



FCC RF Test Report

APPLICANT : CHEP
EQUIPMENT : Asset Tracker
BRAND NAME : CHEP
MODEL NAME : Gen 4 Ultra Short
FCC ID : 2APRD-GEN4SHORT
STANDARD : 47 CFR Part 22(H), 24(E), 27(L) , 27(H) , 27(F) , 27(N)
CLASSIFICATION : PCS Licensed Transmitter (PCB)
TEST DATE(S) : Jul. 19, 2024 ~ Aug. 06, 2024

This product installed a RF module (Brand Name: Quectel, Model Name: BG95-M3, FCC ID: XMR201910BG95M3) during the test, only Conducted Power, 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



Sporton International Inc. (ShenZhen)

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People's Republic of China



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG470213B	Rev. 01	Initial issue of report	Aug. 23, 2024



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	-	PASS	-
	§22.913(a)(5)	Effective Radiated Power (Band 5) (Band 26)	ERP < 7 Watt		-
	§27.50(b)(10) §27.50(c)(10)	Effective Radiated Power (Band 12) (Band 85) (Band 13)(Band 71)	ERP < 3 Watt		-
	§24.232(c)	Equivalent Isotropic Radiated Power (Band 2) (Band 25)	EIRP < 2 Watt		-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4) (Band 66)	EIRP < 1 Watt		-
-	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	1
-	§2.1049	Occupied Bandwidth	-	PASS	1
-	§2.1051 §22.917(a) §24.238(a) §27.53(c)(2)(4) §27.53(g) §27.53(h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 12) (Band 85) (Band 13) (Band 25) (Band 26) (Band 66)(Band 71)	< 43+10log ₁₀ (P[Watts])	PASS	1
-	§2.1051 §22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 85) (Band 25) (Band 26) (Band 66) (Band 71)	< 43+10log ₁₀ (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(c)(2) §27.53(f) §27.53(g) §27.53(h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 85) (Band 25) (Band 26) (Band 66) (Band 71)	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 6.32 dB at 1559.50 MHz

Remark 1: Test results are leveraged from module RF report No “R1907A0446-R1V1”, “R1907A0446-R2”, “R1907A0446-R3V1”, “R1907A0446-R4”, “R1907A0446-R5”, “R1907A0446-R6V2”, “R1907A0446-R7”, “R1907A0446-R9”.

Conformity Assessment Condition:

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
- The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.



1 General Description

1.1 Applicant

CHEP

2901 Tasman Drive Suite 101 Santa Clara, CA 95054

1.2 Manufacturer

MINEWING VIET NAM ELECTRONICS CO., LTD

Lot CN2, Yen Phong industrial park, Dong Phong commune and, Long Chau commune, Yen Phong District, Bac Ninh province, Vietnam

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Asset Tracker
Brand Name	CHEP
Model Name	Gen 4 Ultra Short
FCC ID	2APRD-GEN4SHORT
IMEI Code	866901065466072
HW Version	v14
SW Version	v10.00.0002
EUT Stage	Production Unit

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 13 : 777 MHz ~ 787 MHz LTE Band 25 : 1850 MHz ~ 1915 MHz LTE Band 26 : 824 MHz ~ 849 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz LTE Band 85: 698 MHz ~ 716 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 13 : 746 MHz ~ 756 MHz LTE Band 25 : 1930 MHz ~ 1995 MHz LTE Band 26 : 869 MHz ~ 894 MHz LTE Band 66 : 2110 MHz~ 2180 MHz LTE Band 71: 617 MHz ~ 652 MHz LTE Band 85 : 728 MHz ~ 746 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 13 : 5MHz / 10MHz LTE Band 25 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 26 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz LTE Band 66 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 71 : 5MHz / 10MHz / 15MHz / 20MHz LTE Band 85 : 5MHz / 10MHz
Maximum Output Power to Antenna	LTE_Cat M1: LTE Band 2 : 19.91 dBm LTE Band 4 : 19.57 dBm LTE Band 5 : 19.53 dBm LTE Band 12 : 19.85 dBm LTE Band 13 : 20.09 dBm LTE Band 25 : 20.10 dBm LTE Band 26 : 19.68 dBm LTE Band 66 : 19.70 dBm LTE Band 85 : 19.31 dBm NB-IoT Category NB2: LTE Band 2 : 20.34 dBm LTE Band 4 : 20.01 dBm LTE Band 5 : 20.39 dBm LTE Band 12 : 20.00 dBm LTE Band 13 : 20.45 dBm LTE Band 25 : 19.85 dBm LTE Band 66 : 20.04 dBm LTE Band 71 : 20.34 dBm LTE Band 85 : 19.85 dBm
Antenna Gain	LTE Band 2 : 3.5 dBi LTE Band 4 : 3.5 dBi LTE Band 5 : 1.6 dBi LTE Band 12 : 0.4 dBi LTE Band 13 : 0.4 dBi LTE Band 25 : 3.5 dBi LTE Band 26 : 1.6 dBi LTE Band 66 : 3.5 dBi LTE Band 71 : 0.4 dBi LTE Band 85 : 0.4 dBi
Type of Modulation	LTE_Cat M1: QPSK / 16QAM NB-IoT: BPSK / QPSK

Note: LTE Band 71 only support NB-IOT, LTE Band 26 only support Cat M1, the other bands support both Cat M1 & NB-IOT.

1.5 Modification of EUT

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



1.6 Maximum ERP/EIRP Power and Emission Designator

<LTE_Cat M1>:

LTE Band 2		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
1.4	1850.7 ~ 1909.3	0.2178	0.2143
3	1851.5 ~ 1908.5	0.2158	0.2128
5	1852.5 ~ 1907.5	0.2163	0.2143
10	1855.0 ~ 1905.0	0.2168	0.2128
15	1857.5 ~ 1902.5	0.2178	0.2148
20	1860.0 ~ 1900.0	0.2193	0.2163
LTE Band 4		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
1.4	1710.7 ~ 1754.3	0.2018	0.1941
3	1711.5 ~ 1753.5	0.2023	0.1945
5	1712.5 ~ 1752.5	0.2000	0.1950
10	1715.0 ~ 1750.0	0.2018	0.1941
15	1717.5 ~ 1747.5	0.2014	0.1945
20	1720.0 ~ 1745.0	0.2028	0.1954
LTE Band 5		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Maximum ERP(W)
1.4	824.7 ~ 848.3	0.0780	0.0752
3	825.5 ~ 847.5	0.0778	0.0753
5	826.5 ~ 846.5	0.0785	0.0753
10	829.0 ~ 844.0	0.0791	0.0762
LTE Band 12		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Maximum ERP(W)
1.4	699.7 ~ 715.3	0.0641	0.0635
3	700.5 ~ 714.5	0.0641	0.0630
5	701.5 ~ 713.5	0.0637	0.0634
10	704.0 ~ 711.0	0.0646	0.0638
LTE Band 13		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Maximum ERP(W)
5	779.5 ~ 784.5	0.0681	0.0673
10	782.0	0.0682	0.0675



LTE Band 25		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
1.4	1850.7 ~ 1914.3	0.2259	0.2208
3	1851.5 ~ 1913.5	0.2259	0.2198
5	1852.5 ~ 1912.5	0.2280	0.2203
10	1855.0 ~ 1910.0	0.2259	0.2213
15	1857.5 ~ 1907.5	0.2280	0.2208
20	1860.0 ~ 1905.0	0.2291	0.2218
LTE Band 26		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Maximum ERP(W)
1.4	824.7 ~ 848.3	0.0815	0.0796
3	825.5 ~ 847.5	0.0815	0.0800
5	826.5 ~ 846.5	0.0809	0.0800
10	829.0 ~ 844.0	0.0813	0.0796
15	831.5 ~ 841.5	0.0818	0.0807
CH26790	824.0	0.0802	0.0794
LTE Band 66		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
1.4	1710.7 ~ 1779.3	0.2070	0.1991
3	1711.5 ~ 1778.5	0.2080	0.2000
5	1712.5 ~ 1777.5	0.2056	0.2009
10	1715.0 ~ 1775.0	0.2065	0.1986
15	1717.5 ~ 1772.5	0.2061	0.2000
20	1720.0 ~ 1770.0	0.2089	0.2018
LTE Band 85		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Maximum ERP(W)
5	700.5 ~ 713.5	0.0568	0.0553
10	703.0 ~ 711.0	0.0570	0.0558

**<NB-IoT Category NB2>:**

LTE Band 2		BPSK/QPSK
BW (kHz)	Frequency Range (MHz)	Maximum EIRP(W)
200	1850.1 ~ 1909.9	0.2421
LTE Band 4		BPSK/QPSK
BW (kHz)	Frequency Range (MHz)	Maximum EIRP(W)
200	1710.0 ~ 1754.9	0.2244
LTE Band 5		BPSK/QPSK
BW (kHz)	Frequency Range (MHz)	Maximum ERP(W)
200	824.1 ~ 848.9	0.0964
LTE Band 12		BPSK/QPSK
BW (kHz)	Frequency Range (MHz)	Maximum ERP(W)
200	699.1 ~ 715.9	0.0668
LTE Band 13		BPSK/QPSK
BW (kHz)	Frequency Range (MHz)	Maximum ERP(W)
200	777.1 ~ 786.9	0.0741
LTE Band 25		BPSK/QPSK
BW (kHz)	Frequency Range (MHz)	Maximum EIRP(W)
200	1850.1 ~ 1914.9	0.2163
LTE Band 66		BPSK/QPSK
BW (kHz)	Frequency Range (MHz)	Maximum EIRP(W)
200	1710.1 ~ 1779.9	0.2259
LTE Band 71		BPSK/QPSK
BW (kHz)	Frequency Range (MHz)	Maximum ERP(W)
200	663.1 ~ 697.9	0.0723
LTE Band 85		BPSK/QPSK
BW (kHz)	Frequency Range (MHz)	Maximum ERP(W)
200	698.1 ~ 715.9	0.0646



1.7 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	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	TH01-SZ	CN1256	421272

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 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH03-SZ	CN1256	421272

1.8 Test Software

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



1.9 Applicable Standards

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

- ♦ 47 CFR Part 22(H), 24(E), 27(L) , 27(H) , 27(F) , 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:

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.



