FCC TEST REPORT

(PART 90)

Applicant:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

Manufacturer or Supplier	Xiaomi Communications Co., Ltd.
Address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Product	Mobile Phone
Brand Name	Redmi
Model Name	24094RAD4G
FCC ID	2AFZZRAD4G
Date of tests	Jul. 12, 2024 ~ Aug. 05, 2024

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

☒ **FCC Part 90, Subpart R, S** ☒ **ANSI/TIA/EIA-603- D**
☒ **FCC Part 2** ☒ **ANSI/TIA/EIA-603-E** ☒ **ANSI C63.26-2015**

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

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Simon Wang Date: Aug. 05, 2024	Luke Lu Date: Aug. 05, 2024

TABLE OF CONTENTS

RELEASE CONTROL RECORD 4

1 SUMMARY OF TEST RESULTS 5

1.1 MEASUREMENT UNCERTAINTY 6
1.2 TEST SITE AND INSTRUMENTS 7

2 GENERAL INFORMATION 8

2.1 GENERAL DESCRIPTION OF EUT 8
2.2 CONFIGURATION OF SYSTEM UNDER TEST 10
2.3 DESCRIPTION OF SUPPORT UNITS 11
2.4 DESCRIPTION OF TEST MODES 11
2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS 13

3 TEST TYPES AND RESULTS 14

3.1 OUTPUT POWER MEASUREMENT 14
3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT 14
3.1.2 TEST PROCEDURES 14
3.1.3 TEST SETUP 15
3.1.4 TEST RESULTS 15
3.2 FREQUENCY STABILITY MEASUREMENT 29
3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT 29
3.2.2 TEST PROCEDURE 29
3.2.3 TEST SETUP 29
3.2.4 TEST RESULTS 30
3.3 OCCUPIED BANDWIDTH MEASUREMENT 31
3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT 31
3.3.2 TEST SETUP 31
3.3.3 TEST PROCEDURES 31
3.3.4 TEST RESULTS 32
3.4 EMISSION MASK MEASUREMENT 33
3.4.1 LIMITS OF EMISSION MASK MEASUREMENT 33
3.4.2 TEST SETUP 33
3.4.3 TEST PROCEDURES 34
3.4.4 TEST RESULTS 35
3.5 CONDUCTED SPURIOUS EMISSIONS 36
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT 36
3.5.2 TEST PROCEDURE 36
3.5.3 TEST SETUP 36
3.5.4 TEST RESULTS 37
3.6 RADIATED EMISSION MEASUREMENT 38
3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT 38
3.6.2 TEST PROCEDURES 38
3.6.3 DEVIATION FROM TEST STANDARD 38
3.6.4 TEST SETUP 39
3.6.5 TEST RESULTS 41
3.7 PEAK TO AVERAGE RATIO 55
3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT 55
3.7.2 TEST SETUP 55
3.7.3 TEST PROCEDURES 55
3.7.4 TEST RESULTS 56

4 INFORMATION ON THE TESTING LABORATORIES 57

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB 58

6 APPENDIX 59

LTE BAND 26Q 59

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-240618W001RF10	Original release	Aug. 05, 2024

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 90 & Part 2		
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**
§2.1046 §90.635(b)	Conducted Output Power (Band26)	PASS
§2.1055 §90.213	Frequency Stability	PASS
§2.1049 §90.209	Occupied Bandwidth	PASS
§2.1051 §90.691(a)	Emission Masks	PASS
§2.1051 §90.691(a)	Conducted Spurious Emissions	PASS
§2.1053 §90.691	Radiated Spurious Emissions	PASS

NOTE:

The worst-case scenario for all measurements is based on an engineering evaluation made on different modulations. Then, QPSK and 16QAM were observed as the worst mode to LTE bands respectively and set for all conducted and radiated. Output power measurements were measured on QPSK, 16QAM, and 64QAM modulations, and tests other than output power are performed only in worse-case QPSK and 16QAM modulations.

1.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	UNCERTAINTY
Maximum Peak Output Power	±2.06dB
Frequency Stability	±76.97Hz
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions (30MHz~1GHz)	±4.98dB
Radiated emissions (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Band Edge Measurements	±4.70dB
Peak to average ratio	±0.76dB

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

1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 28,24	Mar. 27,25
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.10,24	May.09,25
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.03,23	Sep.02,24
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 18,24	Feb. 17,25
Horn Antenna	ETS-LINDGREN	3117	00168692	Feb. 18,24	Feb. 17,25
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Sep.04, 23	Sep.03, 24
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 14,24	Feb. 13,25
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 06,24	May. 05,25
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.10,24	May.09,25
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 17,24	Feb.16,25
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Nov. 14,23	Nov. 13,26
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	50HF-010-SMA	May. 06,24	May. 05,25
Power Meter	Anritsu	ML2495A	1506002	Feb. 14,24	Feb. 13,25
Power Sensor	Anritsu	MA2411B	1339352	Feb. 14,24	Feb. 13,25
Temperature Chamber	ESPEC	SH-242	93000855	May. 06,24	May. 05,25
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 14,24	Feb. 13,25
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.10,24	May.09,25
DC Source	Kikusui/JP	PMX18-5A	N/A	Aug. 11,23	Aug. 10,24

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

PRODUCT	Mobile Phone	
BRAND NAME	Redmi	
MODEL NAME	24094RAD4G	
NOMINAL VOLTAGE	5/5~11Vdc(adapter or host equipment) 3.91Vdc (Li-ion, battery)	
MODULATION TECHNOLOGY	**LTE**	QPSK, 16QAM, 64QAM
FREQUENCY RANGE	**LTE Band 26 (Channel Bandwidth: 1.4MHz)**	814.7MHz ~ 823.3MHz
	LTE Band 26 (Channel Bandwidth: 3MHz)	815.5MHz ~ 822.5MHz
	LTE Band 26 (Channel Bandwidth: 5MHz)	816.5MHz ~ 821.5MHz
	LTE Band 26 (Channel Bandwidth: 10MHz)	819MHz
EMISSION DESIGNATOR	**LTE Band 26 (Channel Bandwidth: 1.4MHz)**	QPSK: 1M09G7D
		16QAM: 1M10W7D
	LTE Band 26 (Channel Bandwidth: 3MHz)	QPSK: 2M69G7D
		16QAM: 2M69W7D
	LTE Band 26 (Channel Bandwidth: 5MHz)	QPSK: 4M51G7D
		16QAM: 4M50W7D
	LTE Band 26 (Channel Bandwidth: 10MHz)	QPSK: 8M98G7D
		16QAM: 8M98W7D
MAX. EIRP POWER	**LTE Band 26 (Channel Bandwidth: 1.4MHz)**	79.8mW
	LTE Band 26 (Channel Bandwidth: 3MHz)	80.35mW
	LTE Band 26 (Channel Bandwidth: 5MHz)	78.89mW
	LTE Band 26 (Channel Bandwidth: 10MHz)	80.17mW
ANTENNA TYPE	PIFA Antenna	
ANTENNA GAIN	ANT 4(UP): PIFA Antenna with -5.2dBi gain for LTE26 ANT 1(DOWN): PIFA Antenna with -3.4dBi gain for LTE26	
HW VERSION	13510O17P	
SW VERSION	Xiaomi HyperOS 1.0	

IMEI	861781070039865
I/O PORTS	Refer to user's manual
DATA CABLE	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
EXTREME TEMPERATURE	0-40 ℃
EXTREME VOLTAGE	3.7V - 4.3V

NOTE:

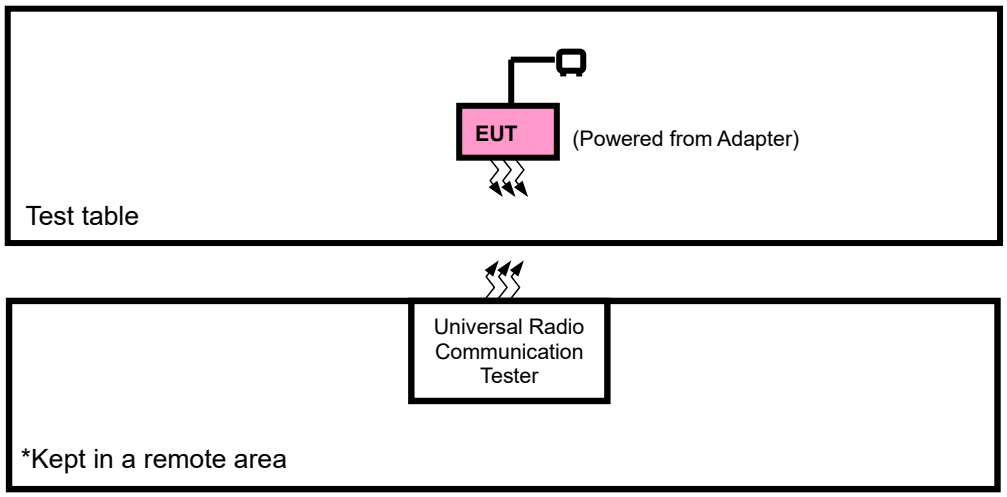
1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. Physically, the EUT provides two completed transmitters and two receivers.

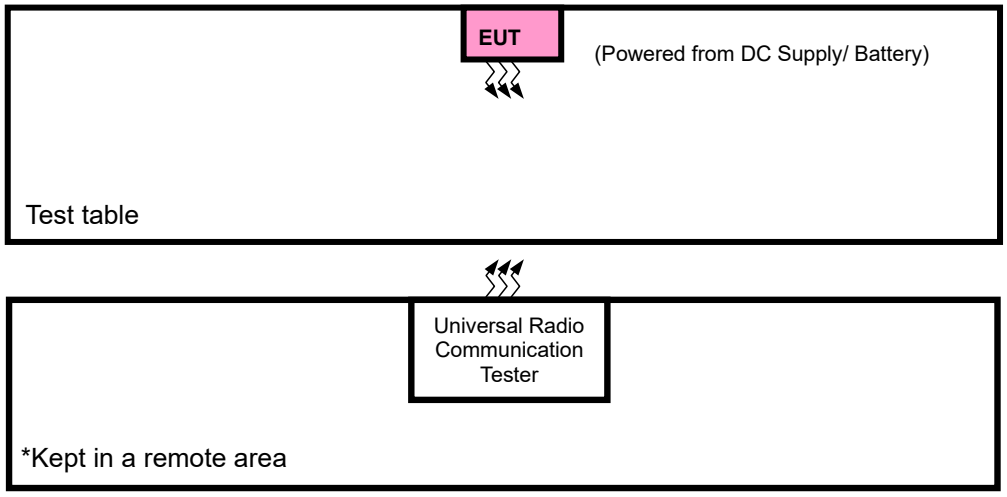
MODULATION MODE	TX FUNCTION
LTE	SISO-2TX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
4. Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.

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 DESCRIPTION OF TEST MODES

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports The worst case in ERP/EIRP and radiated emission was found when positioned on X-plane for LTE. 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 26 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	26697 to 26783	26697, 26740, 26783	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26705 to 26775	26705, 26740, 26775	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26715 to 26765	26715, 26740, 26765	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26740	26740	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	26715 to 26765	26715, 26765	5MHz	QPSK	50 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	26697 to 26783	26697, 26740, 26783	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		26705 to 26775	26705, 26740, 26775	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		26715 to 26765	26715, 26740, 26765	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		26740	26740	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	26740	26740	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
A	BAND EDGE	26697 to 26783	26697	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			26783	1.4MHz	QPSK,16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		26705 to 26775	26705	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			26775	3MHz	QPSK,16QAM	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		26715 to 26765	26715	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			26765	5MHz	QPSK,16QAM	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		26740	26740	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			26740	10MHz	QPSK,16QAM	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
A	CONDUCTED EMISSION	26697 to 26783	26697, 26740, 26783	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
		26705 to 26775	26705, 26740, 26775	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
		26715 to 26765	26715, 26740, 26765	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		26740	26740	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	26697 to 26783	26697, 26740, 26783	1.4MHz	QPSK	1 RB / 0 RB Offset
		26705 to 26775	26740	3MHz	QPSK	1 RB / 0 RB Offset
		26715 to 26765	26740	5MHz	QPSK	1 RB / 0 RB Offset
		26740	26740	10MHz	QPSK	1 RB / 0 RB Offset

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

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP(ERP)	24deg. C, 60%RH	DC 5/5~11V By Adapter	Jace Hu
FREQUENCY STABILITY	24deg. C, 61%RH	DC 3.7/3.91/4.3 By DC Source	James Fu
OCCUPIED BANDWIDTH	24deg. C, 61%RH	DC 5/5~11V By Adapter	James Fu
BAND EDGE	24deg. C, 61%RH	DC 5/5~11V By Adapter	James Fu
CONDUCTED EMISSION	24deg. C, 61%RH	DC 5/5~11V By Adapter	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC 5/5~11V By Adapter	Jace Hu

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 90

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

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

3 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Per FCC Part 90.635(a)(b)

The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

3.1.2 TEST PROCEDURES

EIRP / ERP MEASUREMENT:

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

ERP or EIRP = $P_{Meas} + G_T – L_C$

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);

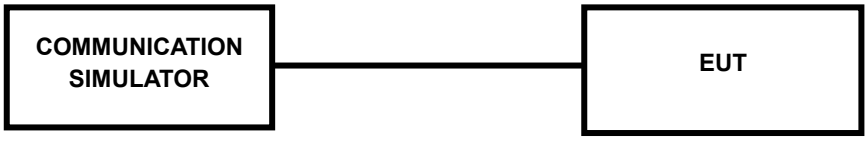
L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB

CONDUCTED POWER MEASUREMENT:

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.

3.1.3 TEST SETUP

CONDUCTED POWER MEASUREMENT:



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

3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

ANT 4(UP):

LTE Band 26

Band/BW	Modulation	RB Size	RB Offset	Low CH 26697	Mid CH 26740	High CH 26783
				Frequency 814.7 MHz	Frequency 819 MHz	Frequency 823.3 MHz
26/ 1.4	QPSK	1	0	23.84	23.80	23.51
		1	2	23.86	23.60	23.54
		1	5	23.58	23.69	23.46
		3	0	23.42	23.42	23.27
		3	1	23.36	23.34	23.52
		3	3	23.32	23.27	23.28
		6	0	22.75	22.65	22.82
	16QAM	1	0	22.93	22.81	22.88
		1	2	22.90	22.96	22.93
		1	5	22.93	22.74	22.91
		3	0	22.68	22.49	22.66
		3	1	22.40	22.52	22.87
		3	3	22.79	22.69	22.97
		6	0	21.48	21.86	21.68
	64QAM	1	0	21.77	21.87	21.76
		1	2	21.93	21.80	21.84
		1	5	21.77	21.73	21.56
		3	0	21.73	21.63	21.68
		3	1	21.68	21.75	21.91
		3	3	21.85	21.73	21.78
		6	0	20.57	20.66	20.74

Band/BW	Modulation	RB Size	RB Offset	Low CH 26705	Mid CH 26740	High CH 26775
				Frequency 815.5 MHz	Frequency 819 MHz	Frequency 822.5 MHz
26/ 3	QPSK	1	0	23.84	23.80	23.51
		1	7	23.86	23.60	23.54
		1	14	23.58	23.69	23.46
		8	0	22.76	22.76	22.61
		8	3	22.70	22.68	22.86
		8	7	22.66	22.61	22.62
		15	0	22.75	22.65	22.82
	16QAM	1	0	22.93	22.81	22.88
		1	7	22.90	22.96	22.93
		1	14	22.93	22.74	22.91
		8	0	21.52	21.83	21.80
		8	3	21.74	21.66	21.61
		8	7	21.53	21.63	21.61
		15	0	21.48	21.86	21.68
	64QAM	1	0	21.77	21.87	21.76
		1	7	21.93	21.80	21.84
		1	14	21.77	21.73	21.56
		8	0	20.47	20.57	20.62
		8	3	20.62	20.57	20.55
		8	7	20.79	20.57	20.82
		15	0	20.57	20.66	20.74

Band/BW	Modulation	RB Size	RB Offset	Low CH 26715	Mid CH 26740	High CH 26765
				Frequency 816.5 MHz	Frequency 819 MHz	Frequency 821.5 MHz
26/ 5	QPSK	1	0	23.80	23.70	23.45
		1	12	23.76	23.70	23.54
		1	24	23.57	23.59	23.52
		12	0	22.67	22.78	22.64
		12	6	22.70	22.62	22.89
		12	13	22.54	22.66	22.60
		25	0	22.62	22.55	22.86
	16QAM	1	0	22.85	22.87	22.83
		1	12	22.87	23.02	22.83
		1	24	22.85	22.87	22.89
		12	0	21.52	21.71	21.82
		12	6	21.65	21.57	21.60
		12	13	21.60	21.68	21.74
		25	0	21.43	21.84	21.68
	64QAM	1	0	21.78	21.75	21.72
		1	12	21.95	21.89	21.77
		1	24	21.74	21.74	21.59
		12	0	20.52	20.49	20.61
		12	6	20.66	20.65	20.63
		12	13	20.70	20.58	20.89
		25	0	20.55	20.67	20.74

Band/BW	Modulation	RB Size	RB Offset	/	Mid CH 26740	/
				/	Frequency 819 MHz	/
26/ 10	QPSK	1	0	/	**23.78**	/
		1	24	/	23.70	/
		1	49	/	23.62	/
		25	0	/	22.74	/
		25	12	/	22.64	/
		25	25	/	22.64	/
		50	0	/	22.60	/
	16QAM	1	0	/	22.88	/
		1	24	/	23.00	/
		1	49	/	22.87	/
		25	0	/	21.74	/
		25	12	/	21.63	/
		25	25	/	21.64	/
		50	0	/	21.69	/
	64QAM	1	0	/	21.76	/
		1	24	/	21.82	/
		1	49	/	21.66	/
		25	0	/	20.56	/
		25	12	/	20.56	/
		25	25	/	20.70	/
		50	0	/	20.50	/

ANT 1(DOWN):

LTE Band 26

Band/BW	Modulation	RB Size	RB Offset	Low CH 26697	Mid CH 26740	High CH 26783
				Frequency 814.7 MHz	Frequency 819 MHz	Frequency 823.3 MHz
26/ 1.4	QPSK	1	0	24.36	24.46	24.34
		1	2	24.33	24.57	24.39
		1	5	24.30	24.27	24.22
		3	0	24.18	24.25	24.13
		3	1	24.09	24.23	24.17
		3	3	24.10	24.20	24.10
		6	0	23.37	23.39	23.28
	16QAM	1	0	23.50	23.54	23.65
		1	2	23.62	23.50	23.51
		1	5	23.73	23.68	23.45
		3	0	23.19	23.08	23.10
		3	1	23.33	23.05	23.37
		3	3	23.14	23.05	23.18
		6	0	22.34	22.29	22.25
	64QAM	1	0	22.56	22.41	22.51
		1	2	22.54	22.38	22.64
		1	5	22.42	22.56	22.43
		3	0	22.04	22.22	22.10
		3	1	22.21	22.21	22.17
		3	3	22.29	21.93	22.01
		6	0	21.36	21.36	21.39

Band/BW	Modulation	RB Size	RB Offset	Low CH 26705	Mid CH 26740	High CH 26775
				Frequency 815.5 MHz	Frequency 819 MHz	Frequency 822.5 MHz
26/ 3	QPSK	1	0	24.33	24.49	24.35
		1	7	24.29	24.60	24.37
		1	14	24.35	24.39	24.32
		8	0	23.38	23.39	23.29
		8	3	23.20	23.31	23.30
		8	7	23.35	23.35	23.30
		15	0	23.40	23.34	23.32
	16QAM	1	0	23.57	23.51	23.66
		1	7	23.60	23.51	23.53
		1	14	23.71	23.68	23.55
		8	0	22.33	22.27	22.27
		8	3	22.39	22.35	22.55
		8	7	22.35	22.29	22.34
		15	0	22.31	22.25	22.29
	64QAM	1	0	22.45	22.44	22.51
		1	7	22.57	22.38	22.58
		1	14	22.36	22.54	22.41
		8	0	21.20	21.38	21.25
		8	3	21.31	21.28	21.36
		8	7	21.41	21.11	21.23
		15	0	21.28	21.28	21.39

Band/BW	Modulation	RB Size	RB Offset	Low CH 26715	Mid CH 26740	High CH 26765
				Frequency 816.5 MHz	Frequency 819 MHz	Frequency 821.5 MHz
26/ 5	QPSK	1	0	24.32	24.47	24.40
		1	12	24.42	24.52	24.28
		1	24	24.40	24.39	24.32
		12	0	23.32	23.43	23.30
		12	6	23.30	23.32	23.30
		12	13	23.27	23.30	23.16
		25	0	23.32	23.27	23.33
	16QAM	1	0	23.51	23.49	23.59
		1	12	23.70	23.62	23.64
		1	24	23.74	23.57	23.44
		12	0	22.38	22.28	22.34
		12	6	22.43	22.27	22.43
		12	13	22.37	22.33	22.39
		25	0	22.39	22.31	22.27
	64QAM	1	0	22.50	22.47	22.46
		1	12	22.52	22.38	22.52
		1	24	22.30	22.58	22.47
		12	0	21.24	21.37	21.25
		12	6	21.36	21.38	21.32
		12	13	21.36	21.11	21.27
		25	0	21.30	21.26	21.42

Band/BW	Modulation	RB Size	RB Offset	/	Mid CH 26740	/
				/	Frequency 819 MHz	/
26/ 10	QPSK	1	0	/	24.53	/
		1	24	/	**24.59**	/
		1	49	/	24.33	/
		25	0	/	23.34	/
		25	12	/	23.36	/
		25	25	/	23.31	/
		50	0	/	23.26	/
	16QAM	1	0	/	23.46	/
		1	24	/	23.56	/
		1	49	/	23.68	/
		25	0	/	22.31	/
		25	12	/	22.26	/
		25	25	/	22.28	/
		50	0	/	22.31	/
	64QAM	1	0	/	22.49	/
		1	24	/	22.41	/
		1	49	/	22.51	/
		25	0	/	21.31	/
		25	12	/	21.30	/
		25	25	/	21.12	/
		50	0	/	21.24	/

