



FCC RF Test Report

APPLICANT : Emerson Digital Cold Chain, Inc.
EQUIPMENT : Global PCBA
BRAND NAME : Emerson
MODEL NAME : NNT-TG05
FCC ID : AMH101019
STANDARD : 47 CFR Part 2, 22(H), 24(E), 27(L), 27(F), 27(H)
CLASSIFICATION : PCS Licensed Transmitter (PCB)
TEST DATE(S) : Jun. 24, 2022 ~ Jul. 12, 2022

We, Sporton International Inc. (Kunshan), 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. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



Sporton International Inc. (ShenZhen)

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

People's Republic of China



TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Product Feature of Equipment Under Test	5
1.4 Product Specification of Equipment Under Test	6
1.5 Modification of EUT	7
1.6 Maximum Conducted Power	7
1.7 Testing Location	10
1.8 Test Software	10
1.9 Applicable Standards	11
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	12
2.1 Test Mode	12
2.2 Connection Diagram of Test System	14
2.3 Support Unit used in test configuration and system	14
2.4 Frequency List of Low/Middle/High Channels	15
3 CONDUCTED TEST ITEMS	19
3.1 Measuring Instruments	19
3.2 Test Setup	19
3.3 Test Result of Conducted Test	19
3.4 Conducted Output Power and ERP/EIRP	20
4 RADIATED TEST ITEMS	21
4.1 Measuring Instruments	21
4.2 Test Setup	21
4.3 Test Result of Radiated Test	22
4.4 Radiated Spurious Emission	23
5 LIST OF MEASURING EQUIPMENT	24
6 UNCERTAINTY OF EVALUATION	25
APPENDIX A. TEST RESULTS OF CONDUCTED TEST	
APPENDIX B. TEST RESULTS OF RADIATED TEST	
APPENDIX C. TEST SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG260705B	Rev. 01	Initial issue of report	Aug. 04, 2022

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	-	Report Only	-
	§22.913(a)(5)	Effective Radiated Power (Band 5) (Band 26)	ERP < 7 Watt	PASS	-
	§27.50(b)(10) §27.50(c)(10)	Effective Radiated Power (Band 12) (Band 13)	ERP < 3 Watt		-
	§24.232(c)	Equivalent Isotropic Radiated Power (Band 2)	EIRP < 2Watt		-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4)	EIRP < 1Watt		-
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 26)	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 8.89 dB at 1560.00 MHz
Remark : This is a change in FCC ID report in conjunction with a permissive change, the original FCC ID is XMR201707BG96. The change note could be referred to the Class II Permissive Change letter which is exhibit separately. According to the change, verify the conducted power / RSE.					

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



1 General Description

1.1 Applicant

Emerson Digital Cold Chain, Inc.

7121 Fairway Dr. Suite #400 | Palm Beach Gardens, FL 33418 USA

1.2 Manufacturer

Konka Smart Technology Co. , Ltd

No.12, West Section of Gangyuan Road, Guoxing Avenue, Lingang Economic Development Zone,
Yibin City, P.R.China ZIP: 511581

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Global PCBA
Brand Name	Emerson
Model Name	NNT-TG05
FCC ID	AMH101019
IMEI Code	Radiation: 860640054180619
HW Version	BR0C
SW Version	Ver 1.0.a18
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 26 : 824 MHz ~ 849 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 26 : 869 MHz ~ 894 MHz
Bandwidth	LTE Category M1: 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 26 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz NB-IOT Category NB1 : 200kHz
Sub-carrier Speacing	NB-IOT Category NB1 : LTE Band 2 : 3.75kHz / 15kHz LTE Band 5 : 3.75kHz / 15kHz LTE Band 12 : 3.75kHz / 15kHz LTE Band 13 : 3.75kHz / 15kHz LTE Band 26 : 3.75kHz / 15kHz
Maximum Output Power to Antenna	LTE Category M1: LTE Band 2 : 22.40 dBm LTE Band 4 : 21.75 dBm LTE Band 5 : 22.61 dBm LTE Band 12 : 22.52 dBm LTE Band 13 : 21.71 dBm LTE Band 26 : 22.92 dBm NB-IOT Category NB1: LTE Band 2 : 23.38 dBm LTE Band 5 : 23.04 dBm LTE Band 12 : 22.78 dBm LTE Band 13 : 21.47 dBm LTE Band 26 : 23.08 dBm
Antenna Gain	LTE Band 2 : -4.12 dBi LTE Band 4 : -4.11 dBi LTE Band 5 : -5.51 dBi LTE Band 12 : -7.41 dBi LTE Band 13 : -10.34 dBi LTE Band 26 : -5.51 dBi
Type of Modulation	LTE Category M1: QPSK / 16QAM NB-IOT Category NB1 : BPSK / QPSK

1.5 Modification of EUT

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

1.6 Maximum Conducted Power

LTE Category M1:

LTE Band 2		QPSK		16QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)
1.4	1850.7 ~ 1909.3	0.1618	-	0.1618	-
3	1851.5 ~ 1908.5	0.1614	-	0.1618	-
5	1852.5 ~ 1907.5	0.1614	-	0.1603	-
10	1855.0 ~ 1905.0	0.1622	-	0.1622	-
15	1857.5 ~ 1902.5	0.1618	-	0.1611	-
20	1860.0 ~ 1900.0	0.1738	-	0.1603	-
LTE Band 4		QPSK		16QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)
1.4	1710.7 ~ 1754.3	0.1449	-	0.1445	-
3	1711.5 ~ 1753.5	0.1435	-	0.1439	-
5	1712.5 ~ 1752.5	0.1435	-	0.1449	-
10	1715.0 ~ 1750.0	0.1455	-	0.1442	-
15	1717.5 ~ 1747.5	0.1452	-	0.1455	-
20	1720.0 ~ 1745.0	0.1496	-	0.1452	-
LTE Band 5		QPSK		16QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)
1.4	824.7 ~ 848.3	0.1807	-	0.1807	-
3	825.5 ~ 847.5	0.1820	-	0.1820	-
5	826.5 ~ 846.5	0.1803	-	0.1816	-
10	829.0 ~ 844.0	0.1820	-	0.1811	-



LTE Band 12		QPSK		16QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)
1.4	699.7 ~ 715.3	0.1766	-	0.1770	-
3	700.5 ~ 714.5	0.1774	-	0.1778	-
5	701.5 ~ 713.5	0.1774	-	0.1762	-
10	704.0 ~ 711.0	0.1786	-	0.1774	-
LTE Band 13		QPSK		16QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)
5	779.5 ~ 784.5	0.1479	-	0.1479	-
10	782.0	0.1483	-	0.1469	-
LTE Band 26		QPSK		16QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)
1.4	824.7 ~ 848.3	0.1928	-	0.1950	-
3	825.5 ~ 847.5	0.1932	-	0.1945	-
5	826.5 ~ 846.5	0.1932	-	0.1919	-
10	829.0 ~ 844.0	0.1945	-	0.1941	-
15	831.5 ~ 841.5	0.1959	-	0.1945	-
CH26765	821.5	0.1905	-	0.1923	-



NB-IOT Category NB1

LTE Band 2		BPSK		QPSK	
Sub-carrier Spacing (kHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)
3.75	1850.1 ~ 1909.9	0.1901	-	0.1687	-
15	1850.1 ~ 1909.9	0.2178	-	0.2148	-
LTE Band 5		BPSK		QPSK	
Sub-carrier Spacing (kHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)
3.75	824.1 ~ 848.9	0.1820	-	0.1811	-
15	824.1 ~ 848.9	0.2014	-	0.2009	-
LTE Band 12		BPSK		QPSK	
Sub-carrier Spacing (kHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)
3.75	699.1 ~ 715.9	0.1722	-	0.1690	-
15	699.1 ~ 715.9	0.1897	-	0.1879	-
LTE Band 13		BPSK		QPSK	
Sub-carrier Spacing (kHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)
3.75	777.1 ~ 786.9	0.1384	-	0.1337	-
15	777.1 ~ 786.9	0.1403	-	0.1396	-
LTE Band 26		BPSK		QPSK	
Sub-carrier Spacing (kHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)
3.75	824.1 ~ 848.9	0.1786	-	0.1698	-
15	824.1 ~ 848.9	0.2032	-	0.1841	-

Note: 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.



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 China 518103 TEL: +86-755-33202398		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH01-SZ	CN1256	421272

1.8 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH01-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 2, 22(H), 24(E), 27(L), 27(F), 27(H)
- ♦ ANSI C63.26-2015
- ♦ FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

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

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 Category M1:

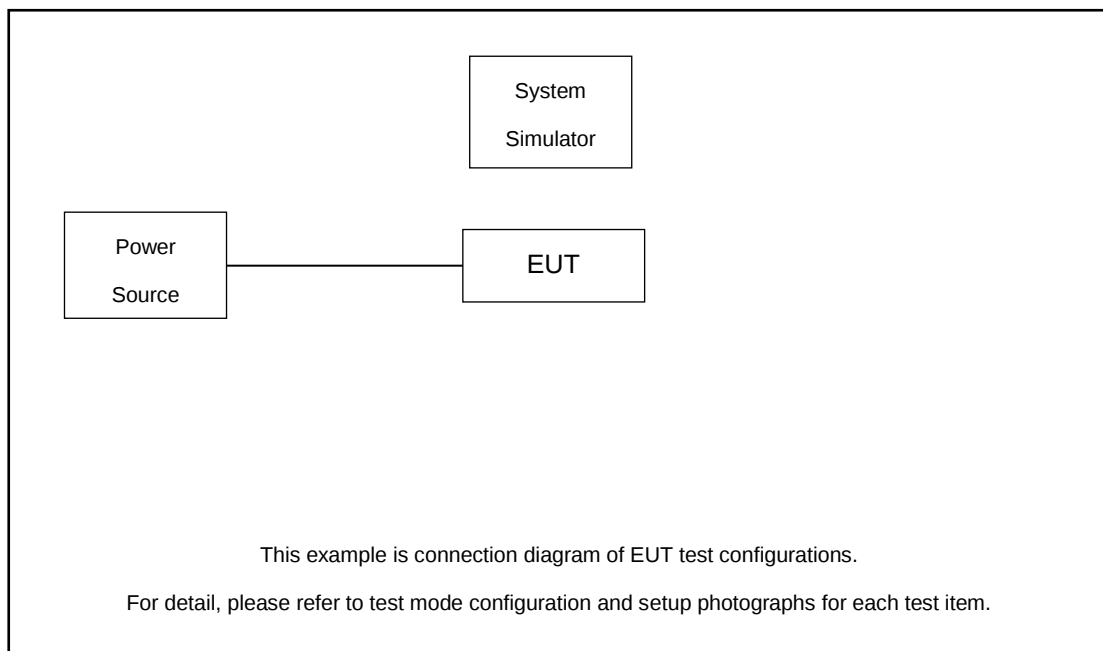
Test Items	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	2	v	v	v	v	v	v	v	v	-	v		v	v	v	v
	4	v	v	v	v	v	v	v	v	-	v		v	v	v	v
	5	v	v	v	v	-	-	v	v	-	v		v	v	v	v
	12	v	v	v	v	-	-	v	v	-	v		v	v	v	v
	13	-	-	v	v	-	-	v	v	-	v		v	v	v	v
	26	v	v	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	v	v
	4	v	v	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
	26	v	v	v	v	v	-	v	v	-	v			v	v	v
Radiated Spurious Emission	2	Worst Case												v	v	v
	4	Worst Case												v	v	v
	12	Worst Case												v	v	v
	13	Worst Case												v	v	v
	26	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.															



