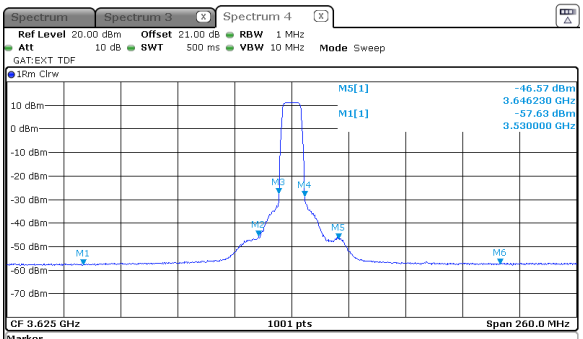
Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

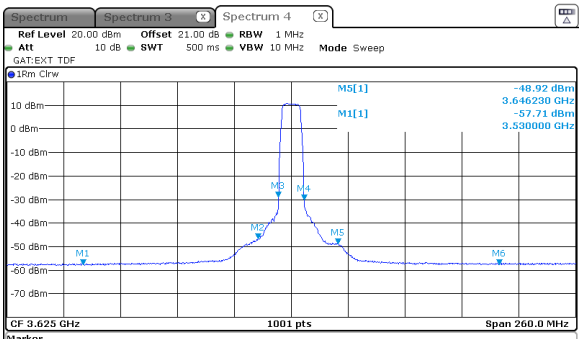
Plot 7.4.4 Emission outside the fundamental test results at mid carrier frequency

CHANNEL SPACING: 10 MHz
ANTENNA CHAIN: 2
Modulation: QPSK **Modulation: 256QAM**



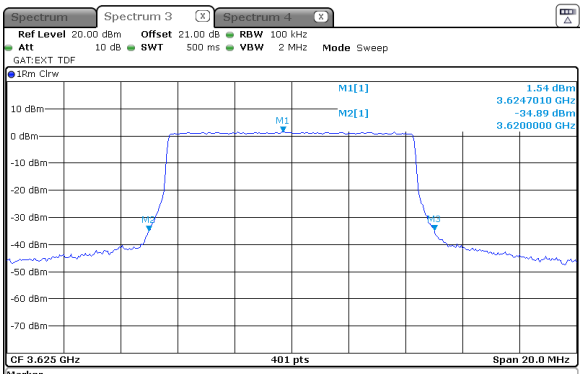
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-57.63 dBm		
M2		1	3.61 GHz	-45.53 dBm		
M3		1	3.619 GHz	-27.30 dBm		
M4		1	3.631 GHz	-28.63 dBm		
M5		1	3.64623 GHz	-46.57 dBm		
M6		1	3.72 GHz	-57.29 dBm		



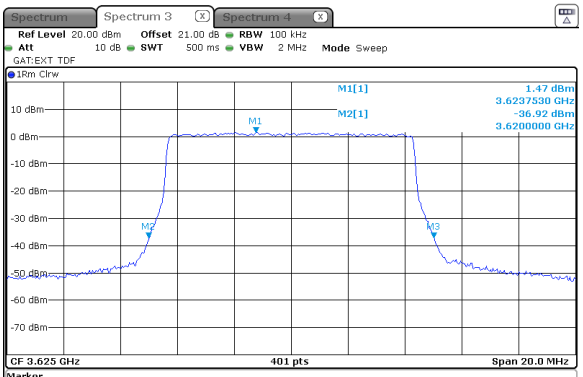
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-57.71 dBm		
M2		1	3.61 GHz	-46.79 dBm		
M3		1	3.619 GHz	-29.01 dBm		
M4		1	3.631 GHz	-30.03 dBm		
M5		1	3.64623 GHz	-48.92 dBm		
M6		1	3.72 GHz	-57.57 dBm		



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.624701 GHz	1.54 dBm		
M2		1	3.62 GHz	-34.89 dBm		
M3		1	3.63 GHz	-34.29 dBm		



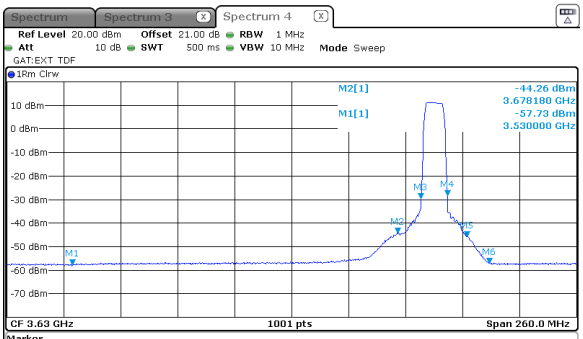
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.623753 GHz	1.47 dBm		
M2		1	3.62 GHz	-36.92 dBm		
M3		1	3.63 GHz	-37.08 dBm		

Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

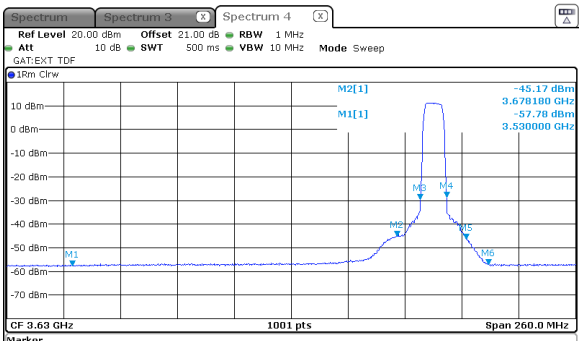
Plot 7.4.5 Emission outside the fundamental test results at high carrier frequency

CHANNEL SPACING: 10 MHz
ANTENNA CHAIN: 1
Modulation: QPSK **Modulation: 256QAM**



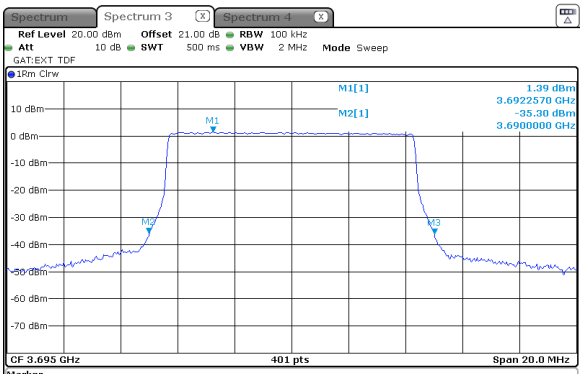
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-57.73 dBm		
M2		1	3.67818 GHz	-44.26 dBm		
M3		1	3.689 GHz	-29.49 dBm		
M4		1	3.701 GHz	-28.44 dBm		
M5		1	3.71 GHz	-45.67 dBm		
M6		1	3.72 GHz	-57.12 dBm		



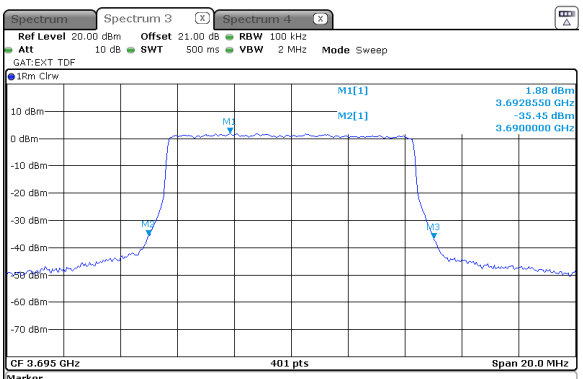
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-57.78 dBm		
M2		1	3.67818 GHz	-45.17 dBm		
M3		1	3.689 GHz	-29.69 dBm		
M4		1	3.701 GHz	-28.71 dBm		
M5		1	3.71 GHz	-46.31 dBm		
M6		1	3.72 GHz	-57.14 dBm		



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.692257 GHz	1.39 dBm		
M2		1	3.69 GHz	-35.30 dBm		
M3		1	3.7 GHz	-35.63 dBm		



Marker

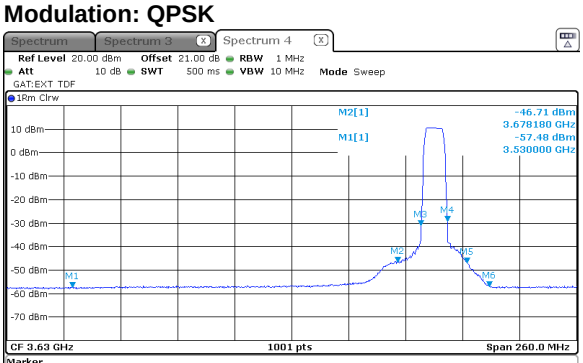
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.692855 GHz	1.88 dBm		
M2		1	3.69 GHz	-35.45 dBm		
M3		1	3.7 GHz	-36.42 dBm		

Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.4.6 Emission outside the fundamental test results at high carrier frequency

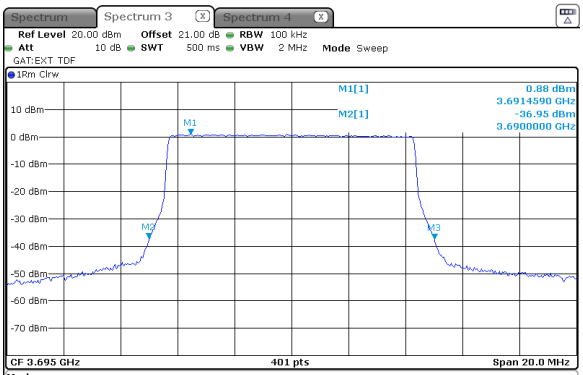
CHANNEL SPACING: 10 MHz
ANTENNA CHAIN: 2

Modulation: QPSK



Marker

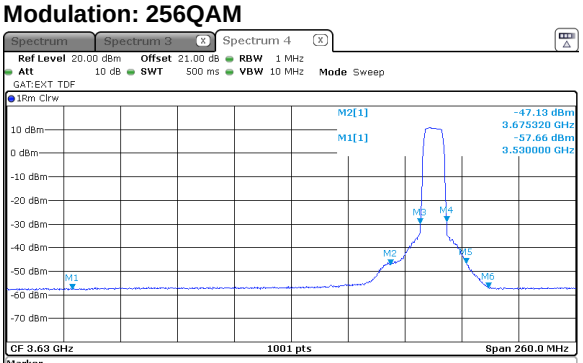
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-57.48 dBm		
M2		1	3.67818 GHz	-46.71 dBm		
M3		1	3.689 GHz	-31.19 dBm		
M4		1	3.701 GHz	-29.34 dBm		
M5		1	3.71 GHz	-47.00 dBm		
M6		1	3.72 GHz	-57.08 dBm		



Marker

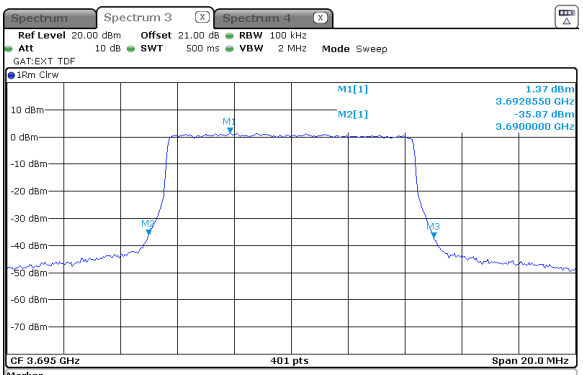
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.691459 GHz	0.88 dBm		
M2		1	3.69 GHz	-36.95 dBm		
M3		1	3.7 GHz	-36.79 dBm		

Modulation: 256QAM



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-57.66 dBm		
M2		1	3.67532 GHz	-47.13 dBm		
M3		1	3.689 GHz	-29.87 dBm		
M4		1	3.701 GHz	-28.86 dBm		
M5		1	3.71 GHz	-46.82 dBm		
M6		1	3.72 GHz	-56.98 dBm		



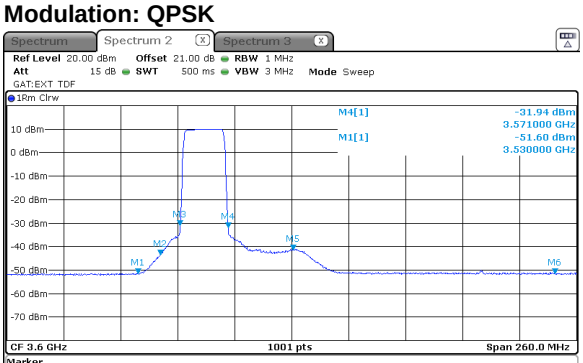
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.692855 GHz	1.37 dBm		
M2		1	3.69 GHz	-35.87 dBm		
M3		1	3.7 GHz	-36.84 dBm		

Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.4.7 Emission outside the fundamental test results at low carrier frequency

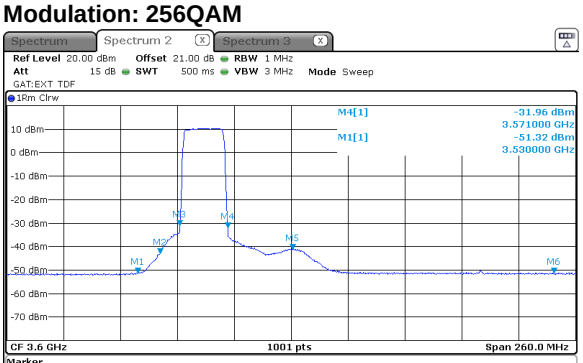
CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 1
Modulation: QPSK



Marker

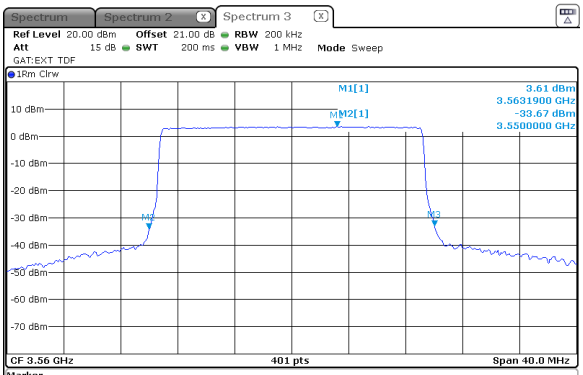
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.60 dBm		
M2		1	3.54 GHz	-43.68 dBm		
M3		1	3.549 GHz	-31.15 dBm		
M4		1	3.571 GHz	-31.94 dBm		
M5		1	3.60052 GHz	-41.46 dBm		
M6		1	3.72 GHz	-51.51 dBm		

Modulation: 256QAM



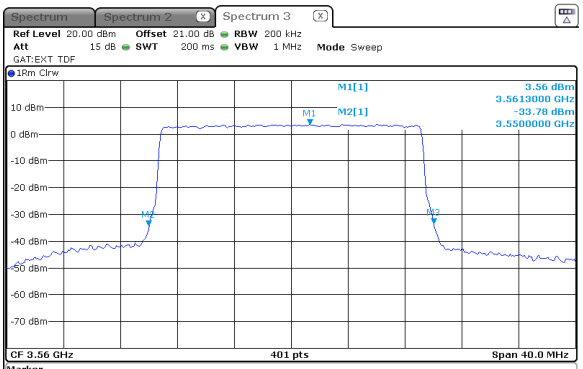
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.32 dBm		
M2		1	3.54 GHz	-42.86 dBm		
M3		1	3.549 GHz	-30.98 dBm		
M4		1	3.571 GHz	-31.96 dBm		
M5		1	3.60052 GHz	-41.10 dBm		
M6		1	3.72 GHz	-51.35 dBm		



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.56319 GHz	3.61 dBm		
M2		1	3.55 GHz	-33.67 dBm		
M3		1	3.57 GHz	-32.71 dBm		



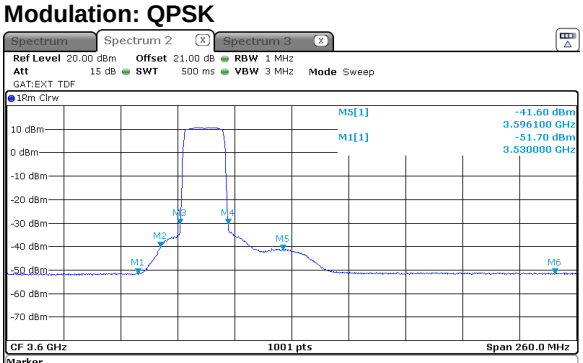
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.5613 GHz	3.56 dBm		
M2		1	3.55 GHz	-33.78 dBm		
M3		1	3.57 GHz	-33.04 dBm		

Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

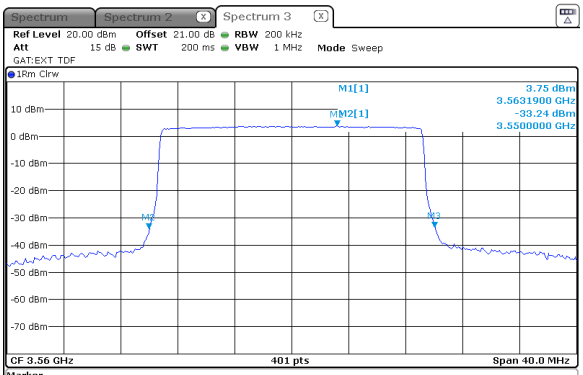
Plot 7.4.8 Emission outside the fundamental test results at low carrier frequency

CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 2
Modulation: QPSK



Marker

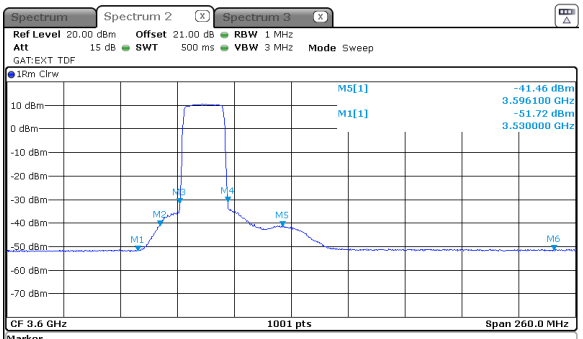
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.70 dBm		
M2		1	3.54 GHz	-40.36 dBm		
M3		1	3.549 GHz	-30.50 dBm		
M4		1	3.571 GHz	-30.59 dBm		
M5		1	3.5961 GHz	-41.60 dBm		
M6		1	3.72 GHz	-51.51 dBm		



Marker

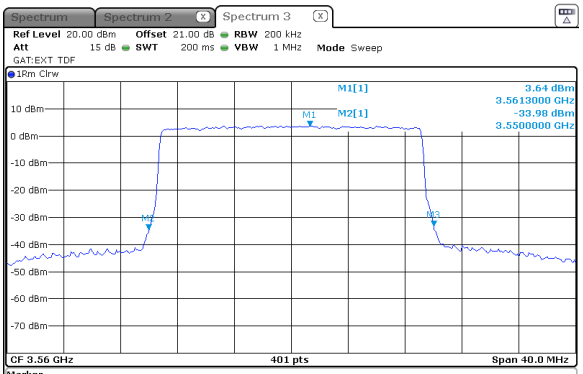
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.56319 GHz	3.75 dBm		
M2		1	3.55 GHz	-33.24 dBm		
M3		1	3.57 GHz	-33.42 dBm		

Modulation: 256QAM



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.72 dBm		
M2		1	3.54 GHz	-41.06 dBm		
M3		1	3.549 GHz	-31.69 dBm		
M4		1	3.571 GHz	-30.94 dBm		
M5		1	3.5961 GHz	-41.46 dBm		
M6		1	3.72 GHz	-51.51 dBm		



Marker

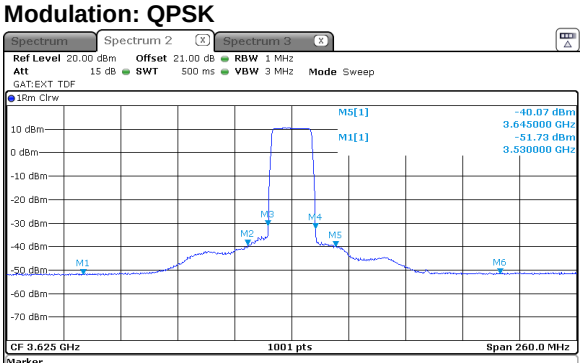
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.5613 GHz	3.64 dBm		
M2		1	3.55 GHz	-33.98 dBm		
M3		1	3.57 GHz	-32.62 dBm		

Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.4.9 Emission outside the fundamental test results at mid carrier frequency

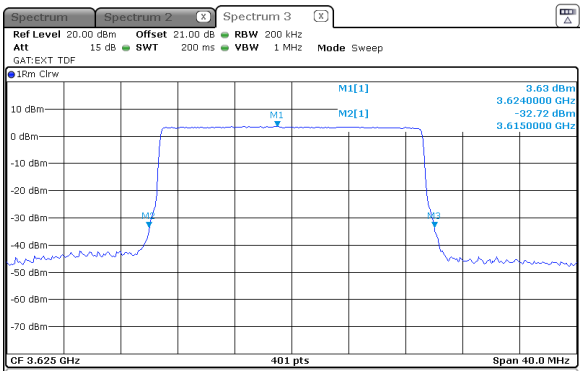
CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 1

Modulation: QPSK



Marker

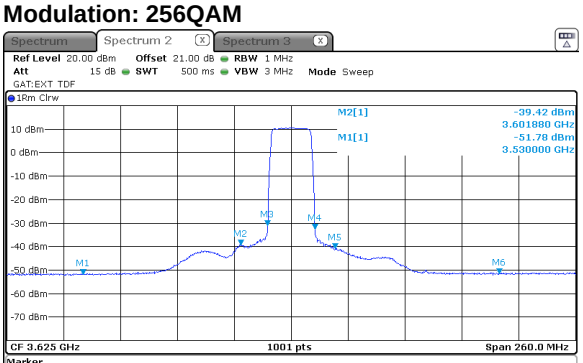
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.73 dBm		
M2		1	3.605 GHz	-39.34 dBm		
M3		1	3.614 GHz	-31.20 dBm		
M4		1	3.636 GHz	-32.33 dBm		
M5		1	3.645 GHz	-40.07 dBm		
M6		1	3.72 GHz	-51.58 dBm		



Marker

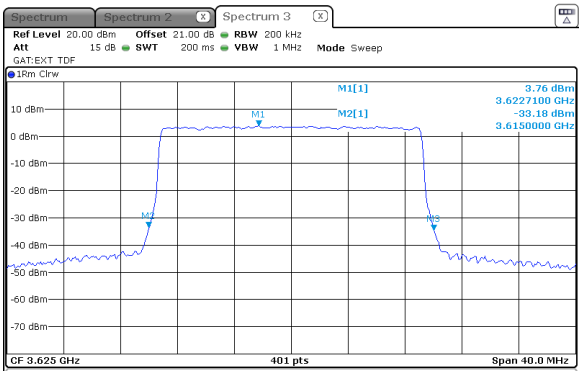
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.624 GHz	3.63 dBm		
M2		1	3.615 GHz	-32.72 dBm		
M3		1	3.635 GHz	-32.74 dBm		

Modulation: 256QAM



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.78 dBm		
M2		1	3.60188 GHz	-39.42 dBm		
M3		1	3.614 GHz	-31.06 dBm		
M4		1	3.636 GHz	-32.48 dBm		
M5		1	3.645 GHz	-40.93 dBm		
M6		1	3.72 GHz	-51.71 dBm		



Marker

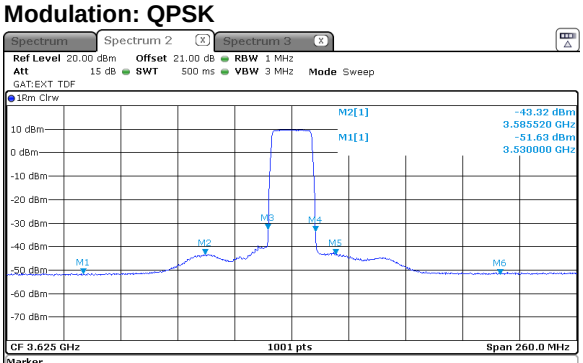
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.62271 GHz	3.76 dBm		
M2		1	3.615 GHz	-33.18 dBm		
M3		1	3.635 GHz	-34.30 dBm		

Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.4.10 Emission outside the fundamental test results at mid carrier frequency

