REPORT No.: SZ24060164W02

TEST REPORT

APPLICANT	:	MiMOMax Wireless Limited
PRODUCT NAME	:	900MHz TornadoXR Transceiver
MODEL NAME	:	MWL-TORNADOX-BGCA
BRAND NAME	:	Ubiik Mimomax
FCC ID	:	XMK-MMXTRNXB013
STANDARD(S)	:	47 CFR Part 2 47 CFR Part 24 47 CFR Part 101
RECEIPT DATE	:	2024-06-20
TEST DATE	:	2024-07-08 to 2025-03-25
ISSUE DATE	:	2025-07-21

Tested by: Gan Jing

Gan Jing (Rapporteur)

Approved by: Shen Junsheng

Shen Junsheng(Supervisor)

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DIRECTORY

Change History		
Issue	Date	Reason for change
1.0	2025-07-21	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 TornadoXR Transceiver	
EUT Serial No:	(N/A, marked 1# by test site)	
Hardware Version:	P001	
Software Version:	TRN_04.08.04	
Operating Frequency Range:	928-929MHz, 930-931 MHz, 932-932.5MHz, 932.5-935MHz, 940-941MHz, 941-941.5MHz, 941.5-944MHz, 952-960MHz, 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
		6.0 dBi
		8.0 dBi
	Panel Antenna	8.0 dBi
		10.0 dBi
		12.0 dBi
		16.0 dBi
	Parabolic Antenna	21.5 dBi
Emission Designator:	BW(kHz)	Designator
	12.5kHz	10K0W1W
	25.0kHz	20K0W1W
	50.0kHz	42K0W1W

Note 1: The EUT description presented in the report are provided by applicant and/or manufacturer,

and the test laboratory is not responsible for the accuracy of the information. For a more detailed description，please refer to Specification or User's Manual supplied by the applicant and/or manufacturer for more detailed information.

1.3. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2, Part 24 and Part101 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
3	47 CFR Part 101	Fixed Microwave Services

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

Section	Description	Test Engineer	Result	Remark
2.1046 24.132 101.113	Transmitter Conducted Output Power and ERP/EIRP	Gan Jing	PASS[5]	/
2.1049	Occupied Bandwidth	Gan Jing	PASS	/
2.1051 24.133 101.111	Conducted Spurious Emissions	Gan Jing	PASS	/
2.1053 24.133 101.111	Radiated Spurious Emissions	Li Hanbin Gao Jianrou	PASS	/
2.1055 24.135 101.101	Frequency stability	Gan Jing	PASS	/

Note 1: The TornadoXR Transceiver complies with FCC 47 CFR Part 2, Part 24 and Part101 when tested in accordance with the test methods described in 47 CFR Part 2, Part 24 and Part101.

Note 2: The TornadoXR 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 0.7dB and attenuator of 30.0dB.

Note 4: Any additions, deviation, or exclusions from the method shall be noted in the “Remark".

Note 5: The antenna gain of EUT presented in the report are provided by applicant and/or manufacturer, and the test laboratory is not responsible for the accuracy of the information.

1.4. Environmental Conditions

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

Temperature (°C):	15 - 35
Relative Humidity (%):	30 -60

2. Summary Test Results And Description

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

2.1.1. Test result

Nominal Frequency: 928.5375 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	33.71	2.350	2.50	35.56	3.597	43.56	22.699
12.5	16QAM	24	33.57	2.275	2.50	35.42	3.483	43.42	21.979
12.5	64QAM	24	33.93	2.472	2.50	35.78	3.784	43.78	23.878
12.5	256QAM	24	33.88	2.443	2.50	35.73	3.741	43.73	23.605
25.0	QPSK	24	33.81	2.404	2.50	35.66	3.681	43.66	23.227
25.0	16QAM	24	33.68	2.333	2.50	35.53	3.573	43.53	22.542
25.0	64QAM	24	33.94	2.477	2.50	35.79	3.793	43.79	23.933
25.0	256QAM	24	33.82	2.410	2.50	35.67	3.690	43.67	23.281
50.0	QPSK	24	33.78	2.388	2.50	35.63	3.656	43.63	23.067
50.0	16QAM	24	33.89	2.449	2.50	35.74	3.750	43.74	23.659
50.0	64QAM	24	33.86	2.432	2.50	35.71	3.724	43.71	23.496
50.0	256QAM	24	34.08	2.559	2.50	35.93	3.917	43.93	24.717

Nominal Frequency: 928.5375 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	33.95	2.483	2.50	35.80	3.802	43.80	23.988
12.5	16QAM	24	33.78	2.388	2.50	35.63	3.656	43.63	23.067
12.5	64QAM	24	33.92	2.466	2.50	35.77	3.776	43.77	23.823
12.5	256QAM	24	34.13	2.588	2.50	35.98	3.963	43.98	25.003
25.0	QPSK	24	33.87	2.438	2.50	35.72	3.733	43.72	23.550
25.0	16QAM	24	33.96	2.489	2.50	35.81	3.811	43.81	24.044
25.0	64QAM	24	34.02	2.523	2.50	35.87	3.864	43.87	24.378
25.0	256QAM	24	33.92	2.466	2.50	35.77	3.776	43.77	23.823
50.0	QPSK	24	33.98	2.500	2.50	35.83	3.828	43.83	24.155
50.0	16QAM	24	33.76	2.377	2.50	35.61	3.639	43.61	22.961
50.0	64QAM	24	34.03	2.529	2.50	35.88	3.873	43.88	24.434
50.0	256QAM	24	34.02	2.523	2.50	35.87	3.864	43.87	24.378

Nominal Frequency: 930.50 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 = 16.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	34.06	2.547	2.50	35.91	3.899	53.41	219.280
12.5	16QAM	24	33.69	2.339	2.50	35.54	3.581	53.04	201.372
12.5	64QAM	24	33.89	2.449	2.50	35.74	3.750	53.24	210.863
12.5	256QAM	24	33.95	2.483	2.50	35.80	3.802	53.30	213.796
25.0	QPSK	24	33.76	2.377	2.50	35.61	3.639	53.11	204.644
25.0	16QAM	24	33.90	2.455	2.50	35.75	3.758	53.25	211.349
25.0	64QAM	24	33.92	2.466	2.50	35.77	3.776	53.27	212.324
25.0	256QAM	24	34.10	2.570	2.50	35.95	3.936	53.45	221.309
50.0	QPSK	24	33.75	2.371	2.50	35.60	3.631	53.10	204.174

50.0	16QAM	24	33.69	2.339	2.50	35.54	3.581	53.04	201.372
50.0	64QAM	24	33.77	2.382	2.50	35.62	3.648	53.12	205.116
50.0	256QAM	24	33.89	2.449	2.50	35.74	3.750	53.24	210.863

Nominal Frequency: 930.50 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 = 16.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	34.04	2.535	2.50	35.89	3.882	53.39	218.273
12.5	16QAM	24	33.87	2.438	2.50	35.72	3.733	53.22	209.894
12.5	64QAM	24	33.89	2.449	2.50	35.74	3.750	53.24	210.863
12.5	256QAM	24	34.10	2.570	2.50	35.95	3.936	53.45	221.309
25.0	QPSK	24	34.00	2.512	2.50	35.85	3.846	53.35	216.272
25.0	16QAM	24	33.86	2.432	2.50	35.71	3.724	53.21	209.411
25.0	64QAM	24	34.09	2.564	2.50	35.94	3.926	53.44	220.800
25.0	256QAM	24	34.05	2.541	2.50	35.90	3.890	53.40	218.776
50.0	QPSK	24	34.01	2.518	2.50	35.86	3.855	53.36	216.770
50.0	16QAM	24	33.75	2.371	2.50	35.60	3.631	53.10	204.174
50.0	64QAM	24	34.05	2.541	2.50	35.90	3.890	53.40	218.776
50.0	256QAM	24	34.11	2.576	2.50	35.96	3.945	53.46	221.820

Nominal Frequency: 933.5 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 = 16.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	33.89	2.449	2.50	35.74	3.750	53.24	210.863
12.5	16QAM	24	33.77	2.382	2.50	35.62	3.648	53.12	205.116
12.5	64QAM	24	33.88	2.443	2.50	35.73	3.741	53.23	210.378
12.5	256QAM	24	34.05	2.541	2.50	35.90	3.890	53.40	218.776
25.0	QPSK	24	33.80	2.399	2.50	35.65	3.673	53.15	206.538
25.0	16QAM	24	33.81	2.404	2.50	35.66	3.681	53.16	207.014

25.0	64QAM	24	33.91	2.460	2.50	35.76	3.767	53.26	211.836
25.0	256QAM	24	33.98	2.500	2.50	35.83	3.828	53.33	215.278
50.0	QPSK	24	33.93	2.472	2.50	35.78	3.784	53.28	212.814
50.0	16QAM	24	33.92	2.466	2.50	35.77	3.776	53.27	212.324
50.0	64QAM	24	33.95	2.483	2.50	35.80	3.802	53.30	213.796
50.0	256QAM	24	34.04	2.535	2.50	35.89	3.882	53.39	218.273

Nominal Frequency: 933.5 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 = 16.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	33.91	2.460	2.50	35.76	3.767	53.26	211.836
12.5	16QAM	24	33.91	2.460	2.50	35.76	3.767	53.26	211.836
12.5	64QAM	24	33.83	2.415	2.50	35.68	3.698	53.18	207.970
12.5	256QAM	24	34.09	2.564	2.50	35.94	3.926	53.44	220.800
25.0	QPSK	24	33.83	2.415	2.50	35.68	3.698	53.18	207.970
25.0	16QAM	24	33.82	2.410	2.50	35.67	3.690	53.17	207.491
25.0	64QAM	24	33.82	2.410	2.50	35.67	3.690	53.17	207.491
25.0	256QAM	24	33.96	2.489	2.50	35.81	3.811	53.31	214.289
50.0	QPSK	24	33.99	2.506	2.50	35.84	3.837	53.34	215.774
50.0	16QAM	24	33.85	2.427	2.50	35.70	3.715	53.20	208.930
50.0	64QAM	24	33.96	2.489	2.50	35.81	3.811	53.31	214.289
50.0	256QAM	24	34.13	2.588	2.50	35.98	3.963	53.48	222.844

Nominal Frequency: 940.50 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 = 16.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	34.02	2.523	2.50	35.87	3.864	53.37	217.270
12.5	16QAM	24	33.92	2.466	2.50	35.77	3.776	53.27	212.324
12.5	64QAM	24	34.15	2.600	2.50	36.00	3.981	53.50	223.872

12.5	256QAM	24	34.18	2.618	2.50	36.03	4.009	53.53	225.424
25.0	QPSK	24	34.05	2.541	2.50	35.90	3.890	53.40	218.776
25.0	16QAM	24	33.97	2.495	2.50	35.82	3.819	53.32	214.783
25.0	64QAM	24	34.00	2.512	2.50	35.85	3.846	53.35	216.272
25.0	256QAM	24	34.13	2.588	2.50	35.98	3.963	53.48	222.844
50.0	QPSK	24	33.91	2.460	2.50	35.76	3.767	53.26	211.836
50.0	16QAM	24	33.83	2.415	2.50	35.68	3.698	53.18	207.970
50.0	64QAM	24	33.96	2.489	2.50	35.81	3.811	53.31	214.289
50.0	256QAM	24	34.13	2.588	2.50	35.98	3.963	53.48	222.844

Nominal Frequency: 940.50 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 = 16.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	34.07	2.553	2.50	35.92	3.908	53.42	219.786
12.5	16QAM	24	33.85	2.427	2.50	35.70	3.715	53.20	208.930
12.5	64QAM	24	34.15	2.600	2.50	36.00	3.981	53.50	223.872
12.5	256QAM	24	34.16	2.606	2.50	36.01	3.990	53.51	224.388
25.0	QPSK	24	34.06	2.547	2.50	35.91	3.899	53.41	219.280
25.0	16QAM	24	33.87	2.438	2.50	35.72	3.733	53.22	209.894
25.0	64QAM	24	34.06	2.547	2.50	35.91	3.899	53.41	219.280
25.0	256QAM	24	34.10	2.570	2.50	35.95	3.936	53.45	221.309
50.0	QPSK	24	34.08	2.559	2.50	35.93	3.917	53.43	220.293
50.0	16QAM	24	33.52	2.249	2.50	35.37	3.443	52.87	193.642
50.0	64QAM	24	33.92	2.466	2.50	35.77	3.776	53.27	212.324
50.0	256QAM	24	34.21	2.636	2.50	36.06	4.036	53.56	226.986

Nominal Frequency: 942.5 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 = 16.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	33.75	2.371	2.50	35.60	3.631	53.10	204.174
12.5	16QAM	24	33.86	2.432	2.50	35.71	3.724	53.21	209.411
12.5	64QAM	24	33.93	2.472	2.50	35.78	3.784	53.28	212.814
12.5	256QAM	24	34.02	2.523	2.50	35.87	3.864	53.37	217.270
25.0	QPSK	24	33.89	2.449	2.50	35.74	3.750	53.24	210.863
25.0	16QAM	24	33.84	2.421	2.50	35.69	3.707	53.19	208.449
25.0	64QAM	24	34.01	2.518	2.50	35.86	3.855	53.36	216.770
25.0	256QAM	24	33.91	2.460	2.50	35.76	3.767	53.26	211.836
50.0	QPSK	24	33.89	2.449	2.50	35.74	3.750	53.24	210.863
50.0	16QAM	24	33.92	2.466	2.50	35.77	3.776	53.27	212.324
50.0	64QAM	24	33.76	2.377	2.50	35.61	3.639	53.11	204.644
50.0	256QAM	24	34.03	2.529	2.50	35.88	3.873	53.38	217.771

Nominal Frequency: 942.5 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 = 16.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	33.55	2.265	2.50	35.40	3.467	52.90	194.984
12.5	16QAM	24	33.67	2.328	2.50	35.52	3.565	53.02	200.447
12.5	64QAM	24	33.99	2.506	2.50	35.84	3.837	53.34	215.774
12.5	256QAM	24	33.78	2.388	2.50	35.63	3.656	53.13	205.589
25.0	QPSK	24	33.68	2.333	2.50	35.53	3.573	53.03	200.909
25.0	16QAM	24	33.60	2.291	2.50	35.45	3.508	52.95	197.242
25.0	64QAM	24	33.85	2.427	2.50	35.70	3.715	53.20	208.930
25.0	256QAM	24	33.88	2.443	2.50	35.73	3.741	53.23	210.378
50.0	QPSK	24	33.91	2.460	2.50	35.76	3.767	53.26	211.836

