



Test Report No.: RF200629W001-4



FCC TEST REPORT (PART 27)

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

Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
Product:	GSM/WCDMA/LTE Mobile Phone
Brand Name:	Nokia
Model Name:	TA-1282
FCC ID:	2AJOTTA-1282
Date of tests:	Jun. 30, 2020 ~ Jul. 20, 2020

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

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

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

Prepared by Alex Chen Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Date: Jul. 21, 2020	Date: Jul. 21, 2020

This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 SUMMARY OF TEST RESULTS	5
1.1 MEASUREMENT UNCERTAINTY	5
1.2 TEST SITE AND INSTRUMENTS	6
2 GENERAL INFORMATION.....	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 CONFIGURATION OF SYSTEM UNDER TEST	11
2.3 DESCRIPTION OF SUPPORT UNITS	12
2.4 DESCRIPTION OF TEST MODES.....	12
2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	17
3 TEST TYPES AND RESULTS	18
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	19
3.2 FREQUENCY STABILITY MEASUREMENT	32
3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT	32
3.2.2 TEST PROCEDURE	32
3.2.3 TEST SETUP	32
3.2.4 TEST RESULTS	33
3.3 OCCUPIED BANDWIDTH MEASUREMENT	46
3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT	46
3.3.2 TEST SETUP	46
3.3.3 TEST PROCEDURES	46
3.3.4 TEST RESULTS	47
3.4 PEAK TO AVERAGE RATIO	60
3.4.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT	60
3.4.2 TEST SETUP	60
3.4.3 TEST PROCEDURES	60
3.4.4 TEST RESULTS	61
3.5 BAND EDGE MEASUREMENT	76
3.5.1 LIMITS OF BAND EDGE MEASUREMENT	76
3.5.2 TEST SETUP	76
3.5.3 TEST PROCEDURES	77
3.5.4 TEST RESULTS	78
3.6 CONDUCTED SPURIOUS EMISSIONS.....	103
3.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT	103
3.6.2 TEST PROCEDURE	103
3.6.3 TEST SETUP	103
3.6.4 TEST RESULTS	104
3.7 RADIATED EMISSION MEASUREMENT	117
3.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT	117
3.7.2 TEST PROCEDURES	117
3.7.3 DEVIATION FROM TEST STANDARD	117
3.7.4 TEST SETUP	118
3.7.5 TEST RESULTS	119



**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

4	INFORMATION ON THE TESTING LABORATORIES	163
5	APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	164



Test Report No.: RF200629W001-4

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF200629W001-4	Original release	Jul. 21, 2020

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 27 & Part 2		
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT
2.1046 27.50(d)(4)	Maximum Peak Output Power	Compliance
2.1055 27.54	Frequency Stability	Compliance
2.1049 27.53(h)	Occupied Bandwidth	Compliance
27.50(d)(5)	Peak to average ratio	Compliance
27.53(h)	Band Edge Measurements	Compliance
2.1051 27.53(h)	Conducted Spurious Emissions	Compliance
2.1053 27.53(h)	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	± 76.97Hz
Radiated emissions & Radiated Power (30MHz~1GMHz)	±4.98dB
Radiated emissions & Radiated Power (1GMHz ~6GMHz)	±4.70dB
Radiated emissions (6GMHz ~18GMHz)	±4.60dB
Radiated emissions (18GMHz ~40GMHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Band Edge Measurements	±4.70dB
Peak to average ratio	±0.76dB

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	Apr. 27,20	Apr. 26,21
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 26,20	Feb. 25,21
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 27,20	Mar. 26,21
Horn Antenna (1GHz-18GHz)	ETS-LINDGREN	3117	00168692	Mar. 27,20	Mar. 26,21
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Nov. 24, 19	Nov. 23, 20
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 27,20	Feb. 26,21
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,20	Jun. 01,21
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 02,20	Jun. 01,21
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 30,20	Apr. 29,21
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 V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,20	Jun. 02,21
Power Meter	Anritsu	ML2495A	1506002	Feb. 26,20	Feb. 25,21
Power Sensor	Anritsu	MA2411B	1339352	Feb. 26,20	Feb. 25,21
Humid & Temp Programmable Tester	Juyi	ITH-120-45-CP-AR	IAA1504-001	Jun. 02,20	Jun. 01,21
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 11,20	Mar. 10,21
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.



**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	GSM/WCDMA/LTE Mobile Phone	
BRAND NAME	Nokia	
MODEL NAME	TA-1282	
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.7Vdc (Li-ion, battery)	
MODULATION TECHNOLOGY	WCDMA	BPSK, QPSK
	LTE	QPSK, 16QAM
FREQUENCY RANGE	WCDMA IV	1712.4MHz ~ 1752.6MHz
	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	1715.0MHz ~ 1750.0MHz
	LTE Band 4 Channel Bandwidth: 15MHz	1717.5MHz ~ 1747.5MHz
	LTE Band 4 Channel Bandwidth: 20MHz	1720.0MHz ~ 1745.0MHz
	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	704.0MHz ~ 711.0MHz
	LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz
	LTE Band 13 Channel Bandwidth: 10MHz	782.0MHz

EMISSION DESIGNATOR	WCDMA IV	4M16F9W
	LTE Band 4 Channel Bandwidth: 1.4MHz	QPSK: 1M09G7D
		16QAM: 1M09W7D
	LTE Band 4 Channel Bandwidth: 3MHz	QPSK: 2M70G7D
		16QAM: 2M69W7D
	LTE Band 4 Channel Bandwidth: 5MHz	QPSK: 4M49G7D
		16QAM: 4M48W7D
	LTE Band 4 Channel Bandwidth: 10MHz	QPSK: 8M98G7D
		16QAM: 8M97W7D
	LTE Band 4 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M5W7D
	LTE Band 4 Channel Bandwidth: 20MHz	QPSK: 18M0G7D
		16QAM: 18M0W7D
	LTE Band 12 Channel Bandwidth: 1.4MHz	QPSK: 1M09G7D
		16QAM: 1M09W7D
	LTE Band 12 Channel Bandwidth: 3MHz	QPSK: 2M69G7D
16QAM: 2M69W7D		
LTE Band 12 Channel Bandwidth: 5MHz	QPSK: 4M48G7D	
	16QAM: 4M49W7D	
LTE Band 12 Channel Bandwidth: 10MHz	QPSK: 8M97G7D	
	16QAM: 8M97W7D	
LTE Band 13 Channel Bandwidth: 5MHz	QPSK: 4M49G7D	
	16QAM: 4M49W7D	
LTE Band 13 Channel Bandwidth: 10MHz	QPSK: 8M94G7D	
	16QAM: 8M92W7D	

MAX. ERP/EIRP POWER	WCDMA IV	121mW
	LTE Band 4 Channel Bandwidth: 1.4MHz	108mW
	LTE Band 4 Channel Bandwidth: 3MHz	109mW
	LTE Band 4 Channel Bandwidth: 5MHz	107mW
	LTE Band 4 Channel Bandwidth: 10MHz	108mW
	LTE Band 4 Channel Bandwidth: 15MHz	108mW
	LTE Band 4 Channel Bandwidth: 20MHz	109mW
	LTE Band 12 Channel Bandwidth: 1.4MHz	34mW
	LTE Band 12 Channel Bandwidth: 3MHz	34mW
	LTE Band 12 Channel Bandwidth: 5MHz	35mW
	LTE Band 12 Channel Bandwidth: 10MHz	35mW
	LTE Band 13 Channel Bandwidth: 5MHz	50mW
	LTE Band 13 Channel Bandwidth: 10MHz	50mW
	ANTENNA TYPE	Fixed Internal Antenna with -3.10dBi gain for WCDMA IV/LTE B4 Fixed Internal Antenna with -5.58dBi gain for LTE B12 Fixed Internal Antenna with -3.83dBi gain for LTE B13
HW VERSION	0154	
SW VERSION	0.2025.11.05	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	USB cable: non-shielded, detachable, 1meter Earphone: non-shielded, detachable, 1.5meter	

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.



**BUREAU
VERITAS**

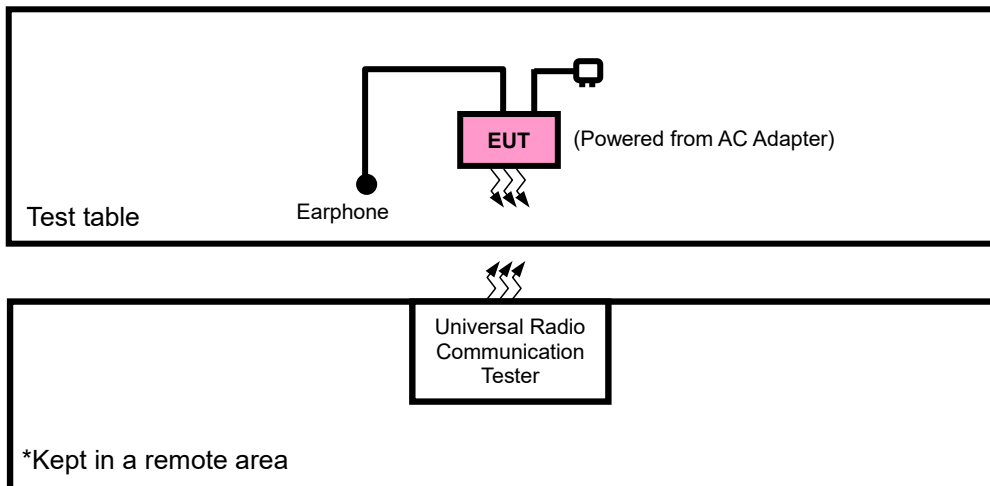
Test Report No.: RF200629W001-4

List of Accessory:

ACCESSORIES	BRAND	MODEL	MANUFACTURER	SPECIFICATION
Battery 1	Nokia	BL-4WL	TM	Power Rating:3.7 Vdc, 1150 mAh
AC Adapter 1	Nokia	AC-18U	DVE	I/P: 100 - 240 Vac, 100mA, O/P: 5Vdc, 550 mA
AC Adapter 2	Nokia	AC-18U	Aohai	I/P: 100 - 240 Vac, 100mA, O/P: 5Vdc, 550 mA
Earphone 1	Nokia	WH-108	RTF	1.5m non-shielded cable w/ core
USB Cable 1	Nokia	CA-190CD	RTF	1m non-shielded cable w/ core

2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST





2.3 DESCRIPTION OF SUPPORT UNITS

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

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

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.8m

NOTE:

1. All power cords of the above support units are non shielded.

2.4 DESCRIPTION OF TEST MODES

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 in ERP/EIRP and radiated emission was found when positioned on X-plane for WCDMA /LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter + USB Cable with WCDMA or LTE link
B	EUT + Battery with 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	CONDCUDED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA
A	RADIATED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA

LTE BAND 4

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	
B	FREQUENCY STABILITY	19957 to 20393	19957, 20393	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	19957, 20175, 20393	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	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	
B	BAND EDGE	19957 to 20393	19957	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset	
			20393	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset	
		19965 to 20385	19965	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset	
			20385	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset	
		19975 to 20375	19975	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset	
			20375	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset	
		20000 to 20350	20000	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset	
			20350	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset	
							1 RB / 5 RB Offset
							1 RB / 14 RB Offset
							1 RB / 24 RB Offset
							1 RB / 49 RB Offset

B	BAND EDGE	20025 to 20325	20025	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
			20325	15MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		20050 to 20300	20050	20MHz	QPSK, 16QAM	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
			20300	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
B	CONDCUDED 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.



**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

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		
B	FREQUENCY STABILITY	23017 to 23173	23017, 23173	1.4MHz	QPSK	1 RB / 0 RB Offset		
		23025 to 23165	23025, 23165	3MHz	QPSK	1 RB / 0 RB Offset		
		23035 to 23155	23035, 23155	5MHz	QPSK	1 RB / 0 RB Offset		
		23060 to 23130	23060, 23130	10MHz	QPSK	1 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	15 RB / 0 RB Offset		
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset		
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset		
B	PEAK TO AVERAGE RATIO	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		
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 15 RB / 0 RB Offset		
			23165	3MHz	QPSK	1 RB / 14 RB Offset 15 RB / 0 RB Offset		
		23035 to 23155	23035	5MHz	QPSK	1 RB / 0 RB Offset 25 RB / 0 RB Offset		
			23155	5MHz	QPSK	1 RB / 24 RB Offset 25 RB / 0 RB Offset		
		23060 to 23130	23060	10MHz	QPSK	1 RB / 0 RB Offset 50 RB / 0 RB Offset		
			23130	10MHz	QPSK	1 RB / 49 RB Offset 50 RB / 0 RB Offset		
		B	CONDCUETED 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	23095	5MHz	QPSK	1 RB / 0 RB Offset		
		23060 to 23130	23060, 23095 ,23130	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	23205, 23230, 23255	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	23205 to 23255	23205, 23255	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	23205 to 23255	23205, 23230, 23255	5MHz	QPSK,16QAM	25 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM	50 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	23205 to 23255	23205, 23230, 23255	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
B	BAND EDGE	23205 to 23255	23205	5MHz	QPSK	1 RB / 0 RB Offset
			23255	5MHz	QPSK	25 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	1 RB / 24 RB Offset
			23230	10MHz	QPSK	25 RB / 0 RB Offset
			23230	10MHz	QPSK	1 RB / 0 RB Offset
			23230	10MHz	QPSK	50 RB / 0 RB Offset
B	CONDCUDED EMISSION	23205 to 23255	23205, 23230, 23255	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	23205 to 23255	23205, 23230, 23255	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
EIRP	23deg. C, 70%RH	DC 3.7V By Battery	Star Le
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.6V/3.7V/4.2V	Kevin Zhang
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC 3.7V By Battery	Kevin Zhang
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC 3.7V By Battery	Kevin Zhang
BAND EDGE	23deg. C, 70%RH	DC 3.7V By Battery	Kevin Zhang
CONDCUDED EMISSION	23deg. C, 70%RH	DC 3.7V By Battery	Kevin Zhang
RADIATED EMISSION	23deg. C, 70%RH	DC 5V By Adapter	Star Le



Test Report No.: RF200629W001-4

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

27.50(b)(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

27.50(c)(10) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

27.50(d)(4) Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

3.1.2 TEST PROCEDURES

EIRP / ERP MEASUREMENT:

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

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

Where:

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

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

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

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

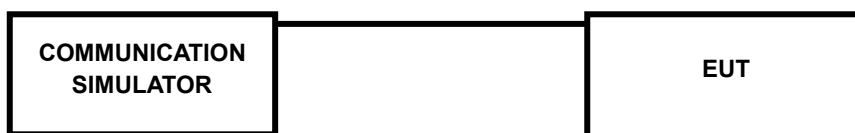
CONDUCTED POWER MEASUREMENT:

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

3.1.3 TEST SETUP

EIRP MEASUREMENT:

CONDUCTED POWER MEASUREMENT:



3.1.4 TEST RESULTS

AVERAGE CONDUCTED OUTPUT POWER (dBm)

Band	WCDMA IV			Max. Tune-up Power
	Channel	1312	1413	
Rx Channel	1537	1638	1738	
Frequency	1712.4	1732.6	1752.6	
RMC 12.2K	23.86	23.91	23.88	25.0
HSDPA Subtest-1	22.79	22.83	22.75	24.0
HSDPA Subtest-2	22.77	22.80	22.72	24.0
HSDPA Subtest-3	22.25	22.36	22.28	23.5
HSDPA Subtest-4	22.22	22.31	22.23	23.5
HSUPA Subtest-1	22.72	22.81	22.73	24.0
HSUPA Subtest-2	20.67	20.76	20.68	22.0
HSUPA Subtest-3	21.76	21.85	21.77	23.0
HSUPA Subtest-4	20.64	20.73	20.65	22.0
HSUPA Subtest-5	22.66	22.75	22.67	24.0



**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

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	23.33	23.44	23.38	0
		1	2	23.30	23.34	23.33	0
		1	5	23.16	23.18	23.15	0
		3	0	23.29	23.34	23.35	0
		3	1	23.20	23.26	23.15	0
		3	3	23.11	23.15	23.12	0
	16QAM	6	0	22.18	22.20	22.19	1
		1	0	22.86	22.91	22.88	1
		1	2	22.79	22.80	22.81	1
		1	5	22.65	22.69	22.71	1
		3	0	22.27	22.33	22.28	1
		3	1	22.28	22.42	22.33	1
		3	3	22.22	22.28	22.27	1
		6	0	21.34	21.45	21.37	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	23.35	23.46	23.37	0
		1	7	23.26	23.35	23.33	0
		1	14	23.12	23.18	23.15	0
		8	0	22.28	22.37	22.35	1
		8	3	22.13	22.26	22.17	1
		8	7	22.08	22.22	22.16	1
		15	0	22.15	22.21	22.13	1
	16QAM	1	0	22.83	22.97	22.91	1
		1	7	22.76	22.83	22.79	1
		1	14	22.68	22.69	22.71	1
		8	0	21.23	21.34	21.28	2
		8	3	21.33	21.37	21.36	2
		8	7	21.24	21.26	21.23	2
		15	0	21.34	21.39	21.40	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	23.36	23.41	23.38	0
		1	12	23.31	23.32	23.33	0
		1	24	23.13	23.17	23.19	0
		12	0	22.31	22.37	22.32	1
		12	6	22.13	22.27	22.18	1
		12	13	22.12	22.18	22.17	1
		25	0	22.13	22.24	22.16	1
	16QAM	1	0	22.84	22.93	22.91	1
		1	12	22.73	22.86	22.78	1
		1	24	22.68	22.69	22.70	1
		12	0	21.23	21.32	21.25	2
		12	6	21.30	21.41	21.32	2
		12	13	21.19	21.28	21.26	2
		25	0	21.34	21.40	21.37	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	23.33	23.44	23.38	0
		1	24	23.31	23.32	23.34	0
		1	49	23.10	23.21	23.15	0
		25	0	22.32	22.36	22.35	1
		25	12	22.19	22.21	22.18	1
		25	25	22.10	22.15	22.16	1
		50	0	22.18	22.24	22.13	1
	16QAM	1	0	22.84	22.90	22.87	1
		1	24	22.78	22.82	22.81	1
		1	49	22.68	22.70	22.67	1
		25	0	21.25	21.30	21.31	2
		25	12	21.34	21.35	21.37	2
		25	25	21.18	21.29	21.23	2
		50	0	21.38	21.39	21.41	2



Test Report No.: RF200629W001-4

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	23.40	23.44	23.35	0
		1	37	23.29	23.37	23.29	0
		1	74	23.16	23.24	23.16	0
		36	0	22.29	22.37	22.36	1
		36	19	22.20	22.26	22.18	1
		36	39	22.08	22.16	22.16	1
		75	0	22.18	22.22	22.18	1
	16QAM	1	0	22.88	22.97	22.87	1
		1	37	22.77	22.83	22.81	1
		1	74	22.64	22.75	22.69	1
		36	0	21.29	21.30	21.32	2
		36	19	21.28	21.39	21.33	2
		36	39	21.23	21.27	21.26	2
		75	0	21.39	21.42	21.34	2

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	23.41	23.48	23.43	0
		1	50	23.33	23.40	23.35	0
		1	99	23.18	23.25	23.20	0
		50	0	22.35	22.42	22.37	1
		50	25	22.21	22.28	22.23	1
		50	50	22.16	22.23	22.18	1
		100	0	22.19	22.26	22.21	1
	16QAM	1	0	22.91	22.98	22.93	1
		1	50	22.81	22.88	22.83	1
		1	99	22.70	22.77	22.72	1
		50	0	21.31	21.38	21.33	2
		50	25	21.36	21.43	21.38	2
		50	50	21.26	21.33	21.28	2
		100	0	21.40	21.47	21.42	2



**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

LTE Band 12

Band/BW	Modulation	RB Size	RB Offset	Low CH 23017	Mid CH 23095	High CH 23173	MPR
				Frequency 699.7 MHz	Frequency 707.5 MHz	Frequency 715.3 MHz	
12/ 1.4	QPSK	1	0	22.89	22.89	22.96	0
		1	2	22.95	22.88	23.00	0
		1	5	23.06	22.97	23.07	0
		3	0	22.84	22.78	22.92	0
		3	1	22.83	22.78	22.80	0
		3	3	22.86	22.79	22.89	0
	16QAM	6	0	21.82	21.73	21.85	1
		1	0	22.16	22.10	22.20	1
		1	2	22.26	22.16	22.30	1
		1	5	22.32	22.25	22.40	1
		3	0	21.67	21.62	21.70	1
		3	1	21.75	21.78	21.82	1
		3	3	21.77	21.72	21.84	1
		6	0	20.85	20.85	20.90	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 23025	Mid CH 23095	High CH 23165	MPR
				Frequency 700.5 MHz	Frequency 707.5 MHz	Frequency 714.5 MHz	
12/ 3	QPSK	1	0	22.91	22.91	22.95	0
		1	7	22.91	22.89	23.00	0
		1	14	23.02	22.97	23.07	0
		8	0	21.83	21.81	21.92	1
		8	3	21.76	21.78	21.82	1
		8	7	21.83	21.86	21.93	1
		15	0	21.79	21.74	21.79	1
	16QAM	1	0	22.13	22.16	22.23	1
		1	7	22.23	22.19	22.28	1
		1	14	22.35	22.25	22.40	1
		8	0	20.63	20.63	20.70	2
		8	3	20.80	20.73	20.85	2
		8	7	20.79	20.70	20.80	2
		15	0	20.85	20.79	20.93	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 23035	Mid CH 23095	High CH 23155	MPR
				Frequency 701.5 MHz	Frequency 707.5 MHz	Frequency 713.5 MHz	
12/ 5	QPSK	1	0	22.92	22.86	22.96	0
		1	12	22.96	22.86	23.00	0
		1	24	23.03	22.96	23.11	0
		12	0	21.86	21.81	21.89	1
		12	6	21.76	21.79	21.83	1
		12	13	21.87	21.82	21.94	1
		25	0	21.77	21.77	21.82	1
	16QAM	1	0	22.14	22.12	22.23	1
		1	12	22.20	22.22	22.27	1
		1	24	22.35	22.25	22.39	1
		12	0	20.63	20.61	20.67	2
		12	6	20.77	20.77	20.81	2
		12	13	20.74	20.72	20.83	2
		25	0	20.85	20.80	20.90	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 23060	Mid CH 23095	High CH 23130	MPR
				Frequency 704 MHz	Frequency 707.5 MHz	Frequency 711 MHz	
12/ 10	QPSK	1	0	22.97	22.93	23.01	0
		1	24	22.98	22.94	23.02	0
		1	49	23.08	23.04	23.12	0
		25	0	21.90	21.86	21.94	1
		25	12	21.84	21.80	21.88	1
		25	25	21.91	21.87	21.95	1
		50	0	21.83	21.79	21.87	1
	16QAM	1	0	22.21	22.17	22.25	1
		1	24	22.28	22.24	22.32	1
		1	49	22.37	22.33	22.41	1
		25	0	20.71	20.67	20.75	2
		25	12	20.83	20.79	20.87	2
		25	25	20.81	20.77	20.85	2
		50	0	20.91	20.87	20.95	2



**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

LTE Band 13

Band/BW	Modulation	RB Size	RB Offset	Low CH 23205	Mid CH 23230	High CH 23255	MPR
				779.5 MHz	782.0 MHz	784.5 MHz	
13/ 5	QPSK	1	0	22.83	22.81	22.83	0
		1	12	22.92	22.86	22.92	0
		1	24	22.96	22.93	23.00	0
		12	0	21.76	21.75	21.75	1
		12	6	21.77	21.84	21.80	1
		12	13	21.91	21.90	21.94	1
		25	0	21.77	21.81	21.78	1
	16QAM	1	0	22.18	22.20	22.23	1
		1	12	22.21	22.27	22.24	1
		1	24	22.25	22.19	22.25	1
		12	0	20.76	20.78	20.76	2
		12	6	21.12	21.16	21.12	2
		12	13	20.82	20.84	20.87	2
		25	0	21.16	21.15	21.17	2

