pass
	Mid	1732.5	Horizontal	20.11	30	Pass
	High	1745	Horizontal	20.34	30	Pass
1.4MHz(16QAM)	Low	1710.7	Horizontal	20.88	30	Pass
	Mid	1732.5	Horizontal	20.27	30	Pass
	High	1754.3	Horizontal	20.91	30	Pass
3MHz(16QAM)	Low	1711.5	Horizontal	19.75	30	Pass
	Mid	1732.5	Horizontal	20.18	30	Pass
	High	1753.5	Horizontal	20.47	30	Pass
5MHz(16QAM)	Low	1712.5	Horizontal	19.15	30	Pass
	Mid	1732.5	Horizontal	19.69	30	Pass
	High	1752.5	Horizontal	20.12	30	Pass
10MHz(16QAM)	Low	1715	Horizontal	21.05	30	Pass
	Mid	1732.5	Horizontal	20.63	30	Pass
	High	1750	Horizontal	20.94	30	Pass
15MHz (16QAM)	Low	1717.5	Horizontal	20.49	30	Pass
	Mid	1732.5	Horizontal	21.27	30	Pass
	High	1747.5	Horizontal	21.52	30	Pass
20MHz (16QAM)	Low	1720	Horizontal	20.06	30	Pass
	Mid	1732.5	Horizontal	19.59	30	Pass
	High	1745	Horizontal	19.90	30	Pass

LTE Band 5						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	Low	824.7	Horizontal	19.70	38.45	Pass
	Mid	836.5	Horizontal	19.39	38.45	Pass
	High	848.3	Horizontal	19.78	38.45	Pass
3 MHz (QPSK)	Low	825.5	Horizontal	19.56	38.45	Pass
	Mid	836.5	Horizontal	19.96	38.45	Pass
	High	847.5	Horizontal	20.04	38.45	Pass
5 MHz (QPSK)	Low	826.5	Horizontal	19.42	38.45	Pass
	Mid	836.5	Horizontal	19.72	38.45	Pass
	High	846.5	Horizontal	20.21	38.45	Pass
10 MHz (QPSK)	Low	829	Horizontal	19.62	38.45	Pass
	Mid	836.5	Horizontal	19.51	38.45	Pass
	High	844	Horizontal	19.97	38.45	Pass
1.4 MHz (16QAM)	Low	824.7	Horizontal	19.11	38.45	Pass
	Mid	836.5	Horizontal	19.34	38.45	Pass
	High	848.3	Horizontal	19.43	38.45	Pass
3 MHz (16QAM)	Low	825.5	Horizontal	18.98	38.45	Pass
	Mid	836.5	Horizontal	19.30	38.45	Pass
	High	847.5	Horizontal	19.49	38.45	Pass
5 MHz (16QAM)	Low	826.5	Horizontal	19.08	38.45	Pass
	Mid	836.5	Horizontal	18.95	38.45	Pass
	High	846.5	Horizontal	19.42	38.45	Pass
10 MHz (16QAM)	Low	829	Horizontal	18.95	38.45	Pass
	Mid	836.5	Horizontal	19.37	38.45	Pass
	High	844	Horizontal	19.56	38.45	Pass

LTE Band12						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
1.4MHz(QPSK)	Low	699.7	Horizontal	16.35	34.77	Pass
	Mid	707.5	Horizontal	17.50	34.77	Pass
	High	715.3	Horizontal	17.52	34.77	Pass
3MHz(QPSK)	Low	700.5	Horizontal	16.78	34.77	Pass
	Mid	707.5	Horizontal	17.50	34.77	Pass
	High	714.5	Horizontal	17.62	34.77	Pass
5MHz(QPSK)	Low	701.5	Horizontal	16.29	34.77	Pass
	Mid	707.5	Horizontal	17.43	34.77	Pass
	High	713.5	Horizontal	17.99	34.77	Pass
10MHz(QPSK)	Low	704	Horizontal	16.60	34.77	Pass
	Mid	707.5	Horizontal	16.52	34.77	Pass
	High	711	Horizontal	17.09	34.77	Pass
1.4MHz(16QAM)	Low	699.7	Horizontal	15.89	34.77	Pass
	Mid	707.5	Horizontal	17.37	34.77	Pass
	High	715.3	Horizontal	17.43	34.77	Pass
3MHz(16QAM)	Low	700.5	Horizontal	16.37	34.77	Pass
	Mid	707.5	Horizontal	16.95	34.77	Pass
	High	714.5	Horizontal	17.43	34.77	Pass
5MHz(16QAM)	Low	701.5	Horizontal	16.28	34.77	Pass
	Mid	707.5	Horizontal	17.12	34.77	Pass
	High	713.5	Horizontal	17.64	34.77	Pass
10MHz(16QAM)	Low	704	Horizontal	15.78	34.77	Pass
	Mid	707.5	Horizontal	16.17	34.77	Pass
	High	711	Horizontal	16.76	34.77	Pass

