

FCC TEST REPORT

(PART 27)

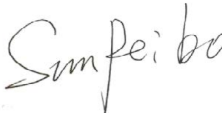
Applicant:	Waltero AB
Address:	Nytänkargatan 4

Manufacturer or Supplier:	Waltero AB
Address:	Nytänkargatan 4
Product:	W-Sensor
Brand Name:	Waltero
Model Name:	W-Sensor LTE
FCC ID:	2BNXWWS-001
Date of tests:	Dec. 27, 2024 ~ Jan. 23, 2025

The tests have been carried out according to the requirements of the following standard:

☒ FCC Part 27 ☒ ANSI/TIA/EIA-603-D
☒ FCC Part 2 ☒ ANSI/TIA/EIA-603-E ☒ ANSI C63.26-2015

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Hanwen Xu Engineer / Mobile Department	Approved by Peibo Sun Manager / Mobile Department
 Date: Jan. 23, 2025	

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

TABLE OF CONTENTS

RELEASE CONTROL RECORD	3
1 SUMMARY OF TEST RESULTS	4
1.1 MEASUREMENT UNCERTAINTY	6
1.2 TEST SITE AND INSTRUMENTS	7
2 GENERAL INFORMATION	9
2.1 GENERAL DESCRIPTION OF EUT	9
2.2 CONFIGURATION OF SYSTEM UNDER TEST	16
2.3 DESCRIPTION OF SUPPORT UNITS	17
2.4 TEST ITEM AND TEST CONFIGURATION	17
2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	21
3 TEST TYPES AND RESULTS	22
3.1 OUTPUT POWER MEASUREMENT	22
3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT	22
3.1.2 TEST PROCEDURES	22
3.1.3 TEST SETUP	23
3.1.4 TEST RESULTS	24
3.2 FREQUENCY STABILITY MEASUREMENT	50
3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT	50
3.2.2 TEST PROCEDURE	50
3.2.3 TEST SETUP	50
3.2.4 TEST RESULTS	51
3.3 OCCUPIED BANDWIDTH MEASUREMENT	52
3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT	52
3.3.2 TEST SETUP	52
3.3.3 TEST PROCEDURES	52
3.3.4 TEST RESULTS	53
3.4 BAND EDGE MEASUREMENT	54
3.4.1 LIMITS OF BAND EDGE MEASUREMENT	54
3.4.2 TEST SETUP	55
3.4.3 TEST PROCEDURES	56
3.4.4 TEST RESULTS	57
3.5 CONDUCTED SPURIOUS EMISSIONS	58
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT	58
3.5.2 TEST PROCEDURE	58
3.5.3 TEST SETUP	58
3.5.4 TEST RESULTS	59
3.6 RADIATED EMISSION MEASUREMENT	60
3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT	60
3.6.2 TEST PROCEDURES	60
3.6.3 DEVIATION FROM TEST STANDARD	60
3.6.4 TEST SETUP	61
3.6.5 TEST RESULTS	63
3.7 PEAK TO AVERAGE RATIO	123
3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT	123
3.7.2 TEST SETUP	123
3.7.3 TEST PROCEDURES	123
3.7.4 TEST RESULTS	124
4 INFORMATION ON THE TESTING LABORATORIES	125
5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB ..	126



Test Report No.: PSZ-QSU2412270112RF03

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSZ-QSU2412270112RF03	Original release	Jan. 23, 2025

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 27 & PART 2			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	TEST LAB
§2.1046	Conducted Output Power	Compliance	A
§27.50(b)(10) §27.50(c)(10)	Effective Radiated Power (Band 12) (Band 13) (Band 17)	Compliance	A
§27.50(d)(4)	Equivalent Isotropically Radiated Power (Band 4) (Band 66)	Compliance	A
§2.1055 §27.54	Frequency Stability	See Note	--
§2.1049	Occupied Bandwidth	See Note	--
§2.1051 §27.53(h) §27.53(c)(2)(4) §27.53(g)	Conducted Band Edge Measurements (Band 4) (Band 12) (Band 13) (Band 17) (Band 66)	See Note	--
§2.1051 §27.53(h) §27.53(c)(2)(4) §27.53(g)	Conducted Spurious Emissions (Band 4) (Band 12) (Band 13) (Band 17) (Band 66)	See Note	--
§2.1053 §27.53(h) §27.53(c)(2)(4) §27.53(g) §27.53(f)	Radiated Spurious Emissions (Band 4) (Band 12) (Band 13) (Band 17) (Band 66)	Compliance	A/B
§27.50(k)(4)	Peak to average ratio	See Note	--

NOTE: Refer to Module report R2207A0656-R7V1/ R2207A0656-R8V1, FCC ID: XMR2021BG770AGL.



Test Report No.: PSZ-QSU2412270112RF03

Lab A:

BV 7Layers Communications Technology (Shenzhen) Co. Ltd

Lab Address:

Room B37, Warehouse A5, No.3 Chiwan 4th Road, Zhaoshang Street, Nanshan District
Shenzhen, Guangdong, People's Republic of China

Accredited Test Lab Cert 3939.01

The FCC Site Registration No. is 525120; The Designation No. is CN1171.

Lab B:

BV 7Layers Communications Technology (Shenzhen) Co. Ltd

Lab Address:

Room B37, Warehouse A5, No.3 Chiwan 4th Road, Zhaoshang Street, Nanshan District
Shenzhen, Guangdong, People's Republic of China

Accredited Test Lab Cert 3939.01

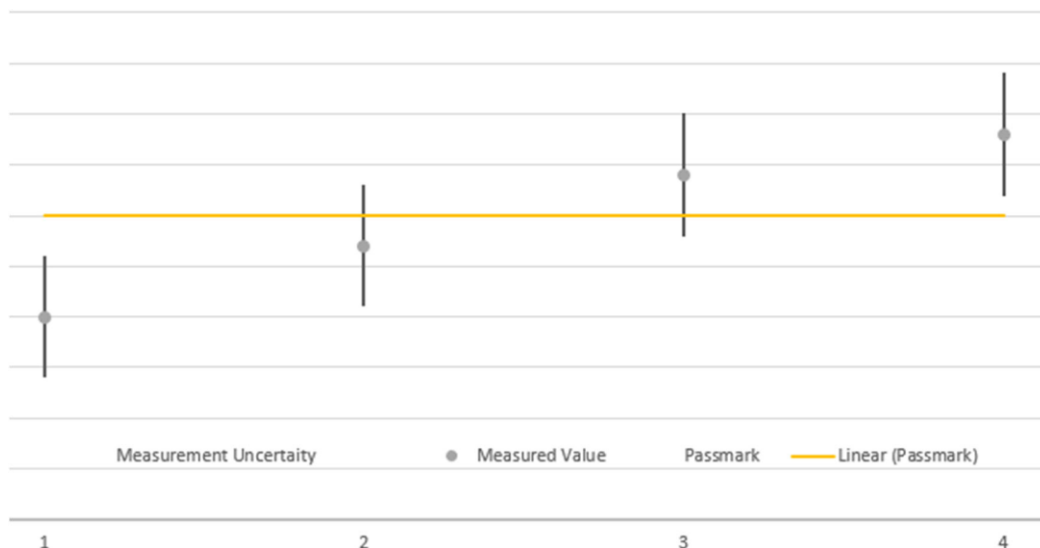
The FCC Site Registration No. is 525120; The Designation No. is CN1171.

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
Frequency Stability	$\pm 76.97\text{Hz}$
Radiated emissions (9KHz~30MHz)	$\pm 2.68\text{dB}$
Radiated emissions & Radiated Power (30MHz~1GHz)	$\pm 4.98\text{dB}$
Radiated emissions & Radiated Power (1GHz ~6GHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GHz ~18GHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GHz ~40GHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Conducted Output power	$\pm 2.06\text{dB}$
Band Edge Measurements	$\pm 4.70\text{dB}$

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	above pass mark	within pass mark	Failed
4	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.

1.2 TEST SITE AND INSTRUMENTS

Lab A:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,23	Aug.29,25
Pre-Amplifier	R&S	SCU08F1	101028	Jan.22,24	Jan.21,26
Vector Signal Generator	R&S	SMBV100B	102176	Mar.29,24	Mar.28,26
Signal Generator	R&S	SMB100A	182185	Mar.29,24	Mar.28,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESR26	101734	Mar.28,24	Mar.27,26
EMI TEST Receiver	R&S	ESW44	101973	Mar.28,24	Mar.27,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Dec.26,23	Dec.25,25
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,23	Aug.21,25
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Jul.15,24	Jul.14,26
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,23	Aug.21,25
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,23	Feb.22,25
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.19,24	Jun.18,26
Test Software	EMC32	EMC32	N/A	N/A	N/A
6DB attenuator	Tonscend Technology Co., Ltd	N/A	23062787	N/A	N/A
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	N/A	N/A
DC Source	HYELEC	HY3010B	551016	Aug.31,23	Aug.30,25
Hygrothermograph	DELI	20210528	SZ014	Sep.06,23	Sep.05,25
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.27,24	Apr.26,25
CABLE	R&S	W12.14	N/A	Apr.27,24	Apr.26,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.27,24	Apr.26,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.27,24	Apr.26,25
Temperature Chamber	votsch	VT4002	58566078100050	May.30,24	May.29,26



Test Report No.: PSZ-QSU2412270112RF03

- NOTE:**
1. The calibration interval of the above test instruments is 12 / 24/ 36 months and the calibrations are traceable to CEPREI/CHINA, GREGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
 3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 434559; The Designation No. is CN1325.

Lab B:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 27,24	Mar. 26,25
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.09,24	May.08,25
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.01,24	Aut.31,25
Bilog Antenna	ETS-LINDGRE N	3143B	00161965	Feb. 17,24	Feb. 16,25
Horn Antenna	ETS-LINDGRE N	3117	00168692	Feb. 17,24	Feb. 16,25
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Sep.02, 24	Sep.01, 25
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 13,24	Feb. 12,25
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 05,24	May. 04,25
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.09,24	May.08,25
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 16,24	Feb.15,25
3m Semi-anechoic Chamber	ETS-LINDGRE N	9m*6m*6m	Euroshieldpn-CT0001143-1216	Nov. 14,23	Nov. 13,26
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120	3.1.36	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	50HF-010-SMA	May. 05,24	May. 04,25
Power Meter	Anritsu	ML2495A	1506002	Feb. 13,24	Feb. 12,25
Power Sensor	Anritsu	MA2411B	1339352	Feb. 13,24	Feb. 12,25
Temperature Chamber	ESPEC	SH-242	93000855	May. 05,24	May. 04,25
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 13,24	Feb. 12,25
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.09,24	May.08,25
DC Source	Kikusui/JP	PMX18-5A	N/A	Aug. 10,24	Aug. 09,25
Power Divider	COM-MW	ZPD8-2M0-40G-1942	04223131	Oct.08.24	Oct.07.25

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GREGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
 3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 525120; The Designation No. is CN1171.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT*	W-Sensor		
BRAND NAME*	Waltero		
MODEL NAME*	W-Sensor LTE		
NOMINAL VOLTAGE*	5.0Vdc (Adapter) 3.0Vdc (battery)		
MODULATION TECHNOLOGY*	LTE CAT-M1/NB-IOT		QPSK, 16QAM, BPSK
FREQUENCY RANGE	LTE CAT-M1	LTE Band 4 Channel Bandwidth: 1.4MHz	1710.7MHz ~ 1754.3MHz
		LTE Band 4 Channel Bandwidth: 3MHz	1711.5MHz ~ 1753.5MHz
		LTE Band 4 Channel Bandwidth: 5MHz	1712.5MHz ~ 1752.5MHz
		LTE Band 4 Channel Bandwidth: 10MHz	1715MHz ~ 1750MHz
		LTE Band 4 Channel Bandwidth: 15MHz	1717.5MHz ~ 1747.5 MHz
		LTE Band 4 Channel Bandwidth: 20MHz	1720MHz ~ 1745MHz
		LTE Band 12 Channel Bandwidth: 1.4MHz	699.7MHz ~ 715.3MHz
		LTE Band 12 Channel Bandwidth: 3MHz	700.5MHz ~ 714.5MHz
		LTE Band 12 Channel Bandwidth: 5MHz	701.5MHz ~ 713.5MHz
		LTE Band 12 Channel Bandwidth: 10MHz	704MHz ~ 711MHz
		LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz
		LTE Band 13 Channel Bandwidth: 10MHz	782MHz

FREQUENCY RANGE	LTE CAT-M1	LTE Band 66 Channel Bandwidth: 1.4MHz	1710.7MHz ~ 1779.3MHz
		LTE Band 66 Channel Bandwidth: 3MHz	1711.5MHz ~ 1778.5MHz
		LTE Band 66 Channel Bandwidth: 5MHz	1712.5MHz ~ 1777.5MHz
		LTE Band 66 Channel Bandwidth: 10MHz	1715MHz ~ 1775MHz
		LTE Band 66 Channel Bandwidth: 15MHz	1717.5MHz ~ 1772.5MHz
		LTE Band 66 Channel Bandwidth: 20MHz	1720MHz ~ 1770MHz
FREQUENCY RANGE	LTE NB-IOT	LTE Band 4 (SUB-CARRIER SPEACING: 3.75KHz)	1710.2MHz ~ 1754.8MHz
		LTE Band 4 (SUB-CARRIER SPEACING: 15KHz)	1710.2MHz ~ 1754.8MHz
		LTE Band 12 (SUB-CARRIER SPEACING: 3.75KHz)	699.2MHz ~ 715.8MHz
		LTE Band 12 (SUB-CARRIER SPEACING: 15KHz)	699.2MHz ~ 715.8MHz
		LTE Band 13 (SUB-CARRIER SPEACING: 3.75KHz)	777.2MHz ~ 786.8MHz
		LTE Band 13 (SUB-CARRIER SPEACING: 15KHz)	777.2MHz ~ 786.8MHz
		LTE Band 17 (SUB-CARRIER SPEACING: 3.75KHz)	704.2MHz ~ 715.8MHz
		LTE Band 17 (SUB-CARRIER SPEACING: 15KHz)	704.2MHz ~ 715.8MHz
		LTE Band 66 (SUB-CARRIER SPEACING: 3.75KHz)	1710.2MHz ~ 1779.8MHz
		LTE Band 66 (SUB-CARRIER SPEACING: 15KHz)	1710.2MHz ~ 1779.8MHz

MAX. EIRP /ERP POWER	LTE CAT-M1	LTE Band 4 Channel Bandwidth: 1.4MHz	439.54mW
		LTE Band 4 Channel Bandwidth: 3MHz	422.67mW
		LTE Band 4 Channel Bandwidth: 5MHz	434.51mW
		LTE Band 4 Channel Bandwidth: 10MHz	434.51mW
		LTE Band 4 Channel Bandwidth: 15MHz	429.54mW
		LTE Band 4 Channel Bandwidth: 20MHz	441.57mW
		LTE Band 12 Channel Bandwidth: 1.4MHz	31.92mW
		LTE Band 12 Channel Bandwidth: 3MHz	31.55mW
		LTE Band 12 Channel Bandwidth: 5MHz	32.14mW
		LTE Band 12 Channel Bandwidth: 10MHz	32.21mW
		LTE Band 13 Channel Bandwidth: 5MHz	29.92mW
		LTE Band 13 Channel Bandwidth: 10MHz	30.13mW
		LTE Band 66 Channel Bandwidth: 1.4MHz	398.11mW
		LTE Band 66 Channel Bandwidth: 3MHz	395.37mW
		LTE Band 66 Channel Bandwidth: 5MHz	404.58mW
		LTE Band 66 Channel Bandwidth: 10MHz	393.55mW

MAX. EIRP /ERP POWER	LTE CAT-M1	LTE Band 66 Channel Bandwidth: 15MHz	398.11mW
		LTE Band 66 Channel Bandwidth: 20MHz	408.32mW
	LTE NB-IOT	LTE Band 4 (SUB-CARRIER SPEACING: 3.75KHz)	388.157mW
		LTE Band 4 (SUB-CARRIER SPEACING: 15KHz)	305.49mW
		LTE Band 12 (SUB-CARRIER SPEACING: 3.75KHz)	32.51mW
		LTE Band 12 (SUB-CARRIER SPEACING: 15KHz)	27.48mW
		LTE Band 13 (SUB-CARRIER SPEACING: 3.75KHz)	31.05mW
		LTE Band 13 (SUB-CARRIER SPEACING: 15KHz)	26.67mW
		LTE Band 17 (SUB-CARRIER SPEACING: 3.75KHz)	31.12mW
		LTE Band 17 (SUB-CARRIER SPEACING: 15KHz)	26.12mW
		LTE Band 66 (SUB-CARRIER SPEACING: 3.75KHz)	406.44mW
		LTE Band 66 (SUB-CARRIER SPEACING: 15KHz)	309.03mW
EMISSION DESIGNATOR	LTE CAT-M1	LTE Band 4 Channel Bandwidth: 1.4MHz	QPSK: 1M11G7D 16QAM: 968KW7D
		LTE Band 4 Channel Bandwidth: 3MHz	QPSK: 1M12G7D 16QAM: 964KW7D
		LTE Band 4 Channel Bandwidth: 5MHz	QPSK: 1M10G7D 16QAM: 999K W7D
		LTE Band 4 Channel Bandwidth: 10MHz	QPSK: 1M11G7D 16QAM: 985KW7D

EMISSION DESIGNATOR	LTE CAT-M1	LTE Band 4 Channel Bandwidth: 15MHz	QPSK: 1M12G7D 16QAM: 1M00W7D
		LTE Band 4 Channel Bandwidth: 20MHz	QPSK: 1M12G7D 16QAM: 1M01W7D
		LTE Band 12 Channel Bandwidth: 1.4MHz	QPSK: 1M11G7D 16QAM: 970KW7D
		LTE Band 12 Channel Bandwidth: 3MHz	QPSK: 1M10G7D 16QAM: 986KW7D
		LTE Band 12 Channel Bandwidth: 5MHz	QPSK: 1M10G7D 16QAM: 966KW7D
		LTE Band 12 Channel Bandwidth: 10MHz	QPSK: 1M10G7D 16QAM: 988KW7D
		LTE Band 13 Channel Bandwidth: 5MHz	QPSK: 1M11G7D 16QAM: 963KW7D
		LTE Band 13 Channel Bandwidth: 10MHz	QPSK: 1M11G7D 16QAM: 986KW7D
		LTE Band 66 Channel Bandwidth: 1.4MHz	QPSK: 1M11G7D 16QAM: 962KW7D
		LTE Band 66 Channel Bandwidth: 3MHz	QPSK: 1M10G7D 16QAM: 949KW7D
		LTE Band 66 Channel Bandwidth: 5MHz	QPSK: 1M11G7D 16QAM: 999KW7D
		LTE Band 66 Channel Bandwidth: 10MHz	QPSK: 1M11G7D 16QAM: 988KW7D
		LTE Band 66 Channel Bandwidth: 15MHz	QPSK: 1M10G7D 16QAM: 985KW7D
		LTE Band 66 Channel Bandwidth: 20MHz	QPSK: 1M12G7D 16QAM: 990KW7D

EMISSION DESIGNATOR	LTE NB-IOT	LTE Band 4 (SUB-CARRIER SPEACING: 3.75KHz)	BPSK: 39K8G7D
			QPSK: 43K7G7D
		LTE Band 4 (SUB-CARRIER SPEACING: 15KHz)	BPSK: 75K8G7D
			QPSK: 187KG7D
		LTE Band 12 (SUB-CARRIER SPEACING: 3.75KHz)	BPSK: 37K5G7D
			QPSK: 41K9G7D
		LTE Band 12 (SUB-CARRIER SPEACING: 15KHz)	BPSK: 74K9G7D
			QPSK: 186KG7D
		LTE Band 13 (SUB-CARRIER SPEACING: 3.75KHz)	BPSK: 38K3G7D
			QPSK: 42K2G7D
		LTE Band 13 (SUB-CARRIER SPEACING: 15KHz)	BPSK: 74K2G7D
			QPSK: 185KG7D
		LTE Band 17 (SUB-CARRIER SPEACING: 3.75KHz)	BPSK: 37K4G7D
			QPSK: 41K7G7D
ANTENNA TYPE*	Fixed Internal Antenna with 2.76dBi gain for LTE4/66 Fixed Internal Antenna with -6.23dBi gain for LTE12/17 Fixed Internal Antenna with -6.48dBi gain for LTE13	LTE Band 17 (SUB-CARRIER SPEACING: 15KHz)	BPSK: 74K1G7D
			QPSK: 186KG7D
		LTE Band 66 (Sub-carrier Speacing: 3.75KHz)	BPSK: 40K5G7D
			QPSK: 43K3G7D
		LTE Band 66 (Sub-carrier Speacing: 15KHz)	BPSK: 73K9G7D
			QPSK: 186KG7D
HW VERSION*	5		
SW VERSION*	1.4.021		
I/O PORTS*	Refer to user's manual		
CABLE SUPPLIED*	USB Cable: shielded cable, with ferrite core, 1 meter		
EXTREME TEMPERATURE*	-25-55 °C		
EXTREME VOLTAGE*	2.1V – 5.3V		

NOTE:

1. *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.
2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
3. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

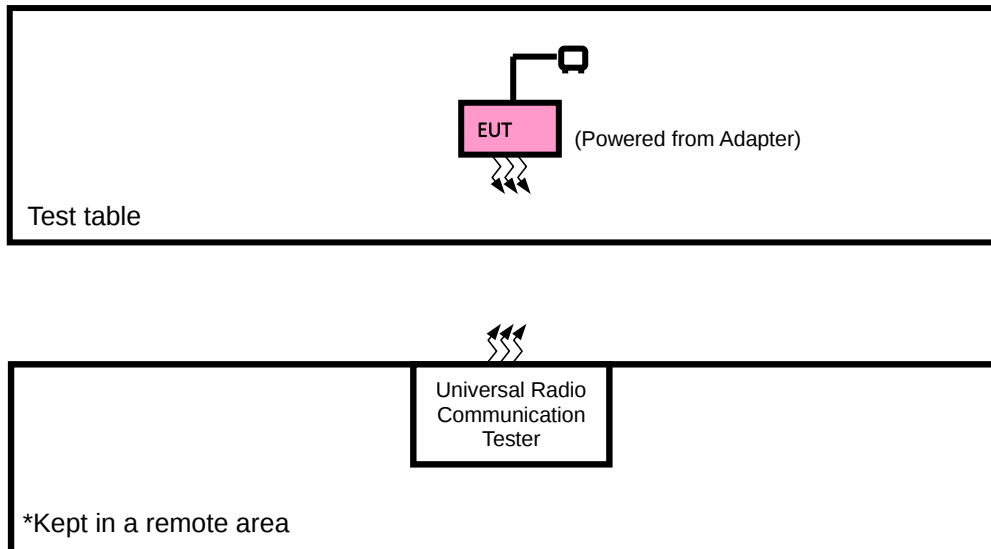
MODULATION MODE	TX FUNCTION
LTE	1TX/1RX

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

5. List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery 1	GP	Ningbo GP Energy Co., Ltd	GPCR123A	Capacity: 3.0Vdc, 1500mAh
Battery 2	PROCELL	PROCELL	CR123A	Capacity: 3.0Vdc, 1600mAh
Battery 3	Panasonic	Panasonic Corporation	CR123A	N/A
USB Cable	Waltero	Waltero	W-CABLE-01	Signal Line,1.0meter

2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION TEST



2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Adapter	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB Cable: shielded cable, with ferrite core, 1 meter

2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on Y-plane for EIRP and X-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter with LTE link

LTE CAT-M1

LTE BAND 4 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK,16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK,16QAM	1 RB / 0 RB Offset

Note: 1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

2. LTE Band 4 are covered by LTE Band 66, Because it is a subset of LTE Band 66 with the same output power and supported bandwidths, So the test data please refer to LTE Band 66.

