



Test Report No.: RF190823W003-7



# FCC TEST REPORT (PART 27)

Applicant:	Xiaomi Communications Co., Ltd.
Address:	The Rainbow City of China Resources,NO.68,Qinghe Middle Street, Haidian District, Beijing, China

Manufacturer or Supplier:	Xiaomi Communications Co., Ltd.
Address:	The Rainbow City of China Resources,NO.68,Qinghe Middle Street, Haidian District, Beijing, China
Product:	Mobile Phone
Brand Name:	Redmi
Model Name:	M1908C3XG
FCC ID:	2AFZZC3XG
Date of tests:	Aug 24, 2019 ~ Sep 25, 2019

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 Alex Chen Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Date: Sep 26, 2019	Date: Sep 26, 2019

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF190823W003-7	Original release	Sep 26, 2019

## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 27 & Part 2		
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT
2.1046 27.50(h)(2)	Equivalent Isotropically Radiated Power	Compliance
2.1055 27.54	Frequency Stability	Compliance
2.1049 27.53(m)(6)	Occupied Bandwidth	Compliance
2.1051 27.53(m)(4)(6)	Band Edge Measurements	Compliance
2.1051 27.53(m)(4)(6)	Conducted Spurious Emissions	Compliance
2.1053 27.53(m)(4)(6)	Radiated Spurious Emissions	Compliance

### 1.1 MEASUREMENT UNCERTAINTY

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

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

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



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## 1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 26,19	Feb. 25,20
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 26,19	Feb. 25,20
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 26,19	Feb. 25,20
Horn Antenna (1GHz-18GHz)	ETS-LINDGREN	3117	00168692	Nov. 30, 18	Nov. 29, 19
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40 -K-SG/QMS-00 361	15433	Nov. 21, 18	Nov. 20, 19
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 26,19	Feb. 25,20
Radio Communication Analyzer	Rohde&Schwarz	CMW500	131349	Feb. 26,19	Feb. 25,20
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Jun. 24,19	Jun. 23,20
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn- CT0001143-1216	Feb. 26,19	Feb. 25,20
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-SM A	1505	Jun. 24,19	Jun. 23,20
Power Meter	Anritsu	ML2495A	1506002	Feb. 26,19	Feb. 25,20
Power Sensor	Anritsu	MA2411B	1339352	Feb. 26,19	Feb. 25,20
Humid & Temp Programmable Tester	Juyi	ITH-120-45-CP -AR	IAA1504-001	Jun. 24,19	Jun. 23,20
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 26,19	Feb. 25,20
Power Divider	MCLI/USA	PS2-15	24880	Jul. 09,19	Jul. 08,20

- 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; The Designation No. is CN1171.

## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Mobile Phone	
<b>BRAND NAME</b>	Redmi	
<b>MODEL NAME</b>	M1908C3XG	
<b>POWER SUPPLY</b>	5V/9V/12Vdc (adapter or host equipment) 3.85Vdc (Li-ion, battery) $V_{min}=3.65V, V_{nor}=3.85V, V_{max}=4.4V$	
<b>MODULATION TECHNOLOGY</b>	<b>LTE</b>	QPSK, 16QAM, 64QAM
<b>FREQUENCY RANGE</b>	<b>LTE Band 7 Channel Bandwidth: 5MHz</b>	2502.5MHz ~ 2567.5MHz
	<b>LTE Band 7 Channel Bandwidth: 10MHz</b>	2505MHz ~ 2565MHz
	<b>LTE Band 7 Channel Bandwidth: 15MHz</b>	2507.5MHz ~ 2562.5MHz
	<b>LTE Band 7 Channel Bandwidth: 20MHz</b>	2510MHz ~ 2560MHz
	<b>LTE Band 38 Channel Bandwidth: 5MHz</b>	2572.5MHz ~ 2617.5MHz
	<b>LTE Band 38 Channel Bandwidth: 10MHz</b>	2575MHz ~ 2615MHz
	<b>LTE Band 38 Channel Bandwidth: 15MHz</b>	2577.5MHz ~ 2612.5MHz
	<b>LTE Band 38 Channel Bandwidth: 20MHz</b>	2580MHz ~ 2610MHz
	<b>LTE Band CA_7C Channel Bandwidth: 10MHz+20MHz</b>	2505.5MHz ~ 2545.6MHz
	<b>LTE Band CA_7C Channel Bandwidth: 15MHz+10MHz</b>	2507.5MHz ~ 2552.7MHz
	<b>LTE Band CA_7C Channel Bandwidth: 15MHz+15MHz</b>	2507.5MHz ~ 2547.5MHz
	<b>LTE Band CA_7C Channel Bandwidth: 15MHz+20MHz</b>	2507.8MHz ~ 2542.9MHz
	<b>LTE Band CA_7C Channel Bandwidth: 20MHz+10MHz</b>	2510MHz ~ 2550.1MHz
	<b>LTE Band CA_7C Channel Bandwidth: 20MHz+15MHz</b>	2510MHz ~ 2545.1MHz



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	LTE Band CA_7C Channel Bandwidth: 20MHz+20MHz	2510MHz ~ 2540.2MHz
	LTE Band CA_38C Channel Bandwidth: 15MHz+15MHz	2577.5MHz ~ 2597.5MHz
	LTE Band CA_38C Channel Bandwidth: 20MHz+20MHz	2580MHz ~ 2590.2MHz
EMISSION DESIGNATOR	LTE Band 7 Channel Bandwidth: 5MHz	QPSK: 4M49G7D
		16QAM: 4M49W7D
		64QAM: 4M48W7D
	LTE Band 7 Channel Bandwidth: 10MHz	QPSK: 8M95G7D
		16QAM: 8M95W7D
		64QAM: 8M96W7D
	LTE Band 7 Channel Bandwidth: 15MHz	QPSK: 13M4G7D
		16QAM: 13M4W7D
		64QAM: 13M4W7D
	LTE Band 7 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 17M9W7D
		64QAM: 17M9W7D
EMISSION DESIGNATOR	LTE Band CA_7C Channel Bandwidth: 10MHz+20MHz	QPSK: 28M2G7D
		16QAM: 28M1W7D
		64QAM: 28M1W7D
	LTE Band CA_7C Channel Bandwidth: 15MHz +10MHz	QPSK: 23M6G7D
		16QAM: 23M5W7D
		64QAM: 23M5W7D
	LTE Band CA_7C Channel Bandwidth: 15MHz +15MHz	QPSK: 28M7G7D
		16QAM: 28M7W7D
		64QAM: 28M7W7D
	LTE Band CA_7C Channel Bandwidth: 15MHz +20MHz	QPSK: 32M9G7D
		16QAM: 32M9W7D
		64QAM: 32M9W7D
	LTE Band CA_7C Channel Bandwidth: 20MHz +10MHz	QPSK: 28M1G7D
		16QAM: 28M0W7D
		64QAM: 28M0W7D
	LTE Band CA_7C Channel Bandwidth: 20MHz +15MHz	QPSK: 32M9G7D
		16QAM: 32M9W7D
		64QAM: 32M9W7D
	LTE Band CA_7C Channel Bandwidth: 20MHz +20MHz	QPSK: 37M7G7D
		16QAM: 37M7W7D
		64QAM: 37M7W7D
	LTE Band 38 Channel Bandwidth: 5MHz	QPSK: 4M49G7D
		16QAM: 4M47W7D



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		64QAM: 4M47W7D
	LTE Band 38 Channel Bandwidth: 10MHz	QPSK: 8M96G7D
		16QAM: 8M96W7D
		64QAM: 8M97W7D
	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 CA_38C Channel Bandwidth: 15MHz+15MHz	QPSK: 28M4G7D
		16QAM: 28M5W7D
64QAM: 28M5W7D		
LTE Band CA_38C Channel Bandwidth: 20MHz+20MHz	QPSK: 37M6G7D	
	16QAM: 37M7W7D	
	64QAM: 37M7W7D	
MAX. EIRP POWER	LTE Band 7 Channel Bandwidth: 5MHz	484mW
	LTE Band 7 Channel Bandwidth: 10MHz	523mW
	LTE Band 7 Channel Bandwidth: 15MHz	548mW
	LTE Band 7 Channel Bandwidth: 20MHz	460mW
	LTE Band CA_7C Channel Bandwidth: 10MHz+20MHz	143mW
	LTE Band CA_7C Channel Bandwidth: 15MHz+10MHz	145mW
	LTE Band CA_7C Channel Bandwidth: 15MHz+15MHz	144mW
	LTE Band CA_7C Channel Bandwidth: 15MHz+20MHz	146mW
	LTE Band CA_7C Channel Bandwidth: 20MHz+10MHz	144mW
	LTE Band CA_7C Channel Bandwidth: 20MHz+15MHz	144mW
	LTE Band CA_7C Channel Bandwidth: 20MHz+20MHz	130mW
	LTE Band 38 Channel Bandwidth: 5MHz	512mW



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	LTE Band 38 Channel Bandwidth: 10MHz	543mW
	LTE Band 38 Channel Bandwidth: 15MHz	547mW
	LTE Band 38 Channel Bandwidth: 20MHz	483mW
	LTE Band CA_38C Channel Bandwidth: 15MHz+15MHz	131mW
	LTE Band CA_38C Channel Bandwidth: 20MHz+20MHz	114mW
ANTENNA TYPE	Main Antenna(ANT 0): Fixed Internal Antenna with 0.9dBi gain for LTE Band 7 Fixed Internal Antenna with 1.0dBi gain for LTE Band 38	
HW VERSION	P2	
SW VERSION	MIUI 10	
I/O PORTS	Refer to user's manual	
DATA CABLE	USB cable: 1.0 meter, shielded cable, without ferrite core	

**NOTE:**

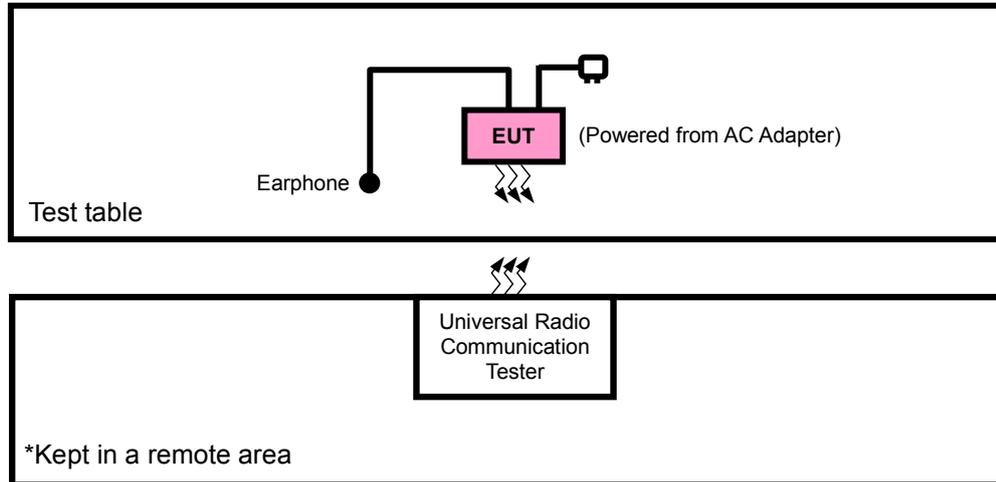
1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

**List of Accessories:**

ACCESSORIES	BRAND	MODEL	MANUFACTURER	SPECIFICATION
AC Adapter	MI	MDY-10-ED	Chenyang	I/P: 100 - 240Vac,500mA, O/P: 5Vdc, 3000mA/9V,2A/12V,1.5A
Battery	MI	BN46	CosMX	Rating: 3.85Vdc, Min. 3900mAh, Typ.4000 mAh, Li-ion, Y
USB Cable 1	MI	L23312	LUXSHARE Precision Industry Co., Ltd.	1.0 meter, shielded cable, without ferrite core
USB Cable 2	MI	K23312	SU ZHOU KELI SCIENCE&TECHNOLOGY DEVELOPMENT CO.,LTD	1.0 meter, shielded cable, without ferrite core

## 2.2 CONFIGURATION OF SYSTEM UNDER TEST

### FOR RADIATION EMISSION TEST



### 2.3 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	LONG WEI	PS-6403D	010934269	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 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	BAND EDGE	20775 to 21425	20775	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
			21425	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset		
		20800 to 21400	20800	10MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset		
			21400	10MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset		
		20825 to 21375	20825	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
			21375	15MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset		
		20850 to 21350	20825	15MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset		
			21375	15MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset		
		20850 to 21350	20850	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
			21350	20MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset		
		B	CONDCUDET ED 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		

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

**LTE BAND 38 MODE**

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	3775 to 38225	3775, 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	3775 to 38225	3775, 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	3775 to 38225	3775, 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	BAND EDGE	3775 to 38225	3775	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
			38825	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		37800 to 38200	37800	10MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset
			38200	10MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		37825 to 38175	37825	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
			38175	15MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		37850 to38150	37825	15MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset
			38175	15MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		37850 to38150	37825	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
			38175	15MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		37850 to38150	37850	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
			38150	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
B	CONDCUDET ED EMISSION	3775 to 38225	3775, 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	3775 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