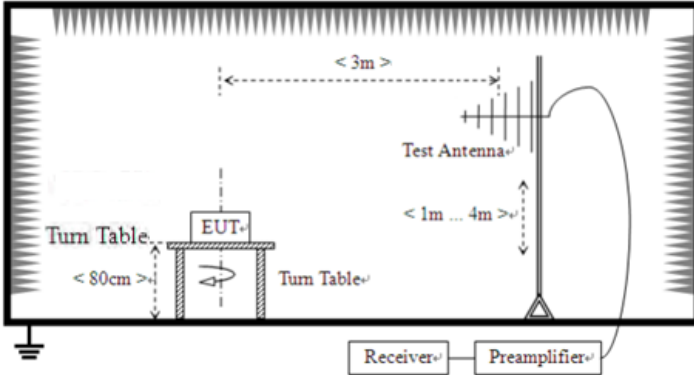
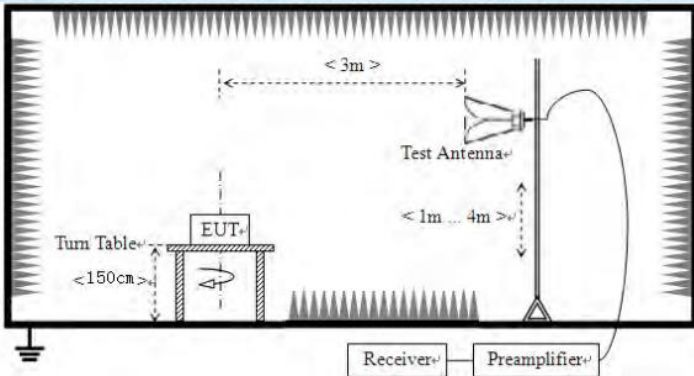
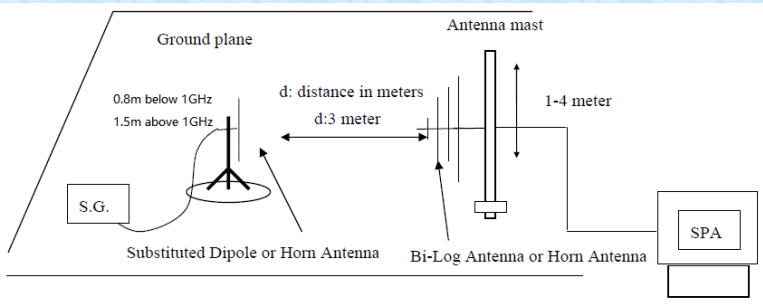
LTE Band13						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
5MHz(QPSK)	Low	779.5	Horizontal	20.65	34.77	Pass
	Mid	782	Horizontal	20.44	34.77	Pass
	High	784.5	Horizontal	20.62	34.77	Pass
10MHz (QPSK)	Mid	782	Horizontal	20.86	34.77	Pass
5MHz(16QAM)	Low	779.5	Horizontal	20.25	34.77	Pass
	Mid	782	Horizontal	20.35	34.77	Pass
	High	784.5	Horizontal	19.96	34.77	Pass
10MHz (16QAM)	Mid	782	Horizontal	20.65	34.77	Pass

LTE Band14						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
5MHz (QPSK)	Low	790.5	Horizontal	24.18	34.77	Pass
	Mid	793	Horizontal	23.94	34.77	Pass
	High	795.5	Horizontal	23.84	34.77	Pass
10MHz (QPSK)	Mid	793	Horizontal	24.6	34.77	Pass
5MHz (16QAM)	Low	790.5	Horizontal	23.64	34.77	Pass
	Mid	793	Horizontal	23.48	34.77	Pass
	High	795.5	Horizontal	23.67	34.77	Pass
10MHz (16QAM)	Mid	793	Horizontal	24.02	34.77	Pass

