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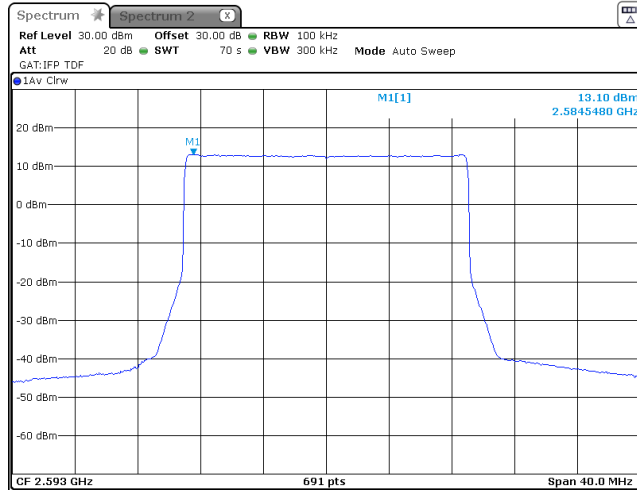
<b>Test specification:</b> Section 27.50, Peak output power			
<b>Test procedure:</b> 47 CFR, Section 2.1046; TIA/EIA-603-E, Section 2.2.1			
<b>Test mode:</b> Compliance	<b>Verdict:</b> PASS		
<b>Date(s):</b> 06-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

Plot 7.2.17 Peak output power test results frequency, at low, mid, high frequency

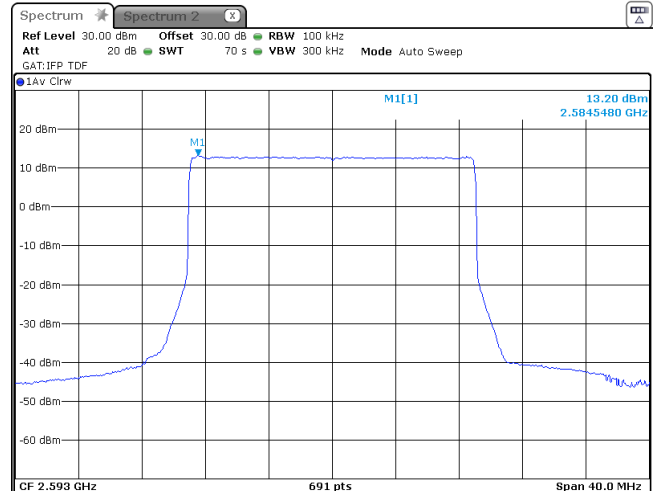
CHANNEL BANDWIDTH:  
NUMBER OF ANTENNA:

20 MHz  
2

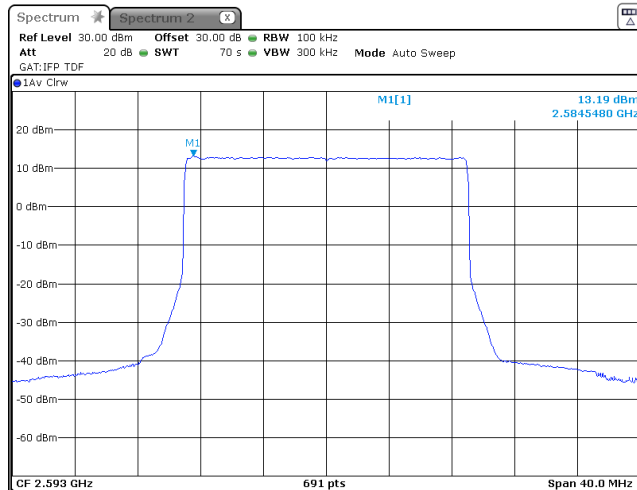
MODULATION: QPSK



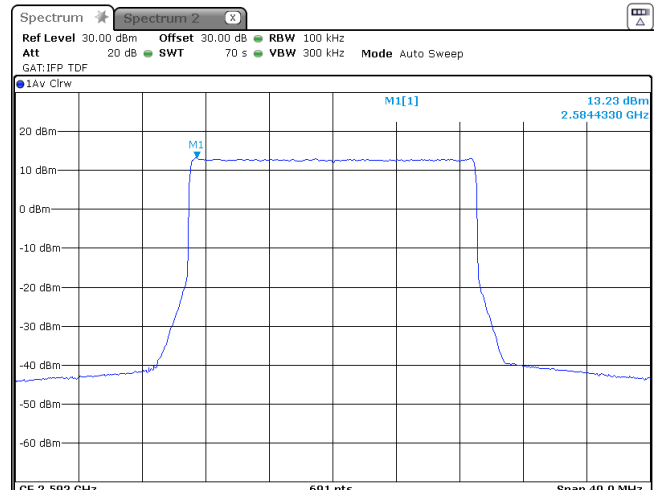
MODULATION: 16 QAM



MODULATION: 64 QAM



MODULATION: 256 QAM





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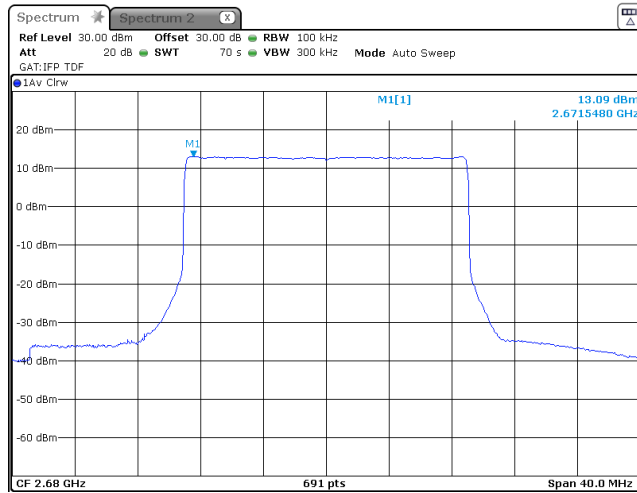
<b>Test specification:</b> Section 27.50, Peak output power			
<b>Test procedure:</b> 47 CFR, Section 2.1046; TIA/EIA-603-E, Section 2.2.1			
<b>Test mode:</b> Compliance	<b>Verdict:</b> PASS		
<b>Date(s):</b> 06-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

Plot 7.2.18 Peak output power test results frequency, at low, mid, high frequency

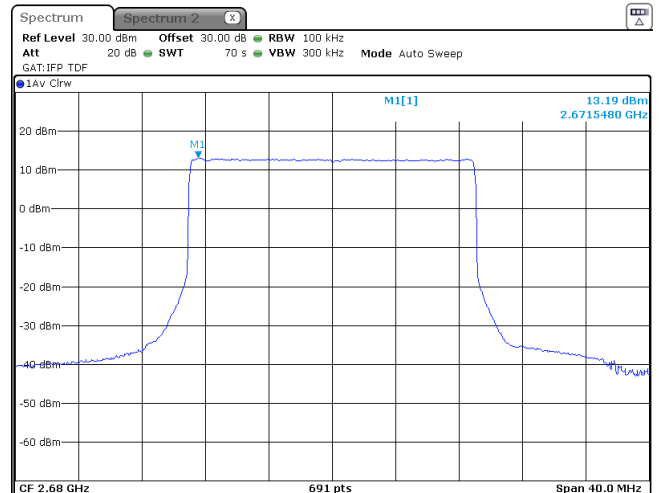
CHANNEL BANDWIDTH:  
NUMBER OF ANTENNA:

20 MHz  
1

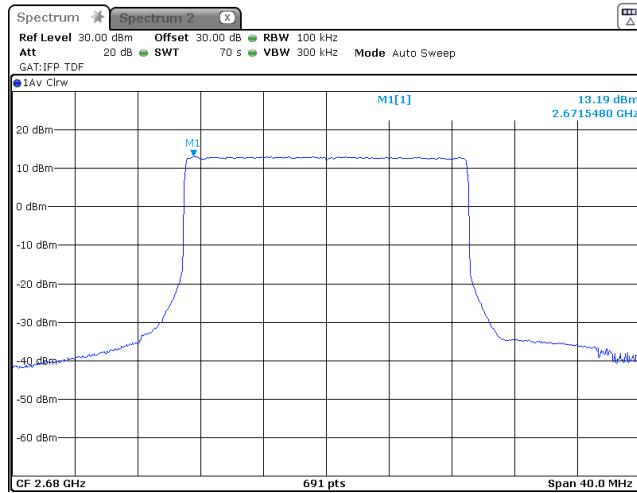
MODULATION: QPSK



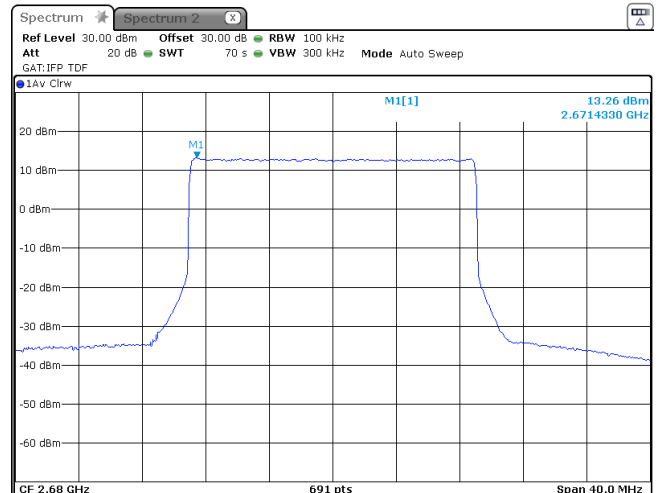
MODULATION: 16 QAM



MODULATION: 64 QAM



MODULATION: 256 QAM





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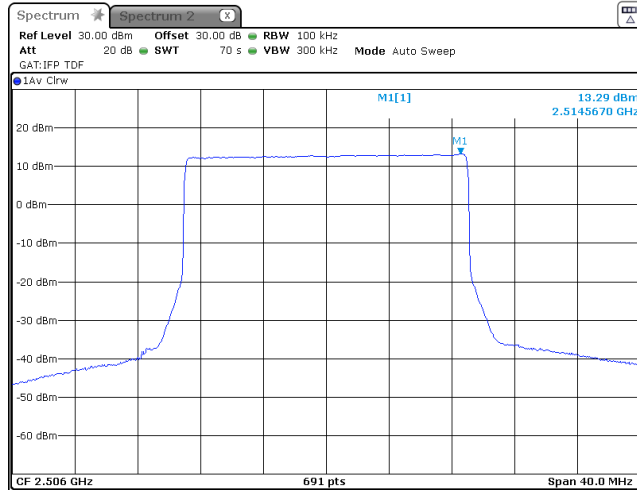
<b>Test specification:</b> Section 27.50, Peak output power			
<b>Test procedure:</b> 47 CFR, Section 2.1046; TIA/EIA-603-E, Section 2.2.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 06-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