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.

LTE_Cat M1:

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
Max. Output Power	2	v	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	v
	5	v	v	v	v	-	-	v	v	-	v	v	v	v	v	v
	12	v	v	v	v	-	-	v	v	-	v	v	v	v	v	v
	13	-	-	v	v	-	-	v	v	-	v	v	v	v	v	v
	25	v	v	v	v	v	v	v	v	-	v	v	v	v	v	v
	26	v	v	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	v
	85	-	-	v	v	-	-	v	v	-	v	v	v	v	v	v
E.R.P / E.I.R.P	2	v	v	v	v			v	v	-	v			v	v	v
	4	v	v	v	v	v	v	v	v	-	v			v	v	v
	5	v	v	v	v	-	-	v	v	-	v			v	v	v
	12	v	v	v	v	-	-	v	v	-	v			v	v	v
	13	-	-	v	v	-	-	v	v	-	v			v	v	v
	25	v	v	v	v	v	v	v	v	-	v			v	v	v
	26	v	v	v	v	v	-	v	v	-	v			v	v	v
	66	v	v	v	v	v	v	v	v	-	v			v	v	v
	85	-	-	v	v	-	-	v	v	-	v			v	v	v
Radiated Spurious Emission	12	Worst Case												v	v	v
	13	Worst Case												v	v	v
	25	Worst Case												v	v	v
	26	Worst Case												v	v	v
	66	Worst Case												v	v	v
	85	Worst Case												v	v	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. 4. LTE Band 26 overlaps the entire frequency range of LTE Band 5. Therefore, the test results provided in this report covers Band 5 and the portion of Band 26 subject to Part 22. 5. 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. 6. LTE Band 25 overlaps the entire frequency range of LTE Band 2. Therefore, the test results provided in this report covers Band 25 as well as Band 2.															

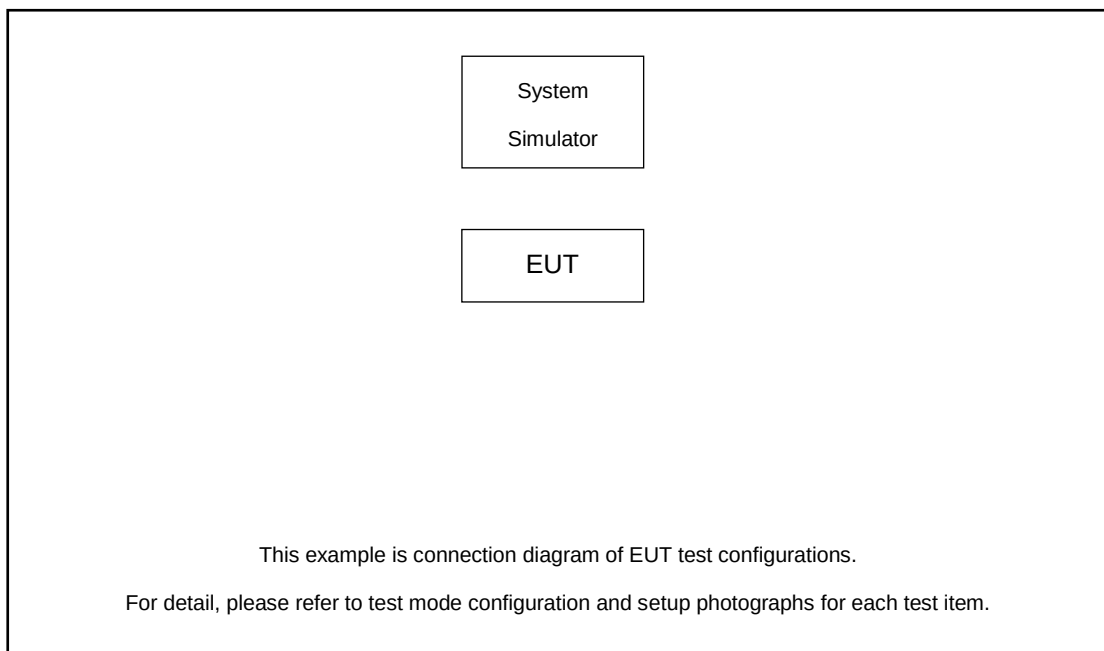


NB-IoT Category NB2:

Test Items	Band	SCS (KHz)	Modulation			RB #			Test Channel		
		3.75 / 15	BPSK	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	2	v	v	v	-	v		v	v	v	v
	4	v	v	v	-	v		v	v	v	v
	5	v	v	v	-	v		v	v	v	v
	12	v	v	v	-	v		v	v	v	v
	13	v	v	v	-	v		v	v	v	v
	25	v	v	v	-	v		v	v	v	v
	66	v	v	v	-	v		v	v	v	v
	71	v	v	v	-	v		v	v	v	v
	85	v	v	v	-	v		v	v	v	v
E.R.P / E.I.R.P	2	v	v	v	-	v		v	v	v	v
	4	v	v	v	-	v		v	v	v	v
	5	v	v	v	-	v		v	v	v	v
	12	v	v	v	-	v		v	v	v	v
	13	v	v	v	-	v		v	v	v	v
	25	v	v	v	-	v		v	v	v	v
	66	v	v	v	-	v		v	v	v	v
	71	v	v	v	-	v		v	v	v	v
	85	v	v	v	-	v		v	v	v	v
Radiated Spurious Emission	5	Worst Case							v	v	v
	12	Worst Case							v	v	v
	13	Worst Case							v	v	v
	25	Worst Case							v	v	v
	66	Worst Case							v	v	v
	71	Worst Case							v	v	v
	85	Worst Case							v	v	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. 4. 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. 5. LTE Band 25 overlaps the entire frequency range of LTE Band 2. Therefore, the test results provided in this report covers Band 25 as well as Band 2.										



2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Power Supply	GWINSTEK	PSS-2002	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m



2.4 Frequency List of Low/Middle/High Channels

LTE_Cat M1:

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 13 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	-	23230	-
	Frequency	-	782	-
5	Channel	23205	23230	23255
	Frequency	779.5	782	784.5

LTE Band 25 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	26140	26340	26590
	Frequency	1860	1880	1905
15	Channel	26115	26340	26615
	Frequency	1857.5	1880	1907.5
10	Channel	26090	26340	26640
	Frequency	1855	1880	1910
5	Channel	26065	26340	26665
	Frequency	1852.5	1880	1912.5
3	Channel	26055	26340	26675
	Frequency	1851.5	1880	1913.5
1.4	Channel	26047	26340	26683
	Frequency	1850.7	1880	1914.3

LTE Band 26 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
15	Channel	26865	26915	26965
	Frequency	831.5	836.5	841.5
10	Channel	26840	26915	26990
	Frequency	829	836.5	844
5	Channel	26815	26915	27015
	Frequency	826.5	836.5	846.5
3	Channel	26805	26915	27025
	Frequency	825.5	836.5	847.5
1.4	Channel	26797	26915	27033
	Frequency	824.7	836.5	848.3



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

LTE Band 85 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	134052	134092	134132
	Frequency	703	707	711
5	Channel	134027	134092	134157
	Frequency	700.5	707	713.5



NB-IOT:

LTE Band 2 Channel and Frequency List				
BW [KHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
200	Channel	18601	18900	19199
	Frequency	1850.1	1880	1909.9

LTE Band 4 Channel and Frequency List				
BW [KHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
200	Channel	19951	20175	20399
	Frequency	1710.1	1732.5	1754.9

LTE Band 5 Channel and Frequency List				
BW [KHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
200	Channel	20401	20525	20649
	Frequency	824.1	836.5	848.9

LTE Band 12 Channel and Frequency List				
BW [KHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
200	Channel	23011	23095	23179
	Frequency	699.1	707.5	715.9

LTE Band 13 Channel and Frequency List				
BW [KHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
200	Channel	23181	23230	23279
	Frequency	777.1	782	786.9

LTE Band 25 Channel and Frequency List				
BW [KHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
200	Channel	26041	26365	26689
	Frequency	1850.1	1882.5	1914.9

LTE Band 66 Channel and Frequency List				
BW [KHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
200	Channel	131973	132322	132671
	Frequency	1710.1	1745	1779.9

LTE Band 71 Channel and Frequency List				
BW [KHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
200	Channel	133123	133297	133471
	Frequency	663.1	680.5	697.9

LTE Band 85 Channel and Frequency List				
BW [KHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
200	Channel	134003	134082	134181
	Frequency	698.1	706	715.9

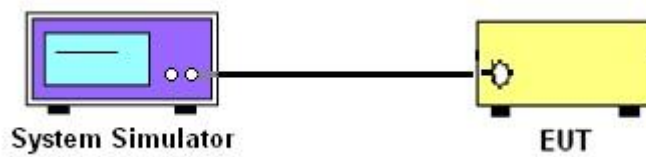
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.2 Test Setup

3.2.1 Conducted Output Power



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and ERP/EIRP

3.4.1 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 and Band 26.

