



Test Report No.: W7L-P20210616-2RF06



# FCC TEST REPORT (PART 27)

Applicant:	Continental Automotive Systems, Inc.
Address:	21440 W Lake Cook Rd., Deer Park, IL 60010, USA

Manufacturer or Supplier:	Continental Automotive Systems, Inc.
Address:	21440 W Lake Cook Rd., Deer Park, IL 60010, USA
Product:	BL28RW-RD1
Brand Name:	Continental
Model Name:	BL28RW-RD1
FCC ID:	LHJ-BL28RWRD1
Date of tests:	Jun. 16, 2021 ~ Jul. 06, 2021

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

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

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

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Date: Jul. 07, 2021	Date: Jul. 07, 2021

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# TABLE OF CONTENTS

<b>RELEASE CONTROL RECORD .....</b>	<b>4</b>
<b>1 SUMMARY OF TEST RESULTS .....</b>	<b>5</b>
1.1 MEASUREMENT UNCERTAINTY .....	5
1.2 TEST SITE AND INSTRUMENTS .....	6
<b>2 GENERAL INFORMATION .....</b>	<b>7</b>
2.1 GENERAL DESCRIPTION OF EUT .....	7
2.2 CONFIGURATION OF SYSTEM UNDER TEST .....	10
2.3 DESCRIPTION OF SUPPORT UNITS .....	11
2.4 TEST ITEM AND TEST CONFIGURATION .....	11
2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS .....	17
<b>3 TEST TYPES AND RESULTS .....</b>	<b>18</b>
3.1 OUTPUT POWER MEASUREMENT .....	18
3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT .....	18
3.1.2 TEST PROCEDURES .....	18
3.1.3 TEST SETUP .....	19
3.1.4 TEST RESULTS .....	20
3.2 FREQUENCY STABILITY MEASUREMENT .....	31
3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT .....	31
3.2.2 TEST PROCEDURE .....	31
3.2.3 TEST SETUP .....	31
3.2.4 TEST RESULTS .....	32
3.3 OCCUPIED BANDWIDTH MEASUREMENT .....	43
3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT .....	43
3.3.2 TEST SETUP .....	43
3.3.3 TEST PROCEDURES .....	43
3.3.4 TEST RESULTS .....	44
3.4 BAND EDGE MEASUREMENT .....	55
3.4.1 LIMITS OF BAND EDGE MEASUREMENT .....	55
3.4.2 TEST SETUP .....	55
3.4.3 TEST PROCEDURES .....	56
3.4.4 TEST RESULTS .....	57
3.5 CONDUCTED SPURIOUS EMISSIONS .....	78
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT .....	78
3.5.2 TEST PROCEDURE .....	78
3.5.3 TEST SETUP .....	78
3.5.4 TEST RESULTS .....	79
3.6 RADIATED EMISSION MEASUREMENT .....	90
3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT .....	90
3.6.2 TEST PROCEDURES .....	90
3.6.3 DEVIATION FROM TEST STANDARD .....	90
3.6.4 TEST SETUP .....	91
3.6.5 TEST RESULTS .....	92
3.7 PEAK TO AVERAGE RATIO .....	124
3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT .....	124
3.7.2 TEST SETUP .....	124
3.7.3 TEST PROCEDURES .....	124
3.7.4 TEST RESULTS .....	125



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**Test Report No.: W7L-P20210616-2RF06**

<b>4 INFORMATION ON THE TESTING LABORATORIES .....</b>	<b>138</b>
<b>5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB .....</b>	<b>139</b>



Test Report No.: W7L-P20210616-2RF06

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P20210616-2RF06	Original release	Jul. 07, 2021

# 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 27 & Part 2		
STANDARD SECTION	1.1.1.1.1 TEST TYPE AND LIMIT	RESULT
2.1046 27.50(h)(2)	Equivalent Isotropically Radiated Power	Compliance
2.1055 27.54	Frequency Stability	Compliance
2.1049 27.53(m)(6)	Occupied Bandwidth	Compliance
2.1051 27.53(m)(4)(6)	Band Edge Measurements	Compliance
2.1051 27.53(m)(4)(6)	Conducted Spurious Emissions	Compliance
2.1053 27.53(m)(4)(6)	Radiated Spurious Emissions	Compliance

## 1.1 MEASUREMENT UNCERTAINTY

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

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

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



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VERITAS

Test Report No.: W7L-P20210616-2RF06

## 1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 22,21	Apr. 21,22
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 03,21	Jun. 02,22
Bilog Antenna 2	ETS-LINDGREN	3143B	00161965	Mar. 05,21	Mar. 04,22
Horn Antenna 1	ETS-LINDGREN	3117	00168728	Aug. 21,20	Aug. 20,21
Horn Antenna 2	ETS-LINDGREN	3117	00168692	Apr. 02,21	Apr. 01,22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 26, 20	Aug. 25, 21
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 25,21	Feb. 24,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V 7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
Power Meter	Anritsu	ML2495A	1506002	Apr. 07,21	Apr. 06,22
Power Sensor	Anritsu	MA2411B	1339352	May. 07,21	May. 06,22
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 02,21	Jun. 01,22
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 05,21	Mar. 04,22
Power Divider	MCLI/USA	PS2-15	24880	N/A	N/A

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

## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	BL28RW-RD1	
<b>BRAND NAME</b>	Continental	
<b>MODEL NAME</b>	BL28RW-RD1	
<b>NOMINAL VOLTAGE</b>	EUT 4.0V	
<b>MODULATION TECHNOLOGY</b>	<b>WCDMA</b>	BPSK, QPSK
	<b>LTE</b>	QPSK, 16QAM
<b>FREQUENCY RANGE</b>	<b>WCDMA IV</b>	1712.4MHz ~ 1752.6MHz
	<b>LTE Band 4 Channel Bandwidth: 1.4MHz</b>	1710.7MHz ~ 1754.3MHz
	<b>LTE Band 4 Channel Bandwidth: 3MHz</b>	1711.5MHz ~ 1753.5MHz
	<b>LTE Band 4 Channel Bandwidth: 5MHz</b>	1712.5MHz ~ 1752.5MHz
	<b>LTE Band 4 Channel Bandwidth: 10MHz</b>	1715MHz ~ 1750MHz
	<b>LTE Band 4 Channel Bandwidth: 15MHz</b>	1717.5MHz ~ 1747.5 MHz
	<b>LTE Band 4 Channel Bandwidth: 20MHz</b>	1720MHz ~ 1745MHz
	<b>LTE Band 7 Channel Bandwidth: 5MHz</b>	2502.5MHz ~ 2567.5MHz
	<b>LTE Band 7 Channel Bandwidth: 10MHz</b>	2505MHz ~ 2565MHz
	<b>LTE Band 7 Channel Bandwidth: 15MHz</b>	2507.5MHz ~ 2562.5MHz
	<b>LTE Band 7 Channel Bandwidth: 20MHz</b>	2510MHz ~ 2560MHz

<b>EMISSION DESIGNATOR</b>	<b>WCDMA IV</b>	4M15F9W
	<b>LTE Band 4 Channel Bandwidth: 1.4MHz</b>	QPSK: 1M09G7D 16QAM: 1M09W7D
	<b>LTE Band 4 Channel Bandwidth: 3MHz</b>	QPSK: 2M69G7D 16QAM: 2M69W7D
	<b>LTE Band 4 Channel Bandwidth: 5MHz</b>	QPSK: 4M48G7D 16QAM: 4M47W7D
	<b>LTE Band 4 Channel Bandwidth: 10MHz</b>	QPSK: 8M94G7D 16QAM: 8M96W7D
	<b>LTE Band 4 Channel Bandwidth: 15MHz</b>	QPSK: 13M41G7D 16QAM: 13M41W7D
	<b>LTE Band 4 Channel Bandwidth: 20MHz</b>	QPSK: 17M89G7D 16QAM: 17M84W7D
	<b>LTE Band 7 Channel Bandwidth: 5MHz</b>	QPSK: 4M47G7D 16QAM: 4M47W7D
	<b>LTE Band 7 Channel Bandwidth: 10MHz</b>	QPSK: 8M95G7D 16QAM: 8M95W7D
	<b>LTE Band 7 Channel Bandwidth: 15MHz</b>	QPSK: 13M43G7D 16QAM: 13M41W7D
	<b>LTE Band 7 Channel Bandwidth: 20MHz</b>	QPSK: 17M87G7D 16QAM: 17M83W7D



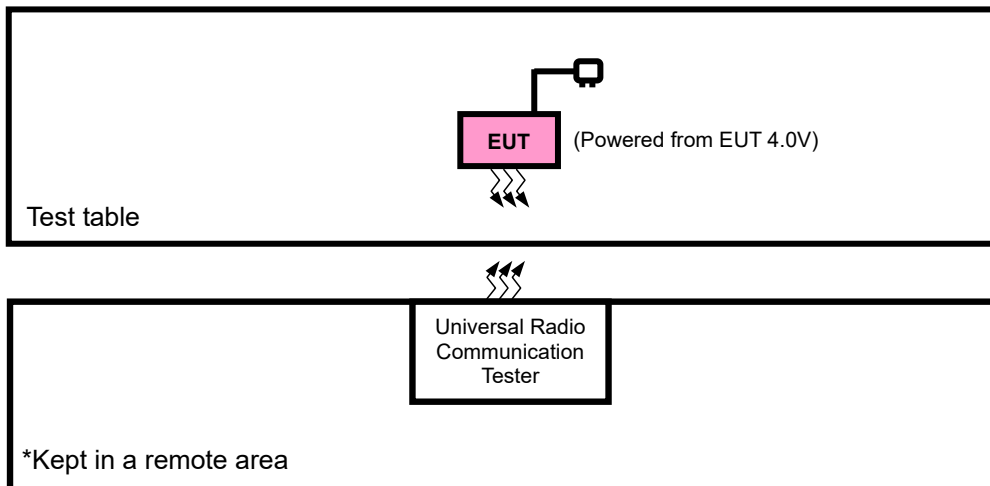
<b>MAX. EIRP POWER</b>	<b>WCDMA IV</b>	150.66mW	
	<b>LTE Band 4 Channel Bandwidth: 1.4MHz</b>	263.63mW	
	<b>LTE Band 4 Channel Bandwidth: 3MHz</b>	264.85mW	
	<b>LTE Band 4 Channel Bandwidth: 5MHz</b>	265.46mW	
	<b>LTE Band 4 Channel Bandwidth: 10MHz</b>	263.63mW	
	<b>LTE Band 4 Channel Bandwidth: 15MHz</b>	267.92mW	
	<b>LTE Band 4 Channel Bandwidth: 20MHz</b>	268.53mW	
	<b>LTE Band 7 Channel Bandwidth: 5MHz</b>	460.26mW	
	<b>LTE Band 7 Channel Bandwidth: 10MHz</b>	460.26mW	
	<b>LTE Band 7 Channel Bandwidth: 15MHz</b>	458.14mW	
	<b>LTE Band 7 Channel Bandwidth: 20MHz</b>	462.38mW	
	<b>ANTENNA TYPE</b>	Dipole Antenna with 3.35dBi gain for LTE B7 Dipole Antenna with 0.68dBi gain for WCDMA IV & LTE B4	
	<b>HW VERSION</b>	P4.0	
<b>SW VERSION</b>	MODEM9x28_64.01.15		
<b>I/O PORTS</b>	Refer to user's manual		
<b>CABLE SUPPLIED</b>	N/A		
<b>EXTREME TEMPERATURE</b>	-30-75 °C		
<b>EXTREME VOLTAGE</b>	EUT 3.8V - EUT 4.2V		

**NOTE:**

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

## 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 1.0m

## 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/B	EUT + DC Source with GSM or WCDMA or LTE link

### WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
B	EIRP	1312 to 1513	1312, 1413, 1513	WCDMA
B	FREQUENCY STABILITY	1312 to 1513	1312, 1513	WCDMA
B	OCCUPIED BANDWIDTH	1312 to 1513	1312, 1413, 1513	WCDMA
B	BAND EDGE	1312 to 1513	1312, 1513	WCDMA
B	PEAK TO AVERAGE RATIO	1312 to 1513	1312, 1413, 1513	WCDMA
B	CONDCUETED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA
A	RADIATED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA



Test Report No.: W7L-P20210616-2RF06

LTE BAND 4

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	19957 to 20393	18607, 20175, 19193	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
B	FREQUENCY STABILITY	19957 to 20393	18607, 19193	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965, 20385	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975, 20375	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000, 20350	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025, 20325	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050, 20300	20MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	19957 to 20393	18607, 20175, 19193	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK,16QAM	15 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK,16QAM	25 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK,16QAM	50 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK,16QAM	75 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK,16QAM	100 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	19957 to 20393	18607, 20175, 19193	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
B	BAND EDGE	19957 to 20393	18607	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset
			19193	1.4MHz	QPSK,16QAM	1 RB / 5 RB Offset 6 RB / 0 RB Offset
		19965 to 20385	20000	3MHz	QPSK,16QAM	1 RB / 0 RB Offset 15 RB / 0 RB Offset
			20350	3MHz	QPSK,16QAM	1 RB / 14 RB Offset 15 RB / 0 RB Offset
		19965 to 20385	19975	5MHz	QPSK,16QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
			20375	5MHz	QPSK,16QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset
		20000 to 20350	20000	10MHz	QPSK,16QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
			20350	10MHz	QPSK,16QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset
		20000 to 20350	20025	15MHz	QPSK,16QAM	1 RB / 0 RB Offset 75 RB / 0 RB Offset
			20325	15MHz	QPSK,16QAM	1 RB / 74 RB Offset 75 RB / 0 RB Offset
		20000 to 20350	20050	20MHz	QPSK,16QAM	1 RB / 0 RB Offset



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**Test Report No.: W7L-P20210616-2RF06**

						100 RB / 0 RB Offset
			20300	20MHz	QPSK,16QAM	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
B	CONDCUDED EMISSION	19957 to 20393	18607, 20175, 19193	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.



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**Test Report No.: W7L-P20210616-2RF06**

**LTE BAND 7**

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	1 RB / 0RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	20775 to 21425	20775, 21425	5MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	20800, 21400	10MHz	QPSK	1 RB / 0RB Offset
		20825 to 21375	20825, 21375	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21350	20MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	100 RB / 0 RB Offset
B	BAND EDGE	20775 to 21425	20775	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
			21425	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset 1 RB / 24 RB Offset
		20800 to 21400	20800	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
			21400	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset 1 RB / 49 RB Offset
		20825 to 21375	20825	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
			21375	15MHz	QPSK, 16QAM	75 RB / 0 RB Offset 1 RB / 74 RB Offset
		20850 to 21350	20850	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
			21350	20MHz	QPSK, 16QAM	100 RB / 0 RB Offset 1 RB / 99 RB Offset



**Test Report No.: W7L-P20210616-2RF06**

B	CONDCUDE TED EMISSION	20775 to 21425	20775, 21100, 21425	5MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK	1 RB / 0RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	20775 to 21425	21100	5MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK	1 RB / 0RB Offset
		20825 to 21375	21100	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	21100	20MHz	QPSK	1 RB / 0 RB Offset

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



Test Report No.: W7L-P20210616-2RF06

**TEST CONDITION:**

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP/EIRP	23deg. C, 70%RH	EUT 4.0V	Star Le
FREQUENCY STABILITY	23deg. C, 70%RH	EUT 4.0V	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	Star Le





Test Report No.: W7L-P20210616-2RF06

## 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  $P_{\text{Meas}}$ , typically dBW or dBm);

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

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

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

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

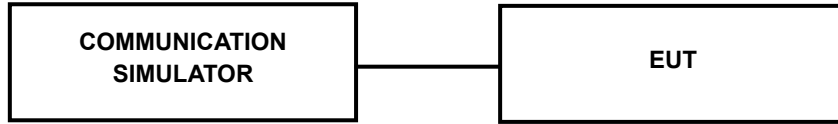
- a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.



Test Report No.: W7L-P20210616-2RF06

### 3.1.3 TEST SETUP

#### CONDUCTED POWER MEASUREMENT:



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



Test Report No.: W7L-P20210616-2RF06

### 3.1.4 TEST RESULTS

#### AVERAGE CONDUCTED OUTPUT POWER (dBm)

Band	WCDMA IV		
	1312	1413	1513
Channel	1712.4	1732.6	1752.6
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	23.25	23.14	23.17
HSDPA Subtest-1	22.36	22.24	22.23
HSDPA Subtest-2	22.29	22.19	22.25
HSDPA Subtest-3	21.90	21.78	21.76
HSDPA Subtest-4	21.81	21.73	21.75
HSUPA Subtest-1	22.34	22.21	22.29
HSUPA Subtest-2	20.33	20.23	20.23
HSUPA Subtest-3	21.38	21.23	21.27
HSUPA Subtest-4	20.32	20.27	20.23
HSUPA Subtest-5	22.38	22.23	22.27

LTE Band 4

Band/BW	Modulation	RB Size	RB Offset	Low CH 19957	Mid CH 20175	High CH 20393	MPR
				Frequency 1710.7 MHz	Frequency 1732.5 MHz	Frequency 1754.3 MHz	
4/ 1.4	QPSK	1	0	23.53	23.41	23.44	0
		1	2	23.43	23.28	23.37	0
		1	5	23.44	23.27	23.34	0
		3	0	23.37	23.23	23.41	0
		3	1	23.46	23.31	23.30	0
		3	3	23.26	23.11	23.26	0
	16QAM	6	0	22.40	22.19	22.32	1
		1	0	22.01	21.88	21.93	1
		1	2	22.09	21.89	22.06	1
		1	5	22.14	22.02	22.16	1
		3	0	22.30	22.10	22.25	1
		3	1	22.22	22.20	22.23	1
		3	3	22.27	22.10	22.26	1
		6	0	21.30	21.17	21.19	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 19965	Mid CH 20175	High CH 20385	MPR
				Frequency 1711.5 MHz	Frequency 1732.5 MHz	Frequency 1753.5 MHz	
4/ 3	QPSK	1	0	23.55	23.43	23.43	0
		1	7	23.39	23.29	23.37	0
		1	14	23.40	23.27	23.34	0
		8	0	22.36	22.26	22.41	1
		8	3	22.39	22.31	22.32	1
		8	7	22.23	22.18	22.30	1
		15	0	22.37	22.20	22.26	1
	16QAM	1	0	21.98	21.94	21.96	1
		1	7	22.06	21.92	22.04	1
		1	14	22.17	22.02	22.16	1
		8	0	21.26	21.11	21.25	2
		8	3	21.27	21.15	21.26	2
		8	7	21.29	21.08	21.22	2
		15	0	21.30	21.11	21.22	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 19975	Mid CH 20175	High CH 20375	MPR
				Frequency 1712.5 MHz	Frequency 1732.5 MHz	Frequency 1752.5 MHz	
4/ 5	QPSK	1	0	23.56	23.38	23.44	0
		1	12	23.44	23.26	23.37	0
		1	24	23.41	23.26	23.38	0
		12	0	22.39	22.26	22.38	1
		12	6	22.39	22.32	22.33	1
		12	13	22.27	22.14	22.31	1
		25	0	22.35	22.23	22.29	1
	16QAM	1	0	21.99	21.90	21.96	1
		1	12	22.03	21.95	22.03	1
		1	24	22.17	22.02	22.15	1
		12	0	21.26	21.09	21.22	2
		12	6	21.24	21.19	21.22	2
		12	13	21.24	21.10	21.25	2
		25	0	21.30	21.12	21.19	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 20000	Mid CH 20175	High CH 20350	MPR
				Frequency 1715 MHz	Frequency 1732.5 MHz	Frequency 1750 MHz	
4/ 10	QPSK	1	0	23.53	23.41	23.44	0
		1	24	23.44	23.26	23.38	0
		1	49	23.38	23.30	23.34	0
		25	0	22.40	22.25	22.41	1
		25	12	22.45	22.26	22.33	1
		25	25	22.25	22.11	22.30	1
		50	0	22.40	22.23	22.26	1
	16QAM	1	0	21.99	21.87	21.92	1
		1	24	22.08	21.91	22.06	1
		1	49	22.17	22.03	22.12	1
		25	0	21.28	21.07	21.28	2
		25	12	21.28	21.13	21.27	2
		25	25	21.23	21.11	21.22	2
		50	0	21.34	21.11	21.23	2



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**Test Report No.: W7L-P20210616-2RF06**

Band/BW	Modulation	RB Size	RB Offset	Low CH 20025	Mid CH 20175	High CH 20325	MPR
				Frequency 1717.5 MHz	Frequency 1732.5 MHz	Frequency 1747.5 MHz	
4/ 15	QPSK	1	0	23.60	23.41	23.41	0
		1	37	23.42	23.31	23.33	0
		1	74	23.44	23.33	23.35	1
		36	0	22.37	22.26	22.42	1
		36	19	22.46	22.31	22.33	1
		36	39	22.23	22.12	22.30	1
		75	0	22.40	22.21	22.31	1
	16QAM	1	0	22.03	21.94	21.92	1
		1	37	22.07	21.92	22.06	1
		1	74	22.13	22.08	22.14	2
		36	0	21.32	21.07	21.29	2
		36	19	21.22	21.17	21.23	2
		36	39	21.28	21.09	21.25	2
		75	0	21.35	21.14	21.16	0

Band/BW	Modulation	RB Size	RB Offset	Low CH 20050	Mid CH 20175	High CH 20300	MPR
				Frequency 1720 MHz	Frequency 1732.5 MHz	Frequency 1745 MHz	
4/ 20	QPSK	1	0	<b>23.61</b>	23.45	23.49	0
		1	50	23.46	23.34	23.39	0
		1	99	23.46	23.34	23.39	0
		50	0	22.43	22.31	22.43	1
		50	25	22.47	22.33	22.38	1
		50	50	22.31	22.19	22.32	1
		100	0	22.41	22.25	22.34	1
	16QAM	1	0	22.06	21.95	21.98	1
		1	50	22.11	21.97	22.08	1
		1	99	22.19	22.10	22.17	1
		50	0	21.34	21.15	21.30	2
		50	25	21.30	21.21	21.28	2
		50	50	21.31	21.15	21.27	2
		100	0	21.36	21.19	21.24	2

LTE Band 7

Band/BW	Modulation	RB Size	RB Offset	Low CH 20775	Mid CH 21100	High CH 21425	MPR
				Frequency 2502.5 MHz	Frequency 2535 MHz	Frequency 2567.5 MHz	
7/5	QPSK	1	0	23.20	23.07	23.01	0
		1	12	23.28	23.15	23.14	0
		1	24	23.13	23.03	23.03	0
		12	0	22.18	22.10	22.10	1
		12	6	22.16	22.14	22.03	1
		12	13	22.14	22.06	22.11	1
		25	0	22.14	22.07	22.01	1
	16QAM	1	0	21.95	21.91	21.85	1
		1	12	21.99	21.96	21.92	1
		1	24	22.00	21.90	21.91	1
		12	0	21.09	20.97	20.98	2
		12	6	21.05	21.05	20.96	2
		12	13	21.08	20.99	21.02	2
		25	0	21.09	20.96	20.91	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 20800	Mid CH 21100	High CH 21400	MPR
				Frequency 2505 MHz	Frequency 2535 MHz	Frequency 2565 MHz	
7/10	QPSK	1	0	23.17	23.10	23.01	0
		1	24	23.28	23.15	23.15	0
		1	49	23.10	23.07	22.99	0
		25	0	22.19	22.09	22.13	1
		25	12	22.22	22.08	22.03	1
		25	25	22.12	22.03	22.10	1
		50	0	22.19	22.07	21.98	1
	16QAM	1	0	21.95	21.88	21.81	1
		1	24	22.04	21.92	21.95	1
		1	49	22.00	21.91	21.88	1
		25	0	21.11	20.95	21.04	2
		25	12	21.09	20.99	21.01	2
		25	25	21.07	21.00	20.99	2
		50	0	21.13	20.95	20.95	2





Test Report No.: W7L-P20210616-2RF06

Band/BW	Modulation	RB Size	RB Offset	Low CH 20825	Mid CH 21100	High CH 21375	MPR
				Frequency 2507.5 MHz	Frequency 2535 MHz	Frequency 2562.5 MHz	
7/ 15	QPSK	1	0	23.24	23.10	22.98	0
		1	37	23.26	23.20	23.10	0
		1	74	23.16	23.10	23.00	0
		36	0	22.16	22.10	22.14	1
		36	19	22.23	22.13	22.03	1
		36	39	22.10	22.04	22.10	1
		75	0	22.19	22.05	22.03	1
	16QAM	1	0	21.99	21.95	21.81	1
		1	37	22.03	21.93	21.95	1
		1	74	21.96	21.96	21.90	1
		36	0	21.15	20.95	21.05	2
		36	19	21.03	21.03	20.97	2
		36	39	21.12	20.98	21.02	2
		75	0	21.14	20.98	20.88	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 20850	Mid CH 21100	High CH 21350	MPR
				Frequency 2510 MHz	Frequency 2535 MHz	Frequency 2560 MHz	
7/ 20	QPSK	1	0	23.25	23.14	23.06	0
		1	50	<b>23.30</b>	23.23	23.16	0
		1	99	23.18	23.11	23.04	0
		50	0	22.22	22.15	22.15	1
		50	25	22.24	22.15	22.08	1
		50	50	22.18	22.11	22.12	1
		100	0	22.20	22.09	22.06	1
	16QAM	1	0	22.02	21.96	21.87	1
		1	50	22.07	21.98	21.97	1
		1	99	22.02	21.98	21.93	1
		50	0	21.17	21.03	21.06	2
		50	25	21.11	21.07	21.02	2
		50	50	21.15	21.04	21.04	2
		100	0	21.15	21.03	20.96	2



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Test Report No.: W7L-P20210616-2RF06

EIRP

WCDMA IV

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
1312	1712.4	23.25	0.68	23.93	247.17	1
1413	1732.6	23.14	0.68	23.82	240.99	1
1513	1752.6	23.17	0.68	23.85	242.66	1

LTE BAND 4

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	23.53	0.68	24.21	263.63	1
20175	1732.5	23.41	0.68	24.09	256.45	1
20393	1754.3	23.44	0.68	24.12	258.23	1

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	22.30	0.68	22.98	198.61	1
20175	1732.5	22.20	0.68	22.88	194.09	1
20393	1754.3	22.26	0.68	22.94	196.79	1

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	23.55	0.68	24.23	264.85	1
20175	1732.5	23.43	0.68	24.11	257.63	1
20385	1753.5	23.43	0.68	24.11	257.63	1

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	22.17	0.68	22.85	192.75	1
20175	1732.5	22.02	0.68	22.70	186.21	1
20385	1753.5	21.22	0.68	21.90	154.88	1