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



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LTE BAND CA\_7C MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE PCC CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE	
B	EIRP	20805 to 21206	Low, Middle, High	10MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 49RB&1RB/ 0RB Offset	
		20825 to 21277	Low, Middle, High	15MHz+10MHz	QPSK, 16QAM, 64QAM	1RB/ 74RB&1RB/ 0RB Offset	
		20825 to 21225	Low, Middle, High	15MHz+15MHz	QPSK, 16QAM, 64QAM	1RB/ 74RB&1RB/ 0RB Offset	
		20828 to 21179	Low, Middle, High	15MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 74RB&1RB/ 0RB Offset	
		20850 to 21251	Low, Middle, High	20MHz+10MHz	QPSK, 16QAM, 64QAM	1RB/ 99RB&1RB/ 0RB Offset	
		20850 to 21201	Low, Middle, High	20MHz+15MHz	QPSK, 16QAM, 64QAM	1RB/ 99RB&1RB/ 0RB Offset	
		20850 to 21152	Low, Middle, High	20MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 99RB&1RB/ 0RB Offset	
B	OCCUPIED BANDWIDTH	20805 to 21206	Low, Middle, High	10MHz+20MHz	QPSK, 16QAM, 64QAM	50RB/ 0RB&100RB/ 0RB Offset	
		20825 to 21277	Low, Middle, High	15MHz+10MHz	QPSK, 16QAM, 64QAM	75RB/ 0RB&50RB/ 0RB Offset	
		20825 to 21225	Low, Middle, High	15MHz+15MHz	QPSK, 16QAM, 64QAM	75RB/ 0RB&75RB/ 0RB Offset	
		20828 to 21179	Low, Middle, High	15MHz+20MHz	QPSK, 16QAM, 64QAM	75RB/ 0RB&100RB/ 0RB Offset	
		20850 to 21251	Low, Middle, High	20MHz+10MHz	QPSK, 16QAM, 64QAM	100RB/ 0RB&50RB/ 0RB Offset	
		20850 to 21201	Low, Middle, High	20MHz+15MHz	QPSK, 16QAM, 64QAM	100RB/ 0RB&75RB/ 0RB Offset	
		20850 to 21152	Low, Middle, High	20MHz+20MHz	QPSK, 16QAM, 64QAM	100RB/ 0RB&100RB/ 0RB Offset	
B	BAND EDGE	20805 to 21206	Low	10MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 99RB Offset 1RB/ 49RB&1RB/ 0RB Offset 50RB/ 0RB&100RB/ 0RB Offset	
			High	10MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 99RB Offset 1RB/ 49RB&1RB/ 0RB Offset 50RB/ 0RB&100RB/ 0RB Offset	
			20825 to 21277	Low	15MHz+10MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 49RB Offset 1RB/ 74RB&1RB/ 0RB Offset 75RB/ 0RB&50RB/ 0RB Offset
				High	15MHz+10MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 49RB Offset 1RB/ 74RB&1RB/ 0RB Offset 75RB/ 0RB&50RB/ 0RB Offset
		20825 to 21225		Low	15MHz+15MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 74RB Offset 1RB/ 74RB&1RB/ 0RB Offset 75RB/ 0RB&75RB/ 0RB Offset
				High	15MHz+15MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 74RB Offset 1RB/ 74RB&1RB/ 0RB Offset 75RB/ 0RB&75RB/ 0RB Offset
			20828 to 21179	Low	15MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 99RB Offset 1RB/ 74RB&1RB/ 0RB Offset 75RB/ 0RB&100RB/ 0RB Offset
				High	15MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 99RB Offset 1RB/ 74RB&1RB/ 0RB Offset 75RB/ 0RB&100RB/ 0RB Offset
		20850 to 21251		Low	20MHz+10MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 49RB Offset 1RB/ 99RB&1RB/ 0RB Offset 100RB/ 0RB&50RB/ 0RB Offset
				High	20MHz+10MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 49RB Offset 1RB/ 99RB&1RB/ 0RB Offset 100RB/ 0RB&50RB/ 0RB Offset
			20850 to 21201	Low	20MHz+15MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 74RB Offset 1RB/ 99RB&1RB/ 0RB Offset
				High	20MHz+15MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 74RB Offset 1RB/ 99RB&1RB/ 0RB Offset



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		20850 to 21152	High	20MHz+15MHz	QPSK, 16QAM, 64QAM	100RB/ 0RB&75RB/ 0RB Offset				
						1RB/ 0RB&1RB/ 74RB Offset				
						1RB/ 99RB&1RB/ 0RB Offset				
				20850 to 21152	Low	20MHz+20MHz	QPSK, 16QAM, 64QAM	100RB/ 0RB&75RB/ 0RB Offset		
								1RB/ 0RB&1RB/ 99RB Offset		
								1RB/ 99RB&1RB/ 0RB Offset		
						20850 to 21152	High	20MHz+20MHz	QPSK, 16QAM, 64QAM	100RB/ 0RB&100RB/ 0RB Offset
										1RB/ 0RB&1RB/ 99RB Offset
										1RB/ 99RB&1RB/ 0RB Offset
B	CONDCUDET ED EMISSION					20805 to 21206	Low, Middle, High	10MHz+20MHz	QPSK	1RB/ 0RB&1RB/ 99RB Offset
										1RB/ 49RB&1RB/ 0RB Offset
										50RB/ 0RB&100RB/ 0RB Offset
		20825 to 21277	Low, Middle, High			15MHz+10MHz	QPSK	1RB/ 0RB&1RB/ 49RB Offset		
								1RB/ 74RB&1RB/ 0RB Offset		
								75RB/ 0RB&50RB/ 0RB Offset		
		20825 to 21225	Low, Middle, High	15MHz+15MHz	QPSK	1RB/ 0RB&1RB/ 74RB Offset				
						1RB/ 74RB&1RB/ 0RB Offset				
						75RB/ 0RB&75RB/ 0RB Offset				
		20828 to 21179	Low, Middle, High	15MHz+20MHz	QPSK	1RB/ 0RB&1RB/ 99RB Offset				
						1RB/ 74RB&1RB/ 0RB Offset				
						75RB/ 0RB&100RB/ 0RB Offset				
		20850 to 21251	Low, Middle, High	20MHz+10MHz	QPSK	1RB/ 0RB&1RB/ 49RB Offset				
						1RB/ 99RB&1RB/ 0RB Offset				
						100RB/ 0RB&50RB/ 0RB Offset				
		20850 to 21201	Low, Middle, High	20MHz+15MHz	QPSK	1RB/ 0RB&1RB/ 74RB Offset				
						1RB/ 99RB&1RB/ 0RB Offset				
						100RB/ 0RB&75RB/ 0RB Offset				
		20850 to 21152	Low, Middle, High	20MHz+20MHz	QPSK	1RB/ 0RB&1RB/ 99RB Offset				
						1RB/ 99RB&1RB/ 0RB Offset				
						100RB/ 0RB&100RB/ 0RB Offset				
		A	RADIATED EMISSION	20805 to 21206	Low, Middle, High	10MHz+20MHz	QPSK	1RB/ 49RB&1RB/ 0RB Offset		
				20825 to 21277	Low, Middle, High	15MHz+10MHz	QPSK	1RB/ 74RB&1RB/ 0RB Offset		
				20825 to 21225	Low, Middle, High	15MHz+15MHz	QPSK	1RB/ 74RB&1RB/ 0RB Offset		
20828 to 21179	Low, Middle, High			15MHz+20MHz	QPSK	1RB/ 74RB&1RB/ 0RB Offset				
20850 to 21251	Low, Middle, High			20MHz+10MHz	QPSK	1RB/ 99RB&1RB/ 0RB Offset				
20850 to 21201	Low, Middle, High			20MHz+15MHz	QPSK	1RB/ 99RB&1RB/ 0RB Offset				
20850 to 21152	Low, Middle, High			20MHz+20MHz	QPSK	1RB/ 99RB&1RB/ 0RB Offset				

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

**LTE BAND CA\_38C MODE**

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	37825 to 38025	Low, Middle, High	15MHz+15MHz	QPSK, 16QAM, 64QAM	1RB/ 74RB&1RB/ 0RB Offset
		37850 to 37952	Low, Middle, High	20MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 99RB&1RB/ 0RB Offset
B	OCCUPIED BANDWIDTH	37825 to 38025	Low, Middle, High	15MHz+15MHz	QPSK, 16QAM, 64QAM	75RB/ 0RB&75RB/ 0RB Offset
		37850 to 37952	Low, Middle, High	20MHz+20MHz	QPSK, 16QAM, 64QAM	100RB/ 0RB&100RB/ 0RB Offset
B	BAND EDGE	37825 to 38025	Low	15MHz+15MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB&1RB/ 74RB Offset
						1RB/ 74RB&1RB/ 0RB Offset
			High	15MHz+15MHz	QPSK, 16QAM, 64QAM	75RB/ 0RB&75RB/ 0RB Offset
						1RB/ 0RB&1RB/ 74RB Offset
		37850 to 37952	Low	20MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 74RB&1RB/ 0RB Offset
						1RB/ 99RB&1RB/ 0RB Offset
			High	20MHz+20MHz	QPSK, 16QAM, 64QAM	75RB/ 0RB&75RB/ 0RB Offset
						100RB/ 0RB&100RB/ 0RB Offset
B	CONDCUDET EMISSION	37825 to 38025	Low, Middle, High	15MHz+15MHz	QPSK	1RB/ 0RB&1RB/ 99RB Offset
						1RB/ 99RB&1RB/ 0RB Offset
						100RB/ 0RB&100RB/ 0RB Offset
		37850 to 37952	Low, Middle, High	20MHz+20MHz	QPSK	1RB/ 0RB&1RB/ 99RB Offset
						1RB/ 99RB&1RB/ 0RB Offset
						100RB/ 0RB&100RB/ 0RB Offset
A	RADIATED EMISSION	37825 to 38025	Low, Middle, High	15MHz+15MHz	QPSK	1RB/ 74RB&1RB/ 0RB Offset
		37850 to 37952	Low, Middle, High	20MHz+20MHz	QPSK	1RB/ 99RB&1RB/ 0RB Offset

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



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**TEST CONDITION:**

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	24deg. C, 60%RH	3.85Vdc from Battery	Star Le & Tony Xiong
FREQUENCY STABILITY	24deg. C, 61%RH	DC 3.65V/3.85V/4.4V	Kevin Zhang
OCCUPIED BANDWIDTH	24deg. C, 61%RH	3.85Vdc from Battery	Kevin Zhang
BAND EDGE	24deg. C, 61%RH	3.85Vdc from Battery	Kevin Zhang
CONDCUDED EMISSION	24deg. C, 61%RH	3.85Vdc from Battery	Kevin Zhang
RADIATED EMISSION	23deg. C, 70%RH	DC 5V/9V/12V from adaptor	Star Le & Tony Xiong

## 2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 27**

**KDB 971168 D01 Power Meas License Digital Systems v03r01**

**ANSI/TIA/EIA-603-D**

**ANSI/TIA/EIA-603-E**

**ANSI C63.26-2015**

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

## 3 TEST TYPES AND RESULTS

### 3.1 OUTPUT POWER MEASUREMENT

#### 3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

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

#### 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.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$

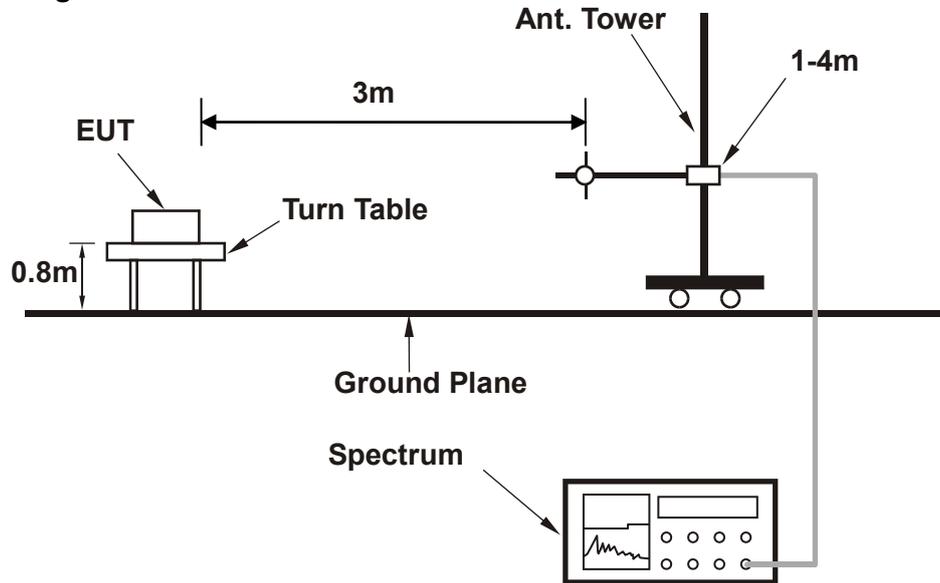
##### **CONDUCTED POWER MEASUREMENT:**

- 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.

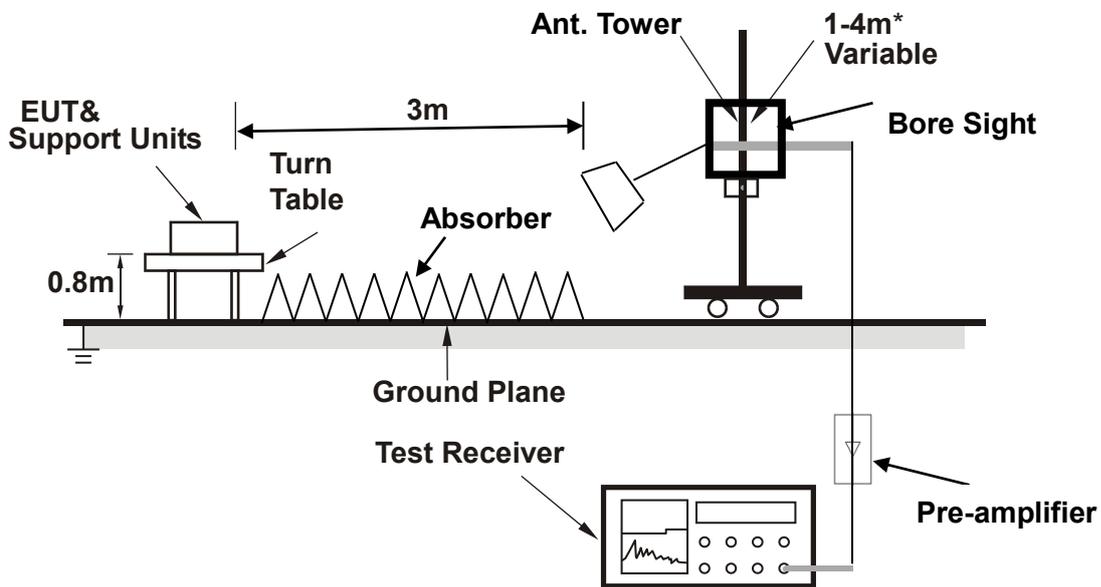
### 3.1.3 TEST SETUP

#### EIRP MEASUREMENT:

< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



**Note:** Above 1G is a directional antenna

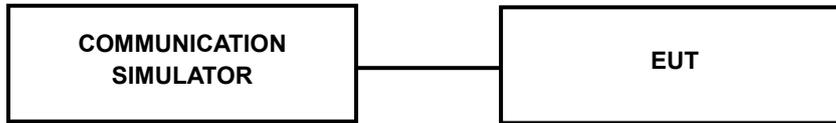
depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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