Band/BW	Modulation	RB Size	RB Offset	-	Mid CH 23230	-	MPR
				-	782.0 MHz	-	
13/ 10	QPSK	1	0	-	22.88	-	0
		1	24	-	22.94	-	0
		1	49	-	23.01	-	0
		25	0	-	21.80	-	1
		25	12	-	21.85	-	1
		25	25	-	21.95	-	1
		50	0	-	21.83	-	1
	16QAM	1	0	-	22.25	-	1
		1	24	-	22.29	-	1
		1	49	-	22.27	-	1
		25	0	-	20.84	-	2
		25	12	-	21.18	-	2
		25	25	-	20.89	-	2
		50	0	-	21.22	-	2



**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

EIRP

WCDMA IV

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
1312	1712.4	23.86	-3.10	20.76	119.12	1
1413	1732.6	23.91	-3.10	20.81	120.50	1
1513	1752.6	23.88	-3.10	20.78	119.67	1

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

LTE BAND 4

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	23.33	-3.10	20.23	105.44	1
20175	1732.5	23.44	-3.10	20.34	108.14	1
20393	1754.3	23.38	-3.10	20.28	106.66	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	22.86	-3.10	19.76	94.62	1
20175	1732.5	22.91	-3.10	19.81	95.72	1
20393	1754.3	22.88	-3.10	19.78	95.06	1

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	23.35	-3.10	20.25	105.93	1
20175	1732.5	23.46	-3.10	20.36	108.64	1
20385	1753.5	23.37	-3.10	20.27	106.41	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	22.83	-3.10	19.73	93.97	1
20175	1732.5	22.97	-3.10	19.87	97.05	1
20385	1753.5	22.91	-3.10	19.81	95.72	1



BUREAU
VERITAS

Test Report No.: RF200629W001-4

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	23.36	-3.10	20.26	106.17	1
20175	1732.5	23.41	-3.10	20.31	107.40	1
20375	1752.5	23.38	-3.10	20.28	106.66	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	22.84	-3.10	19.74	94.19	1
20175	1732.5	22.93	-3.10	19.83	96.16	1
20375	1752.5	22.91	-3.10	19.81	95.72	1

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1715.0	23.33	-3.10	20.23	105.44	1
18900	1732.5	23.44	-3.10	20.34	108.14	1
19150	1750.0	23.38	-3.10	20.28	106.66	1

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715.0	22.84	-3.10	19.74	94.19	1
20175	1732.5	22.90	-3.10	19.80	95.50	1
20350	1750.0	22.87	-3.10	19.77	94.84	1



BUREAU
VERITAS

Test Report No.: RF200629W001-4

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	23.40	-3.10	20.30	107.15	1
20175	1732.5	23.44	-3.10	20.34	108.14	1
20325	1747.5	23.35	-3.10	20.25	105.93	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	22.88	-3.10	19.78	95.06	1
20175	1732.5	22.97	-3.10	19.87	97.05	1
20325	1747.5	22.87	-3.10	19.77	94.84	1

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720.0	23.41	-3.10	20.31	107.40	1
20175	1732.5	23.48	-3.10	20.38	109.14	1
20300	1745.0	23.43	-3.10	20.33	107.89	1

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720.0	22.91	-3.10	19.81	95.72	1
20175	1732.5	22.98	-3.10	19.88	97.27	1
20300	1745.0	22.93	-3.10	19.83	96.16	1

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



BUREAU
VERITAS

Test Report No.: RF200629W001-4

LTE Band 12

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23017	699.7	23.06	-5.58	15.33	34.12	3
23095	707.5	22.97	-5.58	15.24	33.42	3
23173	715.3	23.07	-5.58	15.34	34.20	3

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23017	699.7	22.32	-5.58	14.59	28.77	3
23095	707.5	22.25	-5.58	14.52	28.31	3
23173	715.3	22.40	-5.58	14.67	29.31	3

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23025	700.5	23.02	-5.58	15.29	33.81	3
23095	707.5	22.97	-5.58	15.24	33.42	3
23165	714.5	23.07	-5.58	15.34	34.2	3

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23025	700.5	22.35	-5.58	14.62	28.97	3
23095	707.5	22.25	-5.58	14.52	28.31	3
23165	714.5	22.40	-5.58	14.67	29.31	3



BUREAU
VERITAS

Test Report No.: RF200629W001-4

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23035	701.5	23.03	-5.58	15.30	33.88	3
23095	707.5	22.96	-5.58	15.23	33.34	3
23155	713.5	23.11	-5.58	15.38	34.51	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23035	701.5	22.35	-5.58	14.62	28.97	3
23095	707.5	22.25	-5.58	14.52	28.31	3
23155	713.5	22.39	-5.58	14.66	29.24	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23060	704.0	23.08	-5.58	15.35	34.28	3
23095	707.5	23.04	-5.58	15.31	33.96	3
23130	711.0	23.12	-5.58	15.39	34.59	3

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23060	704.0	22.37	-5.58	14.64	29.11	3
23095	707.5	22.33	-5.58	14.60	28.84	3
23130	711.0	22.41	-5.58	14.68	29.38	3



BUREAU
VERITAS

Test Report No.: RF200629W001-4

LTE Band 13

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23205	779.5	22.96	-3.83	16.98	49.89	3
23230	782.0	22.93	-3.83	16.95	49.55	3
23255	784.5	23.00	-3.83	17.02	50.35	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23205	779.5	22.25	-3.83	16.27	42.36	3
23230	782.0	22.27	-3.83	16.29	42.56	3
23255	784.5	22.25	-3.83	16.27	42.36	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23230	782.0	23.01	-3.83	17.03	50.47	3

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
23230	782.0	22.29	-3.83	16.31	42.76	3

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

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

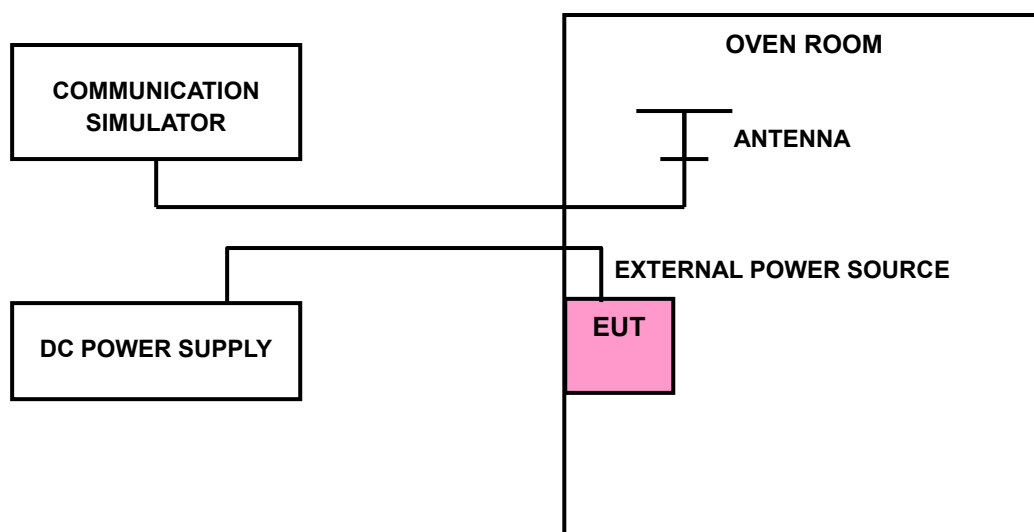
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

3.2.2 TEST PROCEDURE

- 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}	0.0021	0.0020	2.5
V_{min}	-0.0026	-0.0021	2.5
V_{max}	0.0025	0.0020	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
-30	-0.0115	-0.0115	2.5
-20	-0.0101	-0.0107	2.5
-10	-0.0086	-0.0079	2.5
0	-0.0075	-0.0072	2.5
10	-0.0056	-0.0047	2.5
20	-0.0041	-0.0042	2.5
30	-0.0032	-0.0032	2.5
40	-0.0020	-0.0019	2.5
50	-0.0002	-0.0002	2.5

LTE BAND 4

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V_{nor}	0.0020	0.0024	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 battery is from V_{min} to V_{max} .

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0116	-0.0114	2.5
-20	-0.0111	-0.0107	2.5
-10	-0.0085	-0.0079	2.5
0	-0.0078	-0.0073	2.5
10	-0.0047	-0.0049	2.5
20	-0.0040	-0.0042	2.5
30	-0.0039	-0.0024	2.5
40	-0.0020	-0.0022	2.5
50	-0.0003	-0.0006	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0022	0.0021	2.5
V _{min}	-0.0022	-0.0025	2.5
V _{max}	0.0019	0.0018	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0114	-0.0111	2.5
-20	-0.0106	-0.0109	2.5
-10	-0.0082	-0.0079	2.5
0	-0.0078	-0.0072	2.5
10	-0.0045	-0.0049	2.5
20	-0.0042	-0.0038	2.5
30	-0.0025	-0.0039	2.5
40	-0.0016	-0.0017	2.5
50	-0.0002	-0.0004	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0022	0.0025	2.5
V _{min}	-0.0023	-0.0031	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} to V_{max}.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0118	-0.0112	2.5
-20	-0.0109	-0.0096	2.5
-10	-0.0085	-0.0080	2.5
0	-0.0077	-0.0072	2.5
10	-0.0049	-0.0049	2.5
20	-0.0040	-0.0038	2.5
30	-0.0032	-0.0032	2.5
40	-0.0017	-0.0015	2.5
50	-0.0005	-0.0004	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0026	0.0025	2.5
V _{min}	-0.0031	-0.0030	2.5
V _{max}	0.0025	0.0024	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0119	-0.0112	2.5
-20	-0.0098	-0.0098	2.5
-10	-0.0082	-0.0083	2.5
0	-0.0077	-0.0074	2.5
10	-0.0047	-0.0054	2.5
20	-0.0039	-0.0041	2.5
30	-0.0031	-0.0039	2.5
40	-0.0021	-0.0023	2.5
50	-0.0004	-0.0003	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0024	0.0026	2.5
V _{min}	-0.0031	-0.0030	2.5
V _{max}	0.0026	0.0023	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0117	-0.0113	2.5
-20	-0.0103	-0.0107	2.5
-10	-0.0083	-0.0083	2.5
0	-0.0074	-0.0074	2.5
10	-0.0048	-0.0047	2.5
20	-0.0045	-0.0042	2.5
30	-0.0032	-0.0028	2.5
40	-0.0017	-0.0017	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 _{nor}	0.0025	0.0024	2.5
V _{min}	-0.0031	-0.0030	2.5
V _{max}	0.0025	0.0025	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0122	-0.0115	2.5
-20	-0.0100	-0.0107	2.5
-10	-0.0084	-0.0082	2.5
0	-0.0075	-0.0076	2.5
10	-0.0045	-0.0051	2.5
20	-0.0044	-0.0038	2.5
30	-0.0026	-0.0039	2.5
40	-0.0021	-0.0020	2.5
50	-0.0003	-0.0004	2.5



LTE BAND 12

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0022	0.0023	2.5
V _{min}	-0.0030	-0.0030	2.5
V _{max}	0.0021	0.0021	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0118	-0.0116	2.5
-20	-0.0106	-0.0097	2.5
-10	-0.0082	-0.0080	2.5
0	-0.0078	-0.0075	2.5
10	-0.0050	-0.0045	2.5
20	-0.0042	-0.0042	2.5
30	-0.0035	-0.0041	2.5
40	-0.0022	-0.0021	2.5
50	-0.0005	-0.0002	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}	0.0019	0.0018	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0118	-0.0113	2.5
-20	-0.0102	-0.0106	2.5
-10	-0.0086	-0.0079	2.5
0	-0.0078	-0.0075	2.5
10	-0.0049	-0.0051	2.5
20	-0.0041	-0.0039	2.5
30	-0.0040	-0.0027	2.5
40	-0.0023	-0.0015	2.5
50	-0.0004	-0.0002	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 battery is from V_{min} to V_{max}.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0121	-0.0111	2.5
-20	-0.0110	-0.0110	2.5
-10	-0.0082	-0.0084	2.5
0	-0.0078	-0.0073	2.5
10	-0.0056	-0.0049	2.5
20	-0.0044	-0.0040	2.5
30	-0.0039	-0.0031	2.5
40	-0.0017	-0.0017	2.5
50	-0.0002	-0.0003	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0025	0.0025	2.5
V _{min}	-0.0031	-0.0030	2.5
V _{max}	0.0024	0.0025	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0120	-0.0116	2.5
-20	-0.0099	-0.0102	2.5
-10	-0.0081	-0.0083	2.5
0	-0.0077	-0.0073	2.5
10	-0.0052	-0.0045	2.5
20	-0.0039	-0.0043	2.5
30	-0.0040	-0.0032	2.5
40	-0.0022	-0.0018	2.5
50	-0.0002	-0.0005	2.5



LTE BAND 13

FREQUENCY ERROR VS. VOLTAGE

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

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0119	-0.0111	2.5
-20	-0.0105	-0.0108	2.5
-10	-0.0082	-0.0082	2.5
0	-0.0078	-0.0074	2.5
10	-0.0057	-0.0050	2.5
20	-0.0039	-0.0042	2.5
30	-0.0026	-0.0025	2.5
40	-0.0015	-0.0018	2.5
50	-0.0002	-0.0003	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz	LIMIT (ppm)
	FREQUENCY ERROR (ppm)	
	Mid Channel	
V _{nor}	0.0024	2.5
V _{min}	-0.0030	2.5
V _{max}	0.0025	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

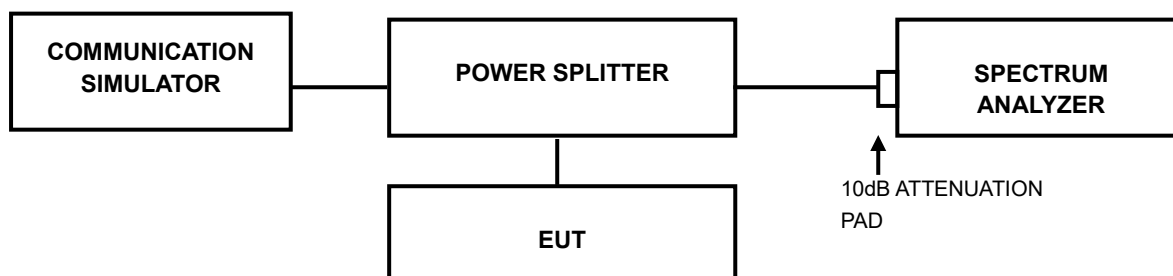
TEMP. (°C)	10MHz	LIMIT (ppm)
	FREQUENCY ERROR (ppm)	
	Mid Channel	
-30	-0.0115	2.5
-20	-0.0099	2.5
-10	-0.0085	2.5
0	-0.0074	2.5
10	-0.0048	2.5
20	-0.0044	2.5
30	-0.0038	2.5
40	-0.0020	2.5
50	-0.0005	2.5

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



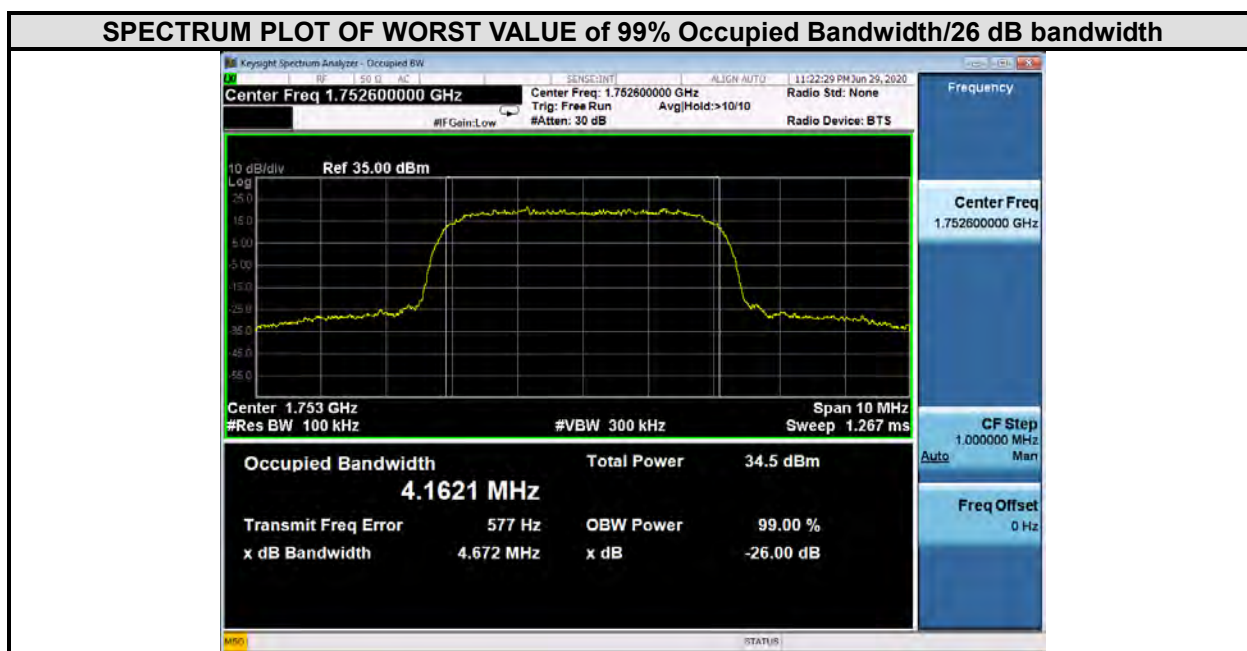
3.3.3 TEST PROCEDURES

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

3.3.4 TEST RESULTS

WCDMA BAND IV

Channel	FREQ. (MHz)	99% Occupied Bandwidth (MHz)	Channel	FREQ. (MHz)	26dB Bandwidth (MHz)
		WCDMA			WCDMA
1312	1712.40	4.162	1312	1712.40	4.673
1413	1732.60	4.156	1413	1732.60	4.701
1513	1752.60	4.162	1513	1752.60	4.672



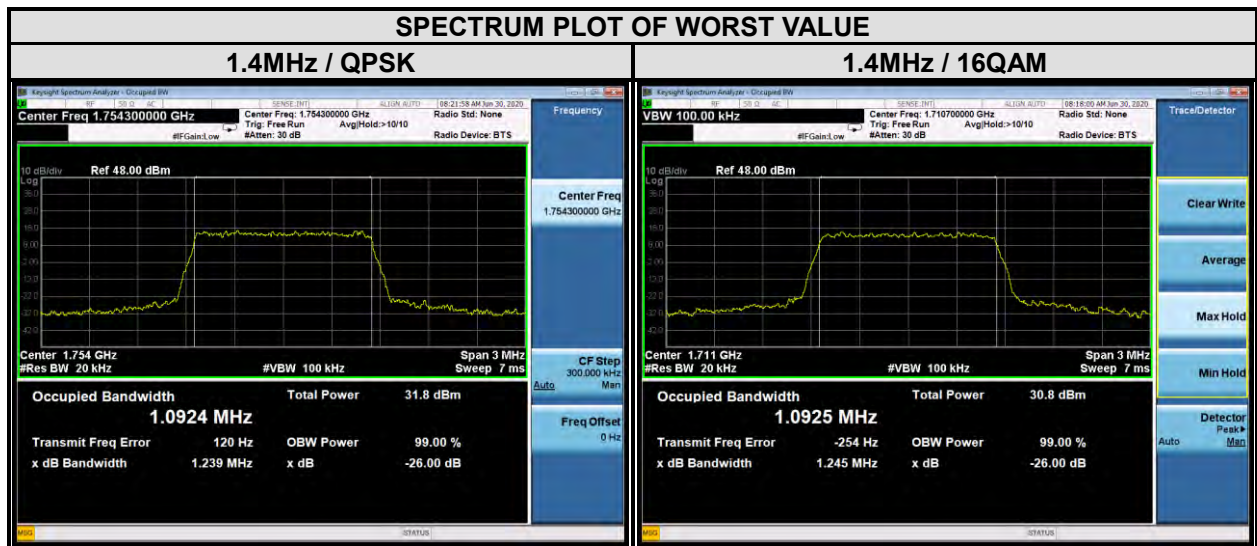


**BUREAU
VERITAS**

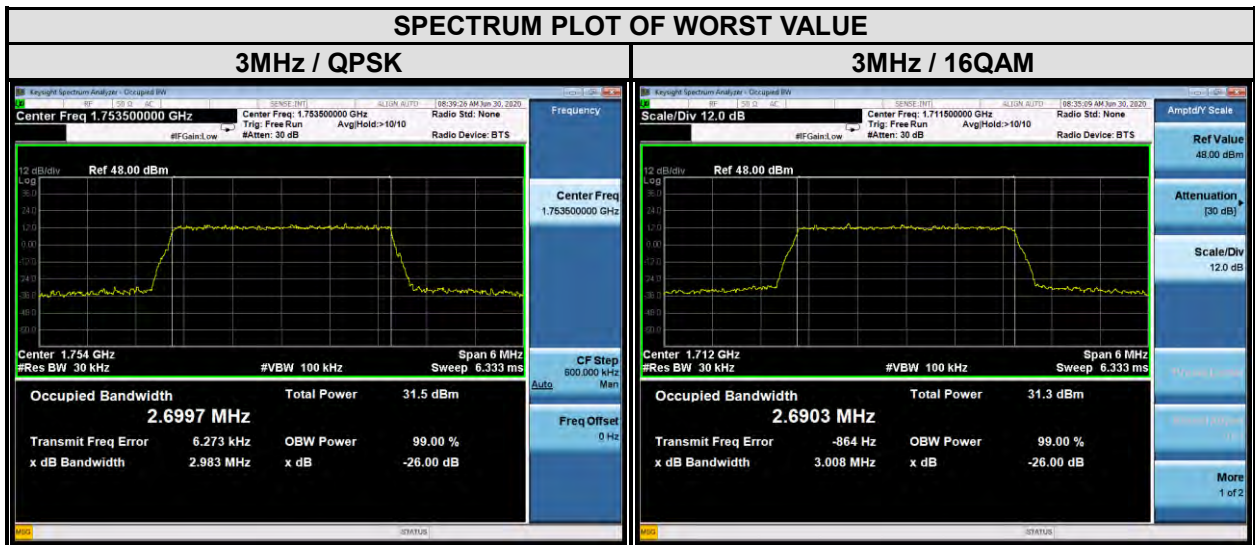
Test Report No.: RF200629W001-4

LTE BAND 4

CHANNEL BANDWIDTH: 1.4MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
19957	1710.7	1.09	1.09	1.23	1.25
20175	1732.5	1.09	1.08	1.24	1.24
20393	1754.3	1.09	1.09	1.24	1.25



CHANNEL BANDWIDTH: 3MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
19965	1711.5	2.69	2.69	2.99	3.01
20175	1732.5	2.69	2.69	2.99	3.01
20385	1753.5	2.70	2.69	2.98	2.99

