

FCC TEST REPORT

(PART 96)

Applicant:	Unplugged Technologies Ltd.
Address:	3 Hakidma St., Yokneam 2066731, Israel

Manufacturer or Supplier:	Unplugged Technologies Ltd.
Address:	3 Hakidma St., Yokneam 2066731, Israel
Product:	UP Phone 1
Brand Name:	UP Phone
Model Name:	UP01
FCC ID:	2BBBCUP01
Date of tests:	Jul. 03, 2023 ~ Sep. 28, 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 Chao Wu Engineer / Mobile Department	Approved by Peibo Sun Manager / Mobile Department
 Date: Sep. 28, 2023	 Date: Sep. 28, 2023

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 SUMMARY OF TEST RESULTS	5
1.1 MEASUREMENT UNCERTAINTY	5
1.2 TEST SITE AND INSTRUMENTS	6
2 GENERAL INFORMATION	8
2.1 GENERAL DESCRIPTION OF EUT	8
2.2 CONFIGURATION OF SYSTEM UNDER TEST	11
2.3 DESCRIPTION OF SUPPORT UNITS	12
2.4 TEST ITEM AND TEST CONFIGURATION	12
2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	17
3 TEST TYPES AND RESULTS	18
3.1 MAXIMUM EIRP MEASUREMENT	18
3.1.1 LIMITS OF MAXIMUM EIRP MEASUREMENT	18
3.1.2 TEST SETUP	18
3.1.3 TEST PROCEDURES	19
3.1.4 DEVIATION FROM TEST STANDARD	19
3.1.5 TEST RESULTS	20
3.2 CONDUCTED BAND EDGE	44
3.2.1 LIMITS OF CONDUCTED BAND EDGE MEASUREMENT	44
3.2.2 TEST SETUP	44
3.2.3 TEST INSTRUMENTS	44
3.2.4 TEST PROCEDURE	45
3.2.5 DEVIATION FROM TEST STANDARD	45
3.2.6 TEST RESULTS	46
3.3 FREQUENCY STABILITY MEASUREMENT	47
3.3.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT	47
3.3.2 TEST PROCEDURE	47
3.3.3 TEST SETUP	47
3.3.4 TEST RESULTS	48
3.4 OCCUPIED BANDWIDTH MEASUREMENT	49
3.4.1 OCCUPIED BANDWIDTH MEASUREMENT	49
3.4.2 TEST SETUP	49
3.4.3 TEST INSTRUMENTS	49
3.4.4 TEST PROCEDURE	49
3.4.5 DEVIATION FROM TEST STANDARD	49
3.4.6 TEST RESULT	50
3.5 CONDUCTED SPURIOUS EMISSIONS	51
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT	51
3.5.2 TEST SETUP	51
3.5.3 TEST PROCEDURE	51
3.5.4 TEST RESULTS	52
3.6 RADIATED EMISSION MEASUREMENT	53
3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT	53
3.6.2 TEST PROCEDURES	53
3.6.3 DEVIATION FROM TEST STANDARD	53
3.6.4 TEST SET UP	54
3.6.5 TEST RESULTS	56
3.7 PEAK TO AVERAGE RATIO	70
3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT	70
3.7.2 TEST SETUP	70



3.7.3 TEST PROCEDURES	70
3.7.4 TEST RESULTS	71
4 INFORMATION ON THE TESTING LABORATORIES	72
5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	73
6 APPENDIX	74
LTE BAND48 (INCLUDING LTE BAND42/43)	74
Peak-to-Average Ratio(CCDF)	74
Test Result	74
Test Graphs	75
26dB Bandwidth and Occupied Bandwidth	84
Test Result	84
Test Graphs	85
Band Edge	103
Test Result	103
Test Graphs	104
ACLR	128
Test Result	128
Test Graphs	128
Conducted Spurious Emission	136
Test Result	136
Test Graphs	137
Frequency Stability	155
Test Result	155



RELEASE CONTROL RECORD

ISSUE NO.	DESCRIPTION	DATE ISSUED
PSU-QSU2306120115RF08	Original release	Sep. 28, 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 & Radiated Power (30MHz~1GHz)	±4.98dB
Radiated emissions & Radiated Power (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB
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.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,22	Aug.29,24
Pre-Amplifier	R&S	SCU08F1	101028	Sep.16,22	Sep.15,24
Vector Signal Generator	R&S	SMBV100B	102176	Feb.16,22	Feb.15,24
Signal Generator	R&S	SMB100A	182185	Feb.16,22	Feb.15,24
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-E MC-01 Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-E MC-02 Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESR26	101734	Feb.25,22	Feb.24,24
EMI TEST Receiver	R&S	ESW44	101973	Feb.25,22	Feb.24,24
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.28,22	Feb.27,24
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,22	Aug.21,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.23,22	Feb.22,24
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,22	Aug.21,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,22	Feb.22,24
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.27,22	Jun.26,24
Test Software	EMC32	EMC32	N/A	N/A	N/A
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	Oct.01,22	Sep.30,24
DC Source	HYELEC	HY3010B	551016	Aug.31,22	Aug.30,24
Hygrothermograph	DELI	20210528	SZ014	Sep.06,22	Sep.05,24
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.28,23	Oct.27,23
CABLE	R&S	W12.14	N/A	Apr.28,23	Oct.27,23
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.28,23	Oct.27,23
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.28,23	Oct.27,23
Temperature Chamber	votsch	VT4002	58566078100050	May.31,22	May.30,24



Test Report No.: W7L-P22110036RF10

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GREGT/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 434559; The Designation No. is CN1325.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	UP Phone 1	
BRAND NAME	UP Phone	
MODEL NAME	UP01	
NOMINAL VOLTAGE	3.87 Vdc (Battery)	
MODULATION TECHNOLOGY	LTE	QPSK, 16QAM, 64QAM
FREQUENCY RANGE	LTE Band 42 Channel Bandwidth: 5MHz	3552.5 MHz ~ 3597.5MHz
	LTE Band 42 Channel Bandwidth: 10MHz	3555MHz ~ 3595MHz
	LTE Band 42 Channel Bandwidth: 15MHz	3557.5MHz ~ 3592.5MHz
	LTE Band 42 Channel Bandwidth: 20MHz	3560MHz ~ 3590MHz
	LTE Band 43 Channel Bandwidth: 5MHz	3602.5MHz ~ 3697.5MHz
	LTE Band 43 Channel Bandwidth: 10MHz	3605MHz ~ 3695MHz
	LTE Band 43 Channel Bandwidth: 15MHz	3607.5MHz ~ 3692.5MHz
	LTE Band 43 Channel Bandwidth: 20MHz	3610MHz ~ 3690MHz
	LTE Band 48 Channel Bandwidth: 5MHz	3552.5MHz ~ 3697.5MHz
	LTE Band 48 Channel Bandwidth: 10MHz	3555MHz ~ 3695MHz
	LTE Band 48 Channel Bandwidth: 15MHz	3557.5MHz ~ 3692.5MHz
	LTE Band 48 Channel Bandwidth: 20MHz	3560MHz ~ 3690MHz
EMISSION DESIGNATOR	LTE Band 48 Channel Bandwidth: 5MHz	QPSK: 4M50G7D
		16QAM: 4M50W7D
		64QAM: 4M50W7D
	LTE Band 48 Channel Bandwidth: 10MHz	QPSK: 8M97G7D
		16QAM: 9M00W7D
		64QAM: 8M98W7D
	LTE Band 48 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M5W7D
		64QAM: 13M5W7D
	LTE Band 48 Channel Bandwidth: 20MHz	QPSK: 18M0G7D
		16QAM: 17M9W7D
		64QAM: 18M0W7D



MAX. EIRP POWER	LTE Band 42 Channel Bandwidth: 5MHz	156.68mW
	LTE Band 42 Channel Bandwidth: 10MHz	154.88mW
	LTE Band 42 Channel Bandwidth: 15MHz	157.04mW
	LTE Band 42 Channel Bandwidth: 20MHz	157.76mW
	LTE Band 43 Channel Bandwidth: 5MHz	150.31mW
	LTE Band 43 Channel Bandwidth: 10MHz	150.31mW
	LTE Band 43 Channel Bandwidth: 15MHz	152.05mW
	LTE Band 43 Channel Bandwidth: 20MHz	164.06mW
	LTE Band 48 Channel Bandwidth: 5MHz	195.43mW
	LTE Band 48 Channel Bandwidth: 10MHz	194.09mW
	LTE Band 48 Channel Bandwidth: 15MHz	193.64mW
	LTE Band 48 Channel Bandwidth: 20MHz	195.88mW
ANTENNA GAIN	PIFA Antenna with 0.5dBi gain for LTE42/LTE43/LTE48	
HW VERSION	M156-MUB-V2	
SW VERSION	NR_D011.13_N_UP01_1.000.01	
I/O PORTS	Refer to user's manual	
DATA CABLE	N/A	
EXTREME TEMPERATURE	0-55 °C	
EXTREME VOLTAGE	3.6V – 4.45V	

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 four receiver.

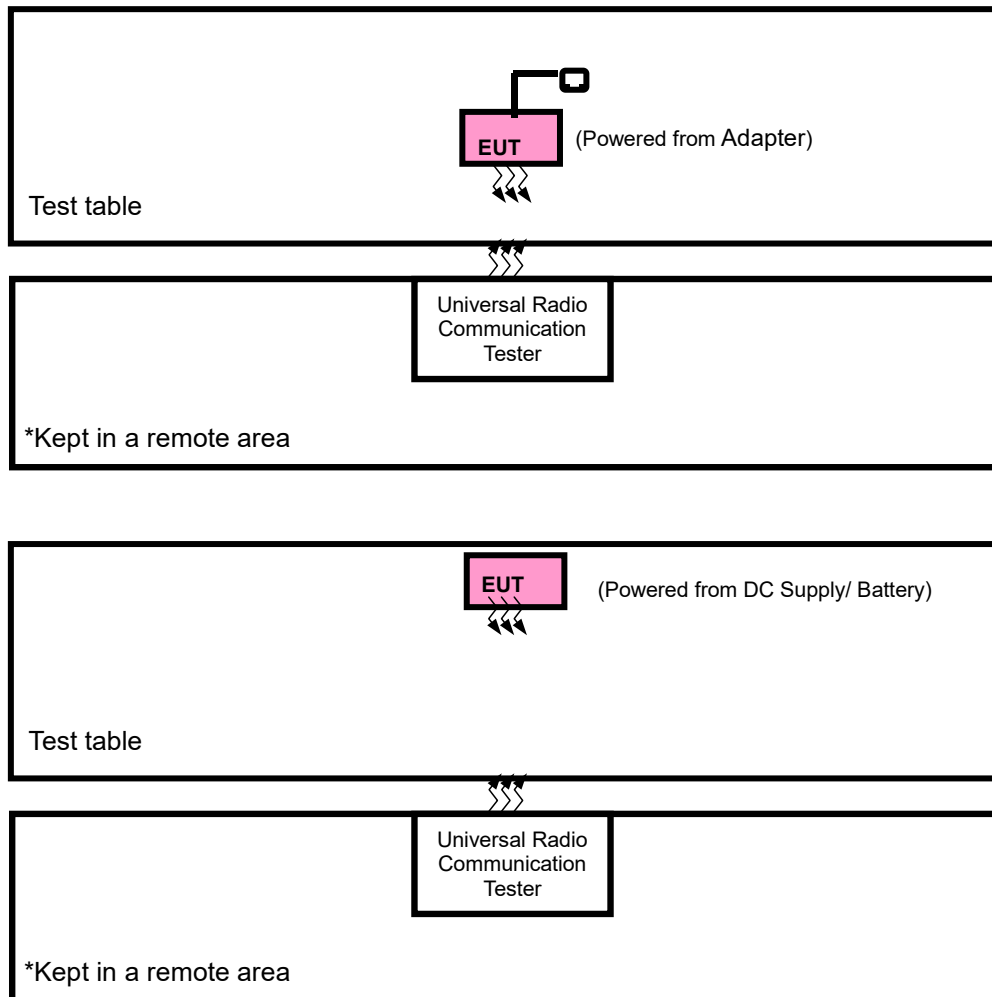
MODULATION MODE	TX FUNCTION
LTE	1TX/4RX

- 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:

ACCESSORIES	Brand	MODEL / SPECIFICATION
CPU	MediaTek	MT6893
eMMC 1 (=ROM 1)	Sandisk	SDINFDK4-256G
eMMC 2 (=ROM 2)	Samsung	KLUEG4RHGB-B0E1
eMMC 3 (=ROM 3)	Samsung	KLUEG4RHGB-B0E1
eMMC 4 (=ROM 4)	Samsung	KLUEG4RHGB-B0E1
RAM 1	Hynix	H9HKNNNFBMAVAR-NEH
RAM 2	Samsung	K3UH7H70BM-AGCL
BT/WLAN Module	MediaTek	/
NFC chipset	ST	/
Battery	/	Power Rating: 16.98Wh

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	Laptop	Lenovo	ThinkPad E14	HRSW00024	N/A
2	DC Source	HYELEC	HY3010B	551016	N/A
3	Adapter	N/A	N/A	N/A	N/A
4	USB Cable	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable, 1.0m;
2	USB Cable: Unshielded, Detachable, 1.0m;

2.4 TEST ITEM AND TEST CONFIGURATION

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

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

LTE band 42

EUT CONFIGUR E MODE	TEST ITEM	AVAILABL E CHANNEL	TESTED CHANNEL	CHANNEL BANDWID TH	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	AVAILABL E CHANNEL	TESTED CHANNEL	CHANNEL BANDWID TH	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	AVAILABL E 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	55340 to 56640	55340, 55990, 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	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
			56715	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		55290 to 56690	55290	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
			56690	10MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset
			56690	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		55315 to 56665	55315	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 75 RB / 0 RB Offset
			56665	15MHz	QPSK, 16QAM, 64QAM	1 RB / 74 RB Offset 75 RB / 0 RB Offset
			56665	15MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		55340 to 56640	55340	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
			56640	20MHz	QPSK, 16QAM, 64QAM	1 RB / 99 RB Offset 100 RB / 0 RB Offset
			56640	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
A	CONDCUDETE 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	55990	5MHz	QPSK	1 RB / 0 RB Offset
		55290 to 56690	55290, 55990, 56690	10MHz	QPSK	1 RB / 0 RB Offset
		55315 to 56665	55990	15MHz	QPSK	1 RB / 0 RB Offset
		55340 to 56640	55990	20MHz	QPSK	1 RB / 0 RB Offset
A	ACLR	55265 to 56715	55265	5MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			56715	5MHz	QPSK	1 RB / 24 RB Offset
		55290 to 56690				25 RB / 0 RB Offset
			55290	10MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			56690	10MHz	QPSK	1 RB / 49 RB Offset
		55315 to 56665				50 RB / 0 RB Offset
			55315	15MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			56665	15MHz	QPSK	1 RB / 74 RB Offset
		55340 to 56640				75 RB / 0 RB Offset
			55340	20MHz	QPSK	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			56640	20MHz	QPSK	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.

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	DC 3.87V By Battery	Chao Wu
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.6V/ 3.87V/ 4.45V By DC Source	Chao Wu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC 3.87V By Battery	Chao Wu
BAND EDGE	23deg. C, 70%RH	DC 3.87V By Battery	Chao Wu
CONDUCTED EMISSION	23deg. C, 70%RH	DC 3.87V By Battery	Chao Wu
RADIATED EMISSION	23deg. C, 70%RH	AC120V/60Hz	Chao Wu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC 3.87V By Battery	Chao Wu

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

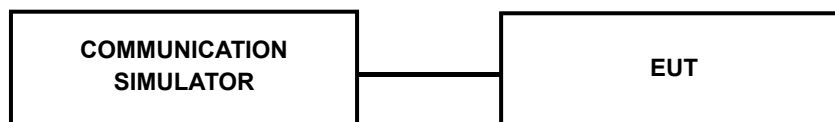
3.1 MAXIMUM EIRP MEASUREMENT

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:

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

Where:

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

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

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

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

CONDUCTED POWER MEASUREMENT:

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

Note: The worst case EIRP shown in this section is found with LTE operating only using 1RB. As such, the EIRP/10MHz and full channel EIRP values will be identical since 1RB is fully contained within all available channel bandwidths (i.e., 5, 10, 15, 20MHz).

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.

3.1.5 TEST RESULTS

LTE band 42 Part96

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	21.12	21.17	21.25
		1	12	21.36	21.28	21.45
		1	24	21.26	21.25	21.33
		12	0	20.28	20.32	20.38
		12	6	20.34	20.39	20.38
		12	13	20.30	20.32	20.43
		25	0	20.30	20.37	20.40
	16QAM	1	0	20.11	19.99	20.06
		1	12	20.22	20.16	20.16
		1	24	20.25	19.99	20.06
		12	0	19.21	19.25	19.23
		12	6	19.35	19.35	19.35
		12	13	19.17	19.37	19.37
		25	0	19.28	19.26	19.37
	64QAM	1	0	18.97	19.10	19.25
		1	12	19.29	19.23	19.30
		1	24	19.19	19.31	19.29
		12	0	18.25	18.21	18.29
		12	6	18.28	18.37	18.35
		12	13	18.18	18.22	18.27
		25	0	18.26	18.31	18.37

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	21.19	21.17	21.22
		1	24	21.34	21.33	21.40
		1	49	21.32	21.28	21.34
		25	0	20.25	20.33	20.39
		25	12	20.35	20.44	20.38
		25	25	20.28	20.33	20.43
		50	0	20.30	20.35	20.45
	16QAM	1	0	20.15	20.06	20.06
		1	24	20.21	20.17	20.16
		1	49	20.21	20.04	20.08
		25	0	19.25	19.25	19.24
		25	12	19.29	19.39	19.31
		25	25	19.22	19.35	19.40
		50	0	19.29	19.29	19.30
	64QAM	1	0	18.99	19.11	19.26
		1	24	19.30	19.22	19.27
		1	49	19.15	19.30	19.32
		25	0	18.30	18.27	18.23
		25	12	18.22	18.31	18.37
		25	25	18.21	18.29	18.29
		50	0	18.25	18.29	18.38

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	21.20	21.21	21.30
		1	37	21.38	21.36	21.46
		1	74	21.34	21.29	21.38
		36	0	20.31	20.38	20.40
		36	19	20.36	20.46	20.43
		36	39	20.36	20.40	20.45
		75	0	20.31	20.39	20.48
	16QAM	1	0	20.18	20.07	20.12
		1	37	20.25	20.22	20.18
		1	74	20.27	20.06	20.11
		36	0	19.27	19.33	19.25
		36	19	19.37	19.43	19.36
		36	39	19.25	19.41	19.42
		75	0	19.30	19.34	19.38
	64QAM	1	0	19.05	19.14	19.30
		1	37	19.32	19.29	19.32
		1	74	19.21	19.38	19.34
		36	0	18.31	18.29	18.31
		36	19	18.29	18.39	18.43
		36	39	18.23	18.30	18.33
		75	0	18.27	18.37	18.39

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	21.25	21.28	21.35
		1	50	21.40	21.44	21.48
		1	99	21.39	21.37	21.39
		50	0	20.35	20.43	20.45
		50	25	20.44	20.47	20.48
		50	50	20.40	20.45	20.46
		100	0	20.37	20.41	20.53
	16QAM	1	0	20.25	20.12	20.14
		1	50	20.33	20.24	20.23
		1	99	20.29	20.14	20.13
		50	0	19.35	19.39	19.33
		50	25	19.43	19.45	19.42
		50	50	19.32	19.46	19.44
		100	0	19.36	19.41	19.43
	64QAM	1	0	19.12	19.19	19.32
		1	50	19.40	19.31	19.38
		1	99	19.29	19.39	19.36
		50	0	18.35	18.34	18.39
		50	25	18.37	18.40	18.45
		50	50	18.27	18.35	18.41
		100	0	18.33	18.39	18.42



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	21.16	21.23	20.88
		1	12	21.23	21.27	20.96
		1	24	21.11	21.19	20.81
		12	0	20.19	20.38	20.14
		12	6	20.93	21.06	20.96
		12	13	20.13	20.36	20.33
		25	0	20.28	20.41	20.24
	16QAM	1	0	20.13	20.22	19.65
		1	12	20.08	20.17	19.64
		1	24	20.20	19.81	19.52
		12	0	19.37	19.43	19.14
		12	6	19.37	19.36	19.13
		12	13	19.34	19.29	19.14
		25	0	19.36	19.34	19.23
	64QAM	1	0	19.28	19.29	19.23
		1	12	19.33	19.26	19.13
		1	24	19.34	19.35	18.95
		12	0	19.16	19.18	19.08
		12	6	18.31	19.36	19.25
		12	13	18.37	18.39	17.90
		25	0	18.33	18.33	18.29

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	21.13	21.26	20.88
		1	24	21.23	21.27	20.97
		1	49	21.08	21.23	20.77
		25	0	20.20	20.37	20.17
		25	12	20.99	21.00	20.96
		25	25	20.11	20.33	20.32
		50	0	20.33	20.41	20.21
	16QAM	1	0	20.13	20.19	19.61
		1	24	20.13	20.13	19.67
		1	49	20.20	19.82	19.49
		25	0	19.39	19.41	19.20
		25	12	19.41	19.30	19.18
		25	25	19.33	19.30	19.11
		50	0	19.40	19.33	19.27
	64QAM	1	0	19.27	19.30	19.20
		1	24	19.38	19.22	19.17
		1	49	19.40	19.29	18.92
		25	0	19.14	19.15	19.14
		25	12	18.38	19.35	19.19
		25	25	18.36	18.36	17.92
		50	0	18.38	18.29	18.30

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	21.20	21.26	20.85
		1	37	21.21	21.32	20.92
		1	74	21.14	21.26	20.78
		36	0	20.17	20.38	20.18
		36	19	21.00	21.05	20.96
		36	39	20.09	20.34	20.32
		75	0	20.33	20.39	20.26
	16QAM	1	0	20.17	20.26	19.61
		1	37	20.12	20.14	19.67
		1	74	20.16	19.87	19.51
		36	0	19.43	19.41	19.21
		36	19	19.35	19.34	19.14
		36	39	19.38	19.28	19.14
		75	0	19.41	19.36	19.20
	64QAM	1	0	19.29	19.31	19.21
		1	37	19.39	19.21	19.14
		1	74	19.36	19.28	18.95
		36	0	19.19	19.21	19.08
		36	19	18.32	19.29	19.21
		36	39	18.39	18.43	17.94
		75	0	18.37	18.27	18.31

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	21.21	21.30	20.93
		1	50	21.55	21.65	21.58
		1	99	21.16	21.27	20.82
		50	0	20.23	20.43	20.19
		50	25	21.01	21.07	21.01
		50	50	20.17	20.41	20.34
		100	0	20.34	20.43	20.29
	16QAM	1	0	20.20	20.27	19.67
		1	50	20.16	20.19	19.69
		1	99	20.22	19.89	19.54
		50	0	19.45	19.49	19.22
		50	25	19.43	19.38	19.19
		50	50	19.41	19.34	19.16
		100	0	19.42	19.41	19.28
	64QAM	1	0	19.35	19.34	19.25
		1	50	19.41	19.28	19.19
		1	99	19.42	19.36	18.97
		50	0	19.20	19.23	19.16
		50	25	18.39	19.37	19.27
		50	50	18.41	18.44	17.98
		100	0	18.39	18.35	18.32



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	21.67	21.78	21.89
		1	12	22.24	22.11	22.23
		1	24	22.24	22.14	22.41
		12	0	20.94	20.99	21.08
		12	6	21.06	21.16	21.22
		12	13	21.00	21.06	21.24
		25	0	20.98	21.12	21.11
	16QAM	1	0	20.82	20.77	20.90
		1	12	20.98	21.12	21.16
		1	24	21.20	21.12	21.26
		12	0	19.72	19.90	19.96
		12	6	20.07	20.13	20.19
		12	13	19.93	20.02	20.16
		25	0	20.00	20.11	20.16
	64QAM	1	0	19.50	19.47	19.64
		1	12	19.63	19.85	19.86
		1	24	19.73	19.96	20.03
		12	0	18.99	18.97	19.01
		12	6	18.91	19.14	19.21
		12	13	19.21	19.16	19.20
		25	0	18.89	19.14	19.16

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	21.71	21.81	21.86
		1	24	22.22	22.16	22.19
		1	49	22.27	22.21	22.38
		25	0	20.92	20.99	21.12
		25	12	21.13	21.15	21.22
		25	25	20.96	21.04	21.23
		50	0	21.03	21.10	21.13
	16QAM	1	0	20.86	20.81	20.86
		1	24	21.02	21.09	21.19
		1	49	21.16	21.18	21.25
		25	0	19.78	19.88	20.03
		25	12	20.05	20.11	20.20
		25	25	19.97	20.01	20.16
		50	0	20.05	20.13	20.13
	64QAM	1	0	19.51	19.49	19.62
		1	24	19.69	19.80	19.87
		1	49	19.75	19.89	20.03
		25	0	19.02	19.00	19.01
		25	12	18.92	19.07	19.17
		25	25	19.23	19.20	19.24
		50	0	18.93	19.08	19.18

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	21.64	21.81	21.89
		1	37	22.24	22.11	22.24
		1	74	22.21	22.18	22.37
		36	0	20.95	20.98	21.11
		36	19	21.12	21.10	21.22
		36	39	20.98	21.03	21.23
		75	0	21.03	21.12	21.08
	16QAM	1	0	20.82	20.74	20.86
		1	37	21.03	21.08	21.19
		1	74	21.20	21.13	21.23
		36	0	19.74	19.88	20.02
		36	19	20.11	20.07	20.24
		36	39	19.92	20.03	20.13
		75	0	20.04	20.10	20.20
	64QAM	1	0	19.49	19.48	19.61
		1	37	19.68	19.81	19.90
		1	74	19.79	19.90	20.00
		36	0	18.97	18.94	19.07
		36	19	18.98	19.13	19.15
		36	39	19.20	19.13	19.22
		75	0	18.94	19.10	19.17

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	21.72	21.85	21.94
		1	50	22.26	22.19	22.25
		1	99	22.29	22.22	22.42
		50	0	20.98	21.04	21.13
		50	25	21.14	21.17	21.27
		50	50	21.04	21.11	21.25
		100	0	21.04	21.14	21.16
	16QAM	1	0	20.89	20.82	20.92
		1	50	21.06	21.14	21.21
		1	99	21.22	21.20	21.28
		50	0	19.80	19.96	20.04
		50	25	20.13	20.15	20.25
		50	50	20.00	20.07	20.18
		100	0	20.06	20.18	20.21
	64QAM	1	0	19.57	19.52	19.66
		1	50	19.71	19.87	19.92
		1	99	19.81	19.97	20.05
		50	0	19.03	19.02	19.09
		50	25	18.99	19.15	19.23
		50	50	19.25	19.21	19.28
		100	0	18.95	19.16	19.19

EIRP

LTE Band 42

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43115	3552.5	21.36	0.5	21.86	153.46	23
43340	3575	21.28	0.5	21.78	150.66	23
43565	3597.5	21.45	0.5	21.95	156.68	23

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43115	3552.5	20.25	0.5	20.75	118.85	23
43340	3575	20.16	0.5	20.66	116.41	23
43565	3597.5	20.16	0.5	20.66	116.41	23

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43115	3552.5	19.29	0.5	19.79	95.28	23
43340	3575	19.31	0.5	19.81	95.72	23
43565	3597.5	19.3	0.5	19.8	95.5	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	21.34	0.5	21.84	152.76	23
43340	3575	21.33	0.5	21.83	152.41	23
43540	3595	21.4	0.5	21.9	154.88	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	20.21	0.5	20.71	117.76	23
43340	3575	20.17	0.5	20.67	116.68	23
43540	3595	20.16	0.5	20.66	116.41	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	19.3	0.5	19.8	95.5	23
43340	3575	19.3	0.5	19.8	95.5	23
43540	3595	19.32	0.5	19.82	95.94	23

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43165	3557.5	21.38	0.5	21.88	154.17	23
43340	3575	21.36	0.5	21.86	153.46	23
43515	3592.5	21.46	0.5	21.96	157.04	23

