

FCC TEST REPORT

(PART 24)

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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 24, Subpart E** ☒ **FCC PART 2**
☒ **ANSI/TIA/EIA-603-D** ☒ **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: Jan. 14, 2020	 Date: Jan. 14, 2020

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BY THE LAB 172



Test Report No.: RF191122W002-2

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF191122W002-2	Original release	Jan. 14, 2020



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2		
STANDARD SECTION	TEST TYPE	RESULT
2.1046 24.232	Equivalent Isotropic Radiated Power	Compliance
2.1055 24.235	Frequency Stability	Compliance
2.1049 24.238(b)	Occupied Bandwidth	Compliance
24.232(d)	Peak to average ratio	Compliance
24.238(b)	Band Edge Measurements	Compliance
2.1051 24.238	Conducted Spurious Emissions	Compliance
2.1053 24.238	Radiated Spurious Emissions	Compliance

1.1 MEASUREMENT UNCERTAINTY

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

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

PRODUCT	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: GMSK, 8PSK EDGE: GMSK, 8PSK LTE CAT-M1: QPSK, 16QAM	
FREQUENCY RANGE	GSM, GPRS, EDGE	1850.2MHz ~ 1909.8MHz
	LTE CAT-M1 Band 2 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1909.3MHz
	LTE CAT-M1 Band 2 Channel Bandwidth: 3MHz	1851.5MHz ~ 1908.5MHz
	LTE CAT-M1 Band 2 Channel Bandwidth: 5MHz	1852.5MHz ~ 1907.5MHz
	LTE CAT-M1 Band 2 Channel Bandwidth: 10MHz	1855.0MHz ~ 1905.0MHz
	LTE CAT-M1 Band 2 Channel Bandwidth: 15MHz	1857.5MHz ~ 1902.5MHz
	LTE CAT-M1 Band 2 Channel Bandwidth: 20MHz	1860.0MHz ~ 1900.0MHz
	LTE CAT-M1 Band 25 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1914.3MHz
	LTE CAT-M1 Band 25 Channel Bandwidth: 3MHz	1851.5MHz ~ 1913.5MHz
	LTE CAT-M1 Band 25 Channel Bandwidth: 5MHz	1852.5MHz ~ 1912.5MHz
	LTE CAT-M1 Band 25 Channel Bandwidth: 10MHz	1855.0MHz ~ 1910.0MHz
	LTE CAT-M1 Band 25 Channel Bandwidth: 15MHz	1857.5MHz ~ 1907.5MHz
	LTE CAT-M1 Band 25 Channel Bandwidth: 20MHz	1860.0MHz ~ 1905.0MHz



MAX. EIRP POWER	GSM	1312mW
	EDGE	457mW
	LTE CAT-M1 Band 2 Channel Bandwidth: 1.4MHz	318mW
	LTE CAT-M1 Band 2 Channel Bandwidth: 3MHz	320mW
	LTE CAT-M1 Band 2 Channel Bandwidth: 5MHz	319mW
	LTE CAT-M1 Band 2 Channel Bandwidth: 10MHz	324mW
	LTE CAT-M1 Band 2 Channel Bandwidth: 15MHz	326mW
	LTE CAT-M1 Band 2 Channel Bandwidth: 20MHz	330mW
	LTE CAT-M1 Band 25 Channel Bandwidth: 1.4MHz	288mW
	LTE CAT-M1 Band 25 Channel Bandwidth: 3MHz	287mW
	LTE CAT-M1 Band 25 Channel Bandwidth: 5MHz	292mW
	LTE CAT-M1 Band 25 Channel Bandwidth: 10MHz	288mW
	LTE CAT-M1 Band 25 Channel Bandwidth: 15MHz	296mW
	LTE CAT-M1 Band 25 Channel Bandwidth: 20MHz	297mW



EMISSION DESIGNATOR	GSM	243KGXW
	EDGE	242KG7W
	LTE CAT-M1 Band 2 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D 16QAM: 1M10W7D
	LTE CAT-M1 Band 2 Channel Bandwidth: 3MHz	QPSK: 1M26G7D 16QAM: 1M11W7D
	LTE CAT-M1 Band 2 Channel Bandwidth: 5MHz	QPSK: 1M09G7D 16QAM: 910KW7D
	LTE CAT-M1 Band 2 Channel Bandwidth: 10MHz	QPSK: 1M08G7D 16QAM: 910KW7D
	LTE CAT-M1 Band 2 Channel Bandwidth: 15MHz	QPSK: 1M09G7D 16QAM: 913KW7D
	LTE CAT-M1 Band 2 Channel Bandwidth: 20MHz	QPSK: 1M08G7D 16QAM: 915KW7D
	LTE CAT-M1 Band 25 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D 16QAM: 1M10W7D
	LTE CAT-M1 Band 25 Channel Bandwidth: 3MHz	QPSK: 1M26G7D 16QAM: 1M09W7D
	LTE CAT-M1 Band 25 Channel Bandwidth: 5MHz	QPSK: 1M08G7D 16QAM: 907KW7D
	LTE CAT-M1 Band 25 Channel Bandwidth: 10MHz	QPSK: 1M08G7D 16QAM: 908KW7D
	LTE CAT-M1 Band 25 Channel Bandwidth: 15MHz	QPSK: 1M09G7D 16QAM: 908KW7D
	LTE CAT-M1 Band 25 Channel Bandwidth: 20MHz	QPSK: 1M09G7D 16QAM: 911KW7D
ANTENNA TYPE	Monopole antenna with 2dBi gain for GSM 1900 Monopole antenna with 2dBi gain for LTE CAT-M1 Band 2 Monopole antenna with 2dBi gain for LTE CAT-M1 Band 25	
HW VERSION	V1.1	
SW VERSION	N27-Q01-STDBZ-01B	
I/O PORTS	Refer to user's manual	



NOTE:

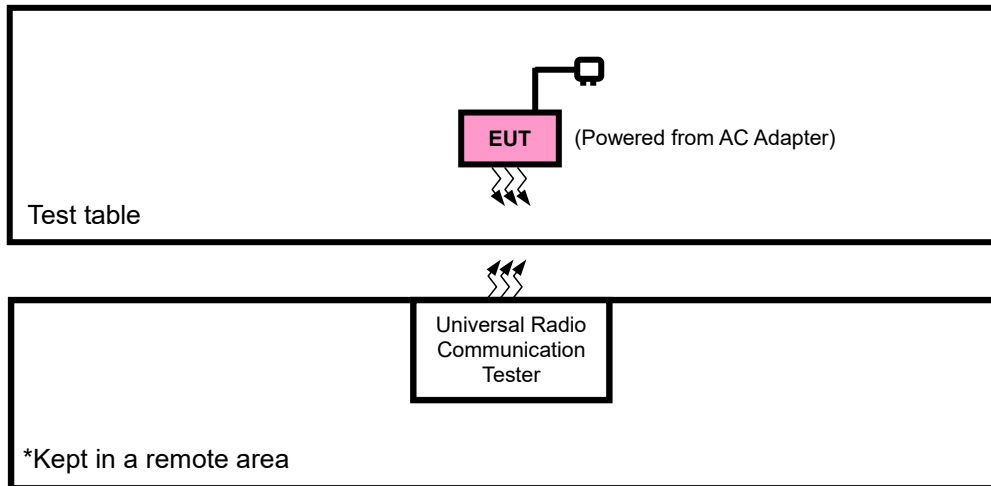
1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. The EUT incorporates a SISO function. Physically, the EUT provides 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 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	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/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 CAT-M1 link



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GSM MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
EIRP	512 to 810	512, 661, 810	GSM, EDGE
FREQUENCY STABILITY	512 to 810	512, 810	GSM, EDGE
OCCUPIED BANDWIDTH	512 to 810	512, 661, 810	GSM, EDGE
PEAK TO AVERAGE RATIO	512 to 810	512, 661, 810	GSM, EDGE
BAND EDGE	512 to 810	512, 810	GSM, EDGE
CONDCUDED EMISSION	512 to 810	512, 661, 810	GSM, EDGE
RADIATED EMISSION	512 to 810	512, 661, 810	GSM, EDGE

LTE CAT-M1 BAND 2

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM	2 RB / 0 RB Offset
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM	2 RB / 0 RB Offset
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM	2 RB / 0 RB Offset
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM	2 RB / 0 RB Offset
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM	2 RB / 0 RB Offset
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM	2 RB / 0 RB Offset
FREQUENCY STABILITY	18607 to 19193	18607, 19193	1.4MHz	QPSK	2 RB / 0 RB Offset
	18615 to 19185	18615, 19185	3MHz	QPSK	2 RB / 0 RB Offset
	18625 to 19175	18625, 19175	5MHz	QPSK	2 RB / 0 RB Offset
	18650 to 19150	18650, 19150	10MHz	QPSK	2 RB / 0 RB Offset
	18675 to 19125	18675, 19125	15MHz	QPSK	2 RB / 0 RB Offset
	18700 to 19100	18700, 19100	20MHz	QPSK	2 RB / 0 RB Offset
OCCUPIED BANDWIDTH	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
PEAK TO AVERAGE RATIO	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM	2 RB / 0 RB Offset
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM	2 RB / 0 RB Offset
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM	2 RB / 0 RB Offset
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM	2 RB / 0 RB Offset
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM	2 RB / 0 RB Offset
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM	2 RB / 0 RB Offset



BAND EDGE	18607 to 19193	18607	1.4MHz	QPSK,16QAM	2 RB / 0 RB Offset
		19193	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset
	18615 to 19185	18615	3MHz	QPSK,16QAM	2 RB / 0 RB Offset
		19185	3MHz	QPSK,16QAM	6 RB / 0 RB Offset
		19185	3MHz	QPSK,16QAM	5 RB / 0 RB Offset
	18625 to 19175	18625	5MHz	QPSK,16QAM	2 RB / 0 RB Offset
		19175	5MHz	QPSK,16QAM	6 RB / 0 RB Offset
		19175	5MHz	QPSK,16QAM	5 RB / 0 RB Offset
	18650 to 19150	18650	10MHz	QPSK,16QAM	2 RB / 0 RB Offset
		19150	10MHz	QPSK,16QAM	6 RB / 0 RB Offset
		19150	10MHz	QPSK,16QAM	5 RB / 0 RB Offset
	18675 to 19125	18675	15MHz	QPSK,16QAM	2 RB / 0 RB Offset
		19125	15MHz	QPSK,16QAM	6 RB / 0 RB Offset
		19125	15MHz	QPSK,16QAM	5 RB / 0 RB Offset
	18700 to 19100	18700	20MHz	QPSK,16QAM	2 RB / 0 RB Offset
		19100	20MHz	QPSK,16QAM	6 RB / 0 RB Offset
		19100	20MHz	QPSK,16QAM	5 RB / 0 RB Offset
CONDCUDED EMISSION	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK	2 RB / 0 RB Offset
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK	2 RB / 0 RB Offset
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK	2 RB / 0 RB Offset
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK	2 RB / 0 RB Offset
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK	2 RB / 0 RB Offset
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK	2 RB / 0 RB Offset
RADIATED EMISSION	18607 to 19193	18900	1.4MHz	QPSK	2 RB / 0 RB Offset
	18615 to 19185	18900	3MHz	QPSK	2 RB / 0 RB Offset
	18625 to 19175	18900	5MHz	QPSK	2 RB / 0 RB Offset
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK	2 RB / 0 RB Offset
	18675 to 19125	18900	15MHz	QPSK	2 RB / 0 RB Offset
	18700 to 19100	18900	20MHz	QPSK	2 RB / 0 RB Offset



LTE CAT-M1 BAND 25

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26055 to 26675	26055, 26365, 26675	3MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26065 to 26665	26065, 26365, 26665	5MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26090 to 26640	26090, 26365, 26640	10MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26115 to 26615	26115, 26365, 26615	15MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26140 to 26590	26140, 26365, 26590	20MHz	QPSK,16QAM	2 RB / 0 RB Offset
FREQUENCY STABILITY	26047 to 26683	26047, 26683	1.4MHz	QPSK	2 RB / 0 RB Offset
	26055 to 26675	26055, 26675	3MHz	QPSK	2 RB / 0 RB Offset
	26065 to 26665	26065, 26665	5MHz	QPSK	2 RB / 0 RB Offset
	26090 to 26640	26090, 26640	10MHz	QPSK	2 RB / 0 RB Offset
	26115 to 26615	26115, 26615	15MHz	QPSK	2 RB / 0 RB Offset
	26140 to 26590	26140, 26590	20MHz	QPSK	2 RB / 0 RB Offset
OCCUPIED BANDWIDTH	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	26055 to 26675	26055, 26365, 26675	3MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	26065 to 26665	26065, 26365, 26665	5MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	26090 to 26640	26090, 26365, 26640	10MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	26115 to 26615	26115, 26365, 26615	15MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
	26140 to 26590	26140, 26365, 26590	20MHz	QPSK,16QAM	6 RB / 0 RB Offset 5 RB / 0 RB Offset
PEAK TO AVERAGE RATIO	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26055 to 26675	26055, 26365, 26675	3MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26065 to 26665	26065, 26365, 26665	5MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26090 to 26640	26090, 26365, 26640	10MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26115 to 26615	26115, 26365, 26615	15MHz	QPSK,16QAM	2 RB / 0 RB Offset
	26140 to 26590	26140, 26365, 26590	20MHz	QPSK,16QAM	2 RB / 0 RB Offset



BAND EDGE	26047 to 26683	26047	1.4MHz	QPSK,16QAM	2 RB / 0 RB Offset
		26683	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset
	26055 to 26675	26055	3MHz	QPSK,16QAM	2 RB / 0 RB Offset
		26675	3MHz	QPSK,16QAM	6 RB / 0 RB Offset
	26065 to 26665	26065	5MHz	QPSK,16QAM	2 RB / 0 RB Offset
		26665	5MHz	QPSK,16QAM	6 RB / 0 RB Offset
	26090 to 26640	26090	10MHz	QPSK,16QAM	2 RB / 0 RB Offset
		26640	10MHz	QPSK,16QAM	6 RB / 0 RB Offset
	26115 to 26615	26115	15MHz	QPSK,16QAM	2 RB / 0 RB Offset
		26615	15MHz	QPSK,16QAM	6 RB / 0 RB Offset
	26140 to 26590	26140	20MHz	QPSK,16QAM	2 RB / 0 RB Offset
		26590	20MHz	QPSK,16QAM	6 RB / 0 RB Offset
CONDCUDED EMISSION	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK	2 RB / 0 RB Offset
	26055 to 26675	26055, 26365, 26675	3MHz	QPSK	2 RB / 0 RB Offset
	26065 to 26665	26065, 26365, 26665	5MHz	QPSK	2 RB / 0 RB Offset
	26090 to 26640	26090, 26365, 26640	10MHz	QPSK	2 RB / 0 RB Offset
	26115 to 26615	26115, 26365, 26615	15MHz	QPSK	2 RB / 0 RB Offset
	26140 to 26590	26140, 26365, 26590	20MHz	QPSK	2 RB / 0 RB Offset
RADIATED EMISSION	26047 to 26683	26365	1.4MHz	QPSK	2 RB / 0 RB Offset
	26055 to 26675	26365	3MHz	QPSK	2 RB / 0 RB Offset
	26065 to 26665	26365	5MHz	QPSK	2 RB / 0 RB Offset
	26090 to 26640	26365	10MHz	QPSK	2 RB / 0 RB Offset
	26115 to 26615	26115, 26365, 26615	15MHz	QPSK	2 RB / 0 RB Offset
	26140 to 26590	26365	20MHz	QPSK	2 RB / 0 RB Offset

TEST CONDITION:

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/4.3	Kevin Zhang
OCCUPIED BANDWIDTH	23deg. C, 70%RH	5Vdc from adapter	Kevin Zhang
BAND EDGE	23deg. C, 70%RH	5Vdc from adapter	Kevin Zhang
CONDCUDED 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

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 24

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 and portable stations are limited to 2 watts EIRP.

3.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

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

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

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively

(expressed in the same units as P_{Meas} , typically dBW or dBm);

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

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

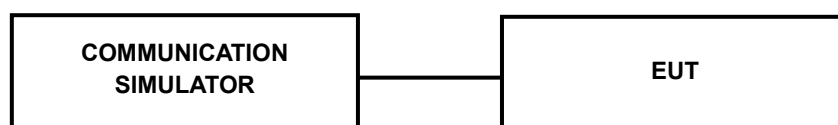
L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

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	GSM1900		
Channel	512	661	810
Frequency	1850.2	1880	1909.8
GPRS (GMSK, 1Tx-slot)	28.65	29.18	28.73
GPRS (GMSK, 2Tx-slot)	28.46	28.99	28.54
GPRS (GMSK, 3Tx-slot)	28.22	28.75	28.30
GPRS (GMSK, 4Tx-slot)	28.00	28.53	28.08
EDGE (8PSK, 1Tx-slot)	24.07	24.60	24.15
EDGE (8PSK, 2Tx-slot)	23.90	24.43	23.98
EDGE (8PSK, 3Tx-slot)	23.68	24.21	23.76
EDGE (8PSK, 4Tx-slot)	23.49	24.02	23.57



LTE CAT-M1 Band 2						
BW	Modulation	RB Size	RB Offset	Low CH 18607	Mid CH 18900	High CH 19193
				Frequency 1850.7 MHz	Frequency 1880 MHz	Frequency 1909.3 MHz
1.4MHz	QPSK	2	0	23.52	23.57	23.84
		2	4	23.57	23.62	23.85
		5	0	23.57	23.55	23.82
		5	1	23.50	23.51	23.79
		6	0	22.96	23.02	23.31
	16QAM	2	0	23.52	23.59	23.83
		2	4	23.58	23.63	23.90
		5	0	23.53	23.57	23.88
		5	1	23.58	23.57	23.83

LTE CAT-M1 Band 2						
BW	Modulation	RB Size	RB Offset	Low CH 18615	Mid CH 18900	High CH 19185
				Frequency 1851.5 MHz	Frequency 1880 MHz	Frequency 1908.5 MHz
3MHz	QPSK	2	0	23.56	23.57	23.87
		2	4	23.55	23.62	23.89
		5	0	23.52	23.59	23.83
		5	1	23.51	23.52	23.80
		6	0	22.94	22.97	23.28
	16QAM	2	0	23.58	23.56	23.87
		2	4	23.61	23.61	23.94
		5	0	23.55	23.56	23.82
		5	1	23.55	23.57	23.84



LTE CAT-M1 Band 2						
BW	Modulation	RB Size	RB Offset	Low CH 18625	Mid CH 18900	High CH 19175
				Frequency 1852.5 MHz	Frequency 1880 MHz	Frequency 1907.5 MHz
5MHz	QPSK	2	0	23.54	23.57	23.82
		2	4	23.55	23.60	23.84
		5	0	23.59	23.56	23.84
		5	1	23.48	23.56	23.85
		6	0	22.98	23.03	23.29
	16QAM	2	0	23.53	23.58	23.87
		2	4	23.61	23.65	23.89
		5	0	23.59	23.56	23.88
		5	1	23.57	23.56	23.82

LTE CAT-M1 Band 2						
BW	Modulation	RB Size	RB Offset	Low CH 18650	Mid CH 18900	High CH 19150
				Frequency 1855 MHz	Frequency 1880 MHz	Frequency 1905 MHz
10MHz	QPSK	2	0	23.51	23.54	23.87
		2	4	23.59	23.62	23.88
		5	0	23.53	23.61	23.86
		5	1	23.48	23.56	23.83
		6	0	22.97	22.97	23.29
	16QAM	2	0	23.52	23.57	23.87
		2	4	23.61	23.59	23.94
		5	0	23.58	23.55	23.86
		5	1	23.51	23.59	23.82



LTE CAT-M1 Band 2						
BW	Modulation	RB Size	RB Offset	Low CH 18675	Mid CH 18900	High CH 19125
				Frequency 1857.5 MHz	Frequency 1880 MHz	Frequency 1902.5 MHz
15MHz	QPSK	2	0	23.55	23.60	23.87
		2	4	23.56	23.57	23.89
		5	0	23.54	23.60	23.83
		5	1	23.50	23.52	23.80
		6	0	22.96	23.03	23.30
	16QAM	2	0	23.53	23.60	23.87
		2	4	23.59	23.60	23.89
		5	0	23.55	23.59	23.87
		5	1	23.53	23.55	23.87

LTE CAT-M1 Band 2						
BW	Modulation	RB Size	RB Offset	Low CH 18700	Mid CH 18900	High CH 19100
				Frequency 1860 MHz	Frequency 1880 MHz	Frequency 1900 MHz
20MHz	QPSK	2	0	23.59	23.61	23.89
		2	4	23.61	23.63	23.91
		5	0	23.60	23.62	23.90
		5	1	23.56	23.58	23.86
		6	0	23.02	23.04	23.32
	16QAM	2	0	23.59	23.61	23.89
		2	4	23.65	23.67	23.95
		5	0	23.60	23.62	23.90
		5	1	23.59	23.61	23.89



LTE CAT-M1 Band 25						
BW	Modulation	RB Size	RB Offset	Low CH 26047	Mid CH 26365	High CH 26683
				Frequency 1850.7 MHz	Frequency 1882.5 MHz	Frequency 1914.3 MHz
1.4MHz	QPSK	2	0	22.29	22.48	22.49
		2	4	22.20	22.49	22.53
		5	0	22.26	22.48	22.51
		5	1	22.27	22.43	22.41
		6	0	22.10	22.34	22.24
	16QAM	2	0	22.30	22.55	22.49
		2	4	22.32	22.55	22.58
		5	0	22.36	22.58	22.58
		5	1	22.36	22.54	22.59

LTE CAT-M1 Band 25						
BW	Modulation	RB Size	RB Offset	Low CH 26055	Mid CH 26365	High CH 26675
				Frequency 1851.5 MHz	Frequency 1882.5 MHz	Frequency 1913.5 MHz
3MHz	QPSK	2	0	22.17	22.55	22.45
		2	4	22.19	22.50	22.49
		5	0	22.26	22.46	22.39
		5	1	22.25	22.41	22.43
		6	0	22.06	22.25	22.32
	16QAM	2	0	22.35	22.53	22.52
		2	4	22.33	22.58	22.56
		5	0	22.32	22.58	22.56
		5	1	22.35	22.56	22.55



LTE CAT-M1 Band 25						
BW	Modulation	RB Size	RB Offset	Low CH 26065	Mid CH 26365	High CH 26665
				Frequency 1852.5 MHz	Frequency 1882.5 MHz	Frequency 1912.5 MHz
5MHz	QPSK	2	0	22.25	22.47	22.48
		2	4	22.20	22.46	22.52
		5	0	22.24	22.45	22.45
		5	1	22.24	22.41	22.48
		6	0	22.04	22.29	22.27
	16QAM	2	0	22.23	22.52	22.47
		2	4	22.36	22.58	22.59
		5	0	22.39	22.66	22.60
		5	1	22.27	22.58	22.53

LTE CAT-M1 Band 25						
BW	Modulation	RB Size	RB Offset	Low CH 26090	Mid CH 26365	High CH 26640
				Frequency 1855 MHz	Frequency 1882.5 MHz	Frequency 1910 MHz
10MHz	QPSK	2	0	22.29	22.55	22.53
		2	4	22.25	22.52	22.57
		5	0	22.31	22.53	22.49
		5	1	22.30	22.49	22.54
		6	0	22.10	22.35	22.33
	16QAM	2	0	22.30	22.58	22.53
		2	4	22.41	22.65	22.62
		5	0	22.41	22.70	22.66
		5	1	22.34	22.60	22.55



LTE CAT-M1 Band 25						
BW	Modulation	RB Size	RB Offset	Low CH 26115	Mid CH 26365	High CH 26615
				Frequency 1857.5 MHz	Frequency 1882.5 MHz	Frequency 1907.5 MHz
15MHz	QPSK	2	0	22.34	22.57	22.57
		2	4	22.33	22.58	22.58
		5	0	22.32	22.59	22.52
		5	1	22.32	22.55	22.56
		6	0	22.16	22.37	22.36
	16QAM	2	0	22.38	22.64	22.58
		2	4	22.46	22.70	22.66
		5	0	22.42	22.72	22.68
		5	1	22.42	22.65	22.61