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 12, Band 13, Band 71 and Band 85.

The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 2 and Band 25.

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

3.4.2 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.

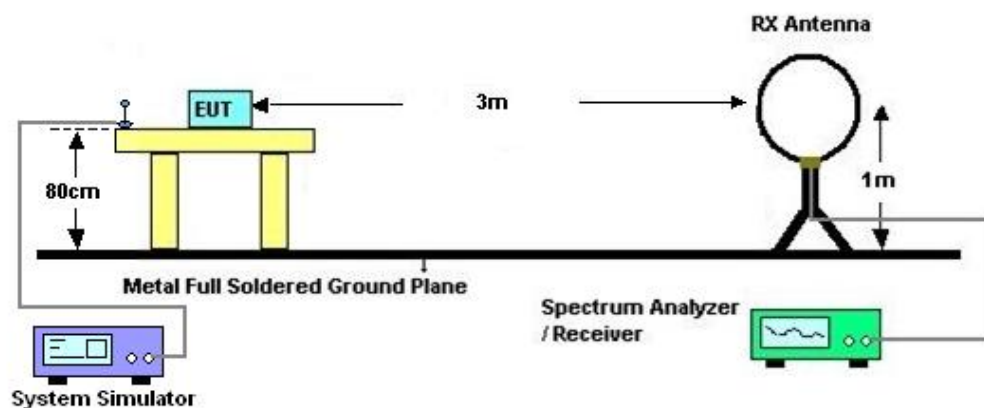
4 Radiated Test Items

4.1 Measuring Instruments

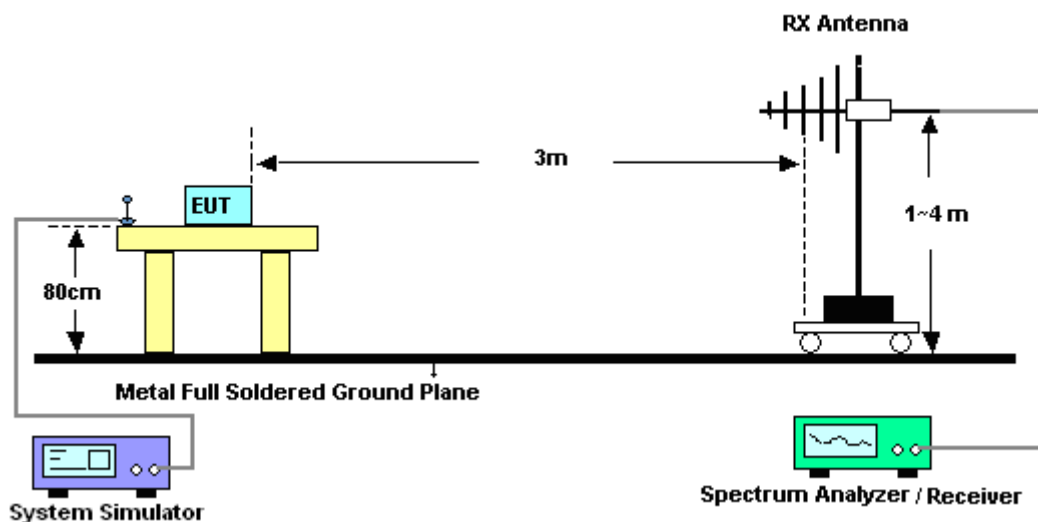
See list of measuring instruments of this test report.

4.2 Test Setup

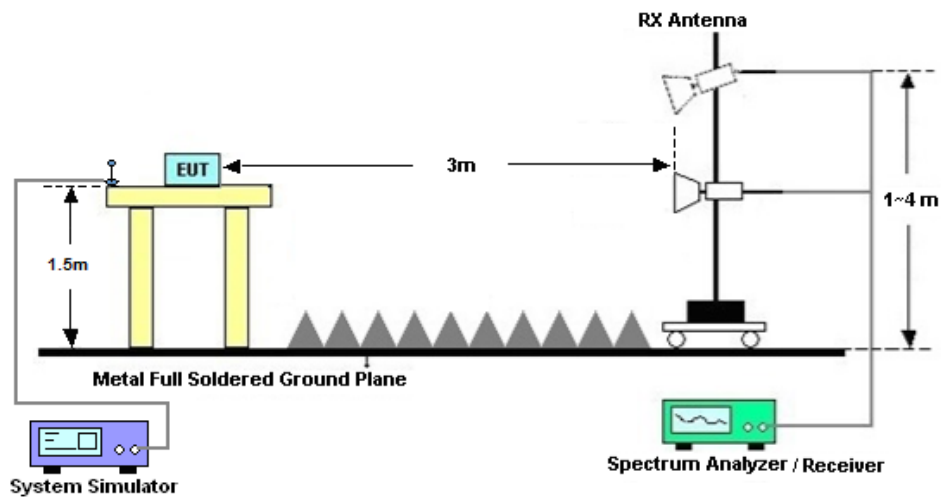
4.2.1 For radiated test below 30MHz



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.

For LTE Band 13

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

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. $\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$
11. $\text{ERP (dBm)} = \text{EIRP} - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 09, 2024	Aug. 06, 2024	Apr. 08, 2025	Conducted (TH01-SZ)
DC Power Supply	TTI	PL330P	290070	Max 32V , 3A	Oct. 16, 2023	Aug. 06, 2024	Oct. 15, 2024	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 25, 2023	Aug. 06, 2024	Dec. 24, 2024	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 03, 2024	Aug. 06, 2024	Jul. 02, 2025	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 09, 2024	Jul. 19, 2024~ Jul. 30, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 09, 2024	Jul. 19, 2024~ Jul. 30, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jun. 27, 2024	Jul. 19, 2024~ Jul. 30, 2024	Jun. 26, 2025	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	Aug. 20, 2023	Jul. 19, 2024~ Jul. 30, 2024	Aug. 19, 2025	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Apr. 09, 2024	Jul. 19, 2024~ Jul. 30, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz~40GHz	Apr. 09, 2024	Jul. 19, 2024~ Jul. 30, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 18, 2023	Jul. 19, 2024~ Jul. 30, 2024	Oct. 17, 2024	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 03, 2024	Jul. 19, 2024~ Jul. 30, 2024	Jul. 02, 2025	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 27, 2023	Jul. 19, 2024~ Jul. 30, 2024	Dec. 26, 2024	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	61601000272 9	N/A	Oct. 18, 2023	Jul. 19, 2024~ Jul. 30, 2024	Oct. 17, 2024	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jul. 19, 2024~ Jul. 30, 2024	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jul. 19, 2024~ Jul. 30, 2024	NCR	Radiation (03CH03-SZ)

NCR: No Calibration Required



6 Measurement Uncertainty

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 Conducted Measurement

Test Item	Uncertainty
Conducted Power	± 1.34 dB

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.0dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.6dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.8dB
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----- THE END -----



Appendix A. Test Results of Conducted Test

Test Engineer :	Khan Zhen	Temperature :	22~23°C
		Relative Humidity :	40~42%

Conducted Output Power(Average power) and ERP/EIRP

<LTE_Cat M1>:

LTE Band 2:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				18700	18900	19100			
Frequency (MHz)				1860	1880	1900	L	M	H
20	QPSK	1	0	19.76	19.86	19.91	0.2118	0.2168	0.2193
20	QPSK	1	5	19.68	19.81	19.88	0.2080	0.2143	0.2178
20	QPSK	3	0	19.65	19.78	19.86	0.2065	0.2128	0.2168
20	QPSK	3	3	19.75	19.83	19.89	0.2113	0.2153	0.2183
20	QPSK	6	0	19.59	19.71	19.74	0.2037	0.2094	0.2109
20	16QAM	1	0	19.72	19.80	19.85	0.2099	0.2138	0.2163
Channel				18675	18900	19125	EIRP(W)		
Frequency (MHz)				1857.5	1880	1902.5	L	M	H
15	QPSK	1	0	19.72	19.80	19.88	0.2099	0.2138	0.2178
15	16QAM	1	0	19.69	19.75	19.82	0.2084	0.2113	0.2148
Channel				18650	18900	19150	EIRP(W)		
Frequency (MHz)				1855	1880	1905	L	M	H
10	QPSK	1	0	19.70	19.80	19.86	0.2089	0.2138	0.2168
10	16QAM	1	0	19.65	19.77	19.78	0.2065	0.2123	0.2128
Channel				18625	18900	19175	EIRP(W)		
Frequency (MHz)				1852.5	1880	1907.5	L	M	H
5	QPSK	1	0	19.70	19.85	19.84	0.2089	0.2163	0.2158
5	16QAM	1	0	19.67	19.78	19.81	0.2075	0.2128	0.2143
Channel				18615	18900	19185	EIRP(W)		
Frequency (MHz)				1851.5	1880	1908.5	L	M	H
3	QPSK	1	0	19.73	19.80	19.84	0.2104	0.2138	0.2158
3	16QAM	1	0	19.69	19.73	19.78	0.2084	0.2104	0.2128
Channel				18607	18900	19193	EIRP(W)		
Frequency (MHz)				1850.7	1880	1909.3	L	M	H
1.4	QPSK	1	0	19.71	19.80	19.88	0.2094	0.2138	0.2178
1.4	16QAM	1	0	19.68	19.73	19.81	0.2080	0.2104	0.2143