Plot 7.2.19 Peak output power test results frequency, at low, mid, high frequency

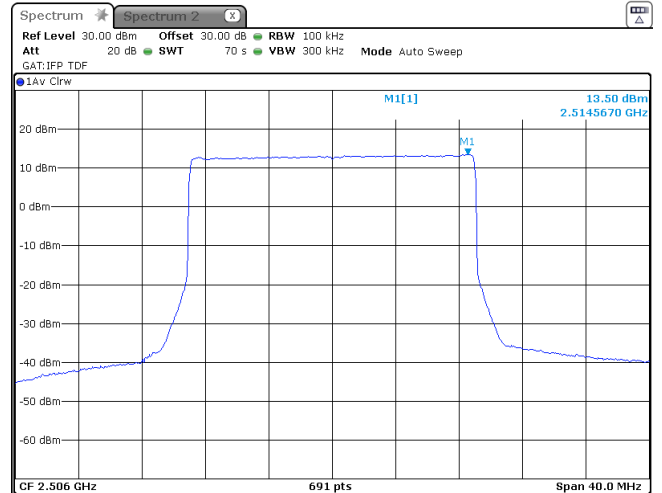
CHANNEL BANDWIDTH:  
NUMBER OF ANTENNA:

20 MHz  
3

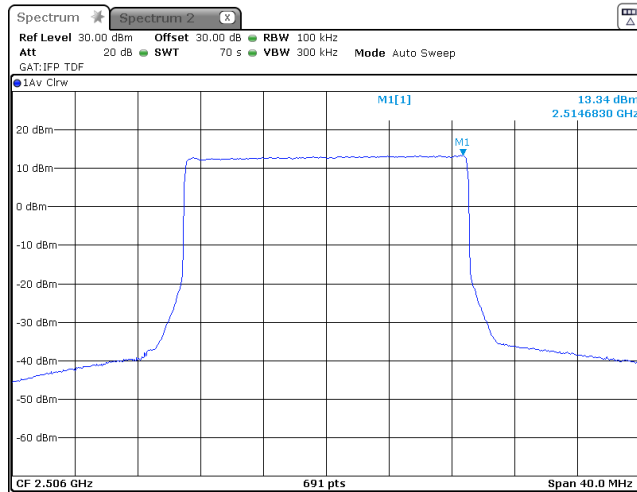
MODULATION: QPSK



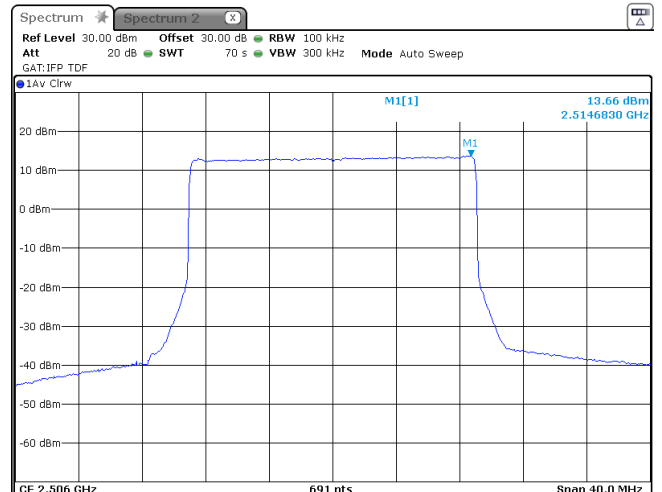
MODULATION: 16 QAM



MODULATION: 64 QAM



MODULATION: 256 QAM





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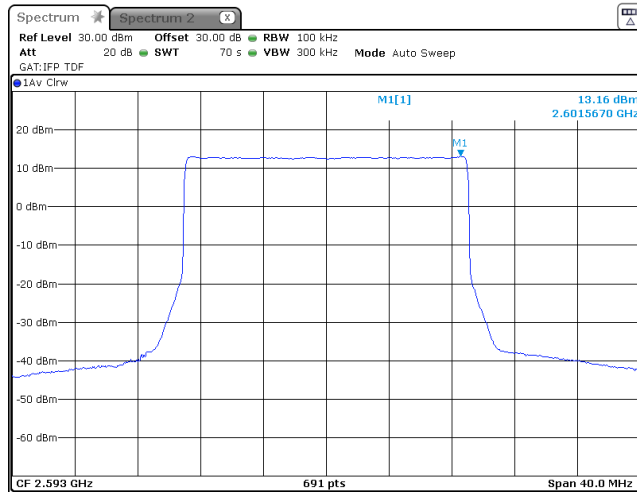
<b>Test specification:</b> Section 27.50, Peak output power			
<b>Test procedure:</b> 47 CFR, Section 2.1046; TIA/EIA-603-E, Section 2.2.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 06-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

Plot 7.2.20 Peak output power test results frequency, at low, mid, high frequency

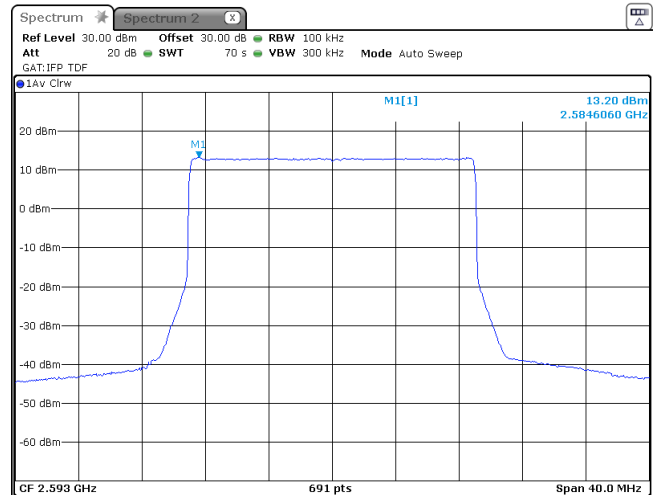
CHANNEL BANDWIDTH:  
NUMBER OF ANTENNA:

20 MHz  
3

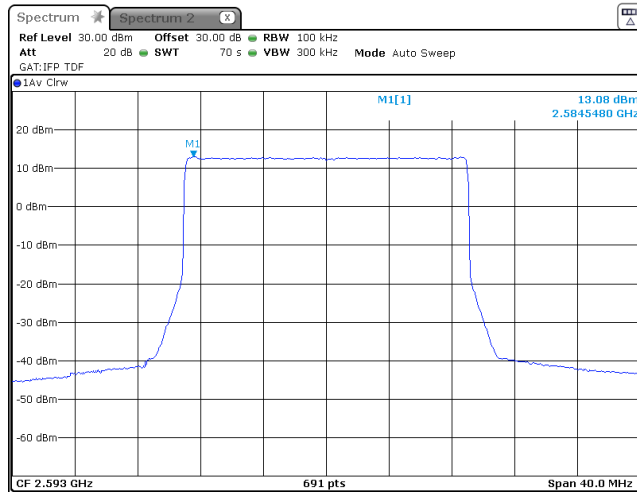
MODULATION: QPSK



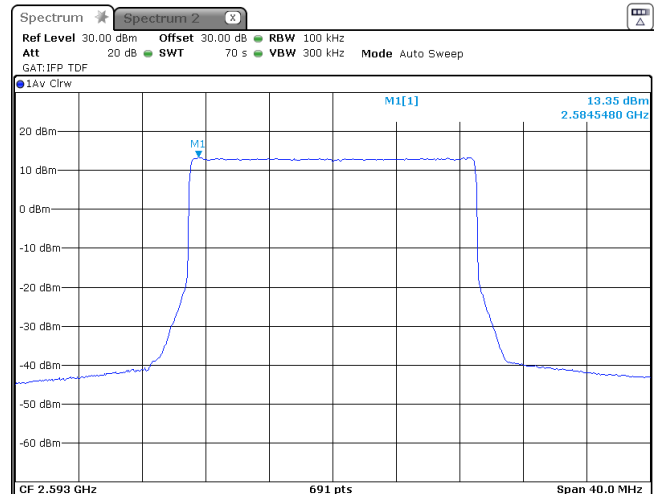
MODULATION: 16 QAM



MODULATION: 64 QAM



MODULATION: 256 QAM





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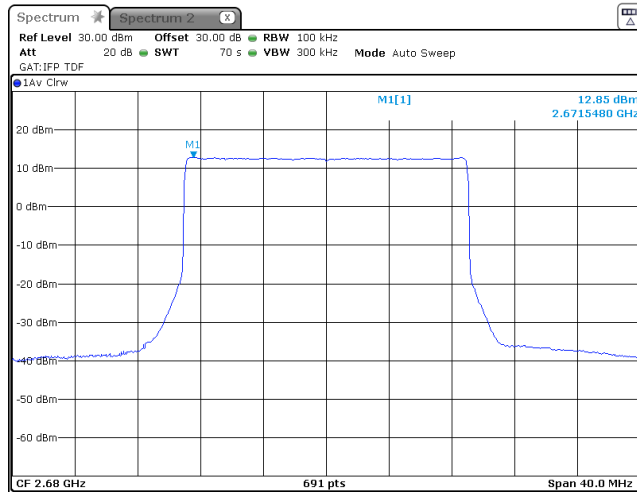
<b>Test specification:</b> Section 27.50, Peak output power			
<b>Test procedure:</b> 47 CFR, Section 2.1046; TIA/EIA-603-E, Section 2.2.1			
<b>Test mode:</b> Compliance	<b>Verdict:</b> PASS		
<b>Date(s):</b> 06-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

Plot 7.2.21 Peak output power test results frequency, at low, mid, high frequency

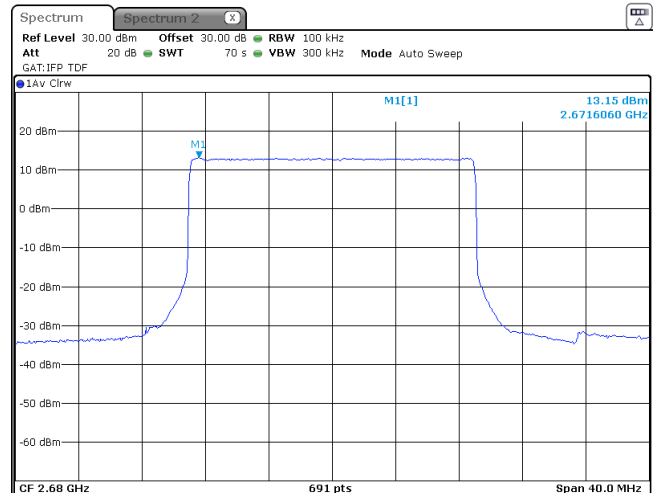
CHANNEL BANDWIDTH:  
NUMBER OF ANTENNA:

20 MHz  
3

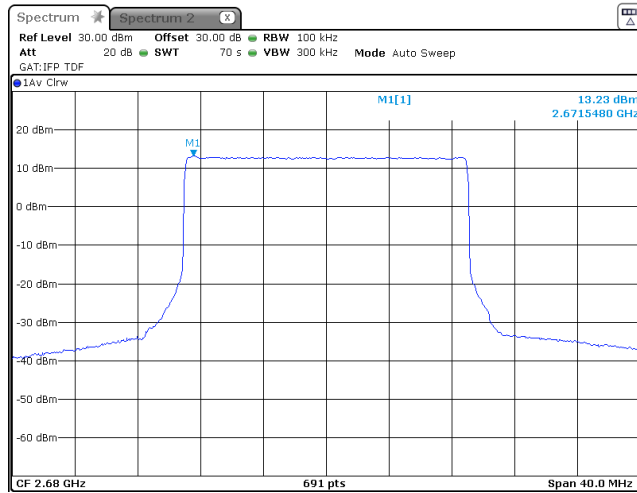
MODULATION: QPSK



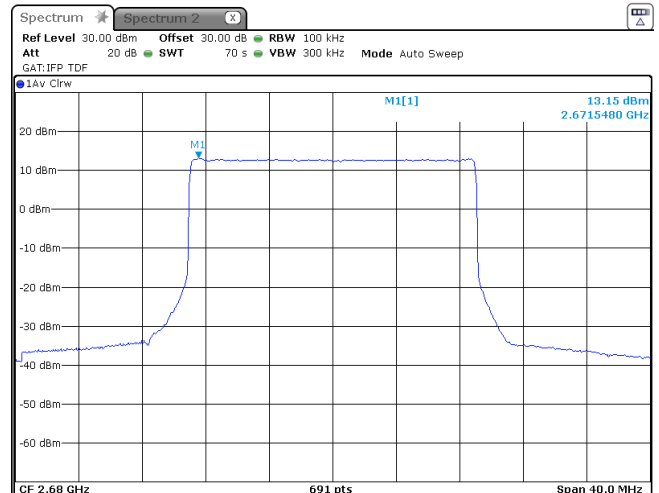
MODULATION: 16 QAM



MODULATION: 64 QAM



MODULATION: 256 QAM





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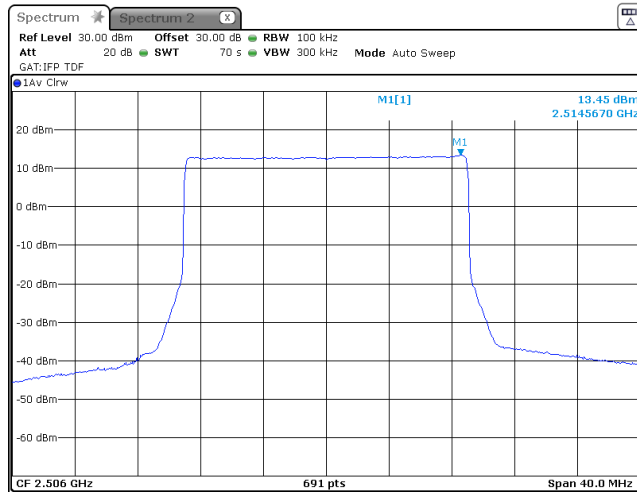
<b>Test specification:</b> Section 27.50, Peak output power			
<b>Test procedure:</b> 47 CFR, Section 2.1046; TIA/EIA-603-E, Section 2.2.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 06-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

Plot 7.2.22 Peak output power test results frequency, at low, mid, high frequency

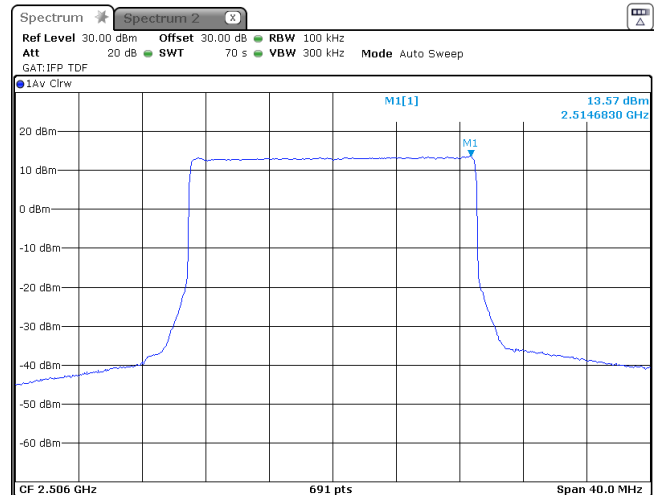
CHANNEL BANDWIDTH:  
NUMBER OF ANTENNA:

20 MHz  
4

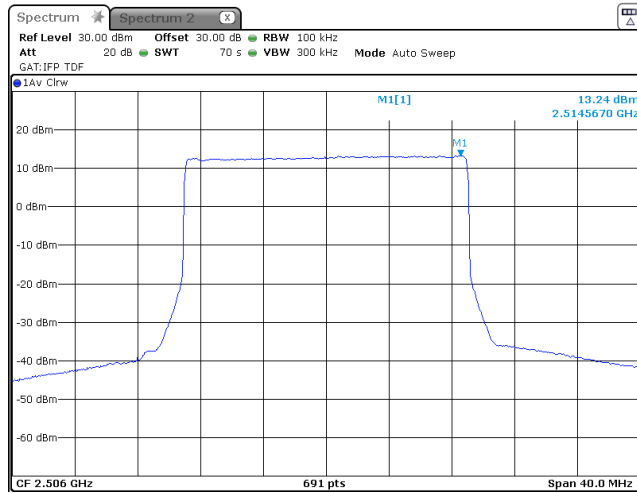
MODULATION: QPSK



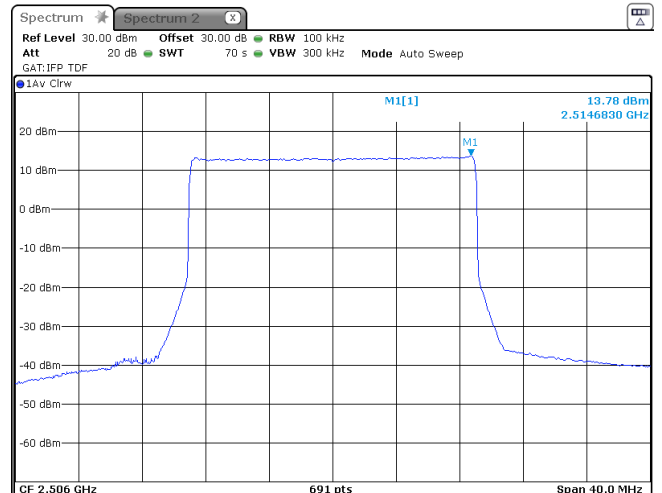
MODULATION: 16 QAM



MODULATION: 64 QAM



MODULATION: 256 QAM





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<b>Test specification:</b> Section 27.50, Peak output power			
<b>Test procedure:</b> 47 CFR, Section 2.1046; TIA/EIA-603-E, Section 2.2.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 06-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

Plot 7.2.23 Peak output power test results frequency, at low, mid, high frequency

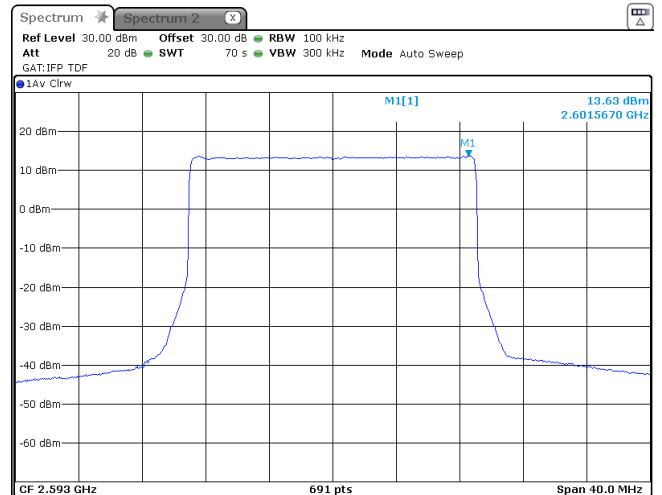
CHANNEL BANDWIDTH:  
NUMBER OF ANTENNA:

20 MHz  
4

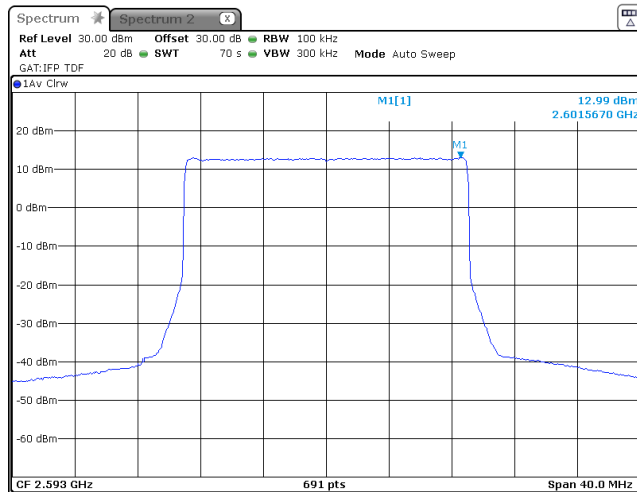
MODULATION: QPSK



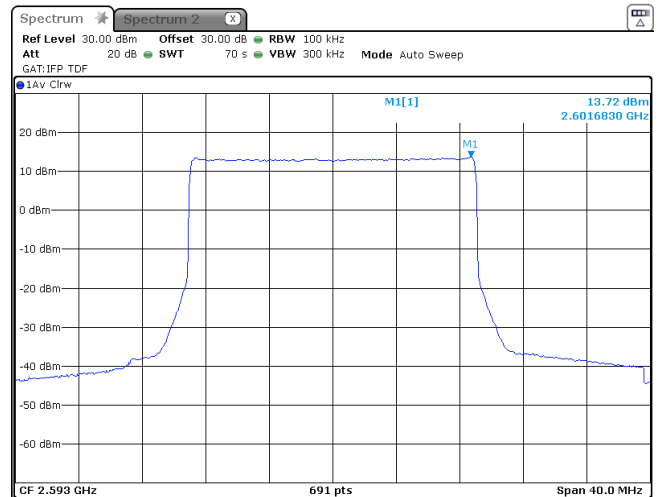
MODULATION: 16 QAM



MODULATION: 64 QAM



MODULATION: 256 QAM





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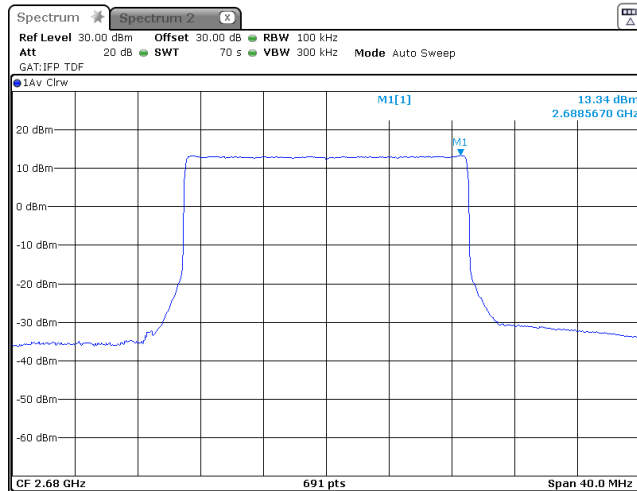
<b>Test specification:</b> Section 27.50, Peak output power			
<b>Test procedure:</b> 47 CFR, Section 2.1046; TIA/EIA-603-E, Section 2.2.1			
<b>Test mode:</b> Compliance	<b>Verdict:</b> PASS		
<b>Date(s):</b> 06-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

