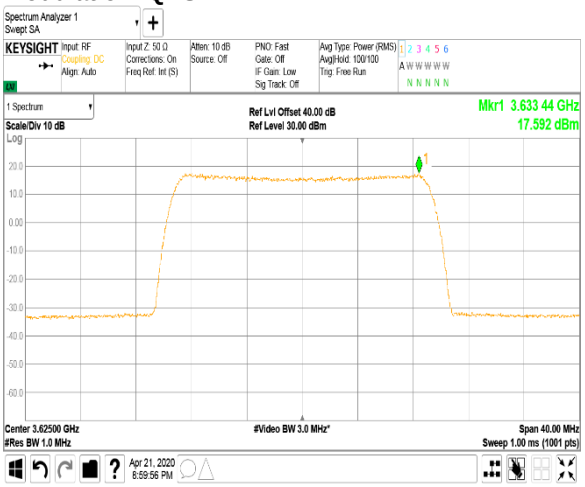
Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

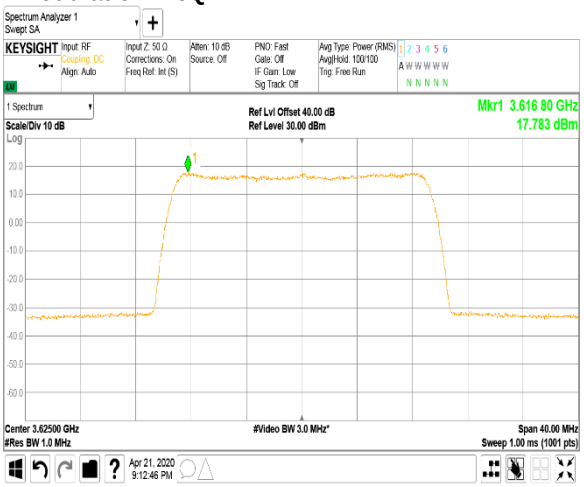
Plot 7.1.14 Peak spectral power density at mid frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 1

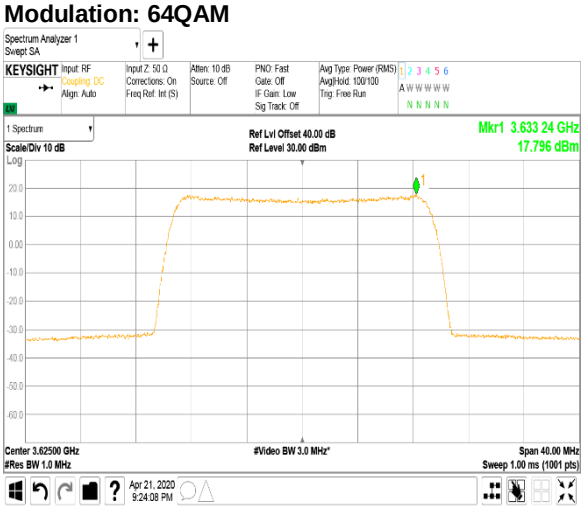
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

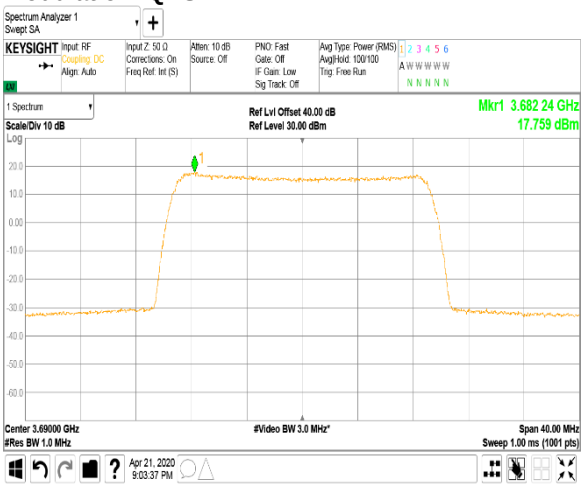


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

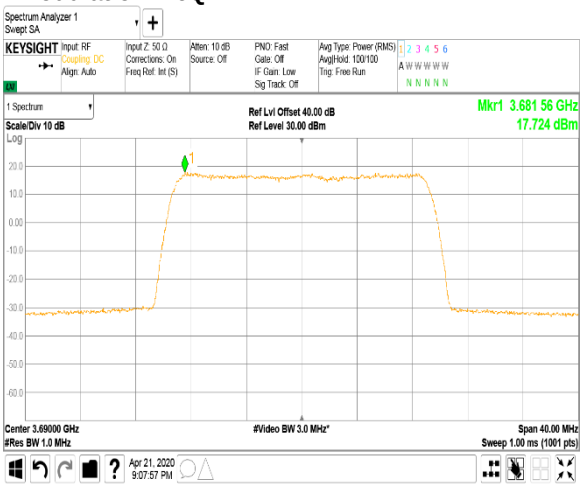
Plot 7.1.15 Peak spectral power density at high frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 1

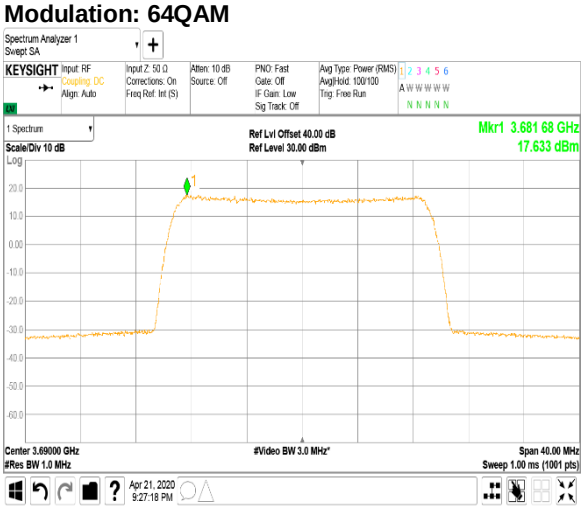
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

