

FCC TEST REPORT

(PART 22)

Applicant:	Shenzhen Neoway Technology Co.,Ltd.
Address:	4F-2#,Lianjian Science&Industry Park, Huarong Road, Dalang,Longhua District, Shenzhen City, Guangdong Province, P.R.China

Manufacturer or Supplier:	Shenzhen Neoway Technology Co.,Ltd.
Address:	4F-2#,Lianjian Science&Industry Park, Huarong Road, Dalang,Longhua District, Shenzhen City, Guangdong Province, P.R.China
Product:	Cat.M1 Module
Brand Name:	neoway
Model Name:	N27-W3
FCC ID:	PJ7-N27-W3
Date of tests:	Nov. 23, 2019 ~ Jan. 09, 2020

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

- | | |
|---|---|
| ☒ FCC PART 22, Subpart H | ☒ FCC Part 2 |
| ☒ ANSI/TIA/EIA-603-D | ☒ ANSI C63.26-2015 |
| ☒ ANSI/TIA/EIA-603-E | |

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: Jan. 13, 2020	Date: Jan. 13, 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	10
2.3 DESCRIPTION OF SUPPORT UNITS	11
2.4 TEST ITEM AND TEST CONFIGURATION.....	11
2.5 EUT OPERATING CONDITIONS	16
2.6 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	30
3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT	30
3.2.2 TEST PROCEDURE	30
3.2.3 TEST SETUP	30
3.2.4 TEST RESULTS	31
3.3 OCCUPIED BANDWIDTH MEASUREMENT	42
3.3.1 TEST PROCEDURES	42
3.3.2 TEST SETUP	42
3.3.3 TEST RESULTS	43
3.4 BAND EDGE MEASUREMENT	53
3.4.1 LIMITS OF BAND EDGE MEASUREMENT	53
3.4.2 TEST SETUP	53
3.4.3 TEST PROCEDURES	54
3.4.4 TEST RESULTS	55
3.5 CONDUCTED SPURIOUS EMISSIONS.....	74
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT	74
3.5.2 TEST PROCEDURE	74
3.5.3 TEST SETUP	74
3.5.4 TEST RESULTS	75
3.6 RADIATED EMISSION MEASUREMENT	86
3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT	86
3.6.2 TEST PROCEDURES	86
3.6.3 DEVIATION FROM TEST STANDARD	86
3.6.4 TEST SETUP	87



Test Report No.: RF191122W002-1

3.6.5	TEST RESULTS	88
3.7	PEAK TO AVERAGE RATIO	128
3.7.1	LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT	128
3.7.2	TEST SETUP	128
3.7.3	TEST PROCEDURES	128
3.7.4	TEST RESULTS	129
4	PHOTOGRAPHS OF THE TEST CONFIGURATION	144
5	INFORMATION ON THE TESTING LABORATORIES	145
6	APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	146



Test Report No.: RF191122W002-1

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF191122W002-1	Original release	Jan. 13, 2020

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 22 & Part 2		
STANDARD SECTION	TEST TYPE	RESULT
2.1046 22.913 (a)	Effective Radiated Power	Compliance
2.1055 22.355	Frequency Stability	Compliance
2.1049 22.917 (b)	Occupied Bandwidth	Compliance
22.913 (d)	Peak to average ratio*	Compliance
22.917	Band Edge Measurements	Compliance
2.1051 22.917	Conducted Spurious Emissions	Compliance
2.1053 22.917	Radiated Spurious Emissions	Compliance

* Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01.

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
Maximum Peak Output Power	$\pm 2.06\text{dB}$
Frequency Stability	$\pm 76.97\text{Hz}$
Radiated emissions (30MHz~1GMHz)	$\pm 4.98\text{dB}$
Radiated emissions (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	$\pm 43.58\text{KHz}$
Band Edge Measurements	$\pm 4.70\text{dB}$
Peak to average ratio	$\pm 0.76\text{dB}$

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

1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 26,19	Feb. 25,20
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 26,19	Feb. 25,20
Bilog Antenna 1	ETS-LINDGREN	3143B	00161964	Feb. 26,19	Feb. 25,20
Bilog Antenna 2	ETS-LINDGREN	3143B	00161965	Feb. 26,19	Feb. 25,20
Horn Antenna 1	ETS-LINDGREN	3117	00168728	Feb. 26,19	Feb. 25,20
Horn Antenna 2	ETS-LINDGREN	3117	00168692	Nov. 24, 19	Nov. 23, 20
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40 -K-SG/QMS-00 361	15433	Nov. 24, 19	Nov. 23, 20
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 26,19	Feb. 25,20
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Jun. 24,19	Jun. 23,20
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn- CT0001143-1216	Feb. 26,19	Feb. 25,20
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-SM A	1505	Jun. 24,19	Jun. 23,20
Power Meter	Anritsu	ML2495A	1506002	Feb. 26,19	Feb. 25,20
Power Sensor	Anritsu	MA2411B	1339352	Feb. 26,19	Feb. 25,20
Humid & Temp Programmable Tester	Juyi	ITH-120-45-CP -AR	IAA1504-001	Jun. 24,19	Jun. 23,20
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 26,19	Feb. 25,20

NOTE: 1. The calibration interval of the above test instruments is 12 months or 24 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

EUT	Cat.M1 Module	
BRAND NAME	neoway	
MODEL NAME	N27-W3	
POWER SUPPLY	$V_{\min}=3.1\text{Vdc}$, $V_{\text{nor}}=3.6\text{Vdc}$, $V_{\max}=4.3\text{Vdc}$	
MODULATION TYPE	GSM/GPRS/EDGE	GMSK, 8PSK
	LTE CAT-M1	QPSK, 16QAM
FREQUENCY RANGE	GSM/GPRS/EDGE	824.2MHz ~ 848.8MHz
	LTE CAT-M1 Band 5 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE CAT-M1 Band 5 (Channel Bandwidth: 3MHz)	825.5MHz ~ 847.5MHz
	LTE CAT-M1 Band 5 (Channel Bandwidth: 5MHz)	826.5MHz ~ 846.5MHz
	LTE CAT-M1 Band 5 (Channel Bandwidth: 10MHz)	829MHz ~ 844MHz
	LTE CAT-M1 Band 26 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE CAT-M1 Band 26 (Channel Bandwidth: 3MHz)	825.5MHz ~ 847.5MHz
	LTE CAT-M1 Band 26 (Channel Bandwidth: 5MHz)	826.5MHz ~ 846.5MHz
	LTE CAT-M1 Band 26 (Channel Bandwidth: 10MHz)	829MHz ~ 844MHz
	LTE CAT-M1 Band 26 (Channel Bandwidth: 15MHz)	821.5MHz ~ 841.5MHz
MAX. ERP POWER	GSM	1253mW
	EDGE	316mW
	LTE CAT-M1 Band 5 (Channel Bandwidth: 1.4MHz)	164mW
	LTE CAT-M1 Band 5 (Channel Bandwidth: 3MHz)	166mW
	LTE CAT-M1 Band 5 (Channel Bandwidth: 5MHz)	168mW
	LTE CAT-M1 Band 5 (Channel Bandwidth: 10MHz)	169mW



MAX. ERP POWER	LTE CAT-M1 Band 26 (Channel Bandwidth: 1.4MHz)	144mW
	LTE CAT-M1 Band 26 (Channel Bandwidth: 3MHz)	143mW
	LTE CAT-M1 Band 26 (Channel Bandwidth: 5MHz)	144mW
	LTE CAT-M1 Band 26 (Channel Bandwidth: 10MHz)	145mW
	LTE CAT-M1 Band 26 (Channel Bandwidth: 15MHz)	145mW
EMISSION DESIGNATOR	GSM	249KGXW
	EDGE	245KG7W
	LTE CAT-M1 Band 5 (Channel Bandwidth: 1.4MHz)	QPSK: 1M10G7D
		16QAM: 1M10W7D
	LTE CAT-M1 Band 5 (Channel Bandwidth: 3MHz)	QPSK: 1M27G7D
		16QAM: 1M09W7D
	LTE CAT-M1 Band 5 (Channel Bandwidth: 5MHz)	QPSK: 1M08G7D
		16QAM: 912KG7D
	LTE CAT-M1 Band 5 (Channel Bandwidth: 10MHz)	QPSK: 1M08G7D
		16QAM: 910KW7D
	LTE CAT-M1 Band 26 (Channel Bandwidth: 1.4MHz)	QPSK: 1M10G7D
		16QAM: 1M10W7D
	LTE CAT-M1 Band 26 (Channel Bandwidth: 3MHz)	QPSK: 1M26G7D
		16QAM: 1M08W7D
	LTE CAT-M1 Band 26 (Channel Bandwidth: 5MHz)	QPSK: 1M08G7D
		16QAM: 907KW7D
	LTE CAT-M1 Band 26 (Channel Bandwidth: 10MHz)	QPSK: 1M08G7D
		16QAM: 909KW7D
	LTE CAT-M1 Band 26 (Channel Bandwidth: 15MHz)	QPSK: 1M09G7D
		16QAM: 912KW7D
ANTENNA TYPE	Monopole antenna with 1dBi gain for GSM 850 Monopole antenna with 1dBi gain for Band 5 Monopole antenna with 1dBi gain for Band 26	
HW VERSION	V1.1	
SW VERSION	N27-Q01-STDBZ-01B	
I/O PORTS	Refer to user's manual	



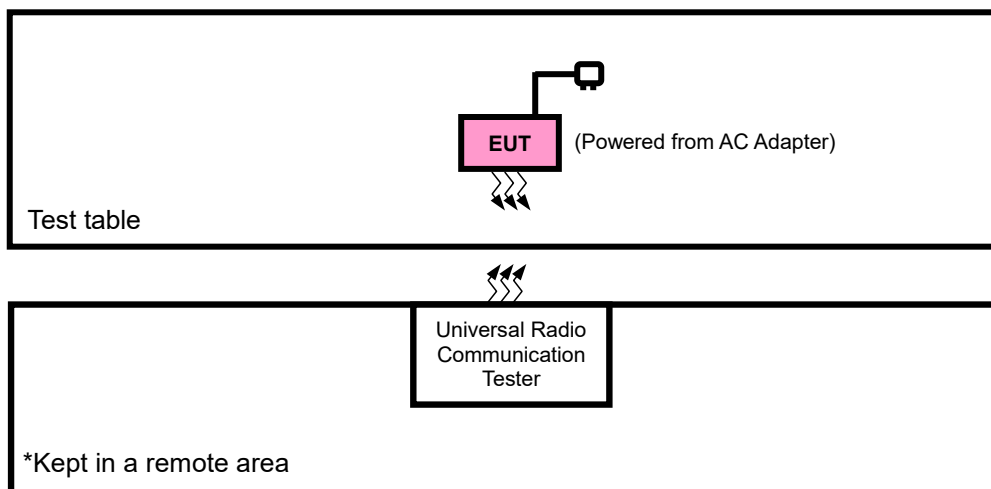
Test Report No.: RF191122W002-1

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

MODULATION MODE	TX FUNCTION
GSM/GPRS/EDGE	1TX/1RX
LTE CAT-M1	1TX/1RX

2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION



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	Adapter	JINGSAI	CLS-050200	N/A	N/A
2	DC source	LONG WEI	PS-6403D	010934269	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	Unshielded, Detachable 1.8m
2	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 in radiated emission was found when positioned on X-plane for GSM/GPRS/EDGE /LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
-	EUT + Adapter with GSM or LTE link

GSM MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	128 to 251	128, 189, 251	GSM, EDGE
FREQUENCY STABILITY	128 to 251	128, 251	GSM, EDGE
OCCUPIED BANDWIDTH	128 to 251	128, 189, 251	GSM, EDGE
BAND EDGE	128 to 251	128, 251	GSM, EDGE
CONDUCTED EMISSION	128 to 251	128, 189, 251	GSM, EDGE
RADIATED EMISSION	128 to 251	128, 189, 251	GSM, EDGE
PEAK TO AVERAGE RATIO	128 to 251	128, 189, 251	GSM, EDGE



LTE CAT-M1 BAND 5 MODE

TEST ITEM	Available Channel	Tested Channel	Channel bandwidth	modulation	mode
ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK,16QAM	2 RB / 0 RB Offset
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK,16QAM	2 RB / 0 RB Offset
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK,16QAM	2 RB / 0 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK,16QAM	2 RB / 0 RB Offset
FREQUENCY STABILITY	20407 to 20643	20407, 20643	1.4MHz	QPSK	2 RB / 0 RB Offset
	20415 to 20635	20415, 20635	3MHz	QPSK	2 RB / 0 RB Offset
	20425 to 20625	20425, 20625	5MHz	QPSK	2 RB / 0 RB Offset
	20450 to 20600	20450, 20600	10MHz	QPSK	2 RB / 0 RB Offset
OCCUPIED BANDWIDTH	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 1 RB Offset
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 1 RB Offset
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 1 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 1 RB Offset
BAND EDGE	20407 to 20643	20407	1.4 MHz	QPSK,16QAM	2 RB / 0 RB Offset
					6 RB / 0 RB Offset
	20407 to 20643	20643	1.4 MHz	QPSK,16QAM	2 RB / 0 RB Offset
					5 RB / 0 RB Offset
	20415 to 20635	20415	3 MHz	QPSK,16QAM	2 RB / 0 RB Offset
					6 RB / 0 RB Offset
	20415 to 20635	20635	3 MHz	QPSK,16QAM	2 RB / 0 RB Offset
					5 RB / 0 RB Offset
	20425 to 20625	20425	5MHz	QPSK,16QAM	2 RB / 0 RB Offset
					6 RB / 0 RB Offset
	20425 to 20625	20625	5MHz	QPSK,16QAM	2 RB / 0 RB Offset
					5 RB / 0 RB Offset
	20450 to 20600	20450	10MHz	QPSK,16QAM	2 RB / 0 RB Offset
					6 RB / 0 RB Offset
	20450 to 20600	20600	10MHz	QPSK,16QAM	2 RB / 0 RB Offset
					5 RB / 0 RB Offset



**BUREAU
VERITAS**

Test Report No.: RF191122W002-1

CONDCUDED EMISSION	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK	2 RB / 0 RB Offset
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK	2 RB / 0 RB Offset
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK	2 RB / 0 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK	2 RB / 0 RB Offset
RADIATED EMISSION	20407 to 20643	20525	1.4MHz	QPSK	2 RB / 0 RB Offset
	20415 to 20635	20525	3MHz	QPSK	2 RB / 0 RB Offset
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK	2 RB / 0 RB Offset
	20450 to 20600	20525	10MHz	QPSK	2 RB / 0 RB Offset
PEAK TO AVERAGE RATIO	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK,16QAM	2 RB / 0 RB Offset
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK,16QAM	2 RB / 0 RB Offset
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK,16QAM	2 RB / 0 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK,16QAM	2 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.: RF191122W002-1

LTE CAT-M1 BAND 26 MODE

TEST ITEM	Available Channel	Tested Channel	Channel bandwidth	modulation	mode
ERP	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26815 to 27015	26815, 26915, 27015	5MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK,16QAM	2 RB / 0 RB Offset
FREQUENCY STABILITY	26797 to 27033	26797, 27033	1.4MHz	QPSK	2 RB / 0 RB Offset
	26805 to 27025	26805, 27025	3MHz	QPSK	2 RB / 0 RB Offset
	26815 to 26815	26815, 26815	5MHz	QPSK	2 RB / 0 RB Offset
	26840 to 26990	26840, 26990	10MHz	QPSK	2 RB / 0 RB Offset
	26865 to 26965	26865, 26965	15MHz	QPSK	2 RB / 0 RB Offset
OCCUPIED BANDWIDTH	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	26815 to 27015	26815, 26915, 27015	5MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset

BAND EDGE	26797 to 27033	26797	1.4 MHz	QPSK, 16QAM	2 RB / 0 RB Offset
					6 RB / 0 RB Offset
	26797 to 27033	27033	1.4 MHz	QPSK, 16QAM	2 RB / 0 RB Offset
					5 RB / 0 RB Offset
	26805 to 27025	26805	3 MHz	QPSK, 16QAM	2 RB / 0 RB Offset
					6 RB / 0 RB Offset
	26805 to 27025	27025	3 MHz	QPSK, 16QAM	2 RB / 0 RB Offset
					5 RB / 0 RB Offset
	26815 to 27015	26815	5MHz	QPSK, 16QAM	2 RB / 0 RB Offset
					6 RB / 0 RB Offset
	26815 to 27015	27015	5MHz	QPSK, 16QAM	2 RB / 0 RB Offset
					5 RB / 0 RB Offset
CONDCUDED EMISSION	26840 to 26990	26840	10MHz	QPSK, 16QAM	2 RB / 0 RB Offset
					6 RB / 0 RB Offset
	26840 to 26990	26990	10MHz	QPSK, 16QAM	2 RB / 0 RB Offset
					5 RB / 0 RB Offset
	26865 to 26965	26865	15MHz	QPSK, 16QAM	2 RB / 0 RB Offset
RADIATED EMISSION					6 RB / 0 RB Offset
	26865 to 26965	26965	15MHz	QPSK, 16QAM	2 RB / 0 RB Offset
					5 RB / 0 RB Offset
	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK	2 RB / 0 RB Offset
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK	2 RB / 0 RB Offset
RADIATED EMISSION	26815 to 27015	26815, 26915, 27015	5MHz	QPSK	2 RB / 0 RB Offset
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK	2 RB / 0 RB Offset
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK	2 RB / 0 RB Offset
	26797 to 27033	26915	1.4MHz	QPSK	2 RB / 0 RB Offset
	26805 to 27025	26915	3MHz	QPSK	2 RB / 0 RB Offset
RADIATED EMISSION	26815 to 27015	26915	5MHz	QPSK	2 RB / 0 RB Offset
	26840 to 26990	26915	10MHz	QPSK	2 RB / 0 RB Offset
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK	2 RB / 0 RB Offset

PEAK TO AVERAGE RATIO	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK, 16QAM	2 RB / 0 RB Offset
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK, 16QAM	2 RB / 0 RB Offset
	26815 to 27015	26815, 26915, 27015	5MHz	QPSK, 16QAM	2 RB / 0 RB Offset
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK, 16QAM	2 RB / 0 RB Offset
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK, 16QAM	2 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 ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP	23deg. C, 70%RH	5Vdc from adapter	Tony Xiong
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.1V/3.6V/4.3V	Kevin Zhang
OCCUPIED BANDWIDTH	23deg. C, 70%RH	5Vdc from adapter	Kevin Zhang
BAND EDGE	23deg. C, 70%RH	5Vdc from adapter	Kevin Zhang
CONDUCTED EMISSION	23deg. C, 70%RH	5Vdc from adapter	Kevin Zhang
RADIATED EMISSION	23deg. C, 70%RH	5Vdc from adapter	Tony Xiong
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	5Vdc from adapter	Kevin Zhang

2.5 EUT OPERATING CONDITIONS

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency



Test Report No.: RF191122W002-1

2.6 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 22

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

Mobile / Portable station are limited to 7 watts e.r.p.

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.

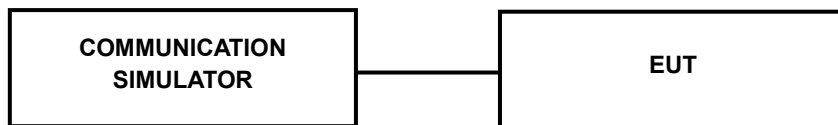
$$\text{ERP} = \text{EIRP} - 2.15$$

CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with WCDMA 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

CONDUCTED POWER MEASUREMENT:



3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	GSM850		
Channel	128	189	251
Frequency	824.2	836.4	848.8
GPRS (GMSK, 1Tx-slot)	32.01	32.13	31.79
GPRS (GMSK, 2Tx-slot)	31.79	31.91	31.57
GPRS (GMSK, 3Tx-slot)	31.53	31.65	31.31
GPRS (GMSK, 4Tx-slot)	31.23	31.35	31.01
EDGE (8PSK, 1Tx-slot)	26.03	26.15	25.81
EDGE (8PSK, 2Tx-slot)	25.90	26.02	25.68
EDGE (8PSK, 3Tx-slot)	25.71	25.83	25.49
EDGE (8PSK, 4Tx-slot)	25.54	25.66	25.32

LTE CAT-M1 Band 5

Band/BW	Modulation	RB Size	RB Offset	Low CH 20407	Mid CH 20525	High CH 20643
				Frequency 824.7 MHz	Frequency 836.5 MHz	Frequency 848.3 MHz
5/1.4	QPSK	2	0	22.39	22.50	22.49
		2	4	22.41	22.53	22.53
		5	0	22.39	22.46	22.52
		5	1	22.43	22.52	22.53
		6	0	21.48	21.56	21.58
	16QAM	2	0	22.44	22.47	22.53
		2	4	22.46	22.53	22.58
		5	0	22.32	22.35	22.42
5/ 3	QPSK	2	0	22.39	22.46	22.47
		2	4	22.41	22.52	22.55
		5	0	22.43	22.49	22.47
		5	1	22.40	22.50	22.52
		6	0	21.51	21.56	21.60
	16QAM	2	0	22.42	22.53	22.52
		2	4	22.50	22.56	22.54
		5	0	22.33	22.40	22.37
		5	1	22.29	22.36	22.40

Band/BW	Modulation	RB Size	RB Offset	Low CH 20425	Mid CH 20525	High CH 20625
				Frequency 826.5 MHz	Frequency 836.5 MHz	Frequency 846.5 MHz
5/ 5	QPSK	2	0	22.43	22.45	22.51
		2	4	22.46	22.54	22.52
		5	0	22.38	22.47	22.48
		5	1	22.42	22.54	22.50
		6	0	21.46	21.53	21.56
	16QAM	2	0	22.45	22.50	22.54
		2	4	22.49	22.51	22.57
		5	0	22.33	22.36	22.37
5/ 10	QPSK	5	1	22.32	22.38	22.43
	QPSK	2	0	22.44	22.52	22.54
		2	4	22.48	22.56	22.58
		5	0	22.45	22.53	22.55
		5	1	22.47	22.55	22.57
		6	0	21.52	21.60	21.62
	16QAM	2	0	22.46	22.54	22.56
		2	4	22.51	22.59	22.61
		5	0	22.34	22.42	22.44
		5	1	22.35	22.43	22.45

LTE CAT-M1 Band 26

Band/BW	Modulation	RB Size	RB Offset	Low CH 26797	Mid CH 26915	High CH 27033
				Frequency 824.7 MHz	Frequency 836.5 MHz	Frequency 848.3 MHz
26/1.4	QPSK	2	0	22.65	22.65	22.63
		2	4	22.66	22.74	22.69
		5	0	22.51	22.59	22.57
		5	1	22.61	22.62	22.56
		6	0	22.35	22.38	22.38
	16QAM	2	0	22.50	22.52	22.52
		2	4	22.62	22.62	22.57
		5	0	22.60	22.67	22.68
		5	1	22.41	22.50	22.44

Band/BW	Modulation	RB Size	RB Offset	Low CH 26805	Mid CH 26915	High CH 27025
				Frequency 825.5 MHz	Frequency 836.5 MHz	Frequency 847.5 MHz
26/3	QPSK	2	0	22.63	22.68	22.65
		2	4	22.64	22.69	22.65
		5	0	22.48	22.61	22.52
		5	1	22.65	22.58	22.57
		6	0	22.35	22.42	22.38
	16QAM	2	0	22.48	22.52	22.53
		2	4	22.59	22.64	22.59
		5	0	22.65	22.67	22.66
		5	1	22.41	22.53	22.45

Band/BW	Modulation	RB Size	RB Offset	Low CH 26815	Mid CH 26915	High CH 27015
				Frequency 826.5 MHz	Frequency 836.5MHz	Frequency 846.5 MHz
26/5	QPSK	2	0	22.61	22.65	22.59
		2	4	22.67	22.72	22.66
		5	0	22.53	22.60	22.52
		5	1	22.60	22.59	22.59
		6	0	22.40	22.41	22.37
	16QAM	2	0	22.50	22.54	22.53
		2	4	22.60	22.62	22.61
		5	0	22.62	22.68	22.65
		5	1	22.41	22.47	22.41

Band/BW	Modulation	RB Size	RB Offset	Low CH 26840	Mid CH 26915	High CH 26990
				Frequency 829MHz	Frequency 836.5MHz	Frequency 844MHz
26/10	QPSK	2	0	22.62	22.68	22.60
		2	4	22.64	22.75	22.67
		5	0	22.49	22.63	22.55
		5	1	22.65	22.61	22.58
		6	0	22.39	22.45	22.38
	16QAM	2	0	22.48	22.56	22.56
		2	4	22.60	22.60	22.57
		5	0	22.61	22.68	22.67
		5	1	22.42	22.49	22.46

Band/BW	Modulation	RB Size	RB Offset	Low CH 26865	Mid CH 26915	High CH 26965
				Frequency 831.5 MHz	Frequency 836.5 MHz	Frequency 841.5 MHz
26/15	QPSK	2	0	22.68	22.72	22.66
		2	4	22.71	22.77	22.70
		5	0	22.54	22.64	22.59
		5	1	22.66	22.66	22.64
		6	0	22.41	22.46	22.45
	16QAM	2	0	22.52	22.57	22.59
		2	4	22.63	22.66	22.64
		5	0	22.67	22.71	22.71
		5	1	22.46	22.54	22.49

ERP POWER (dBm)

GSM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
128	824.2	32.01	1.00	30.86	1218.99	7
189	836.4	32.13	1.00	30.98	1253.14	7
251	848.8	31.79	1.00	30.64	1158.78	7

EDGE

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
128	824.2	26.03	1.00	24.88	307.61	7
189	836.4	26.15	1.00	25.00	316.23	7
251	848.8	25.81	1.00	24.66	292.42	7

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

LTE CAT-M1 BAND 5

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20407	824.7	22.80	1.00	21.65	146.22	7
20525	836.5	22.99	1.00	21.84	152.76	7
20643	848.3	22.78	1.00	21.63	145.55	7

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20407	824.7	23.13	1.00	21.98	157.76	7
20525	836.5	23.30	1.00	22.15	164.06	7
20643	848.3	23.09	1.00	21.94	156.31	7

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20415	825.5	22.86	1.00	21.71	148.25	7
20525	836.5	23.03	1.00	21.88	154.17	7
20635	847.5	22.82	1.00	21.67	146.89	7

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20415	825.5	23.17	1.00	22.02	159.22	7
20525	836.5	23.34	1.00	22.19	165.58	7
20635	847.5	23.13	1.00	21.98	157.76	7

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20425	826.5	22.92	1.00	21.77	150.31	7
20525	836.5	23.09	1.00	21.94	156.31	7
20625	846.5	22.88	1.00	21.73	148.94	7

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20425	826.5	23.23	1.00	22.08	161.44	7
20525	836.5	23.40	1.00	22.25	167.88	7
20625	846.5	23.19	1.00	22.04	159.96	7

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20450	829.0	22.95	1.00	21.80	151.36	7
20525	836.5	23.12	1.00	21.97	157.40	7
20600	844.0	22.91	1.00	21.76	149.97	7

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20450	829.0	23.26	1.00	22.11	162.55	7
20525	836.5	23.43	1.00	22.28	169.04	7
20600	844.0	23.22	1.00	22.07	161.06	7

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

LTE CAT-M1 BAND 26

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26797	824.7	22.66	1.00	21.51	141.58	7
26915	836.5	22.74	1.00	21.59	144.21	7
27033	848.3	22.69	1.00	21.54	142.56	7

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26797	824.7	22.62	1.00	21.47	140.28	7
26915	836.5	22.67	1.00	21.52	141.91	7
27033	848.3	22.68	1.00	21.53	142.23	7

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26805	825.5	22.65	1.00	21.50	141.25	7
26915	836.5	22.69	1.00	21.54	142.56	7
27015	847.5	22.65	1.00	21.50	141.25	7

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26805	825.5	22.65	1.00	21.50	141.25	7
26915	836.5	22.67	1.00	21.52	141.91	7
27015	847.5	22.66	1.00	21.51	141.58	7

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26815	826.5	22.67	1.00	21.52	141.91	7
26915	836.5	22.72	1.00	21.57	143.55	7
27015	846.5	22.66	1.00	21.51	141.58	7

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26815	826.5	22.62	1.00	21.47	140.28	7
26915	836.5	22.68	1.00	21.53	142.23	7
27015	846.5	22.65	1.00	21.50	141.25	7

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26840	829.0	22.65	1.00	21.50	141.25	7
26915	836.5	22.75	1.00	21.60	144.54	7
26990	844.0	22.67	1.00	21.52	141.91	7

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26840	829.0	22.61	1.00	21.46	139.96	7
26915	836.5	22.68	1.00	21.53	142.23	7
26990	844.0	22.67	1.00	21.52	141.91	7

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26865	831.5	22.71	1.00	21.56	143.22	7
26915	836.5	22.77	1.00	21.62	145.21	7
26965	841.5	22.70	1.00	21.55	142.89	7

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26865	831.5	22.67	1.00	21.52	141.91	7
26915	836.5	22.71	1.00	21.56	143.22	7
26965	841.5	22.71	1.00	21.56	143.22	7

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

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

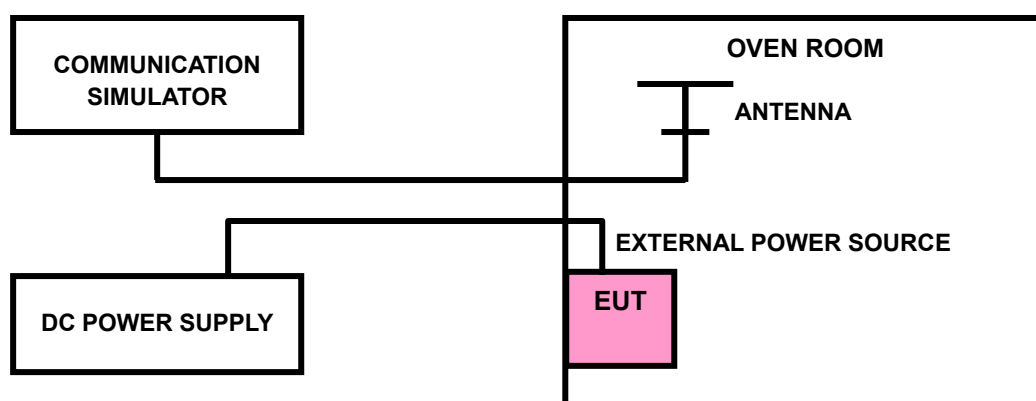
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

3.2.2 TEST PROCEDURE

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

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

3.2.3 TEST SETUP





3.2.4 TEST RESULTS

GSM 850

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
V_{nor}	0.0023	0.0026	2.5
V_{min}	-0.0027	-0.0026	2.5
V_{max}	0.0021	0.0022	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	-0.0123	-0.0117	2.5
-20	-0.0116	-0.0110	2.5
-10	-0.0100	-0.0094	2.5
0	-0.0087	-0.0082	2.5
10	-0.0071	-0.0065	2.5
20	-0.0055	-0.0050	2.5
30	-0.0041	-0.0035	2.5
40	-0.0027	-0.0022	2.5
50	-0.0012	-0.0007	2.5



EDGE 850

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
V_{nor}	0.0021	0.0025	2.5
V_{min}	-0.0026	-0.0027	2.5
V_{max}	0.0019	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)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
-30	-0.0120	-0.0109	2.5
-20	-0.0106	-0.0096	2.5
-10	-0.0088	-0.0084	2.5
0	-0.0080	-0.0070	2.5
10	-0.0063	-0.0056	2.5
20	-0.0050	-0.0041	2.5
30	-0.0035	-0.0028	2.5
40	-0.0022	-0.0007	2.5
50	0.0008	0.0001	2.5



LTE CAT-M1 BAND 5

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 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	-0.0104	-0.0103	2.5
-10	-0.0082	-0.0079	2.5
0	-0.0078	-0.0074	2.5
10	-0.0046	-0.0045	2.5
20	-0.0040	-0.0043	2.5
30	-0.0036	-0.0031	2.5
40	-0.0022	-0.0017	2.5
50	-0.0003	-0.0004	2.5

FREQUENCY ERROR VS. VOLTAGE

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

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0114	-0.0120	2.5
-20	-0.0105	-0.0097	2.5
-10	-0.0081	-0.0080	2.5
0	-0.0076	-0.0072	2.5
10	-0.0053	-0.0046	2.5
20	-0.0043	-0.0040	2.5
30	-0.0031	-0.0040	2.5
40	-0.0018	-0.0018	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}	0.0022	0.0023	2.5
V _{min}	-0.0024	-0.0030	2.5
V _{max}	0.0021	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)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0122	-0.0113	2.5
-20	-0.0107	-0.0107	2.5
-10	-0.0085	-0.0082	2.5
0	-0.0076	-0.0076	2.5
10	-0.0046	-0.0052	2.5
20	-0.0041	-0.0039	2.5
30	-0.0030	-0.0036	2.5
40	-0.0015	-0.0021	2.5
50	-0.0003	-0.0003	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0026	0.0024	2.5
V _{min}	-0.0031	-0.0030	2.5
V _{max}	0.0025	0.0026	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	-0.0123	-0.0113	2.5
-20	-0.0099	-0.0098	2.5
-10	-0.0084	-0.0084	2.5
0	-0.0075	-0.0072	2.5
10	-0.0052	-0.0051	2.5
20	-0.0039	-0.0039	2.5
30	-0.0031	-0.0024	2.5
40	-0.0023	-0.0018	2.5
50	-0.0002	-0.0002	2.5



LTE CAT-M1 BAND 26

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0020	0.0023	2.5
V _{min}	-0.0031	-0.0030	2.5
V _{max}	0.0021	0.0021	2.5

NOTE: The applicant defined the normal working voltage of the battery is 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	-0.0117	2.5
-20	-0.0111	-0.0109	2.5
-10	-0.0082	-0.0082	2.5
0	-0.0078	-0.0076	2.5
10	-0.0046	-0.0053	2.5
20	-0.0042	-0.0038	2.5
30	-0.0033	-0.0033	2.5
40	-0.0015	-0.0017	2.5
50	-0.0006	-0.0003	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0021	0.0021	2.5
V _{min}	-0.0021	-0.0025	2.5
V _{max}	0.0018	0.0017	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0115	-0.0120	2.5
-20	-0.0108	-0.0096	2.5
-10	-0.0085	-0.0081	2.5
0	-0.0077	-0.0074	2.5
10	-0.0051	-0.0054	2.5
20	-0.0044	-0.0041	2.5
30	-0.0042	-0.0038	2.5
40	-0.0017	-0.0020	2.5
50	-0.0005	-0.0004	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}	-0.0024	-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	-0.0115	-0.0113	2.5
-20	-0.0105	-0.0107	2.5
-10	-0.0086	-0.0079	2.5
0	-0.0075	-0.0074	2.5
10	-0.0054	-0.0044	2.5
20	-0.0038	-0.0041	2.5
30	-0.0031	-0.0027	2.5
40	-0.0015	-0.0020	2.5
50	-0.0002	-0.0004	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0026	0.0023	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	-0.0123	-0.0114	2.5
-20	-0.0098	-0.0101	2.5
-10	-0.0082	-0.0084	2.5
0	-0.0076	-0.0076	2.5
10	-0.0050	-0.0051	2.5
20	-0.0041	-0.0039	2.5
30	-0.0031	-0.0024	2.5
40	-0.0023	-0.0017	2.5
50	-0.0005	-0.0002	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0025	0.0026	2.5
V _{min}	-0.0031	-0.0030	2.5
V _{max}	0.0024	0.0024	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

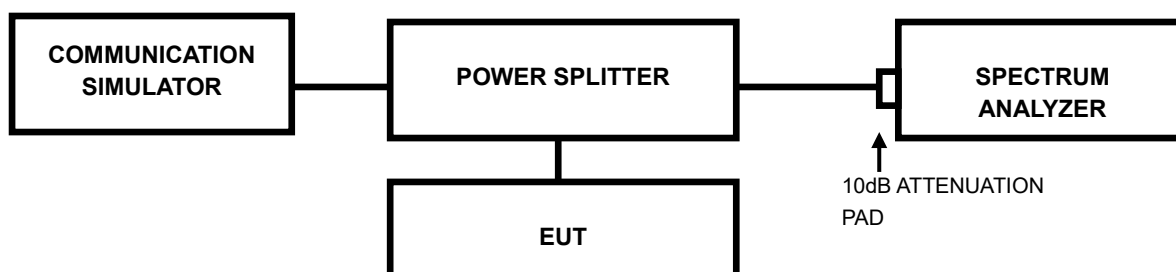
TEMP. (°C)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0119	-0.0115	2.5
-20	-0.0103	-0.0109	2.5
-10	-0.0083	-0.0081	2.5
0	-0.0076	-0.0076	2.5
10	-0.0056	-0.0048	2.5
20	-0.0039	-0.0038	2.5
30	-0.0041	-0.0024	2.5
40	-0.0021	-0.0019	2.5
50	-0.0005	-0.0002	2.5

