



Test Report No.: W7L-P23030025RF07



FCC TEST REPORT (PART 27)

Applicant:	Thundercomm Technology Co., Ltd
Address:	No. 107, Middle Datagu Road, Xiantao Street, Yubei District, Chongqing, China, 401122

Manufacturer or Supplier:	Thundercomm Technology Co., Ltd
Address:	No. 107, Middle Datagu Road, Xiantao Street, Yubei District, Chongqing, China, 401122
Product:	TurboX CM2290-NA
Brand Name:	TURBOX
Model Name:	TurboX CM2290-NA
FCC ID:	2AOHHCM2290NA
Date of tests:	Apr. 07, 2023 ~ Apr. 26, 2023

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

- FCC Part 27 ANSI/TIA/EIA-603-D
- FCC Part 2 ANSI/TIA/EIA-603-E ANSI C63.26-2015

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

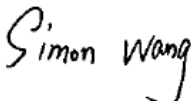

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Apr. 26, 2023	 Date: Apr. 26, 2023
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P23030025RF07	Original release	Apr. 26, 2023

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	TEST LAB*
§2.1046	Conducted Output Power	Compliance	A
§27.50(d)(4) §27.50(h)(2)	Equivalent Isotropically Radiated Power (Band 4) (Band 41) (Band 66)	Compliance	A
§2.1055 §27.54	Frequency Stability	Compliance	A
§2.1049	Occupied Bandwidth	Compliance	A
§2.1051 §27.53(h) §27.53(m)(4)(6)	Conducted Band Edge Measurements (Band 4) (Band 41) (Band 66)	Compliance	A
§2.1051 §27.53(h) §27.53(m)(4)(6)	Conducted Spurious Emissions (Band 4) (Band 41) (Band 66)	Compliance	A
§2.1053 §27.53(h) §27.53(m)(4)(6)	Radiated Spurious Emissions (Band 4) (Band 41) ((Band 66)	Compliance	A
NA	Peak to average ratio	Compliance	A



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***Test Lab Information Reference**

Lab A:

BV 7Layers Communications Technology (Shenzhen) Co., Ltd

Lab Address:

No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

Accredited Test Lab Cert 3939.01

The FCC Site Registration No. : 525120; Designation No. : CN1171;

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

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

1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 17,23	Feb. 16,24
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.14,22	May.13,23
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.03,22	Sep.02,23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 05,23	Mar. 04,24
Horn Antenna	ETS-LINDGREN	3117	00168692	Mar. 05,23	Mar. 04,24
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40- K-SG/QMS-003 61	15433	Sep.04, 22	Sep.03, 23
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 14,23	Feb. 13,24
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 17,23	Feb.16,24
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn- CT0001143-121 6	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120	3.1.36	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	N/A	May. 12,22	May. 11,23
Power Meter	Anritsu	ML2495A	1506002	Feb. 14,23	Feb. 13,24
Power Sensor	Anritsu	MA2411B	1339352	May. 07,22	May. 06,23
Temperature Chamber	ESPEC	SH-242	93000855	May. 12,22	May. 11,23
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 14,23	Feb. 13,24
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.12,22	May.11,23
DC Source	Kikusui/JP	PMX18-5A	N/A	Aug. 12,22	Aug. 11,23

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

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	TurboX CM2290-NA	
BRAND NAME	TURBOX	
MODEL NAME	TurboX CM2290-NA	
NOMINAL VOLTAGE	EUT 4.0V	
MODULATION TECHNOLOGY	LTE	QPSK, 16QAM, 64QAM
FREQUENCY RANGE	LTE Band 4 Channel Bandwidth: 1.4MHz	1710.7MHz ~ 1754.3MHz
	LTE Band 4 Channel Bandwidth: 3MHz	1711.5MHz ~ 1753.5MHz
	LTE Band 4 Channel Bandwidth: 5MHz	1712.5MHz ~ 1752.5MHz
	LTE Band 4 Channel Bandwidth: 10MHz	1715MHz ~ 1750MHz
	LTE Band 4 Channel Bandwidth: 15MHz	1717.5MHz ~ 1747.5 MHz
	LTE Band 4 Channel Bandwidth: 20MHz	1720MHz ~ 1745MHz
	LTE Band 41 Channel Bandwidth: 5MHz	2537.5MHz ~ 2652.5MHz
	LTE Band 41 Channel Bandwidth: 10MHz	2540MHz ~ 2650MHz
	LTE Band 41 Channel Bandwidth: 15MHz	2542.5MHz ~ 2647.5MHz
	LTE Band 41 Channel Bandwidth: 20MHz	2545MHz ~ 2645MHz
	LTE Band 66 Channel Bandwidth: 1.4MHz	1710.7MHz ~ 1779.3MHz
	LTE Band 66 Channel Bandwidth: 3MHz	1711.5MHz ~ 1778.5MHz
	LTE Band 66 Channel Bandwidth: 5MHz	1712.5MHz ~ 1777.5MHz
	LTE Band 66 Channel Bandwidth: 10MHz	1715MHz ~ 1775MHz
	LTE Band 66 Channel Bandwidth: 15MHz	1717.5MHz ~ 1772.5MHz
	LTE Band 66 Channel Bandwidth: 20MHz	1720MHz ~ 1770MHz

MAX. EIRP POWER	LTE Band 4 Channel Bandwidth: 1.4MHz	650.13mW
	LTE Band 4 Channel Bandwidth: 3MHz	650.13mW
	LTE Band 4 Channel Bandwidth: 5MHz	645.65mW
	LTE Band 4 Channel Bandwidth: 10MHz	650.13mW
	LTE Band 4 Channel Bandwidth: 15MHz	647.14mW
	LTE Band 4 Channel Bandwidth: 20MHz	653.13mW
	LTE Band 41 Channel Bandwidth: 5MHz	584.79mW
	LTE Band 41 Channel Bandwidth: 10MHz	576.77mW
	LTE Band 41 Channel Bandwidth: 15MHz	578.1mW
	LTE Band 41 Channel Bandwidth: 20MHz	586.14mW
	LTE Band 66 Channel Bandwidth: 1.4MHz	608.14mW
	LTE Band 66 Channel Bandwidth: 3MHz	613.76mW
	LTE Band 66 Channel Bandwidth: 5MHz	605.34mW
	LTE Band 66 Channel Bandwidth: 10MHz	605.34mW
	LTE Band 66 Channel Bandwidth: 15MHz	609.54mW
	LTE Band 66 Channel Bandwidth: 20MHz	616.6mW
EMISSION DESIGNATOR	LTE Band 41 Channel Bandwidth: 5MHz	QPSK: 4M50G7D
		16QAM: 4M48W7D
		64QAM: 4M50W7D
	LTE Band 41 Channel Bandwidth: 10MHz	QPSK: 8M96G7D
		16QAM: 8M95W7D
		64QAM: 8M97W7D
	LTE Band 41 Channel Bandwidth: 15MHz	QPSK: 13M4G7D
		16QAM: 13M4W7D
		64QAM: 13M4W7D