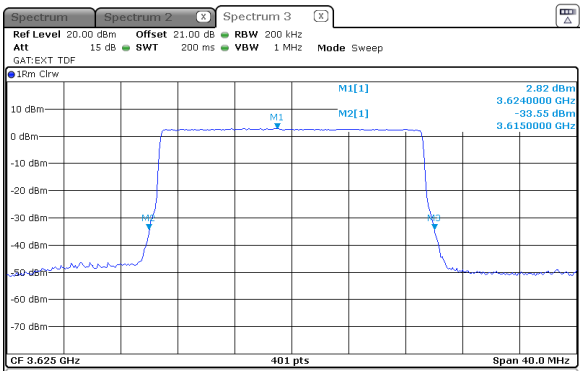
CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 2

Modulation: QPSK



Marker

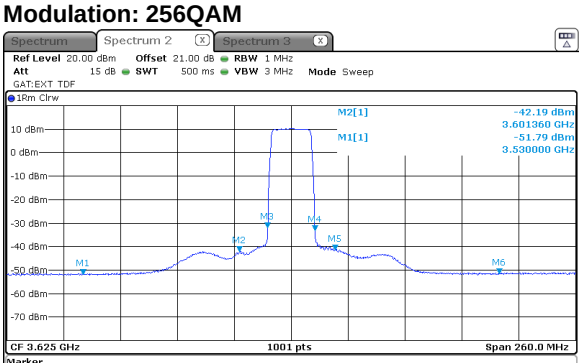
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.63 dBm		
M2		1	3.58552 GHz	-43.32 dBm		
M3		1	3.614 GHz	-32.68 dBm		
M4		1	3.636 GHz	-33.58 dBm		
M5		1	3.645 GHz	-43.43 dBm		
M6		1	3.72 GHz	-51.87 dBm		



Marker

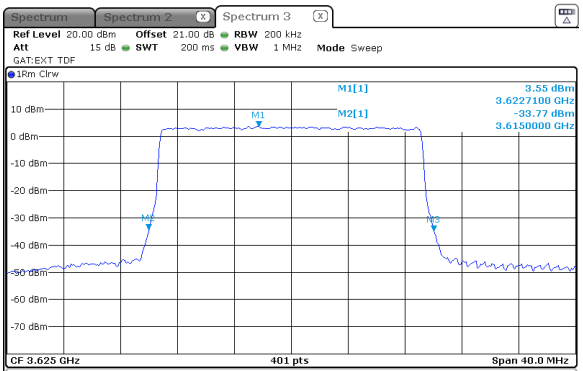
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.624 GHz	2.82 dBm		
M2		1	3.615 GHz	-33.55 dBm		
M3		1	3.635 GHz	-33.58 dBm		

Modulation: 256QAM



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.79 dBm		
M2		1	3.60136 GHz	-42.19 dBm		
M3		1	3.614 GHz	-31.95 dBm		
M4		1	3.636 GHz	-33.36 dBm		
M5		1	3.645 GHz	-41.49 dBm		
M6		1	3.72 GHz	-51.66 dBm		



Marker

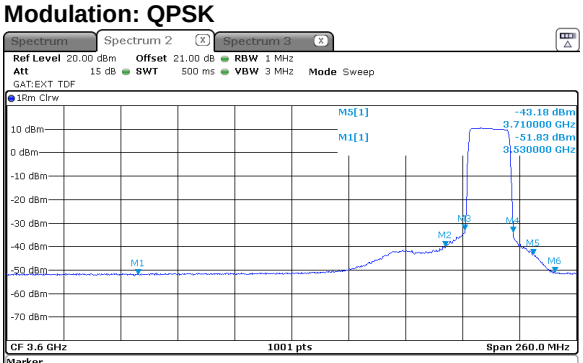
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.62271 GHz	3.55 dBm		
M2		1	3.615 GHz	-33.77 dBm		
M3		1	3.635 GHz	-34.40 dBm		

Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.4.11 Emission outside the fundamental test results at high carrier frequency

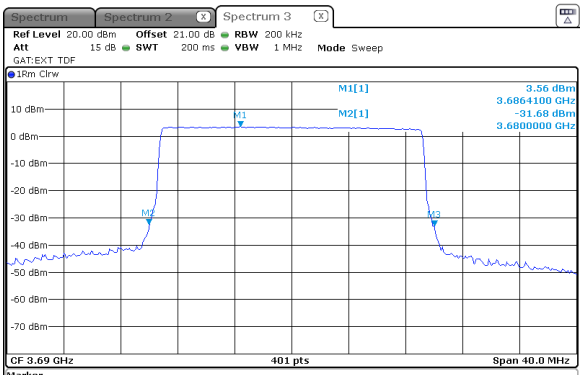
CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 1

Modulation: QPSK



Marker

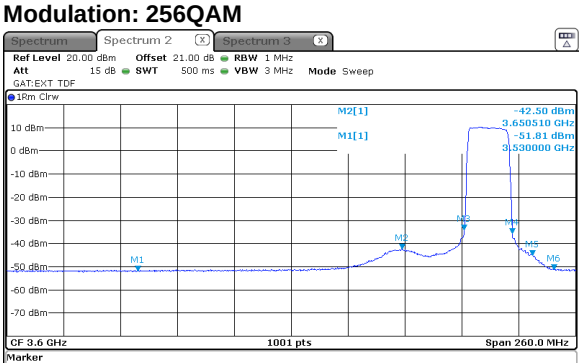
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.83 dBm		
M2		1	3.67 GHz	-40.01 dBm		
M3		1	3.679 GHz	-32.82 dBm		
M4		1	3.701 GHz	-33.81 dBm		
M5		1	3.71 GHz	-43.18 dBm		
M6		1	3.72 GHz	-50.84 dBm		



Marker

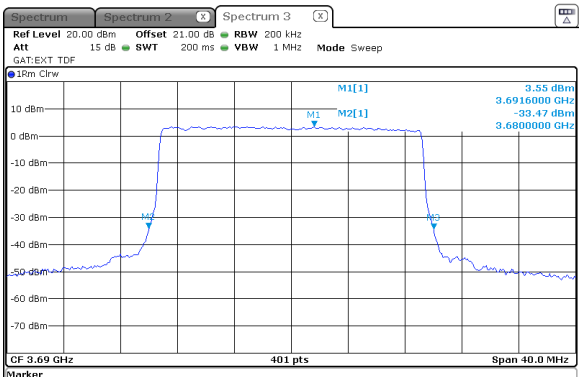
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.68641 GHz	3.56 dBm		
M2		1	3.68 GHz	-31.68 dBm		
M3		1	3.7 GHz	-32.44 dBm		

Modulation: 256QAM



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.81 dBm		
M2		1	3.65051 GHz	-42.50 dBm		
M3		1	3.679 GHz	-34.05 dBm		
M4		1	3.701 GHz	-35.80 dBm		
M5		1	3.71 GHz	-45.19 dBm		
M6		1	3.72 GHz	-51.18 dBm		



Marker

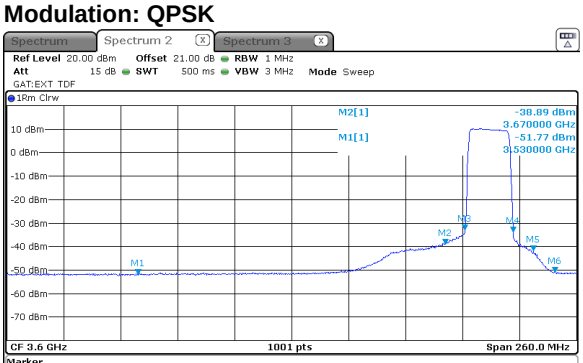
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.6916 GHz	3.55 dBm		
M2		1	3.68 GHz	-33.47 dBm		
M3		1	3.7 GHz	-33.62 dBm		

Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.4.12 Emission outside the fundamental test results at high carrier frequency

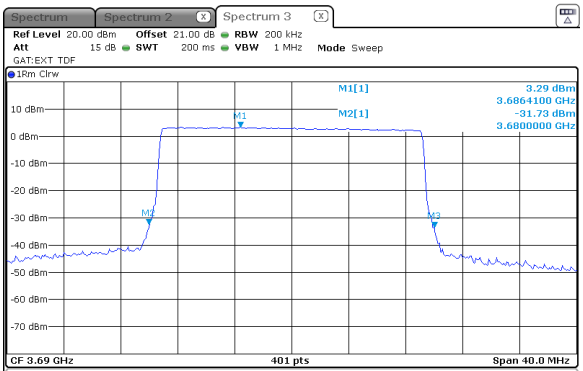
CHANNEL SPACING: 20 MHz
ANTENNA CHAIN: 2

Modulation: QPSK



Marker

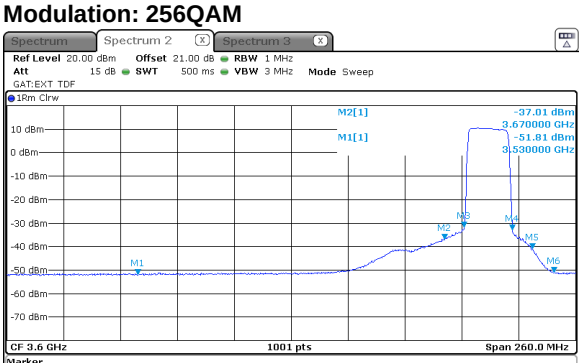
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.77 dBm		
M2		1	3.67 GHz	-38.89 dBm		
M3		1	3.679 GHz	-32.83 dBm		
M4		1	3.701 GHz	-33.94 dBm		
M5		1	3.71 GHz	-41.84 dBm		
M6		1	3.72 GHz	-50.86 dBm		



Marker

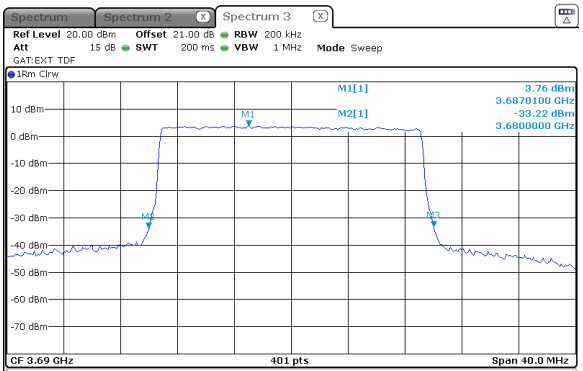
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.68641 GHz	3.29 dBm		
M2		1	3.68 GHz	-31.73 dBm		
M3		1	3.7 GHz	-32.72 dBm		

Modulation: 256QAM



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.53 GHz	-51.81 dBm		
M2		1	3.67 GHz	-37.01 dBm		
M3		1	3.679 GHz	-31.69 dBm		
M4		1	3.701 GHz	-32.84 dBm		
M5		1	3.71 GHz	-40.99 dBm		
M6		1	3.72 GHz	-51.10 dBm		



Marker

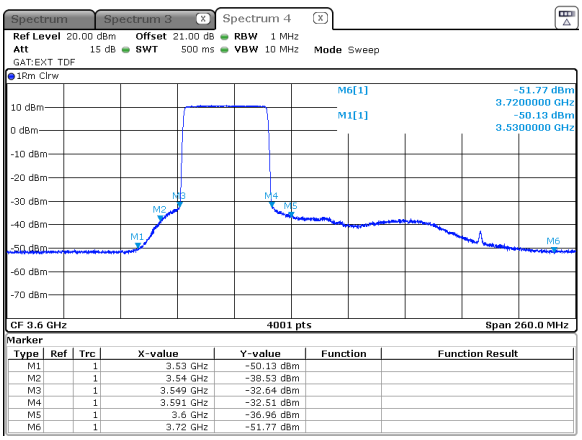
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.68701 GHz	3.76 dBm		
M2		1	3.68 GHz	-33.22 dBm		
M3		1	3.7 GHz	-32.93 dBm		