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 TEST PROCEDURES

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.3.2 TEST SETUP



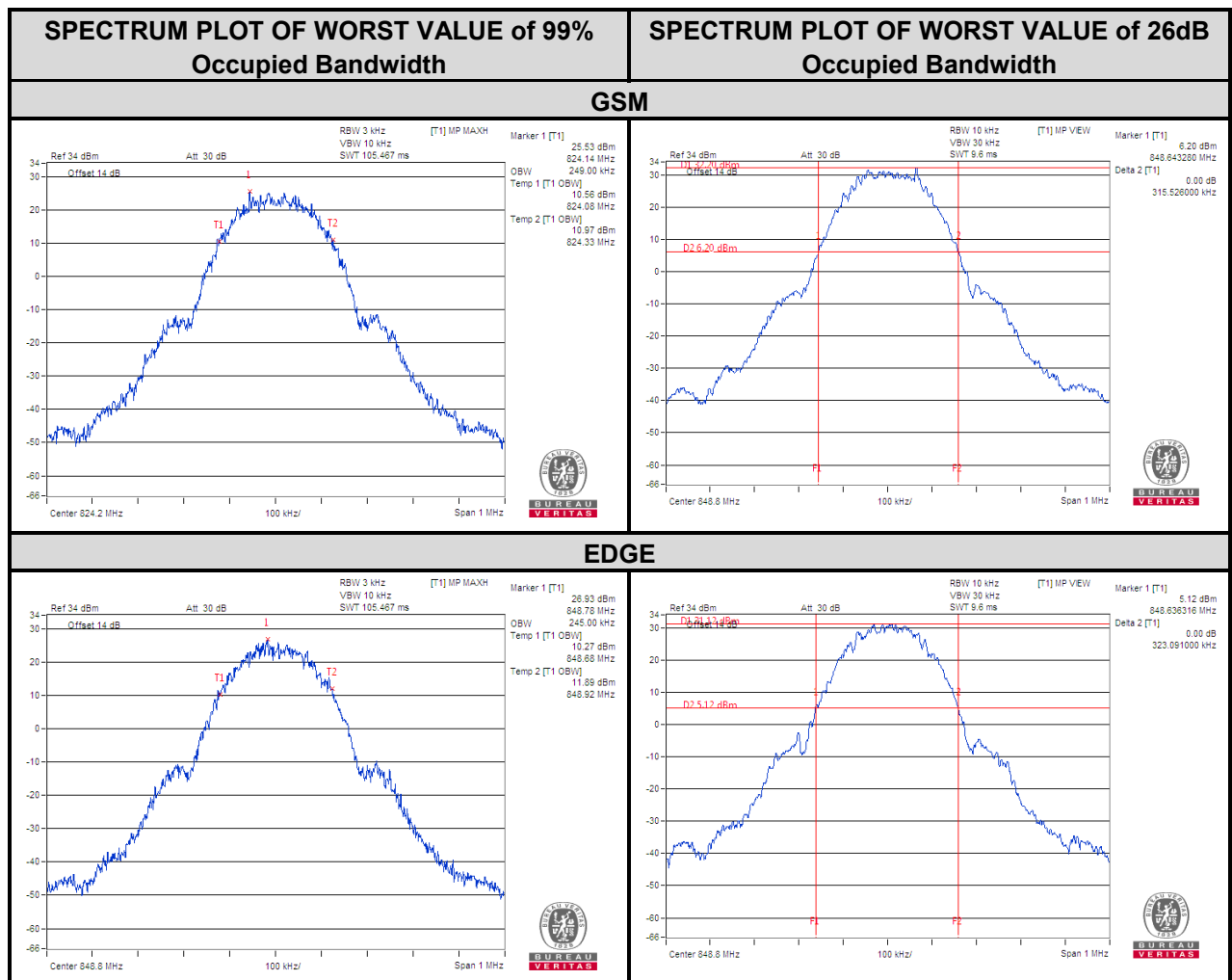


**BUREAU
VERITAS**

Test Report No.: RF191122W002-1

3.3.3 TEST RESULTS

CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (kHz)		CHANNEL	Frequency (MHz)	26dB Bandwidth (MHz)	
		GSM	EDGE			GSM	EDGE
128	824.2	249.00	244.00	128	824.2	309.44	319.45
189	836.4	244.00	244.00	189	836.4	315.10	320.15
251	848.8	243.00	245.00	251	848.8	315.53	323.09



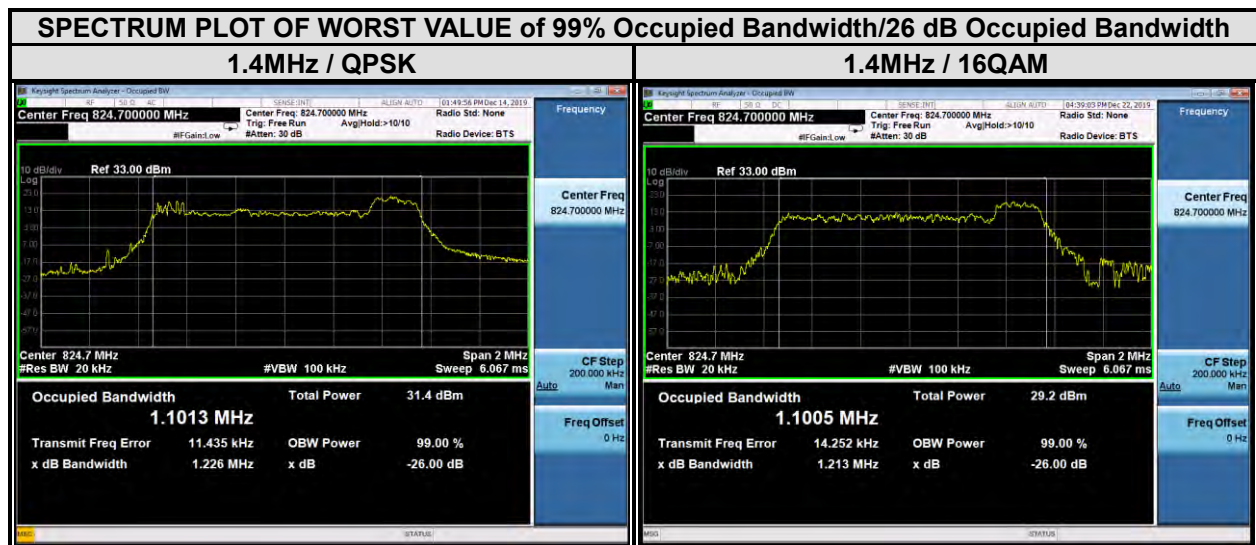


**BUREAU
VERITAS**

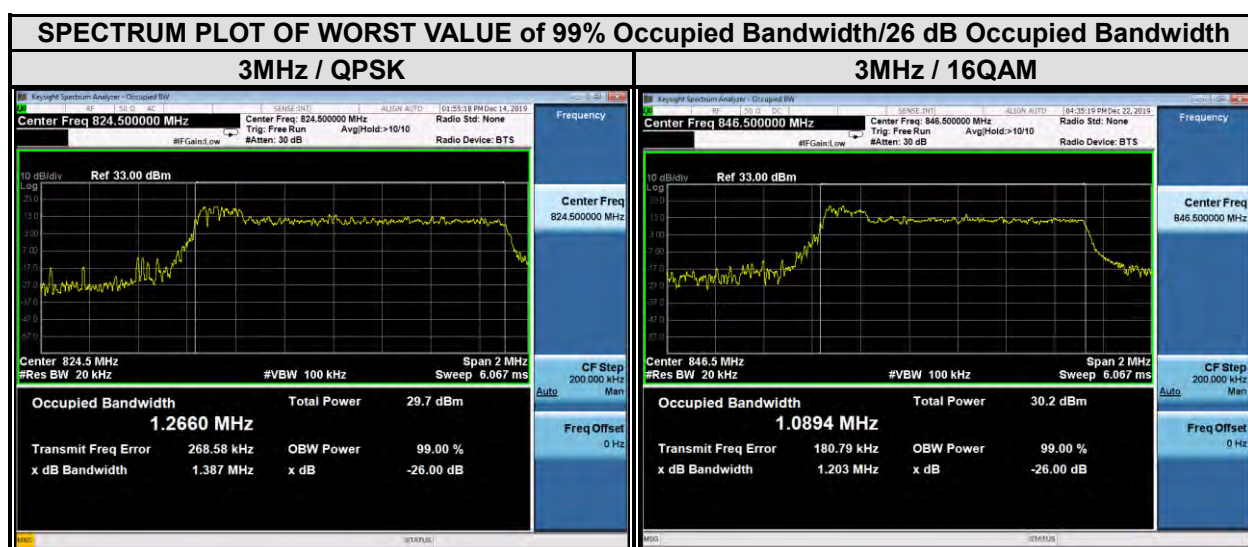
Test Report No.: RF191122W002-1

LTE CAT-M1 BAND 5

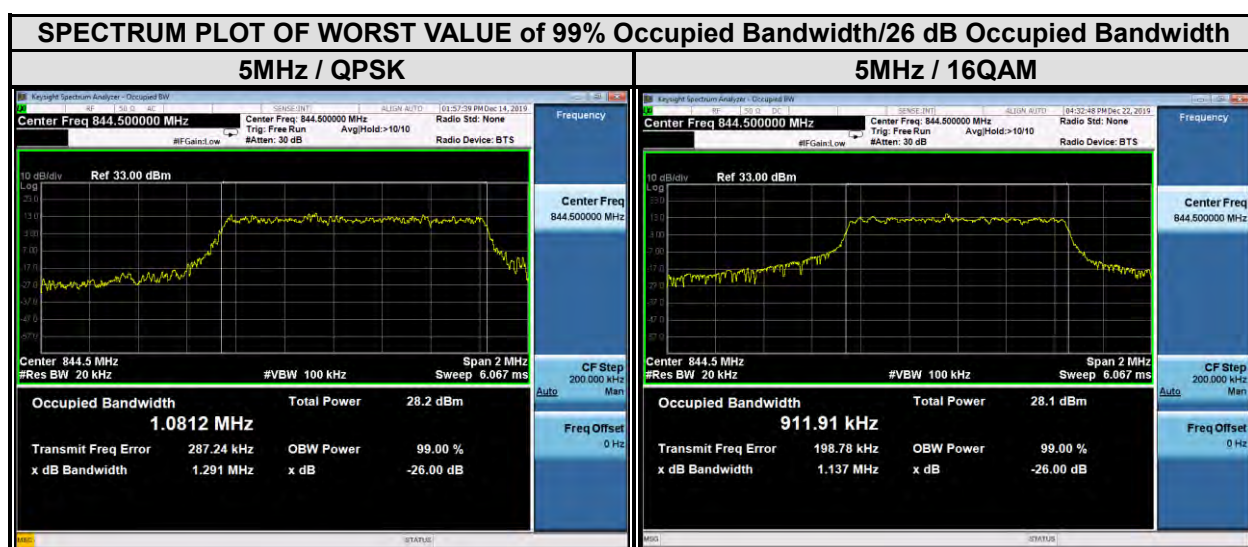
CHANNEL BANDWIDTH: 1.4MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20407	824.7	1.10	1.10	1.23	1.21
20525	836.5	1.10	1.10	1.20	1.23
20643	848.3	1.10	1.10	1.21	1.24



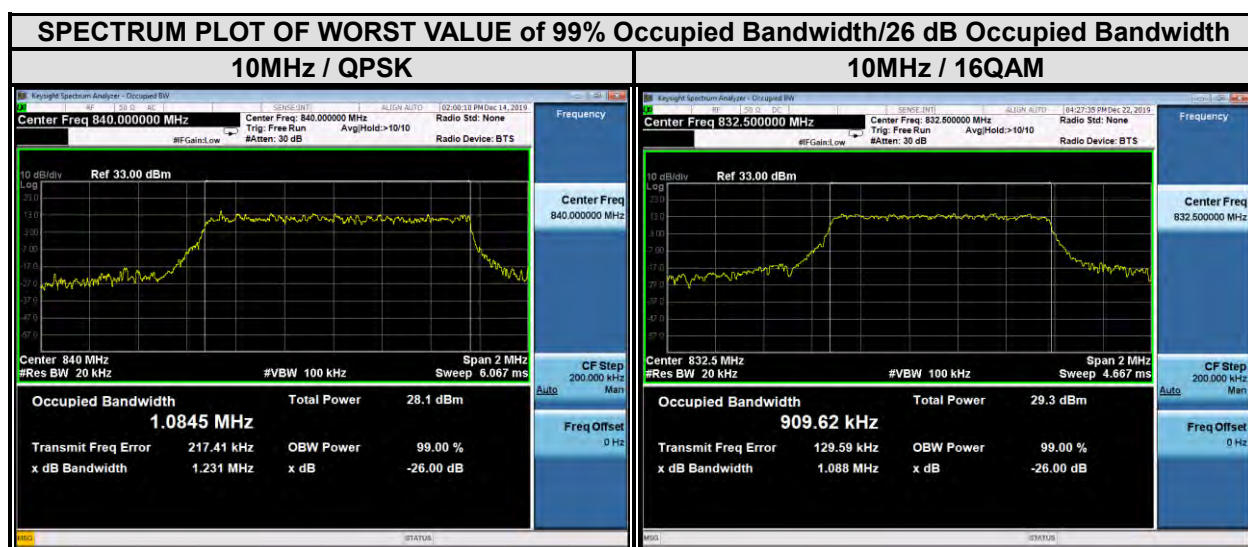
CHANNEL BANDWIDTH: 3MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20415	825.5	1.27	1.08	1.39	1.20
20525	836.5	1.26	1.09	1.35	1.22
20635	847.5	1.26	1.09	1.37	1.20



CHANNEL BANDWIDTH: 5MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20425	826.5	1.08	0.911	1.23	1.09
20525	836.5	1.08	0.909	1.27	1.08
20625	846.5	1.08	0.912	1.29	1.14



CHANNEL BANDWIDTH: 10MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20450	829	1.08	0.907	1.29	1.19
20525	836.5	1.08	0.910	1.26	1.09
20600	844	1.08	0.909	1.23	1.10



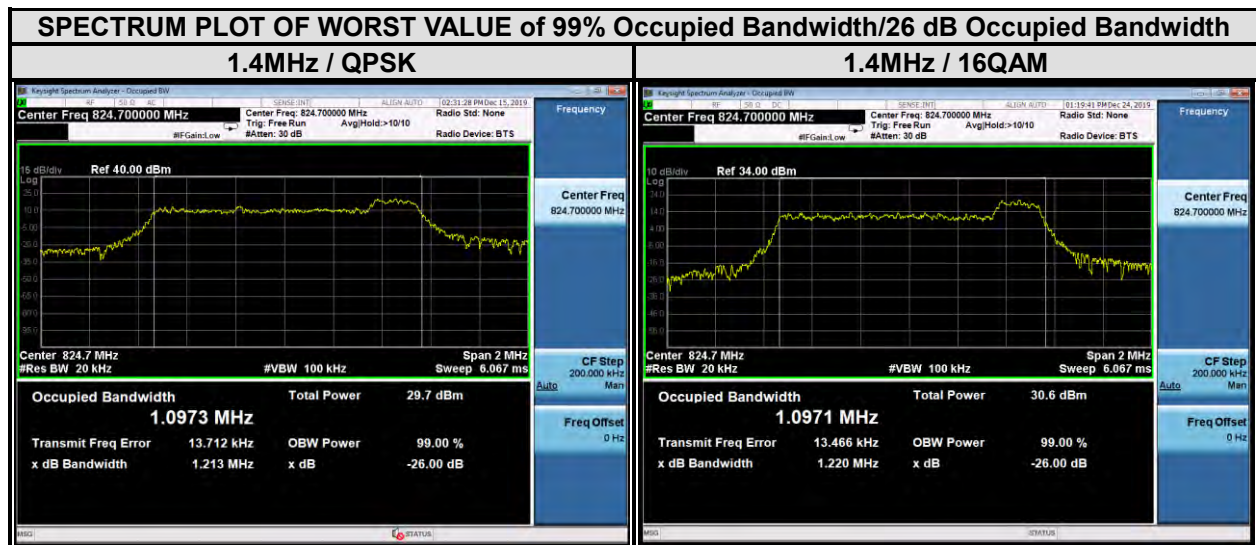


**BUREAU
VERITAS**

Test Report No.: RF191122W002-1

LTE CAT-M1 BAND 26

CHANNEL BANDWIDTH: 1.4MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26797	824.7	1.10	1.10	1.21	1.22
26915	836.5	1.09	1.09	1.20	1.22
27033	848.3	1.10	1.09	1.19	1.20

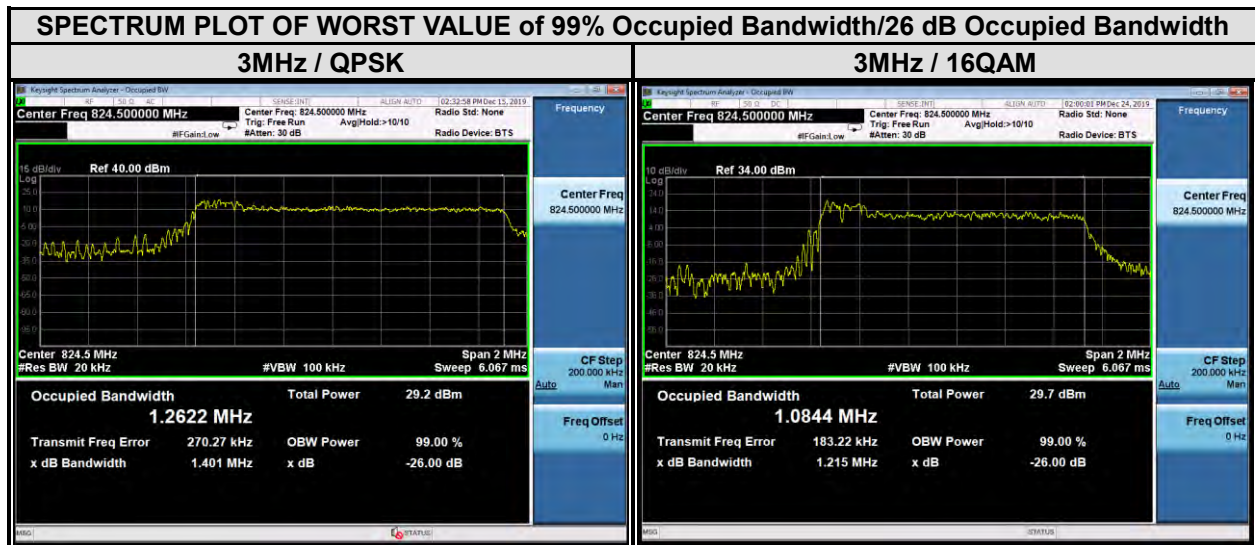




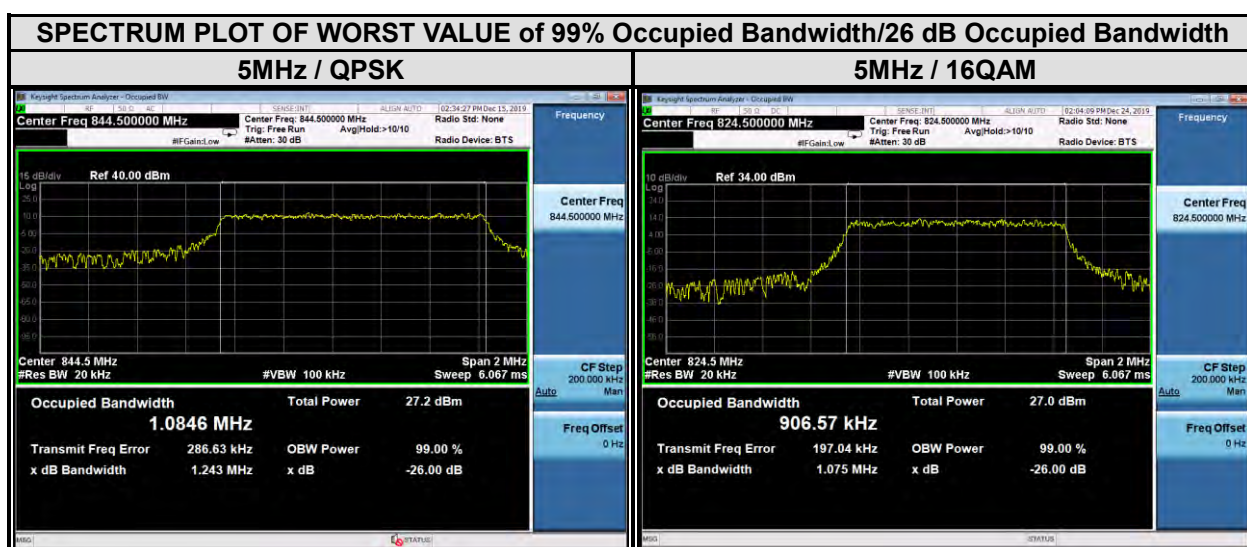
BUREAU
VERITAS

Test Report No.: RF191122W002-1

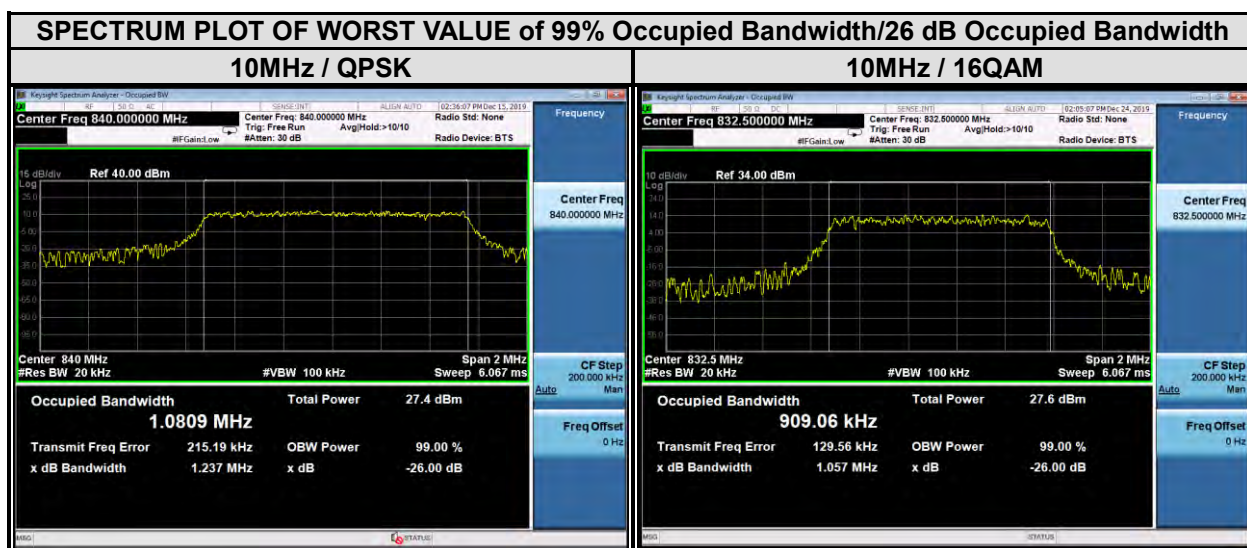
CHANNEL BANDWIDTH: 3MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26805	825.5	1.26	1.08	1.40	1.22
26915	836.5	1.26	1.08	1.36	1.22
27025	847.5	1.26	1.08	1.36	1.18



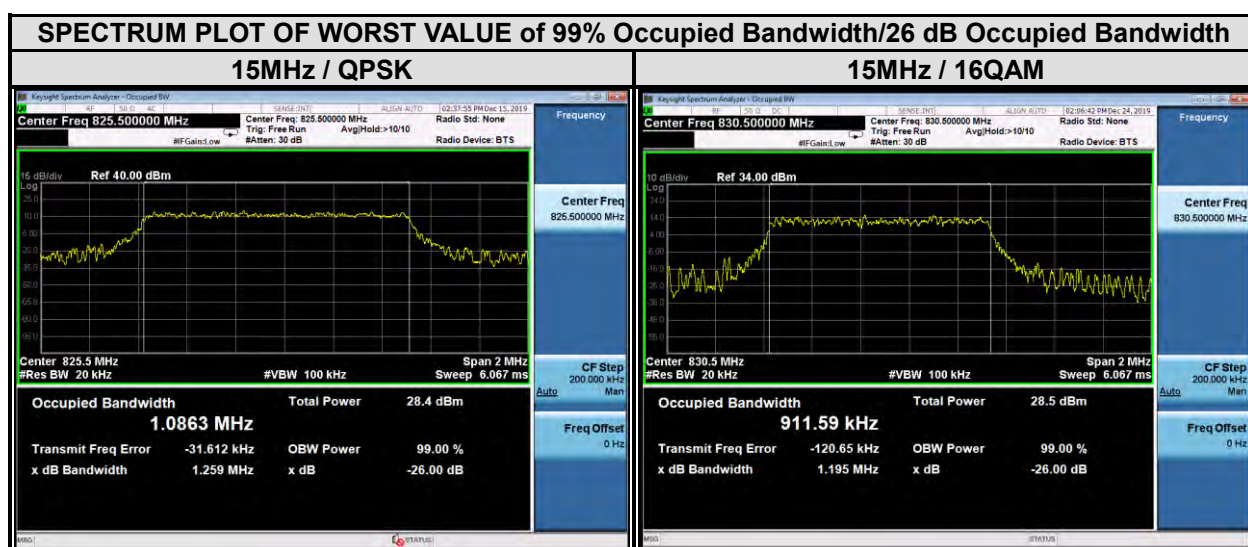
CHANNEL BANDWIDTH: 5MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26815	826.5	1.08	0.907	1.27	1.08
26915	836.5	1.08	0.903	1.30	1.07
27015	846.5	1.08	0.906	1.24	1.14



CHANNEL BANDWIDTH: 10MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26840	829	1.08	0.908	1.28	1.09
26915	836.5	1.08	0.909	1.28	1.06
26990	844	1.08	0.908	1.24	1.11



CHANNEL BANDWIDTH: 15MHz					
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26865	831.5	1.09	0.909	1.26	1.17
26915	836.5	1.08	0.912	1.31	1.20
26965	841.5	1.08	0.901	1.24	1.06

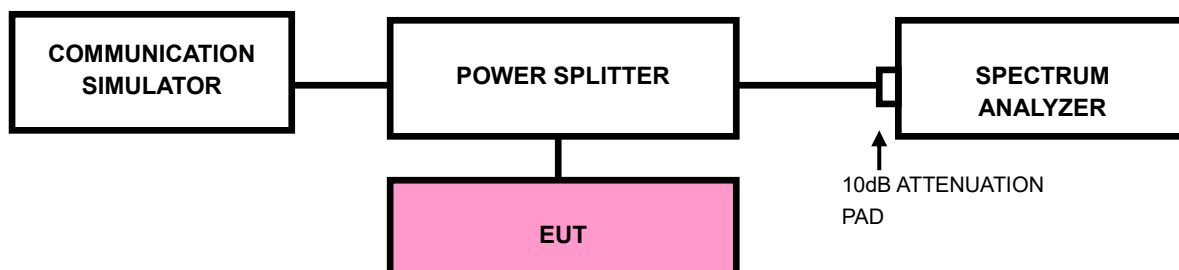


3.4 BAND EDGE MEASUREMENT

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.4.2 TEST SETUP



3.4.3 TEST PROCEDURES

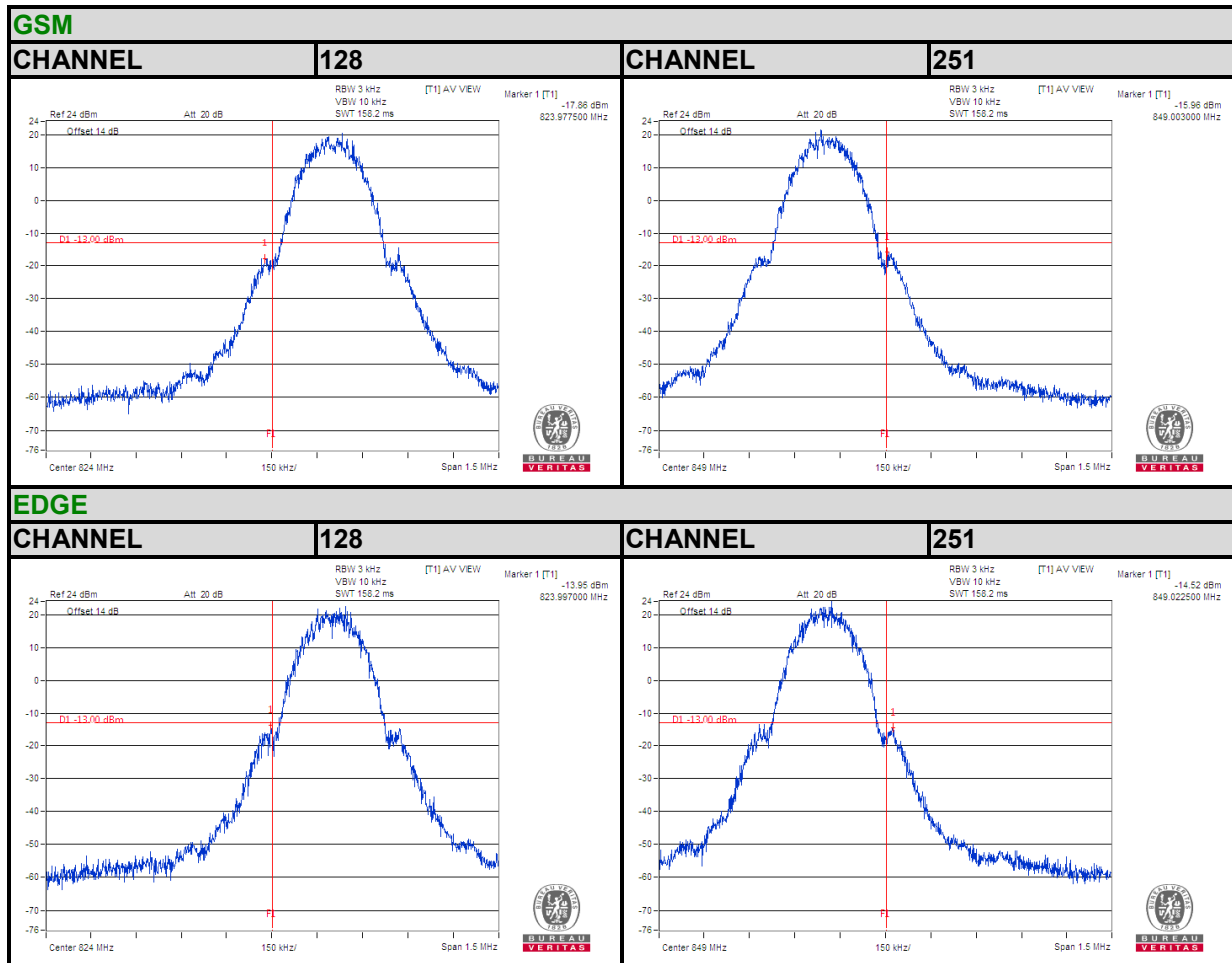
- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 1.5MHz.
RBW of the spectrum is 10kHz and VBW of the spectrum is 30kHz (GSM/GPRS/EDGE).
- c. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz.
RBW of the spectrum is 20kHz and VBW of the spectrum is 100 kHz. (LTE bandwidth 1.4MHz).
- 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 100kHz. (LTE bandwidth 3MHz)
- e. 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)
- f. 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)
- g. Record the max trace plot into the test report.