NB-IOT Category NB1 :

Test Items	Band	Sub-carrier Spacing (kHz)		Modulation				Tones #			Test Channel		
		3.75	15	BPSK	QPSK	16QAM	64QAM	1	-	12	L	M	H
Max. Output Power	2	v	v	v	v	-	-	v	-	v	v	v	v
	5	v	v	v	v	-	-	v	-	v	v	v	v
	12	v	v	v	v	-	-	v	-	v	v	v	v
	13	v	v	v	v	-	-	v	-	v	v	v	v
	26	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
	12	v	v	v	v	-	-	v	-		v	v	v
	13	v	v	v	v	-	-	v	-		v	v	v
	26	v	v	v	v	-	-	v	-		v	v	v
Radiated Spurious Emission	2	Worst case									v	v	v
	12	Worst case									v	v	v
	13	Worst case									v	v	v
	26	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.												

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.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Adapter	N/A	N/A	N/A	N/A	N/A
3.	Antenna	N/A	N/A	N/A	N/A	N/A



2.4 Frequency List of Low/Middle/High Channels

LTE Category 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 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

NB-IOT Category NB1:

LTE Band 2 Channel and Frequency List				
Sub-carrier Speacing (kHz)	Channel / Frequency (MHz)	Lowest	Middle	Highest
3.75	Channel	18601	18900	19199
	Frequency	1850.1	1880	1909.9
15	Channel	18601	18900	19199
	Frequency	1850.1	1880	1909.9

LTE Band 5 Channel and Frequency List				
Sub-carrier Speacing (kHz)	Channel / Frequency (MHz)	Lowest	Middle	Highest
3.75	Channel	20410	20525	20649
	Frequency	824.1	836.5	848.9
15	Channel	20410	20525	20649
	Frequency	824.1	836.5	848.9

LTE Band 12 Channel and Frequency List				
Sub-carrier Spacing (kHz)	Channel / Frequency (MHz)	Lowest	Middle	Highest
3.75	Channel	23011	23095	23179
	Frequency	699.1	707.5	715.9
15	Channel	23011	23095	23179
	Frequency	699.1	707.5	715.9

LTE Band 13 Channel and Frequency List				
Sub-carrier Spacing (kHz)	Channel / Frequency (MHz)	Lowest	Middle	Highest
3.75	Channel	23181	23230	23279
	Frequency	777.1	782	786.9
15	Channel	23181	23230	23279
	Frequency	777.1	782	786.9

LTE Band 26 Channel and Frequency List				
Sub-carrier Spacing (kHz)	Channel / Frequency (MHz)	Lowest	Middle	Highest
3.75	Channel	26791	26915	27039
	Frequency	824.1	836.5	848.9
15	Channel	26791	26915	27039
	Frequency	824.1	836.5	848.9

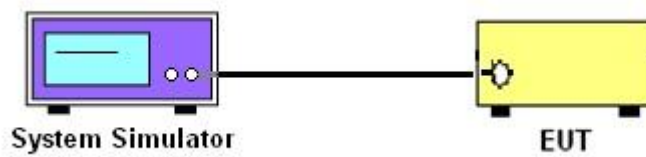
3 Conducted Test Items

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 and Band 13.

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

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

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.

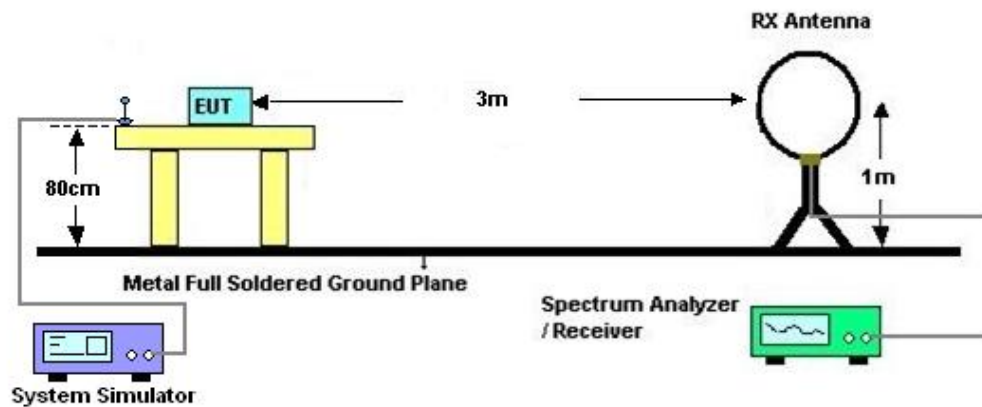
4 Radiated Test Items

4.1 Measuring Instruments

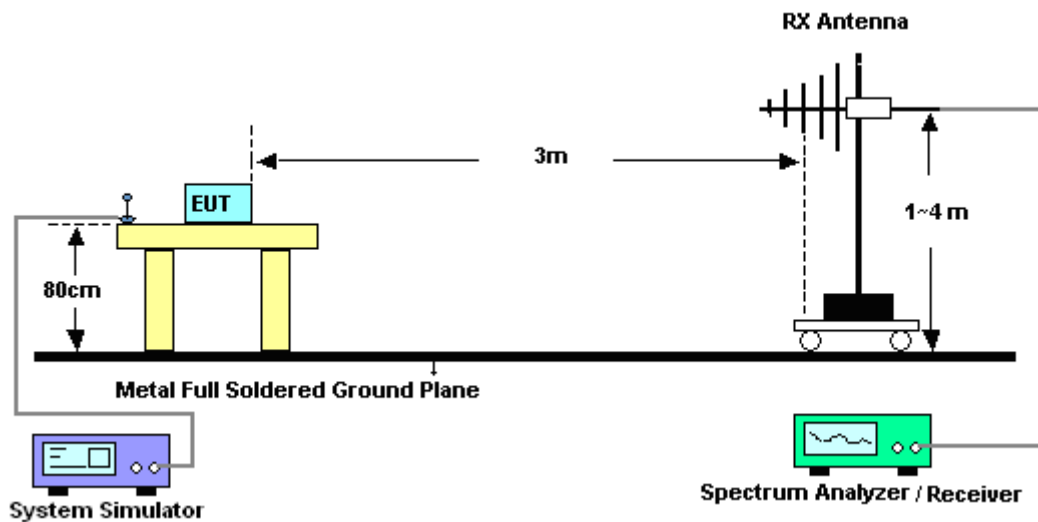
See list of measuring instruments of this test report.

4.2 Test Setup

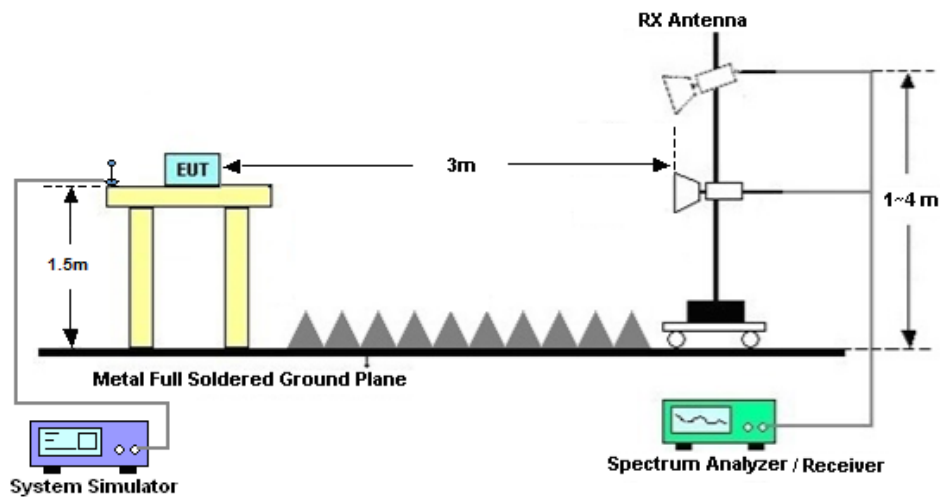
4.2.1 For radiated test below 30MHz



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

The limit line is derived from $43 + 10\log(P)$ 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. 07, 2022	Jul. 12, 2022	Apr. 06, 2023	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 25, 2021	Jul. 12, 2022	Dec. 24, 2022	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 27, 2021	Jun. 24, 2022	Dec. 26, 2022	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jun. 21, 2022	Jun. 24, 2022	Jun. 20, 2023	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5GHz	Oct. 22, 2021	Jun. 24, 2022	Oct. 21, 2022	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz~2GHz	Sep. 28, 2021	Jun. 24, 2022	Sep. 27, 2022	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 18, 2021	Jun. 24, 2022	Jul. 17, 2022	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Apr. 10, 2022	Jun. 24, 2022	Apr. 09, 2023	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 06, 2022	Jun. 24, 2022	Apr. 05, 2023	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P-R	1943528	1GHz~18GHz	Oct. 22, 2021	Jun. 24, 2022	Oct. 21, 2022	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 13, 2021	Jun. 24, 2022	Jul. 12, 2022	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Jun. 24, 2022	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jun. 24, 2022	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jun. 24, 2022	NCR	Radiation (03CH01-SZ)