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Test Report No.: W7L-P20210616-2RF06

**CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	23.56	0.68	24.24	265.46	1
20175	1732.5	23.38	0.68	24.06	254.68	1
20375	1752.5	23.44	0.68	24.12	258.23	1

**CHANNEL BANDWIDTH: 5MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	22.17	0.68	22.85	192.75	1
20175	1732.5	22.02	0.68	22.70	186.21	1
20375	1752.5	22.15	0.68	22.83	191.87	1

**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	23.53	0.68	24.21	263.63	1
20175	1732.5	23.41	0.68	24.09	256.45	1
20350	1750	23.44	0.68	24.12	258.23	1

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	22.17	0.68	22.85	192.75	1
20175	1732.5	22.03	0.68	22.71	186.64	1
20350	1750	22.12	0.68	22.80	190.55	1

**CHANNEL BANDWIDTH: 15MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	23.6	0.68	24.28	267.92	1
20175	1732.5	23.41	0.68	24.09	256.45	1
20325	1747.5	23.41	0.68	24.09	256.45	1

**CHANNEL BANDWIDTH: 15MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	22.13	0.68	22.81	190.99	1
20175	1732.5	22.08	0.68	22.76	188.80	1
20325	1747.5	22.14	0.68	22.82	191.43	1

**CHANNEL BANDWIDTH: 20MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	23.61	0.68	24.29	268.53	1
20175	1732.5	23.45	0.68	24.13	258.82	1
20300	1745	23.49	0.68	24.17	261.22	1

**CHANNEL BANDWIDTH: 20MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	22.19	0.68	22.87	193.64	1
20175	1732.5	22.10	0.68	22.78	189.67	1
20300	1745	22.17	0.68	22.85	192.75	1

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



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Test Report No.: W7L-P20210616-2RF06

**LTE BAND 7**

**CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20775	2502.5	23.28	3.35	26.63	460.26	2
21100	2535.0	23.15	3.35	26.50	446.68	2
21425	2567.5	23.14	3.35	26.49	445.66	2

**CHANNEL BANDWIDTH: 5MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20775	2502.5	22.00	3.35	25.35	342.77	2
21100	2535.0	21.96	3.35	25.31	339.63	2
21425	2567.5	21.92	3.35	25.27	336.51	2

**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20800	2505.0	23.28	3.35	26.63	460.26	2
21100	2535.0	23.15	3.35	26.50	446.68	2
21400	2565.0	23.15	3.35	26.50	446.68	2

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20800	2505.0	22.04	3.35	25.39	345.94	2
21100	2535.0	21.92	3.35	25.27	336.51	2
21400	2565.0	21.95	3.35	25.30	338.84	2



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Test Report No.: W7L-P20210616-2RF06

**CHANNEL BANDWIDTH: 15MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20825	2507.5	23.26	3.35	26.61	458.14	2
21100	2535.0	23.20	3.35	26.55	451.86	2
21375	2562.5	23.10	3.35	26.45	441.57	2

**CHANNEL BANDWIDTH: 15MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20825	2507.5	22.03	3.35	25.38	345.14	2
21100	2535.0	21.96	3.35	25.31	339.63	2
21375	2562.5	21.95	3.35	25.30	338.84	2

**CHANNEL BANDWIDTH: 20MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20850	2510.0	23.30	3.35	26.65	462.38	2
21100	2535.0	23.23	3.35	26.58	454.99	2
21350	2560.0	23.16	3.35	26.51	447.71	2

**CHANNEL BANDWIDTH: 20MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20850	2510.0	22.07	3.35	25.42	348.34	2
21100	2535.0	21.98	3.35	25.33	341.19	2
21350	2560.0	21.97	3.35	25.32	340.41	2

## 3.2 FREQUENCY STABILITY MEASUREMENT

### 3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

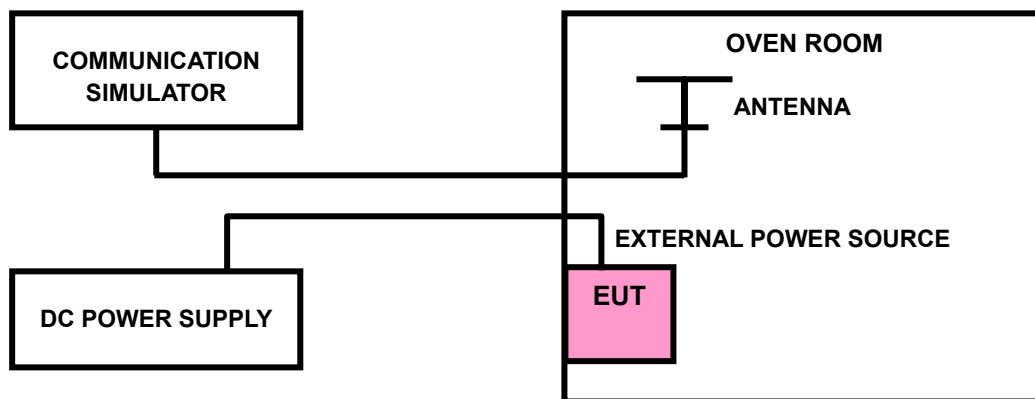
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### 3.2.2 TEST PROCEDURE

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

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

### 3.2.3 TEST SETUP



### 3.2.4 TEST RESULTS

#### WCDMA BAND IV

#### FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
$V_{nor}$	0.0011	0.0020	2.5
$V_{min}$	0.0005	0.0019	2.5
$V_{max}$	0.0026	0.0034	2.5

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

#### FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
-30	-0.0047	-0.0104	2.5
-20	-0.0037	-0.0101	2.5
-10	-0.0032	-0.0023	2.5
0	-0.0021	-0.0011	2.5
10	-0.0005	-0.0003	2.5
20	0.0005	0.0060	2.5
30	0.0011	0.0017	2.5
40	0.0021	0.0037	2.5
50	0.0026	0.0065	2.5
60	0.0047	0.0085	2.5



## LTE BAND 4

### FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
$V_{nor}$	0.002	0.0025	2.5
$V_{min}$	-0.0031	-0.003	2.5
$V_{max}$	0.0021	0.0021	2.5

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

### FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0116	-0.0113	2.5
-20	-0.0106	-0.0109	2.5
-10	-0.0083	-0.0082	2.5
0	-0.0074	-0.0075	2.5
10	-0.0045	-0.0053	2.5
20	-0.0043	-0.0039	2.5
30	-0.0029	-0.0028	2.5
40	-0.0022	-0.0015	2.5
50	-0.0002	-0.0003	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0021	0.0021	2.5
V <sub>min</sub>	-0.0021	-0.0025	2.5
V <sub>max</sub>	0.0018	0.0018	2.5

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

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0117	-0.0112	2.5
-20	-0.0107	-0.0108	2.5
-10	-0.0084	-0.0082	2.5
0	-0.0077	-0.0073	2.5
10	-0.0045	-0.0052	2.5
20	-0.0041	-0.0039	2.5
30	-0.0038	-0.0039	2.5
40	-0.0023	-0.0021	2.5
50	-0.0002	-0.0003	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0022	0.0024	2.5
V <sub>min</sub>	-0.0023	-0.003	2.5
V <sub>max</sub>	0.0021	0.0021	2.5

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

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0115	-0.0111	2.5
-20	-0.0104	-0.0099	2.5
-10	-0.0081	-0.008	2.5
0	-0.0074	-0.0076	2.5
10	-0.0049	-0.0047	2.5
20	-0.0045	-0.0042	2.5
30	-0.0037	-0.0026	2.5
40	-0.0018	-0.0022	2.5
50	-0.0003	-0.0005	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0026	0.0026	2.5
V <sub>min</sub>	-0.0031	-0.003	2.5
V <sub>max</sub>	0.0026	0.0024	2.5

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

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0115	-0.0113	2.5
-20	-0.0107	-0.0107	2.5
-10	-0.0082	-0.0082	2.5
0	-0.0076	-0.0073	2.5
10	-0.0052	-0.0044	2.5
20	-0.0044	-0.0037	2.5
30	-0.0034	-0.0027	2.5
40	-0.0019	-0.0021	2.5
50	-0.0003	-0.0002	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0026	0.0024	2.5
V <sub>min</sub>	-0.0031	-0.003	2.5
V <sub>max</sub>	0.0024	0.0026	2.5

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

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0122	-0.0113	2.5
-20	-0.0111	-0.0099	2.5
-10	-0.0084	-0.0083	2.5
0	-0.0073	-0.0073	2.5
10	-0.0052	-0.0047	2.5
20	-0.0042	-0.0038	2.5
30	-0.0028	-0.003	2.5
40	-0.0016	-0.002	2.5
50	-0.0004	-0.0005	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0025	0.0024	2.5
V <sub>min</sub>	-0.003	-0.003	2.5
V <sub>max</sub>	0.0026	0.0025	2.5

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

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0123	-0.0112	2.5
-20	-0.0101	-0.0106	2.5
-10	-0.0085	-0.0084	2.5
0	-0.0075	-0.0074	2.5
10	-0.0052	-0.0054	2.5
20	-0.0041	-0.0043	2.5
30	-0.0031	-0.0033	2.5
40	-0.0021	-0.0015	2.5
50	-0.0003	-0.0003	2.5

**LTE BAND 7**

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0021	0.0025	2.5
V <sub>min</sub>	-0.0023	-0.003	2.5
V <sub>max</sub>	0.0021	0.0021	2.5

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

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.012	-0.0113	2.5
-20	-0.0103	-0.0098	2.5
-10	-0.0084	-0.0084	2.5
0	-0.0075	-0.0074	2.5
10	-0.0052	-0.0051	2.5
20	-0.0042	-0.0042	2.5
30	-0.0032	-0.0042	2.5
40	-0.0023	-0.0018	2.5
50	-0.0006	-0.0005	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0025	0.0025	2.5
V <sub>min</sub>	-0.0031	-0.003	2.5
V <sub>max</sub>	0.0024	0.0025	2.5

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

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0123	-0.0118	2.5
-20	-0.0103	-0.0104	2.5
-10	-0.0081	-0.008	2.5
0	-0.0077	-0.0076	2.5
10	-0.0045	-0.005	2.5
20	-0.004	-0.0038	2.5
30	-0.003	-0.003	2.5
40	-0.0023	-0.0017	2.5
50	-0.0005	-0.0004	2.5



**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0025	0.0026	2.5
V <sub>min</sub>	-0.0031	-0.003	2.5
V <sub>max</sub>	0.0025	0.0026	2.5

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

**FREQUENCY ERROR vs. TEMPERATURE.**

TEMP. (°C)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.012	-0.0119	2.5
-20	-0.0098	-0.0099	2.5
-10	-0.0083	-0.0084	2.5
0	-0.0077	-0.0075	2.5
10	-0.005	-0.0053	2.5
20	-0.0043	-0.0041	2.5
30	-0.0036	-0.0028	2.5
40	-0.0019	-0.0022	2.5
50	-0.0006	-0.0003	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V <sub>nor</sub>	0.0025	0.0025	2.5
V <sub>min</sub>	-0.0031	-0.003	2.5
V <sub>max</sub>	0.0026	0.0026	2.5

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

**FREQUENCY ERROR vs. TEMPERATURE.**

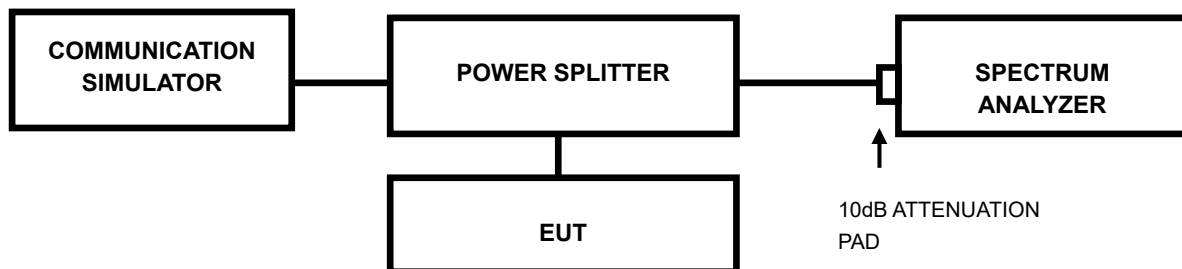
TEMP. (°C)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0115	-0.0116	2.5
-20	-0.0099	-0.01	2.5
-10	-0.0084	-0.0083	2.5
0	-0.0074	-0.0073	2.5
10	-0.0046	-0.0046	2.5
20	-0.0038	-0.0039	2.5
30	-0.0036	-0.0039	2.5
40	-0.0021	-0.0015	2.5
50	-0.0002	-0.0004	2.5

### 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



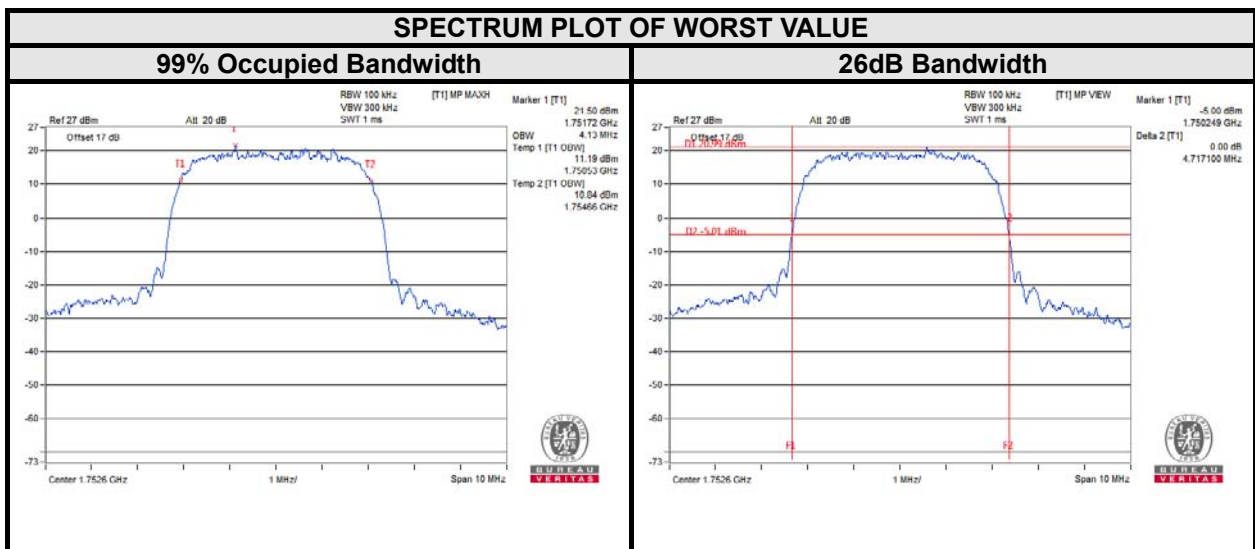
#### 3.3.3 TEST PROCEDURES

- 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

#### WCDMA BAND IV

Channel	FREQ. (MHz)	99% Occupied Bandwidth (MHz)	Channel	FREQ. (MHz)	26dB Bandwidth (MHz)
		WCDMA			WCDMA
1312	1712.40	4.14	1312	1712.40	4.718
1413	1732.60	4.15	1413	1732.60	4.724
1513	1752.60	4.13	1513	1752.60	4.717



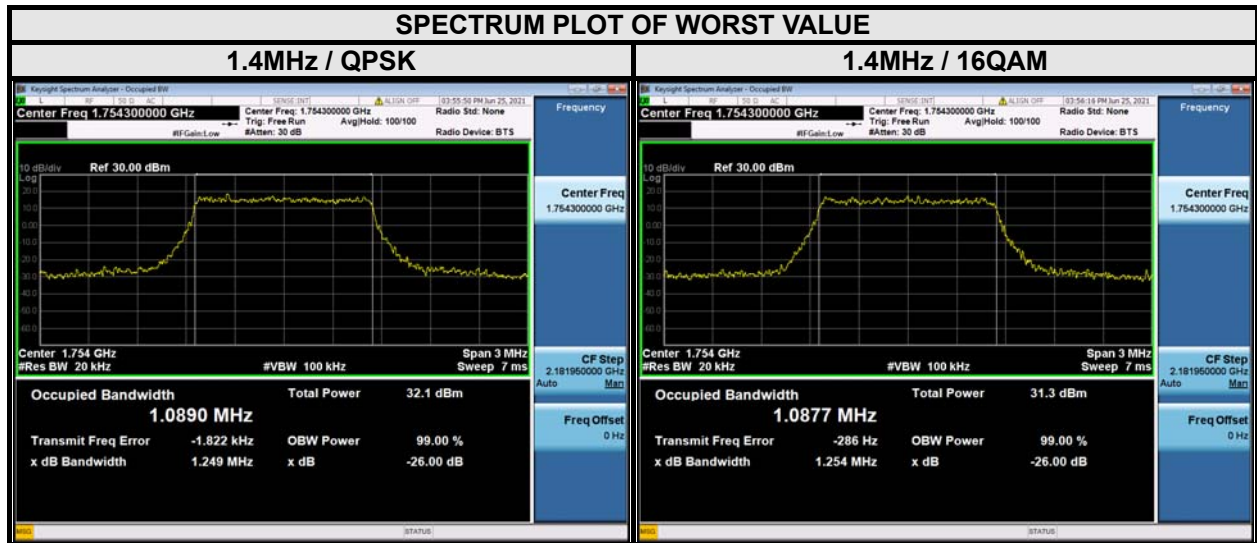


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Test Report No.: W7L-P20210616-2RF06

**LTE BAND 4**

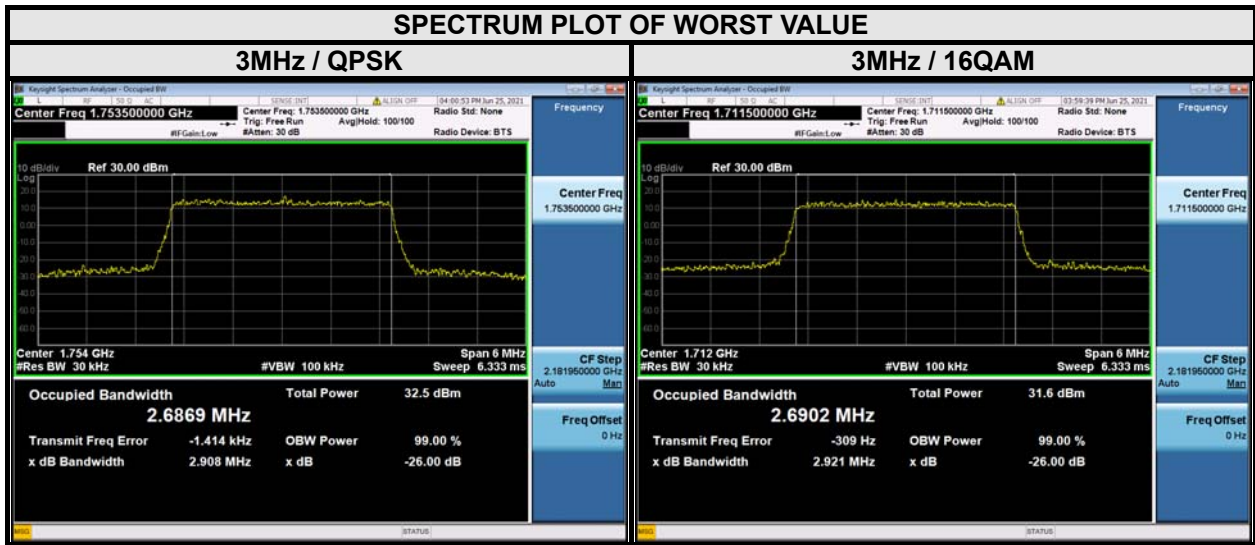
LTE BAND 4					
CHANNEL BANDWIDTH: 1.4MHz					
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		26dB BANDWIDTH (MHz)	
		QPSK	16QAM	QPSK	16QAM
19957	1710.7	1.08	1.08	1.24	1.25
20175	1732.5	1.09	1.08	1.25	1.26
20393	1754.3	1.09	1.09	1.25	1.25



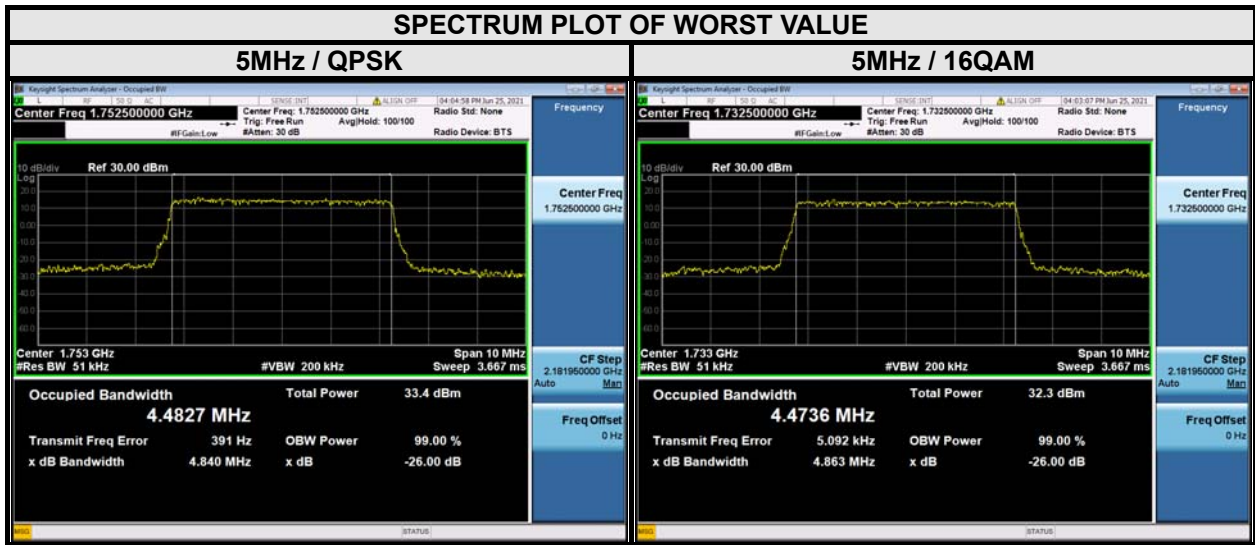


Test Report No.: W7L-P20210616-2RF06

LTE BAND 4					
CHANNEL BANDWIDTH: 3MHz					
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		26dB BANDWIDTH (MHz)	
		QPSK	16QAM	QPSK	16QAM
19965	1711.5	2.67	2.69	2.91	2.92
20175	1732.5	2.69	2.68	2.93	2.91
20385	1753.5	2.69	2.69	2.91	2.93



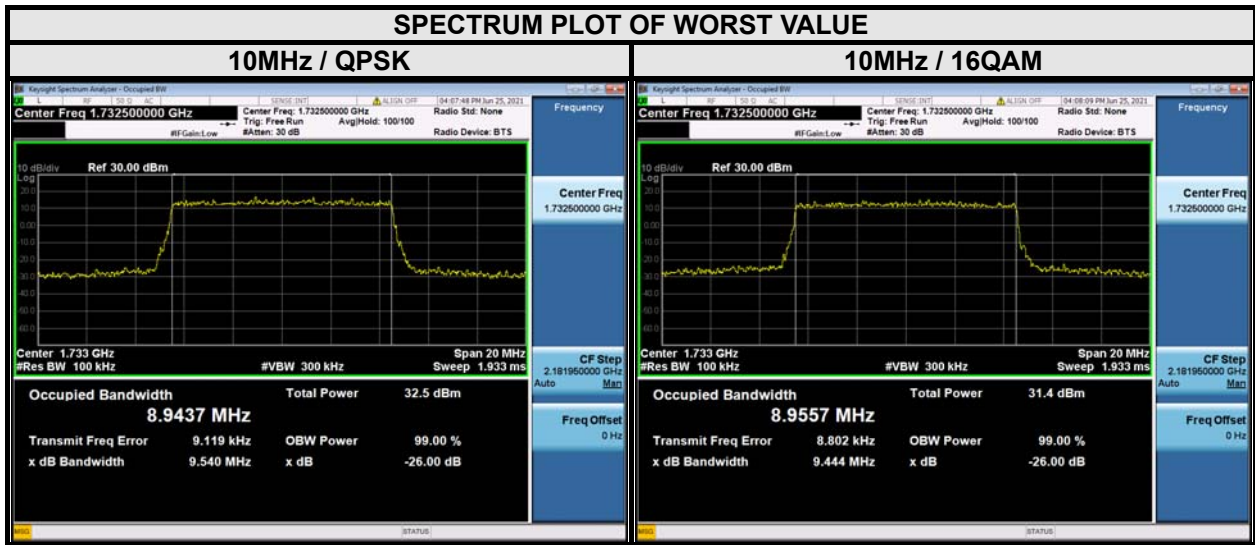
LTE BAND 4					
CHANNEL BANDWIDTH: 5MHz					
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		26dB BANDWIDTH (MHz)	
		QPSK	16QAM	QPSK	16QAM
19975	1712.5	4.47	4.46	4.88	4.92
20175	1732.5	4.47	4.47	4.91	4.86
20375	1752.5	4.48	4.46	4.84	4.89





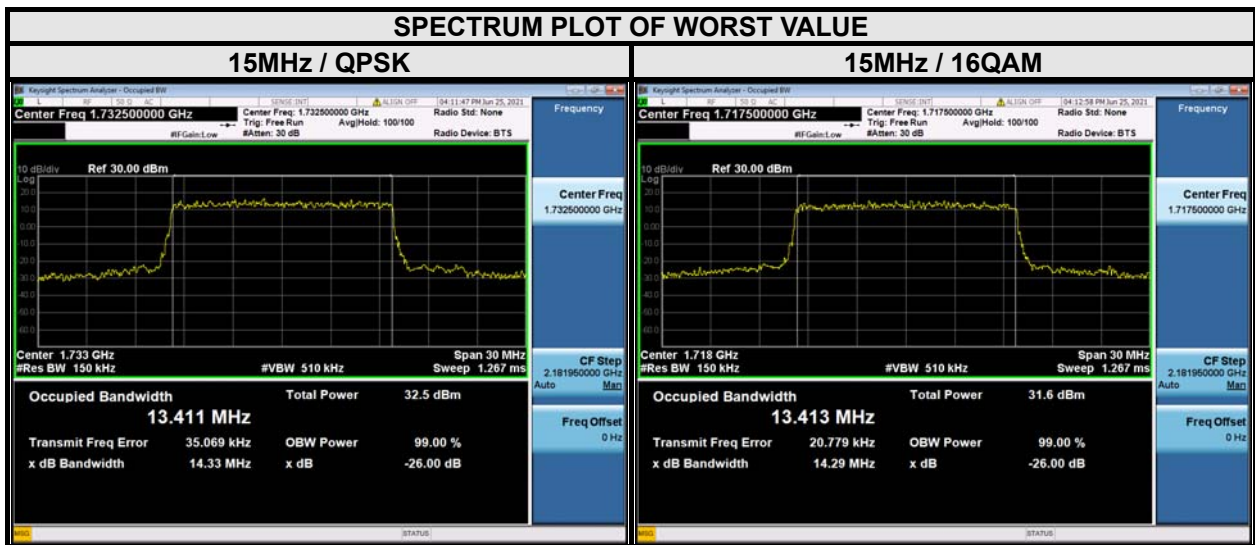
Test Report No.: W7L-P20210616-2RF06

LTE BAND 4					
CHANNEL BANDWIDTH: 10MHz					
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		26dB BANDWIDTH (MHz)	
		QPSK	16QAM	QPSK	16QAM
20000	1715	8.91	8.93	9.56	9.49
20175	1732.5	8.94	8.96	9.54	9.44
20350	1750	8.93	8.92	9.45	9.56