LTE Band 4:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				20050	20175	20300			
Frequency (MHz)				1720	1732.5	1745	L	M	H
20	QPSK	1	0	19.50	19.56	19.57	0.1995	0.2023	0.2028
20	QPSK	1	5	19.46	19.49	19.50	0.1977	0.1991	0.1995
20	QPSK	3	0	19.47	19.49	19.49	0.1982	0.1991	0.1991
20	QPSK	3	3	19.42	19.46	19.46	0.1959	0.1977	0.1977
20	QPSK	6	0	19.38	19.46	19.44	0.1941	0.1977	0.1968
20	16QAM	1	0	19.39	19.41	19.41	0.1945	0.1954	0.1954
Channel				20025	20175	20325	EIRP(W)		
Frequency (MHz)				1717.5	1732.5	1747.5	L	M	H
15	QPSK	1	0	19.46	19.54	19.54	0.1977	0.2014	0.2014
15	16QAM	1	0	19.36	19.39	19.34	0.1932	0.1945	0.1923
Channel				20000	20175	20350	EIRP(W)		
Frequency (MHz)				1715	1732.5	1750	L	M	H
10	QPSK	1	0	19.45	19.55	19.55	0.1972	0.2018	0.2018
10	16QAM	1	0	19.34	19.34	19.38	0.1923	0.1923	0.1941
Channel				19975	20175	20375	EIRP(W)		
Frequency (MHz)				1712.5	1732.5	1752.5	L	M	H
5	QPSK	1	0	19.49	19.50	19.51	0.1991	0.1995	0.2000
5	16QAM	1	0	19.33	19.38	19.40	0.1919	0.1941	0.1950
Channel				19965	20175	20385	EIRP(W)		
Frequency (MHz)				1711.5	1732.5	1753.5	L	M	H
3	QPSK	1	0	19.48	19.50	19.56	0.1986	0.1995	0.2023
3	16QAM	1	0	19.33	19.39	19.37	0.1919	0.1945	0.1936
Channel				19950	20175	20393	EIRP(W)		
Frequency (MHz)				1710	1732.5	1754.3	L	M	H
1.4	QPSK	1	0	19.45	19.55	19.54	0.1972	0.2018	0.2014
1.4	16QAM	1	0	19.35	19.34	19.38	0.1928	0.1923	0.1941



LTE Band 5:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				20450	20525	20600			
Frequency (MHz)				829	836.5	844	L	M	H
10	QPSK	1	0	19.03	19.19	19.53	0.0705	0.0731	0.0791
10	QPSK	1	5	19.00	19.18	19.47	0.0700	0.0729	0.0780
10	QPSK	3	0	18.95	19.12	19.41	0.0692	0.0719	0.0769
10	QPSK	3	3	19.01	19.15	19.46	0.0701	0.0724	0.0778
10	QPSK	6	0	18.98	19.12	19.41	0.0697	0.0719	0.0769
10	16QAM	1	0	18.92	19.08	19.37	0.0687	0.0713	0.0762
Channel				20425	20525	20625	ERP(W)		
Frequency (MHz)				826.5	836.5	846.5	L	M	H
5	QPSK	1	0	18.98	19.17	19.50	0.0697	0.0728	0.0785
5	16QAM	1	0	18.85	19.03	19.32	0.0676	0.0705	0.0753
Channel				20415	20525	20635	ERP(W)		
Frequency (MHz)				825.5	836.5	847.5	L	M	H
3	QPSK	1	0	18.97	19.17	19.46	0.0695	0.0728	0.0778
3	16QAM	1	0	18.86	19.03	19.32	0.0678	0.0705	0.0753
Channel				20407	20525	20643	ERP(W)		
Frequency (MHz)				824.7	836.5	848.3	L	M	H
1.4	QPSK	1	0	18.99	19.18	19.47	0.0698	0.0729	0.0780
1.4	16QAM	1	0	18.91	19.06	19.31	0.0685	0.0710	0.0752

LTE Band 12:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				23060	23095	23130			
Frequency (MHz)				704	707.5	711	L	M	H
10	QPSK	1	0	19.72	19.65	19.85	0.0627	0.0617	0.0646
10	QPSK	1	5	19.68	19.60	19.77	0.0621	0.0610	0.0634
10	QPSK	3	0	19.64	19.54	19.71	0.0615	0.0601	0.0625
10	QPSK	3	3	19.71	19.61	19.84	0.0625	0.0611	0.0644
10	QPSK	6	0	19.58	19.53	19.75	0.0607	0.0600	0.0631
10	16QAM	1	0	19.68	19.61	19.80	0.0621	0.0611	0.0638
Channel				23035	23095	23155	ERP(W)		
Frequency (MHz)				701.5	707.5	713.5	L	M	H
5	QPSK	1	0	19.69	19.60	19.79	0.0622	0.0610	0.0637
5	16QAM	1	0	19.63	19.59	19.77	0.0614	0.0608	0.0634
Channel				23025	23095	23165	ERP(W)		
Frequency (MHz)				700.5	707.5	714.5	L	M	H
3	QPSK	1	0	19.69	19.58	19.82	0.0622	0.0607	0.0641
3	16QAM	1	0	19.61	19.55	19.74	0.0611	0.0603	0.0630
Channel				23017	23095	23173	ERP(W)		
Frequency (MHz)				699.7	707.5	715.3	L	M	H
1.4	QPSK	1	0	19.65	19.63	19.82	0.0617	0.0614	0.0641
1.4	16QAM	1	0	19.65	19.58	19.78	0.0617	0.0607	0.0635



LTE Band 13:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				23230					
Frequency (MHz)				782				M	
10	QPSK	1	0		20.09			0.0682	
10	QPSK	1	5		19.94			0.0659	
10	QPSK	3	0		19.98			0.0665	
10	QPSK	3	3		19.99			0.0667	
10	QPSK	6	0		20.03			0.0673	
10	16QAM	1	0		20.04			0.0675	
Channel				23205	23230	23255	ERP(W)		
Frequency (MHz)				779.5	782	784.5	L	M	H
5	QPSK	1	0	20.03	20.08	20.05	0.0673	0.0681	0.0676
5	16QAM	1	0	19.97	20.03	19.98	0.0664	0.0673	0.0665

LTE Band 25:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				26140	26340	26590			
Frequency (MHz)				1860	1880	1905	L	M	H
20	QPSK	1	0	20.06	19.95	20.10	0.2270	0.2213	0.2291
20	QPSK	1	5	19.94	19.84	19.99	0.2208	0.2158	0.2234
20	QPSK	3	0	19.93	19.81	19.95	0.2203	0.2143	0.2213
20	QPSK	3	3	19.91	19.82	19.98	0.2193	0.2148	0.2228
20	QPSK	6	0	19.97	19.84	20.01	0.2223	0.2158	0.2244
20	16QAM	1	0	19.95	19.84	19.96	0.2213	0.2158	0.2218
Channel				26115	26340	26615	EIRP(W)		
Frequency (MHz)				1857.5	1880	1907.5	L	M	H
15	QPSK	1	0	20.03	19.91	20.08	0.2254	0.2193	0.2280
15	16QAM	1	0	19.94	19.82	19.89	0.2208	0.2148	0.2183
Channel				26090	26340	26640	EIRP(W)		
Frequency (MHz)				1855	1880	1910	L	M	H
10	QPSK	1	0	20.04	19.92	20.03	0.2259	0.2198	0.2254
10	16QAM	1	0	19.89	19.81	19.95	0.2183	0.2143	0.2213
Channel				26065	26340	26665	EIRP(W)		
Frequency (MHz)				1852.5	1880	1912.5	L	M	H
5	QPSK	1	0	20.02	19.92	20.08	0.2249	0.2198	0.2280
5	16QAM	1	0	19.90	19.78	19.93	0.2188	0.2128	0.2203
Channel				26055	26340	26675	EIRP(W)		
Frequency (MHz)				1851.5	1880	1913.5	L	M	H
3	QPSK	1	0	20.00	19.88	20.04	0.2239	0.2178	0.2259
3	16QAM	1	0	19.92	19.81	19.92	0.2198	0.2143	0.2198
Channel				26047	26340	26683	EIRP(W)		
Frequency (MHz)				1850.7	1880	1914.3	L	M	H
1.4	QPSK	1	0	20.04	19.92	20.03	0.2259	0.2198	0.2254
1.4	16QAM	1	0	19.89	19.80	19.94	0.2183	0.2138	0.2208



