



Test Report No.: W7L-P22090015-1RF06



# VARIANT FCC TEST REPORT (PART 27)

Applicant:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland

Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
Product:	Multi-band GSM/WCDMA/LTE phone with Bluetooth&WLAN
Brand Name:	NOKIA
Model Name:	TA-1401
FCC ID:	2AJOTTA-1401
Date of tests:	Nov. 25, 2021 ~ Oct. 10, 2022

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 Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Date: Oct. 10, 2022	Date: Oct. 10, 2022

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



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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21100018-4RF06	Original release	Dec. 17, 2021
W7L-P22090015-1RF06	Based on the original product changing the packaging factory of the chip and software version, removed Aohai_A829US adapter, BRL_CB - 36A USB cable, Saibao_CB - 12A USB cable, LEADER_HS-34 earphone, added Saibao_AC-2A USB cable. The new sample verify Power and RSE worst case (LTE B41), other test data is copied from the original test report W7L-P21100018-4RF06.	Oct. 10, 2022

# 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 27 & PART 2		
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT
§2.1046	Conducted Output Power	Compliance
§27.50(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

Note: Except the data of RSE and power, other data please refer to APPENDIX.

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

This uncertainty represents an expanded uncertainty expressed at approximately the



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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	Apr. 22,21	Apr. 21,22
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 21,22	Apr. 20,23
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 03,21	Jun. 02,22
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 02,22	Jun. 01,23
Bilog Antenna 2	ETS-LINDGREN	3143B	00161965	Mar. 05,21	Mar. 04,22
Bilog Antenna 2	ETS-LINDGREN	3143B	00161965	Mar. 04,22	Mar. 03,23
Horn Antenna 1	ETS-LINDGREN	3117	00168728	Aug. 19,21	Aug. 18,22
Horn Antenna 1	ETS-LINDGREN	3117	00168728	Aug. 18,22	Aug. 17,23
Horn Antenna 2	ETS-LINDGREN	3117	00168692	Apr. 02,21	Apr. 01,22
Horn Antenna 2	ETS-LINDGREN	3117	00168692	Apr. 01,22	Mar. 31,23
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 25, 21	Aug. 24, 22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 24, 22	Aug. 23, 23
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 25,21	Feb. 24,22
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 24,22	Feb. 23,23
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 01,22	May. 31,23
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 02,22	Jun. 01,23
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 21,22	Apr. 20,23
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V 7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 02,22	Jun. 01,23
Power Meter	Anritsu	ML2495A	1506002	Apr. 07,21	Apr. 06,22
Power Meter	Anritsu	ML2495A	1506002	Apr. 06,22	Apr. 05,23
Power Sensor	Anritsu	MA2411B	1339352	May. 07,21	May. 06,22
Power Sensor	Anritsu	MA2411B	1339352	May. 06,22	May. 05,23
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 02,21	Jun. 01,22
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 01,22	May. 31,23
MXG Analog	KEYSIGHT	N5183A	MY50143024	Mar. 05,21	Mar. 04,22



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Microvave Signal Generator					
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 04,22	Mar. 03,23
Power Divider	MCLI/USA	PS2-15	24880	N/A	N/A

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

## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Multi-band GSM/WCDMA/LTE phone with Bluetooth&WLAN	
<b>BRAND NAME</b>	NOKIA	
<b>MODEL NAME</b>	TA-1401	
<b>NOMINAL VOLTAGE</b>	5.0Vdc(adapter or host equipment) 3.85Vdc (Li-ion, battery)	
<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 41 Channel Bandwidth: 5MHz</b>	2498.5MHz ~ 2687.5MHz
	<b>LTE Band 41 Channel Bandwidth: 10MHz</b>	2501MHz ~ 2685MHz
	<b>LTE Band 41 Channel Bandwidth: 15MHz</b>	2503.5MHz ~ 2682.5MHz
	<b>LTE Band 41 Channel Bandwidth: 20MHz</b>	2506MHz ~ 2680MHz





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<b>MAX. EIRP POWER</b>	<b>LTE Band 7 Channel Bandwidth: 5MHz</b>	180.72mW	
	<b>LTE Band 7 Channel Bandwidth: 10MHz</b>	178.65mW	
	<b>LTE Band 7 Channel Bandwidth: 15MHz</b>	179.47mW	
	<b>LTE Band 7 Channel Bandwidth: 20MHz</b>	181.13mW	
	<b>LTE Band 38 Channel Bandwidth: 5MHz</b>	158.85mW	
	<b>LTE Band 38 Channel Bandwidth: 10MHz</b>	158.85mW	
	<b>LTE Band 38 Channel Bandwidth: 15MHz</b>	158.85mW	
	<b>LTE Band 38 Channel Bandwidth: 20MHz</b>	160.69mW	
	<b>LTE Band 41 Channel Bandwidth: 5MHz</b>	178.24mW	
	<b>LTE Band 41 Channel Bandwidth: 10MHz</b>	177.42mW	
	<b>LTE Band 41 Channel Bandwidth: 15MHz</b>	178.24mW	
	<b>LTE Band 41 Channel Bandwidth: 20MHz</b>	180.72mW	
	<b>EMISSION DESIGNATOR</b>	<b>LTE Band 7 Channel Bandwidth: 5MHz</b>	QPSK: 4M50G7D
			16QAM: 4M50W7D
64QAM: 4M50W7D			
<b>LTE Band 7 Channel Bandwidth: 10MHz</b>		QPSK: 8M99G7D	
		16QAM: 8M98W7D	
		64QAM: 8M99W7D	
<b>LTE Band 7 Channel Bandwidth: 15MHz</b>		QPSK: 13M5G7D	
		16QAM: 13M5W7D	
		64QAM: 13M5W7D	
<b>LTE Band 7 Channel Bandwidth: 20MHz</b>		QPSK: 18M0G7D	
		16QAM: 18M0W7D	
		64QAM: 18M0W7D	