BUREAU
VERITAS

Test Report No.: RF191122W002-1

3.4.4 TEST RESULTS



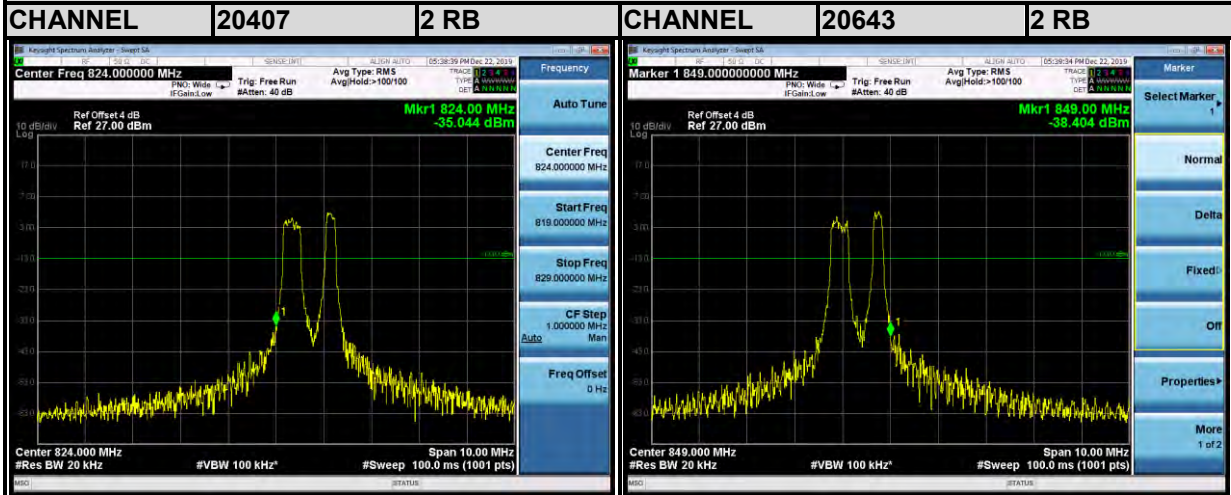


BUREAU
VERITAS

Test Report No.: RF191122W002-1

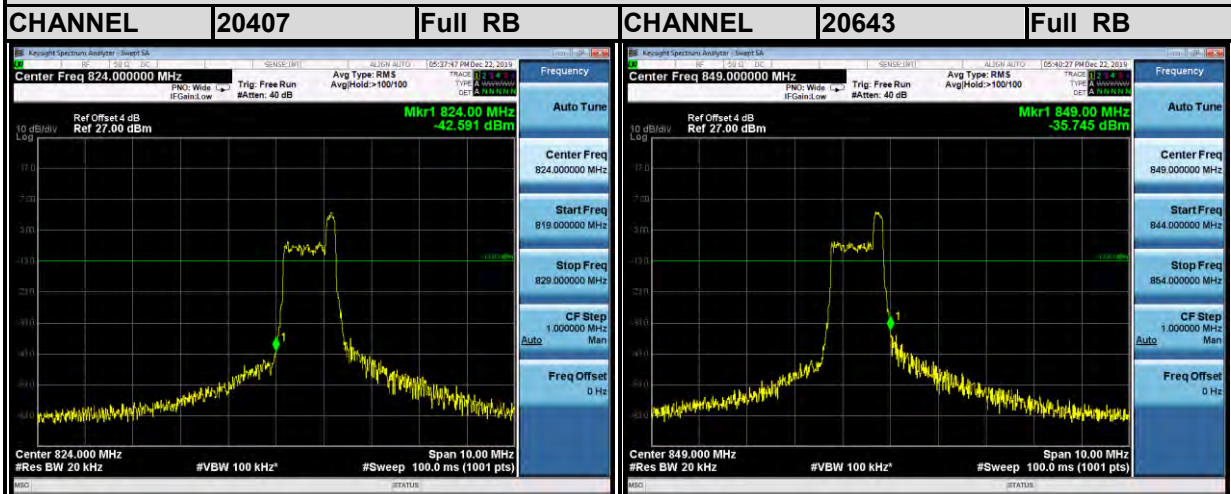
LTE CAT-M1 Band5

Channel Bandwidth: 1.4MHz QPSK



LTE CAT-M1 Band5

Channel Bandwidth: 1.4MHz QPSK



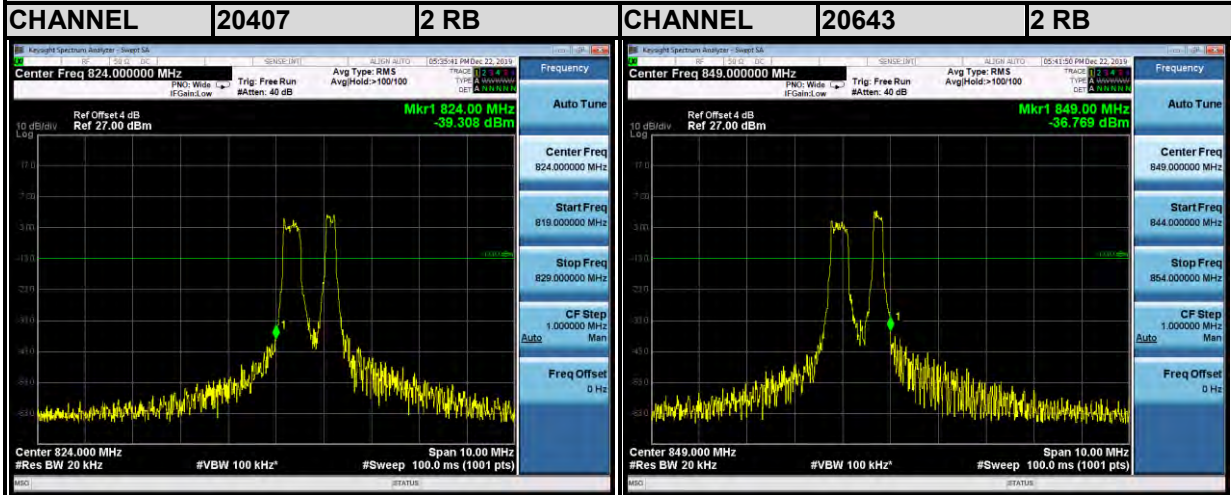


BUREAU
VERITAS

Test Report No.: RF191122W002-1

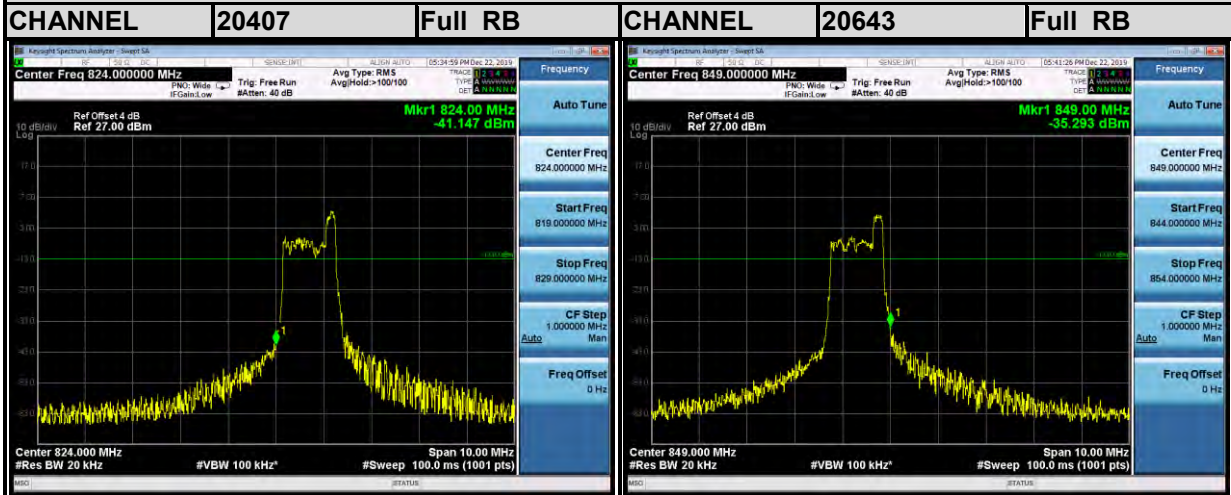
LTE CAT-M1 Band5

Channel Bandwidth: 1.4MHz 16QAM



LTE CAT-M1 Band5

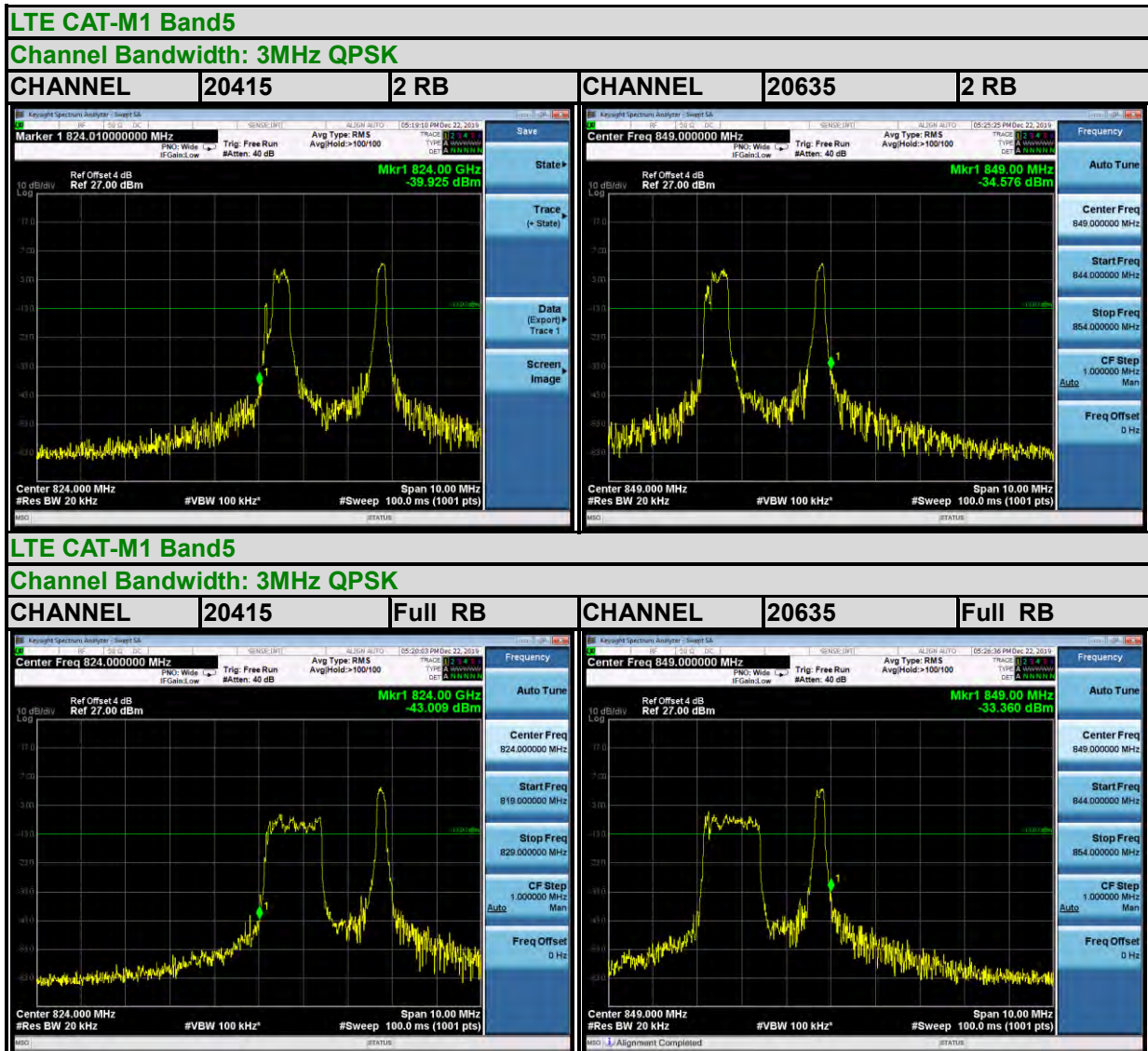
Channel Bandwidth: 1.4MHz 16QAM





BUREAU
VERITAS

Test Report No.: RF191122W002-1



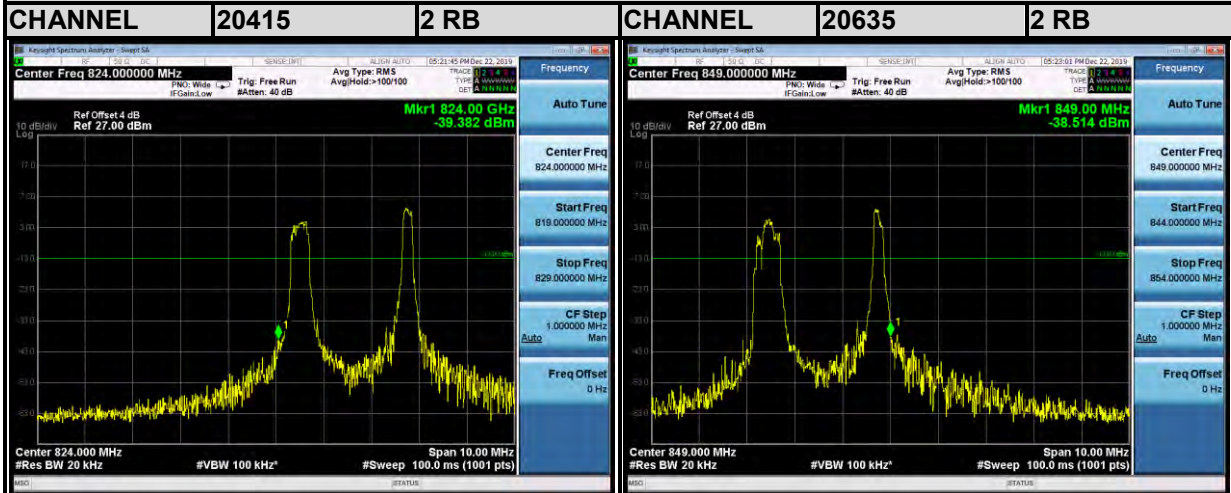


BUREAU
VERITAS

Test Report No.: RF191122W002-1

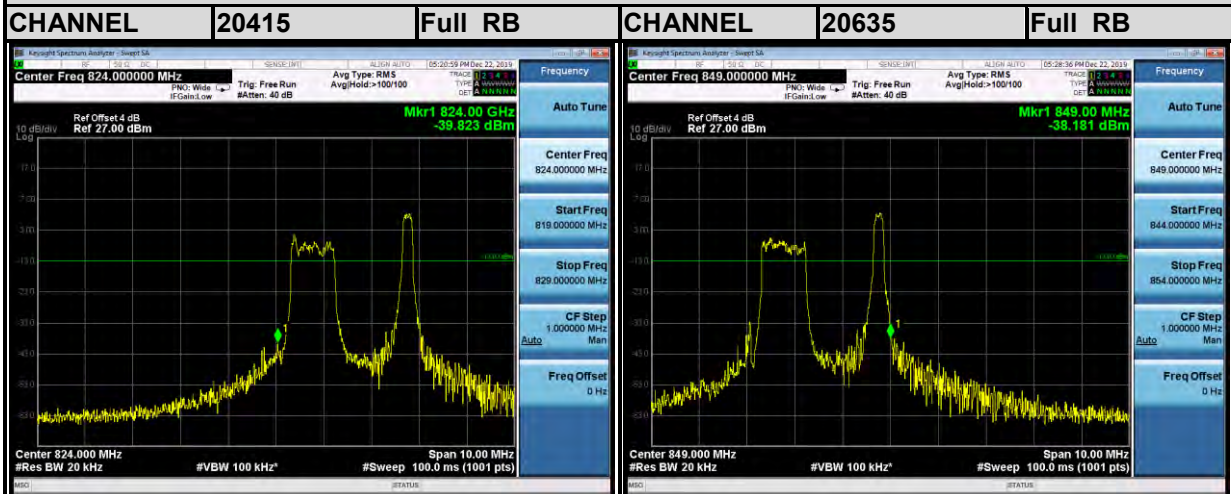
LTE CAT-M1 Band5

Channel Bandwidth: 3MHz 16QAM



LTE CAT-M1 Band5

Channel Bandwidth: 3MHz 16QAM



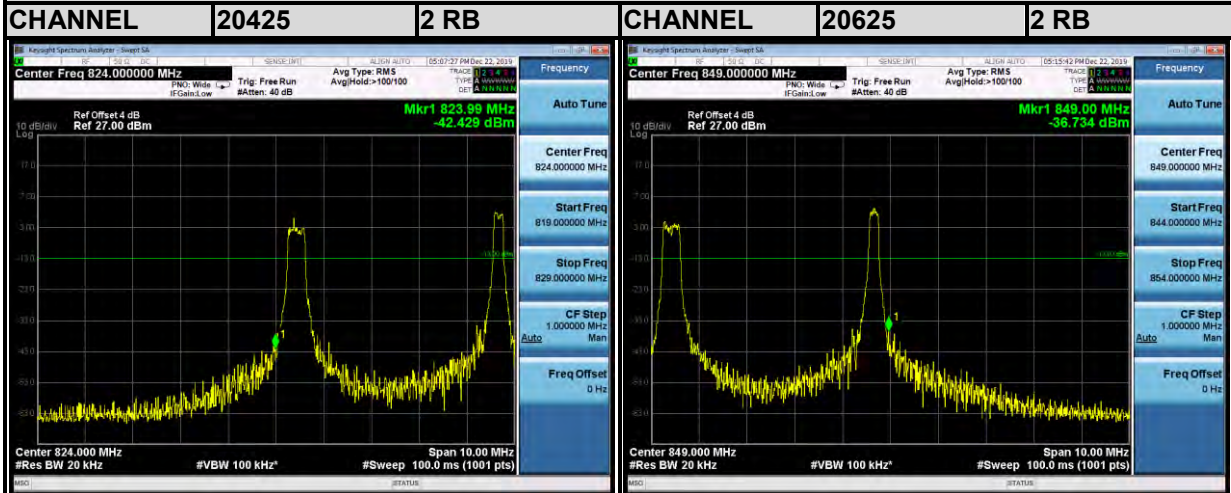


BUREAU
VERITAS

Test Report No.: RF191122W002-1

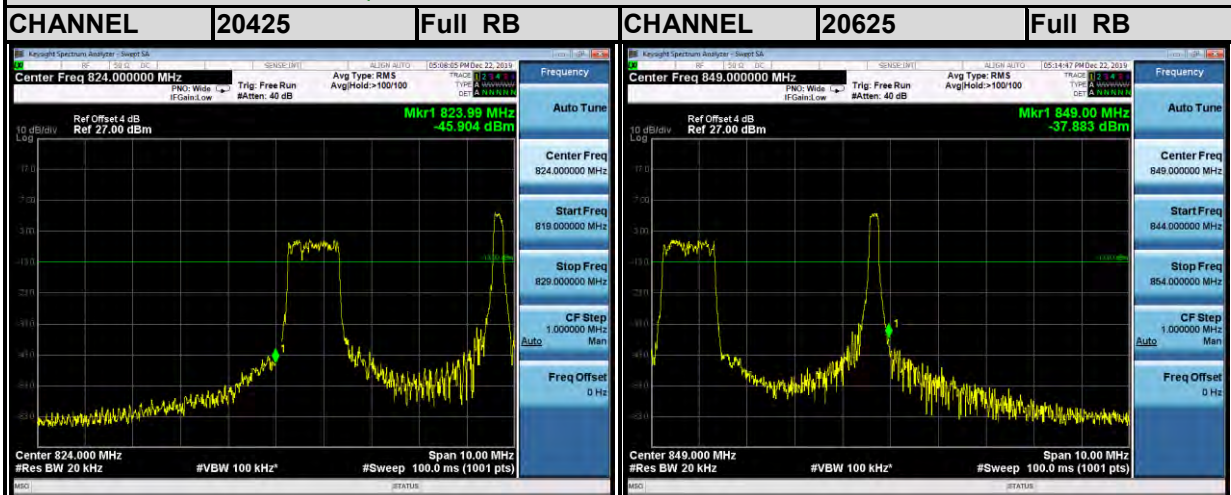
LTE CAT-M1 Band5

Channel Bandwidth: 5MHz QPSK



LTE CAT-M1 Band5

Channel Bandwidth: 5MHz QPSK



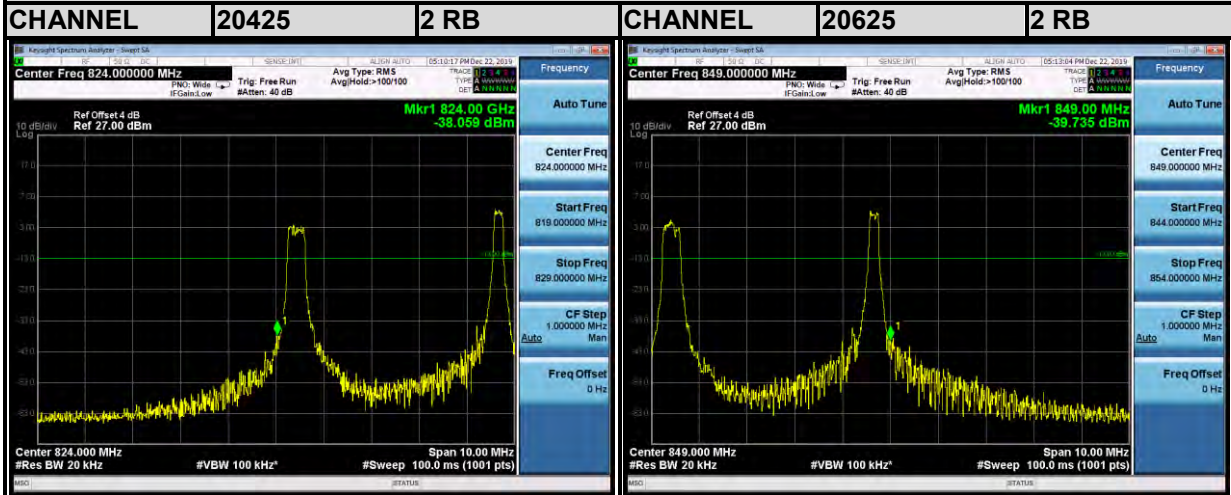


BUREAU
VERITAS

Test Report No.: RF191122W002-1

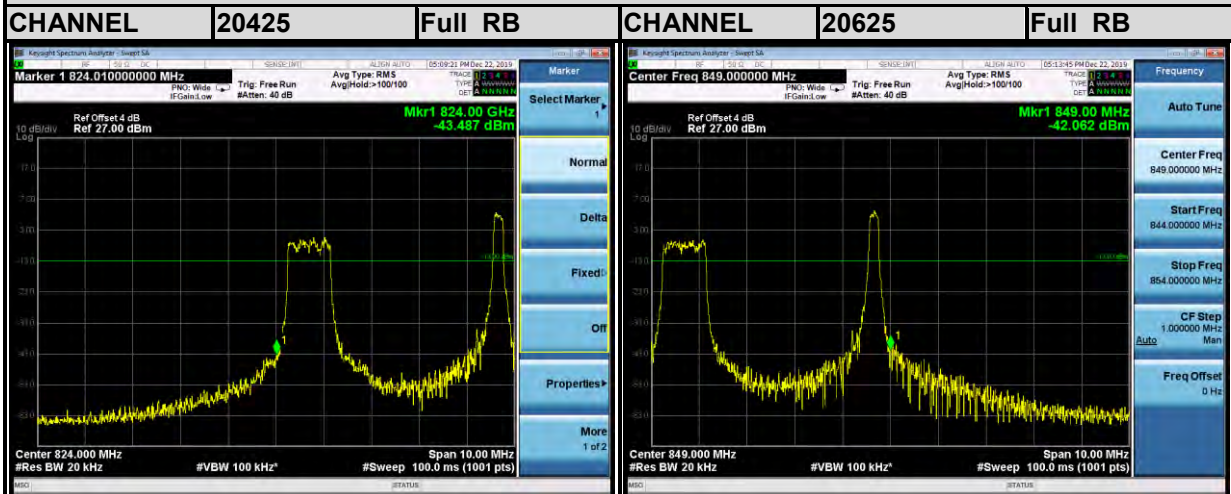
LTE CAT-M1 Band5

Channel Bandwidth: 5MHz 16QAM



LTE CAT-M1 Band5

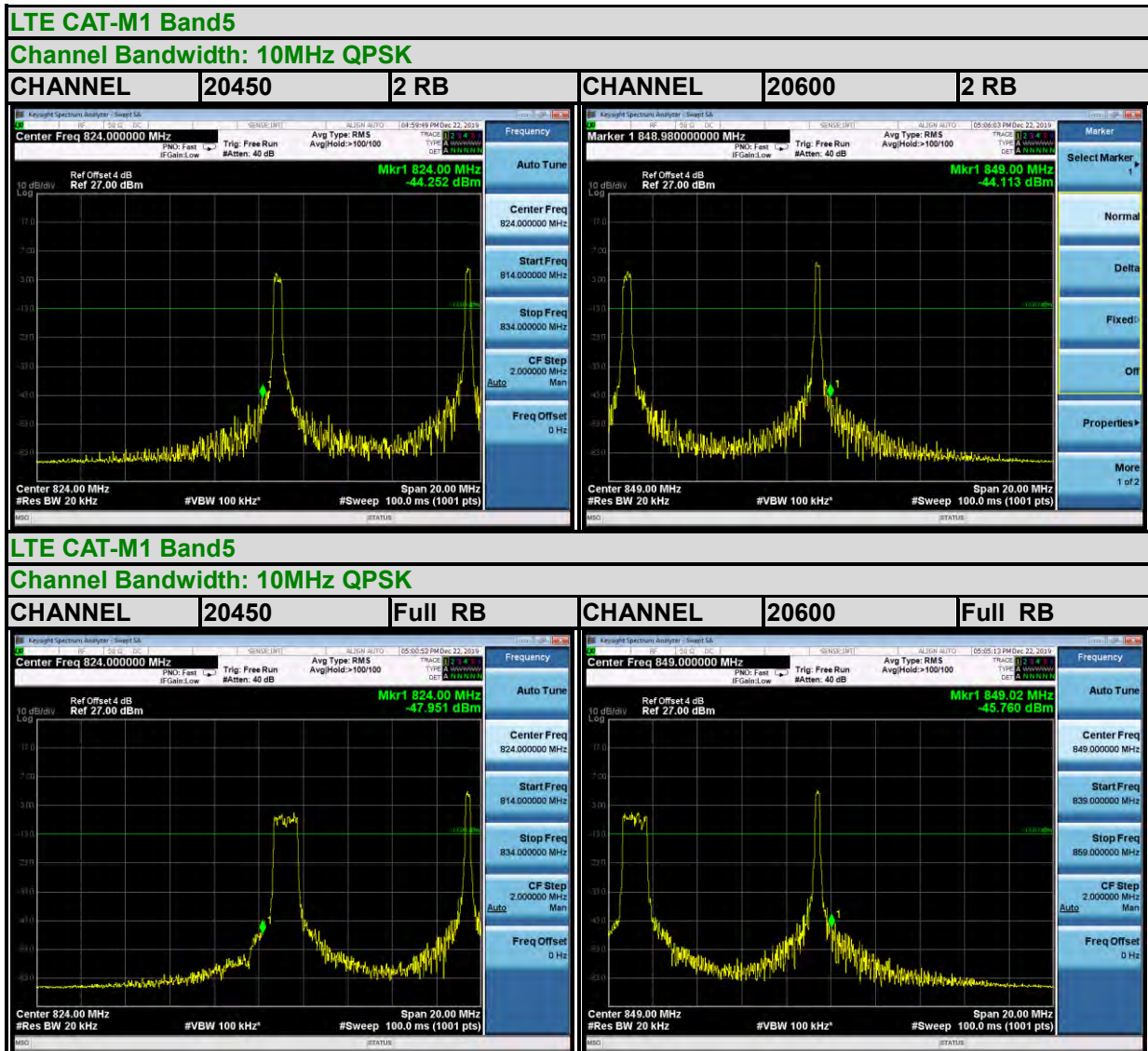
Channel Bandwidth: 5MHz 16QAM





BUREAU
VERITAS

Test Report No.: RF191122W002-1



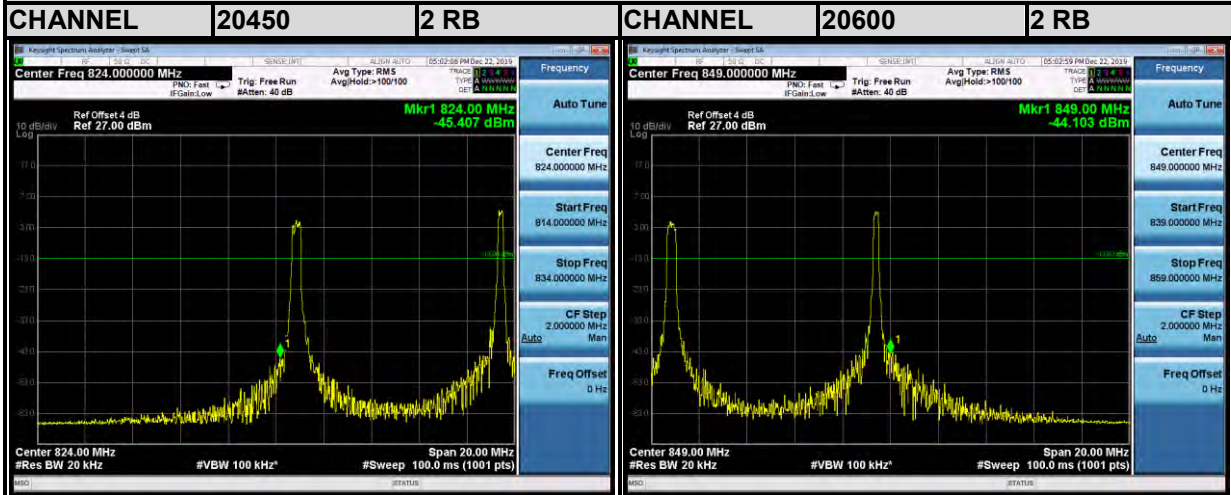


BUREAU
VERITAS

Test Report No.: RF191122W002-1

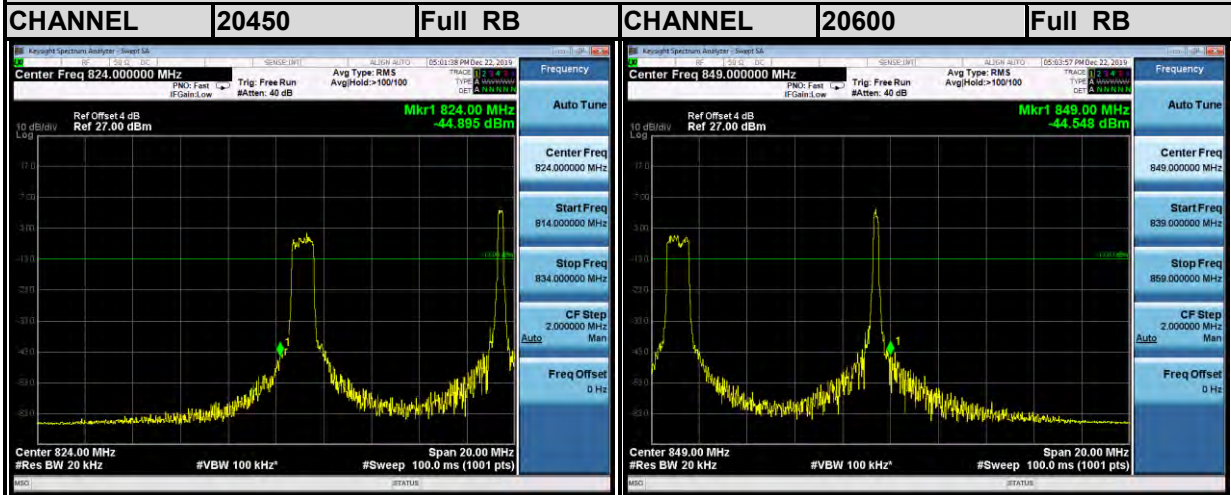
LTE CAT-M1 Band5

Channel Bandwidth: 10MHz 16QAM



LTE CAT-M1 Band5

Channel Bandwidth: 10MHz 16QAM



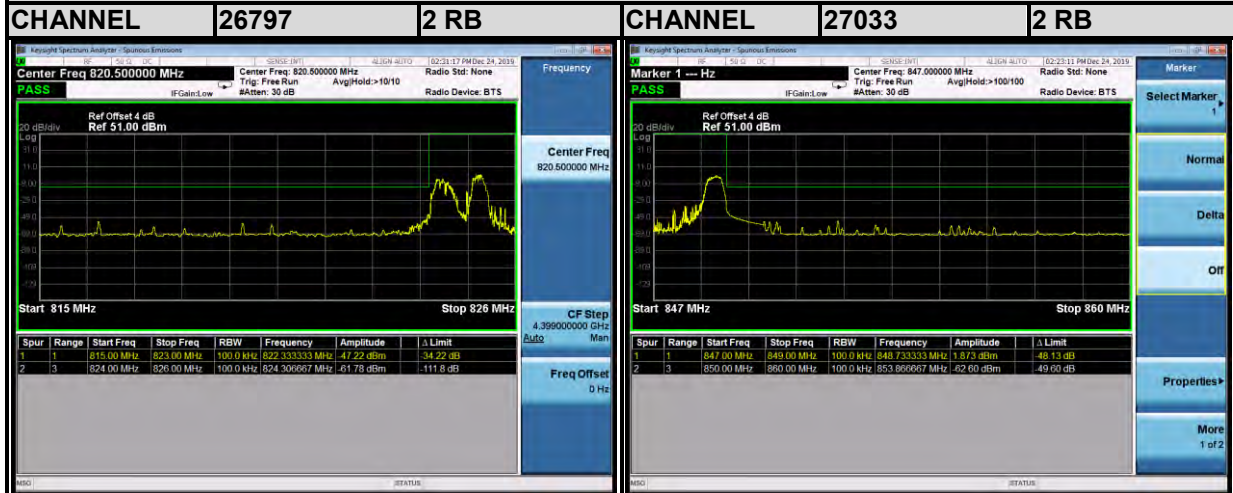


BUREAU
VERITAS

Test Report No.: RF191122W002-1

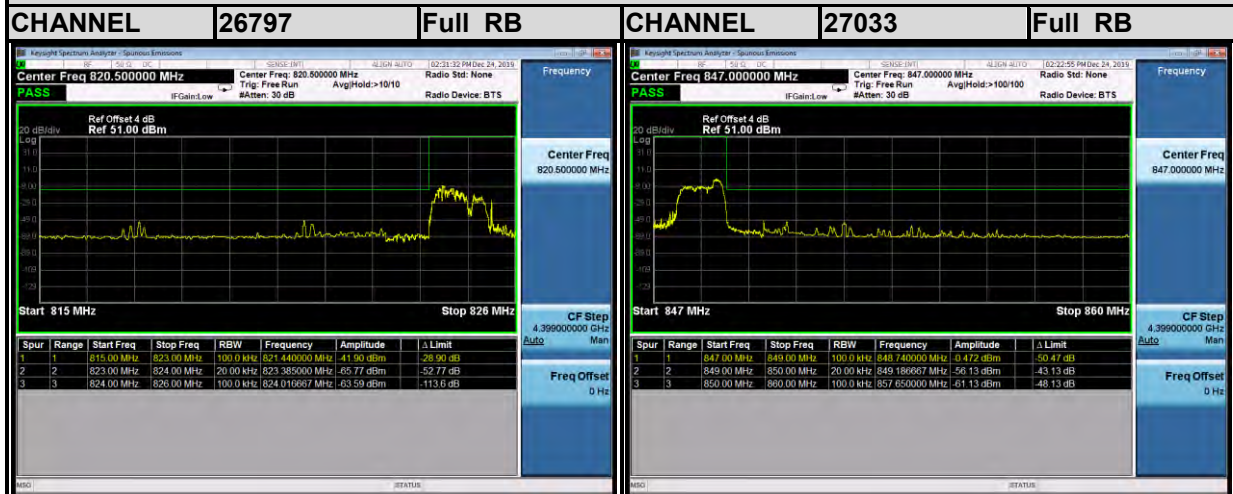
LTE CAT-M1 Band26

Channel Bandwidth: 1.4MHz QPSK



LTE CAT-M1 Band26

Channel Bandwidth: 1.4MHz QPSK



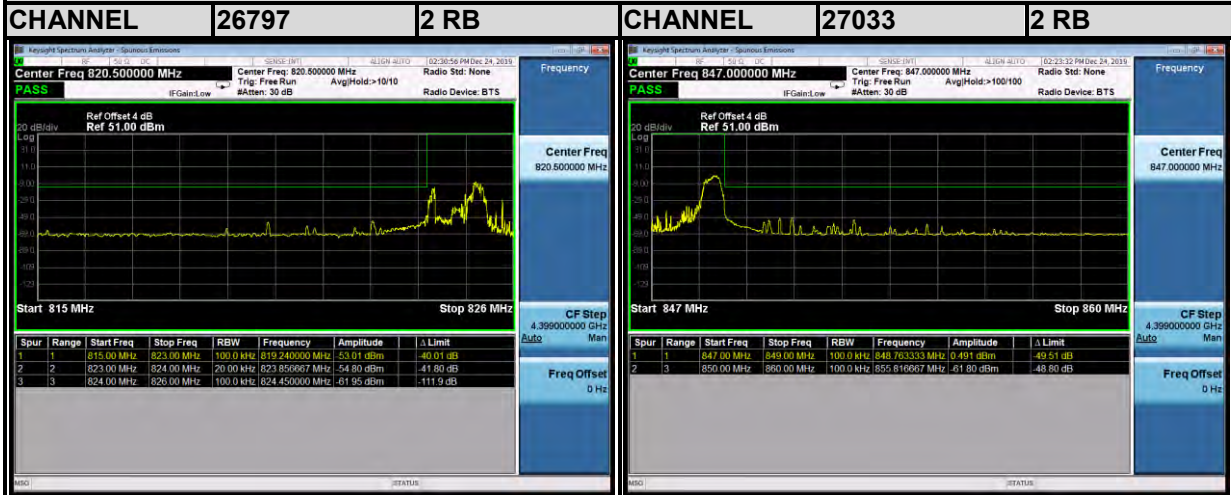


BUREAU
VERITAS

Test Report No.: RF191122W002-1

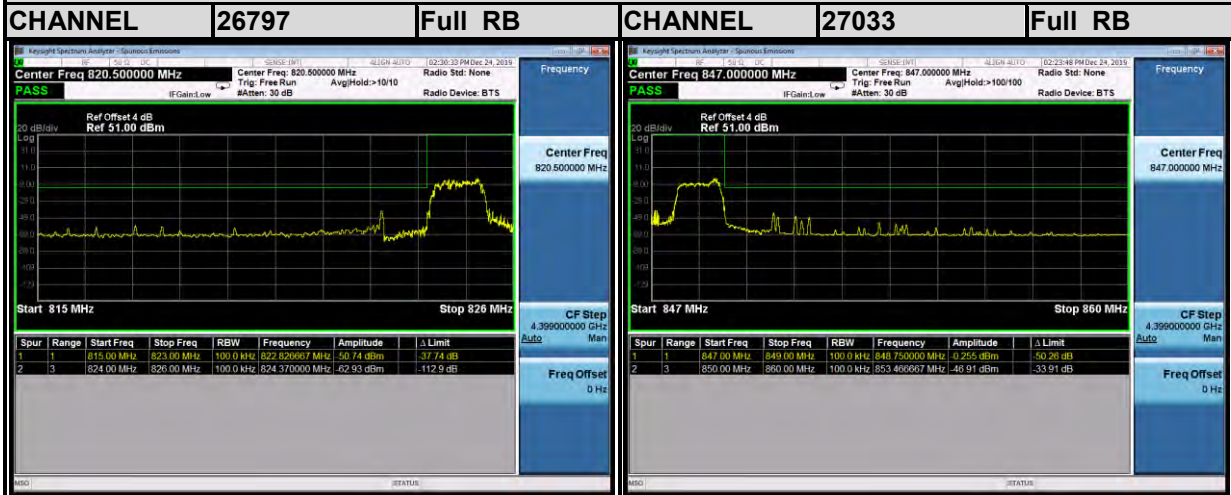
LTE CAT-M1 Band26

Channel Bandwidth: 1.4MHz 16QAM



LTE CAT-M1 Band26

Channel Bandwidth: 1.4MHz 16QAM



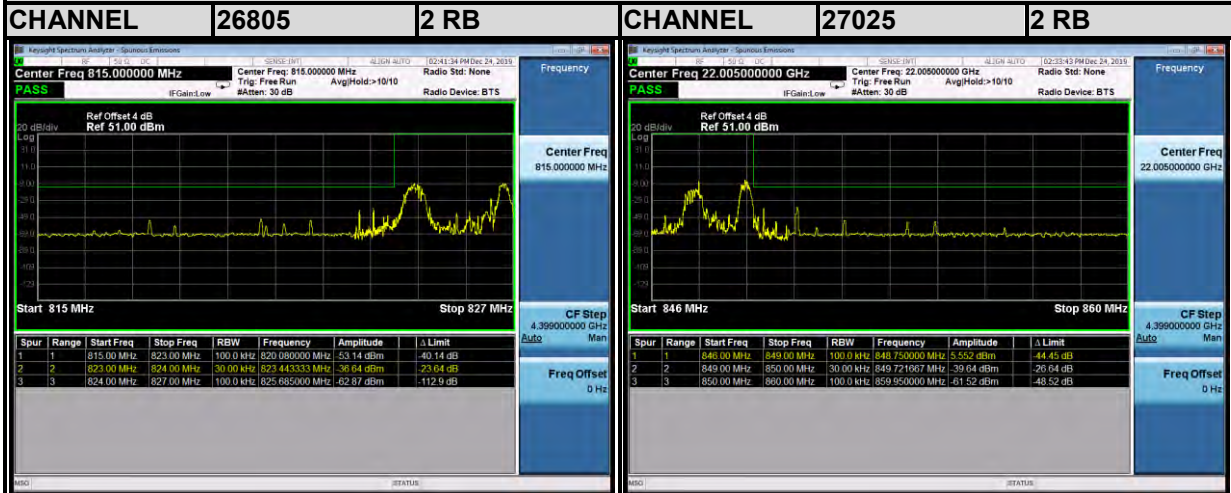


