



Test Report No.: W7L-P23100014RF10



# VARIANT FCC TEST REPORT (PART 96)

Applicant:	Nokia of America Corp
Address:	3201, Olympus Blvd, Dallas, TX 75019, USA

Manufacturer or Supplier:	Nokia of America Corp
Address:	3201, Olympus Blvd, Dallas, TX 75019, USA
Product:	Nokia Industrial 5G handheld HHRA501x
Brand Name:	Nokia
Model Name:	HHRA501a
Marketing Name:	Nokia Industrial 5G handheld HHRA501a
FCC ID:	2AVO2-HHRA501A
Date of tests:	Nov. 24, 2022 ~ Feb. 03, 2023

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

47 CFR FCC Part 96

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

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Date: Oct. 23, 2023	Date: Oct. 23, 2023

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**BUREAU**  
**VERITAS**

Test Report No.: W7L-P23100014RF10

## RELEASE CONTROL RECORD

ISSUE NO.	DESCRIPTION	DATE ISSUED
W7L-P22110036RF10	Original release	Feb. 03, 2023
W7L-P23100014RF10	Based on the original product changing the model name and FCC ID, brand name, marketing name, product name, battery model, applicant and manufacturer information.	Oct. 23, 2023

# 1 SUMMARY OF TEST RESULTS

47 CFR FCC PART 96		
FCC CLAUSE	TEST ITEM	RESULT
2.1046 96.41(b)	Maximum Peak Output Power and Maximum EIRP	Compliance
2.1046 96.41(e)	Conducted Band Edge	Compliance
2.1049	Occupied Bandwidth	Compliance
2.1055	Frequency Stability	Compliance
2.1051 96.41(e)	Conducted Spurious Emissions	Compliance
2.1053 96.41(e)	Radiated Spurious Emissions	Compliance
96.41(g)	Peak-to-Average Power Ratio	Compliance

**Note:**

Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

## 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
Effective Radiated Power	±1.48dB
Frequency Stability	±39.27Hz
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions	±4.98dB
Conducted emissions	±4.01 dB
Occupied Channel Bandwidth	±21.7KHz
Band Edge Measurements	±1.48dB
Peak to average ratio	±0.76dB

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

## 1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 21,22	Feb. 20,23
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.15,22	May.14,23
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.04,22	Sep.03,23
Bilog Antenna	ETS-LINDGRE N	3143B	00161965	Mar. 06,22	Mar. 05,23
Horn Antenna	ETS-LINDGRE N	3117	00168692	Mar. 06,22	Mar. 05,23
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K- SG/QMS-00361	15433	Aug. 24, 22	Aug. 23, 23
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 15,22	Feb. 14,23
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 21,22	Feb.20,23
3m Semi-anechoic Chamber	ETS-LINDGRE N	9m*6m*6m	Euroshieldpn- CT0001143-121 6	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120	3.1.36	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	May. 07,22	May. 06,23
Power Meter	Anritsu	ML2495A	1506002	Feb. 22,22	Feb. 21,23
Power Sensor	Anritsu	MA2411B	1339352	May. 07,22	May. 06,23
Temperature Chamber	ESPEC	SH-242	93000855	May. 12,22	May. 11,23
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 18,22	Feb. 17,23
Base station R&S CMW500	Rohde&Schwa rz	CMW500	153085	May.12,22	May.11,23
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 24,22	Aug. 23,23

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



## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Nokia Industrial 5G handheld HHRA501x	
<b>BRAND NAME</b>	Nokia	
<b>MODEL NAME</b>	HHRA501a	
<b>MARKETING NAME</b>	Nokia Industrial 5G handheld HHRA501a	
<b>NOMINAL VOLTAGE</b>	5.0Vdc(adapter or host equipment) 3.7Vdc (Li-ion, battery)	
<b>MODULATION TECHNOLOGY</b>	<b>LTE</b>	QPSK, 16QAM, 64QAM
<b>FREQUENCY RANGE</b>	<b>LTE Band 42 Channel Bandwidth: 5MHz</b>	3552.5 MHz ~ 3597.5MHz
	<b>LTE Band 42 Channel Bandwidth: 10MHz</b>	3555MHz ~ 3595MHz
	<b>LTE Band 42 Channel Bandwidth: 15MHz</b>	3557.5MHz ~ 3592.5MHz
	<b>LTE Band 42 Channel Bandwidth: 20MHz</b>	3560MHz ~ 3590MHz
	<b>LTE Band 43 Channel Bandwidth: 5MHz</b>	3602.5MHz ~ 3697.5MHz
	<b>LTE Band 43 Channel Bandwidth: 10MHz</b>	3605MHz ~ 3695MHz
	<b>LTE Band 43 Channel Bandwidth: 15MHz</b>	3607.5MHz ~ 3692.5MHz
	<b>LTE Band 43 Channel Bandwidth: 20MHz</b>	3610MHz ~ 3690MHz
	<b>LTE Band 48 Channel Bandwidth: 5MHz</b>	3552.5MHz ~ 3697.5MHz
	<b>LTE Band 48 Channel Bandwidth: 10MHz</b>	3555MHz ~ 3695MHz
	<b>LTE Band 48 Channel Bandwidth: 15MHz</b>	3557.5MHz ~ 3692.5MHz
	<b>LTE Band 48 Channel Bandwidth: 20MHz</b>	3560MHz ~ 3690MHz
	<b>LTE Band CA_48C Channel Bandwidth: 5MHz+20MHz</b>	3553.3MHz ~ 3690MHz
	<b>LTE Band CA_48C Channel Bandwidth: 20MHz +5MHz</b>	3560MHz ~ 3696.7MHz
	<b>LTE Band CA_48C Channel Bandwidth: 10MHz +20MHz</b>	3555.5MHz ~ 3690MHz



<b>FREQUENCY RANGE</b>	LTE Band CA_48C Channel Bandwidth: 20MHz +10MHz	3560MHz ~ 3694.5MHz
	LTE Band CA_48C Channel Bandwidth: 15MHz +20MHz	3557.8MHz ~ 3690MHz
	LTE Band CA_48C Channel Bandwidth: 20MHz +15MHz	3560MHz ~ 3692.2MHz
	LTE Band CA_48C Channel Bandwidth: 20MHz +20MHz	3560MHz ~ 3690MHz
<b>EMISSION DESIGNATOR</b>	LTE Band 48 Channel Bandwidth: 5MHz	QPSK: 4M50G7D
		16QAM: 4M50W7D
		64QAM: 4M50W7D
	LTE Band 48 Channel Bandwidth: 10MHz	QPSK: 8M98G7D
		16QAM: 8M98W7D
		64QAM: 8M98W7D
	LTE Band 48 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M5W7D
		64QAM: 13M5W7D
	LTE Band 48 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 17M9W7D
		64QAM: 17M9W7D
	LTE Band CA_48C Channel Bandwidth: 5MHz+20MHz	QPSK: 22M6G7D
		16QAM: 22M7W7D
		64QAM: 22M6W7D
	LTE Band CA_48C Channel Bandwidth: 20MHz +5MHz	QPSK: 22M9G7D
16QAM: 22M9W7D		
64QAM: 22M8W7D		
LTE Band CA_48C Channel Bandwidth: 10MHz +20MHz	QPSK: 27M9G7D	
	16QAM: 27M7W7D	
	64QAM: 27M5W7D	
LTE Band CA_48C Channel Bandwidth: 20MHz +10MHz	QPSK: 27M9G7D	
	16QAM: 27M7W7D	
	64QAM: 27M7W7D	
LTE Band CA_48C Channel Bandwidth: 15MHz +20MHz	QPSK: 32M4G7D	
	16QAM: 32M5W7D	
	64QAM: 32M4W7D	
LTE Band CA_48C Channel Bandwidth: 20MHz +15MHz	QPSK: 32M5G7D	
	16QAM: 32M5W7D	
	64QAM: 32M5W7D	
LTE Band CA_48C Channel Bandwidth:	QPSK: 37M4G7D	
	16QAM: 37M4W7D	





	<b>20MHz +20MHz</b>	64QAM: 37M4W7D
<b>MAX. EIRP POWER</b>	<b>LTE Band 42 Channel Bandwidth: 5MHz</b>	139.64mW
	<b>LTE Band 42 Channel Bandwidth: 10MHz</b>	140.6mW
	<b>LTE Band 42 Channel Bandwidth: 15MHz</b>	139.64mW
	<b>LTE Band 42 Channel Bandwidth: 20MHz</b>	141.25mW
	<b>LTE Band 43 Channel Bandwidth: 5MHz</b>	150.66mW
	<b>LTE Band 43 Channel Bandwidth: 10MHz</b>	151.71mW
	<b>LTE Band 43 Channel Bandwidth: 15MHz</b>	151.01mW
	<b>LTE Band 43 Channel Bandwidth: 20MHz</b>	153.11mW
	<b>LTE Band 48 Channel Bandwidth: 5MHz</b>	141.25mW
	<b>LTE Band 48 Channel Bandwidth: 10MHz</b>	141.25mW
	<b>LTE Band 48 Channel Bandwidth: 15MHz</b>	141.25mW
	<b>LTE Band 48 Channel Bandwidth: 20MHz</b>	142.89mW
	<b>LTE Band CA_48C Channel Bandwidth: 5MHz+20MHz</b>	128.82mW
	<b>LTE Band CA_48C Channel Bandwidth: 20MHz +5MHz</b>	128.23mW
	<b>LTE Band CA_48C Channel Bandwidth: 10MHz +20MHz</b>	129.42mW
	<b>LTE Band CA_48C Channel Bandwidth: 20MHz +10MHz</b>	128.82mW
	<b>LTE Band CA_48C Channel Bandwidth: 15MHz +20MHz</b>	129.42mW
	<b>LTE Band CA_48C Channel Bandwidth: 20MHz +15MHz</b>	129.12mW
	<b>LTE Band CA_48C Channel Bandwidth: 20MHz +20MHz</b>	130.62mW



<b>ANTENNA GAIN</b>	PIFA Antenna with -1.3dBi gain for LTE42 PIFA Antenna with -1.3dBi gain for LTE43 PIFA Antenna with -1.3dBi gain for LTE48 PIFA Antenna with -1.3dBi gain for LTE48C
<b>HW VERSION</b>	V02
<b>SW VERSION</b>	IS540_ROW_00.00_1_20221017
<b>I/O PORTS</b>	Refer to user's manual
<b>DATA CABLE</b>	USB cable1: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable2: non-shielded cable, with w/o ferrite core, 1.0 meter
<b>EXTREME TEMPERATURE</b>	-10-50 °C
<b>EXTREME VOLTAGE</b>	3.6V - 4.2V

**NOTE:**

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

<b>MODULATION MODE</b>	<b>TX FUNCTION</b>
LTE	1TX/1RX

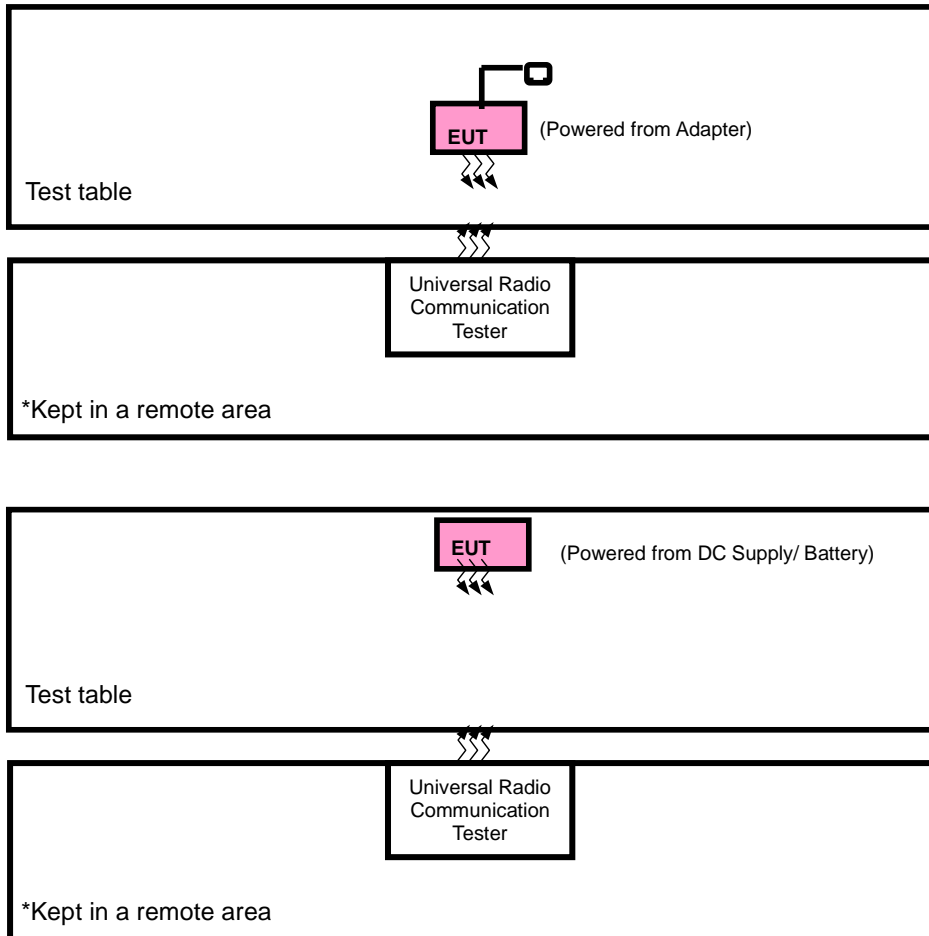
- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- For Band Edge and Emission Mask: The all BW combinations were tested. Combination pairs of the same BW are considered generally equivalent. The RB combinations were selected such that the signal is active closest to the band limit, as this is the worst case.
- For Out of Band Emissions: The all combination was tested. The highest power RB combination was selected as worst case.

**List of Accessory:**

<b>ACCESSORIES</b>	<b>BRAND</b>	<b>MANUFACTURER</b>	<b>MODEL</b>	<b>SPECIFICATION</b>
Battery	N/A	FPR Connectivity Technology Inc.	BL440ACP	Capacity: 3.7Vdc, 4400mAh
AC Adapter	N/A	SHENZHEN SHI YINGYUAN POWER SUPPLY TECHNOLOGY CO., LTD.	ICP12-050-2000B	I/P: 100-240Vac, 0.3A, O/P: 5.0Vdc, 2A
USB Cable 1	N/A	Winpower Technology Co., LTD	PROTECTOR 2.0	Signal Line,1.0meter
USB Cable 2	N/A	Winpower Technology Co., LTD	USB2.0	Signal Line,1.0meter



## 2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION TEST





### 2.3 DESCRIPTION OF SUPPORT UNITS

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

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

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

### 2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on Y-plane for EIRP and X-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter + USB Cable with LTE link
B	EUT + DC Supply with LTE link

**LTE band 42**

EUT CONFIGUR E MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	43115 to 43565	43115 (3552.5MHz), 43340 (3575.0MHz), 43565 (3597.5MHz)	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		43140 to 43540	43140 (3555.0MHz), 43340 (3575.0MHz), 43540 (3595.0MHz)	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		43165 to 43515	43165 (3557.50MHz), 43340 (3575.0MHz), 43515 (3592.5MHz)	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		43190 to 43490	43190 (3560.0MHz), 43340 (3575.0MHz), 43490 (3590.0MHz)	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset

**Note:** 1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

2. LTE Band 42 are covered by LTE Band 48, Because it is a subset of LTE Band 48 with the same output power and supported bandwidths, So the conducted test data and RSE test data please refer to LTE Band 48

**LTE band 43**

EUT CONFIGUR E MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	43615 to 44565	43615 (3602.5MHz), 44090 (3650.0MHz), 44565 (3697.5MHz)	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		43640 to 44540	43640 (3605.0MHz), 44090 (3650.0MHz), 44540 (3695.0MHz)	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		43665 to 44515	43665 (3607.5MHz), 44090 (3650.0MHz), 44515 (3692.5MHz)	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		43690 to 44490	43690 (3610.0MHz), 44090 (3650.0MHz), 44490 (3690.0MHz)	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset

**Note:** 1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

2. LTE Band 43 are covered by LTE Band 48, Because it is a subset of LTE Band 48 with the same output power and supported bandwidths, So the conducted test data and RSE test data please refer to LTE Band 48.



**LTE BAND 48 MODE**

EUT CONFIGUR E MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWID TH	MODULATION	MODE
A	EIRP	55265 to 56715	55265, 55990, 56715	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		55290 to 56690	55290, 55990, 56690	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
		55315 to 56665	55315, 55990, 56665	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		55340 to 56640	55340, 55990, 56640	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	55265 to 56715	55265, 56715	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		55290 to 56690	55290, 56690	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
		55315 to 56665	55315, 56665	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		55340 to 56640	55340, 56640	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	55265 to 56715	55265, 55990, 56715	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		55290 to 56690	55290, 55990, 56690	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		55315 to 56665	55315, 55990, 56665	15MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		55340 to 56640	55340, 55990, 56640	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	55265 to 56715	55265, 55990, 56715	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
		55290 to 56690	55290, 55990, 56690	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
		55315 to 56665	55315, 55990, 56665	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 75 RB / 0 RB Offset
		55340 to 56640	55340, 55990, 56640	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
A	BAND EDGE	55265 to 56715	55265	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
			56715	5MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset
			55290	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
				10MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset
		55290 to 56690	55315	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 75 RB / 0 RB Offset
				15MHz	QPSK, 16QAM, 64QAM	1 RB / 74 RB Offset
			56665	15MHz	QPSK, 16QAM, 64QAM	1 RB / 74 RB Offset
				15MHz	QPSK, 16QAM, 64QAM	1 RB / 74 RB Offset



						75 RB / 0 RB Offset	
		55340 to 56640	55340	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset	
			56640	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset	
						1 RB / 99 RB Offset	
						100 RB / 0 RB Offset	
A	CONDUDETE D EMISSION	55265 to 56715	55265, 55990, 56715	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset	
		55290 to 56690	55290, 55990, 56690	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset	
		55315 to 56665	55315, 55990, 56665	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset	
		55340 to 56640	55340, 55990, 56640	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset	
A	RADIATED EMISSION	55265 to 56715	55265, 55990, 56715	5MHz	QPSK	1 RB / 0 RB Offset	
		55290 to 56690	55290, 55990, 56690	10MHz	QPSK	1 RB / 0RB Offset	
		55315 to 56665	55315, 55990, 56665	15MHz	QPSK	1 RB / 0 RB Offset	
		55340 to 56640	55340, 55990, 56640	20MHz	QPSK	1 RB / 0 RB Offset	
A	ACLR	55265 to 56715	55265	5MHz	QPSK	1 RB / 0 RB Offset	
				56715	5MHz	QPSK	25 RB / 0 RB Offset
							1 RB / 24 RB Offset
		55290 to 56690	55290	10MHz	QPSK	25 RB / 0 RB Offset	
			56690	10MHz	QPSK	1 RB / 0 RB Offset	
		55315 to 56665				50 RB / 0 RB Offset	
			55315	15MHz	QPSK	1 RB / 49 RB Offset	
			56665	15MHz	QPSK	50 RB / 0 RB Offset	
		55340 to 56640				1 RB / 0 RB Offset	
			55340	20MHz	QPSK	75 RB / 0 RB Offset	
			56640	20MHz	QPSK	1 RB / 74 RB Offset	
						75 RB / 0 RB Offset	
				1 RB / 0 RB Offset			
				100 RB / 0 RB Offset			
				1 RB / 99 RB Offset			
				100 RB / 0 RB Offset			

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



LTE BAND CA\_48C MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE PCC CHANNEL	AVAILABLE SCC CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE(PCC)	MODE(SCC)
A	EIRP	55340 to 56491	55511 to 56662	Low, Middle, High	20MHz+15MHz	QPSK, 16QAM, 64QAM	1RB/ 99RB Offset	1RB/ 0RB Offset
		55318 to 56496	55489 to 56640	Low, Middle, High	15MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 74RB Offset	1RB/ 0RB Offset
		55340 to 56541	55484 to 56685	Low, Middle, High	20MHz+10MHz	QPSK, 16QAM, 64QAM	1RB/ 99RB Offset	1RB/ 0RB Offset
		55295 to 56496	55439 to 56640	Low, Middle, High	10MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 49RB Offset	1RB/ 0RB Offset
		55340 to 56590	55457 to 56707	Low, Middle, High	20MHz +5MHz	QPSK, 16QAM, 64QAM	1RB/ 99RB Offset	1RB/ 0RB Offset
		55273 to 56523	55390 to 56640	Low, Middle, High	5MHz +20MHz	QPSK, 16QAM, 64QAM	1RB / 24RB Offset	1RB / 0RB Offset
		55340 to 56442	55538 to 56640	Low, Middle, High	20MHz +20MHz	QPSK, 16QAM, 64QAM	1RB/ 99RB Offset	1RB/ 0RB Offset
A	OCCUPIED BANDWIDTH	55340 to 56491	55511 to 56662	Low, Middle, High	20MHz+15MHz	QPSK, 16QAM, 64QAM	100RB/ 0RB Offset	75RB/ 0RB Offset
		55318 to 56496	55489 to 56640	Low, Middle, High	15MHz+20MHz	QPSK, 16QAM, 64QAM	75RB/ 0RB Offset	100RB/ 0RB Offset
		55340 to 56541	55484 to 56685	Low, Middle, High	20MHz+10MHz	QPSK, 16QAM, 64QAM	100RB/ 0RB Offset	50RB/ 0RB Offset
		55295 to 56496	55439 to 56640	Low, Middle, High	10MHz+20MHz	QPSK, 16QAM, 64QAM	50RB/ 0RB Offset	100RB/ 0RB Offset
		55340 to 56590	55457 to 56707	Low, Middle, High	20MHz +5MHz	QPSK, 16QAM, 64QAM	100RB/ 0RB Offset	50RB/ 0RB Offset
		55273 to 56523	55390 to 56640	Low, Middle, High	5MHz +20MHz	QPSK, 16QAM, 64QAM	50RB/ 0RB Offset	100RB/ 0RB Offset
		55340 to 56442	55538 to 56640	Low, Middle, High	20MHz +20MHz	QPSK, 16QAM, 64QAM	100RB/ 0RB Offset	100RB/ 0RB Offset
A	BAND EDGE	55340 to 56442	55538 to 56640	Low	20MHz+20MHz	QPSK, 16QAM, 64QAM	1RB/ 0RB Offset	1RB/ 99RB Offset
							1RB/ 99RB Offset	1RB/ 0RB Offset
							100RB/ 0RB Offset	100RB/ 0RB Offset
				High	20MHz+20MHz		1RB/ 0RB Offset	1RB/ 99RB Offset
							1RB/ 99RB Offset	1RB/ 0RB Offset
							100RB/ 0RB Offset	100RB/ 0RB Offset
A	CONDCUDED EMISSION	55340 to 56442	55538 to 56640	Low, Middle, High	20MHz+20MHz	QPSK, 16QAM, 64QAM	1RB / 99RB Offset	1RB/ 0RB Offset
A	RADIATED EMISSION	55340 to 56491	55511 to 56662	Middle	20MHz+15MHz	QPSK,	1RB/ 99RB Offset	1RB/ 0RB Offset
		55318 to 56496	55489 to 56640	Low, Middle, High,	15MHz+20MHz	QPSK,	1RB/ 74RB Offset	1RB/ 0RB Offset
		55340 to 56541	55484 to 56685	Middle	20MHz+10MHz	QPSK,	1RB/ 99RB Offset	1RB/ 0RB Offset
		55295 to 56496	55439 to 56640	Middle	10MHz+20MHz	QPSK,	1RB/ 49RB Offset	1RB/ 0RB Offset
		55340 to 56590	55457 to 56707	Middle,	20MHz +5MHz	QPSK,	1RB/ 99RB Offset	1RB/ 0RB Offset





		55273 to 56523	55390 to 56640	Middle	5MHz +20MHz	QPSK,	1RB/ 24RB Offset	1RB/ 0RB Offset
		55340 to 56442	55538 to 56640	Middle,	20MHz+20MHz	QPSK,	1RB / 99RB Offset 1RB / 0RB Offset	1RB/ 0RB Offset
A	ACLR	55340 to 56442	55538 to 56640	Low	20MHz+20MHz	QPSK	1RB/ 0RB Offset	1RB/ 99RB Offset
							1RB/ 99RB Offset	1RB/ 0RB Offset
							100RB/ 0RB Offset	100RB/ 0RB Offset
				High	20MHz+20MHz		1RB/ 0RB Offset	1RB/ 99RB Offset
							1RB/ 99RB Offset	1RB/ 0RB Offset
							100RB/ 0RB Offset	100RB/ 0RB Offset

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



**TEST CONDITION:**

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	DC 5V By Adapter	Jace Hu
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.6V/3.7V/4.2V By DC Supply	James Fu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC5V By Adapter	James Fu
BAND EDGE	23deg. C, 70%RH	DC 5V By Adapter	James Fu
CONDCUDED EMISSION	23deg. C, 70%RH	DC5V By Adapter	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC5V By Adapter	Jace Hu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC5V By Adapter	James Fu



## 2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 96**

**KDB 971168 D02 Power Meas License Digital Systems v02r02**

**ANSI/TIA/EIA-603-E 2016**

**ANSI 63.26-2015**

**NOTE:** All test items have been performed and recorded as per the above standards.

### 3 TEST TYPES AND RESULTS

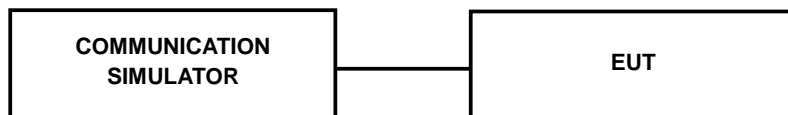
#### 3.1 MAXIMUM EIRP MEASUREMENT

##### 3.1.1 LIMITS OF MAXIMUM EIRP MEASUREMENT

Device	Maximum EIRP (dBm/10 MHz)
End User Device	23
Category A CBSD	30
Category B CBSD	47

##### 3.1.2 TEST SETUP

###### CONDUCTED POWER MEASUREMENT:



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

### 3.1.3 TEST PROCEDURES

#### **EIRP MEASUREMENT:**

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

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

Where:

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

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

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

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

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

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

### 3.1.4 DEVIATION FROM TEST STANDARD

No deviation.



### 3.1.5 TEST RESULTS

LTE band 42:

Band/BW	Modulation	RB Size	RB Offset	Low CH (43115)	Mid CH (43340)	High CH (43565)
				Frequency (3552.5)MHz	Frequency (3575)MHz	Frequency (3597.5)MHz
42/ 5	QPSK	1	0	22.63	22.72	22.75
		1	12	22.57	22.69	22.71
		1	24	22.59	22.66	22.69
		12	0	21.59	21.71	21.74
		12	6	21.59	21.67	21.67
		12	13	21.51	21.66	21.65
		25	0	21.63	21.65	21.74
	16QAM	1	0	21.67	21.70	21.74
		1	12	21.53	21.64	21.67
		1	24	21.52	21.61	21.68
		12	0	20.60	20.69	20.74
		12	6	20.56	20.65	20.72
		12	13	20.54	20.69	20.69
		25	0	20.53	20.68	20.70
	64QAM	1	0	20.21	20.21	20.24
		1	12	20.15	20.33	20.35
		1	24	20.18	20.17	20.17
		12	0	19.63	19.76	19.75
		12	6	19.68	19.68	19.77
		12	13	19.62	19.62	19.66
		25	0	19.56	19.65	19.69



Band/BW	Modulation	RB Size	RB Offset	Low CH (43140)	Mid CH (43340)	High CH (43540)
				Frequency (3555)MHz	Frequency (3575)MHz	Frequency (3595)MHz
42/ 10	QPSK	1	0	22.64	22.73	22.78
		1	24	22.63	22.66	22.71
		1	49	22.57	22.63	22.68
		25	0	21.64	21.70	21.71
		25	12	21.59	21.62	21.63
		25	25	21.56	21.63	21.68
		50	0	21.63	21.65	21.71
	16QAM	1	0	21.69	21.70	21.80
		1	24	21.57	21.64	21.72
		1	49	21.51	21.56	21.65
		25	0	20.64	20.68	20.78
		25	12	20.55	20.60	20.69
		25	25	20.59	20.67	20.73
		50	0	20.59	20.62	20.67
	64QAM	1	0	20.19	20.25	20.30
		1	24	20.22	20.27	20.29
		1	49	20.17	20.21	20.19
		25	0	19.68	19.73	19.76
		25	12	19.69	19.68	19.71
		25	25	19.64	19.66	19.73
		50	0	19.56	19.63	19.70



Band/BW	Modulation	RB Size	RB Offset	Low CH (43165)	Mid CH (43340)	High CH (43515)
				Frequency (3557.5)MHz	Frequency (3575)MHz	Frequency (3592.5)MHz
42/ 15	QPSK	1	0	22.59	22.72	22.75
		1	37	22.62	22.73	22.74
		1	74	22.61	22.62	22.65
		36	0	21.59	21.74	21.77
		36	19	21.65	21.64	21.61
		36	39	21.52	21.69	21.64
		75	0	21.62	21.59	21.74
	16QAM	1	0	21.73	21.72	21.77
		1	37	21.53	21.68	21.71
		1	74	21.57	21.58	21.69
		36	0	20.58	20.67	20.74
		36	19	20.61	20.62	20.73
		36	39	20.54	20.73	20.70
		75	0	20.58	20.69	20.70
	64QAM	1	0	20.23	20.24	20.27
		1	37	20.17	20.34	20.35
		1	74	20.21	20.20	20.17
		36	0	19.64	19.77	19.72
		36	19	19.69	19.62	19.77
		36	39	19.64	19.65	19.70
		75	0	19.62	19.69	19.74





Band/BW	Modulation	RB Size	RB Offset	Low CH (43190)	Mid CH (43340)	High CH (43490)
				Frequency (3560)MHz	Frequency (3575)MHz	Frequency (3590)MHz
42/ 20	QPSK	1	0	22.67	22.77	22.80
		1	50	22.65	22.74	22.76
		1	99	22.63	22.67	22.70
		50	0	21.65	21.76	21.79
		50	25	21.66	21.69	21.69
		50	50	21.59	21.71	21.70
		100	0	21.65	21.67	21.76
	16QAM	1	0	21.75	21.78	21.82
		1	50	21.59	21.70	21.73
		1	99	21.59	21.63	21.70
		50	0	20.66	20.74	20.79
		50	25	20.63	20.67	20.74
		50	50	20.62	20.75	20.75
		100	0	20.61	20.70	20.72
	64QAM	1	0	20.25	20.29	20.32
		1	50	20.23	20.35	20.37
		1	99	20.22	20.25	20.25
		50	0	19.69	19.79	19.78
		50	25	19.70	19.70	19.79
		50	50	19.66	19.70	19.74
		100	0	19.64	19.71	19.75



LTE Band 43

Band/BW	Modulation	RB Size	RB Offset	Low CH (43615)	Mid CH (44090)	High CH (44565)
				Frequency (3602.5)MHz	Frequency (3650)MHz	Frequency (3697.5)MHz
43/ 5	QPSK	1	0	23.01	23.08	23.06
		1	12	22.93	22.86	22.90
		1	24	22.79	22.90	22.78
		12	0	21.97	21.97	22.01
		12	6	21.95	22.05	21.98
		12	13	21.89	21.87	21.94
		25	0	21.92	22.04	21.97
	16QAM	1	0	22.17	22.10	22.17
		1	12	21.96	21.96	21.88
		1	24	21.85	21.94	21.86
		12	0	20.98	20.97	20.99
		12	6	20.98	20.97	21.02
		12	13	20.92	20.95	20.89
		25	0	20.93	21.00	20.95
	64QAM	1	0	20.76	20.86	20.79
		1	12	20.71	20.66	20.67
		1	24	20.53	20.63	20.56
		12	0	20.02	20.02	19.90
		12	6	20.01	20.05	20.07
		12	13	19.94	19.94	19.91
		25	0	19.96	20.03	20.00



Band/BW	Modulation	RB Size	RB Offset	Low CH (43640)	Mid CH (44090)	High CH (44540)
				Frequency (3605)MHz	Frequency (3650)MHz	Frequency (3695)MHz
43/ 10	QPSK	1	0	22.98	23.11	23.06
		1	24	22.92	22.88	22.90
		1	49	22.85	22.84	22.78
		25	0	21.95	21.94	22.00
		25	12	22.00	22.05	21.95
		25	25	21.89	21.84	21.90
		50	0	21.97	22.00	22.00
	16QAM	1	0	22.17	22.11	22.14
		1	24	21.98	21.94	21.94
		1	49	21.89	21.88	21.91
		25	0	20.97	20.98	20.96
		25	12	21.02	20.96	21.06
		25	25	20.91	20.96	20.86
		50	0	20.98	20.96	20.99
	64QAM	1	0	20.82	20.80	20.76
		1	24	20.69	20.63	20.73
		1	49	20.60	20.62	20.50
		25	0	20.01	19.99	19.92
		25	12	20.06	20.01	20.08
		25	25	19.98	19.93	19.91
		50	0	19.96	20.01	20.00



Band/BW	Modulation	RB Size	RB Offset	Low CH (43665)	Mid CH (44090)	High CH (44515)
				Frequency (3607.5)MHz	Frequency (3650)MHz	Frequency (3692.5)MHz
43/ 15	QPSK	1	0	22.98	23.08	23.09
		1	37	22.94	22.90	22.89
		1	74	22.84	22.90	22.77
		36	0	21.97	21.97	22.00
		36	19	21.95	22.05	22.00
		36	39	21.94	21.84	21.95
		75	0	21.92	22.02	21.97
	16QAM	1	0	22.16	22.12	22.17
		1	37	22.03	21.97	21.88
		1	74	21.85	21.93	21.88
		36	0	21.03	20.95	20.96
		36	19	20.98	20.96	21.05
		36	39	20.98	20.98	20.83
		75	0	20.94	20.94	20.95
	64QAM	1	0	20.82	20.86	20.77
		1	37	20.73	20.63	20.74
		1	74	20.59	20.63	20.54
		36	0	20.05	20.05	19.90
		36	19	20.01	19.99	20.08
		36	39	20.00	19.94	19.85
		75	0	20.00	20.00	20.03



Band/BW	Modulation	RB Size	RB Offset	Low CH (43690)	Mid CH (44090)	High CH (44490)
				Frequency (3610)MHz	Frequency (3650)MHz	Frequency (3690)MHz
43/ 20	QPSK	1	0	23.06	23.15	23.11
		1	50	22.95	22.94	22.92
		1	99	22.87	22.91	22.83
		50	0	22.01	22.02	22.02
		50	25	22.01	22.07	22.03
		50	50	21.96	21.92	21.96
		100	0	22.00	22.06	22.02
	16QAM	1	0	22.19	22.18	22.19
		1	50	22.04	22.02	21.96
		1	99	21.91	21.96	21.92
		50	0	21.05	21.02	21.01
		50	25	21.04	21.04	21.07
		50	50	20.99	21.00	20.91
		100	0	21.01	21.02	21.01
	64QAM	1	0	20.84	20.87	20.81
		1	50	20.75	20.71	20.75
		1	99	20.61	20.64	20.58
		50	0	20.06	20.07	19.98
		50	25	20.07	20.07	20.10
		50	50	20.01	19.99	19.93
		100	0	20.04	20.05	20.05



LTE band 48:

Band/BW	Modulation	RB Size	RB Offset	Low CH (55265)	Mid CH (55990)	High CH (56715)
				Frequency (3552.5)MHz	Frequency (3625.0)MHz	Frequency (3697.5)MHz
48/ 5	QPSK	1	0	22.28	22.47	22.80
		1	12	22.18	22.25	22.73
		1	24	22.09	22.23	22.61
		12	0	21.21	21.32	21.75
		12	6	21.18	21.27	21.66
		12	13	21.10	21.25	21.68
		25	0	21.25	21.33	21.62
	16QAM	1	0	21.20	21.32	21.71
		1	12	21.31	21.40	21.83
		1	24	21.39	21.36	21.81
		12	0	20.24	20.33	20.72
		12	6	20.28	20.27	20.71
		12	13	20.25	20.34	20.79
		25	0	20.23	20.26	20.77
	64QAM	1	0	20.34	20.48	20.81
		1	12	20.32	20.37	20.86
		1	24	20.33	20.34	20.74
		12	0	20.13	20.26	20.68
		12	6	20.17	20.20	20.52
		12	13	20.04	20.16	20.55
		25	0	20.19	20.18	20.66