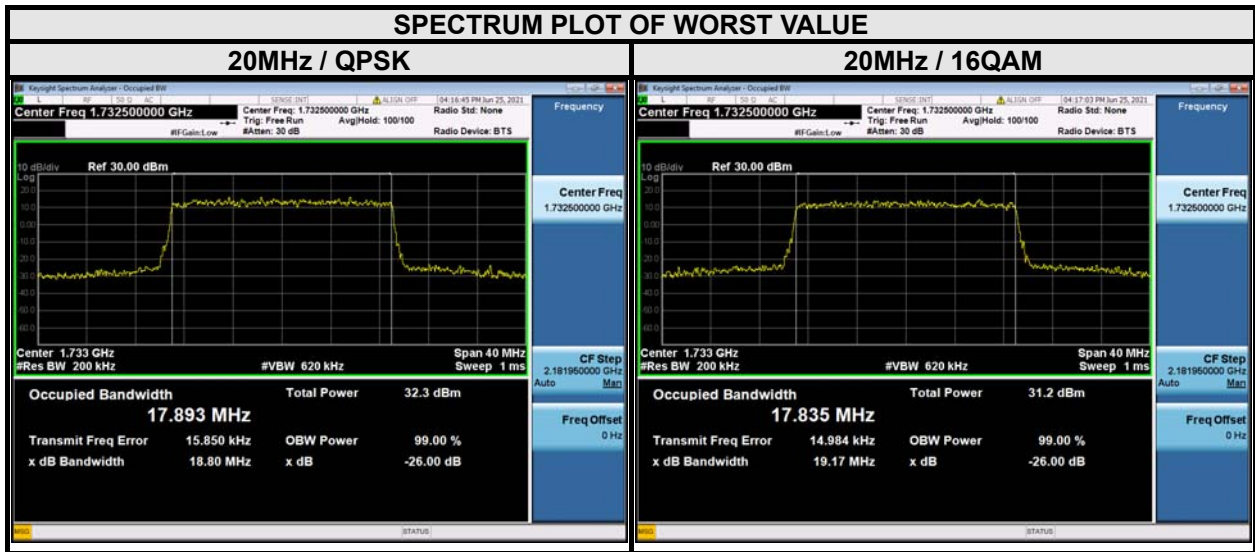
LTE BAND 4					
CHANNEL BANDWIDTH:15MHz					
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		26dB BANDWIDTH (MHz)	
		QPSK	16QAM	QPSK	16QAM
20025	1717.5	13.39	13.41	14.32	14.29
20175	1732.5	13.41	13.39	14.33	14.29
20325	1747.5	13.39	13.38	14.13	14.44



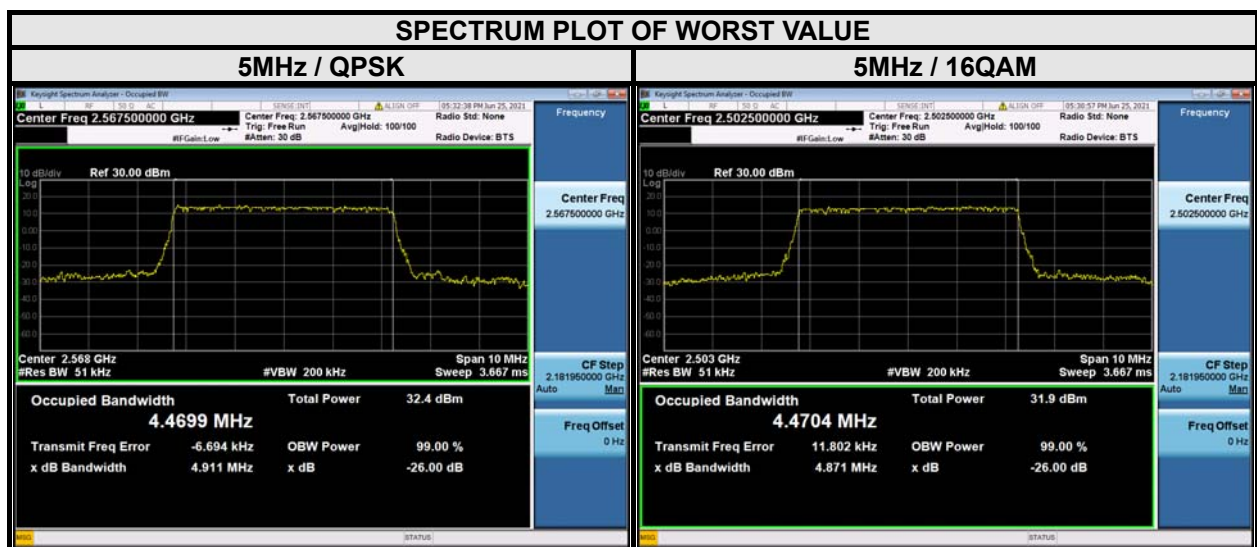


Test Report No.: W7L-P20210616-2RF06

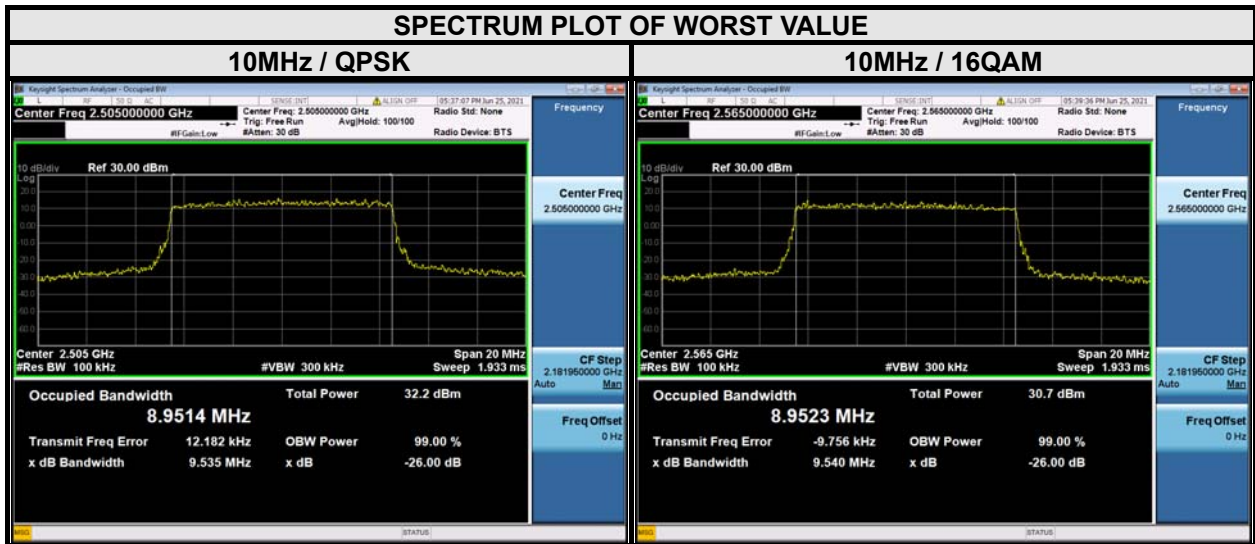
LTE BAND 4					
CHANNEL BANDWIDTH: 20MHz					
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		26dB BANDWIDTH (MHz)	
		QPSK	16QAM	QPSK	16QAM
20050	1720	17.86	17.83	18.71	18.86
20175	1732.5	17.89	17.84	18.80	19.17
20300	1745	17.75	17.80	18.94	18.97



LTE BAND 7					
CHANNEL BANDWIDTH:5MHz					
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		26dB BANDWIDTH (MHz)	
		QPSK	16QAM	QPSK	16QAM
20775	2502.5	4.47	4.47	4.89	4.87
21100	2535	4.46	4.46	4.85	4.88
21425	2567.5	4.47	4.46	4.91	4.90



LTE BAND 7					
CHANNEL BANDWIDTH:10MHz					
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		26dB BANDWIDTH (MHz)	
		QPSK	16QAM	QPSK	16QAM
20800	2505	8.95	8.93	9.54	9.42
21100	2535	8.95	8.94	9.66	9.52
21400	2565	8.95	8.95	9.55	9.54

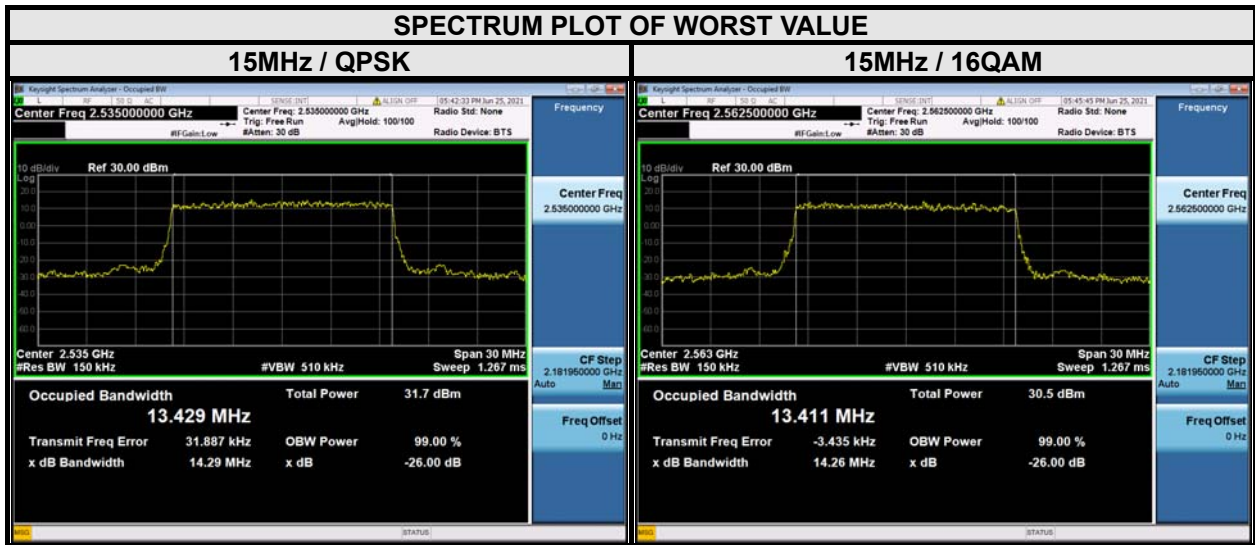




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Test Report No.: W7L-P20210616-2RF06

LTE BAND 7					
CHANNEL BANDWIDTH:15MHz					
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		26dB BANDWIDTH (MHz)	
		QPSK	16QAM	QPSK	16QAM
20825	2507.5	13.40	13.37	14.25	14.17
21100	2535	13.43	13.34	14.29	14.31
21375	2562.5	13.42	13.41	14.12	14.26

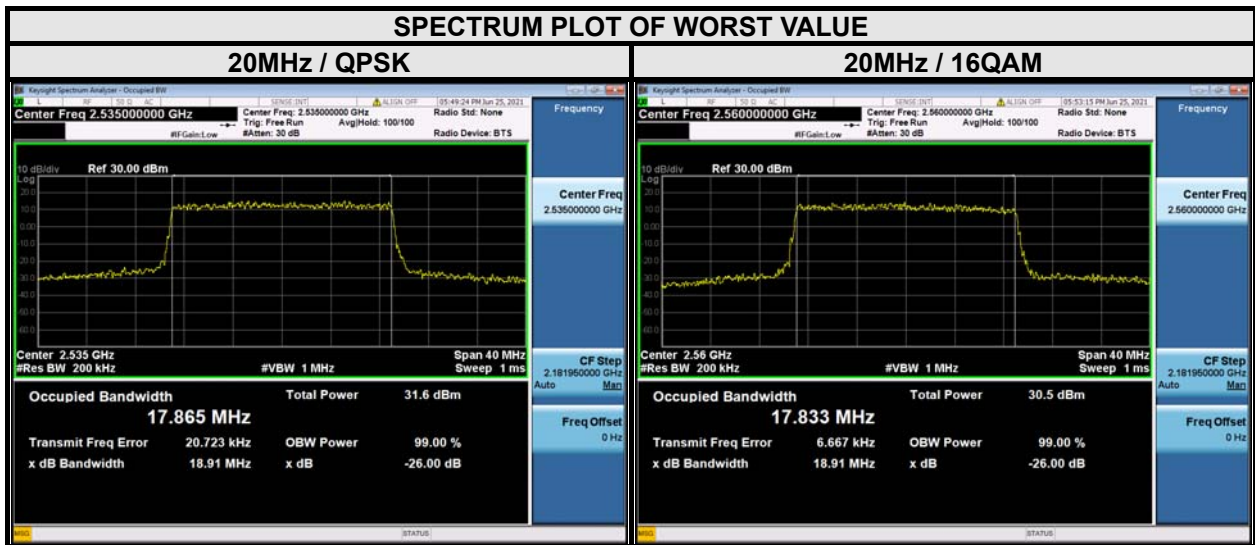




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VERITAS**

Test Report No.: W7L-P20210616-2RF06

LTE BAND 7					
CHANNEL BANDWIDTH:20MHz					
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		26dB BANDWIDTH (MHz)	
		QPSK	16QAM	QPSK	16QAM
20850	2510	17.77	17.76	18.88	18.88
21100	2535	17.87	17.82	18.91	19.03
21350	2560	17.82	17.83	18.64	18.91

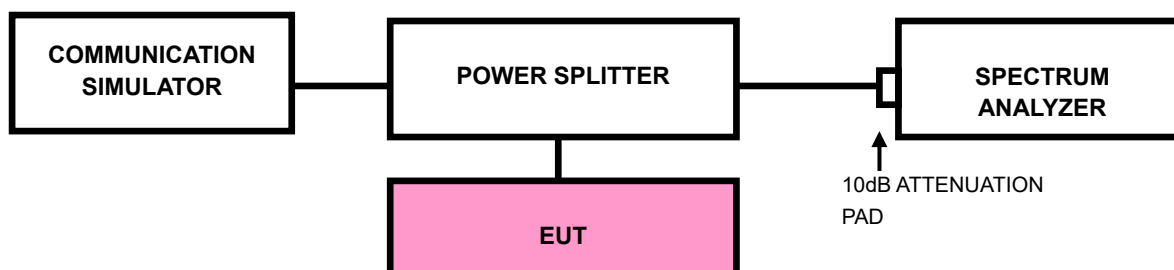


### 3.4 BAND EDGE MEASUREMENT

#### 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. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
- b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. The center frequency of spectrum is the band edge frequency and span is 10MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (WCDMA).
- d. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 20kHz and VBW of the spectrum is 100 kHz. (LTE bandwidth 1.4MHz)
- e. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 30kHz and VBW of the spectrum is 100kHz. (LTE bandwidth 3MHz)
- f. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 50kHz and VBW of the spectrum is 200kHz. (LTE bandwidth 5MHz)
- g. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz. (LTE bandwidth 10MHz)
- h. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 150kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 15MHz)
- i. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 20MHz)
- j. Record the max trace plot into the test report.

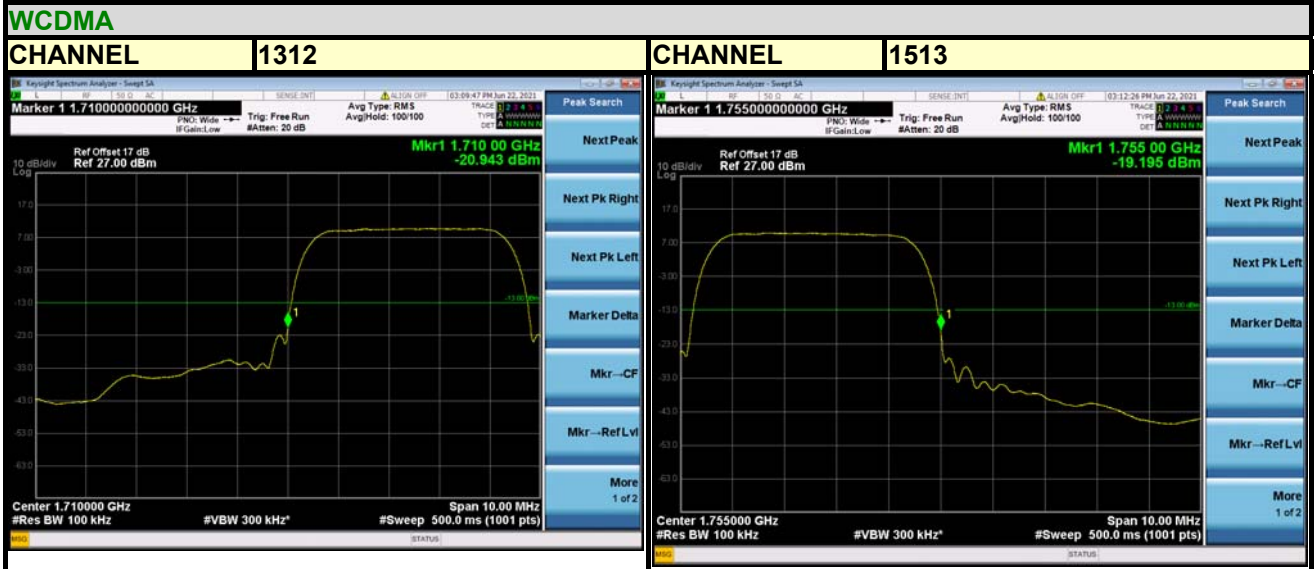




Test Report No.: W7L-P20210616-2RF06

### 3.4.4 TEST RESULTS

#### WCDMA BAND 4





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Test Report No.: W7L-P20210616-2RF06





