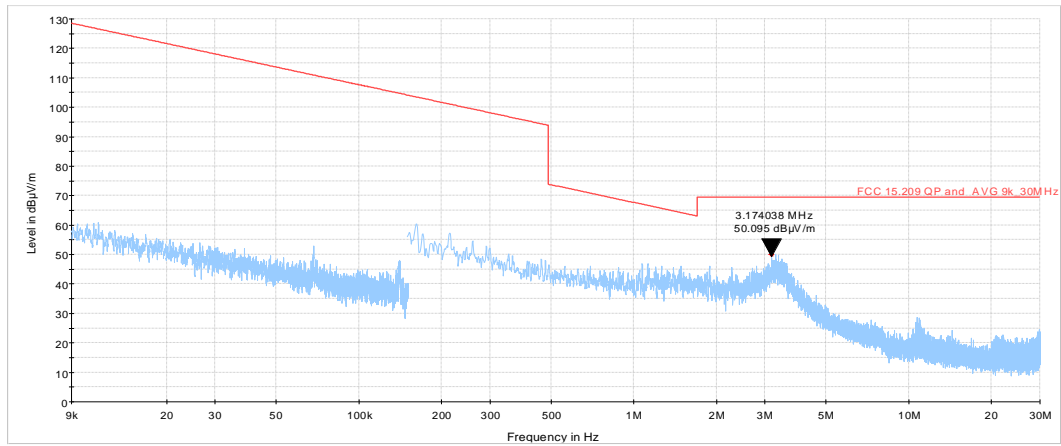




Test specification: Section 96.41(e)(2), Radiated spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 20-Apr-20			
Temperature: 24 °C	Relative Humidity: 52 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

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

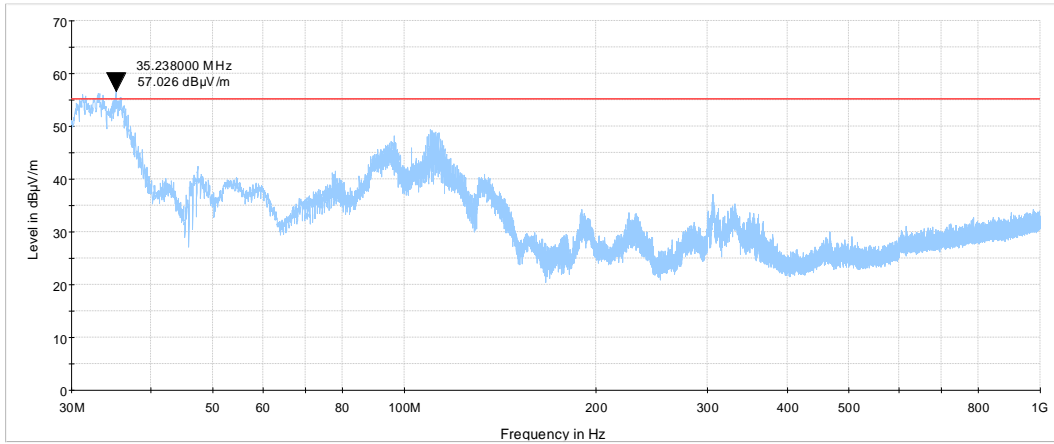




Test specification: Section 96.41(e)(2), Radiated spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 20-Apr-20			
Temperature: 24 °C	Relative Humidity: 52 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

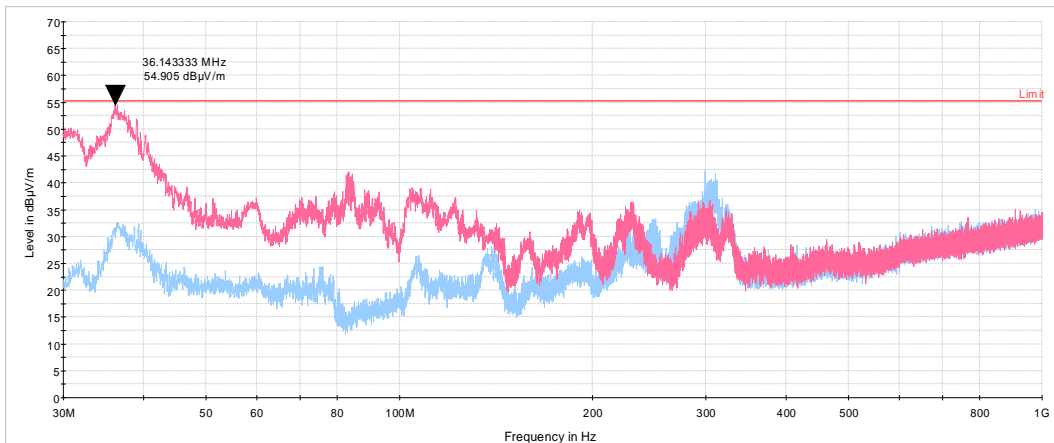
Plot 7.5.4 Radiated emission measurements in 30 - 1000 MHz range

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

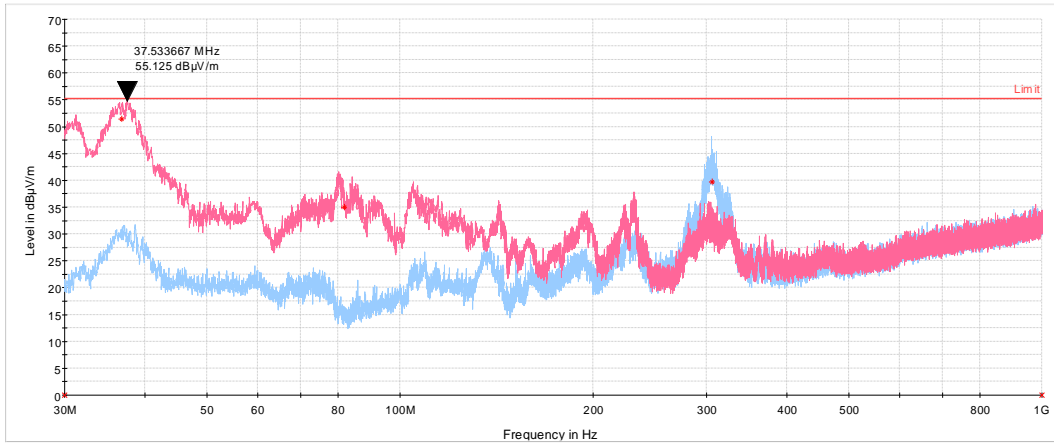




Test specification: Section 96.41(e)(2), Radiated spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 20-Apr-20			
Temperature: 24 °C	Relative Humidity: 52 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

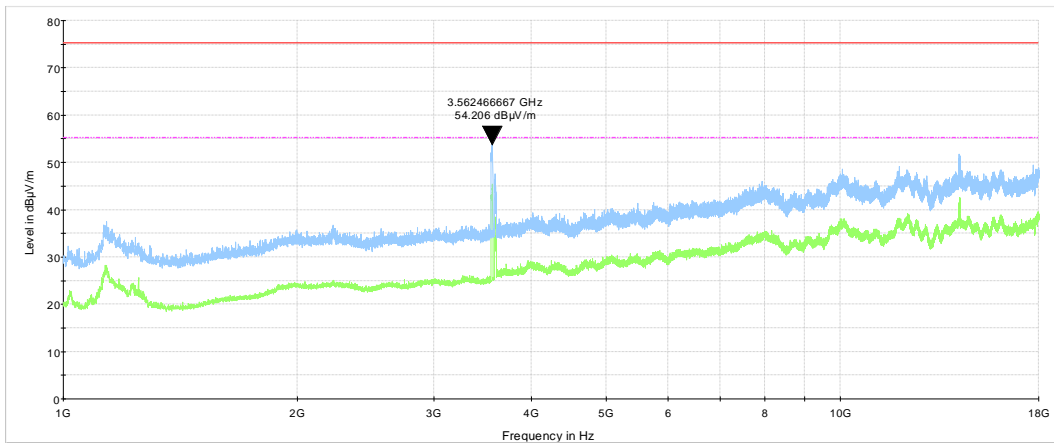
Plot 7.5.6 Radiated emission measurements in 30 - 1000 MHz range