Band/BW	Modulation	RB Size	RB Offset	Low CH (55290)	Mid CH (55990)	High CH (56690)
				Frequency (3555)MHz	Frequency (3625.0)MHz	Frequency (3695)MHz
48/ 10	QPSK	1	0	22.29	22.42	22.80
		1	24	22.23	22.21	22.73
		1	49	22.10	22.29	22.61
		25	0	21.24	21.34	21.75
		25	12	21.18	21.32	21.66
		25	25	21.14	21.29	21.68
		50	0	21.23	21.36	21.62
	16QAM	1	0	21.21	21.30	21.71
		1	24	21.28	21.38	21.83
		1	49	21.39	21.40	21.81
		25	0	20.24	20.34	20.72
		25	12	20.25	20.24	20.71
		25	25	20.20	20.37	20.79
		50	0	20.23	20.25	20.77
	64QAM	1	0	20.28	20.50	20.81
		1	24	20.29	20.39	20.86
		1	49	20.26	20.34	20.74
		25	0	20.14	20.25	20.68
		25	12	20.11	20.20	20.52
		25	25	20.08	20.16	20.55
		50	0	20.15	20.18	20.66



Band/BW	Modulation	RB Size	RB Offset	Low CH (55315)	Mid CH (55990)	High CH (56665)
				Frequency (3557.5)MHz	Frequency (3625.0)MHz	Frequency (3692.5)MHz
48/ 15	QPSK	1	0	22.26	22.50	22.80
		1	37	22.23	22.23	22.73
		1	74	22.07	22.18	22.61
		36	0	21.25	21.27	21.75
		36	19	21.24	21.35	21.66
		36	39	21.12	21.26	21.68
		75	0	21.28	21.32	21.62
	16QAM	1	0	21.21	21.38	21.71
		1	37	21.33	21.35	21.83
		1	74	21.39	21.32	21.81
		36	0	20.26	20.38	20.72
		36	19	20.29	20.25	20.71
		36	39	20.19	20.33	20.79
		75	0	20.27	20.21	20.77
	64QAM	1	0	20.27	20.48	20.81
		1	37	20.34	20.30	20.86
		1	74	20.32	20.35	20.74
		36	0	20.12	20.24	20.68
		36	19	20.18	20.16	20.52
		36	39	20.07	20.15	20.55
		75	0	20.20	20.16	20.66





Band/BW	Modulation	RB Size	RB Offset	Low CH (55340)	Mid CH (55990)	High CH (56640)
				Frequency (3560)MHz	Frequency (3625.0)MHz	Frequency (3690)MHz
48/ 20	QPSK	1	0	22.34	22.53	22.85
		1	50	22.25	22.32	22.74
		1	99	22.15	22.26	22.66
		50	0	21.28	21.39	21.77
		50	25	21.26	21.32	21.71
		50	50	21.18	21.32	21.70
		100	0	21.29	21.41	21.70
	16QAM	1	0	21.28	21.40	21.77
		1	50	21.36	21.46	21.85
		1	99	21.41	21.40	21.86
		50	0	20.32	20.44	20.79
		50	25	20.31	20.31	20.76
		50	50	20.27	20.41	20.81
		100	0	20.29	20.33	20.78
	64QAM	1	0	20.35	20.51	20.86
		1	50	20.37	20.45	20.87
		1	99	20.34	20.38	20.79
		50	0	20.18	20.33	20.70
		50	25	20.19	20.29	20.60
		50	50	20.12	20.23	20.60
		100	0	20.21	20.20	20.68



LTE Band CA\_48C

CA_48C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC	SCC	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
Channel	Channel		RB Size	RB offset	RB Size	RB offset		
55340	55538	QPSK	1	0	0	0	1	22.46
		16QAM	1	0	0	0	1	21.71
		64QAM	1	0	0	0	1	20.16
55990	56188	QPSK	1	0	0	0	1	22.31
		16QAM	1	0	0	0	1	21.49
		64QAM	1	0	0	0	1	20.04
56640	56442	QPSK	1	0	0	0	1	22.26
		16QAM	1	0	0	0	1	21.52
		64QAM	1	0	0	0	1	20.01



**EIRP**

**LTE Band 42**

**CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43115	3552.5	22.63	-1.3	21.33	135.83	23
43340	3575	22.72	-1.3	21.42	138.68	23
43565	3597.5	22.75	-1.3	21.45	139.64	23

**CHANNEL BANDWIDTH: 5MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43115	3552.5	21.67	-1.3	20.37	108.89	23
43340	3575	21.7	-1.3	20.4	109.65	23
43565	3597.5	21.74	-1.3	20.44	110.66	23

**CHANNEL BANDWIDTH: 5MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43115	3552.5	20.21	-1.3	18.91	77.8	23
43340	3575	20.33	-1.3	19.03	79.98	23
43565	3597.5	20.35	-1.3	19.05	80.35	23



**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_T-L_c$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43140	3555	22.64	-1.3	21.34	136.14	23
43340	3575	22.73	-1.3	21.43	139	23
43540	3595	22.78	-1.3	21.48	140.6	23

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_T-L_c$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43140	3555	21.69	-1.3	20.39	109.4	23
43340	3575	21.7	-1.3	20.4	109.65	23
43540	3595	21.8	-1.3	20.5	112.2	23

**CHANNEL BANDWIDTH: 10MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_T-L_c$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43140	3555	20.22	-1.3	18.92	77.98	23
43340	3575	20.27	-1.3	18.97	78.89	23
43540	3595	20.3	-1.3	19	79.43	23



**CHANNEL BANDWIDTH: 15MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43165	3557.5	22.62	-1.3	21.32	135.52	23
43340	3575	22.73	-1.3	21.43	139	23
43515	3592.5	22.75	-1.3	21.45	139.64	23

**CHANNEL BANDWIDTH: 15MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43165	3557.5	21.73	-1.3	20.43	110.41	23
43340	3575	21.72	-1.3	20.42	110.15	23
43515	3592.5	21.77	-1.3	20.47	111.43	23

**CHANNEL BANDWIDTH: 15MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43165	3557.5	20.23	-1.3	18.93	78.16	23
43340	3575	20.34	-1.3	19.04	80.17	23
43515	3592.5	20.35	-1.3	19.05	80.35	23



**CHANNEL BANDWIDTH: 20MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T-Lc</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43190	3560	22.67	-1.3	21.37	137.09	23
43340	3575	22.77	-1.3	21.47	140.28	23
43490	3590	22.8	-1.3	21.5	141.25	23

**CHANNEL BANDWIDTH: 20MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T-Lc</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43190	3560	21.75	-1.3	20.45	110.92	23
43340	3575	21.78	-1.3	20.48	111.69	23
43490	3590	21.82	-1.3	20.52	112.72	23

**CHANNEL BANDWIDTH: 20MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T-Lc</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43190	3560	20.25	-1.3	18.95	78.52	23
43340	3575	20.35	-1.3	19.05	80.35	23
43490	3590	20.37	-1.3	19.07	80.72	23



LTE Band 43

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43615	3602.5	23.01	-1.3	21.71	148.25	23
44090	3650	23.08	-1.3	21.78	150.66	23
44565	3697.5	23.06	-1.3	21.76	149.97	23

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43615	3602.5	22.17	-1.3	20.87	122.18	23
44090	3650	22.1	-1.3	20.8	120.23	23
44565	3697.5	22.17	-1.3	20.87	122.18	23

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43615	3602.5	20.76	-1.3	19.46	88.31	23
44090	3650	20.86	-1.3	19.56	90.36	23
44565	3697.5	20.79	-1.3	19.49	88.92	23



**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43640	3605	22.98	-1.3	21.68	147.23	23
44090	3650	23.11	-1.3	21.81	151.71	23
44540	3695	23.06	-1.3	21.76	149.97	23

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43640	3605	22.17	-1.3	20.87	122.18	23
44090	3650	22.11	-1.3	20.81	120.5	23
44540	3695	22.14	-1.3	20.84	121.34	23

**CHANNEL BANDWIDTH: 10MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43640	3605	20.82	-1.3	19.52	89.54	23
44090	3650	20.8	-1.3	19.5	89.13	23
44540	3695	20.76	-1.3	19.46	88.31	23





**CHANNEL BANDWIDTH: 15MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_T-L_c$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43665	3607.5	22.98	-1.3	21.68	147.23	23
44090	3650	23.08	-1.3	21.78	150.66	23
44515	3692.5	23.09	-1.3	21.79	151.01	23

**CHANNEL BANDWIDTH: 15MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_T-L_c$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43665	3607.5	22.16	-1.3	20.86	121.9	23
44090	3650	22.12	-1.3	20.82	120.78	23
44515	3692.5	22.17	-1.3	20.87	122.18	23

**CHANNEL BANDWIDTH: 15MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_T-L_c$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43665	3607.5	20.82	-1.3	19.52	89.54	23
44090	3650	20.86	-1.3	19.56	90.36	23
44515	3692.5	20.77	-1.3	19.47	88.51	23



**CHANNEL BANDWIDTH: 20MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_{T-L_c}$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43690	3610	23.06	-1.3	21.76	149.97	23
44090	3650	23.15	-1.3	21.85	153.11	23
44490	3690	23.11	-1.3	21.81	151.71	23

**CHANNEL BANDWIDTH: 20MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_{T-L_c}$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43690	3610	22.19	-1.3	20.89	122.74	23
44090	3650	22.18	-1.3	20.88	122.46	23
44490	3690	22.19	-1.3	20.89	122.74	23

**CHANNEL BANDWIDTH: 20MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_{T-L_c}$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43690	3610	20.84	-1.3	19.54	89.95	23
44090	3650	20.87	-1.3	19.57	90.57	23
44490	3690	20.81	-1.3	19.51	89.33	23



**LTE Band 48**

**CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55265	3552.5	22.28	-1.3	20.98	125.31	23
55990	3625	22.47	-1.3	21.17	130.92	23
56715	3697.5	22.8	-1.3	21.5	141.25	23

**CHANNEL BANDWIDTH: 5MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55265	3552.5	21.39	-1.3	20.09	102.09	23
55990	3625	21.4	-1.3	20.1	102.33	23
56715	3697.5	21.83	-1.3	20.53	112.98	23

**CHANNEL BANDWIDTH: 5MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55265	3552.5	20.34	-1.3	19.04	80.17	23
55990	3625	20.48	-1.3	19.18	82.79	23
56715	3697.5	20.86	-1.3	19.56	90.36	23



**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_T-L_c$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55290	3555	22.29	-1.3	20.99	125.6	23
55990	3625	22.42	-1.3	21.12	129.42	23
56690	3695	22.8	-1.3	21.5	141.25	23

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_T-L_c$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55290	3555	21.39	-1.3	20.09	102.09	23
55990	3625	21.4	-1.3	20.1	102.33	23
56690	3695	21.83	-1.3	20.53	112.98	23

**CHANNEL BANDWIDTH: 10MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_T-L_c$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55290	3555	20.29	-1.3	18.99	79.25	23
55990	3625	20.5	-1.3	19.2	83.18	23
56690	3695	20.86	-1.3	19.56	90.36	23



**CHANNEL BANDWIDTH: 15MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55315	3557.5	22.26	-1.3	20.96	124.74	23
55990	3625	22.5	-1.3	21.2	131.83	23
56665	3692.5	22.8	-1.3	21.5	141.25	23

**CHANNEL BANDWIDTH: 15MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55315	3557.5	21.39	-1.3	20.09	102.09	23
55990	3625	21.38	-1.3	20.08	101.86	23
56665	3692.5	21.83	-1.3	20.53	112.98	23

**CHANNEL BANDWIDTH: 15MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55315	3557.5	20.34	-1.3	19.04	80.17	23
55990	3625	20.48	-1.3	19.18	82.79	23
56665	3692.5	20.86	-1.3	19.56	90.36	23



**CHANNEL BANDWIDTH: 20MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_{T-L_c}$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560	22.34	-1.3	21.04	127.06	23
55990	3625	22.53	-1.3	21.23	132.74	23
56640	3690	22.85	-1.3	21.55	142.89	23

**CHANNEL BANDWIDTH: 20MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_{T-L_c}$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560	21.41	-1.3	20.11	102.57	23
55990	3625	21.46	-1.3	20.16	103.75	23
56640	3690	21.86	-1.3	20.56	113.76	23

**CHANNEL BANDWIDTH: 20MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	$G_{T-L_c}$ (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560	20.37	-1.3	19.07	80.72	23
55990	3625	20.51	-1.3	19.21	83.37	23
56640	3690	20.87	-1.3	19.57	90.57	23



LTE BAND CA\_48C

LTE BAND CA_48C 5M+20M QPSK								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55273	3553.3	42240	3550.0	22.4	-1.3	21.10	128.82	23
55898	3615.8	56015	3627.5	22.23	-1.3	20.93	123.88	23
56523	3678.3	56640	3690.0	22.22	-1.3	20.92	123.59	23
LTE BAND CA_48C 5M+20M 16QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55273	3553.3	42240	3550.0	21.64	-1.3	20.34	108.14	23
55898	3615.8	56015	3627.5	21.45	-1.3	20.15	103.51	23
56523	3678.3	56640	3690.0	21.46	-1.3	20.16	103.75	23
LTE BAND CA_48C 5M+20M 64QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55273	3553.3	42240	3550.0	20.08	-1.3	18.78	75.51	23
55898	3615.8	56015	3627.5	19.96	-1.3	18.66	73.45	23
56523	3678.3	56640	3690.0	19.94	-1.3	18.64	73.11	23



LTE BAND CA_48C 20M+5M QPSK								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	42307	3550.0	22.38	-1.3	21.08	128.23	23
55965	3622.5	56082	3634.2	22.23	-1.3	20.93	123.88	23
56590	3685.0	56707	3696.7	22.22	-1.3	20.92	123.59	23
LTE BAND CA_48C 20M+5M 16QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	42307	3550.0	21.63	-1.3	20.33	107.89	23
55965	3622.5	56082	3634.2	21.45	-1.3	20.15	103.51	23
56590	3685.0	56707	3696.7	21.46	-1.3	20.16	103.75	23
LTE BAND CA_48C 20M+5M 64QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	42307	3550.0	20.12	-1.3	18.82	76.21	23
55965	3622.5	56082	3634.2	19.98	-1.3	18.68	73.79	23
56590	3685.0	56707	3696.7	19.94	-1.3	18.64	73.11	23





LTE BAND CA_48C 10M+20M QPSK								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55295	3555.5	55439	3569.9	22.42	-1.3	21.12	129.42	23
55896	3615.6	56040	3630.0	22.25	-1.3	20.95	124.45	23
56496	3675.6	56640	3690.0	22.24	-1.3	20.94	124.17	23
LTE BAND CA_48C 10M+20M 16QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55295	3555.5	55439	3569.9	21.63	-1.3	20.33	107.89	23
55896	3615.6	56040	3630.0	21.42	-1.3	20.12	102.80	23
56496	3675.6	56640	3690.0	21.44	-1.3	20.14	103.28	23
LTE BAND CA_48C 10M+20M 64QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55295	3555.5	55439	3569.9	20.12	-1.3	18.82	76.21	23
55896	3615.6	56040	3630.0	19.96	-1.3	18.66	73.45	23
56496	3675.6	56640	3690.0	19.95	-1.3	18.65	73.28	23



LTE BAND CA_48C 20M+10M QPSK								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	55484	3574.4	22.4	-1.3	21.10	128.82	23
55941	3620.1	56085	3634.5	22.24	-1.3	20.94	124.17	23
56541	3680.1	56685	3694.5	22.18	-1.3	20.88	122.46	23
LTE BAND CA_48C 20M+10M 16QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	55484	3574.4	21.66	-1.3	20.36	108.64	23
55941	3620.1	56085	3634.5	21.41	-1.3	20.11	102.57	23
56541	3680.1	56685	3694.5	21.51	-1.3	20.21	104.95	23
LTE BAND CA_48C 20M+10M 64QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	55484	3574.4	20.13	-1.3	18.83	76.38	23
55941	3620.1	56085	3634.5	20.02	-1.3	18.72	74.47	23
56541	3680.1	56685	3694.5	19.93	-1.3	18.63	72.95	23



LTE BAND CA_48C 15M+20M QPSK								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55318	3557.8	55489	3574.9	22.42	-1.3	21.12	129.42	23
55893	3615.3	55064	3632.4	22.26	-1.3	20.96	124.74	23
56496	3672.9	56640	3690.0	22.22	-1.3	20.92	123.59	23
LTE BAND CA_48C 15M+20M 16QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55318	3557.8	55489	3574.9	21.68	-1.3	20.38	109.14	23
55893	3615.3	55064	3632.4	21.47	-1.3	20.17	103.99	23
56496	3672.9	56640	3690.0	21.51	-1.3	20.21	104.95	23
LTE BAND CA_48C 15M+20M 64QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55318	3557.8	55489	3574.9	20.15	-1.3	18.85	76.74	23
55893	3615.3	55064	3632.4	19.97	-1.3	18.67	73.62	23
56496	3672.9	56640	3690.0	19.96	-1.3	18.66	73.45	23



LTE BAND CA_48C 20M+15M QPSK								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	55511	3577.1	22.41	-1.3	21.11	129.12	23
55916	3617.6	56087	3634.7	22.29	-1.3	20.99	125.60	23
56491	3675.1	56662	3692.2	22.25	-1.3	20.95	124.45	23
LTE BAND CA_48C 20M+15M 16QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	55511	3577.1	21.64	-1.3	20.34	108.14	23
55916	3617.6	56087	3634.7	21.48	-1.3	20.18	104.23	23
56491	3675.1	56662	3692.2	21.47	-1.3	20.17	103.99	23
LTE BAND CA_48C 20M+15M 64QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	55511	3577.1	20.11	-1.3	18.81	76.03	23
55916	3617.6	56087	3634.7	19.99	-1.3	18.69	73.96	23
56491	3675.1	56662	3692.2	19.99	-1.3	18.69	73.96	23



LTE BAND CA_48C 20M+20M QPSK								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	55538	3579.8	22.46	-1.3	21.16	130.62	23
55891	3615.1	56089	3634.9	22.36	-1.3	21.06	127.64	23
56442	3670.2	56640	3690.0	22.28	-1.3	20.98	125.31	23
LTE BAND CA_48C 20M+20M 16QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	55538	3579.8	21.71	-1.3	20.41	109.90	23
55891	3615.1	56089	3634.9	21.5	-1.3	20.20	104.71	23
56442	3670.2	56640	3690.0	21.57	-1.3	20.27	106.41	23
LTE BAND CA_48C 20M+20M 64QAM								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55340	3560.0	55538	3579.8	20.16	-1.3	18.86	76.91	23
55891	3615.1	56089	3634.9	20.09	-1.3	18.79	75.68	23
56442	3670.2	56640	3690.0	20.03	-1.3	18.73	74.64	23

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

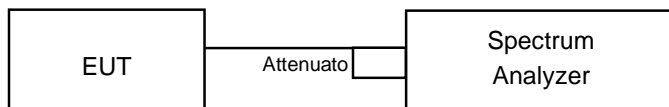


### **3.2 CONDUCTED BAND EDGE**

#### **3.2.1 LIMITS OF CONDUCTED BAND EDGE MEASUREMENT**

The conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz. Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

#### **3.2.2 TEST SETUP**



#### **3.2.3 TEST INSTRUMENTS**

Refer to section 1.2 to get information of above instrument.

### 3.2.4 TEST PROCEDURE

#### For the Conducted Band Edge:

- a. Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
- b. Tune the analyzer to the nominal center frequency of the emission bandwidth (EBW).
- c. Set the resolution bandwidth (RBW)  $\geq 1\%$  EBW in the 1MHz band immediately outside and adjacent to the band edge.
- d. Beyond the 1MHz band from the band edge, RBW=1MHz was used.
- e. Set the video bandwidth (VBW) to  $\geq 3 \times$  RBW.
- f. Select the average power (RMS) display detector.
- g. Set the number of measurement points to  $\geq 1001$ .
- h. Use auto-coupled sweep time.
- i. Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.
- j. The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.
- k. Record the max trace plot into the test report.

#### For Adjacent Channel Leakage Ratio (ACLR) measurement:

1. The Adjacent Channel Leakage Ratio (ACLR) is the ratio of the average power in the assigned aggregated channel bandwidth to the average power over the equivalent adjacent channel bandwidth.
2. The option ACLR of spectrum analyzer is used and measures the ACLR ratio by setting equivalent channel bandwidth.
3. The measured ACLR ratio shall be at least 30 dB.

### 3.2.5 DEVIATION FROM TEST STANDARD

No deviation.



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### 3.2.6 TEST RESULTS

Please Refer to Appendix Of this test report.





### 3.3 FREQUENCY STABILITY MEASUREMENT

#### 3.3.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

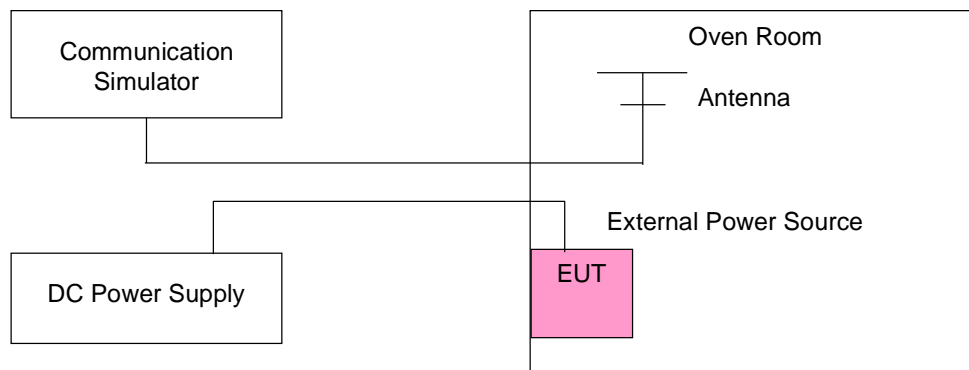
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency band.

#### 3.3.2 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.

#### 3.3.3 TEST SETUP





**3.3.4 TEST RESULTS**

Please Refer to Appendix Of this test report.

**LTE BAND CA\_48C**

<b>LTE BAND CA_48C channel and Frequency List</b>					
<b>BW(MHz)</b>	<b>Channel/Frequncy(MHz)</b>		<b>Lowest</b>	<b>Middle</b>	<b>Highest</b>
5+20	PCC	channel	55273	55898	56523
		Frequncy	3553.3	3615.8	3678.3
	SCC	channel	42240	56015	56640
		Frequncy	3550	3627.5	3690
10+20	PCC	channel	55295	55896	56496
		Frequncy	3555.5	3615.6	3675.6
	SCC	channel	55439	56040	56640
		Frequncy	3569.9	3630	3690
15+20	PCC	channel	55318	55893	56496
		Frequncy	3557.8	3615.3	3672.9
	SCC	channel	55489	55064	56640
		Frequncy	3574.9	3632.4	3690
20+5	PCC	channel	55340	55965	56590
		Frequncy	3560	3622.5	3685
	SCC	channel	42307	56082	56707
		Frequncy	3550	3634.2	3696.7
20+10	PCC	channel	55340	55941	56541
		Frequncy	3560	3620.1	3680.1
	SCC	channel	55484	56085	56685
		Frequncy	3574.4	3634.5	3694.5
20+15	PCC	channel	55340	55916	56491
		Frequncy	3560	3617.6	3675.1
	SCC	channel	55511	56087	56662
		Frequncy	3577.1	3634.7	3692.2
20+20	PCC	channel	55340	55891	56442
		Frequncy	3560	3615.1	3670.2
	SCC	channel	55538	56089	56640
		Frequncy	3579.8	3634.9	3690



**BUREAU  
VERITAS**

**Test Report No.: W7L-P23100014RF10**

Note: VL = Low voltage(3.6V); VN/NV = Normal voltage(3.7V); VH = High voltage(4.2V);  
NT = Normal temperature (25°C)

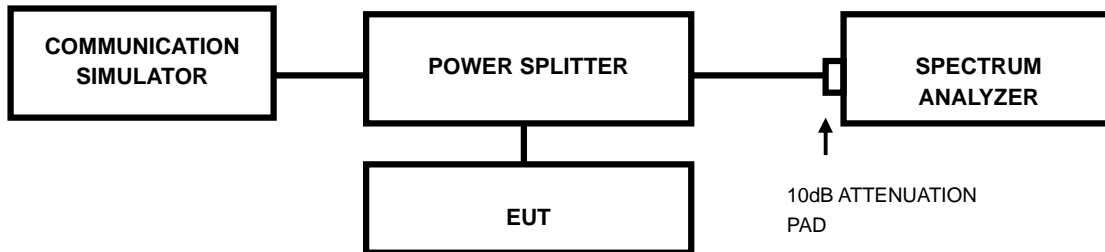


### 3.4 OCCUPIED BANDWIDTH MEASUREMENT

#### 3.4.1 OCCUPIED BANDWIDTH MEASUREMENT

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

#### 3.4.2 TEST SETUP



#### 3.4.3 TEST INSTRUMENTS

Refer to section 1.2 to get information of above instrument.

#### 3.4.4 TEST PROCEDURE

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

#### 3.4.5 DEVIATION FROM TEST STANDARD

No deviation.



Test Report No.: W7L-P23100014RF10

### 3.4.6 TEST RESULT

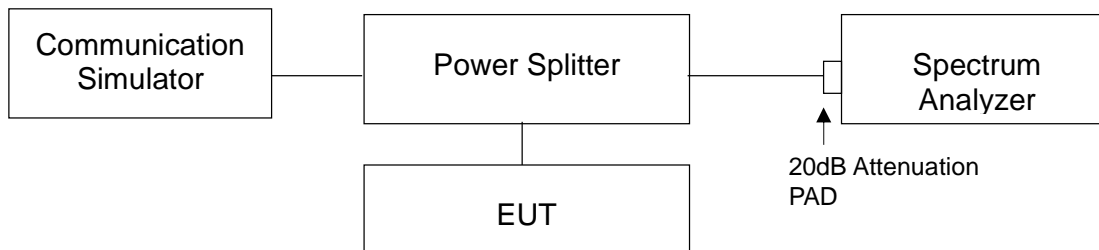
Please Refer to Appendix Of this test report.

### 3.5 CONDUCTED SPURIOUS EMISSIONS

#### 3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

The power of any emissions below 3530 MHz or above 3720 MHz shall not exceed  $-40\text{dBm/MHz}$ .

#### 3.5.2 TEST SETUP



#### 3.5.3 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 40 GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.



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### 3.5.4 TEST RESULTS

Please Refer to Appendix Of this test report.

### 3.6 RADIATED EMISSION MEASUREMENT

#### 3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

#### 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(below or equal 1GHz) and/or 1.5m(above 1GHz) 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 antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G
- c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  
E.R.P power = E.I.P.R power - 2.15dBi.

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

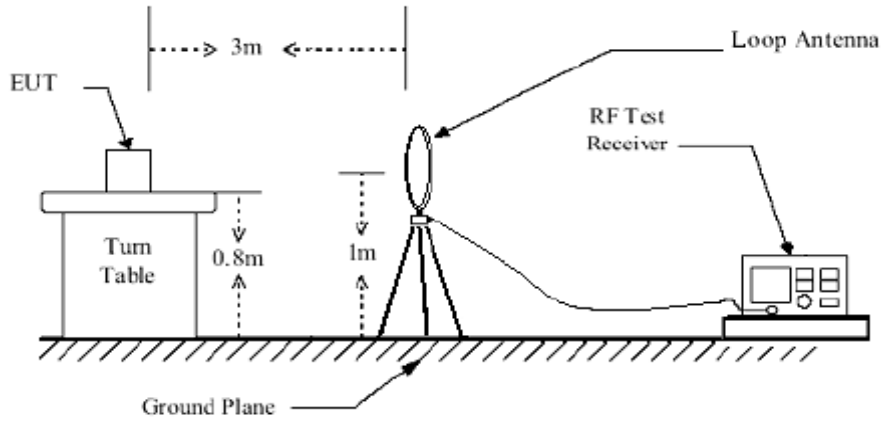
#### 3.6.3 DEVIATION FROM TEST STANDARD

No deviation.

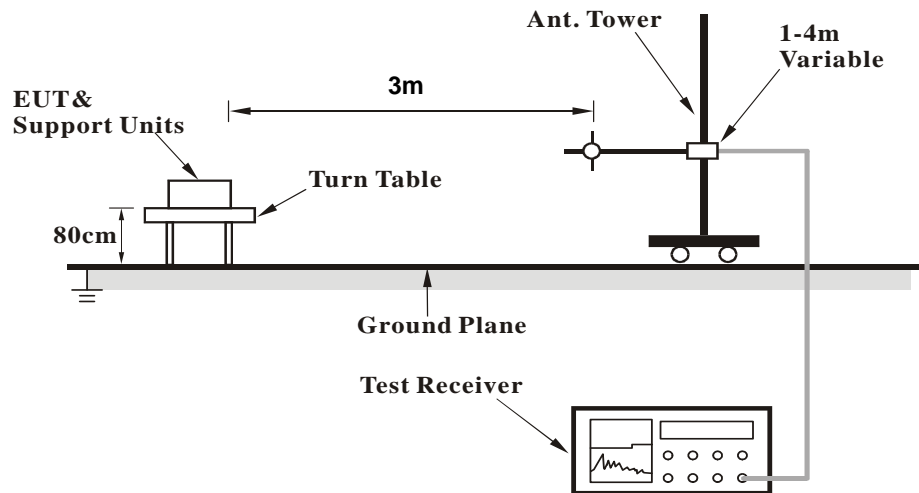


### 3.6.4 TEST SET UP

< Frequency Range below 30MHz >

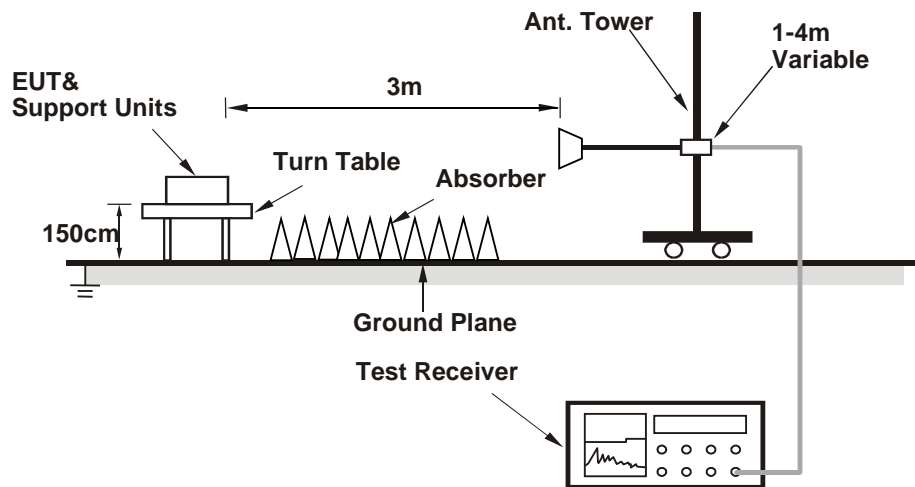


<Frequency Range below 1GHz>





<Frequency Range above 1GHz>



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

### 3.6.5 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

#### BELOW 1GHz WORST-CASE DATA

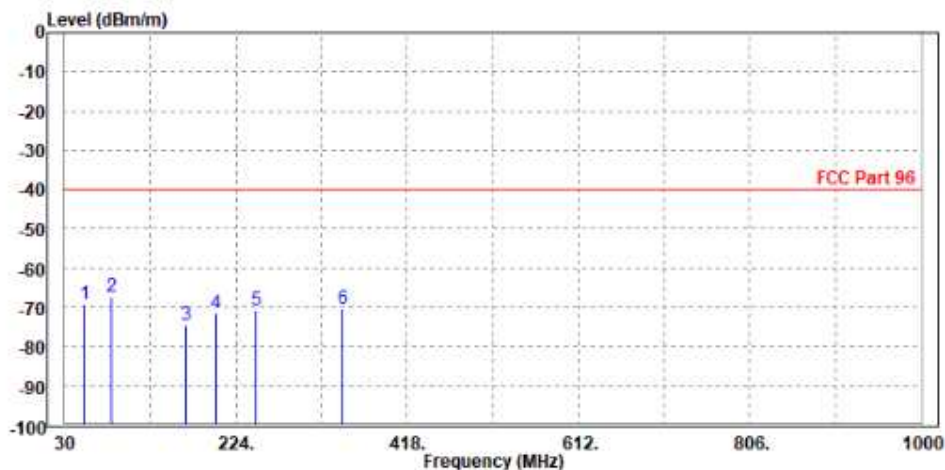
30 MHz – 1GHz data:

LTE Band 48

CHANNEL BANDWIDTH: 15MHz / QPSK

<b>MODE</b>	TX channel 55990	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

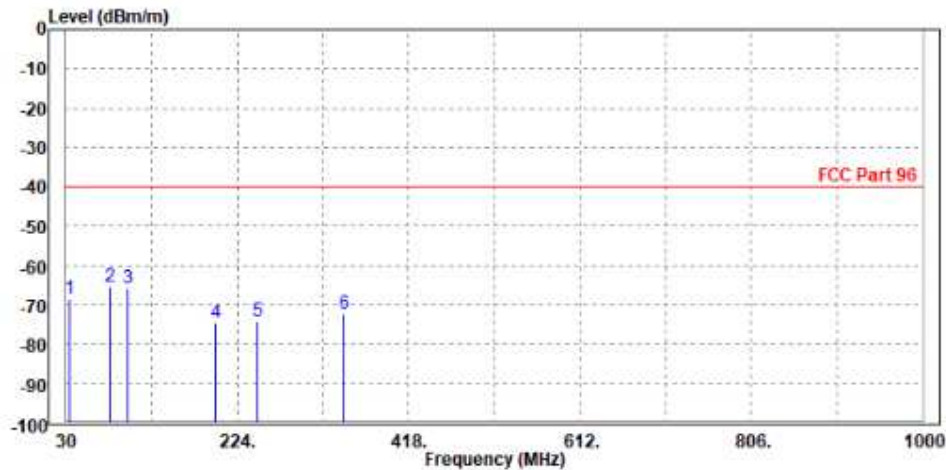
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	52.310	-69.28	-51.91	-40.00	-29.28	-17.37	Peak	Horizontal
2	82.380	-67.34	-45.92	-40.00	-27.34	-21.42	Peak	Horizontal
3	166.770	-74.62	-58.39	-40.00	-34.62	-16.23	Peak	Horizontal
4	200.720	-71.58	-54.24	-40.00	-31.58	-17.34	Peak	Horizontal
5	247.280	-70.76	-58.98	-40.00	-30.76	-11.78	Peak	Horizontal
6	345.250	-70.37	-59.01	-40.00	-30.37	-11.36	Peak	Horizontal





<b>MODE</b>	TX channel 55990	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	33.880	-68.45	-48.69	-40.00	-28.45	-19.76	Peak	Vertical
2 PP	79.470	-65.38	-46.05	-40.00	-25.38	-19.33	Peak	Vertical
3	99.840	-65.82	-59.31	-40.00	-25.82	-6.51	Peak	Vertical
4	198.780	-74.54	-56.43	-40.00	-34.54	-18.11	Peak	Vertical
5	247.280	-73.95	-60.11	-40.00	-33.95	-13.84	Peak	Vertical
6	345.250	-72.29	-62.30	-40.00	-32.29	-9.99	Peak	Vertical





**ABOVE 1GHz**

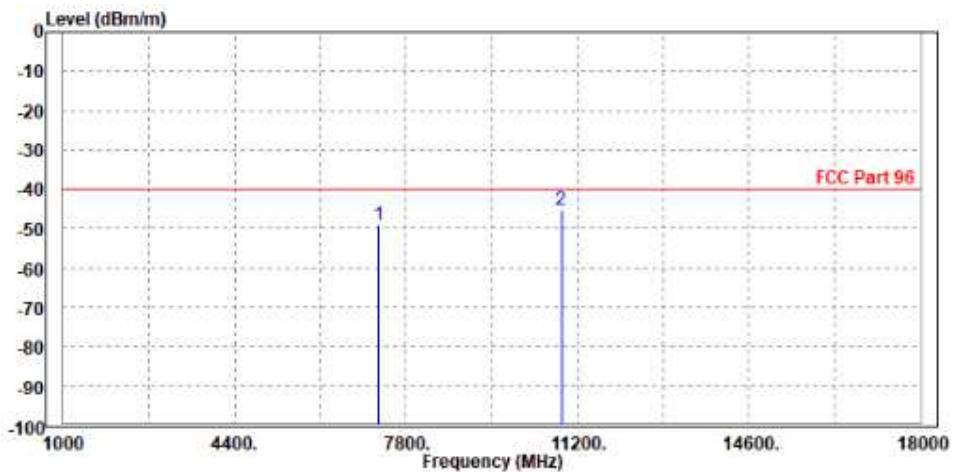
Note: For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