EMISSION DESIGNATOR	LTE Band 41 Channel Bandwidth: 20MHz	QPSK: 17M9G7D	
		16QAM: 17M9W7D	
		64QAM: 17M9W7D	
	LTE Band 66 Channel Bandwidth: 1.4MHz	QPSK: 1M09G7D	
		16QAM: 1M09W7D	
		64QAM: 1M09W7D	
	LTE Band 66 Channel Bandwidth: 3MHz	QPSK: 2M70G7D	
		16QAM: 2M70W7D	
		64QAM: 2M70W7D	
	LTE Band 66 Channel Bandwidth: 5MHz	QPSK: 4M50G7D	
		16QAM: 4M50W7D	
		64QAM: 4M49W7D	
	LTE Band 66 Channel Bandwidth: 10MHz	QPSK: 8M97G7D	
		16QAM: 8M96W7D	
		64QAM: 8M97W7D	
	LTE Band 66 Channel Bandwidth: 15MHz	QPSK: 13M4G7D	
		16QAM: 13M4W7D	
		64QAM: 13M4W7D	
	LTE Band 66 Channel Bandwidth: 20MHz	QPSK: 17M9G7D	
		16QAM: 17M9W7D	
		64QAM: 17M9W7D	
	ANTENNA TYPE	Flex Antenna with 4.8dBi gain for LTE4 Flex Antenna with 4.8dBi gain for LTE41 Flex Antenna with 4.8dBi gain for LTE66	
	HW VERSION	V06	
	SW VERSION	FlatBuild_Turbox-CM2290_cm2290_la1.0.1.v.userdebug.20230301.1952	
I/O PORTS	Refer to user's manual		
CABLE SUPPLIED	N/A		
EXTREME TEMPERATURE	-25-75 °C		
EXTREME VOLTAGE	3.4V - 4.35V		

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.



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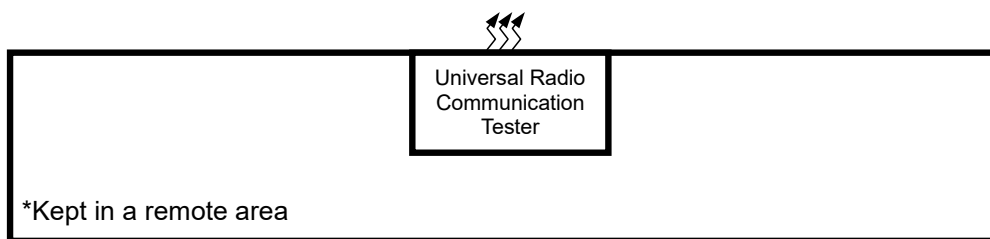
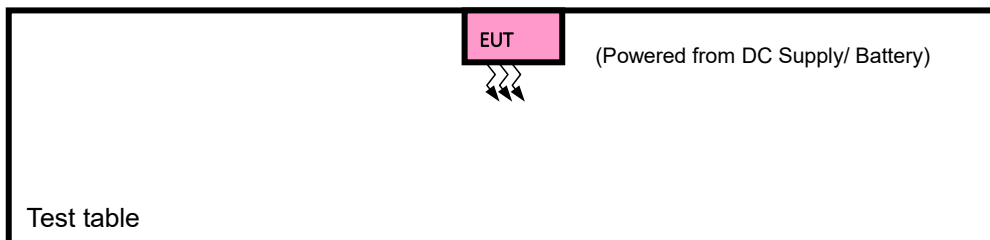
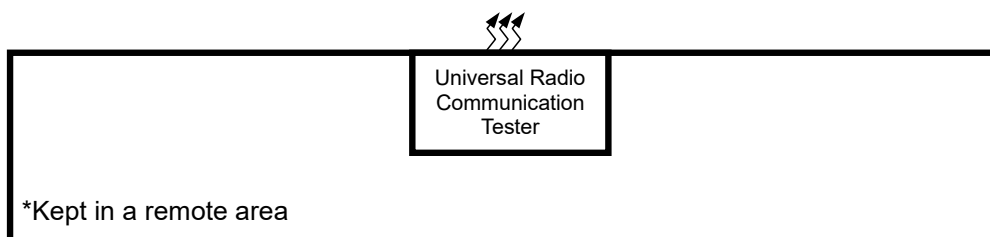
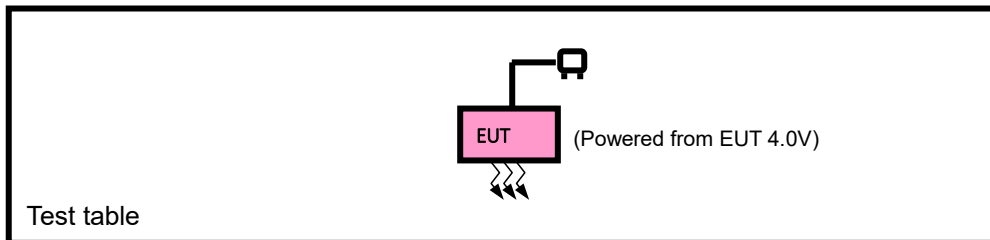
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The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
LTE	1TX/1RX

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

2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION TEST



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 with LTE link
B	EUT + DC source with LTE link

LTE BAND 4 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset

Note: 1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

2. LTE Band 4 are covered by LTE Band 66, Because it is a subset of LTE Band 66 with the same output power and supported bandwidths, So the conducted test data and RSE test data please refer to LTE Band 66