Plot 7.2.24 Peak output power test results frequency, at low, mid, high frequency

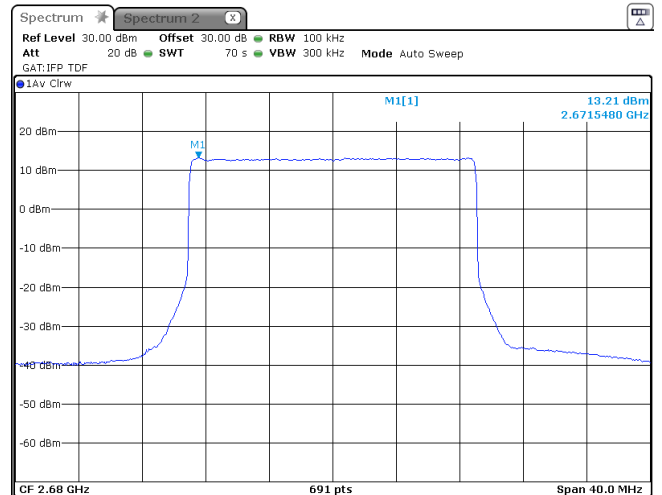
CHANNEL BANDWIDTH:  
NUMBER OF ANTENNA:

20 MHz  
4

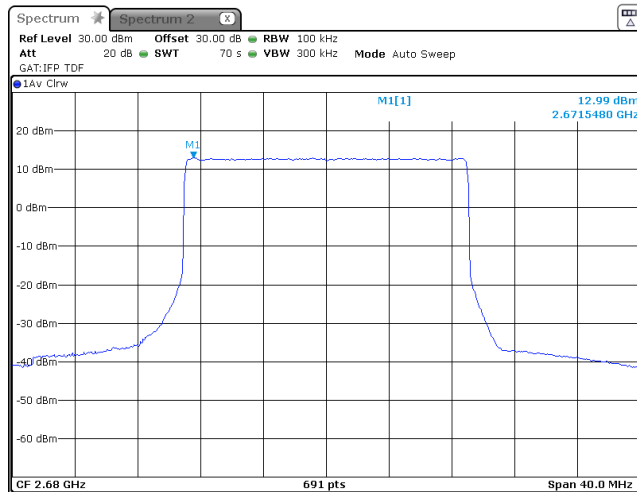
MODULATION: QPSK



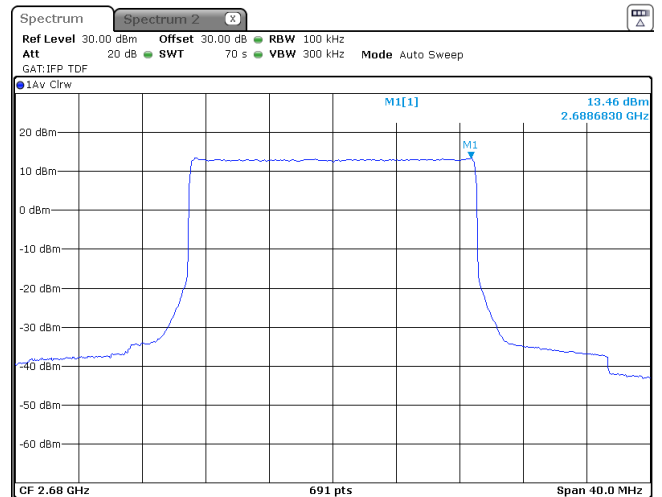
MODULATION: 16 QAM



MODULATION: 64 QAM



MODULATION: 256 QAM







<b>Test specification: Section 27.53, Band edge emissions</b>			
<b>Test procedure:</b> 447 CFR, Sections 2.1051, 27.53;			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

### 7.3 Band edge emissions at RF connector test

#### 7.3.1 General

This test was performed to measure spurious emissions at the channel edge at the RF antenna connector. Specification test limits are given in Table 7.3.1.

**Table 7.3.1 Spurious emission limits at band edges**

Channel, 10 MHz	Frequency range	RBW, kHz	Attenuation below carrier, dBc	Limit, dBm
2496.0 – 2507.5	Below 2495 MHz	1000	43+ 10*Log (P*)	-13.0
	2495.0 – 2496.0	100/300	43+ 10*Log (P*)	-13.0
	2507.5 – 2508.5	100/300	43+ 10*Log (P*)	-13.0
	Above 2508.5 MHz	1000	43+ 10*Log (P*)	-13.0
2584-2596	Below 2583.0 MHz	1000	43+ 10*Log (P*)	-13.0
	2584-2590	100/300	43+ 10*Log (P*)	-13.0
	2590-2596	100/300	43+ 10*Log (P*)	-13.0
	Above 2597.0 MHz	1000	43+ 10*Log (P*)	-13.0
2679.0 – 2690.0	Below 2678.0 MHz	1000	43+ 10*Log (P*)	-13.0
	2678.0 – 2679.0	100/300	43+ 10*Log (P*)	-13.0
	2690.0 – 2691.0	100/300	43+ 10*Log (P*)	-13.0
	Above 2691.0	1000	43+ 10*Log (P*)	-13.0
Channel, 20 MHz	Frequency range	RBW, kHz	Attenuation below carrier, dBc	Limit, dBm
2496.0 – 2518.5	Below 2495.0 MHz	1000	43+ 10*Log (P*)	-13.0
	2495.0-2496.0	100/300	43+ 10*Log (P*)	-13.0
	2518.5-2519.5	100/300	43+ 10*Log (P*)	-13.0
	Above 2519.5 MHz	1000	43+ 10*Log (P*)	-13.0
2578.0-2602.0	Below 2577.0 MHz	1000	43+ 10*Log (P*)	-13.0
	2578-2584	100/300	43+ 10*Log (P*)	-13.0
	2596-2602	100/300	43+ 10*Log (P*)	-13.0
	Above 2603.0 MHz	1000	43+ 10*Log (P*)	-13.0
2668.0 – 2690.0	Below 2667.0 MHz	1000	43+ 10*Log (P*)	-13.0
	2667.0 – 2668.0	100/300	43+ 10*Log (P*)	-13.0
	2690.0 – 2691.0	100/300	43+ 10*Log (P*)	-13.0
	Above 2691.0	1000	43+ 10*Log (P*)	-13.0

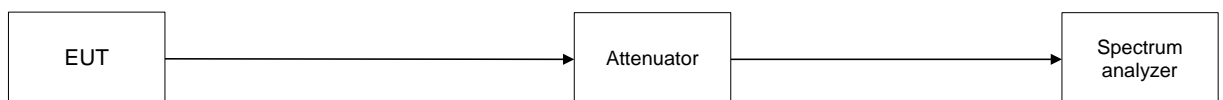
\* - P is transmitter output power in Watts

#### 7.3.2 Test procedure

7.3.2.1 The EUT was set up as shown in Figure 7.3.1, energized and its proper operation was checked.

7.3.2.2 The spurious emission was measured with spectrum analyzer as provided in Table 7.3.2 and the associated plots.

**Figure 7.3.1 Spurious emission test setup for single output**





<b>Test specification: Section 27.53, Band edge emissions</b>			
<b>Test procedure:</b> 447 CFR, Sections 2.1051, 27.53;			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

**Table 7.3.2 Spurious emission at band edge test results**

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz  
 DETECTOR USED: Average (gated)  
 RESOLUTION BANDWIDTH: 100 KHz  
 VIDEO BANDWIDTH: ≥ Resolution bandwidth  
 EBW: 10 MHz  
 NUMBER OF CHAINS: 4  
 ANTENNA PORT: #1

Frequency MHz	Band edge	SA reading over 1 chain*, dBm	Total band edge**, dBm	RBW, kHz	Limit, dBm	Margin***, dB	Verdict
<b>QPSK</b>							
<b>Low frequency 2501.0 MHz</b>							
2496.00	Low	-28.18	-22.18	100	-13.0	-9.18	Pass
2495.00	Low	-19.89	-13.89	1000	-13.0	-0.89	
2507.50	High	-40.79	-34.79	100	-13.0	-21.79	
2508.50	High	-29.49	-23.49	1000	-13.0	-10.49	
<b>Mid frequency 2590.0 MHz</b>							
2584.00	Low	-37.86	-31.86	100	-13.0	-18.86	Pass
2583.00	Low	-29.51	-23.51	1000	-13.0	-10.51	
2596.00	High	-40.26	-34.26	100	-13.0	-21.26	
2597.00	High	-30.66	-24.66	1000	-13.0	-11.66	
<b>High frequency 2685.0 MHz</b>							
2679.00	Low	-38.47	-32.47	100	-13.0	-19.47	Pass
2678.00	Low	-29.95	-23.95	1000	-13.0	-10.95	
2690.00	High	-27.44	-21.44	100	-13.0	-8.44	
2691.00	High	-19.95	-13.95	1000	-13.0	-0.95	
<b>256QAM</b>							
<b>Low frequency 2501.0 MHz</b>							
2496.00	Low	-29.26	-23.26	100	-13.0	-10.26	Pass
2495.00	Low	-19.89	-13.89	1000	-13.0	-0.89	
2507.50	High	-37.71	-31.71	100	-13.0	-18.71	
2508.50	High	-28.95	-22.95	1000	-13.0	-9.95	
<b>Mid frequency 2590.0 MHz</b>							
2584.00	Low	-39.74	-33.74	100	-13.0	-20.74	Pass
2583.00	Low	-31.93	-25.93	1000	-13.0	-12.93	
2596.00	High	-41.00	-35	100	-13.0	-22.00	
2597.00	High	-32.92	-26.92	1000	-13.0	-13.92	
<b>High frequency 2685.0 MHz</b>							
2679.00	Low	-38.76	-32.76	100	-13.0	-19.76	Pass
2678.00	Low	-30.09	-24.09	1000	-13.0	-11.09	
2690.00	High	-29.48	-23.48	100	-13.0	-10.48	
2691.00	High	-20.08	-14.08	1000	-13.0	-1.08	

