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):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 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
90 - 110	90.0	0.5	120.9**	100.9**
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: $Lim_{S2} = Lim_{S1} + 20 \log (S_1/S_2)$,

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

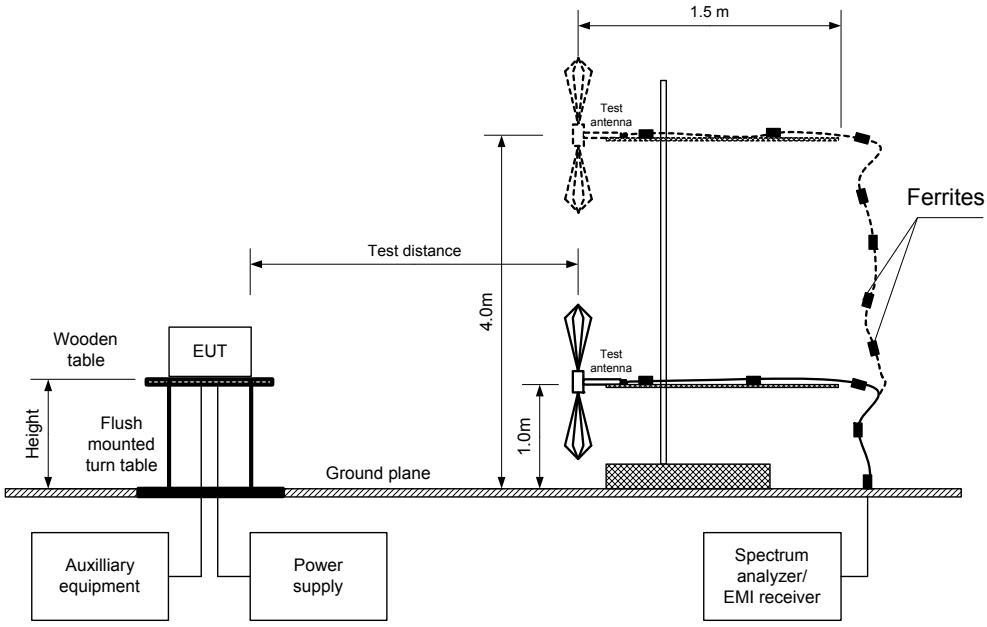
7.4.2.1 The EUT was set up as shown in Figure 7.4.1, energized and the performance check was conducted.

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 360^0, 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:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 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):	03-Jun-20		
Temperature: 24 ºC	**Relative Humidity:** 45 %	**Air Pressure:** 1010 hPa	**Power:** 55 VDC
Remarks:			

Table 7.4.2 Spurious emission field strength test results

TEST DISTANCE: 0.005 - 3 m
EUT POSITION: Typical (Vertical)
TRANSMITTER OUTPUT POWER: Maximum
INVESTIGATED FREQUENCY RANGE: 40 – 200 GHz
RESOLUTION BANDWIDTH: 1000 kHz
VIDEO BANDWIDTH: ≥ Resolution bandwidth
TEST ANTENNA TYPE: Standard Gain Horn 24 dB (40-60 GHz)
Standard Gain Horn 24 dB (60-90 GHz)
Standard Gain Horn 24dB (90-140 GHz)
Standard Gain Horn 24 dB (140-220 GHz)

MODULATION: BPSK

Frequency, MHz	Antenna		Azimuth, degrees*	Peak field strength(VBW=3 MHz)			Average field strength(VBW=1 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 58320 MHz										
No emissions were found										Pass
Mid carrier frequency 60480 MHz										
No emissions were found										Pass
High carrier frequency 64800 MHz										
No emissions were found										Pass

*- EUT front panel refer to 0 degrees position of turntable.
**- Margin = Measured emission – specification limit.

MODULATION: QPSK

Frequency, MHz	Antenna		Azimuth, degrees*	Peak field strength(VBW=3 MHz)			Average field strength(VBW=1 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 58320 MHz										
No emissions were found										Pass
Mid carrier frequency 60480 MHz										
No emissions were found										Pass
High carrier frequency 64800 MHz										
No emissions were found										Pass

*- EUT front panel refer to 0 degrees position of turntable.
**- Margin = Measured emission – specification limit.

Reference numbers of test equipment used

HL 0747	HL 0770	HL 0771	HL 0772	HL 1312	HL 2909	HL 3235	HL 3291
HL 3306	HL 3329	HL 3433	HL 3434	HL 3536	HL 4023	HL 5376	HL 5380

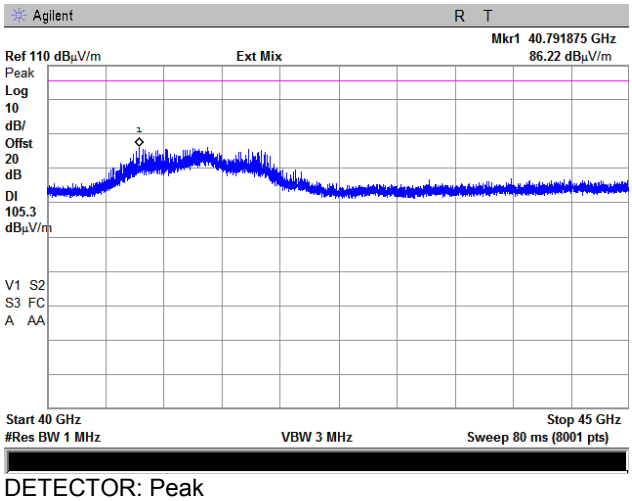
Full description is given in Appendix A.

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):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.1 Spurious emission measurements in 40 – 45 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
Low carrier frequency: 58320 MHz

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



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

Image suppress Modulated

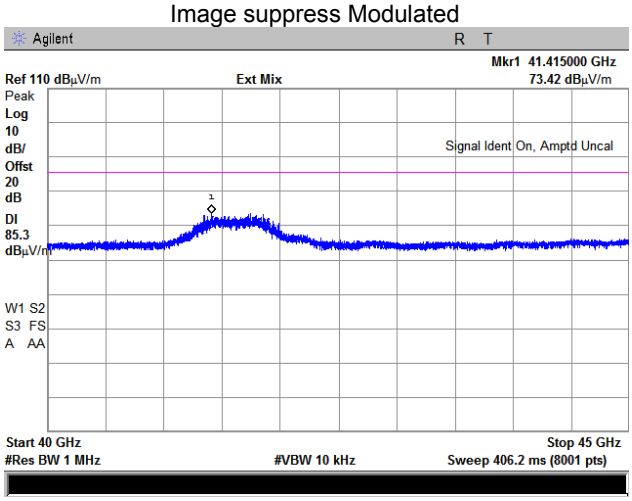
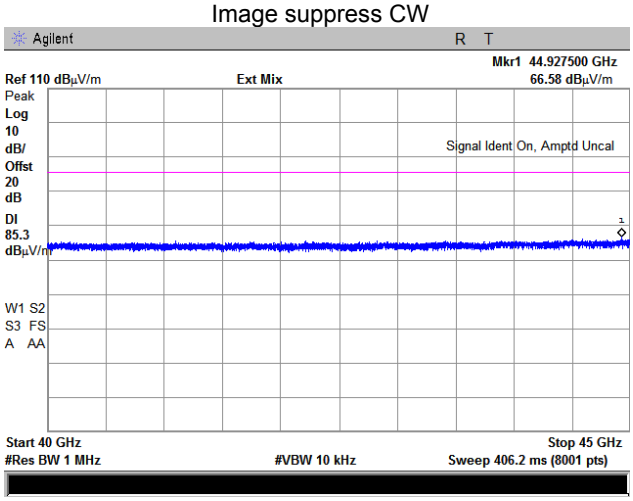


Image suppress CW



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):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.2 Spurious emission measurements in 40 – 45 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	BPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
Low carrier frequency:	58320 MHz

Image shift left

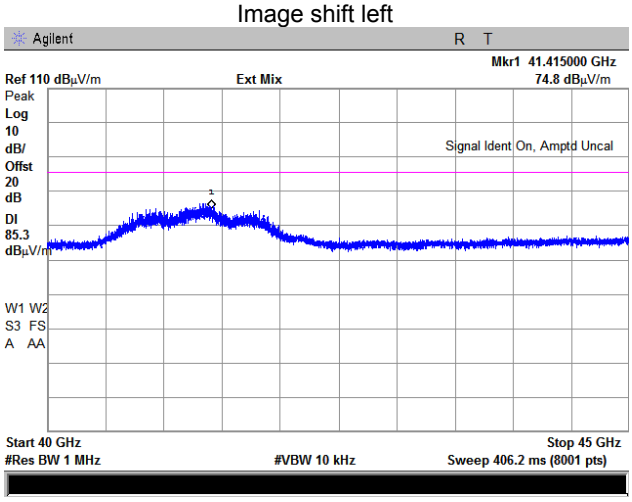
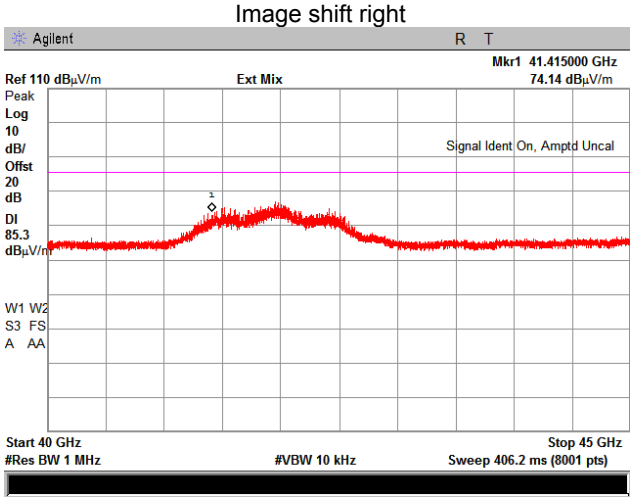


Image shift right

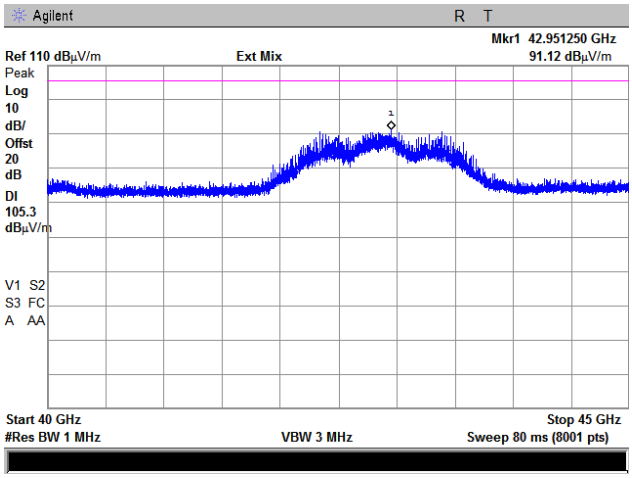


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.3 Spurious emission measurements in 40 – 45 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
Mid carrier frequency: 60480 MHz

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



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

Image suppress Modulated

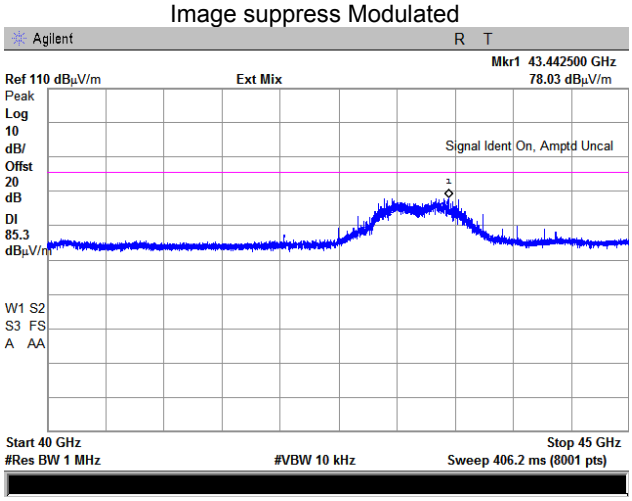
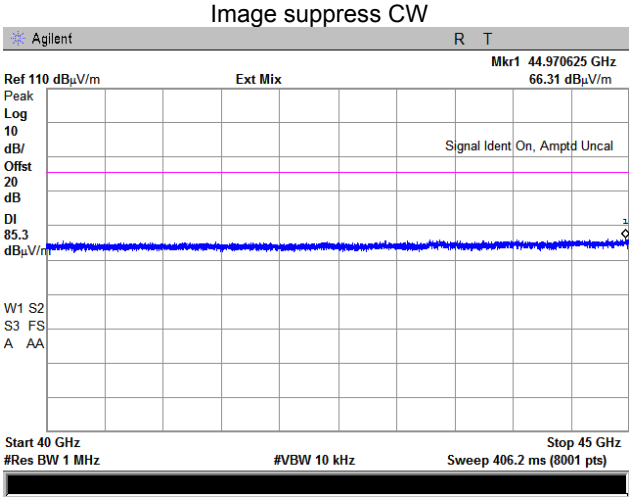


Image suppress CW



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):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.4 Spurious emission measurements in 40 – 45 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	BPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
Mid carrier frequency:	60480 MHz

Image shift left

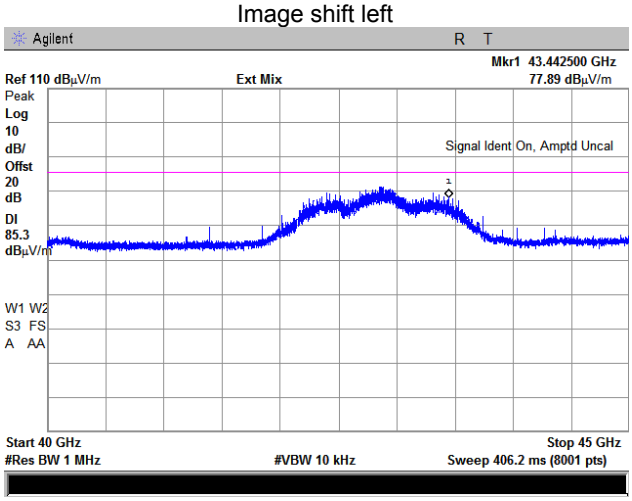
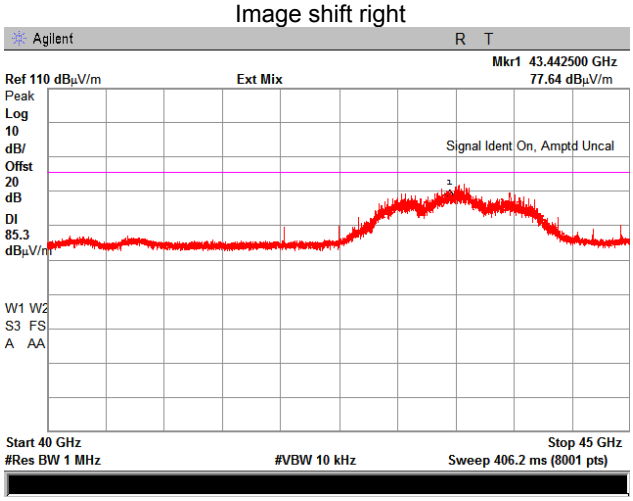


Image shift right

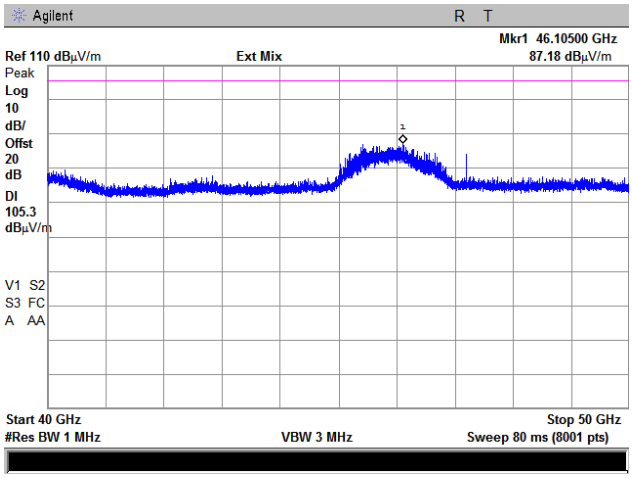


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.5 Spurious emission measurements in 40 – 50 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
High carrier frequency: 64800 MHz

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



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

Image suppress Modulated

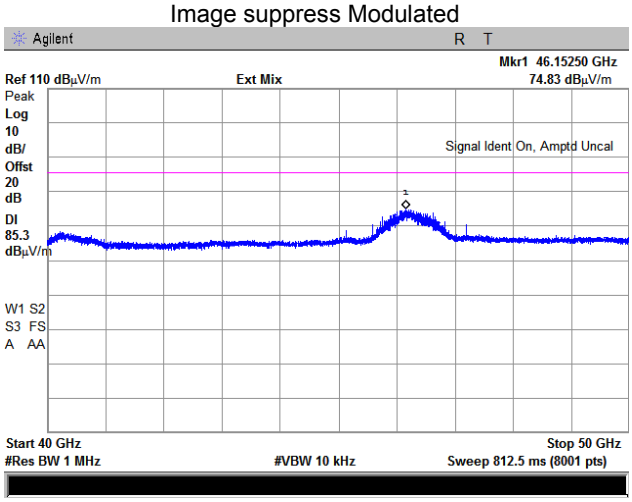
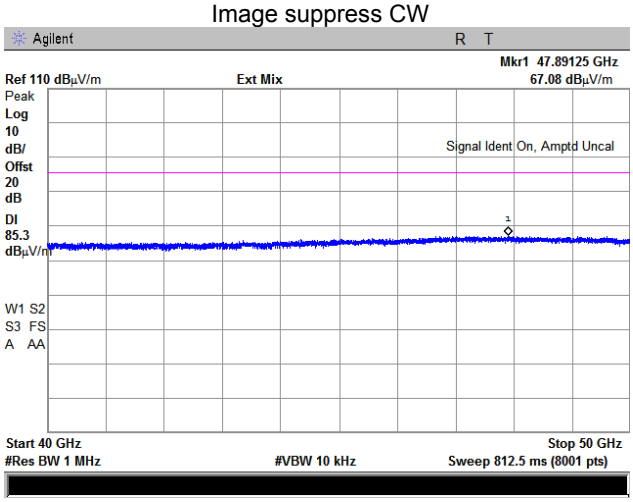


Image suppress CW



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):	03-Jun-20		
Temperature: 24 ºC	**Relative Humidity:** 45 %	**Air Pressure:** 1010 hPa	**Power:** 55 VDC
Remarks:			

Plot 7.4.6 Spurious emission measurements in 40 – 50 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	BPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
High carrier frequency:	64800 MHz

Image shift left

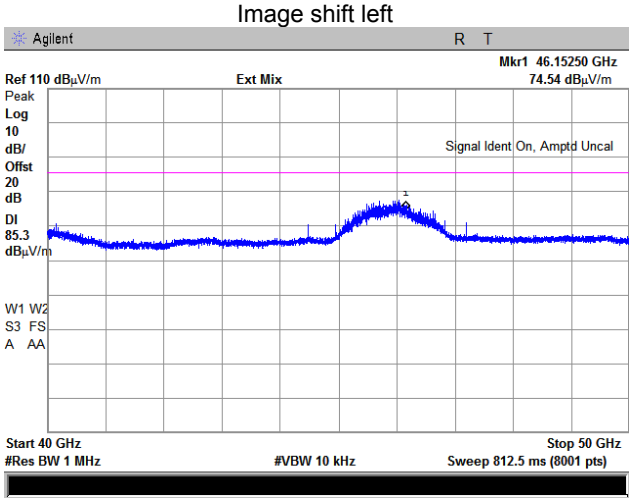
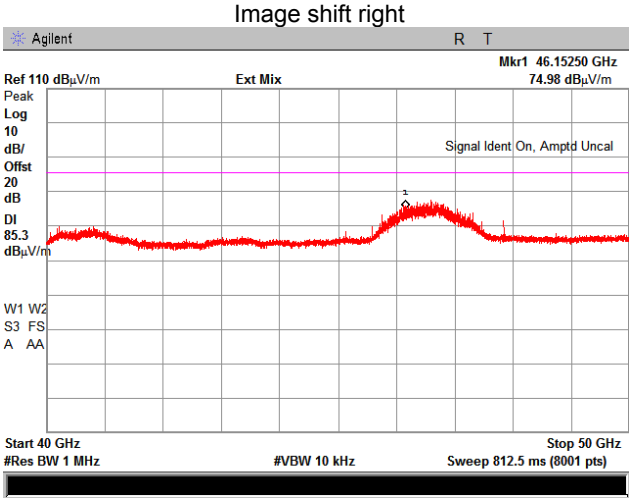


Image shift right

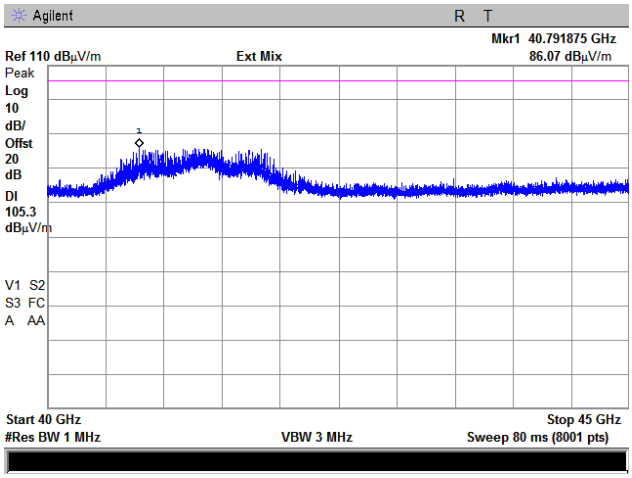


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.7 Spurious emission measurements in 40 – 45 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal

Low carrier frequency: 58320 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz



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

Image suppress Modulated

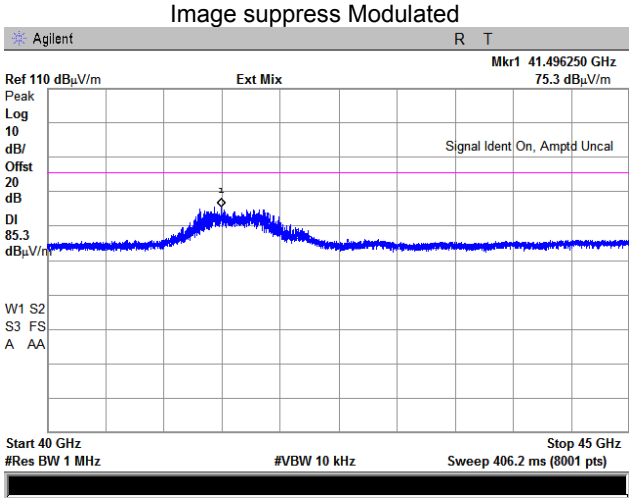
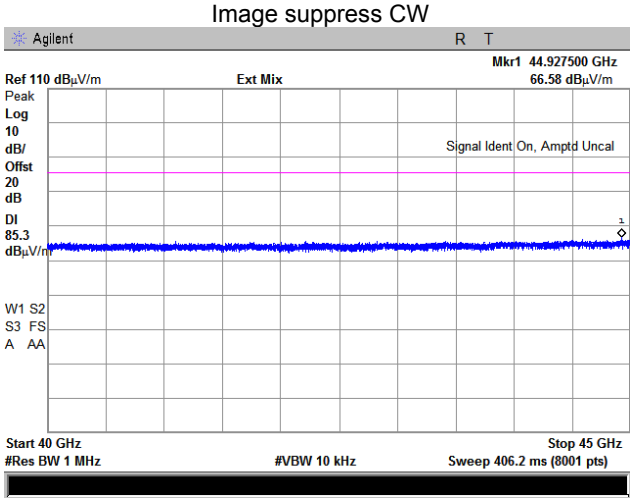


Image suppress CW



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):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.8 Spurious emission measurements in 40 – 45 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	QPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
Low carrier frequency:	58320 MHz