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

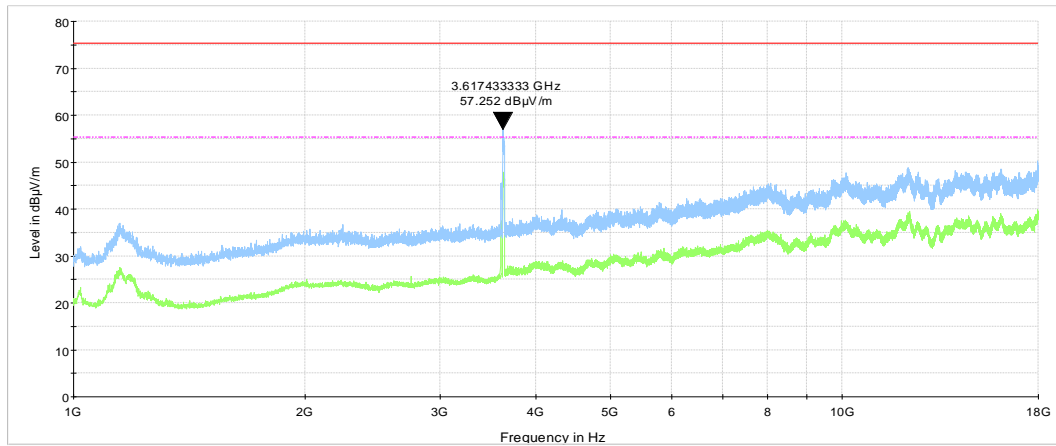




Test specification: Section 96.41(e)(2), Radiated spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 20-Apr-20			
Temperature: 24 °C	Relative Humidity: 52 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

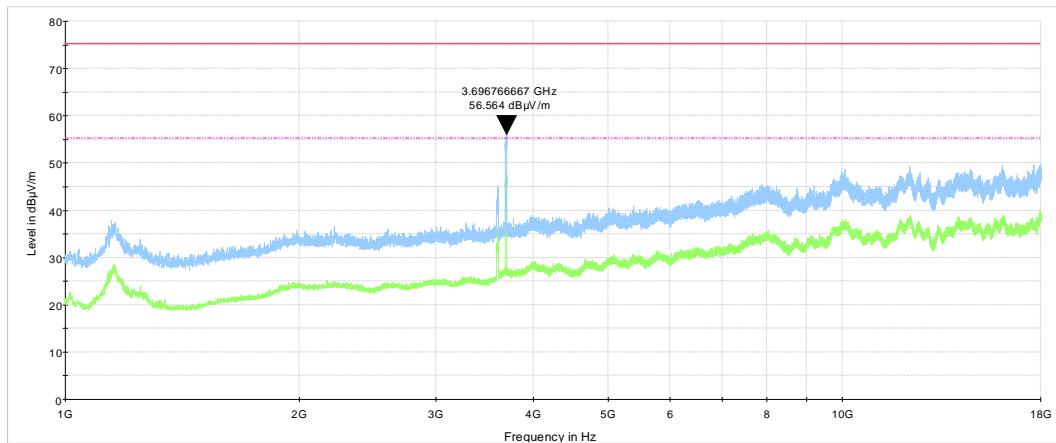
Plot 7.5.8 Radiated emission measurements in 1000 – 18000 MHz range

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



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

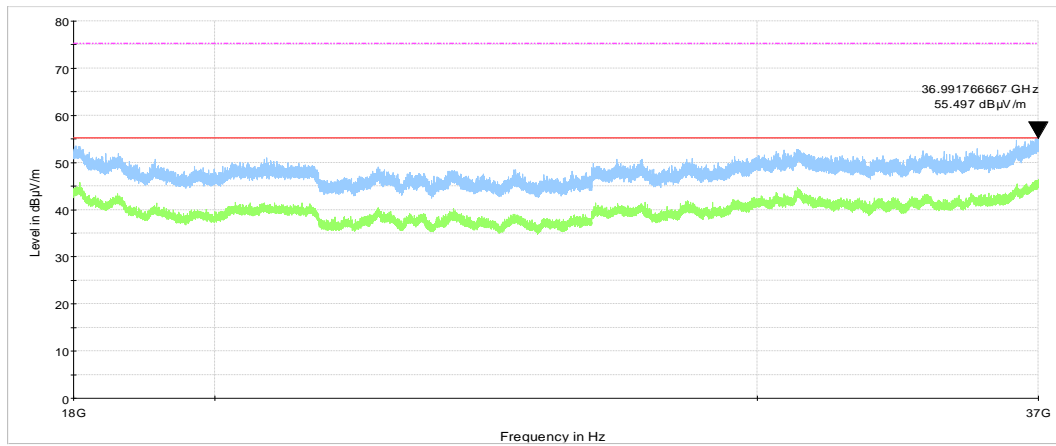




Test specification: Section 96.41(e)(2), Radiated spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 20-Apr-20			
Temperature: 24 °C	Relative Humidity: 52 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

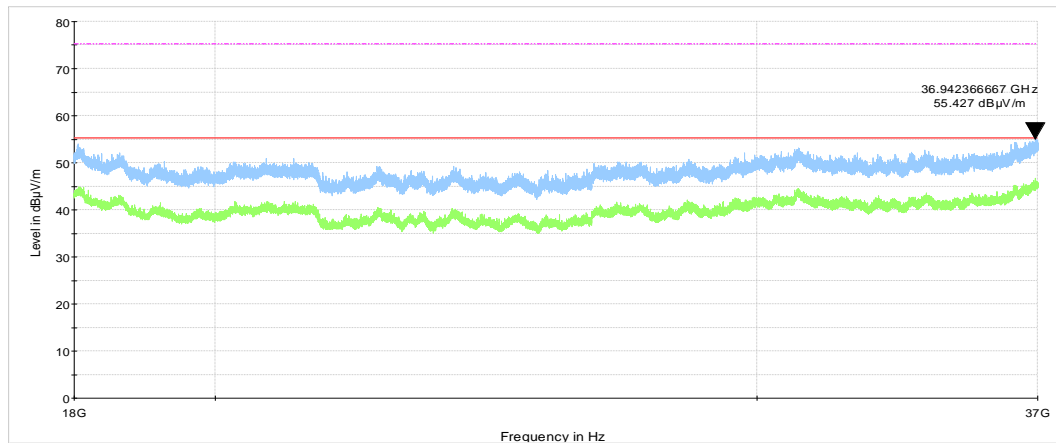
Plot 7.5.10 Radiated emission measurements in 18000 – 37000 MHz range

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

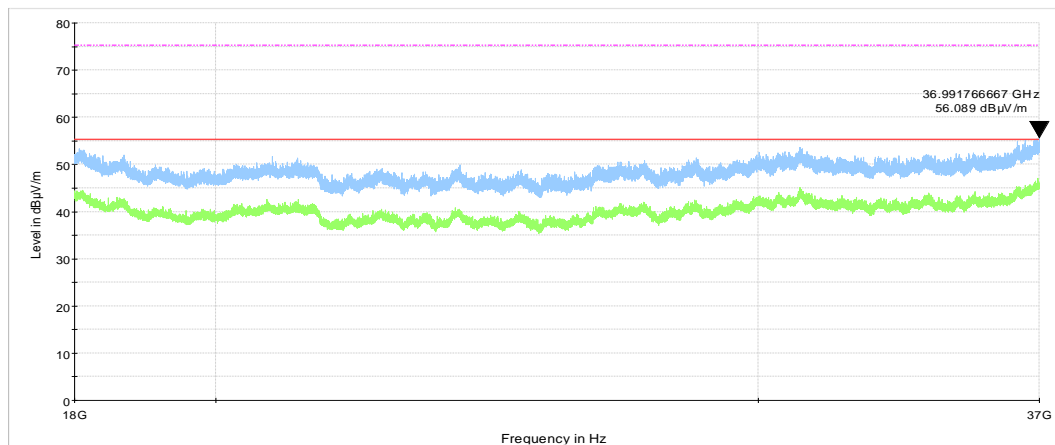




Test specification: Section 96.41(e)(2), Radiated spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 20-Apr-20			
Temperature: 24 °C	Relative Humidity: 52 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