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**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	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	Max. Tune-up (dBm)
		Channel		20850	21100	21350		
		Frequency (MHz)		2510	2535	2560		
20M	QPSK	1	0	24.08	24.15	24.19	0	24.5
		1	50	24.04	24.11	24.15	0	24.5
		1	99	24.02	24.09	24.13	0	24.5
		50	0	22.24	22.31	22.35	1	23.5
		50	25	22.21	22.28	22.32	1	23.5
		50	50	22.16	22.23	22.27	1	23.5
		100	0	22.22	22.29	22.33	1	23.5
	16QAM	1	0	22.26	22.38	22.38	1	23.5
		1	50	22.35	22.46	22.44	1	23.5
		1	99	22.20	22.35	22.37	1	23.5
		50	0	21.23	21.31	21.35	2	22.5
		50	25	21.28	21.36	21.37	2	22.5
		50	50	21.24	21.37	21.40	2	22.5
		100	0	21.22	21.33	21.28	2	22.5
	64QAM	1	0	22.21	22.28	22.32	2	22.5
		1	50	22.18	22.25	22.29	2	22.5
		1	99	22.16	22.23	22.27	2	22.5
		50	0	21.21	21.28	21.32	2	22.5
		50	25	21.16	21.23	21.27	2	22.5
		50	50	21.15	21.22	21.26	2	22.5
		100	0	21.19	21.26	21.30	2	22.5
BW	MCS Index	Channel		20825	21100	21375	3GPP MPR	Max. Tune-up
Frequency (MHz)		2507.5	2535	2562.5				
15M	QPSK	1	0	23.98	24.15	24.19	0	24.5
		1	37	23.95	24.10	24.14	0	24.5
		1	74	23.97	23.99	24.08	0	24.5
		36	0	22.15	22.31	22.25	1	23.5
		36	19	22.11	22.27	22.29	1	23.5
		36	39	22.13	22.17	22.17	1	23.5
		75	0	22.17	22.20	22.29	1	23.5
	16QAM	1	0	22.21	22.37	22.38	1	23.5
		1	37	22.32	22.43	22.39	1	23.5
		1	74	22.20	22.30	22.29	1	23.5
		36	0	21.19	21.29	21.28	2	22.5
		36	19	21.26	21.28	21.27	2	22.5
		36	39	21.16	21.28	21.40	2	22.5
		75	0	21.13	21.24	21.23	2	22.5
	64QAM	1	0	22.15	22.26	22.28	2	22.5
		1	37	22.18	22.16	22.20	2	22.5
		1	74	22.12	22.16	22.23	2	22.5
		36	0	21.14	21.25	21.29	2	22.5
		36	19	21.06	21.19	21.27	2	22.5
		36	39	21.11	21.16	21.20	2	22.5
		75	0	21.17	21.23	21.28	2	22.5

BW	MCS Index	Channel		20800	21100	21400	3GPP MPR	Max. Tune-up
		Frequency (MHz)		2505	2535	2565		
10M	QPSK	1	0	24.04	24.10	24.05	0	24.5
		1	24	23.89	23.91	23.92	0	24.5
		1	49	23.87	23.89	23.97	0	24.5
		25	0	22.06	22.11	22.25	1	23.5
		25	12	22.10	22.09	22.32	1	23.5
		25	25	22.07	22.08	22.24	1	23.5
		50	0	22.10	22.09	22.19	1	23.5
	16QAM	1	0	22.18	22.17	22.27	1	23.5
		1	24	22.13	22.24	22.37	1	23.5
		1	49	22.13	22.22	22.31	1	23.5
		25	0	21.11	21.15	21.27	2	22.5
		25	12	21.18	21.24	21.29	2	22.5
		25	25	21.07	21.27	21.23	2	22.5
		50	0	21.11	21.19	21.14	2	22.5
	64QAM	1	0	22.11	22.09	22.21	2	22.5
		1	24	22.13	22.13	22.20	2	22.5
		1	49	22.09	22.19	22.15	2	22.5
		25	0	21.02	21.24	21.25	2	22.5
		25	12	20.95	21.06	21.12	2	22.5
		25	25	20.92	21.08	21.22	2	22.5
		50	0	20.97	21.17	21.23	2	22.5
BW	MCS Index	Channel		20775	21100	21425	3GPP MPR	Max. Tune-up
Frequency (MHz)		2502.5	2535	2567.5				
5M	QPSK	1	0	24.00	24.03	24.12	0	24.5
		1	12	23.93	24.08	23.93	0	24.5
		1	24	23.95	24.03	23.96	0	24.5
		12	0	22.20	22.08	22.14	1	23.5
		12	6	22.17	22.17	21.95	1	23.5
		12	13	22.09	22.07	22.15	1	23.5
		25	0	22.11	22.17	22.18	1	23.5
	16QAM	1	0	22.02	22.38	22.22	1	23.5
		1	12	22.17	22.31	22.27	1	23.5
		1	24	22.04	22.12	22.33	1	23.5
		12	0	21.13	21.27	21.28	2	22.5
		12	6	21.09	21.25	21.22	2	22.5
		12	13	21.10	21.28	21.30	2	22.5
		25	0	21.04	21.18	21.24	2	22.5
	64QAM	1	0	22.09	22.17	22.11	2	22.5
		1	12	21.99	22.16	22.15	2	22.5
		1	24	22.04	22.20	22.19	2	22.5
		12	0	21.05	21.16	21.23	2	22.5
		12	6	20.95	21.00	21.11	2	22.5
		12	13	21.04	21.09	21.03	2	22.5
		25	0	21.09	21.09	21.18	2	22.5

LTE Band 38								
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	Max. Tune-up (dBm)
		Channel		37850	38000	38150		
		Frequency (MHz)		2580	2595	2610		
20M	QPSK	1	0	23.76	23.78	23.81	0	24
		1	50	23.74	23.76	23.79	0	24
		1	99	23.65	23.67	23.70	0	24
		50	0	22.33	22.35	22.38	1	23
		50	25	22.30	22.32	22.35	1	23
		50	50	22.26	22.28	22.31	1	23
		100	0	22.24	22.26	22.29	1	23
	16QAM	1	0	22.48	22.55	22.54	1	23
		1	50	22.49	22.53	22.55	1	23
		1	99	22.33	22.41	22.42	1	23
		50	0	21.49	21.51	21.48	2	22
		50	25	21.38	21.48	21.45	2	22
		50	50	21.32	21.42	21.44	2	22
		100	0	21.33	21.41	21.39	2	22
	64QAM	1	0	20.07	20.15	20.09	2	22
		1	50	20.10	20.12	20.07	2	22
		1	99	20.05	20.08	20.05	2	22
		50	0	20.41	20.48	20.42	2	22
		50	25	20.48	20.51	20.50	2	22
		50	50	20.37	20.39	20.38	2	22
		100	0	20.42	20.46	20.46	2	22
BW	MCS Index	Channel		37825	38000	38175	3GPP MPR	Max. Tune-up
		Frequency (MHz)		2577.5	2595	2612.5		
15M	QPSK	1	0	23.76	23.78	23.73	0	24
		1	37	23.71	23.71	23.74	0	24
		1	74	23.60	23.58	23.63	0	24
		36	0	22.26	22.31	22.36	1	23
		36	19	22.29	22.30	22.34	1	23
		36	39	22.26	22.28	22.28	1	23
		75	0	22.24	22.25	22.19	1	23
	16QAM	1	0	22.45	22.55	22.50	1	23
		1	37	22.49	22.45	22.46	1	23
		1	74	22.24	22.38	22.37	1	23
		36	0	21.45	21.50	21.47	2	22
		36	19	21.35	21.39	21.38	2	22
		36	39	21.29	21.38	21.37	2	22
		75	0	21.28	21.32	21.31	2	22
	64QAM	1	0	20.08	20.14	20.03	2	22
		1	37	20.08	20.04	20.03	2	22
		1	74	20.05	20.03	20.02	2	22
		36	0	20.33	20.43	20.40	2	22
		36	19	20.41	20.45	20.48	2	22
		36	39	20.30	20.30	20.28	2	22
		75	0	20.34	20.41	20.43	2	22

BW	MCS Index	Channel		37800	38000	38200	3GPP MPR	Max. Tune-up	
		Frequency (MHz)		2575	2595	2615			
10M	QPSK	1	0	23.62	23.67	23.63	0	24	
		1	24	23.56	23.65	23.63	0	24	
		1	49	23.52	23.47	23.68	0	24	
		25	0	22.17	22.12	22.28	1	23	
		25	12	22.15	22.09	22.27	1	23	
		25	25	22.10	22.24	22.10	1	23	
	16QAM	50	0	22.16	22.11	22.11	1	23	
		1	0	22.38	22.47	22.35	1	23	
		1	24	22.44	22.35	22.48	1	23	
		1	49	22.26	22.34	22.30	1	23	
		25	0	21.40	21.36	21.29	2	22	
		25	12	21.22	21.40	21.31	2	22	
	64QAM	25	25	21.30	21.23	21.28	2	22	
		50	0	21.24	21.25	21.28	2	22	
		1	0	20.01	20.04	20.03	2	22	
		1	24	20.30	20.08	20.04	2	22	
		1	49	20.07	20.05	20.06	2	22	
		25	0	20.24	20.45	20.26	2	22	
	5M	QPSK	25	12	20.37	20.44	20.45	2	22
			25	25	20.14	20.32	20.13	2	22
			50	0	20.17	20.43	20.28	2	22
1			0	23.71	23.74	23.62	0	24	
1			12	23.68	23.66	23.47	0	24	
1			24	23.50	23.51	23.60	0	24	
16QAM		12	0	22.24	22.23	22.26	1	23	
		12	6	22.15	22.19	22.11	1	23	
		12	13	22.12	22.24	22.15	1	23	
		25	0	22.06	22.11	22.08	1	23	
		1	0	22.42	22.33	22.44	1	23	
		1	12	22.33	22.37	22.37	1	23	
64QAM		1	24	22.09	22.24	22.22	1	23	
		12	0	21.38	21.40	21.38	2	22	
		12	6	21.30	21.38	21.37	2	22	
		12	13	21.19	21.37	21.34	2	22	
		25	0	21.19	21.25	21.24	2	22	
		1	0	20.05	20.04	20.06	2	22	
QPSK		1	12	20.01	20.08	20.01	2	22	
		1	24	20.03	20.05	20.03	2	22	
		12	0	20.25	20.45	20.31	2	22	
	12	6	20.29	20.35	20.38	2	22		
	12	13	20.17	20.34	20.35	2	22		
	25	0	20.37	20.29	20.26	2	22		

CA_7C								
Combination 10MHz+20MHz (50RB+100RB)								
PCC	SCC	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
Channel	Channel		RB Size	RB offset	RB Size	RB offset		
20805	20949	QPSK	1	49	1	0	2	24.05
		16QAM	1	49	1	0	2	23.20
		64QAM	1	49	1	0	2	22.02
21006	21150	QPSK	1	49	1	0	2	23.87
		16QAM	1	49	1	0	2	23.25
		64QAM	1	49	1	0	2	22.14
21206	21350	QPSK	1	49	1	0	2	24.03
		16QAM	1	49	1	0	2	23.36
		64QAM	1	49	1	0	2	22.17
Combination 15MHz+10MHz (75RB+50RB)								
PCC	SCC	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
Channel	Channel		RB Size	RB offset	RB Size	RB offset		
20825	20975	QPSK	1	74	1	0	2	24.03
		16QAM	1	74	1	0	2	23.17
		64QAM	1	74	1	0	2	22.03
21051	21171	QPSK	1	74	1	0	2	23.86
		16QAM	1	74	1	0	2	23.34
		64QAM	1	74	1	0	2	22.10
21277	21397	QPSK	1	74	1	0	2	24.01
		16QAM	1	74	1	0	2	23.34
		64QAM	1	74	1	0	2	22.21

CA_7C								
Combination 15MHz+15MHz (75RB+75RB)								
PCC	SCC	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
Channel	Channel		RB Size	RB offset	RB Size	RB offset		
20825	20975	QPSK	1	74	1	0	2	23.98
		16QAM	1	74	1	0	2	23.22
		64QAM	1	74	1	0	2	22.02
21025	21175	QPSK	1	74	1	0	2	23.82
		16QAM	1	74	1	0	2	23.28
		64QAM	1	74	1	0	2	22.07
21225	21375	QPSK	1	74	1	0	2	24.03
		16QAM	1	74	1	0	2	23.35
		64QAM	1	74	1	0	2	22.23
Combination 15MHz+20MHz (75RB+100RB)								
PCC	SCC	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
Channel	Channel		RB Size	RB offset	RB Size	RB offset		
20828	20999	QPSK	1	74	1	0	2	24.05
		16QAM	1	74	1	0	2	23.25
		64QAM	1	74	1	0	2	22.11
21003	21174	QPSK	1	74	1	0	2	23.94
		16QAM	1	74	1	0	2	23.33
		64QAM	1	74	1	0	2	22.26
21179	21350	QPSK	1	74	1	0	2	24.02
		16QAM	1	74	1	0	2	23.05
		64QAM	1	74	1	0	2	22.18

CA_7C								
Combination 20MHz+10MHz (100RB+50RB)								
PCC	SCC	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
Channel	Channel		RB Size	RB offset	RB Size	RB offset		
20850	20994	QPSK	1	99	1	0	2	24.01
		16QAM	1	99	1	0	2	23.27
		64QAM	1	99	1	0	2	22.04
21051	21195	QPSK	1	99	1	0	2	23.87
		16QAM	1	99	1	0	2	23.30
		64QAM	1	99	1	0	2	22.08
21251	21395	QPSK	1	99	1	0	2	23.97
		16QAM	1	99	1	0	2	23.39
		64QAM	1	99	1	0	2	22.25
Combination 20MHz+15MHz (100RB+75RB)								
PCC	SCC	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
Channel	Channel		RB Size	RB offset	RB Size	RB offset		
20850	21021	QPSK	1	99	1	0	2	23.97
		16QAM	1	99	1	0	2	23.39
		64QAM	1	99	1	0	2	22.24
21026	21197	QPSK	1	99	1	0	2	24.00
		16QAM	1	99	1	0	2	23.37
		64QAM	1	99	1	0	2	22.39
21201	21372	QPSK	1	99	1	0	2	24.02
		16QAM	1	99	1	0	2	23.16
		64QAM	1	99	1	0	2	22.25

CA_7C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
20850	21048	QPSK	0	0	1	99	1	23.83
			1	0	0	0	1	23.86
			1	99	1	0	2	23.87
		16QAM	0	0	1	99	1	23.36
			1	0	0	0	1	23.27
			1	99	1	0	2	23.21
		64QAM	0	0	1	99	1	22.09
			1	0	0	0	1	22.06
			1	99	1	0	2	21.97
21001	21199	QPSK	0	0	1	99	1	23.95
			1	0	0	0	1	23.92
			1	99	1	0	2	23.98
		16QAM	0	0	1	99	1	23.29
			1	0	0	0	1	23.31
			1	99	1	0	2	23.24
		64QAM	0	0	1	99	1	22.02
			1	0	0	0	1	22.02
			1	99	1	0	2	21.96
21152	21350	QPSK	0	0	1	99	1	23.87
			1	0	0	0	1	23.86
			1	99	1	0	2	23.87
		16QAM	0	0	1	99	1	23.38
			1	0	0	0	1	23.33
			1	99	1	0	2	23.22
		64QAM	0	0	1	99	1	22.03
			1	0	0	0	1	22.09
			1	99	1	0	2	22.04