Image shift left

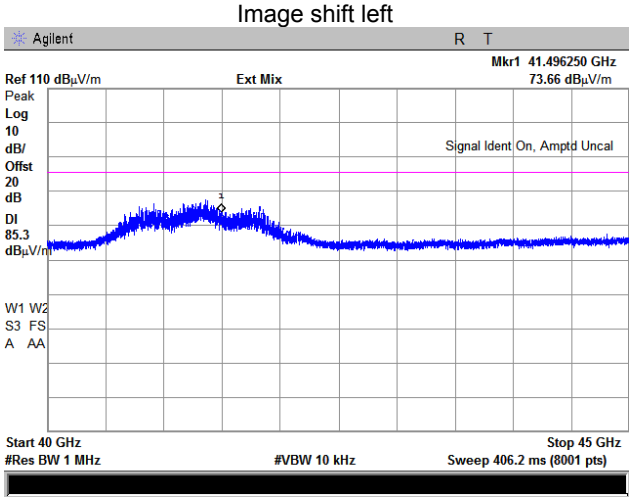
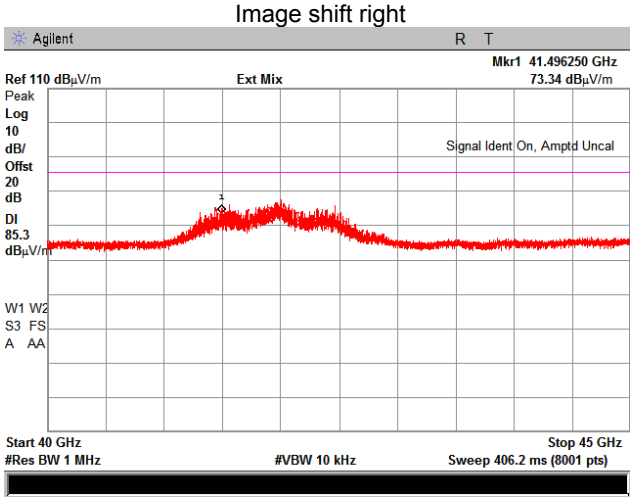


Image shift right



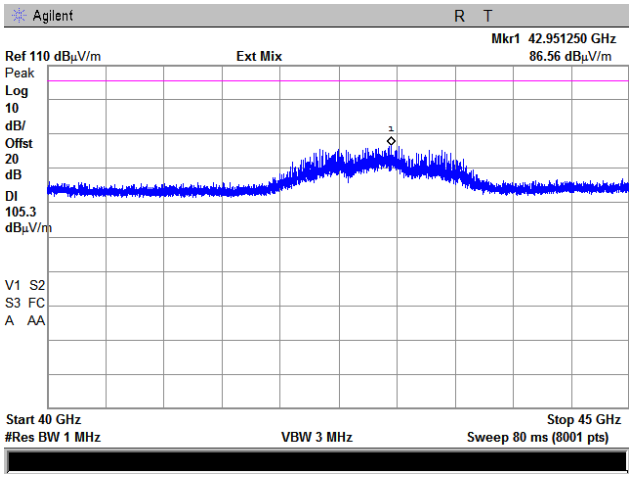
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.9 Spurious emission measurements in 40 – 45 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
Mid carrier frequency: 60480 MHz

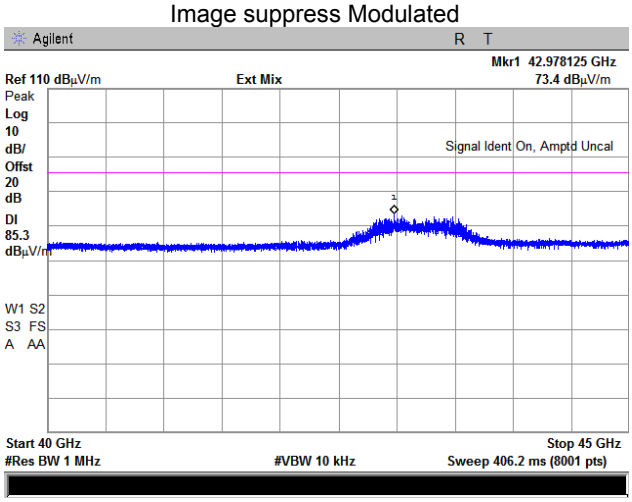
DETECTOR: Peak

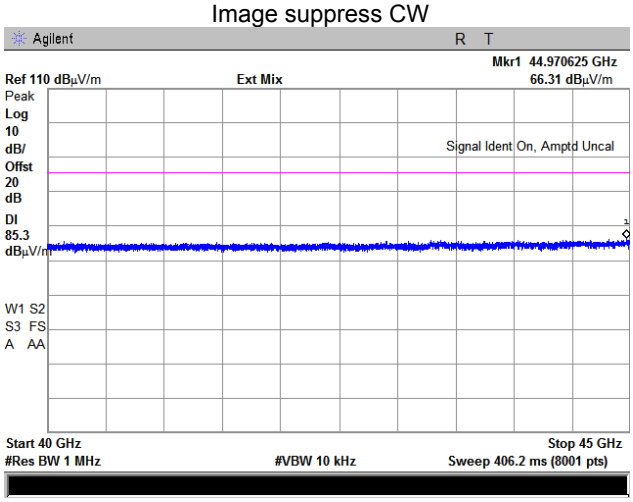
RBW = 1 MHz; VBW = 3 MHz



DETECTOR: Peak
Image suppress Modulated

RBW = 1 MHz; VBW = 10 kHz
Image suppress CW





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):	03-Jun-20		
Temperature: 24 ºC	**Relative Humidity:** 45 %	**Air Pressure:** 1010 hPa	**Power:** 55 VDC
Remarks:			

Plot 7.4.10 Spurious emission measurements in 40 – 45 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	QPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
Mid carrier frequency:	60480 MHz

Image shift left

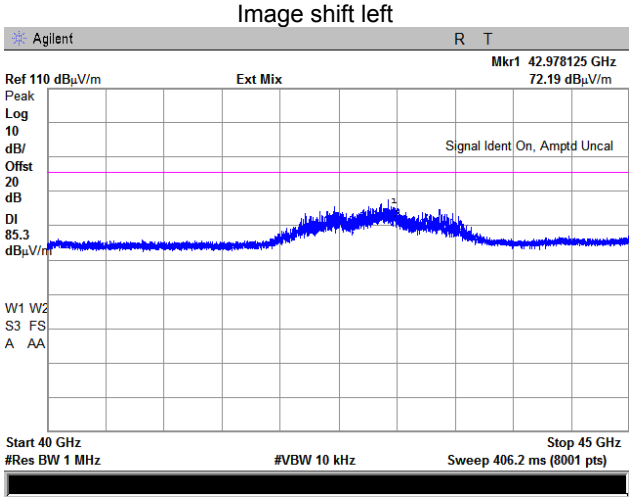
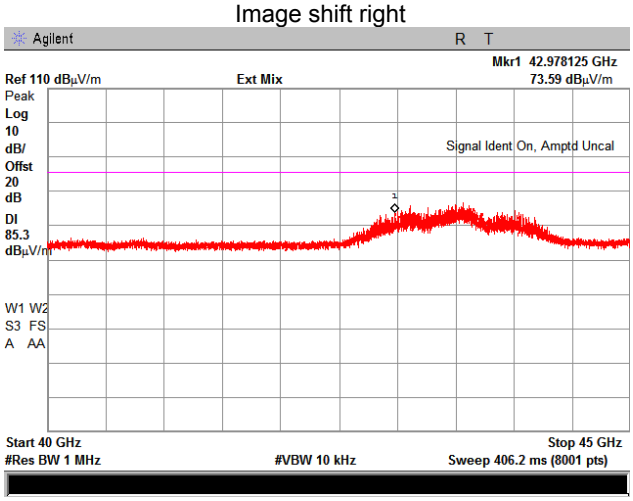


Image shift right

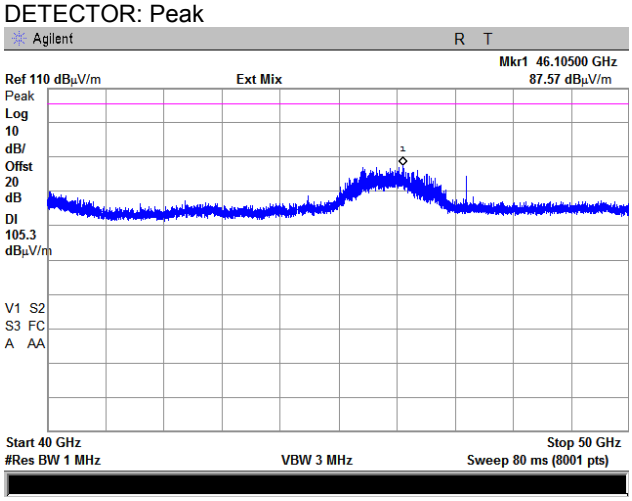


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.11 Spurious emission measurements in 40 – 50 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
High carrier frequency: 64800 MHz

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



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

Image suppress Modulated

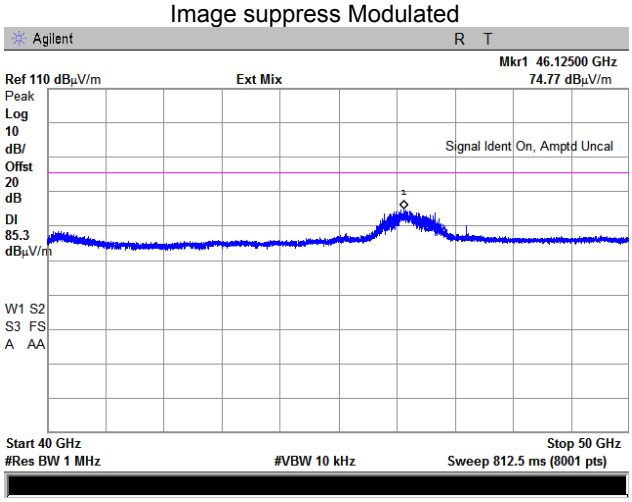
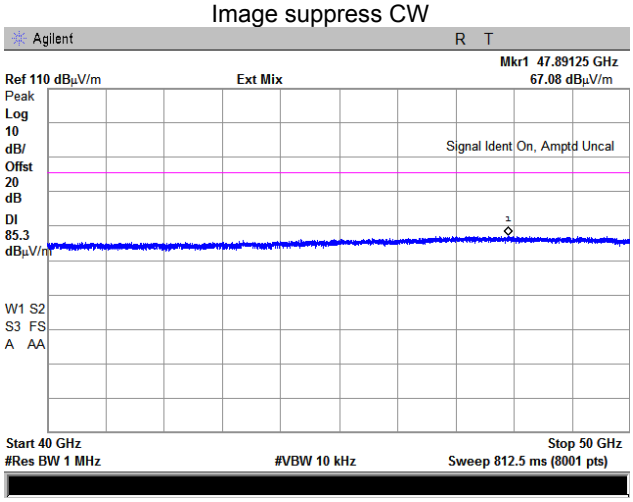


Image suppress CW



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):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.12 Spurious emission measurements in 40 – 50 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	QPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
High carrier frequency:	64800 MHz

Image shift left

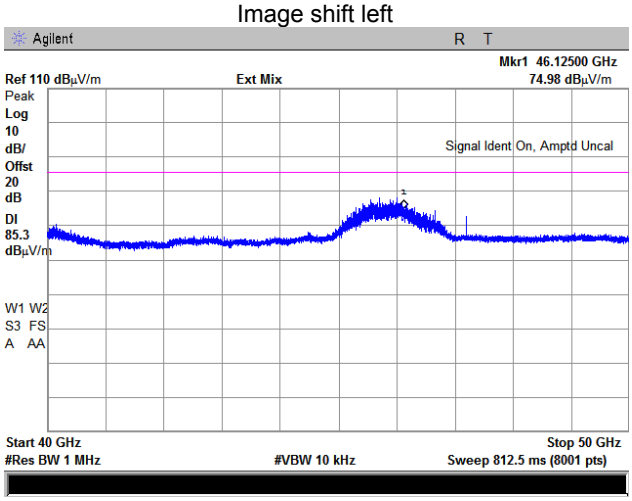
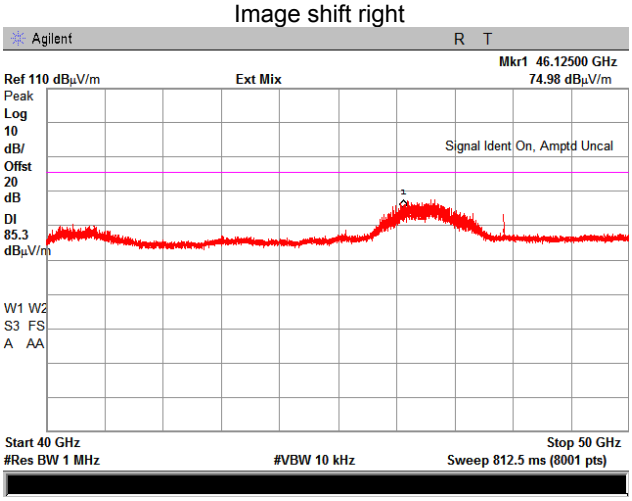


Image shift right

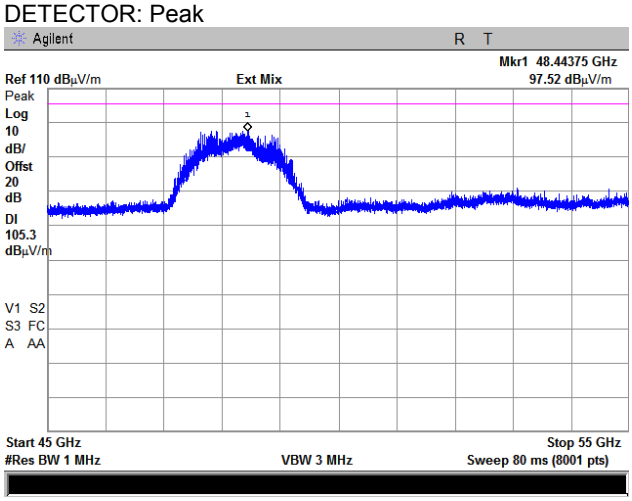


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.13 Spurious emission measurements in 45 – 55 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
Low carrier frequency: 58320 MHz

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



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

Image suppress Modulated

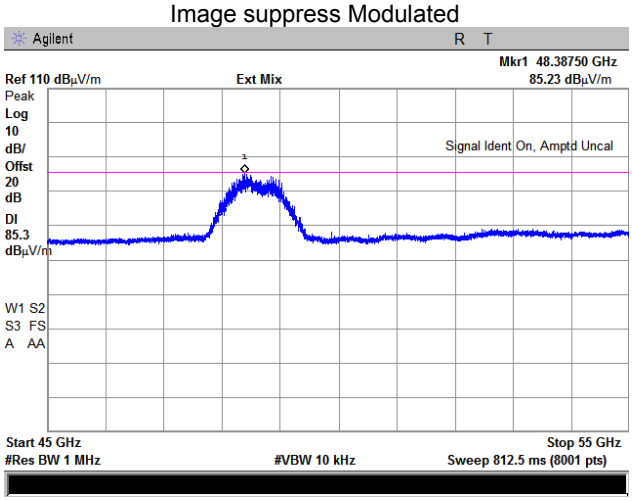
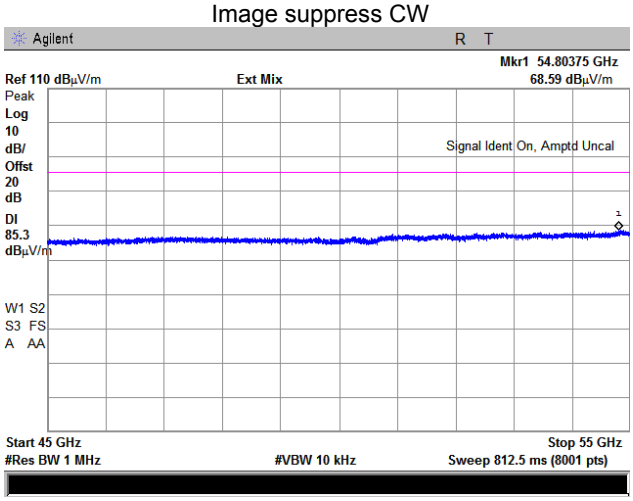


Image suppress CW



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):	03-Jun-20		
Temperature: 24 ºC	**Relative Humidity:** 45 %	**Air Pressure:** 1010 hPa	**Power:** 55 VDC
Remarks:			

Plot 7.4.14 Spurious emission measurements in 45 – 55 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	BPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
Low carrier frequency:	58320 MHz

Image shift left

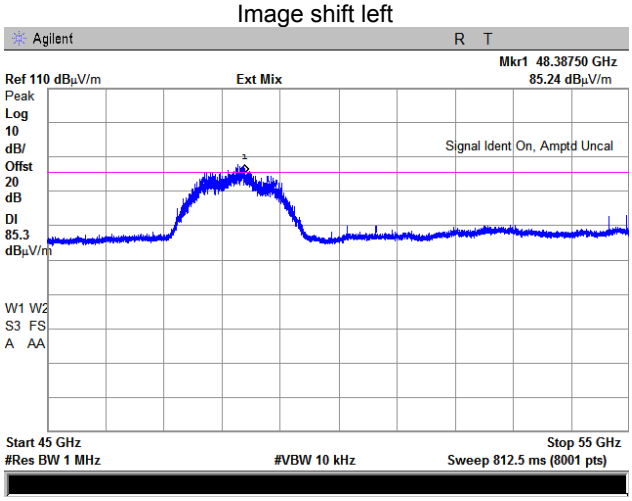
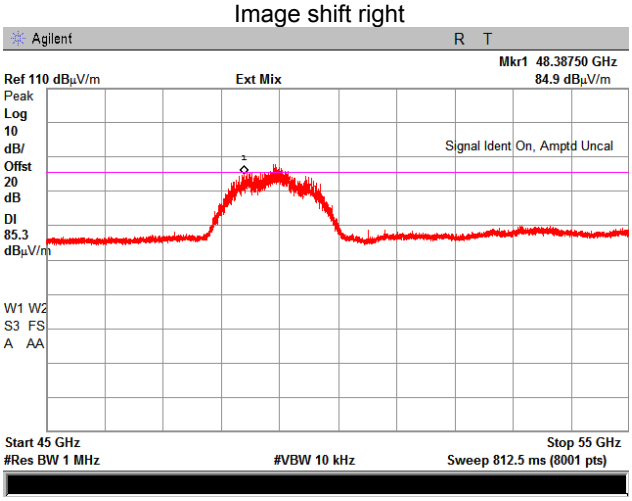


Image shift right

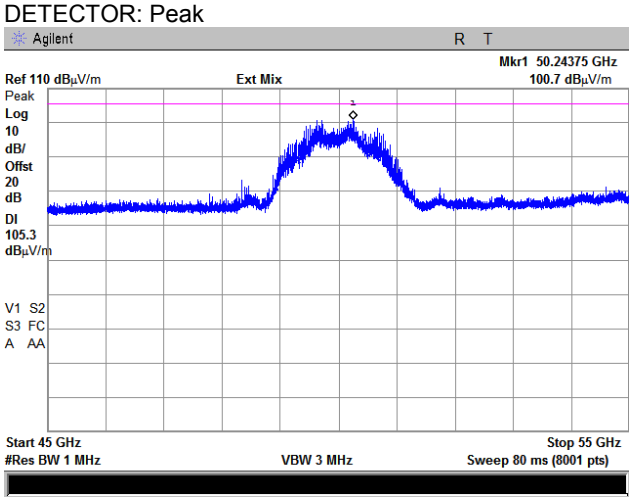


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.15 Spurious emission measurements in 45 – 55 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
Mid carrier frequency: 60480 MHz

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



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

Image suppress Modulated

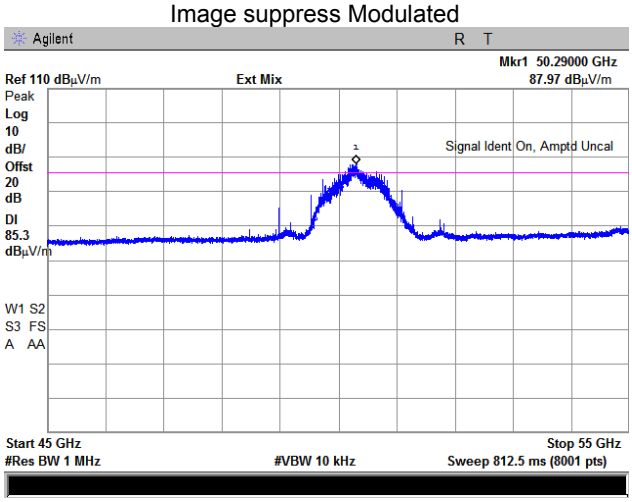
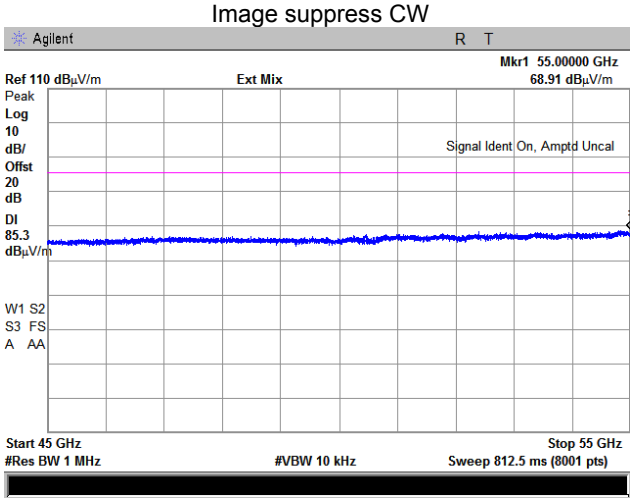


Image suppress CW



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):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.16 Spurious emission measurements in 45 – 55 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	BPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
Mid carrier frequency:	60480 MHz

Image shift left

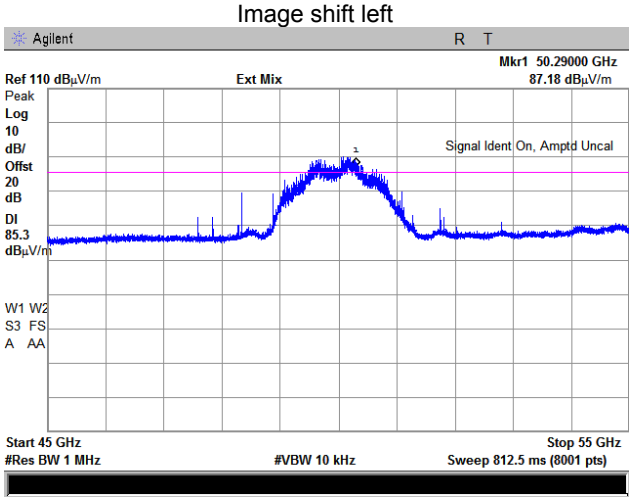
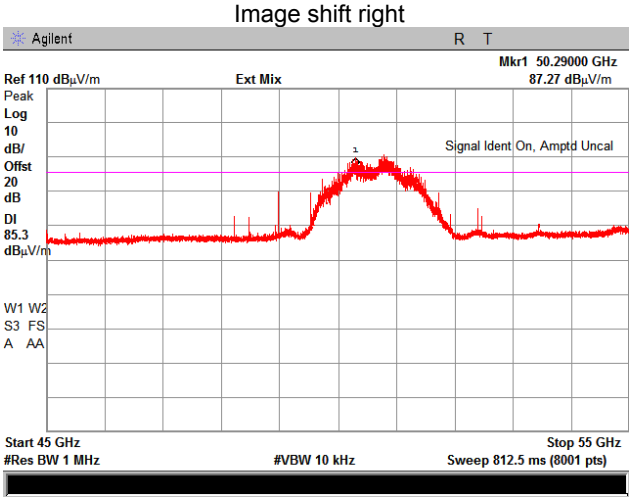


Image shift right

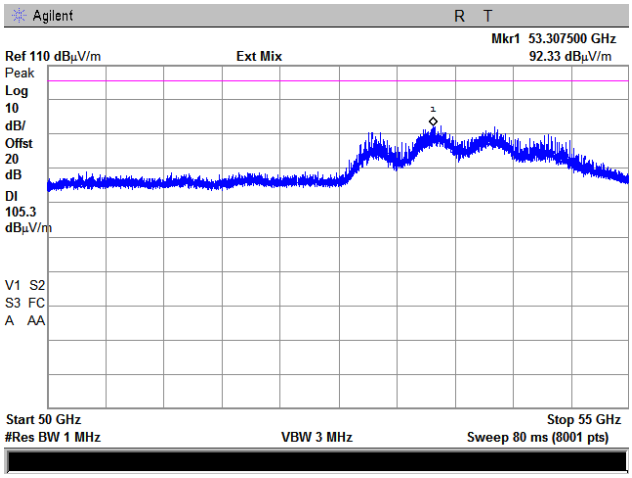


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.17 Spurious emission measurements in 50 – 55 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
High carrier frequency: 64800 MHz