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): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
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

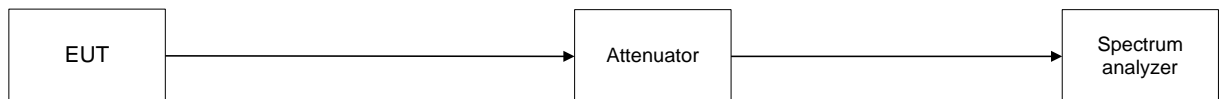
7.6.2 Test procedure

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): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
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: 64QAM
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum
 NUMBER ANTENNA PORTS: N = 2

Frequency, MHz	SA reading, dBm***	Attenuator, dB	Cable loss, dB	RBW, kHz	Total Spurious emission, dBm	Limit, dBm	Margin, dB*	Verdict
Channel spacing 10 MHz								
Low carrier frequency 3555 MHz								
No emissions were found								Pass
Mid carrier frequency 3625 MHz								
No emissions were found								Pass
High carrier frequency 3695 MHz								
No emissions were found								Pass
Channel spacing 20 MHz								
Low carrier frequency 3560 MHz								
No emissions were found								Pass
Mid carrier frequency 3625 MHz								
No emissions were found								Pass
High carrier frequency 3690 MHz								
No emissions were found								Pass

*- Margin = Total spurious emission - specification limit.

** - Total emission = Maximum emission per chain + 10*log(N)

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

Reference numbers of test equipment used

HL 4355	HL 3901	HL 3355	HL 5175	HL 1295	HL 5372	HL 5286	HL 4342
HL 5608	HL 5233						

Full description is given in Appendix A.



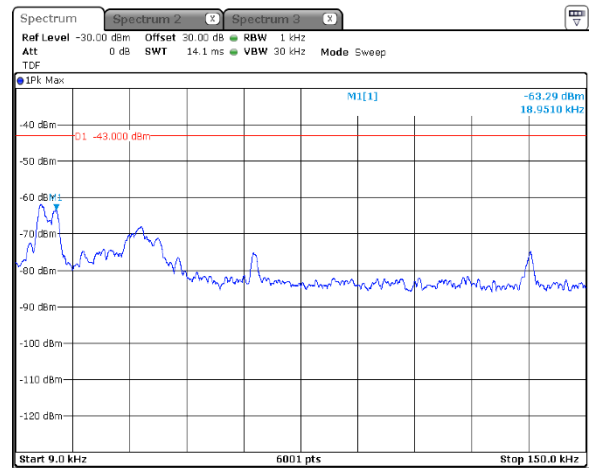
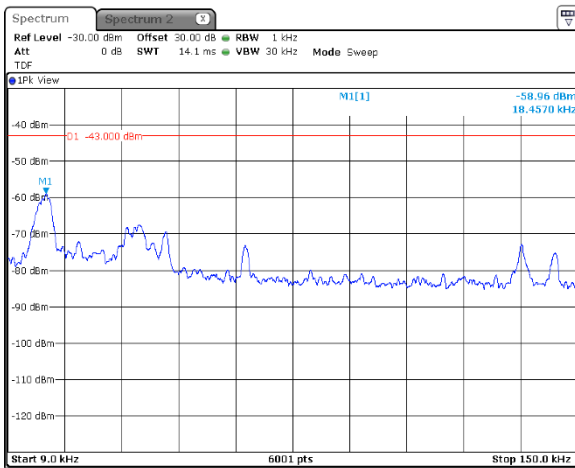
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

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

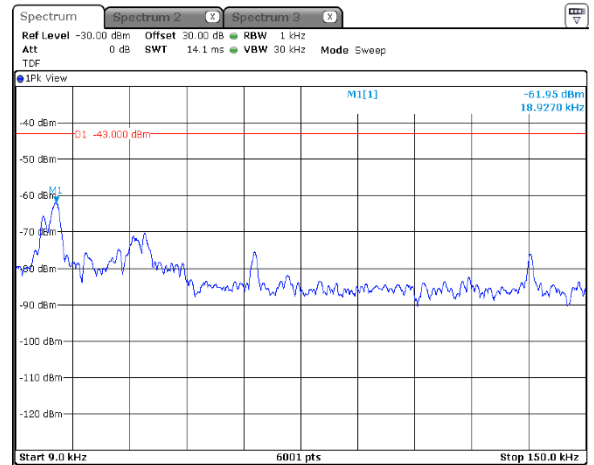
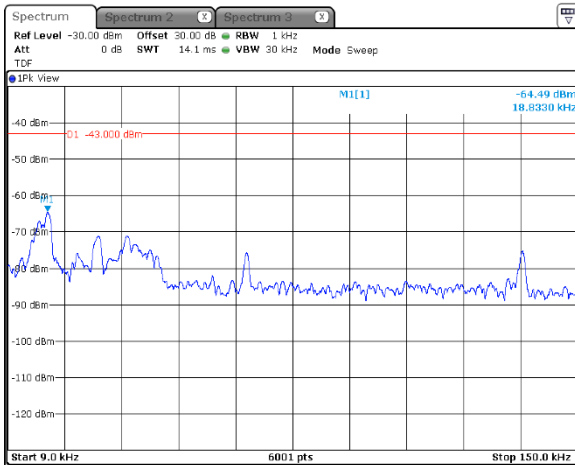
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





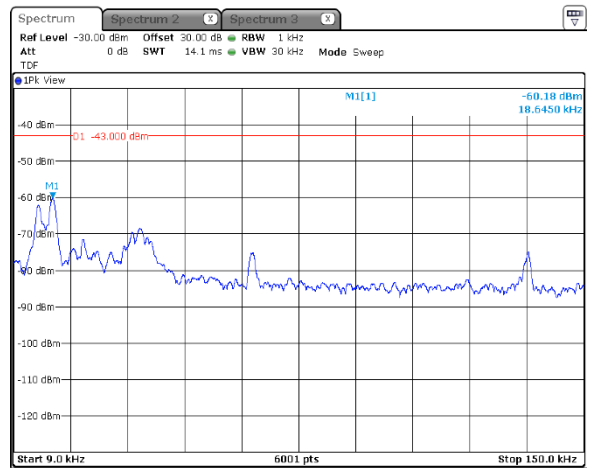
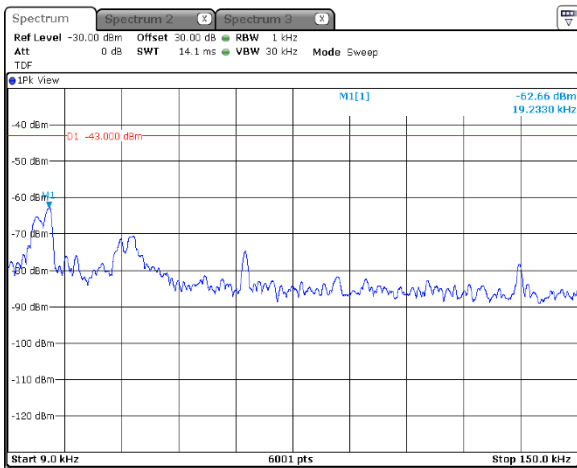
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

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

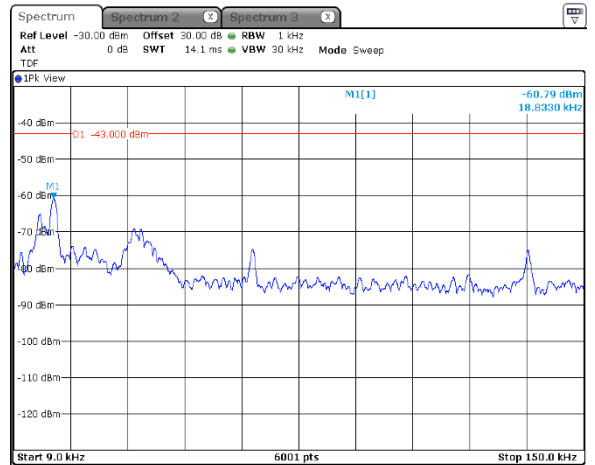
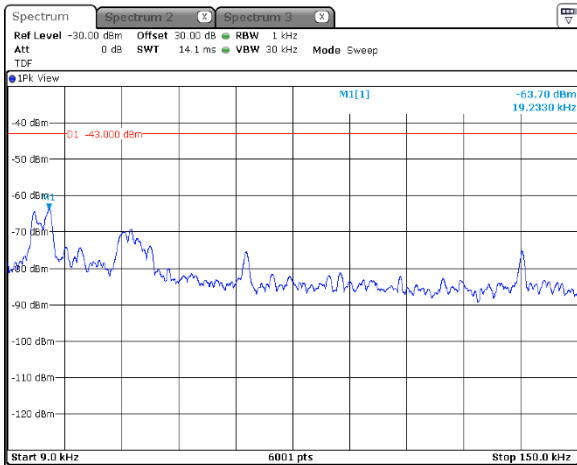
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





