TEST REPORT

APPLICANT	:	MiMOMax Wireless Limited
PRODUCT NAME	:	900MHz TornadoX Transceiver
MODEL NAME	:	MWL-TORNADOX-*G*D/E
BRAND NAME	:	MiMOMax Wireless
FCC ID	:	XMK-MMXTRNXB004
STANDARD(S)	:	47 CFR Part 2 47 CFR Part 24
RECEIPT DATE	:	2022-11-30
TEST DATE	:	2022-12-08 to 2023-02-02
ISSUE DATE	:	2023-02-23

Tested by: Li Huaijie (Rapporteur)

Approved by: Shen Junsheng(Supervisor)

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Change History		
Issue	Date	Reason for change
1.0	2023-02-23	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	MiMOMax Wireless Limited
Applicant Address:	540 Wairakei Road, Christchurch 8053, New Zealand
Manufacturer:	MiMOMax Wireless Limited
Manufacturer Address:	540 Wairakei Road, Christchurch 8053, New Zealand

1.2. Equipment Under Test (EUT) Description

Product Name:	900MHz TornadoX Transceiver	
EUT Serial No:	(N/A, marked 1# by test site)	
Hardware Version:	P001	
Software Version:	TRN_04.08.00.HPT76	
Operating Frequency Range:	901-902 MHz 2Tx/2Rx	
Channel Bandwidth:	12.5kHz; 25kHz; 50kHz	
Modulation Type:	QPSK; 16QAM; 64QAM; 256QAM	
Operating Voltage:	10.5-60Vdc	
Antenna Gain:	Omni Antenna	2.5 dBi
		4.0 dBi
		8.0 dBi
		10.0 dBi
	Panel Antenna	12.0 dBi
Emission Designator:	BW(kHz)	Designator
	12.5kHz	10K0W1W
	25.0kHz	20K0W1W
	50.0kHz	42K0W1W

1.3. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2 and Part 24 for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 24	Personal Communications Services

Test detailed items/section required by FCC rules and results are listed as below:

Section	Description	Test Date	Test Engineer	Result	Method Determination /Remark
2.1046 24.132	Transmitter Conducted Output Power and ERP/EIRP	2022/12/08-2022/12/13	Li Huaijie	PASS	No deviation
2.1049	Occupied Bandwidth	2022/12/09-2022/12/13	Li Huaijie	PASS	No deviation
2.1051 24.133	Conducted Spurious Emissions	2022/12/09-2023/02/02	Li Huaijie	PASS	No deviation
2.1053 24.133	Radiated Spurious Emissions	2023/01/09	Li Hanbin	PASS	No deviation
2.1055 24.135	Frequency stability	2022/12/09-2022/12/13	Li Huaijie	PASS	No deviation

Note 1: The TornadoX Transceiver complies with FCC 47 CFR Part 2 and Part 24 when tested in accordance with the test methods described in 47 CFR Part 2 and Part 24.

Note 2: The TornadoX Transceiver supports 2 Tx antenna ports, which was defined as Channel H &Channel V separately.

Note 3: The path loss during the conducted RF test is calibrated to correct the results by the Ext Gain setting. The Ext Gain contains two parts that cable loss of 0.5dB and attenuator of 30.0dB.

Note 4: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

1.4. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 -60
Atmospheric Pressure (kPa):	86-106

2. 47 CFR Part 2 and Part 24 Requirements

2.1. Radio Frequency Power Output and E.R.P.

2.1.1. Test result

Nominal Frequency: 901.5 MHz Tx Port: Channel H

Channel Bandwidth (kHz)	Modulation Type	Voltage (Vdc)	Measured Power (dBm)	Measured Power (Watt)	Rated Power (Watt)	E.R.P. (ANT Gain = 4.0dBi)		E.R.P. (ANT Gain = 12.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	27.49	0.561	0.63	29.34	0.859	37.34	5.420
12.5	16QAM	24	27.48	0.560	0.63	29.33	0.857	37.33	5.408
12.5	64QAM	24	27.69	0.587	0.63	29.54	0.899	37.54	5.675
12.5	256QAM	24	27.57	0.571	0.63	29.42	0.875	37.42	5.521
25.0	QPSK	24	27.84	0.608	0.63	29.69	0.931	37.69	5.875
25.0	16QAM	24	27.67	0.585	0.63	29.52	0.895	37.52	5.649
25.0	64QAM	24	27.85	0.610	0.63	29.70	0.933	37.70	5.888
25.0	256QAM	24	27.93	0.621	0.63	29.78	0.951	37.78	5.998
50.0	QPSK	24	28.25	0.668	0.63	30.10	1.023	38.10	6.457
50.0	16QAM	24	28.17	0.656	0.63	30.02	1.005	38.02	6.339
50.0	64QAM	24	28.37	0.687	0.63	30.22	1.052	38.22	6.637
50.0	256QAM	24	28.40	0.692	0.63	30.25	1.059	38.25	6.683

Nominal Frequency: 901.5 MHz Tx Port: Channel V

Channel Bandwidth (kHz)	Modulation Type	Voltage (Vdc)	Measured Power (dBm)	Measured Power (Watt)	Rated Power (Watt)	E.R.P. (ANT Gain = 4.0dBi)		E.R.P. (ANT Gain = 12.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	27.80	0.603	0.63	29.65	0.923	37.65	5.821
12.5	16QAM	24	27.73	0.593	0.63	29.58	0.908	37.58	5.728
12.5	64QAM	24	27.88	0.614	0.63	29.73	0.940	37.73	5.929
12.5	256QAM	24	27.74	0.594	0.63	29.59	0.910	37.59	5.741

25.0	QPSK	24	27.95	0.624	0.63	29.80	0.955	37.80	6.026
25.0	16QAM	24	27.89	0.615	0.63	29.74	0.942	37.74	5.943
25.0	64QAM	24	27.97	0.627	0.63	29.82	0.959	37.82	6.053
25.0	256QAM	24	28.18	0.658	0.63	30.03	1.007	38.03	6.353
50.0	QPSK	24	28.27	0.671	0.63	30.12	1.028	38.12	6.486
50.0	16QAM	24	28.18	0.658	0.63	30.03	1.007	38.03	6.353
50.0	64QAM	24	28.52	0.711	0.63	30.37	1.089	38.37	6.871
50.0	256QAM	24	28.44	0.698	0.63	30.29	1.069	38.29	6.745

Note1: Measurements were carried out at the RF output terminals of the transmitter using spectrum analyzer. The path loss during the conducted RF test is calibrated to correct the results by the Ext Gain setting. The Ext Gain contains two parts that cable loss of 0.5dB and attenuator of 30.0dB.

Note 2: The transmitter has a rated output power of .0.631 Watt (28dBm).The measured power has been shown to be within +/- 1 dB of the rated power.

Note3:E.I.R.P. (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi); E.R.P. (dBm) = E.I.R.P. (dBm) - 2.15.

Note4: Part 24 does not specify the transmitter output power.

Stations transmitting in the 901-902 MHz band are limited to 7 watts e.r.p.

Note 5: The product's antenna is a special MIMO antenna with cross-polarization which is able to transmit and receive on both the vertical and horizontal polarizations at the same time, the MIMO antennas are essentially two antennas in one.

Note 6: According to KDB 662911, the MIMO directional gain is the gain of an individual antenna.

Note7: The DUT transmitter ports are completely uncorrelated. According to KDB 662911 the conducted power or E.R.P is measured on each port individually and it complies with the regulations.

Note8: The product based on the interactive calculation of E.R.P limit value and conducted power, allows the use of an antenna with a maximum gain of 12.6dBi for 901-902MHz, or an antenna of higher gain with the transmitter power tuned down so can meet the E.R.P requirement.

2.2. Occupied Bandwidth

2.2.1. Definition

Emission Designator:

Frequency (MHz)	BW(kHz)	Designator
901-902MHz	12.5kHz	10K0W1W
	25.0kHz	20K0W1W
	50.0kHz	42K0W1W

Note: The above data combined with uncertainty and rounding calculations are consistent with the actual test data.

According to FCC section 2.1049, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.
Occupied bandwidth is also known as the 99% emission bandwidth.

2.2.2. Test Description

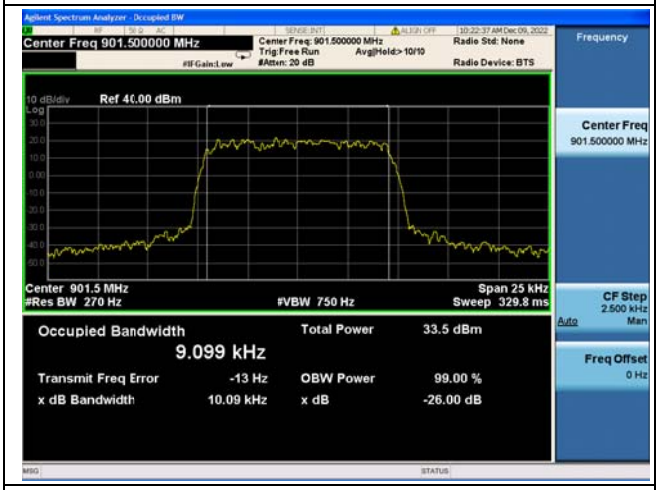
Measurements have been made of each modulation type using a spectrum analyzer operating in occupied bandwidth mode.

2.2.3. Test Result

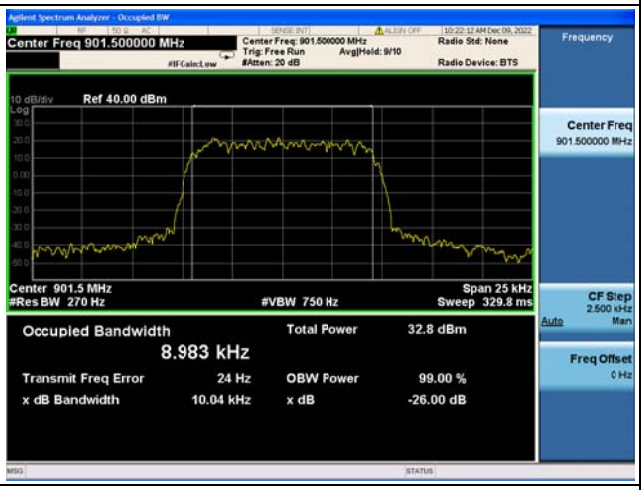
Nominal Frequency: 901.50 MHz

Tx Port	Channel Bandwidth(kHz)	Emission Type	Occupied Bandwidth(kHz)
Channel H	12.5	QPSK	9.099
		16QAM	8.983
		64QAM	8.991
		256QAM	8.978
	25.0	QPSK	18.826
		16QAM	18.647
		64QAM	18.727
		256QAM	18.664
	50.0	QPSK	41.414
		16QAM	41.359
		64QAM	41.451
		256QAM	41.358
Channel V	12.5	QPSK	9.060
		16QAM	9.033
		64QAM	9.127
		256QAM	9.054
	25.0	QPSK	18.715
		16QAM	18.713
		64QAM	18.622
		256QAM	18.404
	50.0	QPSK	41.475
		16QAM	41.052
		64QAM	41.291
		256QAM	41.495

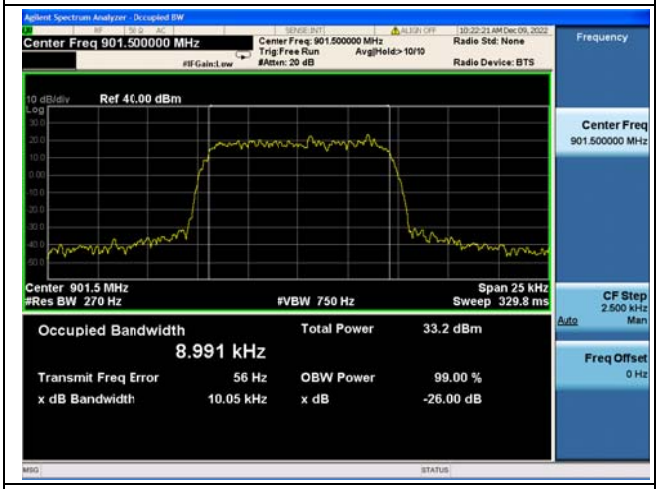
901.50MHz/Channel H/12.5kHz/QPSK



901.50MHz/Channel H/12.5kHz/16QAM



901.50MHz/Channel H/12.5kHz/64QAM



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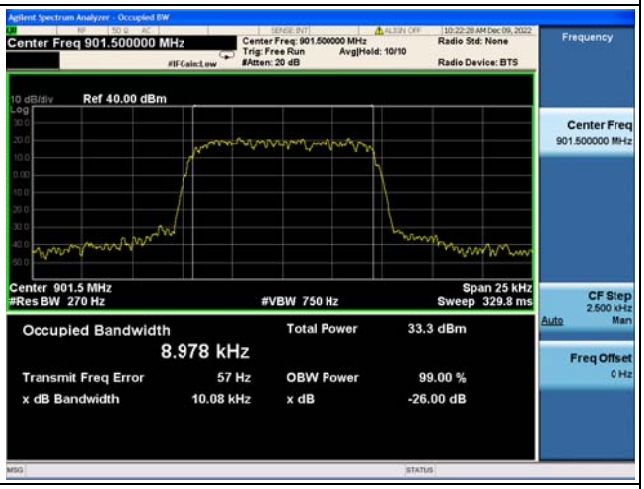

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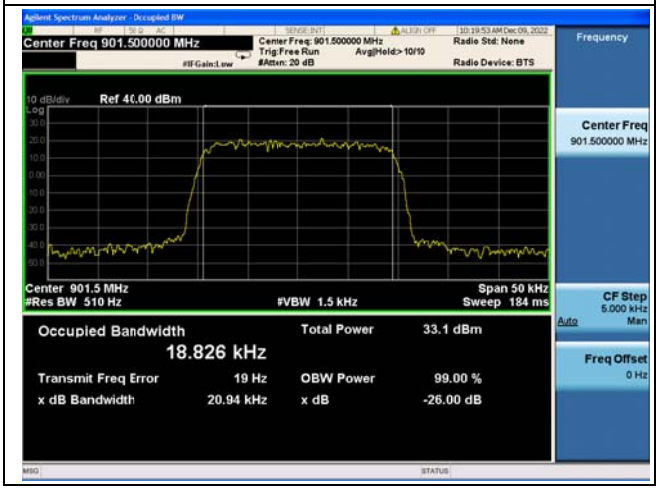