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<b>EMISSION DESIGNATOR</b>	<b>LTE Band 38 Channel Bandwidth: 5MHz</b>	QPSK: 4M50G7D
		16QAM: 4M49W7D
		64QAM: 4M50W7D
	<b>LTE Band 38 Channel Bandwidth: 10MHz</b>	QPSK: 8M97G7D
		16QAM: 8M98W7D
		64QAM: 8M99W7D
	<b>LTE Band 38 Channel Bandwidth: 15MHz</b>	QPSK: 13M5G7D
		16QAM: 13M5W7D
		64QAM: 13M5W7D
	<b>LTE Band 38 Channel Bandwidth: 20MHz</b>	QPSK: 18M0G7D
		16QAM: 18M0W7D
		64QAM: 18M0W7D
	<b>LTE Band 41 Channel Bandwidth: 5MHz</b>	QPSK: 4M49G7D
		16QAM: 4M49W7D
		64QAM: 4M50W7D
	<b>LTE Band 41 Channel Bandwidth: 10MHz</b>	QPSK: 9M00G7D
		16QAM: 8M98W7D
		64QAM: 8M98W7D
	<b>LTE Band 41 Channel Bandwidth: 15MHz</b>	QPSK: 13M5G7D
		16QAM: 13M5W7D
		64QAM: 13M5W7D
	<b>LTE Band 41 Channel Bandwidth: 20MHz</b>	QPSK: 18M0G7D
		16QAM: 17M9W7D
		64QAM: 17M9W7D



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<b>ANTENNA TYPE</b>	Fixed Internal Antenna with -0.2 dBi gain for LTE7 Fixed Internal Antenna with -0.5 dBi gain for LTE38 Fixed Internal Antenna with -0.3 dBi gain for LTE41
<b>HW VERSION</b>	19655-1-11M12
<b>SW VERSION</b>	00WW_1_520
<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	USB1 cable: unshielded without ferrite, 1.0meter USB2 cable: unshielded without ferrite, 1.0meter Earphone1: non-shielded cable, with w/o ferrite core, 1.2 meter
<b>EXTREME TEMPERATURE</b>	0-40 °C
<b>EXTREME VOLTAGE</b>	3.5V - 4.4V

**NOTE:**

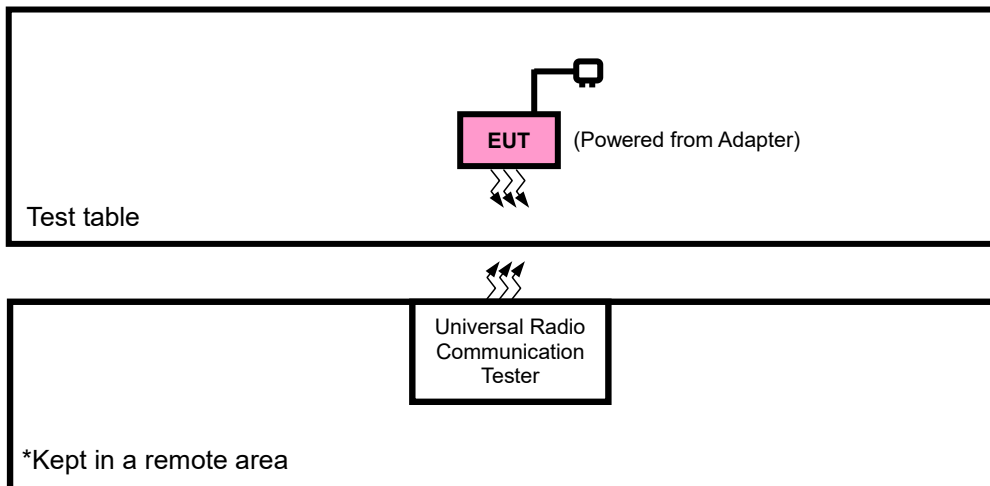
1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

**List of Accessory:**

<b>ACCESSORIES</b>	<b>BRAND</b>	<b>MANUFACTURER</b>	<b>MODEL</b>	<b>SPECIFICATION</b>
Battery	Nokia	Hunan Gaoyuan Battery Co., Ltd.	WT341	Capacity: 3.85 Vdc, 4900mAh
AC Adapter 1	Nokia	ShenZhenBaiJunDa ElectronicCO.,LTD.	AD-010U	I/P: 100-240Vac, 0.35A, O/P: 5.0Vdc, 2.0A
AC Adapter 2	Nokia	SHENZHEN TIANYIN ELECTRONICS CO., LTD.	CH-21U	I/P: 100-240Vac, 0.3A, O/P: 5.0Vdc, 2.0A
AC Adapter 3	Nokia	YuTong Electronics(HuiZhou) Co.,Ltd	PA-US5V2A-036	I/P: 100-240Vac, 0.5A, O/P: 5.0Vdc, 2.0A
Earphone 1	Nokia	Guangdong Wivtak Technology Co., Ltd.	HS-34	Signal Line, 1.2meter
USB Cable 1	Nokia	HUIZHOU WASHIN ELECTRONICS CO.,LTD	CB-36A	Signal Line, 1.0meter
USB Cable 2	Nokia	Saibao(Jiangi) Communication Industrial Co.,Ltd	AC-2A	Signal Line, 1.0meter

