FCC TEST REPORT

(PART 27)

Applicant:	MUNIC
Address:	100 Avenue de Stalingrad 94800 Villejuif – France

Manufacturer or Supplier:	MUNIC
Address:	100 Avenue de Stalingrad 94800 Villejuif – France
Product:	telematics embedded system
Brand Name:	MUNIC
Model Name:	C4MAX-4MUSAA_V8
FCC ID:	A6GC4MAX-4MUSAAV8
Date of tests:	Nov. 01, 2022 ~ Nov. 14, 2022

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
Simon Wang Date: Nov. 14, 2022	Luke Lu Date: Nov. 14, 2022

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P22100017RF03	Original release	Nov. 14, 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(d)(4) §27.50(h)(2)	Equivalent Isotropically Radiated Power (Band 4) (Band 7) (Band 66)	Compliance
§2.1055 §27.54	Frequency Stability	Compliance
§2.1049	Occupied Bandwidth	Compliance
§2.1051 §27.53(c)(2)(4) §27.53(g) §27.53(h) §27.53(m)(4)(6)	Conducted Band Edge Measurements (Band 4) (Band 7) (Band 66)	Compliance
§2.1051 §27.53(c)(2)(4) §27.53(g) §27.53(h) §27.53(m)(4)(6)	Conducted Spurious Emissions (Band 4) (Band 7) (Band 66)	Compliance
§2.1053 §27.53(c)(2) §27.53(f) §27.53(g) §27.53(h) §27.53(m)(4)(6)	Radiated Spurious Emissions (Band 4) (Band 7) (Band 66)	Compliance

1.1 MEASREMENT 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~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 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. 18,22	Feb. 17,23
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.15,22	May.14,23
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.04,22	Sep.03,23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 06,22	Mar. 05,23
Horn Antenna	ETS-LINDGREN	3117	00168692	Mar. 06,22	Mar. 05,23
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. 15,22	Feb. 14,23
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. 21,22	Feb.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	JS1120	3.1.36	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	May. 07,22	May. 06,23
Power Meter	Anritsu	ML2495A	1506002	Feb. 22,22	Feb. 21,23
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 Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 18,22	Feb. 17,23
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.12,22	May.11,23
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 24,22	Aug. 23,23

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	telematics embedded system	
BRAND NAME	MUNIC	
MODEL NAME	C4MAX-4MUSAA_V8	
NOMINAL VOLTAGE	5.0/13.0/27.0Vdc(DC source) 3.7Vdc (Li-ion, battery)	
MODULATION TECHNOLOGY	**LTE**	QPSK, 16QAM
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 12 Channel Bandwidth: 1.4MHz	699.7MHz ~ 715.3MHz
	LTE Band 12 Channel Bandwidth: 3MHz	700.5MHz ~ 714.5MHz
	LTE Band 12 Channel Bandwidth: 5MHz	701.5MHz ~ 713.5MHz
	LTE Band 12 Channel Bandwidth: 10MHz	704MHz ~ 711MHz
	LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz
	LTE Band 13 Channel Bandwidth: 10MHz	782MHz
	LTE Band 4 Channel Bandwidth: 1.4MHz	92.26mW
	LTE Band 4 Channel Bandwidth: 3MHz	91.41mW
	LTE Band 4 Channel Bandwidth: 5MHz	90.78mW
	LTE Band 4 Channel Bandwidth: 10MHz	91.83mW

MAX. EIRP POWER	LTE Band 4 Channel Bandwidth: 15MHz	91.83mW
	LTE Band 4 Channel Bandwidth: 20MHz	92.47mW
	LTE Band 12 Channel Bandwidth: 1.4MHz	54.45mW
	LTE Band 12 Channel Bandwidth: 3MHz	54.58mW
	LTE Band 12 Channel Bandwidth: 5MHz	54.58mW
	LTE Band 12 Channel Bandwidth: 10MHz	55.08mW
	LTE Band 13 Channel Bandwidth: 5MHz	59.02mW
	LTE Band 13 Channel Bandwidth: 10MHz	59.16mW
EMISSION DESIGNATOR	LTE Band 4 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D
		16QAM: 1M10W7D
	LTE Band 4 Channel Bandwidth: 3MHz	QPSK: 1M27G7D
		16QAM: 1M27W7D
	LTE Band 4 Channel Bandwidth: 5MHz	QPSK: 1M09G7D
		16QAM: 1M09W7D
	LTE Band 4 Channel Bandwidth: 10MHz	QPSK: 1M09G7D
		16QAM: 1M09W7D
	LTE Band 4 Channel Bandwidth: 15MHz	QPSK: 1M10G7D
		16QAM: 1M11W7D
	LTE Band 4 Channel Bandwidth: 20MHz	QPSK: 1M10G7D
		16QAM: 1M10W7D
	LTE Band 12 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D
		16QAM: 1M10W7D
	LTE Band 12 Channel Bandwidth: 3MHz	QPSK:1M27G7D
		16QAM: 1M28W7D
	LTE Band 12 Channel Bandwidth: 5MHz	QPSK: 1M09G7D
		16QAM: 1M09W7D

EMISSION DESIGNATOR	**LTE Band 12 Channel Bandwidth: 10MHz**	QPSK: 1M10G7D
		16QAM: 1M10W7D
	LTE Band 13 Channel Bandwidth: 5MHz	QPSK: 1M09G7D
		16QAM: 1M09W7D
	LTE Band 13 Channel Bandwidth: 10MHz	QPSK: 1M09G7D
		16QAM: 1M09W7D
ANTENNA TYPE	External Antenna with -3.1 dBi gain for LTE B4 External Antenna with -3.04 dBi gain for LTE B12 External Antenna with -2.3 dBi gain for LTE B13	
HW VERSION	HC4MAX-4MUSAA_V8.01	
SW VERSION	SC4MAX-4MUSAA_V8.01	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	N/A	
EXTREME TEMPERATURE	-20-55 ℃	
EXTREME VOLTAGE	8V - 32V	

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
LTE	1TX/1RX

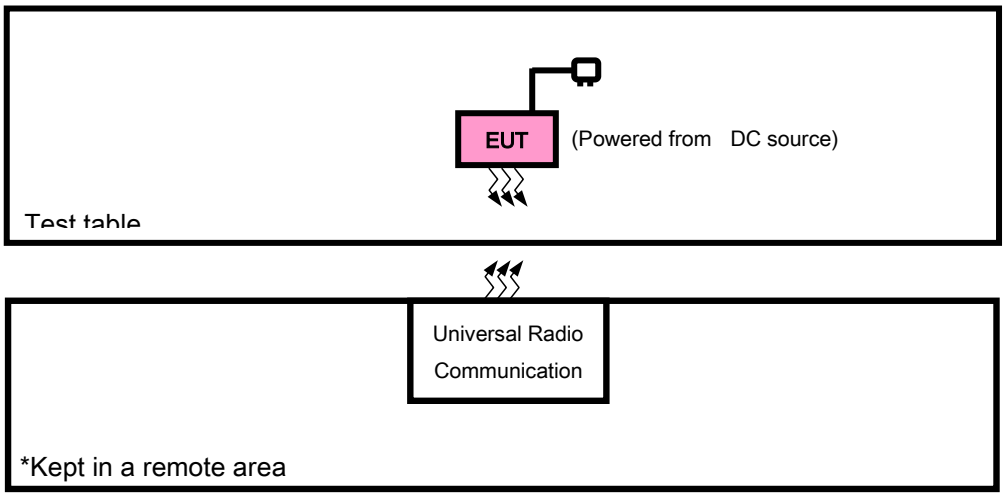
3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

4. List of Accessory:

ACCESSORIES	BRAND	MODEL	SPECIFICATION
Battery 1	Howell	HWE711260H	Capacity · 450mAh
Battery 2	Akkutronics	711260-PTLC	Capacity · 450mAh

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 + DC source with LTE link
B	EUT + Battery with LTE link

LTE BAND 4 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK,16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK,16QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK,16QAM	6 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK,16QAM	6 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK,16QAM	6 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK,16QAM	6 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK,16QAM	6 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK,16QAM	6 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK,16QAM	6 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK,16QAM	6 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK,16QAM	6 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK,16QAM	6 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK,16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK,16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK,16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK,16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK,16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset
B	BAND EDGE	19957 to 20393	19957	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset
			20393	1.4MHz	QPSK, 16QAM	1 RB / 5 RB Offset 6 RB / 0 RB Offset
		19965 to 20385	19965	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset
			20385	3MHz	QPSK, 16QAM	1 RB / 5 RB Offset 6 RB / 0 RB Offset
		19975 to 20375	19975	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset
			20375	5MHz	QPSK, 16QAM	1 RB / 5 RB Offset 6 RB / 0 RB Offset
		20000 to 20350	20000	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset
			20350	10MHz	QPSK, 16QAM	1 RB / 5 RB Offset

						6 RB / 0 RB Offset
B	BAND EDGE	20025 to 20325	20025	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20325	15MHz	QPSK, 16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		20050 to 20300	20050	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20300	20MHz	QPSK, 16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
B	CONDCUDETED EMISSION	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	19957 to 20393	20175	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	20175	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	20175	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20175	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20175	20MHz	QPSK	1 RB / 0 RB Offset

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

LTE BAND 12

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	ERP	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	23017 to 23173	23017, 23173	1.4MHz	QPSK	6 RB / 0 RB Offset
		23025 to 23165	23025, 23165	3MHz	QPSK	6 RB / 0 RB Offset
		23035 to 23155	23035, 23155	5MHz	QPSK	6 RB / 0 RB Offset
		23060 to 23130	23060, 23130	10MHz	QPSK	6 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM	6 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset

		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset
B	BAND EDGE	23017 to 23173	23017	1.4MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23173	1.4MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23025 to 23165	23025	3MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23165	3MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23035 to 23155	23035	5MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23155	5MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23060 to 23130	23060	10MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23130	10MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
B	CONDCUDETED EMISSION	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	23017 to 23173	23095	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23095	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23095	10MHz	QPSK	1 RB / 0 RB Offset

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

LTE BAND 13

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	ERP	23205 to 23255	20025, 20175, 20325	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	23205 to 23255	20025, 20325	1.4MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	1 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	23205 to 23255	20025, 20175, 20325	5MHz	QPSK, 16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset
		23230	23230	10MHz	QPSK, 16QAM	1 RB / 0 RB Offse 6 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	23205 to 23255	20025, 20175, 20325	5MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		23230	23230	10MHz	QPSK, 16QAM	6 RB / 0 RB Offset
B	BAND EDGE	23205 to 23255	23250	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23255	5MHz	QPSK, 16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23230	23230	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
						1 RB / 5 RB Offset
						6 RB / 0 RB Offset
B	CONDCUDETED EMISSION	23205 to 23255	20025, 20175, 20325	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	23205 to 23255	20025, 20175, 20325	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	1 RB / 0 RB Offset

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

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	DC 3.7V By Battery	Jace Hu
FREQUENCY STABILITY	23deg. C, 70%RH	DC 5/13.5/27V By DC source	James Fu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC 3.7V By Battery	James Fu
BAND EDGE	23deg. C, 70%RH	DC 3.7V By Battery	James Fu
CONDCUDETED EMISSION	23deg. C, 70%RH	DC 3.7V By Battery	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC 5/13.5/27V By DC source	Jace Hu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC 3.7V By Battery	James Fu

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

According to the specific rule Part 27.50(b)(10) and 27.50(c)(10) Fixed, mobile, and Portable stations (hand-held devices) transmitting in the 698-746 MHz, 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

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 determing the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

ERP or EIRP = $P_{Meas} + G_T - L_C$

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);

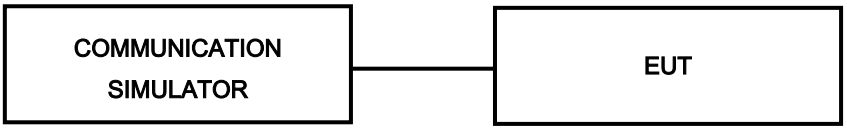
L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

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.