LTE Band 26:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)			
Channel				26790	26865	26915	26965				
Frequency (MHz)				824	831.5	836.5	841.5	Straddle Ch	L	M	H
15	QPSK	1	0	19.58	19.68	19.60	19.40	0.0800	0.0818	0.0804	0.0767
15	QPSK	1	5	19.59	19.64	19.54	19.34	0.0802	0.0811	0.0793	0.0757
15	QPSK	3	0	19.53	19.67	19.58	19.38	0.0791	0.0817	0.0800	0.0764
15	QPSK	3	3	19.45	19.57	19.52	19.35	0.0776	0.0798	0.0789	0.0759
15	QPSK	6	0	19.55	19.56	19.47	19.26	0.0794	0.0796	0.0780	0.0743
15	16QAM	1	0	19.55	19.62	19.51	19.33	0.0794	0.0807	0.0787	0.0755
Channel				26790	26840	26915	26990	ERP(W)			
Frequency (MHz)				824	829	836.5	844	Straddle Ch	L	M	H
10	QPSK	1	0	19.63	19.65	19.58	19.37	0.0809	0.0813	0.0800	0.0762
10	16QAM	1	0	19.42	19.56	19.48	19.27	0.0771	0.0796	0.0782	0.0745
Channel				26790	26815	26915	27015	ERP(W)			
Frequency (MHz)				824	826.5	836.5	846.5	Straddle Ch	L	M	H
5	QPSK	1	0	19.63	19.63	19.57	19.34	0.0809	0.0809	0.0798	0.0757
5	16QAM	1	0	19.51	19.58	19.44	19.30	0.0787	0.0800	0.0774	0.0750
Channel				26790	26815	26915	27025	ERP(W)			
Frequency (MHz)				824	825.5	836.5	847.5	Straddle Ch	L	M	H
3	QPSK	1	0	19.61	19.66	19.55	19.37	0.0805	0.0815	0.0794	0.0762
3	16QAM	1	0	19.51	19.58	19.46	19.28	0.0787	0.0800	0.0778	0.0746
Channel				26790	26797	26915	27033	ERP(W)			
Frequency (MHz)				824	824.7	836.5	848.3	Straddle Ch	L	M	H
1.4	QPSK	1	0	19.58	19.66	19.57	19.39	0.0800	0.0815	0.0798	0.0766
1.4	16QAM	1	0	19.47	19.56	19.49	19.27	0.0780	0.0796	0.0783	0.0745



LTE Band 66:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				132072	132322	132572			
Frequency (MHz)				1720	1745	1770	L	M	H
20	QPSK	1	0	19.35	19.70	19.16	0.1928	0.2089	0.1845
20	QPSK	1	5	19.30	19.62	19.10	0.1905	0.2051	0.1820
20	QPSK	3	0	19.30	19.65	19.13	0.1905	0.2065	0.1832
20	QPSK	3	3	19.32	19.67	19.11	0.1914	0.2075	0.1824
20	QPSK	6	0	19.26	19.62	19.05	0.1888	0.2051	0.1799
20	16QAM	1	0	19.18	19.55	19.00	0.1854	0.2018	0.1778
Channel				132047	132322	132597	EIRP(W)		
Frequency (MHz)				1717.5	1745	1772.5	L	M	H
15	QPSK	1	0	19.30	19.64	19.13	0.1905	0.2061	0.1832
15	16QAM	1	0	19.17	19.51	18.99	0.1849	0.2000	0.1774
Channel				132022	132322	132622	EIRP(W)		
Frequency (MHz)				1715	1745	1775	L	M	H
10	QPSK	1	0	19.34	19.65	19.13	0.1923	0.2065	0.1832
10	16QAM	1	0	19.17	19.48	18.99	0.1849	0.1986	0.1774
Channel				131997	132322	132647	EIRP(W)		
Frequency (MHz)				1712.5	1745	1777.5	L	M	H
5	QPSK	1	0	19.32	19.63	19.11	0.1914	0.2056	0.1824
5	16QAM	1	0	19.13	19.53	18.97	0.1832	0.2009	0.1766
Channel				131987	132322	132657	EIRP(W)		
Frequency (MHz)				1711.5	1745	1778.5	L	M	H
3	QPSK	1	0	19.31	19.68	19.12	0.1910	0.2080	0.1828
3	16QAM	1	0	19.15	19.51	18.99	0.1841	0.2000	0.1774
Channel				131979	132322	132665	EIRP(W)		
Frequency (MHz)				1710.7	1745	1779.3	L	M	H
1.4	QPSK	1	0	19.33	19.66	19.12	0.1919	0.2070	0.1828
1.4	16QAM	1	0	19.15	19.49	18.93	0.1841	0.1991	0.1750

LTE Band 85:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				134052	134092	134132			
Frequency (MHz)				703	707	711	L	M	H
10	QPSK	1	0	19.18	19.25	19.31	0.0553	0.0562	0.0570
10	QPSK	1	5	19.06	19.11	19.17	0.0538	0.0545	0.0552
10	QPSK	3	0	19.07	19.15	19.20	0.0540	0.0550	0.0556
10	QPSK	3	3	19.08	19.18	19.22	0.0541	0.0553	0.0558
10	QPSK	6	0	19.15	19.21	19.28	0.0550	0.0557	0.0566
10	16QAM	1	0	19.11	19.17	19.22	0.0545	0.0552	0.0558
Channel				134027	134092	134207	ERP(W)		
Frequency (MHz)				700.5	707	718.5	L	M	H
5	QPSK	1	0	19.13	19.18	19.29	0.0547	0.0553	0.0568
5	16QAM	1	0	19.06	19.14	19.18	0.0538	0.0548	0.0553



<NB-IoT Category NB2>:

LTE Band 2:

SCS [KHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				18601	18900	19199			
Frequency (MHz)				1850.1	1880	1909.9	L	M	H
3.75	BPSK	1	0	20.16	20.09	20.23	0.2323	0.2286	0.2360
3.75	BPSK	1	47	20.07	20.04	20.18	0.2275	0.2259	0.2333
3.75	QPSK	1	0	20.12	20.07	20.21	0.2301	0.2275	0.2350
3.75	QPSK	1	47	20.01	20.00	20.12	0.2244	0.2239	0.2301
15	BPSK	1	0	20.12	20.07	20.25	0.2301	0.2275	0.2371
15	BPSK	1	11	20.09	20.09	20.22	0.2286	0.2286	0.2355
15	QPSK	1	0	20.23	20.21	20.34	0.2360	0.2350	0.2421
15	QPSK	1	11	20.17	20.12	20.24	0.2328	0.2301	0.2366
15	QPSK	12	0	17.20	17.16	17.29	0.1175	0.1164	0.1199

LTE Band 4:

SCS [KHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				19951	20175	20399			
Frequency (MHz)				1710.1	1732.5	1754.9	L	M	H
3.75	BPSK	1	0	19.52	19.74	19.90	0.2004	0.2109	0.2188
3.75	BPSK	1	47	19.44	19.66	19.80	0.1968	0.2070	0.2138
3.75	QPSK	1	0	19.58	19.75	19.91	0.2032	0.2113	0.2193
3.75	QPSK	1	47	19.44	19.62	19.78	0.1968	0.2051	0.2128
15	BPSK	1	0	19.56	19.79	19.93	0.2023	0.2133	0.2203
15	BPSK	1	11	19.57	19.75	19.90	0.2028	0.2113	0.2188
15	QPSK	1	0	19.69	19.87	20.01	0.2084	0.2173	0.2244
15	QPSK	1	11	19.57	19.73	19.90	0.2028	0.2104	0.2188
15	QPSK	12	0	17.33	17.54	17.69	0.1211	0.1271	0.1315

LTE Band 5:

SCS [KHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				20401	20525	20649			
Frequency (MHz)				824.1	836.5	848.9	L	M	H
3.75	BPSK	1	0	20.18	20.20	20.38	0.0918	0.0923	0.0962
3.75	BPSK	1	47	20.02	20.03	20.25	0.0885	0.0887	0.0933
3.75	QPSK	1	0	20.08	20.11	20.29	0.0897	0.0904	0.0942
3.75	QPSK	1	47	20.03	20.03	20.20	0.0887	0.0887	0.0923
15	BPSK	1	0	20.14	20.15	20.37	0.0910	0.0912	0.0959
15	BPSK	1	11	20.17	20.12	20.34	0.0916	0.0906	0.0953
15	QPSK	1	0	20.20	20.18	20.39	0.0923	0.0918	0.0964
15	QPSK	1	11	20.12	20.15	20.33	0.0906	0.0912	0.0951
15	QPSK	12	0	18.06	18.06	18.29	0.0564	0.0564	0.0594



LTE Band 12:

SCS [kHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				23011	23095	23179			
Frequency (MHz)				699.1	707.5	715.9	L	M	H
3.75	BPSK	1	0	19.90	19.94	19.80	0.0653	0.0659	0.0638
3.75	BPSK	1	47	19.86	19.90	19.74	0.0647	0.0653	0.0630
3.75	QPSK	1	0	19.92	20.00	19.87	0.0656	0.0668	0.0649
3.75	QPSK	1	47	19.85	19.92	19.79	0.0646	0.0656	0.0637
15	BPSK	1	0	18.02	18.08	17.94	0.0424	0.0430	0.0416
15	BPSK	1	11	18.02	18.06	17.92	0.0424	0.0428	0.0414
15	QPSK	1	0	18.12	18.15	18.01	0.0434	0.0437	0.0423
15	QPSK	1	11	18.02	18.09	17.94	0.0424	0.0431	0.0416
15	QPSK	12	0	17.20	17.23	17.08	0.0351	0.0353	0.0341

LTE Band 13:

SCS [kHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				23181	23230	23279			
Frequency (MHz)				777.1	782	786.9		M	
3.75	BPSK	1	0	20.40	20.37	20.36	0.0733	0.0728	0.0726
3.75	BPSK	1	47	20.31	20.26	20.27	0.0718	0.0710	0.0711
3.75	QPSK	1	0	20.45	20.38	20.41	0.0741	0.0729	0.0735
3.75	QPSK	1	47	20.38	20.34	20.32	0.0729	0.0723	0.0719
15	BPSK	1	0	18.43	18.41	18.36	0.0466	0.0463	0.0458
15	BPSK	1	11	18.31	18.28	18.25	0.0453	0.0450	0.0447
15	QPSK	1	0	18.42	18.34	18.37	0.0465	0.0456	0.0459
15	QPSK	1	11	18.36	18.30	18.30	0.0458	0.0452	0.0452
15	QPSK	12	0	17.60	17.65	17.62	0.0385	0.0389	0.0386