LTE BAND 41 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	40065 to 41215	40065, 40640, 41215	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		40090 to 41190	40090, 40640, 41190	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
		40115 to 41165	40115, 40640, 41165	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		40140 to 41140	40140, 40640, 41140	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	40140 to 41140	40140, 40640, 41140	20MHz	QPSK	1 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	40065 to 41215	40065, 40640, 41215	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		40090 to 41190	40090, 40640, 41190	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		40115 to 41165	40115, 40640, 41165	15MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		40140 to 41140	40140, 40640, 41140	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	40140 to 41140	40140, 40640, 41140	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
A	BAND EDGE	40065 to 41215	40065	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
			41215	5MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset
		40090 to 41190	40090	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
			41190	10MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset
		40115 to 41165	40115	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 75 RB / 0 RB Offset
			41165	15MHz	QPSK, 16QAM, 64QAM	1 RB / 74 RB Offset 75 RB / 0 RB Offset
		40140 to 41140	40140	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
			41140	20MHz	QPSK, 16QAM, 64QAM	1 RB / 99 RB Offset 100 RB / 0 RB Offset



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A	CONDUCTED EMISSION	40065 to 41215	40065, 40640, 41215	5MHz	QPSK	1 RB / 0 RB Offset
		40090 to 41190	40090, 40640, 41190	10MHz	QPSK	1 RB / 0 RB Offset
		40115 to 41165	40115, 40640, 41165	15MHz	QPSK	1 RB / 0 RB Offset
		40140 to 41140	40140, 40640, 41140	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	40065 to 41215	40640	5MHz	QPSK	1 RB / 0 RB Offset
		40090 to 41190	40640	10MHz	QPSK	1 RB / 0 RB Offset
		40115 to 41165	40640	15MHz	QPSK	1 RB / 0 RB Offset
		40140 to 41140	40640	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 66 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE		
A	EIRP	131979 to 132665	131979,132322,132665	1.4MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset		
		131987 to 132657	131987,132322,132657	3MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset		
		131997 to 132647	131997,132322,132647	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset		
		132022 to 132622	132022,132322,132622	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset		
		132047 to 132597	132047,132322,132597	15MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset		
		132072 to 132572	132072,132322,132572	20MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset		
B	FREQUENCY STABILITY	132072 to 132572	132072,132322,132572	20MHz	QPSK	100 RB / 0 RB Offset		
A	OCCUPIED BANDWIDTH	131979 to 132665	131979,132322,132665	1.4MHz	QPSK,16QAM,64QAM	6 RB / 0 RB Offset		
		131987 to 132657	131987,132322,132657	3MHz	QPSK,16QAM,64QAM	15 RB / 0 RB Offset		
		131997 to 132647	131997,132322,132647	5MHz	QPSK,16QAM,64QAM	25 RB / 0 RB Offset		
		132022 to 132622	132022,132322,132622	10MHz	QPSK,16QAM,64QAM	50 RB / 0 RB Offset		
		132047 to 132597	132047,132322,132597	15MHz	QPSK,16QAM,64QAM	75 RB / 0 RB Offset		
		132072 to 132572	132072,132322,132572	20MHz	QPSK,16QAM,64QAM	100 RB / 0 RB Offset		
A	BAND EDGE	131979 to 132322	131979	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset		
			132322	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 5 RB Offset 6 RB / 0 RB Offset		
		131987 to 132657	131987	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 15 RB / 0 RB Offset		
			132657	3MHz	QPSK,16QAM, 64QAM	1 RB / 14 RB Offset 15 RB / 0 RB Offset		
		131997 to 132647	131997	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset		
			132647	5MHz	QPSK,16QAM, 64QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset		
		132022 to 132622	132022	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset		
			132622	10MHz	QPSK,16QAM, 64QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset		
		132047 to 132597	132047	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 75 RB / 0 RB Offset		
			132597	15MHz	QPSK,16QAM, 64QAM	1 RB / 74 RB Offset 75 RB / 0 RB Offset		
		132072 to 132572	132072	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset		
			132572	20MHz	QPSK,16QAM, 64QAM	1 RB / 99 RB Offset 100 RB / 0 RB Offset		
		A	PEAK TO AVERAGE RATIO	132072 to 132572	132072,132322,132572	20MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
		A	CONDCUDED EMISSION	131979 to 132665	131979,132322,132665	1.4MHz	QPSK	1 RB / 0 RB Offset
				131987 to 132657	131987,132322,132657	3MHz	QPSK	1 RB / 0 RB Offset



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		131997 to 132647	131997,132322,132647	5MHz	QPSK	1 RB / 0 RB Offset
		132022 to 132622	132022,132322,132622	10MHz	QPSK	1 RB / 0 RB Offset
		132047 to 132597	132047,132322,132597	15MHz	QPSK	1 RB / 0 RB Offset
		132072 to 132572	132072,132322,132572	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	131979 to 132665	132322	1.4MHz	QPSK	1 RB / 0 RB Offset
		131987 to 132657	132322	3MHz	QPSK	1 RB / 0 RB Offset
		131997 to 132647	132322	5MHz	QPSK	1 RB / 0 RB Offset
		132022 to 132622	132022,132322,132622	10MHz	QPSK	1 RB / 0 RB Offset
		132047 to 132597	132322	15MHz	QPSK	1 RB / 0 RB Offset
		132072 to 132572	132322	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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TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	EUT 4.0V	Jace Hu
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.4/4.0/4.35V By DC Source	James Fu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	EUT 4.0V	James Fu
BAND EDGE	23deg. C, 70%RH	EUT 4.0V	James Fu
CONDCUDED EMISSION	23deg. C, 70%RH	EUT 4.0V	James Fu
RADIATED EMISSION	23deg. C, 70%RH	EUT 4.0V	Jace Hu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	EUT 4.0V	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:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_{\text{T}} - L_{\text{C}}$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively
(expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_{T} = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

L_{C} = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

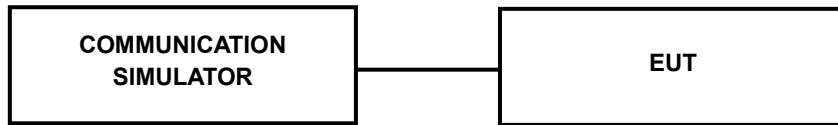
- a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.