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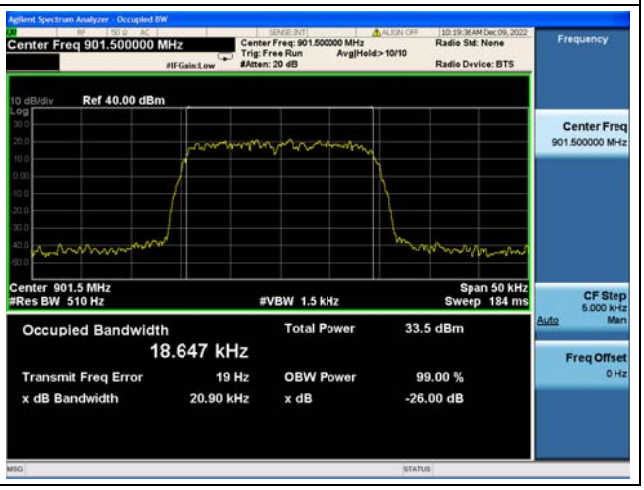

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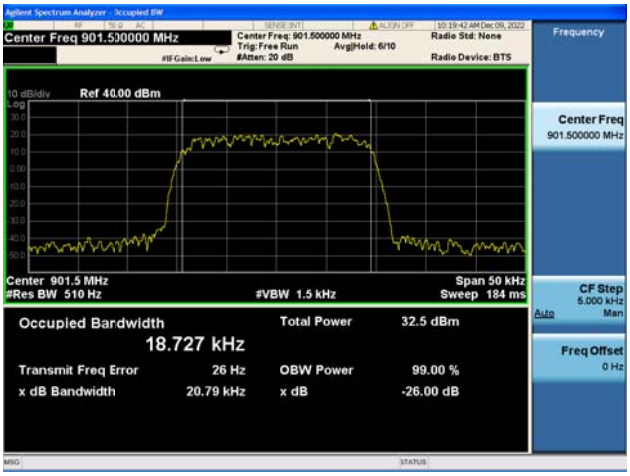
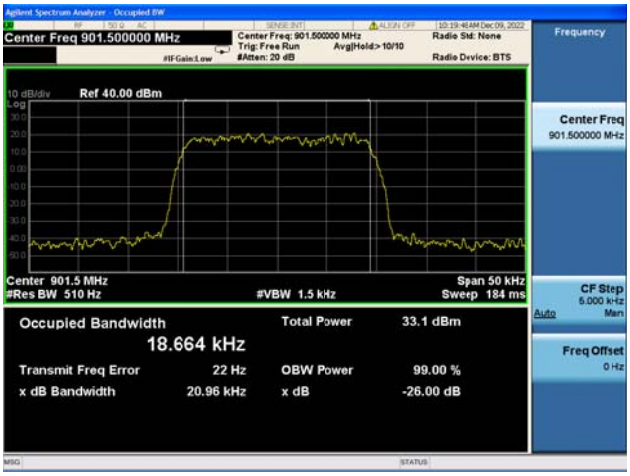
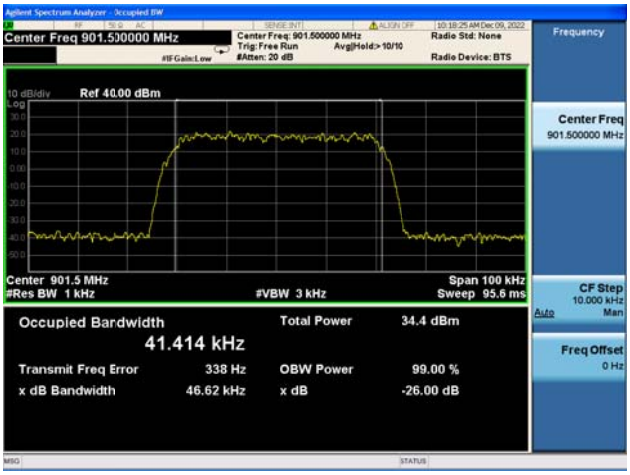


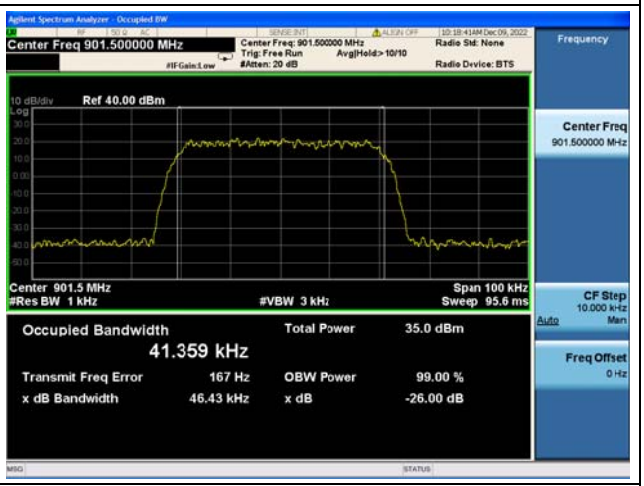
901.50MHz/Channel H/25.0 kHz/256QAM



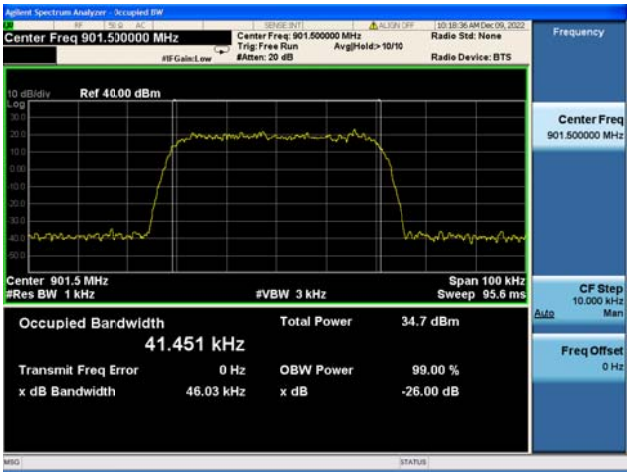
901.50MHz/Channel H/50.0 kHz/QPSK



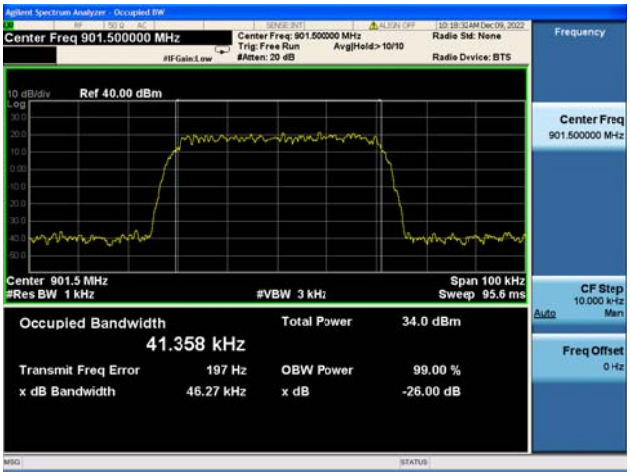
901.50MHz/Channel H/50.0 kHz/16QAM



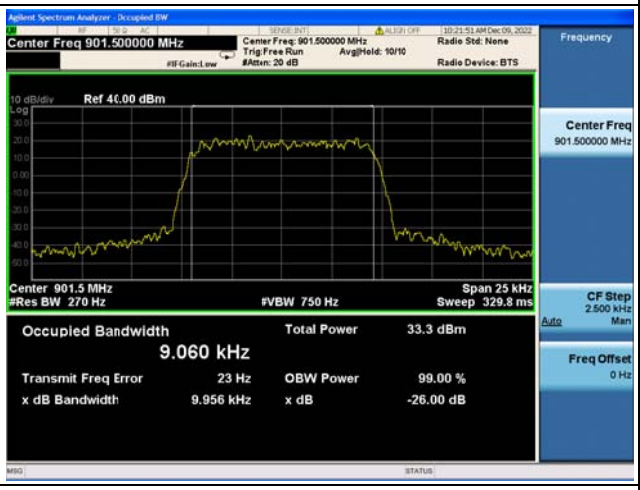
901.50MHz/Channel H/50.0 kHz/64QAM



901.50MHz/Channel H/50.0 kHz/256QAM

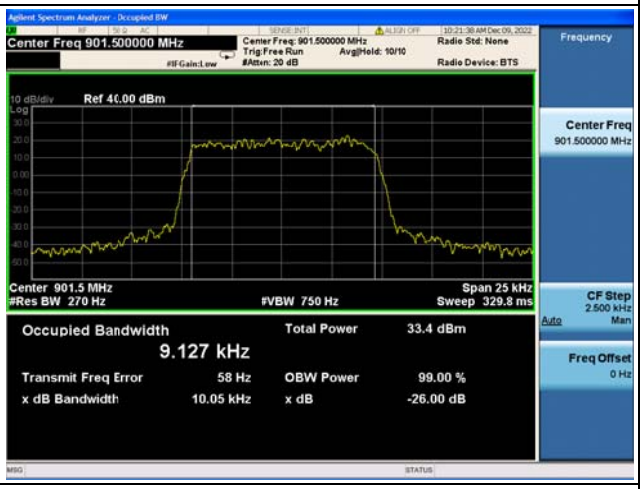


901.50MHz/Channel V/12.5kHz/QPSK

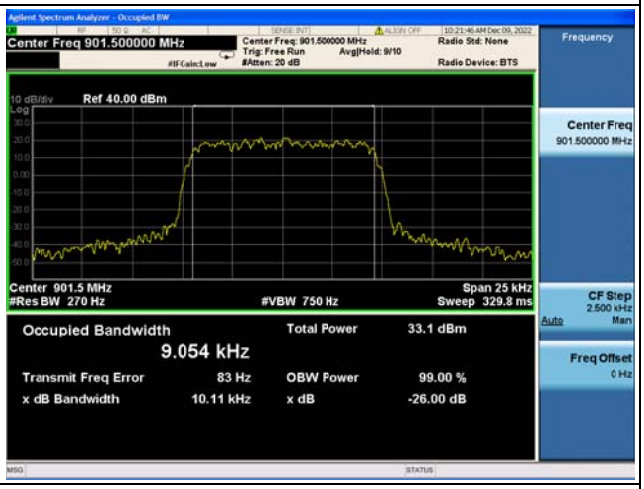


901.50MHz/Channel V/12.5kHz/16QAM

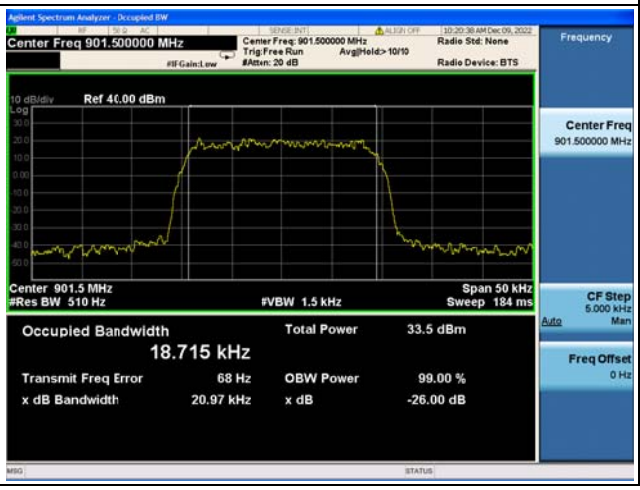
901.50MHz/Channel V/12.5kHz/64QAM



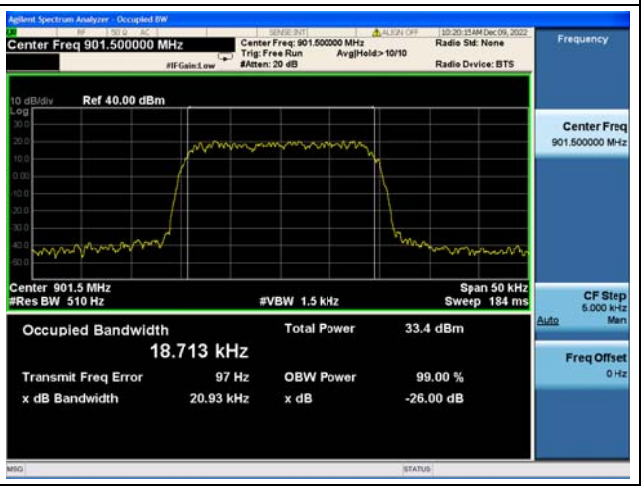
901.50MHz/Channel V/12.5 kHz/256QAM



901.50MHz/Channel V/25.0 kHz/QPSK



901.50MHz/Channel V/25.0 kHz/16QAM



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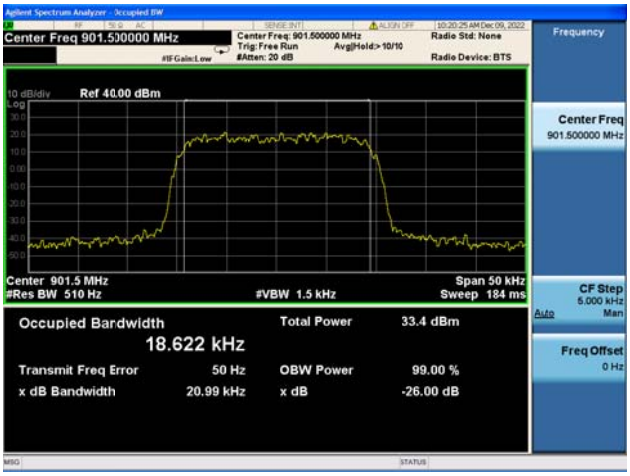