NCR: No Calibration Required

6 Uncertainty of Evaluation

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

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.48dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.53dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.02dB
---	--------



Appendix A. Test Results of Conducted Test

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

Conducted Output Power(Average power)

LTE Category M1:

LTE Band 2

BW [MHz]	Modulation	RB Size	RB Offset	Index			Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				L	M	H	18700	18900	19100
Frequency (MHz)							1860	1880	1900
20	QPSK	1	0	0	0	15	22.35	22.40	22.33
20	QPSK	1	5	0	0	15	21.97	21.93	21.70
20	QPSK	3	0	0	0	15	21.82	21.73	21.80
20	QPSK	3	3	0	0	15	21.82	22.00	21.76
20	QPSK	6	0	0	0	15	21.91	21.76	21.89
20	16QAM	1	0	0	0	15	21.93	21.87	22.03
20	16QAM	1	5	0	0	15	22.02	22.03	21.80
20	16QAM	3	0	0	0	15	21.93	21.86	22.05
20	16QAM	3	3	0	0	15	21.72	21.72	21.97
20	16QAM	6	0	0	0	15	21.72	21.95	21.83
Channel				L	M	H	18675	18900	19125
Frequency (MHz)							1857.5	1880	1902.5
15	QPSK	1	0	0	0	11	21.78	22.06	21.92
15	QPSK	1	5	0	0	11	22.08	22.07	21.71
15	QPSK	3	0	0	0	11	21.84	22.03	21.90
15	QPSK	3	3	0	0	11	21.87	22.00	21.85
15	QPSK	6	0	0	0	11	21.98	22.09	21.94
15	16QAM	1	0	0	0	11	21.93	21.75	21.87
15	16QAM	1	5	0	0	11	21.86	21.70	21.90
15	16QAM	3	0	0	0	11	21.80	21.78	21.96
15	16QAM	3	3	0	0	11	22.07	21.93	21.82
15	16QAM	6	0	0	0	11	21.83	22.04	21.83
Channel				L	M	H	18650	18900	19150
Frequency (MHz)							1855	1880	1905
10	QPSK	1	0	0	0	7	19.99	19.83	19.82
10	QPSK	1	5	0	0	7	22.07	21.97	21.90
10	QPSK	3	0	0	0	7	22.03	21.96	22.10
10	QPSK	3	3	0	0	7	21.84	21.88	21.91
10	QPSK	6	0	0	0	7	21.93	21.78	21.87
10	16QAM	1	0	0	0	7	21.72	21.84	22.06
10	16QAM	1	5	0	0	7	21.81	21.94	22.10
10	16QAM	3	0	0	0	7	22.01	21.90	22.00
10	16QAM	3	3	0	0	7	21.76	21.83	22.06
10	16QAM	6	0	0	0	7	21.83	21.71	21.76



Channel				L	M	H	18625	18900	19175
Frequency (MHz)							1852.5	1880	1907.5
5	QPSK	1	0	0	0	3	21.85	21.88	21.82
5	QPSK	1	5	0	0	3	21.86	21.95	21.79
5	QPSK	3	0	0	0	3	21.72	21.98	21.83
5	QPSK	3	3	0	0	3	22.08	22.01	22.03
5	QPSK	6	0	0	0	3	22.06	22.03	21.73
5	16QAM	1	0	0	0	3	21.71	21.83	22.01
5	16QAM	1	5	0	0	3	21.94	21.94	22.02
5	16QAM	3	0	0	0	3	21.70	21.81	21.98
5	16QAM	3	3	0	0	3	21.93	21.89	22.05
5	16QAM	6	0	0	0	3	21.75	21.87	21.93
Channel				L	M	H	18615	18900	19185
Frequency (MHz)							1851.5	1880	1908.5
3	QPSK	1	0	0	0	1	21.99	22.00	21.85
3	QPSK	1	5	0	0	1	22.01	21.77	21.73
3	QPSK	3	0	0	0	1	22.08	21.84	21.90
3	QPSK	3	3	0	0	1	21.82	21.76	21.78
3	QPSK	6	0	0	0	1	22.04	21.95	21.72
3	16QAM	1	0	0	0	1	22.03	21.78	22.05
3	16QAM	1	5	0	0	1	22.04	21.84	21.91
3	16QAM	3	0	0	0	1	21.79	22.01	21.90
3	16QAM	3	3	0	0	1	21.83	22.09	22.08
3	16QAM	6	0	0	0	1	22.02	21.91	21.86
Channel				L	M	H	18607	18900	19193
Frequency (MHz)							1850.7	1880	1909.3
1.4	QPSK	1	0	0	0	0	22.06	22.09	22.07
1.4	QPSK	1	5	0	0	0	21.76	21.86	21.81
1.4	QPSK	3	0	0	0	0	22.04	21.89	22.08
1.4	QPSK	3	3	0	0	0	22.04	22.04	21.72
1.4	QPSK	6	0	0	0	0	21.75	21.72	21.74
1.4	16QAM	1	0	0	0	0	21.72	21.92	22.09
1.4	16QAM	1	5	0	0	0	21.82	21.79	21.87
1.4	16QAM	3	0	0	0	0	21.78	22.02	22.07
1.4	16QAM	3	3	0	0	0	21.81	22.00	22.02
1.4	16QAM	6	0	0	0	0	22.06	22.09	22.02



LTE Band 4

BW [MHz]	Modulation	RB Size	RB Offset	Index			Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				L	M	H	20050	20175	20300
Frequency (MHz)							1720	1732.5	1745
20	QPSK	1	0	0	0	15	21.46	21.75	21.34
20	QPSK	1	5	0	0	15	21.40	21.62	21.59
20	QPSK	3	0	0	0	15	21.35	21.42	21.45
20	QPSK	3	3	0	0	15	21.63	21.53	21.51
20	QPSK	6	0	0	0	15	21.32	21.64	21.32
20	16QAM	1	0	0	0	15	21.24	21.60	21.26
20	16QAM	1	5	0	0	15	21.30	21.50	21.55
20	16QAM	3	0	0	0	15	21.51	21.48	21.52
20	16QAM	3	3	0	0	15	21.43	21.55	21.62
20	16QAM	6	0	0	0	15	21.49	21.58	21.47
Channel				L	M	H	20025	20175	20325
Frequency (MHz)							1717.5	1732.5	1747.5
15	QPSK	1	0	0	0	11	21.54	21.52	21.59
15	QPSK	1	5	0	0	11	21.50	21.48	21.32
15	QPSK	3	0	0	0	11	21.52	21.45	21.27
15	QPSK	3	3	0	0	11	21.57	21.25	21.62
15	QPSK	6	0	0	0	11	21.39	21.46	21.36
15	16QAM	1	0	0	0	11	21.29	21.36	21.50
15	16QAM	1	5	0	0	11	21.47	21.27	21.59
15	16QAM	3	0	0	0	11	21.46	21.50	21.34
15	16QAM	3	3	0	0	11	21.42	21.44	21.40
15	16QAM	6	0	0	0	11	21.63	21.36	21.46
Channel				L	M	H	20000	20175	20350
Frequency (MHz)							1715	1732.5	1750
10	QPSK	1	0	0	0	7	21.44	21.27	21.63
10	QPSK	1	5	0	0	7	21.37	21.45	21.40
10	QPSK	3	0	0	0	7	21.58	21.53	21.37
10	QPSK	3	3	0	0	7	21.24	21.49	21.61
10	QPSK	6	0	0	0	7	21.28	21.35	21.44
10	16QAM	1	0	0	0	7	21.59	21.27	21.48
10	16QAM	1	5	0	0	7	21.37	21.27	21.52
10	16QAM	3	0	0	0	7	21.25	21.35	21.34
10	16QAM	3	3	0	0	7	21.29	21.37	21.44
10	16QAM	6	0	0	0	7	21.24	21.29	21.51
Channel				L	M	H	19975	20175	20375
Frequency (MHz)							1712.5	1732.5	1752.5
5	QPSK	1	0	0	0	3	21.50	21.57	21.49
5	QPSK	1	5	0	0	3	21.57	21.26	21.56
5	QPSK	3	0	0	0	3	21.49	21.56	21.27
5	QPSK	3	3	0	0	3	21.34	21.55	21.47
5	QPSK	6	0	0	0	3	21.40	21.44	21.42
5	16QAM	1	0	0	0	3	21.37	21.42	21.49
5	16QAM	1	5	0	0	3	21.32	21.50	21.33
5	16QAM	3	0	0	0	3	21.47	21.52	21.61



5	16QAM	3	3	0	0	3	21.45	21.56	21.33
5	16QAM	6	0	0	0	3	21.27	21.52	21.59
Channel				L	M	H	19965	20175	20385
Frequency (MHz)							1711.5	1732.5	1753.5
3	QPSK	1	0	0	0	1	21.27	21.33	21.26
3	QPSK	1	5	0	0	1	21.45	21.57	21.52
3	QPSK	3	0	0	0	1	21.51	21.41	21.56
3	QPSK	3	3	0	0	1	21.56	21.56	21.40
3	QPSK	6	0	0	0	1	21.55	21.46	21.44
3	16QAM	1	0	0	0	1	21.29	21.47	21.37
3	16QAM	1	5	0	0	1	21.58	21.34	21.46
3	16QAM	3	0	0	0	1	21.56	21.30	21.24
3	16QAM	3	3	0	0	1	21.57	21.50	21.24
3	16QAM	6	0	0	0	1	21.28	21.32	21.44
Channel				L	M	H	19957	20175	20393
Frequency (MHz)							1710.7	1732.5	1754.3
1.4	QPSK	1	0	0	0	0	21.25	21.41	21.61
1.4	QPSK	1	5	0	0	0	21.54	21.41	21.32
1.4	QPSK	3	0	0	0	0	21.54	21.26	21.48
1.4	QPSK	3	3	0	0	0	21.29	21.35	21.38
1.4	QPSK	6	0	0	0	0	21.59	21.56	21.35
1.4	16QAM	1	0	0	0	0	21.54	21.44	21.57
1.4	16QAM	1	5	0	0	0	21.34	21.37	21.44
1.4	16QAM	3	0	0	0	0	21.33	21.25	21.60
1.4	16QAM	3	3	0	0	0	21.60	21.53	21.32
1.4	16QAM	6	0	0	0	0	21.48	21.51	21.33



