FCC TEST REPORT

(PART 27)

Applicant:	Sonim Technologies, Inc.
Address:	1825 S. Grant St., Suite 200., San Mateo, CA, 94402

Manufacturer or Supplier	Sonim Technologies (Shenzhen) Limited
Address	2nd Floor, No. 2 Building Phase B, Daqian Industrial park, Longchang Road, 67 District, Baoan, Shenzhen, P. R. China
Product	Mobile Phone
Brand Name	Sonim
Model Name	XP8800
FCC ID	WYPPC4000
Date of tests	Nov. 06, 2017 ~ Dec. 04, 2017

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

☒ **FCC Part 27, Subpart C, M** ☒ **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 Yuqiang Yin Engineer / Mobile Department	Approved by Bill Yao Manager / Mobile Department
Date: Dec. 05, 2017	Date: Dec. 05, 2017

This report is 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. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, 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. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification

TABLE OF CONTENTS

RELEASE CONTROL RECORD 4

1 SUMMARY OF TEST RESULTS 5

1.1 MEASUREMENT UNCERTAINTY 5
1.2 TEST SITE AND INSTRUMENTS 6

2 GENERAL INFORMATION 7

2.1 GENERAL DESCRIPTION OF EUT 7
2.2 CONFIGURATION OF SYSTEM UNDER TEST 10
2.3 DESCRIPTION OF SUPPORT UNITS 11
2.4 TEST ITEM AND TEST CONFIGURATION 11
2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS 15

3 TEST TYPES AND RESULTS 16

3.1 OUTPUT POWER MEASUREMENT 16
3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT 16
3.1.2 TEST PROCEDURES 16
3.1.3 TEST SETUP 17
3.1.4 TEST RESULTS 18
3.2 FREQUENCY STABILITY MEASUREMENT 42
3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT 42
3.2.2 TEST PROCEDURE 42
3.2.3 TEST SETUP 42
3.2.4 TEST RESULTS 43
3.3 OCCUPIED BANDWIDTH MEASUREMENT 55
3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT 55
3.3.2 TEST SETUP 55
3.3.3 TEST PROCEDURES 55
3.3.4 TEST RESULTS 56
3.4 PEAK TO AVERAGE RATIO 68
3.4.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT 68
3.4.2 TEST SETUP 68
3.4.3 TEST PROCEDURES 68
3.4.4 TEST RESULTS 69
3.5 BAND EDGE MEASUREMENT 81
3.5.1 LIMITS OF BAND EDGE MEASUREMENT 81
3.5.2 TEST SETUP 81
3.5.3 TEST PROCEDURES 82
3.5.4 TEST RESULTS 83
3.6 CONDUCTED SPURIOUS EMISSIONS 95
3.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT 95
3.6.2 TEST PROCEDURE 95
3.6.3 TEST SETUP 95
3.6.4 TEST RESULTS 96
3.7 RADIATED EMISSION MEASUREMENT 108
3.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT 108
3.7.2 TEST PROCEDURES 108
3.7.3 DEVIATION FROM TEST STANDARD 108
3.7.4 TEST SETUP 109
3.7.5 TEST RESULTS 111

4 INFORMATION ON THE TESTING LABORATORIES 149

5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB 150

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170730W002-8	Original release	Dec. 05, 2017

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**	**REMARK**
2.1046 27.50(h)(2)	Equivalent Isotropically Radiated Power	PASS	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	PASS	Meet the requirement of limit.
2.1049 27.53(m)(6)	Occupied Bandwidth	PASS	Meet the requirement of limit.
27.50(d)(5)	Peak to average ratio	PASS	Meet the requirement of limit.
2.1051 27.53(m)(4)(6)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(m)(4)(6)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(m)(4)(6)	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -4.38dB at 44.550MHz.

1.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.66dB
Radiated emissions	9KHz ~ 30MHz	2.68dB
	30MHz ~ 1GMHz	3.26dB
	1GHz ~ 18GHz	4.48dB
	18GHz ~ 40GHz	4.12dB

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. 01,17	Feb. 28,18
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510332	Mar. 01,17	Feb. 28,18
Bilog Antenna 1	ETS-LINDGREN	3143B	00161964	Nov. 26,16	Nov. 25,18
Bilog Antenna 2	ETS-LINDGREN	3143B	00161965	Nov. 26,16	Nov. 25,18
Horn Antenna 1	ETS-LINDGREN	3117	00168728	Nov. 26,16	Nov. 25,18
Horn Antenna 2	ETS-LINDGREN	3117	00168692	Nov. 26,16	Nov. 25,18
Loop antenna	Daze	ZN30900A	0708	Nov. 20,17	Nov. 19,18
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Dec. 16,16	Dec. 15,17
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Mar. 01,17	Feb. 28,18
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jul. 24,17	Jul. 23,18
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jul. 24,17	Jul. 23,18
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Jul. 24,17	Jul. 23,18
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May 06,17	May 05,18
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jul. 24,17	Jul. 23,18
Power Meter	Anritsu	ML2495A	1506002	Mar. 01,17	Feb. 28,18
Power Sensor	Anritsu	MA2411B	1339352	Mar. 01,17	Feb. 28,18
Humid & Temp Programmable Tester	Juyi	ITH-120-45-CP-AR	IAA1504-001	Jul. 18,17	Jul. 17,18
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 01,17	Feb. 28,18

NOTE: 1. The calibration interval of the above test instruments is 12 months or 24 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.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mobile Phone	
MODEL NAME	XP8800	
TYPE NUMBER	PC4011/PT4000	
POWER SUPPLY	5/9Vdc (adapter or host equipment) 3.85Vdc (Li-ion, battery)	
MODULATION TECHNOLOGY	**LTE**	QPSK, 16QAM, 64QAM
FREQUENCY RANGE	**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 38 Channel Bandwidth: 5MHz	2572.5MHz ~ 2617.5MHz
	LTE Band 38 Channel Bandwidth: 10MHz	2575MHz ~ 2615MHz
	LTE Band 38 Channel Bandwidth: 15MHz	2577.5MHz ~ 2612.5MHz
	LTE Band 38 Channel Bandwidth: 20MHz	2580MHz ~ 2610MHz
	LTE Band 41 Channel Bandwidth: 5MHz	2498.5MHz ~ 2687.5MHz
	LTE Band 41 Channel Bandwidth: 10MHz	2501.0MHz ~ 2685.0MHz
	LTE Band 41 Channel Bandwidth: 15MHz	2503.5MHz ~ 2682.5MHz
	LTE Band 41 Channel Bandwidth: 20MHz	2506.0MHz ~ 2680.0MHz
EMISSION DESIGNATOR	**LTE Band 7 Channel Bandwidth: 5MHz**	QPSK: 4M49G7D
		16QAM: 4M47W7D
		64QAM: 4M49W7D
	LTE Band 7 Channel Bandwidth: 10MHz	QPSK: 8M95G7D
		16QAM: 8M95W7D
		64QAM: 8M95W7D
	LTE Band 7 Channel Bandwidth: 15MHz	QPSK: 13M4G7D
		16QAM: 13M4W7D
		64QAM: 13M4W7D

EMISSION DESIGNATOR	LTE Band 7 Channel Bandwidth: 20MHz	QPSK: 18M0G7D
		16QAM: 17M9W7D
		64QAM: 17M9W7D
	LTE Band 38 Channel Bandwidth: 5MHz	QPSK: 4M48G7D
		16QAM: 4M48W7D
		64QAM: 4M49W7D
	LTE Band 38 Channel Bandwidth: 10MHz	QPSK: 8M94G7D
		16QAM: 8M94W7D
		64QAM: 8M95W7D
	LTE Band 38 Channel Bandwidth: 15MHz	QPSK: 13M4G7D
		16QAM: 13M4W7D
		64QAM: 13M4W7D
	LTE Band 38 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 17M9W7D
		64QAM: 17M9W7D
	LTE Band 41 Channel Bandwidth: 5MHz	QPSK: 4M48G7D
		16QAM: 4M48W7D
		64QAM: 4M49W7D
	LTE Band 41 Channel Bandwidth: 10MHz	QPSK: 8M93G7D
		16QAM: 8M94W7D
		64QAM: 8M94W7D
	LTE Band 41 Channel Bandwidth: 15MHz	QPSK: 13M4G7D
		16QAM: 13M4W7D
		64QAM: 13M4W7D
	LTE Band 41 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 17M9W7D
		64QAM: 17M9W7D
MAX. EIRP POWER	LTE Band 7 Channel Bandwidth: 5MHz	362mW
	LTE Band 7 Channel Bandwidth: 10MHz	392mW
	LTE Band 7 Channel Bandwidth: 15MHz	410mW
	LTE Band 7 Channel Bandwidth: 20MHz	345mW
	LTE Band 38 Channel Bandwidth: 5MHz	433mW
	LTE Band 38 Channel Bandwidth: 10MHz	459mW
	LTE Band 38 Channel Bandwidth: 15MHz	462mW

	LTE Band 38 Channel Bandwidth: 20MHz	408mW
	LTE Band 41 Channel Bandwidth: 5MHz	422mW
	LTE Band 41 Channel Bandwidth: 10MHz	436mW
	LTE Band 41 Channel Bandwidth: 15MHz	438mW
	LTE Band 41 Channel Bandwidth: 20MHz	385mW
ANTENNA TYPE	Fixed Internal antenna	
ANTENNA GAIN	0dBi gain for LTE Band 7 -1dBi gain for LTE Band 38/ LTE Band 41	
HW VERSION	A	
SW VERSION	8A.0.0-00-7.1.1-00.01.26	
I/O PORTS	Refer to user's manual	
DATA CABLE	USB cable 1: With shield, detachable, 1.5meter USB cable 2: non-shielded, detachable, 1.0meter	

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT was powered by the following adapter:

ADAPTER	
BRAND:	Sonim
MODEL:	S42A02
INPUT:	AC 100-240V, 500mA
OUTPUT:	DC 5V, 1500mA DC 9V, 1500mA DC 12V,1100mA

3. The EUT matched the following USB cables:

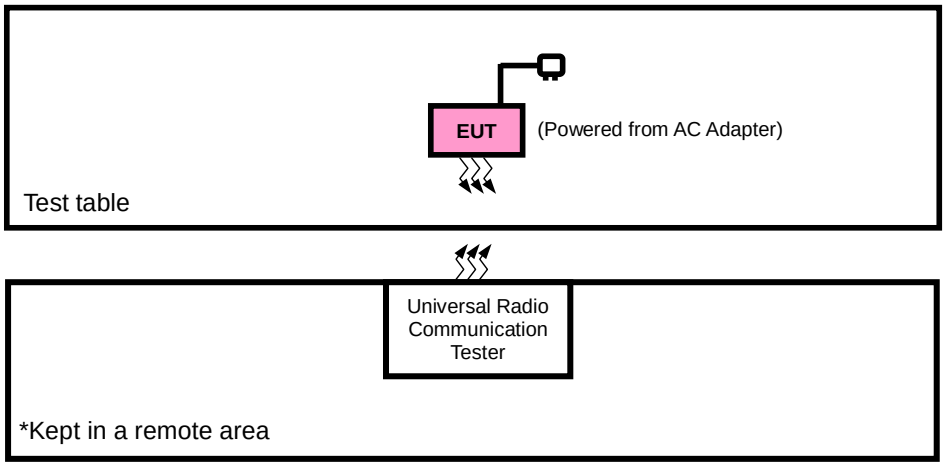
USB CABLE 1	
BRAND:	N/A
MODEL:	N/A
SIGNAL LINE:	1.5 METER

USB CABLE 2	
BRAND:	N/A
MODEL:	N/A
SIGNAL LINE:	1.0 METER

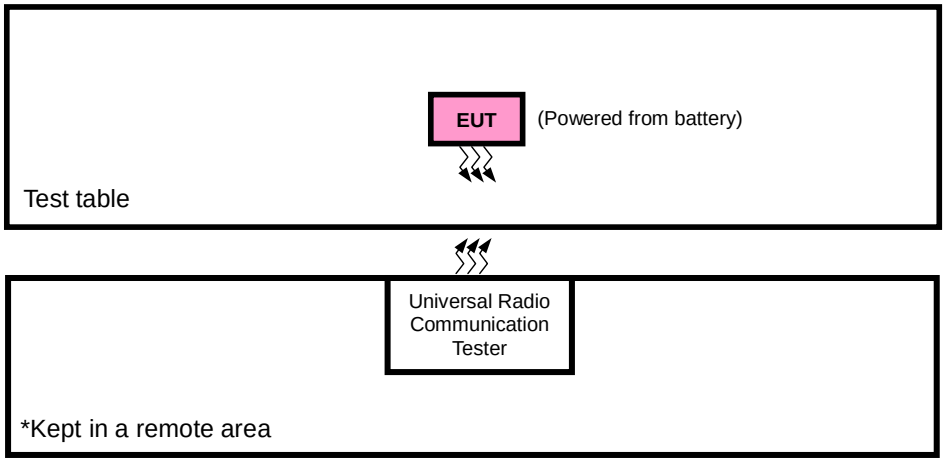
4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



FOR CONDUCTED & E.I.R.P 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	DC source	LONG WEI	PS-6403D	010934269	N/A
2	PC	HP	A6608CN	3CR83825X3	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m
2	AC Line: Unshielded, Detachable 1.5m

NOTE: All power cords of the above support units are non shielded (1.8m).

2.4 TEST ITEM AND TEST CONFIGURATION

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

EUT CONFIGURE MODE	DESCRIPTION
A	**EUT + Adapter + USB Cable with LTE link**
B	EUT + Battery with **LTE link**

LTE BAND 7 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	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
B	FREQUENCY STABILITY	20775 to 21425	20775, 21425	5MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	20800, 21400	10MHz	QPSK	1 RB / 0RB Offset
		20825 to 21375	20825, 21375	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21350	20MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	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
B	BAND EDGE	20775 to 21425	20775	5MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			21425	5MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		20800 to 21400	20800	10MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			21400	10MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		20825 to 21375	20825	15MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			21375	15MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		20850 to 21350	20850	20MHz	QPSK	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			21350	20MHz	QPSK	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
B	CONDCUDETED 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	20800, 21100, 21400	10MHz	QPSK	1 RB / 0RB Offset
		20825 to 21375	21100	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	21100	20MHz	QPSK	1 RB / 0 RB Offset

LTE BAND 38 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
		37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37850 to38150	37850, 38000, 38150	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	37775 to 38225	37775, 38225	5MHz	QPSK	1 RB / 0 RB Offset
		37800 to 38200	37800, 38200	10MHz	QPSK	1 RB / 0RB Offset
		37825 to 38175	37825, 38175	15MHz	QPSK	1 RB / 0 RB Offset
		37850 to38150	37850, 38150	20MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		37850 to38150	37850, 38000, 38150	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
		37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37850 to38150	37850, 38000, 38150	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	BAND EDGE	37775 to 38225	37775	5MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			38825	5MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		37800 to 38200	37800	10MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			38200	10MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		37825 to 38175	37825	15MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			38175	15MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		37850 to38150	37850	20MHz	QPSK	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			38150	20MHz	QPSK	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
B	CONDCUDETED EMISSION	37775 to 38225	37775, 38000, 38225	5MHz	QPSK	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10MHz	QPSK	1 RB / 0RB Offset
		37825 to 38175	37825, 38000, 38175	15MHz	QPSK	1 RB / 0 RB Offset
		37850 to38150	37850, 38000, 38150	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	37775 to 38225	38000	5MHz	QPSK	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10MHz	QPSK	1 RB / 0RB Offset
		37825 to 38175	38000	15MHz	QPSK	1 RB / 0 RB Offset
		37850 to38150	38000	20MHz	QPSK	1 RB / 0 RB Offset

LTE BAND 41 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	39675 to 41565	39675, 41565	5MHz	QPSK	1 RB / 0 RB Offset
		39700 to 41540	39700, 41540	10MHz	QPSK	1 RB / 0RB Offset
		39725 to 41515	39725, 41515	15MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	39750, 41490	20MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	BAND EDGE	39675 to 41565	39675	5MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			41565	5MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		39700 to 41540	39700	10MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			41540	10MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		39725 to 41515	39725	15MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			41515	15MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		39750 to 41490	39750	20MHz	QPSK	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			41490	20MHz	QPSK	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
B	CONDCUDETED EMISSION	39675 to 41565	39675, 40620, 41565	5MHz	QPSK	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK	1 RB / 0RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	39675 to 41565	40620	5MHz	QPSK	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK	1 RB / 0RB Offset
		39725 to 41515	40620	15MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	40620	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
EIRP	24deg. C, 60%RH	3.85Vdc from Battery	Simon Yang
FREQUENCY STABILITY	24deg. C, 61%RH	DC 3.5V/3.85V/4.2V	Wenliang Wu
OCCUPIED BANDWIDTH	24deg. C, 61%RH	3.85Vdc from Battery	Wenliang Wu
PEAK TO AVERAGE RATIO	24deg. C, 61%RH	3.85Vdc from Battery	Wenliang Wu
BAND EDGE	24deg. C, 61%RH	3.85Vdc from Battery	Wenliang Wu
CONDCUDETED EMISSION	24deg. C, 61%RH	3.85Vdc from Battery	Wenliang Wu
RADIATED EMISSION	24deg. C, 60%RH	DC 5/9V from adaptor	Simon Yang

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 v03

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.”

3.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

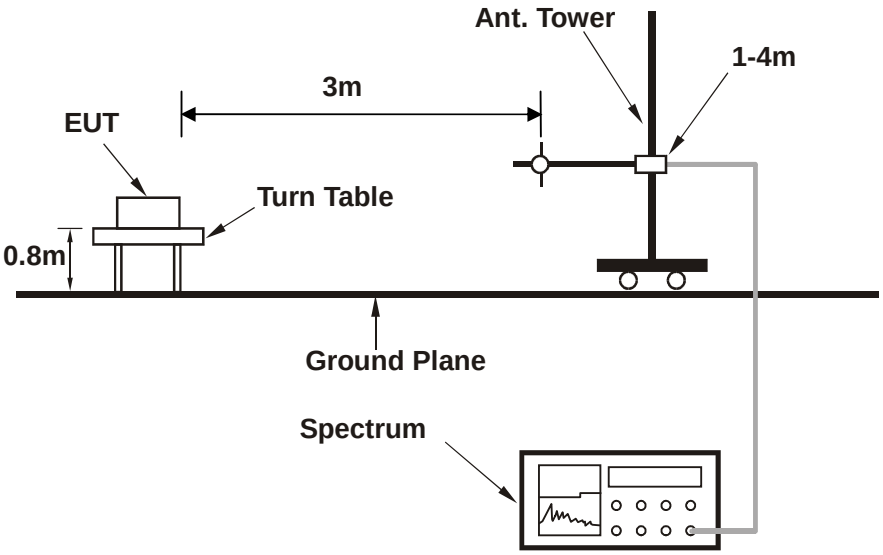
a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 10MHz for LTE mode.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum 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.
c. 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 b. Record the power level of S.G.
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

CONDUCTED POWER MEASUREMENT:

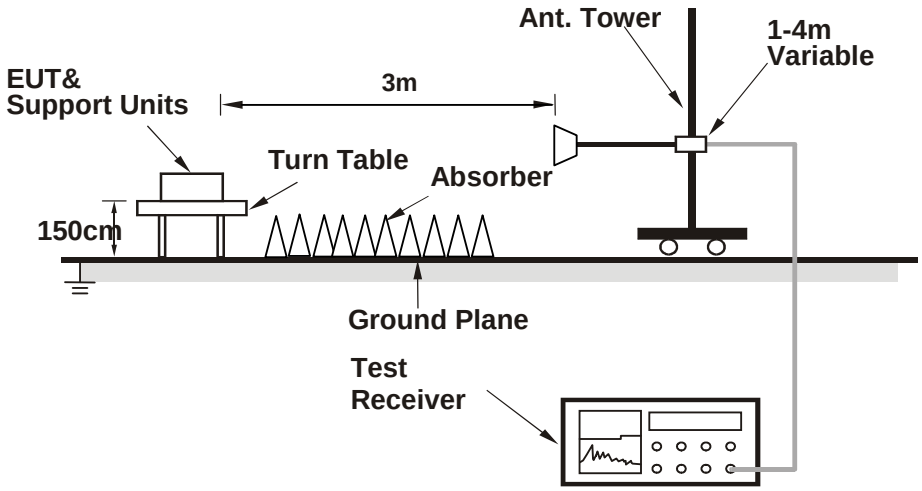
a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.1.3 TEST SETUP

ERP MEASUREMENT:

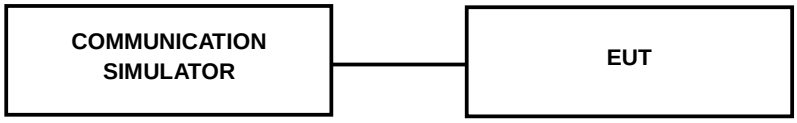


EIRP MEASUREMENT:



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

CONDUCTED POWER MEASUREMENT:



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

3.1.4 TEST RESULTS

AVERAGE CONDUCTED OUTPUT POWER (dBm)

LTE Band 7							
BW	Modulation	RB Size	RB Offset	Low CH 20775 Frequency 2502.5 MHz	Mid CH 21100 Frequency 2535 MHz	High CH 21425 Frequency 2567.5 MHz	3GPP MPR (dB)
5MHz	QPSK	1	0	22.29	22.26	22.41	0
		1	12	22.23	22.20	22.35	0
		1	24	22.12	22.09	22.24	0
		12	0	21.41	21.38	21.53	1
		12	6	21.37	21.34	21.49	1
		12	13	21.32	21.29	21.44	1
		25	0	21.40	21.37	21.52	1
	16QAM	1	0	21.26	21.23	21.38	1
		1	12	21.22	21.19	21.34	1
		1	24	21.19	21.16	21.31	1
		12	0	20.40	20.37	20.52	2
		12	6	20.37	20.34	20.49	2
		12	13	20.32	20.29	20.44	2
		25	0	20.42	20.39	20.54	2
	64QAM	1	0	20.42	20.39	20.54	2
		1	12	20.38	20.35	20.50	2
		1	24	20.36	20.33	20.48	2
		12	0	19.56	19.53	19.68	3
		12	6	19.54	19.51	19.66	3
		12	13	19.50	19.47	19.62	3
		25	0	19.56	19.53	19.68	3

LTE Band 7							
BW	Modulation	RB Size	RB Offset	Low CH 20800 Frequency 2505 MHz	Mid CH 21100 Frequency 2535 MHz	High CH 21400 Frequency 2565 MHz	3GPP MPR (dB)
10MHz	QPSK	1	0	22.33	22.30	22.45	0
		1	24	22.27	22.24	22.39	0
		1	49	22.16	22.13	22.28	0
		25	0	21.45	21.42	21.57	1
		25	12	21.41	21.38	21.53	1
		25	25	21.36	21.33	21.48	1
		50	0	21.44	21.41	21.56	1
	16QAM	1	0	21.30	21.27	21.42	1
		1	24	21.26	21.23	21.38	1
		1	49	21.23	21.20	21.35	1
		25	0	20.44	20.41	20.56	2
		25	12	20.41	20.38	20.53	2
		25	25	20.36	20.33	20.48	2
		50	0	20.46	20.43	20.58	2
	64QAM	1	0	20.47	20.44	20.59	2
		1	24	20.43	20.40	20.55	2
		1	49	20.41	20.38	20.53	2
		25	0	19.61	19.58	19.73	3
		25	12	19.59	19.56	19.71	3
		25	25	19.55	19.52	19.67	3
		50	0	19.61	19.58	19.73	3

LTE Band 7							
BW	Modulation	RB Size	RB Offset	Low CH 20825	Mid CH 21100	High CH 21375	3GPP MPR (dB)
				Frequency 2507.5 MHz	Frequency 2535 MHz	Frequency 2562.5 MHz	
15MHz	QPSK	1	0	22.39	22.36	22.51	0
		1	37	22.33	22.30	22.45	0
		1	74	22.22	22.19	22.34	0
		36	0	21.51	21.48	21.63	1
		36	19	21.47	21.44	21.59	1
		36	39	21.42	21.39	21.54	1
		75	0	21.50	21.47	21.62	1
	16QAM	1	0	21.36	21.33	21.48	1
		1	37	21.32	21.29	21.44	1
		1	74	21.29	21.26	21.41	1
		36	0	20.50	20.47	20.62	2
		36	19	20.47	20.44	20.59	2
		36	39	20.42	20.39	20.54	2
		75	0	20.52	20.49	20.64	2
	64QAM	1	0	20.52	20.49	20.64	2
		1	37	20.48	20.45	20.60	2
		1	74	20.46	20.43	20.58	2
		36	0	19.66	19.63	19.78	3
		36	19	19.64	19.61	19.76	3
		36	39	19.60	19.57	19.72	3
		75	0	19.66	19.63	19.78	3

LTE Band 7							
BW	Modulation	RB Size	RB Offset	Low CH 20850 Frequency 2510 MHz	Mid CH 21100 Frequency 2535 MHz	High CH 21350 Frequency 2560 MHz	3GPP MPR (dB)
20MHz	QPSK	1	0	22.42	22.39	**22.54**	0
		1	50	22.36	22.33	22.48	0
		1	99	22.25	22.22	22.37	0
		50	0	21.54	21.51	21.66	1
		50	25	21.50	21.47	21.62	1
		50	50	21.45	21.42	21.57	1
		100	0	21.53	21.50	21.65	1
	16QAM	1	0	21.39	21.36	21.51	1
		1	50	21.35	21.32	21.47	1
		1	99	21.32	21.29	21.44	1
		50	0	20.53	20.50	20.65	2
		50	25	20.50	20.47	20.62	2
		50	50	20.45	20.42	20.57	2
		100	0	20.55	20.52	20.67	2
	64QAM	1	0	20.57	20.54	20.69	2
		1	50	20.53	20.50	20.65	2
		1	99	20.51	20.48	20.63	2
		50	0	19.71	19.68	19.83	3
		50	25	19.69	19.66	19.81	3
		50	50	19.65	19.62	19.77	3
		100	0	19.71	19.68	19.83	3

LTE Band 38							
BW	Modulation	RB Size	RB Offset	Low CH 37775	Mid CH 38000	High CH 38225	3GPP MPR (dB)
				Frequency 2572.5 MHz	Frequency 2595 MHz	Frequency 2617.5MHz	
5MHz	QPSK	1	0	22.76	22.78	22.94	0
		1	12	22.71	22.73	22.89	0
		1	24	22.66	22.68	22.84	0
		12	0	21.98	22.00	22.16	1
		12	6	21.95	21.97	22.13	1
		12	13	21.92	21.94	22.10	1
		25	0	21.95	21.97	22.13	1
	16QAM	1	0	21.82	21.84	22.00	1
		1	12	21.79	21.81	21.97	1
		1	24	21.76	21.78	21.94	1
		12	0	20.97	20.99	21.15	2
		12	6	20.93	20.95	21.11	2
		12	13	20.88	20.90	21.06	2
		25	0	21.02	21.04	21.20	2
	64QAM	1	0	20.72	20.74	20.90	2
		1	12	20.67	20.69	20.85	2
		1	24	20.64	20.66	20.82	2
		12	0	20.03	20.05	20.21	3
		12	6	19.98	20.00	20.16	3
		12	13	19.95	19.97	20.13	3
		25	0	20.00	20.02	20.18	3

LTE Band 38							
BW	Modulation	RB Size	RB Offset	Low CH 37800 Frequency 2575 MHz	Mid CH 38000 Frequency 2595 MHz	High CH 38200 Frequency 2615 MHz	3GPP MPR (dB)
10MHz	QPSK	1	0	22.80	22.82	22.98	0
		1	24	22.75	22.77	22.93	0
		1	49	22.70	22.72	22.88	0
		25	0	22.02	22.04	22.20	1
		25	12	21.99	22.01	22.17	1
		25	25	21.96	21.98	22.14	1
		50	0	21.99	22.01	22.17	1
	16QAM	1	0	21.86	21.88	22.04	1
		1	24	21.83	21.85	22.01	1
		1	49	21.80	21.82	21.98	1
		25	0	21.01	21.03	21.19	2
		25	12	20.97	20.99	21.15	2
		25	25	20.92	20.94	21.10	2
		50	0	21.06	21.08	21.24	2
	64QAM	1	0	20.77	20.79	20.95	2
		1	24	20.72	20.74	20.90	2
		1	49	20.69	20.71	20.87	2
		25	0	20.08	20.10	20.26	3
		25	12	20.03	20.05	20.21	3
		25	25	20.00	20.02	20.18	3
		50	0	20.05	20.07	20.23	3

LTE Band 38							
BW	Modulation	RB Size	RB Offset	Low CH 37825	Mid CH 38000	High CH 38175	3GPP MPR (dB)
				Frequency 2577.5 MHz	Frequency 2595 MHz	Frequency 2612.5MHz	
15MHz	QPSK	1	0	22.83	22.85	23.01	0
		1	37	22.78	22.80	22.96	0
		1	74	22.73	22.75	22.91	0
		36	0	22.05	22.07	22.23	1
		36	19	22.02	22.04	22.20	1
		36	39	21.99	22.01	22.17	1
		75	0	22.02	22.04	22.20	1
	16QAM	1	0	21.89	21.91	22.07	1
		1	37	21.86	21.88	22.04	1
		1	74	21.83	21.85	22.01	1
		36	0	21.04	21.06	21.22	2
		36	19	21.00	21.02	21.18	2
		36	39	20.95	20.97	21.13	2
		75	0	21.09	21.11	21.27	2
	64QAM	1	0	20.82	20.84	21.00	2
		1	37	20.77	20.79	20.95	2
		1	74	20.74	20.76	20.92	2
		36	0	20.13	20.15	20.31	3
		36	19	20.08	20.10	20.26	3
		36	39	20.05	20.07	20.23	3
		75	0	20.10	20.12	20.28	3

LTE Band 38							
BW	Modulation	RB Size	RB Offset	Low CH 37850 Frequency 2580 MHz	Mid CH 38000 Frequency 2595 MHz	High CH 38150 Frequency 2610 MHz	3GPP MPR (dB)
20MHz	QPSK	1	0	22.90	22.92	**23.08**	0
		1	50	22.85	22.87	23.03	0
		1	99	22.80	22.82	22.98	0
		50	0	22.12	22.14	22.30	1
		50	25	22.09	22.11	22.27	1
		50	50	22.06	22.08	22.24	1
		100	0	22.09	22.11	22.27	1
	16QAM	1	0	21.96	21.98	22.14	1
		1	50	21.93	21.95	22.11	1
		1	99	21.90	21.92	22.08	1
		50	0	21.11	21.13	21.29	2
		50	25	21.07	21.09	21.25	2
		50	50	21.02	21.04	21.20	2
		100	0	21.16	21.18	21.34	2
	64QAM	1	0	20.87	20.89	21.05	2
		1	50	20.82	20.84	21.00	2
		1	99	20.79	20.81	20.97	2
		50	0	20.18	20.20	20.36	3
		50	25	20.13	20.15	20.31	3
		50	50	20.10	20.12	20.28	3
		100	0	20.15	20.17	20.33	3

LTE Band 41									
BW	Modulation	RB Size	RB Offset	Low CH (39675) Frequency (2498.5)MHz	Low CH (40148) Frequency (2545.8)MHz	Mid CH (40620) Frequency (2593)MHz	High CH (41093) Frequency (2640.3)MHz	High CH (41565) Frequency (2687.5)MHz	3GPP MPR (dB)
5MHz	QPSK	1	0	23.23	23.28	23.46	23.41	23.51	0
		1	12	23.18	23.23	23.41	23.36	23.46	0
		1	24	23.13	23.18	23.36	23.31	23.41	0
		12	0	22.51	22.56	22.74	22.69	22.79	1
		12	6	22.48	22.53	22.71	22.66	22.76	1
		12	13	22.45	22.50	22.68	22.63	22.73	1
		25	0	22.48	22.53	22.71	22.66	22.76	1
	16QAM	1	0	22.14	22.19	22.37	22.32	22.42	1
		1	12	22.10	22.15	22.33	22.28	22.38	1
		1	24	22.06	22.11	22.29	22.24	22.34	1
		12	0	21.50	21.55	21.73	21.68	21.78	2
		12	6	21.47	21.52	21.70	21.65	21.75	2
		12	13	21.42	21.47	21.65	21.60	21.70	2
		25	0	21.44	21.49	21.67	21.62	21.72	2
	64QAM	1	0	21.29	21.34	21.52	21.47	21.57	2
		1	12	21.26	21.31	21.49	21.44	21.54	2
		1	24	21.23	21.28	21.46	21.41	21.51	2
		12	0	20.43	20.48	20.66	20.61	20.71	3
		12	6	20.39	20.44	20.62	20.57	20.67	3
		12	13	20.33	20.38	20.56	20.51	20.61	3
		25	0	20.32	20.37	20.55	20.50	20.60	3