50.0	16QAM	24	33.78	2.388	2.50	35.63	3.656	53.13	205.589
50.0	64QAM	24	33.82	2.410	2.50	35.67	3.690	53.17	207.491
50.0	256QAM	24	34.07	2.553	2.50	35.92	3.908	53.42	219.786

Nominal Frequency: 952.5375 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 = 16.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	34.05	2.541	2.50	35.90	3.890	53.40	218.776
12.5	16QAM	24	33.72	2.355	2.50	35.57	3.606	53.07	202.768
12.5	64QAM	24	33.60	2.291	2.50	35.45	3.508	52.95	197.242
12.5	256QAM	24	34.11	2.576	2.50	35.96	3.945	53.46	221.820
25.0	QPSK	24	33.50	2.239	2.50	35.35	3.428	52.85	192.752
25.0	16QAM	24	33.53	2.254	2.50	35.38	3.451	52.88	194.089
25.0	64QAM	24	33.66	2.323	2.50	35.51	3.556	53.01	199.986
25.0	256QAM	24	33.59	2.286	2.50	35.44	3.499	52.94	196.789
50.0	QPSK	24	33.70	2.344	2.50	35.55	3.589	53.05	201.837
50.0	16QAM	24	33.59	2.286	2.50	35.44	3.499	52.94	196.789
50.0	64QAM	24	33.85	2.427	2.50	35.70	3.715	53.20	208.930
50.0	256QAM	24	34.04	2.535	2.50	35.89	3.882	53.39	218.273

Nominal Frequency: 952.5375 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 = 16.0dBi)	
						dBm	Watt	dBm	Watt
12.5	QPSK	24	33.61	2.296	2.50	35.46	3.516	52.96	197.697
12.5	16QAM	24	33.89	2.449	2.50	35.74	3.750	53.24	210.863
12.5	64QAM	24	34.09	2.564	2.50	35.94	3.926	53.44	220.800
12.5	256QAM	24	33.89	2.449	2.50	35.74	3.750	53.24	210.863
25.0	QPSK	24	33.77	2.382	2.50	35.62	3.648	53.12	205.116

25.0	16QAM	24	33.73	2.360	2.50	35.58	3.614	53.08	203.236
25.0	64QAM	24	34.01	2.518	2.50	35.86	3.855	53.36	216.770
25.0	256QAM	24	33.94	2.477	2.50	35.79	3.793	53.29	213.304
50.0	QPSK	24	33.85	2.427	2.50	35.70	3.715	53.20	208.930
50.0	16QAM	24	34.00	2.512	2.50	35.85	3.846	53.35	216.272
50.0	64QAM	24	33.96	2.489	2.50	35.81	3.811	53.31	214.289
50.0	256QAM	24	34.09	2.564	2.50	35.94	3.926	53.44	220.800

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 0.7dB and attenuator of 30.0dB.

Note 2: The transmitter has a rated output power of 2.512 Watt (34dBm).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.

Base stations transmitting in the 930-931 MHz and 940-941 MHz bands are limited to 3500 watts e.r.p. per authorized channel and are unlimited in antenna height except as provided in paragraph (d) of this section.

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.

Note 7: 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.

Note 8: This product is based on the interactive calculation of erp limits and conducted power. In the 928-929MHz and 932-932.5MHz range, an antenna with a maximum gain of 12dBi can be used to meet the erp requirements.

Note 9: The radios are designed to maintain the performances from 896 to 960MHz. The bandwidth of the frequency band 932 to 932.5MHz is only 0.5MHz. Therefore, the frequency bands of 932 to 932.5MHz and 932.5 to 935MHz are considered as one frequency band, and 933.5Mhz has been chosen at the middle frequency to be the test point. The test results at 933.5MHz should be adequate to represent both frequency bands of 932 to 932.5MHz and 932.5 to 935MHz. Similarly, 942.5MHz has been tested to present the performances of the frequency bands 941 to 941.5MHz and 941.5 to 944MHz. And the test results at both 933.5MHz and 942.5MHz should be adequate to verify the radio performances in the frequency bands 935 to 940MHz.

2.2. Occupied Bandwidth

2.2.1. Definition

Emission Designator:

Frequency (MHz)	BW(kHz)	Designator
928-929MHz	12.5kHz	10K0W1W
	25.0kHz	20K0W1W
	50.0kHz	42K0W1W
930-931MHz	12.5kHz	10K0W1W
	25.0kHz	20K0W1W
	50.0kHz	42K0W1W
932-932.5MHz	12.5kHz	10K0W1W
	25.0kHz	20K0W1W
	50.0kHz	42K0W1W
932.5-935MHz	12.5kHz	10K0W1W
	25.0kHz	20K0W1W
	50.0kHz	42K0W1W
940-941MHz	12.5kHz	10K0W1W
	25.0kHz	20K0W1W
	50.0kHz	42K0W1W
941-941.5MHz	12.5kHz	10K0W1W
	25.0kHz	20K0W1W
	50.0kHz	42K0W1W
941.5-944MHz	12.5kHz	10K0W1W
	25.0kHz	20K0W1W
	50.0kHz	42K0W1W
952-960MHz	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

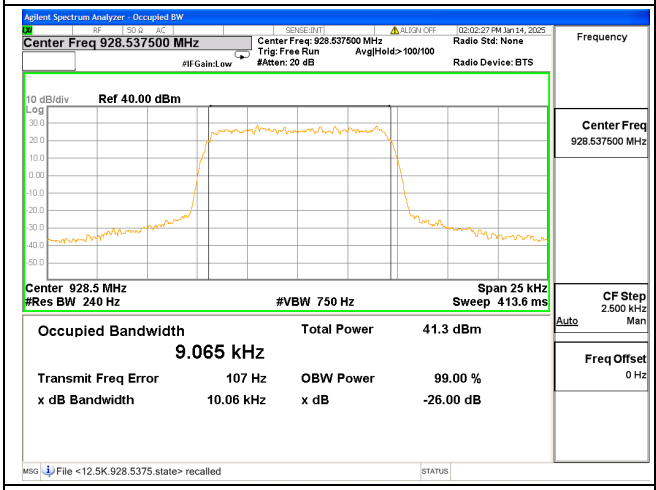
Measurements have been made of each modulation type using a spectrum analyzer operating in occupied bandwidth mode.

2.2.3. Test Result

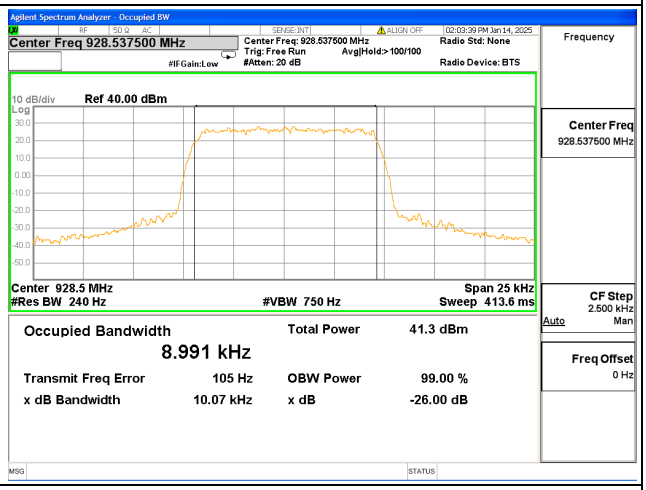
Nominal Frequency: 928.5375 MHz

Tx Port	Channel Bandwidth(kHz)	Emission Type	Occupied Bandwidth(kHz)
H	12.5	QPSK	9.065
		16QAM	8
		64QAM	9.008
		256QAM	8.976
	25.0	QPSK	18.771
		16QAM	18.748
		64QAM	18.722
		256QAM	18.709
	50.0	QPSK	41.235
		16QAM	41.538
		64QAM	41.152
		256QAM	41.694
V	12.5	QPSK	9.025
		16QAM	9.046
		64QAM	9.007
		256QAM	9.027
	25.0	QPSK	18.879
		16QAM	18.811
		64QAM	18.644
		256QAM	18.721
	50.0	QPSK	41.334
		16QAM	41.386
		64QAM	41.294
		256QAM	41.376

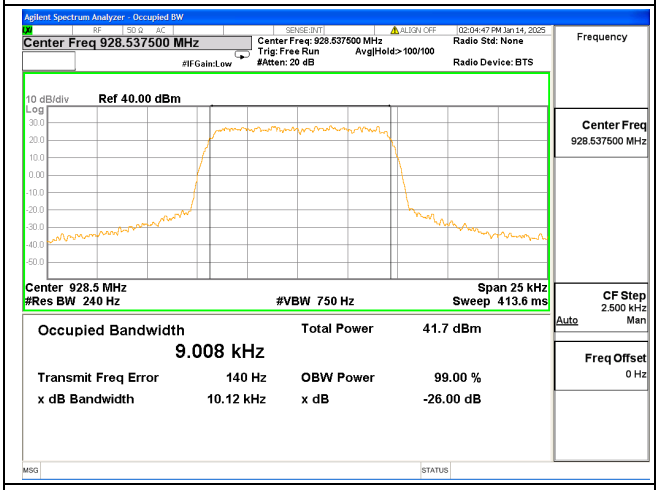
928.5375MHz/Channel H/12.5kHz/QPSK



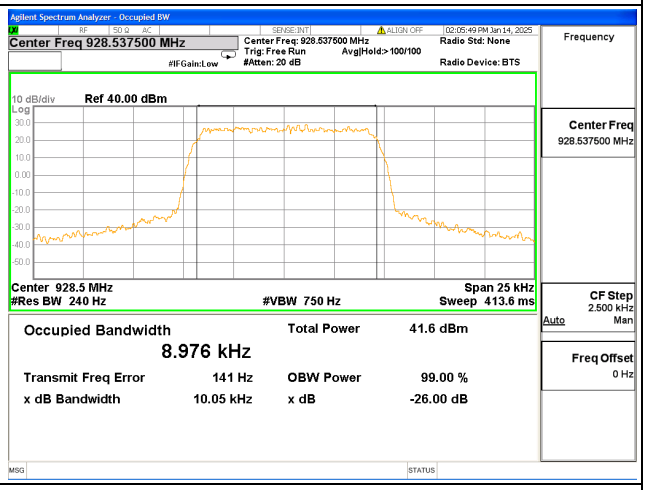
928.5375MHz/Channel H/12.5kHz/16QAM



928.5375MHz/Channel H/12.5kHz/64QAM



928.5375MHz/Channel H/12.5 kHz/256QAM



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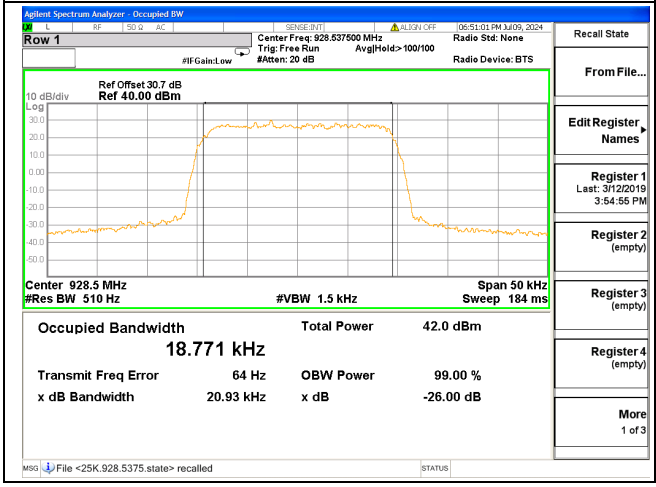
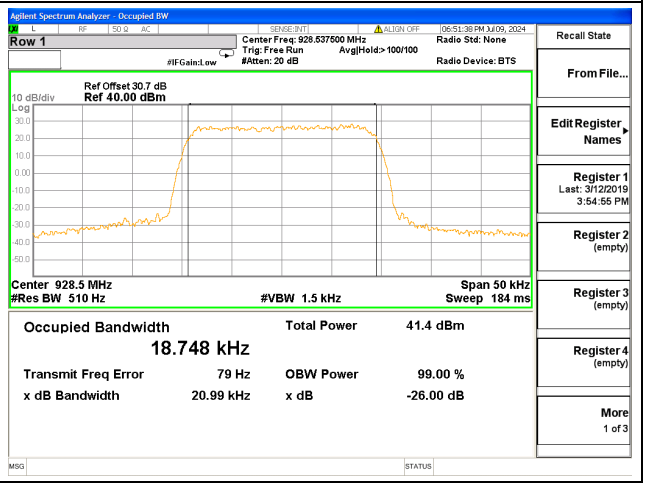


928.5375MHz/Channel H/25.0 kHz/16QAM



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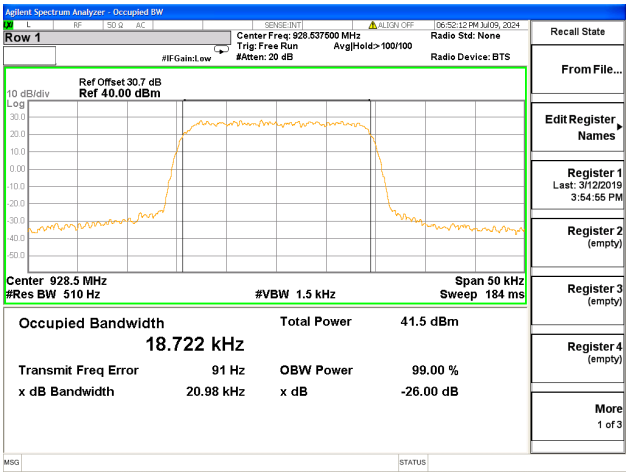