ERP

ANT 4(UP):

LTE B26 1.4M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26697	814.7	23.86	-5.2	16.51	44.77	100
26740	819	23.8	-5.2	16.45	44.16	100
26783	823.3	23.54	-5.2	16.19	41.59	100

LTE B26 1.4M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26697	814.7	22.93	-5.2	15.58	36.14	100
26740	819	22.96	-5.2	15.61	36.39	100
26783	823.3	22.97	-5.2	15.62	36.48	100

LTE B26 1.4M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26697	814.7	21.93	-5.2	14.58	28.71	100
26740	819	21.87	-5.2	14.52	28.31	100
26783	823.3	21.91	-5.2	14.56	28.58	100

LTE B26 3M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26705	815.5	23.86	-5.2	16.51	44.77	100
26740	819	23.8	-5.2	16.45	44.16	100
26775	822.5	23.54	-5.2	16.19	41.59	100

LTE B26 3M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26705	815.5	22.93	-5.2	15.58	36.14	100
26740	819	22.96	-5.2	15.61	36.39	100
26775	822.5	22.93	-5.2	15.58	36.14	100

LTE B26 3M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26705	815.5	21.93	-5.2	14.58	28.71	100
26740	819	21.87	-5.2	14.52	28.31	100
26775	822.5	21.84	-5.2	14.49	28.12	100

LTE B26 5M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26715	816.5	23.8	-5.2	16.45	44.16	100
26740	819	23.7	-5.2	16.35	43.15	100
26765	821.5	23.54	-5.2	16.19	41.59	100

LTE B26 5M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26715	816.5	22.87	-5.2	15.52	35.65	100
26740	819	23.02	-5.2	15.67	36.9	100
26765	821.5	22.89	-5.2	15.54	35.81	100

LTE B26 5M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26715	816.5	21.95	-5.2	14.6	28.84	100
26740	819	21.89	-5.2	14.54	28.44	100
26765	821.5	21.77	-5.2	14.42	27.67	100

LTE B26 10M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26740	819	23.78	-5.2	16.43	43.95	100

LTE B26 10M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26740	819	23	-5.2	15.65	36.73	100

LTE B26 10M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26740	819	21.82	-5.2	14.47	27.99	100

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

ANT 1(DOWN):

LTE B26 1.4M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26697	814.7	24.36	-3.4	18.81	76.03	100
26740	819	24.57	-3.4	19.02	79.8	100
26783	823.3	24.39	-3.4	18.84	76.56	100

LTE B26 1.4M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26697	814.7	23.73	-3.4	18.18	65.77	100
26740	819	23.68	-3.4	18.13	65.01	100
26783	823.3	23.65	-3.4	18.1	64.57	100

LTE B26 1.4M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26697	814.7	22.56	-3.4	17.01	50.23	100
26740	819	22.56	-3.4	17.01	50.23	100
26783	823.3	22.64	-3.4	17.09	51.17	100

LTE B26 3M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26705	815.5	24.35	-3.4	18.8	75.86	100
26740	819	24.6	-3.4	19.05	80.35	100
26775	822.5	24.37	-3.4	18.82	76.21	100

LTE B26 3M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26705	815.5	23.71	-3.4	18.16	65.46	100
26740	819	23.68	-3.4	18.13	65.01	100
26775	822.5	23.66	-3.4	18.11	64.71	100

LTE B26 3M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26705	815.5	22.57	-3.4	17.02	50.35	100
26740	819	22.54	-3.4	16.99	50	100
26775	822.5	22.58	-3.4	17.03	50.47	100

LTE B26 5M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26715	816.5	24.42	-3.4	18.87	77.09	100
26740	819	24.52	-3.4	18.97	78.89	100
26765	821.5	24.4	-3.4	18.85	76.74	100

LTE B26 5M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26715	816.5	23.74	-3.4	18.19	65.92	100
26740	819	23.62	-3.4	18.07	64.12	100
26765	821.5	23.64	-3.4	18.09	64.42	100

LTE B26 5M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26715	816.5	22.52	-3.4	16.97	49.77	100
26740	819	22.58	-3.4	17.03	50.47	100
26765	821.5	22.52	-3.4	16.97	49.77	100

LTE B26 10M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26740	819	24.59	-3.4	19.04	80.17	100

LTE B26 10M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26740	819	23.68	-3.4	18.13	65.01	100

LTE B26 10M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	Lmit (W)
26740	819	22.51	-3.4	16.96	49.66	100

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

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

The frequency stability of mobile, portable and control transmitters operating in the wideband segment must be 1.25 parts per million or better when AFC is locked to a base station, and 5 parts per million or better when AFC is not locked

3.2.2 TEST PROCEDURE

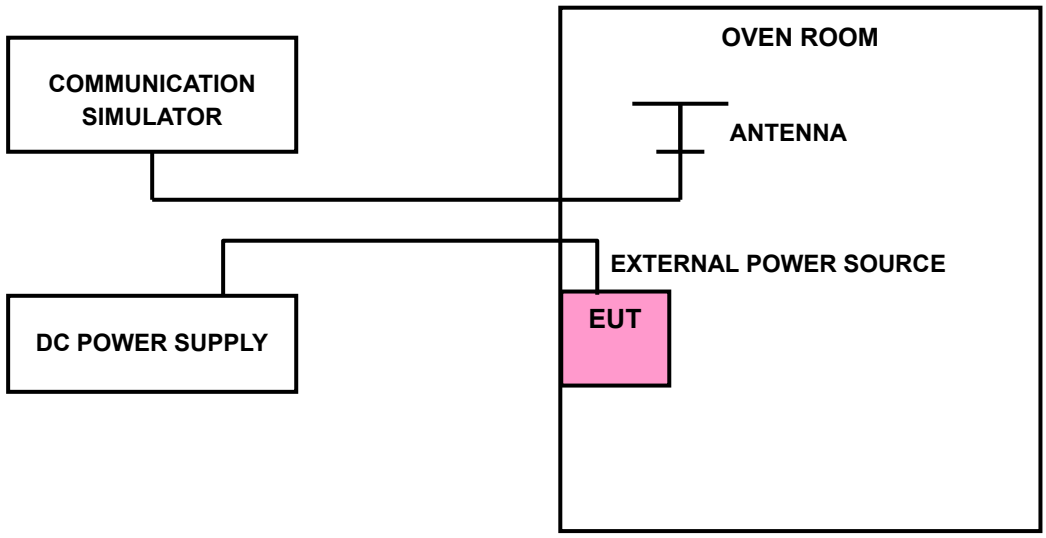
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.

c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

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

3.2.3 TEST SETUP



3.2.4 TEST RESULTS

Please Refer to Appendix Of this test report.

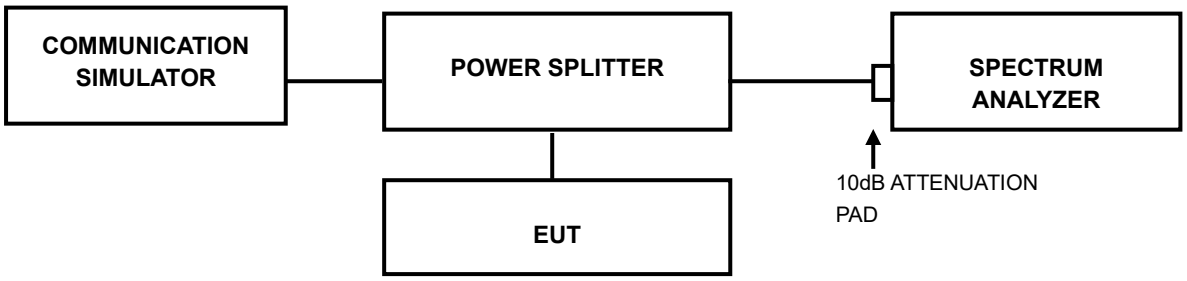
Note: LV = Low voltage (3.7V); NV = Normal voltage (3.91V); HV= High voltage (4.3V).
NT = Normal temperature (25℃)

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

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

3.3.2 TEST SETUP



3.3.3 TEST PROCEDURES

a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.3.4 TEST RESULTS

Please Refer to Appendix Of this test report.

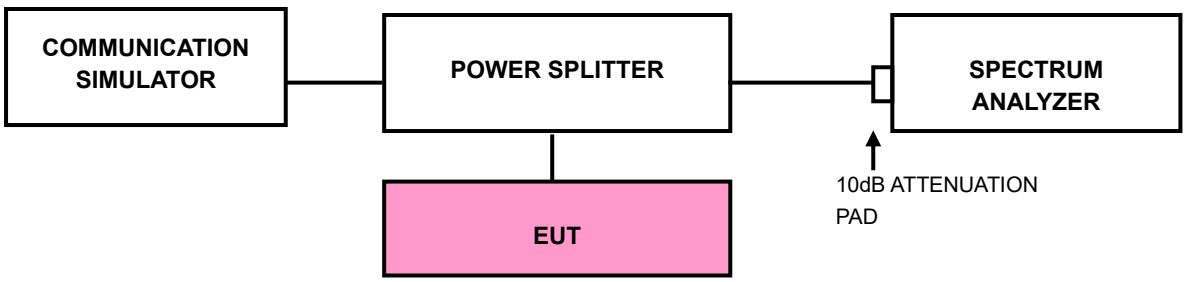
3.4 EMISSION MASK MEASUREMENT

3.4.1 LIMITS OF EMISSION MASK MEASUREMENT

LTE Band26:
According to FCC part 90.691 shall be tested the emission mask. For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

3.4.2 TEST SETUP



3.4.3 TEST PROCEDURES

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) ≧ 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 ≧3 x 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.

3.4.4 TEST RESULTS

Please Refer to Appendix Of this test report.

3.5 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

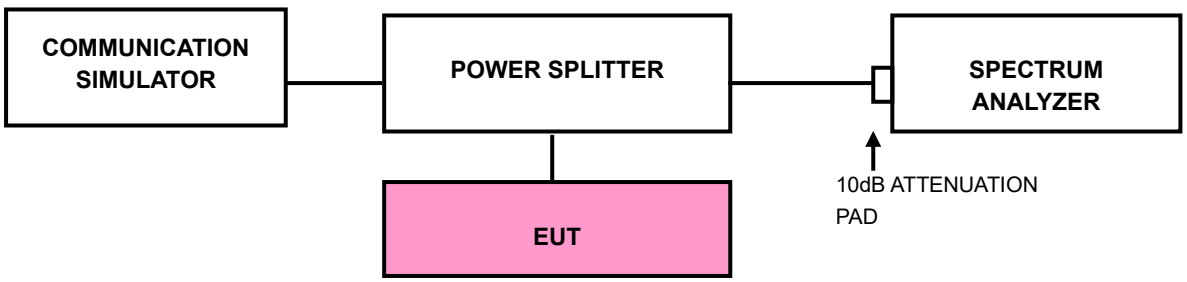
47 CFR 90.691(a)(2)
or any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

3.5.2 TEST PROCEDURE

a. The EUT makes a phone call to the communication simulator. All measurements were done at middle operational frequency range.

b. Measuring frequency range is from 9kHz up to a frequency including its 10th harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.5.3 TEST SETUP



3.5.4 TEST RESULTS

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

Please Refer to Appendix Of this test report.

3.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

47 CFR 90.691(a)(2)
or any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

3.6.2 TEST PROCEDURES

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G

c. 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.R.P power - 2.15dBi.

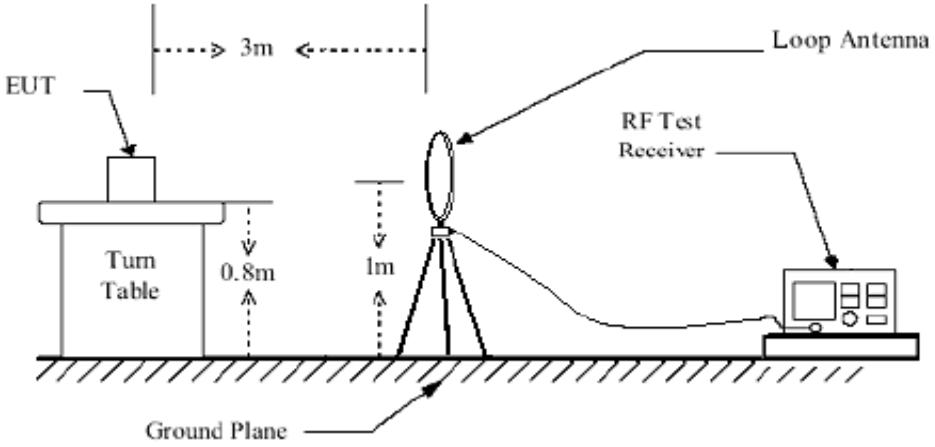
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.6.3 DEVIATION FROM TEST STANDARD

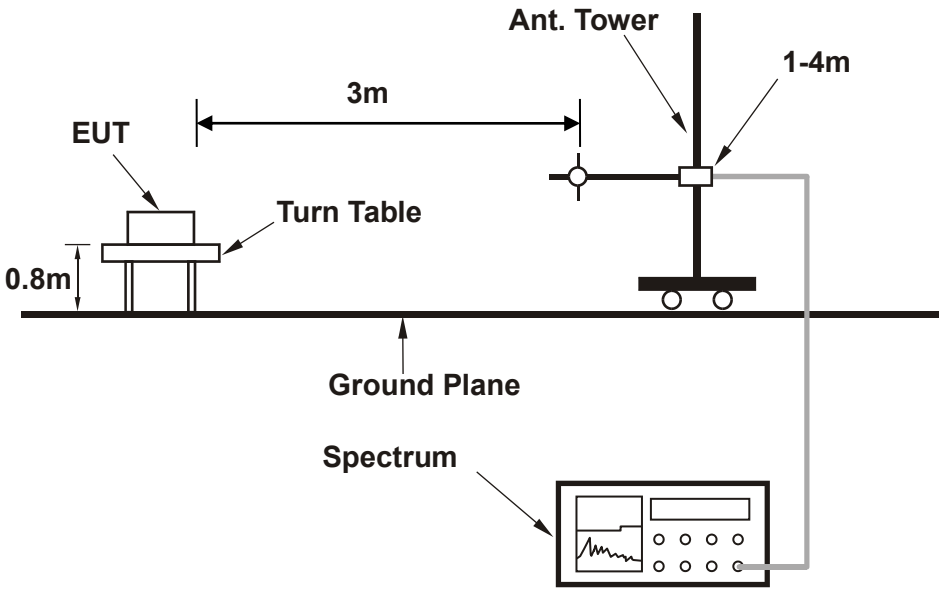
No deviation

3.6.4 TEST SETUP

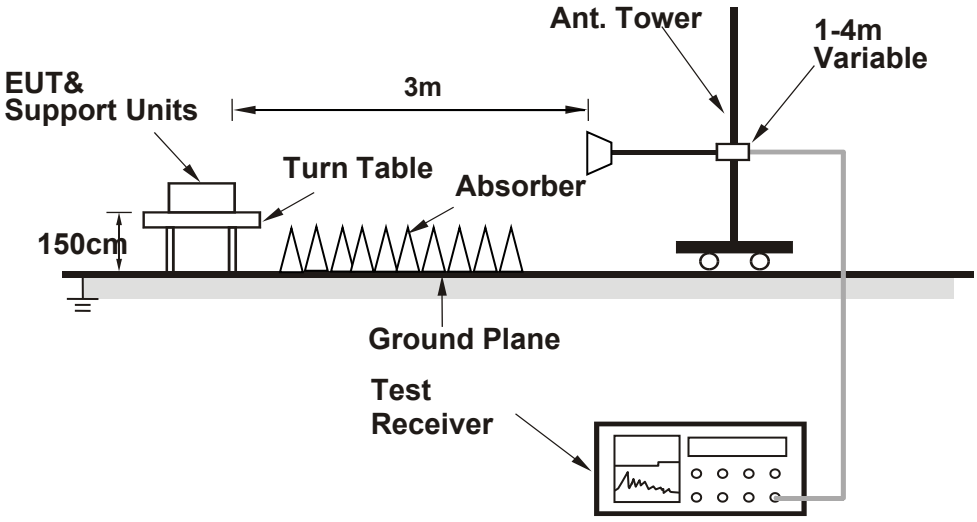
<Below 30MHz>



< Frequency Range 30MHz~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

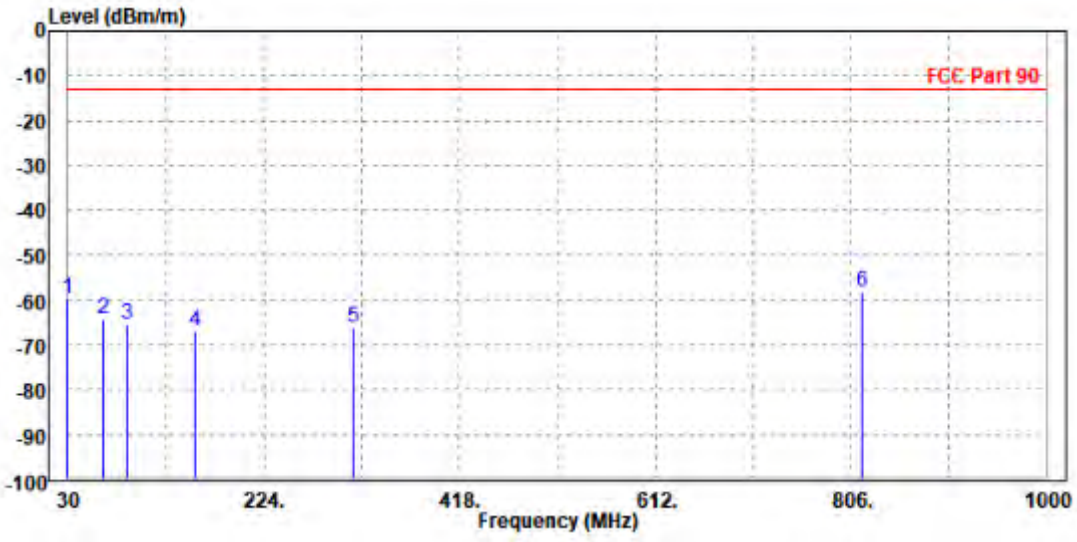
30 MHz – 1GHz data:

LTE Band 26 (ANT1) (DOWN):

CHANNEL BANDWIDTH: 1.4MHz / QPSK

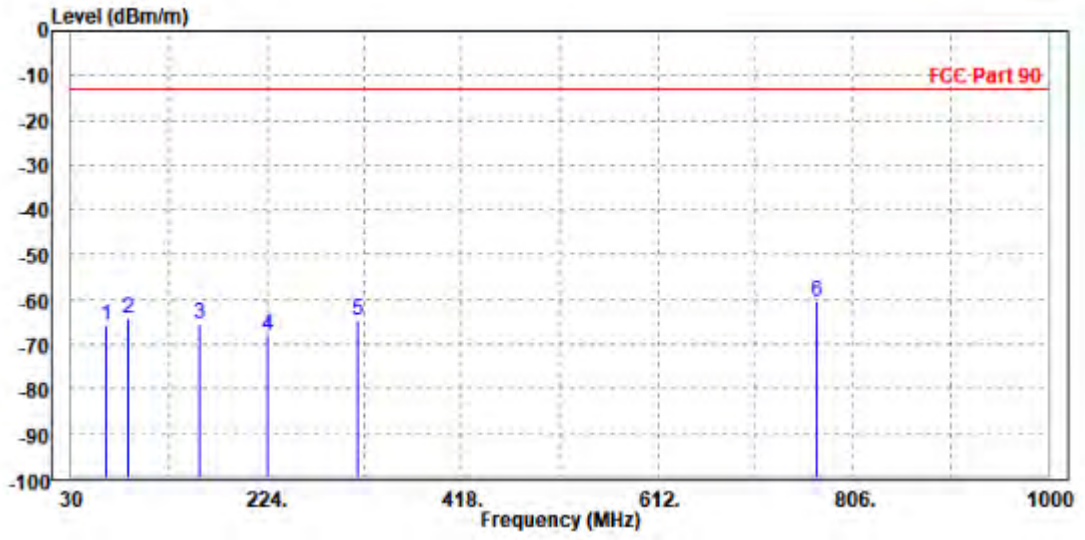
MODE	TX channel 26740	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Jace HU		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	30.000	-59.78	-57.80	-13.00	-46.78	-1.98	Peak	Horizontal
2	64.920	-64.44	-52.10	-13.00	-51.44	-12.34	Peak	Horizontal
3	88.200	-65.41	-52.68	-13.00	-52.41	-12.73	Peak	Horizontal
4	156.100	-66.80	-51.89	-13.00	-53.80	-14.91	Peak	Horizontal
5	313.240	-66.30	-57.75	-13.00	-53.30	-8.55	Peak	Horizontal
6 PP	816.670	-58.25	-62.69	-13.00	-45.25	4.44	Peak	Horizontal



MODE	TX channel 26740	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			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	63.950	-65.62	-46.45	-13.00	-52.62	-19.17	Peak	Vertical
2	87.230	-64.15	-46.33	-13.00	-51.15	-17.82	Peak	Vertical
3	158.040	-65.42	-54.47	-13.00	-52.42	-10.95	Peak	Vertical
4	224.970	-67.90	-61.44	-13.00	-54.90	-6.46	Peak	Vertical
5	314.210	-64.52	-61.00	-13.00	-51.52	-3.52	Peak	Vertical
6 PP	769.140	-60.51	-64.00	-13.00	-47.51	3.49	Peak	Vertical