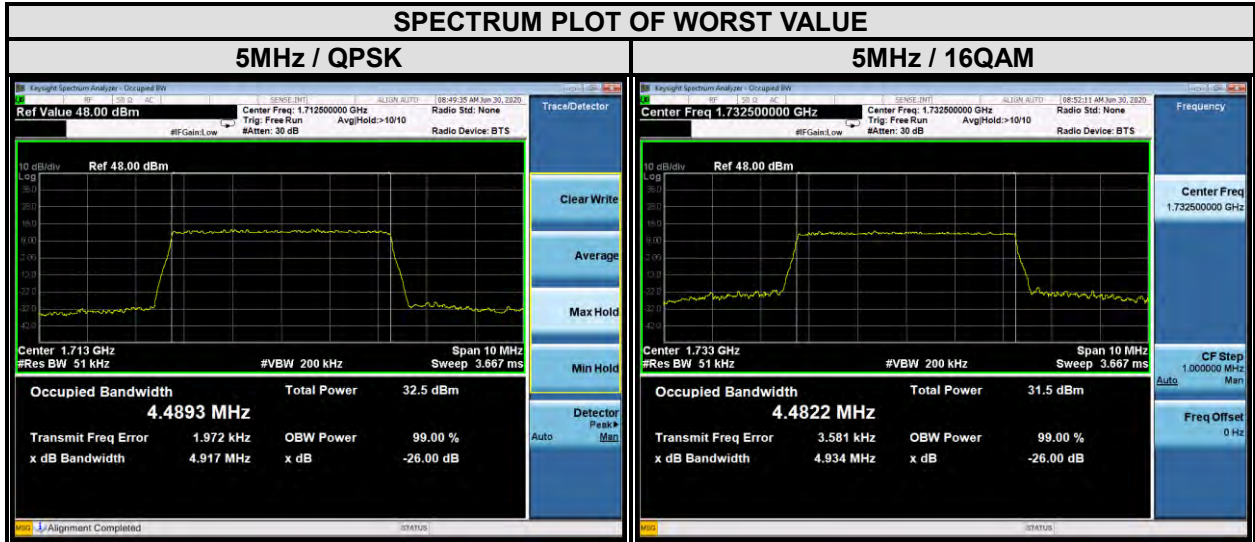




**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

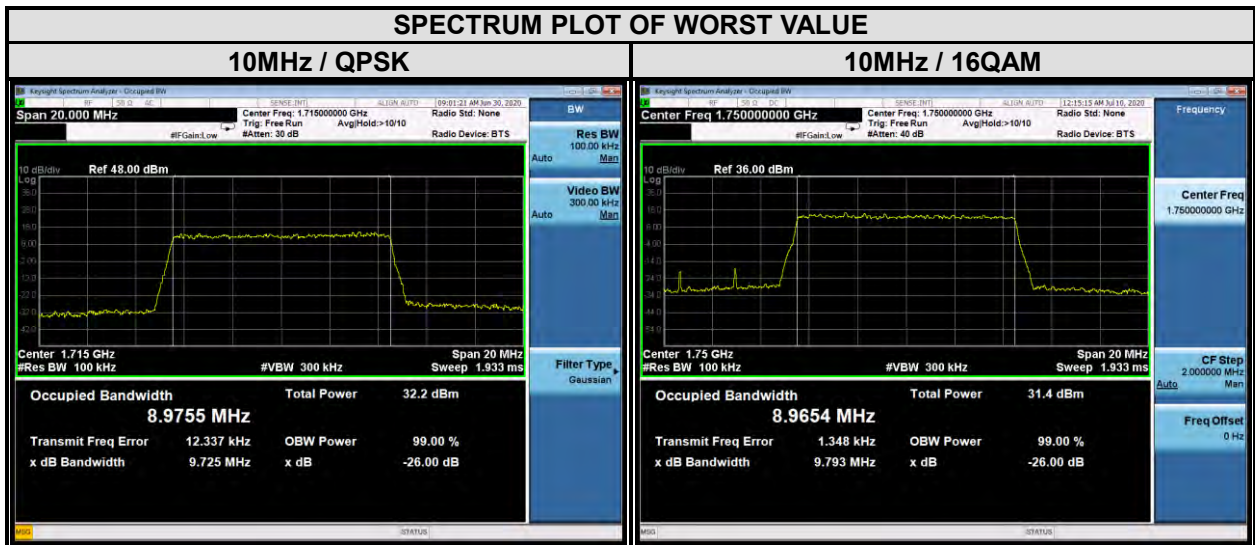
CHANNEL BANDWIDTH: 5MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
19975	1712.5	4.49	4.47	4.92	4.87
20175	1732.5	4.47	4.48	4.93	4.93
20375	1752.5	4.47	4.47	4.92	4.92





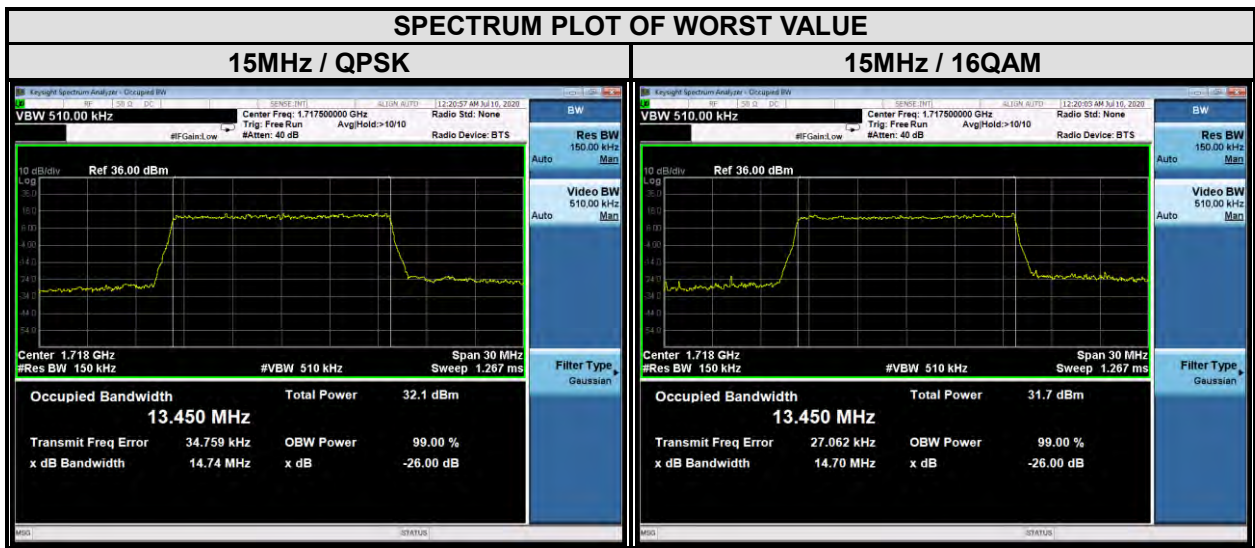
Test Report No.: RF200629W001-4

CHANNEL BANDWIDTH: 10MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20000	1715	8.98	8.95	9.73	9.78
20175	1732.5	8.96	8.95	9.78	9.70
20350	1750	8.94	8.97	9.73	9.79



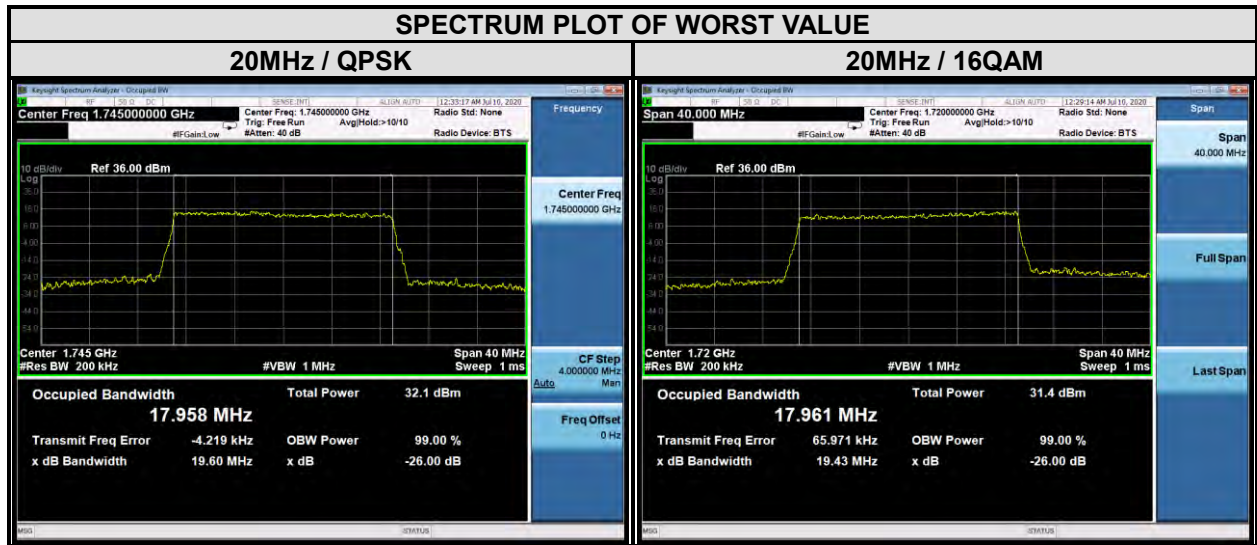
LTE BAND 4

CHANNEL BANDWIDTH: 15MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20025	1717.5	13.45	13.45	14.74	14.70
20175	1732.5	13.39	13.42	14.62	14.70
20325	1747.5	13.44	13.44	14.66	14.70



LTE BAND 4

CHANNEL BANDWIDTH: 20MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20050	1720	17.94	17.96	19.30	19.43
20175	1732.5	17.89	17.86	19.43	19.20
20300	1745	17.96	17.91	19.60	19.48



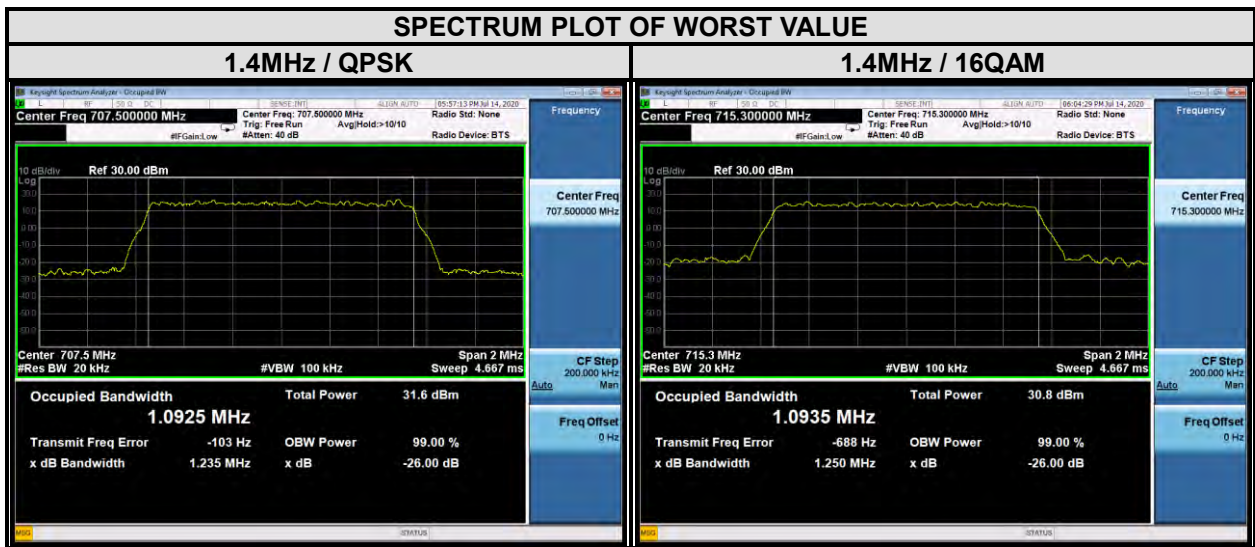


**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

LTE BAND 12

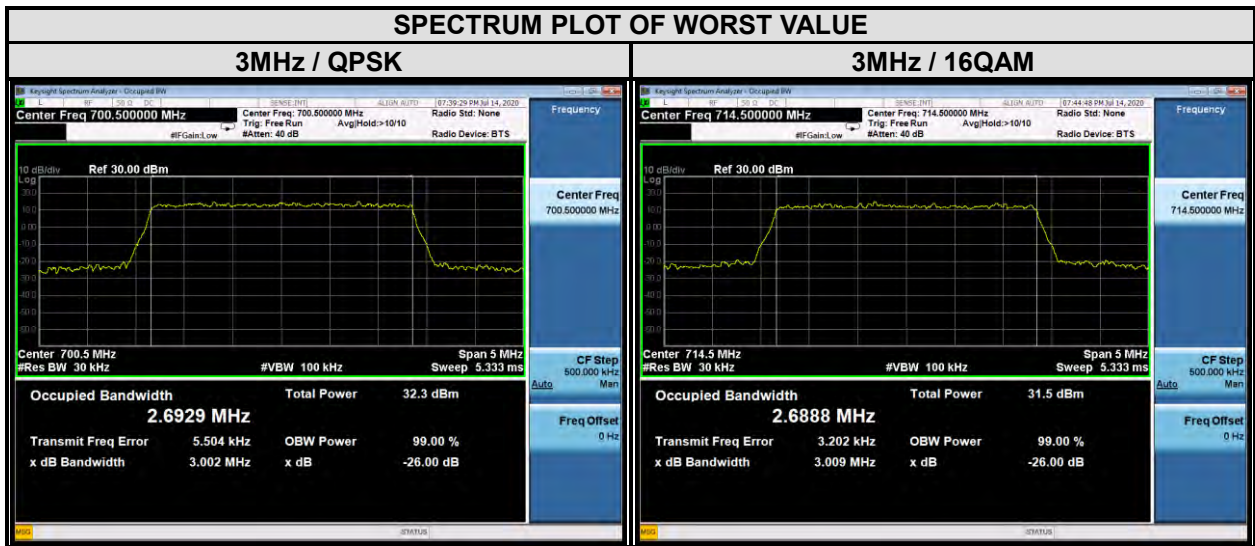
CHANNEL BANDWIDTH: 1.4MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23017	699.7	1.08	1.08	1.24	1.24
23095	707.5	1.09	1.09	1.24	1.24
23173	715.3	1.09	1.09	1.23	1.25



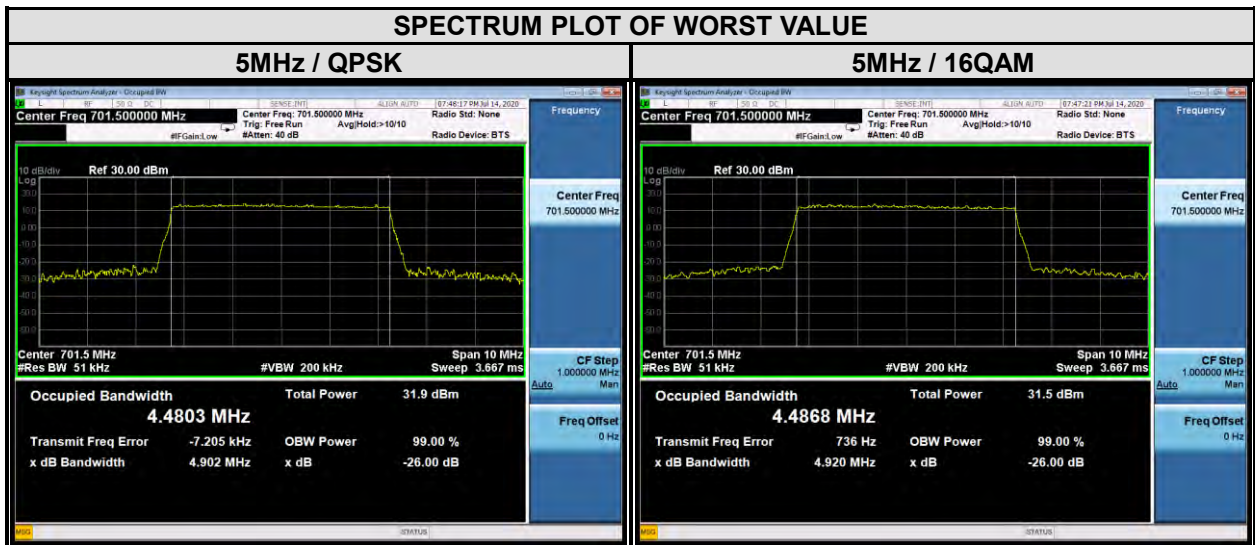


Test Report No.: RF200629W001-4

CHANNEL BANDWIDTH: 3MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23025	700.5	2.69	2.68	3.00	2.98
23095	707.5	2.69	2.69	2.99	2.99
23165	714.5	2.69	2.69	2.98	3.01



CHANNEL BANDWIDTH: 5MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23035	701.5	4.48	4.49	4.90	4.92
23095	707.5	4.47	4.47	4.93	4.89
23155	713.5	4.48	4.47	4.91	4.89



CHANNEL BANDWIDTH: 10MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23060	704	8.96	8.97	9.71	9.76
23095	707.5	8.97	8.97	9.81	9.86
23130	711	8.95	8.95	9.74	9.68

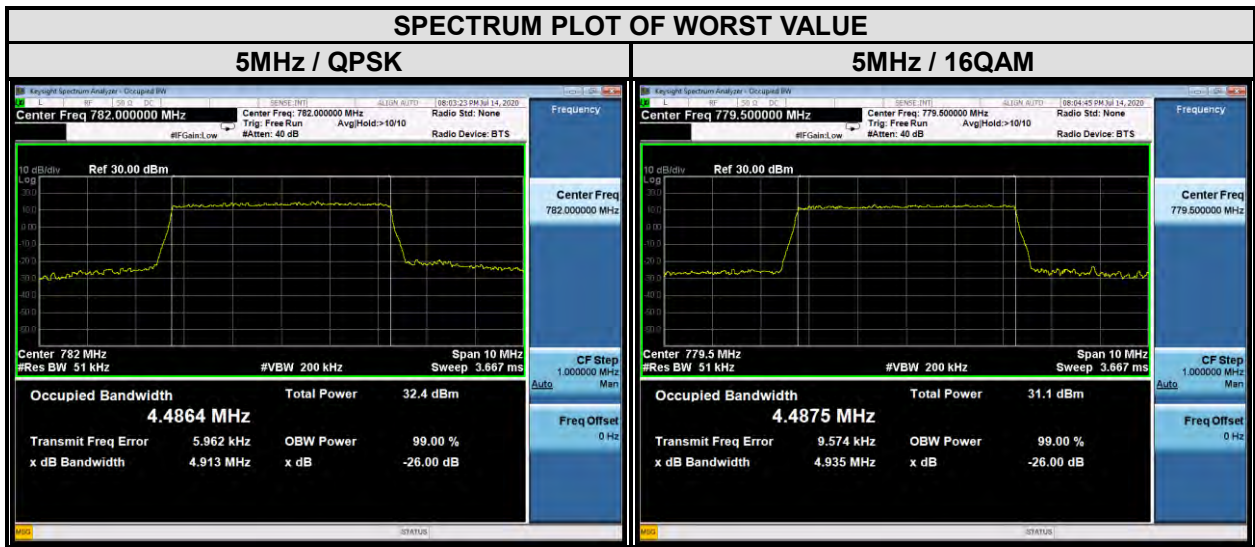




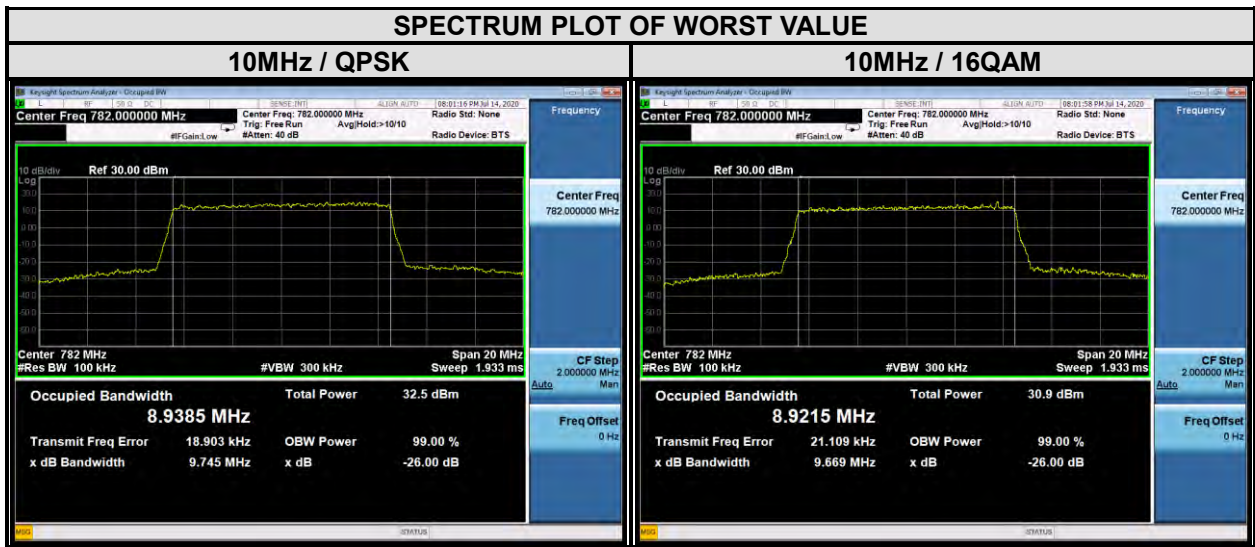
Test Report No.: RF200629W001-4

LTE BAND 13

CHANNEL BANDWIDTH: 5MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23205	779.5	4.48	4.49	4.92	4.94
23230	782	4.49	4.46	4.91	4.88
23255	784.5	4.46	4.47	4.88	4.91



CHANNEL BANDWIDTH: 10MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
-	-	-	-	-	-
23230	782	8.94	8.92	9.75	9.67
-	-	-	-	-	-

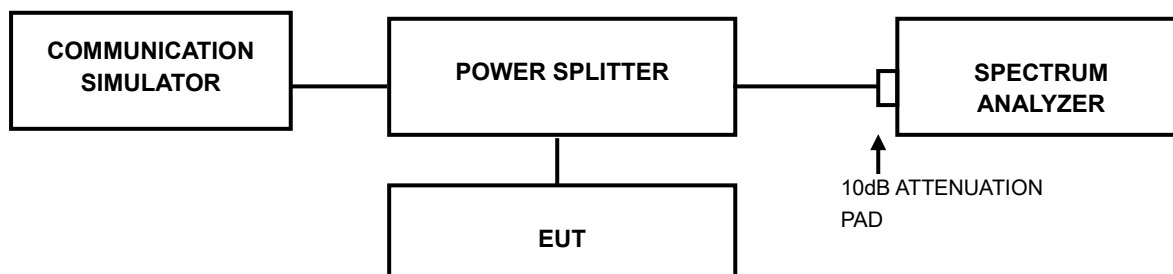


3.4 PEAK TO AVERAGE RATIO

3.4.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

3.4.2 TEST SETUP



3.4.3 TEST PROCEDURES

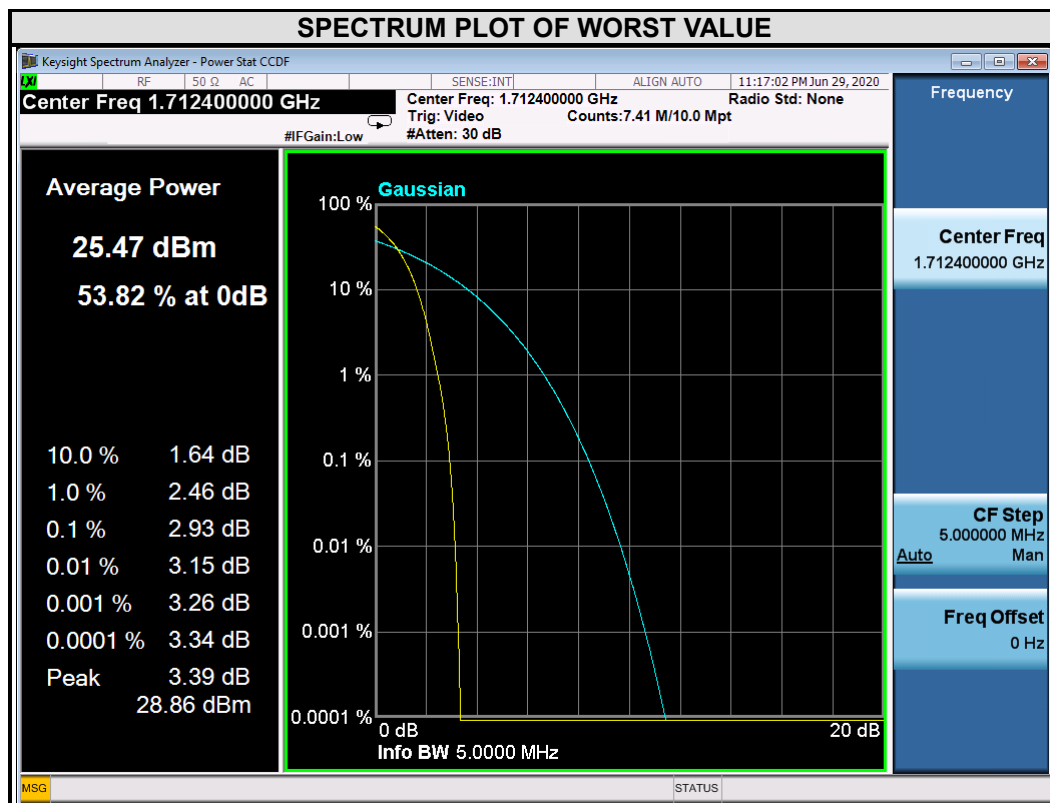
1. Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.