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



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

Image suppress Modulated

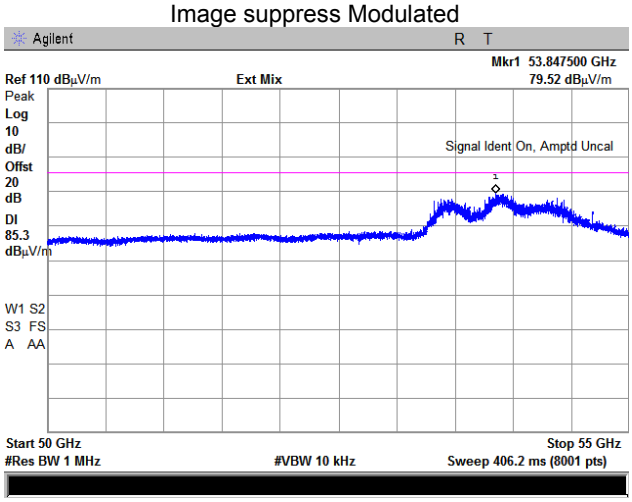
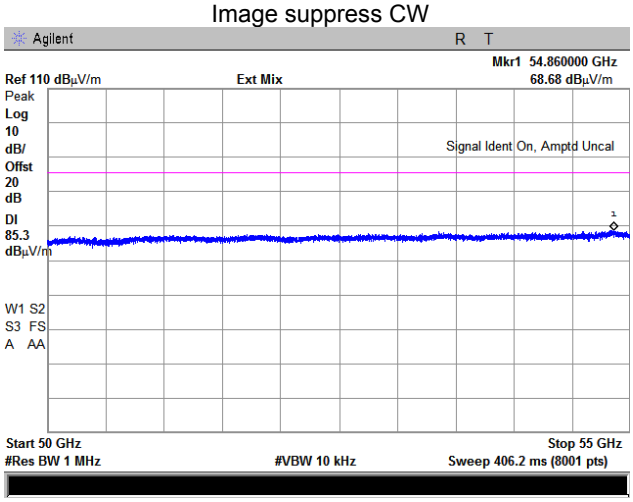


Image suppress CW



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):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.18 Spurious emission measurements in 50 – 55 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	BPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
High carrier frequency:	64800 MHz

Image shift left

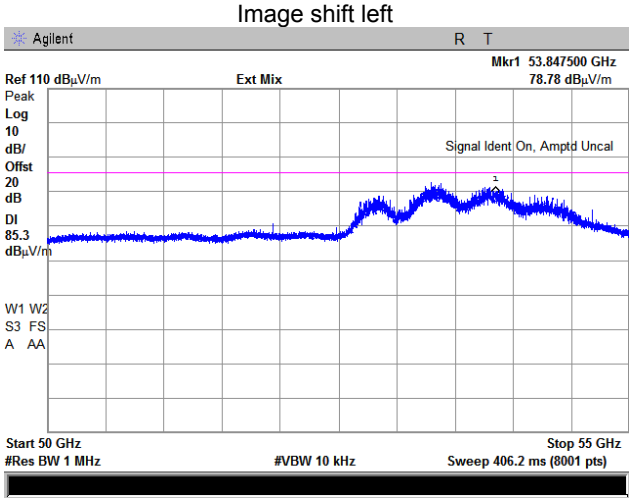
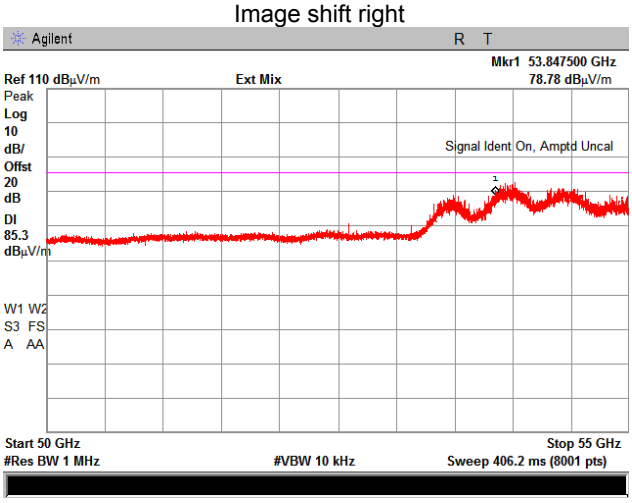


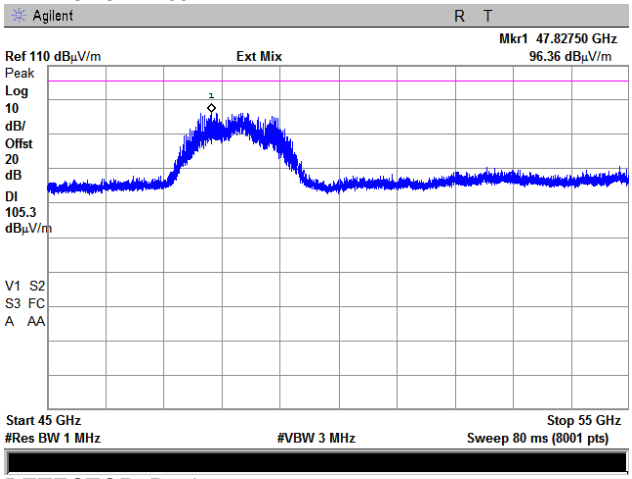
Image shift right



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):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.19 Spurious emission measurements in 45 – 55 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
Low carrier frequency: 58320 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz



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

Image suppress Modulated

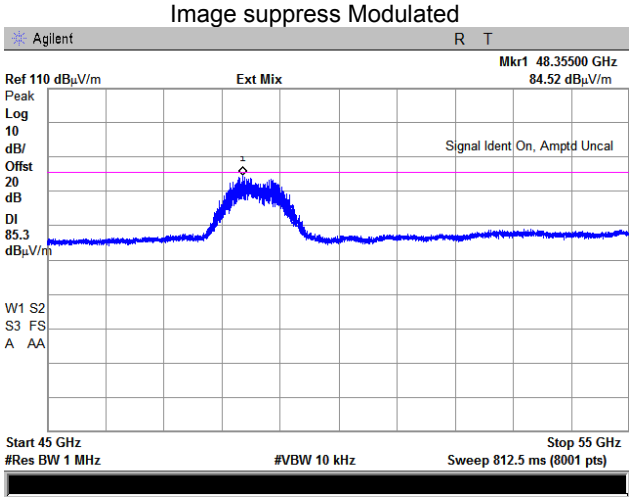
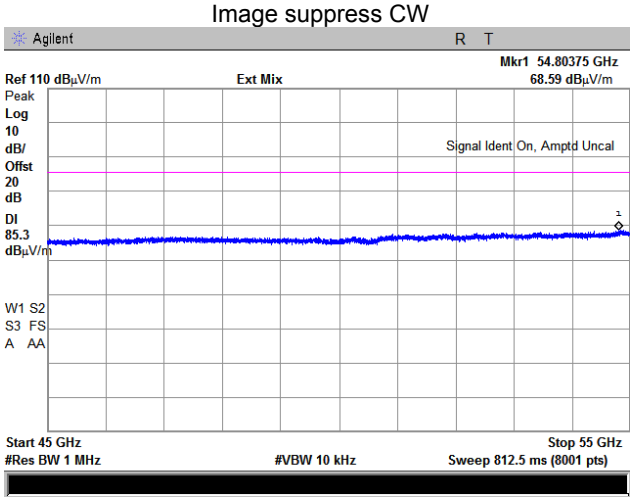


Image suppress CW



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):	03-Jun-20		
Temperature: 24 ºC	**Relative Humidity:** 45 %	**Air Pressure:** 1010 hPa	**Power:** 55 VDC
Remarks:			

Plot 7.4.20 Spurious emission measurements in 45 – 55 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	QPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
Low carrier frequency:	58320 MHz

Image shift left

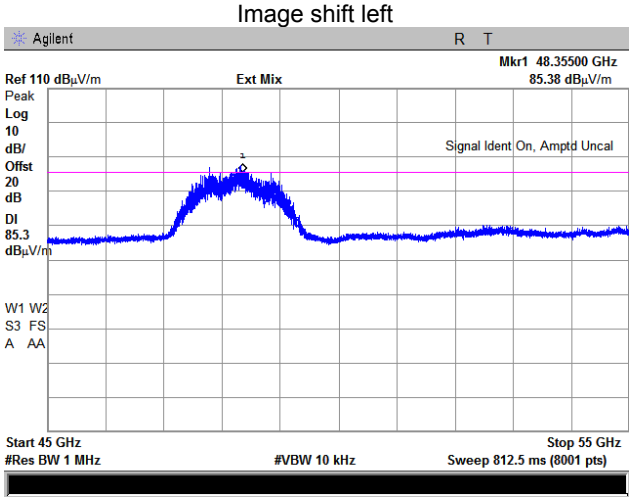
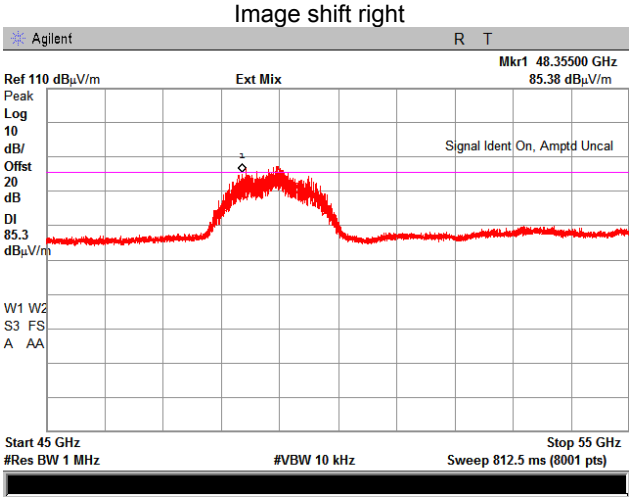


Image shift right

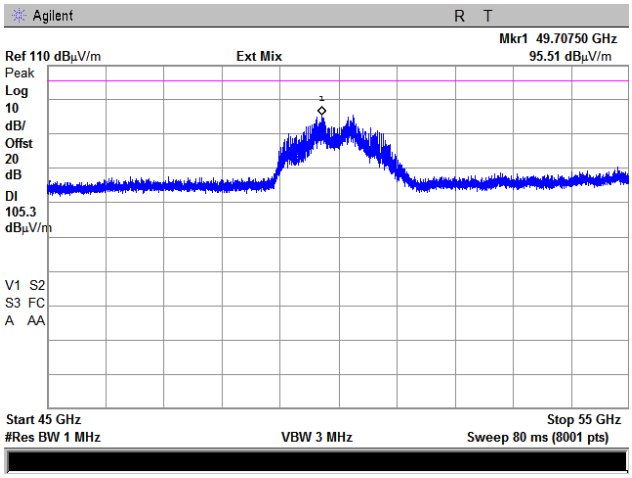


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.21 Spurious emission measurements in 45 – 55 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
Mid carrier frequency: 60480 MHz

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



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

Image suppress Modulated

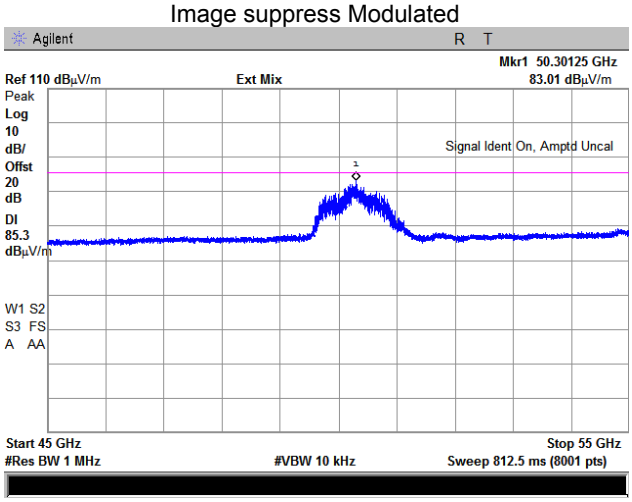
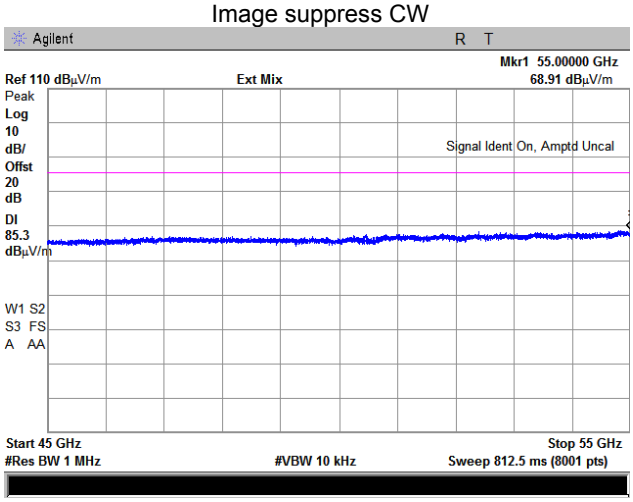


Image suppress CW



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):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.22 Spurious emission measurements in 45 – 55 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	QPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
Mid carrier frequency:	60480 MHz

Image shift left

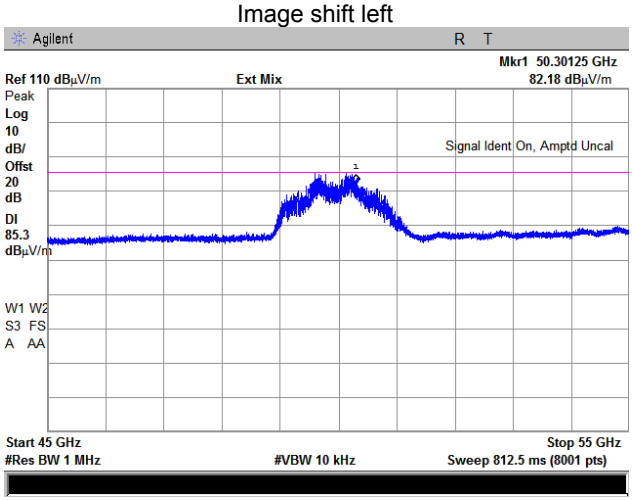
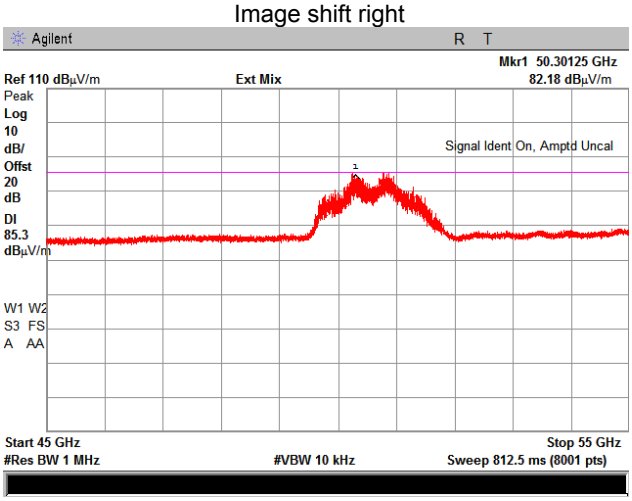


Image shift right

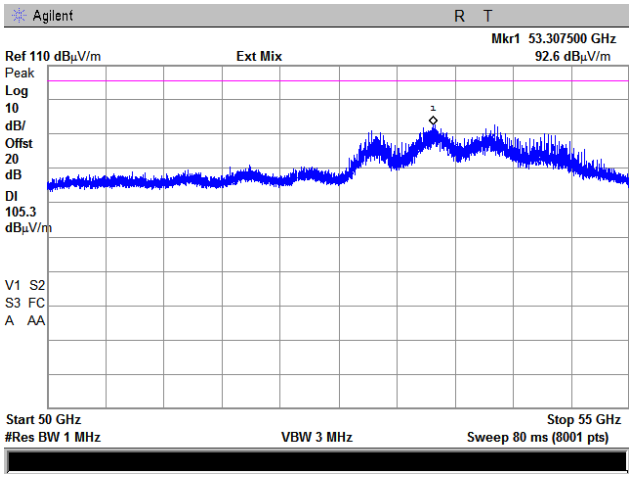


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.23 Spurious emission measurements in 50 – 55 GHz range

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
High carrier frequency: 64800 MHz

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



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

Image suppress Modulated

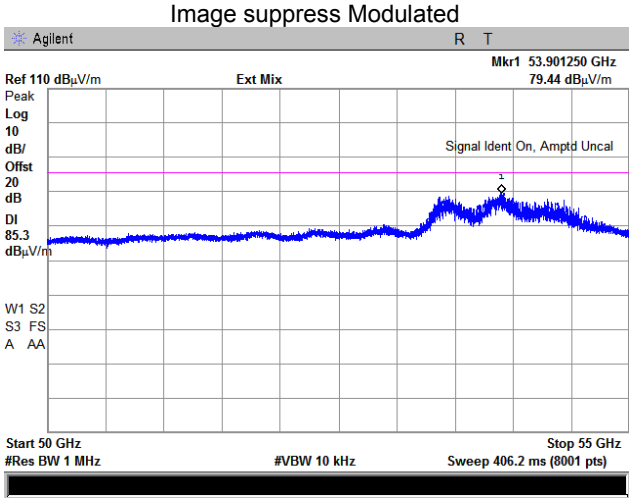
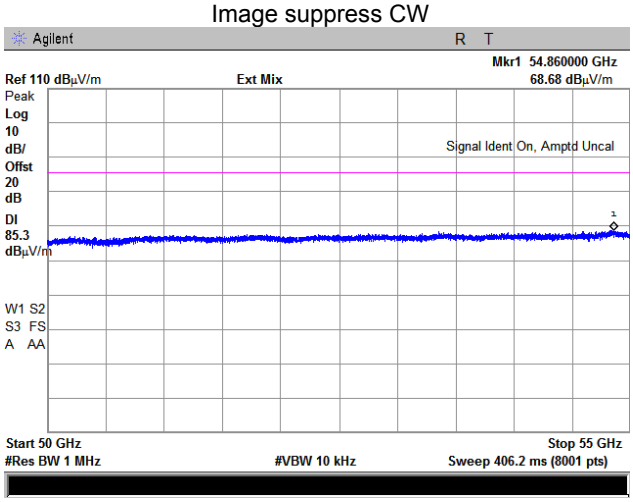


Image suppress CW



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):	03-Jun-20		
Temperature: 24 ºC	**Relative Humidity:** 45 %	**Air Pressure:** 1010 hPa	**Power:** 55 VDC
Remarks:			

Plot 7.4.24 Spurious emission measurements in 50 – 55 GHz range

TEST SITE:	OATS
TEST DISTANCE:	3 m
MODULATION:	QPSK
ANTENNA POLARIZATION:	Vertical and Horizontal
High carrier frequency:	64800 MHz

Image shift left

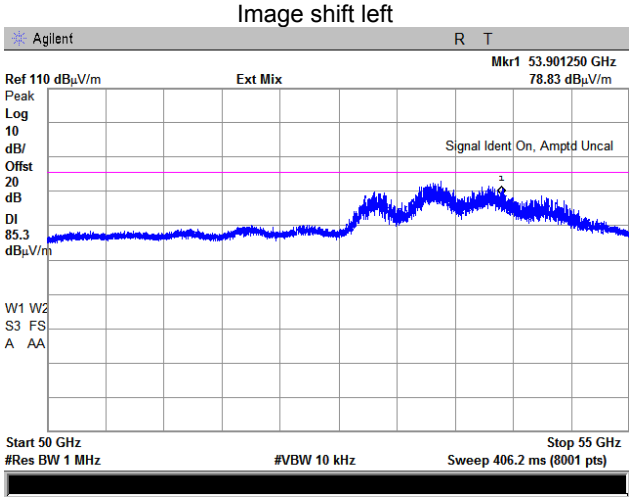
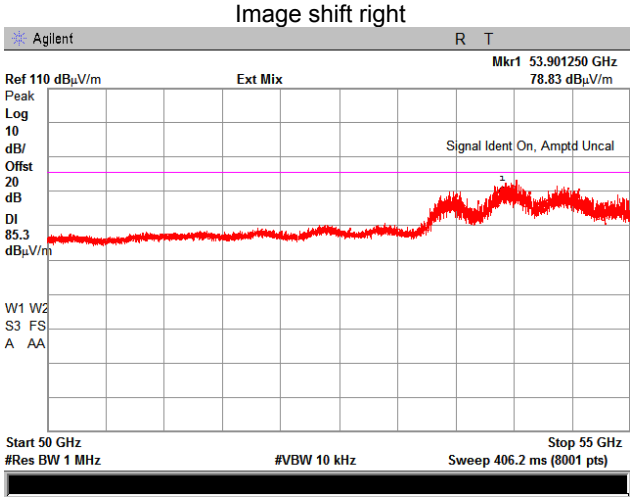


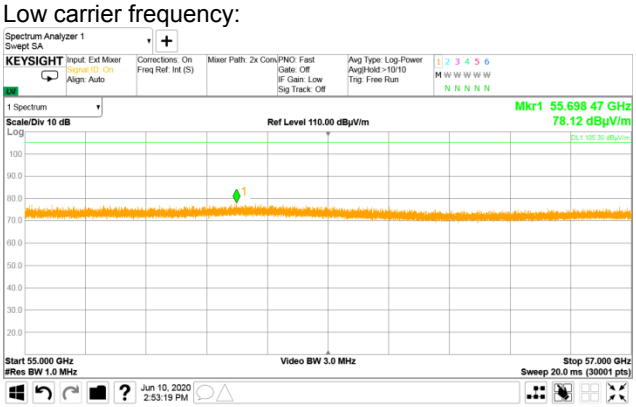
Image shift right



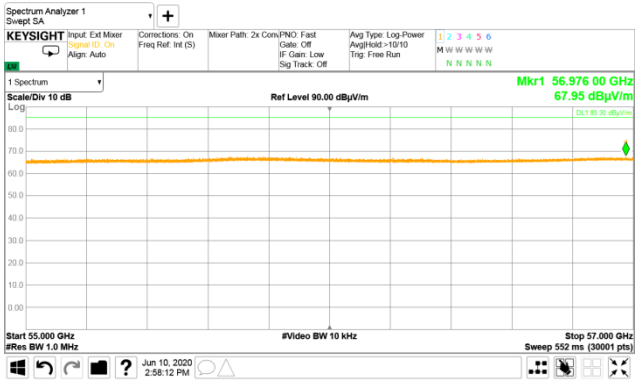
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.25 Spurious emission measurements in 55 – 57 GHz range

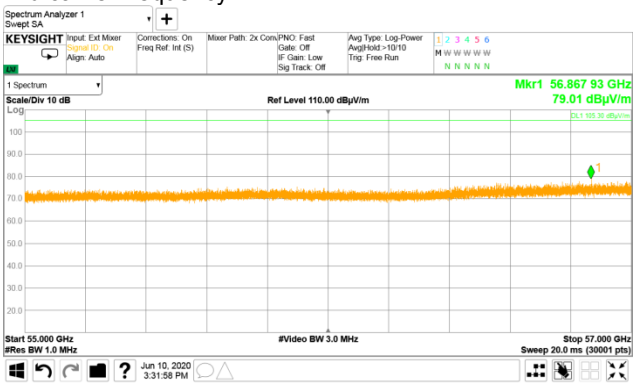
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:

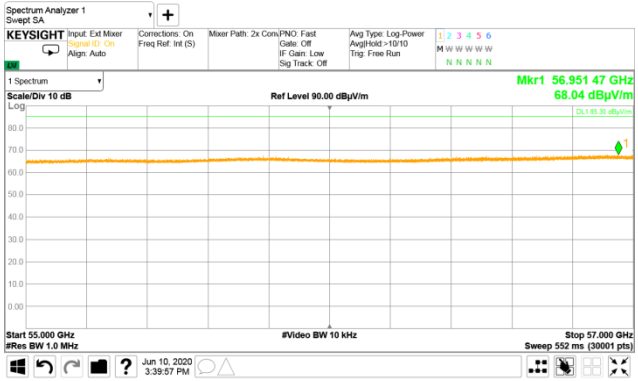


DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz

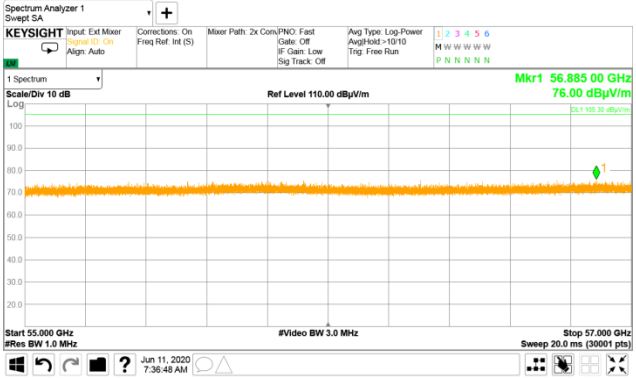


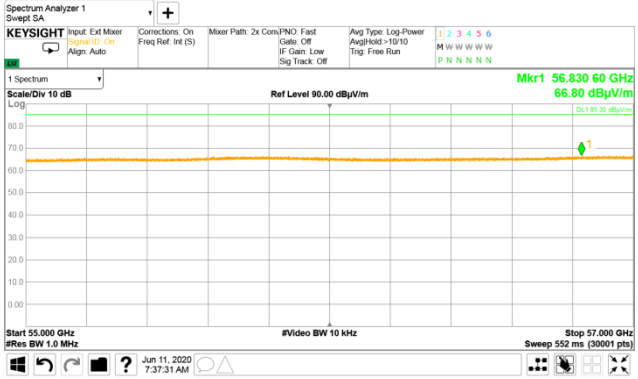
Mid carrier frequency:
60480 MHz





High carrier frequency:
64800 MHz



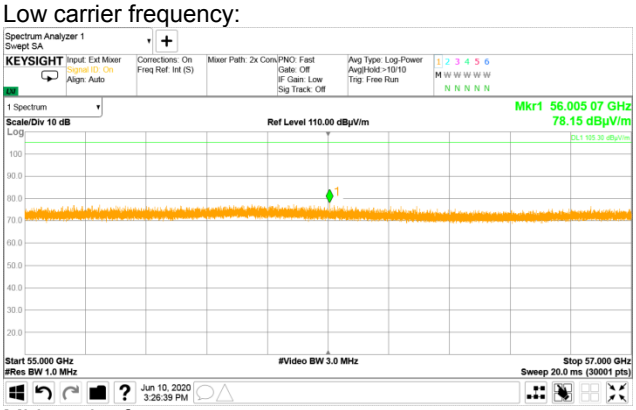


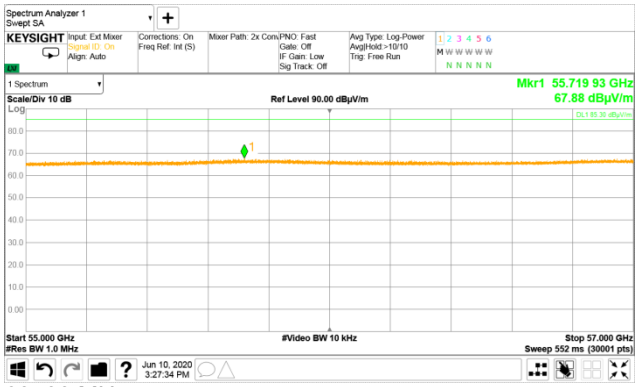
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.26 Spurious emission measurements in 55 – 57 GHz range

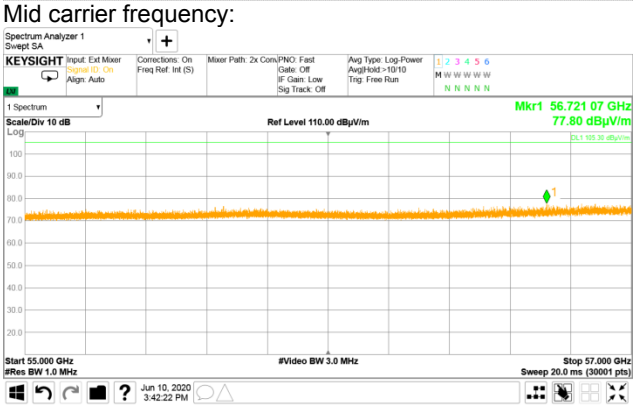
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

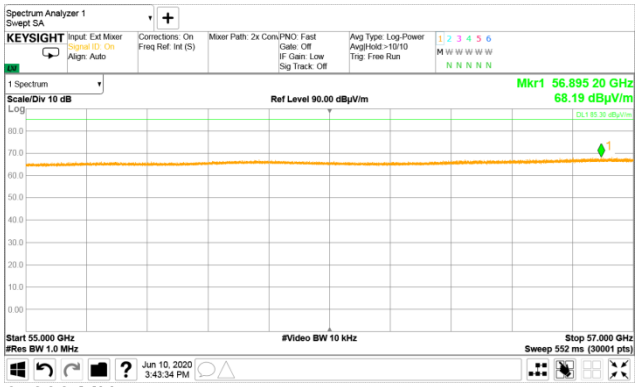
Low carrier frequency: 58320 MHz



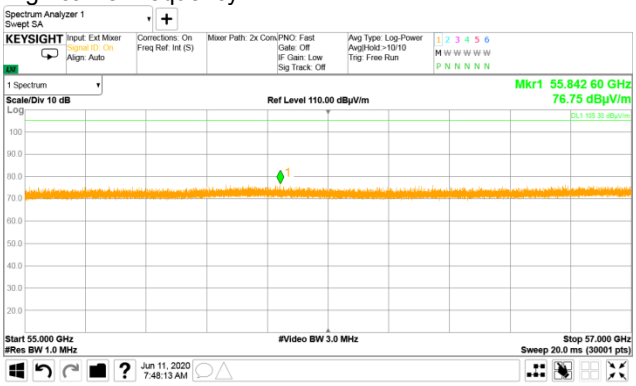


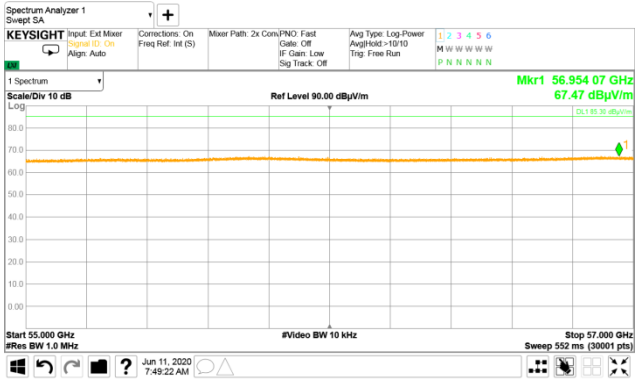
Mid carrier frequency: 60480 MHz





High carrier frequency: 64800 MHz



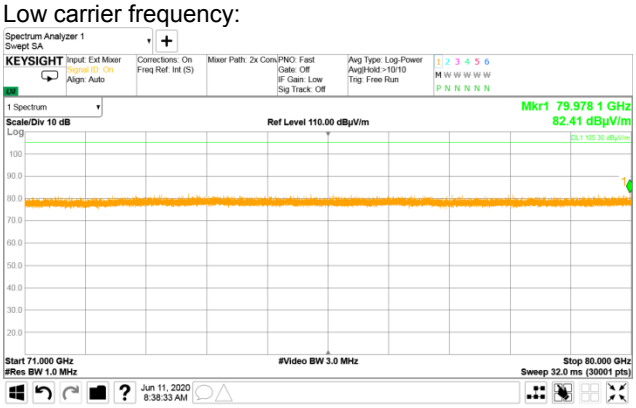


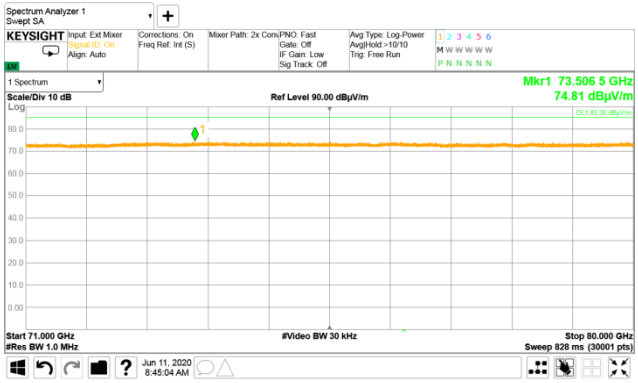
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.27 Spurious emission measurements in 71 – 80 GHz range

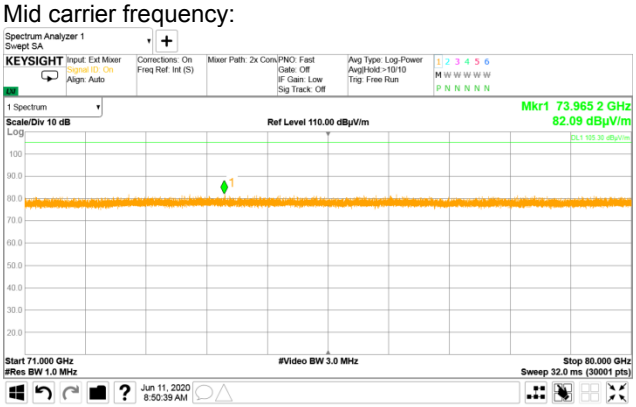
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 100 kHz

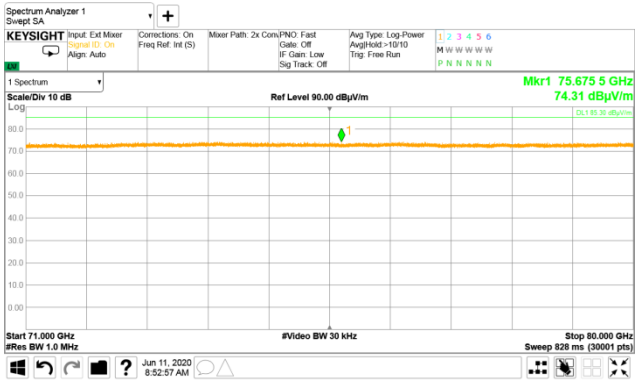
Low carrier frequency: 58320 MHz



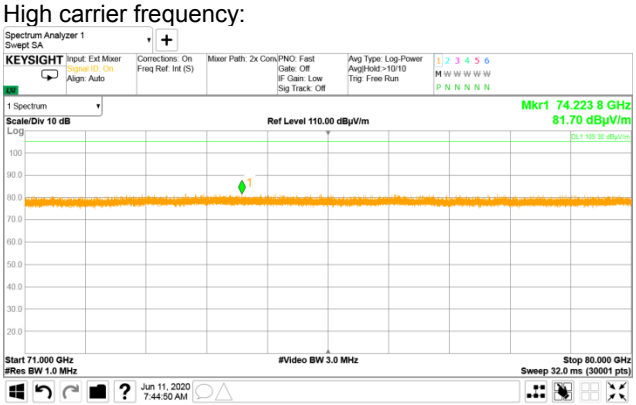


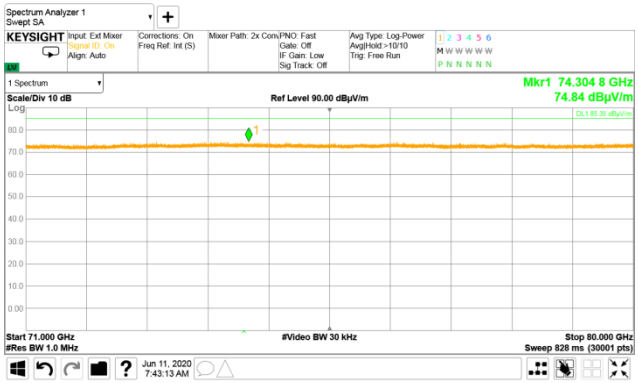
Mid carrier frequency: 60480 MHz





High carrier frequency: 64800 MHz



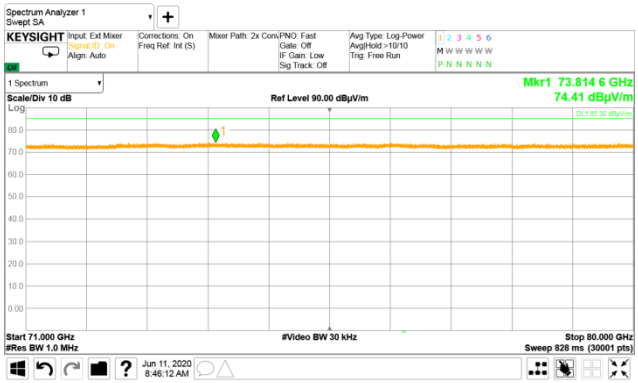


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

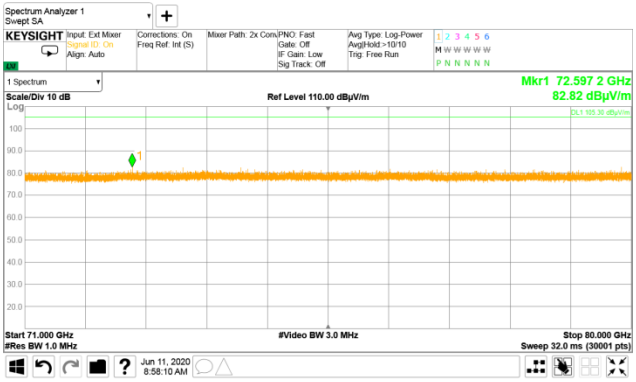
Plot 7.4.28 Spurious emission measurements in 71 – 80 GHz range

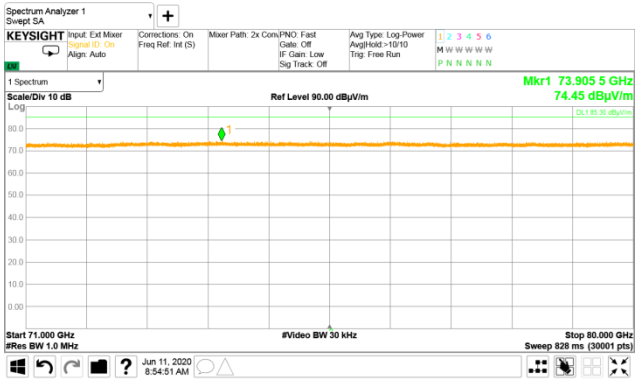
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 100 kHz

Low carrier frequency: 58320 MHz

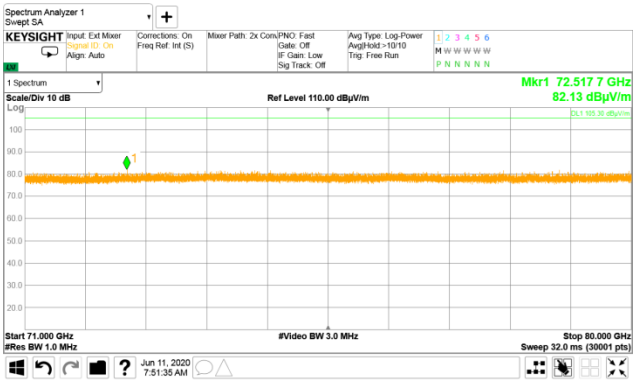


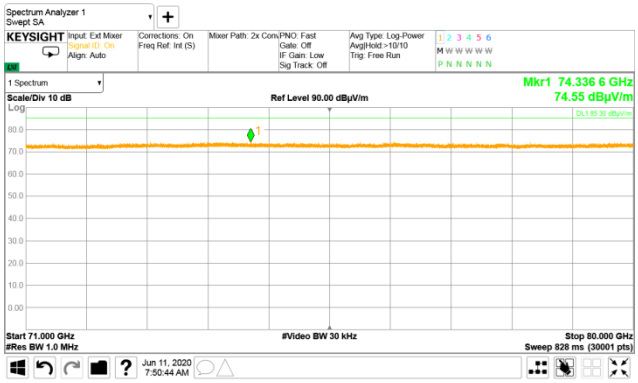
Mid carrier frequency: 60480 MHz





High carrier frequency: 64800 MHz

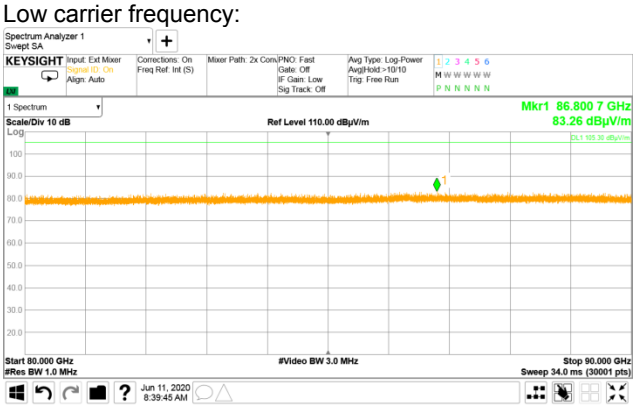




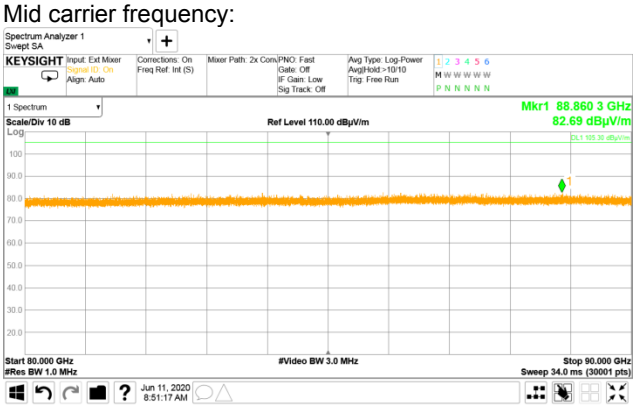
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.29 Spurious emission measurements in 80 – 90 GHz range

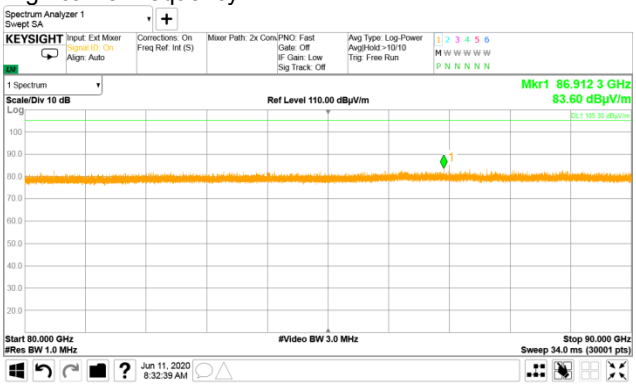
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:



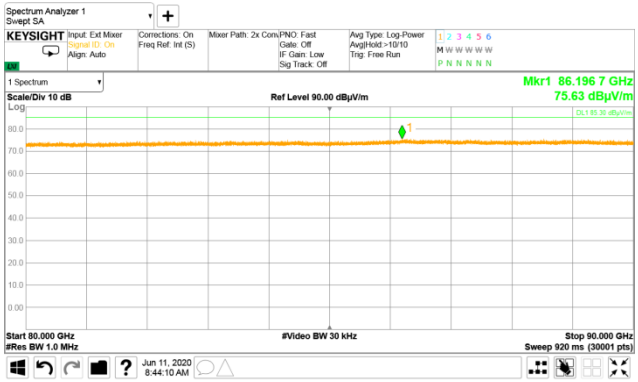
Mid carrier frequency:



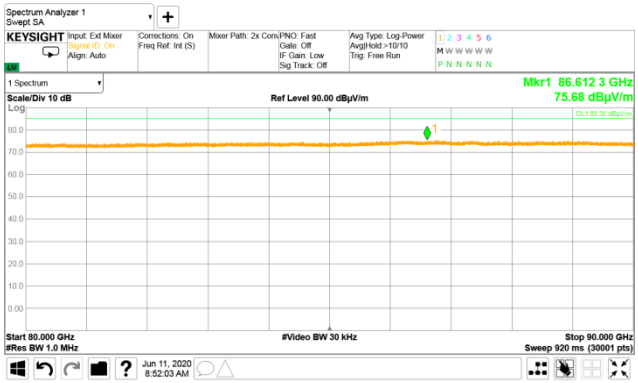
High carrier frequency:



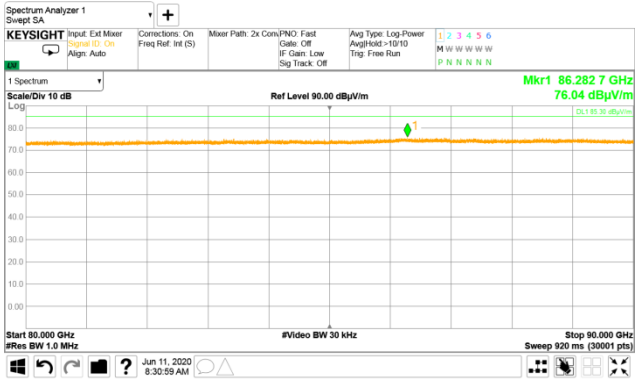
58320 MHz



60480 MHz



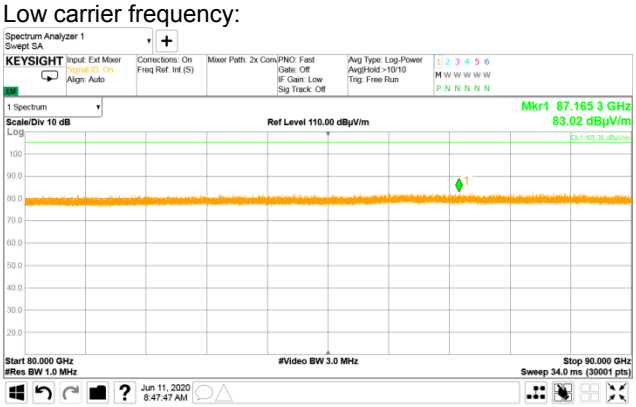
64800 MHz

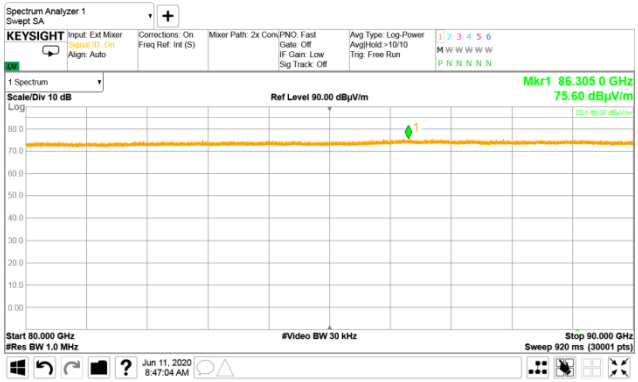


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

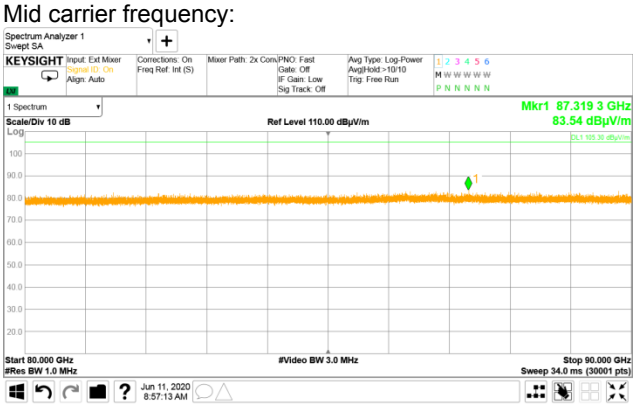
Plot 7.4.30 Spurious emission measurements in 80 – 90 GHz range

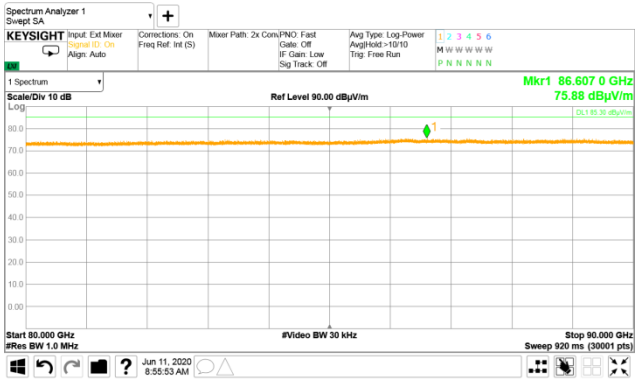
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency: 58320 MHz