LTE Band 5

BW [MHz]	Modulation	RB Size	RB Offset	Index			Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				L	M	H	20450	20525	20600
Frequency (MHz)							829	836.5	844
10	QPSK	1	0	0	0	7	22.49	22.28	22.30
10	QPSK	1	5	0	0	7	22.52	22.61	22.37
10	QPSK	3	0	0	0	7	22.33	22.42	22.26
10	QPSK	3	3	0	0	7	22.40	22.38	22.25
10	QPSK	6	0	0	0	7	22.50	22.37	22.52
10	16QAM	1	0	0	0	7	22.35	22.29	22.33
10	16QAM	1	5	0	0	7	22.57	22.58	22.40
10	16QAM	3	0	0	0	7	22.20	22.56	22.57
10	16QAM	3	3	0	0	7	22.54	22.50	22.40
10	16QAM	6	0	0	0	7	22.45	22.26	22.44
Channel				L	M	H	20425	20525	20625
Frequency (MHz)							826.5	836.5	846.5
5	QPSK	1	0	0	0	3	22.29	22.42	22.43
5	QPSK	1	5	0	0	3	22.31	22.28	22.44
5	QPSK	3	0	0	0	3	22.56	22.53	22.26
5	QPSK	3	3	0	0	3	22.53	22.54	22.48
5	QPSK	6	0	0	0	3	22.37	22.47	22.54
5	16QAM	1	0	0	0	3	22.36	22.50	22.59
5	16QAM	1	5	0	0	3	22.51	22.50	22.32
5	16QAM	3	0	0	0	3	22.29	22.38	22.52
5	16QAM	3	3	0	0	3	22.37	22.45	22.38
5	16QAM	6	0	0	0	3	22.22	22.56	22.59
Channel				L	M	H	20415	20525	20635
Frequency (MHz)							825.5	836.5	847.5
3	QPSK	1	0	0	0	1	22.39	22.26	22.23
3	QPSK	1	5	0	0	1	22.60	22.59	22.42
3	QPSK	3	0	0	0	1	22.59	22.29	22.25
3	QPSK	3	3	0	0	1	22.36	22.52	22.55
3	QPSK	6	0	0	0	1	22.57	22.29	22.56
3	16QAM	1	0	0	0	1	22.58	22.27	22.37
3	16QAM	1	5	0	0	1	22.45	22.23	22.23
3	16QAM	3	0	0	0	1	22.43	22.54	22.28
3	16QAM	3	3	0	0	1	22.53	22.41	22.59
3	16QAM	6	0	0	0	1	22.60	22.48	22.56
Channel				L	M	H	20407	20525	20643
Frequency (MHz)							824.7	836.5	848.3
1.4	QPSK	1	0	0	0	0	22.52	22.37	22.36
1.4	QPSK	1	5	0	0	0	22.30	22.30	22.57
1.4	QPSK	3	0	0	0	0	22.43	22.28	22.50
1.4	QPSK	3	3	0	0	0	22.53	22.32	22.30
1.4	QPSK	6	0	0	0	0	22.52	22.21	22.56
1.4	16QAM	1	0	0	0	0	22.53	22.35	22.36
1.4	16QAM	1	5	0	0	0	22.57	22.35	22.34
1.4	16QAM	3	0	0	0	0	22.22	22.33	22.41
1.4	16QAM	3	3	0	0	0	22.36	22.43	22.56
1.4	16QAM	6	0	0	0	0	22.56	22.49	22.43



LTE Band 12

BW [MHz]	Modulation	RB Size	RB Offset	Index			Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				L	M	H	23060	23095	23130
Frequency (MHz)							704	707.5	711
10	QPSK	1	0	0	0	7	22.07	22.18	22.05
10	QPSK	1	5	0	0	7	22.29	22.52	22.12
10	QPSK	3	0	0	0	7	22.23	22.30	22.49
10	QPSK	3	3	0	0	7	22.46	22.31	22.41
10	QPSK	6	0	0	0	7	22.15	22.39	22.04
10	16QAM	1	0	0	0	7	22.26	22.46	22.14
10	16QAM	1	5	0	0	7	22.03	22.37	22.04
10	16QAM	3	0	0	0	7	22.32	22.09	22.35
10	16QAM	3	3	0	0	7	22.30	22.17	22.18
10	16QAM	6	0	0	0	7	22.49	22.36	22.24
Channel				L	M	H	23035	23095	23155
Frequency (MHz)							701.5	707.5	713.5
5	QPSK	1	0	0	0	3	22.28	22.43	22.16
5	QPSK	1	5	0	0	3	22.49	22.14	22.44
5	QPSK	3	0	0	0	3	22.36	22.37	22.36
5	QPSK	3	3	0	0	3	22.29	22.19	22.03
5	QPSK	6	0	0	0	3	22.44	22.05	22.36
5	16QAM	1	0	0	0	3	22.20	22.46	22.34
5	16QAM	1	5	0	0	3	22.08	22.32	22.36
5	16QAM	3	0	0	0	3	22.19	22.42	22.23
5	16QAM	3	3	0	0	3	22.35	22.29	22.15
5	16QAM	6	0	0	0	3	22.19	22.08	22.40
Channel				L	M	H	23025	23095	23165
Frequency (MHz)							700.5	707.5	714.5
3	QPSK	1	0	0	0	1	22.31	22.35	22.46
3	QPSK	1	5	0	0	1	22.26	22.49	22.06
3	QPSK	3	0	0	0	1	22.11	22.16	22.32
3	QPSK	3	3	0	0	1	22.35	22.34	22.49
3	QPSK	6	0	0	0	1	22.24	22.32	22.00
3	16QAM	1	0	0	0	1	22.30	22.50	22.19
3	16QAM	1	5	0	0	1	22.41	22.28	22.47
3	16QAM	3	0	0	0	1	22.04	22.41	22.02
3	16QAM	3	3	0	0	1	22.35	22.17	22.07
3	16QAM	6	0	0	0	1	22.06	22.02	22.29
Channel				L	M	H	23017	23095	23173
Frequency (MHz)							699.7	707.5	715.3
1.4	QPSK	1	0	0	0	0	22.41	22.31	22.04
1.4	QPSK	1	5	0	0	0	22.43	22.19	22.20
1.4	QPSK	3	0	0	0	0	22.08	22.24	22.41
1.4	QPSK	3	3	0	0	0	22.45	22.06	22.12
1.4	QPSK	6	0	0	0	0	22.47	22.12	22.42
1.4	16QAM	1	0	0	0	0	22.20	22.19	22.46
1.4	16QAM	1	5	0	0	0	22.11	22.14	22.11
1.4	16QAM	3	0	0	0	0	22.15	22.12	22.27
1.4	16QAM	3	3	0	0	0	22.48	22.17	22.30
1.4	16QAM	6	0	0	0	0	22.38	22.34	22.11

**LTE Band 13**

BW [MHz]	Modulation	RB Size	RB Offset	Index			Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				L	M	H		23230	
Frequency (MHz)								782	
10	QPSK	1	0	0	0	7		21.41	
10	QPSK	1	5	0	0	7		21.46	
10	QPSK	3	0	0	0	7		21.71	
10	QPSK	3	3	0	0	7		21.65	
10	QPSK	6	0	0	0	7		21.37	
10	16QAM	1	0	0	0	7		21.67	
10	16QAM	1	5	0	0	7		21.65	
10	16QAM	3	0	0	0	7		21.62	
10	16QAM	3	3	0	0	7		21.53	
10	16QAM	6	0	0	0	7		21.47	
Channel				L	M	H	23205	23230	23255
Frequency (MHz)							779.5	782	784.5
5	QPSK	1	0	0	0	3	21.64	21.41	21.40
5	QPSK	1	5	0	0	3	21.65	21.70	21.33
5	QPSK	3	0	0	0	3	21.65	21.44	21.55
5	QPSK	3	3	0	0	3	21.40	21.63	21.48
5	QPSK	6	0	0	0	3	21.47	21.62	21.30
5	16QAM	1	0	0	0	3	21.36	21.65	21.50
5	16QAM	1	5	0	0	3	21.45	21.37	21.38
5	16QAM	3	0	0	0	3	21.65	21.70	21.66
5	16QAM	3	3	0	0	3	21.43	21.30	21.52
5	16QAM	6	0	0	0	3	21.40	21.33	21.64