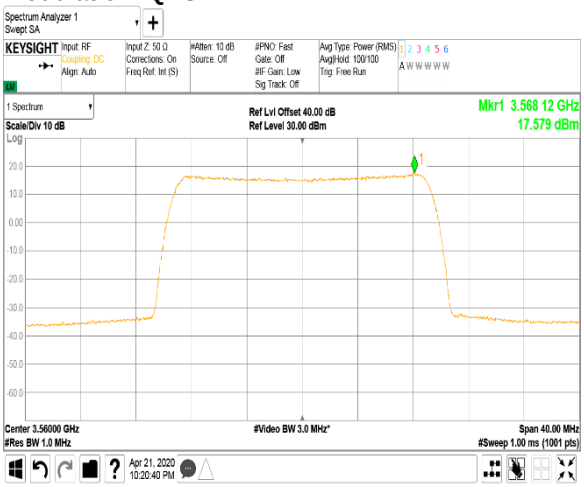


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

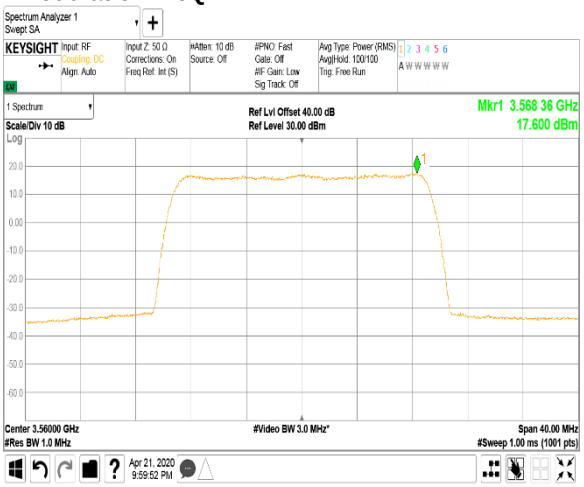
Plot 7.1.16 Peak spectral power density at low frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 2

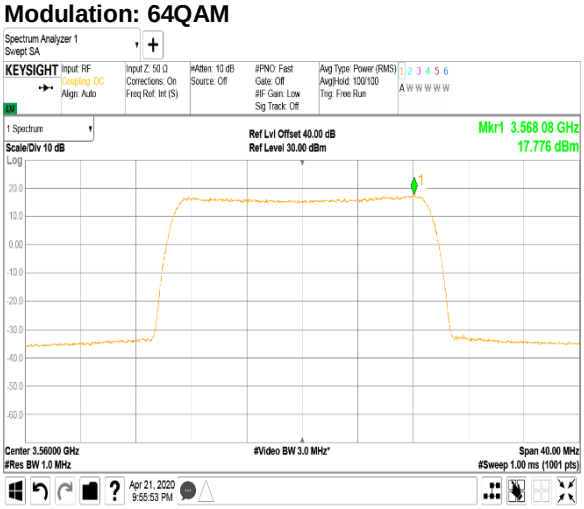
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

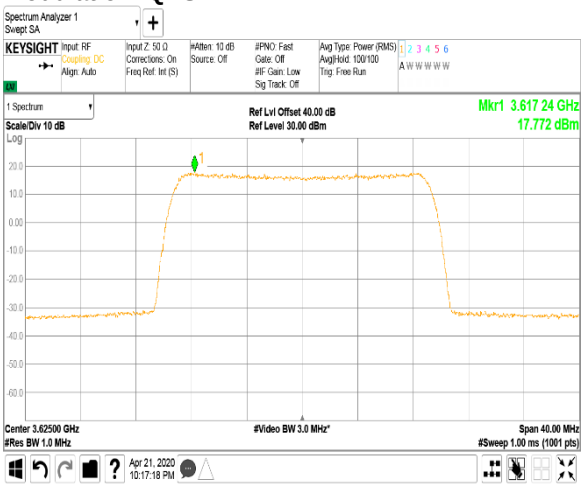


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

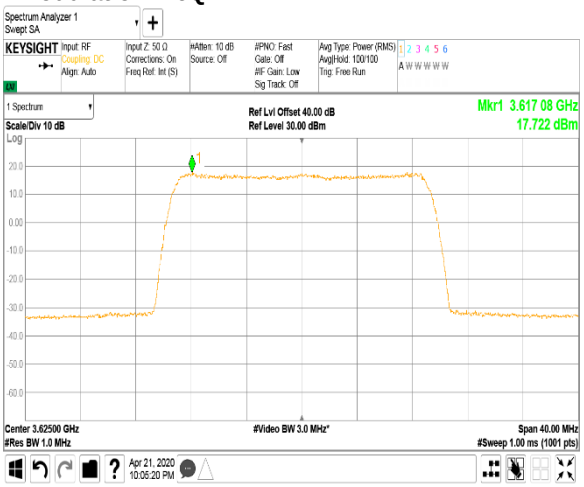
Plot 7.1.17 Peak spectral power density at mid frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 2

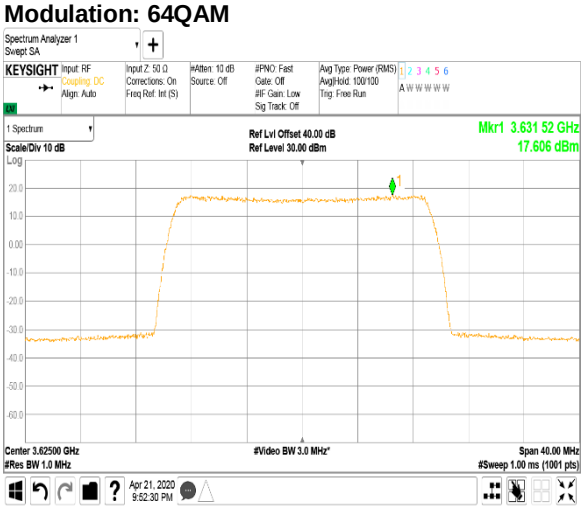
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

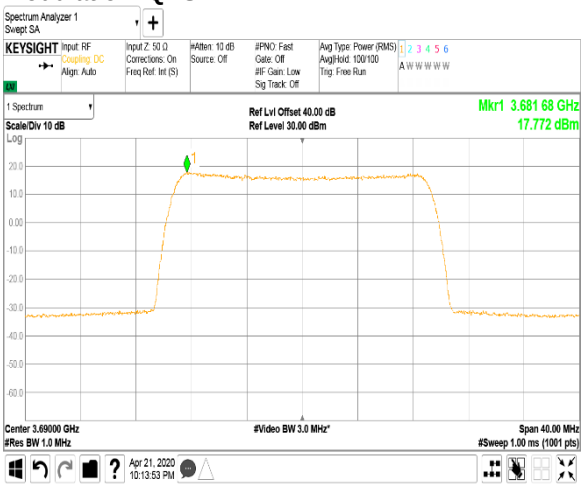


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

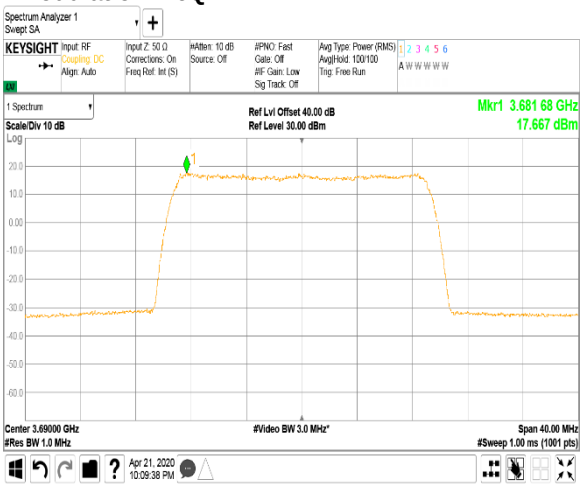
Plot 7.1.18 Peak spectral power density at high frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 2