LTE Band 41									
BW	Modulation	RB Size	RB Offset	Low CH (39700) Frequency (2501)MHz	Low CH (40160) Frequency (2547)MHz	Mid CH (40620) Frequency (2593)MHz	High CH (41080) Frequency (2639)MHz	High CH (41540) Frequency (2685)MHz	3GPP MPR (dB)
10MHz	QPSK	1	0	23.26	23.31	23.49	23.44	23.54	0
		1	24	23.21	23.26	23.44	23.39	23.49	0
		1	49	23.16	23.21	23.39	23.34	23.44	0
		25	0	22.54	22.59	22.77	22.72	22.82	1
		25	12	22.51	22.56	22.74	22.69	22.79	1
		25	25	22.48	22.53	22.71	22.66	22.76	1
		50	0	22.51	22.56	22.74	22.69	22.79	1
	16QAM	1	0	22.17	22.22	22.40	22.35	22.45	1
		1	24	22.13	22.18	22.36	22.31	22.41	1
		1	49	22.09	22.14	22.32	22.27	22.37	1
		25	0	21.53	21.58	21.76	21.71	21.81	2
		25	12	21.50	21.55	21.73	21.68	21.78	2
		25	25	21.45	21.50	21.68	21.63	21.73	2
		50	0	21.47	21.52	21.70	21.65	21.75	2
	64QAM	1	0	21.34	21.39	21.57	21.52	21.62	2
		1	24	21.31	21.36	21.54	21.49	21.59	2
		1	49	21.28	21.33	21.51	21.46	21.56	2
		25	0	20.48	20.53	20.71	20.66	20.76	3
		25	12	20.44	20.49	20.67	20.62	20.72	3
		25	25	20.38	20.43	20.61	20.56	20.66	3
		50	0	20.37	20.42	20.60	20.55	20.65	3

LTE Band 41									
BW	Modulation	RB Size	RB Offset	Low CH (39725) Frequency (2503.5)MHz	Low CH (40173) Frequency (2548.3)MHz	Mid CH (40620) Frequency (2593)MHz	High CH (41068) Frequency (2637.8)MHz	High CH (41515) Frequency (2682.5)MHz	3GPP MPR (dB)
15MHz	QPSK	1	0	23.30	23.35	23.53	23.48	23.58	0
		1	37	23.25	23.30	23.48	23.43	23.53	0
		1	74	23.20	23.25	23.43	23.38	23.48	0
		36	0	22.58	22.63	22.81	22.76	22.86	1
		36	19	22.55	22.60	22.78	22.73	22.83	1
		36	39	22.52	22.57	22.75	22.70	22.80	1
		75	0	22.55	22.60	22.78	22.73	22.83	1
	16QAM	1	0	22.21	22.26	22.44	22.39	22.49	1
		1	37	22.17	22.22	22.40	22.35	22.45	1
		1	74	22.13	22.18	22.36	22.31	22.41	1
		36	0	21.57	21.62	21.80	21.75	21.85	2
		36	19	21.54	21.59	21.77	21.72	21.82	2
		36	39	21.49	21.54	21.72	21.67	21.77	2
		75	0	21.51	21.56	21.74	21.69	21.79	2
	64QAM	1	0	21.39	21.44	21.62	21.57	21.67	2
		1	37	21.36	21.41	21.59	21.54	21.64	2
		1	74	21.33	21.38	21.56	21.51	21.61	2
		36	0	20.53	20.58	20.76	20.71	20.81	3
		36	19	20.49	20.54	20.72	20.67	20.77	3
		36	39	20.43	20.48	20.66	20.61	20.71	3
		75	0	20.42	20.47	20.65	20.60	20.70	3

LTE Band 41									
BW	Modulation	RB Size	RB Offset	Low CH (39750) Frequency (2506)MHz	Low CH (40185) Frequency (2549.5)MHz	Mid CH (40620) Frequency (2593)MHz	High CH (41055) Frequency (2636.5)MHz	High CH (41490) Frequency (2680)MHz	3GPP MPR (dB)
20MHz	QPSK	1	0	23.36	23.41	23.59	23.54	**23.64**	0
		1	50	23.31	23.36	23.54	23.49	23.59	0
		1	99	23.26	23.31	23.49	23.44	23.54	0
		50	0	22.64	22.69	22.87	22.82	22.92	1
		50	25	22.61	22.66	22.84	22.79	22.89	1
		50	50	22.58	22.63	22.81	22.76	22.86	1
		100	0	22.61	22.66	22.84	22.79	22.89	1
	16QAM	1	0	22.27	22.32	22.50	22.45	22.55	1
		1	50	22.23	22.28	22.46	22.41	22.51	1
		1	99	22.19	22.24	22.42	22.37	22.47	1
		50	0	21.63	21.68	21.86	21.81	21.91	2
		50	25	21.60	21.65	21.83	21.78	21.88	2
		50	50	21.55	21.60	21.78	21.73	21.83	2
		100	0	21.57	21.62	21.80	21.75	21.85	2
	64QAM	1	0	21.44	21.49	21.67	21.62	21.72	2
		1	50	21.41	21.46	21.64	21.59	21.69	2
		1	99	21.38	21.43	21.61	21.56	21.66	2
		50	0	20.58	20.63	20.81	20.76	20.86	3
		50	25	20.54	20.59	20.77	20.72	20.82	3
		50	50	20.48	20.53	20.71	20.66	20.76	3
		100	0	20.47	20.52	20.70	20.65	20.75	3

EIRP

LTE BAND 7

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20775	2502.5	-21.40	45.65	24.25	266.26	H	2
21100	2535.0	-21.97	46.04	24.07	255.27	H	2
21425	2567.5	-22.20	45.87	23.67	232.54	H	2
20775	2502.5	-21.44	47.03	25.59	**362.33**	V	2
21100	2535.0	-21.73	46.57	24.84	304.65	V	2
21425	2567.5	-22.01	46.98	24.97	313.98	V	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20775	2502.5	-22.23	45.65	23.42	219.94	H	2
21100	2535.0	-22.99	46.04	23.05	201.84	H	2
21425	2567.5	-23.30	45.87	22.57	180.51	H	2
20775	2502.5	-22.27	47.03	24.76	299.30	V	2
21100	2535.0	-22.75	46.57	23.82	240.88	V	2
21425	2567.5	-23.11	46.98	23.87	243.72	V	2

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20775	2502.5	-23.16	45.65	22.49	177.34	H	2
21100	2535.0	-23.18	46.04	22.86	192.97	H	2
21425	2567.5	-23.31	45.87	22.55	180.05	H	2
20775	2502.5	-23.34	47.03	23.69	233.94	V	2
21100	2535.0	-23.64	46.57	22.93	196.34	V	2
21425	2567.5	-23.96	46.98	23.02	200.45	V	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20800	2505.0	-21.21	45.65	24.44	278.23	H	2
21100	2535.0	-21.91	46.04	24.13	258.82	H	2
21400	2565.0	-22.07	46.07	23.99	250.84	H	2
20800	2505.0	-21.25	47.18	25.93	**391.65**	V	2
21100	2535.0	-21.67	46.57	24.90	308.89	V	2
21400	2565.0	-21.88	47.06	25.18	329.84	V	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20800	2505.0	-22.36	45.65	23.29	213.50	H	2
21100	2535.0	-23.01	46.04	23.03	200.91	H	2
21400	2565.0	-23.23	46.07	22.83	192.04	H	2
20800	2505.0	-22.40	47.18	24.78	300.54	V	2
21100	2535.0	-22.77	46.57	23.80	239.77	V	2
21400	2565.0	-23.04	47.06	24.02	252.52	V	2

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20800	2505.0	-22.97	45.65	22.68	185.31	H	2
21100	2535.0	-23.12	46.04	22.92	195.66	H	2
21400	2565.0	-23.18	46.07	22.88	194.22	H	2
20800	2505.0	-23.15	47.18	24.03	252.87	V	2
21100	2535.0	-23.58	46.57	22.99	199.07	V	2
21400	2565.0	-23.83	47.06	23.23	210.57	V	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20825	2507.5	-21.22	45.63	24.42	276.57	H	2
21100	2535.0	-21.98	46.04	24.06	254.68	H	2
21375	2562.5	-22.14	45.94	23.80	239.72	H	2
20825	2507.5	-21.26	47.39	26.13	**410.39**	V	2
21100	2535.0	-21.74	46.57	24.83	303.95	V	2
21375	2562.5	-21.95	47.00	25.05	319.74	V	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20825	2507.5	-22.08	45.63	23.56	226.88	H	2
21100	2535.0	-22.85	46.04	23.19	208.45	H	2
21375	2562.5	-22.99	45.94	22.95	197.11	H	2
20825	2507.5	-22.12	47.39	25.27	336.67	V	2
21100	2535.0	-22.61	46.57	23.96	248.77	V	2
21375	2562.5	-22.80	47.00	24.20	262.91	V	2

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20825	2507.5	-22.98	45.63	22.65	184.20	H	2
21100	2535.0	-23.19	46.04	22.85	192.53	H	2
21375	2562.5	-23.25	45.94	22.69	185.61	H	2
20825	2507.5	-23.16	47.39	24.23	264.97	V	2
21100	2535.0	-23.65	46.57	22.92	195.88	V	2
21375	2562.5	-23.90	47.00	23.10	204.13	V	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20850	2510.0	-21.80	45.80	24.00	251.42	H	2
21100	2535.0	-22.43	46.04	23.61	229.61	H	2
21350	2560.0	-22.72	45.83	23.11	204.74	H	2
20850	2510.0	-21.84	47.21	25.37	**344.59**	V	2
21100	2535.0	-22.19	46.57	24.37	273.78	V	2
21350	2560.0	-22.53	47.07	24.54	284.32	V	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20850	2510.0	-22.73	45.80	23.07	202.96	H	2
21100	2535.0	-23.50	46.04	22.54	179.47	H	2
21350	2560.0	-23.55	45.83	22.28	169.12	H	2
20850	2510.0	-22.77	47.21	24.44	278.16	V	2
21100	2535.0	-23.26	46.57	23.30	213.99	V	2
21350	2560.0	-23.36	47.07	23.71	234.86	V	2

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
20850	2510.0	-23.56	45.80	22.24	167.46	H	2
21100	2535.0	-23.64	46.04	22.40	173.58	H	2
21350	2560.0	-23.83	45.83	22.00	158.53	H	2
20850	2510.0	-23.74	47.21	23.47	222.48	V	2
21100	2535.0	-24.10	46.57	22.47	176.44	V	2
21350	2560.0	-24.48	47.07	22.59	181.51	V	2

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

LTE BAND 38

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37775	2572.5	-19.87	45.91	26.04	401.79	H	2
38000	2595.0	-20.42	46.04	25.62	364.75	H	2
38225	2617.5	-20.53	46.23	25.70	371.54	H	2
37775	2572.5	-20.56	46.92	26.36	**432.51**	V	2
38000	2595.0	-20.83	47.10	26.27	423.64	V	2
38225	2617.5	-21.14	47.26	26.12	409.26	V	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37775	2572.5	-20.70	45.91	25.21	331.89	H	2
38000	2595.0	-21.44	46.04	24.60	288.40	H	2
38225	2617.5	-21.63	46.23	24.60	288.40	H	2
37775	2572.5	-21.39	46.92	25.53	357.27	V	2
38000	2595.0	-21.85	47.10	25.25	334.97	V	2
38225	2617.5	-22.24	47.26	25.02	317.69	V	2

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37775	2572.5	-21.16	45.91	24.75	298.54	H	2
38000	2595.0	-21.51	46.04	24.53	283.79	H	2
38225	2617.5	-21.36	46.23	24.87	306.90	H	2
37775	2572.5	-21.40	46.92	25.52	356.45	V	2
38000	2595.0	-21.72	47.10	25.38	345.14	V	2
38225	2617.5	-21.62	47.26	25.64	366.44	V	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37800	2575.0	-19.68	45.96	26.28	424.62	H	2
38000	2595.0	-20.36	46.04	25.68	369.83	H	2
38200	2615.0	-20.40	46.18	25.78	378.44	H	2
37800	2575.0	-20.37	46.99	26.62	**459.20**	V	2
38000	2595.0	-20.77	47.10	26.33	429.54	V	2
38200	2615.0	-21.01	47.21	26.20	416.87	V	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37800	2575.0	-20.83	45.96	25.13	325.84	H	2
38000	2595.0	-21.46	46.04	24.58	287.08	H	2
38200	2615.0	-21.56	46.18	24.62	289.73	H	2
37800	2575.0	-21.52	46.99	25.47	352.37	V	2
38000	2595.0	-21.87	47.10	25.23	333.43	V	2
38200	2615.0	-22.17	47.21	25.04	319.15	V	2

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37800	2575.0	-20.97	45.96	24.99	315.50	H	2
38000	2595.0	-21.45	46.04	24.59	287.74	H	2
38200	2615.0	-21.23	46.18	24.95	312.61	H	2
37800	2575.0	-21.21	46.99	25.78	378.44	V	2
38000	2595.0	-21.66	47.10	25.44	349.95	V	2
38200	2615.0	-21.49	47.21	25.72	373.25	V	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37825	2577.5	-19.69	46.01	26.32	428.55	H	2
38000	2595.0	-20.43	46.04	25.61	363.92	H	2
38175	2612.5	-20.47	46.14	25.67	368.98	H	2
37825	2577.5	-20.38	47.03	26.65	**462.38**	V	2
38000	2595.0	-20.84	47.10	26.26	422.67	V	2
38175	2612.5	-21.08	47.17	26.09	406.44	V	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37825	2577.5	-20.55	46.01	25.46	351.56	H	2
38000	2595.0	-21.30	46.04	24.74	297.85	H	2
38175	2612.5	-21.32	46.14	24.82	303.39	H	2
37825	2577.5	-21.24	47.03	25.79	379.31	V	2
38000	2595.0	-21.71	47.10	25.39	345.94	V	2
38175	2612.5	-21.93	47.17	25.24	334.20	V	2

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37825	2577.5	-20.98	46.01	25.03	318.42	H	2
38000	2595.0	-21.52	46.04	24.52	283.14	H	2
38175	2612.5	-21.30	46.14	24.84	304.79	H	2
37825	2577.5	-21.22	47.03	25.81	381.07	V	2
38000	2595.0	-21.73	47.10	25.37	344.35	V	2
38175	2612.5	-21.56	47.17	25.61	363.92	V	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37850	2580.0	-20.27	46.05	25.78	378.44	H	2
38000	2595.0	-20.88	46.04	25.16	328.10	H	2
38150	2610.0	-21.05	46.11	25.06	320.63	H	2
37850	2580.0	-20.96	47.07	26.11	**408.32**	V	2
38000	2595.0	-21.29	47.10	25.81	381.07	V	2
38150	2610.0	-21.66	47.13	25.47	352.37	V	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37850	2580.0	-21.20	46.05	24.85	305.49	H	2
38000	2595.0	-21.95	46.04	24.09	256.45	H	2
38150	2610.0	-21.88	46.11	24.23	264.85	H	2
37850	2580.0	-21.89	47.07	25.18	329.61	V	2
38000	2595.0	-22.36	47.10	24.74	297.85	V	2
38150	2610.0	-22.49	47.13	24.64	291.07	V	2

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
37850	2580.0	-21.56	46.05	24.49	281.19	H	2
38000	2595.0	-21.97	46.04	24.07	255.27	H	2
38150	2610.0	-21.88	46.11	24.23	264.85	H	2
37850	2580.0	-21.80	47.07	25.27	336.51	V	2
38000	2595.0	-22.18	47.10	24.92	310.46	V	2
38150	2610.0	-22.14	47.13	24.99	315.50	V	2

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

LTE BAND 41

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39675	2498.5	-19.50	45.69	26.19	415.62	H	2
40620	2593.0	-19.82	46.07	26.25	**421.70**	H	2
41565	2687.5	-20.35	46.49	26.14	411.43	H	2
39675	2498.5	-22.46	46.76	24.30	269.09	V	2
40620	2593.0	-22.69	47.13	24.44	277.84	V	2
41565	2687.5	-23.04	47.60	24.56	286.02	V	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39675	2498.5	-20.33	45.69	25.36	343.32	H	2
40620	2593.0	-20.84	46.07	25.23	333.43	H	2
41565	2687.5	-21.45	46.49	25.04	319.37	H	2
39675	2498.5	-23.29	46.76	23.47	222.28	V	2
40620	2593.0	-23.71	47.13	23.42	219.68	V	2
41565	2687.5	-24.14	47.60	23.46	222.02	V	2

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39675	2498.5	-21.21	45.69	24.48	280.35	H	2
40620	2593.0	-21.41	46.07	24.66	292.15	H	2
41565	2687.5	-22.37	46.49	24.13	258.52	H	2
39675	2498.5	-24.34	46.76	22.42	174.78	V	2
40620	2593.0	-24.19	47.13	22.94	196.70	V	2
41565	2687.5	-24.62	47.60	22.98	198.43	V	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39700	2501.0	-19.31	45.71	26.40	**436.21**	H	2
40620	2593.0	-19.76	46.07	26.31	427.56	H	2
41540	2685.0	-20.22	46.42	26.20	417.16	H	2
39700	2501.0	-22.27	46.78	24.51	282.42	V	2
40620	2593.0	-22.63	47.13	24.50	281.71	V	2
41540	2685.0	-22.91	47.56	24.65	292.01	V	2

CHANNEL BANDWIDTH: 10Mz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39700	2501.0	-20.46	45.71	25.25	334.73	H	2
40620	2593.0	-20.86	46.07	25.21	331.89	H	2
41540	2685.0	-21.38	46.42	25.04	319.37	H	2
39700	2501.0	-23.42	46.78	23.36	216.72	V	2
40620	2593.0	-23.73	47.13	23.40	218.68	V	2
41540	2685.0	-24.07	47.56	23.49	223.56	V	2

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39700	2501.0	-21.02	45.71	24.69	294.24	H	2
40620	2593.0	-21.35	46.07	24.72	296.21	H	2
41540	2685.0	-22.24	46.42	24.19	262.12	H	2
39700	2501.0	-24.15	46.78	22.63	183.44	V	2
40620	2593.0	-24.13	47.13	23.00	199.43	V	2
41540	2685.0	-24.49	47.56	23.07	202.58	V	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39725	2503.5	-19.32	45.74	26.42	**438.23**	H	2
40620	2593.0	-19.83	46.07	26.24	420.73	H	2
41515	2682.5	-20.29	46.39	26.10	407.66	H	2
39725	2503.5	-22.28	46.78	24.50	281.77	V	2
40620	2593.0	-22.70	47.13	24.43	277.20	V	2
41515	2682.5	-22.98	47.41	24.43	277.59	V	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39725	2503.5	-20.18	45.74	25.56	359.50	H	2
40620	2593.0	-20.70	46.07	25.37	344.35	H	2
41515	2682.5	-21.14	46.39	25.25	335.20	H	2
39725	2503.5	-23.14	46.78	23.64	231.15	V	2
40620	2593.0	-23.57	47.13	23.56	226.88	V	2
41515	2682.5	-23.83	47.41	23.58	228.24	V	2

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39725	2503.5	-21.03	45.74	24.71	295.60	H	2
40620	2593.0	-21.42	46.07	24.65	291.47	H	2
41515	2682.5	-22.31	46.39	24.09	256.15	H	2
39725	2503.5	-24.16	46.78	22.62	183.02	V	2
40620	2593.0	-24.20	47.13	22.93	196.25	V	2
41515	2682.5	-24.56	47.41	22.85	192.58	V	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39750	2506.0	-19.90	45.76	25.86	**385.21**	H	2
40620	2593.0	-20.28	46.07	25.79	379.31	H	2
41490	2680.0	-20.87	46.36	25.49	354.24	H	2
39750	2506.0	-22.86	46.80	23.94	247.69	V	2
40620	2593.0	-23.15	47.13	23.98	249.92	V	2
41490	2680.0	-23.56	47.39	23.83	241.77	V	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39750	2506.0	-20.83	45.76	24.93	310.96	H	2
40620	2593.0	-21.35	46.07	24.72	296.48	H	2
41490	2680.0	-21.70	46.36	24.66	292.62	H	2
39750	2506.0	-23.79	46.80	23.01	199.94	V	2
40620	2593.0	-24.22	47.13	22.91	195.34	V	2
41490	2680.0	-24.39	47.39	23.00	199.71	V	2

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)	Limit (W)
39750	2506.0	-21.61	45.76	24.15	259.84	H	2
40620	2593.0	-21.87	46.07	24.20	262.78	H	2
41490	2680.0	-22.89	46.36	23.48	222.59	H	2
39750	2506.0	-24.74	46.80	22.06	160.88	V	2
40620	2593.0	-24.65	47.13	22.48	176.93	V	2
41490	2680.0	-25.14	47.39	22.25	167.73	V	2

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

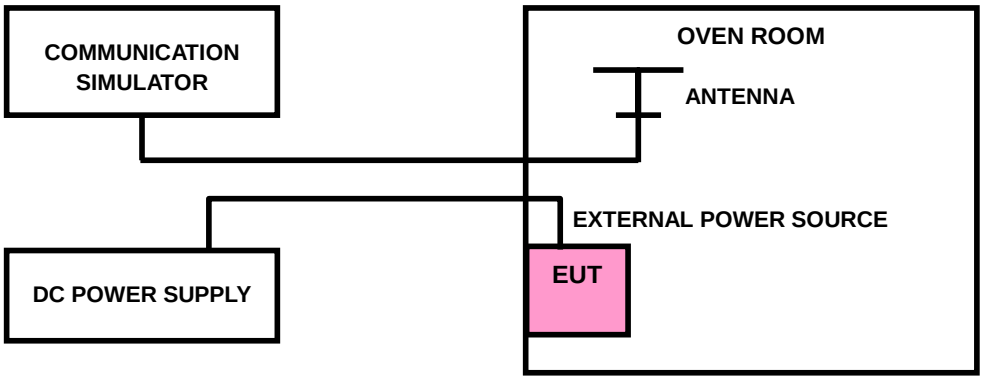
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

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

LTE BAND 7

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0005	0.0005	2.5
3.5	-0.0007	-0.0006	2.5
4.2	0.0005	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0037	-0.0038	2.5
-20	-0.0033	-0.0033	2.5
-10	-0.0029	-0.0029	2.5
0	-0.0026	-0.0026	2.5
10	-0.0021	-0.0021	2.5
20	-0.0018	-0.0018	2.5
30	-0.0013	-0.0013	2.5
40	-0.0007	-0.0008	2.5
50	-0.0002	-0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0006	0.0006	2.5
3.5	-0.0006	-0.0007	2.5
4.2	0.0007	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0039	-0.0040	2.5
-20	-0.0035	-0.0035	2.5
-10	-0.0027	-0.0027	2.5
0	-0.0021	-0.0021	2.5
10	-0.0018	-0.0018	2.5
20	-0.0015	-0.0015	2.5
30	-0.0009	-0.0009	2.5
40	-0.0007	-0.0007	2.5
50	-0.0003	-0.0003	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0006	0.0005	2.5
3.5	-0.0007	-0.0006	2.5
4.2	0.0005	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0041	-0.0041	2.5
-20	-0.0038	-0.0039	2.5
-10	-0.0030	-0.0030	2.5
0	-0.0026	-0.0027	2.5
10	-0.0021	-0.0021	2.5
20	-0.0017	-0.0017	2.5
30	-0.0009	-0.0009	2.5
40	-0.0005	-0.0005	2.5
50	-0.0002	-0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0005	0.0006	2.5
3.5	-0.0005	-0.0007	2.5
4.2	0.0004	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0041	-0.0041	2.5
-20	-0.0039	-0.0040	2.5
-10	-0.0034	-0.0035	2.5
0	-0.0030	-0.0030	2.5
10	-0.0021	-0.0021	2.5
20	-0.0018	-0.0018	2.5
30	-0.0013	-0.0014	2.5
40	-0.0009	-0.0009	2.5
50	-0.0002	-0.0002	2.5

LTE BAND 38

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0005	0.0005	2.5
3.5	-0.0007	-0.0006	2.5
4.2	0.0005	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0038	-0.0038	2.5
-20	-0.0033	-0.0033	2.5
-10	-0.0030	-0.0030	2.5
0	-0.0025	-0.0025	2.5
10	-0.0021	-0.0021	2.5
20	-0.0018	-0.0016	2.5
30	-0.0013	-0.0013	2.5
40	-0.0007	-0.0007	2.5
50	-0.0002	-0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0006	0.0007	2.5
3.5	-0.0006	-0.0007	2.5
4.2	0.0006	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0040	-0.0040	2.5
-20	-0.0034	-0.0034	2.5
-10	-0.0026	-0.0027	2.5
0	-0.0022	-0.0022	2.5
10	-0.0018	-0.0018	2.5
20	-0.0014	-0.0014	2.5
30	-0.0009	-0.0009	2.5
40	-0.0007	-0.0007	2.5
50	-0.0004	-0.0004	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0006	0.0006	2.5
3.5	-0.0007	-0.0006	2.5
4.2	0.0005	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0041	-0.0041	2.5
-20	-0.0037	-0.0037	2.5
-10	-0.0030	-0.0030	2.5
0	-0.0025	-0.0026	2.5
10	-0.0021	-0.0022	2.5
20	-0.0017	-0.0017	2.5
30	-0.0011	-0.0011	2.5
40	-0.0006	-0.0006	2.5
50	-0.0002	-0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0005	0.0006	2.5
3.5	-0.0005	-0.0007	2.5
4.2	0.0004	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0042	-0.0042	2.5
-20	-0.0039	-0.0040	2.5
-10	-0.0034	-0.0034	2.5
0	-0.0030	-0.0031	2.5
10	-0.0022	-0.0022	2.5
20	-0.0017	-0.0017	2.5
30	-0.0014	-0.0014	2.5
40	-0.0009	-0.0009	2.5
50	-0.0004	-0.0004	2.5

LTE BAND 41

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0005	0.0005	2.5
3.5	-0.0007	-0.0006	2.5
4.2	0.0006	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0038	-0.0038	2.5
-20	-0.0033	-0.0034	2.5
-10	-0.0029	-0.0029	2.5
0	-0.0026	-0.0027	2.5
10	-0.0021	-0.0021	2.5
20	-0.0017	-0.0017	2.5
30	-0.0013	-0.0013	2.5
40	-0.0007	-0.0007	2.5
50	-0.0002	-0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0006	0.0006	2.5
3.5	-0.0006	-0.0007	2.5
4.2	0.0006	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0040	-0.0040	2.5
-20	-0.0035	-0.0036	2.5
-10	-0.0026	-0.0026	2.5
0	-0.0022	-0.0022	2.5
10	-0.0018	-0.0018	2.5
20	-0.0014	-0.0014	2.5
30	-0.0009	-0.0009	2.5
40	-0.0007	-0.0007	2.5
50	-0.0004	-0.0004	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0006	0.0005	2.5
3.5	-0.0006	-0.0006	2.5
4.2	0.0005	0.0004	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0041	-0.0041	2.5
-20	-0.0037	-0.0038	2.5
-10	-0.0030	-0.0030	2.5
0	-0.0027	-0.0027	2.5
10	-0.0021	-0.0021	2.5
20	-0.0017	-0.0017	2.5
30	-0.0009	-0.0009	2.5
40	-0.0006	-0.0006	2.5
50	-0.0002	-0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0006	0.0005	2.5
3.5	-0.0005	-0.0006	2.5
4.2	0.0004	0.0005	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

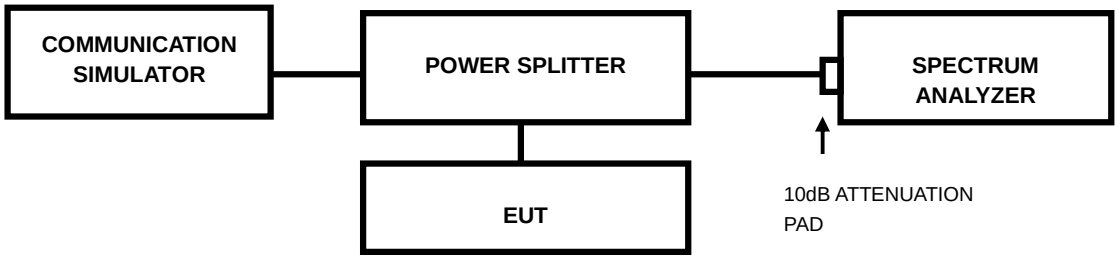
TEMP. (℃)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0041	-0.0041	2.5
-20	-0.0040	-0.0040	2.5
-10	-0.0035	-0.0036	2.5
0	-0.0030	-0.0030	2.5
10	-0.0022	-0.0022	2.5
20	-0.0017	-0.0017	2.5
30	-0.0013	-0.0014	2.5
40	-0.0009	-0.0009	2.5
50	-0.0003	-0.0003	2.5

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

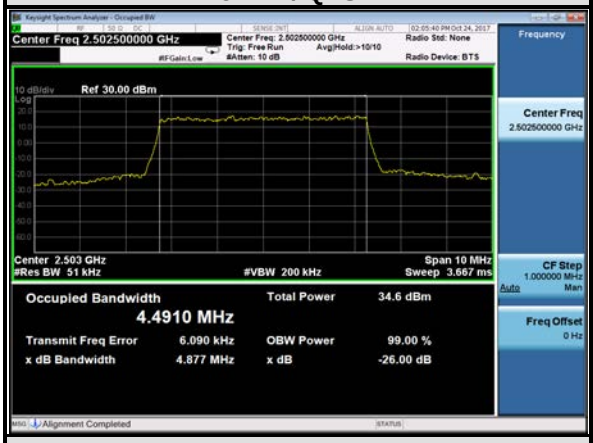
a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.3.4 TEST RESULTS

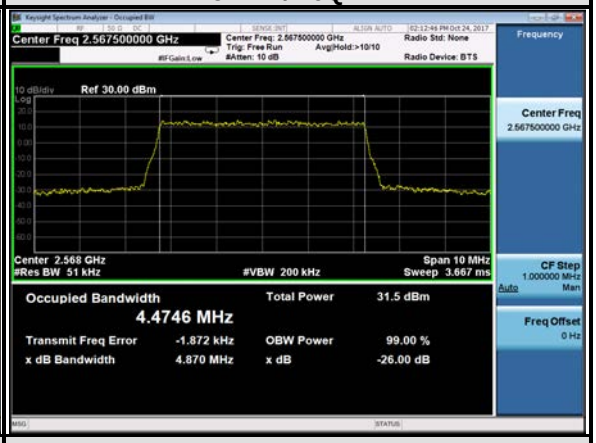
LTE BAND 7				
CHANNEL BANDWIDTH: 5MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20775	2502.5	4.49	4.47	4.49
21100	2535	4.48	4.47	4.49
21425	2567.5	4.48	4.47	4.47

SPECTRUM PLOT OF WORST VALUE

5MHz / QPSK



5MHz / 16QAM

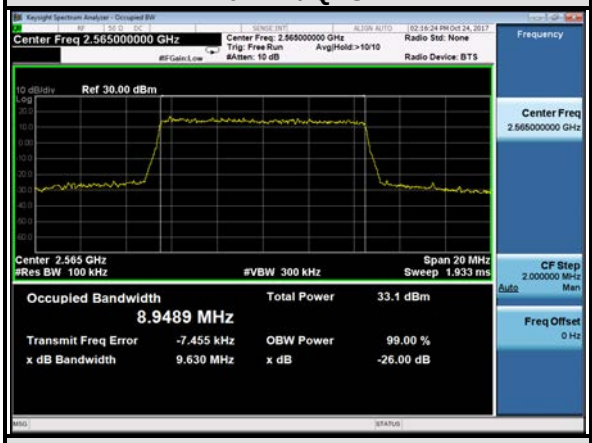


5MHz / 64QAM

LTE BAND 7				
CHANNEL BANDWIDTH: 10MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20800	2505	8.94	8.92	8.93
21100	2535	8.94	8.95	8.94
21400	2565	8.95	8.94	8.95

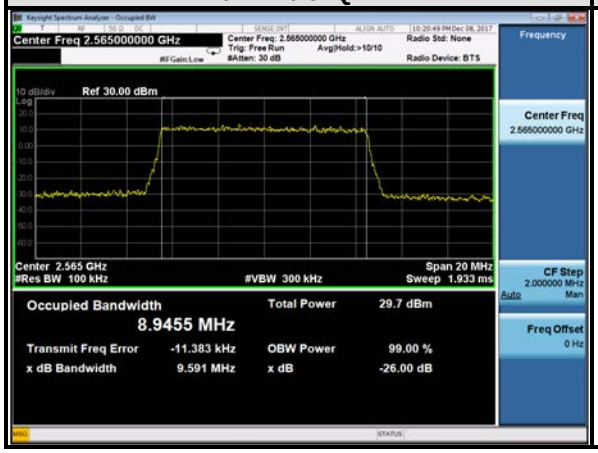
SPECTRUM PLOT OF WORST VALUE

10MHz / QPSK



10MHz / 16QAM

10MHz / 64QAM



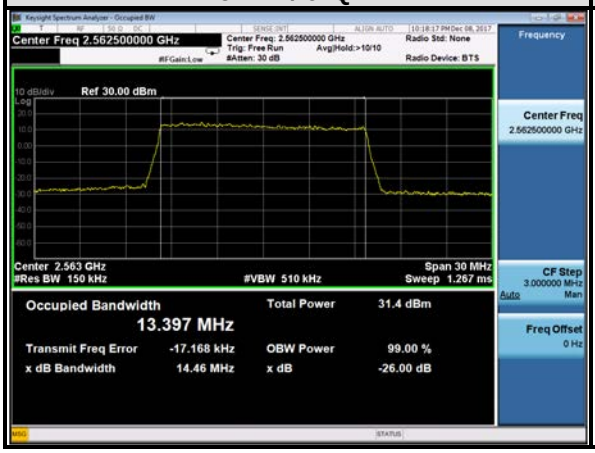
LTE BAND 7				
CHANNEL BANDWIDTH: 15MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20825	2507.5	13.39	13.36	13.35
21100	2535	13.42	13.41	13.38
21375	2562.5	13.41	13.39	13.40