LTE Band66						
Band width	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
1.4MHz (QPSK)	Low	1710.70	Horizontal	24.56	30	Pass
	Mid	1745.00	Horizontal	24.29	30	Pass
	High	1779.30	Horizontal	23.31	30	Pass
3MHz(QPSK)	Low	1711.50	Horizontal	24.74	30	Pass
	Mid	1745.00	Horizontal	24.66	30	Pass
	High	1778.50	Horizontal	23.47	30	Pass
5 MHz(QPSK)	Low	1712.50	Horizontal	24.10	30	Pass
	Mid	1745.00	Horizontal	24.17	30	Pass
	High	1777.50	Horizontal	23.49	30	Pass
10MHz(QPSK)	Low	1715.00	Horizontal	24.64	30	Pass
	Mid	1745.00	Horizontal	24.49	30	Pass
	High	1775.00	Horizontal	23.39	30	Pass
15MHz(QPSK)	Low	1717.50	Horizontal	24.24	30	Pass
	Mid	1745.00	Horizontal	24.72	30	Pass
	High	1772.50	Horizontal	23.89	30	Pass
20MHz(QPSK)	Low	1720.00	Horizontal	24.16	30	Pass
	Mid	1745.00	Horizontal	24.41	30	Pass
	High	1770.00	Horizontal	23.82	30	Pass
1.4MHz (16QAM)	Low	1710.70	Horizontal	23.93	30	Pass
	Mid	1745.00	Horizontal	23.46	30	Pass
	High	1779.30	Horizontal	22.76	30	Pass
3MHz(16QAM)	Low	1711.50	Horizontal	24.10	30	Pass
	Mid	1745.00	Horizontal	23.85	30	Pass
	High	1778.50	Horizontal	22.91	30	Pass
5MHz(16QAM)	Low	1712.50	Horizontal	23.32	30	Pass
	Mid	1745.00	Horizontal	23.60	30	Pass
	High	1777.50	Horizontal	22.88	30	Pass
10MHz (16QAM)	Low	1715.00	Horizontal	24.00	30	Pass
	Mid	1745.00	Horizontal	23.67	30	Pass
	High	1775.00	Horizontal	22.76	30	Pass
15MHz (16QAM)	Low	1717.50	Horizontal	23.86	30	Pass
	Mid	1745.00	Horizontal	24.58	30	Pass
	High	1772.50	Horizontal	23.65	30	Pass
20MHz (16QAM)	Low	1720.00	Horizontal	23.97	30	Pass
	Mid	1745.00	Horizontal	23.99	30	Pass
	High	1770.00	Horizontal	23.48	30	Pass

LTE Band71						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
5MHz(QPSK)	Low	665.5	Horizontal	18.69	34.77	Pass
	Mid	680.5	Horizontal	19.91	34.77	Pass
	High	695.5	Horizontal	19.80	34.77	Pass
10MHz(QPSK)	Low	668	Horizontal	18.38	34.77	Pass
	Mid	680.5	Horizontal	20.02	34.77	Pass
	High	693	Horizontal	19.63	34.77	Pass
15MHz(QPSK)	Low	670.5	Horizontal	18.50	34.77	Pass
	Mid	680.5	Horizontal	19.13	34.77	Pass
	High	690.5	Horizontal	19.95	34.77	Pass
20MHz(QPSK)	Low	673	Horizontal	18.80	34.77	Pass
	Mid	683	Horizontal	19.85	34.77	Pass
	High	688	Horizontal	19.78	34.77	Pass
5MHz(16QAM)	Low	665.5	Horizontal	17.85	34.77	Pass
	Mid	680.5	Horizontal	19.85	34.77	Pass
	High	695.5	Horizontal	19.49	34.77	Pass
10MHz(16QAM)	Low	668	Horizontal	17.79	34.77	Pass
	Mid	680.5	Horizontal	19.09	34.77	Pass
	High	693	Horizontal	19.15	34.77	Pass
15MHz(16QAM)	Low	670.5	Horizontal	18.03	34.77	Pass
	Mid	680.5	Horizontal	18.49	34.77	Pass
	High	690.5	Horizontal	19.16	34.77	Pass
20MHz(16QAM)	Low	673	Horizontal	18.15	34.77	Pass
	Mid	683	Horizontal	19.54	34.77	Pass
	High	688	Horizontal	19.34	34.77	Pass

7.4 Spurious Radiation Emissions

Test Requirement:	Part 22.917; Part 24.238; Part 27.53; Part 90.691/543
Test Method:	FCC part 2.1053 and ANSI C63.26:2015
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