LTE Band 26

BW [MHz]	Modulation	RB Size	RB Offset	Index			Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				L	M	H	26765	26865	26965
Frequency (MHz)							821.5	831.5	841.5
15	QPSK	1	0	0	0	11	22.55	22.63	22.86
15	QPSK	1	5	0	0	11	22.68	22.61	22.67
15	QPSK	3	0	0	0	11	22.80	22.64	22.85
15	QPSK	3	3	0	0	11	22.75	22.57	22.92
15	QPSK	6	0	0	0	11	22.69	22.85	22.84
15	16QAM	1	0	0	0	11	22.72	22.57	22.89
15	16QAM	1	5	0	0	11	22.83	22.66	22.62
15	16QAM	3	0	0	0	11	22.83	22.77	22.60
15	16QAM	3	3	0	0	11	22.84	22.74	22.63
15	16QAM	6	0	0	0	11	22.52	22.85	22.62
Channel				L	M	H	26740	26865	26990
Frequency (MHz)							819	831.5	844
10	QPSK	1	0	0	0	7	22.89	22.84	22.87
10	QPSK	1	5	0	0	7	22.62	22.71	22.79
10	QPSK	3	0	0	0	7	22.64	22.63	22.73
10	QPSK	3	3	0	0	7	22.52	22.56	22.84
10	QPSK	6	0	0	0	7	22.59	22.77	22.52
10	16QAM	1	0	0	0	7	22.88	22.73	22.70
10	16QAM	1	5	0	0	7	22.51	22.66	22.74
10	16QAM	3	0	0	0	7	22.57	22.56	22.71
10	16QAM	3	3	0	0	7	22.84	22.61	22.83
10	16QAM	6	0	0	0	7	22.71	22.64	22.52
Channel				L	M	H	26715	26865	27015
Frequency (MHz)							816.5	831.5	846.5
5	QPSK	1	0	0	0	3	22.67	22.70	22.86
5	QPSK	1	5	0	0	3	22.61	22.79	22.51
5	QPSK	3	0	0	0	3	22.72	22.63	22.56
5	QPSK	3	3	0	0	3	22.79	22.51	22.53
5	QPSK	6	0	0	0	3	22.66	22.69	22.51
5	16QAM	1	0	0	0	3	22.70	22.81	22.76
5	16QAM	1	5	0	0	3	22.62	22.74	22.69
5	16QAM	3	0	0	0	3	22.53	22.63	22.51
5	16QAM	3	3	0	0	3	22.83	22.53	22.77
5	16QAM	6	0	0	0	3	22.74	22.53	22.52
Channel				L	M	H	26705	26865	27025
Frequency (MHz)							815.5	831.5	847.5
3	QPSK	1	0	0	0	1	22.55	22.71	22.59
3	QPSK	1	5	0	0	1	22.72	22.71	22.54
3	QPSK	3	0	0	0	1	22.56	22.78	22.70
3	QPSK	3	3	0	0	1	22.68	22.86	22.82
3	QPSK	6	0	0	0	1	22.71	22.77	22.72
3	16QAM	1	0	0	0	1	22.52	22.57	22.68
3	16QAM	1	5	0	0	1	22.89	22.52	22.59
3	16QAM	3	0	0	0	1	22.67	22.80	22.75



3	16QAM	3	3	0	0	1	22.70	22.89	22.80
3	16QAM	6	0	0	0	1	22.62	22.71	22.56
Channel				L	M	H	26697	26865	27033
Frequency (MHz)							814.7	831.5	848.3
1.4	QPSK	1	0	0	0	0	22.85	22.56	22.61
1.4	QPSK	1	5	0	0	0	22.53	22.78	22.81
1.4	QPSK	3	0	0	0	0	22.65	22.66	22.80
1.4	QPSK	3	3	0	0	0	22.66	22.72	22.75
1.4	QPSK	6	0	0	0	0	22.76	22.59	22.76
1.4	16QAM	1	0	0	0	0	22.68	22.63	22.61
1.4	16QAM	1	5	0	0	0	22.58	22.63	22.75
1.4	16QAM	3	0	0	0	0	22.84	22.60	22.61
1.4	16QAM	3	3	0	0	0	22.66	22.85	22.78
1.4	16QAM	6	0	0	0	0	22.90	22.77	22.85

**NB-IOT Category NB1:****LTE Band 2**

Sub-carrier Speacing (kHz)	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				18601	18900	19199
Frequency (MHz)				1850.1	1880	1909.9
3.75	BPSK	1	0	22.37	22.41	22.30
3.75	BPSK	1	47	22.21	22.25	22.79
3.75	QPSK	1	0	22.10	22.13	22.17
3.75	QPSK	1	47	22.23	22.27	22.17
15	BPSK	1	0	23.36	23.38	23.27
15	BPSK	1	11	22.43	22.56	23.15
15	QPSK	1	0	22.50	22.51	23.07
15	QPSK	1	11	22.44	22.51	23.09
15	QPSK	12	0	22.67	22.83	23.32

LTE Band 5

Sub-carrier Speacing (kHz)	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				20401	20525	20649
Frequency (MHz)				824.1	836.5	848.9
3.75	BPSK	1	0	22.60	22.57	22.44
3.75	BPSK	1	47	22.45	22.05	22.36
3.75	QPSK	1	0	22.40	22.34	22.31
3.75	QPSK	1	47	22.58	22.25	22.20
15	BPSK	1	0	23.04	23.03	23.03
15	BPSK	1	11	22.99	22.83	22.95
15	QPSK	1	0	22.90	22.75	22.99
15	QPSK	1	11	22.90	22.76	22.99
15	QPSK	12	0	23.03	23.02	23.03

**LTE Band 12**

Sub-carrier Spacing (kHz)	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				23011	23095	23179
Frequency (MHz)				699.1	707.5	715.9
3.75	BPSK	1	0	22.16	22.27	22.31
3.75	BPSK	1	47	22.36	22.09	22.22
3.75	QPSK	1	0	22.16	22.28	22.16
3.75	QPSK	1	47	22.25	22.16	22.17
15	BPSK	1	0	22.22	22.78	22.27
15	BPSK	1	11	22.75	22.60	22.27
15	QPSK	1	0	22.72	22.43	22.36
15	QPSK	1	11	22.67	22.57	22.26
15	QPSK	12	0	22.63	22.74	22.45

LTE Band 13

Sub-carrier Spacing (kHz)	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				23181	23230	23279
Frequency (MHz)				777.1	782	786.9
3.75	BPSK	1	0	21.36	21.39	21.41
3.75	BPSK	1	47	21.07	21.12	21.15
3.75	QPSK	1	0	21.14	21.23	21.15
3.75	QPSK	1	47	21.24	21.26	21.22
15	BPSK	1	0	21.42	21.47	21.45
15	BPSK	1	11	21.06	21.11	21.12
15	QPSK	1	0	21.02	21.00	21.10
15	QPSK	1	11	21.07	21.12	21.07
15	QPSK	12	0	21.43	21.45	21.36

LTE Band 26

Sub-carrier Spacing (kHz)	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				26709	26865	27021
Frequency (MHz)				815.9	831.5	847.1
3.75	BPSK	1	0	22.45	22.52	22.46
3.75	BPSK	1	47	22.41	22.12	22.03
3.75	QPSK	1	0	22.30	22.04	22.04
3.75	QPSK	1	47	21.96	21.63	21.50
15	BPSK	1	0	22.96	23.08	22.97
15	BPSK	1	11	22.64	22.01	22.14
15	QPSK	1	0	22.62	21.94	22.20
15	QPSK	1	11	22.65	21.99	22.26
15	QPSK	12	0	22.63	22.42	22.60

ERP/EIRP

LTE Category M1:

LTE Band 2 (GT - LC = -4.12 dB) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	18607	18900	19193	18615	18900	19185	18625	18900	19175
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1850.7	1880	1909.3	1851.5	1880	1908.5	1852.5	1880	1907.5
(MHz)									
Conducted Power (dBm)	22.06	22.09	22.07	22.08	21.84	21.90	22.08	22.01	22.03
Conducted Power (Watts)	0.1607	0.1618	0.1611	0.1614	0.1528	0.1549	0.1614	0.1589	0.1596
EIRP(dBm)	17.94	17.97	17.95	17.96	17.72	17.78	17.96	17.89	17.91
EIRP(Watts)	0.0622	0.0627	0.0624	0.0625	0.0592	0.0600	0.0625	0.0615	0.0618

LTE Band 2 (GT - LC = -4.12 dB) QPSK									
Bandwidth	10M			15M			20M		
Channel	18650	18900	19150	18675	18900	19125	18700	18900	19100
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1855	1880	1905	1857.5	1880	1902.5	1860	1880	1900
(MHz)									
Conducted Power (dBm)	22.03	21.96	22.10	21.98	22.09	21.94	22.35	22.40	22.33
Conducted Power (Watts)	0.1596	0.1570	0.1622	0.1578	0.1618	0.1563	0.1718	0.1738	0.1710
EIRP(dBm)	17.91	17.84	17.98	17.86	17.97	17.82	18.23	18.28	18.21
EIRP(Watts)	0.0618	0.0608	0.0628	0.0611	0.0627	0.0605	0.0665	0.0673	0.0662



LTE Band 2 (GT - LC = -4.12 dB) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	18607	18900	19193	18615	18900	19185	18625	18900	19175
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1850.7	1880	1909.3	1851.5	1880	1908.5	1852.5	1880	1907.5
(MHz)									
Conducted Power (dBm)	21.72	21.92	22.09	21.83	22.09	22.08	21.93	21.89	22.05
Conducted Power (Watts)	0.1486	0.1556	0.1618	0.1524	0.1618	0.1614	0.1560	0.1545	0.1603
EIRP(dBm)	17.60	17.80	17.97	17.71	17.97	17.96	17.81	17.77	17.93
EIRP(Watts)	0.0575	0.0603	0.0627	0.0590	0.0627	0.0625	0.0604	0.0598	0.0621

LTE Band 2 (GT - LC = -4.12 dB) 16QAM									
Bandwidth	10M			15M			20M		
Channel	18650	18900	19150	18675	18900	19125	18700	18900	19100
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1855	1880	1905	1857.5	1880	1902.5	1860	1880	1900
(MHz)									
Conducted Power (dBm)	21.81	21.94	22.10	22.07	21.93	21.82	21.93	21.86	22.05
Conducted Power (Watts)	0.1517	0.1563	0.1622	0.1611	0.1560	0.1521	0.1560	0.1535	0.1603
EIRP(dBm)	17.69	17.82	17.98	17.95	17.81	17.70	17.81	17.74	17.93
EIRP(Watts)	0.0587	0.0605	0.0628	0.0624	0.0604	0.0589	0.0604	0.0594	0.0621



LTE Band 4 (GT - LC = -4.11 dB) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	19957	20175	20393	19965	20175	20385	19975	20175	20375
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1710.7	1732.5	1754.3	1711.5	1732.5	1753.5	1712.5	1732.5	1752.5
(MHz)									
Conducted Power (dBm)	21.25	21.41	21.61	21.45	21.57	21.52	21.50	21.57	21.49
Conducted Power (Watts)	0.1334	0.1384	0.1449	0.1396	0.1435	0.1419	0.1413	0.1435	0.1409
EIRP(dBm)	17.14	17.30	17.50	17.34	17.46	17.41	17.39	17.46	17.38
EIRP(Watts)	0.0518	0.0537	0.0562	0.0542	0.0557	0.0551	0.0548	0.0557	0.0547