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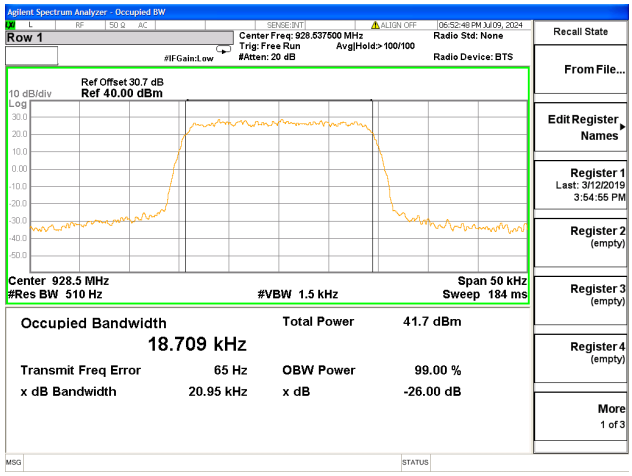
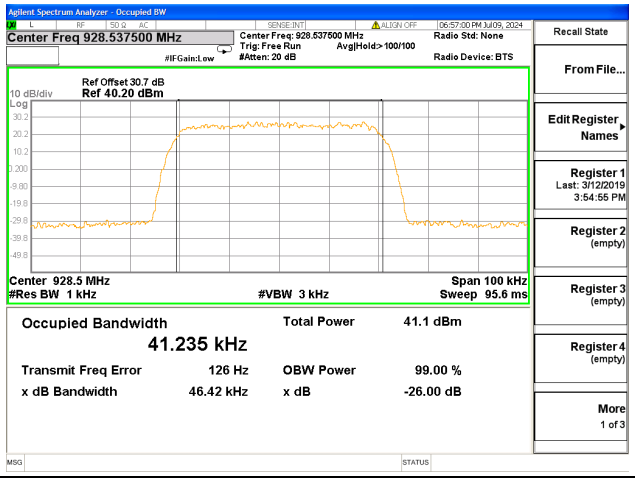
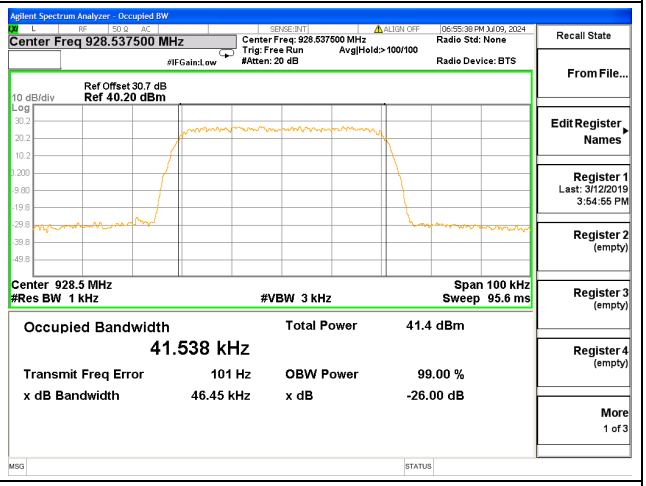