LTE BAND 48

CHANNEL BANDWIDTH: 5MHz / QPSK

<b>MODE</b>	TX channel 55990	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60Hz
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

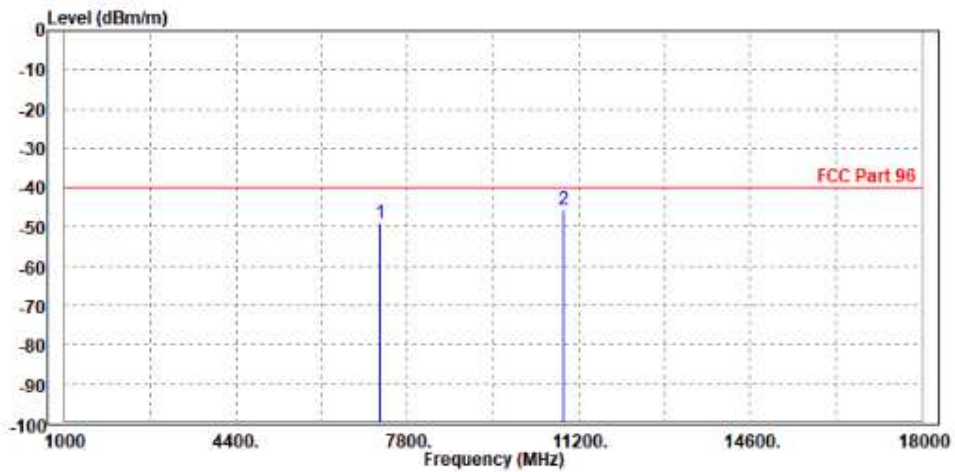
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7256.000	-48.88	-60.69	-40.00	-8.88	11.81	Peak	Horizontal
2	PP10875.000	-45.44	-65.05	-40.00	-5.44	19.61	Peak	Horizontal





<b>MODE</b>	TX channel 55990	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60Hz
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7250.000	-49.11	-62.82	-40.00	-9.11	13.71	Peak	Vertical
2	PP10877.000	-45.70	-65.38	-40.00	-5.70	19.68	Peak	Vertical

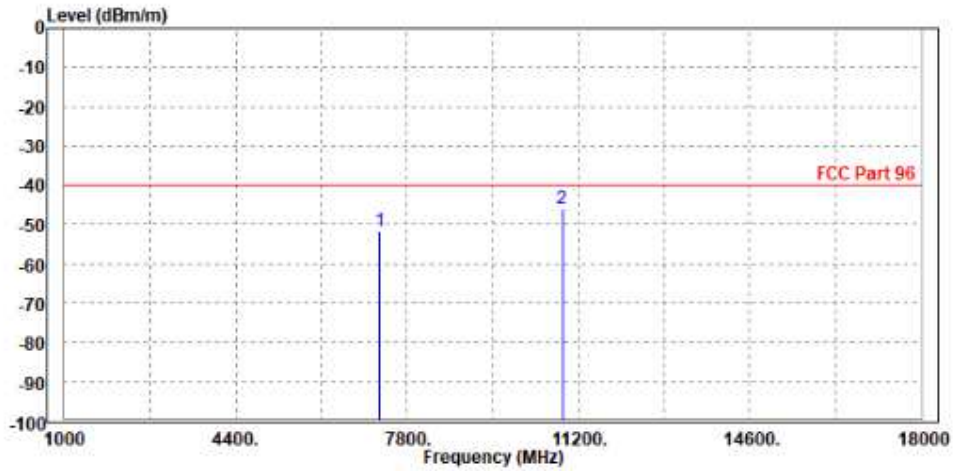




CHANNEL BANDWIDTH: 10MHz / QPSK

MODE	TX channel 55990	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

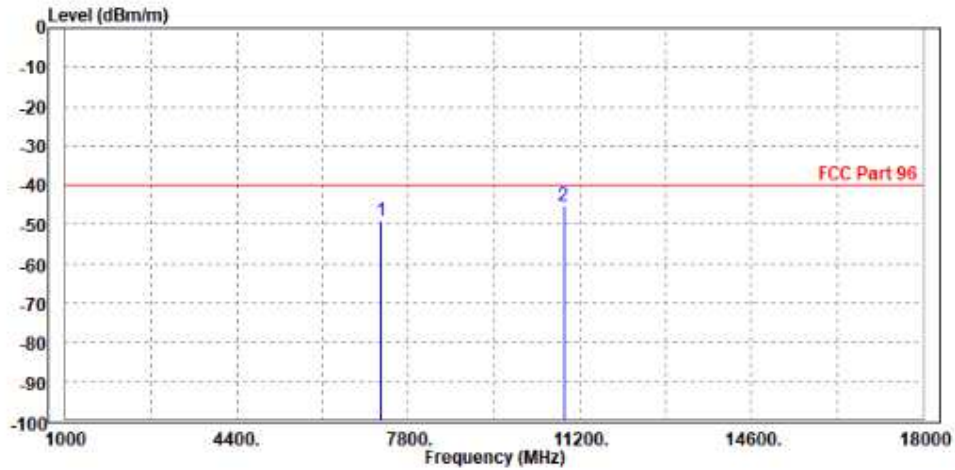
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7256.000	-51.57	-63.38	-40.00	-11.57	11.81	Peak	Horizontal
2	PP10875.000	-45.83	-65.44	-40.00	-5.83	19.61	Peak	Horizontal





<b>MODE</b>	TX channel 55990	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60Hz
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7256.000	-49.10	-62.84	-40.00	-9.10	13.74	Peak	Vertical
2	PP10875.000	-45.41	-65.08	-40.00	-5.41	19.67	Peak	Vertical





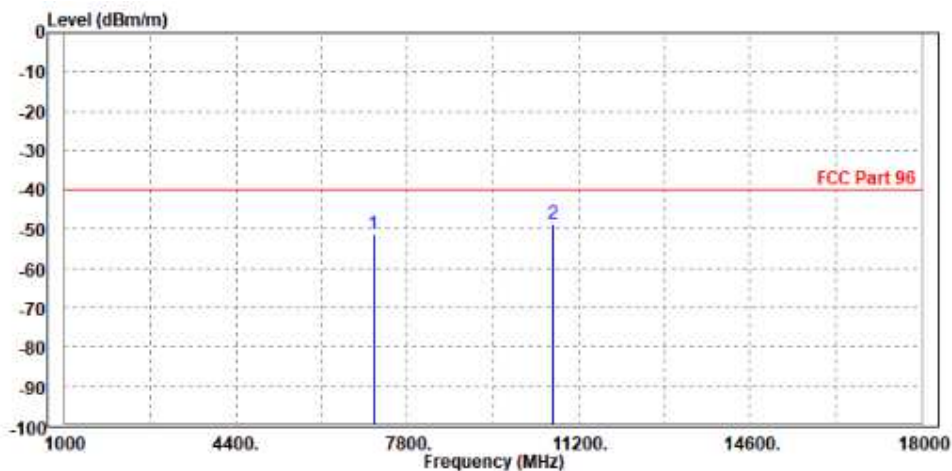


CHANNEL BANDWIDTH: 15MHz / QPSK

CH55315

MODE	TX channel 55315	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

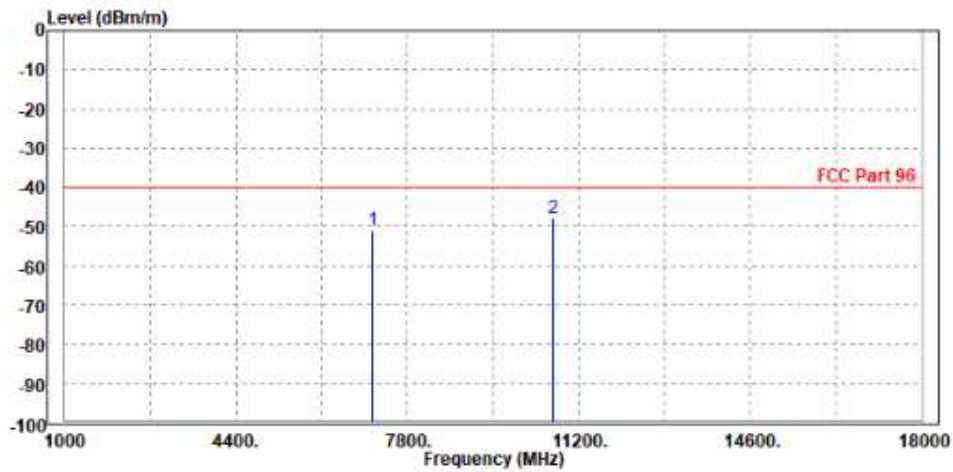
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7120.000	-51.20	-63.23	-40.00	-11.20	12.03	Peak	Horizontal
2	PP10672.500	-48.54	-67.60	-40.00	-8.54	19.06	Peak	Horizontal





MODE	TX channel 55315	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7115.000	-51.01	-64.19	-40.00	-11.01	13.18	Peak	Vertical
2	PP10673.000	-48.09	-66.81	-40.00	-8.09	18.72	Peak	Vertical

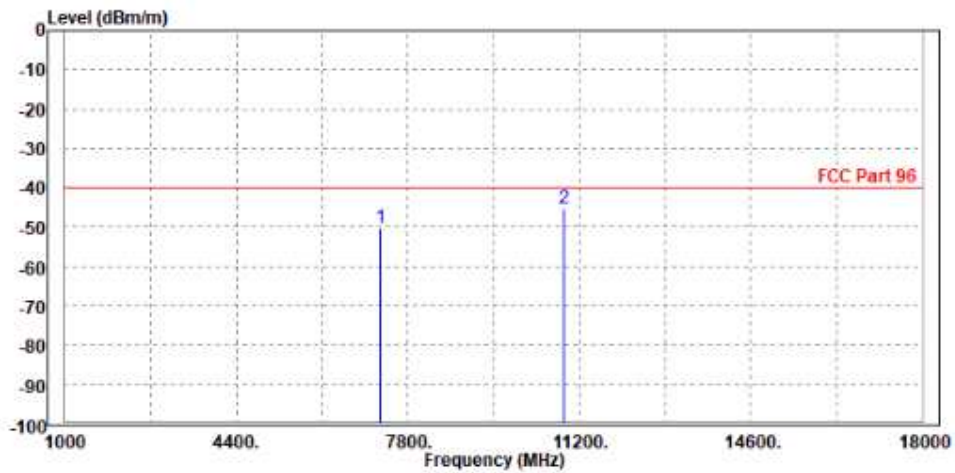




CH55990

MODE	TX channel 55990	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

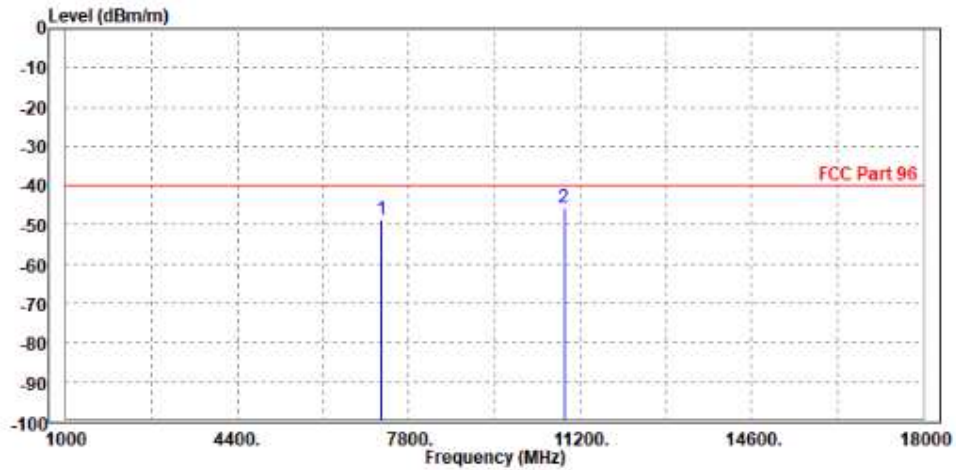
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7250.000	-50.34	-62.16	-40.00	-10.34	11.82	Peak	Horizontal
2	PP10877.000	-45.27	-64.89	-40.00	-5.27	19.62	Peak	Horizontal





MODE	TX channel 55990	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7256.000	-48.50	-62.24	-40.00	-8.50	13.74	Peak	Vertical
2	PP10875.000	-45.57	-65.24	-40.00	-5.57	19.67	Peak	Vertical





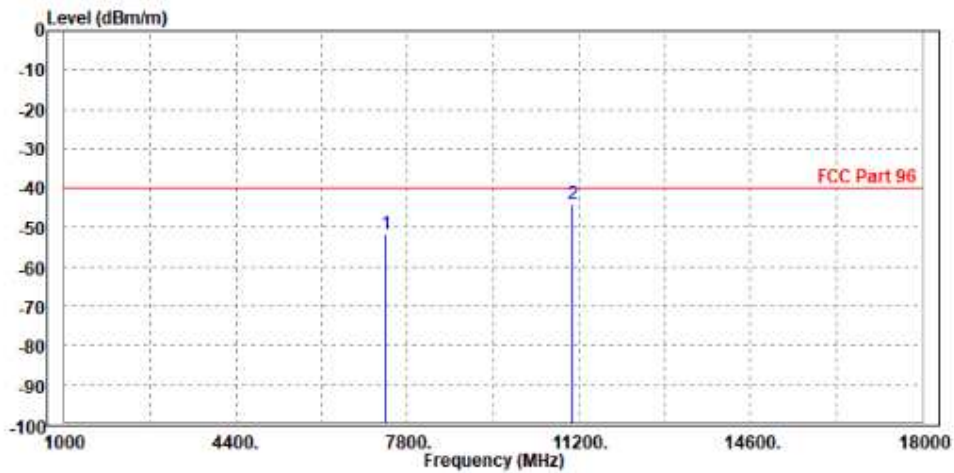
BUREAU VERITAS

Test Report No.: W7L-P23100014RF10

CH56665

MODE	TX channel 56665	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

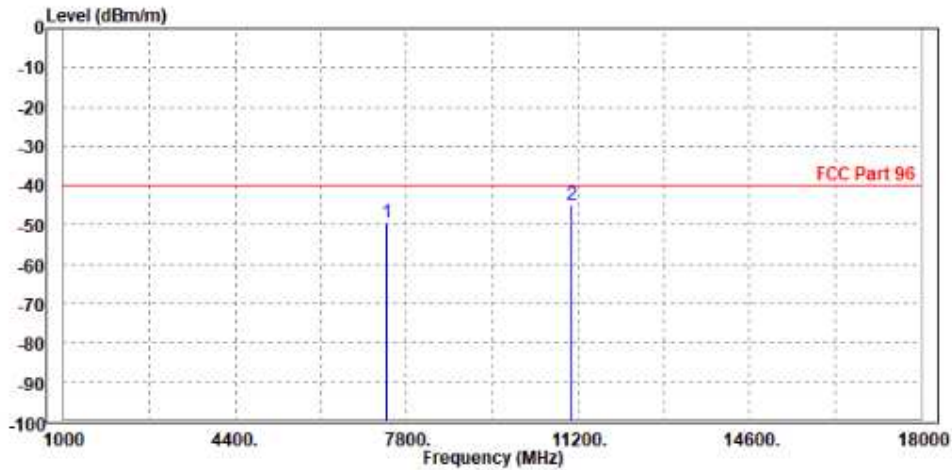
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7385.000	-51.76	-63.36	-40.00	-11.76	11.60	Peak	Horizontal
2	PP11081.000	-44.08	-64.14	-40.00	-4.08	20.06	Peak	Horizontal





<b>MODE</b>	TX channel 56665	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60Hz
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7392.000	-49.46	-63.73	-40.00	-9.46	14.27	Peak	Vertical
2	PP11077.500	-44.91	-64.75	-40.00	-4.91	19.84	Peak	Vertical

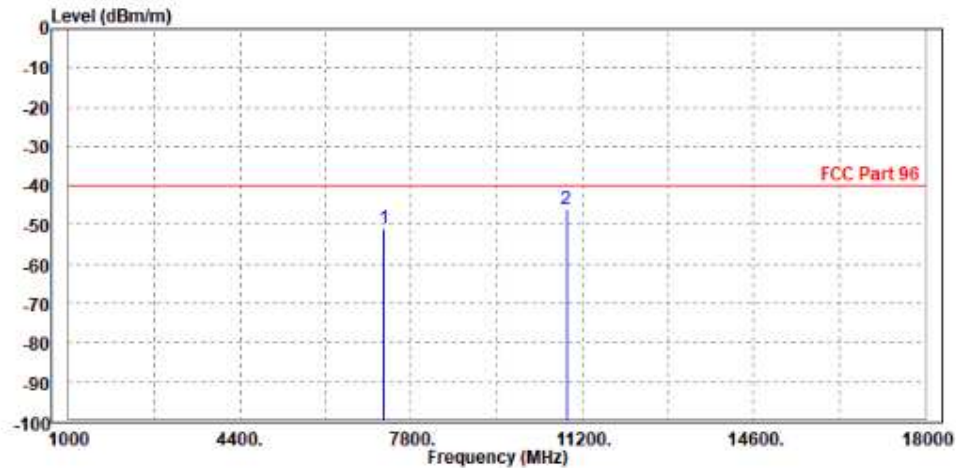




CHANNEL BANDWIDTH: 20MHz / QPSK

MODE	TX channel 5590	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
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	7256.000	-51.13	-62.94	-40.00	-11.13	11.81	Peak	Horizontal
2	PP10875.000	-46.00	-65.61	-40.00	-6.00	19.61	Peak	Horizontal

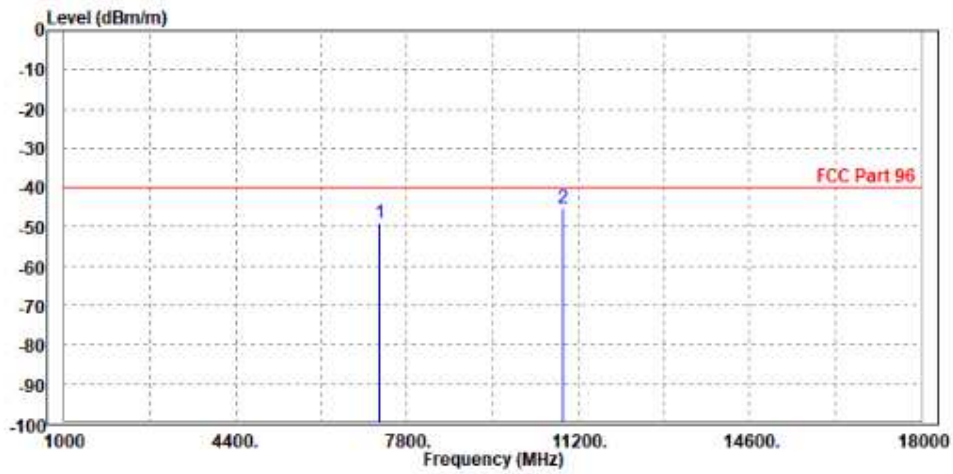






MODE	TX channel 55990	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7250.000	-48.98	-62.69	-40.00	-8.98	13.71	Peak	Vertical
2	PP10877.000	-45.40	-65.08	-40.00	-5.40	19.68	Peak	Vertical







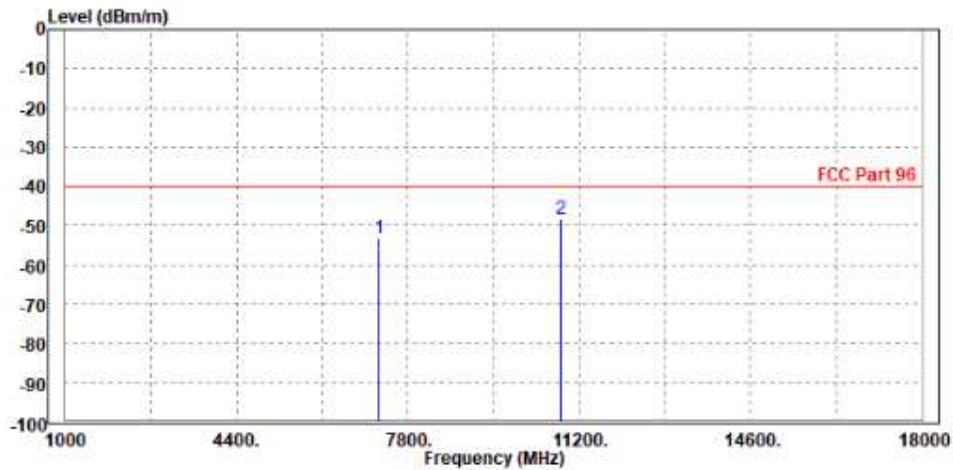
**LTE Band CA\_48C**

Note: For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

**CHANNEL BANDWIDTH: 5 MHz + 20MHz**

<b>MODE</b>	TX channel PCC 55898	<b>FREQUENCY RANGE</b>	Above 1000MHz
	TX channel SCC 56015		
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7231.600	-53.15	-65.00	-40.00	-13.15	11.85	Peak	Horizontal
2	PP10843.000	-48.12	-67.65	-40.00	-8.12	19.53	Peak	Horizontal



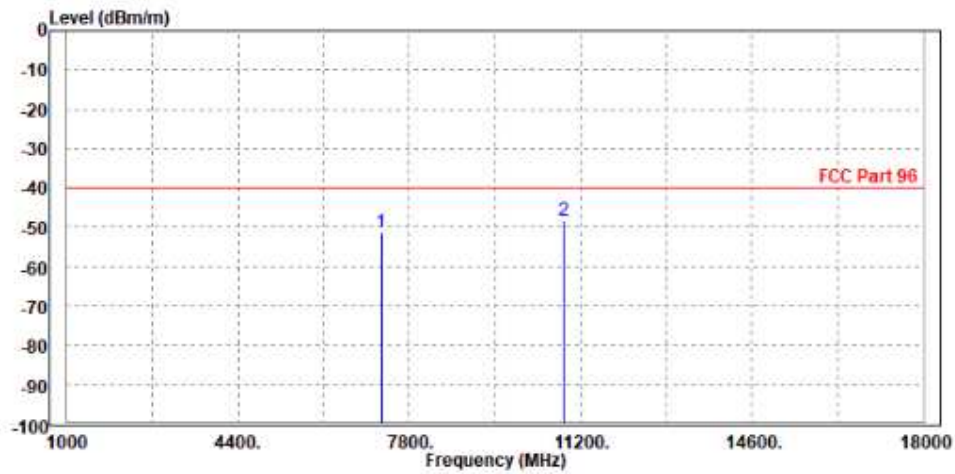


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VERITAS**

**Test Report No.: W7L-P23100014RF10**

<b>MODE</b>	TX channel PCC 55898	<b>FREQUENCY RANGE</b>	Above 1000MHz
	TX channel SCC 56015		
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7239.000	-51.40	-65.07	-40.00	-11.40	13.67	Peak	Vertical
2	PP10847.400	-48.37	-67.91	-40.00	-8.37	19.54	Peak	Vertical



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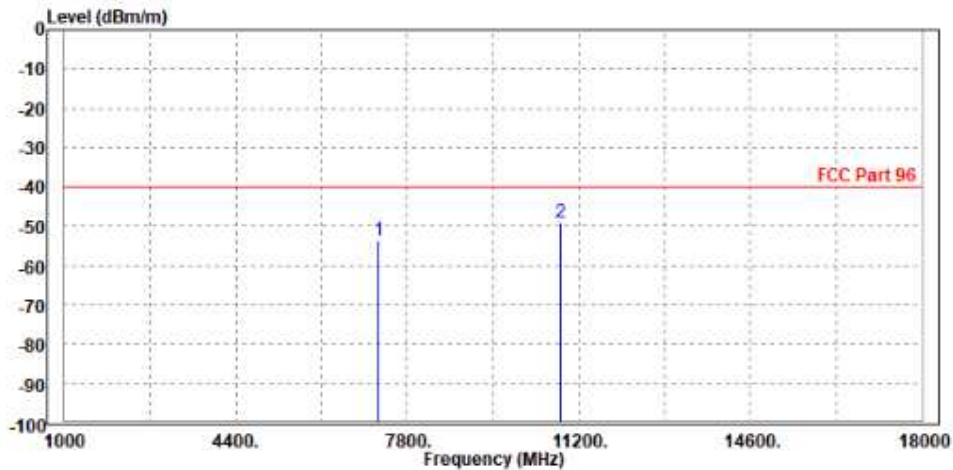
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CHANNEL BANDWIDTH: 10MHz + 20MHz

MODE	TX channel PCC 55896	FREQUENCY RANGE	Above 1000MHz
	TX channel SCC 56040		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7231.200	-53.57	-65.42	-40.00	-13.57	11.85	Peak	Horizontal
2	PP10843.000	-49.06	-68.59	-40.00	-9.06	19.53	Peak	Horizontal



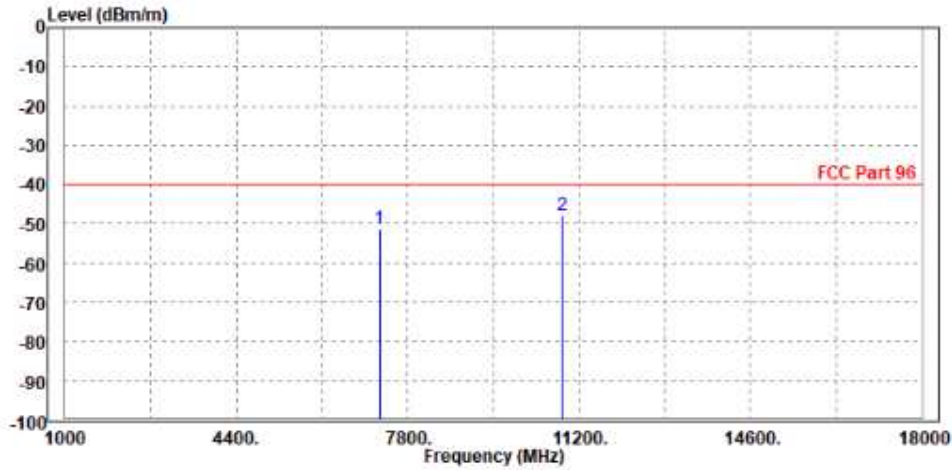


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Test Report No.: W7L-P23100014RF10

MODE	TX channel PCC 55896	FREQUENCY RANGE	Above 1000MHz
	TX channel SCC 56040		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7239.000	-51.52	-65.19	-40.00	-11.52	13.67	Peak	Vertical
2	PP10846.800	-47.82	-67.36	-40.00	-7.82	19.54	Peak	Vertical

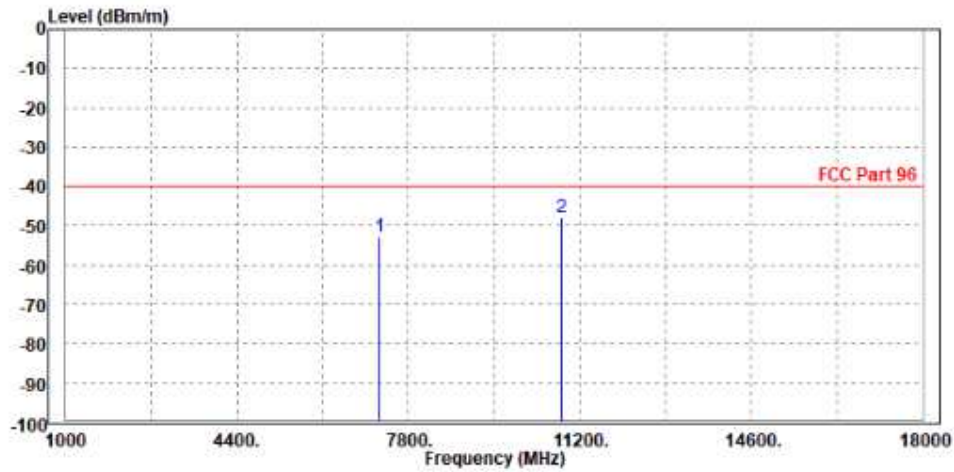




**CHANNEL BANDWIDTH: 15MHz + 20MHz**

<b>MODE</b>	TX channel PCC 55893	<b>FREQUENCY RANGE</b>	Above 1000MHz
	TX channel SCC 55064		
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

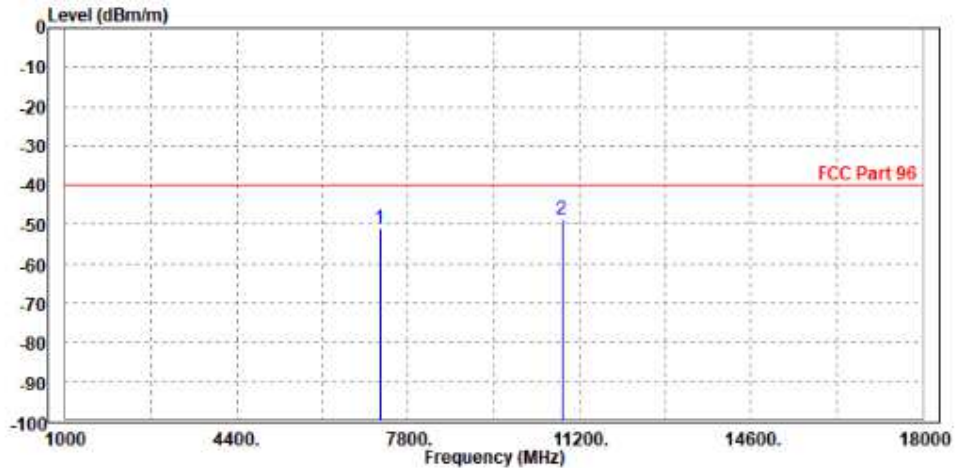
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7230.600	-52.88	-64.74	-40.00	-12.88	11.86	Peak	Horizontal
2	PP10843.000	-47.84	-67.37	-40.00	-7.84	19.53	Peak	Horizontal





<b>MODE</b>	TX channel PCC 55893	<b>FREQUENCY RANGE</b>	Above 1000MHz
	TX channel SCC 55064		
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7239.000	-51.00	-64.67	-40.00	-11.00	13.67	Peak	Vertical
2	PP10845.900	-48.70	-68.23	-40.00	-8.70	19.53	Peak	Vertical

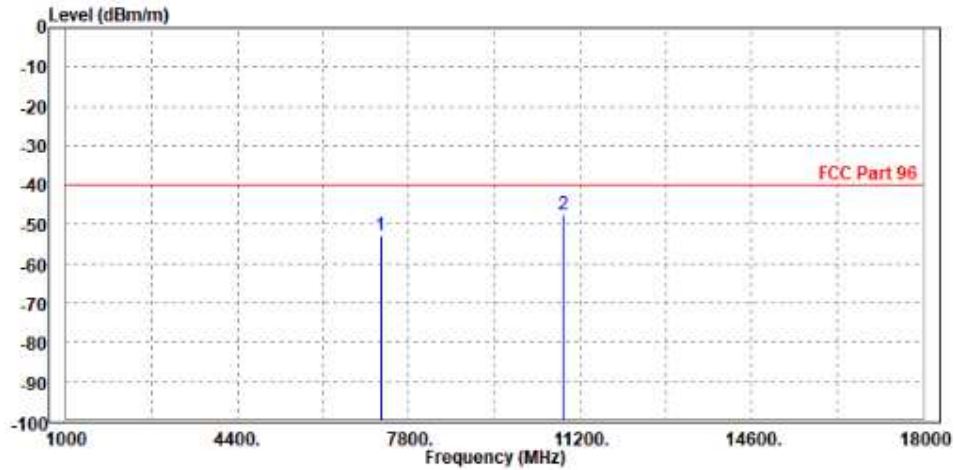




CHANNEL BANDWIDTH: 20MHz + 5MHz

MODE	TX channel PCC 55965	FREQUENCY RANGE	Above 1000MHz
	TX channel SCC 56082		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7239.000	-52.72	-64.56	-40.00	-12.72	11.84	Peak	Horizontal
2	PP10867.500	-47.69	-67.28	-40.00	-7.69	19.59	Peak	Horizontal

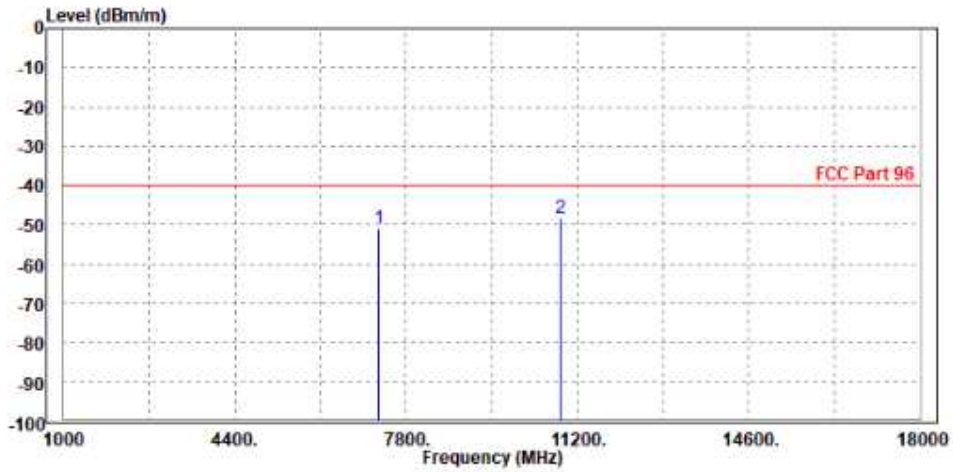






MODE	TX channel PCC 55965	FREQUENCY RANGE	Above 1000MHz
	TX channel SCC 56082		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7245.000	-51.02	-64.71	-40.00	-11.02	13.69	Peak	Vertical
2	PP10860.000	-48.12	-67.72	-40.00	-8.12	19.60	Peak	Vertical







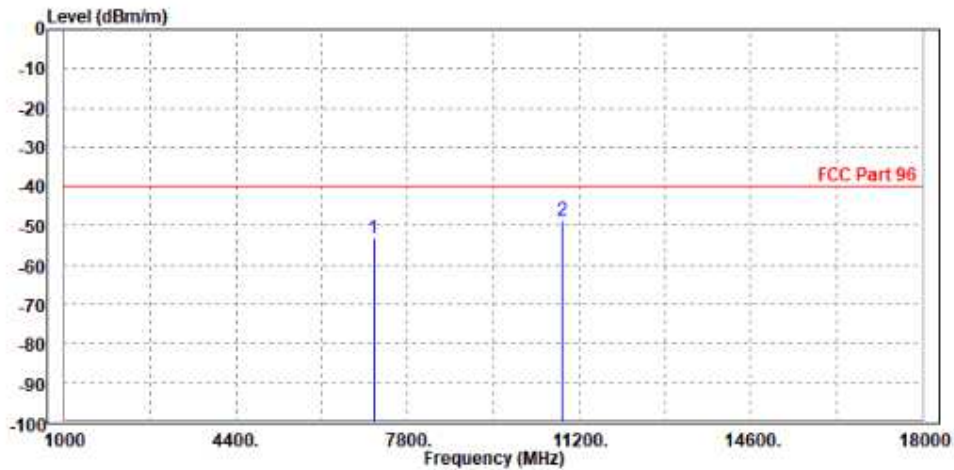
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**Test Report No.: W7L-P23100014RF10**

**CHANNEL BANDWIDTH: 20MHz + 10MHz**

<b>MODE</b>	TX channel PCC 55340	<b>FREQUENCY RANGE</b>	Above 1000MHz
	TX channel SCC 55484		
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

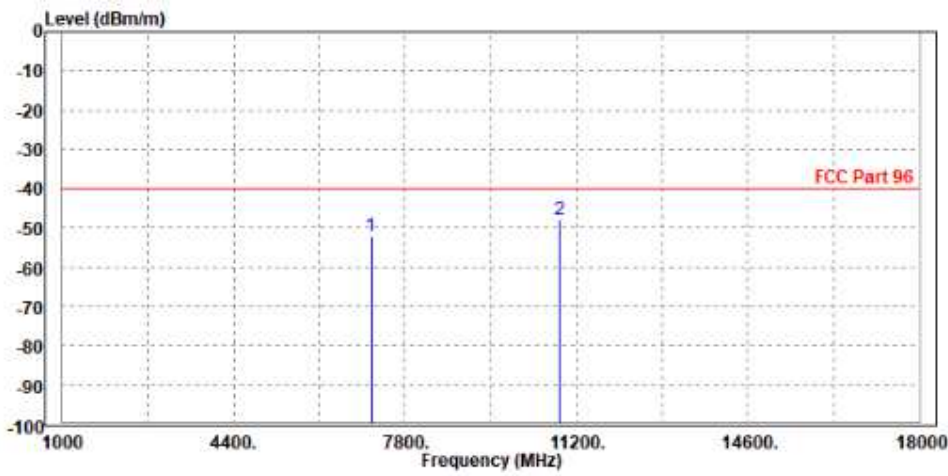
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7120.000	-53.09	-65.12	-40.00	-13.09	12.03	Peak	Horizontal
2	PP10860.000	-48.65	-68.22	-40.00	-8.65	19.57	Peak	Horizontal