3.4.4 TEST RESULTS

WCDMA Band IV

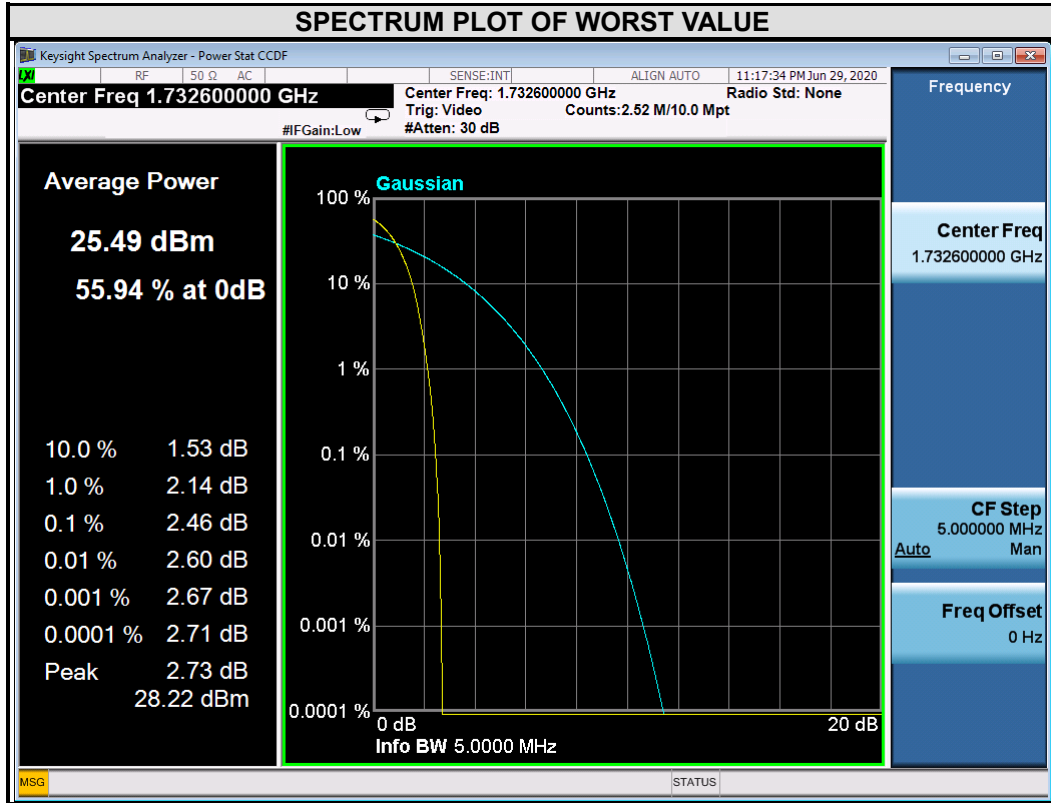
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
1312	1712.4	2.93





Test Report No.: RF200629W001-4

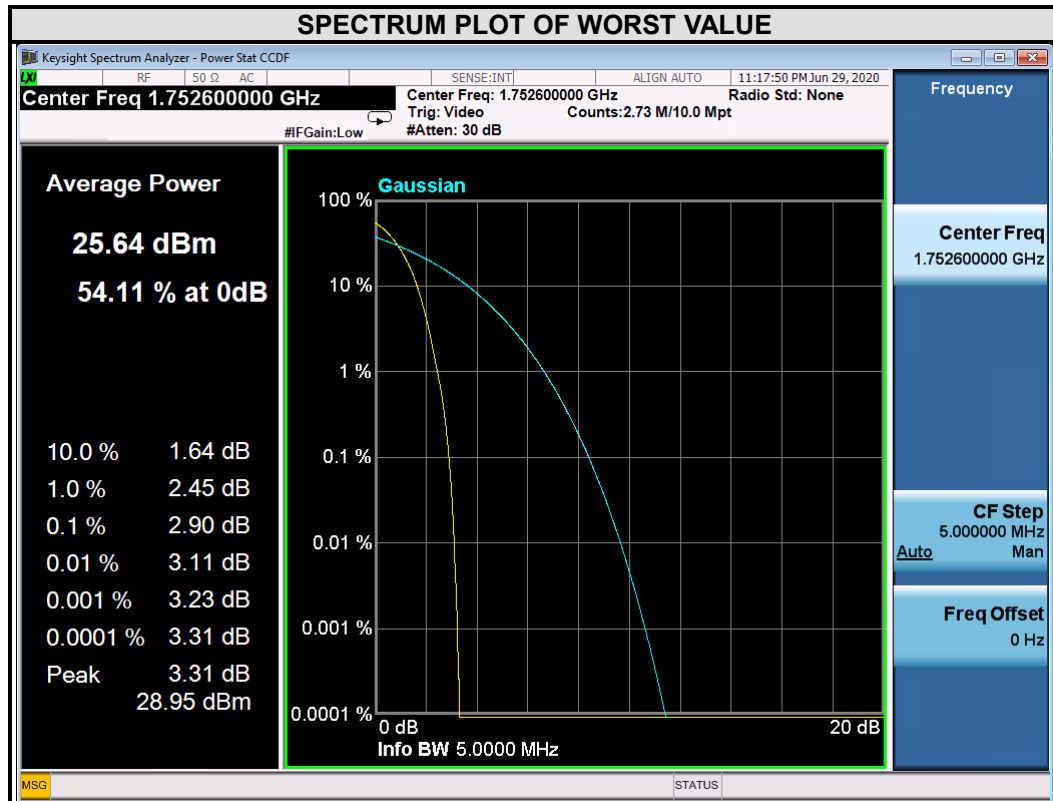
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
1413	1732.6	2.46





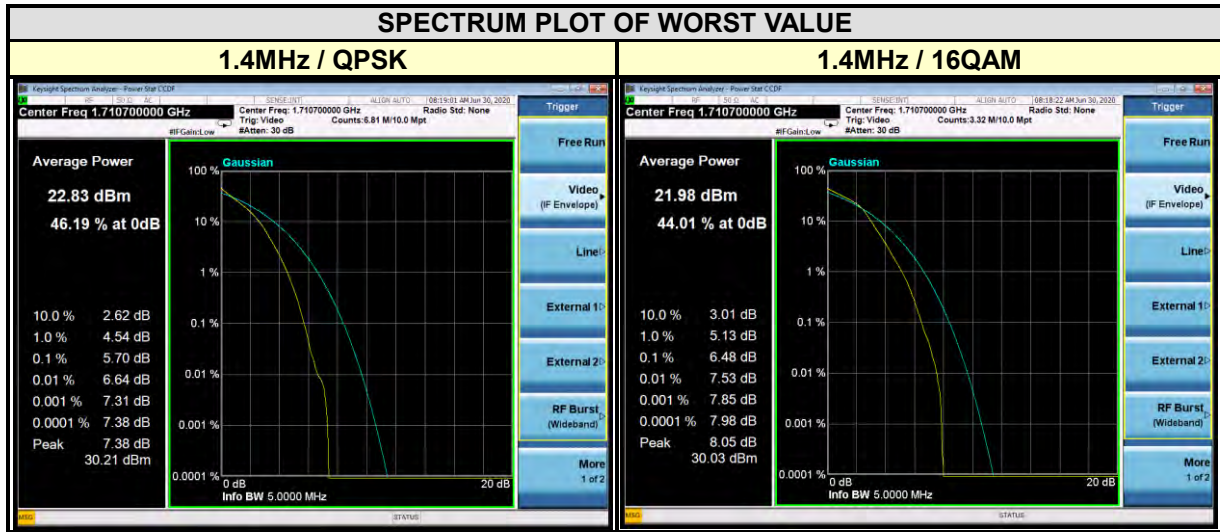
Test Report No.: RF200629W001-4

CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
1513	1752.6	2.90



LTE BAND 4

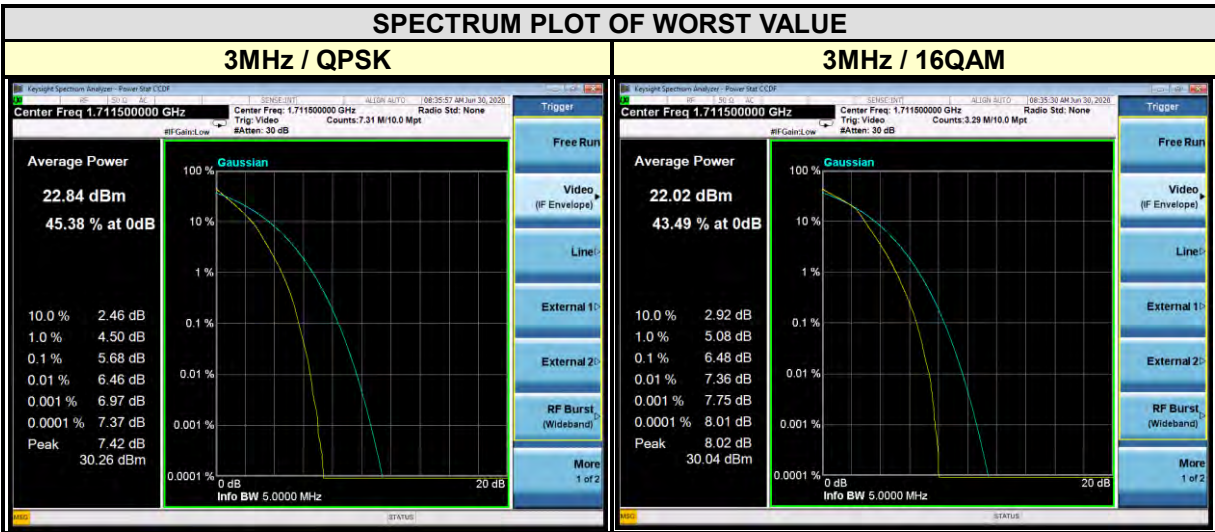
CHANNEL BANDWIDTH: 1.4MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
19957	1710.7	5.70	6.48
20175	1732.5	4.75	5.58
20393	1754.3	5.51	6.22





Test Report No.: RF200629W001-4

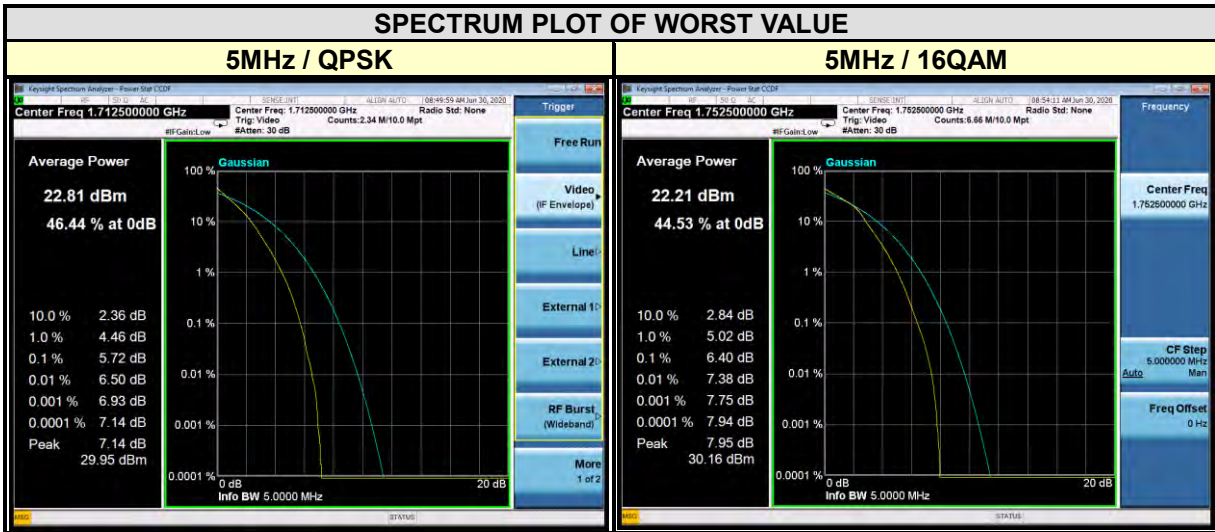
CHANNEL BANDWIDTH: 3MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
19965	1711.5	5.68	6.48
20175	1732.5	4.91	5.76
20385	1753.5	5.53	6.35





Test Report No.: RF200629W001-4

CHANNEL BANDWIDTH: 5MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
19975	1712.5	5.72	6.39
20175	1732.5	5.13	5.89
20375	1752.5	5.62	6.40

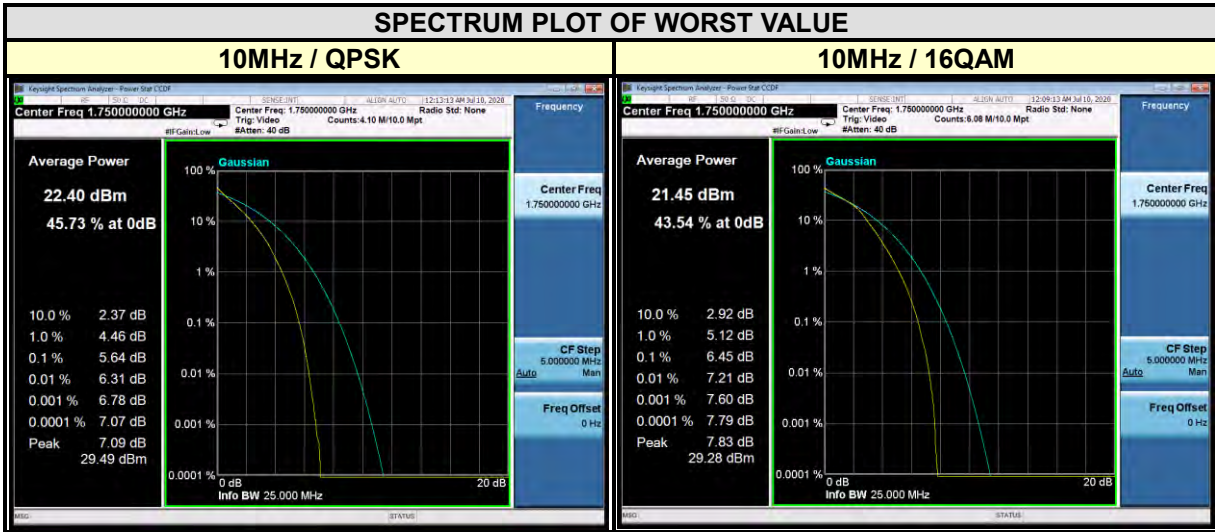




**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

CHANNEL BANDWIDTH: 10MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20000	1715	5.59	6.37
20175	1732.5	5.01	5.82
20350	1750	5.64	6.45

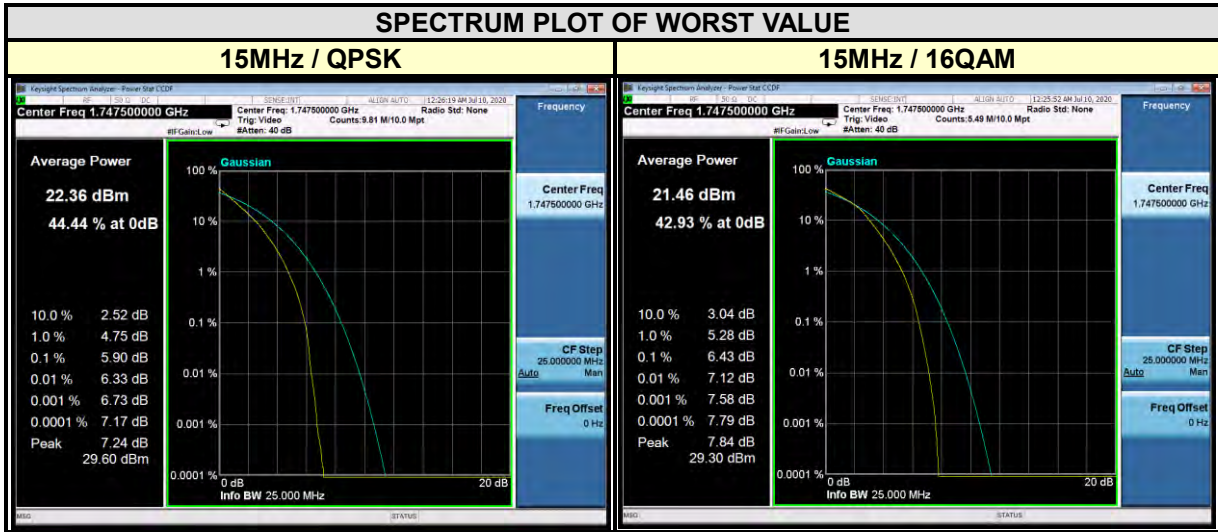




**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

CHANNEL BANDWIDTH: 15MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20025	1717.5	5.82	6.33
20175	1732.5	5.16	5.81
20325	1747.5	5.90	6.43

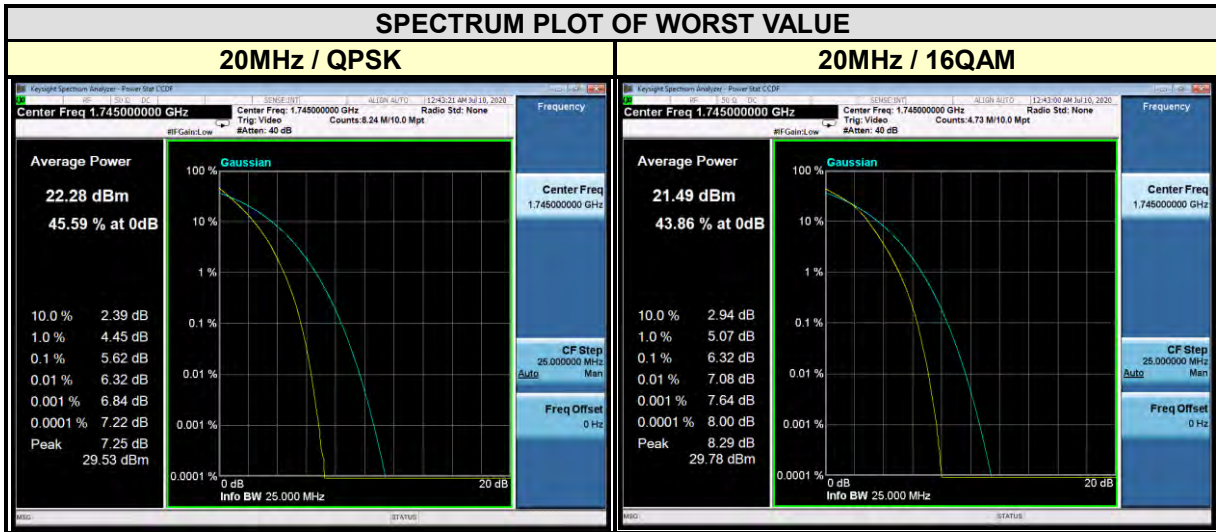




**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

CHANNEL BANDWIDTH: 20MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20050	1720	5.54	6.24
20175	1732.5	5.14	5.96
20300	1745	5.62	6.32



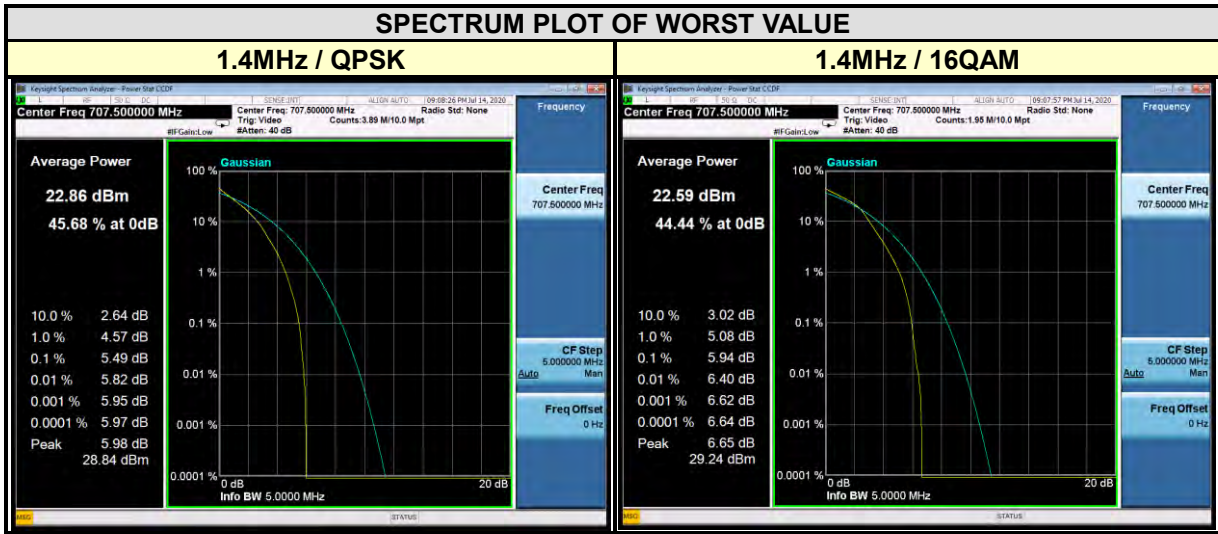


**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

LTE BAND 12

CHANNEL BANDWIDTH: 1.4MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
23017	699.7	4.86	5.70
23095	707.5	5.49	5.94
23173	715.3	4.40	5.35

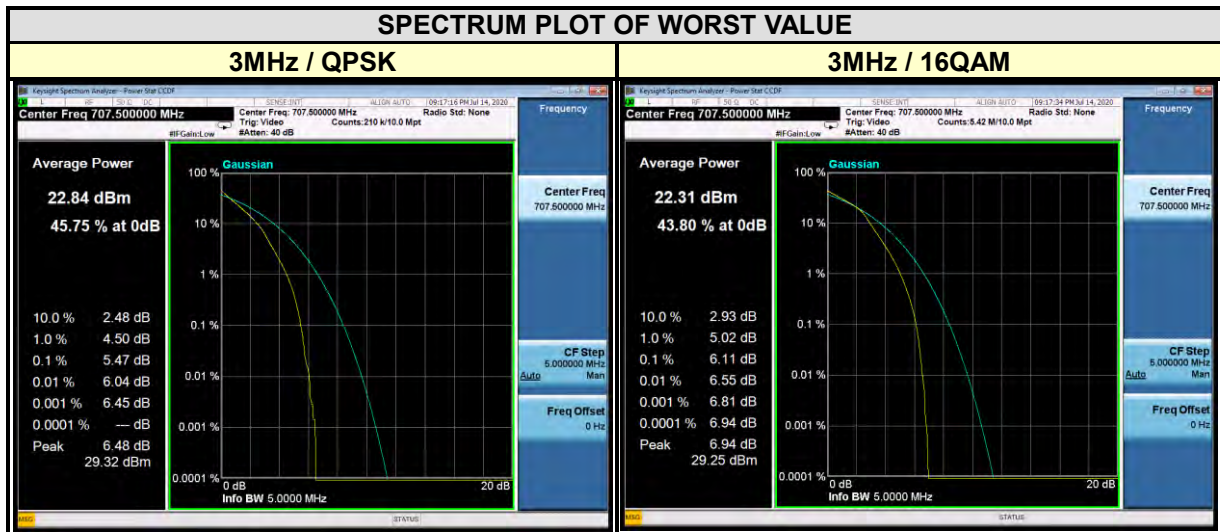




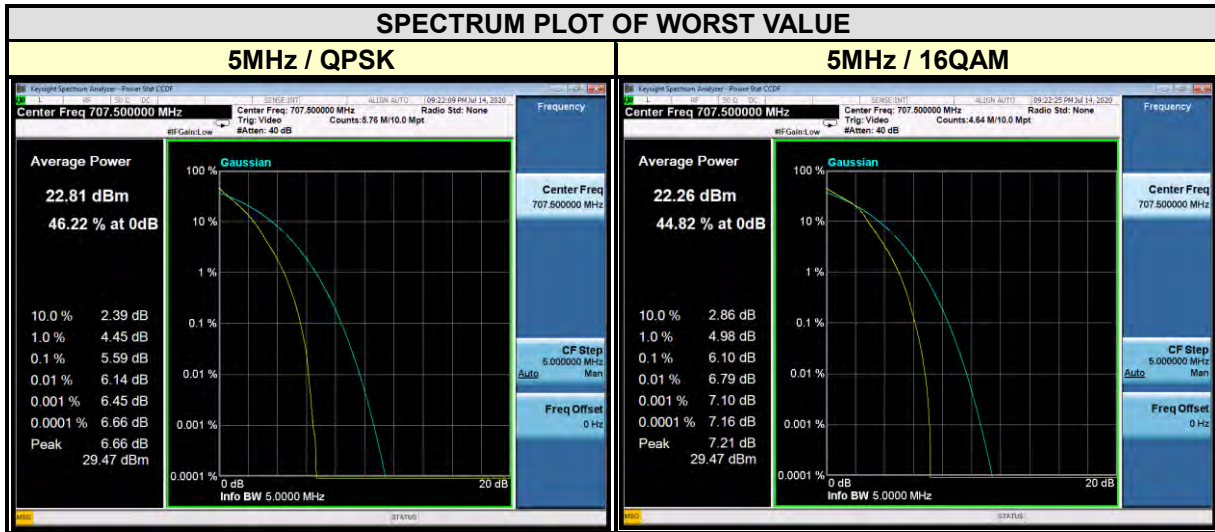
**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