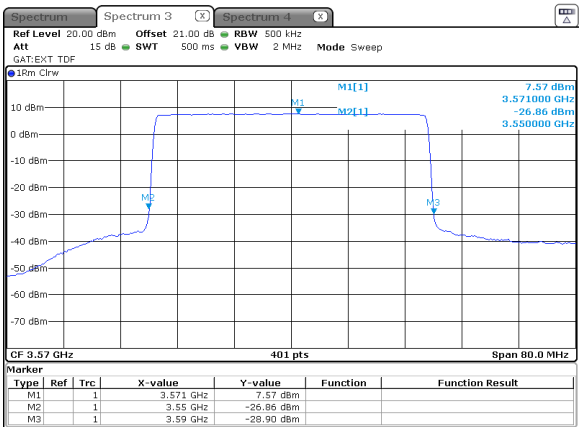
Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.4.13 Emission outside the fundamental test results at low carrier frequency

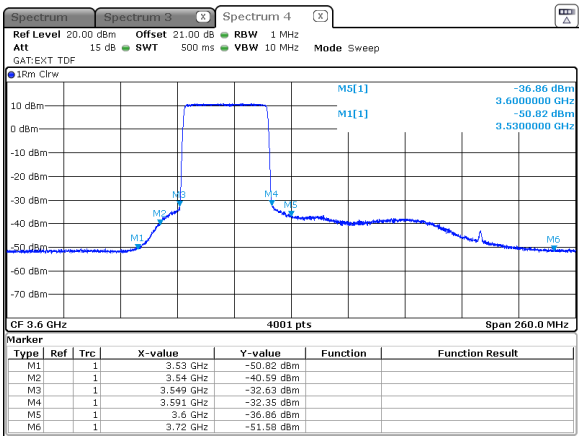
CHANNEL SPACING: 40 MHz
ANTENNA CHAIN: 1

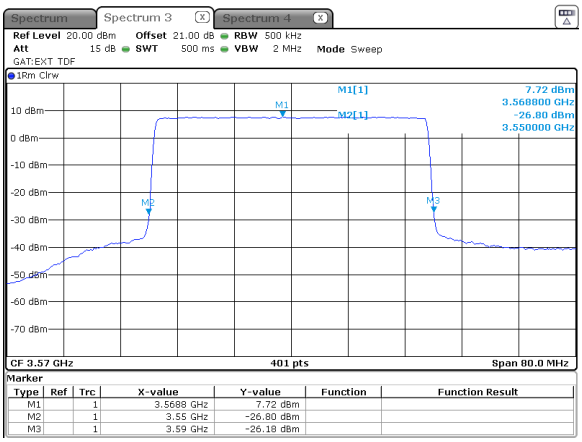
Modulation: QPSK





Modulation: 256QAM



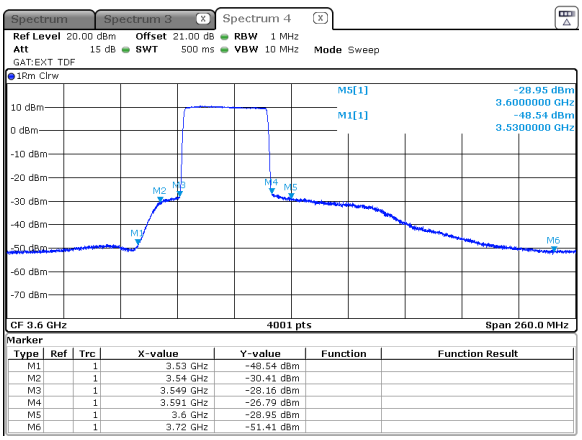


Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

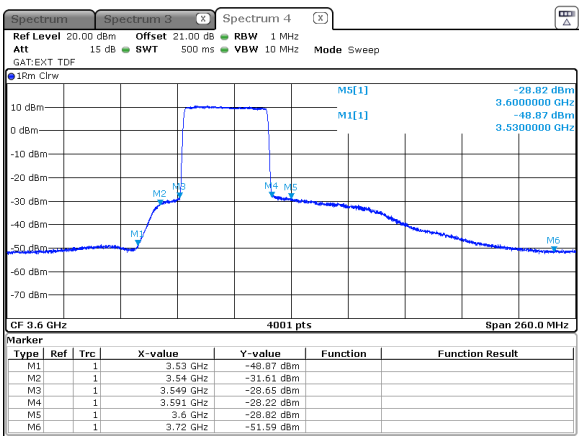
Plot 7.4.14 Emission outside the fundamental test results at low carrier frequency

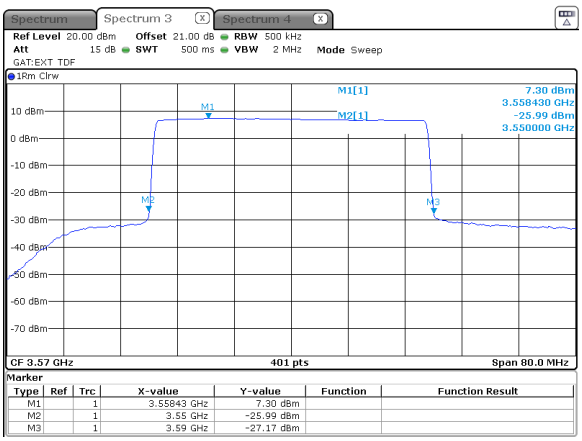
CHANNEL SPACING: 40 MHz
ANTENNA CHAIN: 2

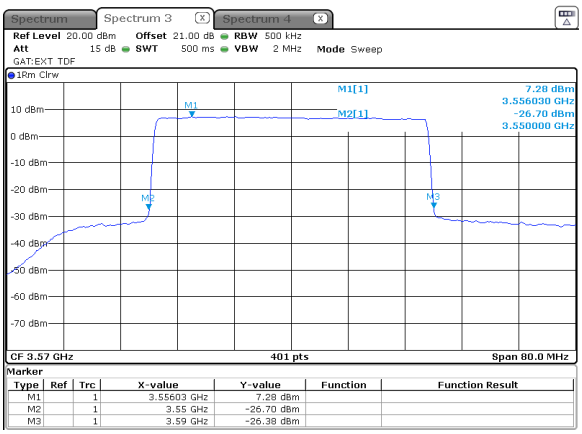
Modulation: QPSK



Modulation: 256QAM



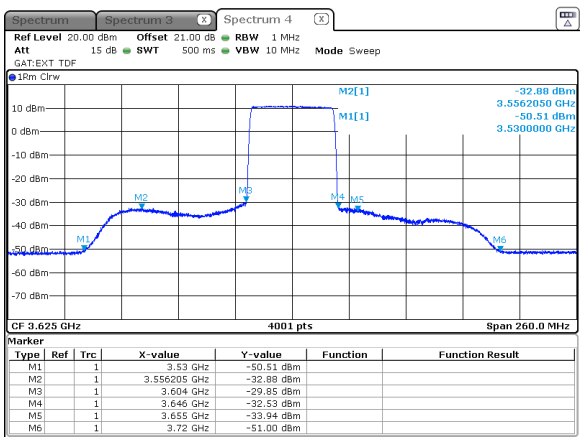


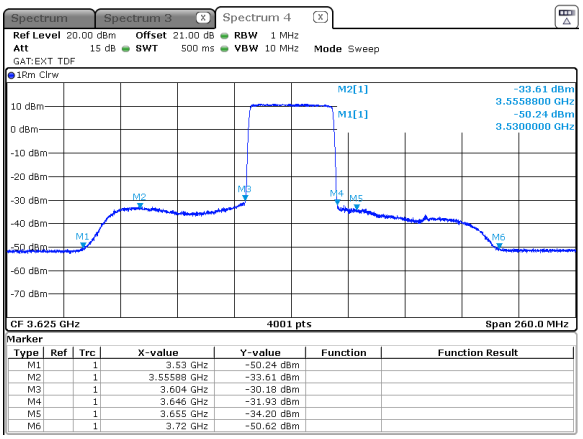


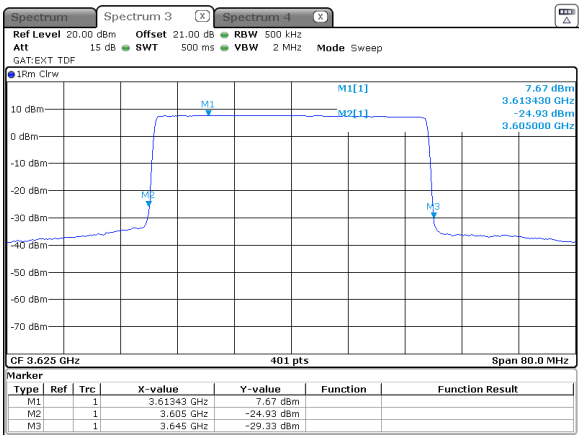
Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

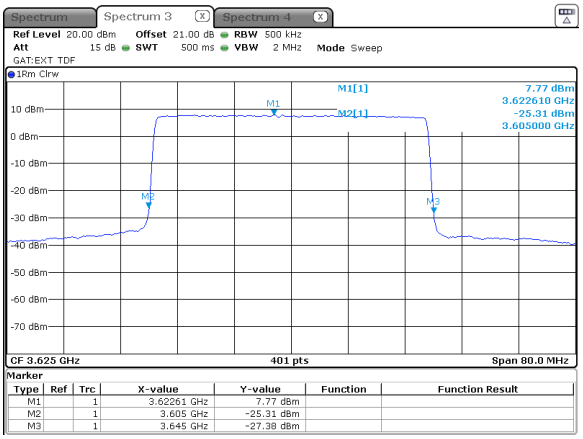
Plot 7.4.15 Emission outside the fundamental test results at mid carrier frequency

CHANNEL SPACING: 40 MHz
ANTENNA CHAIN: 1
Modulation: QPSK **Modulation: 256QAM**







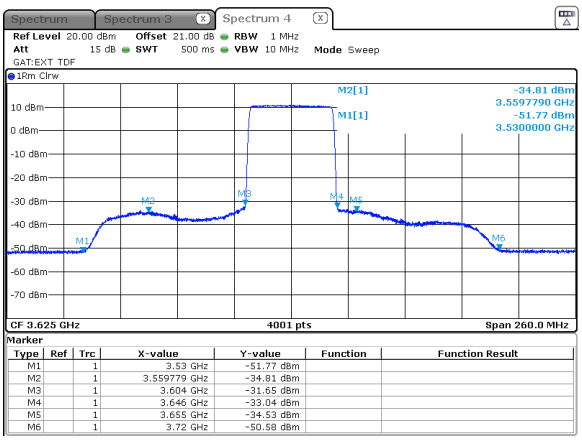


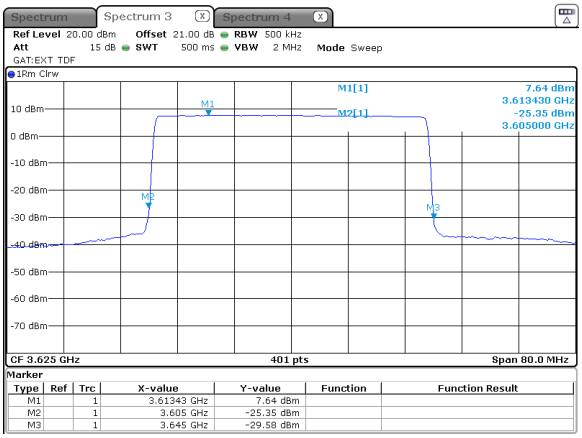
Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.4.16 Emission outside the fundamental test results at mid carrier frequency

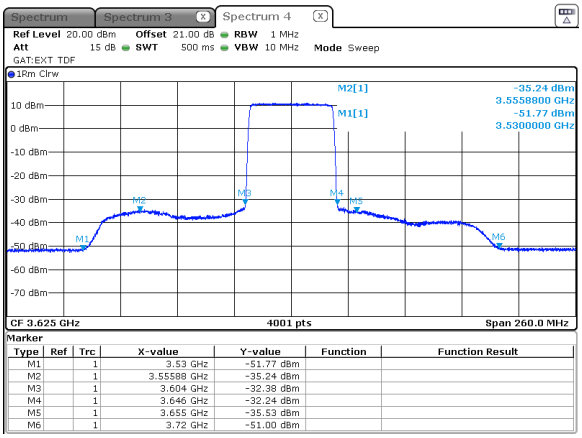
CHANNEL SPACING: 40 MHz
ANTENNA CHAIN: 2