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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 4

Band/BW	Modulation	RB Size	RB Offset	Low CH 19957	Mid CH 20175	High CH 20393
				Frequency 1710.7 MHz	Frequency 1732.5 MHz	Frequency 1754.3 MHz
4/ 1.4	QPSK	1	0	23.08	22.99	23.16
		1	2	23.23	23.16	23.33
		1	5	22.86	22.77	22.99
		3	0	22.54	22.46	22.65
		3	1	22.46	22.41	22.56
		3	3	22.40	22.29	22.48
		6	0	22.09	22.01	22.16
	16QAM	1	0	21.87	21.79	22.00
		1	2	22.10	22.03	22.24
		1	5	21.47	21.33	21.63
		3	0	21.47	21.45	21.60
		3	1	21.34	21.33	21.49
		3	3	21.36	21.26	21.43
		6	0	20.80	20.82	20.94
	64QAM	1	0	20.86	20.78	20.99
		1	2	21.15	21.14	21.33
		1	5	21.04	20.92	21.08
		3	0	20.50	20.46	20.62
		3	1	20.49	20.49	20.58
		3	3	20.38	20.24	20.54
		6	0	19.74	19.62	19.85

Band/BW	Modulation	RB Size	RB Offset	Low CH 19965	Mid CH 20175	High CH 20385
				Frequency 1711.5 MHz	Frequency 1732.5 MHz	Frequency 1753.5 MHz
4/3	QPSK	1	0	23.03	22.98	23.13
		1	7	23.19	23.17	23.33
		1	14	22.80	22.82	22.98
		8	0	22.02	22.03	22.15
		8	3	21.93	21.88	22.06
		8	7	21.87	21.86	22.02
		15	0	22.05	22.02	22.14
	16QAM	1	0	21.90	21.78	22.04
		1	7	22.04	22.07	22.21
		1	14	21.49	21.35	21.62
		8	0	20.99	20.93	21.10
		8	3	20.86	20.76	21.02
		8	7	20.89	20.79	20.86
		15	0	20.81	20.76	20.93
	64QAM	1	0	20.92	20.77	20.99
		1	7	21.18	21.14	21.31
		1	14	21.04	20.92	21.09
		8	0	20.00	19.98	20.15
		8	3	20.03	19.93	20.13
		8	7	19.85	19.78	20.00
		15	0	19.76	19.59	19.89

Band/BW	Modulation	RB Size	RB Offset	Low CH 19975	Mid CH 20175	High CH 20375
				Frequency 1712.5 MHz	Frequency 1732.5 MHz	Frequency 1752.5 MHz
4/5	QPSK	1	0	23.04	22.97	23.17
		1	12	23.22	23.17	23.30
		1	24	22.80	22.83	22.99
		12	0	22.06	21.99	22.16
		12	6	21.91	21.91	22.09
		12	13	21.88	21.82	22.02
		25	0	22.02	22.05	22.13
	16QAM	1	0	21.90	21.78	22.03
		1	12	22.04	22.05	22.18
		1	24	21.46	21.39	21.58
		12	0	20.94	20.95	21.13
		12	6	20.86	20.77	20.99
		12	13	20.83	20.76	20.92
		25	0	20.78	20.82	20.93
	64QAM	1	0	20.85	20.82	20.99
		1	12	21.19	21.11	21.30
		1	24	20.98	20.99	21.08
		12	0	20.04	19.97	20.12
		12	6	19.99	19.99	20.11
		12	13	19.89	19.77	19.97
		25	0	19.72	19.65	19.87

Band/BW	Modulation	RB Size	RB Offset	Low CH 20000	Mid CH 20175	High CH 20350
				Frequency 1715 MHz	Frequency 1732.5 MHz	Frequency 1750 MHz
4/ 10	QPSK	1	0	23.01	23.01	23.13
		1	24	23.23	23.16	23.33
		1	49	22.86	22.77	22.99
		25	0	22.04	21.96	22.15
		25	12	21.96	21.91	22.06
		25	25	21.88	21.79	21.98
		50	0	22.07	22.01	22.16
	16QAM	1	0	21.90	21.79	22.00
		1	24	22.06	22.03	22.24
		1	49	21.50	21.33	21.63
		25	0	20.93	20.96	21.10
		25	12	20.90	20.76	21.03
		25	25	20.82	20.77	20.89
		50	0	20.83	20.78	20.97
	64QAM	1	0	20.91	20.76	20.96
		1	24	21.17	21.08	21.36
		1	49	21.05	20.98	21.02
		25	0	20.03	19.94	20.14
		25	12	20.04	19.95	20.12
		25	25	19.88	19.74	19.99
		50	0	19.77	19.61	19.88

Band/BW	Modulation	RB Size	RB Offset	Low CH 20025	Mid CH 20175	High CH 20325
				Frequency 1717.5 MHz	Frequency 1732.5 MHz	Frequency 1747.5 MHz
4/ 15	QPSK	1	0	23.05	23.02	23.12
		1	37	23.24	23.21	23.31
		1	74	22.82	22.79	23.03
		36	0	22.09	22.02	22.12
		36	19	21.89	21.86	22.12
		36	39	21.94	21.83	22.01
		75	0	22.07	22.06	22.12
	16QAM	1	0	21.88	21.81	22.03
		1	37	22.06	22.09	22.23
		1	74	21.50	21.33	21.63
		36	0	20.93	20.96	21.10
		36	19	20.89	20.78	21.02
		36	39	20.89	20.76	20.86
		75	0	20.80	20.81	20.95
	64QAM	1	0	20.91	20.76	20.96
		1	37	21.17	21.08	21.36
		1	74	21.05	20.98	21.02
		36	0	20.01	19.94	20.14
		36	19	20.03	20.00	20.10
		36	39	19.91	19.74	20.04
		75	0	19.76	19.59	19.89

