



HERMON LABORATORIES

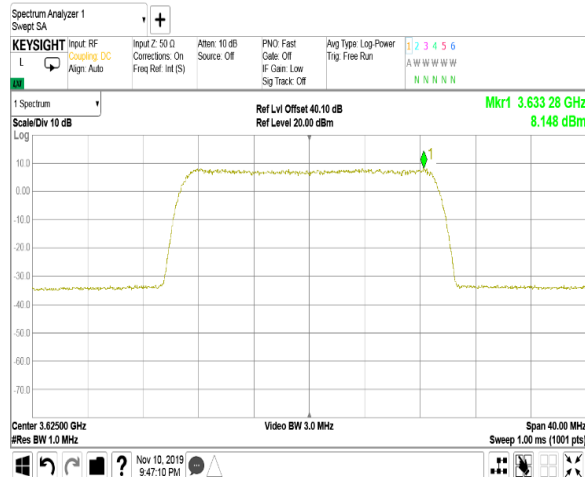
Test specification: Section 96.41(b), Maximum EIRP and maximum power spectral density			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-19			
Temperature: 24 °C	Relative Humidity: 51 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.1.14 Peak spectral power density at mid frequency

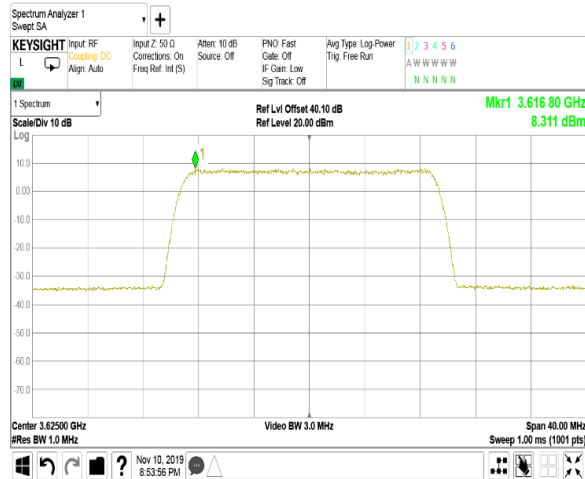
CHANNEL SPACING:

ANTENNA CHAIN:

Modulation: QPSK



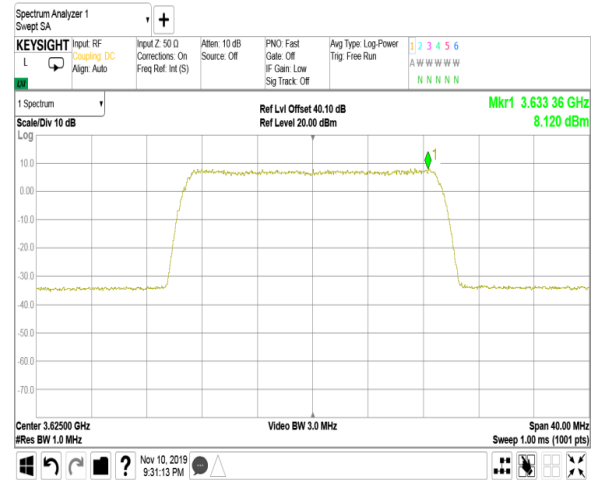
Modulation: 64QAM



20 MHz

1

Modulation: 16QAM





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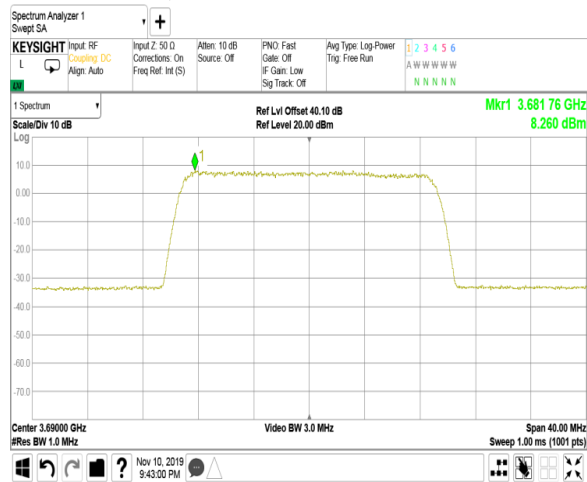
Test specification:		Section 96.41(b), Maximum EIRP and maximum power spectral density	
Test procedure:		Section 96.41(e)(3)	
Test mode:		Verdict: PASS	
Date(s):			
14-Apr-19			
Temperature: 24 °C	Relative Humidity: 51 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.1.15 Peak spectral power density at high frequency

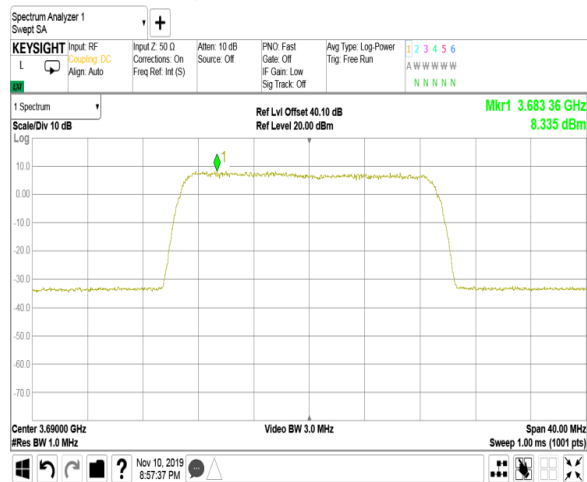
CHANNEL SPACING:

ANTENNA CHAIN:

Modulation: QPSK



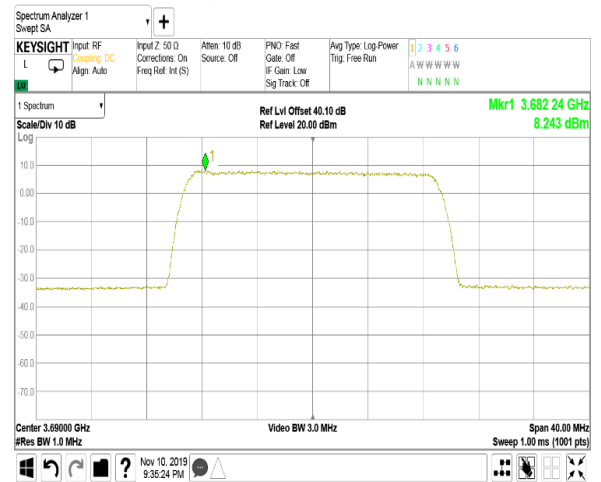
Modulation: 64QAM



20 MHz

1

Modulation: 16QAM





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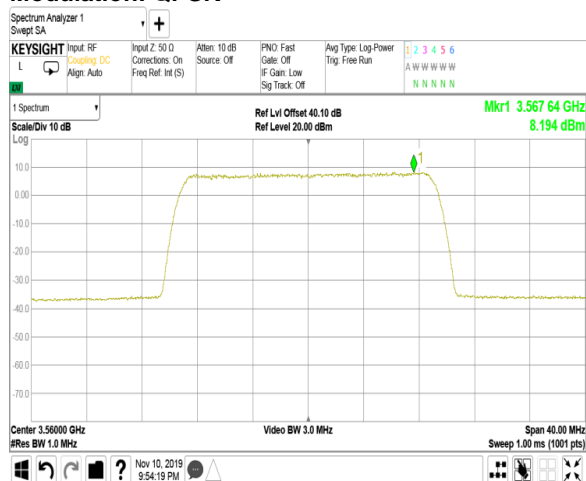
Test specification: Section 96.41(b), Maximum EIRP and maximum power spectral density			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-19			
Temperature: 24 °C	Relative Humidity: 51 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.1.16 Peak spectral power density at low frequency within

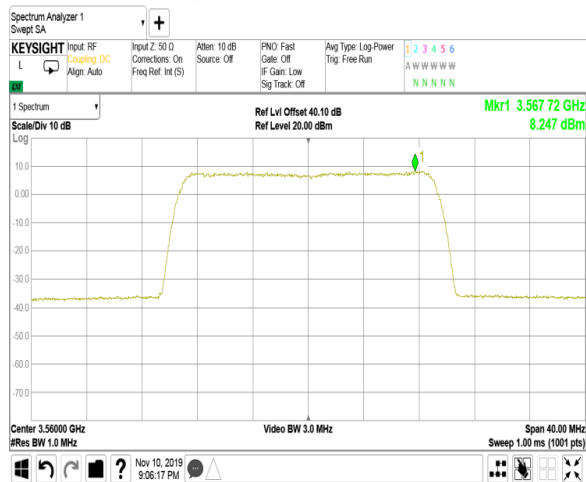
CHANNEL SPACING:

ANTENNA CHAIN:

Modulation: QPSK



Modulation: 64QAM



20 MHz

2

Modulation: 16QAM





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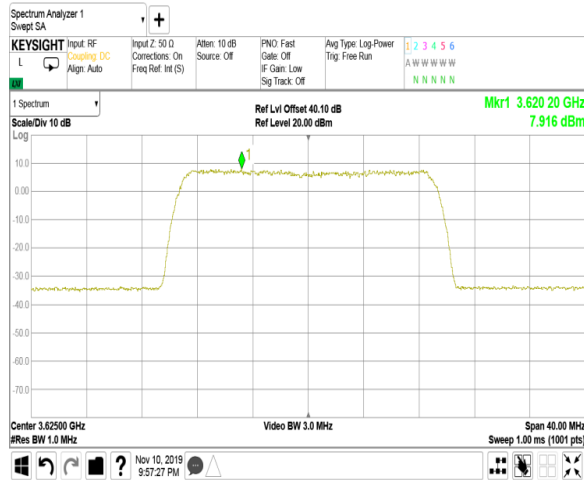
Test specification: Section 96.41(b), Maximum EIRP and maximum power spectral density			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-19			
Temperature: 24 °C	Relative Humidity: 51 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.1.17 Peak spectral power density at mid frequency

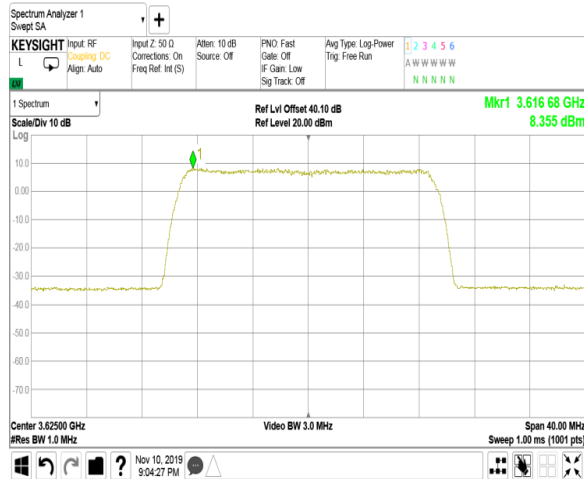
CHANNEL SPACING:

ANTENNA CHAIN:

Modulation: QPSK



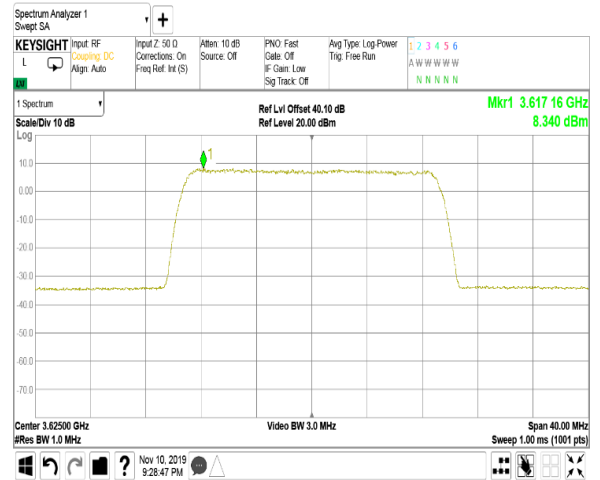
Modulation: 64QAM



20 MHz

2

Modulation: 16QAM





HERMON LABORATORIES

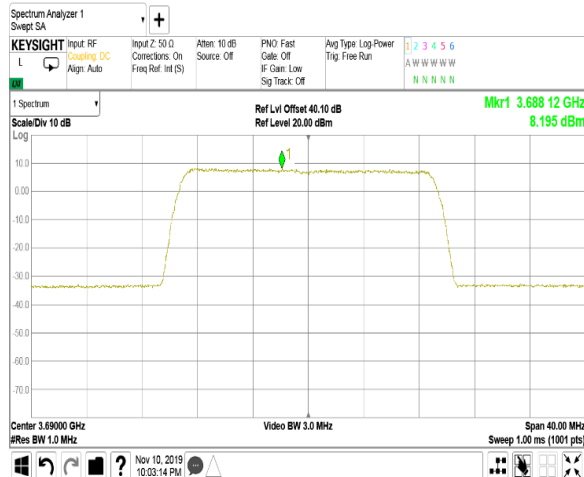
Test specification: Section 96.41(b), Maximum EIRP and maximum power spectral density			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-19			
Temperature: 24 °C	Relative Humidity: 51 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.1.18 Peak spectral power density at high frequency