LTE Band 25:

SCS [kHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				26041	26365	26689			
Frequency (MHz)				1850.1	1882.5	1914.9	L	M	H
3.75	BPSK	1	0	19.84	19.83	19.78	0.2158	0.2153	0.2128
3.75	BPSK	1	47	19.72	19.69	19.68	0.2099	0.2084	0.2080
3.75	QPSK	1	0	19.81	19.83	19.74	0.2143	0.2153	0.2109
3.75	QPSK	1	47	19.80	19.81	19.77	0.2138	0.2143	0.2123
15	BPSK	1	0	19.72	19.69	19.65	0.2099	0.2084	0.2065
15	BPSK	1	11	19.67	19.64	19.63	0.2075	0.2061	0.2056
15	QPSK	1	0	19.85	19.83	19.78	0.2163	0.2153	0.2128
15	QPSK	1	11	19.80	19.78	19.75	0.2138	0.2128	0.2113
15	QPSK	12	0	17.65	17.62	17.62	0.1303	0.1294	0.1294



LTE Band 66:

SCS [KHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				131973	132322	132671			
Frequency (MHz)				1710.1	1745	1779.9	L	M	H
3.75	BPSK	1	0	19.83	19.85	20.03	0.2153	0.2163	0.2254
3.75	BPSK	1	47	19.67	19.68	19.90	0.2075	0.2080	0.2188
3.75	QPSK	1	0	19.73	19.76	19.94	0.2104	0.2118	0.2208
3.75	QPSK	1	47	19.68	19.68	19.85	0.2080	0.2080	0.2163
15	BPSK	1	0	19.79	19.80	20.02	0.2133	0.2138	0.2249
15	BPSK	1	11	19.82	19.77	19.99	0.2148	0.2123	0.2234
15	QPSK	1	0	19.85	19.83	20.04	0.2163	0.2153	0.2259
15	QPSK	1	11	19.77	19.80	19.98	0.2123	0.2138	0.2228
15	QPSK	12	0	17.71	17.71	17.94	0.1321	0.1321	0.1393

LTE Band 71:

SCS [KHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				133123	133297	133471			
Frequency (MHz)				663.1	680.5	697.9	L	M	H
3.75	BPSK	1	0	20.32	20.04	20.05	0.0719	0.0675	0.0676
3.75	BPSK	1	47	20.31	20.02	20.00	0.0718	0.0671	0.0668
3.75	QPSK	1	0	20.34	20.05	20.05	0.0723	0.0676	0.0676
3.75	QPSK	1	47	20.27	19.97	19.99	0.0711	0.0664	0.0667
15	BPSK	1	0	17.84	17.54	17.56	0.0406	0.0379	0.0381
15	BPSK	1	11	17.79	17.52	17.48	0.0402	0.0378	0.0374
15	QPSK	1	0	17.87	17.54	17.54	0.0409	0.0379	0.0379
15	QPSK	1	11	17.80	17.51	17.48	0.0403	0.0377	0.0374
15	QPSK	12	0	17.80	17.31	17.51	0.0403	0.0360	0.0377

LTE Band 85:

SCS [KHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				134003	134082	134181			
Frequency (MHz)				698.1	706	715.9	L	M	H
3.75	BPSK	1	0	19.75	19.75	19.82	0.0631	0.0631	0.0641
3.75	BPSK	1	47	19.68	19.67	19.77	0.0621	0.0619	0.0634
3.75	QPSK	1	0	19.77	19.77	19.85	0.0634	0.0634	0.0646
3.75	QPSK	1	47	19.68	19.74	19.78	0.0621	0.0630	0.0635
15	BPSK	1	0	17.68	17.68	17.73	0.0392	0.0392	0.0396
15	BPSK	1	11	17.59	17.63	17.68	0.0384	0.0387	0.0392
15	QPSK	1	0	17.74	17.68	17.78	0.0397	0.0392	0.0401
15	QPSK	1	11	17.63	17.62	17.72	0.0387	0.0386	0.0395
15	QPSK	12	0	16.93	17.10	17.50	0.0330	0.0343	0.0376



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

Test Engineer :	Jia Kuang	Temperature :	22~25°C
		Relative Humidity :	48~52%

<LTE_Cat M1>:

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)
Lowest	1408	-60.18	-13	-47.18	-68.24	-63.41	3.98	9.36	H
	2104	-54.93	-13	-41.93	-64.61	-58.48	4.85	10.55	H
	2824	-62.30	-13	-49.30	-74.36	-67.23	5.50	12.58	H
	1408	-61.18	-13	-48.18	-69.31	-64.41	3.98	9.36	V
	2104	-52.00	-13	-39.00	-62.05	-55.55	4.85	10.55	V
	2824	-63.68	-13	-50.68	-75.98	-68.61	5.50	12.58	V
Middle	1408	-54.50	-13	-41.50	-62.56	-57.75	4.00	9.40	H
	2112	-49.39	-13	-36.39	-59.23	-52.96	4.88	10.60	H
	2816	-55.66	-13	-42.66	-67.68	-60.59	5.52	12.60	H
	1408	-56.30	-13	-43.30	-64.43	-59.55	4.00	9.40	V
	2112	-50.52	-13	-37.52	-60.72	-54.09	4.88	10.60	V
	2816	-53.51	-13	-40.51	-65.78	-58.44	5.52	12.60	V
Highest	1416	-60.67	-13	-47.67	-68.64	-63.84	4.10	9.42	H
	2136	-51.47	-13	-38.47	-61.73	-55.05	4.90	10.63	H
	2840	-63.44	-13	-50.44	-75.52	-68.36	5.55	12.62	H
	1424	-63.62	-13	-50.62	-71.68	-66.79	4.10	9.42	V
	2136	-49.98	-13	-36.98	-60.59	-53.56	4.90	10.63	V
	2856	-62.43	-13	-49.43	-74.82	-67.35	5.55	12.62	V



LTE Band 13 / 5MHz / 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)
Lowest	1554.5	-54.62	-13	-41.62	-61.46	-57.85	3.98	9.36	H
	2331.75	-56.08	-13	-43.08	-66.89	-59.63	4.85	10.55	H
	3109	-63.11	-13	-50.11	-75.96	-68.04	5.50	12.58	H
	1554.5	-53.86	-13	-40.86	-60.90	-57.09	3.98	9.36	V
	2331.75	-55.14	-13	-42.14	-66.34	-58.69	4.85	10.55	V
	3109	-62.52	-13	-49.52	-75.87	-67.45	5.50	12.58	V
Middle	1559.5	-48.68	-42.15	-6.53	-55.46	-51.93	4.00	9.40	H
	2339.25	-57.69	-13	-44.69	-68.48	-61.26	4.88	10.60	H
	3119	-63.22	-13	-50.22	-76.11	-68.15	5.52	12.60	H
	1559.5	-48.47	-42.15	-6.32	-55.46	-51.72	4.00	9.40	V
	2339.25	-55.47	-13	-42.47	-66.65	-59.04	4.88	10.60	V
	3119	-62.75	-13	-49.75	-76.15	-67.68	5.52	12.60	V
Highest	1564.5	-59.76	-42.15	-17.61	-66.48	-62.93	4.10	9.42	H
	2346.75	-57.49	-13	-44.49	-68.24	-61.07	4.90	10.63	H
	3129	-63.55	-13	-50.55	-76.47	-68.47	5.55	12.62	H
	1564.5	-63.04	-42.15	-20.89	-69.98	-66.21	4.10	9.42	V
	2346.75	-59.37	-13	-46.37	-70.51	-62.95	4.90	10.63	V
	3129	-62.48	-13	-49.48	-75.93	-67.40	5.55	12.62	V

LTE Band 13 / 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	1555	-47.35	-13	-34.35	-54.18	-50.60	4.00	9.40	H
	2332.5	-51.36	-13	-38.36	-62.17	-54.93	4.88	10.60	H
	3110	-62.12	-13	-49.12	-74.97	-67.05	5.52	12.60	H
	1555	-50.08	-13	-37.08	-57.12	-53.33	4.00	9.40	V
	2332.5	-58.17	-13	-45.17	-69.37	-61.74	4.88	10.60	V
	3110	-61.71	-13	-48.71	-75.07	-66.64	5.52	12.60	V



LTE Band 25 / 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)
Lowest	3702	-55.37	-13	-42.37	-69.91	-62.13	5.82	12.58	H
	5553	-63.29	-13	-50.29	-80.82	-69.01	7.28	13.00	H
	7404	-55.55	-13	-42.55	-78.26	-58.71	8.32	11.48	H
	3702	-52.08	-13	-39.08	-66.91	-58.84	5.82	12.58	V
	5553	-63.08	-13	-50.08	-80.66	-68.80	7.28	13.00	V
	7404	-55.63	-13	-42.63	-78.38	-58.79	8.32	11.48	V
Middle	3750	-49.91	-13	-36.91	-64.55	-56.66	5.85	12.60	H
	5622	-61.26	-13	-48.26	-78.99	-67.06	7.30	13.10	H
	7500	-56.41	-13	-43.41	-78.74	-59.56	8.35	11.50	H
	3750	-50.61	-13	-37.61	-65.45	-57.36	5.85	12.60	V
	5622	-60.54	-13	-47.54	-78.18	-66.34	7.30	13.10	V
	7500	-56.66	-13	-43.66	-78.9	-59.81	8.35	11.50	V
Highest	3792	-60.39	-13	-47.39	-75.10	-67.13	5.88	12.62	H
	5688	-61.76	-13	-48.76	-79.68	-67.57	7.32	13.13	H
	7584	-56.42	-13	-43.42	-78.60	-59.58	8.38	11.54	H
	3792	-61.01	-13	-48.01	-75.84	-67.75	5.88	12.62	V
	5688	-61.72	-13	-48.72	-79.64	-67.53	7.32	13.13	V
	7584	-56.75	-13	-43.75	-78.72	-59.91	8.38	11.54	V

