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** ☒ **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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170730W002-9	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(a)(3)	Equivalent Isotropically Radiated Power	PASS	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	PASS	Meet the requirement of limit.
2.1049	Occupied Bandwidth	PASS	Meet the requirement of limit.
--	Peak to average ratio	PASS	Meet the requirement of limit.
2.1051 27.53(a)(4)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(a)(4)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(a)(4)	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.94dB at 4622.5MHz.

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	150 kHz ~ 30 MHz	2.66dB
Radiated emissions	30 MHz ~ 200 MHz	2.68dB
	200 MHz ~1000 MHz	3.26dB
	1 GHz ~ 18 GHz	4.48dB
	18 GHz ~ 40 GHz	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 30 Channel Bandwidth: 5MHz**	2307.5 MHz ~ 2312.5 MHz
	LTE Band 30 Channel Bandwidth: 10MHz	2310 MHz
	LTE Band 40 Channel Bandwidth: 5MHz	2307.5 MHz ~ 2312.5 MHz
	LTE Band 40 Channel Bandwidth: 10MHz	2310 MHz
EMISSION DESIGNATOR	**LTE Band 30 Channel Bandwidth: 5MHz**	QPSK: 4M48G7D
		16QAM: 4M48W7D
		64QAM: 4M49W7D
	LTE Band 30 Channel Bandwidth: 10MHz	QPSK: 8M95G7D
		16QAM: 8M92W7D
		64QAM: 8M95W7D
	LTE Band 40 Channel Bandwidth: 5MHz	QPSK: 4M48G7D
		16QAM: 4M48W7D
		64QAM: 4M49W7D
	LTE Band 40 Channel Bandwidth: 10MHz	QPSK: 8M93G7D
		16QAM: 8M93W7D
		64QAM: 8M94W7D
MAX. EIRP POWER	**LTE Band 30 Channel Bandwidth: 5MHz**	245mW
	LTE Band 30 Channel Bandwidth: 10MHz	212mW
	LTE Band 40 Channel Bandwidth: 5MHz	280mW
	LTE Band 40 Channel Bandwidth: 10MHz	252mW
ANTENNA TYPE	**LTE Band 30**	Fixed Internal Antenna with 0dBi
	LTE Band 40	Fixed Internal Antenna with -1dBi
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 shielded, detachable, 1.5m USB cable 2: non-shielded, detachable, 1.0m

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:

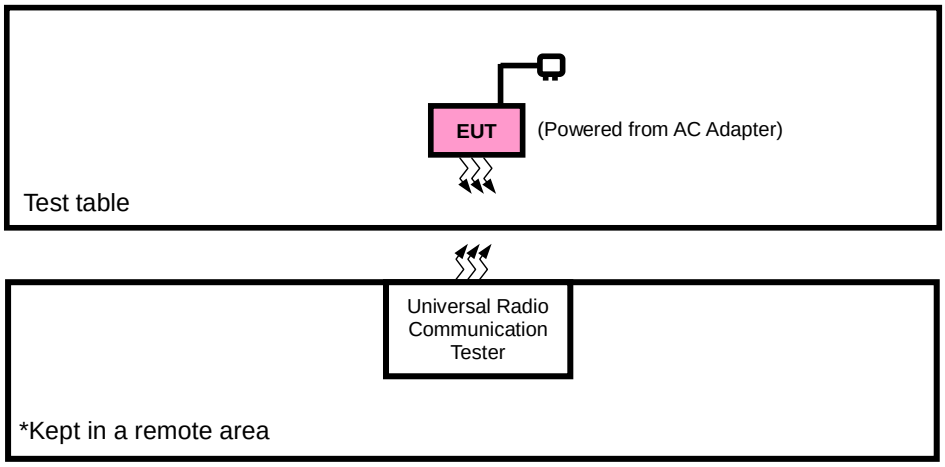
USB CABLE 1	
BRAND:	N.A
MODEL:	N.A
SIGNAL LINE:	1.5 METER

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

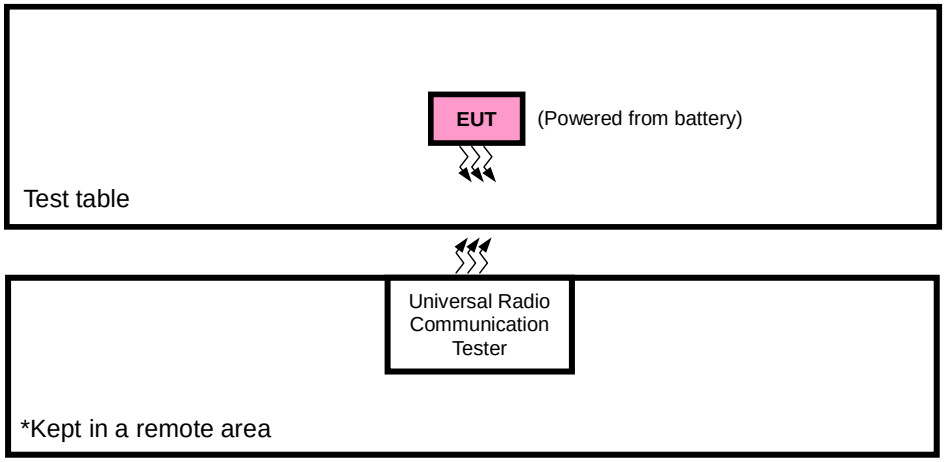
4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

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 30

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	27685 to 27735	27685, 27710, 27735	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		27710	27710	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	27685 to 27735	27685, 27735	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		27710	27710	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	27685 to 27735	27685, 27710, 27735	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		27710	27710	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	27685 to 27735	27685, 27710, 27735	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		27710	27710	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	BAND EDGE	27685 to 27735	27685	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
			27710	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
			27735	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		27710	27710	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
			27710	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
B	CONDCUDETED EMISSION	27685 to 27735	27685, 27710, 27735	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		27710	27710	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	27685 to 27735	27685, 27710, 27735	5MHz	QPSK	1 RB / 0 RB Offset
		27710	27710	10MHz	QPSK	1 RB / 0 RB Offset

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

LTE BAND 40

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	38725 to 38775	38725, 38750, 38775	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		38750	38750	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	38725 to 38775	38725, 38775	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		38750	38750	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	38725 to 38775	38725, 38750, 38775	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		38750	38750	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	38725 to 38775	38725, 38750, 38775	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		38750	38750	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	BAND EDGE	38725 to 38775	38725	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
			38750	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
			38775	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		38750	38750	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
			38750	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
B	CONDCUDETED EMISSION	38725 to 38775	38725, 38750, 38775	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		38750	38750	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	38725 to 38775	38750	5MHz	QPSK	1 RB / 0 RB Offset
		38750	38750	10MHz	QPSK	1 RB / 0 RB Offset

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

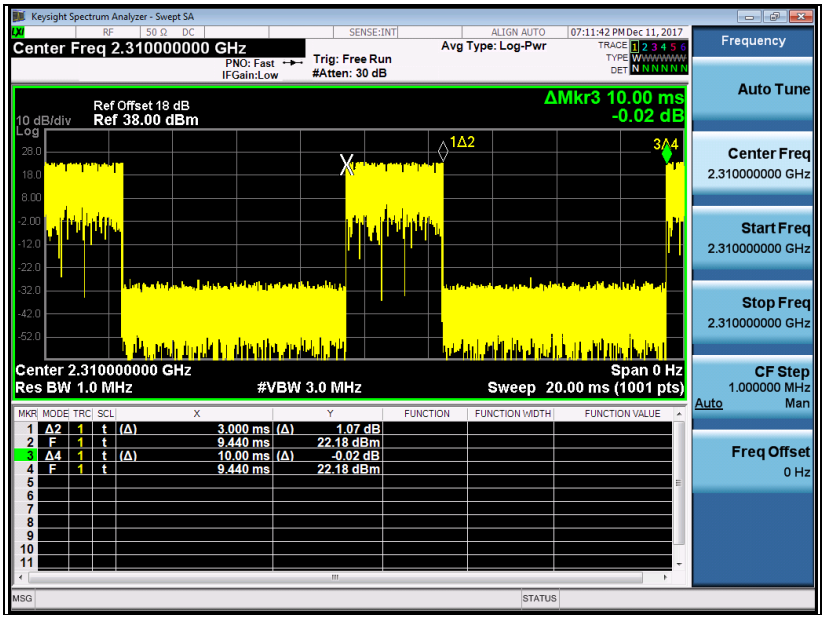
TEST CONDITION:

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	23deg. C, 70%RH	DC 5/9V from adaptor	Simon Yang

2.5 Duty Cycle of Test Signal

TDD Band 40

Duty cycle = 3/10 = 0.30 < 38%,



2.6 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

Mobile and portable stations. (i) For mobile and portable stations transmitting in the 2305-2315 MHz band orthe 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz ofauthorized bandwidth, except that or mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of t he operatingband the average EIRP must not exceed 250 milliwatts within any 5 mega hertz of authorized bandwidth butmay exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stationsusing time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted totransmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

3.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

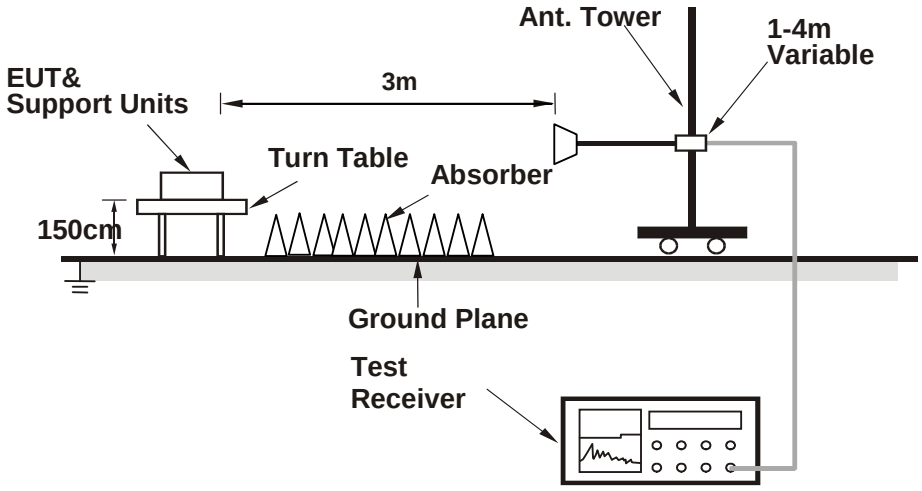
a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 10MHz for LTE mode.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum 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.

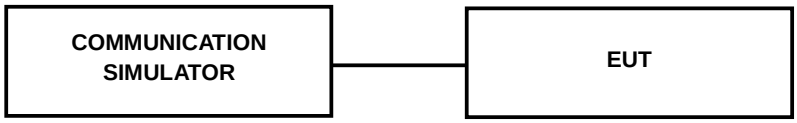
3.1.3 TEST SETUP

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 30							
BW	Modulation	RB Size	RB Offset	Low CH 27685	Mid CH 27710	High CH 27735	MPR
				Frequency 2307.5 MHz	Frequency 2310.0 MHz	Frequency 2312.5 MHz	
5 MHz	QPSK	1	0	23.25	23.17	23.15	0
		1	12	23.21	23.13	23.11	0
		1	24	23.17	23.09	23.07	0
		12	0	22.44	22.36	22.34	1
		12	6	22.40	22.32	22.30	1
		12	13	22.37	22.29	22.27	1
		25	0	22.34	22.26	22.24	1
	16QAM	1	0	22.52	22.44	22.42	1
		1	12	22.47	22.39	22.37	1
		1	24	22.44	22.36	22.34	1
		12	0	21.31	21.23	21.21	2
		12	6	21.27	21.19	21.17	2
		12	13	21.24	21.16	21.14	2
		25	0	21.35	21.27	21.25	2
	64QAM	1	0	21.45	21.37	21.35	2
		1	12	21.40	21.32	21.30	2
		1	24	21.35	21.27	21.25	2
		12	0	21.44	21.36	21.34	3
		12	6	21.39	21.31	21.29	3
		12	13	21.34	21.26	21.24	3
		25	0	20.45	20.37	20.35	3

LTE Band 30							
BW	Modulation	RB Size	RB Offset	CH Frequency MHz	CH 27710 Frequency 2310.0 MHz	CH Frequency MHz	MPR
10 MHz	QPSK	1	0	-	**23.32**	-	0
		1	24	-	23.21	-	0
		1	49	-	23.11	-	0
		25	0	-	22.35	-	1
		25	12	-	22.31	-	1
		25	25	-	22.27	-	1
		50	0	-	22.36	-	1
	16QAM	1	0	-	22.49	-	1
		1	24	-	22.45	-	1
		1	49	-	22.42	-	1
		25	0	-	21.33	-	2
		25	12	-	21.31	-	2
		25	25	-	21.28	-	2
		50	0	-	21.32	-	2
	64QAM	1	0	-	21.41	-	2
		1	24	-	21.36	-	2
		1	49	-	21.31	-	2
		25	0	-	20.39	-	3
		25	12	-	20.35	-	3
		25	25	-	20.31	-	3
		50	0	-	20.41	-	3