BUREAU VERITAS

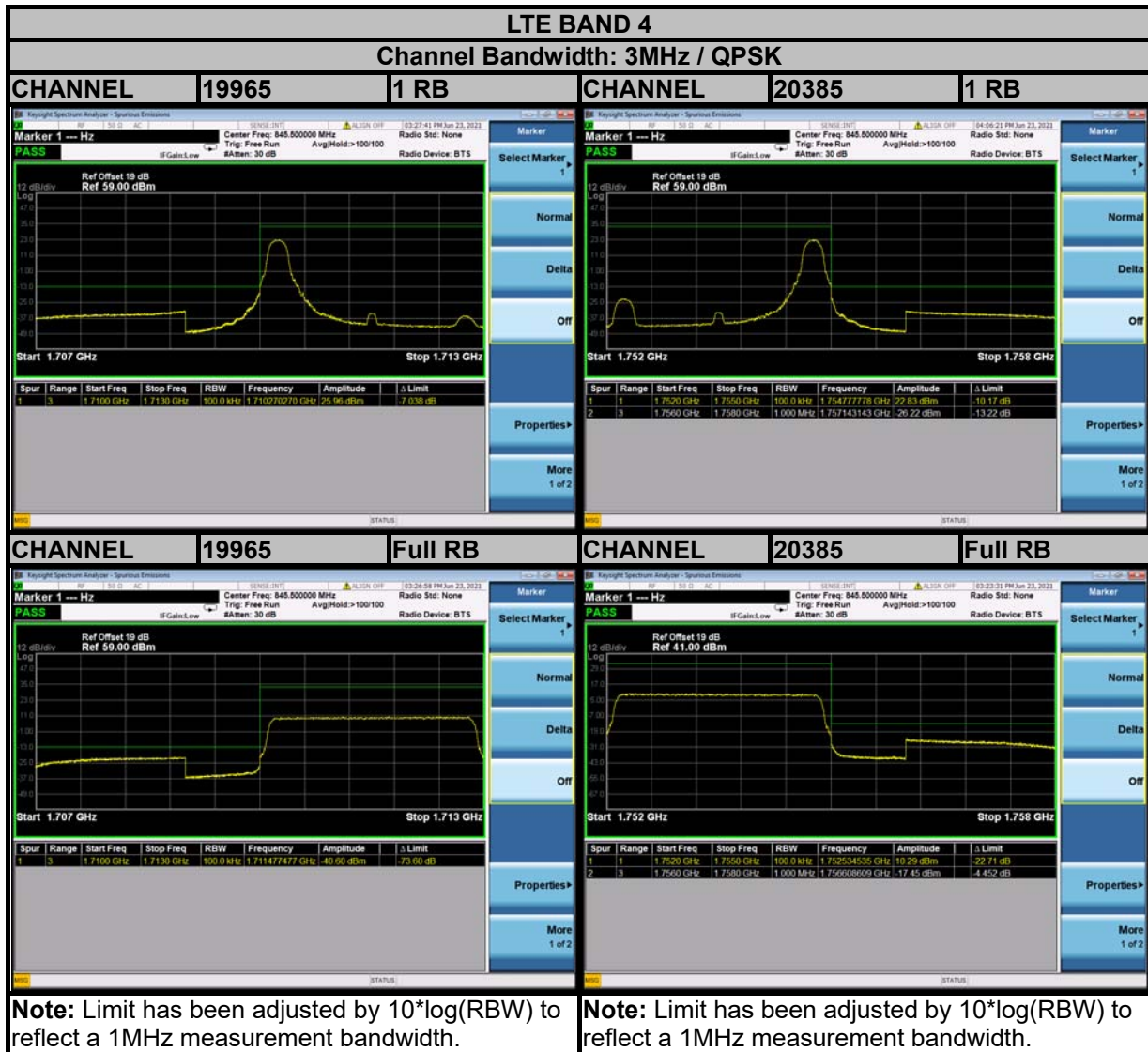
Test Report No.: W7L-P20210616-2RF06

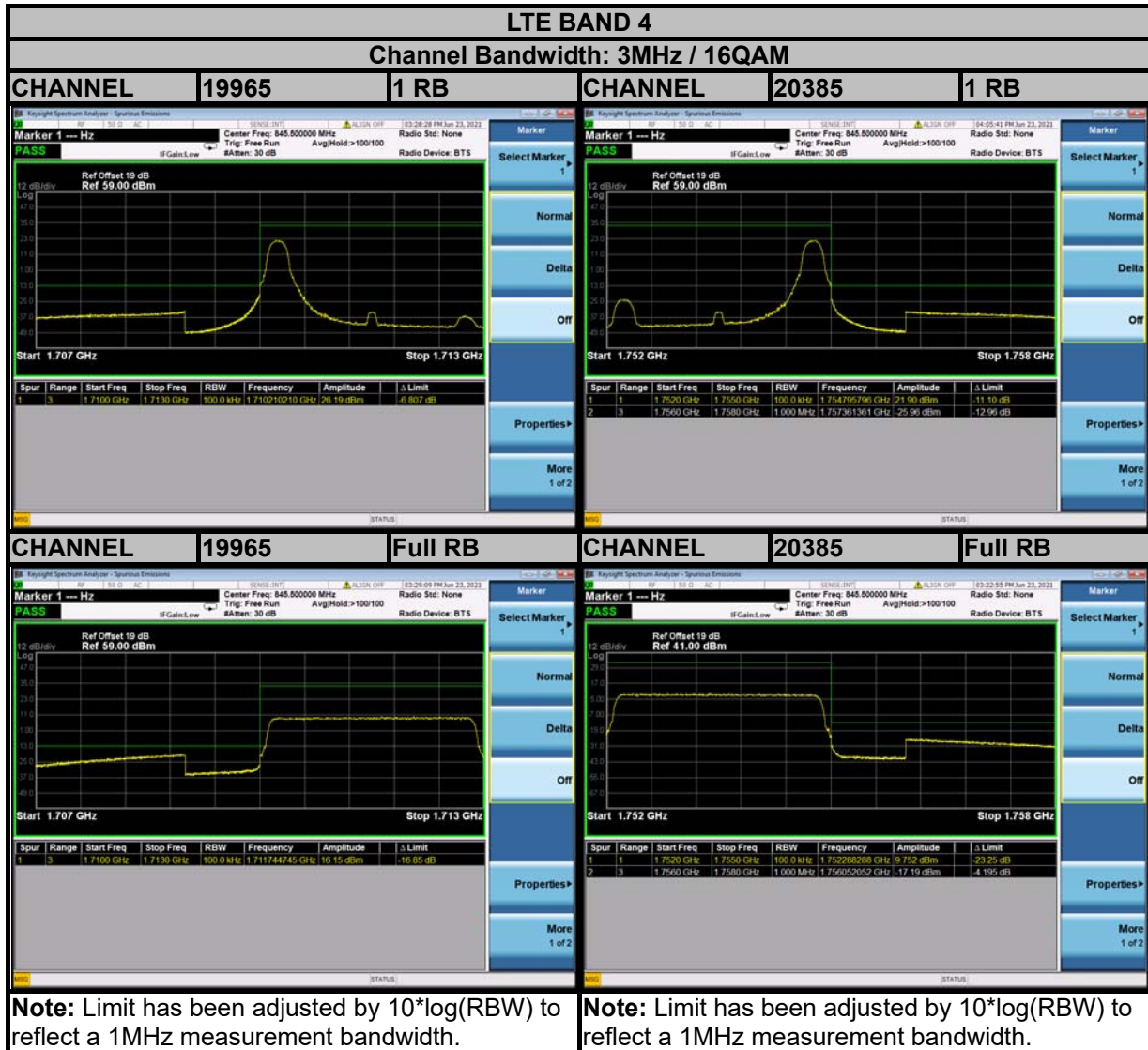




BUREAU VERITAS

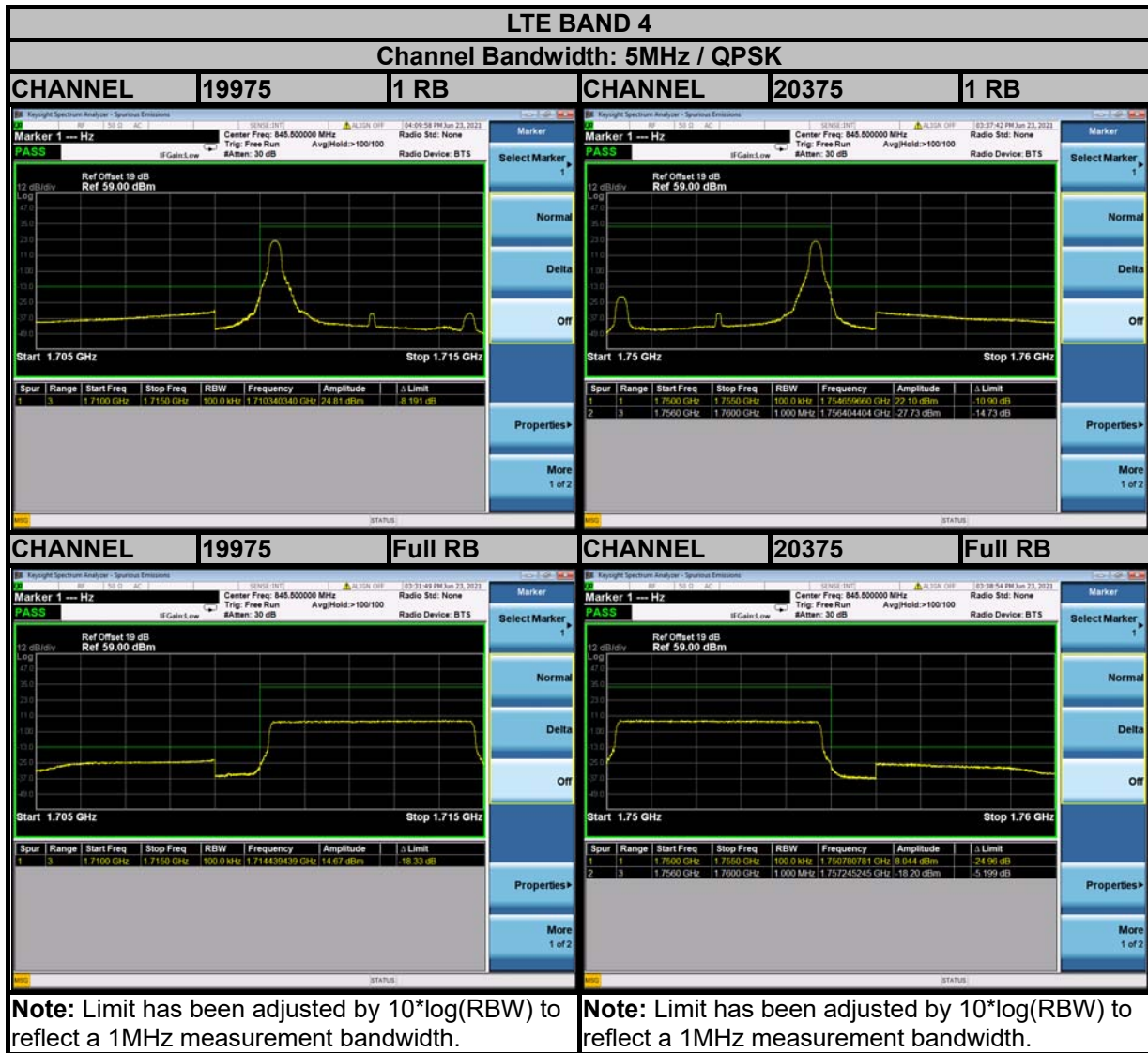
Test Report No.: W7L-P20210616-2RF06







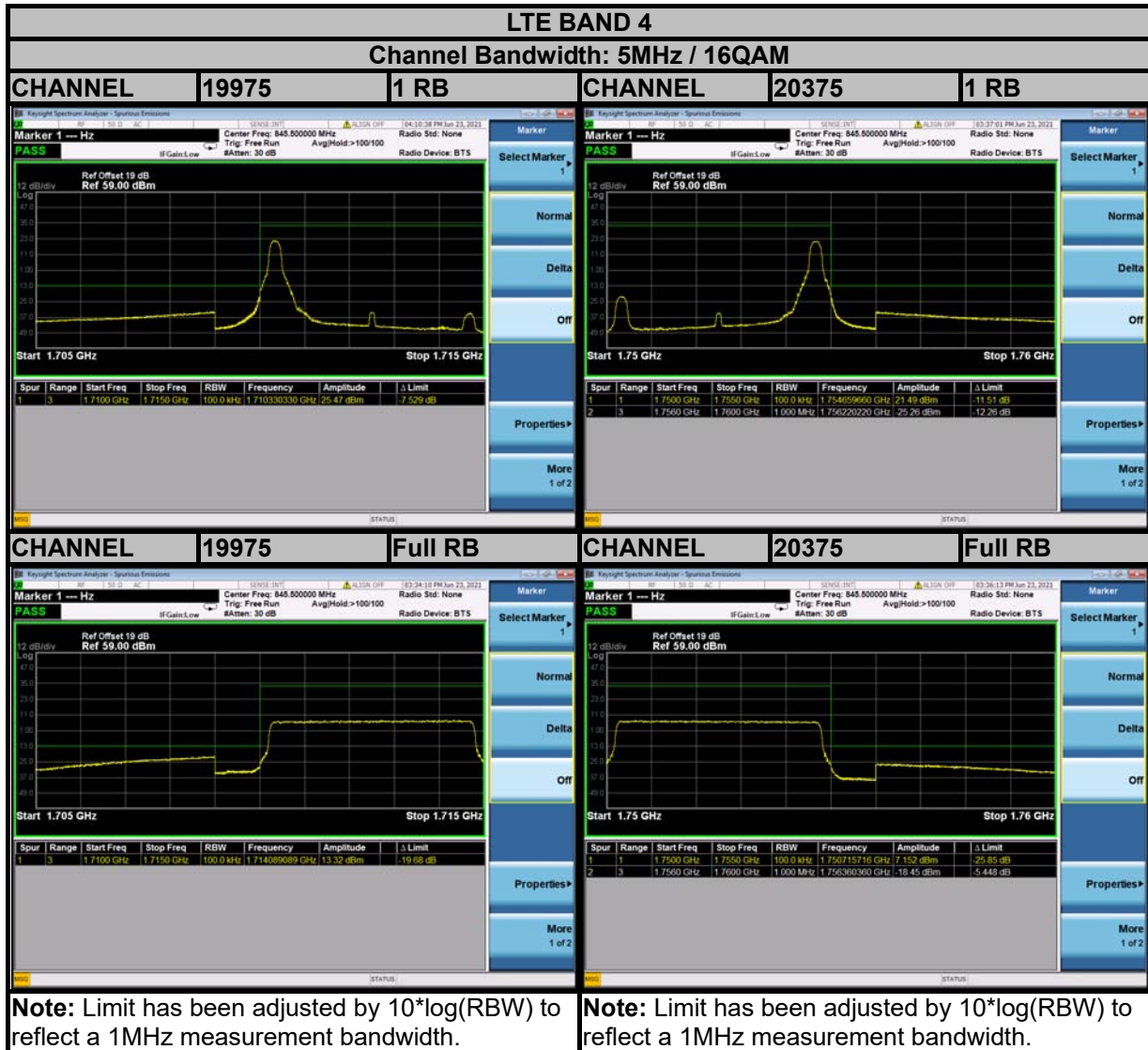
Test Report No.: W7L-P20210616-2RF06





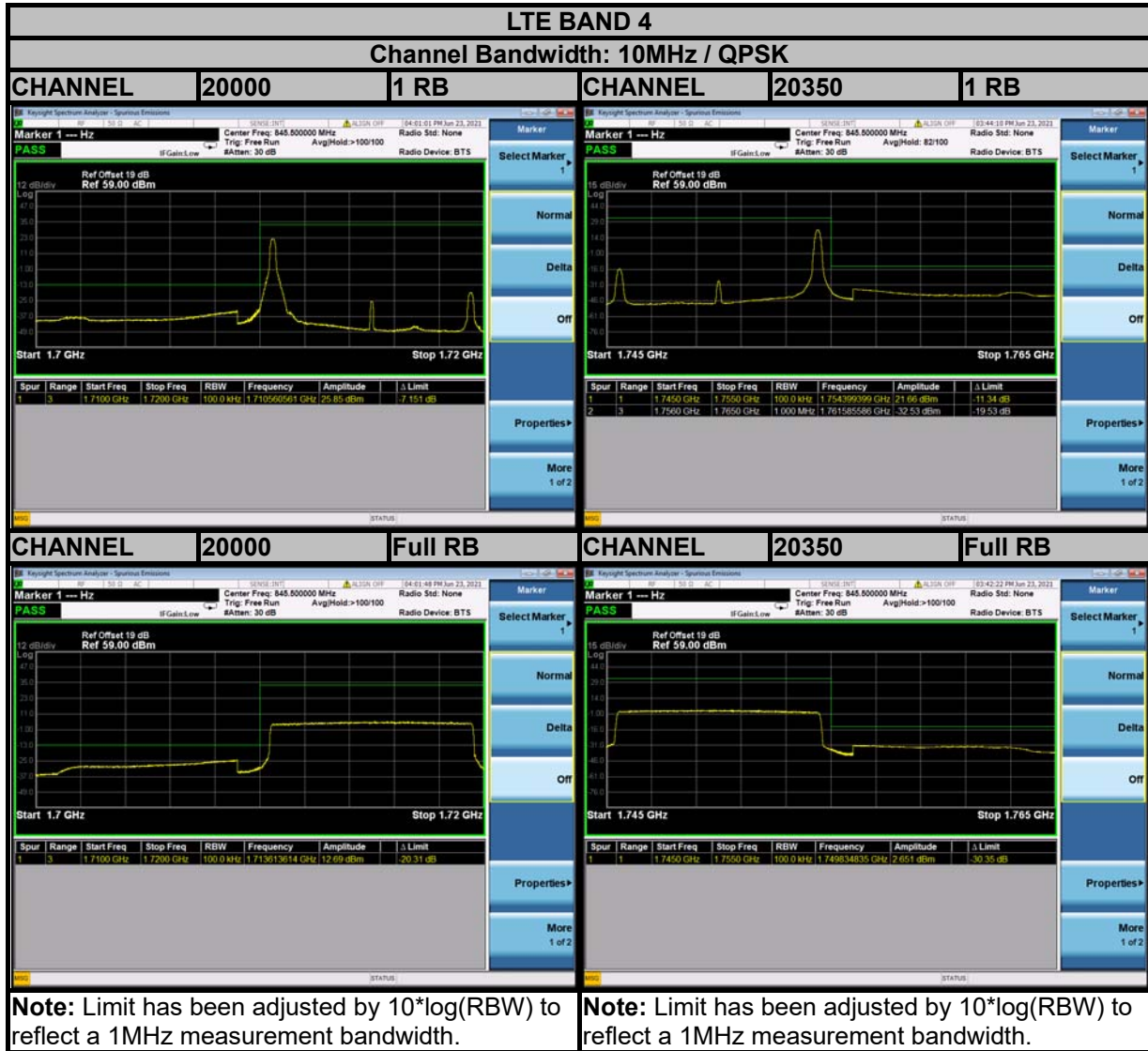
BUREAU  
VERITAS

Test Report No.: W7L-P20210616-2RF06





Test Report No.: W7L-P20210616-2RF06

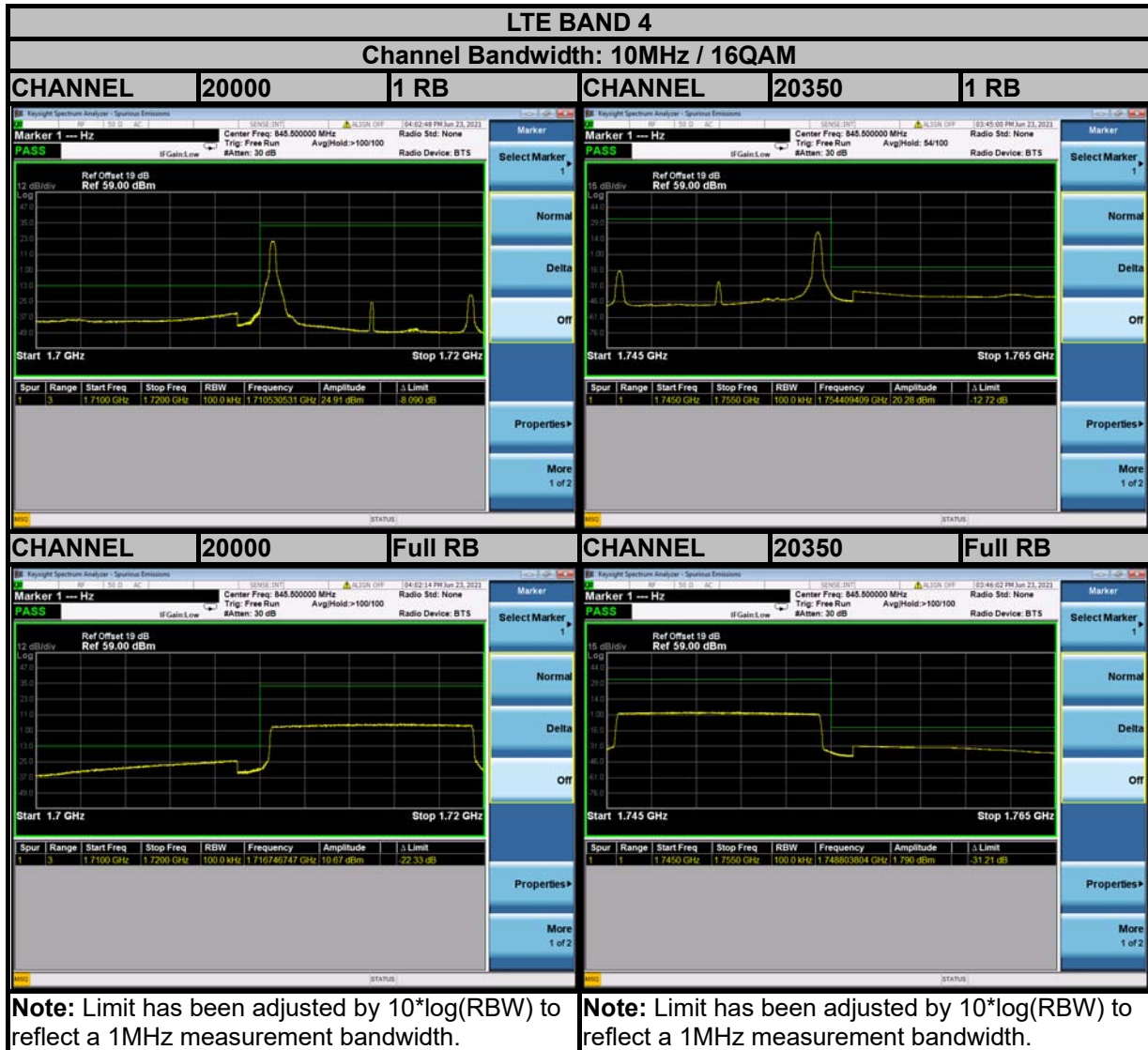






**BUREAU  
VERITAS**

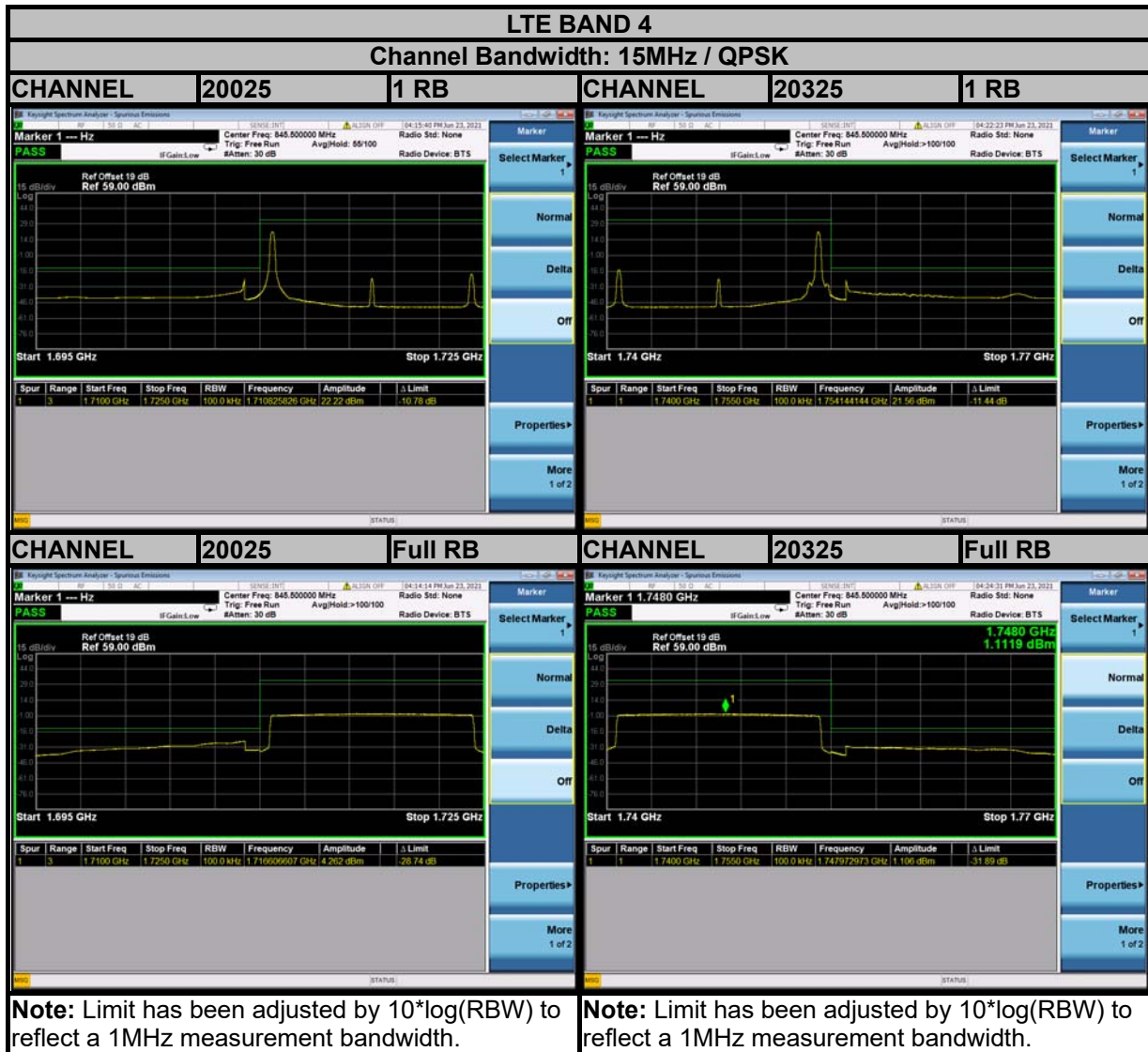
Test Report No.: W7L-P20210616-2RF06

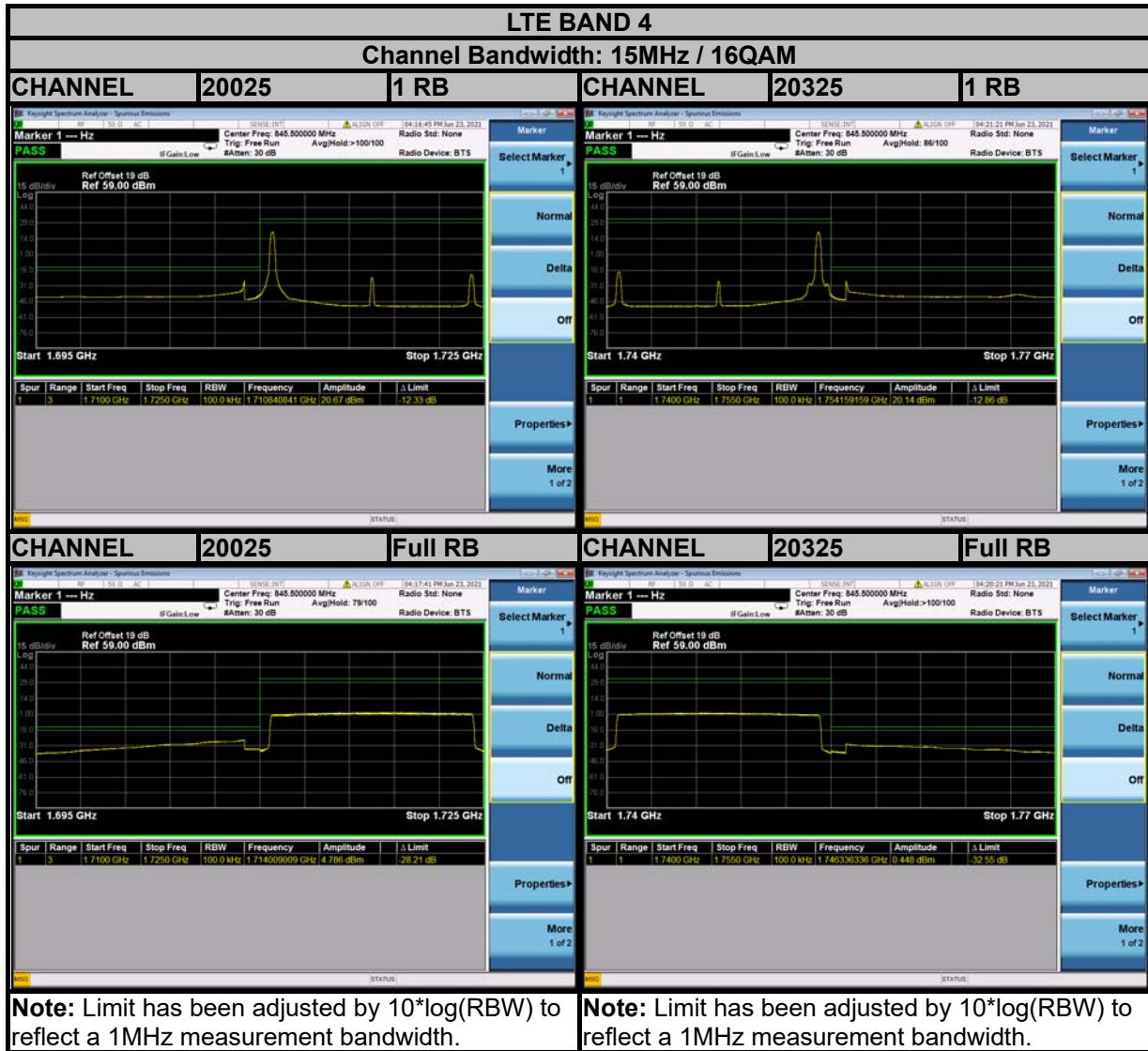




BUREAU  
VERITAS

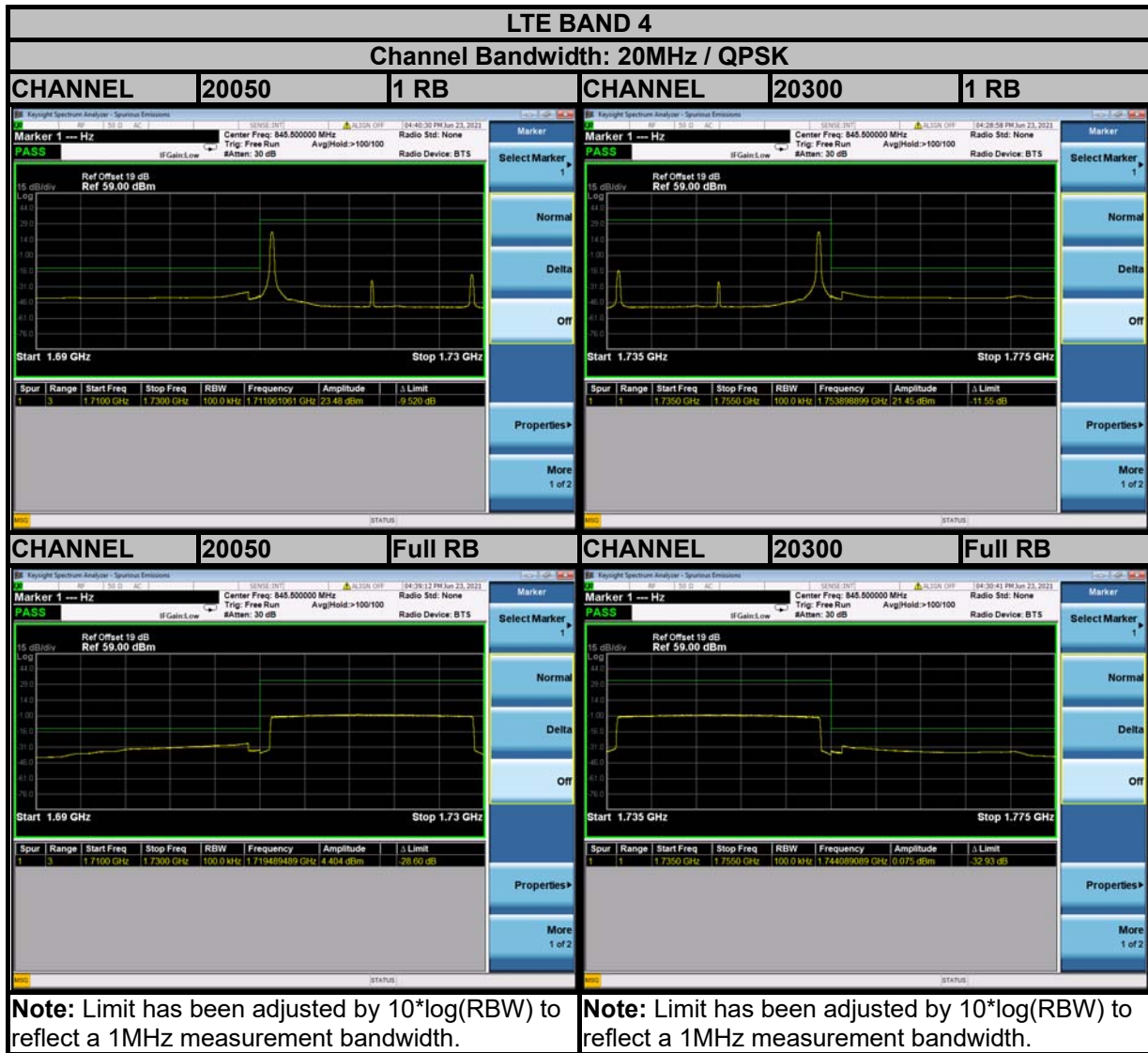
Test Report No.: W7L-P20210616-2RF06







Test Report No.: W7L-P20210616-2RF06





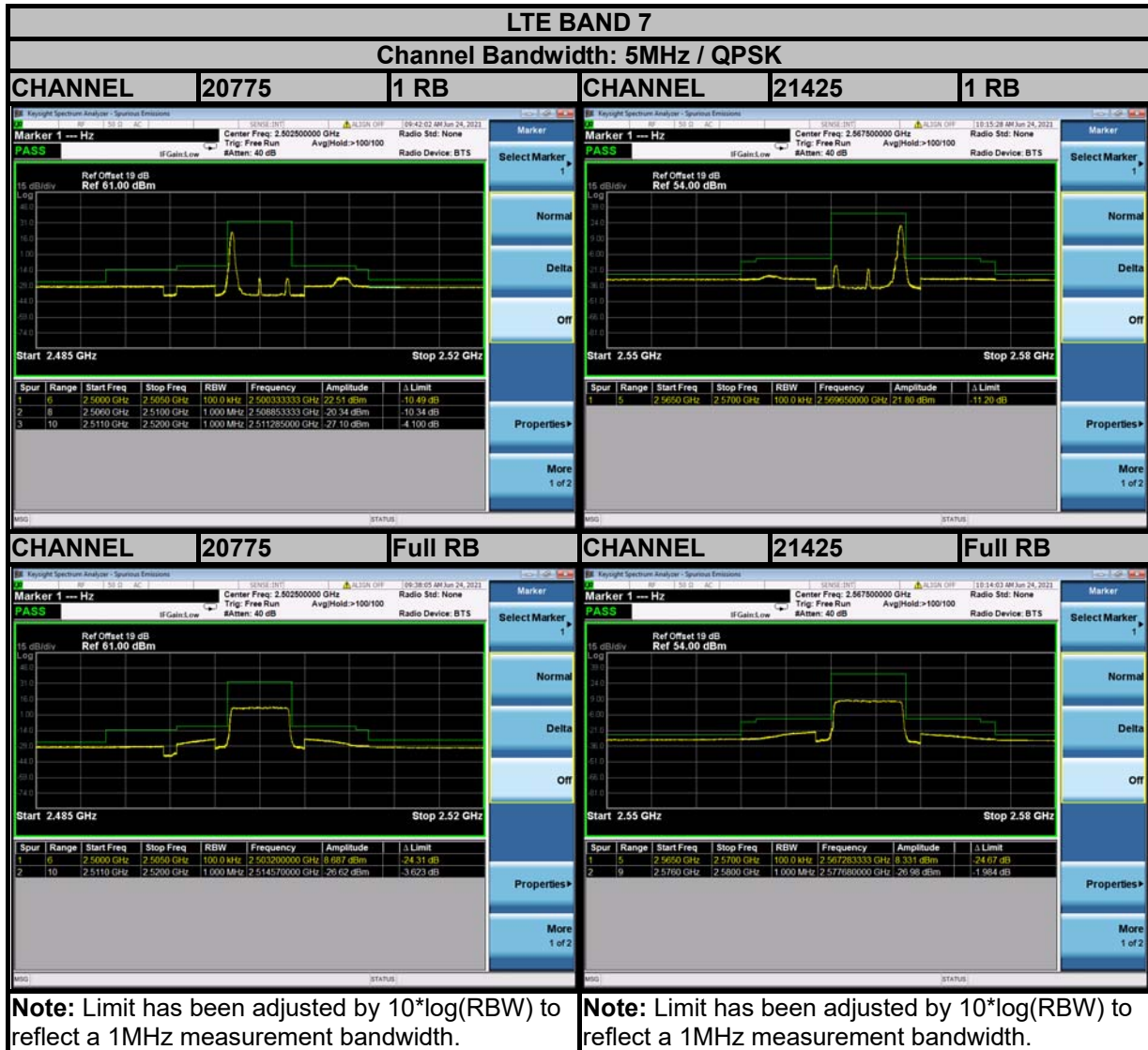
Test Report No.: W7L-P20210616-2RF06





BUREAU VERITAS