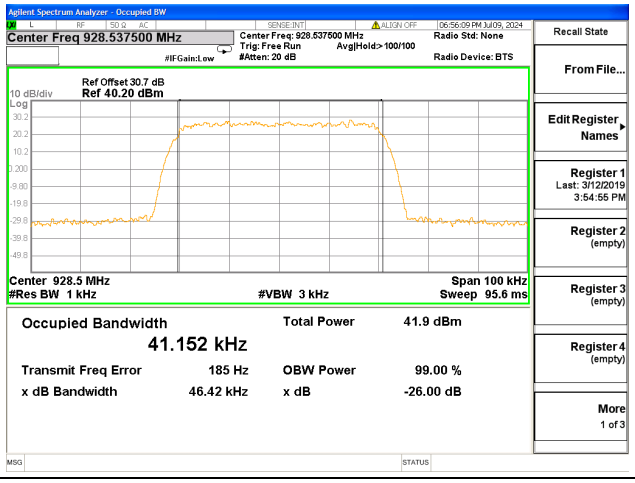
928.5375MHz/Channel H/50.0 kHz/QPSK



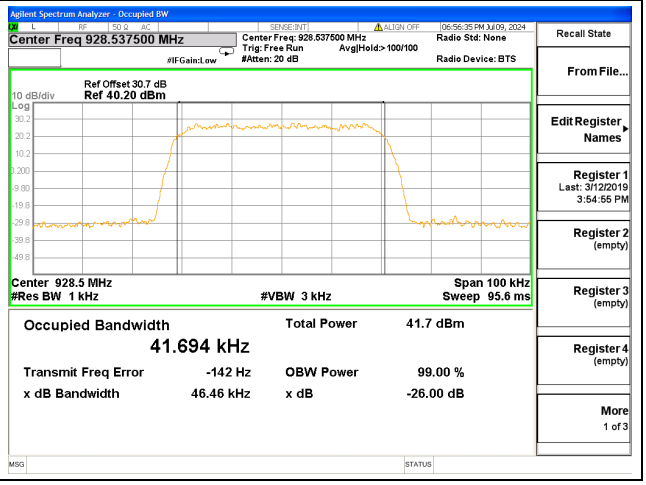
928.5375MHz/Channel H/50.0 kHz/16QAM



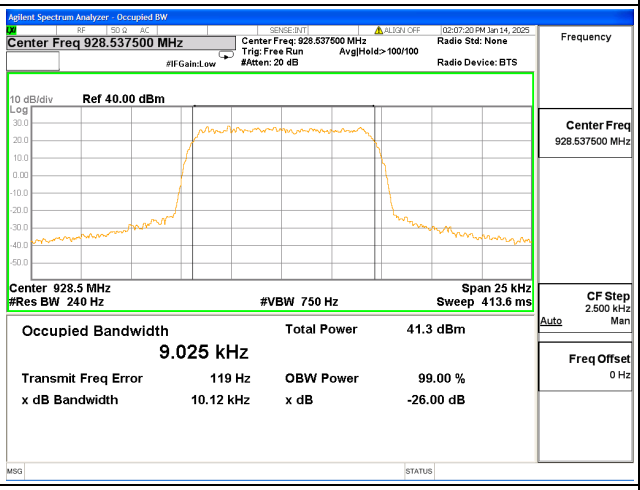
928.5375MHz/Channel H/50.0 kHz/64QAM



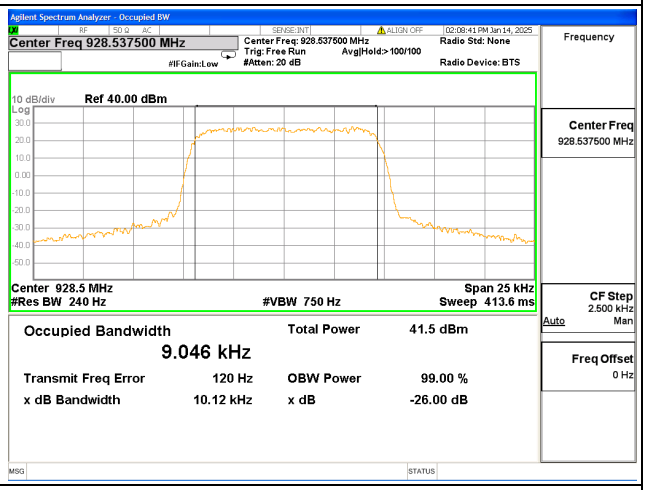
928.5375MHz/Channel H/50.0 kHz/256QAM



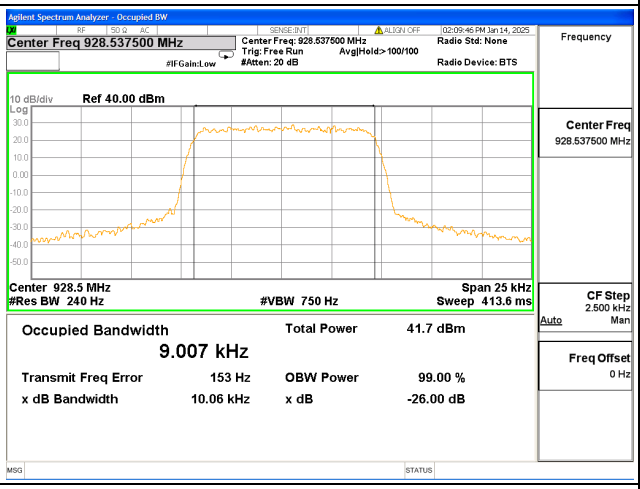
928.5375MHz/Channel V/12.5kHz/QPSK



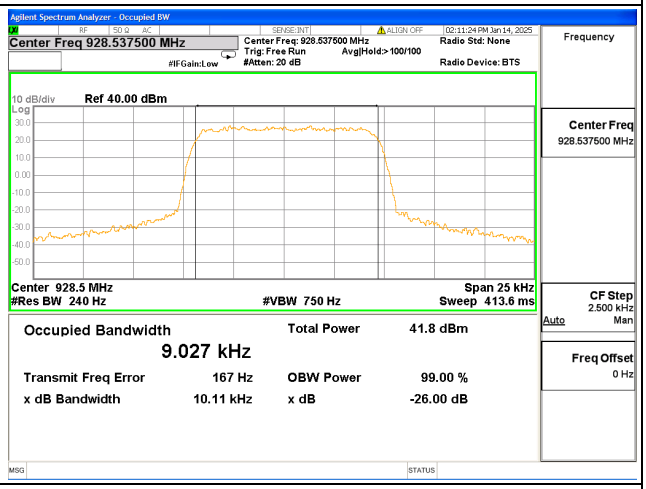
928.5375MHz/Channel V/12.5kHz/16QAM



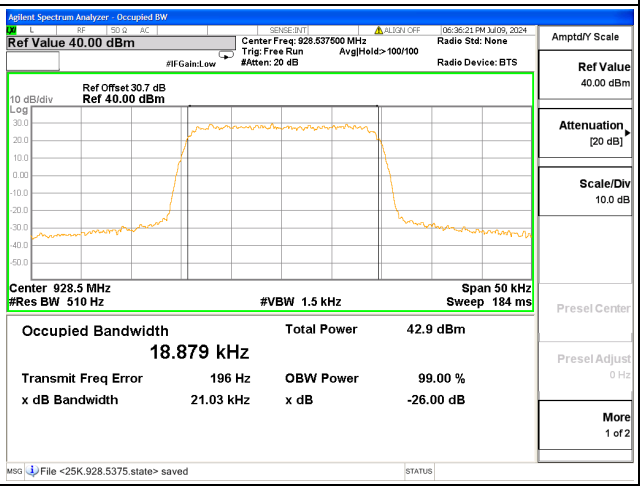
928.5375MHz/Channel V/12.5kHz/64QAM



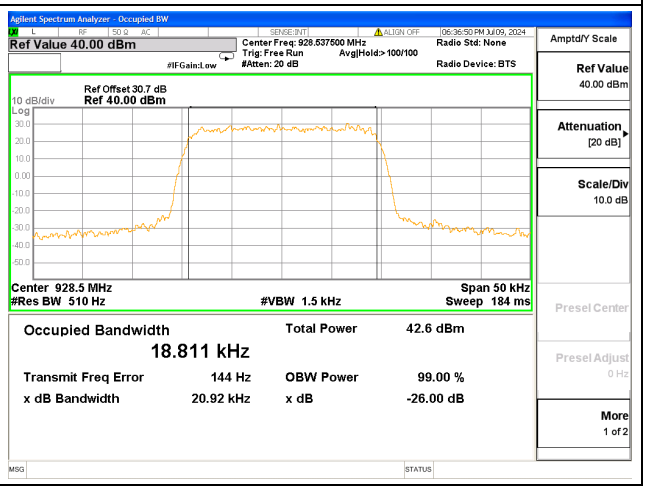
928.5375MHz/Channel V/12.5 kHz/256QAM



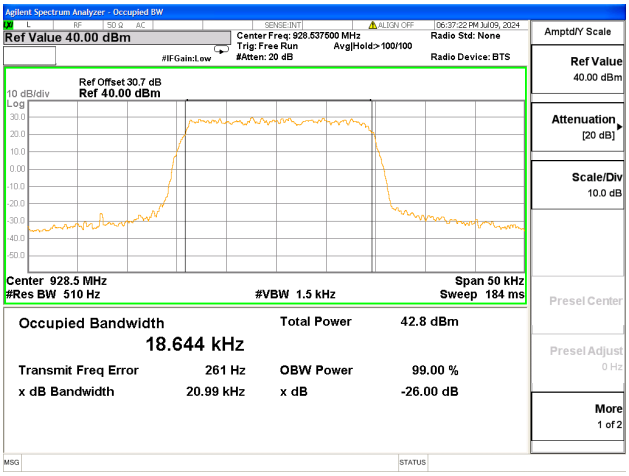
928.5375MHz/Channel V/25.0 kHz/QPSK



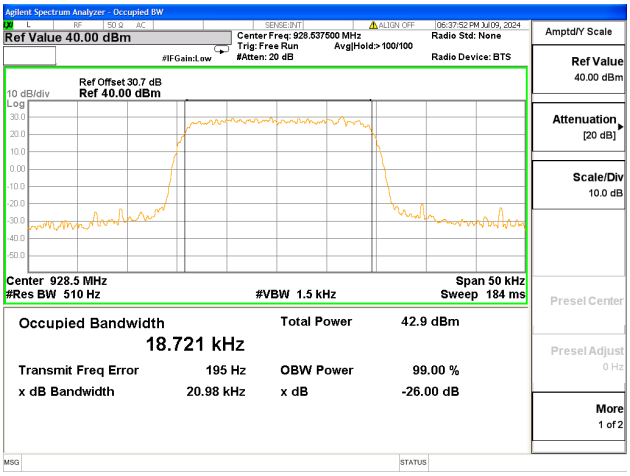
928.5375MHz/Channel V/25.0 kHz/16QAM



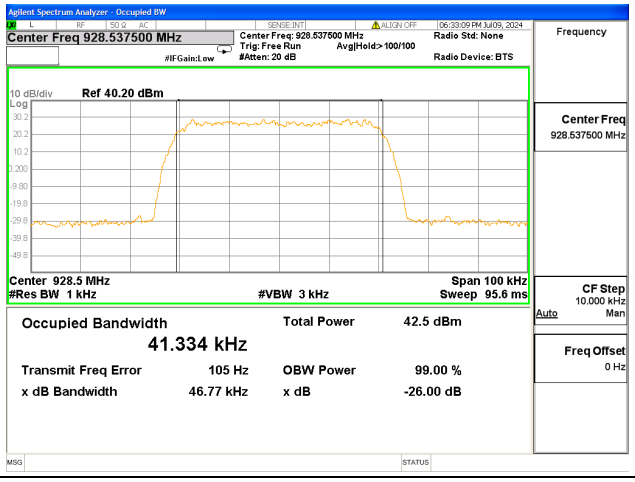
928.5375MHz/Channel V/25.0 kHz/64QAM



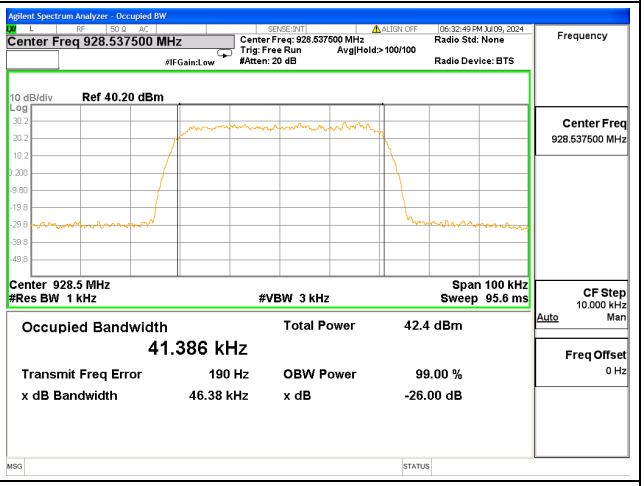
928.5375MHz/Channel V/25.0 kHz/256QAM



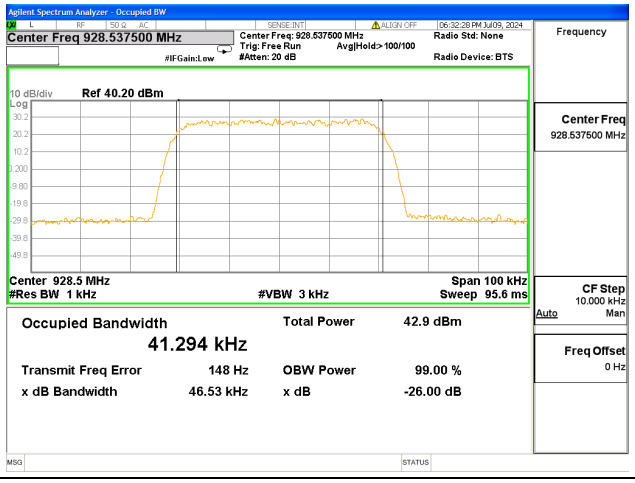
928.5375MHz/Channel V/50.0 kHz/QPSK



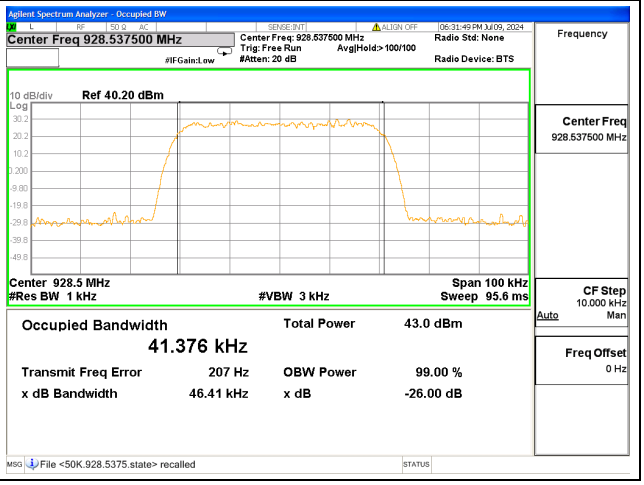
928.5375MHz/Channel V/50.0 kHz/16QAM



928.5375MHz/Channel V/50.0 kHz/64QAM

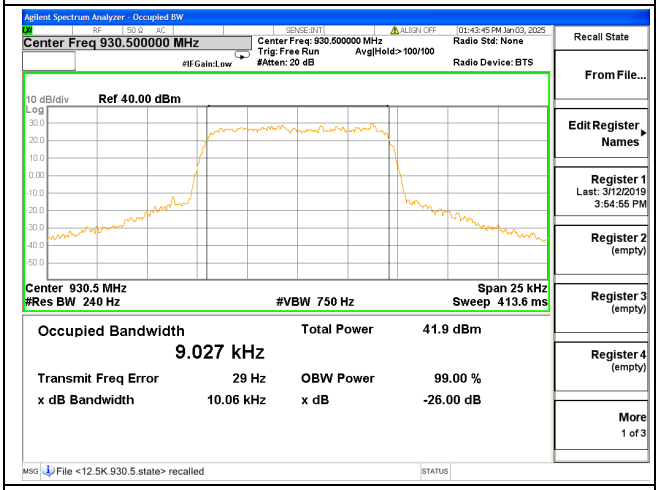


