



FCC TEST REPORT

Application No.: DNT2508130648R8786-16211

Applicant: SHENZHEN HUIYE IOT TECHNOLOGY CO.,LTD.

Address of Applicant: No.39, Zhulongtian Road, Shuitian Community, Shiyan Street, Baoan, Shenzhen

EUT Description: TRACKER

Model No.: HYB001P

FCC ID: 2BO2A-HYB001P

Power supply DC 2.5V-3.3V

Standards: 47 CFR Part 2
47 CFR Part 22 subpart H
47 CFR Part 24 subpart E
47 CFR Part 27 subpart C
ANSI/TIA-603-E-2016

Trade Mark: N/A

Date of Receipt: 2025/8/13

Date of Test: 2025/8/14 to 2025/12/08

Date of Issue: 2025/12/10

Test Result: **PASS ***

Prepared By: Wayne Lin (Testing Engineer)

Reviewed By: Pencils Chen (Project Engineer)

Approved By: Heise Shen (Manager)



Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.



Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Dec. 10, 2025	Valid	Original Report



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1 Test Summary

Test Item	Verdict	
Power Output Data(conducted)	Part 2.1046 Part 24.232(c)	Data reference FCC ID:XMR202111EG915ULA
Effective (Isotropic) Radiated Power Output Data	Part 2.1046 Part 24.232(c)	PASS
Peak-Average Ratio	Part 24.232(d)	Data reference FCC ID:XMR202111EG915ULA
Modulation Bandwidth	Part 2.1049 Part 24.238	Data reference FCC ID:XMR202111EG915ULA
Band Edges Compliance	Part 22.917(a) Part 24.238(a)	Data reference FCC ID:XMR202111EG915ULA
Spurious Emission at Antenna Terminals	Part 2.1051 Part 24.238(a)	Data reference FCC ID:XMR202111EG915ULA
Field Strength of Spurious Radiation	Part 2.1053 Part 24.238(a)	Pass
Frequency Stability	Part 2.1055 Part 24.235	Data reference FCC ID:XMR202111EG915ULA

Nlote1 the LTE module in this product has already finished the certification FCC ID: XMR202111EG915ULA, Reference the results in the original test report.



2 General Information

2.1 Test Location

Company:	Dongguan DN Testing Co., Ltd
Address:	No. 1, West Fourth Street, South Xinfu Road, Wusha Liwu, Chang 'an Town, Dongguan City, Guangdong P.R.China
Test engineer:	Wayne Lin

2.2 General Description of EUT

EUT Description:	Chongqing Huiye IoT Technology Co.,Ltd
Model No.:	No.6-4,Zong bao Avenue, Shapingba District, Chongqing City, P.R.China
Trade Mark:	/
Hardware Version:	B001P_MB_V1.0.3
Software Version:	V08
Sample Type:	☐ Portable Device, ☒ Mobile Device
Antenna Type:	☐ External, ☒ Integrated
Antenna Gain*:	☒ Provided by applicant
	Band 2:0.9dBi
	Band 4:0.9dBi
	Band 5:-2.4dBi
	Band 7:0.2dBi
RF Cable*:	Band 66:0.2dBi
	☒ Provided by applicant
	0.5dB(0.6~1GHz); 0.8dB(1.4~2GHz); 1.0dB(2.1~2.7GHz); 1.5dB(3~4GHz); 1.8dB(4.4~6GHz);

Remark:

*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information , DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.



2.3 Test Mode

Test Mode	Test Modes Description
LTE/TM1	LTE system, QPSK modulation

Remark: The test mode(s) are selected according to relevant radio technology specifications.

2.4 Test Environment

Operating Environment:		
Humidity:	45~56 % RH	
Atmospheric Pressure:	101.0~101.30 KPa	
Temperature	NT	20~25 °C
Voltage:	LV	2.5V
	NV	3V
	HV	3.3V

Remark: LV= lower extreme test voltage; NV= nominal voltage
HV= upper extreme test voltage; NT= normal temperature

2.5 Test Facility

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

Lab A:

• FCC, USA

Designation Number: CN1348

• A2LA (Certificate No. 7050.01)

DONGGUAN DN TESTING CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 7050.01.

• Innovation, Science and Economic Development Canada

DONGGUAN DN TESTING CO., LTD. EMC Laboratory has been recognized by ISED as an accredited testing laboratory. CAB identifier is CN0149.
IC#: 30755.



2.6 Technical Specification

Characteristics	Description		
Radio System Type	☐ GSM		
	☐ UMTS		
	☐ CDMA		
	☐ EVDO		
	☒ LTE		
Supported Frequency Range	Band	TX	RX
	LTE Band 2	1850 to 1910 MHz	1930 to 1990 MHz
	LTE Band 4	1710 to 1755 MHz	2110 to 2155 MHz
	LTE Band 5	824 to 849 MHz	869 to 894 MHz
	LTE Band 7	2500 to 2570 MHz	2620 to 2690 MHz
	LTE Band 66	1710 to 1780 MHz	2110 to 2200 MHz
Supported Channel Bandwidth	LTE Band 2	☒ 1.4 MHz; ☒ 3 MHz; ☒ 5 MHz; ☒ 10 MHz; ☒ 15 MHz, ☒ 20 MHz	
	LTE Band 4	☒ 1.4 MHz; ☒ 3 MHz; ☒ 5 MHz; ☒ 10 MHz; ☒ 15 MHz, ☒ 20 MHz	
	LTE Band 5	☒ 1.4 MHz; ☒ 3 MHz; ☒ 5 MHz; ☒ 10 MHz	
	LTE Band 7	☒ 5 MHz; ☒ 10 MHz; ☒ 15 MHz, ☒ 20 MHz	
	LTE Band66	☒ 1.4 MHz; ☒ 3 MHz; ☒ 5 MHz; ☒ 10 MHz; ☒ 15 MHz, ☒ 20 MHz	
Characteristics	Description		
Designation of Emissions (Remark: the necessary bandwidth of which is the worst value from the measured occupied bandwidths for each type of channel bandwidth configuration.)	LTE Band 2	1M10G7D;1M09W7D; 1M10W7D 2M69G7D;2M69W7D; 2M69W7D 4M49G7D;4M49W7D; 4M49W7D 8M93G7D;8M95W7D; 8M93W7D 13M5G7D;13M5W7D; 13M5W7D 17M9G7D;18M0W7D; 17M9W7D	
	LTE Band 4	1M10G7D;1M09W7D; 1M10W7D 2M69G7D;2M69W7D; 2M69W7D 4M49G7D;4M49W7D; 4M49W7D 8M93G7D;8M95W7D; 8M93W7D 13M5G7D;13M5W7D; 13M5W7D 17M9G7D;18M0W7D; 17M9W7D	
	LTE Band 5	1M10G7D;1M09W7D; 1M10W7D 2M69G7D;2M69W7D; 2M69W7D 4M49G7D;4M49W7D; 4M48W7D 8M95G7D;8M93W7D; 8M95W7D	
	LTE Band 7	4M48G7D;4M48W7D; 4M48W7D 8M95G7D;8M93W7D; 8M95W7D 13M5G7D;13M5W7D; 13M5W7D 17M9G7D;17M9W7D; 17M9W7D	
	LTE Band 66	4M48G7D;4M48W7D; 4M48W7D 8M95G7D;8M93W7D; 8M95W7D 13M5G7D;13M5W7D; 13M5W7D 17M9G7D;17M9W7D; 17M9W7D	