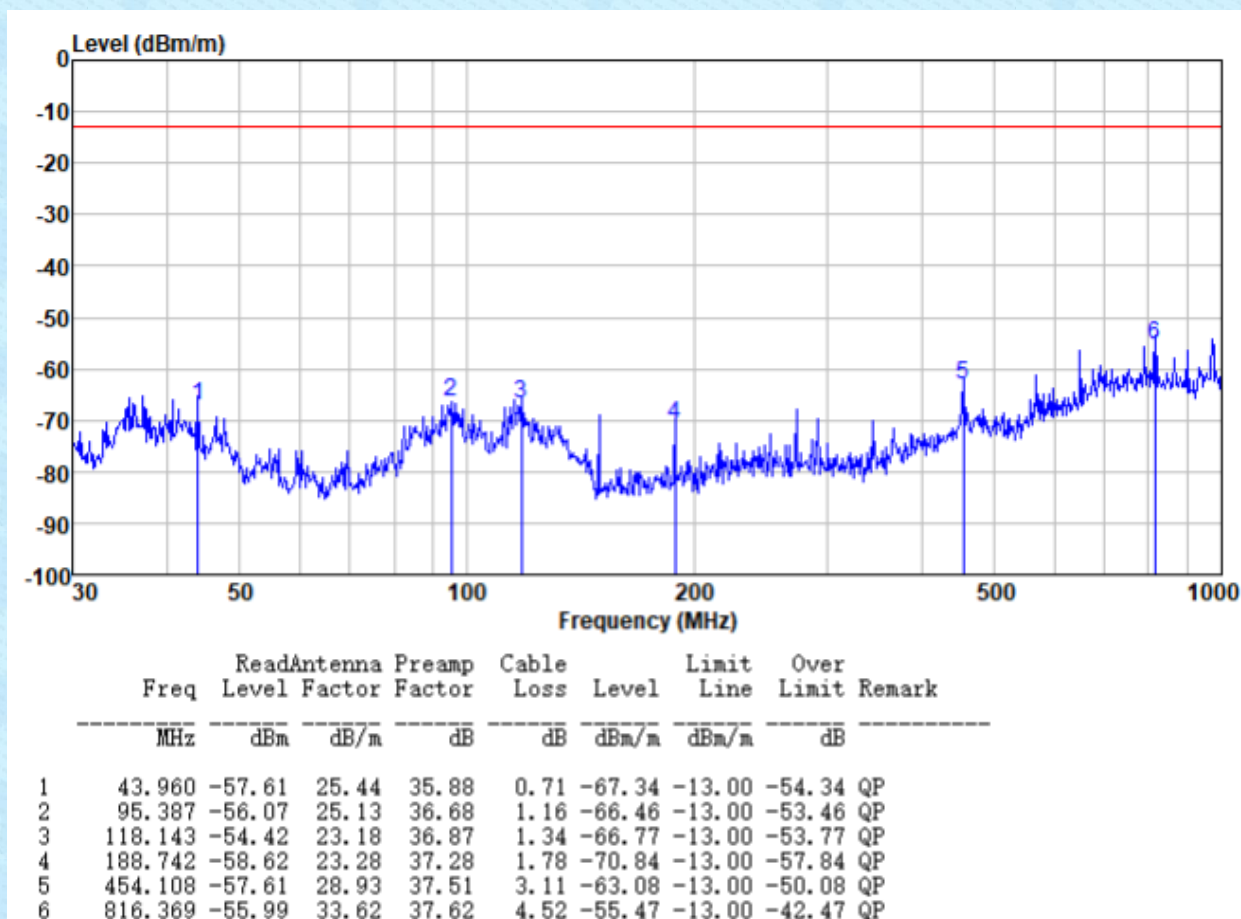
Measurement Data:

Below 1GHz

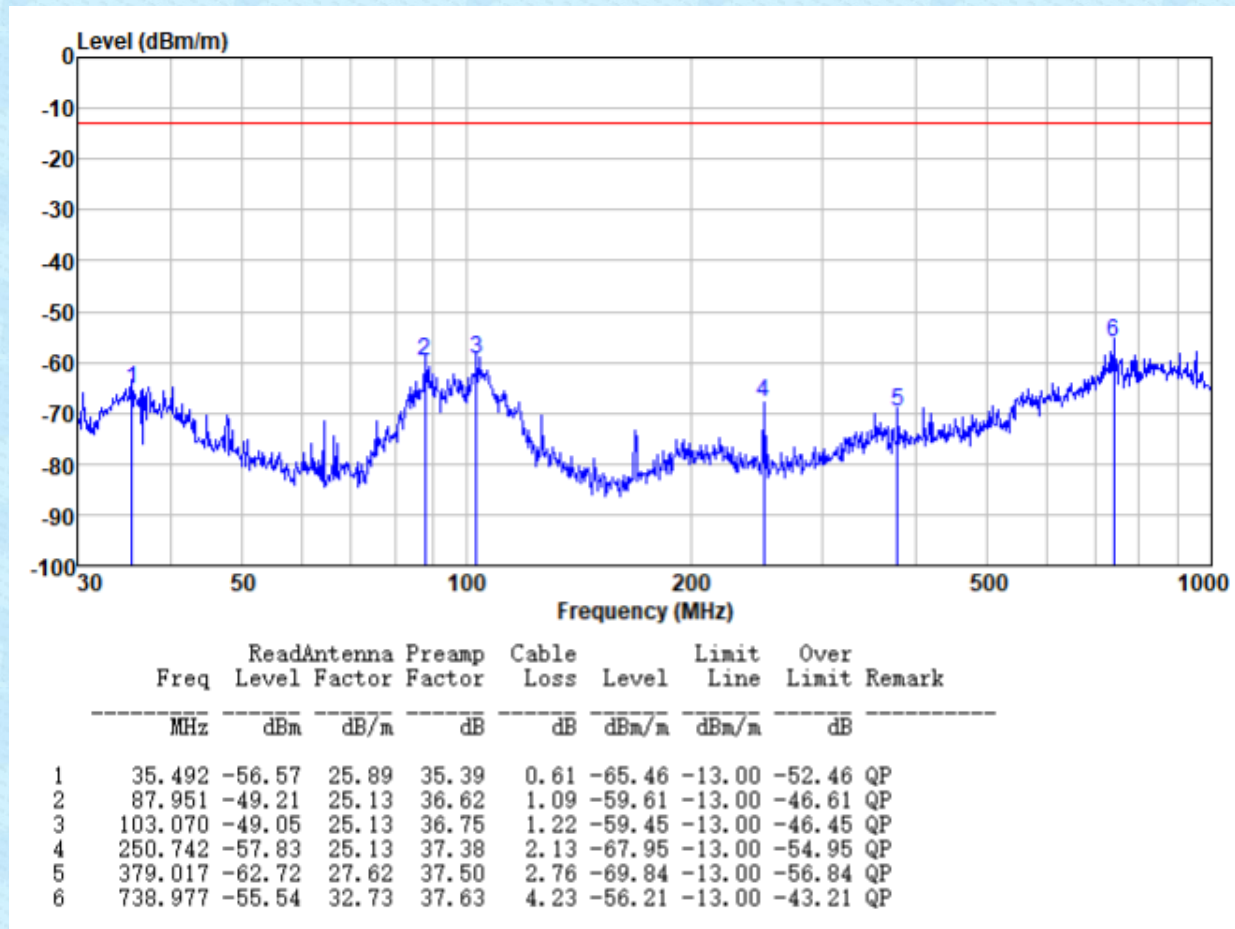
Pre-scan all test modes, found worst case at Band 2, and so only show the test result of it

