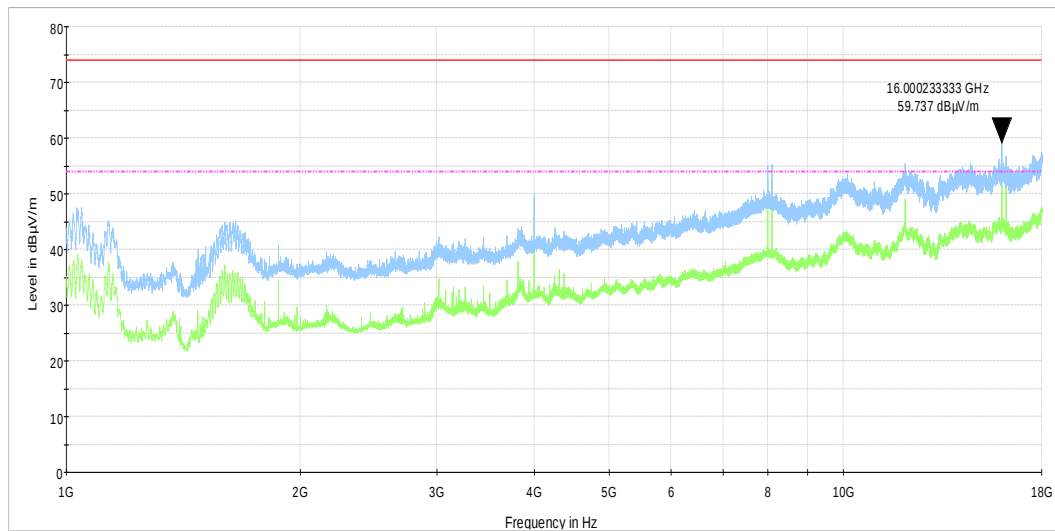




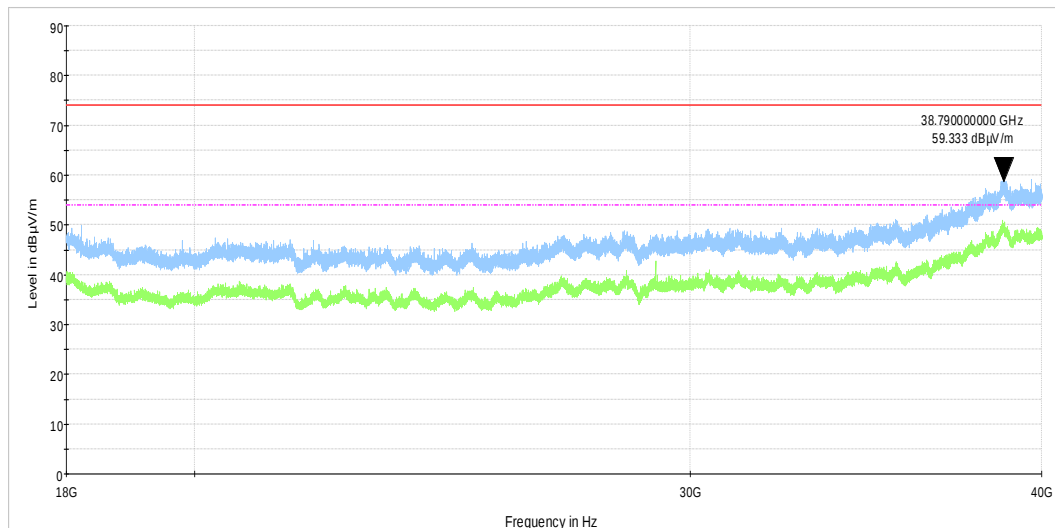
Test specification:		FCC Section 15.255(d)(2), RSS-210 section J.3, Out of band radiated emissions below 40 GHz	
Test procedure:		47 CFR, Section 2.1053; ANSI C63.10, Section 9.13	
Test mode:		Verdict: PASS	
Date(s):			
16-Nov-20			
Temperature: 23 °C	Relative Humidity: 58 %	Air Pressure: 1010 hPa	Power: 48 VDC
Remarks:			

Plot 7.3.9 Radiated emission measurements from 1 to 18 MHz at high frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
EUT POSITION: Typical (Vertical)

**Plot 7.3.10 Radiated emission measurements from 18 to 40 GHz at low frequency**

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
EUT POSITION: Typical (Vertical)