LTE Band 4 (GT - LC = -4.11 dB) QPSK									
Bandwidth	10M			15M			20M		
Channel	20000	20175	20350	20025	20175	20325	20050	20175	20300
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1715	1732.5	1750	1717.5	1732.5	1747.5	1720	1732.5	1745
(MHz)									
Conducted Power (dBm)	21.44	21.27	21.63	21.57	21.25	21.62	21.46	21.75	21.34
Conducted Power (Watts)	0.1393	0.1340	0.1455	0.1435	0.1334	0.1452	0.1400	0.1496	0.1361
EIRP(dBm)	17.33	17.16	17.52	17.46	17.14	17.51	17.35	17.64	17.23
EIRP(Watts)	0.0541	0.0520	0.0565	0.0557	0.0518	0.0564	0.0543	0.0581	0.0528



LTE Band 4 (GT - LC = -4.11 dB) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	19957	20175	20393	19965	20175	20385	19975	20175	20375
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1710.7	1732.5	1754.3	1711.5	1732.5	1753.5	1712.5	1732.5	1752.5
(MHz)									
Conducted Power (dBm)	21.33	21.25	21.60	21.58	21.34	21.46	21.47	21.52	21.61
Conducted Power (Watts)	0.1358	0.1334	0.1445	0.1439	0.1361	0.1400	0.1403	0.1419	0.1449
EIRP(dBm)	17.22	17.14	17.49	17.47	17.23	17.35	17.36	17.41	17.50
EIRP(Watts)	0.0527	0.0518	0.0561	0.0558	0.0528	0.0543	0.0545	0.0551	0.0562

LTE Band 4 (GT - LC = -4.11 dB) 16QAM									
Bandwidth	10M			15M			20M		
Channel	20000	20175	20350	20025	20175	20325	20050	20175	20300
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1715	1732.5	1750	1717.5	1732.5	1747.5	1720	1732.5	1745
(MHz)									
Conducted Power (dBm)	21.59	21.27	21.48	21.63	21.36	21.46	21.43	21.55	21.62
Conducted Power (Watts)	0.1442	0.1340	0.1406	0.1455	0.1368	0.1400	0.1390	0.1429	0.1452
EIRP(dBm)	17.48	17.16	17.37	17.52	17.25	17.35	17.32	17.44	17.51
EIRP(Watts)	0.0560	0.0520	0.0546	0.0565	0.0531	0.0543	0.0540	0.0555	0.0564

LTE Band 12 (GT - LC = -7.41 dB) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	23017	23095	23173	23025	23095	23165	23035	23095	23155
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	699.7	707.5	715.3	700.5	707.5	714.5	701.5	707.5	713.5
(MHz)									
Conducted Power (dBm)	22.47	22.12	22.42	22.26	22.49	22.06	22.49	22.14	22.44
Conducted Power (Watts)	0.1766	0.1629	0.1746	0.1683	0.1774	0.1607	0.1774	0.1637	0.1754
ERP(dBm)	12.91	12.56	12.86	12.70	12.93	12.50	12.93	12.58	12.88
ERP(Watts)	0.0195	0.0180	0.0193	0.0186	0.0196	0.0178	0.0196	0.0181	0.0194

LTE Band 12 (GT - LC = -7.41 dB) QPSK			
Bandwidth	10M		
Channel	23060	23095	23130
	(Low)	(Mid)	(High)
Frequency	704	707.5	711
(MHz)			
Conducted Power (dBm)	22.29	22.52	22.12
Conducted Power (Watts)	0.1694	0.1786	0.1629
ERP(dBm)	12.73	12.96	12.56
ERP(Watts)	0.0187	0.0198	0.0180



LTE Band 12 (GT - LC = -7.41 dB) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	23017	23095	23173	23025	23095	23165	23035	23095	23155
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	699.7	707.5	715.3	700.5	707.5	714.5	701.5	707.5	713.5
Conducted Power (dBm)	22.48	22.17	22.30	22.30	22.50	22.19	22.20	22.46	22.34
Conducted Power (Watts)	0.1770	0.1648	0.1698	0.1698	0.1778	0.1656	0.1660	0.1762	0.1714
ERP(dBm)	12.92	12.61	12.74	12.74	12.94	12.63	12.64	12.90	12.78
ERP(Watts)	0.0196	0.0182	0.0188	0.0188	0.0197	0.0183	0.0184	0.0195	0.0190

LTE Band 12 (GT - LC = -7.41 dB) 16QAM			
Bandwidth	10M		
Channel	23060	23095	23130
	(Low)	(Mid)	(High)
Frequency (MHz)	704	707.5	711
Conducted Power (dBm)	22.49	22.36	22.24
Conducted Power (Watts)	0.1774	0.1722	0.1675
ERP(dBm)	12.93	12.80	12.68
ERP(Watts)	0.0196	0.0191	0.0185



LTE Band 13 (GT - LC = -10.34 dB) QPSK						
Bandwidth	5M			10M		
Channel	23205	23230	23255	23230		
	(Low)	(Mid)	(High)	-	(Mid)	-
Frequency	779.5	782	784.5	-	782	-
(MHz)						
Conducted Power (dBm)	21.65	21.70	21.33		21.71	-
Conducted Power (Watts)	0.1462	0.1479	0.1358		0.1483	-
ERP(dBm)	9.16	9.21	8.84		9.22	-
ERP(Watts)	0.0082	0.0083	0.0077		0.0084	-

LTE Band 13 (GT - LC = -10.34 dB) 16QAM						
Bandwidth	5M			10M		
Channel	23205	23230	23255	23230		
	(Low)	(Mid)	(High)	-	(Mid)	-
Frequency	779.5	782	784.5	-	782	-
(MHz)						
Conducted Power (dBm)	21.65	21.70	21.66		21.67	-
Conducted Power (Watts)	0.1462	0.1479	0.1466		0.1469	-
ERP(dBm)	9.16	9.21	9.17		9.18	-
ERP(Watts)	0.0082	0.0083	0.0083		0.0083	-



LTE Band 26 (GT - LC = -5.51 dB) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	26797	26915	27033	26805	26915	27025	26815	26915	27015
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	824.7	836.5	848.3	825.5	836.5	847.5	826.5	836.5	846.5
(MHz)									
Conducted Power (dBm)	22.85	22.56	22.61	22.68	22.86	22.82	22.67	22.70	22.86
Conducted Power (Watts)	0.1928	0.1803	0.1824	0.1854	0.1932	0.1914	0.1849	0.1862	0.1932
ERP(dBm)	15.19	14.90	14.95	15.02	15.20	15.16	15.01	15.04	15.20
ERP(Watts)	0.0330	0.0309	0.0313	0.0318	0.0331	0.0328	0.0317	0.0319	0.0331

LTE Band 26 (GT - LC = -5.51 dB) QPSK							
Bandwidth	10M			15M			15M
Channel	26840	26915	26990	26865	26915	26965	26765
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)
Frequency	829	836.5	844	831.5	836.5	841.5	821.5
(MHz)							
Conducted Power (dBm)	22.89	22.84	22.87	22.75	22.57	22.92	22.80
Conducted Power (Watts)	0.1945	0.1923	0.1936	0.1884	0.1807	0.1959	0.1905
ERP(dBm)	15.23	15.18	15.21	15.09	14.91	15.26	15.14
ERP(Watts)	0.0333	0.0330	0.0332	0.0323	0.0310	0.0336	0.0327



LTE Band 26 (GT - LC = -5.51 dB) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	26797	26915	27033	26805	26915	27025	26815	26915	27015
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	824.7	836.5	848.3	825.5	836.5	847.5	826.5	836.5	846.5
(MHz)									
Conducted Power (dBm)	22.90	22.77	22.85	22.89	22.52	22.59	22.83	22.53	22.77
Conducted Power (Watts)	0.1950	0.1892	0.1928	0.1945	0.1786	0.1816	0.1919	0.1791	0.1892
ERP(dBm)	15.24	15.11	15.19	15.23	14.86	14.93	15.17	14.87	15.11
ERP(Watts)	0.0334	0.0324	0.0330	0.0333	0.0306	0.0311	0.0329	0.0307	0.0324

LTE Band 26 (GT - LC = -5.51 dB) 16QAM							
Bandwidth	10M			15M			15M
Channel	26840	26915	26990	26865	26915	26965	26765
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)
Frequency	829	836.5	844	831.5	836.5	841.5	821.5
(MHz)							
Conducted Power (dBm)	22.88	22.73	22.70	22.72	22.57	22.89	22.84
Conducted Power (Watts)	0.1941	0.1875	0.1862	0.1871	0.1807	0.1945	0.1923
ERP(dBm)	15.22	15.07	15.04	15.06	14.91	15.23	15.18
ERP(Watts)	0.0333	0.0321	0.0319	0.0321	0.0310	0.0333	0.0330



NB-IOT Category NB1:

LTE Band 2 (GT - LC = -4.12 dB) BPSK						
Sub-carrier Spacing	3.75K			15K		
Channel	18601	18900	19199	18601	18900	19199
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1850.1	1880	1909.9	1850.1	1880	1909.9
Conducted Power (dBm)	22.21	22.25	22.79	23.36	23.38	23.27
Conducted Power (Watts)	0.1663	0.1679	0.1901	0.2168	0.2178	0.2123
EIRP(dBm)	18.09	18.13	18.67	19.24	19.26	19.15
EIRP(Watts)	0.0644	0.0650	0.0736	0.0839	0.0843	0.0822