CHANNEL BANDWIDTH: 3MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
23025	700.5	4.83	5.74
23095	707.5	5.47	6.11
23165	714.5	4.79	5.30



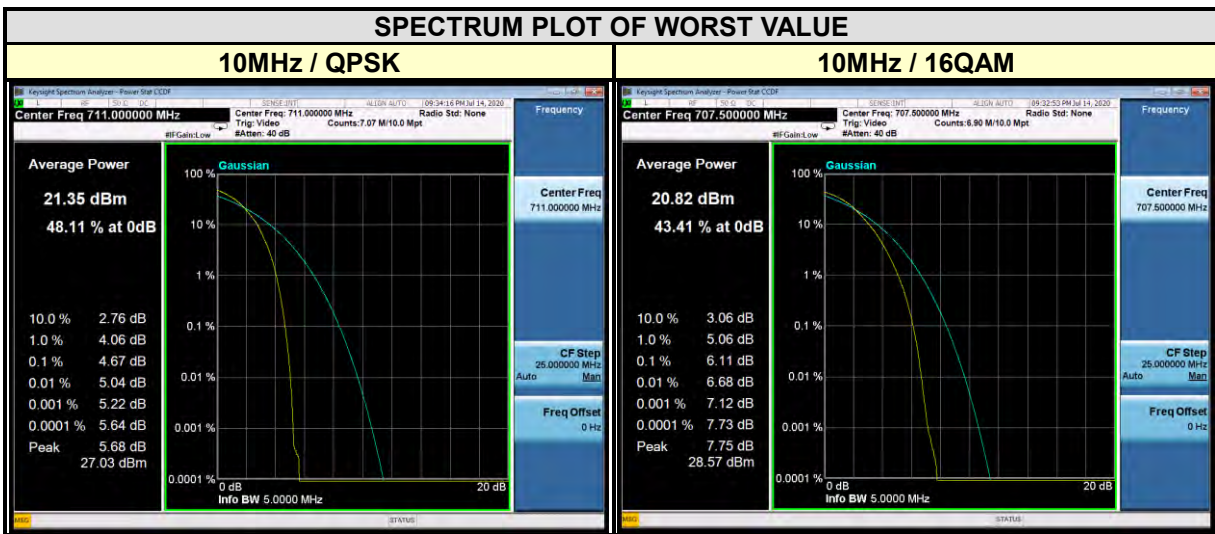
CHANNEL BANDWIDTH: 5MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
23035	701.5	5.28	6.02
23095	707.5	5.59	6.10
23155	713.5	5.10	5.67





Test Report No.: RF200629W001-4

CHANNEL BANDWIDTH: 10MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
23060	704	4.64	6.00
23095	707.5	4.66	6.11
23130	711	4.67	6.08



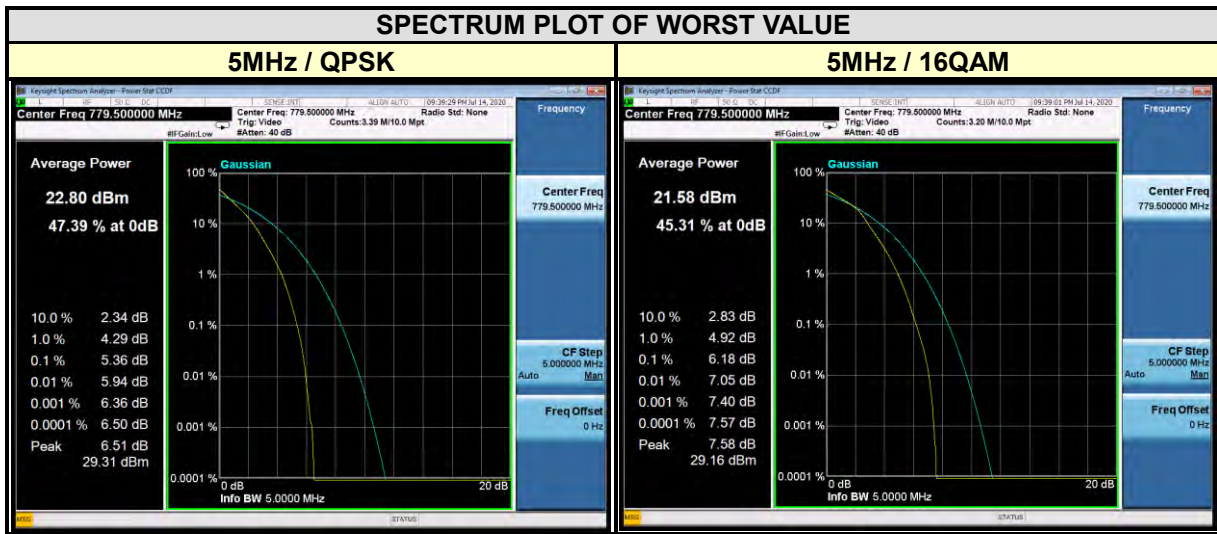


**BUREAU
VERITAS**

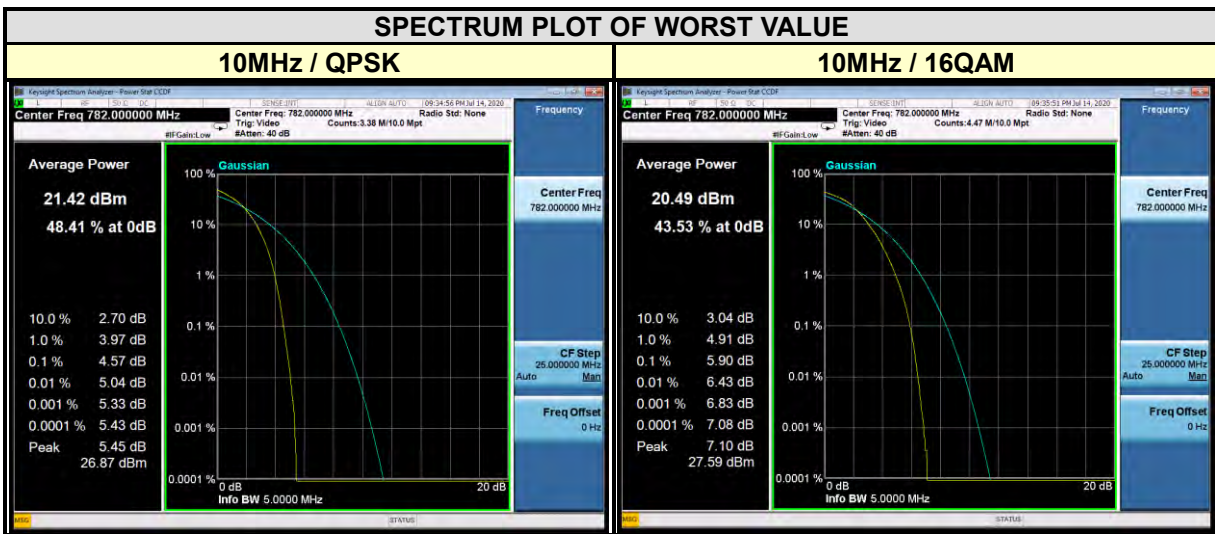
Test Report No.: RF200629W001-4

LTE BAND 13

CHANNEL BANDWIDTH: 5MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
23205	779.5	5.36	6.18
23230	782	5.13	5.80
23255	784.5	5.16	5.86



CHANNEL BANDWIDTH: 10MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
-	-	-	-
23230	782	4.57	5.90
-	-	-	-



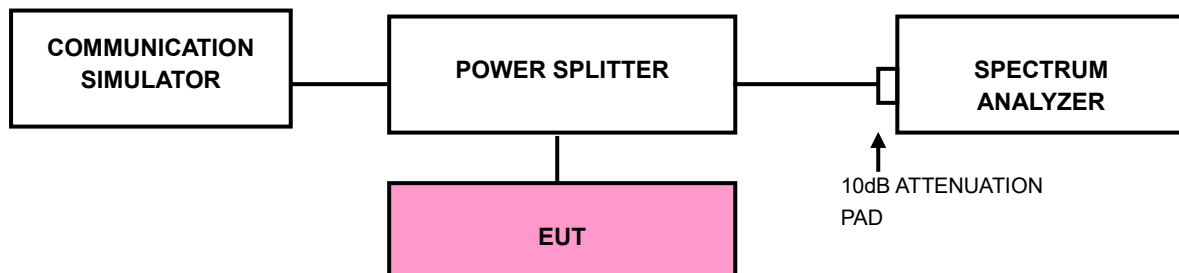
3.5 BAND EDGE MEASUREMENT

3.5.1 LIMITS OF BAND EDGE MEASUREMENT

The power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

3.5.2 TEST SETUP





Test Report No.: RF200629W001-4

3.5.3 TEST PROCEDURES

- a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
- b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. The center frequency of spectrum is the band edge frequency and span is 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 30kHz 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 200kHz 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.