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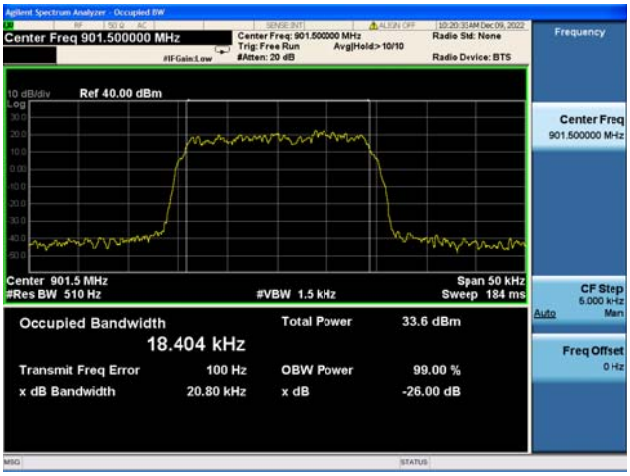
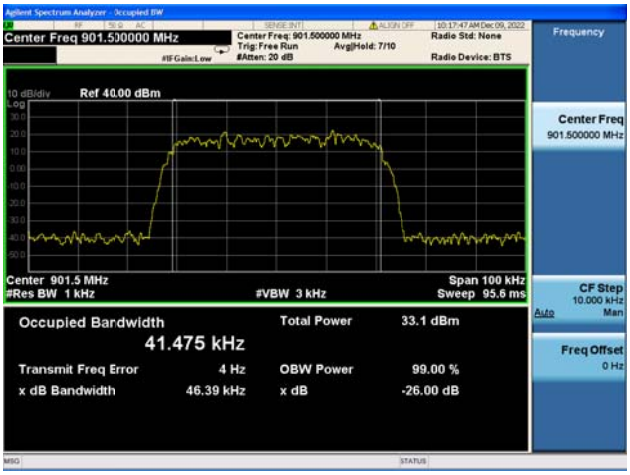
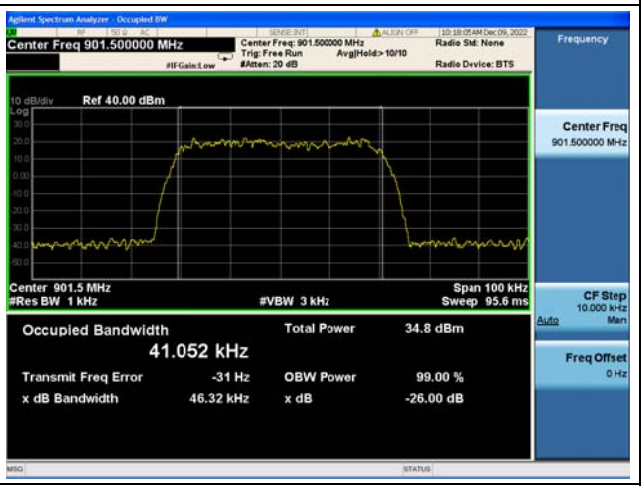


901.50MHz/Channel V/50.0 kHz/QPSK



901.50MHz/Channel V/50.0 kHz/16QAM



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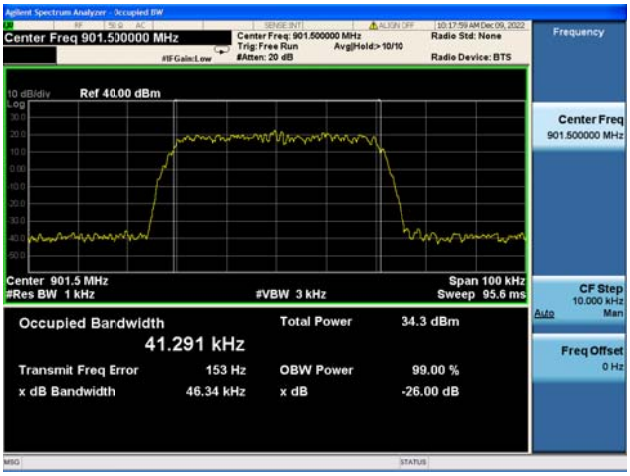
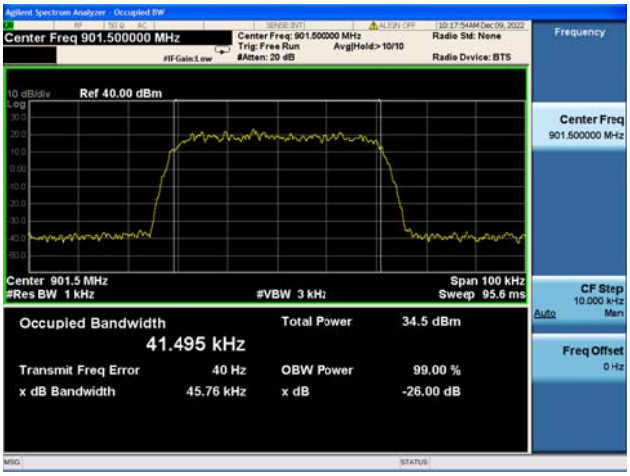


901.50MHz/Channel V/50.0 kHz/256QAM



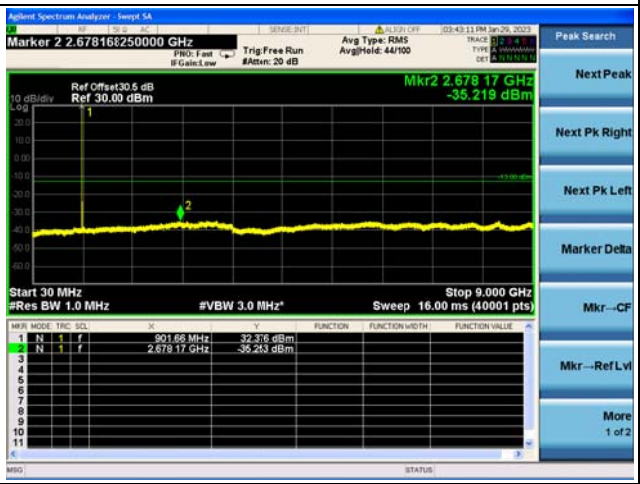
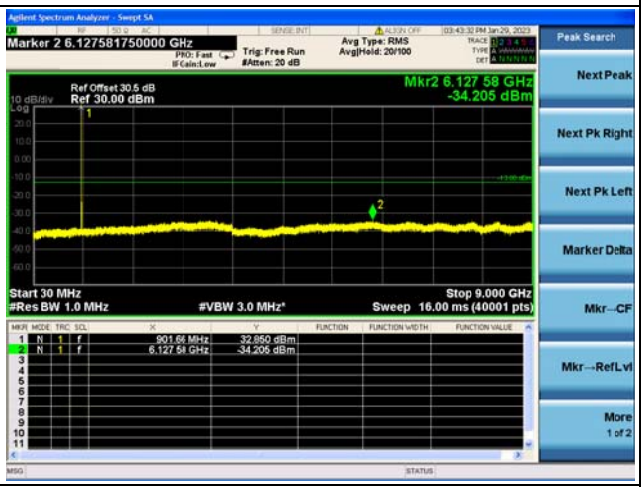
2.3. Spurious Emissions At Antenna Terminals

2.3.1. Test Requirement

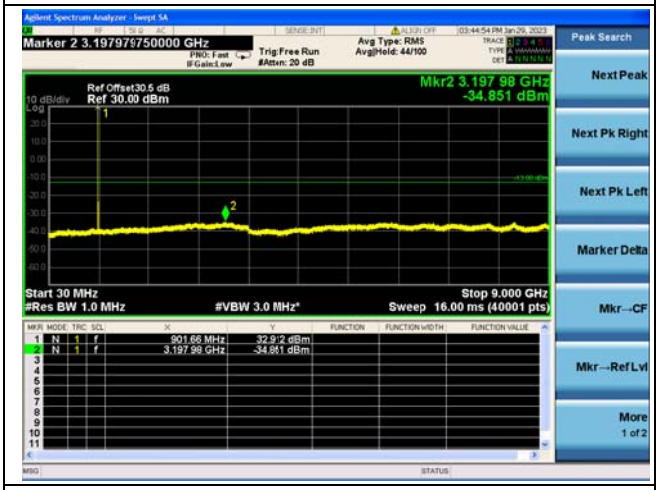
According to FCC section 2.1051, 24.131 and 24. 133(a) section
The authorized bandwidth of narrowband PCS channels will be 10 kHz for 12.5 kHz channels and 45 kHz for 50 kHz channels. For aggregated adjacent channels, a maximum authorized bandwidth of 5 kHz less than the total aggregated channel width is permitted.
For transmitters authorized a bandwidth greater than 10 kHz**:**
1. On any frequency outside the authorized bandwidth and removed from the edge of the authorized bandwidth by a displacement frequency (fd in kHz) of up to and including 40 kHz: at least 116 Log10 ((fd + 10)/6.1) decibels or 50 plus 10 Log10 (P) decibels or 70 decibels, whichever is the lesser attenuation;
2. On any frequency outside the authorized bandwidth and removed from the edge of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 40 kHz: at least 43 + 10 Log10 (P) decibels or 80 decibels, whichever is the lesser attenuation;
For transmitters authorized a bandwidth of 10 kHz**:**
1. On any frequency outside the authorized bandwidth and removed from the edge of the authorized bandwidth by a displacement frequency (fd in kHz) of up to and including 20 kHz: at least 116 × Log10 ((fd + 5)/3.05) decibels or 50 + 10 × Log10 (P) decibels or 70 decibels, whichever is the lesser attenuation;
2. On any frequency outside the authorized bandwidth and removed from the edge of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 20 kHz: at least 43 + 10 Log10 (P) decibels or 80 decibels, whichever is the lesser attenuation.