SPECTRUM PLOT OF WORST VALUE

15MHz / QPSK

15MHz / 16QAM

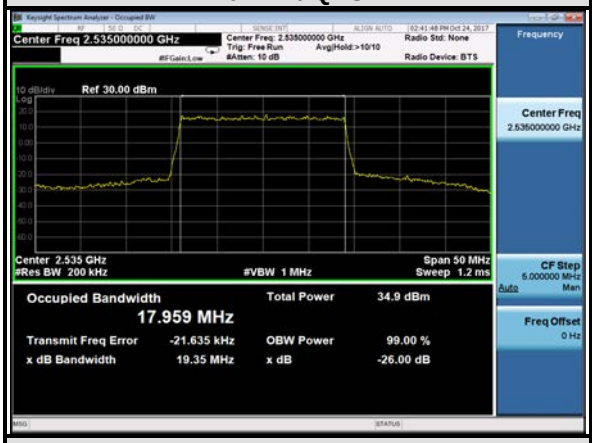
15MHz / 64QAM



LTE BAND 7				
CHANNEL BANDWIDTH: 20MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20850	2510	17.87	17.81	17.81
21100	2535	17.96	17.86	17.92
21350	2560	17.91	17.83	17.86

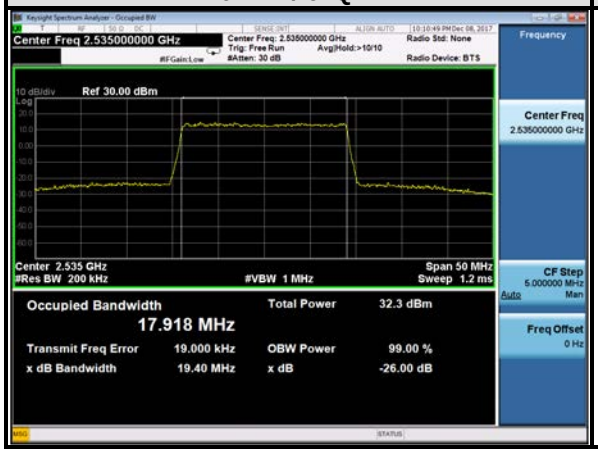
SPECTRUM PLOT OF WORST VALUE

20MHz / QPSK



20MHz / 16QAM

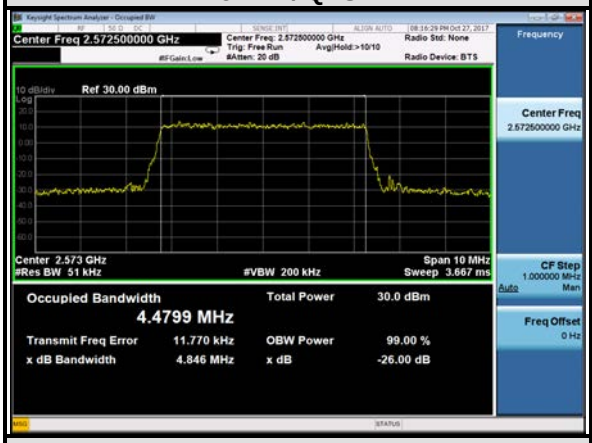
20MHz / 64QAM



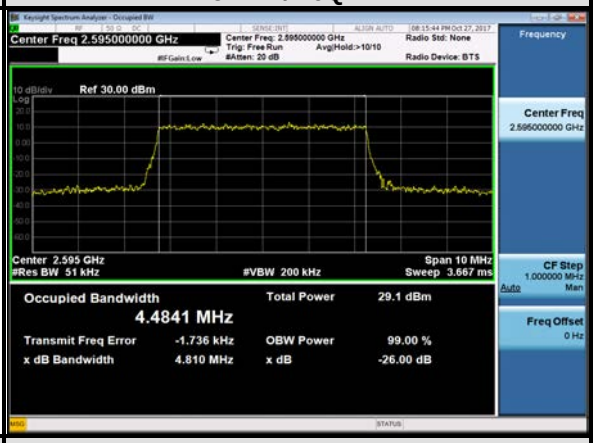
LTE BAND 38				
CHANNEL BANDWIDTH: 5MHZ				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37775	2572.5	4.48	4.48	4.48
38000	2595	4.47	4.48	4.48
38225	2617.5	4.47	4.48	4.49

SPECTRUM PLOT OF WORST VALUE

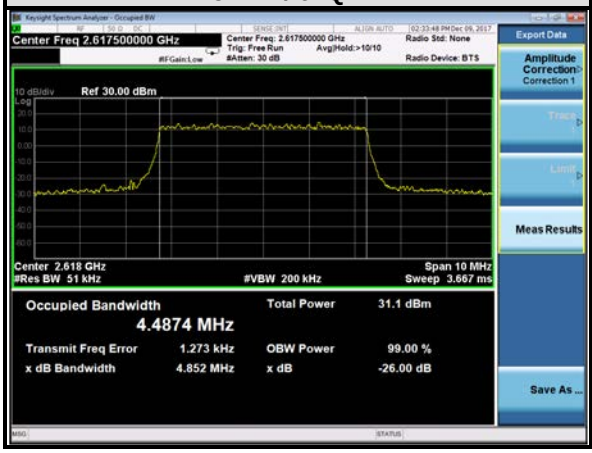
5MHz / QPSK



5MHz / 16QAM



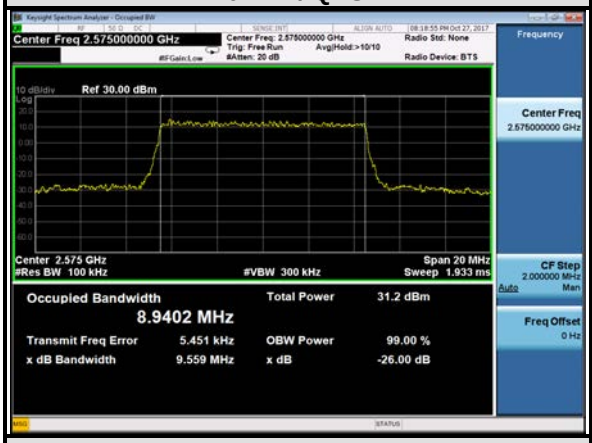
5MHz / 64QAM



LTE BAND 38				
CHANNEL BANDWIDTH: 10MHZ				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37800	2575	8.94	8.92	8.95
38000	2595	8.91	8.93	8.94
38200	2615	8.93	8.94	8.94

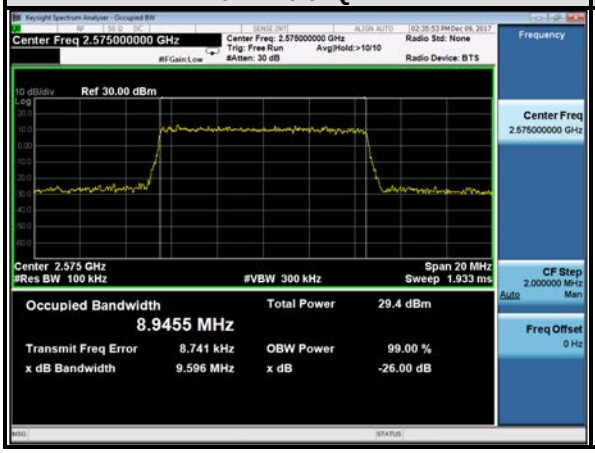
SPECTRUM PLOT OF WORST VALUE

10MHz / QPSK



10MHz / 16QAM

10MHz / 64QAM



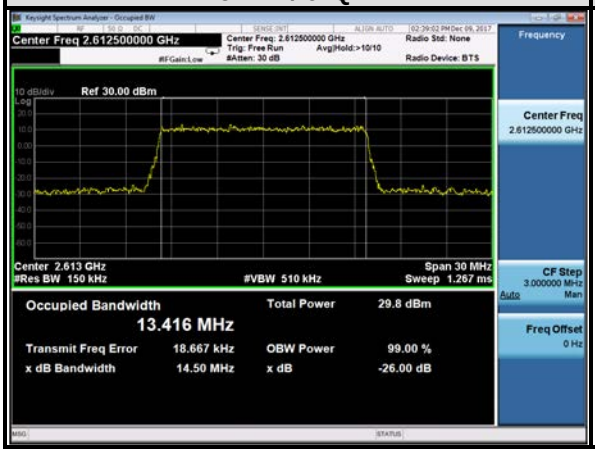
LTE BAND 38				
CHANNEL BANDWIDTH: 15MHZ				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37825	2577.5	13.42	13.40	13.39
38000	2595	13.37	13.42	13.39
38175	2612.5	13.37	13.40	13.42

SPECTRUM PLOT OF WORST VALUE

15MHz / QPSK

15MHz / 16QAM

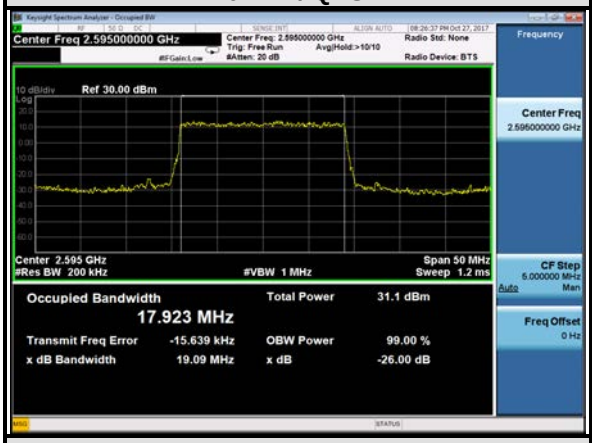
15MHz / 64QAM



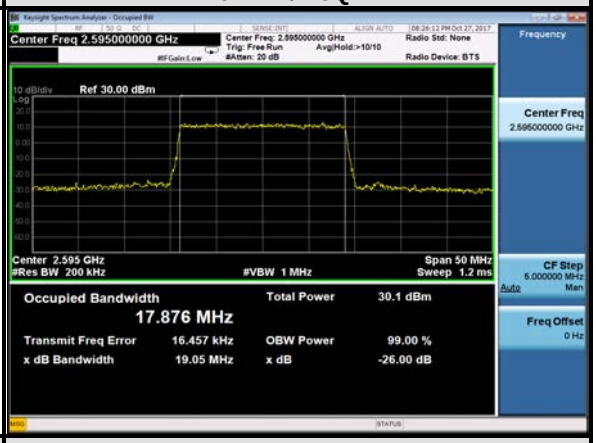
LTE BAND 38				
CHANNEL BANDWIDTH: 20MHZ				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37850	2580	17.90	17.87	17.85
38000	2595	17.92	17.88	17.88
38150	2610	17.88	17.84	17.93

SPECTRUM PLOT OF WORST VALUE

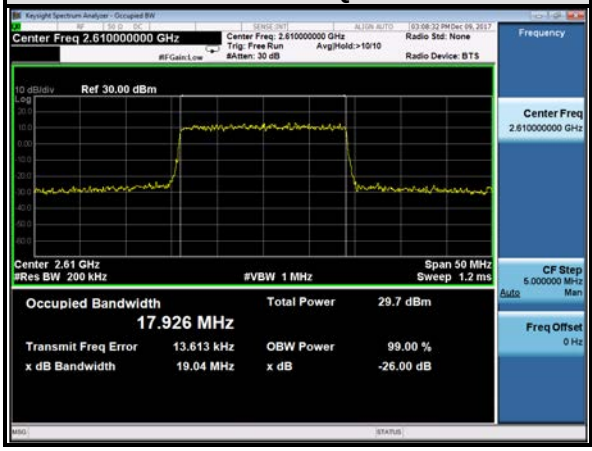
20MHz / QPSK



20MHz / 16QAM



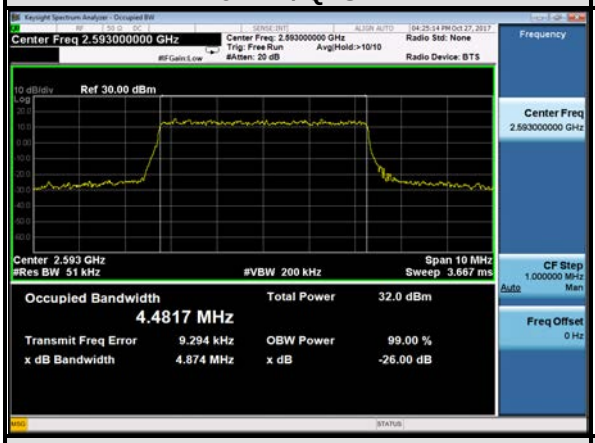
20MHz / 64QAM



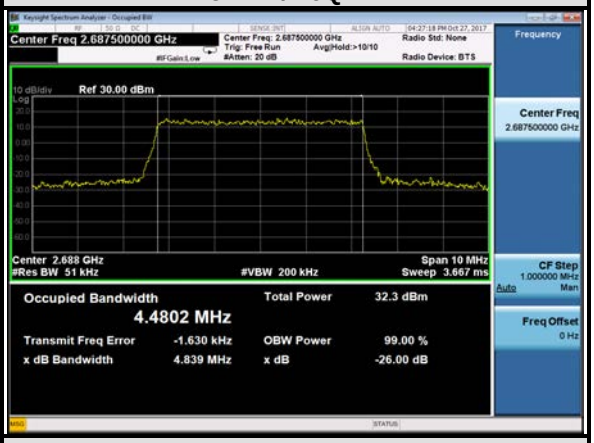
LTE BAND 41				
CHANNEL BANDWIDTH: 5MHZ				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
39675	2498.5	4.48	4.48	4.48
40620	2593.0	4.48	4.47	4.49
41565	2687.5	4.48	4.48	4.48

SPECTRUM PLOT OF WORST VALUE

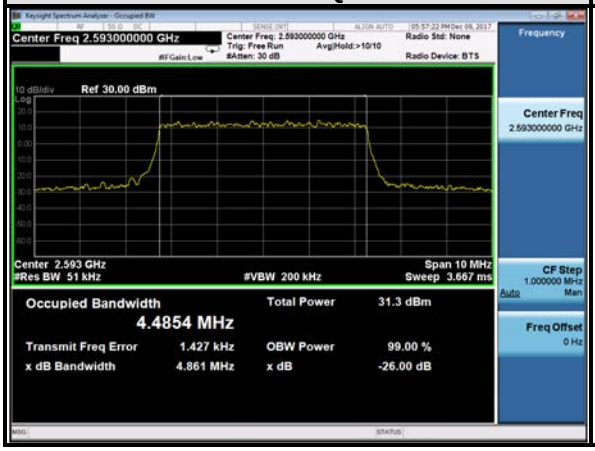
5MHz / QPSK



5MHz / 16QAM



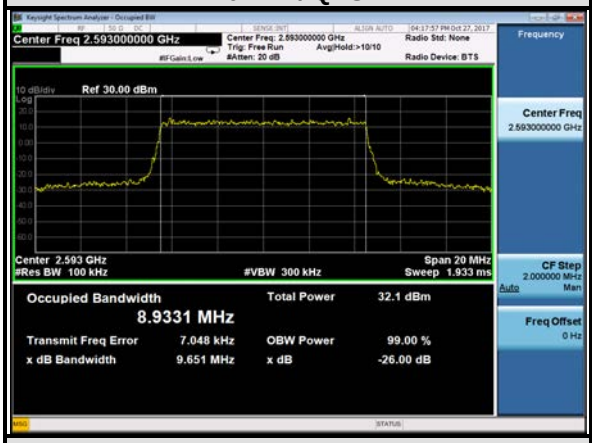
5MHz / 64QAM



LTE BAND 41				
CHANNEL BANDWIDTH: 10MHZ				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
39700	2501.0	8.92	8.94	8.93
40620	2593.0	8.93	8.94	8.94
41540	2685.0	8.93	8.93	8.93

SPECTRUM PLOT OF WORST VALUE

10MHz / QPSK



10MHz / 16QAM

10MHz / 64QAM

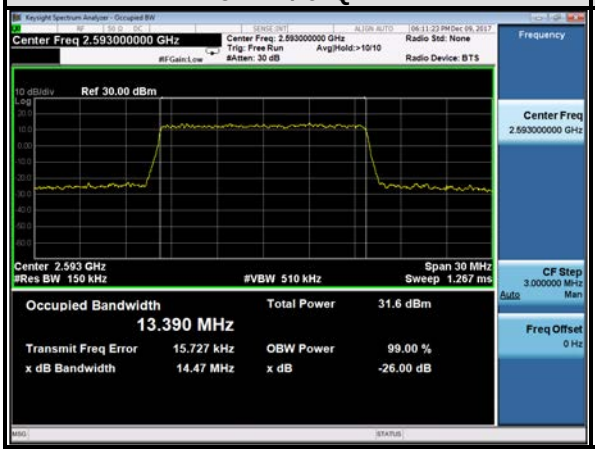
LTE BAND 41				
CHANNEL BANDWIDTH: 15MHZ				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
39725	2503.5	13.35	13.37	13.38
40620	2593.0	13.41	13.40	13.39
41515	2682.5	13.36	13.38	13.38

SPECTRUM PLOT OF WORST VALUE

15MHz / QPSK

15MHz / 16QAM

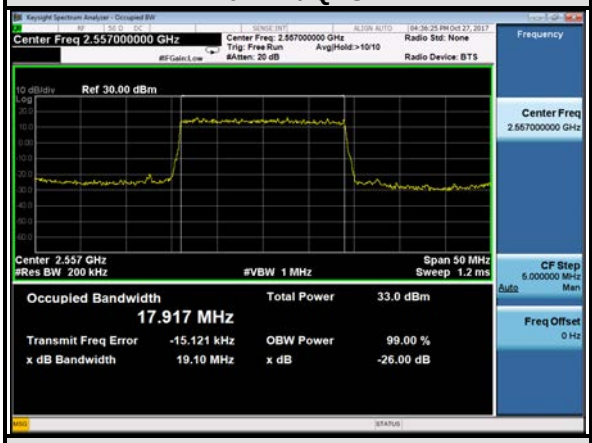
15MHz / 64QAM



LTE BAND 41				
CHANNEL BANDWIDTH: 20MHZ				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
39750	2506.0	17.88	17.81	17.86
40620	2593.0	17.92	17.90	17.89
41490	2680.0	17.90	17.81	17.84

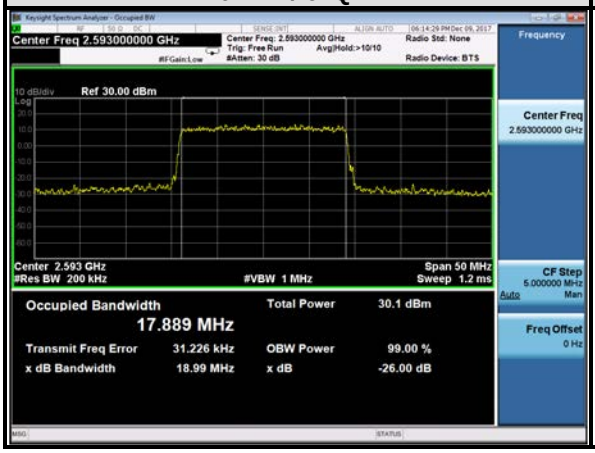
SPECTRUM PLOT OF WORST VALUE

20MHz / QPSK



20MHz / 16QAM

20MHz / 64QAM

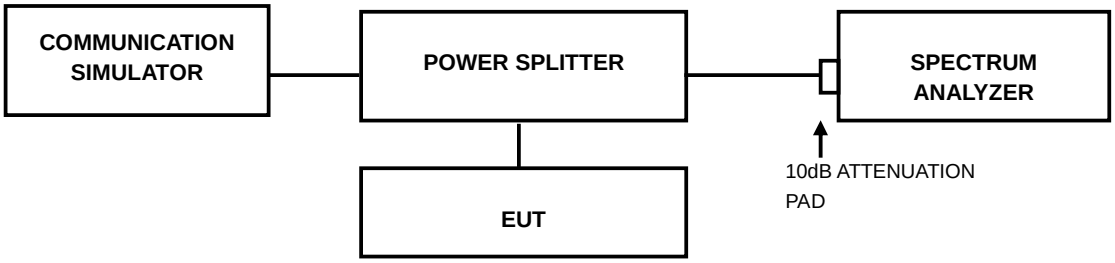


3.4 PEAK TO AVERAGE RATIO

3.4.1 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.

3.4.2 TEST SETUP



3.4.3 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%.

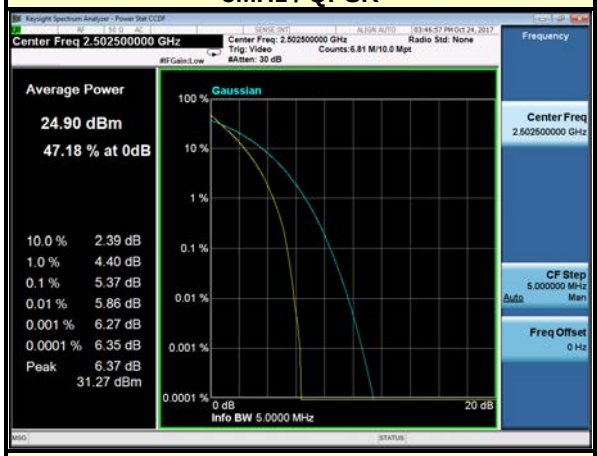
3.4.4 TEST RESULTS

LTE BAND 7

CHANNEL BANDWIDTH: 5MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
20775	2502.5	5.37	6.14	6.47
21100	2535	5.35	6.14	6.41
21425	2567.5	5.33	6.10	6.39

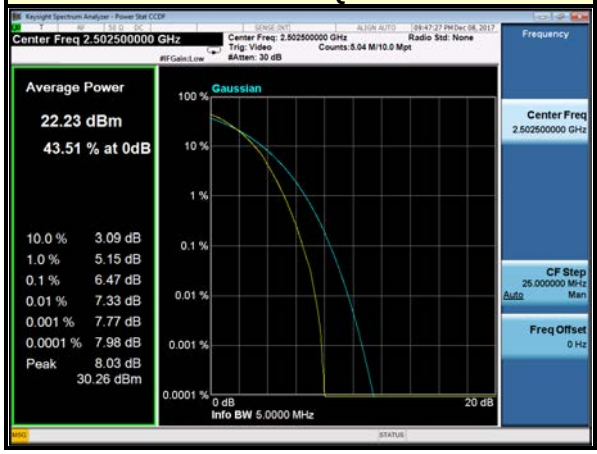
SPECTRUM PLOT OF WORST VALUE

5MHz / QPSK



5MHz / 16QAM

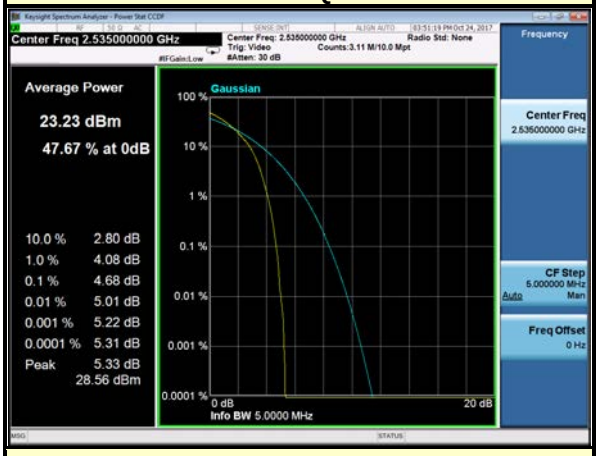
5MHz / 64QAM



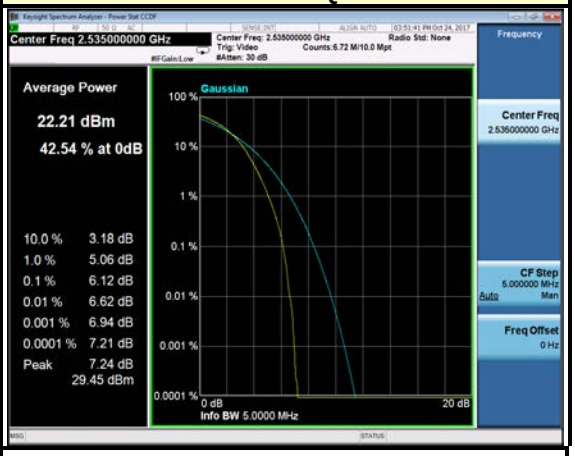
CHANNEL BANDWIDTH: 10MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
20800	2505	4.64	6.05	6.36
21100	2535	4.68	6.12	6.55
21400	2565	4.65	6.03	6.29

SPECTRUM PLOT OF WORST VALUE

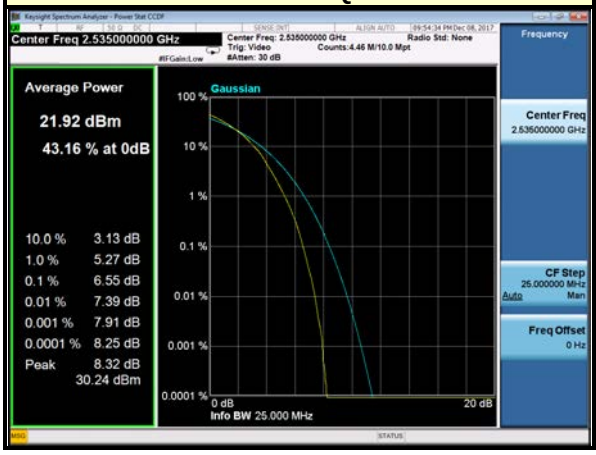
10MHz / QPSK



10MHz / 16QAM



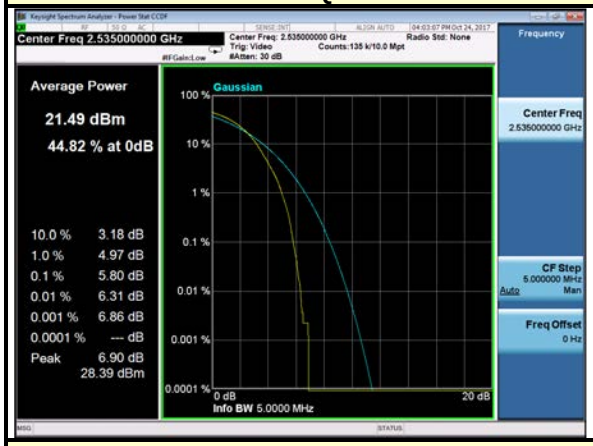
10MHz / 64QAM



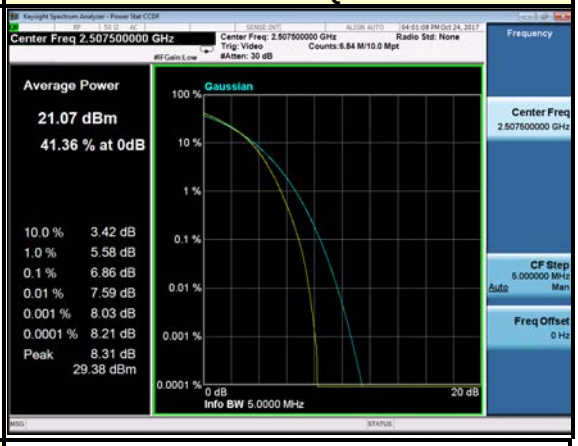
CHANNEL BANDWIDTH: 15MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
20825	2507.5	5.75	6.86	6.41
21100	2535	5.80	6.85	6.62
21375	2562.5	5.75	6.80	6.38

SPECTRUM PLOT OF WORST VALUE

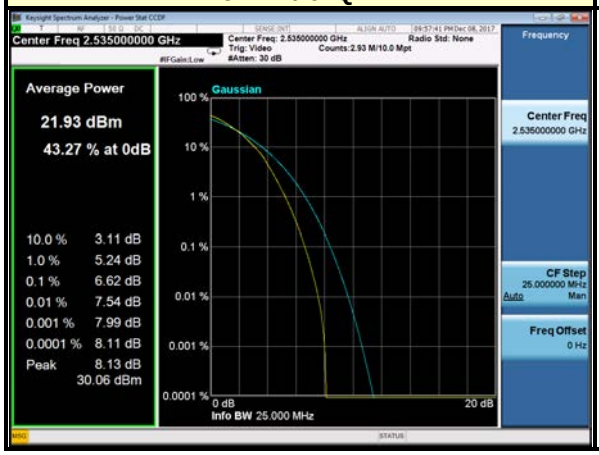
15MHz / QPSK



15MHz / 16QAM



15MHz / 64QAM

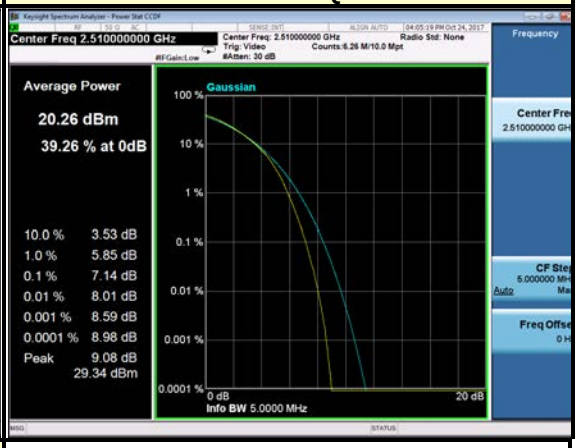


CHANNEL BANDWIDTH: 20MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
20850	2510	6.49	7.14	6.35
21100	2535	6.48	7.10	6.62
21350	2560	6.46	7.10	6.40

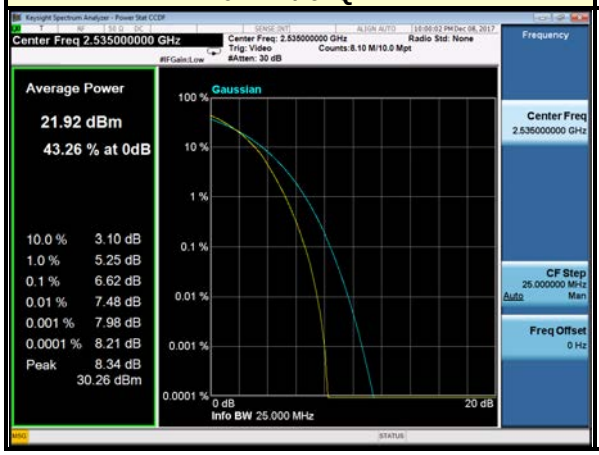
SPECTRUM PLOT OF WORST VALUE

20MHz / QPSK

20MHz / 16QAM



20MHz / 64QAM

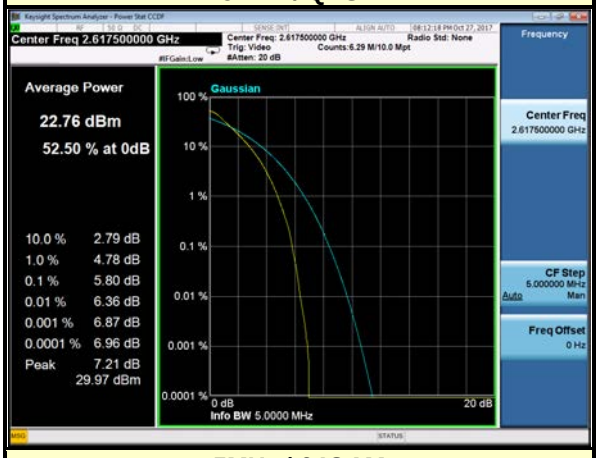


LTE BAND 38

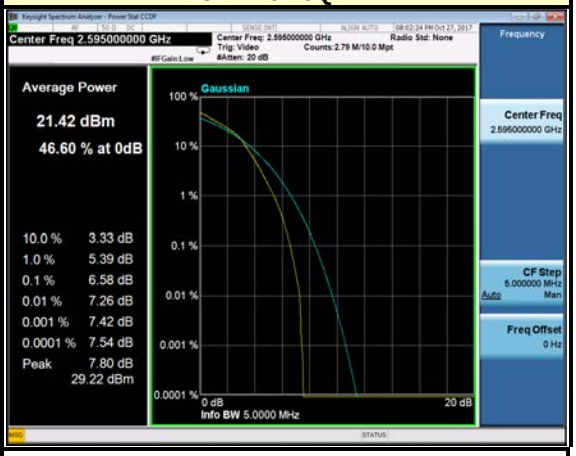
CHANNEL BANDWIDTH: 5MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
37775	2572.5	5.69	6.43	6.81
38000	2595	5.79	6.58	6.70
38225	2617.5	5.80	6.34	6.71