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

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		19957	20175	20393
		Frequency(MHz)		1710.7	1732.5	1754.3
4/ 1.4	QPSK	1	0	22.61	22.16	22.28
		1	5	22.61	22.19	22.26
		3	0	22.63	22.15	22.20
		3	3	22.64	22.23	22.12
		6	0	22.75	22.20	22.20
	16QAM	1	0	22.31	22.13	22.17
		1	5	22.48	22.14	22.23
		3	0	22.53	22.23	22.19
		3	3	22.45	22.25	22.18
		5	0	22.49	22.26	22.19

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		19965	20175	20385
		Frequency(MHz)		1711.5	1732.5	1753.5
4/ 3	QPSK	1	0	22.56	22.15	22.25
		1	5	22.57	22.20	22.26
		3	0	22.61	22.22	22.20
		3	3	22.61	22.20	22.12
		6	0	22.71	22.21	22.18
	16QAM	1	0	22.34	22.12	22.21
		1	5	22.42	22.18	22.20
		3	0	22.55	22.21	22.19
		3	3	22.47	22.18	22.21
		5	0	22.50	22.20	22.18

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		19975	20175	20375
		Frequency(MHz)		1712.5	1732.5	1752.5
4/ 5	QPSK	1	0	22.57	22.14	22.29
		1	5	22.60	22.20	22.23
		3	0	22.65	22.18	22.21
		3	3	22.59	22.23	22.15
		6	0	22.68	22.24	22.17
	16QAM	1	0	22.34	22.12	22.20
		1	5	22.42	22.16	22.17
		3	0	22.50	22.23	22.22
		3	3	22.47	22.19	22.18
		5	0	22.47	22.26	22.18

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		20000	20175	20350
		Frequency(MHz)		1715	1732.5	1750
4/ 10	QPSK	1	0	22.54	22.18	22.25
		1	5	22.61	22.19	22.26
		3	0	22.63	22.15	22.20
		3	3	22.64	22.23	22.12
		6	0	22.73	22.20	22.20
	16QAM	1	0	22.34	22.13	22.17
		1	5	22.44	22.14	22.23
		3	0	22.49	22.24	22.19
		3	3	22.51	22.18	22.22
		5	0	22.52	22.22	22.22

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		20025	20175	20325
		Frequency(MHz)		1717.5	1732.5	1747.5
4/ 15	QPSK	1	0	22.58	22.19	22.24
		1	5	22.62	22.24	22.24
		3	0	22.68	22.21	22.17
		3	3	22.57	22.18	22.18
		6	0	22.73	22.25	22.16
	16QAM	1	0	22.32	22.15	22.20
		1	5	22.44	22.20	22.22
		3	0	22.49	22.24	22.19
		3	3	22.50	22.20	22.21
		5	0	22.49	22.25	22.20

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		20050	20175	20300
		Frequency(MHz)		1720	1732.5	1745
4/ 20	QPSK	1	0	22.62	22.22	22.30
		1	5	22.64	22.25	22.28
		3	0	22.69	22.23	22.22
		3	3	22.65	22.25	22.20
		6	0	22.76	22.26	22.22
	16QAM	1	0	22.36	22.20	22.22
		1	5	22.50	22.22	22.25
		3	0	22.57	22.28	22.24
		3	3	22.53	22.26	22.23
		5	0	22.55	22.28	22.24

LTE Band 12

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		23017	23095	23173
		Frequency(MHz)		699.7	707.5	715.3
12/ 1.4	QPSK	1	0	22.34	22.54	22.37
		1	5	22.38	22.54	22.36
		3	0	22.43	22.47	22.44
		3	3	22.49	22.55	22.36
		6	0	22.44	22.48	22.48
	16QAM	1	0	22.40	22.45	22.40
		1	5	22.42	22.45	22.44
		3	0	22.41	22.47	22.40
		3	3	22.35	22.52	22.42
		5	0	22.39	22.50	22.38

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		23025	23095	23165
		Frequency(MHz)		700.5	707.5	714.5
12/ 3	QPSK	1	0	22.36	22.56	22.36
		1	5	22.34	22.55	22.36
		3	0	22.42	22.50	22.44
		3	3	22.42	22.55	22.38
		6	0	22.41	22.49	22.42
	16QAM	1	0	22.37	22.51	22.43
		1	5	22.39	22.48	22.42
		3	0	22.37	22.48	22.40
		3	3	22.40	22.47	22.45
		5	0	22.39	22.44	22.41

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		23035	23095	23155
		Frequency(MHz)		701.5	707.5	713.5
12/ 5	QPSK	1	0	22.37	22.51	22.37
		1	5	22.39	22.52	22.36
		3	0	22.45	22.50	22.41
		3	3	22.42	22.56	22.39
		6	0	22.39	22.52	22.45
	16QAM	1	0	22.38	22.47	22.43
		1	5	22.36	22.51	22.41
		3	0	22.37	22.46	22.37
		3	3	22.37	22.51	22.41
		5	0	22.39	22.45	22.38

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		23060	23095	23130
		Frequency(MHz)		704	707.5	711
12/ 10	QPSK	1	0	22.42	22.58	22.42
		1	5	22.41	22.60	22.38
		3	0	22.49	22.55	22.46
		3	3	22.50	22.57	22.44
		6	0	22.45	22.54	22.50
	16QAM	1	0	22.45	22.52	22.45
		1	5	22.44	22.53	22.46
		3	0	22.45	22.52	22.45
		3	3	22.43	22.53	22.47
		5	0	22.45	22.52	22.43

LTE Band 13

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		23205	23230	23255
		Frequency(MHz)		779.5	782	784.5
13/ 5	QPSK	1	0	22.05	22.09	22.08
		1	5	22.13	22.07	22.14
		3	0	22.11	22.08	22.12
		3	3	22.13	22.08	22.10
		6	0	22.16	22.15	22.09
	16QAM	1	0	22.08	22.07	22.09
		1	5	22.09	22.06	22.10
		3	0	22.08	22.06	22.12
		3	3	22.14	22.08	22.15
		5	0	22.12	22.06	22.13

		RB Size	RB Offset	Low	Mid	High
Band/BW	Modulation	Channel		23230		
		Frequency(MHz)		782		
13/ 10	QPSK	1	0	/	22.13	/
		1	5	/	22.15	/
		3	0	/	22.14	/
		3	3	/	22.15	/
		6	0	/	22.17	/
	16QAM	1	0	/	22.15	/
		1	5	/	22.12	/
		3	0	/	22.14	/
		3	3	/	22.16	/
		5	0	/	22.14	/

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	22.75	-3.1	19.65	92.26	1
20175	1732.5	22.23	-3.1	19.13	81.85	1
20393	1754.3	22.28	-3.1	19.18	82.79	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	22.53	-3.1	19.43	87.7	1
20175	1732.5	22.26	-3.1	19.16	82.41	1
20393	1754.3	22.23	-3.1	19.13	81.85	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	22.71	-3.1	19.61	91.41	1
20175	1732.5	22.22	-3.1	19.12	81.66	1
20385	1753.5	22.26	-3.1	19.16	82.41	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	22.55	-3.1	19.45	88.1	1
20175	1732.5	22.21	-3.1	19.11	81.47	1
20385	1753.5	22.21	-3.1	19.11	81.47	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	22.68	-3.1	19.58	90.78	1
20175	1732.5	22.24	-3.1	19.14	82.04	1
20375	1752.5	22.29	-3.1	19.19	82.99	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	22.5	-3.1	19.4	87.1	1
20175	1732.5	22.26	-3.1	19.16	82.41	1
20375	1752.5	22.22	-3.1	19.12	81.66	1

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	22.73	-3.1	19.63	91.83	1
20175	1732.5	22.23	-3.1	19.13	81.85	1
20350	1750	22.26	-3.1	19.16	82.41	1

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	22.52	-3.1	19.42	87.5	1
20175	1732.5	22.24	-3.1	19.14	82.04	1
20350	1750	22.23	-3.1	19.13	81.85	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	22.73	-3.1	19.63	91.83	1
20175	1732.5	22.25	-3.1	19.15	82.22	1
20325	1747.5	22.24	-3.1	19.14	82.04	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	22.5	-3.1	19.4	87.1	1
20175	1732.5	22.25	-3.1	19.15	82.22	1
20325	1747.5	22.22	-3.1	19.12	81.66	1

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	22.76	-3.1	19.66	92.47	1
20175	1732.5	22.26	-3.1	19.16	82.41	1
20300	1745	22.3	-3.1	19.2	83.18	1

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	22.57	-3.1	19.47	88.51	1
20175	1732.5	22.28	-3.1	19.18	82.79	1
20300	1745	22.25	-3.1	19.15	82.22	1

LTE BAND 12
CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	22.49	-3.04	17.3	53.7	3
23095	707.5	22.55	-3.04	17.36	54.45	3
23173	715.3	22.48	-3.04	17.29	53.58	3

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	22.42	-3.04	17.23	52.84	3
23095	707.5	22.52	-3.04	17.33	54.08	3
23173	715.3	22.44	-3.04	17.25	53.09	3

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	22.42	-3.04	17.23	52.84	3
23095	707.5	22.56	-3.04	17.37	54.58	3
23165	714.5	22.44	-3.04	17.25	53.09	3

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	22.4	-3.04	17.21	52.6	3
23095	707.5	22.51	-3.04	17.32	53.95	3
23165	714.5	22.45	-3.04	17.26	53.21	3

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	22.45	-3.04	17.26	53.21	3
23095	707.5	22.56	-3.04	17.37	54.58	3
23155	713.5	22.45	-3.04	17.26	53.21	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	22.39	-3.04	17.2	52.48	3
23095	707.5	22.51	-3.04	17.32	53.95	3
23155	713.5	22.43	-3.04	17.24	52.97	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	22.5	-3.04	17.31	53.83	3
23095	707.5	22.6	-3.04	17.41	55.08	3
23130	711	22.5	-3.04	17.31	53.83	3

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	22.45	-3.04	17.26	53.21	3
23095	707.5	22.53	-3.04	17.34	54.2	3
23130	711	22.47	-3.04	17.28	53.46	3

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

LTE BAND 13

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	22.16	-2.3	17.71	59.02	3
23230	782	22.15	-2.3	17.7	58.88	3
23255	784.5	22.14	-2.3	17.69	58.75	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	22.14	-2.3	17.69	58.75	3
23230	782	22.08	-2.3	17.63	57.94	3
23255	784.5	22.15	-2.3	17.7	58.88	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
-	-	-	-	-	-	-
23230	782	22.17	-2.3	17.72	59.16	3
-	-	-	-	-	-	-

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
-	-	-	-	-	-	-
23230	782	22.16	-2.3	17.71	59.02	3
-	-	-	-	-	-	-

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

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

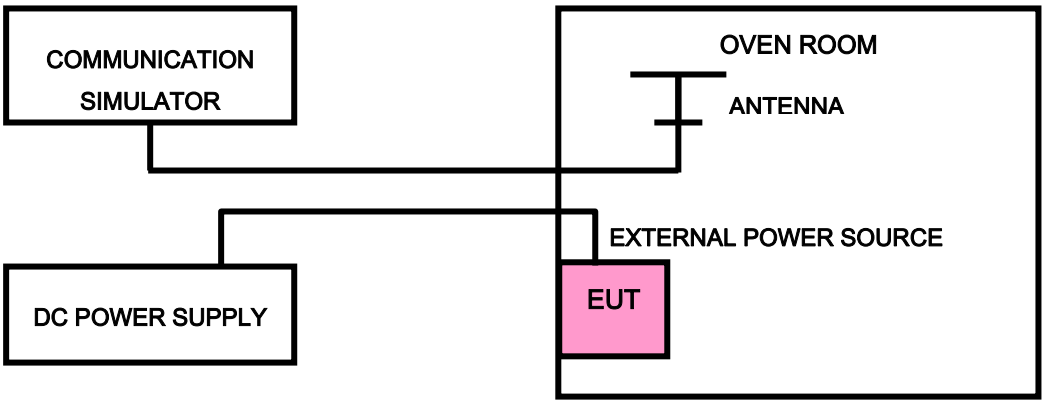
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

3.2.2 TEST PROCEDURE

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

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

3.2.3 TEST SETUP



3.2.4 TEST RESULTS

LTE BAND 4

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V_{nor}	0.0021	0.0023	2.5
V_{min}	-0.0031	-0.0030	2.5
V_{max}	0.0021	0.0021	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0058	-0.0056	2.5
-20	-0.0054	-0.0056	2.5
-10	-0.0042	-0.0042	2.5
0	-0.0038	-0.0035	2.5
10	-0.0024	-0.0025	2.5
20	-0.0019	-0.0019	2.5
30	-0.0019	-0.0010	2.5
40	-0.0007	-0.0008	2.5
50	-0.0002	-0.0001	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V_{nor}	0.0021	0.0021	2.5
V_{min}	-0.0021	-0.0025	2.5
V_{max}	0.0018	0.0018	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0059	-0.0059	2.5
-20	-0.0099	-0.0101	2.5
-10	-0.0083	-0.0083	2.5
0	-0.0075	-0.0072	2.5
10	-0.0055	-0.0050	2.5
20	-0.0039	-0.0040	2.5
30	-0.0027	-0.0036	2.5
40	-0.0022	-0.0019	2.5
50	-0.0004	-0.0005	2.5

FREQUENCY ERROR VS. VOLTAGE

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

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0062	-0.0058	2.5
-20	-0.0050	-0.0050	2.5
-10	-0.0041	-0.0042	2.5
0	-0.0036	-0.0035	2.5
10	-0.0023	-0.0026	2.5
20	-0.0020	-0.0018	2.5
30	-0.0014	-0.0012	2.5
40	-0.0006	-0.0008	2.5
50	-0.0003	-0.0001	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V_{nor}	0.0026	0.0023	2.5
V_{min}	-0.0031	-0.0030	2.5
V_{max}	0.0026	0.0024	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0059	-0.0057	2.5
-20	-0.0054	-0.0053	2.5
-10	-0.0041	-0.0041	2.5
0	-0.0038	-0.0037	2.5
10	-0.0022	-0.0023	2.5
20	-0.0017	-0.0020	2.5
30	-0.0018	-0.0011	2.5
40	-0.0008	-0.0006	2.5
50	-0.0002	-0.0003	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V_{nor}	0.0026	0.0024	2.5
V_{min}	-0.0031	-0.0030	2.5
V_{max}	0.0024	0.0024	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0060	-0.0059	2.5
-20	-0.0053	-0.0055	2.5
-10	-0.0041	-0.0041	2.5
0	-0.0037	-0.0036	2.5
10	-0.0021	-0.0026	2.5
20	-0.0019	-0.0020	2.5
30	-0.0016	-0.0010	2.5
40	-0.0005	-0.0007	2.5
50	-0.0002	-0.0001	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V_{nor}	0.0026	0.0023	2.5
V_{min}	-0.0030	-0.0031	2.5
V_{max}	0.0024	0.0024	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0059	-0.0061	2.5
-20	-0.0054	-0.0049	2.5
-10	-0.0042	-0.0040	2.5
0	-0.0037	-0.0035	2.5
10	-0.0021	-0.0023	2.5
20	-0.0019	-0.0017	2.5
30	-0.0015	-0.0011	2.5
40	-0.0008	-0.0007	2.5
50	-0.0002	-0.0001	2.5