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43165	3557.5	20.27	0.5	20.77	119.4	23
43340	3575	20.22	0.5	20.72	118.03	23
43515	3592.5	20.18	0.5	20.68	116.95	23

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43165	3557.5	19.32	0.5	19.82	95.94	23
43340	3575	19.38	0.5	19.88	97.27	23
43515	3592.5	19.34	0.5	19.84	96.38	23

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43190	3560	21.4	0.5	21.9	154.88	23
43340	3575	21.44	0.5	21.94	156.31	23
43490	3590	21.48	0.5	21.98	157.76	23

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43190	3560	20.33	0.5	20.83	121.06	23
43340	3575	20.24	0.5	20.74	118.58	23
43490	3590	20.23	0.5	20.73	118.3	23

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43190	3560	19.4	0.5	19.9	97.72	23
43340	3575	19.39	0.5	19.89	97.5	23
43490	3590	19.38	0.5	19.88	97.27	23

LTE Band 43

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43615	3602.5	21.23	0.5	21.73	148.94	23
44090	3650	21.27	0.5	21.77	150.31	23
44565	3697.5	20.96	0.5	21.46	139.96	23

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43615	3602.5	20.2	0.5	20.7	117.49	23
44090	3650	20.22	0.5	20.72	118.03	23
44565	3697.5	19.65	0.5	20.15	103.51	23

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43615	3602.5	19.34	0.5	19.84	96.38	23
44090	3650	19.36	0.5	19.86	96.83	23
44565	3697.5	19.25	0.5	19.75	94.41	23

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43640	3605	21.23	0.5	21.73	148.94	23
44090	3650	21.27	0.5	21.77	150.31	23
44540	3695	20.97	0.5	21.47	140.28	23

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43640	3605	20.2	0.5	20.7	117.49	23
44090	3650	20.19	0.5	20.69	117.22	23
44540	3695	19.67	0.5	20.17	103.99	23

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
43640	3605	19.4	0.5	19.9	97.72	23
44090	3650	19.35	0.5	19.85	96.61	23
44540	3695	19.2	0.5	19.7	93.33	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	21.21	0.5	21.71	148.25	23
44090	3650	21.32	0.5	21.82	152.05	23
44515	3692.5	20.96	0.5	21.46	139.96	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	20.17	0.5	20.67	116.68	23
44090	3650	20.26	0.5	20.76	119.12	23
44515	3692.5	19.67	0.5	20.17	103.99	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	19.39	0.5	19.89	97.5	23
44090	3650	19.31	0.5	19.81	95.72	23
44515	3692.5	19.21	0.5	19.71	93.54	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	21.55	0.5	22.05	160.32	23
44090	3650	21.65	0.5	22.15	164.06	23
44490	3690	21.58	0.5	22.08	161.44	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	20.22	0.5	20.72	118.03	23
44090	3650	20.27	0.5	20.77	119.4	23
44490	3690	19.69	0.5	20.19	104.47	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	19.42	0.5	19.92	98.17	23
44090	3650	19.37	0.5	19.87	97.05	23
44490	3690	19.27	0.5	19.77	94.84	23

**LTE Band 48****CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55265	3552.5	22.24	0.5	22.74	187.93	23
55990	3625	22.14	0.5	22.64	183.65	23
56715	3697.5	22.41	0.5	22.91	195.43	23

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55265	3552.5	21.2	0.5	21.7	147.91	23
55990	3625	21.12	0.5	21.62	145.21	23
56715	3697.5	21.26	0.5	21.76	149.97	23

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55265	3552.5	19.73	0.5	20.23	105.44	23
55990	3625	19.96	0.5	20.46	111.17	23
56715	3697.5	20.03	0.5	20.53	112.98	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	22.27	0.5	22.77	189.23	23
55990	3625	22.21	0.5	22.71	186.64	23
56690	3695	22.38	0.5	22.88	194.09	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	21.16	0.5	21.66	146.55	23
55990	3625	21.18	0.5	21.68	147.23	23
56690	3695	21.25	0.5	21.75	149.62	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	19.75	0.5	20.25	105.93	23
55990	3625	19.89	0.5	20.39	109.4	23
56690	3695	20.03	0.5	20.53	112.98	23

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55315	3557.5	22.24	0.5	22.74	187.93	23
55990	3625	22.18	0.5	22.68	185.35	23
56665	3692.5	22.37	0.5	22.87	193.64	23

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55315	3557.5	21.2	0.5	21.7	147.91	23
55990	3625	21.13	0.5	21.63	145.55	23
56665	3692.5	21.23	0.5	21.73	148.94	23

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
55315	3557.5	19.79	0.5	20.29	106.91	23
55990	3625	19.9	0.5	20.4	109.65	23
56665	3692.5	20	0.5	20.5	112.2	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	22.29	0.5	22.79	190.11	23
55990	3625	22.22	0.5	22.72	187.07	23
56640	3690	22.42	0.5	22.92	195.88	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	21.22	0.5	21.72	148.59	23
55990	3625	21.2	0.5	21.7	147.91	23
56640	3690	21.28	0.5	21.78	150.66	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	19.81	0.5	20.31	107.4	23
55990	3625	19.97	0.5	20.47	111.43	23
56640	3690	20.05	0.5	20.55	113.5	23

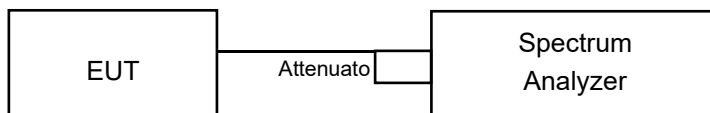
Note: The worst case EIRP shown in this section is found with LTE operating only using 1RB. As such, the EIRP/10MHz and full channel EIRP values will be identical since 1RB is fully contained within all available channel bandwidths (i.e., 5, 10, 15, 20MHz).

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 ≥ 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.



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

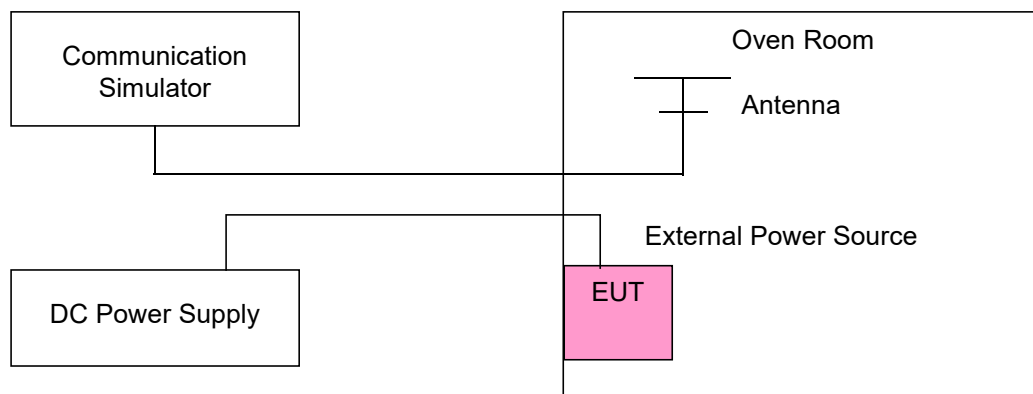
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency band.

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





Test Report No.: W7L-P22110036RF10

3.3.4 TEST RESULTS

Please Refer to Appendix Of this test report.

Note: VL = Low voltage(3.6V); VN/NV = Normal voltage(3.87V); VH = High voltage(4.45V);
NT = Normal temperature (25°C)

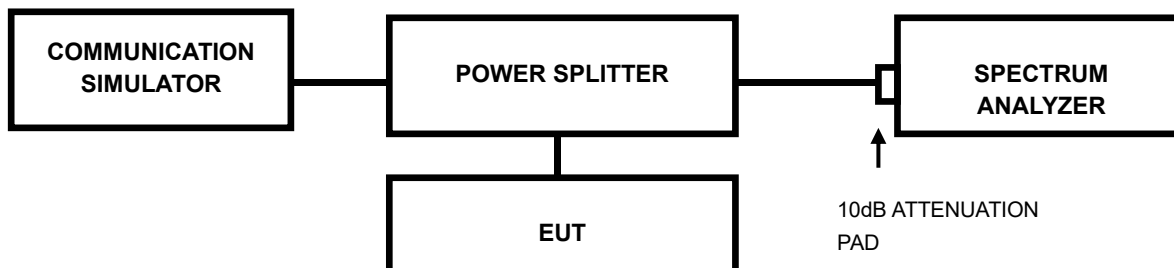


3.4 OCCUPIED BANDWIDTH MEASUREMENT

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-P22110036RF10

3.4.6 TEST RESULT

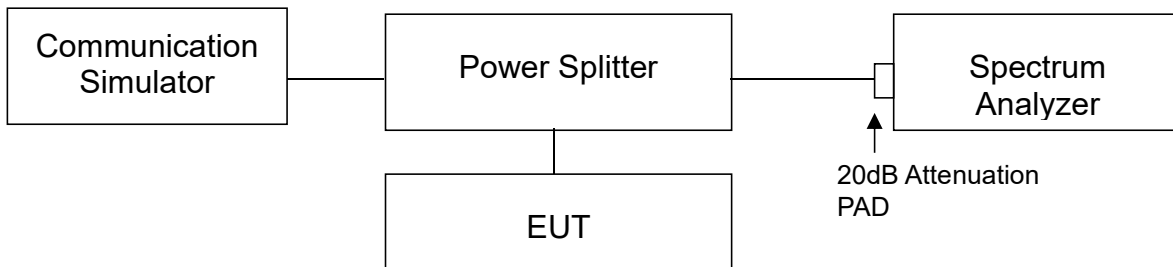
Please Refer to Appendix Of this test report.

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 -40dBm/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.



Test Report No.: W7L-P22110036RF10

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,
$$\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi}.$$

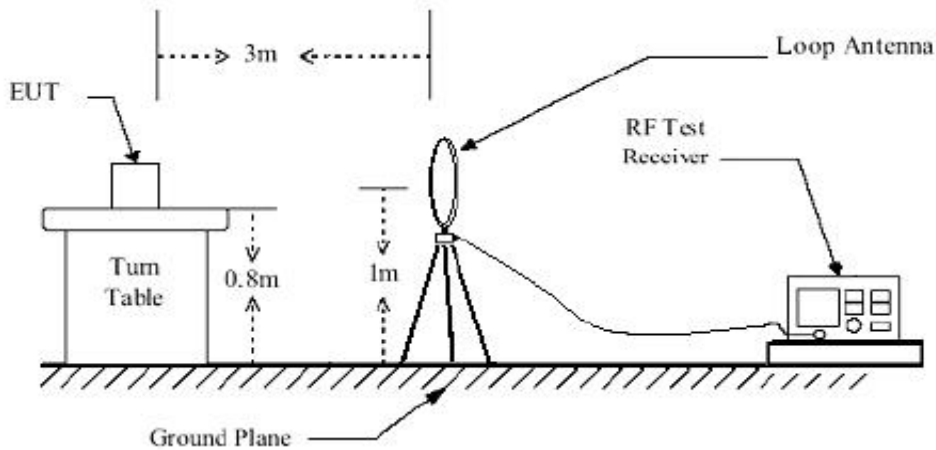
Note: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.6.3 DEVIATION FROM TEST STANDARD

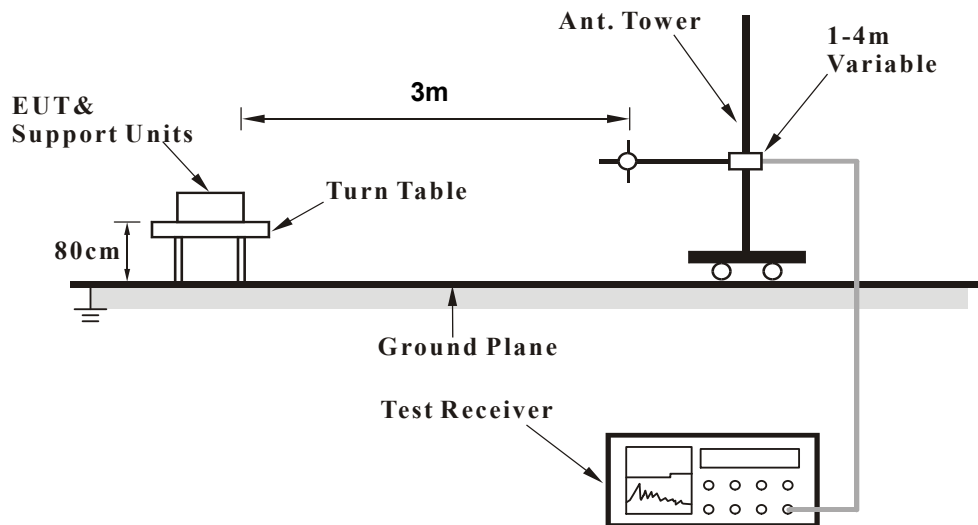
No deviation.

3.6.4 TEST SET UP

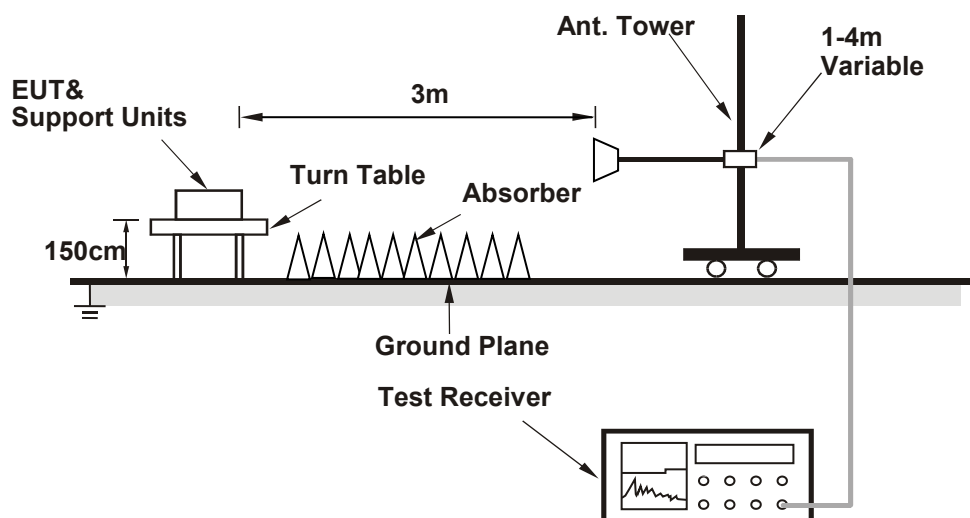
< Frequency Range below 30MHz >



<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

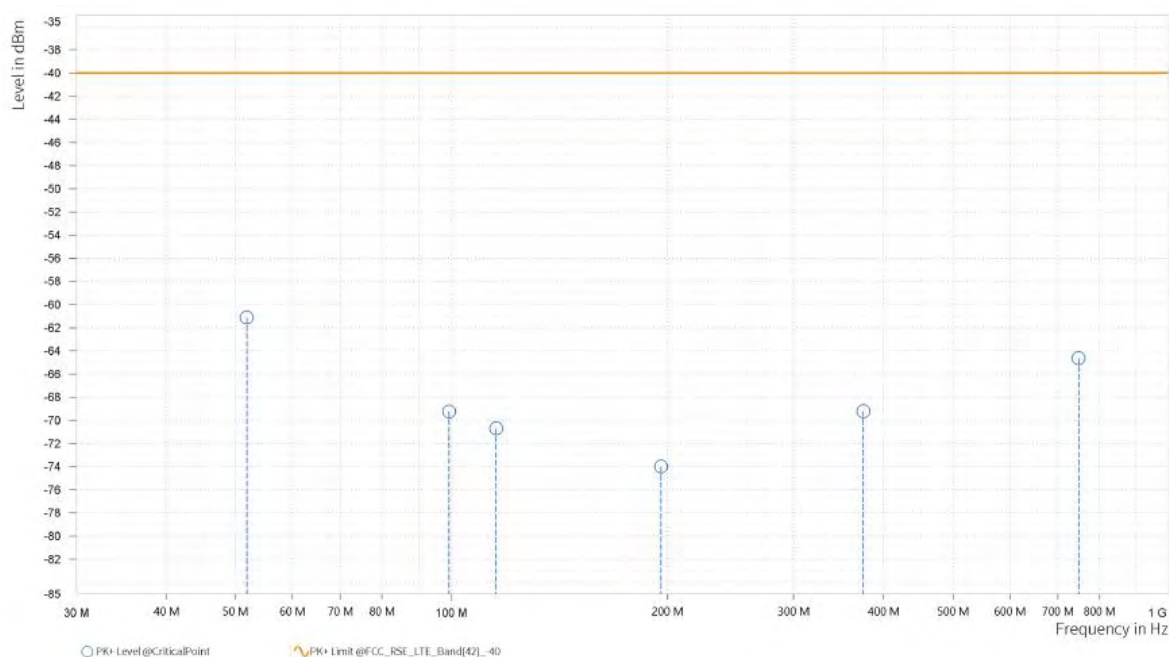
30 MHz – 1GHz data:

LTE Band 48

CHANNEL BANDWIDTH: 10MHz / QPSK

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

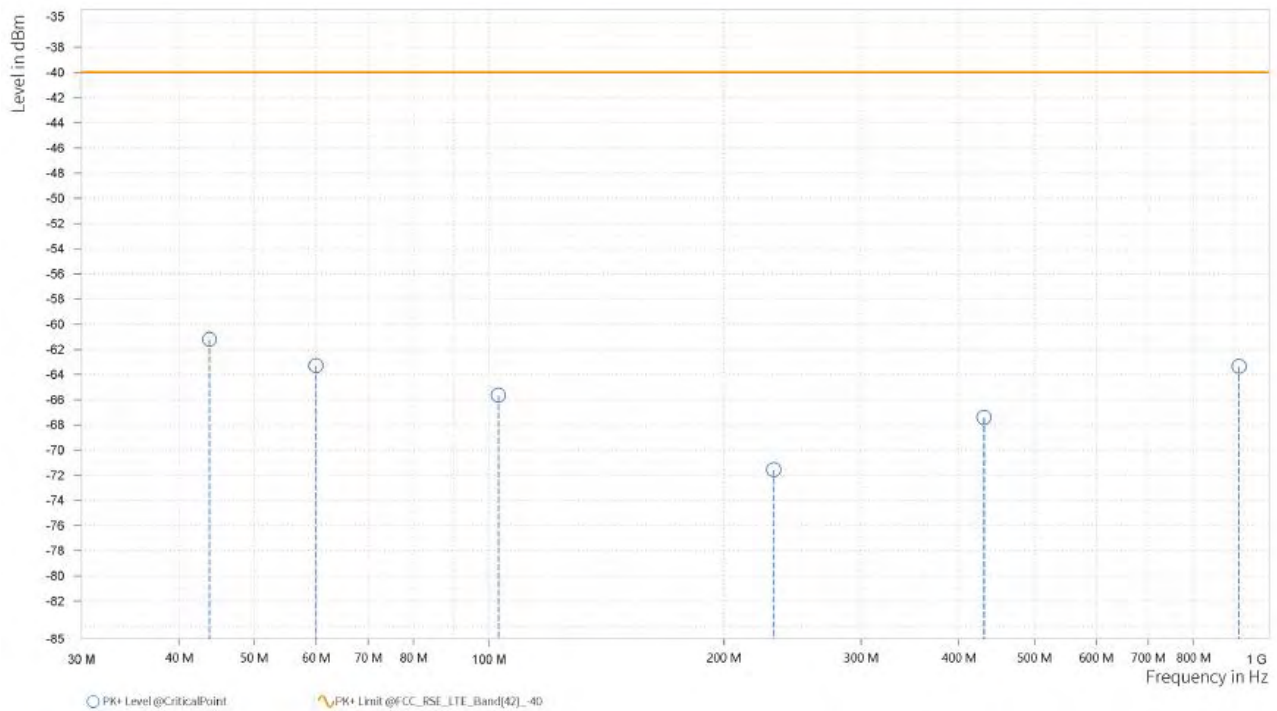
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	51.850	-61.13	-40.00	21.13	4.94	H	130.6	1
1	99.200	-69.24	-40.00	29.24	0.42	H	126	1
1	115.400	-70.71	-40.00	30.71	-0.44	H	238	2
1	196.000	-74.00	-40.00	34.00	-0.67	H	126	1
1	375.000	-69.21	-40.00	29.21	7.17	H	126	1
2	748.513	-64.64	-40.00	24.64	11.50	H	126	1





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

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	43.800	-61.21	-40.00	21.21	5.36	V	125.9	2
1	59.950	-63.31	-40.00	23.31	4.41	V	238	2
1	102.750	-65.65	-40.00	25.65	2.61	V	238	2
1	231.750	-71.56	-40.00	31.56	2.96	V	233.8	2
1	431.000	-67.40	-40.00	27.40	7.72	V	125.9	2
2	914.933	-63.36	-40.00	23.36	15.39	V	126	1



ABOVE 1GHz

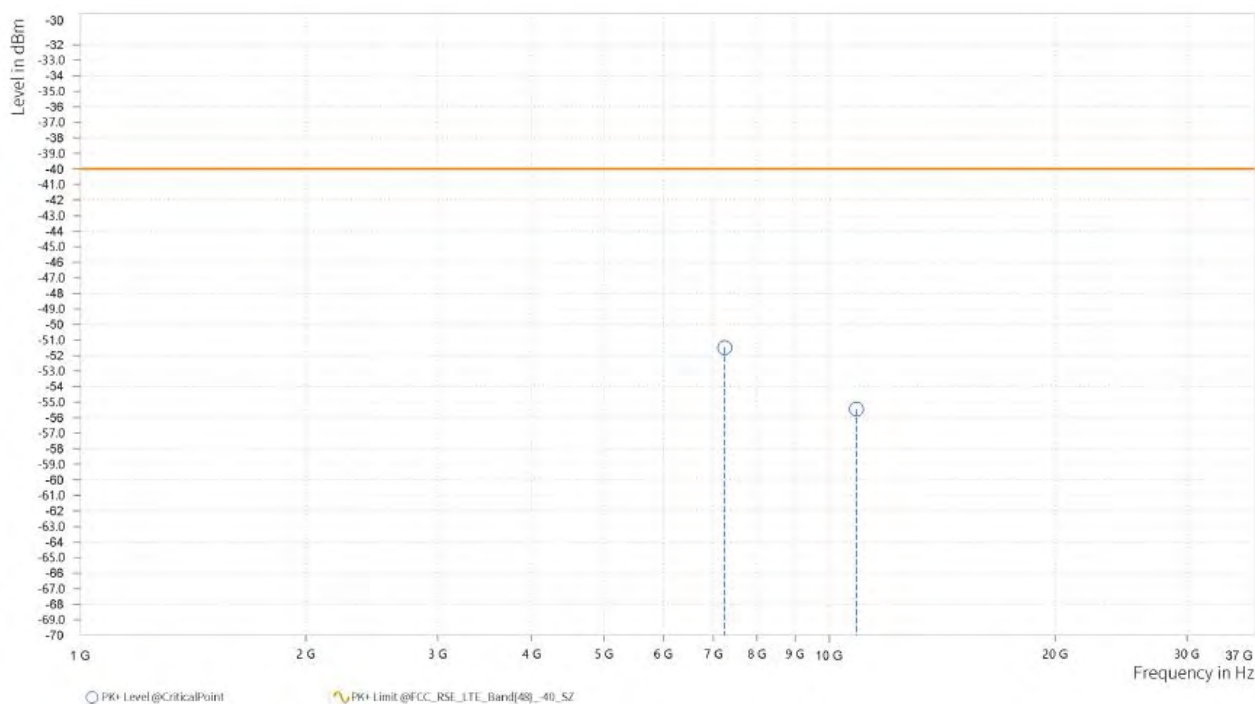
Note: For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

LTE BAND 48

CHANNEL BANDWIDTH: 5MHz / QPSK

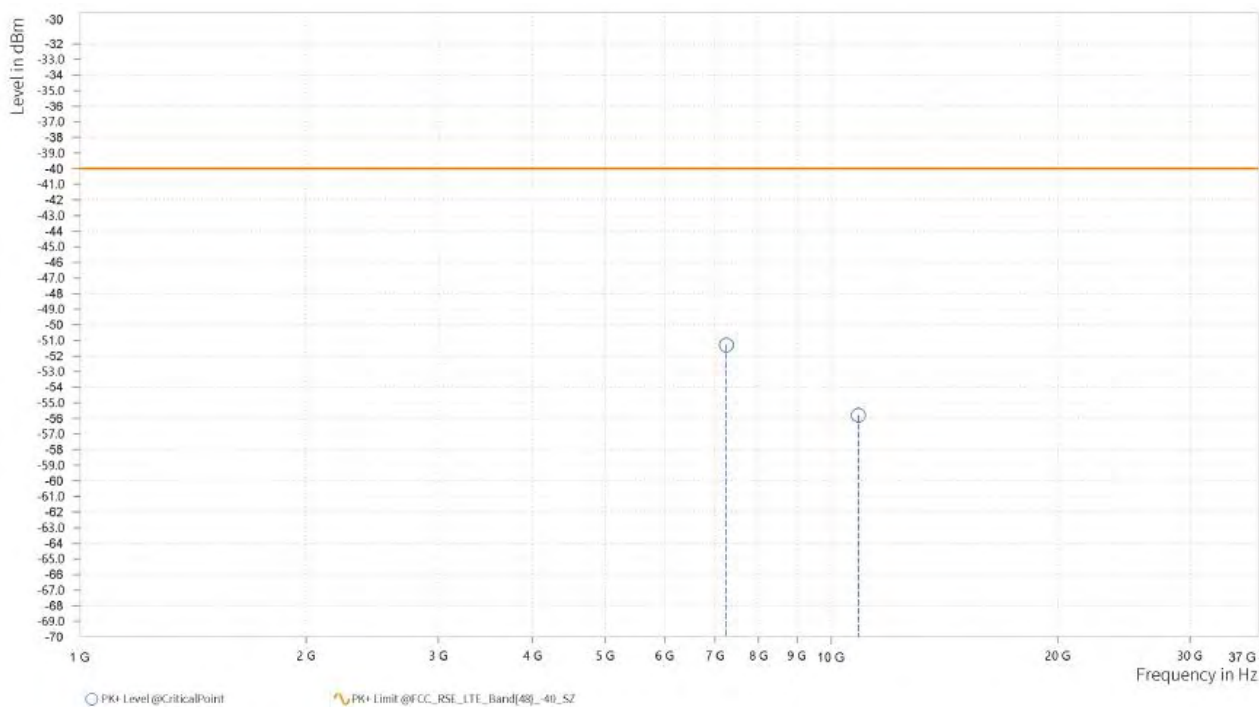
MODE	TX channel 55990	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,245.045	-51.49	-40.00	11.49	27.34	H	359.1	1
6	10,868.182	-55.45	-40.00	15.45	16.36	H	1	1



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: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,245.045	-51.29	-40.00	11.29	27.32	V	1	2
6	10,868.182	-55.79	-40.00	15.79	16.49	V	357	2