## 2.2 CONFIGURATION OF SYSTEM UNDER TEST

### FOR RADIATION EMISSION TEST





### 2.3 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	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, 16QAM, 64QAM	1 RB / 0 RB Offset		
		20800 to 21400	20800, 21400	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset		
		20825 to 21375	20825, 21375	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		20850 to 21350	20850, 21350	20MHz	QPSK, 16QAM, 64QAM	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	75 RB / 0 RB Offset		
		20850 to 21350	20850	20MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset		
			21350	20MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset		
		B	CONDCUDE TED EMISSION	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
				20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
				20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
				20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	20775 to 21425	21100	5MHz	QPSK	1 RB / 0 RB Offset		
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK	1 RB / 0 RB Offset		
		20825 to 21375	21100	15MHz	QPSK	1 RB / 0 RB Offset		
		20850 to 21350	21100	20MHz	QPSK	1 RB / 0 RB Offset		
B	PEAK TO AVERAGE RATIO	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset		
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		



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						75 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
						100 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	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset		
		37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		37850 to38150	37850, 38000, 38150	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
B	FREQUENCY STABILITY	37775 to 38225	37775, 38225	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		37800 to 38200	37800, 38200	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset		
		37825 to 38175	37825, 38175	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		37850 to38150	37850, 38150	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
B	OCCUPIED BANDWIDTH	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset		
		37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset		
		37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset		
		37850 to38150	37850, 38000, 38150	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset		
B	BAND EDGE	37775 to 38225	37775	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	75 RB / 0 RB Offset		
		37850 to38150	37850	20MHz	QPSK, 16QAM, 64QAM	1 RB / 74 RB Offset		
			38150	20MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset		
		B	CONDCUDE TED EMISSION	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
				37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
				37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
				37850 to38150	37850, 38000, 38150	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	37775 to 38225	38000	5MHz	QPSK	1 RB / 0 RB Offset		
		37800 to 38200	37800, 38000, 38200	10MHz	QPSK	1 RB / 0RB Offset		
		37825 to 38175	38000	15MHz	QPSK	1 RB / 0 RB Offset		
		37850 to38150	38000	20MHz	QPSK	1 RB / 0 RB Offset		
B	PEAK TO AVERAGE RATIO	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset		
		37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
						50 RB / 0 RB Offset		
						75 RB / 0 RB Offset		



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		37850 to 38150	37850, 38000, 38150	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
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**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

**LTE BAND 41 MODE**

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDT H	MODULATION	MODE
B	EIRP	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	39675 to 41565	39675, 41565	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 41540	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39725 to 41515	39725, 41515	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 41490	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
B	BAND EDGE	39675 to 41565	39675	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
			41565	5MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset
		39700 to 41540	39700	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
			41540	10MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset
		39725 to	39725	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset



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		41515				75 RB / 0 RB Offset
			41515	15MHz	QPSK, 16QAM, 64QAM	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		39750 to 41490	39750	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
			41490	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
						1 RB / 99 RB Offset
						100 RB / 0 RB Offset
B	CONDCUDET ED EMISSION	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	39675 to 41565	39675, 40620, 41565	5MHz	QPSK	1 RB / 0 RB Offset
		39700 to 41540	40620	10MHz	QPSK	1 RB / 0 RB Offset
		39725 to 41515	40620	15MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	40620	20MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
						75 RB / 0 RB Offset
						100 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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**TEST CONDITION:**

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	23deg. C, 70%RH	DC 5V By Adapter	Jace Hu
FREQUENCY STABILITY	23deg. C, 70%RH	3.85V By Battery	James Fu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC5V By Adapter	James Fu
BAND EDGE	23deg. C, 70%RH	DC 5V By Adapter	James Fu
CONDCUDED EMISSION	23deg. C, 70%RH	DC5V By Adapter	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC5V By Adapter	Jace Hu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC5V By Adapter	James Fu



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## 2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 27**

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

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

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

**ANSI C63.26-2015**

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



### 3 TEST TYPES AND RESULTS

#### 3.1 OUTPUT POWER MEASUREMENT

##### 3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

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

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP

##### 3.1.2 TEST PROCEDURES

###### EIRP MEASUREMENT:

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

$$\text{ERP or EIRP} = \text{PMeas} + \text{GT} - \text{LC}$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively

(expressed in the same units as PMeas, typically dBW or dBm);

PMeas = measured transmitter output power or PSD, in dBm or dBW;

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

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

###### CONDUCTED POWER MEASUREMENT:

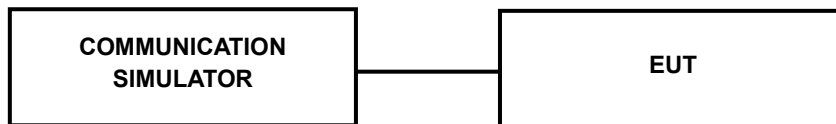
- a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.



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### 3.1.3 TEST SETUP

#### CONDUCTED POWER MEASUREMENT:



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

### 3.1.4 TEST RESULTS

#### AVERAGE CONDUCTED OUTPUT POWER (dBm)

LTE Band 7

Band/BW	Modulation	RB Size	RB Offset	Low CH 20775	Mid CH 21100	High CH 21425
				Frequency 2502.5 MHz	Frequency 2535 MHz	Frequency 2567.5 MHz
7/5	QPSK	1	0	22.57	22.71	22.58
		1	12	22.55	22.77	22.68
		1	24	22.56	22.68	22.69
		12	0	21.62	21.77	21.69
		12	6	21.66	21.82	21.84
		12	13	21.64	21.80	21.77
		25	0	21.59	21.73	21.71
	16QAM	1	0	22.09	22.21	22.19
		1	12	22.02	22.26	22.14
		1	24	22.16	22.31	22.31
		12	0	20.77	20.87	20.84
		12	6	20.77	20.93	20.95
		12	13	20.78	20.99	20.82
		25	0	20.75	20.95	20.89
	64QAM	1	0	21.46	21.56	21.50
		1	12	21.56	21.74	21.68
		1	24	21.52	21.65	21.61
		12	0	19.43	19.62	19.48
		12	6	19.47	19.69	19.63
		12	13	19.53	19.69	19.56
		25	0	19.43	19.57	19.56