CA_38C								
Combination 15MHz+15MHz (75RB+75RB)								
PCC	SCC	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
Channel	Channel		RB Size	RB offset	RB Size	RB offset		
37825	37975	QPSK	1	74	1	0	2	23.60
		16QAM	1	74	1	0	2	22.62
		64QAM	1	74	1	0	2	21.59
37925	38075	QPSK	1	74	1	0	2	23.57
		16QAM	1	74	1	0	2	22.58
		64QAM	1	74	1	0	2	21.53
38025	38175	QPSK	1	74	1	0	2	23.54
		16QAM	1	74	1	0	2	22.55
		64QAM	1	74	1	0	2	21.55

CA_38C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
37850	38048	QPSK	0	0	1	99	1	23.61
			1	0	0	0	1	23.50
			1	99	1	0	2	23.65
		16QAM	0	0	1	99	1	22.54
			1	0	0	0	1	22.41
			1	99	1	0	2	22.39
		64QAM	0	0	1	99	1	21.57
			1	0	0	0	1	21.50
			1	99	1	0	2	21.52
37901	38099	QPSK	0	0	1	99	1	23.35
			1	0	0	0	1	23.38
			1	99	1	0	2	23.40
		16QAM	0	0	1	99	1	22.54
			1	0	0	0	1	22.58
			1	99	1	0	2	22.53
		64QAM	0	0	1	99	1	21.57
			1	0	0	0	1	21.57
			1	99	1	0	2	21.59
37952	38150	QPSK	0	0	1	99	1	23.43
			1	0	0	0	1	23.39
			1	99	1	0	2	23.50
		16QAM	0	0	1	99	1	22.67
			1	0	0	0	1	22.60
			1	99	1	0	2	22.61
		64QAM	0	0	1	99	1	21.65
			1	0	0	0	1	21.70
			1	99	1	0	2	21.59

**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	-24.75	45.65	20.90	122.97	H	2
21100	2535.0	-24.78	46.04	21.26	133.51	H	2
21425	2567.5	-24.37	45.87	21.50	141.12	H	2
20775	2502.5	-20.18	47.03	26.85	<b>483.95</b>	V	2
21100	2535.0	-19.90	46.57	26.67	464.52	V	2
21425	2567.5	-20.69	46.98	26.29	425.60	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	-25.58	45.65	20.07	101.58	H	2
21100	2535.0	-25.80	46.04	20.24	105.56	H	2
21425	2567.5	-25.47	45.87	20.40	109.55	H	2
20775	2502.5	-21.01	47.03	26.02	399.76	V	2
21100	2535.0	-20.92	46.57	25.65	367.28	V	2
21425	2567.5	-21.79	46.98	25.19	330.37	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	-27.58	45.65	18.07	64.09	H	2
21100	2535.0	-27.78	46.04	18.26	66.91	H	2
21425	2567.5	-27.47	45.87	18.40	69.12	H	2
20775	2502.5	-23.07	47.03	23.96	248.77	V	2
21100	2535.0	-22.96	46.57	23.61	229.61	V	2
21425	2567.5	-23.81	46.98	23.17	207.49	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	-24.56	45.65	21.09	128.50	H	2
21100	2535.0	-24.72	46.04	21.32	135.36	H	2
21400	2565.0	-24.24	46.07	21.83	152.23	H	2
20800	2505.0	-19.99	47.18	27.19	<b>523.12</b>	V	2
21100	2535.0	-19.84	46.57	26.73	470.98	V	2
21400	2565.0	-20.56	47.06	26.50	447.10	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	-25.71	45.65	19.94	98.61	H	2
21100	2535.0	-25.82	46.04	20.22	105.08	H	2
21400	2565.0	-25.40	46.07	20.67	116.55	H	2
20800	2505.0	-21.14	47.18	26.04	401.42	V	2
21100	2535.0	-20.94	46.57	25.63	365.59	V	2
21400	2565.0	-21.72	47.06	25.34	342.29	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	-27.81	45.65	17.84	60.80	H	2
21100	2535.0	-27.78	46.04	18.26	66.91	H	2
21400	2565.0	-27.49	46.07	18.58	72.03	H	2
20800	2505.0	-23.27	47.18	23.91	245.81	V	2
21100	2535.0	-22.90	46.57	23.67	232.81	V	2
21400	2565.0	-23.75	47.06	23.31	214.49	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	-24.57	45.63	21.06	127.73	H	2
21100	2535.0	-24.79	46.04	21.25	133.20	H	2
21375	2562.5	-24.31	45.94	21.63	145.48	H	2
20825	2507.5	-20.00	47.39	27.39	<b>548.15</b>	V	2
21100	2535.0	-19.91	46.57	26.66	463.45	V	2
21375	2562.5	-20.63	47.00	26.37	433.41	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	-25.43	45.63	20.20	104.79	H	2
21100	2535.0	-25.66	46.04	20.38	109.02	H	2
21375	2562.5	-25.16	45.94	20.78	119.62	H	2
20825	2507.5	-20.86	47.39	26.53	449.68	V	2
21100	2535.0	-20.78	46.57	25.79	379.31	V	2
21375	2562.5	-21.48	47.00	25.52	356.37	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	-27.48	45.63	18.15	65.36	H	2
21100	2535.0	-25.71	46.04	20.33	107.77	H	2
21375	2562.5	-27.25	45.94	18.69	73.93	H	2
20825	2507.5	-22.89	47.39	24.50	281.77	V	2
21100	2535.0	-22.84	46.57	23.73	236.05	V	2
21375	2562.5	-23.56	47.00	23.44	220.75	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	-25.15	45.80	20.65	116.12	H	2
21100	2535.0	-25.24	46.04	20.80	120.09	H	2
21350	2560.0	-24.89	45.83	20.94	124.25	H	2
20850	2510.0	-20.58	47.21	26.63	<b>460.26</b>	V	2
21100	2535.0	-20.36	46.57	26.21	417.45	V	2
21350	2560.0	-21.21	47.07	25.86	385.39	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	-26.08	45.80	19.72	93.73	H	2
21100	2535.0	-26.31	46.04	19.73	93.86	H	2
21350	2560.0	-25.72	45.83	20.11	102.64	H	2
20850	2510.0	-21.51	47.21	25.70	371.54	V	2
21100	2535.0	-21.43	46.57	25.14	326.29	V	2
21350	2560.0	-22.04	47.07	25.03	318.35	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	-28.16	45.80	17.64	58.06	H	2
21100	2535.0	-28.41	46.04	17.63	57.88	H	2
21350	2560.0	-28.07	45.83	17.76	59.74	H	2
20850	2510.0	-23.58	47.21	23.63	230.67	V	2
21100	2535.0	-23.51	46.57	23.06	202.12	V	2
21350	2560.0	-24.15	47.07	22.92	195.84	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



BUREAU  
VERITAS

Test Report No.: RF190823W003-7

**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	-24.35	45.91	21.56	143.22	H	2
38000	2595.0	-24.76	46.04	21.28	134.28	H	2
38225	2617.5	-23.99	46.23	22.24	167.49	H	2
37775	2572.5	-19.83	46.92	27.09	<b>511.68</b>	V	2
38000	2595.0	-20.41	47.10	26.69	466.66	V	2
38225	2617.5	-20.93	47.26	26.33	429.54	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	-25.18	45.91	20.73	118.30	H	2
38000	2595.0	-25.78	46.04	20.26	106.17	H	2
38225	2617.5	-25.09	46.23	21.14	130.02	H	2
37775	2572.5	-20.66	46.92	26.26	422.67	V	2
38000	2595.0	-21.43	47.10	25.67	368.98	V	2
38225	2617.5	-22.03	47.26	25.23	333.43	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	-27.27	45.91	18.64	73.11	H	2
38000	2595.0	-27.82	46.04	18.22	66.37	H	2
38225	2617.5	-27.19	46.23	19.04	80.17	H	2
37775	2572.5	-22.75	46.92	24.17	261.22	V	2
38000	2595.0	-23.46	47.10	23.64	231.21	V	2
38225	2617.5	-24.08	47.26	23.18	207.97	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	-24.16	45.96	21.80	151.36	H	2
38000	2595.0	-24.70	46.04	21.34	136.14	H	2
38200	2615.0	-23.86	46.18	22.32	170.61	H	2
37800	2575.0	-19.64	46.99	27.35	<b>543.25</b>	V	2
38000	2595.0	-20.35	47.10	26.75	473.15	V	2
38200	2615.0	-20.80	47.21	26.41	437.52	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	-25.31	45.96	20.65	116.14	H	2
38000	2595.0	-25.80	46.04	20.24	105.68	H	2
38200	2615.0	-25.02	46.18	21.16	130.62	H	2
37800	2575.0	-20.79	46.99	26.20	416.87	V	2
38000	2595.0	-21.45	47.10	25.65	367.28	V	2
38200	2615.0	-21.96	47.21	25.25	334.97	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	-27.41	45.96	18.55	71.61	H	2
38000	2595.0	-27.80	46.04	18.24	66.68	H	2
38200	2615.0	-27.04	46.18	19.14	82.04	H	2
37800	2575.0	-22.81	46.99	24.18	261.82	V	2
38000	2595.0	-23.47	47.10	23.63	230.67	V	2
38200	2615.0	-24.02	47.21	23.19	208.45	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	-24.17	46.01	21.84	152.76	H	2
38000	2595.0	-24.77	46.04	21.27	133.97	H	2
38175	2612.5	-23.93	46.14	22.21	166.34	H	2
37825	2577.5	-19.65	47.03	27.38	<b>547.02</b>	V	2
38000	2595.0	-20.42	47.10	26.68	465.59	V	2
38175	2612.5	-20.87	47.17	26.30	426.58	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	-25.03	46.01	20.98	125.31	H	2
38000	2595.0	-25.64	46.04	20.40	109.65	H	2
38175	2612.5	-24.78	46.14	21.36	136.77	H	2
37825	2577.5	-20.51	47.03	26.52	448.75	V	2
38000	2595.0	-21.29	47.10	25.81	381.07	V	2
38175	2612.5	-21.72	47.17	25.45	350.75	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	-24.93	46.01	21.08	128.23	H	2
38000	2595.0	-27.74	46.04	18.30	67.61	H	2
38175	2612.5	-26.81	46.14	19.33	85.70	H	2
37825	2577.5	-22.52	47.03	24.51	282.49	V	2
38000	2595.0	-23.79	47.10	23.31	214.29	V	2
38175	2612.5	-24.71	47.17	22.46	176.20	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	-24.75	46.05	21.30	134.90	H	2
38000	2595.0	-25.22	46.04	20.82	120.78	H	2
38150	2610.0	-24.51	46.11	21.60	144.54	H	2
37850	2580.0	-20.23	47.07	26.84	<b>483.06</b>	V	2
38000	2595.0	-20.87	47.10	26.23	419.76	V	2
38150	2610.0	-21.45	47.13	25.68	369.83	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	-25.68	46.05	20.37	108.89	H	2
38000	2595.0	-26.29	46.04	19.75	94.41	H	2
38150	2610.0	-25.34	46.11	20.77	119.40	H	2
37850	2580.0	-21.16	47.07	25.91	389.94	V	2
38000	2595.0	-21.94	47.10	25.16	328.10	V	2
38150	2610.0	-22.28	47.13	24.85	305.49	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	-27.75	46.05	18.30	67.61	H	2
38000	2595.0	-28.30	46.04	17.74	59.43	H	2
38150	2610.0	-27.38	46.11	18.73	74.64	H	2
37850	2580.0	-23.21	47.07	23.86	243.22	V	2
38000	2595.0	-24.10	47.10	23.00	199.53	V	2
38150	2610.0	-24.41	47.13	22.72	187.07	V	2



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CHANNEL BANDWIDTH: 10MHz+20MHz QPSK

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20805	2505.5	20949	2519.9	-24.34	45.65	21.31	135.15	H	2
21006	2525.6	21150	2540.0	-24.48	46.04	21.56	<b>143.05</b>	H	2
21206	2545.6	21350	2560.0	-25.40	45.87	20.47	111.33	H	2
20805	2505.5	20949	2519.9	-26.51	47.03	20.52	112.67	V	2
21006	2525.6	21150	2540.0	-27.23	46.57	19.34	85.90	V	2
21206	2545.6	21350	2560.0	-28.48	46.98	18.50	70.79	V	2

CHANNEL BANDWIDTH: 10MHz+20MHz 16QAM

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20805	2505.5	20949	2519.9	-25.11	45.65	20.54	113.19	H	2
21006	2525.6	21150	2540.0	-25.33	46.04	20.71	117.63	H	2
21206	2545.6	21350	2560.0	-26.27	45.87	19.60	91.12	H	2
20805	2505.5	20949	2519.9	-27.41	47.03	19.62	91.58	V	2
21006	2525.6	21150	2540.0	-28.11	46.57	18.46	70.15	V	2
21206	2545.6	21350	2560.0	-29.36	46.98	17.62	57.81	V	2

CHANNEL BANDWIDTH: 10MHz+20MHz 64QAM

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20805	2505.5	20949	2519.9	-25.77	45.65	19.88	97.23	H	2
21006	2525.6	21150	2540.0	-25.97	46.04	20.07	101.51	H	2
21206	2545.6	21350	2560.0	-26.99	45.87	18.88	77.20	H	2
20805	2505.5	20949	2519.9	-27.98	47.03	19.05	80.32	V	2
21006	2525.6	21150	2540.0	-28.68	46.57	17.89	61.52	V	2
21206	2545.6	21350	2560.0	-30.07	46.98	16.91	49.09	V	2

**CHANNEL BANDWIDTH: 15MHz+10MHz QPSK**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20825	2507.5	20945	2519.5	-24.30	45.65	21.35	136.40	H	2
21025	2527.5	21171	2542.1	-24.42	46.04	21.62	<b>145.04</b>	H	2
21225	2547.5	21397	2564.7	-25.30	45.87	20.57	113.92	H	2
20825	2507.5	20945	2519.5	-26.44	47.03	20.59	114.50	V	2
21025	2527.5	21171	2542.1	-27.09	46.57	19.48	88.72	V	2
21225	2547.5	21397	2564.7	-28.34	46.98	18.64	73.11	V	2