MODE	TX channel PCC 55340	FREQUENCY RANGE	Above 1000MHz
	TX channel SCC 55484		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7120.000	-52.09	-65.29	-40.00	-12.09	13.20	Peak	Vertical
2	PP10860.000	-47.98	-67.58	-40.00	-7.98	19.60	Peak	Vertical

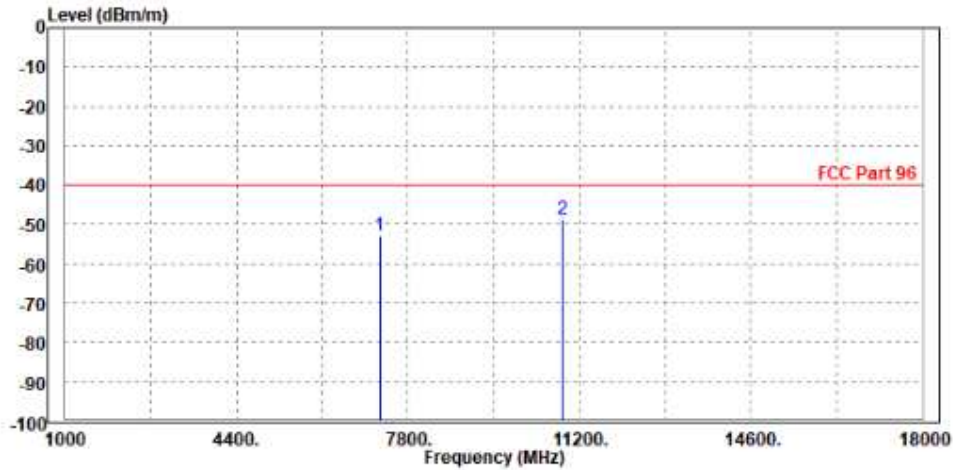




CHANNEL BANDWIDTH: 20MHz + 10MHz

MODE	TX channel PCC 55941	FREQUENCY RANGE	Above 1000MHz
	TX channel SCC 56085		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7239.000	-52.98	-64.82	-40.00	-12.98	11.84	Peak	Horizontal
2	PP10860.300	-48.67	-68.24	-40.00	-8.67	19.57	Peak	Horizontal



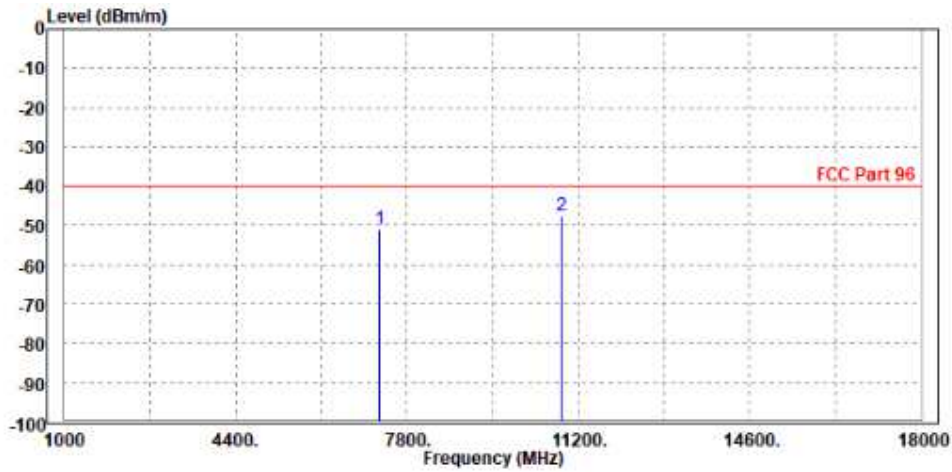


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VERITAS**

**Test Report No.: W7L-P23100014RF10**

<b>MODE</b>	TX channel PCC 55941	<b>FREQUENCY RANGE</b>	Above 1000MHz
	TX channel SCC 56085		
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7240.200	-50.80	-64.47	-40.00	-10.80	13.67	Peak	Vertical
2	PP10860.000	-47.41	-67.01	-40.00	-7.41	19.60	Peak	Vertical



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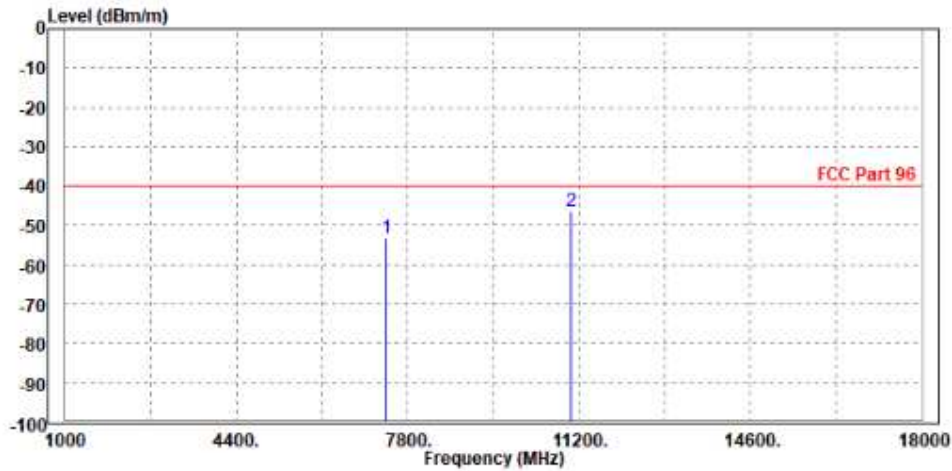
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**CHANNEL BANDWIDTH: 20MHz + 10MHz**

<b>MODE</b>	TX channel PCC 56541	<b>FREQUENCY RANGE</b>	Above 1000MHz
	TX channel SCC 56685		
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7358.000	-53.33	-64.98	-40.00	-13.33	11.65	Peak	Horizontal
2	PP11040.300	-46.36	-66.37	-40.00	-6.36	20.01	Peak	Horizontal



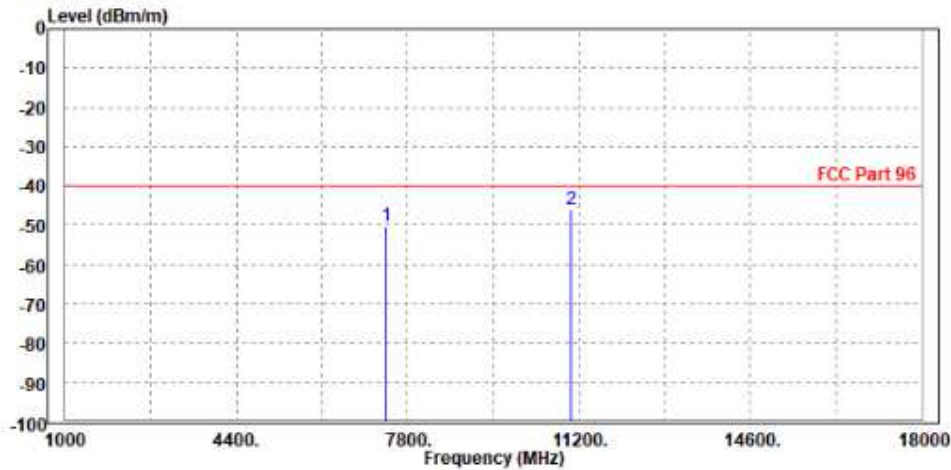


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Test Report No.: W7L-P23100014RF10

MODE	TX channel PCC 56541	FREQUENCY RANGE	Above 1000MHz
	TX channel SCC 56685		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7360.200	-50.07	-64.22	-40.00	-10.07	14.15	Peak	Vertical
2	PP11047.000	-46.01	-66.01	-40.00	-6.01	20.00	Peak	Vertical



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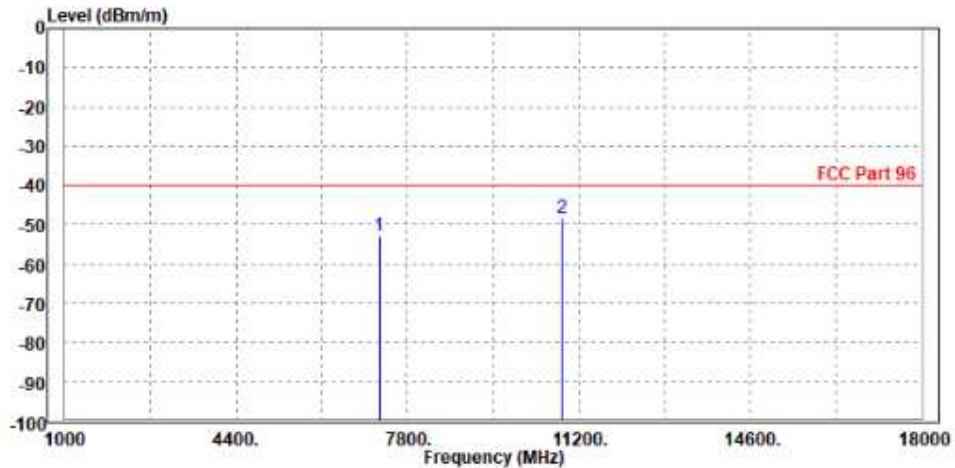
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CHANNEL BANDWIDTH: 20MHz + 15MHz

MODE	TX channel PCC 55916	FREQUENCY RANGE	Above 1000MHz
	TX channel SCC 56087		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7239.000	-53.02	-64.86	-40.00	-13.02	11.84	Peak	Horizontal
2	PP10852.800	-48.32	-67.87	-40.00	-8.32	19.55	Peak	Horizontal

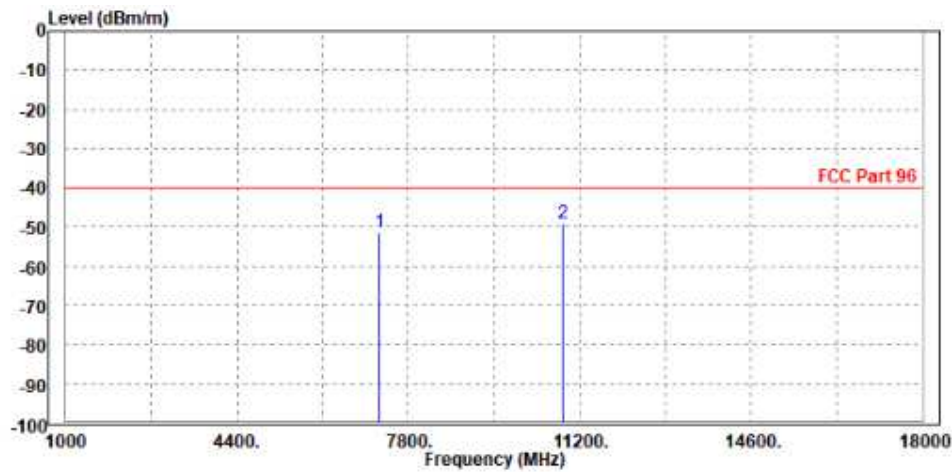






MODE	TX channel PCC 55916	FREQUENCY RANGE	Above 1000MHz
	TX channel SCC 56087		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7235.200	-51.27	-64.93	-40.00	-11.27	13.66	Peak	Vertical
2	PP10860.000	-48.91	-68.51	-40.00	-8.91	19.60	Peak	Vertical



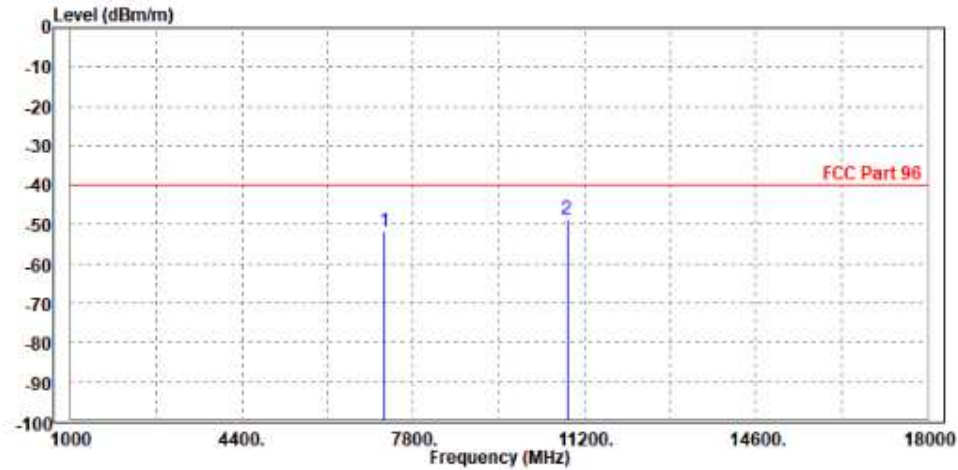




**CHANNEL BANDWIDTH: 20MHz + 20MHz**

<b>MODE</b>	TX channel PCC 55891	<b>FREQUENCY RANGE</b>	Above 1000MHz
	TX channel SCC 56089		
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7222.000	-51.85	-63.72	-40.00	-11.85	11.87	Peak	Horizontal
2	PP10845.300	-48.84	-68.37	-40.00	-8.84	19.53	Peak	Horizontal



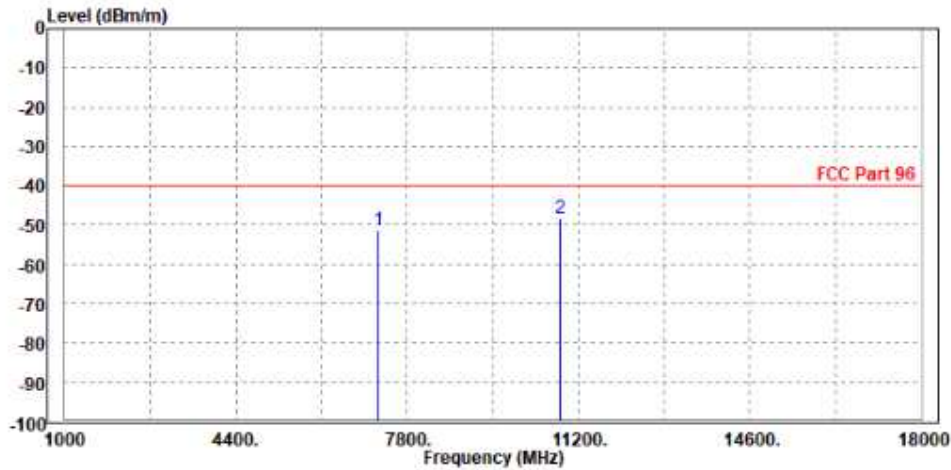


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**Test Report No.: W7L-P23100014RF10**

<b>MODE</b>	TX channel PCC 55891	<b>FREQUENCY RANGE</b>	Above 1000MHz
	TX channel SCC 56089		
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	7230.230	-51.49	-65.13	-40.00	-11.49	13.64	Peak	Vertical
2	PP10843.000	-48.42	-67.94	-40.00	-8.42	19.52	Peak	Vertical



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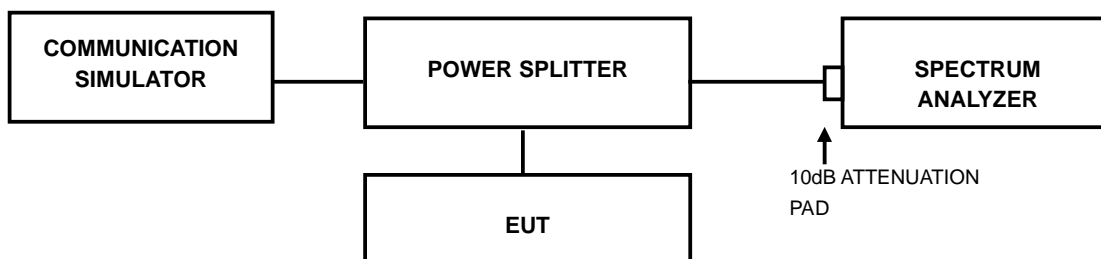
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## 3.7 PEAK TO AVERAGE RATIO

### 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%.



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### 3.7.4 TEST RESULTS

Please Refer to Appendix Of this test report.



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## 4 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:

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Fax: +86-755-88696577

**Email:** [customerservice.sw@cn.bureauveritas.com](mailto:customerservice.sw@cn.bureauveritas.com)

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

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



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## **5 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.



### 6 Appendix

### LTE BAND48 (INCLUDING LTE BAND42/43)

### PEAK-TO-AVERAGE RATIO (CCDF)

### TEST RESULT

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band48	5MHz	QPSK	55265	1RB#0	4.05	13	PASS
Band48	5MHz	QPSK	55265	25RB#0	6.50	13	PASS
Band48	5MHz	QPSK	55990	1RB#0	3.97	13	PASS
Band48	5MHz	QPSK	55990	25RB#0	5.24	13	PASS
Band48	5MHz	QPSK	56715	1RB#0	3.82	13	PASS
Band48	5MHz	QPSK	56715	25RB#0	5.72	13	PASS
Band48	5MHz	16QAM	55265	1RB#0	6.12	13	PASS
Band48	5MHz	16QAM	55265	25RB#0	6.75	13	PASS
Band48	5MHz	16QAM	55990	1RB#0	5.88	13	PASS
Band48	5MHz	16QAM	55990	25RB#0	6.40	13	PASS
Band48	5MHz	16QAM	56715	1RB#0	5.38	13	PASS
Band48	5MHz	16QAM	56715	25RB#0	6.46	13	PASS
Band48	5MHz	64QAM	55265	1RB#0	6.40	13	PASS
Band48	5MHz	64QAM	55265	25RB#0	7.07	13	PASS
Band48	5MHz	64QAM	55990	1RB#0	7.74	13	PASS
Band48	5MHz	64QAM	55990	25RB#0	6.88	13	PASS
Band48	5MHz	64QAM	56715	1RB#0	6.79	13	PASS
Band48	5MHz	64QAM	56715	25RB#0	6.74	13	PASS
Band48	10MHz	QPSK	55290	1RB#0	3.82	13	PASS
Band48	10MHz	QPSK	55290	50RB#0	5.29	13	PASS
Band48	10MHz	QPSK	55990	1RB#0	3.76	13	PASS
Band48	10MHz	QPSK	55990	50RB#0	5.15	13	PASS
Band48	10MHz	QPSK	56690	1RB#0	3.55	13	PASS
Band48	10MHz	QPSK	56690	50RB#0	5.11	13	PASS
Band48	10MHz	16QAM	55290	1RB#0	6.39	13	PASS
Band48	10MHz	16QAM	55290	50RB#0	6.65	13	PASS
Band48	10MHz	16QAM	55990	1RB#0	5.78	13	PASS
Band48	10MHz	16QAM	55990	50RB#0	6.04	13	PASS
Band48	10MHz	16QAM	56690	1RB#0	5.04	13	PASS
Band48	10MHz	16QAM	56690	50RB#0	6.26	13	PASS
Band48	10MHz	64QAM	55290	1RB#0	6.81	13	PASS
Band48	10MHz	64QAM	55290	50RB#0	6.85	13	PASS
Band48	10MHz	64QAM	55990	1RB#0	6.94	13	PASS
Band48	10MHz	64QAM	55990	50RB#0	6.93	13	PASS
Band48	10MHz	64QAM	56690	1RB#0	7.41	13	PASS
Band48	10MHz	64QAM	56690	50RB#0	6.90	13	PASS
Band48	15MHz	QPSK	55315	1RB#0	4.30	13	PASS
Band48	15MHz	QPSK	55315	75RB#0	5.53	13	PASS
Band48	15MHz	QPSK	55990	1RB#0	3.99	13	PASS
Band48	15MHz	QPSK	55990	75RB#0	5.42	13	PASS
Band48	15MHz	QPSK	56665	1RB#0	4.05	13	PASS
Band48	15MHz	QPSK	56665	75RB#0	5.29	13	PASS



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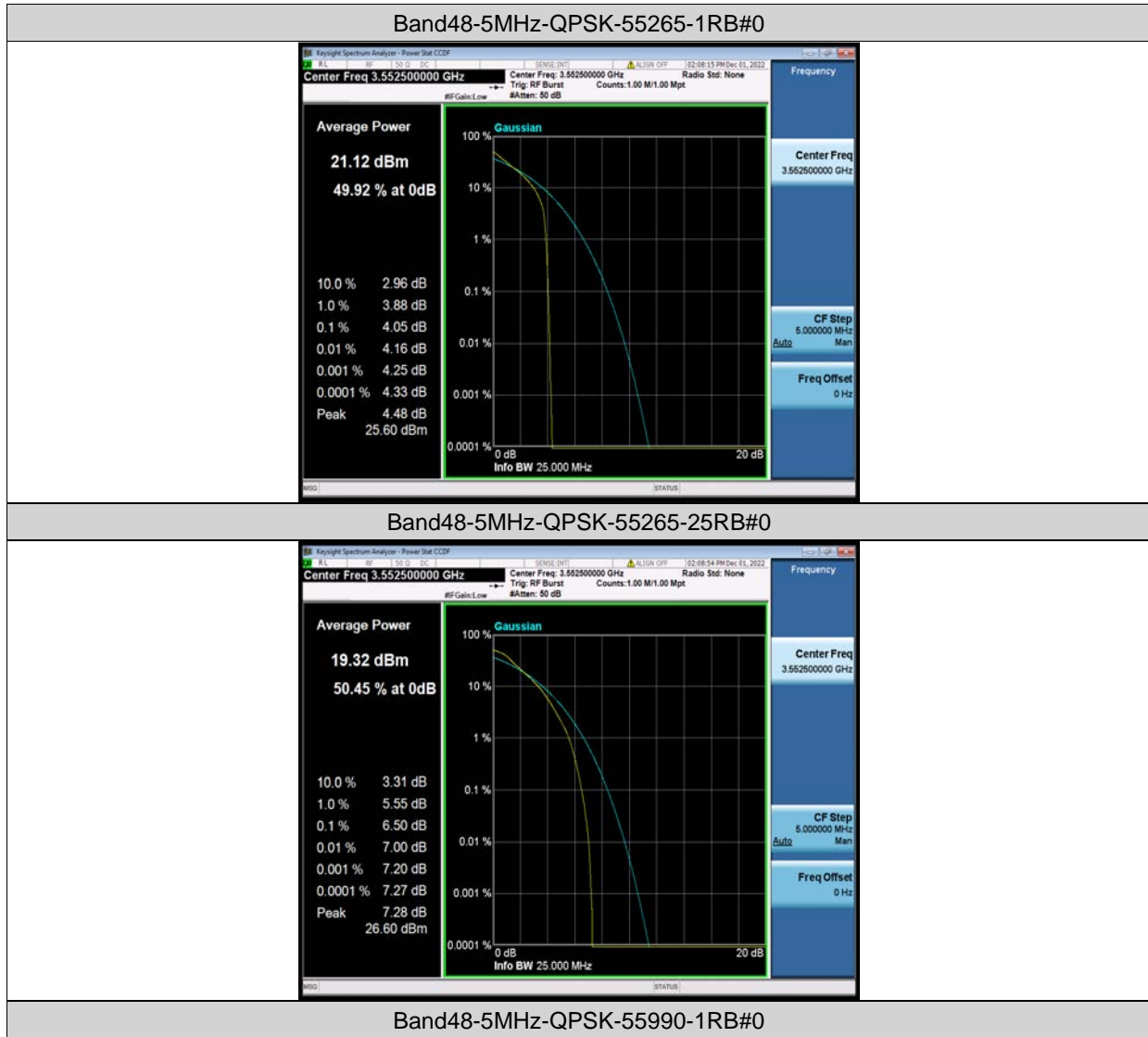
**Test Report No.: W7L-P23100014RF10**

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Band48	15MHz	16QAM	55315	75RB#0	6.26	13	PASS
Band48	15MHz	16QAM	55990	1RB#0	5.60	13	PASS
Band48	15MHz	16QAM	55990	75RB#0	7.64	13	PASS
Band48	15MHz	16QAM	56665	1RB#0	5.58	13	PASS
Band48	15MHz	16QAM	56665	75RB#0	6.20	13	PASS
Band48	15MHz	64QAM	55315	1RB#0	7.16	13	PASS
Band48	15MHz	64QAM	55315	75RB#0	7.13	13	PASS
Band48	15MHz	64QAM	55990	1RB#0	6.79	13	PASS
Band48	15MHz	64QAM	55990	75RB#0	6.91	13	PASS
Band48	15MHz	64QAM	56665	1RB#0	6.80	13	PASS
Band48	15MHz	64QAM	56665	75RB#0	6.86	13	PASS
Band48	20MHz	QPSK	55340	1RB#0	3.66	13	PASS
Band48	20MHz	QPSK	55340	100RB#0	5.29	13	PASS
Band48	20MHz	QPSK	55990	1RB#0	3.79	13	PASS
Band48	20MHz	QPSK	55990	100RB#0	5.13	13	PASS
Band48	20MHz	QPSK	56640	1RB#0	4.01	13	PASS
Band48	20MHz	QPSK	56640	100RB#0	5.08	13	PASS
Band48	20MHz	16QAM	55340	1RB#0	5.50	13	PASS
Band48	20MHz	16QAM	55340	100RB#0	6.10	13	PASS
Band48	20MHz	16QAM	55990	1RB#0	5.62	13	PASS
Band48	20MHz	16QAM	55990	100RB#0	6.02	13	PASS
Band48	20MHz	16QAM	56640	1RB#0	5.69	13	PASS
Band48	20MHz	16QAM	56640	100RB#0	6.00	13	PASS
Band48	20MHz	64QAM	55340	1RB#0	7.42	13	PASS
Band48	20MHz	64QAM	55340	100RB#0	6.78	13	PASS
Band48	20MHz	64QAM	55990	1RB#0	6.73	13	PASS
Band48	20MHz	64QAM	55990	100RB#0	6.75	13	PASS
Band48	20MHz	64QAM	56640	1RB#0	6.81	13	PASS
Band48	20MHz	64QAM	56640	100RB#0	6.83	13	PASS





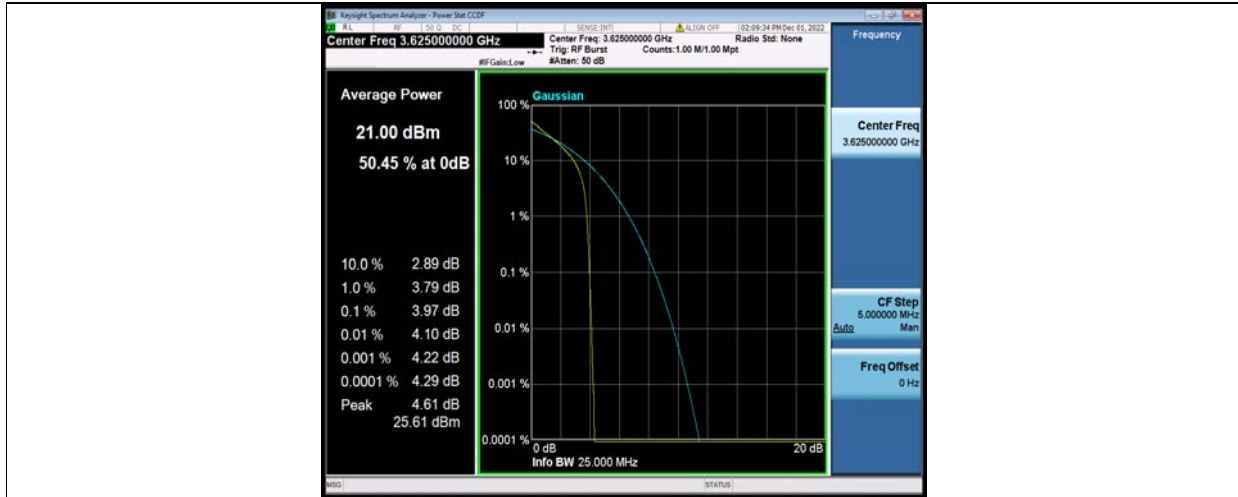
### TEST GRAPHS



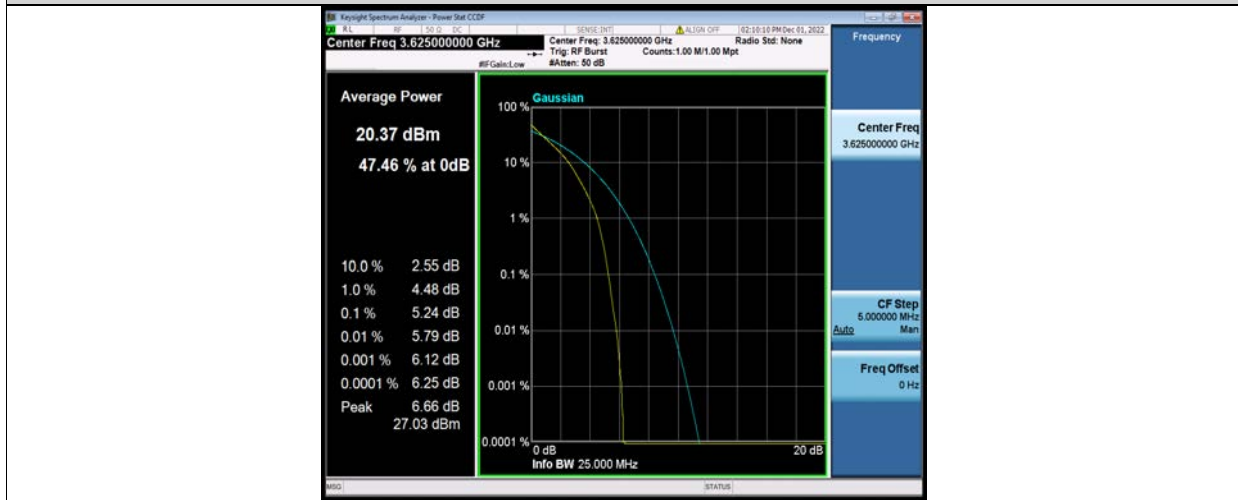


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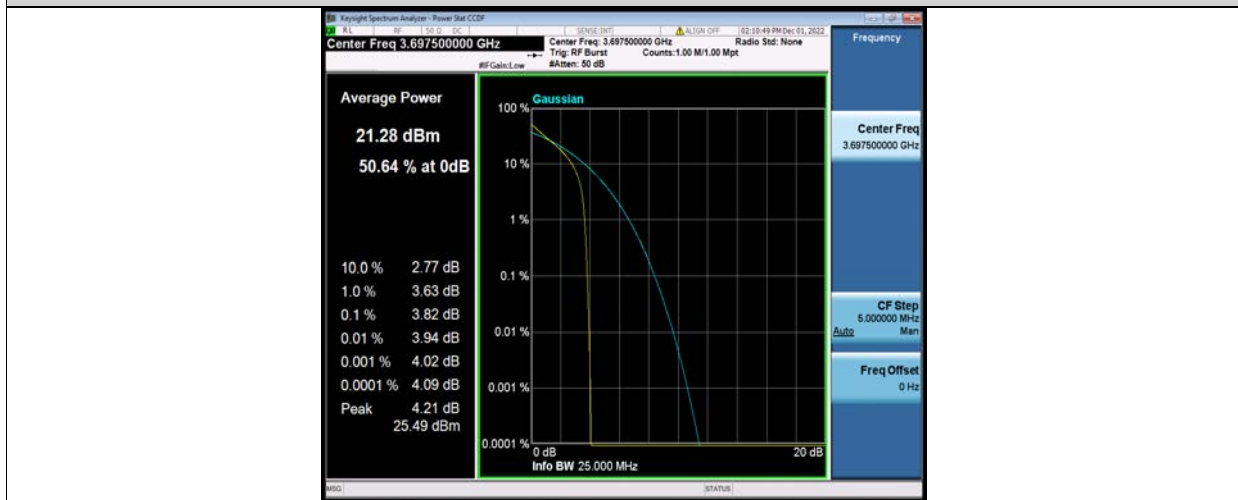
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Band48-5MHz-QPSK-55990-25RB#0



Band48-5MHz-QPSK-56715-1RB#0



Band48-5MHz-QPSK-56715-25RB#0

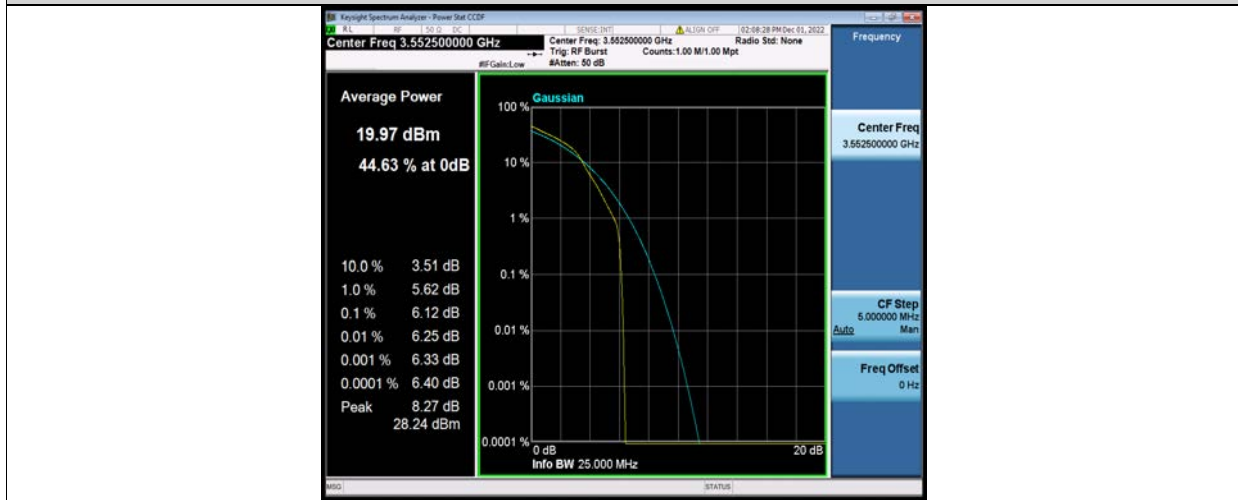
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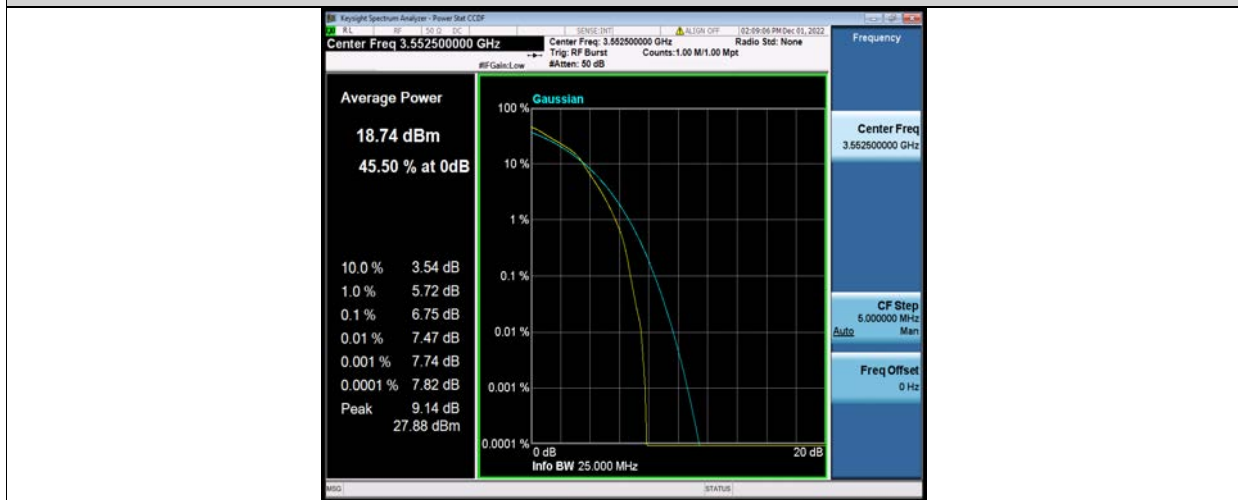
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Band48-5MHz-16QAM-55265-1RB#0