LTE Band 26 / 15MHz / 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)
Lowest	1632	-57.16	-13	-44.16	-63.47	-60.39	3.98	9.36	H
	2448	-64.84	-13	-51.84	-75.24	-68.39	4.85	10.55	H
	3264	-61.23	-13	-48.23	-73.91	-66.16	5.50	12.58	H
	1632	-57.39	-13	-44.39	-63.72	-60.62	3.98	9.36	V
	2448	-62.72	-13	-49.72	-73.51	-66.27	4.85	10.55	V
	3264	-62.65	-13	-49.65	-75.84	-67.58	5.50	12.58	V
Middle	1648	-50.26	-13	-37.26	-56.52	-53.51	4.00	9.40	H
	2472	-54.81	-13	-41.81	-65.16	-58.38	4.88	10.60	H
	3296	-58.31	-13	-45.31	-70.74	-63.24	5.52	12.60	H
	1648	-52.30	-13	-39.30	-58.46	-55.55	4.00	9.40	V
	2472	-53.30	-13	-40.30	-64.01	-56.87	4.88	10.60	V
	3296	-56.53	-13	-43.53	-69.42	-61.46	5.52	12.60	V
Highest	1672	-55.18	-13	-42.18	-61.40	-58.35	4.10	9.42	H
	2504	-62.23	-13	-49.23	-72.50	-65.81	4.90	10.63	H
	3192	-61.30	-13	-48.30	-74.47	-66.22	5.55	12.62	H
	1672	-58.88	-13	-45.88	-64.82	-62.05	4.10	9.42	V
	2504	-60.83	-13	-47.83	-71.43	-64.41	4.90	10.63	V
	3192	-61.29	-13	-48.29	-75.06	-66.21	5.55	12.62	V



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)
Lowest	3426	-58.38	-13	-45.38	-70.68	-65.26	5.60	12.48	H
	5136	-58.62	-13	-45.62	-76.11	-64.30	7.10	12.78	H
	6848	-59.20	-13	-46.20	-79.67	-62.59	8.38	11.77	H
	3426	-55.89	-13	-42.89	-68.75	-62.77	5.60	12.48	V
	5136	-57.47	-13	-44.47	-74.91	-63.15	7.10	12.78	V
	6848	-58.76	-13	-45.76	-79	-62.15	8.38	11.77	V
Middle	3474	-54.37	-13	-41.37	-67.22	-61.22	5.65	12.50	H
	5208	-62.29	-13	-49.29	-79.75	-67.96	7.13	12.80	H
	6948	-58.44	-13	-45.44	-79.37	-61.84	8.40	11.80	H
	3474	-50.97	-13	-37.97	-64.36	-57.82	5.65	12.50	V
	5208	-61.60	-13	-48.60	-79.01	-67.27	7.13	12.80	V
	6948	-58.24	-13	-45.24	-79.23	-61.64	8.40	11.80	V
Highest	3522	-62.65	-13	-49.65	-76.05	-69.49	5.68	12.52	H
	5283	-62.71	-13	-49.71	-79.67	-68.38	7.15	12.82	H
	7044	-57.74	-13	-44.74	-79.07	-61.17	8.42	11.85	H
	3522	-60.74	-13	-47.74	-74.67	-67.58	5.68	12.52	V
	5283	-62.30	-13	-49.30	-79.31	-67.97	7.15	12.82	V
	7044	-57.61	-13	-44.61	-79.12	-61.04	8.42	11.85	V

LTE Band 85 / 5MHz / 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)
Lowest	1406	-59.35	-13	-46.35	-67.43	-62.58	3.98	9.36	H
	2109	-45.65	-13	-32.65	-55.41	-49.20	4.85	10.55	H
	2812	-63.35	-13	-50.35	-75.37	-68.28	5.50	12.58	H
	1406	-61.39	-13	-48.39	-69.55	-64.62	3.98	9.36	V
	2109	-59.44	-13	-46.44	-69.57	-62.99	4.85	10.55	V
	2812	-62.73	-13	-49.73	-74.99	-67.66	5.50	12.58	V
Middle	1408	-56.35	-13	-43.35	-64.41	-59.60	4.00	9.40	H
	2112	-41.65	-13	-28.65	-51.49	-45.22	4.88	10.60	H
	2808	-62.35	-13	-49.35	-74.36	-67.28	5.52	12.60	H
	1408	-61.39	-13	-48.39	-69.52	-64.64	4.00	9.40	V
	2112	-56.44	-13	-43.44	-66.64	-60.01	4.88	10.60	V
	2808	-60.73	-13	-47.73	-72.98	-65.66	5.52	12.60	V
Highest	1424	-56.97	-13	-43.97	-64.94	-60.14	4.10	9.42	H
	2133	-49.56	-13	-36.56	-59.75	-53.14	4.90	10.63	H
	2844	-63.51	-13	-50.51	-75.60	-68.43	5.55	12.62	H
	1422	-62.39	-13	-49.39	-70.48	-65.56	4.10	9.42	V
	2133	-60.05	-13	-47.05	-70.60	-63.63	4.90	10.63	V
	2844	-63.41	-13	-50.41	-75.76	-68.33	5.55	12.62	V



LTE Band 85 / 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)
Lowest	1399.8	-65.03	-13	-52.03	-73.18	-68.26	3.98	9.36	H
	2099.7	-64.82	-13	-51.82	-74.42	-68.37	4.85	10.55	H
	2799.6	-63.85	-13	-50.85	-75.85	-68.78	5.50	12.58	H
	1399.8	-64.98	-13	-51.98	-73.20	-68.21	3.98	9.36	V
	2099.7	-64.17	-13	-51.17	-74.15	-67.72	4.85	10.55	V
	2799.6	-63.60	-13	-50.60	-75.83	-68.53	5.50	12.58	V
Middle	1414	-64.60	-13	-51.60	-72.59	-67.85	4.00	9.40	H
	2121	-63.68	-13	-50.68	-73.67	-67.25	4.88	10.60	H
	2828	-63.20	-13	-50.20	-75.26	-68.13	5.52	12.60	H
	1414	-64.76	-13	-51.76	-72.83	-68.01	4.00	9.40	V
	2121	-64.08	-13	-51.08	-74.43	-67.65	4.88	10.60	V
	2828	-63.14	-13	-50.14	-75.45	-68.07	5.52	12.60	V
Highest	1428.2	-65.05	-13	-52.05	-72.97	-68.22	4.10	9.42	H
	2142.3	-64.44	-13	-51.44	-74.80	-68.02	4.90	10.63	H
	2856.4	-62.95	-13	-49.95	-75.06	-67.87	5.55	12.62	H
	1428.2	-65.31	-13	-52.31	-73.33	-68.48	4.10	9.42	V
	2142.3	-64.01	-13	-51.01	-74.73	-67.59	4.90	10.63	V
	2856.4	-63.14	-13	-50.14	-75.53	-68.06	5.55	12.62	V

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



<NB-IoT Category NB2>:

LTE Band 5 / SCS 15K / 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)
Lowest	1648.2	-66.55	-13	-53.55	-72.81	-69.78	3.98	9.36	H
	2472.3	-66.12	-13	-53.12	-76.47	-69.67	4.85	10.55	H
	3296.4	-64.80	-13	-51.80	-77.23	-69.73	5.50	12.58	H
	1648	-64.76	-13	-51.76	-70.92	-67.99	3.98	9.36	V
	2472.3	-65.73	-13	-52.73	-76.44	-69.28	4.85	10.55	V
	3296.4	-64.59	-13	-51.59	-77.48	-69.52	5.50	12.58	V
Middle	1672	-66.76	-13	-53.76	-72.98	-70.01	4.00	9.40	H
	2508	-65.66	-13	-52.66	-75.91	-69.23	4.88	10.60	H
	3344	-65.59	-13	-52.59	-77.64	-70.52	5.52	12.60	H
	1672	-61.91	-13	-48.91	-67.85	-65.16	4.00	9.40	V
	2508	-65.56	-13	-52.56	-76.14	-69.13	4.88	10.60	V
	3344	-65.28	-13	-52.28	-77.71	-70.21	5.52	12.60	V
Highest	1696	-66.14	-13	-53.14	-72.48	-69.31	4.10	9.42	H
	2544	-65.89	-13	-52.89	-76.19	-69.47	4.90	10.63	H
	3392	-65.82	-13	-52.82	-77.83	-70.74	5.55	12.62	H
	1696	-67.79	-13	-54.79	-73.91	-70.96	4.10	9.42	V
	2544	-65.45	-13	-52.45	-76.09	-69.03	4.90	10.63	V
	3392	-64.98	-13	-51.98	-77.53	-69.90	5.55	12.62	V