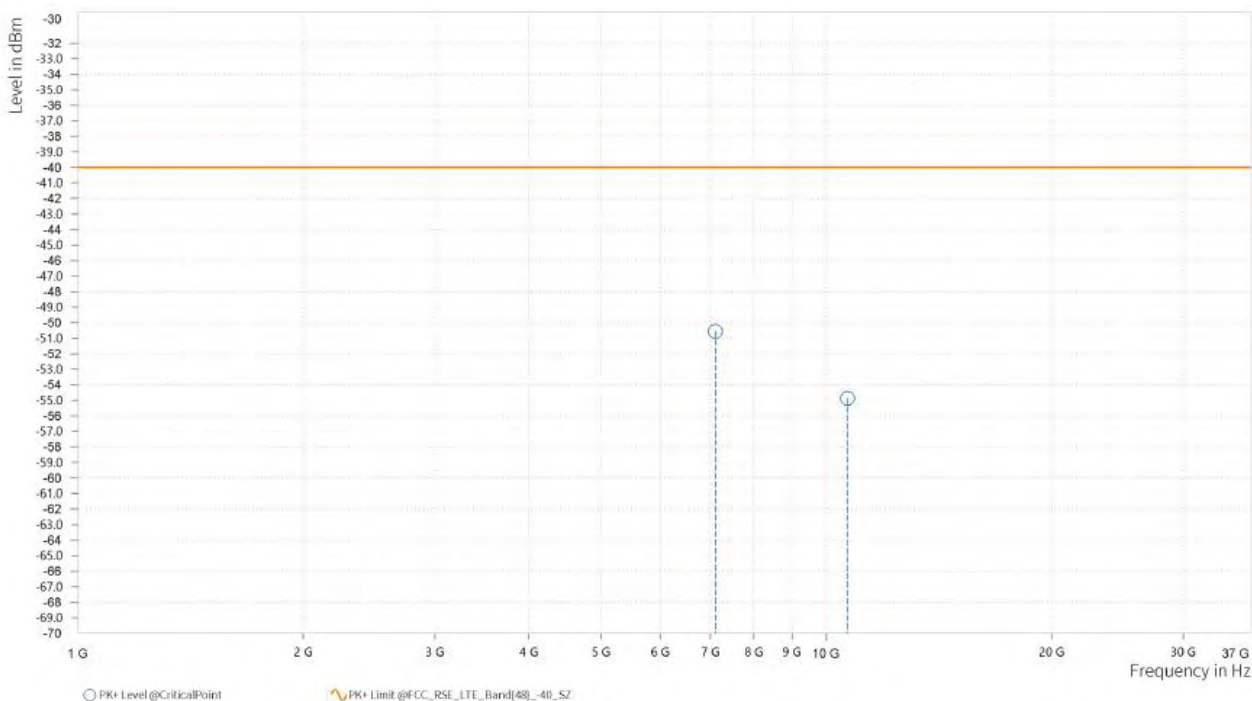


CHANNEL BANDWIDTH: 10MHz / QPSK

CH55290

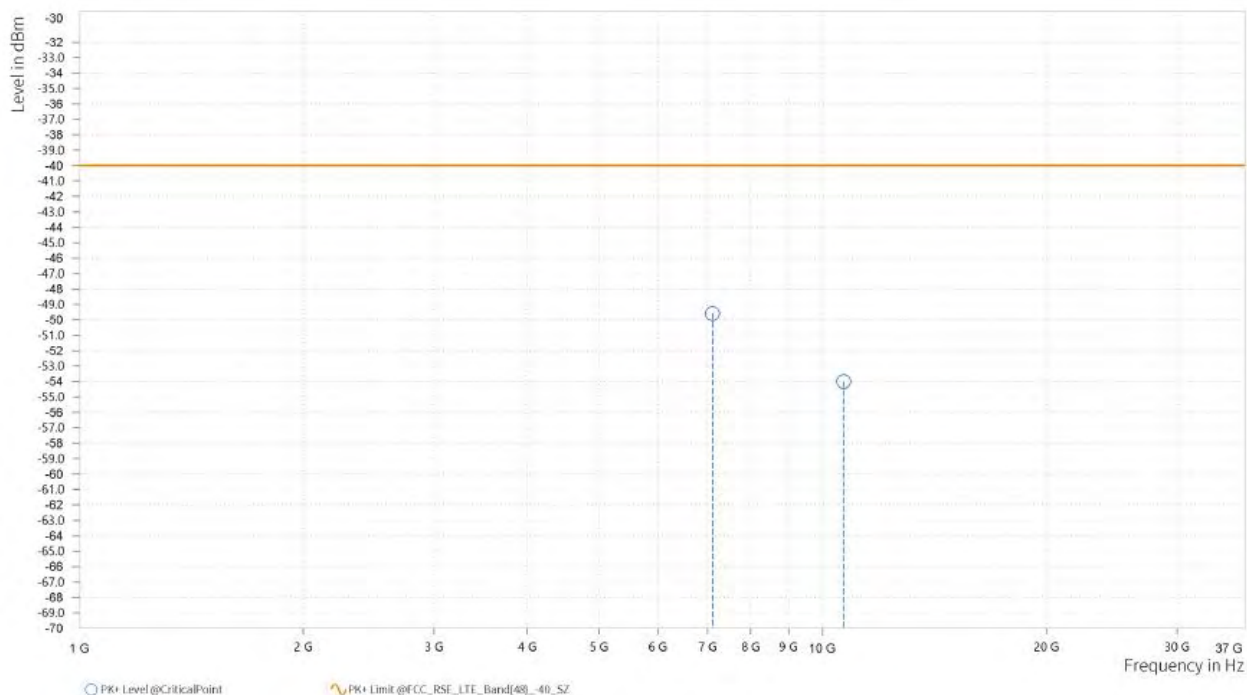
MODE	TX channel 55290	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,110.076	-50.55	-40.00	10.55	27.42	H	359	2
6	10,665.909	-54.87	-40.00	14.87	16.94	H	0.9	2



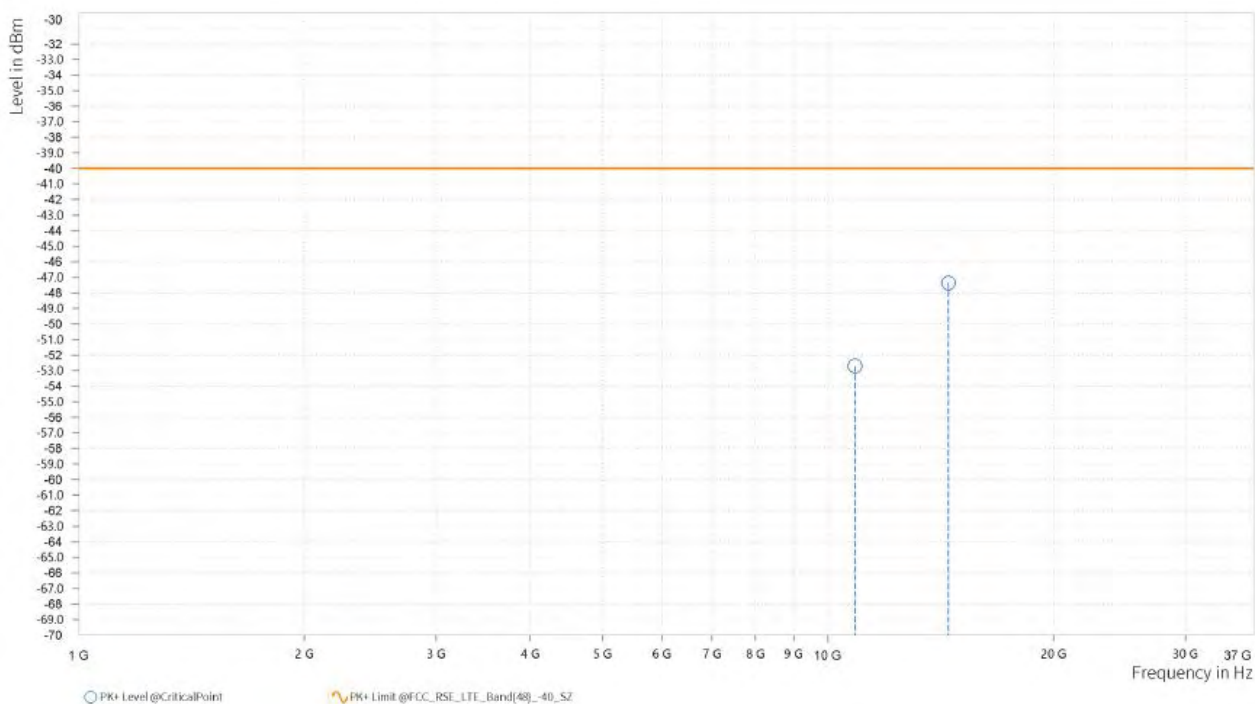
MODE	TX channel 55290	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,111.106	-49.59	-40.00	9.59	27.40	V	78.3	1
6	10,665.909	-54.01	-40.00	14.01	17.14	V	359	1



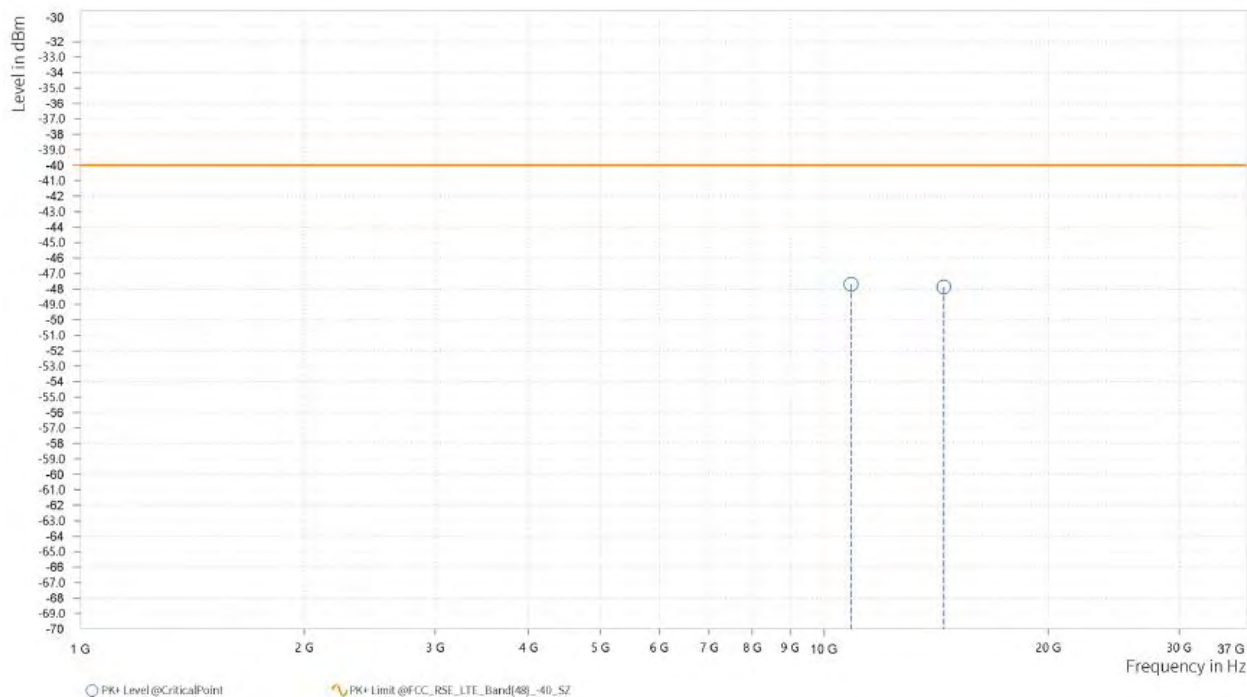
MODE	TX channel 55990	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	10,861.800	-52.70	-40.00	12.70	16.38	H	0.9	2
6	14,482.273	-47.36	-40.00	7.36	20.02	H	359	2



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: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	10,861.818	-47.69	-40.00	7.69	16.51	V	1	1
6	14,482.273	-47.87	-40.00	7.87	19.96	V	1	1





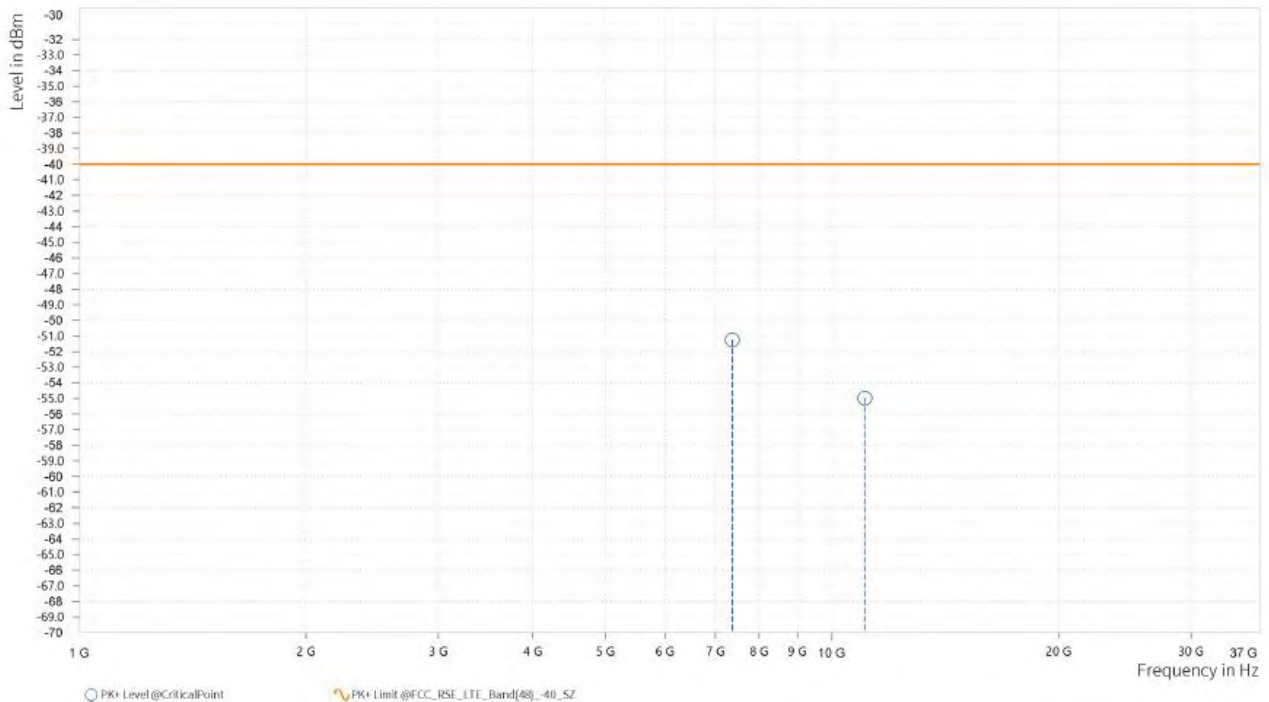
**BUREAU
VERITAS**

Test Report No.: W7L-P22110036RF10

CH56690

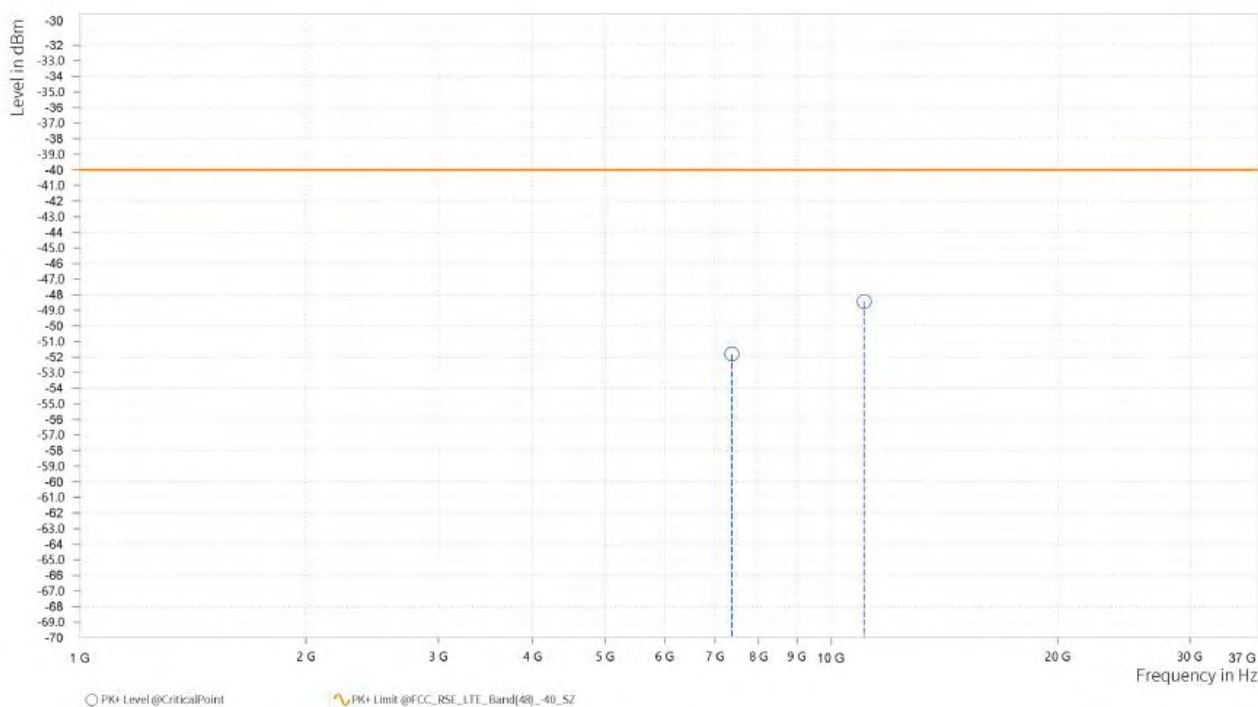
MODE	TX channel 56690	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,371.000	-51.25	-40.00	11.25	26.57	H	359	1
6	11,055.909	-54.97	-40.00	14.97	17.05	H	359	2



MODE	TX channel 56690	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,371.000	-51.82	-40.00	11.82	26.61	V	78.3	1
6	11,057.273	-48.44	-40.00	8.44	17.24	V	1	2

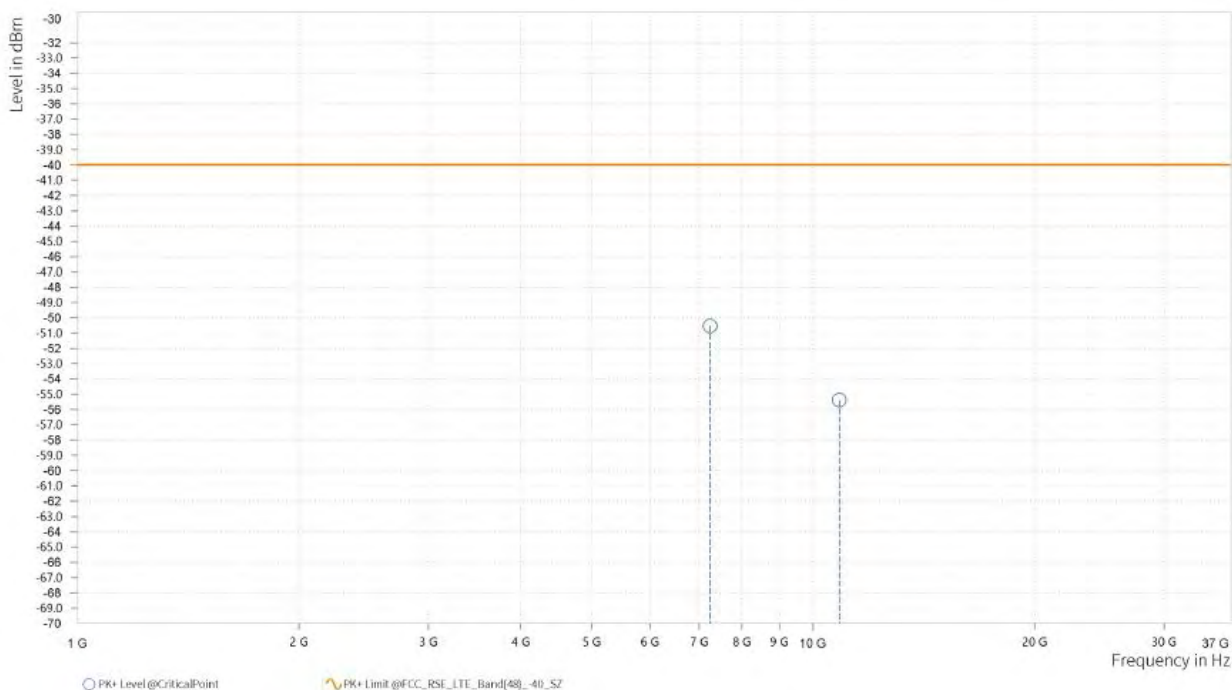


CHANNEL BANDWIDTH: 15MHz / QPSK

CH55990

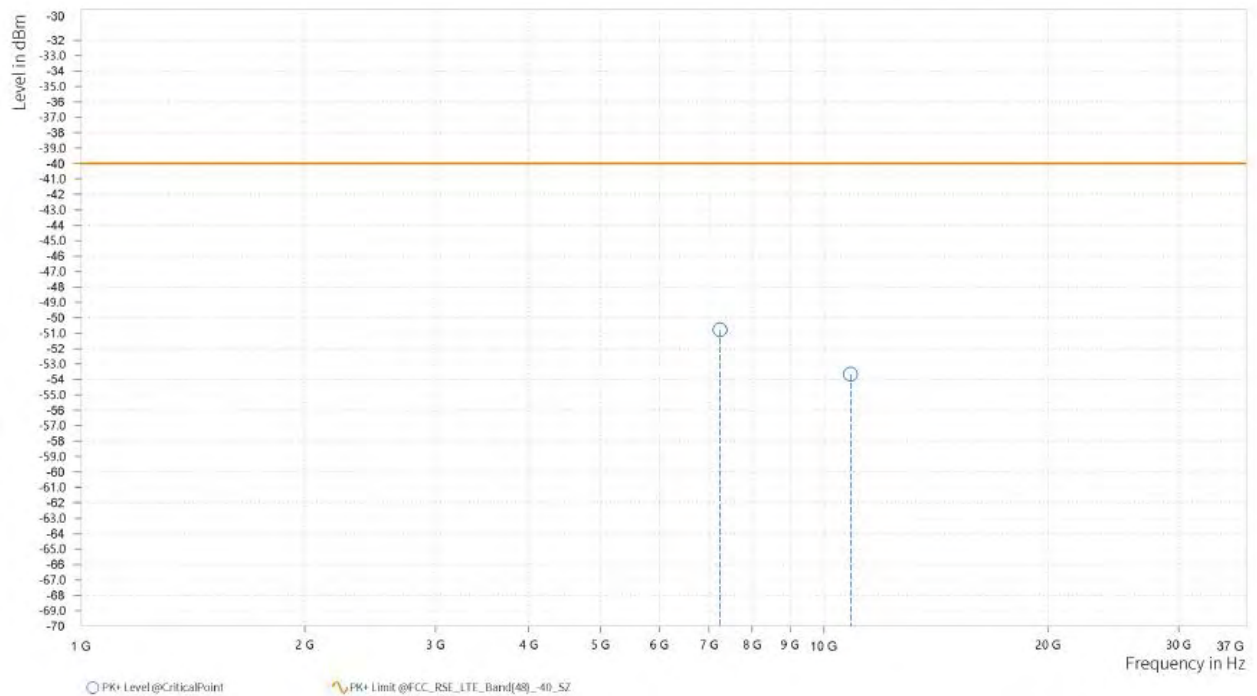
MODE	TX channel 55990	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,236.288	-50.53	-40.00	10.53	27.41	H	1	1
6	10,853.636	-55.40	-40.00	15.40	16.42	H	359.1	1



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: VERTICAL AT 3 M			

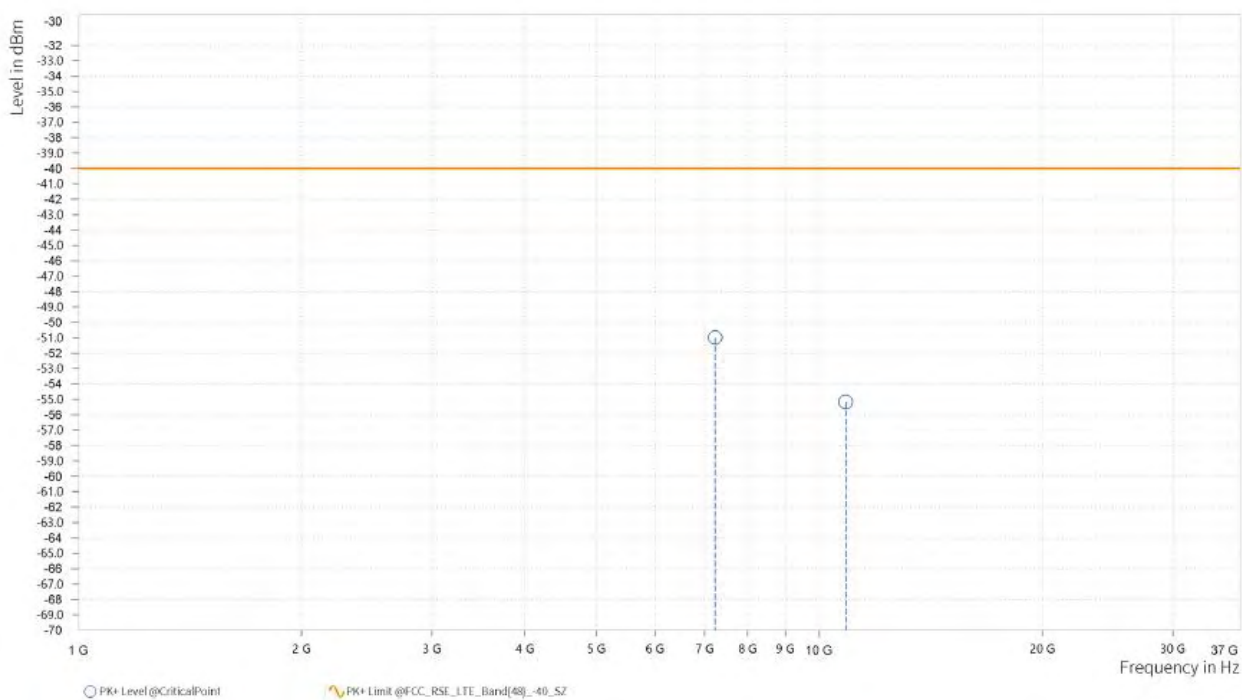
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,236.030	-50.78	-40.00	10.78	27.38	V	69.9	1
6	10,855.000	-53.68	-40.00	13.68	16.55	V	1	2



CHANNEL BANDWIDTH: 20MHz / QPSK

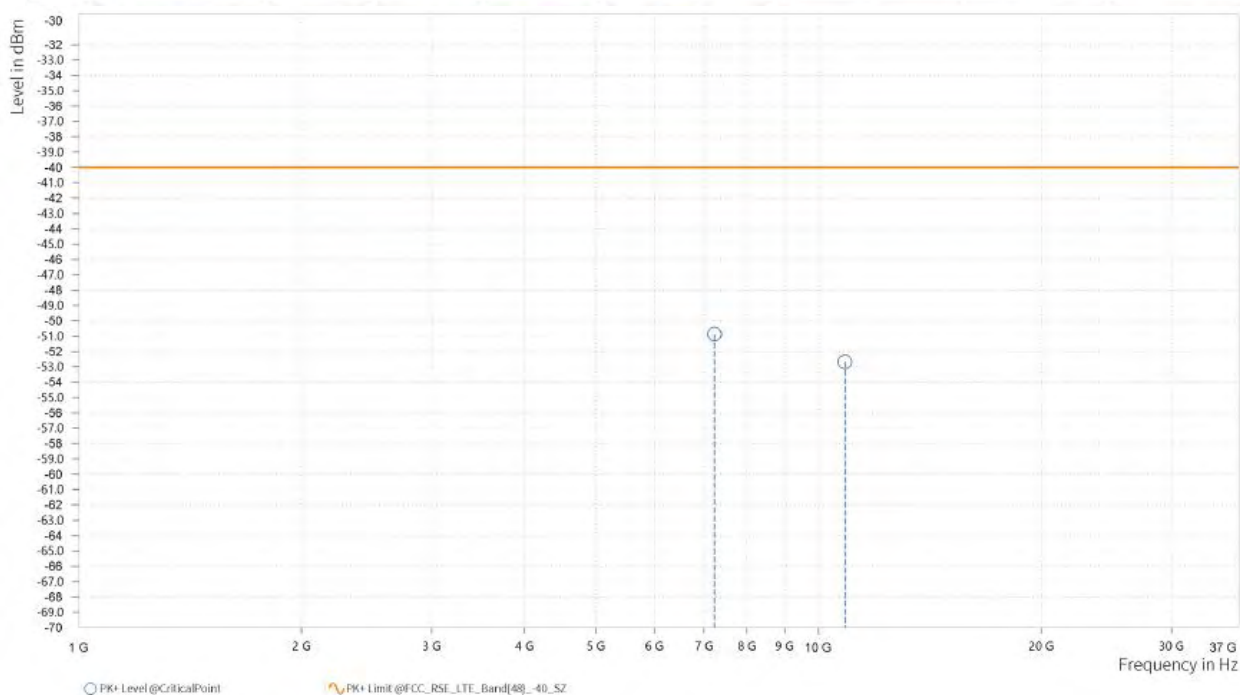
MODE	TX channel 55990	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,232.167	-50.99	-40.00	10.99	27.44	H	1	1
6	10,848.182	-55.16	-40.00	15.16	16.45	H	6.1	2



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: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,231.909	-50.87	-40.00	10.87	27.42	V	359	1
6	10,848.182	-52.67	-40.00	12.67	16.58	V	6.2	1

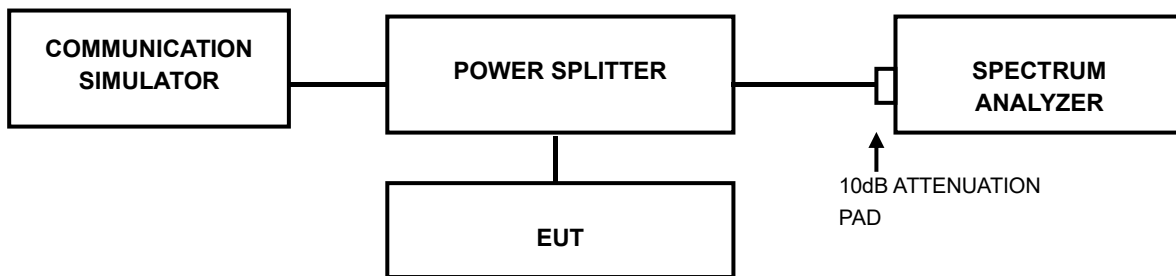


3.7 PEAK TO AVERAGE RATIO

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%.