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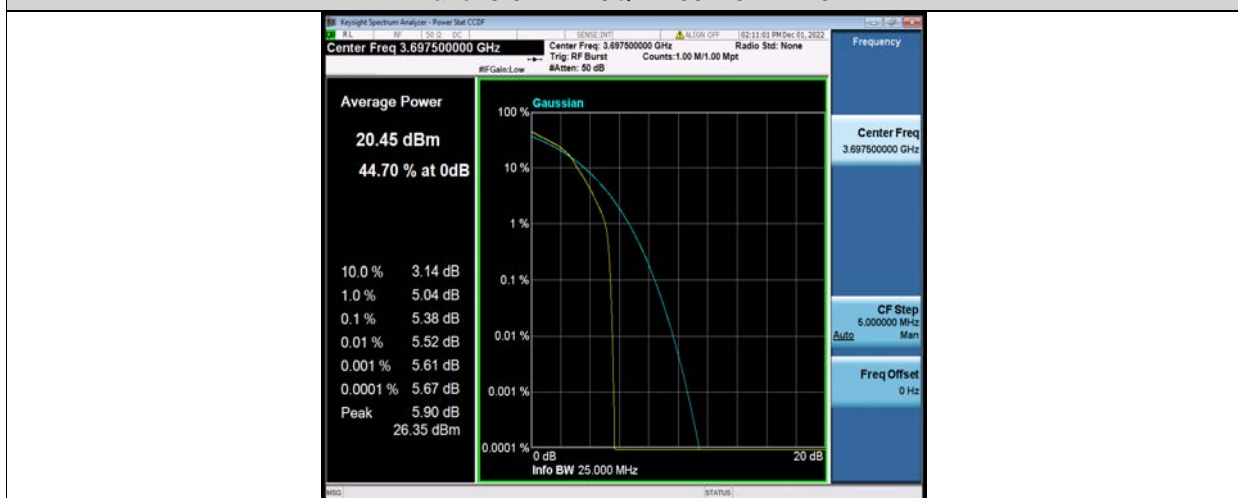
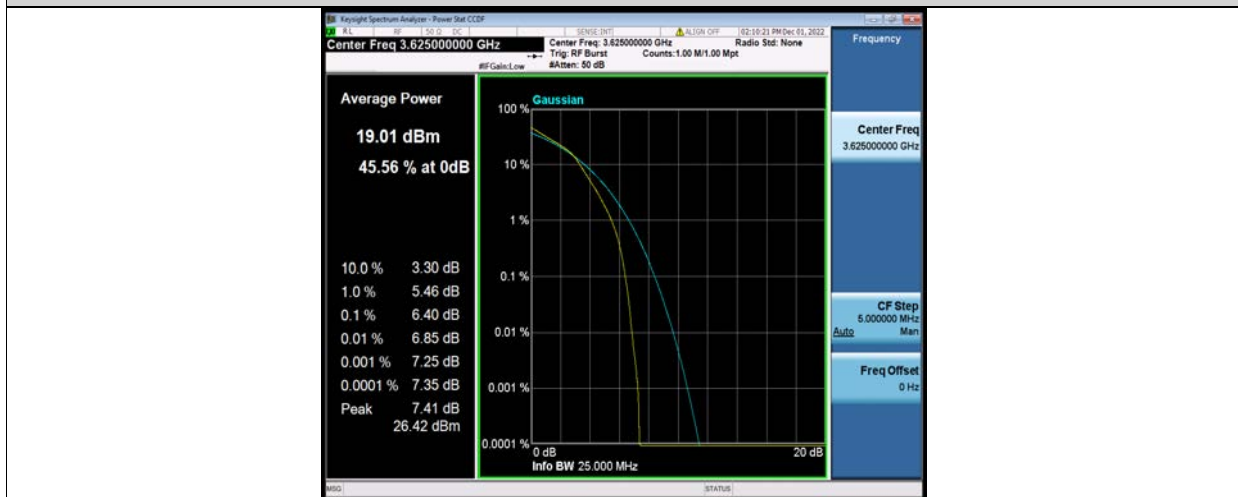
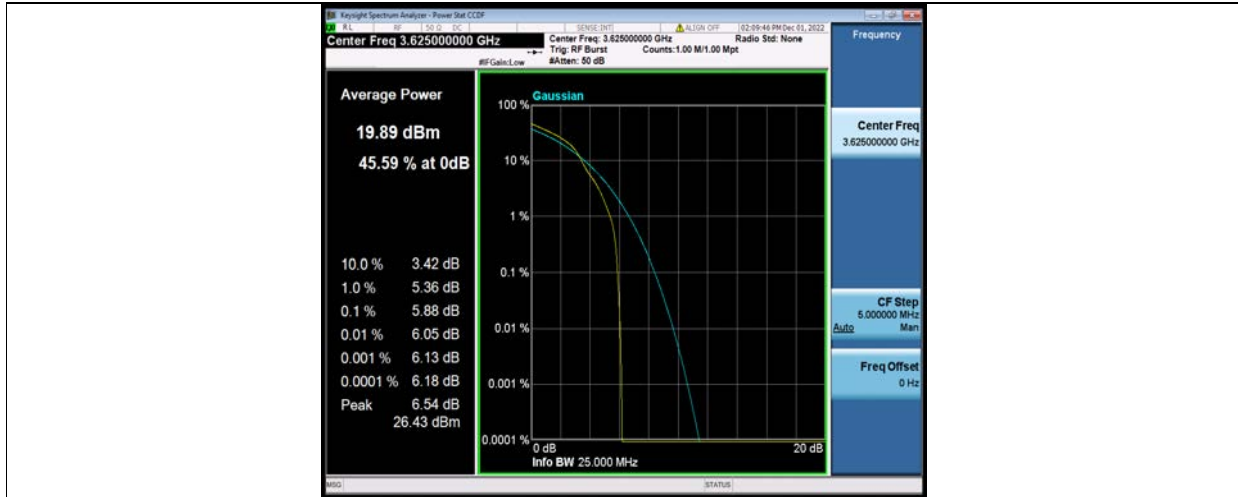


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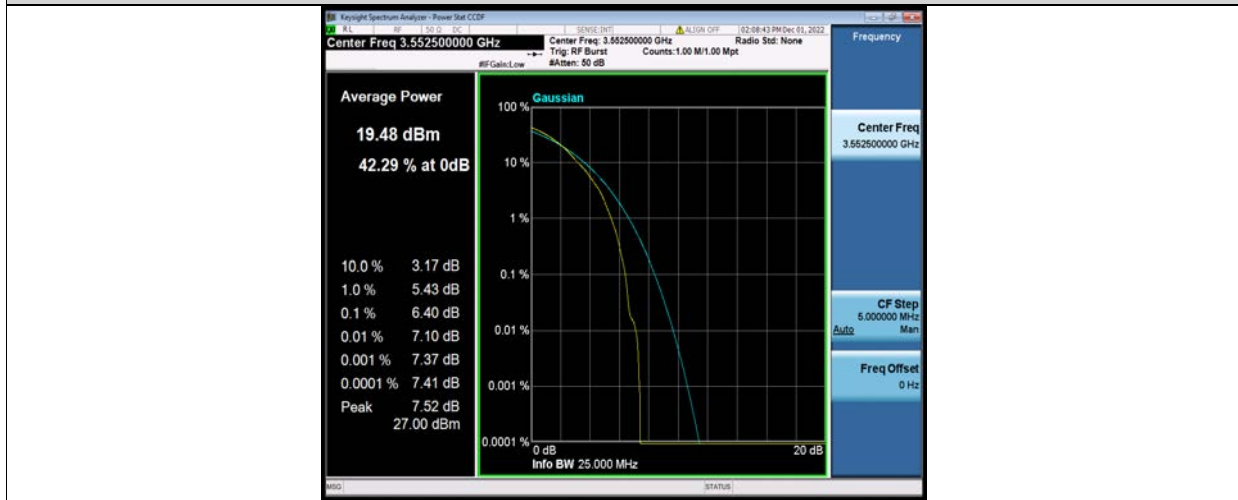
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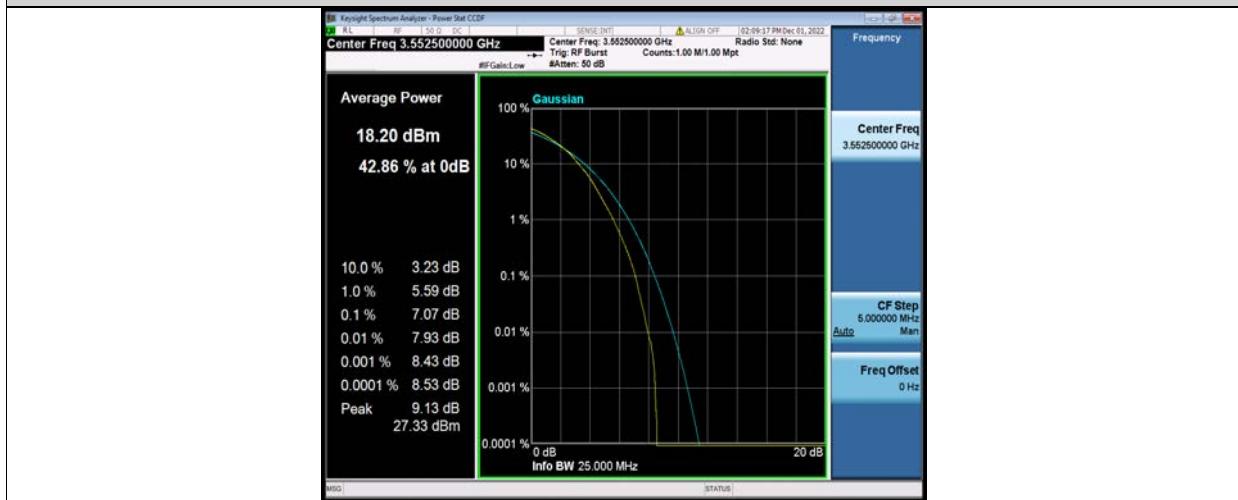
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Band48-5MHz-64QAM-55265-1RB#0



Band48-5MHz-64QAM-55265-25RB#0



Band48-5MHz-64QAM-55990-1RB#0





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# Test Report No.: W7L-P23100014RF10



Band48-5MHz-64QAM-55990-25RB#0



Band48-5MHz-64QAM-56715-1RB#0



Band48-5MHz-64QAM-56715-25RB#0

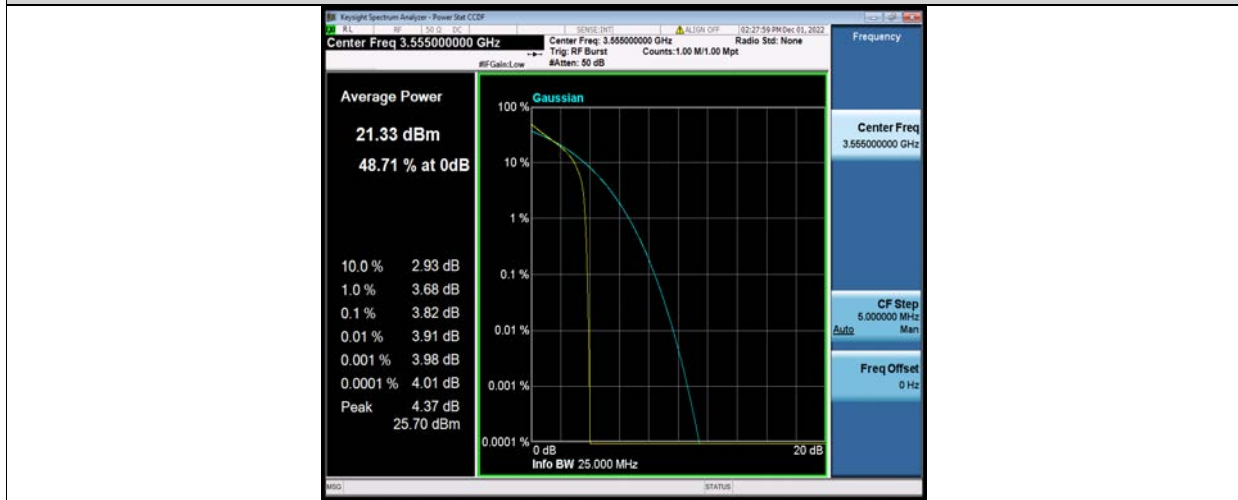
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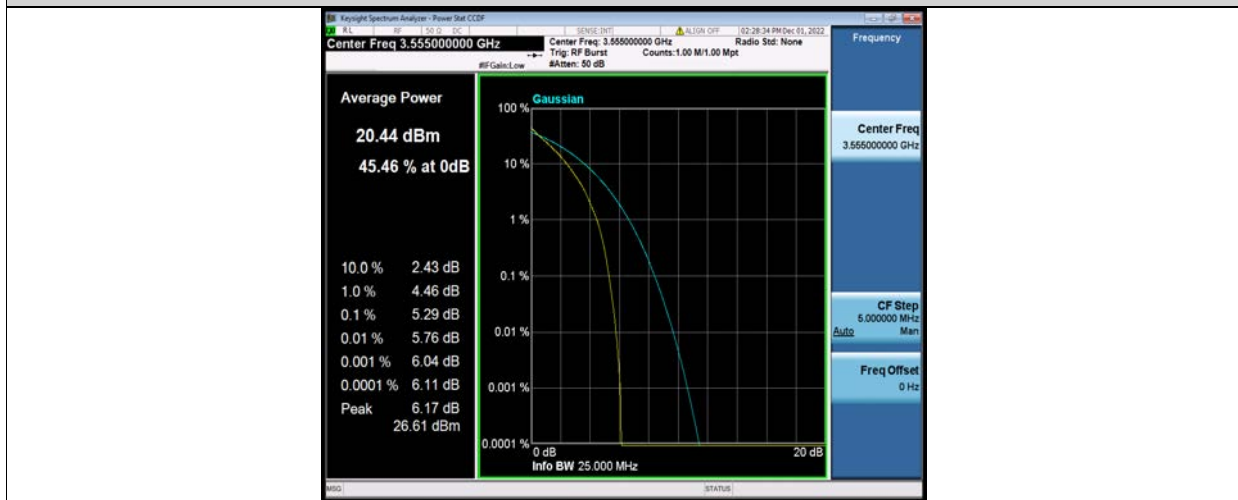
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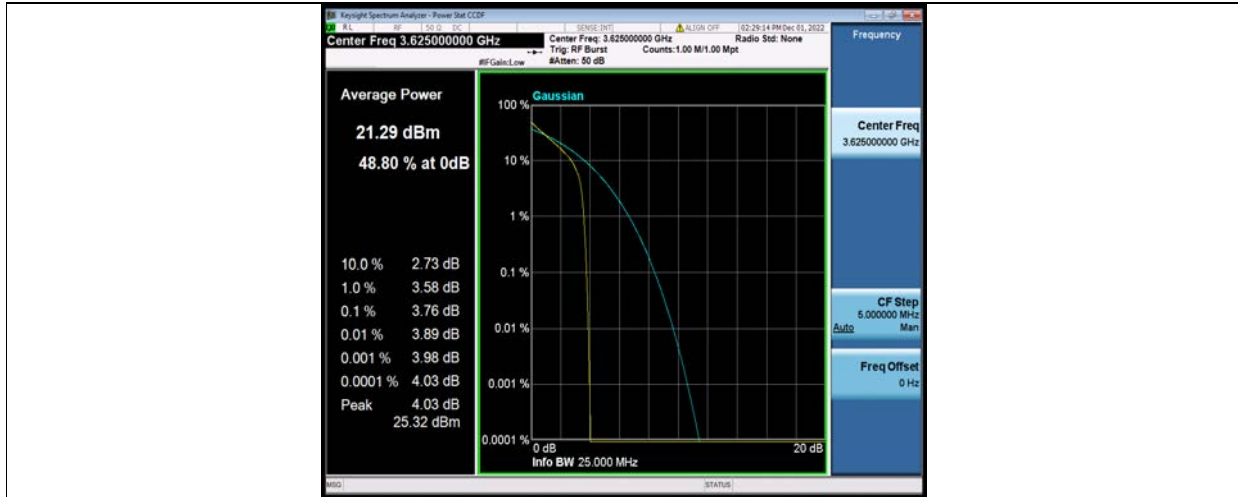
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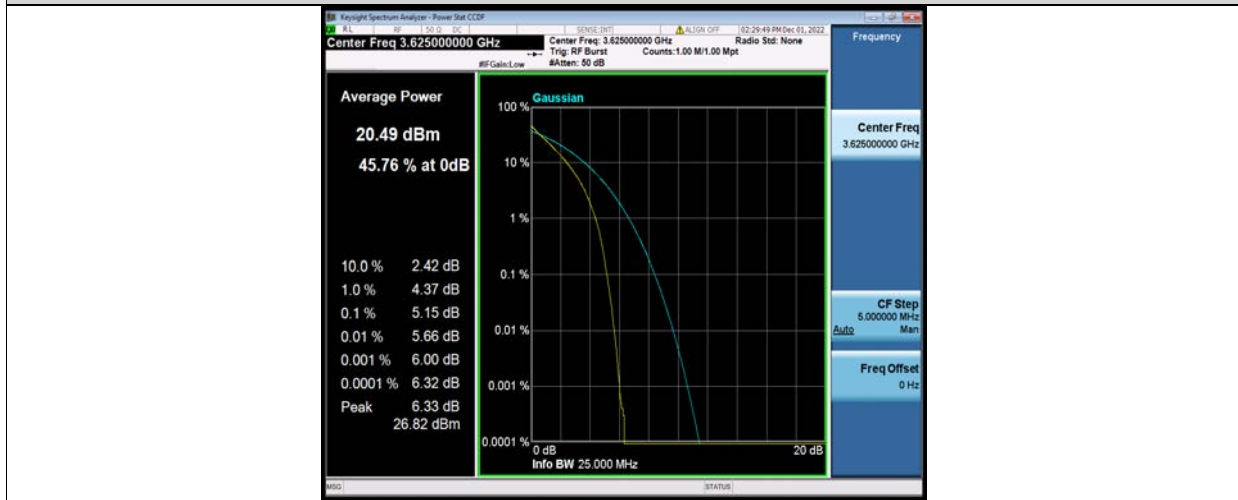
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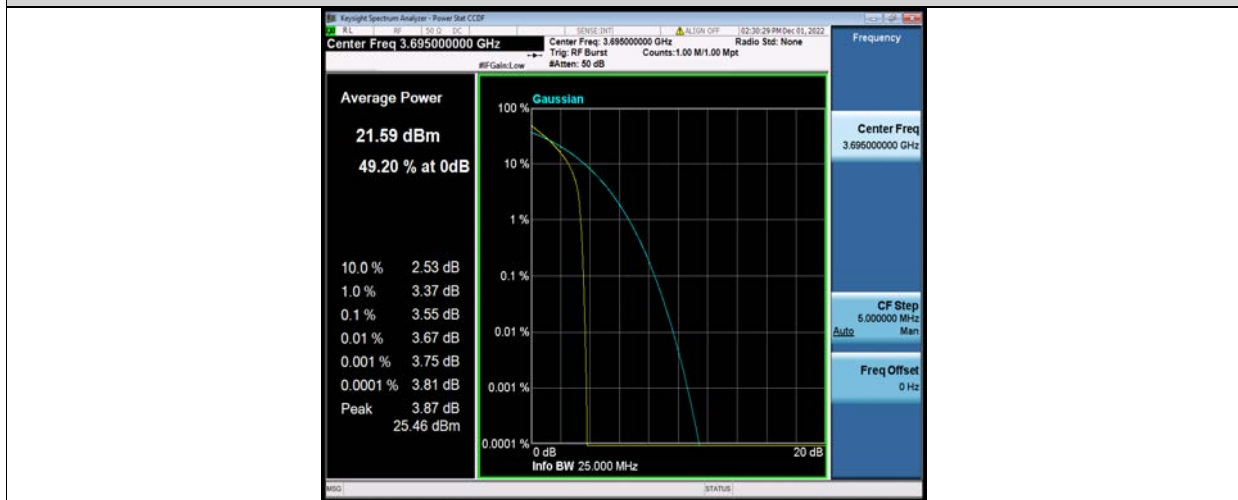
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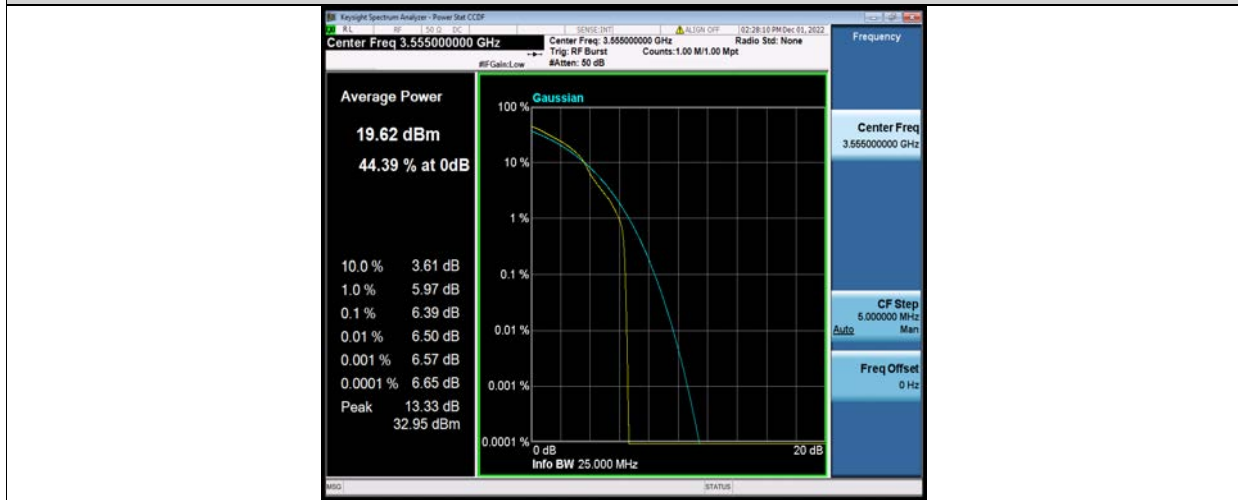


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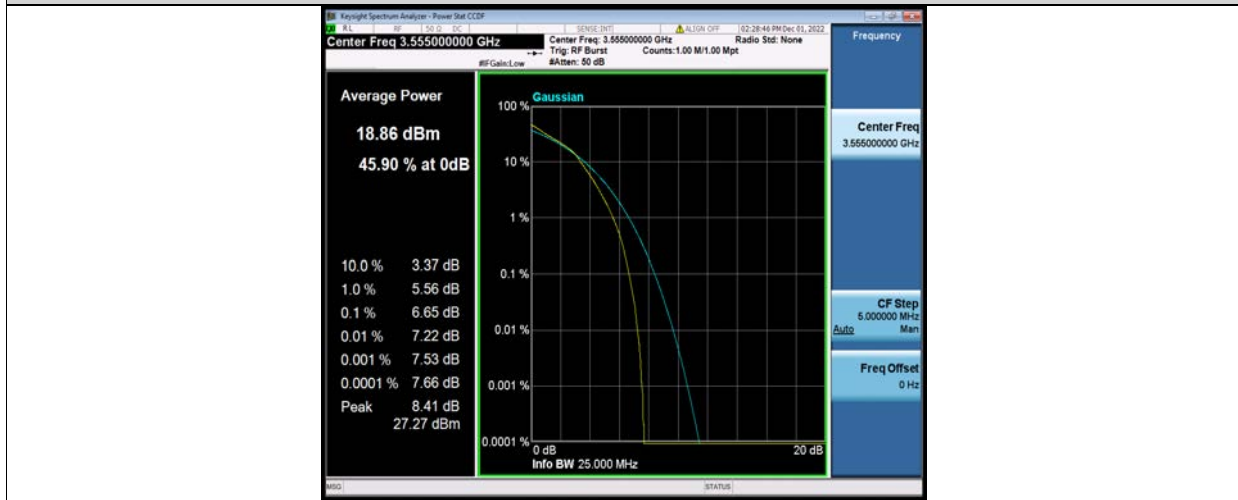




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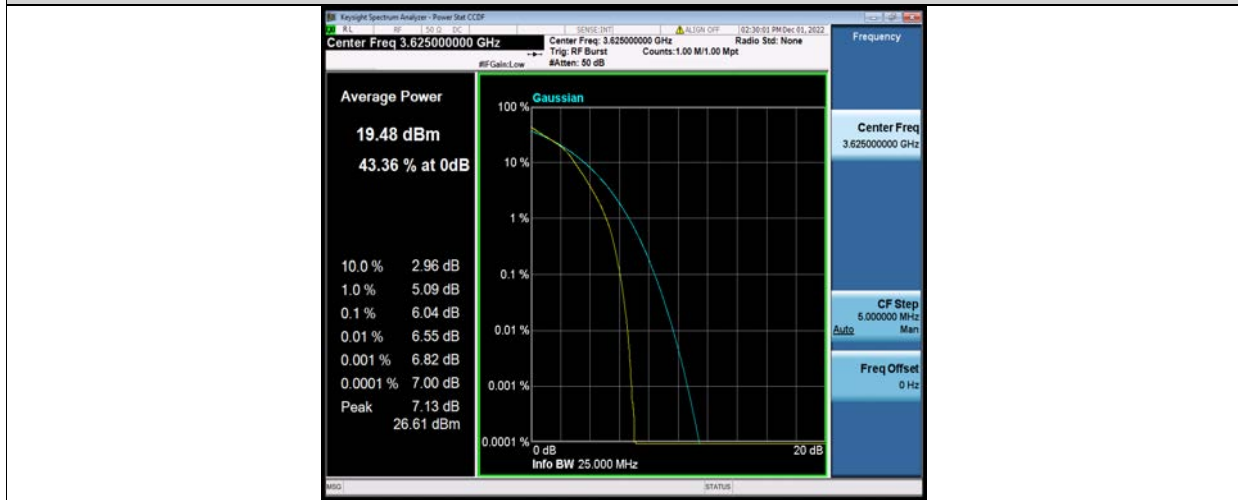


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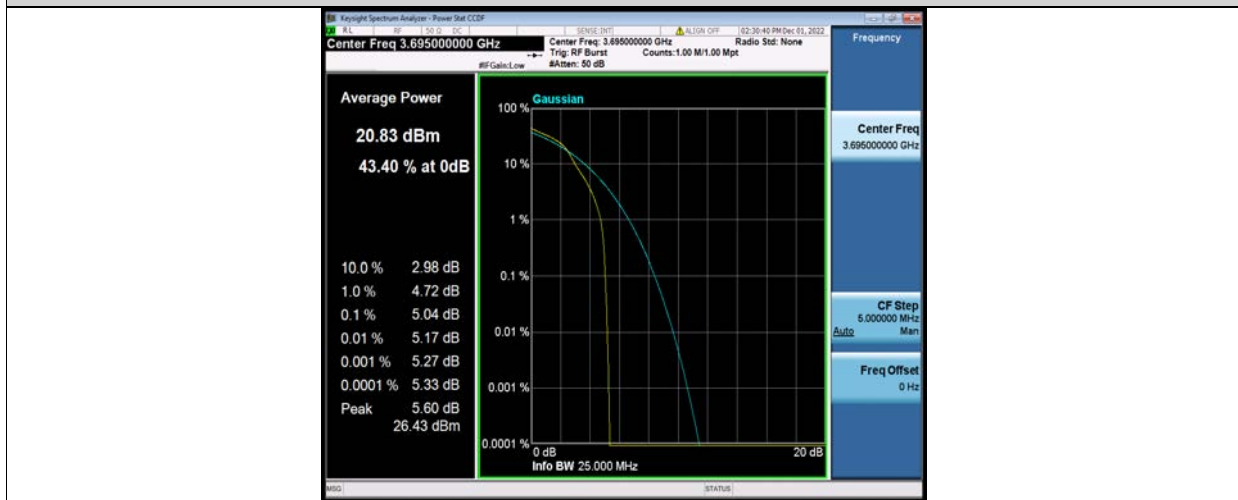
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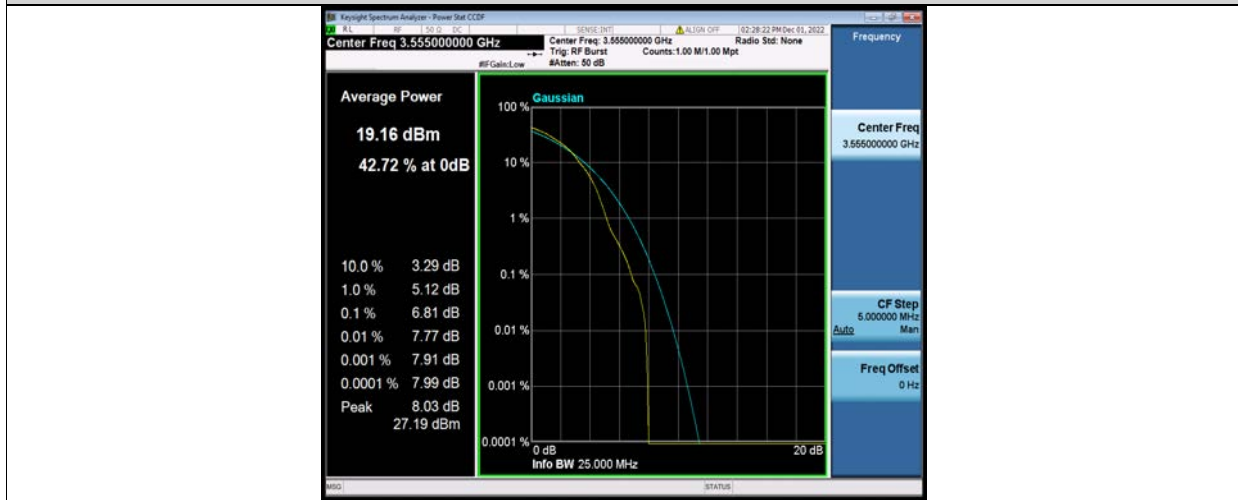


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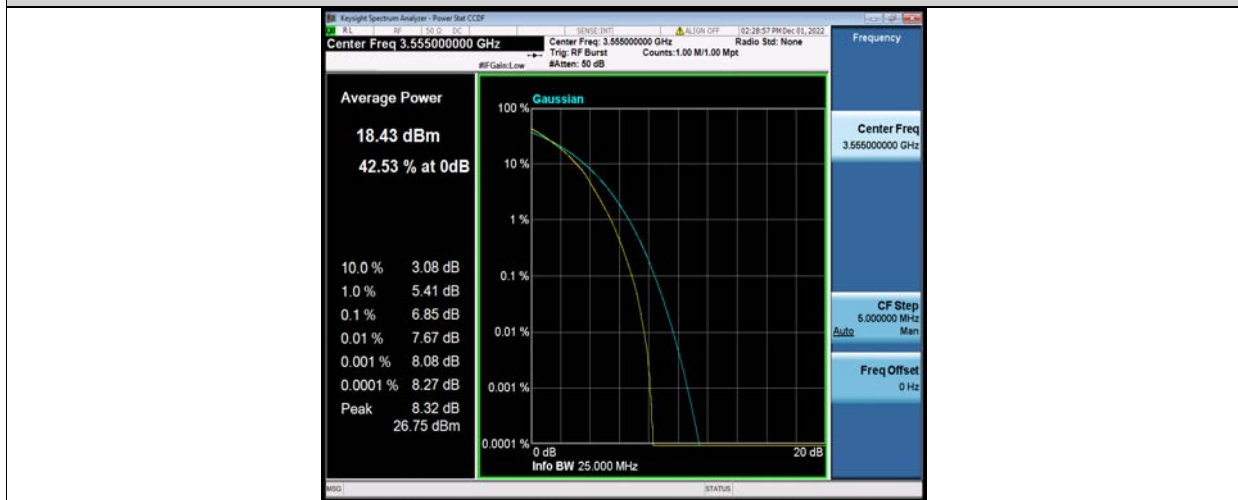
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Band48-10MHz-64QAM-55290-1RB#0



Band48-10MHz-64QAM-55290-50RB#0



Band48-10MHz-64QAM-55990-1RB#0

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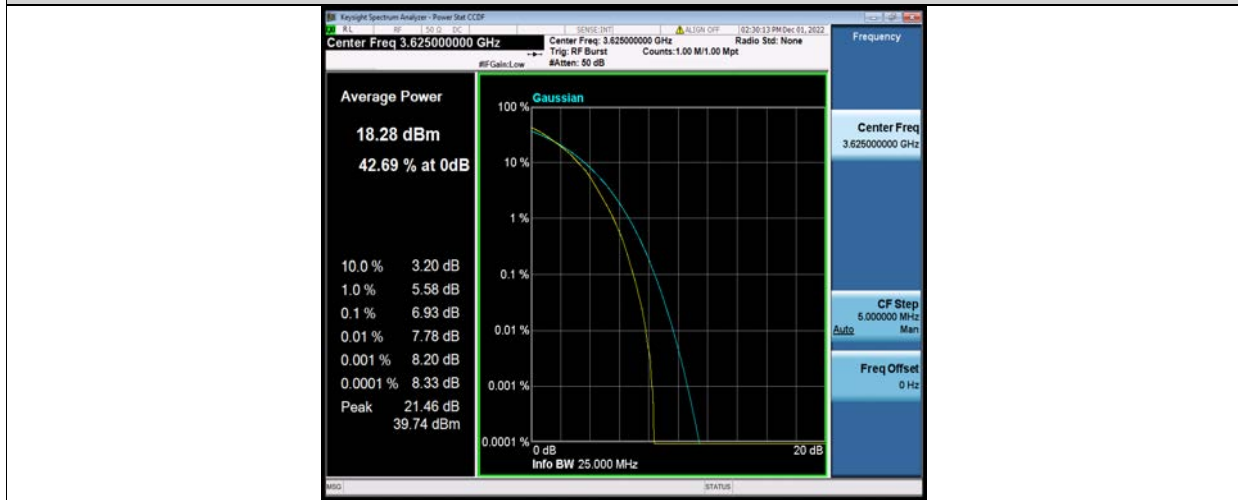


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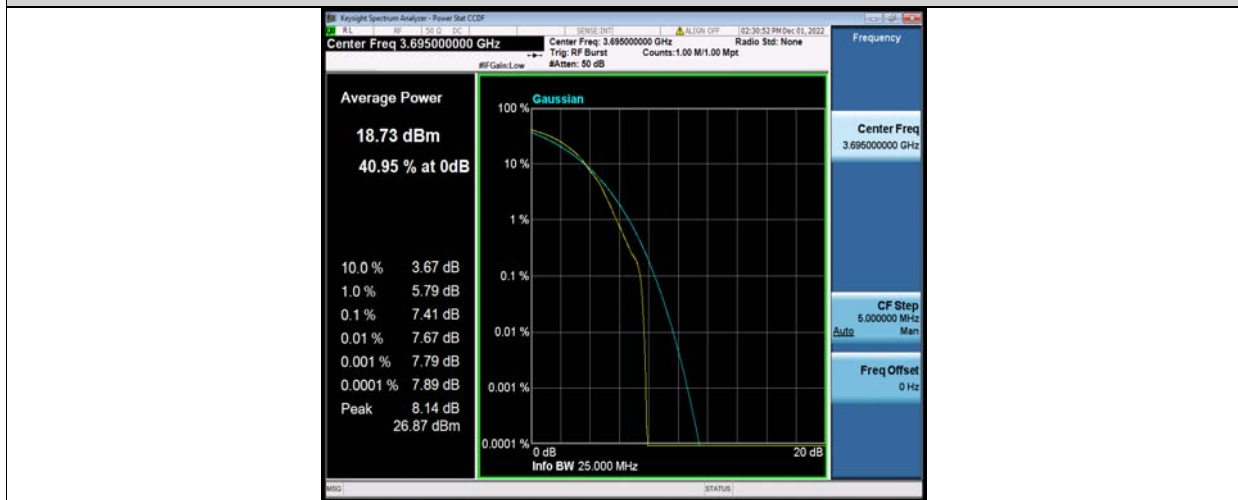
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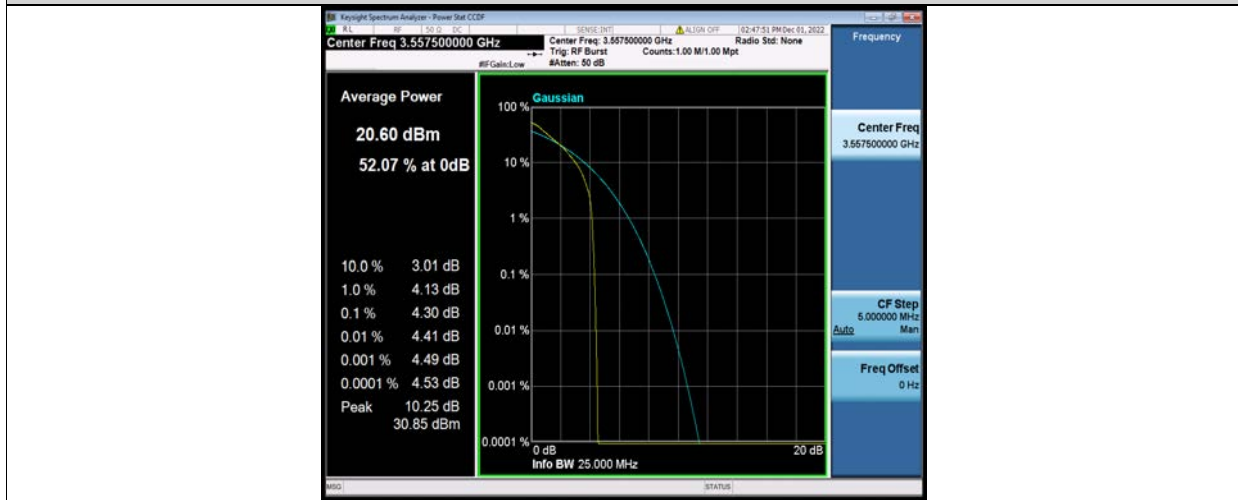
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Band48-15MHz-QPSK-55315-1RB#0