LTE CAT-M1 Band 25						
BW	Modulation	RB Size	RB Offset	Low CH 26140	Mid CH 26365	High CH 26590
				Frequency 1860 MHz	Frequency 1882.5 MHz	Frequency 1905 MHz
20MHz	QPSK	2	0	22.40	22.64	22.61
		2	4	22.39	22.63	22.60
		5	0	22.38	22.62	22.59
		5	1	22.37	22.61	22.58
		6	0	22.18	22.42	22.39
	16QAM	2	0	22.45	22.69	22.66
		2	4	22.48	22.72	22.69
		5	0	22.49	22.73	22.70
		5	1	22.47	22.71	22.68

**EIRP POWER (dBm)****GSM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
512	1850.2	28.65	2.00	30.65	1161.45	2
661	1880.0	29.18	2.00	31.18	1312.2	2
810	1909.8	28.73	2.00	30.73	1183.04	2

EDGE

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
512	1850.2	24.07	2.00	26.07	404.58	2
661	1880.0	24.60	2.00	26.60	457.09	2
810	1909.8	24.15	2.00	26.15	412.1	2

LTE CAT-M1 BAND 2**CHANNEL BANDWIDTH: 1.4MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	23.02	2.00	25.02	317.69	2
18900	1880.0	22.91	2.00	24.91	309.74	2
19193	1908.3	22.94	2.00	24.94	311.89	2

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	22.86	2.00	24.86	306.2	2
18900	1880.0	22.75	2.00	24.75	298.54	2
19193	1908.3	22.78	2.00	24.78	300.61	2



CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	23.05	2.00	25.05	319.89	2
18900	1880.0	22.94	2.00	24.94	311.89	2
19185	1908.5	22.97	2.00	24.97	314.05	2

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	23.01	2.00	25.01	316.96	2
18900	1880.0	22.90	2.00	24.90	309.03	2
19185	1908.5	22.93	2.00	24.93	311.17	2

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	23.04	2.00	25.04	319.15	2
18900	1880.0	22.93	2.00	24.93	311.17	2
19175	1907.5	22.96	2.00	24.96	313.33	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	23.04	2.00	25.04	319.15	2
18900	1880.0	22.93	2.00	24.93	311.17	2
19175	1907.5	22.96	2.00	24.96	313.33	2



CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855.0	23.10	2.00	25.10	323.59	2
18900	1880.0	22.99	2.00	24.99	315.5	2
19150	1905.0	23.02	2.00	25.02	317.69	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855.0	23.06	2.00	25.06	320.63	2
18900	1880.0	22.95	2.00	24.95	312.61	2
19150	1905.0	22.98	2.00	24.98	314.77	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	23.13	2.00	25.13	325.84	2
18900	1880.0	23.02	2.00	25.02	317.69	2
19125	1902.5	23.05	2.00	25.05	319.89	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	23.09	2.00	25.09	322.85	2
18900	1880.0	22.98	2.00	24.98	314.77	2
19125	1902.5	23.01	2.00	25.01	316.96	2



CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	23.18	2.00	25.18	329.61	2
18900	1880.0	23.07	2.00	25.07	321.37	2
19125	1902.5	23.10	2.00	25.10	323.59	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	23.14	2.00	25.14	326.59	2
18900	1880.0	23.03	2.00	25.03	318.42	2
19125	1902.5	23.06	2.00	25.06	320.63	2

LTE CAT-M1 BAND 25

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26047	1850.7	22.29	2.00	24.29	268.53	2
26340	1880.0	22.49	2.00	24.49	281.19	2
26683	1914.3	22.53	2.00	24.53	283.79	2

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26047	1850.7	22.36	2.00	24.36	272.9	2
26340	1880.0	22.58	2.00	24.58	287.08	2
26683	1914.3	22.59	2.00	24.59	287.74	2



CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26055	1851.5	22.26	2.00	24.26	266.69	2
26340	1880.0	22.55	2.00	24.55	285.10	2
26675	1913.5	22.49	2.00	24.49	281.19	2

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26055	1851.5	22.35	2.00	24.35	272.27	2
26340	1880.0	22.58	2.00	24.58	287.08	2
26675	1913.5	22.56	2.00	24.56	285.76	2

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26065	1852.5	22.25	2.00	24.25	266.07	2
26340	1880.0	22.47	2.00	24.47	279.9	2
26665	1912.5	22.48	2.00	24.48	280.54	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26065	1852.5	22.39	2.00	24.39	274.79	2
26340	1880.0	22.66	2.00	24.66	292.42	2
26665	1912.5	22.60	2.00	24.60	288.4	2



CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26090	1855.0	22.31	2.00	24.31	269.77	2
26340	1880.0	22.57	2.00	24.57	286.42	2
26640	1910.0	22.59	2.00	24.59	287.74	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26090	1855.0	22.34	2.00	24.34	271.64	2
26340	1880.0	22.59	2.00	24.59	287.74	2
26640	1910.0	22.58	2.00	24.58	287.08	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26115	1857.5	22.34	2.00	24.34	271.64	2
26340	1880.0	22.59	2.00	24.59	287.74	2
26615	1907.5	22.58	2.00	24.58	287.08	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26115	1857.5	22.42	2.00	24.42	276.69	2
26340	1880.0	22.72	2.00	24.72	296.48	2
26615	1907.5	22.68	2.00	24.68	293.76	2

**CHANNEL BANDWIDTH: 20MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26140	1860.0	22.40	2.00	24.40	275.42	2
26340	1880.0	22.64	2.00	24.64	291.07	2
26590	1905.0	22.61	2.00	24.61	289.07	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26140	1860.0	22.49	2.00	24.49	281.19	2
26340	1880.0	22.73	2.00	24.73	297.17	2
26590	1905.0	22.70	2.00	24.70	295.12	2



3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

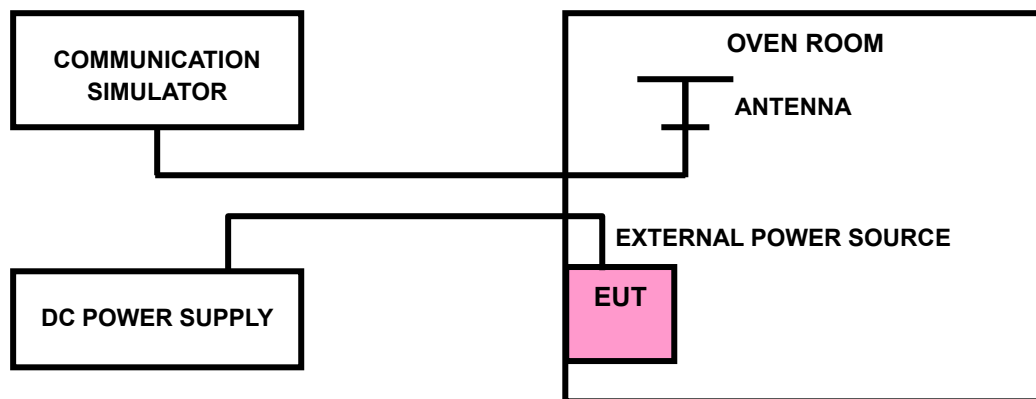
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

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

GSM1900

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
V_{nor}	0.0009	0.0012	2.5
V_{min}	-0.0012	-0.0012	2.5
V_{max}	0.0009	0.0011	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	-0.0055	-0.0053	2.5
-20	-0.0051	-0.0048	2.5
-10	-0.0046	-0.0043	2.5
0	-0.0037	-0.0035	2.5
10	-0.0030	-0.0028	2.5
20	-0.0022	-0.0020	2.5
30	-0.0017	-0.0015	2.5
40	-0.0014	-0.0012	2.5
50	-0.0005	-0.0003	2.5



EDGE 1900

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
V_{nor}	0.0012	0.0011	2.5
V_{min}	-0.0013	-0.0012	2.5
V_{max}	0.0010	0.0009	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	-0.0057	-0.0053	2.5
-20	-0.0050	-0.0047	2.5
-10	-0.0045	-0.0043	2.5
0	-0.0038	-0.0036	2.5
10	-0.0029	-0.0027	2.5
20	-0.0024	-0.0022	2.5
30	-0.0017	-0.0016	2.5
40	-0.0012	-0.0011	2.5
50	-0.0005	-0.0004	2.5



LTE CAT-M1 BAND 2

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}	0.0022	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	-0.0121	-0.0117	2.5
-20	-0.0105	-0.0110	2.5
-10	-0.0084	-0.0081	2.5
0	-0.0074	-0.0074	2.5
10	-0.0051	-0.0052	2.5
20	-0.0045	-0.0039	2.5
30	-0.0040	-0.0041	2.5
40	-0.0015	-0.0022	2.5
50	-0.0004	-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}	0.0018	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	-0.0120	-0.0112	2.5
-20	-0.0108	-0.0099	2.5
-10	-0.0083	-0.0084	2.5
0	-0.0075	-0.0072	2.5
10	-0.0052	-0.0050	2.5
20	-0.0044	-0.0042	2.5
30	-0.0032	-0.0027	2.5
40	-0.0017	-0.0015	2.5
50	-0.0005	-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	-0.0116	-0.0113	2.5
-20	-0.0109	-0.0101	2.5
-10	-0.0086	-0.0080	2.5
0	-0.0077	-0.0072	2.5
10	-0.0051	-0.0051	2.5
20	-0.0044	-0.0042	2.5
30	-0.0040	-0.0039	2.5
40	-0.0019	-0.0015	2.5
50	-0.0004	-0.0003	2.5



FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0026	0.0026	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	-0.0116	-0.0112	2.5
-20	-0.0109	-0.0096	2.5
-10	-0.0084	-0.0080	2.5
0	-0.0075	-0.0076	2.5
10	-0.0050	-0.0046	2.5
20	-0.0041	-0.0043	2.5
30	-0.0038	-0.0027	2.5
40	-0.0023	-0.0021	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}	0.0024	0.0025	2.5
V _{min}	-0.0031	-0.0030	2.5
V _{max}	0.0024	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)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0120	-0.0119	2.5
-20	-0.0102	-0.0108	2.5
-10	-0.0082	-0.0084	2.5
0	-0.0078	-0.0075	2.5
10	-0.0052	-0.0055	2.5
20	-0.0044	-0.0043	2.5
30	-0.0030	-0.0040	2.5
40	-0.0023	-0.0023	2.5
50	-0.0003	-0.0003	2.5



FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0026	0.0026	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)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0116	-0.0111	2.5
-20	-0.0098	-0.0100	2.5
-10	-0.0085	-0.0082	2.5
0	-0.0076	-0.0074	2.5
10	-0.0049	-0.0053	2.5
20	-0.0044	-0.0039	2.5
30	-0.0037	-0.0032	2.5
40	-0.0022	-0.0018	2.5
50	-0.0004	-0.0002	2.5



LTE CAT-M1 BAND 25

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}	-0.0031	-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	-0.0122	-0.0114	2.5
-20	-0.0113	-0.0109	2.5
-10	-0.0084	-0.0079	2.5
0	-0.0074	-0.0073	2.5
10	-0.0055	-0.0049	2.5
20	-0.0044	-0.0042	2.5
30	-0.0041	-0.0040	2.5
40	-0.0022	-0.0018	2.5
50	-0.0002	-0.0005	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}	-0.0021	-0.0025	2.5
V _{max}	0.0018	0.0018	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0116	-0.0112	2.5
-20	-0.0100	-0.0110	2.5
-10	-0.0084	-0.0084	2.5
0	-0.0074	-0.0075	2.5
10	-0.0051	-0.0044	2.5
20	-0.0039	-0.0041	2.5
30	-0.0027	-0.0038	2.5
40	-0.0019	-0.0019	2.5
50	-0.0002	-0.0005	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	-0.0030	2.5
V _{max}	0.0022	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	-0.0117	2.5
-20	-0.0108	-0.0103	2.5
-10	-0.0084	-0.0084	2.5
0	-0.0073	-0.0072	2.5
10	-0.0053	-0.0049	2.5
20	-0.0042	-0.0037	2.5
30	-0.0037	-0.0035	2.5
40	-0.0019	-0.0019	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}	0.0025	0.0025	2.5
V _{min}	-0.0031	-0.0030	2.5
V _{max}	0.0026	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	-0.0116	-0.0120	2.5
-20	-0.0109	-0.0097	2.5
-10	-0.0086	-0.0082	2.5
0	-0.0077	-0.0072	2.5
10	-0.0051	-0.0044	2.5
20	-0.0039	-0.0042	2.5
30	-0.0036	-0.0032	2.5
40	-0.0018	-0.0020	2.5
50	-0.0002	-0.0005	2.5



FREQUENCY ERROR VS. VOLTAGE

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

NOTE: The applicant defined the normal working voltage of the 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	-0.0115	-0.0121	2.5
-20	-0.0104	-0.0108	2.5
-10	-0.0081	-0.0084	2.5
0	-0.0076	-0.0074	2.5
10	-0.0053	-0.0045	2.5
20	-0.0042	-0.0039	2.5
30	-0.0033	-0.0028	2.5
40	-0.0023	-0.0016	2.5
50	-0.0002	-0.0004	2.5



FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0026	0.0025	2.5
V _{min}	-0.0030	-0.0030	2.5
V _{max}	0.0025	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)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0115	-0.0120	2.5
-20	-0.0099	-0.0107	2.5
-10	-0.0082	-0.0083	2.5
0	-0.0077	-0.0075	2.5
10	-0.0055	-0.0044	2.5
20	-0.0039	-0.0037	2.5
30	-0.0026	-0.0031	2.5
40	-0.0018	-0.0020	2.5
50	-0.0003	-0.0005	2.5

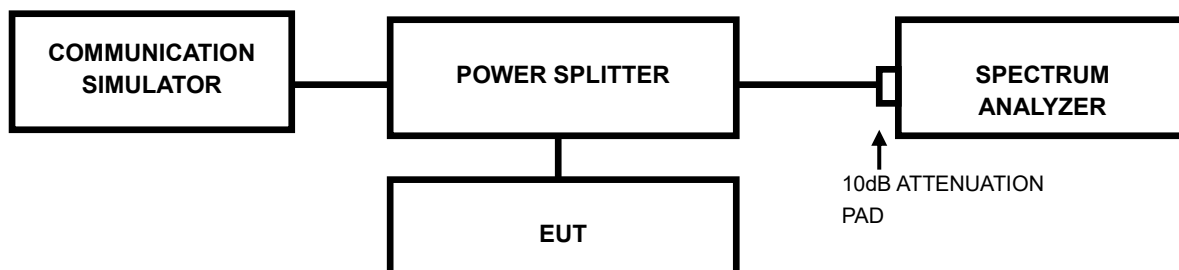


3.3 OCCUPIED BANDWIDTH MEASUREMENT

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



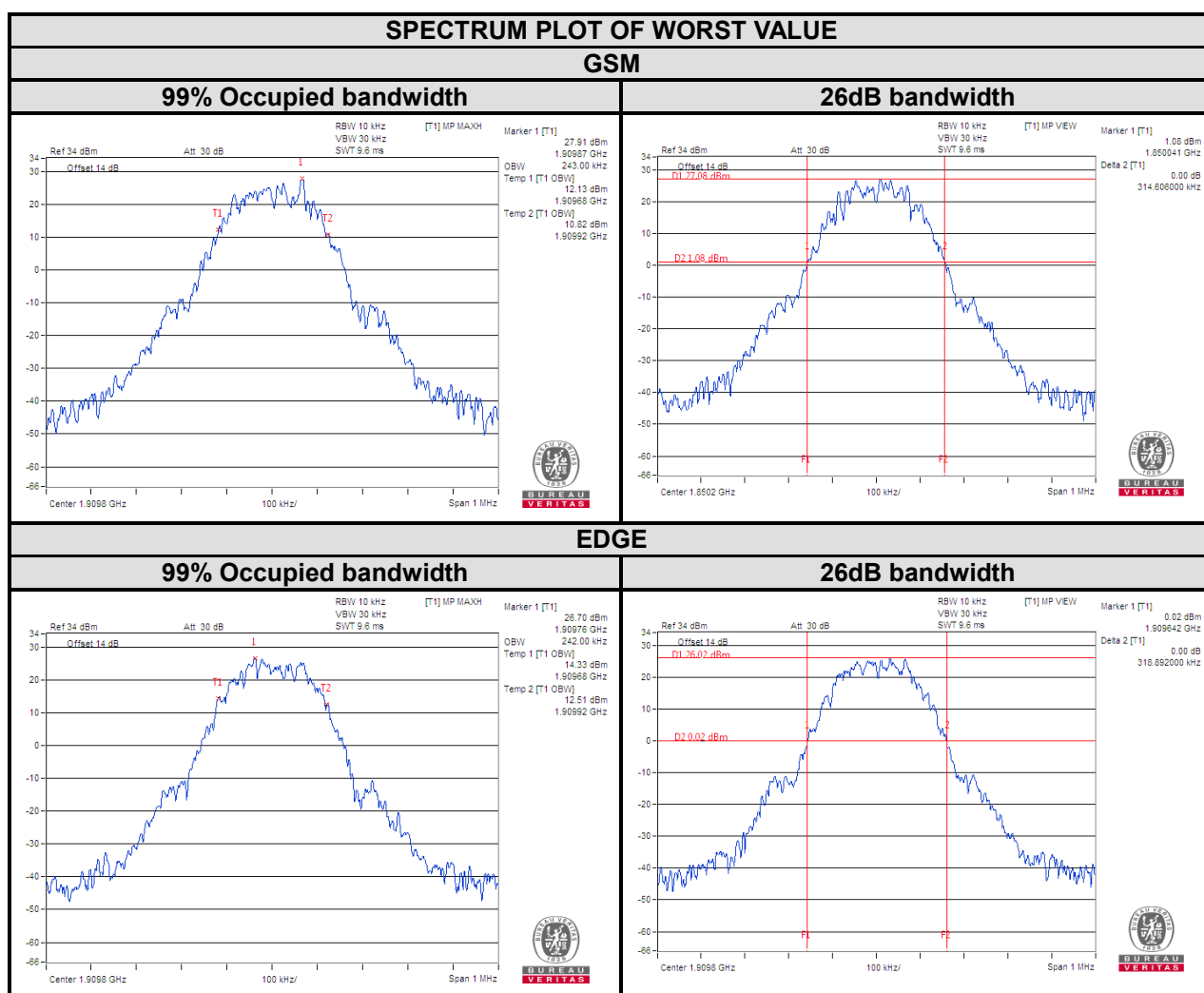


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Test Report No.: RF191122W002-2

3.3.3 TEST RESULTS

Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26dB bandwidth (MHz)	
		GSM	EDGE	GSM	EDGE
512	1850.2	238.00	241.00	314.61	318.27
661	1880	234.00	239.00	312.59	313.17
810	1909.8	243.00	242.00	310.21	318.89

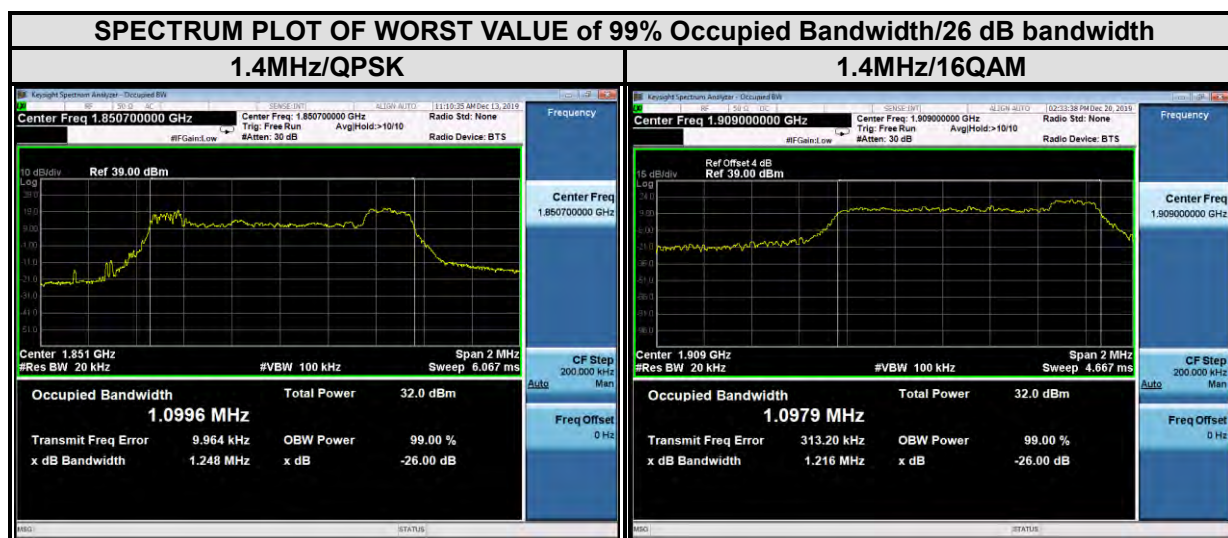




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Test Report No.: RF191122W002-2

LTE CAT-M1 Band 2					
Channel Bandwidth : 1.4MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
18607	1850.7	1.10	1.10	1.25	1.25
18900	1880	1.10	1.10	1.22	1.26
19193	1909.3	1.09	1.10	1.22	1.22

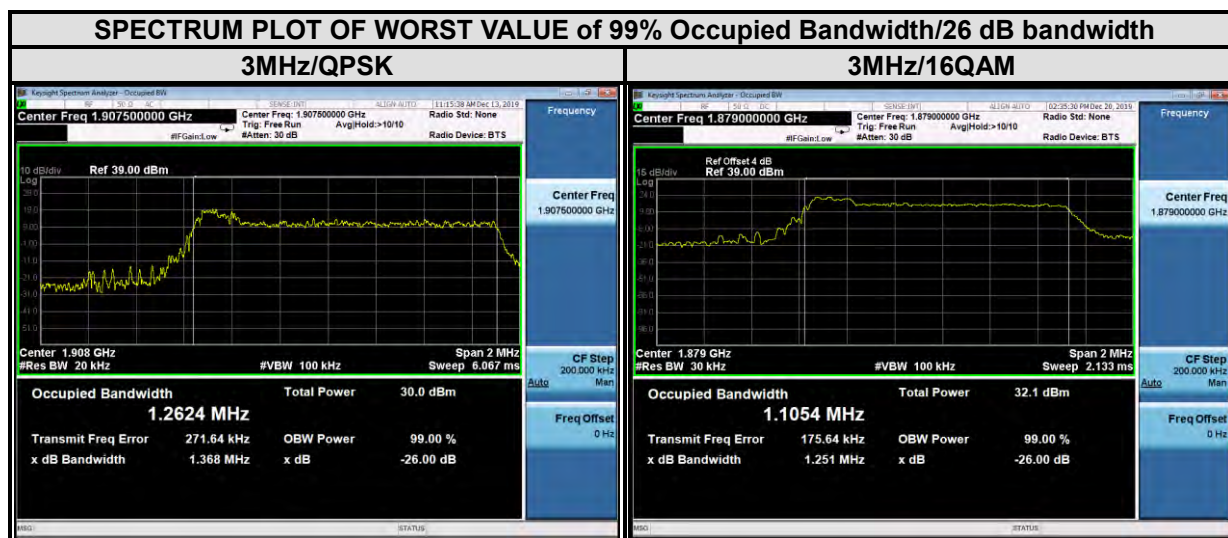




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Test Report No.: RF191122W002-2

LTE CAT-M1 Band 2					
Channel Bandwidth : 3MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
18615	1851.5	1.26	1.10	1.38	1.23
18900	1880	1.26	1.11	1.37	1.25
19185	1908.5	1.26	1.10	1.37	1.24

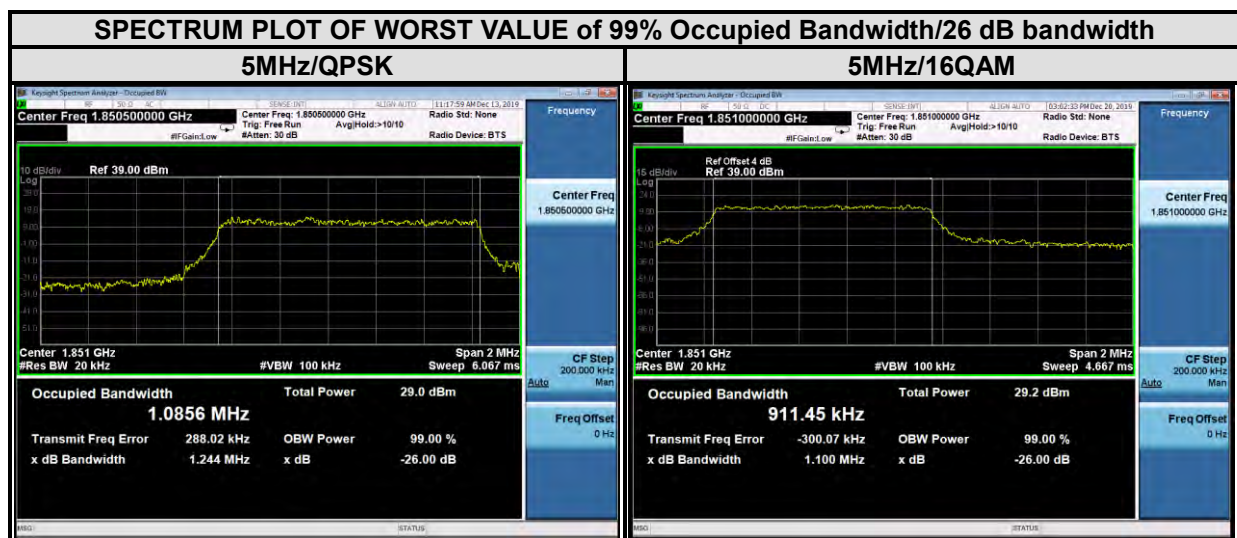




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Test Report No.: RF191122W002-2