BUREAU
VERITAS

Test Report No.: RF191122W002-1

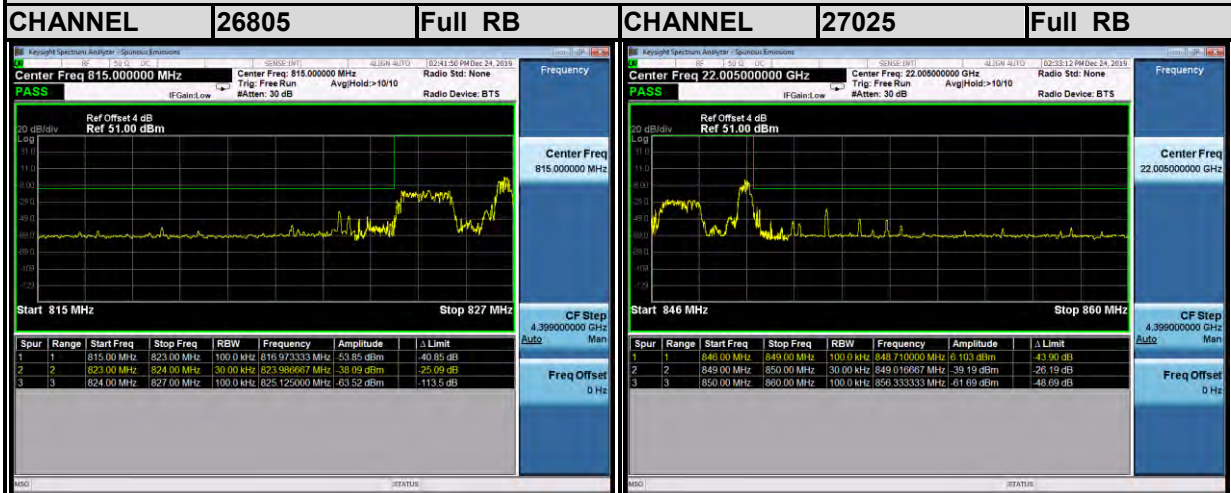
LTE CAT-M1 Band26

Channel Bandwidth: 3MHz QPSK



LTE CAT-M1 Band26

Channel Bandwidth: 3MHz QPSK



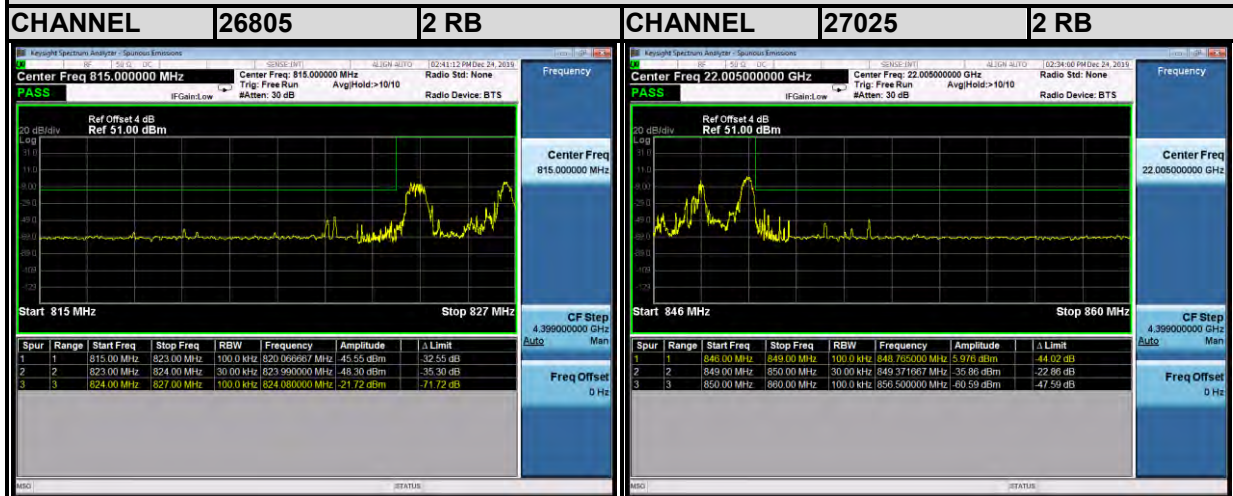


BUREAU
VERITAS

Test Report No.: RF191122W002-1

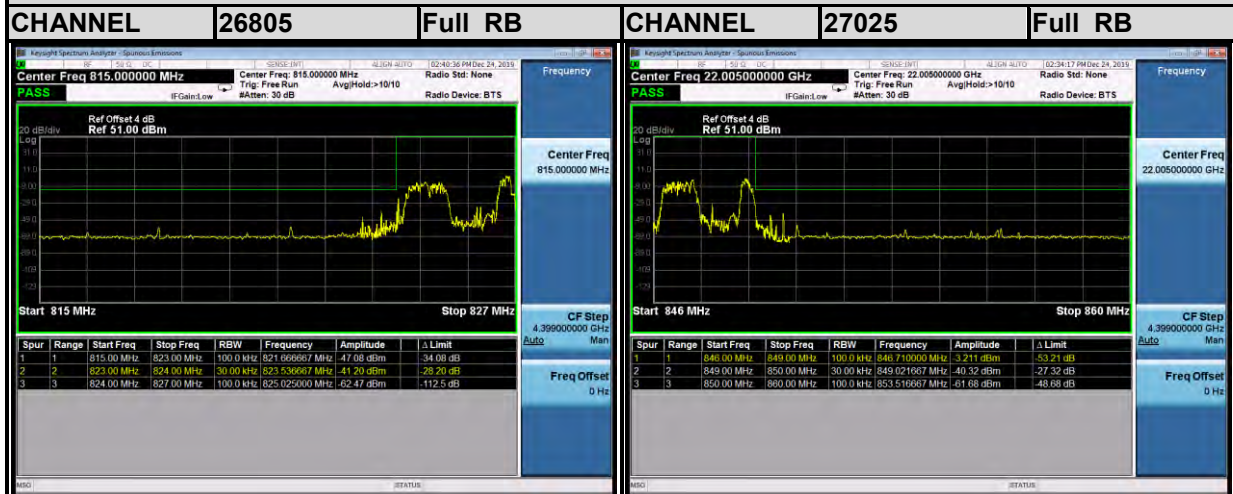
LTE CAT-M1 Band26

Channel Bandwidth: 3MHz 16QAM



LTE CAT-M1 Band26

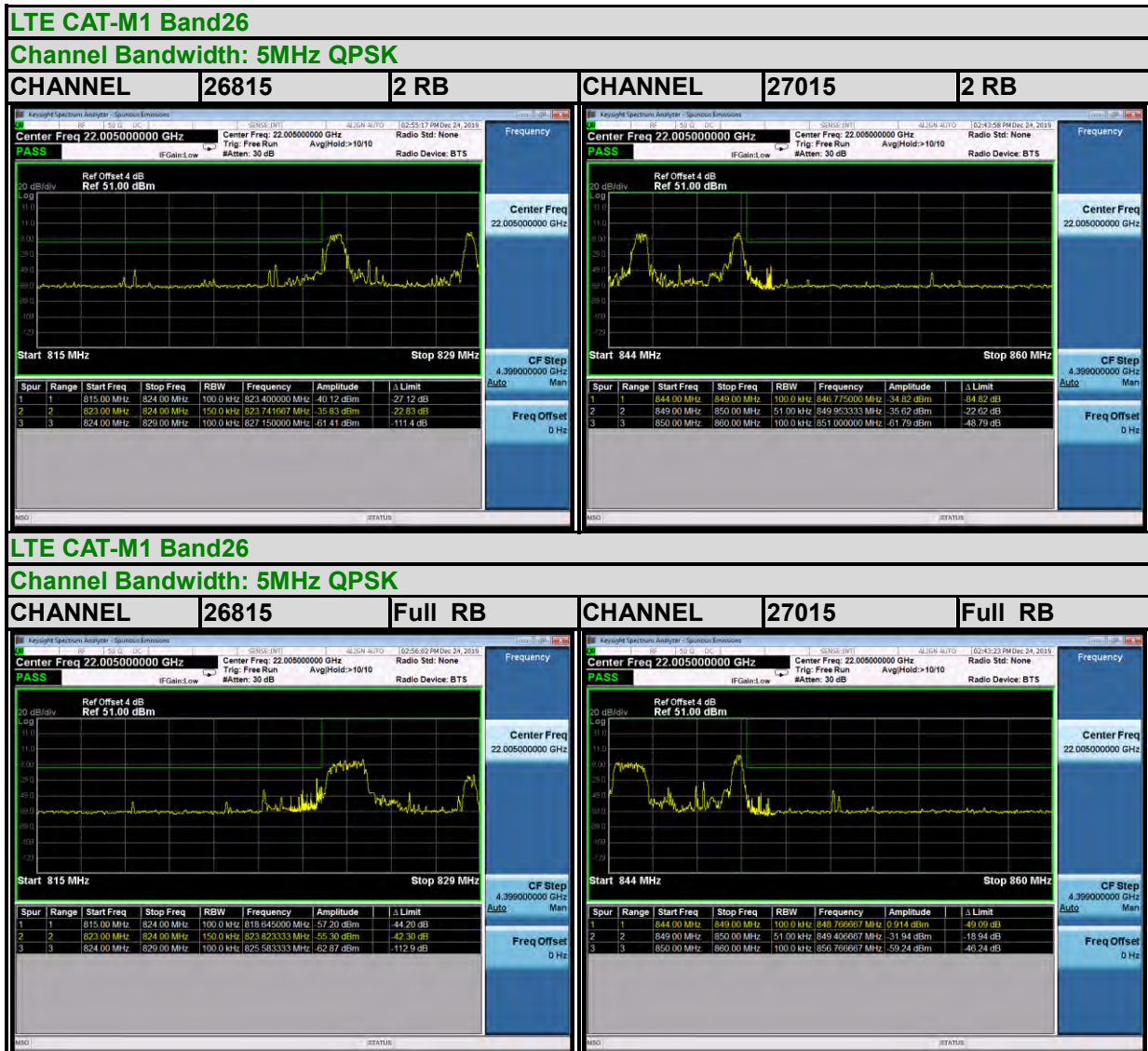
Channel Bandwidth: 3MHz 16QAM





BUREAU
VERITAS

Test Report No.: RF191122W002-1



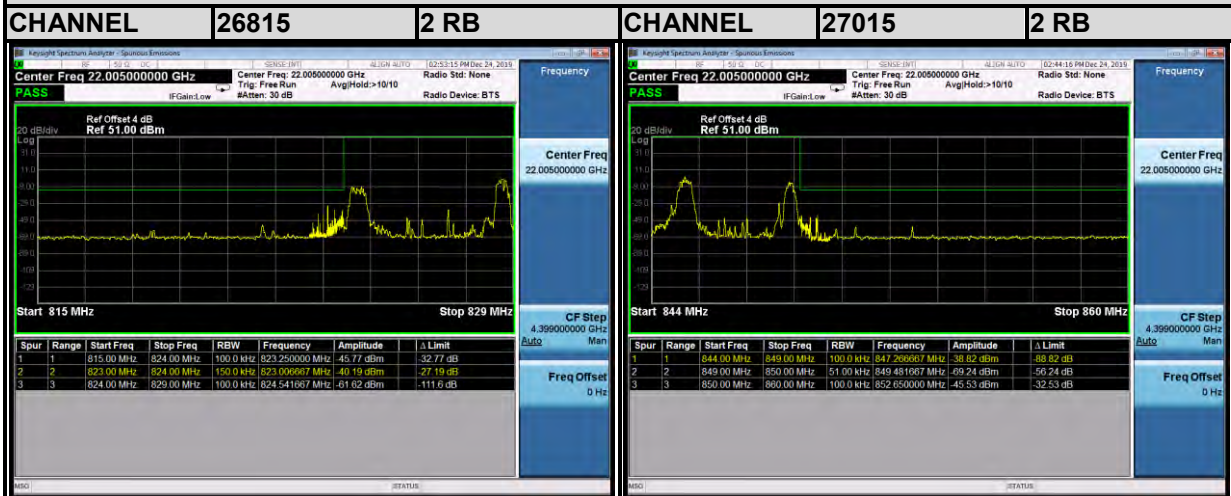


BUREAU
VERITAS

Test Report No.: RF191122W002-1

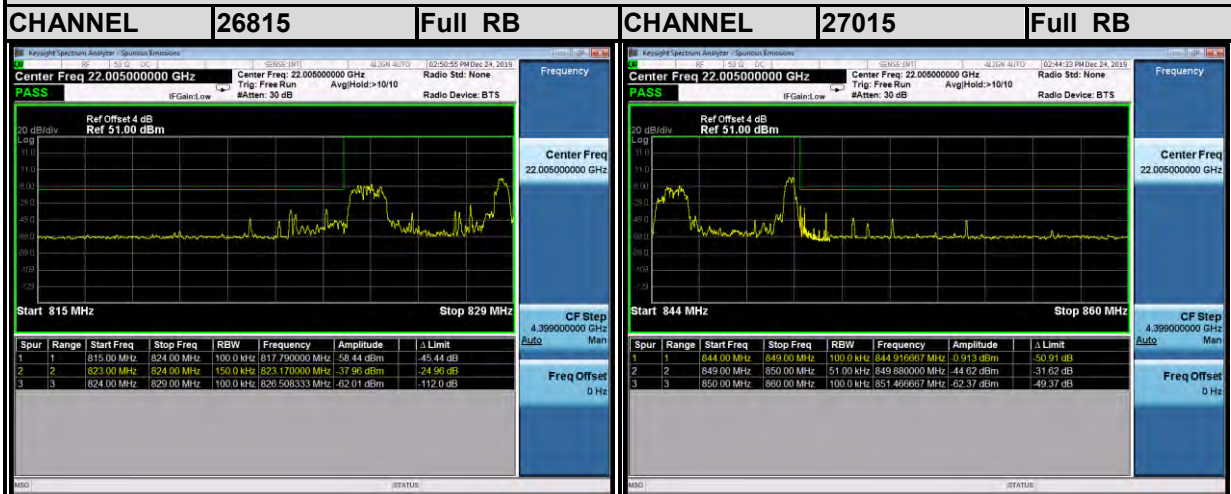
LTE CAT-M1 Band26

Channel Bandwidth: 5MHz 16QAM



LTE CAT-M1 Band26

Channel Bandwidth: 5MHz 16QAM



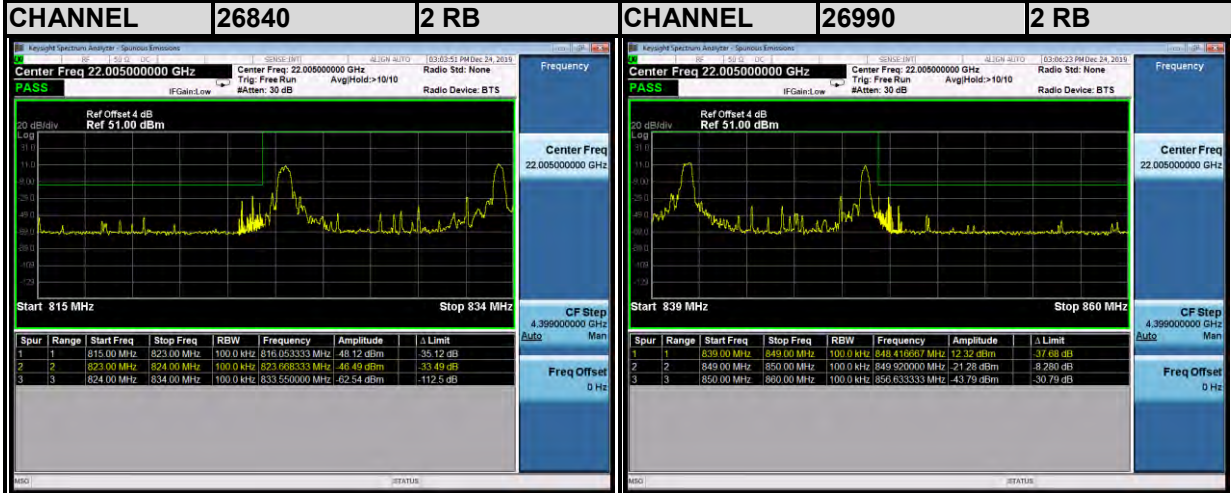


BUREAU
VERITAS

Test Report No.: RF191122W002-1

LTE CAT-M1 Band26

Channel Bandwidth: 10MHz QPSK



LTE CAT-M1 Band26

Channel Bandwidth: 10MHz QPSK



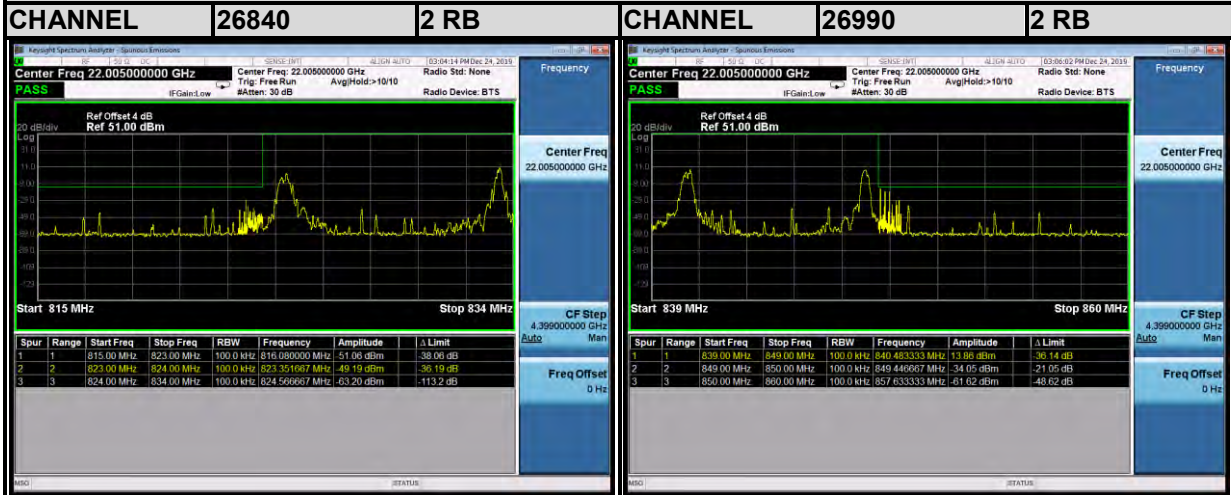


BUREAU
VERITAS

Test Report No.: RF191122W002-1

LTE CAT-M1 Band26

Channel Bandwidth: 10MHz 16QAM



LTE CAT-M1 Band26

Channel Bandwidth: 10MHz 16QAM



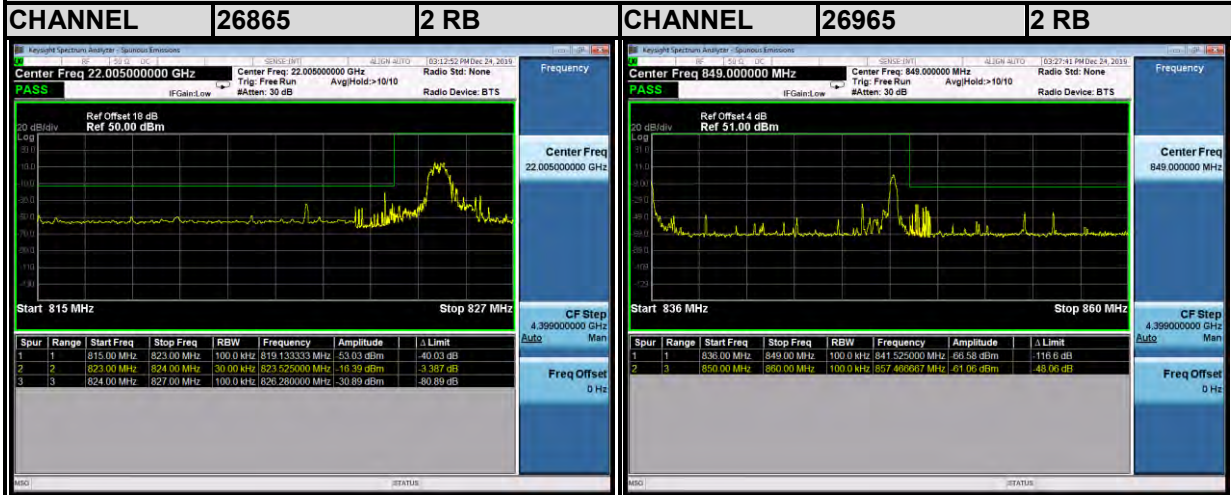


BUREAU
VERITAS

Test Report No.: RF191122W002-1

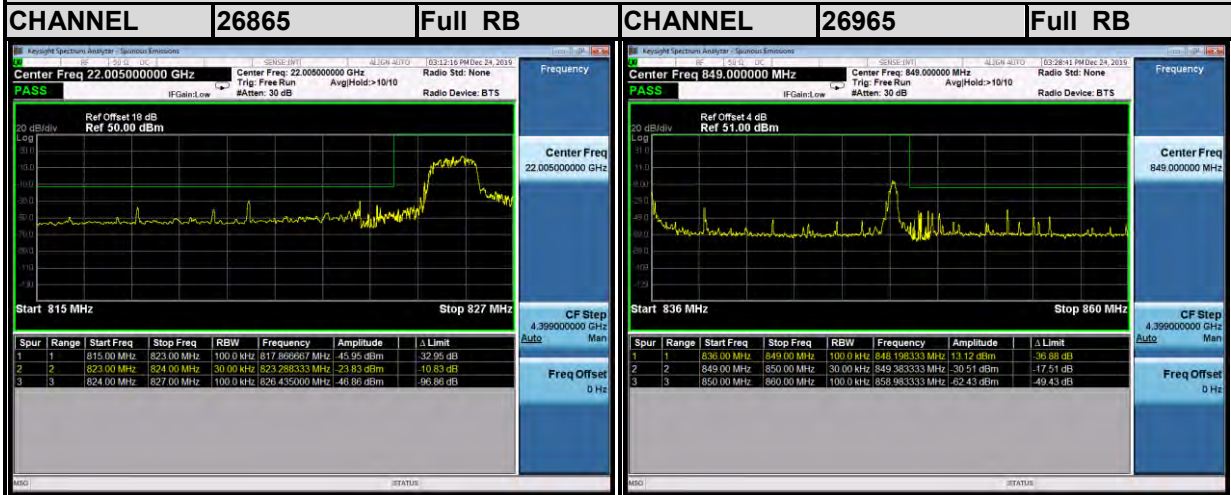
LTE CAT-M1 Band26

Channel Bandwidth: 15MHz QPSK



LTE CAT-M1 Band26

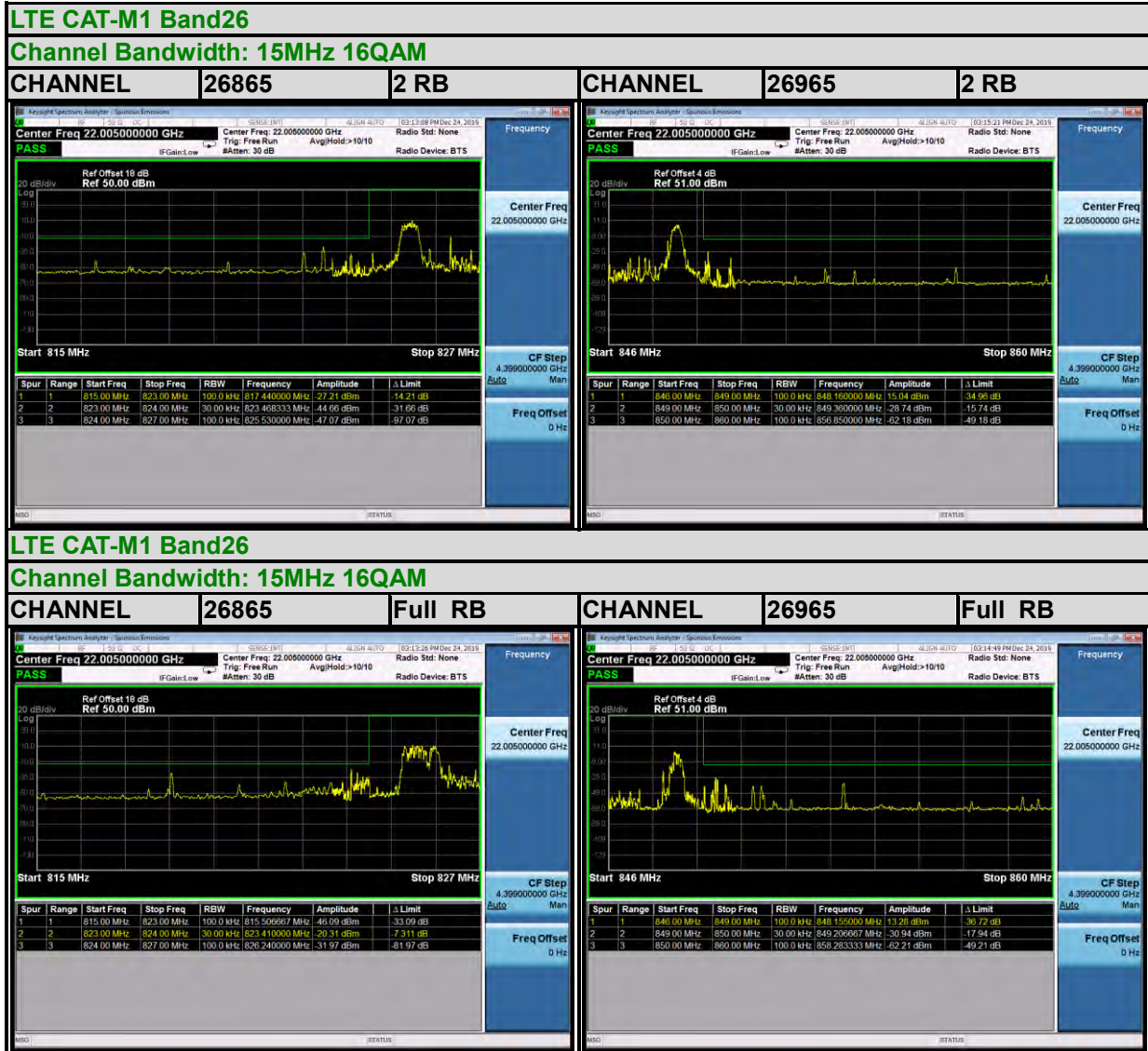
Channel Bandwidth: 15MHz QPSK





BUREAU
VERITAS

Test Report No.: RF191122W002-1



3.5 CONDUCTED SPURIOUS EMISSIONS

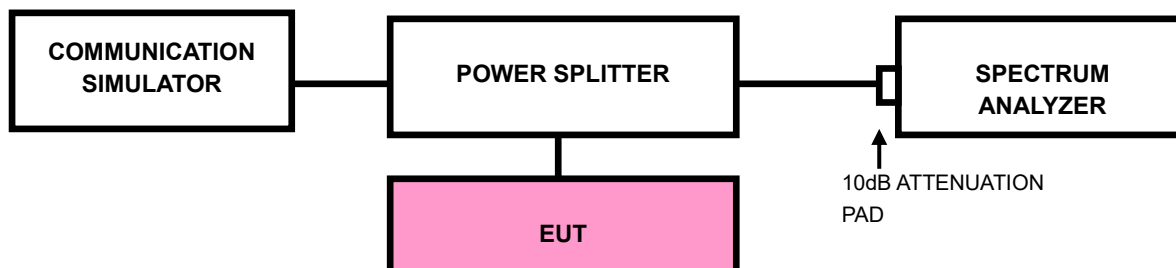
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm .

3.5.2 TEST PROCEDURE

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9 kHz to 9GHz. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.5.3 TEST SETUP

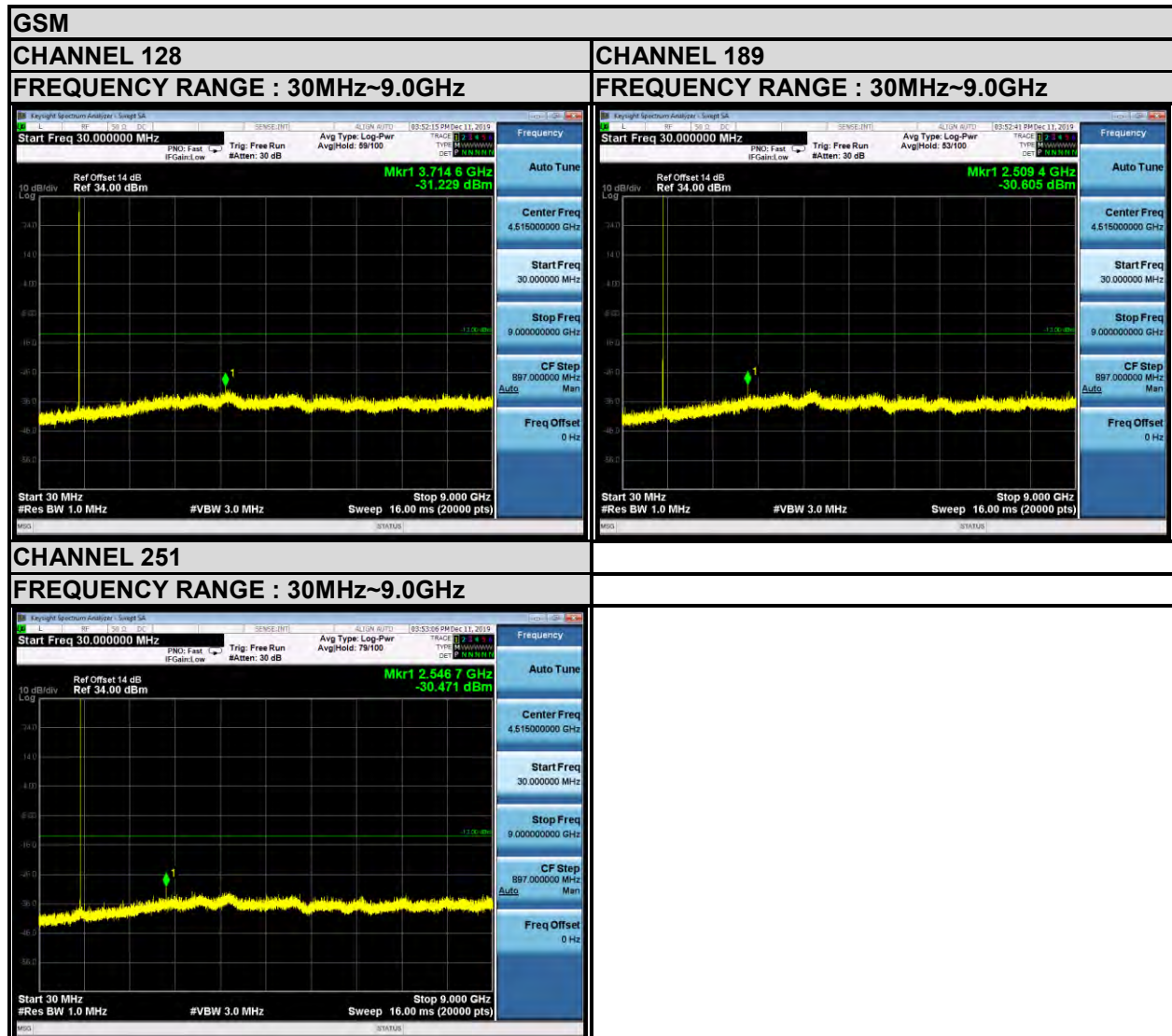




BUREAU
VERITAS

Test Report No.: RF191122W002-1

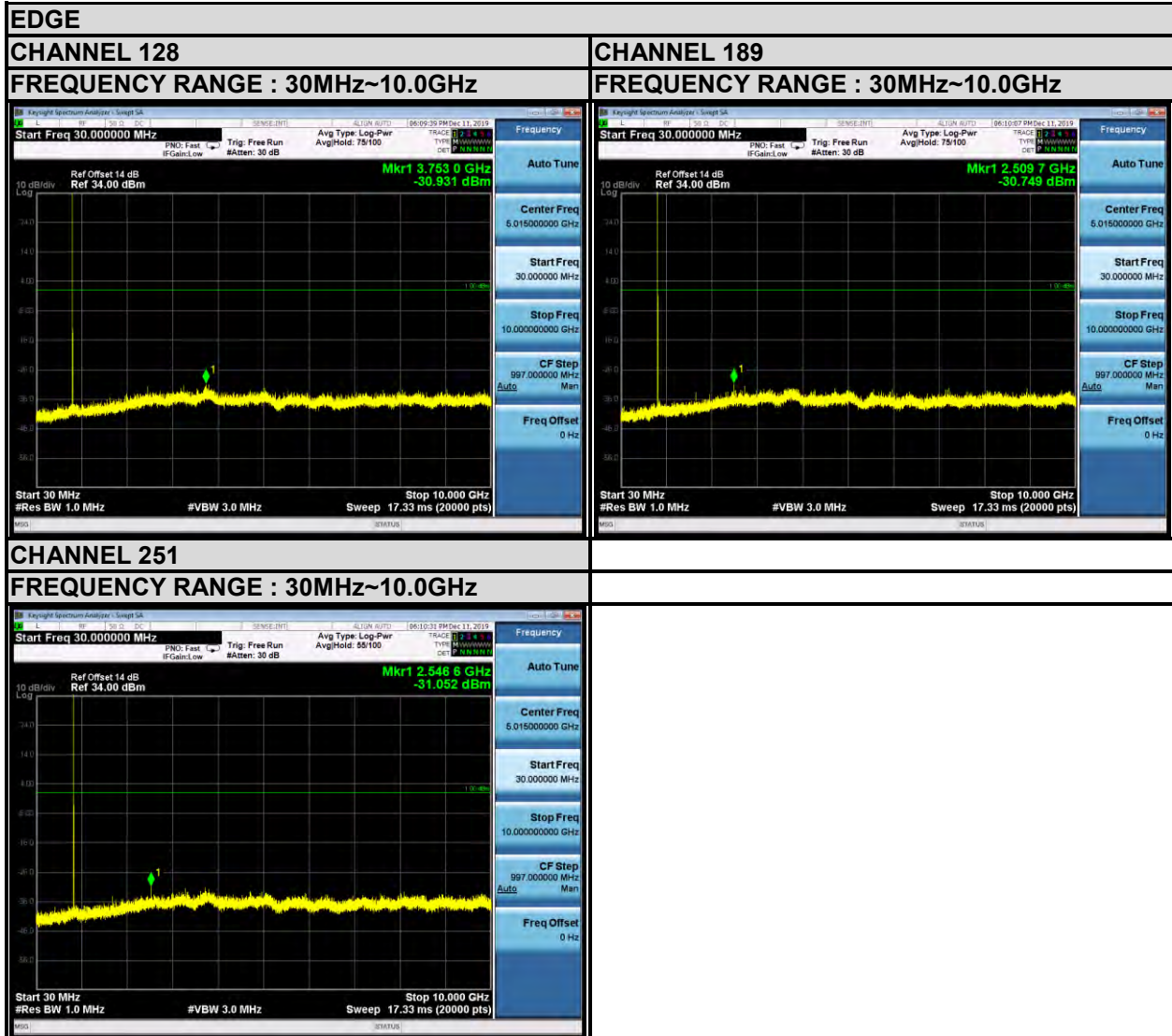
3.5.4 TEST RESULTS





BUREAU
VERITAS

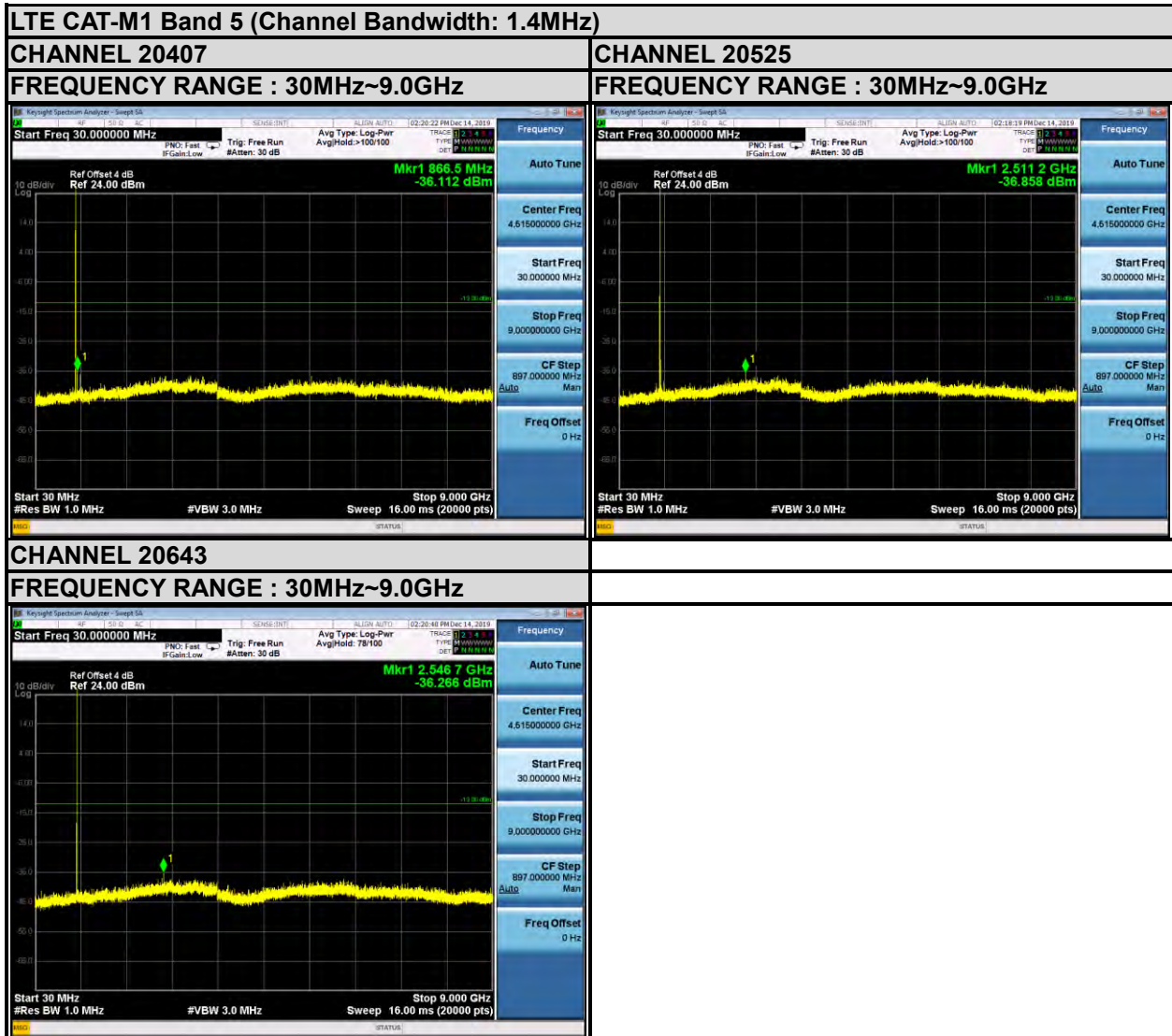
Test Report No.: RF191122W002-1





BUREAU
VERITAS

Test Report No.: RF191122W002-1



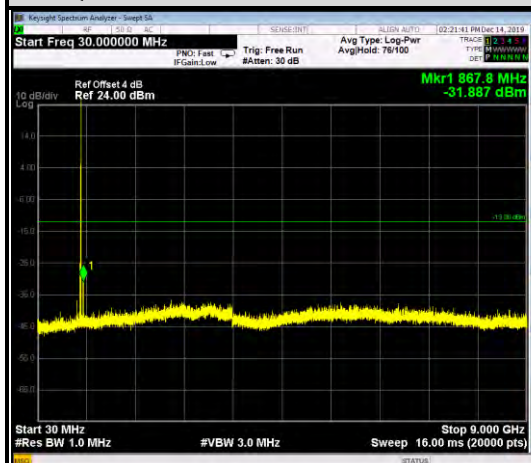


Test Report No.: RF191122W002-1

LTE CAT-M1 Band 5 (Channel Bandwidth: 3MHz)