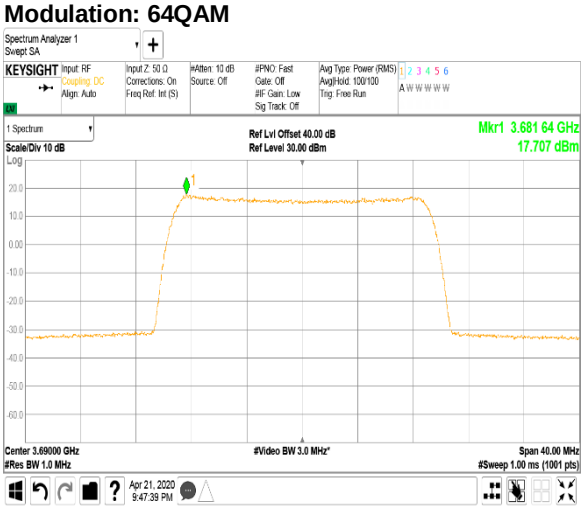
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

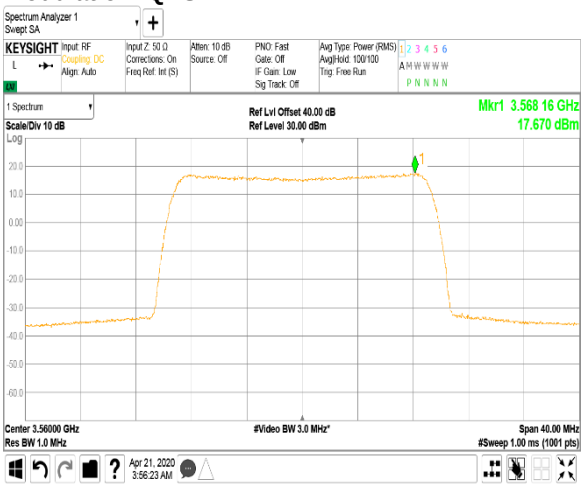


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

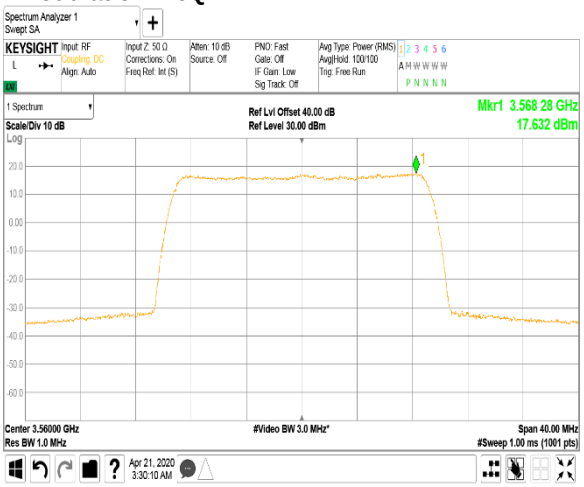
Plot 7.1.19 Peak spectral power density at low frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 3

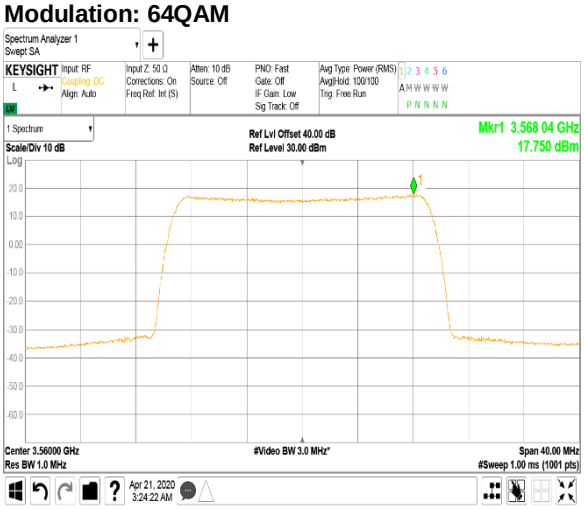
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

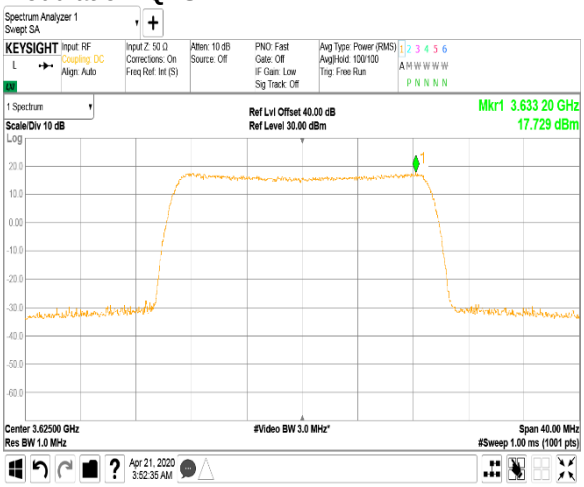


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

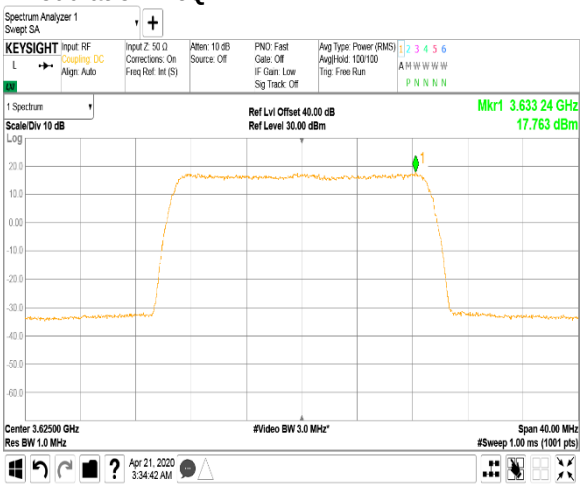
Plot 7.1.20 Peak spectral power density at mid frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 3

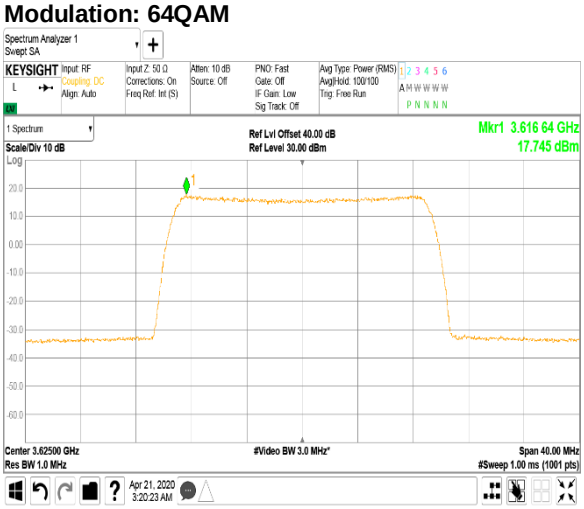
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