2.3.2. Test Result

Nominal Frequency: 901.50 MHz Tx Port: Channel H

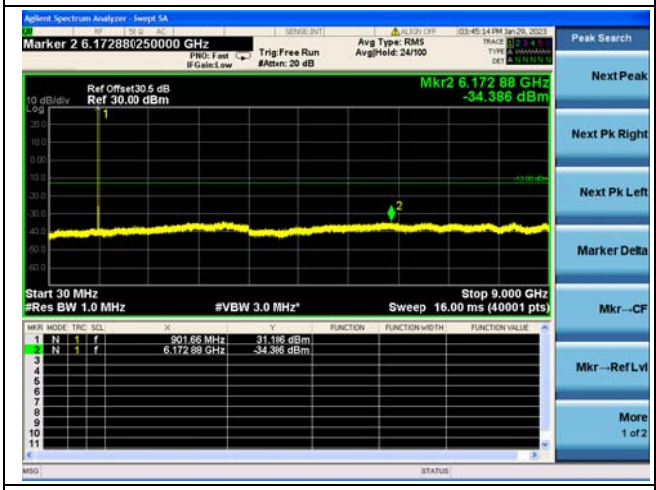
12.5kHz/QPSK	12.5kHz/16QAM
	
12.5kHz/64QAM	**12.5kHz/256QAM**

25.0kHz/QPSK



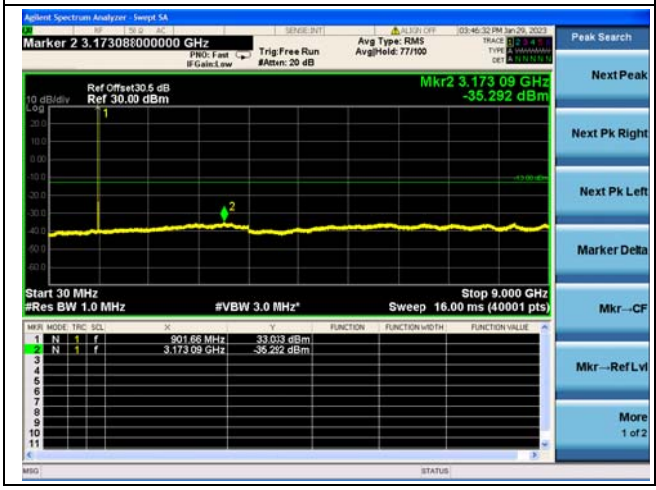
25.0kHz /16QAM

25.0kHz /64QAM

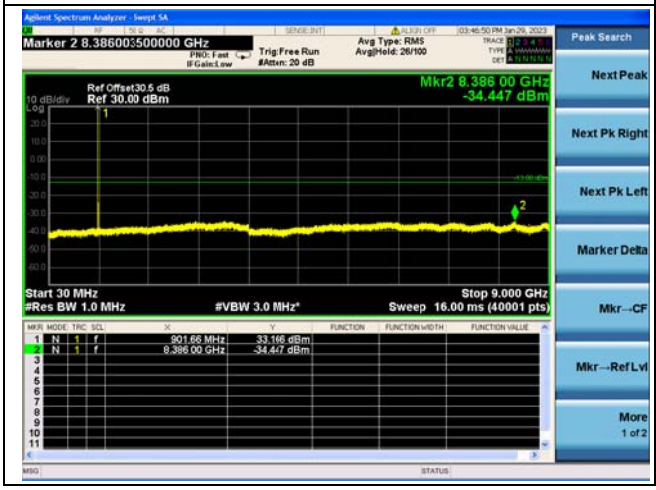


25.0kHz /256QAM

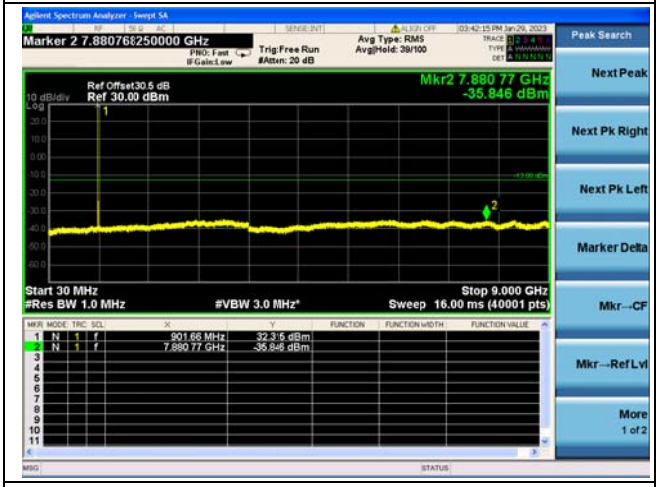
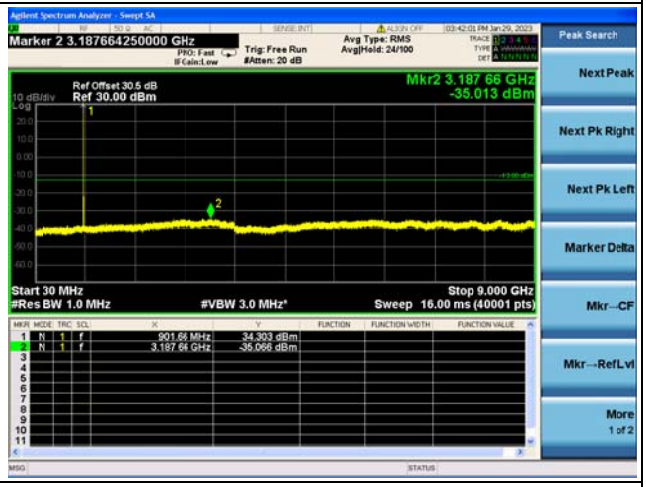
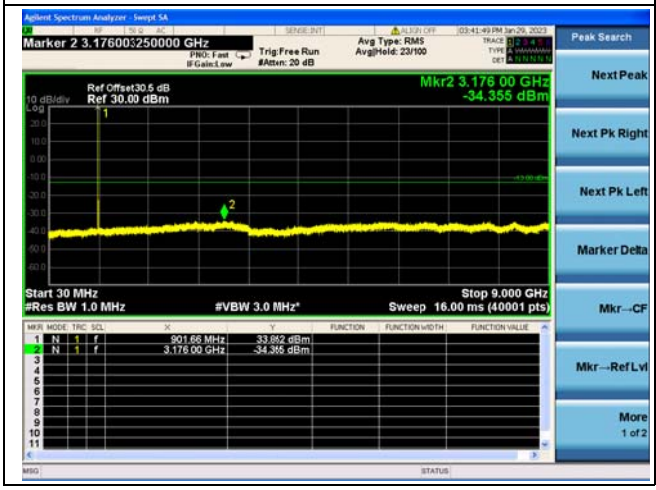
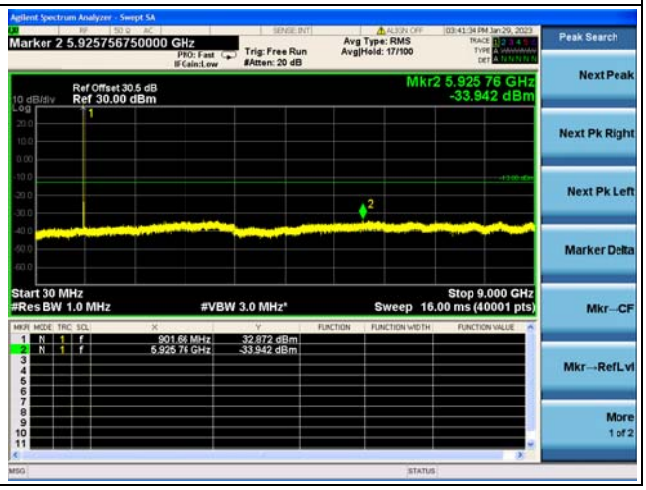
50.0kHz/QPSK



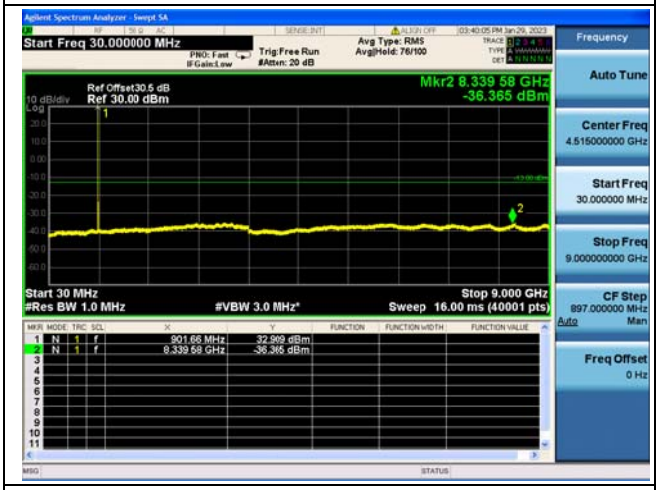
50.0kHz /16QAM

50.0kHz /64QAM	50.0kHz /256QAM
	

Nominal Frequency: 901.50 MHz Tx Port: Channel V

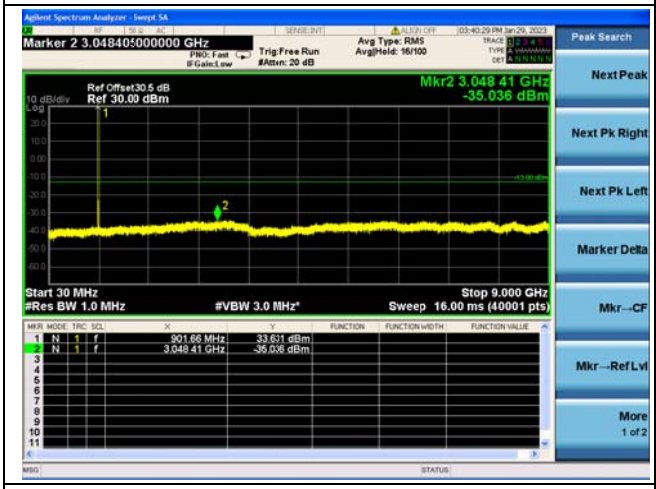
12.5kHz/QPSK	12.5kHz/16QAM
	
12.5kHz/64QAM	**12.5kHz/256QAM**
	

25.0kHz/QPSK



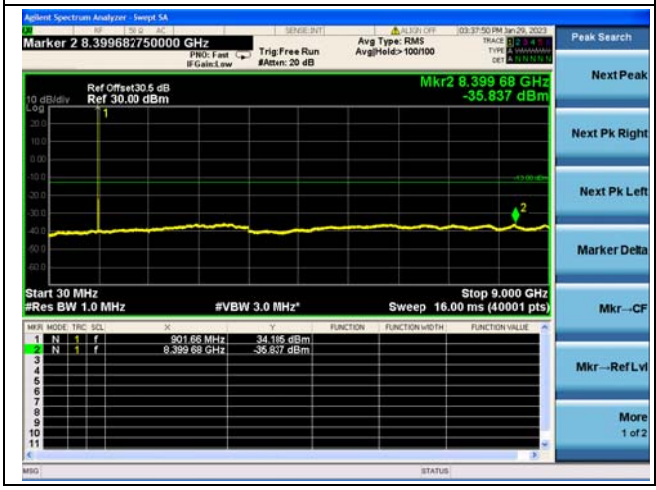
25.0kHz /16QAM

25.0kHz /64QAM

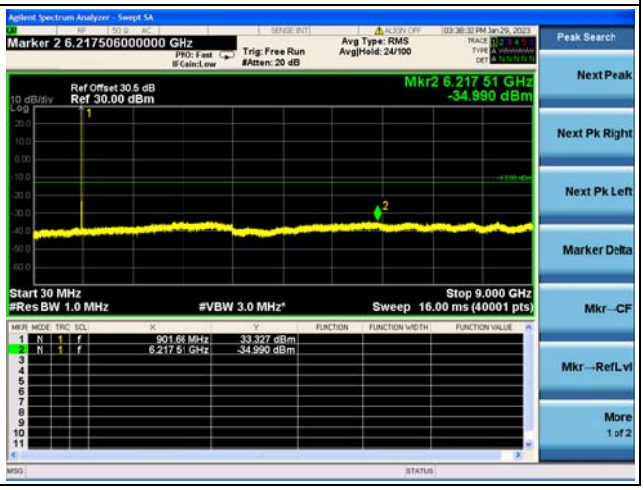


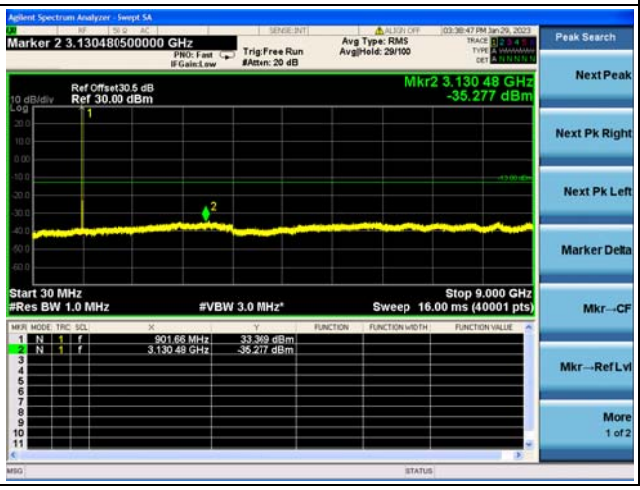
25.0kHz /256QAM

50.0kHz/QPSK

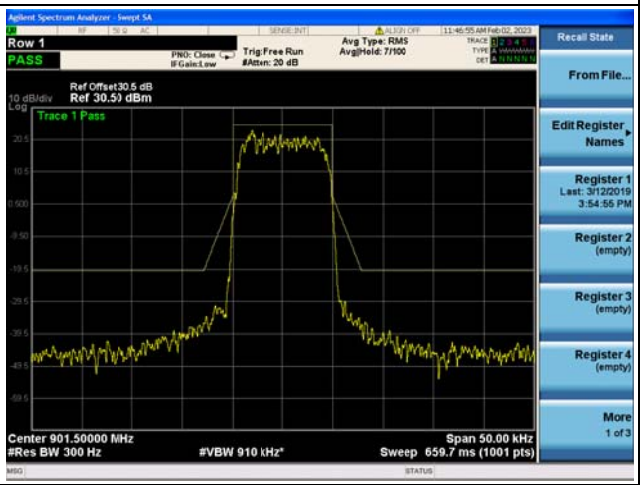
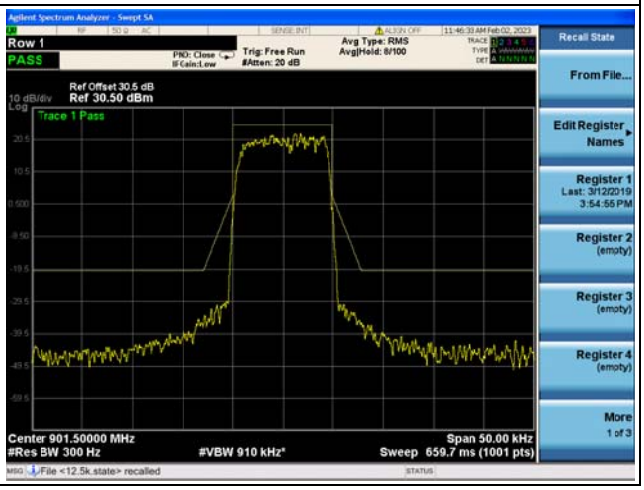


50.0kHz /16QAM



50.0kHz /64QAM	50.0kHz /256QAM
	

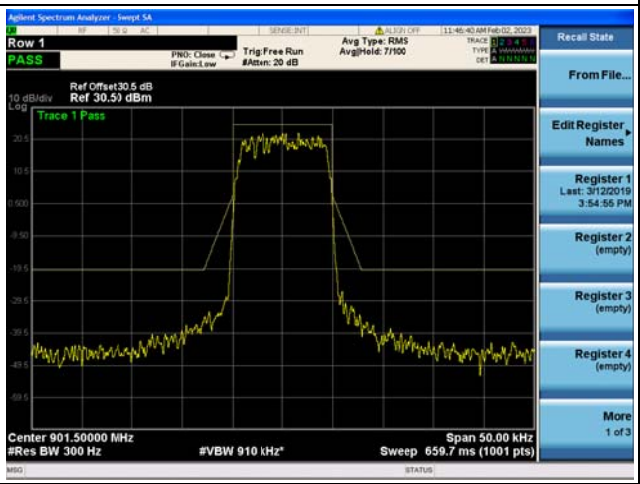
Nominal Frequency: 901.50 MHz Tx Port: Channel H