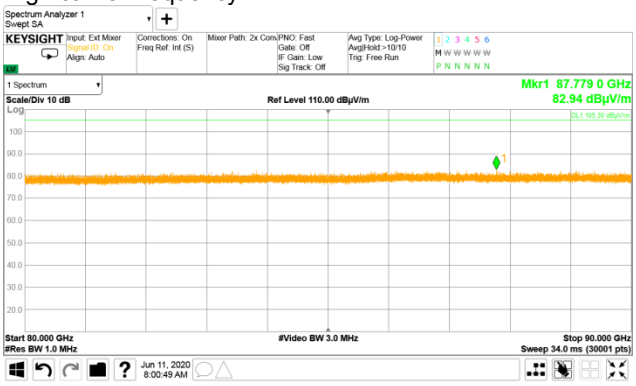


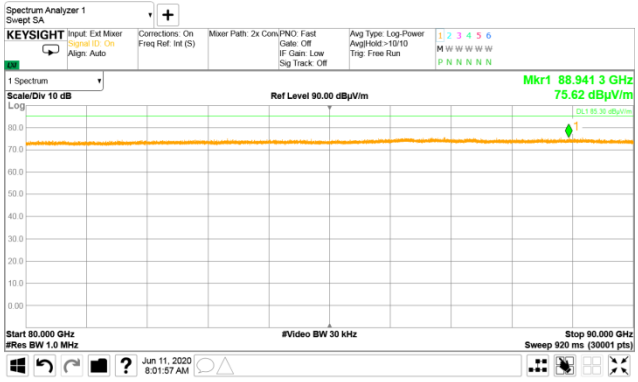
Mid carrier frequency: 60480 MHz





High carrier frequency: 64800 MHz

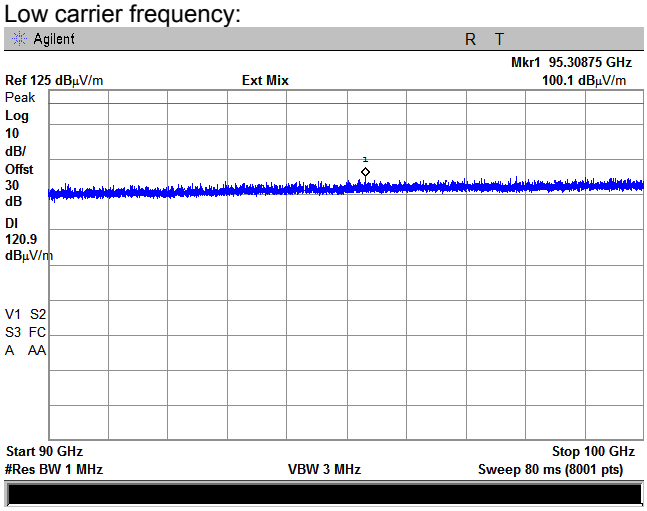




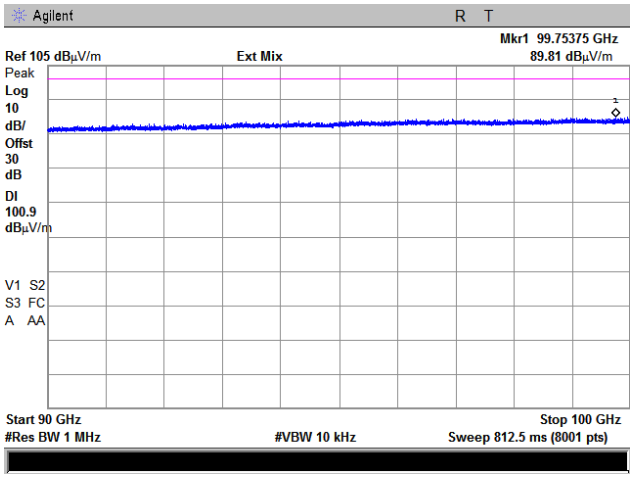
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.31 Spurious emission measurements in 90 – 100 GHz range

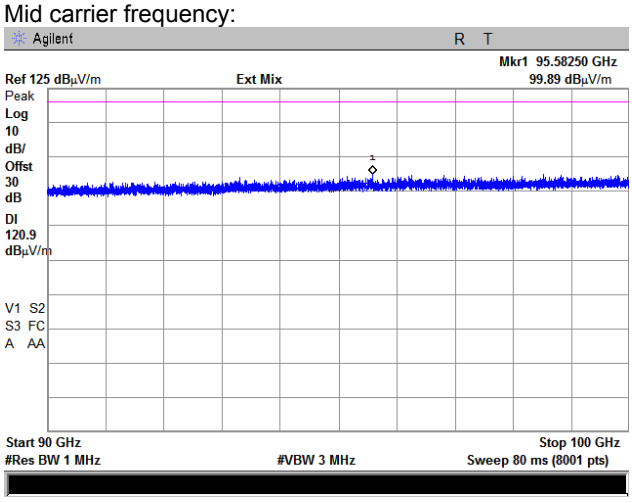
TEST SITE: OATS
TEST DISTANCE: 0.5 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:



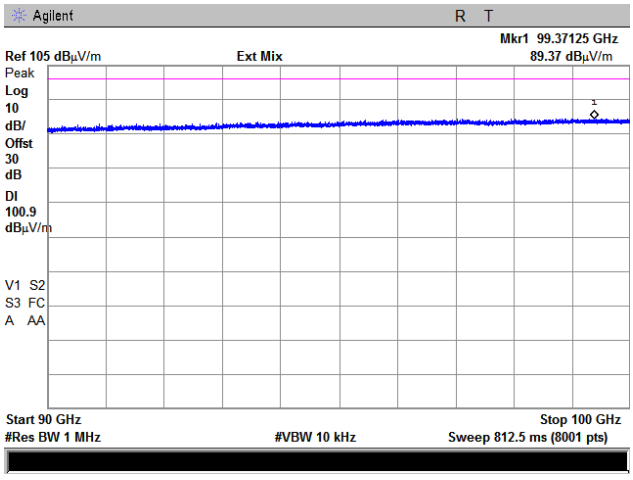
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:



60480 MHz

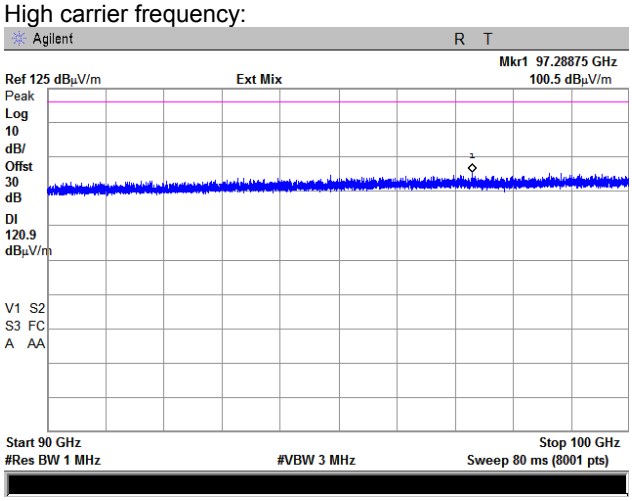


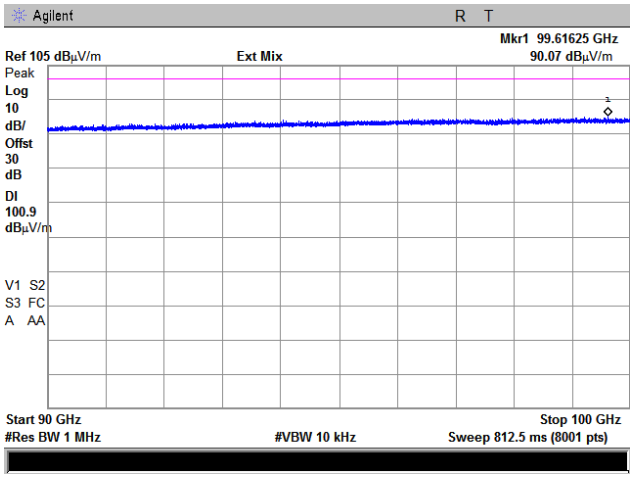
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.32 Spurious emission measurements in 90 – 100 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.5 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

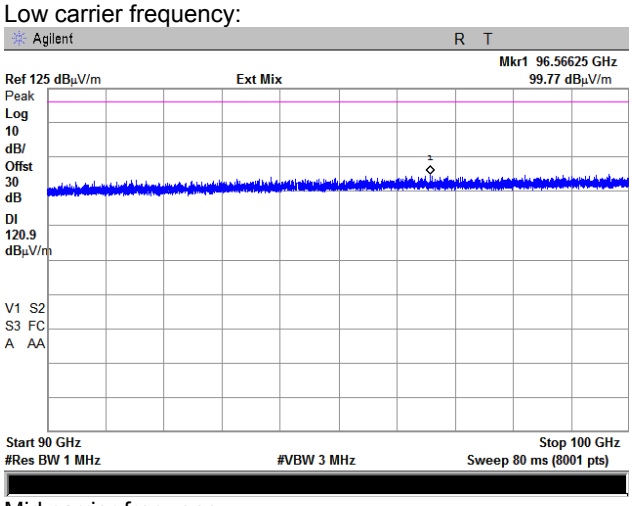




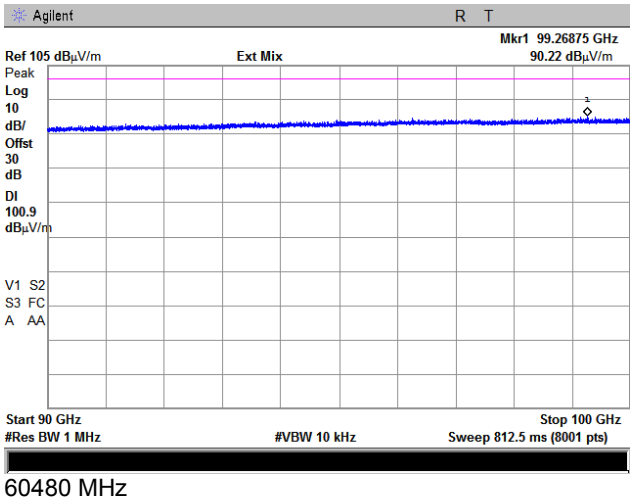
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.33 Spurious emission measurements in 90 – 100 GHz range

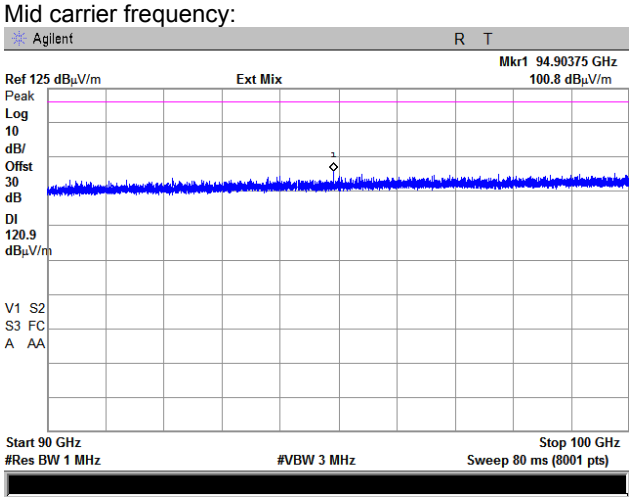
TEST SITE: OATS
TEST DISTANCE: 0.5 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency: 58320 MHz

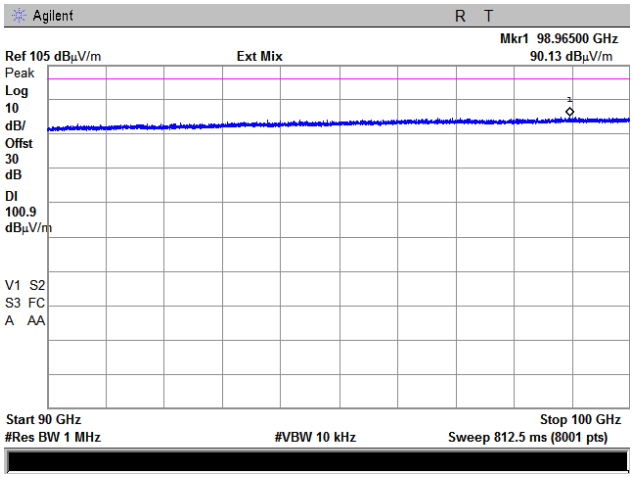


DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz



Mid carrier frequency: 60480 MHz



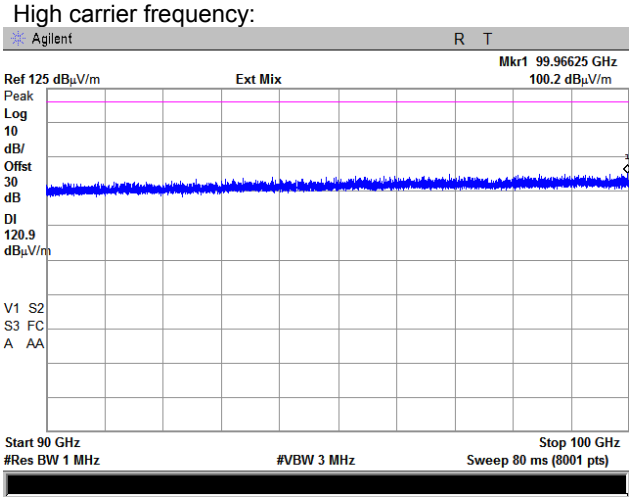


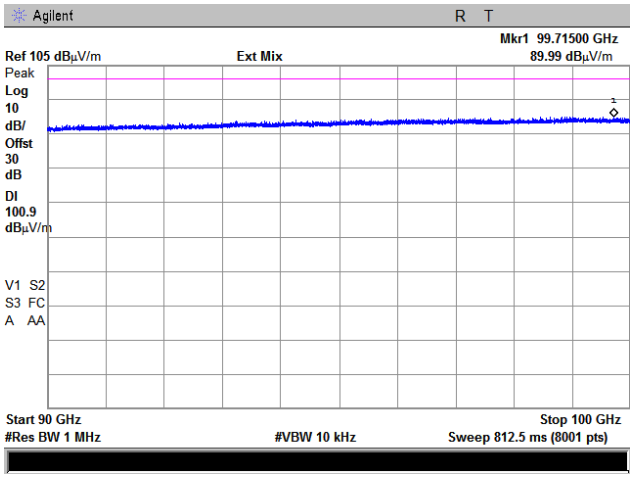
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.34 Spurious emission measurements in 90 – 100 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.5 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

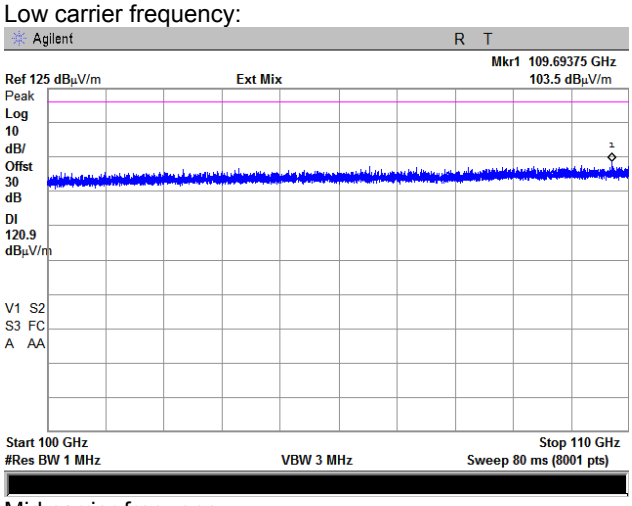




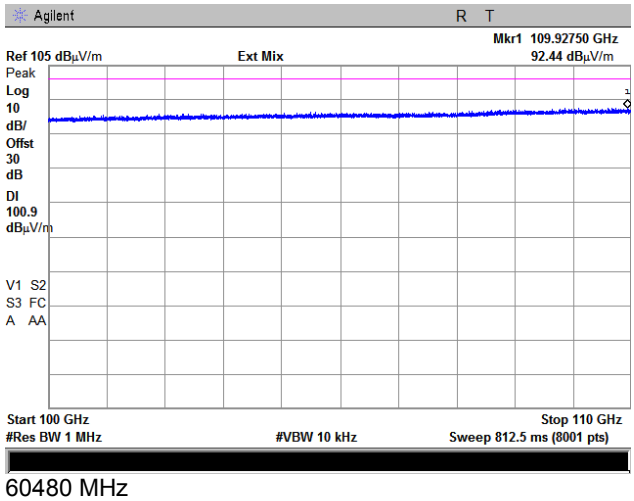
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.35 Spurious emission measurements in 100 – 110 GHz range

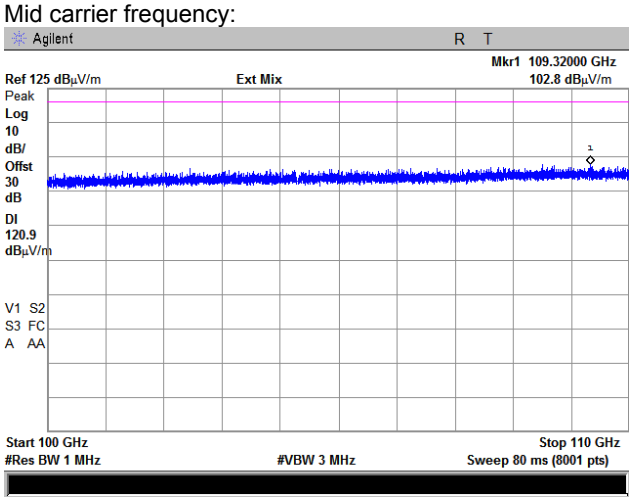
TEST SITE: OATS
TEST DISTANCE: 0.5 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:



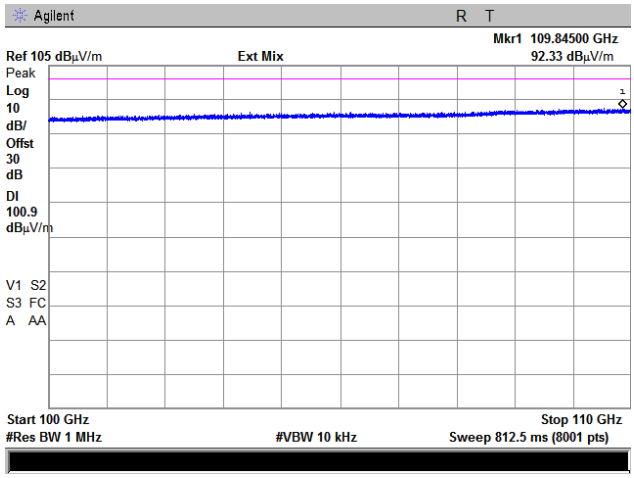
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:



60480 MHz

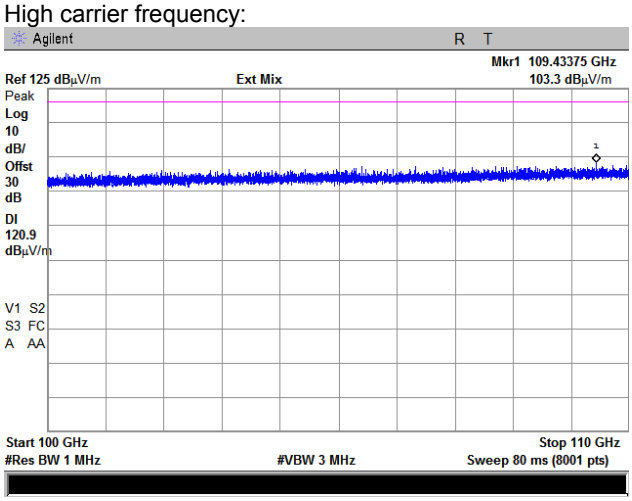


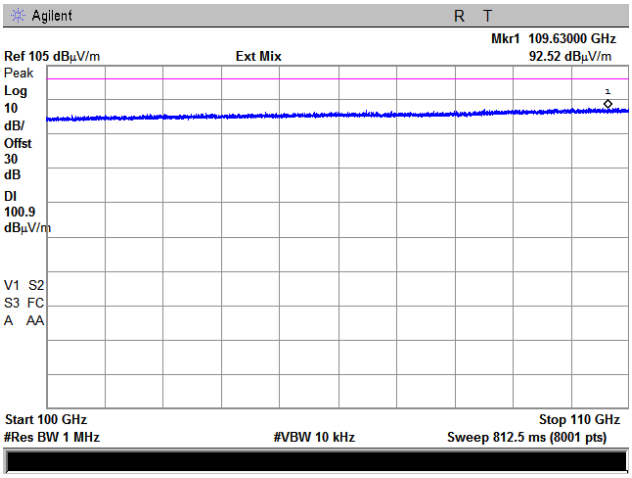
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.36 Spurious emission measurements in 100 – 110 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.5 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

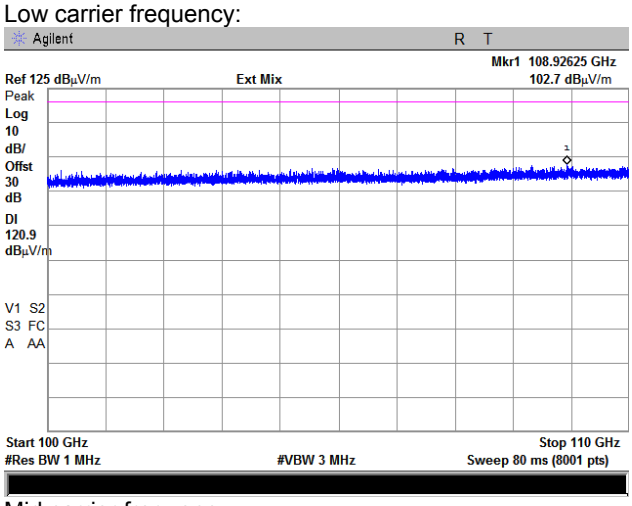




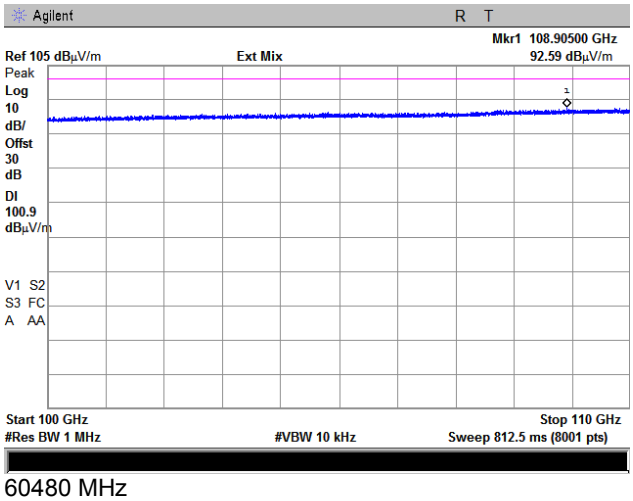
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.37 Spurious emission measurements in 100 – 110 GHz range

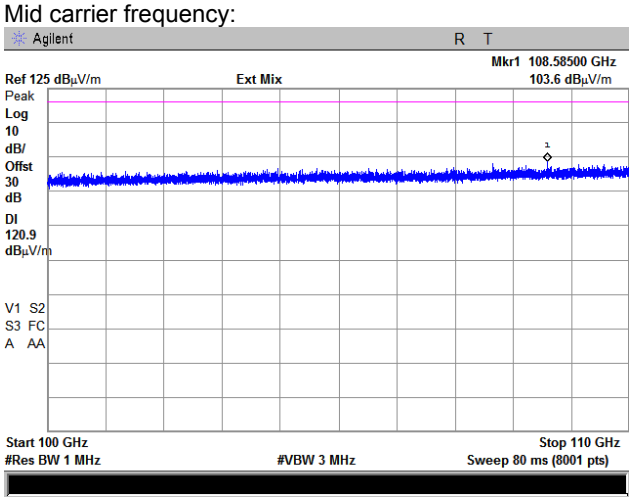
TEST SITE: OATS
TEST DISTANCE: 0.5 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:

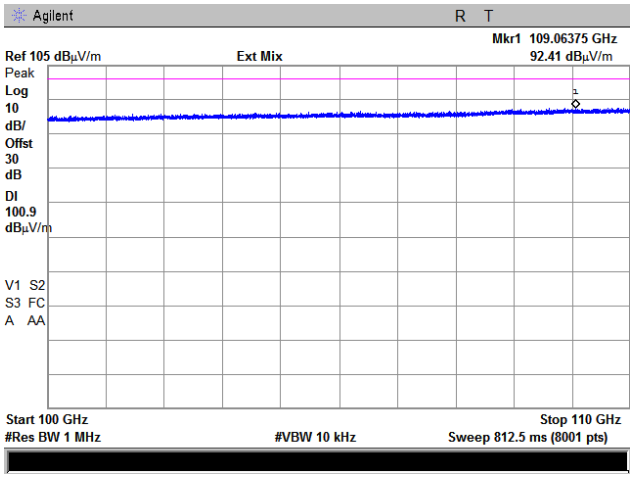


DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:
60480 MHz



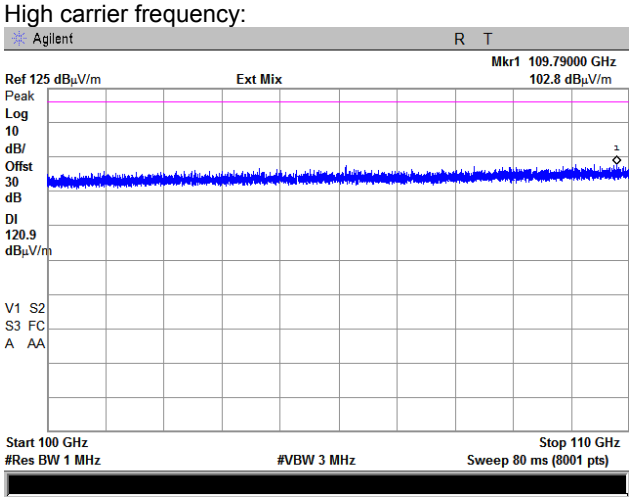


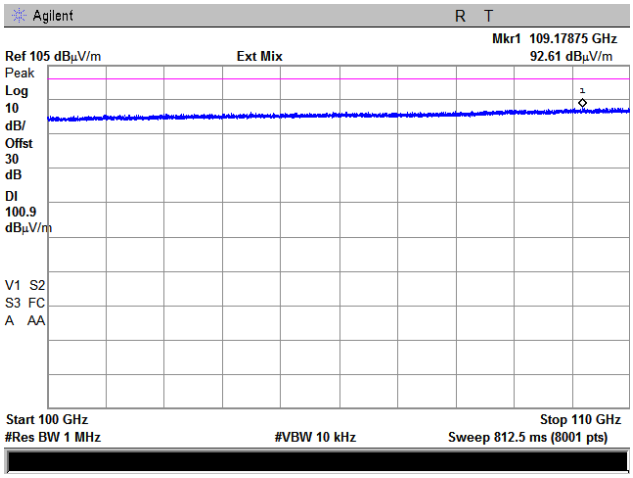
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.38 Spurious emission measurements in 100 – 110 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.5 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

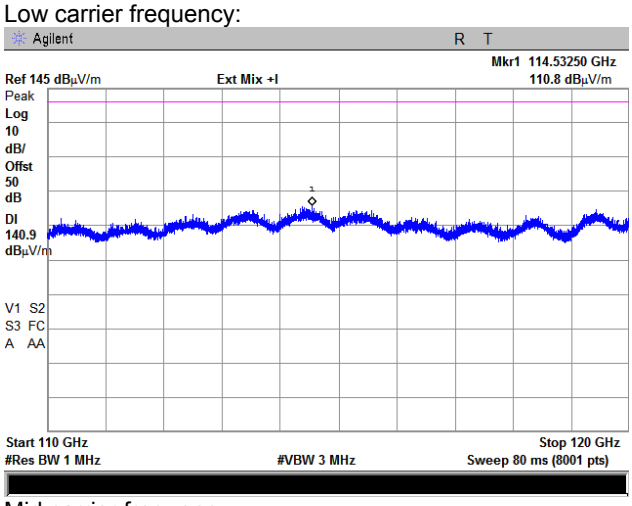




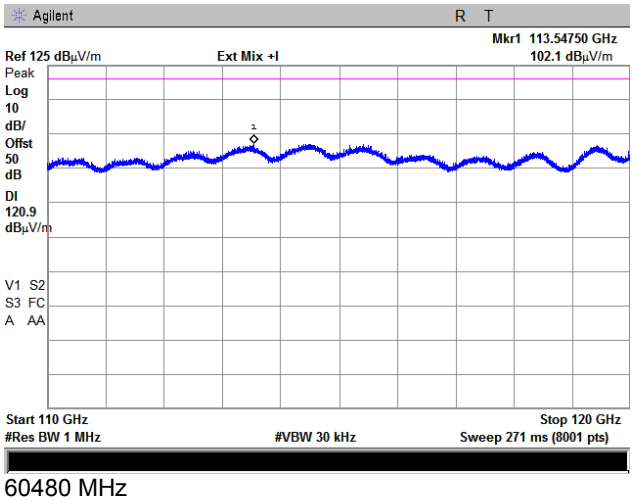
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.39 Spurious emission measurements in 110 – 120 GHz range

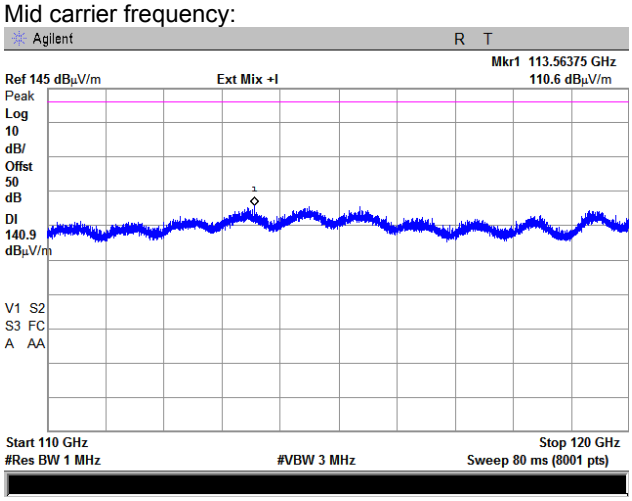
TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:

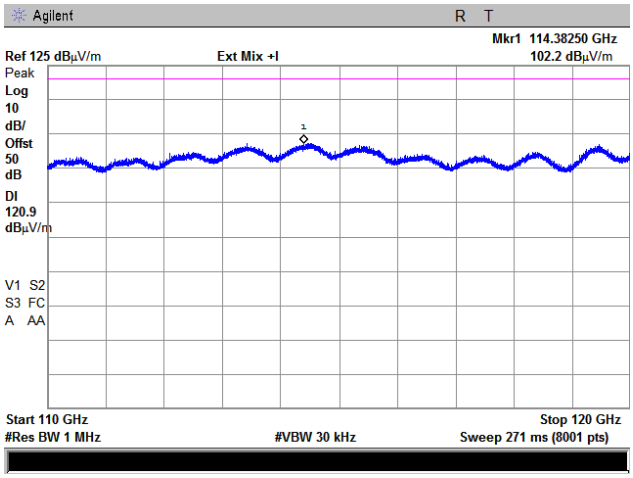


DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:
60480 MHz



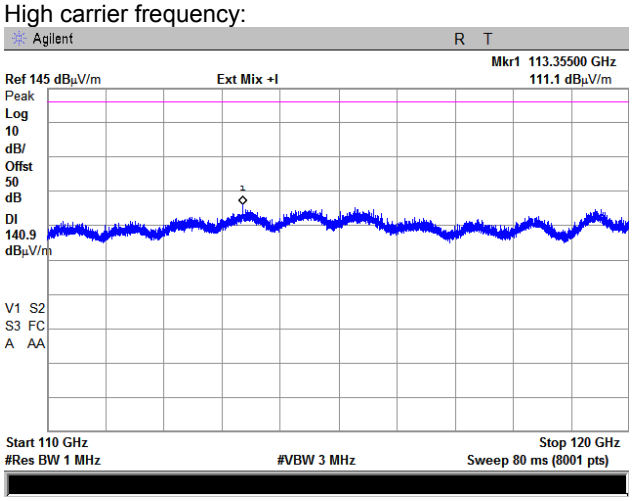


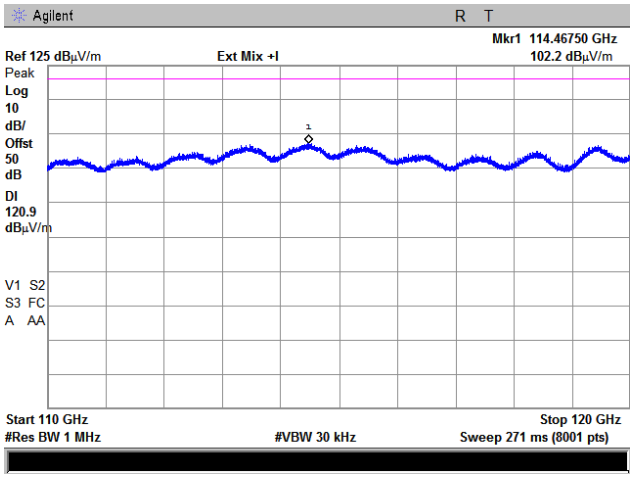
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.40 Spurious emission measurements in 110 – 120 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

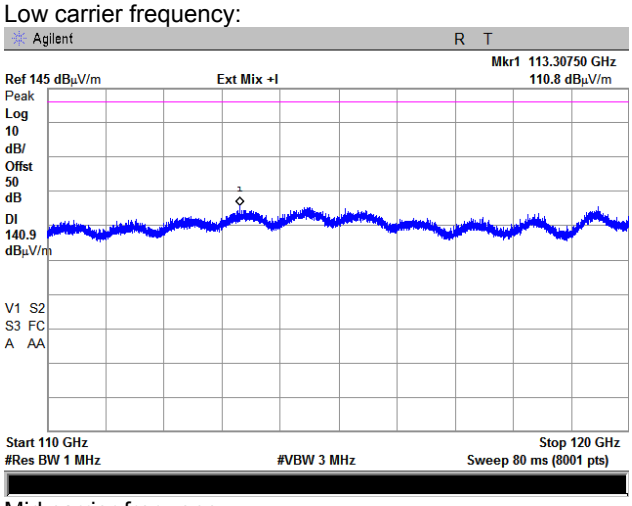




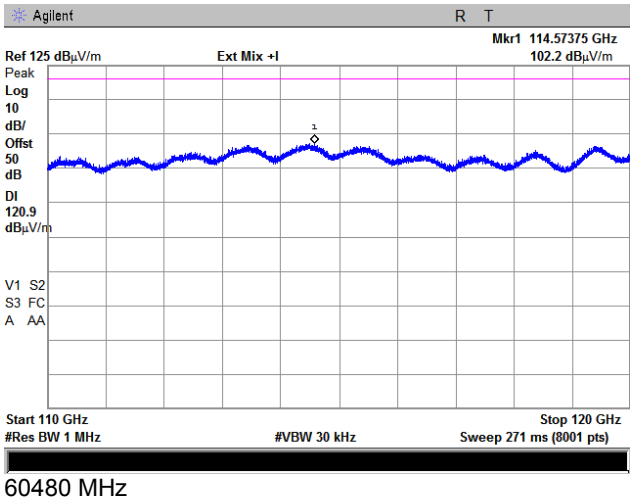
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.41 Spurious emission measurements in 110 – 120 GHz range

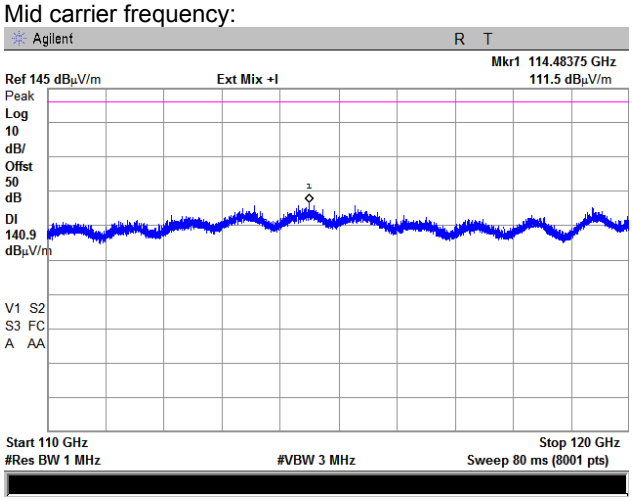
TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:



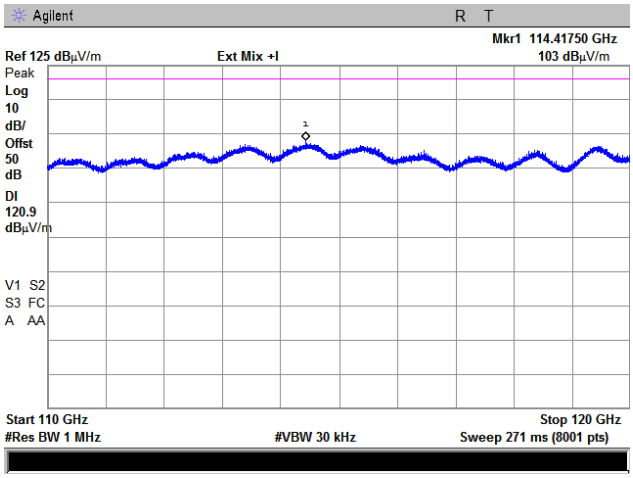
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:



60480 MHz

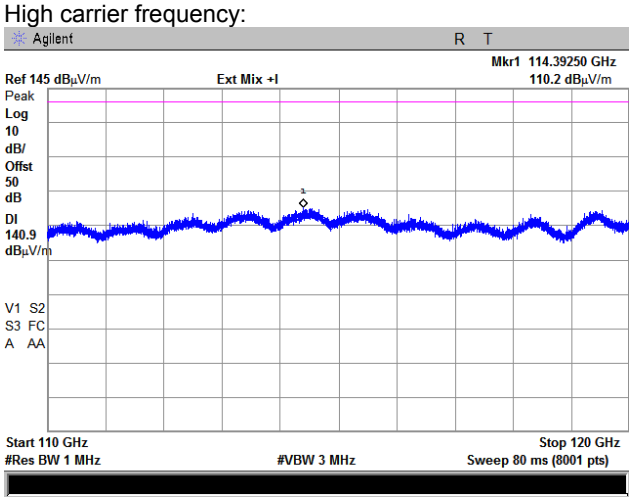


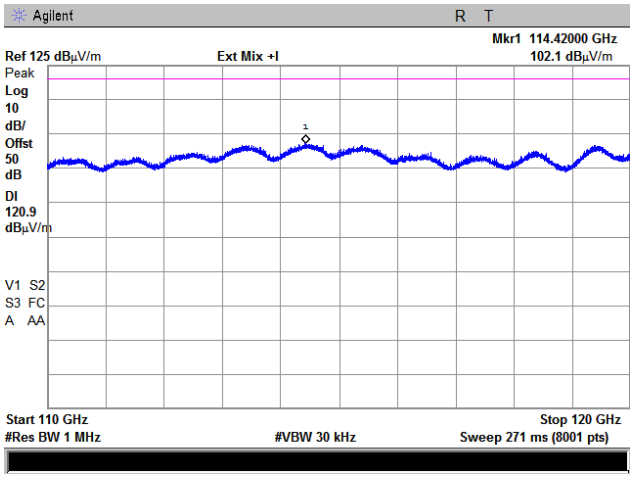
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.42 Spurious emission measurements in 110 – 120 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

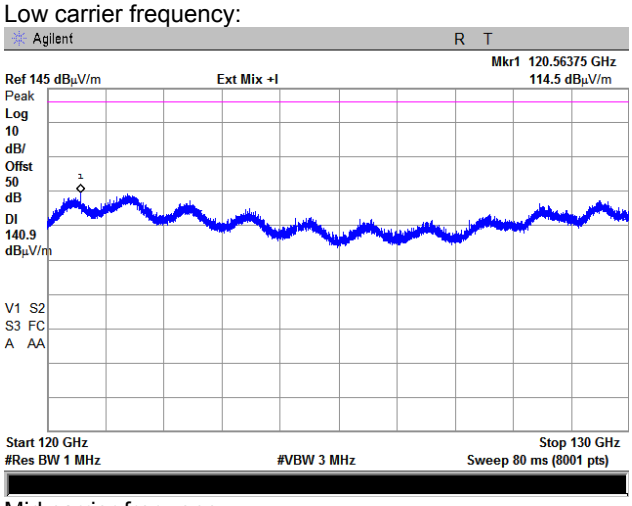




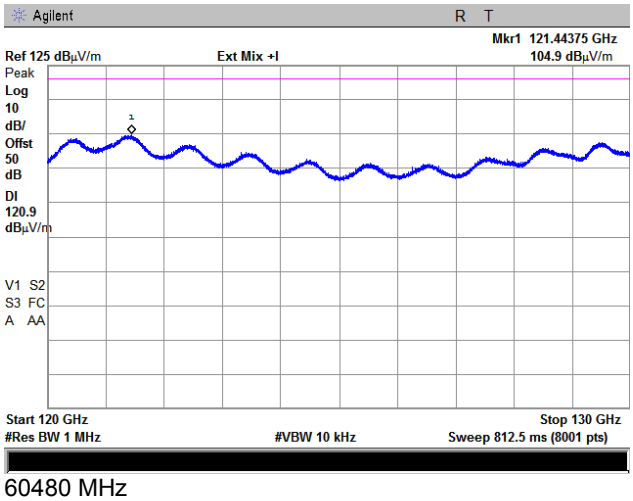
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.43 Spurious emission measurements in 120 – 130 GHz range

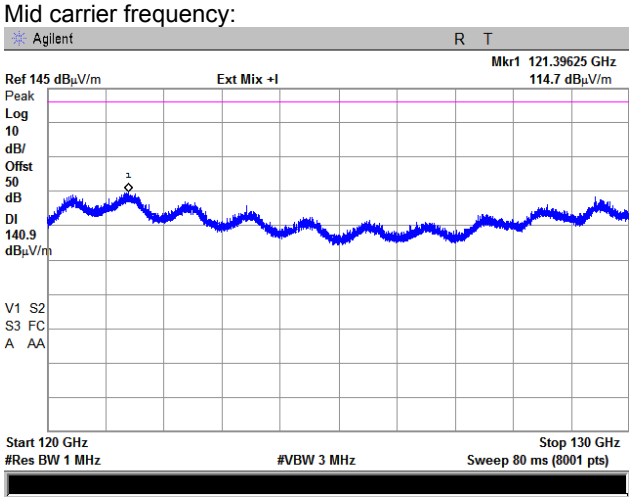
TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:

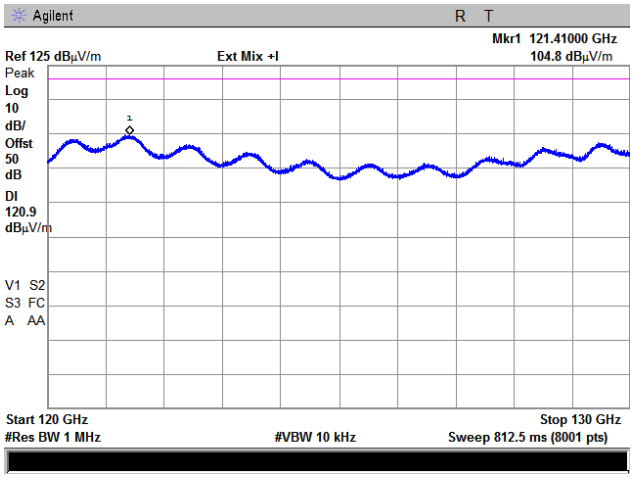


DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:
60480 MHz



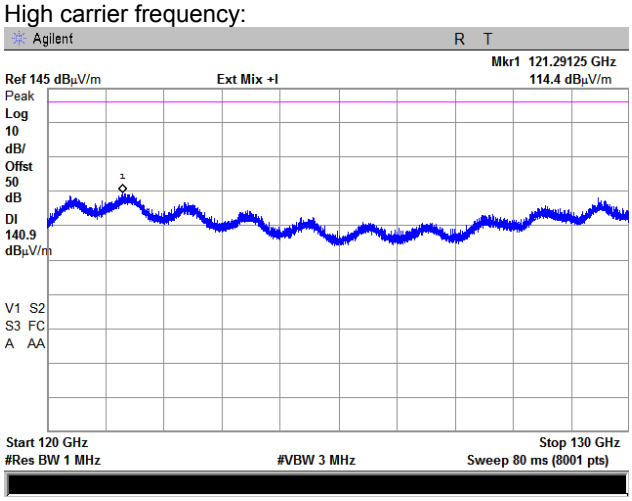


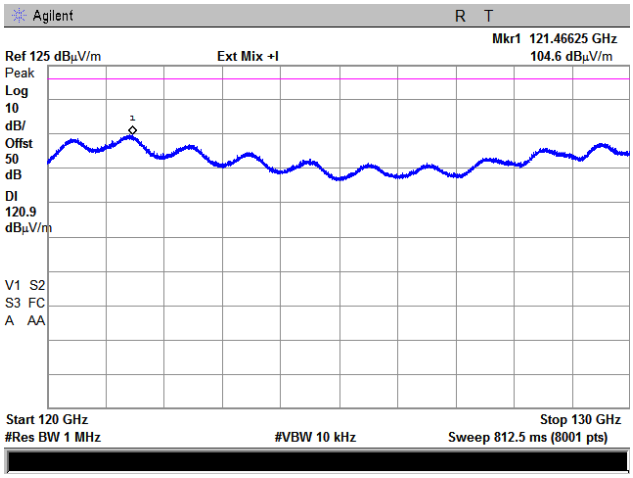
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.44 Spurious emission measurements in 120 – 130 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

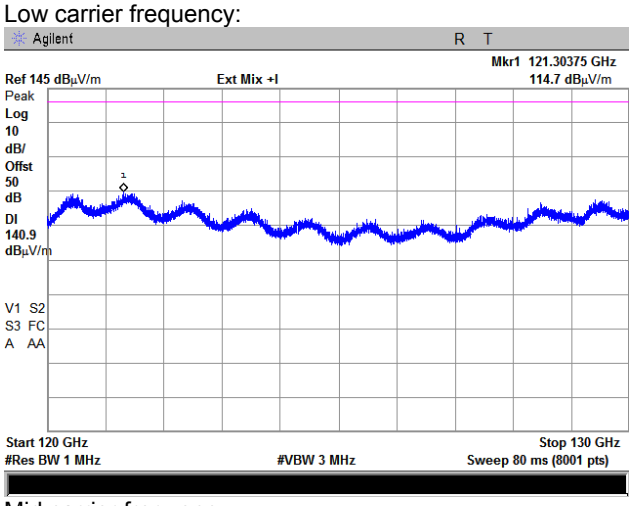


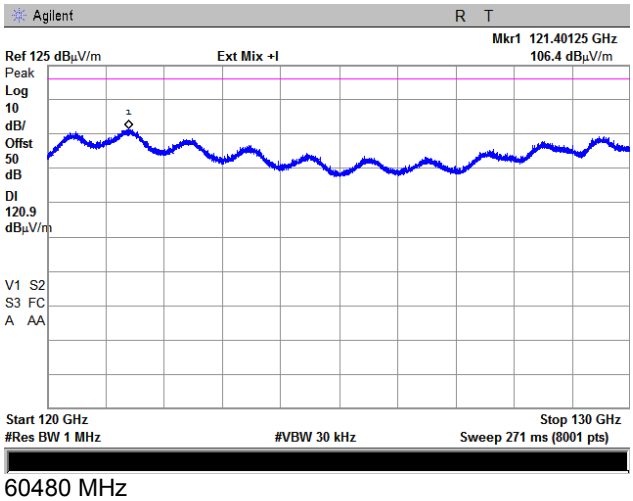


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

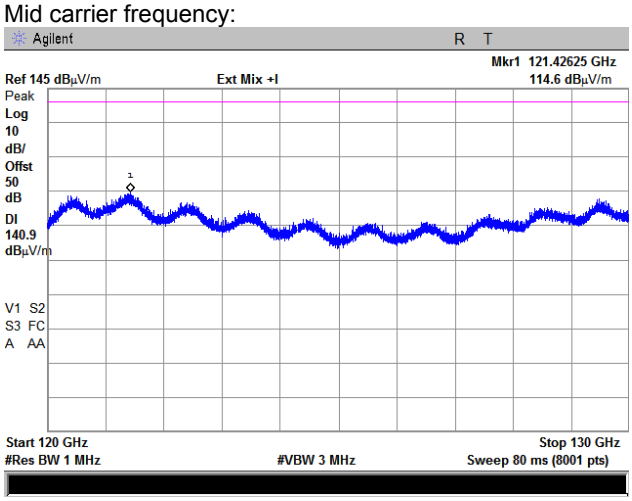
Plot 7.4.45 Spurious emission measurements in 120 – 130 GHz range