LTE Band 12 / SCS 3.75K / 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)
Lowest	1672	-66.04	-13	-53.04	-72.26	-69.27	3.98	9.36	H
	2408	-63.80	-13	-50.80	-74.30	-67.35	4.85	10.55	H
	3184	-60.66	-13	-47.66	-73.80	-65.59	5.50	12.58	H
	1672	-67.84	-13	-54.84	-73.78	-71.07	3.98	9.36	V
	2408	-62.06	-13	-49.06	-72.97	-65.61	4.85	10.55	V
	3148	-63.26	-13	-50.26	-76.81	-68.19	5.50	12.58	V
Middle	1475	-66.57	-13	-53.57	-74.15	-69.82	4.00	9.40	H
	2212.5	-64.27	-13	-51.27	-75.60	-67.84	4.88	10.60	H
	2950	-64.79	-13	-51.79	-77.09	-69.72	5.52	12.60	H
	1475	-66.96	-13	-53.96	-74.68	-70.21	4.00	9.40	V
	2212.5	-64.27	-13	-51.27	-75.93	-67.84	4.88	10.60	V
	2950	-64.43	-13	-51.43	-77.08	-69.36	5.52	12.60	V
Highest	1672	-66.28	-13	-53.28	-72.50	-69.45	4.10	9.42	H
	2508	-65.14	-13	-52.14	-75.39	-68.72	4.90	10.63	H
	3344	-65.48	-13	-52.48	-77.53	-70.40	5.55	12.62	H
	1672	-68.05	-13	-55.05	-73.99	-71.22	4.10	9.42	V
	2508	-64.87	-13	-51.87	-75.45	-68.45	4.90	10.63	V
	3344	-65.26	-13	-52.26	-77.69	-70.18	5.55	12.62	V



LTE Band 13 / SCS 3.75K / 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	1560	-55.07	-42.15	-12.92	-61.84	-58.32	4.00	9.40	H
	2344	-65.42	-13	-52.42	-76.18	-68.99	4.88	10.60	H
	3128	-63.45	-13	-50.45	-76.37	-68.38	5.52	12.60	H
	1560	-52.74	-42.15	-10.59	-59.73	-55.99	4.00	9.40	V
	2344	-63.42	-13	-50.42	-74.58	-66.99	4.88	10.60	V
	3128	-63.51	-13	-50.51	-76.96	-68.44	5.52	12.60	V

LTE Band 25 / SCS 15K / 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)
Lowest	3703.8	-59.84	-13	-46.84	-74.38	-66.60	5.82	12.58	H
	5555.7	-63.55	-13	-50.55	-81.09	-69.27	7.28	13.00	H
	7407.6	-55.95	-13	-42.95	-78.65	-59.11	8.32	11.48	H
	3703.8	-60.13	-13	-47.13	-74.96	-66.89	5.82	12.58	V
	5555.7	-62.96	-13	-49.96	-80.54	-68.68	7.28	13.00	V
	7407.6	-55.56	-13	-42.56	-78.3	-58.72	8.32	11.48	V
Middle	3762	-59.97	-13	-46.97	-74.62	-66.72	5.85	12.60	H
	5643	-62.10	-13	-49.10	-79.86	-67.90	7.30	13.10	H
	7524	-56.58	-13	-43.58	-78.88	-59.73	8.35	11.50	H
	3762	-61.47	-13	-48.47	-76.3	-68.22	5.85	12.60	V
	5643	-62.17	-13	-49.17	-79.83	-67.97	7.30	13.10	V
	7524	-56.58	-13	-43.58	-78.75	-59.73	8.35	11.50	V
Highest	3826.2	-59.59	-13	-46.59	-74.41	-66.33	5.88	12.62	H
	5739.3	-61.60	-13	-48.60	-79.70	-67.41	7.32	13.13	H
	7652.4	-56.56	-13	-43.56	-78.89	-59.72	8.38	11.54	H
	3826.2	-60.53	-13	-47.53	-75.42	-67.27	5.88	12.62	V
	5739.3	-61.69	-13	-48.69	-79.91	-67.50	7.32	13.13	V
	7652.4	-56.56	-13	-43.56	-78.72	-59.72	8.38	11.54	V



LTE Band 66 / SCS 15K / 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)
Lowest	3426	-55.71	-13	-42.71	-68.01	-62.59	5.60	12.48	H
	5136	-54.51	-13	-41.51	-72.00	-60.19	7.10	12.78	H
	6852	-59.20	-13	-46.20	-79.69	-62.59	8.38	11.77	H
	3426	-53.41	-13	-40.41	-66.27	-60.29	5.60	12.48	V
	5136	-59.07	-13	-46.07	-76.51	-64.75	7.10	12.78	V
	6852	-59.31	-13	-46.31	-79.58	-62.70	8.38	11.77	V
Middle	4830	-62.82	-13	-49.82	-80.57	-69.67	5.65	12.50	H
	7245	-56.62	-13	-43.62	-78.73	-62.29	7.13	12.80	H
	9660	-52.21	-13	-39.21	-79.48	-55.61	8.40	11.80	H
	4830	-63.12	-13	-50.12	-80.94	-69.97	5.65	12.50	V
	7245	-56.51	-13	-43.51	-78.66	-62.18	7.13	12.80	V
	9660	-52.70	-13	-39.70	-79.21	-56.10	8.40	11.80	V
Highest	3558	-61.69	-13	-48.69	-75.51	-68.53	5.68	12.52	H
	5337	-63.88	-13	-50.88	-80.83	-69.55	7.15	12.82	H
	7116	-57.36	-13	-44.36	-78.97	-60.79	8.42	11.85	H
	3558	-59.73	-13	-46.73	-74.07	-66.57	5.68	12.52	V
	5337	-63.60	-13	-50.60	-80.77	-69.27	7.15	12.82	V
	7116	-56.72	-13	-43.72	-78.44	-60.15	8.42	11.85	V

LTE Band 71 / SCS 3.75K / 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)
Lowest	1329.8	-62.31	-13	-49.31	-69.14	-65.54	3.98	9.36	H
	1994.7	-65.62	-13	-52.62	-73.44	-69.17	4.85	10.55	H
	2659.6	-65.88	-13	-52.88	-76.72	-70.81	5.50	12.58	H
	1329.8	-61.82	-13	-48.82	-68.57	-65.05	3.98	9.36	V
	1994.7	-64.04	-13	-51.04	-72.28	-67.59	4.85	10.55	V
	2659.6	-65.63	-13	-52.63	-76.79	-70.56	5.50	12.58	V
Middle	1360	-57.76	-13	-44.76	-65.13	-61.01	4.00	9.40	H
	2040	-66.35	-13	-53.35	-74.90	-69.92	4.88	10.60	H
	2720	-65.17	-13	-52.17	-76.51	-70.10	5.52	12.60	H
	1360	-55.67	-13	-42.67	-63.03	-58.92	4.00	9.40	V
	2040	-64.04	-13	-51.04	-73.00	-67.61	4.88	10.60	V
	2720	-65.14	-13	-52.14	-76.76	-70.07	5.52	12.60	V
Highest	1392.2	-61.22	-13	-48.22	-69.16	-64.39	4.10	9.42	H
	2088.3	-64.87	-13	-51.87	-74.28	-68.45	4.90	10.63	H
	2784.4	-64.93	-13	-51.93	-76.79	-69.85	5.55	12.62	H
	1392.2	-59.76	-13	-46.76	-67.75	-62.93	4.10	9.42	V
	2088.3	-64.26	-13	-51.26	-74.05	-67.84	4.90	10.63	V
	2784.4	-64.70	-13	-51.70	-76.80	-69.62	5.55	12.62	V

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



LTE Band 85 / SCS 3.75K / 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)
Lowest	1399.8	-65.03	-13	-52.03	-73.18	-68.26	3.98	9.36	H
	2099.7	-64.82	-13	-51.82	-74.42	-68.37	4.85	10.55	H
	2799.6	-63.85	-13	-50.85	-75.85	-68.78	5.50	12.58	H
	1399.8	-64.98	-13	-51.98	-73.20	-68.21	3.98	9.36	V
	2099.7	-64.17	-13	-51.17	-74.15	-67.72	4.85	10.55	V
	2799.6	-63.60	-13	-50.60	-75.83	-68.53	5.50	12.58	V
Middle	1414	-64.60	-13	-51.60	-72.59	-67.85	4.00	9.40	H
	2121	-63.68	-13	-50.68	-73.67	-67.25	4.88	10.60	H
	2828	-63.20	-13	-50.20	-75.26	-68.13	5.52	12.60	H
	1414	-64.76	-13	-51.76	-72.83	-68.01	4.00	9.40	V
	2121	-64.08	-13	-51.08	-74.43	-67.65	4.88	10.60	V
	2828	-63.14	-13	-50.14	-75.45	-68.07	5.52	12.60	V
Highest	1428.2	-65.05	-13	-52.05	-72.97	-68.22	4.10	9.42	H
	2142.3	-64.44	-13	-51.44	-74.80	-68.02	4.90	10.63	H
	2856.4	-62.95	-13	-49.95	-75.06	-67.87	5.55	12.62	H
	1428.2	-65.31	-13	-52.31	-73.33	-68.48	4.10	9.42	V
	2142.3	-64.01	-13	-51.01	-74.73	-67.59	4.90	10.63	V
	2856.4	-63.14	-13	-50.14	-75.53	-68.06	5.55	12.62	V

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