928.5375MHz/Channel V/50.0 kHz/256QAM

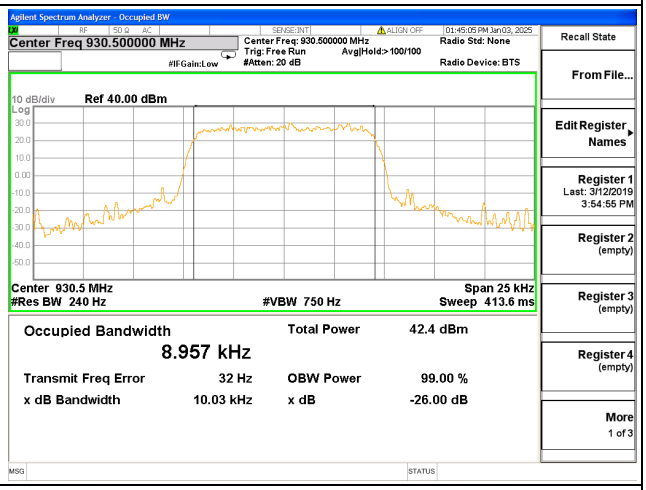


930.50 MHz			
Tx Port	**Channel Bandwidth(kHz)**	**Emission Type**	**Occupied Bandwidth(kHz)**
H	12.5	QPSK	9.027
		16QAM	8.957
		64QAM	9.006
		256QAM	8.997
	25.0	QPSK	18.787
		16QAM	18.718
		64QAM	18.709
		256QAM	18.727
	50.0	QPSK	41.351
		16QAM	41.473
		64QAM	41.295
		256QAM	41.516
V	12.5	QPSK	9.014
		16QAM	9.006
		64QAM	9.020
		256QAM	8.959
	25.0	QPSK	18.891
		16QAM	18.755
		64QAM	18.744
		256QAM	18.717
	50.0	QPSK	41.494
		16QAM	41.418
		64QAM	41.349
		256QAM	41.574

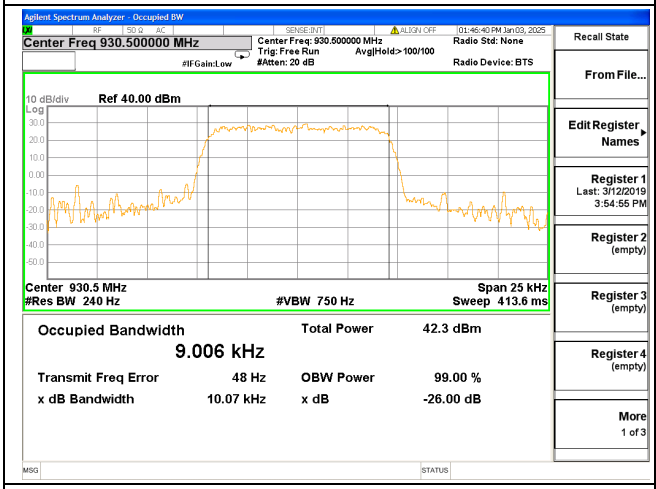
930.50MHz/Channel H/12.5kHz/QPSK



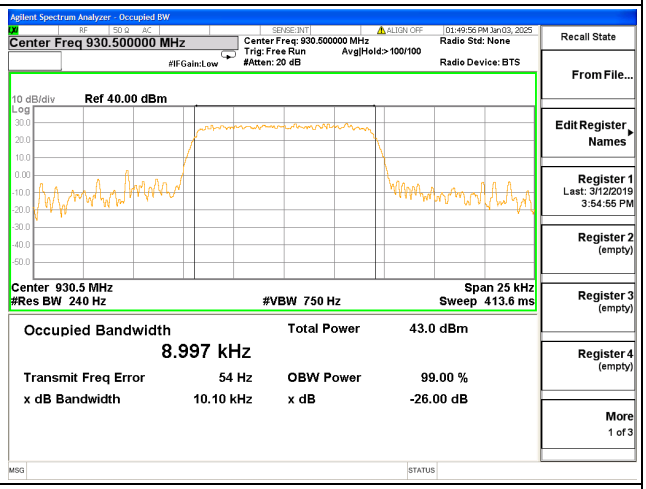
930.50MHz/Channel H/12.5kHz/16QAM



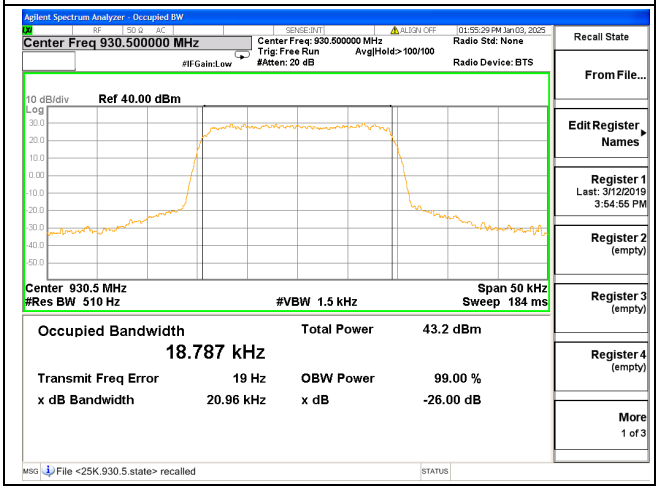
930.50MHz/Channel H/12.5kHz/64QAM



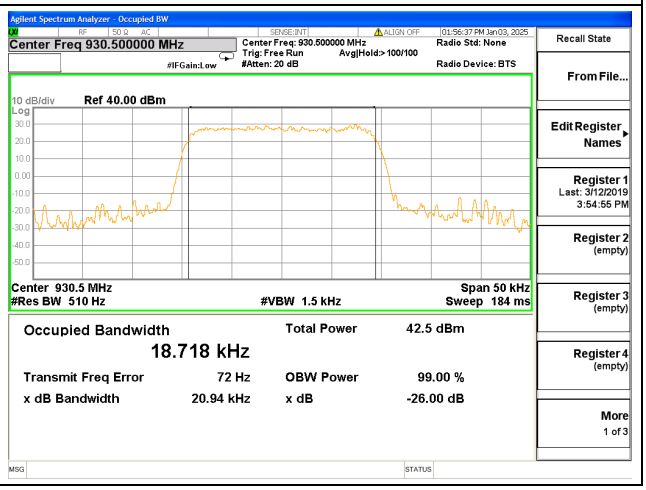
930.50MHz/Channel H/12.5 kHz/256QAM



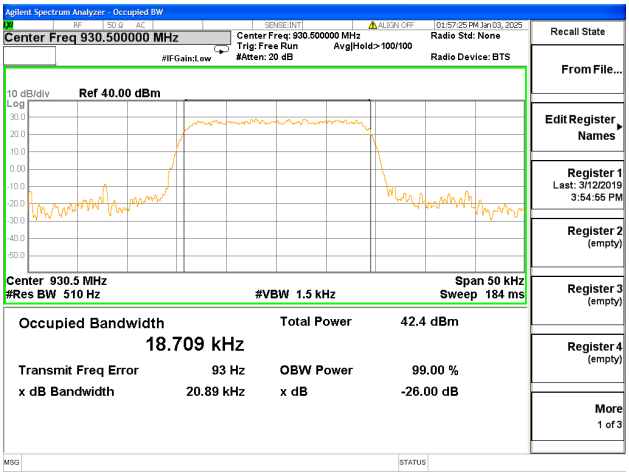
930.50MHz/Channel H/25.0 kHz/QPSK



930.50MHz/Channel H/25.0 kHz/16QAM



930.50MHz/Channel H/25.0 kHz/64QAM



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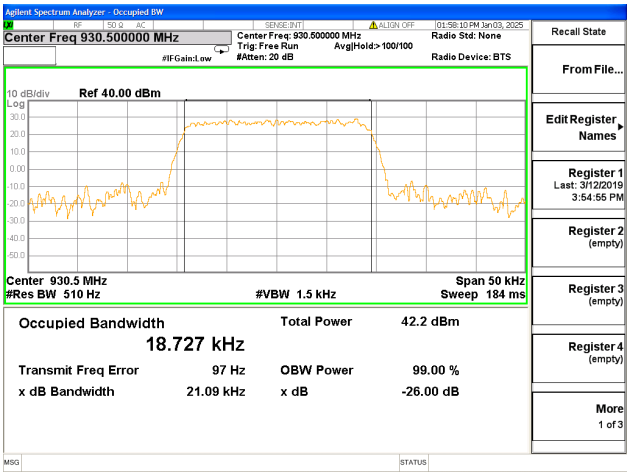
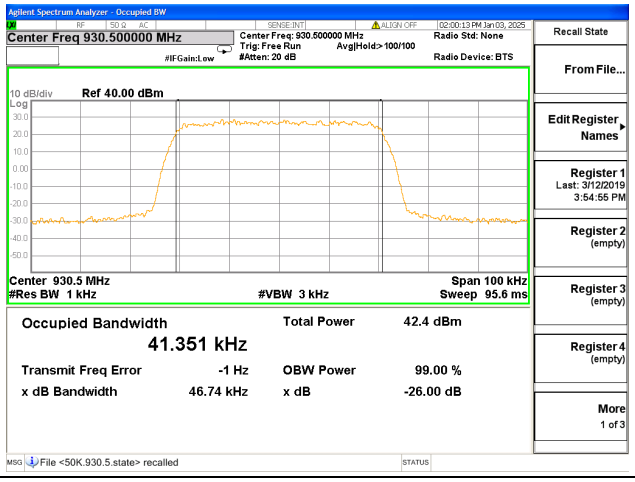
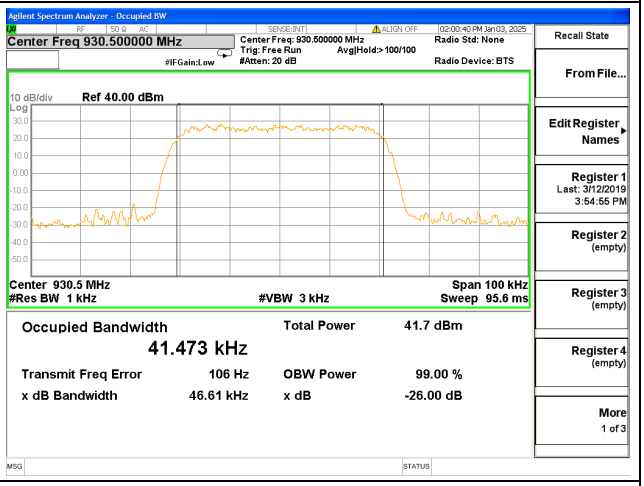