ABOVE 1GHz

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

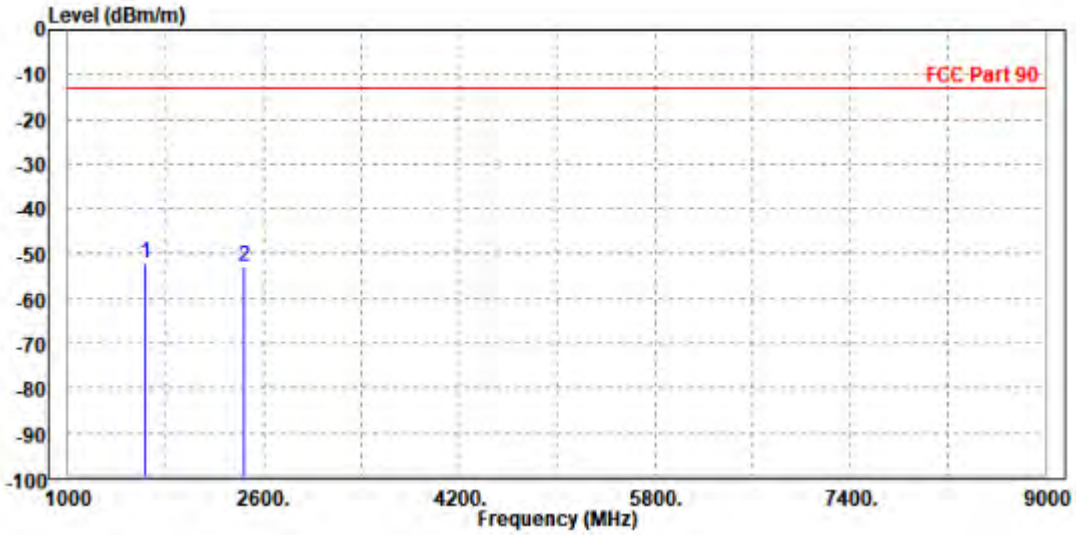
LTE BAND 26(ANT1) (DOWN):

CHANNEL BANDWIDTH: 1.4MHz / QPSK

CH26697

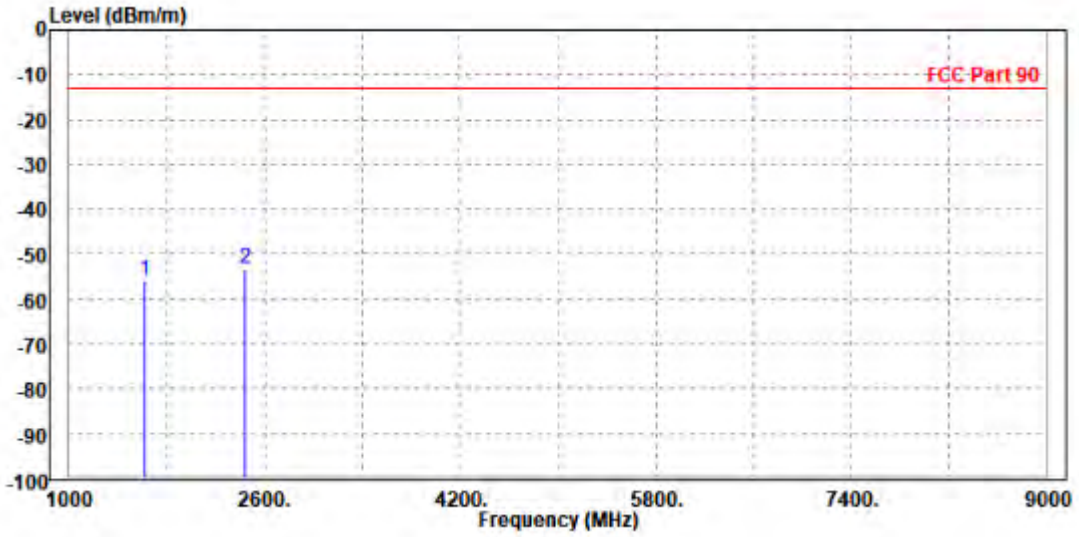
MODE	TX channel 26697	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1632.000	-52.21	-55.82	-13.00	-39.21	3.61	Peak	Horizontal
2	2440.000	-52.98	-58.92	-13.00	-39.98	5.94	Peak	Horizontal



MODE	TX channel 26697	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			

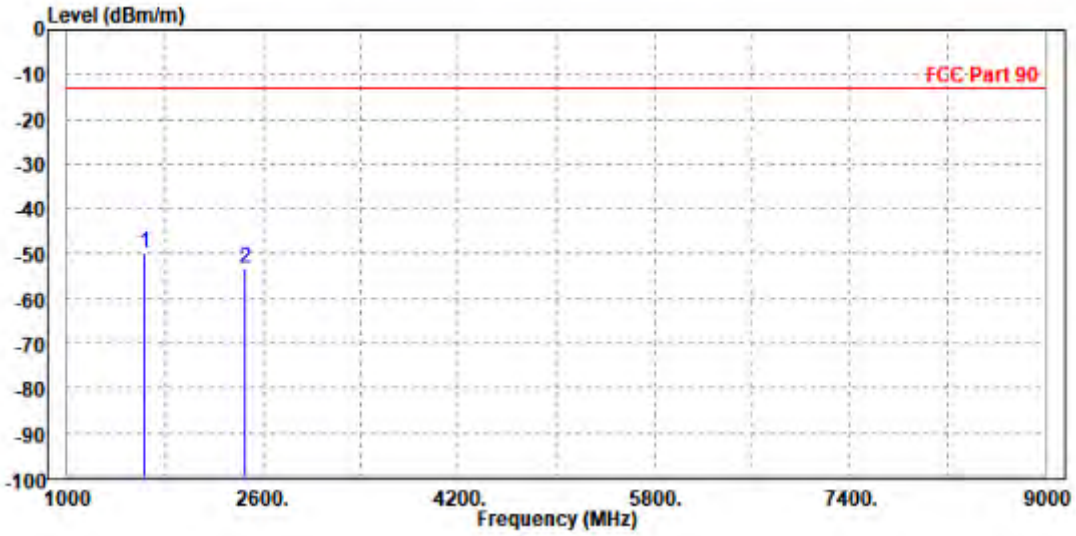
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1624.000	-56.01	-59.36	-13.00	-43.01	3.35	Peak	Vertical
2 PP	2442.000	-53.39	-58.96	-13.00	-40.39	5.57	Peak	Vertical



CH26740

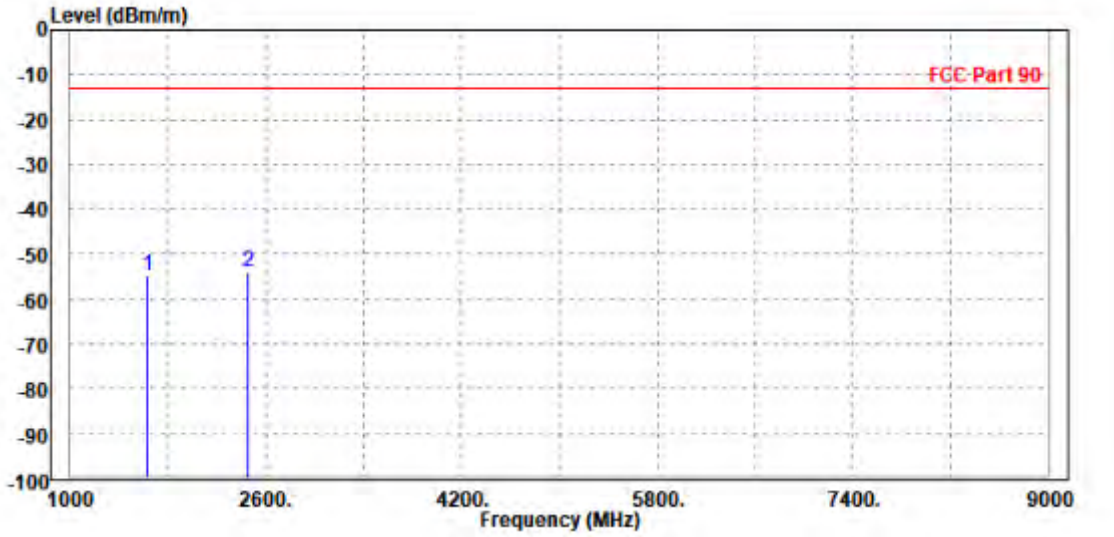
MODE	TX channel 26740	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1640.000	-49.79	-53.42	-13.00	-36.79	3.63	Peak	Horizontal
2	2457.000	-53.21	-59.19	-13.00	-40.21	5.98	Peak	Horizontal



MODE	TX channel 26740	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			

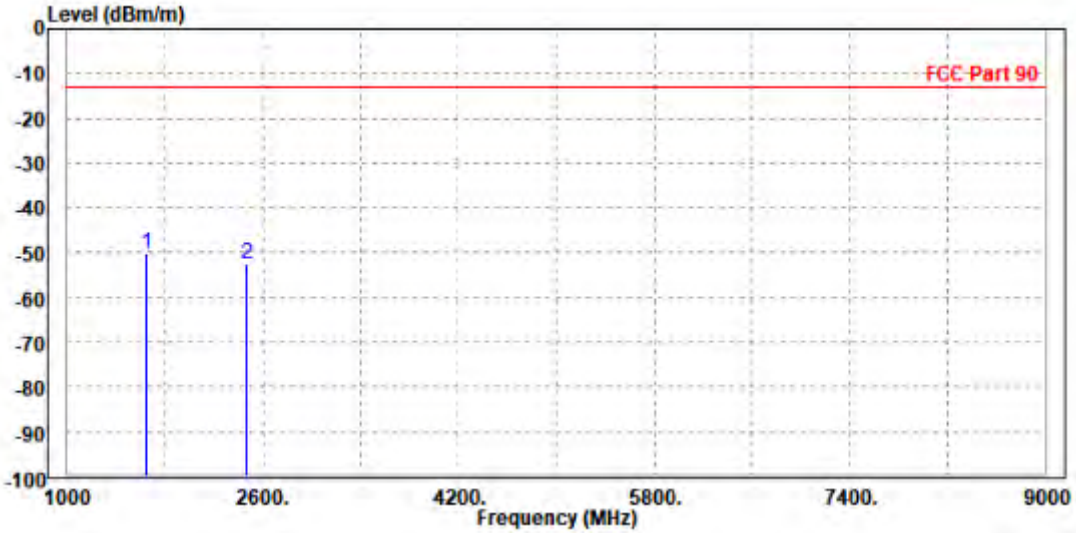
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1638.000	-54.75	-58.12	-13.00	-41.75	3.37	Peak	Vertical
2 PP	2456.000	-53.82	-59.44	-13.00	-40.82	5.62	Peak	Vertical



CH26783

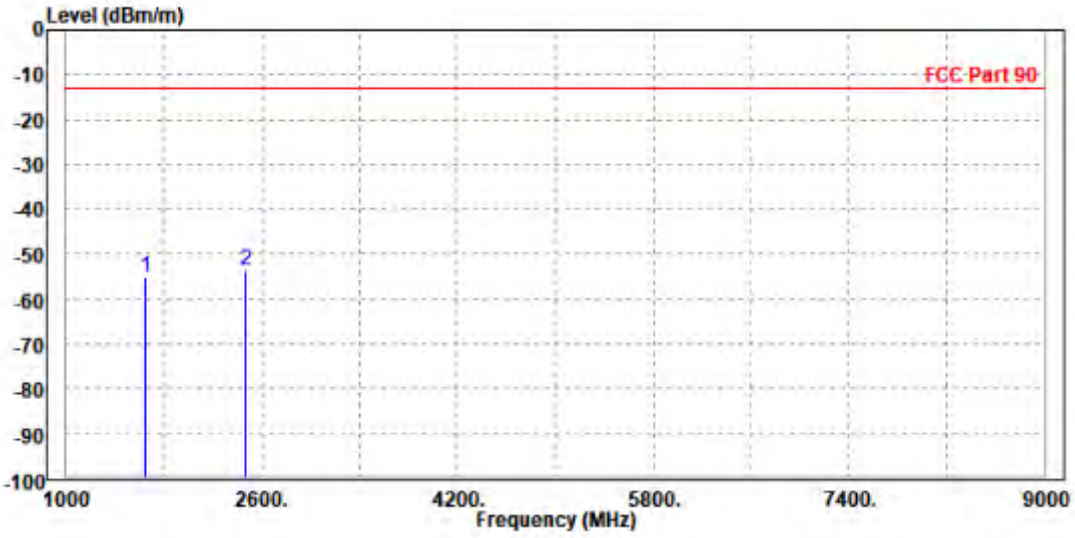
MODE	TX channel 26783	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1648.000	-50.36	-54.02	-13.00	-37.36	3.66	Peak	Horizontal
2	2469.000	-52.35	-58.37	-13.00	-39.35	6.02	Peak	Horizontal



MODE	TX channel 26783	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			

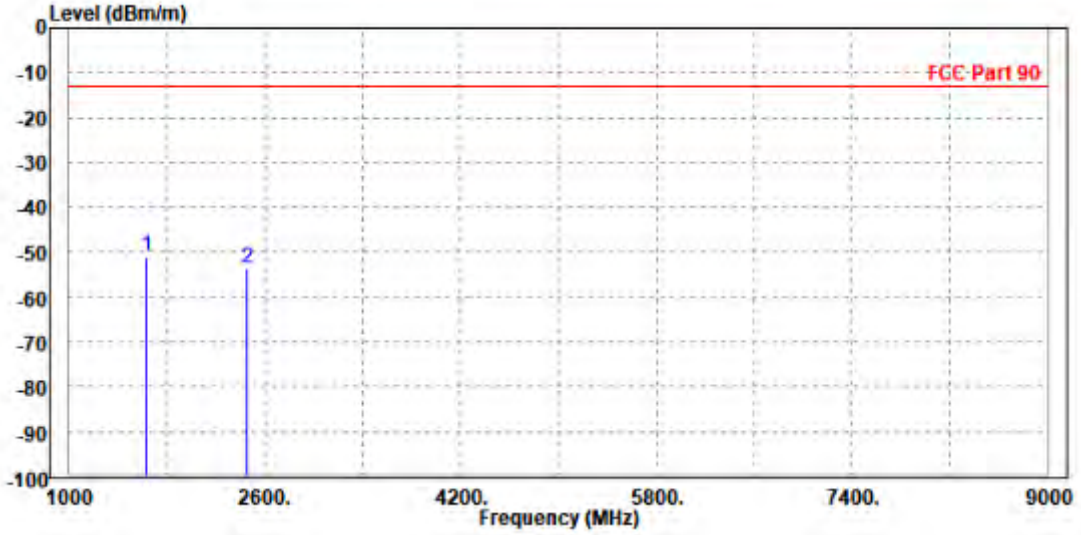
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1646.000	-54.96	-58.34	-13.00	-41.96	3.38	Peak	Vertical
2 PP	2469.000	-53.68	-59.35	-13.00	-40.68	5.67	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK

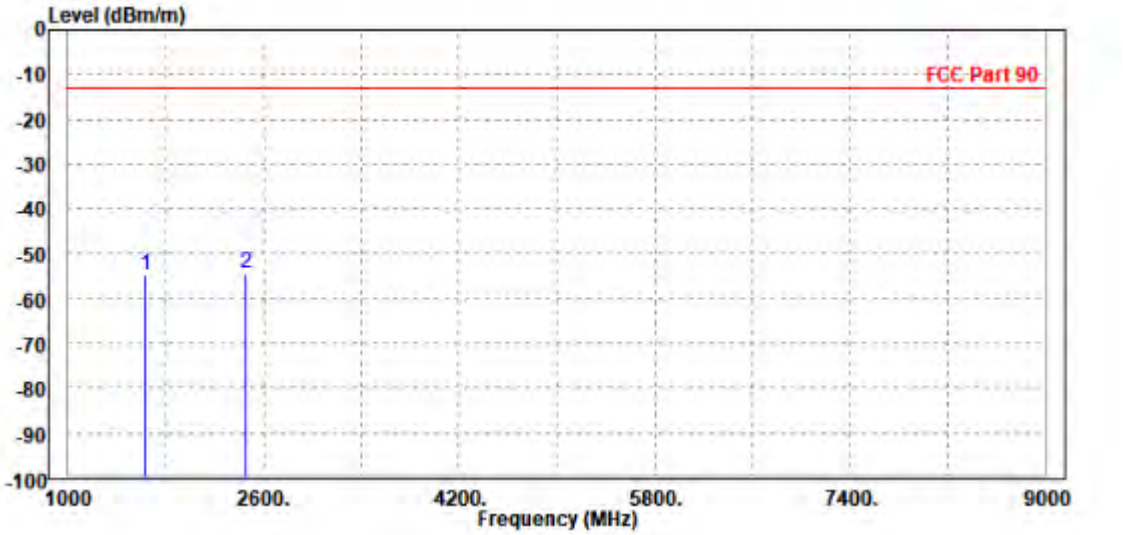
MODE	TX channel 26740	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1638.000	-50.99	-54.62	-13.00	-37.99	3.63	Peak	Horizontal
2	2456.000	-53.67	-59.65	-13.00	-40.67	5.98	Peak	Horizontal



MODE	TX channel 26740	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			

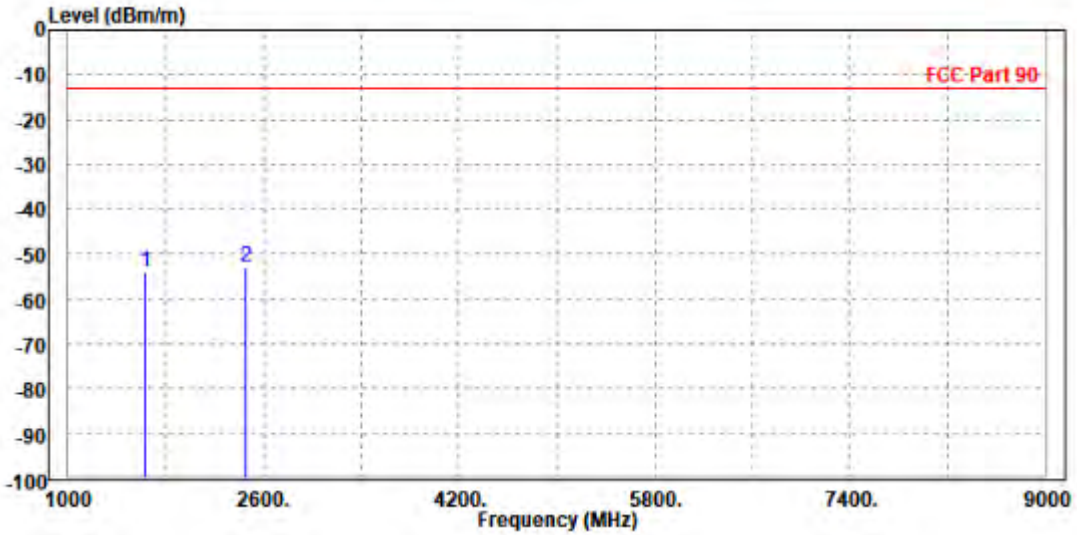
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1640.000	-54.73	-58.10	-13.00	-41.73	3.37	Peak	Vertical
2 PP	2457.000	-54.21	-59.84	-13.00	-41.21	5.63	Peak	Vertical



CHANNEL BANDWIDTH: 5MHz / QPSK

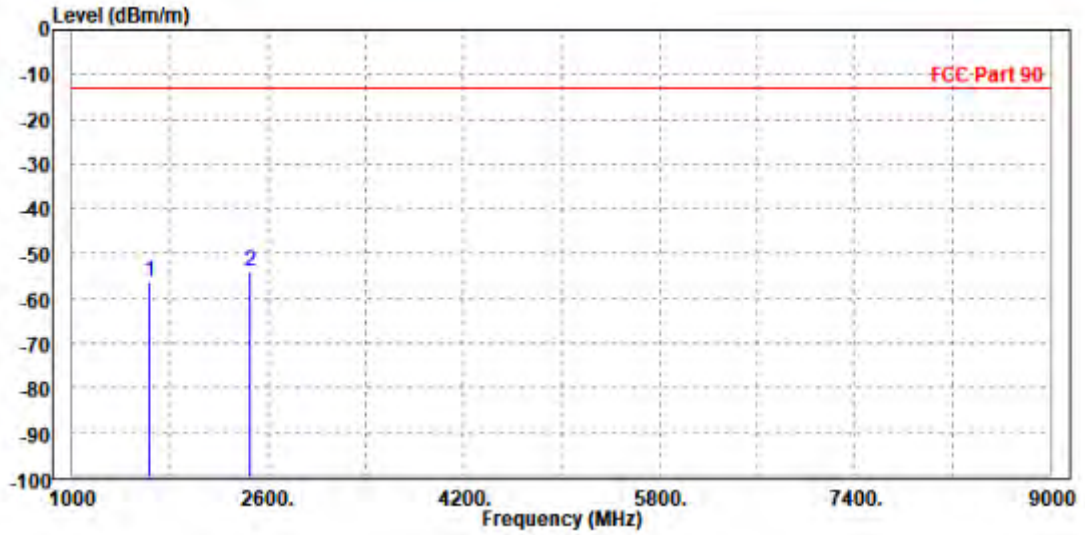
MODE	TX channel 26740	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1640.000	-53.81	-57.44	-13.00	-40.81	3.63	Peak	Horizontal
2 PP	2457.000	-52.91	-58.89	-13.00	-39.91	5.98	Peak	Horizontal



MODE	TX channel 26740	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			

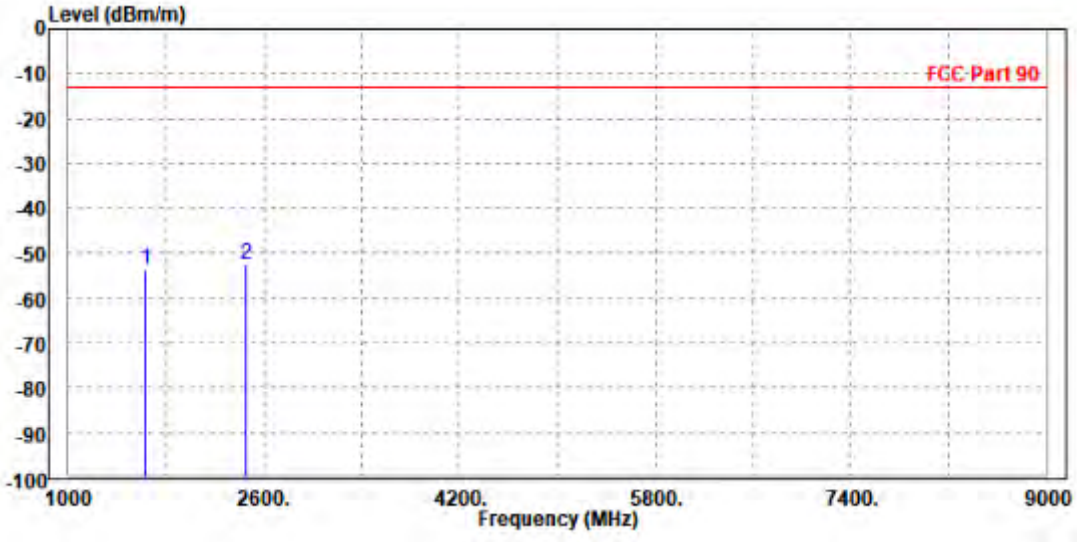
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1638.000	-56.11	-59.48	-13.00	-43.11	3.37	Peak	Vertical
2 PP	2456.000	-54.05	-59.67	-13.00	-41.05	5.62	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