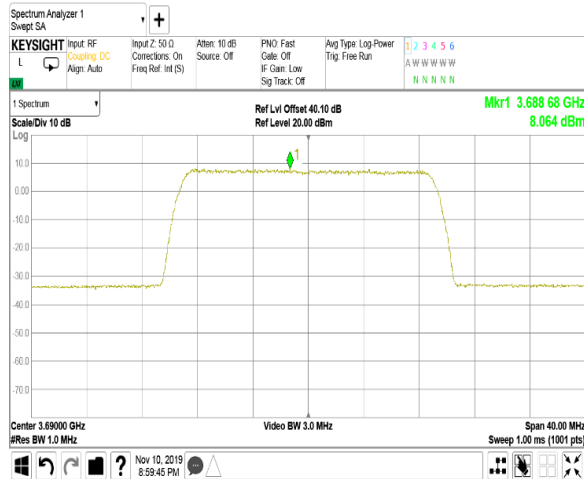
CHANNEL SPACING:

ANTENNA CHAIN:

Modulation: QPSK



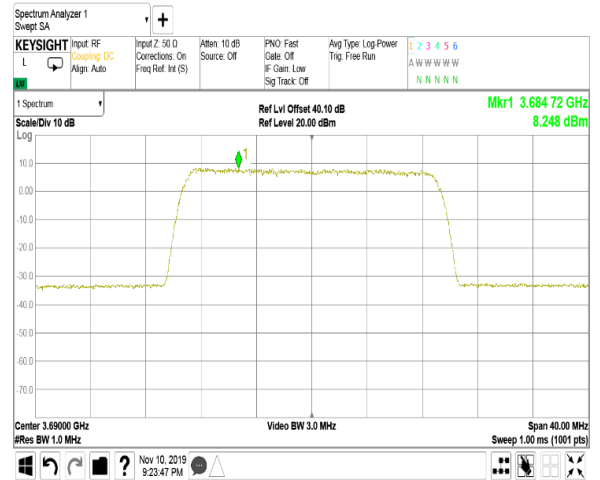
Modulation: 64QAM



20 MHz

2

Modulation: 16QAM





HERMON LABORATORIES

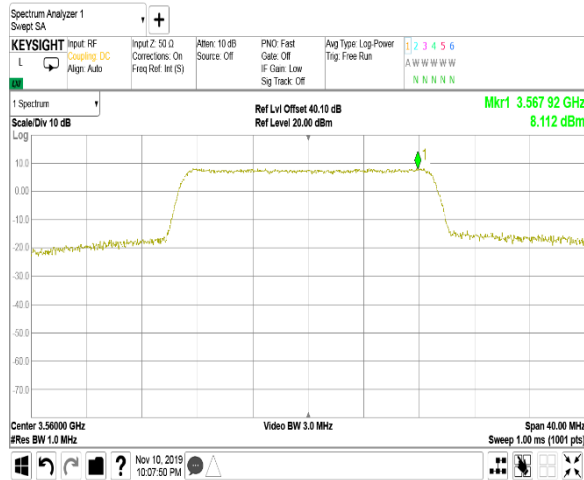
Test specification: Section 96.41(b), Maximum EIRP and maximum power spectral density			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-19			
Temperature: 24 °C	Relative Humidity: 51 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.1.19 Peak spectral power density at low frequency within

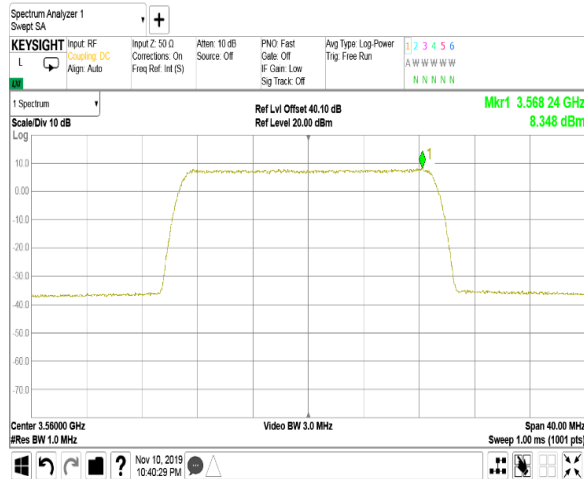
CHANNEL SPACING:

ANTENNA CHAIN:

Modulation: QPSK



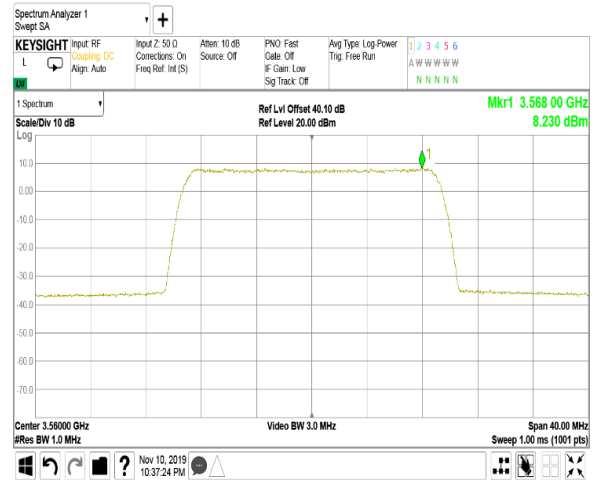
Modulation: 64QAM



20 MHz

3

Modulation: 16QAM





HERMON LABORATORIES

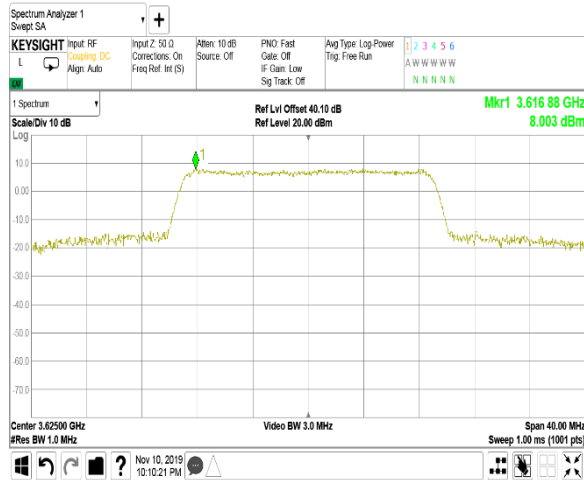
Test specification: Section 96.41(b), Maximum EIRP and maximum power spectral density			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-19			
Temperature: 24 °C	Relative Humidity: 51 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.1.20 Peak spectral power density at mid frequency