LTE BAND 12 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095, 23165	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095, 23155	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095, 23130	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	23017 to 23173	23095	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23095	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095, 23155	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23095	10MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE BAND 13 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23205 to 23255	23205, 23230, 23255	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	23205 to 23255	23205, 23230, 23255	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE BAND 66 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	131979 to 132665	131979,132322,132665	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
		131987 to 132657	131987,132322,132657	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
		131997 to 132647	131997,132322,132647	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		132022 to 132622	132022,132322,132622	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
		132047 to 132597	132047,132322,132597	15MHz	QPSK,16QAM	1 RB / 0 RB Offset
		132072 to 132572	132072,132322,132572	20MHz	QPSK,16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	131979 to 132665	131979,132322,132665	1.4MHz	QPSK	1 RB / 0 RB Offset
		131987 to 132657	132322	3MHz	QPSK	1 RB / 0 RB Offset
		131997 to 132647	132322	5MHz	QPSK	1 RB / 0 RB Offset
		132022 to 132622	132322	10MHz	QPSK	1 RB / 0 RB Offset
		132047 to 132597	132322	15MHz	QPSK	1 RB / 0 RB Offset
		132072 to 132572	132322	20MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE NB-IOT

LTE BAND 4 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	SUBCARRIER SPACING	MODULATION	MODE
A	EIRP	19952 to 20398	19952, 20175, 20398	3.75KHz	BPSK,QPSK	1 RB / 0 RB Offset
		19952 to 20398	19952, 20175, 20398	15KHz	BPSK,QPSK	1 RB / 0 RB Offset

Note: 1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

2. LTE Band 4 are covered by LTE Band 66, Because it is a subset of LTE Band 66 with the same output power and supported bandwidths, So the test data please refer to LTE Band 66.

LTE BAND 12 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	SUBCARRIER SPACING	MODULATION	MODE
A	ERP	23012 to 23178	23012, 23095 , 23178	3.75KHz	BPSK,QPSK	1 RB / 0 RB Offset
		23012 to 23178	23012, 23095 , 23178	15KHz	BPSK,QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	23012 to 23178	23012, 23095 , 23178	3.75KHz	QPSK	1 RB / 0 RB Offset
		23012 to 23178	23095	15KHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE BAND 13 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	SUBCARRIER SPACING	MODULATION	MODE
A	ERP	23182 to 23278	23182, 23230, 23278	3.75KHz	BPSK,QPSK	1 RB / 0 RB Offset
		23182 to 23278	23182, 23230, 23278	15KHz	BPSK,QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	23182 to 23278	23182, 23230, 23278	15KHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE BAND 17 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	SUBCARRIER SPACING	MODULATION	MODE
A	ERP	23182 to 23278	23182, 23230, 23278	3.75KHz	BPSK,QPSK	1 RB / 0 RB Offset
		23182 to 23278	23182, 23230, 23278	15KHz	BPSK,QPSK	1 RB / 0 RB Offset

Note: 1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

2. LTE Band 17 are covered by LTE Band 12, Because it is a subset of LTE Band 12 with the same output power and supported bandwidths, So the test data please refer to LTE Band 12.

LTE BAND 66 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	SUBCARRIER SPACING	MODULATION	MODE
A	EIRP	131974 to 132670	131974, 132322, 132670	3.75KHz	BPSK,QPSK	1 RB / 0 RB Offset
		131974 to 132670	131974, 132322, 132670	15KHz	BPSK,QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	131974 to 132670	131974, 132322, 132670	15KHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	DC 5V By Adapter	Hanwen Xu
RADIATED EMISSION	23deg. C, 70%RH	DC 5V By Adapter	Hanwen Xu/ Jace Hu

2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 27

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.

3 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

47 CFR 27.50(d)(4) Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band and mobile and portable stations operating in the 1695–1710 MHz and 1755–1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710–1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

47 CFR 27.50(c)(10) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698–746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

47 CFR 27.50(b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 776–788 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

3.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_{\text{T}} - L_{\text{C}}$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively
(expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_{T} = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

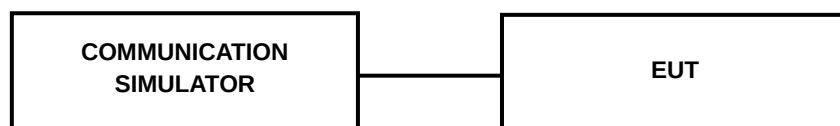
L_{C} = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

- The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.1.3 TEST SETUP

CONDUCTED POWER MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.1.4 TEST RESULTS

AVERAGE CONDUCTED OUTPUT POWER (dBm)

LTE CAT-M1

LTE Band 4

Band/BW	Modulation	RB Size	RB Offset	Low CH 19957	Mid CH 20175	High CH 20393
				Frequency 1710.7 MHz	Frequency 1732.5 MHz	Frequency 1754.3 MHz
4/ 1.4	QPSK	1	0	23.16	23.54	23.18
		1	5	23.03	23.33	23.39
		3	0	23.35	23.41	23.21
		3	3	22.89	23.41	23.22
		6	0	23.12	23.44	23.18
	16QAM	1	0	23.24	23.67	23.25
		1	5	23.06	23.66	23.27
		3	0	23.11	23.49	23.23
		3	3	22.90	23.67	23.05
		6	0	23.26	23.43	23.22

Band/BW	Modulation	RB Size	RB Offset	Low CH 19965	Mid CH 20175	High CH 20385
				Frequency 1711.5 MHz	Frequency 1732.5 MHz	Frequency 1753.5 MHz
4/ 3	QPSK	1	0	23.22	23.46	23.20
		1	5	23.08	23.30	23.15
		3	0	23.18	23.50	23.33
		3	3	22.94	23.45	23.13
		6	0	22.83	23.41	23.14
	16QAM	1	0	22.95	23.55	22.99
		1	5	22.94	23.68	23.15
		3	0	22.86	23.66	23.16
		3	3	22.89	23.60	23.35
		6	0	23.08	23.36	23.24

Band/BW	Modulation	RB Size	RB Offset	Low CH 19975	Mid CH 20175	High CH 20375
				Frequency 1712.5 MHz	Frequency 1732.5 MHz	Frequency 1752.5 MHz
4/ 5	QPSK	1	0	23.01	23.59	23.02
		1	5	23.09	23.44	23.12
		3	0	23.22	23.59	23.34
		3	3	22.90	23.42	23.19
		6	0	22.88	23.51	23.26
	16QAM	1	0	23.04	23.62	23.09
		1	5	23.14	23.59	23.07
		3	0	23.08	23.60	23.26
		3	3	22.93	23.44	23.12
		6	0	22.93	23.61	23.38

Band/BW	Modulation	RB Size	RB Offset	Low CH 20000	Mid CH 20175	High CH 20350
				Frequency 1715 MHz	Frequency 1732.5 MHz	Frequency 1750 MHz
4/ 10	QPSK	1	0	23.08	23.53	23.07
		1	5	23.26	23.54	23.10
		3	0	23.11	23.31	23.17
		3	3	23.13	23.44	23.23
		6	0	22.95	23.39	23.24
	16QAM	1	0	23.24	23.62	23.04
		1	5	23.19	23.62	23.07
		3	0	22.92	23.59	22.98
		3	3	22.93	23.52	23.12
		6	0	22.93	23.40	23.04

Band/BW	Modulation	RB Size	RB Offset	Low CH 20025	Mid CH 20175	High CH 20325
				Frequency 1717.5 MHz	Frequency 1732.5 MHz	Frequency 1747.5 MHz
4/ 15	QPSK	1	0	23.24	23.37	22.94
		1	5	23.19	23.39	23.39
		3	0	23.22	23.53	23.33
		3	3	23.07	23.48	23.44
		6	0	22.88	23.22	23.32
	16QAM	1	0	23.20	23.57	23.18
		1	5	23.23	23.53	23.11
		3	0	22.91	23.40	23.29
		3	3	23.08	23.48	23.15
		6	0	22.96	23.42	23.16

Band/BW	Modulation	RB Size	RB Offset	Low CH 20050	Mid CH 20175	High CH 20300
				Frequency 1720 MHz	Frequency 1732.5 MHz	Frequency 1745 MHz
4/ 20	QPSK	1	0	23.27	23.52	23.21
		1	5	23.20	23.53	23.36
		3	0	23.29	23.57	23.35
		3	3	23.10	23.66	23.39
		6	0	23.10	23.49	23.31
	16QAM	1	0	23.20	23.69	23.21
		1	5	23.17	23.67	23.30
		3	0	23.14	23.65	23.25
		3	3	23.10	23.60	23.29
		6	0	23.19	23.54	23.31

LTE Band 12

Band/BW	Modulation	RB Size	RB Offset	Low CH 23017	Mid CH 23095	High CH 23173
				Frequency 699.7 MHz	Frequency 707.5 MHz	Frequency 715.3 MHz
12/ 1.4	QPSK	1	0	23.42	23.27	23.15
		1	5	23.33	23.15	23.39
		3	0	23.03	23.20	23.16
		3	3	23.04	23.14	23.19
		6	0	23.09	23.13	23.21
	16QAM	1	0	22.99	23.32	23.19
		1	5	22.98	23.42	23.06
		3	0	23.10	23.28	23.13
		3	3	23.08	23.40	23.16
		6	0	23.30	23.15	23.23

Band/BW	Modulation	RB Size	RB Offset	Low CH 23025	Mid CH 23095	High CH 23165
				Frequency 700.5 MHz	Frequency 707.5 MHz	Frequency 714.5 MHz
12/ 3	QPSK	1	0	23.35	23.17	23.37
		1	5	23.04	23.12	23.18
		3	0	23.03	23.18	23.16
		3	3	22.99	23.19	23.35
		6	0	23.03	23.00	23.35
	16QAM	1	0	22.94	23.11	23.21
		1	5	23.05	23.27	23.24
		3	0	23.17	23.27	22.97
		3	3	23.13	23.25	23.22
		6	0	23.30	22.89	23.35

Band/BW	Modulation	RB Size	RB Offset	Low CH 23035	Mid CH 23095	High CH 23155
				Frequency 701.5 MHz	Frequency 707.5 MHz	Frequency 713.5 MHz
12/ 5	QPSK	1	0	23.21	23.00	23.37
		1	5	23.36	23.32	23.15
		3	0	23.15	22.96	22.98
		3	3	23.15	23.26	23.02
		6	0	23.24	23.22	23.45
	16QAM	1	0	23.05	23.38	23.25
		1	5	22.94	23.41	23.07
		3	0	23.06	23.38	23.18
		3	3	23.09	23.41	23.33
		6	0	23.13	23.01	23.09

Band/BW	Modulation	RB Size	RB Offset	Low CH 23060	Mid CH 23095	High CH 23130
				Frequency 704 MHz	Frequency 707.5 MHz	Frequency 711 MHz
12/ 10	QPSK	1	0	23.34	23.25	23.35
		1	5	23.29	23.24	23.37
		3	0	23.17	23.18	23.24
		3	3	23.25	23.26	23.28
		6	0	23.18	23.24	23.39
	16QAM	1	0	23.14	23.30	23.18
		1	5	23.16	23.46	23.22
		3	0	23.34	23.35	23.23
		3	3	23.21	23.38	23.39
		6	0	23.34	23.11	23.36

LTE Band 13

Band/BW	Modulation	RB Size	RB Offset	Low CH 23205	Mid CH 23230	High CH 23255
				Frequency 779.5 MHz	Frequency 782.0 MHz	Frequency 784.5 MHz
13/ 5	QPSK	1	0	23.33	23.21	23.37
		1	5	23.07	23.35	23.22
		3	0	22.98	23.08	23.20
		3	3	23.21	23.15	23.11
		6	0	23.15	22.96	23.24
	16QAM	1	0	23.31	23.39	23.23
		1	5	23.09	23.17	23.12
		3	0	23.36	23.15	23.33
		3	3	23.17	23.17	23.19
		6	0	23.27	23.23	23.22

Band/BW	Modulation	RB Size	RB Offset	/	Mid CH 23230	/
				/	Frequency 782.0 MHz	/
13/ 10	QPSK	1	0	/	23.29	/
		1	5	/	23.27	/
		3	0	/	23.19	/
		3	3	/	23.30	/
		6	0	/	23.24	/
	16QAM	1	0	/	23.42	/
		1	5	/	23.12	/
		3	0	/	23.31	/
		3	3	/	23.20	/
		5	0	/	23.27	/

LTE Band 66

Band/BW	Modulation	RB Size	RB Offset	Low CH 131979	Mid CH 132322	High CH 132665
				Frequency 1710.7MHz	Frequency 1745MHz	Frequency 1779.3MHz
66/ 1.4	QPSK	1	0	23.13	22.87	23.08
		1	5	23.04	22.68	22.98
		3	0	22.92	22.77	23.03
		3	3	22.99	22.94	22.92
		6	0	23.02	22.51	23.02
	16QAM	1	0	22.78	22.93	22.73
		1	5	22.98	22.86	22.78
		3	0	22.79	22.69	22.95
		3	3	22.90	22.82	22.97
		6	0	22.90	22.88	23.24

Band/BW	Modulation	RB Size	RB Offset	Low CH 131987	Mid CH 132322	High CH 132657
				Frequency 1711.5MHz	Frequency 1745MHz	Frequency 1778.5MHz
66/ 3	QPSK	1	0	23.18	22.90	23.01
		1	5	22.95	22.63	23.09
		3	0	22.81	22.67	23.08
		3	3	23.21	22.93	23.06
		6	0	22.89	22.82	23.13
	16QAM	1	0	23.10	22.75	23.05
		1	5	22.97	23.00	23.07
		3	0	22.96	22.73	22.82
		3	3	23.18	22.79	23.21
		6	0	23.08	22.57	22.94

Band/BW	Modulation	RB Size	RB Offset	Low CH 131997	Mid CH 132322	High CH 132647
				Frequency 1712.5MHz	Frequency 1745MHz	Frequency 1777.5MHz
66/ 5	QPSK	1	0	23.25	23.11	23.07
		1	5	23.10	22.76	22.93
		3	0	23.03	22.83	23.01
		3	3	23.31	22.85	23.11
		6	0	23.22	22.59	23.14
	16QAM	1	0	22.79	22.86	22.98
		1	5	23.16	23.04	23.05
		3	0	22.80	22.95	22.75
		3	3	23.02	23.03	22.95
		6	0	23.21	22.66	23.25

Band/BW	Modulation	RB Size	RB Offset	Low CH 132022	Mid CH 132322	High CH 132622
				Frequency 1715MHz	Frequency 1745MHz	Frequency 1775MHz
66/ 10	QPSK	1	0	23.14	22.89	23.09
		1	5	23.12	22.86	23.05
		3	0	22.83	22.70	23.03
		3	3	23.08	23.00	23.17
		6	0	23.19	22.75	22.94
	16QAM	1	0	22.84	22.89	22.93
		1	5	23.02	22.80	22.92
		3	0	22.95	22.87	22.77
		3	3	22.94	22.69	23.07
		6	0	22.91	22.66	23.19

Band/BW	Modulation	RB Size	RB Offset	Low CH 132047	Mid CH 132322	High CH 132597
				Frequency 1717.5 MHz	Frequency 1745MHz	Frequency 1772.5 MHz
66/ 15	QPSK	1	0	23.20	22.77	23.23
		1	5	23.12	22.63	23.06
		3	0	22.83	22.78	22.93
		3	3	23.13	23.08	23.24
		6	0	22.97	22.69	22.96
	16QAM	1	0	22.90	22.88	22.74
		1	5	23.10	22.87	22.79
		3	0	23.09	23.01	22.89
		3	3	22.91	22.86	23.12
		6	0	22.99	22.88	22.90

Band/BW	Modulation	RB Size	RB Offset	Low CH 132072	Mid CH 132322	High CH 132572
				Frequency 1720MHz	Frequency 1745MHz	Frequency 1770MHz
66/ 20	QPSK	1	0	23.21	23.05	23.15
		1	5	23.23	22.82	23.01
		3	0	23.07	22.92	23.07
		3	3	23.35	23.00	23.19
		6	0	23.16	22.79	23.06
	16QAM	1	0	23.04	22.99	23.01
		1	5	23.11	23.02	23.01
		3	0	23.07	22.96	22.99
		3	3	23.17	22.97	23.14
		6	0	23.14	22.81	23.17

LTE NB-IOT

LTE Band 4

Band/Su b-carrier Speacing (KHz)	Modulation	RB Siz e	RB Offset	Low CH 19952	Mid CH 20175	High CH 20398
				Frequency 1710.2 MHz	Frequency 1732.5 MHz	Frequency 1754.8 MHz
4/ 3.75	BPSK	1	0	22.78	22.70	22.93
		1	47	22.96	22.88	23.11
	QPSK	1	0	22.92	22.84	23.07
		1	47	22.98	22.90	23.13

Band/Su b-carrier Speacing (KHz)	Modulation	RB Siz e	RB Offset	Low CH 19952	Mid CH 20175	High CH 20398
				Frequency 1710.2 MHz	Frequency 1732.5 MHz	Frequency 1754.8 MHz
4/ 15	BPSK	1	0	21.94	21.86	22.09
		1	11	21.89	21.81	22.04
	QPSK	1	0	21.88	21.80	22.03
		1	11	21.94	21.86	22.09
		12	0	20.03	19.95	20.18

LTE Band 12

Band/Su b-carrier Speacing (KHz)	Modulation	RB Siz e	RB Offset	Low CH 23012	Mid CH 23095	High CH 23178
				Frequency 699.2 MHz	Frequency 707.5 MHz	Frequency 715.8 MHz
12/ 3.75	BPSK	1	0	23.50	23.29	23.12
		1	47	23.21	23.00	22.83
	QPSK	1	0	23.13	22.92	22.75
		1	47	23.23	23.02	22.85

Band/Su b-carrier Speacing (KHz)	Modulation	RB Siz e	RB Offset	Low CH 23012	Mid CH 23095	High CH 23178
				Frequency 699.2 MHz	Frequency 707.5 MHz	Frequency 715.8 MHz
12/ 15	BPSK	1	0	22.72	22.51	22.34
		1	11	22.70	22.49	22.32
	QPSK	1	0	22.69	22.48	22.31
		1	11	22.77	22.56	22.39
		12	0	21.46	21.25	21.08

LTE Band 13

Band/Su b-carrier Speacing (KHz)	Modulation	RB Siz e	RB Offset	Low CH 23182	Mid CH 23230	High CH 23278
				Frequency 777.2 MHz	Frequency 782.0 MHz	Frequency 786.8 MHz
13/ 3.75	BPSK	1	0	23.51	23.55	23.46
		1	47	23.22	23.43	23.33
	QPSK	1	0	23.37	23.42	23.35
		1	47	23.40	23.47	23.38

Band/Su b-carrier Speacing (KHz)	Modulation	RB Siz e	RB Offset	Low CH 23182	Mid CH 23230	High CH 23278
				Frequency 777.2 MHz	Frequency 782.0 MHz	Frequency 786.8 MHz
13/ 15	BPSK	1	0	22.81	22.82	22.79
		1	11	22.66	22.80	22.60
	QPSK	1	0	22.78	22.87	22.78
		1	11	22.80	22.89	22.87
		12	0	21.81	21.80	21.66

LTE Band 17

Band/Su b-carrier Speacing (KHz)	Modulation	RB Siz e	RB Offset	Low CH 23732	Mid CH 23790	High CH 23848
				Frequency 704.2 MHz	Frequency 710MHz	Frequency 715.8MHz
17/ 3.75	BPSK	1	0	23.27	23.06	23.22
		1	47	23.31	23.14	23.22
	QPSK	1	0	22.94	23.17	23.04
		1	47	23.13	23.31	23.27

Band/Su b-carrier Speacing (KHz)	Modulation	RB Siz e	RB Offset	Low CH 23182	Mid CH 23230	High CH 23278
				Frequency 777.2 MHz	Frequency 782.0 MHz	Frequency 786.8 MHz
17/ 15	BPSK	1	0	22.26	22.35	22.16
		1	11	22.55	22.24	22.34
	QPSK	1	0	22.54	22.21	22.12
		1	11	22.33	22.30	22.24
		12	0	20.42	20.40	20.11

LTE Band 66

Band/Sub-carrier Spacing (KHz)	Modulation	RB Size	RB Offset	Low CH 131974	Mid CH 132322	High CH 132670
				Frequency 1710.2 MHz	Frequency 1745 MHz	Frequency 1779.8MHz
66/ 3.75	BPSK	1	0	23.33	23.13	22.65
		1	47	23.10	23.25	22.77
	QPSK	1	0	23.12	23.22	23.12
		1	47	23.17	22.90	22.86