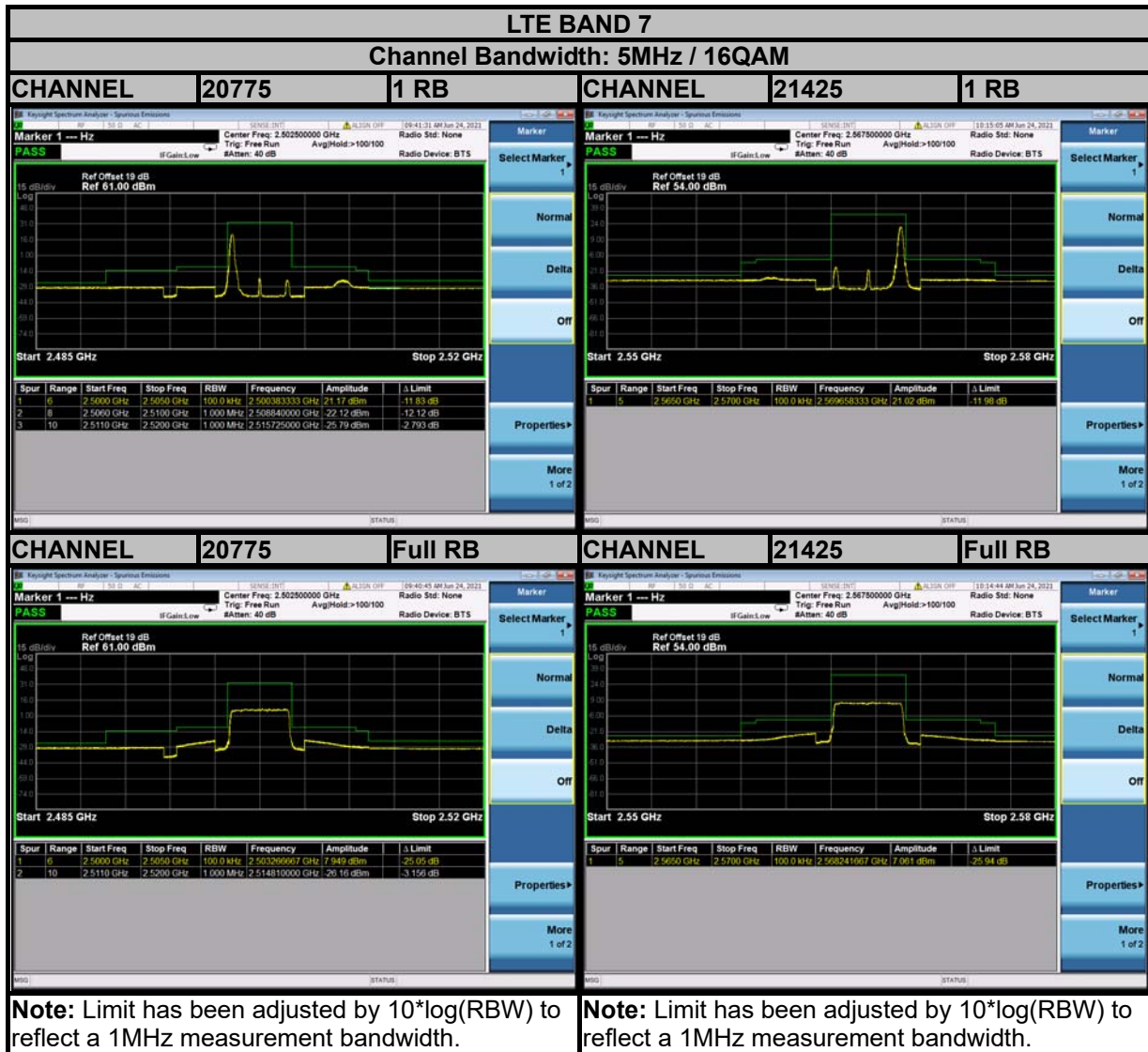
Test Report No.: W7L-P20210616-2RF06





**BUREAU  
VERITAS**

Test Report No.: W7L-P20210616-2RF06





BUREAU  
VERITAS

Test Report No.: W7L-P20210616-2RF06

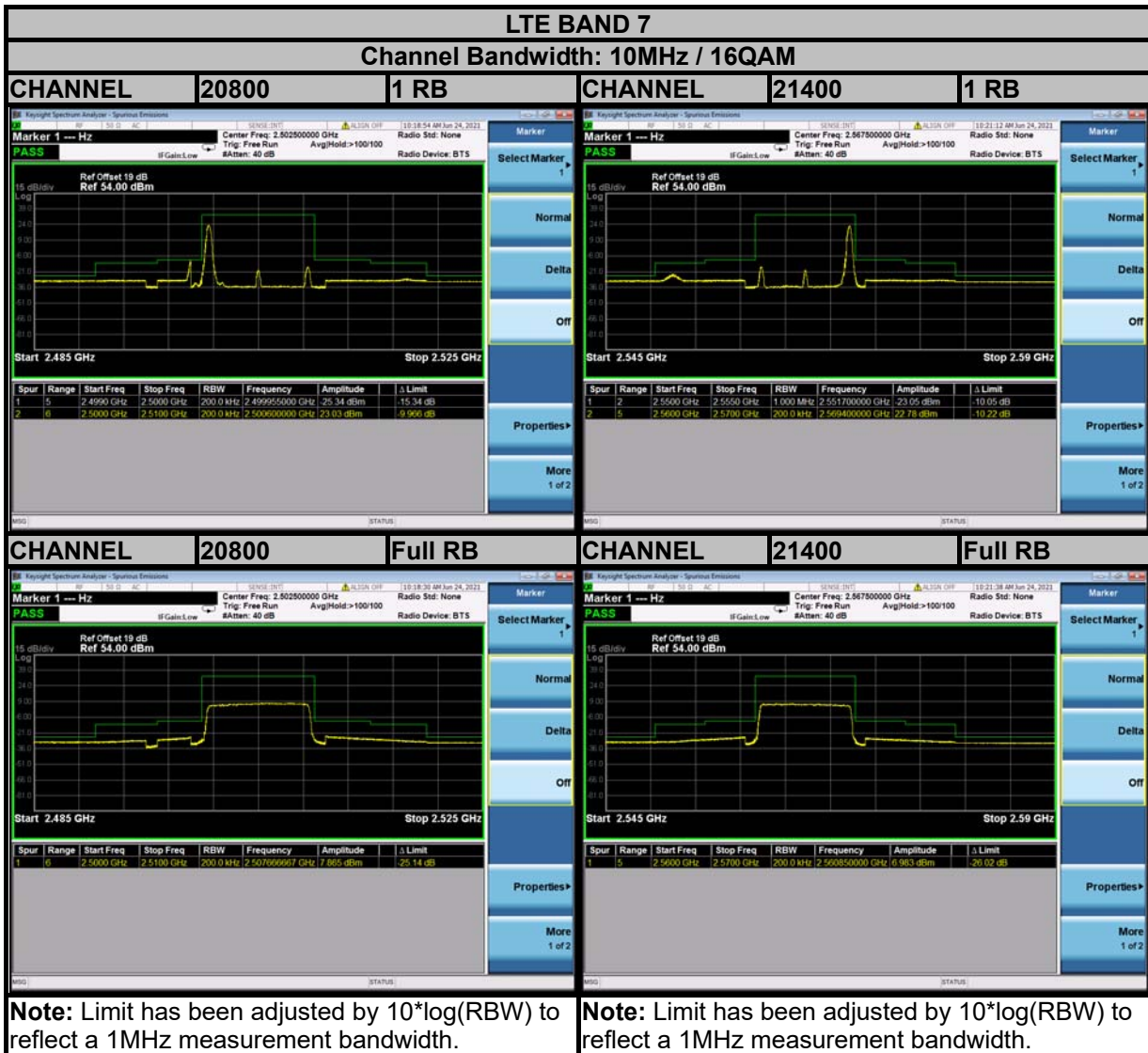






BUREAU  
VERITAS

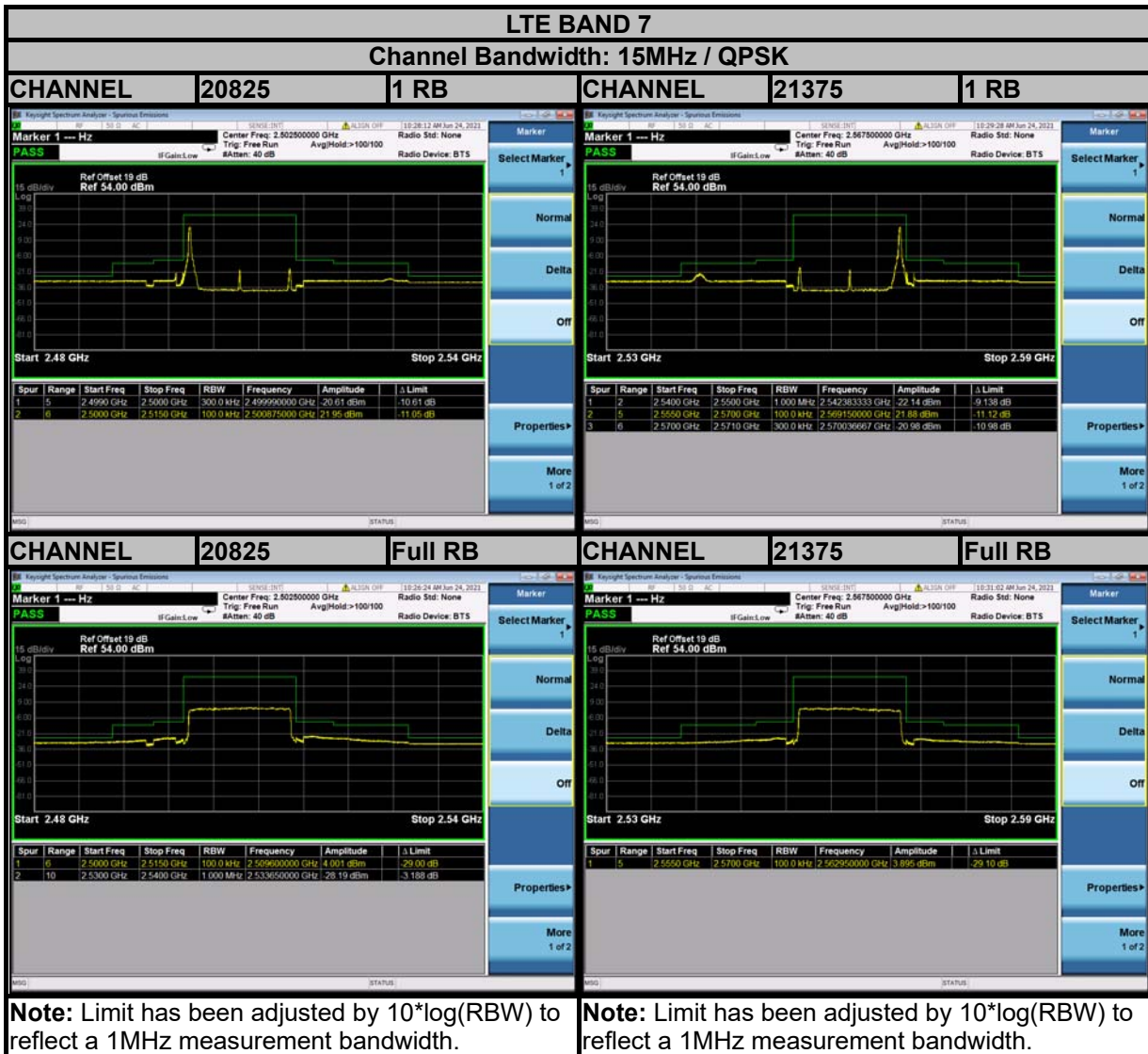
Test Report No.: W7L-P20210616-2RF06





BUREAU  
VERITAS

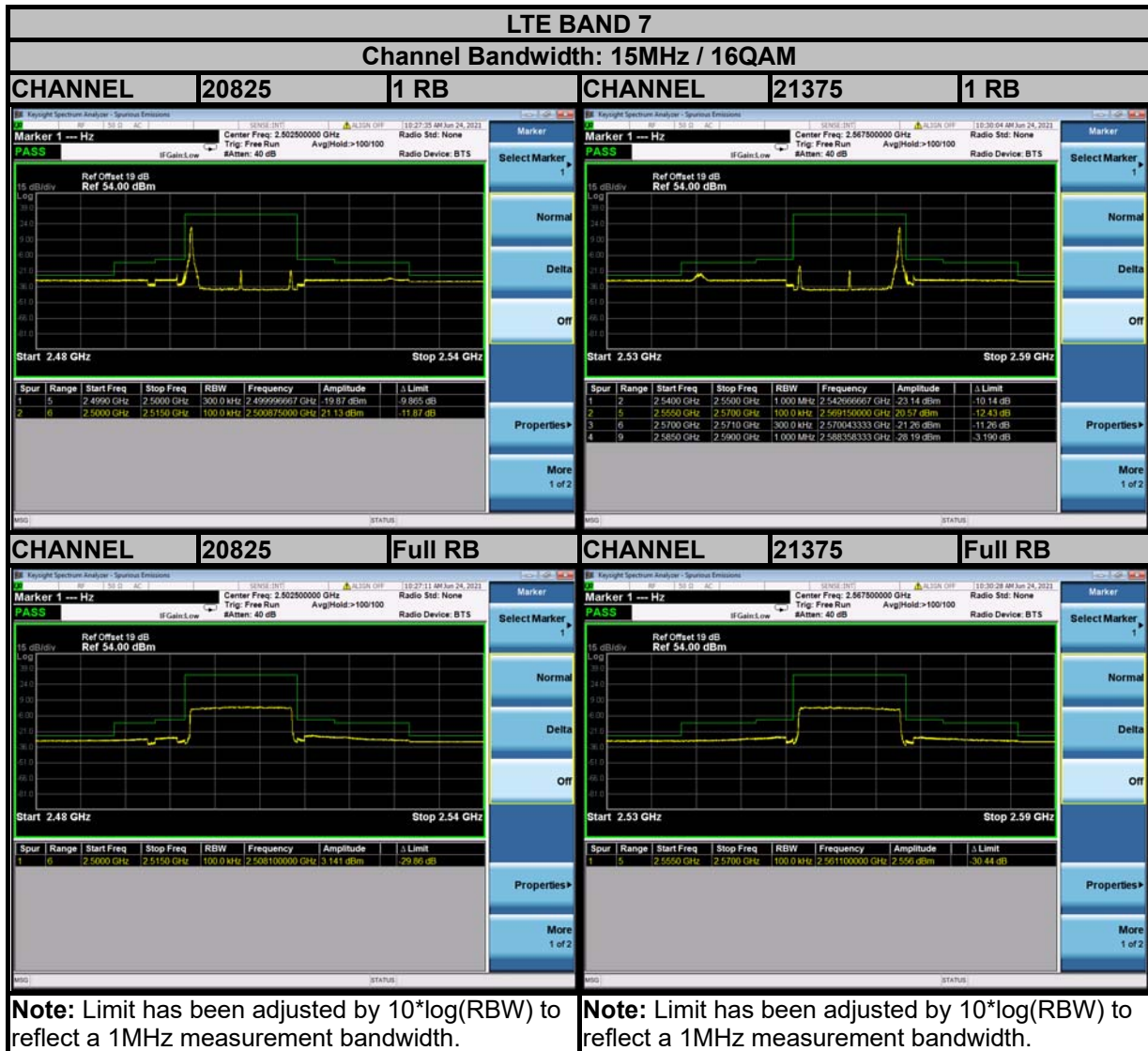
Test Report No.: W7L-P20210616-2RF06





BUREAU VERITAS

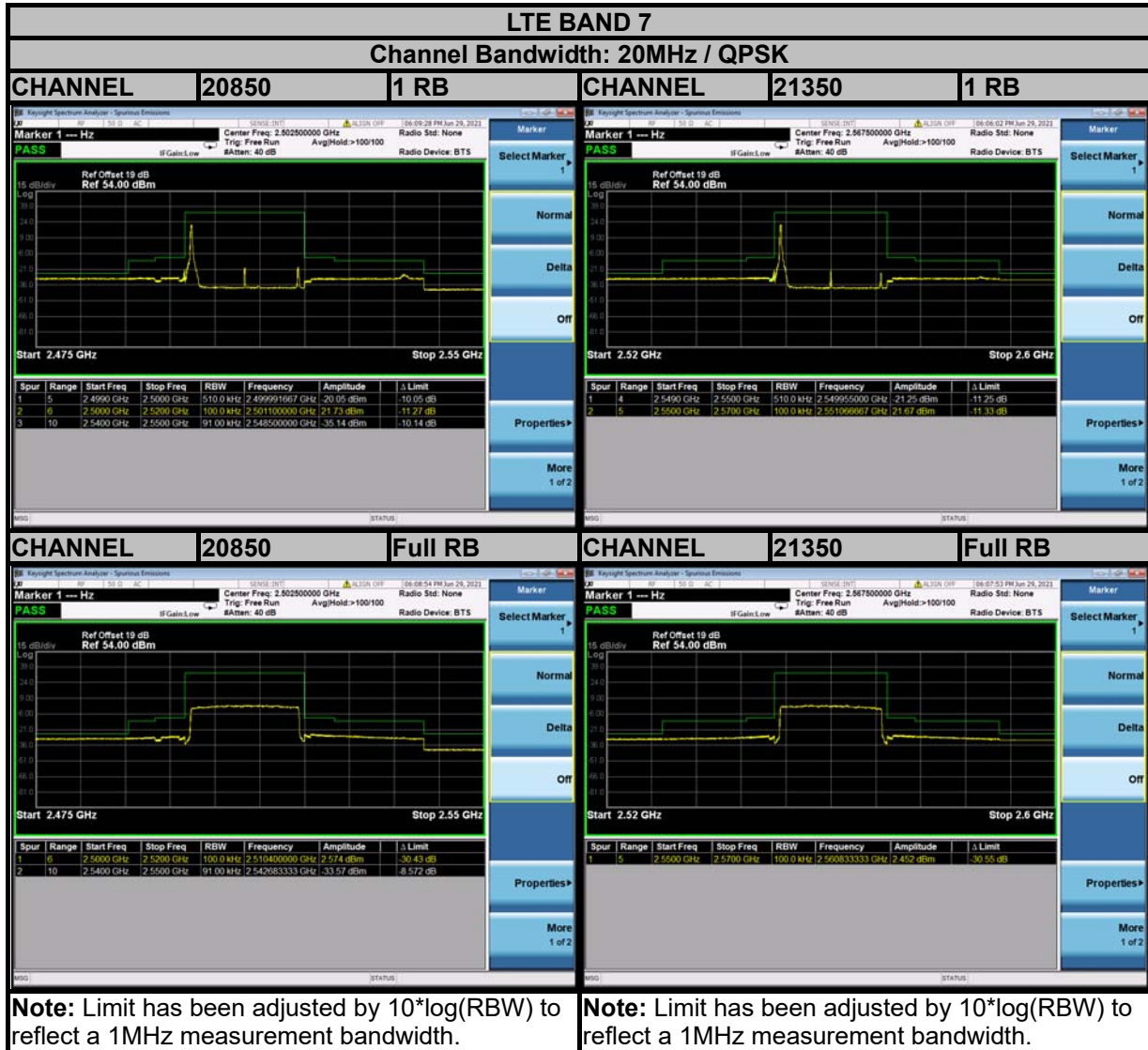
Test Report No.: W7L-P20210616-2RF06





BUREAU VERITAS

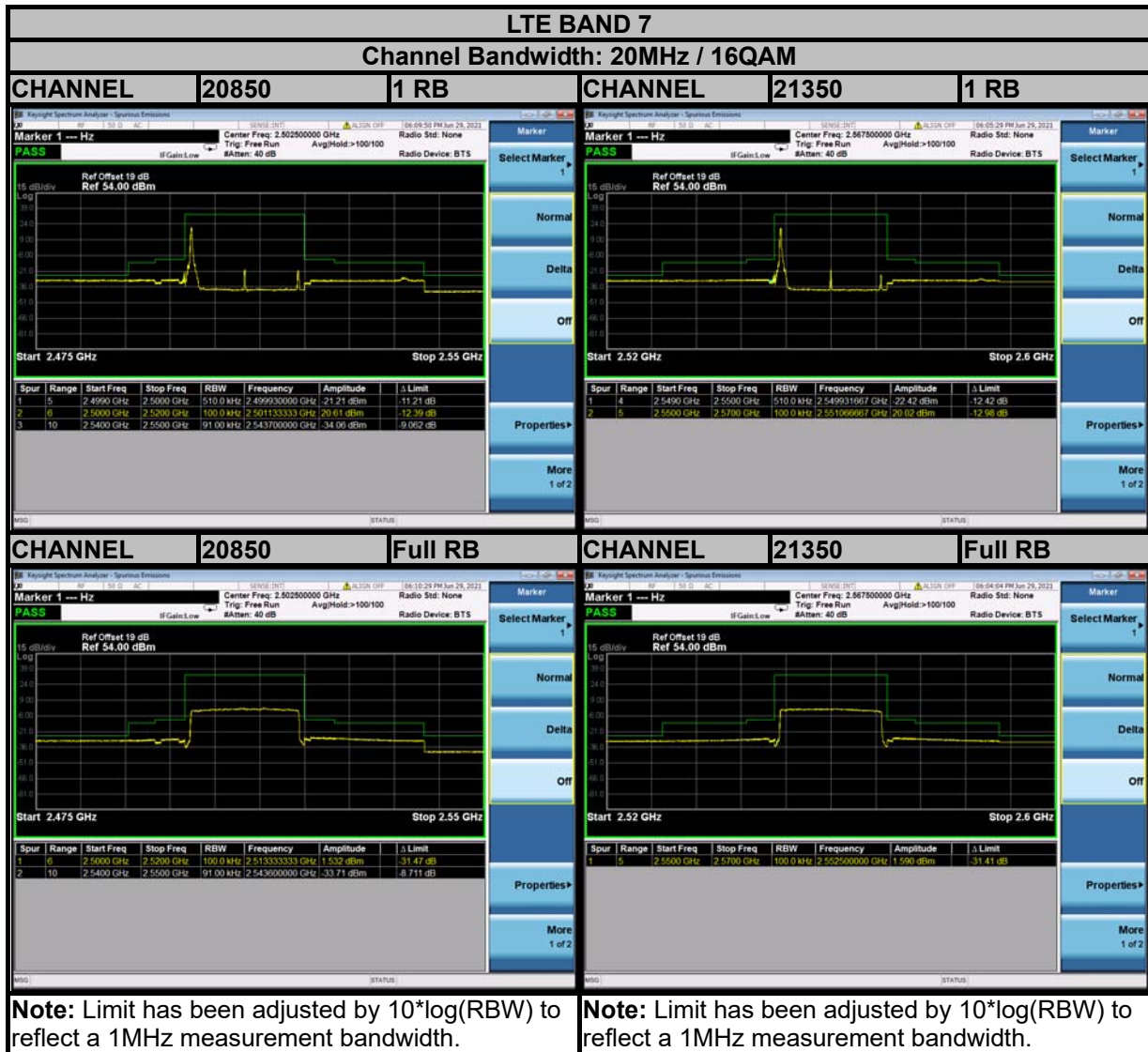
Test Report No.: W7L-P20210616-2RF06





BUREAU VERITAS

Test Report No.: W7L-P20210616-2RF06



### 3.5 CONDUCTED SPURIOUS EMISSIONS

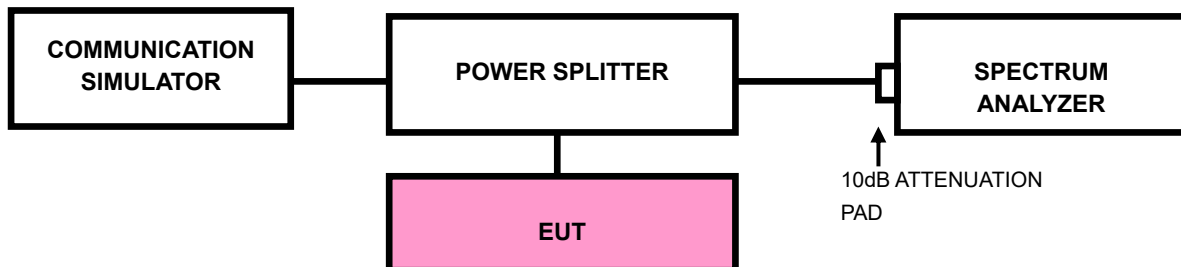
#### 3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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