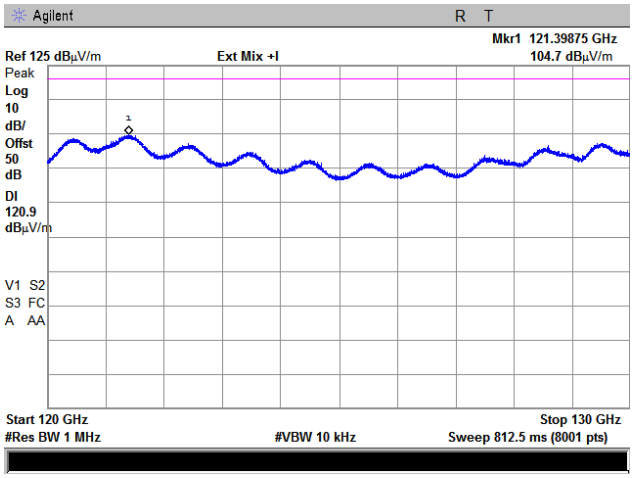
TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency: 58320 MHz





Mid carrier frequency: 60480 MHz



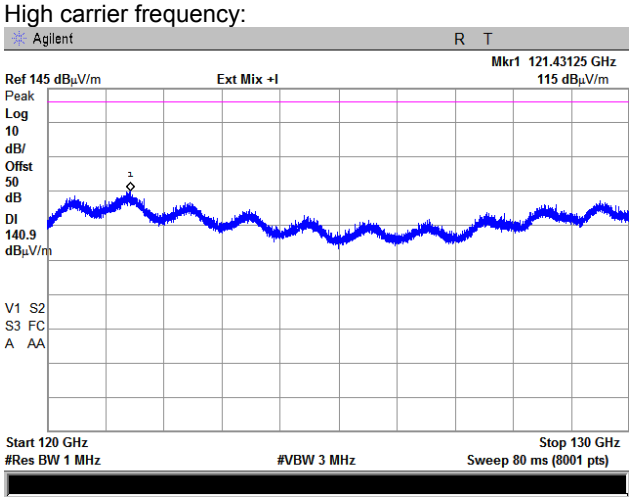


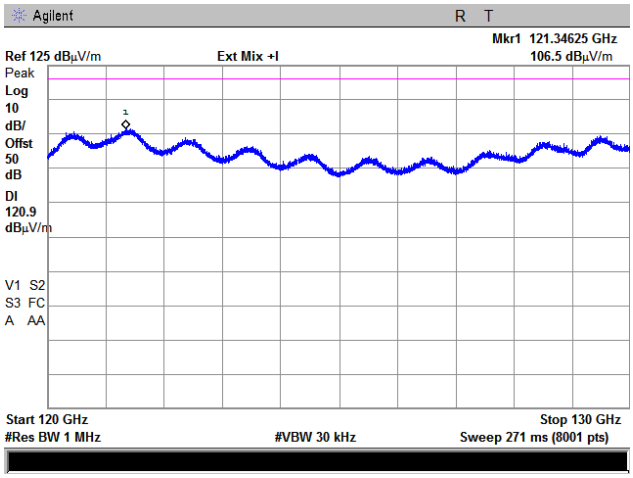
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.46 Spurious emission measurements in 120 – 130 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

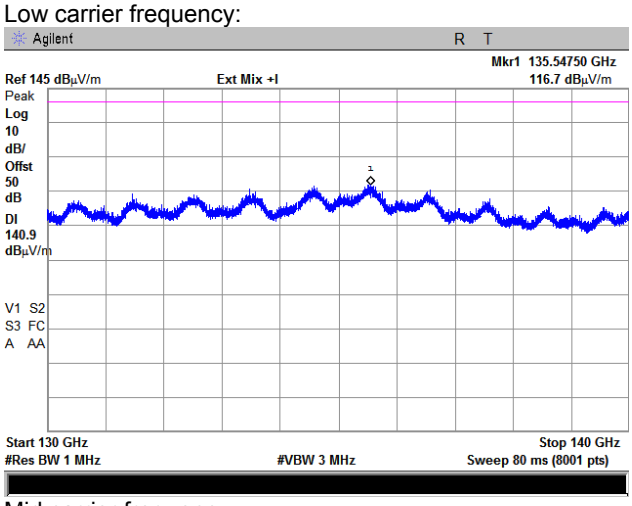




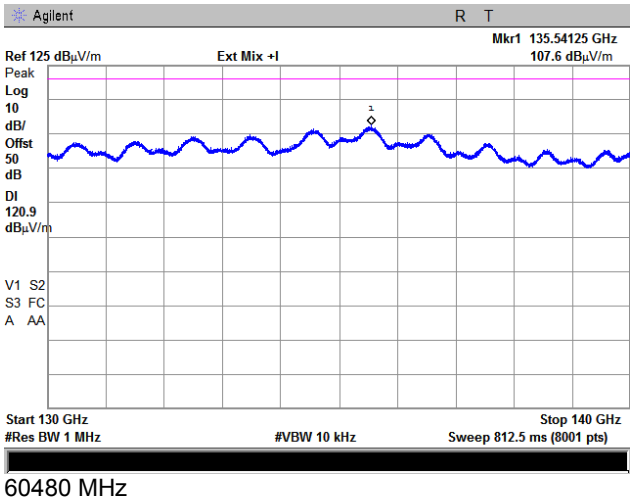
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.47 Spurious emission measurements in 130 – 140 GHz range

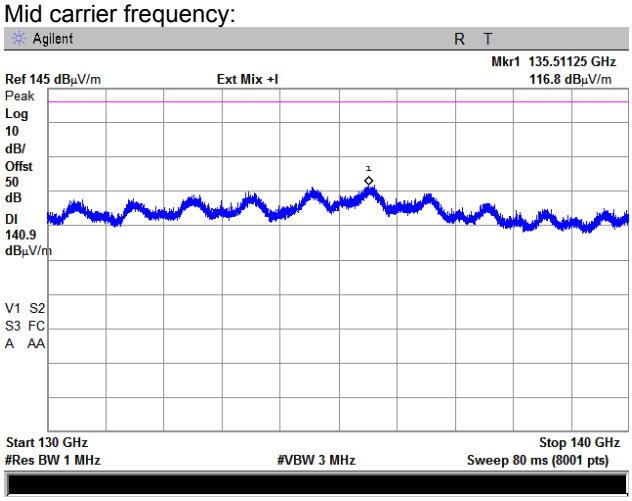
TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:

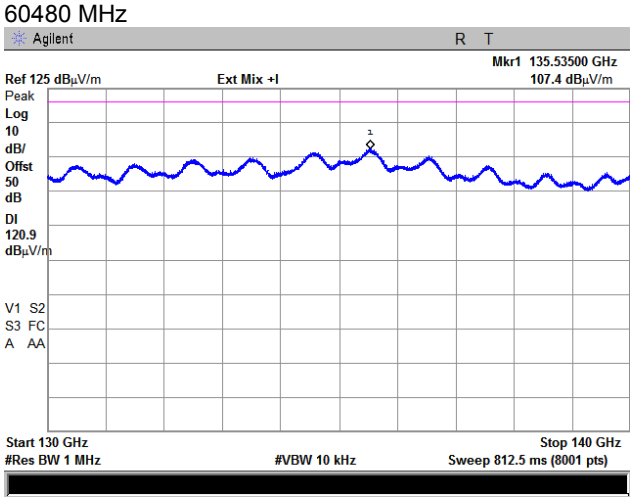


DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:
60480 MHz



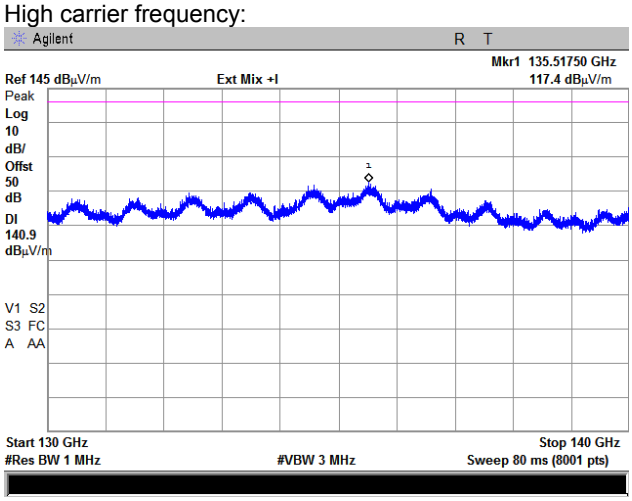


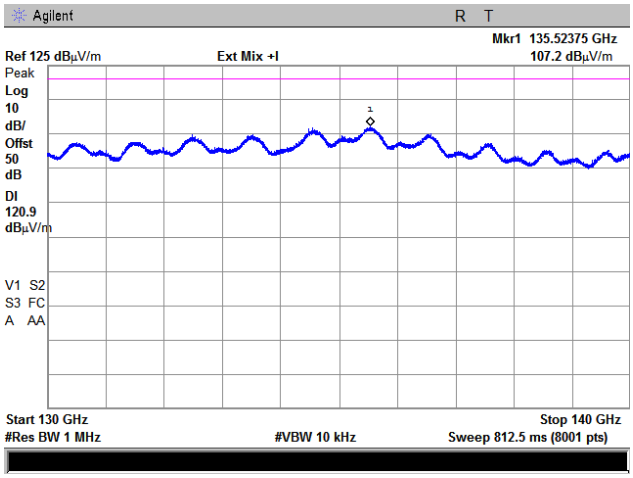
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.48 Spurious emission measurements in 130 – 140 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

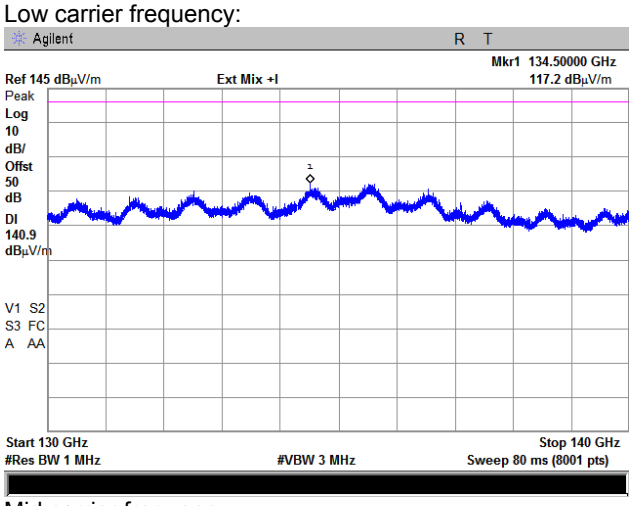




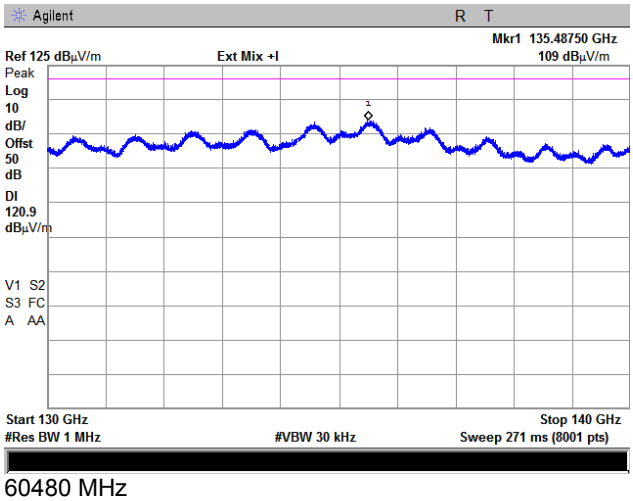
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.49 Spurious emission measurements in 130 – 140 GHz range

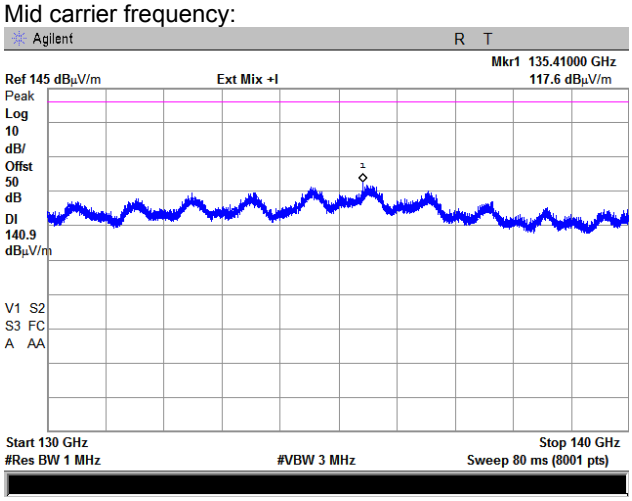
TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:



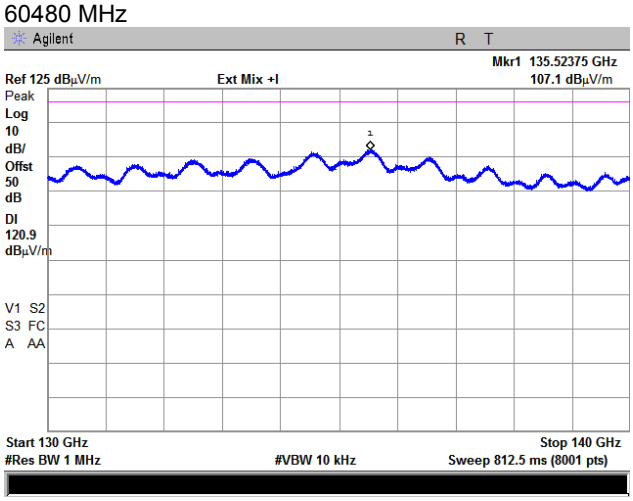
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:



60480 MHz

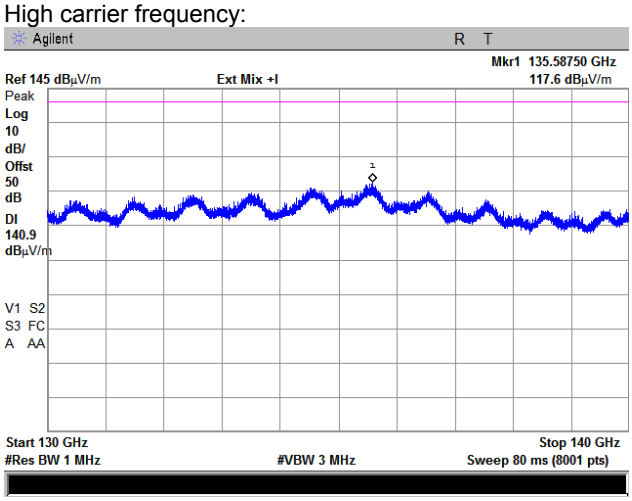


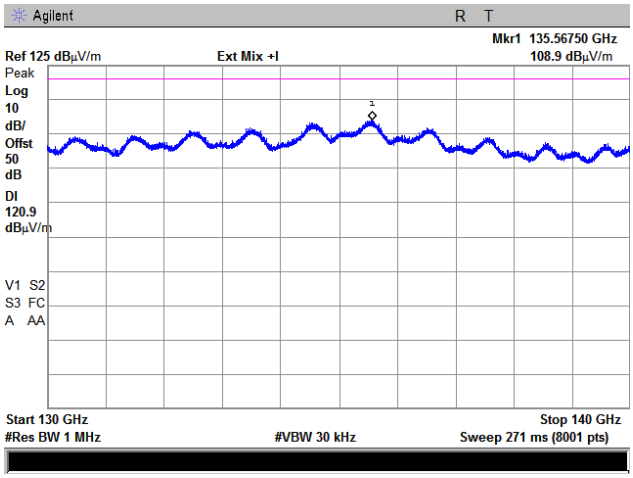
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.50 Spurious emission measurements in 130 – 140 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.05 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

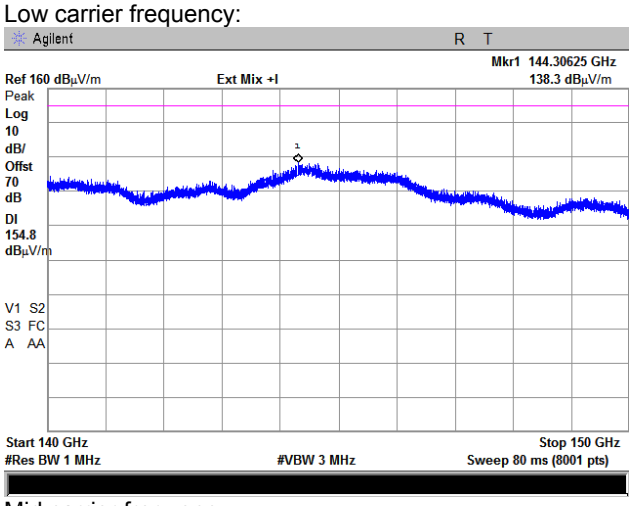




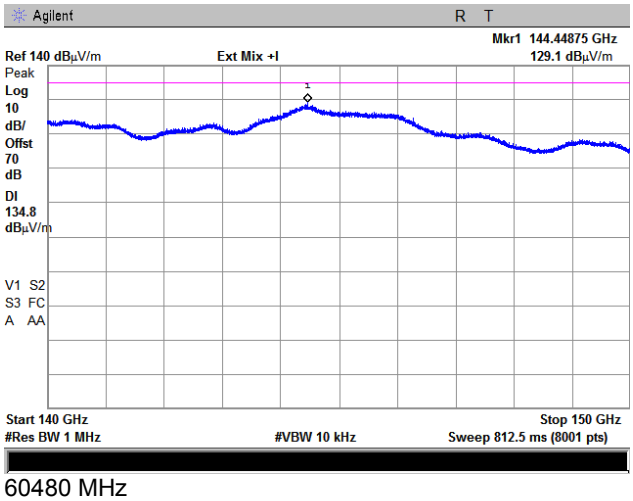
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.51 Spurious emission measurements in 140 – 150 GHz range

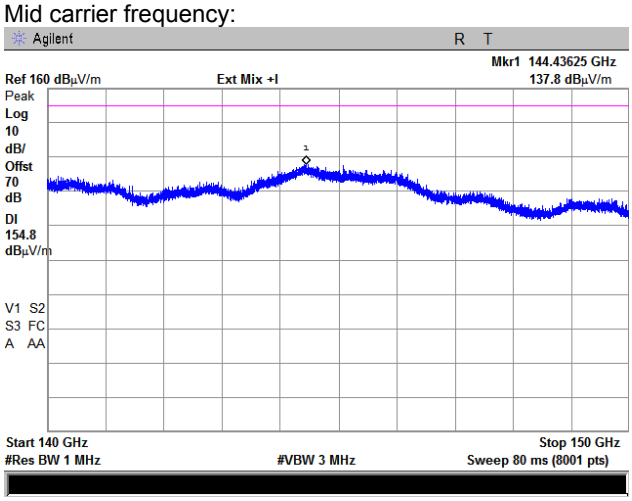
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:



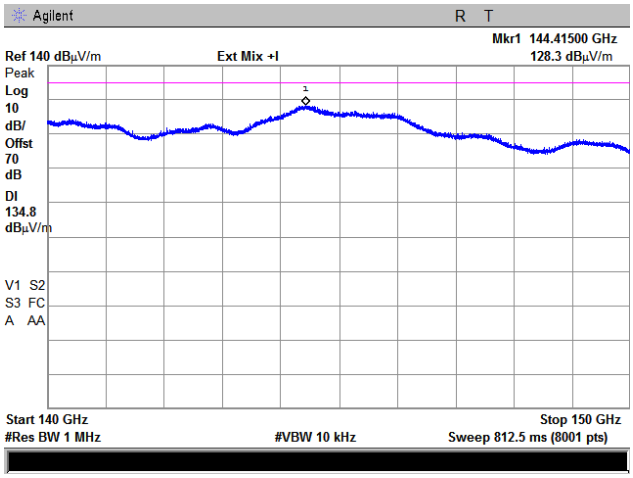
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:



60480 MHz

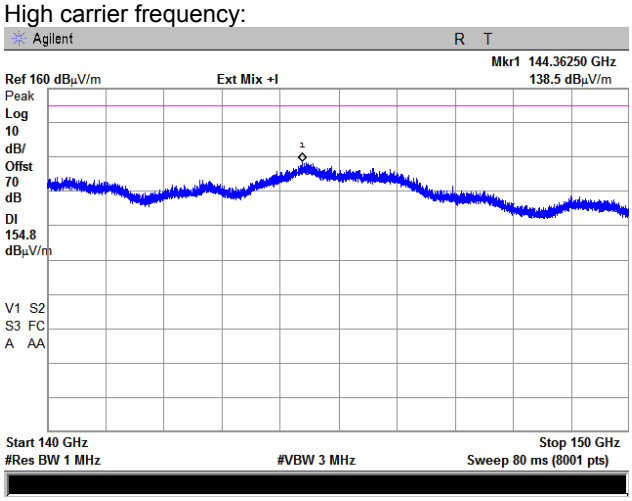


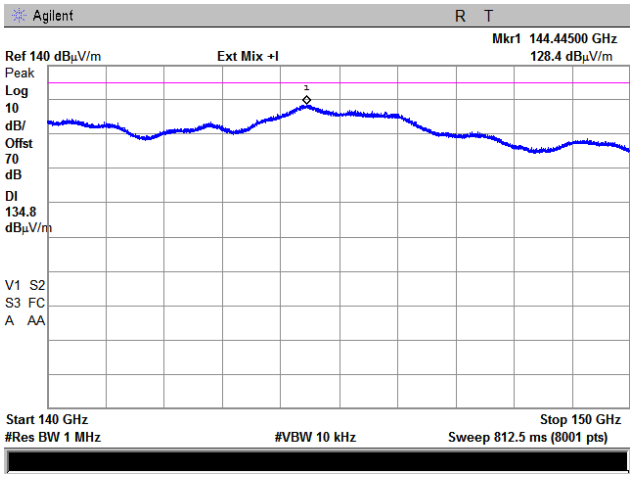
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.52 Spurious emission measurements in 140 – 150 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

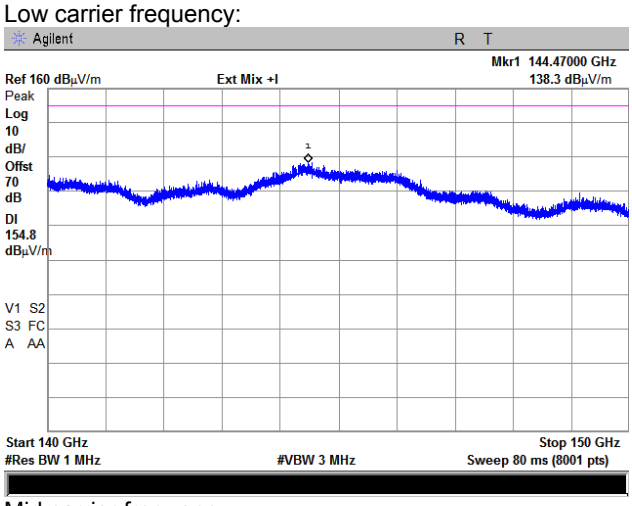




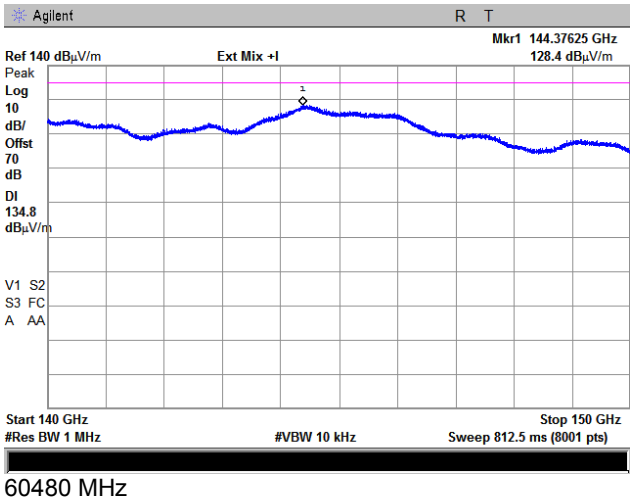
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.53 Spurious emission measurements in 140 – 150 GHz range