**CHANNEL BANDWIDTH: 15MHz+10MHz 16QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20825	2507.5	20945	2519.5	-25.28	45.65	20.37	108.84	H	2
21025	2527.5	21171	2542.1	-25.45	46.04	20.59	114.42	H	2
21225	2547.5	21397	2564.7	-26.33	45.87	19.54	89.87	H	2
20825	2507.5	20945	2519.5	-27.48	47.03	19.55	90.12	V	2
21025	2527.5	21171	2542.1	-28.15	46.57	18.42	69.50	V	2
21225	2547.5	21397	2564.7	-29.40	46.98	17.58	57.28	V	2

**CHANNEL BANDWIDTH: 15MHz+10MHz 64QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20825	2507.5	20945	2519.5	-25.83	45.65	19.82	95.90	H	2
21025	2527.5	21171	2542.1	-26.00	46.04	20.04	100.81	H	2
21225	2547.5	21397	2564.7	-27.05	45.87	18.82	76.14	H	2
20825	2507.5	20945	2519.5	-28.02	47.03	19.01	79.58	V	2
21025	2527.5	21171	2542.1	-28.68	46.57	17.89	61.52	V	2
21225	2547.5	21397	2564.7	-30.11	46.98	16.87	48.64	V	2

**CHANNEL BANDWIDTH: 15MHz+15MHz QPSK**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20825	2507.5	20975	2522.5	-24.28	45.65	21.37	137.03	H	2
21025	2527.5	21175	2542.5	-24.45	46.04	21.59	<b>144.05</b>	H	2
21225	2547.5	21375	2562.5	-25.33	45.87	20.54	113.14	H	2
20825	2507.5	20975	2522.5	-26.48	47.03	20.55	113.45	V	2
21025	2527.5	21175	2542.5	-27.15	46.57	19.42	87.50	V	2
21225	2547.5	21375	2562.5	-28.40	46.98	18.58	72.11	V	2

**CHANNEL BANDWIDTH: 15MHz+15MHz 16QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20825	2507.5	20975	2522.5	-25.11	45.65	20.54	113.19	H	2
21025	2527.5	21175	2542.5	-25.47	46.04	20.57	113.89	H	2
21225	2547.5	21375	2562.5	-26.43	45.87	19.44	87.82	H	2
20825	2507.5	20975	2522.5	-27.31	47.03	19.72	93.71	V	2
21025	2527.5	21175	2542.5	-28.17	46.57	18.40	69.18	V	2
21225	2547.5	21375	2562.5	-29.50	46.98	17.48	55.98	V	2

**CHANNEL BANDWIDTH: 15MHz+15MHz 64QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20825	2507.5	20975	2522.5	-25.89	45.65	19.76	94.58	H	2
21025	2527.5	21175	2542.5	-26.25	46.04	19.79	95.17	H	2
21225	2547.5	21375	2562.5	-27.20	45.87	18.67	73.55	H	2
20825	2507.5	20975	2522.5	-28.16	47.03	18.87	77.05	V	2
21025	2527.5	21175	2542.5	-28.93	46.57	17.64	58.08	V	2
21225	2547.5	21375	2562.5	-30.33	46.98	16.65	46.24	V	2



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**CHANNEL BANDWIDTH: 15MHz+20MHz QPSK**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20828	2507.8	20999	2524.9	-24.09	45.65	21.56	143.19	H	2
21003	2525.3	21174	2542.4	-24.39	46.04	21.65	<b>146.05</b>	H	2
21179	2542.9	21350	2560.0	-25.20	46.07	20.87	122.04	H	2
20828	2507.8	20999	2524.9	-26.29	47.18	20.89	122.63	V	2
21003	2525.3	21174	2542.4	-27.09	46.57	19.48	88.72	V	2
21179	2542.9	21350	2560.0	-28.27	47.06	18.79	75.75	V	2

**CHANNEL BANDWIDTH: 15MHz+20MHz 16QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20828	2507.8	20999	2524.9	-25.24	45.65	20.41	109.88	H	2
21003	2525.3	21174	2542.4	-25.49	46.04	20.55	113.37	H	2
21179	2542.9	21350	2560.0	-26.36	46.07	19.71	93.43	H	2
20828	2507.8	20999	2524.9	-27.44	47.18	19.74	94.10	V	2
21003	2525.3	21174	2542.4	-28.19	46.57	18.38	68.87	V	2
21179	2542.9	21350	2560.0	-29.43	47.06	17.63	58.00	V	2

**CHANNEL BANDWIDTH: 15MHz+20MHz 64QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20828	2507.8	20999	2524.9	-25.85	45.65	19.80	95.48	H	2
21003	2525.3	21174	2542.4	-26.09	46.04	19.95	98.74	H	2
21179	2542.9	21350	2560.0	-27.02	46.07	19.05	80.26	H	2
20828	2507.8	20999	2524.9	-27.96	47.18	19.22	83.48	V	2
21003	2525.3	21174	2542.4	-28.77	46.57	17.80	60.26	V	2
21179	2542.9	21350	2560.0	-30.09	47.06	16.97	49.82	V	2



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**CHANNEL BANDWIDTH: 20MHz+10MHz QPSK**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20850	2510.0	20994	2524.9	-24.28	45.65	21.37	137.03	H	2
21051	2530.1	21195	2544.5	-24.45	46.04	21.59	<b>144.05</b>	H	2
21251	2550.1	21395	2564.5	-25.33	45.87	20.54	113.14	H	2
20850	2510.0	20994	2524.9	-26.48	47.03	20.55	113.45	V	2
21051	2530.1	21195	2544.5	-27.15	46.57	19.42	87.50	V	2
21251	2550.1	21395	2564.5	-28.40	46.98	18.58	72.11	V	2

**CHANNEL BANDWIDTH: 20MHz+10MHz 16QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20850	2510.0	20994	2524.9	-25.31	45.65	20.34	108.09	H	2
21051	2530.1	21195	2544.5	-25.38	46.04	20.66	116.28	H	2
21251	2550.1	21395	2564.5	-26.25	45.87	19.62	91.54	H	2
20850	2510.0	20994	2524.9	-27.43	47.03	19.60	91.16	V	2
21051	2530.1	21195	2544.5	-28.10	46.57	18.47	70.31	V	2
21251	2550.1	21395	2564.5	-29.31	46.98	17.67	58.48	V	2

**CHANNEL BANDWIDTH: 20MHz+10MHz 64QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20850	2510.0	20994	2524.9	-25.85	45.65	19.80	95.46	H	2
21051	2530.1	21195	2544.5	-26.03	46.04	20.01	100.12	H	2
21251	2550.1	21395	2564.5	-27.03	45.87	18.84	76.49	H	2
20850	2510.0	20994	2524.9	-27.90	47.03	19.13	81.81	V	2
21051	2530.1	21195	2544.5	-28.59	46.57	17.98	62.81	V	2
21251	2550.1	21395	2564.5	-29.96	46.98	17.02	50.35	V	2

**CHANNEL BANDWIDTH: 20MHz+15MHz QPSK**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20850	2510.0	21021	2527.1	-24.10	45.63	21.53	142.33	H	2
21051	2530.1	21197	2544.7	-24.46	46.04	21.58	<b>143.71</b>	H	2
21251	2550.1	21372	2562.2	-25.27	45.94	20.67	116.63	H	2
20850	2510.0	21021	2527.1	-26.30	47.39	21.09	128.50	V	2
21051	2530.1	21197	2544.7	-27.16	46.57	19.41	87.30	V	2
21251	2550.1	21372	2562.2	-28.34	47.00	18.66	73.43	V	2

**CHANNEL BANDWIDTH: 20MHz+15MHz 16QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20850	2510.0	21021	2527.1	-24.96	45.63	20.67	116.76	H	2
21051	2530.1	21197	2544.7	-25.33	46.04	20.71	117.63	H	2
21251	2550.1	21372	2562.2	-26.12	45.94	19.82	95.90	H	2
20850	2510.0	21021	2527.1	-27.16	47.39	20.23	105.41	V	2
21051	2530.1	21197	2544.7	-28.03	46.57	18.54	71.45	V	2
21251	2550.1	21372	2562.2	-29.19	47.00	17.81	60.38	V	2

**CHANNEL BANDWIDTH: 20MHz+15MHz 64QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20850	2510.0	21021	2527.1	-25.83	45.63	19.80	95.57	H	2
21051	2530.1	21197	2544.7	-26.13	46.04	19.91	97.84	H	2
21251	2550.1	21372	2562.2	-27.06	45.94	18.88	77.23	H	2
20850	2510.0	21021	2527.1	-27.94	47.39	19.45	88.08	V	2
21051	2530.1	21197	2544.7	-28.76	46.57	17.81	60.39	V	2
21251	2550.1	21372	2562.2	-30.09	47.00	16.91	49.08	V	2



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**CHANNEL BANDWIDTH: 20MHz+20MHz QPSK**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20850	2510.0	21048	2529.8	-24.68	45.80	21.12	129.39	H	2
21001	2525.1	21199	2544.9	-24.91	46.04	21.13	<b>129.57</b>	H	2
21152	2540.2	21350	2560.0	-25.85	45.83	19.98	99.61	H	2
20850	2510.0	21048	2529.8	-26.88	47.21	20.33	107.89	V	2
21001	2525.1	21199	2544.9	-27.61	46.57	18.96	78.63	V	2
21152	2540.2	21350	2560.0	-28.92	47.07	18.15	65.30	V	2

**CHANNEL BANDWIDTH: 20MHz+20MHz 16QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20850	2510.0	21048	2529.8	-25.61	45.80	20.19	104.45	H	2
21001	2525.1	21199	2544.9	-25.98	46.04	20.06	101.27	H	2
21152	2540.2	21350	2560.0	-26.68	45.83	19.15	82.28	H	2
20850	2510.0	21048	2529.8	-27.81	47.21	19.40	87.10	V	2
21001	2525.1	21199	2544.9	-28.68	46.57	17.89	61.46	V	2
21152	2540.2	21350	2560.0	-29.75	47.07	17.32	53.94	V	2

**CHANNEL BANDWIDTH: 20MHz+20MHz 64QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
20850	2510.0	21048	2529.8	-25.73	45.80	20.07	101.60	H	2
21001	2525.1	21199	2544.9	-25.94	46.04	20.10	102.21	H	2
21152	2540.2	21350	2560.0	-26.96	45.83	18.87	77.14	H	2
20850	2510.0	21048	2529.8	-27.97	47.21	19.24	83.95	V	2
21001	2525.1	21199	2544.9	-28.76	46.57	17.81	60.34	V	2
21152	2540.2	21350	2560.0	-30.07	47.07	17.00	50.11	V	2



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LTE BAND CA\_38C

CHANNEL BANDWIDTH: 15MHz+15MHz QPSK

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
37825	2577.5	37975.0	2592.5	-29.59	46.01	16.42	43.87	H	2
37925	2587.5	38075.0	2602.5	-30.98	46.04	15.06	32.09	H	2
38025	2597.5	38175.0	2612.5	-30.37	46.14	15.77	37.72	H	2
37825	2577.5	37975.0	2592.5	-26.04	47.03	20.99	125.57	V	2
37925	2587.5	38075.0	2602.5	-26.99	47.10	20.11	102.49	V	2
38025	2597.5	38175.0	2612.5	-25.97	47.17	21.20	<b>131.89</b>	V	2

CHANNEL BANDWIDTH: 15MHz+15MHz 16QAM

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
37825	2577.5	37975.0	2592.5	-30.45	46.01	15.56	35.99	H	2
37925	2587.5	38075.0	2602.5	-31.85	46.04	14.19	26.27	H	2
38025	2597.5	38175.0	2612.5	-31.22	46.14	14.92	31.02	H	2
37825	2577.5	37975.0	2592.5	-26.90	47.03	20.13	103.01	V	2
37925	2587.5	38075.0	2602.5	-27.86	47.10	19.24	83.89	V	2
38025	2597.5	38175.0	2612.5	-26.82	47.17	20.35	108.44	V	2

CHANNEL BANDWIDTH: 15MHz+15MHz 64QAM

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
37825	2577.5	37975.0	2592.5	-31.53	46.01	14.48	28.07	H	2
37925	2587.5	38075.0	2602.5	-32.76	46.04	13.28	21.30	H	2
38025	2597.5	38175.0	2612.5	-32.26	46.14	13.88	24.41	H	2
37825	2577.5	37975.0	2592.5	-27.93	47.03	19.10	81.26	V	2
37925	2587.5	38075.0	2602.5	-28.75	47.10	18.35	68.34	V	2
38025	2597.5	38175.0	2612.5	-27.79	47.17	19.38	86.74	V	2

**CHANNEL BANDWIDTH: 20MHz+20MHz QPSK**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
37850	2580.0	38048.0	2599.8	-30.17	46.05	15.88	38.74	H	2
37901	2585.1	38099.0	2604.9	-31.43	46.04	14.61	28.93	H	2
37952	2590.2	38150.0	2610.0	-30.95	46.11	15.16	32.78	H	2
37825	2577.5	37975.0	2592.5	-26.62	47.07	20.45	110.89	V	2
37925	2587.5	38075.0	2602.5	-27.44	47.10	19.66	92.41	V	2
38025	2597.5	38175.0	2612.5	-26.55	47.13	20.58	<b>114.34</b>	V	2

**CHANNEL BANDWIDTH: 20MHz+20MHz 16QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
37850	2580.0	38048.0	2599.8	-31.10	46.05	14.95	31.28	H	2
37901	2585.1	38099.0	2604.9	-32.50	46.04	13.54	22.62	H	2
37952	2590.2	38150.0	2610.0	-31.78	46.11	14.33	27.08	H	2
37825	2577.5	37975.0	2592.5	-27.55	47.07	19.52	89.52	V	2
37925	2587.5	38075.0	2602.5	-28.51	47.10	18.59	72.23	V	2
38025	2597.5	38175.0	2612.5	-27.38	47.13	19.75	94.45	V	2

**CHANNEL BANDWIDTH: 20MHz+20MHz 64QAM**

Channel (PCC)	Frequency (MHz)	Channel (SCC)	Frequency (MHz)	SPA LVL (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)	Limit (W)
37850	2580.0	38048.0	2599.8	-31.53	46.05	14.52	28.33	H	2
37901	2585.1	38099.0	2604.9	-32.75	46.04	13.29	21.35	H	2
37952	2590.2	38150.0	2610.0	-32.24	46.11	13.87	24.36	H	2
37825	2577.5	37975.0	2592.5	-27.99	47.07	19.08	80.89	V	2
37925	2587.5	38075.0	2602.5	-28.82	47.10	18.28	67.25	V	2
38025	2597.5	38175.0	2612.5	-27.87	47.13	19.26	84.37	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 STABILITY MEASUREMENT