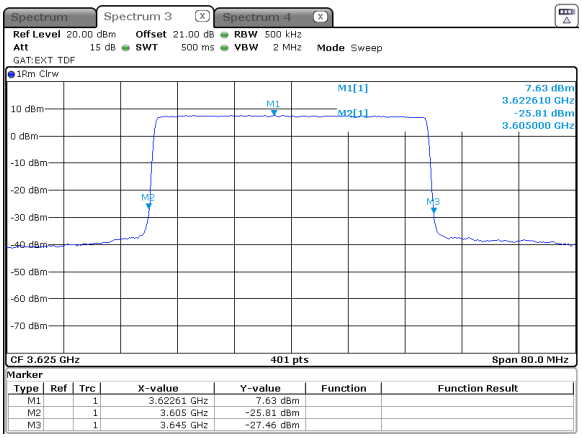
Modulation: QPSK





Modulation: 256QAM



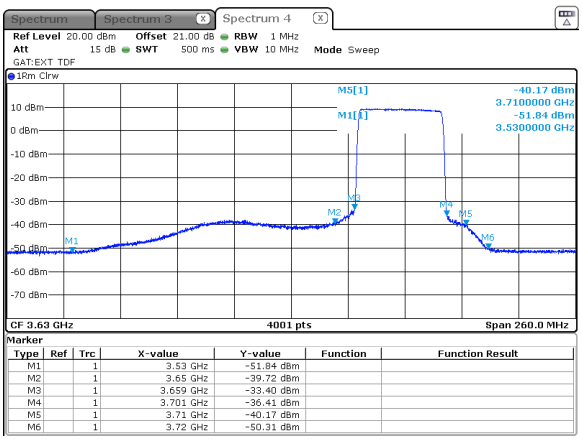


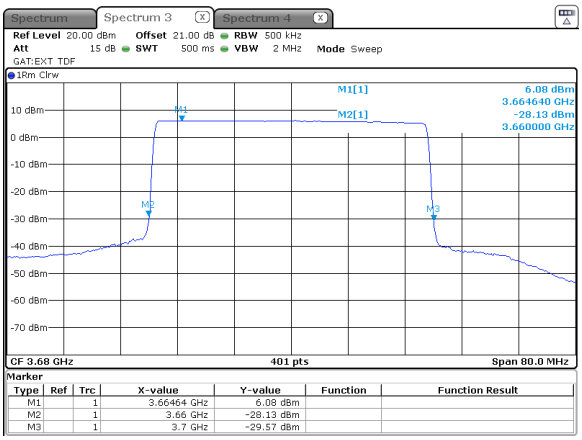
Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.4.17 Emission outside the fundamental test results at high carrier frequency

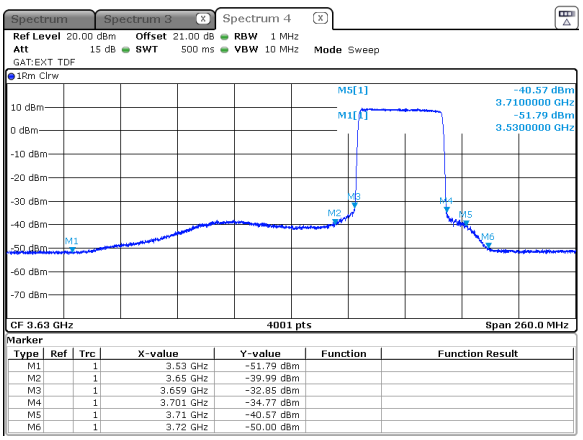
CHANNEL SPACING: 40 MHz
ANTENNA CHAIN: 1

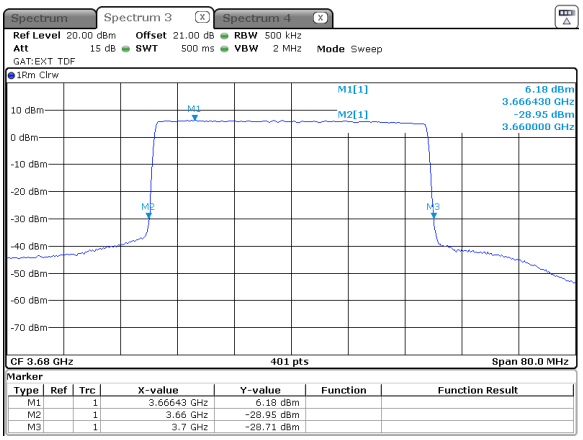
Modulation: QPSK





Modulation: 256QAM

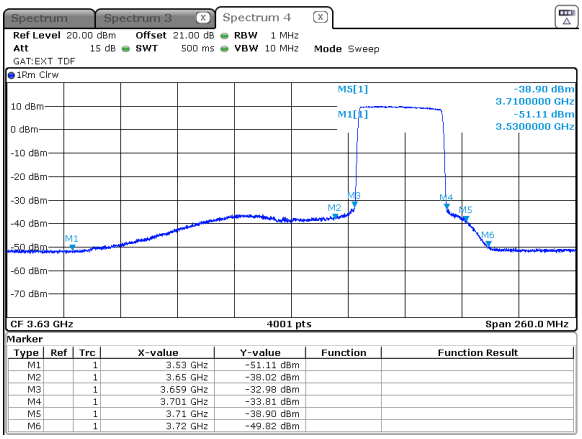


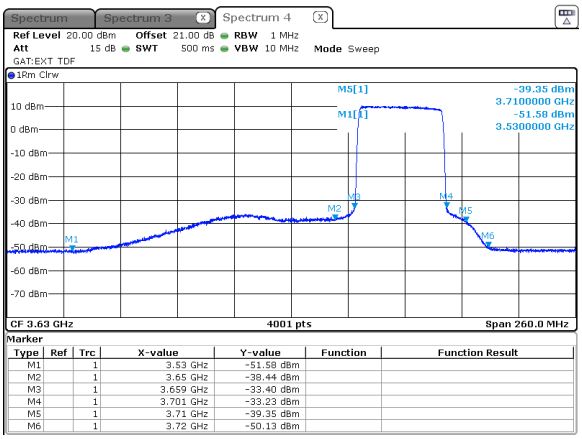


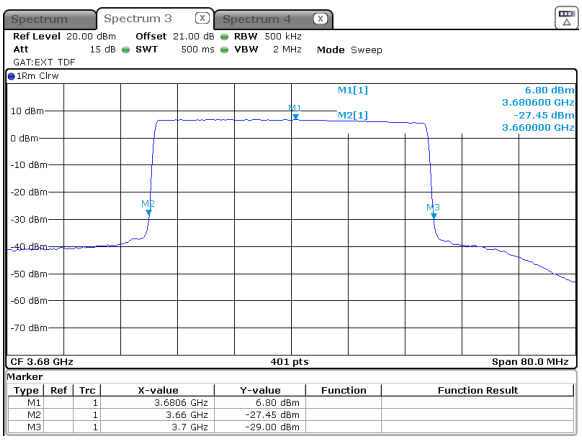
Test specification:	**Section 96.41(e), Emission mask**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Feb-22		
Temperature: 24.2 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1010 hPa	**Power:** 48 VAC
Remarks:			

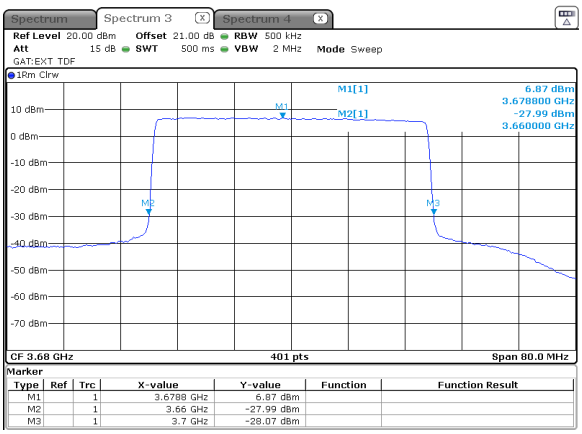
Plot 7.4.18 Emission outside the fundamental test results at high carrier frequency

CHANNEL SPACING: 40 MHz
ANTENNA CHAIN: 2
Modulation: QPSK **Modulation: 256QAM**









Test specification:	Section 96.41(e)(2), Radiated spurious emissions		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	Verdict:	PASS
Date(s):	17-Feb-22		
Temperature: 24 ºC	Relative Humidity: 52 %	Air Pressure: 1011 hPa	Power: 48 VAC
Remarks:			

7.5 Radiated spurious emission measurements

7.5.1 General

This test was performed to measure radiated spurious emissions from the EUT. Specification test limits are given in Table 7.5.1.

Table 7.5.1 Radiated spurious emission test limits

Frequency, MHz	EIRP of spurious, dBm	Equivalent field strength limit @ 3m, dB(μV/m)***
0.09 – below 3530.0	-40.0	55.2
3720.0 – 10th harmonic*	-40.0	55.2

*** - Equivalent field strength limit was calculated from maximum allowed ERP of spurious as follows: E=sqrt(30×P×1.64)/r, where P is ERP in Watts, 1.64 is numeric gain of ideal dipole and r is antenna to EUT distance in meters

7.5.2 Test procedure for spurious emission field strength measurements in 9 kHz to 30 MHz band

7.5.2.1 The EUT was set up as shown in Figure 7.5.1, energized and the performance check was conducted.

7.5.2.2 The specified frequency range was investigated with antenna connected to spectrum analyzer. To find maximum radiation the turntable was rotated 360^0 and the measuring antenna was rotated around its vertical axis.

7.5.2.3 The worst test results (the lowest margins) were recorded in Table 7.5.2 and shown in the associated plots.

7.5.3 Test procedure for spurious emission field strength measurements above 30 MHz

7.5.3.1 The EUT was set up as shown in Figure 7.5.2, energized and the performance check was conducted.

7.5.3.2 The specified frequency range was investigated with antenna connected to spectrum analyzer. To find maximum radiation the turntable was rotated 360^0 and the measuring antenna height was swept from 1 to 4 m in both, vertical and horizontal, polarizations.

7.5.3.3 The worst test results (the lowest margins) were recorded in Table 7.5.2 and shown in the associated plots.

Test specification:	**Section 96.41(e)(2), Radiated spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	17-Feb-22		
Temperature: 24 ºC	**Relative Humidity:** 52 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

Figure 7.5.1 Setup for spurious emission field strength measurements in 9 kHz to 30 MHz band

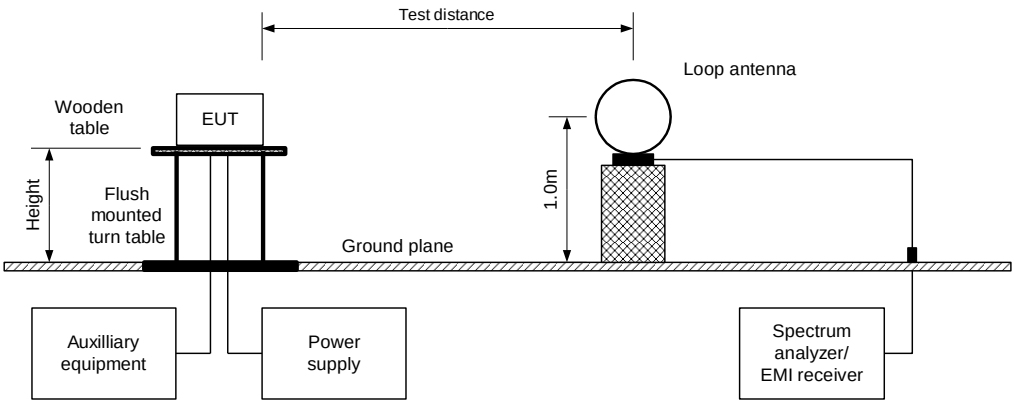
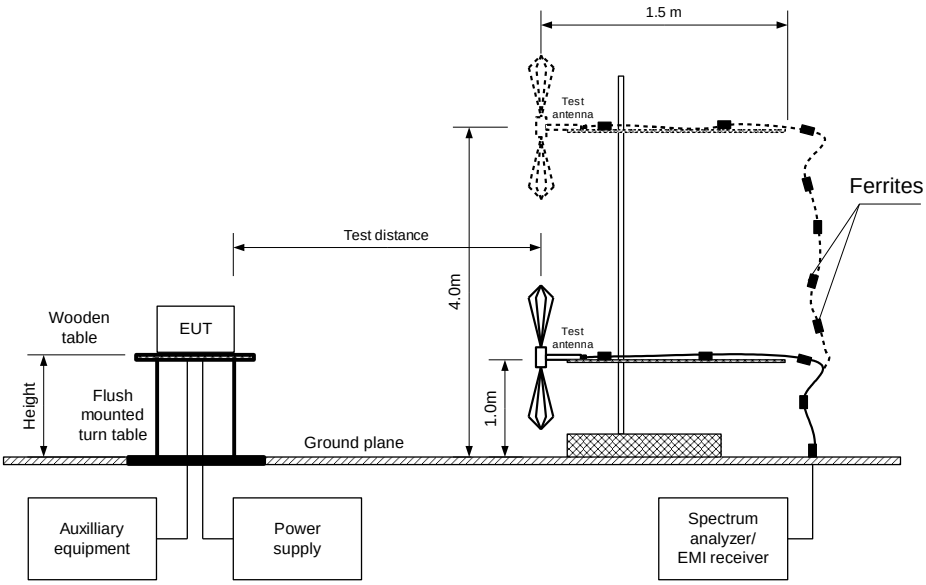