LTE Band 40							
BW	Modulation	RB Size	RB Offset	Low CH 38725 Frequency 2307.5 MHz	Mid CH 38750 Frequency 2310 MHz	High CH 38775 Frequency 2312.5 MHz	MPR
5 MHz	QPSK	1	0	23.20	23.16	23.19	0
		1	12	23.18	23.14	23.17	0
		1	24	23.15	23.11	23.14	0
		12	0	22.30	22.26	22.29	1
		12	6	22.26	22.22	22.25	1
		12	13	22.24	22.20	22.23	1
		25	0	22.27	22.23	22.26	1
	16QAM	1	0	22.22	22.18	22.21	1
		1	12	22.14	22.10	22.13	1
		1	24	22.11	22.07	22.10	1
		12	0	21.34	21.30	21.33	2
		12	6	21.29	21.25	21.28	2
		12	13	21.26	21.22	21.25	2
		25	0	21.32	21.28	21.31	2
	64QAM	1	0	21.20	21.16	21.19	2
		1	12	21.16	21.12	21.15	2
		1	24	21.13	21.09	21.12	2
		12	0	20.33	20.29	20.32	3
		12	6	20.31	20.27	20.30	3
		12	13	20.30	20.26	20.29	3
		25	0	20.27	20.23	20.26	3

LTE Band 40							
BW	Modulation	RB Size	RB Offset	CH Frequency MHz	CH 38750 Frequency 2310 MHz	CH Frequency MHz	MPR
10 MHz	QPSK	1	0	-	23.16	-	0
		1	24	-	23.13	-	0
		1	49	-	23.11	-	0
		25	0	-	22.30	-	1
		25	12	-	22.27	-	1
		25	25	-	22.21	-	1
		50	0	-	22.23	-	1
	16QAM	1	0	-	22.16	-	1
		1	24	-	22.14	-	1
		1	49	-	22.08	-	1
		25	0	-	21.26	-	2
		25	12	-	21.23	-	2
		25	25	-	21.19	-	2
		50	0	-	21.26	-	2
	64QAM	1	0	-	21.09	-	2
		1	24	-	21.06	-	2
		1	49	-	21.05	-	2
		25	0	-	20.32	-	3
		25	12	-	20.29	-	3
		25	25	-	20.28	-	3
		50	0	-	20.23	-	3

EIRP

LTE BAND 30

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
27685	2307.5	-19.58	45.13	23.40	218.78	H
27710	2310.0	-19.18	45.17	23.84	242.10	H
27735	2312.5	-19.78	45.22	23.29	213.30	H
27685	2307.5	-20.18	46.21	23.89	**244.62**	V
27710	2310.0	-20.41	46.28	23.72	235.56	V
27735	2312.5	-20.73	46.33	23.45	221.26	V

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
27685	2307.5	-19.87	45.13	23.12	204.88	H
27710	2310.0	-19.42	45.17	23.60	229.19	H
27735	2312.5	-20.04	45.22	23.03	200.82	H
27685	2307.5	-21.45	46.21	22.61	182.39	V
27710	2310.0	-21.28	46.28	22.85	192.80	V
27735	2312.5	-21.83	46.33	22.35	171.79	V

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
27685	2307.5	-20.24	45.13	22.74	187.93	H
27710	2310.0	-20.30	45.17	22.72	187.15	H
27735	2312.5	-20.83	45.22	22.24	167.42	H
27685	2307.5	-21.61	46.21	22.45	175.71	V
27710	2310.0	-21.81	46.28	22.32	170.69	V
27735	2312.5	-22.13	46.33	22.05	160.29	V

LTE BAND 30

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
27710	2310.0	-19.87	45.17	23.15	206.63	H
27710	2310.0	-20.86	46.28	23.27	**212.37**	V

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
27710	2310.0	-20.94	45.17	22.08	161.51	H
27710	2310.0	-21.93	46.28	22.20	166.00	V

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
27710	2310.0	-21.35	45.17	21.67	146.96	H
27710	2310.0	-22.26	46.28	21.87	153.89	V

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 40

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
38725	2307.5	-19.96	45.13	23.02	200.33	H
38750	2310.0	-19.59	45.17	23.43	220.14	H
38775	2312.5	-20.11	45.22	22.96	197.61	H
38725	2307.5	-19.87	46.21	24.20	262.72	V
38750	2310.0	-19.66	46.28	24.47	**279.83**	V
38775	2312.5	-20.15	46.33	24.03	252.81	V

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
38725	2307.5	-20.77	45.13	22.21	166.19	H
38750	2310.0	-20.46	45.17	22.56	180.18	H
38775	2312.5	-20.87	45.22	22.20	166.00	H
38725	2307.5	-21.45	46.21	22.61	182.39	V
38750	2310.0	-20.53	46.28	23.60	229.03	V
38775	2312.5	-21.83	46.33	22.35	171.79	V

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
38725	2307.5	-20.96	45.13	22.02	159.13	H
38750	2310.0	-21.55	45.17	21.47	140.28	H
38775	2312.5	-21.45	45.22	21.62	145.11	H
38725	2307.5	-20.38	46.21	23.69	233.61	V
38750	2310.0	-21.00	46.28	23.13	205.45	V
38775	2312.5	-21.25	46.33	22.93	196.25	V

LTE BAND 40

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
38750	2310.0	-20.04	45.17	22.98	198.47	H
38750	2310.0	-20.11	46.28	24.02	**252.29**	V

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
38750	2310.0	-21.11	45.17	21.91	155.13	H
38750	2310.0	-21.18	46.28	22.95	197.20	V

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
38750	2310.0	-21.24	45.17	21.78	150.56	H
38750	2310.0	-21.45	46.28	22.68	185.23	V

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

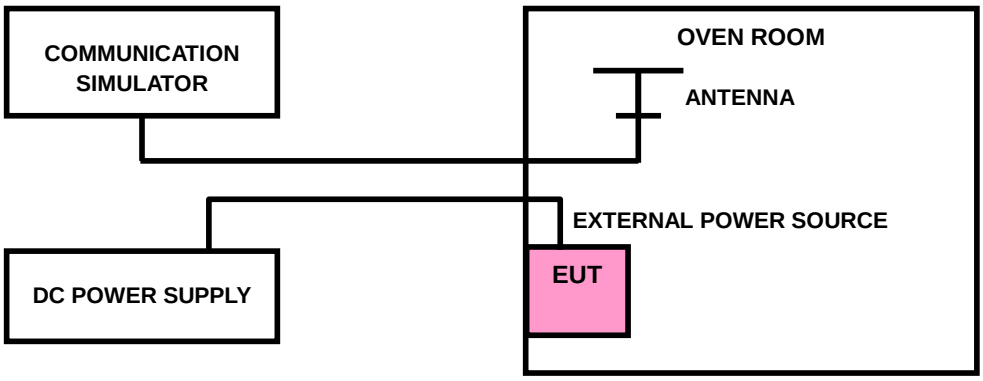
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

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 30

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0020	0.0019	2.5
3.5	-0.0026	-0.0024	2.5
4.2	0.0020	0.0022	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	-0.0145	-0.0143	2.5
-20	-0.0132	-0.0130	2.5
-10	-0.0117	-0.0115	2.5
0	-0.0095	-0.0093	2.5
10	-0.0075	-0.0073	2.5
20	-0.0064	-0.0061	2.5
30	-0.0048	-0.0045	2.5
40	-0.0026	-0.0024	2.5
50	-0.0009	-0.0006	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz	LIMIT (ppm)
	FREQUENCY ERROR (ppm)	
	Channel 27710	
3.85	0.0025	2.5
3.5	-0.0026	2.5
4.2	0.0022	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)	
	Channel 27710	
-30	-0.0148	2.5
-20	-0.0127	2.5
-10	-0.0109	2.5
0	-0.0079	2.5
10	-0.0062	2.5
20	-0.0046	2.5
30	-0.0026	2.5
40	-0.0012	2.5
50	0.0006	2.5
60	-0.0148	2.5

LTE BAND 40

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.85	0.0020	0.0019	2.5
3.5	-0.0026	-0.0025	2.5
4.2	0.0019	0.0021	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	-0.0145	-0.0143	2.5
-20	-0.0132	-0.0131	2.5
-10	-0.0116	-0.0115	2.5
0	-0.0088	-0.0086	2.5
10	-0.0073	-0.0071	2.5
20	-0.0063	-0.0060	2.5
30	-0.0048	-0.0046	2.5
40	-0.0026	-0.0023	2.5
50	-0.0010	-0.0007	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz	LIMIT (ppm)
	FREQUENCY ERROR (ppm)	
	Channel 38750	
3.85	0.0026	2.5
3.5	-0.0026	2.5
4.2	0.0021	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

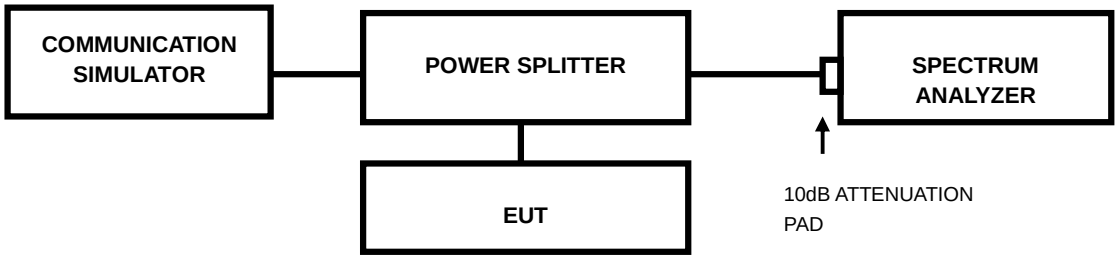
TEMP. (℃)	10MHz	LIMIT (ppm)
	FREQUENCY ERROR (ppm)	
	Channel 38750	
-30	-0.0146	2.5
-20	-0.0126	2.5
-10	-0.0109	2.5
0	-0.0080	2.5
10	-0.0059	2.5
20	-0.0048	2.5
30	-0.0023	2.5
40	-0.0012	2.5
50	0.0005	2.5
60	-0.0146	2.5

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.

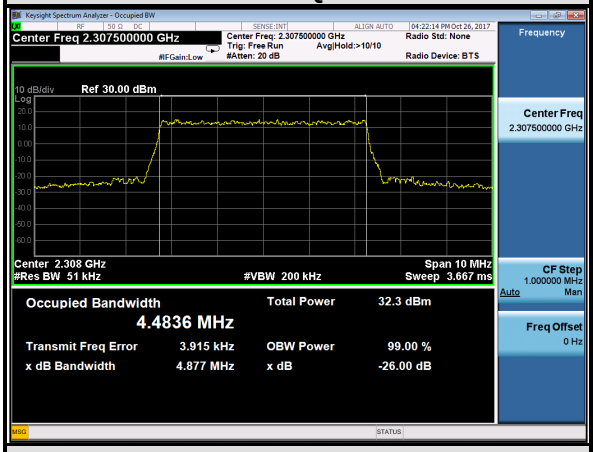
3.3.4 TEST RESULTS

LTE BAND 30

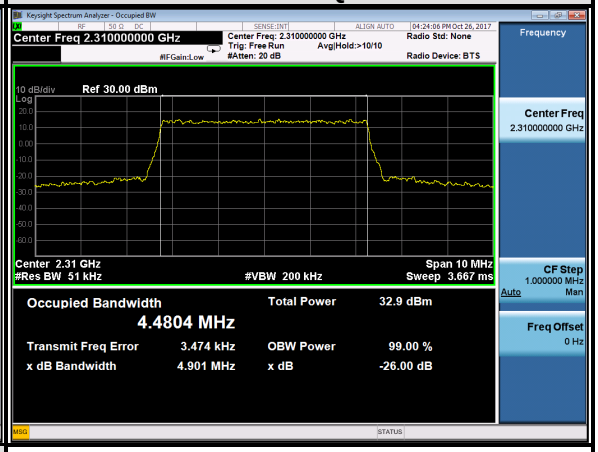
CHANNEL BANDWIDTH: 5MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED Bandwidth (MHz)		
		QPSK	16QAM	64QAM
27685	2307.5	4.48	4.47	4.49
27710	2310.0	4.48	4.48	4.48
27735	2312.5	4.48	4.47	4.48