SPECTRUM PLOT OF WORST VALUE

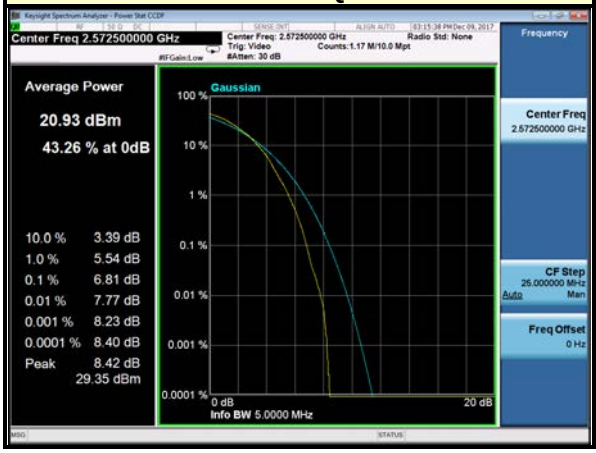
5MHz / QPSK



5MHz / 16QAM



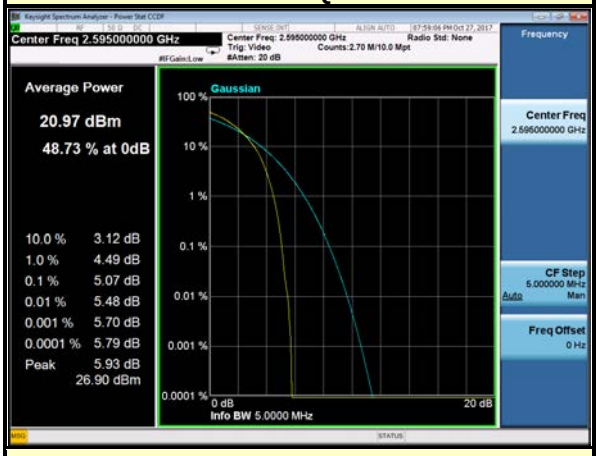
5MHz / 64QAM



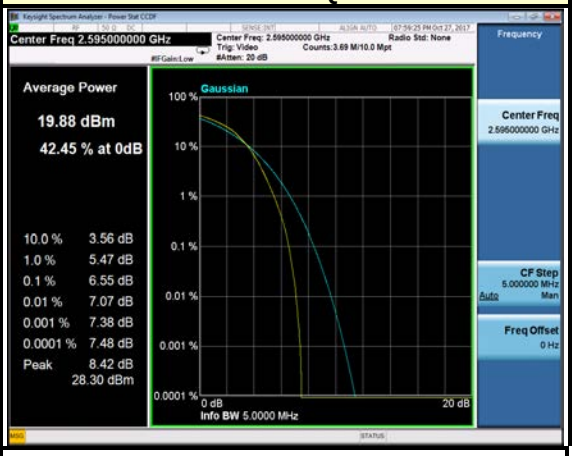
CHANNEL BANDWIDTH: 10MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
37800	2575	5.05	6.42	6.74
38000	2595	5.07	6.55	6.87
38200	2615	5.00	6.24	6.74

SPECTRUM PLOT OF WORST VALUE

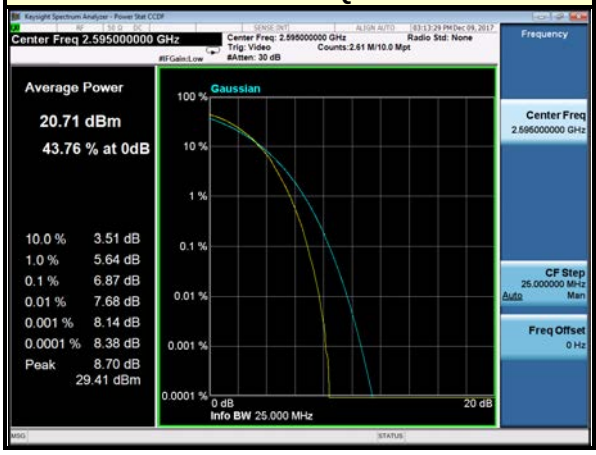
10MHz / QPSK



10MHz / 16QAM



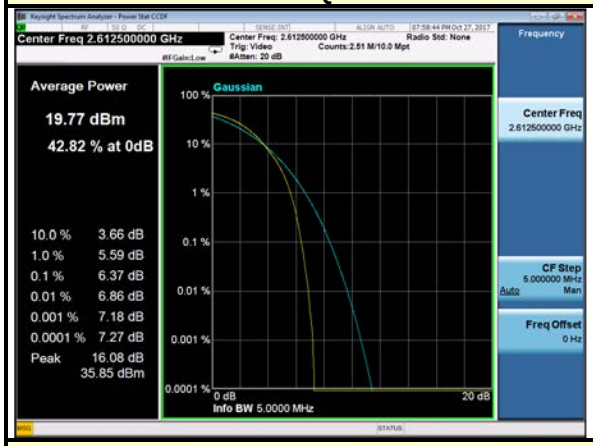
10MHz / 64QAM



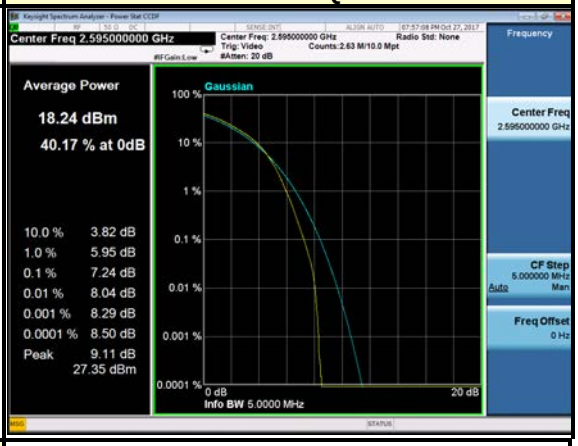
CHANNEL BANDWIDTH: 15MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
37825	2577.5	5.86	7.06	6.79
38000	2595	6.19	7.24	6.81
38175	2612.5	6.37	7.13	6.54

SPECTRUM PLOT OF WORST VALUE

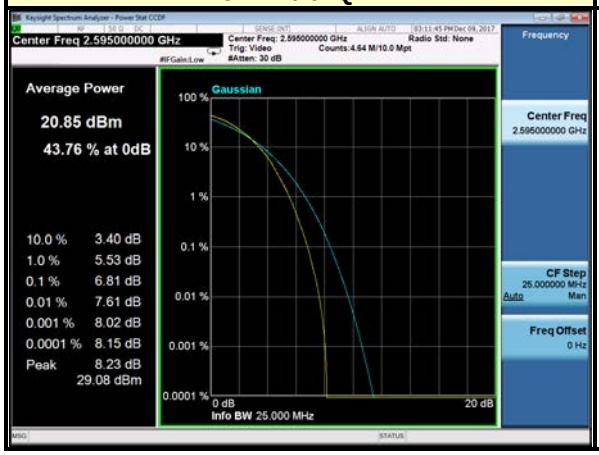
15MHz / QPSK



15MHz / 16QAM



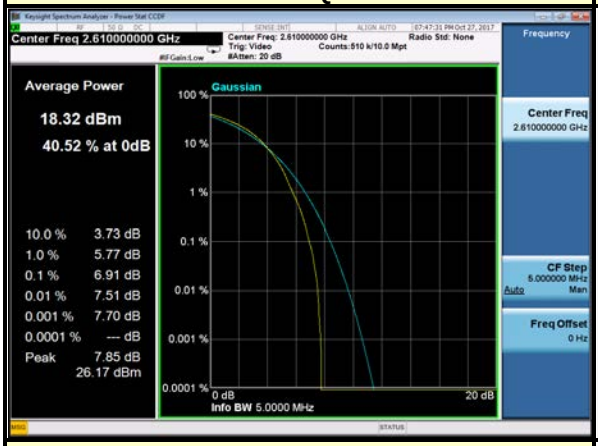
15MHz / 64QAM



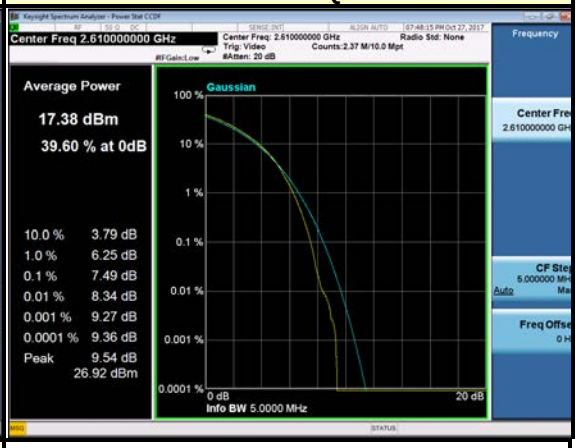
CHANNEL BANDWIDTH: 20MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
37850	2580	6.81	7.46	6.82
38000	2595	6.86	7.42	6.80
38150	2610	6.91	7.49	6.75

SPECTRUM PLOT OF WORST VALUE

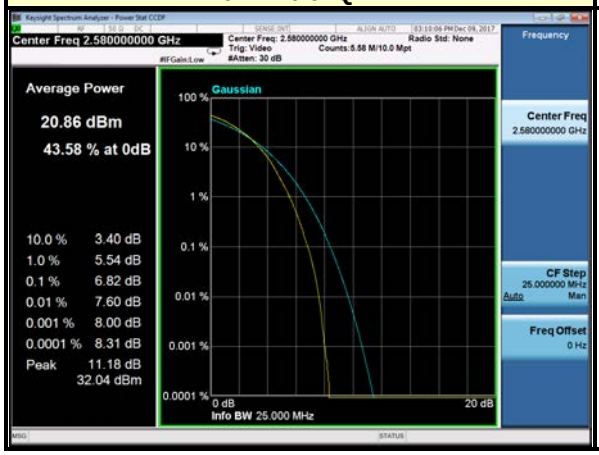
20MHz / QPSK



20MHz / 16QAM



20MHz / 64QAM

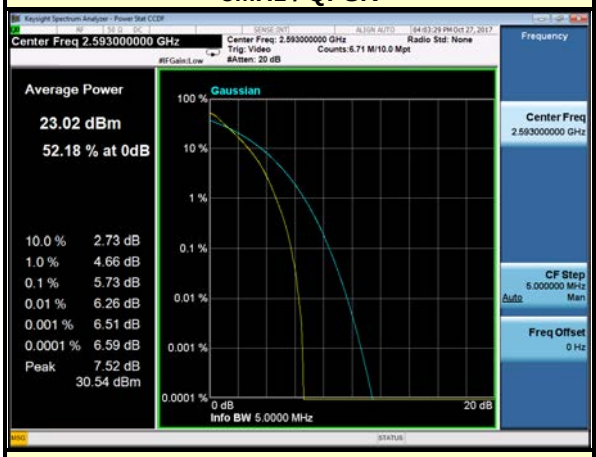


LTE BAND 41

CHANNEL BANDWIDTH: 5MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
39675	2498.5	5.69	6.40	6.87
40620	2593.0	5.73	6.43	6.70
41565	2687.5	5.58	6.36	6.91

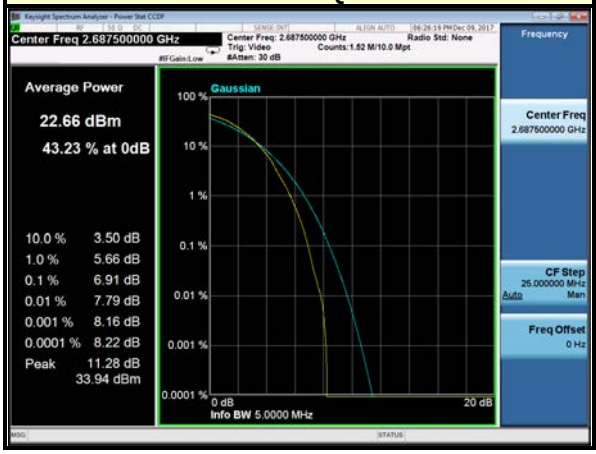
SPECTRUM PLOT OF WORST VALUE

5MHz / QPSK



5MHz / 16QAM

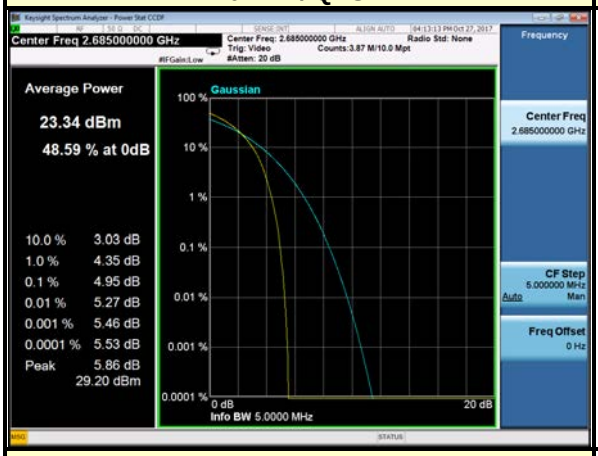
5MHz / 64QAM



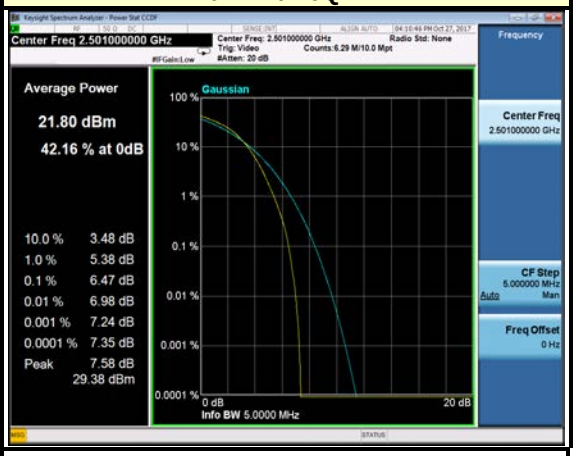
CHANNEL BANDWIDTH: 10MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
39700	2501.0	4.94	6.47	6.66
40620	2593.0	4.92	6.34	6.64
41540	2685.0	4.95	6.38	6.25

SPECTRUM PLOT OF WORST VALUE

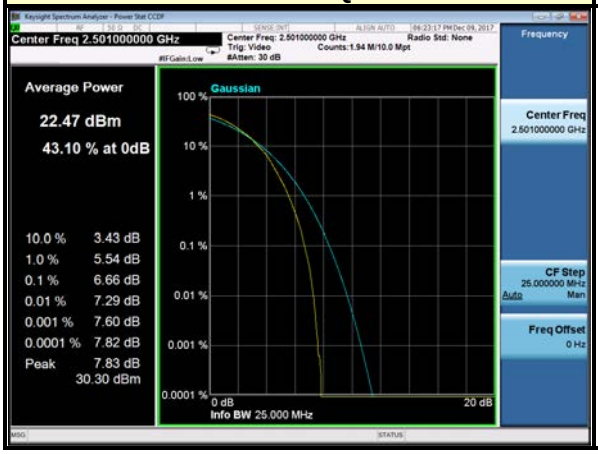
10MHz / QPSK



10MHz / 16QAM



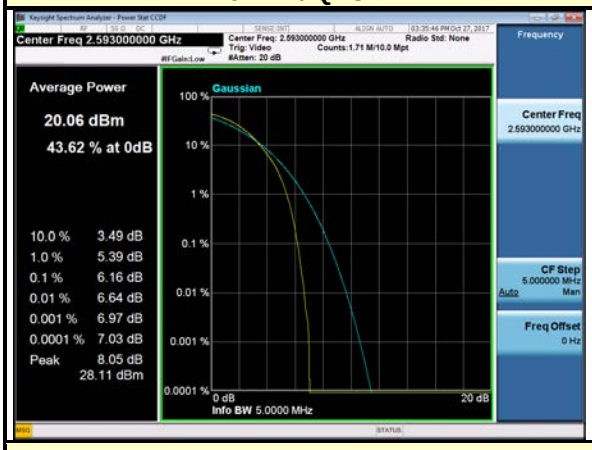
10MHz / 64QAM



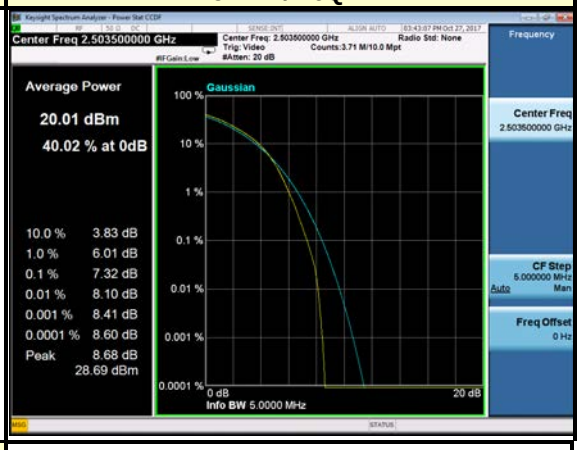
CHANNEL BANDWIDTH: 15MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
39725	2503.5	6.07	7.32	6.92
40620	2593.0	6.16	7.10	6.29
41515	2682.5	6.11	7.14	6.68

SPECTRUM PLOT OF WORST VALUE

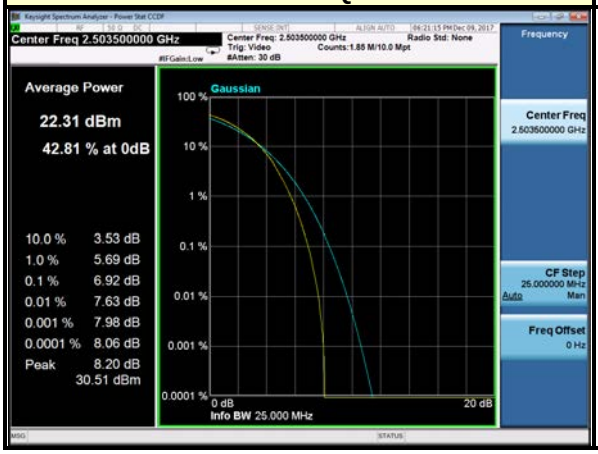
15MHz / QPSK



15MHz / 16QAM



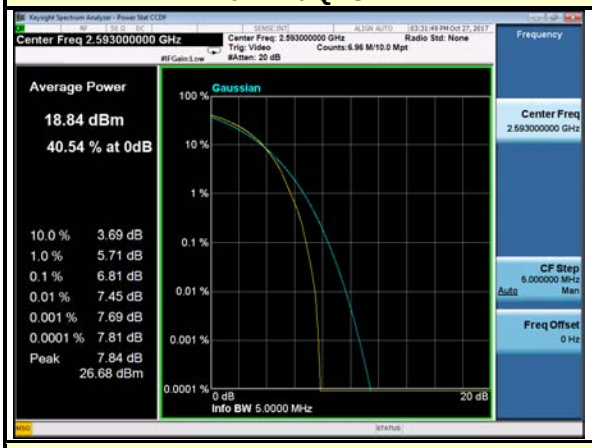
15MHz / 64QAM



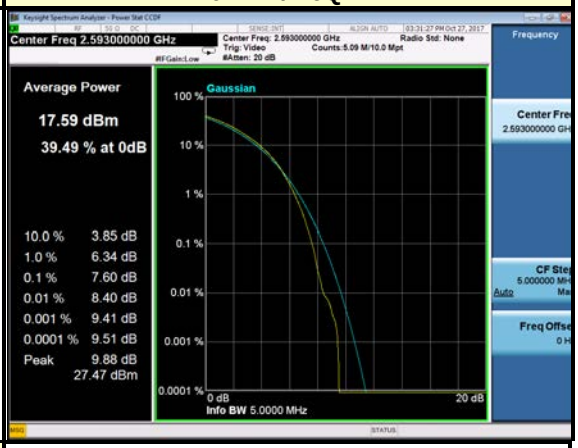
CHANNEL BANDWIDTH: 20MHz				
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
39725	2503.5	6.07	7.32	6.76
40620	2593.0	6.16	7.10	6.47
41515	2682.5	6.11	7.14	6.73

SPECTRUM PLOT OF WORST VALUE

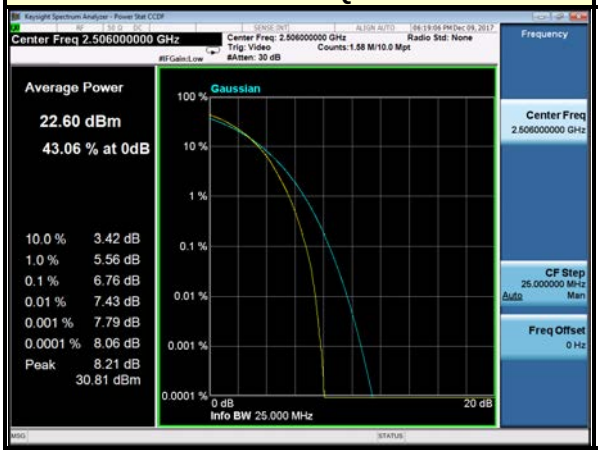
20MHz / QPSK



20MHz / 16QAM



20MHz / 64QAM

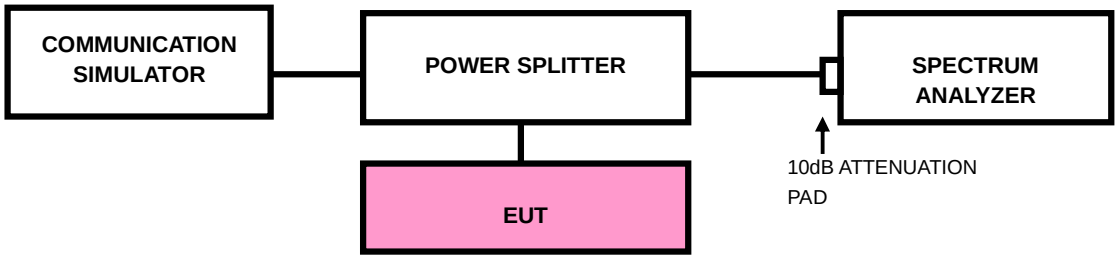


3.5 BAND EDGE MEASUREMENT

3.5.1 LIMITS OF BAND EDGE MEASUREMENT

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.

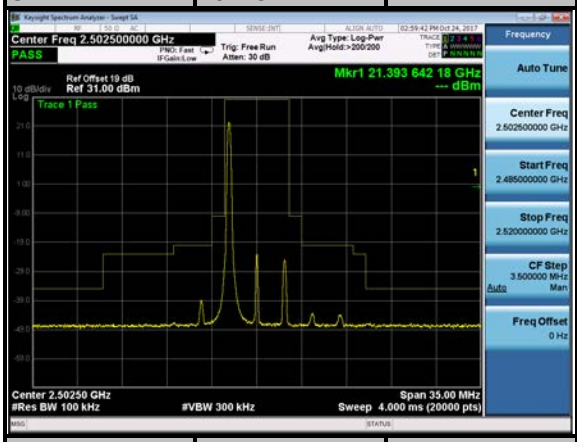
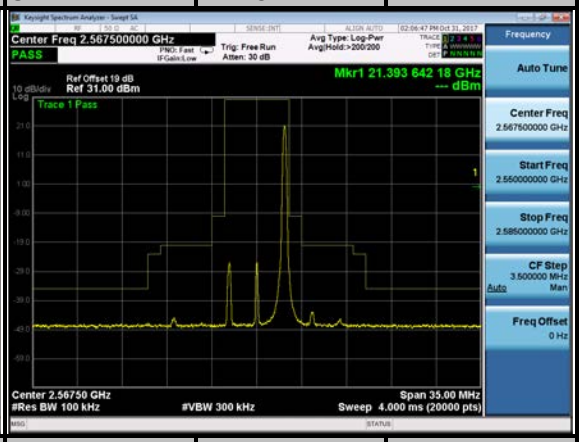
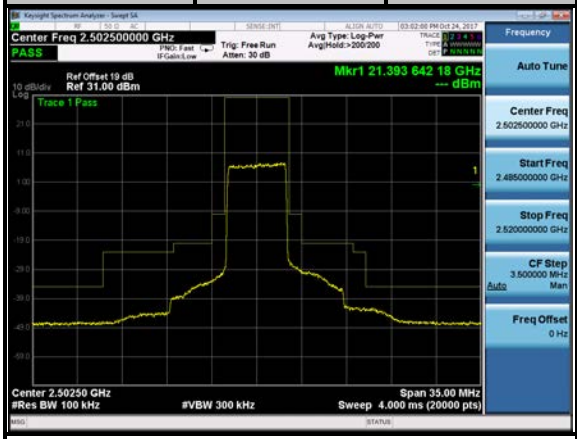
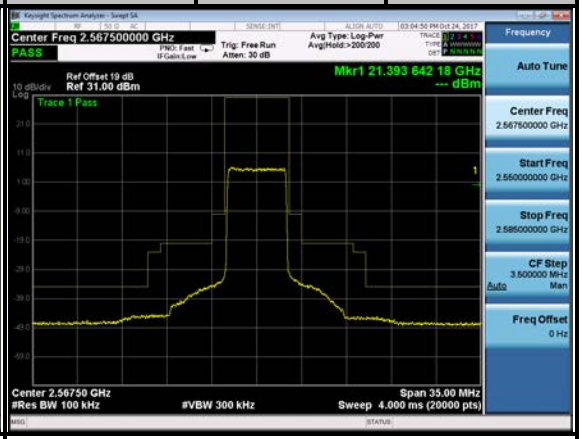
3.5.2 TEST SETUP

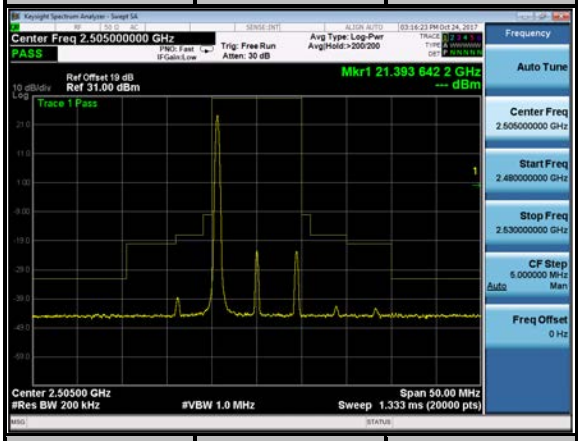
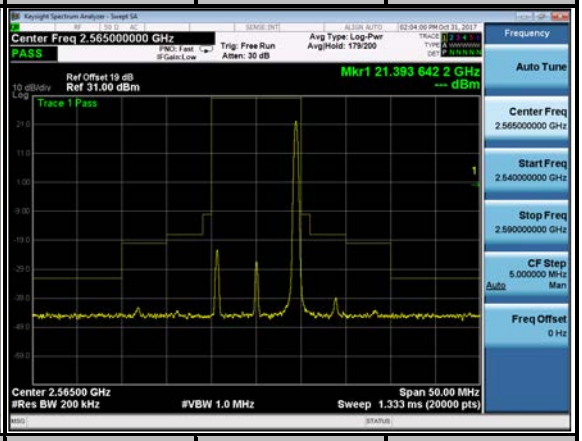
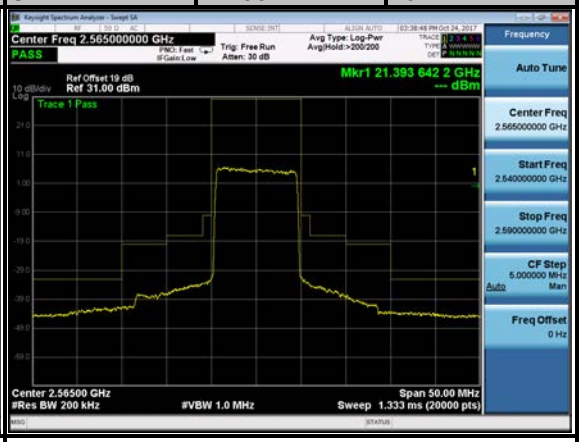


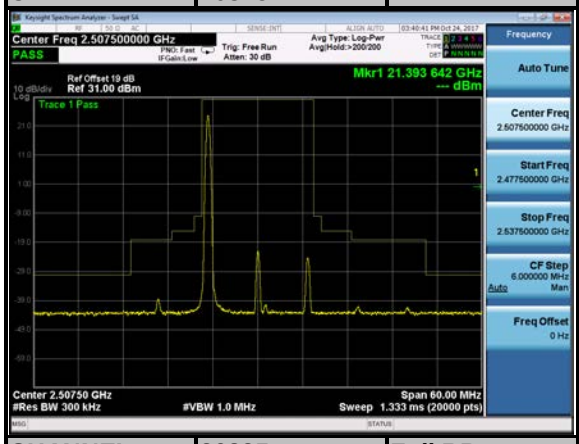
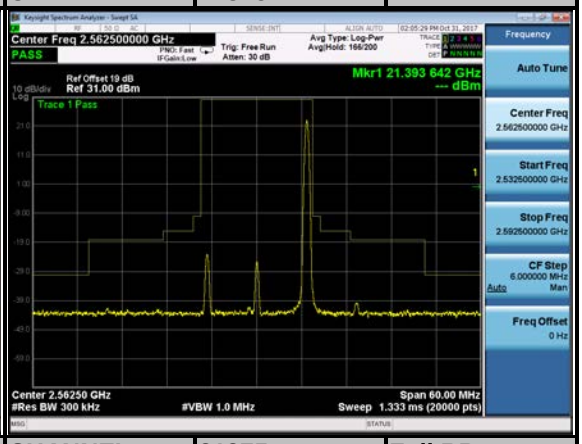
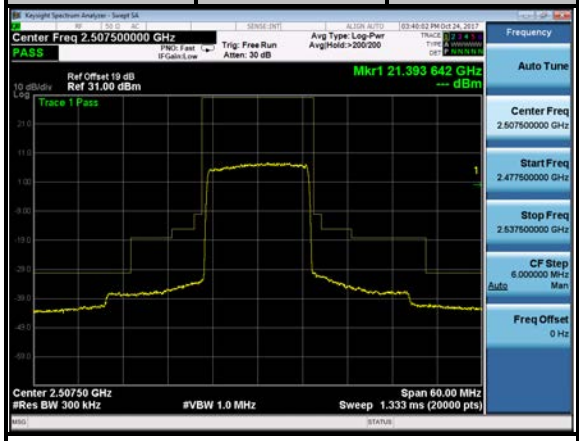
3.5.3 TEST PROCEDURES

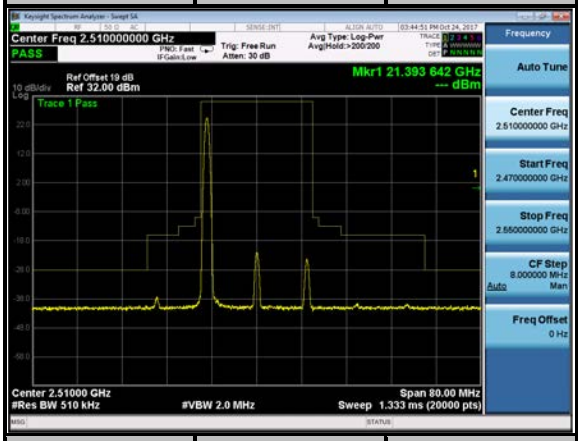
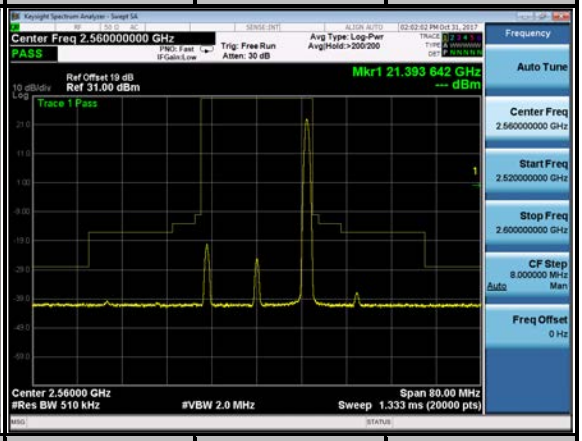
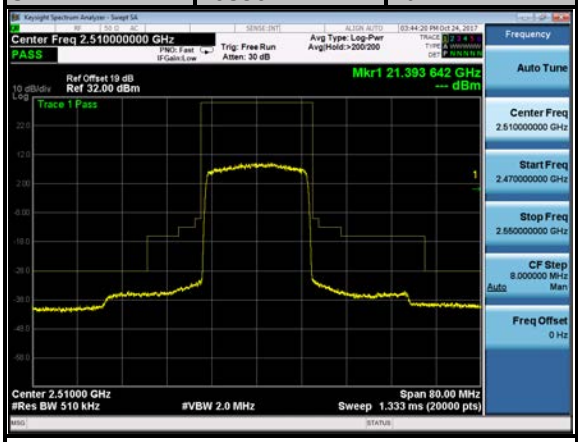
a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
c. The center frequency of spectrum is the band edge frequency and span is 35MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (Channel bandwidth 5MHz).
d. The center frequency of spectrum is the band edge frequency and span is 50MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz (Channel bandwidth 10MHz).
e. The center frequency of spectrum is the band edge frequency and span is 60MHz. RBW of the spectrum is 300kHz and VBW of the spectrum is 1MHz (Channel bandwidth 15MHz).
f. The center frequency of spectrum is the band edge frequency and span is 80MHz. RBW of the spectrum is 500kHz and VBW of the spectrum is 2MHz (Channel bandwidth 20MHz).
g. Record the max trace plot into the test report.