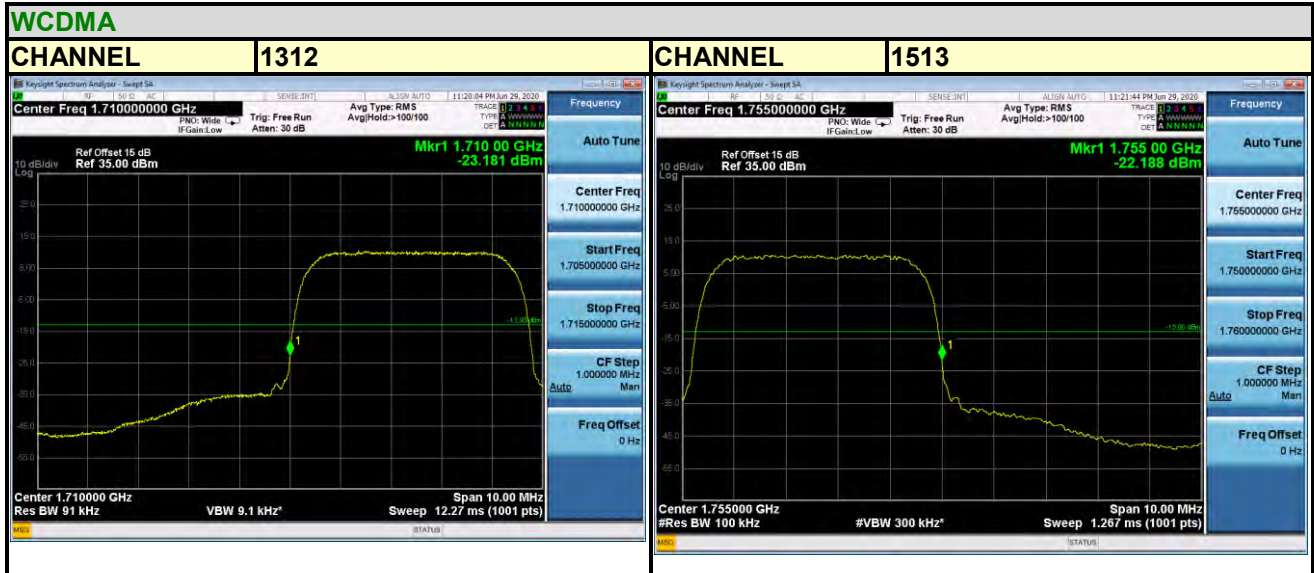


BUREAU VERITAS

Test Report No.: RF200629W001-4

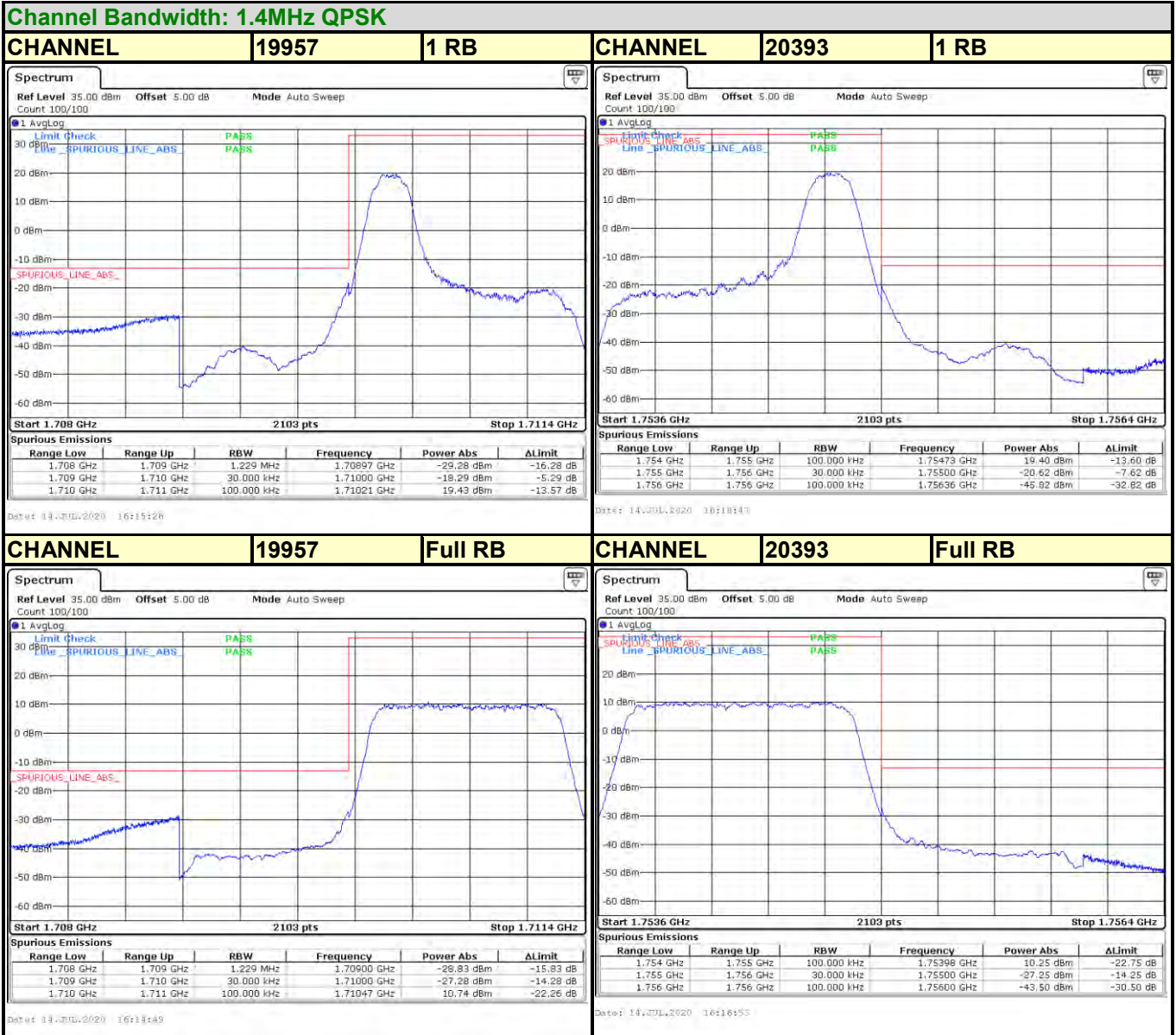
3.5.4 TEST RESULTS

WCDMA BAND 4





LTE BAND 4

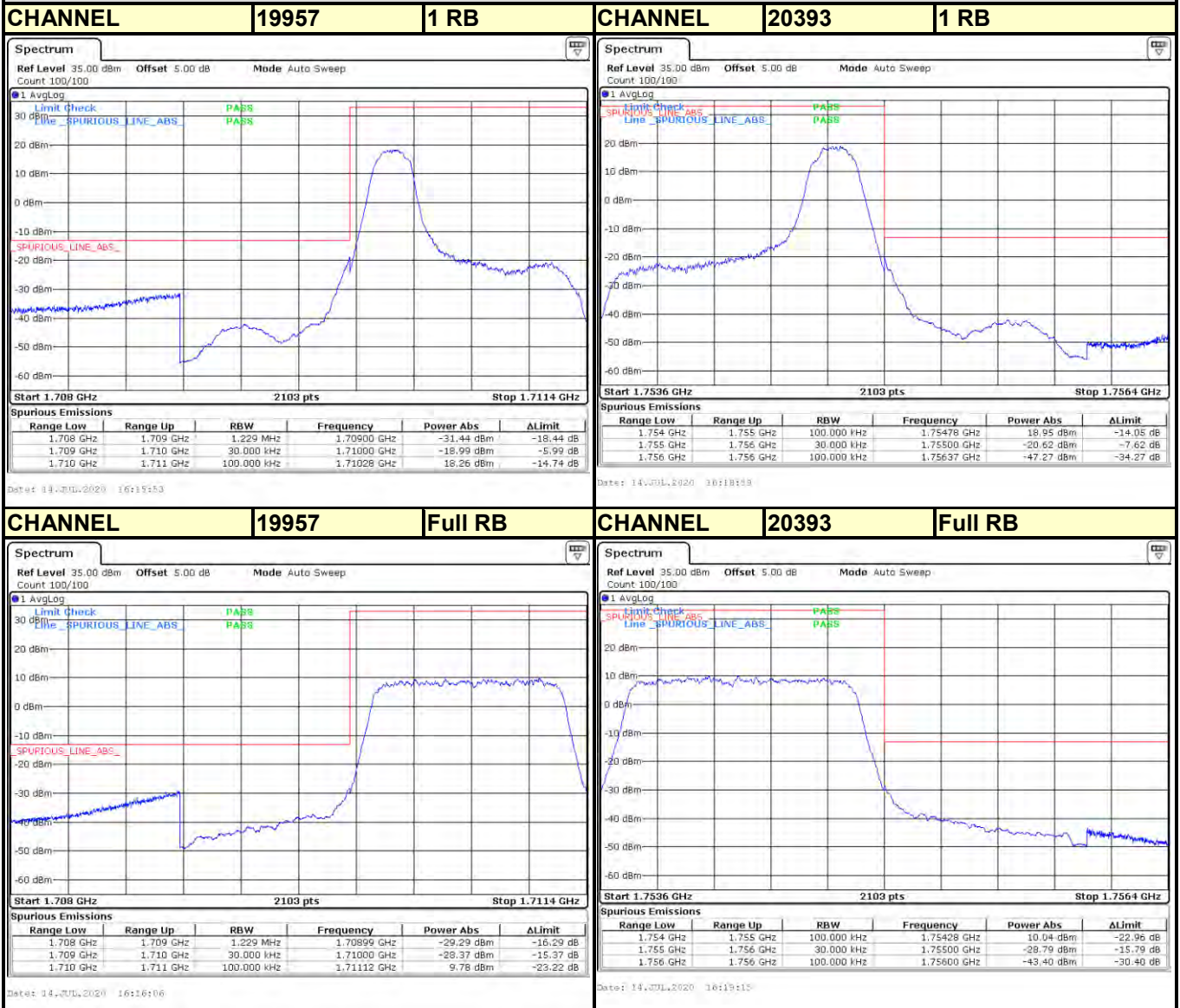




**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

Channel Bandwidth: 1.4MHz 16QAM

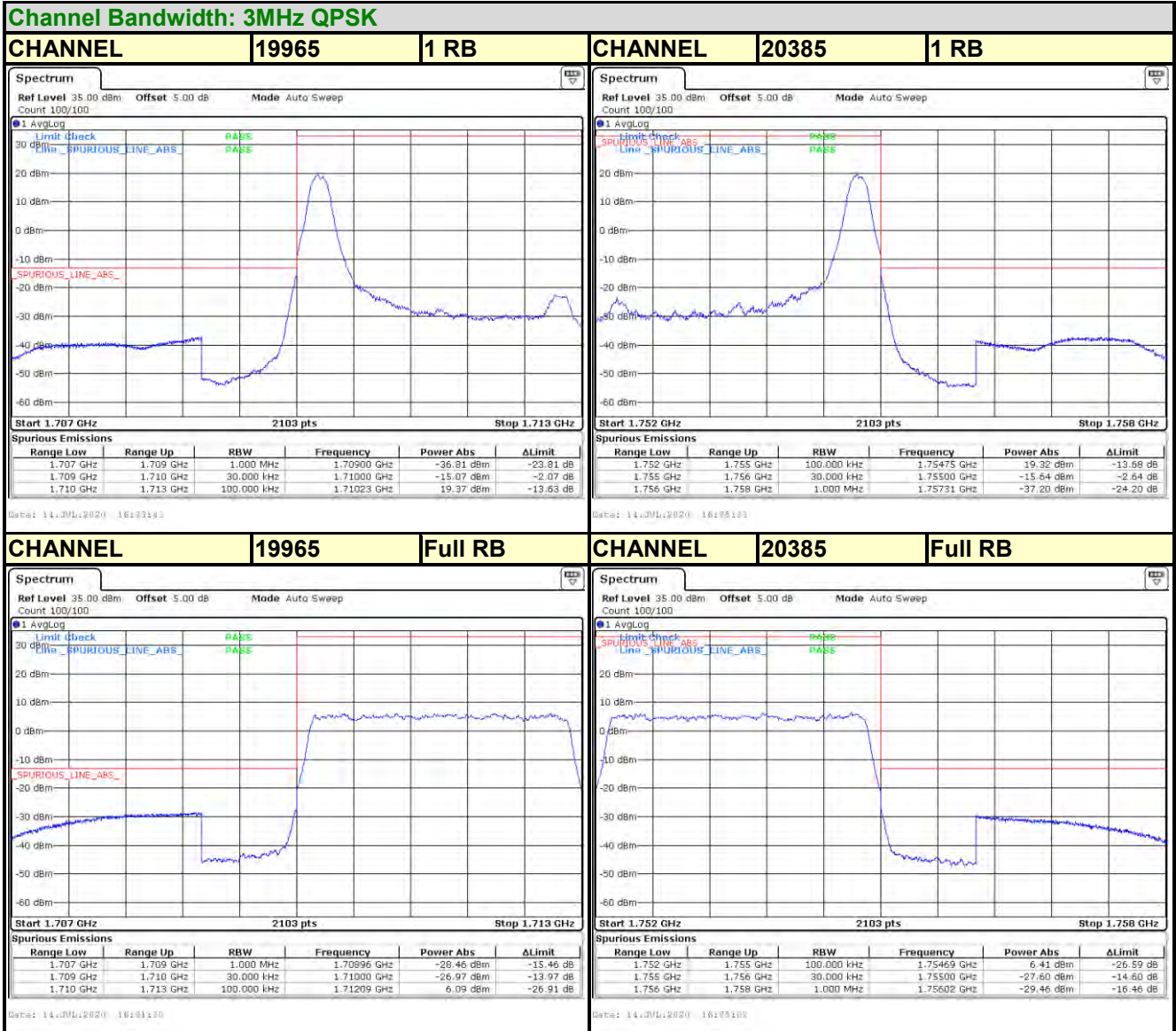




BUREAU VERITAS

Test Report No.: RF200629W001-4

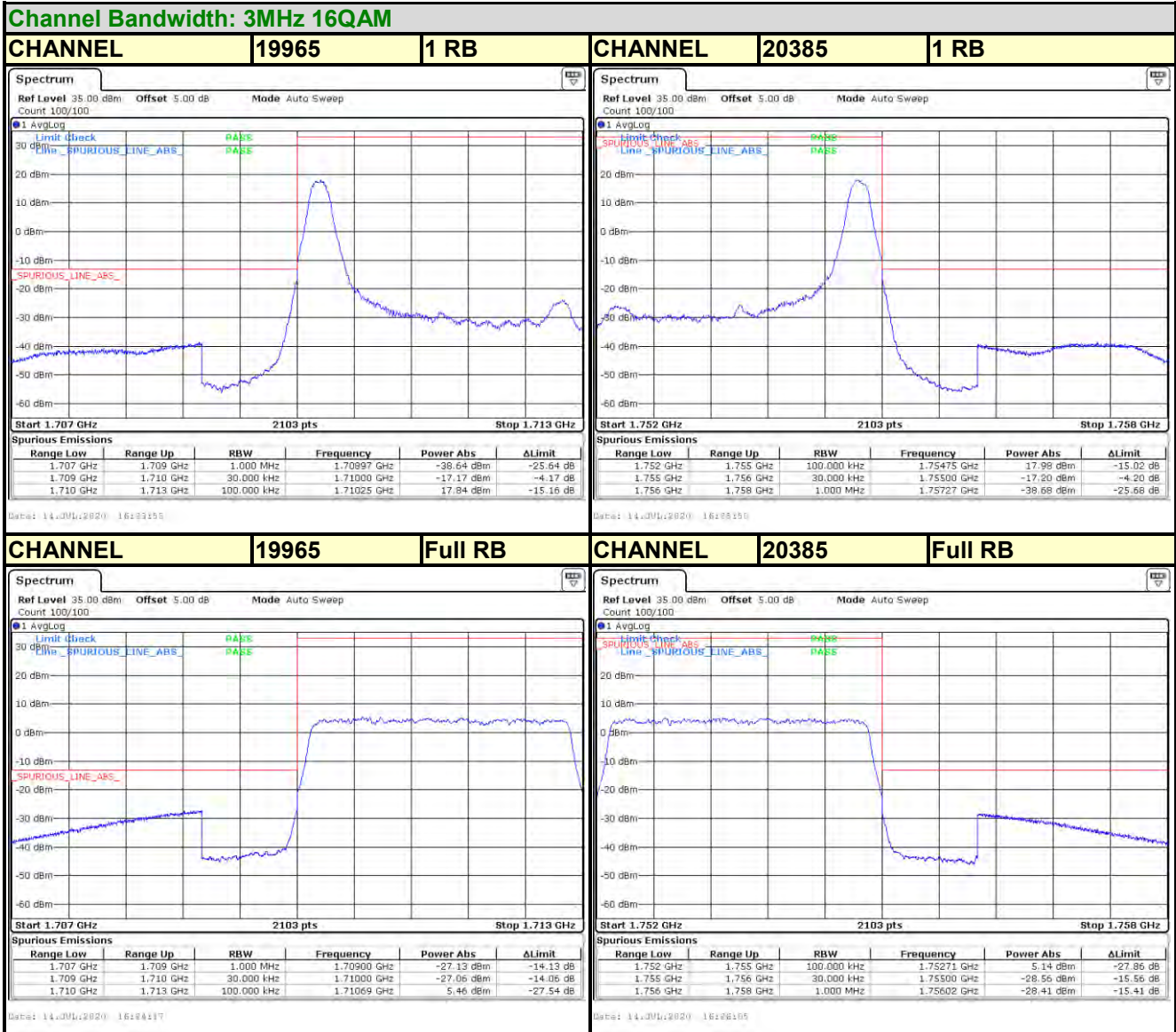
LTE BAND 4





**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

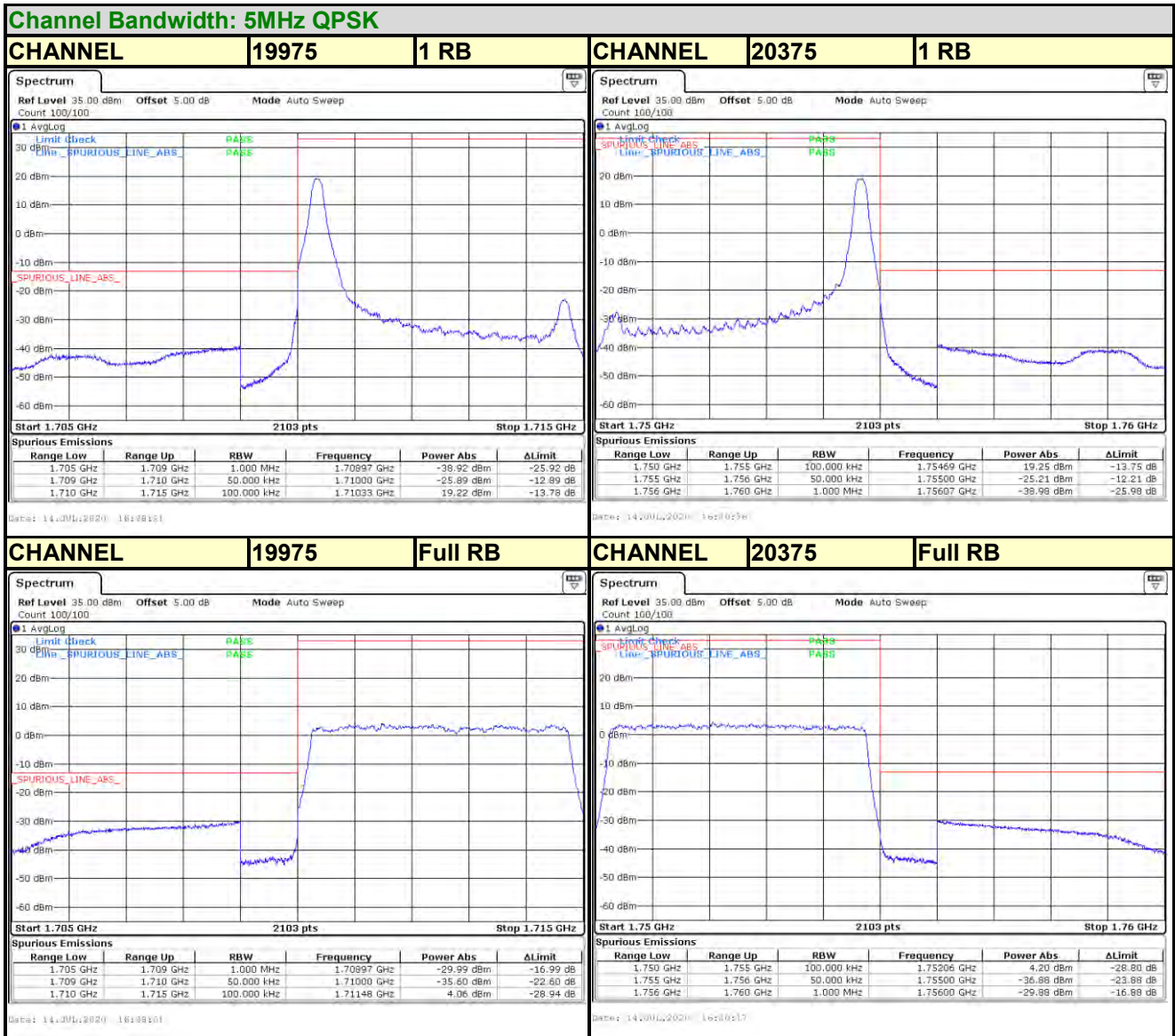




**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

LTE BAND 4

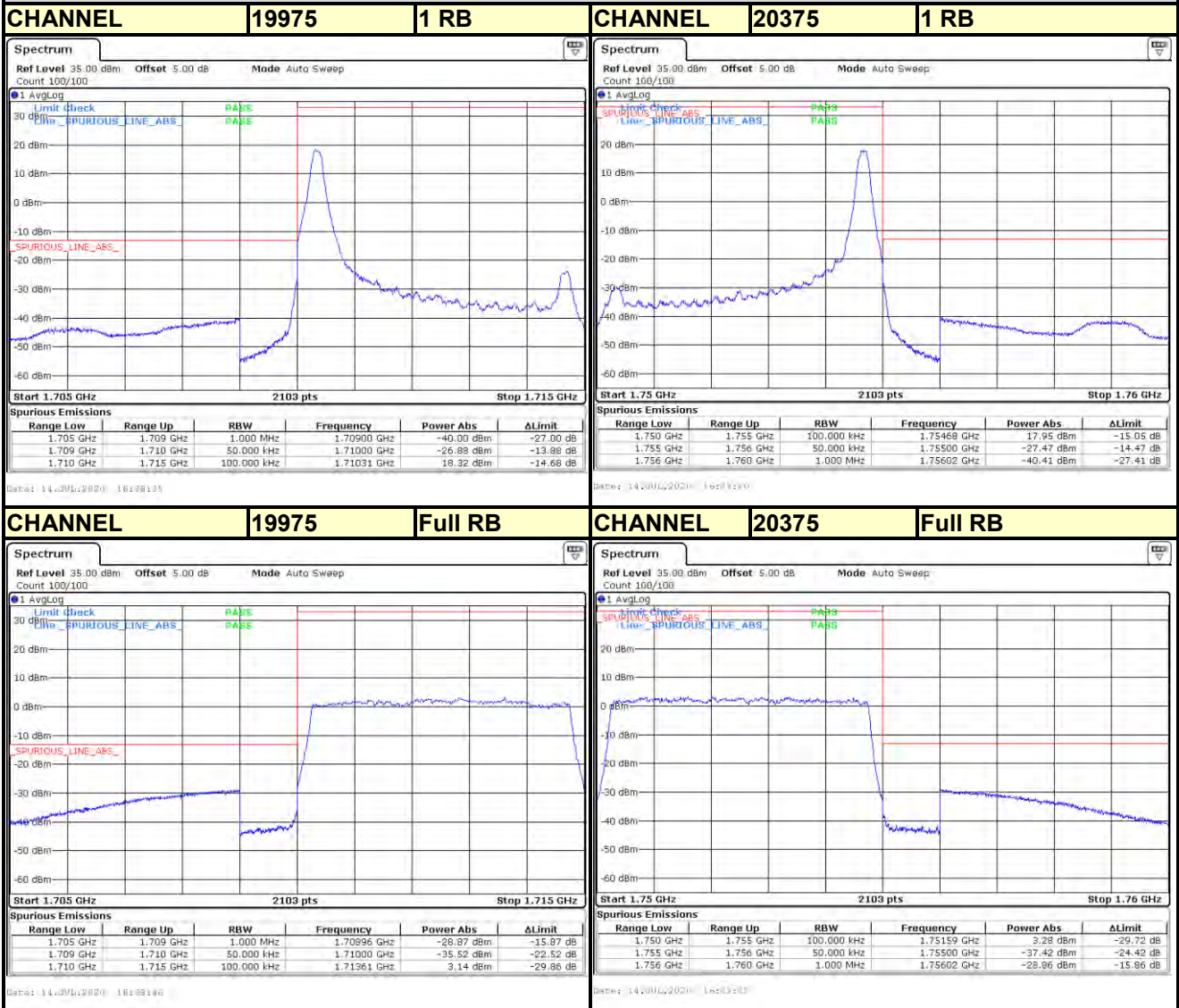




BUREAU VERITAS

Test Report No.: RF200629W001-4

Channel Bandwidth: 5MHz 16QAM





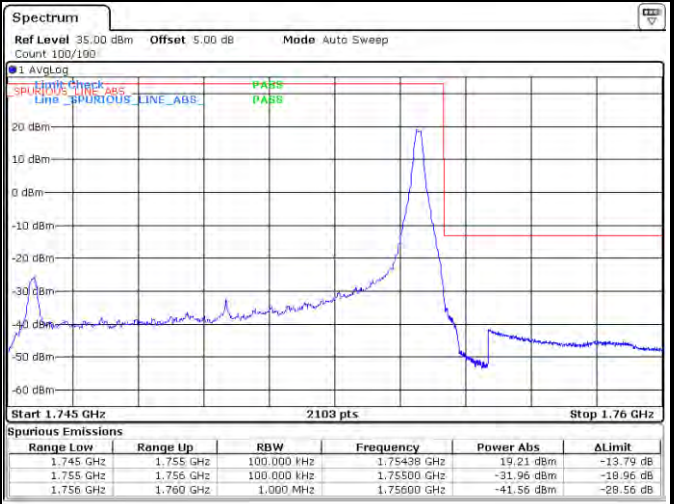
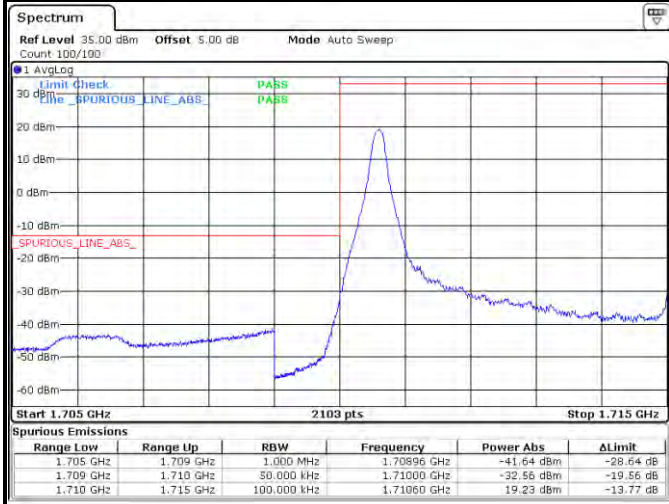
BUREAU VERITAS

Test Report No.: RF200629W001-4

LTE BAND 4

Channel Bandwidth: 10MHz QPSK

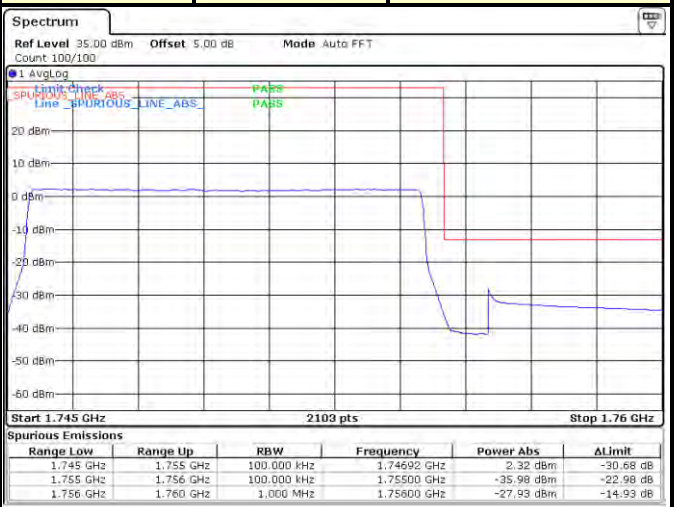
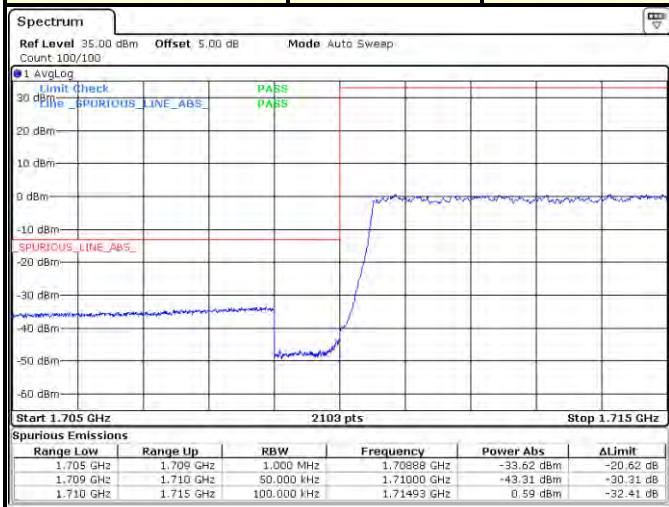
CHANNEL	20000	1 RB	CHANNEL	20350	1 RB
---------	-------	------	---------	-------	------



Date: 14 JUL 2020 16:33:20

Date: 14 JUL 2020 16:33:24

CHANNEL	20000	Full RB	CHANNEL	20350	Full RB
---------	-------	---------	---------	-------	---------