LTE BAND 12

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V_{nor}	0.0026	0.0028	2.5
V_{min}	-0.0037	-0.0035	2.5
V_{max}	0.0025	0.0024	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0139	-0.0149	2.5
-20	-0.0122	-0.0123	2.5
-10	-0.0100	-0.0097	2.5
0	-0.0094	-0.0091	2.5
10	-0.0052	-0.0058	2.5
20	-0.0050	-0.0044	2.5
30	-0.0027	-0.0040	2.5
40	-0.0017	-0.0013	2.5
50	-0.0006	-0.0003	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V_{nor}	0.0025	0.0024	2.5
V_{min}	-0.0025	-0.0030	2.5
V_{max}	0.0022	0.0021	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0147	-0.0144	2.5
-20	-0.0128	-0.0124	2.5
-10	-0.0105	-0.0099	2.5
0	-0.0088	-0.0092	2.5
10	-0.0060	-0.0060	2.5
20	-0.0043	-0.0044	2.5
30	-0.0027	-0.0026	2.5
40	-0.0021	-0.0022	2.5
50	-0.0006	0.0000	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V_{nor}	0.0025	0.0030	2.5
V_{min}	-0.0028	-0.0035	2.5
V_{max}	0.0025	0.0024	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0152	-0.0148	2.5
-20	-0.0124	-0.0134	2.5
-10	-0.0104	-0.0100	2.5
0	-0.0092	-0.0092	2.5
10	-0.0053	-0.0056	2.5
20	-0.0047	-0.0045	2.5
30	-0.0046	-0.0034	2.5
40	-0.0019	-0.0015	2.5
50	-0.0003	-0.0003	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V_{nor}	0.0031	0.0028	2.5
V_{min}	-0.0036	-0.0035	2.5
V_{max}	0.0030	0.0028	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0144	-0.0138	2.5
-20	-0.0130	-0.0130	2.5
-10	-0.0099	-0.0097	2.5
0	-0.0090	-0.0089	2.5
10	-0.0064	-0.0056	2.5
20	-0.0045	-0.0043	2.5
30	-0.0029	-0.0043	2.5
40	-0.0017	-0.0014	2.5
50	0.0005	-0.0003	2.5

LTE BAND 13

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V_{nor}	0.0020	0.0018	2.5
V_{min}	-0.0024	-0.0022	2.5
V_{max}	0.0019	0.0019	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0132	-0.0132	2.5
-20	-0.0120	-0.0120	2.5
-10	-0.0106	-0.0106	2.5
0	-0.0087	-0.0086	2.5
10	-0.0070	-0.0069	2.5
20	-0.0058	-0.0057	2.5
30	-0.0044	-0.0042	2.5
40	-0.0023	-0.0021	2.5
50	-0.0007	-0.0004	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz	LIMIT (ppm)
	FREQUENCY ERROR (ppm)	
	Mid Channel	
V_{nor}	0.0021	2.5
V_{min}	-0.0022	2.5
V_{max}	0.0019	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

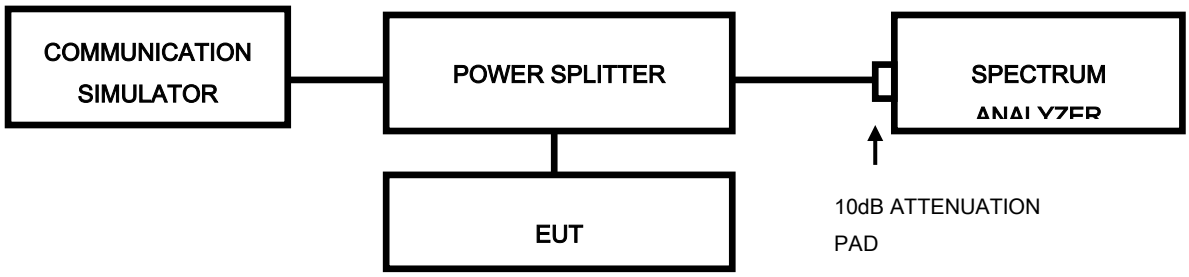
TEMP. (℃)	10MHz	LIMIT (ppm)
	FREQUENCY ERROR (ppm)	
	Mid Channel	
-30	-0.0131	2.5
-20	-0.0111	2.5
-10	-0.0098	2.5
0	-0.0072	2.5
10	-0.0054	2.5
20	-0.0042	2.5
30	-0.0022	2.5
40	-0.0008	2.5
50	0.0005	2.5

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

3.3.2 TEST SETUP

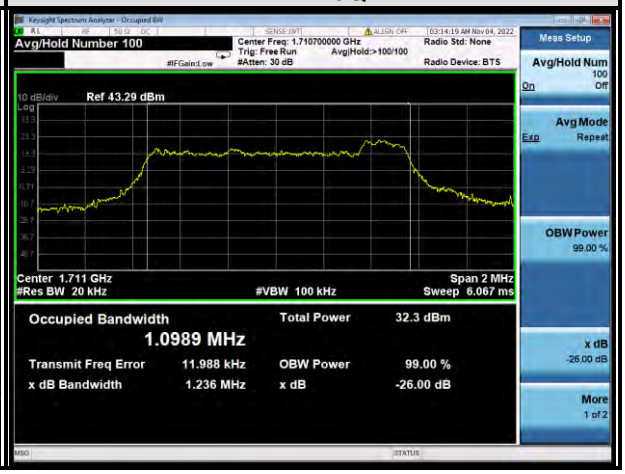


3.3.3 TEST PROCEDURES

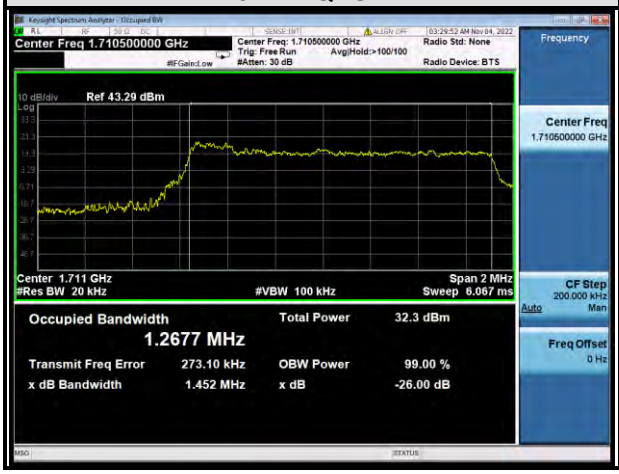
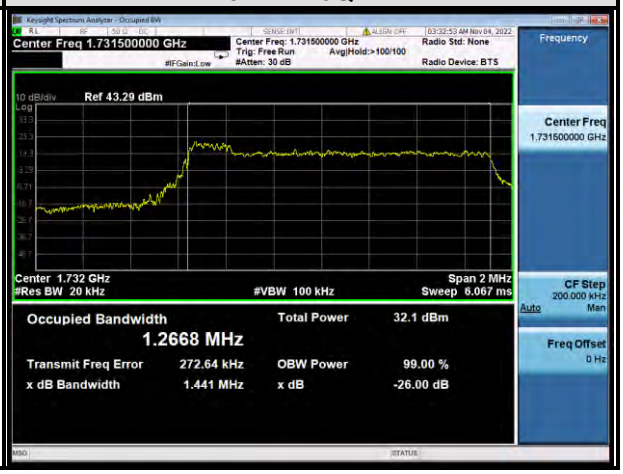
a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.3.4 TEST RESULTS

LTE band 4			
Channel Bandwidth : 1.4MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
19957	1710.7	1.10	1.10
20175	1732.5	1.10	1.09
20393	1754.3	1.10	1.10
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
19957	1710.7	1.23	1.24
20175	1732.5	1.24	1.22
20393	1754.3	1.23	1.23

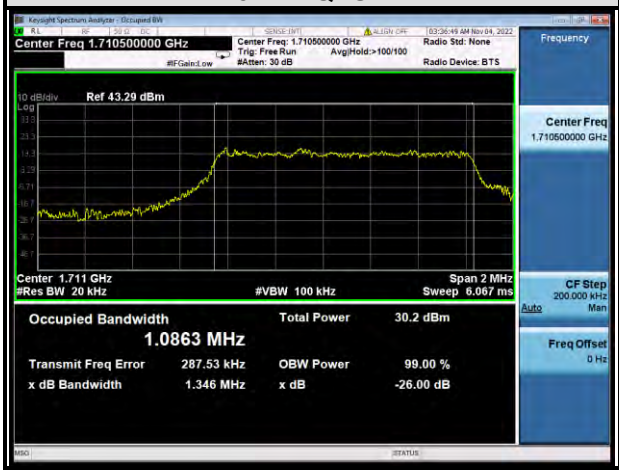
SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
1.4MHz/QPSK	1.4MHz/16QAM
	

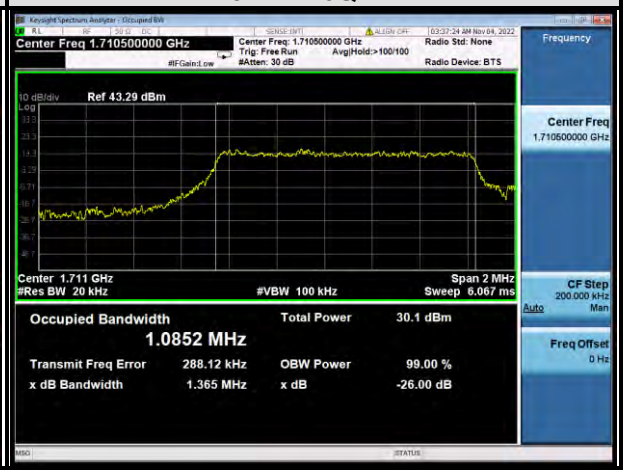
LTE band 4			
Channel Bandwidth : 3MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
19965	1711.5	1.27	1.26
20175	1732.5	1.27	1.27
20385	1753.5	1.27	1.27
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
19965	1711.5	1.45	1.38
20175	1732.5	1.42	1.44
20385	1753.5	1.43	1.42

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
3MHz/QPSK	3MHz/16QAM
	

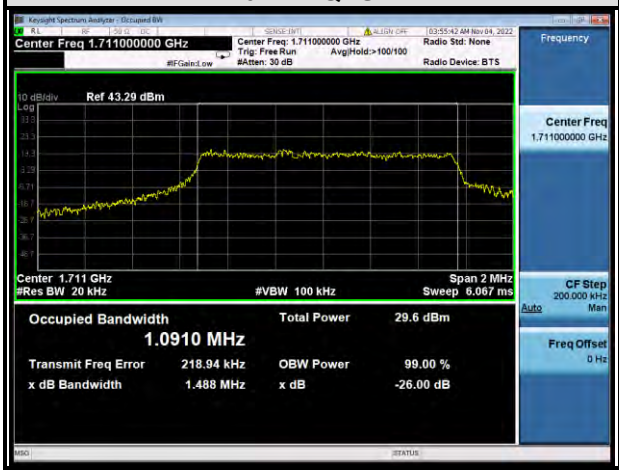
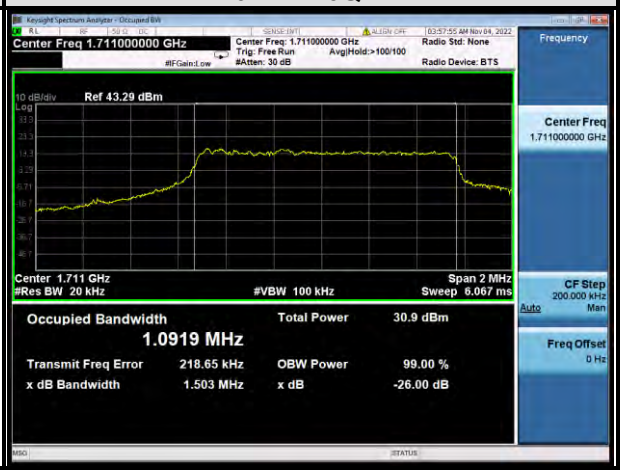
LTE band 4			
Channel Bandwidth : 5MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
19975	1712.5	1.09	1.09
20175	1732.5	1.09	1.09
20375	1752.5	1.09	1.09
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
19975	1712.5	1.35	1.37
20175	1732.5	1.36	1.39
20375	1752.5	1.32	1.33

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
5MHz/QPSK	5MHz/16QAM





LTE band 4			
Channel Bandwidth : 10MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
20000	1715	1.09	1.09
20175	1732.5	1.09	1.09
20350	1750	1.09	1.09
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
20000	1715	1.49	1.50
20175	1732.5	1.54	1.54
20350	1750	1.43	1.48

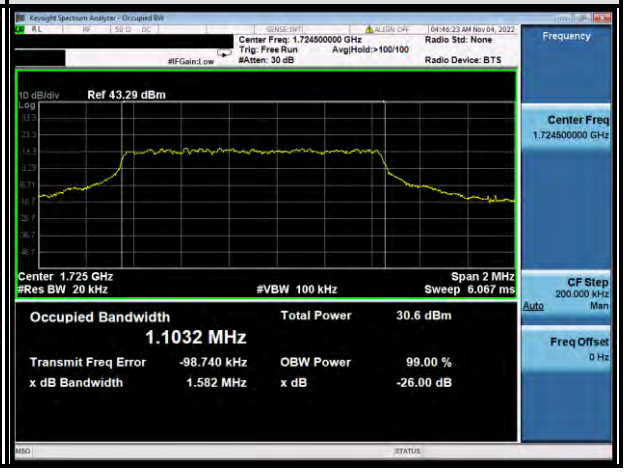
SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
10MHz/QPSK	10MHz/16QAM
	

LTE band 4			
Channel Bandwidth : 15MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
20025	1717.5	1.09	1.10
20175	1732.5	1.10	1.10
20325	1747.5	1.10	1.11
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
20025	1717.5	1.52	1.54
20175	1732.5	1.58	1.66
20325	1747.5	1.60	1.62