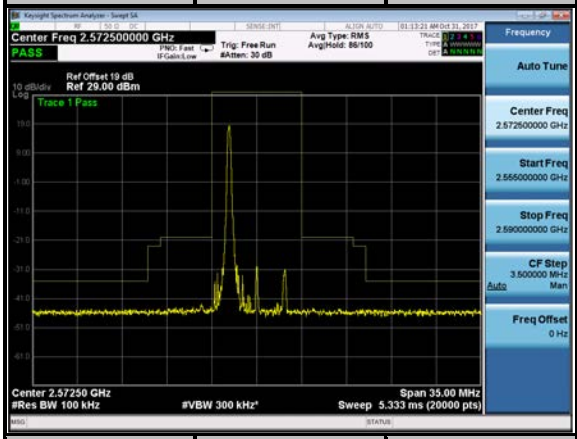
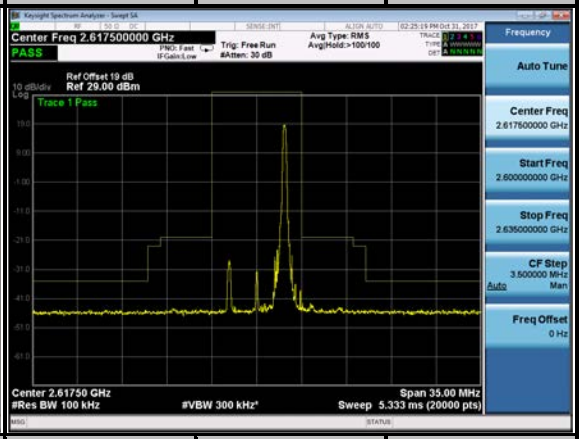
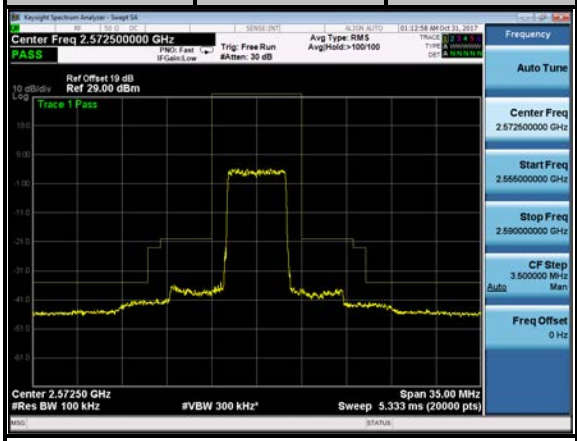
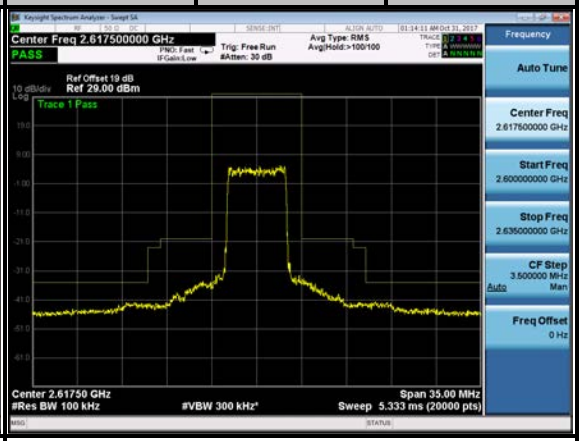
3.5.4 TEST RESULTS

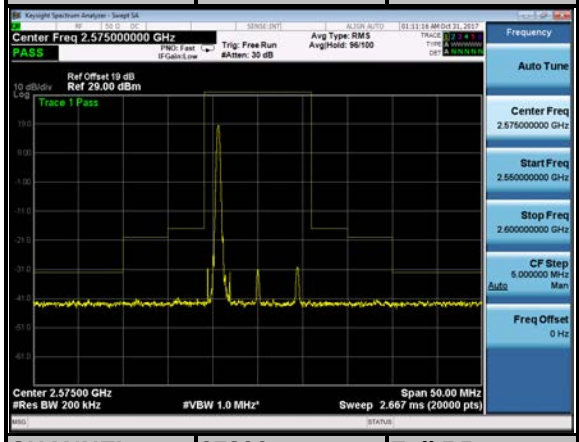
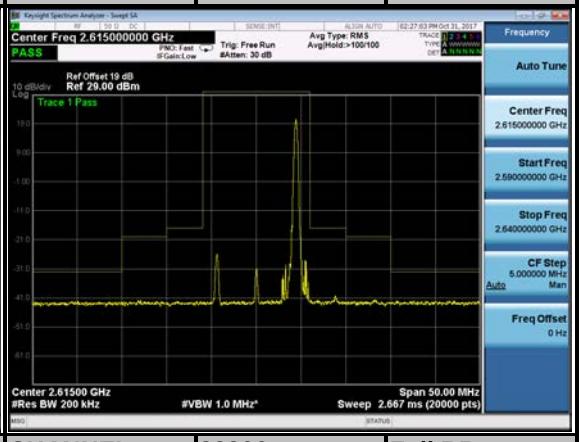
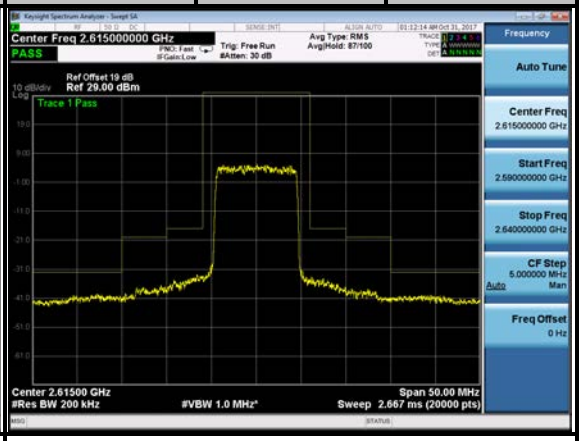
LTE BAND 7					
Channel Bandwidth: 5MHz / QPSK					
CHANNEL	20775	1 RB	CHANNEL	21425	1 RB
					
CHANNEL	20775	Full RB	CHANNEL	21425	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

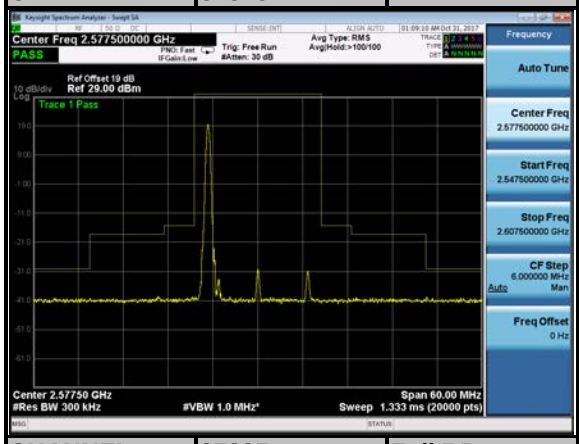
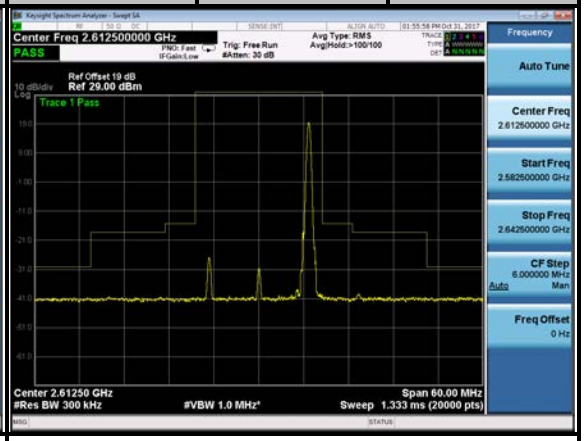
LTE BAND 7					
Channel Bandwidth: 10MHz / QPSK					
CHANNEL	20800	1 RB	CHANNEL	21400	1 RB
					
CHANNEL	20800	Full RB	CHANNEL	21400	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

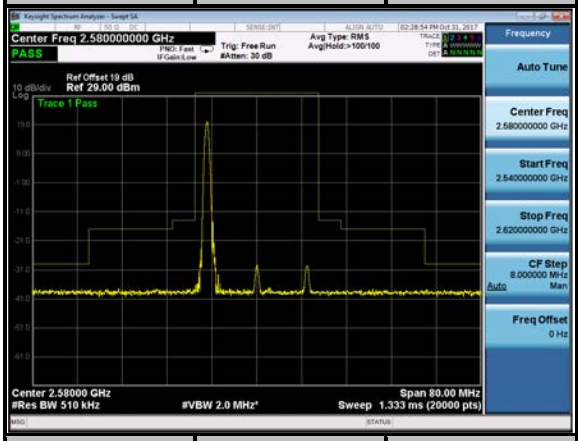
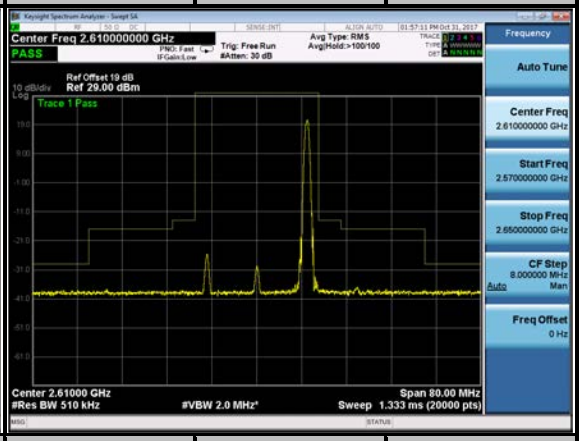
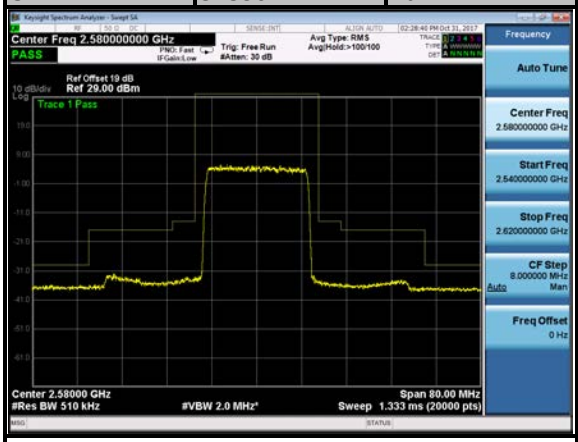
LTE BAND 7					
Channel Bandwidth: 15MHz / QPSK					
CHANNEL	20825	1 RB	CHANNEL	21375	1 RB
					
CHANNEL	20825	Full RB	CHANNEL	21375	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

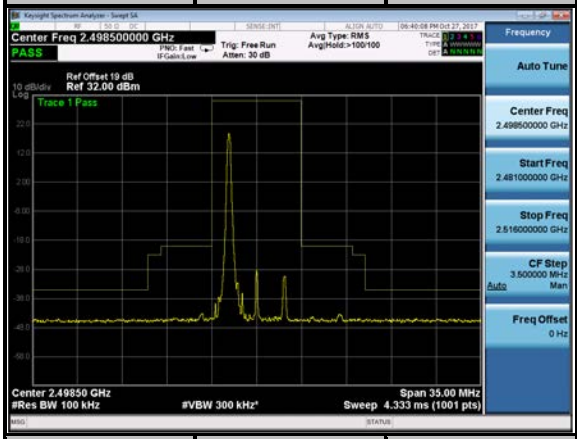
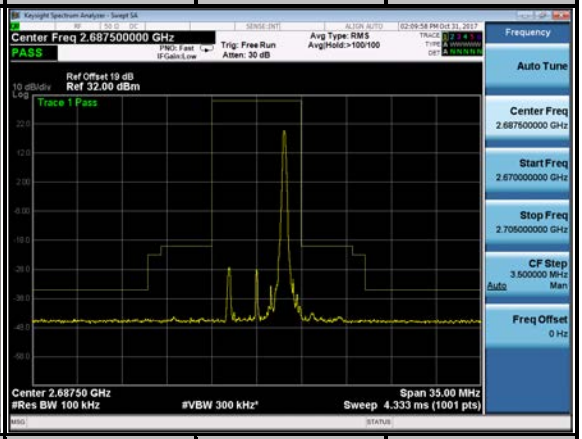
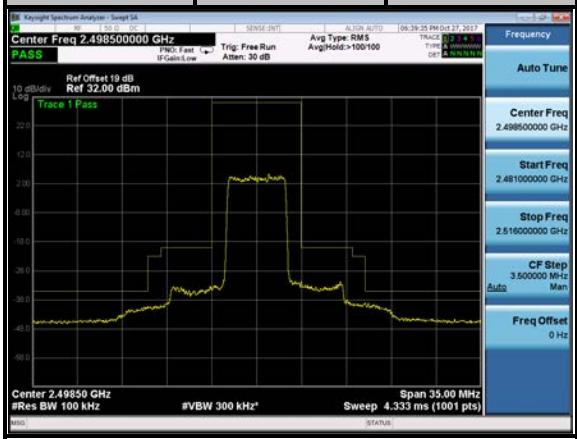
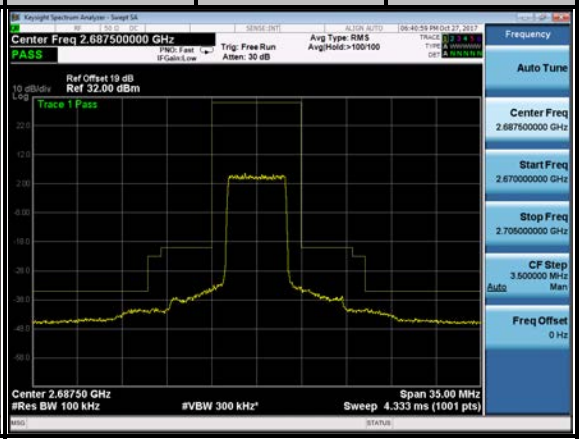
LTE BAND 7					
Channel Bandwidth: 20MHz / QPSK					
CHANNEL	20850	1 RB	CHANNEL	21350	1 RB
					
CHANNEL	20850	Full RB	CHANNEL	21350	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

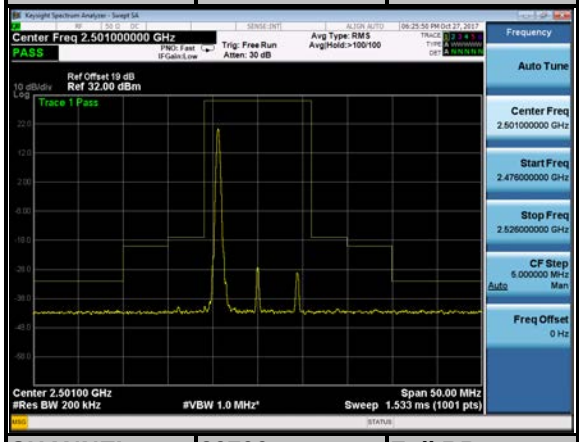
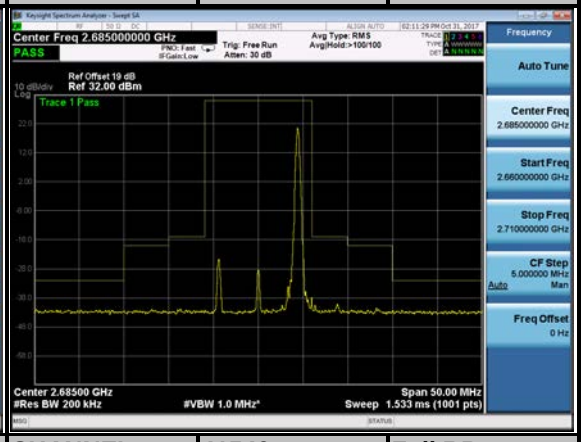
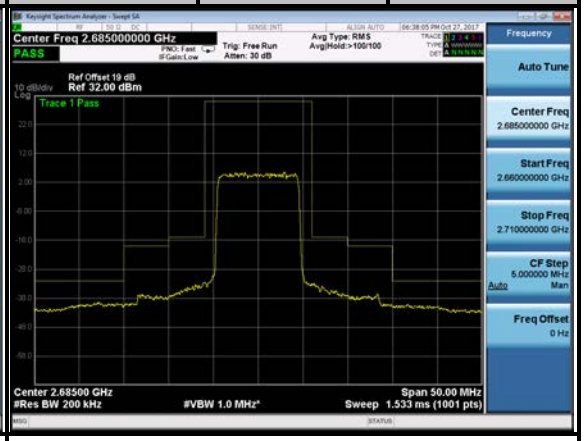
LTE BAND 38					
Channel Bandwidth: 5MHz / QPSK					
CHANNEL	37775	1 RB	CHANNEL	38225	1 RB
					
CHANNEL	37775	Full RB	CHANNEL	38225	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

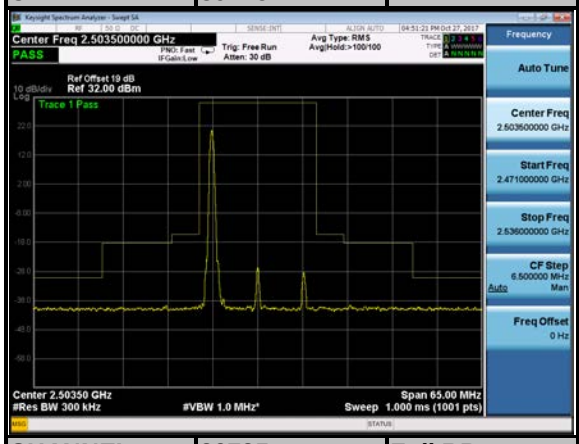
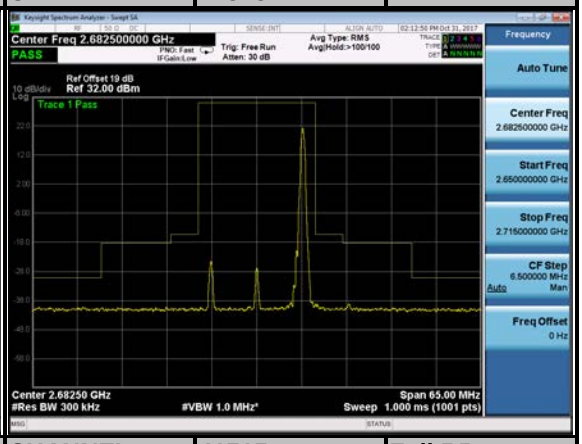
LTE BAND 38					
Channel Bandwidth: 10MHz / QPSK					
CHANNEL	37800	1 RB	CHANNEL	38200	1 RB
					
CHANNEL	37800	Full RB	CHANNEL	38200	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

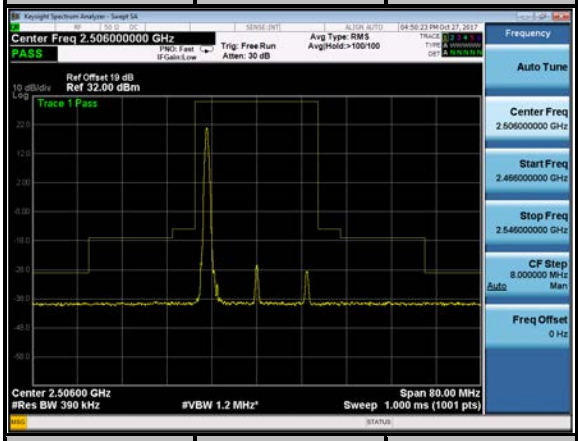
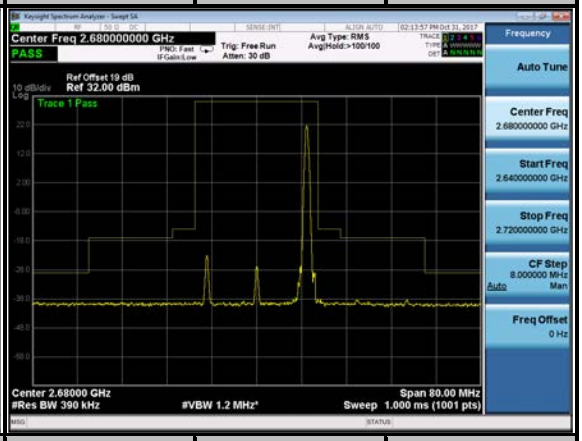
LTE BAND 38					
Channel Bandwidth: 15MHz / QPSK					
CHANNEL	37825	1 RB	CHANNEL	38175	1 RB
					
CHANNEL	37825	Full RB	CHANNEL	38175	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 38					
Channel Bandwidth: 20MHz / QPSK					
CHANNEL	37850	1 RB	CHANNEL	38150	1 RB
					
CHANNEL	37850	Full RB	CHANNEL	38150	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 41					
Channel Bandwidth: 5MHz / QPSK					
CHANNEL	39675	1 RB	CHANNEL	41565	1 RB
					
CHANNEL	39675	Full RB	CHANNEL	41565	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 41					
Channel Bandwidth: 10MHz / QPSK					
CHANNEL	39700	1 RB	CHANNEL	41540	1 RB
					
CHANNEL	39700	Full RB	CHANNEL	41540	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 41					
Channel Bandwidth: 15MHz / QPSK					
CHANNEL	39725	1 RB	CHANNEL	41515	1 RB
					
CHANNEL	39725	Full RB	CHANNEL	41515	Full RB
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 41					
Channel Bandwidth: 20MHz / QPSK					
CHANNEL	39750	1 RB	CHANNEL	41490	1 RB
					
CHANNEL	39750	Full RB	CHANNEL	41490	Full RB
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

3.6 CONDUCTED SPURIOUS EMISSIONS

3.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

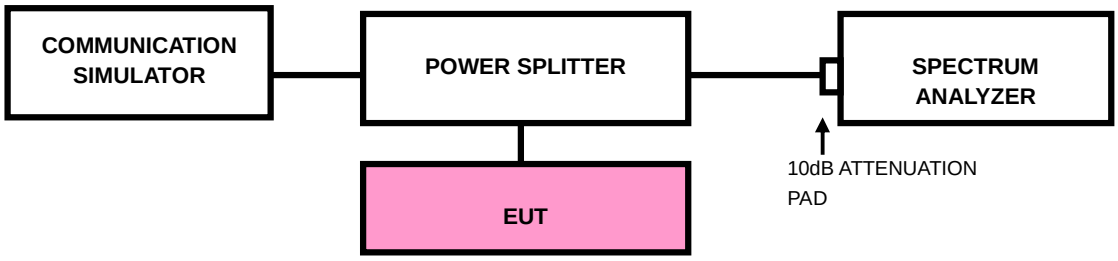
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 55 +10 log10(P) dB. The limit of emission is equal to -25dBm.

3.6.2 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 30MHz~27GHz for LTE Band 7/ LTE Band 38/LTE Band 41. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

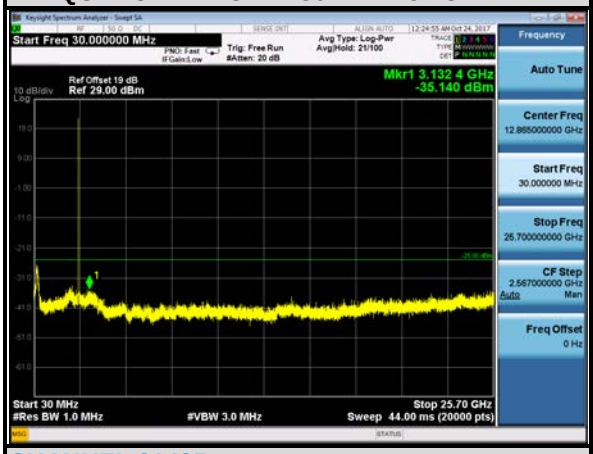
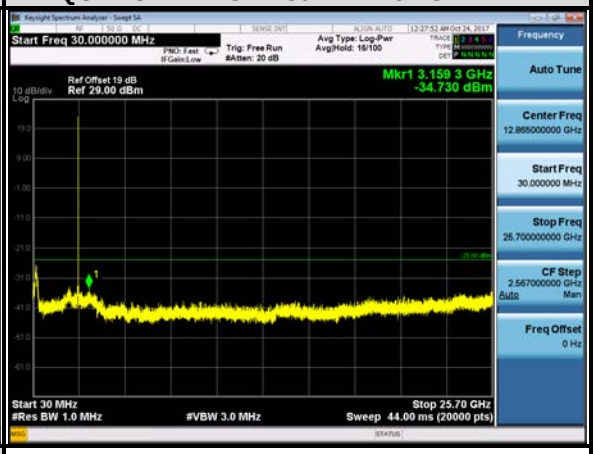
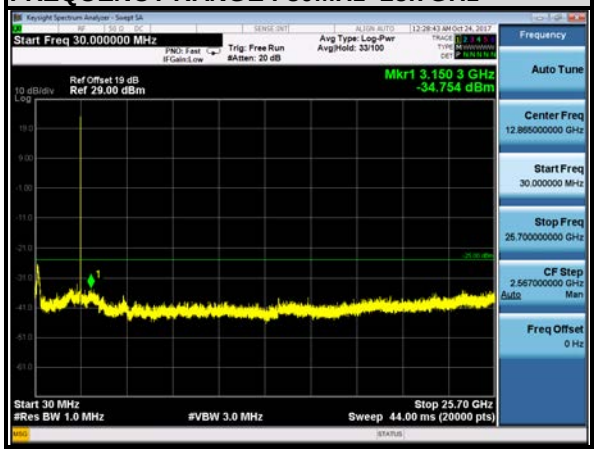
3.6.3 TEST SETUP

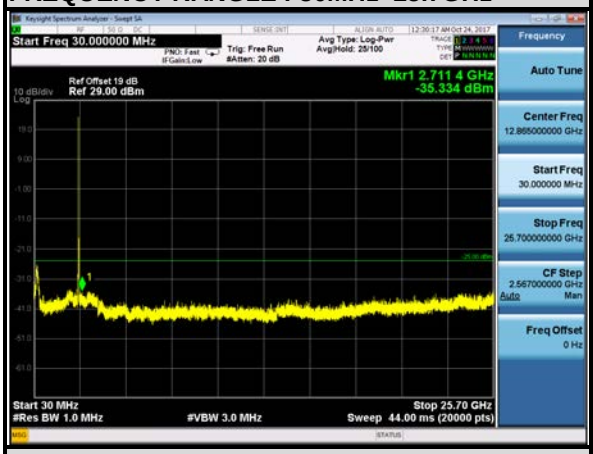
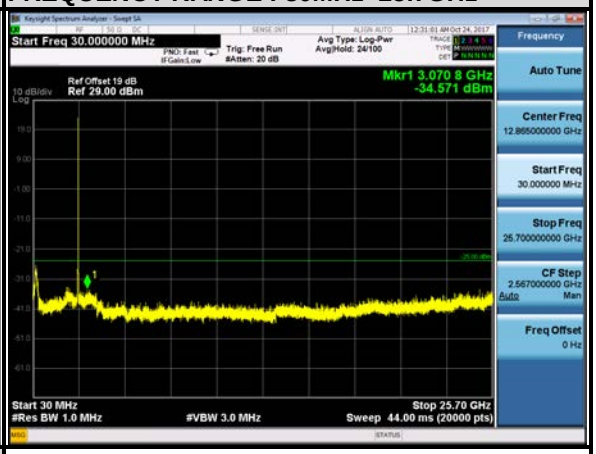
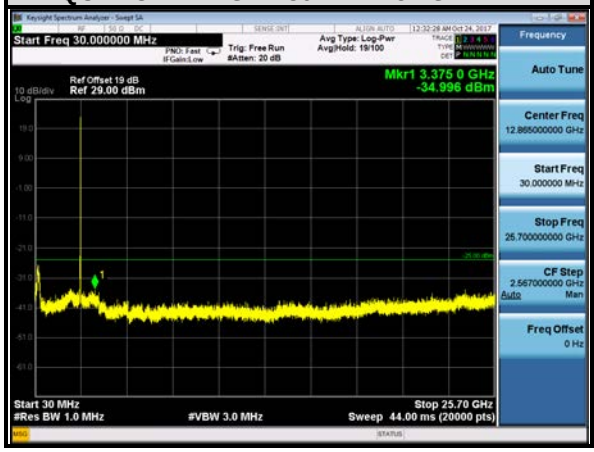


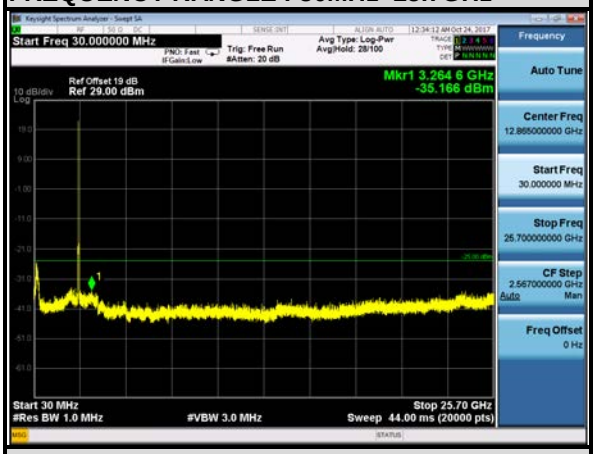
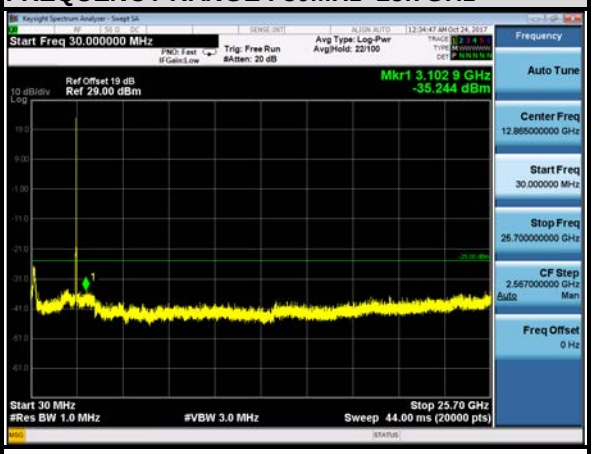
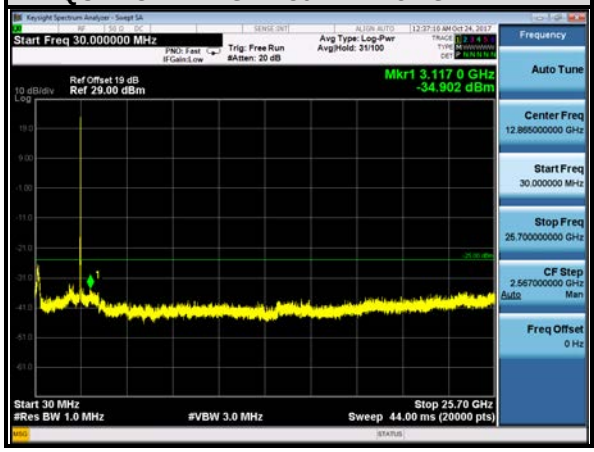
3.6.4 TEST RESULTS