LTE CAT-M1 Band 2					
Channel Bandwidth : 5MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
18625	1852.5	1.09	0.910	1.24	1.10
18900	1880	1.08	0.910	1.28	1.10
19175	1907.5	1.08	0.910	1.23	1.12

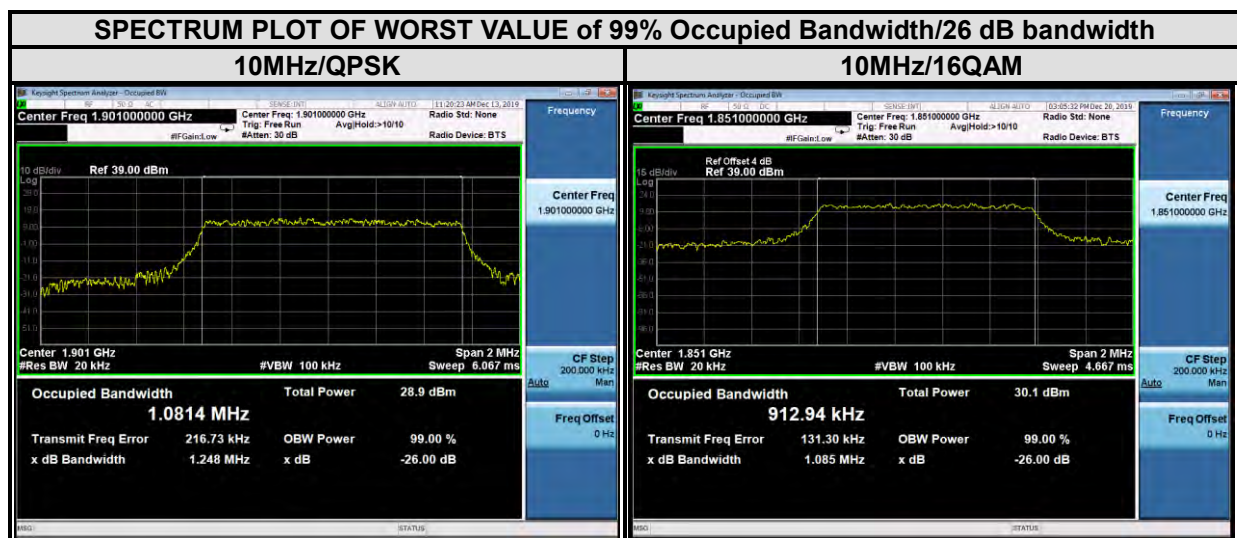




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Test Report No.: RF191122W002-2

LTE CAT-M1 Band 2					
Channel Bandwidth : 10MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
18650	1855	1.08	0.910	1.27	1.09
18900	1880	1.08	0.910	1.29	1.10
19150	1905	1.08	0.910	1.25	1.14

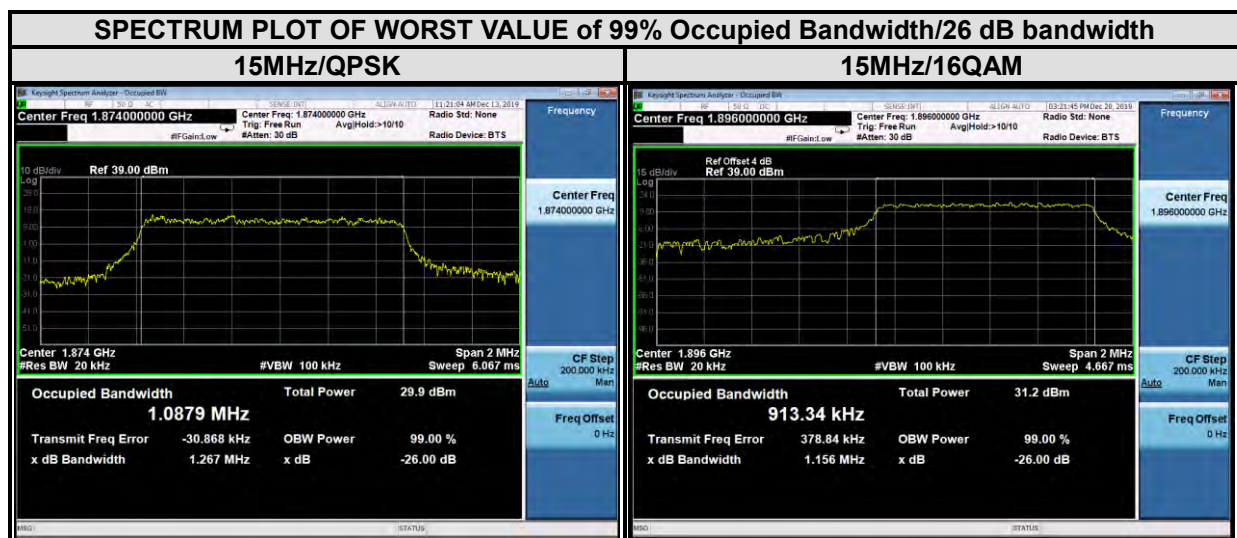




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Test Report No.: RF191122W002-2

LTE CAT-M1 Band 2					
Channel Bandwidth : 15MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
18675	1857.5	1.09	0.908	1.29	1.07
18900	1880	1.09	0.907	1.27	1.06
19125	1902.5	1.09	0.913	1.27	1.16



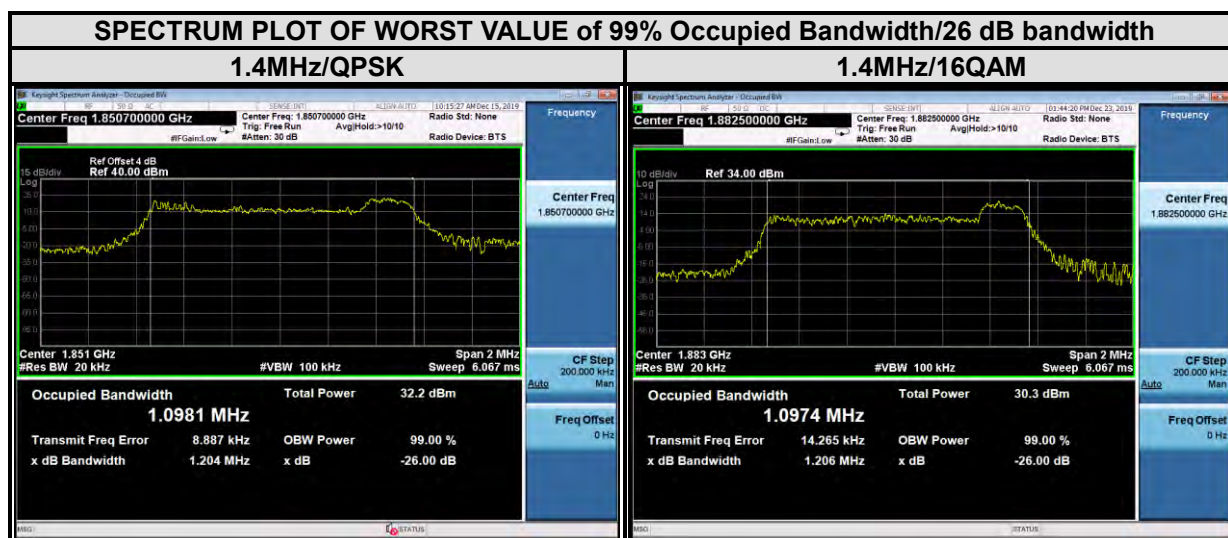


LTE CAT-M1 Band 2					
Channel Bandwidth : 20MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
18700	1860	1.08	0.909	1.28	1.15
18900	1880	1.08	0.915	1.27	1.10
19100	1900	1.08	0.908	1.26	1.12





LTE CAT-M1 Band 25					
Channel Bandwidth : 1.4MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26047	1850.7	1.10	1.09	1.20	1.21
26365	1882.5	1.09	1.10	1.21	1.21
26683	1914.3	1.09	1.10	1.22	1.24

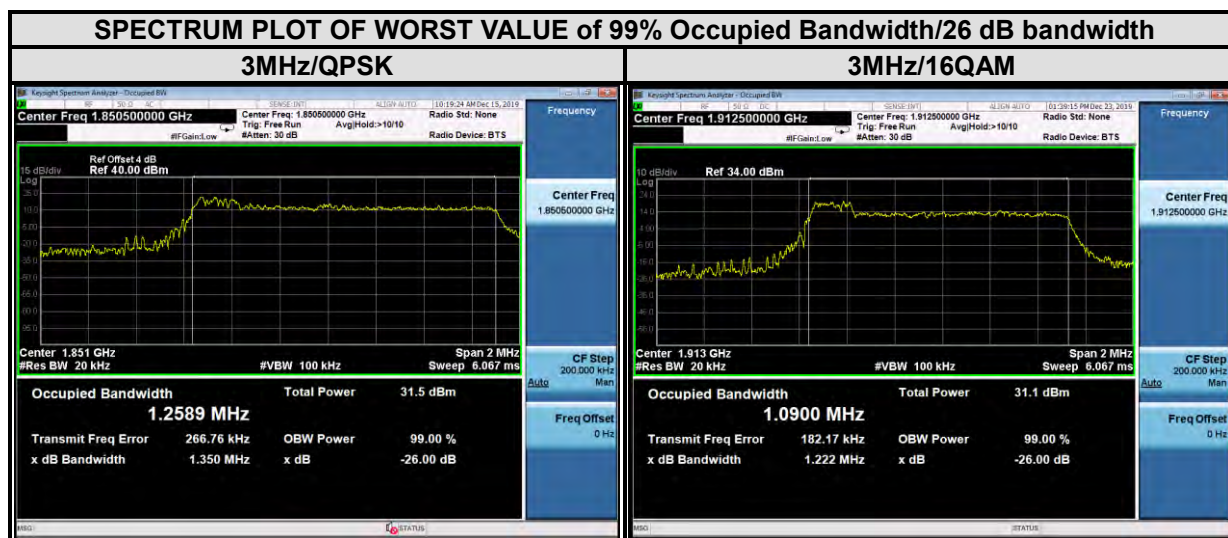




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Test Report No.: RF191122W002-2

LTE CAT-M1 Band 25					
Channel Bandwidth : 3MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26055	1851.5	1.26	1.09	1.35	1.22
26365	1882.5	1.26	1.09	1.39	1.21
26675	1913.5	1.26	1.09	1.38	1.22

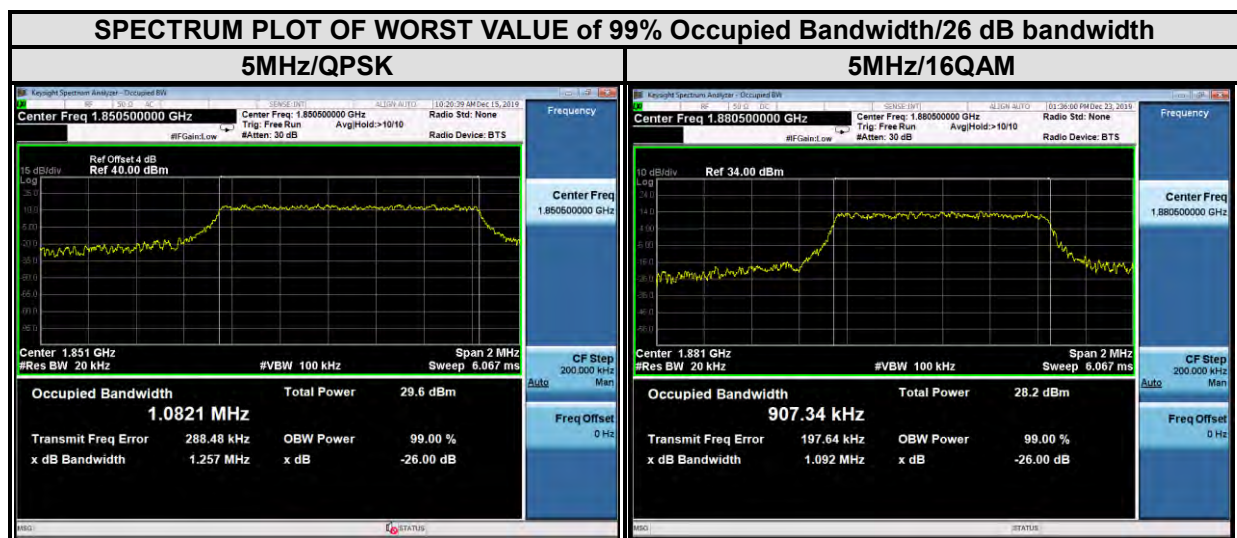




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Test Report No.: RF191122W002-2

LTE CAT-M1 Band 25					
Channel Bandwidth : 5MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26065	1852.5	1.08	0.905	1.26	1.08
26365	1882.5	1.08	0.907	1.22	1.09
26665	1912.5	1.08	0.907	1.25	1.13

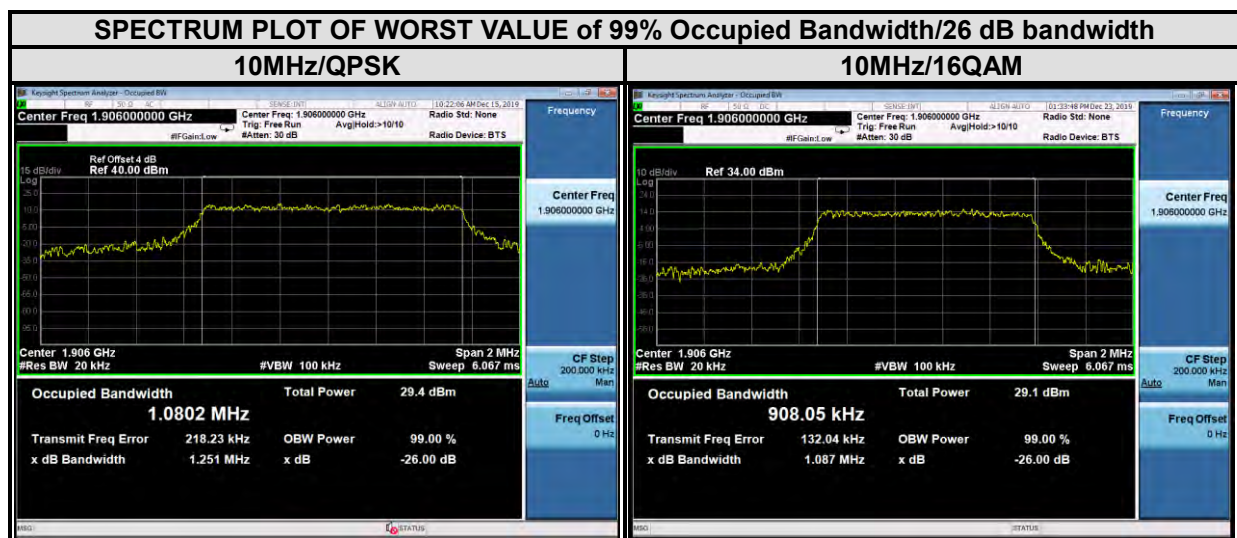




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Test Report No.: RF191122W002-2

LTE CAT-M1 Band 25					
Channel Bandwidth : 10MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26090	1855	1.07	0.907	1.22	1.16
26365	1882.5	1.08	0.904	1.24	1.16
26640	1910	1.08	0.908	1.25	1.09

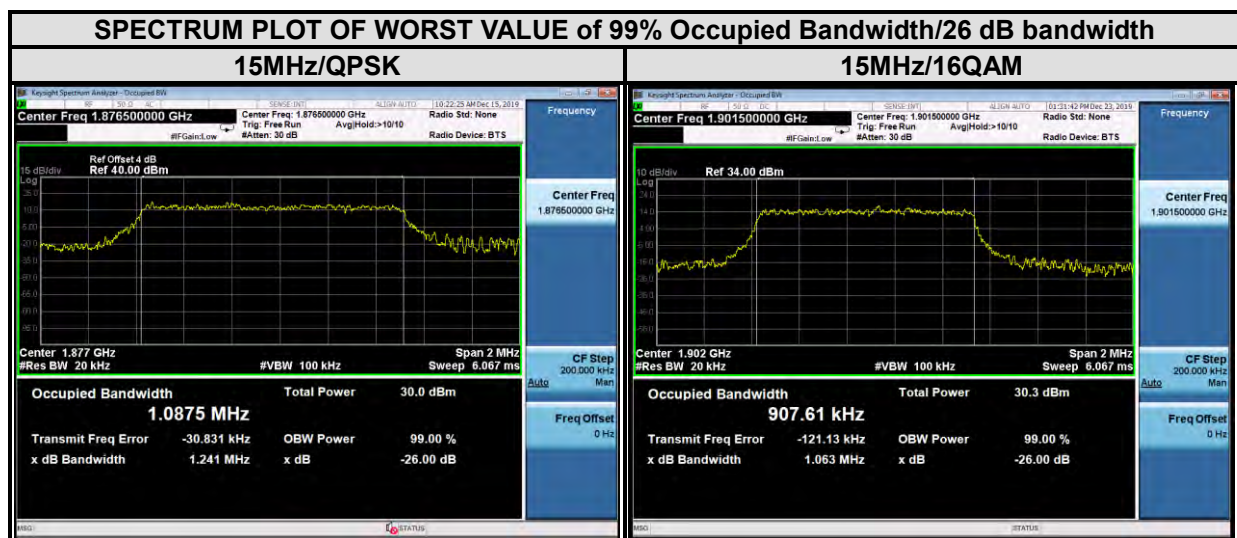




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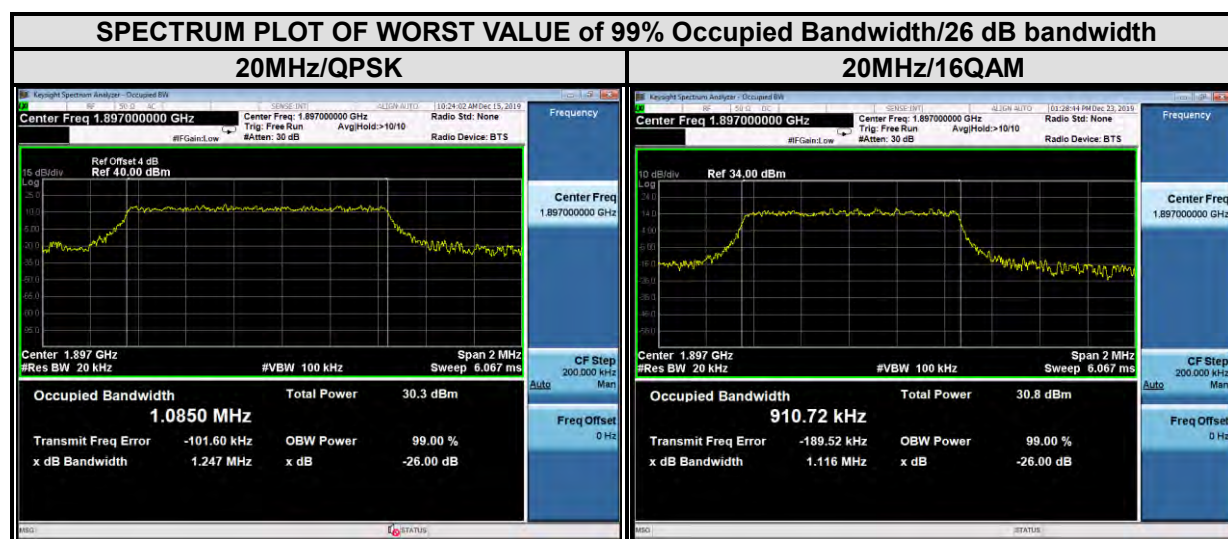
Test Report No.: RF191122W002-2

LTE CAT-M1 Band 25					
Channel Bandwidth : 15MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26115	1857.5	1.09	0.906	1.23	1.14
26365	1882.5	1.09	0.904	1.24	1.07
26615	1907.5	1.09	0.908	1.26	1.06





LTE CAT-M1 Band 25					
Channel Bandwidth : 20MHz					
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		26 dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26140	1860	1.07	0.909	1.26	1.09
26365	1882.5	1.08	0.908	1.22	1.09
26590	1905	1.09	0.911	1.25	1.12



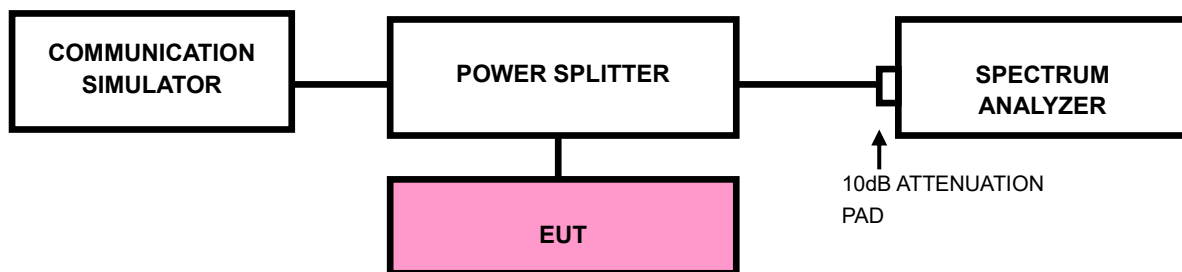


3.4 BAND EDGE MEASUREMENT

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

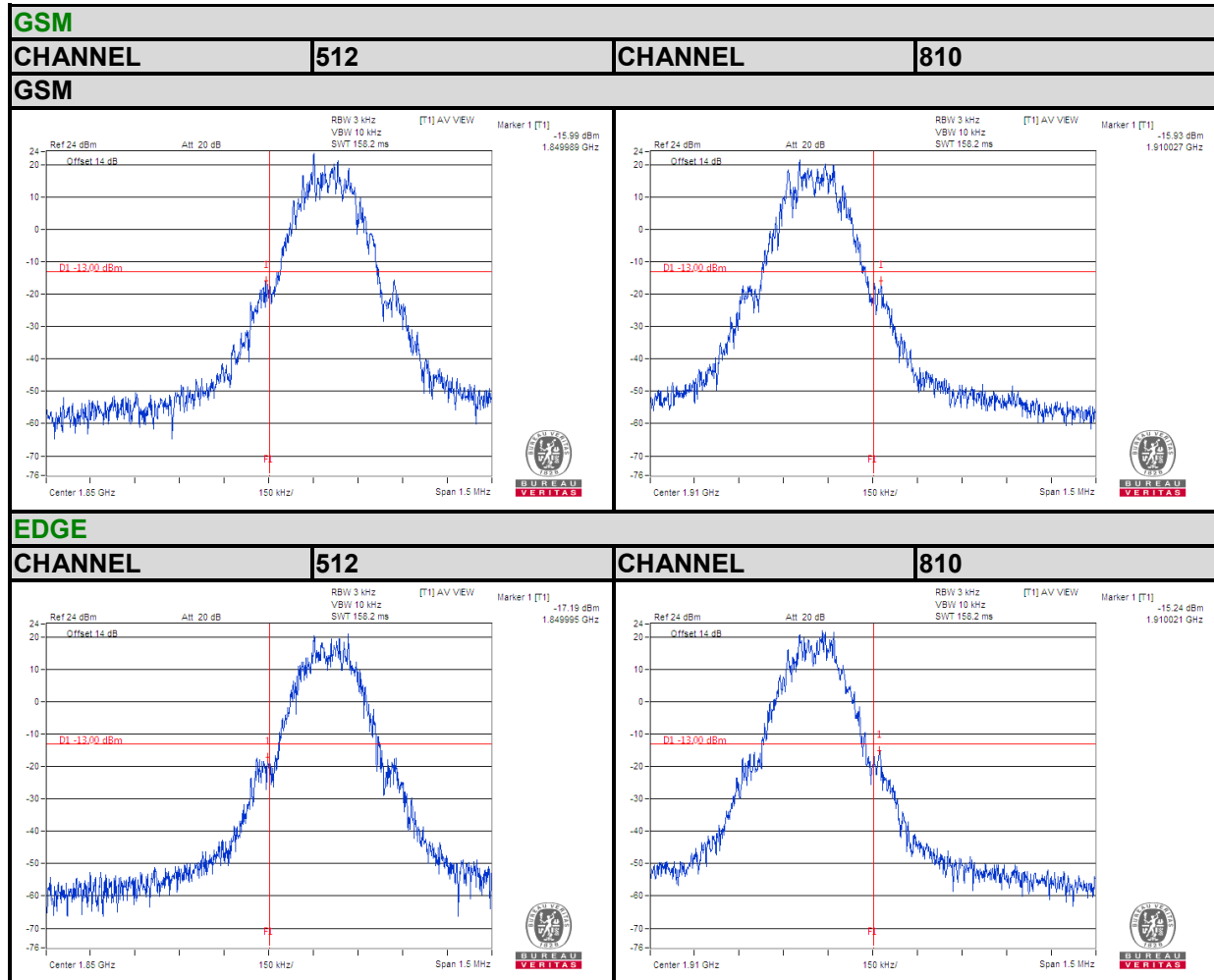
- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 1.5 MHz. RBW of the spectrum is 10kHz and VBW of the spectrum is 30kHz (GSM/GPRS/ EDGE).
- c. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 20kHz and VBW of the spectrum is 100 kHz. (LTE CAT-M1 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. 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)
- 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 20MHz)
- i. Record the max trace plot into the test report.