12.5kHz/ QPSK	12.5kHz/ QPSK/901.4300 -901.4600 MHz
	
12.5kHz/ QPSK/901.5400 -901.5700 MHz	**12.5kHz/16QAM**
	

12.5kHz/ 16QAM /901.4300 -901.4600 MHz

12.5kHz/ 16QAM /901.5400 -901.5700 MHz

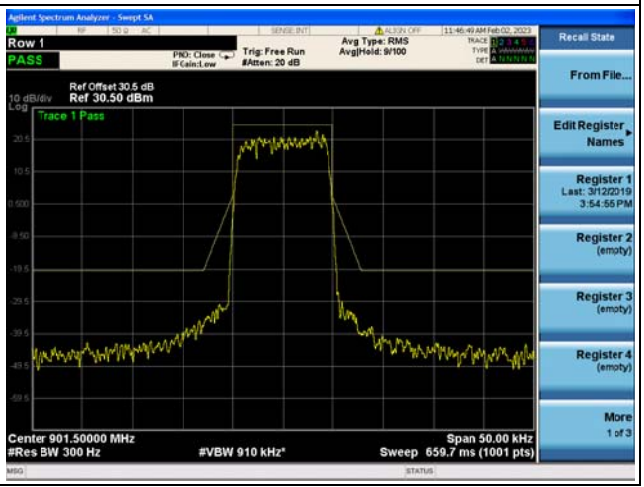
12.5kHz/ 64QAM



12.5kHz/ 64QAM /901.4300 -901.4600 MHz

12.5kHz/ 64QAM /901.5400 -901.5700 MHz

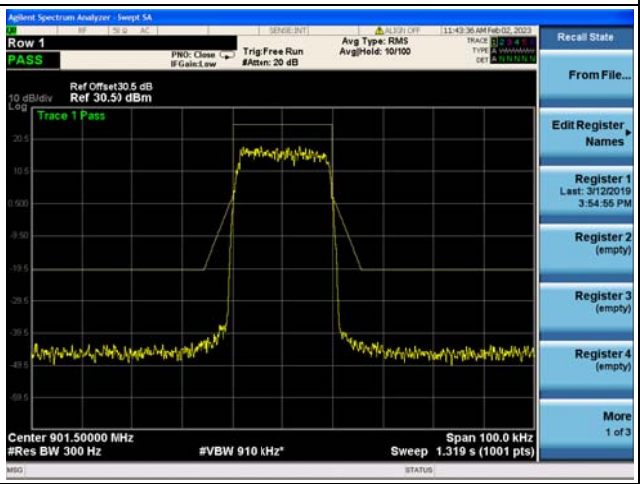
12.5kHz/256QAM



12.5kHz/ 256QAM /901.4300 -901.4600 MHz

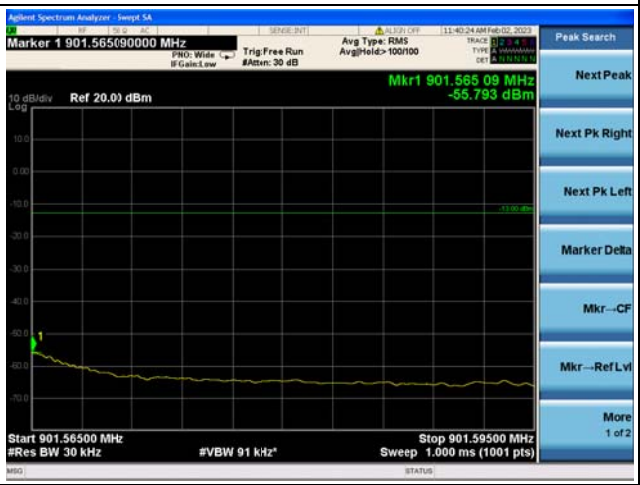
12.5kHz/ 256QAM /901.5400 -901.5700 MHz

25kHz/ QPSK

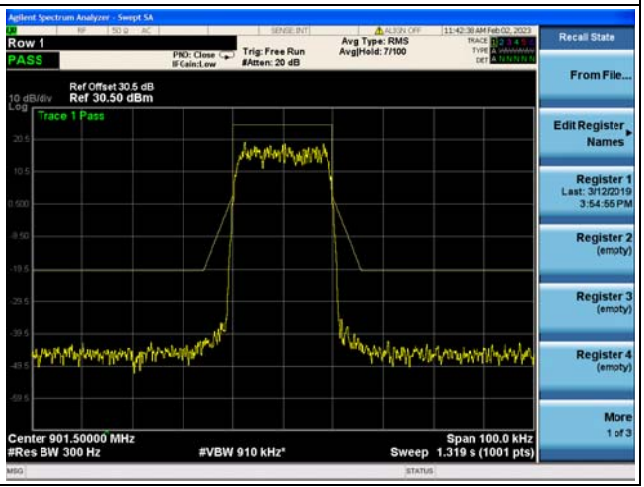


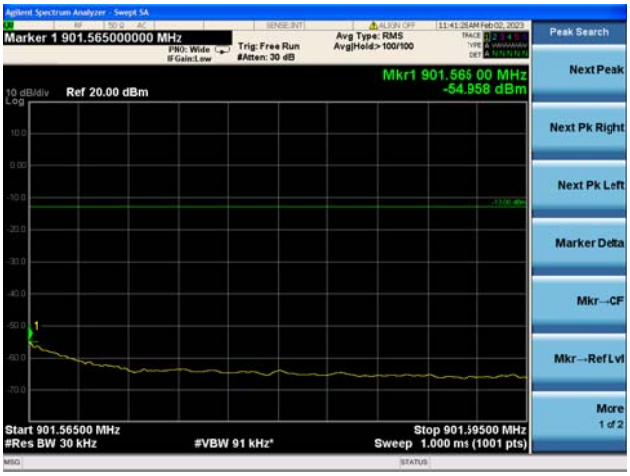
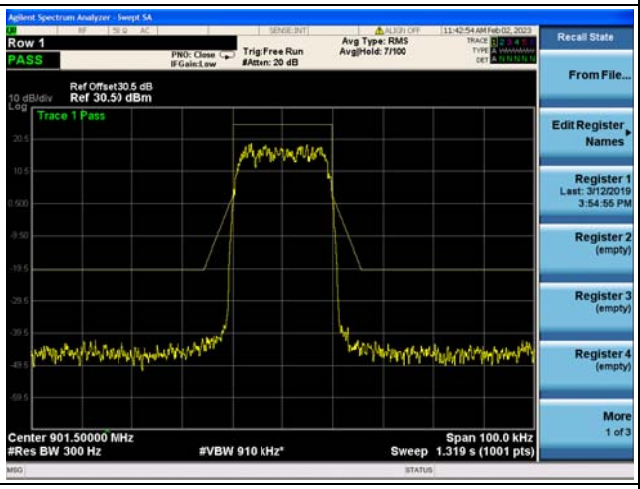
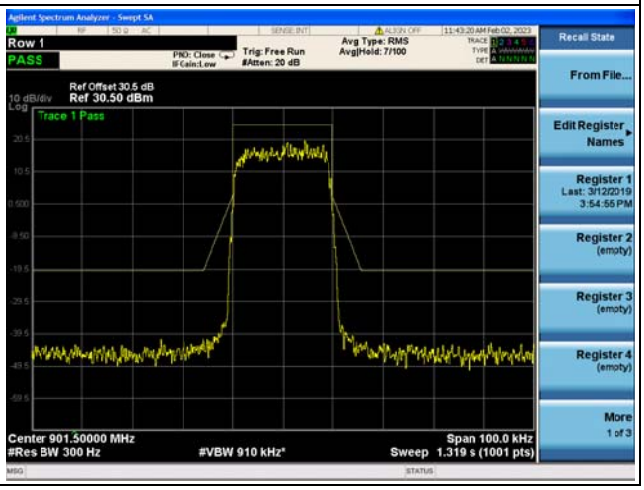
25kHz/ QPSK/901.4050 -901.4350 MHz