Band/BW	Modulation	RB Size	RB Offset	Low CH 20050	Mid CH 20175	High CH 20300
				Frequency 1720 MHz	Frequency 1732.5 MHz	Frequency 1745 MHz
4/ 20	QPSK	1	0	23.09	23.05	23.18
		1	50	23.26	23.22	23.35
		1	99	22.88	22.84	23.04
		50	0	22.10	22.04	22.17
		50	25	21.97	21.93	22.14
		50	50	21.95	21.87	22.04
		100	0	22.10	22.07	22.18
	16QAM	1	0	21.92	21.86	22.05
		1	50	22.12	22.11	22.26
		1	99	21.52	21.41	21.64
		50	0	21.01	21.00	21.15
		50	25	20.92	20.84	21.04
		50	50	20.90	20.81	20.94
		100	0	20.86	20.84	20.99
	64QAM	1	0	20.93	20.83	21.01
		1	50	21.23	21.16	21.38
		1	99	21.06	21.00	21.10
		50	0	20.08	20.02	20.20
		50	25	20.05	20.01	20.14
		50	50	19.93	19.82	20.05
		100	0	19.78	19.67	19.90



**BUREAU
VERITAS**

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LTE Band 41

Band/BW	Modulation	RB Size	RB Offset	Low CH (40065)	Mid CH (40640)	High CH (41215)
				Frequency (2537.5)MHz	Frequency (2595)MHz	Frequency (2652.5)MHz
41/ 5	QPSK	1	0	22.50	22.65	22.42
		1	12	22.71	22.87	22.65
		1	24	22.39	22.45	22.29
		12	0	21.74	21.88	21.69
		12	6	21.81	21.94	21.69
		12	13	21.58	21.75	21.52
		25	0	21.67	21.70	21.58
	16QAM	1	0	20.56	20.65	20.43
		1	12	20.86	21.00	20.80
		1	24	20.42	20.50	20.38
		12	0	20.44	20.59	20.38
		12	6	20.64	20.72	20.60
		12	13	20.42	20.64	20.37
		25	0	20.52	20.68	20.49
	64QAM	1	0	20.07	20.13	19.90
		1	12	20.58	20.75	20.58
		1	24	20.44	20.54	20.23
		12	0	19.49	19.62	19.41
		12	6	19.62	19.63	19.51
		12	13	19.53	19.65	19.37
		25	0	19.45	19.57	19.38

Band/BW	Modulation	RB Size	RB Offset	Low CH (40090)	Mid CH (40640)	High CH (41190)
				Frequency (2540)MHz	Frequency (2595)MHz	Frequency (2650)MHz
41/ 10	QPSK	1	0	22.51	22.64	22.45
		1	24	22.77	22.81	22.65
		1	49	22.37	22.42	22.28
		25	0	21.79	21.88	21.66
		25	12	21.81	21.91	21.65
		25	25	21.63	21.71	21.55
		50	0	21.67	21.71	21.55
	16QAM	1	0	20.58	20.63	20.49
		1	24	20.90	20.94	20.85
		1	49	20.41	20.51	20.35
		25	0	20.48	20.58	20.42
		25	12	20.63	20.73	20.57
		25	25	20.47	20.60	20.41
		50	0	20.58	20.62	20.46
	64QAM	1	0	20.05	20.10	19.96
		1	24	20.65	20.74	20.52
		1	49	20.43	20.51	20.25
		25	0	19.54	19.58	19.42
		25	12	19.63	19.69	19.45
		25	25	19.55	19.62	19.44
		50	0	19.45	19.55	19.39

Band/BW	Modulation	RB Size	RB Offset	Low CH (40115)	Mid CH (40640)	High CH (41165)
				Frequency (2542.5)MHz	Frequency (2595)MHz	Frequency (2647.5)MHz
41/ 15	QPSK	1	0	22.46	22.66	22.42
		1	37	22.76	22.82	22.68
		1	74	22.41	22.43	22.25
		36	0	21.74	21.82	21.72
		36	19	21.87	21.97	21.63
		36	39	21.59	21.69	21.51
		75	0	21.66	21.72	21.58
	16QAM	1	0	20.62	20.64	20.46
		1	37	20.86	20.94	20.84
		1	74	20.47	20.47	20.39
		36	0	20.42	20.62	20.38
		36	19	20.69	20.69	20.61
		36	39	20.42	20.62	20.38
		75	0	20.57	20.63	20.49
	64QAM	1	0	20.09	20.11	19.93
		1	37	20.60	20.68	20.58
		1	74	20.47	20.57	20.23
		36	0	19.50	19.56	19.38
		36	19	19.63	19.65	19.51
		36	39	19.55	19.69	19.41
		75	0	19.51	19.51	19.43

Band/BW	Modulation	RB Size	RB Offset	Low CH (40140)	Mid CH (40640)	High CH (41140)
				Frequency (2545)MHz	Frequency (2595)MHz	Frequency (2645)MHz
41/ 20	QPSK	1	0	22.54	22.70	22.47
		1	50	22.79	22.88	22.70
		1	99	22.43	22.50	22.30
		50	0	21.80	21.90	21.74
		50	25	21.88	21.99	21.71
		50	50	21.66	21.77	21.57
		100	0	21.69	21.78	21.60
	16QAM	1	0	20.64	20.71	20.51
		1	50	20.92	21.02	20.86
		1	99	20.49	20.55	20.40
		50	0	20.50	20.66	20.43
		50	25	20.71	20.77	20.62
		50	50	20.50	20.66	20.43
		100	0	20.60	20.69	20.51
	64QAM	1	0	20.11	20.18	19.98
		1	50	20.66	20.76	20.60
		1	99	20.48	20.59	20.31
		50	0	19.55	19.64	19.44
		50	25	19.64	19.71	19.53
		50	50	19.57	19.70	19.45
		100	0	19.53	19.59	19.44