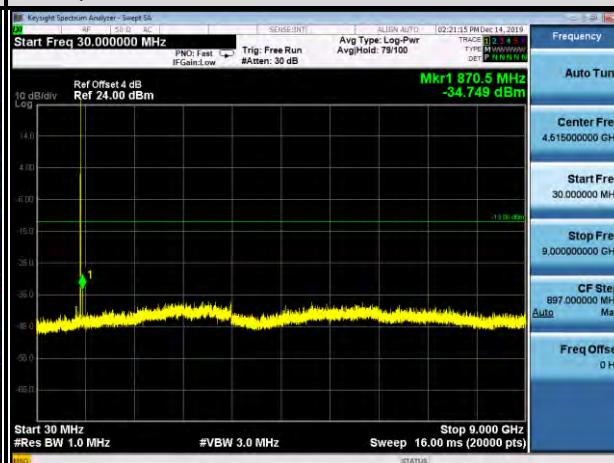
CHANNEL 20415

FREQUENCY RANGE : 30MHz~9.0GHz



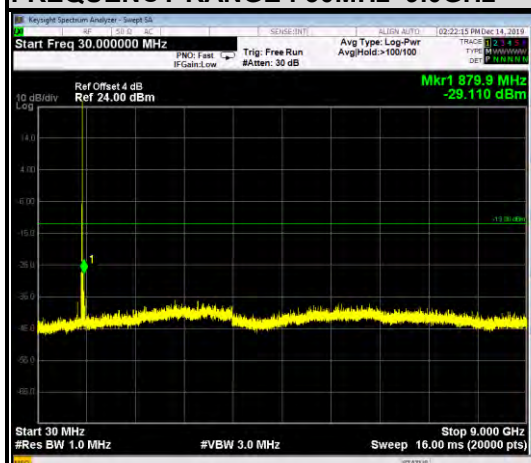
CHANNEL 20525

FREQUENCY RANGE : 30MHz~9.0GHz



CHANNEL 20635

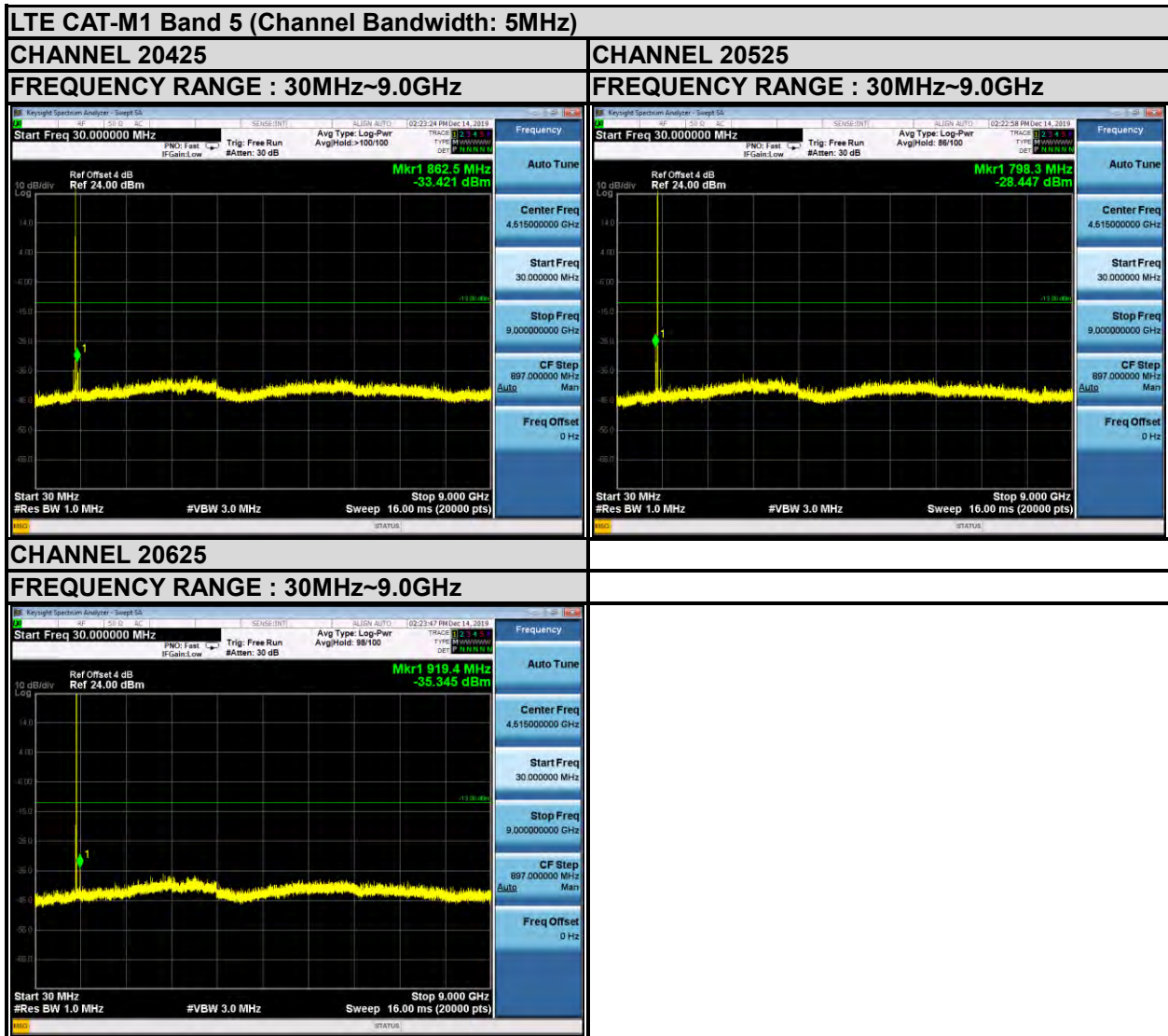
FREQUENCY RANGE : 30MHz~9.0GHz





BUREAU
VERITAS

Test Report No.: RF191122W002-1





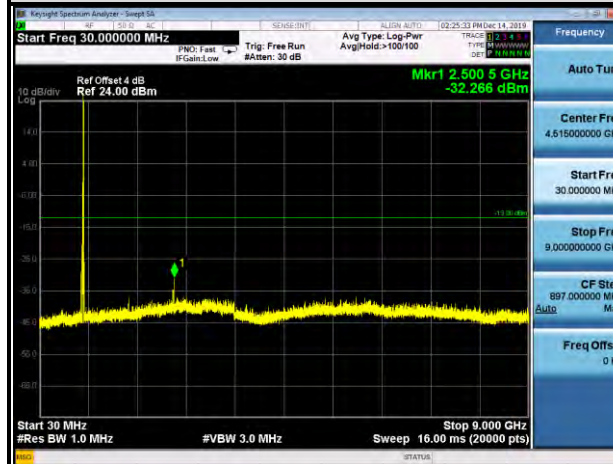
BUREAU
VERITAS

Test Report No.: RF191122W002-1

LTE CAT-M1 Band 5 (Channel Bandwidth: 10MHz)

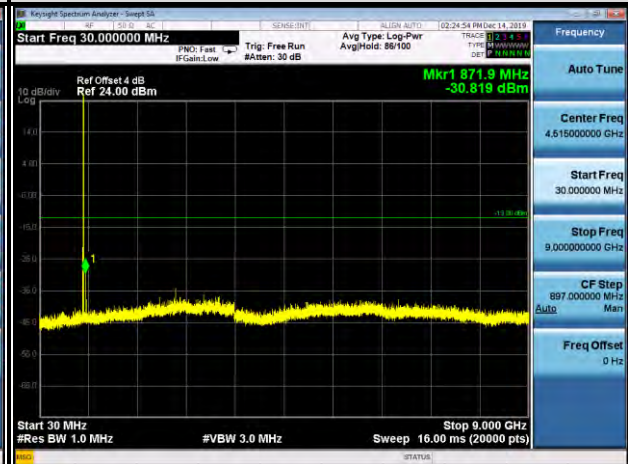
CHANNEL 20450

FREQUENCY RANGE : 30MHz~9.0GHz



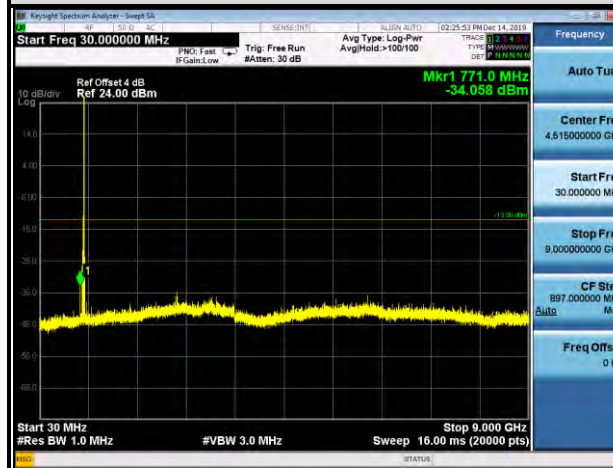
CHANNEL 20525

FREQUENCY RANGE : 30MHz~9.0GHz



CHANNEL 20600

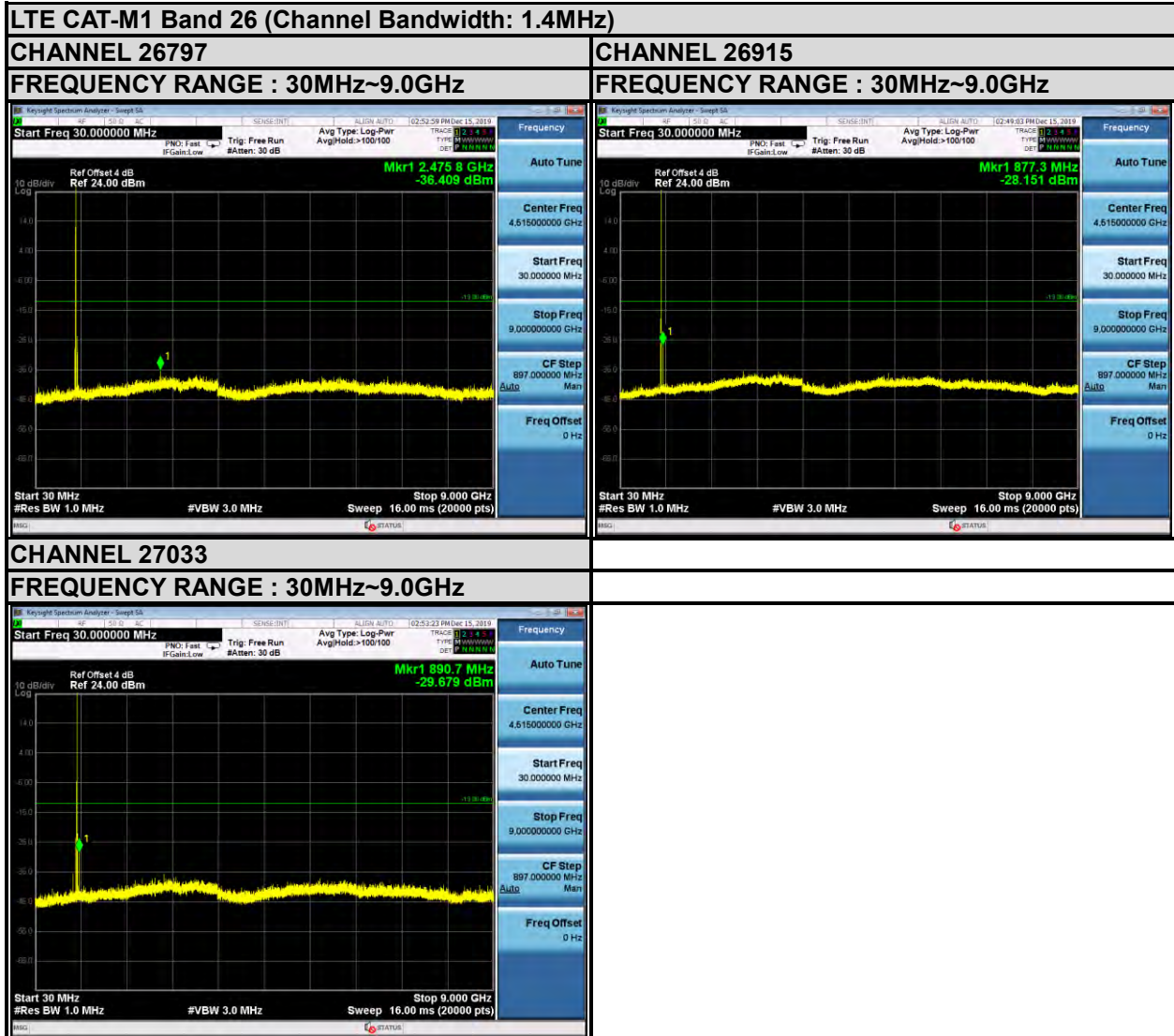
FREQUENCY RANGE : 30MHz~9.0GHz





BUREAU
VERITAS

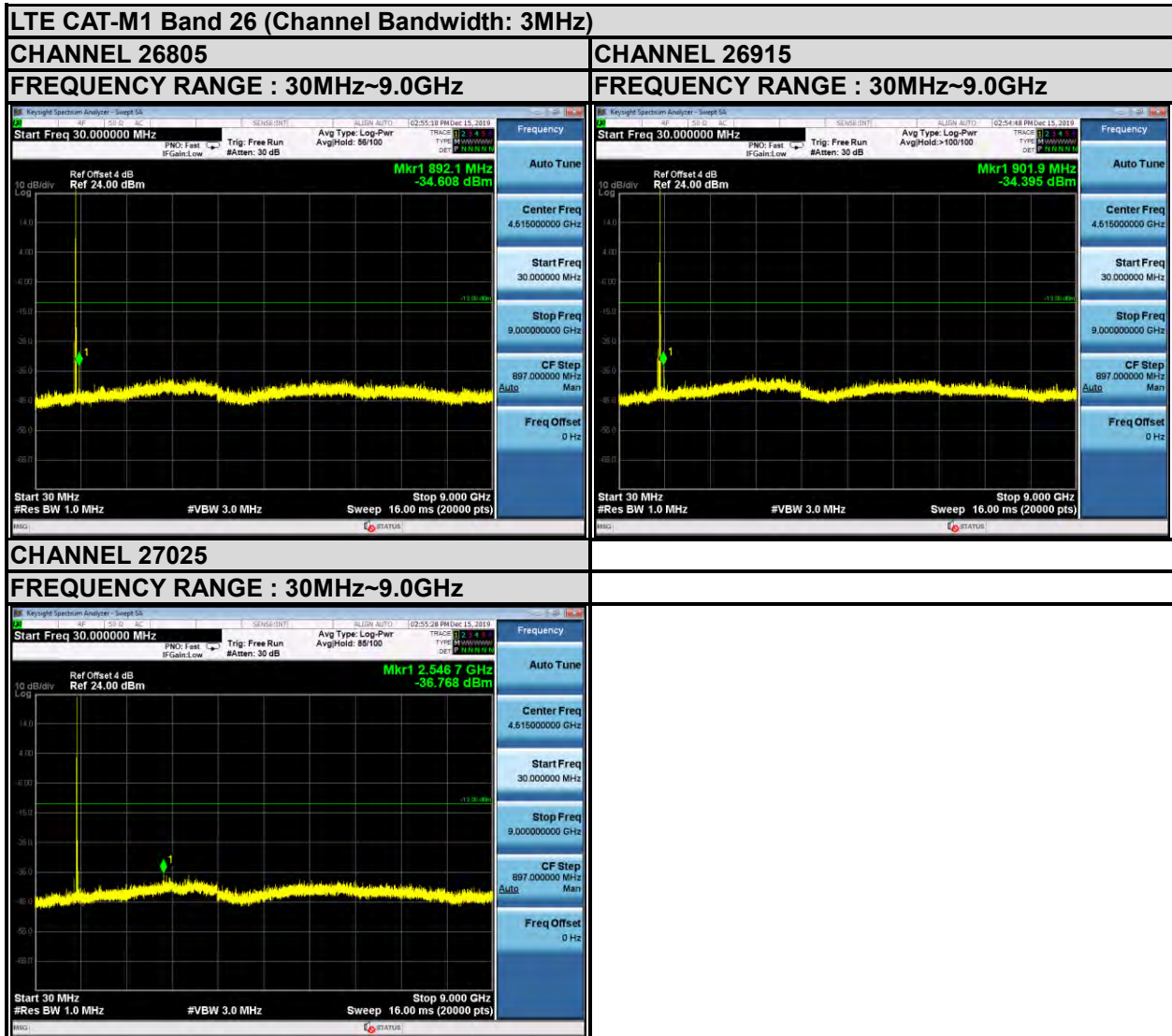
Test Report No.: RF191122W002-1





BUREAU
VERITAS

Test Report No.: RF191122W002-1





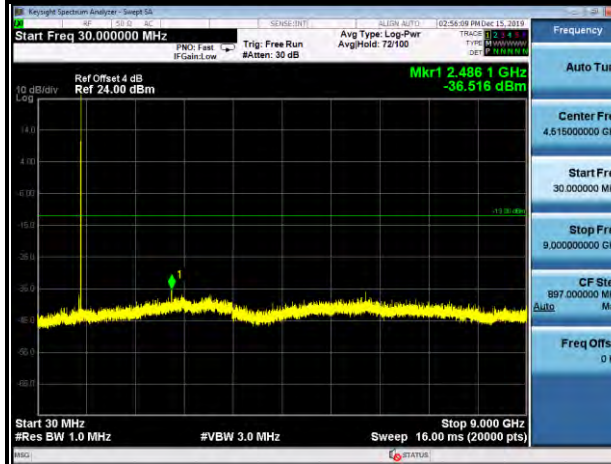
BUREAU
VERITAS

Test Report No.: RF191122W002-1

LTE CAT-M1 Band 26 (Channel Bandwidth: 5MHz)

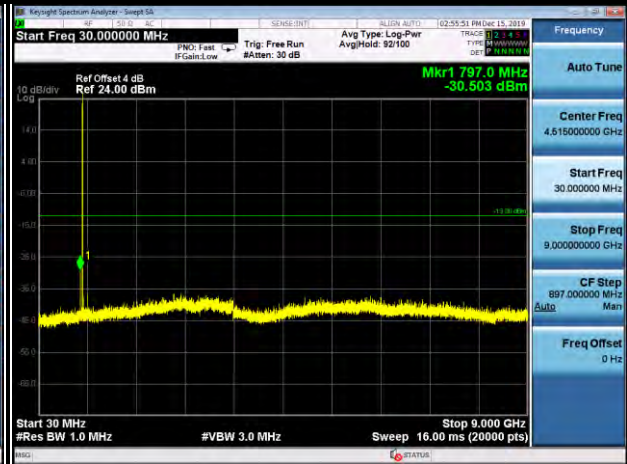
CHANNEL 26815

FREQUENCY RANGE : 30MHz~9.0GHz



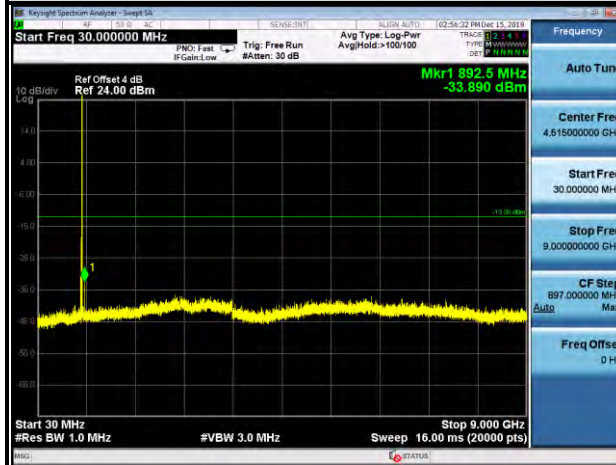
CHANNEL 26915

FREQUENCY RANGE : 30MHz~9.0GHz



CHANNEL 27015

FREQUENCY RANGE : 30MHz~9.0GHz





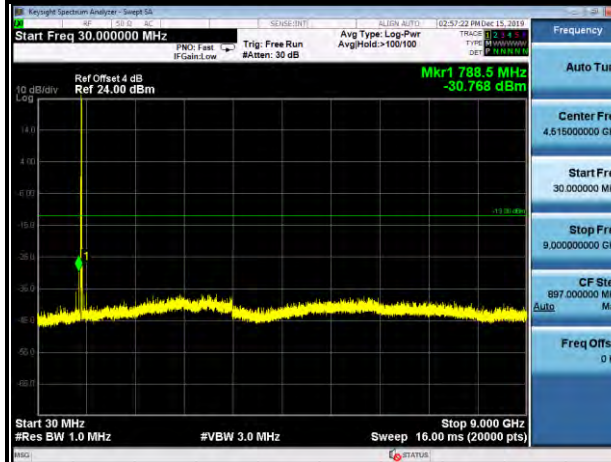
BUREAU
VERITAS

Test Report No.: RF191122W002-1

LTE CAT-M1 Band 26 (Channel Bandwidth: 10MHz)

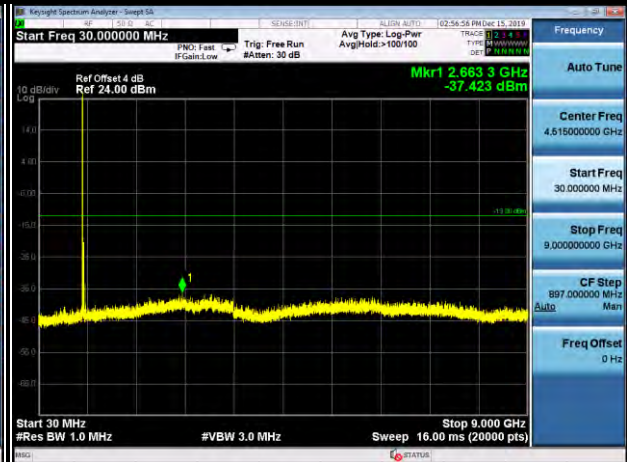
CHANNEL 26840

FREQUENCY RANGE : 30MHz~9.0GHz



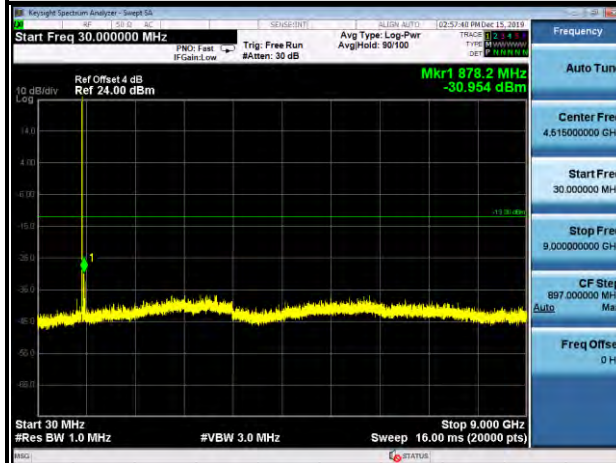
CHANNEL 26915

FREQUENCY RANGE : 30MHz~9.0GHz



CHANNEL 26990

FREQUENCY RANGE : 30MHz~9.0GHz





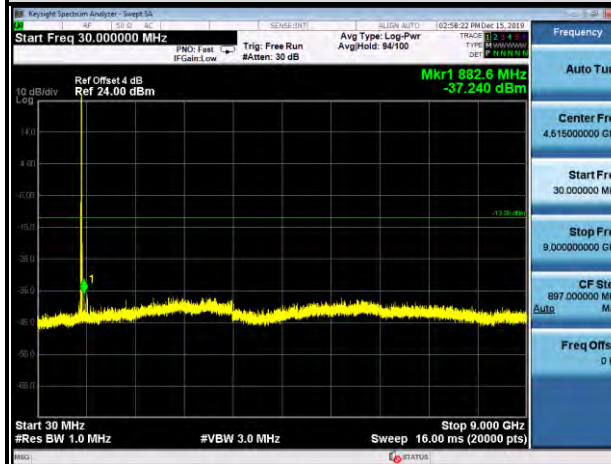
BUREAU
VERITAS

Test Report No.: RF191122W002-1

LTE CAT-M1 Band 26 (Channel Bandwidth: 15MHz)

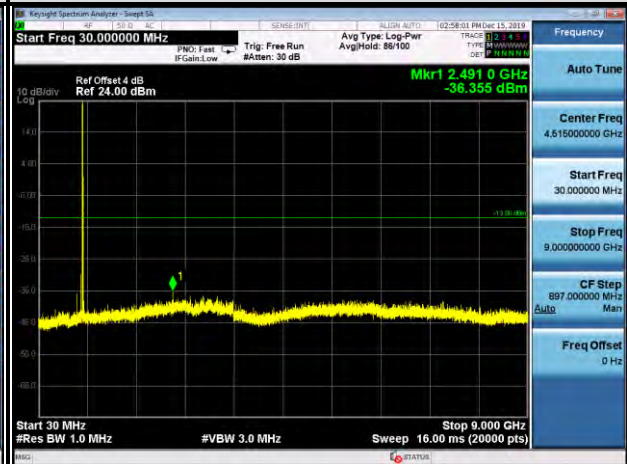
CHANNEL 26865

FREQUENCY RANGE : 30MHz~9.0GHz



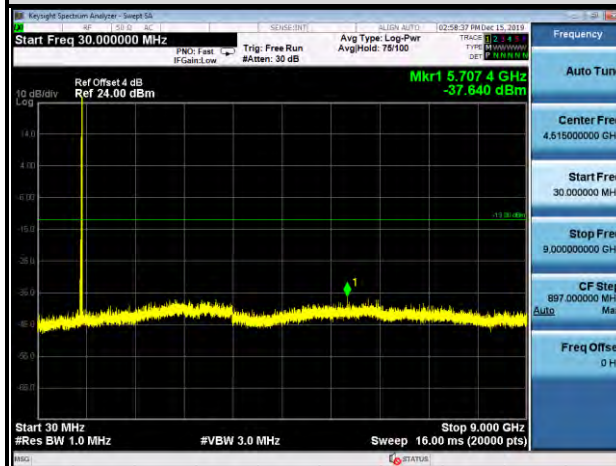
CHANNEL 26915

FREQUENCY RANGE : 30MHz~9.0GHz



CHANNEL 26965

FREQUENCY RANGE : 30MHz~9.0GHz



3.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm .

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. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$.
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,
 $\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi}$.

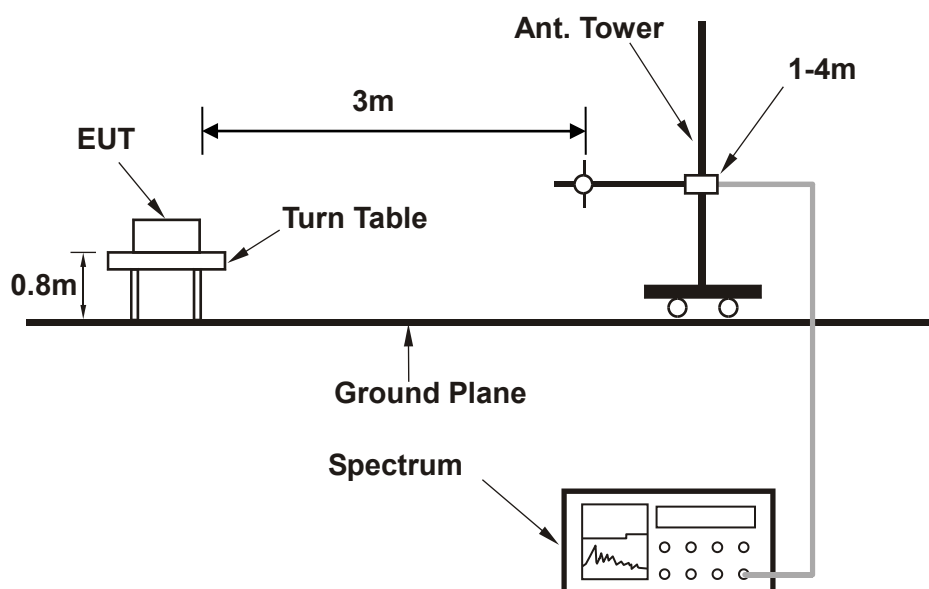
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.6.3 DEVIATION FROM TEST STANDARD

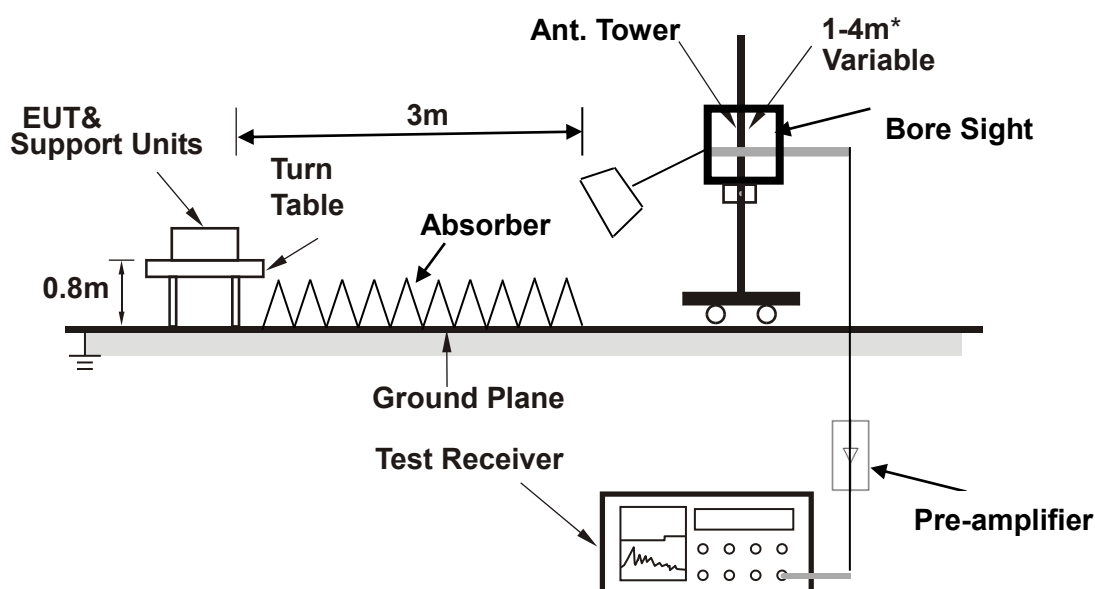
No deviation

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

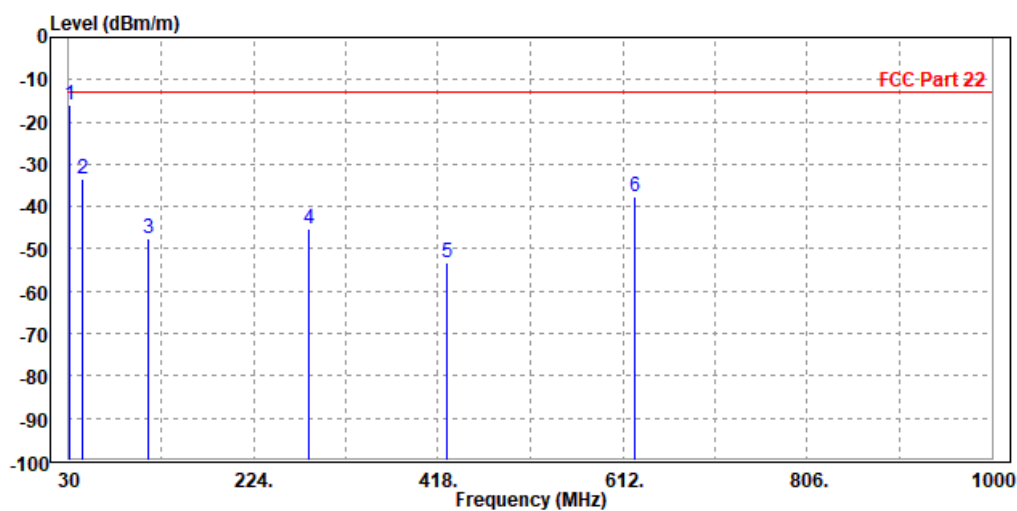
BELOW 1GHz WORST-CASE DATA

30 MHz – 1GHz data:

GSM 850

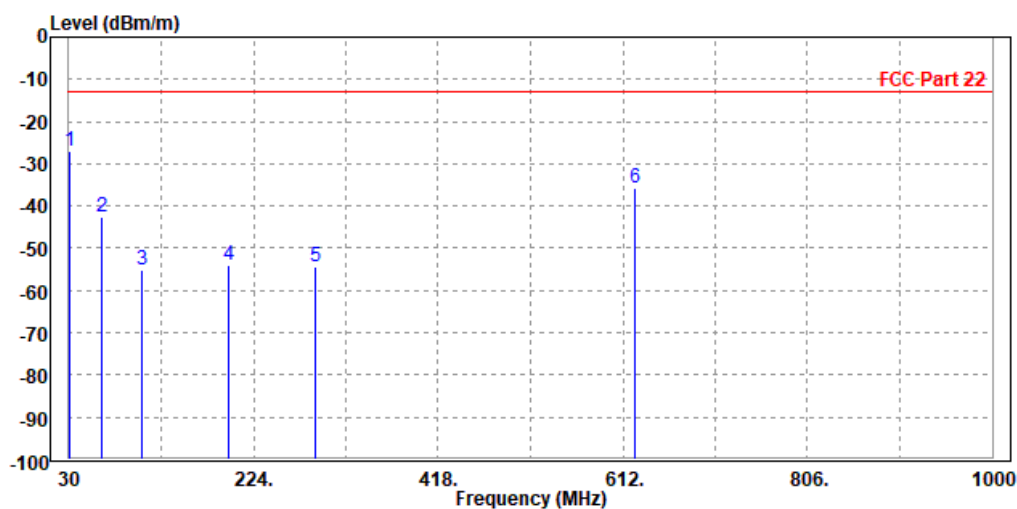
MODE	TX channel 189	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	30.970	-16.10	-34.11	-13.00	-3.10	18.01	Peak	Horizontal
2	44.550	-33.28	-41.38	-13.00	-20.28	8.10	Peak	Horizontal
3	113.420	-47.66	-33.70	-13.00	-34.66	-13.96	Peak	Horizontal
4	282.200	-45.31	-30.62	-13.00	-32.31	-14.69	Peak	Horizontal
5	426.730	-53.37	-42.93	-13.00	-40.37	-10.44	Peak	Horizontal
6	624.610	-37.57	-29.70	-13.00	-24.57	-7.87	Peak	Horizontal



MODE	TX channel 189	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	30.970	-26.87	-30.91	-13.00	-13.87	4.04	Peak	Vertical
2		64.920	-42.59	-28.64	-13.00	-29.59	-13.95	Peak	Vertical
3		107.600	-55.06	-43.38	-13.00	-42.06	-11.68	Peak	Vertical
4		197.810	-53.89	-42.98	-13.00	-40.89	-10.91	Peak	Vertical
5		288.990	-54.40	-43.06	-13.00	-41.40	-11.34	Peak	Vertical
6		624.610	-35.74	-28.68	-13.00	-22.74	-7.06	Peak	Vertical





**BUREAU
VERITAS**

Test Report No.: RF191122W002-1

ABOVE 1GHz DATA

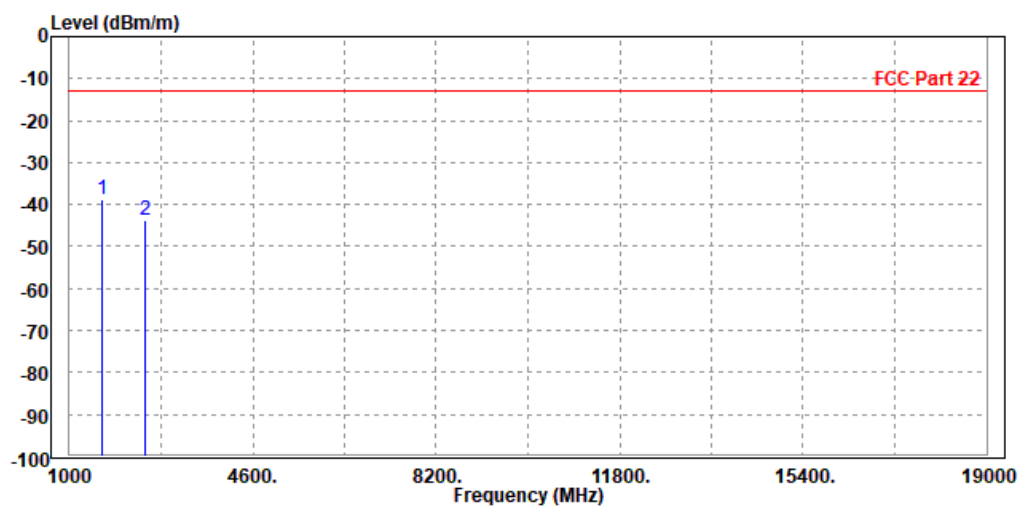
Note: For higher frequency, the emission is too low to be detected.