Date: 14 JUL 2020 16:32:48

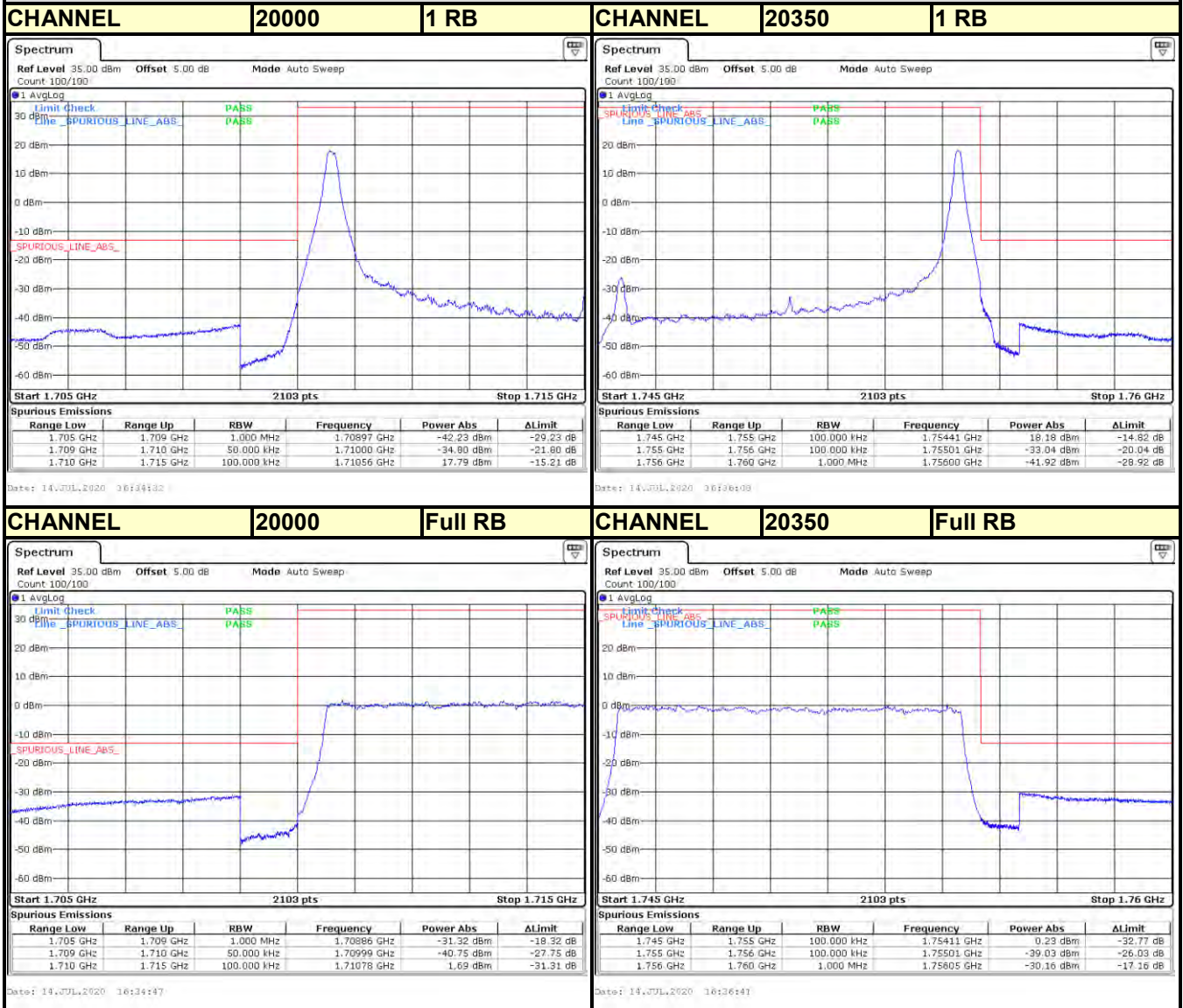
Date: 14 JUL 2020 04:29:11



BUREAU VERITAS

Test Report No.: RF200629W001-4

Channel Bandwidth: 10MHz 16QAM





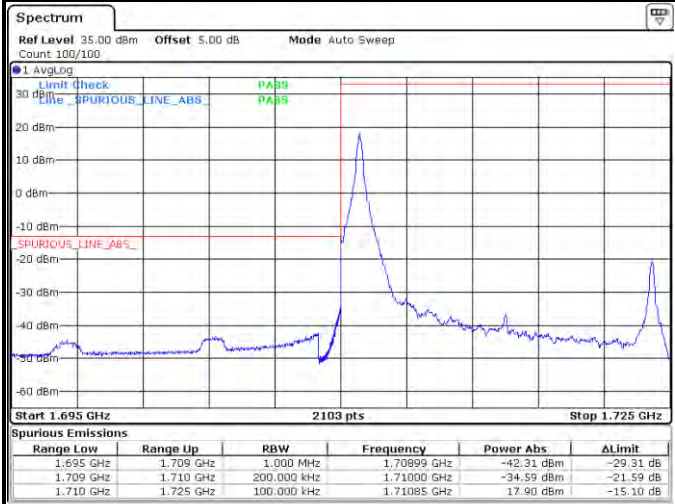
BUREAU VERITAS

Test Report No.: RF200629W001-4

LTE BAND 4

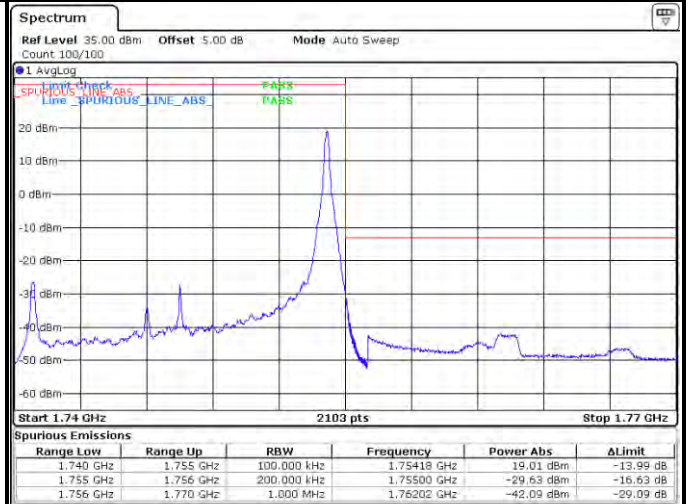
Channel Bandwidth: 15MHz QPSK

CHANNEL 20025 1 RB



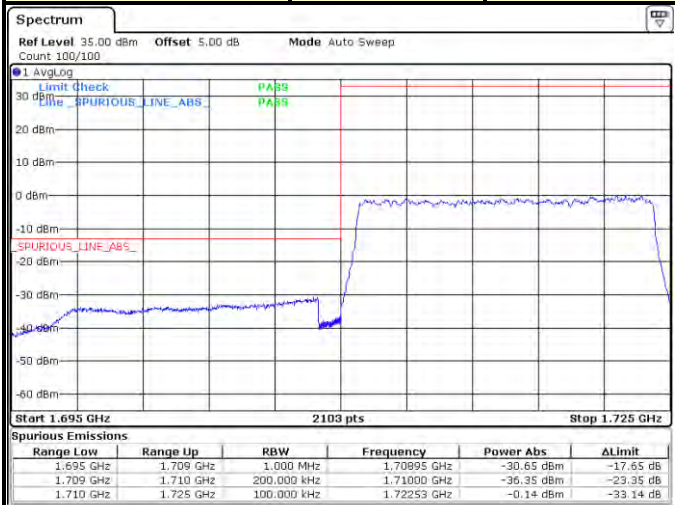
Date: 14.000.2020 17:17:38

CHANNEL 20325 1 RB



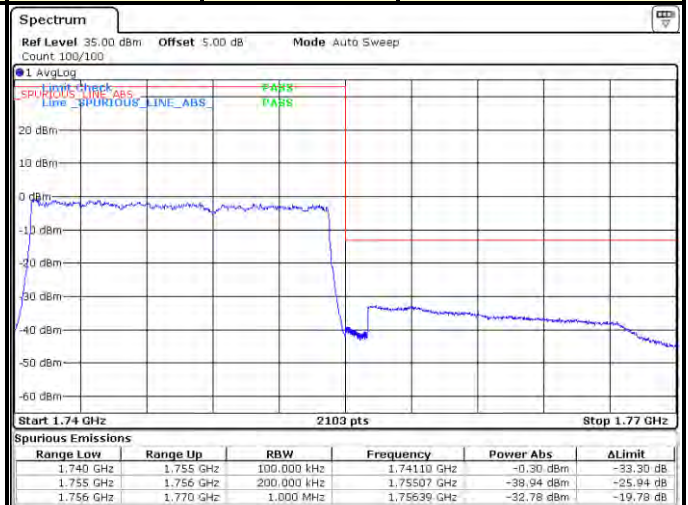
Date: 14.000.2020 17:19:24

CHANNEL 20025 Full RB



Date: 14.000.2020 16:51:35

CHANNEL 20325 Full RB

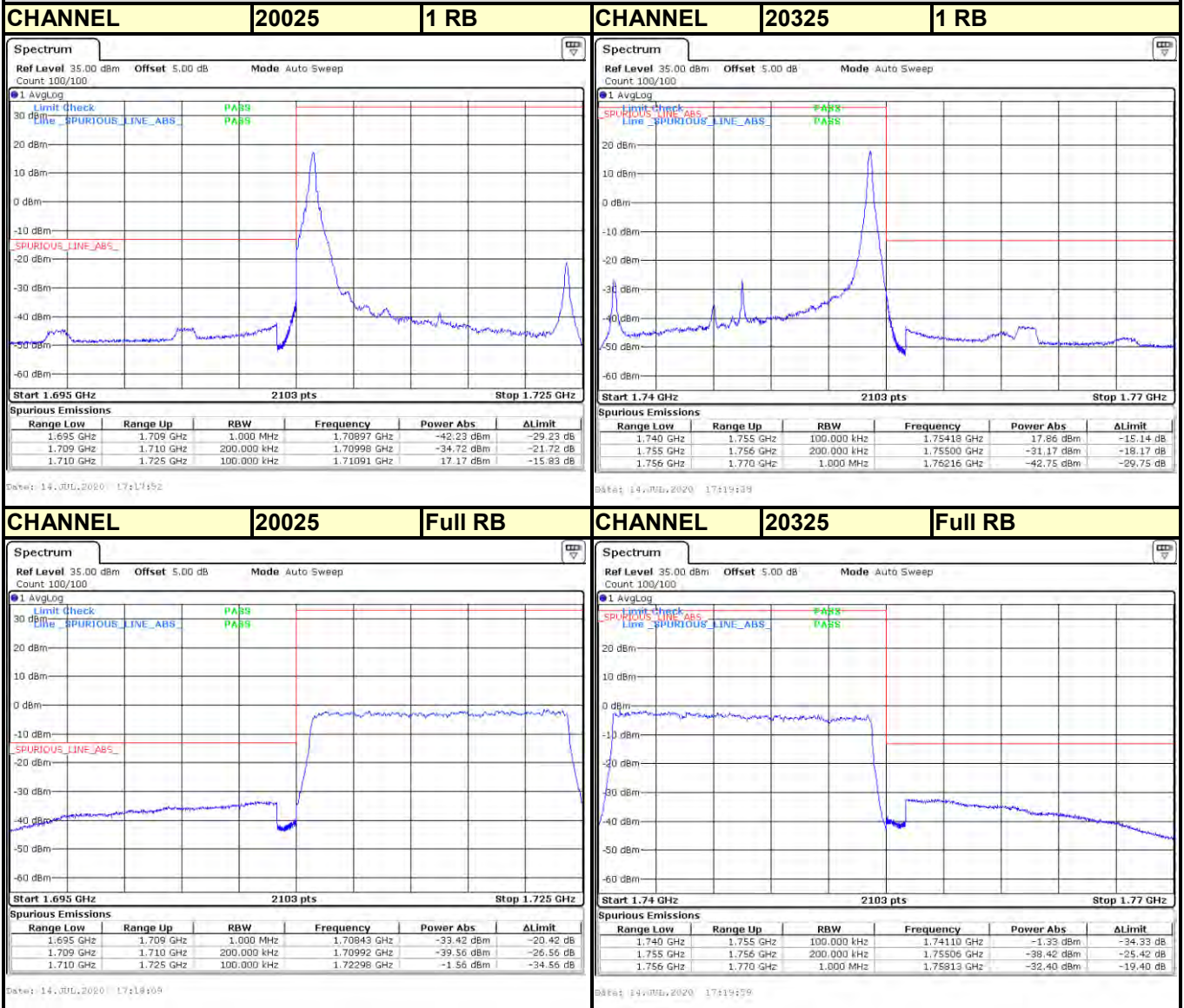


Date: 14.000.2020 17:19:29



Test Report No.: RF200629W001-4

Channel Bandwidth: 15MHz 16QAM





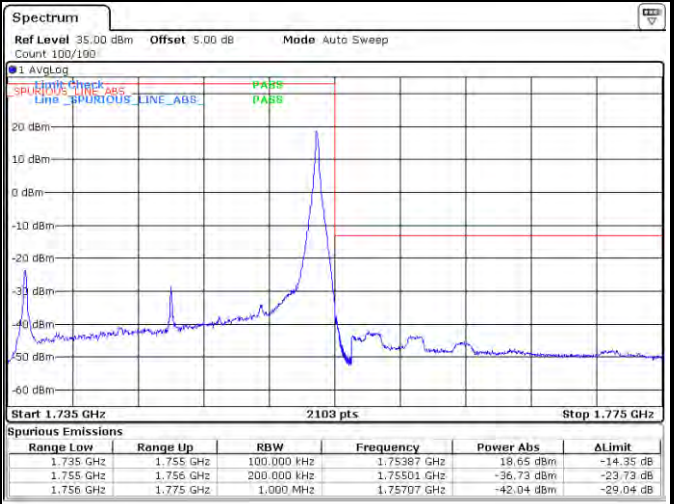
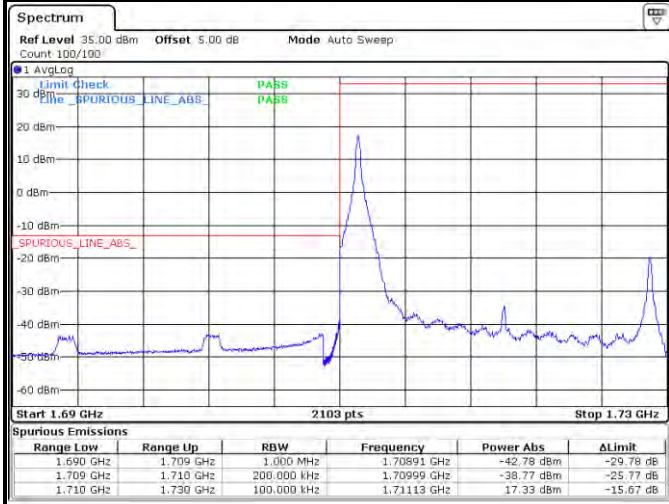
BUREAU VERITAS