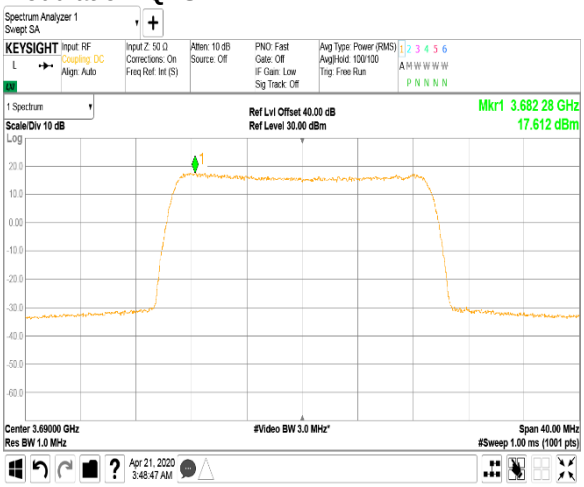


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

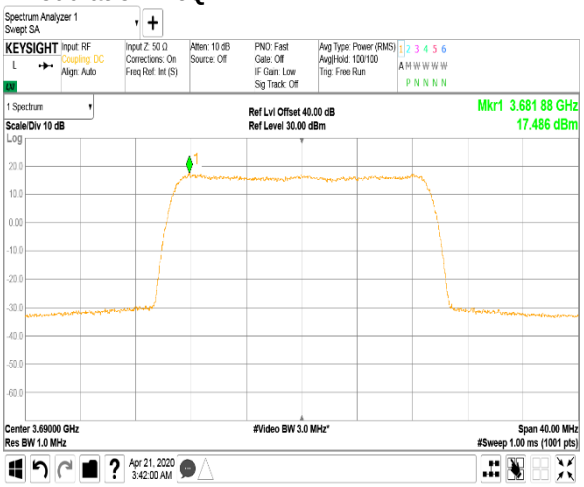
Plot 7.1.21 Peak spectral power density at high frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 3

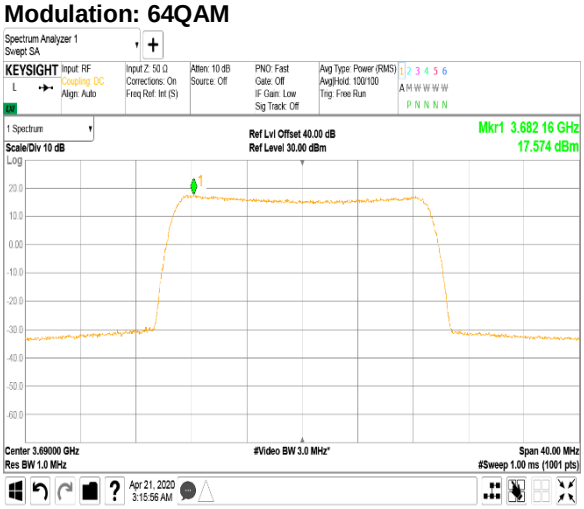
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

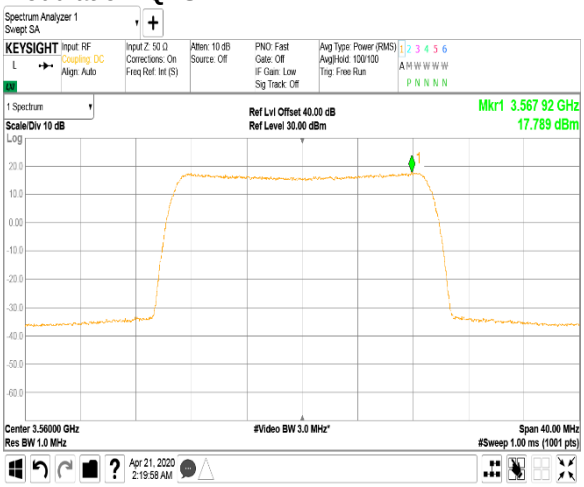


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

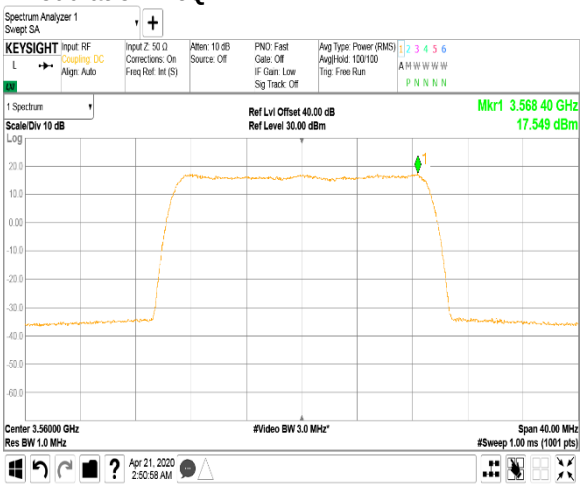
Plot 7.1.22 Peak spectral power density at low frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 4

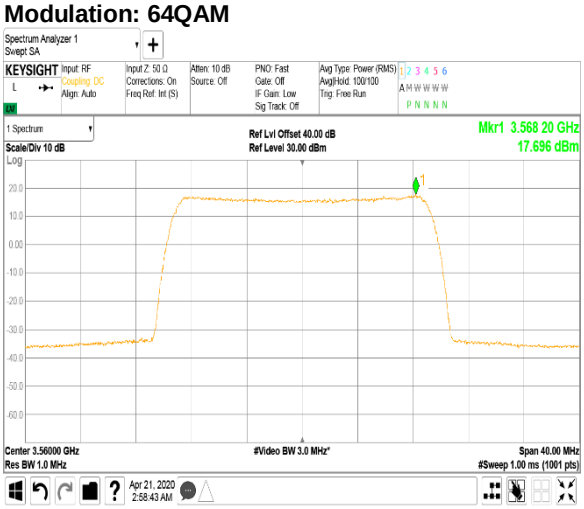
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