SPECTRUM PLOT OF WORST VALUE

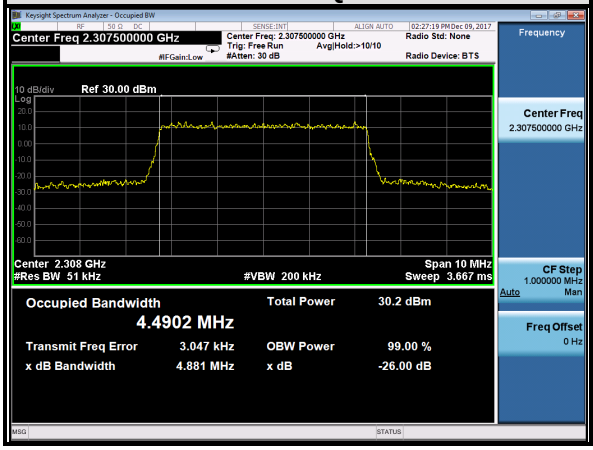
5MHz / QPSK



5MHz / 16QAM



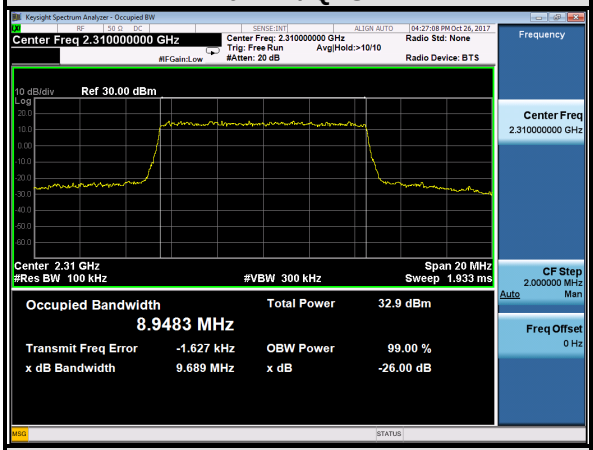
5MHz / 64QAM



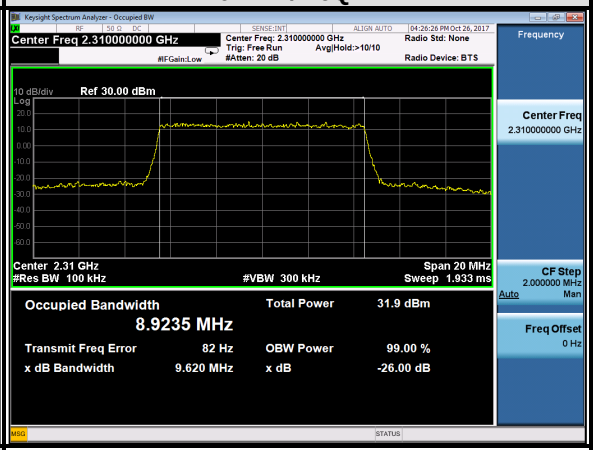
CHANNEL BANDWIDTH: 10MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED Bandwidth (MHz)		
		QPSK	16QAM	64QAM
-	-	-	-	-
27710	2310.0	8.95	8.92	8.95
-	-	-	-	-

SPECTRUM PLOT OF WORST VALUE

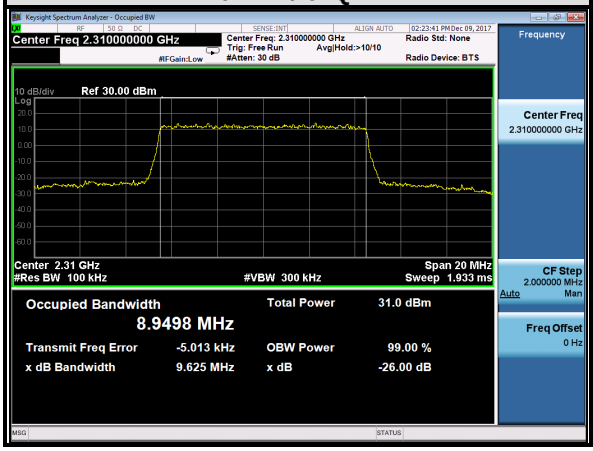
10MHz / QPSK



10MHz / 16QAM



10MHz / 64QAM

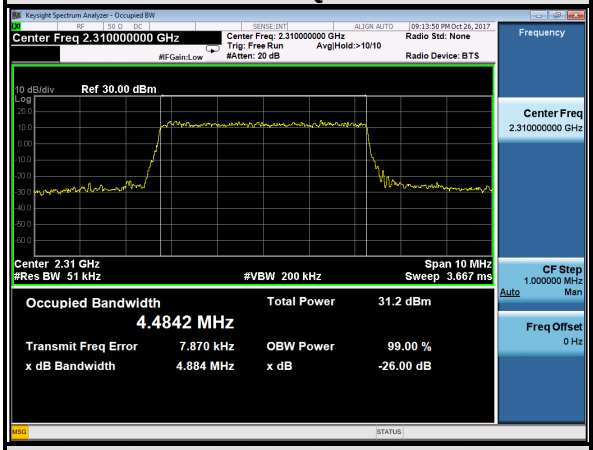


LTE BAND 40

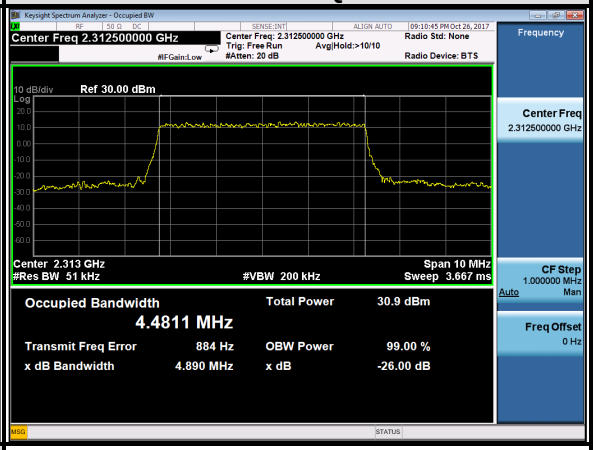
CHANNEL BANDWIDTH: 5MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED Bandwidth (MHz)		
		QPSK	16QAM	64QAM
38725	2307.5	4.48	4.48	4.48
38750	2310.0	4.48	4.48	4.49
38775	2312.5	4.48	4.48	4.49

SPECTRUM PLOT OF WORST VALUE

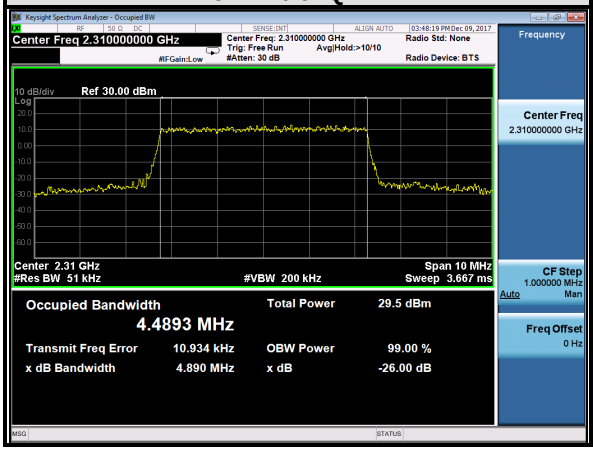
5MHz / QPSK



5MHz / 16QAM



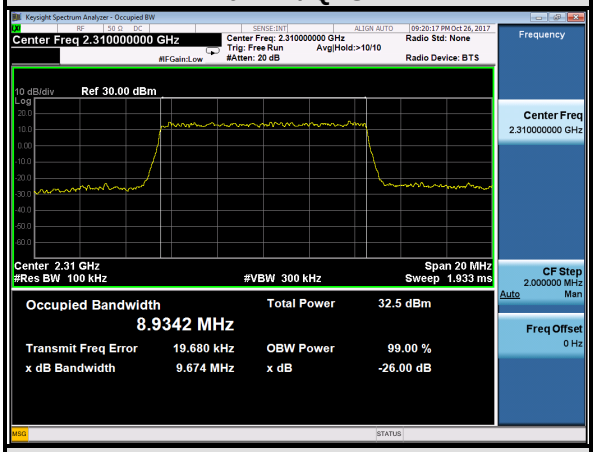
5MHz / 64QAM



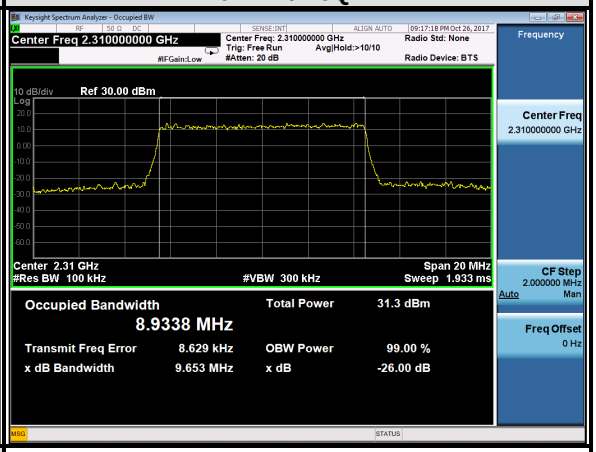
CHANNEL BANDWIDTH: 10MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED Bandwidth (MHz)		
		QPSK	16QAM	64QAM
-	-	-	-	-
38750	2310.0	8.93	8.93	8.94
-	-	-	-	-

SPECTRUM PLOT OF WORST VALUE

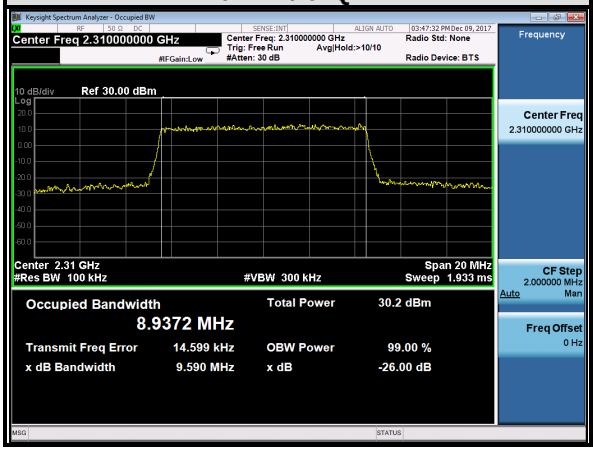
10MHz / QPSK



10MHz / 16QAM



10MHz / 64QAM

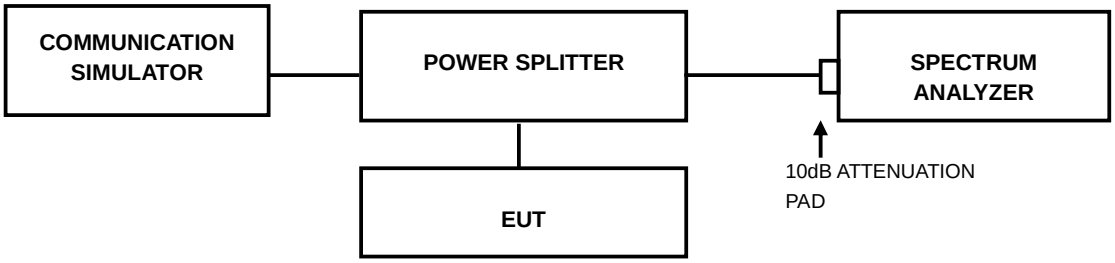


3.4 PEAK TO AVERAGE RATIO

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%.

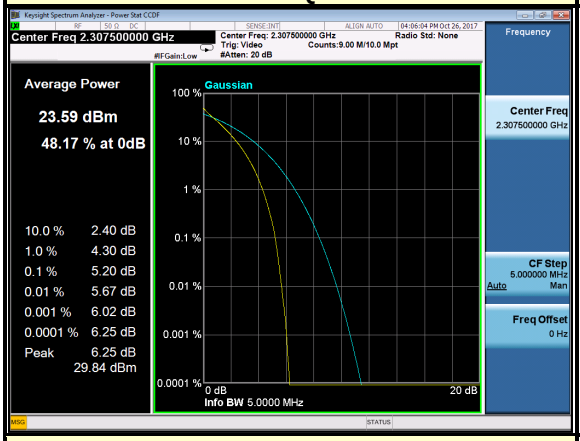
3.4.4 TEST RESULTS

LTE BAND 30

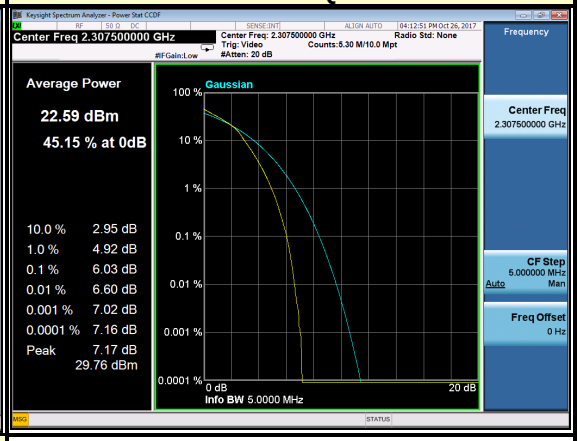
CHANNEL BANDWIDTH: 5MHz				
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
27685	2307.5	5.20	6.03	6.47
27710	2310.0	5.19	5.98	6.46
27735	2312.5	5.19	6.00	6.44