\* - SA Reading over 1 chain = Max SA reading (Chains #1&2 and #3&4)

\*\* - Total band edge = Maximum SA Reading over 1 chain + 10\*log(N) = SA reading +6 dB

\*\*\* - Margin = Total band edge – Specification limit



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<b>Test specification: Section 27.53, Band edge emissions</b>			
<b>Test procedure:</b> 447 CFR, Sections 2.1051, 27.53;			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

**Table 7.3.3 Spurious emission at band edge test results**

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz  
 DETECTOR USED: Average (gated)  
 RESOLUTION BANDWIDTH: 100 KHz  
 VIDEO BANDWIDTH: ≥ Resolution bandwidth  
 EBW: 20 MHz  
 NUMBER OF CHAINS: 4  
 ANTENNA PORT: #1

Frequency MHz	Band edge	SA reading over 1 chain*, dBm	Total band edge**, dBm	RBW, kHz	Limit, dBm	Margin***, dB	Verdict
<b>QPSK</b>							
<b>Low frequency 2506.0 MHz</b>							
2496.00	Low	-43.64	-37.64	100	-13.0	-24.64	Pass
2495.00	Low	-30.99	-24.99	1000	-13.0	-11.99	
2518.50	High	-29.63	-23.63	100	-13.0	-10.63	
2519.50	High	-33.91	-27.91	1000	-13.0	-14.91	
<b>Mid frequency 2590.0 MHz</b>							
2578.00	Low	-42.81	-36.81	100	-13.0	-23.81	Pass
2577.00	Low	-33.72	-27.72	1000	-13.0	-14.72	
2602.00	High	-43.30	-37.3	100	-13.0	-24.3	
2603.00	High	-34.82	-28.82	1000	-13.0	-15.82	
<b>High frequency 2680.0 MHz</b>							
2668.00	Low	-41.60	-35.6	100	-13.0	-22.6	Pass
2667.00	Low	-33.26	-27.26	1000	-13.0	-14.26	
2690.00	High	-31.35	-25.35	100	-13.0	-12.35	
2691.00	High	-30.53	-24.53	1000	-13.0	-11.53	
<b>256QAM</b>							
<b>Low frequency 2506.0 MHz</b>							
2496.00	Low	-31.09	-25.09	100	-13.0	-12.09	Pass
2495.00	Low	-30.63	-24.63	1000	-13.0	-11.63	
2518.50	High	-43.25	-37.25	100	-13.0	-24.25	
2519.50	High	-33.38	-27.38	1000	-13.0	-14.38	
<b>Mid frequency 2590.0 MHz</b>							
2578.00	Low	-41.32	-35.32	100	-13.0	-22.32	Pass
2577.00	Low	-32.46	-26.46	1000	-13.0	-13.46	
2602.00	High	-42.07	-36.07	100	-13.0	-23.07	
2603.00	High	-32.71	-26.71	1000	-13.0	-13.71	
<b>High frequency 2680.0 MHz</b>							
2668.00	Low	-40.56	-34.56	100	-13.0	-21.56	Pass
2667.00	Low	-30.81	-24.81	1000	-13.0	-11.81	
2690.00	High	-30.56	-24.56	100	-13.0	-11.56	
2691.00	High	-29.45	-23.45	1000	-13.0	-10.45	

\* - SA Reading over 1 chain = Max SA reading (Chains #1&2 and #3&4)

\*\* - Total band edge = Maximum SA Reading over 1 chain + 10\*log(N) = SA reading +6 dB

\*\*\* - Margin = Total band edge – Specification limit

**Reference numbers of test equipment used**

HL 2016	HL 5376	HL 5637				
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Full description is given in Appendix A.



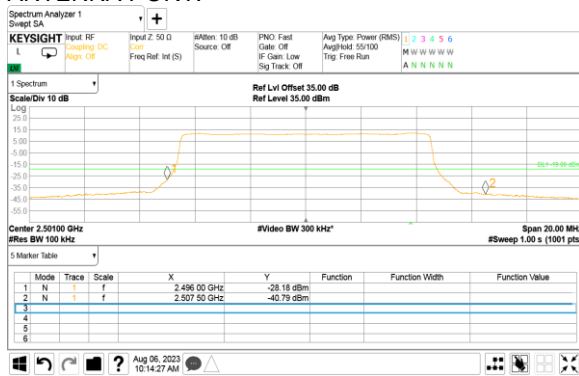
HERMON LABORATORIES

<b>Test specification:</b> Section 27.53, Band edge emissions			
<b>Test procedure:</b> 447 CFR, Sections 2.1051, 27.53;			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

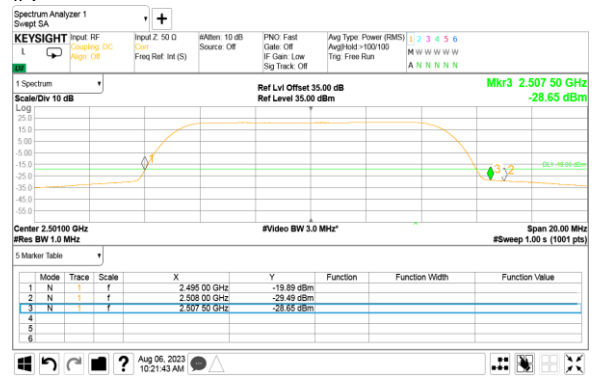
Plot 7.3.1 Spurious emission at band edges test results at low carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
QPSK  
10 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm

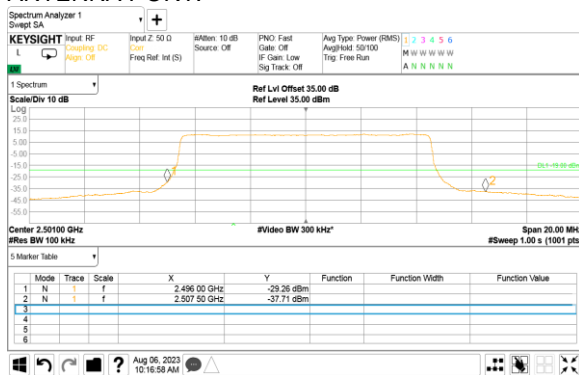


\*Will be applied limit of -13dBm

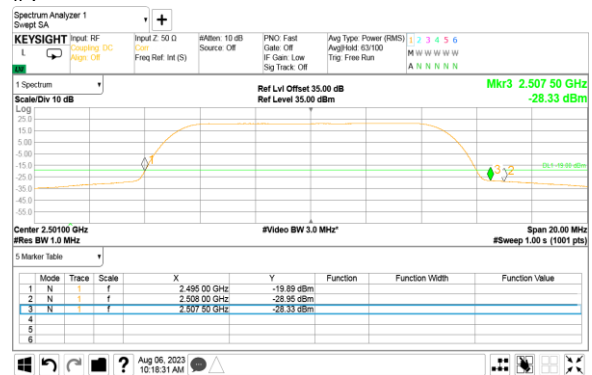
Plot 7.3.2 Spurious emission at band edges test results at low carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
256QAM  
10 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm



\*Will be applied limit of -13dBm



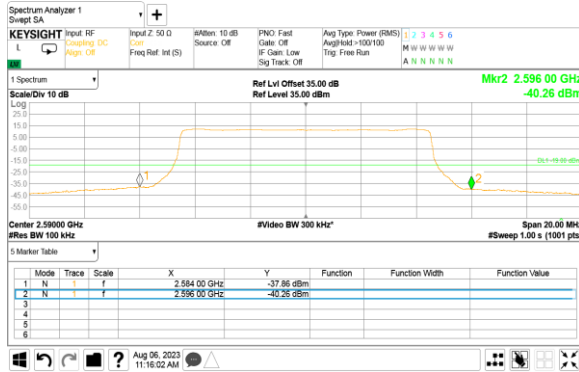
HERMON LABORATORIES

<b>Test specification:</b> Section 27.53, Band edge emissions			
<b>Test procedure:</b> 447 CFR, Sections 2.1051, 27.53;			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

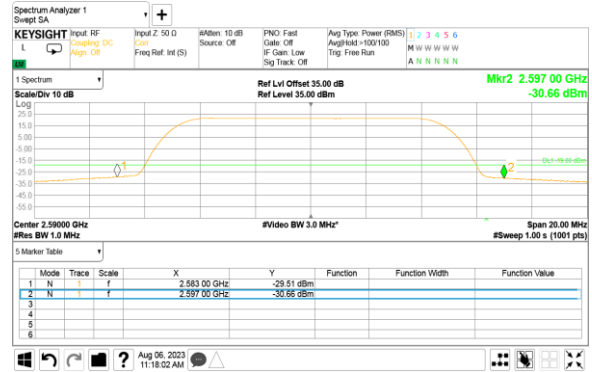
Plot 7.3.3 Spurious emission at band edges test results at mid carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
QPSK  
10 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm

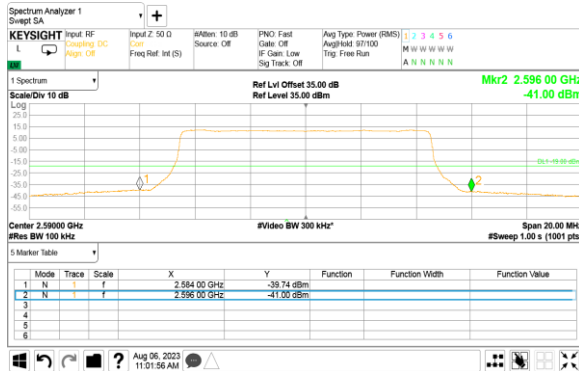


\*Will be applied limit of -13dBm

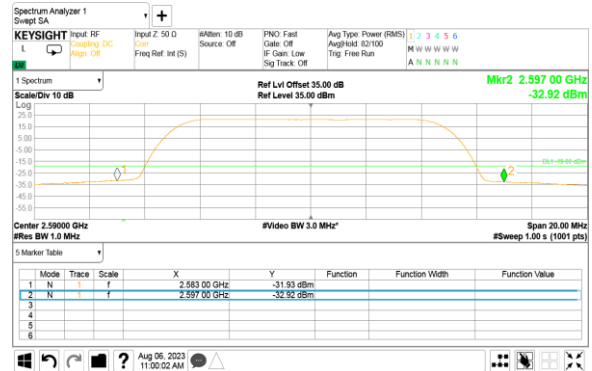
Plot 7.3.4 Spurious emission at band edges test results at mid carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
256QAM  
10 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm



\*Will be applied limit of -13dBm



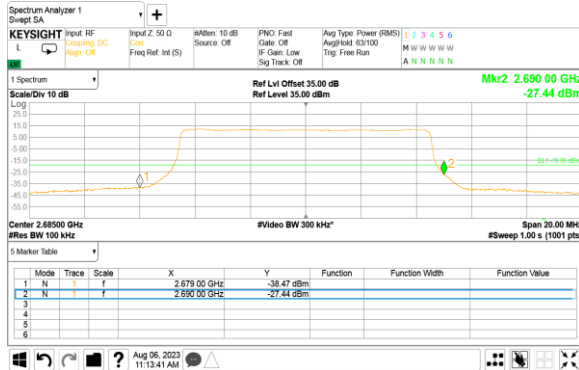
HERMON LABORATORIES

<b>Test specification:</b> Section 27.53, Band edge emissions			
<b>Test procedure:</b> 447 CFR, Sections 2.1051, 27.53;			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

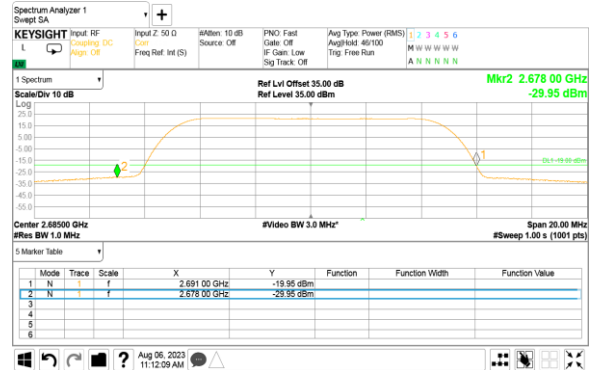
Plot 7.3.5 Spurious emission at band edges test results at high carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
QPSK  
10 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm

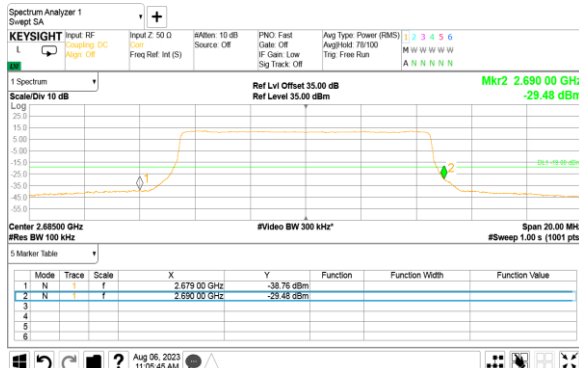


\*Will be applied limit of -13dBm

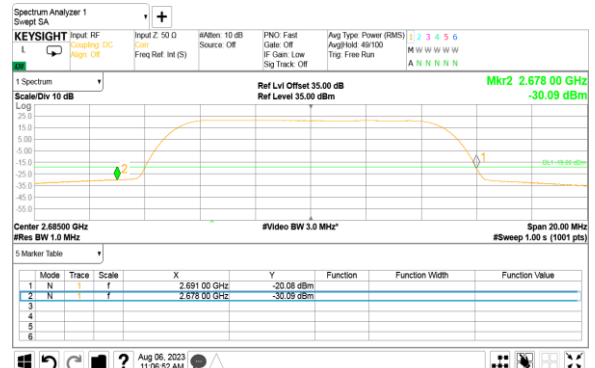
Plot 7.3.6 Spurious emission at band edges test results at high carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
256QAM  
10 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm



\*Will be applied limit of -13dBm



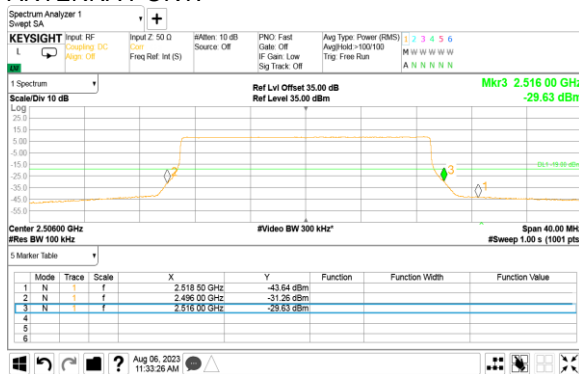
HERMON LABORATORIES

<b>Test specification:</b> Section 27.53, Band edge emissions			
<b>Test procedure:</b> 447 CFR, Sections 2.1051, 27.53;			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

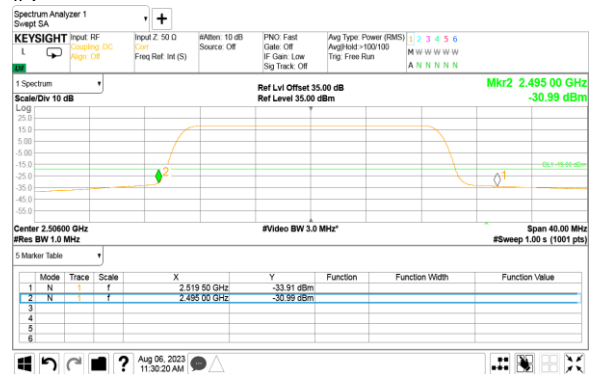
Plot 7.3.7 Spurious emission at band edges test results at low carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
QPSK  
20 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm

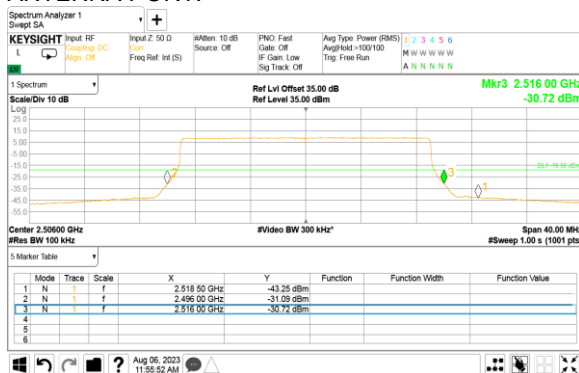


\*Will be applied limit of -13dBm

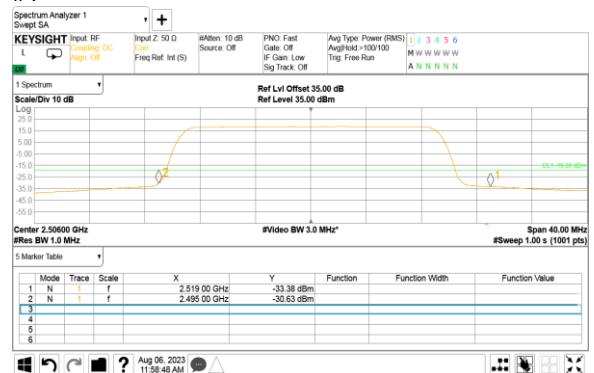
Plot 7.3.8 Spurious emission at band edges test results at low carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
256QAM  
20 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm



\*Will be applied limit of -13dBm



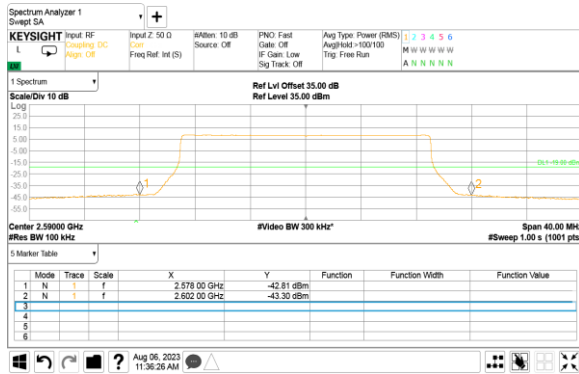
HERMON LABORATORIES

<b>Test specification:</b> Section 27.53, Band edge emissions			
<b>Test procedure:</b> 447 CFR, Sections 2.1051, 27.53;			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

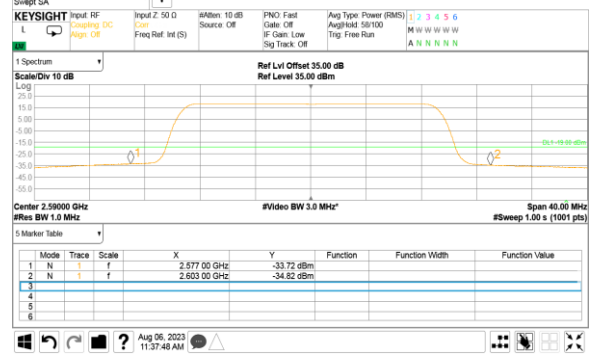
Plot 7.3.9 Spurious emission at band edges test results at mid carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
QPSK  
20 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm

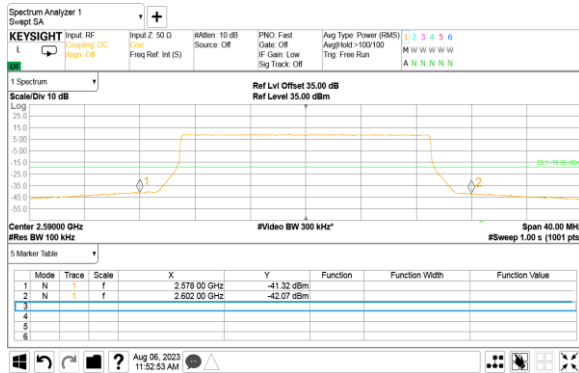


\*Will be applied limit of -13dBm

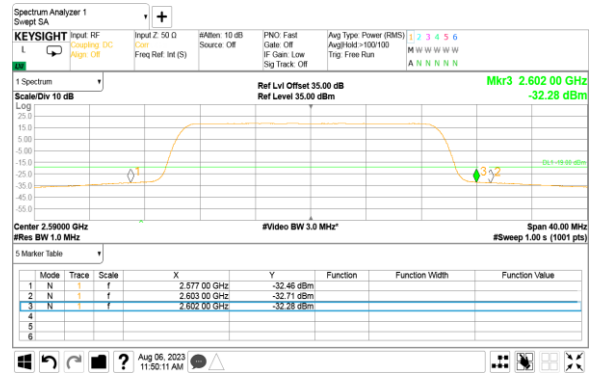
Plot 7.3.10 Spurious emission at band edges test results at mid carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
256QAM  
20 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm



\*Will be applied limit of -13dBm





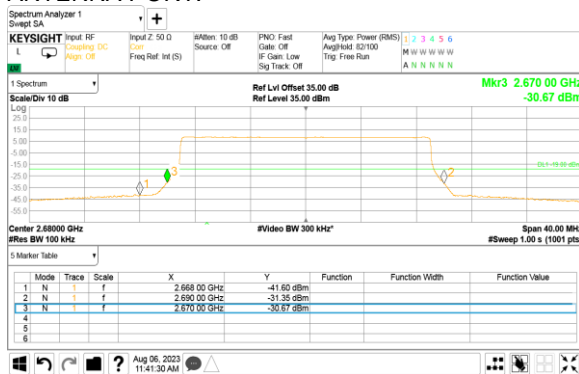
HERMON LABORATORIES

<b>Test specification:</b> Section 27.53, Band edge emissions			
<b>Test procedure:</b> 447 CFR, Sections 2.1051, 27.53;			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