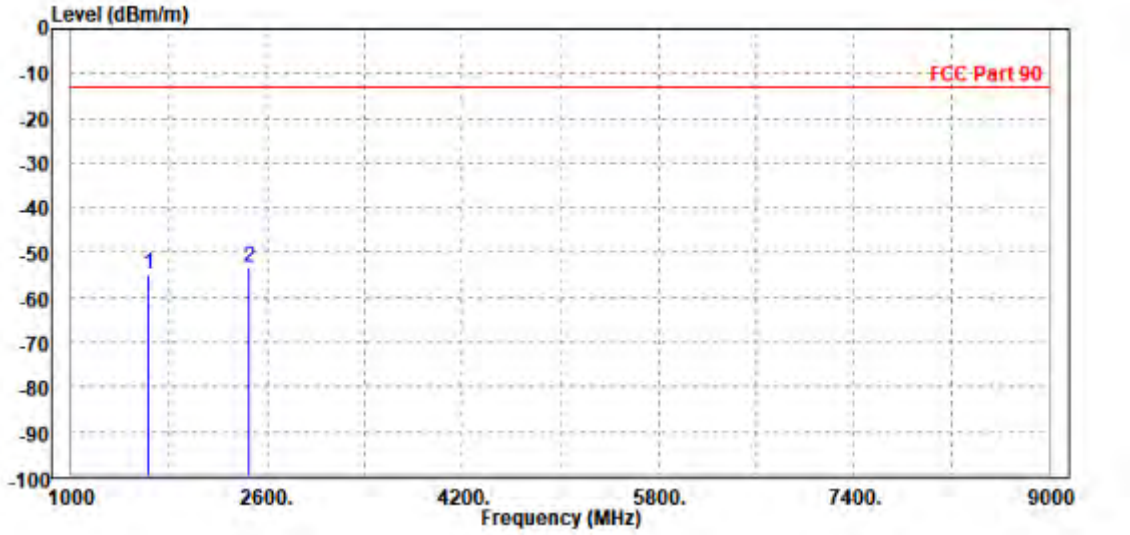
MODE	TX channel 26740	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1638.000	-53.61	-57.24	-13.00	-40.61	3.63	Peak	Horizontal
2 PP	2456.000	-52.57	-58.55	-13.00	-39.57	5.98	Peak	Horizontal



MODE	TX channel 26740	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			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1640.000	-54.87	-58.24	-13.00	-41.87	3.37	Peak	Vertical
2 PP	2457.000	-53.42	-59.05	-13.00	-40.42	5.63	Peak	Vertical

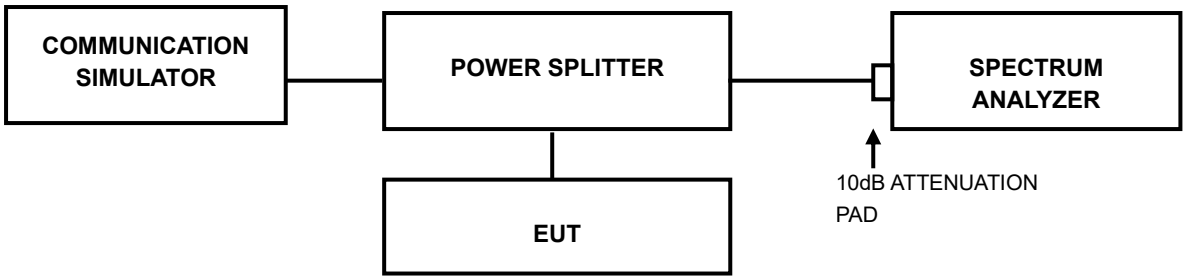


3.7 PEAK TO AVERAGE RATIO

3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

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

3.7.2 TEST SETUP



3.7.3 TEST PROCEDURES

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

3.7.4 TEST RESULTS

Please Refer to Appendix Of this test report.

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@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 modifications were made to the EUT by the lab during the test.

6 APPENDIX

LTE BAND 26Q

PEAK-TO-AVERAGE RATIO(CCDF)

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
26(814-824)	10MHz	QPSK	26740	1RB#0	4.37	13	PASS
26(814-824)	10MHz	QPSK	26740	50RB#0	5.09	13	PASS
26(814-824)	10MHz	16QAM	26740	1RB#0	5.44	13	PASS
26(814-824)	10MHz	16QAM	26740	50RB#0	5.88	13	PASS

Test Graphs

26(814-824)-10MHz-QPSK-26740-1RB#0-PASS

26(814-824)-10MHz-QPSK-26740-50RB#0-PASS

26(814-824)-10MHz-16QAM-26740-1RB#0-PASS

26(814-824)-10MHz-16QAM-26740-50RB#0-PASS

26DB BANDWIDTH AND OCCUPIED BANDWIDTH

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
26(814-824)	1.4MHz	QPSK	26697	6RB#0	1.0897	1.305	PASS
26(814-824)	1.4MHz	QPSK	26740	6RB#0	1.0926	1.299	PASS
26(814-824)	1.4MHz	QPSK	26783	6RB#0	1.0911	1.295	PASS
26(814-824)	1.4MHz	16QAM	26697	6RB#0	1.0978	1.311	PASS
26(814-824)	1.4MHz	16QAM	26740	6RB#0	1.0965	1.304	PASS
26(814-824)	1.4MHz	16QAM	26783	6RB#0	1.0982	1.314	PASS
26(814-824)	3MHz	QPSK	26705	15RB#0	2.6879	2.933	PASS
26(814-824)	3MHz	QPSK	26740	15RB#0	2.6874	2.920	PASS
26(814-824)	3MHz	QPSK	26775	15RB#0	2.6876	2.930	PASS
26(814-824)	3MHz	16QAM	26705	15RB#0	2.6900	2.950	PASS
26(814-824)	3MHz	16QAM	26740	15RB#0	2.6909	2.937	PASS
26(814-824)	3MHz	16QAM	26775	15RB#0	2.6936	2.934	PASS
26(814-824)	5MHz	QPSK	26715	25RB#0	4.5074	5.019	PASS
26(814-824)	5MHz	QPSK	26740	25RB#0	4.5017	5.035	PASS
26(814-824)	5MHz	QPSK	26765	25RB#0	4.5059	5.048	PASS
26(814-824)	5MHz	16QAM	26715	25RB#0	4.5029	4.983	PASS
26(814-824)	5MHz	16QAM	26740	25RB#0	4.5047	4.985	PASS
26(814-824)	5MHz	16QAM	26765	25RB#0	4.5014	5.028	PASS
26(814-824)	10MHz	QPSK	26740	50RB#0	8.9806	9.830	PASS
26(814-824)	10MHz	16QAM	26740	50RB#0	8.9788	9.797	PASS

Test Graphs

26(814-824)-1.4MHz-QPSK-26697-6RB#0-PASS

26(814-824)-1.4MHz-QPSK-26740-6RB#0-PASS

26(814-824)-1.4MHz-QPSK-26783-6RB#0-PASS

26(814-824)-1.4MHz-16QAM-26697-6RB#0-PASS

26(814-824)-1.4MHz-16QAM-26740-6RB#0-PASS

26(814-824)-1.4MHz-16QAM-26783-6RB#0-PASS

26(814-824)-3MHz-QPSK-26705-15RB#0-PASS

26(814-824)-3MHz-QPSK-26740-15RB#0-PASS

26(814-824)-3MHz-QPSK-26775-15RB#0-PASS

26(814-824)-3MHz-16QAM-26705-15RB#0-PASS

26(814-824)-3MHz-16QAM-26740-15RB#0-PASS

26(814-824)-3MHz-16QAM-26775-15RB#0-PASS

26(814-824)-5MHz-QPSK-26715-25RB#0-PASS

26(814-824)-5MHz-QPSK-26740-25RB#0-PASS

26(814-824)-5MHz-QPSK-26765-25RB#0-PASS

26(814-824)-5MHz-16QAM-26715-25RB#0-PASS

26(814-824)-5MHz-16QAM-26740-25RB#0-PASS

26(814-824)-5MHz-16QAM-26765-25RB#0-PASS

26(814-824)-10MHz-QPSK-26740-50RB#0-PASS

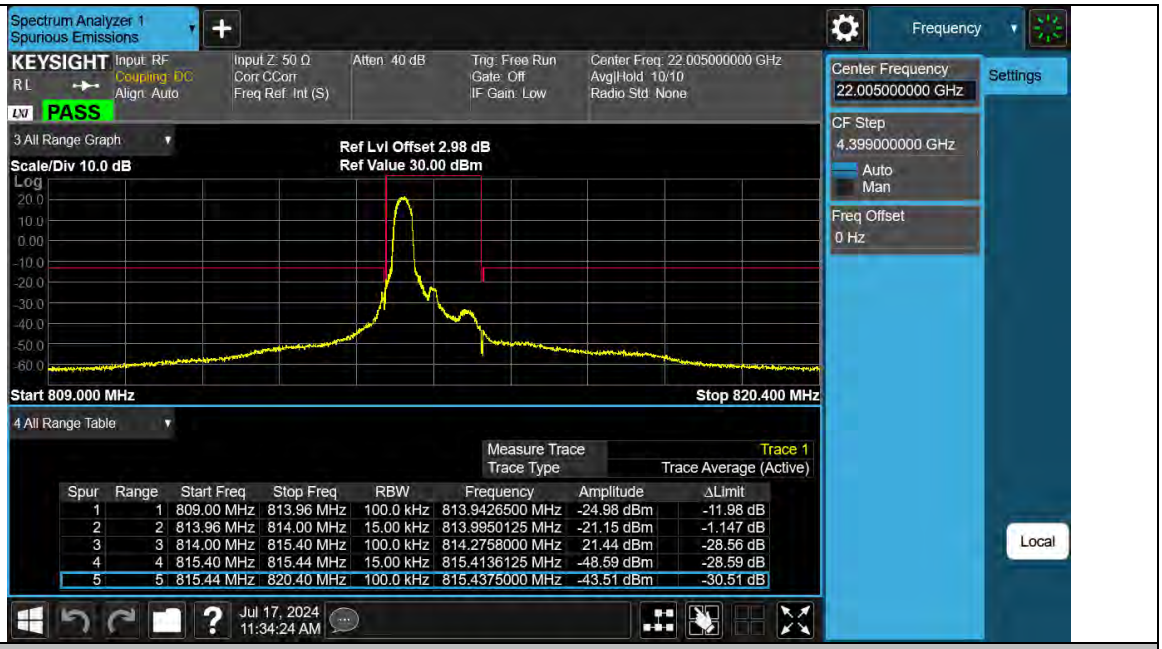
26(814-824)-10MHz-16QAM-26740-50RB#0-PASS

BAND EDGE

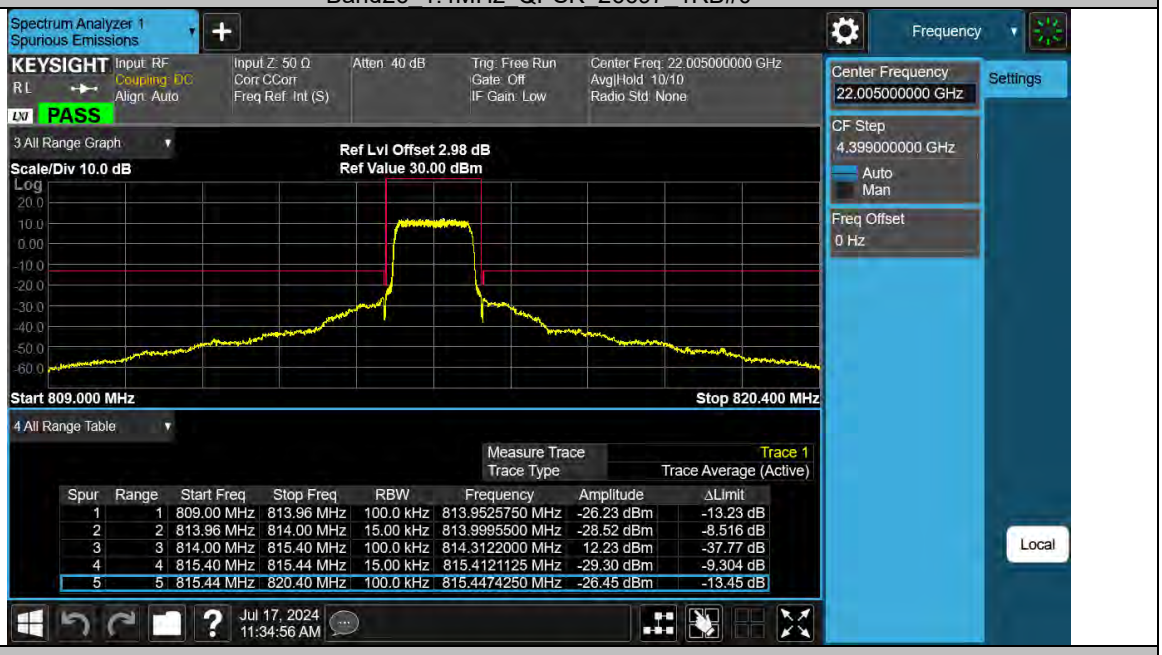
Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
26(814-824)	1.4MHz	QPSK	26697	1RB#0	-21.15	PASS
26(814-824)	1.4MHz	QPSK	26697	6RB#0	-28.52	PASS
26(814-824)	1.4MHz	QPSK	26783	1RB#5	-23.64	PASS
26(814-824)	1.4MHz	QPSK	26783	6RB#0	-28.43	PASS
26(814-824)	1.4MHz	16QAM	26697	1RB#0	-23.70	PASS
26(814-824)	1.4MHz	16QAM	26697	6RB#0	-30.25	PASS
26(814-824)	1.4MHz	16QAM	26783	1RB#5	-23.45	PASS
26(814-824)	1.4MHz	16QAM	26783	6RB#0	-30.12	PASS
26(814-824)	3MHz	QPSK	26705	1RB#0	-21.52	PASS
26(814-824)	3MHz	QPSK	26705	15RB#0	-28.77	PASS
26(814-824)	3MHz	QPSK	26775	1RB#14	-22.02	PASS
26(814-824)	3MHz	QPSK	26775	15RB#0	-31.00	PASS
26(814-824)	3MHz	16QAM	26705	1RB#0	-22.15	PASS
26(814-824)	3MHz	16QAM	26705	15RB#0	-31.90	PASS
26(814-824)	3MHz	16QAM	26775	1RB#14	-23.72	PASS
26(814-824)	3MHz	16QAM	26775	15RB#0	-32.38	PASS
26(814-824)	5MHz	QPSK	26715	1RB#0	-23.74	PASS
26(814-824)	5MHz	QPSK	26715	25RB#0	-30.57	PASS
26(814-824)	5MHz	QPSK	26765	1RB#24	-23.52	PASS
26(814-824)	5MHz	QPSK	26765	25RB#0	-31.71	PASS
26(814-824)	5MHz	16QAM	26715	1RB#0	-23.69	PASS
26(814-824)	5MHz	16QAM	26715	25RB#0	-32.18	PASS
26(814-824)	5MHz	16QAM	26765	1RB#24	-25.03	PASS
26(814-824)	5MHz	16QAM	26765	25RB#0	-34.19	PASS
26(814-824)	10MHz	QPSK	26740	1RB#0	-31.93	PASS
26(814-824)	10MHz	QPSK	26740	1RB#49	-32.95	PASS
26(814-824)	10MHz	QPSK	26740	50RB#0	-33.31	PASS
26(814-824)	10MHz	16QAM	26740	1RB#0	-34.40	PASS
26(814-824)	10MHz	16QAM	26740	1RB#49	-34.08	PASS
26(814-824)	10MHz	16QAM	26740	50RB#0	-35.38	PASS