SPECTRUM PLOT OF WORST VALUE

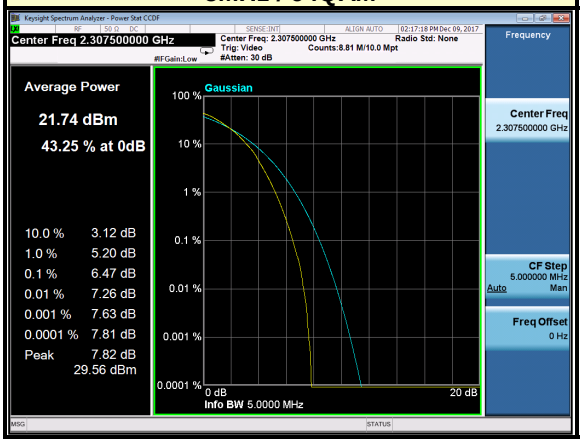
5MHz / QPSK



5MHz / 16QAM



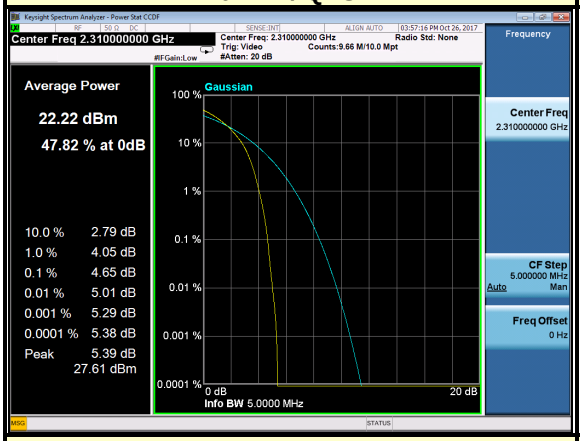
5MHz / 64QAM



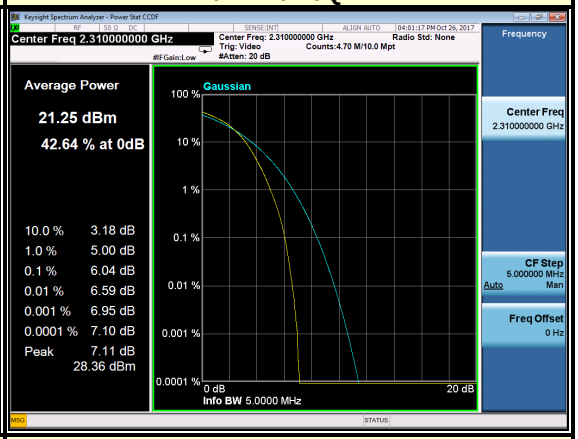
CHANNEL BANDWIDTH: 10MHz				
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
-	-	-	-	-
27710	2310.0	4.65	6.04	6.31
-	-	-	-	-

SPECTRUM PLOT OF WORST VALUE

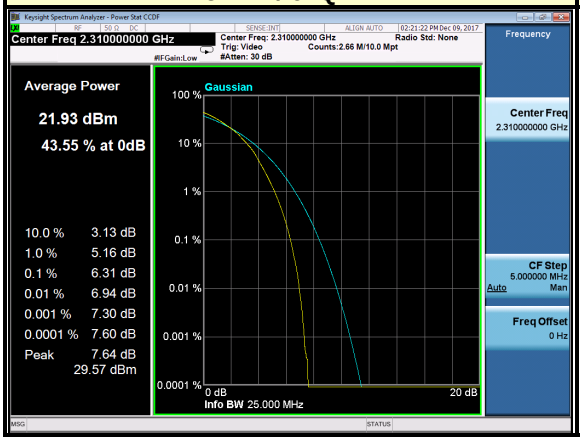
10MHz / QPSK



10MHz / 16QAM



5MHz / 64QAM

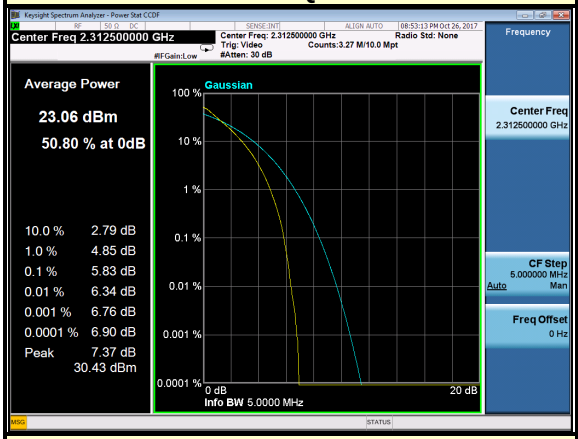


LTE BAND 40

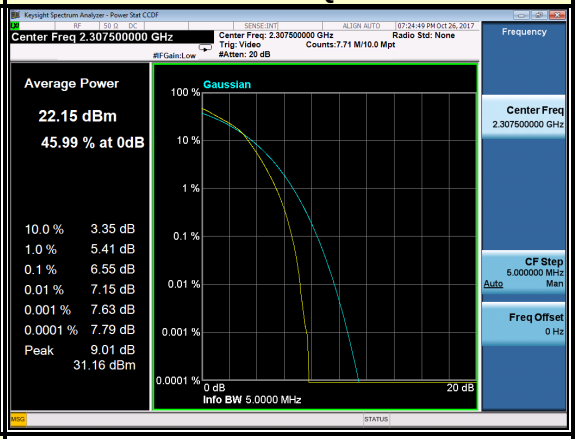
CHANNEL BANDWIDTH: 5MHz				
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
38725	2307.5	5.56	6.55	6.91
38750	2310.0	5.63	6.42	6.96
38775	2312.5	5.83	6.53	6.98

SPECTRUM PLOT OF WORST VALUE

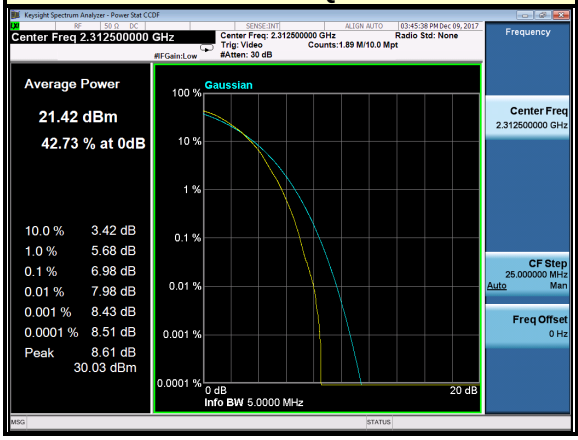
5MHz / QPSK



5MHz / 16QAM



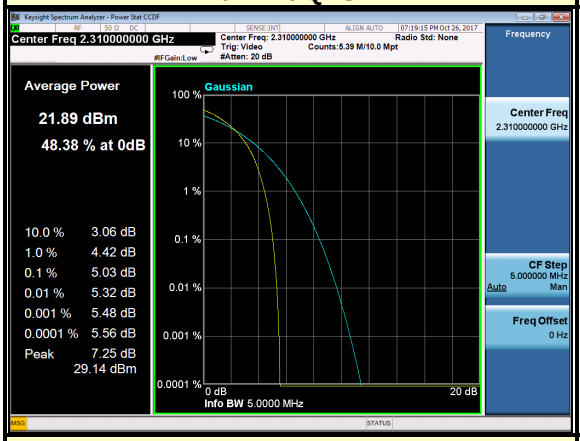
5MHz / 64QAM



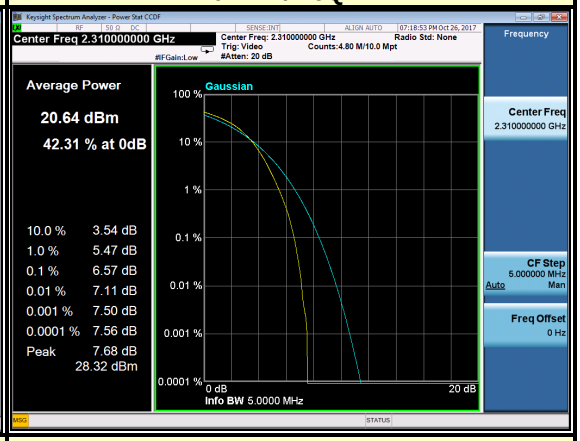
CHANNEL BANDWIDTH: 10MHz				
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		
		QPSK	16QAM	64QAM
-	-	-	-	-
38750	2310.0	5.03	6.57	7.04
-	-	-	-	-

SPECTRUM PLOT OF WORST VALUE

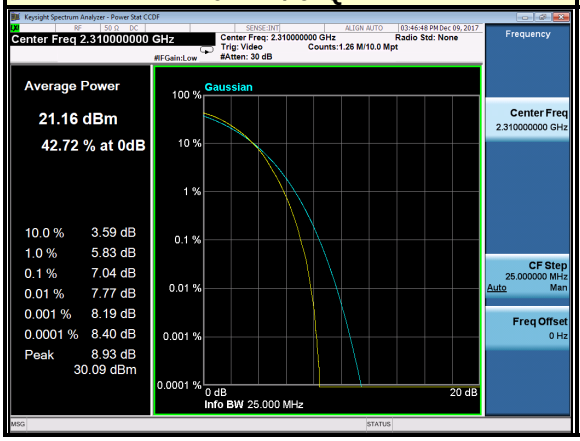
10MHz / QPSK



10MHz / 16QAM



10MHz / 64QAM



3.5 BAND EDGE MEASUREMENT

3.5.1 LIMITS OF BAND EDGE MEASUREMENT

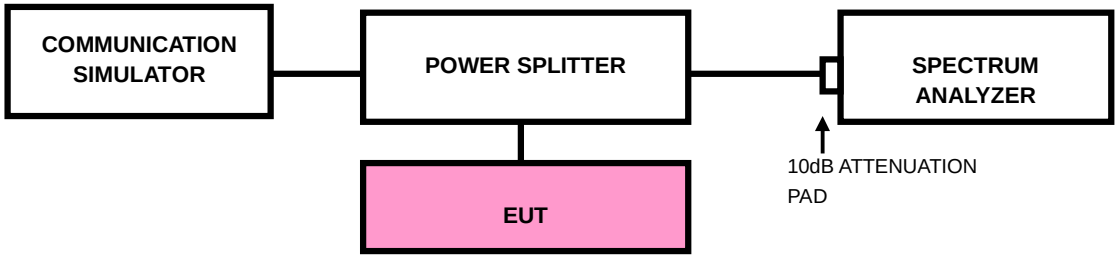
According to FCC 27.53(m) For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

(i) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz and onall frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not lessthan 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHzand on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10 log (P) dB on all frequenciesbetween 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and70 + 10 log (P) dB below 2288 MHz;

(iii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

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.).

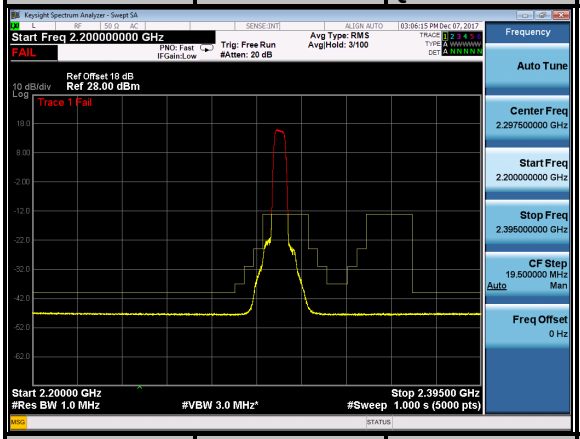
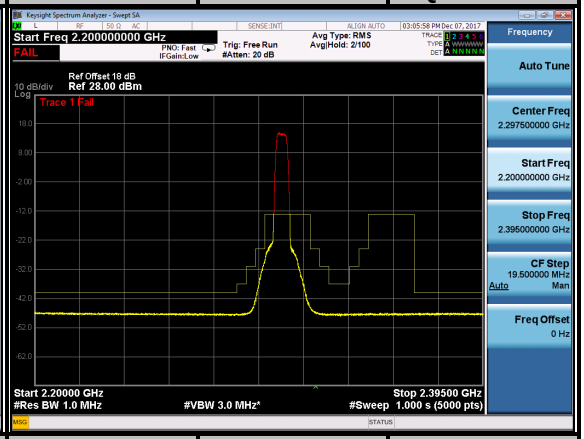
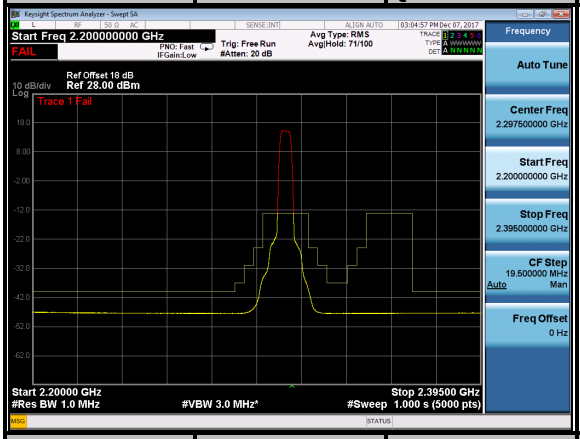
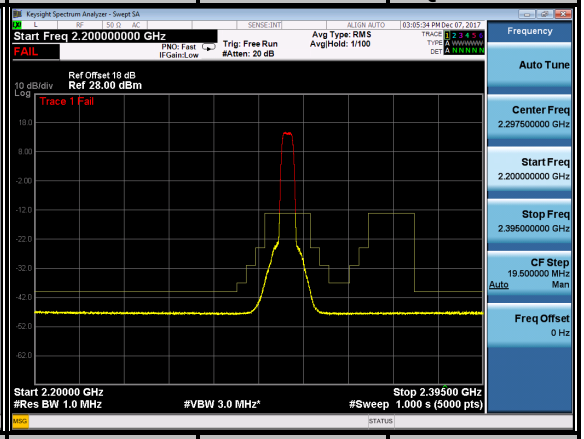
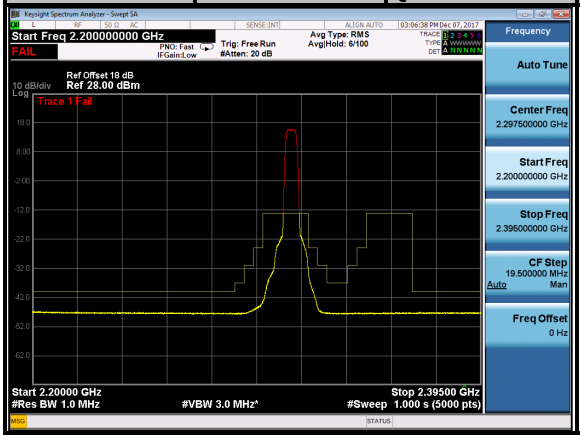
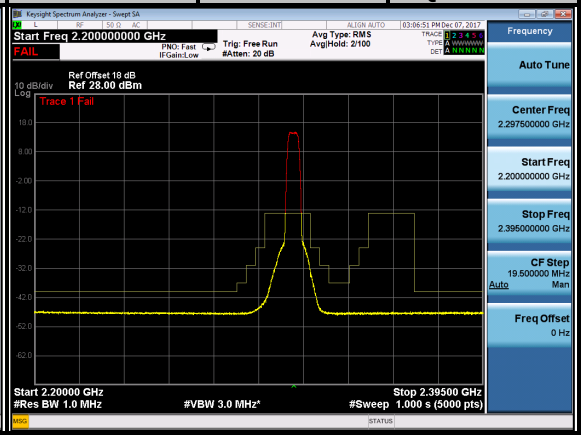
b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