LTE Band 66

Band/BW	Modulation	RB Size	RB Offset	Low CH 131979	Mid CH 132322	High CH 132665
				Frequency 1710.7MHz	Frequency 1745MHz	Frequency 1779.3MHz
66/ 1.4	QPSK	1	0	22.75	23.03	22.85
		1	2	22.85	23.04	22.98
		1	5	22.62	22.76	22.67
		3	0	22.35	22.55	22.51
		3	1	22.79	23.04	22.81
		3	3	22.25	22.49	22.37
		6	0	21.84	21.98	21.86
	16QAM	1	0	21.78	22.03	21.91
		1	2	22.36	22.50	22.44
		1	5	21.51	21.62	21.63
		3	0	21.37	21.60	21.46
		3	1	21.33	21.57	21.44
		3	3	21.25	21.39	21.32
		6	0	20.63	20.85	20.75
	64QAM	1	0	20.13	20.34	20.18
		1	2	21.05	21.28	21.14
		1	5	20.87	20.96	20.93
		3	0	20.35	20.60	20.40
		3	1	20.35	20.53	20.43
		3	3	20.14	20.35	20.28
		6	0	19.73	19.86	19.80



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Band/BW	Modulation	RB Size	RB Offset	Low CH 131987	Mid CH 132322	High CH 132657
				Frequency 1711.5MHz	Frequency 1745MHz	Frequency 1778.5MHz
66/ 3	QPSK	1	0	22.77	23.02	22.89
		1	7	22.87	23.08	22.95
		1	14	22.56	22.76	22.70
		8	0	21.90	22.09	22.00
		8	3	22.27	22.55	22.33
		8	7	21.76	22.02	21.91
		15	0	21.79	22.02	21.85
	16QAM	1	0	21.81	22.02	21.95
		1	7	22.30	22.54	22.41
		1	14	21.53	21.64	21.62
		8	0	20.90	21.10	20.93
		8	3	20.85	21.05	20.95
		8	7	20.77	20.87	20.78
		15	0	20.63	20.79	20.78
	64QAM	1	0	20.19	20.37	20.12
		1	7	21.06	21.22	21.13
		1	14	20.87	21.03	20.91
		8	0	19.91	20.08	19.97
		8	3	19.89	19.97	19.98
		8	7	19.67	19.92	19.75
		15	0	19.74	19.90	19.79

Band/BW	Modulation	RB Size	RB Offset	Low CH 131997	Mid CH 132322	High CH 132647
				Frequency 1712.5MHz	Frequency 1745MHz	Frequency 1777.5MHz
66/ 5	QPSK	1	0	22.78	23.00	22.85
		1	12	22.86	23.02	22.98
		1	24	22.59	22.75	22.71
		12	0	21.87	22.08	21.98
		12	6	22.22	22.55	22.34
		12	13	21.76	22.02	21.92
		25	0	21.79	22.02	21.83
	16QAM	1	0	21.76	22.05	21.94
		1	12	22.30	22.56	22.41
		1	24	21.54	21.62	21.62
		12	0	20.83	21.09	20.93
		12	6	20.85	21.06	20.93
		12	13	20.72	20.89	20.81
		25	0	20.63	20.80	20.75
	64QAM	1	0	20.13	20.34	20.18
		1	12	21.05	21.28	21.13
		1	24	20.81	21.03	20.93
		12	0	19.89	20.11	19.90
		12	6	19.83	20.04	19.97
		12	13	19.65	19.88	19.71
		25	0	19.71	19.89	19.82



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Band/BW	Modulation	RB Size	RB Offset	Low CH 132022	Mid CH 132322	High CH 132622
				Frequency 1715MHz	Frequency 1745MHz	Frequency 1775MHz
66/ 10	QPSK	1	0	22.80	23.01	22.88
		1	24	22.86	23.02	22.99
		1	49	22.56	22.79	22.67
		25	0	21.88	22.07	22.01
		25	12	22.28	22.49	22.34
		25	25	21.74	21.99	21.91
		50	0	21.84	22.02	21.80
	16QAM	1	0	21.76	22.02	21.90
		1	24	22.35	22.52	22.44
		1	49	21.54	21.63	21.59
		25	0	20.85	21.07	20.99
		25	12	20.89	21.00	20.98
		25	25	20.71	20.90	20.78
		50	0	20.67	20.79	20.79
	64QAM	1	0	20.12	20.35	20.15
		1	24	21.10	21.24	21.17
		1	49	20.87	20.97	20.90
		25	0	19.87	20.08	19.96
		25	12	19.90	20.03	19.91
		25	25	19.64	19.85	19.73
		50	0	19.76	19.85	19.83



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Band/BW	Modulation	RB Size	RB Offset	Low CH 132047	Mid CH 132322	High CH 132597
				Frequency 1717.5 MHz	Frequency 1745MHz	Frequency 1772.5 MHz
66/ 15	QPSK	1	0	22.77	23.05	22.84
		1	37	22.81	23.05	22.98
		1	74	22.58	22.76	22.67
		36	0	21.84	22.08	22.01
		36	19	22.22	22.54	22.33
		36	39	21.72	22.06	21.91
		75	0	21.81	21.99	21.80
	16QAM	1	0	21.75	22.09	21.94
		1	37	22.33	22.53	22.42
		1	74	21.54	21.62	21.63
		36	0	20.83	21.11	20.96
		36	19	20.88	21.02	20.97
		36	39	20.77	20.87	20.78
		75	0	20.63	20.79	20.78
	64QAM	1	0	20.19	20.37	20.12
		1	37	21.08	21.22	21.13
		1	74	20.88	20.98	20.93
		36	0	19.88	20.14	19.91
		36	19	19.89	19.97	19.98
		36	39	19.61	19.89	19.74
		75	0	19.75	19.83	19.84



Test Report No.: W7L-P23030025RF07

Band/BW	Modulation	RB Size	RB Offset	Low CH 132072	Mid CH 132322	High CH 132572
				Frequency 1720MHz	Frequency 1745MHz	Frequency 1770MHz
66/ 20	QPSK	1	0	22.83	23.07	22.90
		1	50	22.88	23.10	23.00
		1	99	22.64	22.83	22.72
		50	0	21.91	22.13	22.03
		50	25	22.30	22.56	22.39
		50	50	21.80	22.07	21.93
		100	0	21.85	22.04	21.88
	16QAM	1	0	21.83	22.10	21.96
		1	50	22.38	22.58	22.46
		1	99	21.56	21.70	21.64
		50	0	20.91	21.15	21.01
		50	25	20.91	21.08	20.99
		50	50	20.79	20.94	20.83
		100	0	20.69	20.87	20.80
	64QAM	1	0	20.20	20.39	20.20
		1	50	21.13	21.30	21.19
		1	99	20.89	21.04	20.95
		50	0	19.93	20.16	19.98
		50	25	19.91	20.05	19.99
		50	50	19.69	19.93	19.79
		100	0	19.77	19.91	19.85