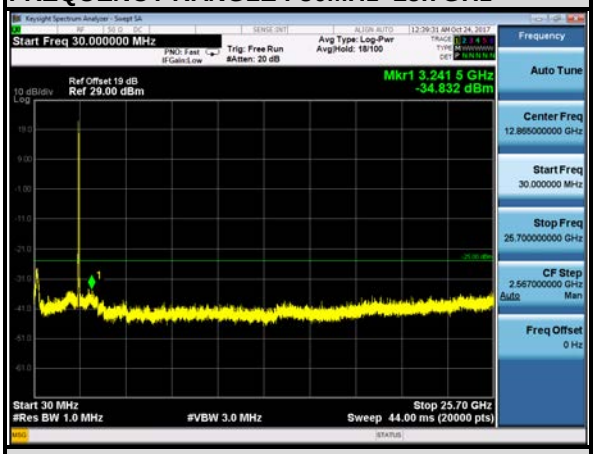
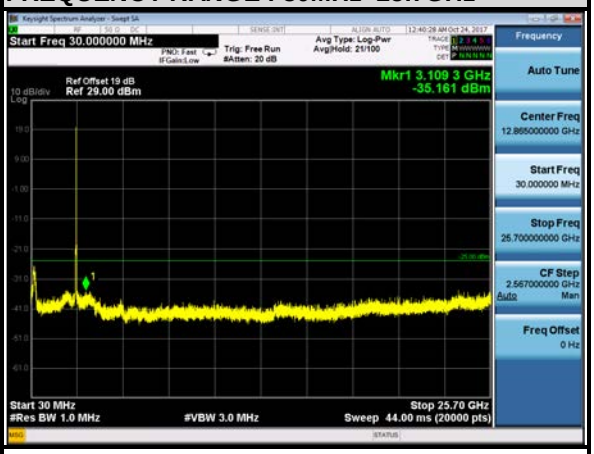
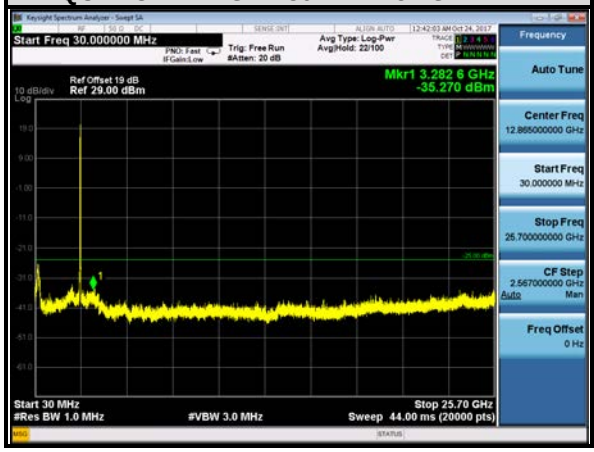
LTE BAND 7

5MHz / QPSK

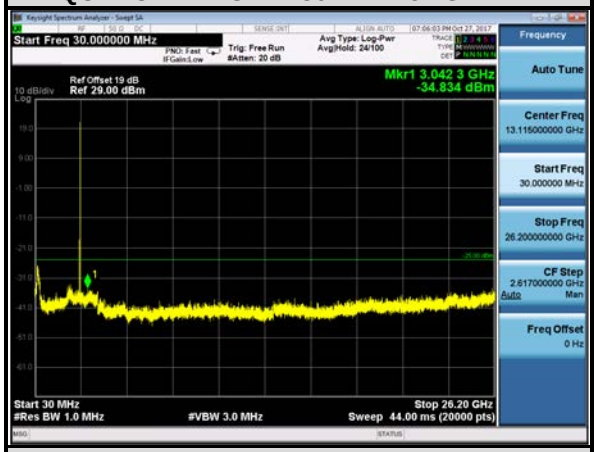
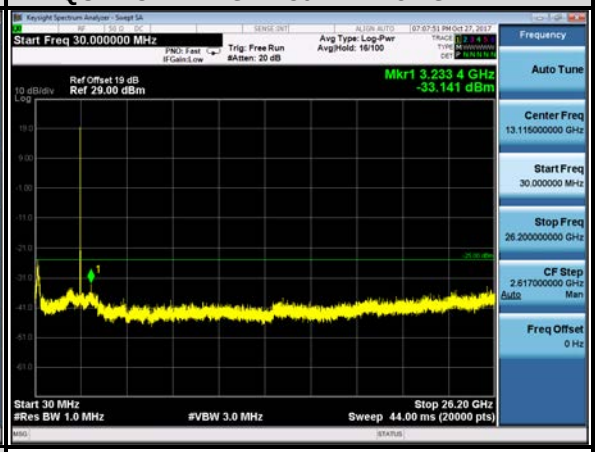
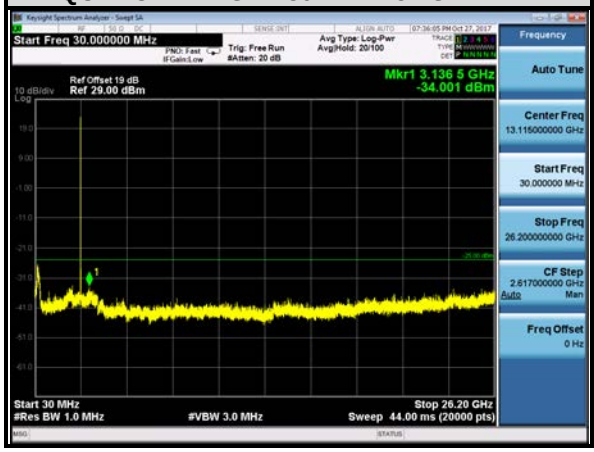
CHANNEL 20775	CHANNEL 21100
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 21425	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

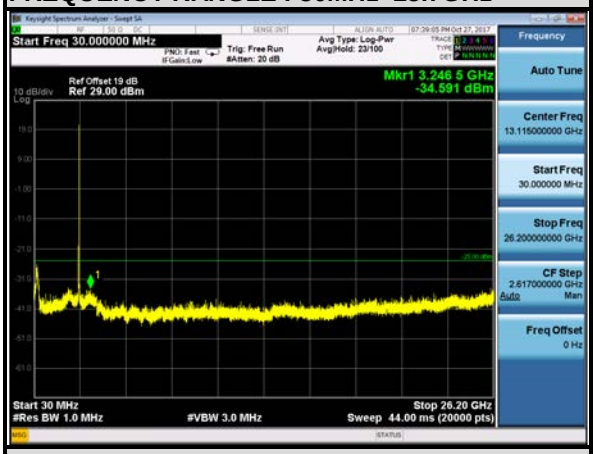
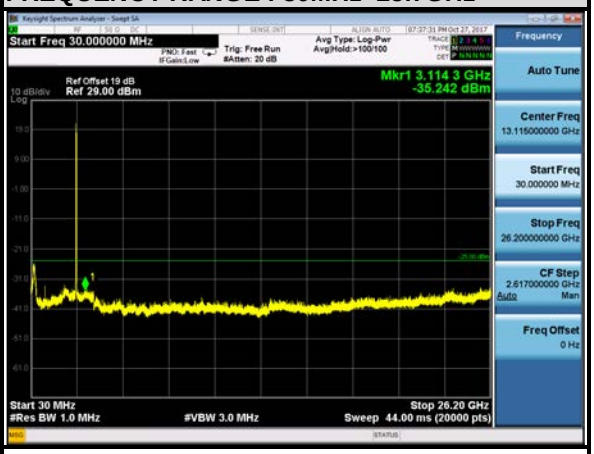
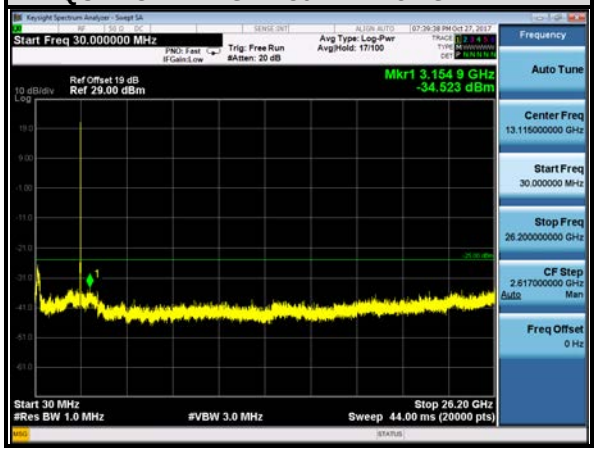
10MHz / QPSK	
CHANNEL 20800	CHANNEL 21100
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 21400	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

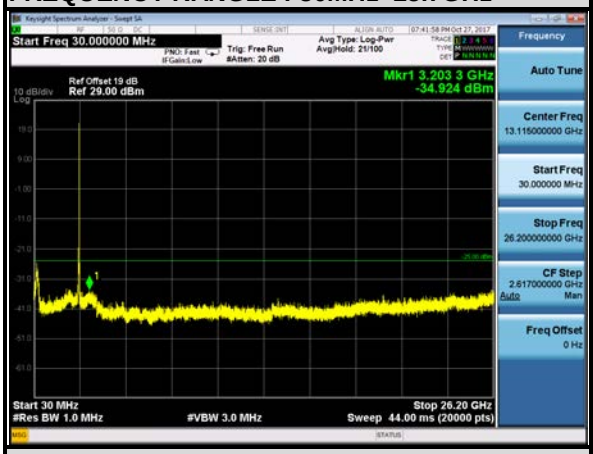
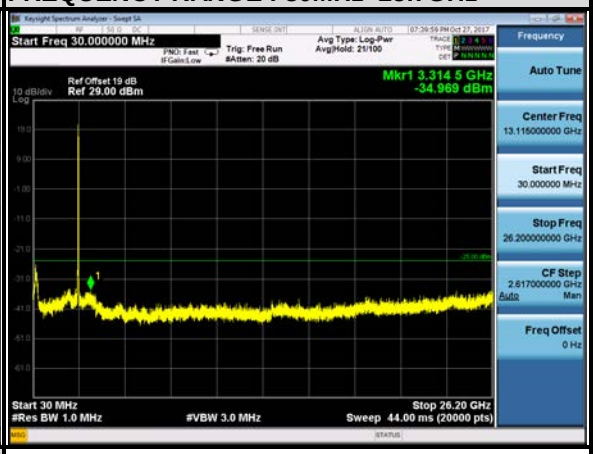
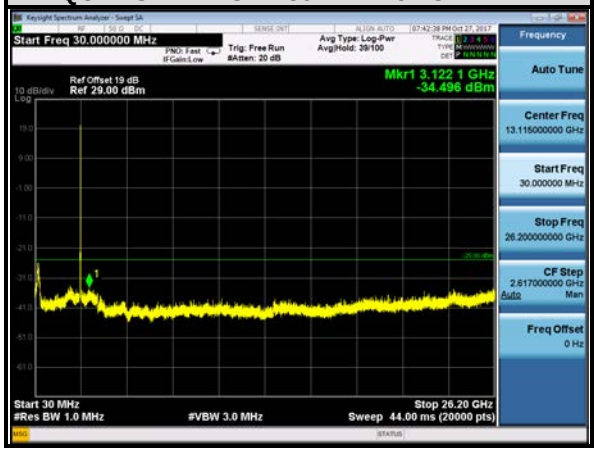
15MHz / QPSK	
CHANNEL 20825	CHANNEL 21100
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 21375	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

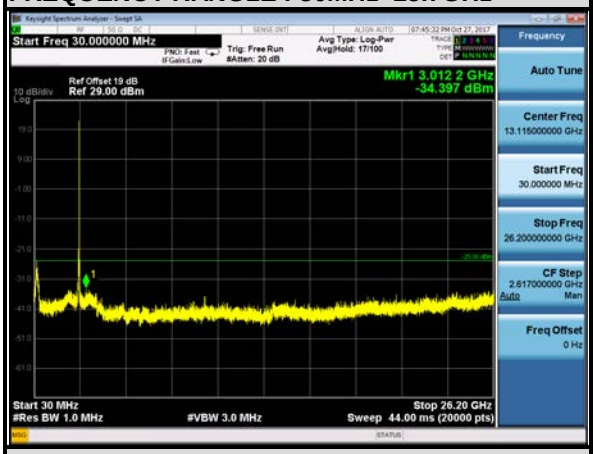
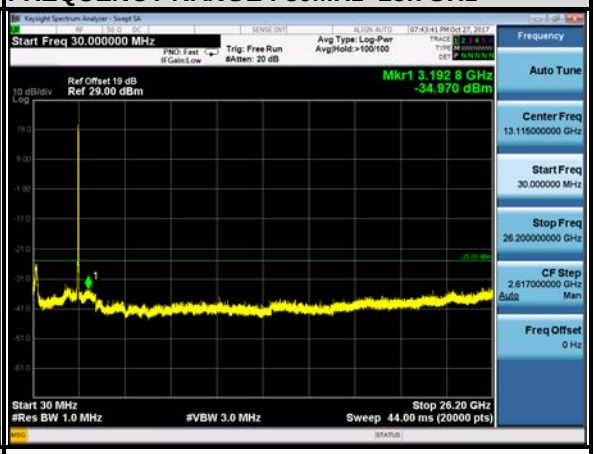
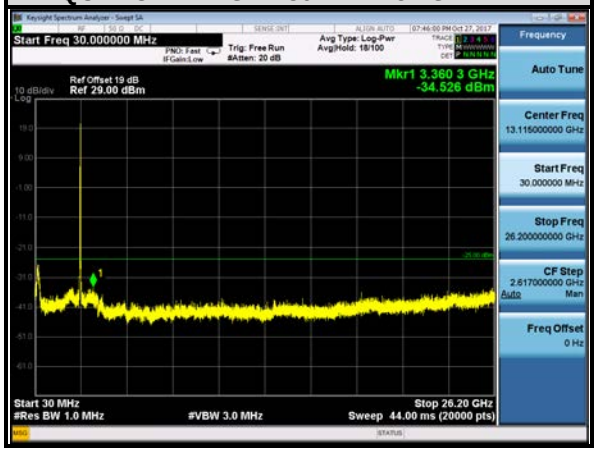
20MHz / QPSK	
CHANNEL 20850	CHANNEL 21100
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 21350	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

LTE BAND 38

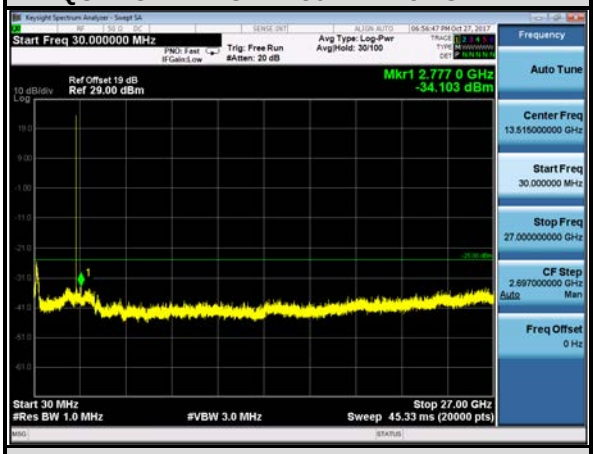
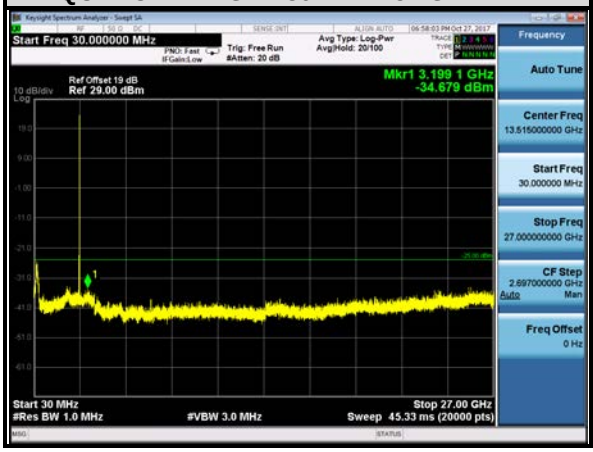
5MHz / QPSK	
CHANNEL 37775	CHANNEL 38000
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 38225	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

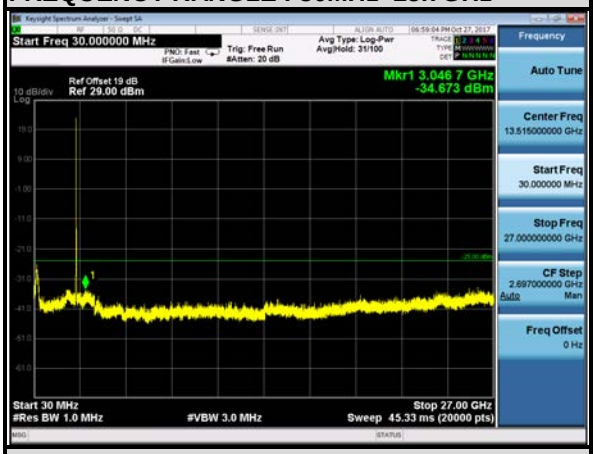
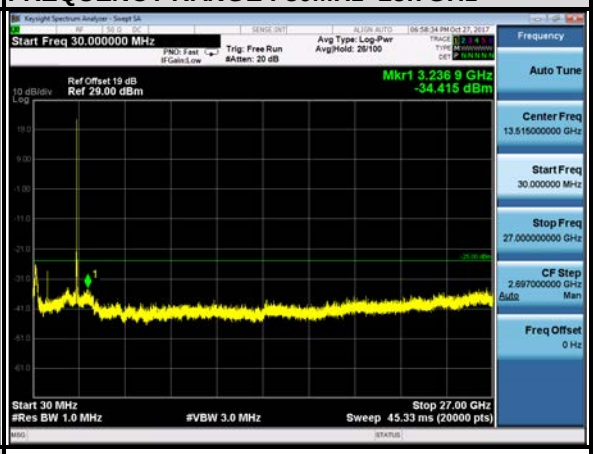
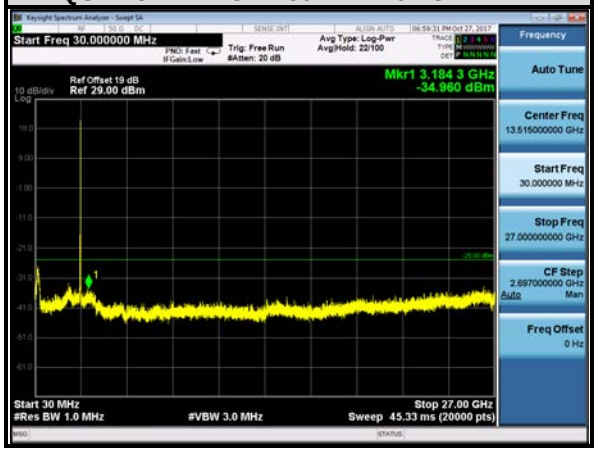
10MHz / QPSK	
CHANNEL 37800	CHANNEL 38000
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 38200	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

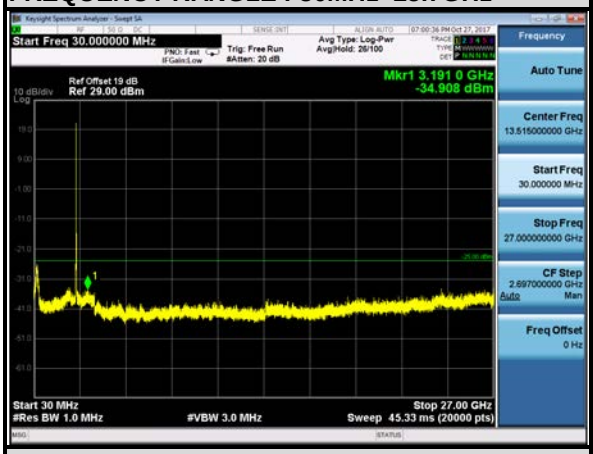
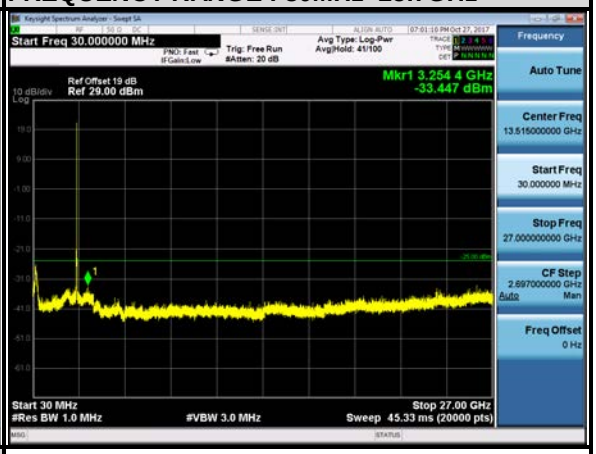
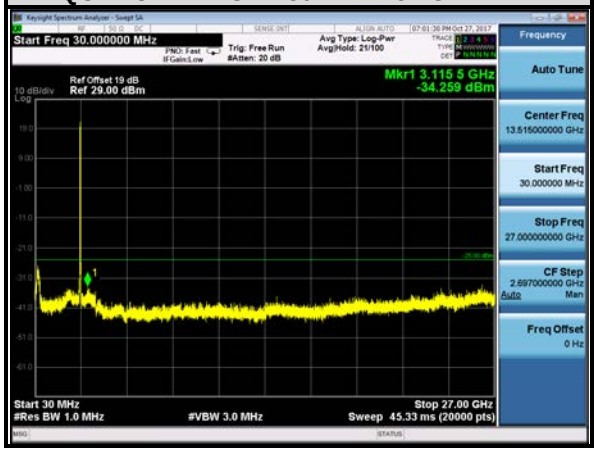
15MHz / QPSK	
CHANNEL 37825	CHANNEL 38000
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 38175	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

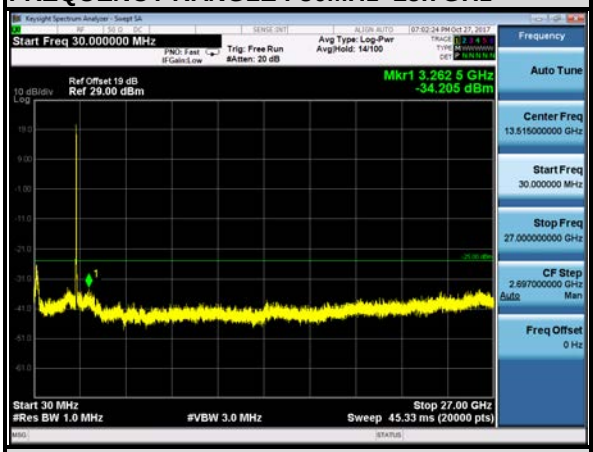
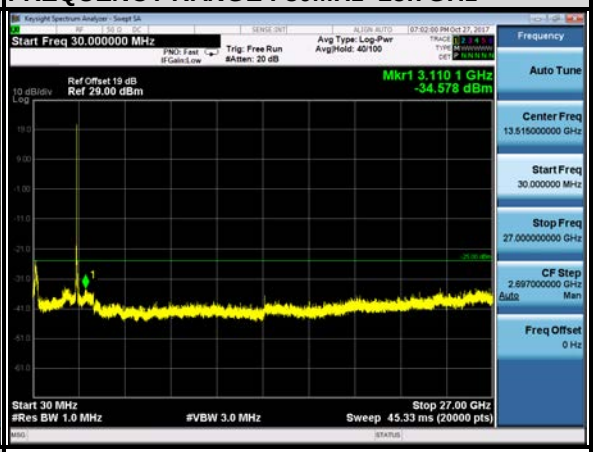
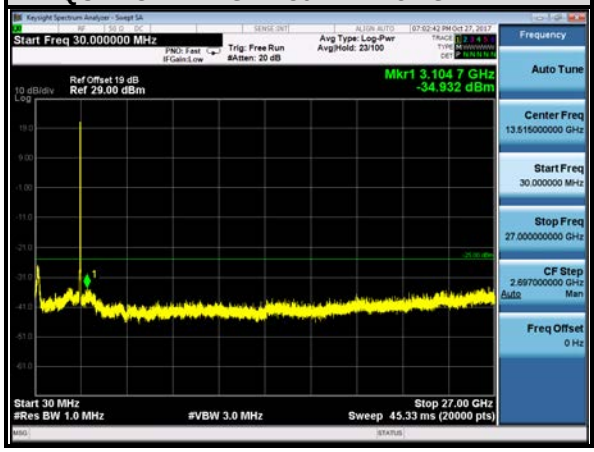
20MHz / QPSK	
CHANNEL 37850	CHANNEL 38000
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 38150	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

LTE BAND 41

5MHz / QPSK	
CHANNEL 39675	CHANNEL 40620
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 41565	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

10MHz / QPSK	
CHANNEL 39700	CHANNEL 40620
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 41540	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

15MHz / QPSK	
CHANNEL 39725	CHANNEL 40620
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 41515	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

20MHz / QPSK	
CHANNEL 39750	CHANNEL 40620
FREQUENCY RANG2E : 30MHz~25.7GHz	FREQUENCY RANGE : 30MHz~25.7GHz
	
CHANNEL 41490	
FREQUENCY RANGE : 30MHz~25.7GHz	
	

3.7 RADIATED EMISSION MEASUREMENT

3.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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.

3.7.2 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.

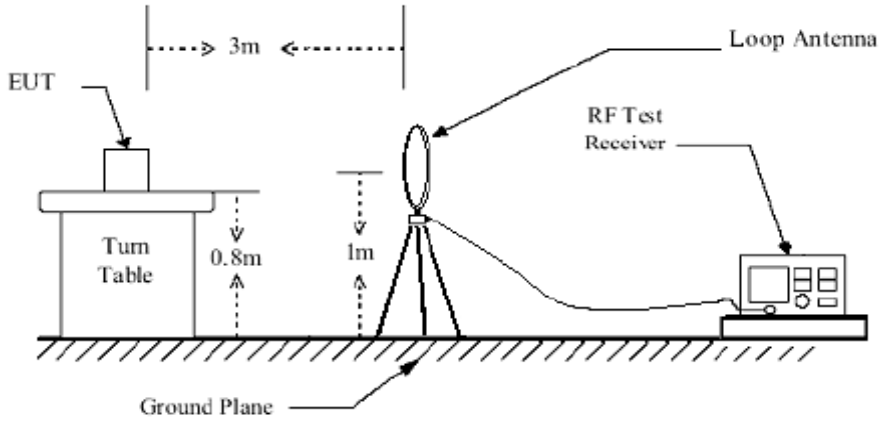
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.7.3 DEVIATION FROM TEST STANDARD

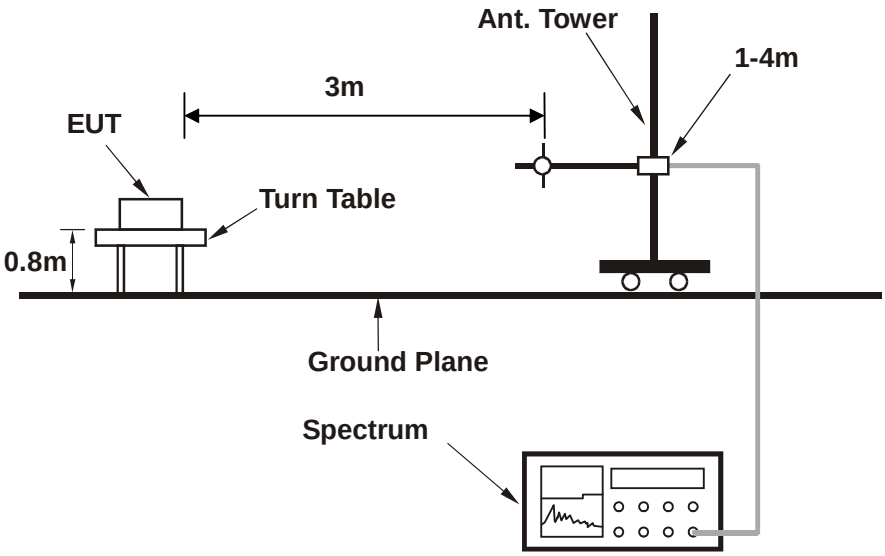
No deviation

3.7.4 TEST SETUP

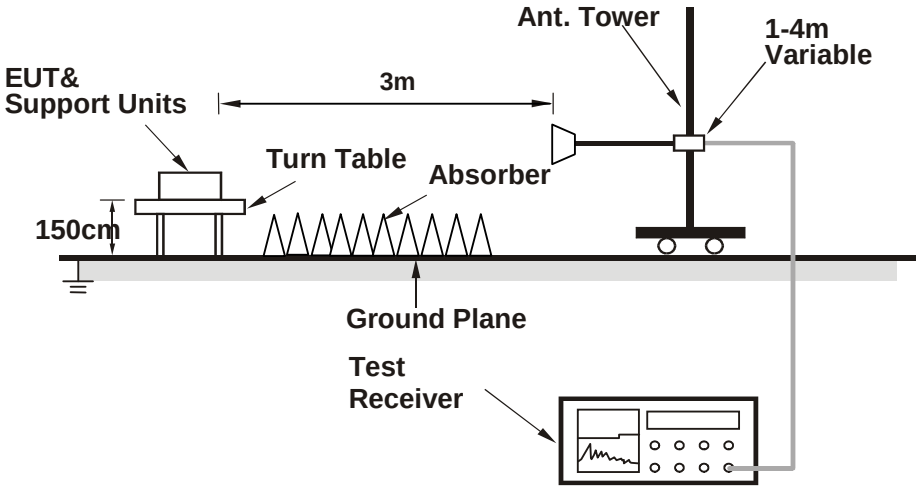
<Below 30MHz>



< Frequency Range 30MHz~1GHz >



< Frequency Range above 1GHz >



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

3.7.5 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

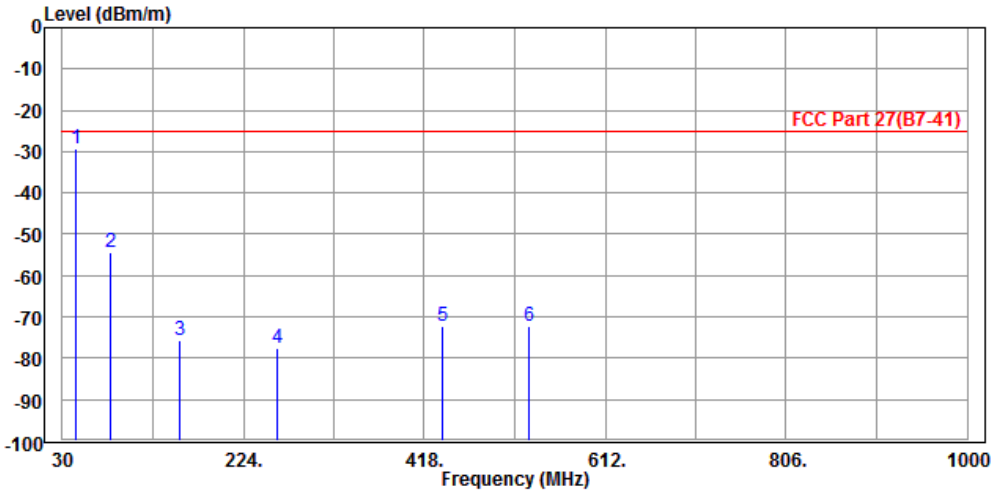
9 KHz – 30 KHz data: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

30 MHz – 1GHz data:

LTE Band 41:

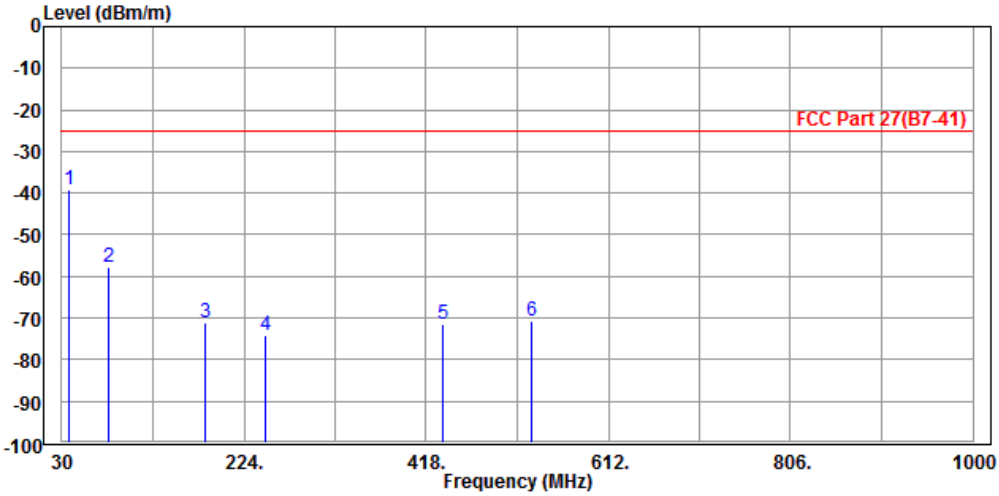
MODE	TX channel 40620	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	44.550	-29.38	-37.48	-25.00	-4.38	8.10	Peak	Horizontal
2	81.410	-54.49	-46.65	-25.00	-29.49	-7.84	Peak	Horizontal
3	155.130	-75.53	-56.74	-25.00	-50.53	-18.79	Peak	Horizontal
4	260.860	-77.72	-61.98	-25.00	-52.72	-15.74	Peak	Horizontal
5	437.400	-72.25	-61.82	-25.00	-47.25	-10.43	Peak	Horizontal
6	530.520	-72.33	-62.46	-25.00	-47.33	-9.87	Peak	Horizontal



MODE	TX channel 40620	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
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	37.760	-39.03	-37.73	-25.00	-14.03	-1.30	Peak	Vertical
2		79.470	-57.63	-47.10	-25.00	-32.63	-10.53	Peak	Vertical
3		182.290	-71.16	-58.28	-25.00	-46.16	-12.88	Peak	Vertical
4		247.280	-74.17	-62.70	-25.00	-49.17	-11.47	Peak	Vertical
5		435.460	-71.63	-62.00	-25.00	-46.63	-9.63	Peak	Vertical
6		530.520	-70.67	-63.40	-25.00	-45.67	-7.27	Peak	Vertical