LTE Band 2 (GT - LC = -4.12 dB) QPSK						
Sub-carrier Spacing	3.75K			15K		
Channel	18601	18900	19199	18601	18900	19199
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1850.1	1880	1909.9	1850.1	1880	1909.9
Conducted Power (dBm)	22.23	22.27	22.17	22.67	22.83	23.32
Conducted Power (Watts)	0.1671	0.1687	0.1648	0.1849	0.1919	0.2148
EIRP(dBm)	18.11	18.15	18.05	18.55	18.71	19.20
EIRP(Watts)	0.0647	0.0653	0.0638	0.0716	0.0743	0.0832



LTE Band 12 (GT - LC = -7.41 dB) BPSK						
Sub-carrier Spacing	3.75K			15K		
Channel	23011	23095	23179	23011	23095	23179
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	699.1	707.5	715.9	699.1	707.5	715.9
(MHz)						
Conducted Power (dBm)	22.36	22.09	22.22	22.22	22.78	22.27
Conducted Power (Watts)	0.1722	0.1618	0.1667	0.1667	0.1897	0.1687
ERP(dBm)	12.80	12.53	12.66	12.66	13.22	12.71
ERP(Watts)	0.0191	0.0179	0.0185	0.0185	0.0210	0.0187

LTE Band 12 (GT - LC = -7.41 dB) QPSK						
Sub-carrier Spacing	3.75K			15K		
Channel	23011	23095	23179	23011	23095	23179
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	699.1	707.5	715.9	699.1	707.5	715.9
(MHz)						
Conducted Power (dBm)	22.16	22.28	22.16	22.63	22.74	22.45
Conducted Power (Watts)	0.1644	0.1690	0.1644	0.1832	0.1879	0.1758
ERP(dBm)	12.60	12.72	12.60	13.07	13.18	12.89
ERP(Watts)	0.0182	0.0187	0.0182	0.0203	0.0208	0.0195



LTE Band 13 (GT - LC = -10.34 dB) BPSK						
Sub-carrier Spacing	3.75K			15K		
Channel	23181	23230	23279	23181	23230	23279
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	777.1	782	786.9	777.1	782	786.9
(MHz)						
Conducted Power (dBm)	21.36	21.39	21.41	21.42	21.47	21.45
Conducted Power (Watts)	0.1368	0.1377	0.1384	0.1387	0.1403	0.1396
ERP(dBm)	8.87	8.90	8.92	8.93	8.98	8.96
ERP(Watts)	0.0077	0.0078	0.0078	0.0078	0.0079	0.0079

LTE Band 13 (GT - LC = -10.34 dB) QPSK						
Sub-carrier Spacing	3.75K			15K		
Channel	23181	23230	23279	23181	23230	23279
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	777.1	782	786.9	777.1	782	786.9
(MHz)						
Conducted Power (dBm)	21.24	21.26	21.22	21.43	21.45	21.36
Conducted Power (Watts)	0.1330	0.1337	0.1324	0.1390	0.1396	0.1368
ERP(dBm)	8.75	8.77	8.73	8.94	8.96	8.87
ERP(Watts)	0.0075	0.0075	0.0075	0.0078	0.0079	0.0077



LTE Band 26 (GT - LC = -5.51 dB) BPSK						
Sub-carrier Spacing	3.75K			15K		
Channel	26791	26915	27039	26791	26915	27039
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	824.1	836.5	848.9	824.1	836.5	848.9
(MHz)						
Conducted Power (dBm)	22.45	22.52	22.46	22.96	23.08	22.97
Conducted Power (Watts)	0.1758	0.1786	0.1762	0.1977	0.2032	0.1982
ERP(dBm)	14.79	14.86	14.80	15.30	15.42	15.31
ERP(Watts)	0.0301	0.0306	0.0302	0.0339	0.0348	0.0340

LTE Band 26 (GT - LC = -5.51 dB) QPSK						
Sub-carrier Spacing	3.75K			15K		
Channel	26791	26915	27039	26791	26915	27039
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	824.1	836.5	848.9	824.1	836.5	848.9
(MHz)						
Conducted Power (dBm)	22.30	22.04	22.04	22.65	21.99	22.26
Conducted Power (Watts)	0.1698	0.1600	0.1600	0.1841	0.1581	0.1683
ERP(dBm)	14.64	14.38	14.38	14.99	14.33	14.60
ERP(Watts)	0.0291	0.0274	0.0274	0.0316	0.0271	0.0288



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

Test Engineer :	Simle Wang	Temperature :	22~23°C
		Relative Humidity :	40~42%

LTE Category M1:

LTE Band 2 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3702	-44.99	-13	-31.99	-67.99	-51.75	5.82	12.58	H
	5553	-57.64	-13	-44.64	-82.05	-63.36	7.28	13.00	H
	7404	-55.29	-13	-42.29	-82.04	-58.45	8.32	11.48	H
	3702	-51.76	-13	-38.76	-76.45	-58.52	5.82	12.58	V
	5553	-56.82	-13	-43.82	-81.66	-62.54	7.28	13.00	V
	7404	-55.03	-13	-42.03	-81.75	-58.19	8.32	11.48	V
Middle	3744	-44.76	-13	-31.76	-67.65	-51.51	5.85	12.60	H
	5616	-57.50	-13	-44.50	-81.70	-63.30	7.30	13.10	H
	7488	-55.77	-13	-42.77	-82.17	-58.92	8.35	11.50	H
	3744	-28.65	-13	-15.65	-53.55	-35.40	5.85	12.60	V
	5616	-57.23	-13	-44.23	-81.93	-63.03	7.30	13.10	V
	7488	-55.33	-13	-42.33	-81.72	-58.48	8.35	11.50	V
Highest	3780	-41.29	-13	-28.29	-64.52	-48.03	5.88	12.62	H
	5670	-57.53	-13	-44.53	-81.85	-63.34	7.32	13.13	H
	7560	-55.69	-13	-42.69	-81.83	-58.85	8.38	11.54	H
	3780	-38.27	-13	-25.27	-62.99	-45.01	5.88	12.62	V
	5670	-57.39	-13	-44.39	-82	-63.20	7.32	13.13	V
	7560	-56.23	-13	-43.23	-82.36	-59.39	8.38	11.54	V

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



LTE Band 4 / 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	-35.15	-13	-22.15	-56.51	-42.03	5.60	12.48	H
	5139	-57.21	-13	-44.21	-80.90	-62.89	7.10	12.78	H
	6852	-56.10	-13	-43.10	-81.71	-59.49	8.38	11.77	H
	3426	-36.83	-13	-23.83	-59.26	-43.71	5.60	12.48	V
	5139	-57.00	-13	-44.00	-81.43	-62.68	7.10	12.78	V
	6852	-54.66	-13	-41.66	-82.1	-58.05	8.38	11.77	V
Middle	3450	-33.81	-13	-20.81	-54.97	-40.66	5.65	12.50	H
	5184	-57.75	-13	-44.75	-81.79	-63.42	7.13	12.80	H
	6912	-56.29	-13	-43.29	-81.95	-59.69	8.40	11.80	H
	3450	-54.09	-13	-41.09	-76.19	-60.94	5.65	12.50	V
	5184	-57.08	-13	-44.08	-81.51	-62.75	7.13	12.80	V
	6912	-55.02	-13	-42.02	-81.78	-58.42	8.40	11.80	V
Highest	3474	-34.46	-13	-21.46	-56.20	-41.30	5.68	12.52	H
	5208	-57.46	-13	-44.46	-81.68	-63.13	7.15	12.82	H
	6948	-56.44	-13	-43.44	-82.15	-59.87	8.42	11.85	H
	3474	-37.19	-13	-24.19	-59.6	-44.03	5.68	12.52	V
	5208	-57.23	-13	-44.23	-81.62	-62.90	7.15	12.82	V
	6948	-55.54	-13	-42.54	-81.98	-58.97	8.42	11.85	V

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

LTE Band 12 / 10MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1400	-49.90	-13	-36.90	-60.69	-53.13	3.98	9.36	H
	2100	-46.59	-13	-33.59	-64.06	-50.14	4.85	10.55	H
	2800	-55.13	-13	-42.13	-74.14	-60.06	5.50	12.58	H
	1400	-51.00	-13	-38.00	-62.85	-54.23	3.98	9.36	V
	2100	-37.70	-13	-24.70	-54.96	-41.25	4.85	10.55	V
	2800	-52.74	-13	-39.74	-72.51	-57.67	5.50	12.58	V
Middle	1408	-51.86	-13	-38.86	-62.65	-55.11	4.00	9.40	H
	2112	-46.78	-13	-33.78	-64.25	-50.35	4.88	10.60	H
	2816	-56.52	-13	-43.52	-75.61	-61.45	5.52	12.60	H
	1408	-53.67	-13	-40.67	-65.52	-56.92	4.00	9.40	V
	2112	-37.52	-13	-24.52	-54.78	-41.09	4.88	10.60	V
	2816	-52.07	-13	-39.07	-71.97	-57.00	5.52	12.60	V
Highest	1432	-58.49	-13	-45.49	-69.41	-61.66	4.10	9.42	H
	2144	-43.04	-13	-30.04	-60.69	-46.62	4.90	10.63	H
	2856	-56.05	-13	-43.05	-75.28	-60.97	5.55	12.62	H
	1432	-52.60	-13	-39.60	-64.52	-55.77	4.10	9.42	V
	2144	-37.75	-13	-24.75	-55.15	-41.33	4.90	10.63	V
	2856	-49.59	-13	-36.59	-69.73	-54.51	5.55	12.62	V

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



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	1552	-61.56	-13	-48.56	-72.81	-64.79	3.98	9.36	H
	2328	-54.27	-13	-41.27	-72.25	-57.82	4.85	10.55	H
	3104	-59.11	-13	-46.11	-79.17	-64.04	5.50	12.58	H
	1552	-60.73	-13	-47.73	-72.65	-63.96	3.98	9.36	V
	2328	-53.01	-13	-40.01	-71.27	-56.56	4.85	10.55	V
	3104	-57.04	-13	-44.04	-78.83	-61.97	5.50	12.58	V
Middle	1560	-56.09	-42.15	-13.94	-67.38	-59.34	4.00	9.40	H
	2336	-48.03	-13	-35.03	-66.01	-51.60	4.88	10.60	H
	3120	-50.59	-13	-37.59	-70.68	-55.52	5.52	12.60	H
	1560	-51.04	-42.15	-8.89	-62.95	-54.29	4.00	9.40	V
	2344	-49.46	-13	-36.46	-67.81	-53.03	4.88	10.60	V
	3120	-57.33	-13	-44.33	-79.22	-62.26	5.52	12.60	V
Highest	1568	-58.68	-42.15	-16.53	-69.97	-61.85	4.10	9.42	H
	2344	-49.99	-13	-36.99	-67.97	-53.57	4.90	10.63	H
	3128	-52.93	-13	-39.93	-73.02	-57.85	5.55	12.62	H
	1568	-56.17	-42.15	-14.02	-68.08	-59.34	4.10	9.42	V
	2344	-43.03	-13	-30.03	-61.38	-46.61	4.90	10.63	V
	3128	-47.81	-13	-34.81	-69.70	-52.73	5.55	12.62	V