Test Report No.: W7L-P22110036RF10

3.7.4 TEST RESULTS

Please Refer to Appendix Of this test report.



Test Report No.: W7L-P22110036RF10

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:

Shenzhen EMC/RF Lab:

Tel: +86-755-88696566

Fax: +86-755-88696577

Email: customerservice.sw@cn.bureauveritas.com

Web Site: www.adt.com.tw

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

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.

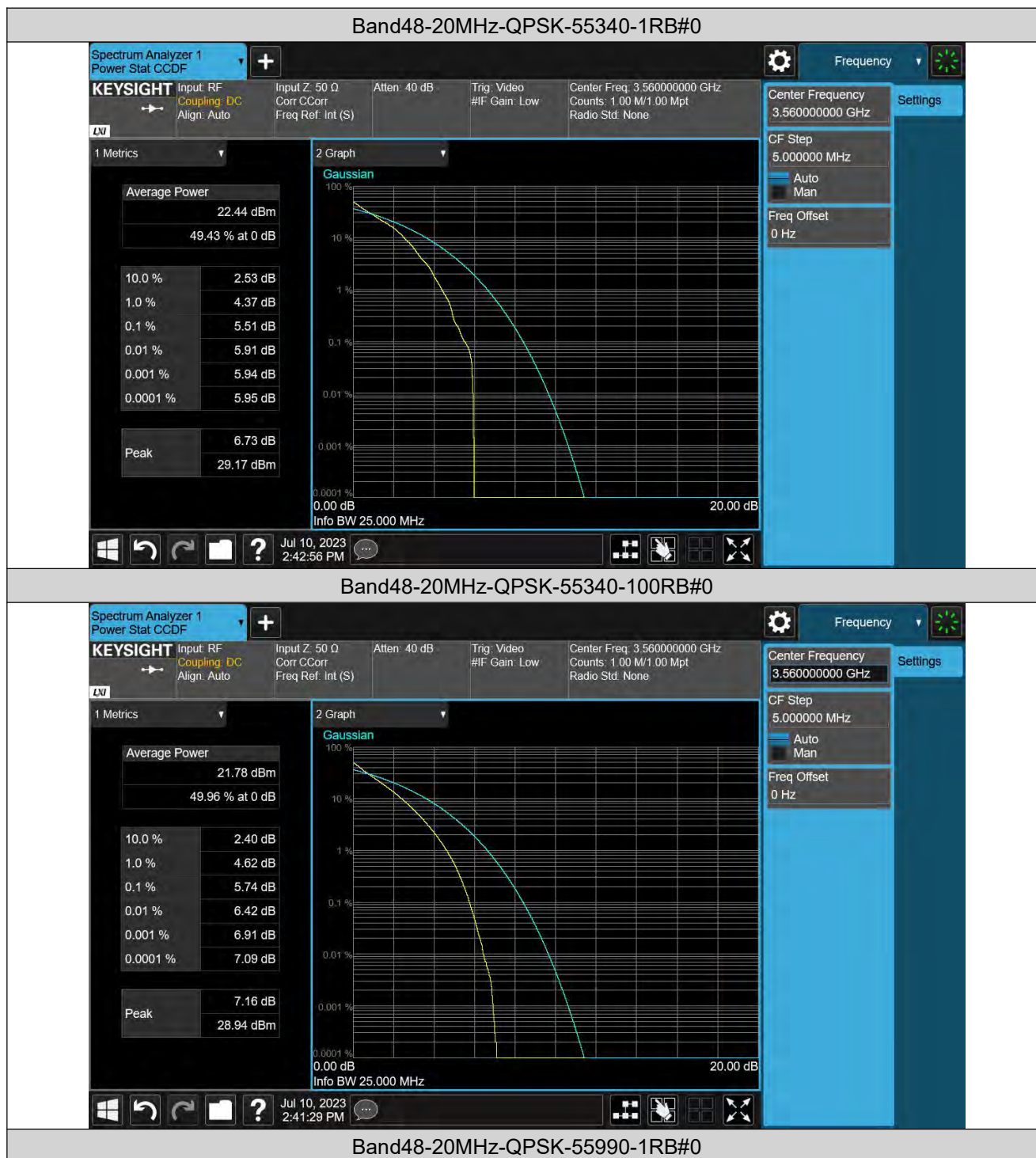
6 APPENDIX

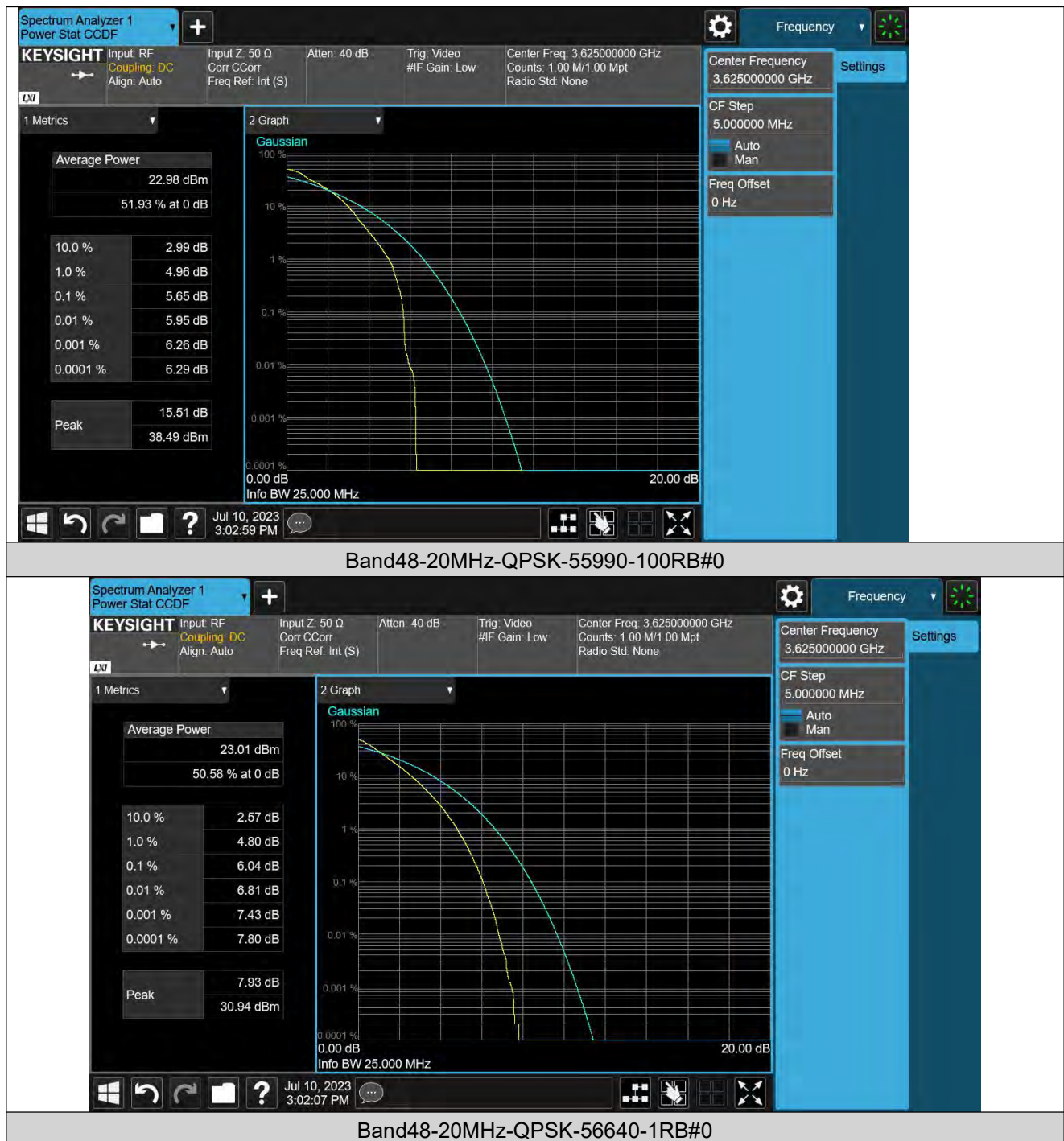
LTE BAND48 (INCLUDING LTE BAND42/43)

PEAK-TO-AVERAGE RATIO(CCDF) TEST RESULT

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band48	20MHz	QPSK	55340	1RB#0	5.51	13	PASS
Band48	20MHz	QPSK	55340	100RB#0	5.74	13	PASS
Band48	20MHz	QPSK	55990	1RB#0	5.65	13	PASS
Band48	20MHz	QPSK	55990	100RB#0	6.04	13	PASS
Band48	20MHz	QPSK	56640	1RB#0	4.90	13	PASS
Band48	20MHz	QPSK	56640	100RB#0	6.36	13	PASS
Band48	20MHz	16QAM	55340	1RB#0	6.43	13	PASS
Band48	20MHz	16QAM	55340	100RB#0	6.78	13	PASS
Band48	20MHz	16QAM	55990	1RB#0	6.20	13	PASS
Band48	20MHz	16QAM	55990	100RB#0	6.92	13	PASS
Band48	20MHz	16QAM	56640	1RB#0	5.98	13	PASS
Band48	20MHz	16QAM	56640	100RB#0	7.01	13	PASS
Band48	20MHz	64QAM	55340	1RB#0	6.36	13	PASS
Band48	20MHz	64QAM	55340	100RB#0	7.12	13	PASS
Band48	20MHz	64QAM	55990	1RB#0	6.83	13	PASS
Band48	20MHz	64QAM	55990	100RB#0	7.11	13	PASS
Band48	20MHz	64QAM	56640	1RB#0	7.15	13	PASS
Band48	20MHz	64QAM	56640	100RB#0	7.22	13	PASS

TEST GRAPHS







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



Band48-20MHz16QAM-55340-1RB#0



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



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



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



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



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



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



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



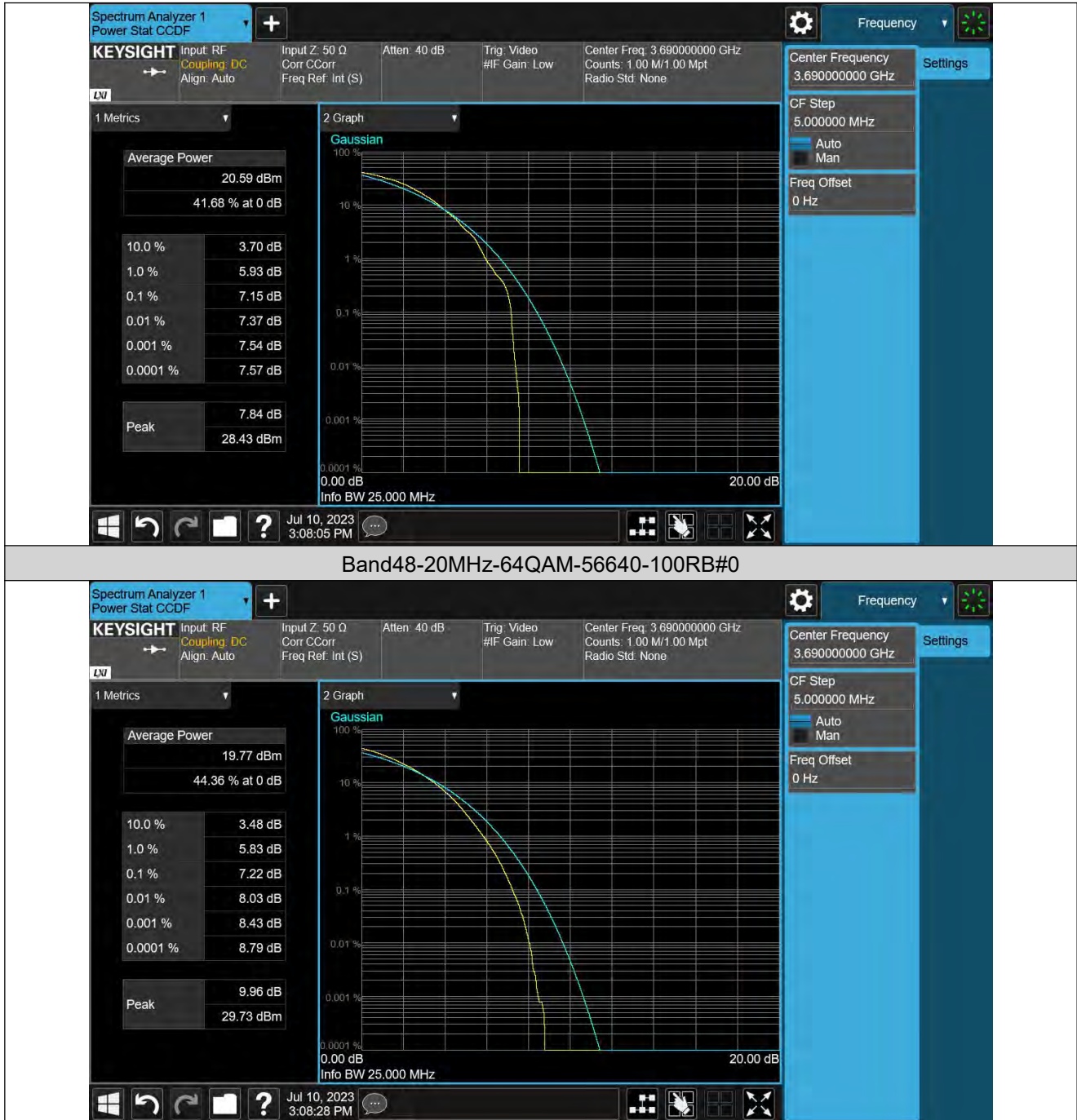
Band48-20MHz-64QAM-55990-1RB#0



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



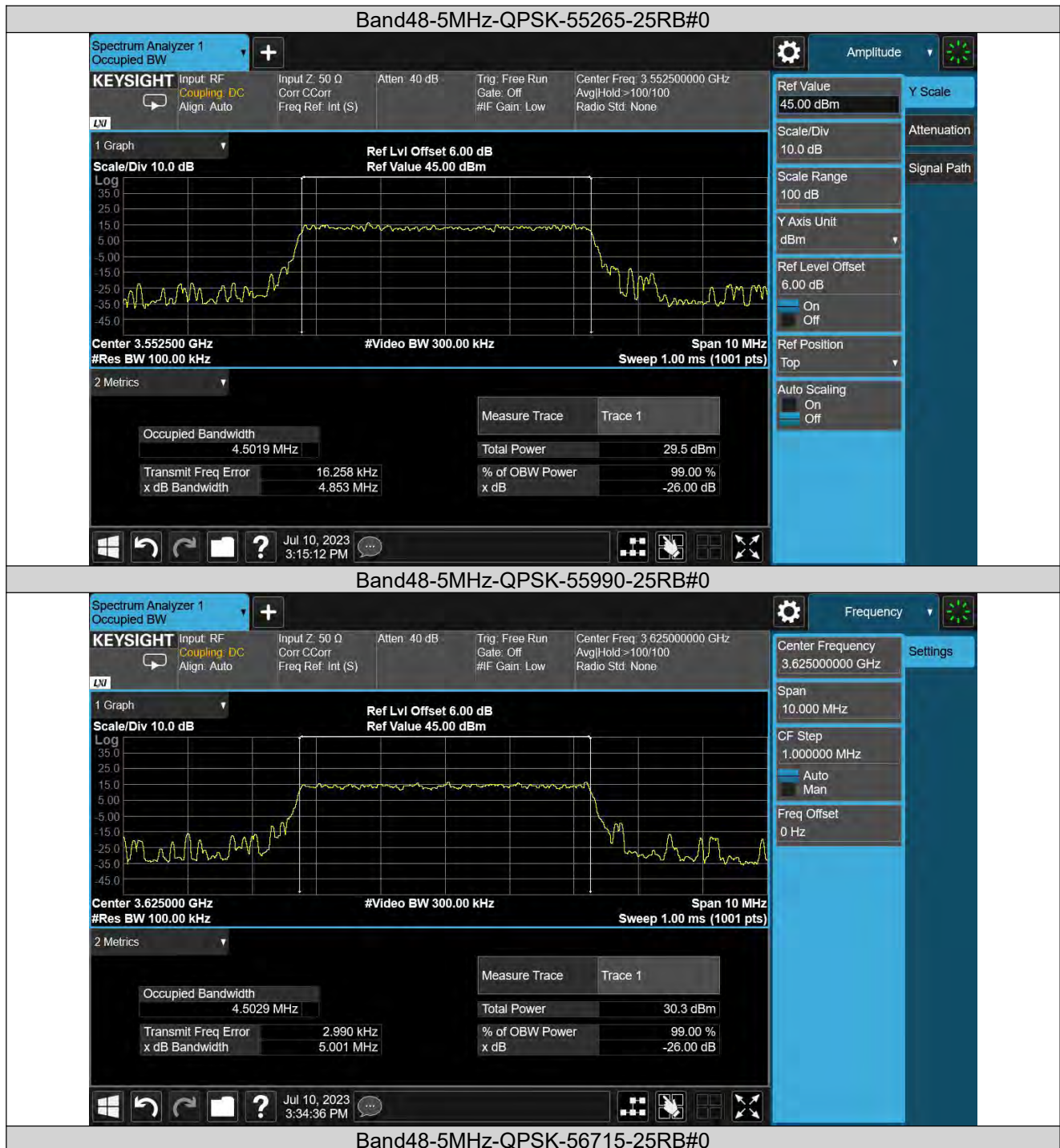
Band48-20MHz-64QAM-56640-1RB#0

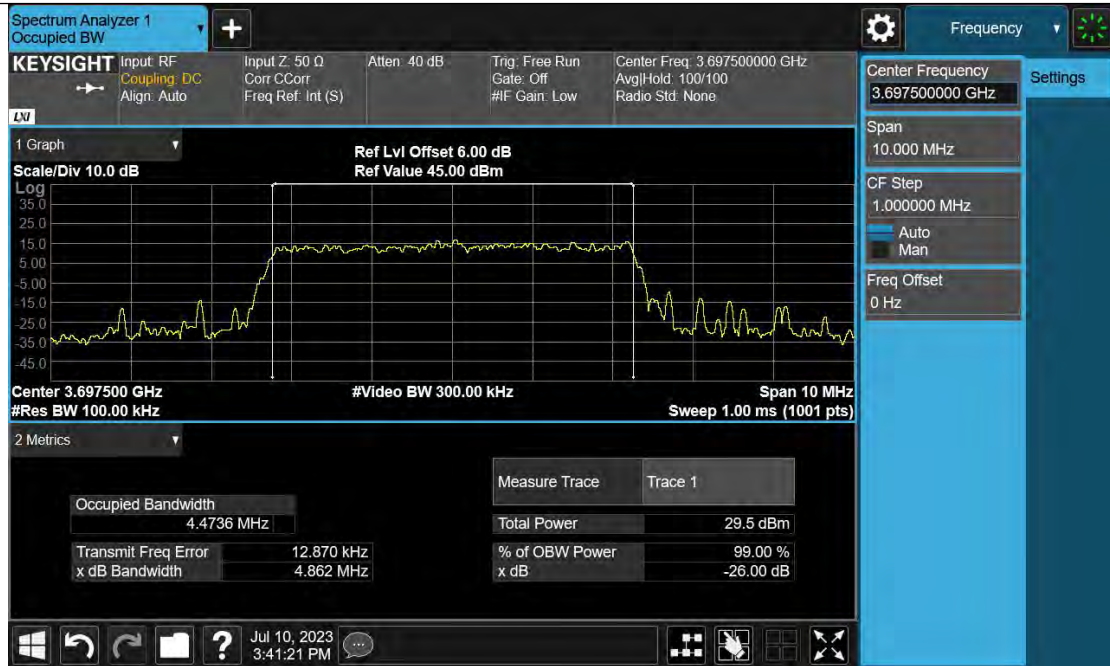


26DB BANDWIDTH AND OCCUPIED BANDWIDTH TEST RESULT

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band48	5MHz	QPSK	55265	25RB#0	4.5019	4.583	PASS
Band48	5MHz	QPSK	55990	25RB#0	4.5029	5.001	PASS
Band48	5MHz	QPSK	56715	25RB#0	4.4736	4.862	PASS
Band48	5MHz	16QAM	55265	25RB#0	4.4978	4.977	PASS
Band48	5MHz	16QAM	55990	25RB#0	4.4911	4.845	PASS
Band48	5MHz	16QAM	56715	25RB#0	4.4876	4.953	PASS
Band48	5MHz	64QAM	55265	25RB#0	4.4756	4.812	PASS
Band48	5MHz	64QAM	55990	25RB#0	4.5040	4.939	PASS
Band48	5MHz	64QAM	56715	25RB#0	4.5001	4.831	PASS
Band48	10MHz	QPSK	55290	50RB#0	8.9485	10.05	PASS
Band48	10MHz	QPSK	55990	50RB#0	8.9639	9.592	PASS
Band48	10MHz	QPSK	56690	50RB#0	8.9690	9.598	PASS
Band48	10MHz	16QAM	55290	50RB#0	8.9968	10.14	PASS
Band48	10MHz	16QAM	55990	50RB#0	8.9775	9.471	PASS
Band48	10MHz	16QAM	56690	50RB#0	8.9598	9.672	PASS
Band48	10MHz	64QAM	55290	50RB#0	8.9759	9.640	PASS
Band48	10MHz	64QAM	55990	50RB#0	8.9849	9.722	PASS
Band48	10MHz	64QAM	56690	50RB#0	8.9712	9.637	PASS
Band48	15MHz	QPSK	55315	75RB#0	13.448	14.68	PASS
Band48	15MHz	QPSK	55990	75RB#0	13.510	14.82	PASS
Band48	15MHz	QPSK	56665	75RB#0	13.447	15.24	PASS
Band48	15MHz	16QAM	55315	75RB#0	13.476	14.64	PASS
Band48	15MHz	16QAM	55990	75RB#0	13.464	14.44	PASS
Band48	15MHz	16QAM	56665	75RB#0	13.418	14.24	PASS
Band48	15MHz	64QAM	55315	75RB#0	13.459	14.40	PASS
Band48	15MHz	64QAM	55990	75RB#0	13.496	14.52	PASS
Band48	15MHz	64QAM	56665	75RB#0	13.507	14.32	PASS
Band48	20MHz	QPSK	55340	100RB#0	17.979	19.32	PASS
Band48	20MHz	QPSK	55990	100RB#0	17.909	19.48	PASS
Band48	20MHz	QPSK	56640	100RB#0	17.936	19.13	PASS
Band48	20MHz	16QAM	55340	100RB#0	17.891	19.25	PASS
Band48	20MHz	16QAM	55990	100RB#0	17.933	18.90	PASS
Band48	20MHz	16QAM	56640	100RB#0	17.883	19.15	PASS
Band48	20MHz	64QAM	55340	100RB#0	17.976	19.56	PASS
Band48	20MHz	64QAM	55990	100RB#0	17.908	19.58	PASS
Band48	20MHz	64QAM	56640	100RB#0	17.920	19.01	PASS