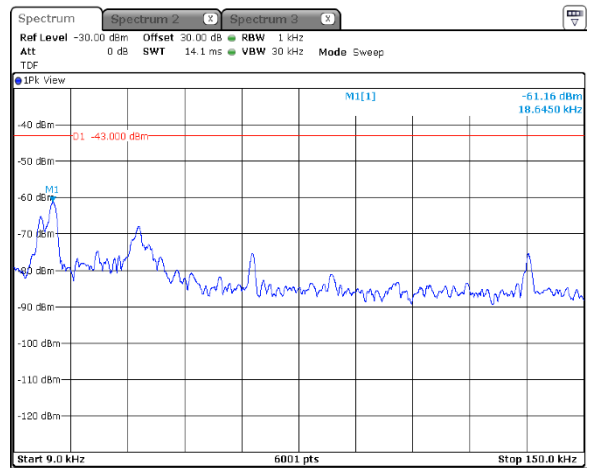
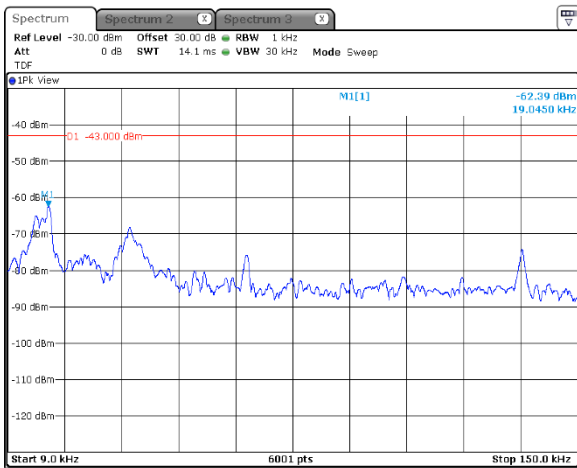
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

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

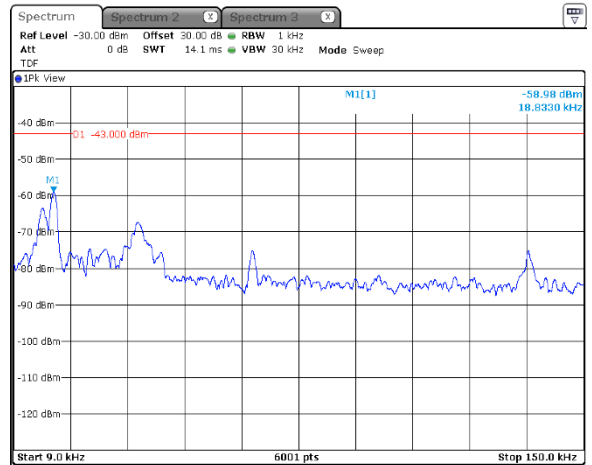
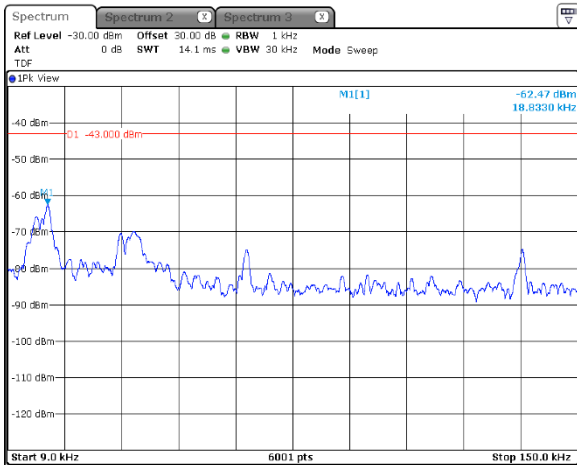
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





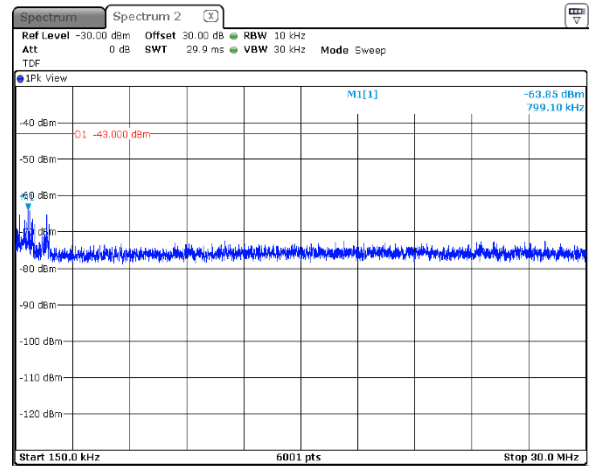
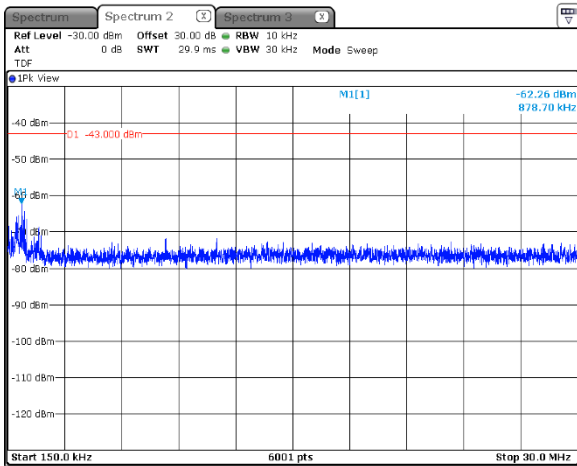
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

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

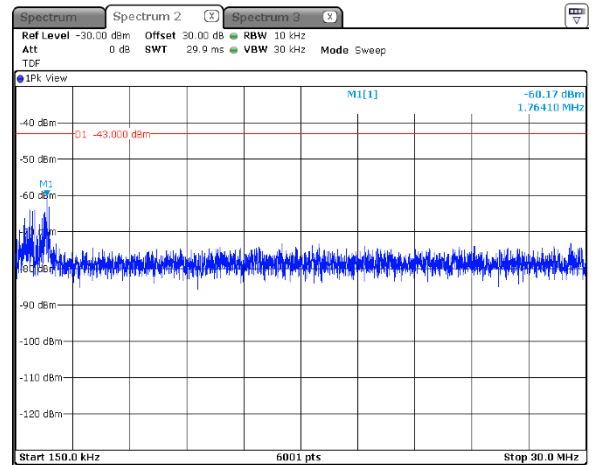
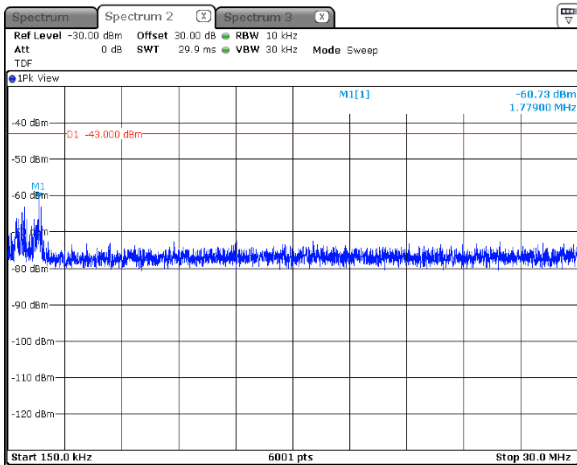
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