2.7 Test Frequencies

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 2	1.4MHz	TX	Channel 18607	Channel 18900	Channel 19193
			1850.7 MHz	1880 MHz	1909.3 MHz
		RX	Channel 607	Channel 900	Channel 1193
			1930.7 MHz	1960 MHz	1989.3 MHz
	3MHz	TX	Channel 18615	Channel 18900	Channel 19185
			1851.5 MHz	1880 MHz	1908.5 MHz
		RX	Channel 615	Channel 900	Channel 1185
			1931.5 MHz	1960 MHz	1988.5 MHz
	5MHz	TX	Channel 18625	Channel 18900	Channel 19175
			1852.5 MHz	1880 MHz	1907.5 MHz
		RX	Channel 625	Channel 900	Channel 1175
			1932.5 MHz	1960 MHz	1987.5 MHz
	10MHz	TX	Channel 18650	Channel 18900	Channel 19150
			1855 MHz	1880 MHz	1905 MHz
		RX	Channel 650	Channel 900	Channel 1150
			1935 MHz	1960 MHz	1985 MHz
	15MHz	TX	Channel 18675	Channel 18900	Channel 19125
			1857.5 MHz	1880 MHz	1902.5 MHz
		RX	Channel 675	Channel 900	Channel 1125
			1937.5 MHz	1960 MHz	1982.5 MHz
	20MHz	TX	Channel 18700	Channel 18900	Channel 19100
			1860 MHz	1880 MHz	1900 MHz
		RX	Channel 700	Channel 900	Channel 1100
			1940 MHz	1960 MHz	1980 MHz



Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 4	1.4MHz	TX	Channel 19957	Channel 20175	Channel 20393
			1710.7 MHz	1732.5 MHz	1754.3 MHz
		RX	Channel 1975	Channel 2175	Channel 2375
			2112.5 MHz	2132.5MHz	2152.5 MHz
	3MHz	TX	Channel 19965	Channel 20175	Channel 20385
			1711.5 MHz	1732.5 MHz	1753.5 MHz
		RX	Channel 2000	Channel 2175	Channel 2350
			2115 MHz	2132.5MHz	2150 MHz
	5MHz	TX	Channel 19975	Channel 20175	Channel 20375
			1712.5 MHz	1732.5 MHz	1752.5 MHz
		RX	Channel 1975	Channel 2175	Channel 2375
			2112.5 MHz	2132.5MHz	2152.5 MHz
	10MHz	TX	Channel 20000	Channel 20175	Channel 20350
			1715 MHz	1732.5 MHz	1750 MHz
		RX	Channel 2000	Channel 2175	Channel 2350
			2115 MHz	2132.5MHz	2150 MHz
LTE Band 5	15MHz	TX	Channel 20025	Channel 20175	Channel 20325
			1717.5 MHz	1732.5 MHz	1747.5 MHz
		RX	Channel 2025	Channel 2175	Channel 2325
			2117.5 MHz	2132.5MHz	2147.5 MHz
	20MHz	TX	Channel 20050	Channel 20175	Channel 20300
			1720 MHz	1732.5 MHz	1745 MHz
		RX	Channel 2050	Channel 2175	Channel 2300
			2120 MHz	2132.5MHz	2145 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 5	1.4MHz	TX	Channel 20407	Channel 20525	Channel 20643
			824.7 MHz	836.5 MHz	848.3 MHz
		RX	Channel 2407	Channel 2525	Channel 2643
			869.7 MHz	881.5 MHz	893.3 MHz
	3MHz	TX	Channel 20415	Channel 20525	Channel 20635
			825.5 MHz	836.5 MHz	847.5 MHz
		RX	Channel 2415	Channel 2525	Channel 2635
			870.5 MHz	881.5 MHz	892.5 MHz
	5MHz	TX	Channel 20425	Channel 20525	Channel 20625
			826.5 MHz	836.5 MHz	846.5 MHz
		RX	Channel 2425	Channel 2525	Channel 2625
			871.5 MHz	881.5 MHz	891.5 MHz
LTE Band 5	10MHz	TX	Channel 20450	Channel 20525	Channel 20600
			829 MHz	836.5 MHz	844 MHz
		RX	Channel 2450	Channel 2525	Channel 2600
			874 MHz	881.5 MHz	889 MHz



Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 7	5MHz	TX	Channel 20775 2502.5 MHz	Channel 21100 2535 MHz	Channel 21425 2567.5 MHz
			Channel 2775 2622.5 MHz	Channel 3100 2655 MHz	Channel 5825 2687.5 MHz
	10MHz	TX	Channel 20800 2505 MHz	Channel 21100 2535 MHz	Channel 21400 2565 MHz
			Channel 2800 2625 MHz	Channel 3100 2655 MHz	Channel 3400 2685 MHz
	15MHz	TX	Channel 20825 2507.5 MHz	Channel 21100 2535 MHz	Channel 21375 2562.5 MHz
			Channel 2825 2627.5 MHz	Channel 3100 2655 MHz	Channel 3375 2682.5 MHz
	20MHz	TX	Channel 20850 2510 MHz	Channel 21100 2535 MHz	Channel 21350 2560 MHz
			Channel 2850 2630 MHz	Channel 3100 2655 MHz	Channel 3350 2680 MHz
		RX			