Band/Sub-carrier Spacing (KHz)	Modulation	RB Size	RB Offset	Low CH 131974	Mid CH 132322	High CH 132670
				Frequency 1710.2 MHz	Frequency 1745 MHz	Frequency 1779.8MHz
66/ 15	BPSK	1	0	22.04	21.98	21.79
		1	11	21.94	21.94	22.09
	QPSK	1	0	21.91	22.14	21.83
		1	11	22.04	21.83	21.68
		12	0	20.10	20.00	19.85

EIRP /ERP

LTE CAT-M1

LTE BAND 4

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	23.35	2.76	26.11	408.32	1
20175	1732.5	23.54	2.76	26.3	426.58	1
20393	1754.3	23.39	2.76	26.15	412.1	1

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	23.26	2.76	26.02	399.94	1
20175	1732.5	23.67	2.76	26.43	439.54	1
20393	1754.3	23.27	2.76	26.03	400.87	1

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	23.22	2.76	25.98	396.28	1
20175	1732.5	23.5	2.76	26.26	422.67	1
20385	1753.5	23.33	2.76	26.09	406.44	1

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	23.08	2.76	25.84	383.71	1
20175	1732.5	23.08	2.76	25.84	383.71	1
20385	1753.5	23.08	2.76	25.84	383.71	1

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	23.22	2.76	25.98	396.28	1
20175	1732.5	23.59	2.76	26.35	431.52	1
20375	1752.5	23.34	2.76	26.1	407.38	1

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	23.14	2.76	25.9	389.05	1
20175	1732.5	23.62	2.76	26.38	434.51	1
20375	1752.5	23.38	2.76	26.14	411.15	1

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	23.26	2.76	26.02	399.94	1
20175	1732.5	23.54	2.76	26.3	426.58	1
20350	1750	23.24	2.76	26	398.11	1

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	23.24	2.76	26	398.11	1
20175	1732.5	23.62	2.76	26.38	434.51	1
20350	1750	23.12	2.76	25.88	387.26	1

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	23.24	2.76	26	398.11	1
20175	1732.5	23.53	2.76	26.29	425.6	1
20325	1747.5	23.44	2.76	26.2	416.87	1

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	23.23	2.76	25.99	397.19	1
20175	1732.5	23.57	2.76	26.33	429.54	1
20325	1747.5	23.29	2.76	26.05	402.72	1

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	23.29	2.76	26.05	402.72	1
20175	1732.5	23.66	2.76	26.42	438.53	1
20300	1745	23.39	2.76	26.15	412.1	1

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	23.2	2.76	25.96	394.46	1
20175	1732.5	23.69	2.76	26.45	441.57	1
20300	1745	23.31	2.76	26.07	404.58	1

LTE BAND 12

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	23.42	-6.23	15.04	31.92	3
23095	707.5	23.27	-6.23	14.89	30.83	3
23173	715.3	23.39	-6.23	15.01	31.7	3

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	23.3	-6.23	14.92	31.05	3
23095	707.5	23.42	-6.23	15.04	31.92	3
23173	715.3	23.23	-6.23	14.85	30.55	3

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	23.35	-6.23	14.97	31.41	3
23095	707.5	23.19	-6.23	14.81	30.27	3
23165	714.5	23.37	-6.23	14.99	31.55	3

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	23.3	-6.23	14.92	31.05	3
23095	707.5	23.27	-6.23	14.89	30.83	3
23165	714.5	23.35	-6.23	14.97	31.41	3

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	23.36	-6.23	14.98	31.48	3
23095	707.5	23.32	-6.23	14.94	31.19	3
23155	713.5	23.45	-6.23	15.07	32.14	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	23.13	-6.23	14.75	29.85	3
23095	707.5	23.41	-6.23	15.03	31.84	3
23155	713.5	23.33	-6.23	14.95	31.26	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	23.34	-6.23	14.96	31.33	3
23095	707.5	23.26	-6.23	14.88	30.76	3
23130	711	23.39	-6.23	15.01	31.7	3

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	23.34	-6.23	14.96	31.33	3
23095	707.5	23.46	-6.23	15.08	32.21	3
23130	711	23.39	-6.23	15.01	31.7	3

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

LTE BAND 13

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	23.33	-6.48	14.7	29.51	3
23230	782	23.35	-6.48	14.72	29.65	3
23255	784.5	23.37	-6.48	14.74	29.79	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	23.36	-6.48	14.73	29.72	3
23230	782	23.39	-6.48	14.76	29.92	3
23255	784.5	23.33	-6.48	14.7	29.51	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
-	-	-	-	-	-	-
23230	782	23.3	-6.48	14.67	29.31	3
-	-	-	-	-	-	-

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
-	-	-	-	-	-	-
23230	782	23.42	-6.48	14.79	30.13	3
-	-	-	-	-	-	-

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

LTE BAND 66

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131979	1710.7	23.13	2.76	25.89	388.15	1
132322	1745	22.94	2.76	25.7	371.54	1
132665	1779.3	23.08	2.76	25.84	383.71	1

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131979	1710.7	22.98	2.76	25.74	374.97	1
132322	1745	22.93	2.76	25.69	370.68	1
132665	1779.3	23.24	2.76	26	398.11	1

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131987	1711.5	23.21	2.76	25.97	395.37	1
132322	1745	22.93	2.76	25.69	370.68	1
132657	1778.5	23.13	2.76	25.89	388.15	1

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131987	1711.5	23.18	2.76	25.94	392.64	1
132322	1745	23	2.76	25.76	376.7	1
132657	1778.5	23.21	2.76	25.97	395.37	1

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131997	1712.5	23.31	2.76	26.07	404.58	1
132322	1745	23.11	2.76	25.87	386.37	1
132647	1777.5	23.14	2.76	25.9	389.05	1

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131997	1712.5	23.21	2.76	25.97	395.37	1
132322	1745	23.04	2.76	25.8	380.19	1
132647	1777.5	23.25	2.76	26.01	399.02	1

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132022	1715	23.19	2.76	25.95	393.55	1
132322	1745	23	2.76	25.76	376.7	1
132622	1775	23.17	2.76	25.93	391.74	1

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132022	1715	23.02	2.76	25.78	378.44	1
132322	1745	22.89	2.76	25.65	367.28	1
132622	1775	23.19	2.76	25.95	393.55	1

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132047	1717.5	23.2	2.76	25.96	394.46	1
132322	1745	23.08	2.76	25.84	383.71	1
132597	1772.5	23.24	2.76	26	398.11	1

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132047	1717.5	23.1	2.76	25.86	385.48	1
132322	1745	23.01	2.76	25.77	377.57	1
132597	1772.5	23.12	2.76	25.88	387.26	1

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132072	1720	23.35	2.76	26.11	408.32	1
132322	1745	23.05	2.76	25.81	381.07	1
132572	1770	23.19	2.76	25.95	393.55	1

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132072	1720	23.17	2.76	25.93	391.74	1
132322	1745	23.02	2.76	25.78	378.44	1
132572	1770	23.17	2.76	25.93	391.74	1

LTE NB-IOT

LTE BAND 4

SUBCARRIER SPACING: 3.75KHz BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19952	1710.2	22.96	2.76	25.72	373.25	1
20175	1732.5	22.88	2.76	25.64	366.44	1
20398	1754.8	23.11	2.76	25.87	386.37	1

SUBCARRIER SPACING: 3.75KHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19952	1710.2	22.98	2.76	25.74	374.97	1
20175	1732.5	22.9	2.76	25.66	368.13	1
20398	1754.8	23.13	2.76	25.89	388.15	1

SUBCARRIER SPACING: 15KHz BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19952	1710.2	21.94	2.76	24.7	295.12	1
20175	1732.5	21.86	2.76	24.62	289.73	1
20398	1754.8	22.09	2.76	24.85	305.49	1

SUBCARRIER SPACING: 15KHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19952	1710.2	21.94	2.76	24.7	295.12	1
20175	1732.5	21.94	2.76	24.7	295.12	1
20398	1754.8	20.03	2.76	22.79	190.11	1

LTE BAND 12

SUBCARRIER SPACING: 3.75KHz BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23012	699.2	23.5	-6.23	15.12	32.51	3
23095	707.5	23.29	-6.23	14.91	30.97	3
23178	715.8	23.12	-6.23	14.74	29.79	3

SUBCARRIER SPACING: 3.75KHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23012	699.2	23.23	-6.23	14.85	30.55	3
23095	707.5	23.02	-6.23	14.64	29.11	3
23178	715.8	22.85	-6.23	14.47	27.99	3

SUBCARRIER SPACING: 15KHz BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23012	699.2	22.72	-6.23	14.34	27.16	3
23095	707.5	22.51	-6.23	14.13	25.88	3
23178	715.8	22.34	-6.23	13.96	24.89	3

SUBCARRIER SPACING: 15KHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23012	699.2	22.77	-6.23	14.39	27.48	3
23095	707.5	22.56	-6.23	14.18	26.18	3
23178	715.8	22.39	-6.23	14.01	25.18	3

LTE BAND 13

SUBCARRIER SPACING: 3.75KHz BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23182	777.2	23.51	-6.48	14.88	30.76	3
23230	782.0	23.55	-6.48	14.92	31.05	3
23278	786.8	23.46	-6.48	14.83	30.41	3

SUBCARRIER SPACING: 3.75KHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23182	777.2	23.4	-6.48	14.77	29.99	3
23230	782.0	23.47	-6.48	14.84	30.48	3
23278	786.8	23.38	-6.48	14.75	29.85	3

SUBCARRIER SPACING: 15KHz BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23182	777.2	22.81	-6.48	14.18	26.18	3
23230	782.0	22.82	-6.48	14.19	26.24	3
23278	786.8	22.79	-6.48	14.16	26.06	3

SUBCARRIER SPACING: 15KHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23182	777.2	22.8	-6.48	14.17	26.12	3
23230	782.0	22.89	-6.48	14.26	26.67	3
23278	786.8	22.87	-6.48	14.24	26.55	3

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

LTE BAND 17

SUBCARRIER SPACING: 3.75KHz BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23732	704.2	23.31	-6.23	14.93	31.12	3
23790	710	23.14	-6.23	14.76	29.92	3
23848	715.8	23.22	-6.23	14.84	30.48	3

SUBCARRIER SPACING: 3.75KHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23732	704.2	23.13	-6.23	14.75	29.85	3
23790	710	23.31	-6.23	14.93	31.12	3
23848	715.8	23.27	-6.23	14.89	30.83	3

SUBCARRIER SPACING: 15KHz BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23732	704.2	22.55	-6.23	14.17	26.12	3
23790	710	22.35	-6.23	13.97	24.95	3
23848	715.8	22.34	-6.23	13.96	24.89	3

SUBCARRIER SPACING: 15KHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23732	704.2	22.54	-6.23	14.16	26.06	3
23790	710	22.3	-6.23	13.92	24.66	3
23848	715.8	22.24	-6.23	13.86	24.32	3

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

LTE BAND 66

SUBCARRIER SPACING: 3.75KHz BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131974	1710.2	23.33	2.76	26.09	406.44	1
132322	1745	23.25	2.76	26.01	399.02	1
132670	1779.8	22.77	2.76	25.53	357.27	1

SUBCARRIER SPACING: 3.75KHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131974	1710.2	23.17	2.76	25.93	391.74	1
132322	1745	23.22	2.76	25.98	396.28	1
132670	1779.8	23.12	2.76	25.88	387.26	1

SUBCARRIER SPACING: 15KHz BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131974	1710.2	22.04	2.76	24.8	302	1
132322	1745	21.98	2.76	24.74	297.85	1
132670	1779.8	22.09	2.76	24.85	305.49	1

SUBCARRIER SPACING: 15KHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131974	1710.2	22.04	2.76	24.8	302	1
132322	1745	22.14	2.76	24.9	309.03	1
132670	1779.8	21.83	2.76	24.59	287.74	1

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

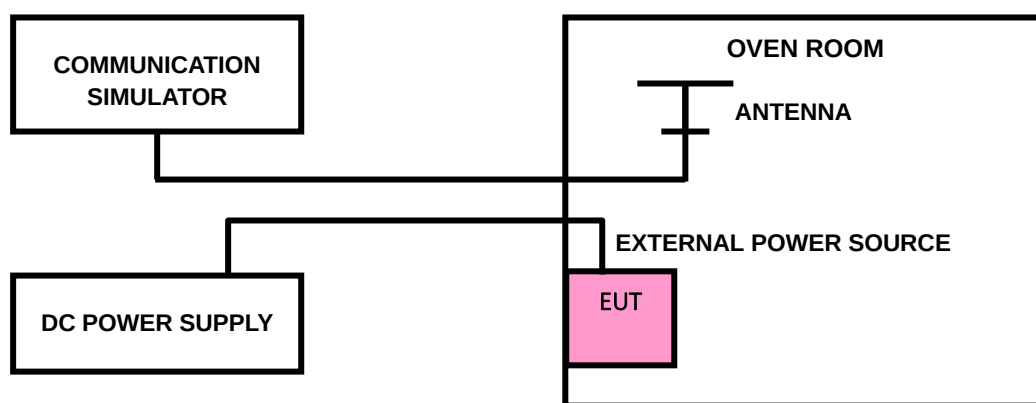
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

3.2.2 TEST PROCEDURE

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

3.2.3 TEST SETUP





Test Report No.: PSZ-QSU2412270112RF03

3.2.4 TEST RESULTS

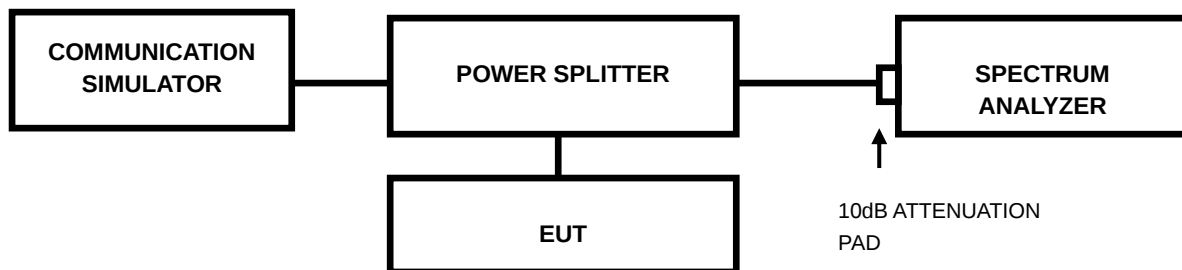
Please Refer to Module report R2207A0656-R7V1/ R2207A0656-R8V1, FCC ID: XMR2021BG770AGL.

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

3.3.2 TEST SETUP



3.3.3 TEST PROCEDURES

- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.



Test Report No.: PSZ-QSU2412270112RF03

3.3.4 TEST RESULTS

Please Refer to Module report R2207A0656-R7V1/ R2207A0656-R8V1, FCC ID: XMR2021BG770AGL.

3.4 BAND EDGE MEASUREMENT

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

According to FCC 27.53(g) specified that For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

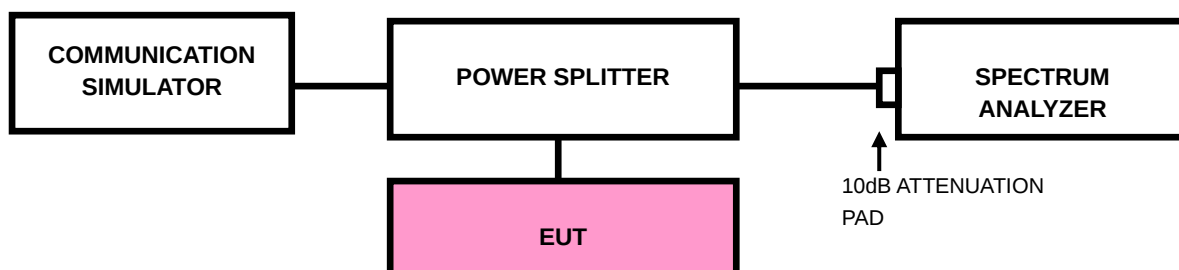
According to FCC 27.53(h) specified that For operations in the 1710-1755 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

47 CFR 27.53(c) For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

3.4.2 TEST SETUP



3.4.3 TEST PROCEDURES

- a) Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
- b) Tune the analyzer to the nominal center frequency of the emission bandwidth (EBW).
- c) Set the resolution bandwidth (RBW) $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
- d) Beyond the 1MHz band from the band edge, RBW=1MHz was used.
- e) Set the video bandwidth (VBW) to $\geq 3 \times$ RBW.
- f) Select the average power (RMS) display detector.
- g) Set the number of measurement points to ≥ 1001 .
- h) Use auto-coupled sweep time.
- i) Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.
- j) The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.
- k) Record the max trace plot into the test report.



Test Report No.: PSZ-QSU2412270112RF03

3.4.4 TEST RESULTS

Please Refer to Module report R2207A0656-R7V1/ R2207A0656-R8V1, FCC ID: XMR2021BG770AGL.

3.5 CONDUCTED SPURIOUS EMISSIONS

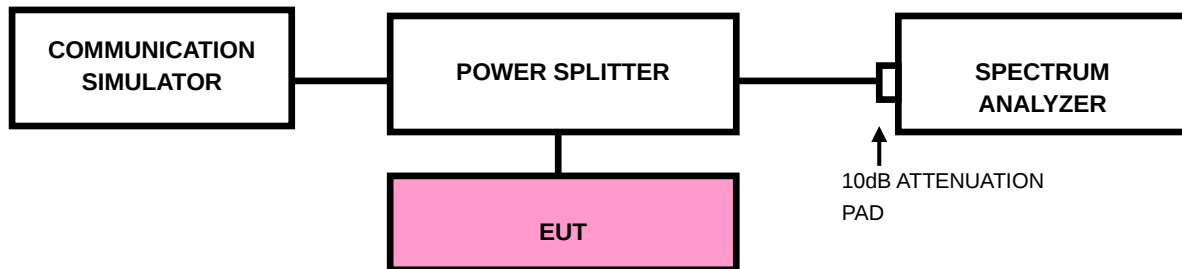
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm .

3.5.2 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 9kHz up to a frequency including its 10th harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.5.3 TEST SETUP





Test Report No.: PSZ-QSU2412270112RF03

3.5.4 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

Please Refer to Module report R2207A0656-R7V1/ R2207A0656-R8V1, FCC ID: XMR2021BG770AGL.

3.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm .

3.6.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G.
- c. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$.
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,
 $\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi}$.

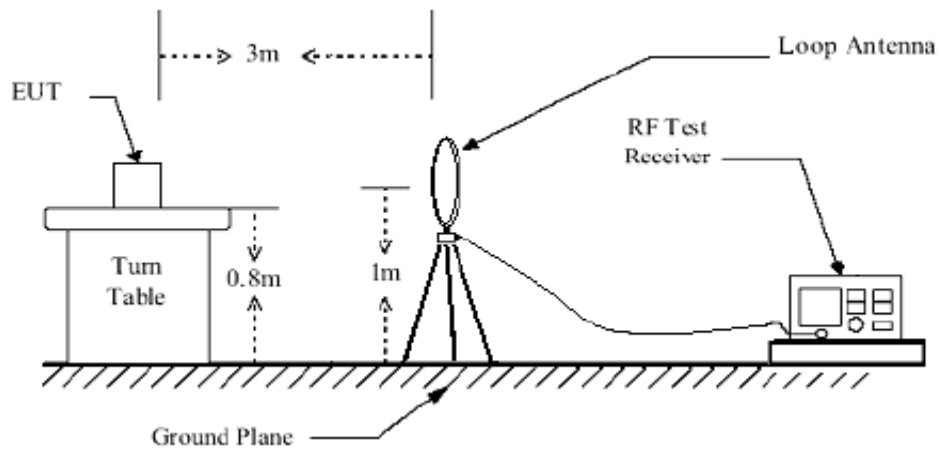
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.6.3 DEVIATION FROM TEST STANDARD

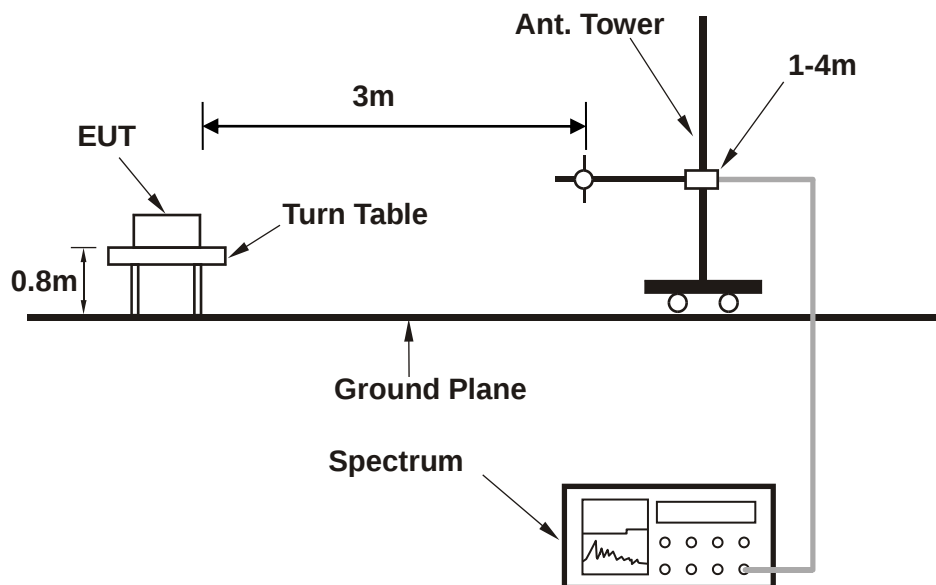
No deviation

3.6.4 TEST SETUP

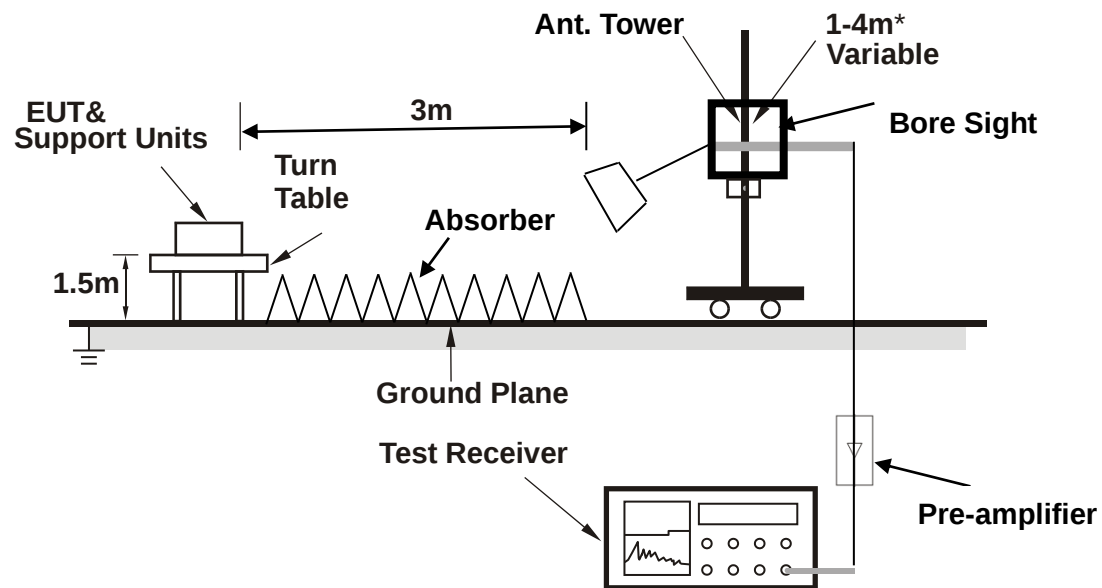
< Frequency Range below 30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.6.5 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