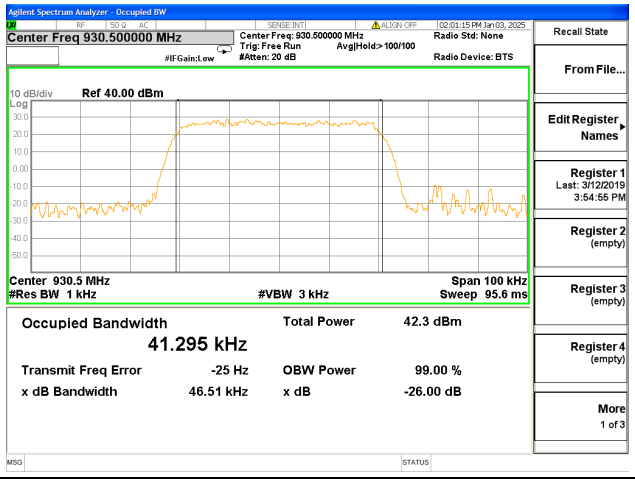
930.50MHz/Channel H/50.0 kHz/QPSK



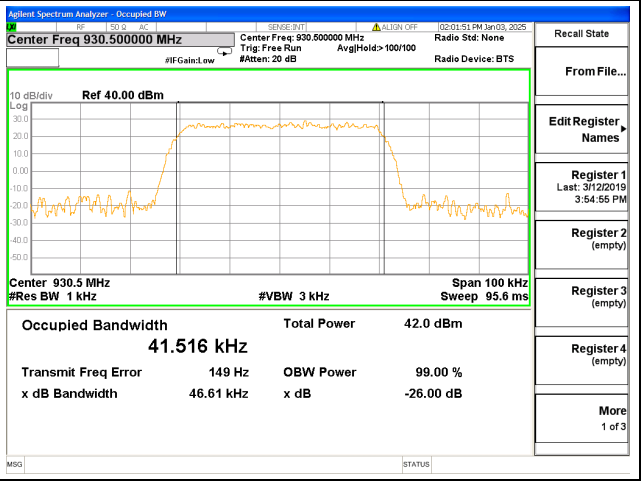
930.50MHz/Channel H/50.0 kHz/16QAM



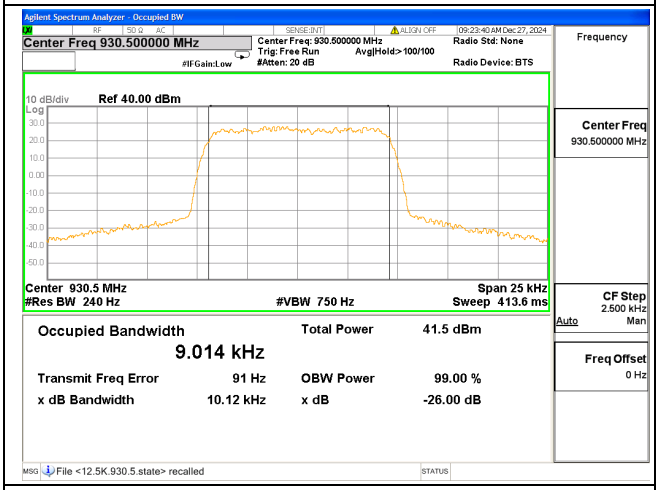
930.50MHz/Channel H/50.0 kHz/64QAM



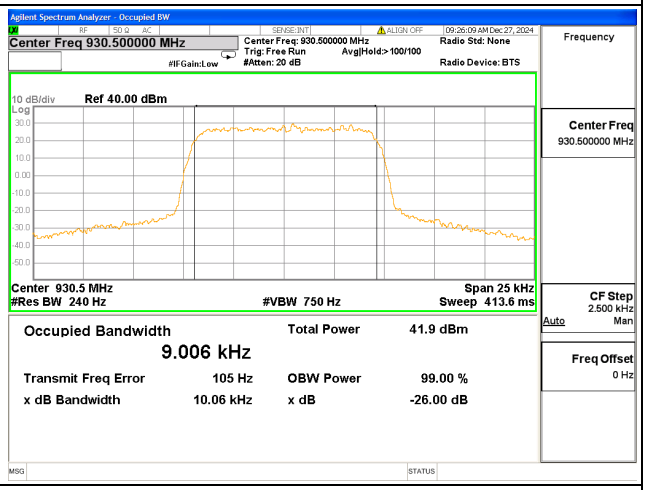
930.50MHz/Channel H/50.0 kHz/256QAM



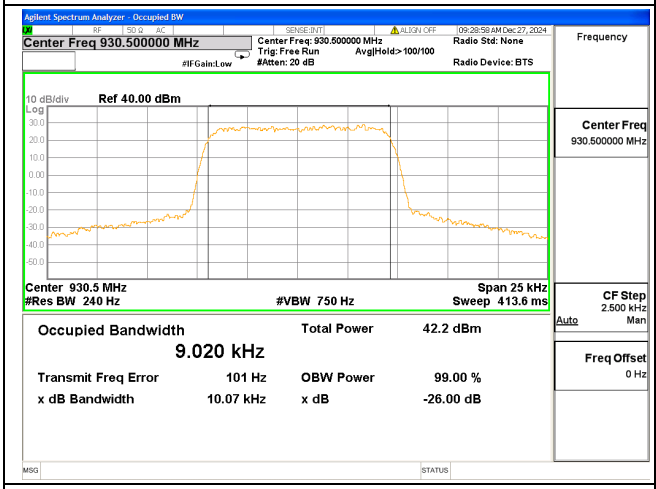
930.50MHz/Channel V/12.5kHz/QPSK



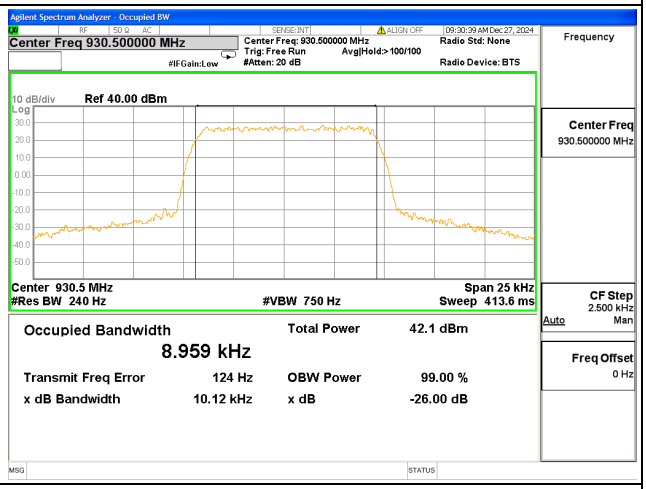
930.50MHz/Channel V/12.5kHz/16QAM



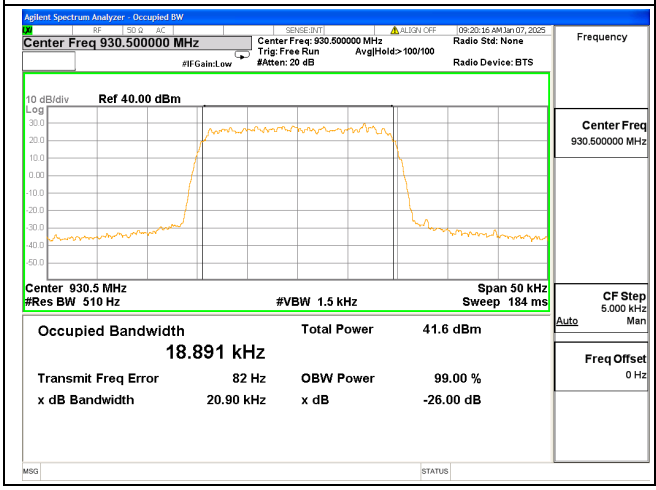
930.50MHz/Channel V/12.5kHz/64QAM



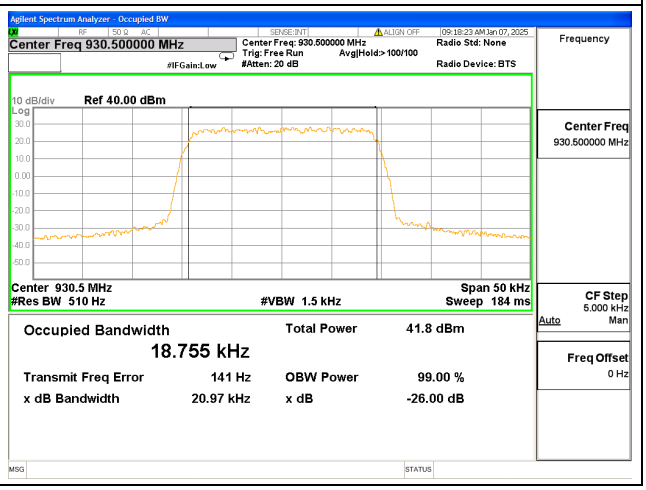
930.50MHz/Channel V/12.5 kHz/256QAM



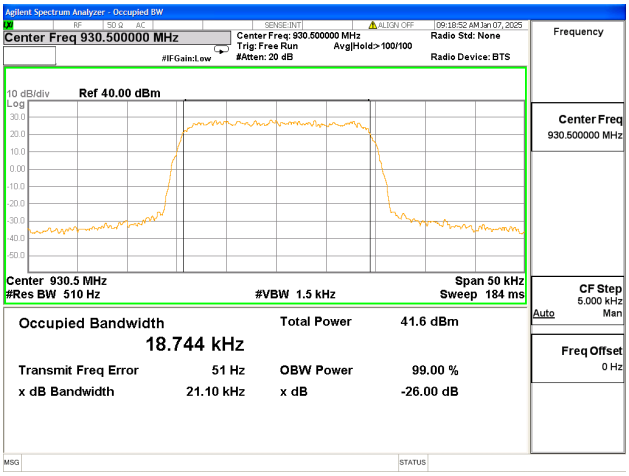
930.50MHz/Channel V/25.0 kHz/QPSK



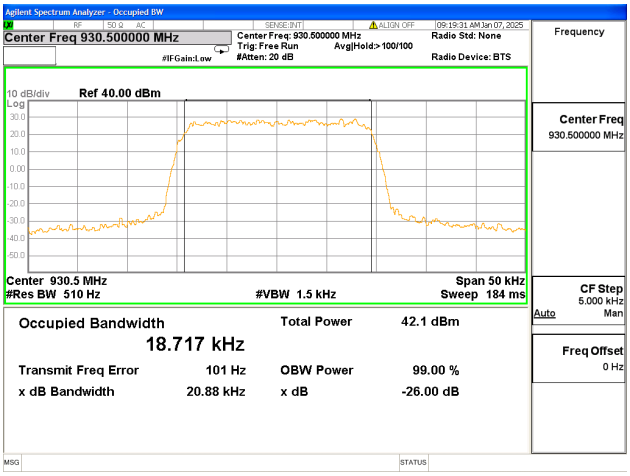
930.50MHz/Channel V/25.0 kHz/16QAM



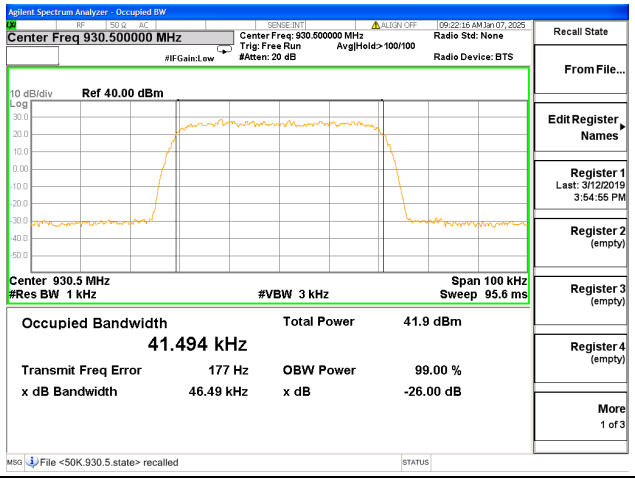
930.50MHz/Channel V/25.0 kHz/64QAM



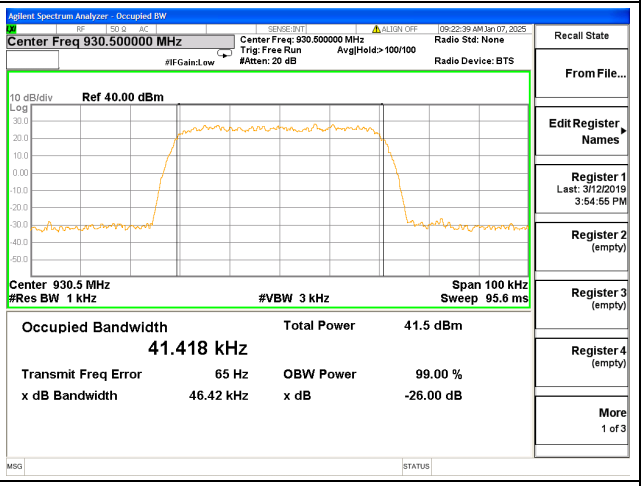
930.50MHz/Channel V/25.0 kHz/256QAM



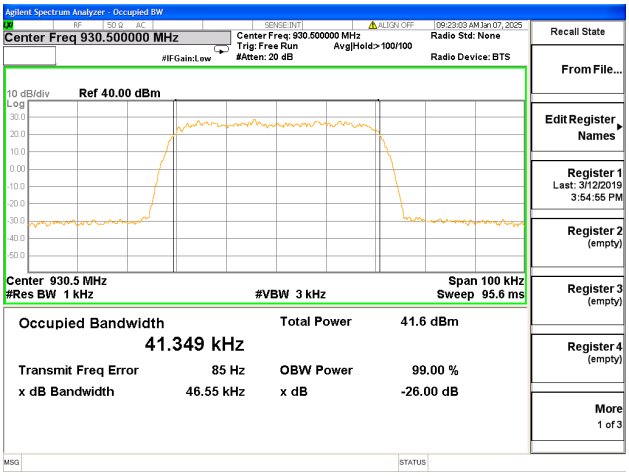
930.50MHz/Channel V/50.0 kHz/QPSK



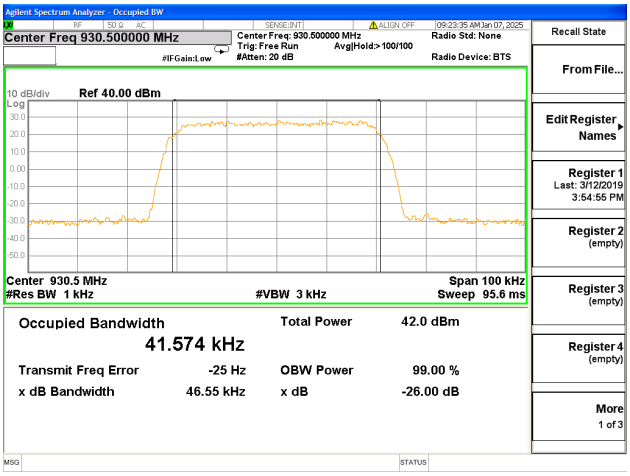
930.50MHz/Channel V/50.0 kHz/16QAM



930.50MHz/Channel V/50.0 kHz/64QAM

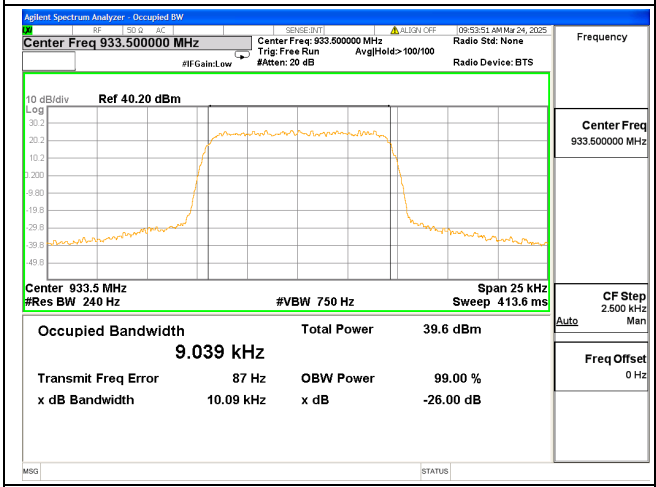


930.50MHz/Channel V/50.0 kHz/256QAM

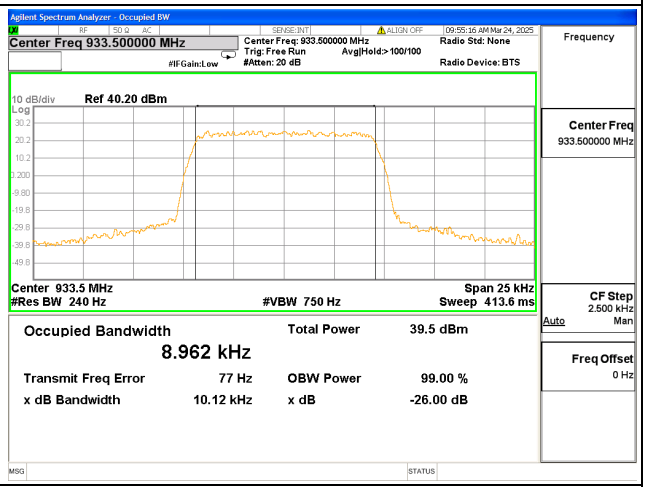


933.50 MHz			
Tx Port	**Channel Bandwidth(kHz)**	**Emission Type**	**Occupied Bandwidth(kHz)**
H	12.5	QPSK	9.039
		16QAM	8.962
		64QAM	9.021
		256QAM	8.974
	25.0	QPSK	18.774
		16QAM	18.812
		64QAM	18.734
		256QAM	18.654
	50.0	QPSK	41.220
		16QAM	41.233
		64QAM	41.432
		256QAM	41.254
V	12.5	QPSK	9.040
		16QAM	9.032
		64QAM	9.993
		256QAM	9.018
	25.0	QPSK	18.856
		16QAM	18.767
		64QAM	18.763
		256QAM	18.814
	50.0	QPSK	41.242
		16QAM	41.338
		64QAM	41.212
		256QAM	41.207