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Test Report No.: RF191122W002-2

3.4.4. TEST RESULTS



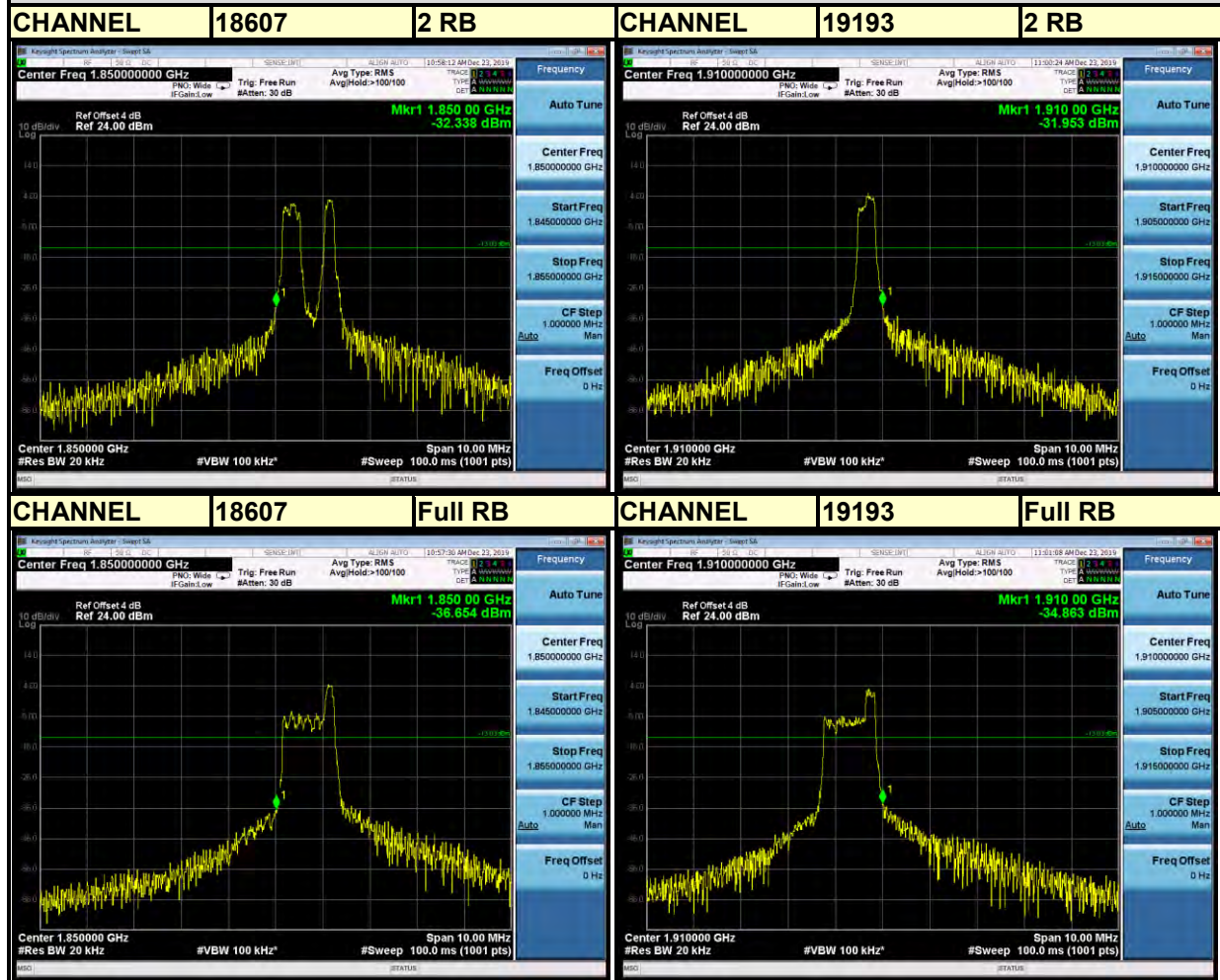


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Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 2

Channel Bandwidth: 1.4MHz QPSK

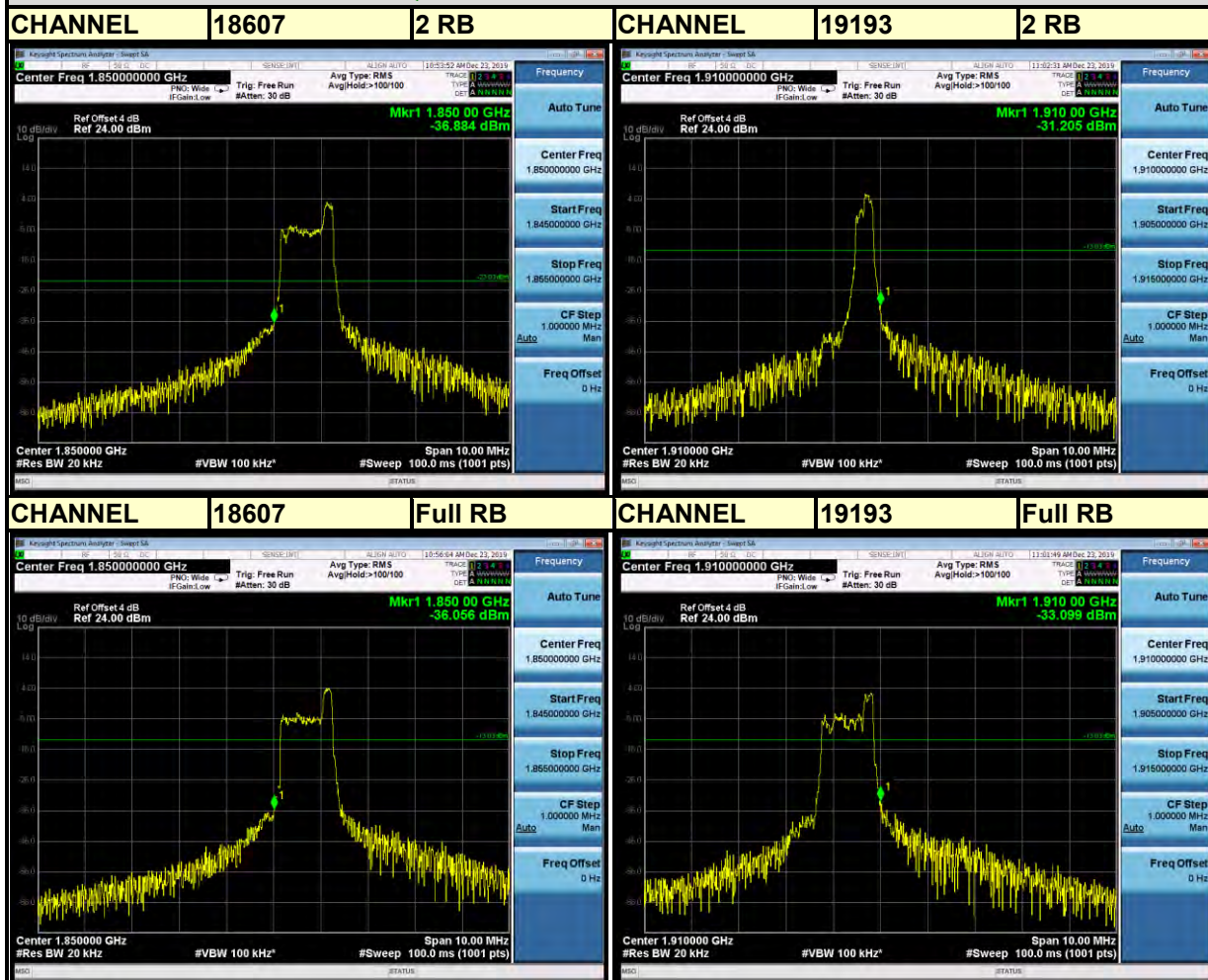




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Test Report No.: RF191122W002-2

Channel Bandwidth: 1.4MHz 16QAM



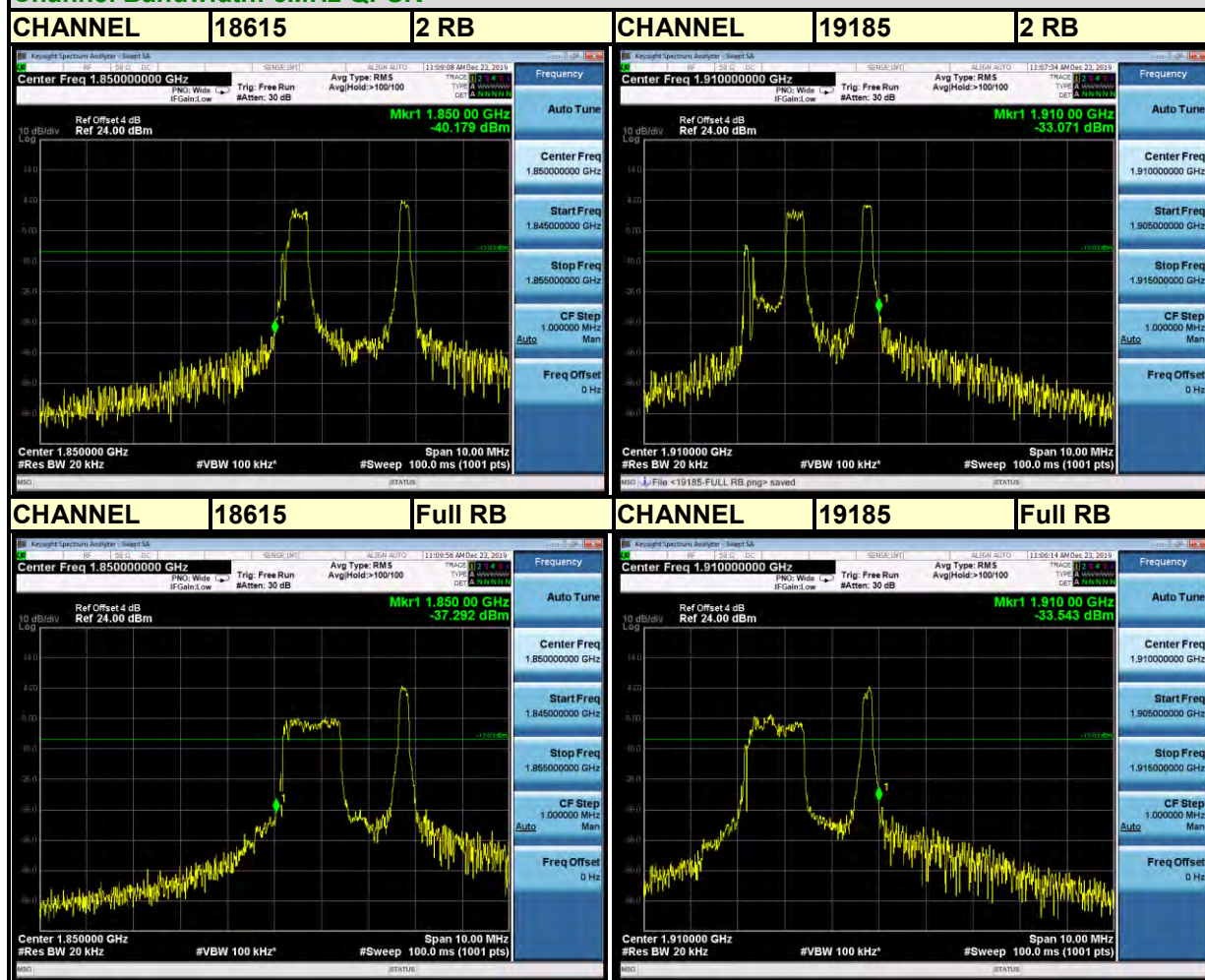


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Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 2

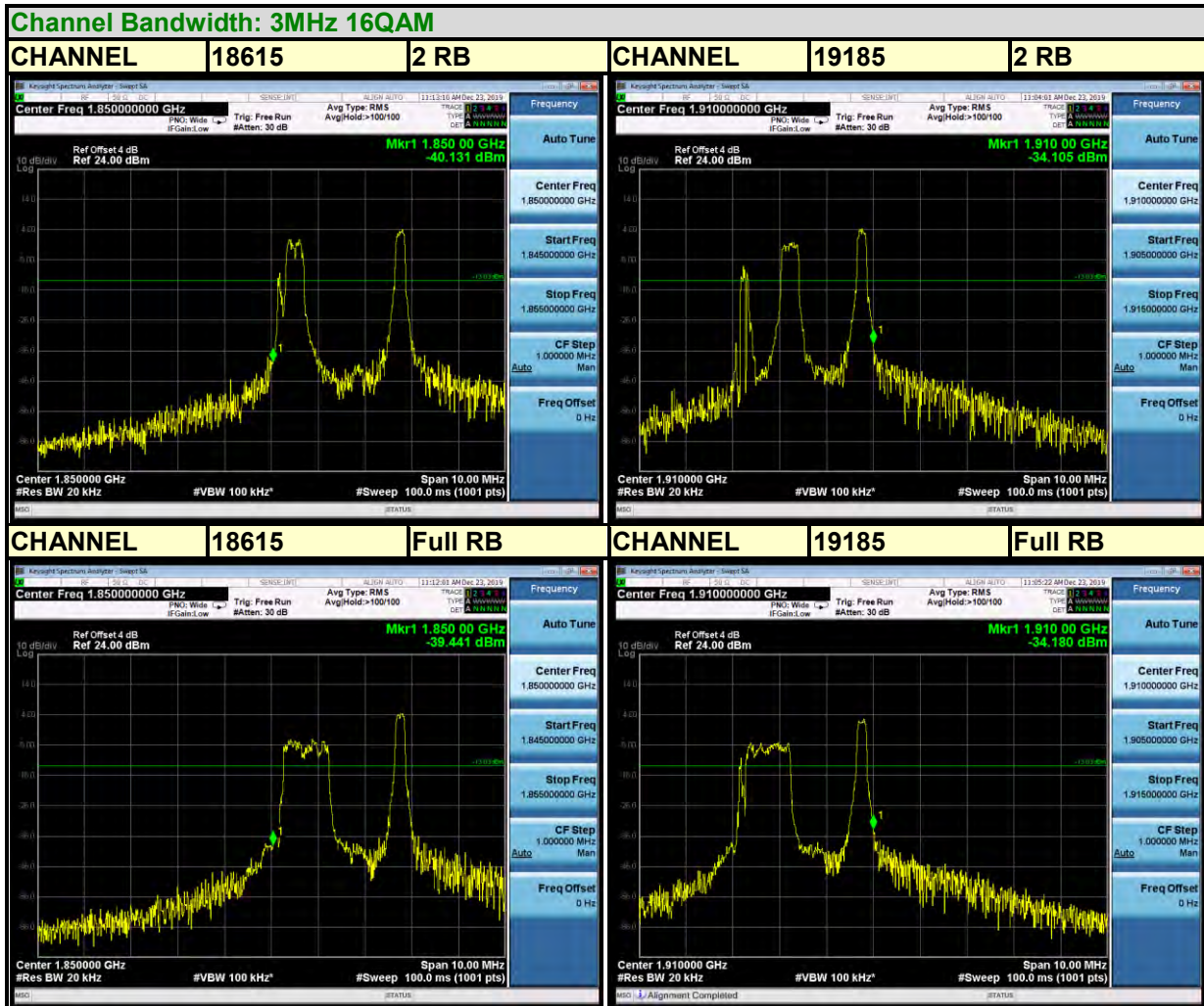
Channel Bandwidth: 3MHz QPSK





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Test Report No.: RF191122W002-2



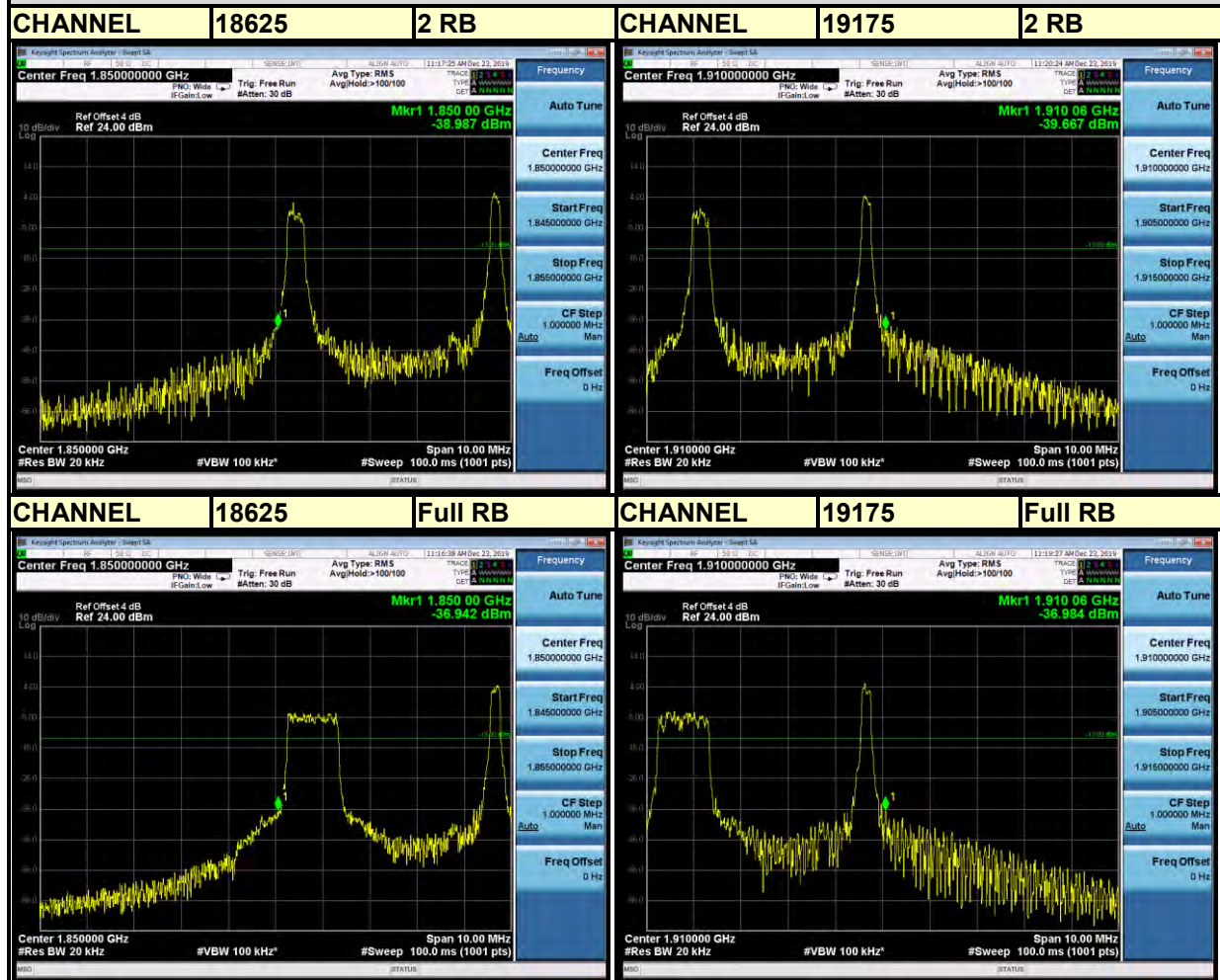


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Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 2