c. Measuring frequency range is from 2305 MHz to 2315 MHz for LTE Band 30 & LTE Band 40. 10 dB attenuation pad is connected with spectrum.
RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

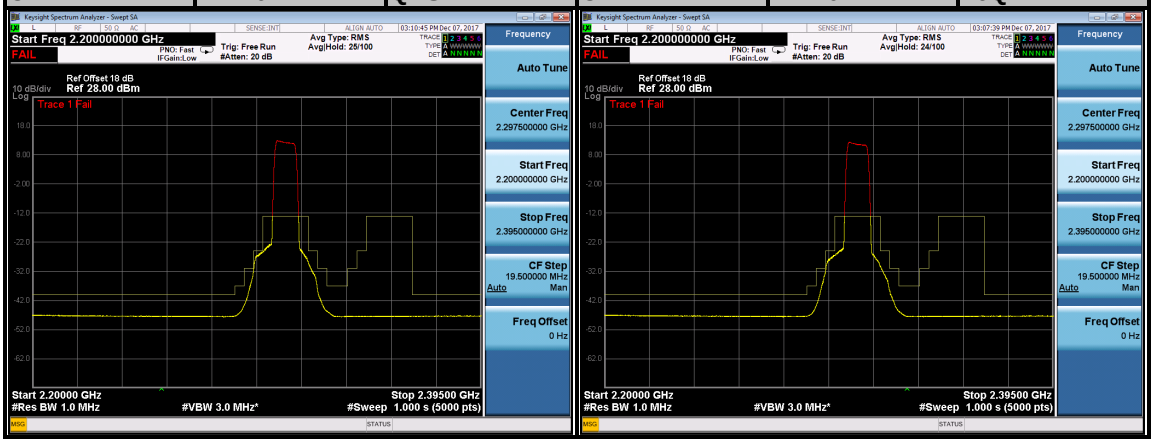
d. Record the max trace plot into the test report.

3.5.4 TEST RESULTS

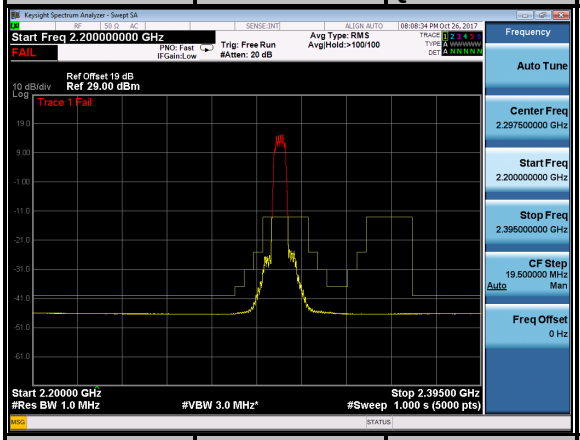
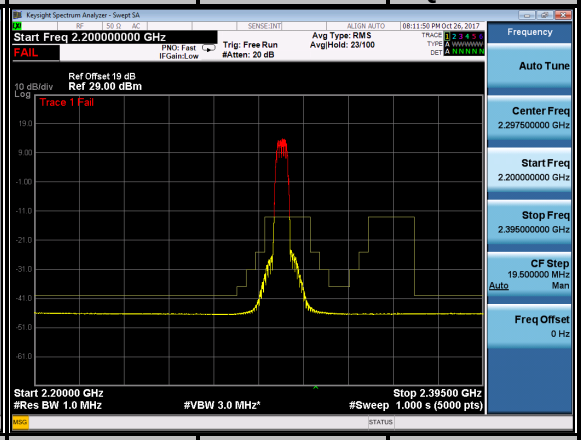
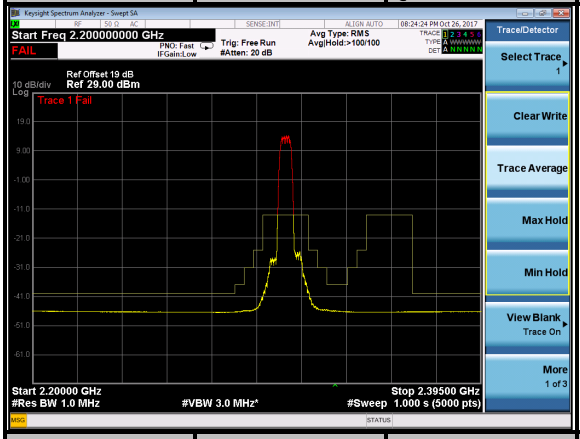
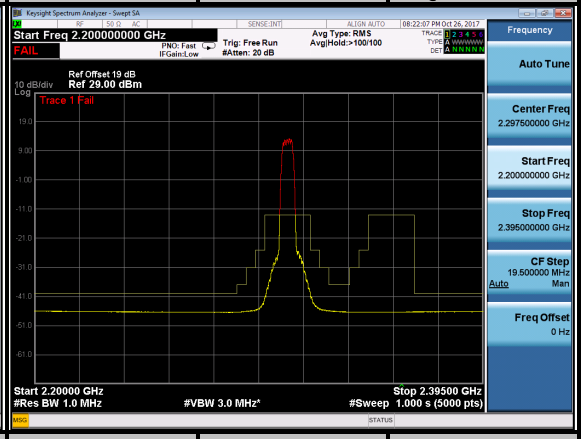
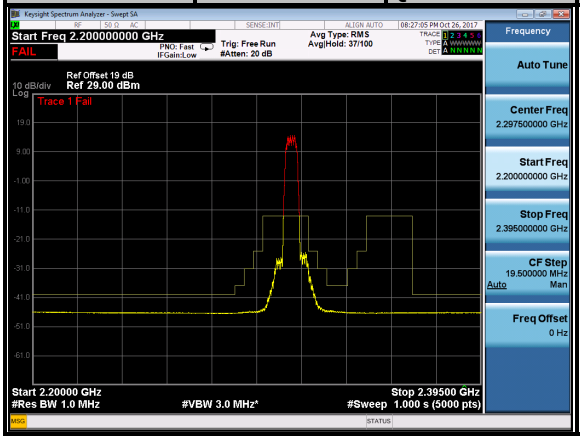
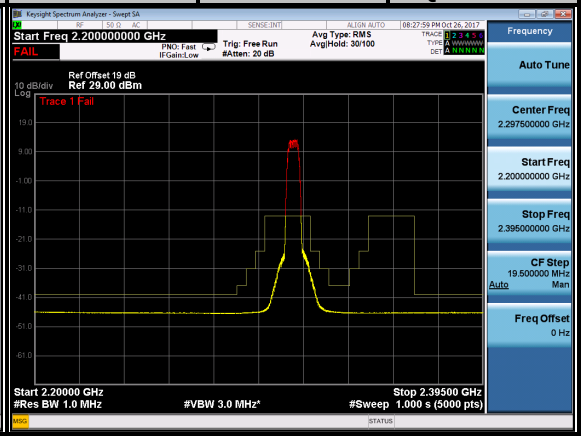
LTE BAND 30

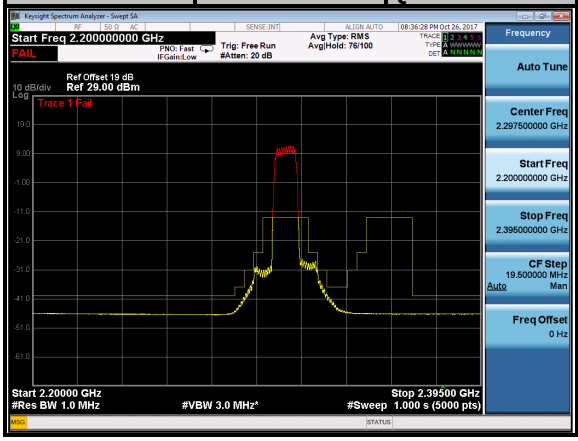
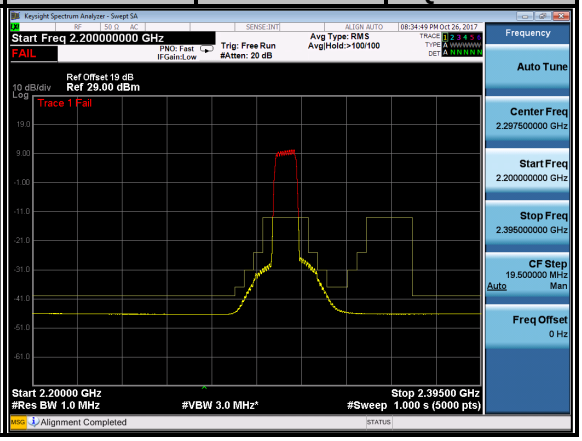
LTE BAND 30					
Channel Bandwidth: 5MHz					
CHANNEL	27685	QPSK	CHANNEL	27685	16QAM
					
CHANNEL	27710	QPSK	CHANNEL	27710	16QAM
					
CHANNEL	27735	QPSK	CHANNEL	27735	16QAM
					

LTE BAND 30					
Channel Bandwidth: 10MHz					
CHANNEL	27710	QPSK	CHANNEL	27710	16QAM



LTE BAND 40

LTE BAND 40					
Channel Bandwidth: 5MHz					
CHANNEL	38725	QPSK	CHANNEL	38725	16QAM
					
CHANNEL	38750	QPSK	CHANNEL	38750	16QAM
					
CHANNEL	38775	QPSK	CHANNEL	38775	16QAM
					

LTE BAND 40					
Channel Bandwidth: 10MHz					
CHANNEL	38750	QPSK	CHANNEL	38750	16QAM
					

NOTE: Since there is no limit on Fundamental frequency, all frequency are connected together to test, so “Fail” doesn’t mean test result!

3.6 CONDUCTED SPURIOUS EMISSIONS

3.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

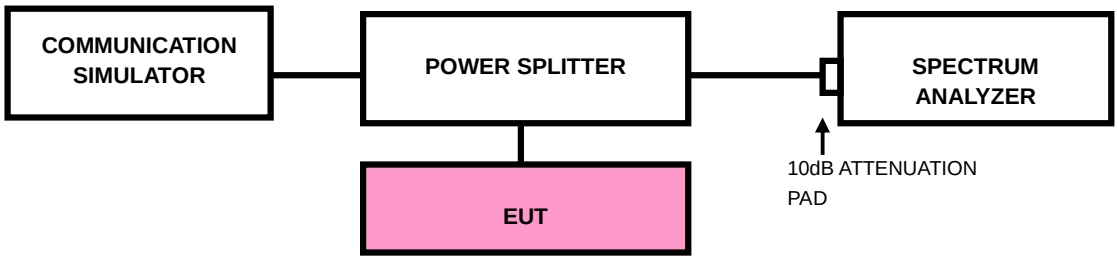
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 70 +10 log10(P) dB. The limit of emission is equal to -40dBm.