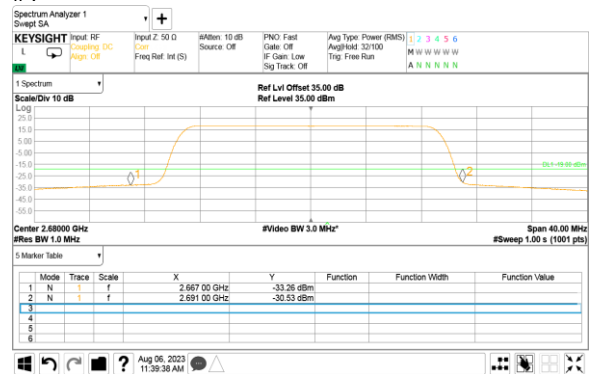
Plot 7.3.11 Spurious emission at band edges test results at high carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
QPSK  
20 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm

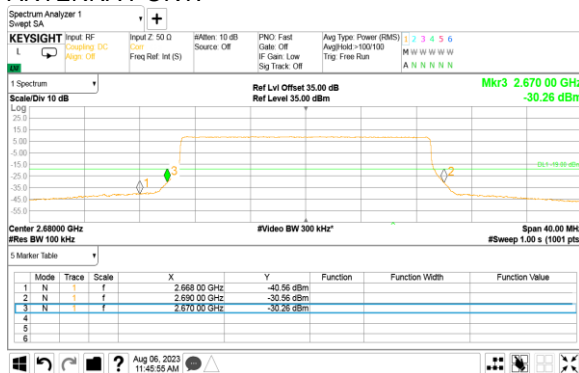


\*Will be applied limit of -13dBm

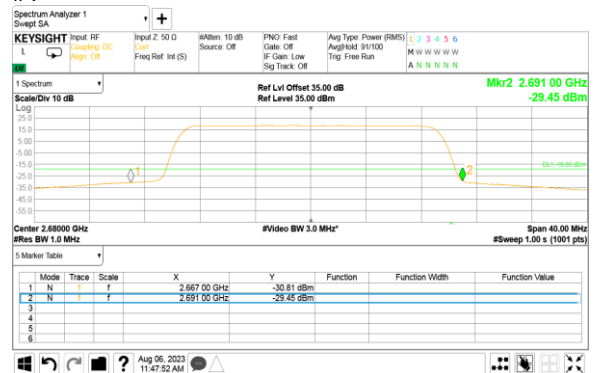
Plot 7.3.12 Spurious emission at band edges test results at high carrier frequency

ASSIGNED FREQUENCY RANGE:  
DETECTOR USED:  
MODULATION:  
EBW:  
TRANSMITTER OUTPUT POWER SETTINGS:  
ANTENNA PORT:

2496 – 2690 MHz  
Average  
256QAM  
20 MHz  
Maximum  
#1



\*Will be applied limit of -13dBm



\*Will be applied limit of -13dBm



<b>Test specification: Section 27.53, Spurious emissions at RF antenna connector</b>			
<b>Test procedure:</b> 47 CFR, Sections 2.1051, 27.53			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

## 7.4 Spurious emissions at RF antenna connector test

### 7.4.1 General

This test was performed to measure spurious emissions at RF antenna connector. Specification test limits are given in Table 7.4.1.

Table 7.4.1 Spurious emission limits

Frequency, MHz	Attenuation below carrier, dBc	Spurious emissions, dBm
Base and fixed user stations		
<b>0.009 – 10th harmonic*</b>	<b>43+10logP(W)**</b>	<b>-13.0</b>

\* - spurious emission limits do not apply to the channel edge emission investigated in course of band edge emission testing

\*\* - P is transmitter output power in watts

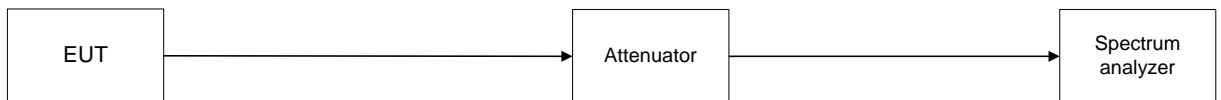
### 7.4.2 Test procedure

7.4.2.1 The EUT was set up as shown in Figure 7.4.1, energized and its proper operation was checked.

7.4.2.2 The EUT was adjusted to produce maximum available for end user RF output power.

7.4.2.3 The spurious emission was measured with spectrum analyzer as provided in Table 7.4.2 and the associated plots.

Figure 7.4.1 Spurious emission test setup, single output





<b>Test specification: Section 27.53, Spurious emissions at RF antenna connector</b>			
<b>Test procedure:</b> 47 CFR, Sections 2.1051, 27.53			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

**Table 7.4.2 Spurious emission test results**

ASSIGNED FREQUENCY RANGE: 2496-2690 MHz  
 INVESTIGATED FREQUENCY RANGE: 0.009 – 26900 MHz  
 DETECTOR USED: Peak  
 VIDEO BANDWIDTH: ≥ Resolution bandwidth  
 MODULATION: QPSK  
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum  
 ANTENNA PORT: #1

Frequency, MHz	SA reading, dBm	Attenuation, dB	Cable loss, dB	RBW, kHz	Spurious emission, dBm	Limit, dBm	Margin, dB*	Verdict
<b>Low carrier frequency</b>								
No emissions were found								Pass
<b>Mid carrier frequency</b>								
No emissions were found								Pass
<b>High carrier frequency</b>								
No emissions were found								Pass

\*- Margin = Spurious emission – specification limit.

**Reference numbers of test equipment used**

HL 5376	HL 5637	HL5642					
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Full description is given in Appendix A.

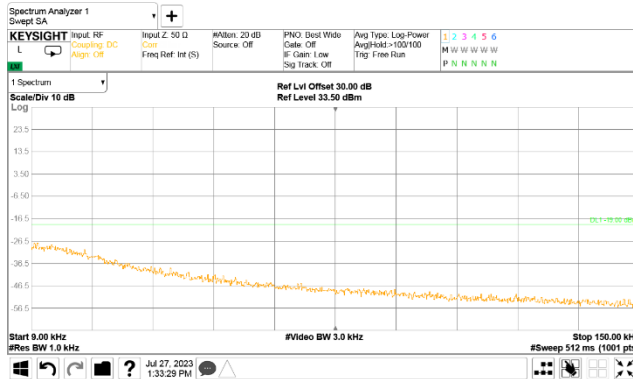


HERMON LABORATORIES

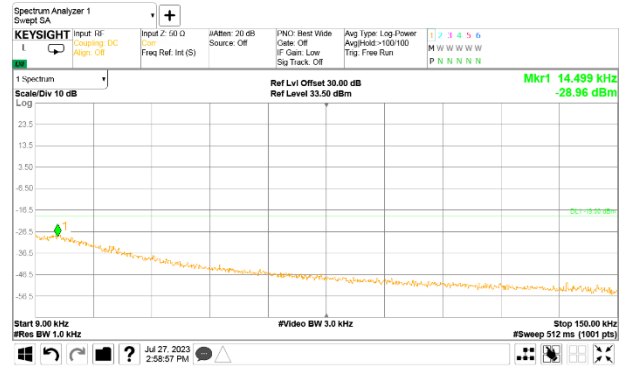
<b>Test specification:</b> Section 27.53, Spurious emissions at RF antenna connector			
<b>Test procedure:</b> 47 CFR, Sections 2.1051, 27.53			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

Plot 7.4.1 Spurious emission measurements in 9 - 150 kHz range at low carrier frequency

MODULATION:  
CHANNEL SPACING:  
ANTENNA CHAIN: #1

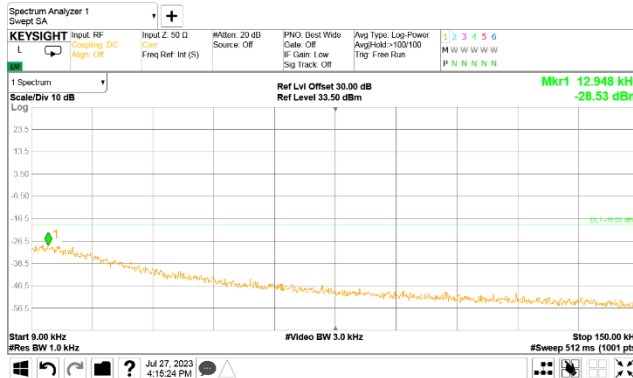


QPSK  
10 MHz  
ANTENNA CHAIN: #2

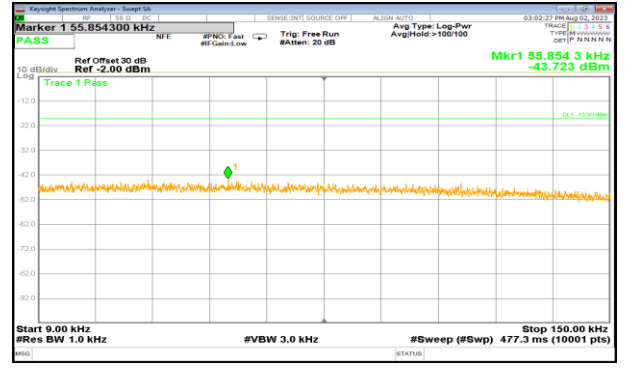


\* The limit line is  $43+10\log P(W) - 10*\log(N)$

ANTENNA CHAIN: #3



ANTENNA CHAIN: #4



\* The limit line is  $43+10\log P(W) - 10*\log(N)$

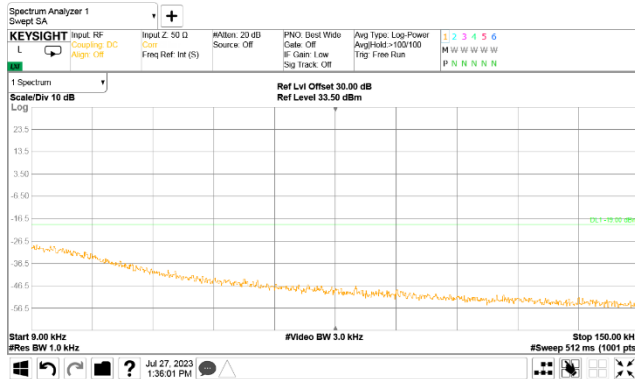


HERMON LABORATORIES

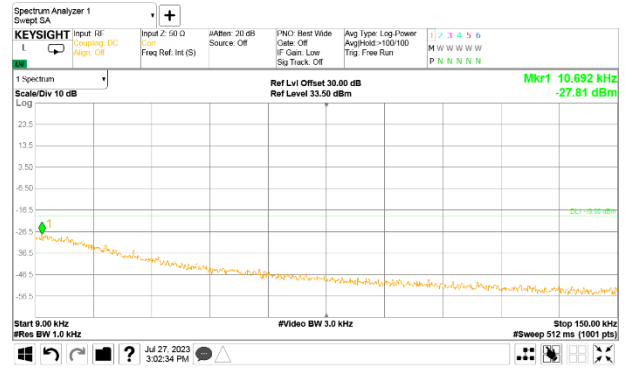
<b>Test specification:</b> Section 27.53, Spurious emissions at RF antenna connector			
<b>Test procedure:</b> 47 CFR, Sections 2.1051, 27.53			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

