FCC TEST REPORT

(PART 27)

Applicant:	Continental Automotive Systems, Inc.
Address:	21440 W Lake Cook Rd., Deer Park, IL 60010, USA

Manufacturer or Supplier:	Continental Automotive Systems, Inc.
Address:	21440 W Lake Cook Rd., Deer Park, IL 60010, USA
Product:	Module
Brand Name:	Continental
Model Name:	FE5NAR110, FE5NAR111
FCC ID:	LHJ-FE5NAR110
Date of tests:	May. 01, 2024 ~ Jun. 17, 2024

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 Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Simon Wang Date: Jun. 17, 2024	Luke Lu Date: Jun. 17, 2024

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.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-240430W002RF04	Original release	Jun. 17, 2024

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**
§2.1046	Conducted Output Power	Compliance
§27.50(b)(10) §27.50(c)(10)	Effective Radiated Power (Band 12) (Band 13) (Band 71)	Compliance
§27.50(d)(4) §27.50(h)(2)	Equivalent Isotropically Radiated Power (WCMDA Band 4) (Band 7)	Compliance
§2.1055 §27.54	Frequency Stability	Compliance
§2.1049	Occupied Bandwidth	Compliance
§2.1051 §27.53(c)(2)(4) §27.53(g) §27.53(h) §27.53(m)(4)(6)	Conducted Band Edge Measurements (WCMDA Band 4) (Band 7) (Band 12) (Band 13) (Band 71)	Compliance
§2.1051 §27.53(c)(2)(4) §27.53(g) §27.53(f) §27.53(h) §27.53(m)(4)(6)	Conducted Spurious Emissions (WCMDA Band 4)(Band 7) (Band 12) (Band 13) (Band 71)	Compliance
§2.1053 §27.53(c)(2)(4) §27.53(f) §27.53(g) §27.53(h) §27.53(m)(4)(6)	Radiated Spurious Emissions (WCMDA Band 4)(Band 7) (Band 12) (Band 13 (Band 71)	Compliance
NA	Peak to average ratio	Compliance

NOTE:
The worst-case scenario for all measurements is based on an engineering evaluation made on different modulations. Then, QPSK and 16QAM were observed as the worst mode to LTE bands respectively and set for all conducted and radiated. Output power measurements were measured on QPSK, 16QAM,

64QAM modulations, and tests other than output power are performed only in worse-case QPSK and 16QAM modulations.

1.1 MEASREMENT 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	±76.97Hz
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions & Radiated Power (30MHz~1GHz)	±4.98dB
Radiated emissions & Radiated Power (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Band Edge Measurements	±4.70dB

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

1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 28,24	Mar. 27,25
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.10,23	May.09,24
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.09,24	May.08,25
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.03,23	Sep.02,24
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 18,24	Feb. 17,25
Horn Antenna	ETS-LINDGREN	3117	00168692	Feb. 18,24	Feb. 17,25
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Sep.04, 23	Sep.03, 24
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 14,24	Feb. 13,25
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 06,23	May. 05,24
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 05,24	May. 04,25
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.10,23	May.09,24
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.09,24	May.08,25
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 17,24	Feb.16,25
3m Semi-anechoic Chamber	ETS-LINDGREN	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. 06,23	May. 05,24
10dB Attenuator	JFW/USA	50HF-010-SMA	50HF-010-SMA	May. 05,24	May. 04,25
Power Meter	Anritsu	ML2495A	1506002	Feb. 14,24	Feb. 13,25
Power Sensor	Anritsu	MA2411B	1339352	Feb. 14,24	Feb. 13,25
Temperature Chamber	ESPEC	SH-242	93000855	May. 06,23	May. 05,24
Temperature Chamber	ESPEC	SH-242	93000855	May. 05,24	May. 04,25
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 14,24	Feb. 13,25
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.10,23	May.09,24
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.09,24	May.08,25
DC Source	Kikusui/JP	PMX18-5A	N/A	Aug. 11,23	Aug. 10,24

NOTE: 1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/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	Module	
BRAND NAME	Continental	
MODEL NAME	FE5NAR110, FE5NAR111	
NOMINAL VOLTAGE	DC4.0V	
MODULATION TECHNOLOGY	**WCDMA**	BPSK, QPSK
	LTE	QPSK, 16QAM, 64QAM
FREQUENCY RANGE	**WCDMA IV**	1712.4MHz ~ 1752.6MHz
	LTE Band 7 Channel Bandwidth: 5MHz	2502.5MHz ~ 2567.5MHz
	LTE Band 7 Channel Bandwidth: 10MHz	2505MHz ~ 2565MHz
	LTE Band 7 Channel Bandwidth: 15MHz	2507.5MHz ~ 2562.5MHz
	LTE Band 7 Channel Bandwidth: 20MHz	2510MHz ~ 2560MHz
	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
	LTE Band 71 Channel Bandwidth: 5MHz	665.5MHz ~ 695.5MHz
	LTE Band 71 Channel Bandwidth: 10MHz	668MHz ~ 693MHz
	LTE Band 71 Channel Bandwidth: 15MHz	670.5MHz ~ 690.5MHz
	LTE Band 71 Channel Bandwidth: 20MHz	673MHz ~ 688MHz
MAX. EIRP POWER	**WCDMA IV**	334.97mW
	LTE Band 7 Channel Bandwidth: 5MHz	261.82mW

	LTE Band 7 Channel Bandwidth: 10MHz	262.42mW
	LTE Band 7 Channel Bandwidth: 15MHz	261.82mW
	LTE Band 7 Channel Bandwidth: 20MHz	267.92mW
	LTE Band 12 Channel Bandwidth: 1.4MHz	112.46mW
	LTE Band 12 Channel Bandwidth: 3MHz	113.24mW
	LTE Band 12 Channel Bandwidth: 5MHz	113.5mW
	LTE Band 12 Channel Bandwidth: 10MHz	116.14mW
	LTE Band 13 Channel Bandwidth: 5MHz	119.12mW
	LTE Band 13 Channel Bandwidth: 10MHz	117.76mW
	LTE Band 71 Channel Bandwidth: 5MHz	151.36mW
	LTE Band 71 Channel Bandwidth: 10MHz	151.01mW
	LTE Band 71 Channel Bandwidth: 15MHz	151.71mW
	LTE Band 71 Channel Bandwidth: 20MHz	154.88mW
EMISSION DESIGNATOR	**WCDMA IV**	4M14F9W
	LTE Band 7 Channel Bandwidth: 5MHz	QPSK: 4M52G7D
		16QAM: 4M51W7D
	LTE Band 7 Channel Bandwidth: 10MHz	QPSK:8M98G7D
		16QAM: 9M00W7D
	LTE Band 7 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M5W7D
	LTE Band 7 Channel Bandwidth: 20MHz	QPSK: 18M0G7D
		16QAM: 17M9W7D
	LTE Band 12 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D
		16QAM: 1M09W7D
	LTE Band 12 Channel Bandwidth: 3MHz	QPSK: 2M69G7D
		16QAM: 2M70W7D
	LTE Band 12	QPSK: 4M51G7D

	Channel Bandwidth: 5MHz	16QAM: 4M50W7D
	LTE Band 12 Channel Bandwidth: 10MHz	QPSK: 8M99G7D
		16QAM: 8M98W7D
	LTE Band 13 Channel Bandwidth: 5MHz	QPSK: 4M52G7D
		16QAM: 4M51W7D
	LTE Band 13 Channel Bandwidth: 10MHz	QPSK: 8M97G7D
		16QAM: 8M95W7D
	LTE Band 71 Channel Bandwidth: 5MHz	QPSK: 4M51G7D
		16QAM: 4M51W7D
	LTE Band 71 Channel Bandwidth: 10MHz	QPSK: 8M99G7D
		16QAM: 8M98W7D
	LTE Band 71 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M5W7D
	LTE Band 71 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 17M9W7D
ANTENNA TYPE	Monopole Antenna with 1.93dBi gain for WCDMA IV Monopole Antenna with 1.24dBi gain for LTE B7 Monopole Antenna with -0.32dBi gain for LTE B12/B13 Monopole Antenna with 0.94dBi gain for LTE B71	
HW VERSION	P2.0	
SW VERSION	MODEM_GM_C3_3.0.2.24	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	N/A	
EXTREME TEMPERATURE	-40-85 ℃	
EXTREME VOLTAGE	3.8V - 4.2V	

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter.

MODULATION MODE	TX FUNCTION
WCDMA	1TX
LTE	1TX

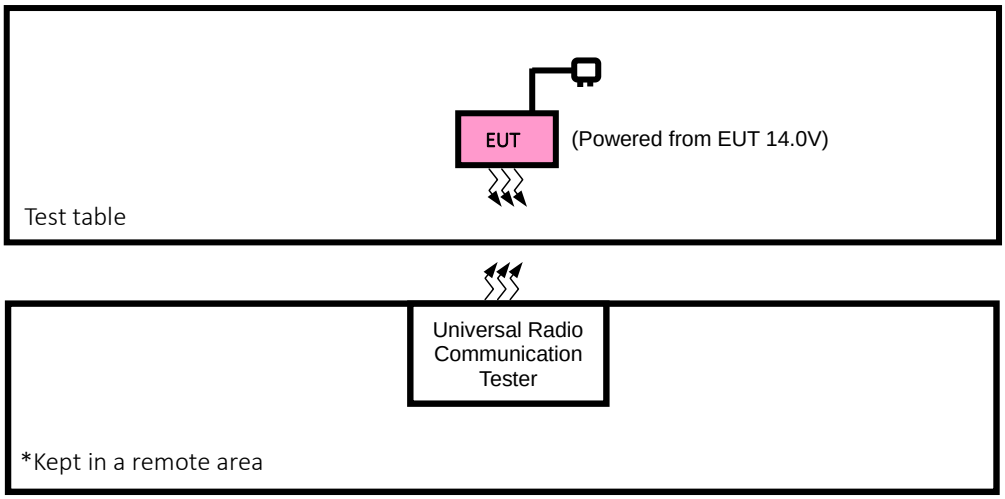
3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
4. Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.

1. According to the information provided by the manufacturer, The difference between FE5NAR110, FE5NAR111 is as follows:

Sample	HVIN/PMN	5G Bands NSA	5G Bands SA	SA UL MIMO	LTE Bands	UMTS	GNSS
1	FE5NAR110	n2, n5, n66, n77	n25, n41, n66, n71, n77	n41, n77	2, 4, 5, 7, 12, 13, 14, 28A, 28B, 29Rx, 30Rx, 66, 71	2, 4, 5	L1, L5
2	FE5NAR111	n2, n5, n66, n77	n25, n41, n66, n71, n77	n41, n77	2, 4, 5, 7, 12, 13, 14, 28A, 28B, 29Rx, 30Rx, 66, 71	2, 4, 5	L1

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	N/A	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB cable: Unshielded, Detachable 1.0m

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 + DC Source with WCDMA or LTE link

WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	EIRP	1312 to 1513	1312, 1413, 1513	WCDMA
A	FREQUENCY STABILITY	1312 to 1513	1312, 1413, 1513	WCDMA
A	OCCUPIED BANDWIDTH	1312 to 1513	1312, 1413, 1513	WCDMA
A	BAND EDGE	1312 to 1513	1312, 1513	WCDMA
A	PEAK TO AVERAGE RATIO	1312 to 1513	1312, 1413, 1513	WCDMA
A	CONDUCTED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA
A	RADIATED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA

LTE BAND 7 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM, 64QAM,	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	20800 to 21400	20800, 21100, 21400	10MHz	QPSK	50 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	20775 to 21425	20775, 21100, 21425	5MHz	QPSK,16QAM	25 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK,16QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK,16QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK,16QAM	100 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	20850 to 21350	20850, 21100, 21350	20MHz	QPSK,16QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
A	BAND EDGE	20775 to 21425	20775	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			21425	5MHz	QPSK,16QAM	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		20800 to 21400	20800	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			21400	10MHz	QPSK,16QAM	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		20825 to 21375	20825	15MHz	QPSK,16QAM	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			21375	15MHz	QPSK,16QAM	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		20850 to 21350	20850	20MHz	QPSK,16QAM	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			21350	20MHz	QPSK,16QAM	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
A	CONDUCTED EMISSION	20775 to 21425	20775, 21100, 21425	5MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK	1 RB / 0RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	20775 to 21425	21100	5MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	21100	10MHz	QPSK	1 RB / 0 RB Offset
		20825 to 21375	21100	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	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 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, 64QAM,	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	23060 to 23130	23060, 23095 ,23130	10MHz	QPSK	50 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK,16QAM	15 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK,16QAM	25 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK,16QAM	50 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	23060 to 23130	23060, 23095 ,23130	10MHz	QPSK,16QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
A	BAND EDGE	23017 to 23173	23017	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23173	1.4MHz	QPSK,16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23025 to 23165	23025	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			23165	3MHz	QPSK,16QAM	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		23035 to 23155	23035	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			23155	5MHz	QPSK,16QAM	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		23060 to 23130	23060	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			23130	10MHz	QPSK,16QAM	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
A	CONDUCTED EMISSION	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK	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, 64QAM,	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	23205 to 23255	23205, 23255	5MHz	QPSK	50 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	23205 to 23255	23205, 23230, 23255	5MHz	QPSK,16QAM	25 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM	50 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	23230	23230	10MHz	QPSK,16QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
A	BAND EDGE	23205 to 23255	23205	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			23255	5MHz	QPSK,16QAM	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
						1 RB / 49 RB Offset
						50 RB / 0 RB Offset
A	CONDUCTED EMISSION	23205 to 23255	23205, 23230, 23255	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	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 71

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	133147 to 133447	133147, 133297, 133447	5MHz	QPSK, 16QAM, 64QAM,	1 RB / 0 RB Offset
		133172 to 133422	133172, 133297 133422	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		133197 to 133397	133197, 133297, 133397	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		133222 to 133372	133222, 133322, 133372	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	133172 to 133422	133172,133422	10MHz	QPSK	50 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	133147 to 133447	133147, 133297, 133447	5MHz	QPSK,16QAM	25 RB / 0 RB Offset
		133172 to 133422	133172, 133297 133422	10MHz	QPSK,16QAM	50 RB / 0 RB Offset
		133197 to 133397	133197, 133297, 133397	15MHz	QPSK,16QAM	75 RB / 0 RB Offset
		133222 to 133372	133222, 133322, 133372	20MHz	QPSK,16QAM	100 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	133222 to 133372	133222, 133322, 133372	20MHz	QPSK,16QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
A	BAND EDGE	133147 to 133447	133147	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			133447	5MHz	QPSK,16QAM	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		133172 to 133422	133172	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			133422	10MHz	QPSK,16QAM	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		133197 to 133397	133197	15MHz	QPSK,16QAM	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			133397	15MHz	QPSK,16QAM	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		133222 to 133372	133222	20MHz	QPSK,16QAM	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			133372	20MHz	QPSK,16QAM	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
A	CONDUCTED EMISSION	133147 to 133447	133147, 133297, 133447	5MHz	QPSK	1 RB / 0 RB Offset
		133172 to 133422	133172, 133297 133422	10MHz	QPSK	1 RB / 0 RB Offset
		133197 to 133397	133197, 133297, 133397	15MHz	QPSK	1 RB / 0 RB Offset
		133222 to 133372	133222, 133322, 133372	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	133147 to 133447	133147, 133297, 133447	5MHz	QPSK	1 RB / 0 RB Offset
		133172 to 133422	133297	10MHz	QPSK	1 RB / 0 RB Offset
		133197 to 133397	133297	15MHz	QPSK	1 RB / 0 RB Offset
		133222 to 133372	133322	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.

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	DC 14.0V	Jace Hu
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.8V/4V/4.2V	James Fu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC 4.0V	James Fu
BAND EDGE	23deg. C, 70%RH	DC 4.0V	James Fu
CONDUCTED EMISSION	23deg. C, 70%RH	DC 4.0V	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC 14.0V	Jace Hu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC 4.0V	James Fu

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

The radiated peak output power shall be according to the specific rule Part 27.50(h)(2) that “User stations are limited to 2 watts” and 27.50(i) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”

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

According to the specific rule Part 27.50(b)(10) and 27.50(c)(10) Fixed, mobile, and Portable stations (hand-held devices) transmitting in the 698-746 MHz, 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 determing the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

ERP or EIRP = $P_{Meas} + G_T – L_C$

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);

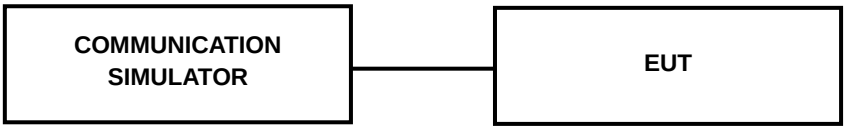
L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
b. 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

CONDUCTED OUTPUT POWER (dBm)

Band	WCDMA IV		
TX Channel	1312	1413	1513
Rx Channel	1537	1638	1738
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	23.32	23.28	**23.30**
HSDPA Subtest-1	22.13	22.01	21.95
HSDPA Subtest-2	21.97	21.92	21.93
HSDPA Subtest-3	21.54	21.58	21.47
HSDPA Subtest-4	21.46	21.43	21.45
DC-HSDPA Subtest-1	21.99	21.99	21.97
DC-HSDPA Subtest-2	21.98	21.97	21.98
DC-HSDPA Subtest-3	21.57	21.47	21.49
DC-HSDPA Subtest-4	21.60	21.54	21.44
HSUPA Subtest-1	22.01	21.93	21.96
HSUPA Subtest-2	20.17	20.15	20.11
HSUPA Subtest-3	21.28	21.13	21.10
HSUPA Subtest-4	20.00	20.06	19.93
HSUPA Subtest-5	21.95	21.92	22.00

LTE Band 7

LTE Band 7						
BW	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		20850	21100	21350
		Frequency (MHz)		2510	2535	2560
20M	QPSK	1	0	22.89	22.92	22.80
		1	50	22.86	22.96	22.84
		1	99	**23.04**	22.93	22.95
		50	0	21.80	21.81	21.81
		50	25	22.05	21.98	22.10
		50	50	22.07	22.00	22.08
		100	0	22.04	21.94	22.00
	16QAM	1	0	22.25	22.24	22.23
		1	50	22.23	22.27	22.25
		1	99	22.34	22.12	22.11
		50	0	20.89	20.79	20.86
		50	25	21.09	20.99	21.01
		50	50	21.03	21.03	21.11
		100	0	20.98	20.98	20.92
	64QAM	1	0	21.10	21.06	21.01
		1	50	21.08	21.02	21.06
		1	99	21.30	21.16	21.18
		50	0	20.30	20.25	20.17
		50	25	20.01	20.10	20.05
		50	50	20.16	20.11	20.19
		100	0	20.08	20.02	20.05

BW	Modulation	Channel		20825	21100	21375
		Frequency (MHz)		2507.5	2535	2562.5
15M	QPSK	1	0	22.74	22.89	22.66
		1	37	22.71	22.81	22.83
		1	74	22.94	22.86	22.88
		36	0	21.70	21.79	21.70
		36	19	21.92	21.93	21.98
		36	39	21.92	21.98	21.93
		75	0	21.91	21.84	21.98
	16QAM	1	0	22.24	22.09	22.18
		1	37	22.10	22.26	22.20
		1	74	22.30	22.04	22.01
		36	0	20.83	20.64	20.71
		36	19	20.96	20.89	21.00
		36	39	20.94	20.94	20.97
		75	0	20.97	20.88	20.78
	64QAM	1	0	21.02	21.04	20.98
		1	37	20.95	20.89	20.92
		1	74	21.19	21.02	21.13
		36	0	20.27	20.24	20.07
		36	19	19.98	20.02	20.03
		36	39	20.15	20.07	20.15
		75	0	19.96	19.91	19.90

BW	Modulation	Channel		20800	21100	21400
		Frequency (MHz)		2505	2535	2565
10M	QPSK	1	0	22.88	22.84	22.67
		1	24	22.82	22.95	22.77
		1	49	22.94	22.80	22.85
		25	0	21.68	21.70	21.70
		25	12	21.99	21.85	21.95
		25	25	21.96	21.92	22.06
		50	0	21.91	21.80	21.85
	16QAM	1	0	22.15	22.16	22.10
		1	24	22.13	22.15	22.16
		1	49	22.19	22.04	21.99
		25	0	20.87	20.67	20.75
		25	12	20.98	20.85	20.96
		25	25	20.92	21.01	21.00
		50	0	20.96	20.83	20.88
	64QAM	1	0	21.02	21.00	20.97
		1	24	20.96	20.98	20.94
		1	49	21.24	21.01	21.03
		25	0	20.16	20.18	20.06
		25	12	19.91	20.01	20.01
		25	25	20.03	20.03	20.10
		50	0	19.94	19.87	19.91

BW	Modulation	Channel		20775	21100	21425
		Frequency (MHz)		2502.5	2535	2567.5
5M	QPSK	1	0	22.79	22.85	22.79
		1	12	22.79	22.94	22.70
		1	24	22.93	22.85	22.81
		12	0	21.65	21.70	21.67
		12	6	22.01	21.97	22.00
		12	13	21.93	21.85	22.03
		25	0	21.94	21.85	21.91
	16QAM	1	0	22.17	22.15	22.20
		1	12	22.18	22.22	22.16
		1	24	22.24	22.08	22.04
		12	0	20.77	20.69	20.83
		12	6	21.00	20.96	20.92
		12	13	21.02	20.99	21.10
		25	0	20.93	20.92	20.79
	64QAM	1	0	20.95	21.02	21.00
		1	12	20.99	20.94	20.92
		1	24	21.18	21.06	21.08
		12	0	20.22	20.10	20.16
		12	6	20.00	20.04	20.02
		12	13	20.12	19.98	20.16
		25	0	19.94	19.91	20.04

LTE Band 12

LTE Band 12						
BW	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		23060	23095	23130
		Frequency (MHz)		704	707.5	711
10M	QPSK	1	0	22.88	22.93	22.86
		1	24	22.90	22.87	22.89
		1	49	22.94	**23.12**	23.00
		25	0	21.79	21.95	21.87
		25	12	22.00	22.04	22.03
		25	25	21.88	21.99	22.02
		50	0	21.89	21.93	21.98
	16QAM	1	0	22.21	22.32	22.17
		1	24	22.40	22.42	22.37
		1	49	22.31	22.44	22.40
		25	0	20.91	20.96	20.81
		25	12	21.05	21.10	21.10
		25	25	20.96	21.07	21.04
		50	0	20.89	20.97	20.95
	64QAM	1	0	21.07	21.20	21.15
		1	24	21.22	21.28	21.19
		1	49	21.21	21.33	21.18
		25	0	19.90	19.88	19.93
		25	12	20.13	20.20	20.08
		25	25	20.09	20.07	20.08
		50	0	19.88	19.97	19.95

BW	Modulation	Channel		23035	23095	23155
		Frequency (MHz)		701.5	707.5	713.5
5M	QPSK	1	0	22.84	22.81	22.83
		1	12	22.77	22.72	22.80
		1	24	22.85	23.02	22.85
		12	0	21.68	21.92	21.77
		12	6	21.87	21.92	21.99
		12	13	21.81	21.84	21.90
		25	0	21.85	21.87	21.89
	16QAM	1	0	22.09	22.19	22.05
		1	12	22.36	22.35	22.36
		1	24	22.28	22.36	22.28
		12	0	20.78	20.92	20.72
		12	6	20.97	21.05	21.04
		12	13	20.83	21.00	21.03
		25	0	20.82	20.87	20.82
	64QAM	1	0	21.01	21.09	21.00
		1	12	21.13	21.24	21.16
		1	24	21.18	21.32	21.05
		12	0	19.75	19.83	19.86
		12	6	20.04	20.06	19.99
		12	13	20.07	19.97	19.96
		25	0	19.81	19.87	19.85

BW	Modulation	Channel		23025	23095	23165
		Frequency (MHz)		700.5	707.5	714.5
3M	QPSK	1	0	22.86	22.89	22.81
		1	7	22.85	22.74	22.81
		1	14	22.79	23.01	22.95
		8	0	21.67	21.80	21.85
		8	3	21.98	21.89	21.97
		8	7	21.76	21.91	21.89
		15	0	21.74	21.90	21.93
	16QAM	1	0	22.19	22.22	22.06
		1	7	22.37	22.38	22.31
		1	14	22.21	22.38	22.30
		8	0	20.83	20.85	20.66
		8	3	21.00	21.01	21.01
		8	7	20.81	20.96	20.89
		15	0	20.75	20.88	20.91
	64QAM	1	0	21.02	21.09	21.06
		1	7	21.11	21.14	21.15
		1	14	21.17	21.18	21.16
		8	0	19.80	19.75	19.91
		8	3	20.06	20.15	20.04
		8	7	20.06	20.06	19.97
		15	0	19.85	19.91	19.82