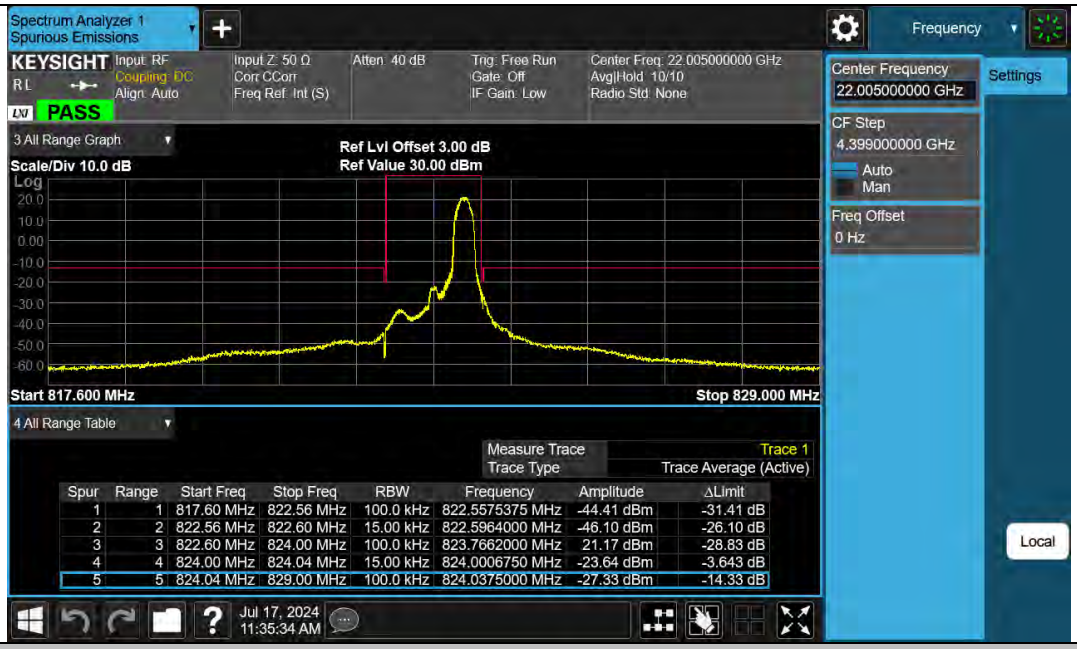
Test Graphs



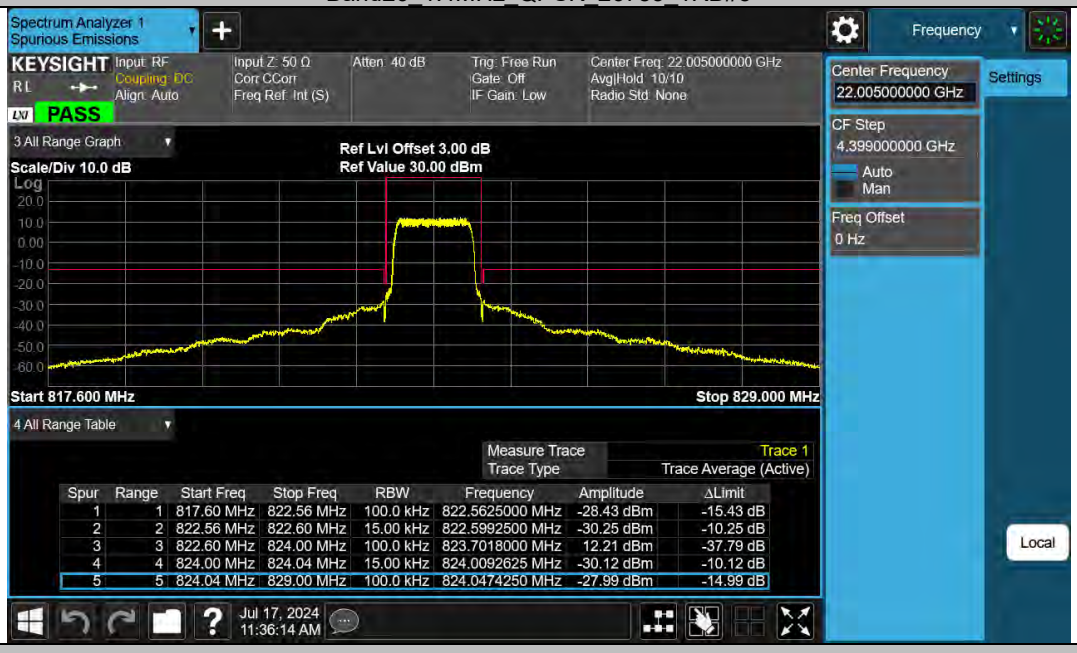
Band26_1.4MHz_QPSK_26697_1RB#0



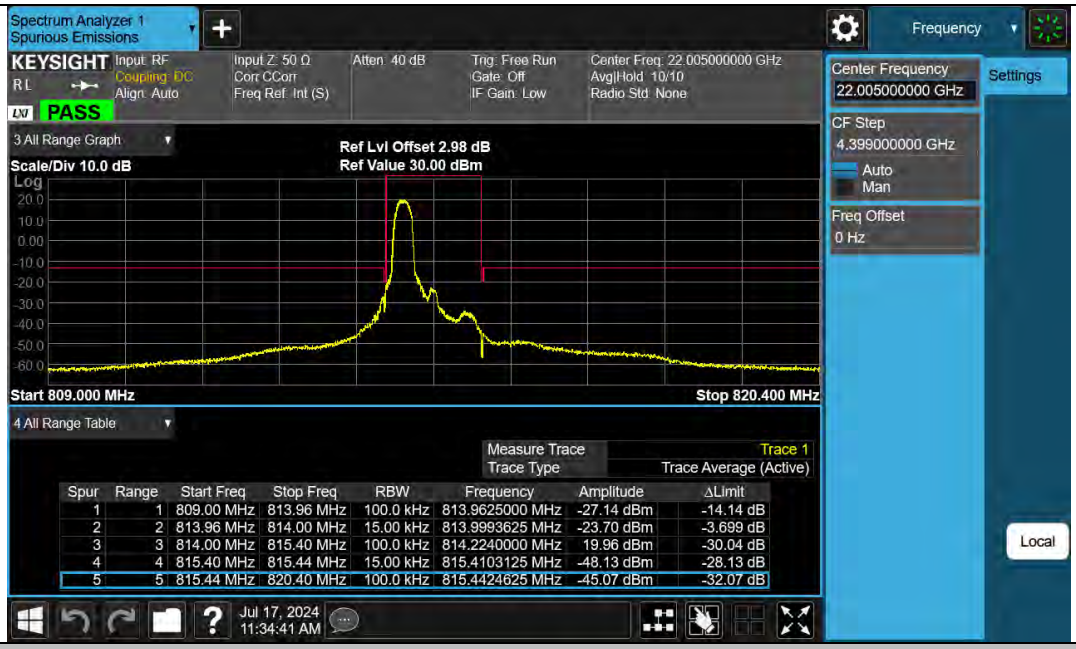
Band26_1.4MHz_QPSK_26697_6RB#0



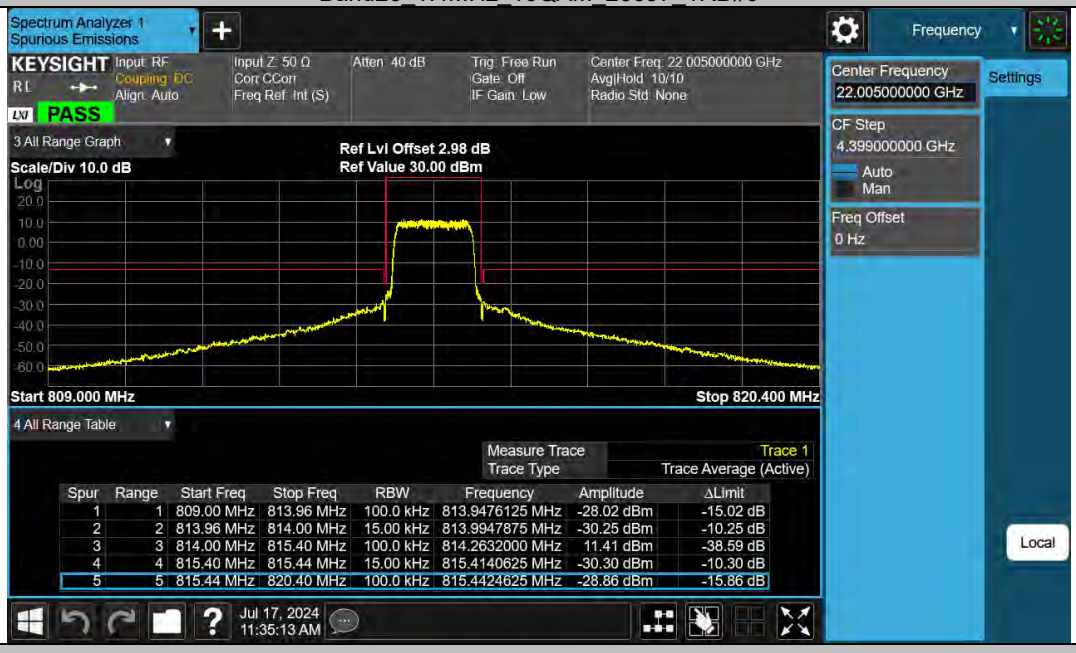
Band26_1.4MHz_QPSK_26783_1RB#5



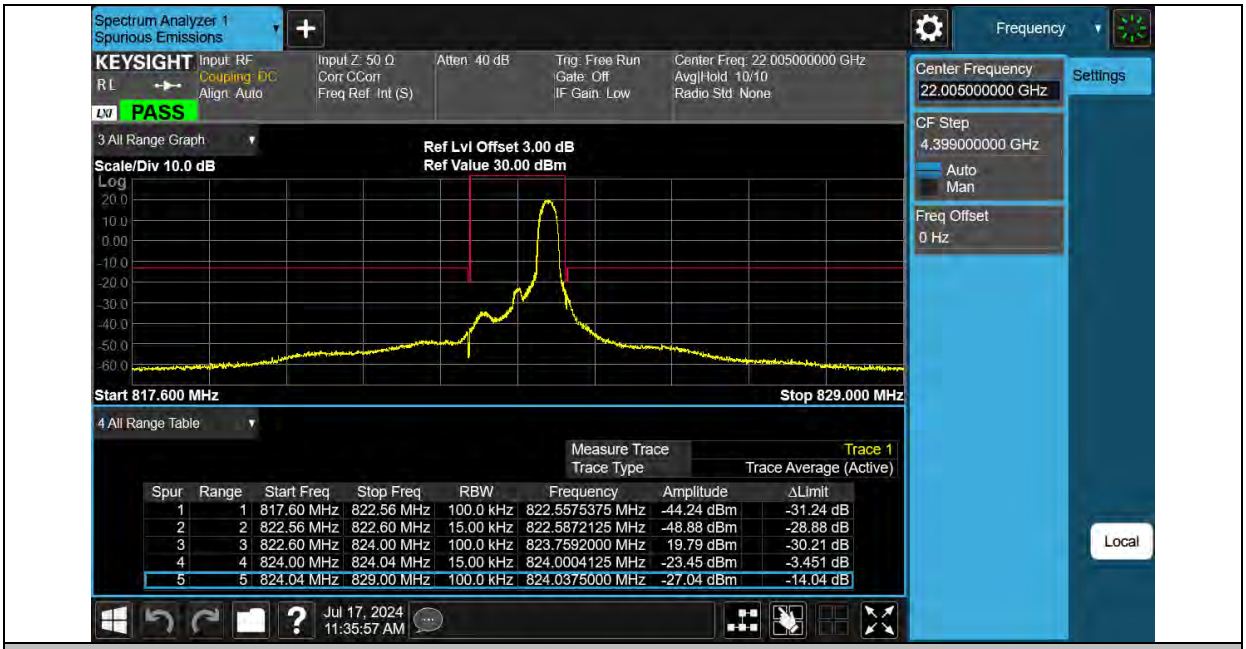
Band26_1.4MHz_QPSK_26783_6RB#0



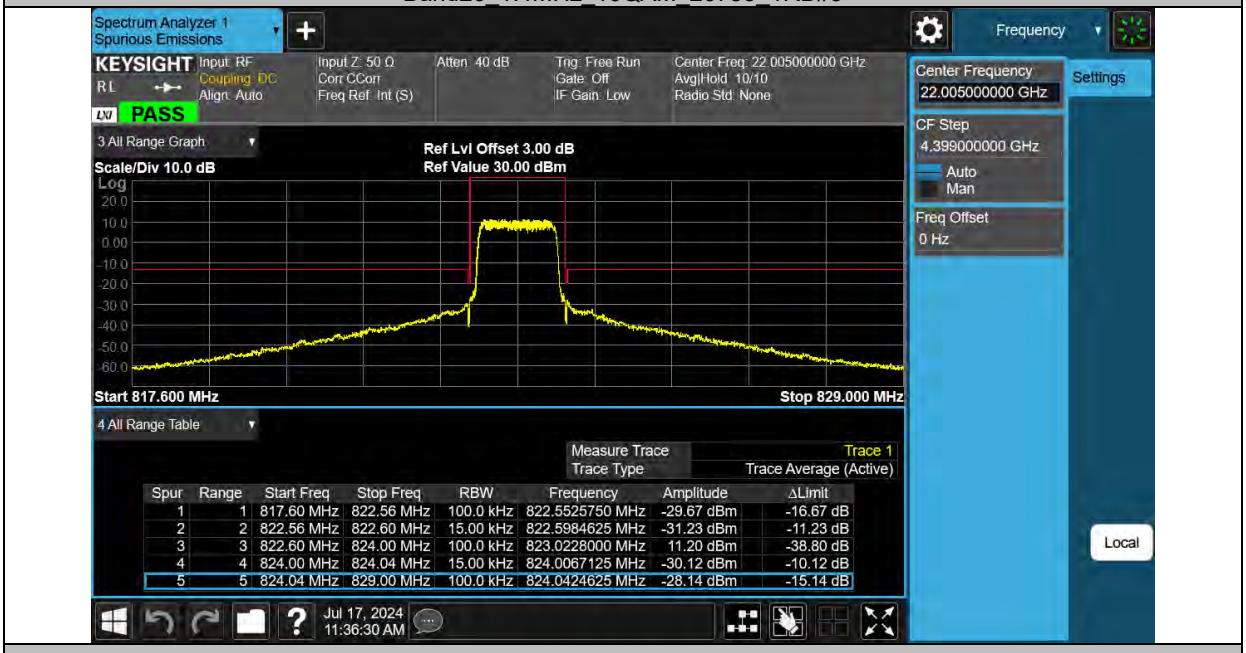
Band26_1.4MHz_16QAM_26697_1RB#0



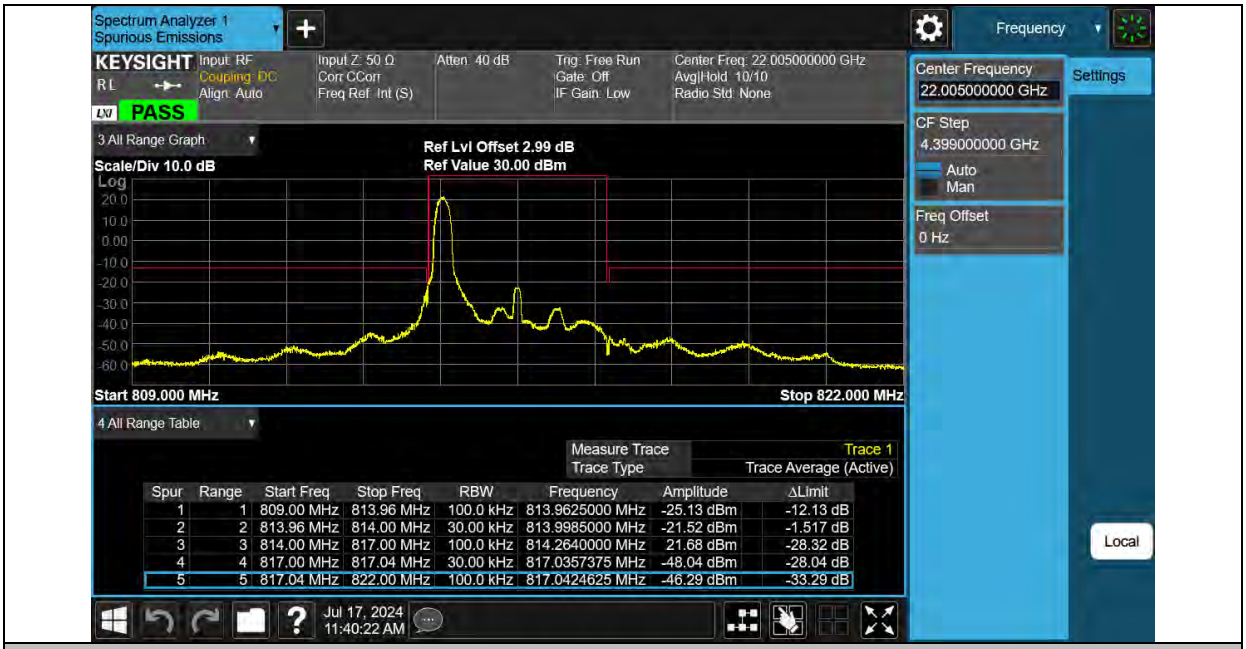
Band26_1.4MHz_16QAM_26697_6RB#0



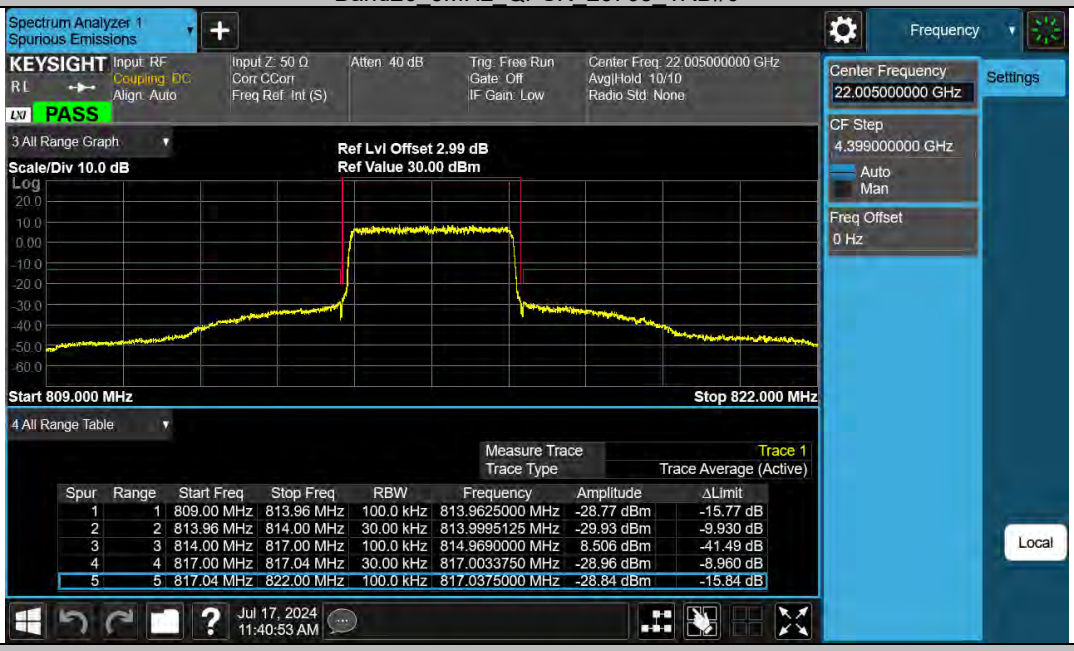
Band26_1.4MHz_16QAM_26783_1RB#5



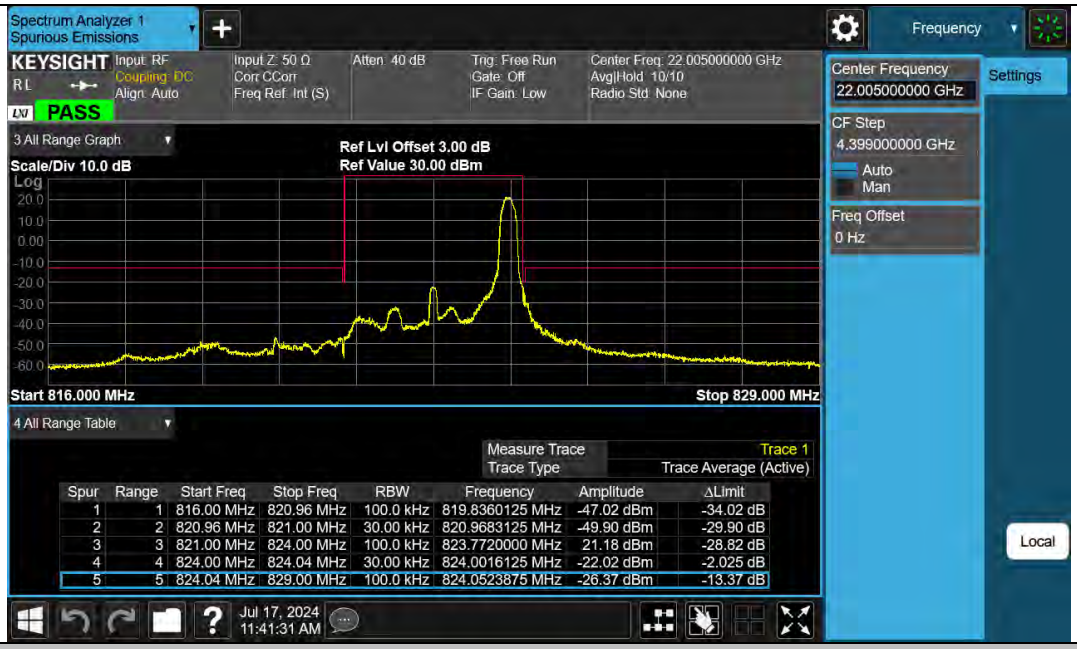
Band26_1.4MHz_16QAM_26783_6RB#0



Band26_3MHz_QPSK_26705_1RB#0

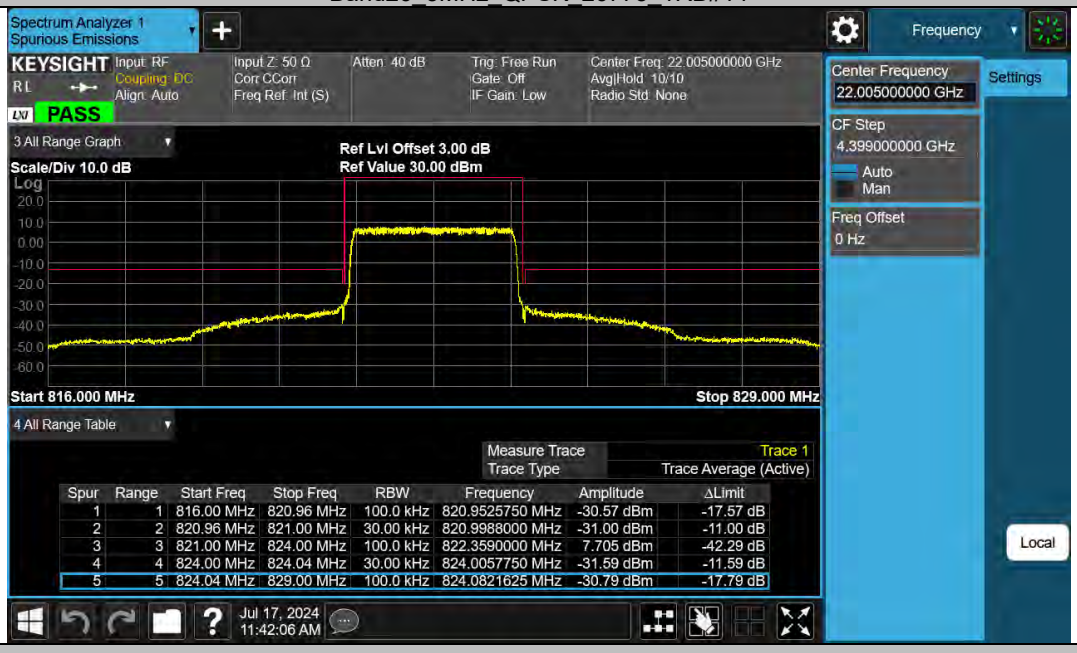


Band26_3MHz_QPSK_26705_15RB#0



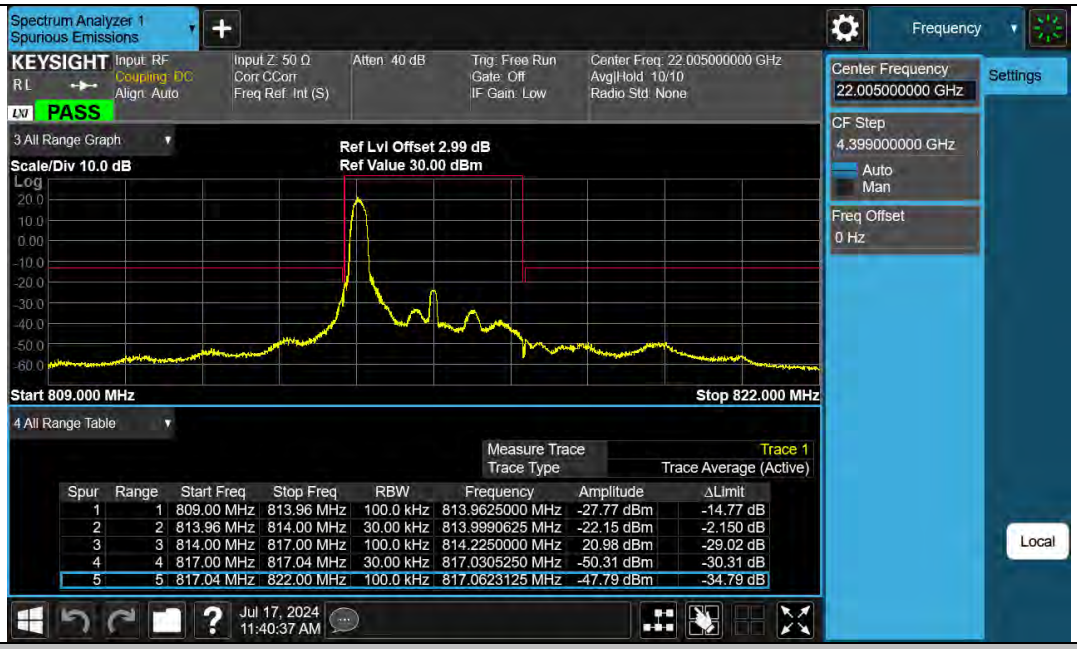
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	ΔLimit
1	1	816.00 MHz	820.96 MHz	100.0 kHz	819.8360125 MHz	-47.02 dBm	-34.02 dB
2	2	820.96 MHz	821.00 MHz	30.00 kHz	820.9683125 MHz	-49.90 dBm	-29.90 dB
3	3	821.00 MHz	824.00 MHz	100.0 kHz	823.7720000 MHz	21.18 dBm	-28.82 dB
4	4	824.00 MHz	824.04 MHz	30.00 kHz	824.0016125 MHz	-22.02 dBm	-2.025 dB
5	5	824.04 MHz	829.00 MHz	100.0 kHz	824.0523875 MHz	-26.37 dBm	-13.37 dB