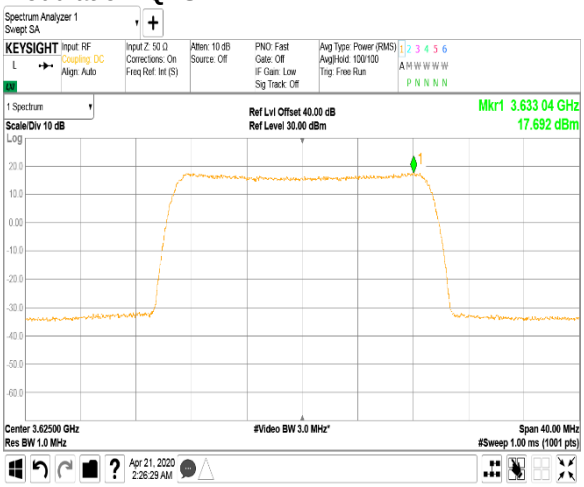


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

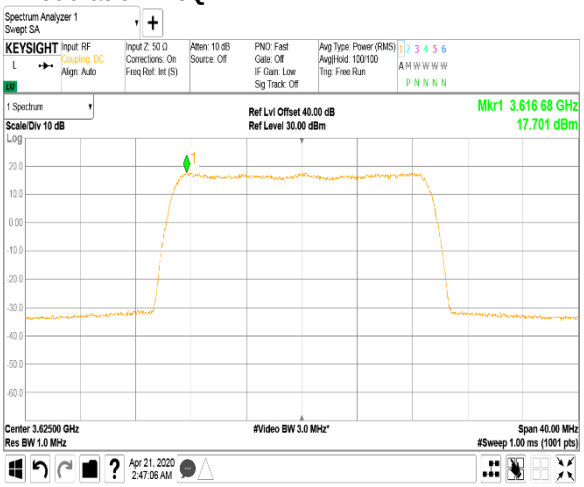
Plot 7.1.23 Peak spectral power density at mid frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 4

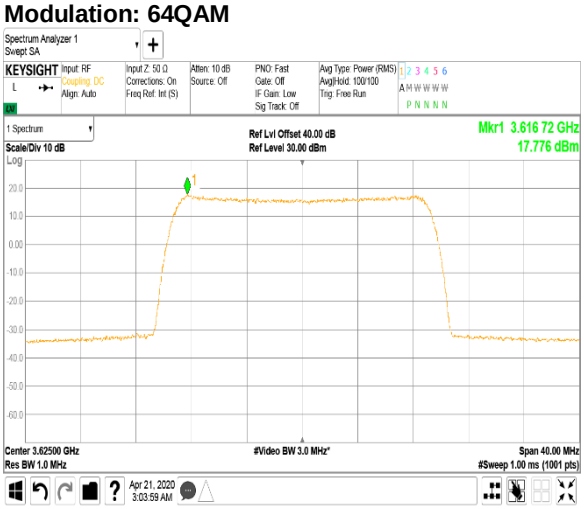
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

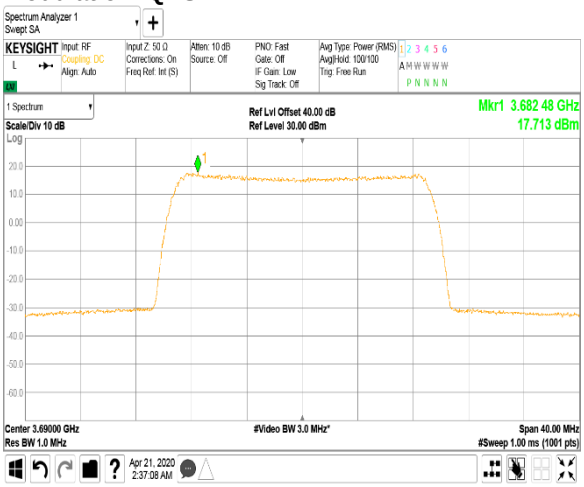


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

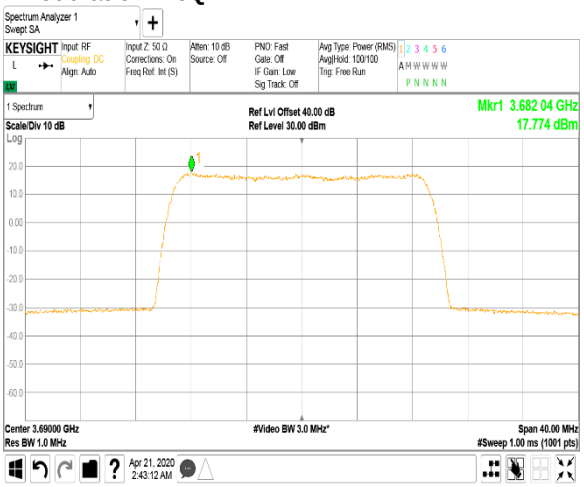
Plot 7.1.24 Peak spectral power density at high frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 4

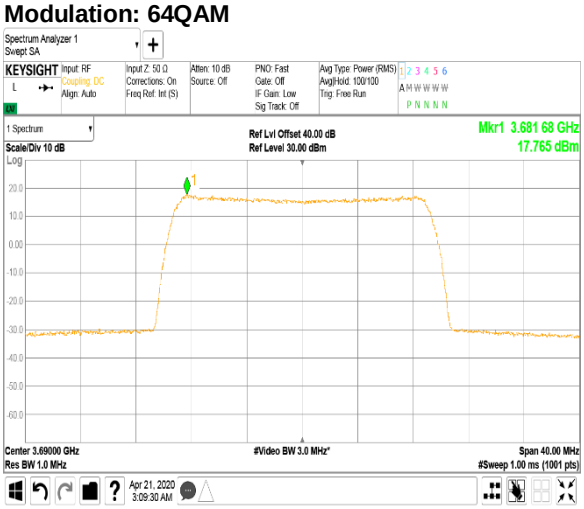
Modulation: QPSK



Modulation: 16QAM

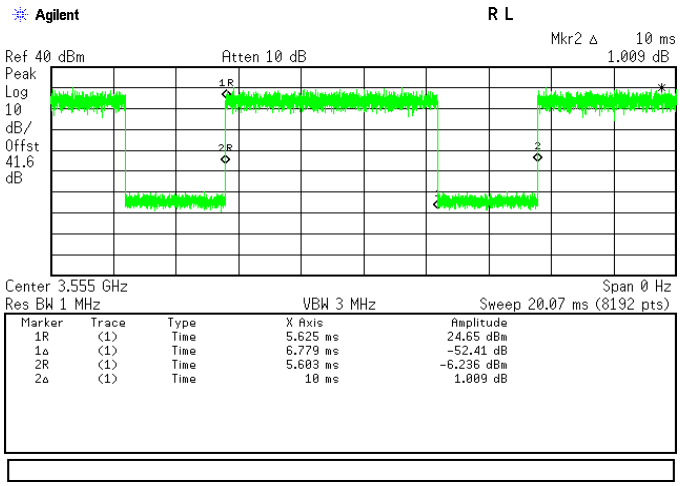


Modulation: 64QAM

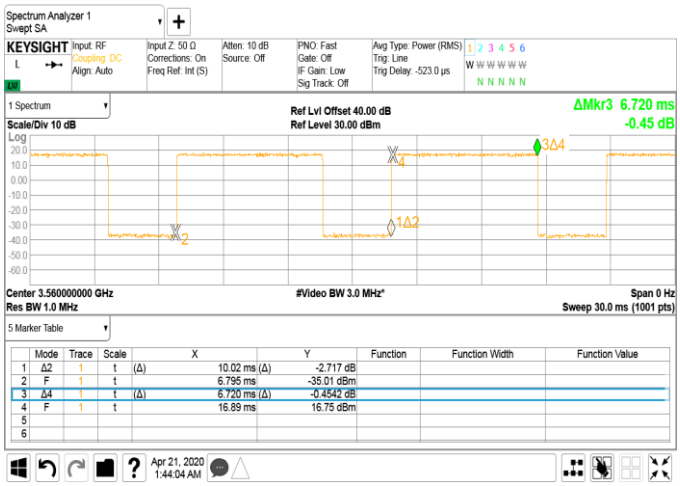


Test specification:	Section 96.41(b), Maximum EIRP and maximum power spectral density		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	22-Apr-20		
Temperature: 24 ºC	Relative Humidity: 55 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.1.25 Transmission pulse duration and pulse period