BW	Modulation	Channel		23017	23095	23173
		Frequency (MHz)		699.7	707.5	715.3
1.4M	QPSK	1	0	22.78	22.84	22.73
		1	2	22.83	22.82	22.78
		1	5	22.83	22.98	22.98
		3	0	22.75	22.90	22.82
		3	1	22.89	22.97	22.96
		3	3	22.79	22.95	22.92
		6	0	21.78	21.86	21.93
	16QAM	1	0	22.11	22.23	22.04
		1	2	22.38	22.37	22.34
		1	5	22.23	22.40	22.26
		3	0	21.90	21.86	21.77
		3	1	22.04	22.03	22.07
		3	3	21.89	21.95	21.93
		6	0	20.78	20.92	20.91
	64QAM	1	0	20.95	21.08	21.01
		1	2	21.16	21.27	21.05
		1	5	21.11	21.29	21.07
		3	0	20.77	20.75	20.87
		3	1	21.05	21.17	21.06
		3	3	21.08	20.95	20.96
		6	0	19.85	19.88	19.89

LTE Band 13

LTE Band 13						
BW	Modulation	RB Size	RB Offset	Mid		
		Channel		23230		
		Frequency (MHz)		782		
10M	QPSK	1	0		23.10	
		1	24		23.06	
		1	49		**23.18**	
		25	0		22.08	
		25	12		22.11	
		25	25		22.11	
		50	0		22.03	
	16QAM	1	0		22.34	
		1	24		22.45	
		1	49		22.47	
		25	0		21.11	
		25	12		21.05	
		25	25		21.13	
		50	0		21.09	
	64QAM	1	0		21.02	
		1	24		21.30	
		1	49		21.40	
		25	0		20.07	
		25	12		20.15	
		25	25		20.11	
		50	0		20.09	

BW	Modulation	Channel		23205	23230	23255
		Frequency (MHz)		779.5	782	784.5
5M	QPSK	1	0	23.23	22.99	23.17
		1	12	23.13	22.94	23.15
		1	24	23.17	23.11	23.17
		12	0	22.20	21.96	22.11
		12	6	22.21	22.03	22.20
		12	13	22.15	22.03	22.12
		25	0	22.06	21.97	22.07
	16QAM	1	0	22.53	22.29	22.57
		1	12	22.51	22.32	22.55
		1	24	22.44	22.35	22.40
		12	0	21.18	20.96	21.25
		12	6	21.20	21.03	21.21
		12	13	21.16	21.03	21.12
		25	0	21.13	20.96	21.08
	64QAM	1	0	21.51	20.93	21.41
		1	12	21.49	21.21	21.41
		1	24	21.42	21.25	21.42
		12	0	20.19	20.06	20.29
		12	6	20.36	20.06	20.25
		12	13	20.19	19.97	20.11
		25	0	20.18	19.97	20.14

LTE Band 71

LTE Band 71						
BW	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		133222	133322	133372
		Frequency (MHz)		673	683	688
20M	QPSK	1	0	23.02	22.97	23.02
		1	50	23.00	**23.11**	23.04
		1	99	22.97	23.03	22.90
		50	0	22.03	22.16	22.01
		50	25	22.06	22.04	22.00
		50	50	22.10	22.07	22.06
		100	0	22.01	22.00	21.98
	16QAM	1	0	22.27	22.22	22.11
		1	50	22.33	22.33	22.22
		1	99	22.26	22.32	22.14
		50	0	21.05	21.03	21.01
		50	25	21.07	21.01	20.97
		50	50	21.00	20.93	20.99
		100	0	21.00	20.90	20.86
	64QAM	1	0	21.20	21.35	21.20
		1	50	21.31	21.37	21.22
		1	99	21.19	21.22	21.10
		50	0	20.15	20.16	20.15
		50	25	20.03	20.02	20.04
		50	50	19.99	20.12	20.08
		100	0	19.97	19.97	19.90

BW	Modulation	Channel		133197	133297	133397
		Frequency (MHz)		670.5	680.5	690.5
15M	QPSK	1	0	22.96	22.94	22.96
		1	37	22.88	23.02	22.95
		1	74	22.85	22.89	22.84
		36	0	21.93	22.02	21.99
		36	19	21.99	21.99	21.94
		36	39	21.99	22.01	21.97
		75	0	21.94	21.92	21.93
	16QAM	1	0	22.26	22.12	22.04
		1	37	22.20	22.31	22.08
		1	74	22.17	22.28	22.13
		36	0	20.92	20.98	20.90
		36	19	21.05	20.96	20.94
		36	39	20.98	20.80	20.93
		75	0	20.94	20.87	20.71
	64QAM	1	0	21.05	21.26	21.17
		1	37	21.28	21.24	21.11
		1	74	21.18	21.09	21.00
		36	0	20.10	20.01	20.00
		36	19	19.88	19.93	20.01
		36	39	19.88	20.01	19.98
		75	0	19.92	19.89	19.75

BW	Modulation	Channel		133172	133272	133422
		Frequency (MHz)		668	678	693
10M	QPSK	1	0	22.93	22.87	22.99
		1	24	22.99	23.00	22.90
		1	49	22.88	23.00	22.75
		25	0	21.89	22.03	21.87
		25	12	22.01	21.98	21.99
		25	25	22.02	21.95	21.98
		50	0	21.87	21.99	21.84
	16QAM	1	0	22.13	22.12	22.08
		1	24	22.25	22.31	22.19
		1	49	22.12	22.28	22.05
		25	0	20.99	21.02	20.92
		25	12	20.95	20.98	20.82
		25	25	20.96	20.84	20.85
		50	0	20.86	20.77	20.83
	64QAM	1	0	21.16	21.27	21.10
		1	24	21.25	21.31	21.11
		1	49	21.05	21.21	21.01
		25	0	20.06	20.03	20.08
		25	12	19.89	19.98	19.96
		25	25	19.96	20.09	19.96
		50	0	19.82	19.92	19.89

BW	Modulation	Channel		133147	133247	133447
		Frequency (MHz)		665.5	675.5	695.5
5M	QPSK	1	0	22.88	22.93	22.95
		1	12	22.92	23.01	23.01
		1	24	22.87	22.95	22.77
		12	0	21.92	22.13	21.91
		12	6	22.03	21.93	21.90
		12	13	22.04	21.93	21.96
		25	0	21.95	21.98	21.97
	16QAM	1	0	22.15	22.09	21.98
		1	12	22.23	22.31	22.20
		1	24	22.18	22.22	22.05
		12	0	21.03	20.96	20.93
		12	6	21.02	20.94	20.95
		12	13	20.96	20.82	20.89
		25	0	20.92	20.82	20.81
	64QAM	1	0	21.11	21.30	21.13
		1	12	21.28	21.26	21.10
		1	24	21.11	21.08	20.98
		12	0	20.08	20.02	20.01
		12	6	19.96	19.91	19.93
		12	13	19.95	20.02	19.93
		25	0	19.96	19.85	19.86

EIRP

WCDMA IV						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
1312	1712.4	23.32	1.93	25.25	334.97	1
1413	1732.6	23.28	1.93	25.21	331.89	1
1513	1752.6	23.3	1.93	25.23	333.43	1

LTE BAND 7

LTE B7 5M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	22.93	1.24	24.17	261.22	2
21100	2535	22.94	1.24	24.18	261.82	2
21425	2567.5	22.81	1.24	24.05	254.1	2

LTE B7 5M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	22.24	1.24	23.48	222.84	2
21100	2535	22.22	1.24	23.46	221.82	2
21425	2567.5	22.2	1.24	23.44	220.8	2

LTE B7 5M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	21.18	1.24	22.42	174.58	2
21100	2535	21.06	1.24	22.3	169.82	2
21425	2567.5	21.08	1.24	22.32	170.61	2

LTE B7 10M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505	22.94	1.24	24.18	261.82	2
21100	2535	22.95	1.24	24.19	262.42	2
21400	2565	22.85	1.24	24.09	256.45	2

LTE B7 10M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505	22.19	1.24	23.43	220.29	2
21100	2535	22.16	1.24	23.4	218.78	2
21400	2565	22.16	1.24	23.4	218.78	2

LTE B7 10M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505	21.24	1.24	22.48	177.01	2
21100	2535	21.01	1.24	22.25	167.88	2
21400	2565	21.03	1.24	22.27	168.66	2

LTE B7 15M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	22.94	1.24	24.18	261.82	2
21100	2535	22.89	1.24	24.13	258.82	2
21375	2562.5	22.88	1.24	24.12	258.23	2

LTE B7 15M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	22.3	1.24	23.54	225.94	2
21100	2535	22.26	1.24	23.5	223.87	2
21375	2562.5	22.2	1.24	23.44	220.8	2

LTE B7 15M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	21.19	1.24	22.43	174.98	2
21100	2535	21.04	1.24	22.28	169.04	2
21375	2562.5	21.13	1.24	22.37	172.58	2

LTE B7 20M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510	23.04	1.24	24.28	267.92	2
21100	2535	22.96	1.24	24.2	263.03	2
21350	2560	22.95	1.24	24.19	262.42	2

LTE B7 20M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510	22.34	1.24	23.58	228.03	2
21100	2535	22.27	1.24	23.51	224.39	2
21350	2560	22.25	1.24	23.49	223.36	2

LTE B7 20M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510	21.3	1.24	22.54	179.47	2
21100	2535	21.16	1.24	22.4	173.78	2
21350	2560	21.18	1.24	22.42	174.58	2

LTE BAND 12

LTE B12 1.4M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	22.89	-0.32	20.42	110.15	3
23095	707.5	22.98	-0.32	20.51	112.46	3
23173	715.3	22.98	-0.32	20.51	112.46	3

LTE B12 1.4M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	22.38	-0.32	19.91	97.95	3
23095	707.5	22.4	-0.32	19.93	98.4	3
23173	715.3	22.34	-0.32	19.87	97.05	3

LTE B12 1.4M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	21.16	-0.32	18.69	73.96	3
23095	707.5	21.29	-0.32	18.82	76.21	3
23173	715.3	21.07	-0.32	18.6	72.44	3

LTE B12 3M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	22.86	-0.32	20.39	109.4	3
23095	707.5	23.01	-0.32	20.54	113.24	3
23165	714.5	22.95	-0.32	20.48	111.69	3

LTE B12 3M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	22.37	-0.32	19.9	97.72	3
23095	707.5	22.38	-0.32	19.91	97.95	3
23165	714.5	22.31	-0.32	19.84	96.38	3

LTE B12 3M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	21.17	-0.32	18.7	74.13	3
23095	707.5	21.18	-0.32	18.71	74.3	3
23165	714.5	21.16	-0.32	18.69	73.96	3

LTE B12 5M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	22.85	-0.32	20.38	109.14	3
23095	707.5	23.02	-0.32	20.55	113.5	3
23155	713.5	22.85	-0.32	20.38	109.14	3

LTE B12 5M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	22.36	-0.32	19.89	97.5	3
23095	707.5	22.36	-0.32	19.89	97.5	3
23155	713.5	22.36	-0.32	19.89	97.5	3

LTE B12 5M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	21.18	-0.32	18.71	74.3	3
23095	707.5	21.32	-0.32	18.85	76.74	3
23155	713.5	21.16	-0.32	18.69	73.96	3

LTE B12 10M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	22.94	-0.32	20.47	111.43	3
23095	707.5	23.12	-0.32	20.65	116.14	3
23130	711	23	-0.32	20.53	112.98	3

LTE B12 10M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	22.4	-0.32	19.93	98.4	3
23095	707.5	22.44	-0.32	19.97	99.31	3
23130	711	22.4	-0.32	19.93	98.4	3

LTE B12 10M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	21.22	-0.32	18.75	74.99	3
23095	707.5	21.33	-0.32	18.86	76.91	3
23130	711	21.19	-0.32	18.72	74.47	3

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

LTE BAND 13

LTE B13 5M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	23.23	-0.32	20.76	119.12	3
23230	782	23.11	-0.32	20.64	115.88	3
23255	784.5	23.17	-0.32	20.7	117.49	3

LTE B13 5M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	22.53	-0.32	20.06	101.39	3
23230	782	22.35	-0.32	19.88	97.27	3
23255	784.5	22.57	-0.32	20.1	102.33	3

LTE B13 5M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	21.51	-0.32	19.04	80.17	3
23230	782	21.25	-0.32	18.78	75.51	3
23255	784.5	21.42	-0.32	18.95	78.52	3

LTE B13 10M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23230	782	23.18	-0.32	20.71	117.76	3

LTE B13 10M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23230	782	22.47	-0.32	20	100	3

LTE B13 10M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
23230	782	21.4	-0.32	18.93	78.16	3

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

LTE BAND 71

LTE B71 5M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133147	665.5	22.92	0.94	21.71	148.25	3
133297	680.5	23.01	0.94	21.8	151.36	3
133447	695.5	23.01	0.94	21.8	151.36	3

LTE B71 5M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133147	665.5	22.23	0.94	21.02	126.47	3
133297	680.5	22.31	0.94	21.1	128.82	3
133447	695.5	22.2	0.94	20.99	125.6	3

LTE B71 5M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133147	665.5	21.28	0.94	20.07	101.62	3
133297	680.5	21.3	0.94	20.09	102.09	3
133447	695.5	21.13	0.94	19.92	98.17	3

LTE B71 10M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133172	668	22.99	0.94	21.78	150.66	3
133297	680.5	23	0.94	21.79	151.01	3
133422	693	22.99	0.94	21.78	150.66	3

LTE B71 10M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133172	668	22.25	0.94	21.04	127.06	3
133297	680.5	22.31	0.94	21.1	128.82	3
133422	693	22.19	0.94	20.98	125.31	3

LTE B71 10M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133172	668	21.25	0.94	20.04	100.93	3
133297	680.5	21.31	0.94	20.1	102.33	3
133422	693	21.11	0.94	19.9	97.72	3

LTE B71 15M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133197	670.5	22.96	0.94	21.75	149.62	3
133297	680.5	23.02	0.94	21.81	151.71	3
133397	690.5	22.96	0.94	21.75	149.62	3

LTE B71 15M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133197	670.5	22.26	0.94	21.05	127.35	3
133297	680.5	22.31	0.94	21.1	128.82	3
133397	690.5	22.13	0.94	20.92	123.59	3

LTE B71 15M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133197	670.5	21.28	0.94	20.07	101.62	3
133297	680.5	21.26	0.94	20.05	101.16	3
133397	690.5	21.17	0.94	19.96	99.08	3

LTE B71 20M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133222	673	23.02	0.94	21.81	151.71	3
133322	683	23.11	0.94	21.9	154.88	3
133372	688	23.04	0.94	21.83	152.41	3

LTE B71 20M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133222	673	22.33	0.94	21.12	129.42	3
133322	683	22.33	0.94	21.12	129.42	3
133372	688	22.22	0.94	21.01	126.18	3

LTE B71 20M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (W)
133222	673	21.31	0.94	20.1	102.33	3
133322	683	21.37	0.94	20.16	103.75	3
133372	688	21.22	0.94	20.01	100.23	3

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

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

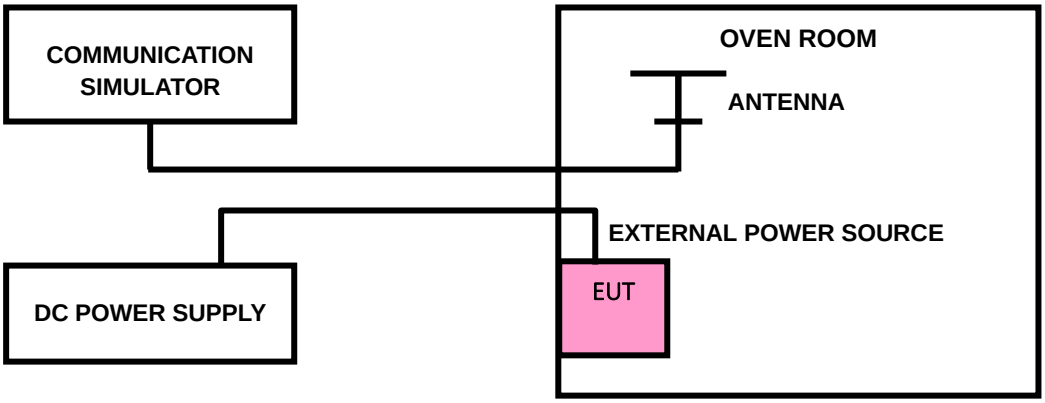
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

3.2.2 TEST PROCEDURE

a. 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.
b. 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.
c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5℃ 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



3.2.4 TEST RESULTS

Please Refer to Appendix D Of this test report.

Note: VL = Low voltage(3.8V); VN/NV = Normal voltage(4V); VH = High voltage(4.2V);

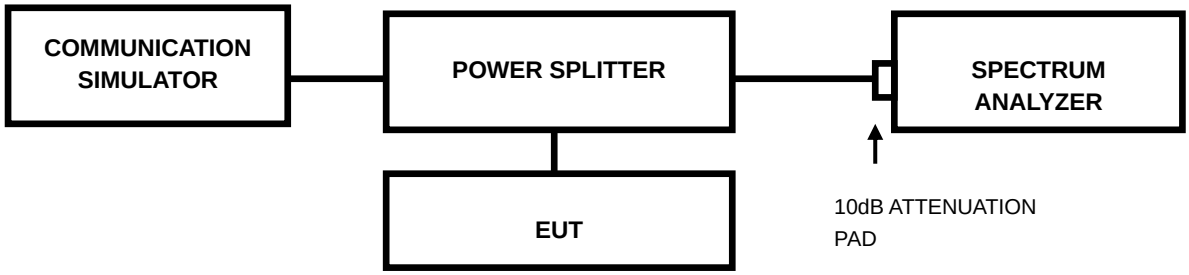
NT = Normal temperature (25℃)

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

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

3.3.4 TEST RESULTS

Please Refer to Appendix D Of this test report.

3.4 BAND EDGE MEASUREMENT

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

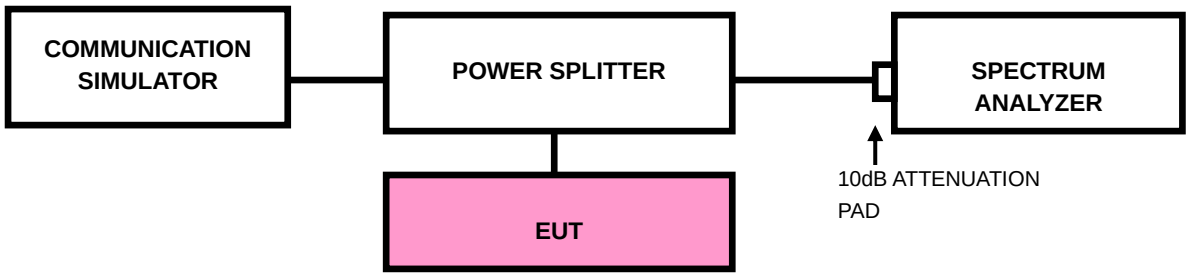
According to FCC 27.53(c) specified that For operations in the 746-758 MHz band and the 776-788 MHz band , the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.In addition, the power of any unwanted emission in an 6.25kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power,P(dBW),by at least 65 +10log10p(P),dB,for mobile and portable equipment.

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.

According to FCC 27.53(m)(4) specified that For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. For mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed.

3.4.2 TEST SETUP



3.4.3 TEST PROCEDURES

a) All measurements were done at low and high operational frequency range

b) Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.

c) Tune the analyzer to the nominal center frequency of the emission bandwidth

(EBW)

d) .Set the resolution bandwidth (RBW) ≧ 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.

e) Beyond the 1MHz band from the band edge, RBW=1MHz was used.

f) Set the video bandwidth (VBW) to ≧3 x RBW.

g) Select the average power (RMS) display detector.

h) Set the number of measurement points to ≧ 1001.

i) Use auto-coupled sweep time.

j) Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.

k) The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.

l) Record the max trace plot into the test report.

3.4.4 TEST RESULTS

Please Refer to Appendix D Of this test report.

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.

For: LTE Band7

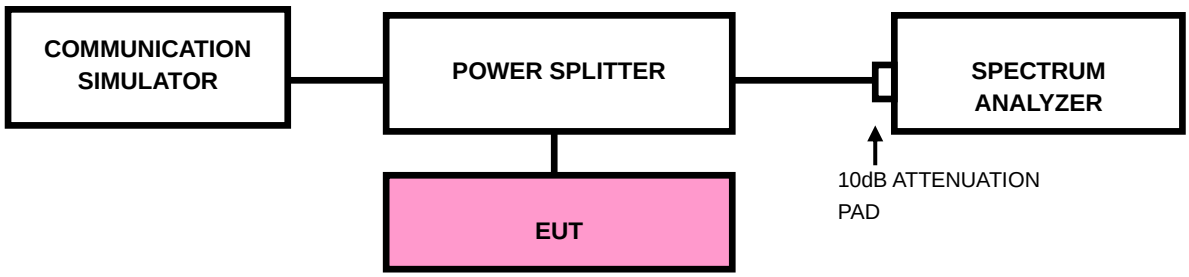
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 55 +10 log10(P) dB. The limit of emission is equal to -25dBm.

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



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 Appendix D Of this test report.

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.

For: LTE Band7

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 55 +10 log10(P) dB. The limit of emission is equal to -25dBm.

. 47 CFR 27.53(f)
For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

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. EIRP = Output power level of S.G – TX cable loss + 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, E.R.P power = E.I.P.R power - 2.15dBi.

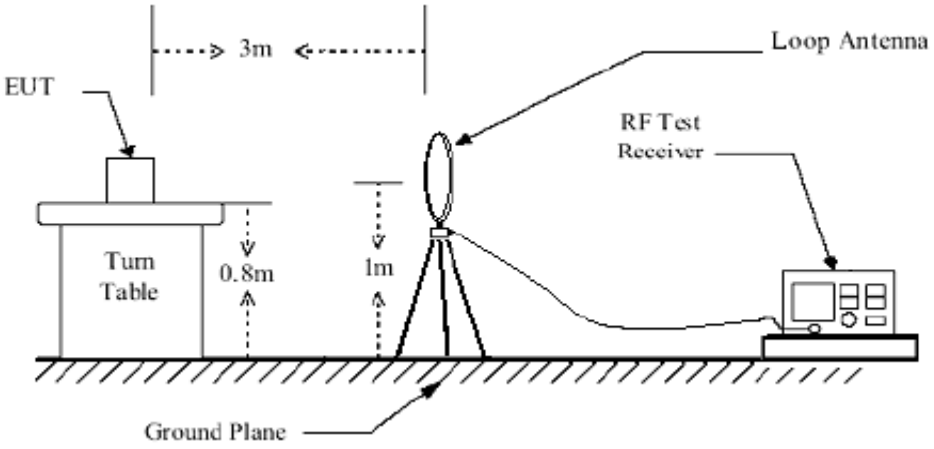
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.6.3 DEVIATION FROM TEST STANDARD

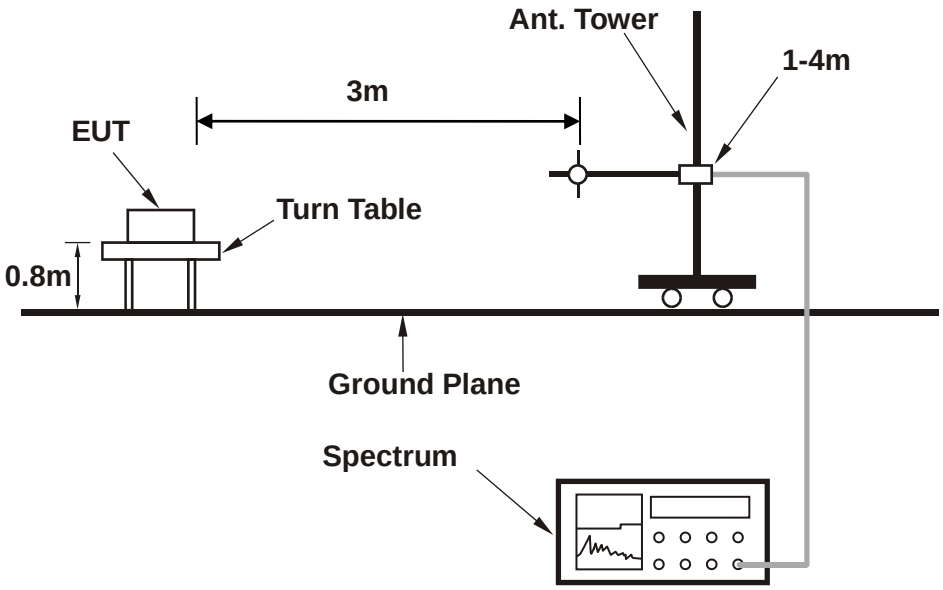
No deviation

3.6.4 TEST SETUP

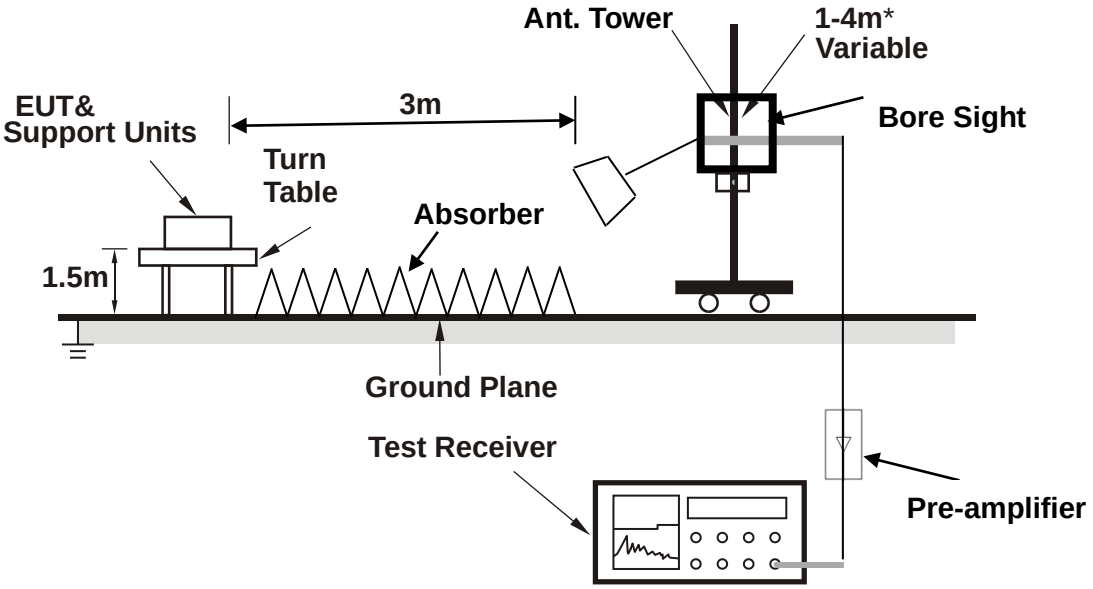
< Frequency Range below 30MHz >



< 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：

1. The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.
2. For CA band, stricter limit is used for the results' evaluation.