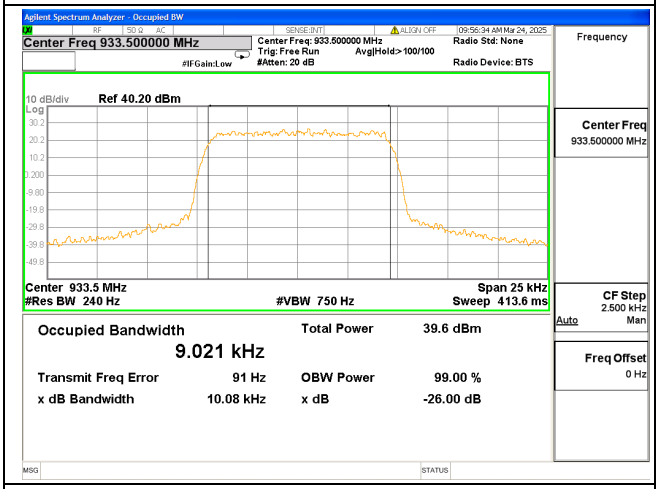
933.50MHz/Channel H/12.5kHz/QPSK



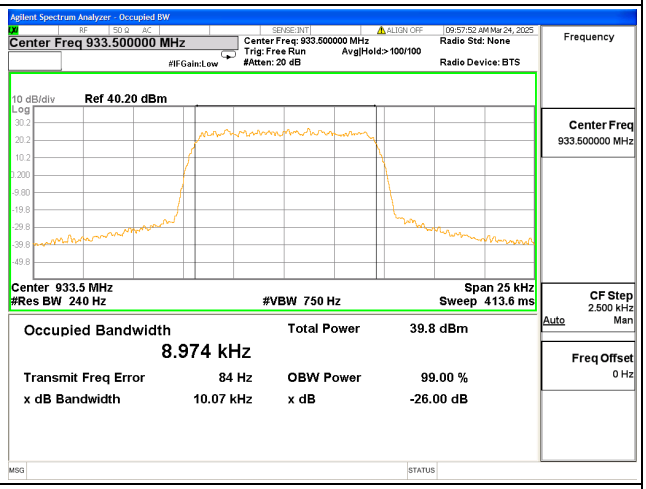
933.50MHz/Channel H/12.5kHz/16QAM



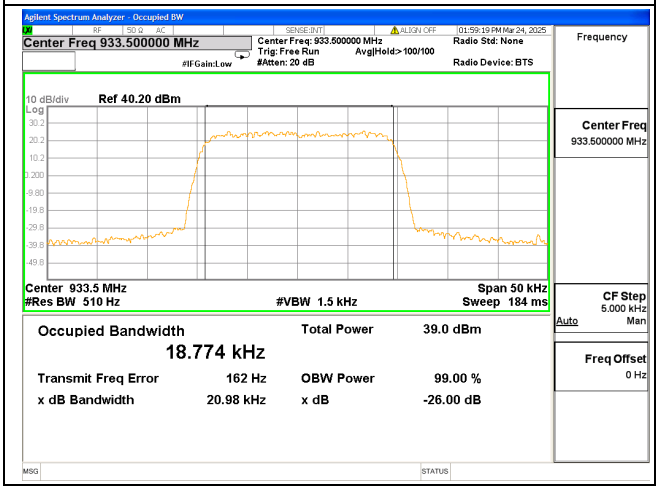
933.50MHz/Channel H/12.5kHz/64QAM



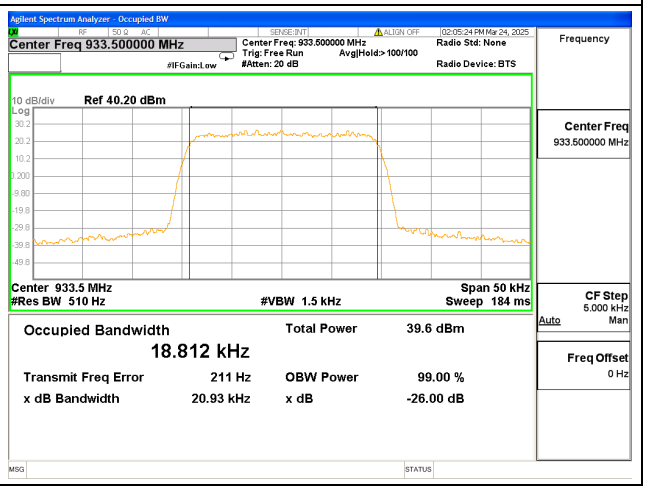
933.50MHz/Channel H/12.5 kHz/256QAM



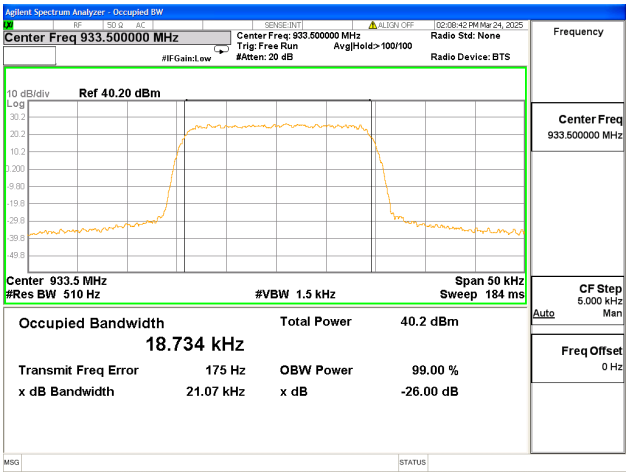
933.50MHz/Channel H/25.0 kHz/QPSK



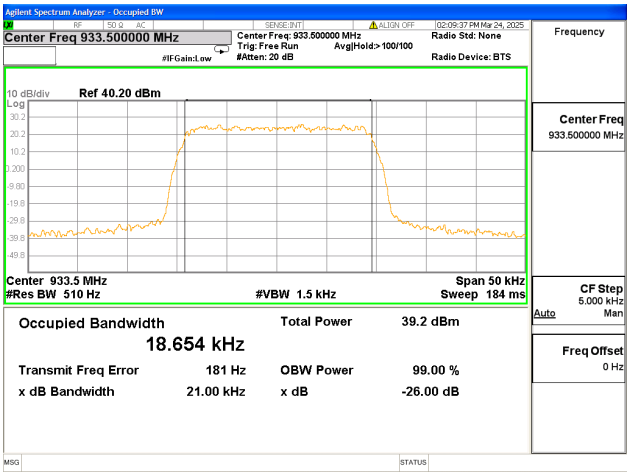
933.50MHz/Channel H/25.0 kHz/16QAM



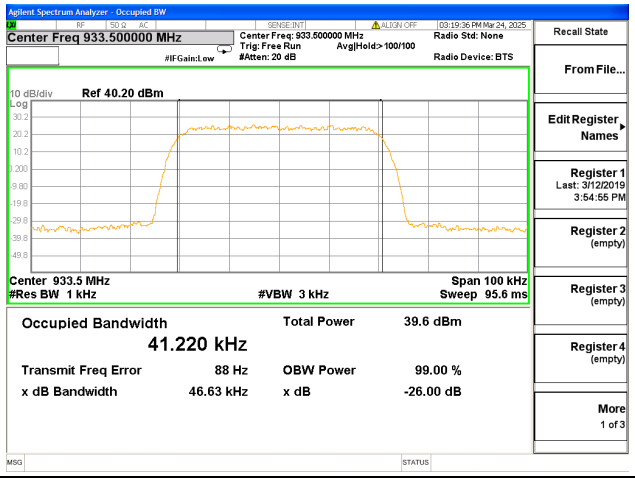
933.50MHz/Channel H/25.0 kHz/64QAM



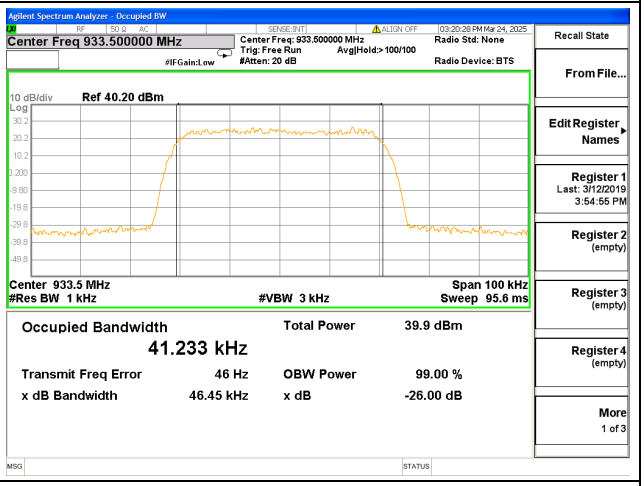
933.50MHz/Channel H/25.0 kHz/256QAM



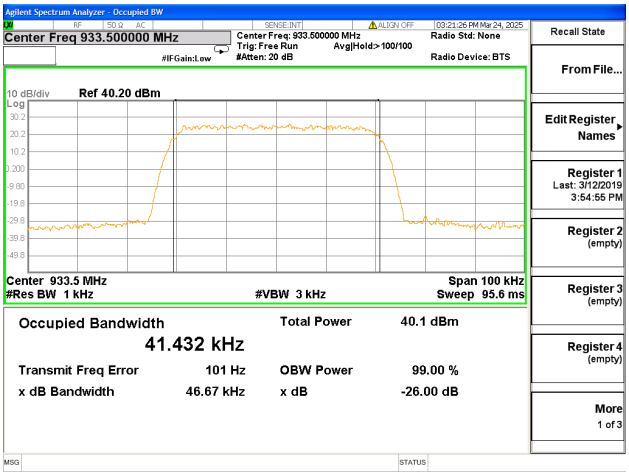
933.50MHz/Channel H/50.0 kHz/QPSK



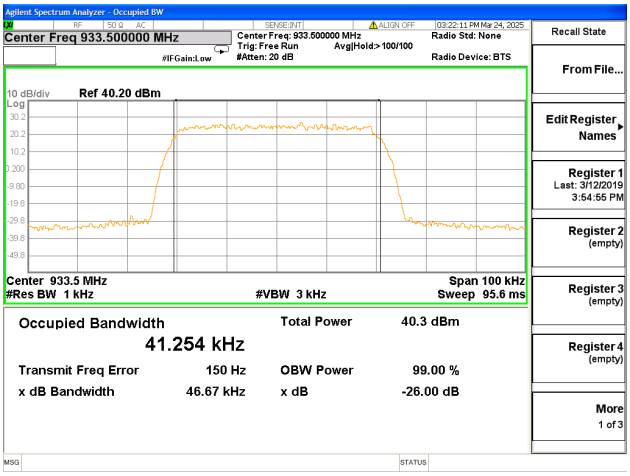
933.50MHz/Channel H/50.0 kHz/16QAM



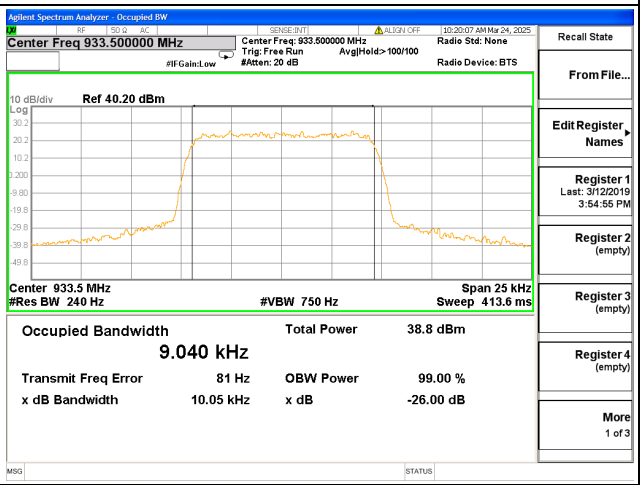
933.50MHz/Channel H/50.0 kHz/64QAM



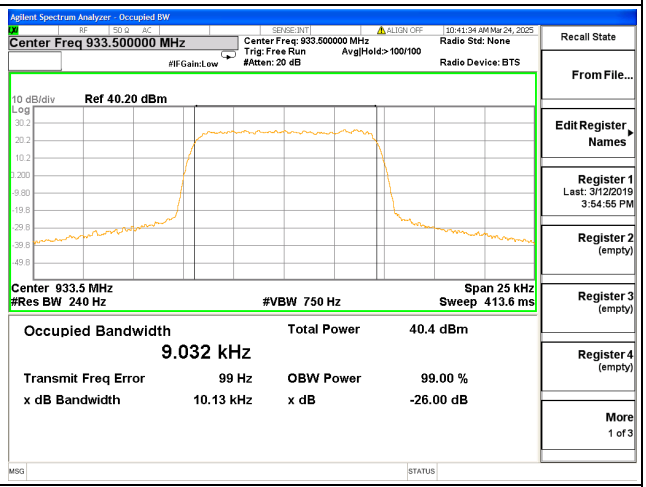
933.50MHz/Channel H/50.0 kHz/256QAM



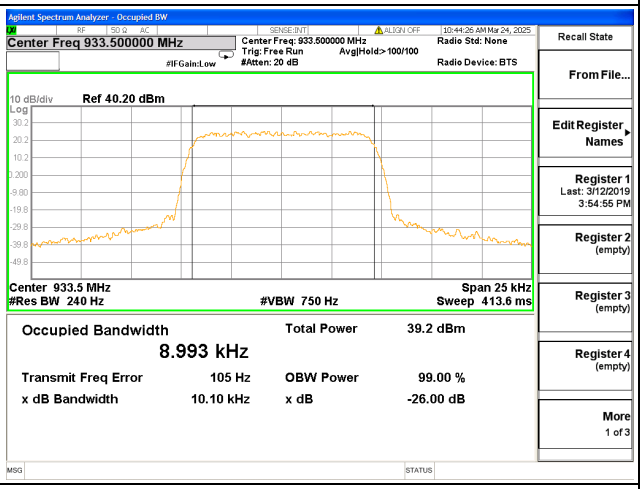
933.50MHz/Channel V/12.5kHz/QPSK



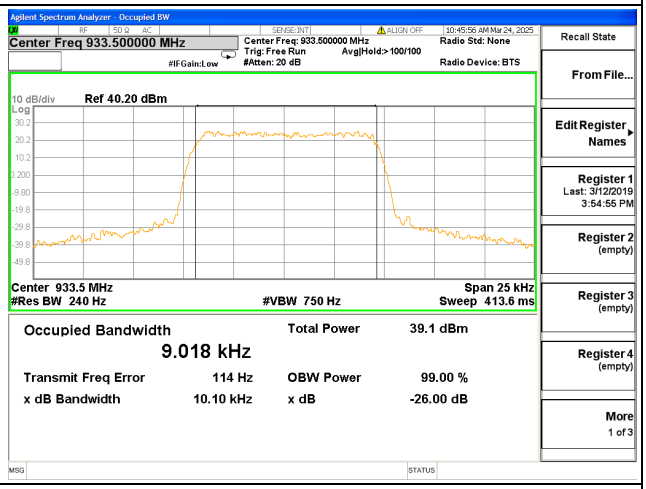
933.50MHz/Channel V/12.5kHz/16QAM



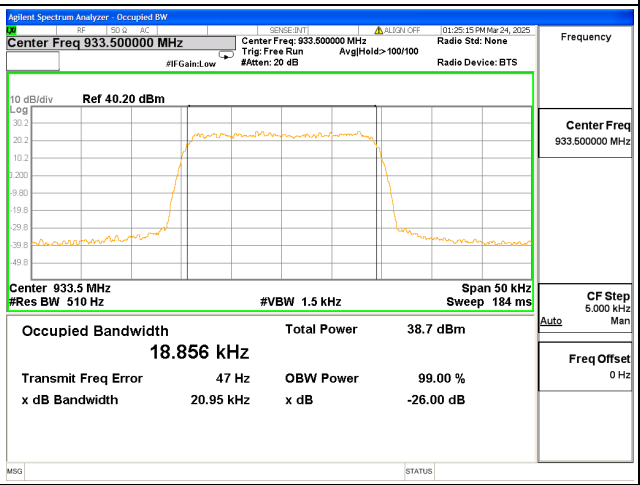
933.50MHz/Channel V/12.5kHz/64QAM



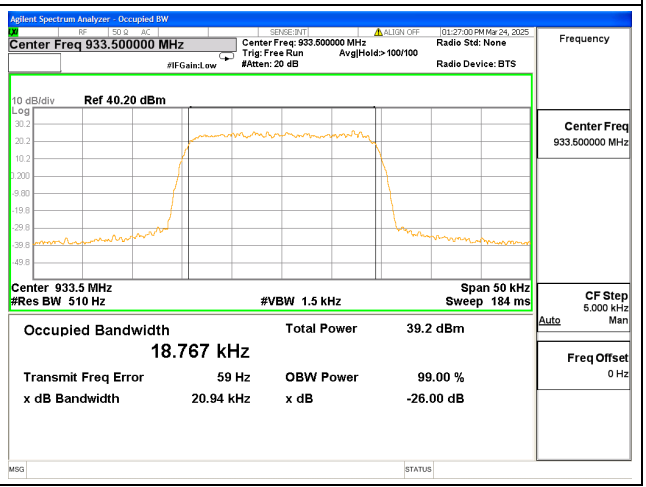
933.50MHz/Channel V/12.5 kHz/256QAM



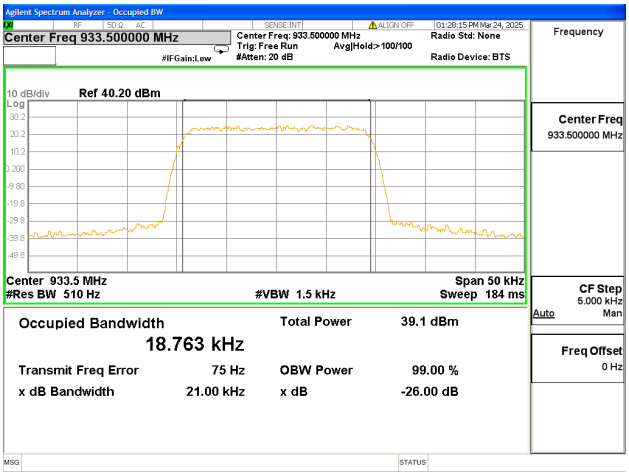
933.50MHz/Channel V/25.0 kHz/QPSK



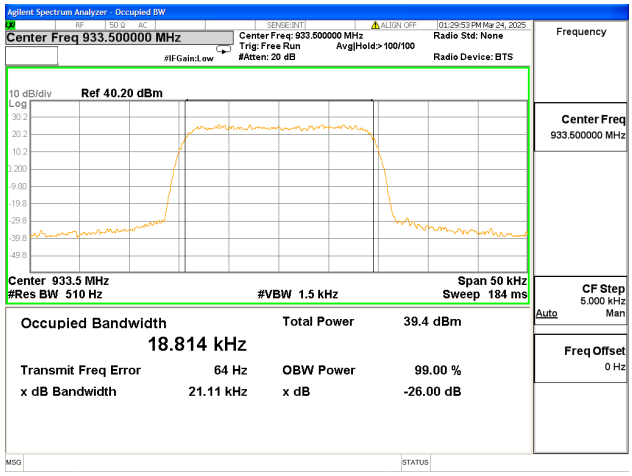
933.50MHz/Channel V/25.0 kHz/16QAM



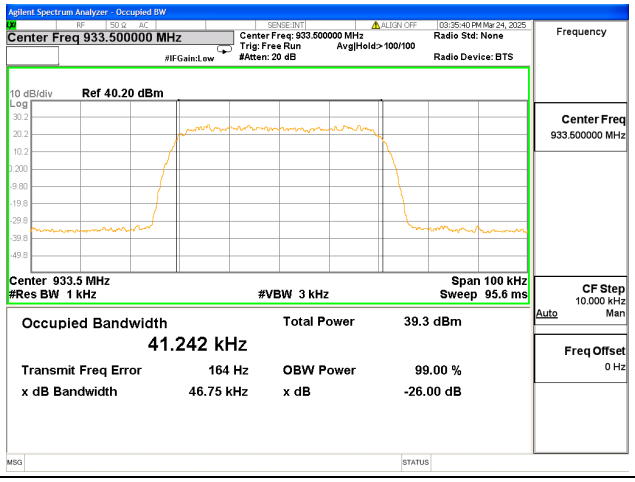
933.50MHz/Channel V/25.0 kHz/64QAM



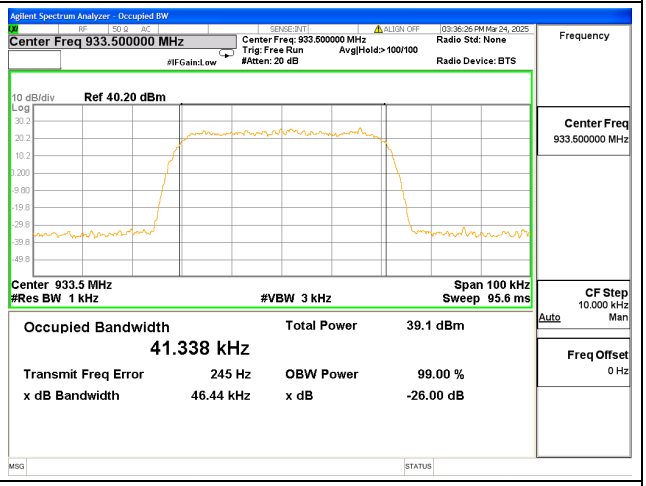
933.50MHz/Channel V/25.0 kHz/256QAM