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

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	1556	-56.00	-13	-43.00	-67.29	-59.25	4.00	9.40	H
	2334	-48.83	-13	-35.83	-66.81	-52.40	4.88	10.60	H
	3112	-52.46	-13	-39.46	-72.52	-57.39	5.52	12.60	H
	1556	-56.78	-13	-43.78	-68.69	-60.03	4.00	9.40	V
	2334	-41.35	-13	-28.35	-59.61	-44.92	4.88	10.60	V
	3112	-44.86	-13	-31.86	-66.65	-49.79	5.52	12.60	V

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



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	1672	-57.35	-13	-44.35	-69.06	-60.58	3.98	9.36	H
	2508	-60.07	-13	-47.07	-78.97	-63.62	4.85	10.55	H
	3344	-58.80	-13	-45.80	-79.87	-63.73	5.50	12.58	H
	1672	-62.19	-13	-49.19	-74.61	-65.42	3.98	9.36	V
	2508	-59.88	-13	-46.88	-78.99	-63.43	4.85	10.55	V
	3344	-58.76	-13	-45.76	-80.13	-63.69	5.50	12.58	V
Middle	1656	-56.01	-13	-43.01	-67.64	-59.26	4.00	9.40	H
	2488	-58.91	-13	-45.91	-77.68	-62.48	4.88	10.60	H
	3312	-58.90	-13	-45.90	-79.78	-63.83	5.52	12.60	H
	1656	-63.08	-13	-50.08	-75.38	-66.33	4.00	9.40	V
	2488	-58.80	-13	-45.80	-77.83	-62.37	4.88	10.60	V
	3312	-58.22	-13	-45.22	-79.80	-63.15	5.52	12.60	V
Highest	1696	-54.30	-13	-41.30	-66.30	-57.47	4.10	9.42	H
	2544	-60.14	-13	-47.14	-79.20	-63.72	4.90	10.63	H
	3392	-60.52	-13	-47.52	-80.31	-65.44	5.55	12.62	H
	1696	-61.42	-13	-48.42	-74.09	-64.59	4.10	9.42	V
	2544	-59.21	-13	-46.21	-78.49	-62.79	4.90	10.63	V
	3392	-59.41	-13	-46.41	-80.53	-64.33	5.55	12.62	V

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



NB-IOT Category NB1:

Band 2 / 15kHz / 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	-34.52	-13	-21.52	-57.52	-41.28	5.82	12.58	H
	5553	-57.46	-13	-44.46	-81.87	-63.18	7.28	13.00	H
	7404	-54.94	-13	-41.94	-81.69	-58.10	8.32	11.48	H
	3702	-41.28	-13	-28.28	-65.97	-48.04	5.82	12.58	V
	5553	-57.31	-13	-44.31	-82.15	-63.03	7.28	13.00	V
	7404	-55.36	-13	-42.36	-82.08	-58.52	8.32	11.48	V
Middle	3762	-34.95	-13	-21.95	-57.29	-41.70	5.85	12.60	H
	5643	-57.83	-13	-44.83	-81.95	-63.63	7.30	13.10	H
	7524	-55.62	-13	-42.62	-81.90	-58.77	8.35	11.50	H
	3762	-38.18	-13	-25.18	-63.68	-44.93	5.85	12.60	V
	5643	-57.45	-13	-44.45	-81.72	-63.25	7.30	13.10	V
	7524	-55.98	-13	-42.98	-82.24	-59.13	8.35	11.50	V
Highest	3822	-31.70	-13	-18.70	-54.48	-38.44	5.88	12.62	H
	5733	-57.27	-13	-44.27	-81.89	-63.08	7.32	13.13	H
	7644	-56.43	-13	-43.43	-82.30	-59.59	8.38	11.54	H
	3822	-37.05	-13	-24.05	-61.43	-43.79	5.88	12.62	V
	5733	-56.69	-13	-43.69	-81.79	-62.50	7.32	13.13	V
	7644	-55.15	-13	-42.15	-82.05	-58.31	8.38	11.54	V

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

Band 12 / 15kHz / 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	1396.94	-64.92	-13	-51.92	-75.61	-68.15	3.98	9.36	H
	2095.41	-61.28	-13	-48.28	-78.66	-64.83	4.85	10.55	H
	2793.88	-59.61	-13	-46.61	-78.62	-64.54	5.50	12.58	H
	1396.94	-64.45	-13	-51.45	-76.17	-67.68	3.98	9.36	V
	2095.41	-61.15	-13	-48.15	-78.34	-64.70	4.85	10.55	V
	2793.88	-58.91	-13	-45.91	-78.68	-63.84	5.50	12.58	V
Middle	1413.74	-65.47	-13	-52.47	-76.26	-68.72	4.00	9.40	H
	2120.61	-60.99	-13	-47.99	-78.55	-64.56	4.88	10.60	H
	2827.48	-59.90	-13	-46.90	-79.01	-64.83	5.52	12.60	H
	1413.74	-64.35	-13	-51.35	-76.20	-67.60	4.00	9.40	V
	2120.61	-61.02	-13	-48.02	-78.35	-64.59	4.88	10.60	V
	2827.48	-59.06	-13	-46.06	-78.98	-63.99	5.52	12.60	V
Highest	1430.54	-65.46	-13	-52.46	-76.38	-68.63	4.10	9.42	H
	2145.81	-60.46	-13	-47.46	-78.11	-64.04	4.90	10.63	H
	2861.08	-59.62	-13	-46.62	-78.85	-64.54	5.55	12.62	H
	1430.54	-64.47	-13	-51.47	-76.39	-67.64	4.10	9.42	V
	2145.81	-61.97	-13	-48.97	-79.37	-65.55	4.90	10.63	V
	2861.08	-59.07	-13	-46.07	-79.21	-63.99	5.55	12.62	V

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



Band 13 / 15kHz / 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	1554.2	-65.68	-13	-52.68	-76.97	-68.91	3.98	9.36	H
	2331.2	-61.19	-13	-48.19	-79.17	-64.74	4.85	10.55	H
	3108.4	-58.94	-13	-45.94	-79.00	-63.87	5.50	12.58	H
	1554.2	-65.14	-13	-52.14	-77.05	-68.37	3.98	9.36	V
	2331.2	-60.70	-13	-47.70	-78.96	-64.25	4.85	10.55	V
	3108.4	-57.62	-13	-44.62	-79.41	-62.55	5.50	12.58	V
Middle	1564	-64.90	-42.15	-22.75	-76.19	-68.15	4.00	9.40	H
	2346	-60.81	-13	-47.81	-78.79	-64.38	4.88	10.60	H
	3128	-59.17	-13	-46.17	-79.26	-64.10	5.52	12.60	H
	1564	-64.52	-42.15	-22.37	-76.43	-67.77	4.00	9.40	V
	2346	-60.58	-13	-47.58	-78.93	-64.15	4.88	10.60	V
	3128	-57.42	-13	-44.42	-79.31	-62.35	5.52	12.60	V
Highest	1573.8	-65.32	-42.15	-23.17	-76.62	-68.49	4.10	9.42	H
	2360.7	-61.46	-13	-48.46	-79.43	-65.04	4.90	10.63	H
	3147.6	-59.05	-13	-46.05	-79.18	-63.97	5.55	12.62	H
	1573.8	-65.15	-42.15	-23.00	-77.02	-68.32	4.10	9.42	V
	2360.7	-60.77	-13	-47.77	-79.20	-64.35	4.90	10.63	V
	3147.6	-57.42	-13	-44.42	-79.41	-62.34	5.55	12.62	V

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

Band 26 / 15kHz / 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	1664	-64.00	-13	-51.00	-75.65	-67.23	3.98	9.36	H
	2494.5	-59.23	-13	-46.23	-78.00	-62.78	4.85	10.55	H
	3326	-58.97	-13	-45.97	-79.94	-63.90	5.50	12.58	H
	1664	-63.86	-13	-50.86	-76.18	-67.09	3.98	9.36	V
	2494.5	-59.62	-13	-46.62	-78.65	-63.17	4.85	10.55	V
	3326	-58.45	-13	-45.45	-79.92	-63.38	5.50	12.58	V
Middle	1672	-65.16	-13	-52.16	-76.87	-68.41	4.00	9.40	H
	2509.5	-60.07	-13	-47.07	-78.97	-63.64	4.88	10.60	H
	3346	-58.65	-13	-45.65	-79.72	-63.58	5.52	12.60	H
	1672	-64.41	-13	-51.41	-76.83	-67.66	4.00	9.40	V
	2509.5	-60.02	-13	-47.02	-79.13	-63.59	4.88	10.60	V
	3346	-59.11	-13	-46.11	-80.48	-64.04	5.52	12.60	V
Highest	1694.2	-65.56	-13	-52.56	-77.56	-68.73	4.10	9.42	H
	2541.3	-60.03	-13	-47.03	-79.09	-63.61	4.90	10.63	H
	3388.4	-60.18	-13	-47.18	-80.39	-65.10	5.55	12.62	H
	1694.2	-64.55	-13	-51.55	-77.22	-67.72	4.10	9.42	V
	2541.3	-59.97	-13	-46.97	-79.25	-63.55	4.90	10.63	V
	3388.4	-59.14	-13	-46.14	-80.34	-64.06	5.55	12.62	V

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