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band66	1.4MHz	TX	Channel 131979 1710.7 MHz	Channel 132322 1745 MHz	Channel 132665 1779.3 MHz
			Channel 66443 2110.7 MHz	Channel 66786 2145MHz	Channel 67329 2199.3 MHz
	3MHz	TX	Channel 131987 1711.5 MHz	Channel 132322 1745 MHz	Channel 132657 1778.5MHz
			Channel 66451 2111.5 MHz	Channel 66786 2145MHz	Channel 67321 2198.5MHz
	5MHz	TX	Channel 131997 1712.5 MHz	Channel 132322 1745 MHz	Channel 132647 1777.5 MHz
			Channel 66461 2112.5 MHz	Channel 66786 2145MHz	Channel 67311 2197.5 MHz
	10MHz	TX	Channel 132022 1715 MHz	Channel 132322 1745 MHz	Channel 132622 1775 MHz
			Channel 66486 2115 MHz	Channel 66786 2145MHz	Channel 67286 2195 MHz
	15MHz	TX	Channel 132047 1717.5 MHz	Channel 132322 1745 MHz	Channel 132597 1772.5 MHz
			Channel 66511 2117.5 MHz	Channel 66786 2145MHz	Channel 67261 2192.5 MHz
	20MHz	TX	Channel 132072 1720 MHz	Channel 132322 1745 MHz	Channel 132572 1770 MHz
			Channel 66536 2120 MHz	Channel 66786 2145MHz	Channel 67236 2190 MHz
		RX			



3 Description of Tests

3.1 Effective (Isotropic) Radiated Power Output Data

Measurement Procedure: FCC KDB 971168 D01 V03r01 ; C63.26 (2015)

Calculate power in dBm by the following formula:

ERP (dBm) = Conducted Power (dBm) + antenna gain (dBd)

EIRP(dBm) = Conducted Power (dBm) + antenna gain (dBi)

EIRP=ERP+2.15dB

Measurement Procedure: FCC KDB 971168 D01 V03r01 ; ANSI/C63.26 (2015)

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:
$$\text{EIRP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$$
$$\text{EIRP=ERP+2.15dB}$$

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.



Result:

Test Band		LTE Band 2					
Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
18607	1850.70	1.4	1	0	21.85	22.75	< 33.01
18900	1880.00				22.02	22.92	< 33.01
19193	1909.30				21.71	22.61	< 33.01
18607	1850.70	1.4	1	2	22.52	23.42	< 33.01
18900	1880.00				22.77	23.67	< 33.01
19193	1909.30				22.36	23.26	< 33.01
18607	1850.70	1.4	1	6	21.75	22.65	< 33.01
18900	1880.00				21.98	22.88	< 33.01
19193	1909.30				21.53	22.43	< 33.01
18607	1850.70	1.4	6	0	21.33	22.23	< 33.01
18900	1880.00				21.66	22.56	< 33.01
19193	1909.30				21.17	22.07	< 33.01
18615	1851.50	3	1	0	22.16	23.06	< 33.01
18900	1880.00				21.93	22.83	< 33.01
19185	1908.50				22.16	23.06	< 33.01
18615	1851.50	3	1	7	22.91	23.81	< 33.01
18900	1880.00				23.28	24.18	< 33.01
19185	1908.50				22.90	23.8	< 33.01
18615	1851.50	3	1	14	21.17	22.07	< 33.01
18900	1880.00				21.47	22.37	< 33.01
19185	1908.50				21.12	22.02	< 33.01
18615	1851.50	3	15	0	21.38	22.28	< 33.01
18900	1880.00				21.68	22.58	< 33.01
19185	1908.50				21.59	22.49	< 33.01

Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)



Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
18625	1852.50	5	1	0	22.18	23.08	< 33.01
18900	1880.00				22.13	23.03	< 33.01
19175	1907.50				22.20	23.1	< 33.01
18625	1852.50	5	1	12	22.36	23.26	< 33.01
18900	1880.00				22.62	23.52	< 33.01
19175	1907.50				22.40	23.3	< 33.01
18625	1852.50	5	1	24	22.21	23.11	< 33.01
18900	1880.00				22.54	23.44	< 33.01
19175	1907.50				22.07	22.97	< 33.01
18625	1852.50	5	25	0	21.45	22.35	< 33.01
18900	1880.00				21.82	22.72	< 33.01
19175	1907.50				21.54	22.44	< 33.01
18650	1855.00	10	1	0	22.11	23.01	< 33.01
18900	1880.00				22.13	23.03	< 33.01
19150	1905.00				21.91	22.81	< 33.01
18650	1855.00	10	1	24	22.43	23.33	< 33.01
18900	1880.00				22.79	23.69	< 33.01
19150	1905.00				22.64	23.54	< 33.01
18650	1855.00	10	1	49	21.85	22.75	< 33.01
18900	1880.00				22.10	23	< 33.01
19150	1905.00				21.73	22.63	< 33.01
18650	1855.00	10	50	0	21.48	22.38	< 33.01
18900	1880.00				21.76	22.66	< 33.01
19150	1905.00				21.60	22.5	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							



Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
18675	1857.50	15	1	0	22.51	23.41	< 33.01
18900	1880.00				22.37	23.27	< 33.01
19125	1902.50				22.53	23.43	< 33.01
18675	1857.50	15	1	37	22.31	23.21	< 33.01
18900	1880.00				22.61	23.51	< 33.01
19125	1902.50				22.63	23.53	< 33.01
18675	1857.50	15	1	74	21.95	22.85	< 33.01
18900	1880.00				22.63	23.53	< 33.01
19125	1902.50				22.29	23.19	< 33.01
18675	1857.50	15	75	0	21.49	22.39	< 33.01
18900	1880.00				21.77	22.67	< 33.01
19125	1902.50				21.61	22.51	< 33.01
18700	1860.00	20	1	0	22.37	23.27	< 33.01
18900	1880.00				22.13	23.03	< 33.01
19100	1900.00				22.53	23.43	< 33.01
18700	1860.00	20	1	49	22.56	23.46	< 33.01
18900	1880.00				22.90	23.8	< 33.01
19100	1900.00				22.81	23.71	< 33.01
18700	1860.00	20	1	99	22.37	23.27	< 33.01
18900	1880.00				22.19	23.09	< 33.01
19100	1900.00				22.02	22.92	< 33.01
18700	1860.00	20	100	0	21.52	22.42	< 33.01
18900	1880.00				21.54	22.44	< 33.01
19100	1900.00				21.56	22.46	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							