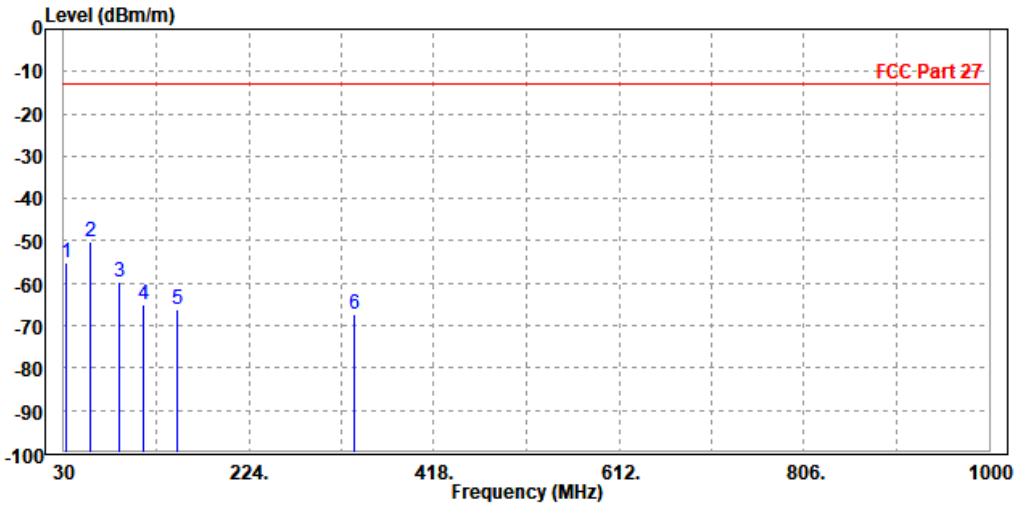
BELOW 1GHz WORST-CASE DATA

30 MHz – 1GHz data:

LTE Band 12
CHANNEL BANDWIDTH: 5MHz / QPSK

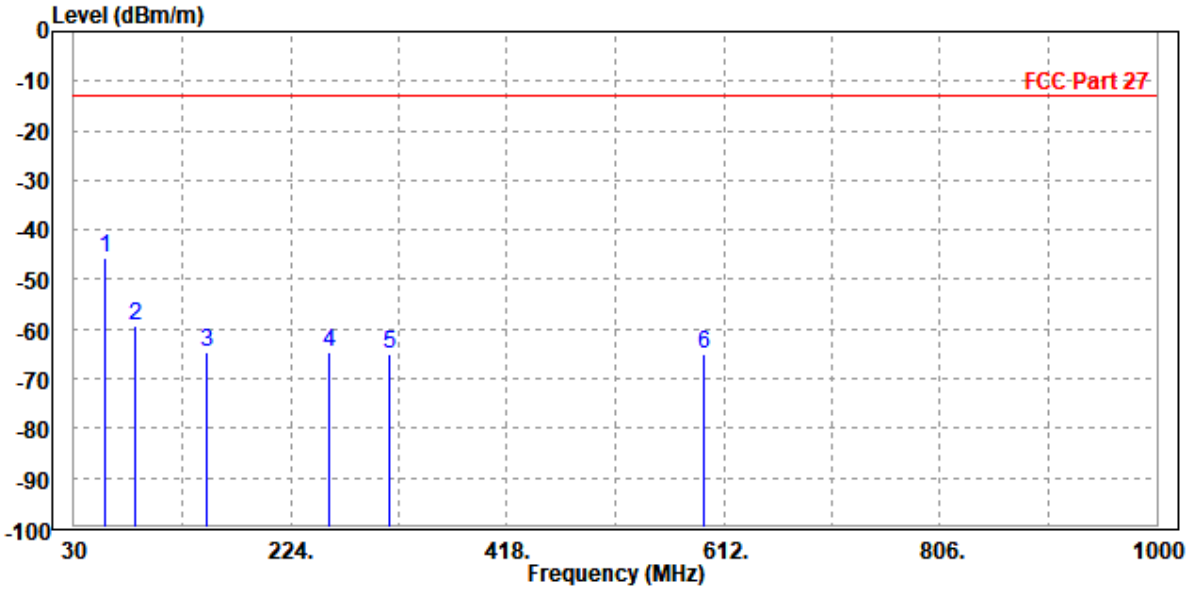
MODE	TX channel 23095	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	31.940	-55.19	-52.15	-13.00	-42.19	-3.04	Peak	Horizontal
2 PP	58.130	-50.33	-38.11	-13.00	-37.33	-12.22	Peak	Horizontal
3	88.200	-59.54	-46.81	-13.00	-46.54	-12.73	Peak	Horizontal
4	113.420	-64.89	-50.07	-13.00	-51.89	-14.82	Peak	Horizontal
5	148.340	-66.25	-51.83	-13.00	-53.25	-14.42	Peak	Horizontal
6	334.580	-67.44	-59.29	-13.00	-54.44	-8.15	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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	57.160	-45.50	-26.60	-13.00	-32.50	-18.90	Peak	Vertical
2		84.320	-59.25	-40.97	-13.00	-46.25	-18.28	Peak	Vertical
3		148.340	-64.65	-51.12	-13.00	-51.65	-13.53	Peak	Vertical
4		258.920	-64.77	-61.09	-13.00	-51.77	-3.68	Peak	Vertical
5		312.270	-64.87	-61.37	-13.00	-51.87	-3.50	Peak	Vertical
6		594.540	-65.11	-63.86	-13.00	-52.11	-1.25	Peak	Vertical



ABOVE 1GHz

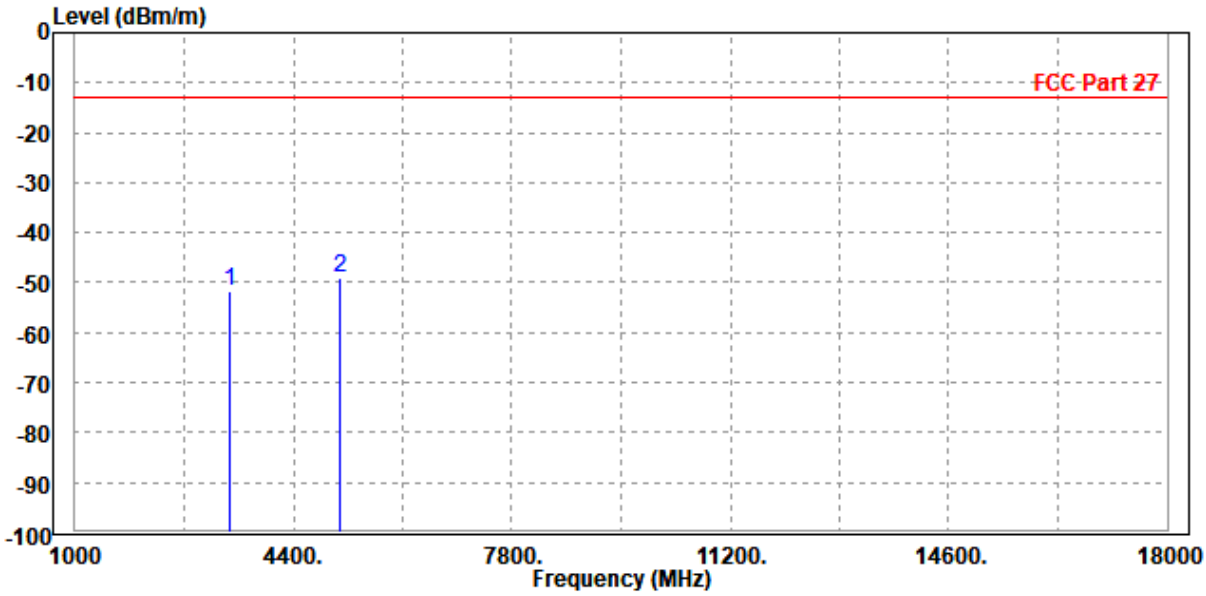
Note: For higher frequency, the emission is too low to be detected.

WCDMA Band IV:

CH 1312

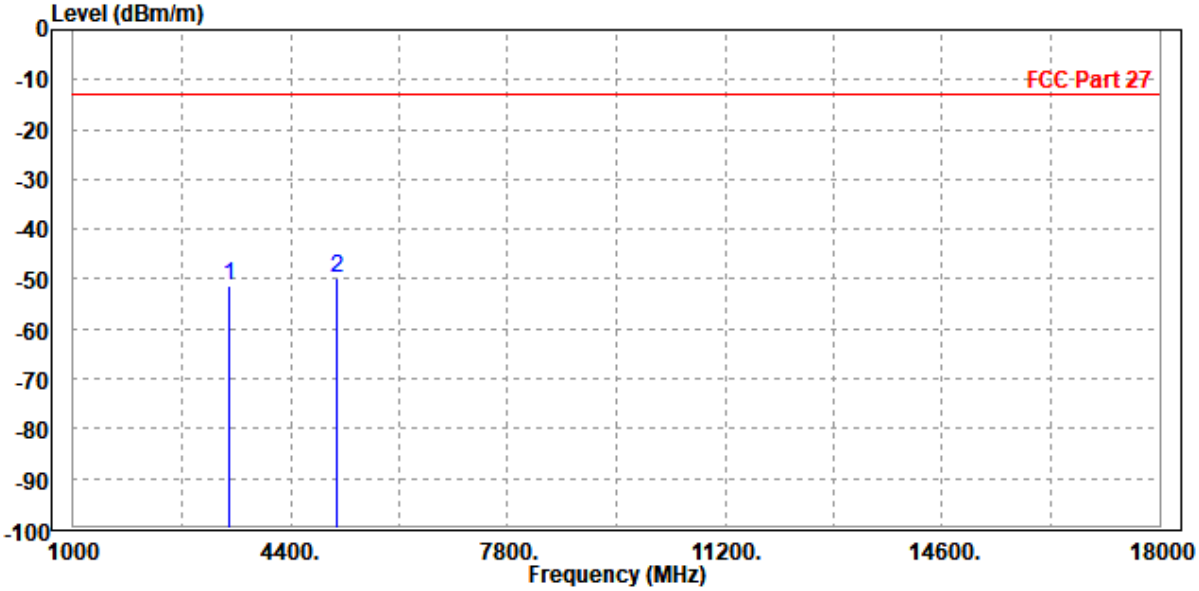
MODE	TX channel 1312	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3424.000	-51.77	-60.28	-13.00	-38.77	8.51	Peak	Horizontal
2 PP	5131.000	-49.06	-60.31	-13.00	-36.06	11.25	Peak	Horizontal



MODE	TX channel 1312	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

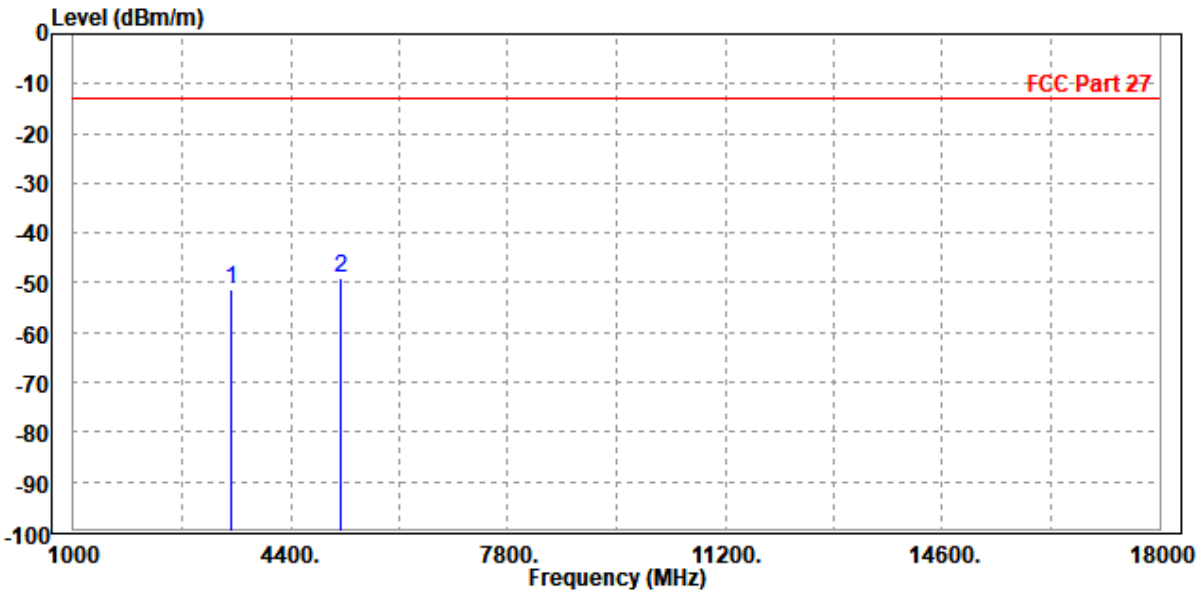
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3431.000	-51.43	-60.10	-13.00	-38.43	8.67	Peak	Vertical
2	PP	5136.000	-49.75	-61.38	-13.00	-36.75	11.63	Peak	Vertical



CH 1413

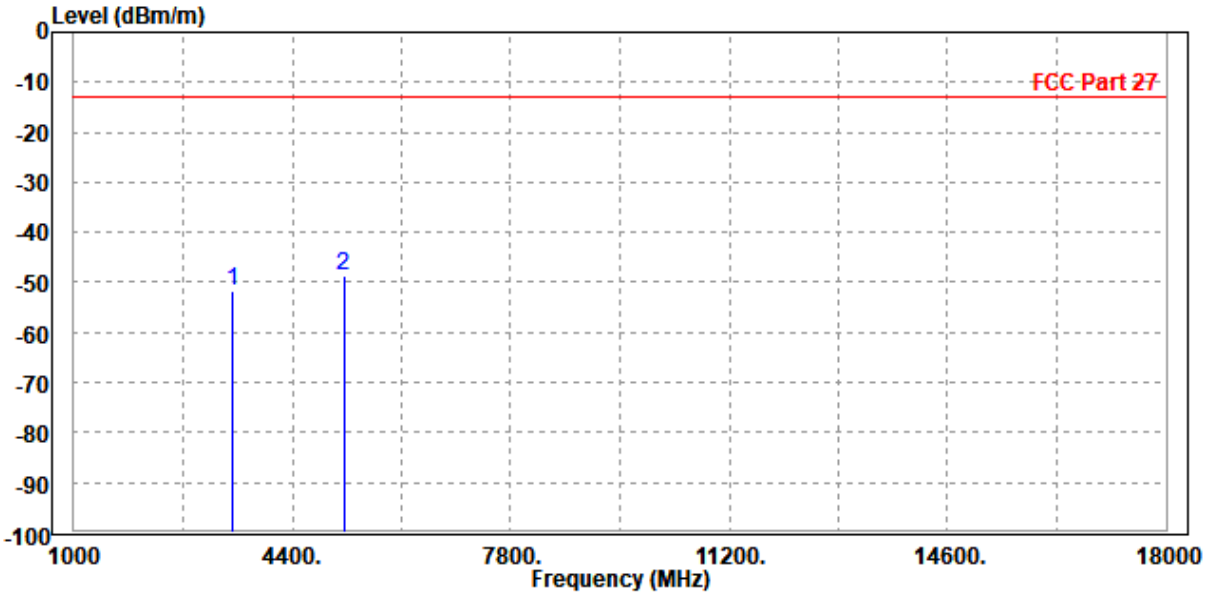
MODE	TX channel 1413	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3465.000	-51.36	-59.90	-13.00	-38.36	8.54	Peak	Horizontal
2	PP	5195.000	-49.01	-60.36	-13.00	-36.01	11.35	Peak	Horizontal



MODE	TX channel 1413	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

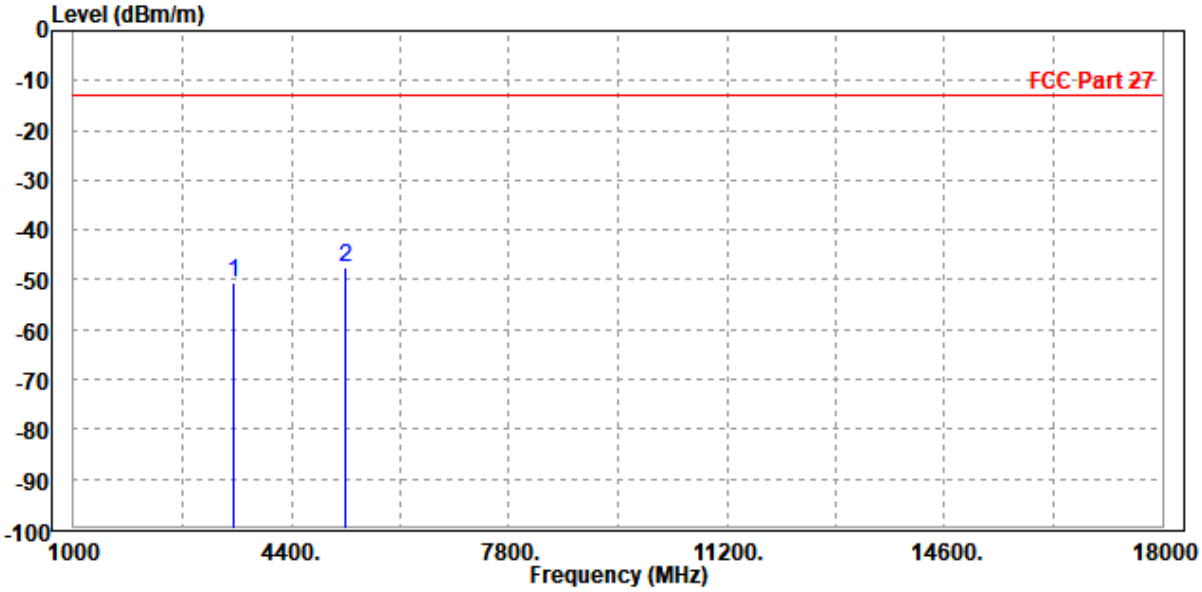
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3464.000	-51.54	-60.19	-13.00	-38.54	8.65	Peak	Vertical
2 PP	5199.000	-48.80	-60.56	-13.00	-35.80	11.76	Peak	Vertical



CH 1513

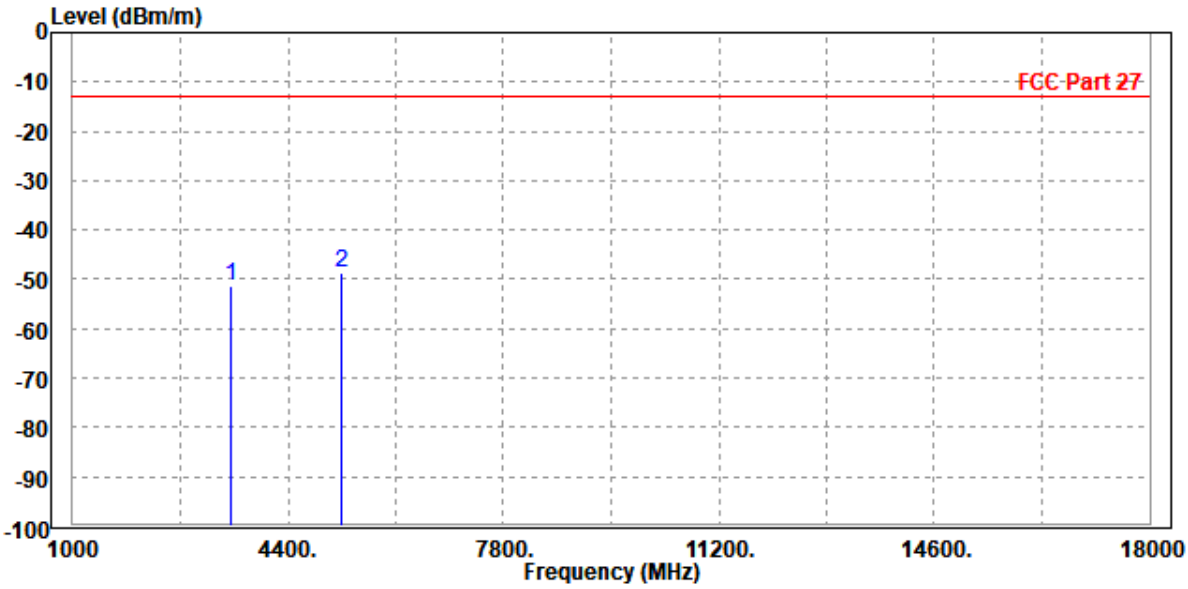
MODE	TX channel 1513	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3499.000	-50.59	-59.15	-13.00	-37.59	8.56	Peak	Horizontal
2	PP	5256.000	-47.71	-59.15	-13.00	-34.71	11.44	Peak	Horizontal