Channel Bandwidth: 5MHz QPSK

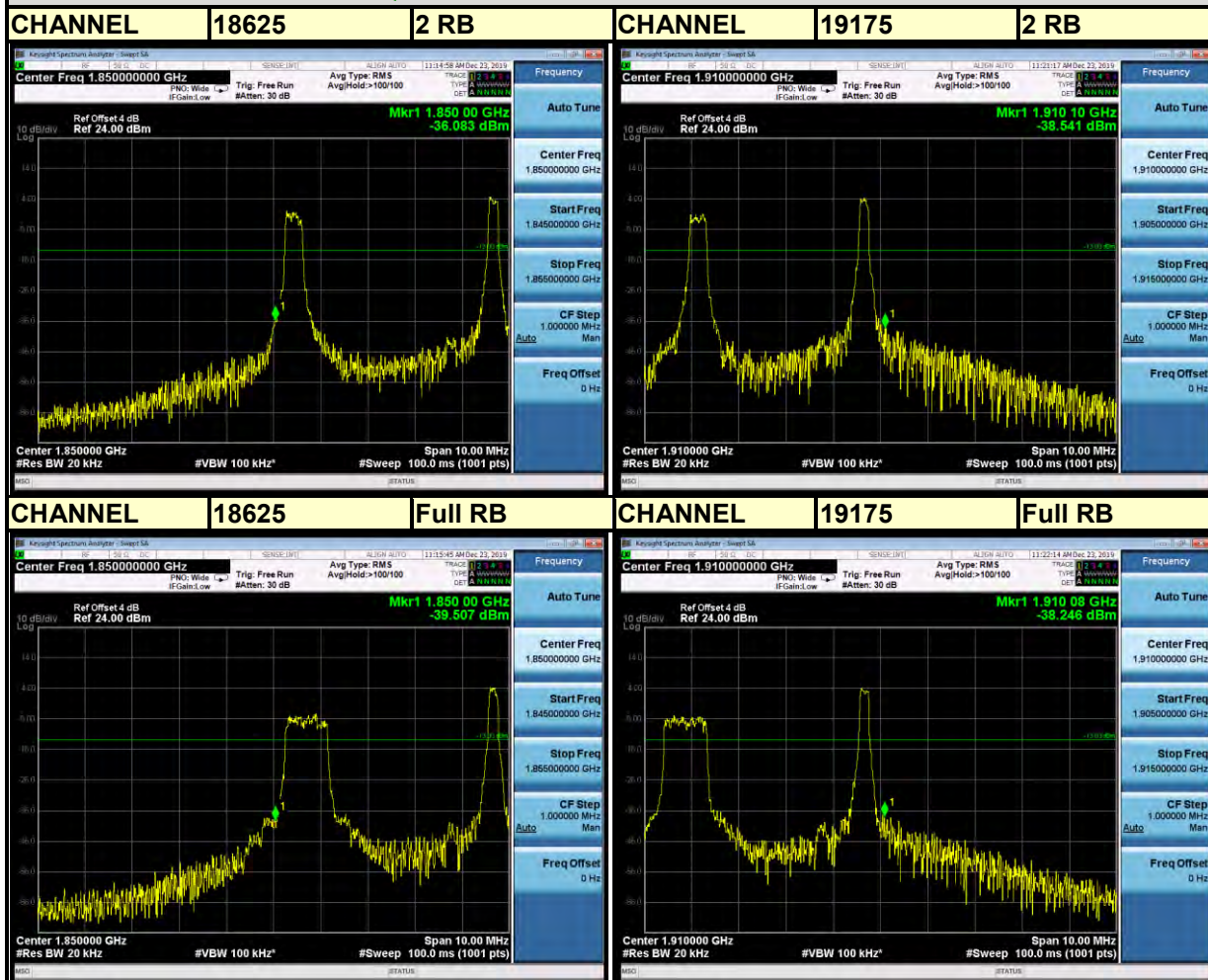




BUREAU
VERITAS

Test Report No.: RF191122W002-2

Channel Bandwidth: 5MHz 16QAM



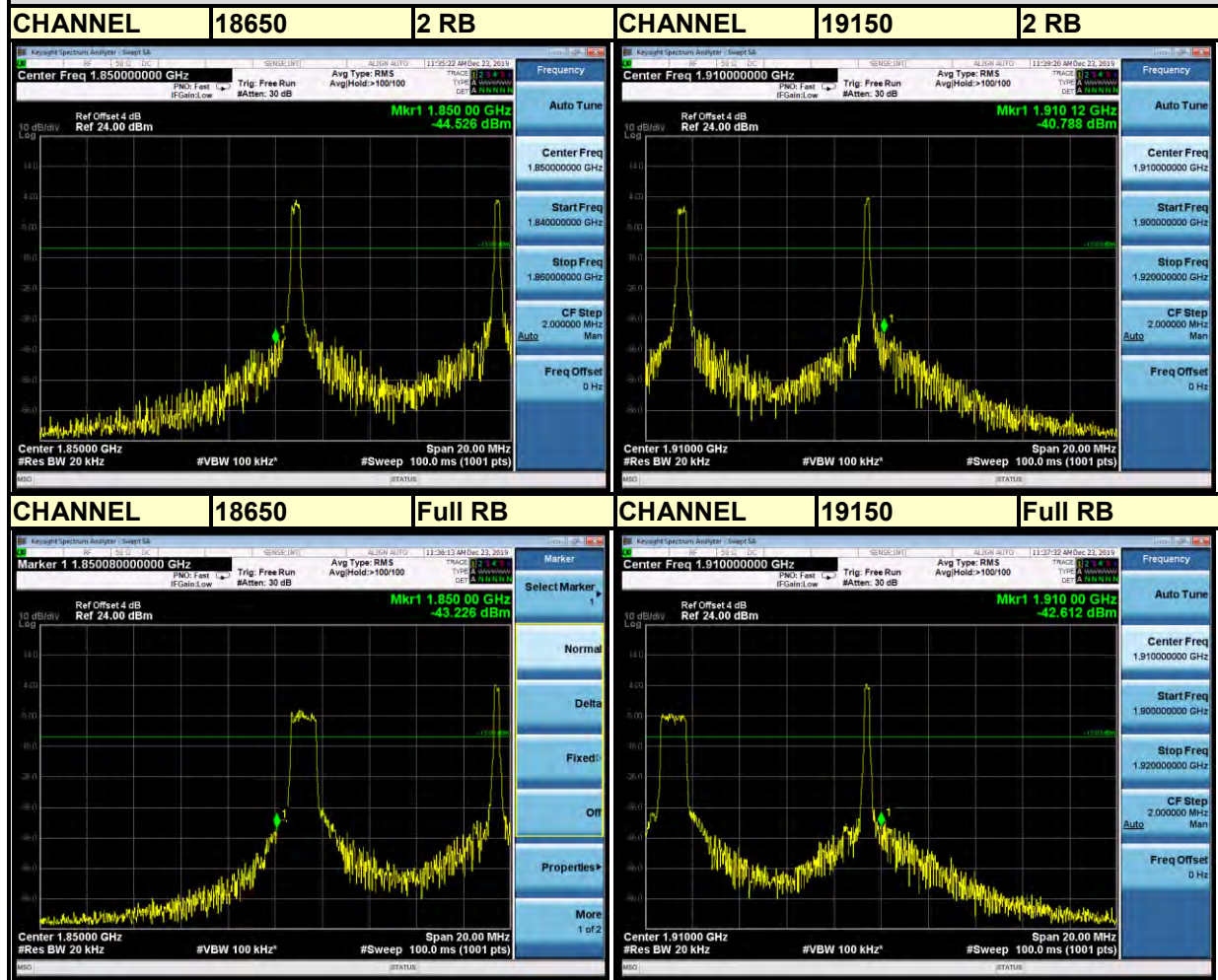


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Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 2

Channel Bandwidth: 10MHz QPSK

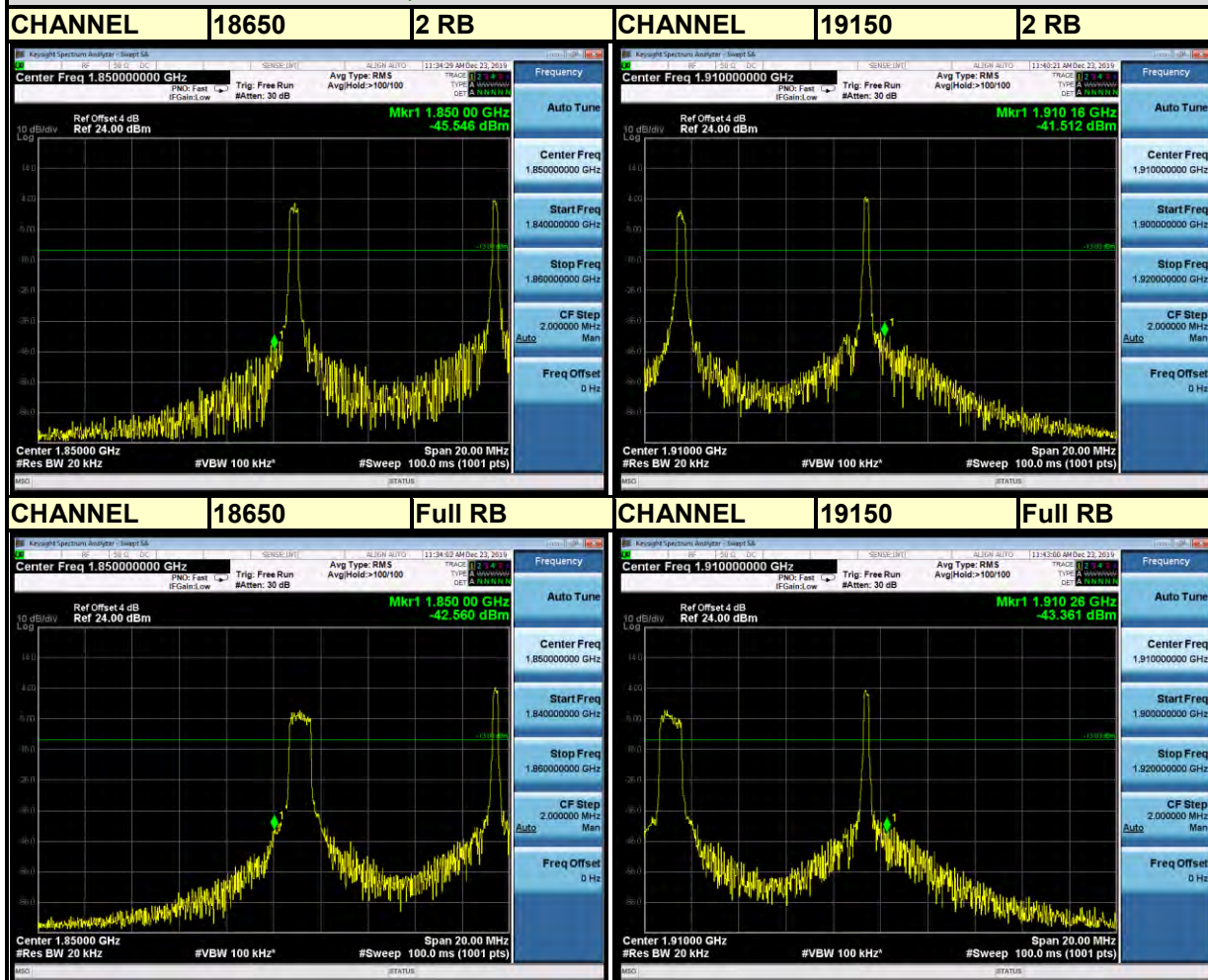




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Test Report No.: RF191122W002-2

Channel Bandwidth: 10MHz 16QAM



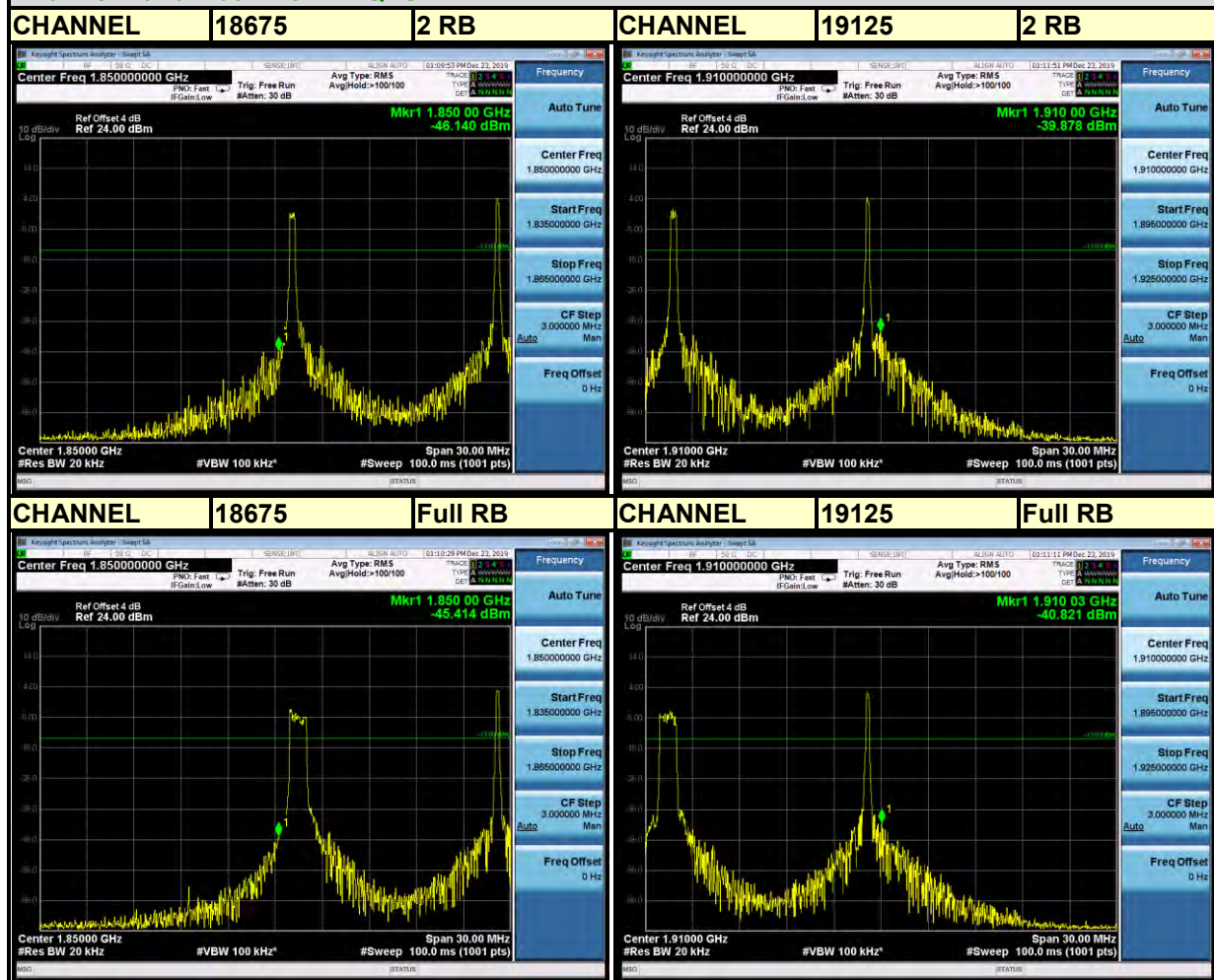


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VERITAS

Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 2

Channel Bandwidth: 15MHz QPSK

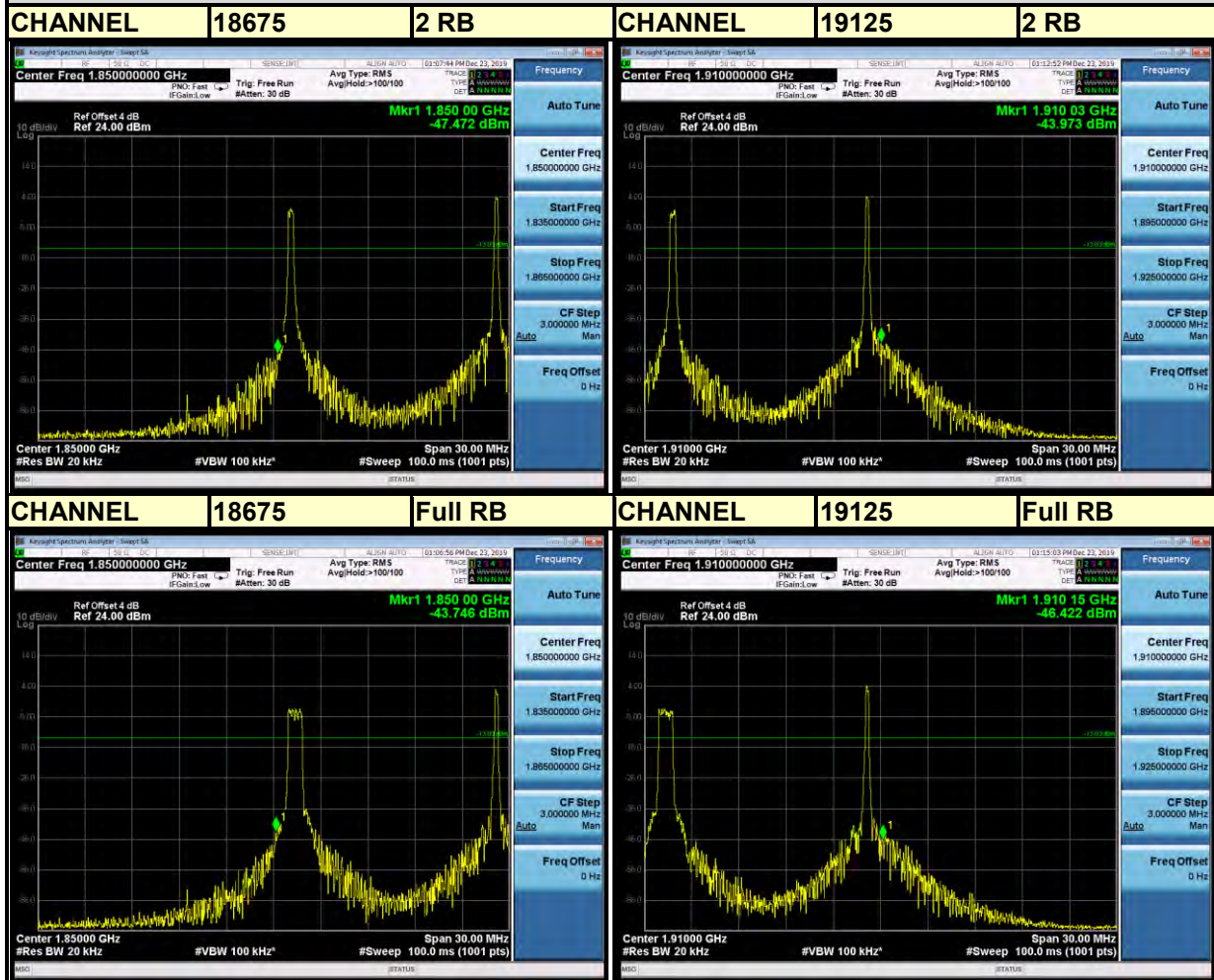




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VERITAS

Test Report No.: RF191122W002-2

Channel Bandwidth: 15MHz 16QAM



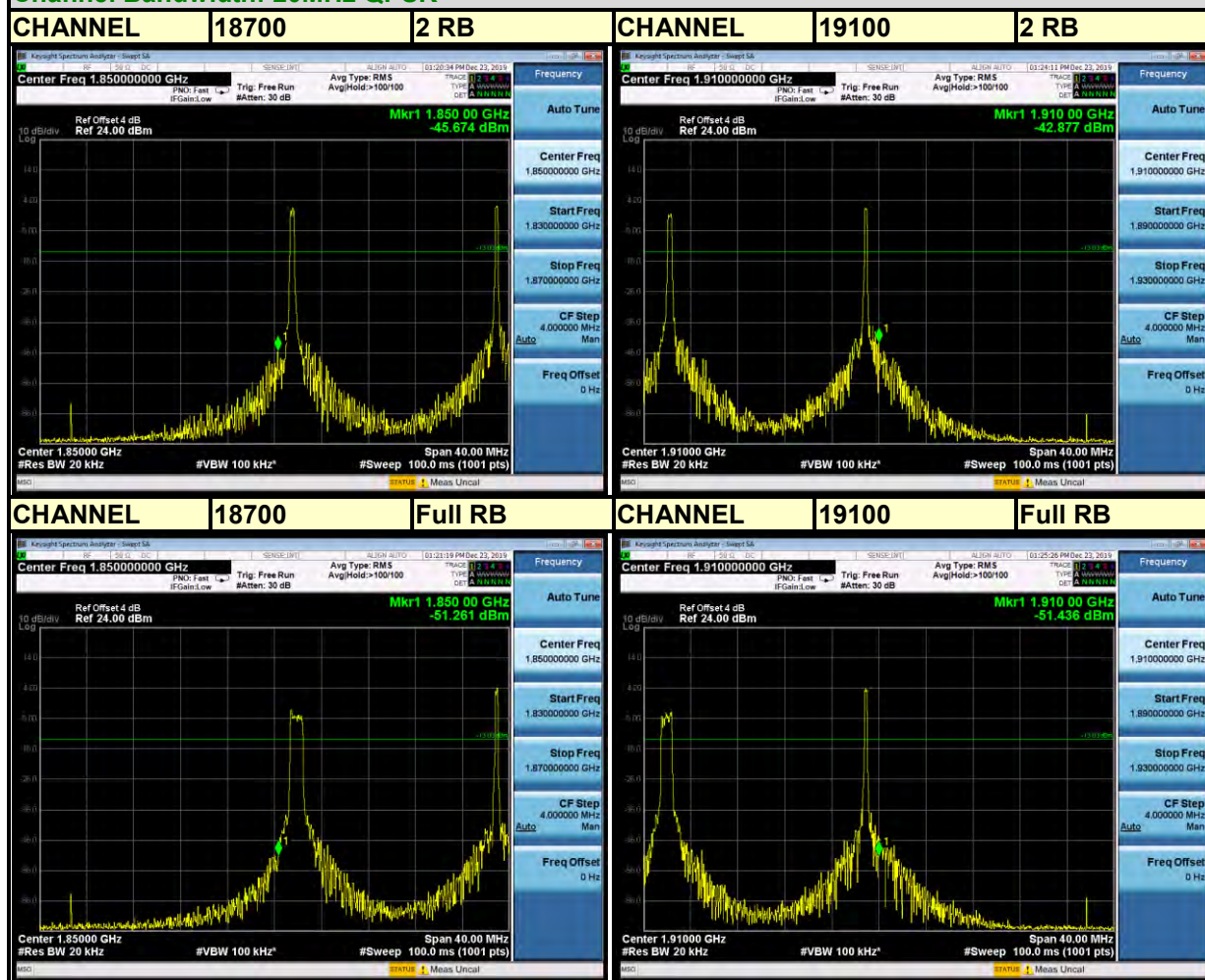


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VERITAS

Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 2

Channel Bandwidth: 20MHz QPSK

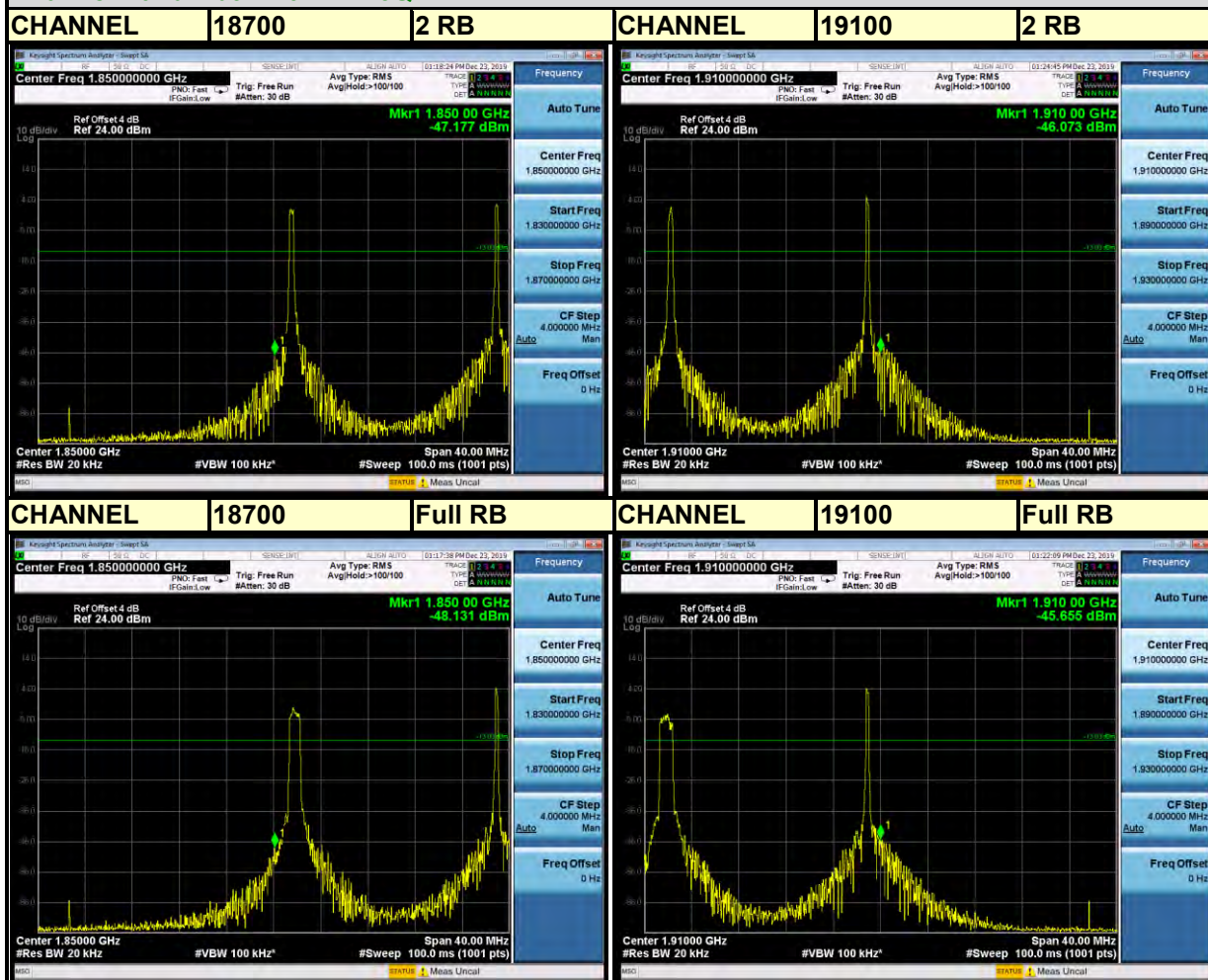




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VERITAS

Test Report No.: RF191122W002-2

Channel Bandwidth: 20MHz 16QAM



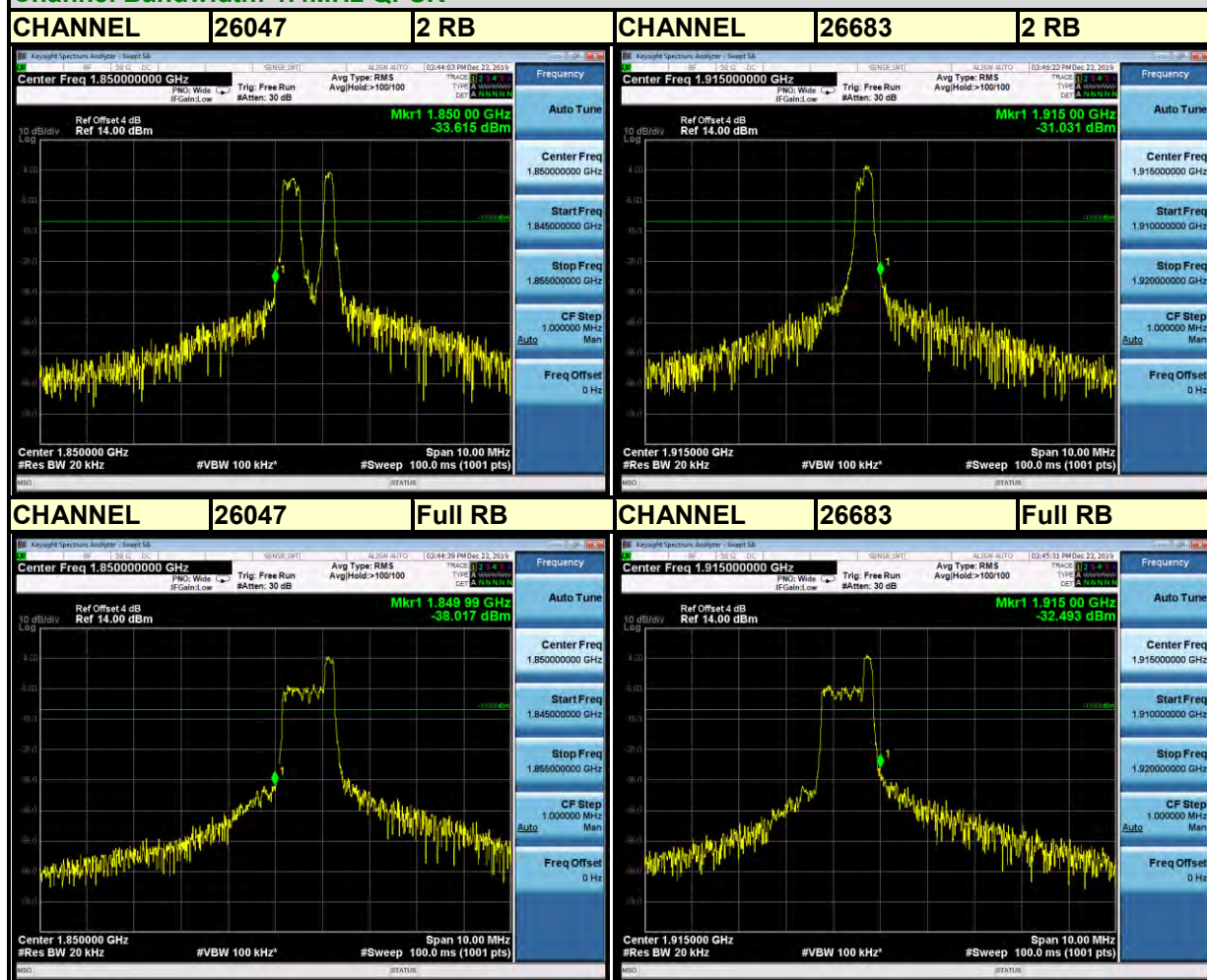


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Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 25