LTE CAT-M1

BELOW 1GHz WORST-CASE DATA

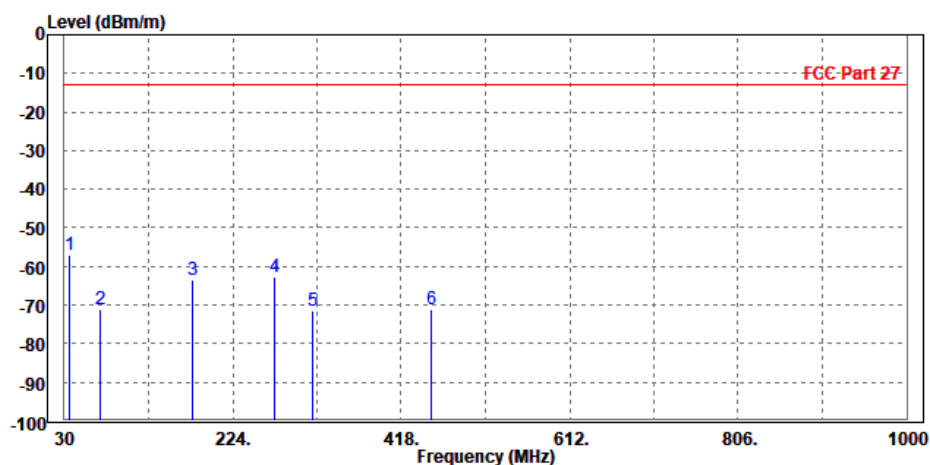
30 MHz – 1GHz data:

LTE Band 13

CHANNEL BANDWIDTH: 5MHz / QPSK

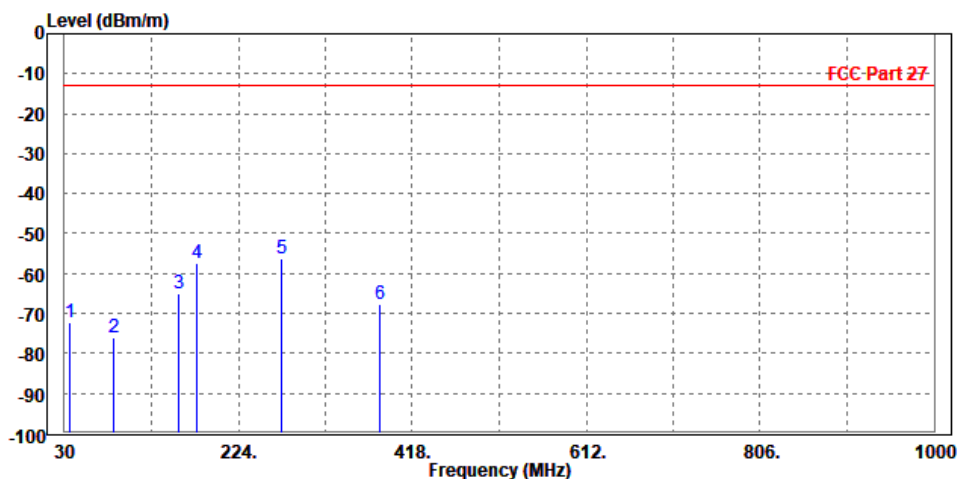
MODE	TX channel 23255	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	35.820	-56.98	-51.82	-13.00	-43.98	-5.16 Peak	Horizontal
2		70.740	-70.99	-58.73	-13.00	-57.99	-12.26 Peak	Horizontal
3		177.440	-63.44	-46.98	-13.00	-50.44	-16.46 Peak	Horizontal
4		272.500	-62.62	-52.51	-13.00	-49.62	-10.11 Peak	Horizontal
5		316.150	-71.47	-62.97	-13.00	-58.47	-8.50 Peak	Horizontal
6		452.920	-71.02	-65.12	-13.00	-58.02	-5.90 Peak	Horizontal



MODE	TX channel 23255	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	35.820	-72.33	-51.51	-13.00	-59.33	-20.82	Peak	Vertical
2	85.290	-75.92	-57.79	-13.00	-62.92	-18.13	Peak	Vertical
3	157.070	-64.90	-53.66	-13.00	-51.90	-11.24	Peak	Vertical
4	177.440	-57.28	-46.70	-13.00	-44.28	-10.58	Peak	Vertical
5 PP	271.530	-56.25	-52.65	-13.00	-43.25	-3.60	Peak	Vertical
6	382.110	-67.65	-63.63	-13.00	-54.65	-4.02	Peak	Vertical



ABOVE 1GHz

Note: For higher frequency, the emission is too low to be detected.

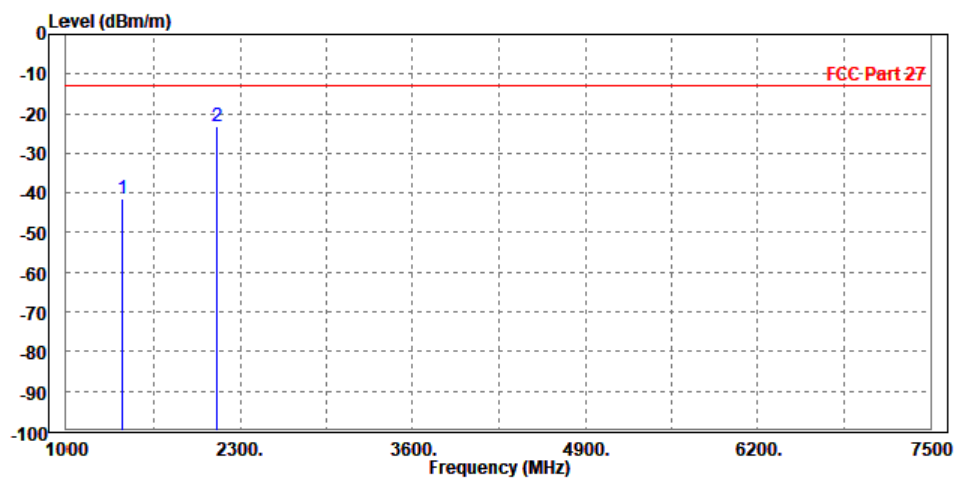
WORST-CASE DATA

LTE BAND 12

CHANNEL BANDWIDTH: 1.4MHz / QPSK

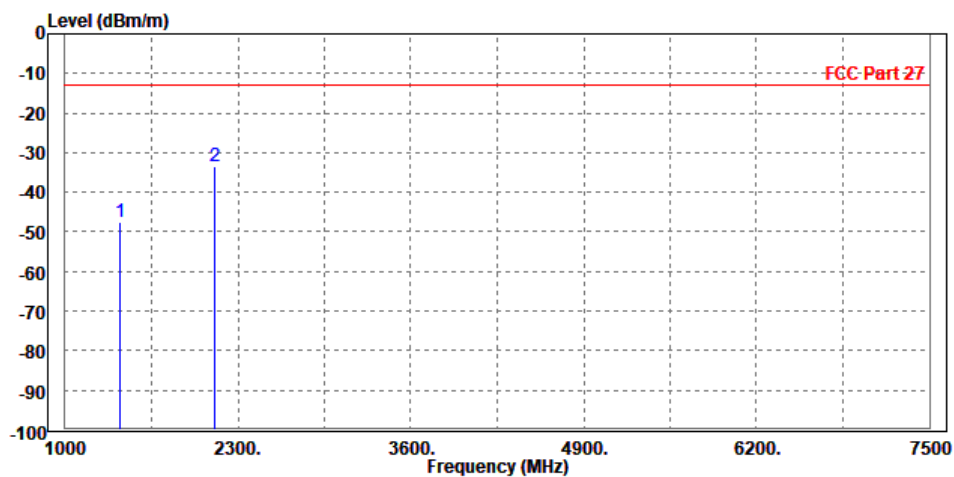
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-41.60	-44.54	-13.00	-28.60	2.94	Peak	Horizontal
2 PP	2122.500	-23.21	-28.29	-13.00	-10.21	5.08	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

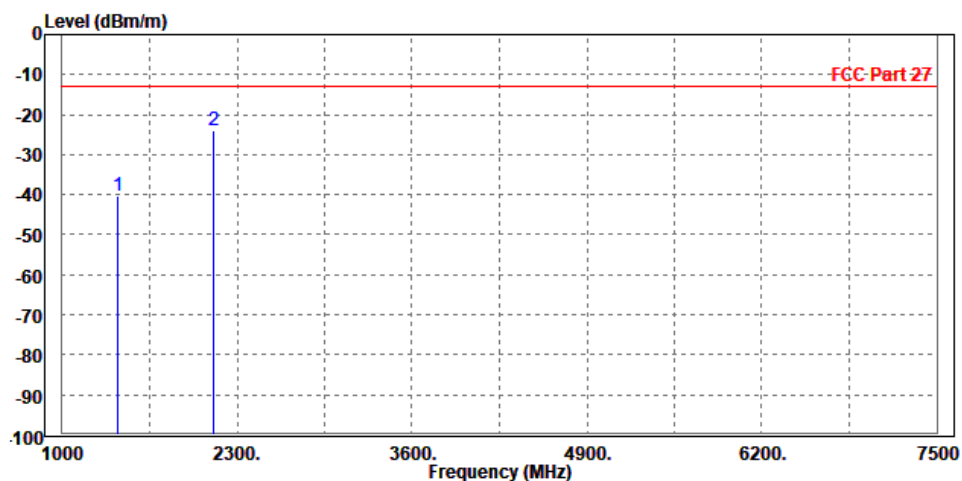
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1415.000	-47.40	-50.32	-13.00	-34.40	2.92	Peak	Vertical
2 PP	2124.500	-33.62	-38.06	-13.00	-20.62	4.44	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK

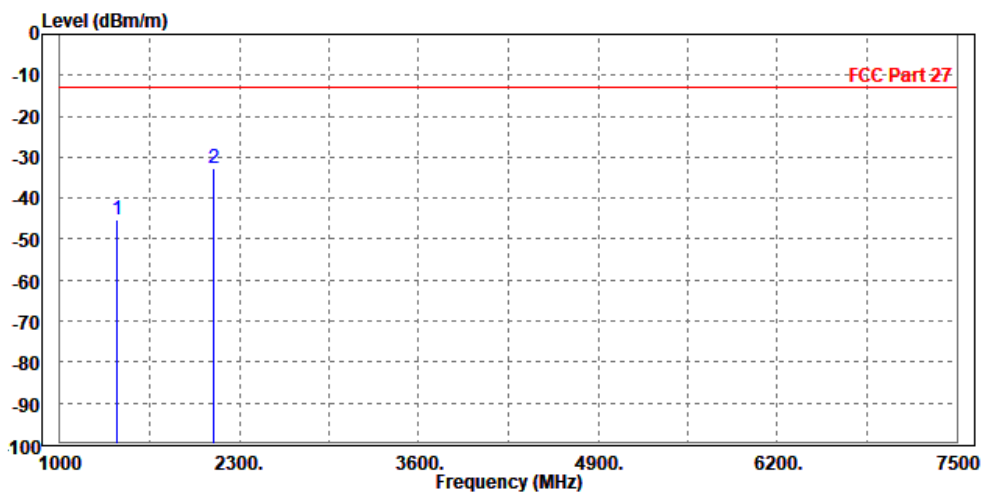
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-40.45	-43.39	-13.00	-27.45	2.94	Peak	Horizontal
2 PP	2124.500	-24.14	-29.23	-13.00	-11.14	5.09	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-45.40	-48.33	-13.00	-32.40	2.93	Peak	Vertical
2 PP	2118.000	-32.78	-37.20	-13.00	-19.78	4.42	Peak	Vertical

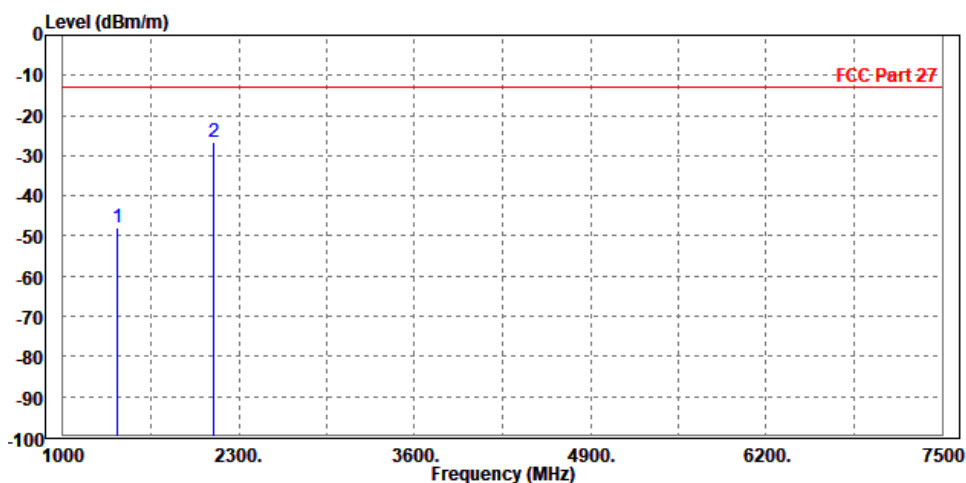


CHANNEL BANDWIDTH: 5MHz / QPSK

CH23035

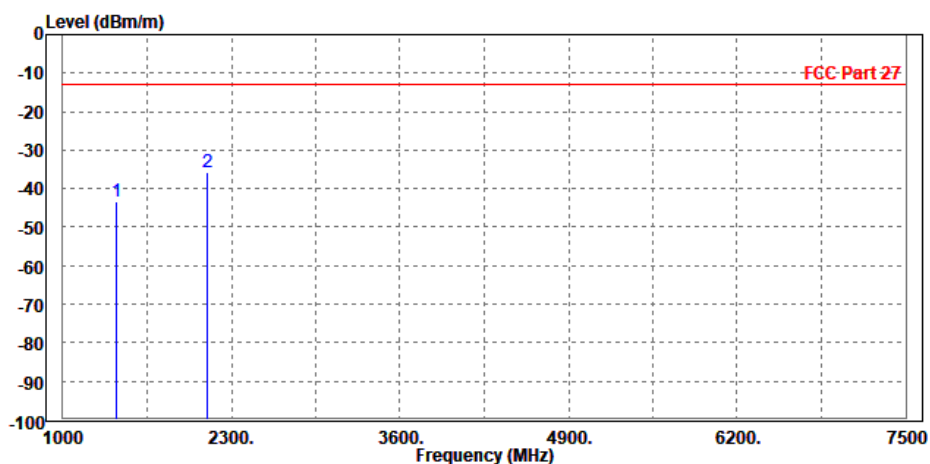
MODE	TX channel 23035	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1396.500	-48.06	-50.94	-13.00	-35.06	2.88	Peak	Horizontal
2 PP	2111.500	-26.50	-31.55	-13.00	-13.50	5.05	Peak	Horizontal



MODE	TX channel 23035	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

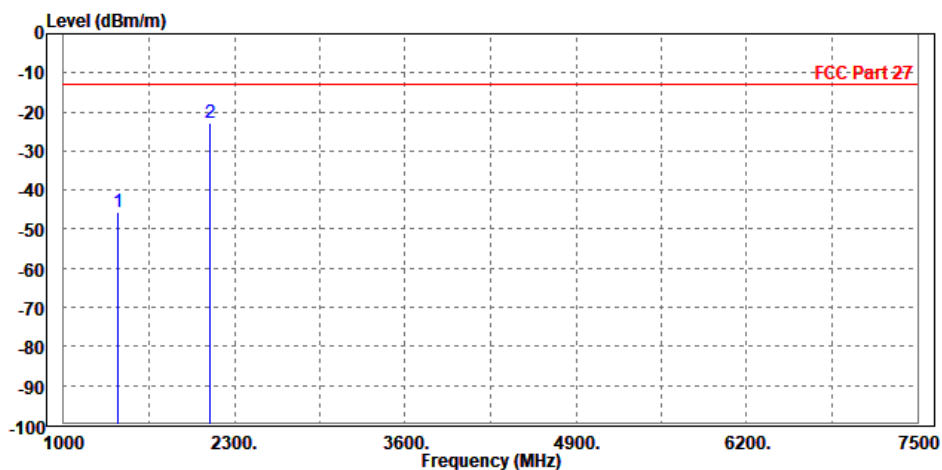
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1409.500	-43.25	-46.16	-13.00	-30.25	2.91	Peak	Vertical
2 PP	2111.500	-35.70	-40.10	-13.00	-22.70	4.40	Peak	Vertical



CH23095

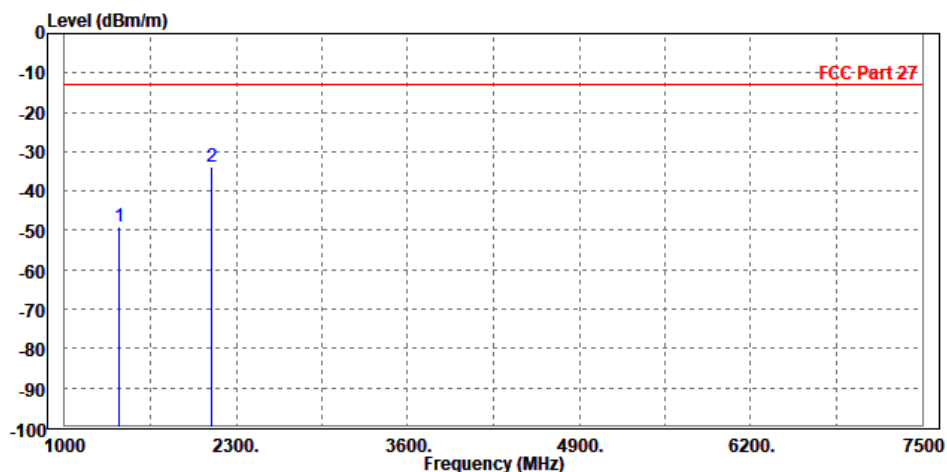
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-45.56	-48.50	-13.00	-32.56	2.94	Peak	Horizontal
2 PP	2118.000	-22.85	-27.92	-13.00	-9.85	5.07	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

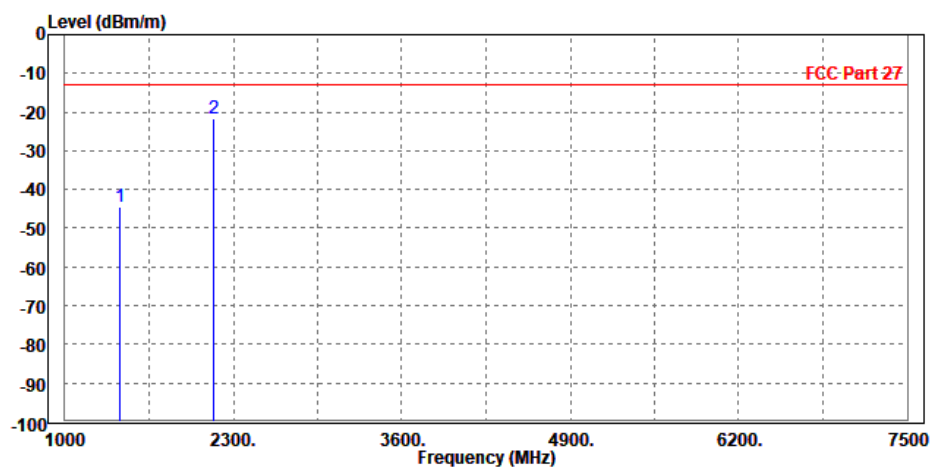
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-48.92	-51.85	-13.00	-35.92	2.93	Peak	Vertical
2 PP	2118.000	-33.66	-38.08	-13.00	-20.66	4.42	Peak	Vertical



CH23155

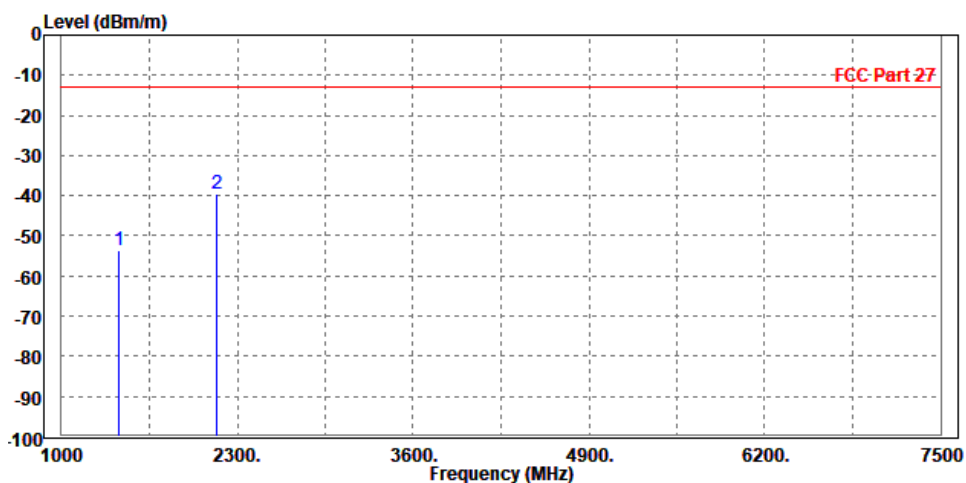
MODE	TX channel 23155	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1429.000	-44.45	-47.43	-13.00	-31.45	2.98	Peak	Horizontal
2 PP	2144.000	-21.66	-26.80	-13.00	-8.66	5.14	Peak	Horizontal