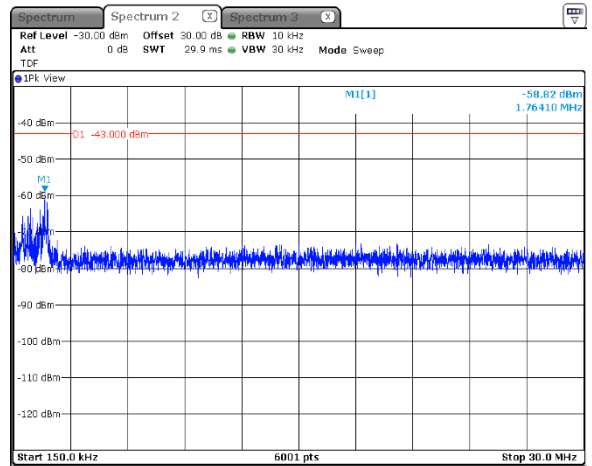
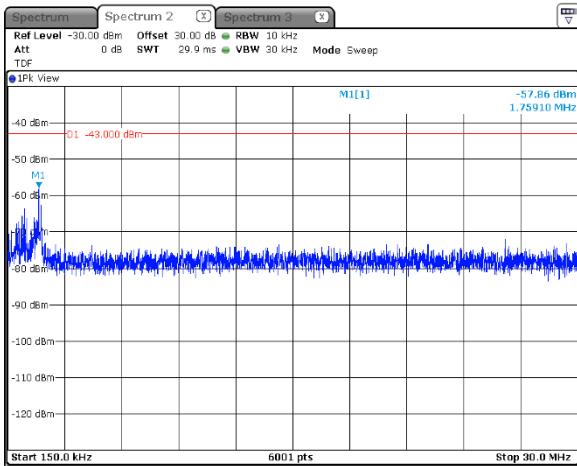
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.6.5 Spurious emission measurements in 150 kHz – 30 MHz range at mid carrier frequency

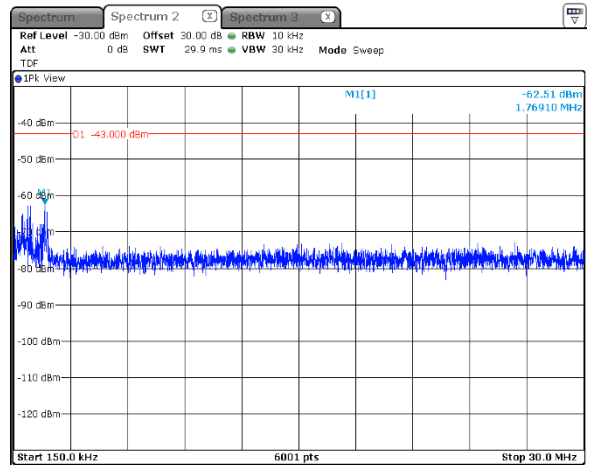
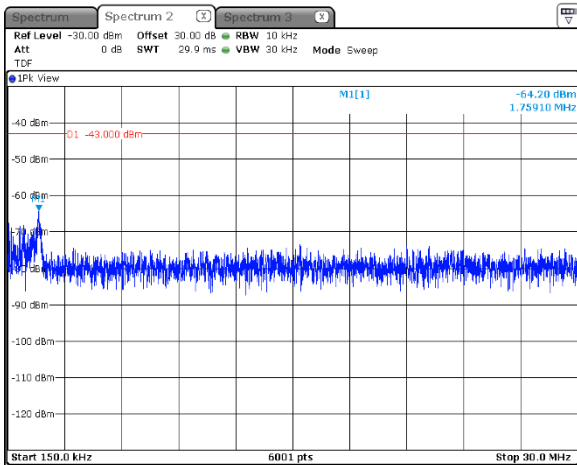
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





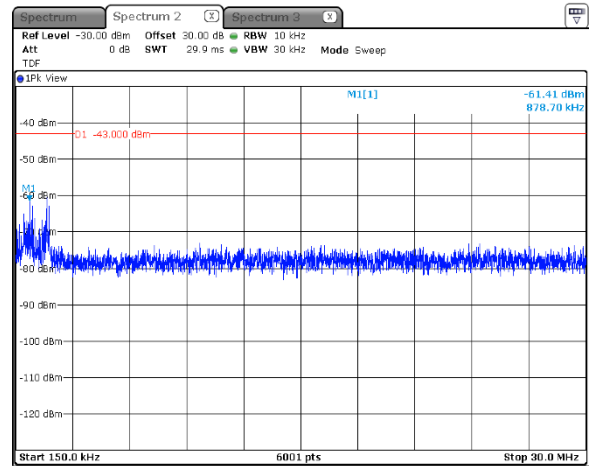
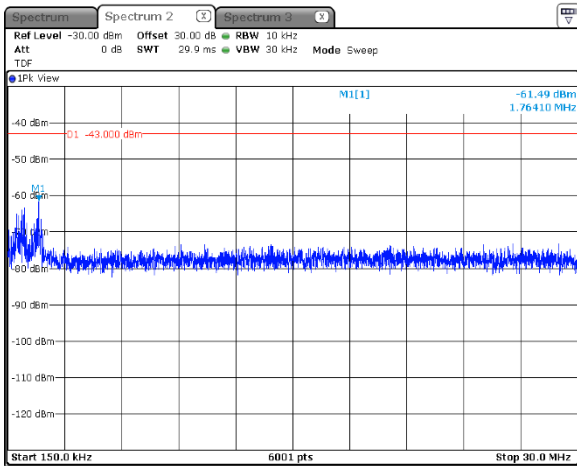
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.6.6 Spurious emission measurements in 150 kHz – 30 MHz range at high carrier frequency

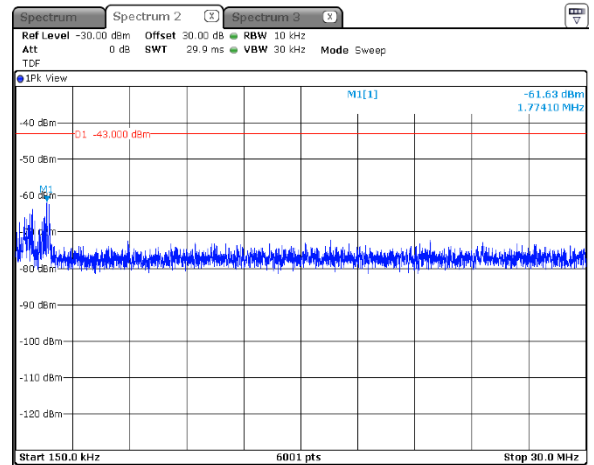
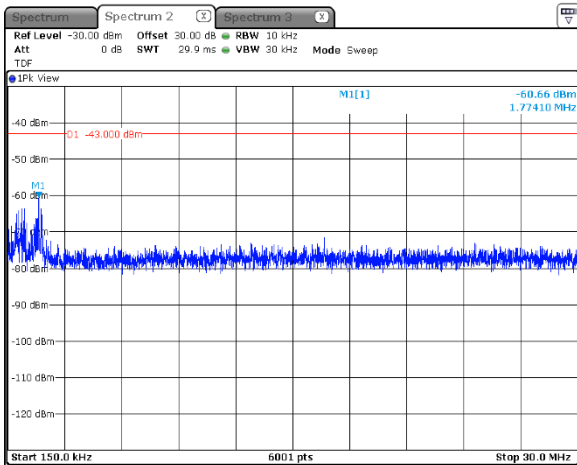
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