Test Report No.: RF200629W001-4

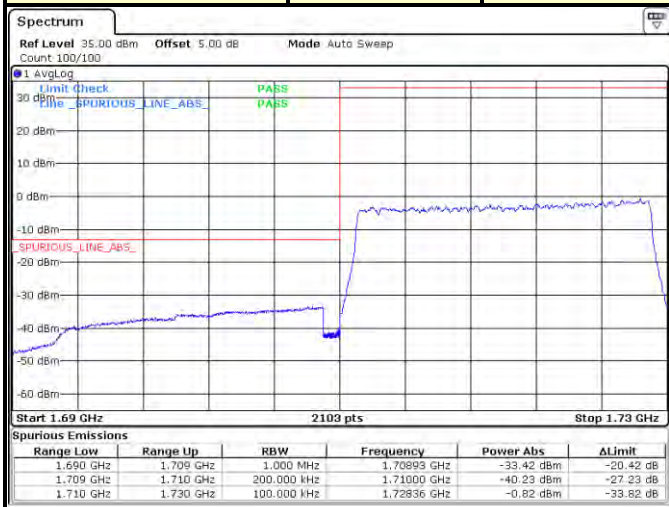
LTE BAND 4

Channel Bandwidth: 20MHz QPSK

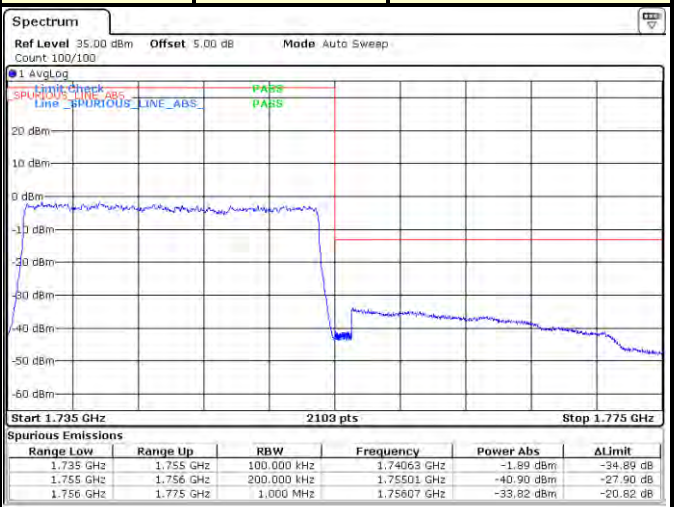
CHANNEL 20050 1 RB CHANNEL 20300 1 RB



CHANNEL 20050 Full RB



CHANNEL 20300 Full RB

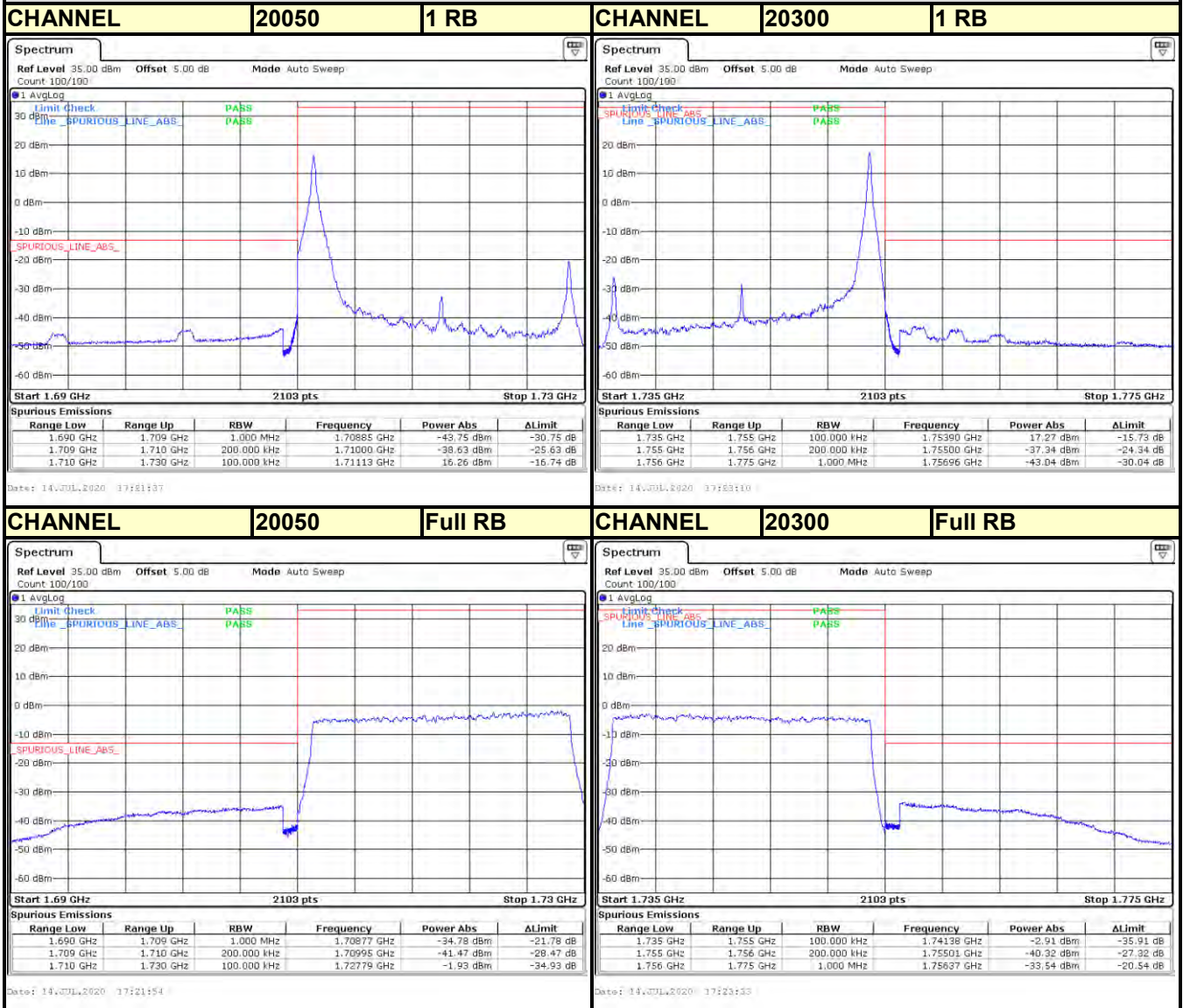




**BUREAU
VERITAS**

Test Report No.: RF200629W001-4

Channel Bandwidth: 20MHz 16QAM

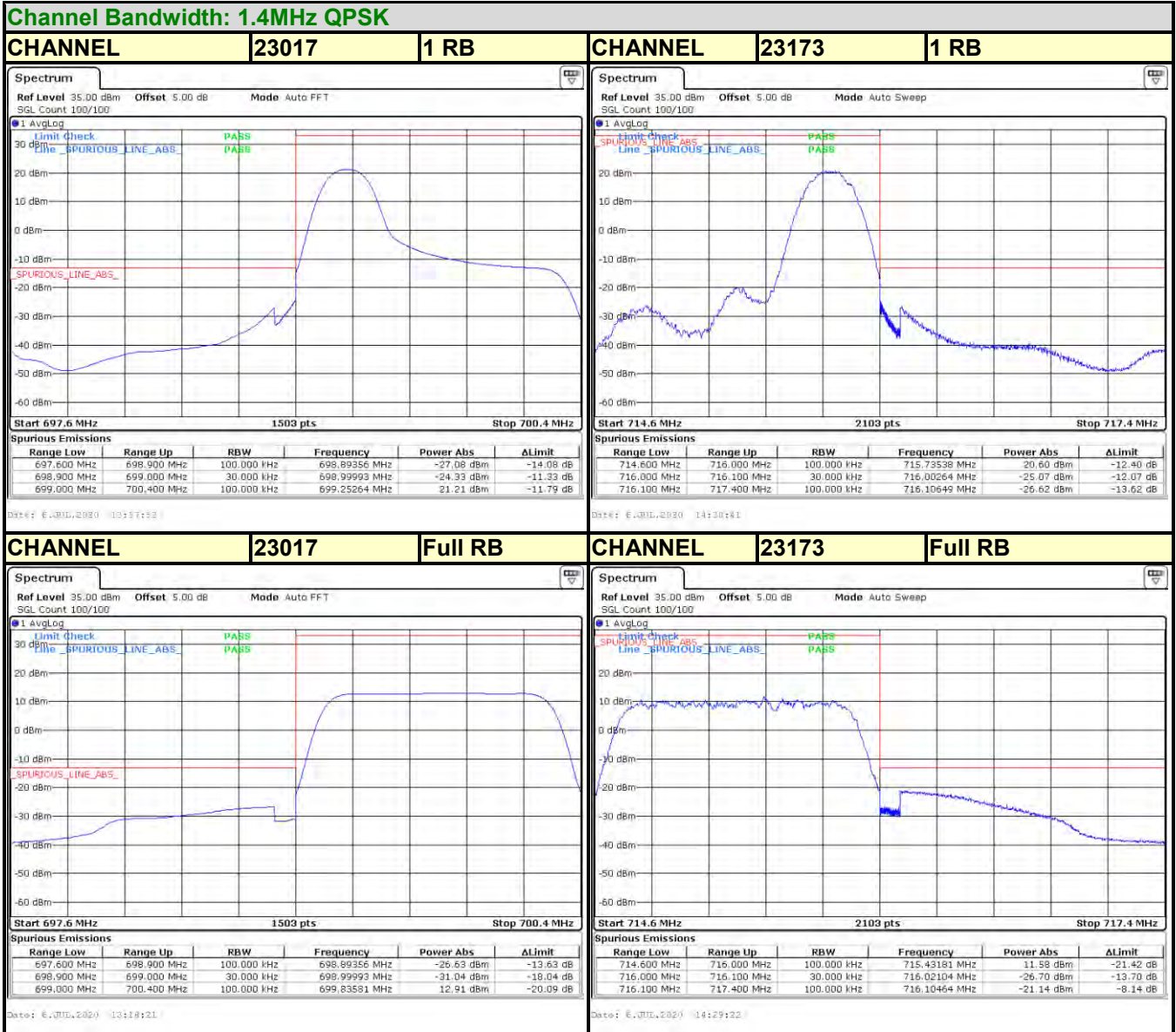




**BUREAU
VERITAS**

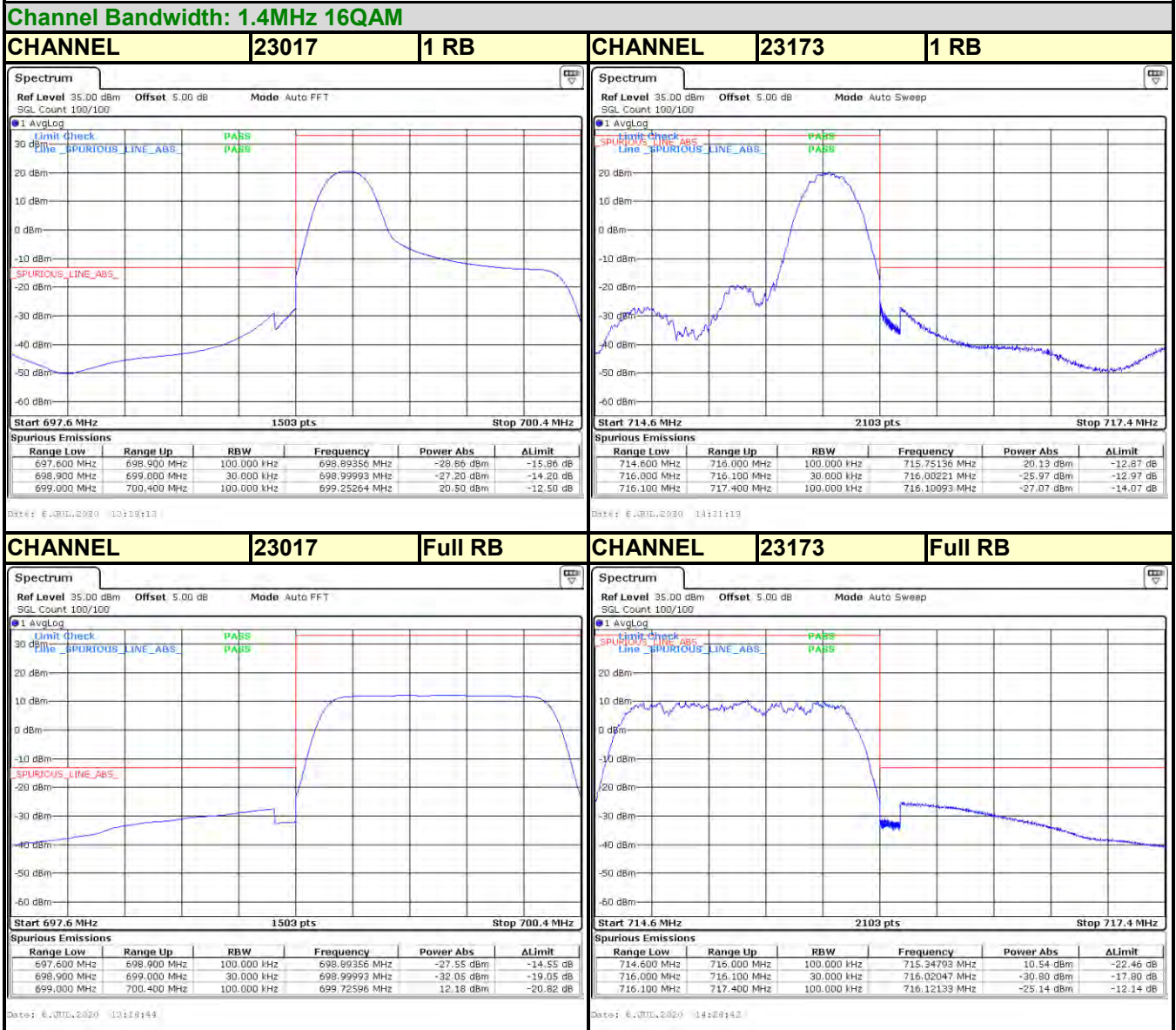
Test Report No.: RF200629W001-4

LTE BAND 12





Test Report No.: RF200629W001-4

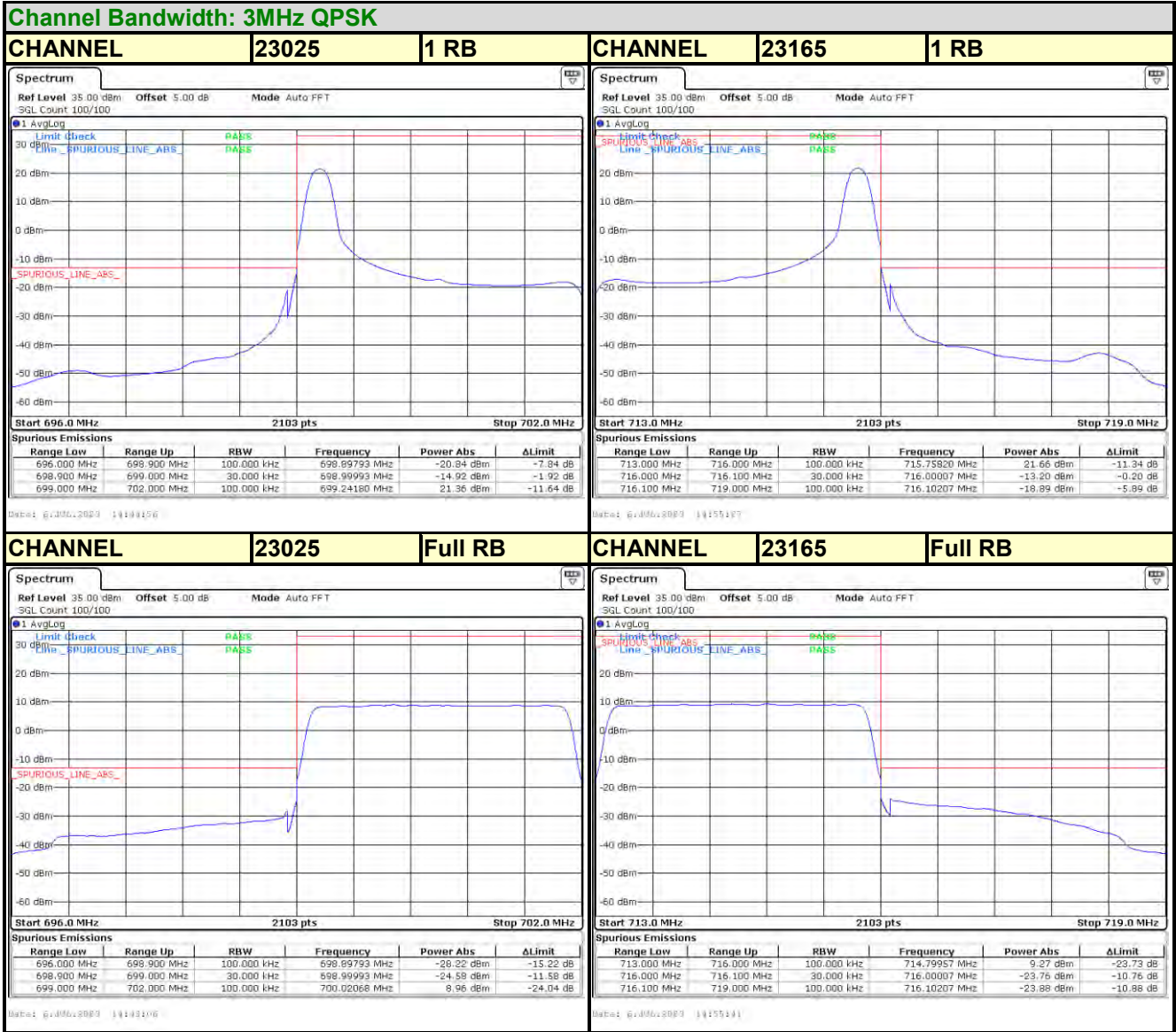




BUREAU VERITAS

Test Report No.: RF200629W001-4

LTE BAND 12

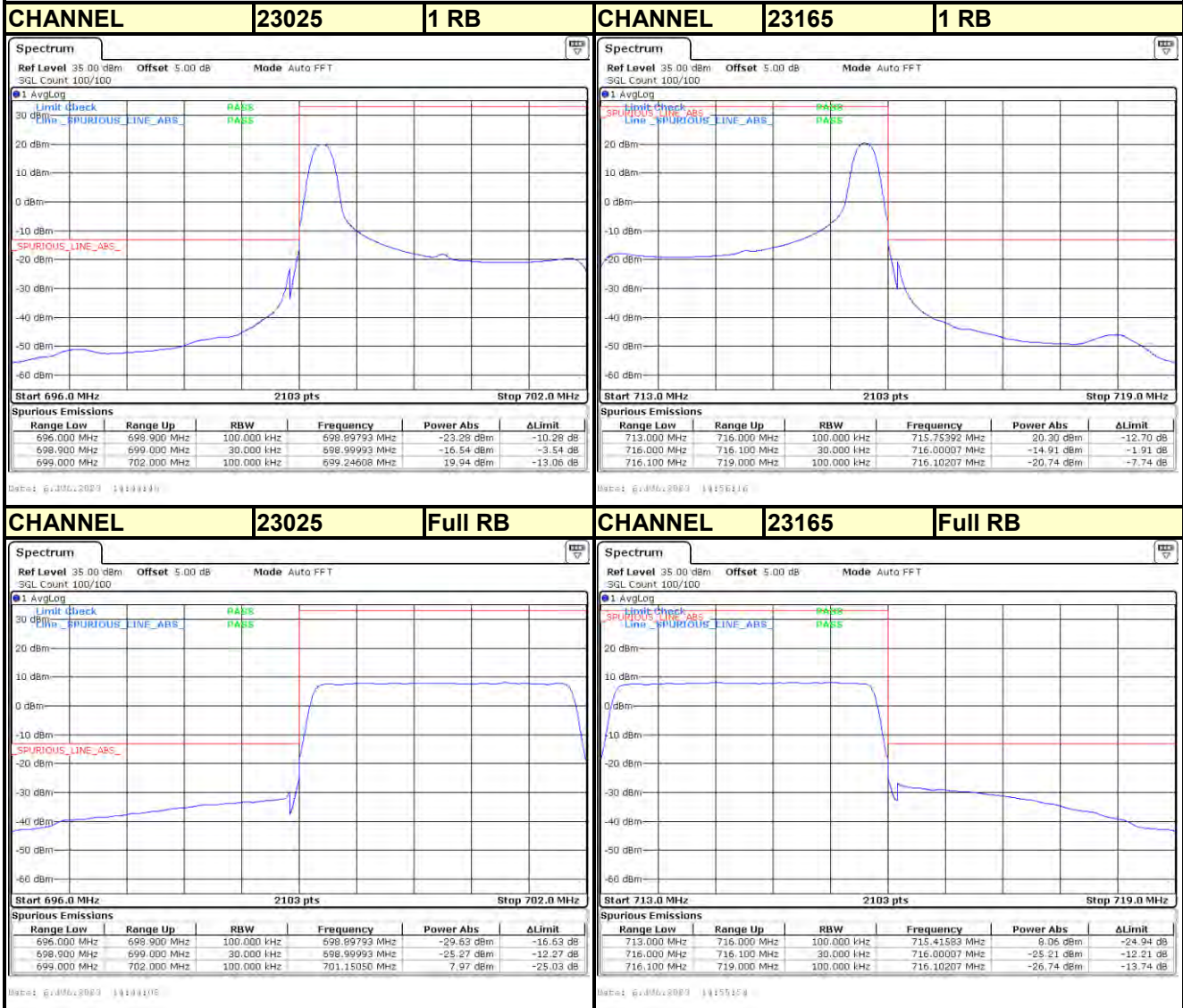




BUREAU VERITAS

Test Report No.: RF200629W001-4

Channel Bandwidth: 3MHz 16QAM

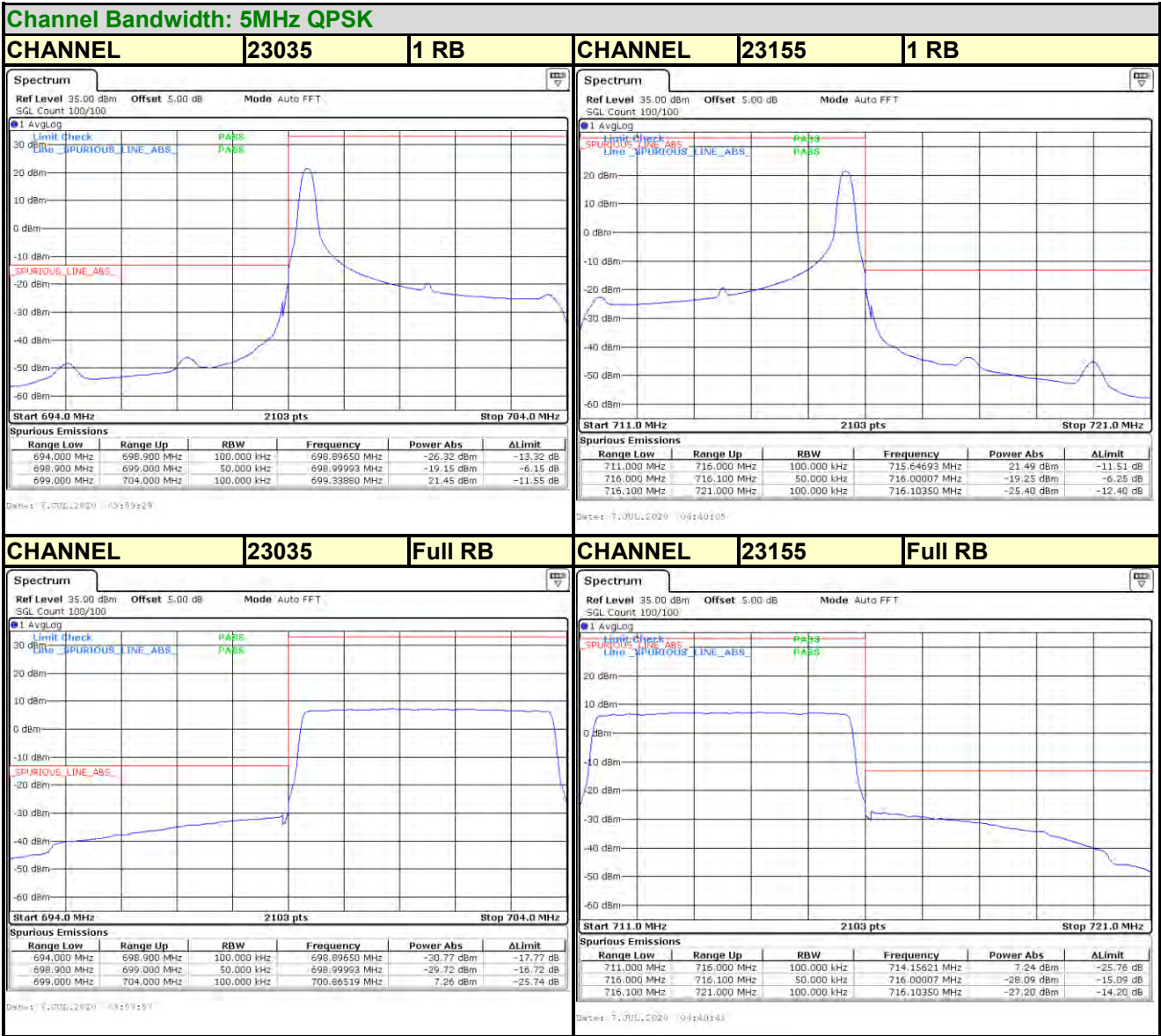




BUREAU VERITAS

Test Report No.: RF200629W001-4

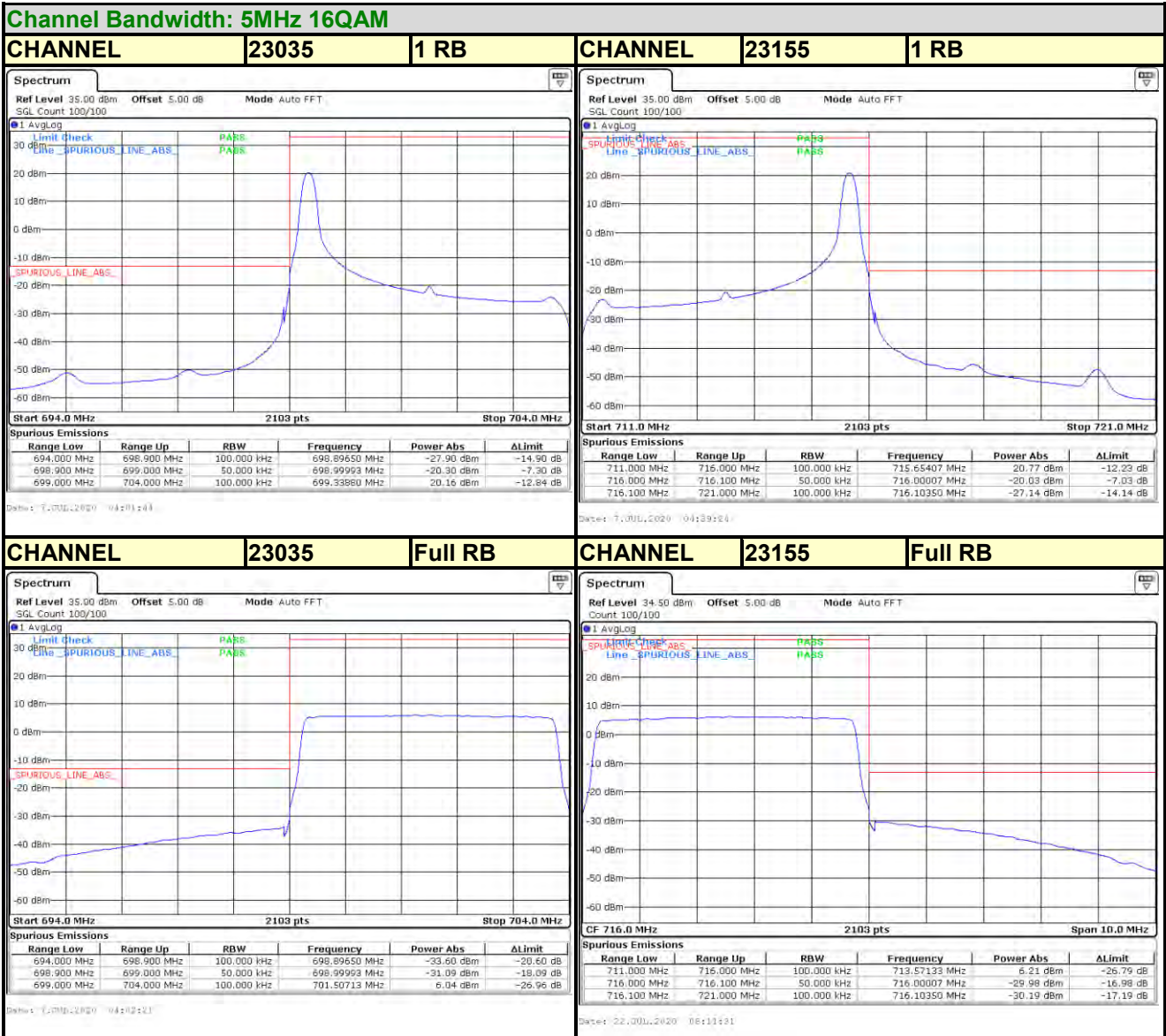
LTE BAND 12





**BUREAU
VERITAS**

Test Report No.: RF200629W001-4





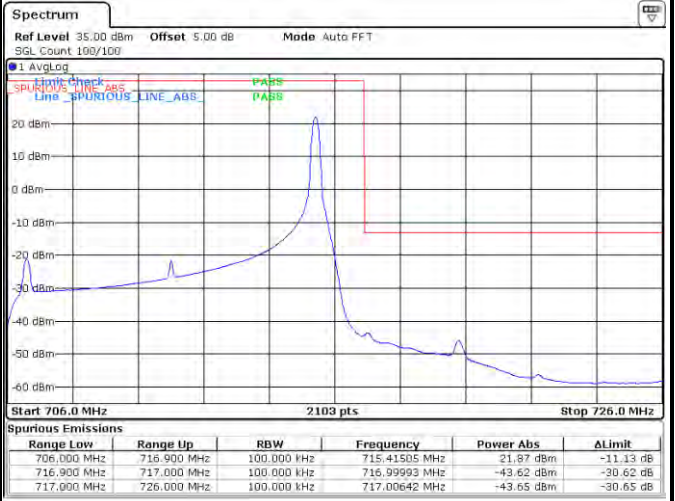
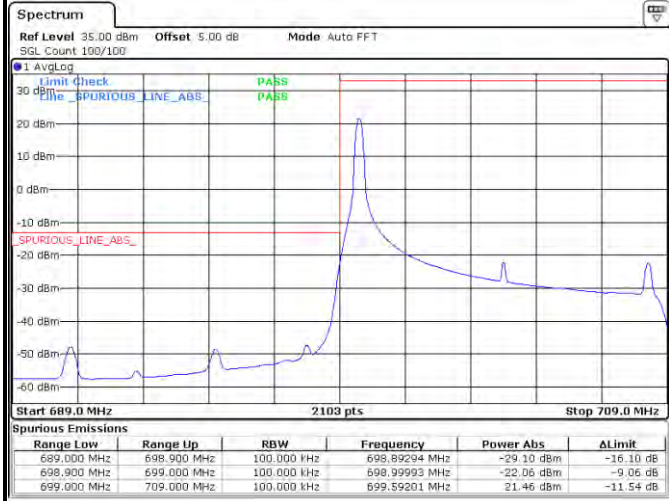
BUREAU VERITAS

Test Report No.: RF200629W001-4

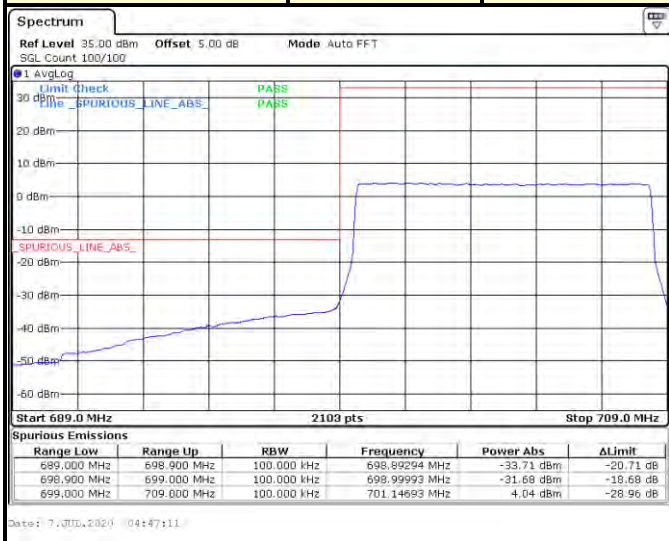
LTE BAND 12

Channel Bandwidth: 10MHz QPSK

CHANNEL 23060 1 RB CHANNEL 23130 1 RB



CHANNEL 23060 Full RB



CHANNEL 23130 Full RB



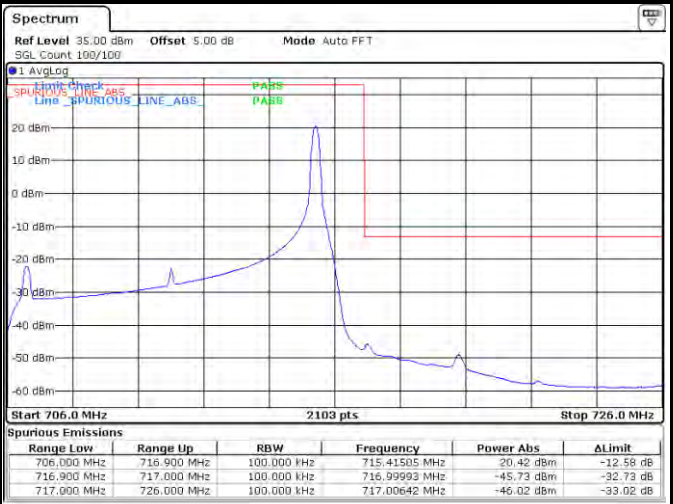
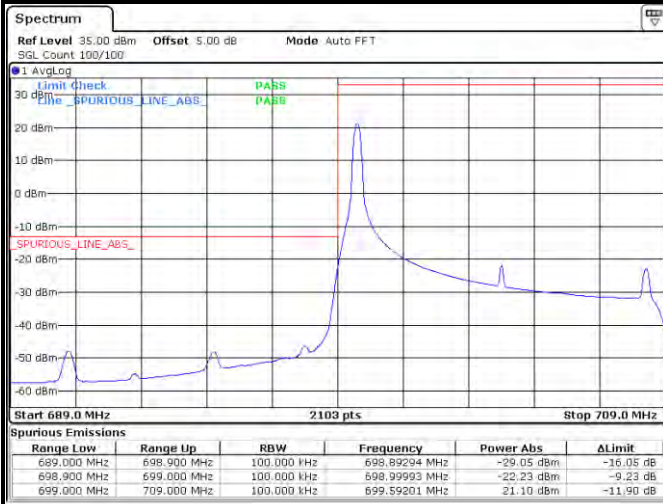


BUREAU VERITAS

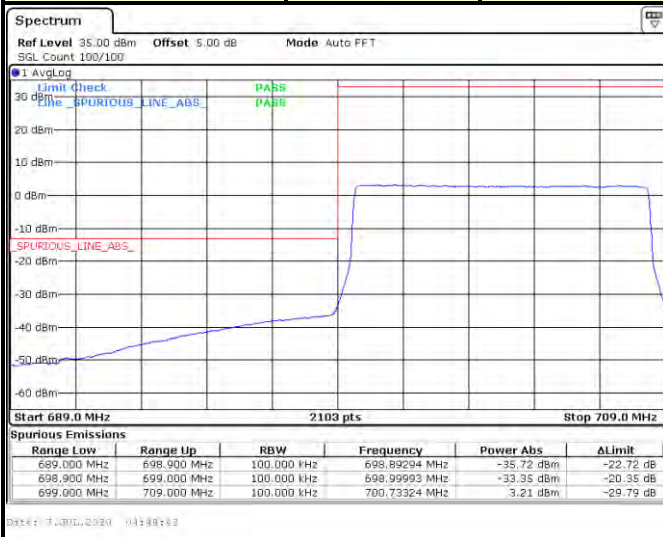
Test Report No.: RF200629W001-4

Channel Bandwidth: 10MHz 16QAM

CHANNEL 23060 1 RB CHANNEL 23130 1 RB



CHANNEL 23060 Full RB



CHANNEL 23130 Full RB





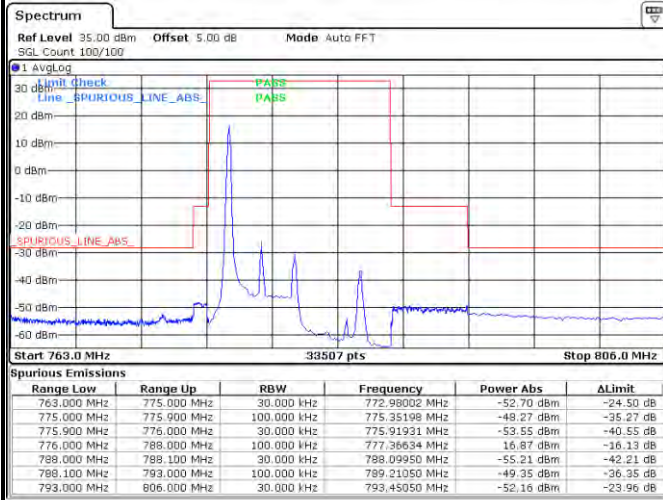
BUREAU VERITAS

LTE BAND 13

Test Report No.: RF200629W001-4

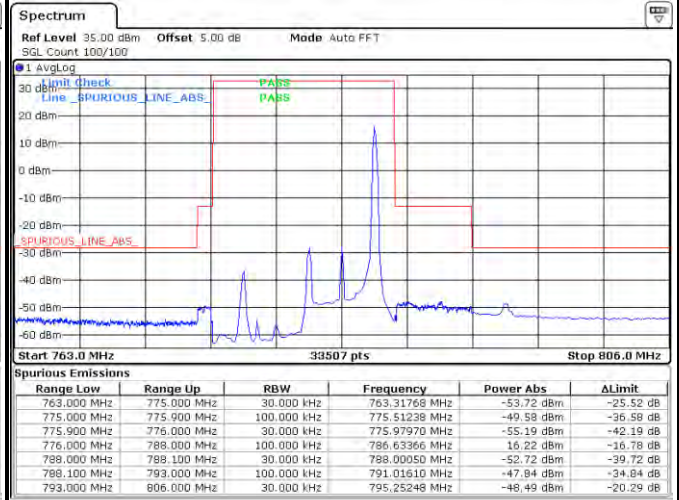
Channel Bandwidth: 5MHz QPSK

CHANNEL 23205 1 RB



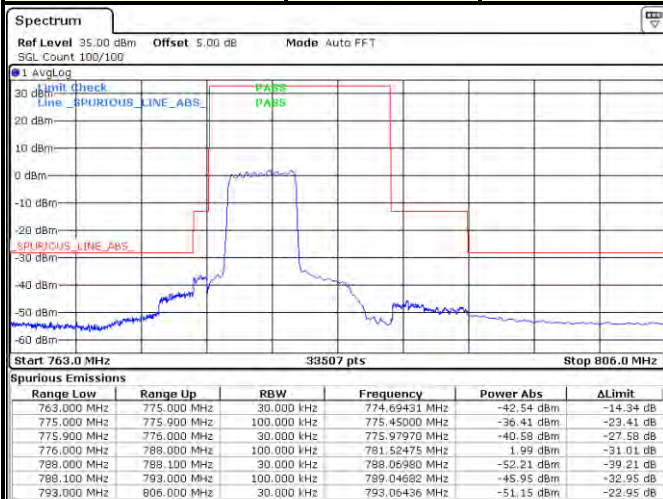
Date: 7.JUL.2020 05:03:04

CHANNEL 23255 1 RB



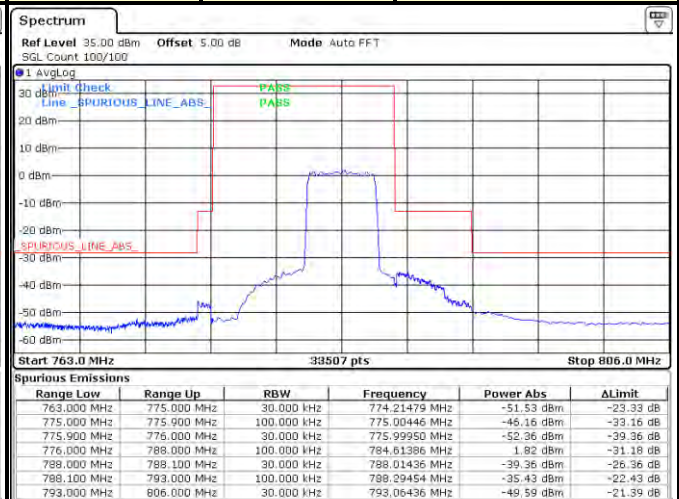
Date: 7.JUL.2020 05:07:51

CHANNEL 23205 Full RB



Date: 7.JUL.2020 04:59:11

CHANNEL 23255 Full RB



Date: 7.JUL.2020 05:09:16