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Band/BW	Modulation	RB Size	RB Offset	Low CH 20800	Mid CH 21100	High CH 21400
				Frequency 2505 MHz	Frequency 2535 MHz	Frequency 2565 MHz
7/ 10	QPSK	1	0	22.55	22.68	22.61
		1	24	22.61	22.70	22.72
		1	49	22.52	22.69	22.65
		25	0	21.66	21.71	21.73
		25	12	21.65	21.83	21.81
		25	25	21.69	21.76	21.80
		50	0	21.59	21.74	21.68
	16QAM	1	0	22.11	22.19	22.25
		1	24	22.07	22.26	22.12
		1	49	22.18	22.28	22.27
		25	0	20.82	20.88	20.87
		25	12	20.82	20.90	20.96
		25	25	20.78	20.97	20.83
		50	0	20.81	20.88	20.90
	64QAM	1	0	21.42	21.57	21.53
		1	24	21.61	21.69	21.68
		1	49	21.54	21.63	21.64
		25	0	19.43	19.56	19.49
		25	12	19.54	19.68	19.57
		25	25	19.52	19.66	19.58
		50	0	19.48	19.53	19.57

Band/BW	Modulation	RB Size	RB Offset	Low CH 20825	Mid CH 21100	High CH 21375
				Frequency 2507.5 MHz	Frequency 2535 MHz	Frequency 2562.5 MHz
7/ 15	QPSK	1	0	22.60	22.74	22.55
		1	37	22.56	22.70	22.67
		1	74	22.57	22.67	22.68
		36	0	21.66	21.72	21.69
		36	19	21.67	21.79	21.84
		36	39	21.70	21.74	21.81
		75	0	21.53	21.77	21.68
	16QAM	1	0	22.15	22.19	22.26
		1	37	22.00	22.24	22.15
		1	74	22.20	22.30	22.31
		36	0	20.81	20.87	20.84
		36	19	20.78	20.90	20.95
		36	39	20.85	20.99	20.80
		75	0	20.78	20.88	20.85
	64QAM	1	0	21.49	21.55	21.56
		1	37	21.62	21.68	21.65
		1	74	21.50	21.62	21.67
		36	0	19.48	19.62	19.43
		36	19	19.48	19.62	19.59
		36	39	19.55	19.73	19.60
		75	0	19.47	19.51	19.58



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Band/BW	Modulation	RB Size	RB Offset	Low CH 20850	Mid CH 21100	High CH 21350
				Frequency 2510 MHz	Frequency 2535 MHz	Frequency 2560 MHz
7/ 20	QPSK	1	0	22.61	22.76	22.63
		1	50	22.63	22.78	22.73
		1	99	22.60	22.73	22.70
		50	0	21.68	21.79	21.74
		50	25	21.73	21.87	21.86
		50	50	21.72	21.82	21.82
		100	0	21.61	21.81	21.73
	16QAM	1	0	22.17	22.27	22.27
		1	50	22.08	22.28	22.20
		1	99	22.23	22.36	22.33
		50	0	20.83	20.94	20.89
		50	25	20.84	20.98	20.97
		50	50	20.86	21.01	20.88
		100	0	20.83	20.96	20.91
	64QAM	1	0	21.50	21.61	21.58
		1	50	21.64	21.75	21.70
		1	99	21.56	21.70	21.69
		50	0	19.49	19.64	19.51
		50	25	19.55	19.70	19.65
		50	50	19.57	19.74	19.64
		100	0	19.49	19.59	19.59



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LTE Band 38

Band/BW	Modulation	RB Size	RB Offset	Low CH 37775	Mid CH 38000	High CH 38225
				Frequency 2572.5 MHz	Frequency 2595 MHz	Frequency 2617.5MHz
38/ 5	QPSK	1	0	22.31	22.17	22.38
		1	12	22.48	22.34	22.51
		1	24	22.27	22.24	22.36
		12	0	21.41	21.31	21.39
		12	6	21.32	21.27	21.36
		12	13	21.31	21.22	21.39
		25	0	21.37	21.30	21.39
	16QAM	1	0	21.76	21.60	21.82
		1	12	21.64	21.52	21.67
		1	24	21.83	21.83	21.88
		12	0	20.58	20.46	20.66
		12	6	20.43	20.38	20.49
		12	13	20.59	20.50	20.67
		25	0	20.64	20.57	20.65
	64QAM	1	0	20.10	20.07	20.22
		1	12	22.06	21.96	21.97
		1	24	20.00	19.96	20.07
		12	0	19.70	19.56	19.67
		12	6	19.35	19.30	19.33
		12	13	19.52	19.50	19.53
		25	0	19.58	19.47	19.62

Band/BW	Modulation	RB Size	RB Offset	Low CH 37800	Mid CH 38000	High CH 38200
				Frequency 2575 MHz	Frequency 2595 MHz	Frequency 2615 MHz
38/ 10	QPSK	1	0	22.32	22.20	22.38
		1	24	22.46	22.37	22.51
		1	49	22.28	22.20	22.39
		25	0	21.37	21.34	21.35
		25	12	21.36	21.21	21.39
		25	25	21.30	21.21	21.33
		50	0	21.39	21.30	21.38
	16QAM	1	0	21.71	21.63	21.82
		1	24	21.66	21.51	21.70
		1	49	21.82	21.80	21.92
		25	0	20.57	20.49	20.62
		25	12	20.41	20.44	20.52
		25	25	20.62	20.50	20.61
		50	0	20.64	20.58	20.69
	64QAM	1	0	20.14	20.03	20.16
		1	24	22.04	21.99	22.02
		1	49	20.00	19.96	20.07
		25	0	19.67	19.56	19.73
		25	12	19.33	19.30	19.31
		25	25	19.58	19.43	19.53
		50	0	19.59	19.50	19.61