**BUREAU
VERITAS**

Test Report No.: W7L-P23030025RF07

EIRP

LTE BAND 4

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	23.23	4.8	28.03	635.33	1
20175	1732.5	23.16	4.8	27.96	625.17	1
20393	1754.3	23.33	4.8	28.13	650.13	1

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	22.1	4.8	26.9	489.78	1
20175	1732.5	22.03	4.8	26.83	481.95	1
20393	1754.3	22.24	4.8	27.04	505.82	1

CHANNEL BANDWIDTH: 1.4MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	21.15	4.8	25.95	393.55	1
20175	1732.5	21.14	4.8	25.94	392.64	1
20393	1754.3	21.33	4.8	26.13	410.2	1

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	23.19	4.8	27.99	629.51	1
20175	1732.5	23.17	4.8	27.97	626.61	1
20385	1753.5	23.33	4.8	28.13	650.13	1

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	22.04	4.8	26.84	483.06	1
20175	1732.5	22.04	4.8	26.84	483.06	1
20385	1753.5	21.49	4.8	26.29	425.6	1

CHANNEL BANDWIDTH: 3MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	21.18	4.8	25.98	396.28	1
20175	1732.5	21.14	4.8	25.94	392.64	1
20385	1753.5	21.31	4.8	26.11	408.32	1

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	23.22	4.8	28.02	633.87	1
20175	1732.5	23.17	4.8	27.97	626.61	1
20375	1752.5	23.3	4.8	28.1	645.65	1

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	22.04	4.8	26.84	483.06	1
20175	1732.5	22.05	4.8	26.85	484.17	1
20375	1752.5	22.18	4.8	26.98	498.88	1

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	21.19	4.8	25.99	397.19	1
20175	1732.5	21.11	4.8	25.91	389.94	1
20375	1752.5	21.3	4.8	26.1	407.38	1

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	23.23	4.8	28.03	635.33	1
20175	1732.5	23.16	4.8	27.96	625.17	1
20350	1750	23.33	4.8	28.13	650.13	1

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	22.06	4.8	26.86	485.29	1
20175	1732.5	22.03	4.8	26.83	481.95	1
20350	1750	22.24	4.8	27.04	505.82	1

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	21.17	4.8	25.97	395.37	1
20175	1732.5	21.08	4.8	25.88	387.26	1
20350	1750	21.36	4.8	26.16	413.05	1

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	23.24	4.8	28.04	636.8	1
20175	1732.5	23.21	4.8	28.01	632.41	1
20325	1747.5	23.31	4.8	28.11	647.14	1

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	22.06	4.8	26.86	485.29	1
20175	1732.5	22.09	4.8	26.89	488.65	1
20325	1747.5	22.23	4.8	27.03	504.66	1

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	21.17	4.8	25.97	395.37	1
20175	1732.5	21.08	4.8	25.88	387.26	1
20325	1747.5	21.36	4.8	26.16	413.05	1

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	23.26	4.8	28.06	639.73	1
20175	1732.5	23.22	4.8	28.02	633.87	1
20300	1745	23.35	4.8	28.15	653.13	1

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	22.12	4.8	26.92	492.04	1
20175	1732.5	22.11	4.8	26.91	490.91	1
20300	1745	22.26	4.8	27.06	508.16	1

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	21.23	4.8	26.03	400.87	1
20175	1732.5	21.16	4.8	25.96	394.46	1
20300	1745	21.38	4.8	26.18	414.95	1



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LTE BAND 41

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40065	2537.5	22.71	4.8	27.51	563.64	2
40640	2595.0	22.87	4.8	27.67	584.79	2
41215	2652.5	22.65	4.8	27.45	555.9	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40065	2537.5	20.86	4.8	25.66	368.13	2
40640	2595.0	21	4.8	25.8	380.19	2
41215	2652.5	20.8	4.8	25.6	363.08	2

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40065	2537.5	20.58	4.8	25.38	345.14	2
40640	2595.0	20.75	4.8	25.55	358.92	2
41215	2652.5	20.58	4.8	25.38	345.14	2



**BUREAU
VERITAS**

Test Report No.: W7L-P23030025RF07

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40090	2540.0	22.77	4.8	27.57	571.48	2
40640	2595.0	22.81	4.8	27.61	576.77	2
41190	2650.0	22.65	4.8	27.45	555.9	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40090	2540.0	20.9	4.8	25.7	371.54	2
40640	2595.0	20.94	4.8	25.74	374.97	2
41190	2650.0	20.85	4.8	25.65	367.28	2

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40090	2540.0	20.65	4.8	25.45	350.75	2
40640	2595.0	20.74	4.8	25.54	358.1	2
41190	2650.0	20.52	4.8	25.32	340.41	2



**BUREAU
VERITAS**

Test Report No.: W7L-P23030025RF07

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40115	2542.5	22.76	4.8	27.56	570.16	2
40640	2595.0	22.82	4.8	27.62	578.1	2
41165	2647.5	22.68	4.8	27.48	559.76	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40115	2542.5	20.86	4.8	25.66	368.13	2
40640	2595.0	20.94	4.8	25.74	374.97	2
41165	2647.5	20.84	4.8	25.64	366.44	2

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40115	2542.5	20.6	4.8	25.4	346.74	2
40640	2595.0	20.68	4.8	25.48	353.18	2
41165	2647.5	20.58	4.8	25.38	345.14	2



**BUREAU
VERITAS**

Test Report No.: W7L-P23030025RF07

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40140	2545.0	22.79	4.8	27.59	574.12	2
40640	2595.0	22.88	4.8	27.68	586.14	2
41140	2645.0	22.7	4.8	27.5	562.34	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40140	2545.0	20.92	4.8	25.72	373.25	2
40640	2595.0	21.02	4.8	25.82	381.94	2
41140	2645.0	20.86	4.8	25.66	368.13	2

CHANNEL BANDWIDTH: 20 MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
40140	2545.0	20.66	4.8	25.46	351.56	2
40640	2595.0	20.76	4.8	25.56	359.75	2
41140	2645.0	20.6	4.8	25.4	346.74	2