Test Band		LTE Band 4/66					
Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
131979	1710.70	1.4	1	0	22.10	23	< 30.00
132322	1745.00				22.24	23.14	< 30.00
132665	1779.30				21.96	22.86	< 30.00
131979	1710.70	1.4	1	2	22.84	23.74	< 30.00
132322	1745.00				22.92	23.82	< 30.00
132665	1779.30				22.63	23.53	< 30.00
131979	1710.70	1.4	1	6	22.09	22.99	< 30.00
132322	1745.00				22.12	23.02	< 30.00
132665	1779.30				21.83	22.73	< 30.00
131979	1710.70	1.4	6	0	21.59	22.49	< 30.00
132322	1745.00				21.72	22.62	< 30.00
132665	1779.30				21.44	22.34	< 30.00
131987	1711.50	3	1	0	22.21	23.11	< 30.00
132322	1745.00				22.34	23.24	< 30.00
132657	1778.50				21.48	22.38	< 30.00
131987	1711.50	3	1	7	23.31	24.21	< 30.00
132322	1745.00				23.36	24.26	< 30.00
132657	1778.50				22.95	23.85	< 30.00
131987	1711.50	3	1	14	21.51	22.41	< 30.00
132322	1745.00				21.52	22.42	< 30.00
132657	1778.50				21.78	22.68	< 30.00
131987	1711.50	3	15	0	21.69	22.59	< 30.00
132322	1745.00				21.80	22.7	< 30.00
132657	1778.50				21.52	22.42	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							



Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
131997	1712.50	5	1	0	22.30	23.2	< 30.00
132322	1745.00				22.49	23.39	< 30.00
132647	1777.50				21.64	22.54	< 30.00
131997	1712.50	5	1	12	22.53	23.43	< 30.00
132322	1745.00				22.63	23.53	< 30.00
132647	1777.50				22.38	23.28	< 30.00
131997	1712.50	5	1	24	21.45	22.35	< 30.00
132322	1745.00				21.48	22.38	< 30.00
132647	1777.50				21.82	22.72	< 30.00
131997	1712.50	5	25	0	21.65	22.55	< 30.00
132322	1745.00				21.78	22.68	< 30.00
132647	1777.50				21.48	22.38	< 30.00
132022	1715.00	10	1	0	22.42	23.32	< 30.00
132322	1745.00				22.18	23.08	< 30.00
132622	1775.00				21.67	22.57	< 30.00
132022	1715.00	10	1	24	22.60	23.5	< 30.00
132322	1745.00				22.81	23.71	< 30.00
132622	1775.00				22.68	23.58	< 30.00
132022	1715.00	10	1	49	21.19	22.09	< 30.00
132322	1745.00				21.28	22.18	< 30.00
132622	1775.00				22.19	23.09	< 30.00
132022	1715.00	10	50	0	21.62	22.52	< 30.00
132322	1745.00				21.85	22.75	< 30.00
132622	1775.00				21.65	22.55	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							



Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
132047	1717.50	15	1	0	22.63	23.53	< 30.00
132322	1745.00				22.19	23.09	< 30.00
132597	1772.50				22.34	23.24	< 30.00
132047	1717.50	15	1	37	22.40	23.3	< 30.00
132322	1745.00				22.84	23.74	< 30.00
132597	1772.50				22.65	23.55	< 30.00
132047	1717.50	15	1	74	22.17	23.07	< 30.00
132322	1745.00				21.53	22.43	< 30.00
132597	1772.50				22.04	22.94	< 30.00
132047	1717.50	15	75	0	21.84	22.74	< 30.00
132322	1745.00				21.88	22.78	< 30.00
132597	1772.50				21.76	22.66	< 30.00
132072	1720.00	20	1	0	22.68	23.58	< 30.00
132322	1745.00				22.05	22.95	< 30.00
132572	1770.00				22.49	23.39	< 30.00
132072	1720.00	20	1	49	22.90	23.8	< 30.00
132322	1745.00				23.02	23.92	< 30.00
132572	1770.00				22.92	23.82	< 30.00
132072	1720.00	20	1	99	22.29	23.19	< 30.00
132322	1745.00				20.94	21.84	< 30.00
132572	1770.00				22.31	23.21	< 30.00
132072	1720.00	20	100	0	21.80	22.7	< 30.00
132322	1745.00				21.69	22.59	< 30.00
132572	1770.00				21.71	22.61	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							



Test Band		LTE Band 5					
Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK							
20407	824.70	1.4	1	0	22.32	20.01	< 38.45
20525	836.50				22.42	20.04	< 38.45
20643	848.30				22.01	20.02	< 38.45
20407	824.70	1.4	1	2	22.90	20.22	< 38.45
20525	836.50				22.89	20.17	< 38.45
20643	848.30				22.43	19.93	< 38.45
20407	824.70	1.4	1	6	22.24	20.05	< 38.45
20525	836.50				22.27	20.11	< 38.45
20643	848.30				21.81	19.6	< 38.45
20407	824.70	1.4	6	0	21.63	19.36	< 38.45
20525	836.50				21.60	19.31	< 38.45
20643	848.30				21.02	19.03	< 38.45
20415	825.50	3	1	0	22.26	20.15	< 38.45
20525	836.50				22.26	20.04	< 38.45
20635	846.50				22.14	19.63	< 38.45
20415	825.50	3	1	7	23.32	20.27	< 38.45
20525	836.50				23.25	20.39	< 38.45
20635	846.50				22.84	20.35	< 38.45
20415	825.50	3	1	14	22.21	18.69	< 38.45
20525	836.50				22.04	20.27	< 38.45
20635	846.50				21.91	19.62	< 38.45
20415	825.50	3	15	0	21.79	19.32	< 38.45
20525	836.50				21.72	19.44	< 38.45
20635	846.50				21.32	19.34	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15							



Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK							
20425	826.50	5	1	0	22.41	20.01	< 38.45
20525	836.50				22.44	20.04	< 38.45
20625	846.50				22.42	20.02	< 38.45
20425	826.50	5	1	12	22.62	20.22	< 38.45
20525	836.50				22.57	20.17	< 38.45
20625	846.50				22.33	19.93	< 38.45
20425	826.50	5	1	24	22.45	20.05	< 38.45
20525	836.50				22.51	20.11	< 38.45
20625	846.50				22.00	19.6	< 38.45
20425	826.50	5	25	0	21.76	19.36	< 38.45
20525	836.50				21.71	19.31	< 38.45
20625	846.50				21.43	19.03	< 38.45
20450	829.00	10	1	0	22.55	20.15	< 38.45
20525	836.50				22.44	20.04	< 38.45
20600	844.00				22.03	19.63	< 38.45
20450	829.00	10	1	24	22.67	20.27	< 38.45
20525	836.50				22.79	20.39	< 38.45
20600	844.00				22.75	20.35	< 38.45
20450	829.00	10	1	49	21.09	18.69	< 38.45
20525	836.50				22.67	20.27	< 38.45
20600	844.00				22.02	19.62	< 38.45
20450	829.00	10	50	0	21.72	19.32	< 38.45
20525	836.50				21.84	19.44	< 38.45
20600	844.00				21.74	19.34	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15							



Test Band		LTE Band 7					
Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
20775	2502.50	5	1	0	22.18	22.38	< 33.01
21100	2535.00				22.33	22.53	< 33.01
21425	2567.50				22.29	22.49	< 33.01
20775	2502.50	5	1	12	22.91	23.11	< 33.01
21100	2535.00				22.91	23.11	< 33.01
21425	2567.50				22.67	22.87	< 33.01
20775	2502.50	5	1	24	22.40	22.6	< 33.01
21100	2535.00				22.03	22.23	< 33.01
21425	2567.50				22.08	22.28	< 33.01
20775	2502.50	5	25	0	22.06	22.26	< 33.01
21100	2535.00				22.06	22.26	< 33.01
21425	2567.50				21.82	22.02	< 33.01
20800	2505.00	10	1	0	22.38	22.58	< 33.01
21100	2535.00				22.56	22.76	< 33.01
21400	2565.00				22.47	22.67	< 33.01
20800	2505.00	10	1	24	23.24	23.44	< 33.01
21100	2535.00				23.16	23.36	< 33.01
21400	2565.00				22.78	22.98	< 33.01
20800	2505.00	10	1	49	22.59	22.79	< 33.01
21100	2535.00				21.65	21.85	< 33.01
21400	2565.00				21.46	21.66	< 33.01
20800	2505.00	10	50	0	22.31	22.51	< 33.01
21100	2535.00				22.22	22.42	< 33.01
21400	2565.00				21.89	22.09	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							



Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
20825	2507.50	15	1	0	22.56	22.76	< 33.01
21100	2535.00				22.83	23.03	< 33.01
21375	2562.50				22.78	22.98	< 33.01
20825	2507.50	15	1	37	23.24	23.44	< 33.01
21100	2535.00				23.04	23.24	< 33.01
21375	2562.50				22.80	23	< 33.01
20825	2507.50	15	1	74	22.70	22.9	< 33.01
21100	2535.00				22.08	22.28	< 33.01
21375	2562.50				22.05	22.25	< 33.01
20825	2507.50	15	75	0	22.32	22.52	< 33.01
21100	2535.00				22.19	22.39	< 33.01
21375	2562.50				21.94	22.14	< 33.01
20850	2510.00	20	1	0	22.51	22.71	< 33.01
21100	2535.00				23.11	23.31	< 33.01
21350	2560.00				22.83	23.03	< 33.01
20850	2510.00	20	1	49	23.48	23.68	< 33.01
21100	2535.00				23.25	23.45	< 33.01
21350	2560.00				23.09	23.29	< 33.01
20850	2510.00	20	1	99	22.74	22.94	< 33.01
21100	2535.00				22.17	22.37	< 33.01
21350	2560.00				22.22	22.42	< 33.01
20850	2510.00	20	100	0	22.20	22.4	< 33.01
21100	2535.00				22.08	22.28	< 33.01
21350	2560.00				21.87	22.07	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							



3.2 Field Strength of Spurious Radiation

Measurement Procedure: FCC KDB 971168 D01 V03r01

Below 1GHz test procedure as below:

- 1). The EUT was powered ON and placed on a 80cm 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) 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:

Pd is the dipole equivalent power, Pg is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to Pg [dBm] – cable loss [dB]. The calculated Pd levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + 10log10(Power [Watts]).

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

Remark1: Reference test setup 2

Remark2: The emission below 18G were measured at a 3m test distance, while emissions above 18GHz were measured at a 1m test distance.

Test Settings:

1. RBW=100kHz for emission below 1GHz and 1MHz for emission above 1GHz
2. VBW≥3*RBW
3. Number of sweep point≥2*span/RBW
4. Detector=RMS



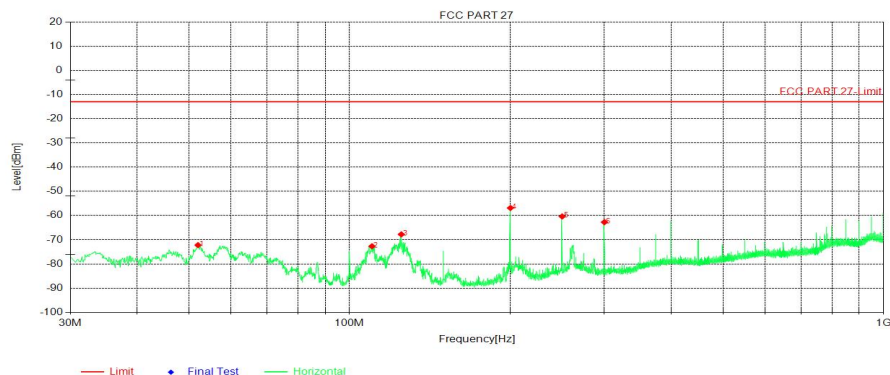
5. Trace mode=Average (Max Hold for pulsed emissions)