ANT type 1:

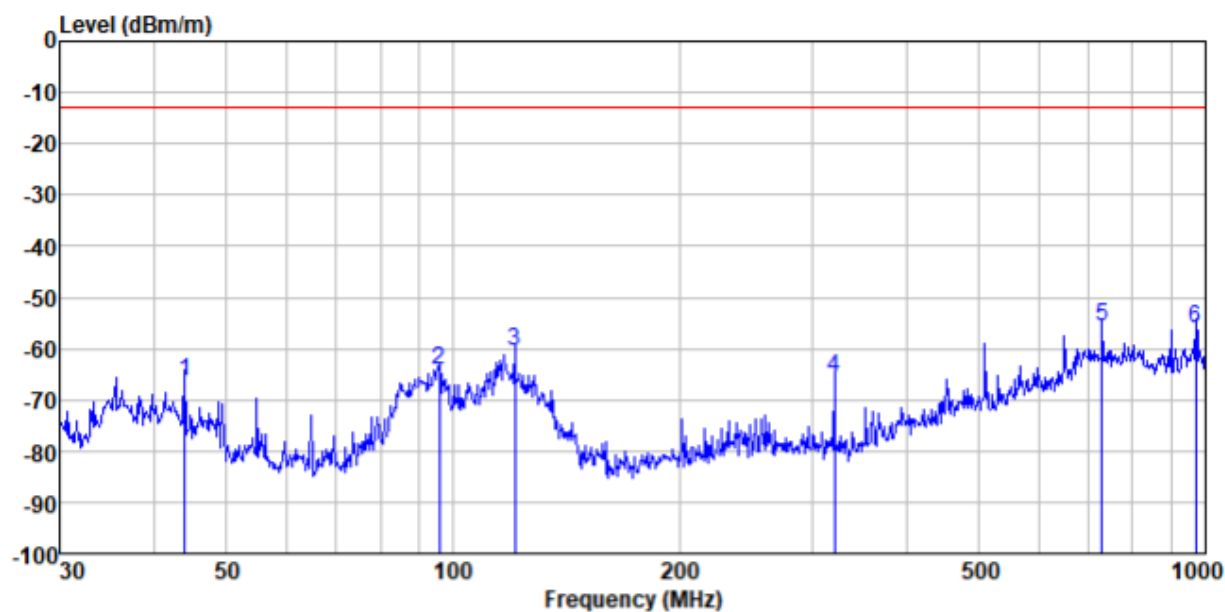
Horizontal:



Vertical:

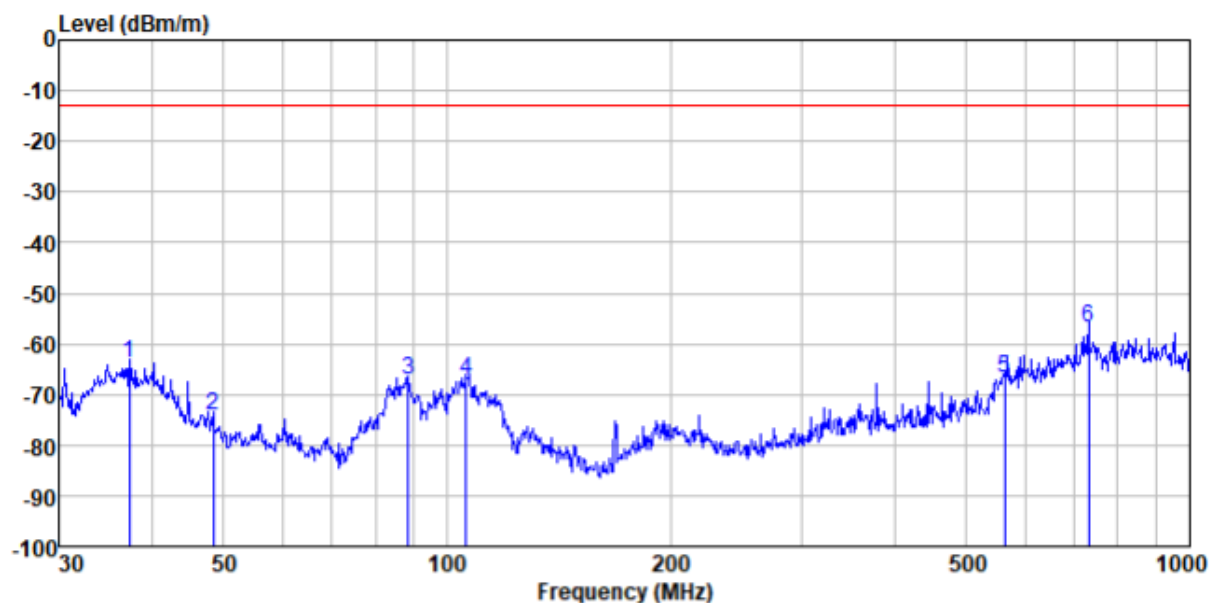


ANT type 2:
Horizontal:



	Freq	Read Level	Antenna Factor	Preamplifier Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	43.960	-56.61	25.44	35.88	0.71	-66.34	-13.00	-53.34	QP
2	95.739	-53.88	25.13	36.69	1.16	-64.28	-13.00	-51.28	QP
3	120.787	-48.08	23.18	36.89	1.37	-60.42	-13.00	-47.42	QP
4	321.045	-57.17	26.62	37.44	2.47	-65.52	-13.00	-52.52	QP
5	728.153	-54.57	32.41	37.63	4.19	-55.60	-13.00	-42.60	QP
6	970.920	-59.66	35.81	37.54	5.12	-56.27	-13.00	-43.27	QP

Vertical:



	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	37.374	-55.02	25.89	35.51	0.63	-64.01	-13.00	-51.01	QP
2	48.385	-64.37	25.44	36.10	0.75	-74.28	-13.00	-61.28	QP
3	88.603	-56.88	25.13	36.63	1.10	-67.28	-13.00	-54.28	QP
4	106.157	-56.76	25.13	36.77	1.25	-67.15	-13.00	-54.15	QP
5	562.443	-63.87	31.11	37.53	3.57	-66.72	-13.00	-53.72	QP
6	730.844	-55.74	32.41	37.63	4.20	-56.76	-13.00	-43.76	QP

Notes:

Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

Above 1GHz

Notes: Margin= Result+ Factor-Limit

ANT type 1:

LTE Band 2 @20MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	2324	H	-50.24	-8.67	-13.00	-45.91	150	142.11	Pass
	7137	H	-55.35	4.57	-13.00	-37.78	150	61.57	Pass
	13884	H	-59.36	11.74	-13.00	-34.62	150	101.70	Pass
	2052	V	-49.86	-9.16	-13.00	-46.02	150	65.74	Pass
	7033	V	-54.55	4.18	-13.00	-37.37	150	190.27	Pass
	13612	V	-59.92	10.85	-13.00	-36.07	150	138.88	Pass

LTE Band 4 @20MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	2121	H	-50.45	-9.04	-13.00	-46.49	150	305.32	Pass
	7238	H	-54.72	4.97	-13.00	-36.75	150	327.17	Pass
	13715	H	-60.01	11.22	-13.00	-35.79	150	328.27	Pass
	2291	V	-49.88	-8.73	-13.00	-45.61	150	182.17	Pass
	7476	V	-53.98	5.85	-13.00	-35.13	150	139.22	Pass
	13987	V	-58.82	12.1	-13.00	-33.72	150	123.93	Pass