Band/BW	Modulation	RB Size	RB Offset	Low CH 37825	Mid CH 38000	High CH 38175
				Frequency 2577.5 MHz	Frequency 2595 MHz	Frequency 2612.5MHz
38/ 15	QPSK	1	0	22.33	22.19	22.37
		1	37	22.50	22.32	22.51
		1	74	22.29	22.17	22.39
		36	0	21.44	21.34	21.32
		36	19	21.31	21.21	21.35
		36	39	21.35	21.21	21.39
		75	0	21.43	21.25	21.39
	16QAM	1	0	21.72	21.60	21.82
		1	37	21.70	21.50	21.74
		1	74	21.81	21.81	21.89
		36	0	20.63	20.43	20.67
		36	19	20.41	20.41	20.49
		36	39	20.63	20.49	20.67
		75	0	20.70	20.52	20.66
	64QAM	1	0	20.12	20.00	20.22
		1	37	22.09	21.99	21.97
		1	74	20.03	19.89	20.03
		36	0	19.73	19.55	19.73
		36	19	19.40	19.30	19.28
		36	39	19.59	19.49	19.47
		75	0	19.63	19.45	19.59

Band/BW	Modulation	RB Size	RB Offset	Low CH 37850	Mid CH 38000	High CH 38150
				Frequency 2580 MHz	Frequency 2595 MHz	Frequency 2610 MHz
38/ 20	QPSK	1	0	22.36	22.25	22.39
		1	50	22.52	22.39	<b>22.56</b>
		1	99	22.35	22.25	22.41
		50	0	21.45	21.36	21.40
		50	25	21.38	21.29	21.41
		50	50	21.38	21.27	21.41
		100	0	21.45	21.32	21.44
	16QAM	1	0	21.78	21.68	21.84
		1	50	21.72	21.58	21.75
		1	99	21.89	21.85	21.94
		50	0	20.65	20.51	20.68
		50	25	20.49	20.45	20.54
		50	50	20.66	20.55	20.69
		100	0	20.72	20.59	20.71
	64QAM	1	0	20.18	20.08	20.24
		1	50	22.10	22.01	22.05
		1	99	20.08	19.97	20.09
		50	0	19.74	19.61	19.75
		50	25	19.41	19.32	19.36
		50	50	19.60	19.51	19.55
		100	0	19.65	19.52	19.64



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LTE Band 41

Band/BW	Modulation	RB Size	RB Offset	Low CH (39675)	Mid CH (40620)	High CH (41565)
				Frequency (2498.5)MHz	Frequency (2593)MHz	Frequency (2687.5)MHz
41/ 5	QPSK	1	0	22.77	22.67	22.81
		1	12	22.66	22.61	22.70
		1	24	22.63	22.62	22.65
		12	0	21.59	21.60	21.68
		12	6	21.62	21.58	21.63
		12	13	21.58	21.64	21.69
		25	0	21.23	21.19	21.30
	16QAM	1	0	22.12	22.11	22.22
		1	12	22.00	22.02	22.11
		1	24	22.02	22.02	22.08
		12	0	20.87	20.85	21.01
		12	6	20.69	20.69	20.80
		12	13	20.77	20.80	20.90
		25	0	20.57	20.48	20.64
	64QAM	1	0	20.71	20.75	20.85
		1	12	20.67	20.63	20.71
		1	24	20.69	20.76	20.88
		12	0	20.10	19.96	20.17
		12	6	19.90	19.94	20.03
		12	13	19.90	19.81	19.97
		25	0	20.12	20.13	20.16



Band/BW	Modulation	RB Size	RB Offset	Low CH (39700)	Mid CH (40620)	High CH (41540)
				Frequency (2501)MHz	Frequency (2593)MHz	Frequency (2685)MHz
41/ 10	QPSK	1	0	22.74	22.67	22.79
		1	24	22.66	22.62	22.75
		1	49	22.60	22.58	22.63
		25	0	21.60	21.63	21.72
		25	12	21.68	21.58	21.69
		25	25	21.56	21.63	21.70
		50	0	21.28	21.16	21.30
	16QAM	1	0	22.12	22.07	22.22
		1	24	22.05	22.05	22.10
		1	49	22.02	21.99	22.05
		25	0	20.89	20.91	20.97
		25	12	20.73	20.74	20.79
		25	25	20.76	20.77	20.85
		50	0	20.61	20.52	20.57
	64QAM	1	0	20.70	20.72	20.88
		1	24	20.72	20.67	20.68
		1	49	20.75	20.73	20.83
		25	0	20.08	20.02	20.12
		25	12	19.97	19.88	20.05
		25	25	19.89	19.83	19.99
		50	0	20.17	20.14	20.18

Band/BW	Modulation	RB Size	RB Offset	Low CH (39725)	Mid CH (40620)	High CH (41515)
				Frequency (2503.5)MHz	Frequency (2593)MHz	Frequency (2682.5)MHz
41/ 15	QPSK	1	0	22.81	22.64	22.81
		1	37	22.64	22.57	22.75
		1	74	22.66	22.59	22.65
		36	0	21.57	21.64	21.74
		36	19	21.69	21.58	21.64
		36	39	21.54	21.63	21.73
		75	0	21.28	21.21	21.27
	16QAM	1	0	22.16	22.07	22.25
		1	37	22.04	22.05	22.05
		1	74	21.98	22.01	22.09
		36	0	20.93	20.92	21.02
		36	19	20.67	20.70	20.80
		36	39	20.81	20.80	20.90
		75	0	20.62	20.45	20.59
	64QAM	1	0	20.72	20.73	20.89
		1	37	20.73	20.64	20.68
		1	74	20.71	20.76	20.88
		36	0	20.13	19.96	20.16
		36	19	19.91	19.90	20.04
		36	39	19.92	19.85	19.99
		75	0	20.16	20.15	20.21