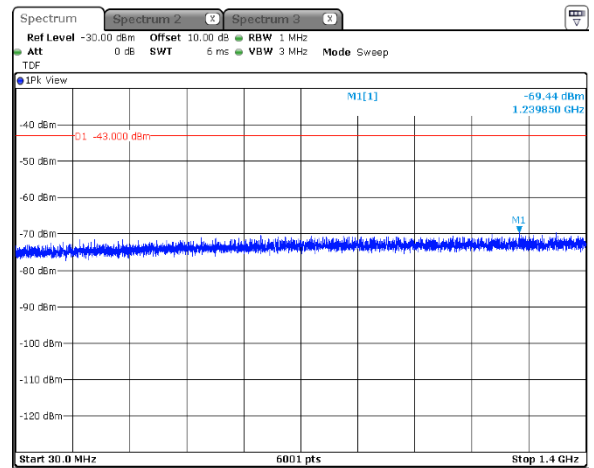
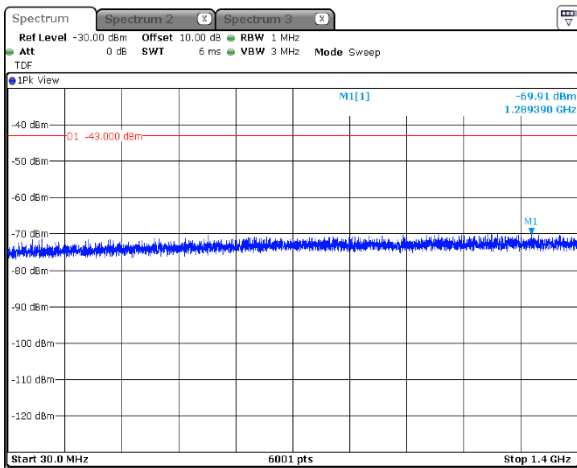
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.6.7 Spurious emission measurements in 30 - 1400 MHz range at low carrier frequency

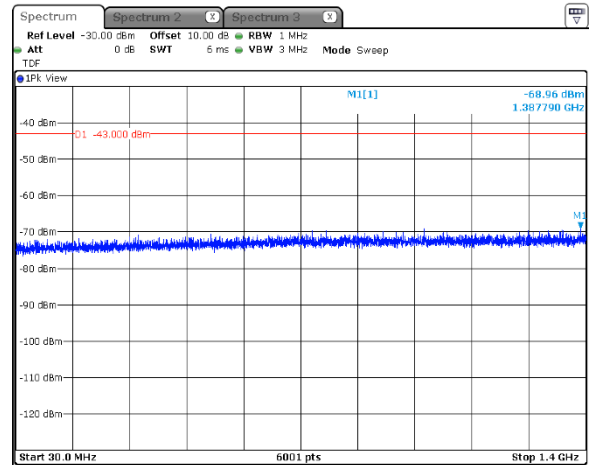
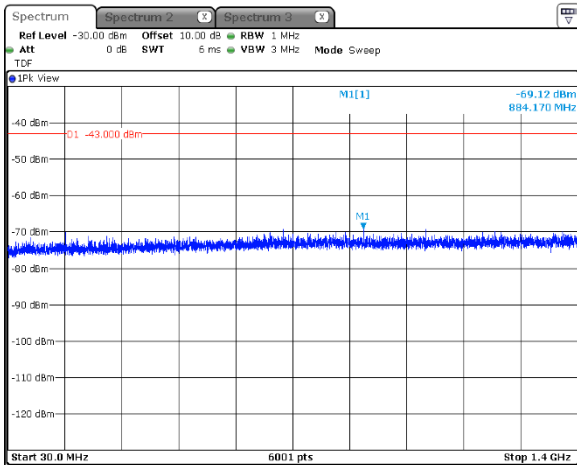
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





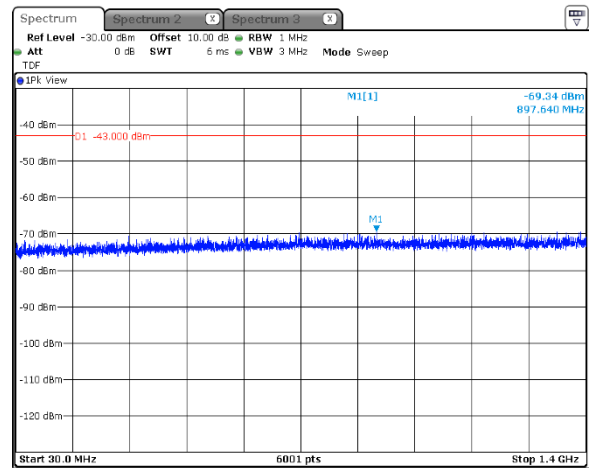
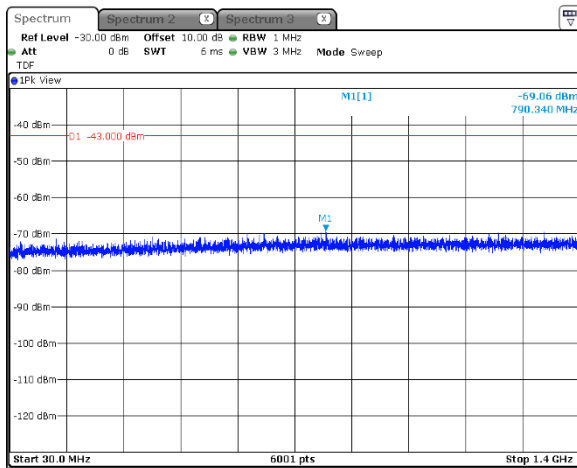
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.6.8 Spurious emission measurements in 30 - 1400 MHz range at mid carrier frequency

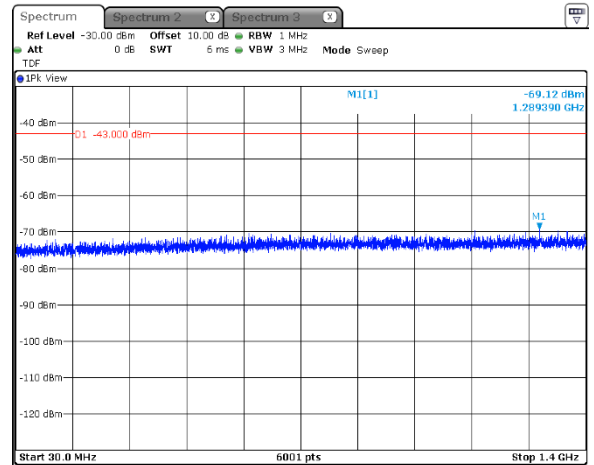
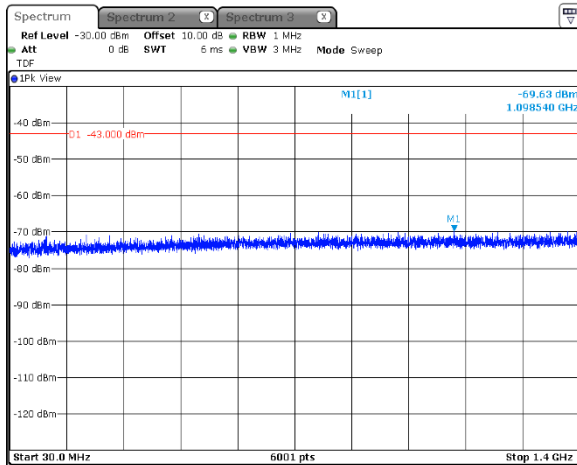
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





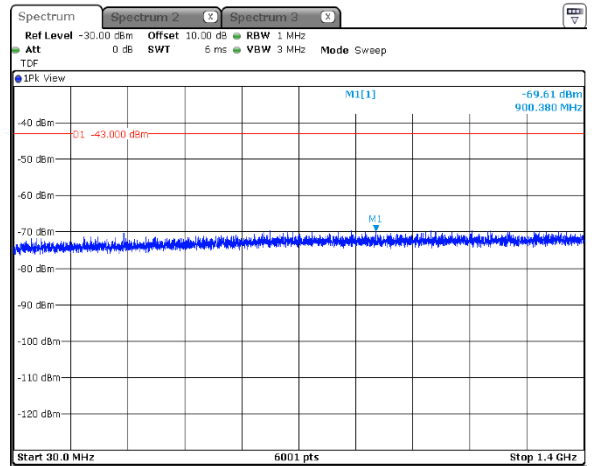
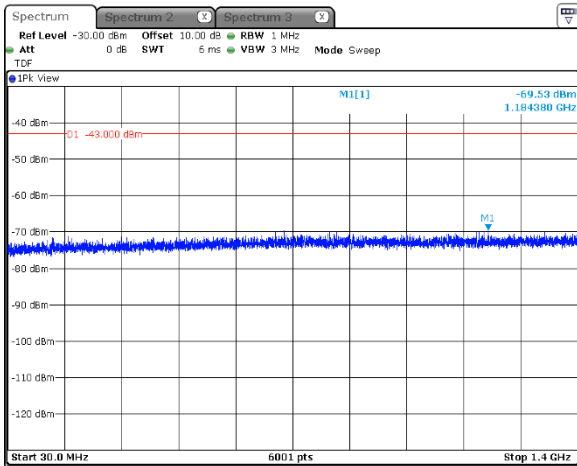
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.6.9 Spurious emission measurements in 30 - 1400 MHz range at high carrier frequency