LTE BAND 66

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131979	1710.7	22.85	4.8	27.65	582.1	1
132322	1745	23.04	4.8	27.84	608.14	1
132665	1779.3	22.98	4.8	27.78	599.79	1

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131979	1710.7	22.36	4.8	27.16	520	1
132322	1745	22.5	4.8	27.3	537.03	1
132665	1779.3	22.44	4.8	27.24	529.66	1

CHANNEL BANDWIDTH: 1.4MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131979	1710.7	21.05	4.8	25.85	384.59	1
132322	1745	21.28	4.8	26.08	405.51	1
132665	1779.3	21.14	4.8	25.94	392.64	1

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131987	1711.5	22.87	4.8	27.67	584.79	1
132322	1745	23.08	4.8	27.88	613.76	1
132657	1778.5	22.95	4.8	27.75	595.66	1

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131987	1711.5	22.3	4.8	27.1	512.86	1
132322	1745	22.54	4.8	27.34	542	1
132657	1778.5	22.41	4.8	27.21	526.02	1

CHANNEL BANDWIDTH: 3MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131987	1711.5	21.06	4.8	25.86	385.48	1
132322	1745	21.22	4.8	26.02	399.94	1
132657	1778.5	21.13	4.8	25.93	391.74	1

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131997	1712.5	22.86	4.8	27.66	583.45	1
132322	1745	23.02	4.8	27.82	605.34	1
132647	1777.5	22.98	4.8	27.78	599.79	1

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131997	1712.5	22.3	4.8	27.1	512.86	1
132322	1745	22.56	4.8	27.36	544.5	1
132647	1777.5	22.41	4.8	27.21	526.02	1

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
131997	1712.5	21.05	4.8	25.85	384.59	1
132322	1745	21.28	4.8	26.08	405.51	1
132647	1777.5	21.13	4.8	25.93	391.74	1

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132022	1715	22.86	4.8	27.66	583.45	1
132322	1745	23.02	4.8	27.82	605.34	1
132622	1775	22.99	4.8	27.79	601.17	1

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132022	1715	22.35	4.8	27.15	518.8	1
132322	1745	22.52	4.8	27.32	539.51	1
132622	1775	22.44	4.8	27.24	529.66	1

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132022	1715	21.1	4.8	25.9	389.05	1
132322	1745	21.24	4.8	26.04	401.79	1
132622	1775	21.17	4.8	25.97	395.37	1

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132047	1717.5	22.81	4.8	27.61	576.77	1
132322	1745	23.05	4.8	27.85	609.54	1
132597	1772.5	22.98	4.8	27.78	599.79	1

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132047	1717.5	22.33	4.8	27.13	516.42	1
132322	1745	22.53	4.8	27.33	540.75	1
132597	1772.5	22.42	4.8	27.22	527.23	1

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132047	1717.5	21.08	4.8	25.88	387.26	1
132322	1745	21.22	4.8	26.02	399.94	1
132597	1772.5	21.13	4.8	25.93	391.74	1



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CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132072	1720	22.88	4.8	27.68	586.14	1
132322	1745	23.1	4.8	27.9	616.6	1
132572	1770	23	4.8	27.8	602.56	1

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132072	1720	22.38	4.8	27.18	522.4	1
132322	1745	22.58	4.8	27.38	547.02	1
132572	1770	22.46	4.8	27.26	532.11	1

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
132072	1720	21.13	4.8	25.93	391.74	1
132322	1745	21.3	4.8	26.1	407.38	1
132572	1770	21.19	4.8	25.99	397.19	1

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

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

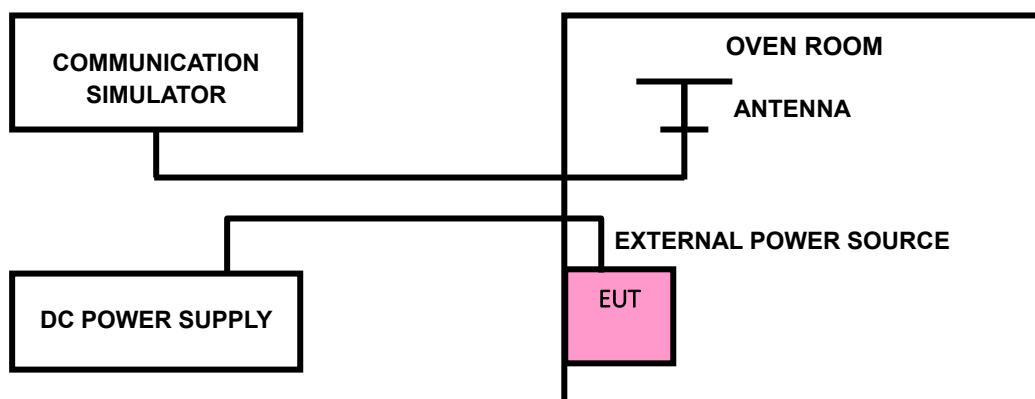
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

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





Test Report No.: W7L-P23030025RF07

3.2.4 TEST RESULTS

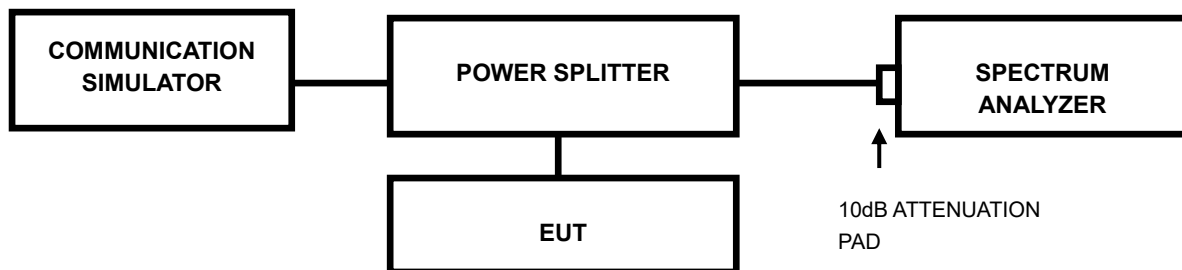
Please Refer to Appendix Of this test report.

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.