Band/BW	Modulation	RB Size	RB Offset	Low CH (39750)	Mid CH (40620)	High CH (41490)
				Frequency (2506)MHz	Frequency (2593)MHz	Frequency (2680)MHz
41/ 20	QPSK	1	0	22.82	22.72	22.87
		1	50	22.68	22.63	22.77
		1	99	22.68	22.63	22.71
		50	0	21.63	21.65	21.75
		50	25	21.70	21.63	21.71
		50	50	21.62	21.65	21.75
		100	0	21.29	21.24	21.32
	16QAM	1	0	22.19	22.13	22.27
		1	50	22.08	22.07	22.12
		1	99	22.04	22.04	22.13
		50	0	20.95	20.93	21.03
		50	25	20.75	20.75	20.85
		50	50	20.84	20.82	20.92
		100	0	20.63	20.53	20.65
	64QAM	1	0	20.78	20.77	20.90
		1	50	20.75	20.69	20.76
		1	99	20.77	20.78	20.89
		50	0	20.14	20.04	20.19
		50	25	19.98	19.96	20.08
		50	50	19.94	19.89	20.01
		100	0	20.18	20.16	20.24



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**EIRP**

**LTE BAND 7**

**CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	22.57	-0.2	22.37	172.58	2
21100	2535.0	22.77	-0.2	22.57	180.72	2
21425	2567.5	22.69	-0.2	22.49	177.42	2

**CHANNEL BANDWIDTH: 5MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	22.16	-0.2	21.96	157.04	2
21100	2535.0	22.31	-0.2	22.11	162.55	2
21425	2567.5	22.31	-0.2	22.11	162.55	2

**CHANNEL BANDWIDTH: 5MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	21.56	-0.2	21.36	136.77	2
21100	2535	21.74	-0.2	21.54	142.56	2
21425	2567.5	21.68	-0.2	21.48	140.6	2

**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505.0	22.61	-0.2	22.41	174.18	2
21100	2535.0	22.7	-0.2	22.5	177.83	2
21400	2565.0	22.72	-0.2	22.52	178.65	2

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505.0	22.18	-0.2	21.98	157.76	2
21100	2535.0	22.28	-0.2	22.08	161.44	2
21400	2565.0	22.27	-0.2	22.07	161.06	2

**CHANNEL BANDWIDTH: 10MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505	21.61	-0.2	21.41	138.36	2
21100	2535	21.69	-0.2	21.49	140.93	2
21400	2565	21.68	-0.2	21.48	140.6	2

**CHANNEL BANDWIDTH: 15MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	22.6	-0.2	22.4	173.78	2
21100	2535.0	22.74	-0.2	22.54	179.47	2
21375	2562.5	22.68	-0.2	22.48	177.01	2

**CHANNEL BANDWIDTH: 15MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	22.2	-0.2	22	158.49	2
21100	2535.0	22.3	-0.2	22.1	162.18	2
21375	2562.5	22.31	-0.2	22.11	162.55	2

**CHANNEL BANDWIDTH: 15MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	21.62	-0.2	21.42	138.68	2
21100	2535	21.68	-0.2	21.48	140.6	2
21375	2562.5	21.67	-0.2	21.47	140.28	2



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**CHANNEL BANDWIDTH: 20MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510.0	22.63	-0.2	22.43	174.98	2
21100	2535.0	22.78	-0.2	22.58	181.13	2
21350	2560.0	22.73	-0.2	22.53	179.06	2

**CHANNEL BANDWIDTH: 20MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510.0	22.23	-0.2	22.03	159.59	2
21100	2535.0	22.36	-0.2	22.16	164.44	2
21350	2560.0	22.33	-0.2	22.13	163.31	2

**CHANNEL BANDWIDTH: 20MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510	21.64	-0.2	21.44	139.32	2
21100	2535	21.75	-0.2	21.55	142.89	2
21350	2560	21.7	-0.2	21.5	141.25	2

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



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Test Report No.: W7L-P22090015-1RF06

**LTE BAND 38**

**CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37775	2572.5	22.48	-0.5	21.98	157.76	2
38000	2595.0	22.34	-0.5	21.84	152.76	2
38225	2617.5	22.51	-0.5	22.01	158.85	2

**CHANNEL BANDWIDTH: 5MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37775	2572.5	21.83	-0.5	21.33	135.83	2
38000	2595.0	21.83	-0.5	21.33	135.83	2
38225	2617.5	21.88	-0.5	21.38	137.4	2

**CHANNEL BANDWIDTH: 5MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37775	2572.5	22.06	-0.5	21.56	143.22	2
38000	2595	21.96	-0.5	21.46	139.96	2
38225	2617.5	21.97	-0.5	21.47	140.28	2



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VERITAS**

Test Report No.: W7L-P22090015-1RF06

**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37800	2575.0	22.46	-0.5	21.96	157.04	2
38000	2595.0	22.37	-0.5	21.87	153.82	2
38200	2615.0	22.51	-0.5	22.01	158.85	2

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37800	2575.0	21.82	-0.5	21.32	135.52	2
38000	2595.0	21.8	-0.5	21.3	134.9	2
38200	2615.0	21.92	-0.5	21.42	138.68	2