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
15MHz/QPSK	15MHz/16QAM

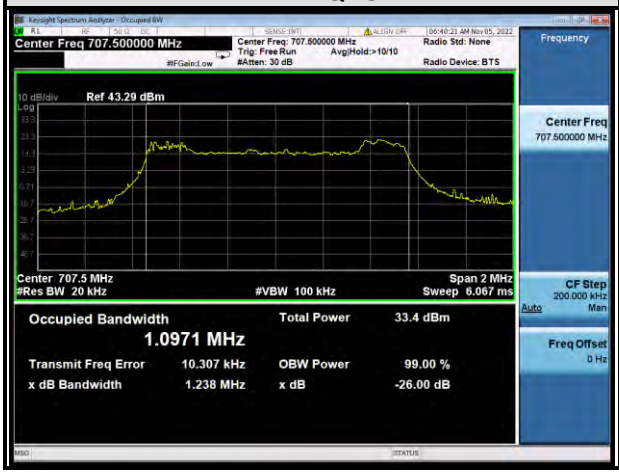
LTE band 4			
Channel Bandwidth : 20MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
20050	1720	1.09	1.09
20175	1732.5	1.10	1.10
20300	1745	1.10	1.09
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
20050	1720	1.49	1.50
20175	1732.5	1.61	1.58
20300	1745	1.58	1.51

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
20MHz/QPSK	20MHz/16QAM

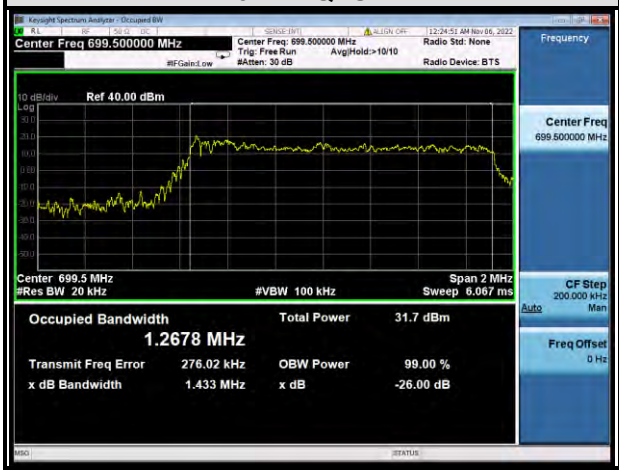


LTE band 12			
Channel Bandwidth : 1.4MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
23017	699.7	1.09	1.09
23095	707.5	1.10	1.10
23173	715.3	1.10	1.10
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
23017	699.7	1.218	1.243
23095	707.5	1.238	1.235
23173	715.3	1.238	1.24

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
1.4MHz/QPSK	1.4MHz/16QAM



LTE band 12			
Channel Bandwidth : 3MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
23025	700.5	1.27	1.28
23095	707.5	1.27	1.27
23165	714.5	1.27	1.28
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
23025	700.5	1.43	1.43
23095	707.5	1.42	1.43
23165	714.5	1.43	1.43

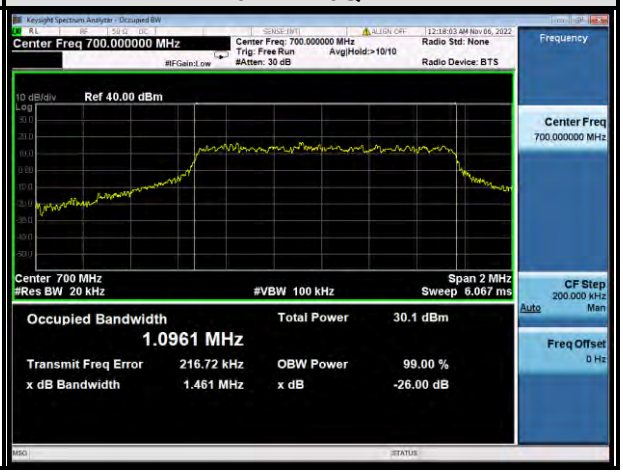
SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
3MHz/QPSK	3MHz/16QAM
	

LTE band 12			
Channel Bandwidth : 5MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
23035	701.5	1.09	1.08
23095	707.5	1.09	1.09
23155	713.5	1.09	1.09
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
23035	701.5	1.38	1.38
23095	707.5	1.37	1.39
23155	713.5	1.34	1.34

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
5MHz/QPSK	5MHz/16QAM

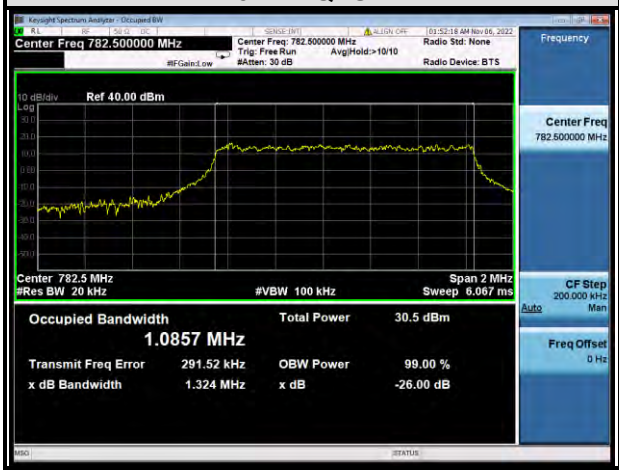
LTE band 12			
Channel Bandwidth : 10MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
23060	704	1.09	1.10
23095	707.5	1.10	1.09
23130	711	1.09	1.09
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
23060	704	1.48	1.46
23095	707.5	1.44	1.44
23130	711	1.52	1.48

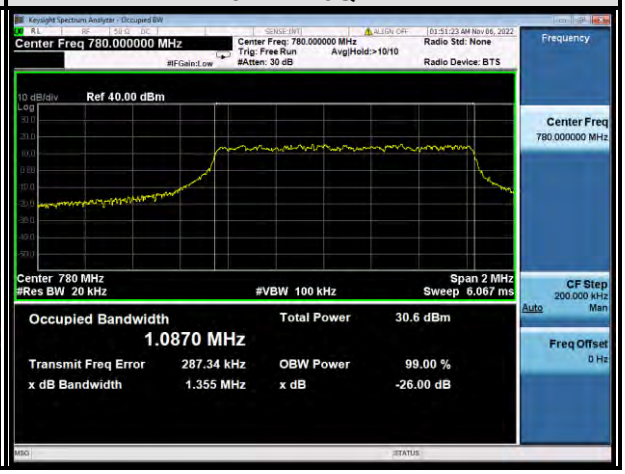
SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
10MHz/QPSK	10MHz/16QAM



LTE band 13			
Channel Bandwidth : 5MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
23205	779.5	1.08	1.08
23230	782	1.08	1.09
23255	784.5	1.09	1.08
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
23205	779.5	1.38	1.38
23230	782	1.35	1.36
23255	784.5	1.32	1.32

SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
5MHz/QPSK	5MHz/16QAM





LTE band 13			
Channel Bandwidth : 10MHz			
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)	
		QPSK	16QAM
23230	782	1.09	1.09
CHANNEL	Frequency (MHz)	26 dB bandwidth (MHz)	
		QPSK	16QAM
23230	782	1.43	1.48

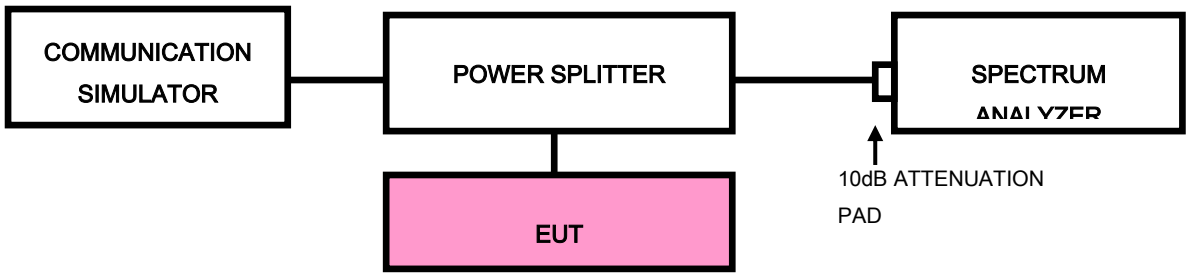
SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth	
10MHz/QPSK	10MHz/16QAM

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



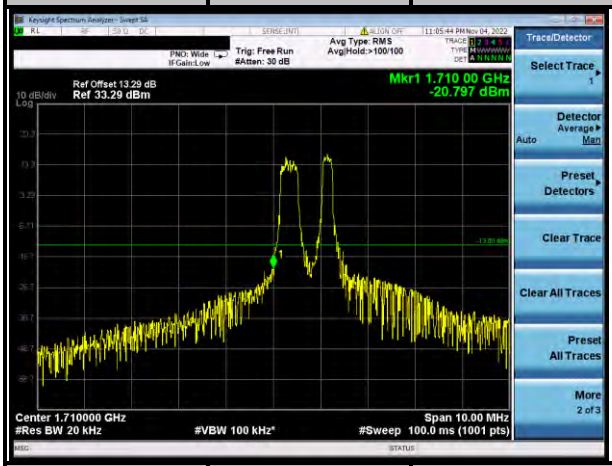
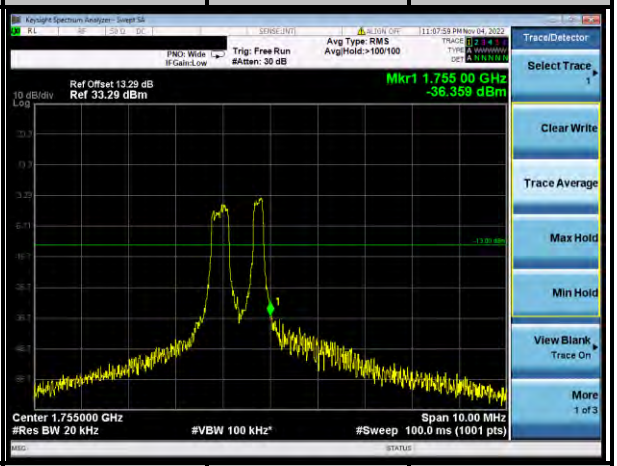
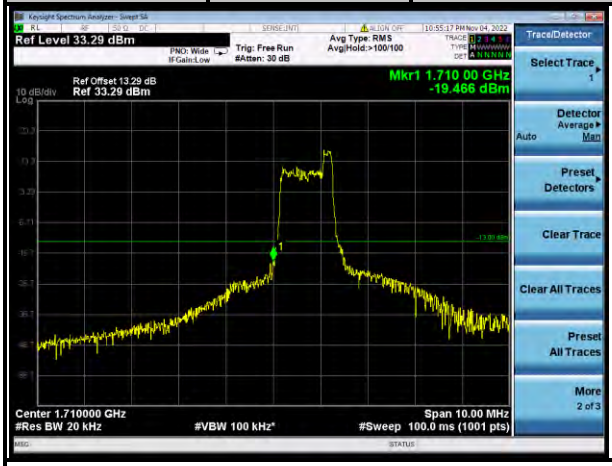
3.4.3 TEST PROCEDURES

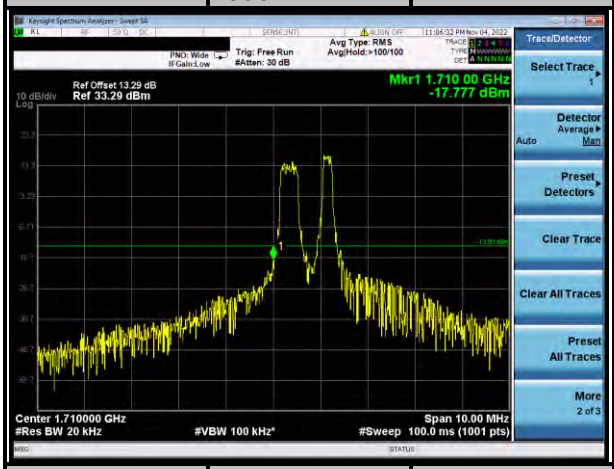
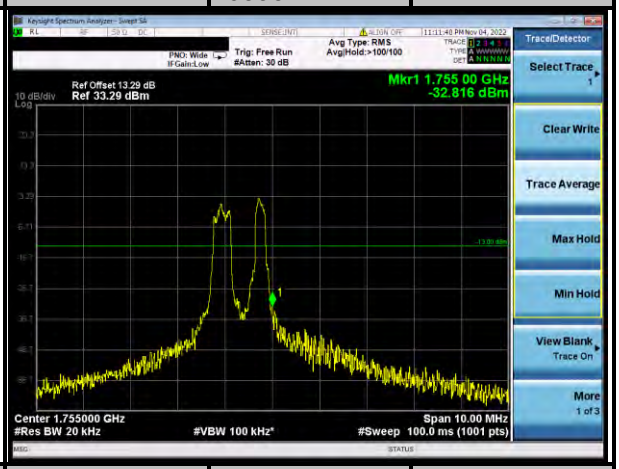
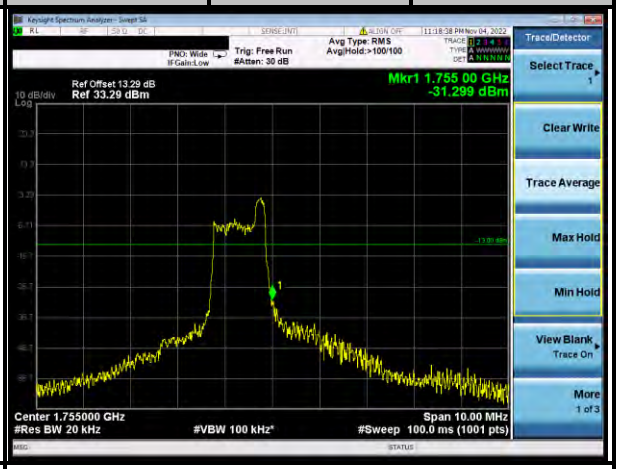
a. All measurements were done at low and high operational frequency range.