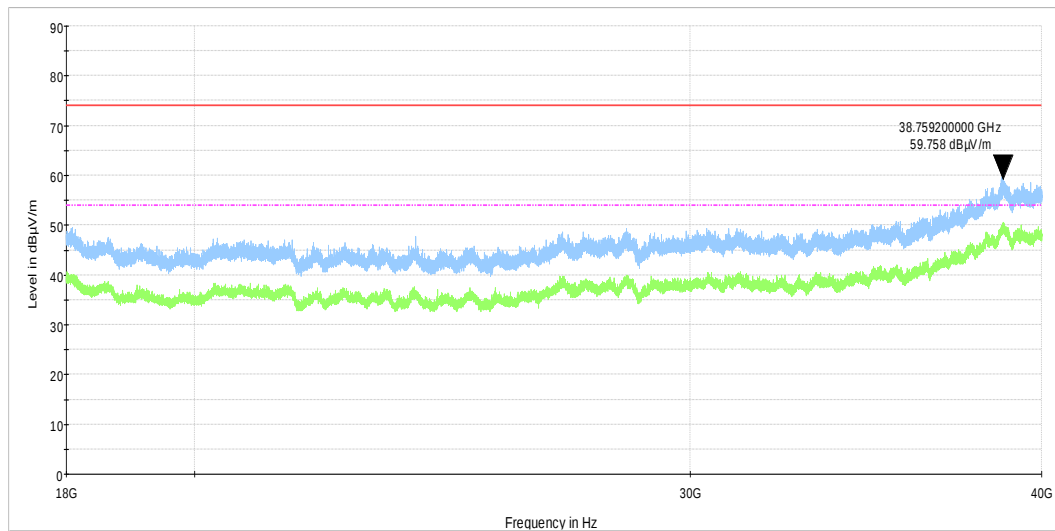




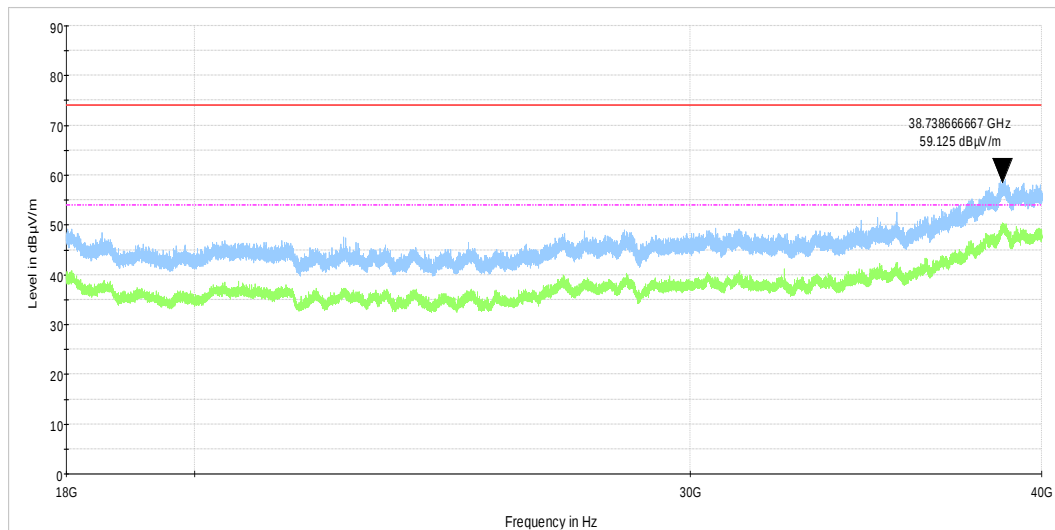
Test specification:		FCC Section 15.255(d)(2), RSS-210 section J.3, Out of band radiated emissions below 40 GHz	
Test procedure:		47 CFR, Section 2.1053; ANSI C63.10, Section 9.13	
Test mode:		Verdict: PASS	
Date(s):			
16-Nov-20			
Temperature: 23 °C	Relative Humidity: 58 %	Air Pressure: 1010 hPa	Power: 48 VDC
Remarks:			

Plot 7.3.11 Radiated emission measurements from 18 to 40 GHz at mid frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
EUT POSITION: Typical (Vertical)

**Plot 7.3.12 Radiated emission measurements from 18 to 40 GHz at high frequency**

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
EUT POSITION: Typical (Vertical)





Test specification:		FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz	
Test procedure:		ANSI C63.10, Sections 9.9, 9.12	
Test mode:		Verdict: PASS	
Date(s):			
22-Oct-20			
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

7.4 Out of band radiated emissions above 40 GHz up to 200 GHz

7.4.1 General

This test was performed to measure radiated spurious emissions from the EUT. Specification test limits are given in Table 7.4.1.

Table 7.4.1 Spurious emission field strength limits

Frequency, GHz	Power density at 3 m distance pW/cm ²	Distance, m	Field strength dB(μV/m)*, peak	Field strength dB(μV/m)*, average
40 – 200	90.0	3.0	105.30	85.30
75 - 110	90.0	0.50	120.90**	100.90**
110 - 140	90.0	0.05	140.9**	120.9**
140 - 200	90.0	0.01	154.8**	134.8**

*- The limit is provided in average values.

** - The limit for 1 m and other test distance was calculated using the inverse distance extrapolation factor as follows:

for far field: $\text{Lim}_{S_2} = \text{Lim}_{S_1} + 20 \log (S_1/S_2)$,

where S_1 – standard defined distance in meters;

S_2 – measurement distance in meters (according to ANSI C63.10)

7.4.2 Test procedure for spurious emission field strength measurements

7.4.2.1 The EUT was set up as shown in Figure 7.4.1, energized and the performance check was conducted.

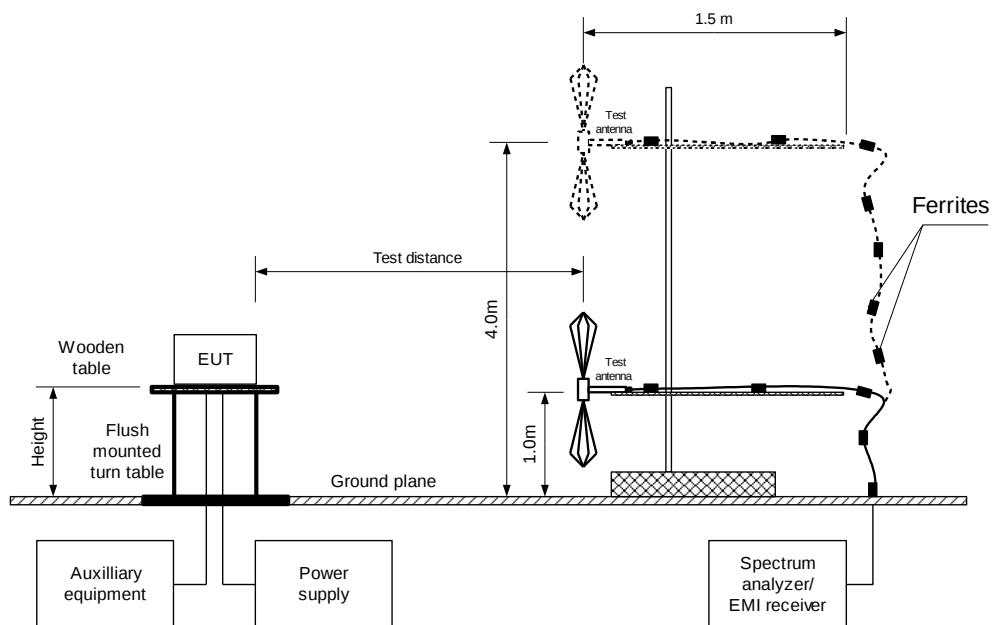
7.4.2.2 The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360°, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.