Channel Bandwidth: 1.4MHz QPSK

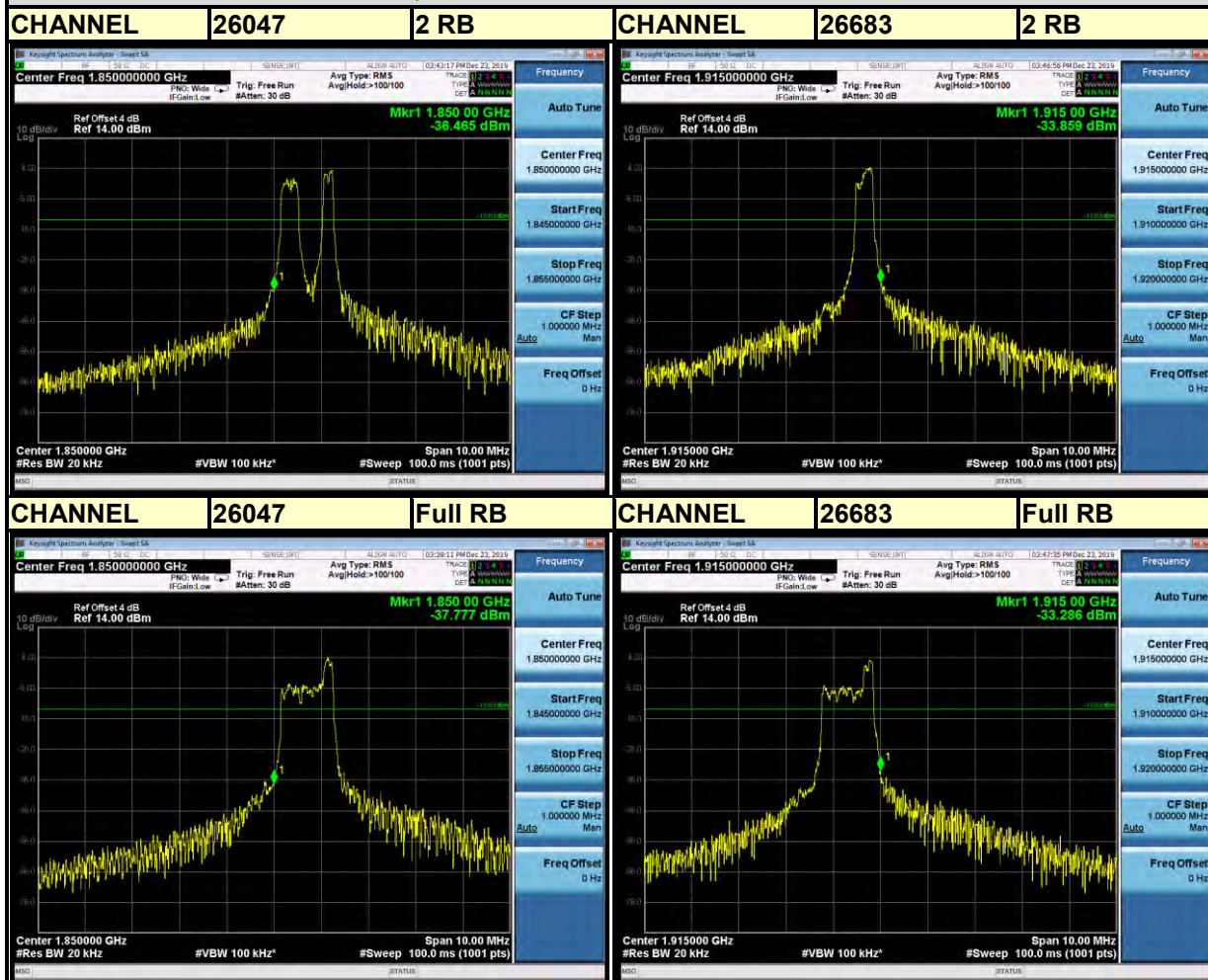




BUREAU
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Test Report No.: RF191122W002-2

Channel Bandwidth: 1.4MHz 16QAM



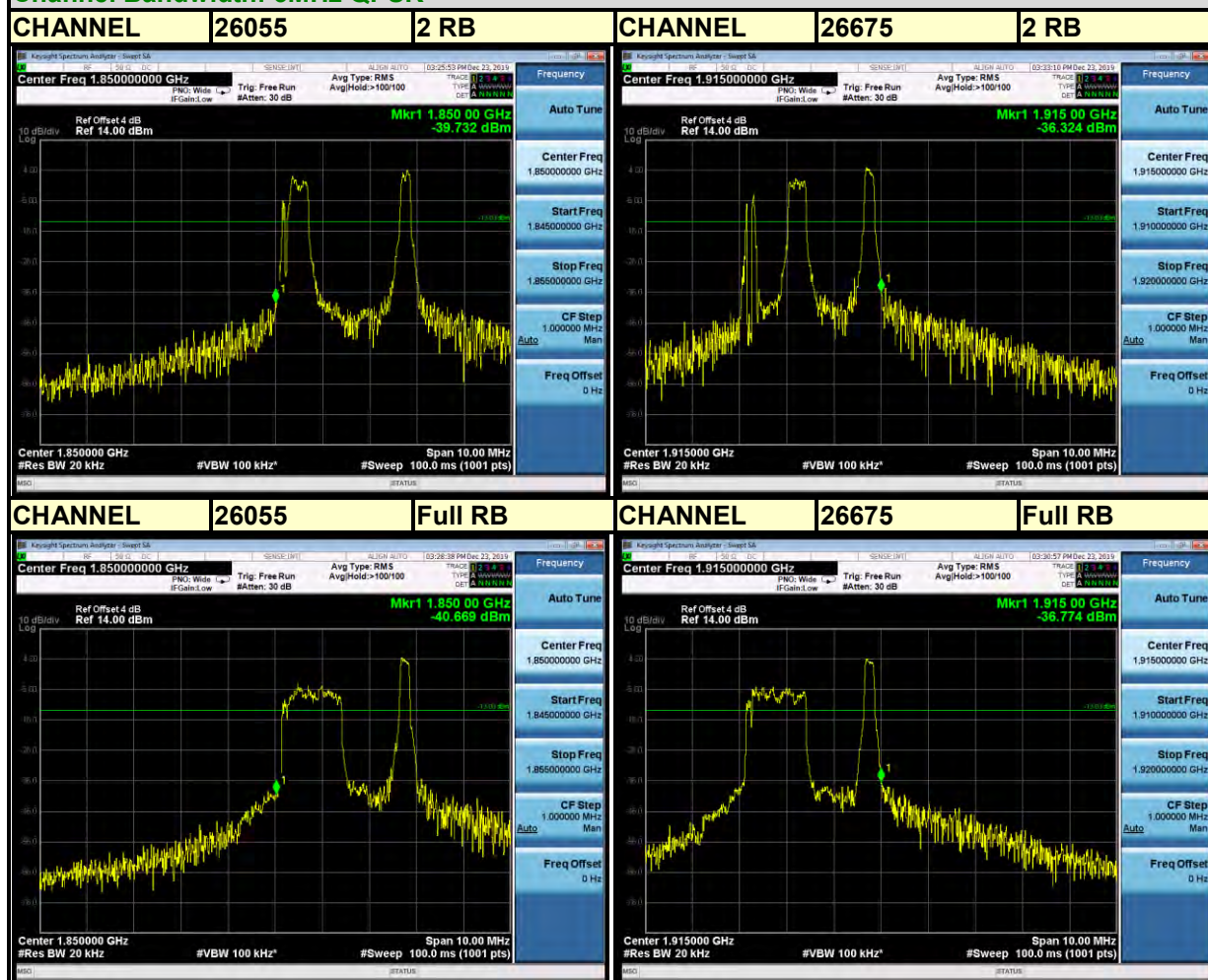


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Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 25