GSM 850

CH 128:

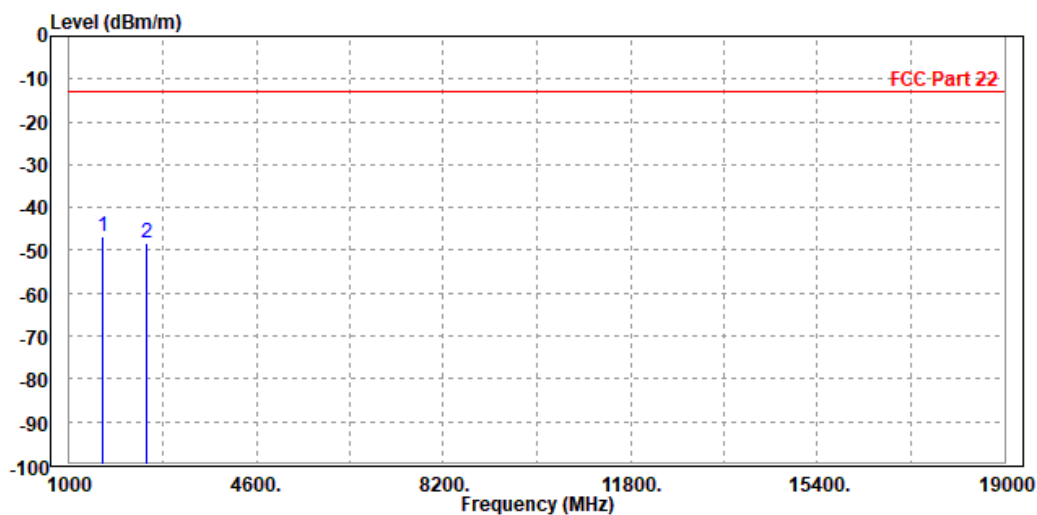
MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

			Read	Limit	Over			
	Freq	Level	Level	Line	Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1648.000	-38.95	-42.20	-13.00	-25.95	3.25	Peak	Horizontal
2	2476.000	-43.56	-51.59	-13.00	-30.56	8.03	Peak	Horizontal



MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

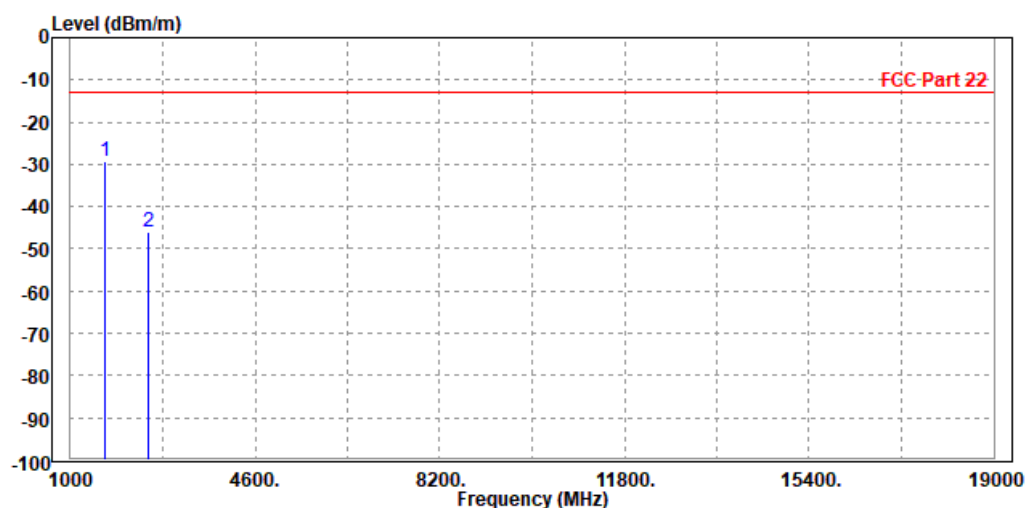
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1648.000	-46.93	-50.31	-13.00	-33.93	3.38	Peak	Vertical
2		2476.000	-48.31	-55.35	-13.00	-35.31	7.04	Peak	Vertical



CH 189:

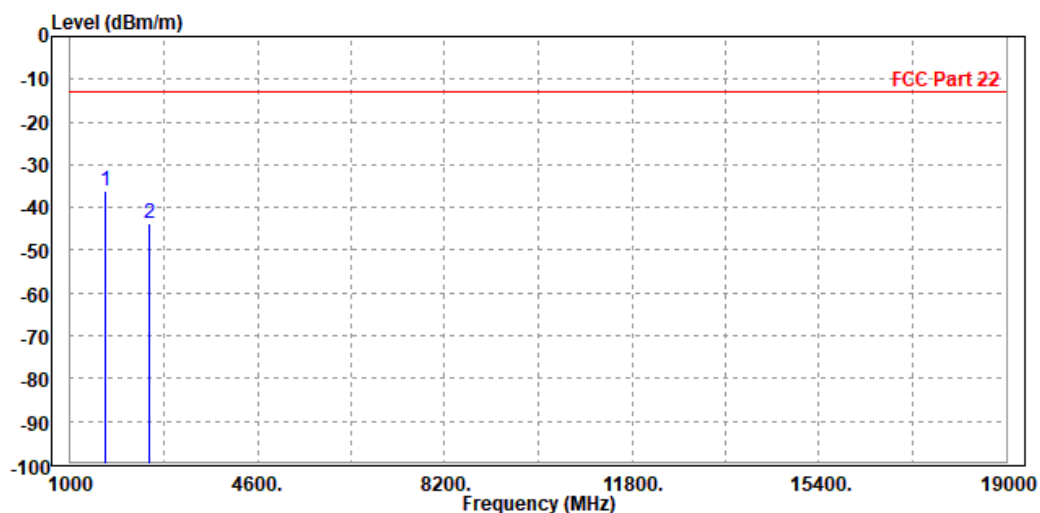
MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1666.000	-29.34	-32.81	-13.00	-16.34	3.47	Peak	Horizontal
2	2509.200	-46.08	-54.14	-13.00	-33.08	8.06	Peak	Horizontal



MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

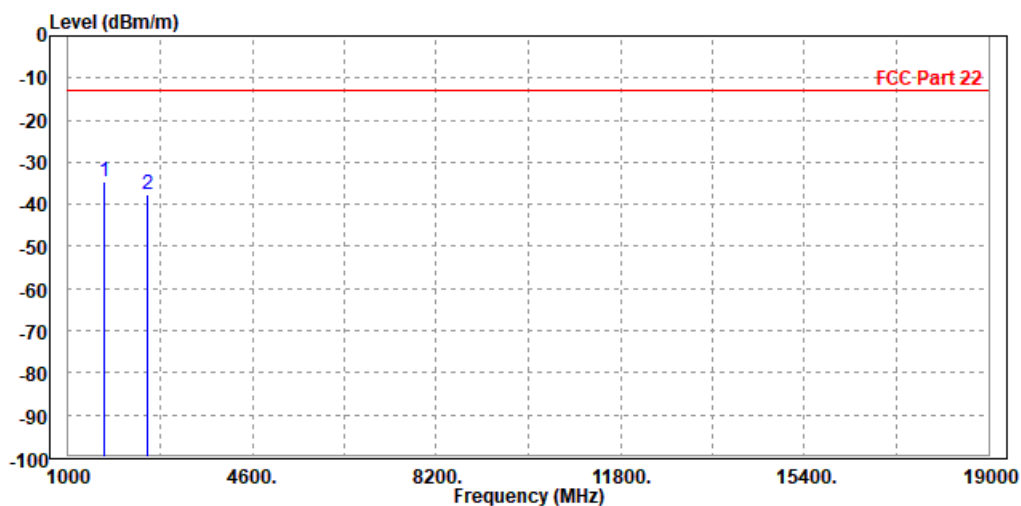
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1666.000	-36.00	-39.54	-13.00	-23.00	3.54	Peak	Vertical
2		2509.200	-43.69	-50.79	-13.00	-30.69	7.10	Peak	Vertical



CH 251:

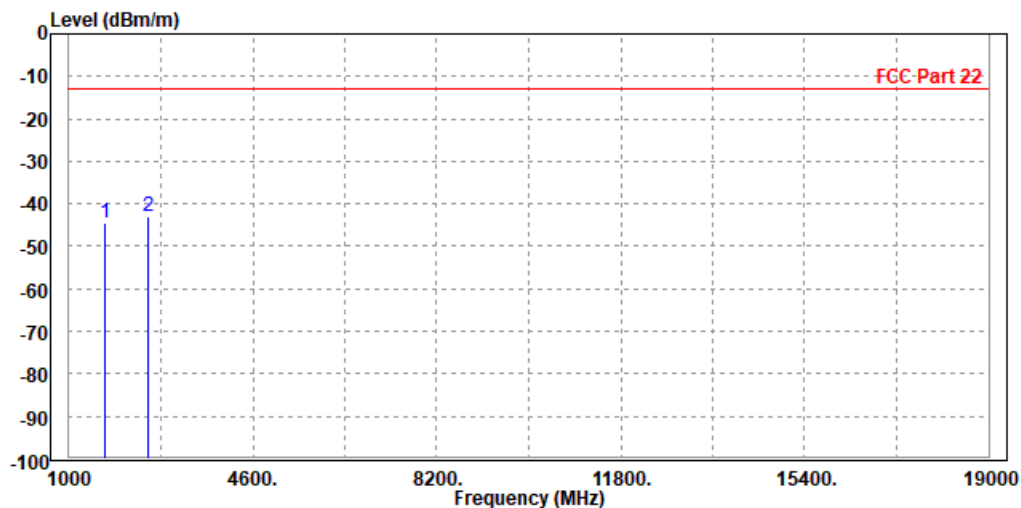
MODE	TX channel 251	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1702.000	-34.45	-38.36	-13.00	-21.45	3.91	Peak	Horizontal
2		2546.400	-37.52	-45.63	-13.00	-24.52	8.11	Peak	Horizontal



MODE	TX channel 251	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1702.000	-44.45	-48.32	-13.00	-31.45	3.87	Peak	Vertical
2 PP	2548.000	-42.79	-50.01	-13.00	-29.79	7.22	Peak	Vertical

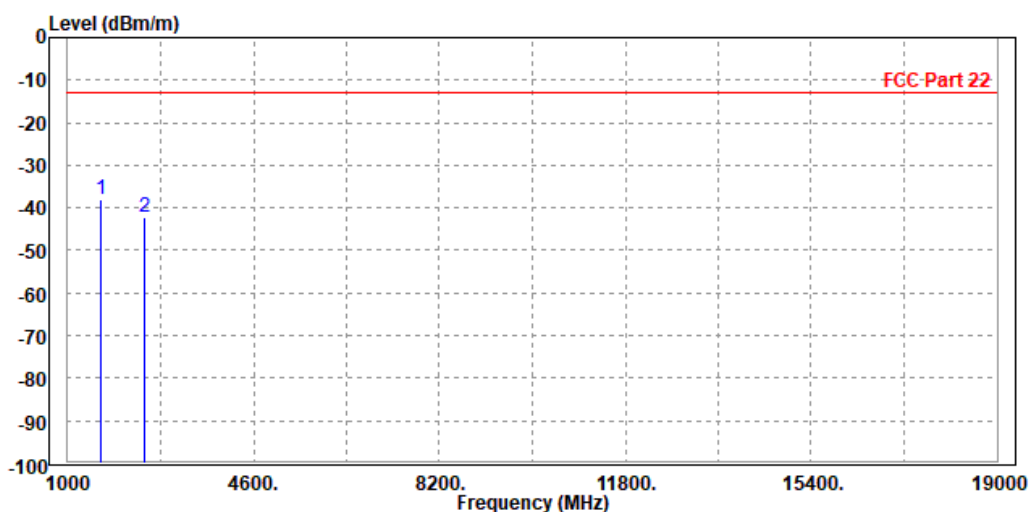


EDGE 850:

CH 128:

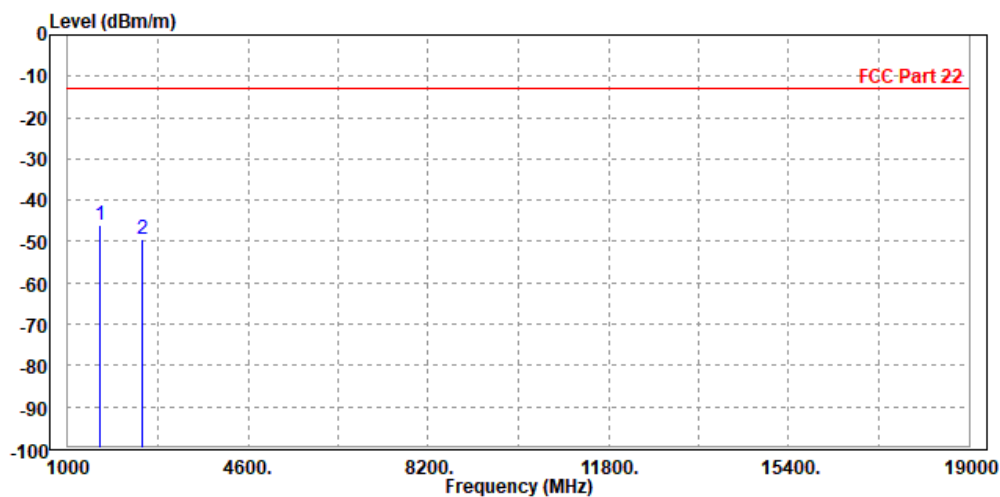
MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1648.000	-37.97	-41.22	-13.00	-24.97	3.25	Peak	Horizontal
2	2476.000	-42.10	-50.13	-13.00	-29.10	8.03	Peak	Horizontal



MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

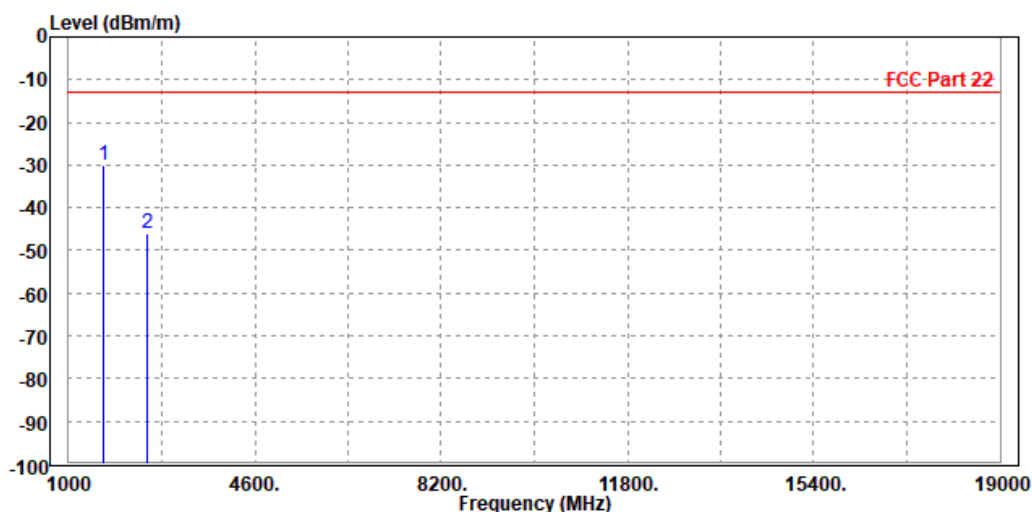
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1648.000	-45.98	-49.36	-13.00	-32.98	3.38	Peak	Vertical
2		2476.000	-49.29	-56.33	-13.00	-36.29	7.04	Peak	Vertical



CH 189:

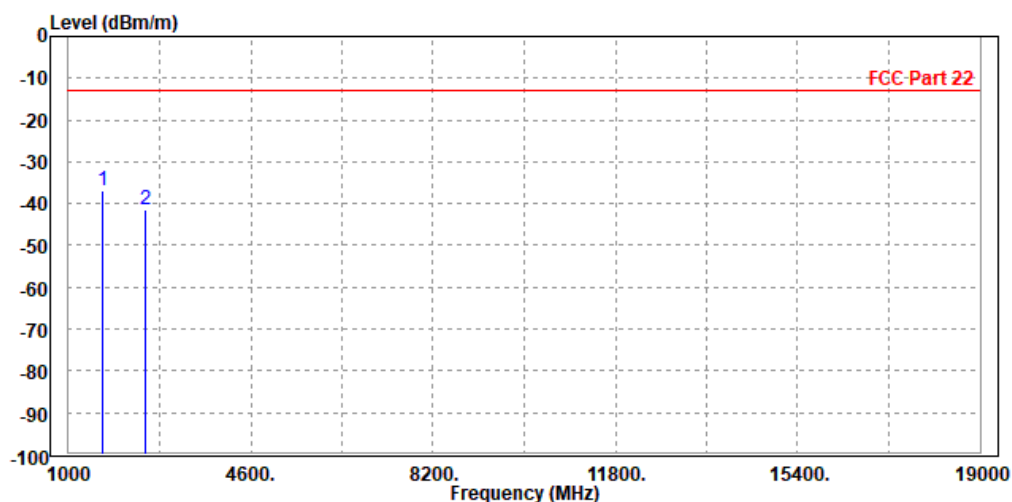
MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1667.200	-30.17	-33.66	-13.00	-17.17	3.49	Peak	Horizontal
2	2510.300	-46.16	-54.22	-13.00	-33.16	8.06	Peak	Horizontal



MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

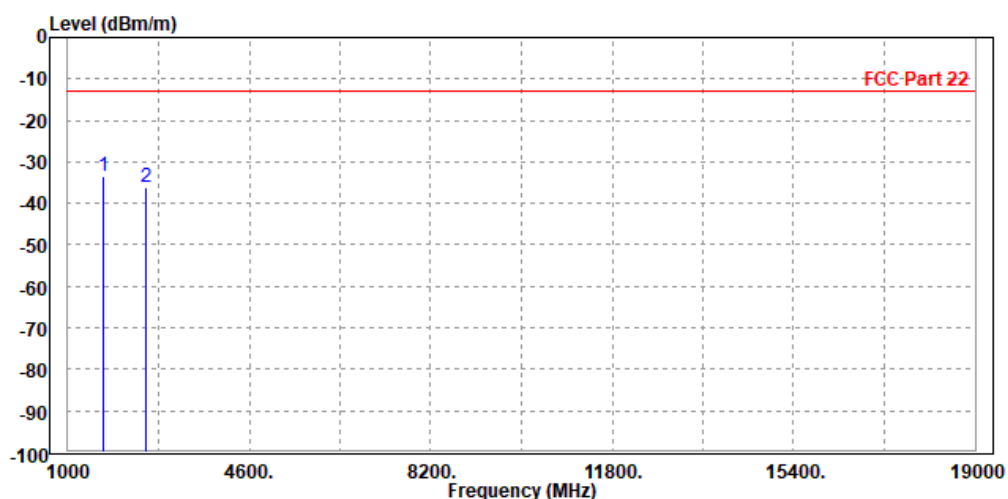
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1668.000	-36.77	-40.33	-13.00	-23.77	3.56	Peak	Vertical
2		2510.650	-41.57	-48.67	-13.00	-28.57	7.10	Peak	Vertical



CH 251:

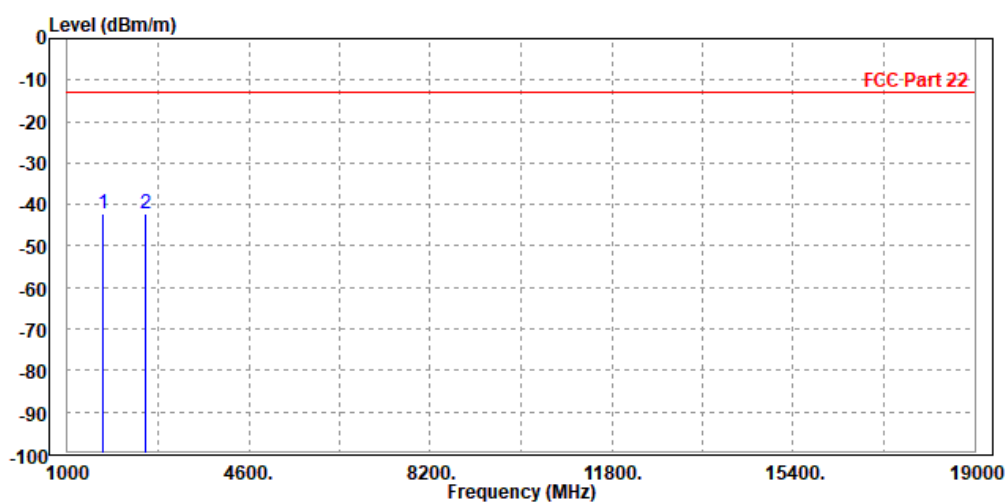
MODE	TX channel 251	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1702.000	-33.65	-37.56	-13.00	-20.65	3.91	Peak	Horizontal
2	2547.000	-36.02	-44.13	-13.00	-23.02	8.11	Peak	Horizontal



MODE	TX channel 251	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1702.000	-42.35	-46.22	-13.00	-29.35	3.87	Peak	Vertical
2 PP	2548.000	-42.13	-49.35	-13.00	-29.13	7.22	Peak	Vertical

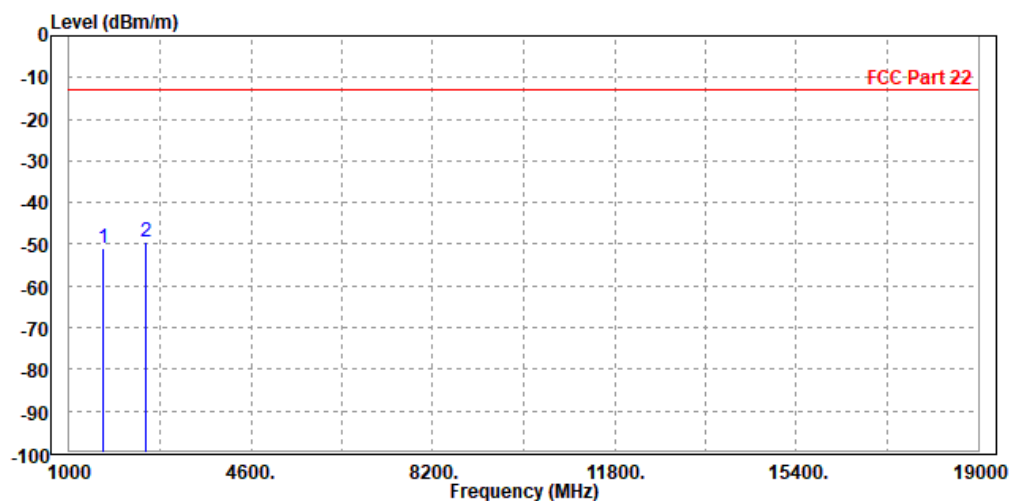


LTE CAT-M1 Band 5

CHANNEL BANDWIDTH: 1.4MHz / QPSK

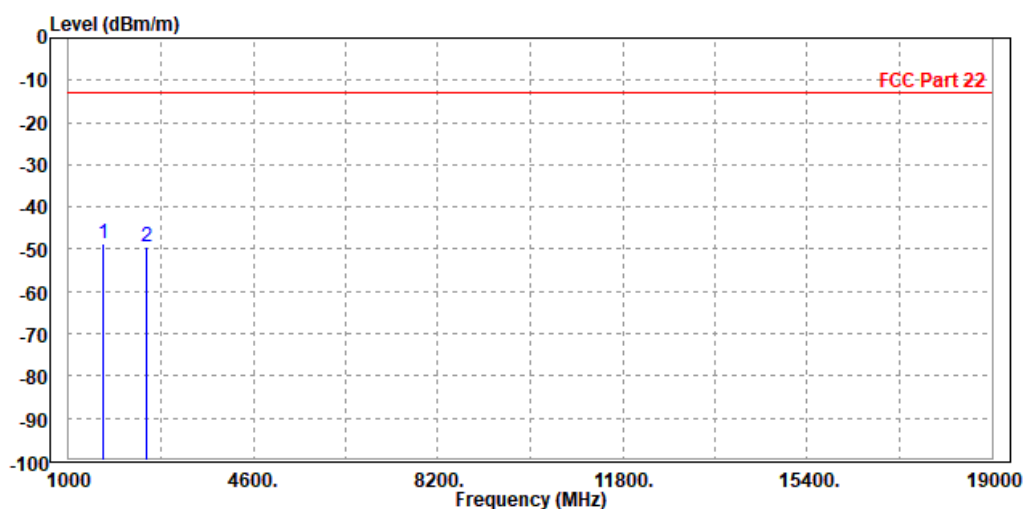
MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-50.89	-54.36	-13.00	-37.89	3.47	Peak	Horizontal
2 PP	2509.500	-49.35	-57.41	-13.00	-36.35	8.06	Peak	Horizontal



MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

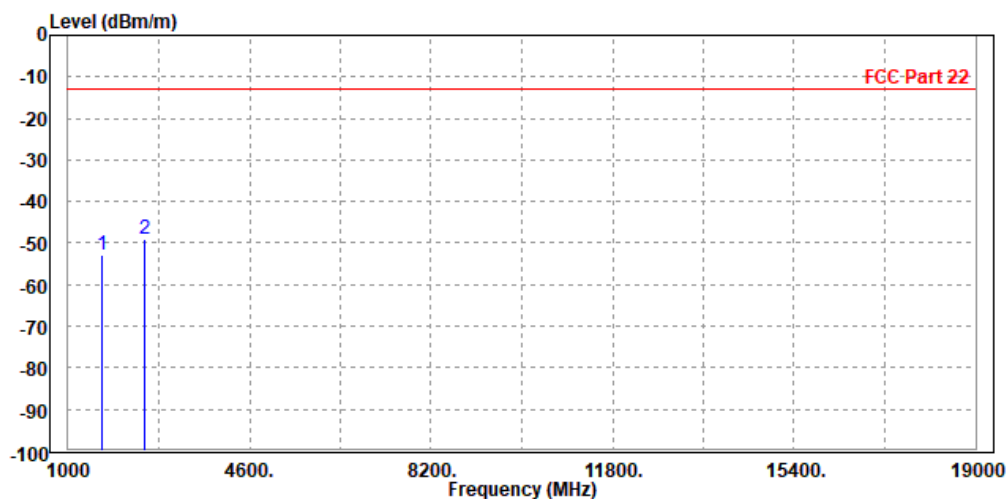
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1666.000	-48.68	-52.22	-13.00	-35.68	3.54	Peak	Vertical
2	2509.500	-49.25	-56.35	-13.00	-36.25	7.10	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK

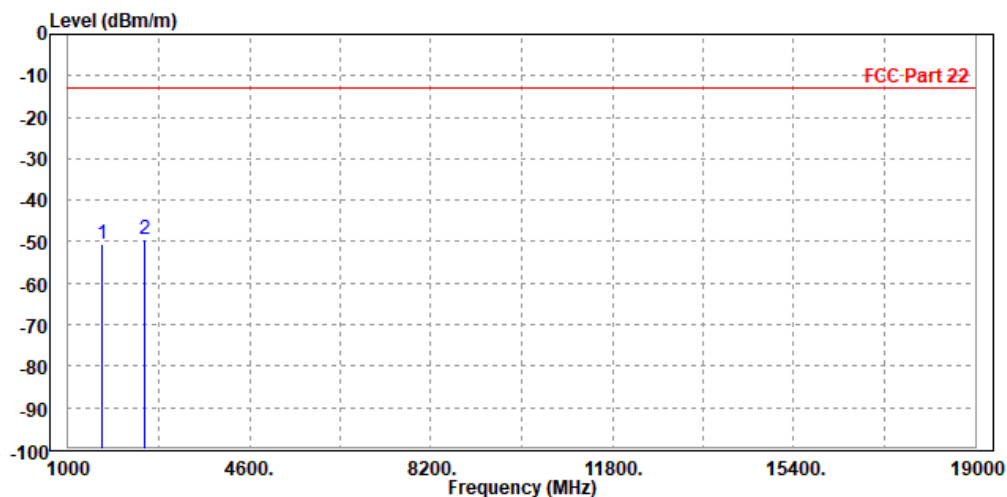
MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-53.00	-56.47	-13.00	-40.00	3.47	Peak	Horizontal
2 PP	2509.500	-49.14	-57.20	-13.00	-36.14	8.06	Peak	Horizontal



MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-50.74	-54.28	-13.00	-37.74	3.54	Peak	Vertical
2 PP	2509.500	-49.44	-56.54	-13.00	-36.44	7.10	Peak	Vertical

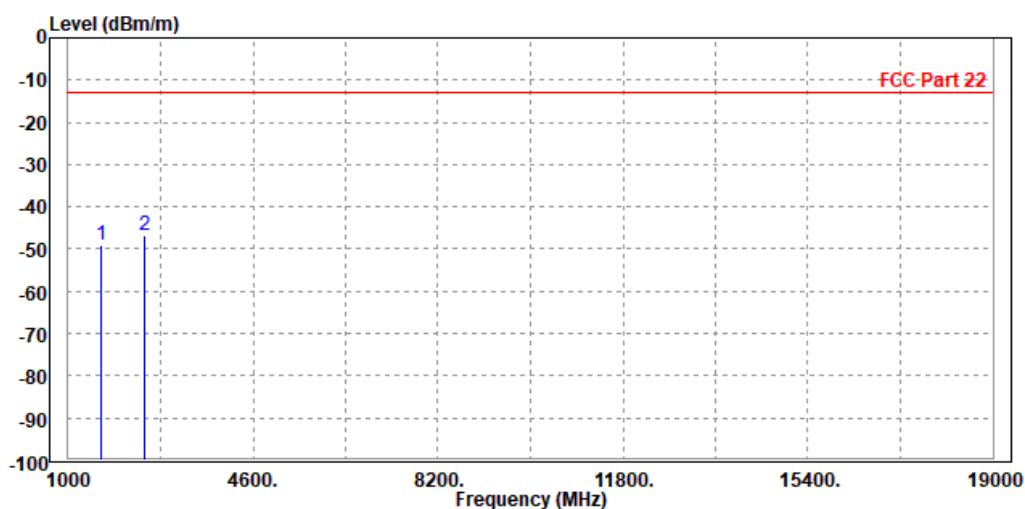


CHANNEL BANDWIDTH: 5MHz / QPSK

CH 20425

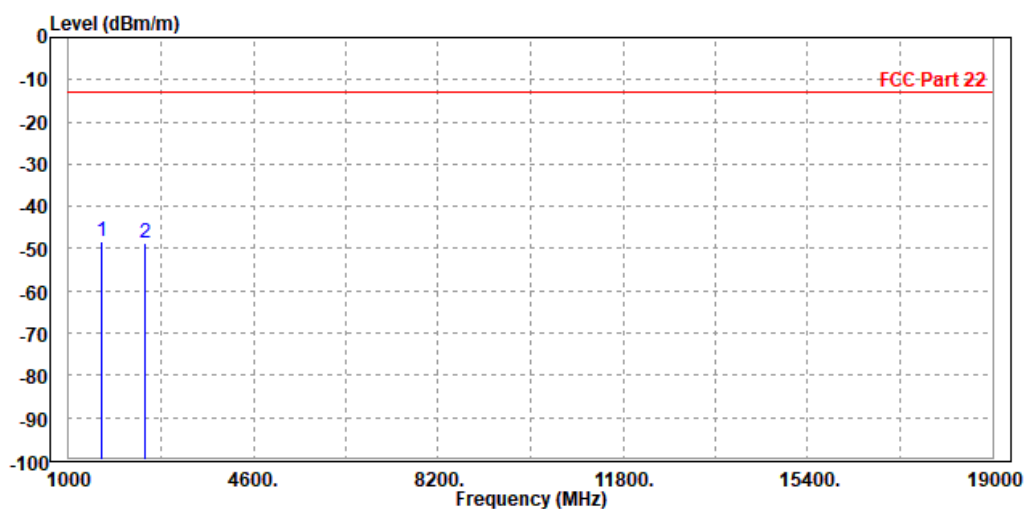
MODE	TX channel 20425	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1648.000	-48.95	-52.20	-13.00	-35.95	3.25	Peak	Horizontal
2 PP	2479.500	-46.84	-54.87	-13.00	-33.84	8.03	Peak	Horizontal



MODE	TX channel 20425	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

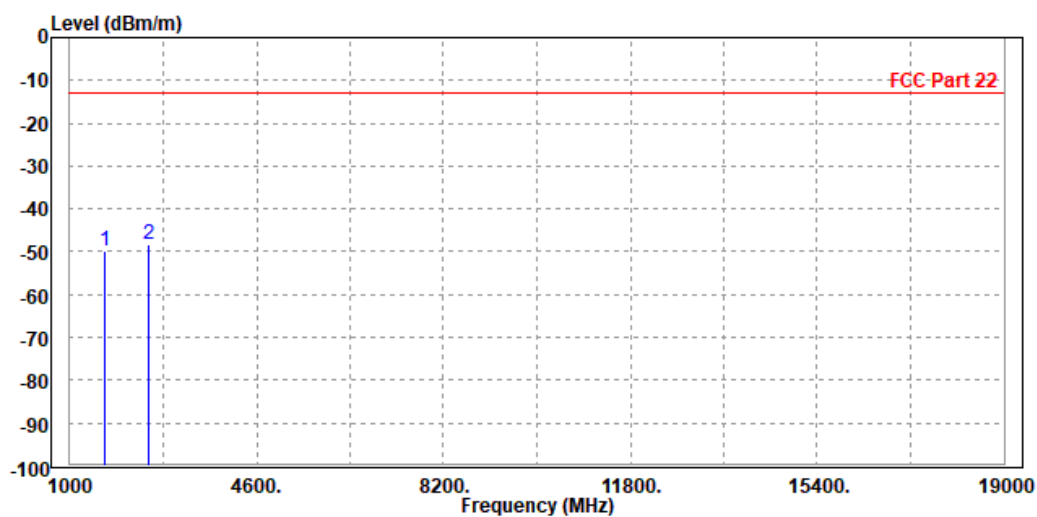
			Read	Limit	Over			
Freq	Level	Level	Line	Limit	Factor	Remark	Pol/Phase	
MHz	dBm/m	dBm	dBm/m	dB	dB/m			
1 PP 1648.000	-48.12	-51.50	-13.00	-35.12	3.38	Peak	Vertical	
2 2479.500	-48.71	-55.76	-13.00	-35.71	7.05	Peak	Vertical	



CH 20525

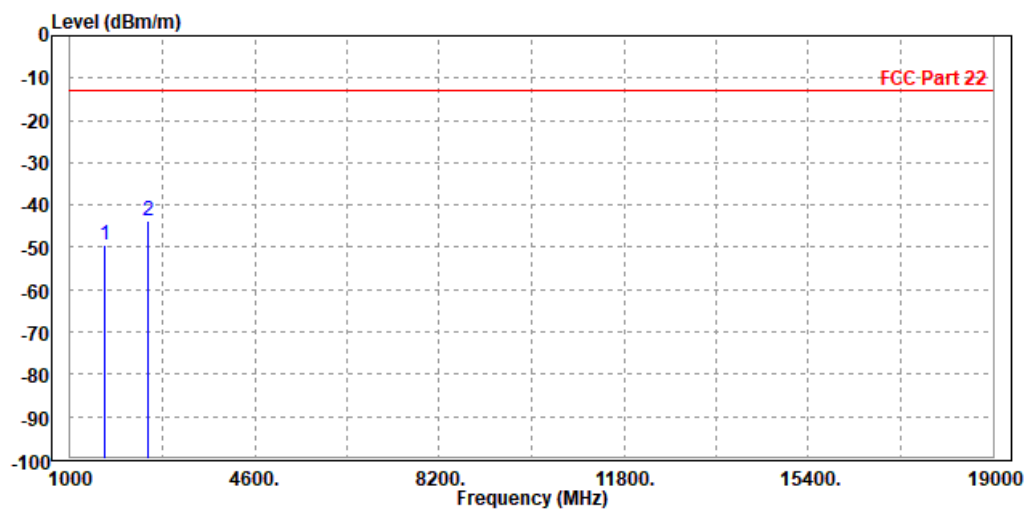
MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-49.97	-53.44	-13.00	-36.97	3.47	Peak	Horizontal
2 PP	2509.500	-48.36	-56.42	-13.00	-35.36	8.06	Peak	Horizontal



MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

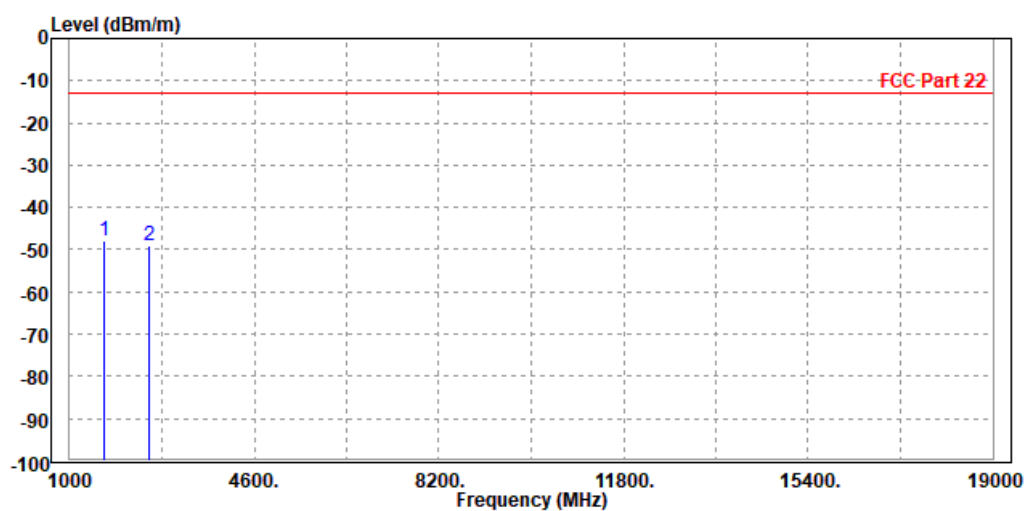
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-49.51	-53.05	-13.00	-36.51	3.54	Peak	Vertical
2 PP	2509.500	-43.91	-51.01	-13.00	-30.91	7.10	Peak	Vertical



CH 20625

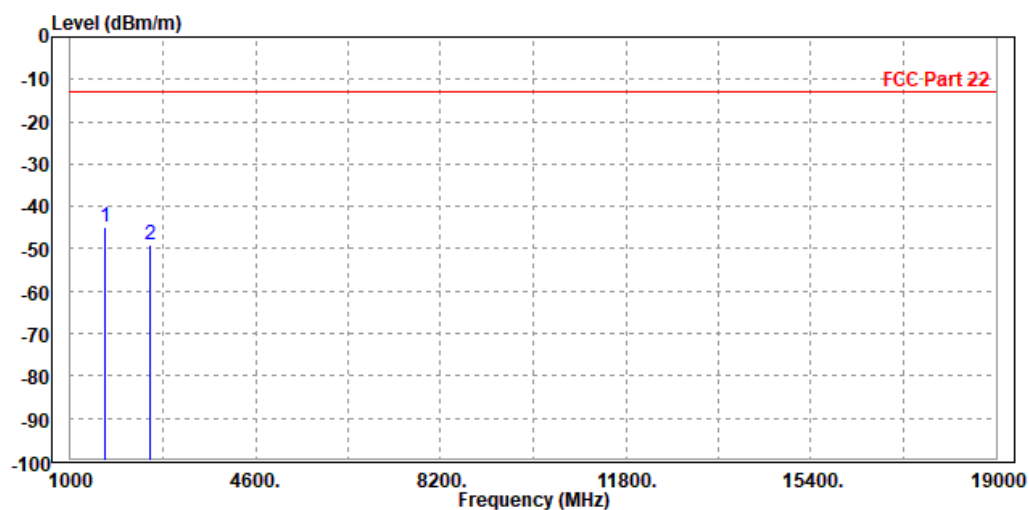
MODE	TX channel 20625	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1684.000	-47.89	-51.58	-13.00	-34.89	3.69	Peak	Horizontal
2	2539.500	-49.16	-57.26	-13.00	-36.16	8.10	Peak	Horizontal



MODE	TX channel 20625	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

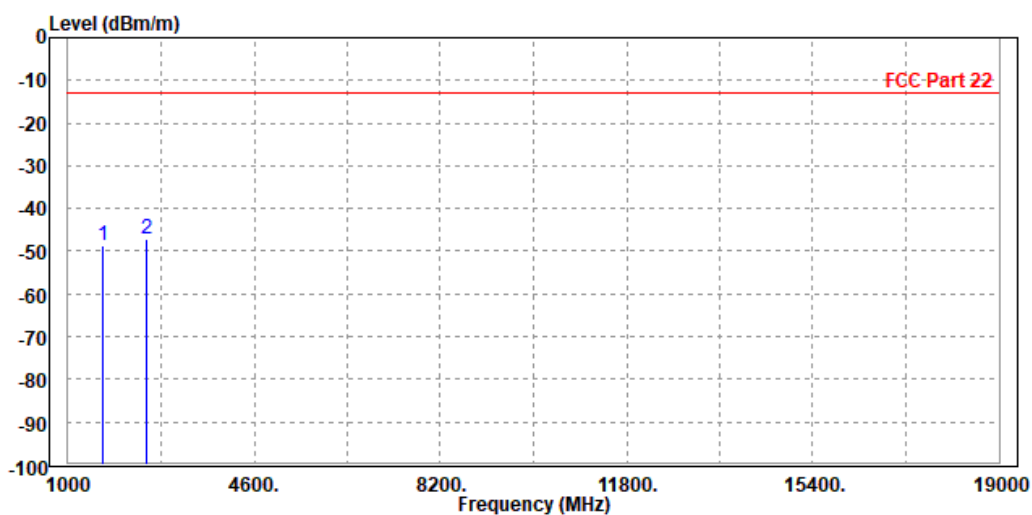
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1684.000	-44.81	-48.52	-13.00	-31.81	3.71	Peak	Vertical
2		2539.500	-48.98	-56.18	-13.00	-35.98	7.20	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

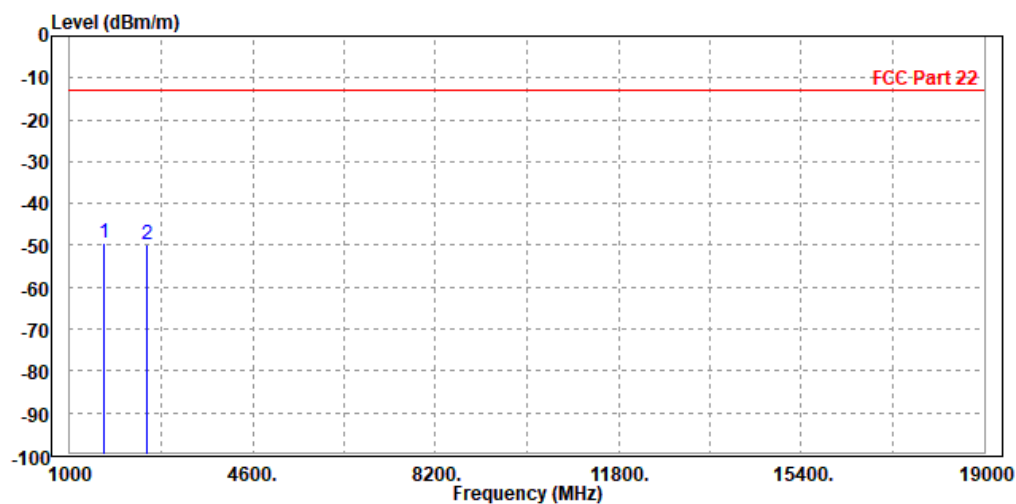
MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-48.58	-52.05	-13.00	-35.58	3.47	Peak	Horizontal
2 PP	2509.500	-47.00	-55.06	-13.00	-34.00	8.06	Peak	Horizontal



MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1666.000	-49.43	-52.97	-13.00	-36.43	3.54	Peak	Vertical
2	2509.500	-49.86	-56.96	-13.00	-36.86	7.10	Peak	Vertical





**BUREAU
VERITAS**

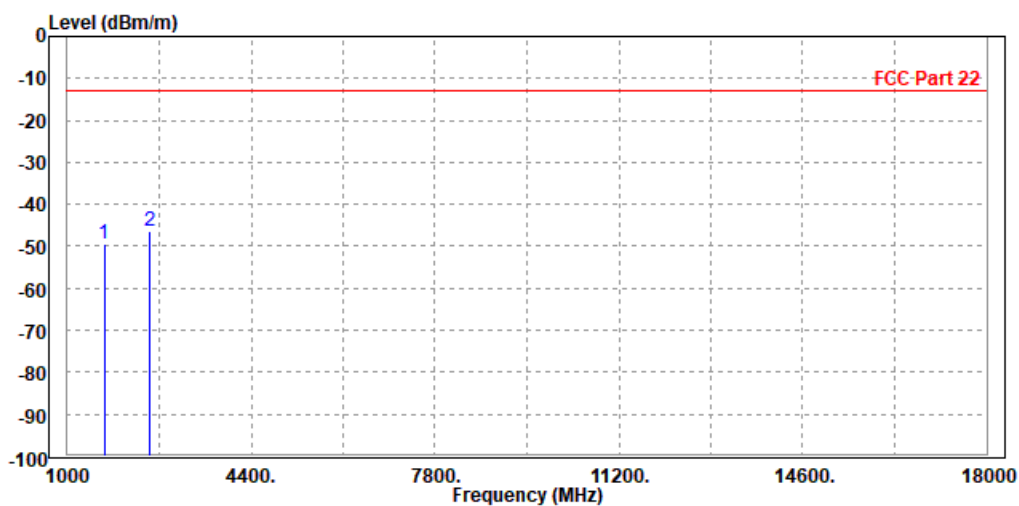
Test Report No.: RF191122W002-1

LTE CAT-M1 Band 26

CHANNEL BANDWIDTH: 1.4MHz / QPSK

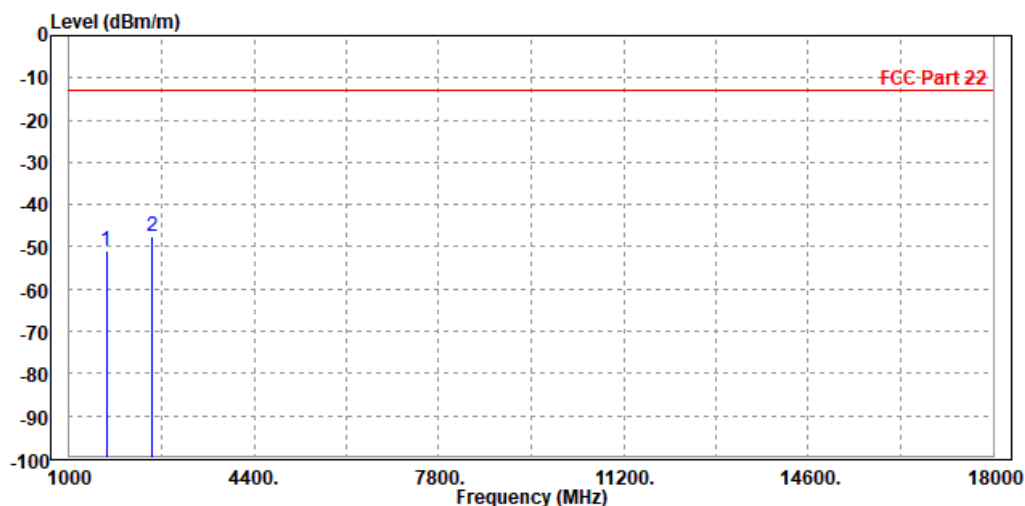
MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1680.000	-49.45	-53.09	-13.00	-36.45	3.64	Peak	Horizontal
2 PP	2509.500	-46.46	-54.52	-13.00	-33.46	8.06	Peak	Horizontal



MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

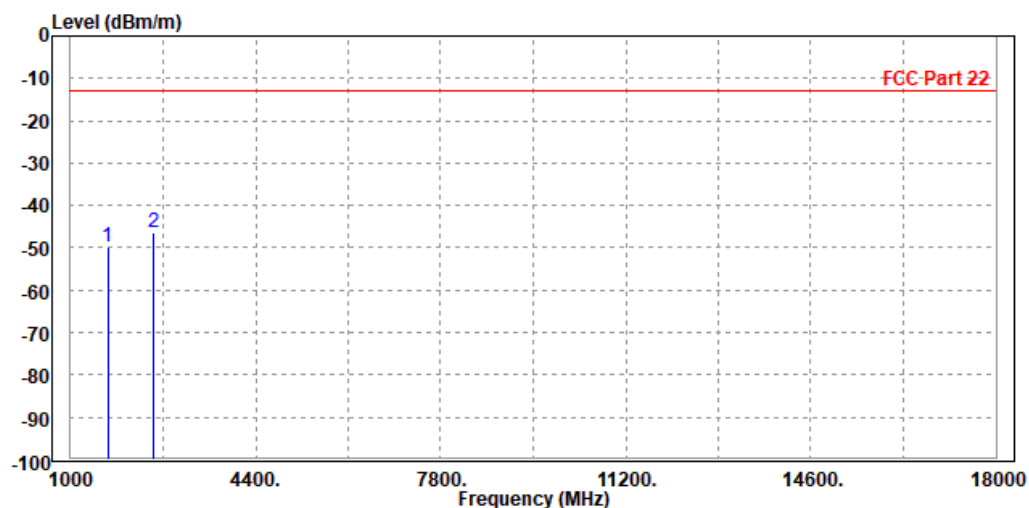
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1680.000	-50.83	-54.50	-13.00	-37.83	3.67	Peak	Vertical
2	PP 2509.500	-47.67	-54.77	-13.00	-34.67	7.10	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK

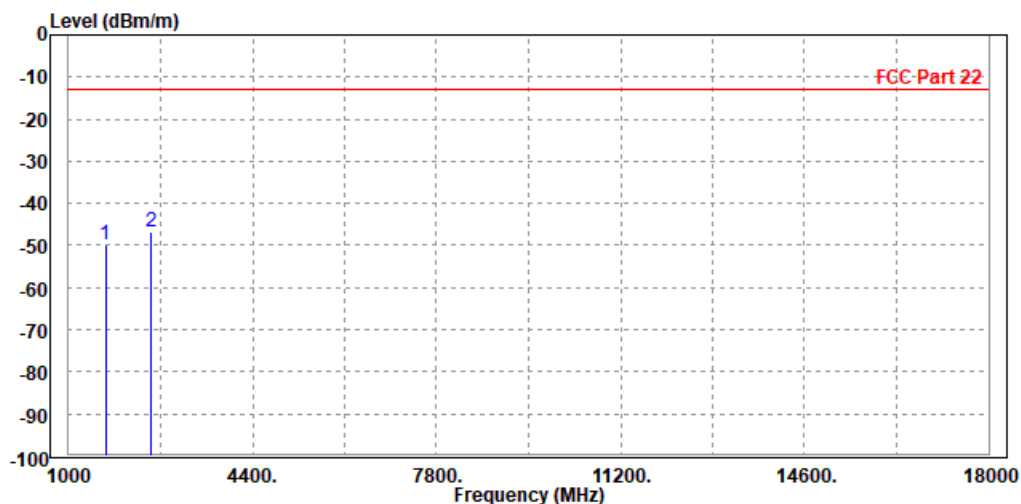
MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1680.000	-49.82	-53.46	-13.00	-36.82	3.64	Peak	Horizontal
2 PP	2509.500	-46.48	-54.54	-13.00	-33.48	8.06	Peak	Horizontal



MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

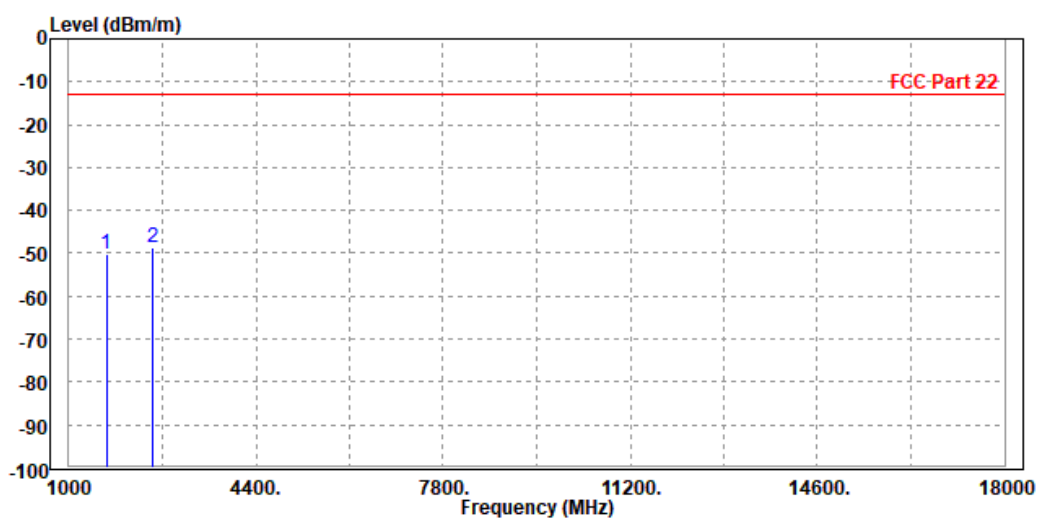
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1680.000	-49.90	-53.57	-13.00	-36.90	3.67	Peak	Vertical
2 PP	2509.500	-46.75	-53.85	-13.00	-33.75	7.10	Peak	Vertical



CHANNEL BANDWIDTH: 5MHz / QPSK

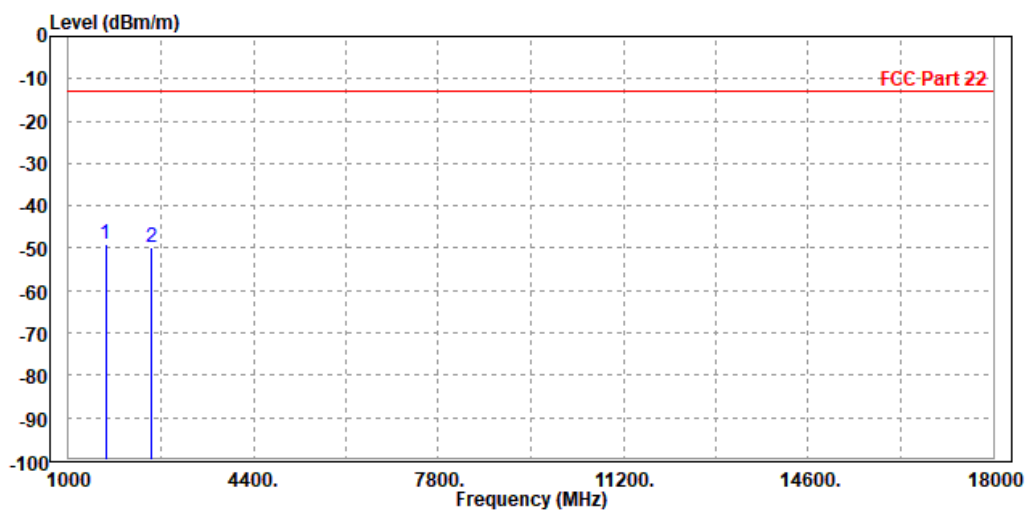
MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1680.000	-50.06	-53.70	-13.00	-37.06	3.64	Peak	Horizontal
2 PP	2509.500	-48.62	-56.68	-13.00	-35.62	8.06	Peak	Horizontal



MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

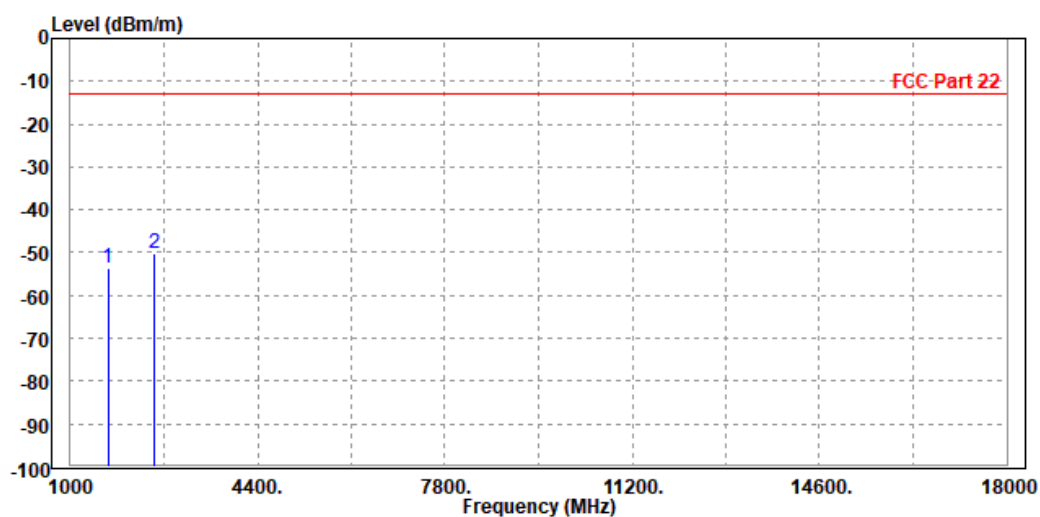
			Read	Limit	Over				
	Freq	Level	Level	Line	Limit	Factor	Remark	Pol/Phase	
	MHz	dBm/m	dBm	dBm/m	dB	dB/m			
1	PP 1680.000	-48.95	-52.62	-13.00	-35.95	3.67	Peak	Vertical	
2	2509.500	-49.70	-56.80	-13.00	-36.70	7.10	Peak	Vertical	



CHANNEL BANDWIDTH: 10MHz / QPSK

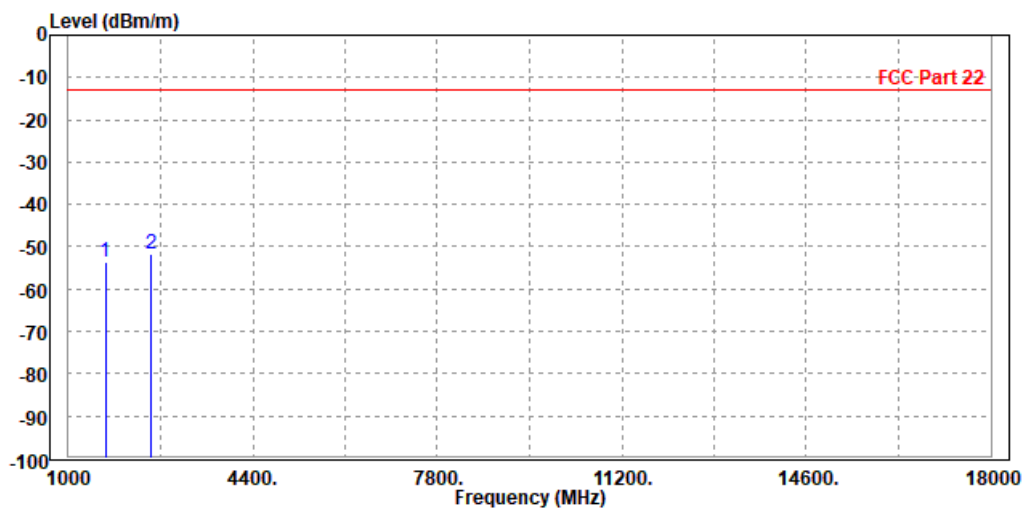
MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1680.000	-53.52	-57.16	-13.00	-40.52	3.64	Peak	Horizontal
2 PP	2509.500	-50.15	-58.21	-13.00	-37.15	8.06	Peak	Horizontal



MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1680.000	-53.44	-57.11	-13.00	-40.44	3.67	Peak	Vertical
2 PP	2509.500	-51.73	-58.83	-13.00	-38.73	7.10	Peak	Vertical





**BUREAU
VERITAS**

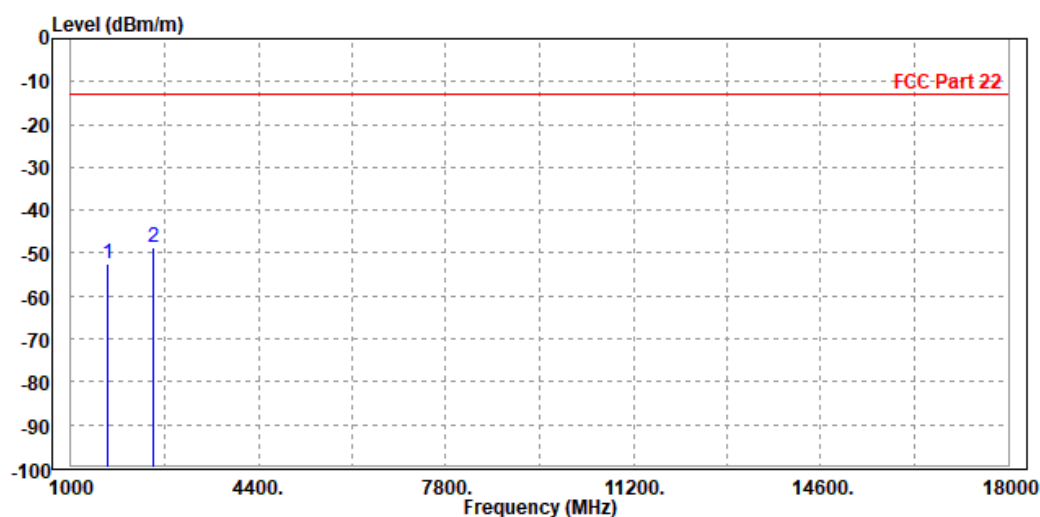
Test Report No.: RF191122W002-1

CHANNEL BANDWIDTH: 15MHz / QPSK

CH 26865

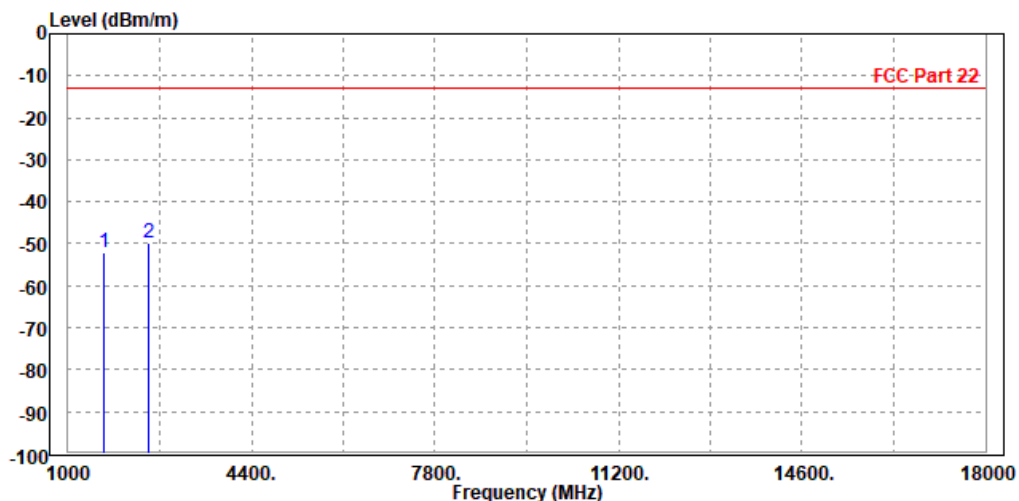
MODE	TX channel 26865	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1663.000	-52.45	-55.88	-13.00	-39.45	3.43	Peak	Horizontal
2	PP 2494.500	-48.53	-56.57	-13.00	-35.53	8.04	Peak	Horizontal



MODE	TX channel 26865	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1663.000	-52.28	-55.80	-13.00	-39.28	3.52	Peak	Vertical
2 PP	2494.500	-49.94	-57.00	-13.00	-36.94	7.06	Peak	Vertical





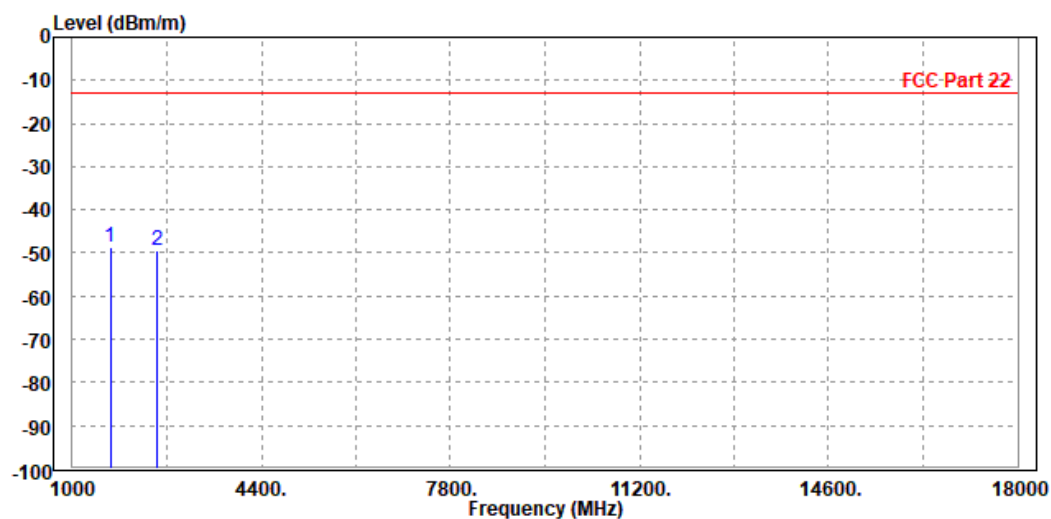
BUREAU
VERITAS

Test Report No.: RF191122W002-1

CH 26915

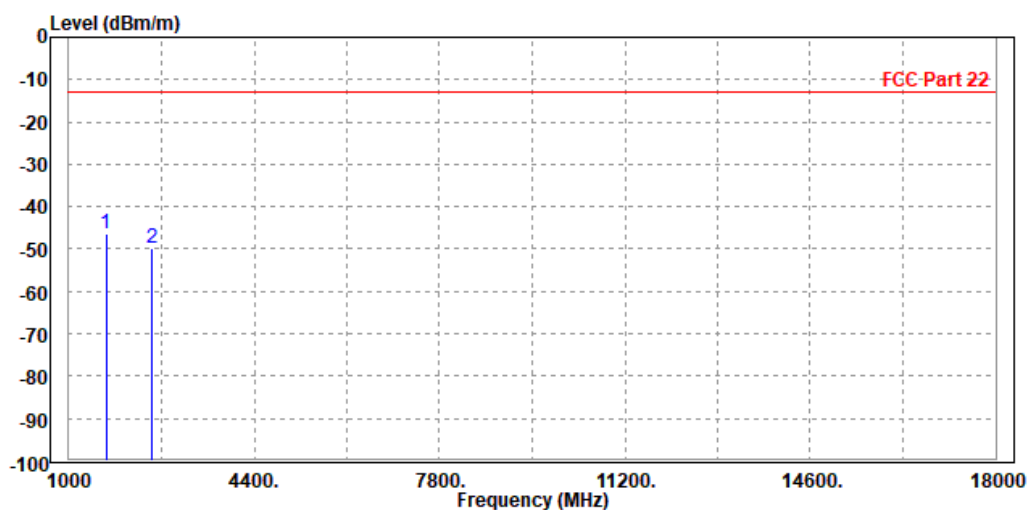
MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit	Over			
		MHz	dBm/m	dBm	dBm/m	dB	dB/m	Remark	Pol/Phase
1	PP	1680.000	-48.56	-52.20	-13.00	-35.56	3.64	Peak	Horizontal
2		2509.500	-49.37	-57.43	-13.00	-36.37	8.06	Peak	Horizontal



MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1680.000	-46.33	-50.00	-13.00	-33.33	3.67	Peak	Vertical
2		2509.500	-49.83	-56.93	-13.00	-36.83	7.10	Peak	Vertical





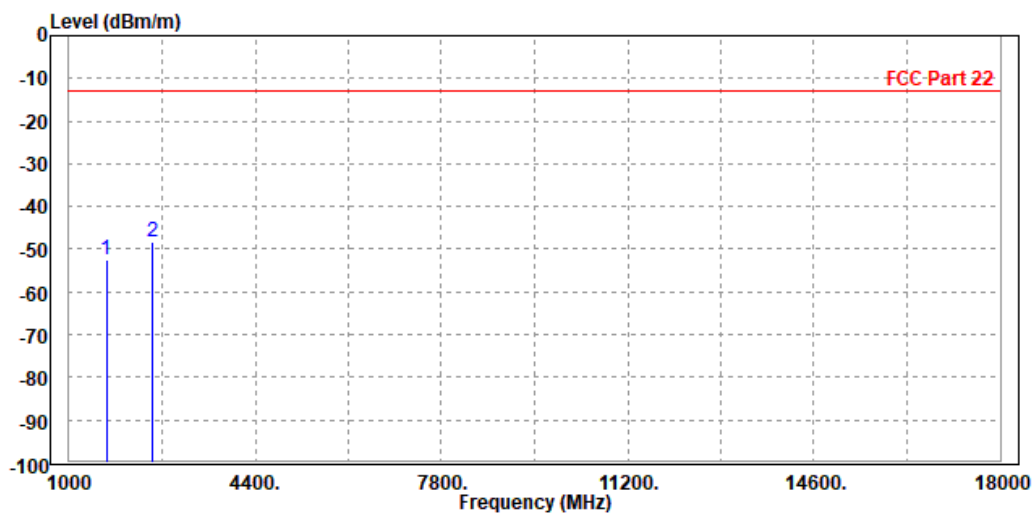
BUREAU
VERITAS

Test Report No.: RF191122W002-1

CH 26965

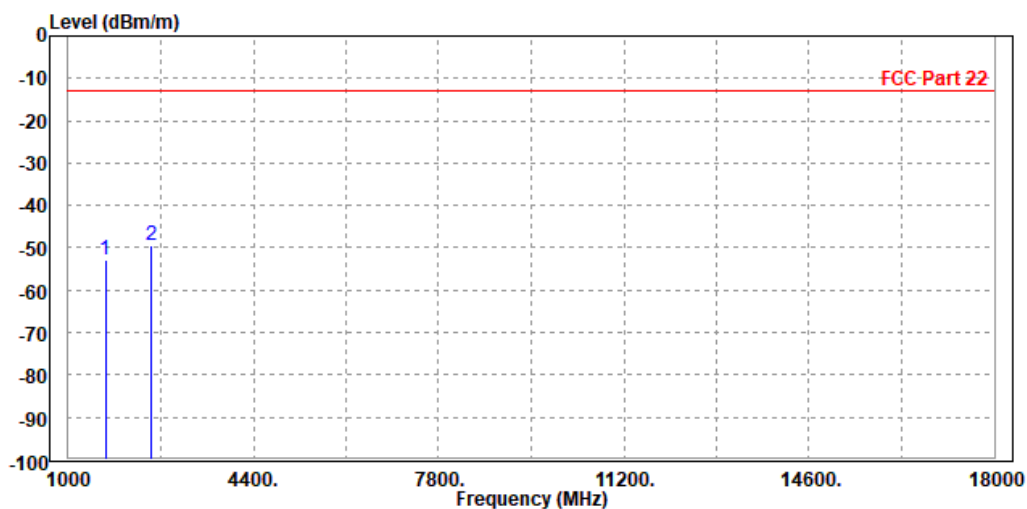
MODE	TX channel 26965	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1680.000	-52.53	-56.17	-13.00	-39.53	3.64	Peak	Horizontal
2 PP	2524.500	-48.29	-56.37	-13.00	-35.29	8.08	Peak	Horizontal



MODE	TX channel 26965	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1680.000	-52.72	-56.39	-13.00	-39.72	3.67	Peak	Vertical
2 PP	2524.500	-49.27	-56.42	-13.00	-36.27	7.15	Peak	Vertical

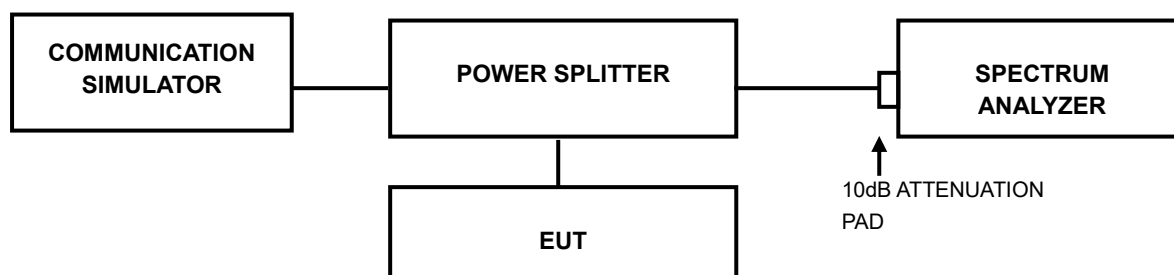


3.7 PEAK TO AVERAGE RATIO

3.7.1 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

3.7.2 TEST SETUP



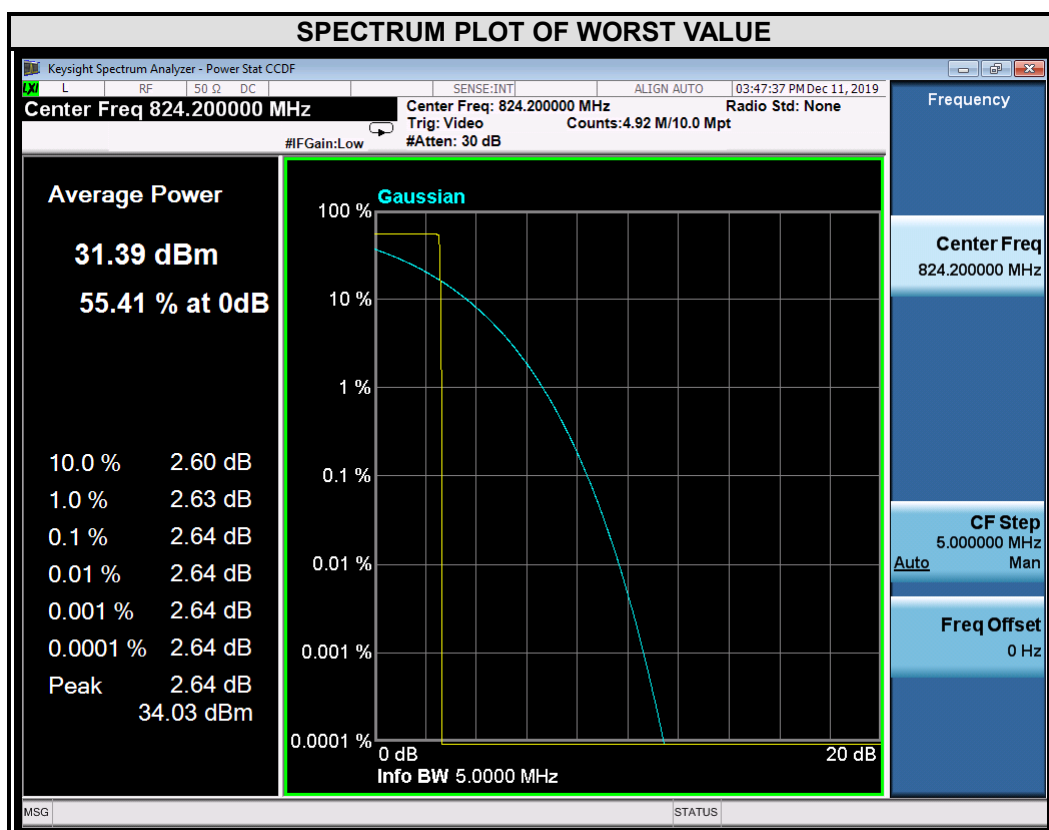
3.7.3 TEST PROCEDURES

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%.