7.4.2.3 The test results were recorded in Table 7.4.2 and are shown in the associated plots.



Test specification:		FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz	
Test procedure:		ANSI C63.10, Sections 9.9, 9.12	
Test mode:		Verdict: PASS	
Date(s):			
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Figure 7.4.1 Spurious emission field strength above 40 GHz test set up





Test specification: FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz			
Test procedure: ANSI C63.10, Sections 9.9, 9.12			
Test mode: Compliance		Verdict: PASS	
Date(s): 22-Oct-20			
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.4.2 Spurious emission field strength test results

TEST DISTANCE: 0.05 - 3 m
EUT POSITION: Typical (Vertical)
MODULATION: 16QAM
TRANSMITTER OUTPUT POWER: Maximum
INVESTIGATED FREQUENCY RANGE: 40 – 200 GHz
RESOLUTION BANDWIDTH: 1000 kHz
VIDEO BANDWIDTH: ≥ Resolution bandwidth
TEST ANTENNA TYPE: Standard Gain Horn 24dB (40-60 GHz)
Standard Gain Horn 24dB (50-75 GHz)
Standard Gain Horn 24dB (75-110 GHz)
Standard Gain Horn 24dB (90-140 GHz)
Standard Gain Horn 24dB (140-220 GHz)

Standard Gain Horn 24dB (140-220 GHz)										
Frequency, MHz	Antenna		Azimuth, degrees*	Peak field strength(VBW=3 MHz)			Average field strength(VBW=10 kHz)			Verdict
	Polariz.	Height, m		Measured, dB(μV/m)	Limit, dB(μV/m)	Margin, dB**	Measured, dB(μV/m)	Limit, dB(μV/m)	Margin, dB**	
Low carrier frequency										
48387.02	Vert	1.5	167	90.56	105.30	-14.74	82.41	85.30	-2.89	Pass
Mid carrier frequency										
44425.48	Vert	1.5	234	85.86	105.30	-19.44	73.45	85.30	-11.85	Pass
51610.58	Vert	1.5	124	92.74	105.30	-12.56	83.12	85.30	-2.18	Pass
High carrier frequency										
53319.42	Vert	1.5	35	82.64	105.30	-22.66	75.46	85.30	-9.84	Pass

*- EUT front panel refer to 0 degrees position of turntable.

**- Margin = Measured emission - specification limit.

Reference numbers of test equipment used

HL 0747	HL0770	HL 0771	HL 0772	HL1312	HL 2909	HL 3235	HL 3290
HL 3291	HL 3306	HL3329	HL 3433	HL 3434	HL 3536		

Full description is given in Appendix A.



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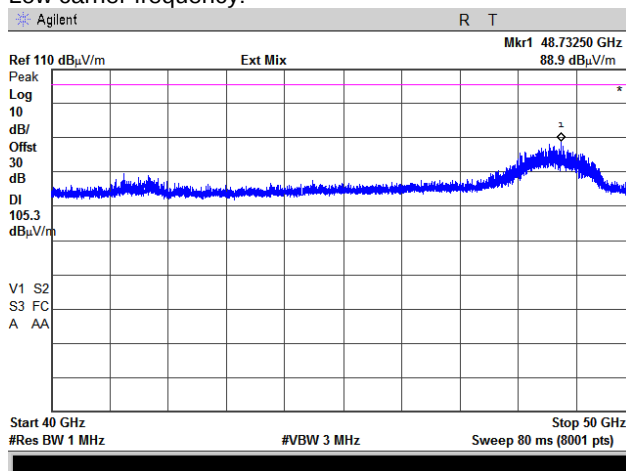
Report ID: SIKRAD_FCC.40852

Date of Issue: 8-Feb-21

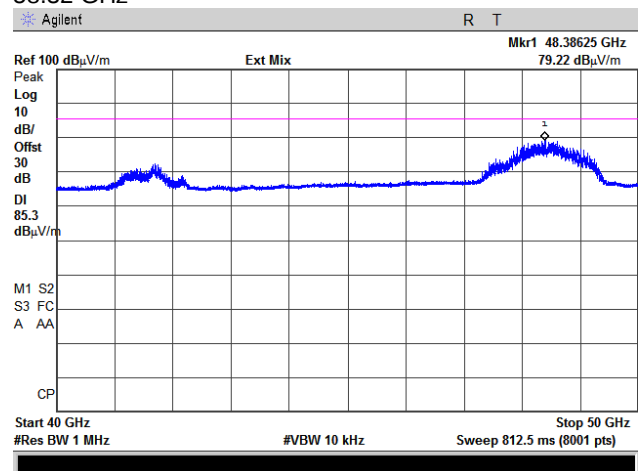
Test specification:		FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz	
Test procedure:		ANSI C63.10, Sections 9.9, 9.12	
Test mode:		Verdict: PASS	
Date(s):			
22-Oct-20			
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.1 Spurious emission measurements in 40 – 45 GHz range