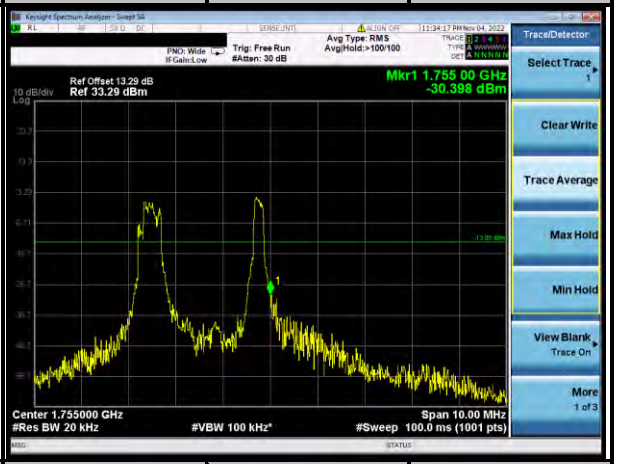
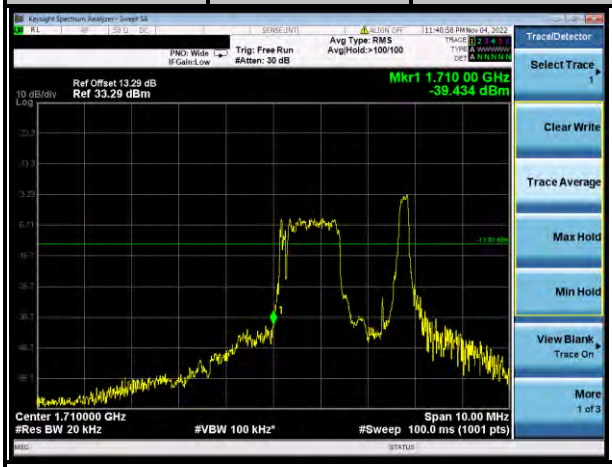
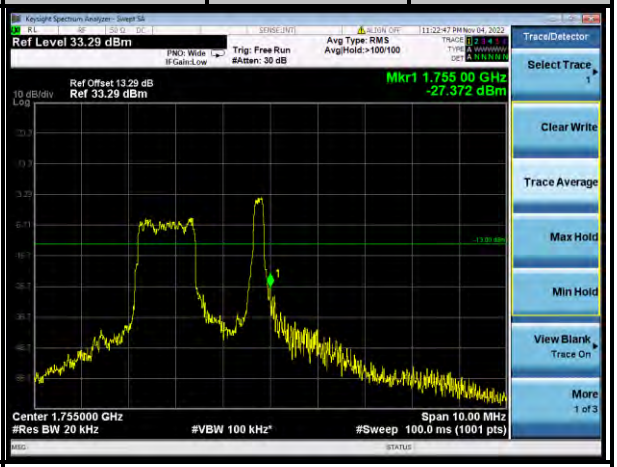
b. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is ≥1%*EBW kHz and VBW of the spectrum is 3*RBW kHz. (LTE bandwidth 1.4M/3M/5M/10M/15M/20MHz).

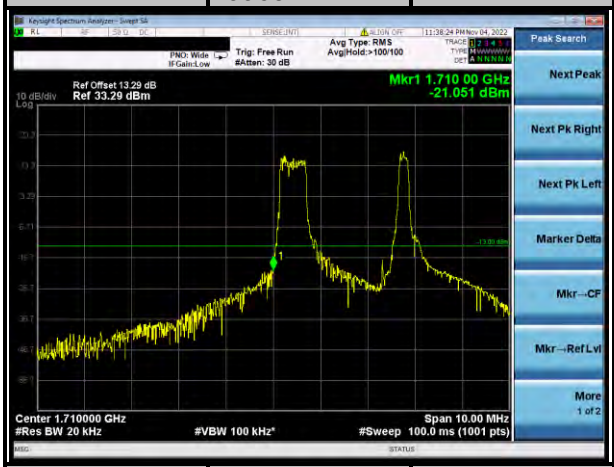
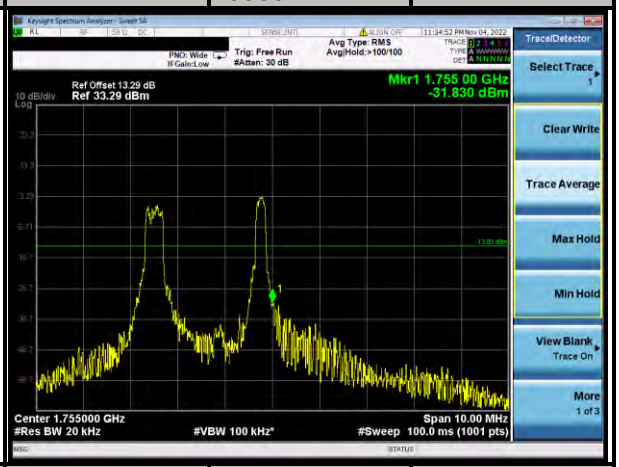
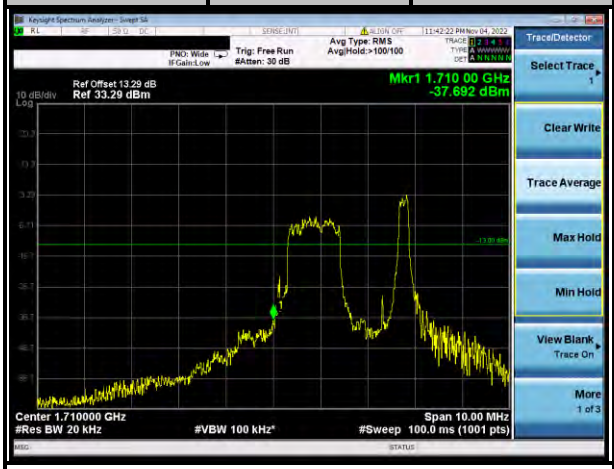
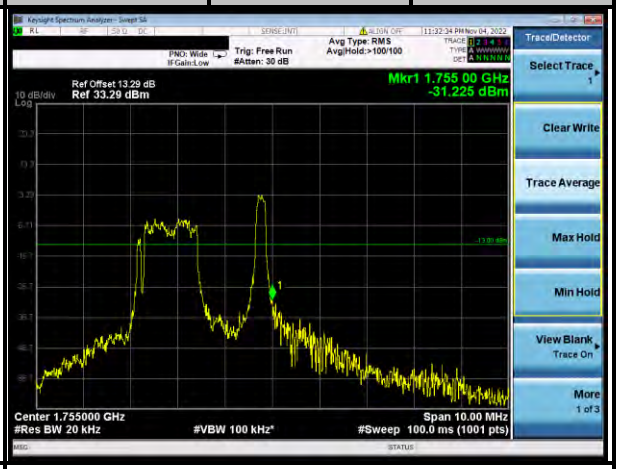
c. Record the max trace plot into the test report.

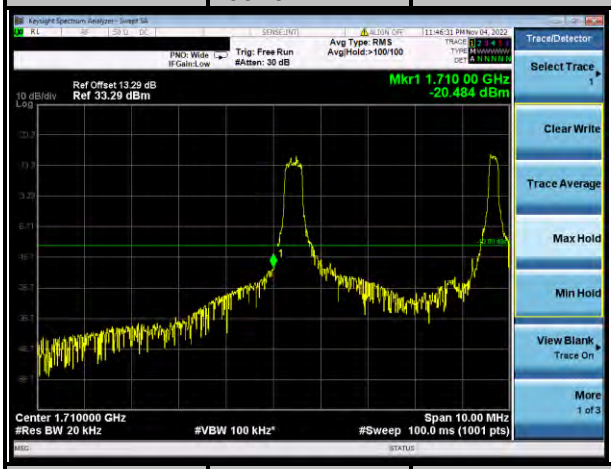
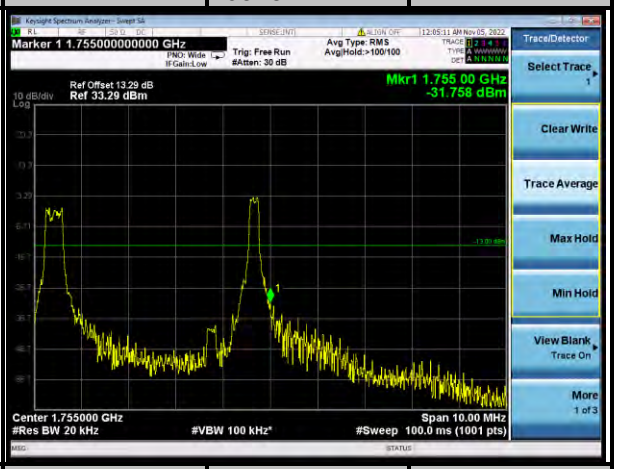
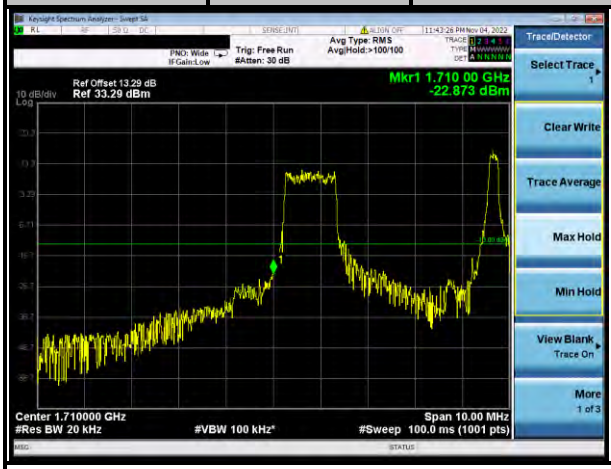
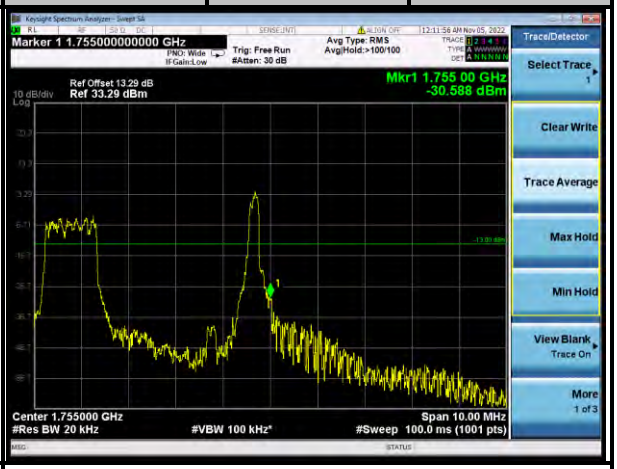
3.4.4 TEST RESULTS

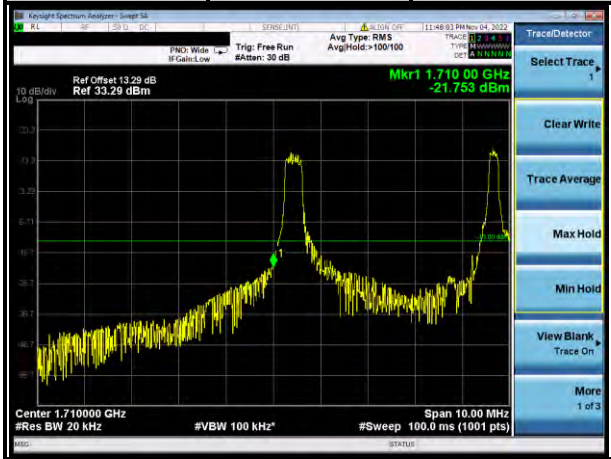
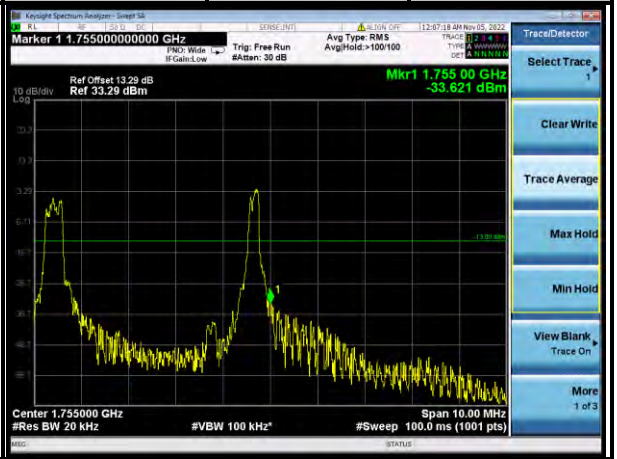
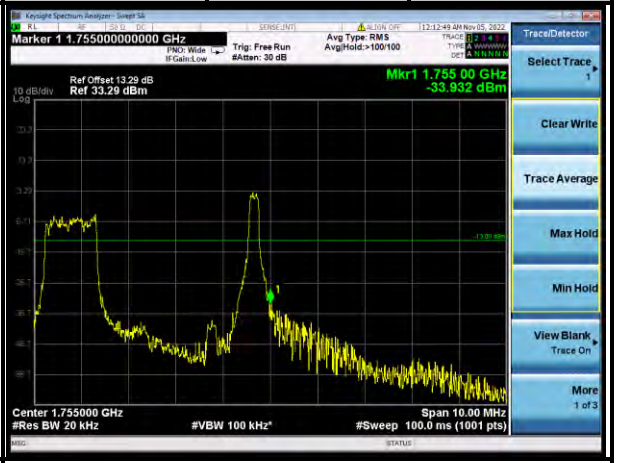
LTE BAND 4					
Channel Bandwidth: 1.4MHz / QPSK					
CHANNEL	19957	1 RB	CHANNEL	20393	1 RB
					
CHANNEL	19957	Full RB	CHANNEL	20393	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