Band48-15MHz-QPSK-55315-75RB#0

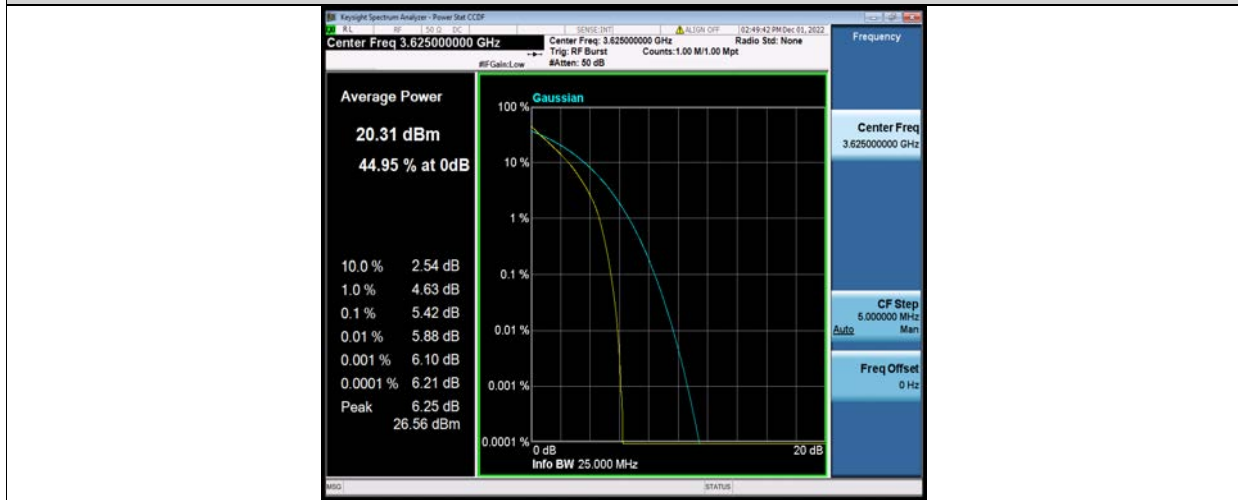


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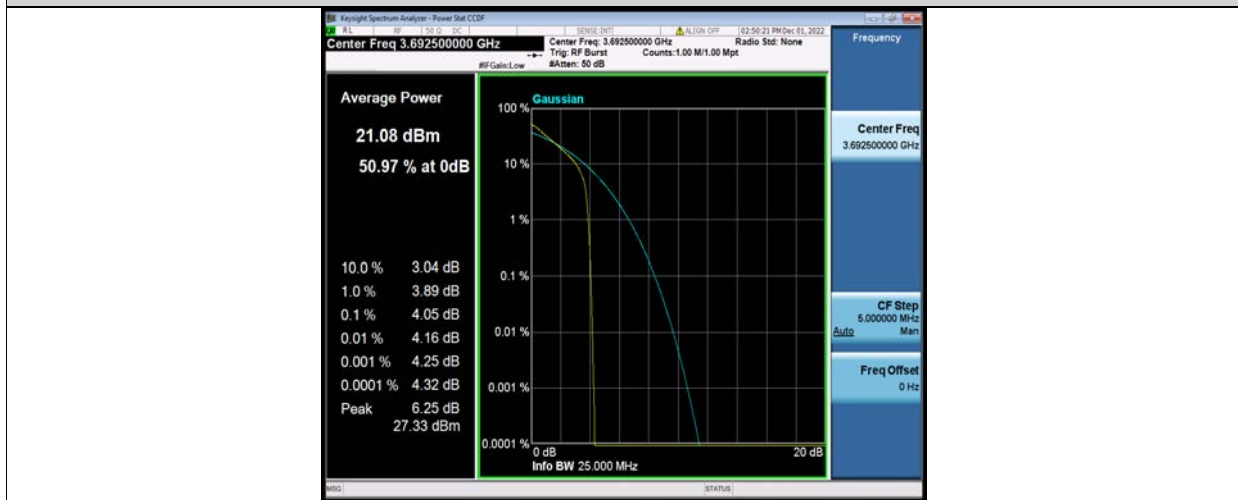




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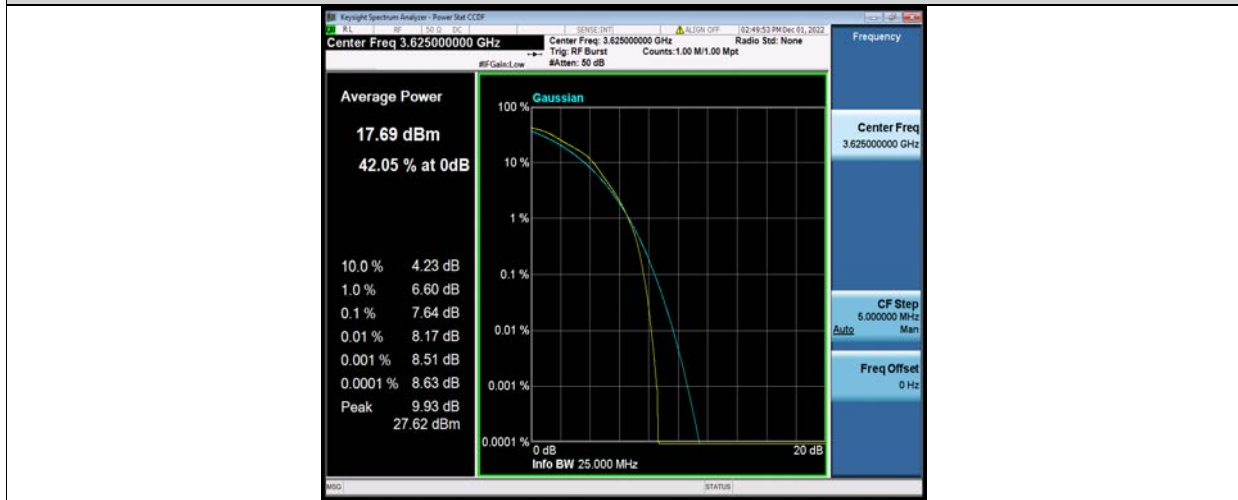
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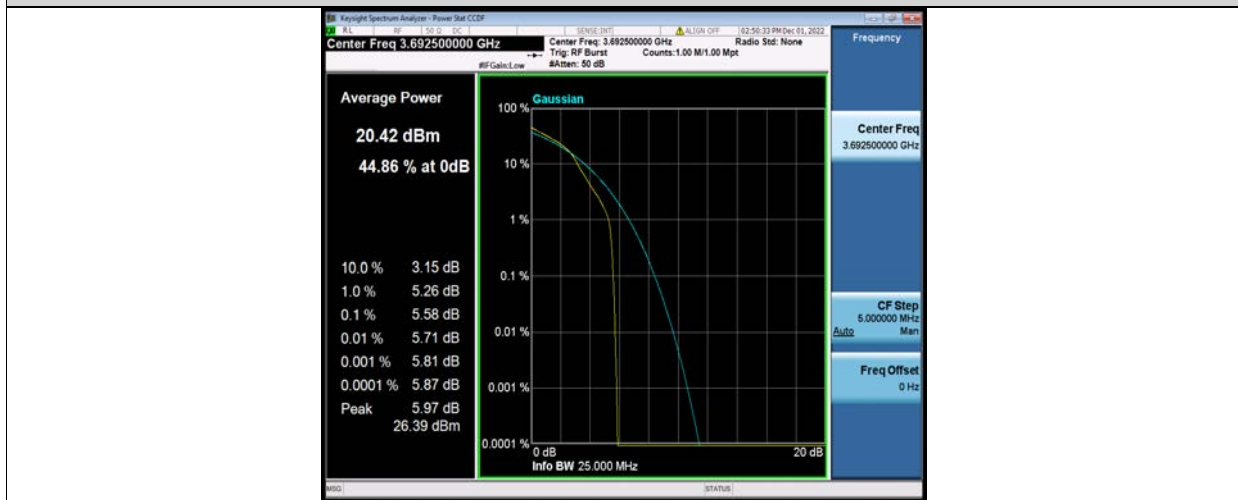
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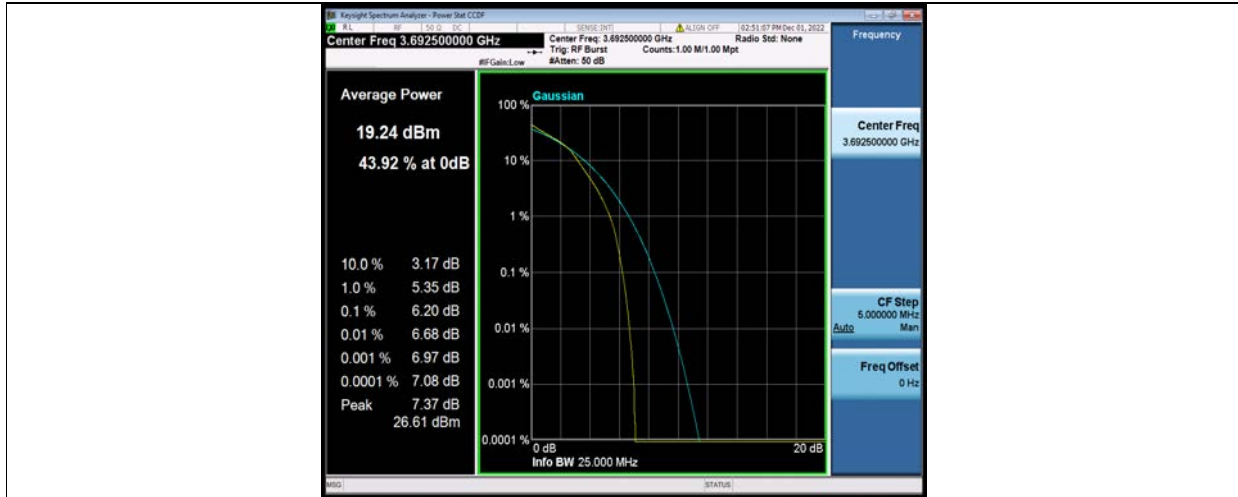


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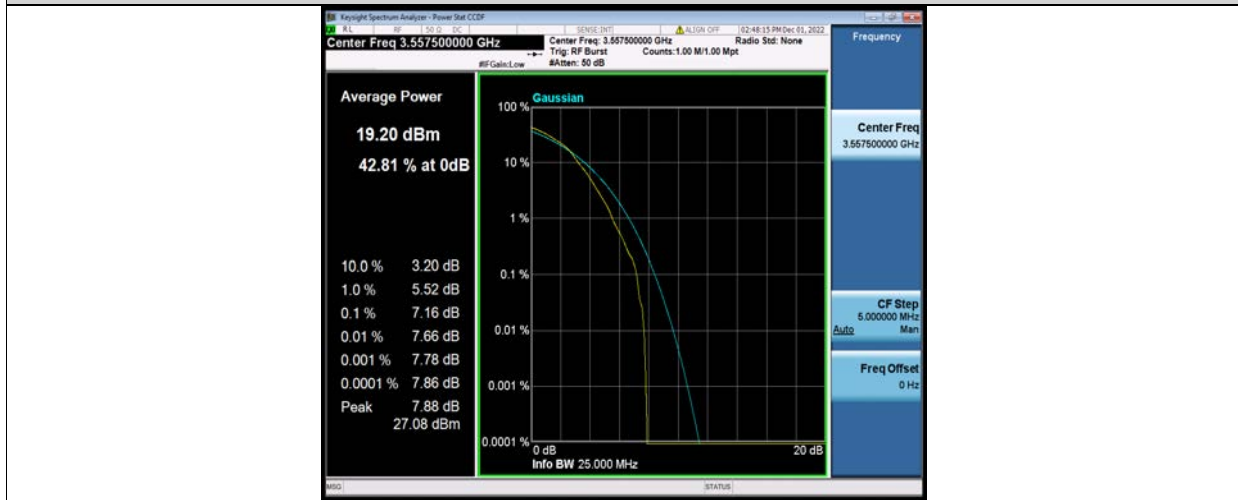


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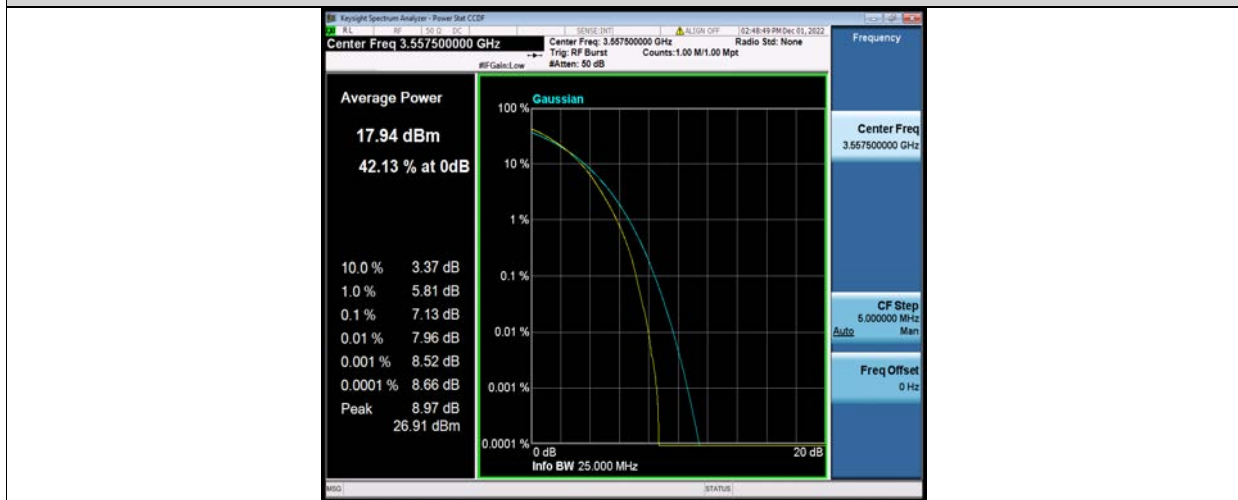




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Band48-15MHz-64QAM-55315-75RB#0

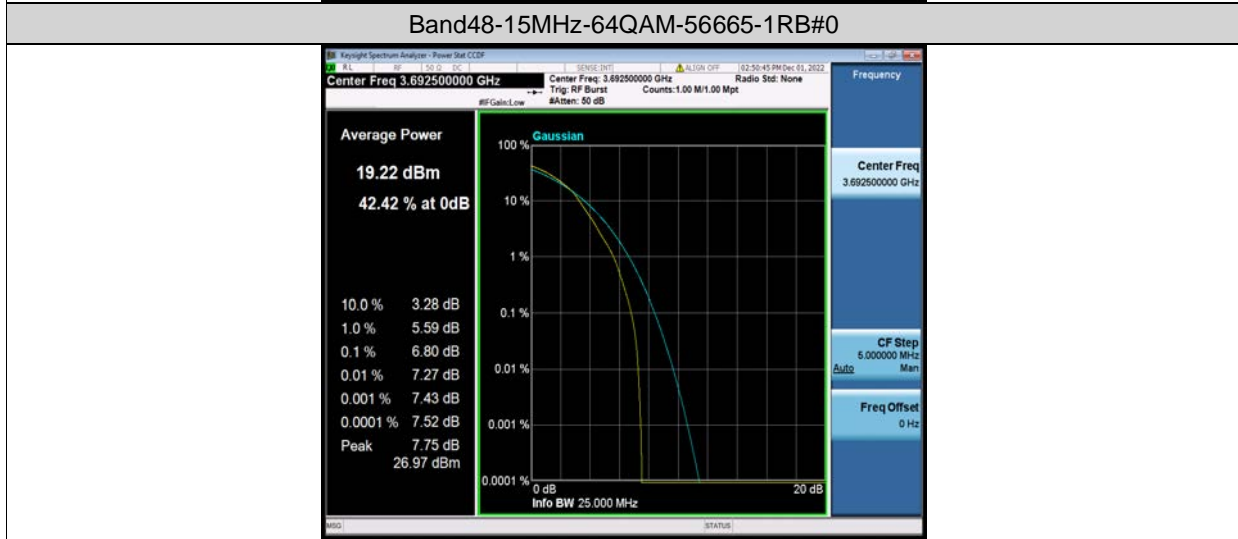
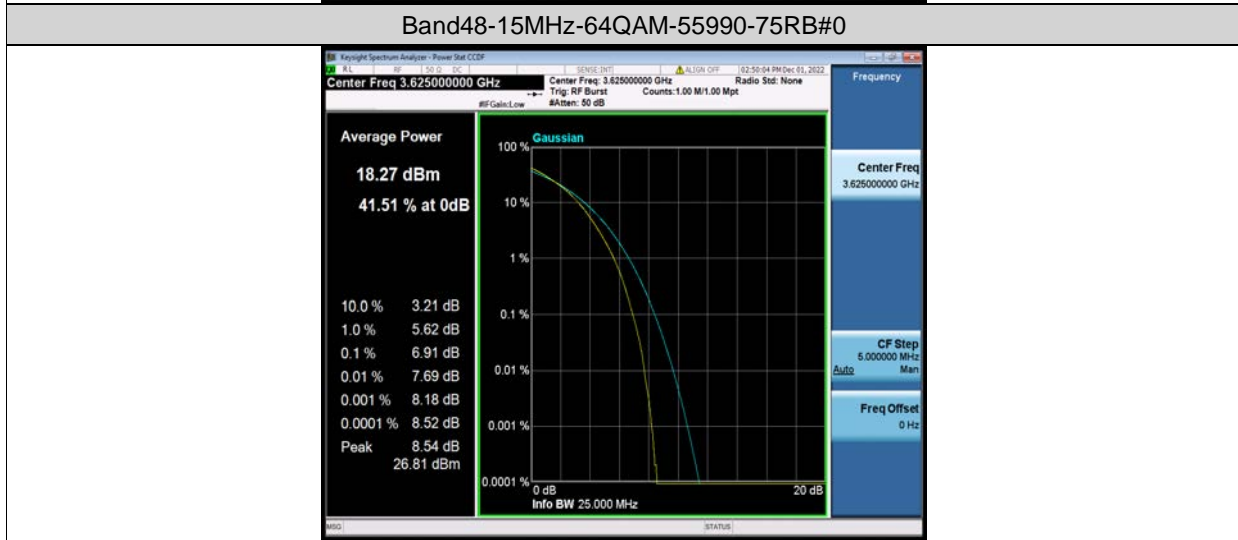
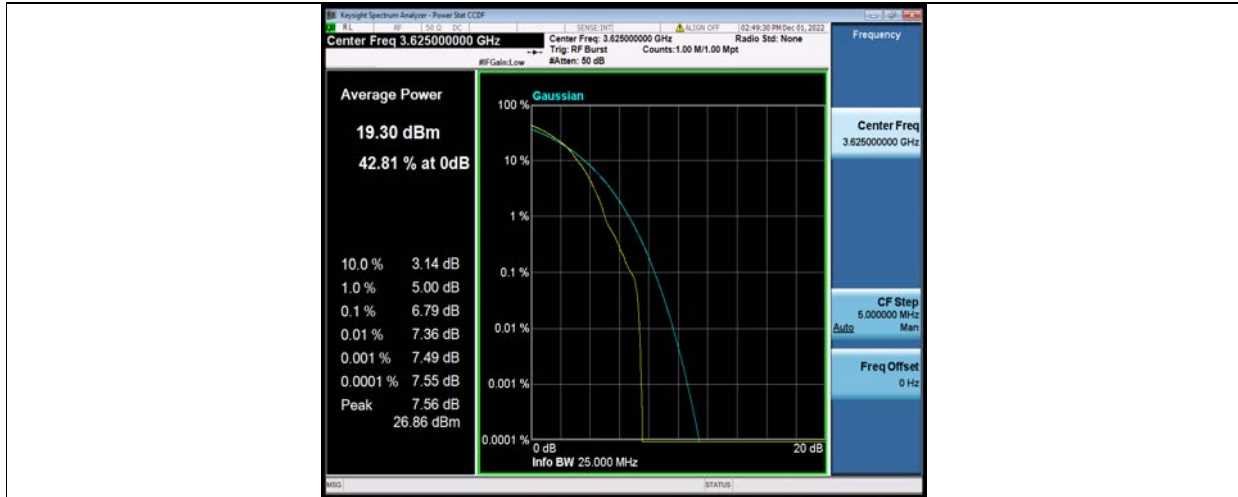


Band48-15MHz-64QAM-55990-1RB#0



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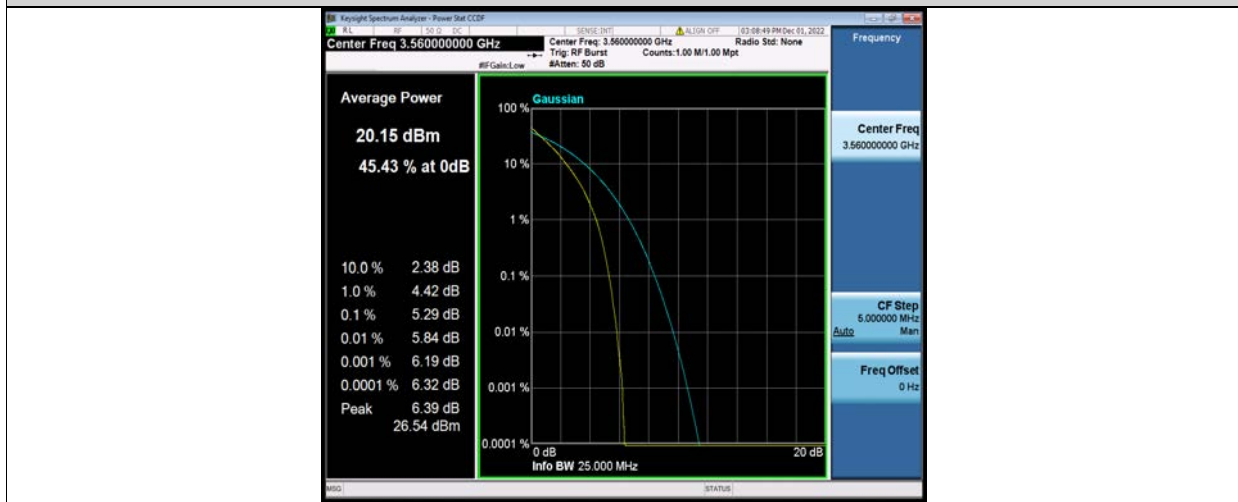
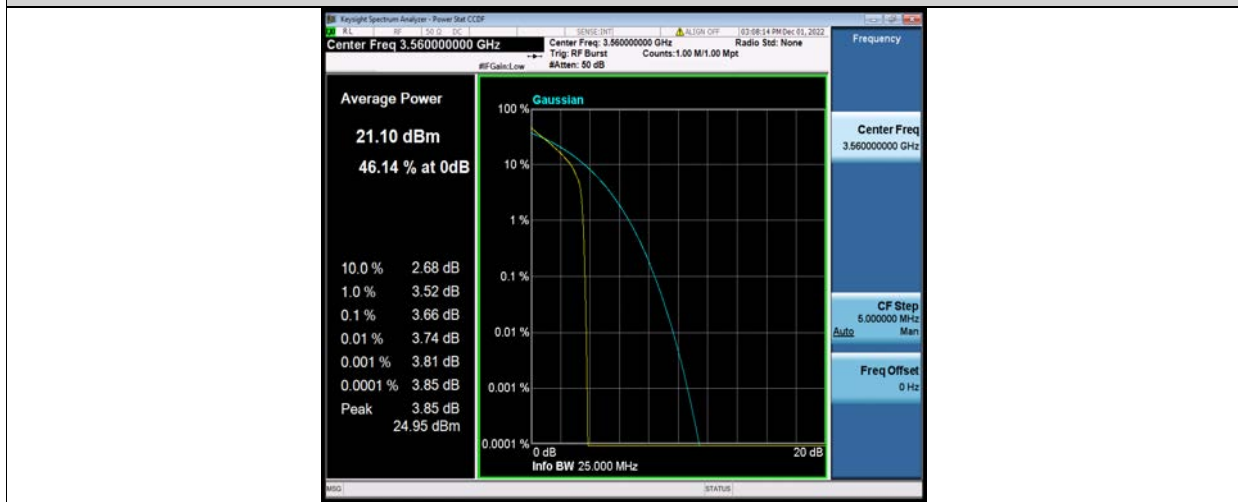
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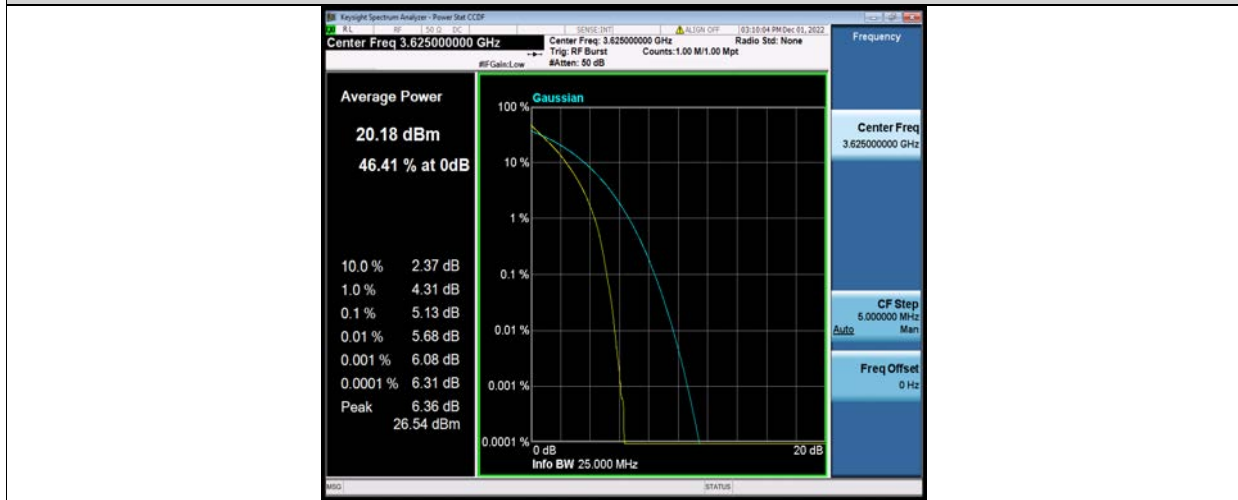


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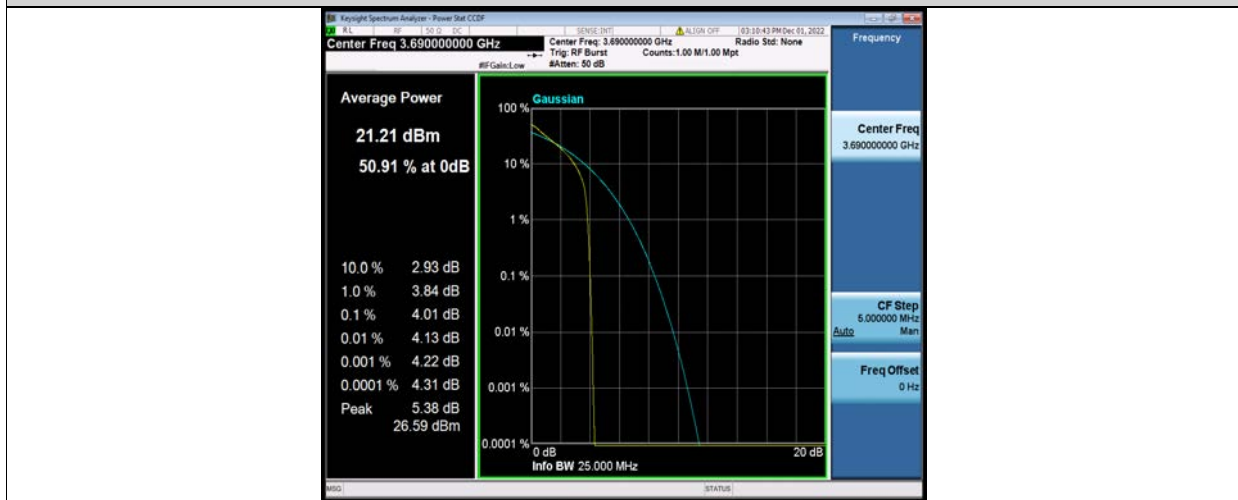
Test Report No.: W7L-P23100014RF10



Band48-20MHz-QPSK-55990-100RB#0



Band48-20MHz-QPSK-56640-1RB#0



Band48-20MHz-QPSK-56640-100RB#0

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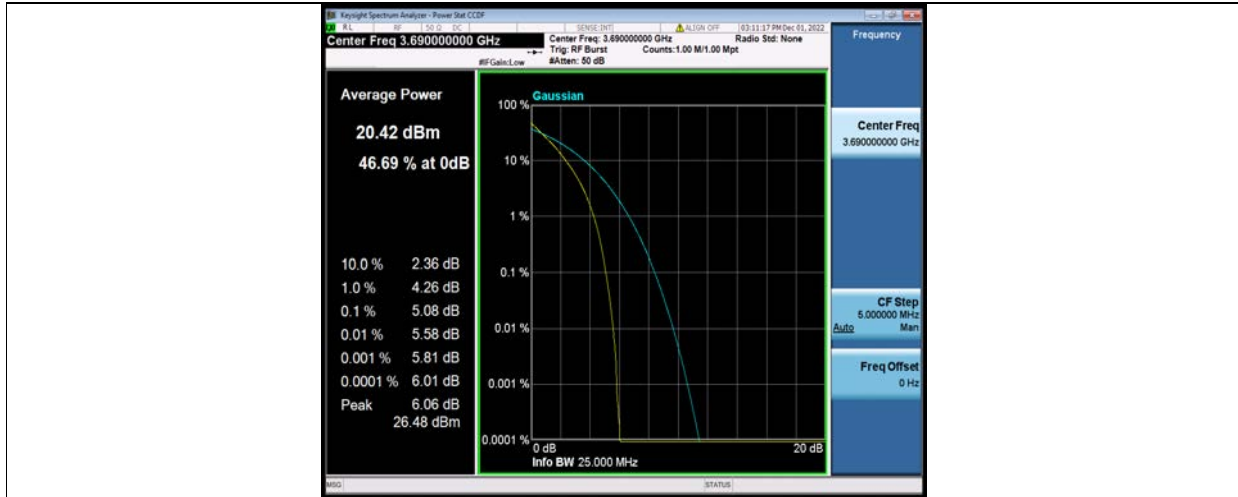
No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

Tel: +86 755 8869 6566 Fax: +86 755 8869 6577 Email: [customerservice.sw@bureauveritas.com](mailto:customerservice.sw@bureauveritas.com)

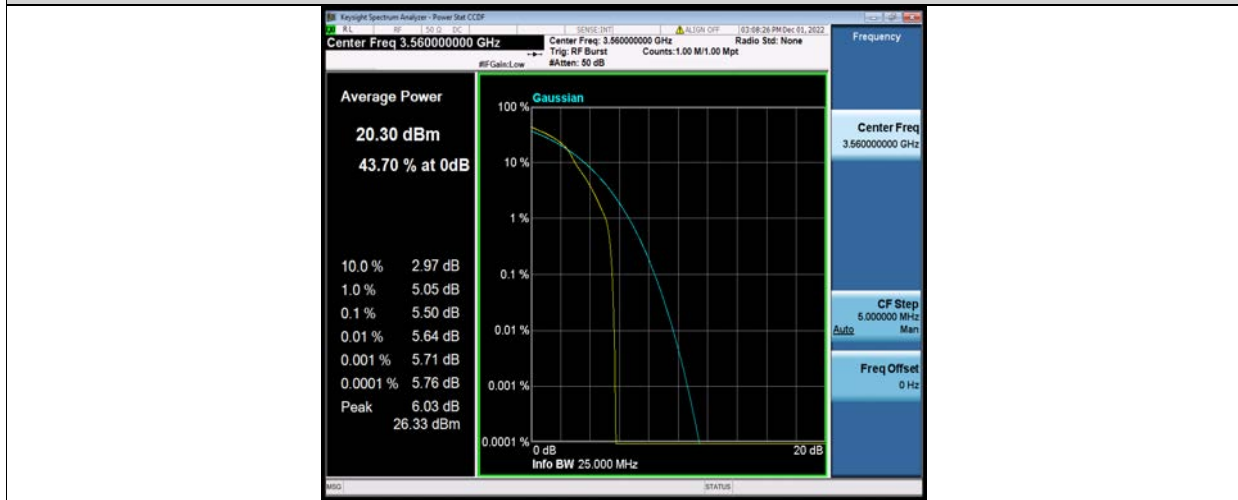


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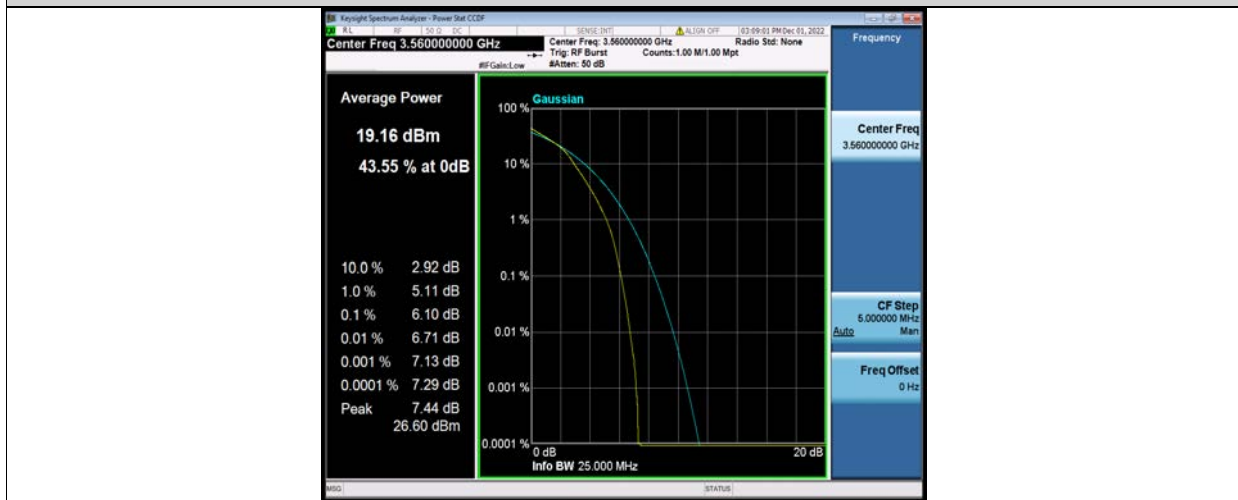
### Test Report No.: W7L-P23100014RF10



Band48-20MHz-16QAM-55340-1RB#0



Band48-20MHz-16QAM-55340-100RB#0



Band48-20MHz-16QAM-55990-1RB#0

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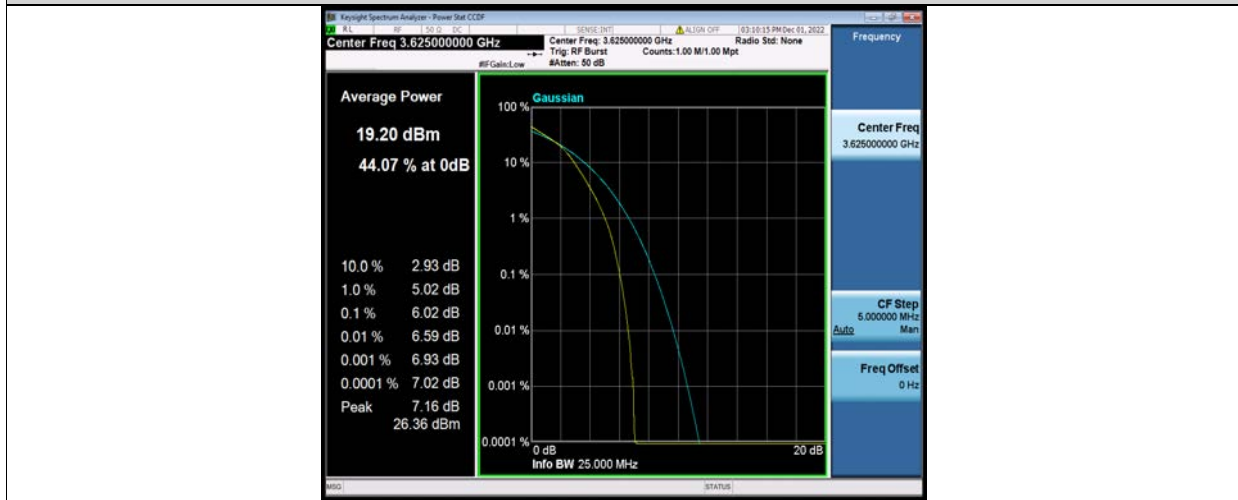
No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