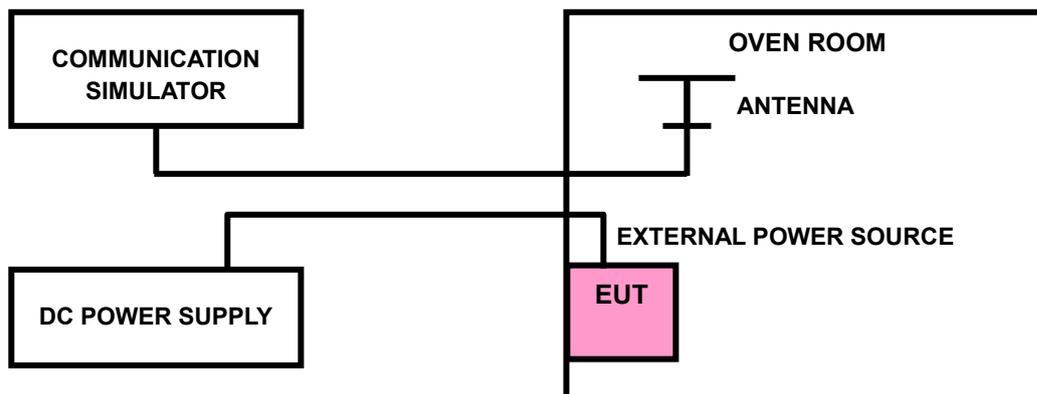
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### 3.2.2 TEST PROCEDURE

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

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

### 3.2.3 TEST SETUP



### 3.2.4 TEST RESULTS

#### LTE BAND 7

#### FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
$V_{nor}$	0.0021	0.0024	2.5
$V_{min}$	-0.0023	-0.0030	2.5
$V_{max}$	0.0021	0.0021	2.5

**NOTE:** The applicant defined the normal working voltage of the battery is from  $V_{min}$  Vdc to  $V_{max}$  Vdc.

#### FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0115	-0.0111	2.5
-20	-0.0103	-0.0106	2.5
-10	-0.0086	-0.0081	2.5
0	-0.0077	-0.0073	2.5
10	-0.0054	-0.0048	2.5
20	-0.0042	-0.0042	2.5
30	-0.0043	-0.0038	2.5
40	-0.0019	-0.0019	2.5
50	-0.0005	-0.0002	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0024	0.0024	2.5
V <sub>min</sub>	-0.0031	-0.0030	2.5
V <sub>max</sub>	0.0026	0.0024	2.5

**NOTE:** The applicant defined the normal working voltage of the battery is from V<sub>min</sub> Vdc to V<sub>max</sub> Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0120	-0.0114	2.5
-20	-0.0101	-0.0107	2.5
-10	-0.0082	-0.0084	2.5
0	-0.0073	-0.0074	2.5
10	-0.0048	-0.0045	2.5
20	-0.0040	-0.0040	2.5
30	-0.0030	-0.0029	2.5
40	-0.0018	-0.0022	2.5
50	-0.0004	-0.0003	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0026	0.0025	2.5
V <sub>min</sub>	-0.0031	-0.0031	2.5
V <sub>max</sub>	0.0025	0.0026	2.5

**NOTE:** The applicant defined the normal working voltage of the battery is from V<sub>min</sub> Vdc to V<sub>max</sub> Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0121	-0.0110	2.5
-20	-0.0112	-0.0107	2.5
-10	-0.0083	-0.0084	2.5
0	-0.0077	-0.0072	2.5
10	-0.0047	-0.0051	2.5
20	-0.0044	-0.0039	2.5
30	-0.0027	-0.0031	2.5
40	-0.0020	-0.0018	2.5
50	-0.0002	-0.0004	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0024	0.0025	2.5
V <sub>min</sub>	-0.0031	-0.0030	2.5
V <sub>max</sub>	0.0024	0.0023	2.5

**NOTE:** The applicant defined the normal working voltage of the battery is from V<sub>min</sub> Vdc to V<sub>max</sub> Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0118	-0.0112	2.5
-20	-0.0102	-0.0105	2.5
-10	-0.0085	-0.0080	2.5
0	-0.0075	-0.0074	2.5
10	-0.0045	-0.0054	2.5
20	-0.0039	-0.0039	2.5
30	-0.0043	-0.0026	2.5
40	-0.0019	-0.0020	2.5
50	-0.0003	-0.0003	2.5

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**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0021	0.0024	2.5
V <sub>min</sub>	-0.0023	-0.0030	2.5
V <sub>max</sub>	0.0021	0.0021	2.5

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.6Vdc to 4.4Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0123	-0.0117	2.5
-20	-0.0112	-0.0099	2.5
-10	-0.0083	-0.0080	2.5
0	-0.0075	-0.0072	2.5
10	-0.0050	-0.0049	2.5
20	-0.0039	-0.0043	2.5
30	-0.0026	-0.0028	2.5
40	-0.0021	-0.0019	2.5
50	-0.0004	-0.0003	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0026	0.0025	2.5
V <sub>min</sub>	-0.0031	-0.0031	2.5
V <sub>max</sub>	0.0026	0.0026	2.5

**NOTE:** The applicant defined the normal working voltage of the battery is from V<sub>min</sub> Vdc to V<sub>max</sub> Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0120	-0.0112	2.5
-20	-0.0105	-0.0101	2.5
-10	-0.0084	-0.0081	2.5
0	-0.0074	-0.0075	2.5
10	-0.0050	-0.0050	2.5
20	-0.0043	-0.0040	2.5
30	-0.0039	-0.0041	2.5
40	-0.0018	-0.0015	2.5
50	-0.0005	-0.0005	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0025	0.0025	2.5
V <sub>min</sub>	-0.0031	-0.0030	2.5
V <sub>max</sub>	0.0024	0.0025	2.5

**NOTE:** The applicant defined the normal working voltage of the battery is from V<sub>min</sub> Vdc to V<sub>max</sub> Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0121	-0.0117	2.5
-20	-0.0111	-0.0098	2.5
-10	-0.0082	-0.0081	2.5
0	-0.0077	-0.0075	2.5
10	-0.0049	-0.0054	2.5
20	-0.0044	-0.0041	2.5
30	-0.0029	-0.0024	2.5
40	-0.0015	-0.0018	2.5
50	-0.0004	-0.0002	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0025	0.0025	2.5
V <sub>min</sub>	-0.0031	-0.0030	2.5
V <sub>max</sub>	0.0025	0.0026	2.5

**NOTE:** The applicant defined the normal working voltage of the battery is from V<sub>min</sub> Vdc to V<sub>max</sub> Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

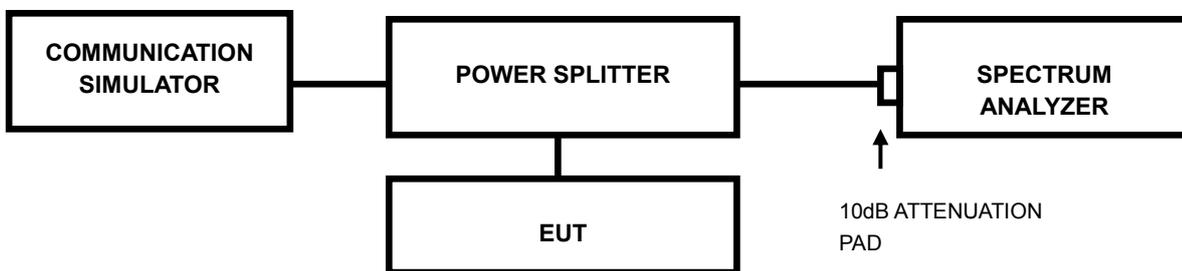
TEMP. (°C)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0112	-0.0114	2.5
-20	-0.0106	-0.0103	2.5
-10	-0.0086	-0.0080	2.5
0	-0.0078	-0.0072	2.5
10	-0.0053	-0.0054	2.5
20	-0.0039	-0.0042	2.5
30	-0.0041	-0.0025	2.5
40	-0.0018	-0.0017	2.5
50	-0.0003	-0.0002	2.5

### 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

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

### 3.3.4 TEST RESULTS

LTE BAND 7				
CHANNEL BANDWIDTH: 5MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20775	2502.5	4.47	4.48	4.48
21100	2535	4.49	4.48	4.48
21425	2567.5	4.49	4.49	4.48
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20775	2502.5	4.93	4.94	4.90
21100	2535	4.93	4.90	4.87
21425	2567.5	4.89	4.90	4.91



LTE BAND 7				
CHANNEL BANDWIDTH: 10MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20800	2505	8.95	8.95	8.95
21100	2535	8.95	8.95	8.95
21400	2565	8.95	8.95	8.96
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20800	2505	9.69	9.67	9.66
21100	2535	9.77	9.64	9.61
21400	2565	9.69	9.72	9.62



LTE BAND 7				
CHANNEL BANDWIDTH: 15MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20825	2507.5	13.44	13.41	13.41
21100	2535	13.42	13.42	13.42
21375	2562.5	13.41	13.44	13.42
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20825	2507.5	14.50	14.43	14.41
21100	2535	14.63	14.53	14.49
21375	2562.5	14.58	14.91	14.44



LTE BAND 7				
CHANNEL BANDWIDTH: 20MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20850	2510	17.88	17.89	17.89
21100	2535	17.87	17.88	17.89
21350	2560	17.87	17.88	17.89
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
20850	2510	19.18	19.29	19.20
21100	2535	19.46	19.20	19.19
21350	2560	19.05	19.23	19.22



LTE BAND 7 CA				
CHANNEL BANDWIDTH: 10MHz+20MHz				
CHANNEL		99% OCCUPIED BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20805	20949	28.09	27.97	28.00
21006	21150	28.14	28.02	28.01
21206	21350	28.15	28.06	28.07
CHANNEL		26dB BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20805	20949	30.08	29.97	29.92
21006	21150	30.16	30.02	29.96
21206	21350	30.13	30.01	30.01



LTE BAND 7 CA				
CHANNEL BANDWIDTH: 15MHz +10MHz				
CHANNEL	CHANNEL	99% OCCUPIED BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20825	20975	23.50	23.40	23.41
21051	21171	23.61	23.53	23.52
21277	21397	23.55	23.46	23.46
CHANNEL	CHANNEL	26dB BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20825	20975	25.54	25.52	25.46
21051	21171	25.62	25.62	25.52
21277	21397	25.59	25.56	25.51



LTE BAND 7 CA				
CHANNEL BANDWIDTH: 15MHz +15MHz				
CHANNEL	CHANNEL	99% OCCUPIED BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20825	20975	28.63	28.60	28.64
21025	21175	28.63	28.67	28.64
21225	21375	28.66	28.69	28.65
CHANNEL	CHANNEL	26dB BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20825	20975	30.74	30.75	30.69
21025	21175	30.79	30.88	30.83
21225	21375	30.85	30.78	30.72



LTE BAND 7 CA				
CHANNEL BANDWIDTH: 15MHz +20MHz				
CHANNEL	CHANNEL	99% OCCUPIED BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20828	20999	32.86	32.81	32.82
21003	21174	32.92	32.87	32.78
21179	21350	32.93	32.89	32.88
CHANNEL	CHANNEL	26dB BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20828	20999	35.19	35.02	35.03
21003	21174	35.13	35.04	35.07
21179	21350	35.17	35.06	35.01



LTE BAND 7 CA				
CHANNEL BANDWIDTH: 20MHz +10MHz				
CHANNEL	CHANNEL	99% OCCUPIED BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20850	20994	28.03	27.99	27.99
21051	21195	28.09	28.03	28.03
21251	21395	28.13	28.04	27.96
CHANNEL	CHANNEL	26dB BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20850	20994	30.40	30.43	30.30
21051	21195	30.67	30.32	30.30
21251	21395	30.30	30.34	30.23



LTE BAND 7 CA				
CHANNEL BANDWIDTH: 20MHz +15MHz				
CHANNEL		99% OCCUPIED BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20850	21021	32.77	32.80	32.78
21026	21197	32.91	32.87	32.89
21201	21372	32.82	32.82	32.85
CHANNEL		26dB BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20850	21021	35.25	35.41	35.34
21026	21197	35.3	35.55	35.50
21201	21372	35.19	35.37	35.53



LTE BAND 7 CA				
CHANNEL BANDWIDTH: 20MHz +20MHz				
CHANNEL	CHANNEL	99% OCCUPIED BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20850	21048	37.62	37.60	37.62
21001	21199	37.67	37.64	37.65
21152	21350	37.72	37.67	37.60
CHANNEL	CHANNEL	26dB BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
20850	21048	40.03	40.09	40.07
21001	21199	40.08	40.08	40.10
21152	21350	40.14	40.14	39.97



LTE BAND 38				
CHANNEL BANDWIDTH:5MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37775	2572.5	4.46	4.47	4.47
38000	2595	4.49	4.46	4.46
38225	2617.5	4.46	4.47	4.47
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37775	2572.5	4.88	4.86	4.88
38000	2595	4.84	4.88	4.86
38225	2617.5	4.84	4.87	4.88



LTE BAND 38				
CHANNEL BANDWIDTH:10MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37800	2575	8.96	8.96	8.97
38000	2595	8.95	8.92	8.95
38200	2615	8.95	8.93	8.94
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37800	2575	9.70	9.56	9.67
38000	2595	9.63	9.53	9.61
38200	2615	9.64	9.54	9.55



LTE BAND 38				
CHANNEL BANDWIDTH:15MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37825	2577.5	13.39	13.43	13.43
38000	2595	13.41	13.42	13.42
38175	2612.5	13.39	13.42	13.41
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37825	2577.5	14.49	14.43	14.47
38000	2595	14.46	14.37	14.39
38175	2612.5	14.47	14.40	14.44



LTE BAND 38				
CHANNEL BANDWIDTH:20MHz				
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37850	2580	17.88	17.87	17.86
38000	2595	17.87	17.86	17.81
38150	2610	17.86	17.89	17.87
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM
37850	2580	19.15	18.99	19.13
38000	2595	19.16	18.97	19.02
38150	2610	19.06	19.03	19.11