MODE	TX channel 23155	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

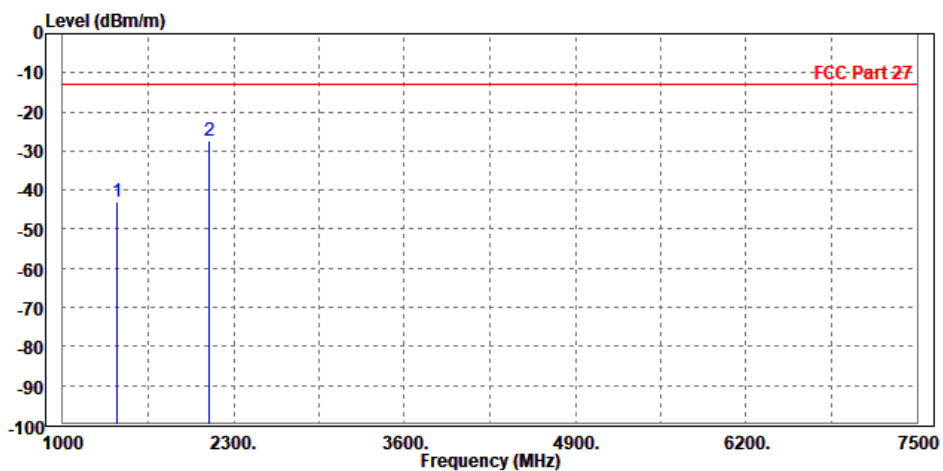
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1429.000	-53.76	-56.72	-13.00	-40.76	2.96	Peak	Vertical
2 PP	2144.000	-39.57	-44.08	-13.00	-26.57	4.51	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

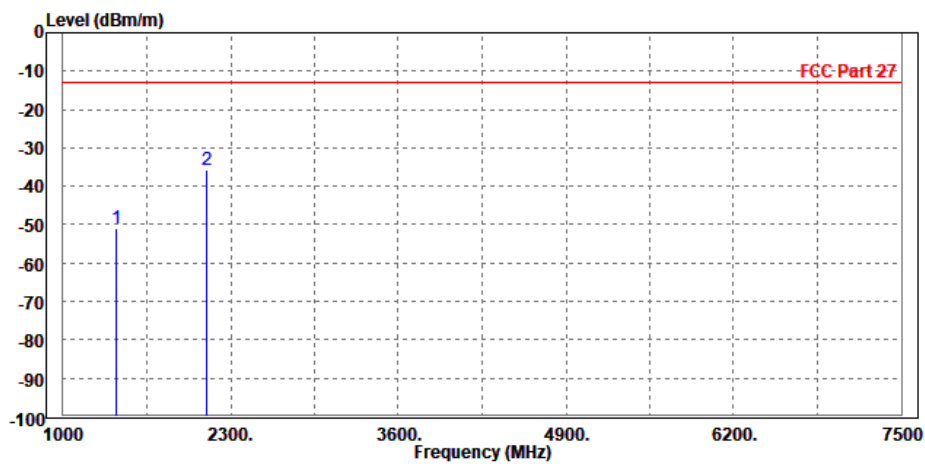
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1409.500	-42.89	-45.81	-13.00	-29.89	2.92	Peak	Horizontal
2 PP	2111.500	-27.55	-32.60	-13.00	-14.55	5.05	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1409.500	-51.07	-53.98	-13.00	-38.07	2.91	Peak	Vertical
2 PP	2111.500	-35.61	-40.01	-13.00	-22.61	4.40	Peak	Vertical



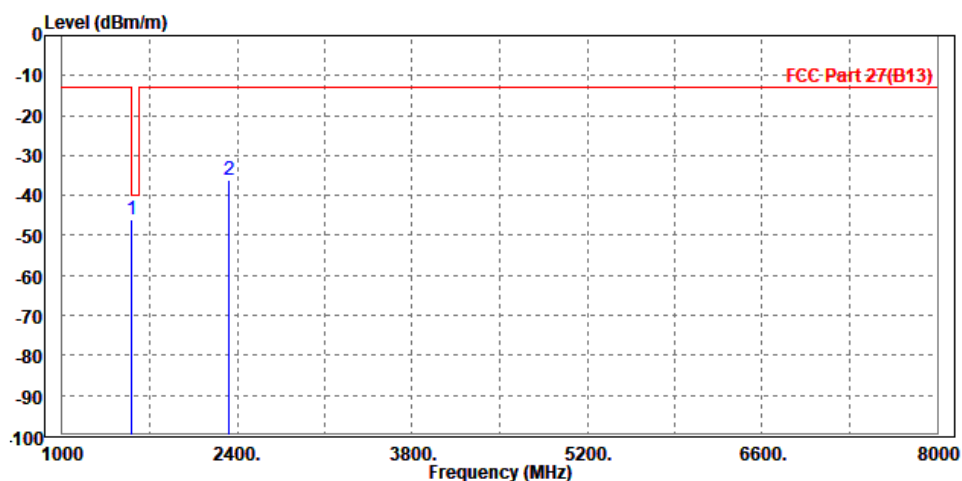
LTE B13

CHANNEL BANDWIDTH: 5MHz / QPSK

CH23205

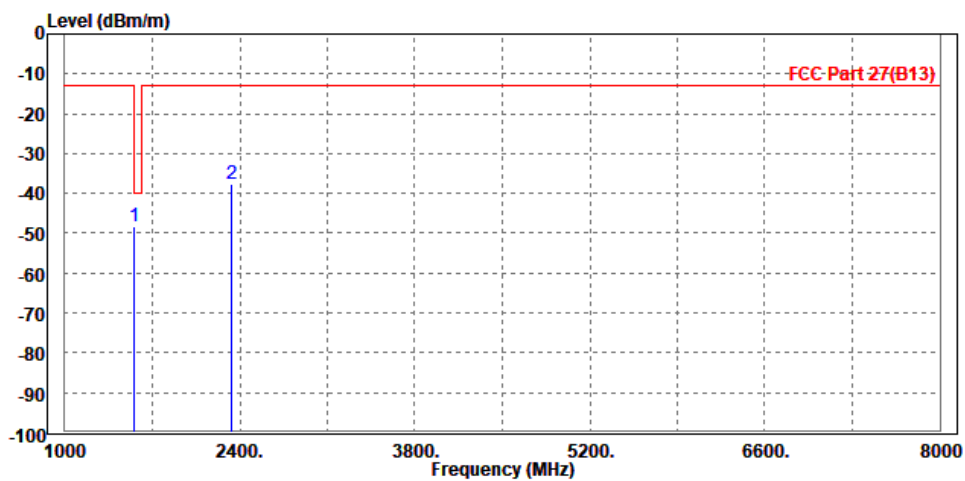
MODE	TX channel 23205	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1560.000	-45.83	-45.96	-40.00	-5.83	0.13	Peak	Horizontal
2	2330.000	-36.25	-40.94	-13.00	-23.25	4.69	Peak	Horizontal



MODE	TX channel 23205	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

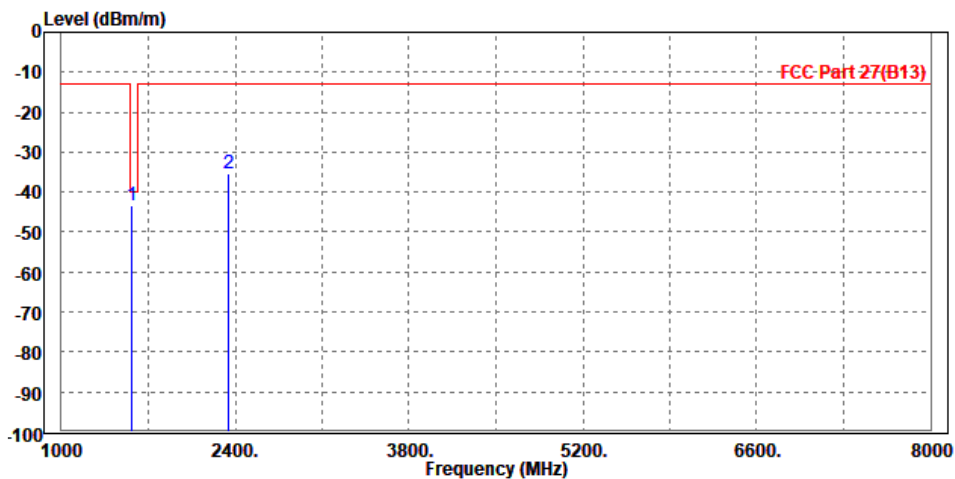
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1553.000	-48.45	-49.58	-13.00	-35.45	1.13	Peak	Vertical
2 PP	2330.000	-37.75	-42.88	-13.00	-24.75	5.13	Peak	Vertical



CH23230

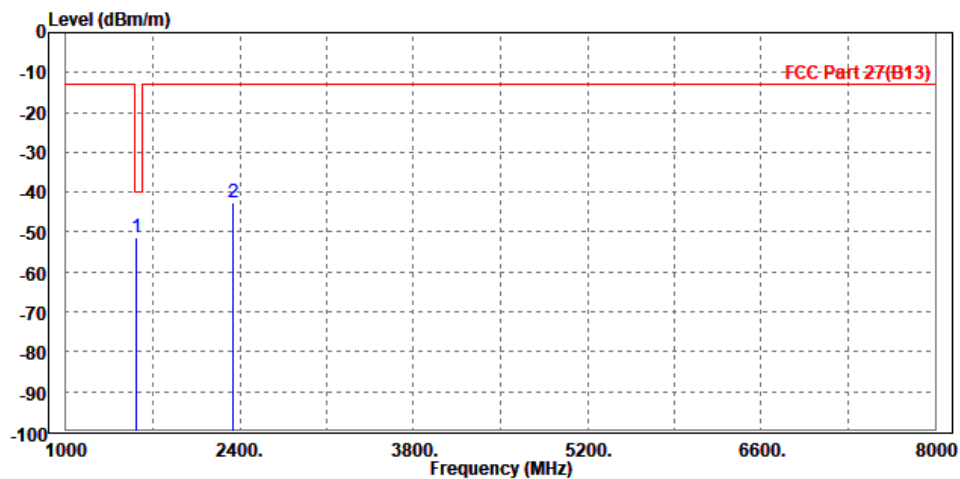
MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1567.000	-43.49	-43.70	-40.00	-3.49	0.21	Peak	Horizontal
2	2351.000	-35.29	-39.95	-13.00	-22.29	4.66	Peak	Horizontal



MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

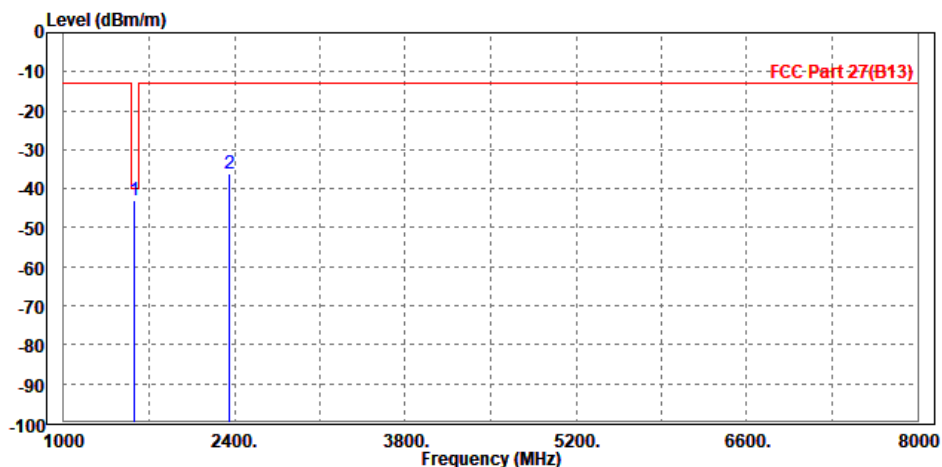
			Read	Limit	Over			
	Freq	Level	Level	Line	Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1564.000	-51.26	-52.47	-40.00	-11.26	1.21	Peak	Vertical
2	2351.000	-42.55	-47.72	-13.00	-29.55	5.17	Peak	Vertical



CH23255

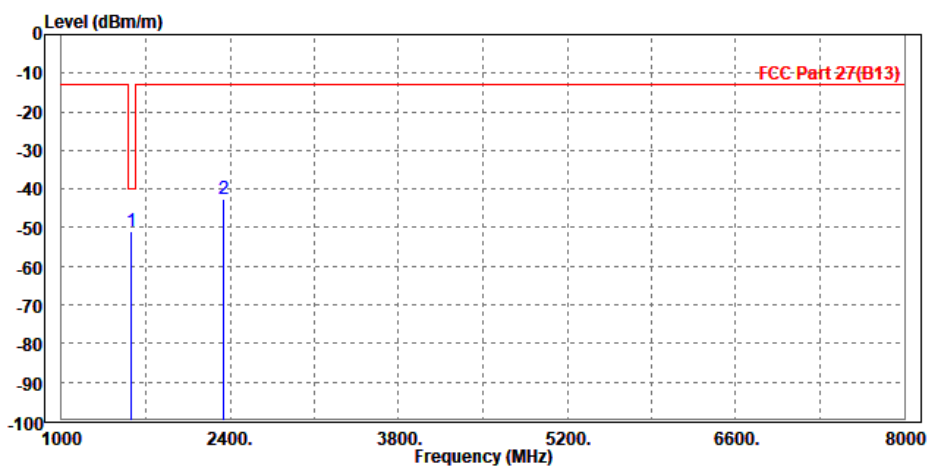
MODE	TX channel 23255	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1574.000	-43.13	-43.42	-40.00	-3.13	0.29	Peak	Horizontal
2		2358.000	-35.96	-40.61	-13.00	-22.96	4.65	Peak	Horizontal



MODE	TX channel 23255	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

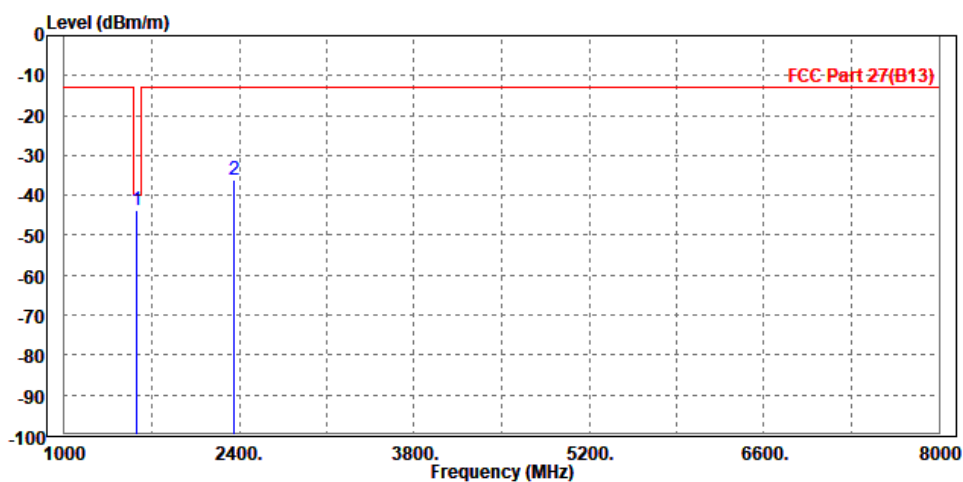
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1574.000	-51.02	-52.31	-40.00	-11.02	1.29	Peak	Vertical
2	2344.000	-42.50	-47.66	-13.00	-29.50	5.16	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz /QPSK

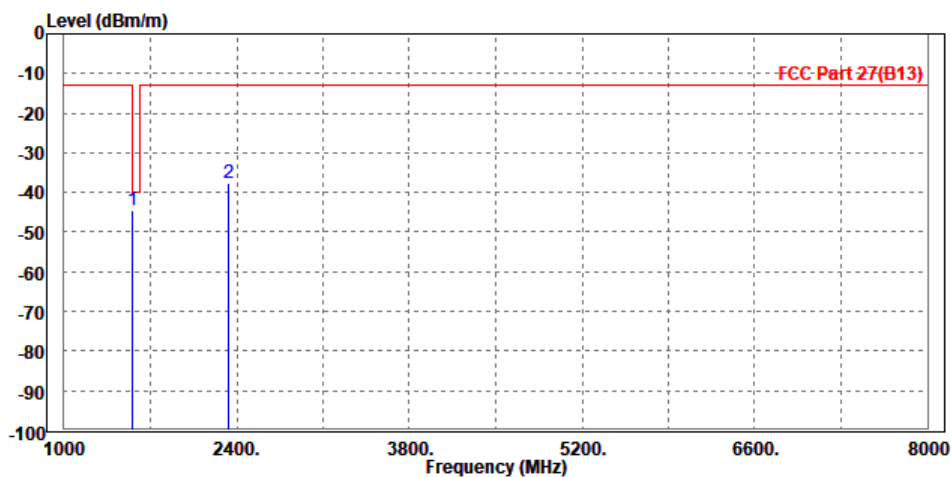
MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1574.000	-43.90	-44.19	-40.00	-3.90	0.29	Peak	Horizontal
2	2358.000	-36.04	-40.69	-13.00	-23.04	4.65	Peak	Horizontal



MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1553.000	-44.47	-45.60	-13.00	-31.47	1.13	Peak	Vertical
2 PP	2337.000	-37.78	-42.93	-13.00	-24.78	5.15	Peak	Vertical



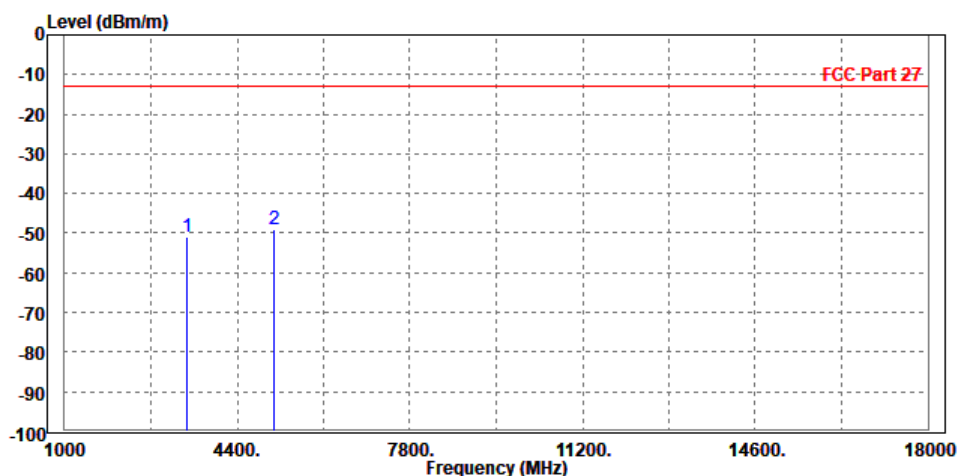
LTE B66

CHANNEL BANDWIDTH: 1.4MHz / QPSK

CH131979

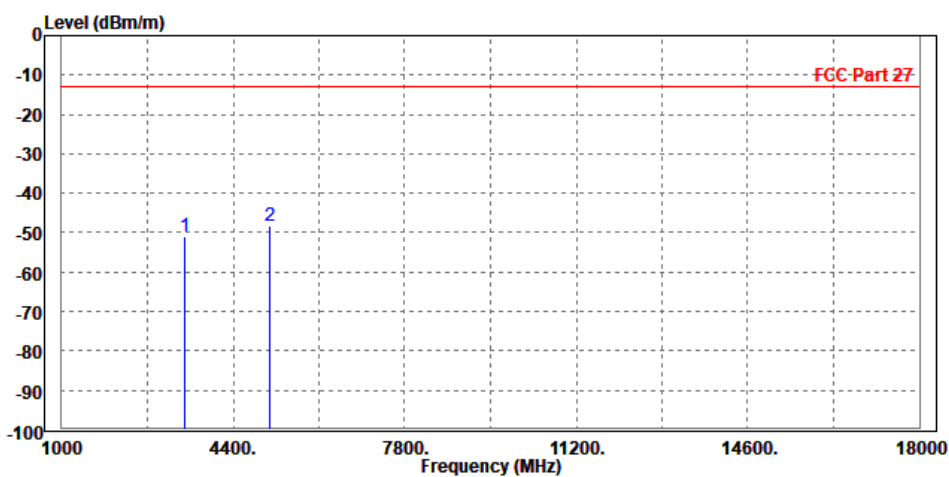
MODE	TX channel 131979	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3423.000	-50.92	-59.43	-13.00	-37.92	8.51	Peak	Horizontal
2	PP 5131.000	-49.12	-60.37	-13.00	-36.12	11.25	Peak	Horizontal