MODE	TX channel 1513	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

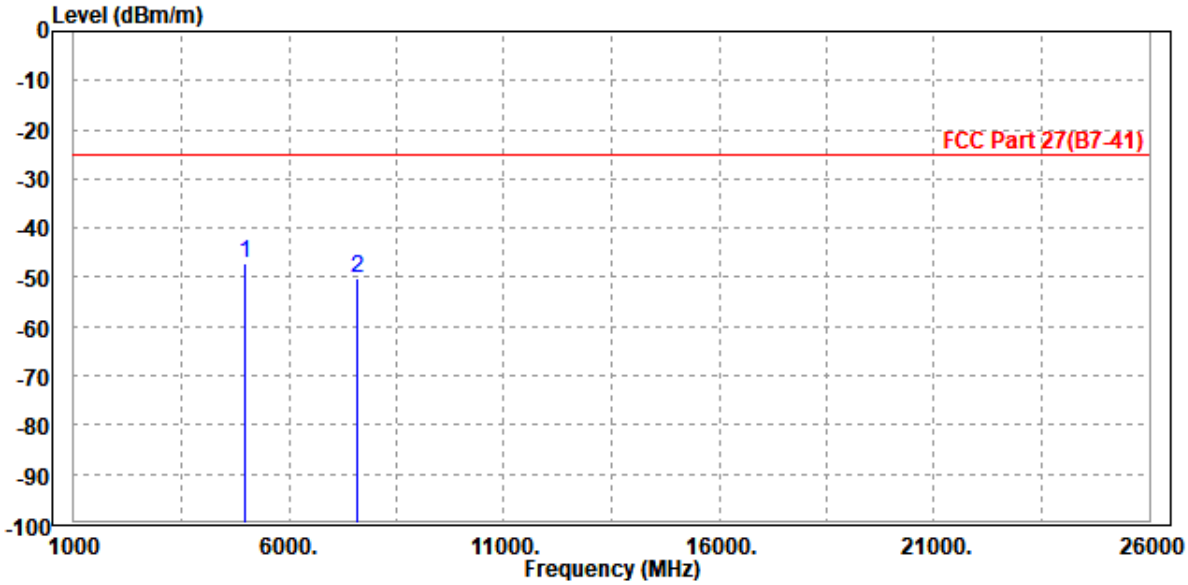
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3504.000	-51.37	-60.01	-13.00	-38.37	8.64	Peak	Vertical
2 PP	5250.000	-48.62	-60.47	-13.00	-35.62	11.85	Peak	Vertical



LTE Band 7
CHANNEL BANDWIDTH: 5MHz / QPSK

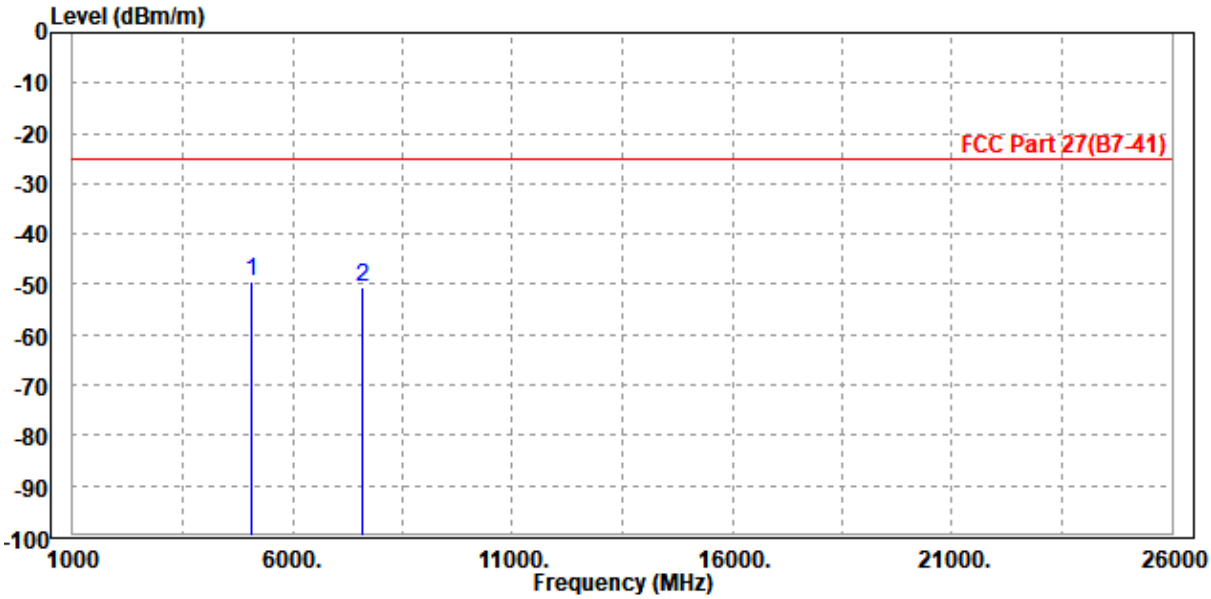
MODE	TX channel 21100	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	5000.000	-46.98	-58.04	-25.00	-21.98	11.06	Peak	Horizontal
2		7600.000	-50.07	-64.58	-25.00	-25.07	14.51	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

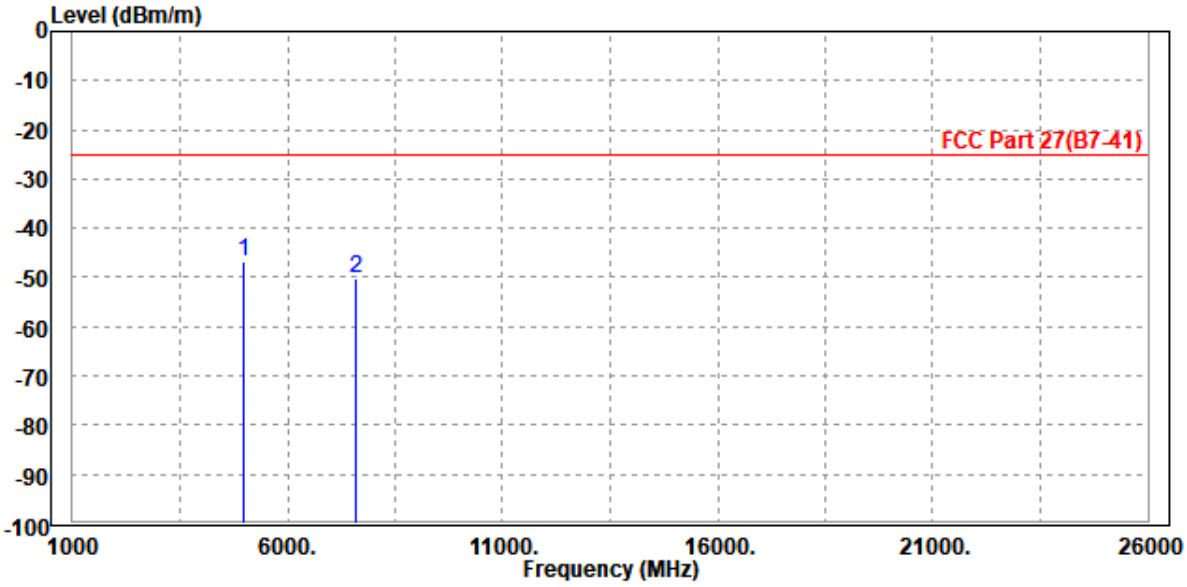
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	5075.000	-49.44	-60.96	-25.00	-24.44	11.52	Peak	Vertical
2		7605.000	-50.67	-64.15	-25.00	-25.67	13.48	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

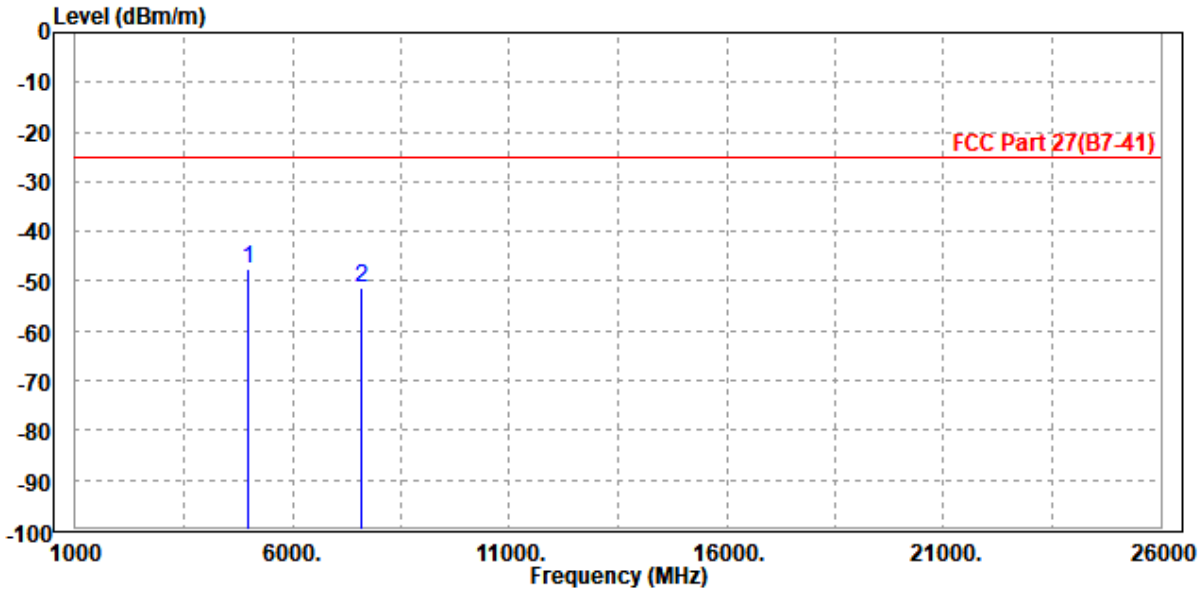
MODE	TX channel 21100	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	4975.000	-46.76	-57.76	-25.00	-21.76	11.00	Peak	Horizontal
2		7605.000	-50.08	-64.60	-25.00	-25.08	14.52	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

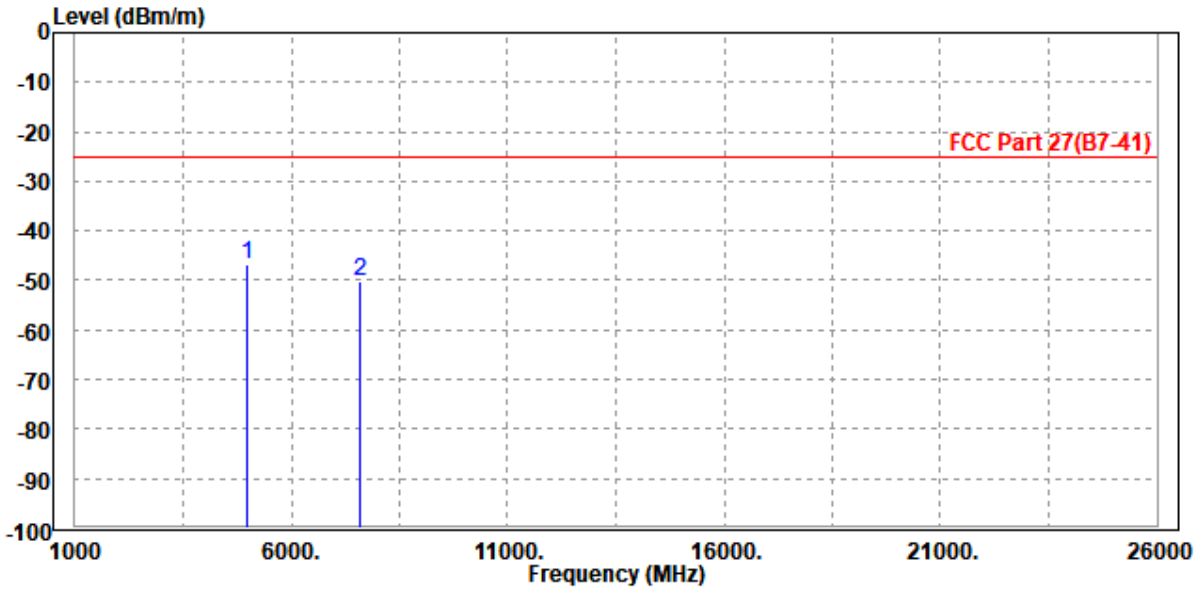
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	5000.000	-47.42	-58.79	-25.00	-22.42	11.37	Peak	Vertical
2	7600.000	-51.20	-64.65	-25.00	-26.20	13.45	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

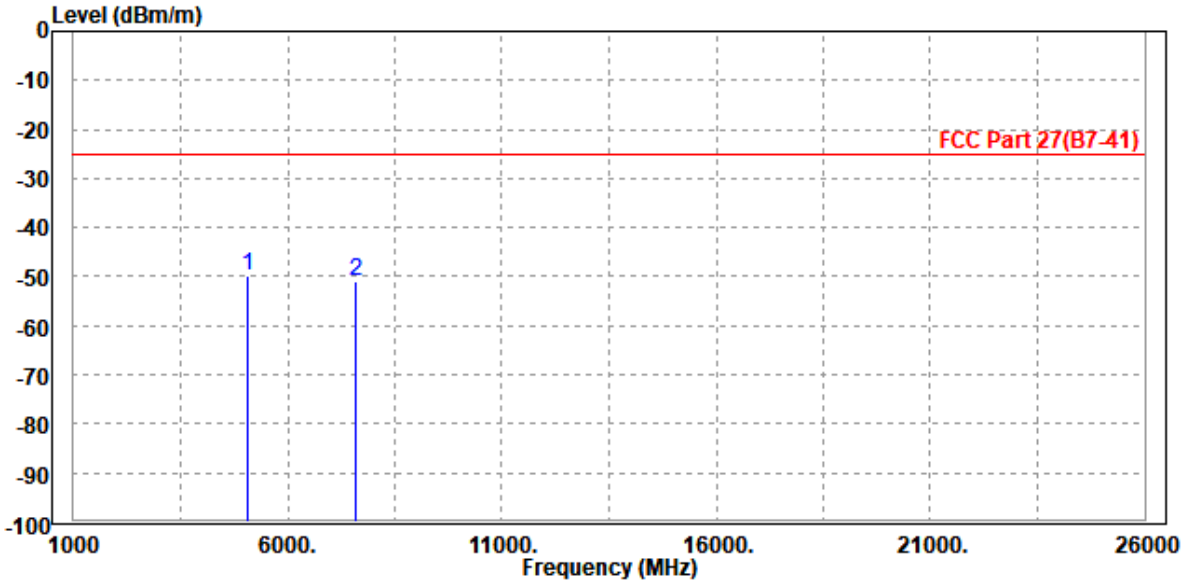
MODE	TX channel 21100	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	4975.000	-46.71	-57.71	-25.00	-21.71	11.00	Peak	Horizontal
2		7600.000	-50.21	-64.72	-25.00	-25.21	14.51	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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	5075.000	-49.66	-61.18	-25.00	-24.66	11.52	Peak	Vertical
2		7605.000	-51.11	-64.59	-25.00	-26.11	13.48	Peak	Vertical

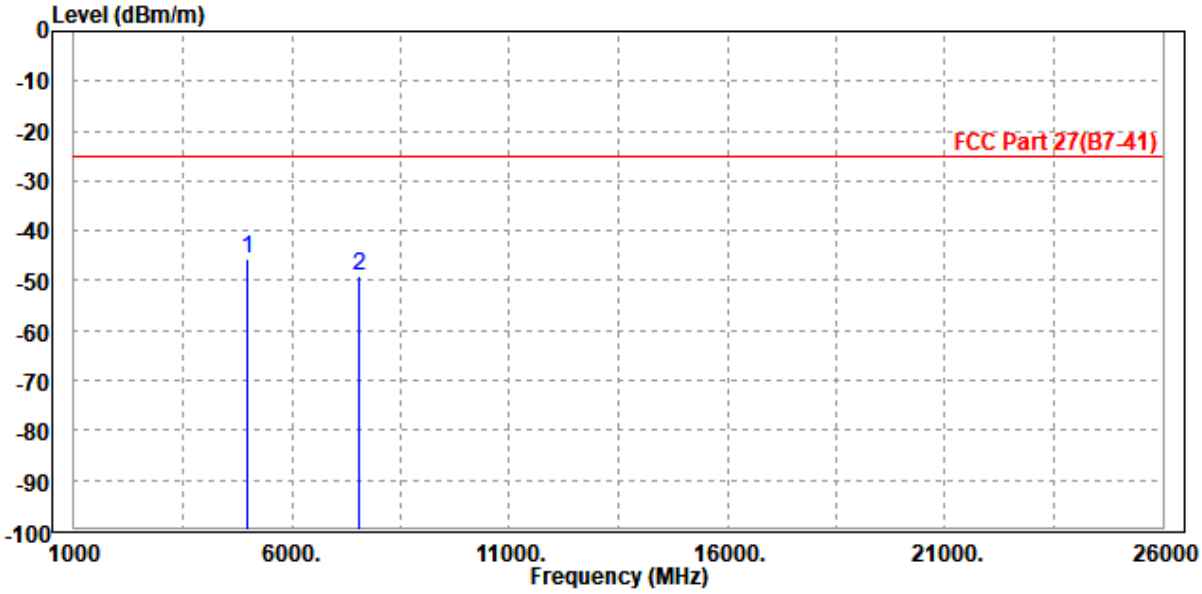


CHANNEL BANDWIDTH: 20MHz / QPSK

CH20850

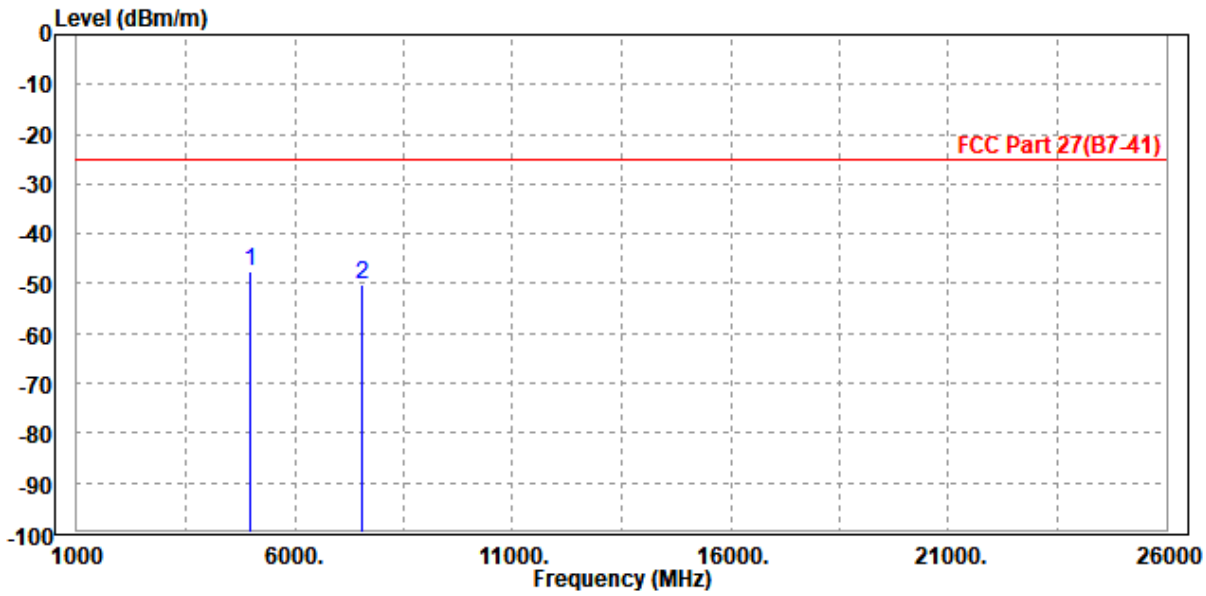
MODE	TX channel 20850	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	5000.000	-45.65	-56.71	-25.00	-20.65	11.06	Peak	Horizontal
2		7525.000	-49.15	-63.53	-25.00	-24.15	14.38	Peak	Horizontal



MODE	TX channel 20850	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

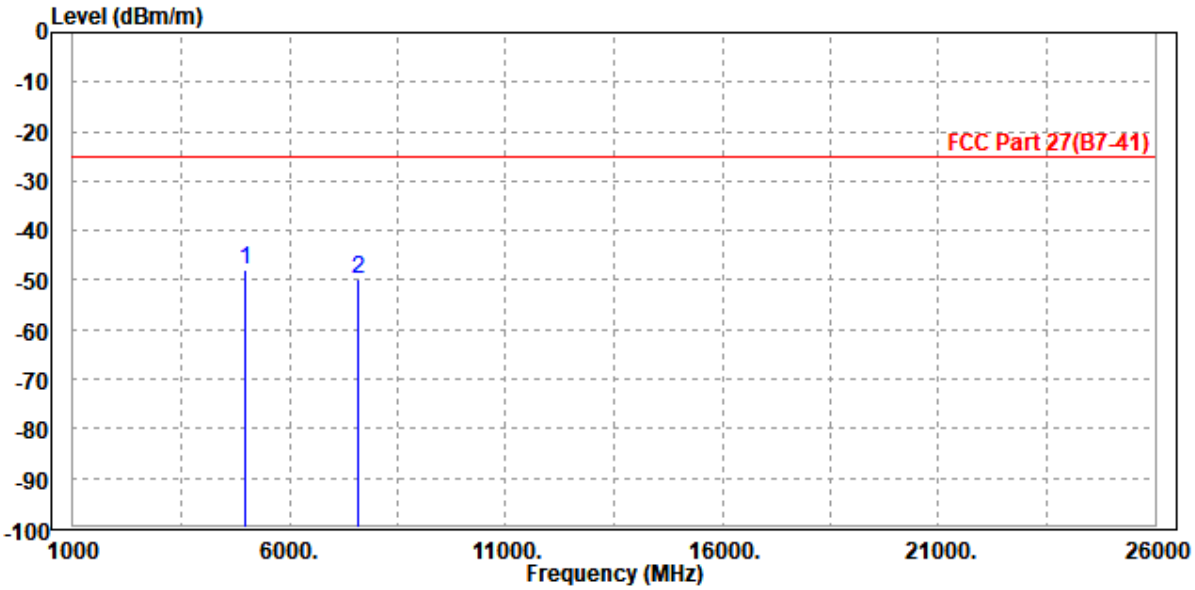
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	5000.000	-47.39	-58.76	-25.00	-22.39	11.37	Peak	Vertical
2	7530.000	-50.21	-63.36	-25.00	-25.21	13.15	Peak	Vertical



CH21100

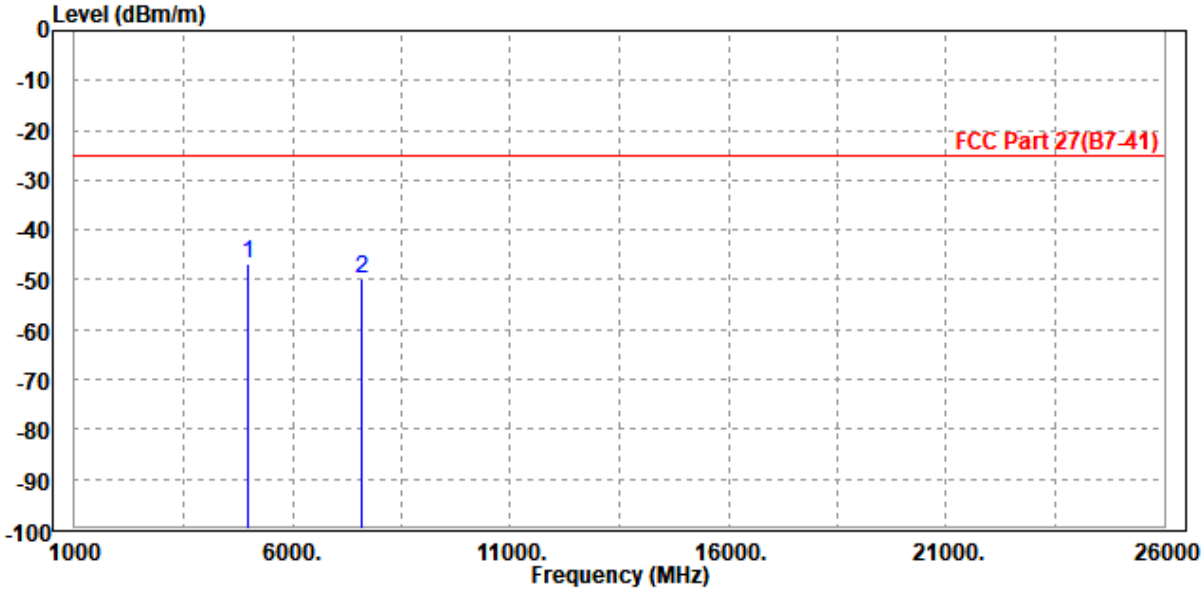
MODE	TX channel 21100	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	5000.000	-47.81	-58.87	-25.00	-22.81	11.06	Peak	Horizontal
2		7605.000	-49.62	-64.14	-25.00	-24.62	14.52	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