Band26_3MHz_QPSK_26775_1RB#14

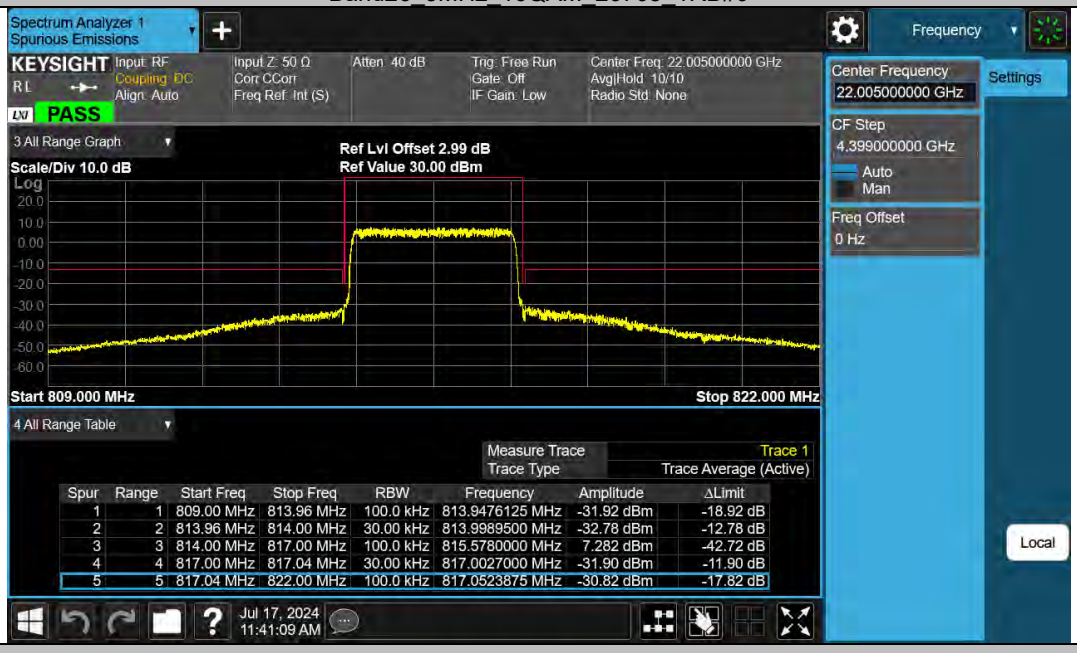


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	ΔLimit
1	1	816.00 MHz	820.96 MHz	100.0 kHz	820.9525750 MHz	-30.57 dBm	-17.57 dB
2	2	820.96 MHz	821.00 MHz	30.00 kHz	820.9988000 MHz	-31.00 dBm	-11.00 dB
3	3	821.00 MHz	824.00 MHz	100.0 kHz	822.3590000 MHz	7.705 dBm	-42.29 dB
4	4	824.00 MHz	824.04 MHz	30.00 kHz	824.0057750 MHz	-31.59 dBm	-11.59 dB
5	5	824.04 MHz	829.00 MHz	100.0 kHz	824.0821625 MHz	-30.79 dBm	-17.79 dB