MODE	TX channel 131979	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

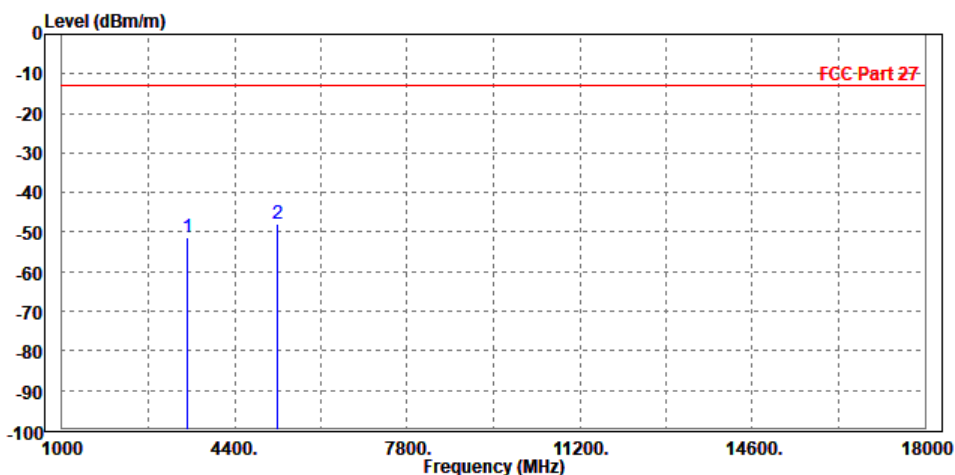
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3431.000	-50.90	-59.57	-13.00	-37.90	8.67	Peak	Vertical
2 PP	5134.500	-48.43	-60.06	-13.00	-35.43	11.63	Peak	Vertical



CH132322

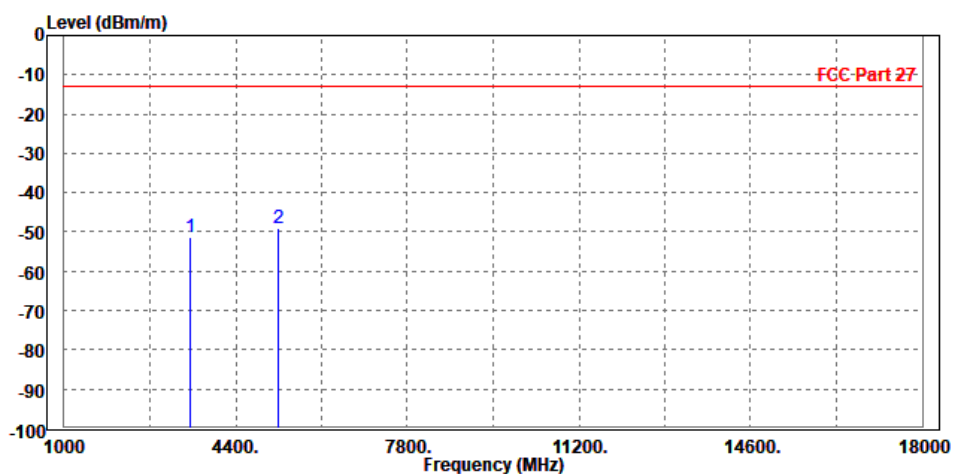
MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3482.000	-51.48	-60.03	-13.00	-38.48	8.55	Peak	Horizontal
2 PP	5235.000	-47.77	-59.18	-13.00	-34.77	11.41	Peak	Horizontal



MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

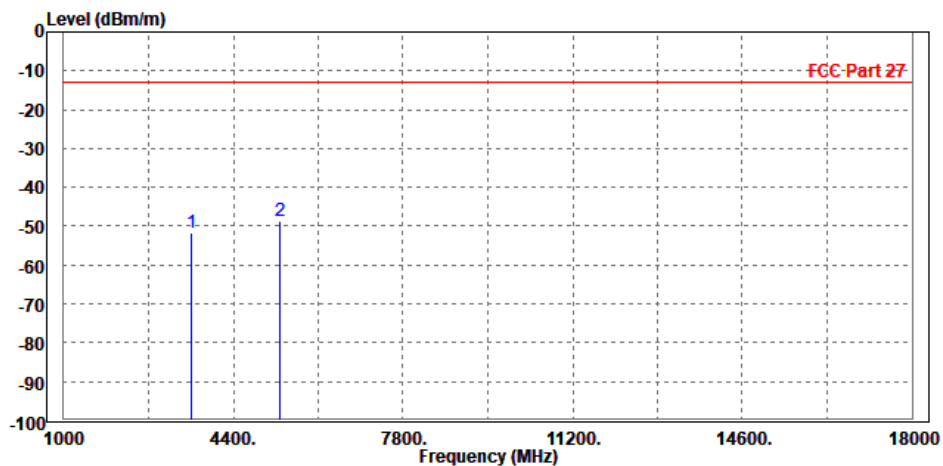
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3490.000	-51.37	-60.01	-13.00	-38.37	8.64	Peak	Vertical
2 PP	5233.000	-48.92	-60.74	-13.00	-35.92	11.82	Peak	Vertical



CH 132665

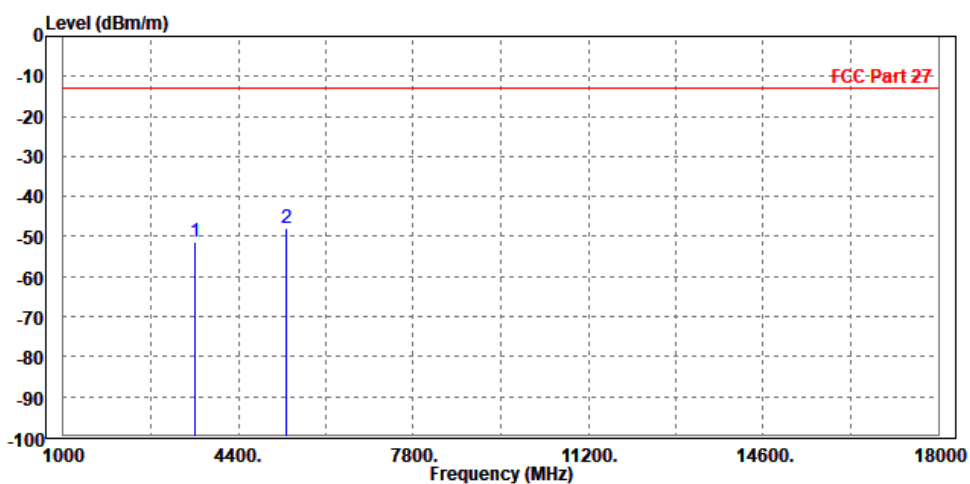
MODE	TX channel 132665	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3550.000	-51.74	-60.26	-13.00	-38.74	8.52	Peak	Horizontal
2 PP	5337.000	-48.51	-60.07	-13.00	-35.51	11.56	Peak	Horizontal



MODE	TX channel 132665	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

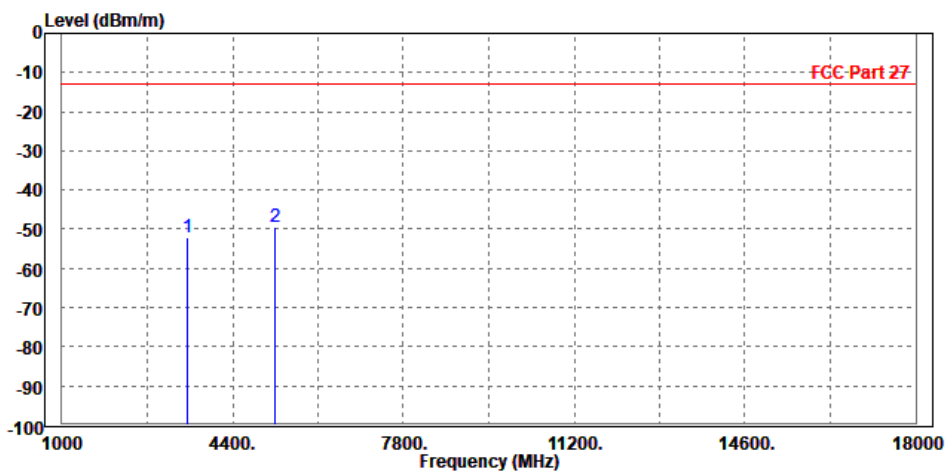
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3558.000	-51.29	-59.93	-13.00	-38.29	8.64	Peak	Vertical
2 PP	5335.000	-47.80	-59.82	-13.00	-34.80	12.02	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK

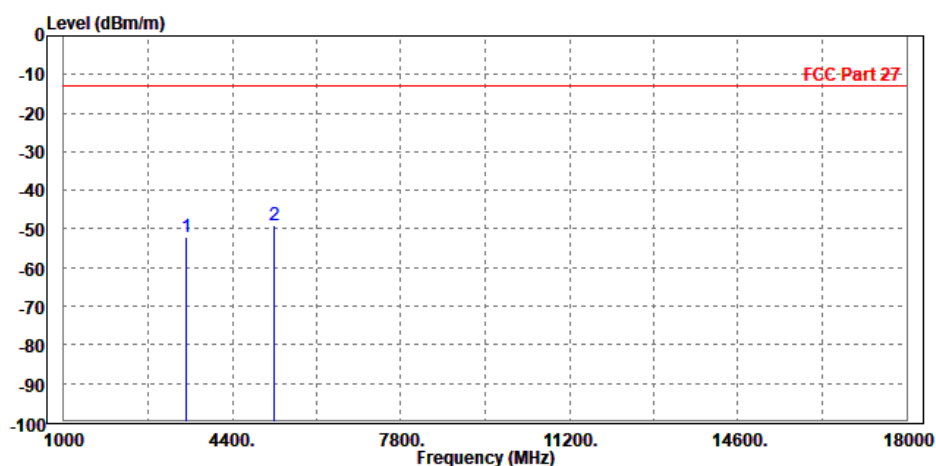
MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3490.000	-52.26	-60.81	-13.00	-39.26	8.55	Peak	Horizontal
2 PP	5233.000	-49.30	-60.70	-13.00	-36.30	11.40	Peak	Horizontal



MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

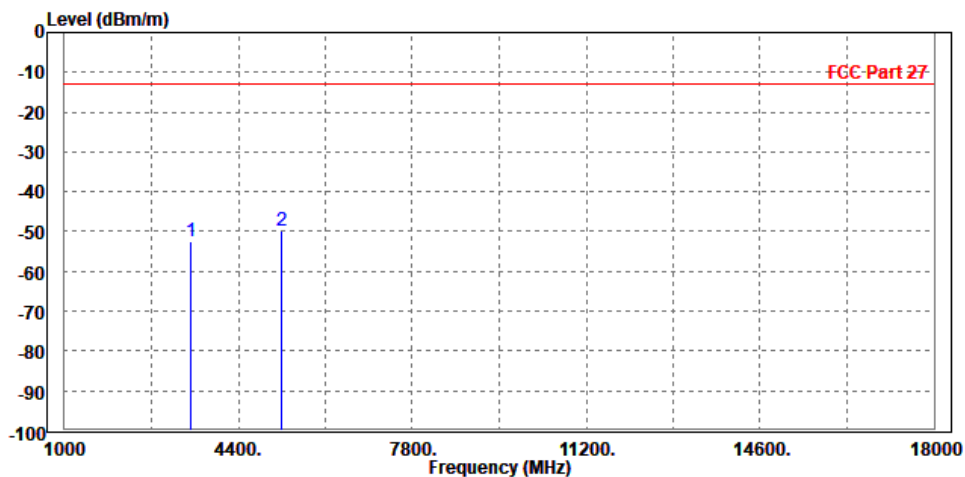
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3482.000	-52.11	-60.76	-13.00	-39.11	8.65	Peak	Vertical
2 PP	5235.000	-49.14	-60.97	-13.00	-36.14	11.83	Peak	Vertical



CHANNEL BANDWIDTH: 5MHz / QPSK

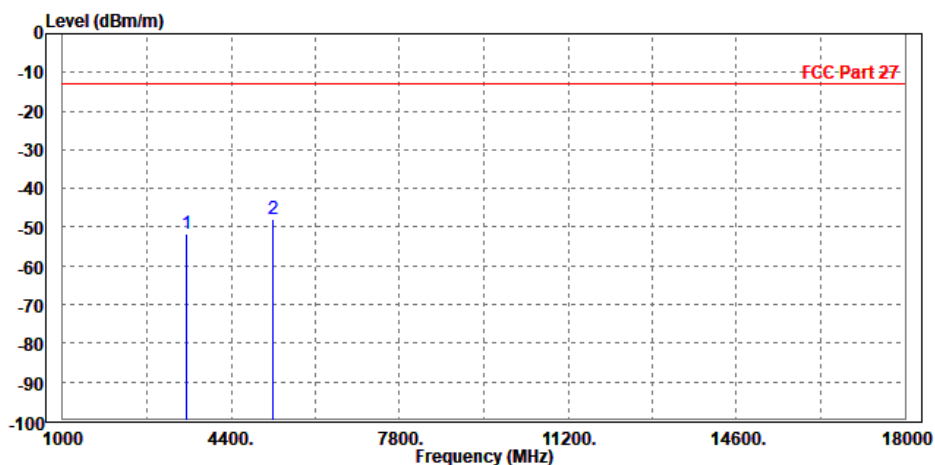
MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3482.000	-52.50	-61.05	-13.00	-39.50	8.55	Peak	Horizontal
2 PP	5235.000	-49.82	-61.23	-13.00	-36.82	11.41	Peak	Horizontal



MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

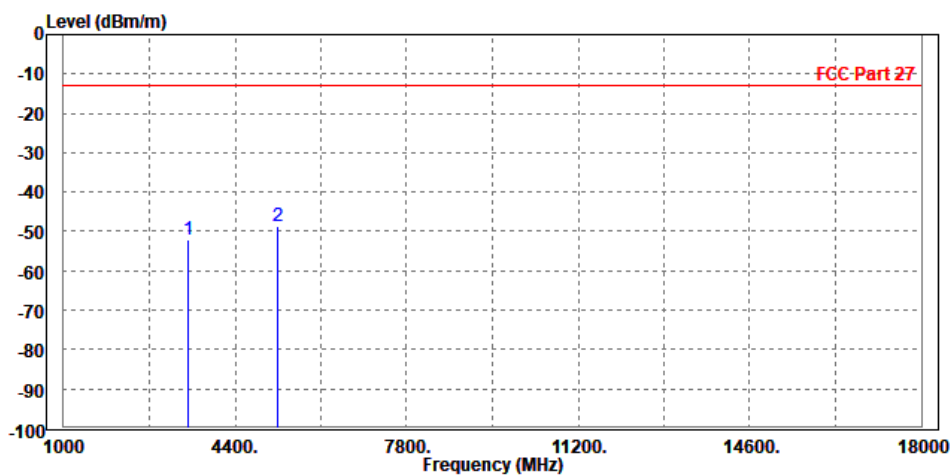
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3490.000	-51.56	-60.20	-13.00	-38.56	8.64	Peak	Vertical
2 PP	5233.000	-47.97	-59.79	-13.00	-34.97	11.82	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

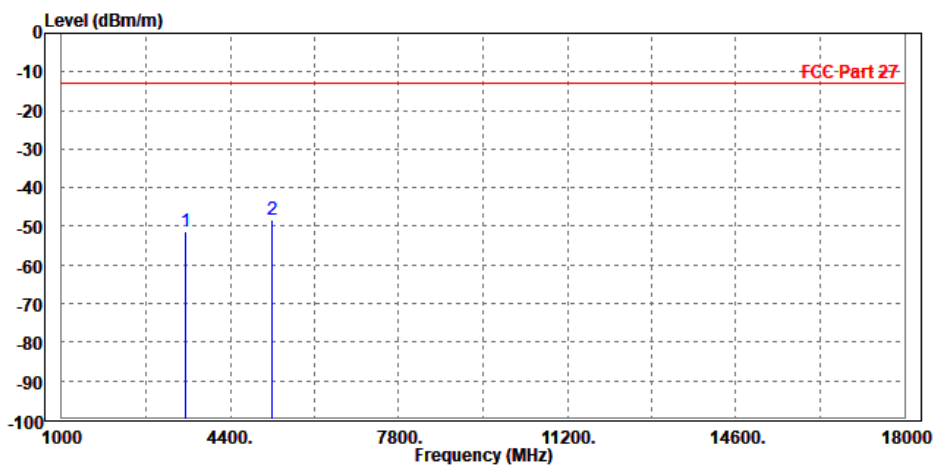
MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3482.000	-52.03	-60.58	-13.00	-39.03	8.55	Peak	Horizontal
2 PP	5235.000	-48.86	-60.27	-13.00	-35.86	11.41	Peak	Horizontal



MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

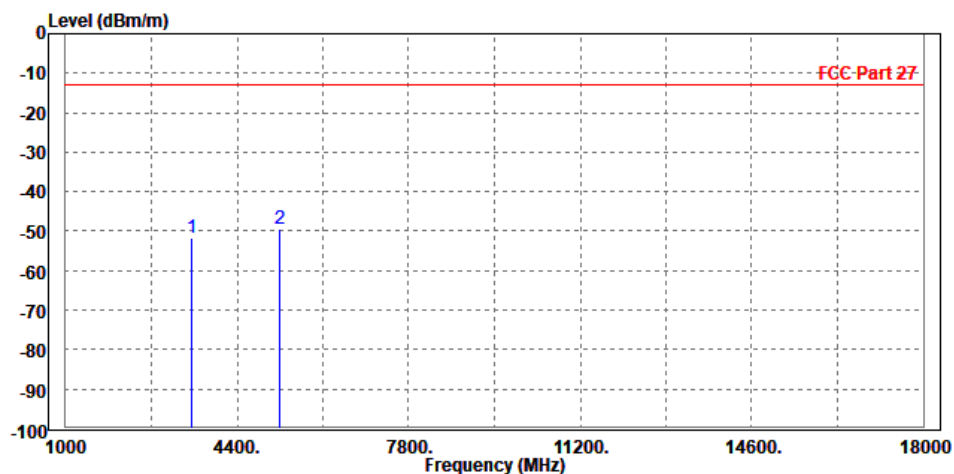
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3490.000	-51.30	-59.94	-13.00	-38.30	8.64	Peak	Vertical
2 PP	5233.000	-48.32	-60.14	-13.00	-35.32	11.82	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

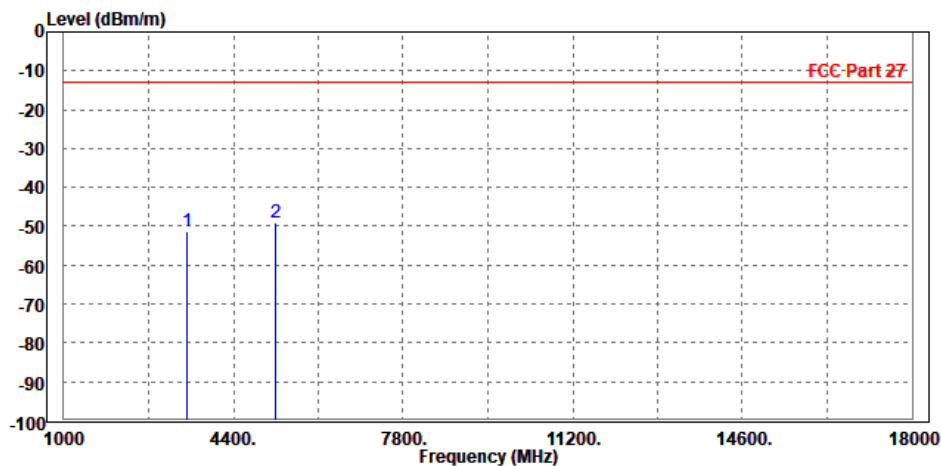
MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3490.000	-51.87	-60.42	-13.00	-38.87	8.55	Peak	Horizontal
2	PP 5233.000	-49.53	-60.93	-13.00	-36.53	11.40	Peak	Horizontal



MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

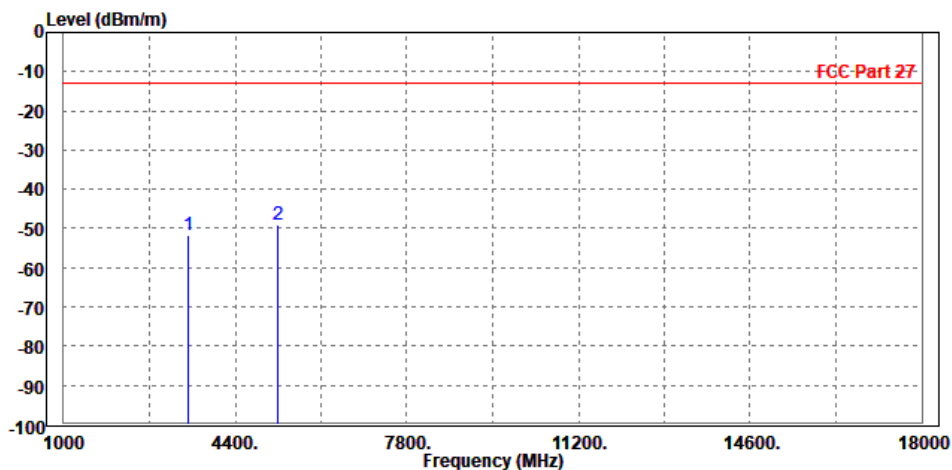
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3482.000	-51.45	-60.10	-13.00	-38.45	8.65	Peak	Vertical
2 PP	5235.000	-48.87	-60.70	-13.00	-35.87	11.83	Peak	Vertical



CHANNEL BANDWIDTH: 20MHz / QPSK

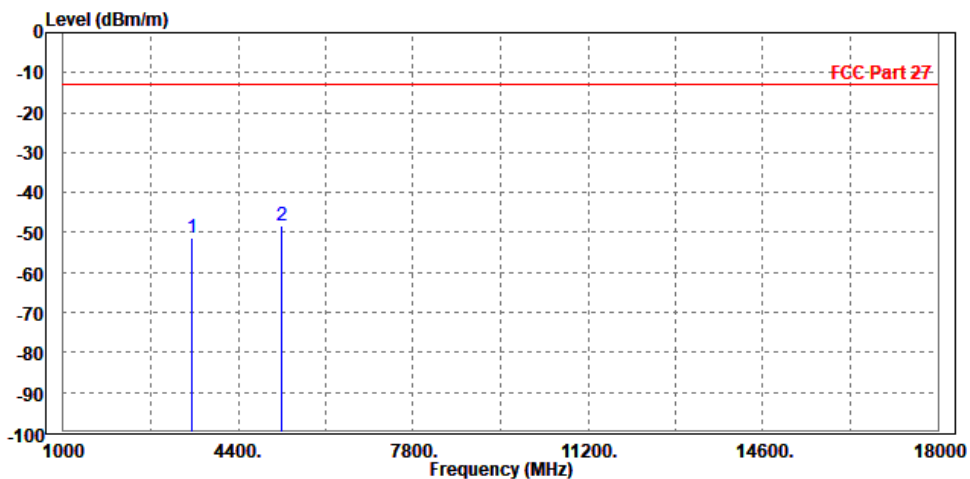
MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3482.000	-51.74	-60.29	-13.00	-38.74	8.55	Peak	Horizontal
2 PP	5235.000	-49.05	-60.46	-13.00	-36.05	11.41	Peak	Horizontal