TEST GRAPHS

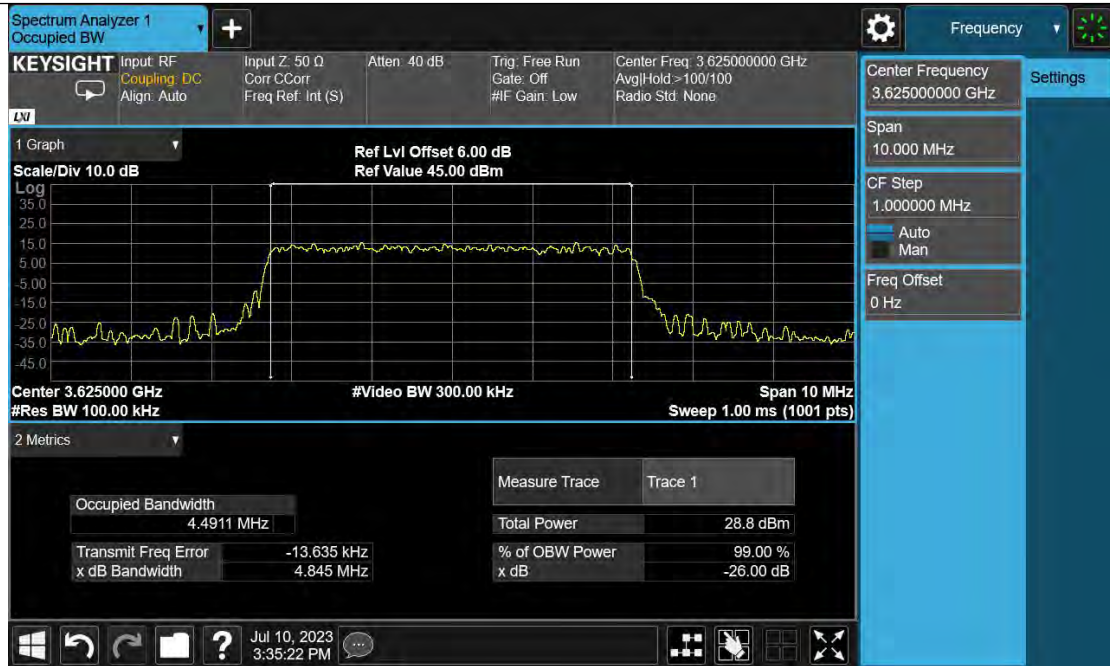




Band48-5MHz-16QAM-55265-25RB#0



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



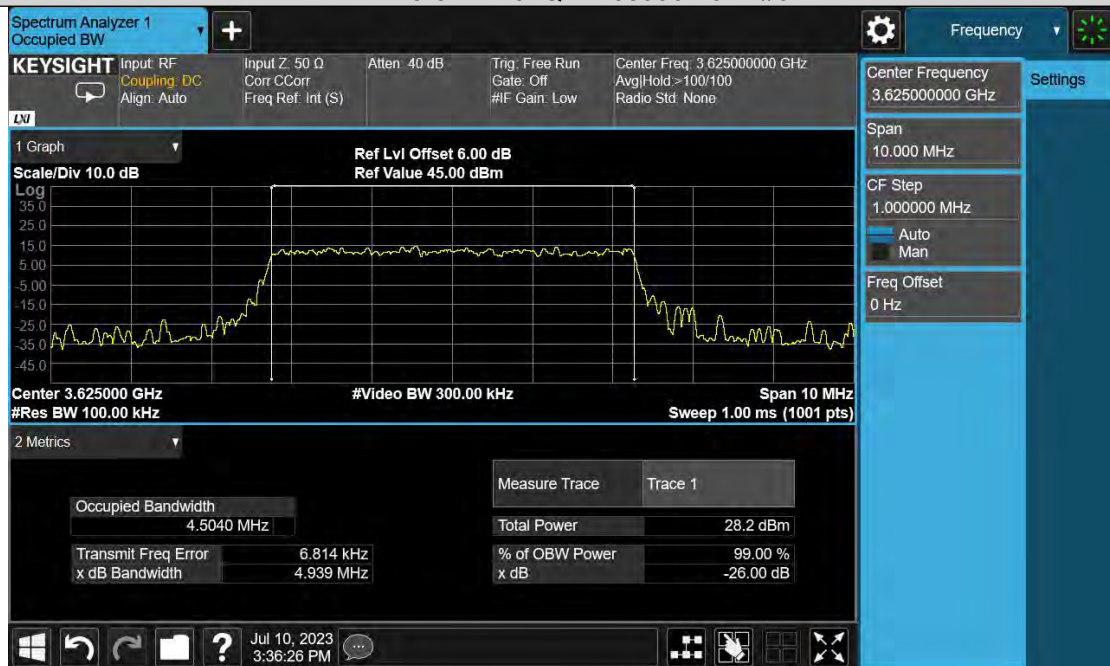
Band48-5MHz-16QAM-56715-25RB#0



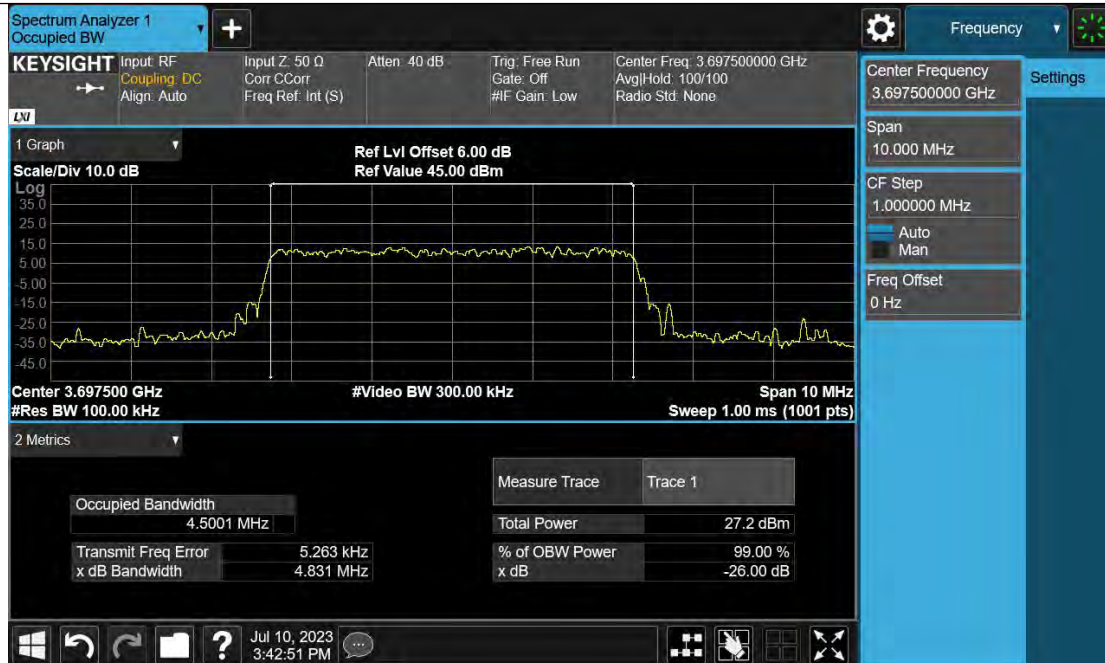
Band48-5MHz-64QAM-55265-25RB#0



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



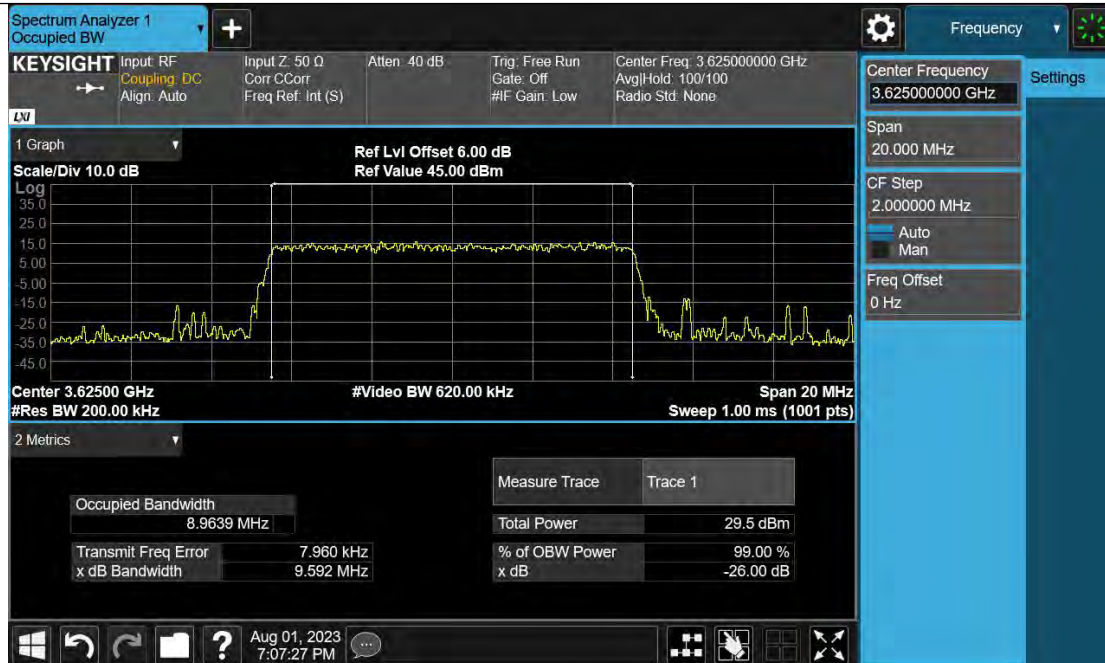
Band48-5MHz-64QAM-56715-25RB#0



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



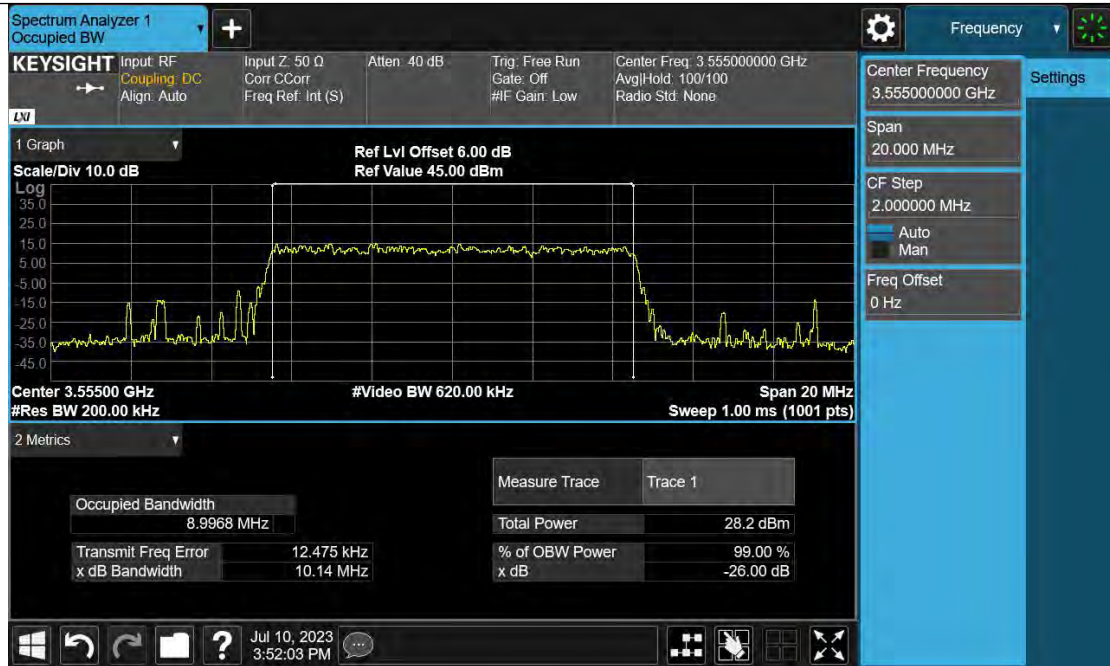
Band48-10MHz-QPSK-55990-50RB#0



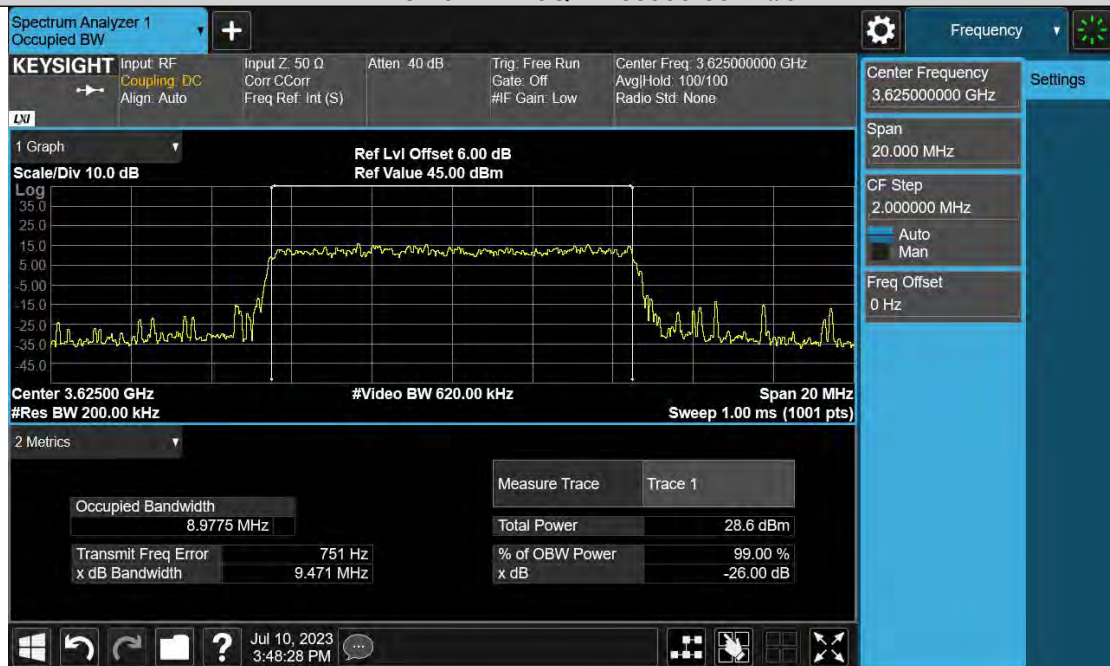
Band48-10MHz-QPSK-56690-50RB#0



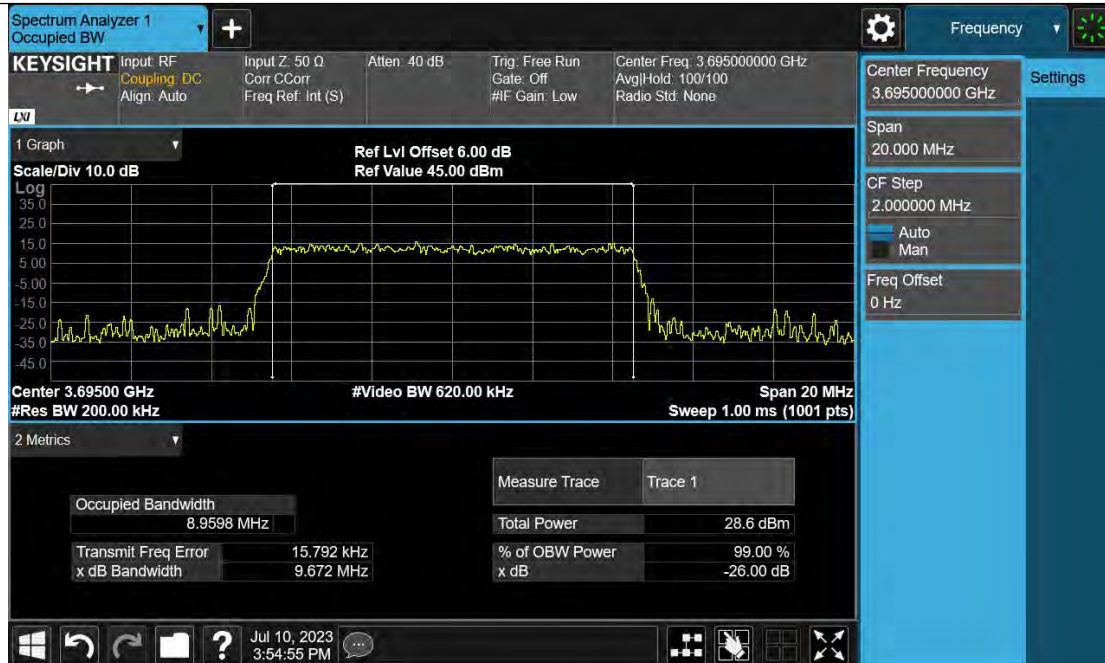
Band48-10MHz-16QAM-55290-50RB#0



Band48-10MHz-16QAM-55990-50RB#0



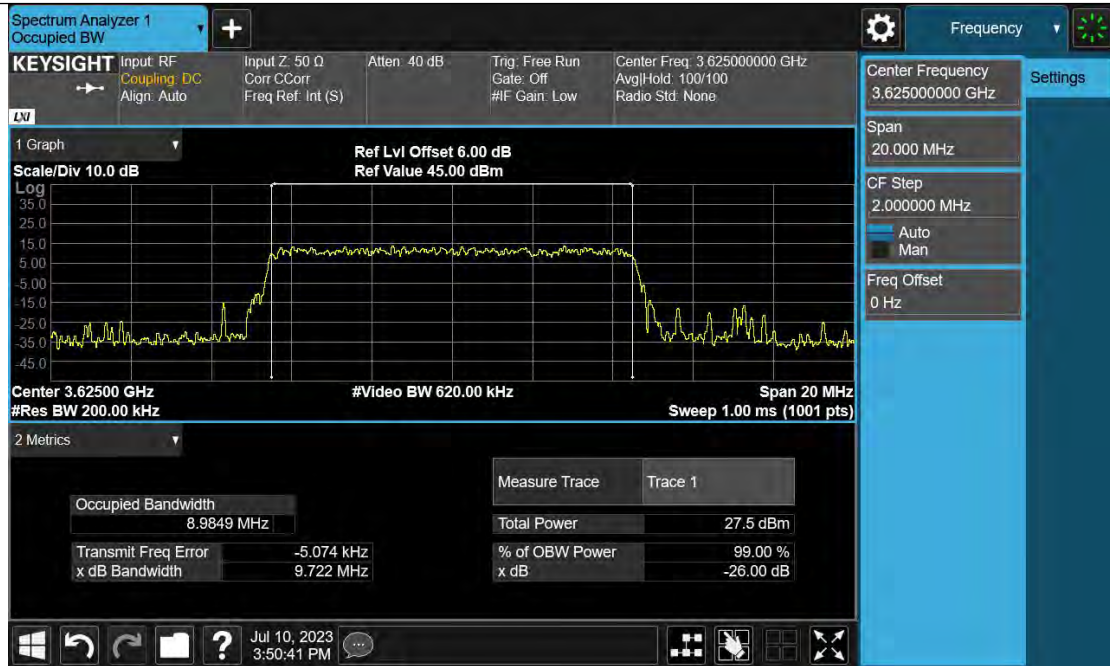
Band48-10MHz-16QAM-56690-50RB#0



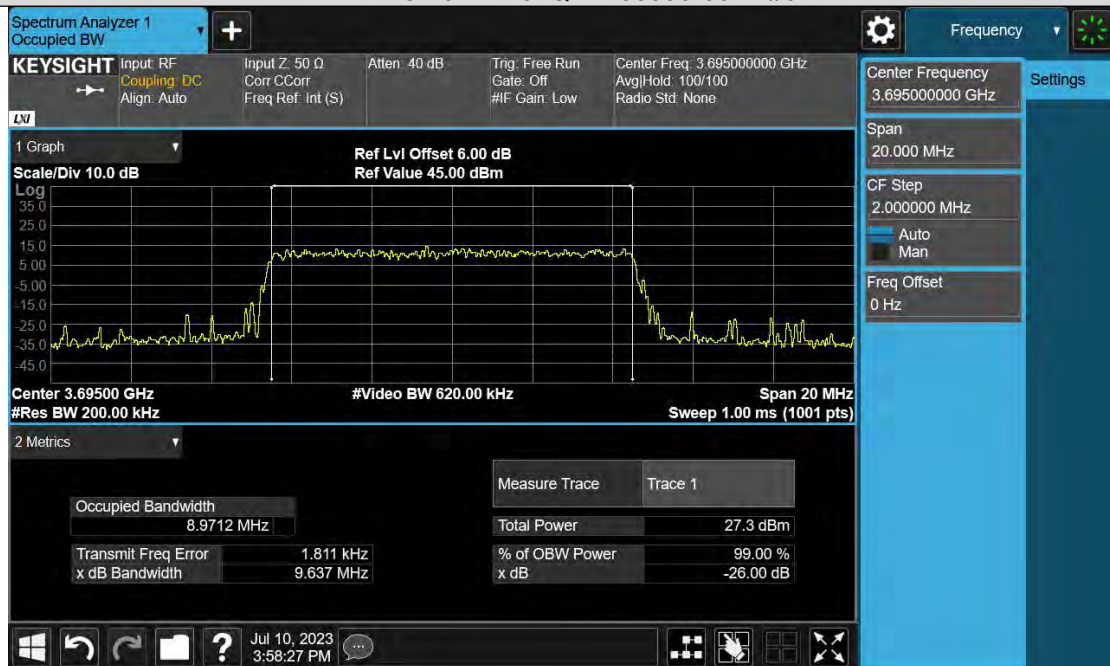
Band48-10MHz-64QAM-55290-50RB#0



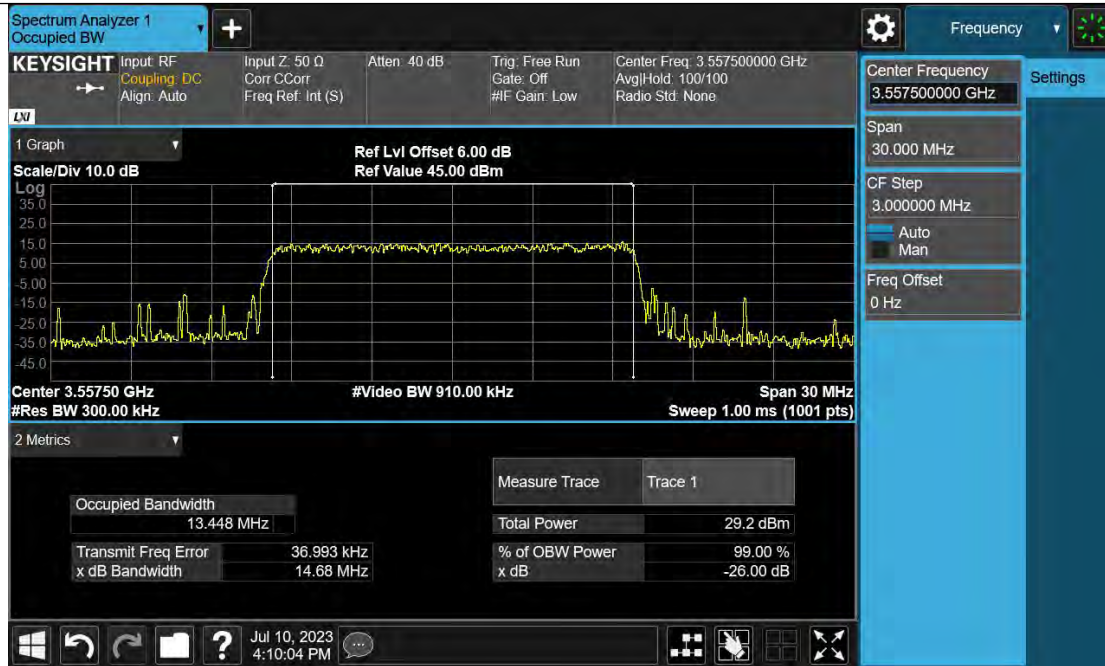
Band48-10MHz-64QAM-55990-50RB#0



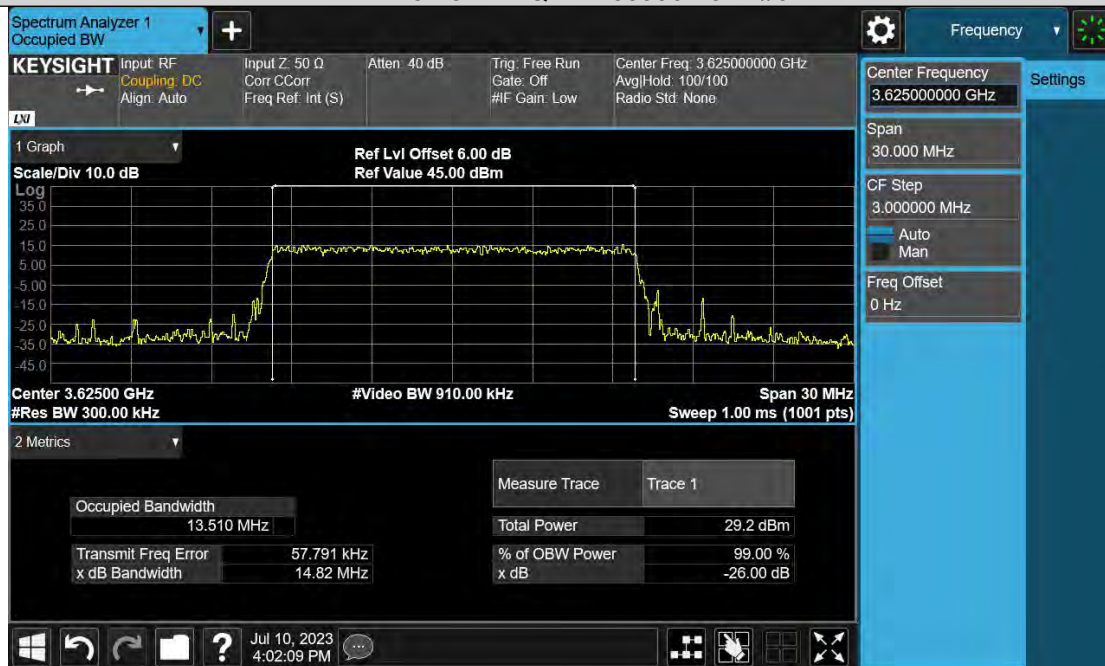
Band48-10MHz-64QAM-56690-50RB#0



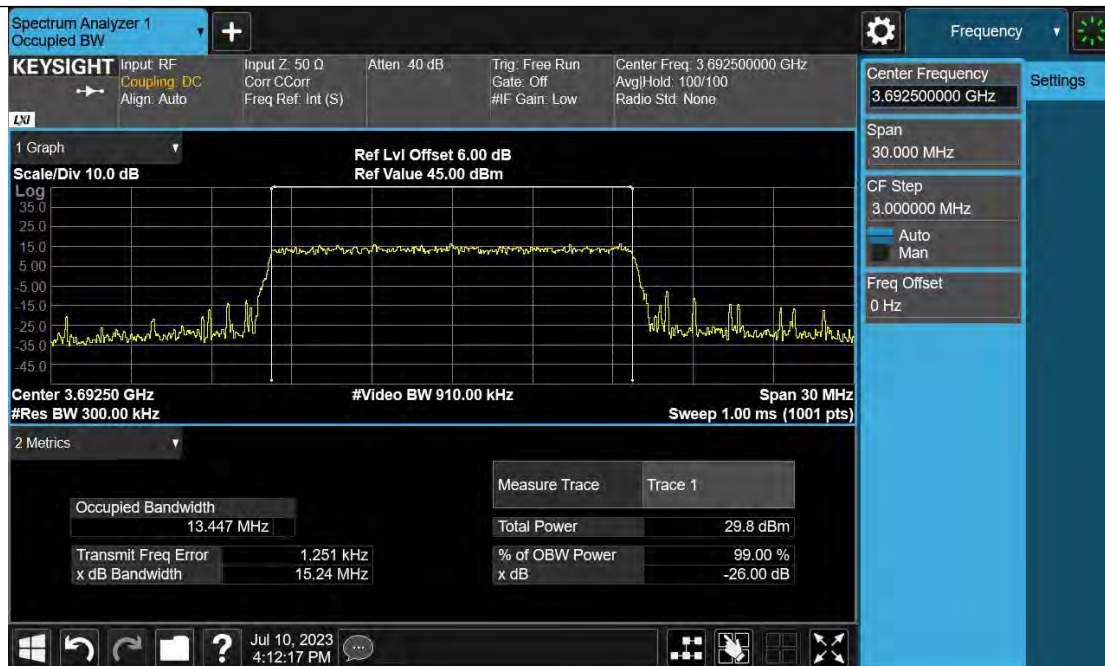
Band48-15MHz-QPSK-55315-75RB#0



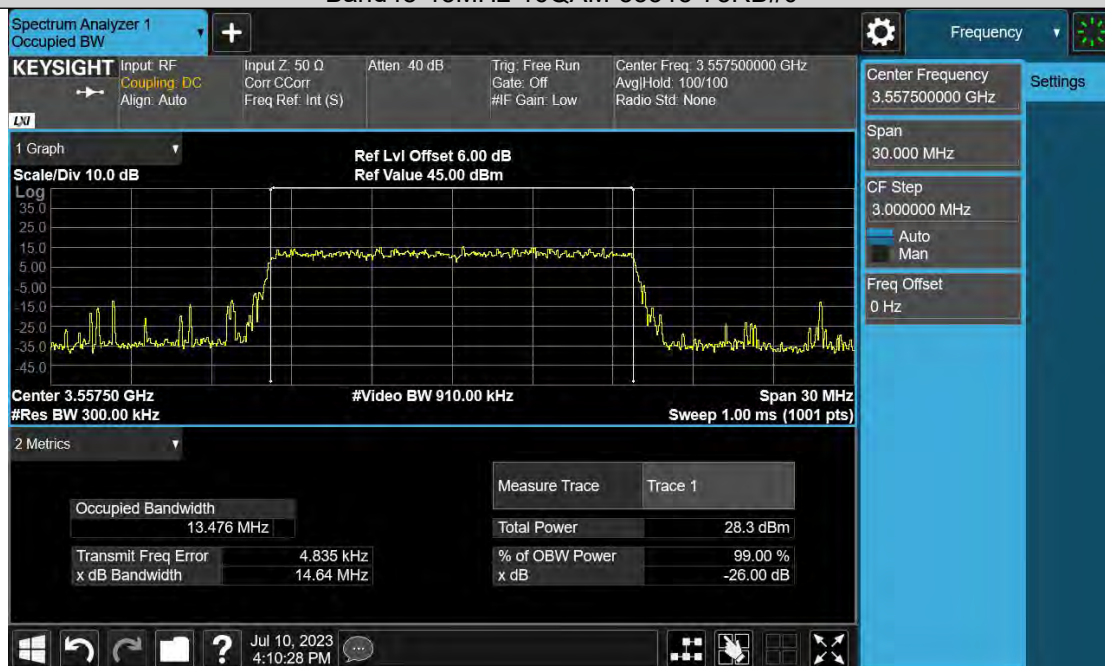
Band48-15MHz-QPSK-55990-75RB#0



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



Band48-15MHz-16QAM-55315-75RB#0

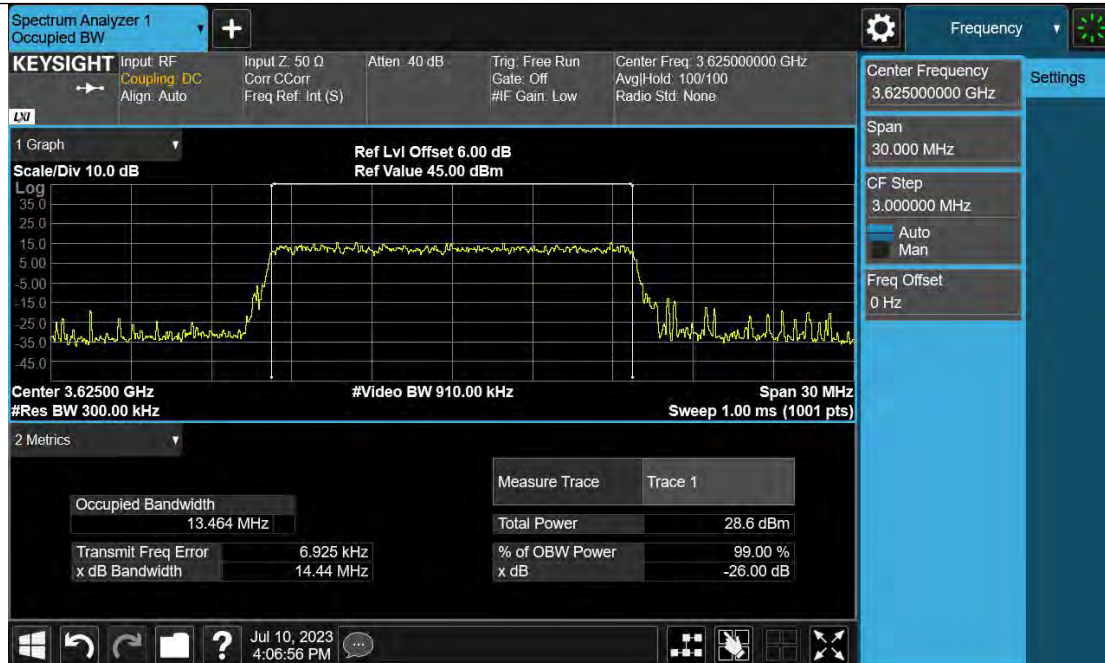


Band48-15MHz-16QAM-55990-75RB#0

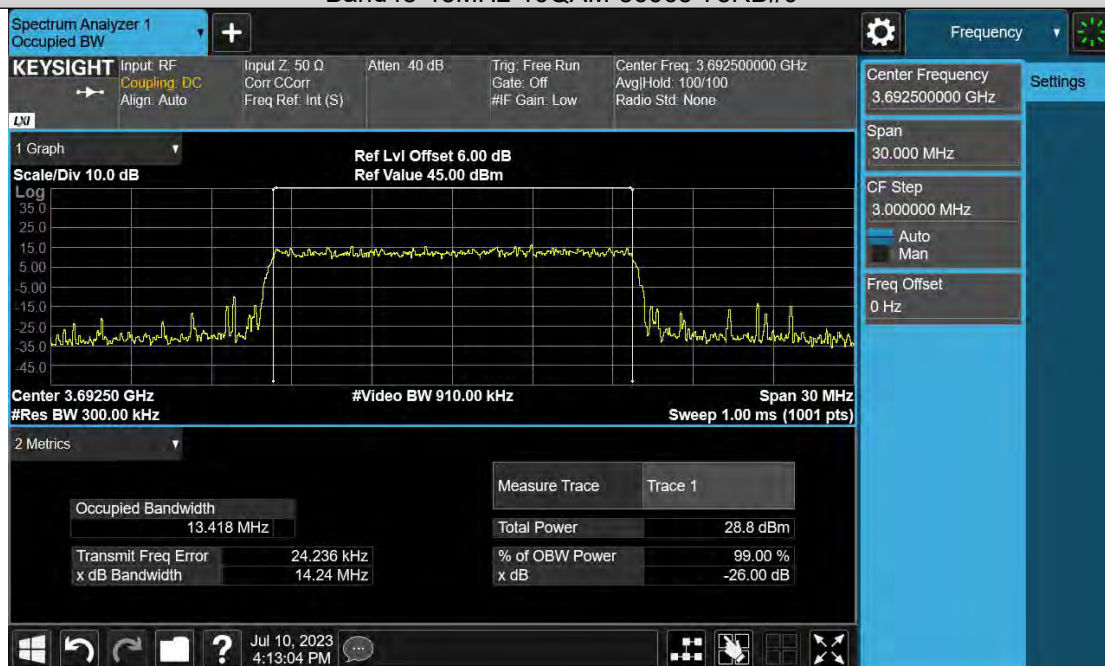


BUREAU
VERITAS

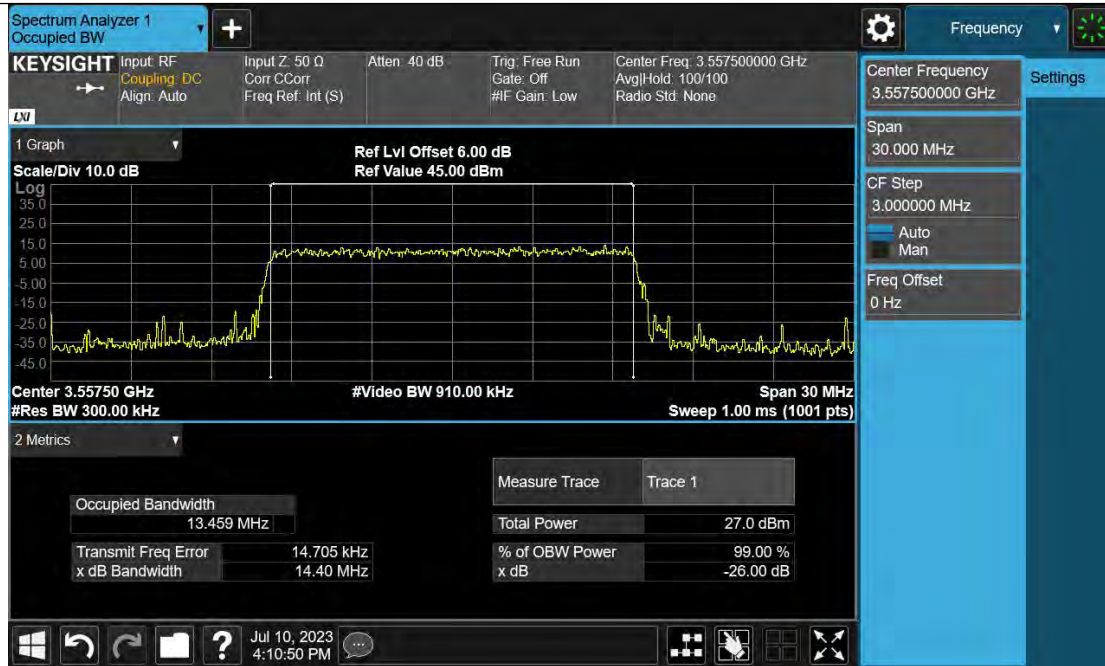
Test Report No.: W7L-P22110036RF10



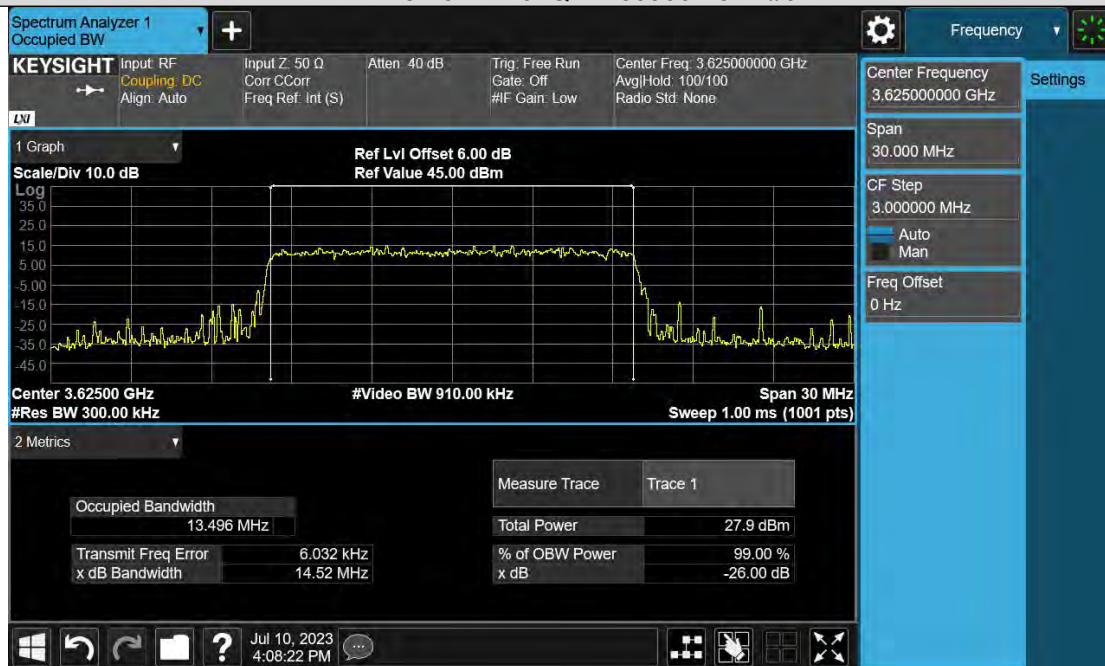
Band48-15MHz-16QAM-56665-75RB#0



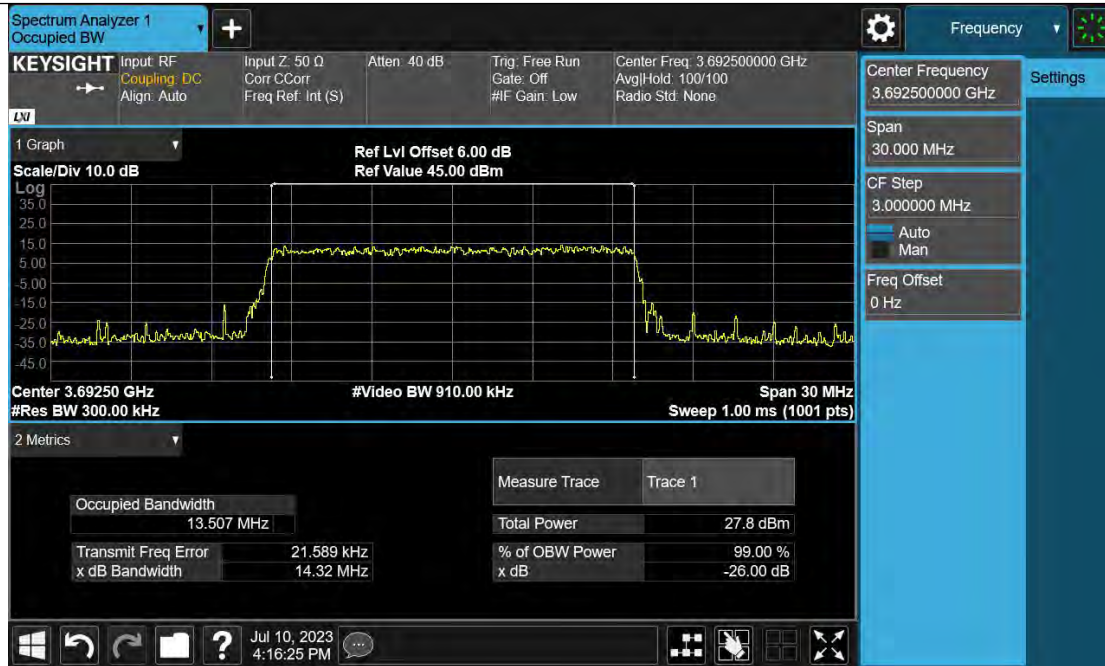
Band48-15MHz-64QAM-55315-75RB#0



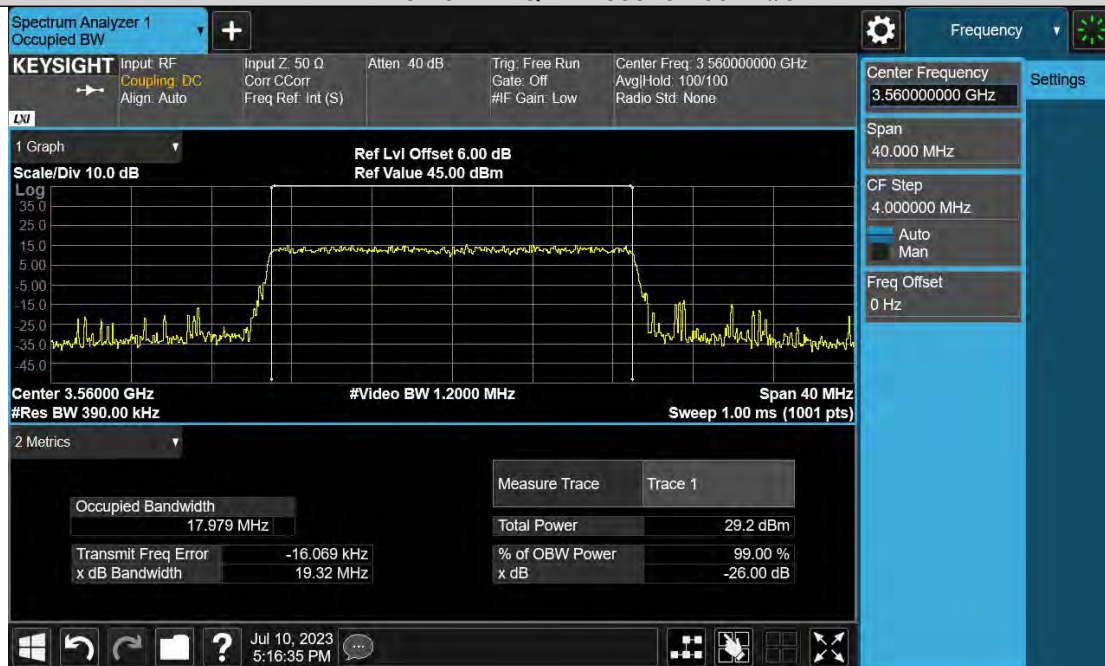
Band48-15MHz-64QAM-55990-75RB#0



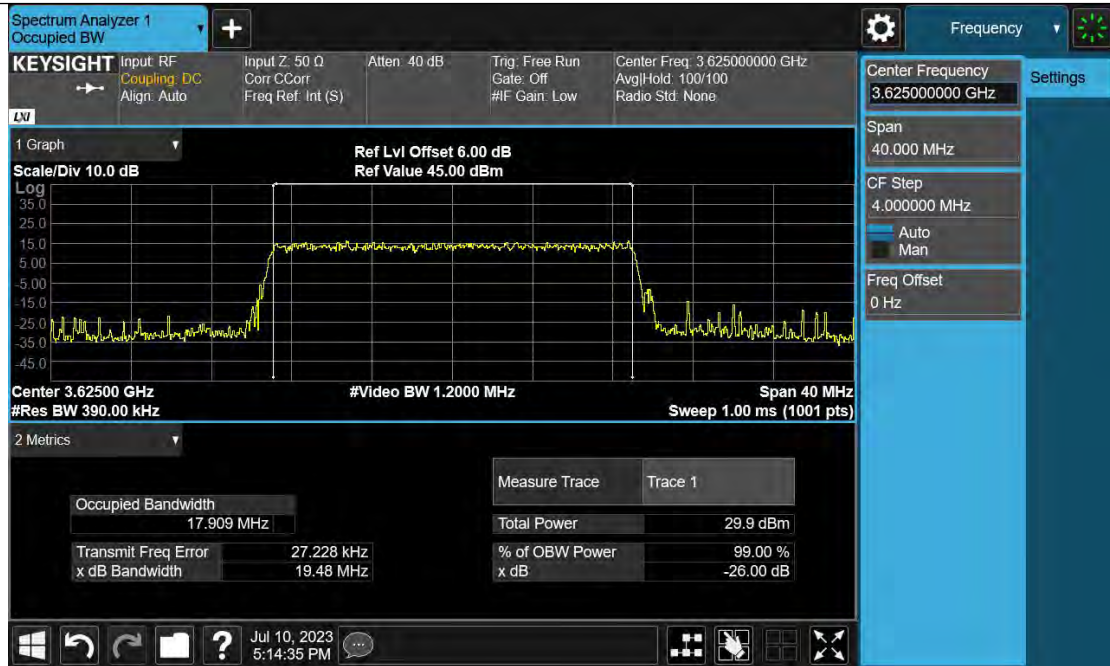
Band48-15MHz-64QAM-56665-75RB#0



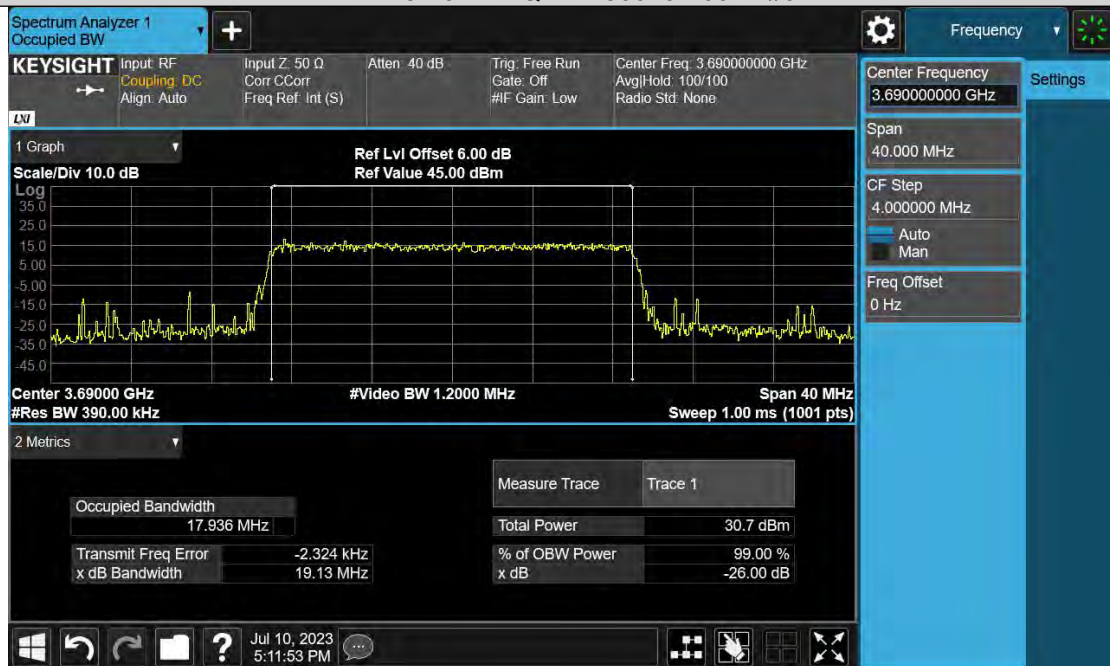
Band48-20MHz-QPSK-55340-100RB#0



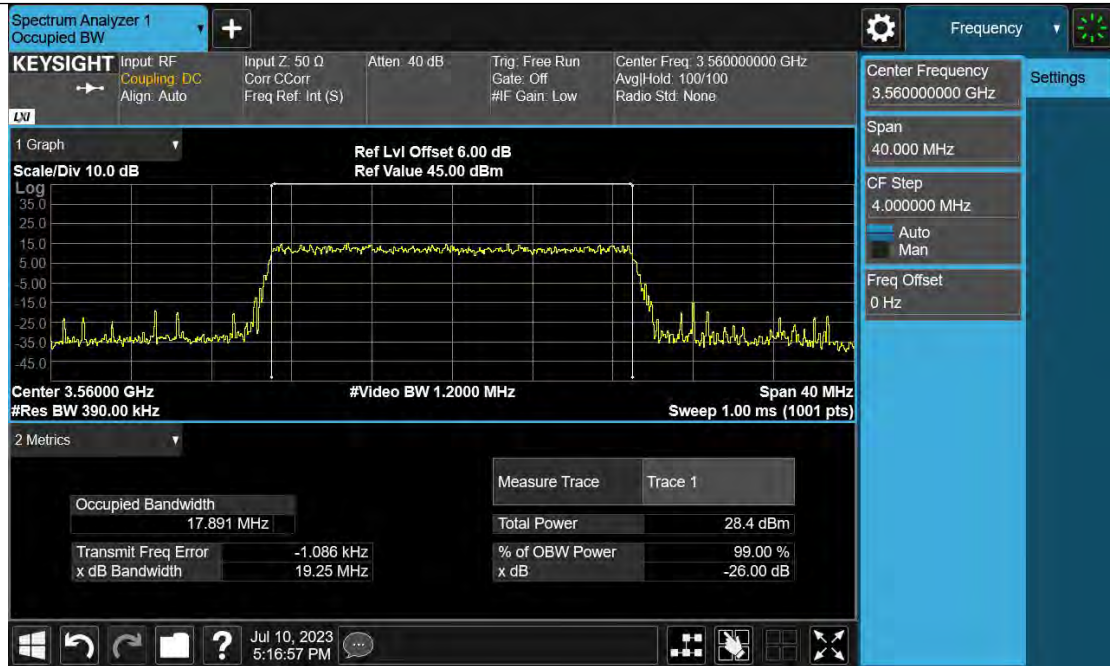