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 30 MHz to 24GHz for LTE Band 30 & LTE Band 40. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

3.6.3 TEST SETUP



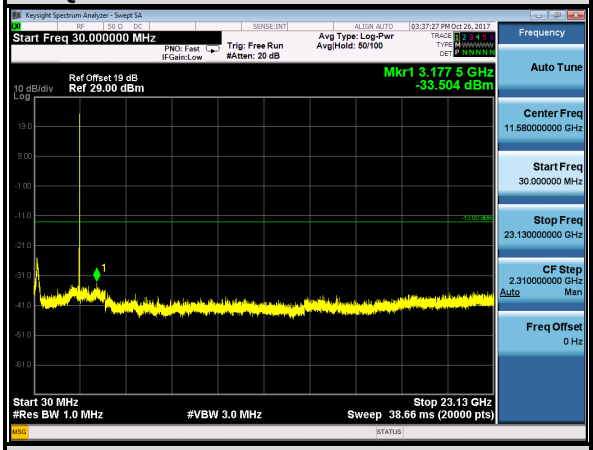
3.6.4 TEST RESULTS

LTE BAND 30

5MHz / QPSK

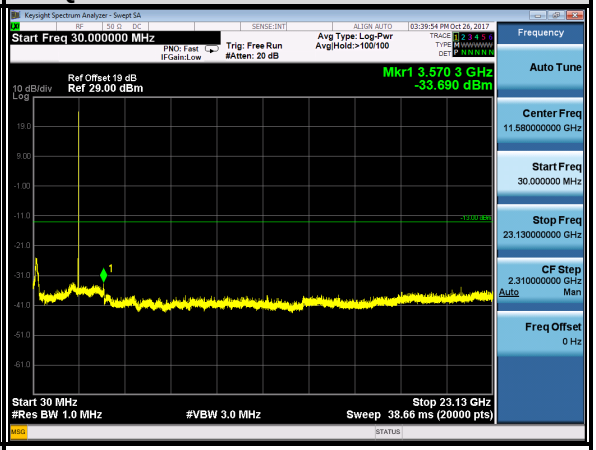
CHANNEL 27685

FREQUENCY RANGE : 30MHz~23.13GHz



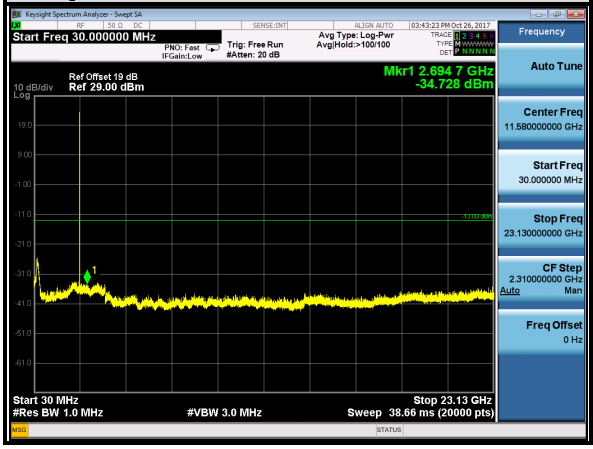
CHANNEL 27710

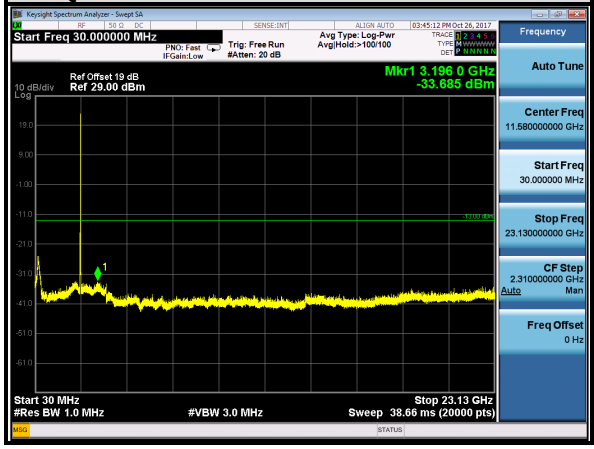
FREQUENCY RANGE : 30MHz~23.13GHz



CHANNEL 27735

FREQUENCY RANGE : 30MHz~23.13GHz



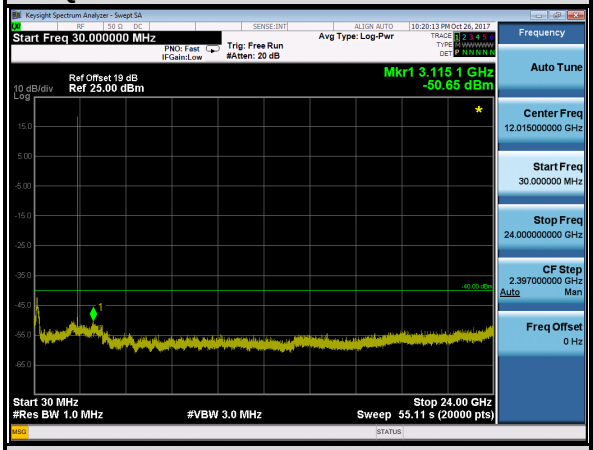
10MHz / QPSK	
CHANNEL 27710	
FREQUENCY RANGE : 30MHz~23.13GHz	
	

LTE BAND 40

5MHz / QPSK

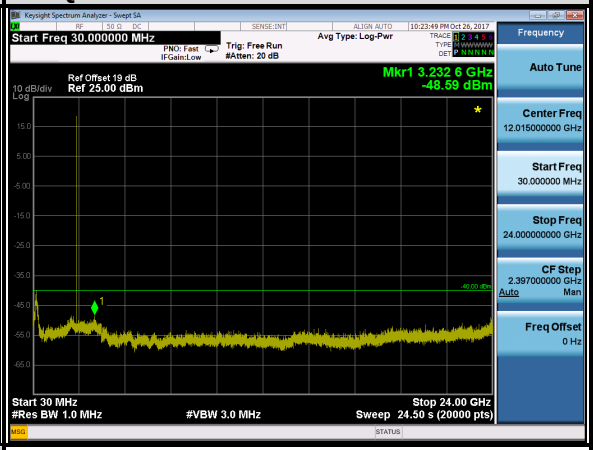
CHANNEL 38725

FREQUENCY RANGE : 30MHz~24GHz



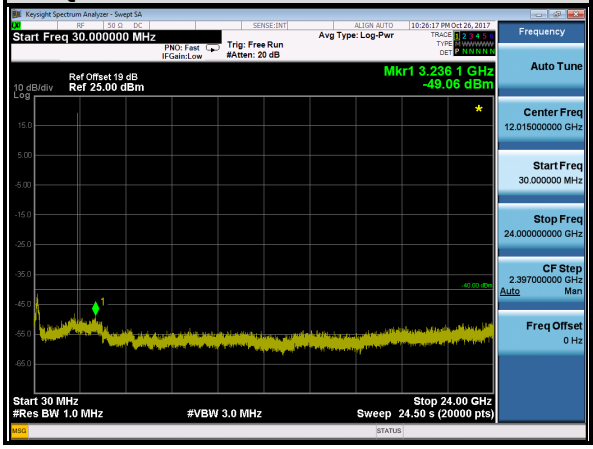
CHANNEL 38750

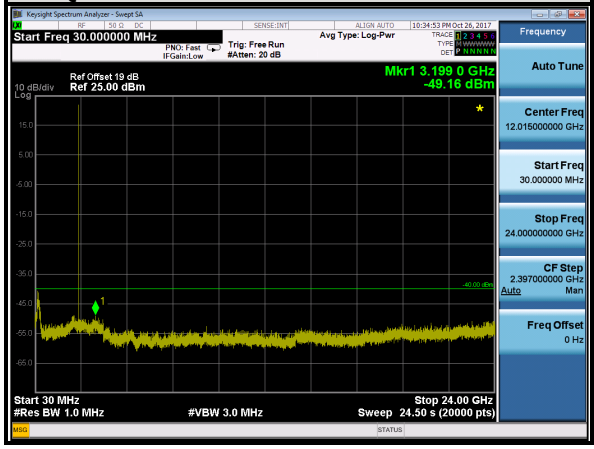
FREQUENCY RANGE : 30MHz~24GHz



CHANNEL 38775

FREQUENCY RANGE : 30MHz~24GHz



10MHz / QPSK	
CHANNEL 38750	
FREQUENCY RANGE : 30MHz~24GHz	
	

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 70 +10 log10(P) dB. The limit of emission is equal to -40dBm.

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.

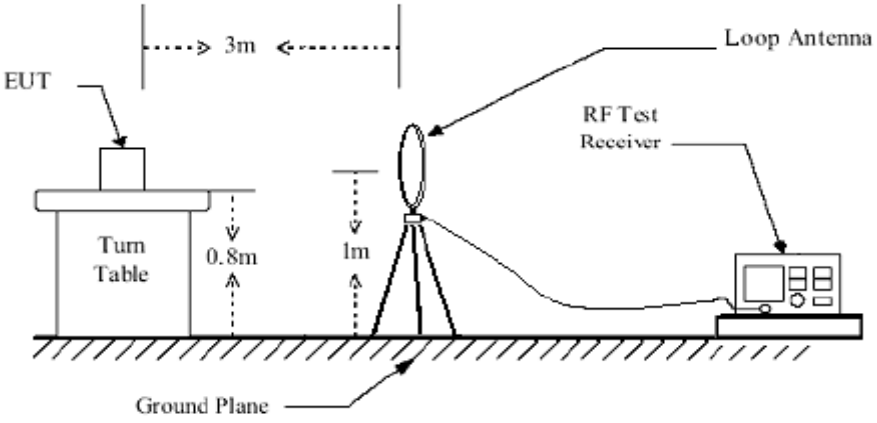
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.7.3 DEVIATION FROM TEST STANDARD

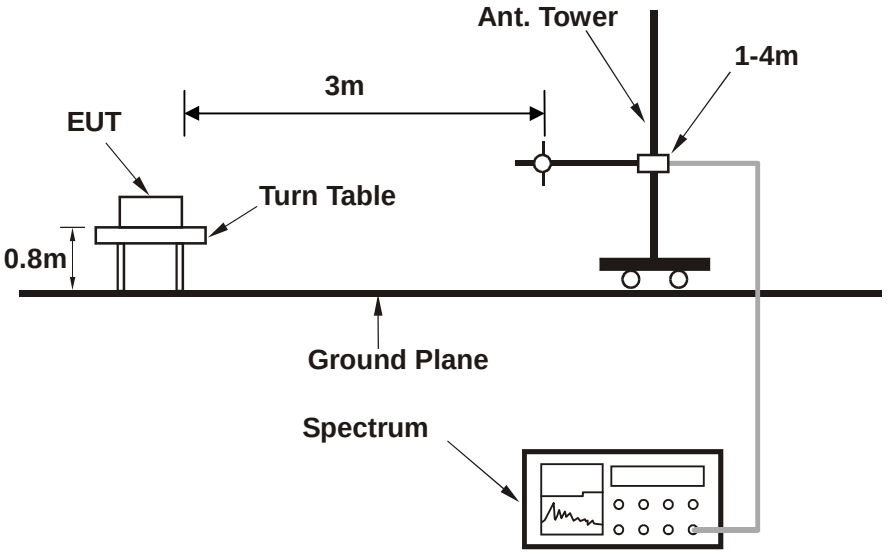
No deviation

3.7.4 TEST SETUP

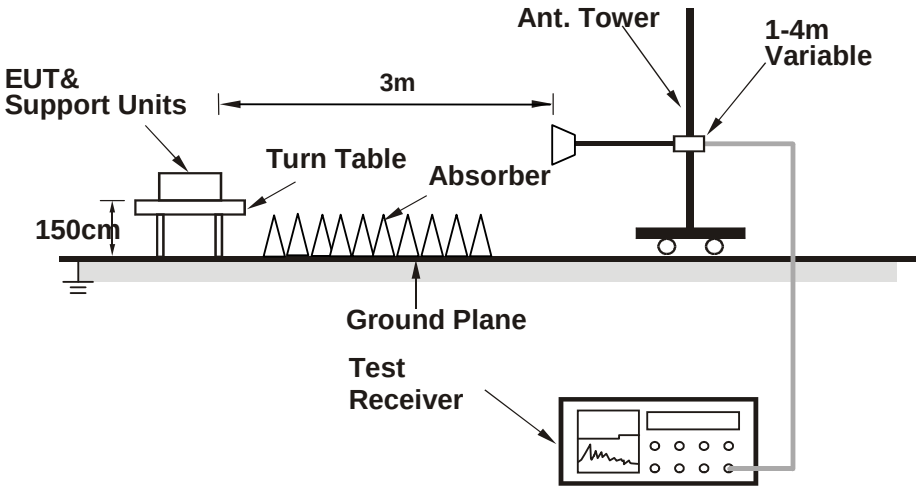
<Below 30MHz>



< 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

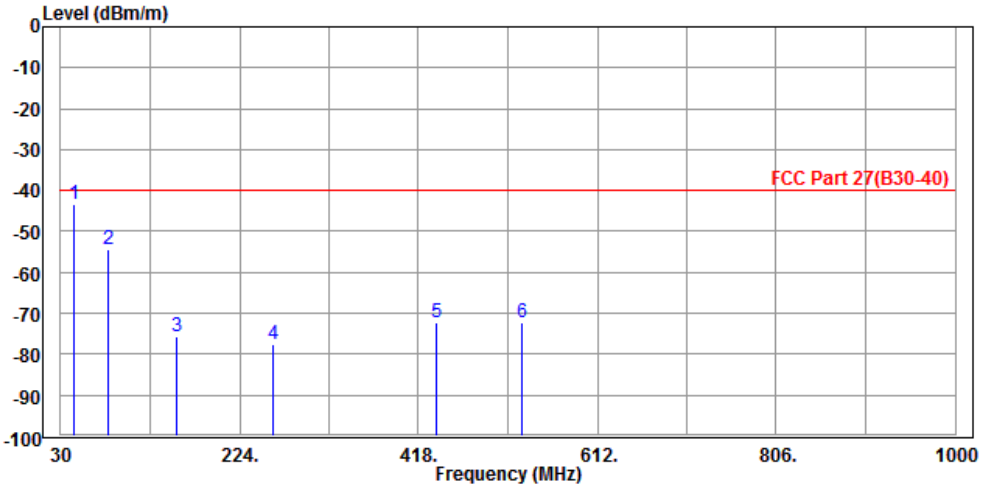
9 KHz – 30 KHz data: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