**CHANNEL BANDWIDTH: 10MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37800	2575	22.04	-0.5	21.54	142.56	2
38000	2595	21.99	-0.5	21.49	140.93	2
38200	2615	22.02	-0.5	21.52	141.91	2





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VERITAS**

Test Report No.: W7L-P22090015-1RF06

**CHANNEL BANDWIDTH: 15MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37825	2577.5	22.5	-0.5	22	158.49	2
38000	2595.0	22.32	-0.5	21.82	152.05	2
38175	2612.5	22.51	-0.5	22.01	158.85	2

**CHANNEL BANDWIDTH: 15MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37825	2577.5	21.81	-0.5	21.31	135.21	2
38000	2595.0	21.81	-0.5	21.31	135.21	2
38175	2612.5	21.89	-0.5	21.39	137.72	2

**CHANNEL BANDWIDTH: 15MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37825	2577.5	22.09	-0.5	21.59	144.21	2
38000	2595	21.99	-0.5	21.49	140.93	2
38175	2612.5	21.97	-0.5	21.47	140.28	2



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VERITAS

Test Report No.: W7L-P22090015-1RF06

**CHANNEL BANDWIDTH: 20MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37850	2580.0	22.52	-0.5	22.02	159.22	2
38000	2595.0	22.39	-0.5	21.89	154.53	2
38150	2610.0	22.56	-0.5	22.06	160.69	2

**CHANNEL BANDWIDTH: 20MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37850	2580.0	21.89	-0.5	21.39	137.72	2
38000	2595.0	21.85	-0.5	21.35	136.46	2
38150	2610.0	21.94	-0.5	21.44	139.32	2

**CHANNEL BANDWIDTH: 20MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
37850	2580	22.1	-0.5	21.6	144.54	2
38000	2595	22.01	-0.5	21.51	141.58	2
38150	2610	22.05	-0.5	21.55	142.89	2



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VERITAS**

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**LTE BAND 41**

**CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39675	2498.5	22.77	-0.3	22.47	176.6	2
40620	2593.0	22.67	-0.3	22.37	172.58	2
41565	2687.5	22.81	-0.3	22.51	178.24	2

**CHANNEL BANDWIDTH: 5MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39675	2498.5	22.12	-0.3	21.82	152.05	2
40620	2593.0	22.11	-0.3	21.81	151.71	2
41565	2687.5	22.22	-0.3	21.92	155.6	2

**CHANNEL BANDWIDTH: 5MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39675	2498.5	20.71	-0.3	20.41	109.9	2
40620	2593.0	20.76	-0.3	20.46	111.17	2
41565	2687.5	20.88	-0.3	20.58	114.29	2



**BUREAU  
VERITAS**

Test Report No.: W7L-P22090015-1RF06

**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39700	2501.0	22.74	-0.3	22.44	175.39	2
40620	2593.0	22.67	-0.3	22.37	172.58	2
41540	2685.0	22.79	-0.3	22.49	177.42	2

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39700	2501.0	22.12	-0.3	21.82	152.05	2
40620	2593.0	22.07	-0.3	21.77	150.31	2
41540	2685.0	22.22	-0.3	21.92	155.6	2

**CHANNEL BANDWIDTH: 10MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39700	2501.0	20.75	-0.3	20.45	110.92	2
40620	2593.0	20.73	-0.3	20.43	110.41	2
41540	2685.0	20.88	-0.3	20.58	114.29	2



**BUREAU  
VERITAS**

Test Report No.: W7L-P22090015-1RF06

**CHANNEL BANDWIDTH: 15MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39725	2503.5	22.81	-0.3	22.51	178.24	2
40620	2593.0	22.64	-0.3	22.34	171.4	2
41515	2682.5	22.81	-0.3	22.51	178.24	2

**CHANNEL BANDWIDTH: 15MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39725	2503.5	22.16	-0.3	21.86	153.46	2
40620	2593.0	22.07	-0.3	21.77	150.31	2
41515	2682.5	22.25	-0.3	21.95	156.68	2

**CHANNEL BANDWIDTH: 15MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39725	2503.5	20.73	-0.3	20.43	110.41	2
40620	2593.0	20.76	-0.3	20.46	111.17	2
41515	2682.5	20.89	-0.3	20.59	114.55	2



**BUREAU  
VERITAS**

Test Report No.: W7L-P22090015-1RF06

**CHANNEL BANDWIDTH: 20MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39750	2506.0	22.82	-0.3	22.52	178.65	2
40620	2593.0	22.72	-0.3	22.42	174.58	2
41490	2680.0	22.87	-0.3	22.57	180.72	2

**CHANNEL BANDWIDTH: 20MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39750	2506.0	22.19	-0.3	21.89	154.53	2
40620	2593.0	22.13	-0.3	21.83	152.41	2
41490	2680.0	22.27	-0.3	21.97	157.4	2

**CHANNEL BANDWIDTH: 20 MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
39750	2506.0	20.78	-0.3	20.48	111.69	2
40620	2593.0	20.78	-0.3	20.48	111.69	2
41490	2680.0	20.9	-0.3	20.6	114.82	2