Plot 7.4.2 Spurious emission measurements in 9 - 150 kHz range at mid carrier frequency

MODULATION:  
CHANNEL SPACING:  
ANTENNA CHAIN: #1

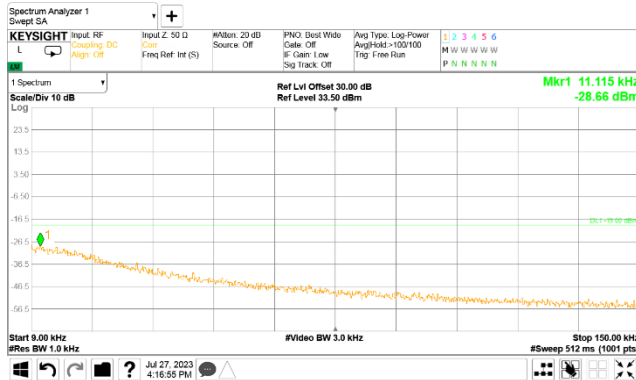


QPSK  
10 MHz  
ANTENNA CHAIN: #2

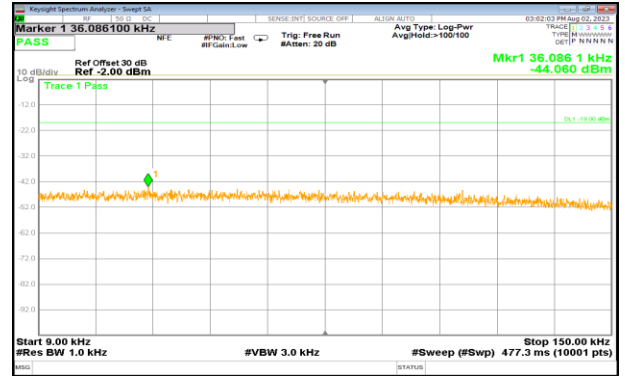


\* The limit line is  $43+10\log P(W) - 10*\log(N)$

ANTENNA CHAIN: #3



ANTENNA CHAIN: #4



\* The limit line is  $43+10\log P(W) - 10*\log(N)$

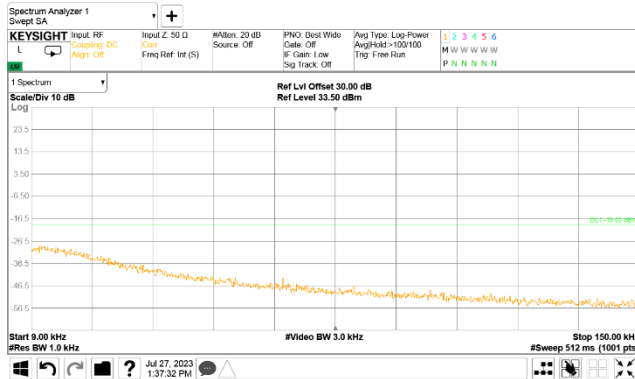


HERMON LABORATORIES

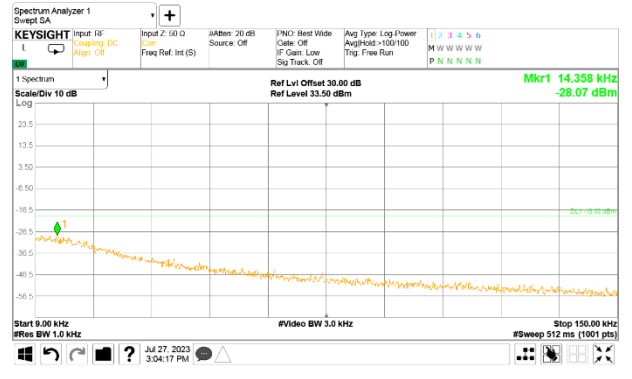
<b>Test specification:</b> Section 27.53, Spurious emissions at RF antenna connector			
<b>Test procedure:</b> 47 CFR, Sections 2.1051, 27.53			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

Plot 7.4.3 Spurious emission measurements in 9 - 150 kHz range at high carrier frequency

MODULATION:  
CHANNEL SPACING:  
ANTENNA CHAIN: #1

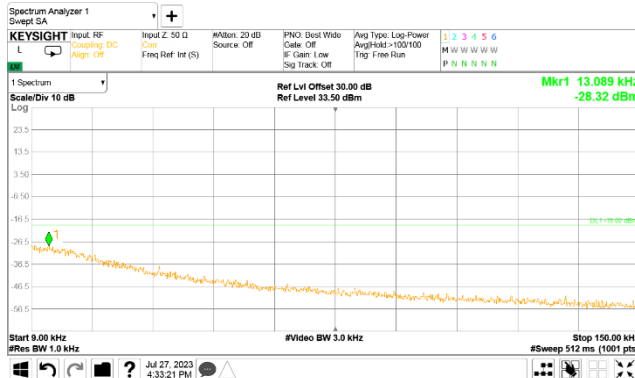


QPSK  
10 MHz  
ANTENNA CHAIN: #2

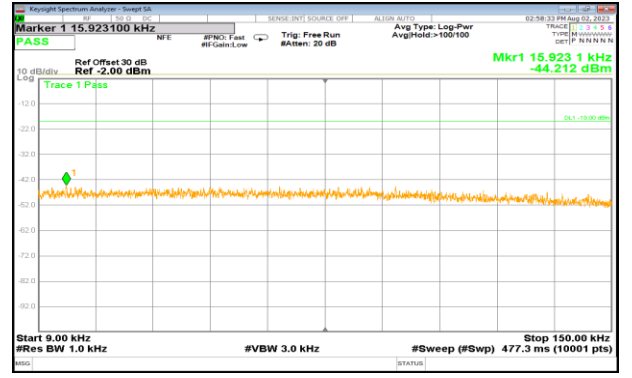


\* The limit line is  $43+10\log P(W) - 10*\log(N)$

ANTENNA CHAIN: #3



ANTENNA CHAIN: #4



\* The limit line is  $43+10\log P(W) - 10*\log(N)$

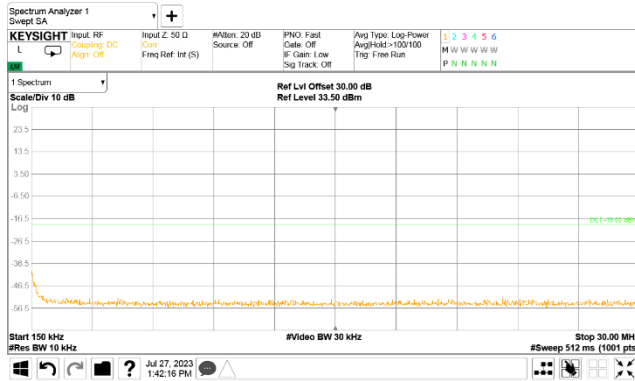


HERMON LABORATORIES

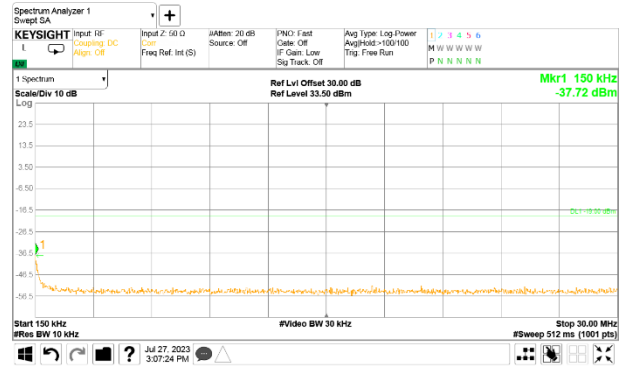
<b>Test specification:</b> Section 27.53, Spurious emissions at RF antenna connector			
<b>Test procedure:</b> 47 CFR, Sections 2.1051, 27.53			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 02-Aug-23			
<b>Temperature:</b> 21 °C	<b>Relative Humidity:</b> 54 %	<b>Air Pressure:</b> 1012 hPa	<b>Power:</b> 110 VAC, 60 Hz
<b>Remarks:</b>			

**Plot 7.4.4 Spurious emission measurements in 150 kHz - 30 MHz range at low carrier frequency**

MODULATION:  
CHANNEL SPACING:  
ANTENNA CHAIN: #1

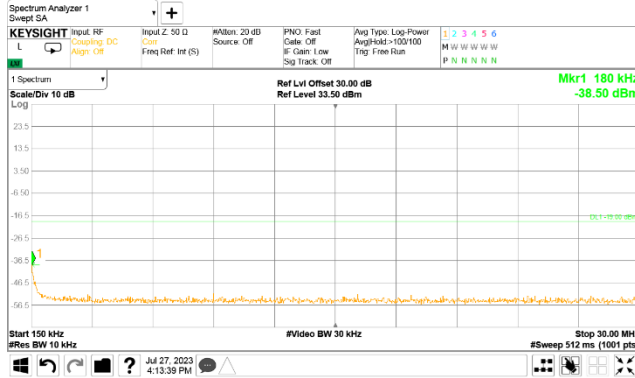


QPSK  
10 MHz  
ANTENNA CHAIN: #2

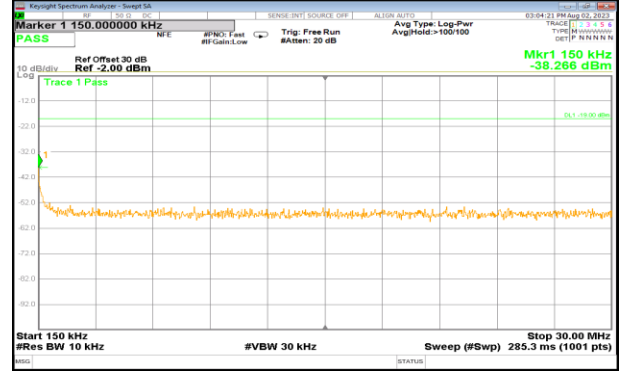


\* The limit line is  $43+10\log P(W) - 10*\log(N)$

ANTENNA CHAIN: #3



ANTENNA CHAIN: #4



\* The limit line is  $43+10\log P(W) - 10*\log(N)$