LTE Band 5 @10MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	2257	H	-49.54	-8.8	-13.00	-45.34	150	168.90	Pass
	7374	H	-54.02	5.47	-13.00	-35.55	150	178.13	Pass
	13834	H	-59.88	11.6	-13.00	-35.28	150	350.75	Pass
	1560	V	-49.34	-11.32	-13.00	-47.66	150	306.30	Pass
	9210	V	-54.26	7.51	-13.00	-33.75	150	142.02	Pass
	14701	V	-59.32	13.26	-13.00	-33.06	150	314.73	Pass

LTE Band 12 @10MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	3787	H	-52.76	-4.76	-13.00	-44.52	150	339.40	Pass
	9941	H	-54.04	8.44	-13.00	-32.60	150	140.73	Pass
	15755	H	-59.69	13.19	-13.00	-33.50	150	129.39	Pass
	4892	V	-53.54	-1.57	-13.00	-42.11	150	80.73	Pass
	9618	V	-54.26	7.99	-13.00	-33.27	150	33.63	Pass
	15262	V	-57.28	13.06	-13.00	-31.22	150	316.97	Pass

LTE Band 13 @10MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	1600	H	-46.33	-10.33	-40.00	-16.66	150	305.11	Pass
	4365	H	-52.22	-3.12	-13.00	-42.34	150	25.04	Pass
	8989	H	-54.74	7.26	-13.00	-34.48	150	150.37	Pass
	14854	H	-57.7	13.2	-13.00	-31.50	150	157.82	Pass
	1600	V	-47.19	-10.33	-40.00	-17.52	150	200.34	Pass
	5521	V	-54.39	-0.73	-13.00	-42.12	150	359.71	Pass
	11454	V	-55.74	10.15	-13.00	-32.59	150	122.74	Pass
	17285	V	-61.99	17.2	-13.00	-31.79	150	126.91	Pass

Remark: the emission level shall be attenuated at least $43+10 \log_{10}(P[\text{Watts}])$ for all out-of-band emissions except emissions in the 1559-1610MHz band are subject to a limit of -40dBm/MHz for wideband signals

LTE Band 14 @10MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	1560	H	-48.48	-11.15	-40.00	-19.63	150	300.10	Pass
	6253	H	-53.63	1.38	-13.00	-39.25	150	316.93	Pass
	12458	H	-57.92	8.43	-13.00	-36.49	150	97.89	Pass
	14430	H	-58.71	13.16	-13.00	-32.55	150	178.56	Pass
	1600	V	-47.68	-10.33	-40.00	-18.01	150	213.15	Pass
	1867	V	-49.76	-9.84	-13.00	-46.60	150	107.19	Pass
	5879	V	-53.34	0.13	-13.00	-40.21	150	55.43	Pass
	13155	V	-59.92	9.11	-13.00	-37.81	150	123.72	Pass

Remark: the emission level shall be attenuated at least $43+10 \log_{10}(P[\text{Watts}])$ for all out-of-band emissions except emissions in the 1559-1610MHz band are subject to a limit of -40dBm/MHz for wideband signals

LTE Band 66 @5MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	2121	H	-50.45	-9.04	-13.00	-46.49	150	306.96	Pass
	7238	H	-54.72	4.97	-13.00	-36.75	150	328.81	Pass
	13715	H	-60.01	11.22	-13.00	-35.79	150	329.91	Pass
	2291	V	-49.88	-8.73	-13.00	-45.61	150	183.81	Pass
	7476	V	-53.98	5.85	-13.00	-35.13	150	140.86	Pass
	13987	V	-58.82	12.1	-13.00	-33.72	150	125.57	Pass

LTE Band 71 @5MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	3788	H	-52.65	-4.76	-13.00	-44.41	150	339.40	Pass
	9942	H	-53.93	8.44	-13.00	-32.49	150	140.73	Pass
	15756	H	-59.58	13.19	-13.00	-33.39	150	129.39	Pass
	4893	V	-53.43	-1.57	-13.00	-42.00	150	80.73	Pass
	9619	V	-54.15	7.99	-13.00	-33.16	150	33.63	Pass
	15263	V	-57.17	13.06	-13.00	-31.11	150	316.97	Pass

ANT type 2:

LTE Band 2 @20MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	2324	H	-51.39	-8.67	-13.00	-47.06	150	146.93	Pass
	7137	H	-56.68	4.57	-13.00	-39.11	150	66.39	Pass
	13884	H	-60.52	11.74	-13.00	-35.78	150	106.52	Pass
	2052	V	-50.81	-9.16	-13.00	-46.97	150	70.56	Pass
	7033	V	-55.8	4.18	-13.00	-38.62	150	195.09	Pass
	13612	V	-60.18	10.85	-13.00	-36.33	150	143.70	Pass