Band48-20MHz-QPSK-55990-100RB#0



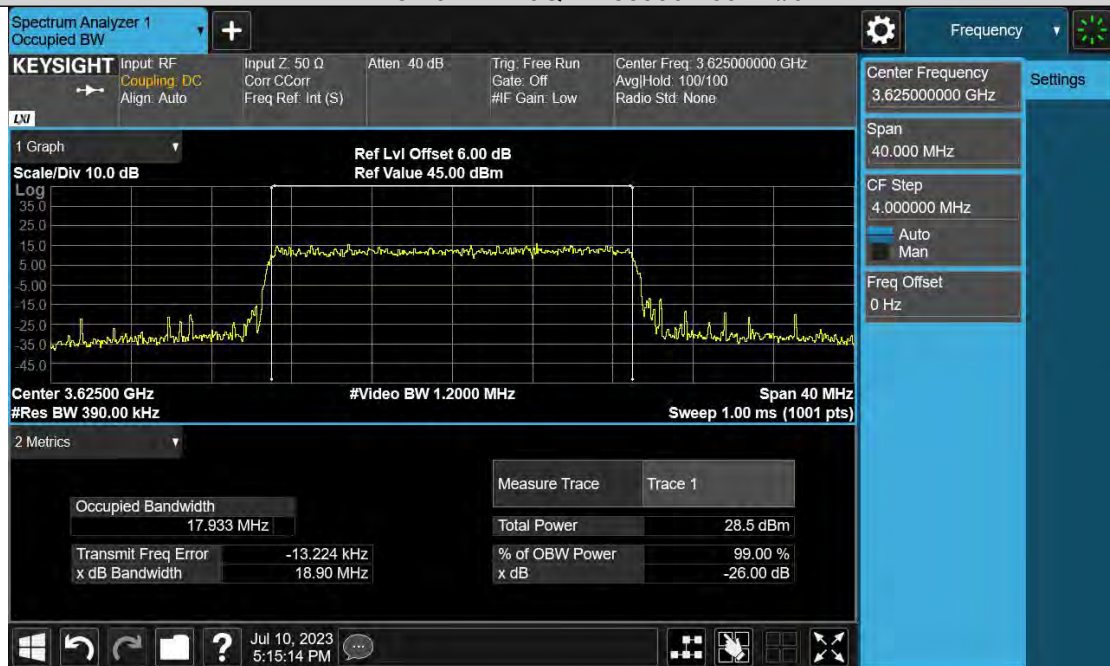
Band48-20MHz-QPSK-56640-100RB#0



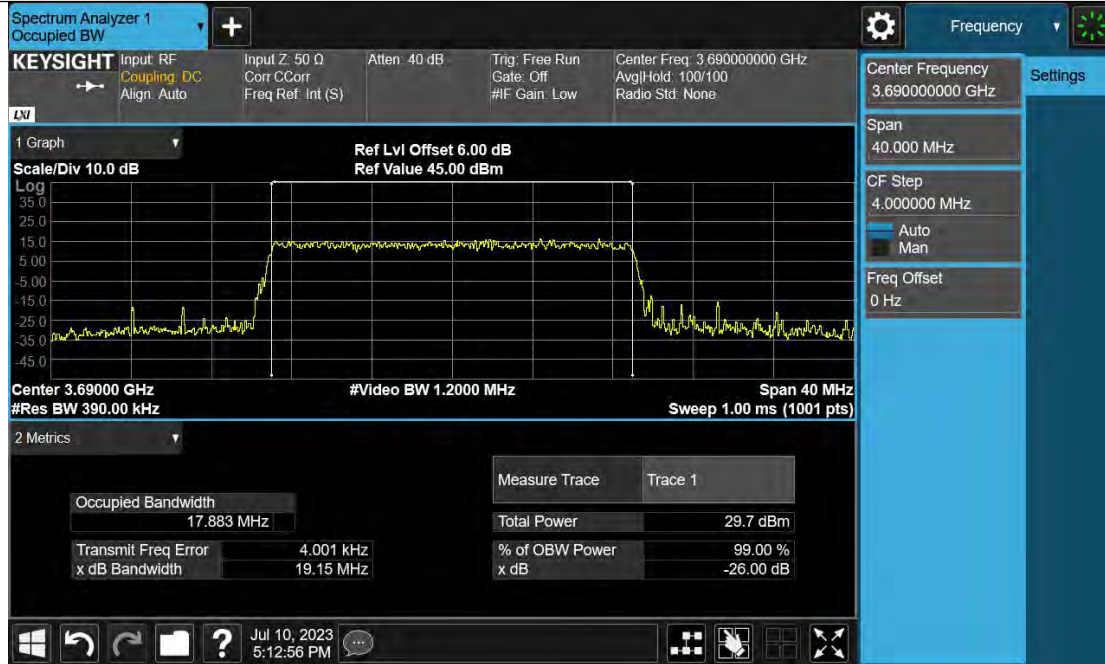
Band48-20MHz-16QAM-55340-100RB#0



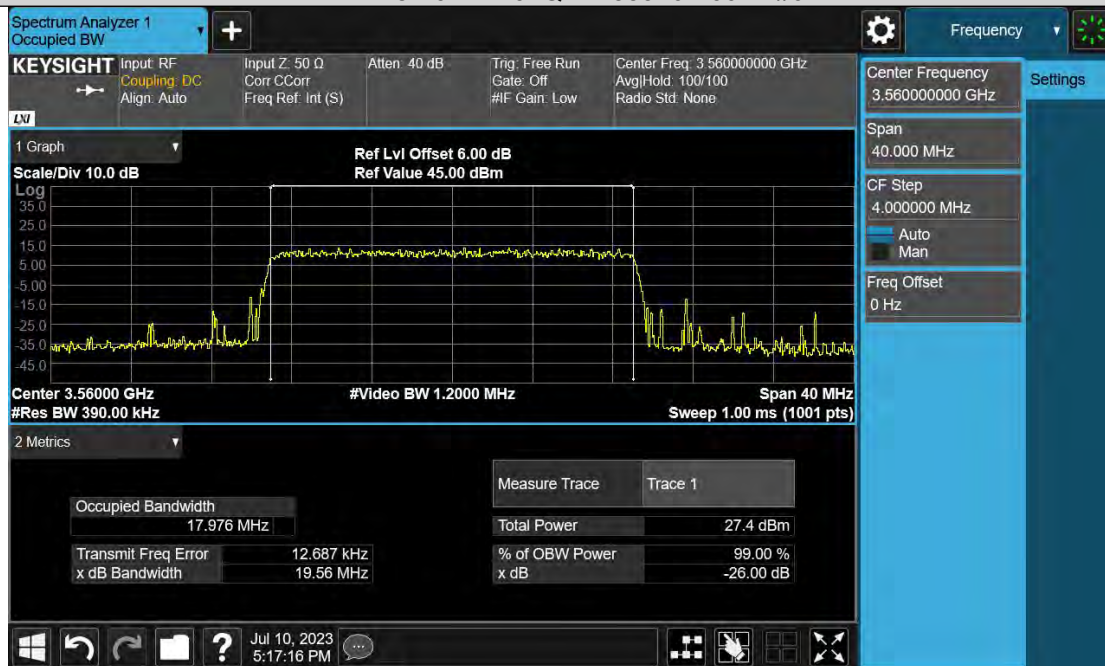
Band48-20MHz-16QAM-55990-100RB#0



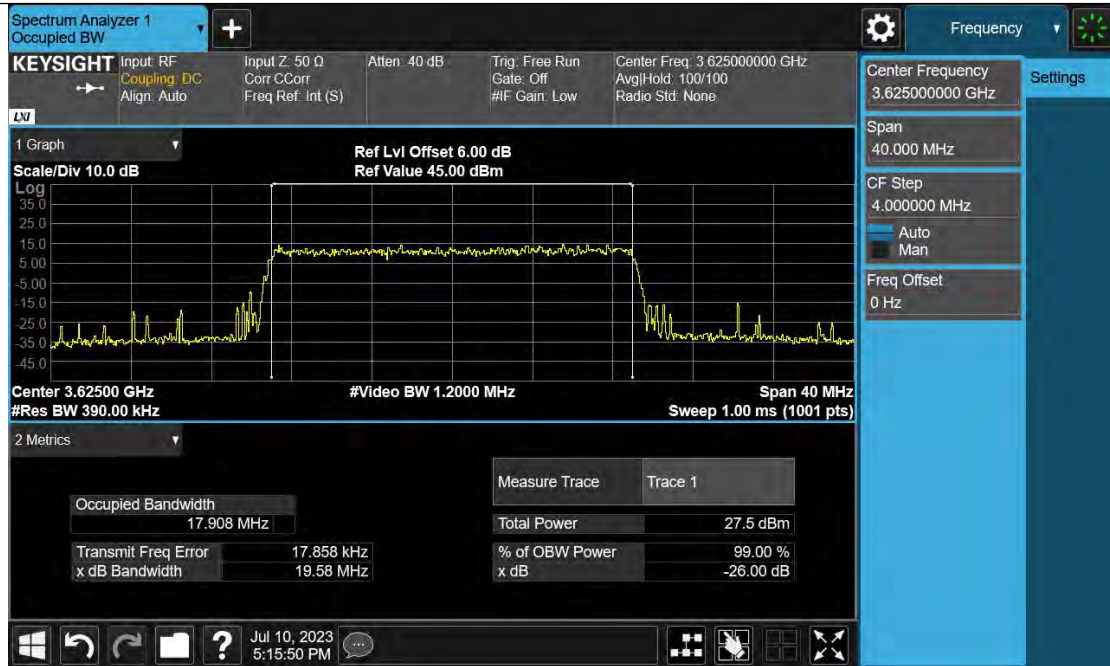
Band48-20MHz-16QAM-56640-100RB#0



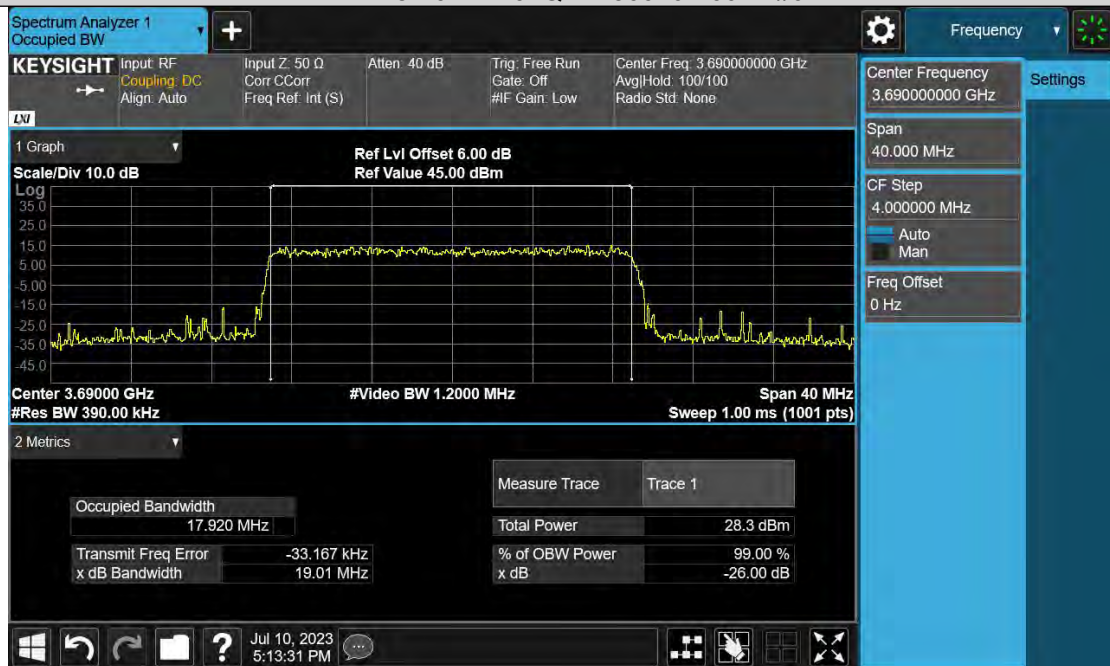
Band48-20MHz-64QAM-55340-100RB#0



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



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



BAND EDGE TEST RESULT

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band48	5MHz	QPSK	55265	1RB#0	-20.42	PASS
Band48	5MHz	QPSK	55265	25RB#0	-29.67	PASS
Band48	5MHz	QPSK	56715	1RB#24	-18.47	PASS
Band48	5MHz	QPSK	56715	25RB#0	-25.95	PASS
Band48	5MHz	16QAM	55265	1RB#0	-20.71	PASS
Band48	5MHz	16QAM	55265	25RB#0	-30.99	PASS
Band48	5MHz	16QAM	56715	1RB#24	-18.86	PASS
Band48	5MHz	16QAM	56715	25RB#0	-27.46	PASS
Band48	5MHz	64QAM	55265	1RB#0	-22.16	PASS
Band48	5MHz	64QAM	55265	25RB#0	-33.26	PASS
Band48	5MHz	64QAM	56715	1RB#24	-21.59	PASS
Band48	5MHz	64QAM	56715	25RB#0	-28.92	PASS
Band48	10MHz	QPSK	55290	1RB#0	-28.08	PASS
Band48	10MHz	QPSK	55290	50RB#0	-29.95	PASS
Band48	10MHz	QPSK	56690	1RB#49	-27.36	PASS
Band48	10MHz	QPSK	56690	50RB#0	-29.18	PASS
Band48	10MHz	16QAM	55290	1RB#0	-28.87	PASS
Band48	10MHz	16QAM	55290	50RB#0	-31.96	PASS
Band48	10MHz	16QAM	56690	1RB#49	-26.96	PASS
Band48	10MHz	16QAM	56690	50RB#0	-34.76	PASS
Band48	10MHz	64QAM	55290	1RB#0	-30.19	PASS
Band48	10MHz	64QAM	55290	50RB#0	-36.83	PASS
Band48	10MHz	64QAM	56690	1RB#49	-30.14	PASS
Band48	10MHz	64QAM	56690	50RB#0	-28.54	PASS
Band48	15MHz	QPSK	55315	1RB#0	-30.79	PASS
Band48	15MHz	QPSK	55315	75RB#0	-31.96	PASS
Band48	15MHz	QPSK	56665	1RB#74	-30.16	PASS
Band48	15MHz	QPSK	56665	75RB#0	-31.00	PASS
Band48	15MHz	16QAM	55315	1RB#0	-31.38	PASS
Band48	15MHz	16QAM	55315	75RB#0	-34.40	PASS