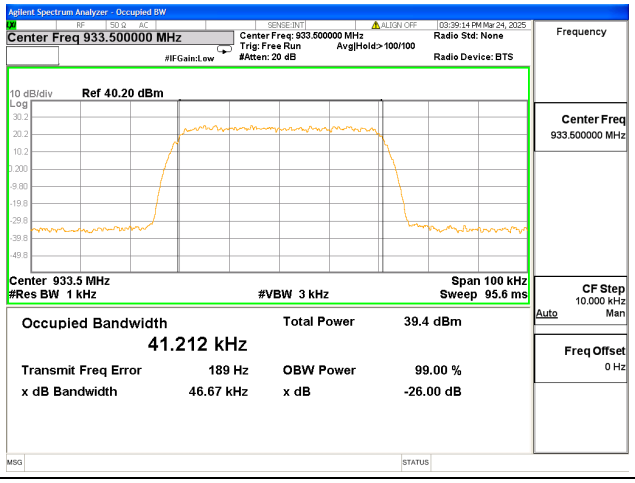
933.50MHz/Channel V/50.0 kHz/QPSK



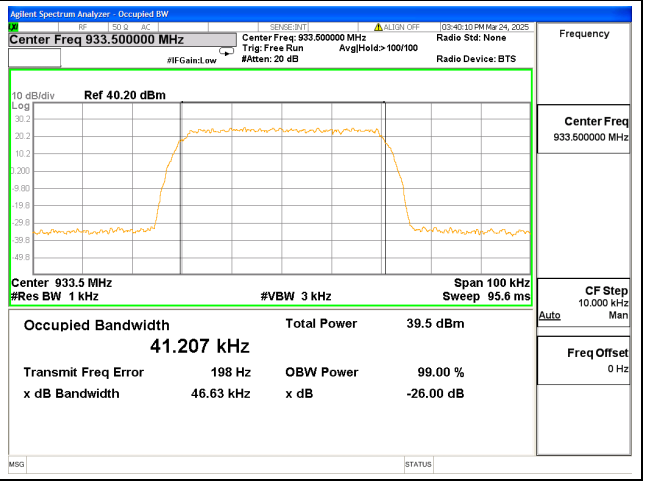
933.50MHz/Channel V/50.0 kHz/16QAM



933.50MHz/Channel V/50.0 kHz/64QAM

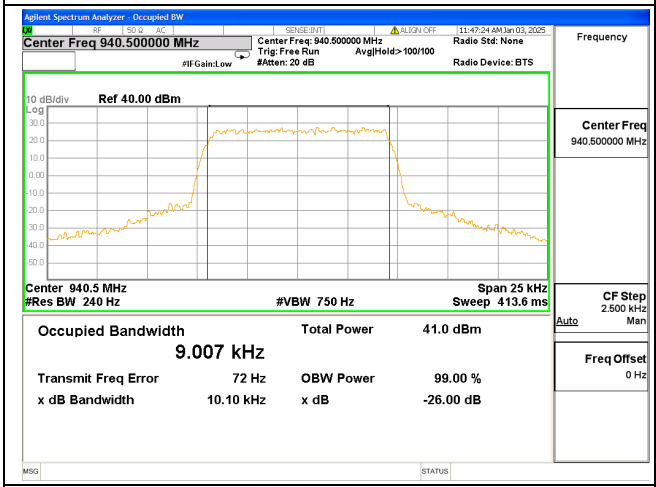


933.50MHz/Channel V/50.0 kHz/256QAM

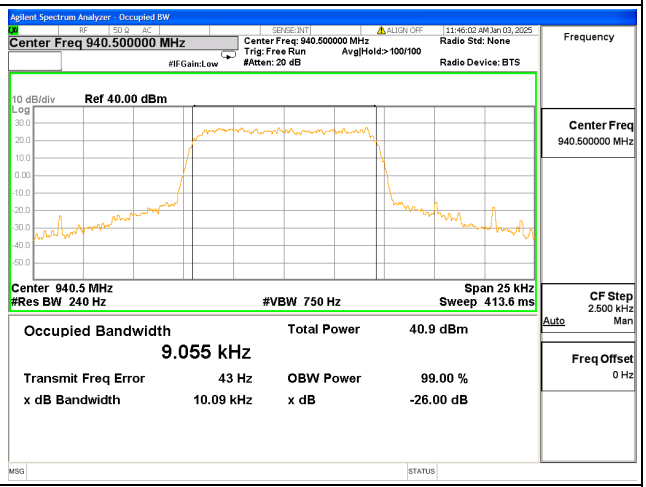


940.50 MHz			
Tx Port	**Channel Bandwidth(kHz)**	**Emission Type**	**Occupied Bandwidth(kHz)**
H	12.5	QPSK	9.007
		16QAM	9.055
		64QAM	9.026
		256QAM	9.016
	25.0	QPSK	18.727
		16QAM	18.671
		64QAM	18.882
		256QAM	18.772
	50.0	QPSK	41.108
		16QAM	41.327
		64QAM	41.324
		256QAM	41.503
V	12.5	QPSK	9.042
		16QAM	8.953
		64QAM	9.066
		256QAM	9.014
	25.0	QPSK	18.665
		16QAM	18.833
		64QAM	18.664
		256QAM	18.753
	50.0	QPSK	41.275
		16QAM	41.602
		64QAM	41.320
		256QAM	41.305

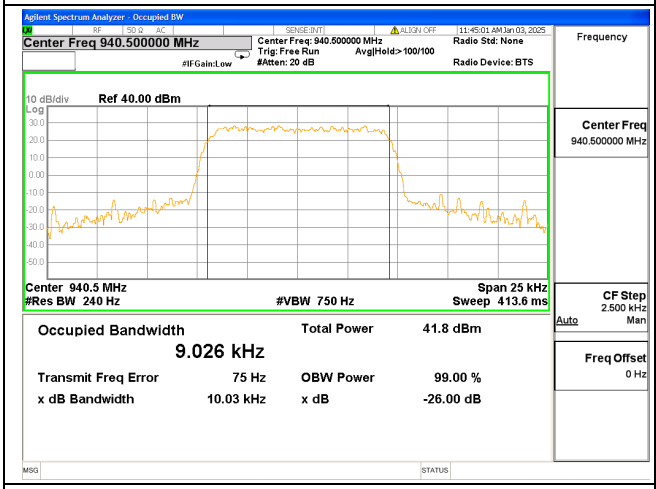
940.50MHz/Channel H/12.5kHz/QPSK



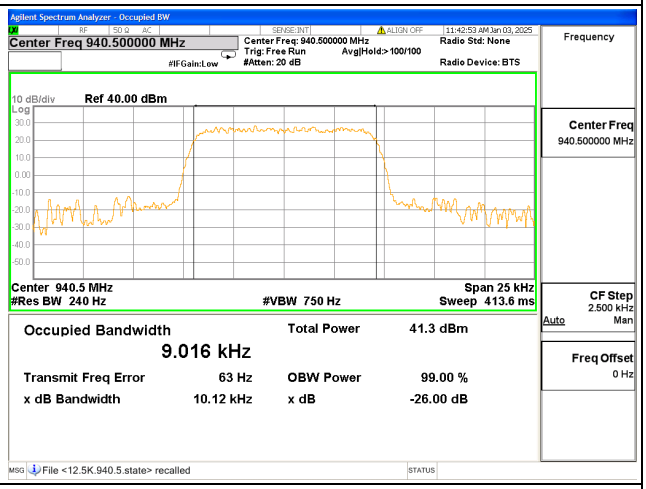
940.50MHz/Channel H/12.5kHz/16QAM



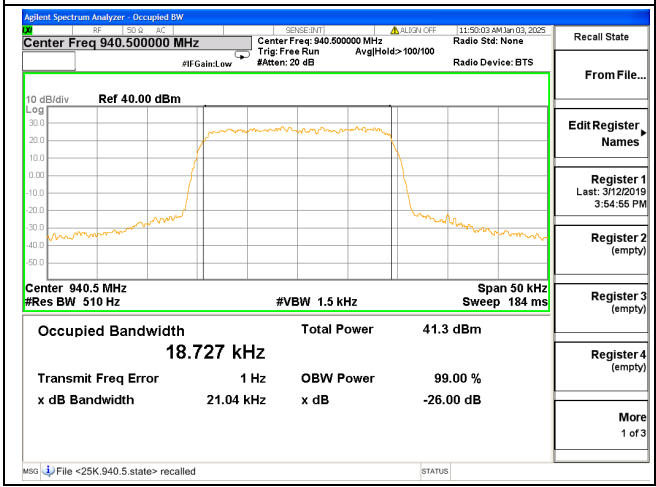
940.50MHz/Channel H/12.5kHz/64QAM



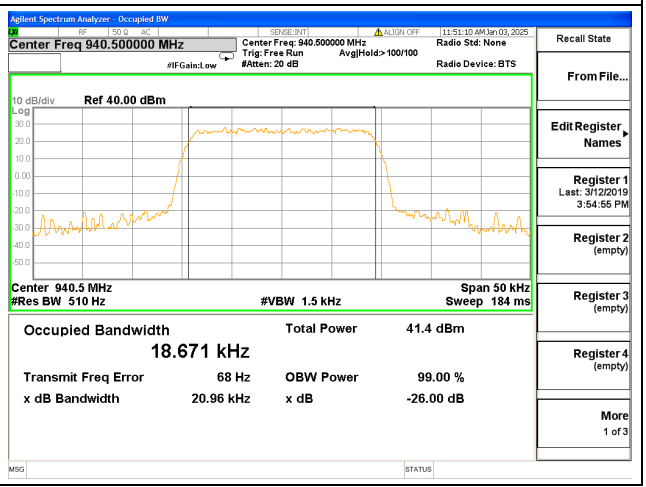
940.50MHz/Channel H/12.5 kHz/256QAM



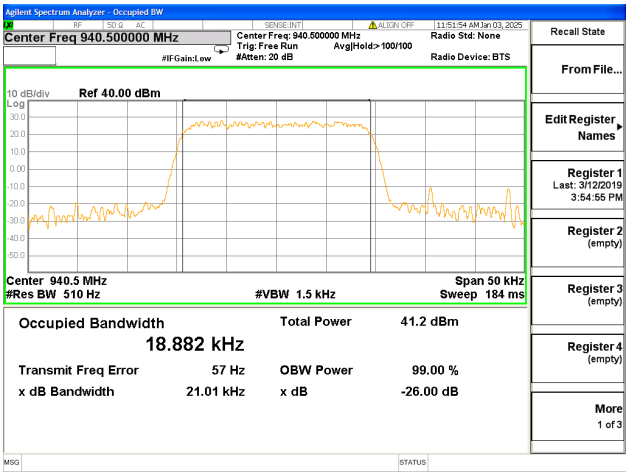
940.50MHz/Channel H/25.0 kHz/QPSK



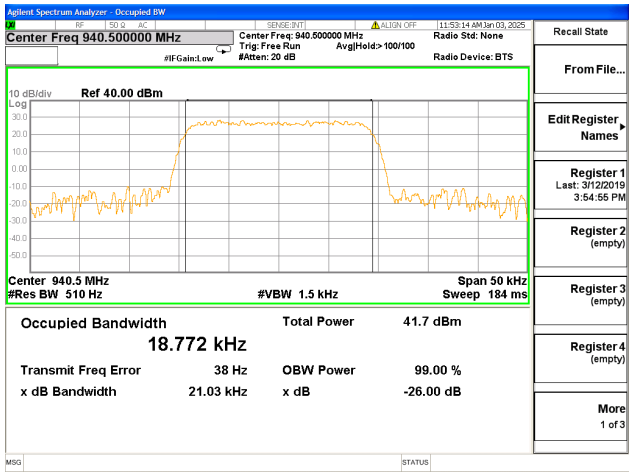
940.50MHz/Channel H/25.0 kHz/16QAM



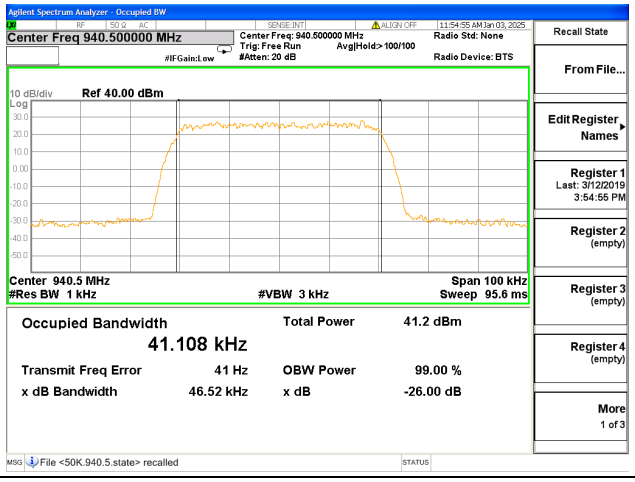
940.50MHz/Channel H/25.0 kHz/64QAM



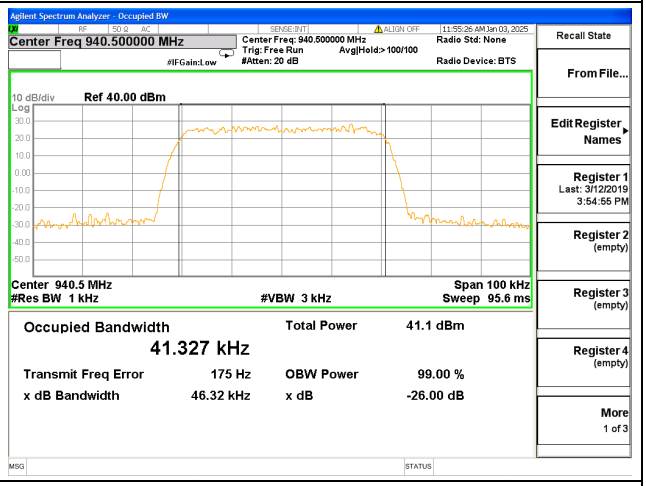
940.50MHz/Channel H/25.0 kHz/256QAM



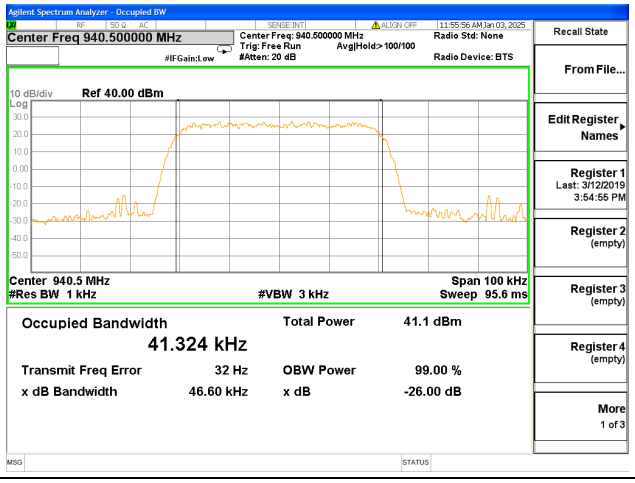
940.50MHz/Channel H/50.0 kHz/QPSK



940.50MHz/Channel H/50.0 kHz/16QAM



940.50MHz/Channel H/50.0 kHz/64QAM



940.50MHz/Channel H/50.0 kHz/256QAM