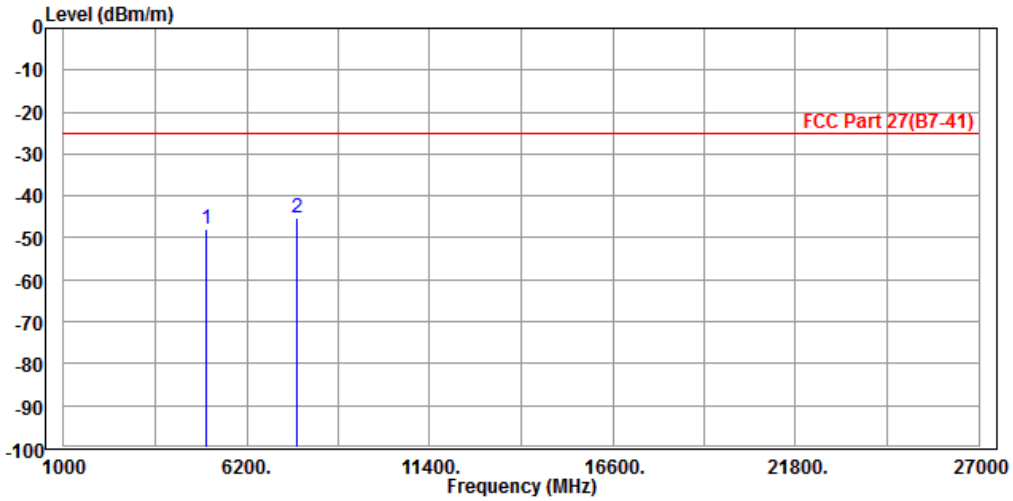
ABOVE 1GHz

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

LTE Band 7
CHANNEL BANDWIDTH: 5MHz / QPSK

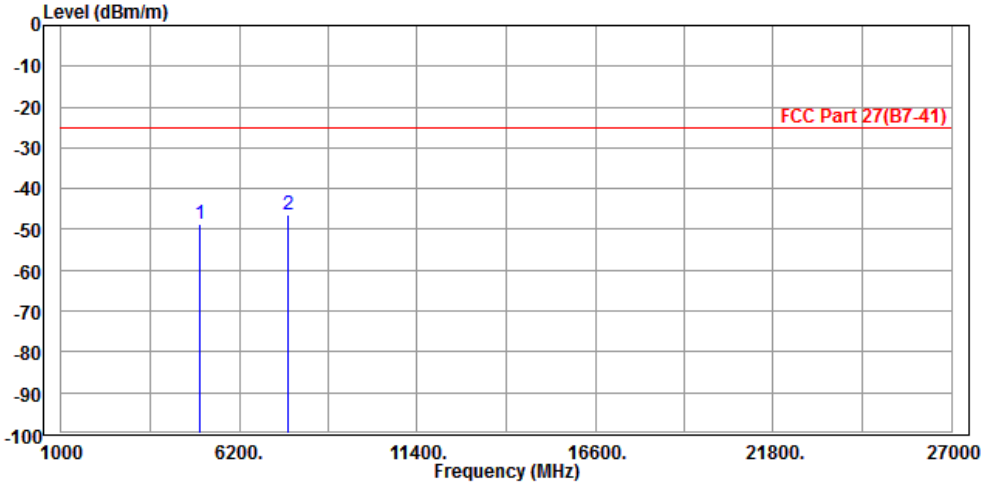
MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5056.000	-47.85	-56.29	-25.00	-22.85	8.44	Peak	Horizontal
2 PP	7605.000	-45.43	-58.91	-25.00	-20.43	13.48	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
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		5056.000	-48.66	-56.65	-25.00	-23.66	7.99	Peak	Vertical
2	PP	7605.000	-46.48	-59.47	-25.00	-21.48	12.99	Peak	Vertical

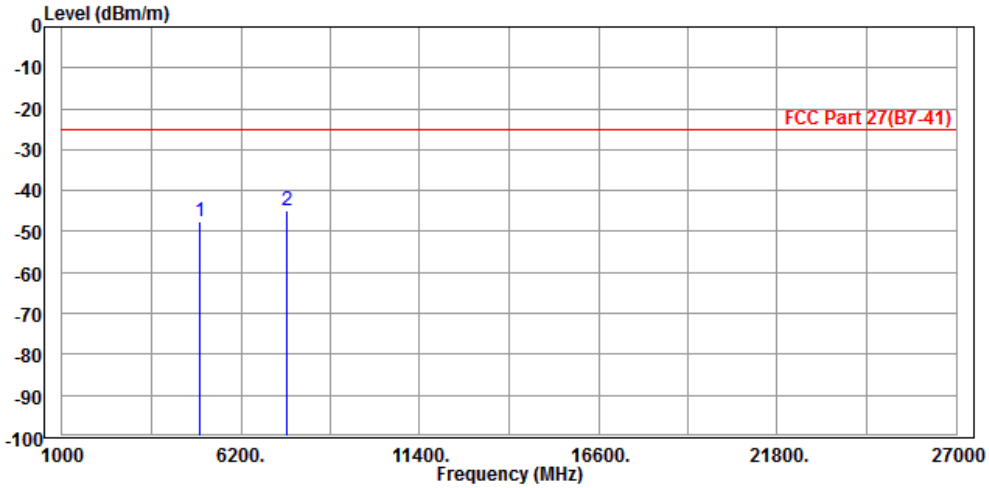


CHANNEL BANDWIDTH: 10MHz / QPSK

CH 20800

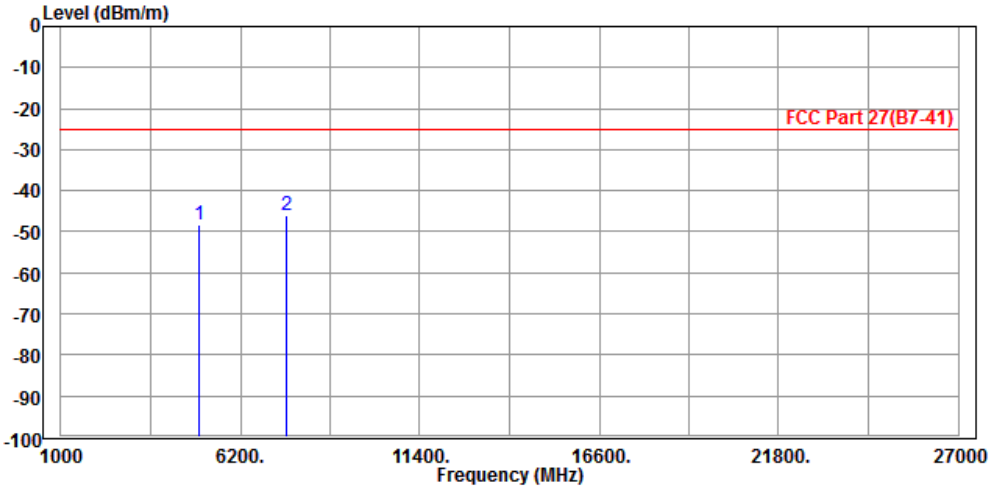
MODE	TX channel 20800	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5004.000	-47.53	-55.91	-25.00	-22.53	8.38	Peak	Horizontal
2 PP	7526.000	-44.74	-58.11	-25.00	-19.74	13.37	Peak	Horizontal



MODE	TX channel 20800	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

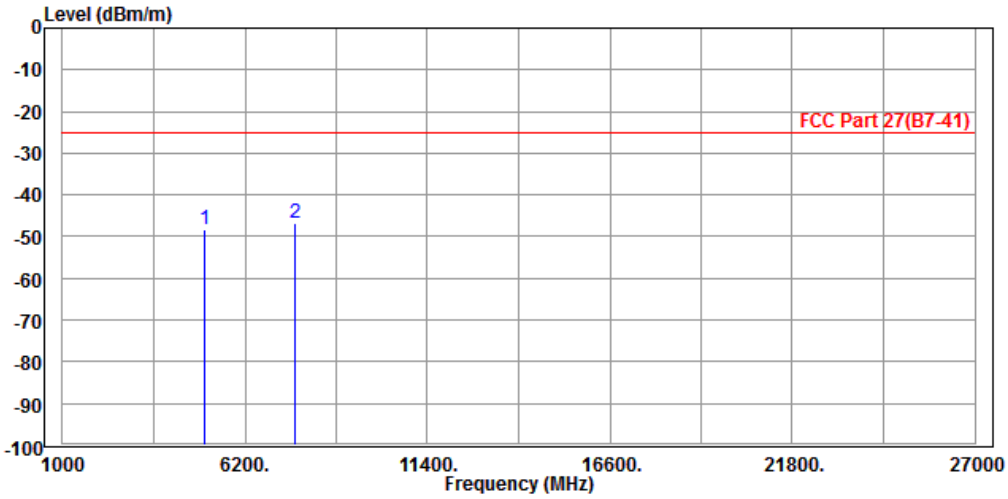
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5004.000	-48.16	-56.15	-25.00	-23.16	7.99	Peak	Vertical
2	PP	7515.000	-45.99	-58.82	-25.00	-20.99	12.83	Peak	Vertical



CH 21100

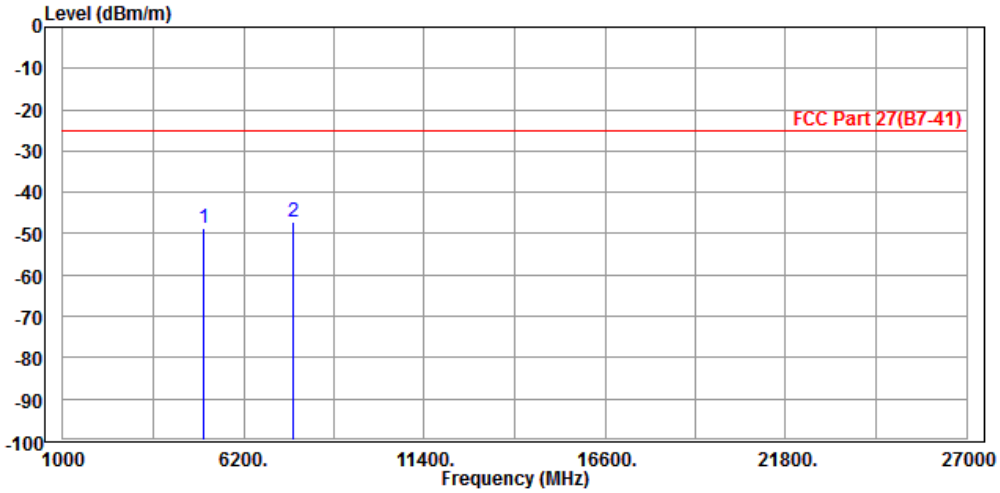
MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5056.000	-48.10	-56.54	-25.00	-23.10	8.44	Peak	Horizontal
2	PP	7605.000	-46.74	-60.22	-25.00	-21.74	13.48	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

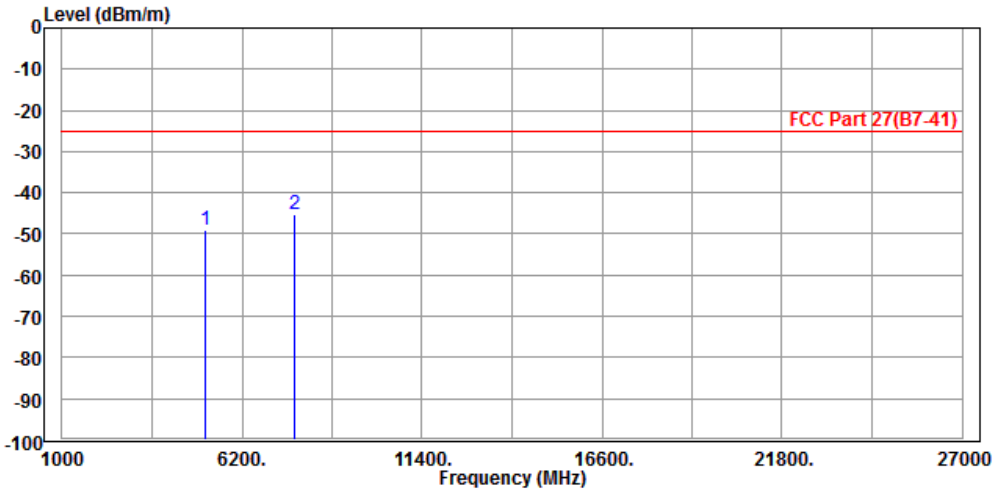
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5056.000	-48.70	-56.69	-25.00	-23.70	7.99	Peak	Vertical
2	PP	7605.000	-47.12	-60.11	-25.00	-22.12	12.99	Peak	Vertical



CH 21400

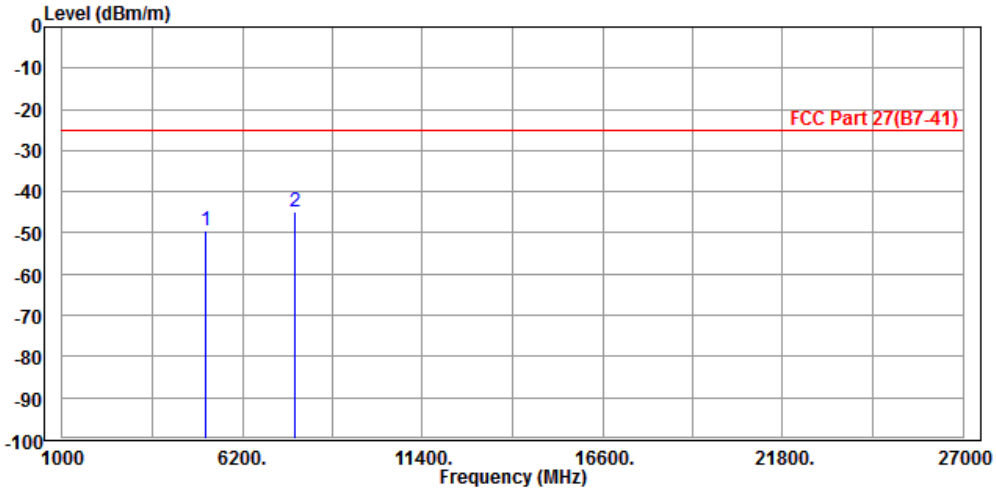
MODE	TX channel 21400	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5134.000	-48.94	-57.47	-25.00	-23.94	8.53	Peak	Horizontal
2	PP	7695.000	-45.10	-58.71	-25.00	-20.10	13.61	Peak	Horizontal



MODE	TX channel 21400	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

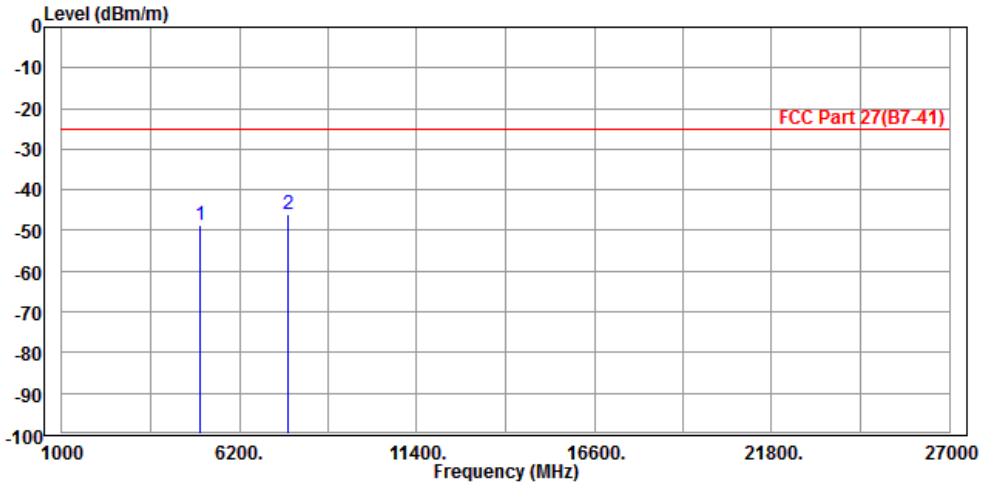
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5134.000	-49.58	-57.57	-25.00	-24.58	7.99	Peak	Vertical
2	PP	7695.000	-44.83	-57.98	-25.00	-19.83	13.15	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

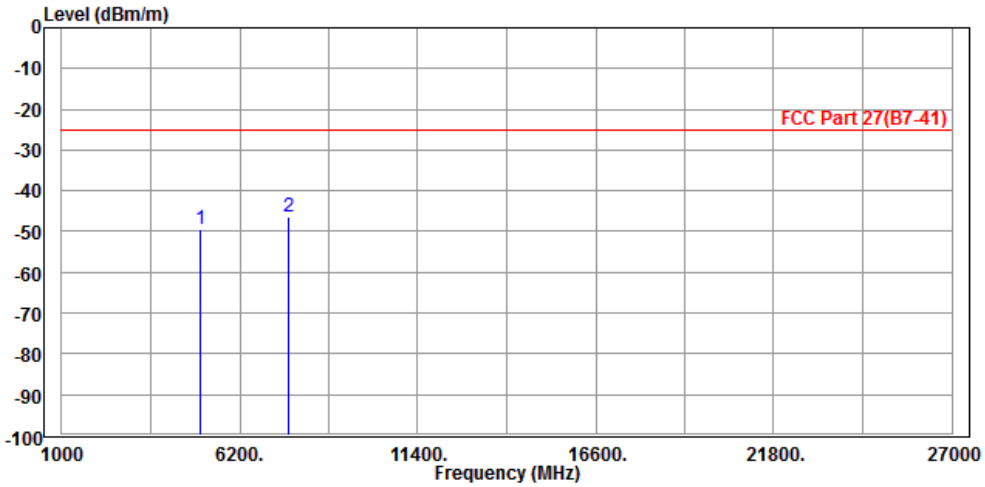
MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5056.000	-48.61	-57.05	-25.00	-23.61	8.44	Peak	Horizontal
2	PP	7605.000	-45.95	-59.43	-25.00	-20.95	13.48	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

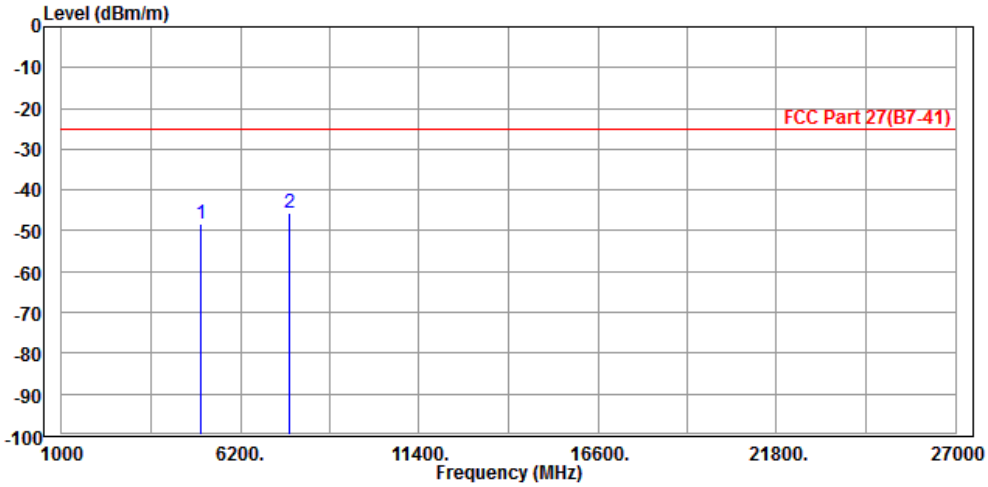
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5056.000	-49.24	-57.23	-25.00	-24.24	7.99	Peak	Vertical
2	PP	7605.000	-46.40	-59.39	-25.00	-21.40	12.99	Peak	Vertical



CHANNEL BANDWIDTH: 20MHz / QPSK

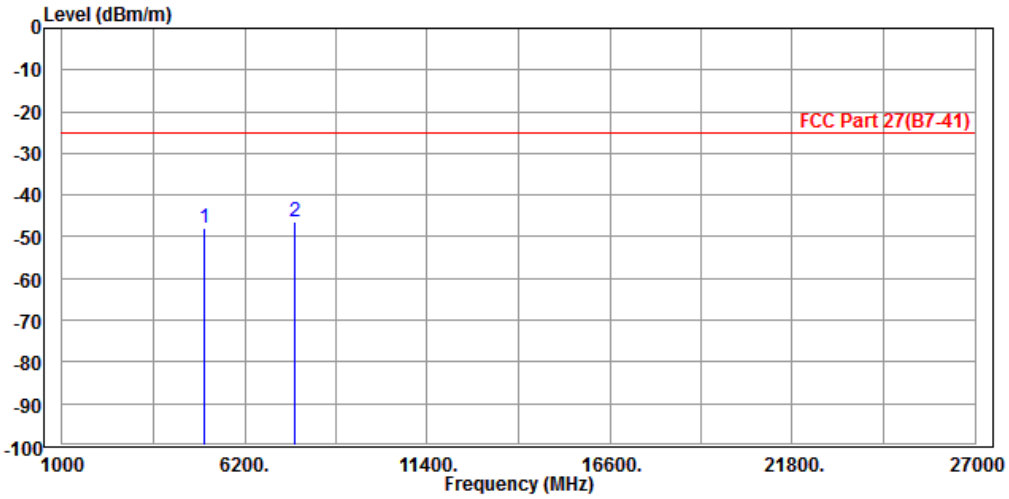
MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5056.000	-48.37	-56.81	-25.00	-23.37	8.44	Peak	Horizontal
2	PP	7605.000	-45.66	-59.14	-25.00	-20.66	13.48	Peak	Horizontal



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

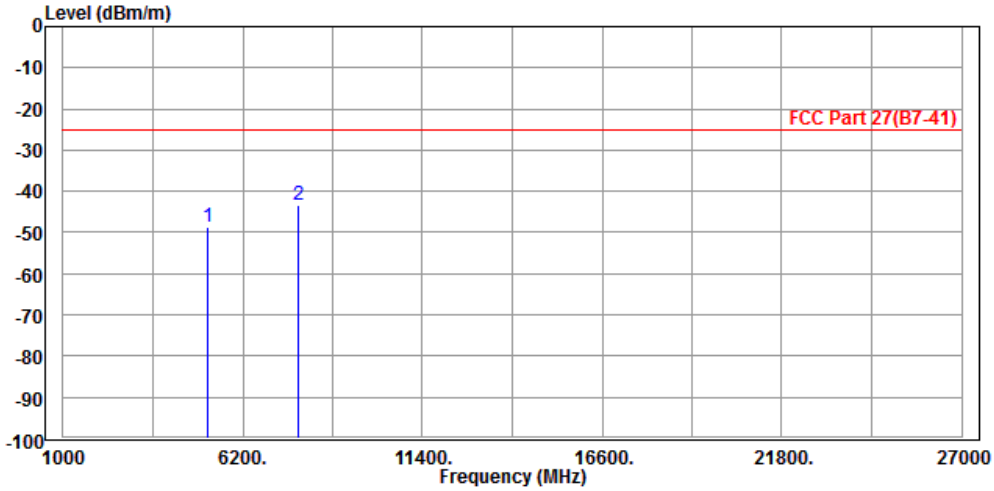
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5056.000	-47.78	-55.77	-25.00	-22.78	7.99	Peak	Vertical
2	PP	7605.000	-46.54	-59.53	-25.00	-21.54	12.99	Peak	Vertical



LTE Band 38
CHANNEL BANDWIDTH: 5MHz / QPSK

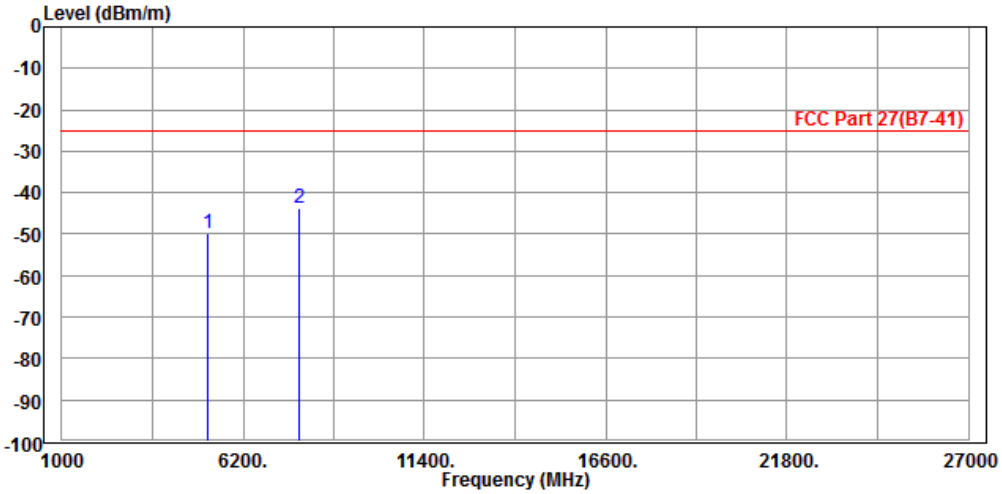
MODE	TX channel 38000	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5186.000	-48.65	-57.24	-25.00	-23.65	8.59	Peak	Horizontal
2	PP	7785.000	-43.51	-57.25	-25.00	-18.51	13.74	Peak	Horizontal



MODE	TX channel 38000	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
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		5186.000	-49.63	-57.61	-25.00	-24.63	7.98	Peak	Vertical
2	PP	7785.000	-43.76	-57.06	-25.00	-18.76	13.30	Peak	Vertical

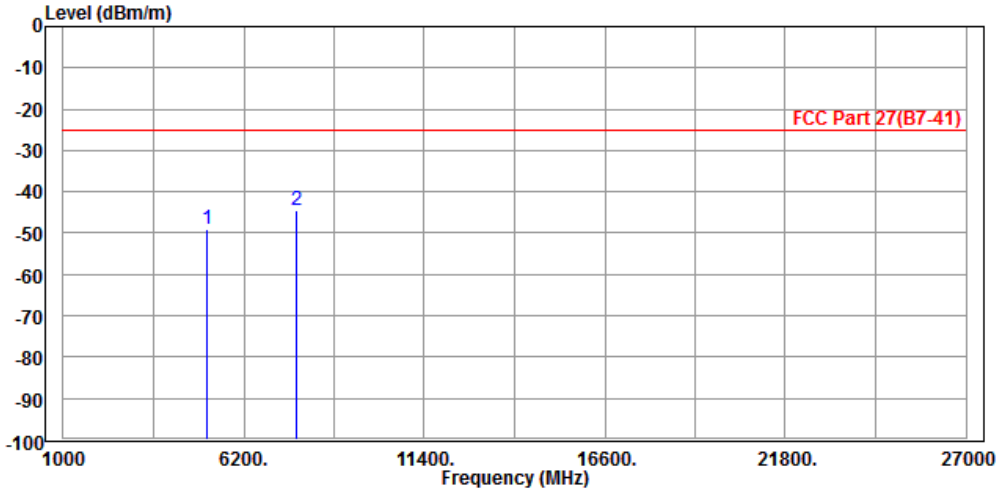


CHANNEL BANDWIDTH: 10MHz / QPSK

CH 37800

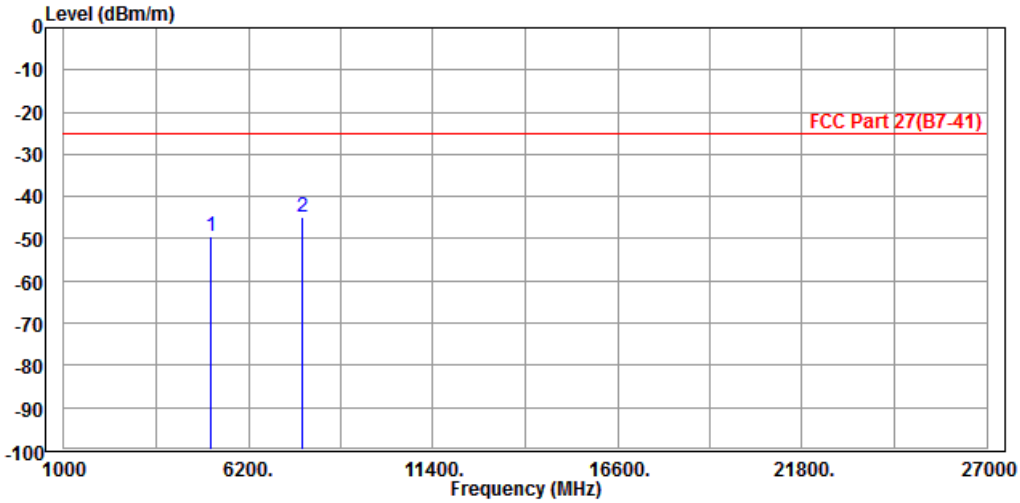
MODE	TX channel 37800	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5160.000	-49.08	-57.64	-25.00	-24.08	8.56	Peak	Horizontal
2	PP	7725.000	-44.41	-58.06	-25.00	-19.41	13.65	Peak	Horizontal



MODE	TX channel 37800	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

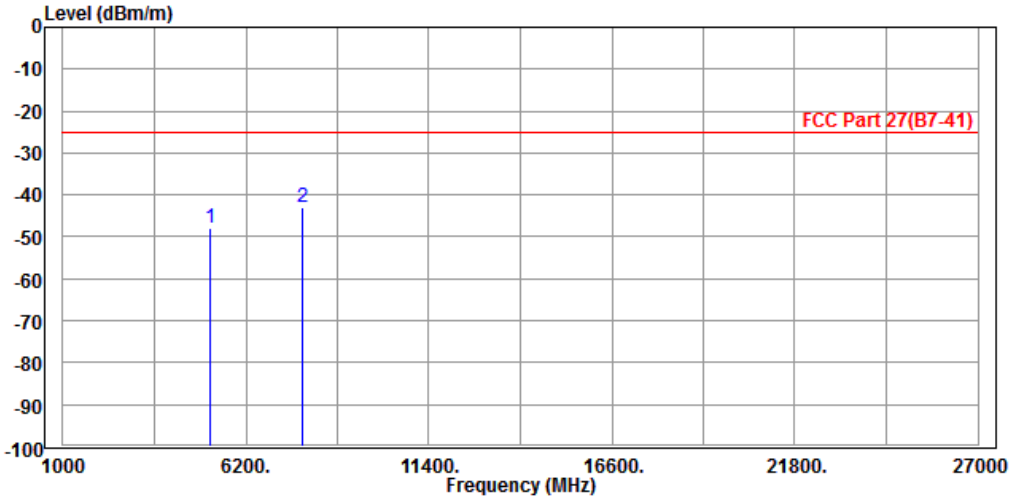
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5160.000	-49.56	-57.54	-25.00	-24.56	7.98	Peak	Vertical
2	PP	7725.000	-45.05	-58.25	-25.00	-20.05	13.20	Peak	Vertical



CH 38000

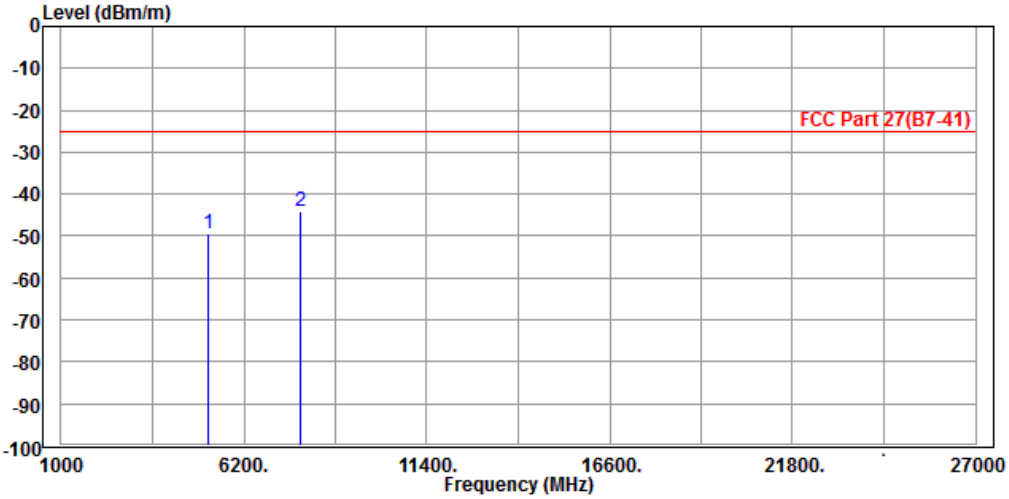
MODE	TX channel 38000	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5186.000	-48.08	-56.67	-25.00	-23.08	8.59	Peak	Horizontal
2	PP	7785.000	-42.92	-56.66	-25.00	-17.92	13.74	Peak	Horizontal