#### 3.5.2 TEST PROCEDURE

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

#### 3.5.3 TEST SETUP

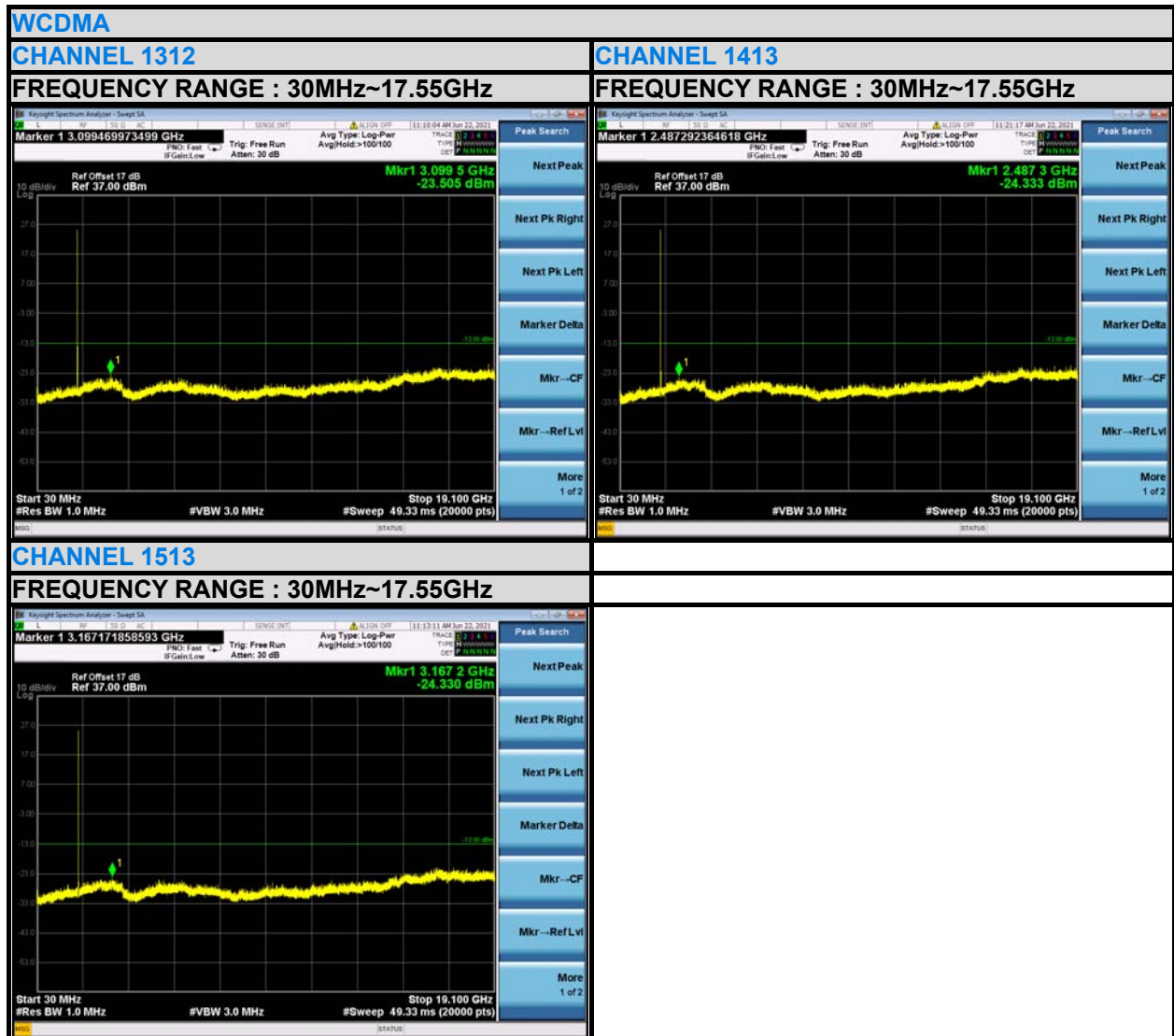




BUREAU VERITAS

Test Report No.: W7L-P20210616-2RF06

### 3.5.4 TEST RESULTS

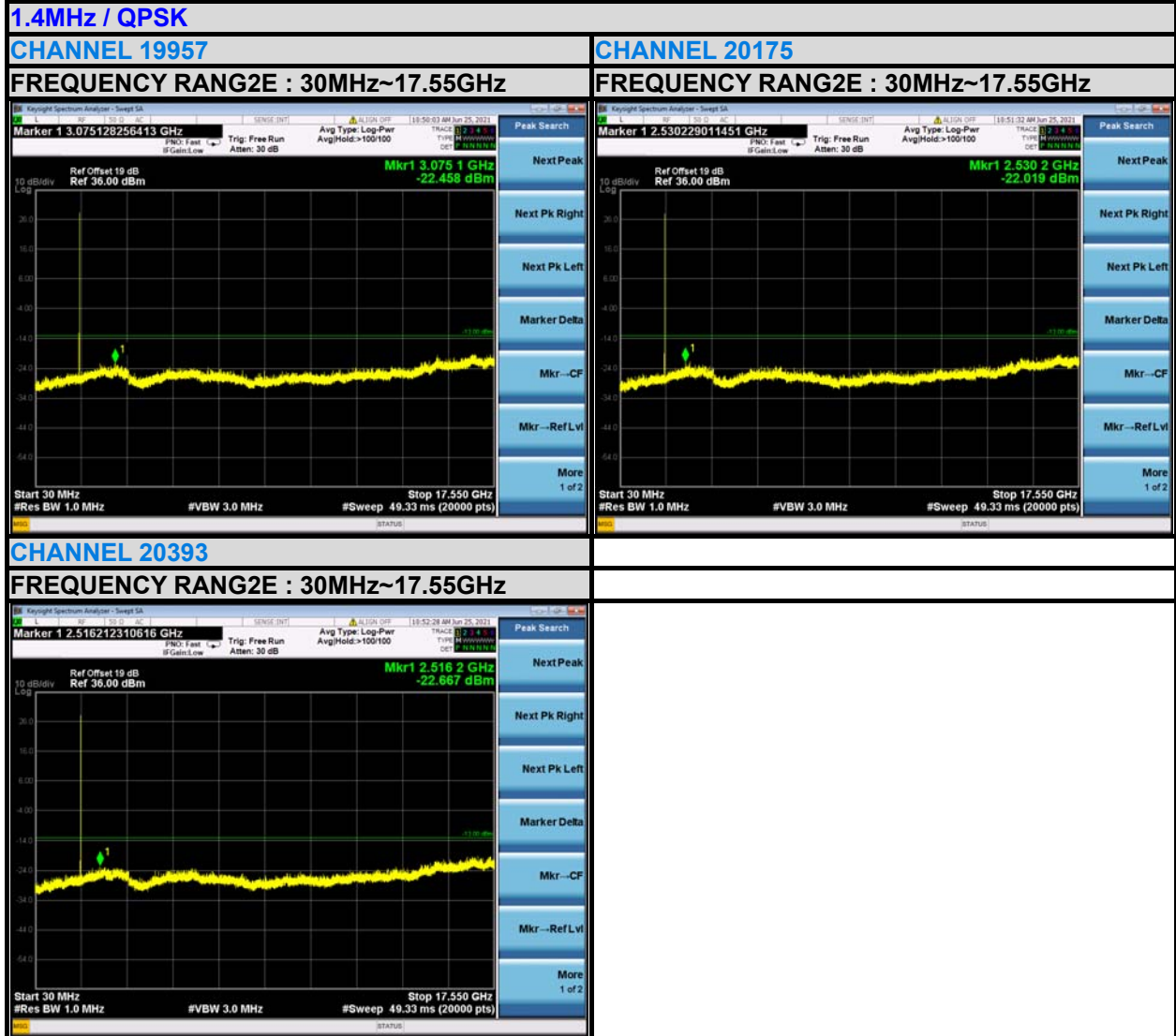




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Test Report No.: W7L-P20210616-2RF06