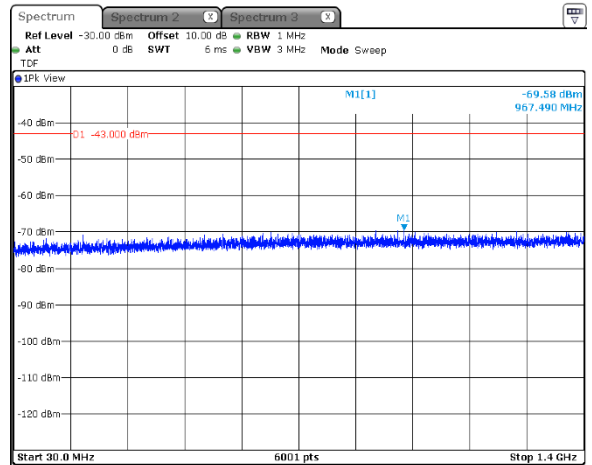
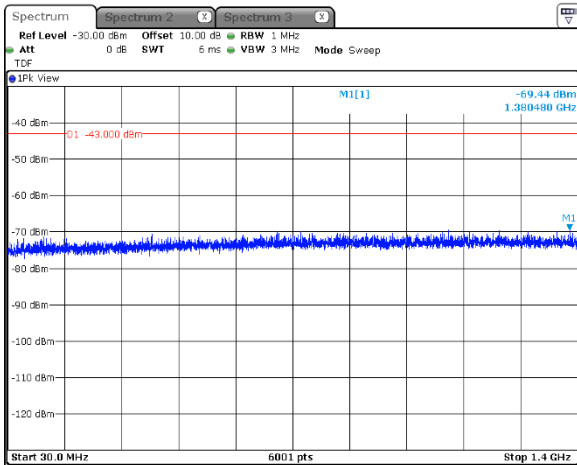
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





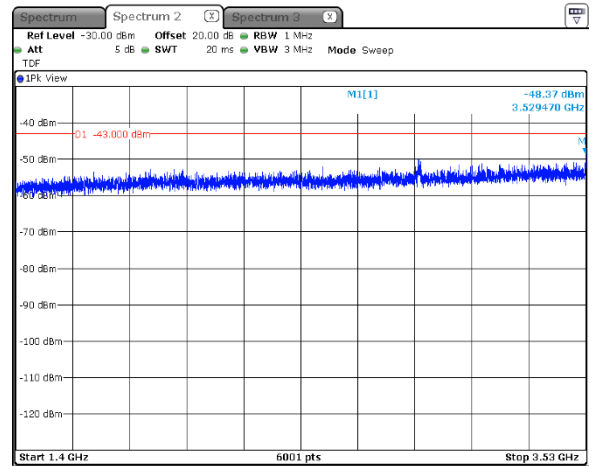
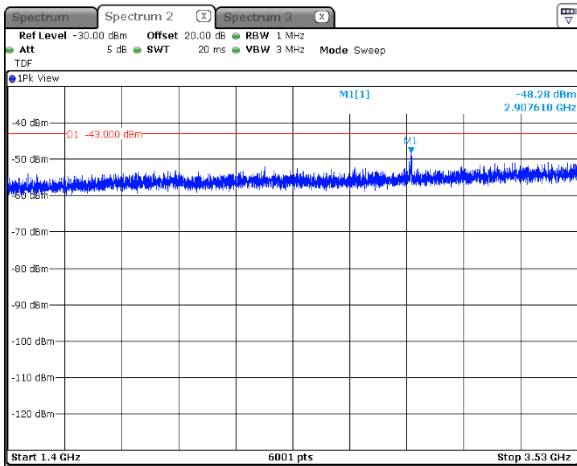
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.6.10 Spurious emission measurements in 1400 - 3530 MHz range at low carrier frequency

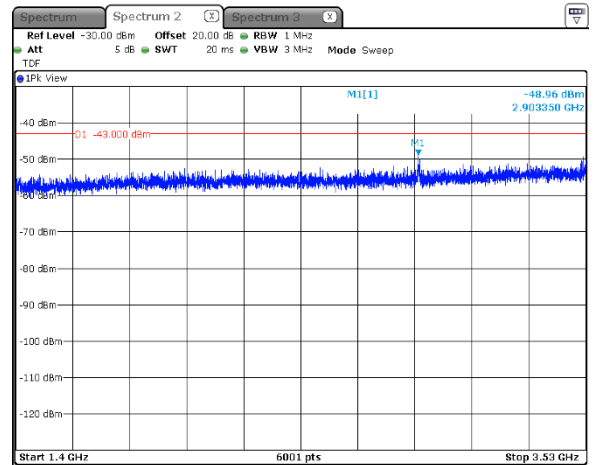
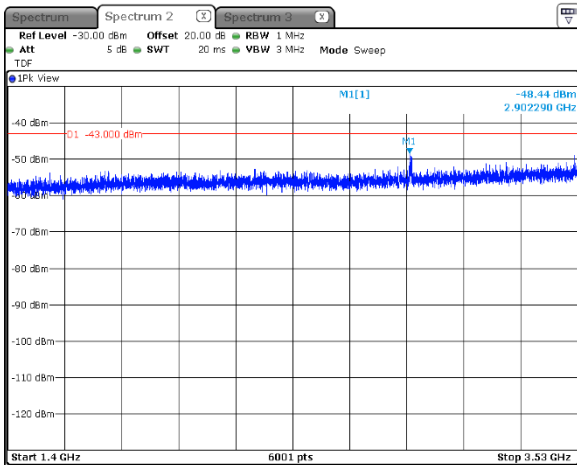
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





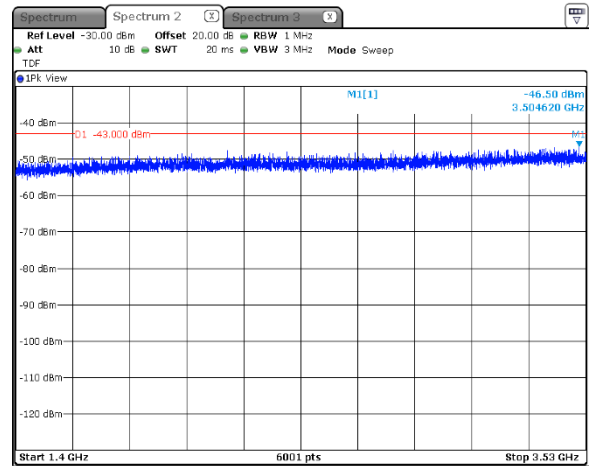
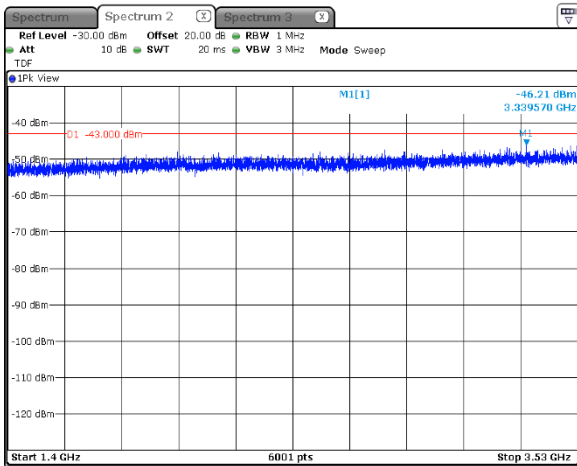
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.6.11 Spurious emission measurements in 1400 - 3530 MHz range at mid carrier frequency