Channel Bandwidth: 3MHz QPSK

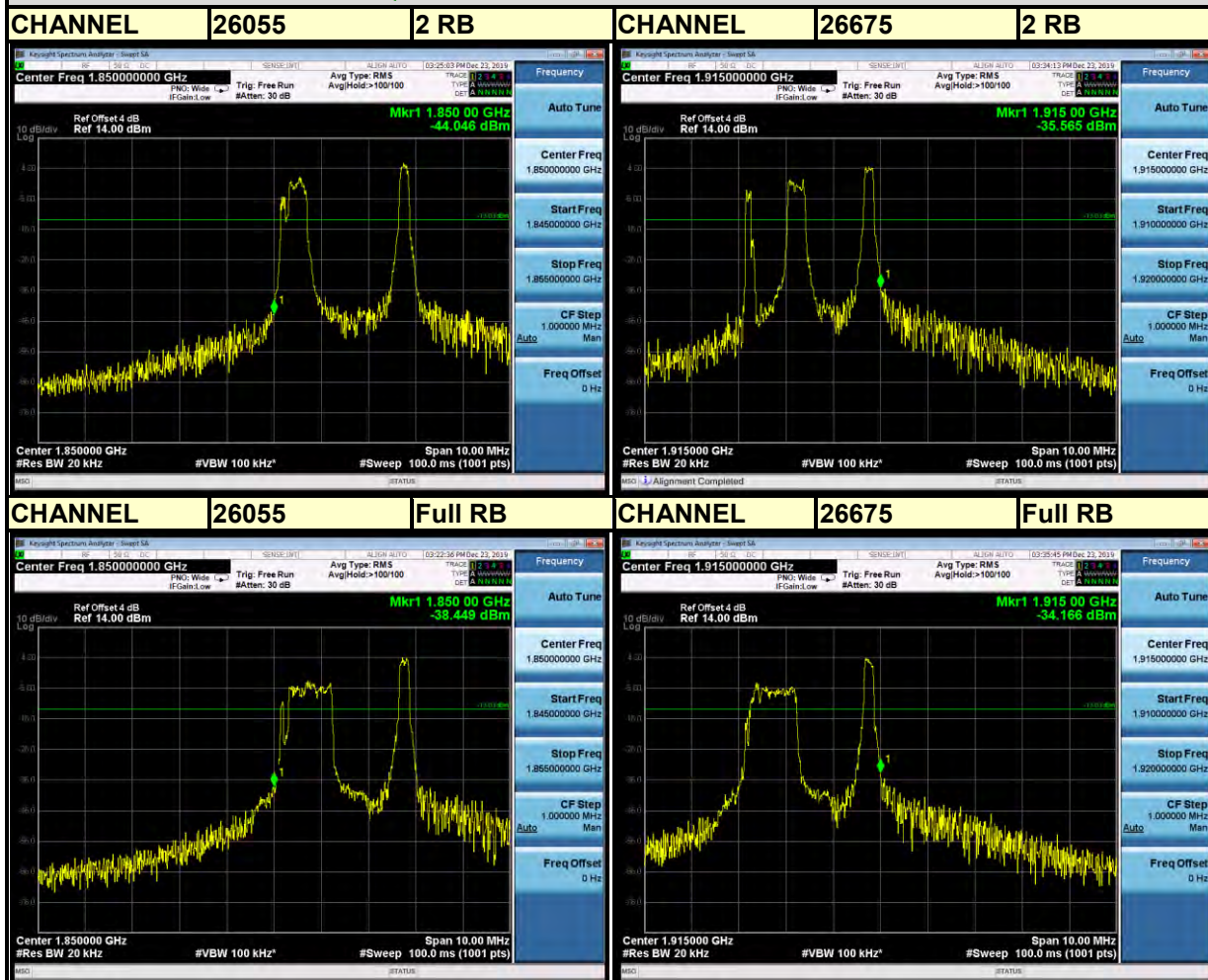




BUREAU
VERITAS

Test Report No.: RF191122W002-2

Channel Bandwidth: 3MHz 16QAM



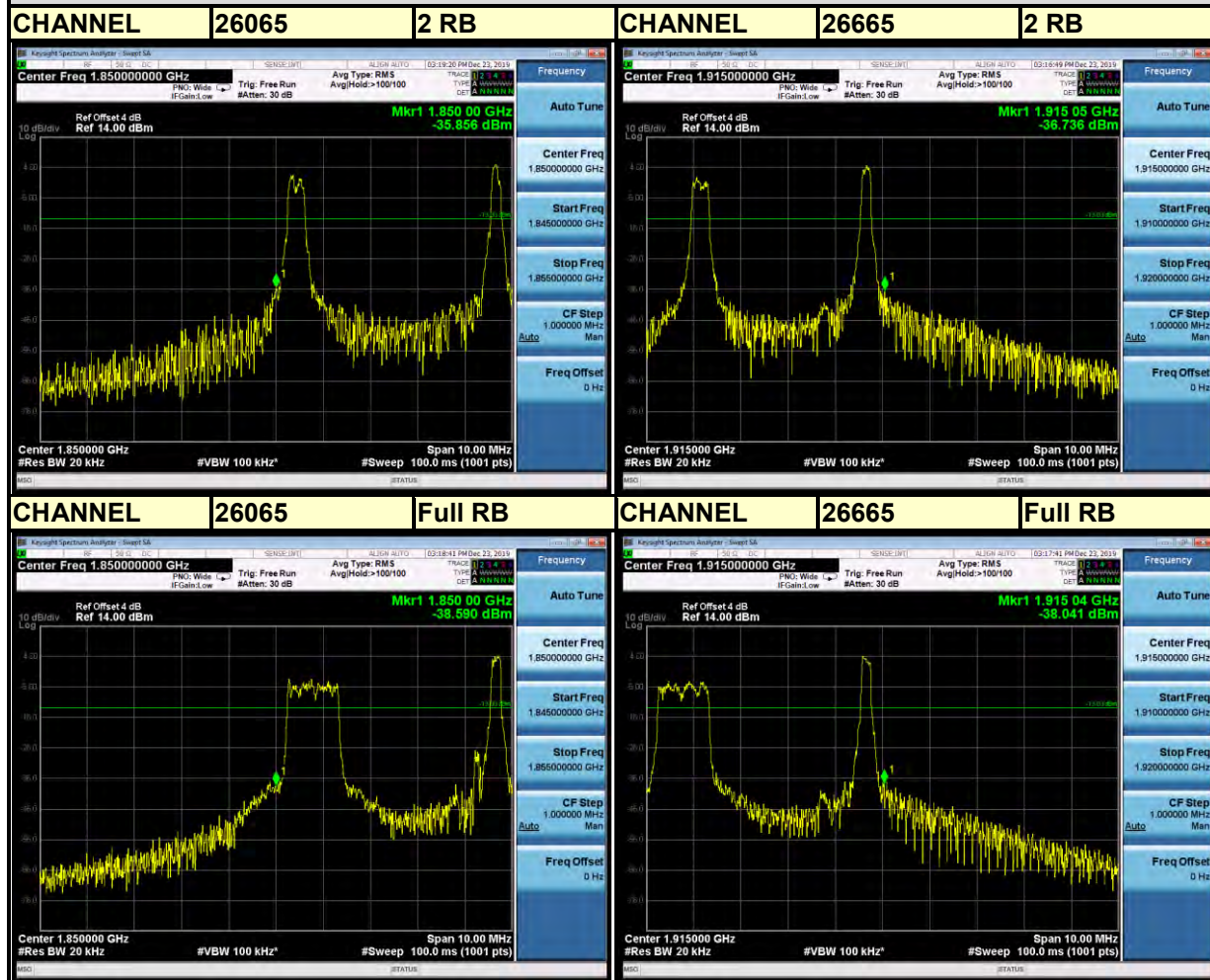


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VERITAS

Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 25

Channel Bandwidth: 5MHz QPSK

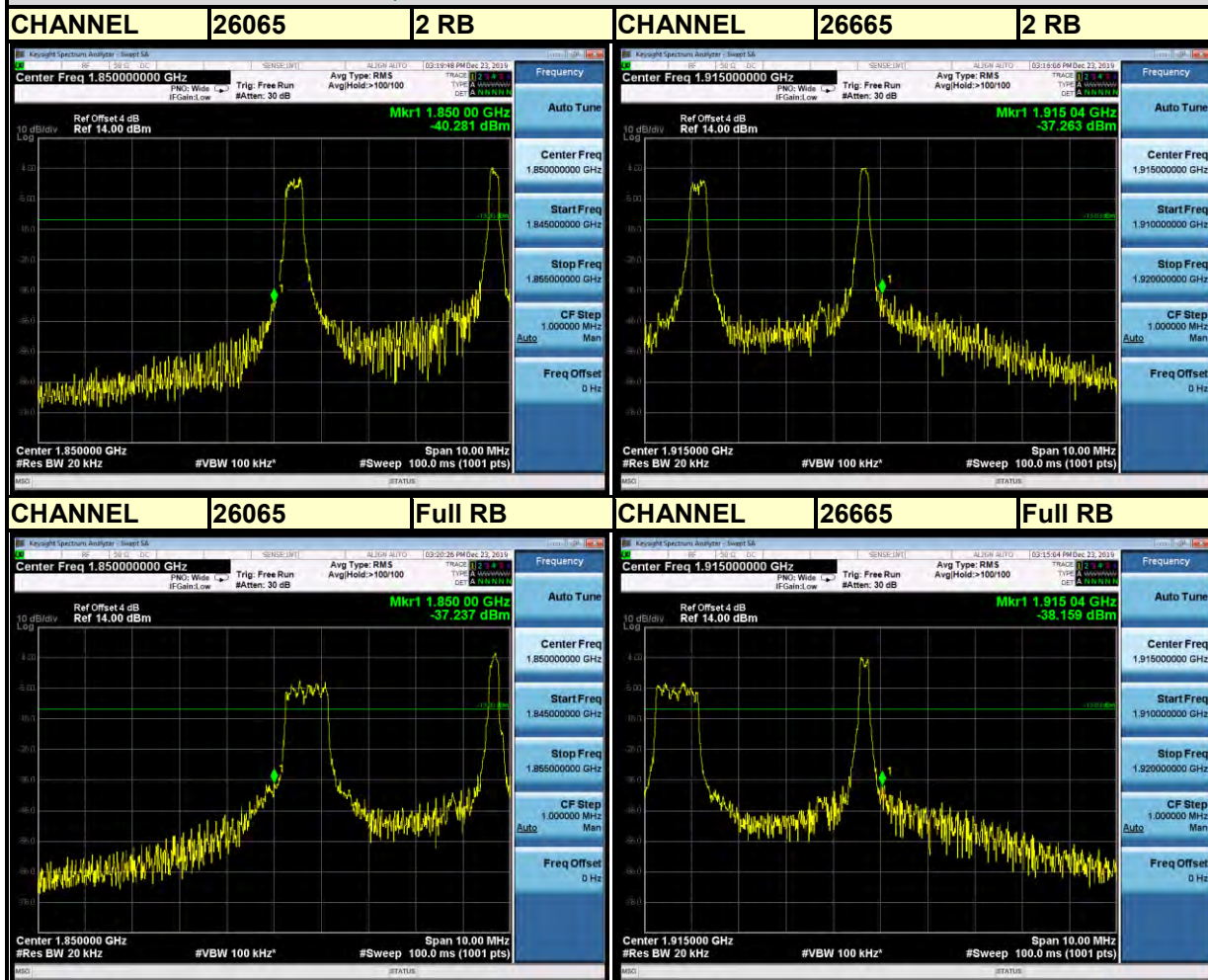




BUREAU
VERITAS

Test Report No.: RF191122W002-2

Channel Bandwidth: 5MHz 16QAM



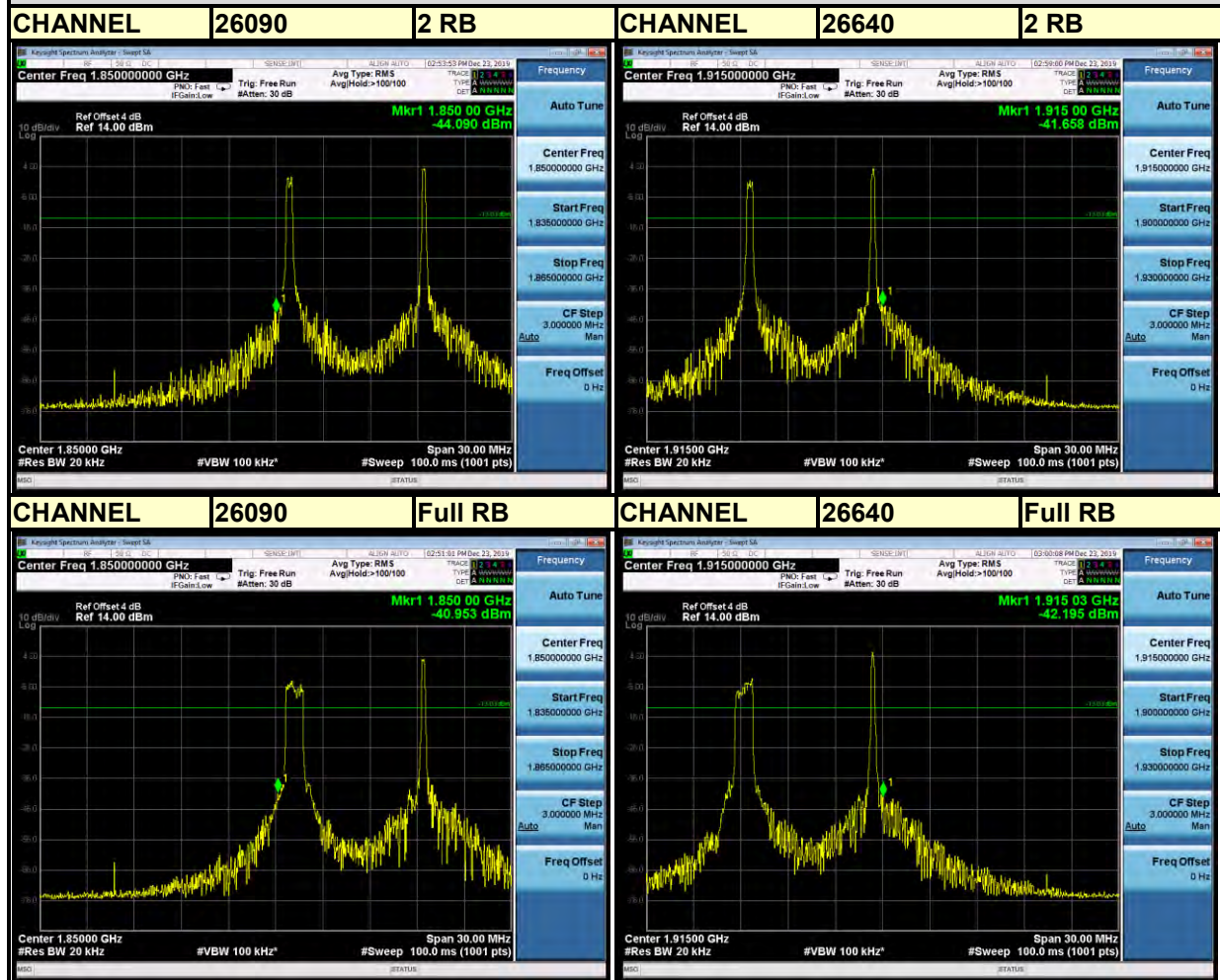


BUREAU
VERITAS

Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 25

Channel Bandwidth: 10MHz QPSK

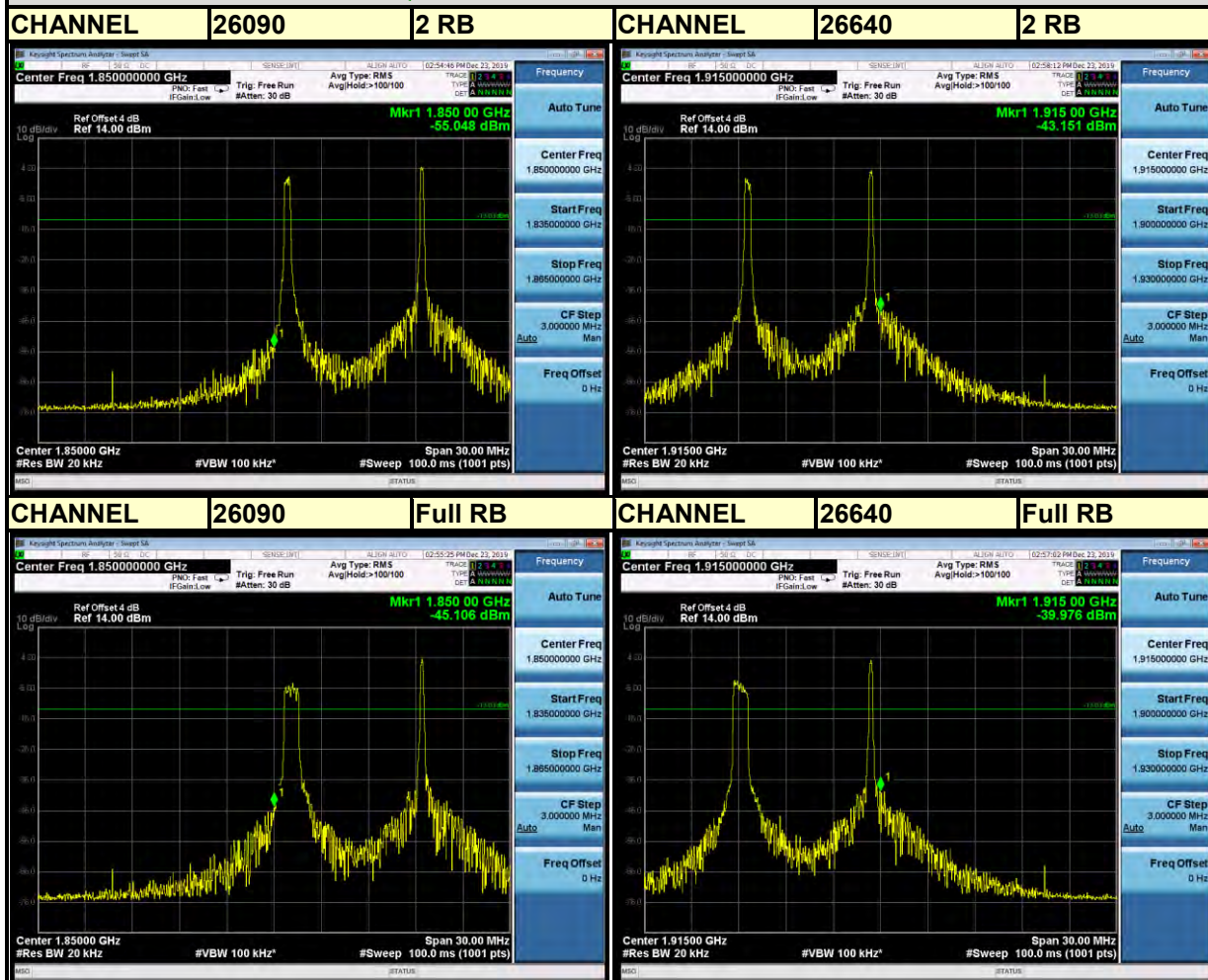




BUREAU
VERITAS

Test Report No.: RF191122W002-2

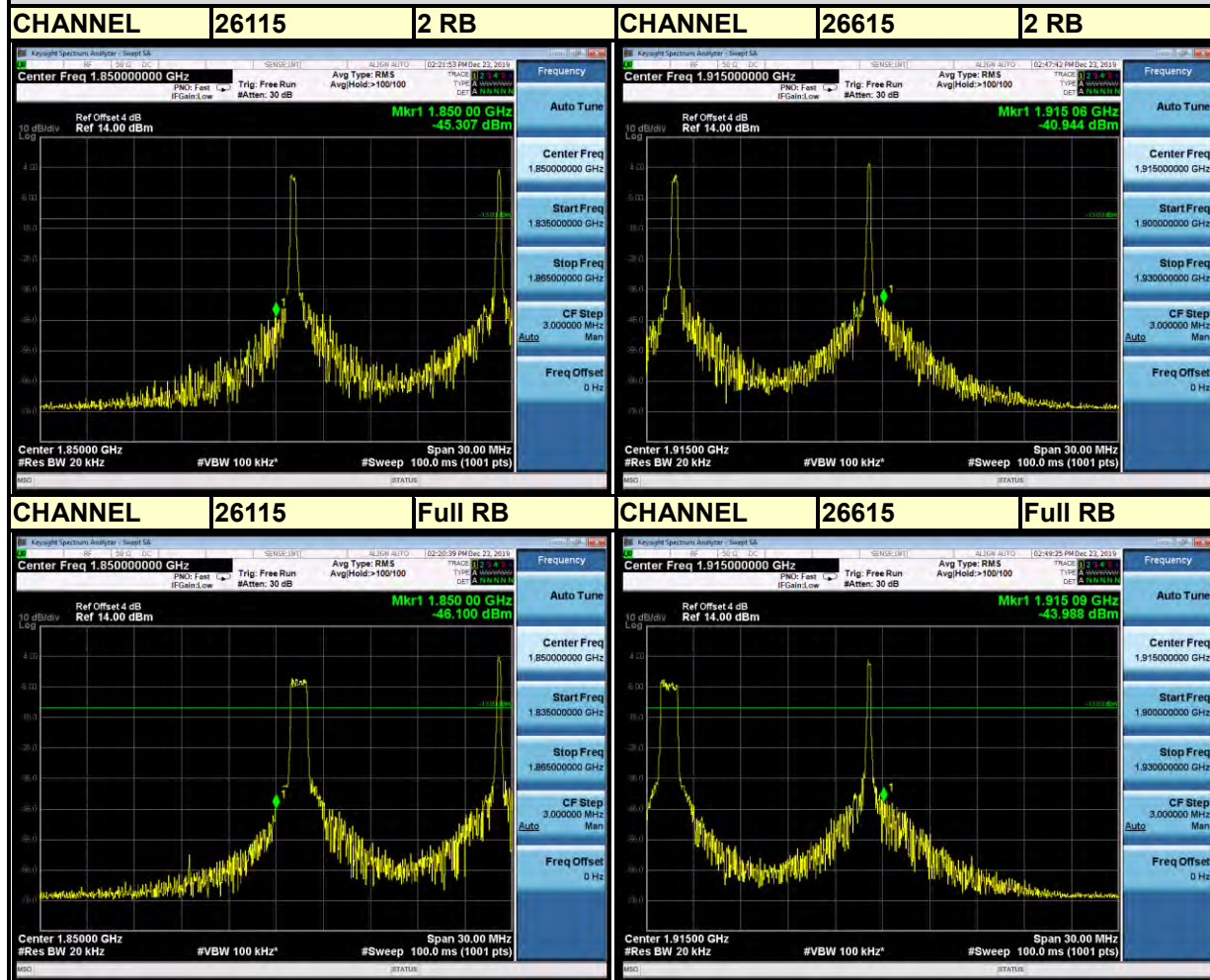
Channel Bandwidth: 10MHz 16QAM





LTE CAT-M1 BAND 25

Channel Bandwidth: 15MHz QPSK

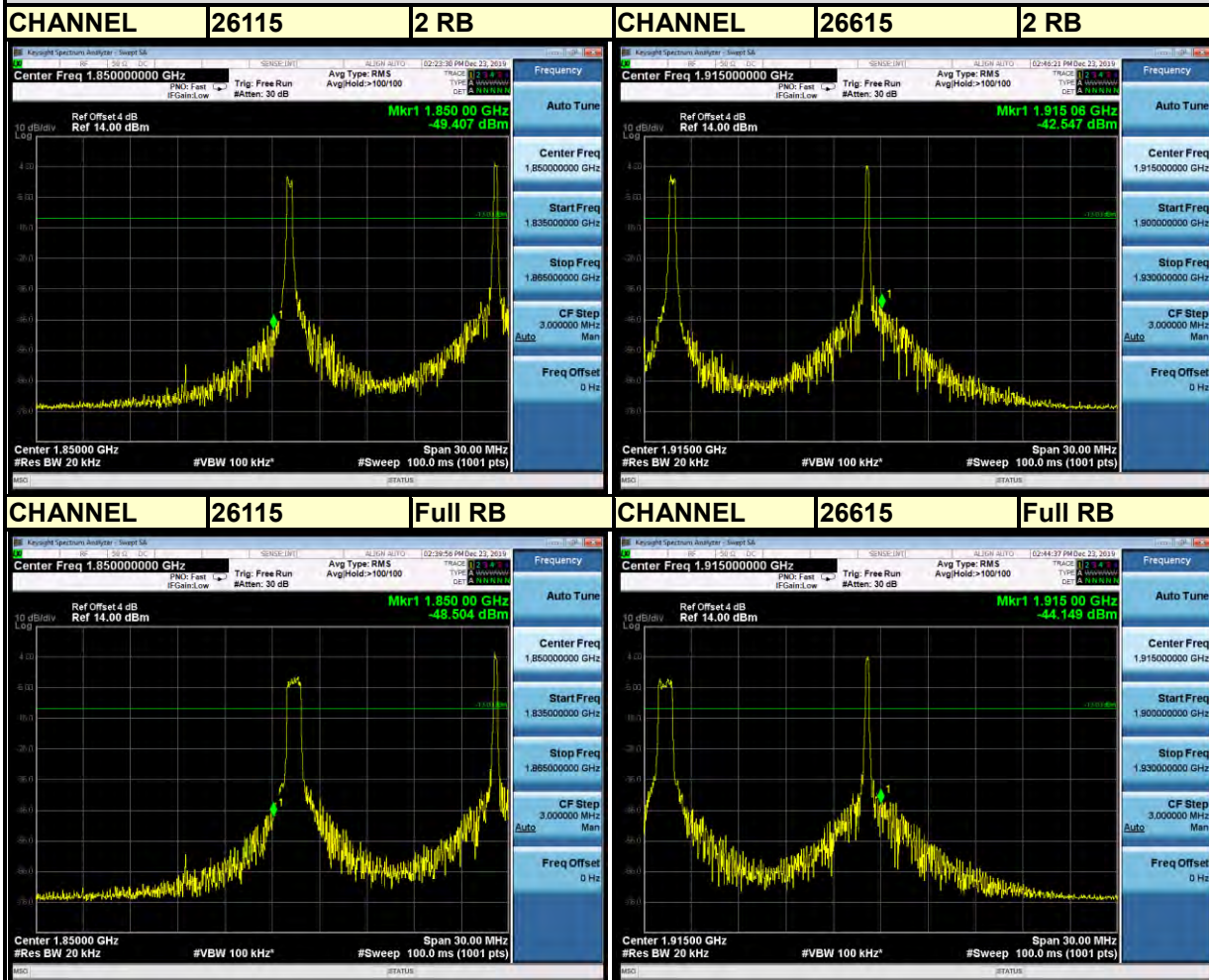




BUREAU
VERITAS

Test Report No.: RF191122W002-2

Channel Bandwidth: 15MHz 16QAM



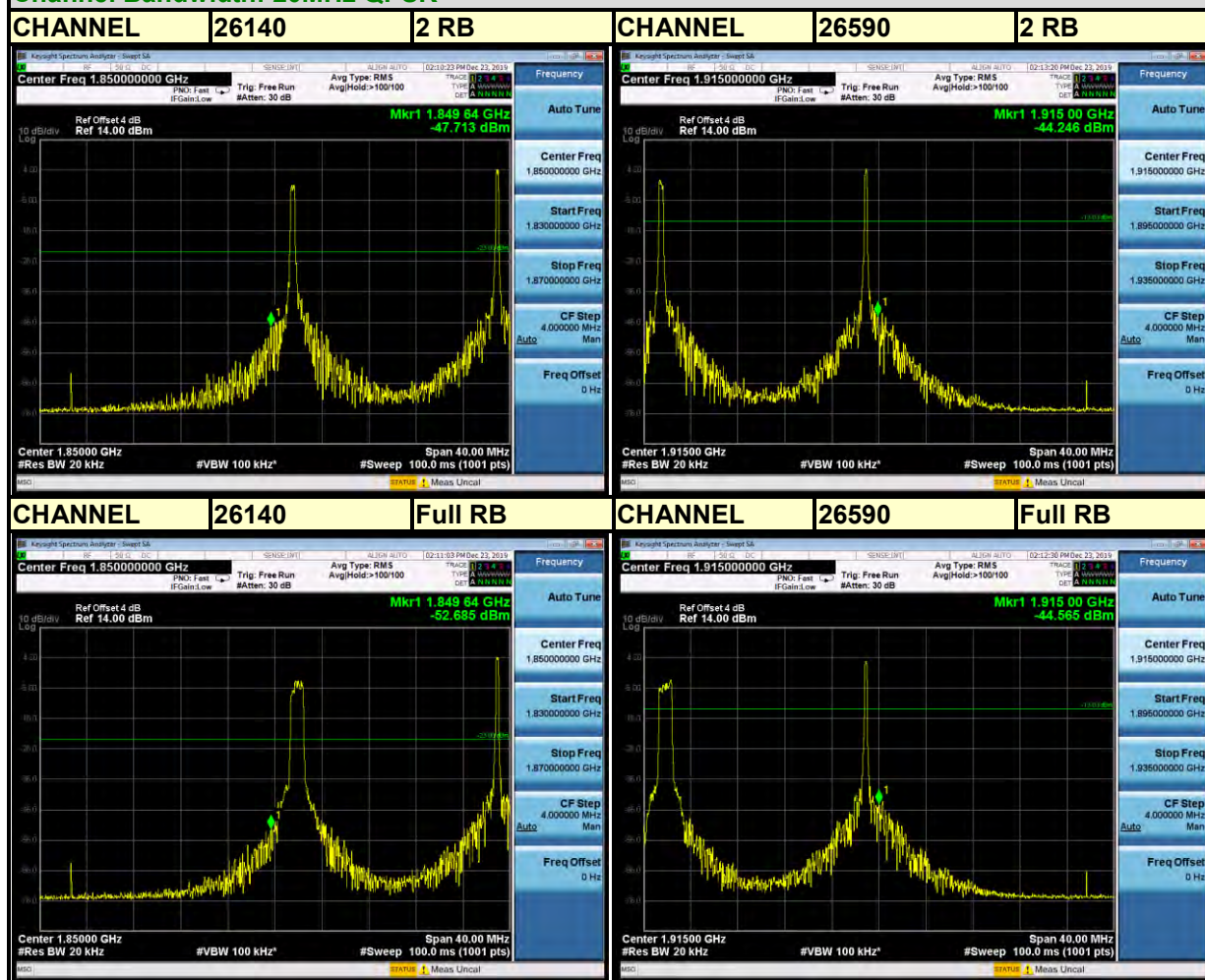


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Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 25

Channel Bandwidth: 20MHz QPSK

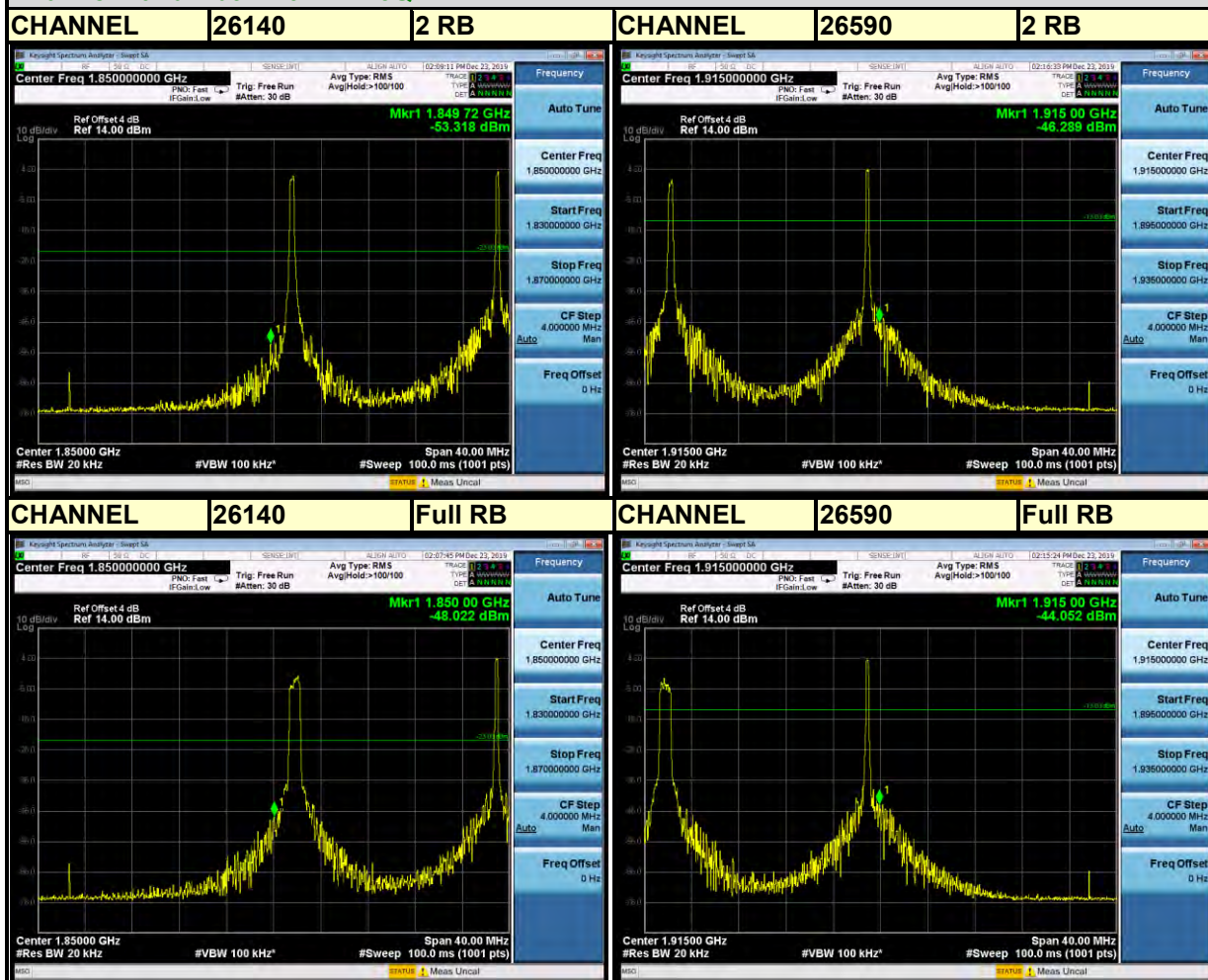




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VERITAS

Test Report No.: RF191122W002-2

Channel Bandwidth: 20MHz 16QAM





3.5 CONDUCTED SPURIOUS EMISSIONS

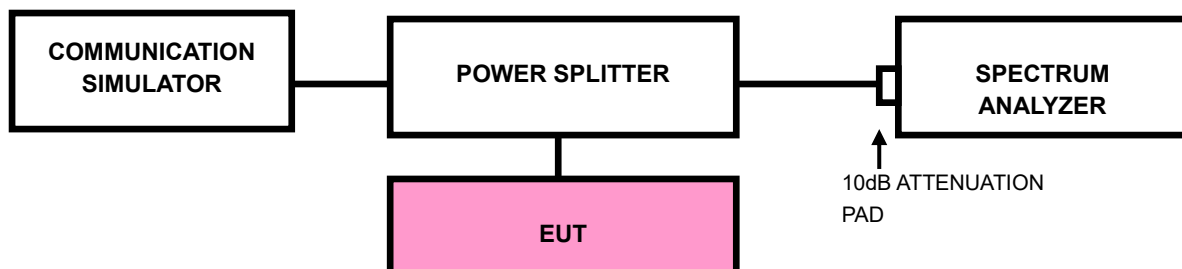
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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

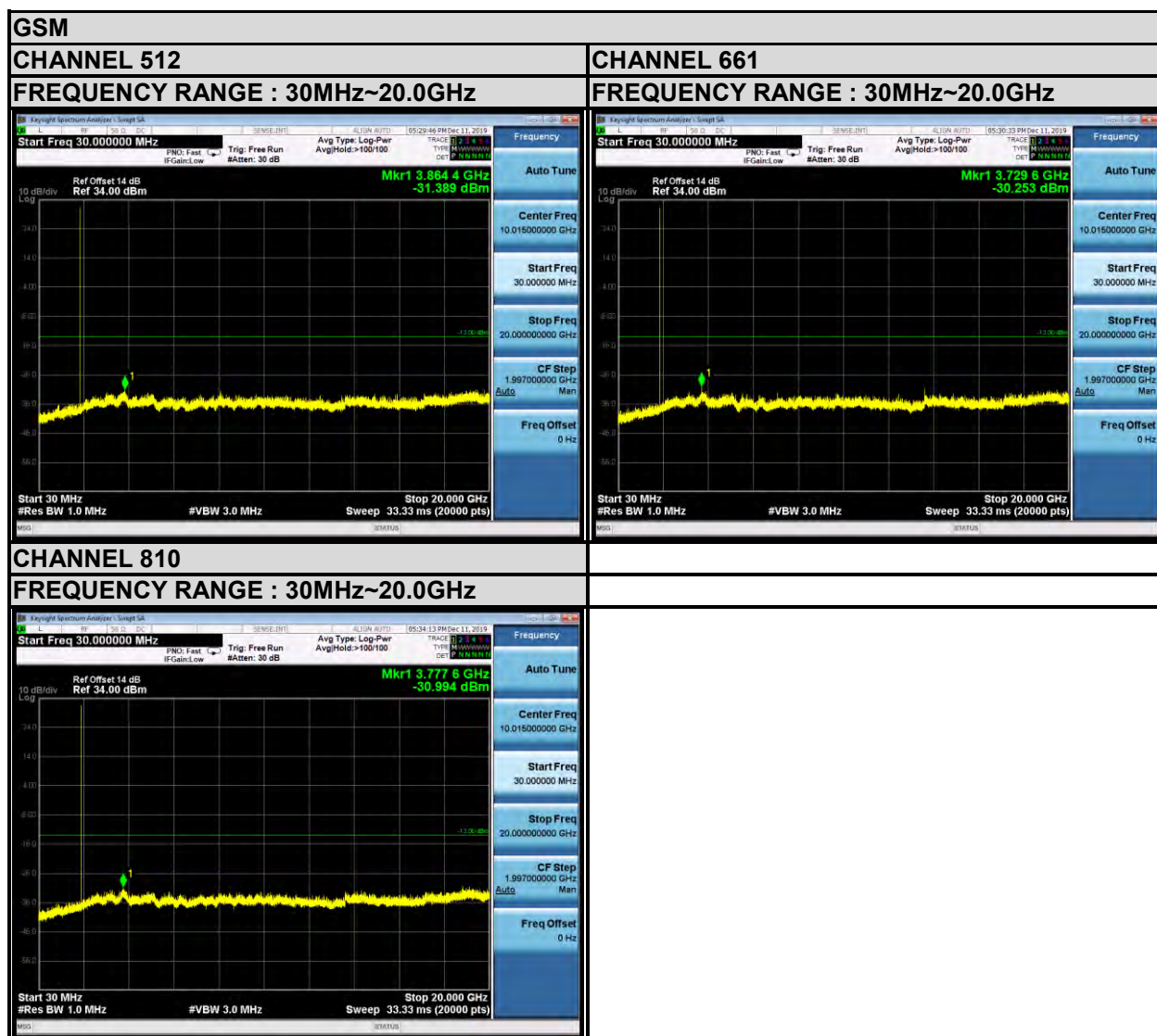
- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 30 MHz to 19.1GHz. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.5.3 TEST SETUP