Figure 7.5.2 Setup for spurious emission field strength measurements above 30 MHz



Test specification:	**Section 96.41(e)(2), Radiated spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	17-Feb-22		
Temperature: 24 ºC	**Relative Humidity:** 52 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

Table 7.5.2 Spurious emission field strength test results

ASSIGNED FREQUENCY RANGE: 3550 - 3700 MHz
TEST DISTANCE: 3 m
TEST SITE: Semi anechoic chamber
INVESTIGATED FREQUENCY RANGE: 0.009 – 1000 MHz
DETECTOR USED: Peak
VIDEO BANDWIDTH: > Resolution bandwidth
TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)
Biconilog (30 MHz – 1000 MHz)
MODULATION: 256 QAM
OCCUPIED BANDWIDTH 40 MHz (Output power and PSD Worst case)
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

Frequency, MHz	Field strength, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*	RBW, kHz	Antenna polarization	Antenna height, cm	Turn-table position**, degrees	Verdict
Low carrier frequency 3570 MHz								
3.117856	46.29	55.20	-8.91	100	V	23.21	-62.0	Pass
3.363887	47.29	55.20	-7.91	100	V	22.21	130.0	Pass
98.229881	30.12	55.20	-25.08	100	V	100.0	-180.0	Pass
Mid carrier frequency 3625 MHz								
1.037773	45.29	55.20	-9.91	100	V	22.01	1.0	Pass
961.924098	28.12	55.20	-27.08	100	V	269.0	-123.0	Pass
High carrier frequency 3680 MHz								
1.447332	44.13	55.20	-11.07	100	V	20.29	130.0	Pass
966.595390	28.19	55.20	-27.01	100	V	169.0	-69.0	Pass

*****- Margin = Field strength of spurious – calculated field strength limit.
******- EUT front panel refers to 0 degrees position of turntable.

Test specification:	**Section 96.41(e)(2), Radiated spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	17-Feb-22		
Temperature: 24 ºC	**Relative Humidity:** 52 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

Table 7.5.3 Field strength of spurious emissions above 1 GHz within restricted bands

ASSIGNED FREQUENCY RANGE:	3550 - 3700 MHz
TEST DISTANCE:	3 m
TEST SITE:	Semi anechoic chamber
INVESTIGATED FREQUENCY RANGE:	0.009 – 37000 MHz
DETECTOR USED:	PEAK / AVERAGE
VIDEO BANDWIDTH:	> Resolution bandwidth
TEST ANTENNA TYPE:	Double ridged guide (above 1000 MHz)
MODULATION:	256 QAM
OCCUPIED BANDWIDTH	40 MHz (Output power and PSD Worst case)
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum

Frequency, MHz	Peak			Average			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
	Measured emission, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*	Measured emission, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*				
Mid carrier frequency 3625 MHz										
14628.83	51.81	75.20	-23.39	40.30	55.20	-14.90	H	180.0	100.0	
17997.80	52.31	75.20	-22.89	40.67	55.20	-14.53	V	-180.0	100.0	

*****- Margin = Field strength of spurious – calculated field strength limit.
******- EUT front panel refers to 0 degrees position of turntable.

Reference numbers of test equipment used

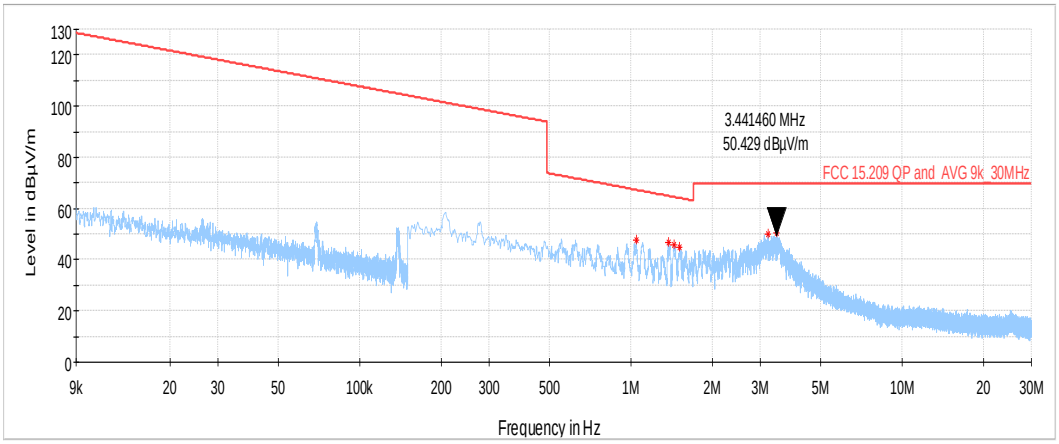
HL 3903	HL 4360	HL 4933	HL 4956	HL 5112	HL 5288	HL 5405	

Full description is given in Appendix A.

Test specification:	**Section 96.41(e)(2), Radiated spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	17-Feb-22		
Temperature: 24 ºC	**Relative Humidity:** 52 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

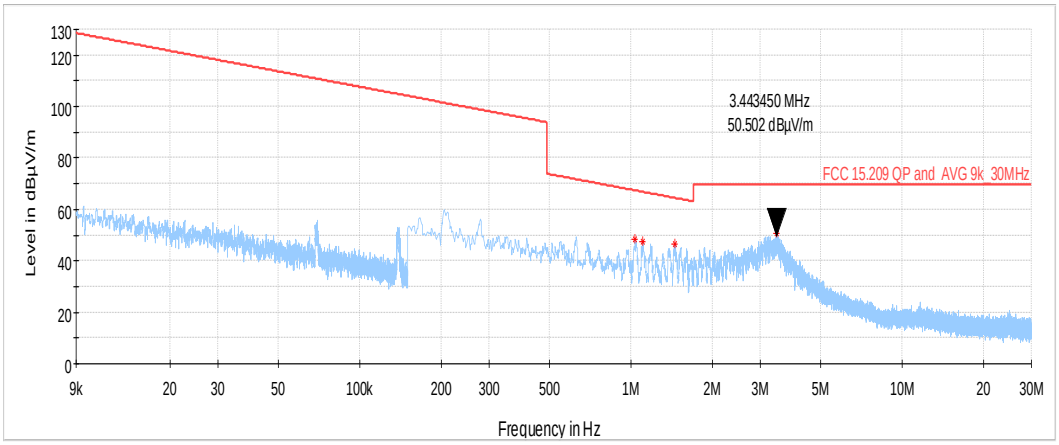
Plot 7.5.1 Radiated emission measurements in 9 kHz - 30 MHz range

TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Low
TEST DISTANCE: 3 m



Plot 7.5.2 Radiated emission measurements in 9 kHz - 30 MHz range

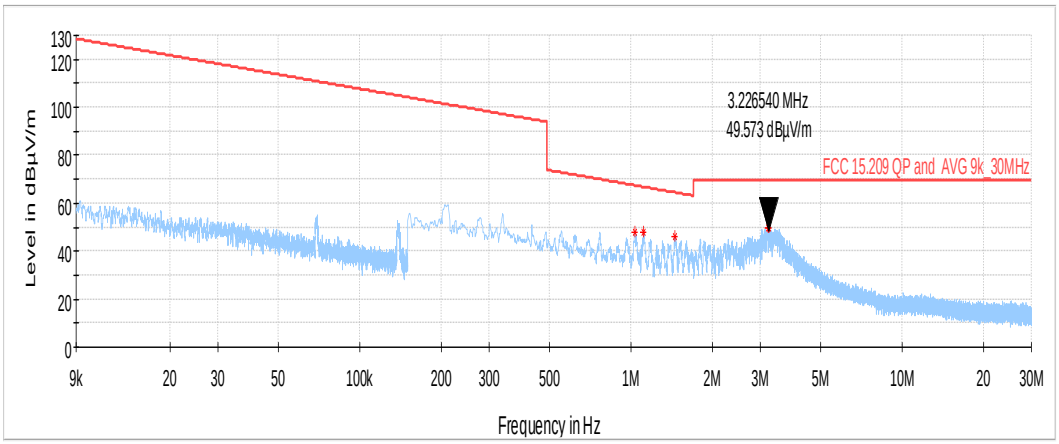
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Mid
TEST DISTANCE: 3 m



Test specification:	**Section 96.41(e)(2), Radiated spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	17-Feb-22		
Temperature: 24 ºC	**Relative Humidity:** 52 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.5.3 Radiated emission measurements in 9 kHz - 30 MHz range

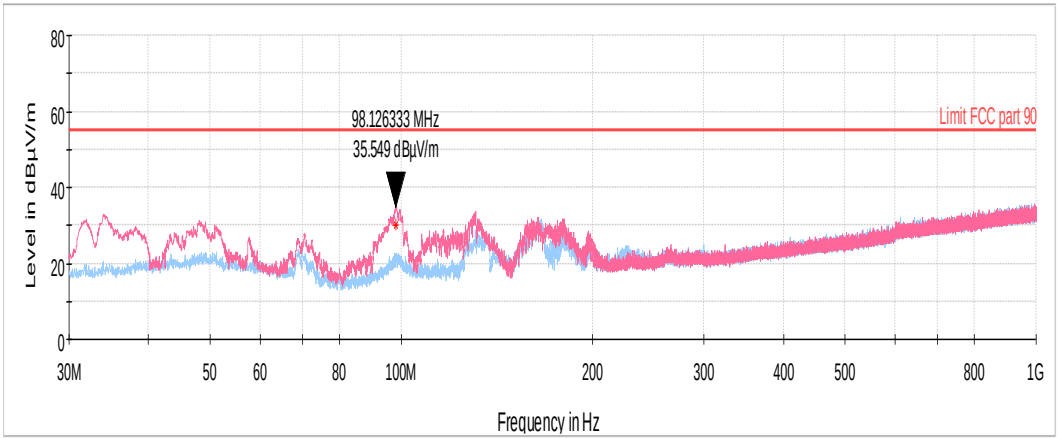
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: High
TEST DISTANCE: 3 m



Test specification:	**Section 96.41(e)(2), Radiated spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	17-Feb-22		
Temperature: 24 ºC	**Relative Humidity:** 52 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

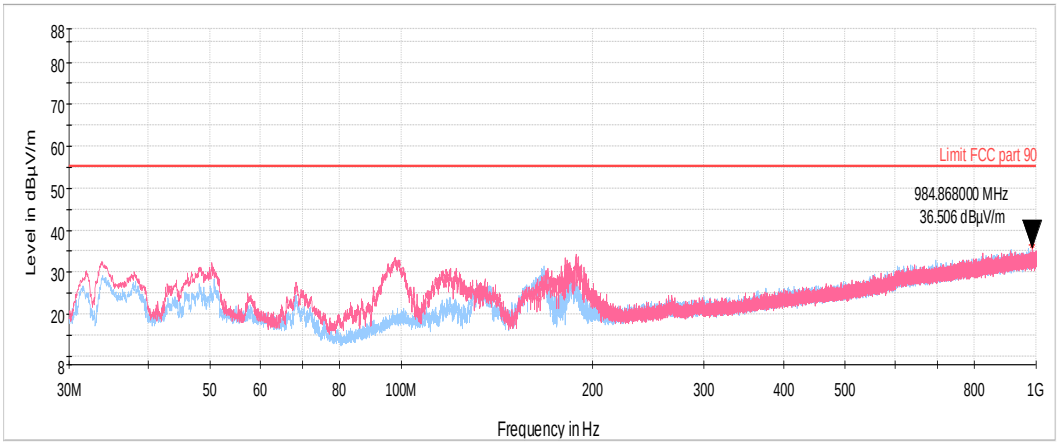
Plot 7.5.4 Radiated emission measurements in 30 - 1000 MHz range

TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Plot 7.5.5 Radiated emission measurements in 30 - 1000 MHz range

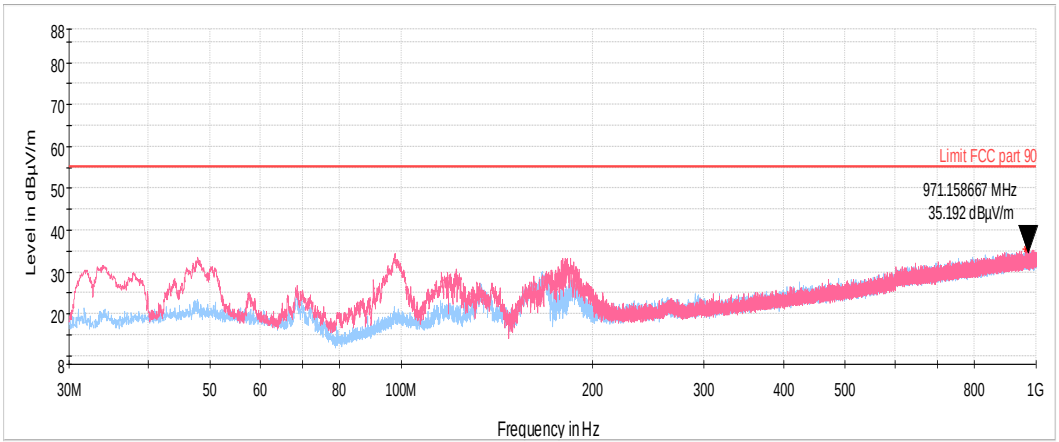
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	**Section 96.41(e)(2), Radiated spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	17-Feb-22		
Temperature: 24 ºC	**Relative Humidity:** 52 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

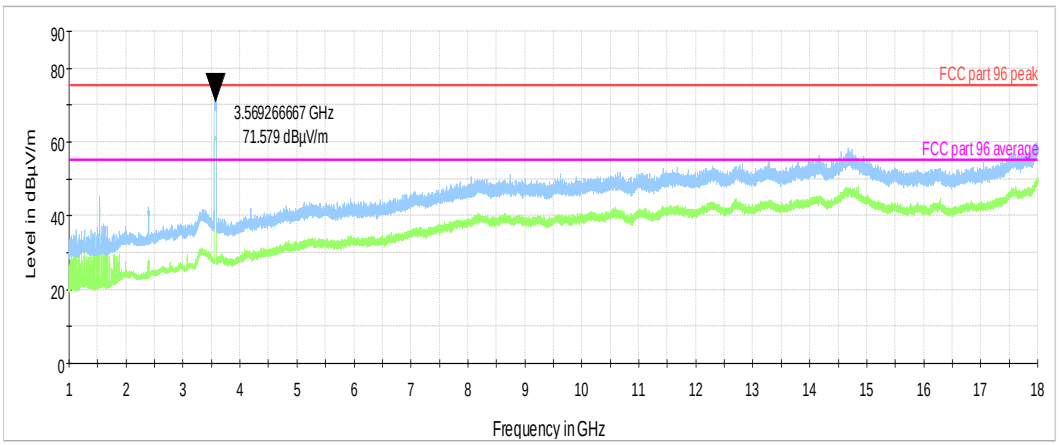
Plot 7.5.6 Radiated emission measurements in 30 - 1000 MHz range

TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Plot 7.5.7 Radiated emission measurements in 1000 – 18000 MHz range

TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Low
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m

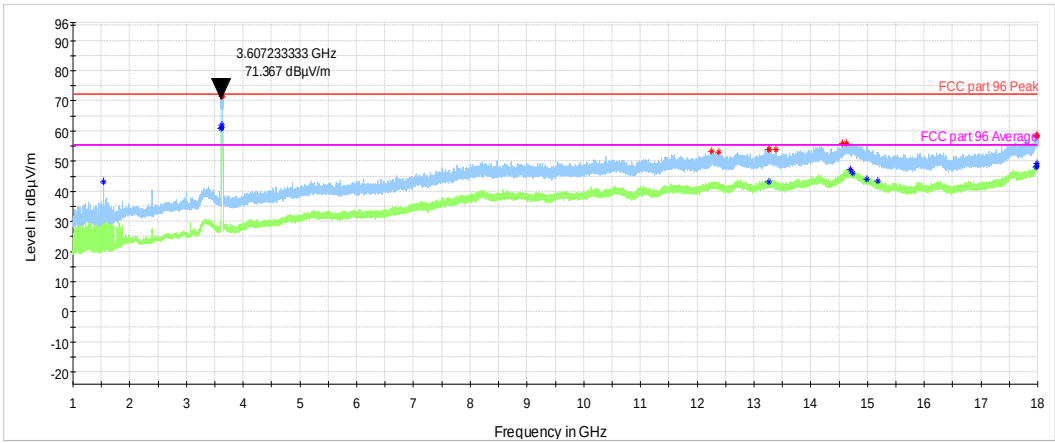


Note: 3569.3 MHz is low fundamental frequency

Test specification:	**Section 96.41(e)(2), Radiated spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	17-Feb-22		
Temperature: 24 ºC	**Relative Humidity:** 52 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.5.8 Radiated emission measurements in 1000 – 18000 MHz range

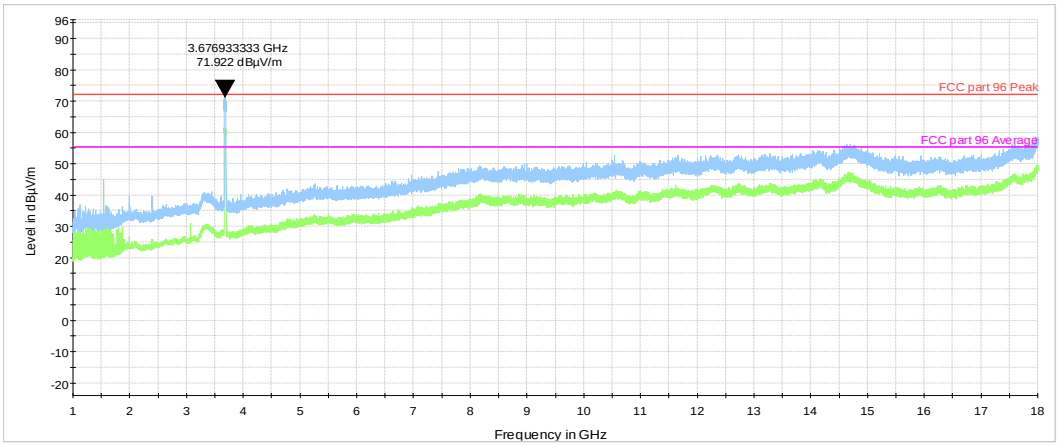
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Mid
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Note: 3607.2 MHz is mid fundamental frequency

Plot 7.5.9 Radiated emission measurements in 1000 – 18000 MHz range

TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m

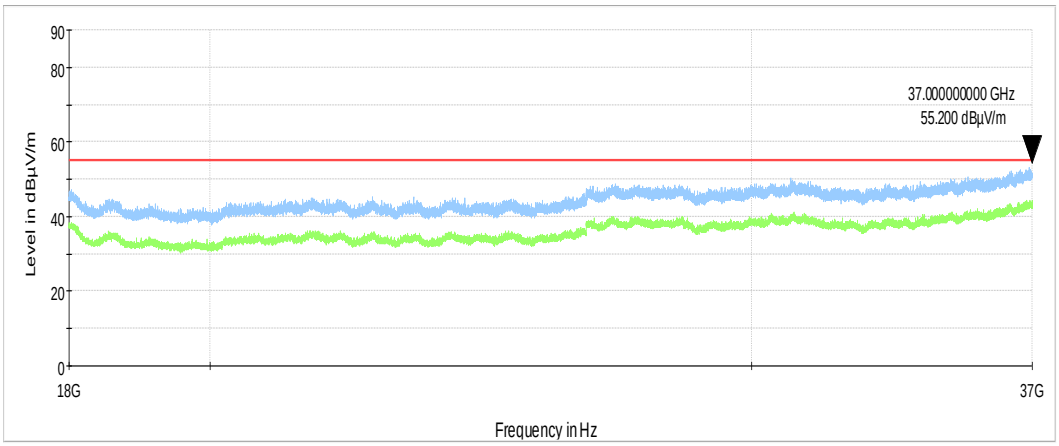


Note: 3676.9 MHz is high fundamental frequency

Test specification:	**Section 96.41(e)(2), Radiated spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	17-Feb-22		
Temperature: 24 ºC	**Relative Humidity:** 52 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

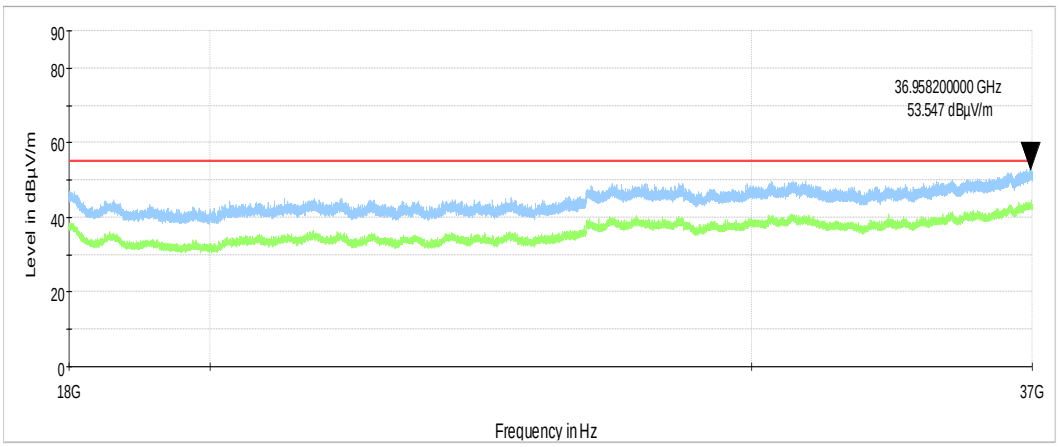
Plot 7.5.10 Radiated emission measurements in 18000 –37000 MHz range

TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Plot 7.5.11 Radiated emission measurements in 18000 –37000 MHz range

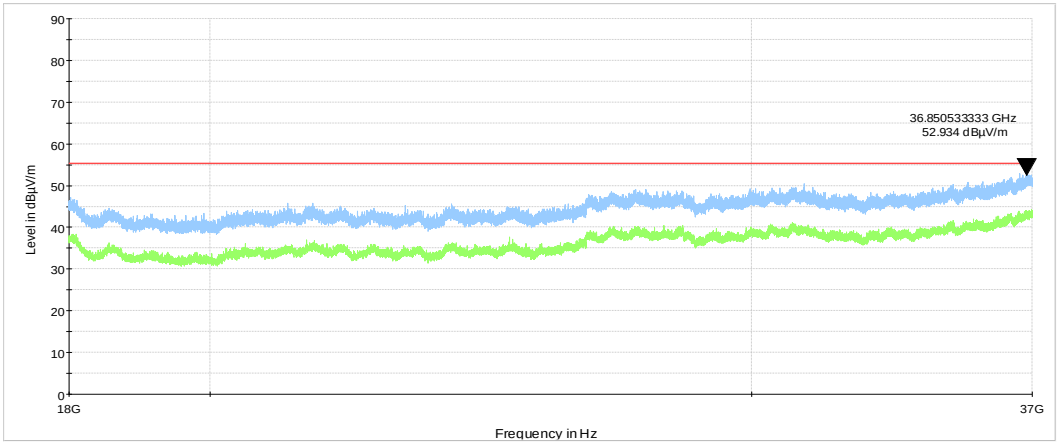
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	**Section 96.41(e)(2), Radiated spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	17-Feb-22		
Temperature: 24 ºC	**Relative Humidity:** 52 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.5.12 Radiated emission measurements in 18000 –37000 MHz range

TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	**Section 96.41(e)(3), Conducted spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	09-Feb-22		
Temperature: 24.1 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

7.6 Spurious emissions at RF antenna connector test

7.6.1 General

This test was performed to measure spurious emissions at RF antenna connector. Specification test limits are given in Table 7.6.1.