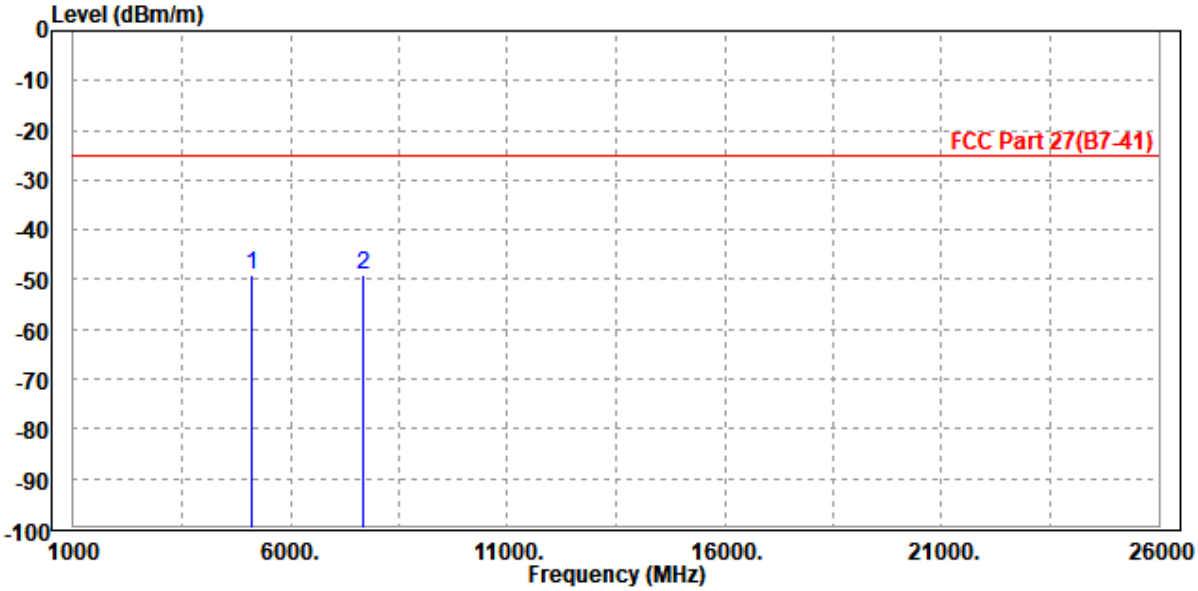
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	4975.000	-46.68	-58.00	-25.00	-21.68	11.32	Peak	Vertical
2		7605.000	-49.70	-63.18	-25.00	-24.70	13.48	Peak	Vertical



CH21350

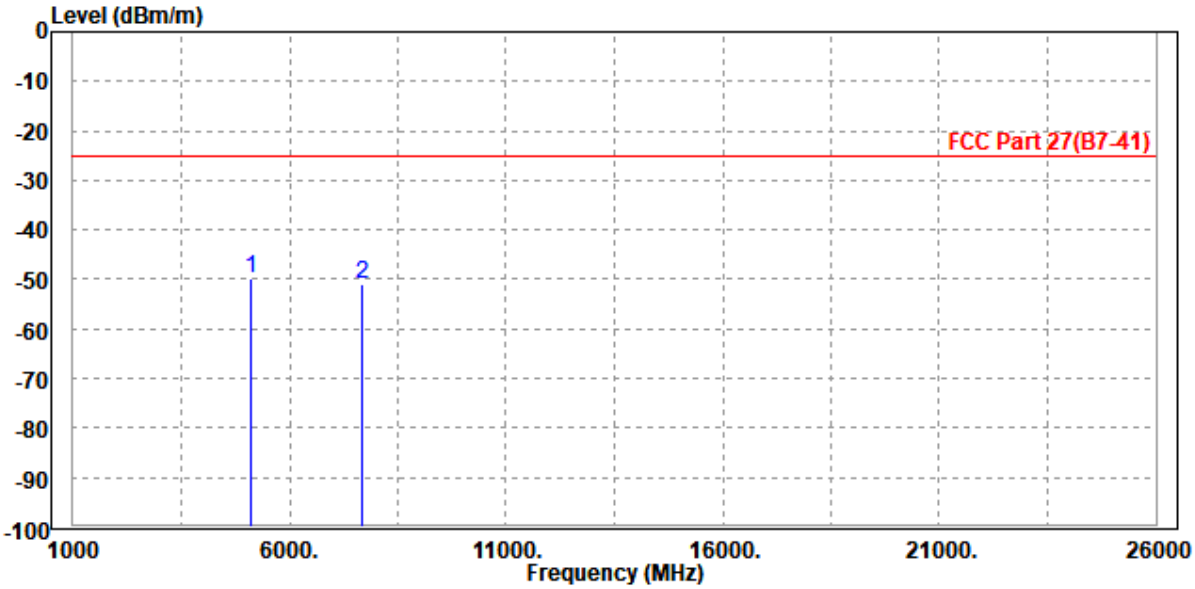
MODE	TX channel 21350	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5120.000	-49.14	-60.38	-25.00	-24.14	11.24	Peak	Horizontal
2	PP	7680.000	-49.08	-63.73	-25.00	-24.08	14.65	Peak	Horizontal



MODE	TX channel 21350	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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	5120.000	-49.90	-61.50	-25.00	-24.90	11.60	Peak	Vertical
2		7675.000	-50.93	-64.71	-25.00	-25.93	13.78	Peak	Vertical

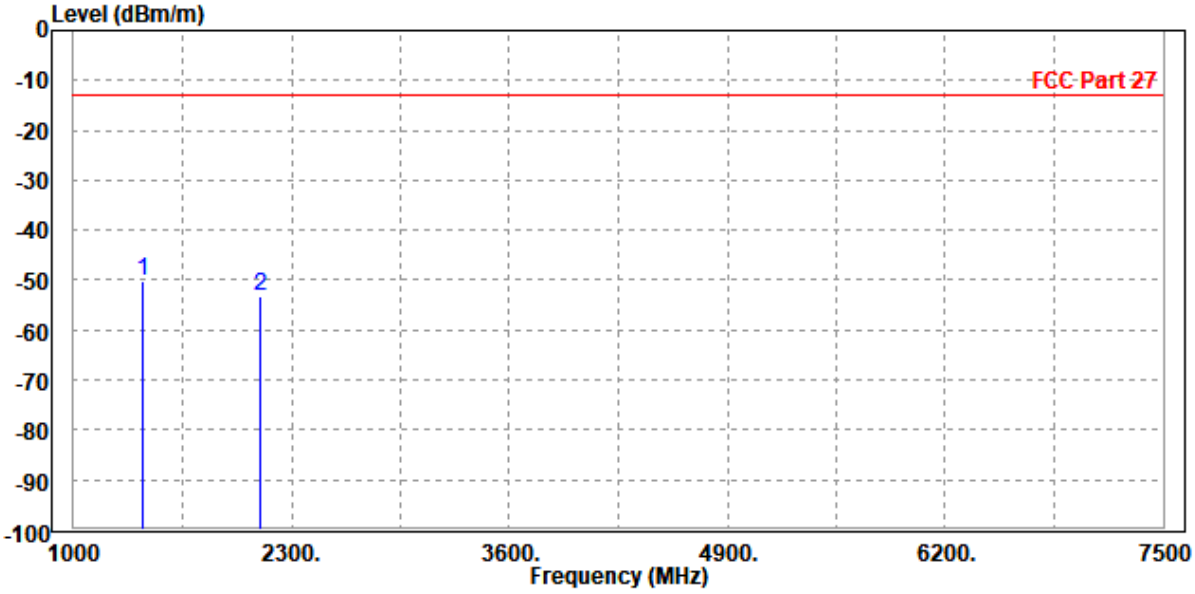


LTE BAND 12

CHANNEL BANDWIDTH: 1.4MHz / QPSK

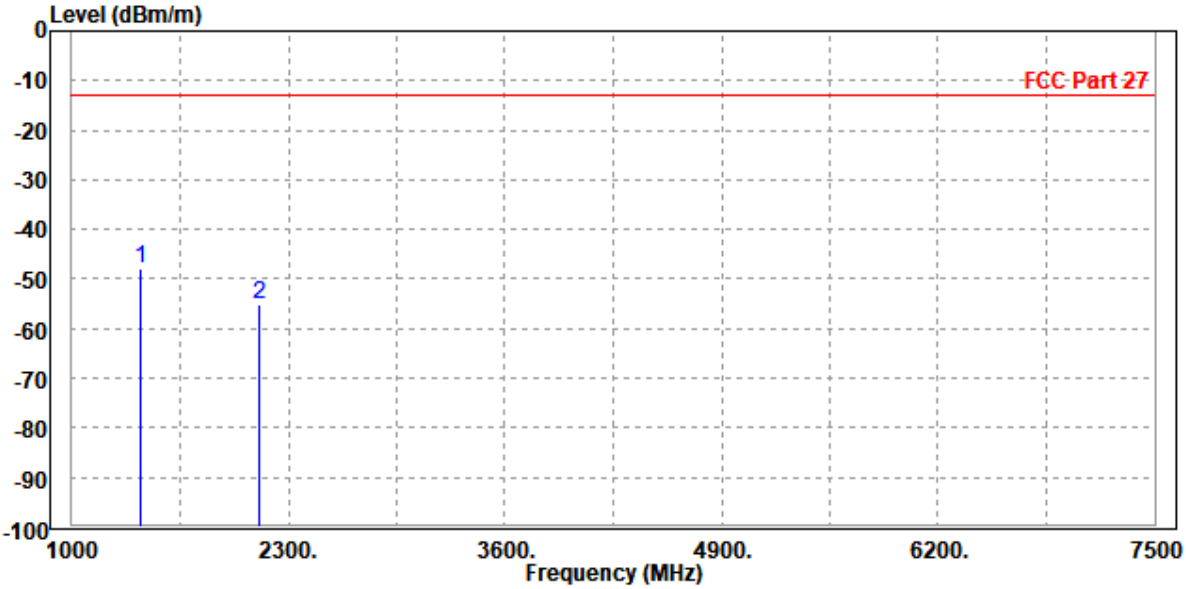
MODE	TX channel 23095	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1414.000	-50.20	-53.14	-13.00	-37.20	2.94	Peak	Horizontal
2	2118.000	-53.42	-58.49	-13.00	-40.42	5.07	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

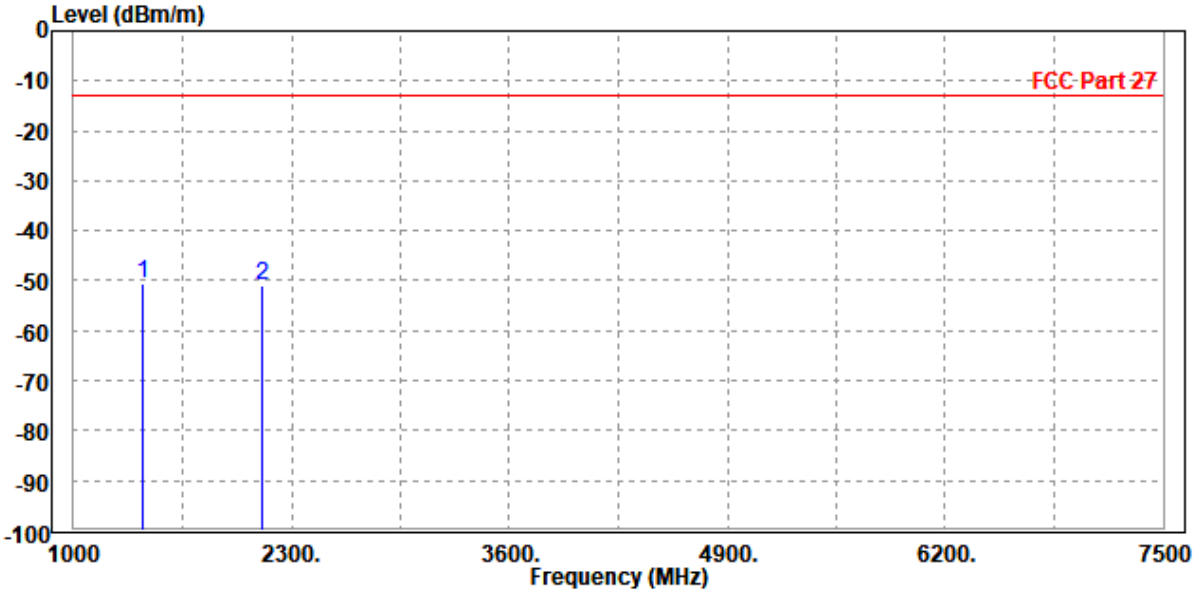
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1416.000	-47.76	-50.69	-13.00	-34.76	2.93	Peak	Vertical
2		2121.000	-54.96	-59.39	-13.00	-41.96	4.43	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK

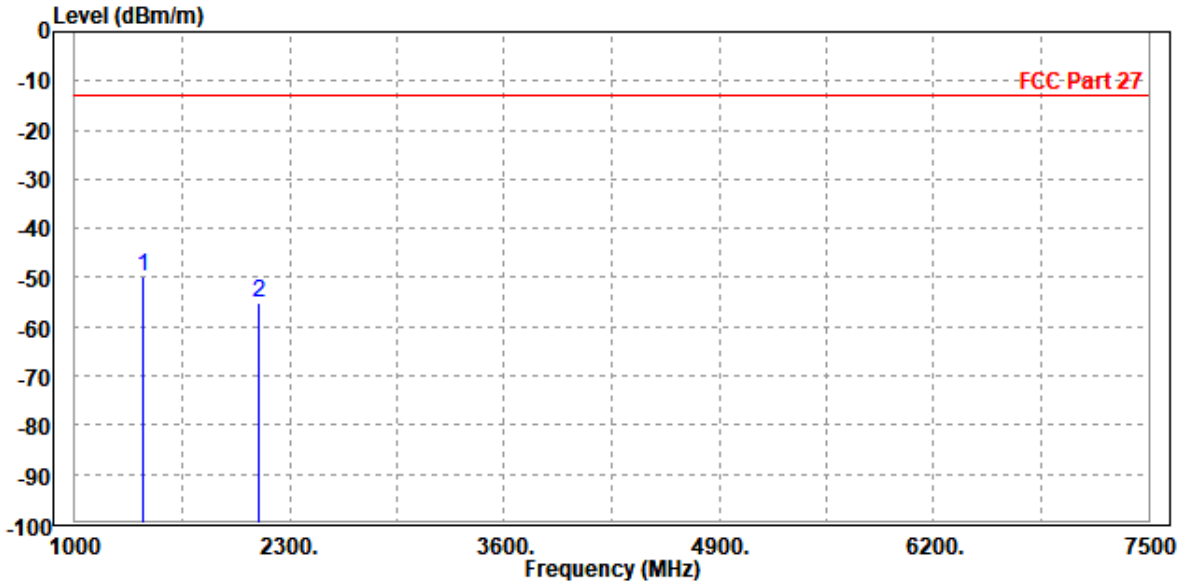
MODE	TX channel 23095	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1416.000	-50.51	-53.45	-13.00	-37.51	2.94	Peak	Horizontal
2	2121.000	-50.86	-55.94	-13.00	-37.86	5.08	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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	1414.000	-49.89	-52.81	-13.00	-36.89	2.92	Peak	Vertical
2		2118.000	-55.12	-59.54	-13.00	-42.12	4.42	Peak	Vertical

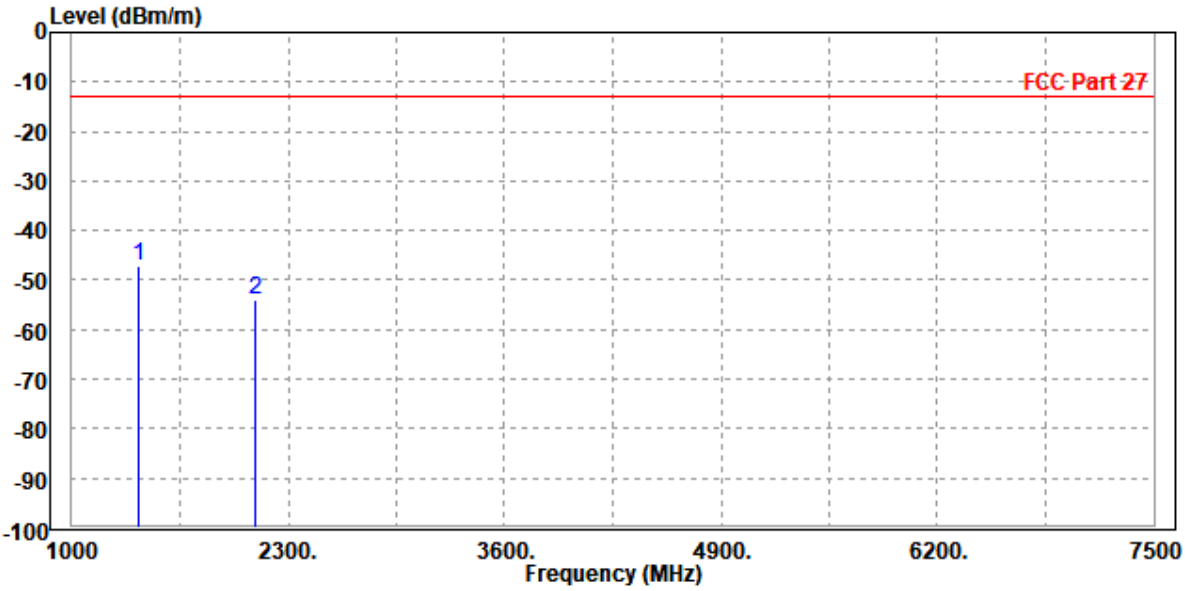


CHANNEL BANDWIDTH: 5MHz / QPSK

CH 23035

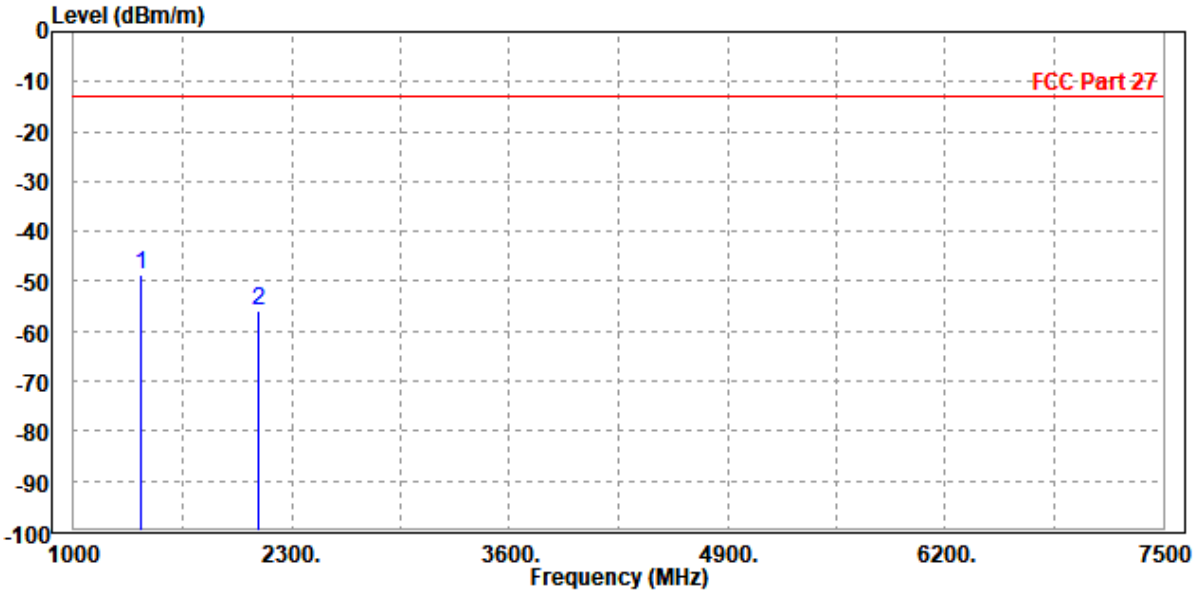
MODE	TX channel 23035	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1396.500	-47.13	-50.01	-13.00	-34.13	2.88	Peak	Horizontal
2		2103.000	-53.85	-58.88	-13.00	-40.85	5.03	Peak	Horizontal



MODE	TX channel 23035	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

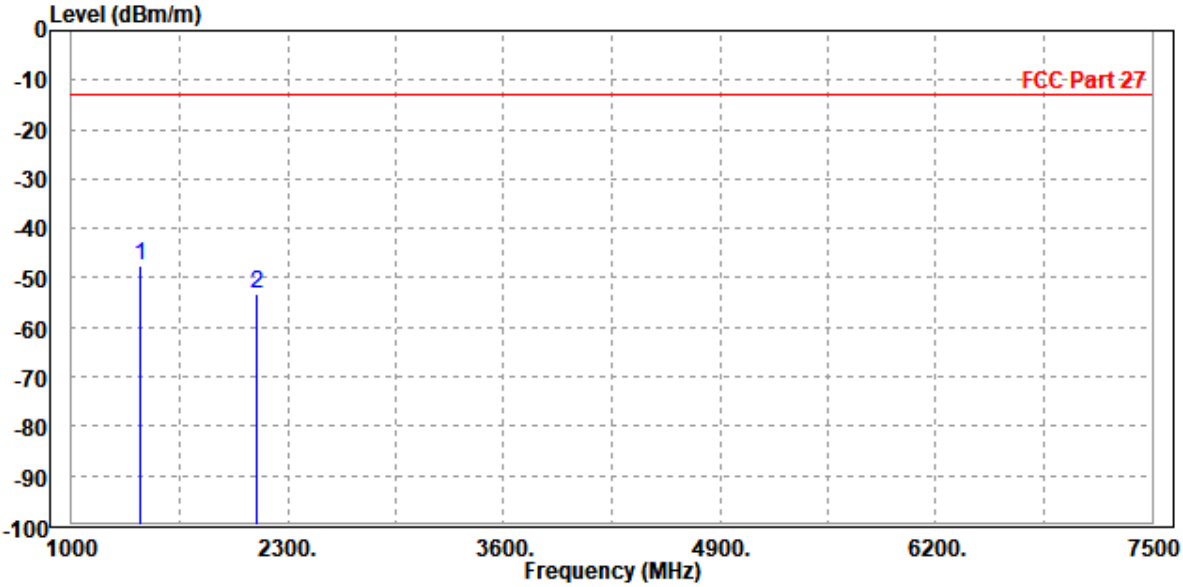
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1396.500	-48.83	-51.71	-13.00	-35.83	2.88	Peak	Vertical
2	2105.000	-55.84	-60.21	-13.00	-42.84	4.37	Peak	Vertical



CH 23095

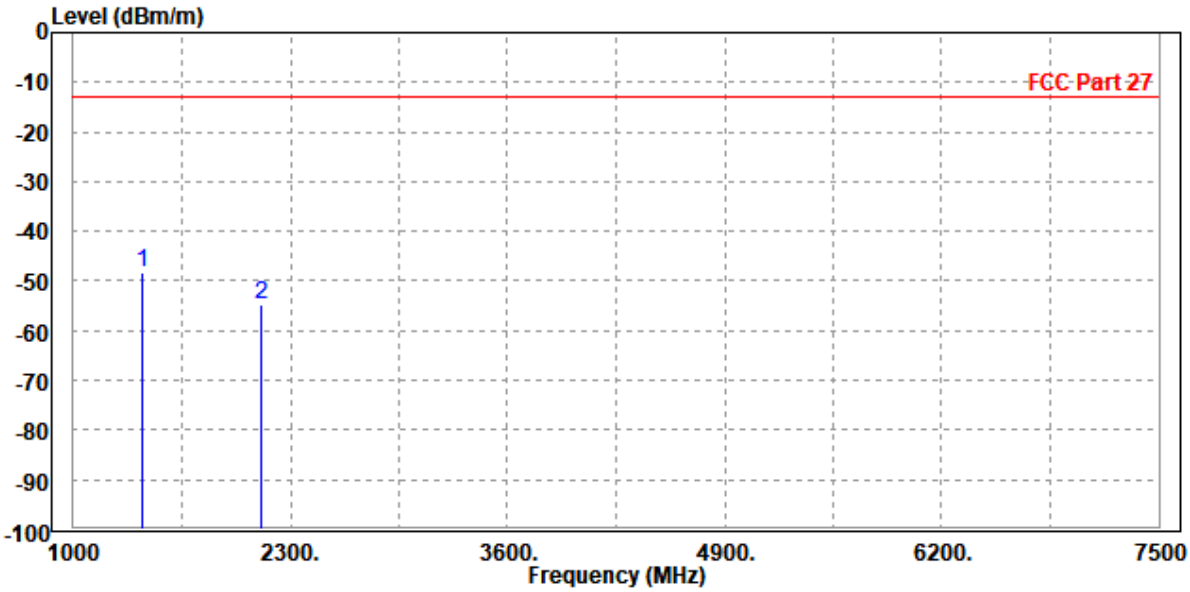
MODE	TX channel 23095	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1409.500	-47.52	-50.44	-13.00	-34.52	2.92	Peak	Horizontal
2		2118.000	-53.34	-58.41	-13.00	-40.34	5.07	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