Duty cycle factor = 10*log(6.82/10) = -1.67 dB



Duty cycle factor = 10*log(6.75/10) = -1.70

Test specification:	Section 96.41(g), Peak-to- average power ratio		
Test procedure:	Section 96.41(g)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	21-Jul-20		
Temperature: 24.3. ºC	Relative Humidity: 48 %	Air Pressure: 1010 hPa	Power: 48 VDC
Remarks:			

7.2 Peak-to-average power ratio (PAPR) 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

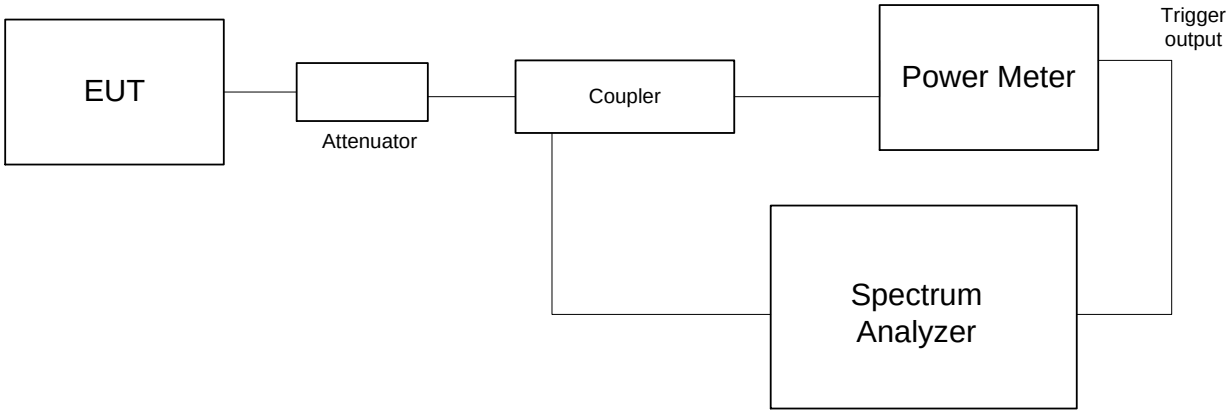
7.2.2 Test procedure

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-to-average power ratio 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):	21-Jul-20		
Temperature: 24.3. ºC	**Relative Humidity:** 48 %	**Air Pressure:** 1010 hPa	**Power:** 48 VDC
Remarks:			

Table 7.2.2 Peak-to-average power ratio 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	9.35	13.0	-3.65	Pass
3625.0	9.15	13.0	-3.85	Pass
3695.0	9.25	13.0	-3.75	Pass
Modulation 16QAM				
3555.0	9.13	13.0	-3.87	Pass
3625.0	9.18	13.0	-3.82	Pass
3695.0	9.05	13.0	-3.95	Pass
Modulation 64QAM				
3555.0	9.07	13.0	-3.93	Pass
3625.0	9.22	13.0	-3.78	Pass
3695.0	9.32	13.0	-3.68	Pass
Channel spacing 20 MHz				
Modulation QPSK				
3560.0	9.38	13.0	-3.62	Pass
3625.0	9.34	13.0	-3.66	Pass
3690.0	9.46	13.0	-3.54	Pass
Modulation 16QAM				
3560.0	8.66	13.0	-4.34	Pass
3625.0	9.17	13.0	-3.83	Pass
3690.0	9.25	13.0	-3.75	Pass
Modulation 64QAM				
3560.0	9.16	13.0	-3.84	Pass
3625.0	9.25	13.0	-3.75	Pass
3690.0	9.29	13.0	-3.71	Pass

Reference numbers of test equipment used

HL 5376	HL 3901	HL 4366	HL 3301	HL 3302			

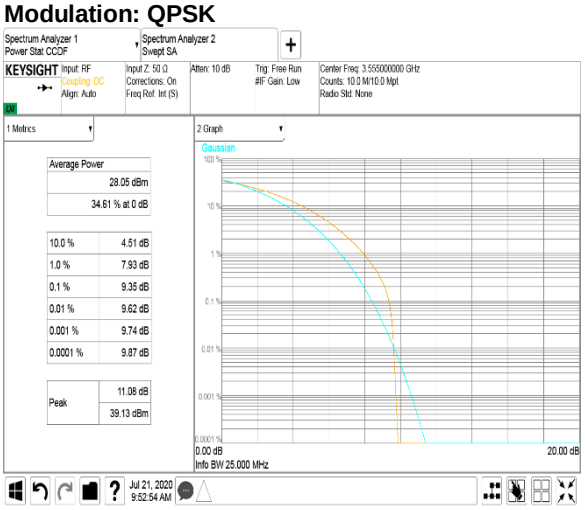
Full description is given in Appendix A.

Test specification:	Section 96.41(g), Peak-to- average power ratio		
Test procedure:	Section 96.41(g)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	21-Jul-20		
Temperature: 24.3. ºC	Relative Humidity: 48 %	Air Pressure: 1010 hPa	Power: 48 VDC
Remarks:			

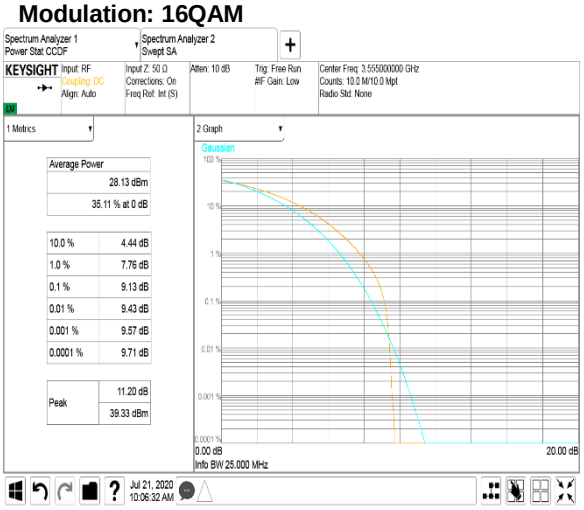
Plot 7.2.1 Peak-to-average power ratio test results at low frequency