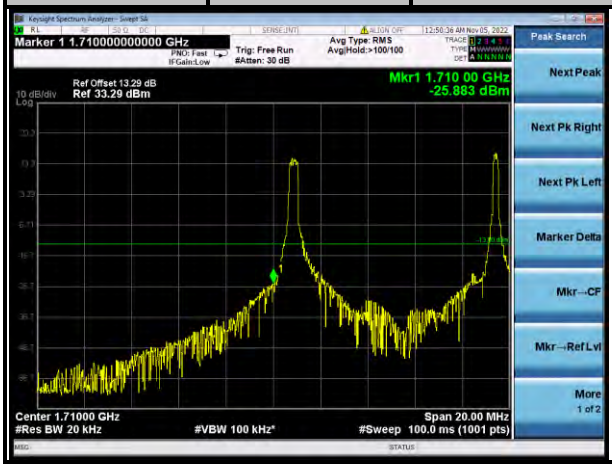
LTE BAND 4					
Channel Bandwidth: 1.4MHz / 16QAM					
CHANNEL	19957	1 RB	CHANNEL	20393	1 RB
					
CHANNEL	19957	Full RB	CHANNEL	20393	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

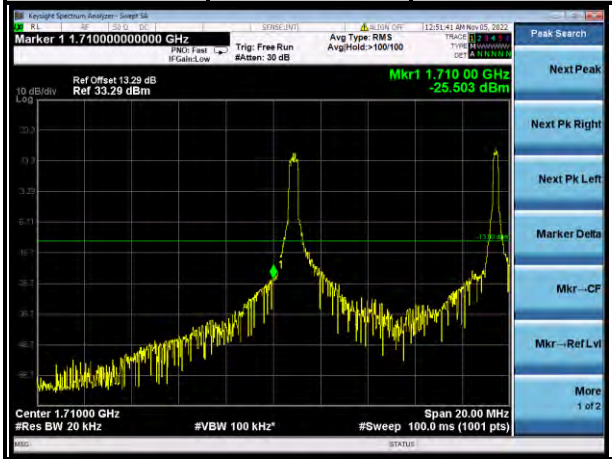
LTE BAND 4					
Channel Bandwidth: 3MHz / QPSK					
CHANNEL	19965	1 RB	CHANNEL	20385	1 RB
					
CHANNEL	19965	Full RB	CHANNEL	20385	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

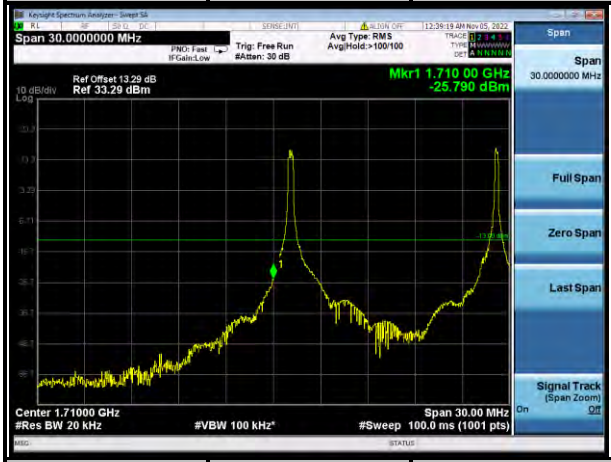
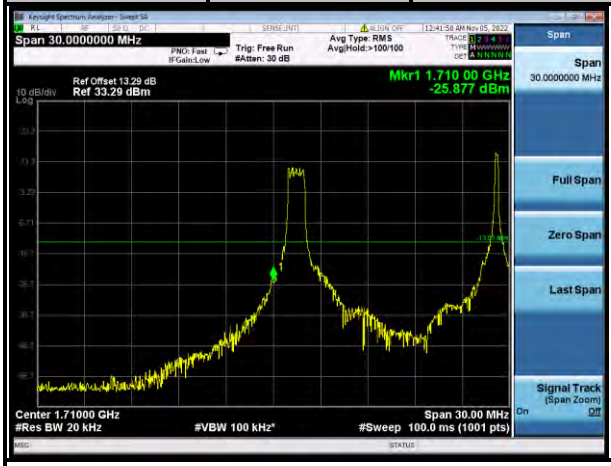
LTE BAND 4					
Channel Bandwidth: 3MHz / 16QAM					
CHANNEL	19965	1 RB	CHANNEL	20385	1 RB
					
CHANNEL	19965	Full RB	CHANNEL	20385	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

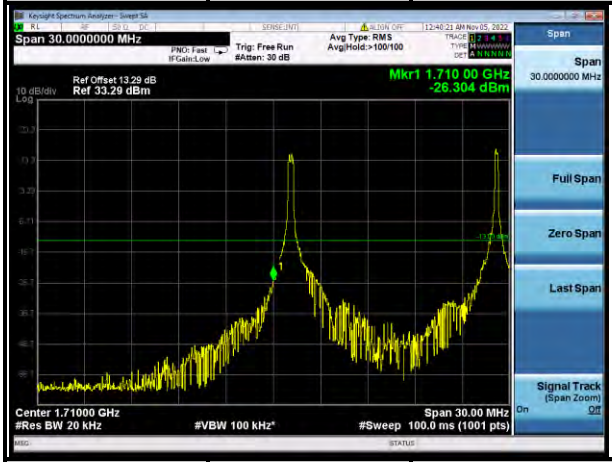
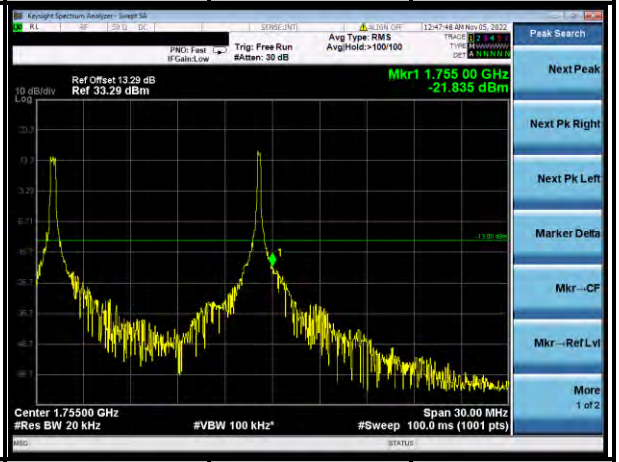
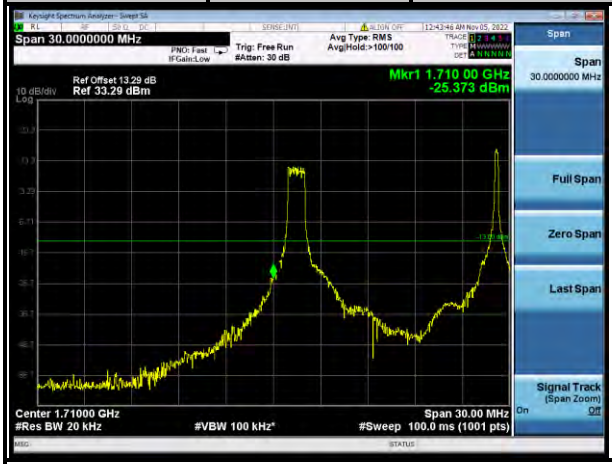
LTE BAND 4					
Channel Bandwidth: 5MHz / QPSK					
CHANNEL	19975	1 RB	CHANNEL	20375	1 RB
					
CHANNEL	19975	Full RB	CHANNEL	20375	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

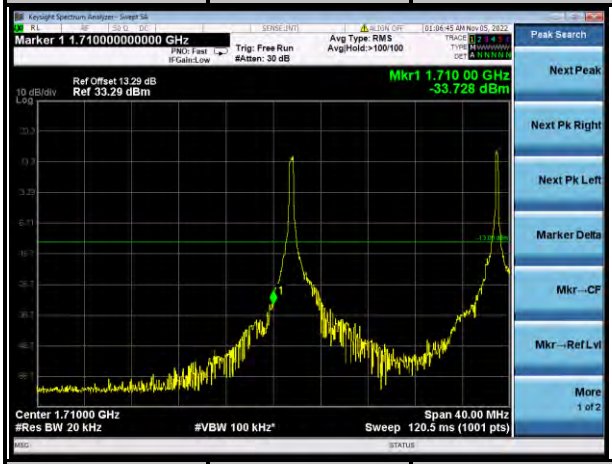
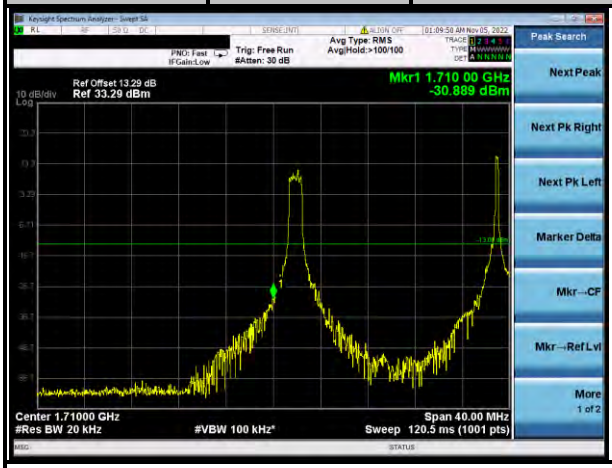
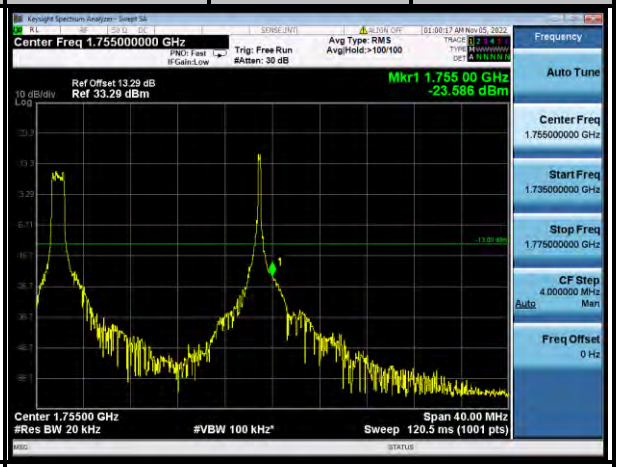
LTE BAND 4					
Channel Bandwidth: 5MHz / 16QAM					
CHANNEL	19975	1 RB	CHANNEL	20375	1 RB
					
CHANNEL	19975	Full RB	CHANNEL	20375	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

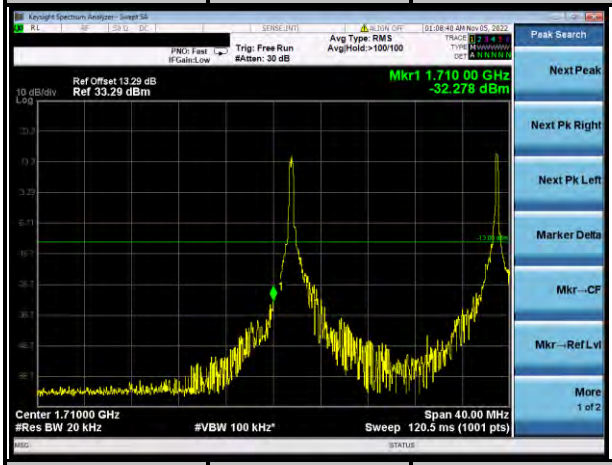
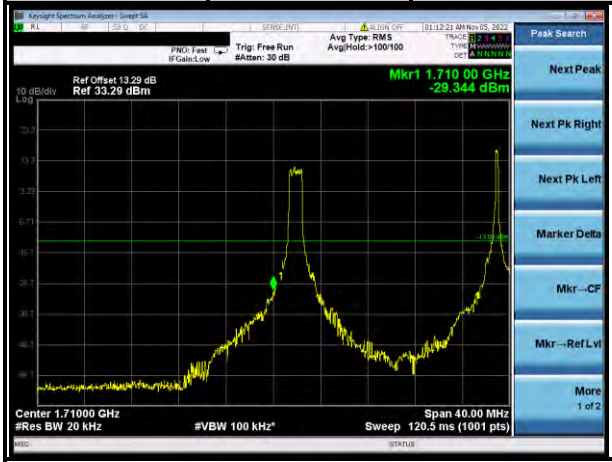
LTE BAND 4					
Channel Bandwidth: 10MHz / QPSK					
CHANNEL	20000	1 RB	CHANNEL	20350	1 RB
					
CHANNEL	20000	Full RB	CHANNEL	20350	Full RB
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