6. The trace was allowed to stabilize

Test data

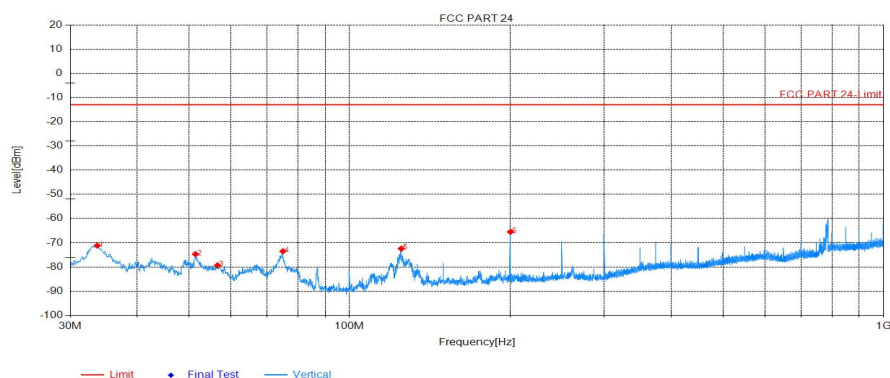
LTE B4 1.4M-Low Channel

For 30-1000MHz



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	52.02	-65.25	-6.98	-72.23	-13.00	59.23	150	360	PK
2	110.13	-64.78	-7.93	-72.71	-13.00	59.71	150	219	PK
3	124.97	-59.51	-8.28	-67.79	-13.00	54.79	150	199	PK
4	200.06	-51.11	-5.78	-56.89	-13.00	43.89	150	199	PK
5	250.02	-58.50	-1.89	-60.39	-13.00	47.39	150	317	PK
6	299.98	-60.85	-1.90	-62.75	-13.00	49.75	150	150	PK

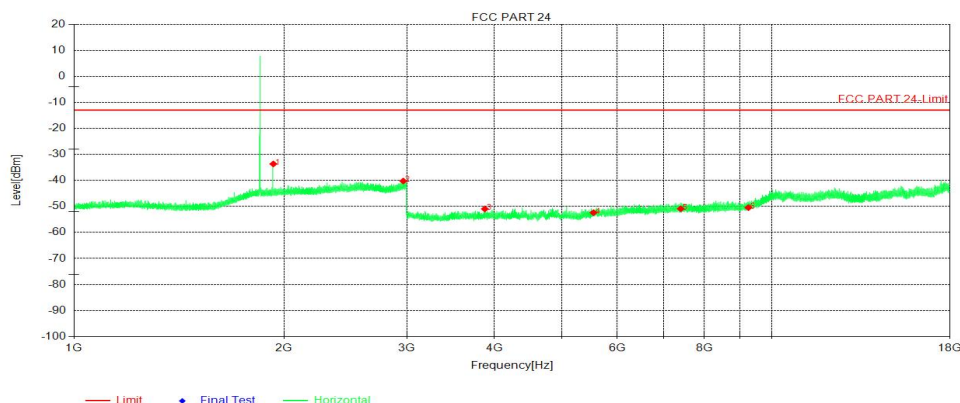
Vertical :



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	33.69	-70.69	-0.52	-71.21	-13.00	58.21	150	182	PK
2	51.44	-68.59	-6.15	-74.74	-13.00	61.74	150	258	PK
3	56.58	-72.82	-6.54	-79.36	-13.00	66.36	150	61	PK
4	75.01	-66.37	-7.18	-73.55	-13.00	60.55	150	300	PK
5	124.97	-65.76	-6.68	-72.44	-13.00	59.44	150	238	PK
6	200.06	-61.21	-4.32	-65.53	-13.00	52.53	150	347	PK

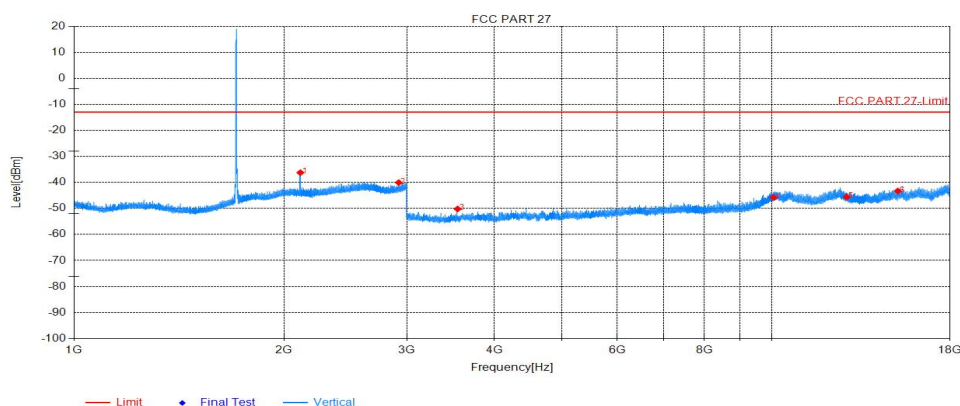
**For above 1GHz**

Horizontal:

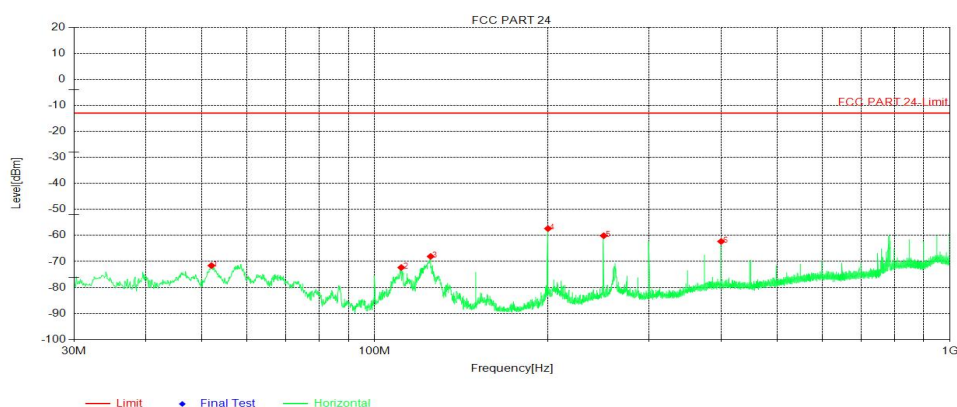


NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2110.74	-43.18	10.09	-33.09	-13.00	20.09	150	46	PK
2	2998.67	-52.53	12.60	-39.93	-13.00	26.93	150	349	PK
3	3659.52	-55.04	5.11	-49.93	-13.00	36.93	150	131	PK
4	10049.24	-60.75	15.21	-45.54	-13.00	32.54	150	227	AV
5	12791.33	-61.20	15.66	-45.54	-13.00	32.54	150	204	AV
6	15146.40	-62.24	17.66	-44.58	-13.00	31.58	150	227	AV

Vertical:

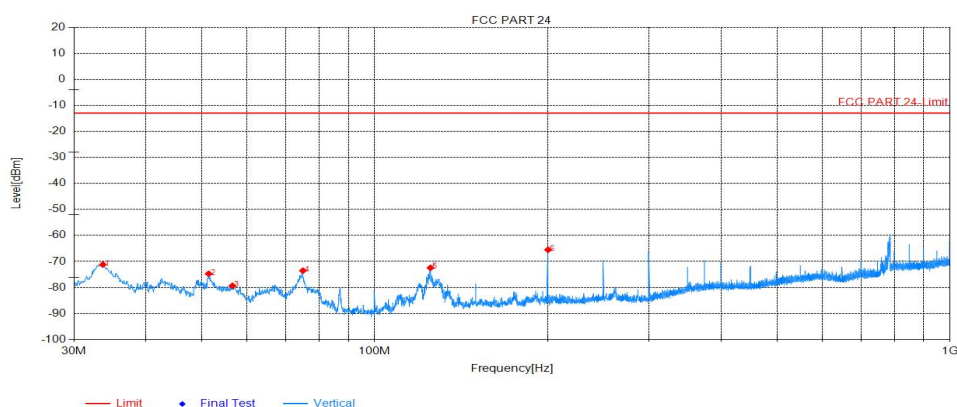


NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2110.61	-46.34	10.08	-36.26	-13.00	23.26	150	0	PK
2	2919.86	-52.24	12.16	-40.08	-13.00	27.08	150	164	PK
3	3545.52	-55.09	4.88	-50.21	-13.00	37.21	150	196	PK
4	10049.24	-61.20	15.41	-45.79	-13.00	32.79	150	342	AV
5	12791.33	-61.86	16.23	-45.63	-13.00	32.63	150	36	AV
6	15146.40	-60.87	17.55	-43.32	-13.00	30.32	150	174	AV

**LTE B4 1.4M-High Channel****For 30-1000MHz**

NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	52.02	-64.61	-6.98	-71.59	-13.00	58.59	150	360	PK
2	111.20	-64.39	-7.95	-72.34	-13.00	59.34	150	214	PK
3	125.07	-59.79	-8.27	-68.06	-13.00	55.06	150	168	PK
4	200.06	-51.60	-5.78	-57.38	-13.00	44.38	150	356	PK
5	250.02	-58.22	-1.89	-60.11	-13.00	47.11	150	312	PK
6	400.00	-64.94	2.62	-62.32	-13.00	49.32	150	92	PK

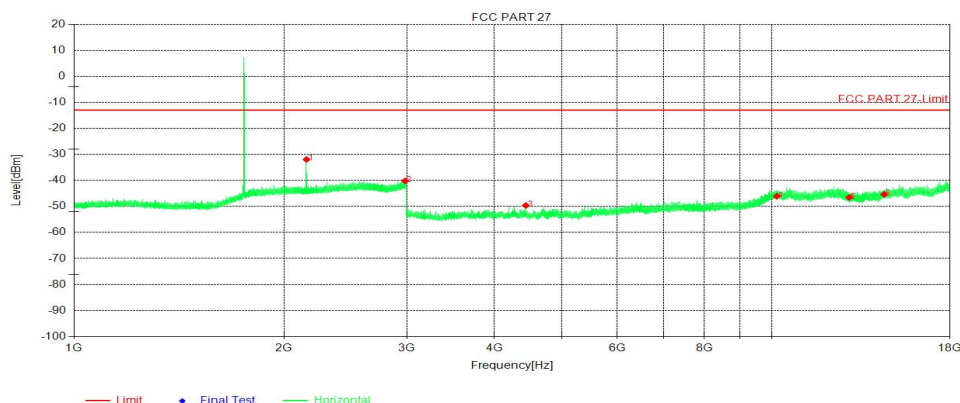
Vertical :



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	33.69	-70.69	-0.52	-71.21	-13.00	58.21	150	182	PK
2	51.44	-68.59	-6.15	-74.74	-13.00	61.74	150	258	PK
3	56.58	-72.82	-6.54	-79.36	-13.00	66.36	150	61	PK
4	75.01	-66.37	-7.18	-73.55	-13.00	60.55	150	300	PK
5	124.97	-65.76	-6.68	-72.44	-13.00	59.44	150	238	PK
6	200.06	-61.21	-4.32	-65.53	-13.00	52.53	150	347	PK

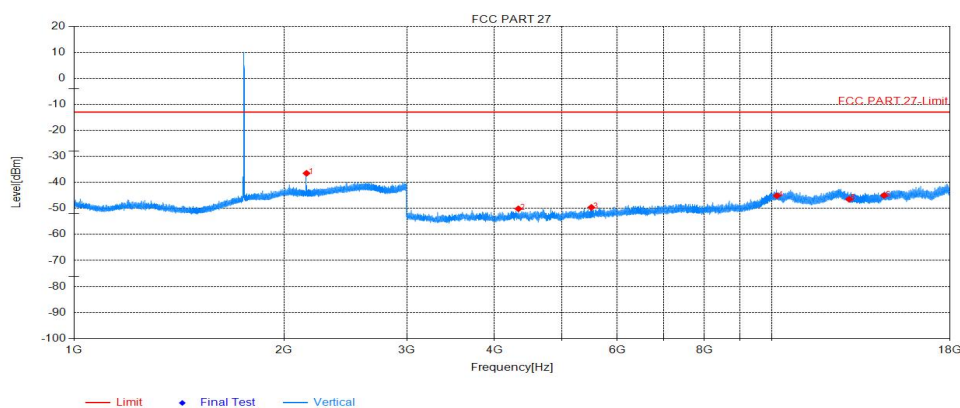
**For above 1GHz**

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2154.08	-42.09	10.14	-31.95	-13.00	18.95	150	135	PK
2	2981.60	-52.67	12.47	-40.20	-13.00	27.20	150	34	PK
3	4440.55	-56.04	6.40	-49.64	-13.00	36.64	150	106	PK
4	10163.24	-61.29	15.21	-46.08	-13.00	33.08	150	224	AV
5	12901.33	-62.13	15.57	-46.56	-13.00	33.56	150	323	AV
6	14476.38	-62.54	17.15	-45.39	-13.00	32.39	150	12	AV

Vertical:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2154.08	-46.53	10.02	-36.51	-13.00	23.51	150	32	PK
2	4333.04	-56.74	6.60	-50.14	-13.00	37.14	150	282	PK
3	5512.08	-56.80	7.19	-49.61	-13.00	36.61	150	360	PK
4	10163.24	-60.57	15.41	-45.16	-13.00	32.16	150	282	AV
5	12901.33	-62.50	16.03	-46.47	-13.00	33.47	150	184	AV
6	14476.38	-62.26	17.23	-45.03	-13.00	32.03	150	184	AV