25kHz/ QPSK/901.5650 -901.5950 MHz



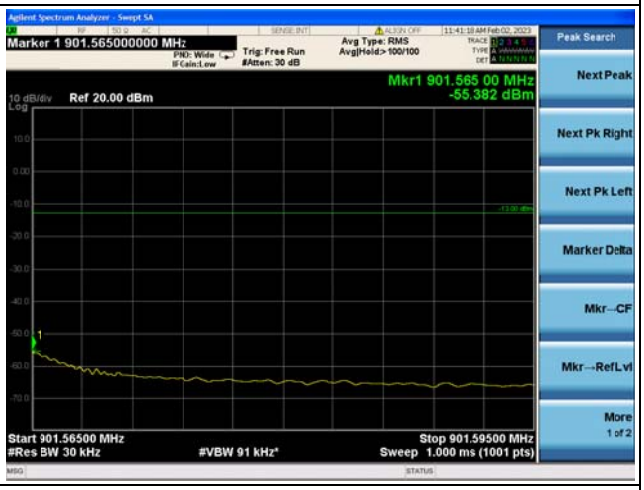
25kHz/16QAM



25kHz/ 16QAM /901.4050 -901.4350 MHz	25kHz/ 16QAM /901.5650 -901.5950 MHz
	
25kHz/ 64QAM	**25kHz/ 64QAM /901.4050 -901.4350 MHz**
	
25kHz/ 64QAM /901.5650 -901.5950 MHz	**25kHz/256QAM**
	

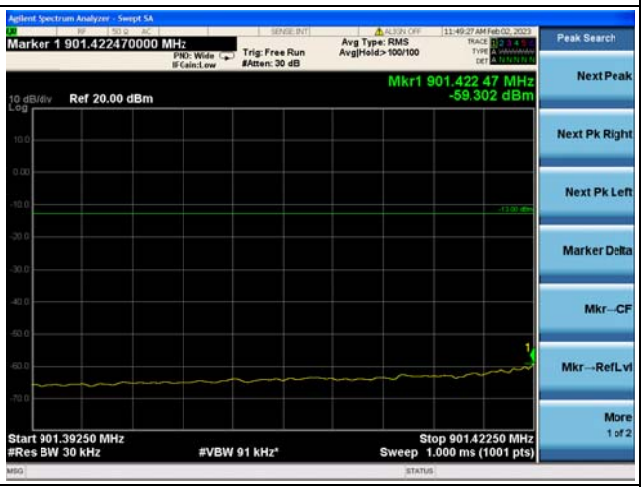
25kHz/ 256QAM /901.4050 -901.4350 MHz

25kHz/ 256QAM /901.5650 -901.5950 MHz

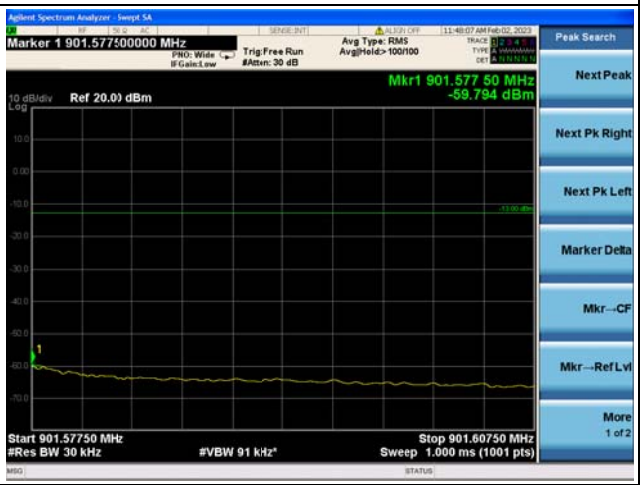


50kHz/ QPSK

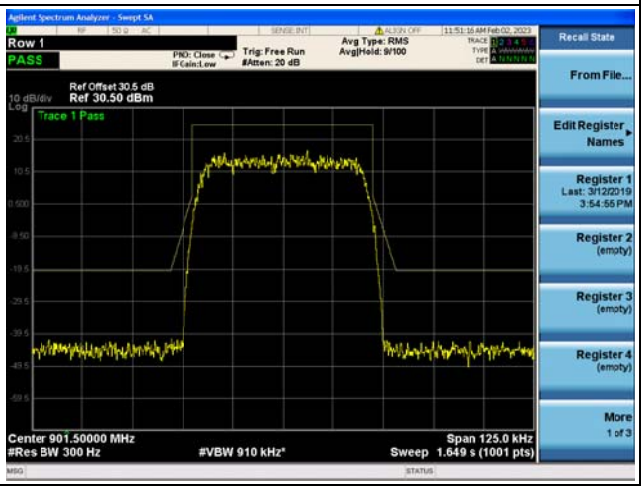
50kHz/ QPSK/901.3925 -901.4225 MHz



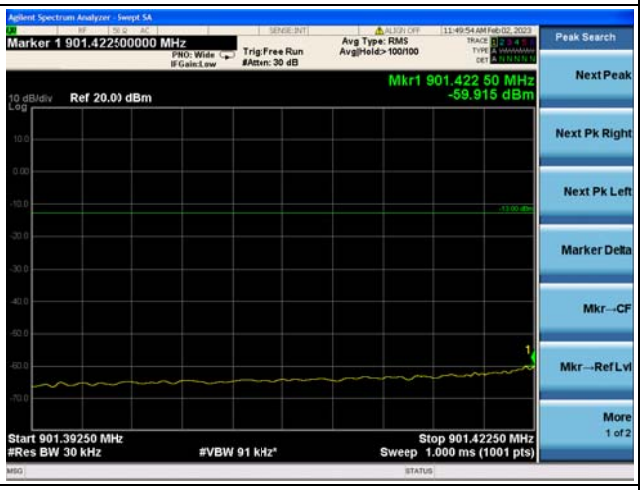
50kHz/ QPSK/901.5775 -901.6075 MHz



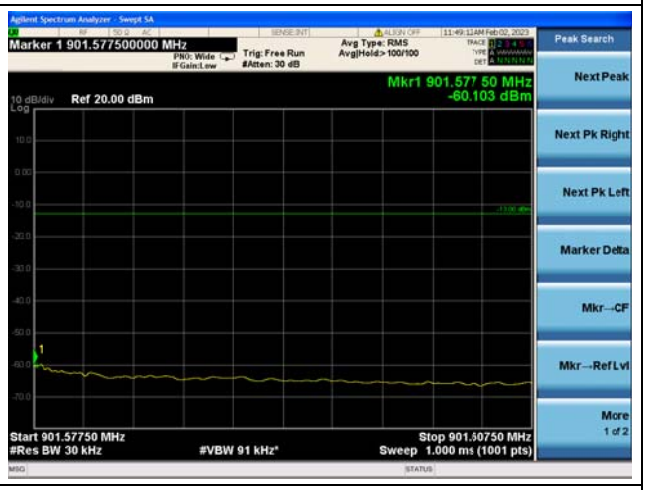
50kHz/16QAM



50kHz/ 16QAM /901.3925 -901.4225 MHz

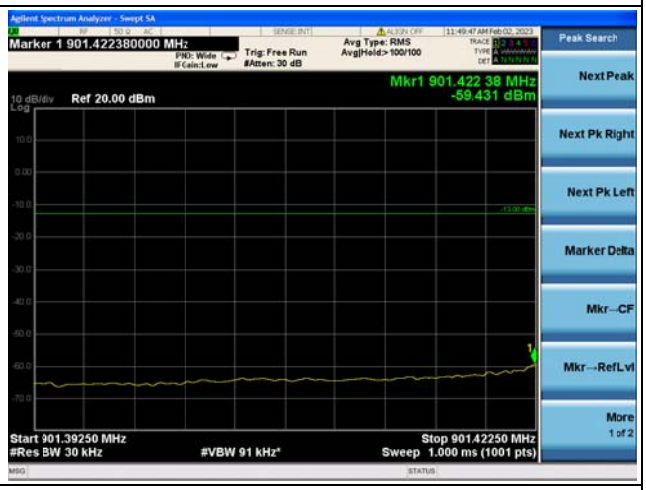


50kHz/ 16QAM /901.5775 -901.6075 MHz

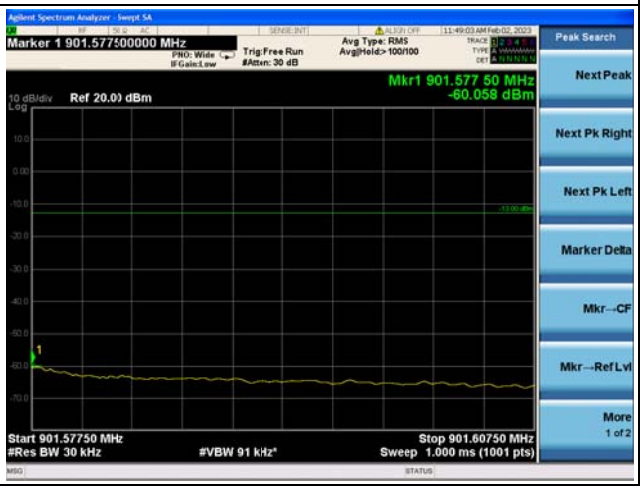


50kHz/ 64QAM

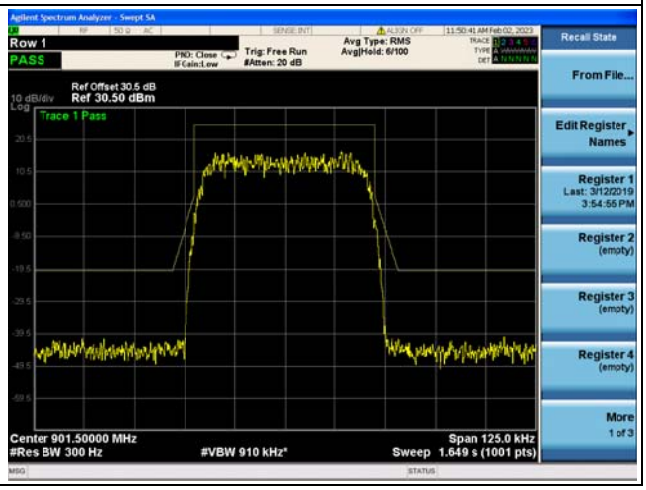
50kHz/ 64QAM /901.3925 -901.4225 MHz

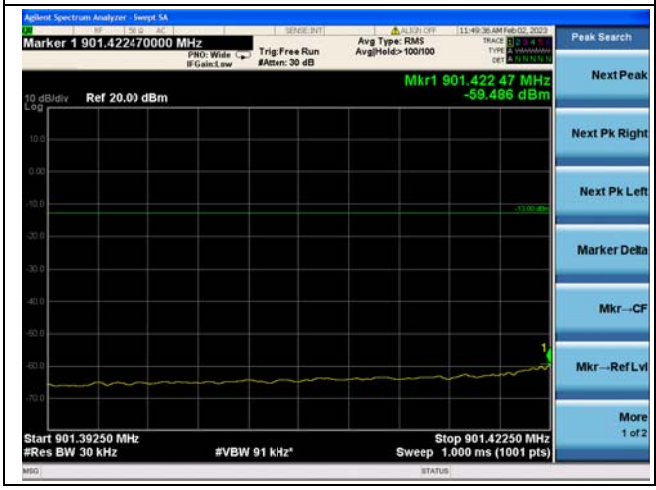
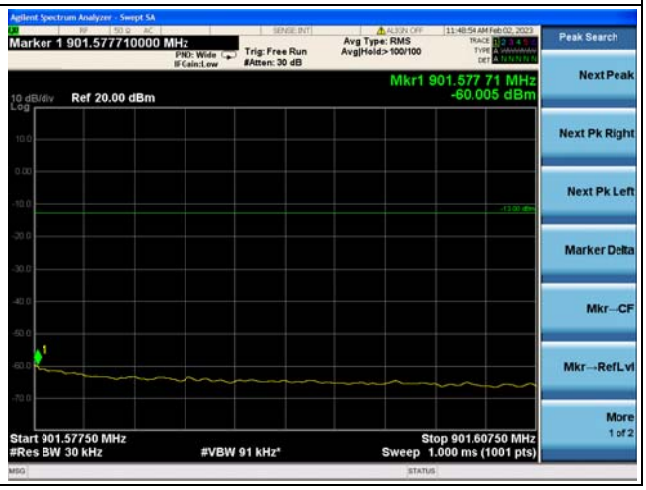


50kHz/ 64QAM /901.5775 -901.6075 MHz

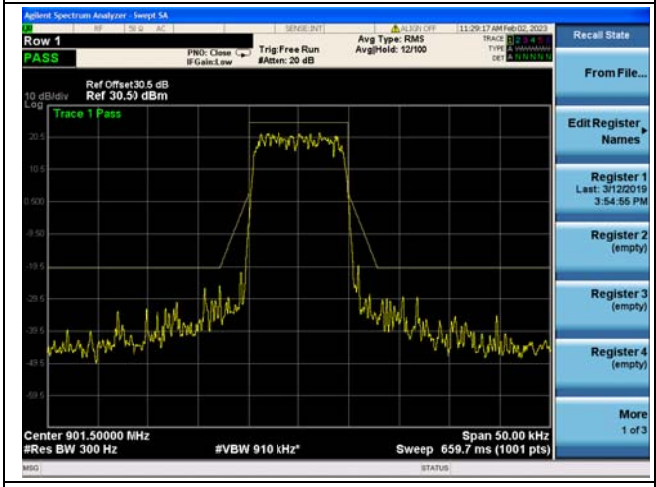


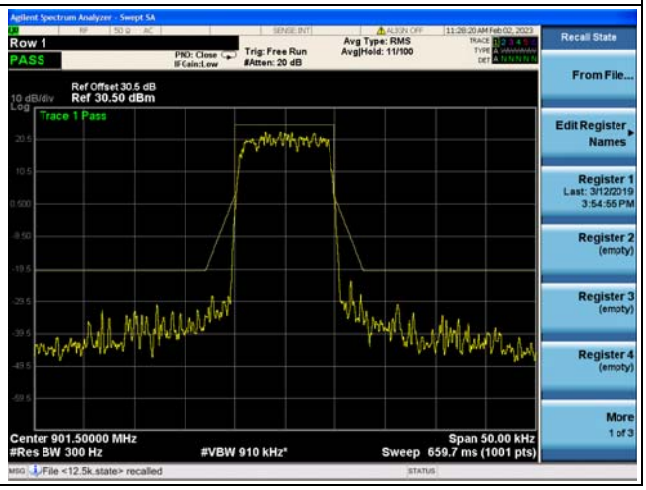
50kHz/256QAM



50kHz/ 256QAM /901.3925 -901.4225 MHz	50kHz/ 256QAM /901.5775 -901.6075 MHz
	

Nominal Frequency: 901.50 MHz Tx Port: Channel V

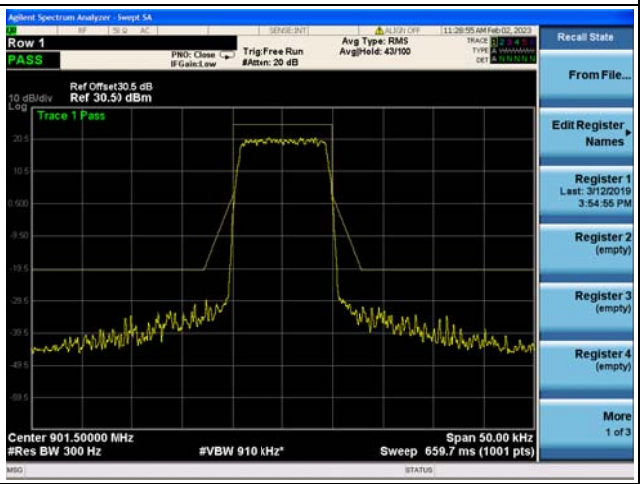
12.5kHz/ QPSK	12.5kHz/ QPSK/901.4300 -901.4600 MHz
	