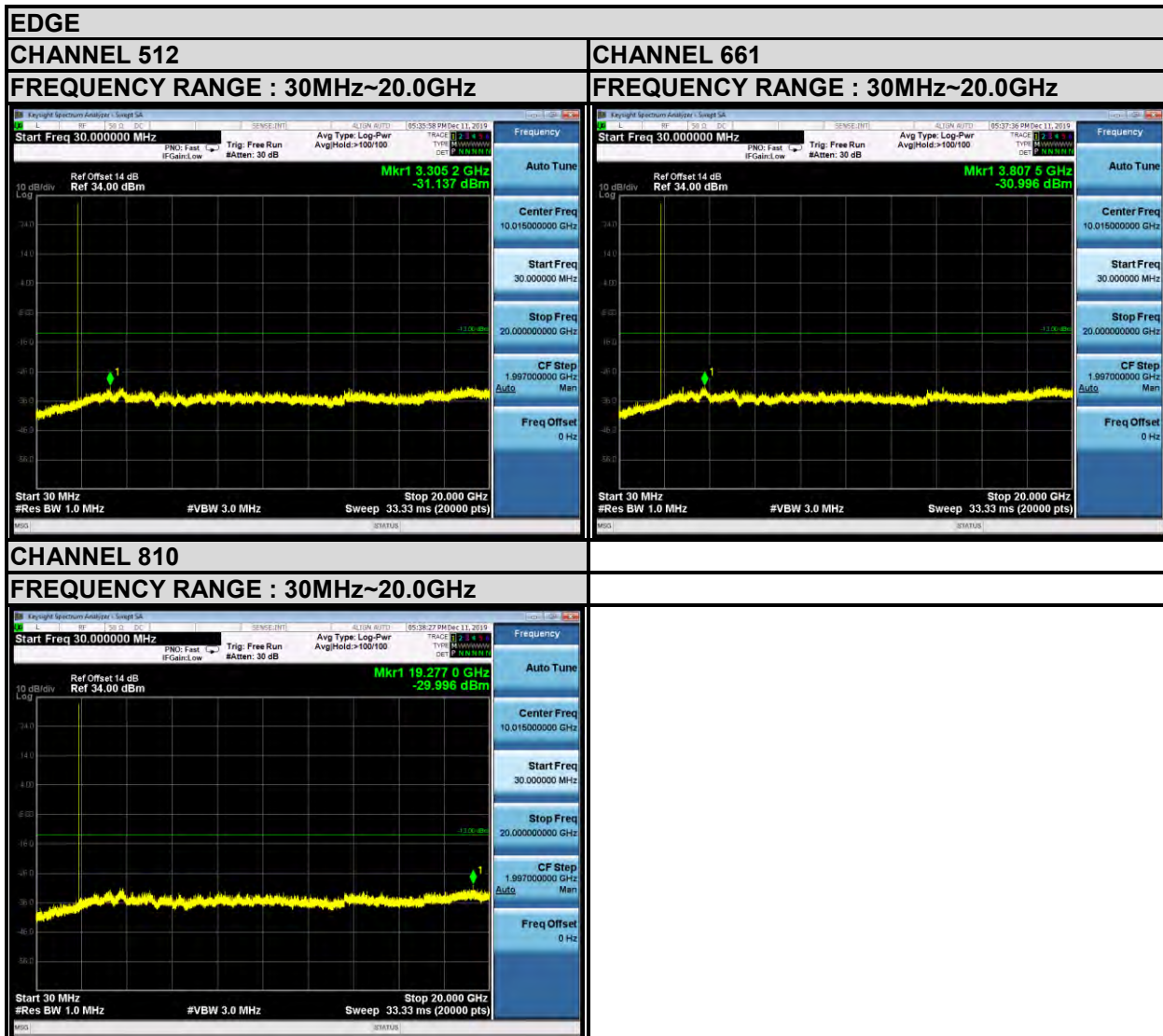
3.5.4 TEST RESULTS





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Test Report No.: RF191122W002-2





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Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 2

1.4MHz / QPSK

CHANNEL 18607

FREQUENCY RANGE : 30MHz~20.0GHz



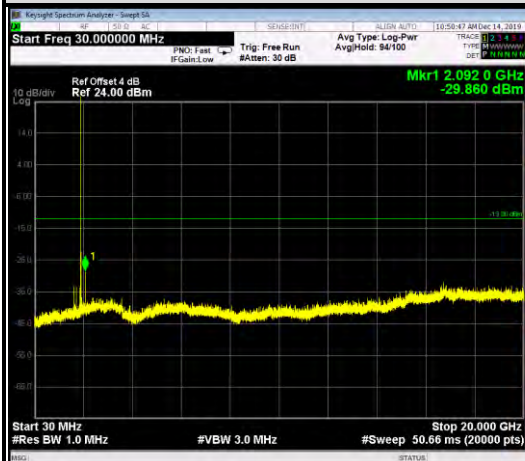
CHANNEL 18900

FREQUENCY RANGE : 30MHz~20.0GHz



CHANNEL 19193

FREQUENCY RANGE : 30MHz~20.0GHz





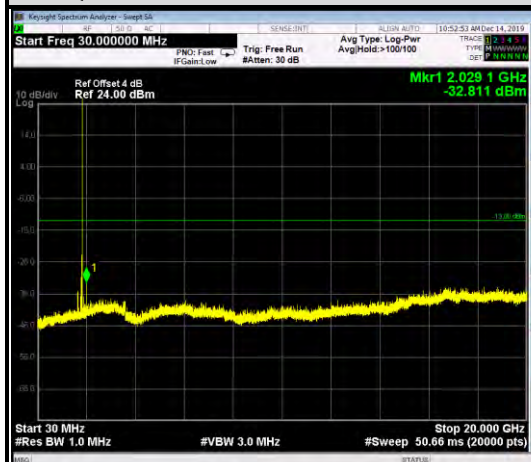
BUREAU
VERITAS

Test Report No.: RF191122W002-2

3MHz / QPSK

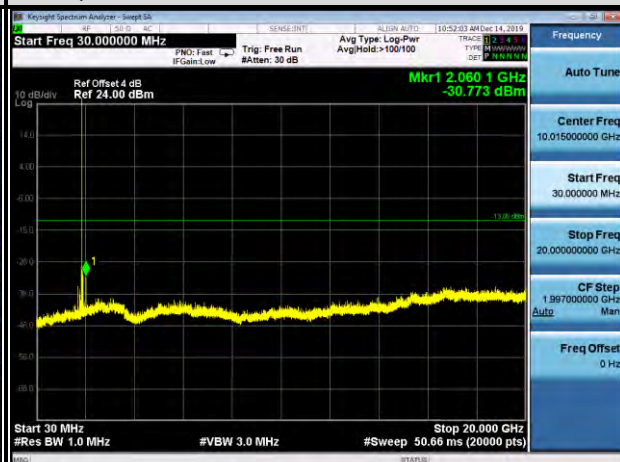
CHANNEL 18615

FREQUENCY RANGE : 30MHz~20.0GHz



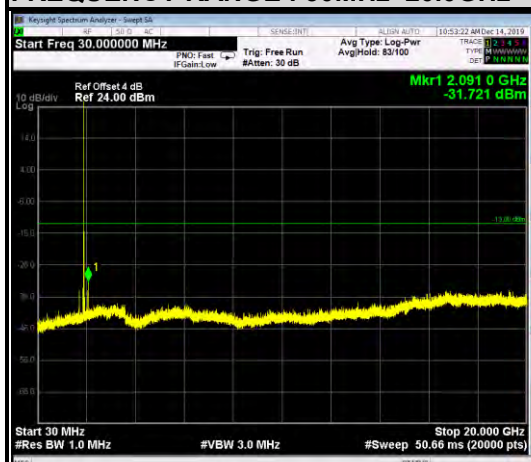
CHANNEL 18900

FREQUENCY RANGE : 30MHz~20.0GHz



CHANNEL 19185

FREQUENCY RANGE : 30MHz~20.0GHz





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Test Report No.: RF191122W002-2

5MHz / QPSK

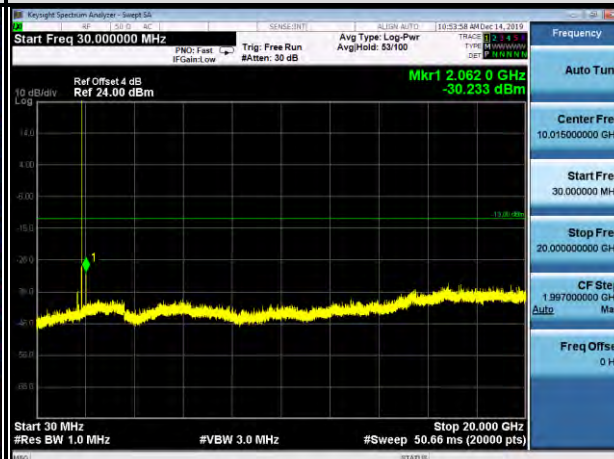
CHANNEL 18625

FREQUENCY RANGE : 30MHz~20.0GHz



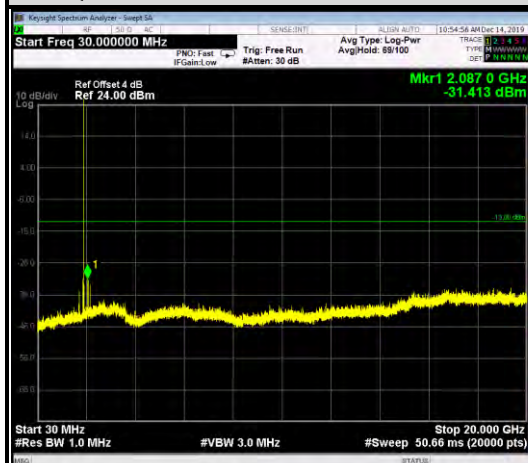
CHANNEL 18900

FREQUENCY RANGE : 30MHz~20.0GHz



CHANNEL 19175

FREQUENCY RANGE : 30MHz~20.0GHz





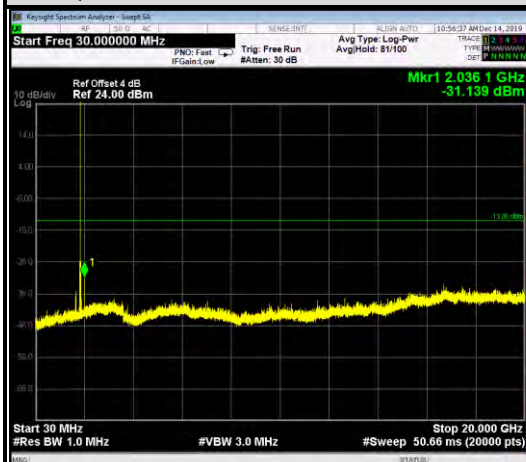
BUREAU
VERITAS

Test Report No.: RF191122W002-2

10MHz / QPSK

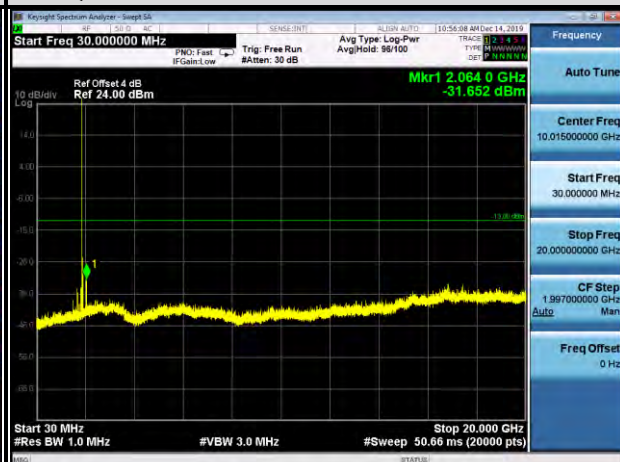
CHANNEL 18650

FREQUENCY RANGE : 30MHz~20.0GHz



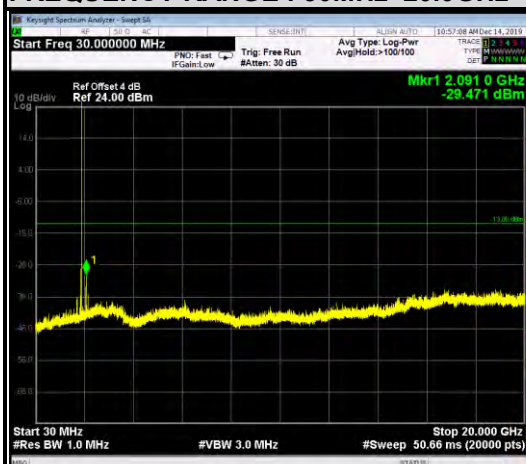
CHANNEL 18900

FREQUENCY RANGE : 30MHz~20.0GHz



CHANNEL 19150

FREQUENCY RANGE : 30MHz~20.0GHz





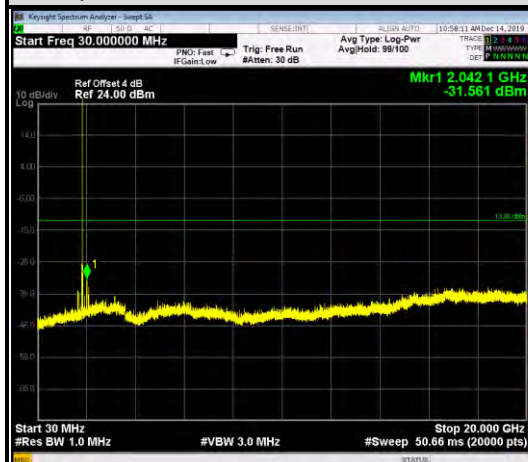
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VERITAS

Test Report No.: RF191122W002-2

15MHz / QPSK

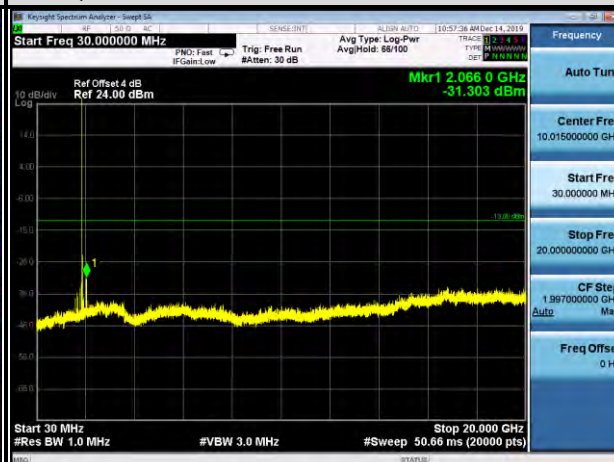
CHANNEL 18675

FREQUENCY RANGE : 30MHz~20.0GHz



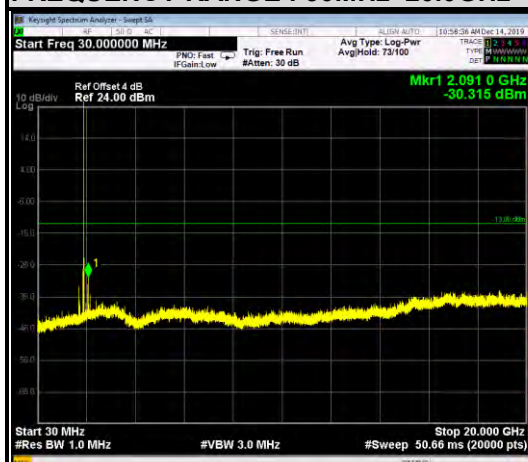
CHANNEL 18900

FREQUENCY RANGE : 30MHz~20.0GHz



CHANNEL 19125

FREQUENCY RANGE : 30MHz~20.0GHz





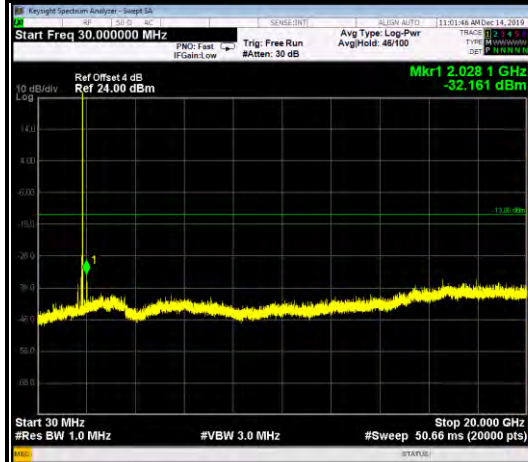
BUREAU
VERITAS

Test Report No.: RF191122W002-2

20MHz / QPSK

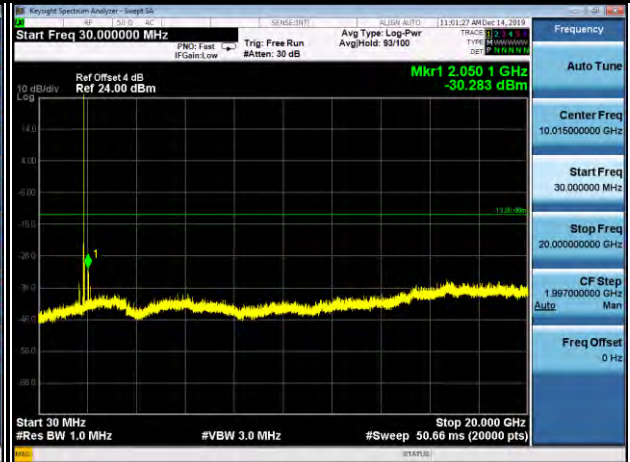
CHANNEL 18700

FREQUENCY RANGE : 30MHz~20.0GHz



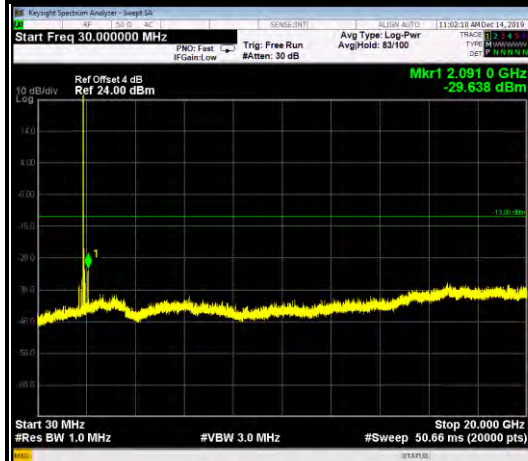
CHANNEL 18900

FREQUENCY RANGE : 30MHz~20.0GHz



CHANNEL 19100

FREQUENCY RANGE : 30MHz~20.0GHz





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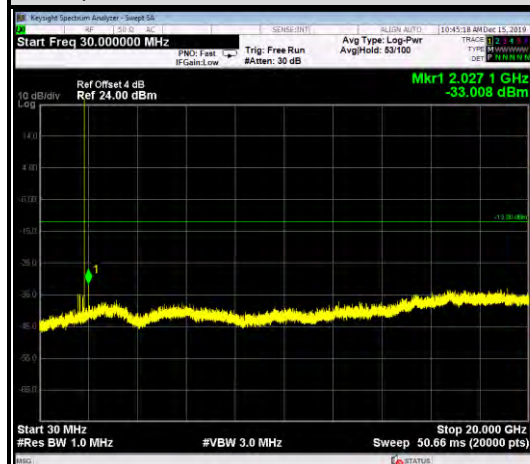
Test Report No.: RF191122W002-2

LTE CAT-M1 BAND 25

1.4MHz / QPSK

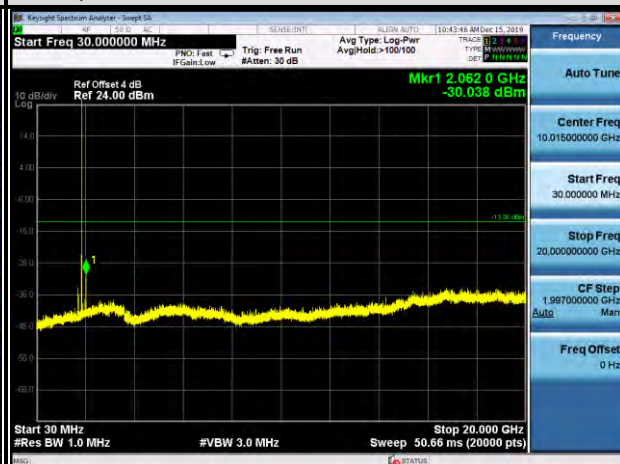
CHANNEL 26047

FREQUENCY RANGE : 30MHz~20.0GHz



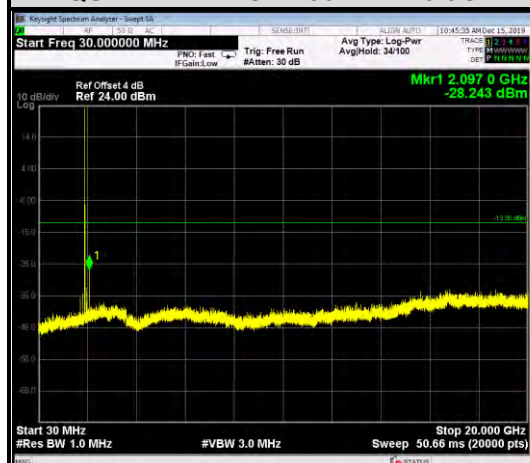
CHANNEL 26365

FREQUENCY RANGE : 30MHz~20.0GHz



CHANNEL 26683

FREQUENCY RANGE : 30MHz~20.0GHz





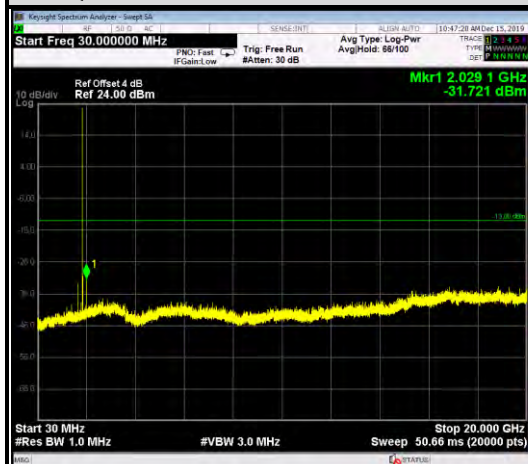
BUREAU
VERITAS

Test Report No.: RF191122W002-2

3MHz / QPSK

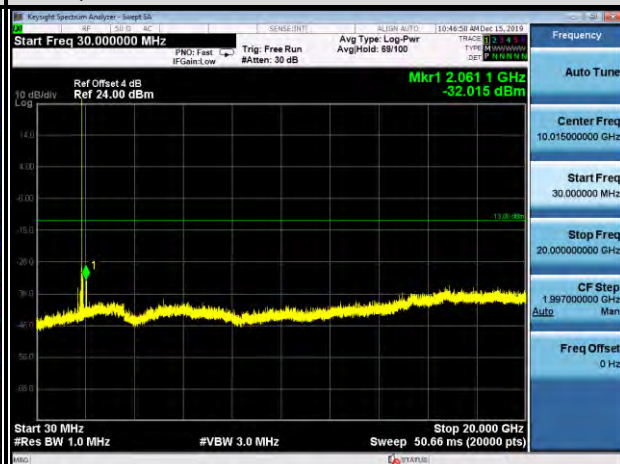
CHANNEL 26055

FREQUENCY RANGE : 30MHz~20.0GHz



CHANNEL 26365

FREQUENCY RANGE : 30MHz~20.0GHz



CHANNEL 26675

FREQUENCY RANGE : 30MHz~20.0GHz