LTE Band 4 @20MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	2121	H	-51.60	-9.04	-13.00	-47.64	150	310.14	Pass
	7238	H	-56.05	4.97	-13.00	-38.08	150	331.99	Pass
	13715	H	-61.17	11.22	-13.00	-36.95	150	333.09	Pass
	2291	V	-50.83	-8.73	-13.00	-46.56	150	186.99	Pass
	7476	V	-55.23	5.85	-13.00	-36.38	150	144.04	Pass
	13987	V	-59.08	12.1	-13.00	-33.98	150	128.75	Pass

LTE Band 5 @10MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	2257	H	-50.69	-8.8	-13.00	-46.49	150	173.72	Pass
	7374	H	-55.35	5.47	-13.00	-36.88	150	182.95	Pass
	13834	H	-61.04	11.6	-13.00	-36.44	150	355.57	Pass
	1560	V	-50.29	-11.32	-13.00	-48.61	150	311.12	Pass
	9210	V	-55.51	7.51	-13.00	-35.00	150	146.84	Pass
	14701	V	-59.58	13.26	-13.00	-33.32	150	319.55	Pass

LTE Band 12 @10MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	3787	H	-53.91	-4.76	-13.00	-45.67	150	344.22	Pass
	9941	H	-55.37	8.44	-13.00	-33.93	150	145.55	Pass
	15755	H	-60.85	13.19	-13.00	-34.66	150	134.21	Pass
	4892	V	-54.49	-1.57	-13.00	-43.06	150	85.55	Pass
	9618	V	-55.51	7.99	-13.00	-34.52	150	38.45	Pass
	15262	V	-57.54	13.06	-13.00	-31.48	150	321.79	Pass

LTE Band 13 @10MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	1600	H	-48.10	-10.33	-40.00	-18.43	150	200.68	Pass
	4365	H	-53.37	-3.12	-13.00	-43.49	150	29.86	Pass
	8989	H	-56.07	7.26	-13.00	-35.81	150	155.19	Pass
	14854	H	-58.86	13.2	-13.00	-32.66	150	162.64	Pass
	1600	V	-47.96	-10.33	-40.00	-18.29	150	206.68	Pass
	5521	V	-55.34	-0.73	-13.00	-43.07	150	364.53	Pass
	11454	V	-56.99	10.15	-13.00	-33.84	150	127.56	Pass
	17285	V	-62.25	17.2	-13.00	-32.05	150	131.73	Pass

Remark: the emission level shall be attenuated at least $43+10 \log_{10}(P[\text{Watts}])$ for all out-of-band emissions except emissions in the 1559-1610MHz band are subject to a limit of -40dBm/MHz for wideband signals

LTE Band 14 @10MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	1600	H	-48.33	-10.33	-40.00	-18.66	150	205.64	Pass
	6252	H	-54.89	1.38	-13.00	-40.51	150	315.08	Pass
	12457	H	-59.36	8.43	-13.00	-37.93	150	96.04	Pass
	14429	H	-59.98	13.16	-13.00	-33.82	150	176.71	Pass
	1560	V	-48.19	-11.15	-40.00	-19.34	150	300.15	Pass
	1866	V	-50.82	-9.84	-13.00	-47.66	150	105.34	Pass
	5878	V	-54.7	0.13	-13.00	-41.57	150	53.58	Pass
	13154	V	-60.29	9.11	-13.00	-38.18	150	121.87	Pass

Remark: the emission level shall be attenuated at least $43+10 \log_{10}(P[\text{Watts}])$ for all out-of-band emissions except emissions in the 1559-1610MHz band are subject to a limit of -40dBm/MHz for wideband signals

LTE Band 66 @5MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	2121	H	-51.6	-9.04	-13.00	-47.64	150	311.78	Pass
	7238	H	-56.05	4.97	-13.00	-38.08	150	333.63	Pass
	13715	H	-61.17	11.22	-13.00	-36.95	150	334.73	Pass
	2291	V	-50.83	-8.73	-13.00	-46.56	150	188.63	Pass
	7476	V	-55.23	5.85	-13.00	-36.38	150	145.68	Pass
	13987	V	-59.08	12.1	-13.00	-33.98	150	130.39	Pass

LTE Band 71 @5MHz, QPSK									
Channel	Frequency (MHz)	Ant. Pol.	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Ant. Height[cm]	Turntable deg.	verdict
Middle	3788	H	-53.8	-4.76	-13.00	-45.56	150	344.22	Pass
	9942	H	-55.26	8.44	-13.00	-33.82	150	145.55	Pass
	15756	H	-60.74	13.19	-13.00	-34.55	150	134.21	Pass
	4893	V	-54.38	-1.57	-13.00	-42.95	150	85.55	Pass
	9619	V	-55.4	7.99	-13.00	-34.41	150	38.45	Pass
	15263	V	-57.43	13.06	-13.00	-31.37	150	321.79	Pass

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

-----End-----