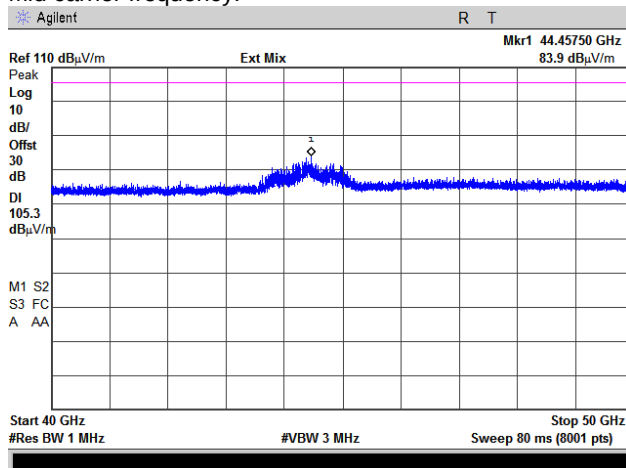
TEST SITE:
TEST DISTANCE:
MODULATION:
ANTENNA POLARIZATION:
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:



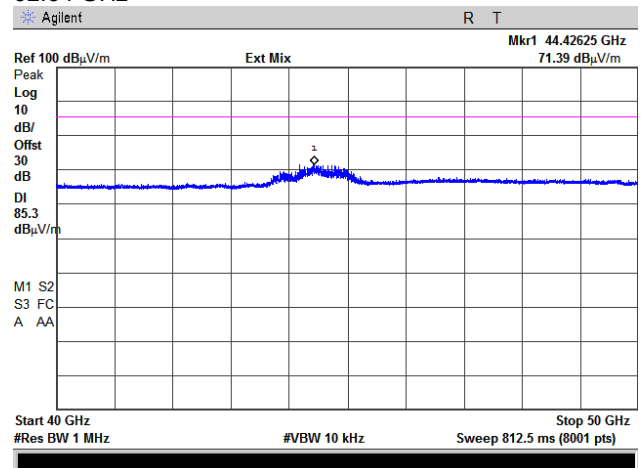
OATS
3 m
16QAM
Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58.32 GHz



Mid carrier frequency:



62.64 GHz





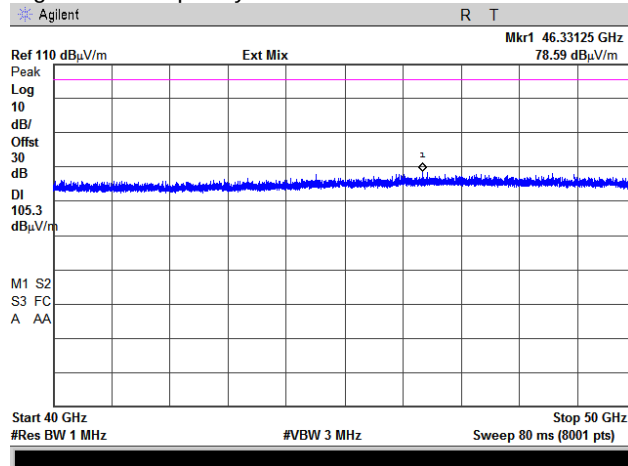
HERMON LABORATORIES

Report ID: SIKRAD_FCC.40852

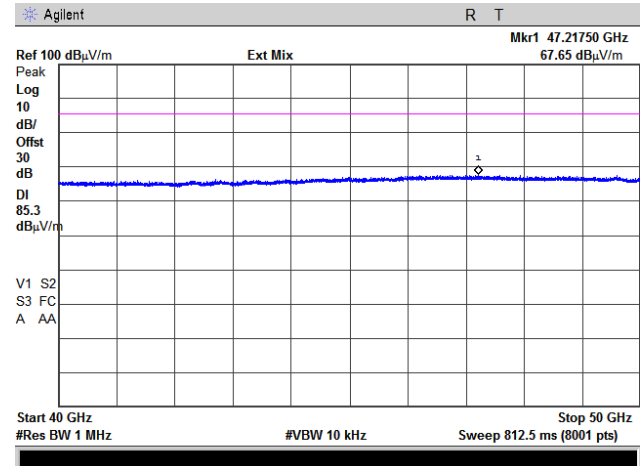
Date of Issue: 8-Feb-21

Test specification:		FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz	
Test procedure:		ANSI C63.10, Sections 9.9, 9.12	
Test mode:		Compliance	Verdict: PASS
Date(s):		22-Oct-20	
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

High carrier frequency:



64.80 GHz





HERMON LABORATORIES

Report ID: SIKRAD_FCC.40852

Date of Issue: 8-Feb-21

Test specification:		FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz	
Test procedure:		ANSI C63.10, Sections 9.9, 9.12	
Test mode:		Compliance	Verdict: PASS
Date(s):		22-Oct-20	
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.2 Spurious emission measurements in 50 – 55 GHz range

TEST SITE:

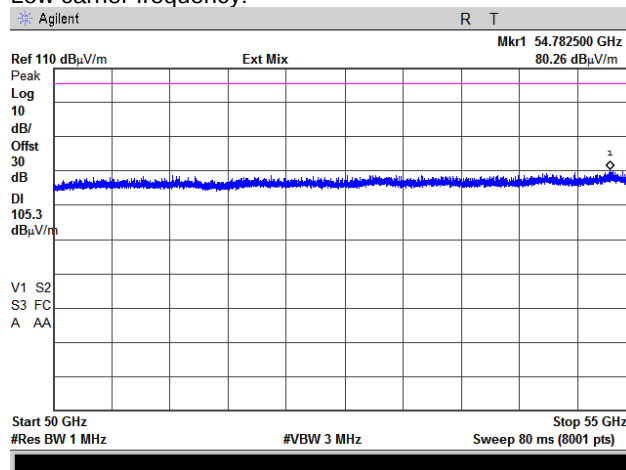
TEST DISTANCE:

MODULATION:

ANTENNA POLARIZATION:

DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz

Low carrier frequency:



OATS

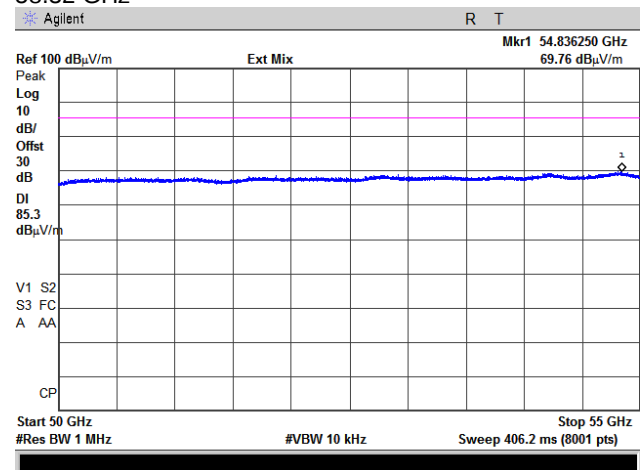
3 m

16QAM

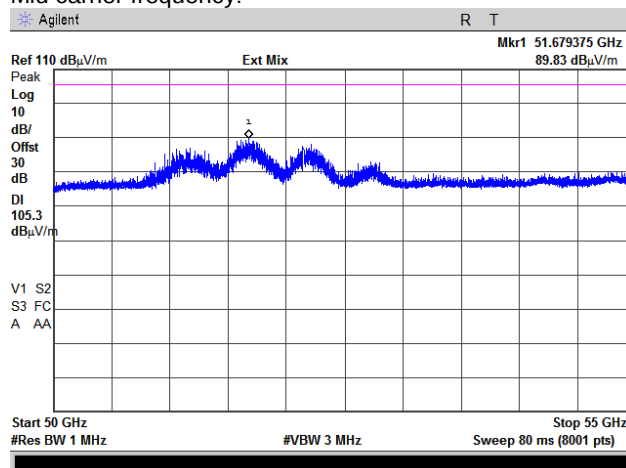
Vertical and Horizontal

DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

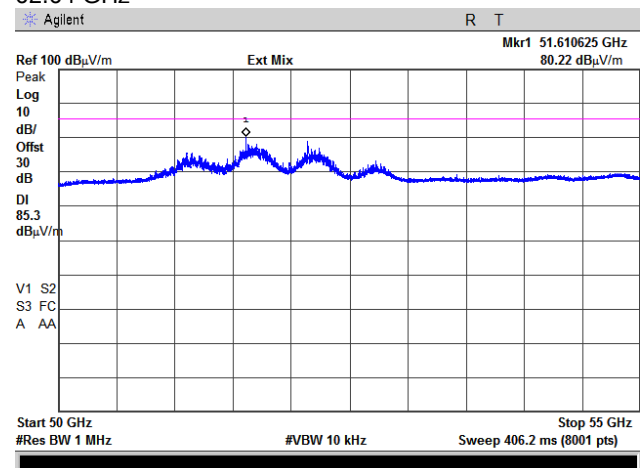
58.32 GHz



Mid carrier frequency:



62.64 GHz





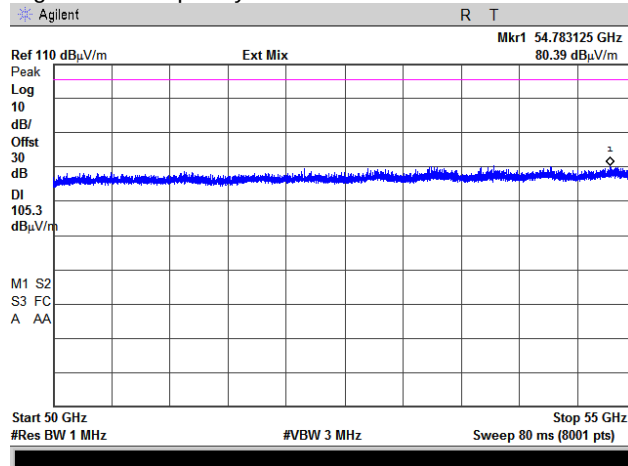
HERMON LABORATORIES

Report ID: SIKRAD_FCC.40852

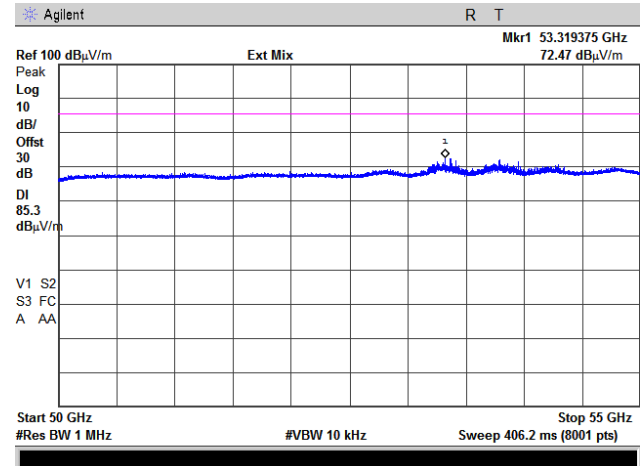
Date of Issue: 8-Feb-21

Test specification:		FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz	
Test procedure:		ANSI C63.10, Sections 9.9, 9.12	
Test mode:		Compliance	Verdict: PASS
Date(s):		22-Oct-20	
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