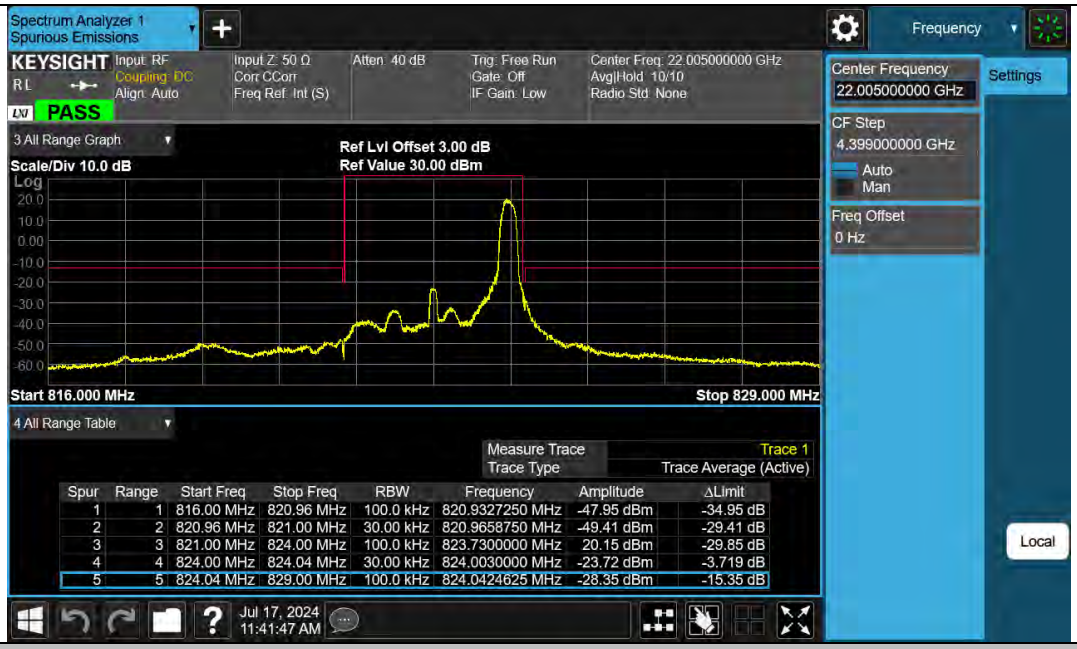
Band26_3MHz_QPSK_26775_15RB#0



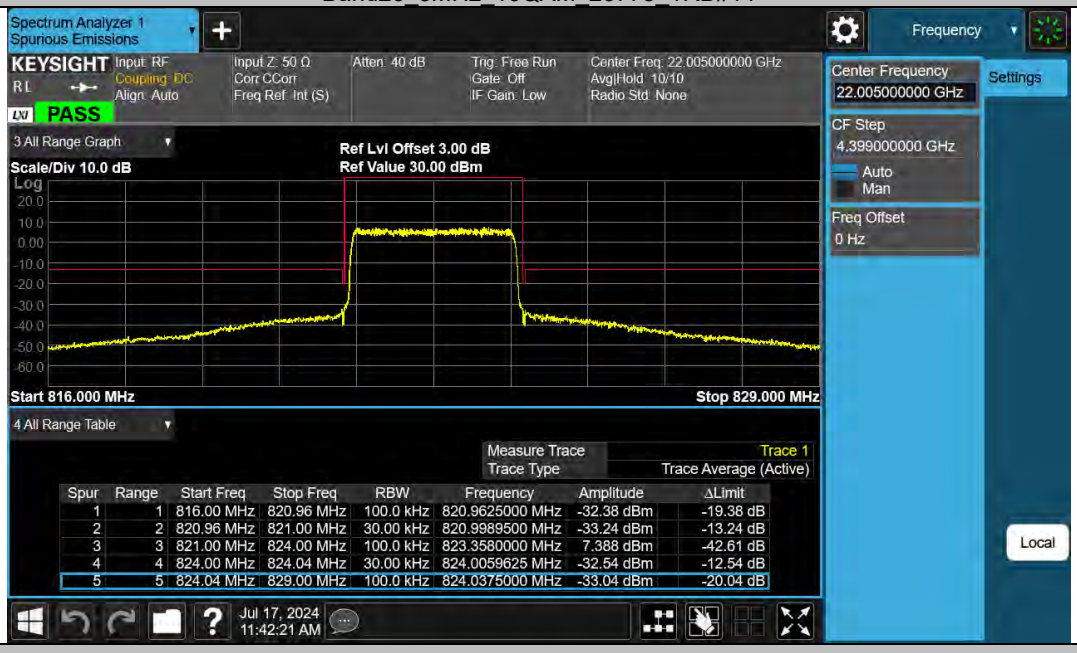
Band26_3MHz_16QAM_26705_1RB#0



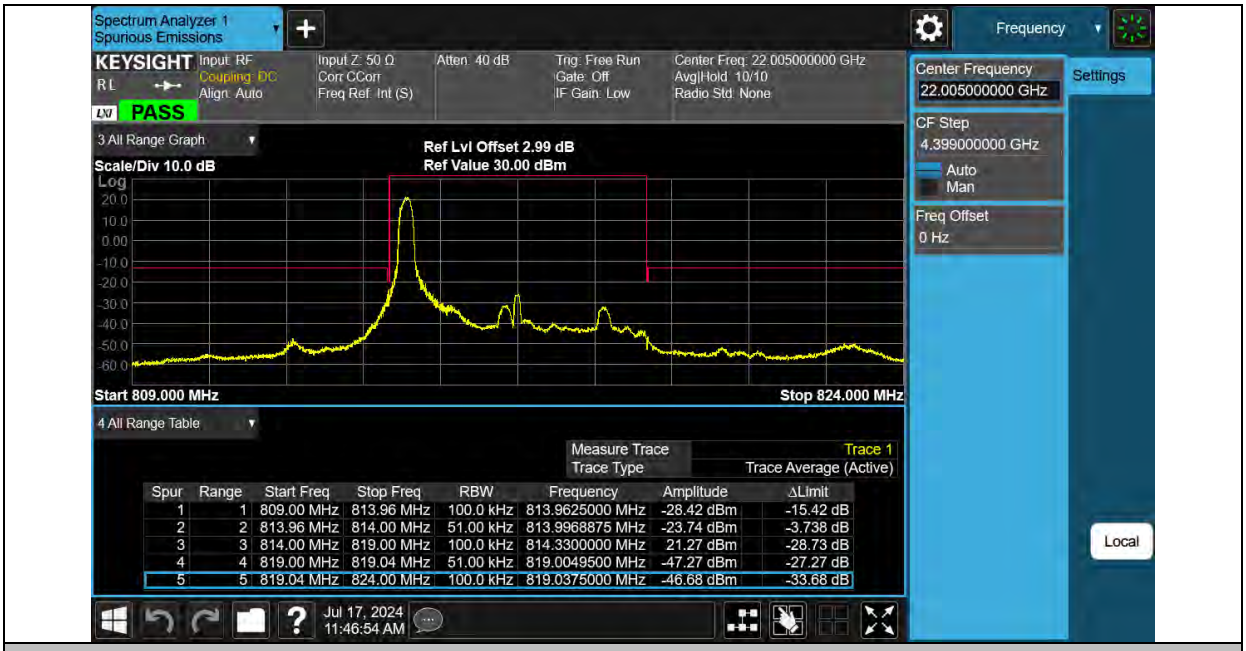
Band26_3MHz_16QAM_26705_15RB#0



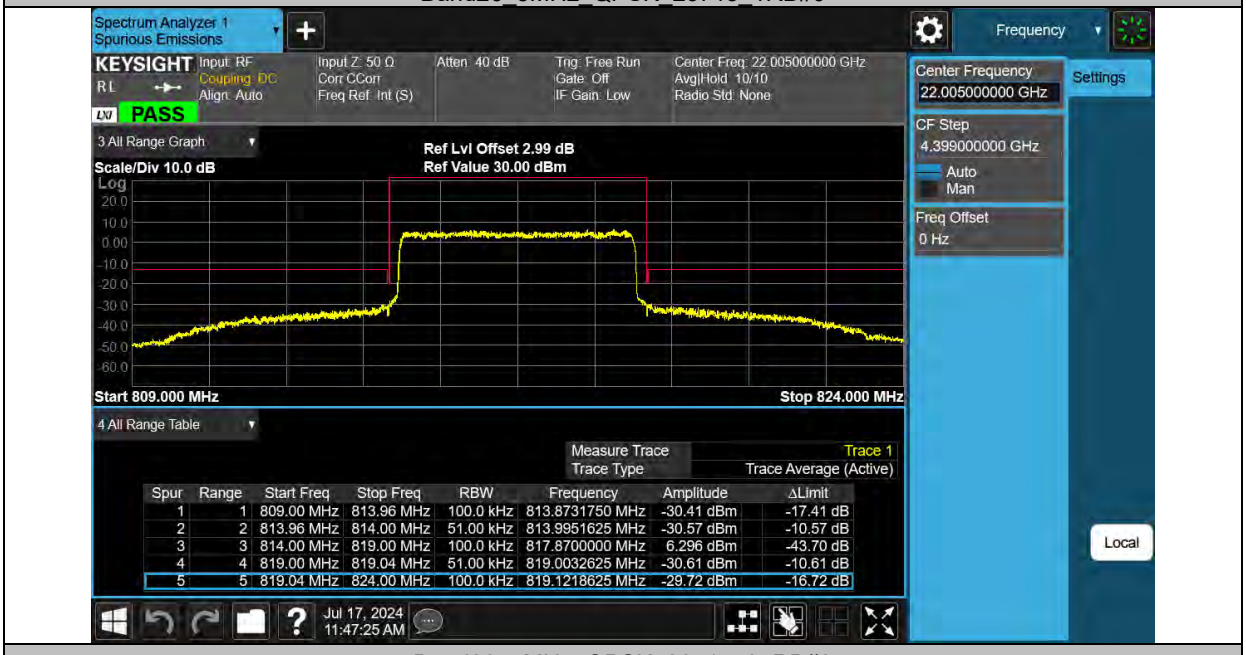
Band26_3MHz_16QAM_26775_1RB#14



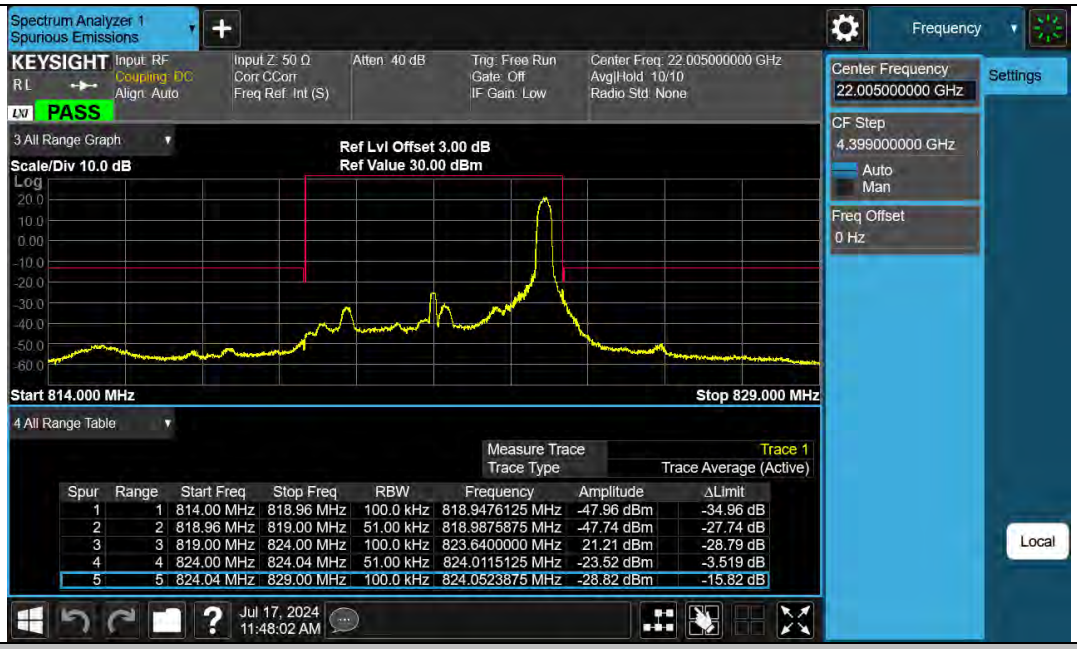
Band26_3MHz_16QAM_26775_15RB#0



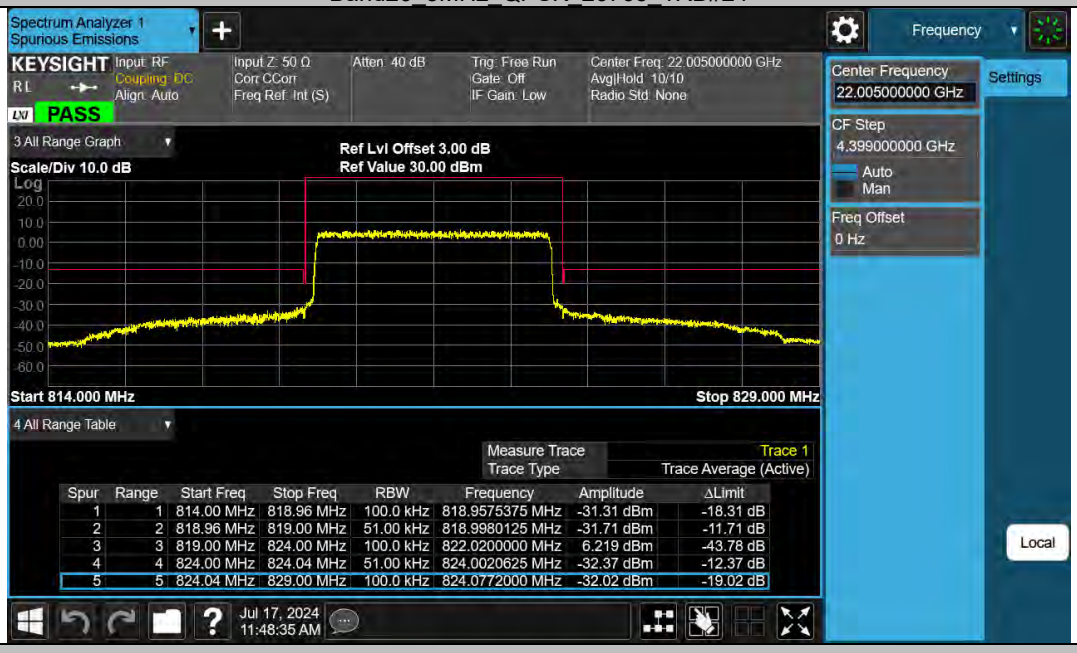
Band26_5MHz_QPSK_26715_1RB#0



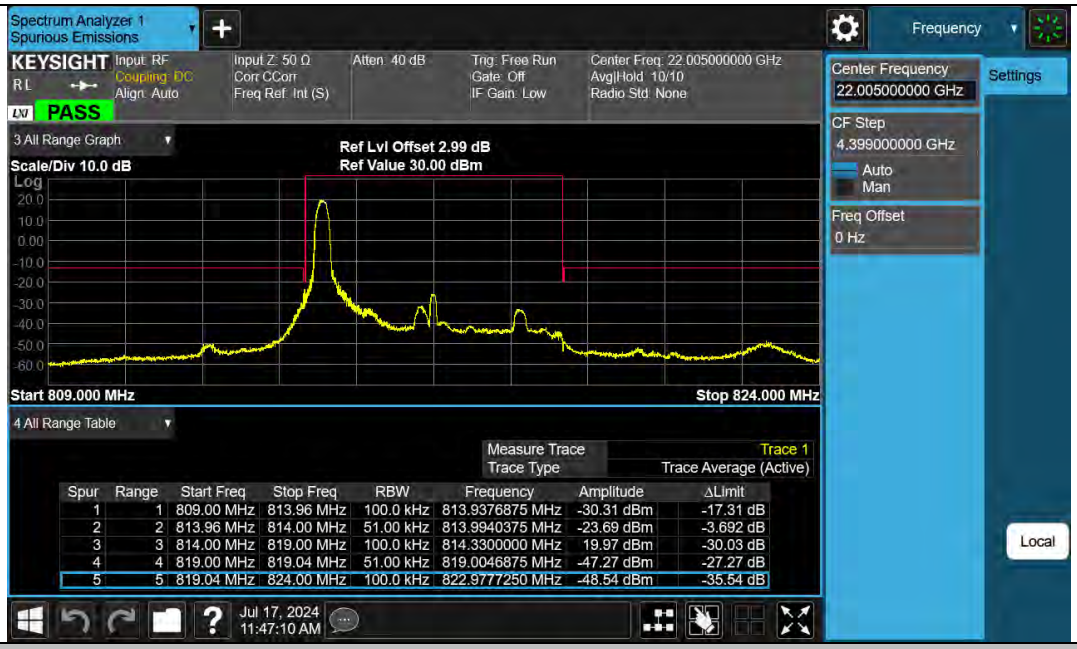
Band26_5MHz_QPSK_26715_25RB#0



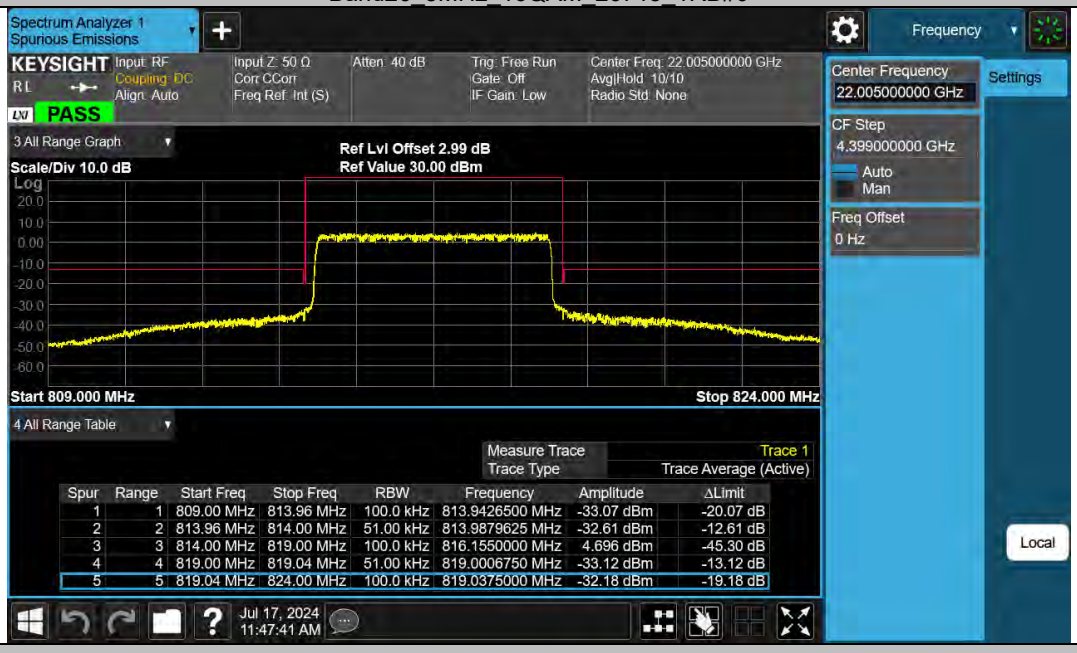
Band26_5MHz_QPSK_26765_1RB#24



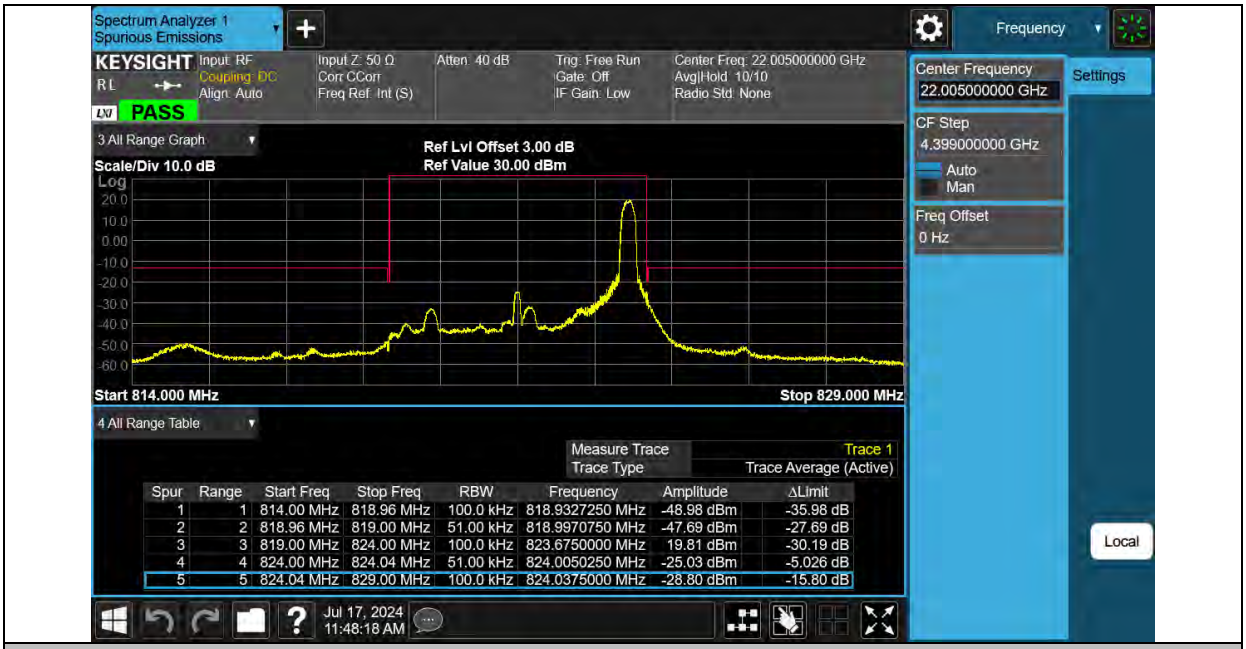
Band26_5MHz_QPSK_26765_25RB#0



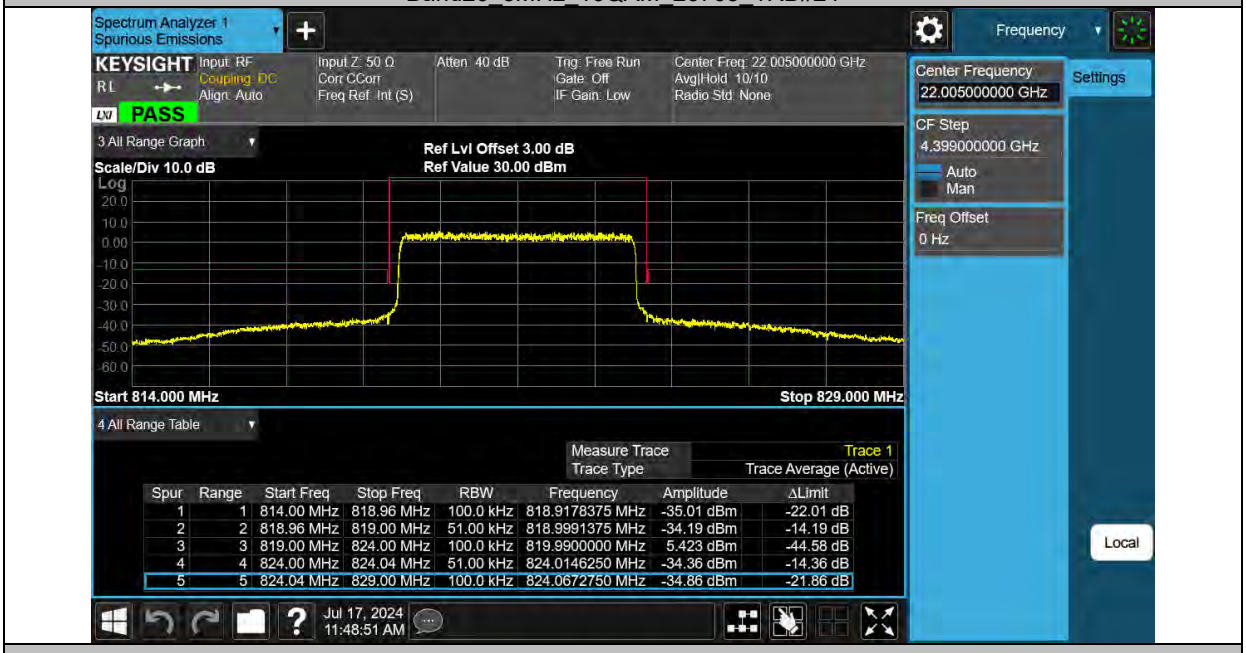
Band26_5MHz_16QAM_26715_1RB#0



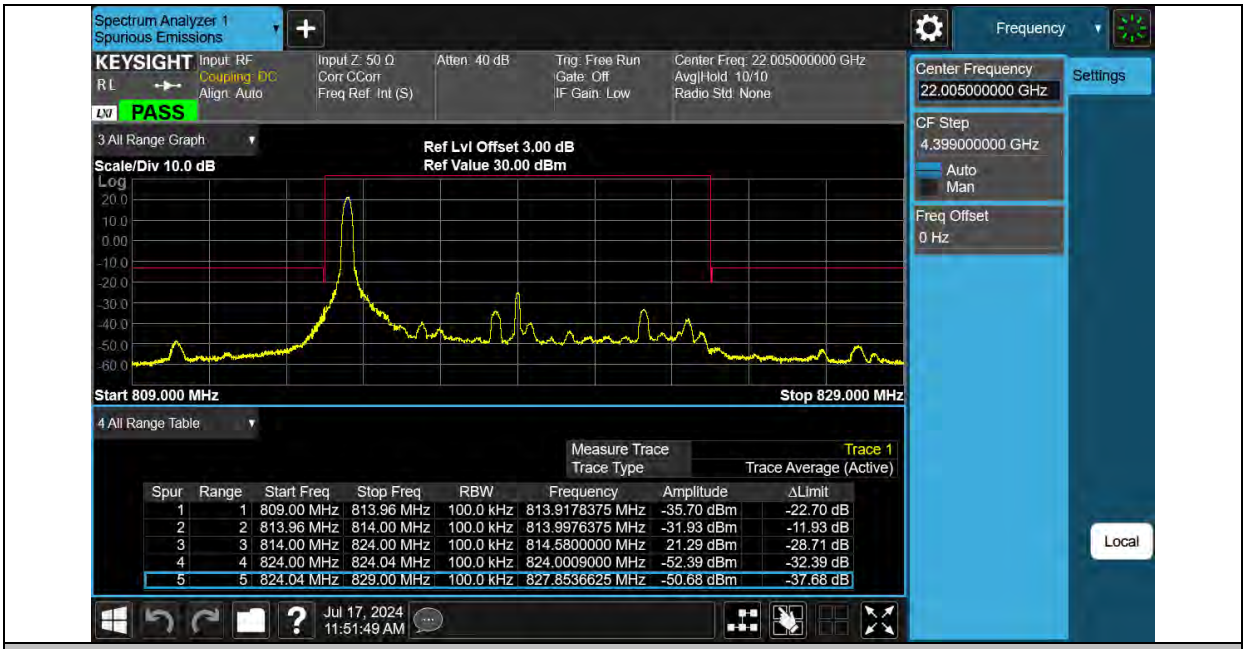
Band26_5MHz_16QAM_26715_25RB#0



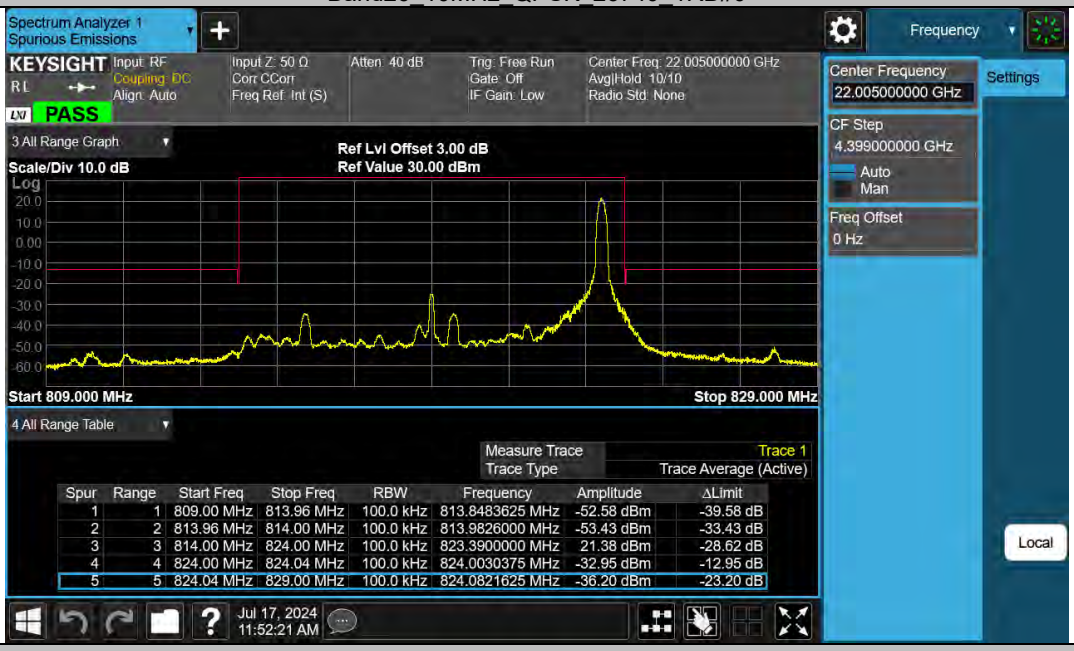
Band26_5MHz_16QAM_26765_1RB#24



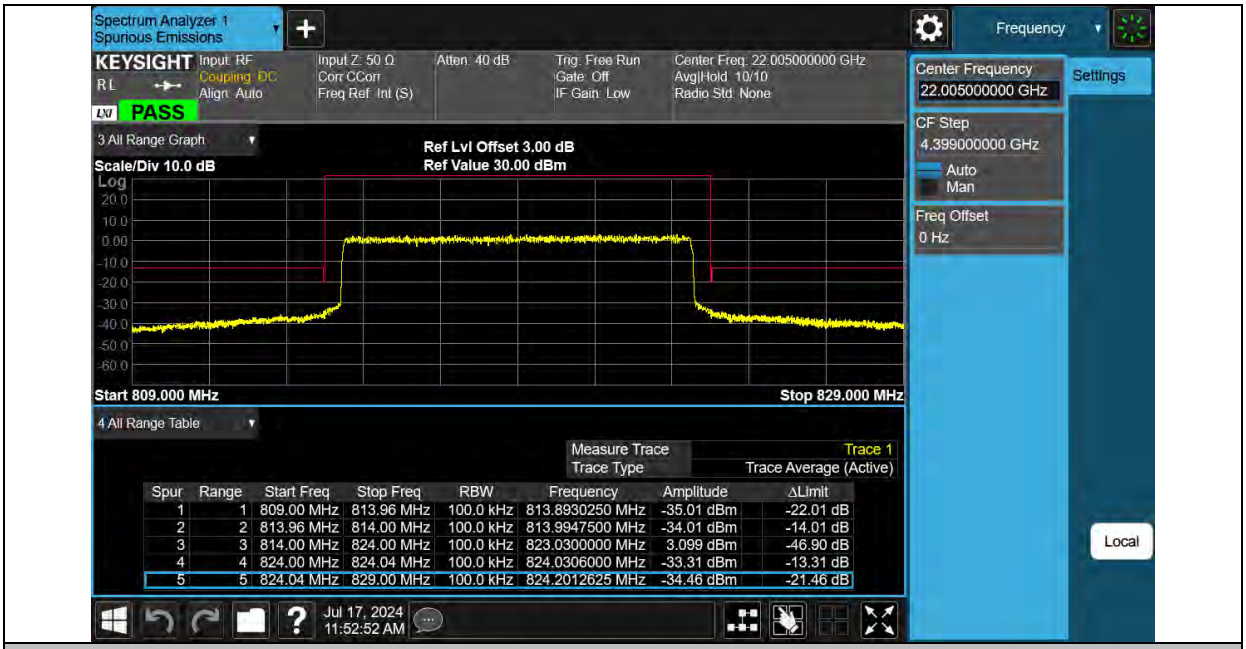
Band26_5MHz_16QAM_26765_25RB#0



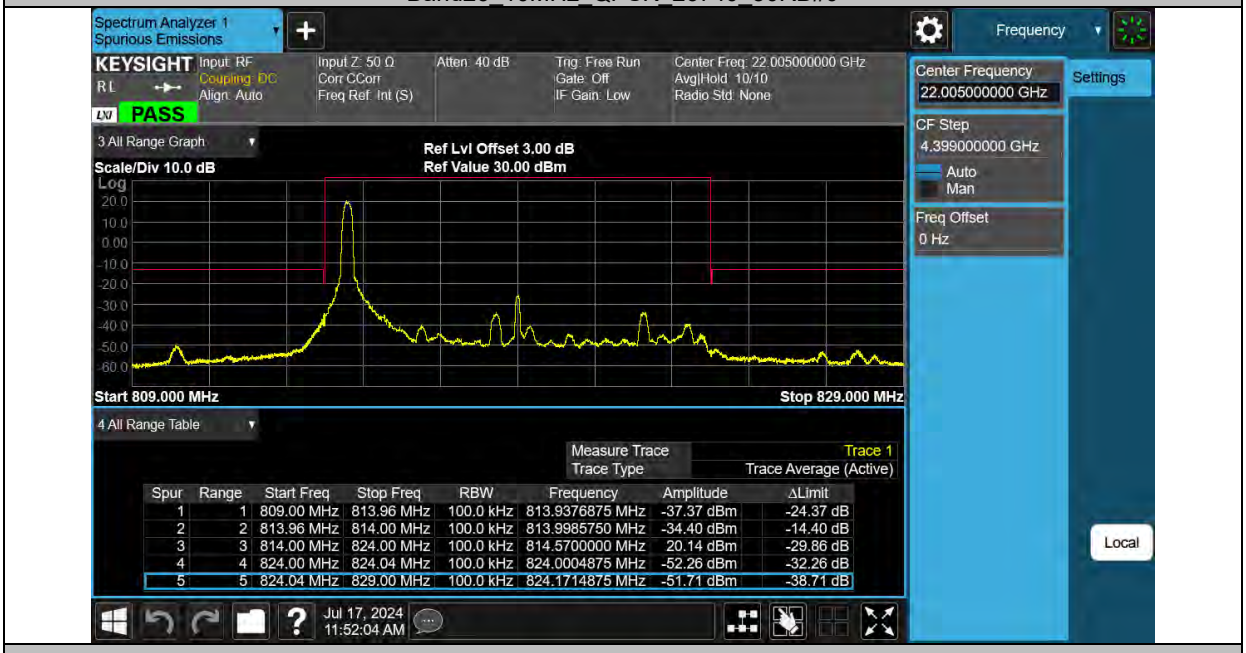
Band26_10MHz_QPSK_26740_1RB#0



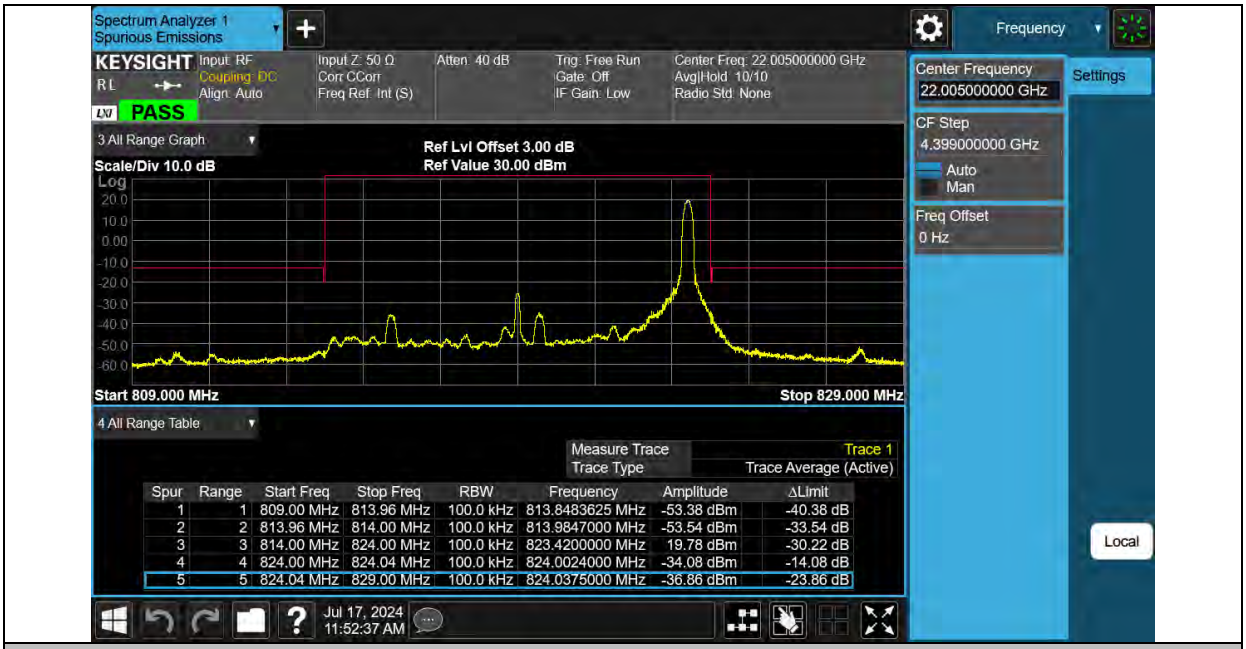
Band26_10MHz_QPSK_26740_1RB#49



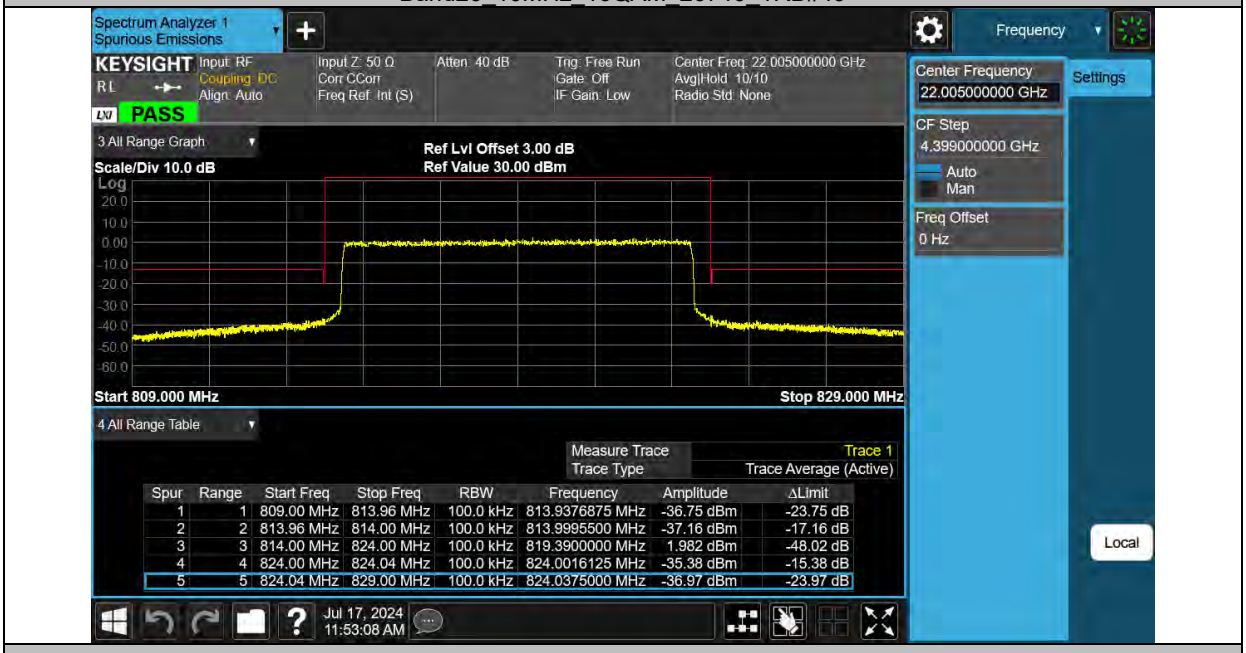
Band26_10MHz_QPSK_26740_50RB#0



Band26_10MHz_16QAM_26740_1RB#0



Band26_10MHz_16QAM_26740_1RB#49



Band26_10MHz_16QAM_26740_50RB#0

CONDUCTED SPURIOUS EMISSION

Test Result

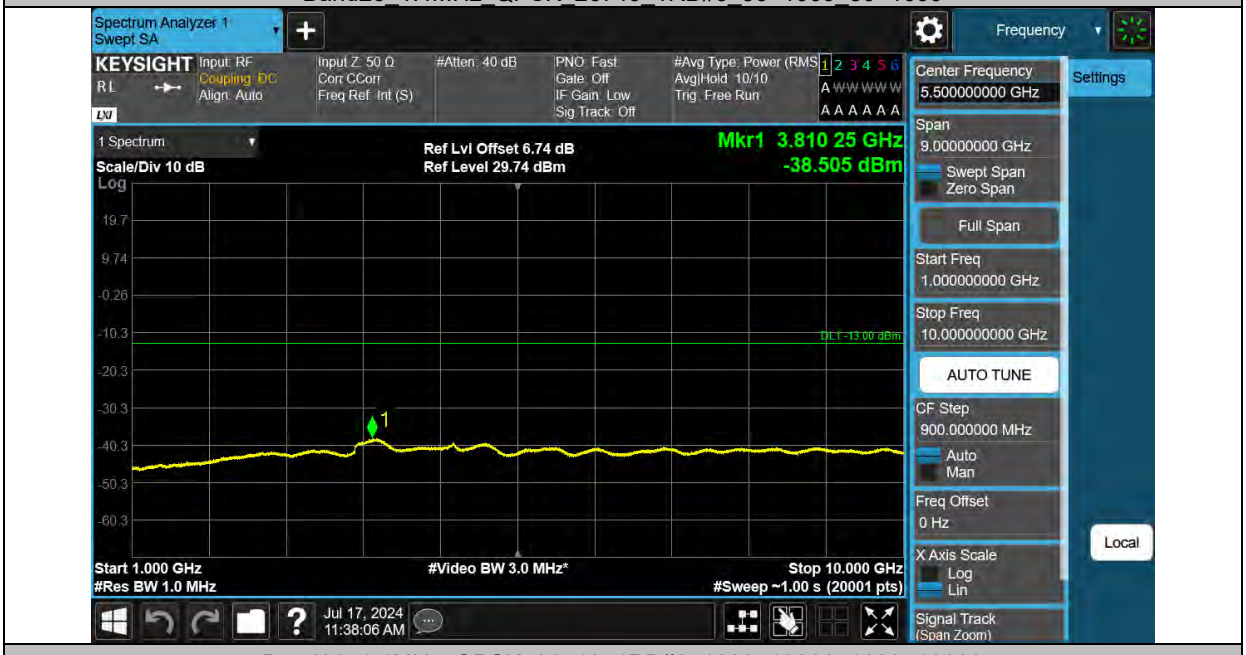
Band	Bandwidth	Modulation	Channel	RB Configuration	Frequency Range	Result (dBm)	Verdict
26(814-824)	1.4MHz	QPSK	26697	1RB#0	30~1000	-54.12	PASS
26(814-824)	1.4MHz	QPSK	26697	1RB#0	1000~10000	-38.60	PASS
26(814-824)	1.4MHz	QPSK	26740	1RB#0	30~1000	-53.81	PASS
26(814-824)	1.4MHz	QPSK	26740	1RB#0	1000~10000	-38.51	PASS
26(814-824)	1.4MHz	QPSK	26783	1RB#0	30~1000	-53.50	PASS
26(814-824)	1.4MHz	QPSK	26783	1RB#0	1000~10000	-38.46	PASS
26(814-824)	3MHz	QPSK	26705	1RB#0	30~1000	-55.52	PASS
26(814-824)	3MHz	QPSK	26705	1RB#0	1000~10000	-38.59	PASS
26(814-824)	3MHz	QPSK	26740	1RB#0	30~1000	-56.00	PASS
26(814-824)	3MHz	QPSK	26740	1RB#0	1000~10000	-38.54	PASS
26(814-824)	3MHz	QPSK	26775	1RB#0	30~1000	-51.32	PASS
26(814-824)	3MHz	QPSK	26775	1RB#0	1000~10000	-38.57	PASS
26(814-824)	5MHz	QPSK	26715	1RB#0	30~1000	-55.73	PASS
26(814-824)	5MHz	QPSK	26715	1RB#0	1000~10000	-38.46	PASS
26(814-824)	5MHz	QPSK	26740	1RB#0	30~1000	-56.11	PASS
26(814-824)	5MHz	QPSK	26740	1RB#0	1000~10000	-38.43	PASS
26(814-824)	5MHz	QPSK	26765	1RB#0	30~1000	-56.88	PASS
26(814-824)	5MHz	QPSK	26765	1RB#0	1000~10000	-38.52	PASS
26(814-824)	10MHz	QPSK	26740	1RB#0	30~1000	-56.35	PASS
26(814-824)	10MHz	QPSK	26740	1RB#0	1000~10000	-38.46	PASS

Test Graphs

Band26_1.4MHz_QPSK_26697_1RB#0_30~1000_30~1000

Band26_1.4MHz_QPSK_26697_1RB#0_1000~10000_1000~10000

Band26_1.4MHz_QPSK_26740_1RB#0_30~1000_30~1000



Band26_1.4MHz_QPSK_26740_1RB#0_1000~10000_1000~10000

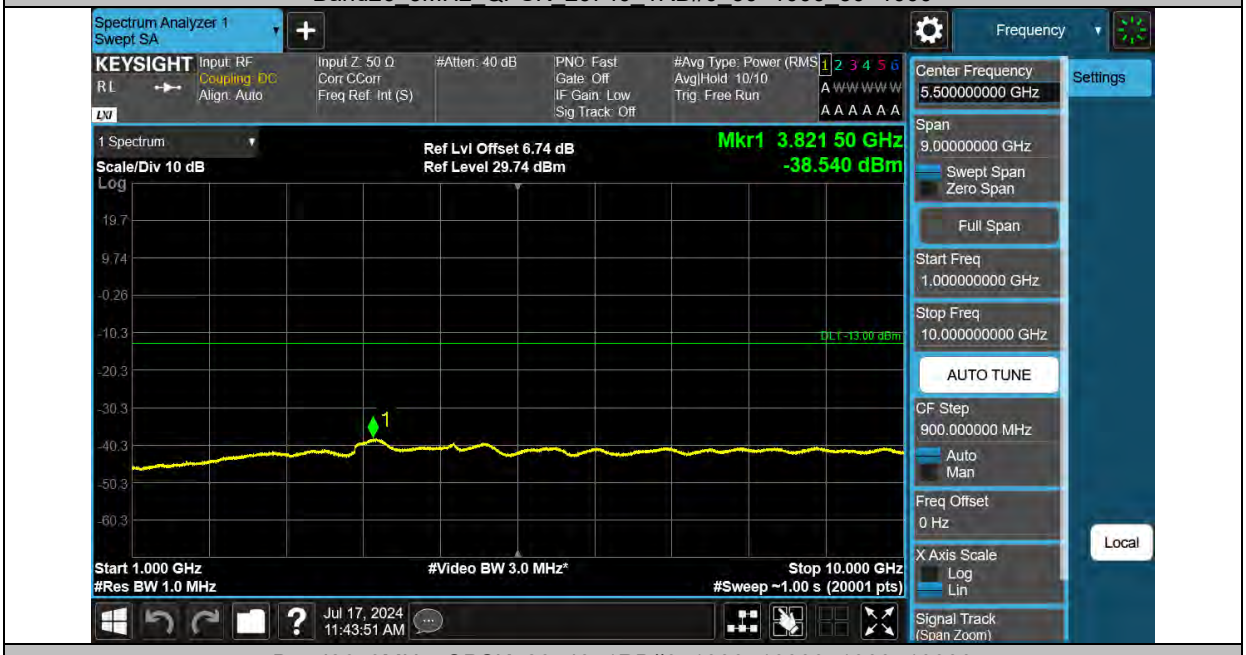
Band26_1.4MHz_QPSK_26783_1RB#0_30~1000_30~1000

Band26_1.4MHz_QPSK_26783_1RB#0_1000~10000_1000~10000

Band26_3MHz_QPSK_26705_1RB#0_30~1000_30~1000

Band26_3MHz_QPSK_26705_1RB#0_1000~10000_1000~10000

Band26_3MHz_QPSK_26740_1RB#0_30~1000_30~1000