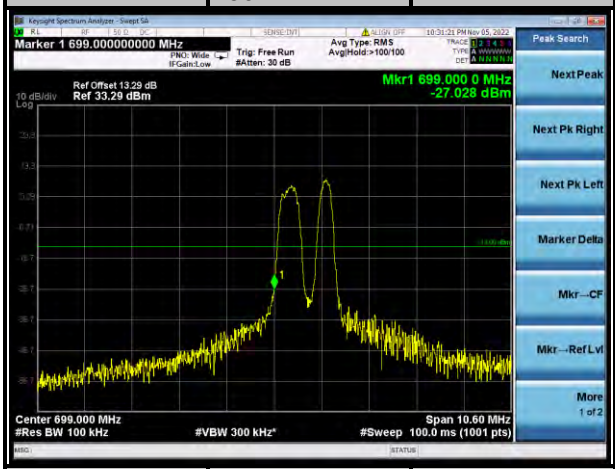
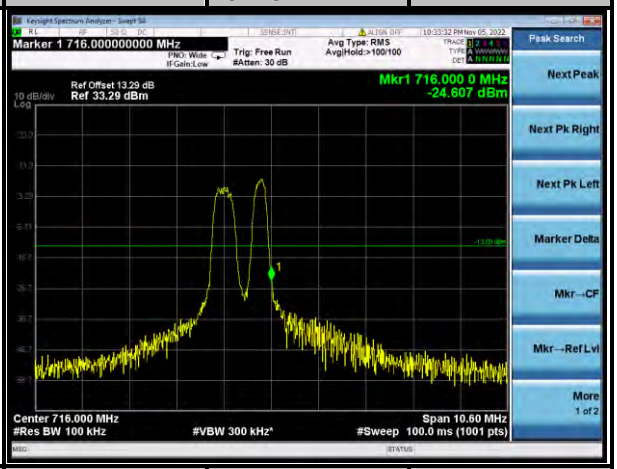
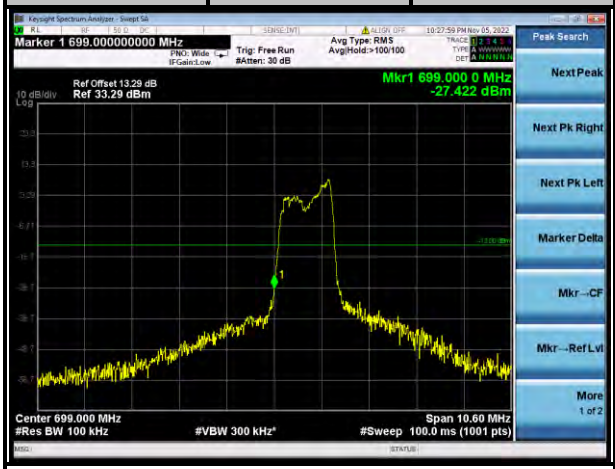
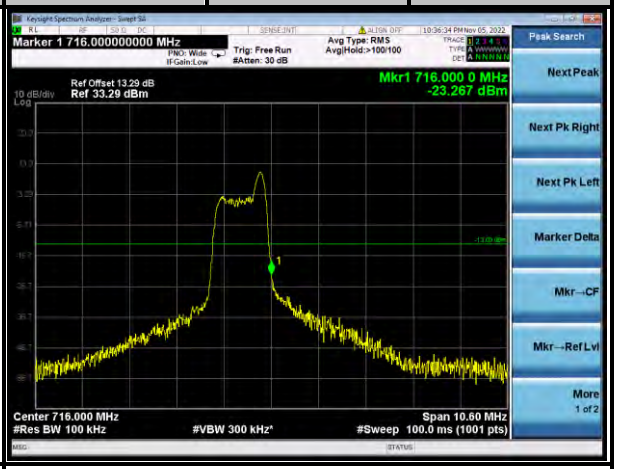
LTE BAND 4					
Channel Bandwidth: 10MHz / 16QAM					
CHANNEL	20000	1 RB	CHANNEL	20350	1 RB
					
CHANNEL	20000	Full RB	CHANNEL	20350	Full RB
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

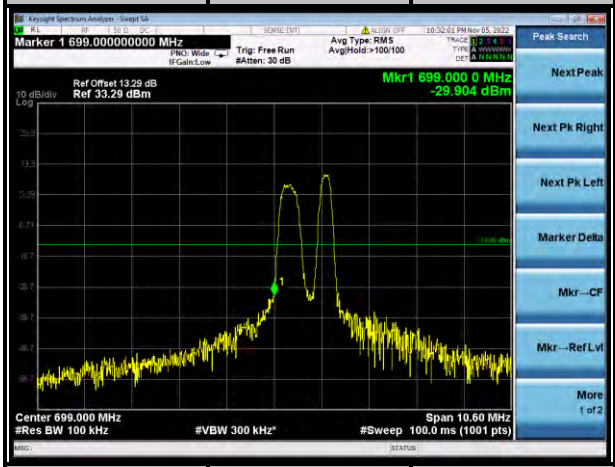
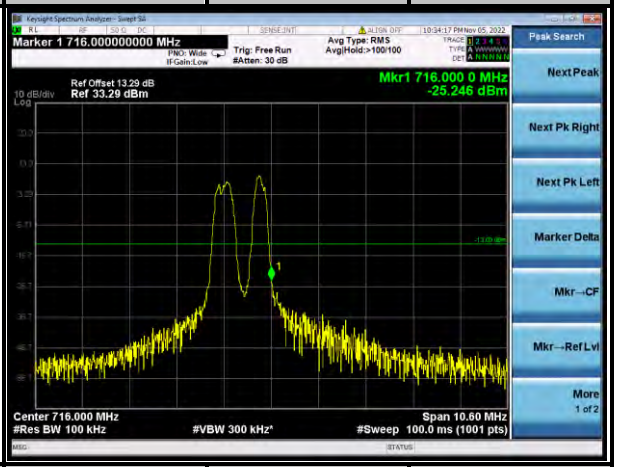
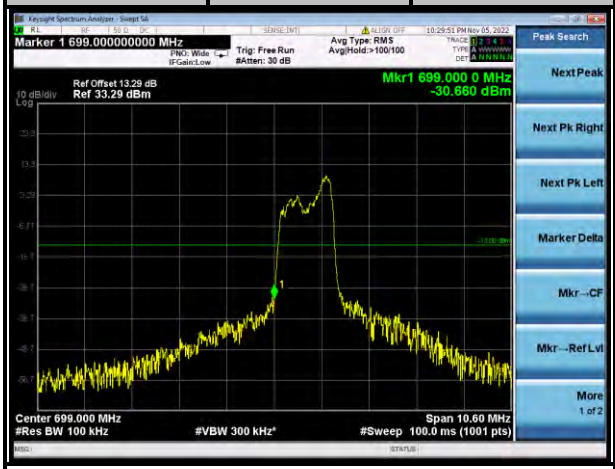
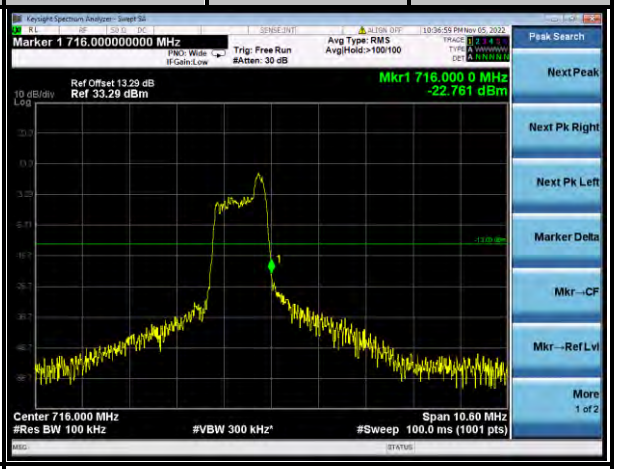
LTE BAND 4					
Channel Bandwidth: 15MHz / QPSK					
CHANNEL	20025	1 RB	CHANNEL	20325	1 RB
					
CHANNEL	20025	Full RB	CHANNEL	20325	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

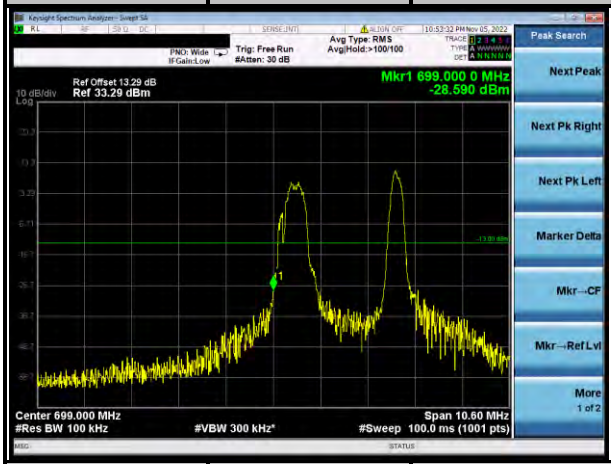
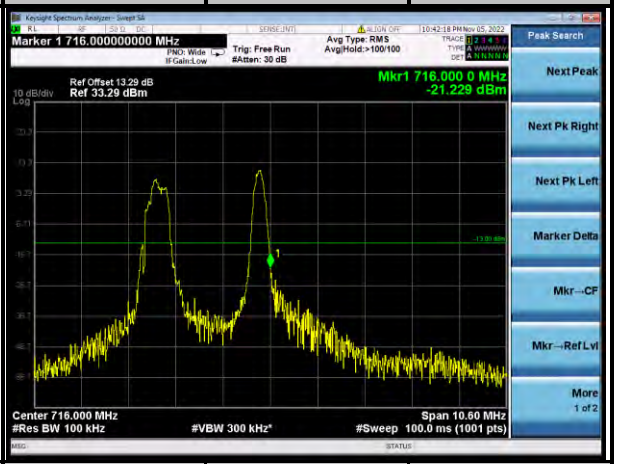
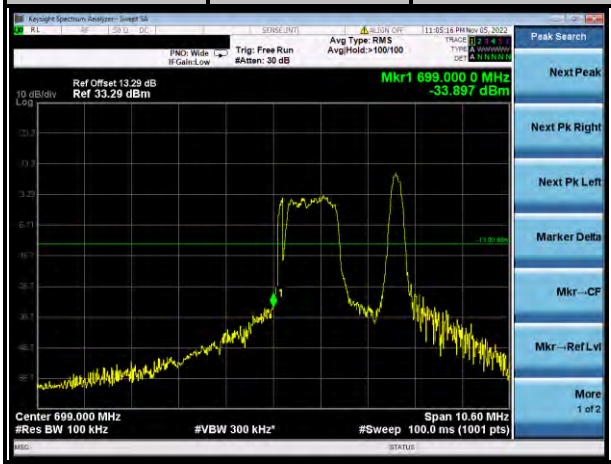
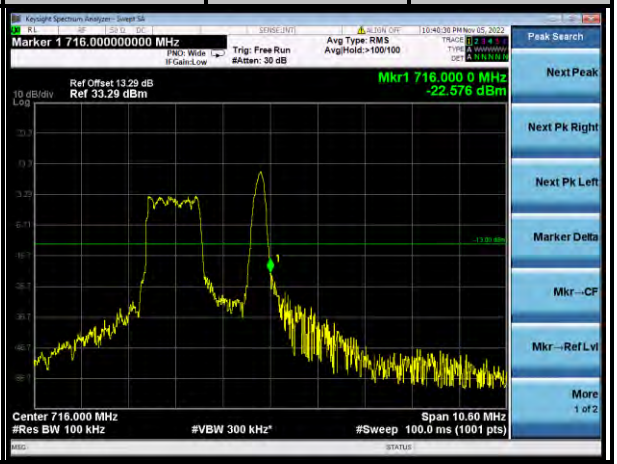
LTE BAND 4					
Channel Bandwidth: 15MHz / 16QAM					
CHANNEL	20025	1 RB	CHANNEL	20325	1 RB
					
CHANNEL	20025	Full RB	CHANNEL	20325	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

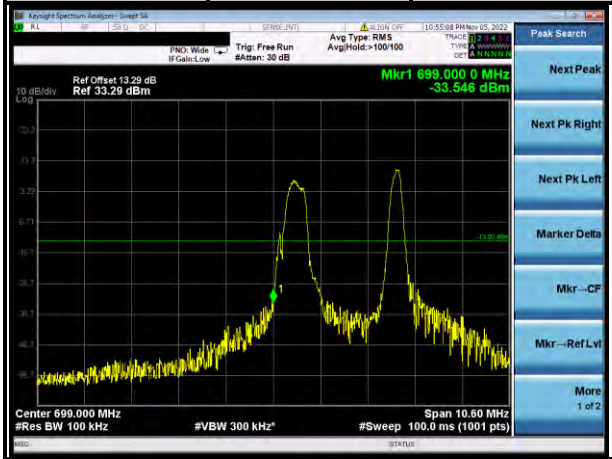
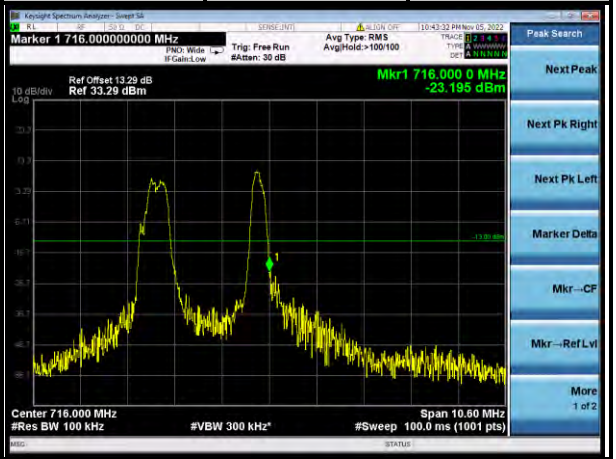
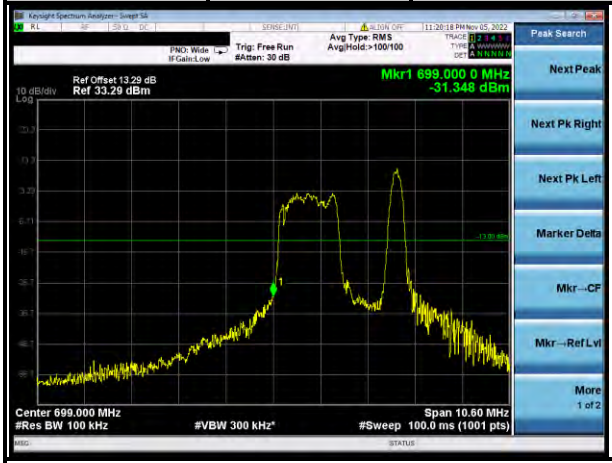
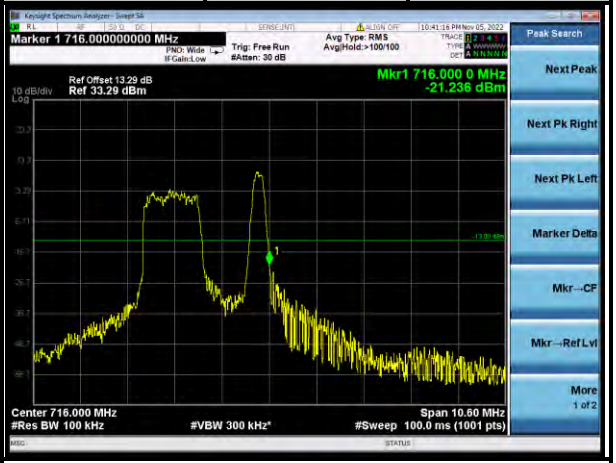
LTE BAND 4					
Channel Bandwidth: 20MHz / QPSK					
CHANNEL	20050	1 RB	CHANNEL	20300	1 RB
					