High carrier frequency:



64.80 GHz





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Report ID: SIKRAD_FCC.40852

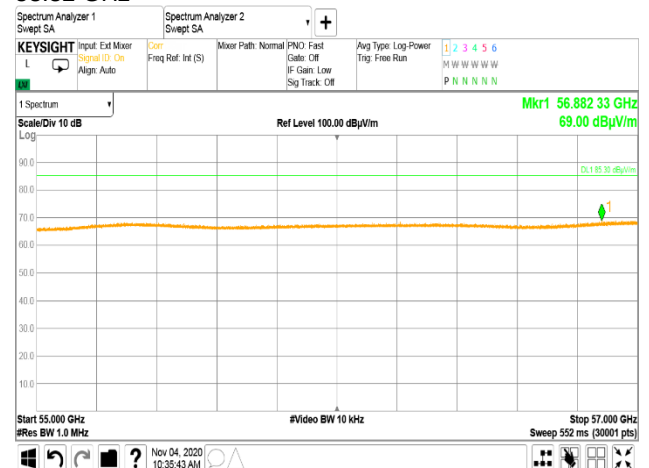
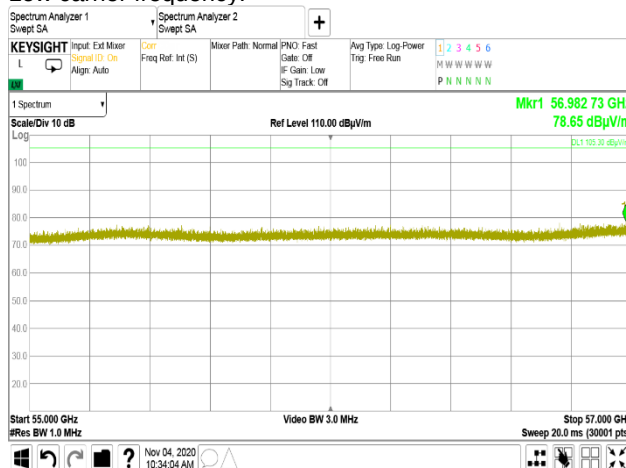
Date of Issue: 8-Feb-21

Test specification:		FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz	
Test procedure:		ANSI C63.10, Sections 9.9, 9.12	
Test mode:		Compliance	Verdict: PASS
Date(s):		22-Oct-20	
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.3 Spurious emission measurements in 55 – 57 GHz range

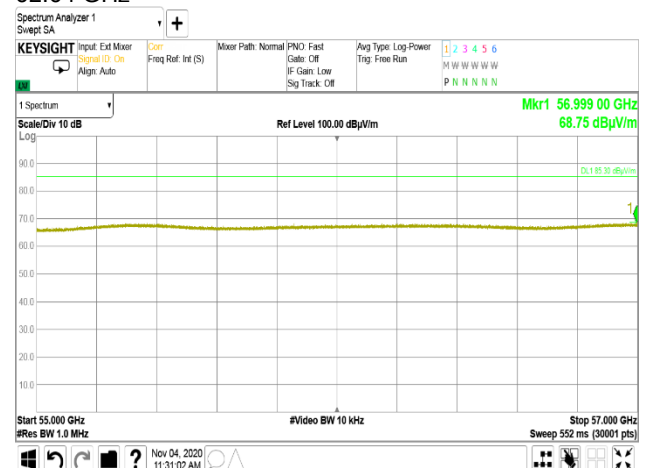
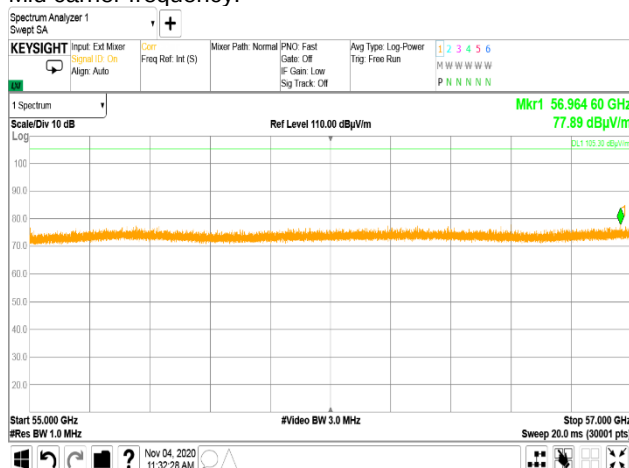
TEST SITE:
TEST DISTANCE:
MODULATION:
ANTENNA POLARIZATION:
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:

OATS
3 m
16QAM
Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58.32 GHz



Mid carrier frequency:

62.64 GHz





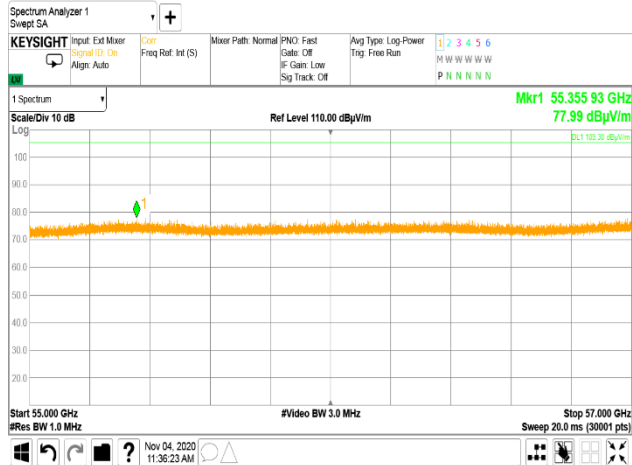
HERMON LABORATORIES

Report ID: SIKRAD_FCC.40852

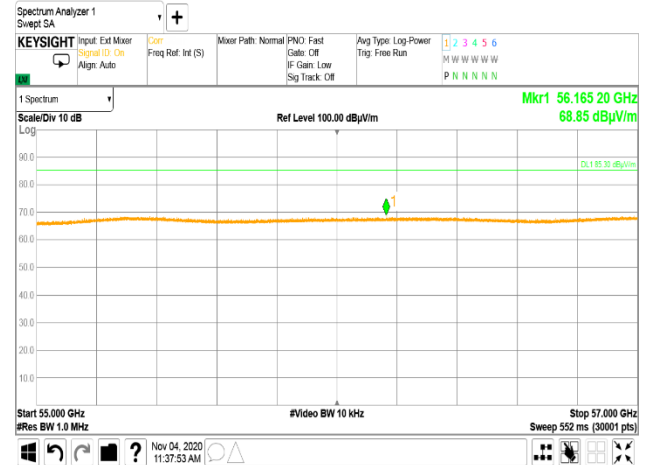
Date of Issue: 8-Feb-21

Test specification:		FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz	
Test procedure:		ANSI C63.10, Sections 9.9, 9.12	
Test mode:		Verdict: PASS	
Date(s):			
22-Oct-20			
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

High carrier frequency:



64.80 GHz





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Report ID: SIKRAD_FCC.40852

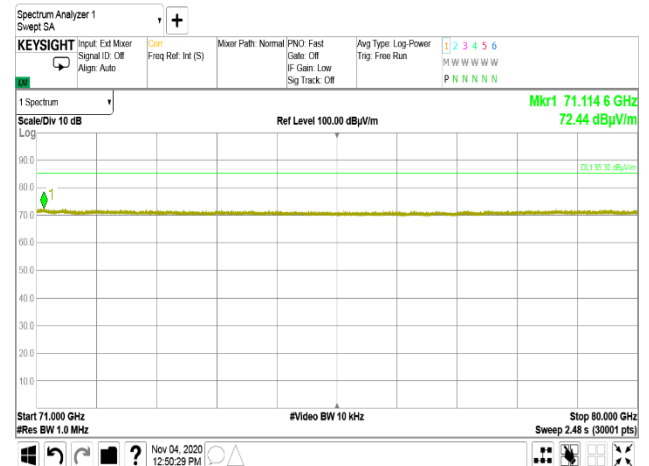
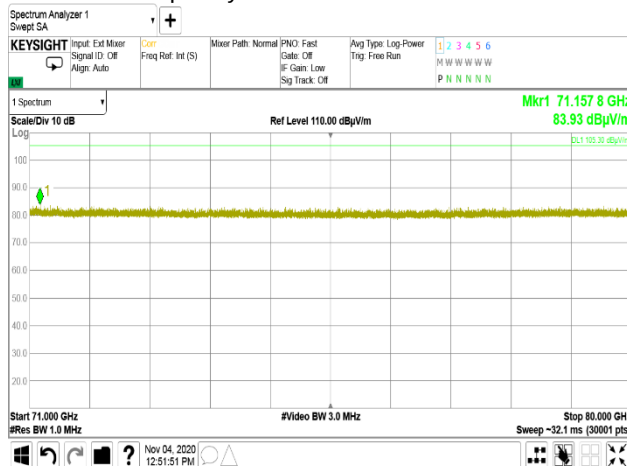
Date of Issue: 8-Feb-21

Test specification:		FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz	
Test procedure:		ANSI C63.10, Sections 9.9, 9.12	
Test mode:		Verdict: PASS	
Date(s):			
22-Oct-20			
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.4 Spurious emission measurements in 71 – 80 GHz range

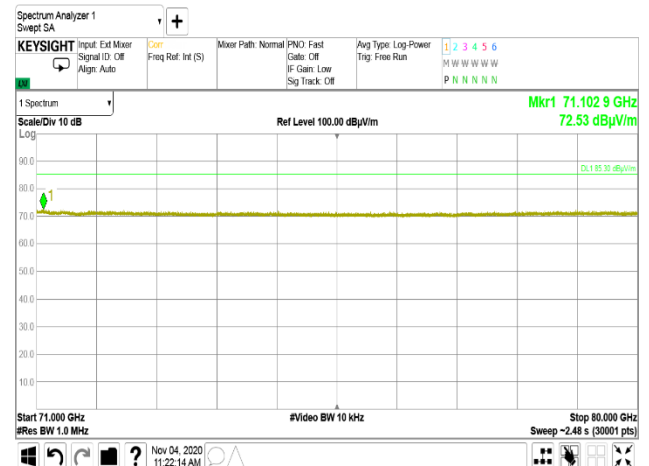
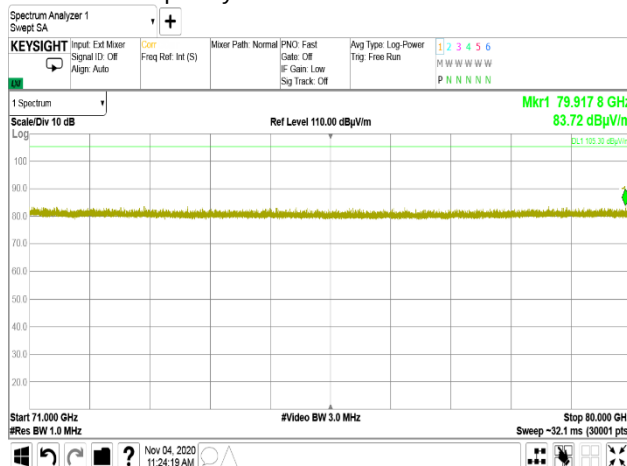
TEST SITE:
TEST DISTANCE:
MODULATION:
ANTENNA POLARIZATION:
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:

OATS
3 m
16QAM
Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 100 kHz
58.32 GHz



Mid carrier frequency:

62.64 GHz





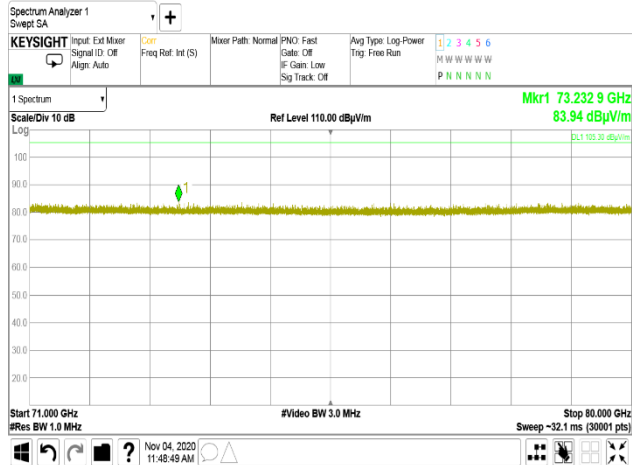
HERMON LABORATORIES

Report ID: SIKRAD_FCC.40852

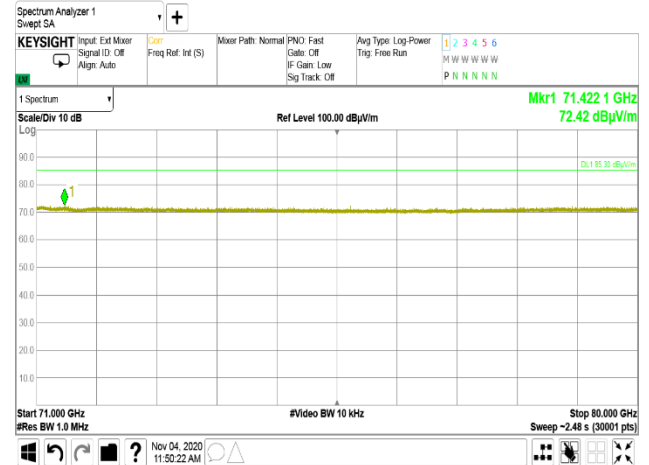
Date of Issue: 8-Feb-21

Test specification:		FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz	
Test procedure:		ANSI C63.10, Sections 9.9, 9.12	
Test mode:		Compliance	Verdict: PASS
Date(s):		22-Oct-20	
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

High carrier frequency:



64.80 GHz





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Report ID: SIKRAD_FCC.40852

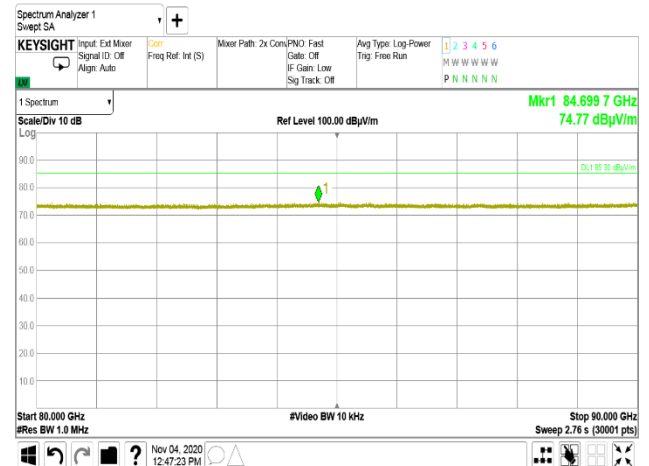
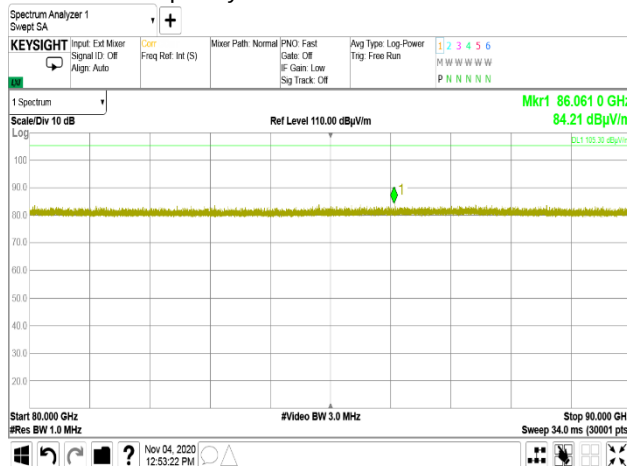
Date of Issue: 8-Feb-21

Test specification:		FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz	
Test procedure:		ANSI C63.10, Sections 9.9, 9.12	
Test mode:		Verdict: PASS	
Date(s):			
22-Oct-20			
Temperature: 25 °C	Relative Humidity: 43 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.5 Spurious emission measurements in 80 – 90 GHz range

TEST SITE:
TEST DISTANCE:
MODULATION:
ANTENNA POLARIZATION:
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:

OATS
3 m
16QAM
Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 100 kHz
58.32 GHz



Mid carrier frequency:

62.64 GHz