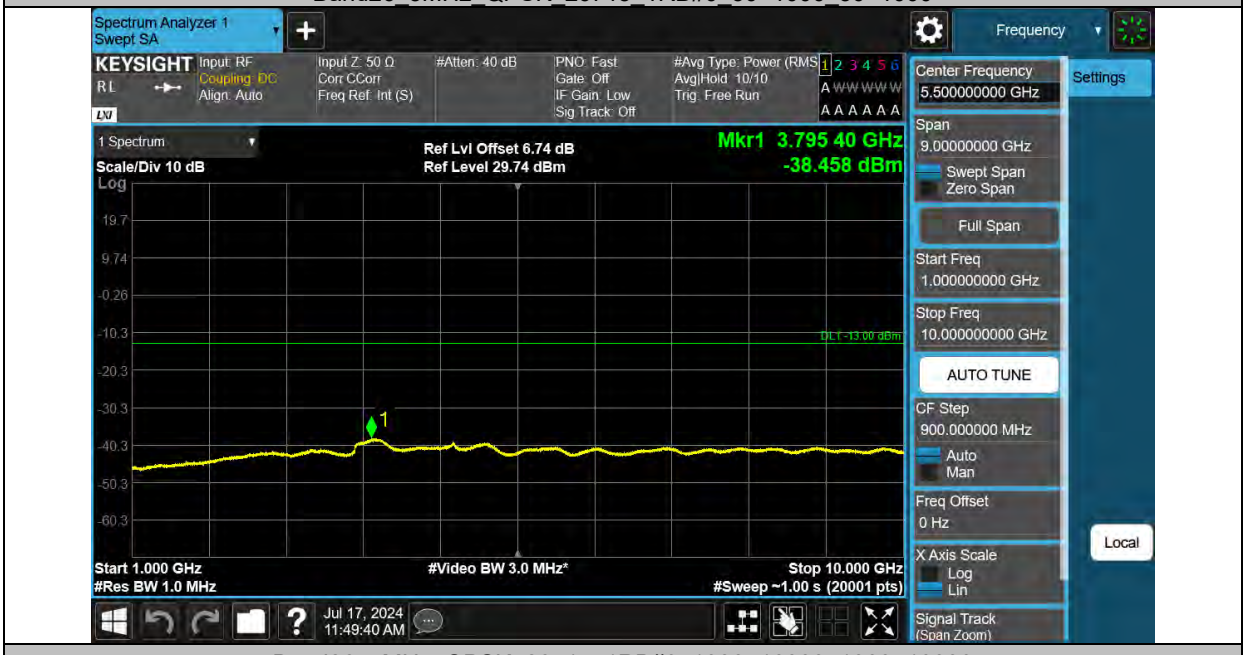


Band26_3MHz_QPSK_26740_1RB#0_1000~10000_1000~10000

Band26_3MHz_QPSK_26775_1RB#0_30~1000_30~1000

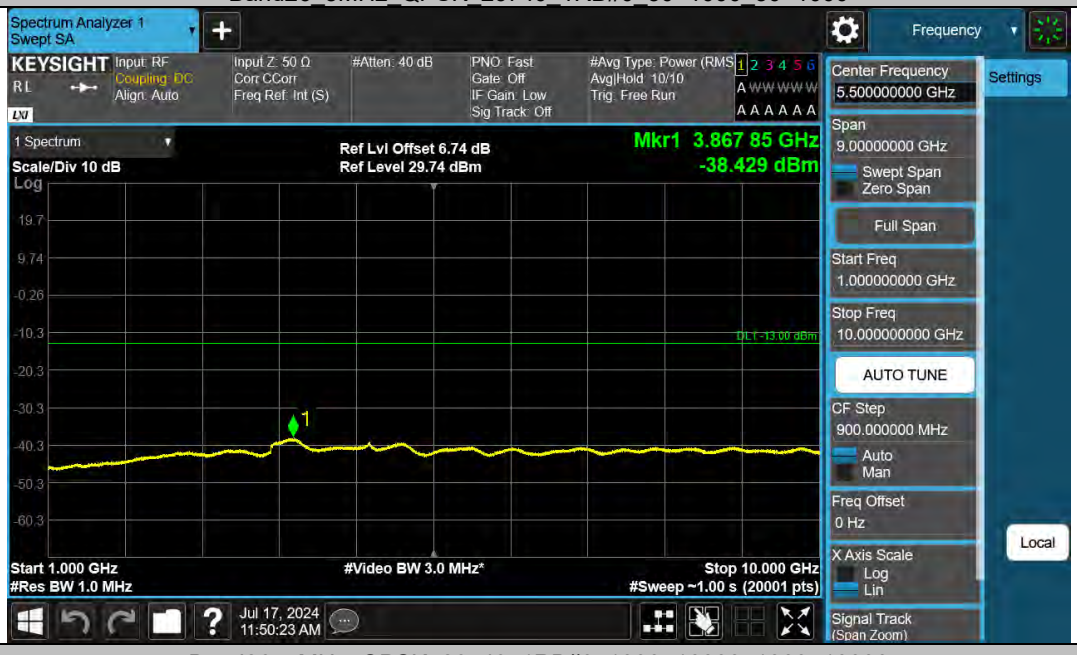
Band26_3MHz_QPSK_26775_1RB#0_1000~10000_1000~10000

Band26_5MHz_QPSK_26715_1RB#0_30~1000_30~1000



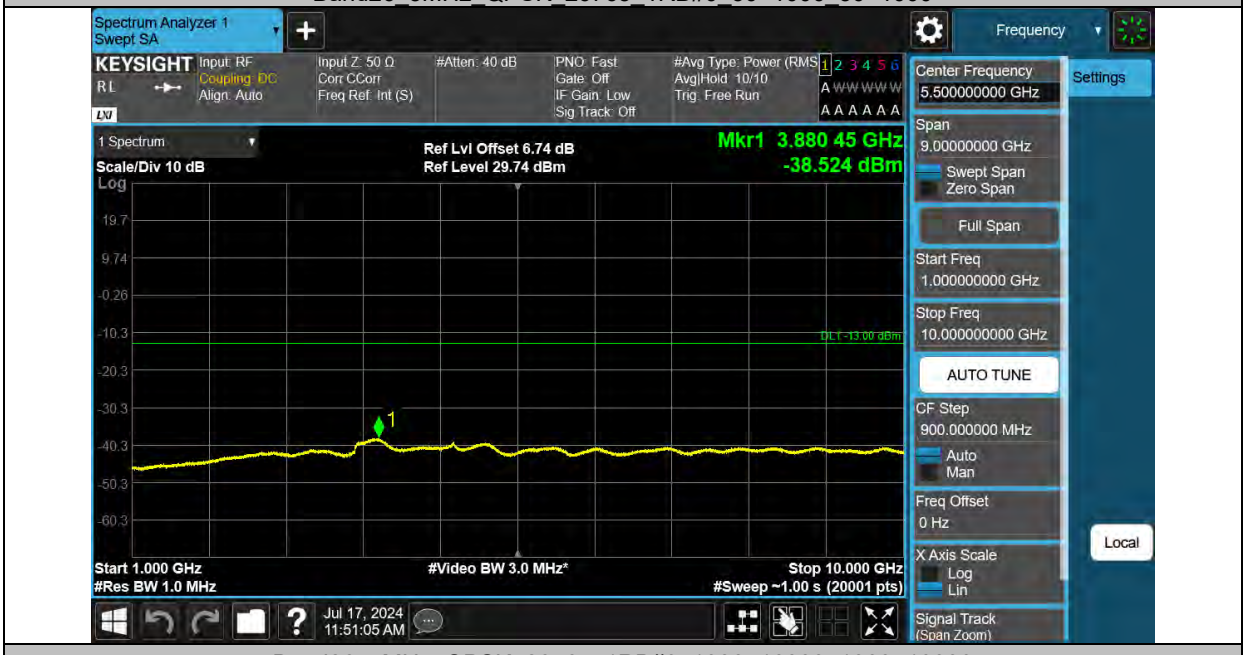
Band26_5MHz_QPSK_26715_1RB#0_1000~10000_1000~10000

Band26_5MHz_QPSK_26740_1RB#0_30~1000_30~1000



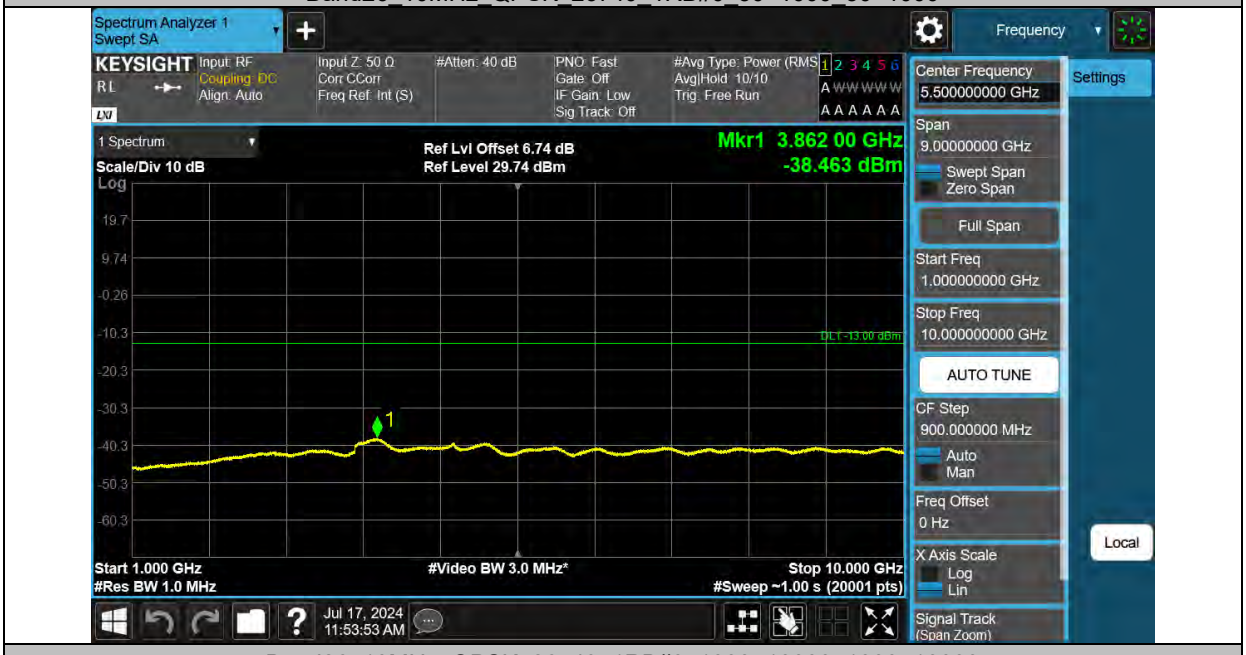
Band26_5MHz_QPSK_26740_1RB#0_1000~10000_1000~10000

Band26_5MHz_QPSK_26765_1RB#0_30~1000_30~1000



Band26_5MHz_QPSK_26765_1RB#0_1000~10000_1000~10000

Band26_10MHz_QPSK_26740_1RB#0_30~1000_30~1000



Band26_10MHz_QPSK_26740_1RB#0_1000~10000_1000~10000

FREQUENCY STABILITY

Test Result

Voltage												
Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	FL (MHz)	FH (MHz)	Limit (MHz)	Verdict
26(814-824)	5MHz	QPSK	26715	25RB #0	VN	NT	-1073.00	-1.314148	814.25881	--	814-824	PASS
26(814-824)	5MHz	QPSK	26715	25RB #0	VL	NT	1205.08	1.475911	814.25816	--	814-824	PASS
26(814-824)	5MHz	QPSK	26715	25RB #0	VH	NT	-1296.21	-1.587522	814.25821	--	814-824	PASS
26(814-824)	5MHz	QPSK	26765	25RB #0	VN	NT	996.90	1.213511	--	823.73295	814-824	PASS
26(814-824)	5MHz	QPSK	26765	25RB #0	VL	NT	-1168.00	-1.421795	--	823.73145	814-824	PASS
26(814-824)	5MHz	QPSK	26765	25RB #0	VH	NT	-1424.13	-1.733568	--	823.73234	814-824	PASS

Temperature												
Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	FL (MHz)	FH (MHz)	Limit (MHz)	Verdict
26(814-824)	5MHz	QPSK	26715	25RB #0	NV	-30	-1090.92	-1.336094	814.25775	--	814-824	PASS
26(814-824)	5MHz	QPSK	26715	25RB #0	NV	-20	1123.32	1.375771	814.25717	--	814-824	PASS
26(814-824)	5MHz	QPSK	26715	25RB #0	NV	-10	-1166.19	-1.428279	814.2612	--	814-824	PASS
26(814-824)	5MHz	QPSK	26715	25RB #0	NV	0	-1150.93	-1.409586	814.26015	--	814-824	PASS
26(814-824)	5MHz	QPSK	26715	25RB #0	NV	10	1055.27	1.292433	814.25736	--	814-824	PASS
26(814-824)	5MHz	QPSK	26715	25RB #0	NV	20	-1197.77	-1.466961	814.25783	--	814-824	PASS
26(814-824)	5MHz	QPSK	26715	25RB #0	NV	30	1047.61	1.283046	814.25931	--	814-824	PASS
26(814-824)	5MHz	QPSK	26715	25RB #0	NV	40	885.19	1.084125	814.26033	--	814-824	PASS
26(814-824)	5MHz	QPSK	26715	25RB #0	NV	50	-1063.61	-1.302641	814.2597	--	814-824	PASS
26(814-824)	5MHz	QPSK	26765	25RB #0	NV	-30	868.31	1.056985	--	823.73222	814-824	PASS
26(814-824)	5MHz	QPSK	26765	25RB #0	NV	-20	-1013.61	-1.233856	--	823.73228	814-824	PASS
26(814-824)	5MHz	QPSK	26765	25RB #0	NV	-10	-1232.20	-1.499944	--	823.73467	814-824	PASS
26(81	5MHz	QPSK	26765	25RB	NV	0	1106.0	1.346	--	823.7	814-8	PASS

4-824)				#0			6	397		3219	24	
26(814-824)	5MHz	QPSK	26765	25RB #0	NV	10	955.30	1.162878	--	823.73068	814-824	PASS
26(814-824)	5MHz	QPSK	26765	25RB #0	NV	20	-459.76	-0.559664	--	823.73268	814-824	PASS
26(814-824)	5MHz	QPSK	26765	25RB #0	NV	30	-651.00	-0.792455	--	823.73195	814-824	PASS
26(814-824)	5MHz	QPSK	26765	25RB #0	NV	40	-1132.64	-1.378746	--	823.73399	814-824	PASS
26(814-824)	5MHz	QPSK	26765	25RB #0	NV	50	-1285.64	-1.564986	--	823.73236	814-824	PASS

---END---