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Band48-20MHz-16QAM-55990-100RB#0



Band48-20MHz-16QAM-56640-1RB#0



Band48-20MHz-16QAM-56640-100RB#0

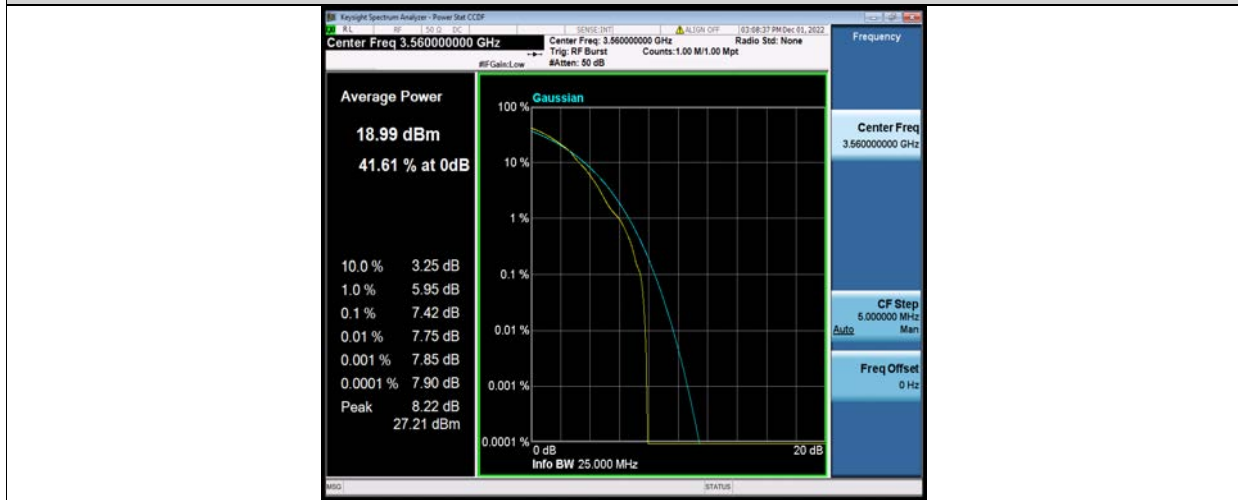


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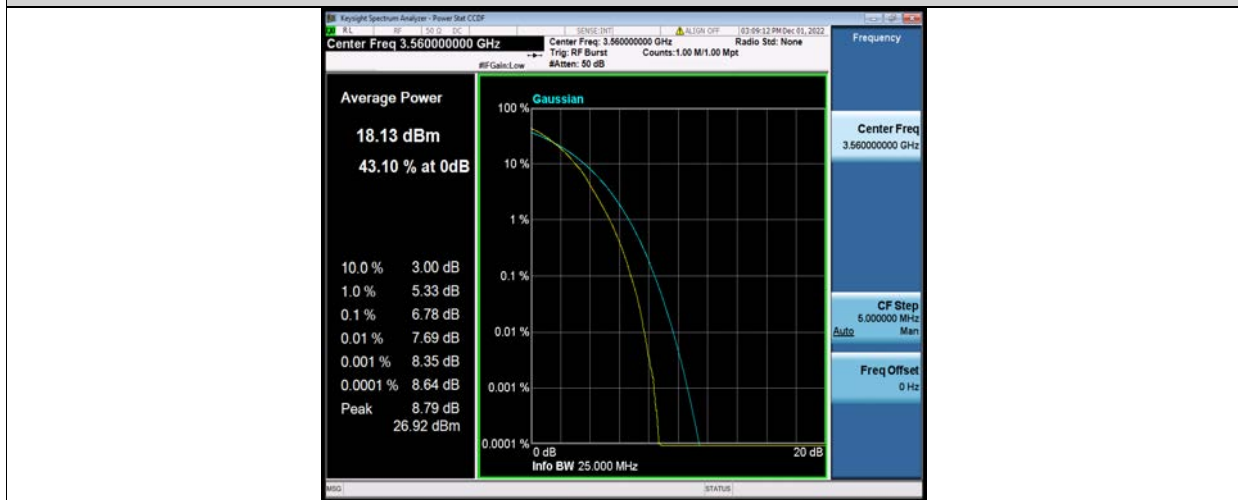
Test Report No.: W7L-P23100014RF10



Band48-20MHz-64QAM-55340-1RB#0



Band48-20MHz-64QAM-55340-100RB#0



Band48-20MHz-64QAM-55990-1RB#0

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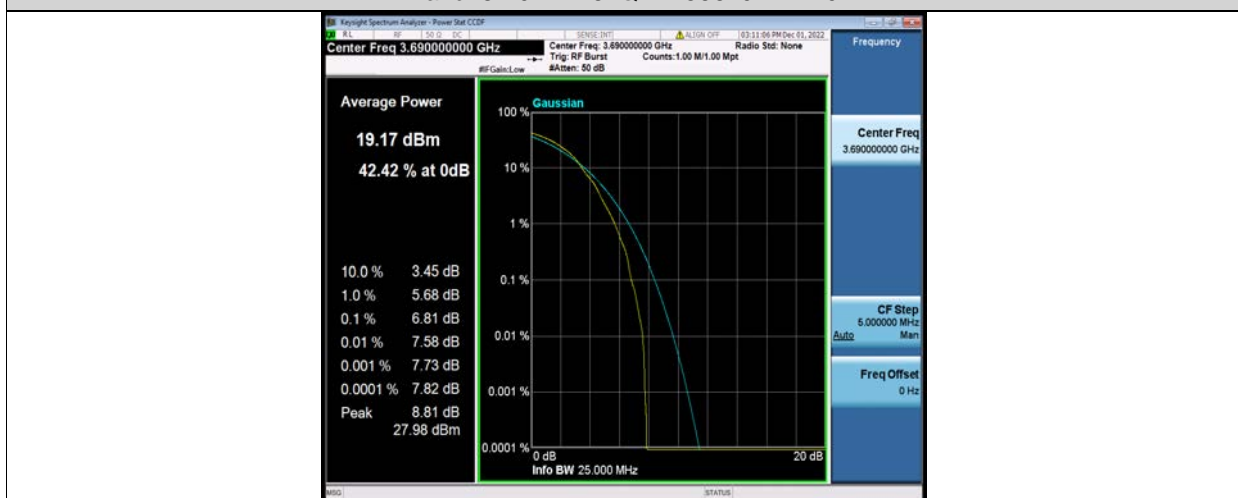
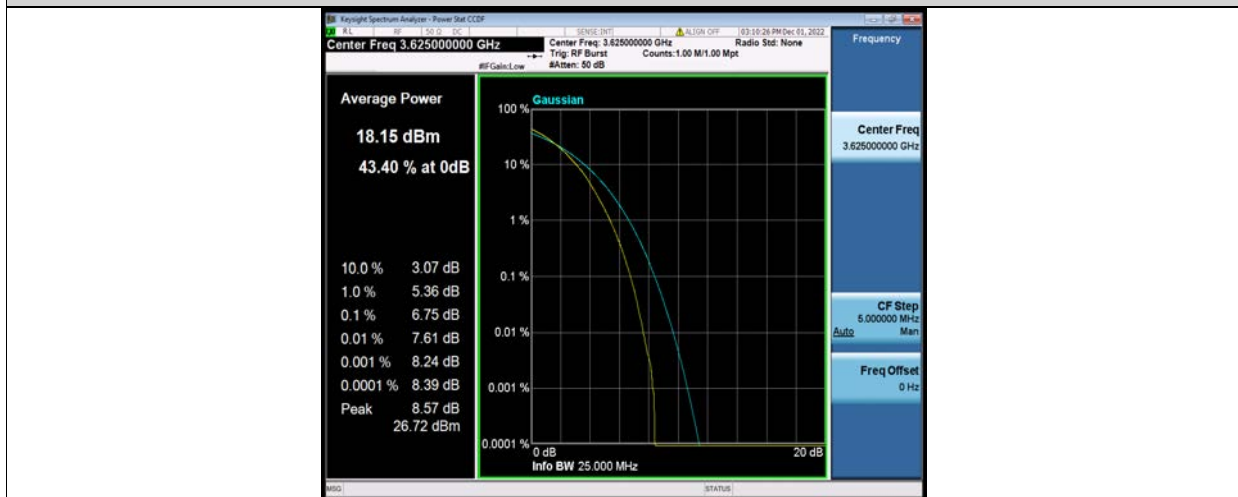
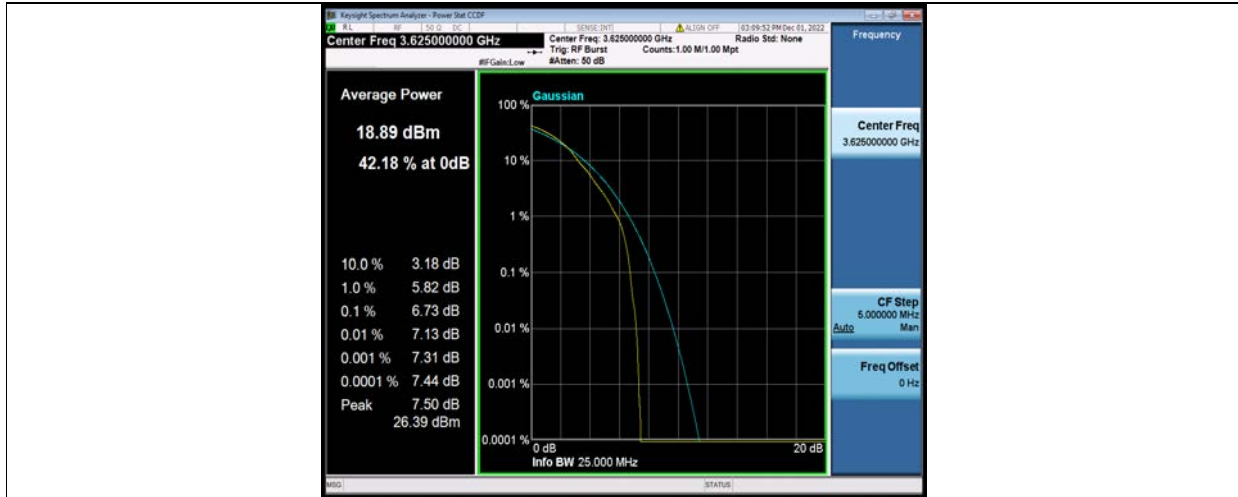
No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

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**Test Report No.: W7L-P23100014RF10**



## 26DB BANDWIDTH AND OCCUPIED BANDWIDTH TEST RESULT

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band48	5MHz	QPSK	55265	25RB#0	4.4986	4.872	PASS
Band48	5MHz	QPSK	55990	25RB#0	4.4998	4.867	PASS
Band48	5MHz	QPSK	56715	25RB#0	4.4972	4.843	PASS
Band48	5MHz	16QAM	55265	25RB#0	4.4969	4.836	PASS
Band48	5MHz	16QAM	55990	25RB#0	4.4958	4.840	PASS
Band48	5MHz	16QAM	56715	25RB#0	4.4993	4.815	PASS
Band48	5MHz	64QAM	55265	25RB#0	4.5011	4.838	PASS
Band48	5MHz	64QAM	55990	25RB#0	4.5034	4.856	PASS
Band48	5MHz	64QAM	56715	25RB#0	4.4890	4.839	PASS
Band48	10MHz	QPSK	55290	50RB#0	8.9805	9.529	PASS
Band48	10MHz	QPSK	55990	50RB#0	8.9835	9.512	PASS
Band48	10MHz	QPSK	56690	50RB#0	8.9824	9.579	PASS
Band48	10MHz	16QAM	55290	50RB#0	8.9783	9.523	PASS
Band48	10MHz	16QAM	55990	50RB#0	8.9823	9.518	PASS
Band48	10MHz	16QAM	56690	50RB#0	8.9605	9.525	PASS
Band48	10MHz	64QAM	55290	50RB#0	8.9581	9.516	PASS
Band48	10MHz	64QAM	55990	50RB#0	8.9825	9.518	PASS
Band48	10MHz	64QAM	56690	50RB#0	8.9730	9.499	PASS
Band48	15MHz	QPSK	55315	75RB#0	13.454	14.25	PASS
Band48	15MHz	QPSK	55990	75RB#0	13.444	14.28	PASS
Band48	15MHz	QPSK	56665	75RB#0	13.469	14.23	PASS
Band48	15MHz	16QAM	55315	75RB#0	13.458	14.27	PASS
Band48	15MHz	16QAM	55990	75RB#0	13.447	14.24	PASS
Band48	15MHz	16QAM	56665	75RB#0	13.468	14.26	PASS
Band48	15MHz	64QAM	55315	75RB#0	13.451	14.25	PASS
Band48	15MHz	64QAM	55990	75RB#0	13.444	14.27	PASS
Band48	15MHz	64QAM	56665	75RB#0	13.448	14.26	PASS
Band48	20MHz	QPSK	55340	100RB#0	17.931	18.96	PASS
Band48	20MHz	QPSK	55990	100RB#0	17.932	18.96	PASS
Band48	20MHz	QPSK	56640	100RB#0	17.933	18.99	PASS
Band48	20MHz	16QAM	55340	100RB#0	17.921	18.96	PASS
Band48	20MHz	16QAM	55990	100RB#0	17.936	18.95	PASS
Band48	20MHz	16QAM	56640	100RB#0	17.917	19.00	PASS
Band48	20MHz	64QAM	55340	100RB#0	17.942	18.93	PASS
Band48	20MHz	64QAM	55990	100RB#0	17.939	18.95	PASS
Band48	20MHz	64QAM	56640	100RB#0	17.932	18.96	PASS

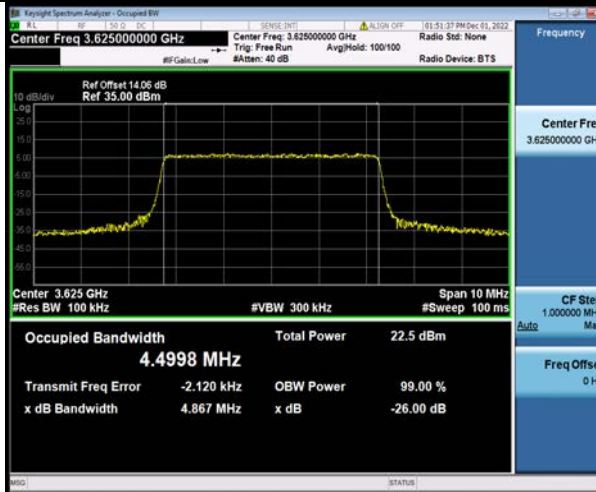


### TEST GRAPHS

Band48-5MHz-QPSK-55265-25RB#0



Band48-5MHz-QPSK-55990-25RB#0

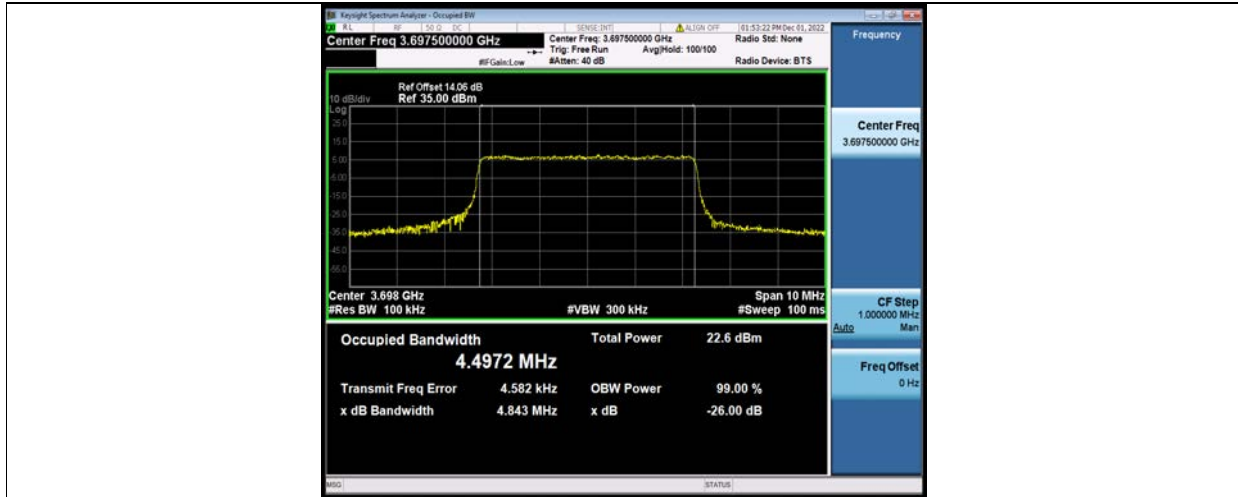


Band48-5MHz-QPSK-56715-25RB#0

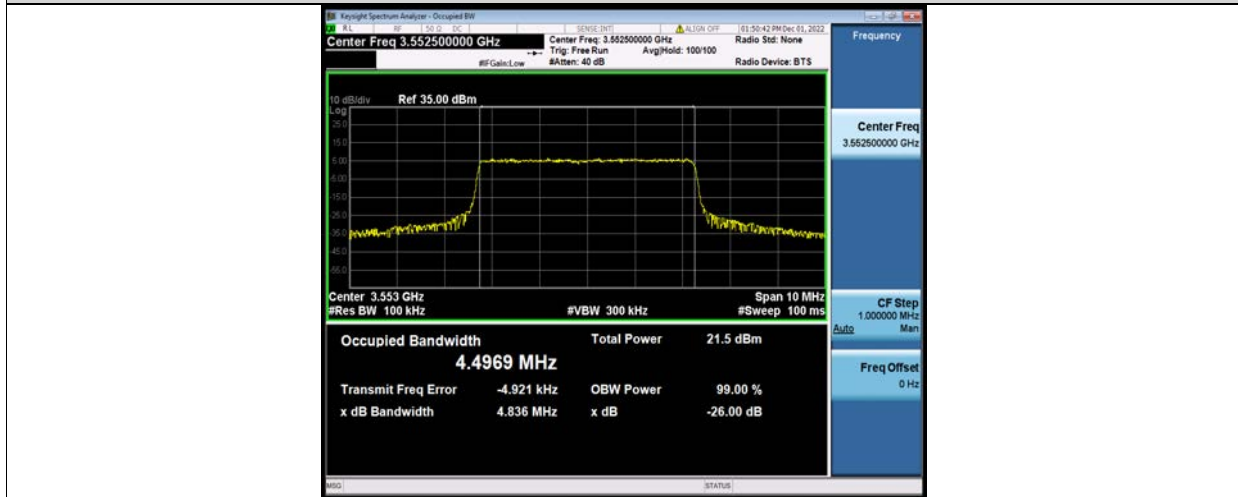


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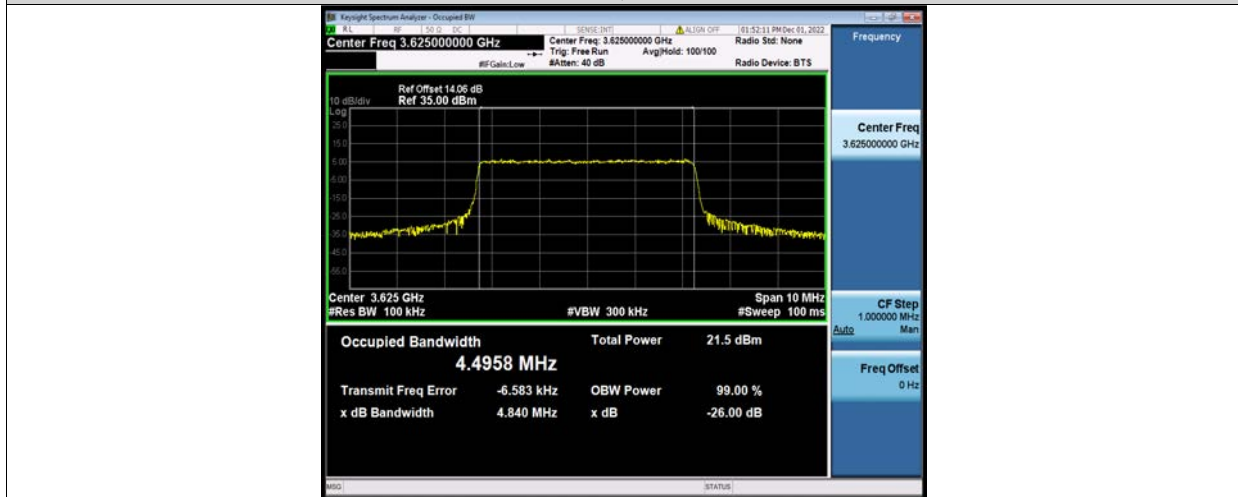
### Test Report No.: W7L-P23100014RF10



Band48-5MHz-16QAM-55265-25RB#0



Band48-5MHz-16QAM-55990-25RB#0

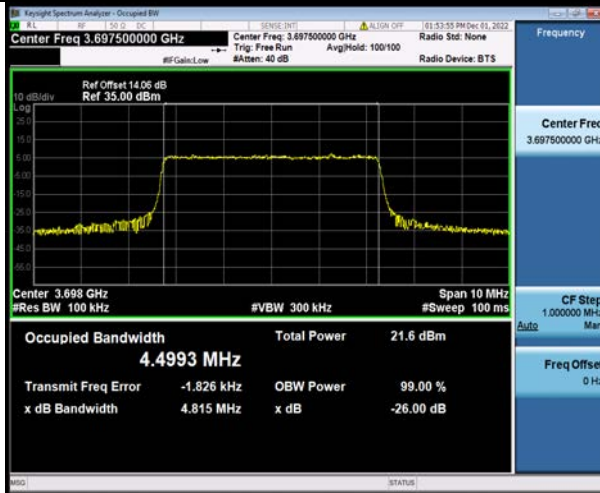


Band48-5MHz-16QAM-56715-25RB#0

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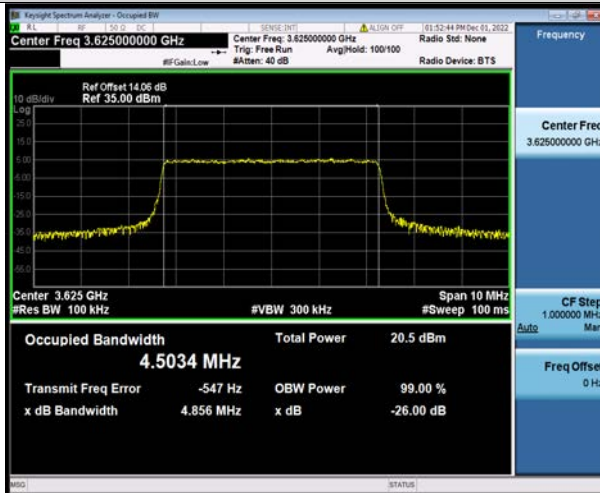
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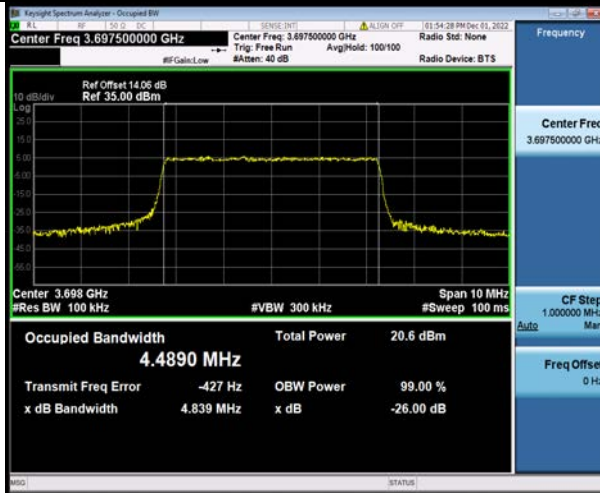
Band48-5MHz-64QAM-55265-25RB#0



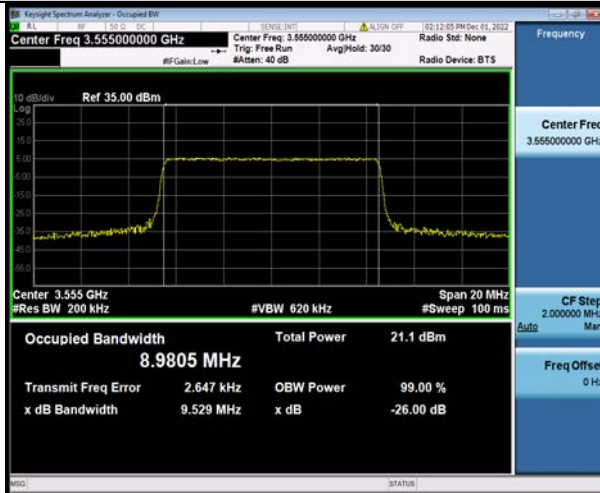
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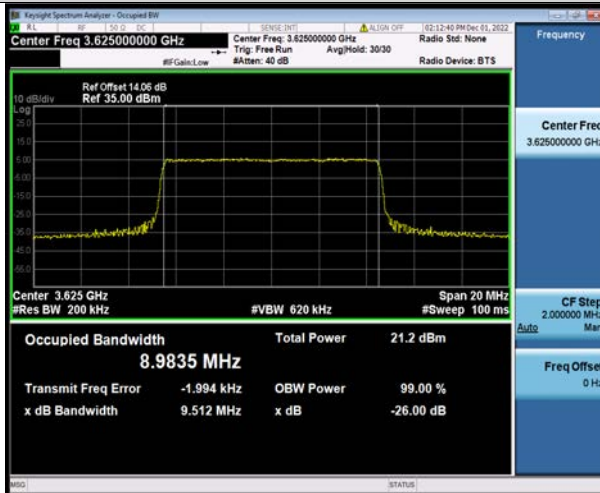
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Band48-10MHz-QPSK-55290-50RB#0



Band48-10MHz-QPSK-55990-50RB#0

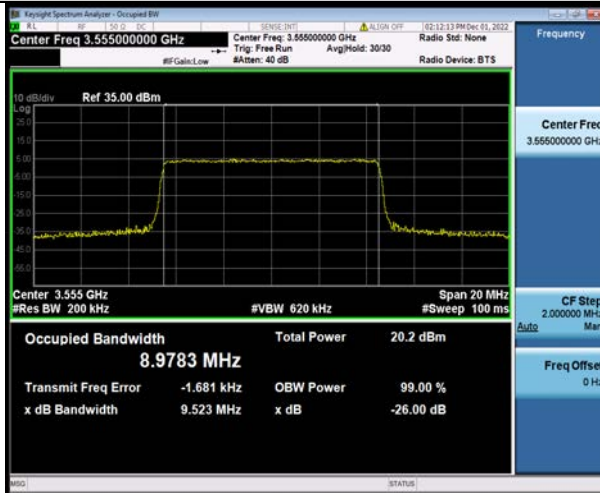


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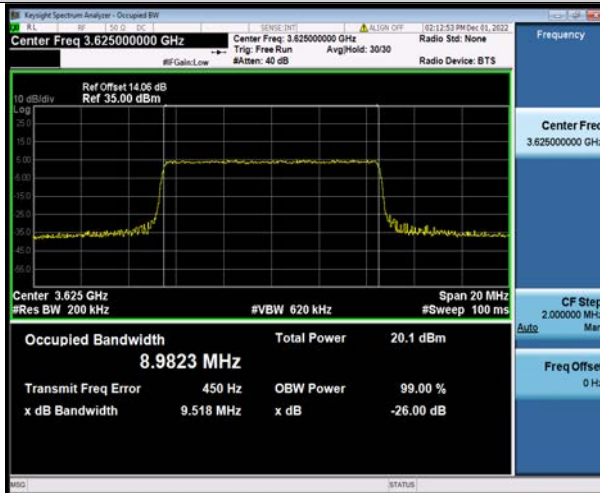




Band48-10MHz-16QAM-55290-50RB#0



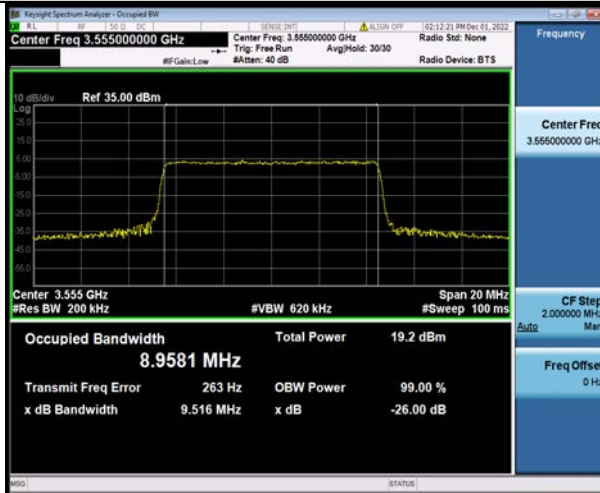
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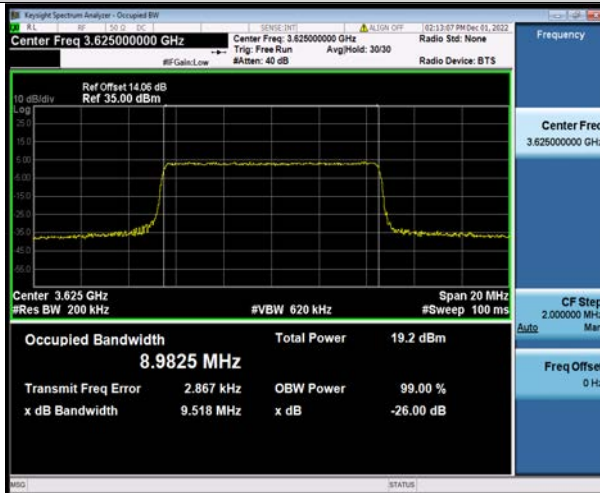
Band48-10MHz-16QAM-56690-50RB#0



Band48-10MHz-64QAM-55290-50RB#0



Band48-10MHz-64QAM-55990-50RB#0



Band48-10MHz-64QAM-56690-50RB#0



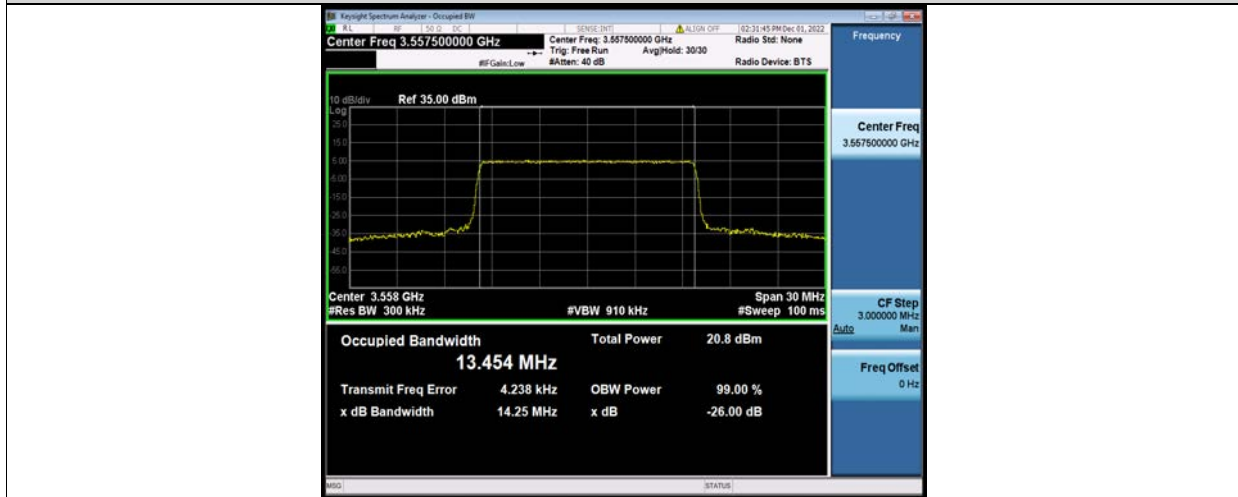


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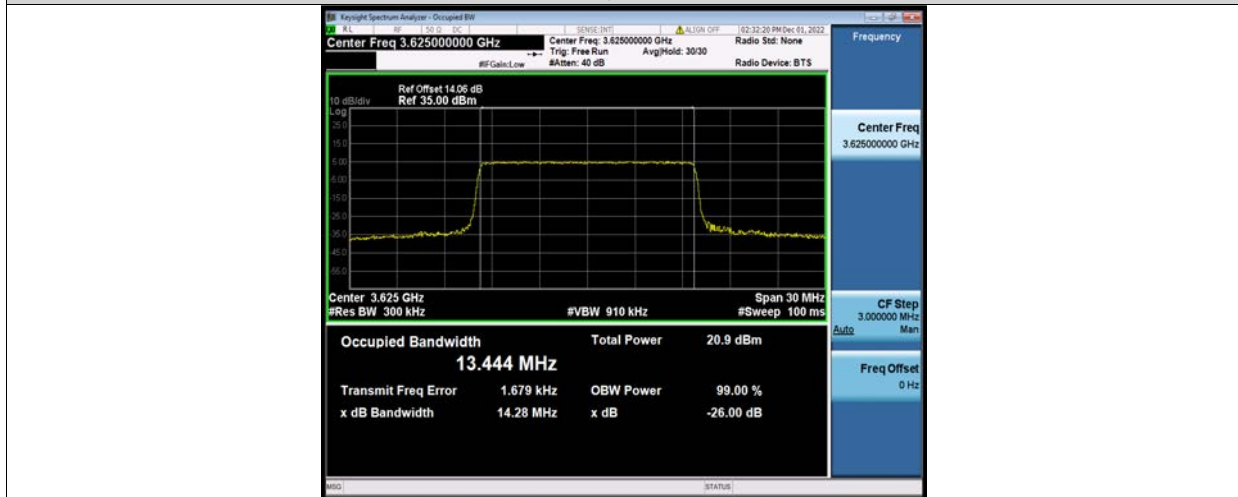
### Test Report No.: W7L-P23100014RF10



Band48-15MHz-QPSK-55315-75RB#0



Band48-15MHz-QPSK-55990-75RB#0

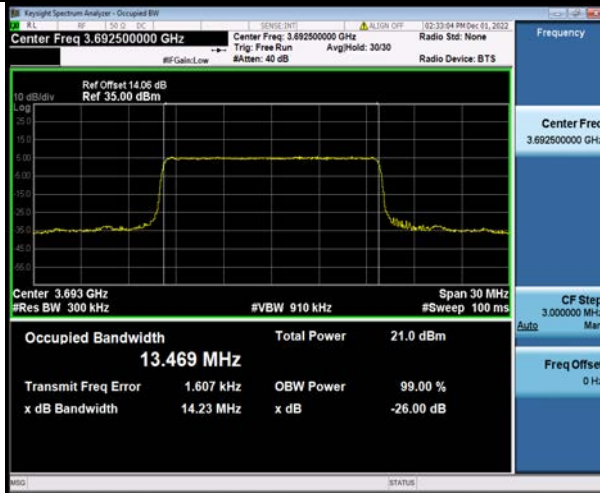


Band48-15MHz-QPSK-56665-75RB#0

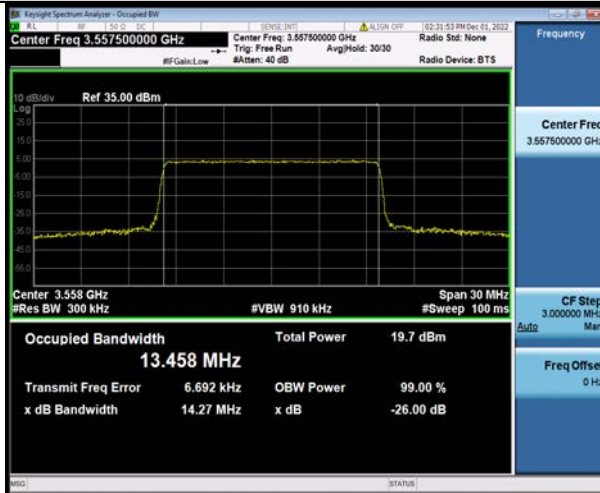
BV 7Layers Communications Technology (Shenzhen) Co., Ltd