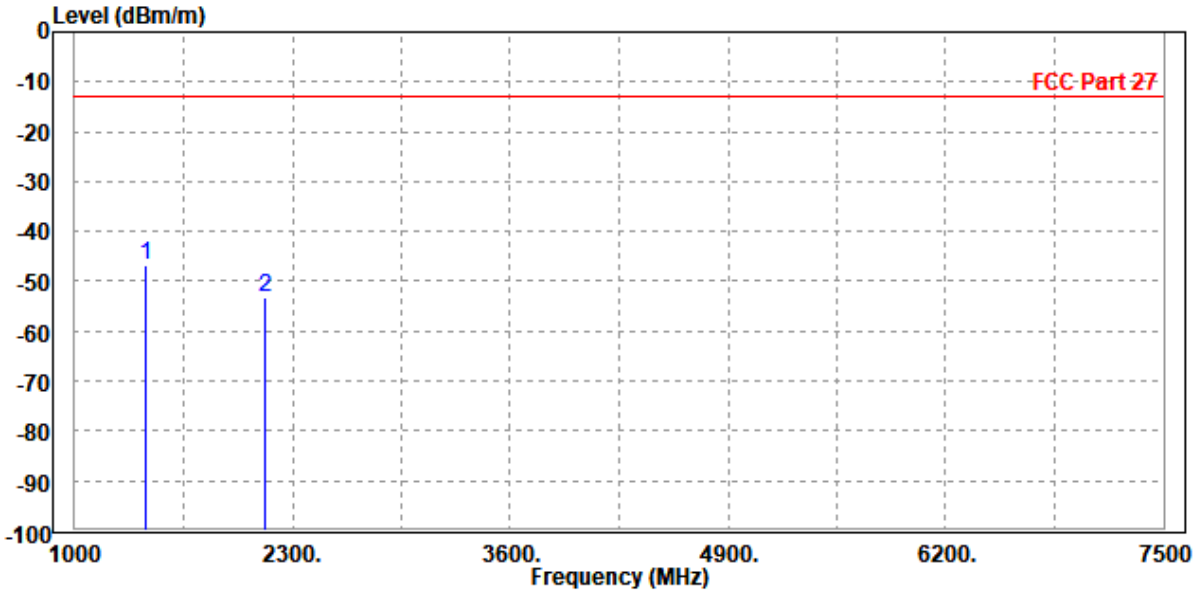
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1409.500	-48.32	-51.23	-13.00	-35.32	2.91	Peak	Vertical
2		2121.000	-54.76	-59.19	-13.00	-41.76	4.43	Peak	Vertical



CH 23155

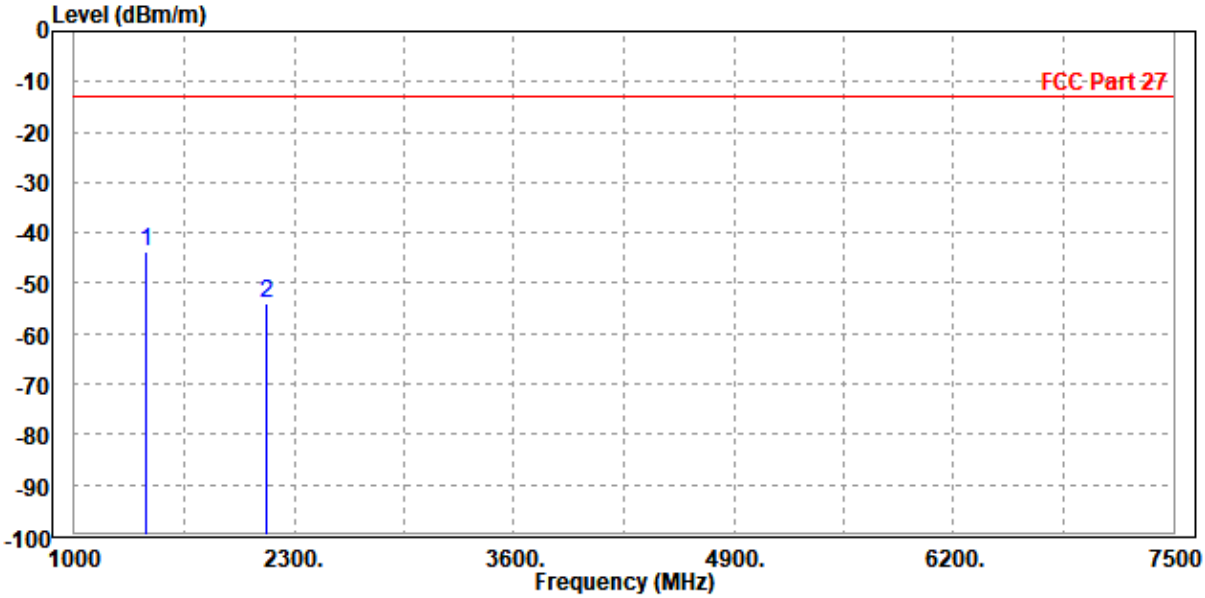
MODE	TX channel 23155	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1422.500	-46.79	-49.75	-13.00	-33.79	2.96	Peak	Horizontal
2		2137.500	-53.17	-58.29	-13.00	-40.17	5.12	Peak	Horizontal



MODE	TX channel 23155	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

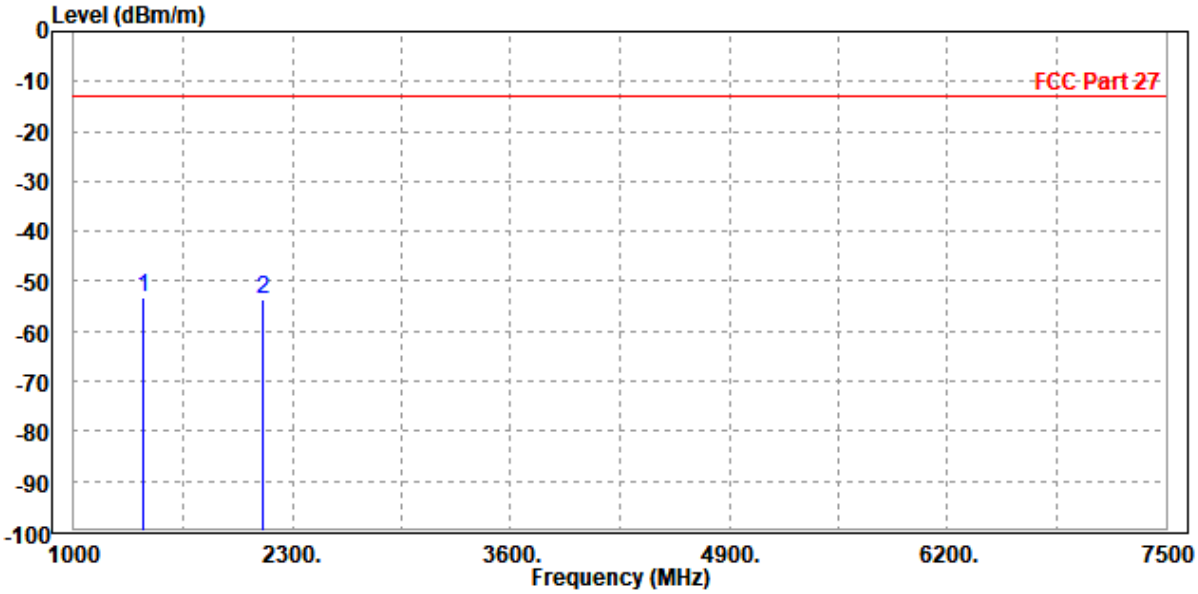
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1422.500	-43.78	-46.72	-13.00	-30.78	2.94	Peak	Vertical
2		2139.000	-54.15	-58.64	-13.00	-41.15	4.49	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

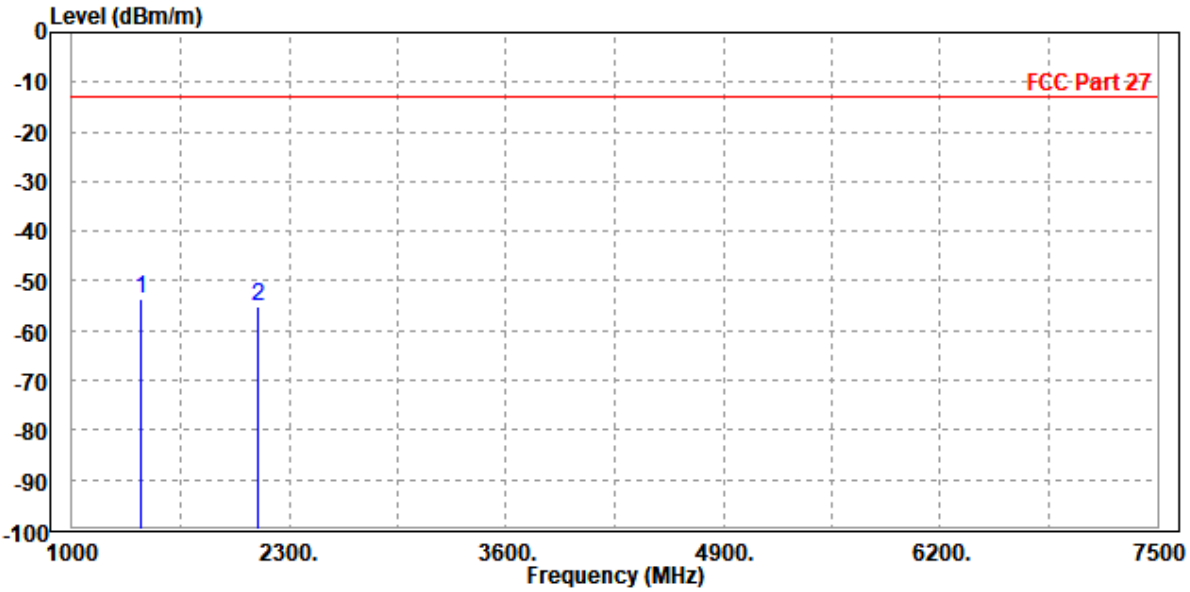
MODE	TX channel 23095	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1416.000	-53.38	-56.32	-13.00	-40.38	2.94	Peak	Horizontal
2	2121.000	-53.71	-58.79	-13.00	-40.71	5.08	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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	1414.000	-53.68	-56.60	-13.00	-40.68	2.92	Peak	Vertical
2	2118.000	-55.14	-59.56	-13.00	-42.14	4.42	Peak	Vertical



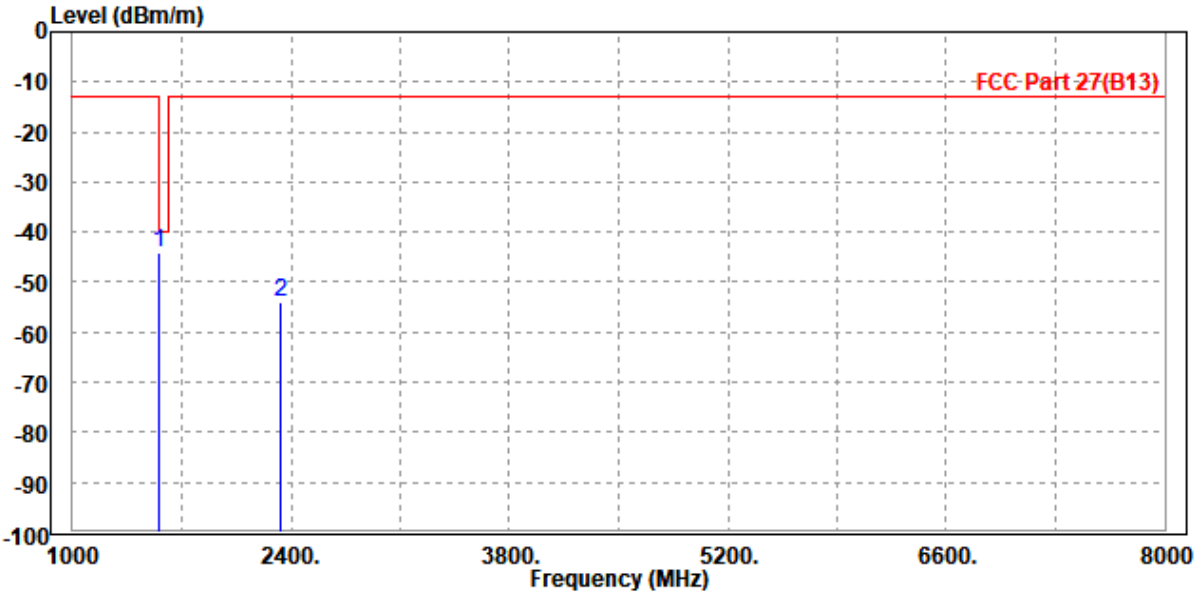
LTE B13

CHANNEL BANDWIDTH: 5MHz / QPSK

CH23205

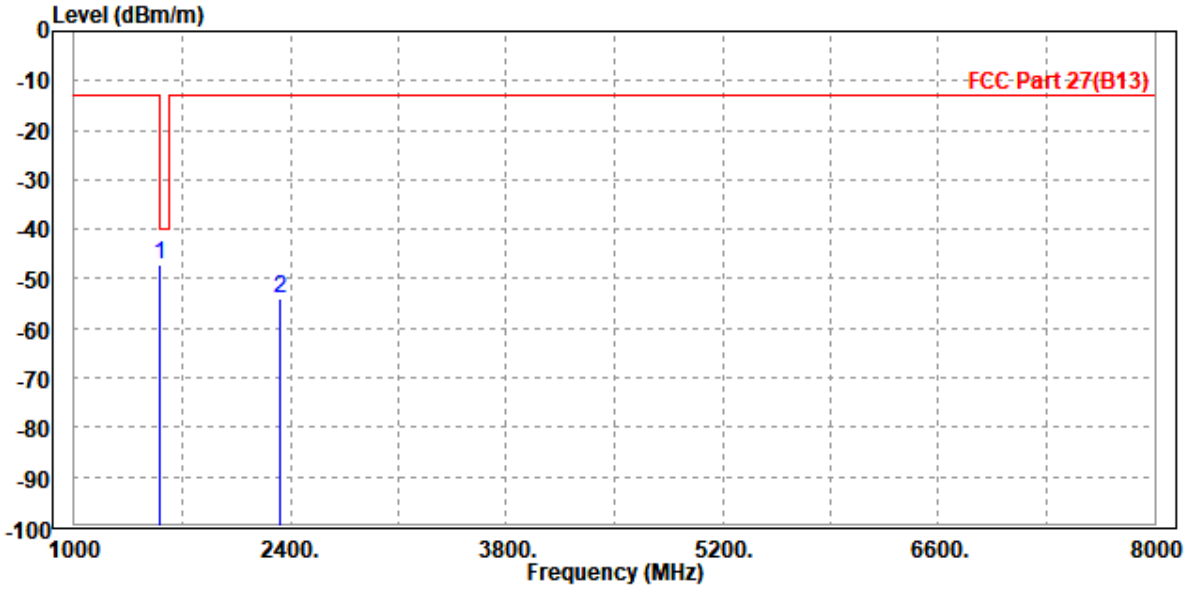
MODE	TX channel 23205	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1553.000	-44.26	-47.62	-13.00	-31.26	3.36	Peak	Horizontal
2		2337.000	-54.12	-59.78	-13.00	-41.12	5.66	Peak	Horizontal



MODE	TX channel 23205	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

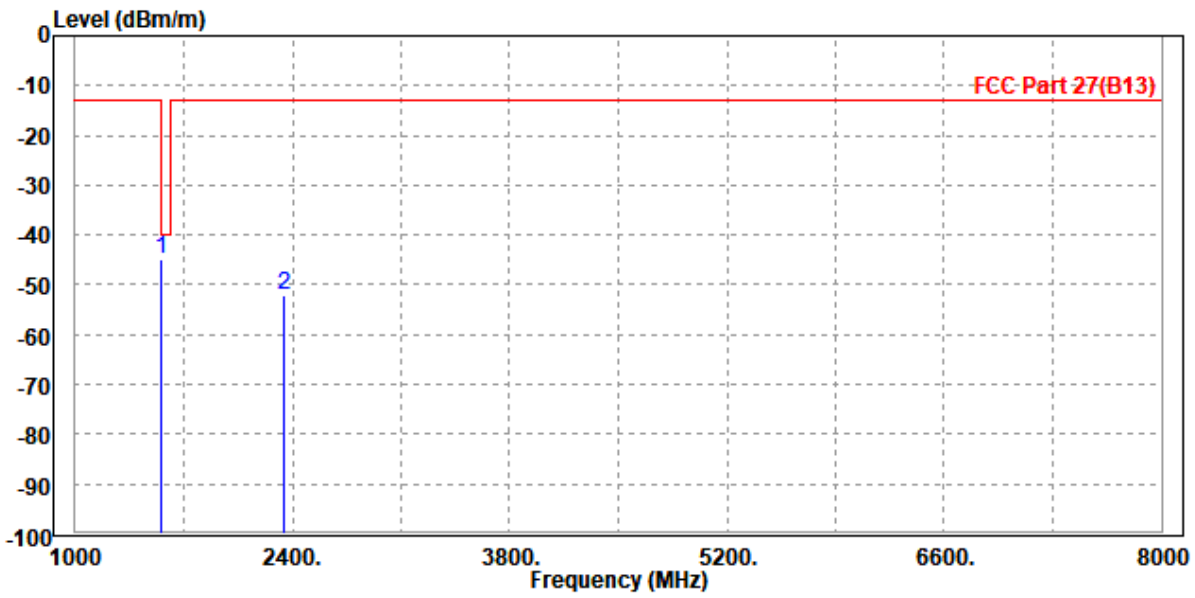
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1553.000	-47.13	-50.35	-13.00	-34.13	3.22	Peak	Vertical
2	2337.000	-53.93	-59.13	-13.00	-40.93	5.20	Peak	Vertical



CH 23230

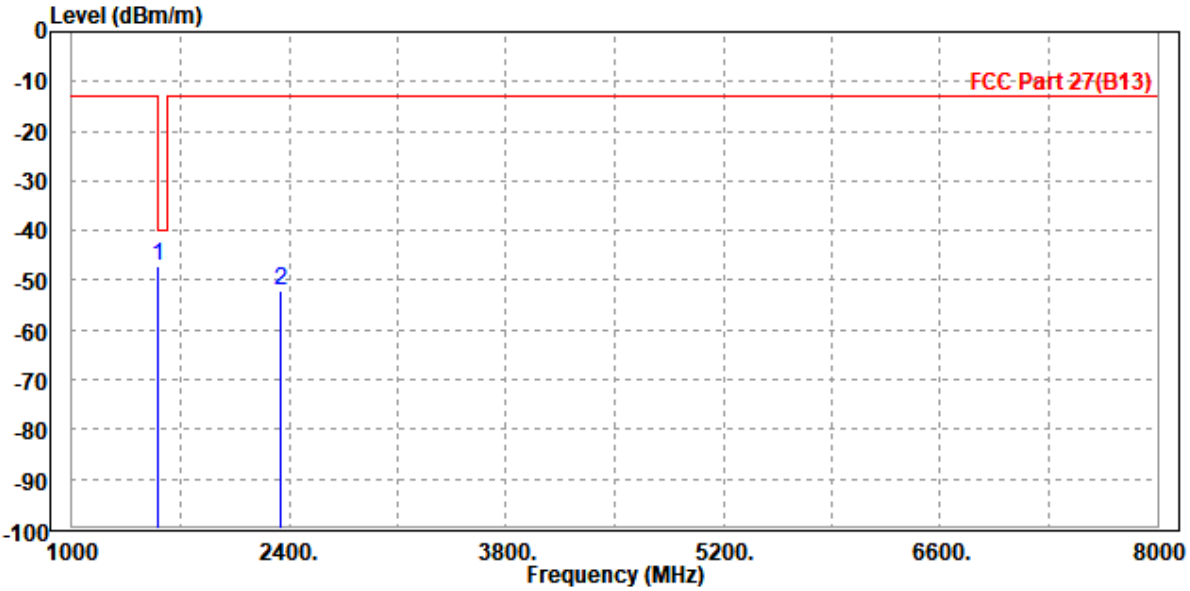
MODE	TX channel 23230	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		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	-44.74	-48.13	-40.00	-4.74	3.39	Peak	Horizontal
2		2344.000	-52.22	-57.90	-13.00	-39.22	5.68	Peak	Horizontal



MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

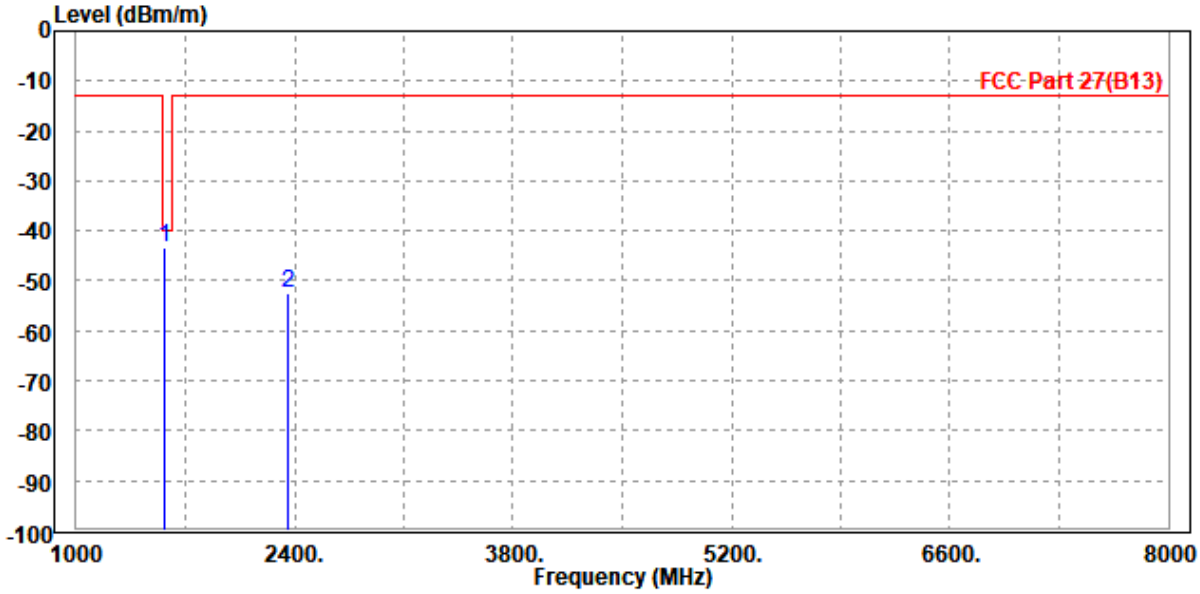
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1560.000	-47.28	-50.51	-40.00	-7.28	3.23	Peak	Vertical
2	2346.000	-52.22	-57.45	-13.00	-39.22	5.23	Peak	Vertical



CH 23255

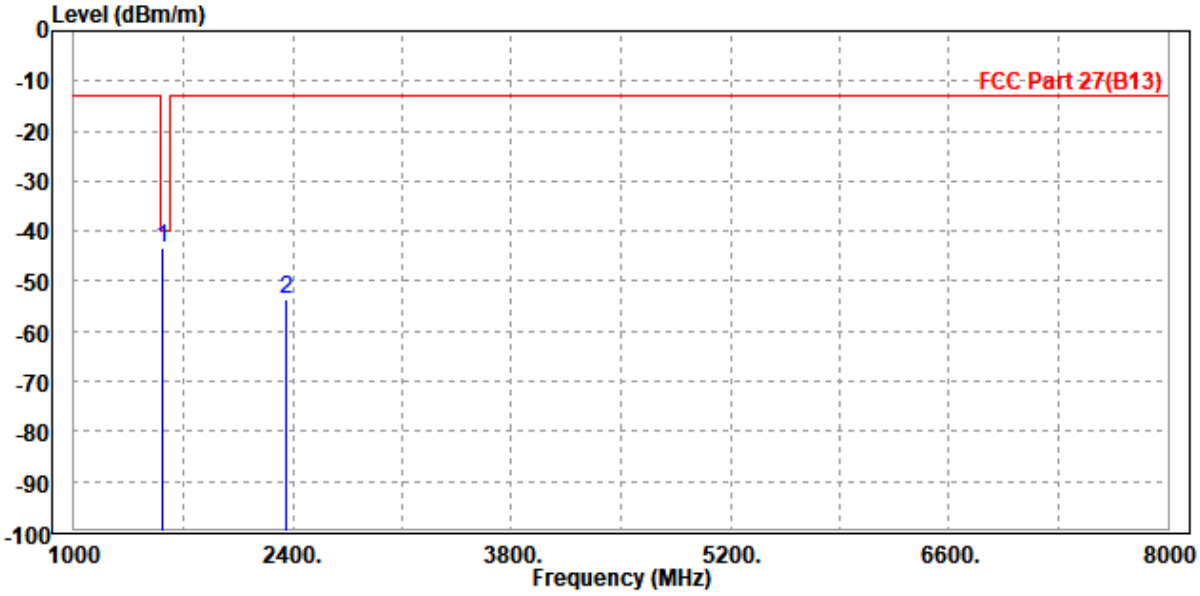
MODE	TX channel 23255	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		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	-43.47	-46.88	-40.00	-3.47	3.41	Peak	Horizontal
2		2355.000	-52.41	-58.12	-13.00	-39.41	5.71	Peak	Horizontal