Band48	15MHz	16QAM	56665	1RB#74	-31.49	PASS
Band48	15MHz	16QAM	56665	75RB#0	-31.57	PASS
Band48	15MHz	64QAM	55315	1RB#0	-32.89	PASS
Band48	15MHz	64QAM	55315	75RB#0	-35.24	PASS
Band48	15MHz	64QAM	56665	1RB#74	-31.95	PASS
Band48	15MHz	64QAM	56665	75RB#0	-32.96	PASS
Band48	20MHz	QPSK	55340	1RB#0	-35.63	PASS
Band48	20MHz	QPSK	55340	100RB#0	-32.37	PASS
Band48	20MHz	QPSK	56640	1RB#99	-35.06	PASS
Band48	20MHz	QPSK	56640	100RB#0	-32.60	PASS
Band48	20MHz	16QAM	55340	1RB#0	-35.63	PASS
Band48	20MHz	16QAM	55340	100RB#0	-34.59	PASS
Band48	20MHz	16QAM	56640	1RB#99	-35.20	PASS
Band48	20MHz	16QAM	56640	100RB#0	-33.56	PASS

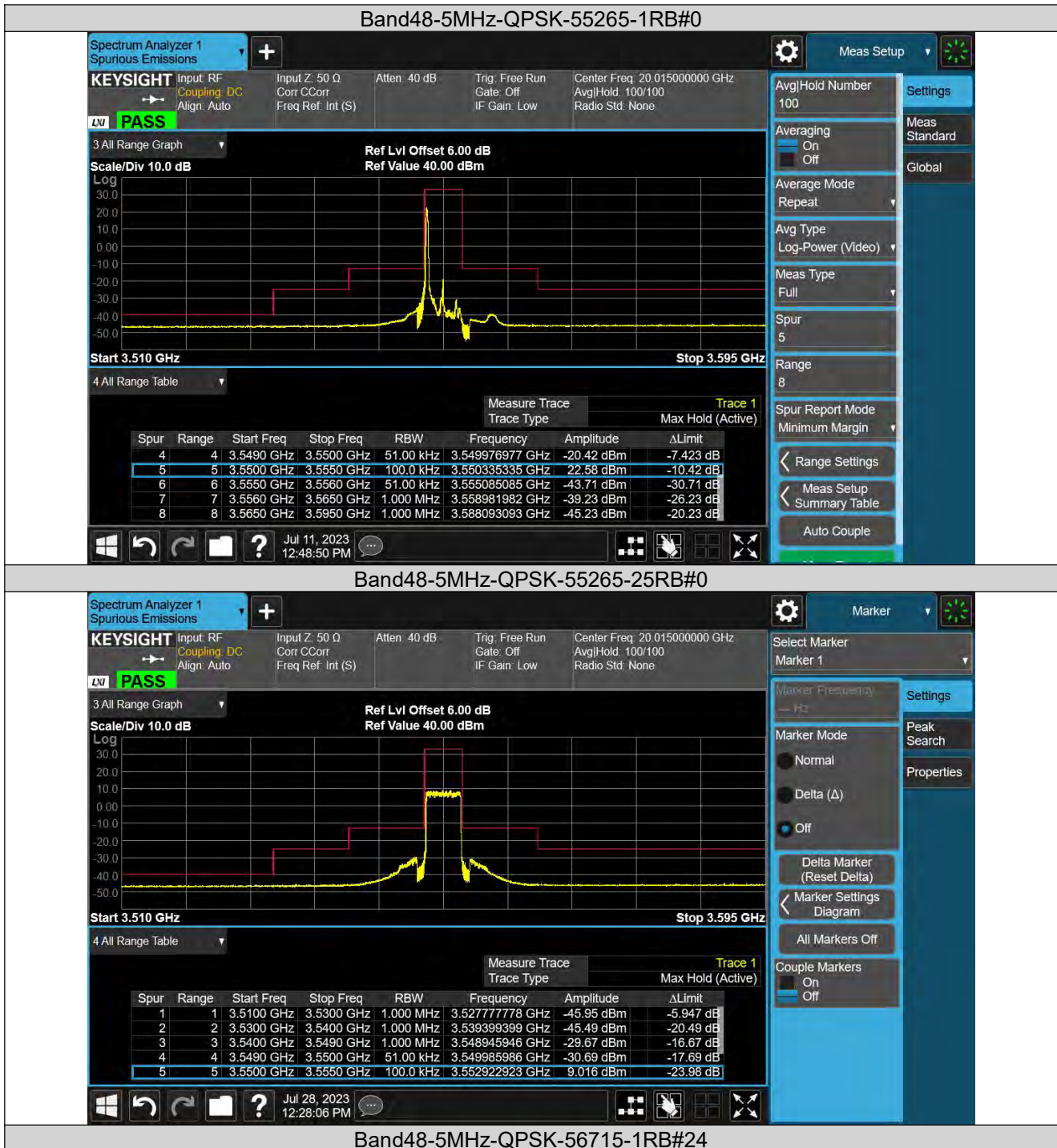


BUREAU
VERITAS

Test Report No.: W7L-P22110036RF10

Band48	20MHz	64QAM	55340	1RB#0	-37.12	PASS
Band48	20MHz	64QAM	55340	100RB#0	-36.82	PASS
Band48	20MHz	64QAM	56640	1RB#99	-36.01	PASS
Band48	20MHz	64QAM	56640	100RB#0	-34.13	PASS

TEST GRAPHS



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

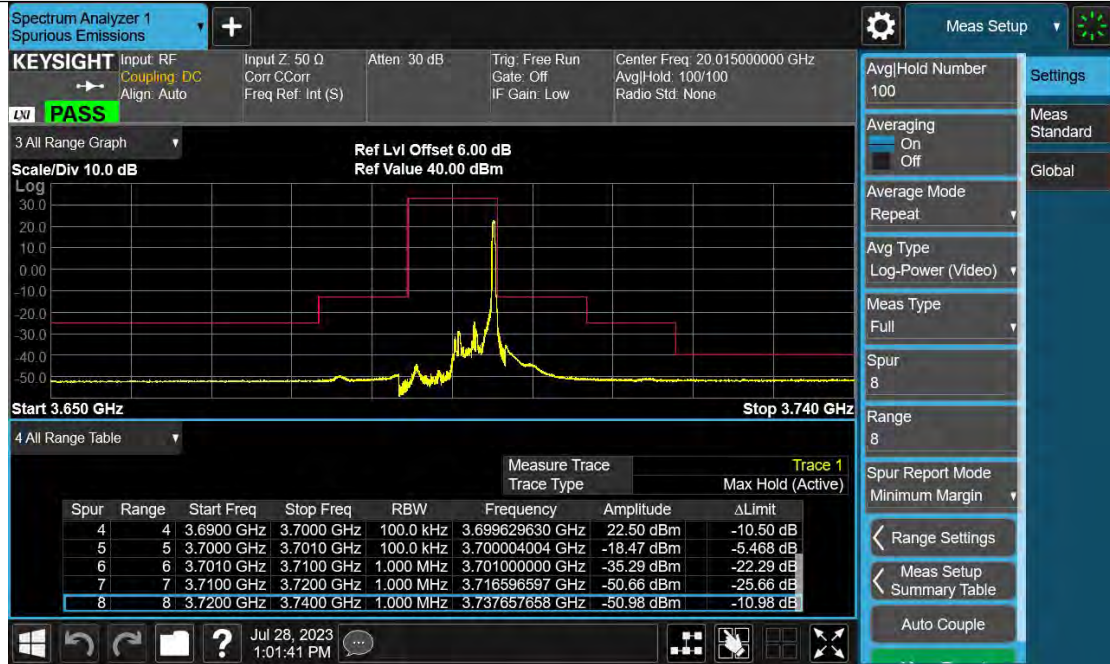
No.B102, Dazu Chuangxin Mansion, North of Beihuan
Avenue, North Area, Hi-Tech Industrial Park, Nanshan
District, Shenzhen, Guangdong, China

Tel: +86 755 8869 6566
Fax: +86 755 8869 6577
Email: customerservice.sw@buree

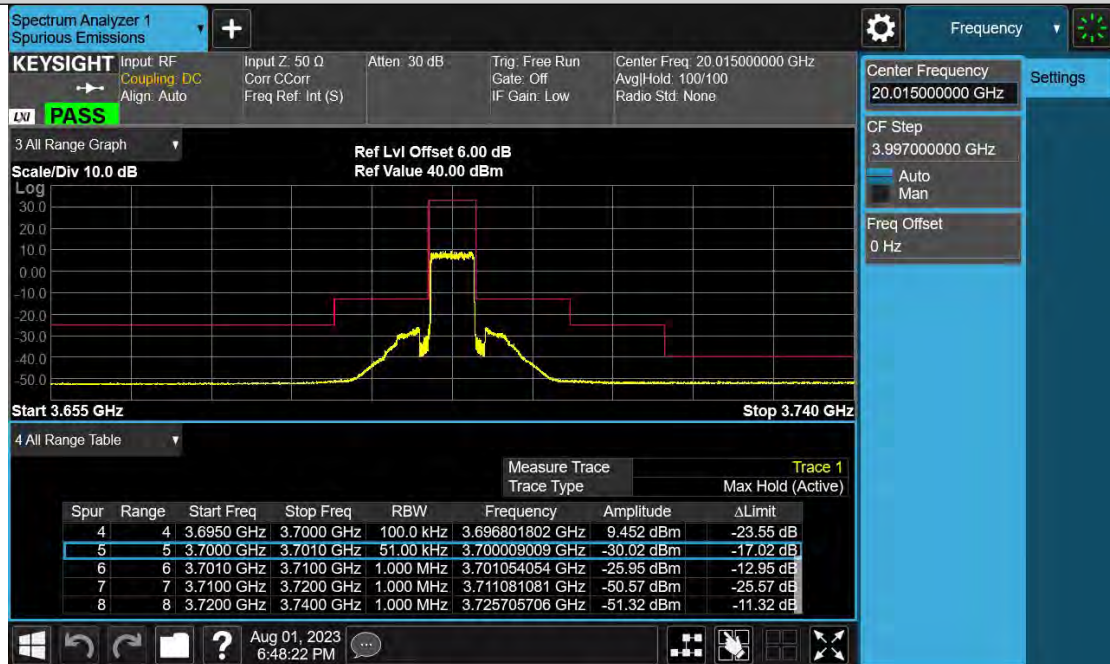


BUREAU
VERITAS

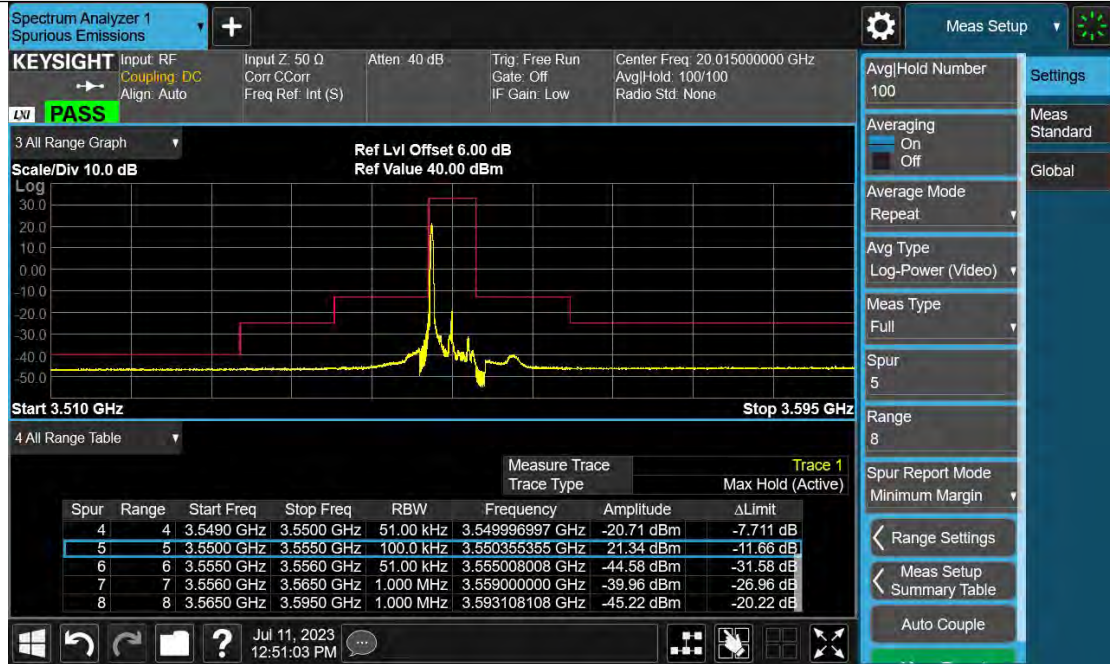
Test Report No.: W7L-P22110036RF10



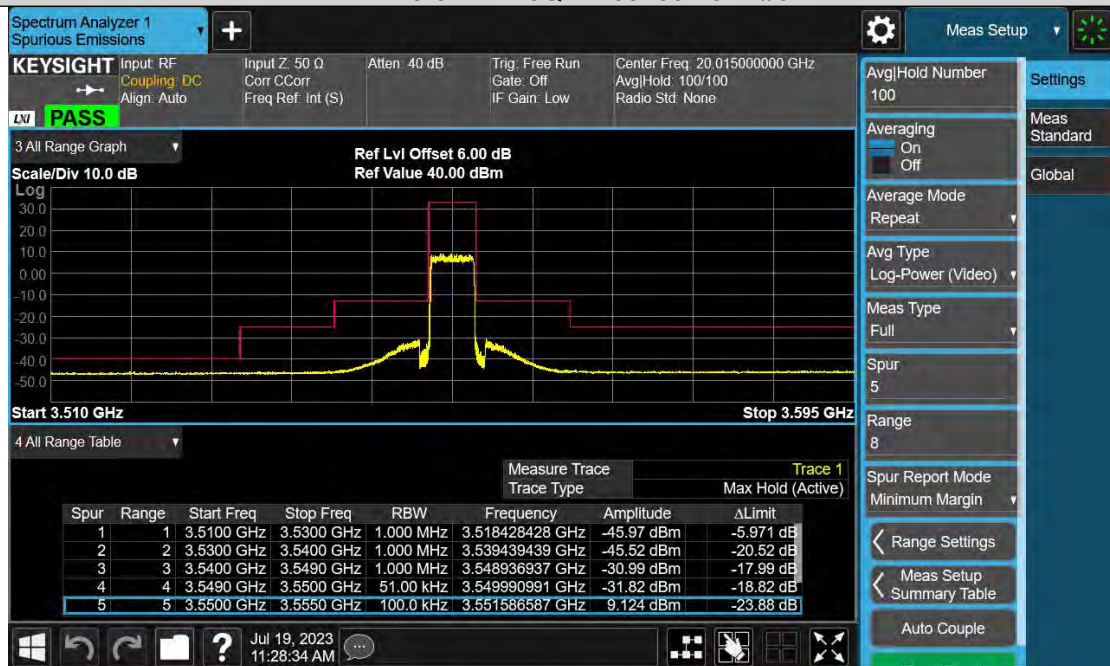
Band48-5MHz-QPSK-56715-25RB#0



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



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

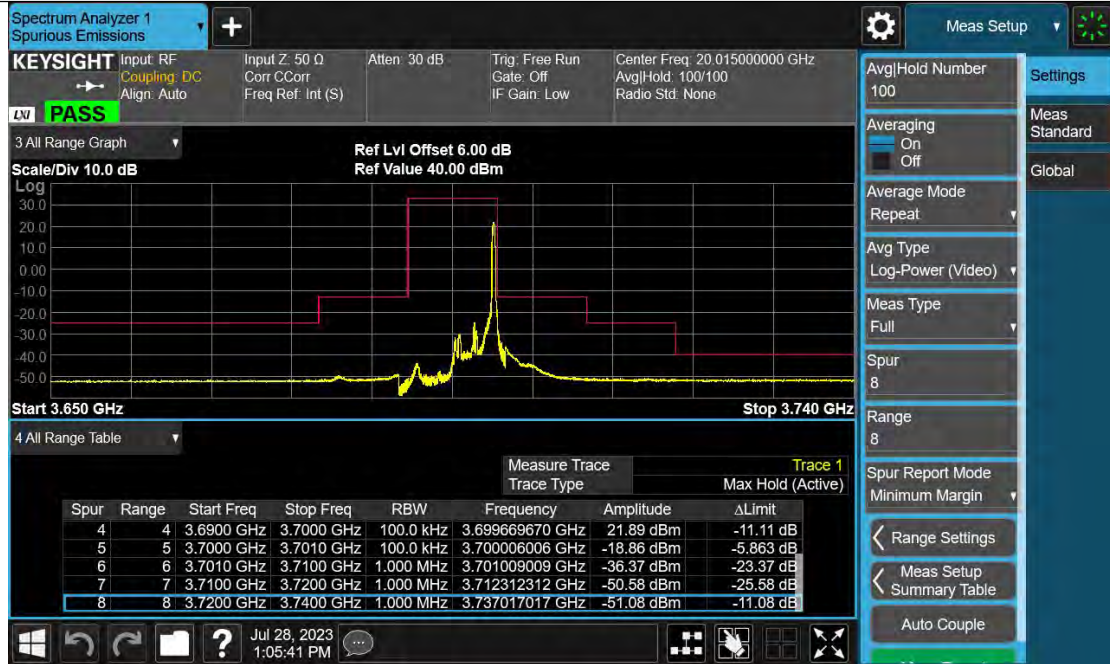


Band48-5MHz-16QAM-56715-1RB#24

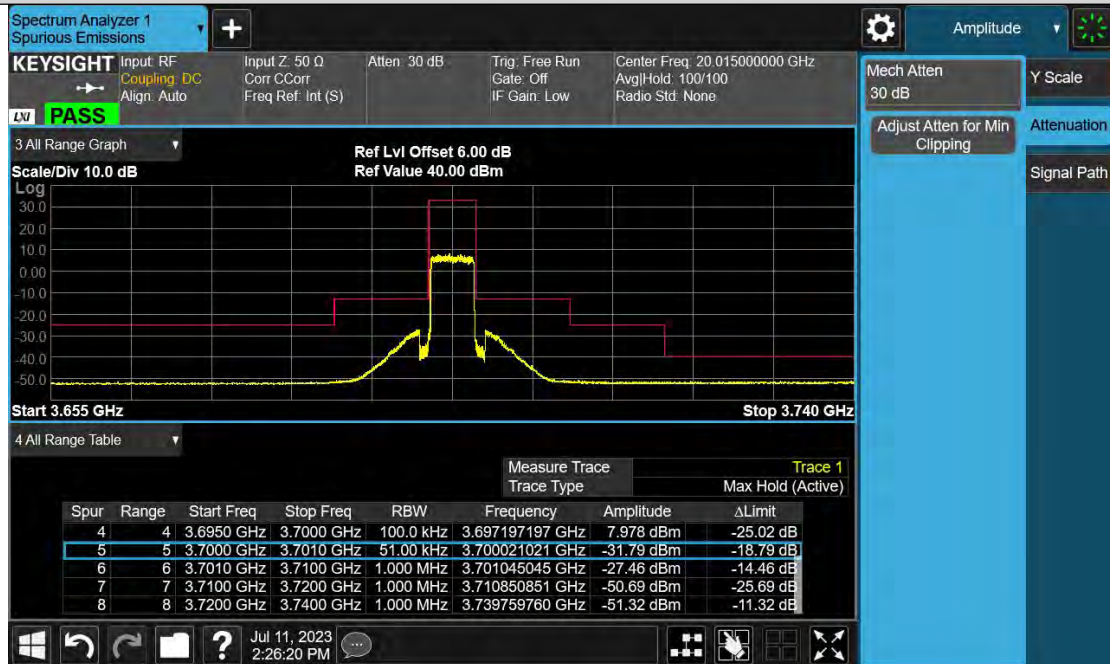


BUREAU
VERITAS

Test Report No.: W7L-P22110036RF10



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

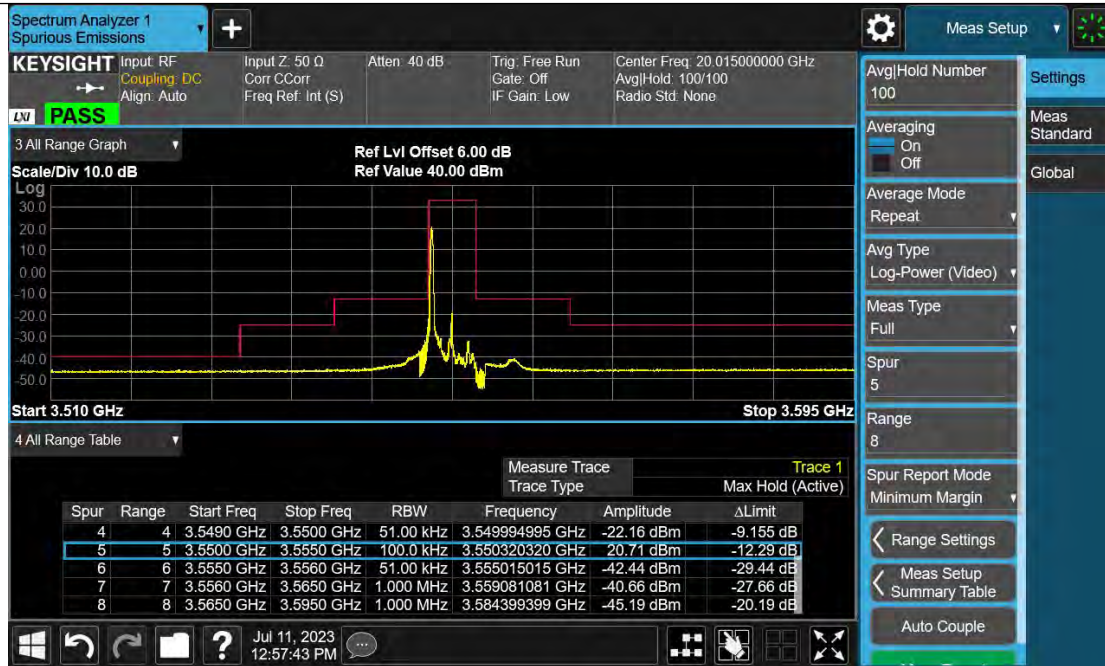


Band48-5MHz-64QAM-55265-1RB#0

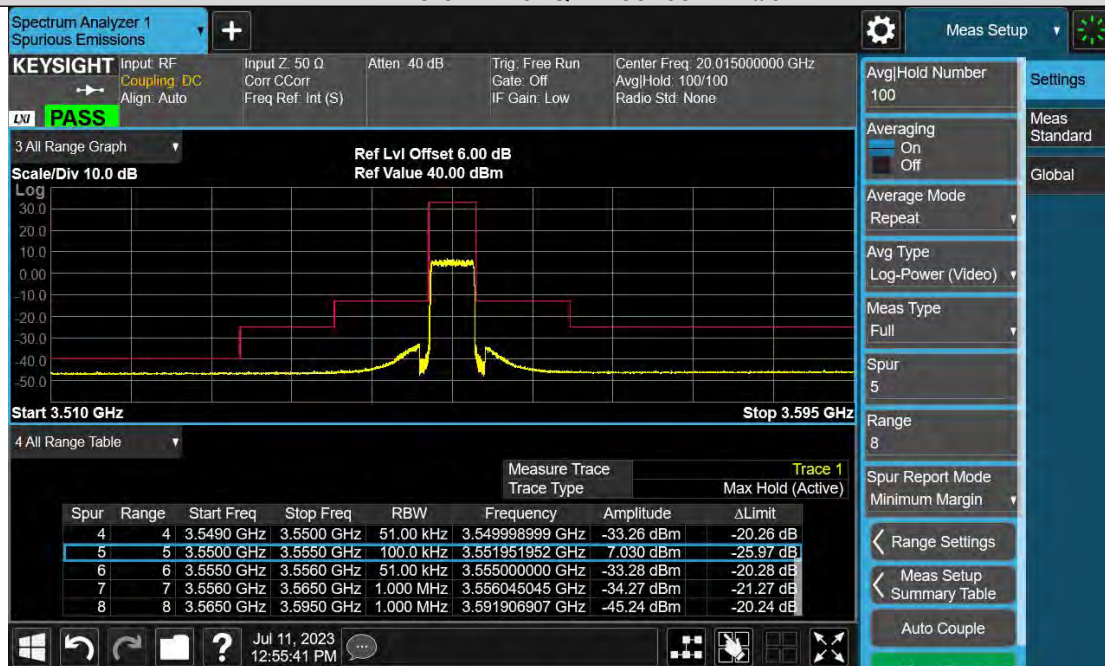
BV 7Layers Communications Technology
(Shenzhen) Co., Ltd