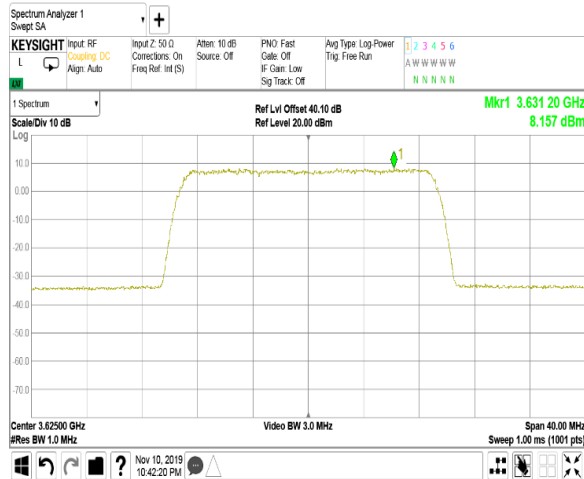
CHANNEL SPACING:

ANTENNA CHAIN:

Modulation: QPSK



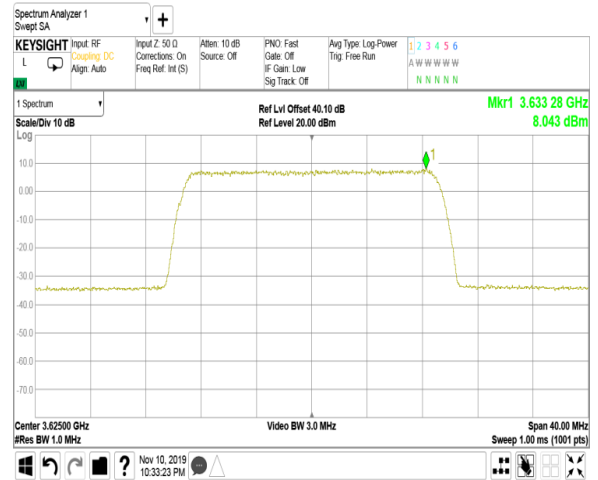
Modulation: 64QAM



20 MHz

3

Modulation: 16QAM





HERMON LABORATORIES

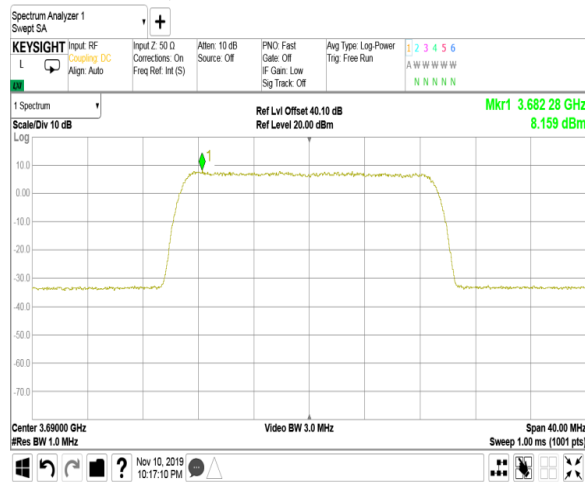
Test specification: Section 96.41(b), Maximum EIRP and maximum power spectral density			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-19			
Temperature: 24 °C	Relative Humidity: 51 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.1.21 Peak spectral power density at high frequency

CHANNEL SPACING:

ANTENNA CHAIN:

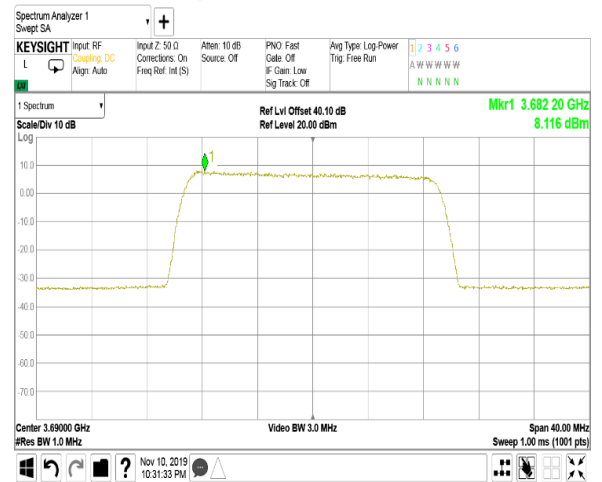
Modulation: QPSK



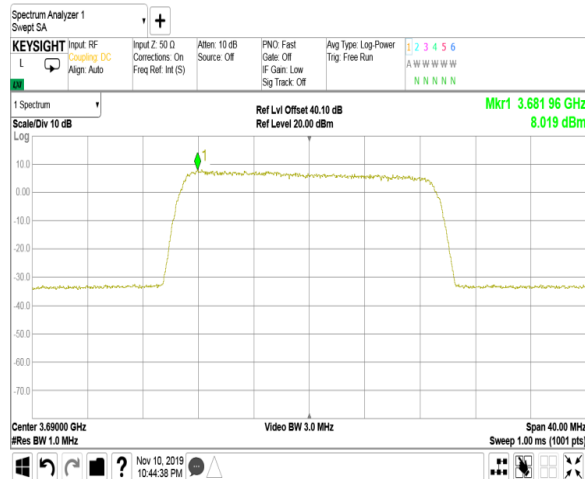
20 MHz

3

Modulation: 16QAM



Modulation: 64QAM





HERMON LABORATORIES

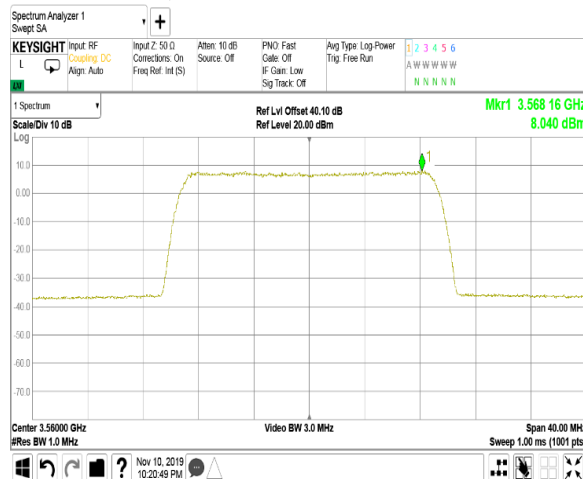
Test specification: Section 96.41(b), Maximum EIRP and maximum power spectral density			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-19			
Temperature: 24 °C	Relative Humidity: 51 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.1.22 Peak spectral power density at low frequency within