12.5kHz/ QPSK/901.5400 -901.5700 MHz	12.5kHz/16QAM
	

12.5kHz/ 16QAM /901.4300 -901.4600 MHz

12.5kHz/ 16QAM /901.5400 -901.5700 MHz

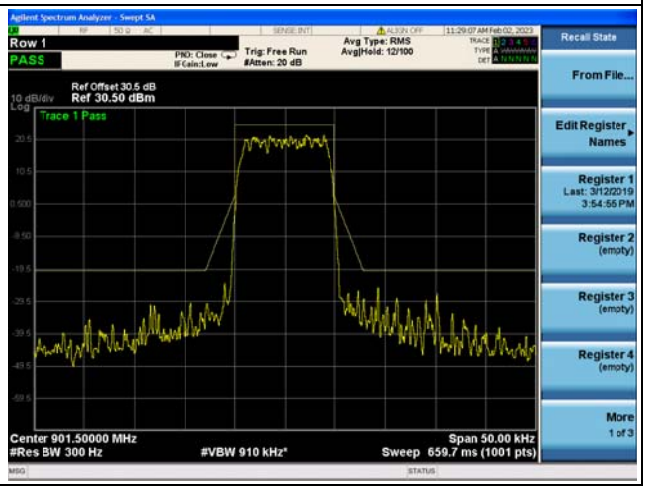
12.5kHz/ 64QAM



12.5kHz/ 64QAM /901.4300 -901.4600 MHz

12.5kHz/ 64QAM /901.5400 -901.5700 MHz

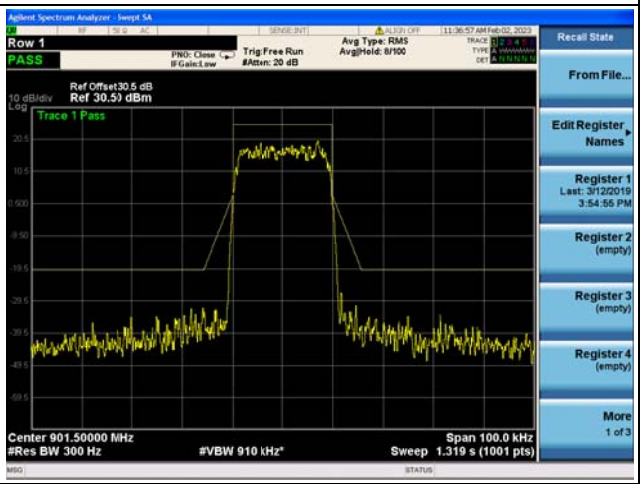
12.5kHz/256QAM



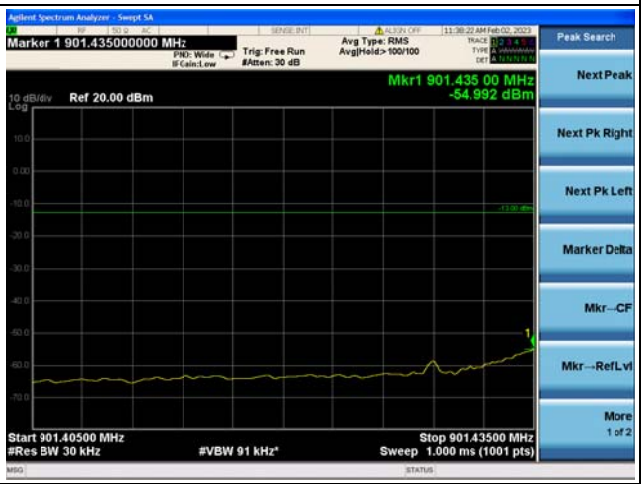
12.5kHz/ 256QAM /901.4300 -901.4600 MHz

12.5kHz/ 256QAM /901.5400 -901.5700 MHz

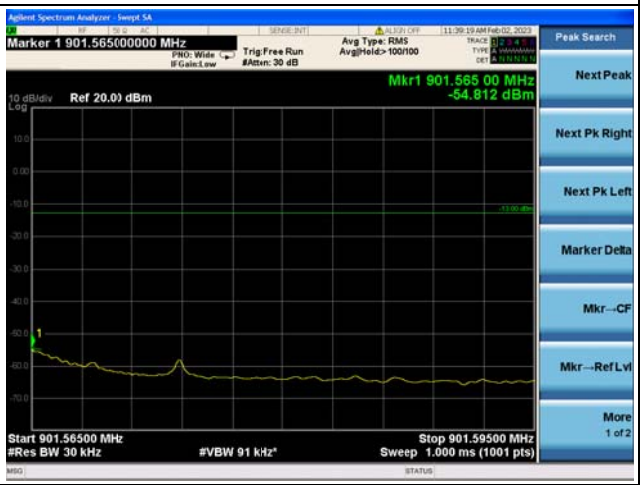
25kHz/ QPSK



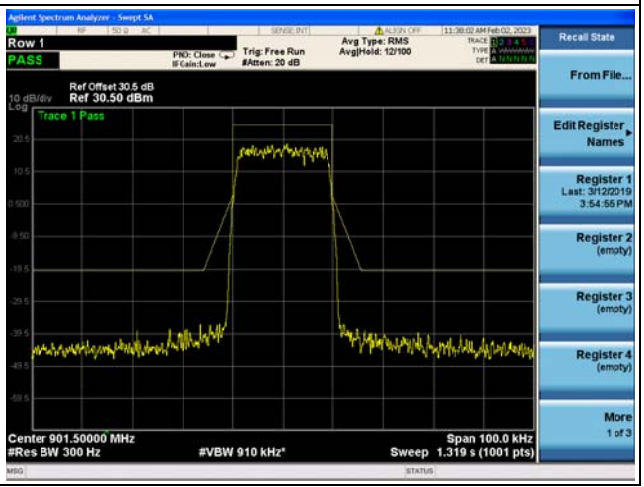
25kHz/ QPSK/901.4050 -901.4350 MHz



25kHz/ QPSK/901.5650 -901.5950 MHz

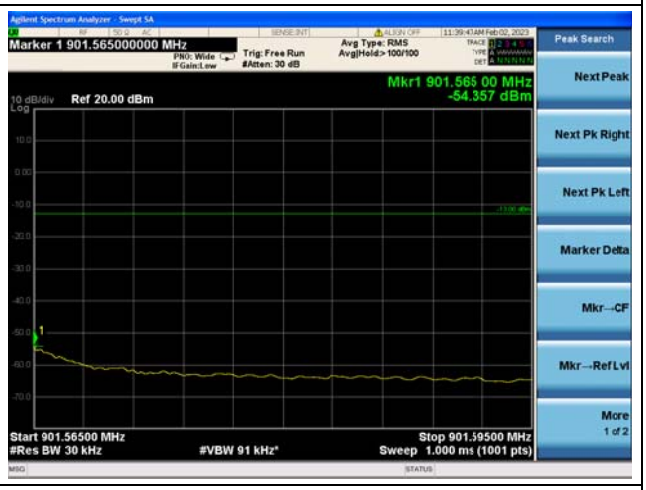


25kHz/16QAM

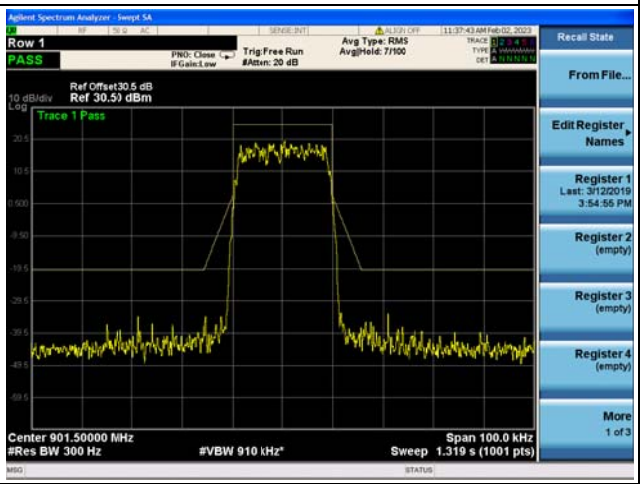


25kHz/ 16QAM /901.4050 -901.4350 MHz

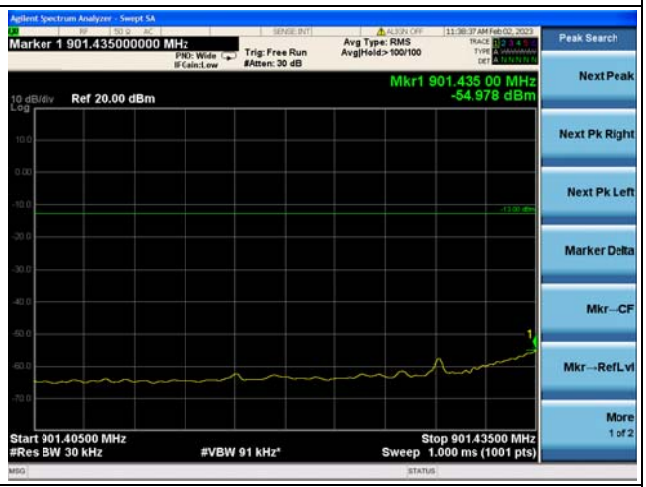
25kHz/ 16QAM /901.5650 -901.5950 MHz



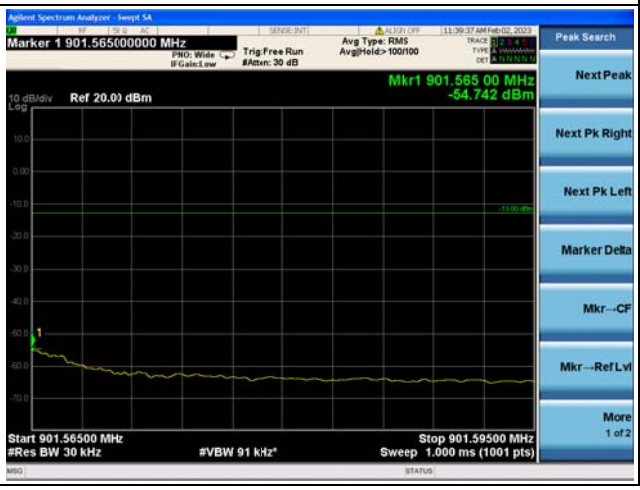
25kHz/ 64QAM



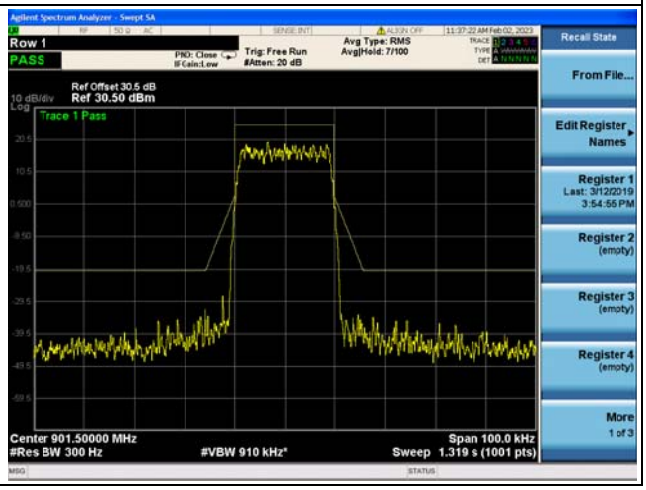
25kHz/ 64QAM /901.4050 -901.4350 MHz



25kHz/ 64QAM /901.5650 -901.5950 MHz

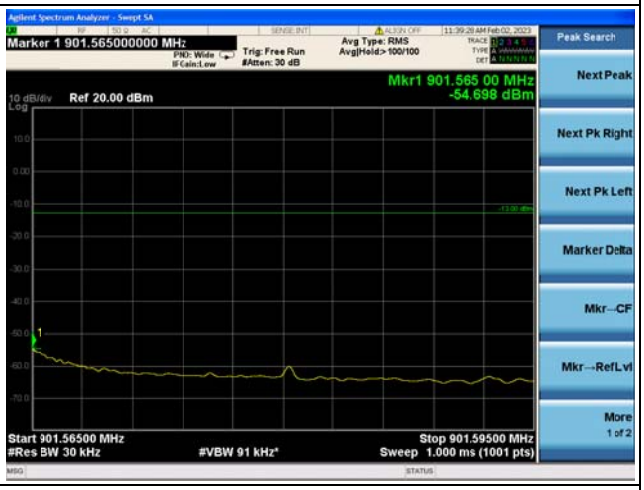


25kHz/256QAM



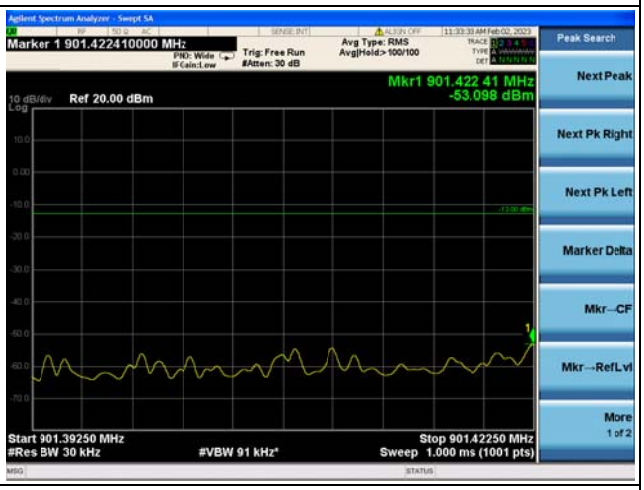
25kHz/ 256QAM /901.4050 -901.4350 MHz

25kHz/ 256QAM /901.5650 -901.5950 MHz

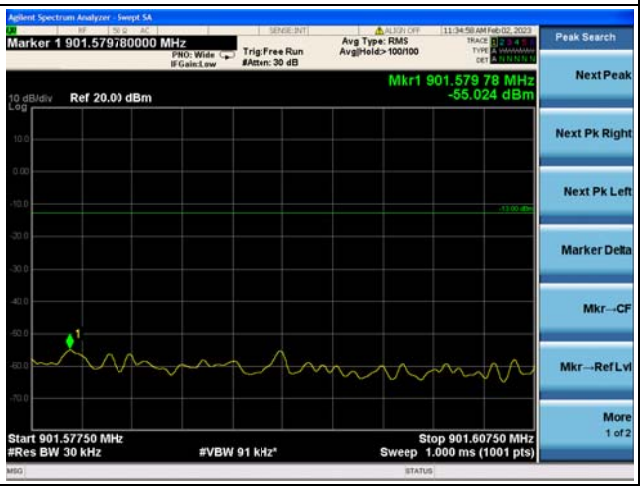


50kHz/ QPSK

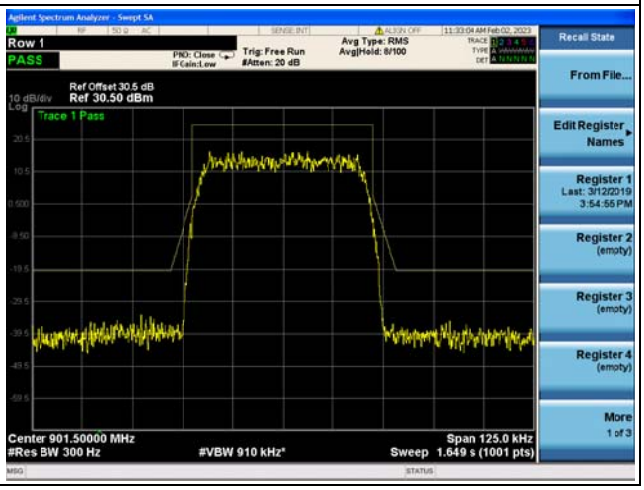
50kHz/ QPSK/901.3925 -901.4225 MHz



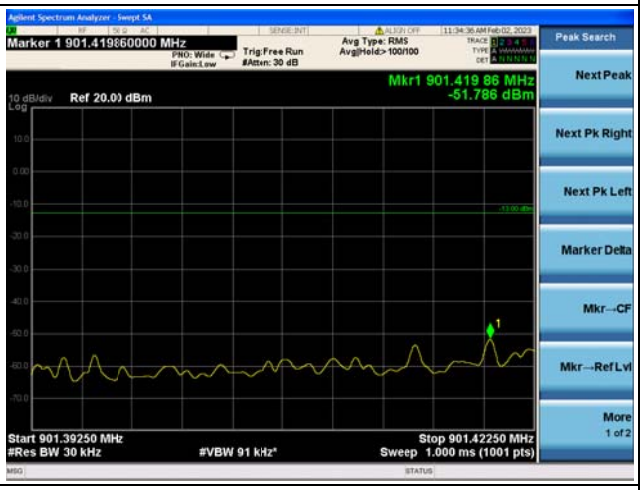
50kHz/ QPSK/901.5775 -901.6075 MHz



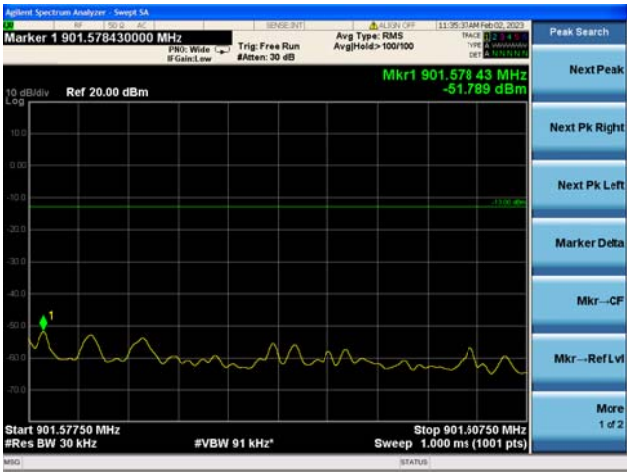
50kHz/16QAM



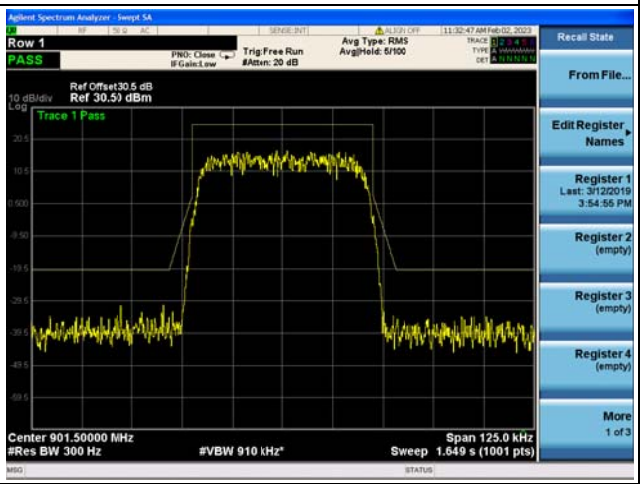
50kHz/ 16QAM /901.3925 -901.4225 MHz



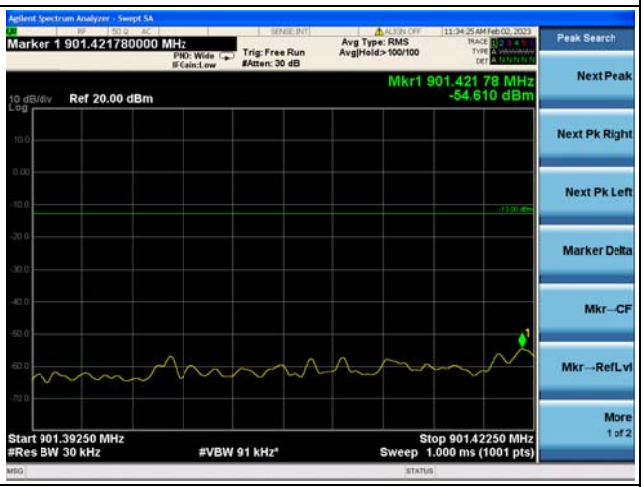
50kHz/ 16QAM /901.5775 -901.6075 MHz



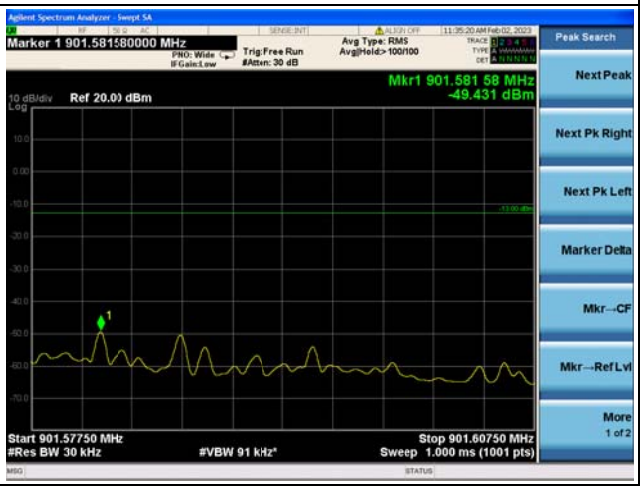
50kHz/ 64QAM



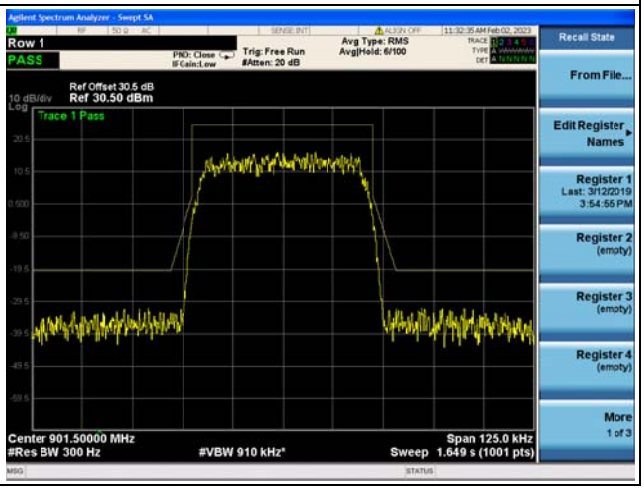
50kHz/ 64QAM /901.3925 -901.4225 MHz

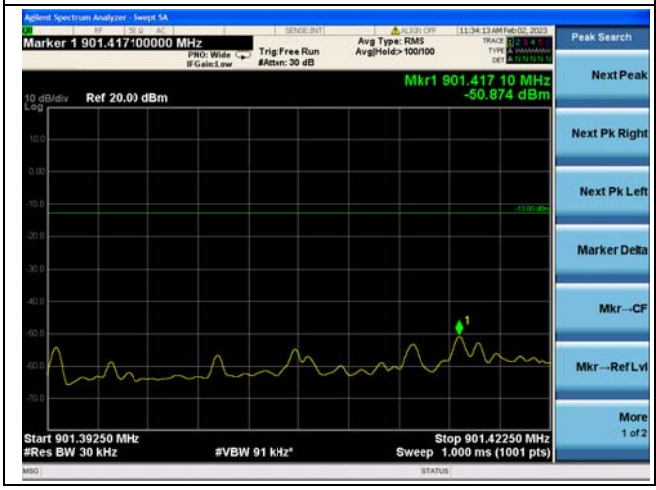
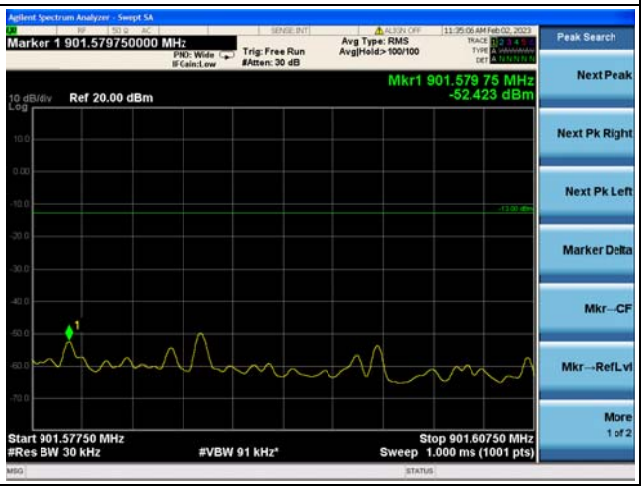


50kHz/ 64QAM /901.5775 -901.6075 MHz



50kHz/256QAM



50kHz/ 256QAM /901.3925 -901.4225 MHz	50kHz/ 256QAM /901.5775 -901.6075 MHz
	

2.4. Radiated Spurious Emissions

2.4.1. Requirement

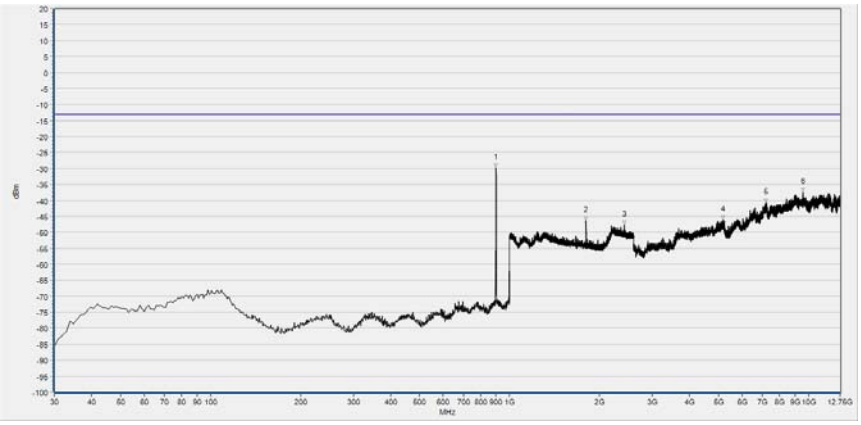
According to FCC section 2.1053 and section 24.133(a).For operations in the 901-902 MHz band , the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 901-902 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

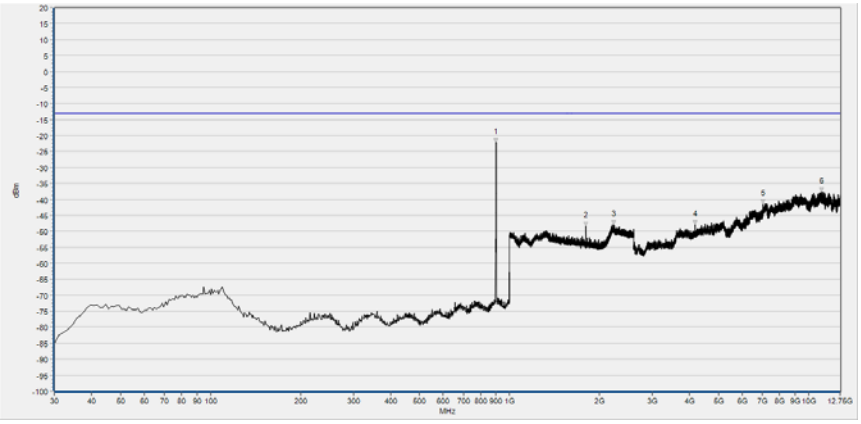
2.4.2. Test Result

Note 1: No discrete emissions were detected.
Note 2: The power of the EUT transmitting frequency should be ignored.
Note 3: N/A means the frequency is the basic frequency; they are no need to verdict.
Note 4: For measurements below 1GHz the resolution bandwidth is set to 100 kHz for peak detection measurements. For measurements above 1GHz the resolution bandwidth is set to 1MHz for peak measurements.
Note 5: All bandwidth and modulation were considered and evaluated respectively by performing full test, only the worst cases were recorded in this test report.

Nominal Frequency 901.5MHz, 12.5kHz BW, 256QAM



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	901.060	-29.87	-13.00	Horizontal	N/A
2	1802.667	-46.28	-13.00	Horizontal	PASS
3	2425.600	-47.70	-13.00	Horizontal	PASS
4	5172.010	-46.17	-13.00	Horizontal	PASS
5	7212.160	-40.88	-13.00	Horizontal	PASS
6	9571.020	-37.52	-13.00	Horizontal	PASS



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	901.060	-22.17	-13.00	Vertical	N/A
2	1802.667	-48.30	-13.00	Vertical	PASS
3	2233.067	-47.97	-13.00	Vertical	PASS
4	4181.370	-47.91	-13.00	Vertical	PASS
5	7037.580	-41.34	-13.00	Vertical	PASS
6	11026.530	-37.74	-13.00	Vertical	PASS

2.5. Frequency Stability

2.5.1. Requirement