Table 7.6.1 Spurious emission limits

Frequency, MHz	Conducted power of spurious, dBm/MHz
0.009– below 3530.0	-40.0
3720.0 – 10th harmonic*	-40.0

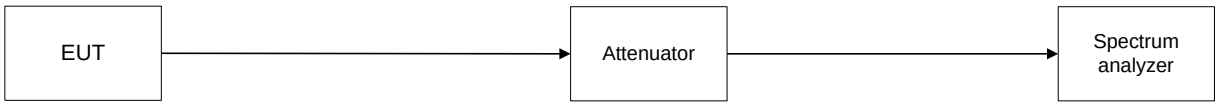
7.6.2 Test procedure

7.6.2.1 The EUT was set up as shown in Figure 7.6.1, energized and its proper operation was checked.

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

7.6.2.3 The spurious emission was measured with spectrum analyzer as provided in Table 7.6.2 and associated plots.

Figure 7.6.1 Spurious emission test setup



Test specification:	**Section 96.41(e)(3), Conducted spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	09-Feb-22		
Temperature: 24.1 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

Table 7.6.2 Spurious emission test results

ASSIGNED FREQUENCY RANGE: 3550 - 3700 MHz
INVESTIGATED FREQUENCY RANGE: 0.009 – 37000 MHz
DETECTOR USED: Peak
VIDEO BANDWIDTH: ≥ Resolution bandwidth
MODULATION: QPSK
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
NUMBER ANTENNA PORTS: N = 2

Frequency, GHz	Peak power (VBW=3 MHz)				Average power (RMS)				Verdict
	Measured, dBm	Total, dBm**	Limit, dBm	Margin, dB*	Measured, dBm	Total, dBm**	Limit, dBm	Margin, dB*	
Channel bandwidth 10 MHz									
Low carrier frequency 3555 MHz									
36.718	-46.47	-43.47	-40.00	-3.47	-46.47	-43.47	-40.00	-3.47	Pass
Mid carrier frequency 3625 MHz									
36.835	-47.41	-44.41	-40.00	-4.41	-47.41	-44.41	-40.00	-4.41	Pass
High carrier frequency 3695 MHz									
36.706	-47.01	-44.01	-40.00	-4.01	-47.01	-44.01	-40.00	-4.01	Pass
Channel bandwidth 20 MHz									
Low carrier frequency 3560 MHz									
36.899	-47.11	-44.11	-40.00	-4.11	-47.11	-44.11	-40.00	-4.11	Pass
Mid carrier frequency 3625 MHz									
36.426	-47.16	-44.16	-40.00	-4.16	-47.16	-44.16	-40.00	-4.16	Pass
High carrier frequency 3690 MHz									
36.720	-46.87	-43.87	-40.00	-3.87	-46.87	-43.87	-40.00	-3.87	Pass
Channel bandwidth 40 MHz									
Low carrier frequency 3570 MHz									
36.654	-46.33	-43.66	-40.00	-3.66	-46.33	-43.66	-40.00	-3.66	Pass
Mid carrier frequency 3625 MHz									
36.656	-47.28	-44.28	-40.00	-4.28	-47.28	-44.28	-40.00	-4.28	Pass
High carrier frequency 3680 MHz									
36.517	-47.09	-44.09	-40.00	-4.09	-47.09	-44.09	-40.00	-4.09	Pass

*****- Margin = Total spurious emission - specification limit.
****** - Total emission = Maximum SA reading per chain (Chains #1&2) + 10*log(N)

Reference numbers of test equipment used

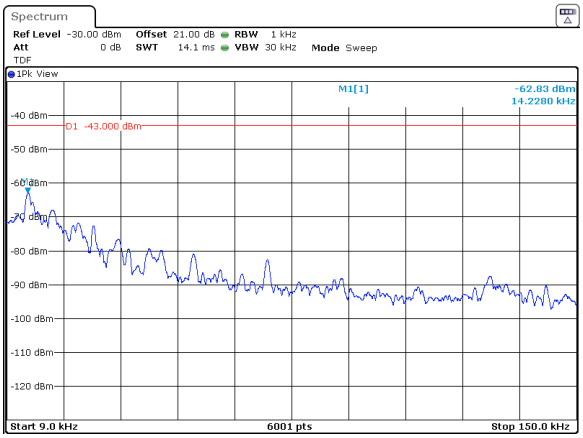
HL 1294	HL 1295	HL 3287	HL 3301	HL 3355	HL 4355	HL 4366	HL 5232
HL 5233	HL 5286	HL 6143					

Full description is given in Appendix A.

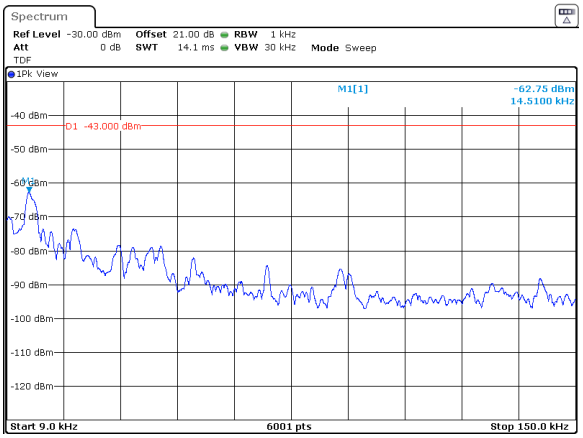
Test specification:	**Section 96.41(e)(3), Conducted spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	09-Feb-22		
Temperature: 24.1 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.6.1 Spurious emission measurements in 9 - 150 kHz range at low carrier frequency

MODULATION: QPSK
CHANNEL SPACING: 10 MHz
ANTENNA CHAIN: #1

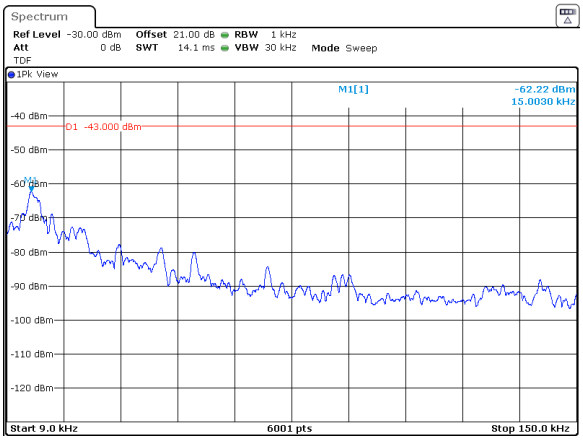


ANTENNA CHAIN: #2

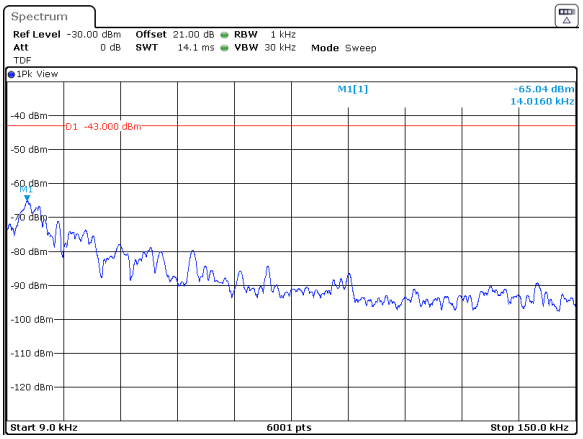


Plot 7.6.2 Spurious emission measurements in 9 - 150 kHz range at mid carrier frequency

MODULATION: QPSK
CHANNEL SPACING: 10 MHz
ANTENNA CHAIN: #1



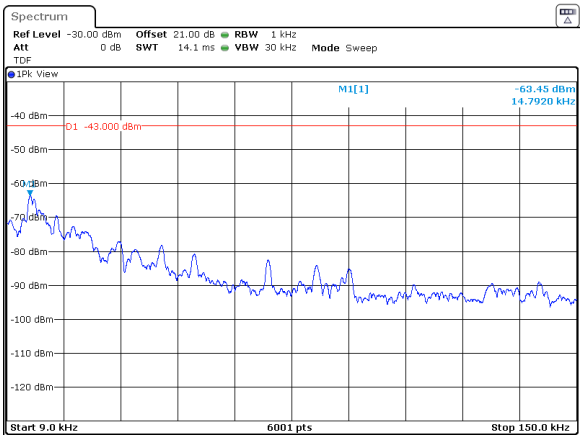
ANTENNA CHAIN: #2



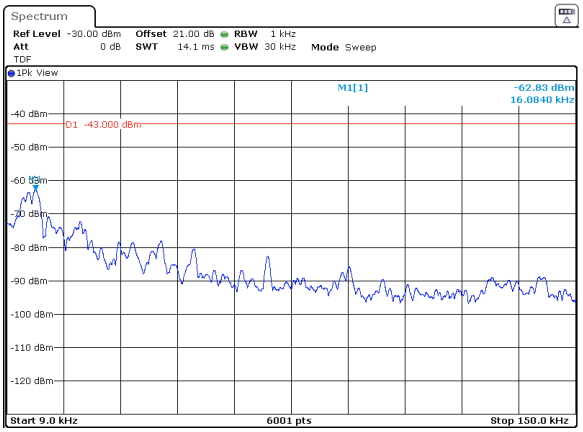
Test specification:	**Section 96.41(e)(3), Conducted spurious emissions**		
Test procedure:	Section 96.41(e)(3)		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	09-Feb-22		
Temperature: 24.1 ºC	**Relative Humidity:** 49 %	**Air Pressure:** 1011 hPa	**Power:** 48 VAC
Remarks:			

Plot 7.6.3 Spurious emission measurements in 9 - 150 kHz range at high carrier frequency

MODULATION: QPSK
CHANNEL SPACING: 10 MHz
ANTENNA CHAIN: #1

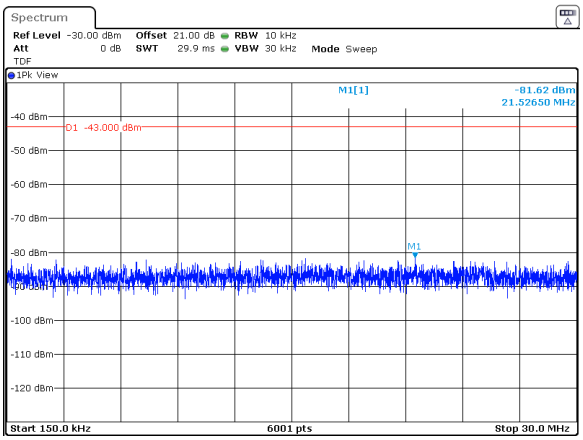
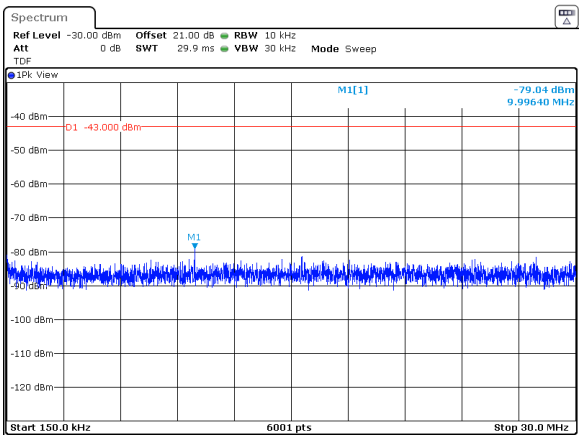


ANTENNA CHAIN: #2



Plot 7.6.4 Spurious emission measurements in 150 kHz - 30 MHz range at low carrier frequency

MODULATION: QPSK
CHANNEL SPACING: 10 MHz
ANTENNA CHAIN: #1



ANTENNA CHAIN: #2