MODE	TX channel 23255	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

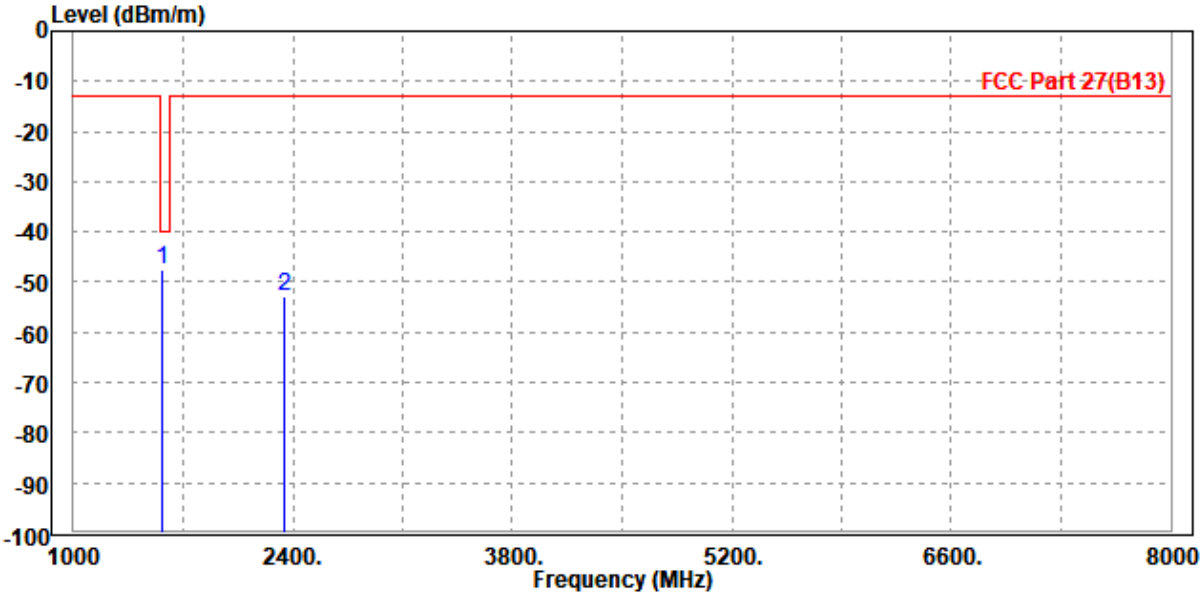
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1567.000	-43.29	-46.54	-40.00	-3.29	3.25	Peak	Vertical
2		2355.000	-53.47	-58.73	-13.00	-40.47	5.26	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz /QPSK

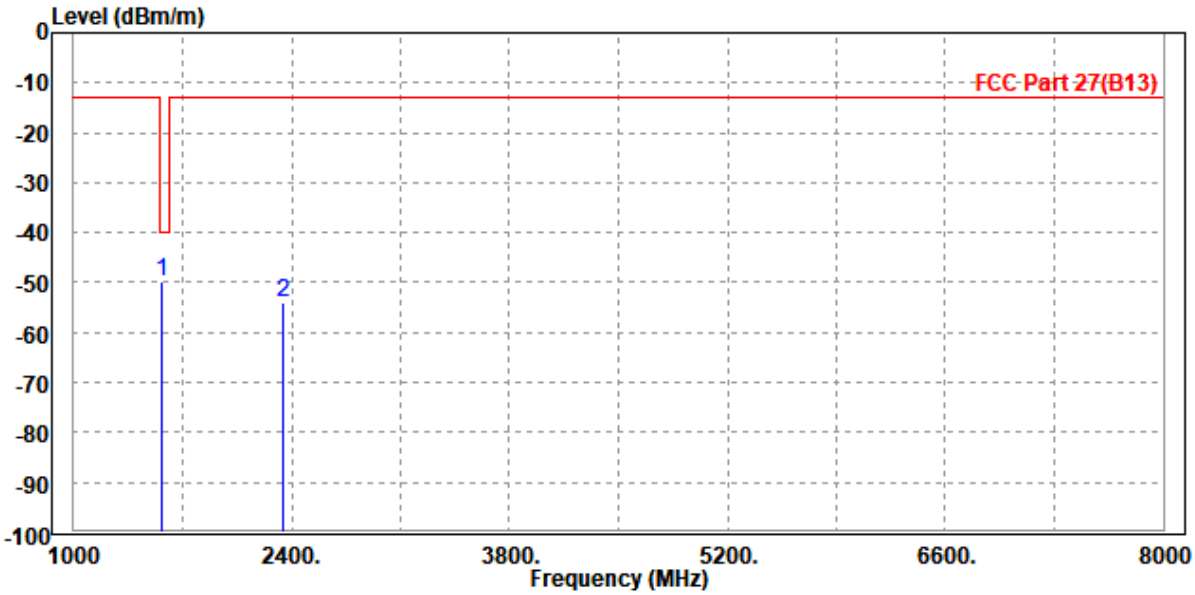
MODE	TX channel 23230	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		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	-47.67	-51.08	-40.00	-7.67	3.41	Peak	Horizontal
2		2346.000	-52.82	-58.50	-13.00	-39.82	5.68	Peak	Horizontal



MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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	1564.000	-49.93	-53.17	-40.00	-9.93	3.24	Peak	Vertical
2		2344.000	-54.04	-59.26	-13.00	-41.04	5.22	Peak	Vertical



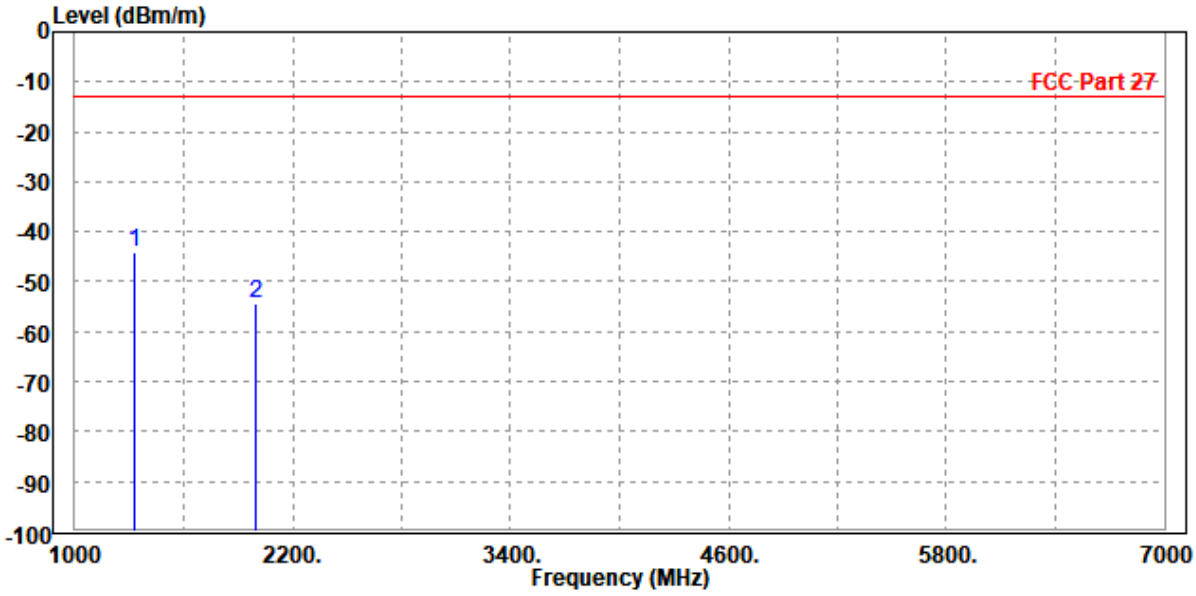
LTE B71

CHANNEL BANDWIDTH: 5MHz / QPSK

CH 133297

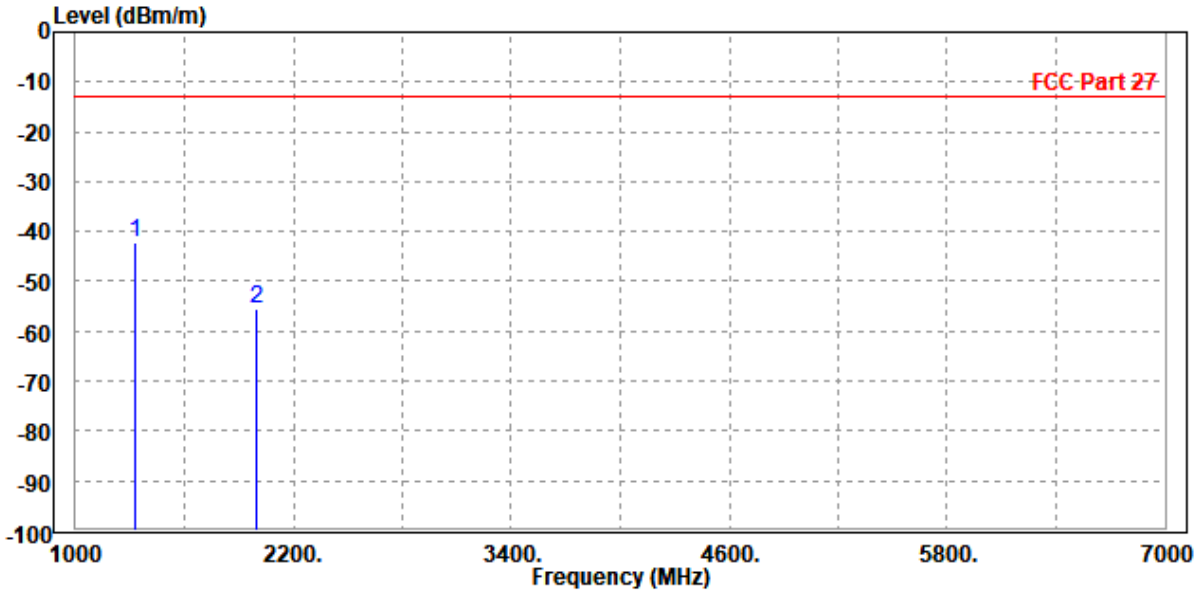
MODE	TX channel 133297	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1324.000	-44.12	-46.78	-13.00	-31.12	2.66	Peak	Horizontal
2	1996.000	-54.53	-59.27	-13.00	-41.53	4.74	Peak	Horizontal



MODE	TX channel 133297	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

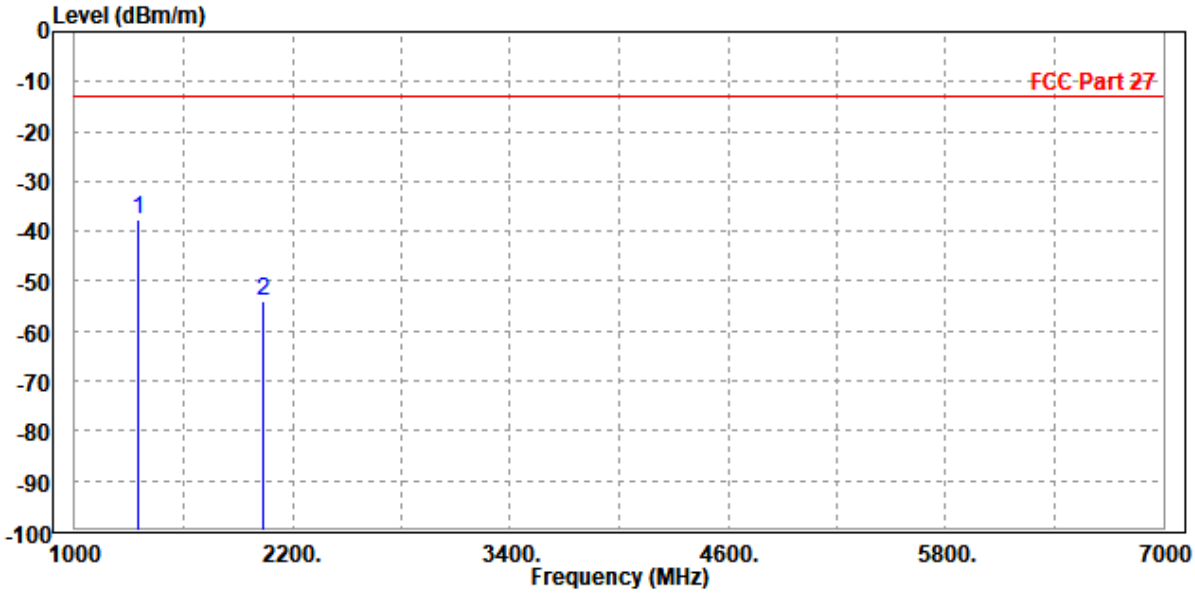
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1324.000	-42.21	-44.91	-13.00	-29.21	2.70	Peak	Vertical
2	1996.500	-55.40	-59.39	-13.00	-42.40	3.99	Peak	Vertical



CH 133297

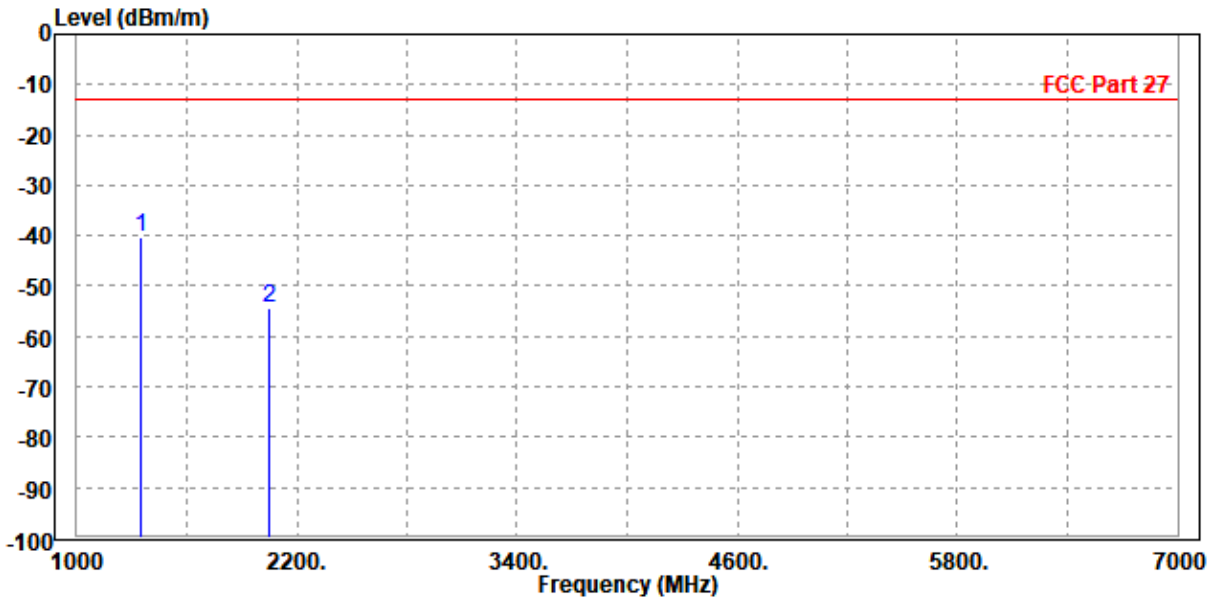
MODE	TX channel 133297	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1354.000	-37.71	-40.46	-13.00	-24.71	2.75	Peak	Horizontal
2		2041.500	-54.16	-59.02	-13.00	-41.16	4.86	Peak	Horizontal



MODE	TX channel 133297	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

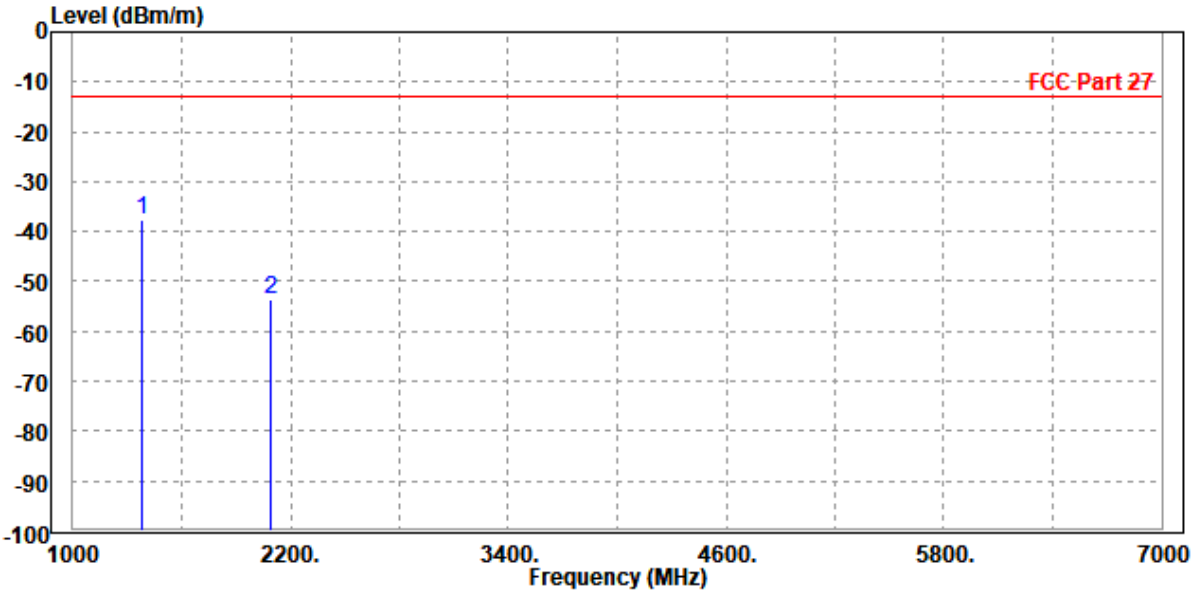
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1354.000	-40.40	-43.18	-13.00	-27.40	2.78	Peak	Vertical
2		2044.000	-54.26	-58.42	-13.00	-41.26	4.16	Peak	Vertical



CH 133447

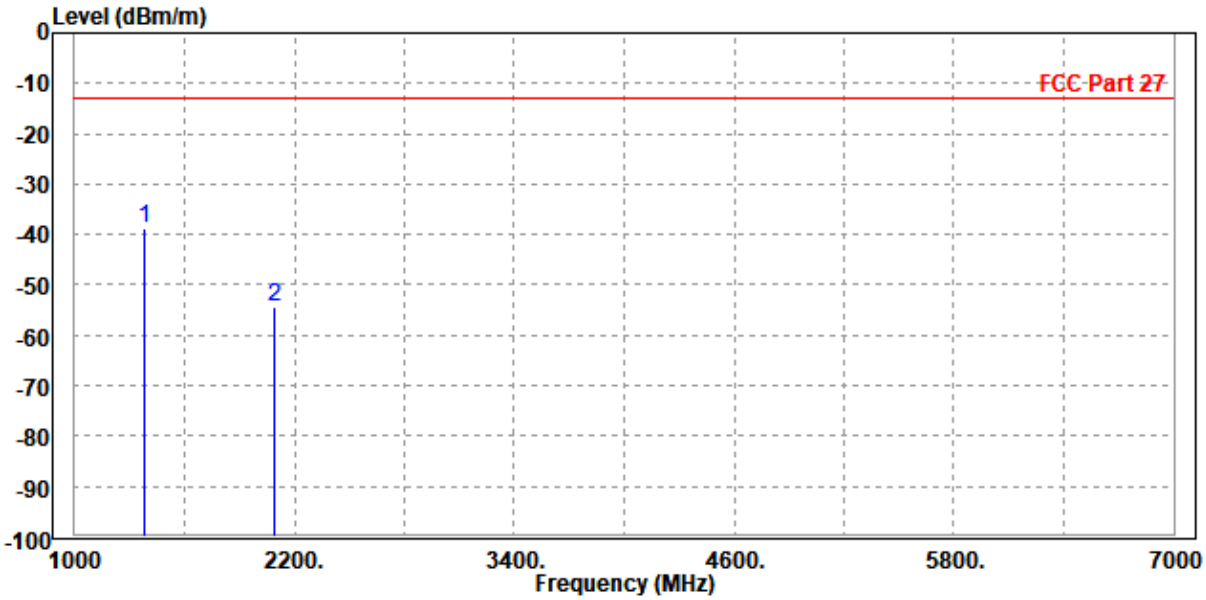
MODE	TX channel 133447	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1384.000	-37.55	-40.39	-13.00	-24.55	2.84	Peak	Horizontal
2		2086.500	-53.65	-58.63	-13.00	-40.65	4.98	Peak	Horizontal



MODE	TX channel 133447	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

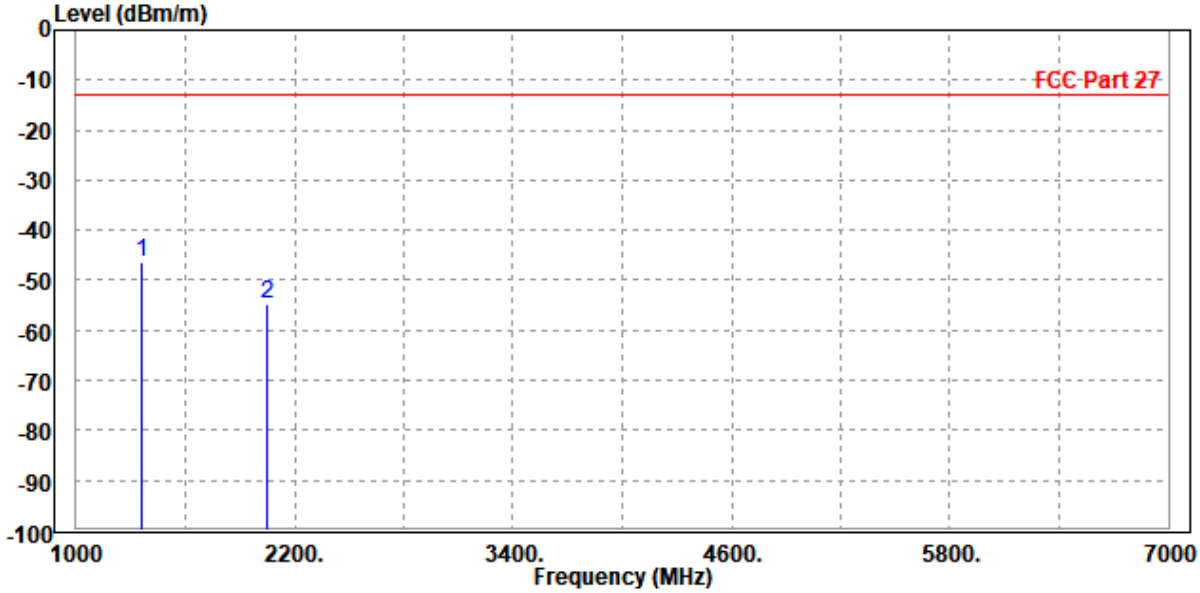
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1384.000	-38.70	-41.55	-13.00	-25.70	2.85	Peak	Vertical
2	2086.000	-54.40	-58.71	-13.00	-41.40	4.31	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