Note:

1. The Measurement (Result Level) is calculated by Reading Level adding the Correct Factor(maybe including Ant.Factor and the Cable Factor etc.), The basic equation is as follows:

$$\text{Result Level} = \text{Reading Level} + \text{Correct Factor}(\text{including Ant.Factor, Cable Factor etc.})$$

2. The amplitude of 9KHz to 30MHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

3. The amplitude of 18GHz to 25GHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be report.

4. All channels had been pre-test,LTE B4 1.4M is the worst case. only the worst case was reported.



3.3 Test Setups

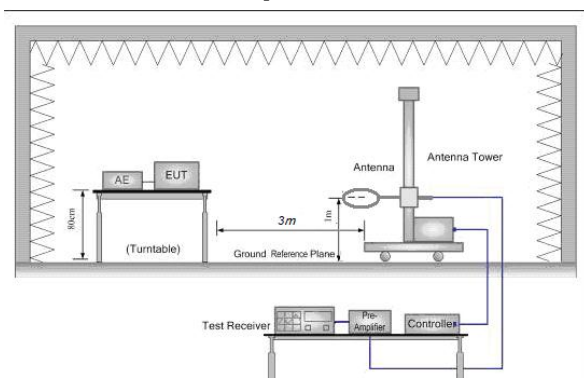


Figure 1. Below 30MHz

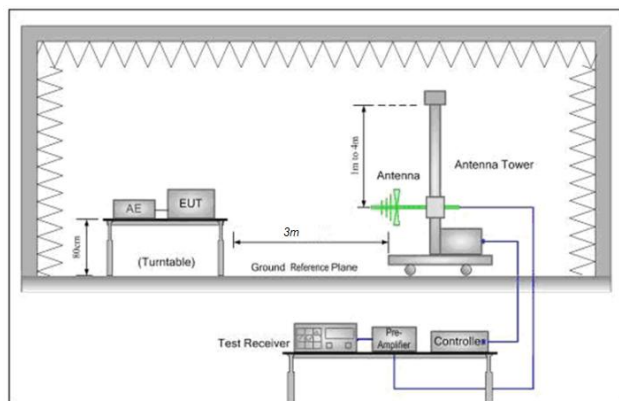


Figure 2. 30MHz to 1GHz

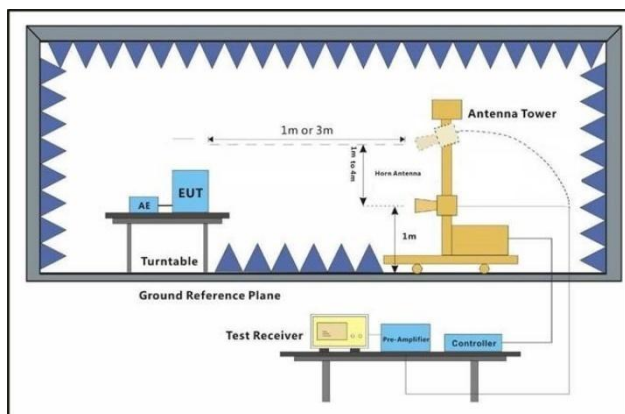


Figure 3. above 1GHz



4 Main Test Instruments

RSE & Tonscend Test System							
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Previously Cal. Date (yyyy-mm-dd)	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	frequency analyser	Keysight	N9010A	JS-DN-EMC-011	2024-10-23	2025-10-21	2026-10-20
2	Radio Communication Analyzer	R&S	CMW500	JS-DN-EMC-006	2024-10-23	2025-10-21	2026-10-20
3	pre-amplifier 30MHz-6GHz	S&B	BBV9743B	JS-DN-EMC-042	2024-10-23	2025-10-21	2026-10-20
4	pre-amplifier 1GHz-18GHz	ETS-LINDGREN	3117-PA	JS-DN-EMC-043	2024-10-23	2025-10-21	2026-10-20
5	pre-amplifier 10GHz-40GHz	ETS-LINDGREN	3116C-PA	JS-DN-EMC-085	2024-10-23	2025-10-21	2026-10-20
6	Log-periodic hybrid antenna	ETS-LINDGREN	VULB 9168	JS-DN-EMC-023	2024-10-23	2025-10-21	2026-10-20
7	Broadband Horn Antenna	ETS-LINDGREN	3117	JS-DN-EMC-045	2024-10-23	2025-10-21	2026-10-20
8	Double ridged waveguide antenna	ETS-LINDGREN	3116C	JS-DN-EMC-084	2024-10-23	2025-10-21	2026-10-20
9	Signal Generator	Keysight	N5181A-6G	JS-DN-RF-001	2024-10-23	2025-10-21	2026-10-20
10	power supply	Keysight	E3640A	JS-DN-RF-003	2024-10-23	2025-10-21	2026-10-20
11	Radio Communication Tester	R&S	CMW500	JS-DN-RF-005	2024-10-23	2025-10-21	2026-10-20
12	Spectrum Analyzer	Keysight	N9020A	JS-DN-RF-009	2024-10-23	2025-10-21	2026-10-20
13	Signal Generator	Keysight	N5182A	JS-DN-RF-010	2024-10-23	2025-10-21	2026-10-20
14	RF Test Software	Tonscend	JS1120-3 V3.2.46	JS-DN-RF-014	NA	NA	NA



5 Measurement Uncertainty

For a 95% confidence level ($k = 2$), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Lab A:

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	$\pm 0.41\text{dB}$
2	RF power density, conducted	$\pm 1.96\text{dB}$
3	Spurious emissions, conducted	$\pm 0.41\text{dB}$
4	Radio Frequency	$\pm 7.10 \times 10^{-8}$
5	Duty Cycle	$\pm 0.49\%$
6	Occupied Bandwidth	$\pm 0.2\%$

Lab B:

No.	Item	Measurement Uncertainty
1	Radiated Emission	$\pm 4.8\text{dB}$ (Below 1GHz)
		$\pm 4.8\text{dB}$ (1GHz to 6GHz)
		$\pm 4.5\text{dB}$ (6GHz to 18GHz)
		$\pm 5.02\text{dB}$ (Above 18GHz)

The End Report