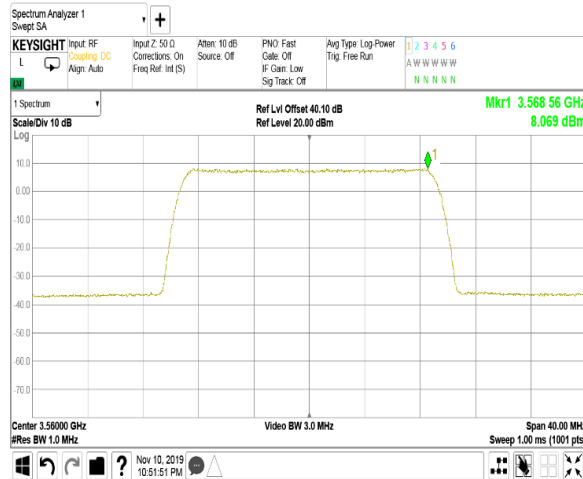
CHANNEL SPACING:

ANTENNA CHAIN:

Modulation: QPSK



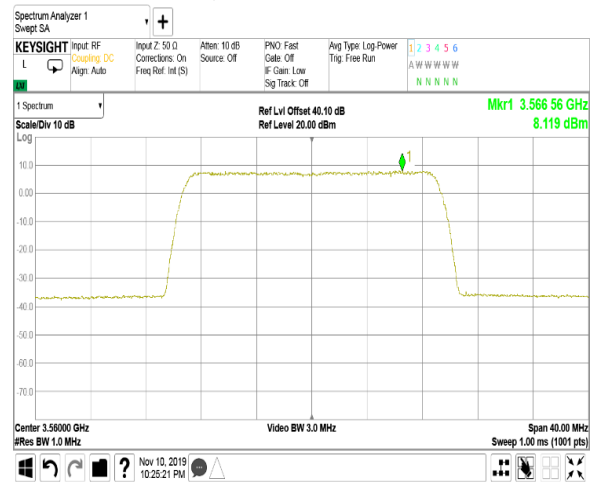
Modulation: 64QAM



20 MHz

4

Modulation: 16QAM





HERMON LABORATORIES

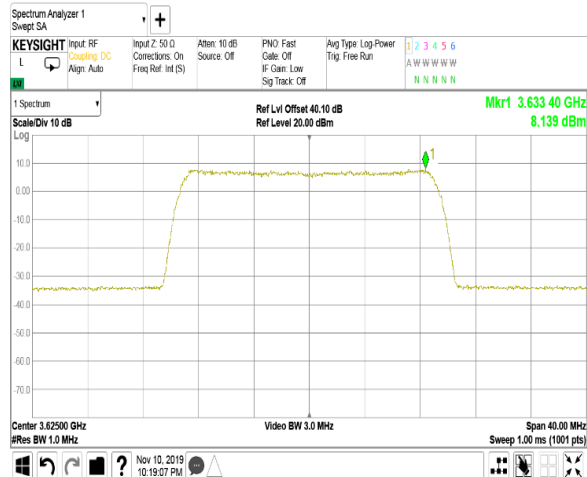
Test specification: Section 96.41(b), Maximum EIRP and maximum power spectral density			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-19			
Temperature: 24 °C	Relative Humidity: 51 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.1.23 Peak spectral power density at mid frequency

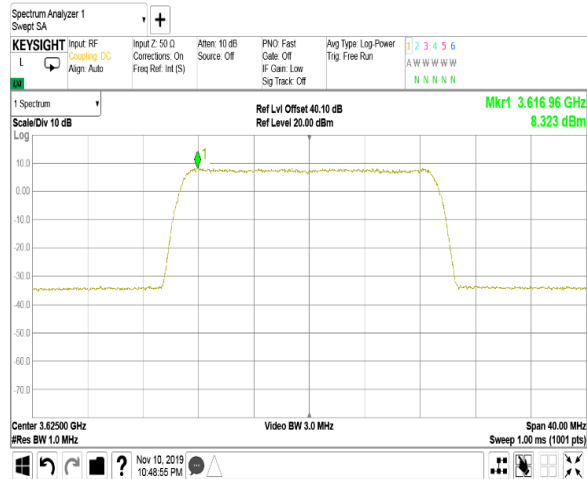
CHANNEL SPACING:

ANTENNA CHAIN:

Modulation: QPSK



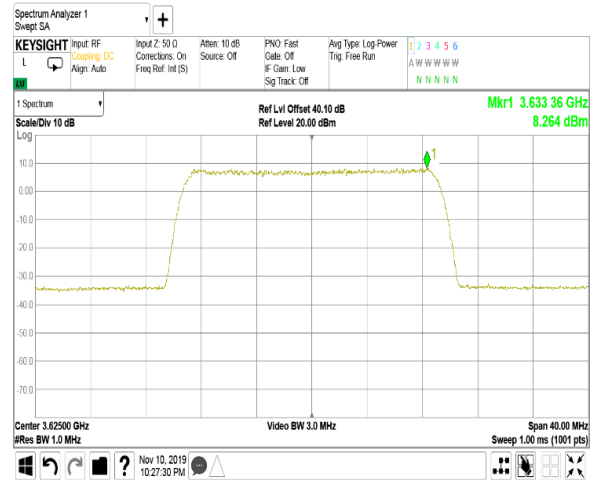
Modulation: 64QAM



20 MHz

4

Modulation: 16QAM





HERMON LABORATORIES

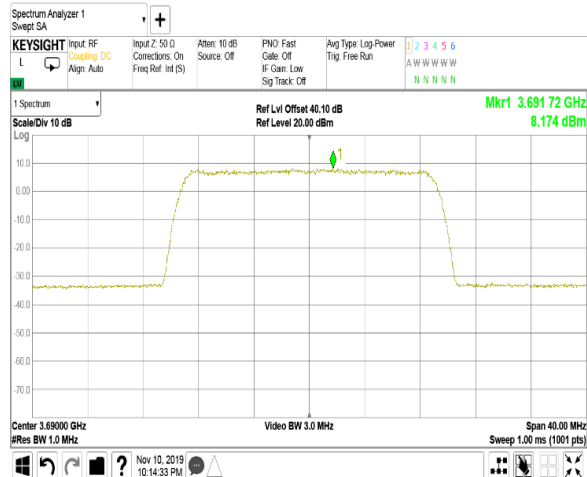
Test specification:		Section 96.41(b), Maximum EIRP and maximum power spectral density	
Test procedure:		Section 96.41(e)(3)	
Test mode:		Verdict: PASS	
Date(s):			
14-Apr-19			
Temperature: 24 °C	Relative Humidity: 51 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.1.24 Peak spectral power density at high frequency