30 MHz – 1GHz data:

LTE Band 40:

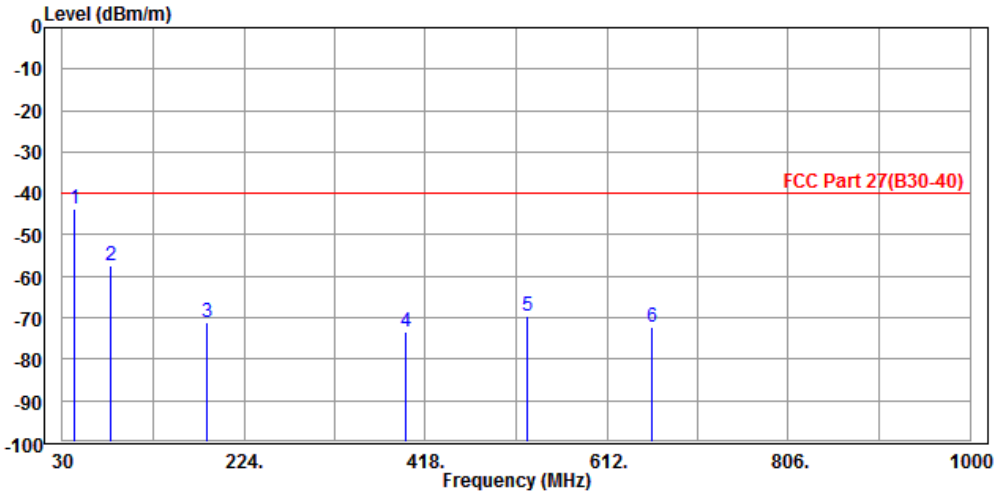
MODE	TX channel 38750	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	44.550	-43.38	-51.48	-40.00	-3.38	8.10	Peak	Horizontal
2	81.410	-54.49	-46.65	-40.00	-14.49	-7.84	Peak	Horizontal
3	155.130	-75.53	-56.74	-40.00	-35.53	-18.79	Peak	Horizontal
4	260.860	-77.72	-61.98	-40.00	-37.72	-15.74	Peak	Horizontal
5	437.400	-72.25	-61.82	-40.00	-32.25	-10.43	Peak	Horizontal
6	530.520	-72.33	-62.46	-40.00	-32.33	-9.87	Peak	Horizontal



MODE	TX channel 38750	FREQUENCY RANGE	Below 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 PP	42.610	-43.64	-41.37	-40.00	-3.64	-2.27	Peak	Vertical
2	81.410	-57.52	-47.23	-40.00	-17.52	-10.29	Peak	Vertical
3	184.230	-71.13	-58.50	-40.00	-31.13	-12.63	Peak	Vertical
4	397.630	-73.41	-62.47	-40.00	-33.41	-10.94	Peak	Vertical
5	527.610	-69.76	-62.49	-40.00	-29.76	-7.27	Peak	Vertical
6	659.530	-72.36	-65.69	-40.00	-32.36	-6.67	Peak	Vertical



ABOVE 1GHz

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

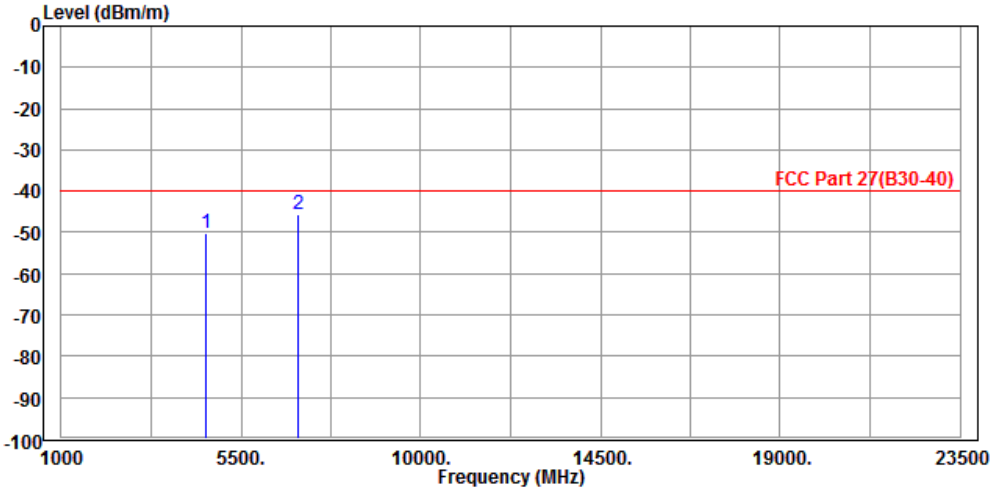
LTE Band 30

CHANNEL BANDWIDTH: 5MHz / QPSK

CH 27685

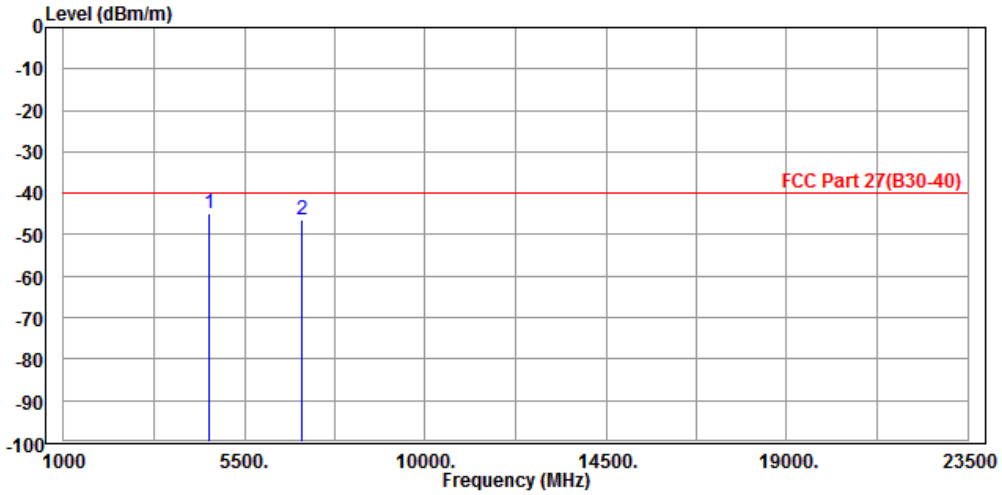
MODE	TX channel 27685	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	4615.000	-50.12	-56.88	-40.00	-10.12	6.76	Peak	Horizontal
2 PP	6923.000	-45.54	-57.08	-40.00	-5.54	11.54	Peak	Horizontal



MODE	TX channel 27685	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			

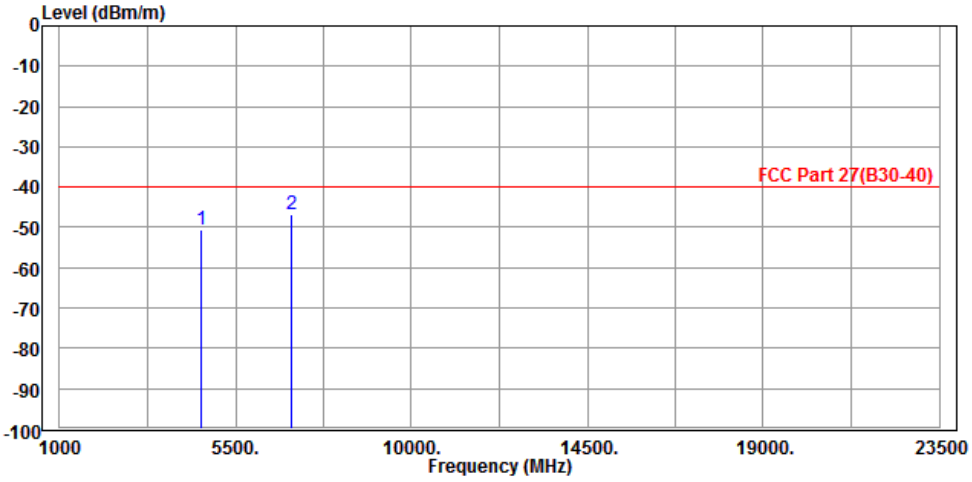
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	4615.000	-44.85	-51.52	-40.00	-4.85	6.67	Peak	Vertical
2		6917.500	-46.22	-57.66	-40.00	-6.22	11.44	Peak	Vertical



CH 27710

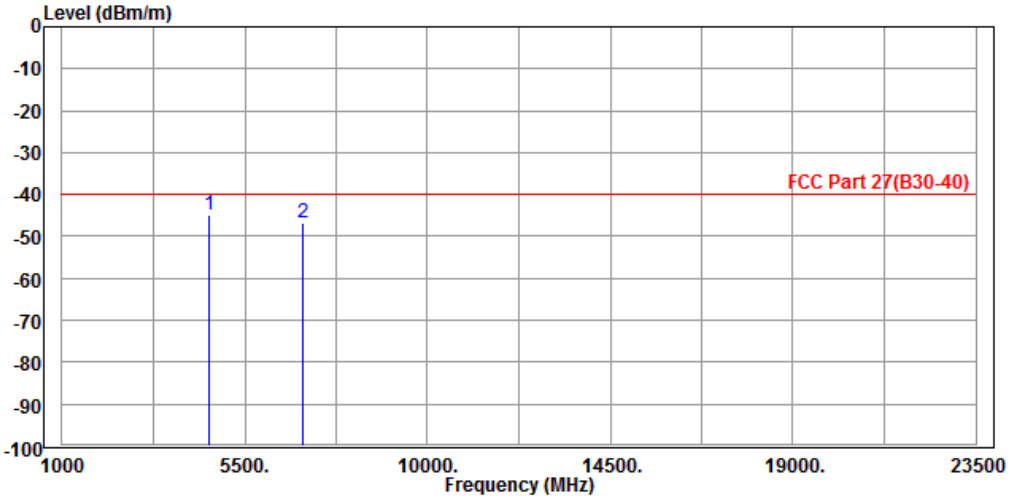
MODE	TX channel 27710	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	4620.000	-50.53	-57.31	-40.00	-10.53	6.78	Peak	Horizontal
2 PP	6940.000	-46.70	-58.28	-40.00	-6.70	11.58	Peak	Horizontal



MODE	TX channel 27710	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			

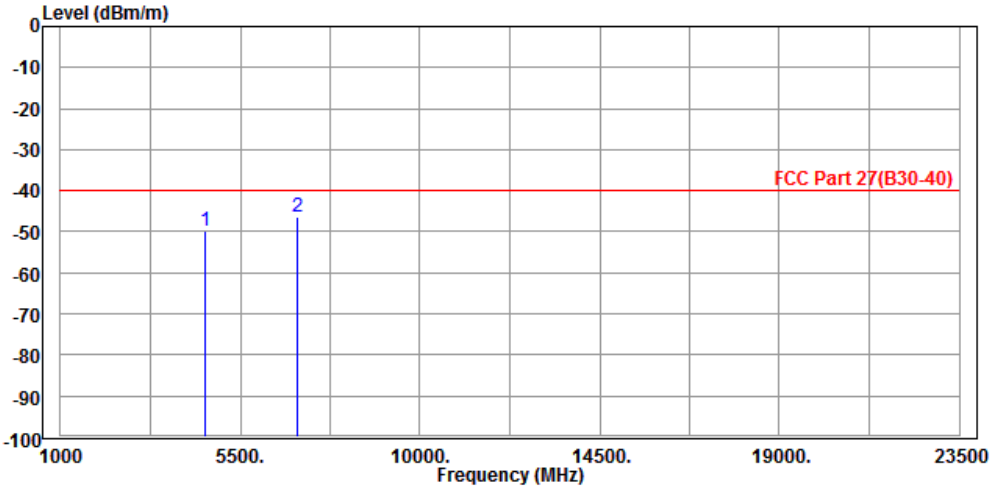
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 4622.500	-44.87	-51.56	-40.00	-4.87	6.69	Peak	Vertical
2	6930.000	-46.94	-58.41	-40.00	-6.94	11.47	Peak	Vertical