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

Tel: +86 755 8869 6566
Fax: +86 755 8869 6577
Email: customerservice.sw@buree



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

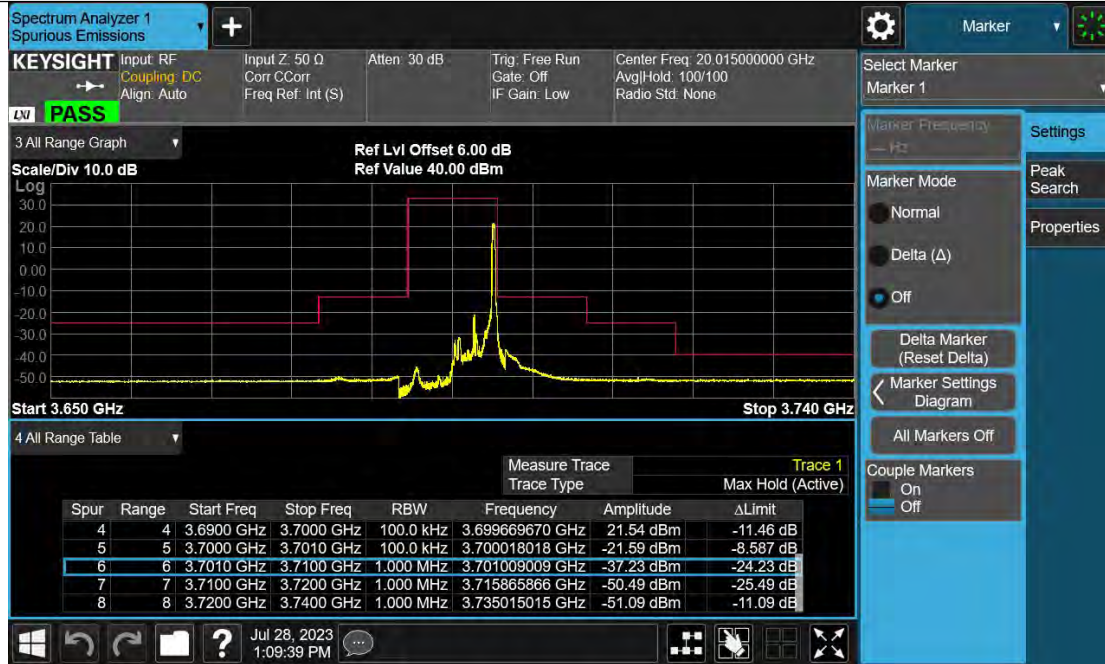


Band48-5MHz-64QAM-56715-1RB#24

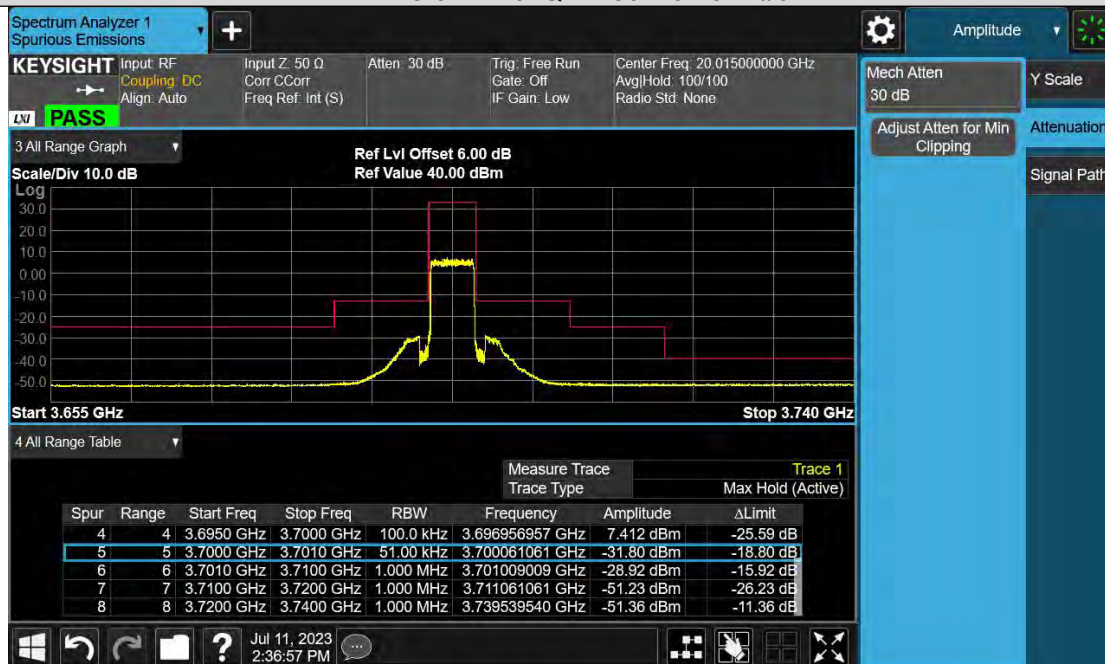


BUREAU
VERITAS

Test Report No.: W7L-P22110036RF10



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

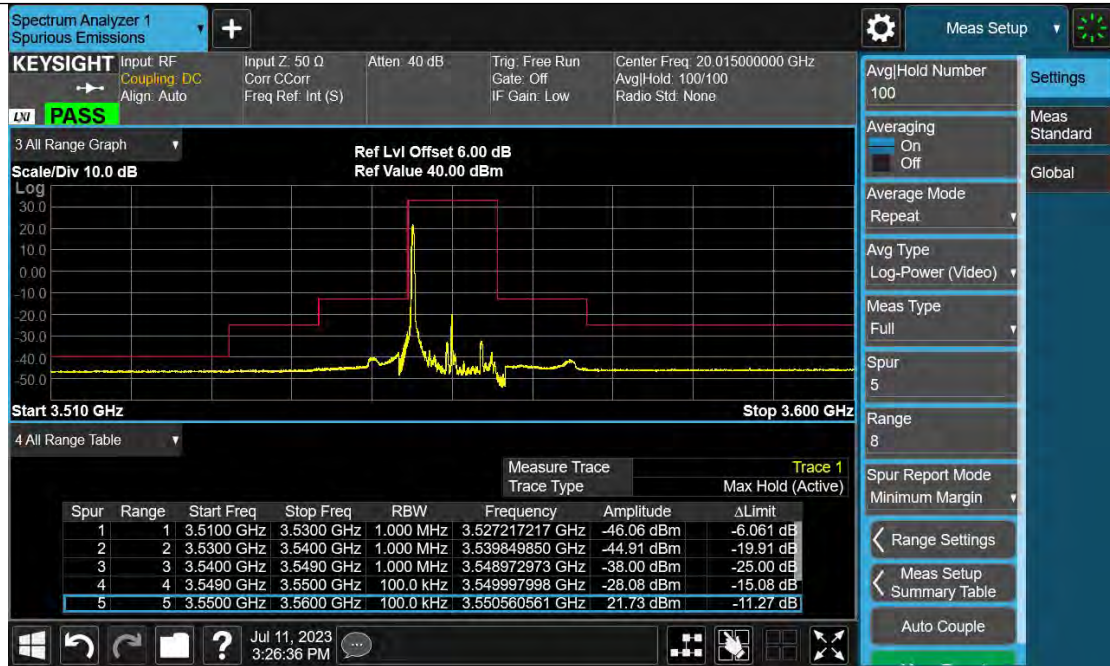


Band48-10MHz-QPSK-55290-1RB#0

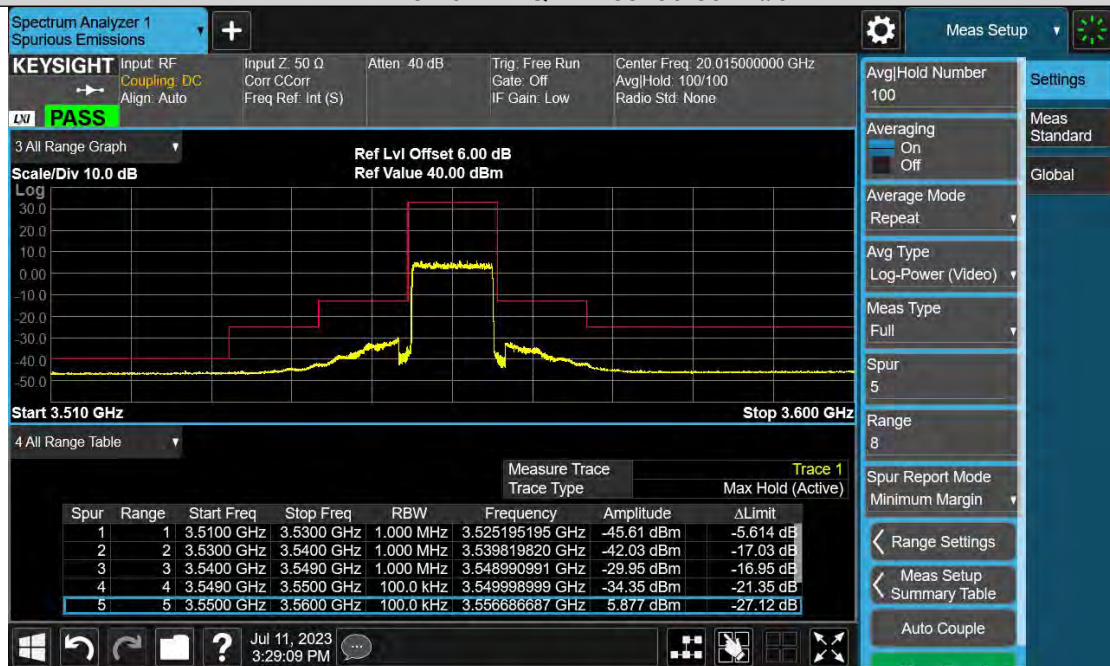
BV 7Layers Communications Technology
(Shenzhen) Co., Ltd

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

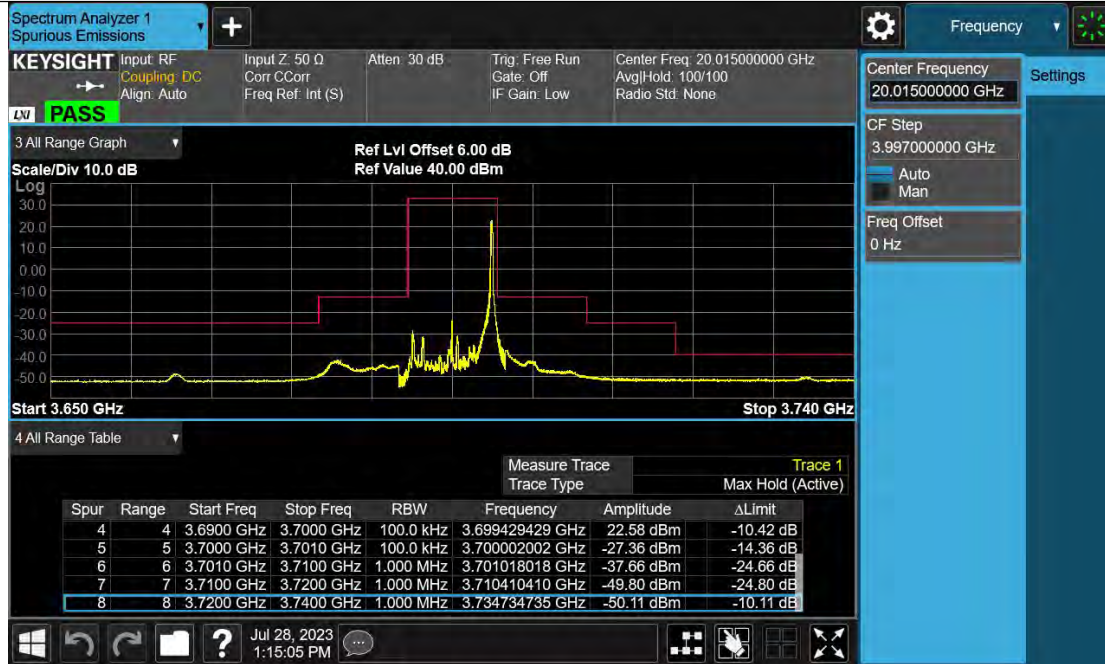
Tel: +86 755 8869 6566
Fax: +86 755 8869 6577
Email: customerservice.sw@buree.com



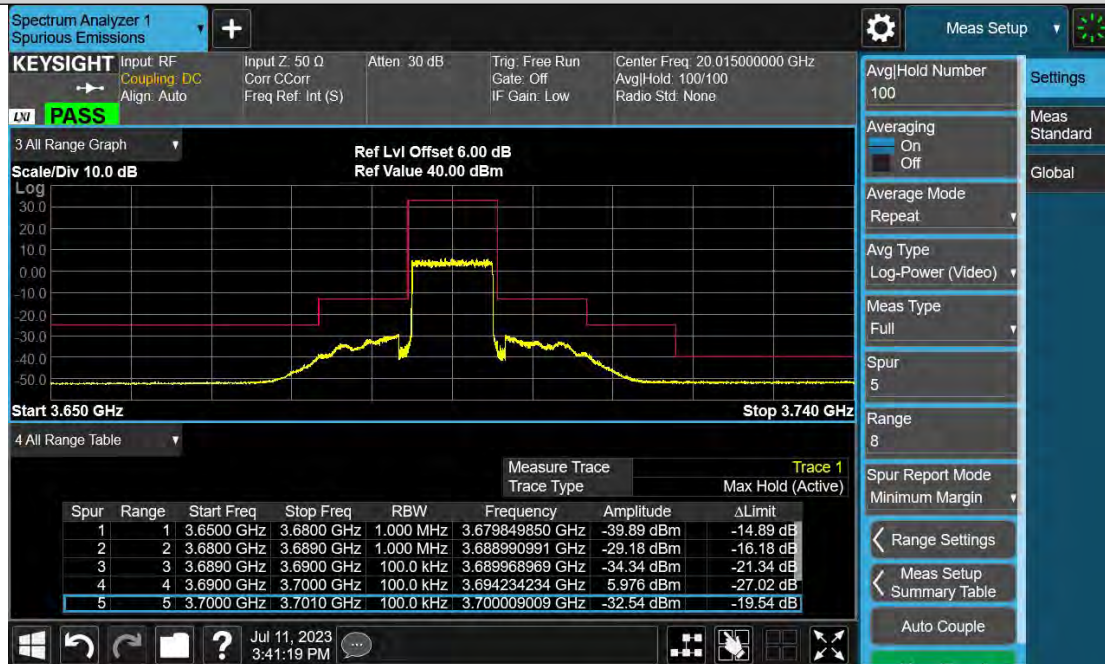
Band48-10MHz-QPSK-55290-50RB#0



Band48-10MHz-QPSK-56690-1RB#49



Band48-10MHz-QPSK-56690-50RB#0

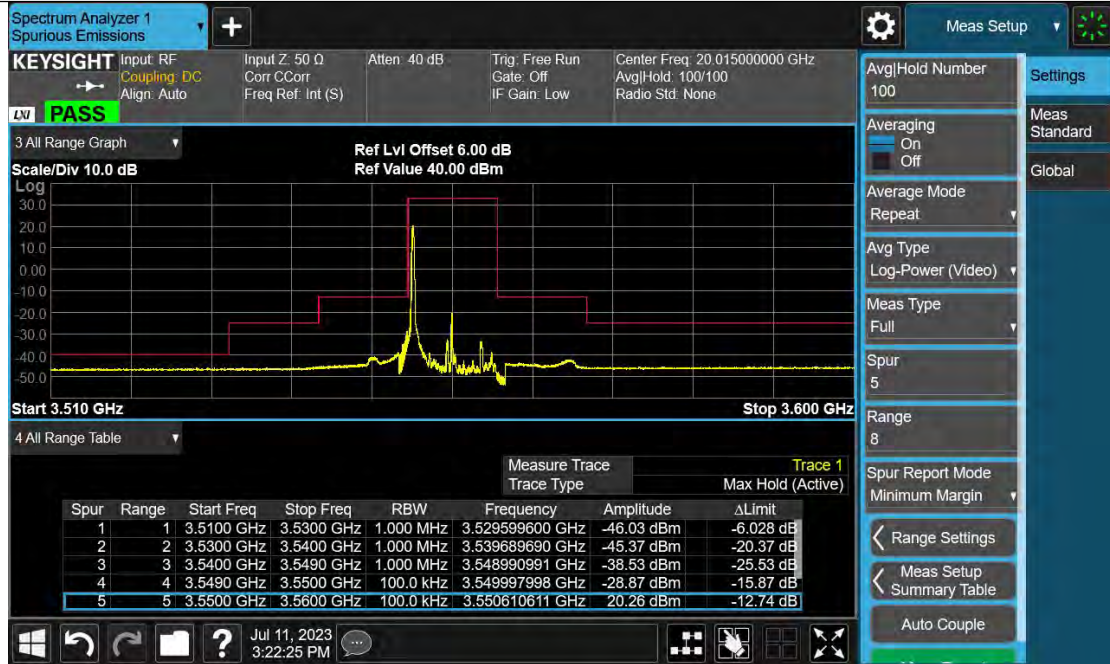


Band48-10MHz-16QAM-55290-1RB#0

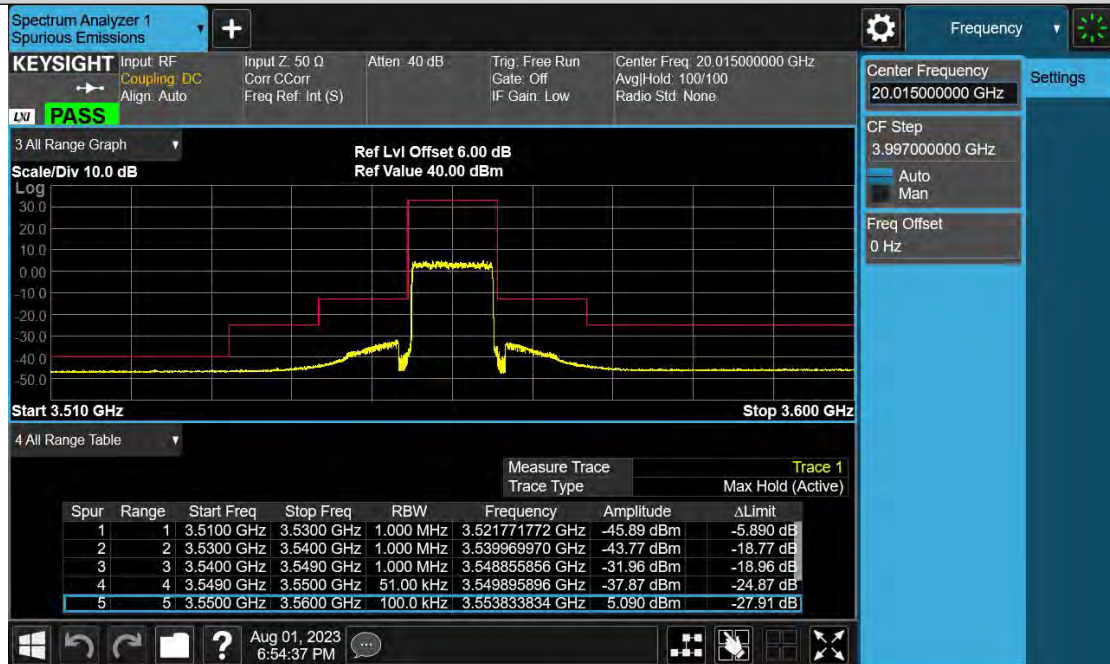


BUREAU
VERITAS

Test Report No.: W7L-P22110036RF10



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

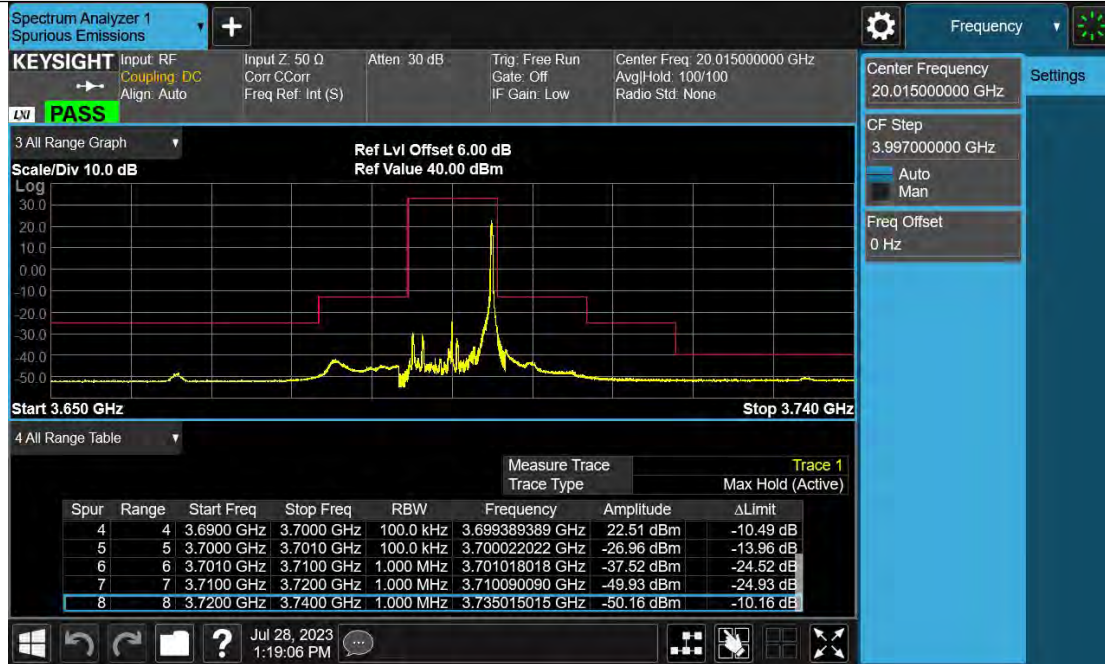


Band48-10MHz-16QAM-56690-1RB#49

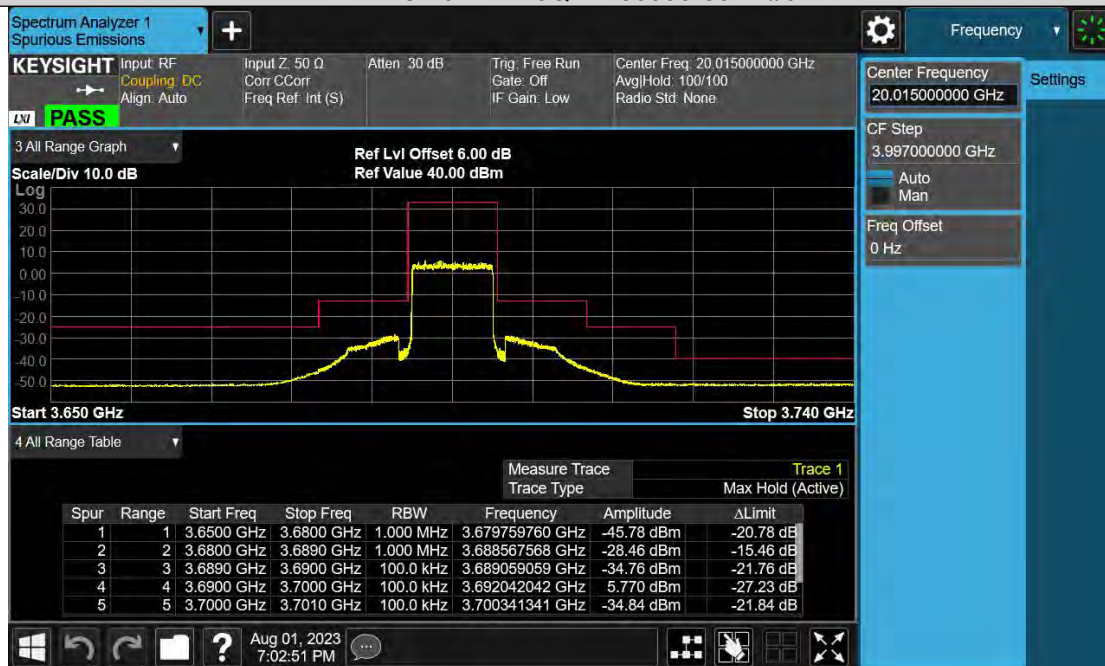


BUREAU
VERITAS

Test Report No.: W7L-P22110036RF10



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



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

Tel: +86 755 8869 6566
Fax: +86 755 8869 6577
Email: customerservice.sw@buree