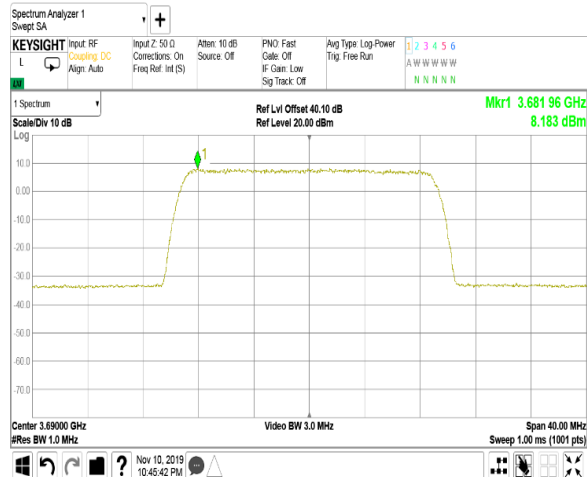
CHANNEL SPACING:

ANTENNA CHAIN:

Modulation: QPSK



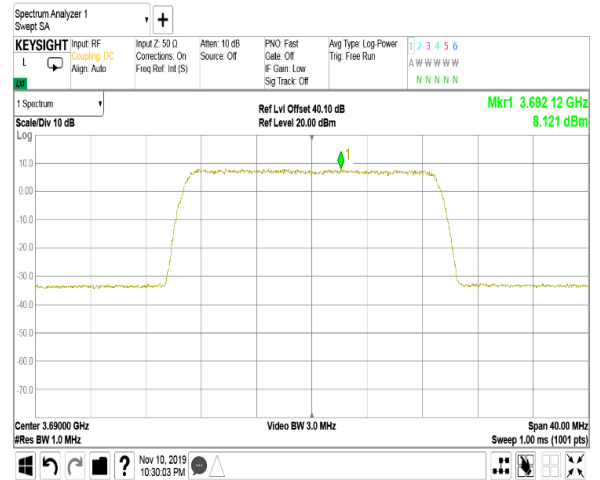
Modulation: 64QAM



20 MHz

4

Modulation: 16QAM





Spectrum Analyzer 1
Swept SA

KEYSIGHT

Input RF
 Coupling DC
Align Auto

Input Z: 50 Ohm
Corrections On
Freq Ref Int (S)

Atten: 10 dB
Source Off

PNO Fast Gate Off
IF Gain Low Sig Track Off

Avg Type: Power (RMS)
Trig: Free Run

1 2 3 4 5 6
W W W W W W
N N N N N N

1 Spectrum

Scale/Div 10 dB

Log

Ref Lvl Offset 30.00 dB
Ref Level 20.00 dBm

Mkr3 15.48 ms
-19.11 dBm

Center 3.55500000 GHz
Res BW 1.0 MHz

Video BW 3.0 MHz*

Span 0 Hz
Sweep 20.0 ms (10001 pts)

5 Marker Table

#	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	t	t	10.48 ms	-19.15 dBm			
2	N	t	t	13.21 ms	-46.60 dBm			
3	N	t	t	15.48 ms	-19.11 dBm			
4								
5								
6								

Duty cycle factor = $10 \cdot \log(2.73/5.0) = -2.63 \text{ dB}$



Test specification: Section 96.41(g), Peak-to-average power ratio			
Test procedure: Section 96.41(g)			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-19			
Temperature: 24 °C	Relative Humidity: 54 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

7.2 Peak to average power ratio test

7.2.1 General

This test was performed to measure the peak to average power ratio at RF antenna connector. Specification test limits are given in Table 7.2.1.

Table 7.2.1 Peak to average power ratio limits

Assigned frequency range, MHz	Peak to average power ratio limit	
	Probability, %	dB
3550.0 – 3700.0	0.1	13.0

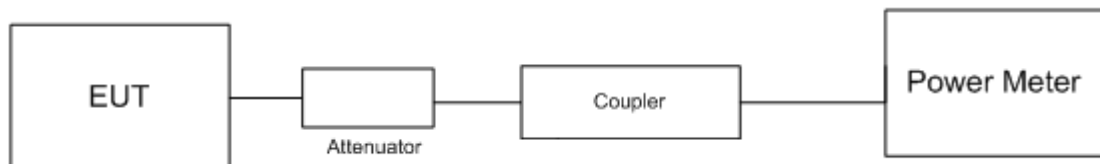
7.2.2 Test procedure

7.2.2.1 The EUT was set up as shown in Figure 7.2.1, energized and its proper operation was checked.

7.2.2.2 The EUT was adjusted to produce maximum available to the end user RF output power.

7.2.2.3 The peak to average power ratio was measured with power meter as provided in Table 7.2.2 and the associated plots.

Figure 7.2.1 Peak output power test setup





Test specification: Section 96.41(g), Peak-to-average power ratio			
Test procedure: Section 96.41(g)			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-19			
Temperature: 24 °C	Relative Humidity: 54 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Table 7.2.2 Peak-to-average power test results

OPERATING FREQUENCY RANGE: 3550 – 3700 MHz
DETECTOR USED: Peak/Average
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

Carrier frequency, MHz	Peak to average ratio, dB	Limit, dBm	Margin, dB	Verdict
Channel Spacing 10 MHz				
Modulation QPSK				
3555.0	9.12	13.0	-3.88	Pass
3625.0	9.11	13.0	-3.89	Pass
3695.0	9.09	13.0	-3.91	Pass
Modulation 16QAM				
3555.0	9.03	13.0	-3.97	Pass
3625.0	9.00	13.0	-4.00	Pass
3695.0	8.95	13.0	-4.05	Pass
Modulation 64QAM				
3555.0	8.97	13.0	-4.03	Pass
3625.0	9.03	13.0	-3.97	Pass
3695.0	8.96	13.0	-4.04	Pass
Channel Spacing 20 MHz				
Modulation QPSK				
3560.0	9.45	13.0	-3.55	Pass
3625.0	9.48	13.0	-3.52	Pass
3690.0	9.45	13.0	-3.55	Pass
Modulation 16QAM				
3560.0	9.54	13.0	-3.46	Pass
3625.0	9.69	13.0	-3.31	Pass
3690.0	9.42	13.0	-3.58	Pass
Modulation 64QAM				
3560.0	9.54	13.0	-3.46	Pass
3625.0	9.60	13.0	-3.40	Pass
3690.0	9.54	13.0	-3.46	Pass

Reference numbers of test equipment used

HL 3301	HL 3302				
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Full description is given in Appendix A.