CHANNEL	20050	Full RB	CHANNEL	20300	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

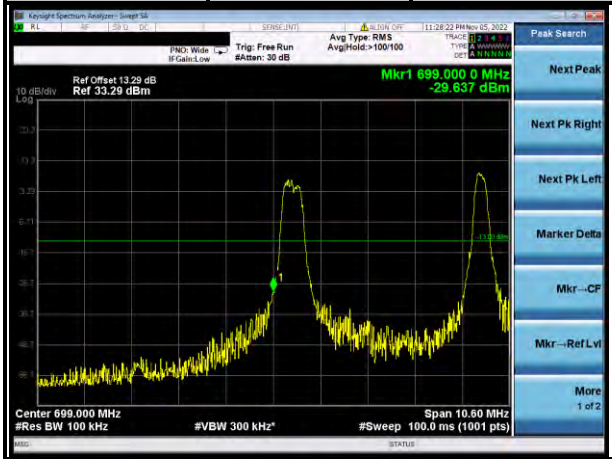
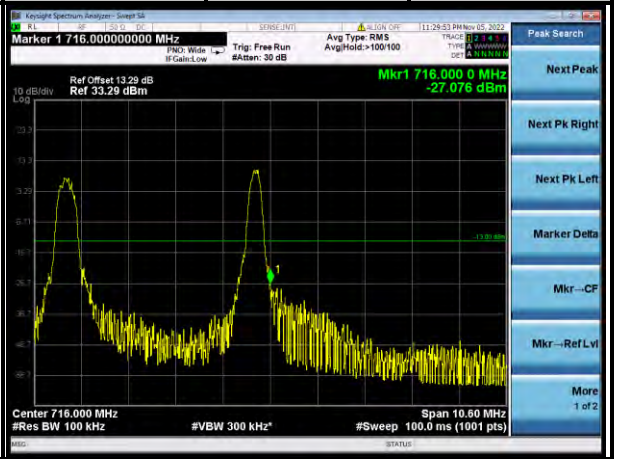
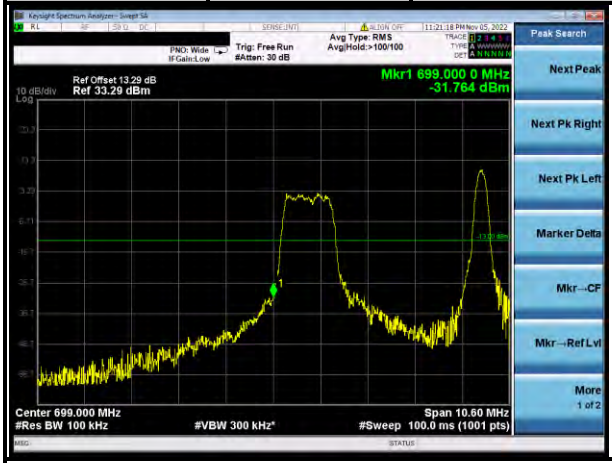
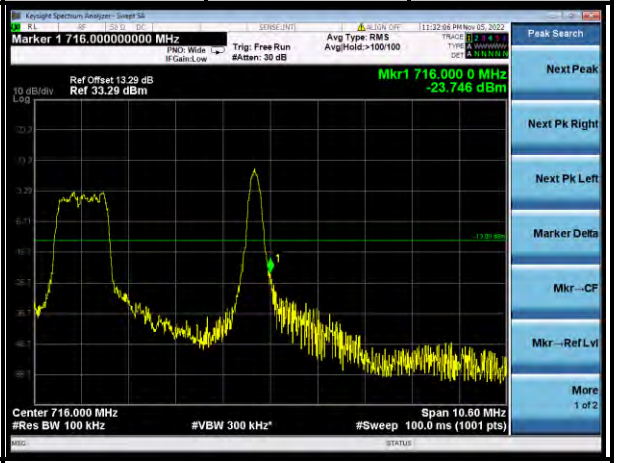
LTE BAND 4					
Channel Bandwidth: 20MHz / 16QAM					
CHANNEL	20050	1 RB	CHANNEL	20300	1 RB
					
CHANNEL	20050	Full RB	CHANNEL	20300	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

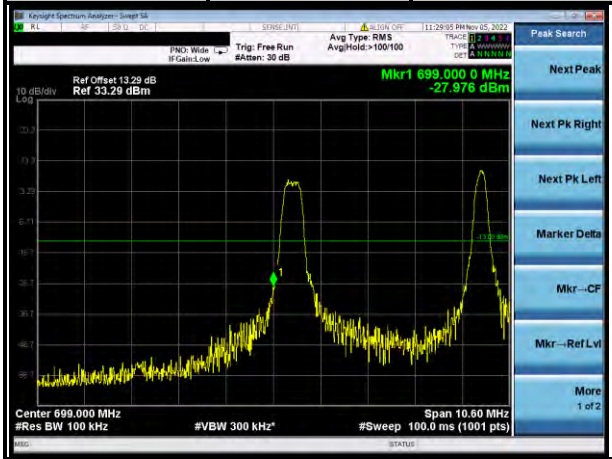
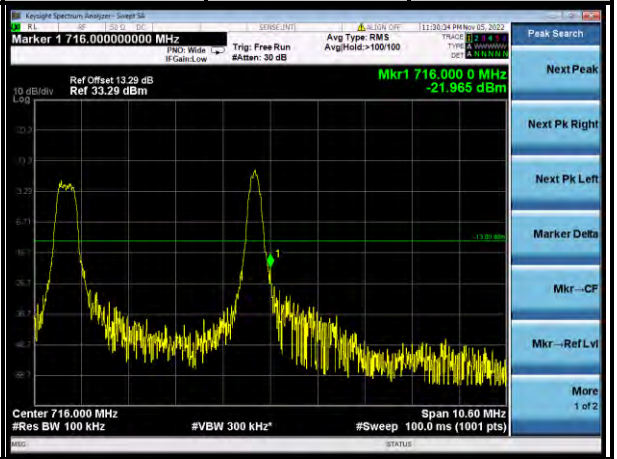
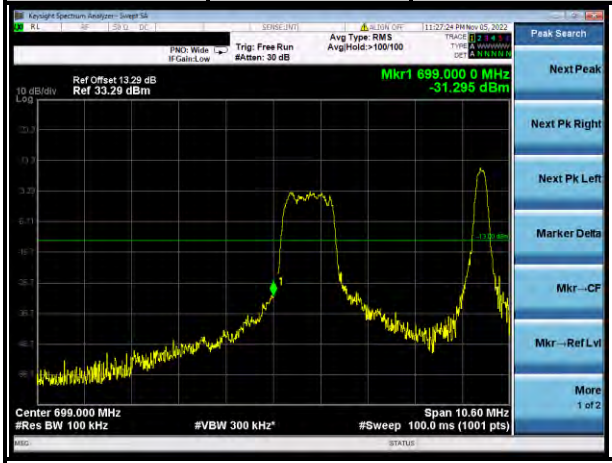
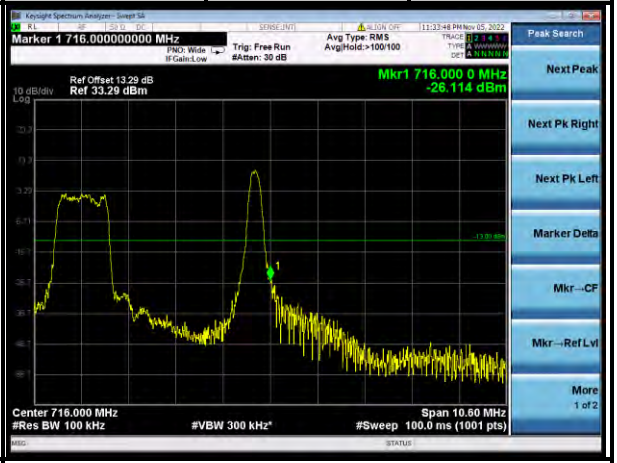
LTE BAND 12					
Channel Bandwidth: 1.4MHz / QPSK					
CHANNEL	23017	1 RB	CHANNEL	23173	1 RB
					
CHANNEL	23017	Full RB	CHANNEL	23173	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

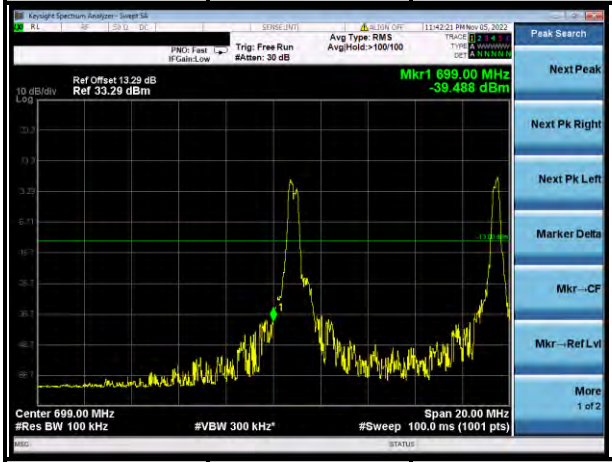
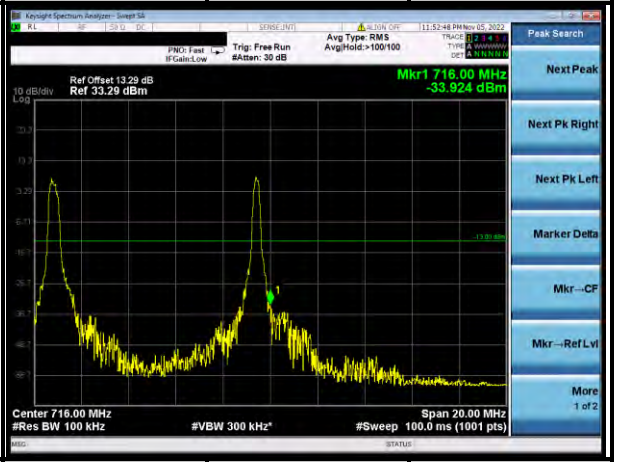
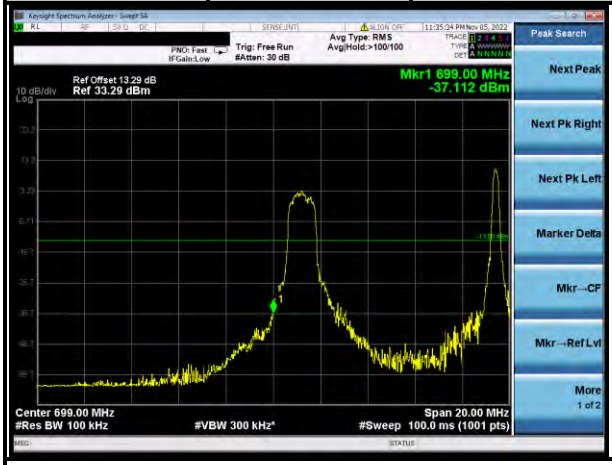
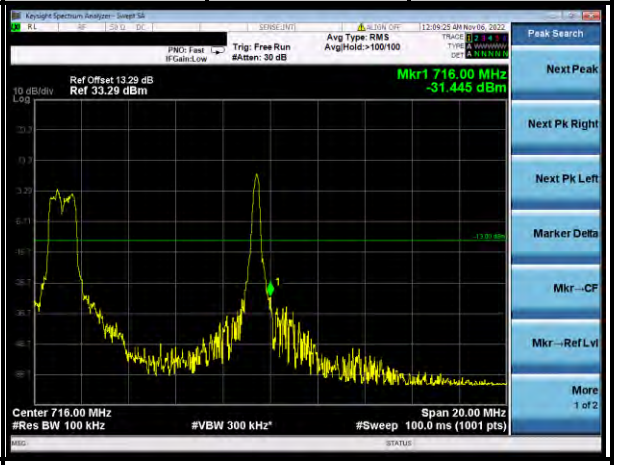
LTE BAND 12					
Channel Bandwidth: 1.4MHz / 16QAM					
CHANNEL	23017	1 RB	CHANNEL	23173	1 RB
					
CHANNEL	23017	Full RB	CHANNEL	23173	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 12					
Channel Bandwidth: 3MHz / QPSK					
CHANNEL	23025	1 RB	CHANNEL	23165	1 RB
					
CHANNEL	23025	Full RB	CHANNEL	23165	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 12					
Channel Bandwidth: 3MHz / 16QAM					
CHANNEL	23025	1 RB	CHANNEL	23165	1 RB
					
CHANNEL	23025	Full RB	CHANNEL	23165	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 12					
Channel Bandwidth: 5MHz / QPSK					
CHANNEL	23035	1 RB	CHANNEL	23155	1 RB
					
CHANNEL	23035	Full RB	CHANNEL	23155	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 12					
Channel Bandwidth: 5MHz / 16QAM					
CHANNEL	23035	1 RB	CHANNEL	23155	1 RB
					
CHANNEL	23035	Full RB	CHANNEL	23155	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		

LTE BAND 12					
Channel Bandwidth: 10MHz / QPSK					
CHANNEL	23060	1 RB	CHANNEL	23130	1 RB
					
CHANNEL	23060	Full RB	CHANNEL	23130	Full RB
					
Note: Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.			**Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth.		