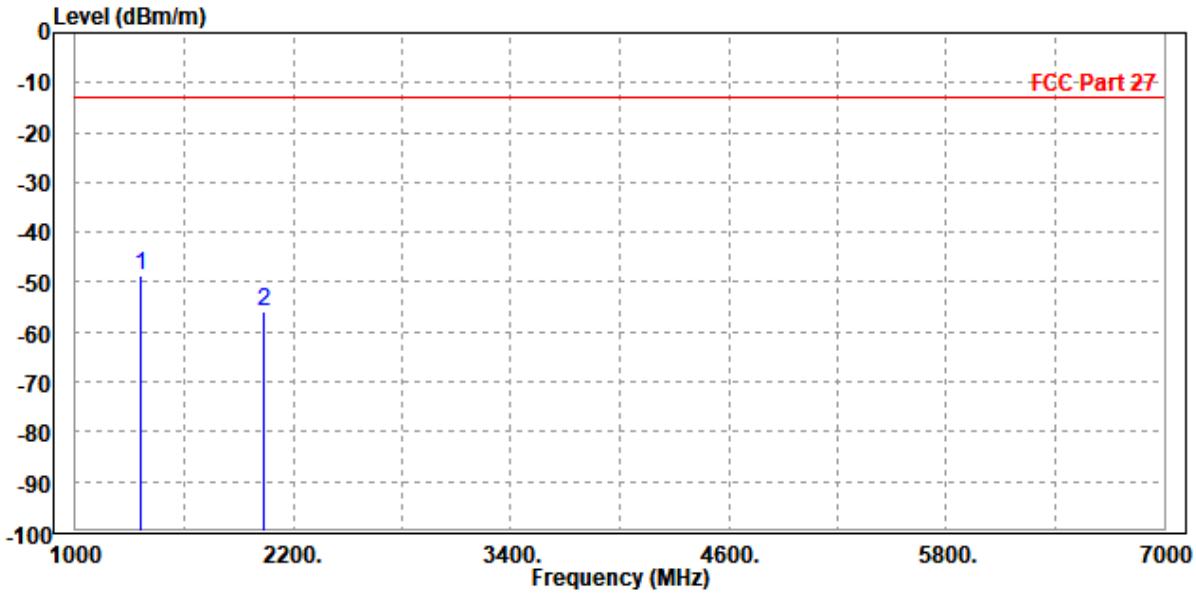
MODE	TX channel 133297	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1361.000	-46.54	-49.31	-13.00	-33.54	2.77	Peak	Horizontal
2		2044.000	-54.66	-59.53	-13.00	-41.66	4.87	Peak	Horizontal



MODE	TX channel 133297	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

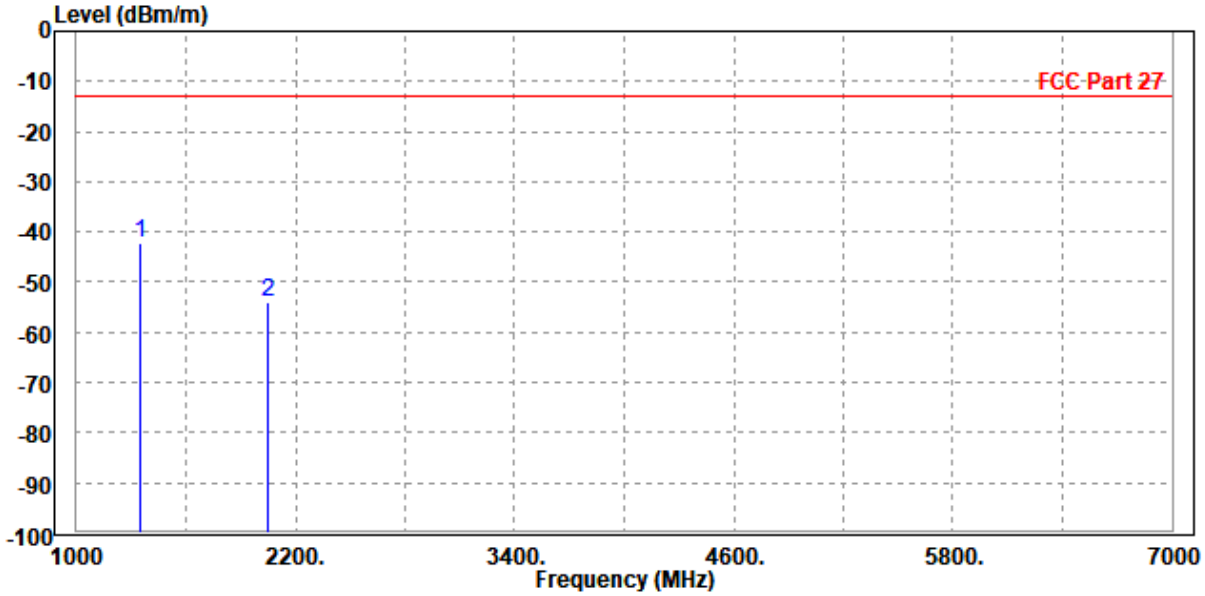
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1360.000	-48.61	-51.40	-13.00	-35.61	2.79	Peak	Vertical
2	2041.500	-55.95	-60.10	-13.00	-42.95	4.15	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

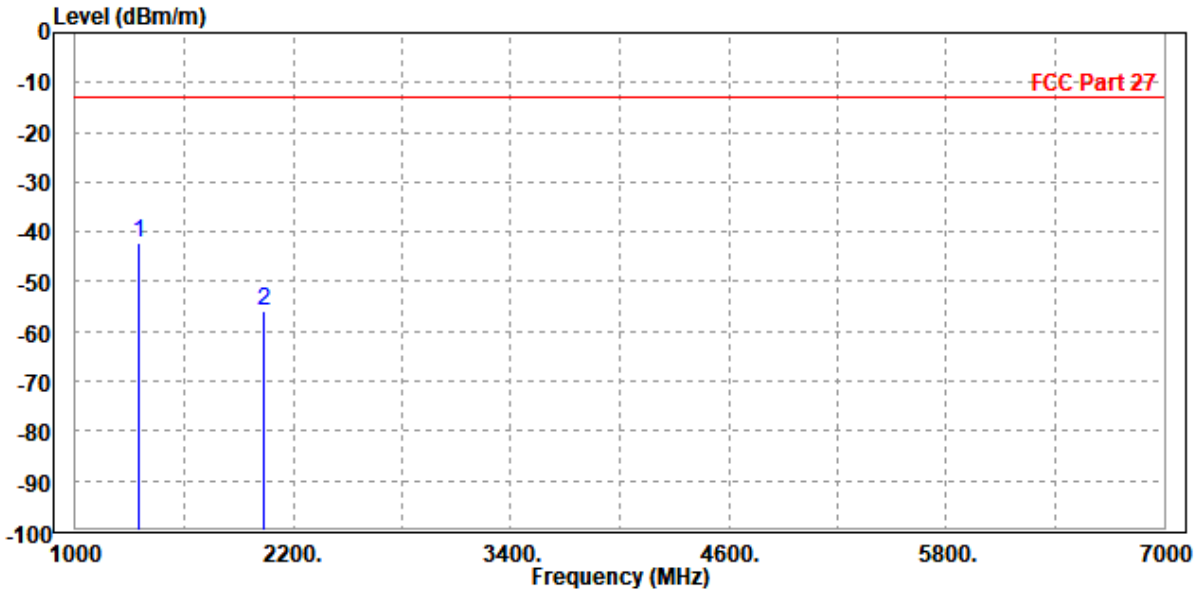
MODE	TX channel 133297	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1348.000	-42.32	-45.05	-13.00	-29.32	2.73	Peak	Horizontal
2		2044.000	-53.90	-58.77	-13.00	-40.90	4.87	Peak	Horizontal



MODE	TX channel 133297	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

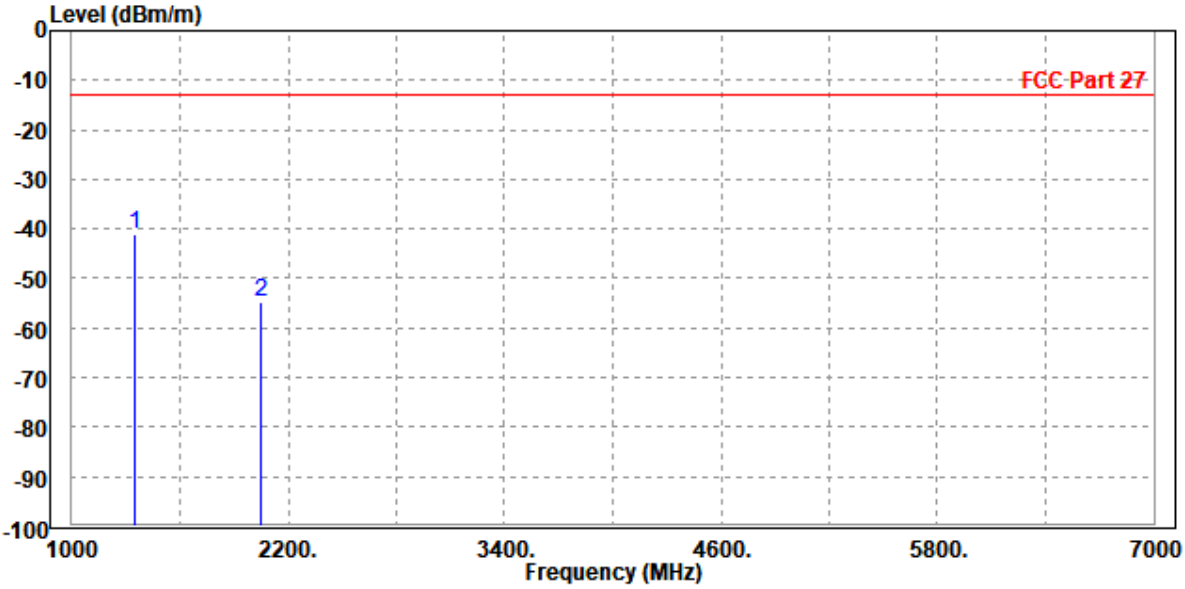
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1348.000	-42.37	-45.13	-13.00	-29.37	2.76	Peak	Vertical
2		2041.500	-56.08	-60.23	-13.00	-43.08	4.15	Peak	Vertical



CHANNEL BANDWIDTH: 20MHz / QPSK

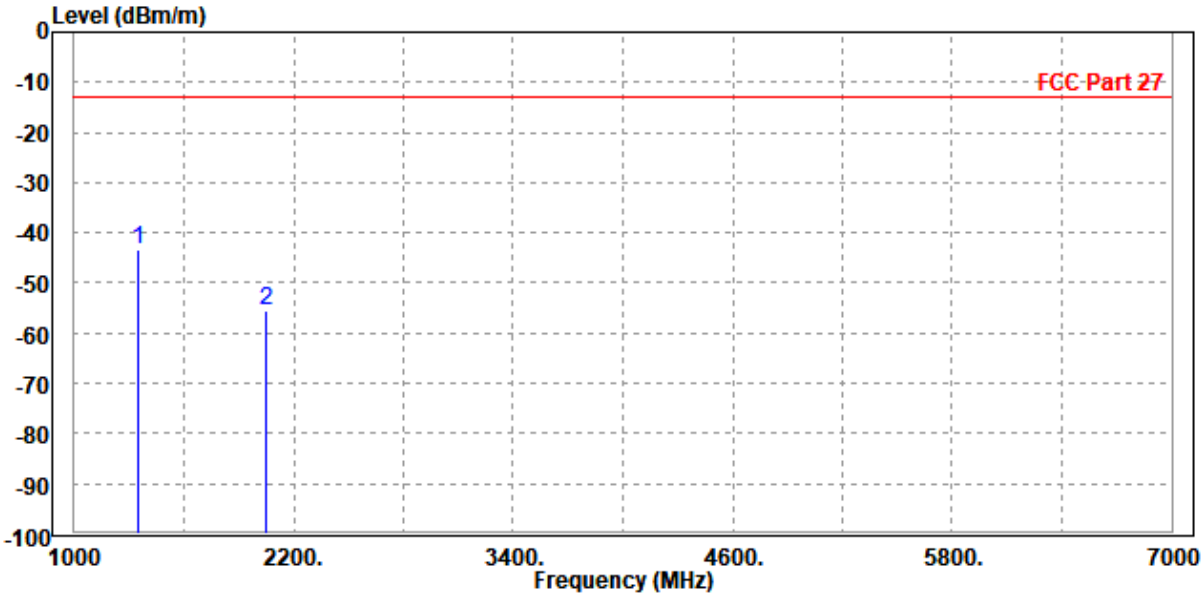
MODE	TX channel 133322	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1348.000	-40.92	-43.65	-13.00	-27.92	2.73	Peak	Horizontal
2		2049.000	-54.77	-59.65	-13.00	-41.77	4.88	Peak	Horizontal



MODE	TX channel 133322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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	1348.000	-43.40	-46.16	-13.00	-30.40	2.76	Peak	Vertical
2		2050.000	-55.39	-59.57	-13.00	-42.39	4.18	Peak	Vertical

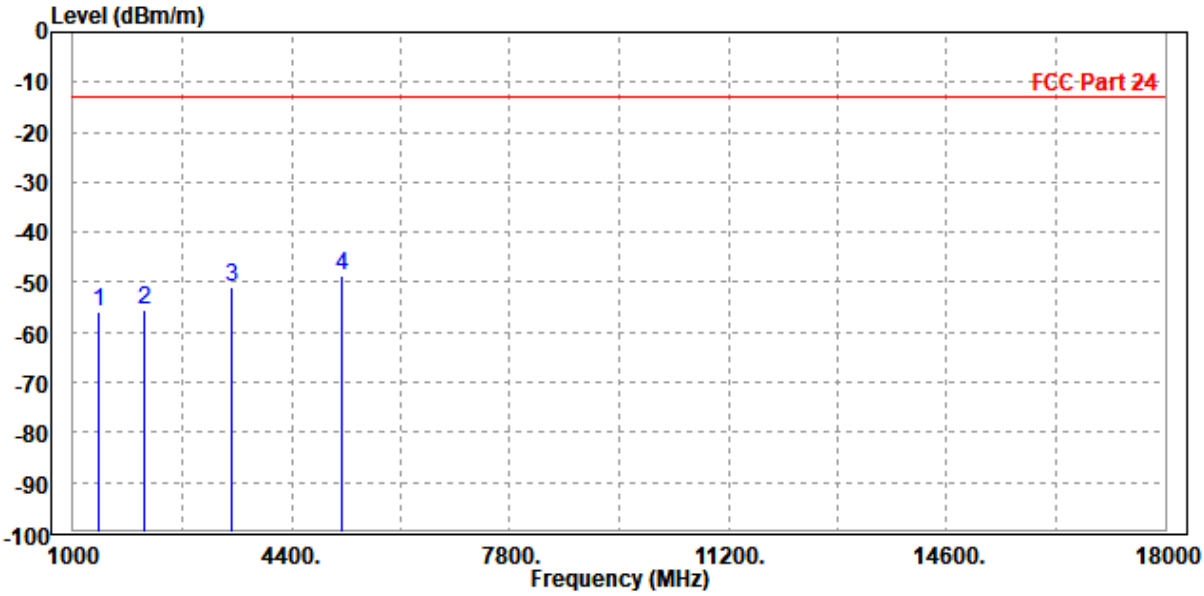


LTE 4A-12A

CHANNEL BANDWIDTH: (20+10) MHz / QPSK

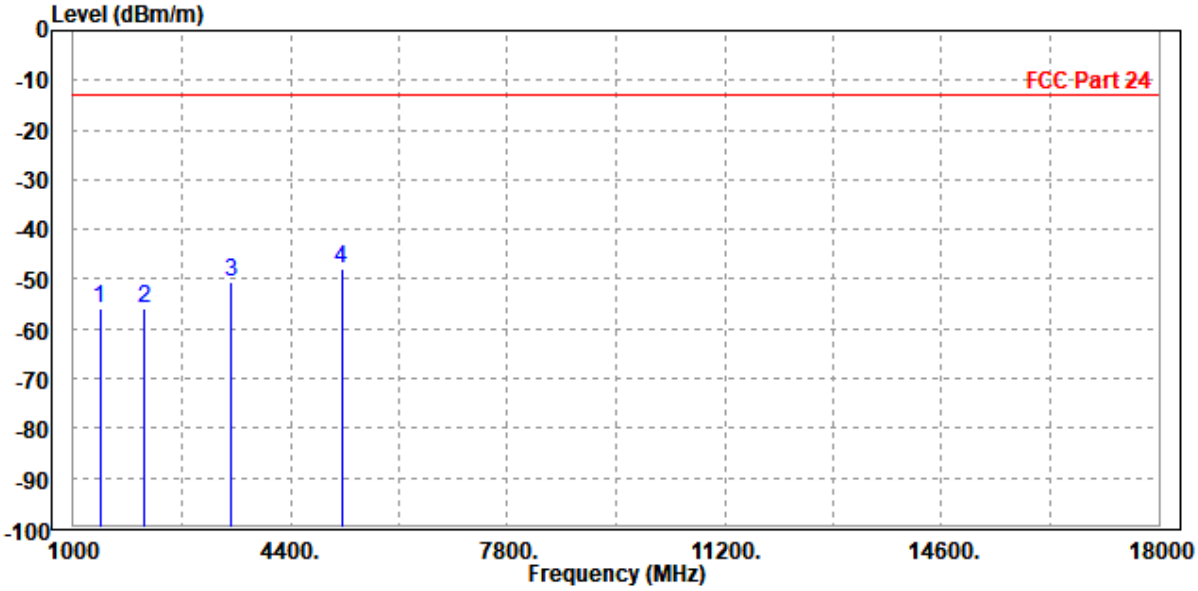
MODE	TX channel PCC 20175 TX channel SCC 23095	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		1408.000	-55.97	-58.89	-13.00	-42.97	2.92	Peak	Horizontal
2		2121.000	-55.41	-60.49	-13.00	-42.41	5.08	Peak	Horizontal
3		3465.000	-51.03	-59.57	-13.00	-38.03	8.54	Peak	Horizontal
4	PP	5197.500	-48.57	-59.92	-13.00	-35.57	11.35	Peak	Horizontal



MODE	TX channel PCC 20175 TX channel SCC 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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		1414.000	-55.81	-58.73	-13.00	-42.81	2.92	Peak	Vertical
2		2121.000	-56.05	-60.48	-13.00	-43.05	4.43	Peak	Vertical
3		3465.000	-50.55	-59.20	-13.00	-37.55	8.65	Peak	Vertical
4	PP	5199.000	-48.08	-59.84	-13.00	-35.08	11.76	Peak	Vertical

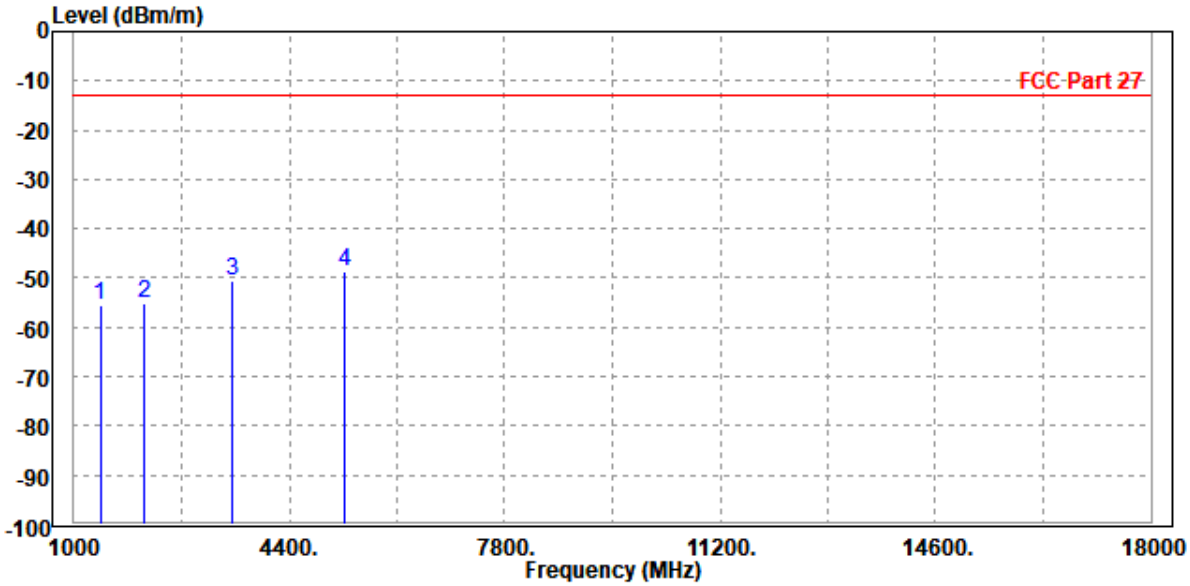


LTE 12A-66A

CHANNEL BANDWIDTH: (10+20) MHz / QPSK

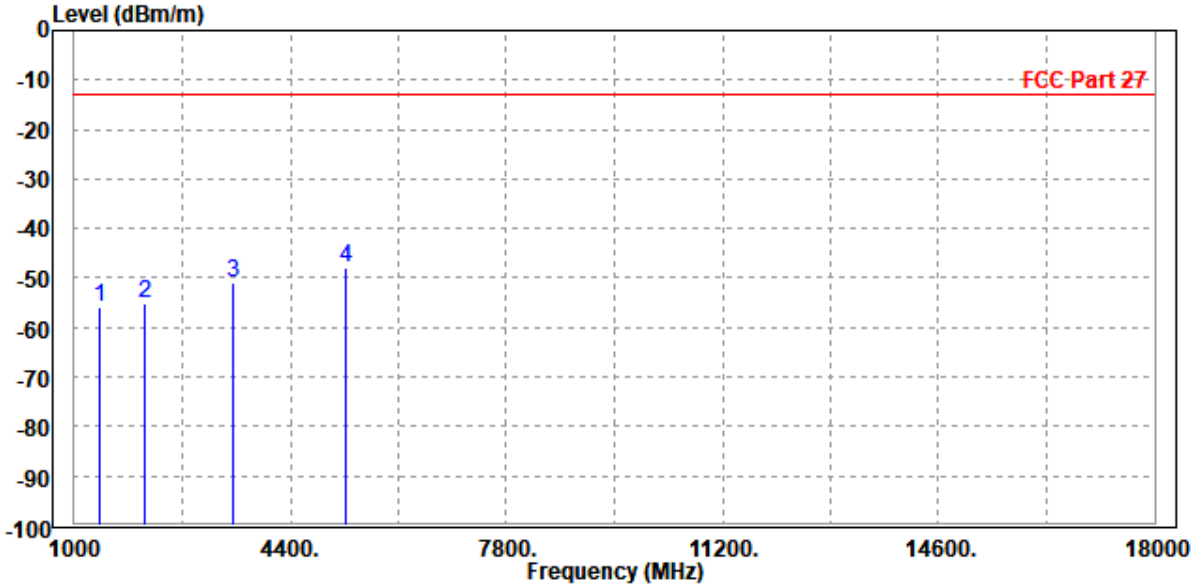
MODE	TX channel PCC 23095 TX channel SCC 132322	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		1414.000	-55.67	-58.61	-13.00	-42.67	2.94	Peak	Horizontal
2		2121.000	-55.09	-60.17	-13.00	-42.09	5.08	Peak	Horizontal
3		3510.000	-50.49	-59.04	-13.00	-37.49	8.55	Peak	Horizontal
4	PP	5267.000	-48.70	-60.16	-13.00	-35.70	11.46	Peak	Horizontal



MODE	TX channel PCC 23095 TX channel SCC 132322	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
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	1408.000	-55.94	-58.85	-13.00	-42.94	2.91	Peak	Vertical
2	2121.000	-55.17	-59.60	-13.00	-42.17	4.43	Peak	Vertical
3	3510.000	-50.91	-59.55	-13.00	-37.91	8.64	Peak	Vertical
4 PP	5265.000	-47.74	-59.62	-13.00	-34.74	11.88	Peak	Vertical

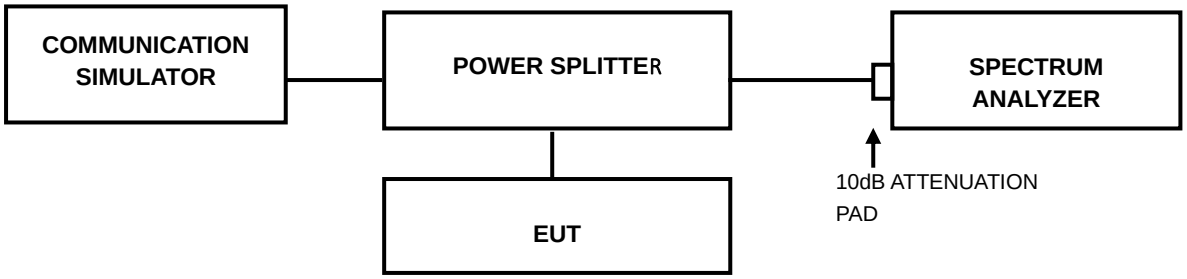


3.7 PEAK TO AVERAGE RATIO

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 ≥ 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%.

3.7.4 TEST RESULTS

Please Refer to Appendix D Of this test report.

4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

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

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Tel: +86-755-88696566
Fax: +86-755-88696577

Email: customerservice.sw@cn.bureauveritas.com
Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.

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---