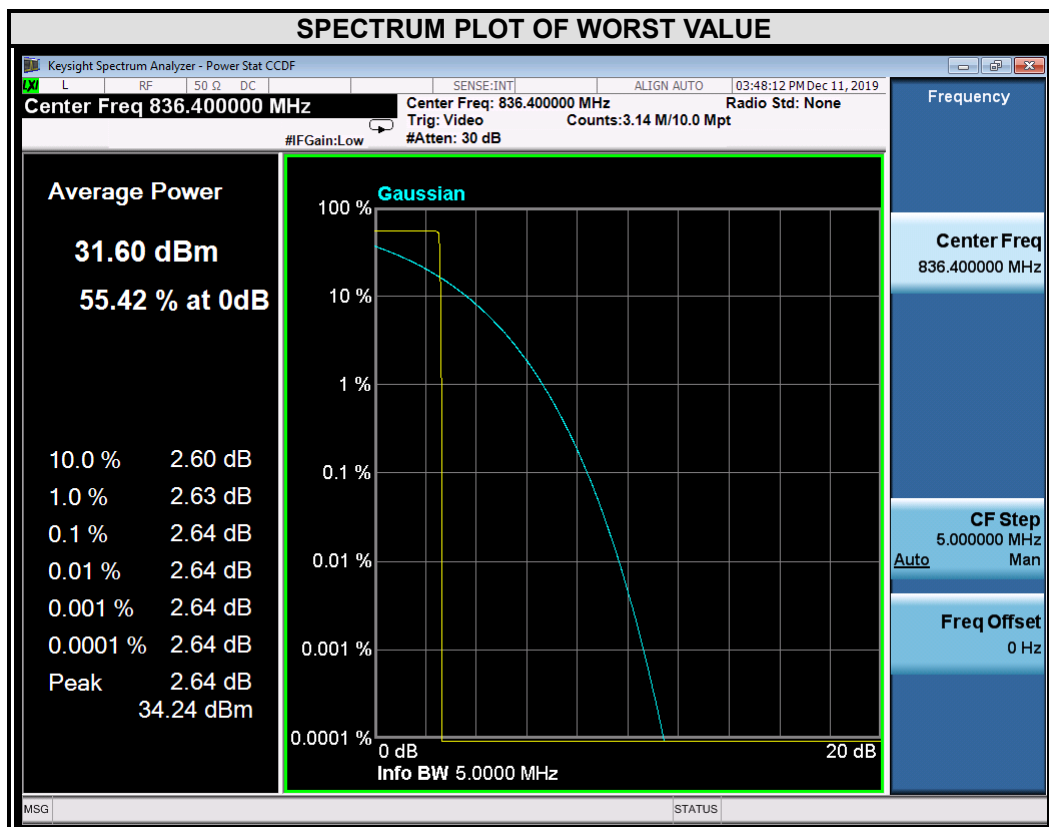
3.7.4 TEST RESULTS

GSM

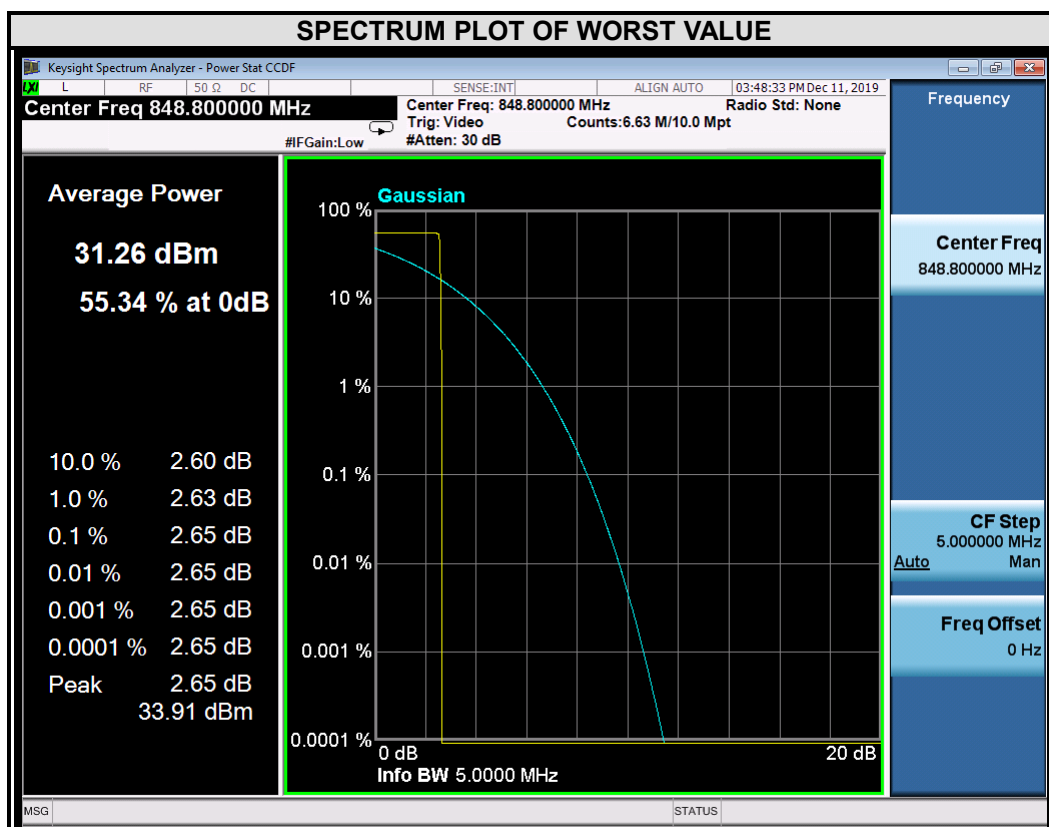
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
128	824.2	2.64



CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
189	836.4	2.64

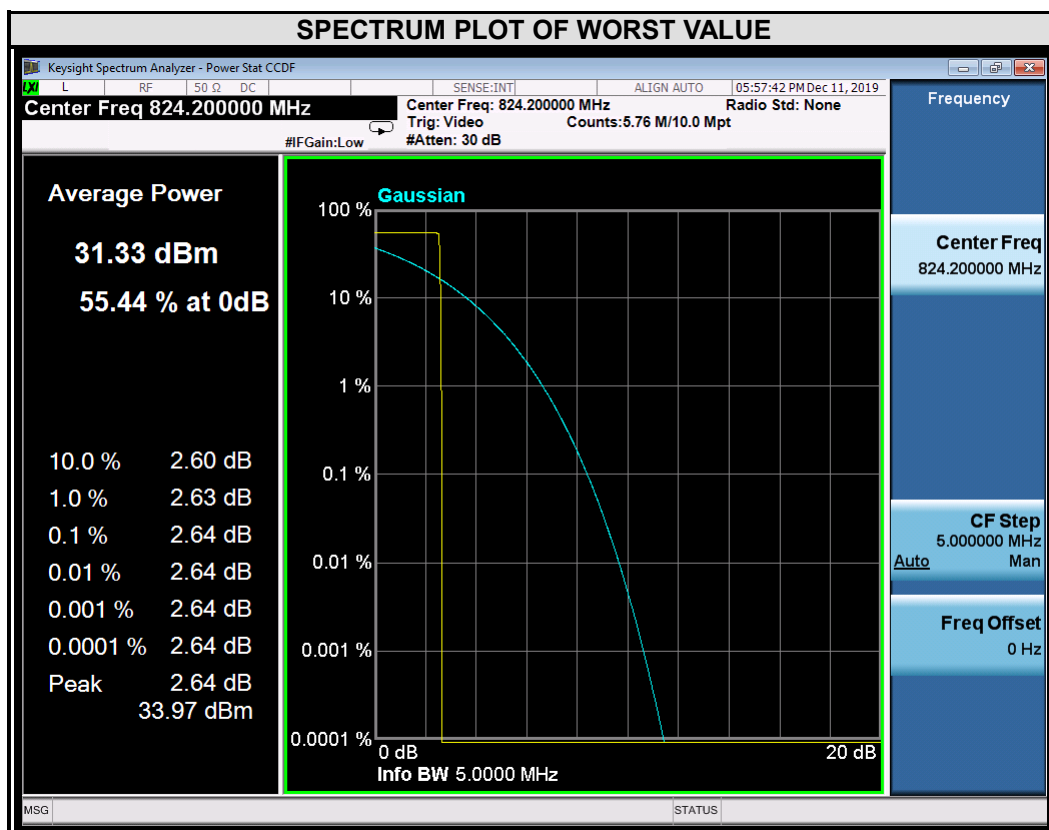


CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
251	848.8	2.65

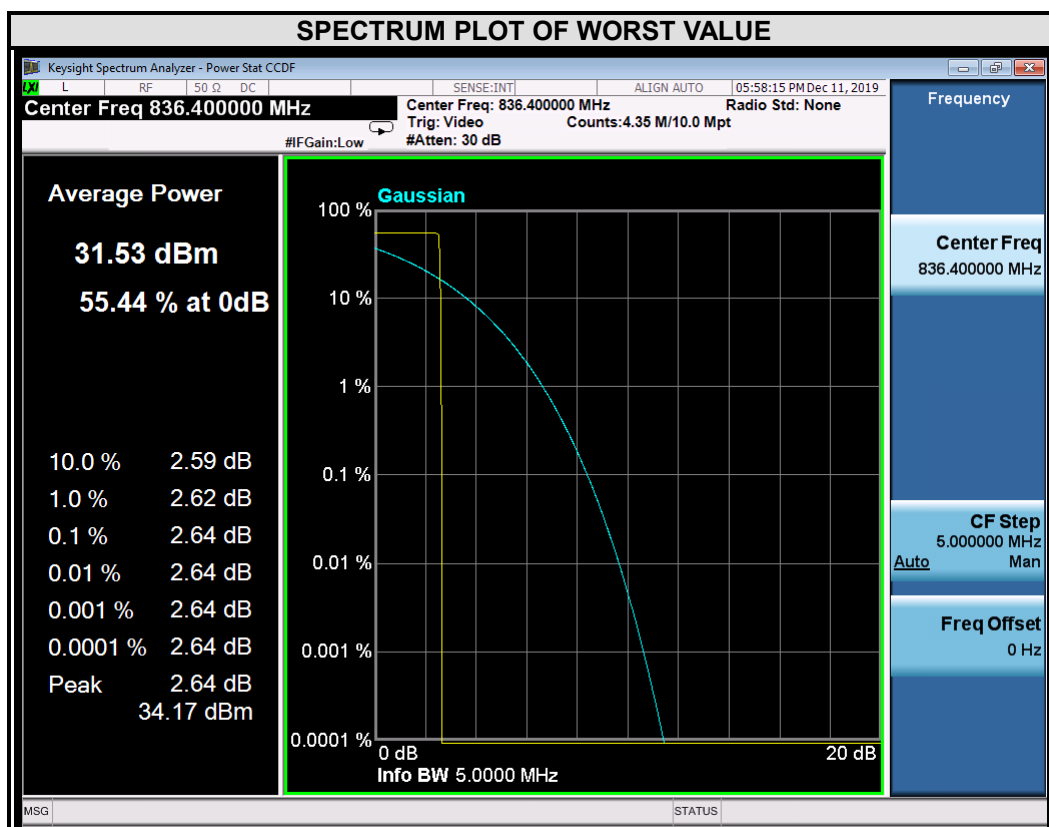


EDGE

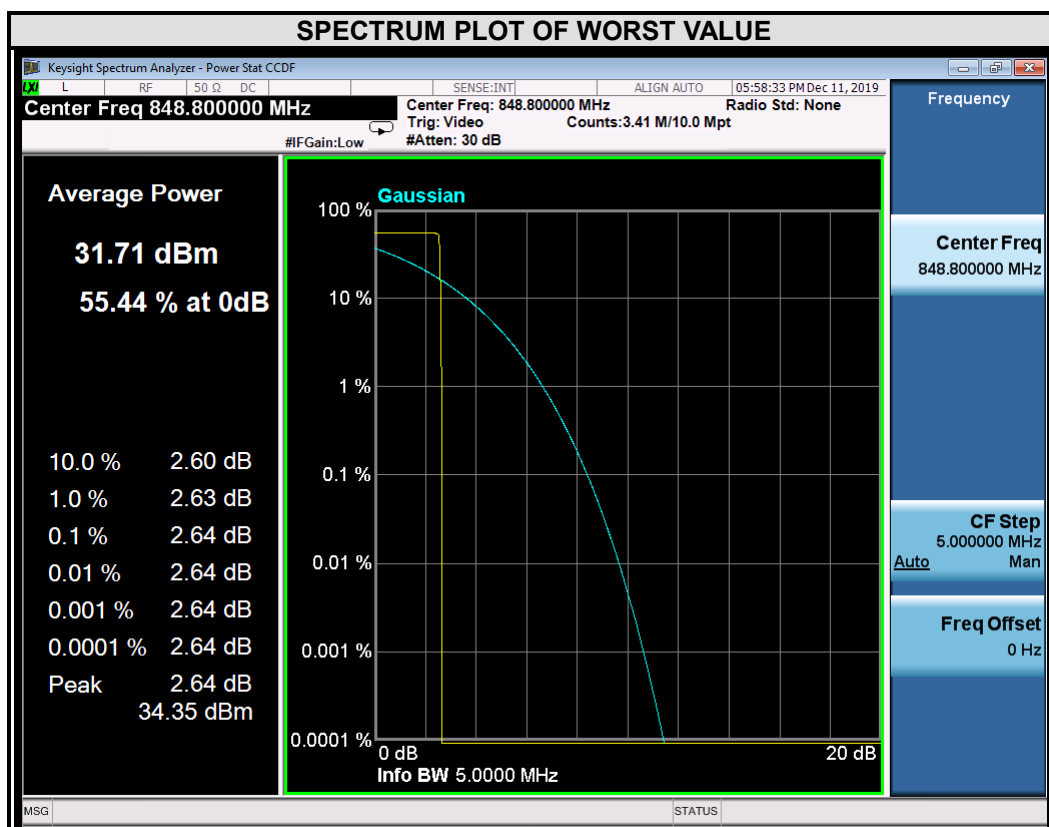
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
128	824.2	2.64



CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
189	836.4	2.64

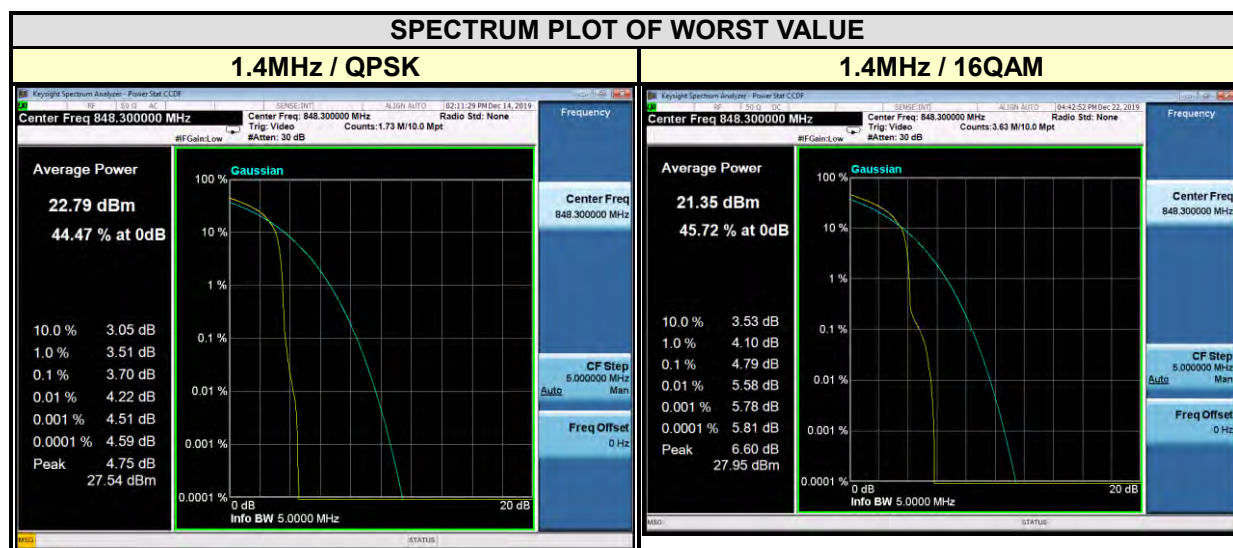


CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
251	848.8	2.64

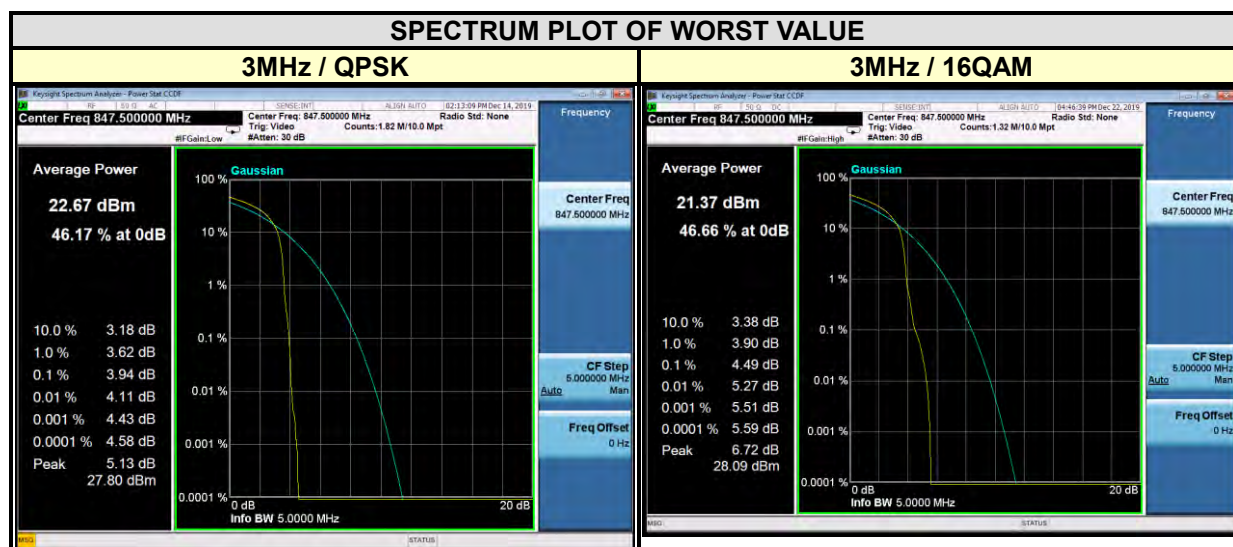


LTE CAT-M1 BAND 5

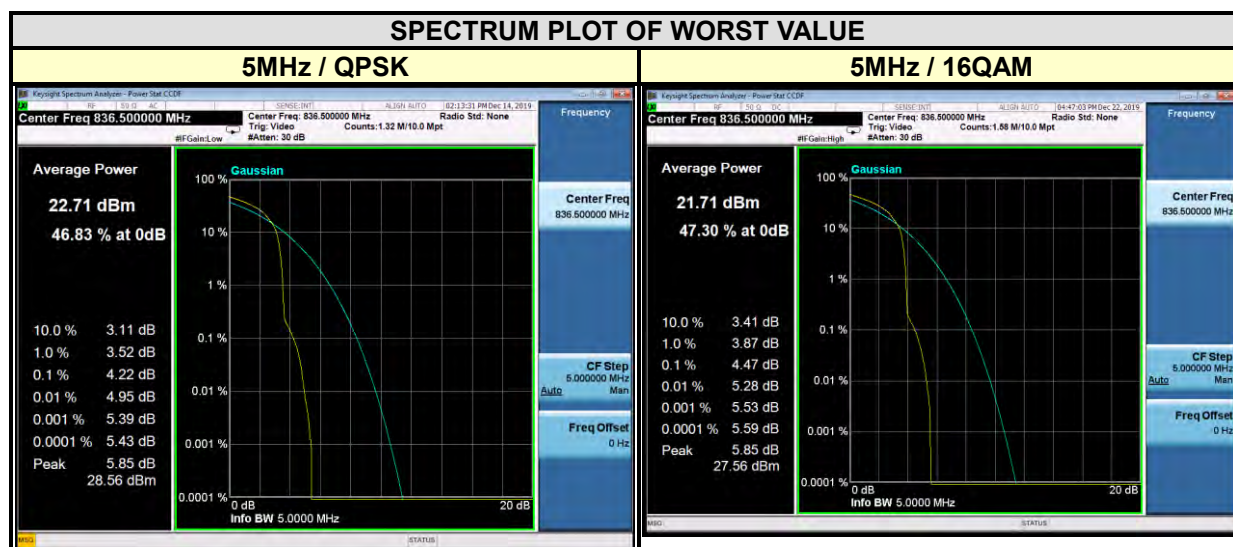
CHANNEL BANDWIDTH: 1.4MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20407	824.7	3.62	4.56
20525	836.5	3.70	4.50
20643	848.3	3.70	4.79



CHANNEL BANDWIDTH: 3MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20415	825.5	3.51	4.15
20525	836.5	3.64	4.42
20635	847.5	3.94	4.49



CHANNEL BANDWIDTH: 5MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20425	826.5	3.44	3.76
20525	836.5	4.22	4.47
20625	846.5	3.35	3.83

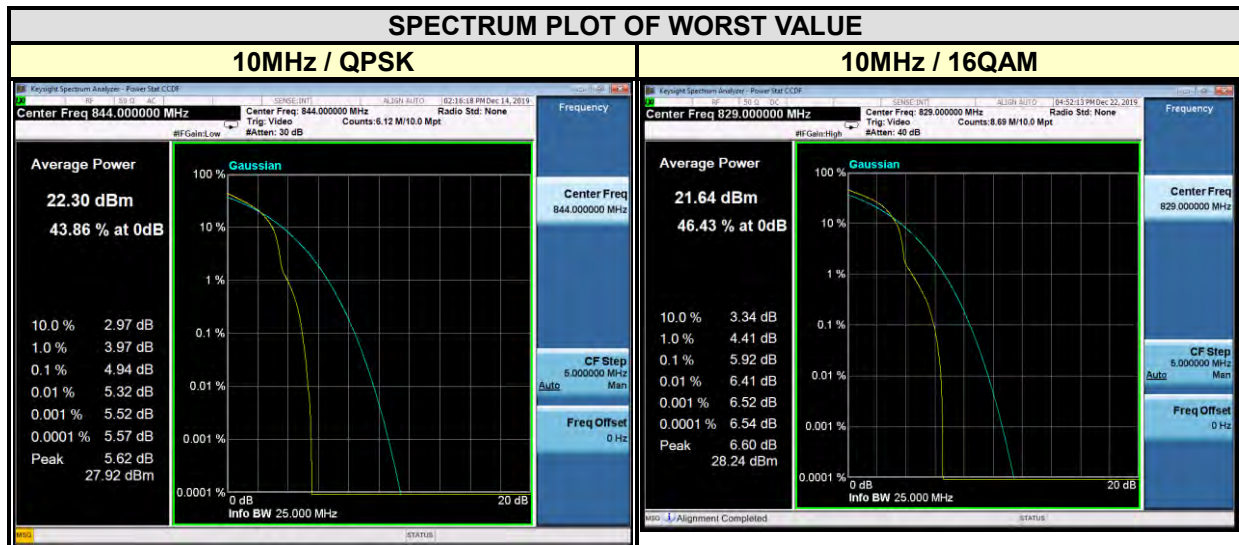




BUREAU
VERITAS

Test Report No.: RF191122W002-1

CHANNEL BANDWIDTH: 10MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20450	829	4.07	5.92
20525	836.5	3.87	5.66
20600	844	4.94	5.70



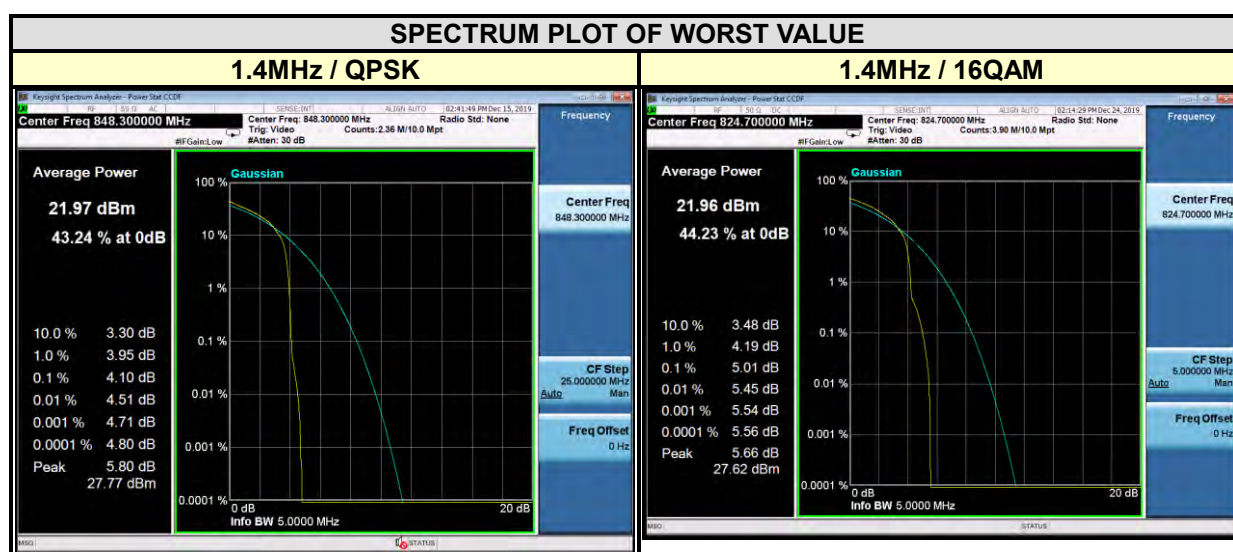


**BUREAU
VERITAS**

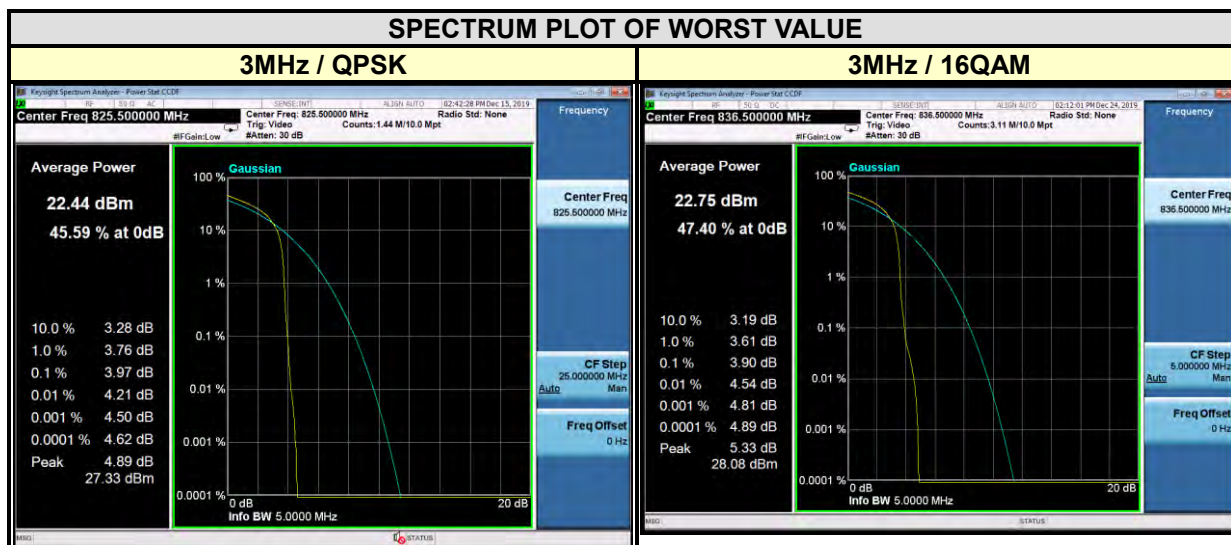
Test Report No.: RF191122W002-1

LTE CAT-M1 BAND 26

CHANNEL BANDWIDTH: 1.4MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
26797	824.7	3.97	5.01
26915	836.5	3.96	4.00
27033	848.3	4.10	4.91



CHANNEL BANDWIDTH: 3MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
26805	825.5	3.97	3.81
26915	836.5	3.96	3.90
27025	847.5	3.93	3.53

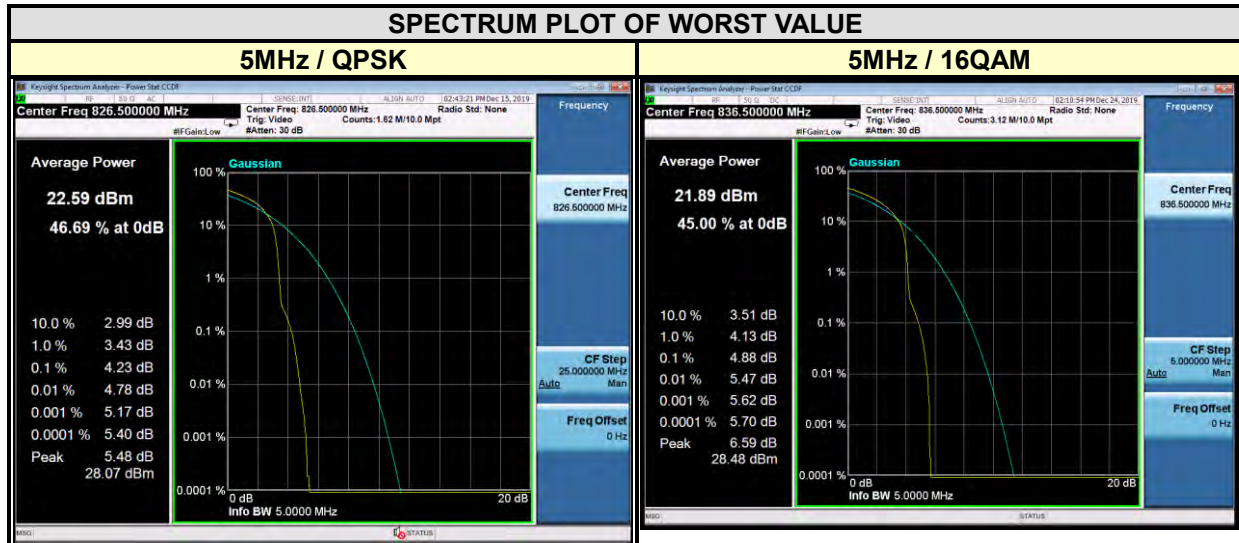




BUREAU
VERITAS

Test Report No.: RF191122W002-1

CHANNEL BANDWIDTH: 5MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
26815	826.5	4.23	3.45
26915	836.5	4.10	4.88
27015	846.5	4.13	4.75

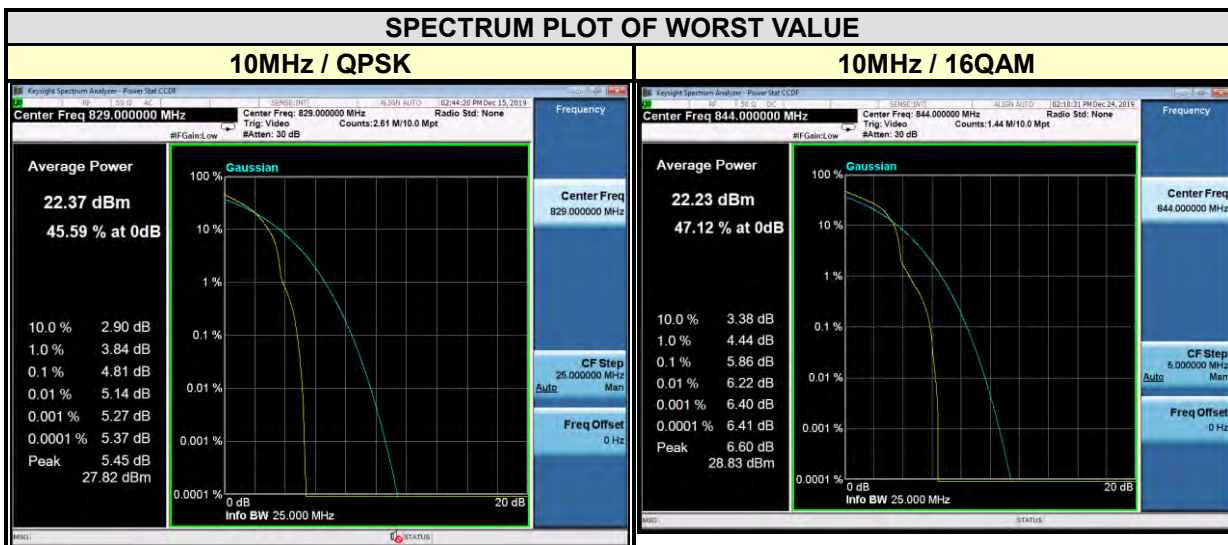




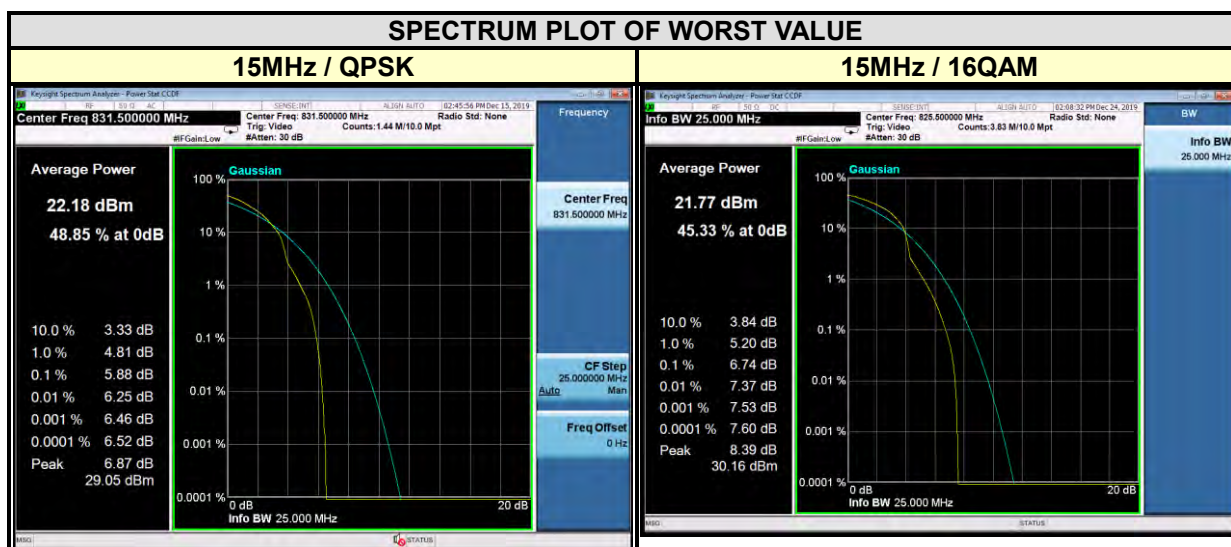
BUREAU
VERITAS

Test Report No.: RF191122W002-1

CHANNEL BANDWIDTH: 10MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
26840	829	4.81	5.76
26915	836.5	4.73	5.84
26990	844	4.45	5.86



CHANNEL BANDWIDTH: 15MHz			
CHANNEL	Frequency (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
26865	831.5	5.88	6.74
26915	836.5	5.58	6.41
26965	841.5	5.66	6.68





Test Report No.: RF191122W002-1

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



Test Report No.: RF191122W002-1

5 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Shenzhen EMC/RF Lab:

Tel: +86-755-88696566

Fax: +86-755-88696577

Email: customerservice.dg@cn.bureauveritas.com

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.



Test Report No.: RF191122W002-1

6 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---