LTE BAND CA_38C				
CHANNEL BANDWIDTH: 15MHz+15MHz				
CHANNEL	CHANNEL	99% OCCUPIED BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
37825	37975	28.43	28.44	28.42
37925	38075	28.41	28.43	28.45
38025	38175	28.33	28.45	28.52
CHANNEL	CHANNEL	26dB BANDWIDTH (MHz)		
PCC	SCC	QPSK	16QAM	64QAM
37825	37975	30.61	30.6	30.58
37925	38075	30.60	30.54	30.45
38025	38175	30.54	30.60	30.58



LTE BAND CA_38C				
CHANNEL BANDWIDTH: 20MHz+20MHz				
99% OCCUPIED BANDWIDTH (MHz)				
CHANNEL	CHANNEL	QPSK	16QAM	64QAM
37850	38048	37.56	37.47	37.48
37901	38099	37.60	37.64	37.69
37952	38150	37.61	37.67	37.65
26dB BANDWIDTH (MHz)				
CHANNEL	CHANNEL	QPSK	16QAM	64QAM
37850	38048	39.96	39.99	39.96
37901	38099	40.07	39.9	39.97
37952	38150	39.99	39.96	39.97

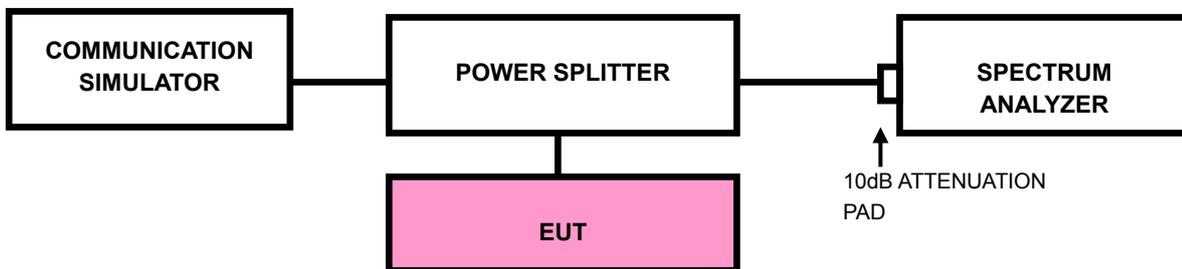


### 3.5 BAND EDGE MEASUREMENT

#### 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.

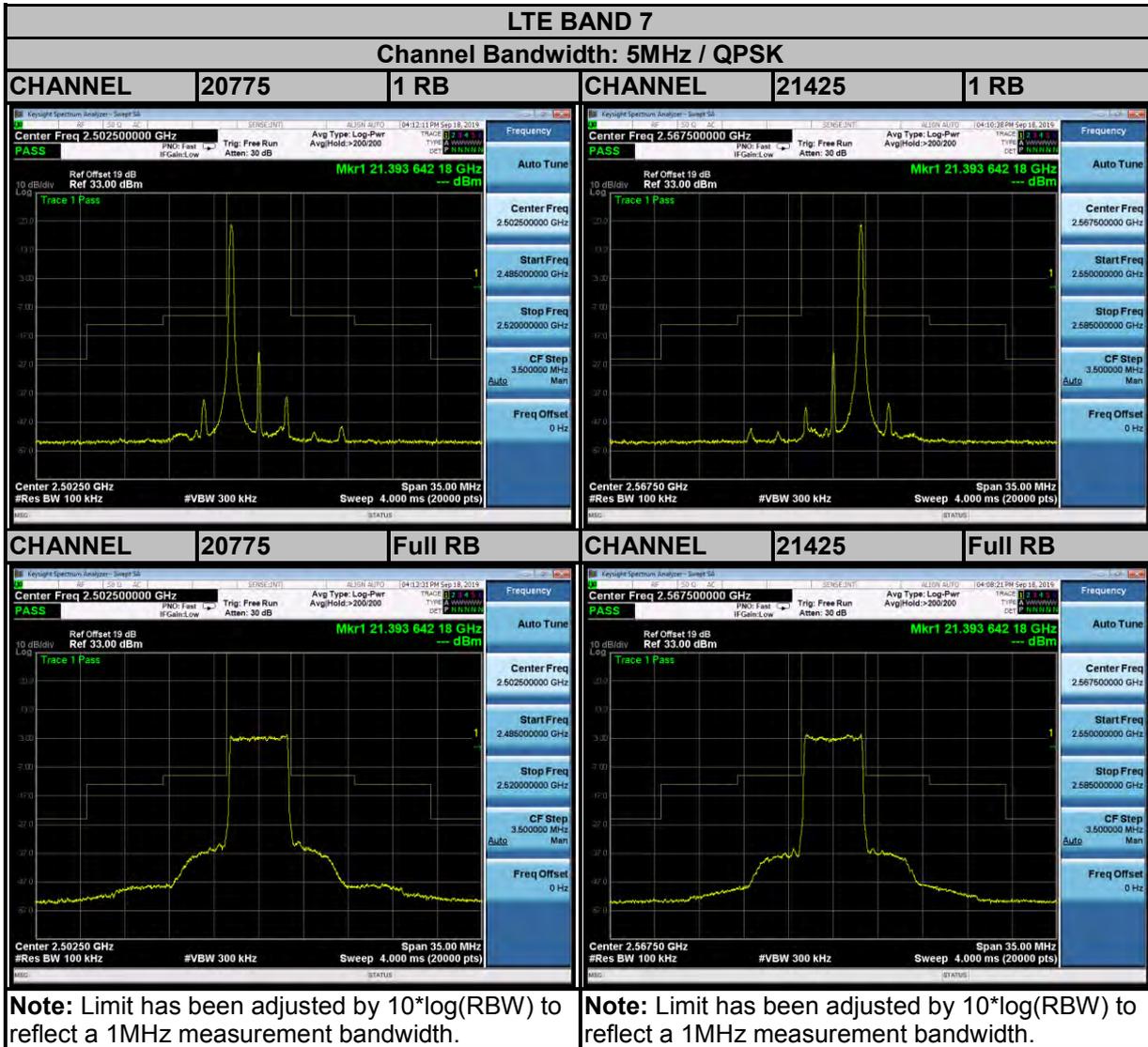
#### 3.5.2 TEST SETUP



### 3.5.3 TEST PROCEDURES

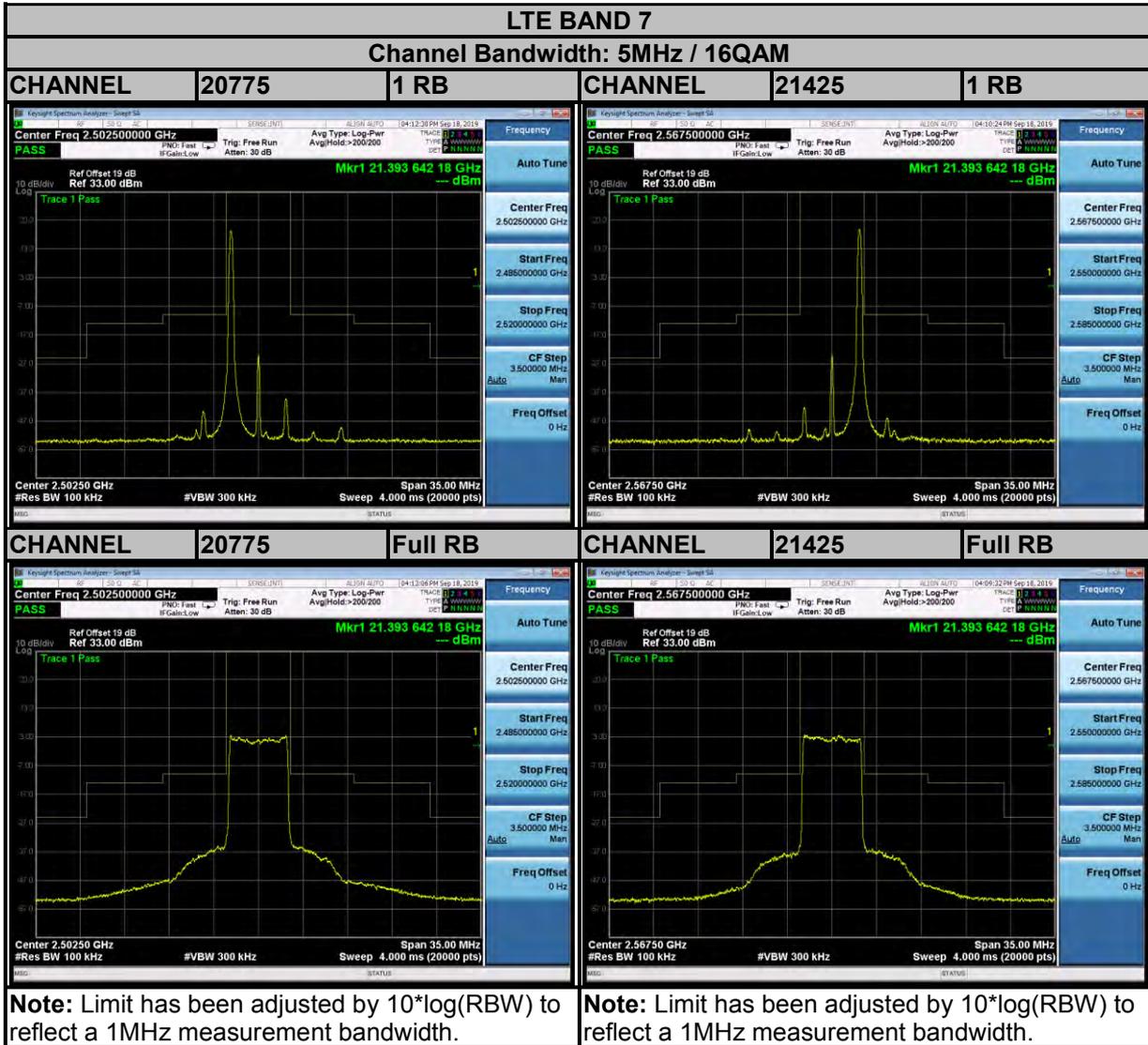
- a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
- b. The band edge measurement used the power splitter via EUT RF power connector 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