MODE	TX channel 132322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3490.000	-51.47	-60.11	-13.00	-38.47	8.64	Peak	Vertical
2 PP	5233.000	-48.27	-60.09	-13.00	-35.27	11.82	Peak	Vertical



LTE NB-IOT

BELOW 1GHz WORST-CASE DATA

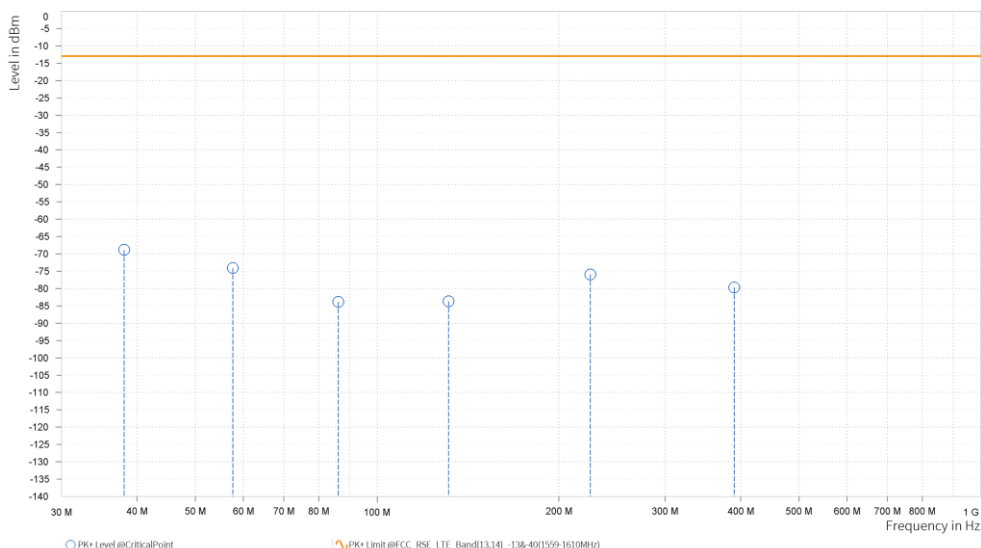
30 MHz – 1GHz data:

LTE Band 13

SUBCARRIER SPACING: 15KHz / QPSK

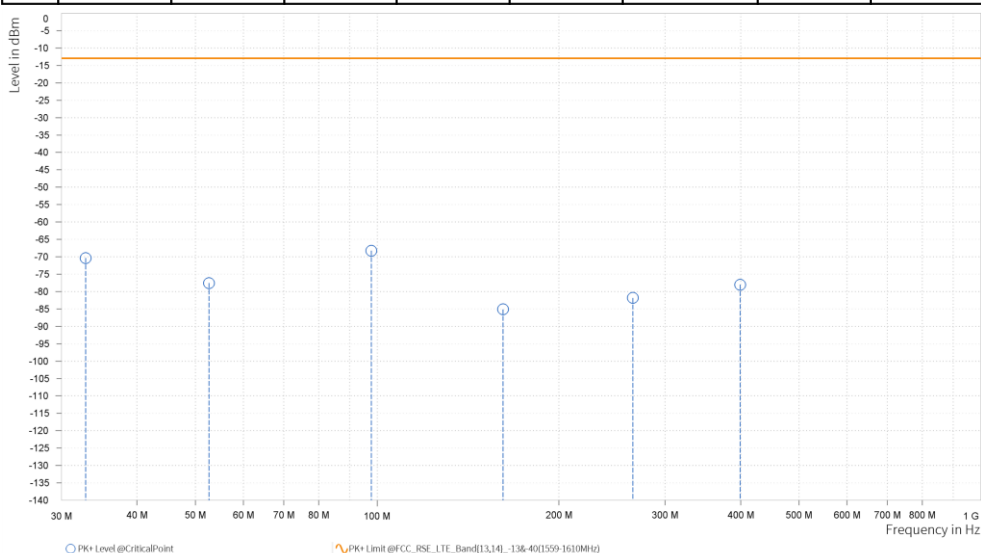
MODE	TX channel 23095	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	38.100	-68.85	-13.00	55.85	-0.25	H	219.3	1.00
1	57.650	-74.07	-13.00	61.07	-4.00	H	9.9	2.00
1	86.200	-83.87	-13.00	70.87	-12.69	H	9.9	2.00
1	131.250	-83.69	-13.00	70.69	-13.40	H	100.9	1.00
1	225.500	-75.94	-13.00	62.94	-0.59	H	291.4	2.00
1	390.150	-79.71	-13.00	66.71	0.12	H	1	1.00



MODE	TX channel 23095	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	32.900	-70.36	-13.00	57.36	-6.65	V	67.4	1.00
1	52.650	-77.57	-13.00	64.57	-6.86	V	359	2.00
1	97.750	-68.28	-13.00	55.28	2.91	V	1	1.00
1	161.650	-85.10	-13.00	72.10	-10.68	V	11.9	2.00
1	265.050	-81.84	-13.00	68.84	-4.18	V	355.7	2.00
1	399.350	-78.03	-13.00	65.03	0.18	V	237.1	1.00





Test Report No.: PSZ-QSU2412270112RF03

ABOVE 1GHz

Note: For higher frequency, the emission is too low to be detected.

WORST-CASE DATA

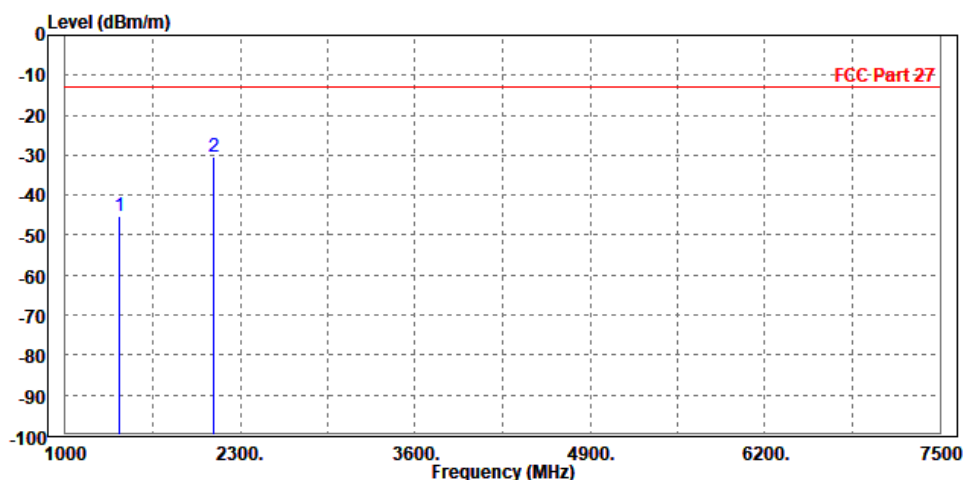
LTE BAND 12

SUBCARRIER SPACING: 3.75KHz / QPSK

CH23012

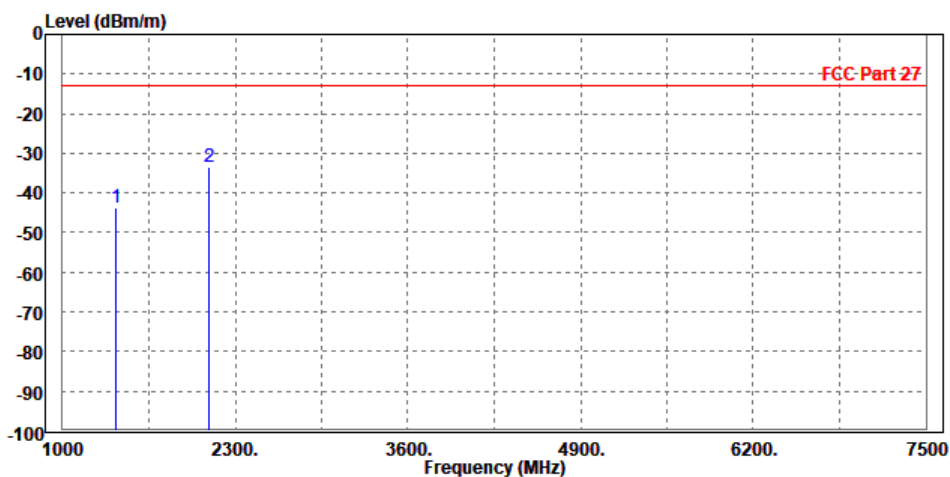
MODE	TX channel 23012	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1396.500	-45.06	-47.94	-13.00	-32.06	2.88	Peak	Horizontal
2 PP	2098.500	-30.48	-35.50	-13.00	-17.48	5.02	Peak	Horizontal



MODE	TX channel 23012	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

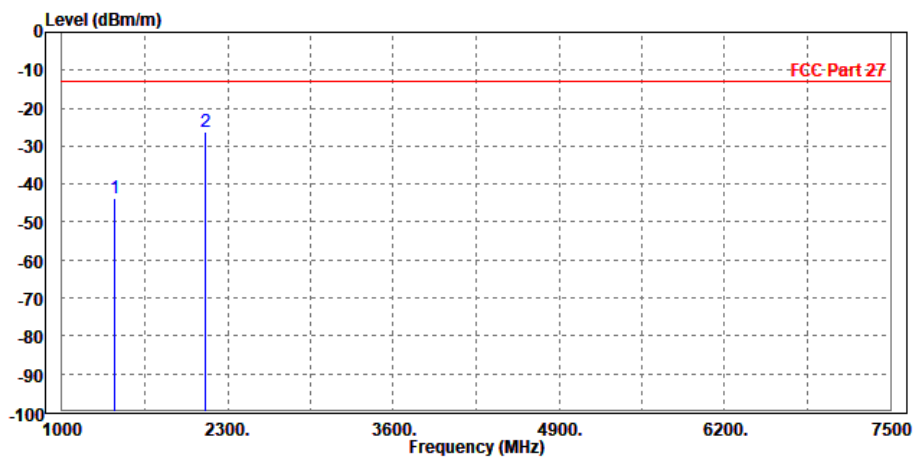
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1396.500	-43.55	-46.43	-13.00	-30.55	2.88	Peak	Vertical
2 PP	2098.500	-33.44	-37.79	-13.00	-20.44	4.35	Peak	Vertical



CH23095

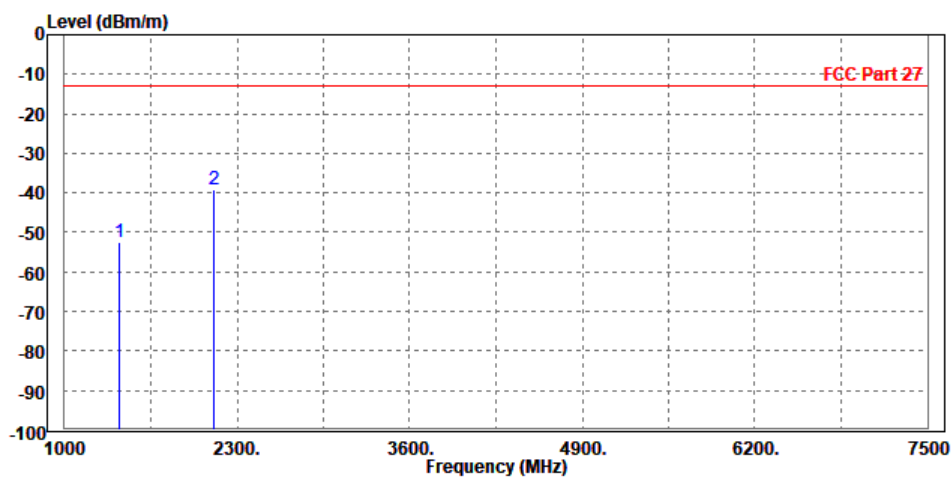
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-43.76	-46.70	-13.00	-30.76	2.94	Peak	Horizontal
2 PP	2124.500	-26.35	-31.44	-13.00	-13.35	5.09	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

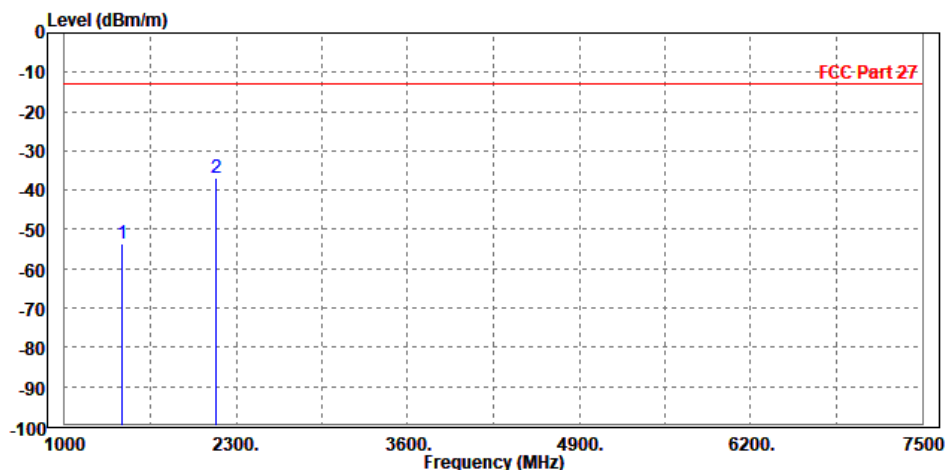
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-52.34	-55.27	-13.00	-39.34	2.93	Peak	Vertical
2 PP	2124.500	-39.28	-43.72	-13.00	-26.28	4.44	Peak	Vertical



CH23178

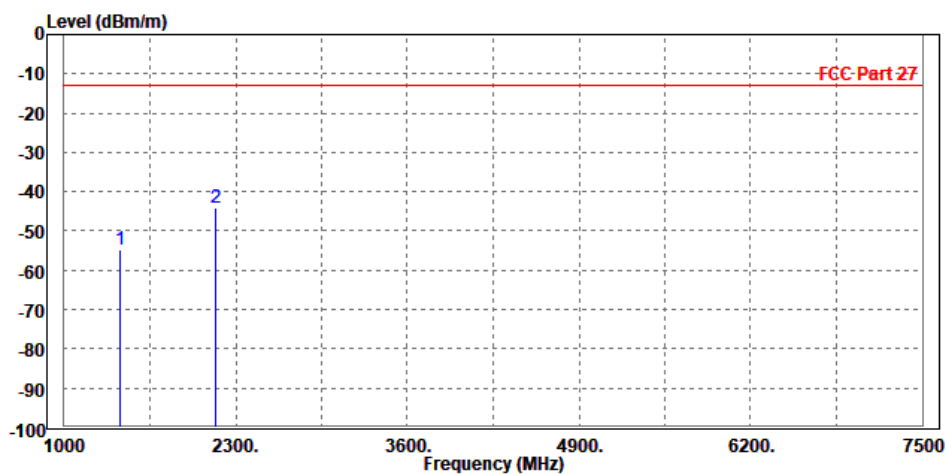
MODE	TX channel 23178	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1432.000	-53.50	-56.49	-13.00	-40.50	2.99	Peak	Horizontal
2 PP	2150.500	-36.70	-41.86	-13.00	-23.70	5.16	Peak	Horizontal



MODE	TX channel 23178	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

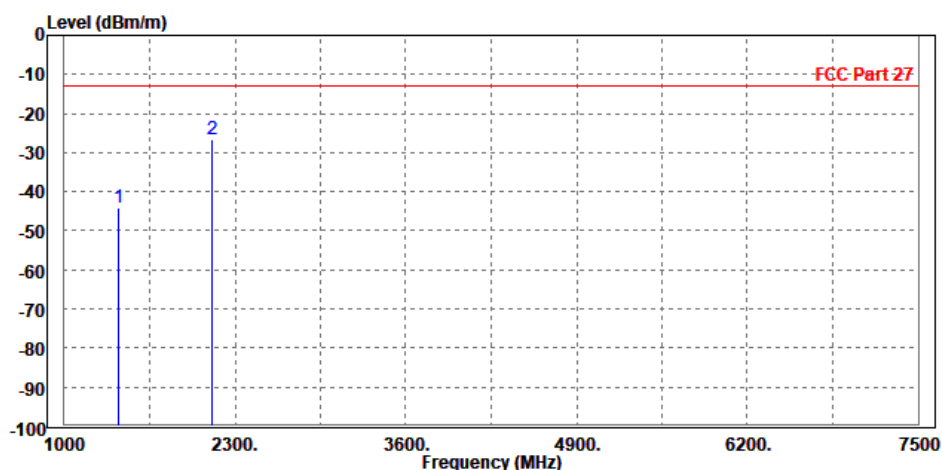
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1429.000	-54.66	-57.62	-13.00	-41.66	2.96	Peak	Vertical
2 PP	2148.000	-43.96	-48.49	-13.00	-30.96	4.53	Peak	Vertical



SUBCARRIER SPACING: 15KHz / QPSK

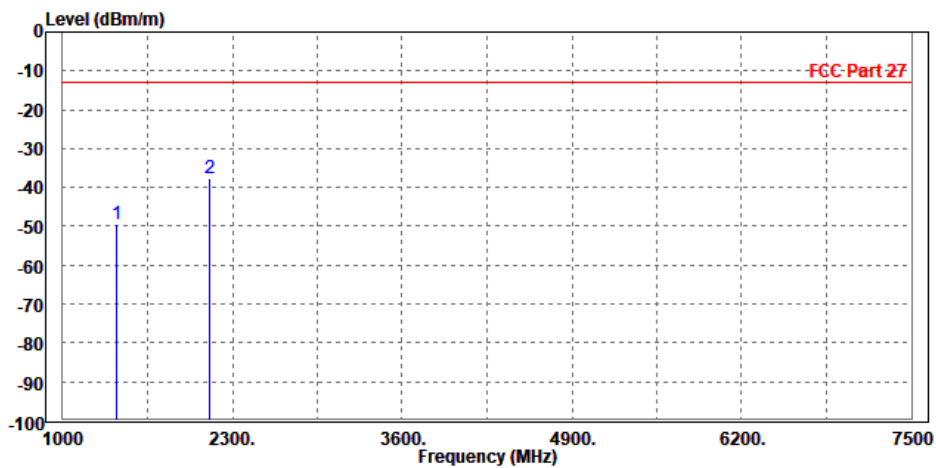
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-44.00	-46.94	-13.00	-31.00	2.94	Peak	Horizontal
2 PP	2122.500	-26.67	-31.75	-13.00	-13.67	5.08	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-49.56	-52.49	-13.00	-36.56	2.93	Peak	Vertical
2 PP	2124.500	-37.72	-42.16	-13.00	-24.72	4.44	Peak	Vertical



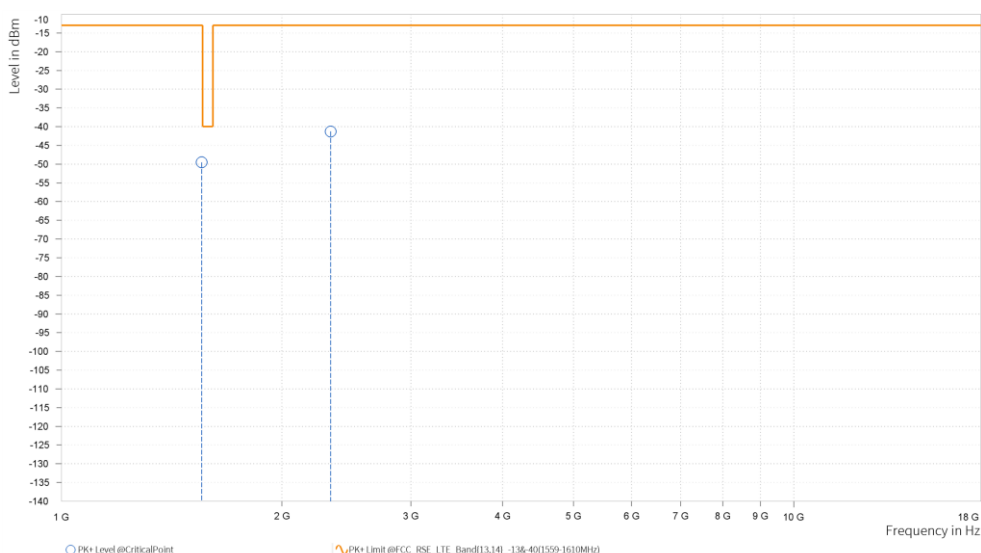
LTE B13

SUBCARRIER SPACING: 15KHz / QPSK

CH23182

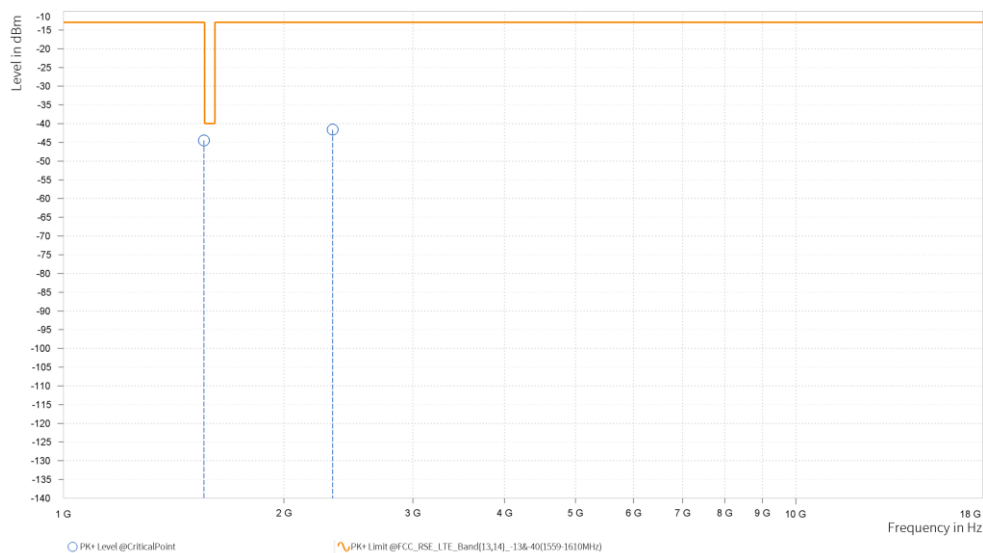
MODE	TX channel 23182	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,554.000	-49.54	-13.00	36.54	12.80	H	222.2	1.00
3	2,330.500	-41.30	-13.00	28.30	19.31	H	1	2.00