CHANNEL SPACING: 10 MHz
ANTENNA PORT: 1

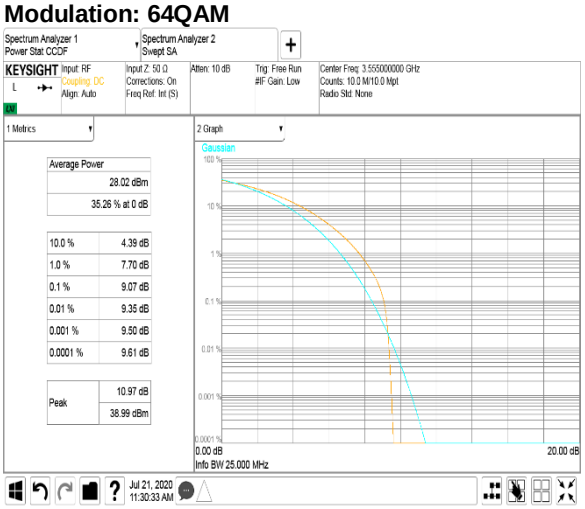
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

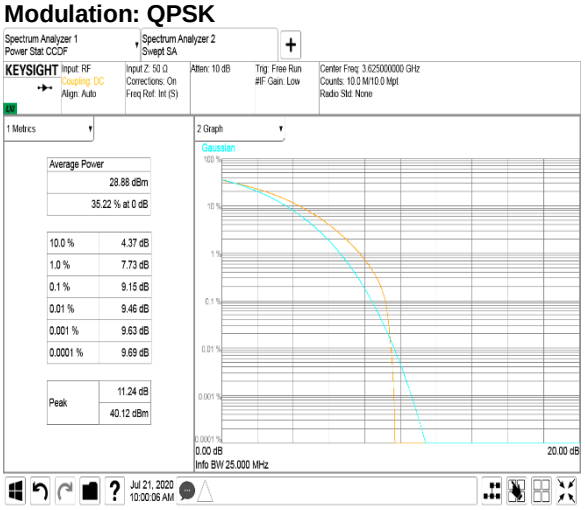


Test specification:	Section 96.41(g), Peak-to- average power ratio		
Test procedure:	Section 96.41(g)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	21-Jul-20		
Temperature: 24.3. ºC	Relative Humidity: 48 %	Air Pressure: 1010 hPa	Power: 48 VDC
Remarks:			

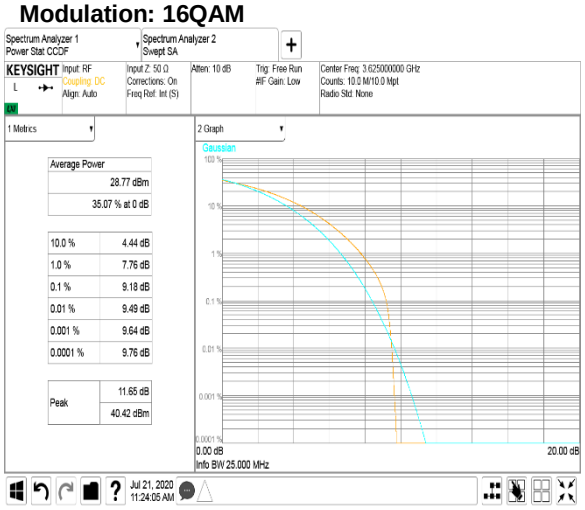
Plot 7.2.2 Peak-to-average power ratio test results at mid frequency

CHANNEL SPACING: 10 MHz
ANTENNA PORT: 1

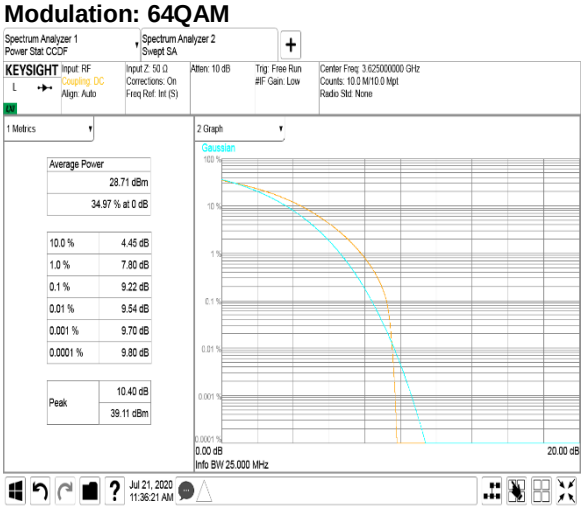
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

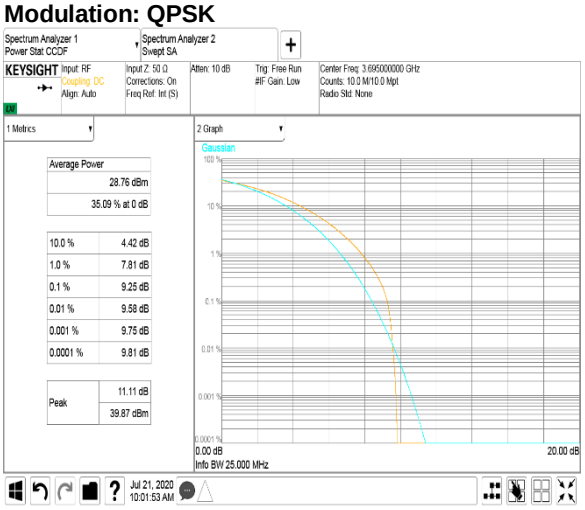


Test specification:	Section 96.41(g), Peak-to- average power ratio		
Test procedure:	Section 96.41(g)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	21-Jul-20		
Temperature: 24.3. ºC	Relative Humidity: 48 %	Air Pressure: 1010 hPa	Power: 48 VDC
Remarks:			

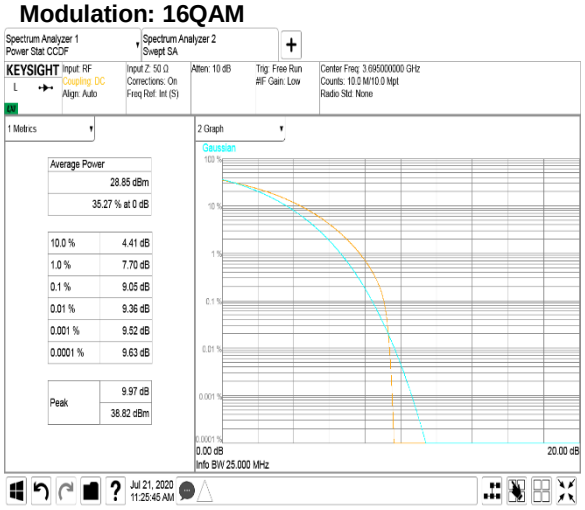
Plot 7.2.3 Peak-to-average power ratio test results at high frequency