CH 27735

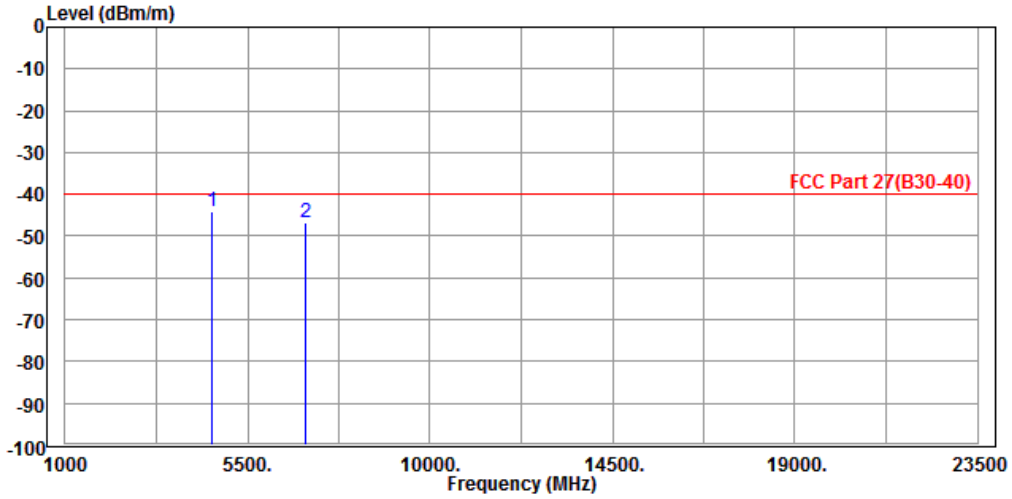
MODE	TX channel 27735	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	4625.000	-49.91	-56.71	-40.00	-9.91	6.80	Peak	Horizontal
2 PP	6940.000	-46.30	-57.88	-40.00	-6.30	11.58	Peak	Horizontal



MODE	TX channel 27735	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			

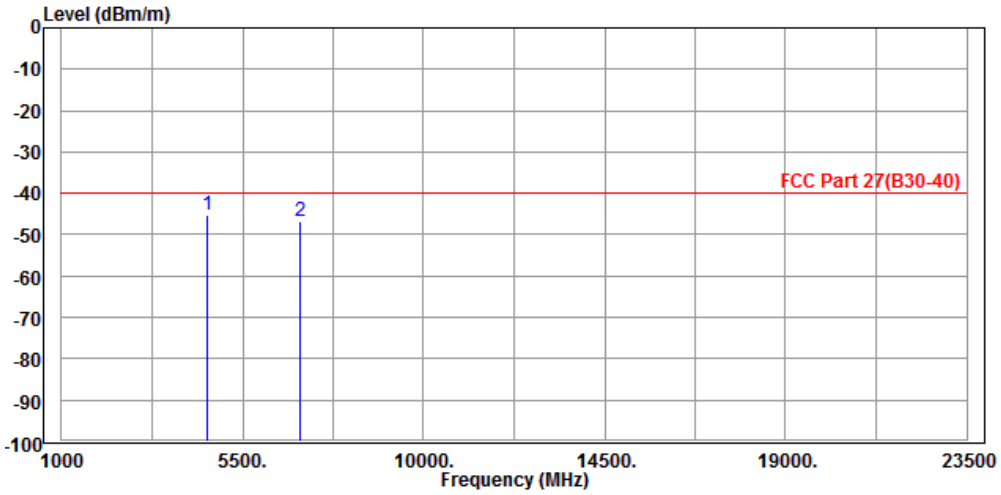
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 4622.500	-44.04	-50.73	-40.00	-4.04	6.69	Peak	Vertical
2	6937.500	-46.89	-58.37	-40.00	-6.89	11.48	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

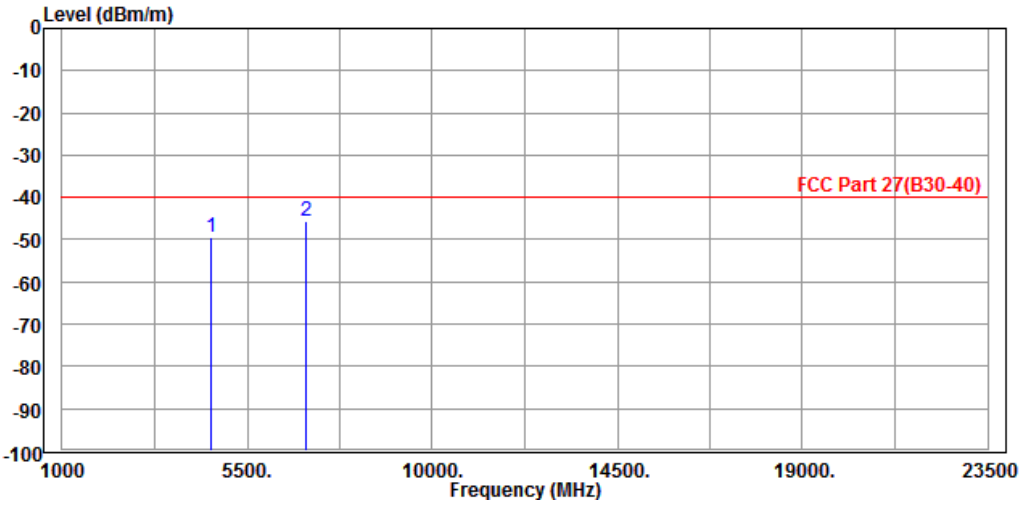
MODE	TX channel 27710	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 4614.000	-45.14	-51.89	-40.00	-5.14	6.75	Peak	Horizontal
2	6930.000	-46.63	-58.19	-40.00	-6.63	11.56	Peak	Horizontal



MODE	TX channel 27710	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	4620.000	-49.50	-56.18	-40.00	-9.50	6.68	Peak	Vertical
2 PP	6928.000	-45.50	-56.96	-40.00	-5.50	11.46	Peak	Vertical

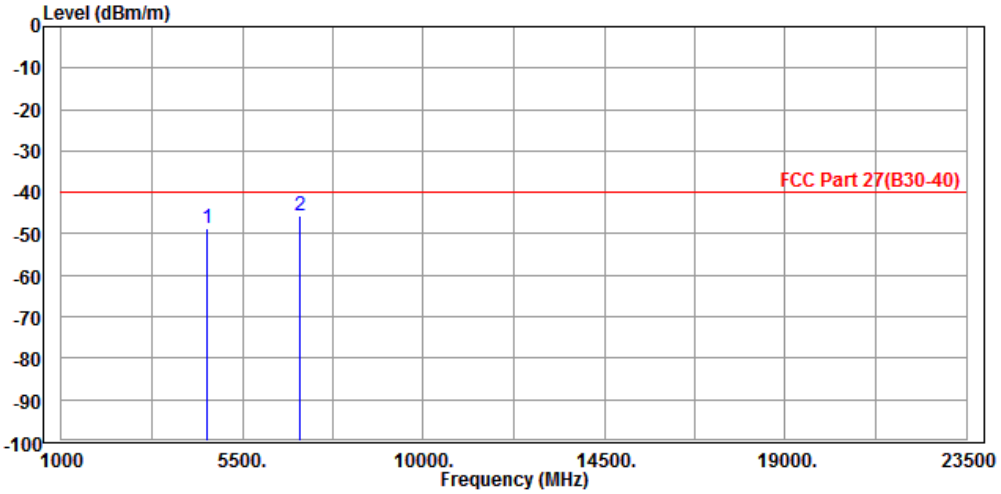


LTE BAND 40

CHANNEL BANDWIDTH: 5MHz / QPSK

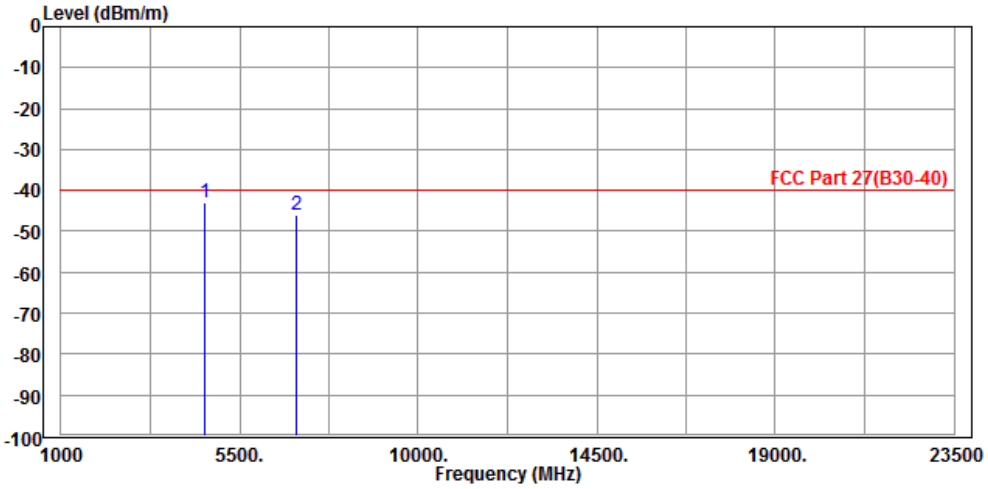
MODE	TX channel 38750	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	4622.500	-48.61	-55.40	-40.00	-8.61	6.79	Peak	Horizontal
2 PP	6930.000	-45.58	-57.14	-40.00	-5.58	11.56	Peak	Horizontal



MODE	TX channel 38750	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			

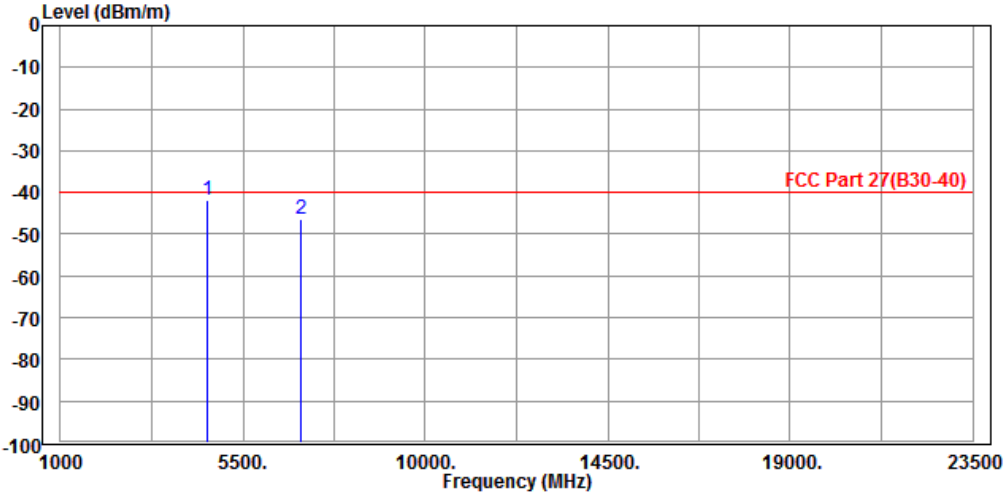
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	4622.500	-43.11	-49.80	-40.00	-3.11	6.69	Peak	Vertical
2	6930.000	-46.13	-57.60	-40.00	-6.13	11.47	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

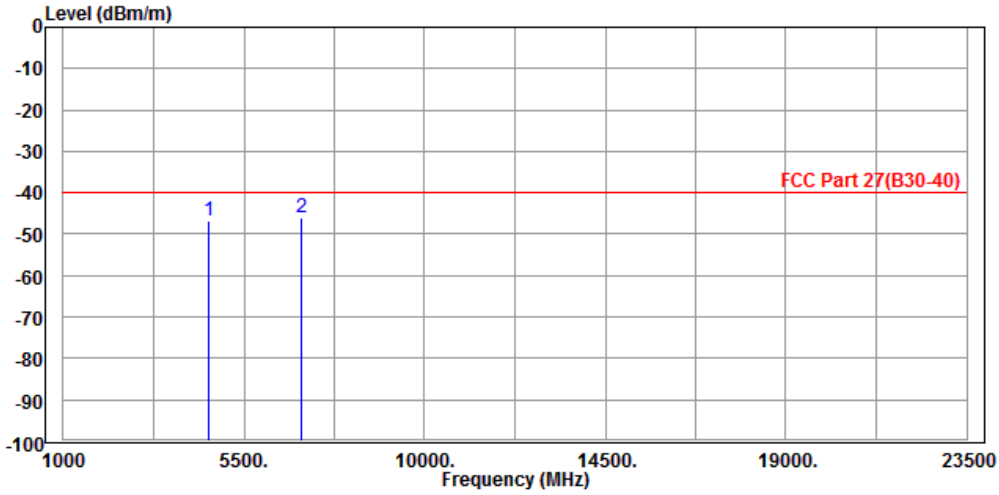
MODE	TX channel 38750	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5/9V from adapter
TESTED BY	Simon Yang		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 4622.500	-41.94	-48.73	-40.00	-1.94	6.79	Peak	Horizontal
2	6930.000	-46.34	-57.90	-40.00	-6.34	11.56	Peak	Horizontal



MODE	TX channel 38750	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	4622.500	-46.71	-53.40	-40.00	-6.71	6.69	Peak	Vertical
2 PP	6930.000	-46.16	-57.63	-40.00	-6.16	11.47	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:

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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.

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