No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

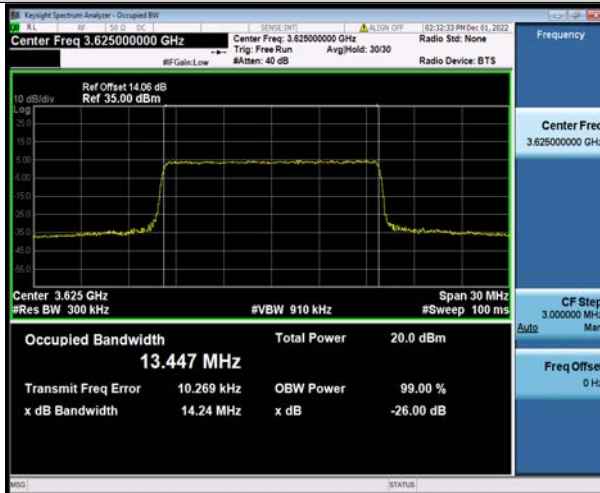
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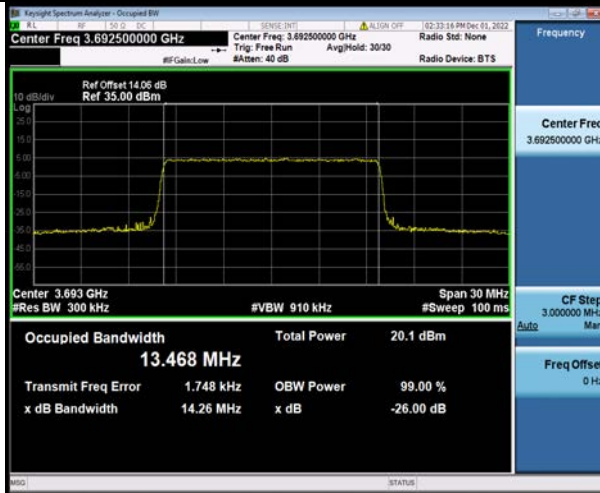
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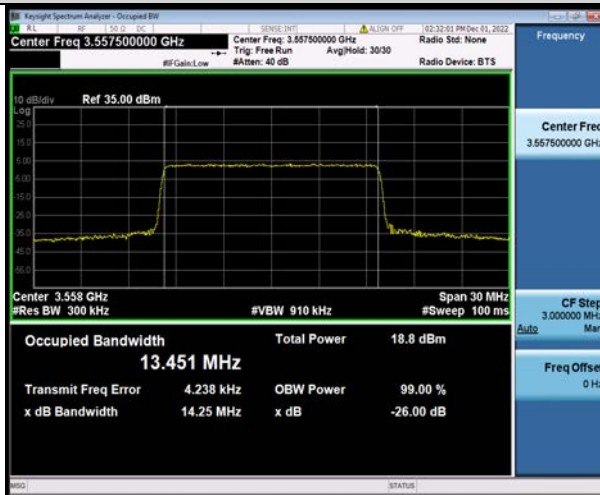
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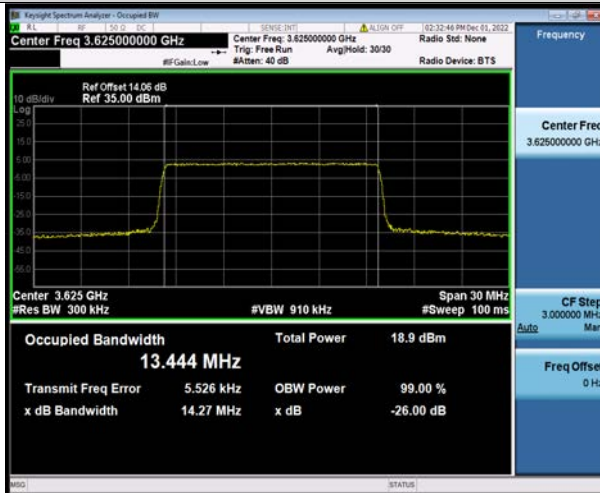
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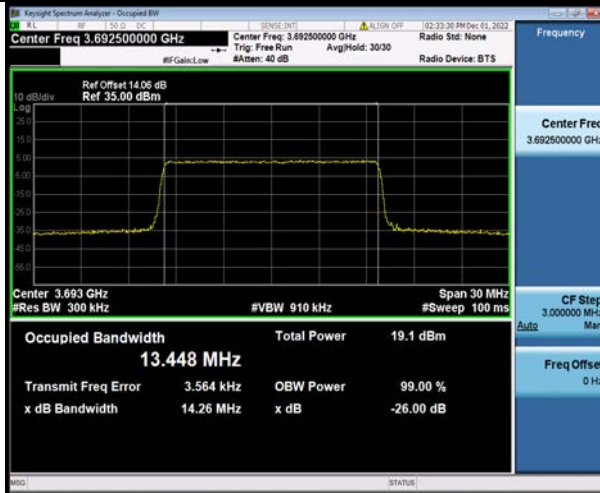
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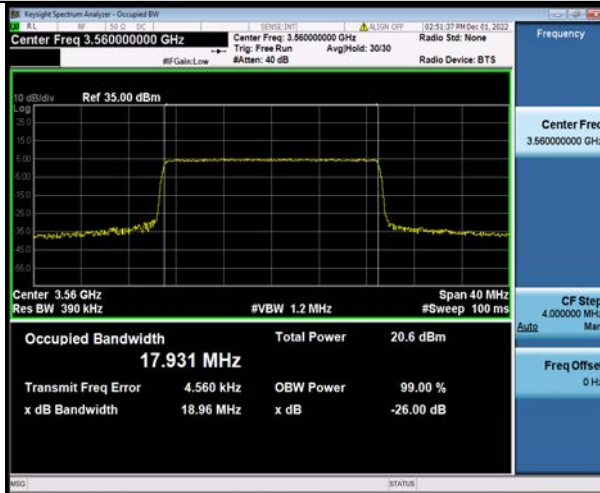
Band48-15MHz-64QAM-55990-75RB#0



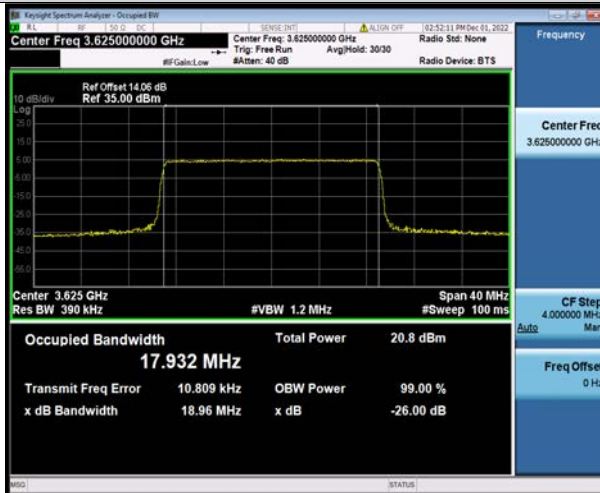
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Band48-20MHz-QPSK-55340-100RB#0



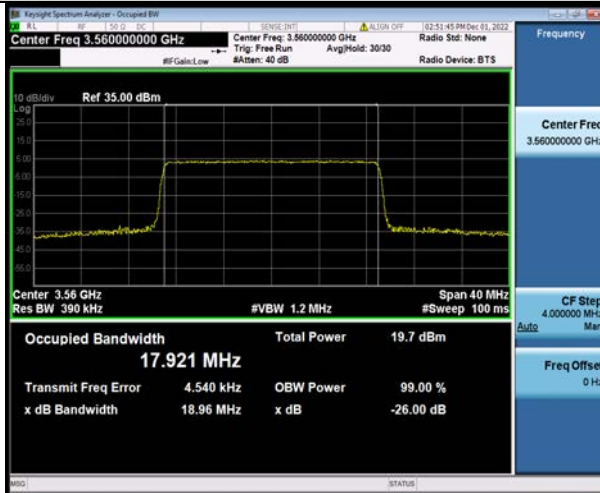
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Band48-20MHz-16QAM-55340-100RB#0



Band48-20MHz-16QAM-55990-100RB#0



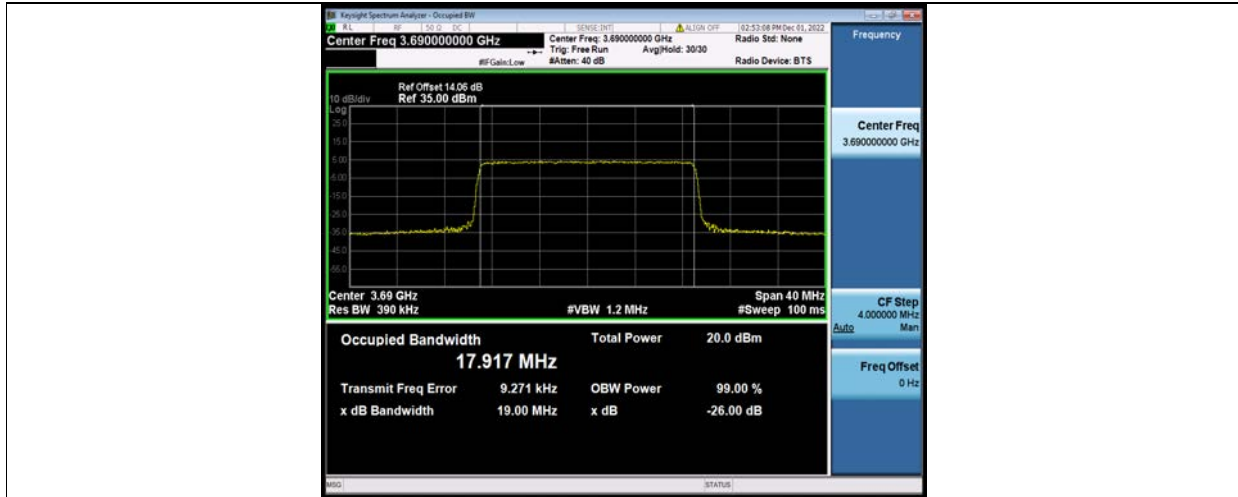
Band48-20MHz-16QAM-56640-100RB#0





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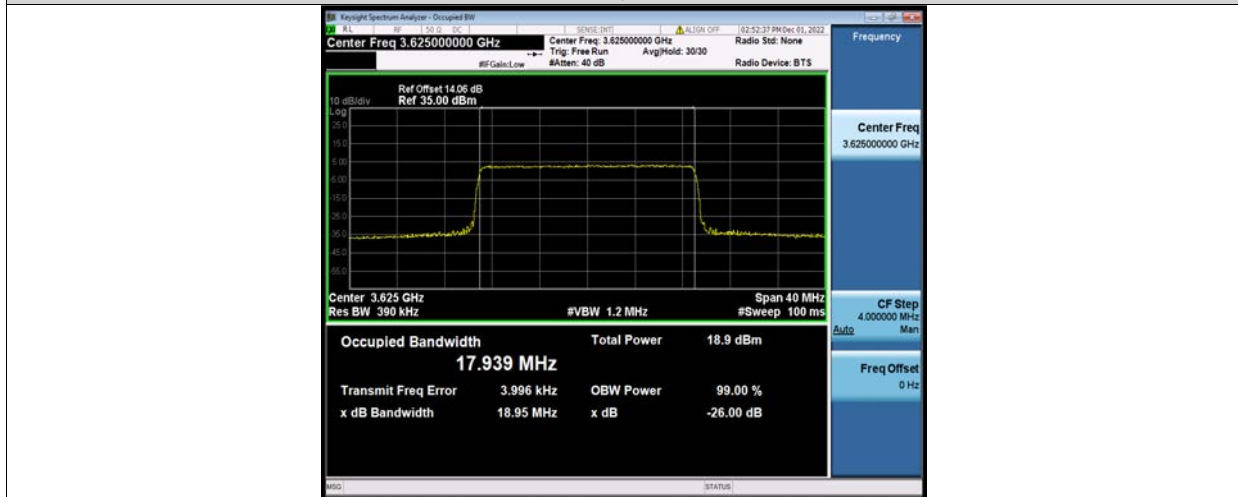
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Band48-20MHz-64QAM-55340-100RB#0



Band48-20MHz-64QAM-55990-100RB#0



Band48-20MHz-64QAM-56640-100RB#0

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Test Report No.: W7L-P23100014RF10





### BAND EDGE TEST RESULT

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band48	5MHz	QPSK	55265	1RB#0	-49.46,-48.72,-41.23,-32.02	PASS
Band48	5MHz	QPSK	55265	1RB#24	-49.52,-49.17,-47.03,-57.67	PASS
Band48	5MHz	QPSK	55265	25RB#0	-49.44,-45.32,-33.99,-39.22	PASS
Band48	5MHz	QPSK	55990	1RB#0	-55.65,-45.82,-46.39	PASS
Band48	5MHz	QPSK	55990	1RB#24	-32.61,-39.52,-46.22	PASS
Band48	5MHz	QPSK	55990	25RB#0	-38.15,-32.19,-41.23	PASS
Band48	5MHz	QPSK	56715	1RB#0	-55.20,-45.23,-45.91,-45.85	PASS
Band48	5MHz	QPSK	56715	1RB#24	-32.55,-40.30,-45.60,-45.70	PASS
Band48	5MHz	QPSK	56715	25RB#0	-37.12,-31.94,-44.10,-45.75	PASS
Band48	5MHz	16QAM	55265	1RB#0	-49.38,-48.75,-41.95,-35.12	PASS
Band48	5MHz	16QAM	55265	1RB#24	-49.55,-49.23,-47.58,-57.79	PASS
Band48	5MHz	16QAM	55265	25RB#0	-49.38,-45.42,-31.74,-39.08	PASS
Band48	5MHz	16QAM	55990	1RB#0	-56.55,-46.04,-46.12	PASS
Band48	5MHz	16QAM	55990	1RB#24	-32.27,-40.89,-46.17	PASS
Band48	5MHz	16QAM	55990	25RB#0	-38.07,-33.07,-41.48	PASS
Band48	5MHz	16QAM	56715	1RB#0	-55.78,-45.27,-45.84,-45.84	PASS
Band48	5MHz	16QAM	56715	1RB#24	-34.54,-40.73,-45.73,-45.73	PASS
Band48	5MHz	16QAM	56715	25RB#0	-38.54,-32.34,-44.70,-45.77	PASS
Band48	5MHz	64QAM	55265	1RB#0	-49.56,-49.04,-42.88,-35.15	PASS
Band48	5MHz	64QAM	55265	1RB#24	-49.51,-49.25,-47.57,-59.09	PASS
Band48	5MHz	64QAM	55265	25RB#0	-49.50,-46.84,-33.48,-39.72	PASS
Band48	5MHz	64QAM	55990	1RB#0	-56.85,-46.19,-46.24	PASS
Band48	5MHz	64QAM	55990	1RB#24	-36.00,-42.02,-46.32	PASS
Band48	5MHz	64QAM	55990	25RB#0	-40.55,-34.00,-42.09	PASS
Band48	5MHz	64QAM	56715	1RB#0	-56.66,-45.52,-45.86,-45.78	PASS
Band48	5MHz	64QAM	56715	1RB#24	-35.36,-40.87,-45.76,-45.84	PASS
Band48	5MHz	64QAM	56715	25RB#0	-40.07,-34.65,-45.05,-45.79	PASS
Band48	10MHz	QPSK	55290	1RB#0	-49.38,-48.88,-41.90,-40.47	PASS
Band48	10MHz	QPSK	55290	1RB#49	-49.52,-49.31,-48.71,-57.00	PASS
Band48	10MHz	QPSK	55290	50RB#0	-46.66,-44.44,-35.91,-41.29	PASS
Band48	10MHz	QPSK	55990	1RB#0	-55.24,-46.36,-46.46	PASS
Band48	10MHz	QPSK	55990	1RB#49	-40.83,-42.35,-46.38	PASS
Band48	10MHz	QPSK	55990	50RB#0	-39.24,-33.44,-41.75	PASS
Band48	10MHz	QPSK	56690	1RB#49	-41.77,-40.90,-45.62,-45.66	PASS
Band48	10MHz	QPSK	56690	50RB#0	-38.82,-33.50,-42.41,-45.15	PASS
Band48	10MHz	16QAM	55290	1RB#0	-49.49,-48.98,-43.70,-42.98	PASS
Band48	10MHz	16QAM	55290	1RB#49	-49.55,-49.39,-48.90,-57.78	PASS
Band48	10MHz	16QAM	55290	50RB#0	-47.58,-43.81,-35.27,-42.62	PASS
Band48	10MHz	16QAM	55990	1RB#0	-55.65,-46.50,-46.45	PASS
Band48	10MHz	16QAM	55990	1RB#49	-43.44,-42.51,-46.23	PASS
Band48	10MHz	16QAM	55990	50RB#0	-41.73,-35.45,-42.05	PASS
Band48	10MHz	16QAM	56690	1RB#0	-54.75,-45.80,-45.94,-45.84	PASS
Band48	10MHz	16QAM	56690	1RB#49	-43.52,-41.08,-45.55,-45.73	PASS
Band48	10MHz	16QAM	56690	50RB#0	-40.53,-35.47,-43.07,-45.31	PASS





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Test Report No.: W7L-P23100014RF10

Band48	10MHz	64QAM	55290	1RB#0	-49.50,-49.07,-43.48,-43.51	PASS
Band48	10MHz	64QAM	55290	1RB#49	-49.59,-49.41,-48.89,-58.03	PASS
Band48	10MHz	64QAM	55290	50RB#0	-47.87,-43.77,-35.49,-41.98	PASS
Band48	10MHz	64QAM	55990	1RB#0	-55.84,-46.50,-46.48	PASS
Band48	10MHz	64QAM	55990	1RB#49	-44.49,-43.38,-46.37	PASS
Band48	10MHz	64QAM	55990	50RB#0	-43.07,-35.85,-43.28	PASS
Band48	10MHz	64QAM	56690	1RB#0	-55.12,-45.87,-45.94,-45.83	PASS
Band48	10MHz	64QAM	56690	1RB#49	-44.91,-42.45,-45.68,-45.70	PASS
Band48	10MHz	64QAM	56690	50RB#0	-43.00,-36.63,-42.97,-45.68	PASS
Band48	15MHz	QPSK	55315	1RB#0	-49.41,-48.98,-43.14,-43.44	PASS
Band48	15MHz	QPSK	55315	1RB#74	-49.59,-49.43,-49.15,-56.08	PASS
Band48	15MHz	QPSK	55315	75RB#0	-45.70,-41.41,-35.36,-40.73	PASS
Band48	15MHz	QPSK	55990	1RB#0	-53.48,-46.65,-46.37	PASS
Band48	15MHz	QPSK	55990	1RB#74	-43.46,-42.53,-46.36	PASS
Band48	15MHz	QPSK	55990	75RB#0	-39.75,-35.01,-41.85	PASS
Band48	15MHz	QPSK	56665	1RB#0	-52.81,-45.79,-45.84,-45.71	PASS
Band48	15MHz	QPSK	56665	1RB#74	-43.63,-42.63,-45.63,-45.73	PASS
Band48	15MHz	QPSK	56665	75RB#0	-39.90,-37.49,-41.36,-43.28	PASS
Band48	15MHz	16QAM	55315	1RB#0	-49.52,-49.00,-43.49,-44.97	PASS
Band48	15MHz	16QAM	55315	1RB#74	-49.53,-49.42,-49.17,-56.95	PASS
Band48	15MHz	16QAM	55315	75RB#0	-45.47,-42.34,-36.80,-42.31	PASS
Band48	15MHz	16QAM	55990	1RB#0	-54.29,-46.65,-46.39	PASS
Band48	15MHz	16QAM	55990	1RB#74	-44.56,-43.20,-46.36	PASS
Band48	15MHz	16QAM	55990	75RB#0	-41.71,-35.33,-42.33	PASS
Band48	15MHz	16QAM	56665	1RB#0	-53.50,-45.81,-45.87,-45.75	PASS
Band48	15MHz	16QAM	56665	1RB#74	-44.61,-42.37,-45.62,-45.69	PASS
Band48	15MHz	16QAM	56665	75RB#0	-43.28,-38.83,-41.71,-43.84	PASS
Band48	15MHz	64QAM	55315	1RB#0	-49.49,-49.13,-44.39,-45.43	PASS
Band48	15MHz	64QAM	55315	1RB#74	-49.59,-49.47,-49.23,-57.25	PASS
Band48	15MHz	64QAM	55315	75RB#0	-45.03,-42.97,-34.84,-43.29	PASS
Band48	15MHz	64QAM	55990	1RB#0	-54.60,-46.64,-46.41	PASS
Band48	15MHz	64QAM	55990	1RB#74	-45.87,-43.50,-46.40	PASS
Band48	15MHz	64QAM	55990	75RB#0	-44.04,-37.06,-42.25	PASS
Band48	15MHz	64QAM	56665	1RB#0	-53.90,-45.88,-45.74,-45.68	PASS
Band48	15MHz	64QAM	56665	1RB#74	-45.75,-42.80,-45.73,-45.60	PASS
Band48	15MHz	64QAM	56665	75RB#0	-46.25,-39.62,-42.42,-43.79	PASS
Band48	20MHz	QPSK	55340	1RB#0	-49.44,-48.87,-44.30,-43.72	PASS
Band48	20MHz	QPSK	55340	1RB#99	-49.53,-49.34,-49.26,-55.72	PASS
Band48	20MHz	QPSK	55340	100RB#0	-46.69,-42.08,-38.17,-42.26	PASS
Band48	20MHz	QPSK	55990	1RB#0	-53.16,-53.10,-46.49,-53.22,-46.72,-46.55,	PASS
Band48	20MHz	QPSK	55990	1RB#99	-43.13,-49.54,-46.42	PASS
Band48	20MHz	QPSK	55990	100RB#0	-40.03,-43.39,-43.23	PASS
Band48	20MHz	QPSK	56640	1RB#0	-52.53,-45.97,-45.95,-45.78	PASS
Band48	20MHz	QPSK	56640	1RB#99	-43.24,-42.32,-45.62,-45.80	PASS
Band48	20MHz	QPSK	56640	100RB#0	-41.48,-36.46,-40.27,-44.02	PASS
Band48	20MHz	16QAM	55340	1RB#0	-49.40,-49.06,-45.19,-45.06	PASS
Band48	20MHz	16QAM	55340	1RB#99	-49.50,-49.43,-49.31,-55.96	PASS
Band48	20MHz	16QAM	55340	100RB#0	-45.72,-41.63,-37.63,-42.07	PASS
Band48	20MHz	16QAM	55990	1RB#0	-53.26,-53.17,-46.54,-53.25,-46.76,-46.53	PASS
Band48	20MHz	16QAM	55990	1RB#99	-44.98,-50.82,-46.49	PASS
Band48	20MHz	16QAM	55990	100RB#0	-42.21,-44.03,-43.80	PASS
Band48	20MHz	16QAM	56640	1RB#0	-52.71,-46.00,-45.97,-45.82	PASS
Band48	20MHz	16QAM	56640	1RB#99	-44.51,-43.04,-45.76,-45.82	PASS

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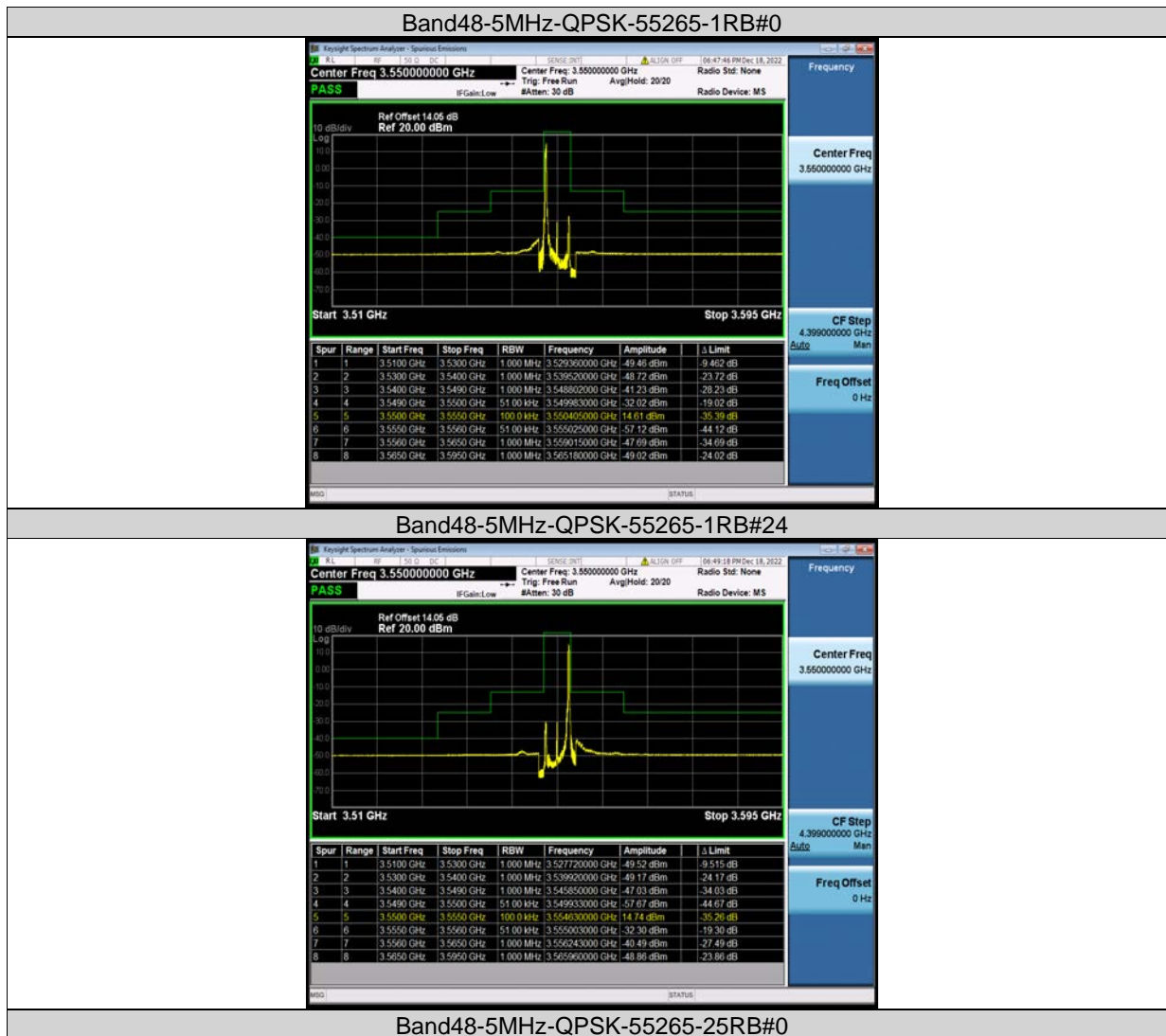


**BUREAU  
VERITAS**

**Test Report No.: W7L-P23100014RF10**

Band48	20MHz	16QAM	56640	100RB#0	-41.32,-37.90,-41.32,-44.25	PASS
Band48	20MHz	64QAM	55340	1RB#0	-49.53,-49.16,-45.91,-45.34	PASS
Band48	20MHz	64QAM	55340	1RB#99	-49.61,-49.41,-49.31,-56.04	PASS
Band48	20MHz	64QAM	55340	100RB#0	-46.09,-42.12,-38.44,-44.00	PASS
Band48	20MHz	64QAM	55990	1RB#0	-53.33,-53.10,-46.48,-53.38,-46.70,-46.52,	PASS
Band48	20MHz	64QAM	55990	1RB#99	-45.82,-51.51,-46.36	PASS
Band48	20MHz	64QAM	55990	100RB#0	-44.33,-45.48,-44.02	PASS
Band48	20MHz	64QAM	56640	1RB#0	-52.41,-46.01,-45.91,-45.81	PASS
Band48	20MHz	64QAM	56640	1RB#99	-45.23,-43.04,-45.82,-45.82	PASS
Band48	20MHz	64QAM	56640	100RB#0	-44.67,-38.55,-42.07,-44.49	PASS

**TEST GRAPHS**



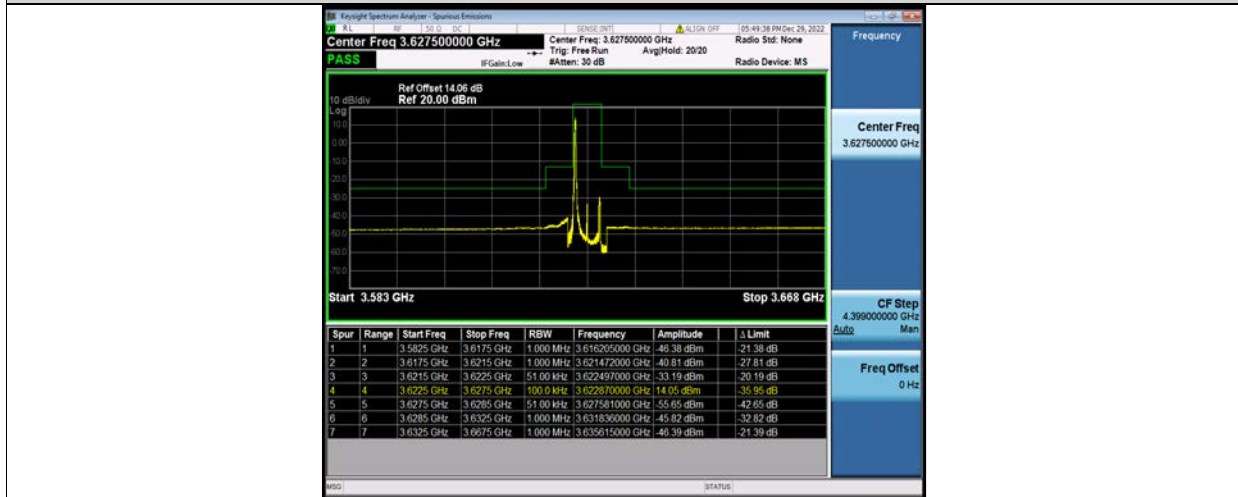


BUREAU VERITAS

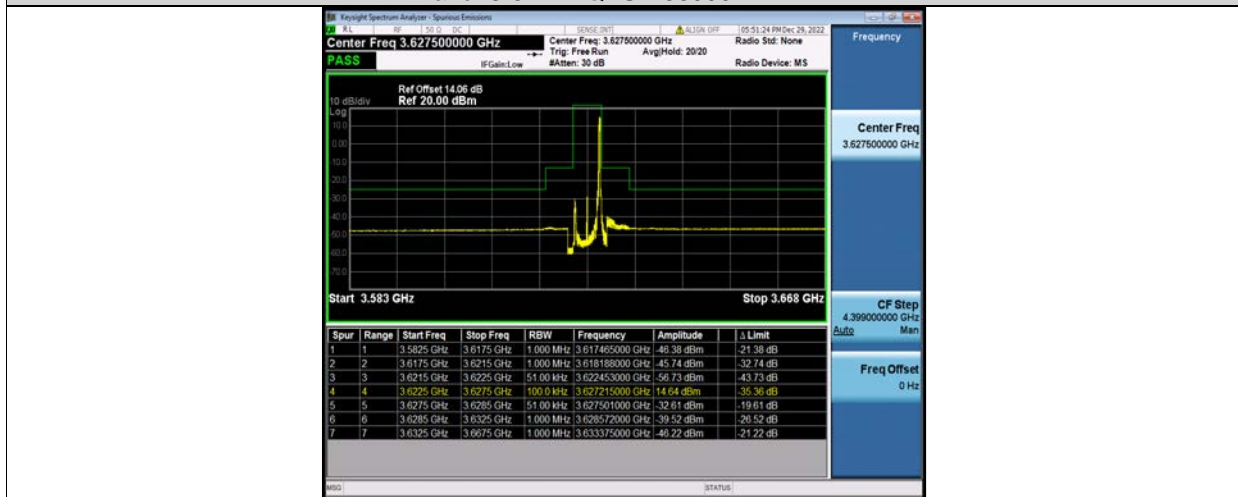
# Test Report No.: W7L-P23100014RF10



Band48-5MHz-QPSK-55990-1RB#0



Band48-5MHz-QPSK-55990-1RB#24



Band48-5MHz-QPSK-55990-25RB#0

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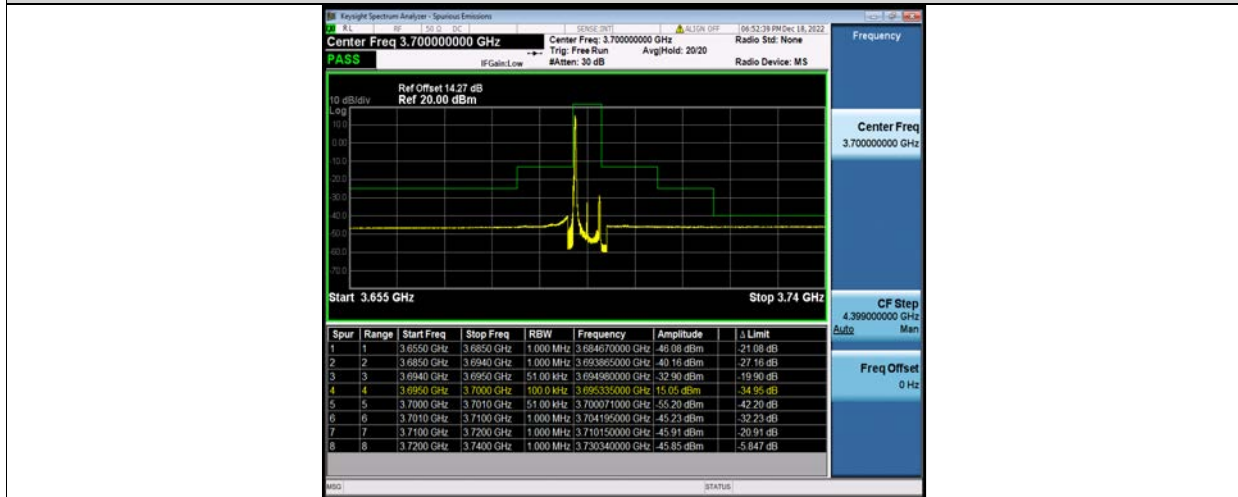


BUREAU VERITAS

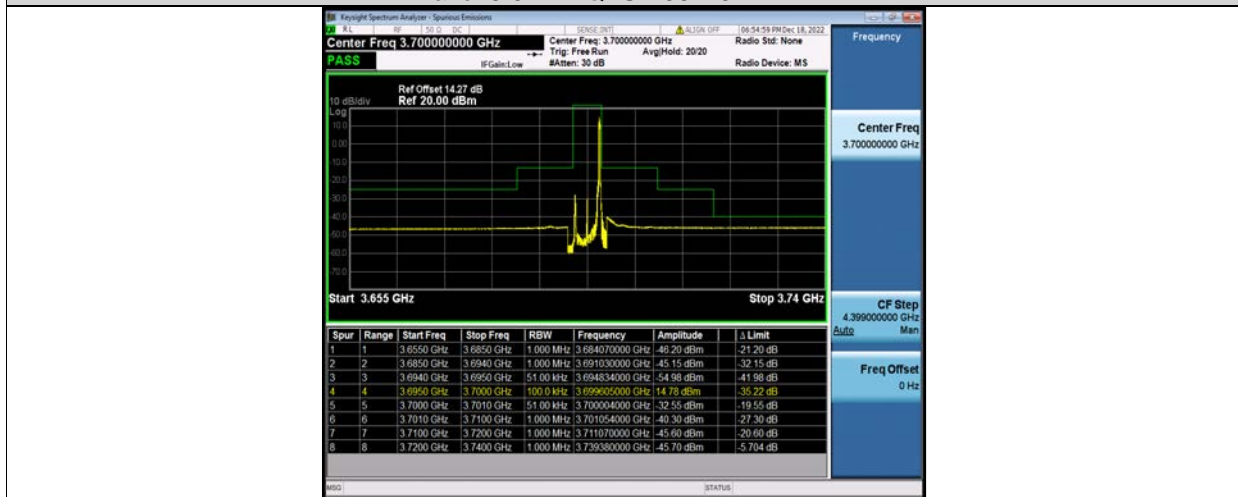
### Test Report No.: W7L-P23100014RF10



Band48-5MHz-QPSK-56715-1RB#0



Band48-5MHz-QPSK-56715-1RB#24



Band48-5MHz-QPSK-56715-25RB#0

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