According to FCC section 2.1055 and FCC section 24.135.e frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 24.135, the test conditions are:

The frequency stability of the transmitter shall be maintained within ±0.0001 percent (±1 ppm) of the center frequency over a temperature variation of −30 °Celsius to + 50 °Celsius at normal supply voltage, and over a variation in the primary supply voltage of 85 percent to 115 percent of the rated supply voltage at a temperature of 20 °Celsius..

2.5.2. Test Results

901.5MHz QPSK 12.5kHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	24.0	+20(Ref)	16	0.018	PASS
100		-40	41	0.045	
100		-30	18	0.020	
100		-20	19	0.021	
100		-10	40	0.044	
100		0	14	0.016	
100		+10	25	0.028	
100		+20	-21	-0.023	
100		+30	21	0.023	
100		+40	13	0.014	
100		+50	39	0.043	
100		+60	39	0.043	
100		+70	-19	-0.021	
115	27.6	+20	40	0.044	
85	20.4	+20	-13	-0.014	

901.5MHz QPSK 25.0kHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	24.0	+20(Ref)	23	0.026	PASS
100		-40	19	0.021	
100		-30	31	0.034	
100		-20	38	0.042	
100		-10	44	0.049	
100		0	-17	-0.019	
100		+10	18	0.020	
100		+20	-20	-0.022	
100		+30	22	0.024	
100		+40	47	0.052	
100		+50	40	0.044	
100		+60	-20	-0.022	
100		+70	-22	-0.024	
115	27.6	+20	44	0.049	

85	20.4	+20	15	0.017	

901.5MHz QPSK 50.0kHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	24.0	+20(Ref)	37	0.041	PASS
100		-40	-23	-0.026	
100		-30	15	0.017	
100		-20	-13	-0.014	
100		-10	33	0.037	
100		0	36	0.040	
100		+10	13	0.014	
100		+20	18	0.020	
100		+30	39	0.043	
100		+40	23	0.026	
100		+50	20	0.022	
100		+60	21	0.023	
100		+70	50	0.055	
115	27.6	+20	-14	-0.016	
85	20.4	+20	13	0.014	

Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test items	Uncertainty
Output Power	±2.22 dB
Bandwidth	±5%
Conducted Spurious Emission	±2.77 dB
Band Edge	±2.77 dB
Equivalent Isotropic Radiated Power	±2.22 dB
Radiated Spurious Emissions	±6 dB

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

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.

4. Test Equipment Utilized

4.1 Conducted Test Equipment

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
Power Splitter	NW521	1506A	Weinschel	N/A	N/A
Attenuator 1	(N/A.)	30.0dB	Resnet	N/A	N/A
Attenuator 2	(N/A.)	30.0dB	Resnet	N/A	N/A
EXA Signal Analyzer	MY51511149	N9020A	Agilent	2022.07.04	2023.07.03
RF Cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial Cable	CB02	RF02	Morlab	N/A	N/A
SMA Connector	CN01	RF03	HUBER-SUHNER	N/A	N/A
Temperature Chamber	S022177101 00089002	KMT-36LF 1A0	KOMEG	2022.11.18	2023.11.17

4.2 Radiated Test Equipment

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal.Due
RF Coaxial Cable（DC-18GHz）	PE330	MRE001	Pasternack	2022.07.08	2023.07.07
RF Coaxial Cable（DC-18GHz）	CLU18	MRE002	Pasternack	2022.07.08	2023.07.07
RF Coaxial Cable（DC-18GHz）	CLU18	MRE003	Pasternack	2022.07.08	2023.07.07
RF Coaxial Cable（DC-40GHz）	QA360-40-KK-0.5	22290045	Qualwave	2022.07.08	2023.07.07
RF Coaxial Cable（DC-40GHz）	QA360-40-KKF-2	22290046	Qualwave	2022.07.08	2023.07.07
RF Coaxial Cable（DC-18GHz）	QA500-18-NN-5	22120181	Qualwave	2022.07.08	2023.07.07
Preamplifier（2GHz-18GHz）	S020180L3203	61171/61172	LUCIX CORP.	2022.07.08	2023.07.07
Preamplifier（10MHz-6GHz）	S10M100L3802	46732	LUCIX CORP.	2022.07.08	2023.07.07
Preamplifier（18GHz-40GHz）	DCLNA0118-40C-S	DS77209	Decentest	2022.07.023	2023.07.022
Receiver	N9038A	MY54130016	Agilent	2022.07.07	2023.07.06
Horn Antenna	BBHA 9120D	9120D-963	SCHWARZBECK	2022.05.25	2025.05.24
Bi-Log Antenna	VULB 9163	9163-274	SCHWARZBECK	2022.11.07	2025.11.06
Receiver	MY56400093	N9038A	KEYSIGHT	2022.03.03	2023.03.02
Test system	N/A	MORLAB EMCR V1.2	MORLAB	N/A	N/A

END OF REPORT