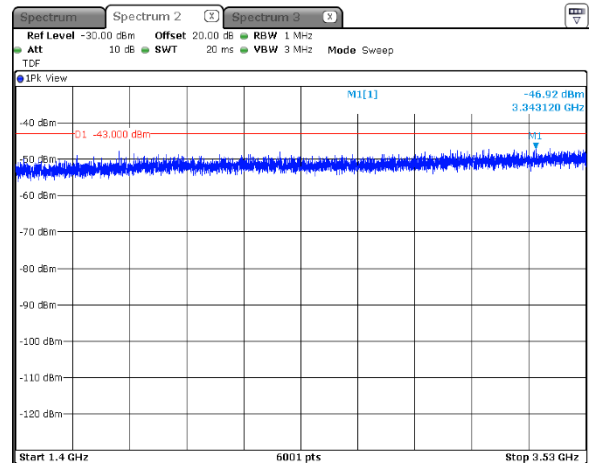
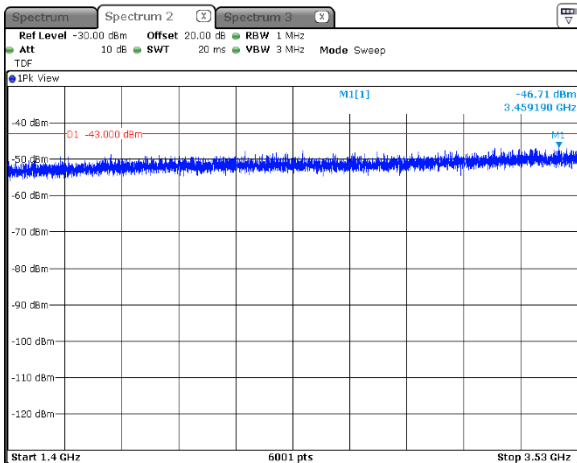
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





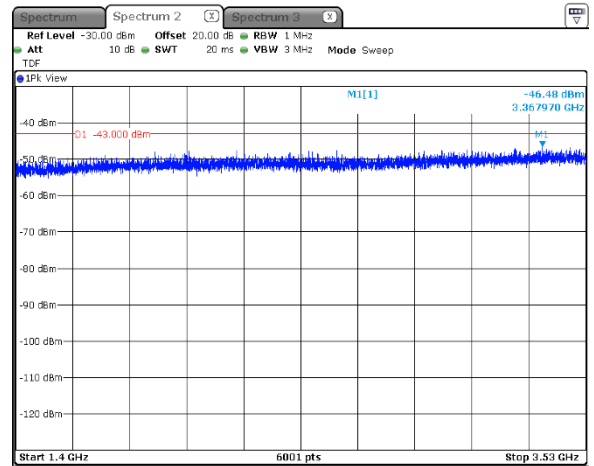
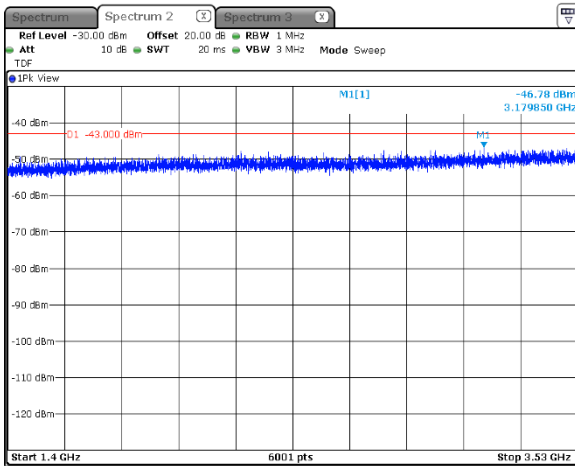
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.6.12 Spurious emission measurements in 1400 - 3530 MHz range at high carrier frequency

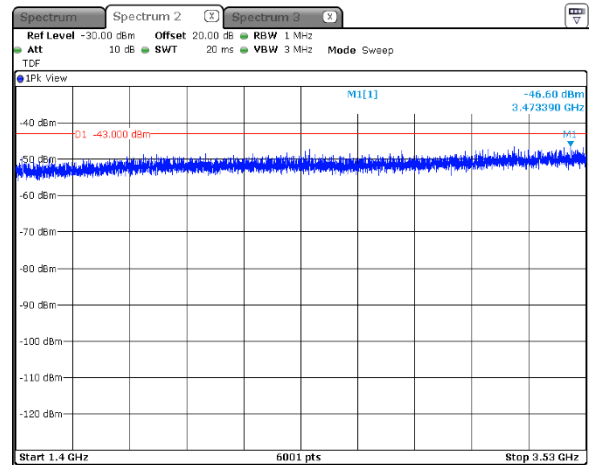
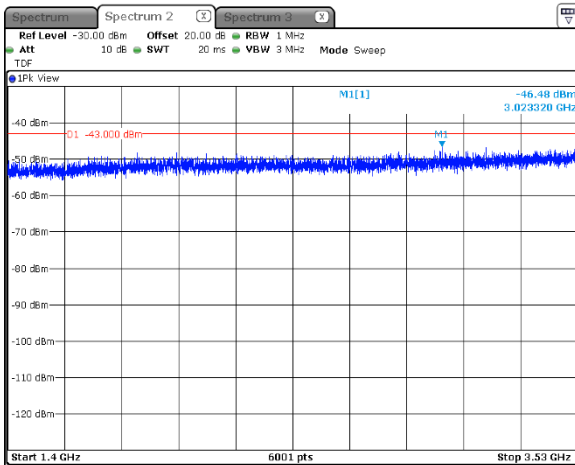
MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4





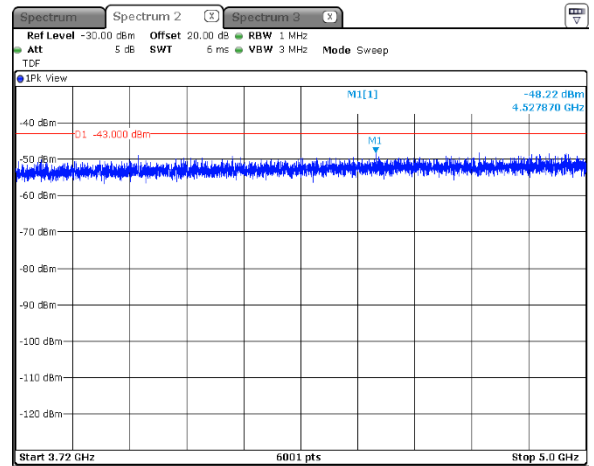
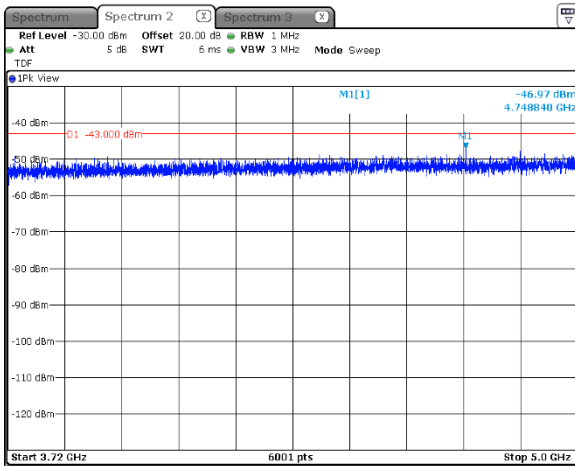
HERMON LABORATORIES

Test specification: Section 96.41(e)(3), Conducted spurious emissions			
Test procedure: Section 96.41(e)(3)			
Test mode: Compliance		Verdict: PASS	
Date(s): 23-Apr-20			
Temperature: 24.1 °C	Relative Humidity: 49 %	Air Pressure: 1011 hPa	Power: 48 VDC
Remarks:			

Plot 7.6.13 Spurious emission measurements in 3720 - 5000 GHz range at low carrier frequency

MODULATION:
CHANNEL SPACING:
ANTENNA CHAIN: #1

64QAM
10 MHz
ANTENNA CHAIN: #2



ANTENNA CHAIN: #3

ANTENNA CHAIN: #4