LTE BAND 4

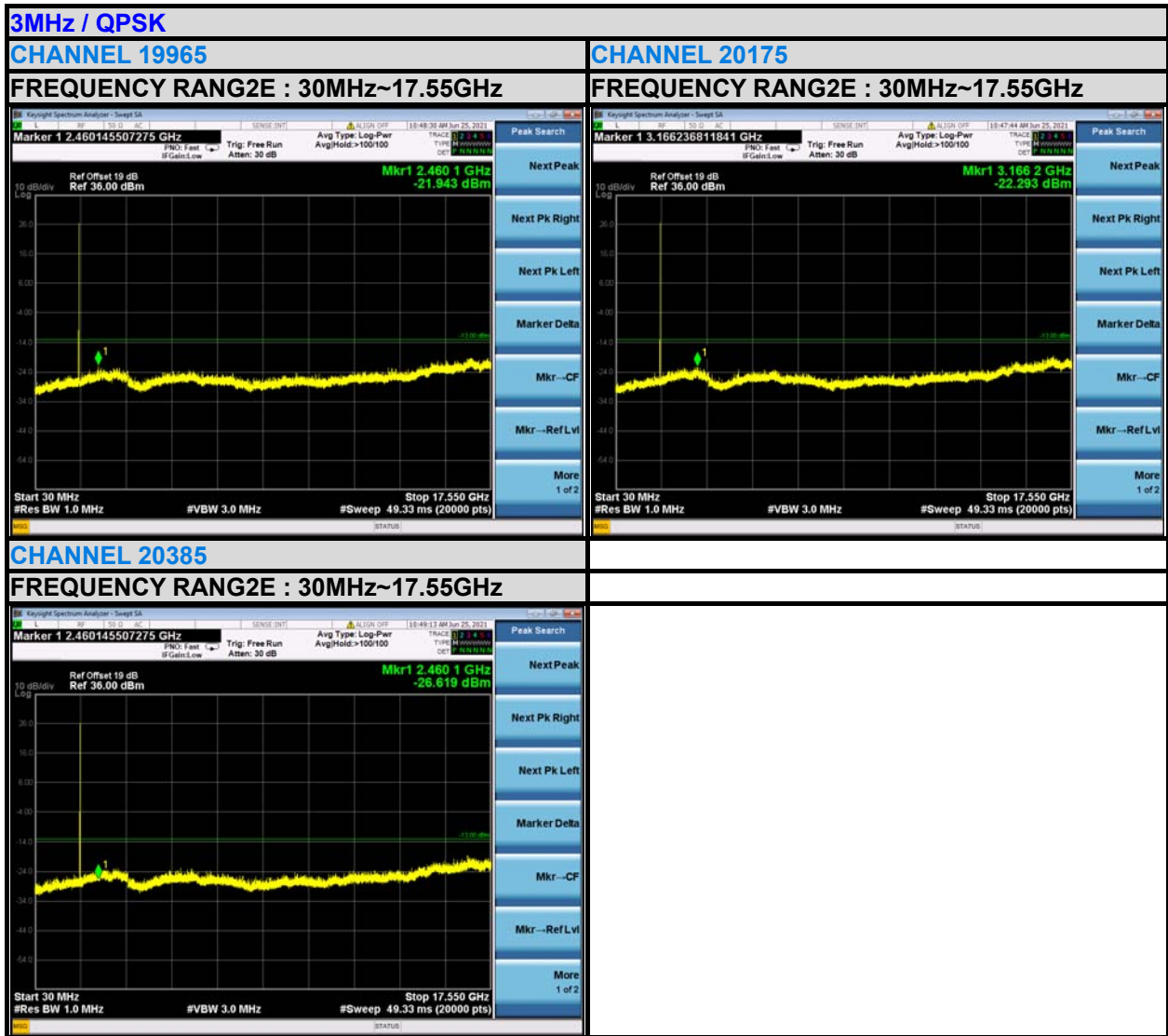






BUREAU VERITAS

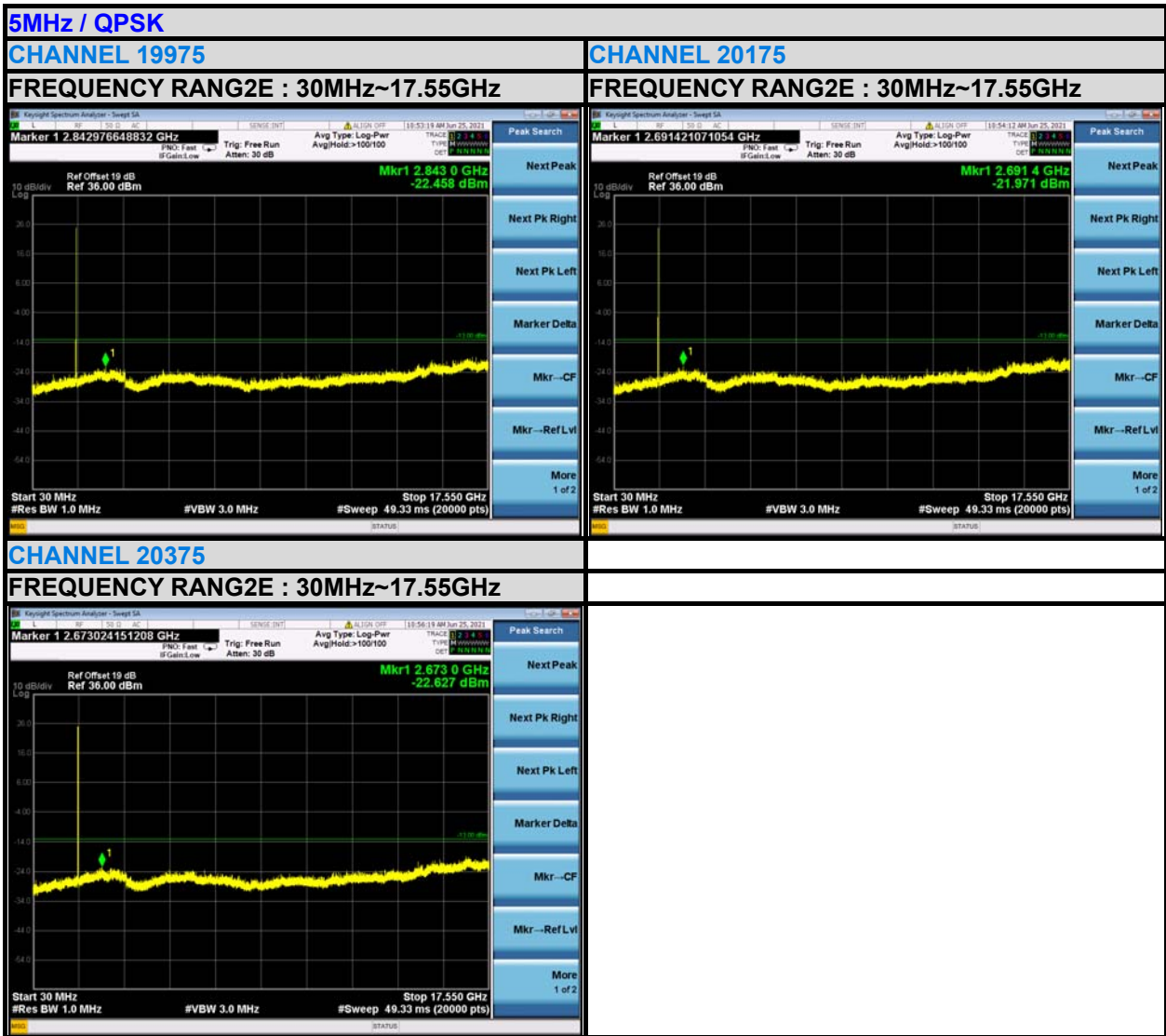
Test Report No.: W7L-P20210616-2RF06





BUREAU VERITAS

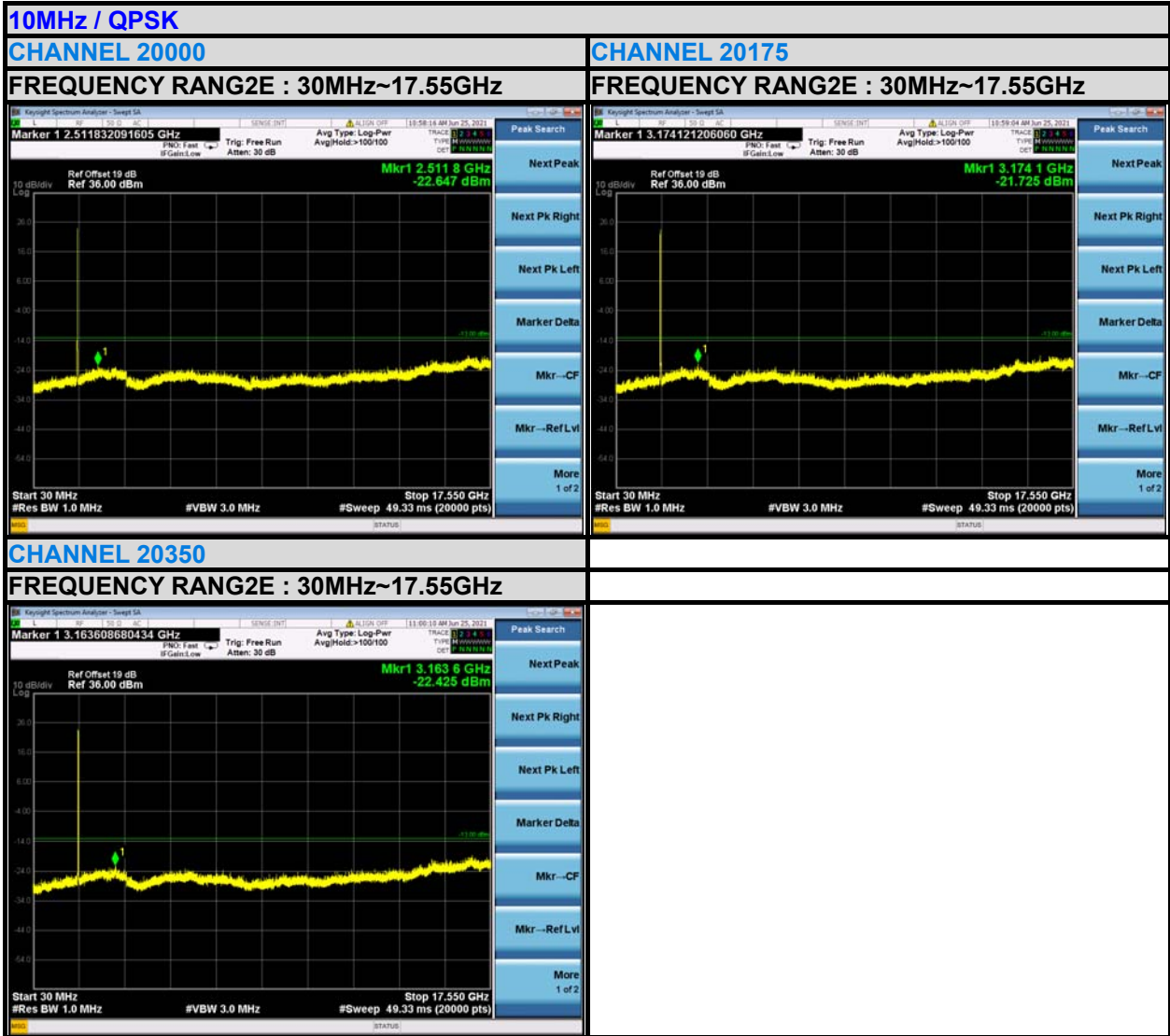
Test Report No.: W7L-P20210616-2RF06





BUREAU VERITAS

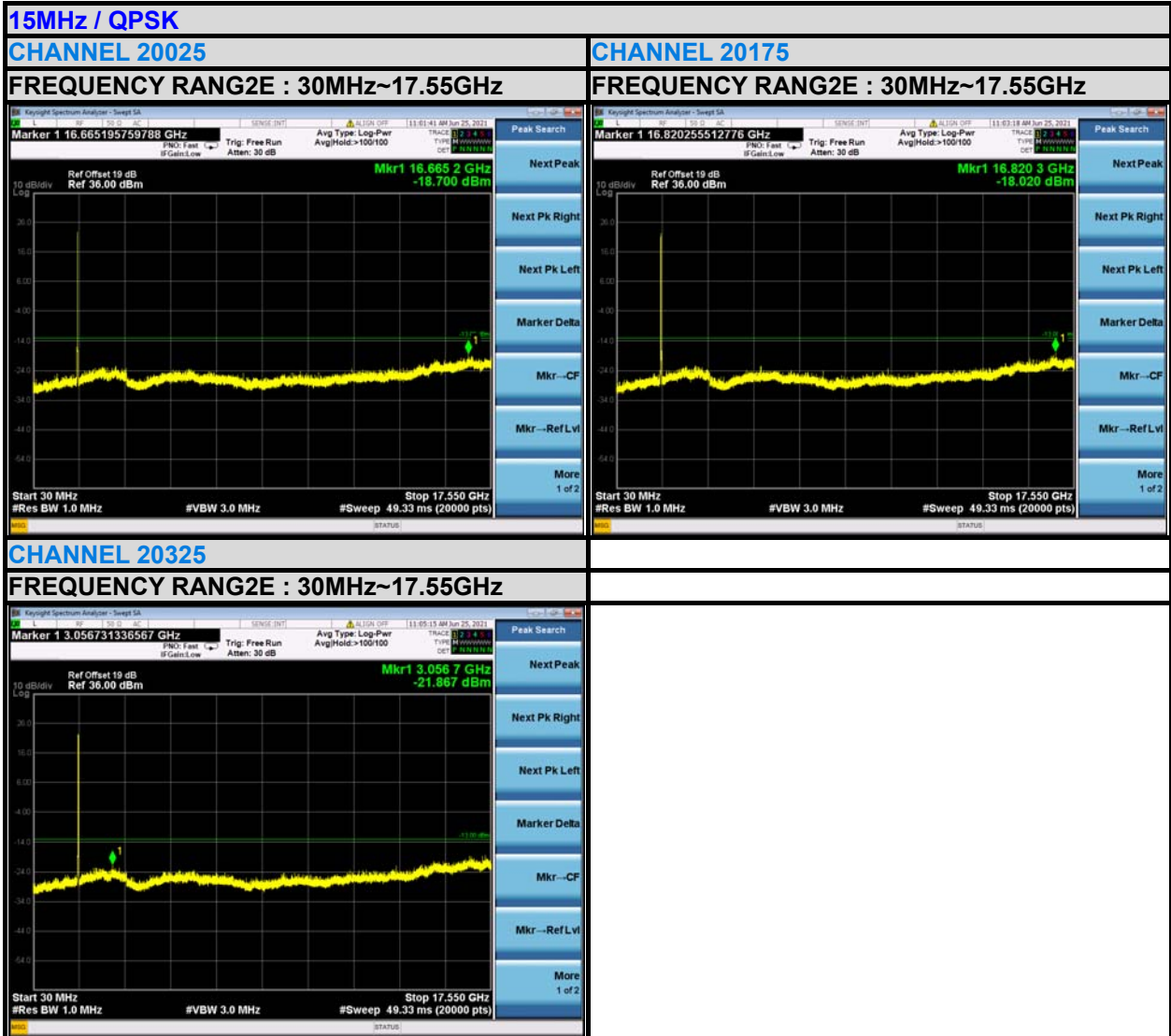
Test Report No.: W7L-P20210616-2RF06





BUREAU VERITAS

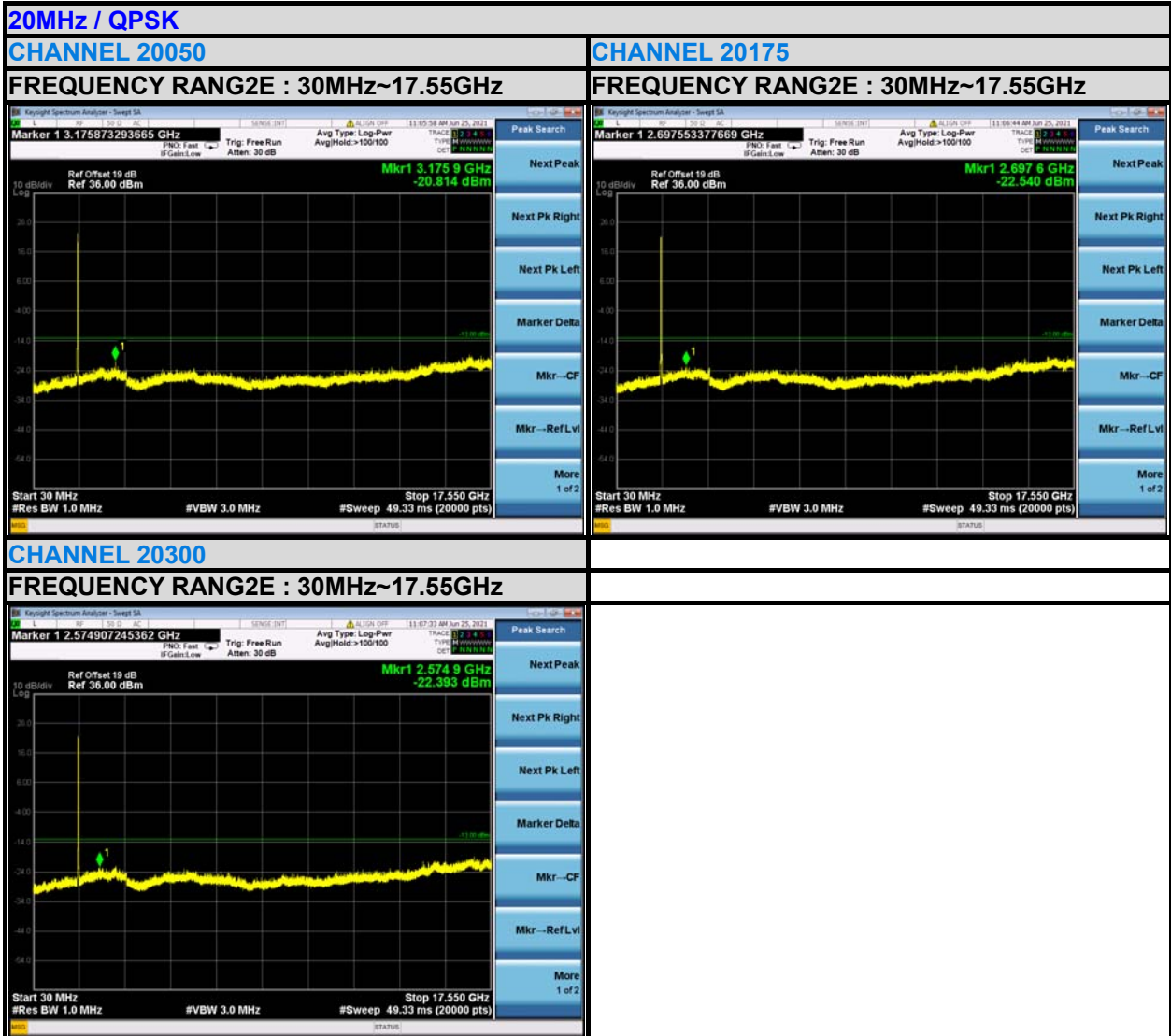
Test Report No.: W7L-P20210616-2RF06





BUREAU VERITAS

Test Report No.: W7L-P20210616-2RF06

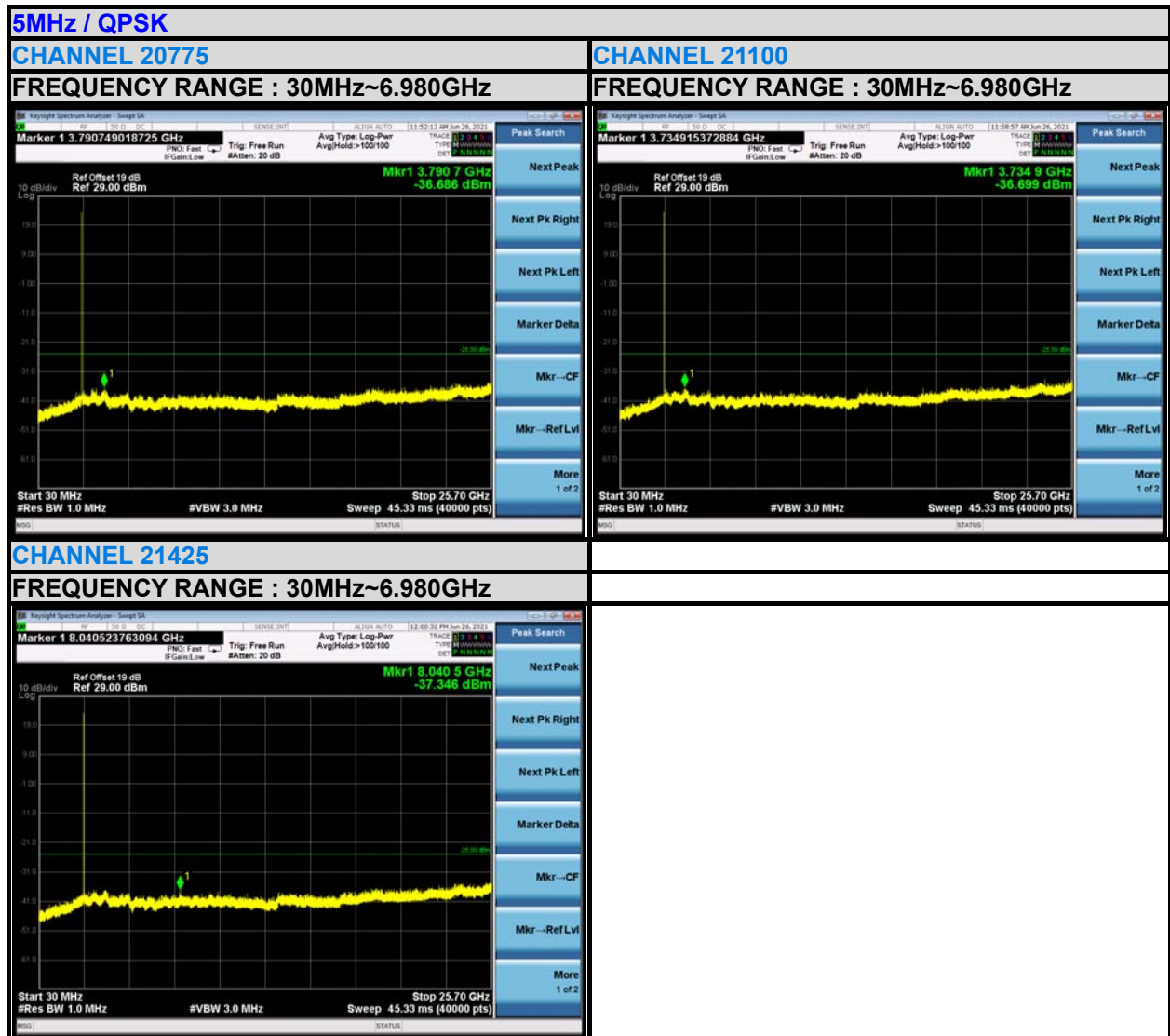




BUREAU VERITAS

Test Report No.: W7L-P20210616-2RF06

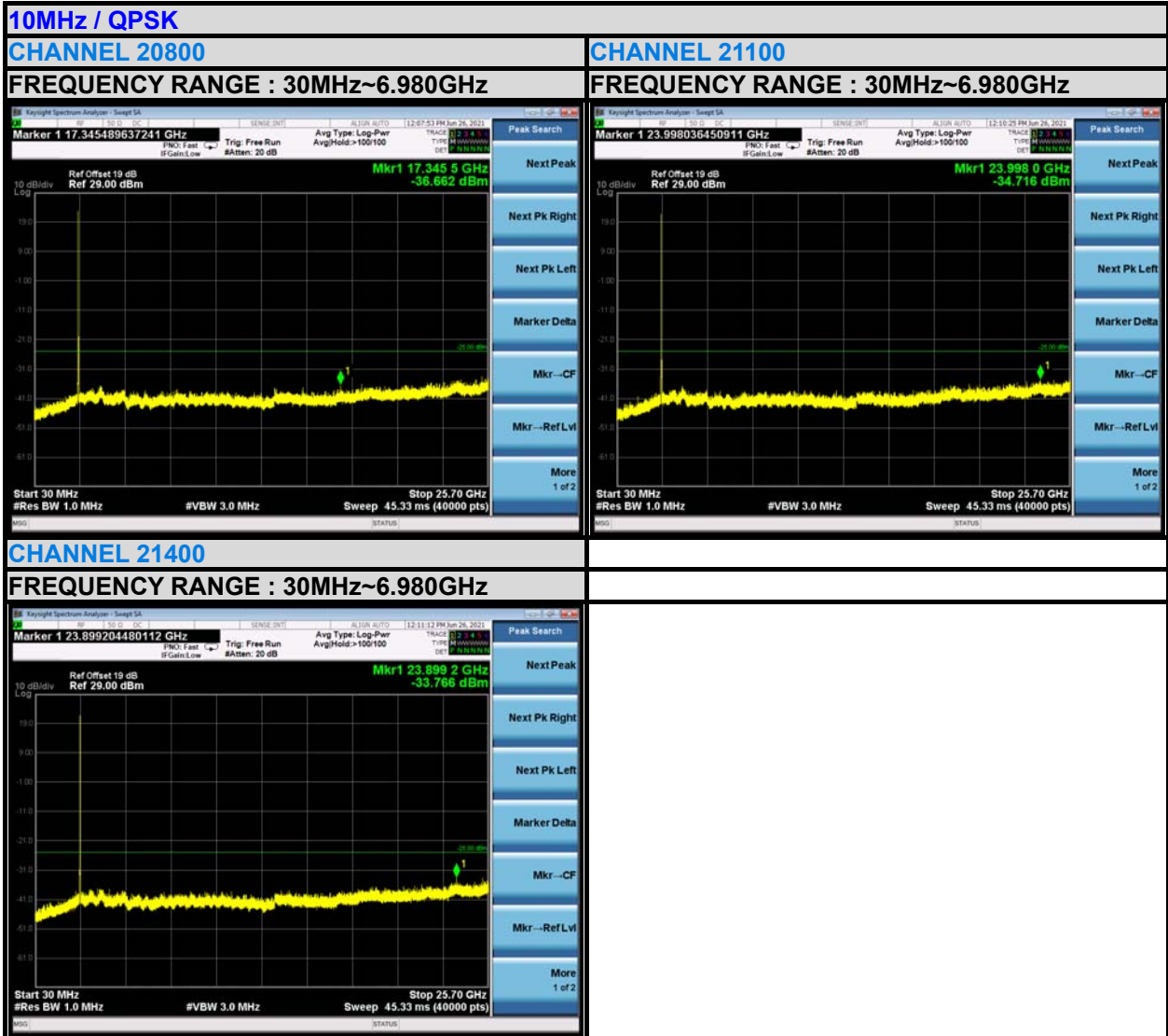
LTE BAND 7





BUREAU VERITAS

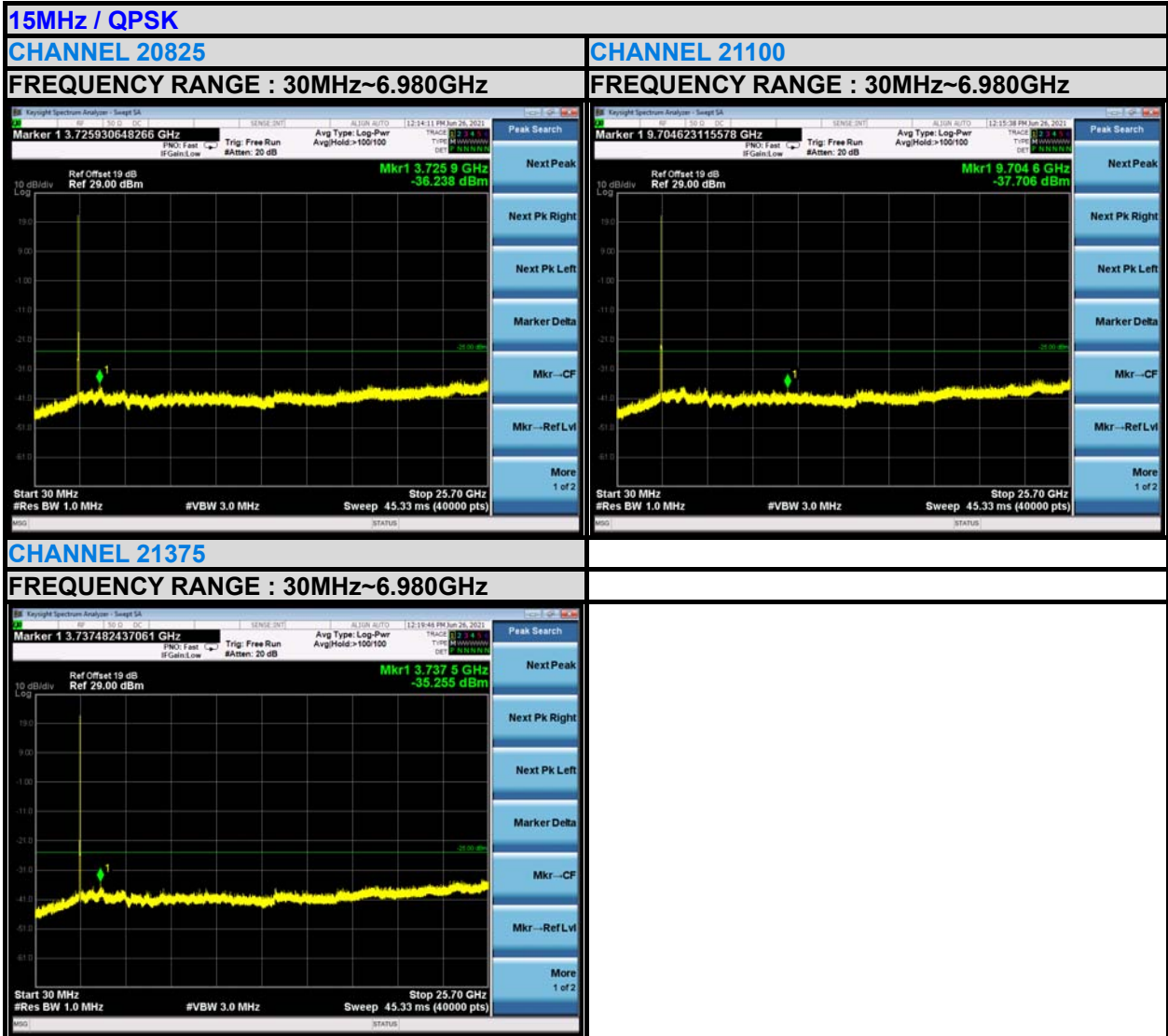
Test Report No.: W7L-P20210616-2RF06





BUREAU VERITAS

Test Report No.: W7L-P20210616-2RF06

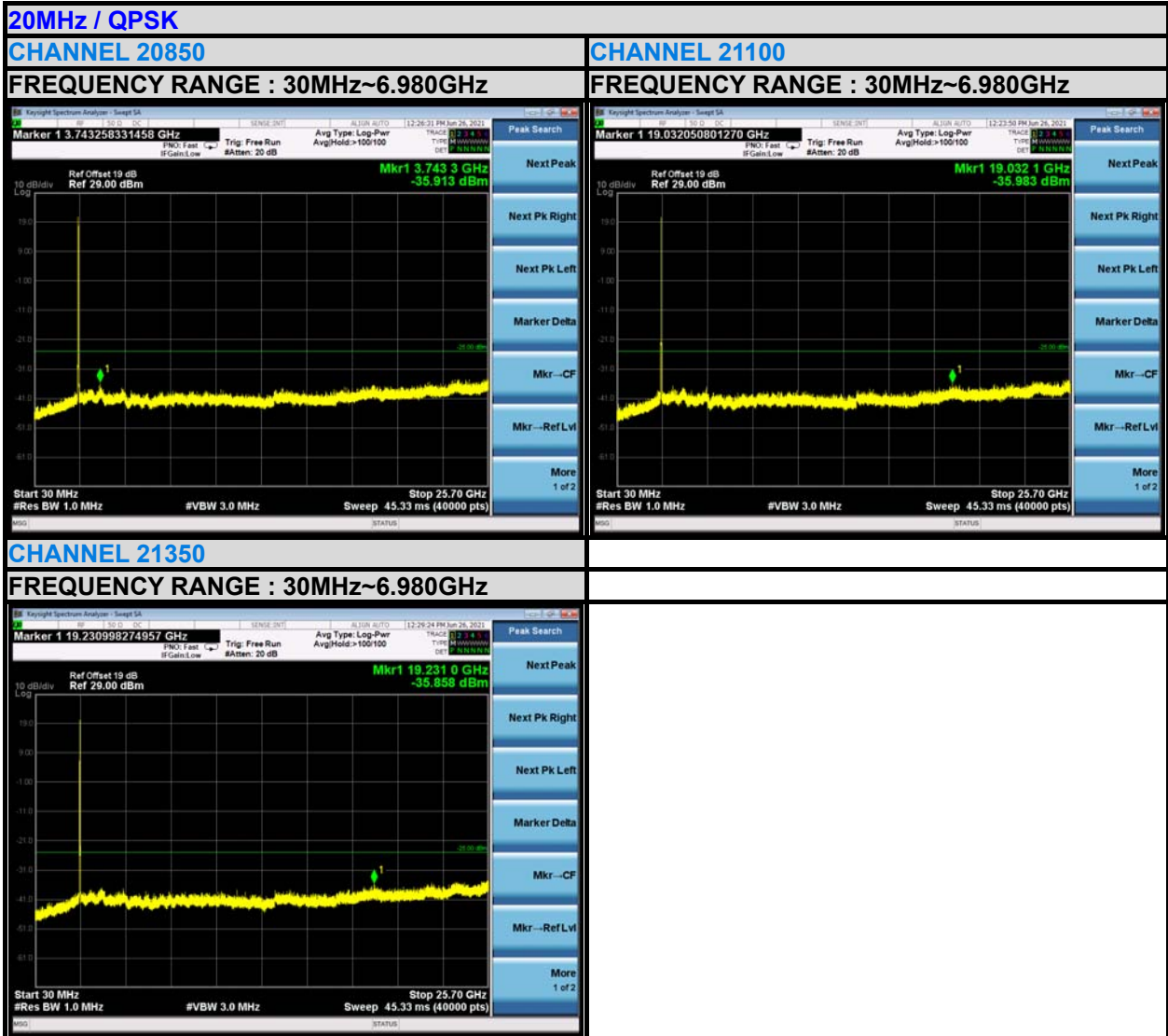






BUREAU VERITAS

Test Report No.: W7L-P20210616-2RF06





### 3.6 RADIATED EMISSION MEASUREMENT

#### 3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

#### 3.6.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G.
- c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

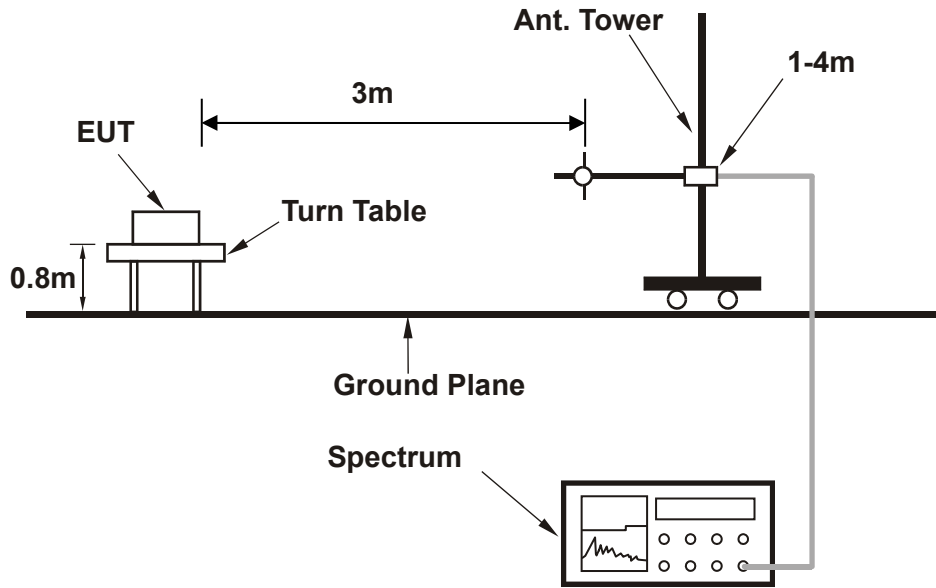
**NOTE:** The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

#### 3.6.3 DEVIATION FROM TEST STANDARD

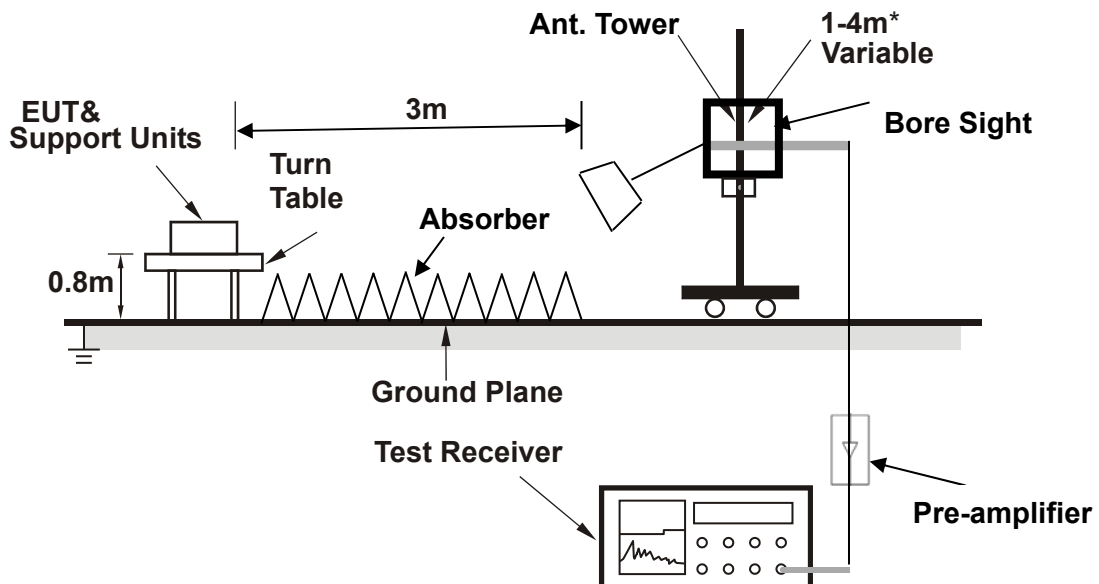
No deviation

### 3.6.4 TEST SETUP

#### < Frequency Range 30MHz~1GHz >



#### <Frequency Range above 1GHz>



**Note:** Above 1G is a directional antenna depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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



### 3.6.5 TEST RESULTS

#### BELOW 1GHz WORST-CASE DATA

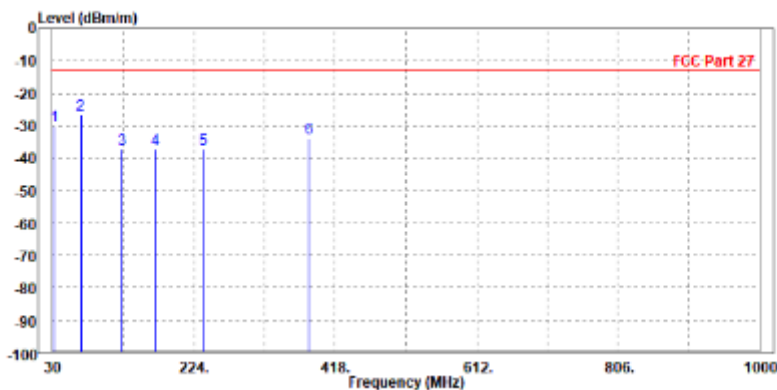
30 MHz – 1GHz data:

LTE Band 4

CHANNEL BANDWIDTH: 1.4MHz / QPSK

<b>MODE</b>	TX channel 19957	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	31.940	-29.90	-50.63	-13.00	-16.90	20.73	Peak	Horizontal
2	68.800	-26.69	-35.01	-13.00	-13.69	8.32	Peak	Horizontal
3	125.060	-37.45	-46.32	-13.00	-24.45	8.87	Peak	Horizontal
4	170.650	-37.18	-49.13	-13.00	-24.18	11.95	Peak	Horizontal
5	236.610	-37.29	-51.82	-13.00	-24.29	14.53	Peak	Horizontal
6	382.110	-33.70	-52.48	-13.00	-20.70	18.78	Peak	Horizontal

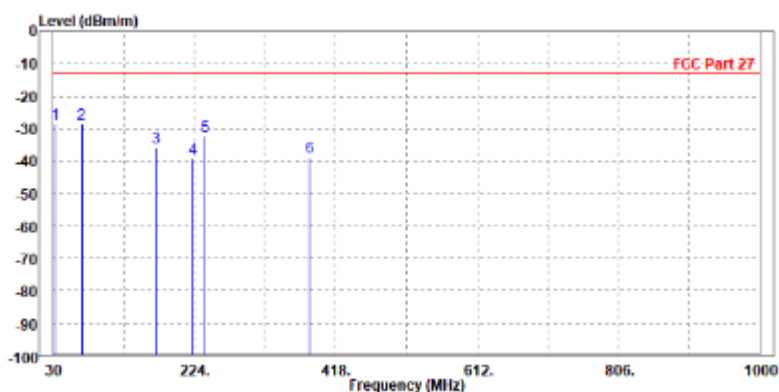




Test Report No.: W7L-P20210616-2RF06

<b>MODE</b>	TX channel 19957	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	31.940	-28.60	-49.33	-13.00	-15.60	20.73	Peak	Vertical
2	68.800	-28.55	-36.87	-13.00	-15.55	8.32	Peak	Vertical
3	170.650	-35.83	-47.78	-13.00	-22.83	11.95	Peak	Vertical
4	222.060	-39.26	-52.70	-13.00	-26.26	13.44	Peak	Vertical
5	237.500	-32.32	-46.93	-13.00	-19.32	14.61	Peak	Vertical
6	381.140	-38.86	-57.60	-13.00	-25.86	18.74	Peak	Vertical





BUREAU VERITAS

Test Report No.: W7L-P20210616-2RF06

ABOVE 1GHz

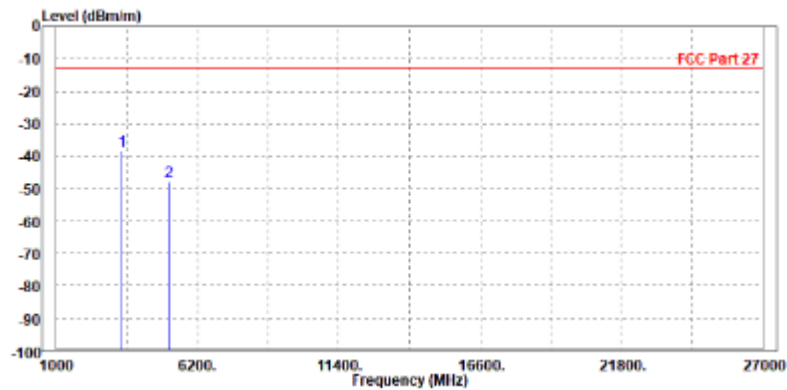
Note: For higher frequency, the emission is too low to be detected.