CHANNEL SPACING: 10 MHz
ANTENNA PORT: 1

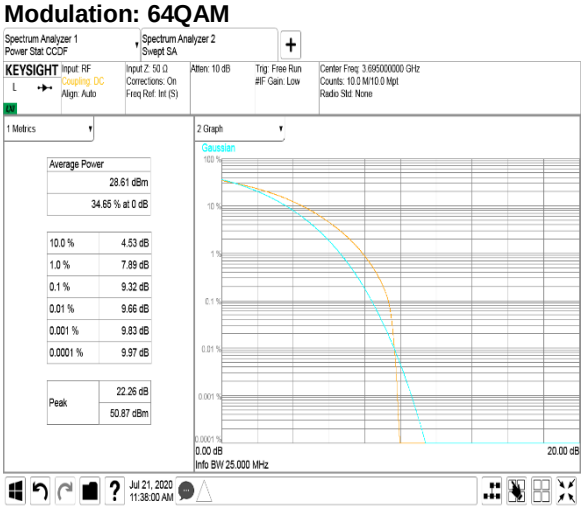
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

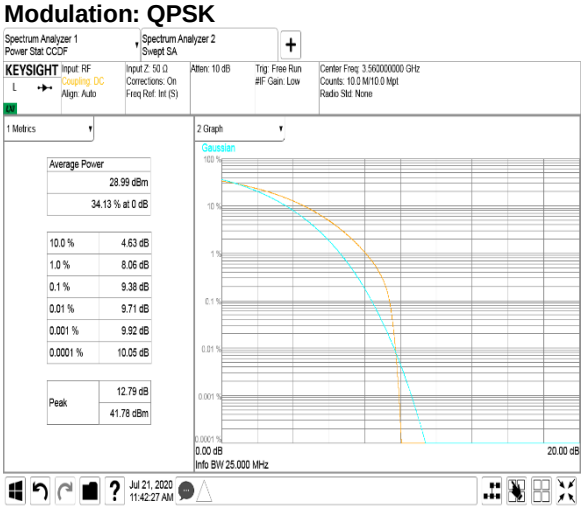


Test specification:	Section 96.41(g), Peak-to- average power ratio		
Test procedure:	Section 96.41(g)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	21-Jul-20		
Temperature: 24.3. ºC	Relative Humidity: 48 %	Air Pressure: 1010 hPa	Power: 48 VDC
Remarks:			

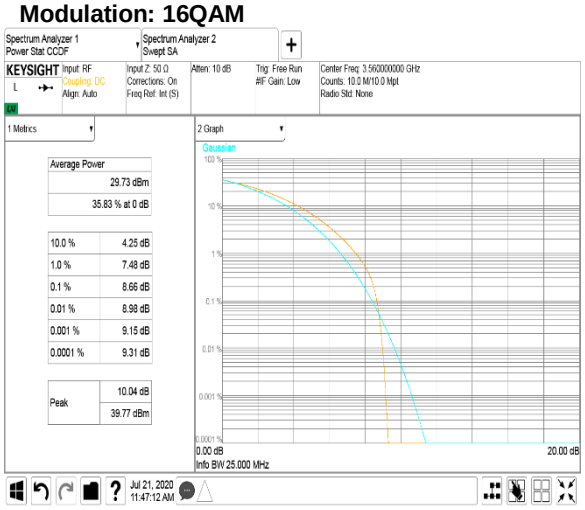
Plot 7.2.4 Peak-to-average power ratio test results at low frequency

CHANNEL SPACING: 20 MHz
ANTENNA PORT: 1

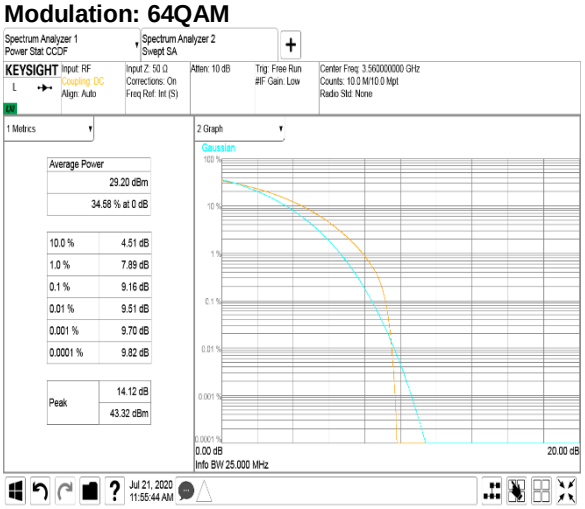
Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM

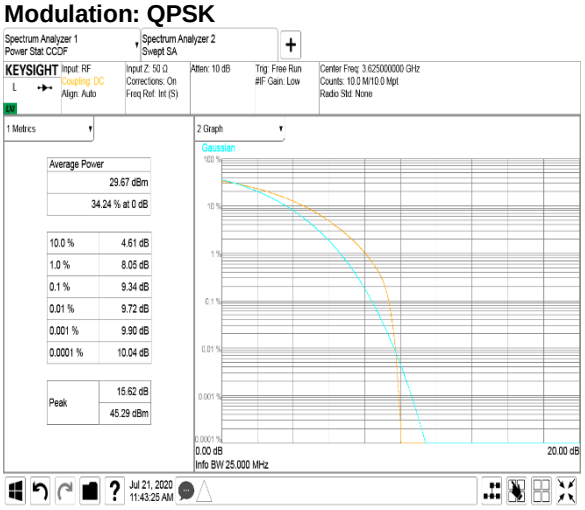


Test specification:	Section 96.41(g), Peak-to- average power ratio		
Test procedure:	Section 96.41(g)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	21-Jul-20		
Temperature: 24.3. ºC	Relative Humidity: 48 %	Air Pressure: 1010 hPa	Power: 48 VDC
Remarks:			

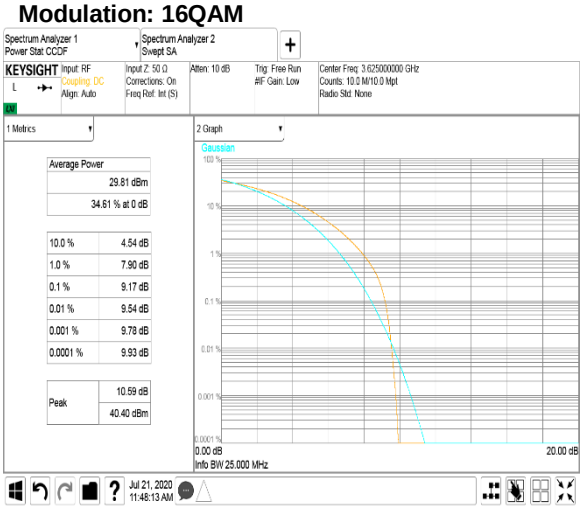
Plot 7.2.5 Peak-to-average power ratio test results at mid frequency

CHANNEL SPACING: 20 MHz
ANTENNA PORT: 1

Modulation: QPSK



Modulation: 16QAM



Modulation: 64QAM