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Report ID: AIRRAD_FCC.32229.Rev3

Date of Issue: 27-Nov-19

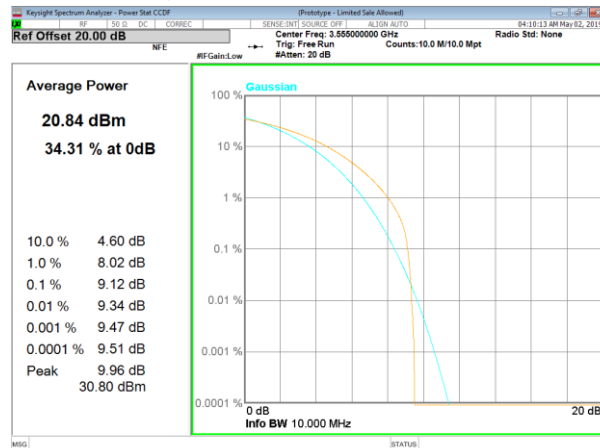
Test specification:		Section 96.41(g), Peak-to-average power ratio	
Test procedure:		Section 96.41(g)	
Test mode:		Verdict: PASS	
Date(s):			
14-Apr-19			
Temperature: 24 °C	Relative Humidity: 54 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.2.1 Peak to average power ratio test results at low frequency

CHANNEL SPACING:

ANTENNA PORT:

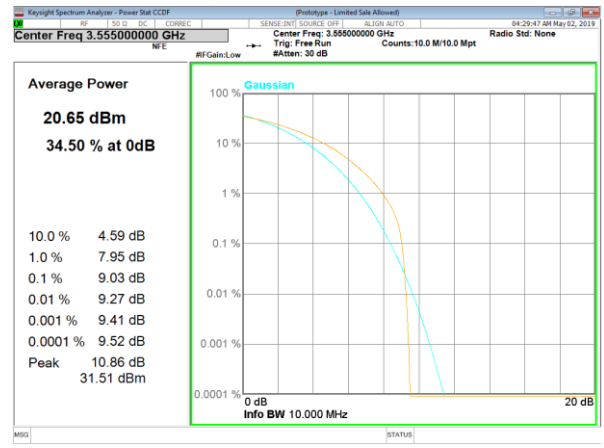
Modulation: QPSK



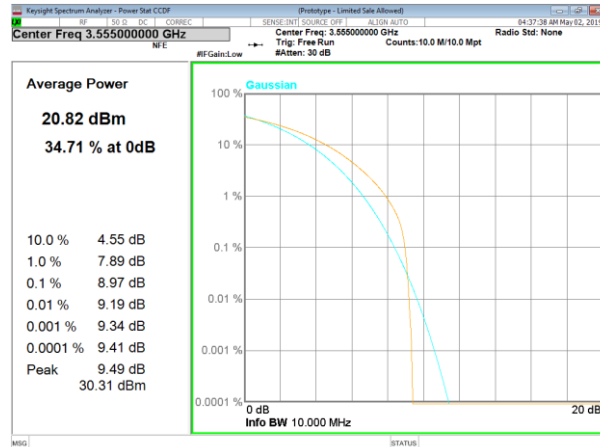
10 MHz

1

Modulation: 16QAM



Modulation: 64QAM





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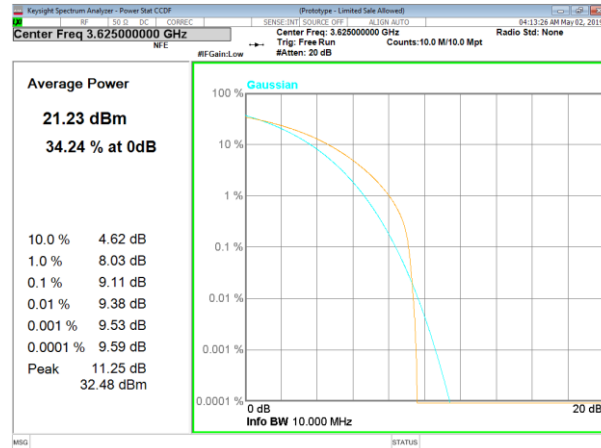
Test specification:		Section 96.41(g), Peak-to-average power ratio	
Test procedure:		Section 96.41(g)	
Test mode:		Verdict: PASS	
Date(s):			
14-Apr-19			
Temperature: 24 °C	Relative Humidity: 54 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.2.2 Peak output power test results at mid frequency

CHANNEL SPACING:

ANTENNA PORT:

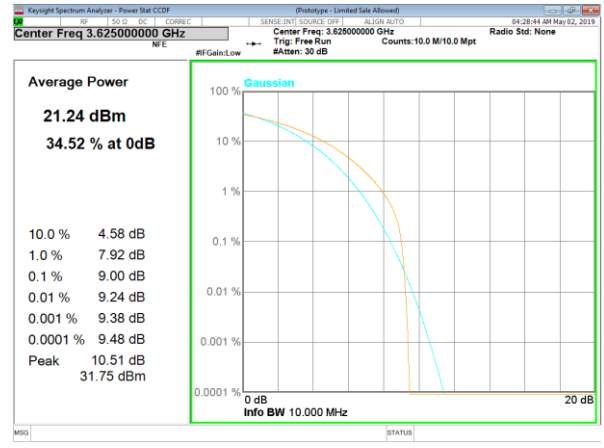
Modulation: QPSK



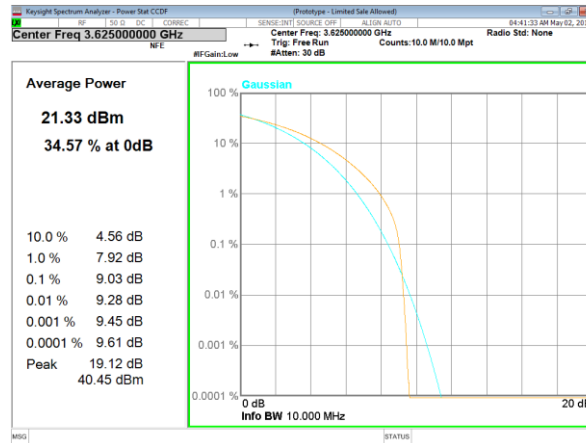
10 MHz

1

Modulation: 16QAM



Modulation: 64QAM





HERMON LABORATORIES

Report ID: AIRRAD_FCC.32229.Rev3

Date of Issue: 27-Nov-19

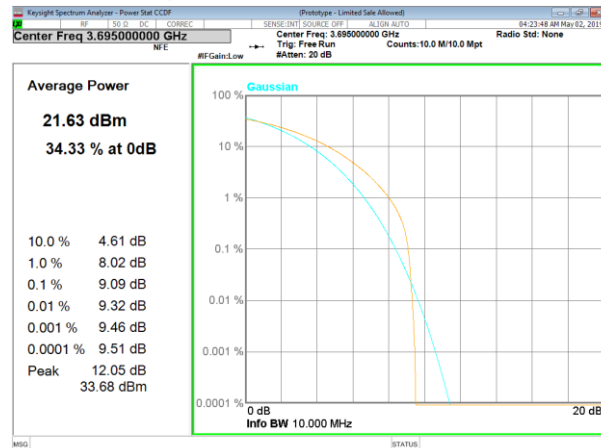
Test specification:		Section 96.41(g), Peak-to-average power ratio	
Test procedure:		Section 96.41(g)	
Test mode:		Verdict: PASS	
Date(s):			
14-Apr-19			
Temperature: 24 °C	Relative Humidity: 54 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.2.3 Peak output power test results at high frequency

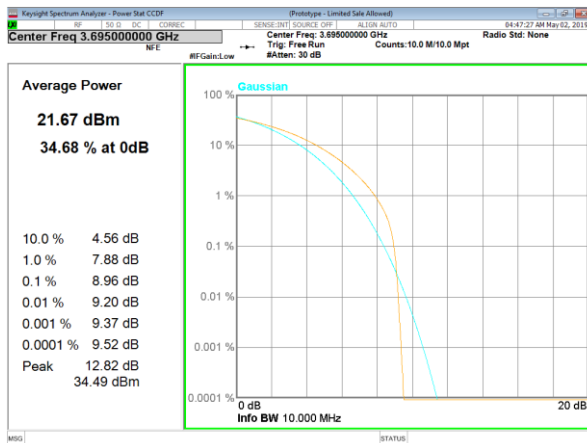
CHANNEL SPACING:

ANTENNA PORT:

Modulation: QPSK



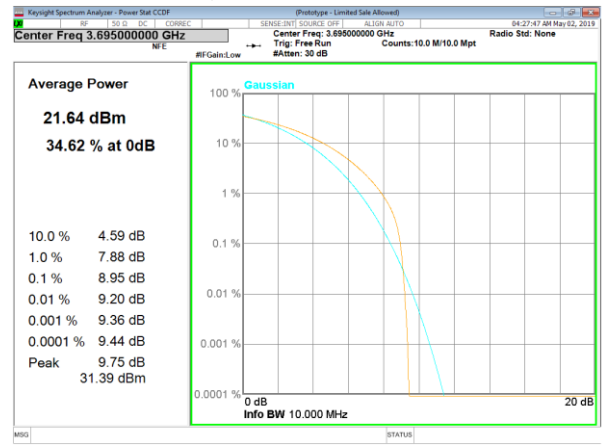
Modulation: 64QAM



10 MHz

1

Modulation: 16QAM





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Test specification:		Section 96.41(g), Peak-to-average power ratio	
Test procedure:		Section 96.41(g)	
Test mode:		Verdict: PASS	
Date(s):			
14-Apr-19			
Temperature: 24 °C	Relative Humidity: 54 %	Air Pressure: 1010 hPa	Power: 56 VDC
Remarks:			

Plot 7.2.4 Peak to average power ratio test results at low frequency

CHANNEL SPACING:

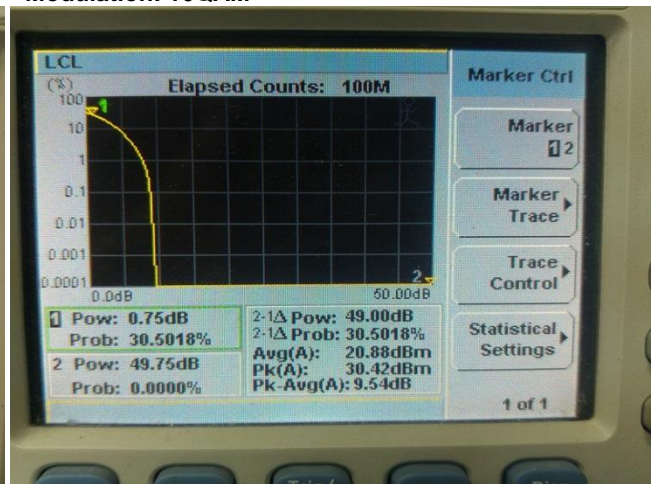
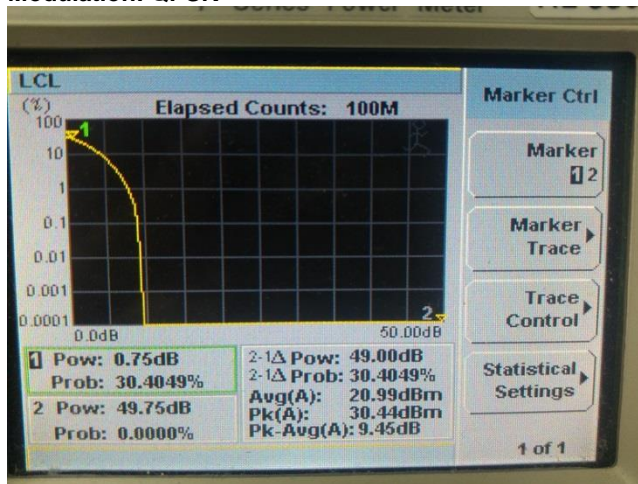
20 MHz

ANTENNA PORT:

1

Modulation: QPSK

Modulation: 16QAM



Modulation: 64QAM