### 3.2 FREQUENCY STABILITY MEASUREMENT

#### 3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

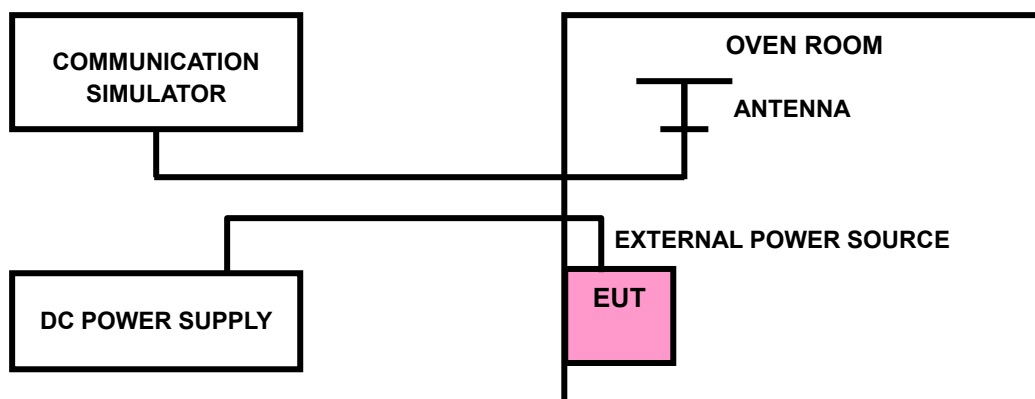
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

#### 3.2.2 TEST PROCEDURE

- 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  $\pm 0.5^{\circ}\text{C}$  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





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### 3.2.4 TEST RESULTS

Please Refer to Appendix Of this test report.

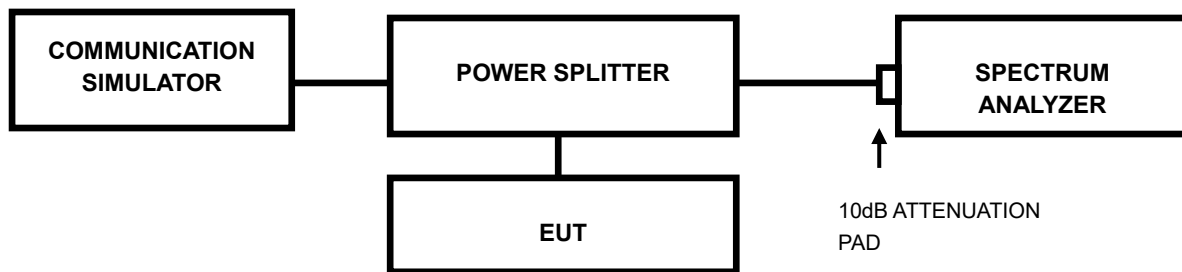


### 3.3 OCCUPIED BANDWIDTH MEASUREMENT

#### 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.



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### 3.3.4 TEST RESULTS

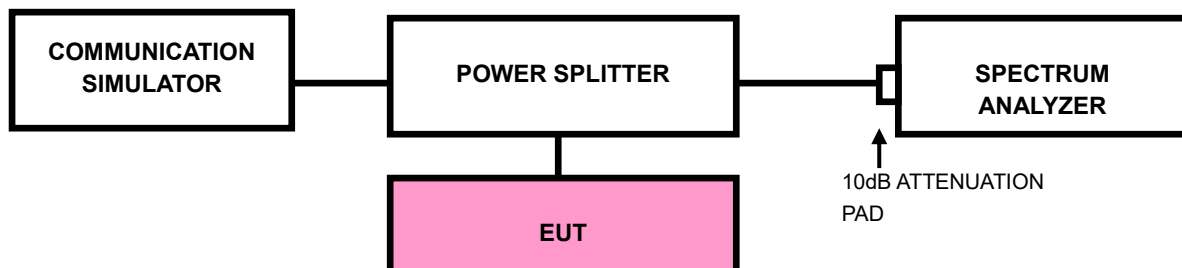
Please Refer to Appendix Of this test report.

### 3.4 BAND EDGE MEASUREMENT

#### 3.4.1 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.

#### 3.4.2 TEST SETUP





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### 3.4.3 TEST PROCEDURES

- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz.  
RBW of the spectrum is 10kHz and VBW of the spectrum is 30kHz (GSM/GPRS/EDGE/LTE bandwidth for (1.4M/3M/5M/10M/15M/20M)1RB/0RB&1RB/MAXRB).
- c. The center frequency of spectrum is the band edge frequency and span is 10MHz.  
RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (WCDMA).
- d. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz.  
RBW of the spectrum is  $\geq 1\% \cdot \text{EBW}$  kHz and VBW of the spectrum is  $3 \cdot \text{RBW}$  kHz.  
(LTE bandwidth 1.4M/3M/5M/10M/15M/20MHz).
- e. Record the max trace plot into the test report.



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### 3.4.4 TEST RESULTS

Please Refer to Appendix Of this test report.

### 3.5 CONDUCTED SPURIOUS EMISSIONS

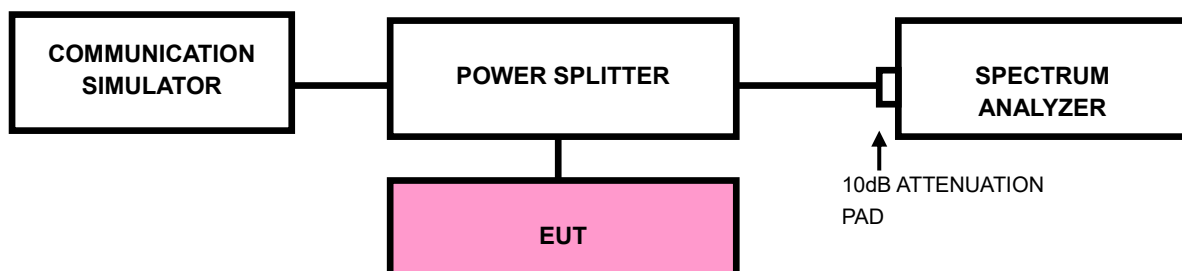
#### 3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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

#### 3.5.2 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 30MHz~27GHz for LTE Band 7 & 30MHz~26.2GHz for LTE Band 38, 30MHz~27GHz for LTE Band 41. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

#### 3.5.3 TEST SETUP





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### 3.5.4 TEST RESULTS

Please Refer to Appendix Of this test report.