MODE	TX channel 38000	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

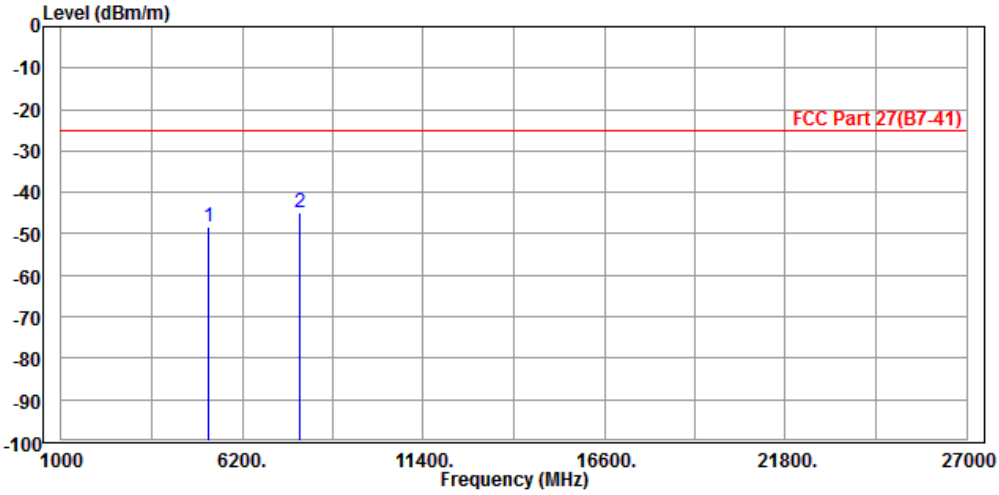
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5186.000	-49.45	-57.43	-25.00	-24.45	7.98	Peak	Vertical
2	PP	7785.000	-44.28	-57.58	-25.00	-19.28	13.30	Peak	Vertical



CH 38200

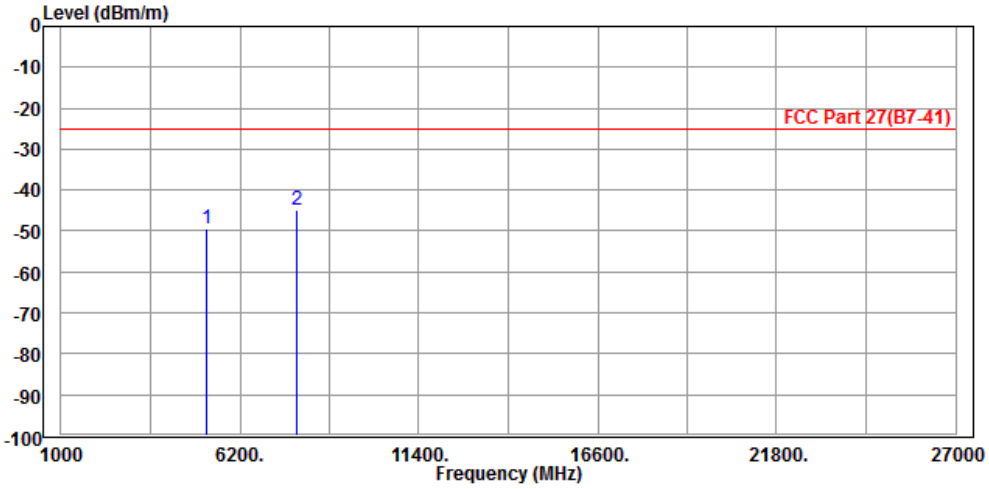
MODE	TX channel 38200	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5238.000	-48.25	-56.90	-25.00	-23.25	8.65	Peak	Horizontal
2 PP	7845.000	-44.70	-58.52	-25.00	-19.70	13.82	Peak	Horizontal



MODE	TX channel 38200	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

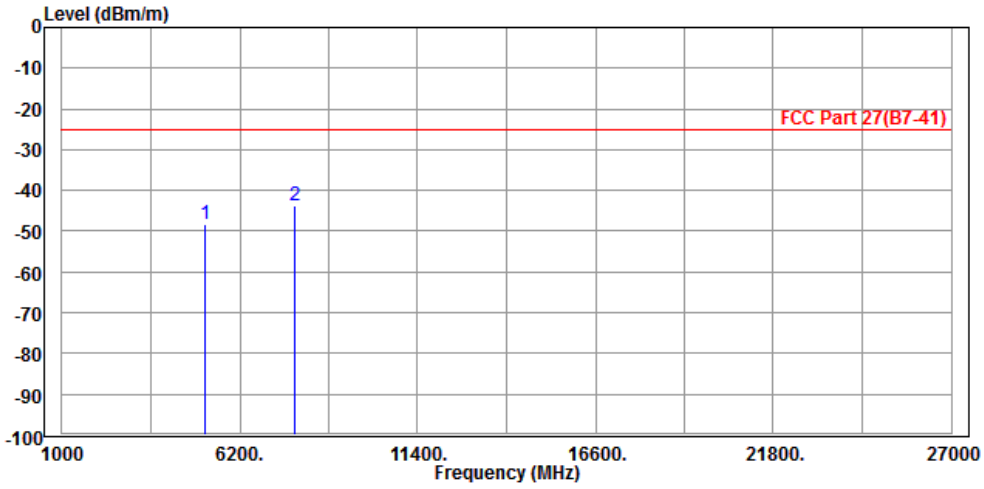
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5238.000	-49.57	-57.55	-25.00	-24.57	7.98	Peak	Vertical
2	PP	7845.000	-44.81	-58.22	-25.00	-19.81	13.41	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

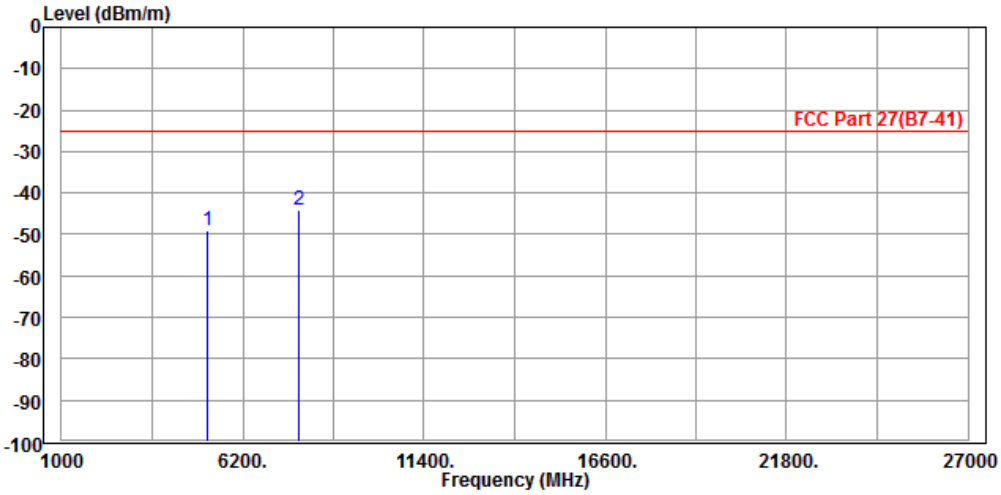
MODE	TX channel 38000	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-48.13	-56.72	-25.00	-23.13	8.59	Peak	Horizontal
2 PP	7785.000	-43.68	-57.42	-25.00	-18.68	13.74	Peak	Horizontal



MODE	TX channel 38000	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

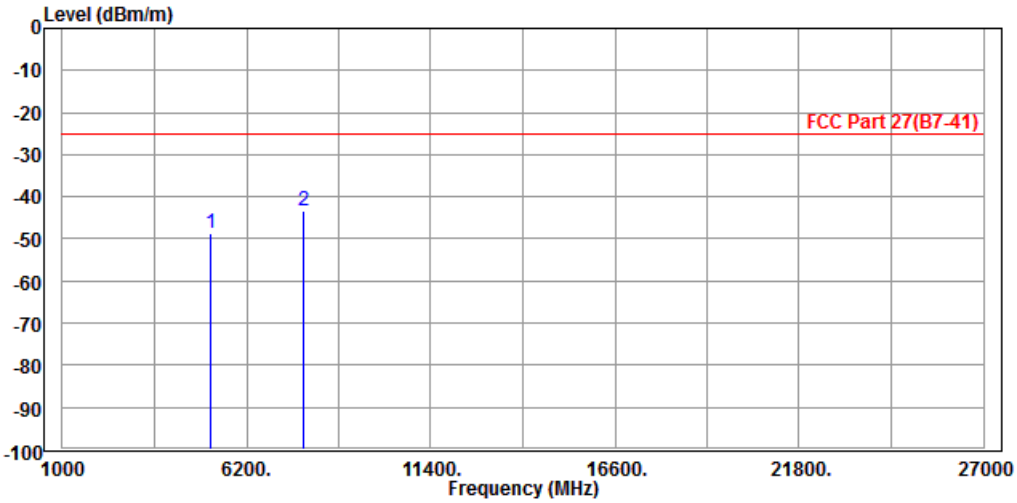
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5186.000	-49.03	-57.01	-25.00	-24.03	7.98	Peak	Vertical
2	PP	7785.000	-44.09	-57.39	-25.00	-19.09	13.30	Peak	Vertical



CHANNEL BANDWIDTH: 20MHz / QPSK

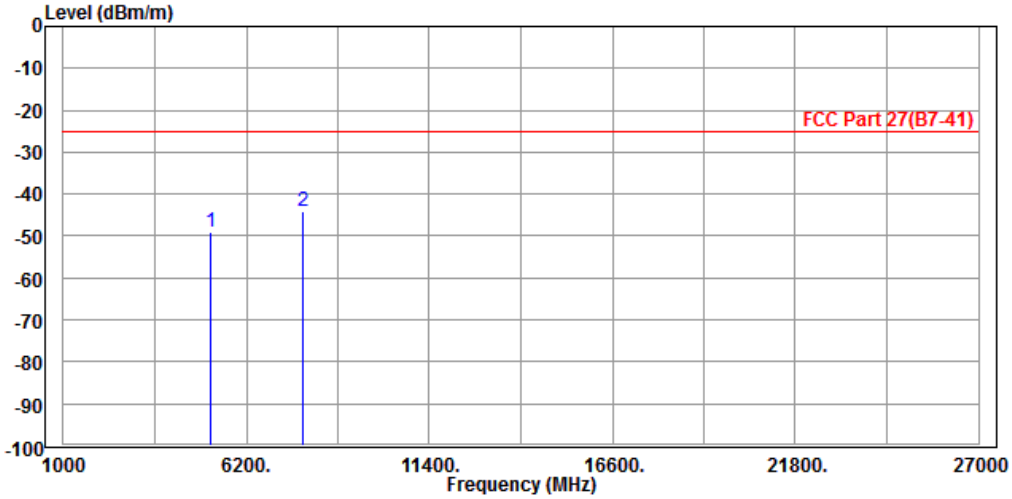
MODE	TX channel 38000	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-48.67	-57.26	-25.00	-23.67	8.59	Peak	Horizontal
2 PP	7785.000	-43.38	-57.12	-25.00	-18.38	13.74	Peak	Horizontal



MODE	TX channel 38000	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

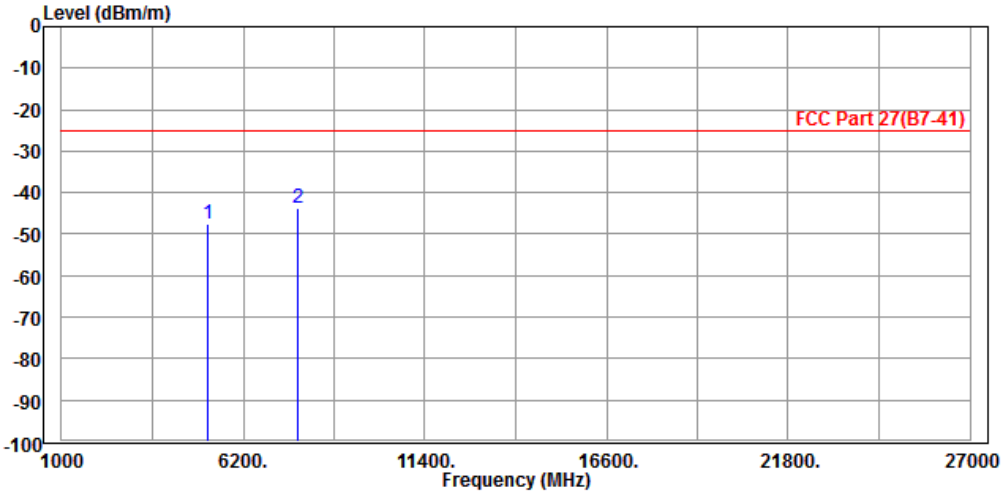
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-49.02	-57.00	-25.00	-24.02	7.98	Peak	Vertical
2 PP	7785.000	-44.07	-57.37	-25.00	-19.07	13.30	Peak	Vertical



LTE Band 41
CHANNEL BANDWIDTH: 5MHz / QPSK

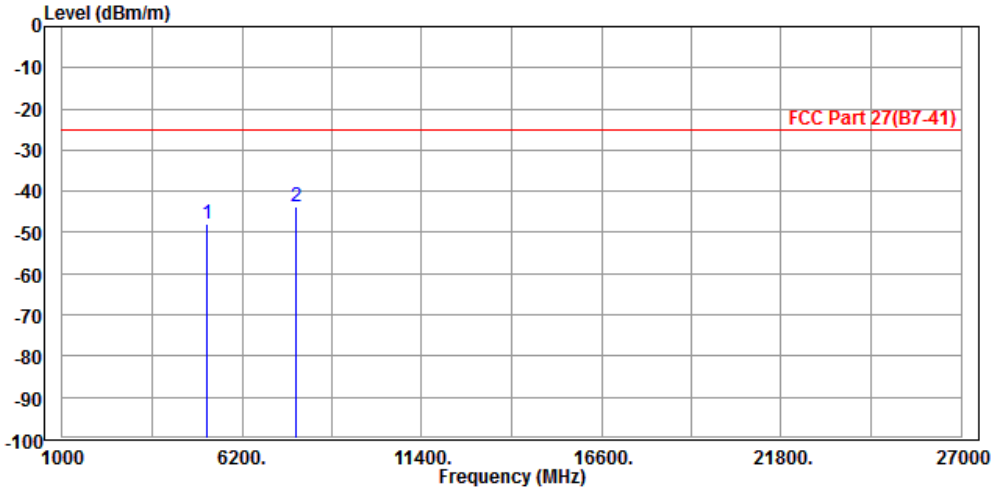
MODE	TX channel 40620	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-47.70	-56.29	-25.00	-22.70	8.59	Peak	Horizontal
2 PP	7779.000	-43.56	-57.29	-25.00	-18.56	13.73	Peak	Horizontal



MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
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		5186.000	-47.92	-55.90	-25.00	-22.92	7.98	Peak	Vertical
2	PP	7779.000	-43.85	-57.14	-25.00	-18.85	13.29	Peak	Vertical

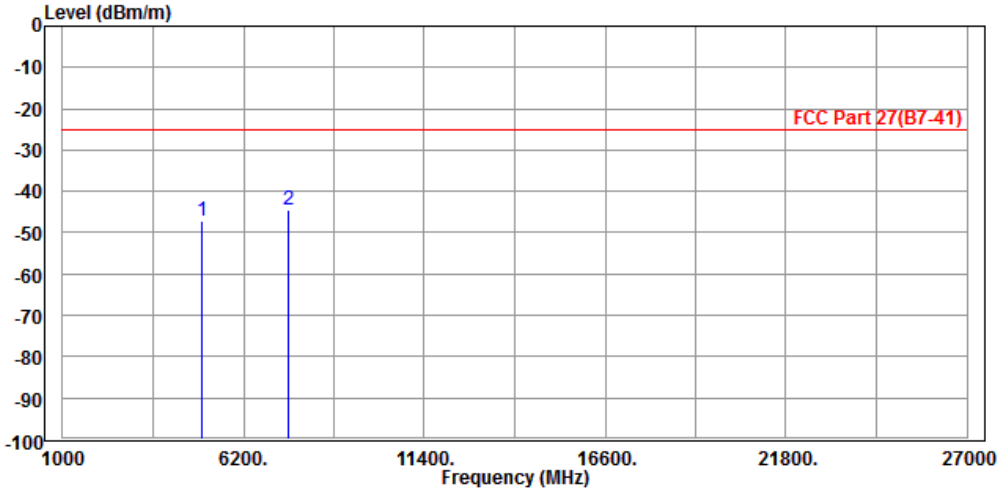


CHANNEL BANDWIDTH: 10MHz / QPSK

CH39700

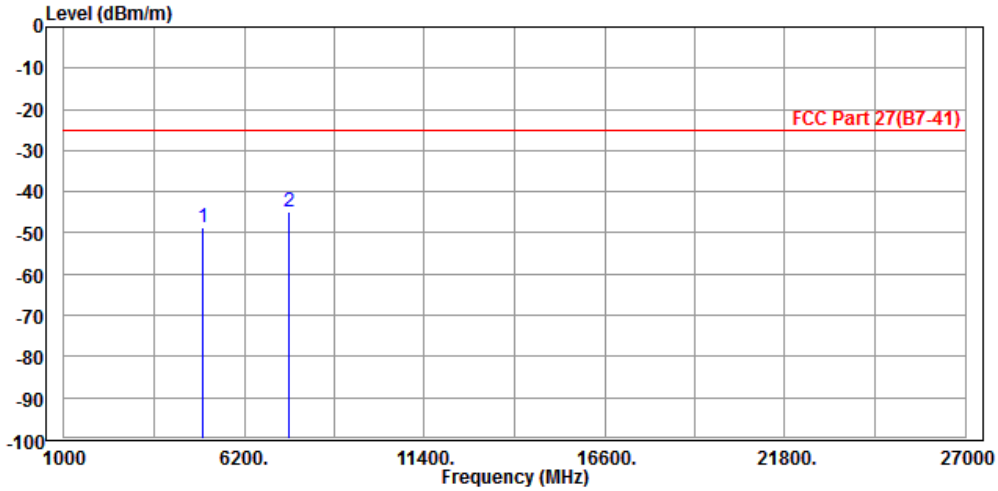
MODE	TX channel 39700	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5004.000	-47.29	-55.67	-25.00	-22.29	8.38	Peak	Horizontal
2 PP	7503.000	-44.40	-57.74	-25.00	-19.40	13.34	Peak	Horizontal



MODE	TX channel 39700	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

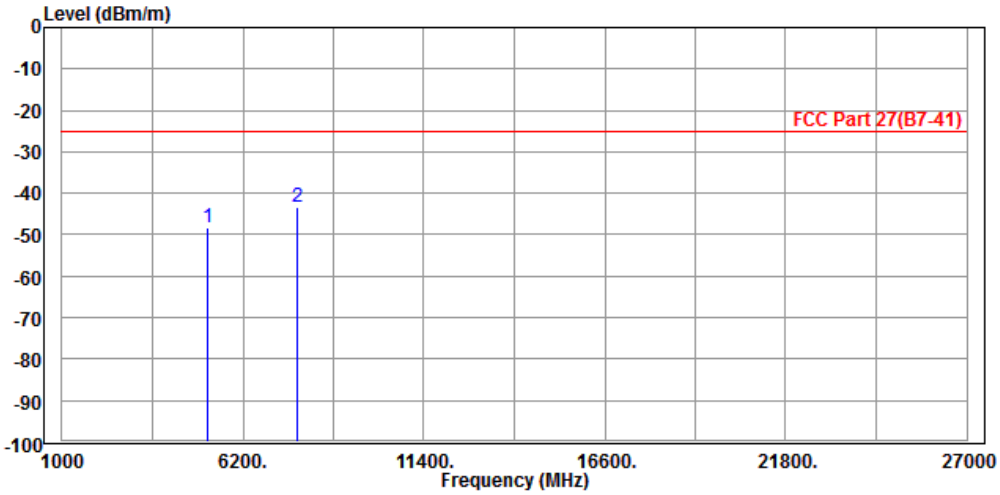
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5004.000	-48.55	-56.54	-25.00	-23.55	7.99	Peak	Vertical
2	PP	7503.000	-44.96	-57.77	-25.00	-19.96	12.81	Peak	Vertical



CH40620

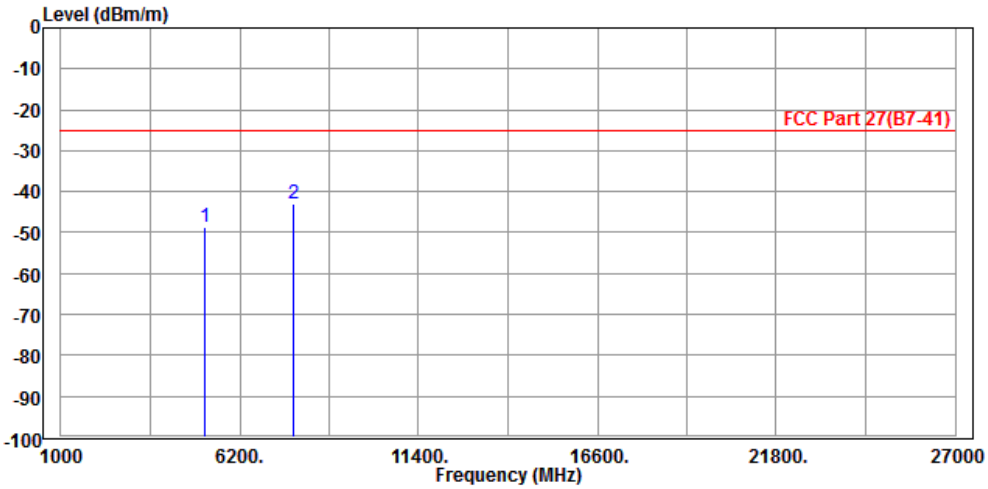
MODE	TX channel 40620	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5186.000	-48.13	-56.72	-25.00	-23.13	8.59	Peak	Horizontal
2	PP	7779.000	-43.19	-56.92	-25.00	-18.19	13.73	Peak	Horizontal



MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

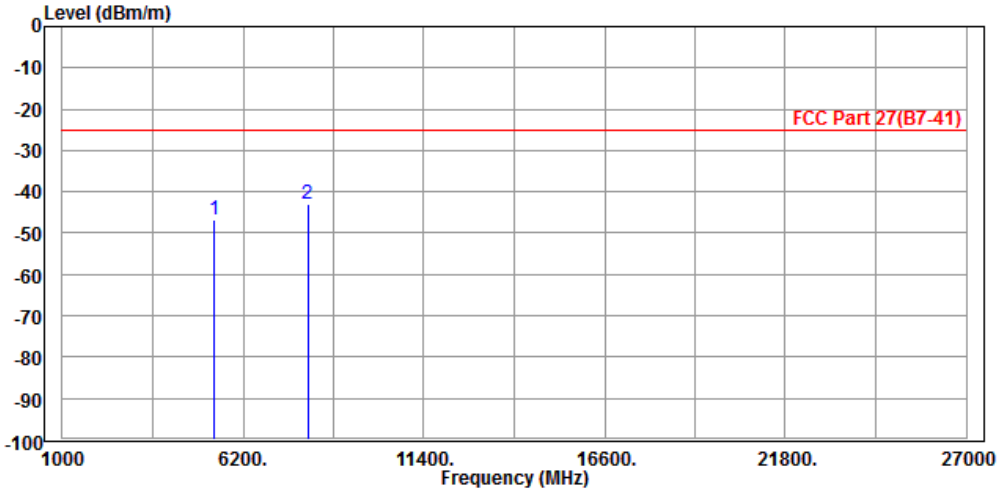
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5186.000	-48.79	-56.77	-25.00	-23.79	7.98	Peak	Vertical
2	PP	7779.000	-42.79	-56.08	-25.00	-17.79	13.29	Peak	Vertical



CH41540

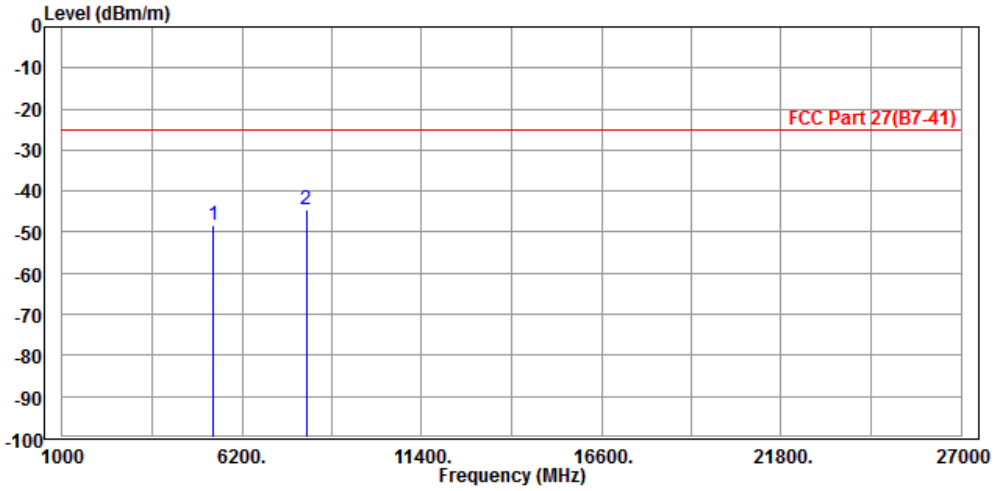
MODE	TX channel 41540	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5368.000	-46.64	-55.45	-25.00	-21.64	8.81	Peak	Horizontal
2 PP	8055.000	-42.93	-57.14	-25.00	-17.93	14.21	Peak	Horizontal



MODE	TX channel 41540	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

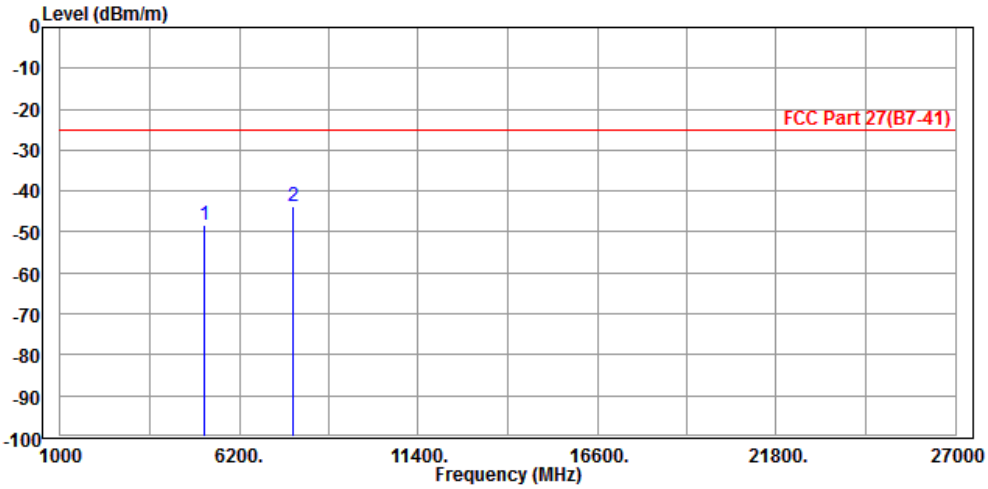
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5368.000	-48.23	-56.21	-25.00	-23.23	7.98	Peak	Vertical
2	PP	8055.000	-44.51	-58.33	-25.00	-19.51	13.82	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

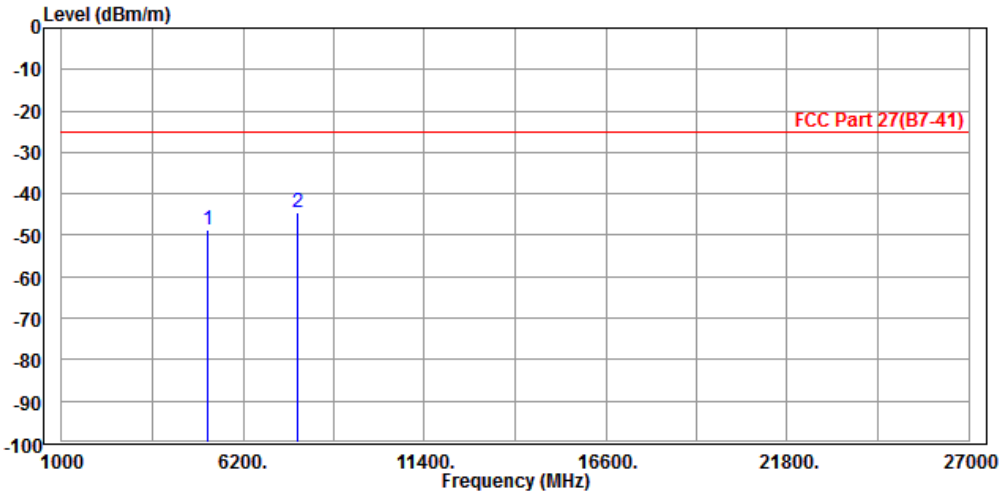
MODE	TX channel 40620	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	5186.000	-48.47	-57.06	-25.00	-23.47	8.59	Peak	Horizontal
2 PP	7779.000	-43.75	-57.48	-25.00	-18.75	13.73	Peak	Horizontal



MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

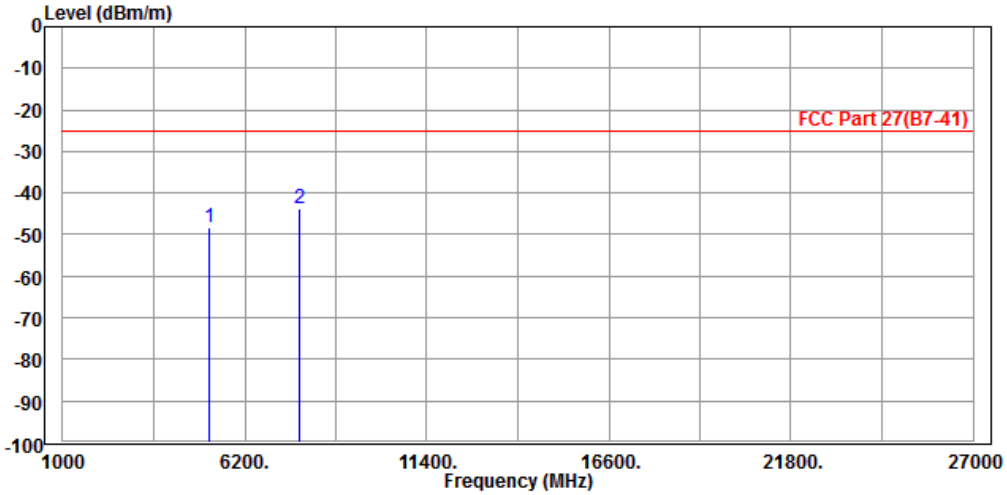
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5186.000	-48.59	-56.57	-25.00	-23.59	7.98	Peak	Vertical
2	PP	7779.000	-44.39	-57.68	-25.00	-19.39	13.29	Peak	Vertical



CHANNEL BANDWIDTH: 20MHz / QPSK

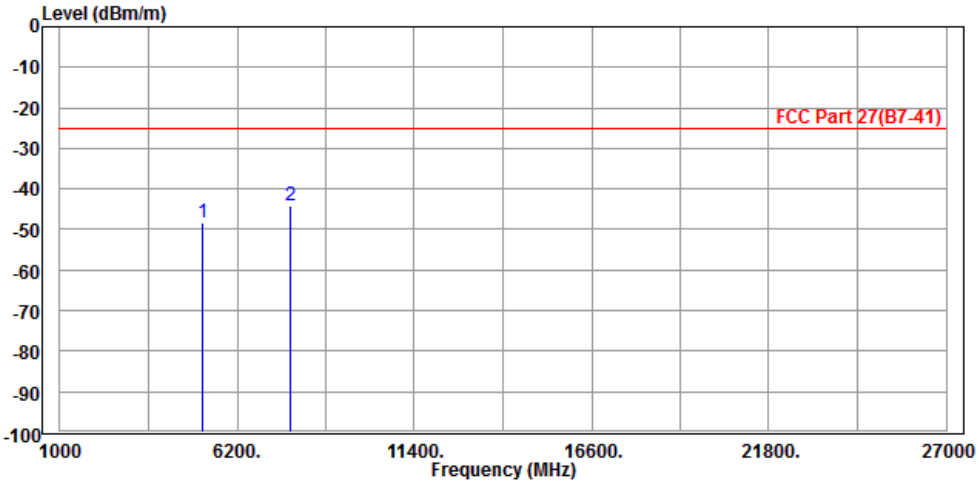
MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		5186.000	-48.29	-56.88	-25.00	-23.29	8.59	Peak	Horizontal
2	PP	7779.000	-43.91	-57.64	-25.00	-18.91	13.73	Peak	Horizontal



MODE	TX channel 40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
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		5186.000	-48.44	-56.42	-25.00	-23.44	7.98	Peak	Vertical
2	PP	7779.000	-44.02	-57.31	-25.00	-19.02	13.29	Peak	Vertical



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:

Shenzhen EMC/RF Lab:
Tel: +86-755-88696566
Fax: +86-755-88696577

Email: customerservice.dg@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 APPENDIX A – 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---