MODE	TX channel 23182	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

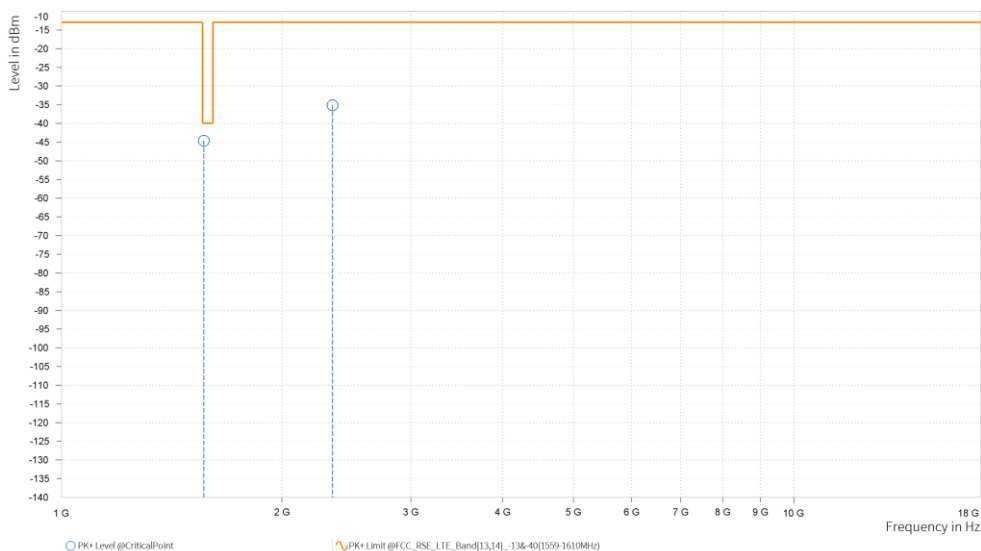
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,554.500	-44.47	-13.00	31.47	14.13	V	274.6	1.00
3	2,331.000	-41.62	-13.00	28.62	19.95	V	283	1.00



CH23230

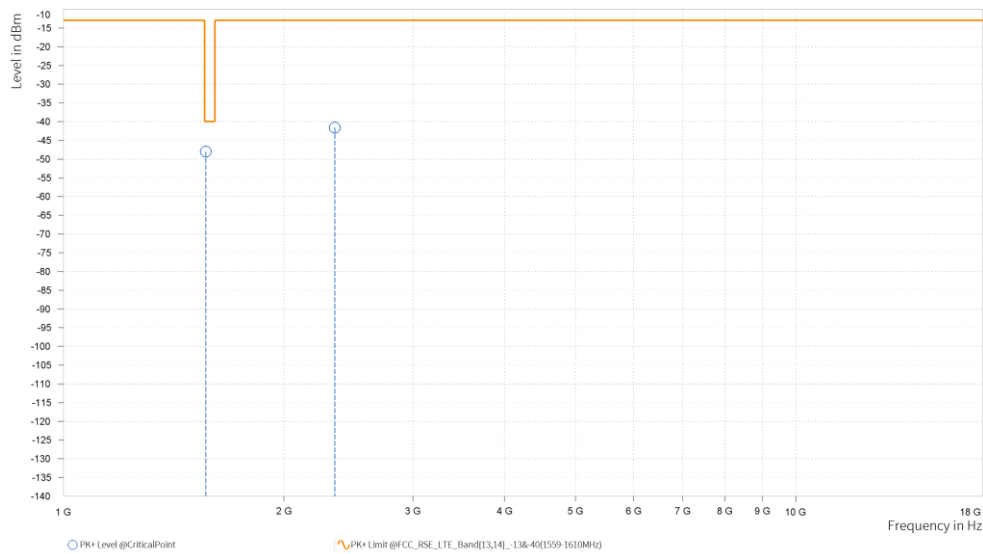
MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,564.000	-44.61	-40.00	4.61	12.67	H	220	1.00
3	2,345.500	-35.10	-13.00	22.10	19.78	H	26.1	2.00



MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

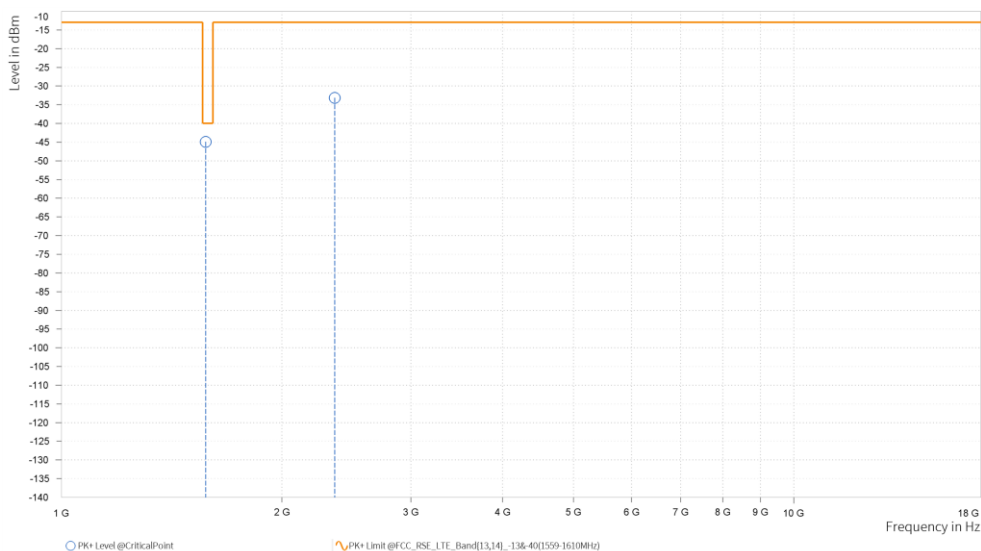
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,564.000	-48.01	-40.00	8.01	14.09	V	223.5	1.00
3	2,346.000	-41.59	-13.00	28.59	20.00	V	336.8	1.00



CH23278

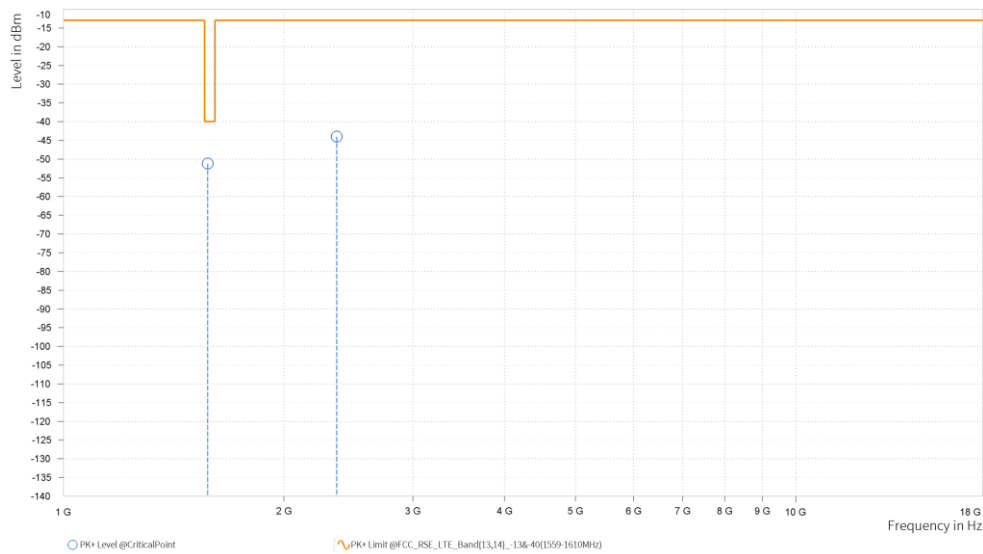
MODE	TX channel 23278	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,573.500	-44.90	-40.00	4.90	12.91	H	359	2.00
3	2,360.500	-33.17	-13.00	20.17	20.25	H	359.1	1.00



MODE	TX channel 23278	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	INPUT 120 VAC, 60 HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,574.000	-51.19	-40.00	11.19	14.17	V	171.8	1.00
3	2,360.500	-44.00	-13.00	31.00	20.03	V	296.3	2.00



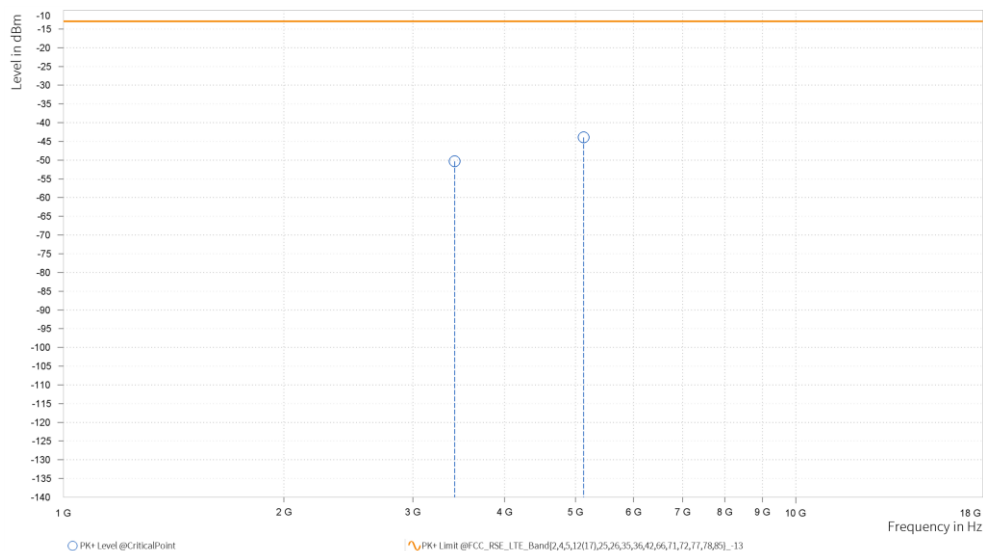
LTE Band 66

SUBCARRIER SPACING: 15KHz / QPSK

CH 131974

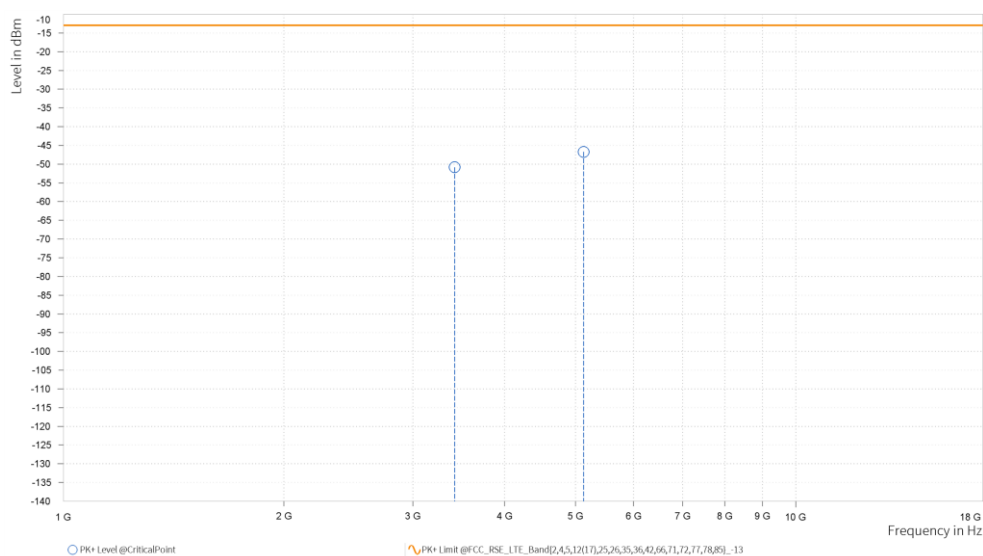
MODE	TX channel 131974	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,420.200	-50.32	-13.00	37.32	20.54	H	300.7	1.00
4	5,130.000	-43.92	-13.00	30.92	23.55	H	1	1.00



MODE	TX channel 131974	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

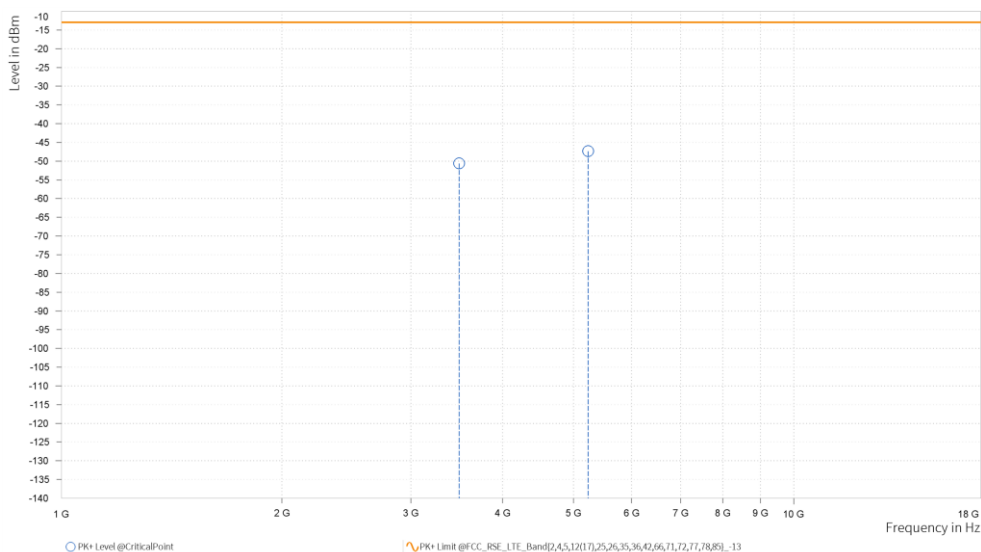
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,420.200	-50.82	-13.00	37.82	20.86	V	118.2	1.00
4	5,130.000	-46.72	-13.00	33.72	23.89	V	263.1	2.00



CH 132322

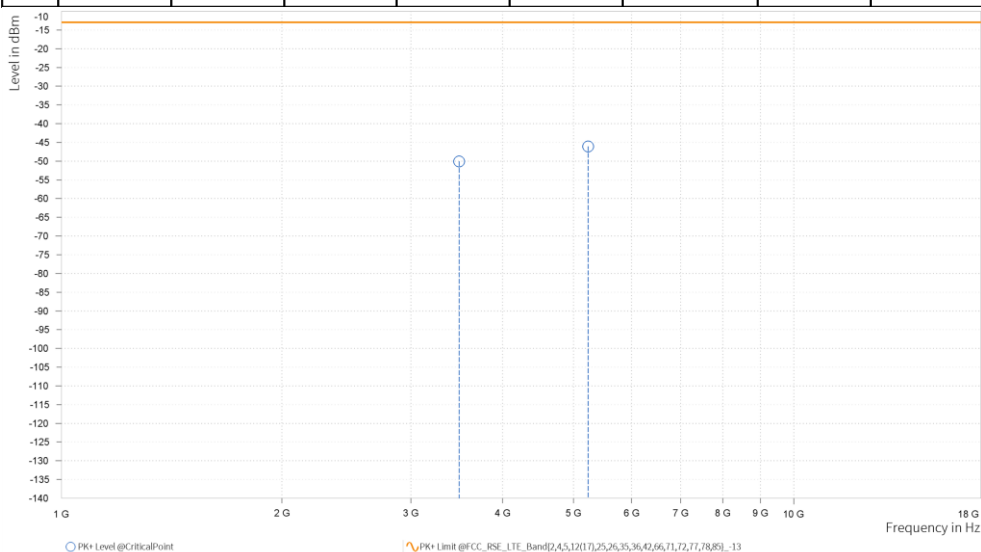
MODE	TX channel 132322	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,490.000	-50.63	-13.00	37.63	20.50	H	359	1.00
4	5,235.000	-47.33	-13.00	34.33	24.04	H	1	1.00



MODE	TX channel 132322	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

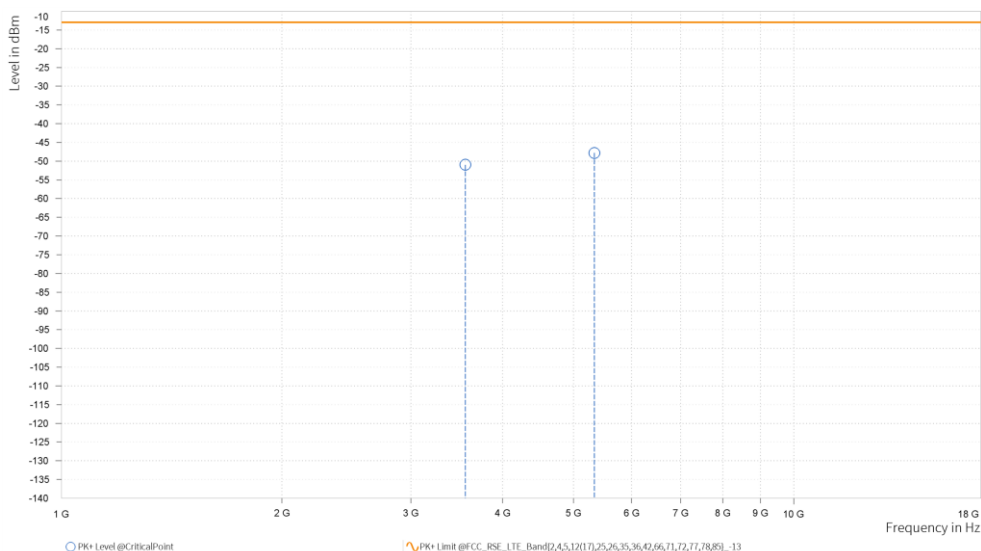
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,490.000	-50.06	-13.00	37.06	21.29	V	1	1.00
4	5,235.000	-46.07	-13.00	33.07	24.56	V	359	2.00



CH 132670

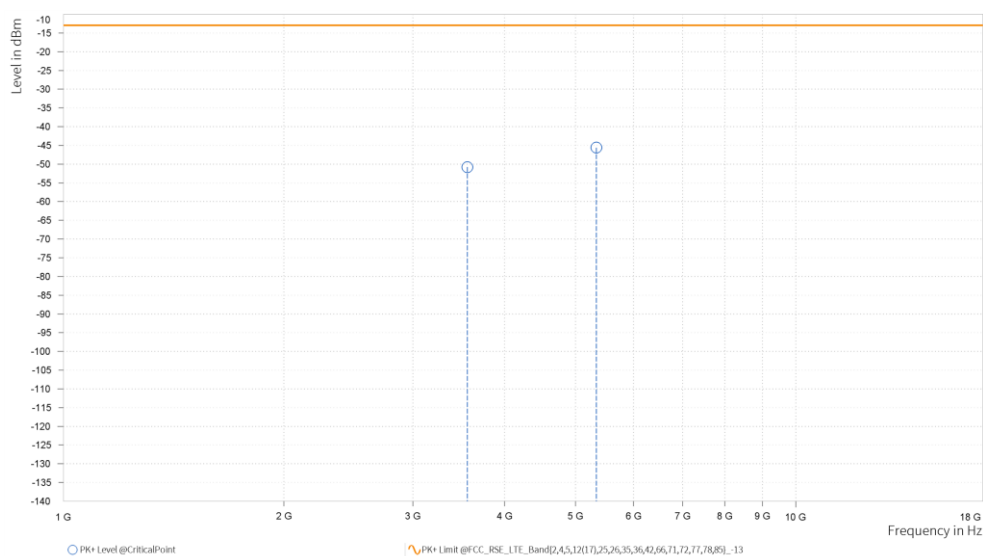
MODE	TX channel 132670	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,559.800	-50.99	-13.00	37.99	20.69	H	7.5	2.00
4	5,339.700	-47.81	-13.00	34.81	24.24	H	7.5	2.00



MODE	TX channel 132670	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,559.800	-50.80	-13.00	37.80	21.24	V	359.1	1.00
4	5,339.700	-45.61	-13.00	32.61	24.71	V	359.1	1.00

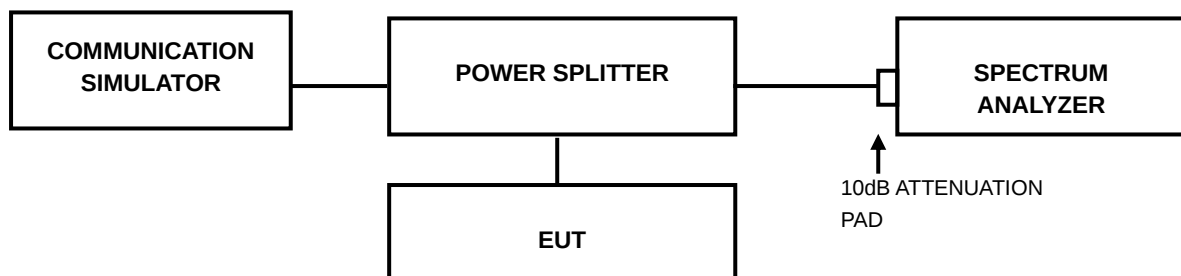


3.7 PEAK TO AVERAGE RATIO

3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

3.7.2 TEST SETUP



3.7.3 TEST PROCEDURES

1. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.



Test Report No.: PSZ-QSU2412270112RF03

3.7.4 TEST RESULTS

Please Refer to Module report R2207A0656-R7V1/ R2207A0656-R8V1, FCC ID: XMR2021BG770AGL.



Test Report No.: PSZ-QSU2412270112RF03

4 INFORMATION ON THE TESTING LABORATORIES

We, Huarui 7layers High Technology (Suzhou) Co., Ltd. ,were founded in 2020 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

If you have any comments, please feel free to contact us at the following:

Suzhou EMC/RF Lab:

Tel: +86 (0557) 368 1008



Test Report No.: PSZ-QSU2412270112RF03

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---