WCDMA Band IV:

CH 1312

MODE	TX channel 1312	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3418.000	-38.48	-47.07	-13.00	-25.48	8.59	Peak	Horizontal
2	5137.200	-48.07	-57.01	-13.00	-35.07	8.94	Peak	Horizontal

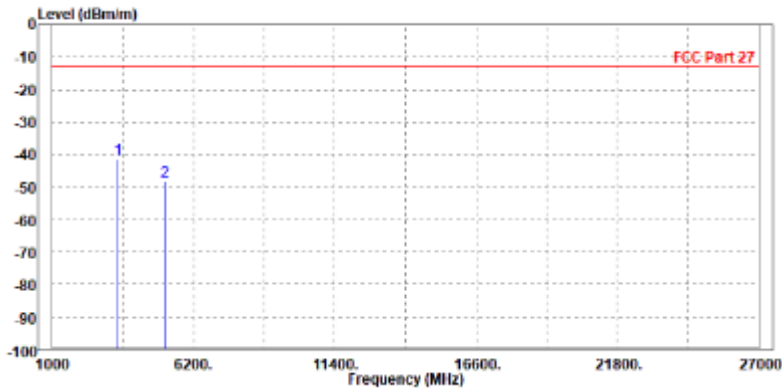




Test Report No.: W7L-P20210616-2RF06

MODE	TX channel 1312	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3418.000	-41.54	-50.65	-13.00	-28.54	9.11	Peak	Vertical
2	5137.200	-48.10	-57.95	-13.00	-35.10	9.85	Peak	Vertical



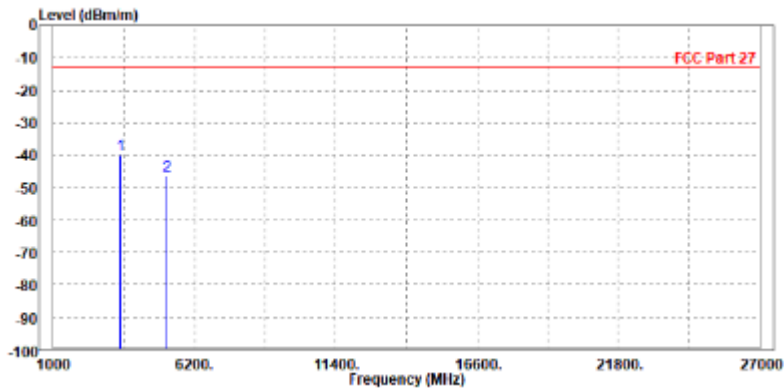


Test Report No.: W7L-P20210616-2RF06

CH 1413

MODE	TX channel 1413	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3478.800	-48.84	-48.62	-13.00	-27.04	8.58	Peak	Horizontal
2	5197.800	-46.26	-55.38	-13.00	-33.26	9.12	Peak	Horizontal



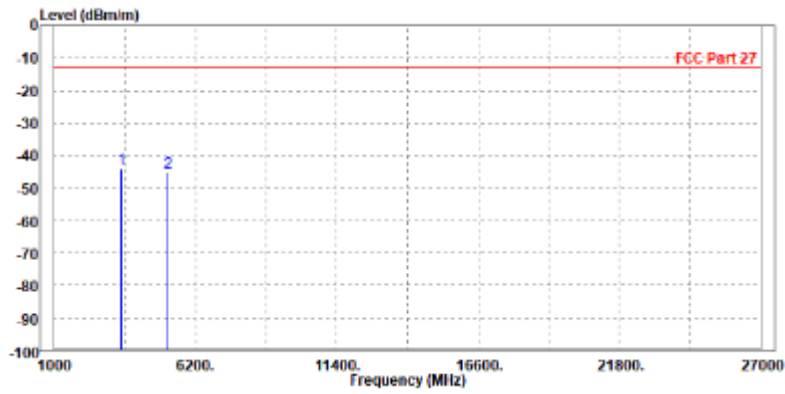




Test Report No.: W7L-P20210616-2RF06

<b>MODE</b>	TX channel 1413	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 3478.000	-44.13	-53.29	-13.00	-31.13	9.16	Peak	Vertical
2	5197.800	-45.41	-55.23	-13.00	-32.41	9.82	Peak	Vertical



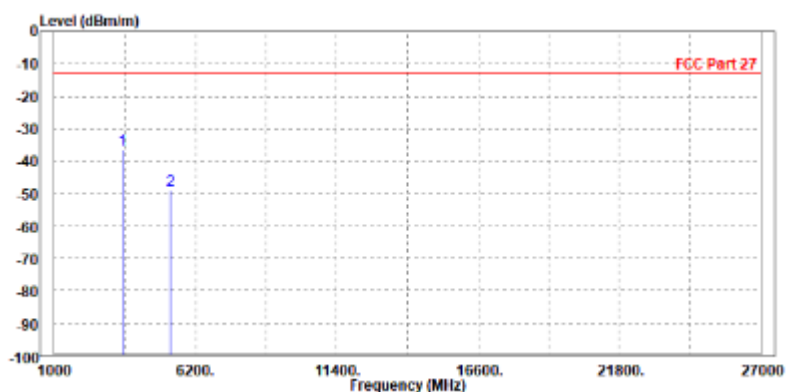


Test Report No.: W7L-P20210616-2RF06

CH 1513

MODE	TX channel 1513	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3496.000	-36.59	-45.16	-13.00	-23.59	8.57	Peak	Horizontal
2	5257.000	-49.18	-58.48	-13.00	-36.18	9.30	Peak	Horizontal

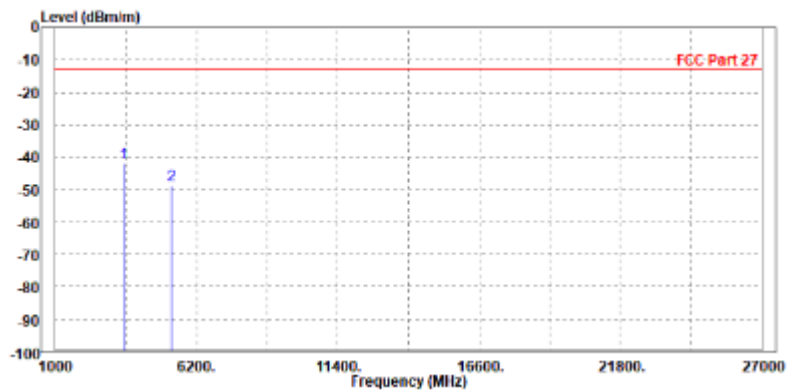




Test Report No.: W7L-P20210616-2RF06

<b>MODE</b>	TX channel 1513	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 3496.000	-41.93	-51.12	-13.00	-28.93	9.19	Peak	Vertical
2	5257.800	-48.55	-58.35	-13.00	-35.55	9.80	Peak	Vertical



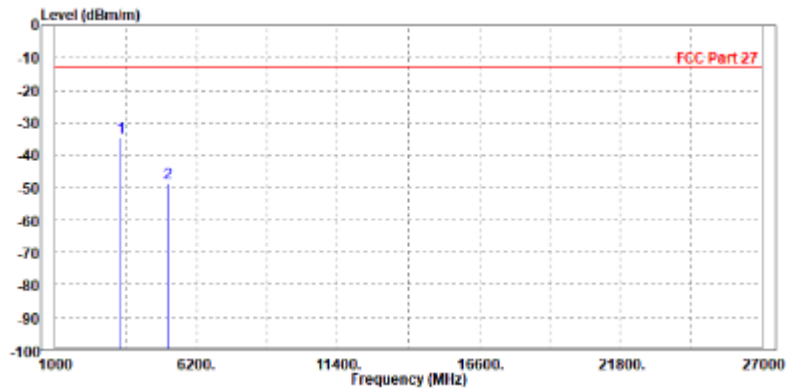


Test Report No.: W7L-P20210616-2RF06

LTE Band 4  
 CHANNEL BANDWIDTH: 1.4MHz / QPSK  
 CH 19957

MODE	TX channel 19957	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Read	Limit	Over				
Freq	Level	Level	Line	Limit	Factor	Remark	Poi/Phase
MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP 3418.000	-34.79	-43.38	-13.00	-21.79	8.59	Peak	Horizontal
2 5132.100	-48.60	-57.52	-13.00	-35.60	8.92	Peak	Horizontal

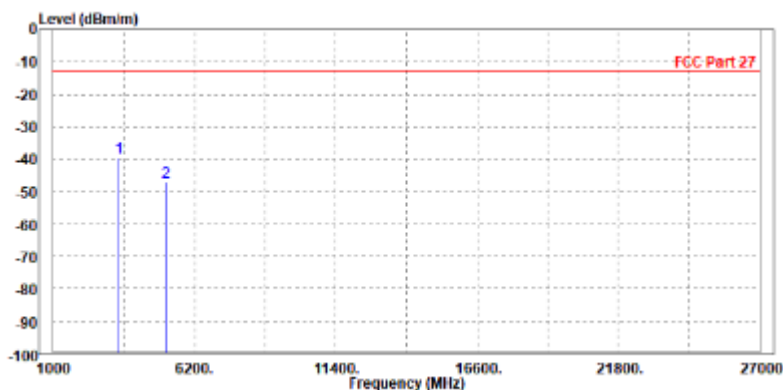




Test Report No.: W7L-P20210616-2RF06

MODE	TX channel 19957	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Read	Limit	Over			
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm/m	dBm	dBm/m	dB	dB/m	Pol/Phase
1 PP 3418.000	-39.66	-48.77	-13.00	-26.66	9.11	Peak Vertical
2 5132.100	-47.05	-56.90	-13.00	-34.05	9.85	Peak Vertical



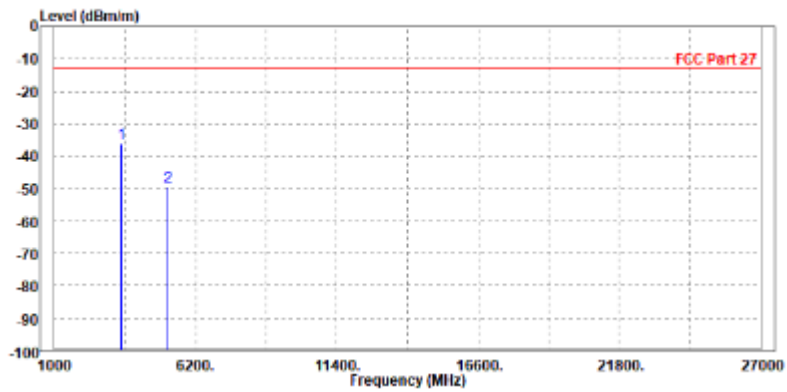


Test Report No.: W7L-P20210616-2RF06

CH 20175

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3478.888	-36.13	-44.71	-13.00	-23.13	8.58	Peak	Horizontal
2	5197.500	-49.29	-58.41	-13.00	-36.29	9.12	Peak	Horizontal

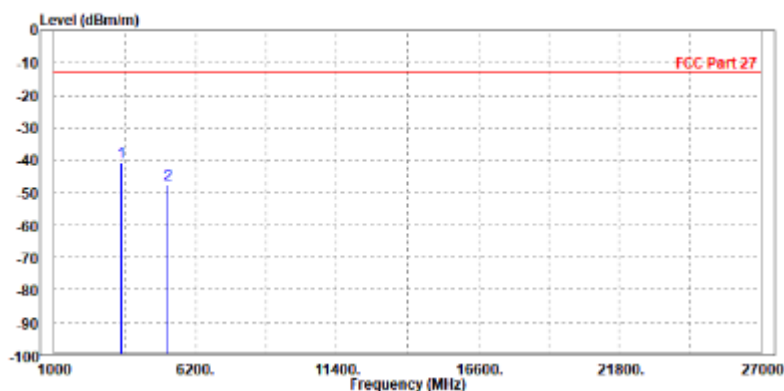




Test Report No.: W7L-P20210616-2RF06

MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 3470.000	-40.68	-49.84	-13.00	-27.68	9.16	Peak	Vertical
2	5197.500	-47.56	-57.38	-13.00	-34.56	9.82	Peak	Vertical



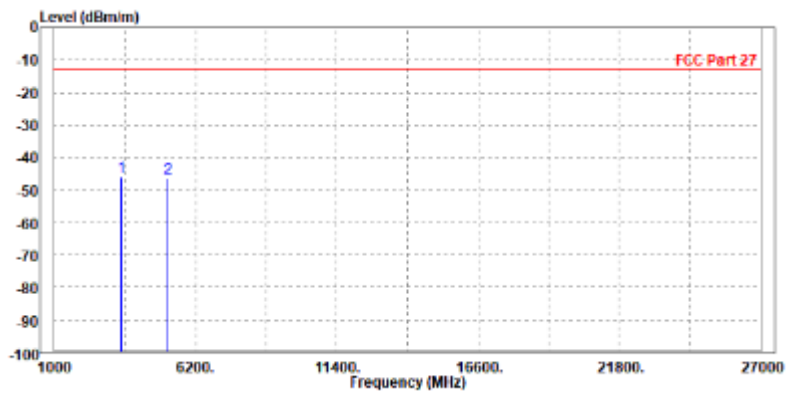


Test Report No.: W7L-P20210616-2RF06

CH 20393

<b>MODE</b>	TX channel 20393	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 3478.800	-46.00	-54.58	-13.00	-33.00	8.58	Peak	Horizontal
2	5197.500	-46.25	-55.37	-13.00	-33.25	9.12	Peak	Horizontal



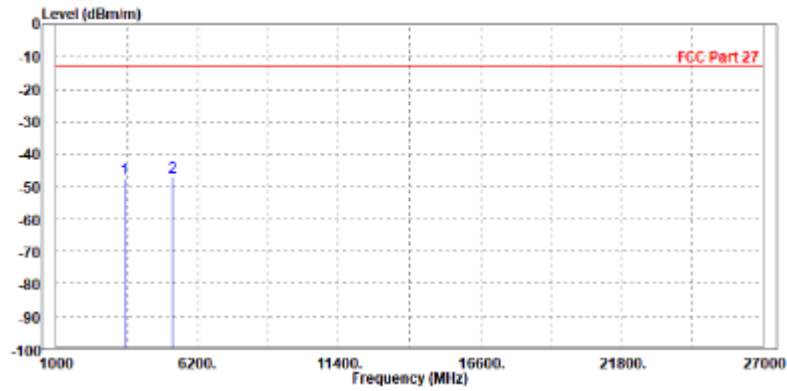




Test Report No.: W7L-P20210616-2RF06

MODE	TX channel 20393	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3496.000	-47.69	-56.88	-13.00	-34.69	9.19	Peak	Vertical
2 PP	5262.900	-47.14	-56.94	-13.00	-34.14	9.80	Peak	Vertical





**BUREAU  
VERITAS**

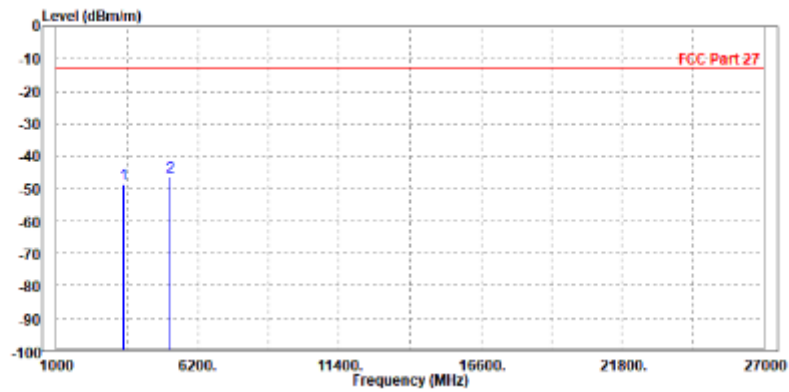
Test Report No.: W7L-P20210616-2RF06

CHANNEL BANDWIDTH: 3MHz / QPSK

CH 20175

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3478.888	-48.56	-57.14	-13.88	-35.56	8.58	Peak	Horizontal
2 PP	5197.588	-46.23	-55.35	-13.88	-33.23	9.12	Peak	Horizontal

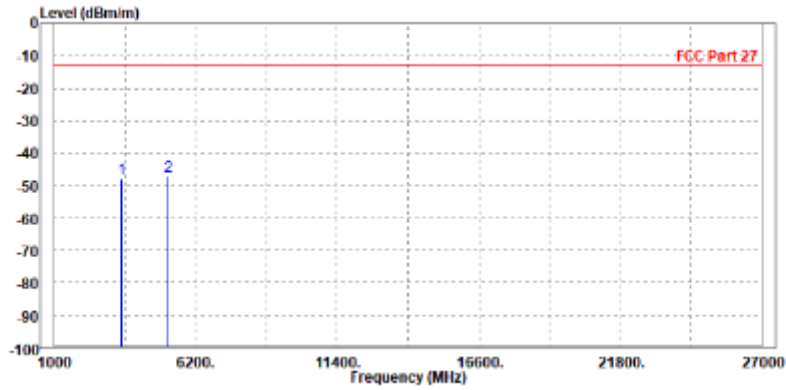




Test Report No.: W7L-P20210616-2RF06

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3478.800	-47.94	-57.18	-13.00	-34.94	9.16	Peak	Vertical
2 PP	5197.500	-47.15	-56.97	-13.00	-34.15	9.82	Peak	Vertical





BUREAU VERITAS

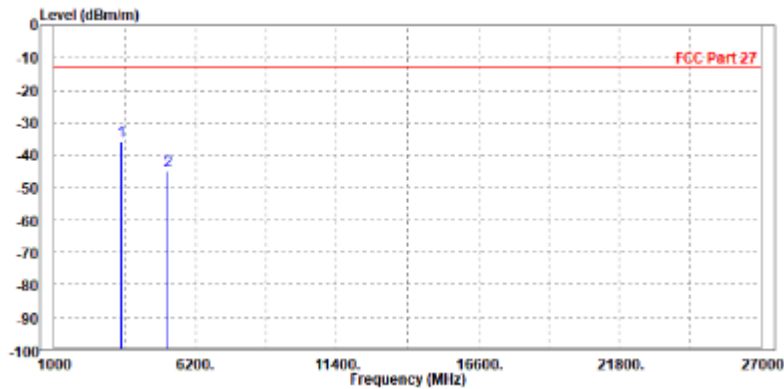
Test Report No.: W7L-P20210616-2RF06

CHANNEL BANDWIDTH: 5MHz / QPSK

CH 20175

MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3478.000	-35.87	-44.45	-13.00	-22.87	8.58	Peak	Horizontal
2	5197.500	-44.98	-54.10	-13.00	-31.98	9.12	Peak	Horizontal

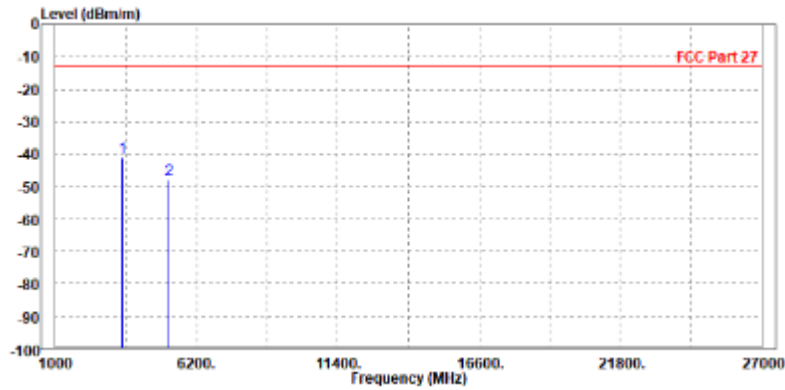




Test Report No.: W7L-P20210616-2RF06

MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 3478.800	-41.12	-58.28	-13.00	-28.12	9.16	Peak	Vertical
2	5197.500	-47.78	-57.60	-13.00	-34.78	9.82	Peak	Vertical





BUREAU VERITAS

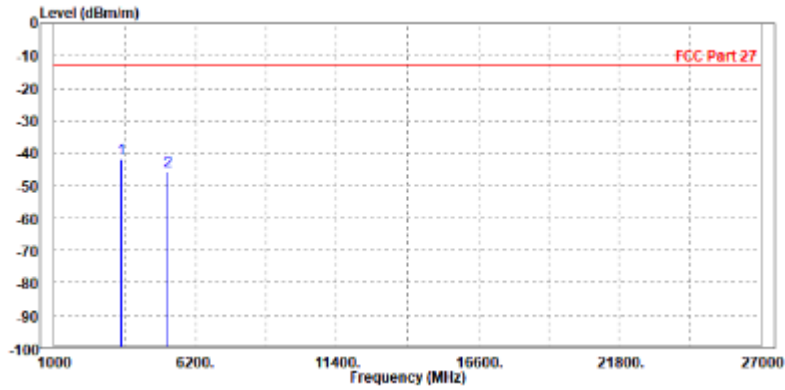
Test Report No.: W7L-P20210616-2RF06

CHANNEL BANDWIDTH: 10MHz / QPSK

CH 20175

MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 3470.000	-41.90	-50.48	-13.00	-28.90	8.58	Peak	Horizontal
2	5197.500	-45.50	-54.62	-13.00	-32.50	9.12	Peak	Horizontal

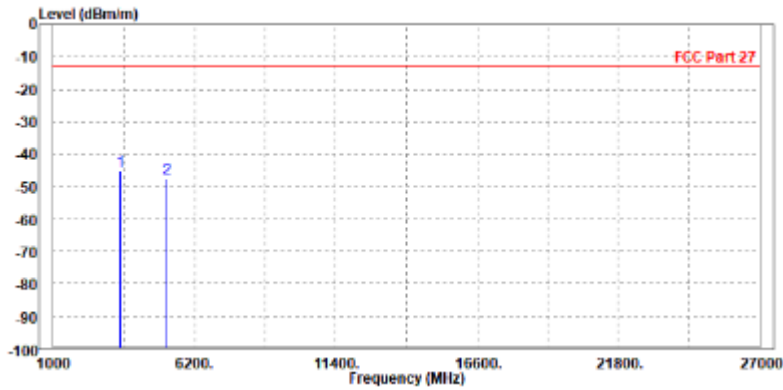




Test Report No.: W7L-P20210616-2RF06

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 3470.000	-45.29	-54.45	-13.00	-32.29	9.16	Peak	Vertical
2	5197.500	-47.51	-57.33	-13.00	-34.51	9.82	Peak	Vertical



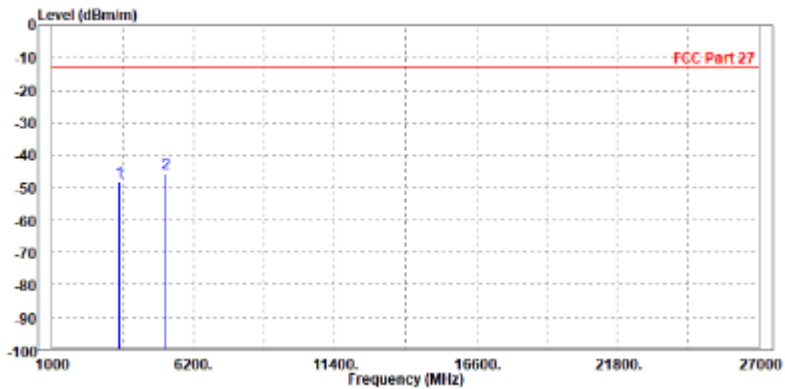


Test Report No.: W7L-P20210616-2RF06

**CHANNEL BANDWIDTH: 15MHz / QPSK**  
**CH 20175**

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3478.000	-48.46	-57.04	-13.00	-35.46	8.58	Peak	Horizontal
2 PP	5197.500	-45.66	-54.78	-13.00	-32.66	9.12	Peak	Horizontal



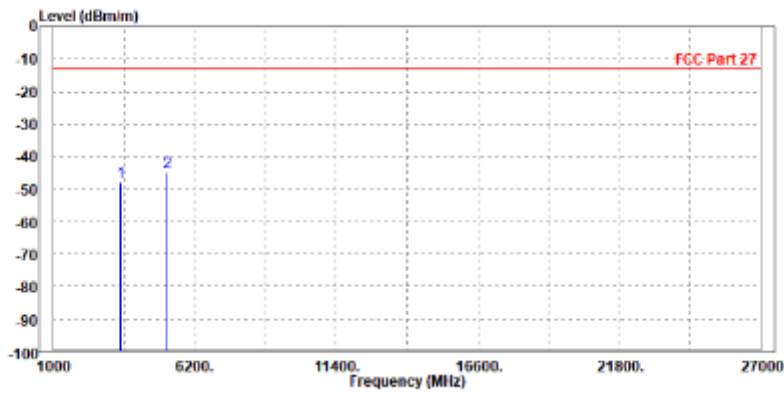




Test Report No.: W7L-P20210616-2RF06

MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-47.77	-56.93	-13.00	-34.77	9.16	Peak	Vertical
2	5197.500	-44.86	-54.68	-13.00	-31.86	9.82	Peak	Vertical





**BUREAU  
VERITAS**

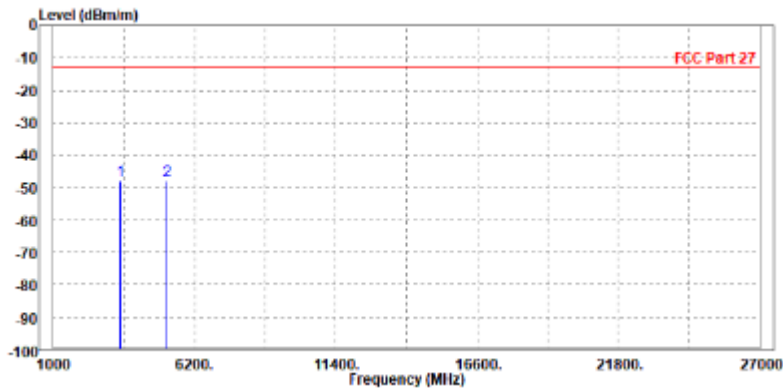
Test Report No.: W7L-P20210616-2RF06

CHANNEL BANDWIDTH: 20MHz / QPSK

CH 20175

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-47.94	-56.52	-13.00	-34.94	8.58	Peak	Horizontal
2 PP	5197.500	-47.75	-56.87	-13.00	-34.75	9.12	Peak	Horizontal





Test Report No.: W7L-P20210616-2RF06

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3478.800	-47.87	-56.23	-13.00	-34.87	9.16	Peak	Vertical
2 PP	5197.500	-45.27	-55.09	-13.00	-32.27	9.82	Peak	Vertical