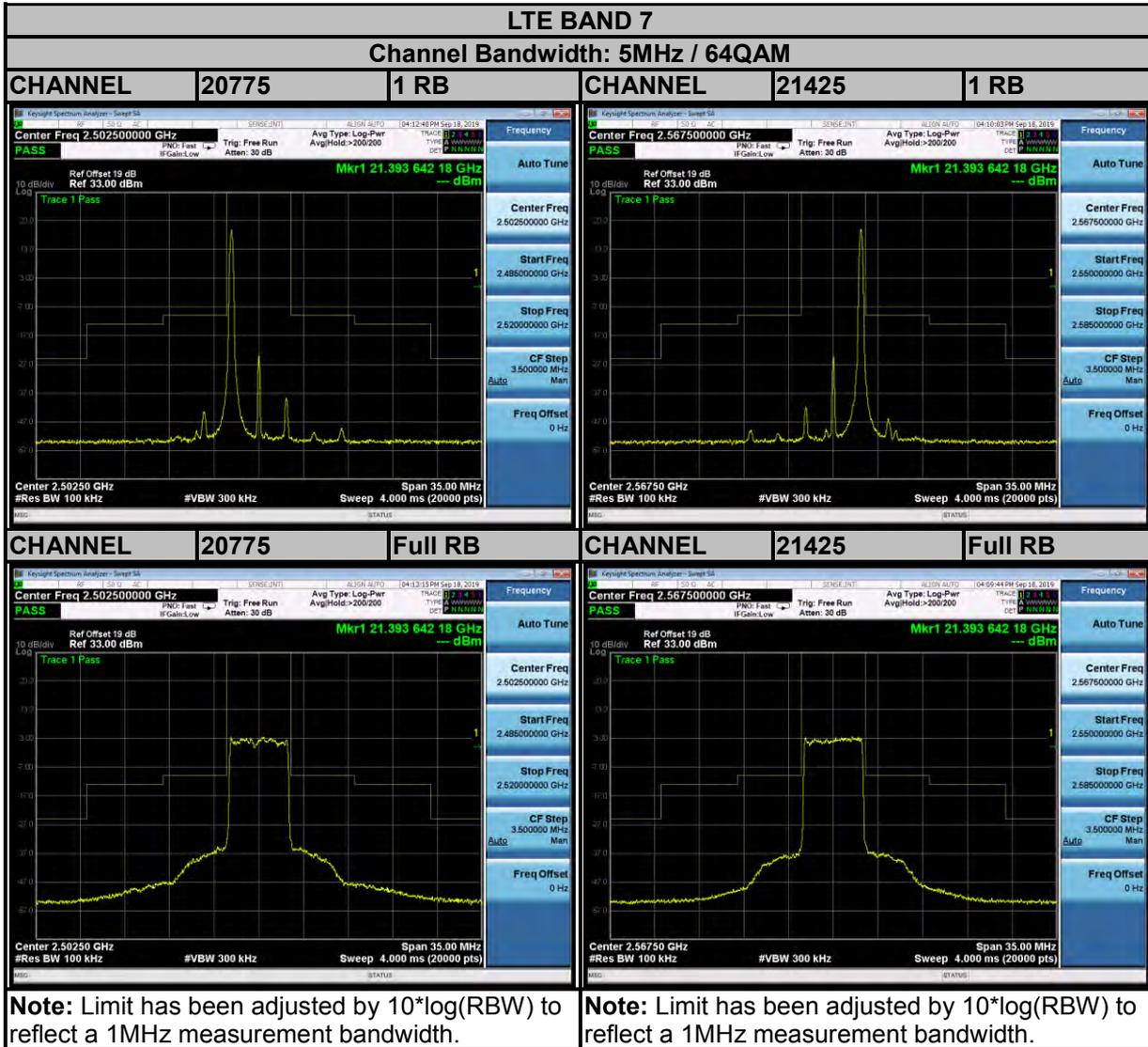


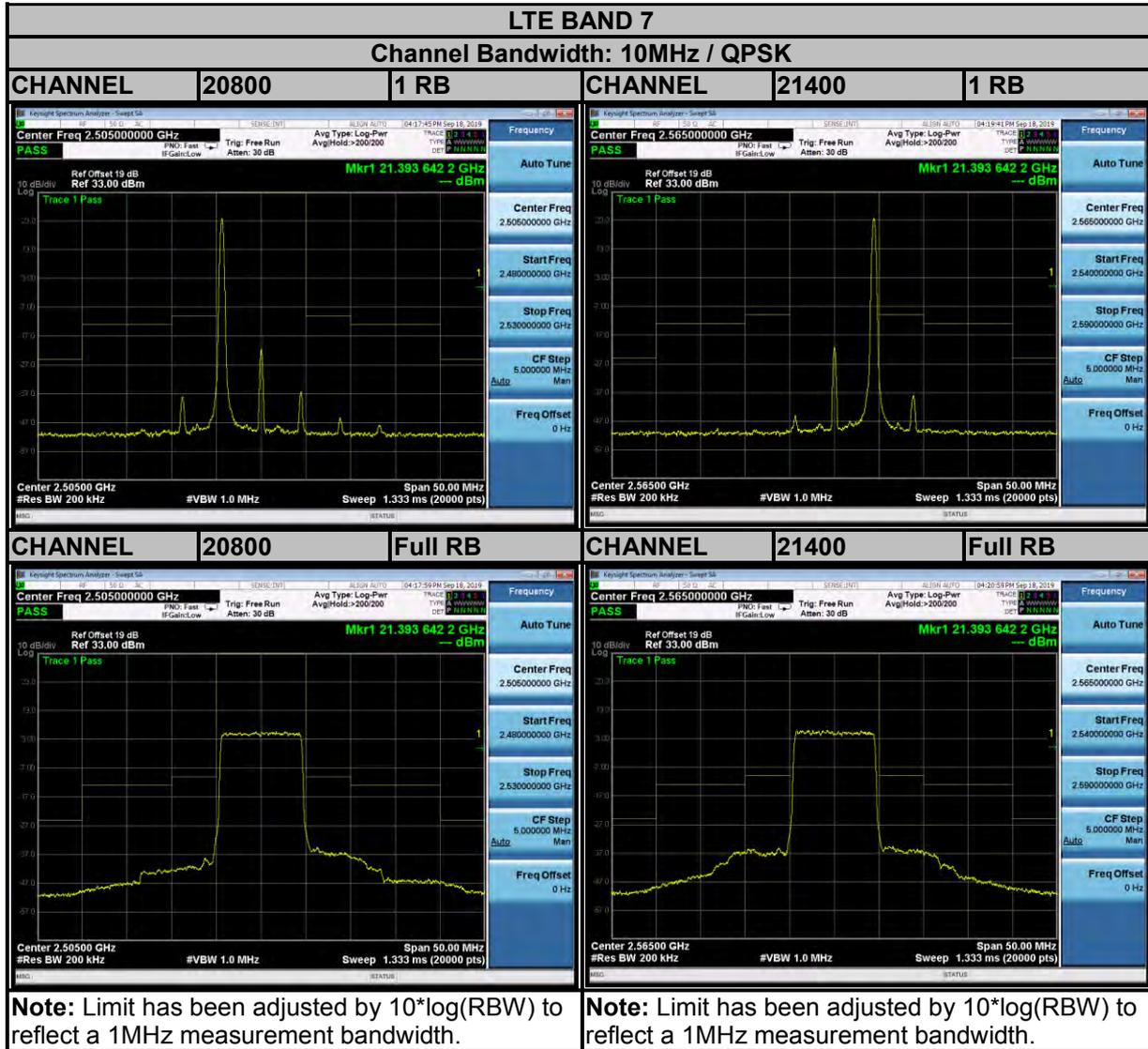
Test Report No.: RF190823W003-7

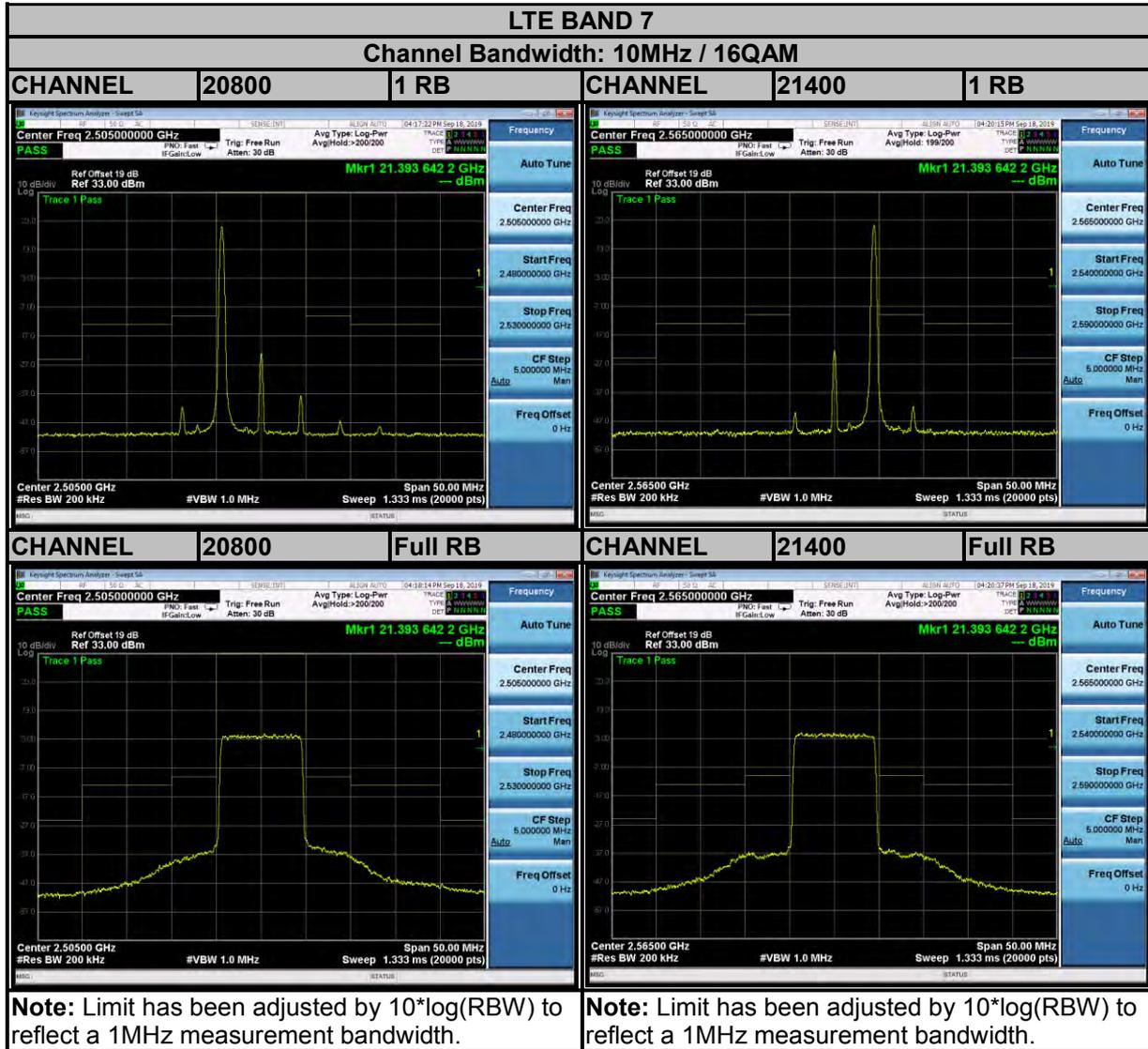


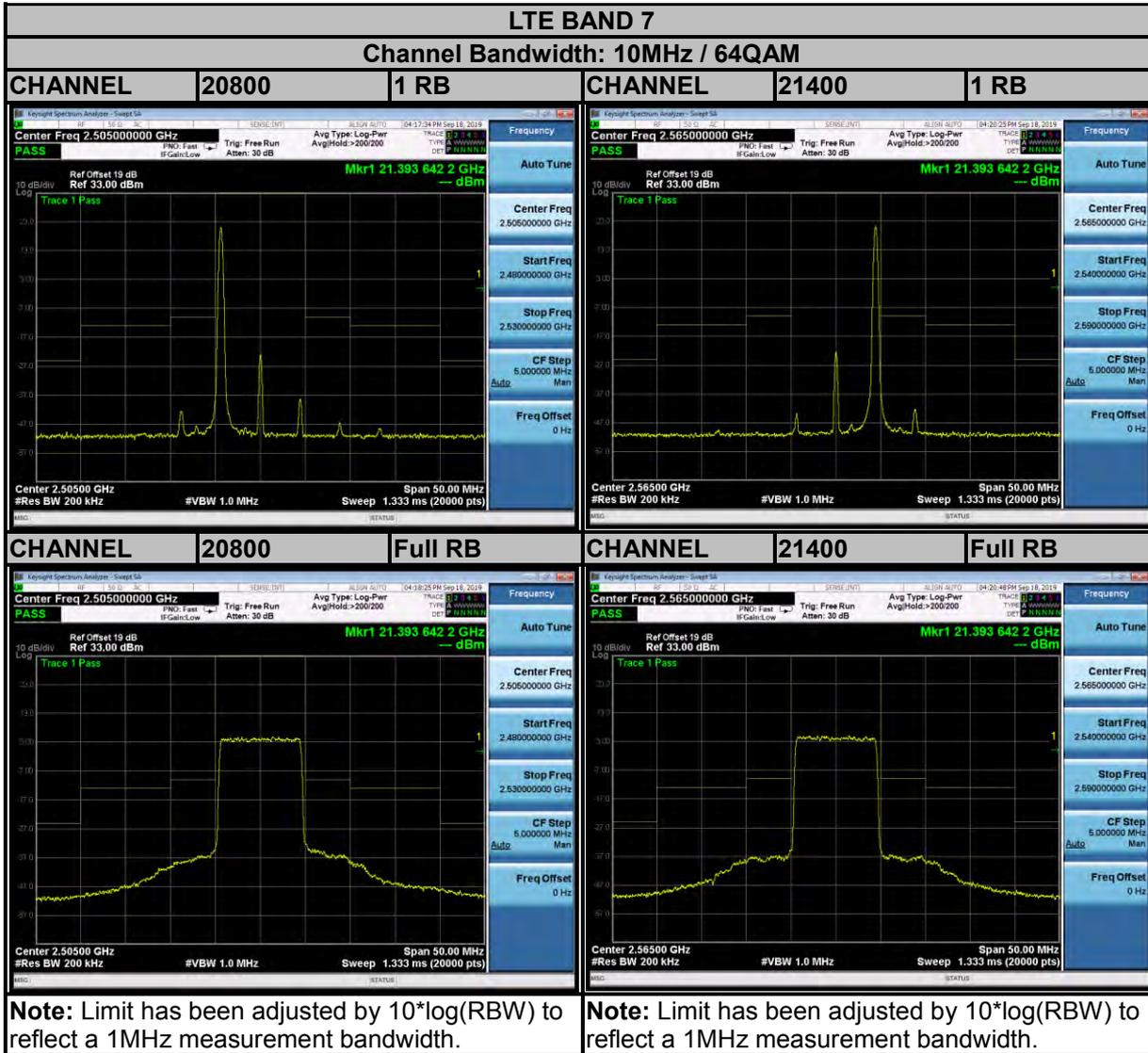


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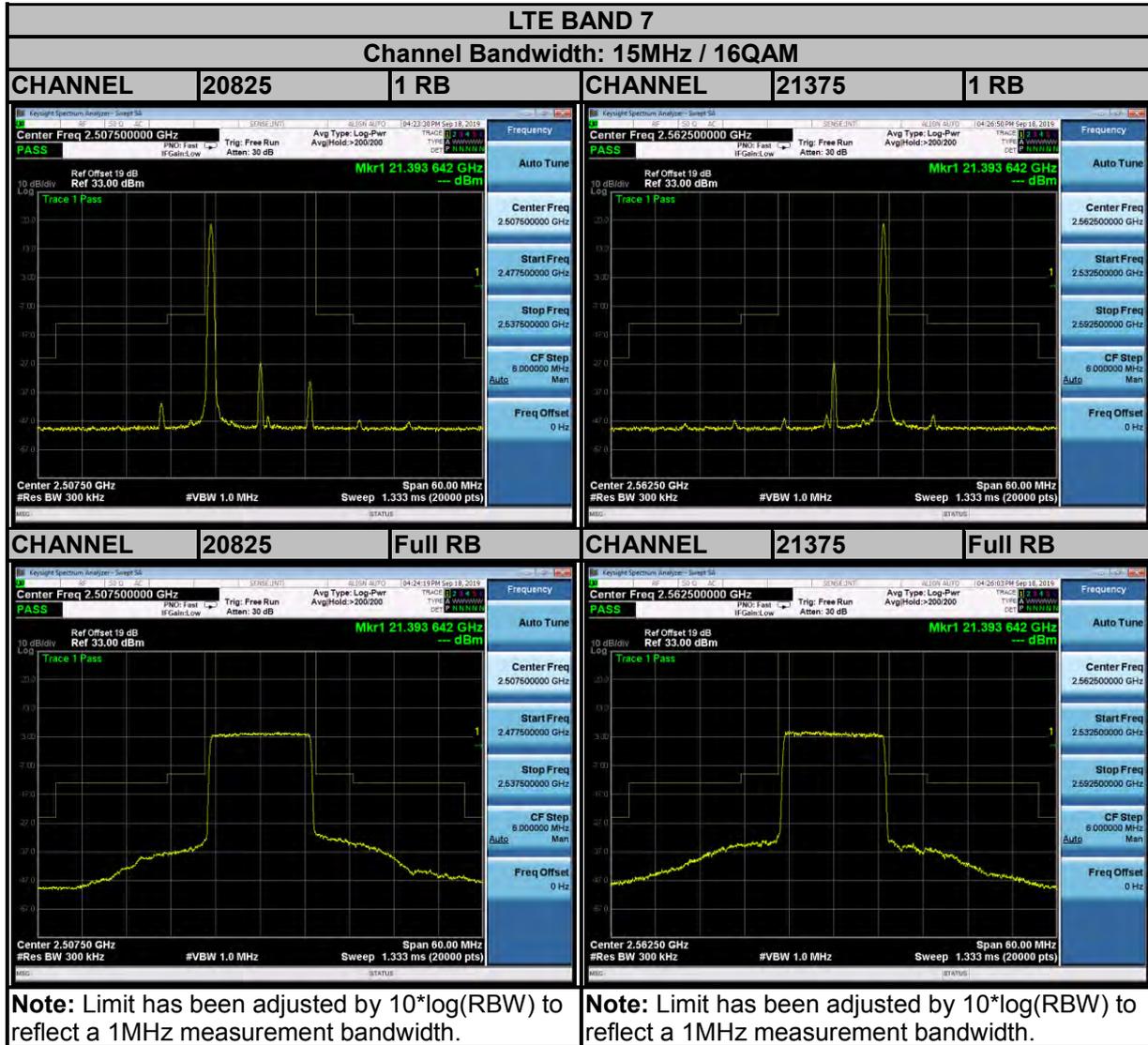
















Test Report No.: RF190823W003-7