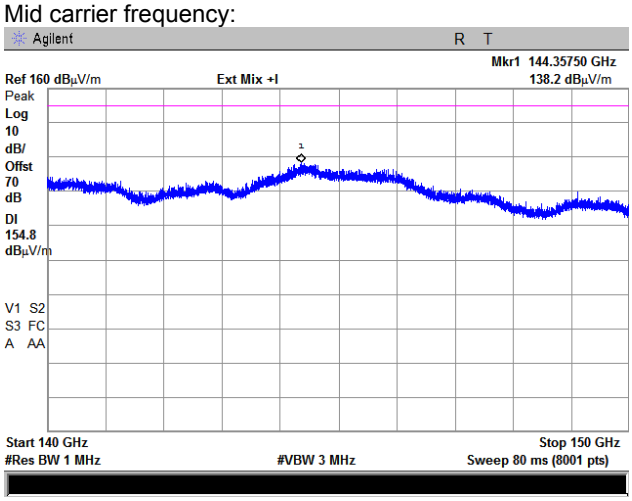
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:



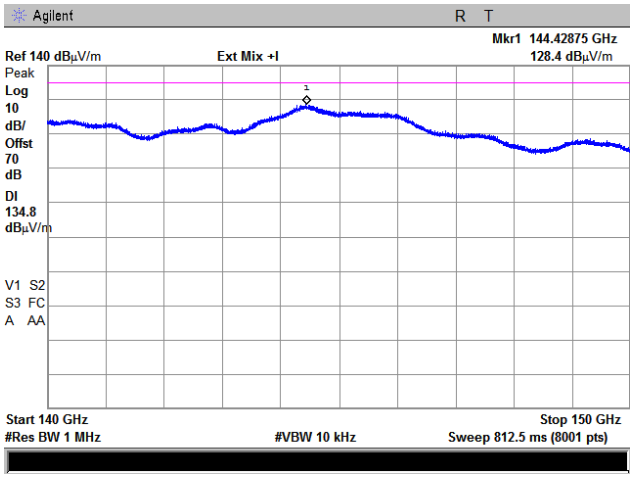
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:



60480 MHz

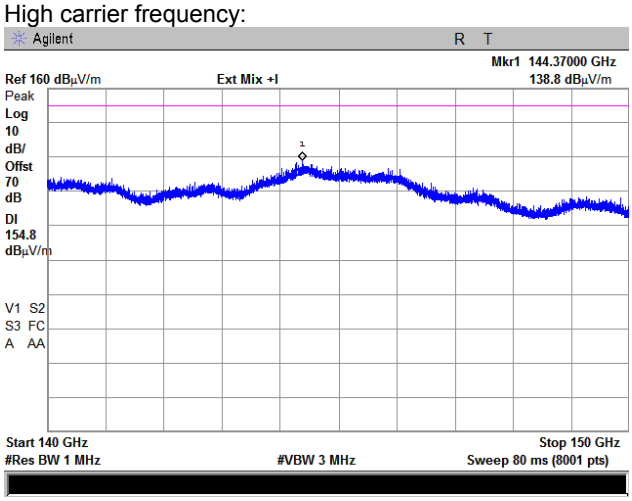


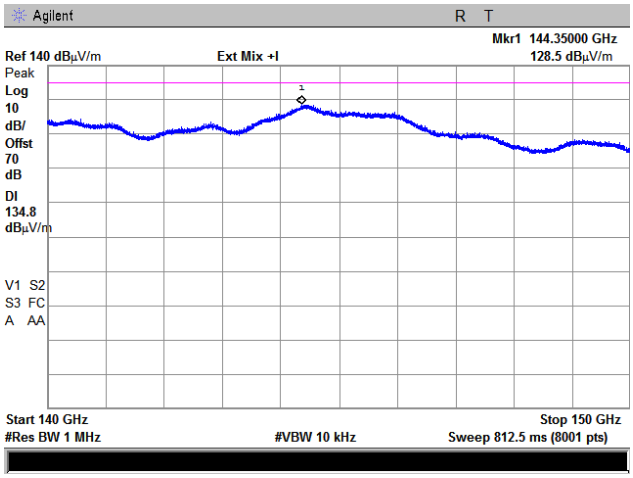
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.54 Spurious emission measurements in 140 – 150 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

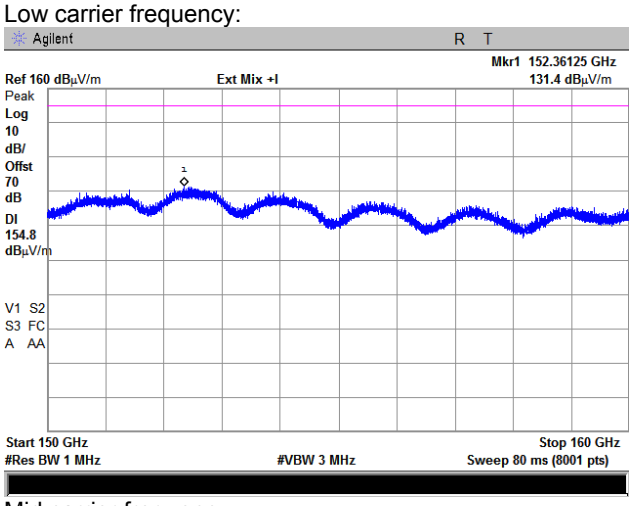




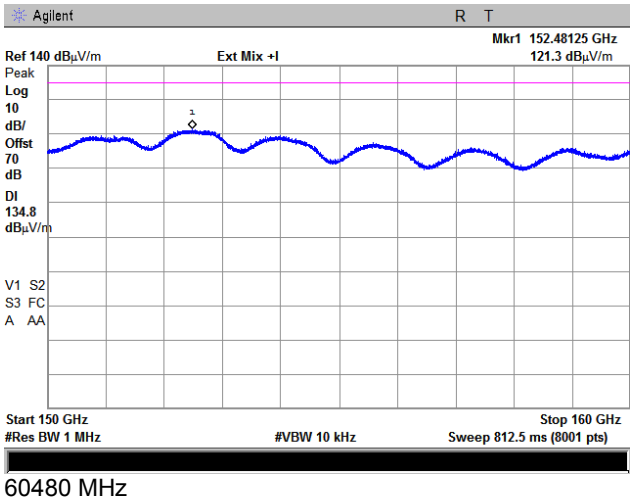
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.55 Spurious emission measurements in 150 – 160 GHz range

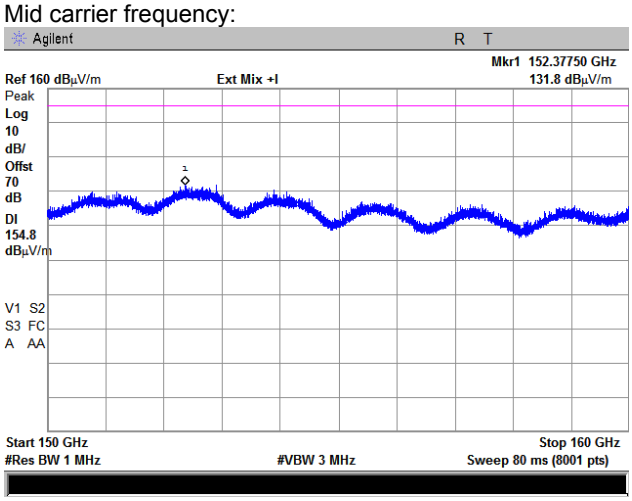
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:

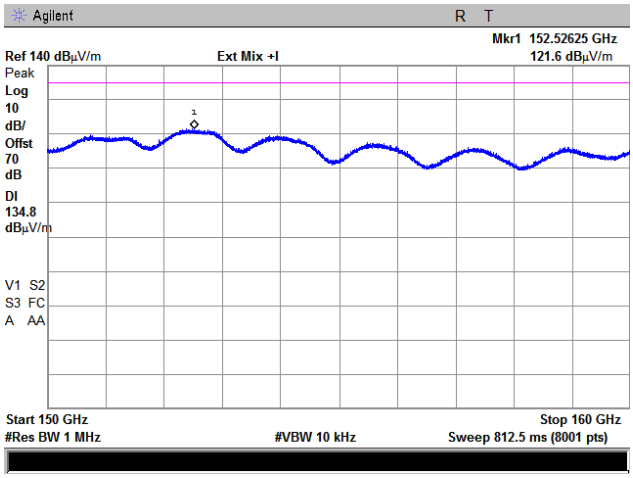


DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:
60480 MHz



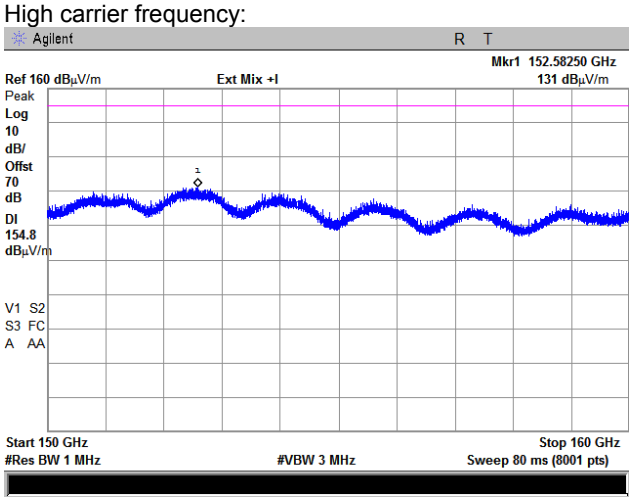


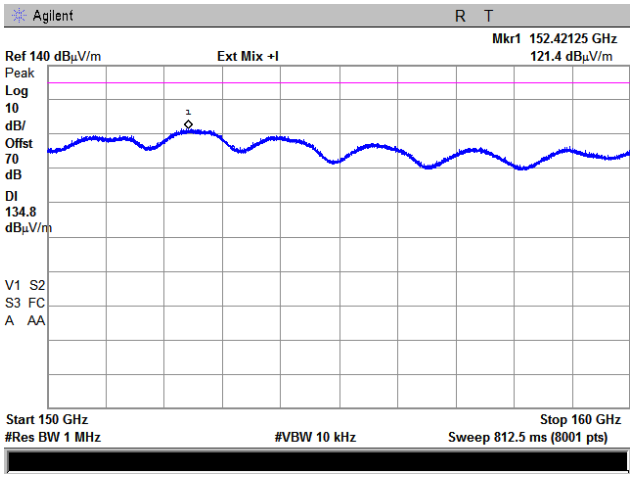
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.56 Spurious emission measurements in 150 – 160 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

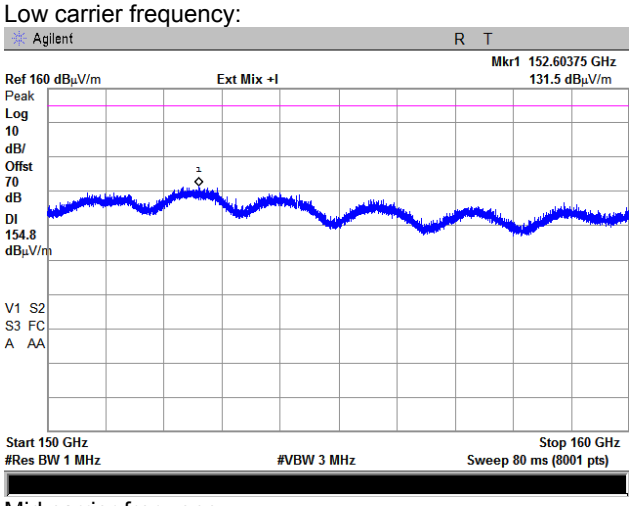


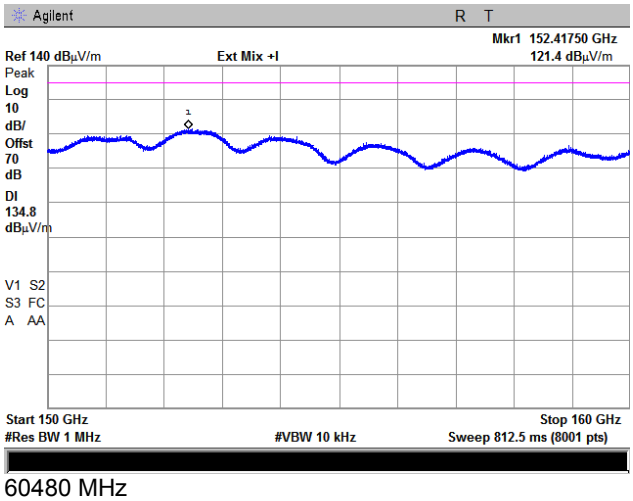


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

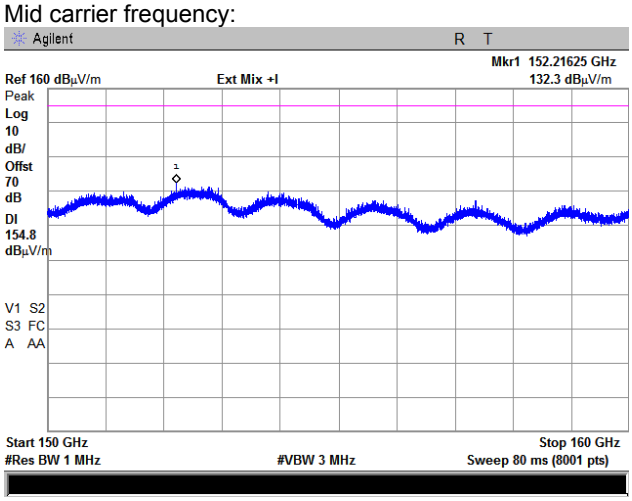
Plot 7.4.57 Spurious emission measurements in 150 – 160 GHz range

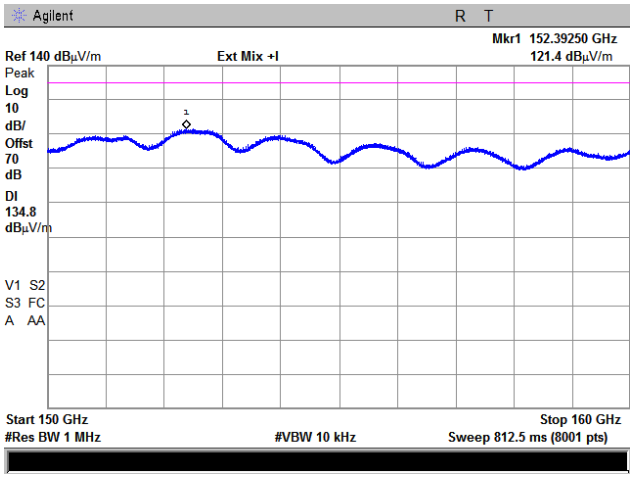
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency: 58320 MHz





Mid carrier frequency: 60480 MHz



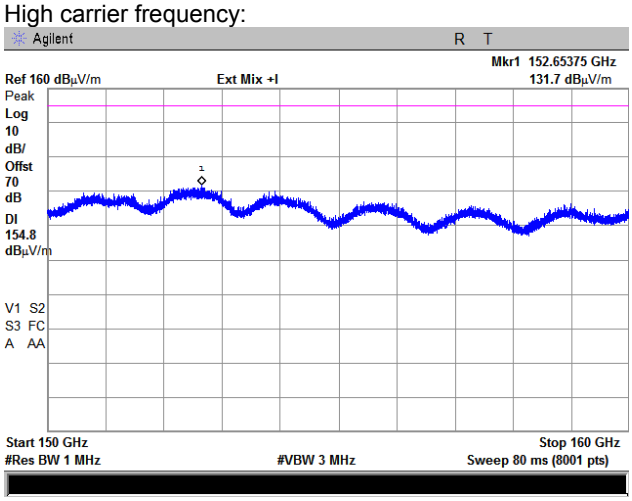


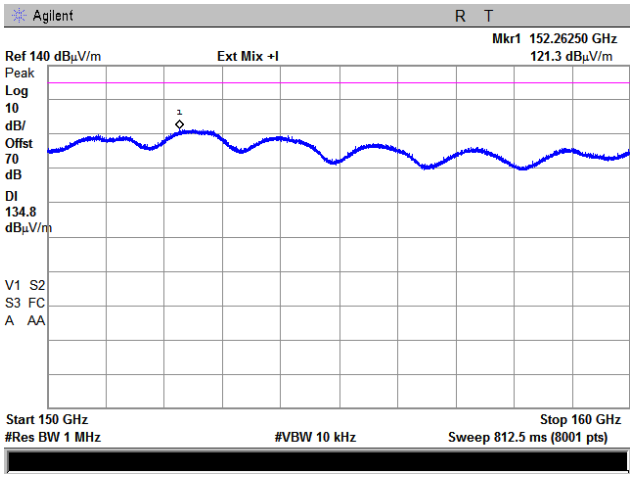
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.58 Spurious emission measurements in 150 – 160 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

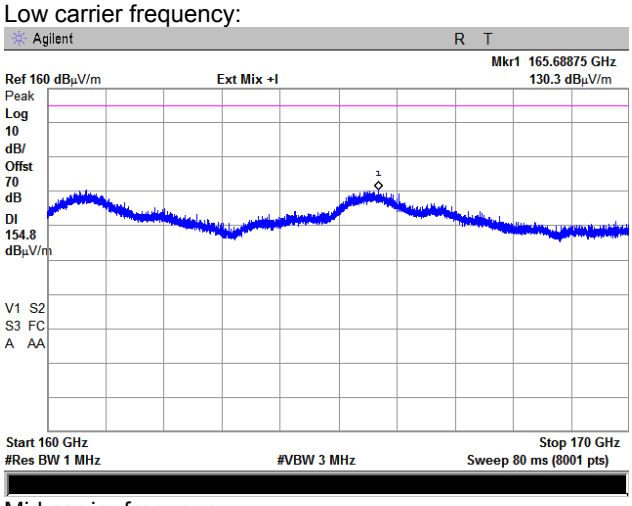




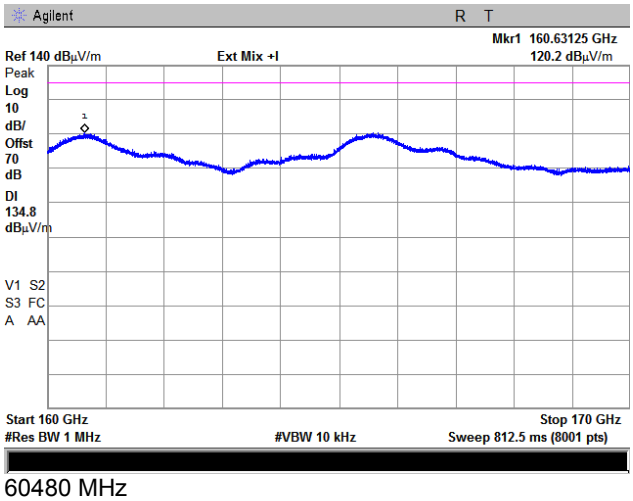
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.59 Spurious emission measurements in 160 – 170 GHz range

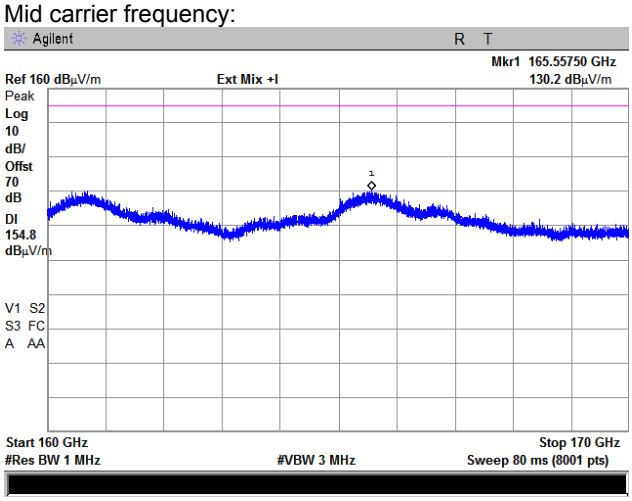
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:

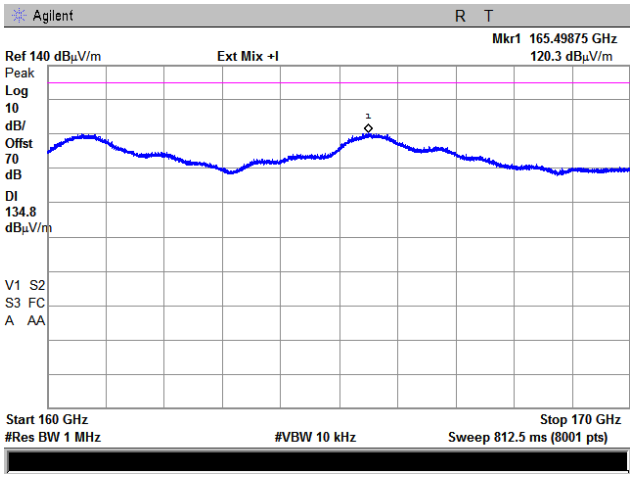


DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:
60480 MHz



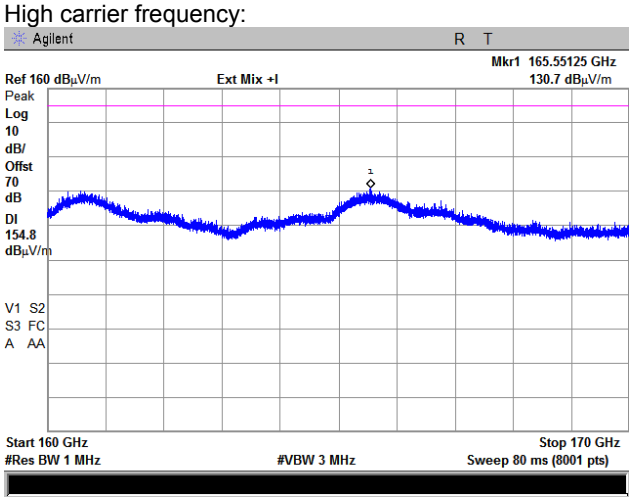


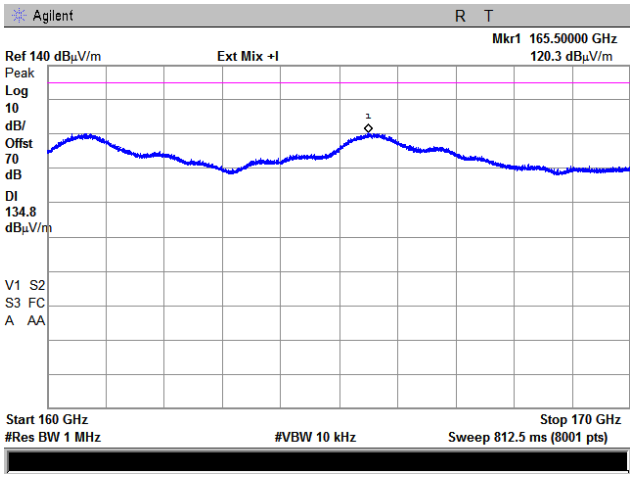
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.60 Spurious emission measurements in 160 – 170 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

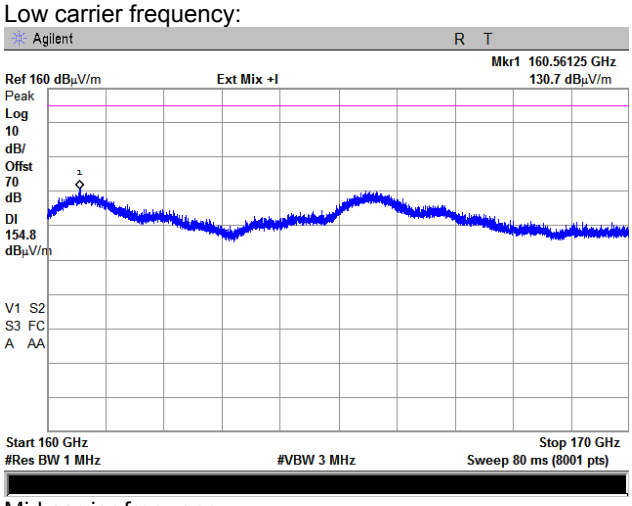


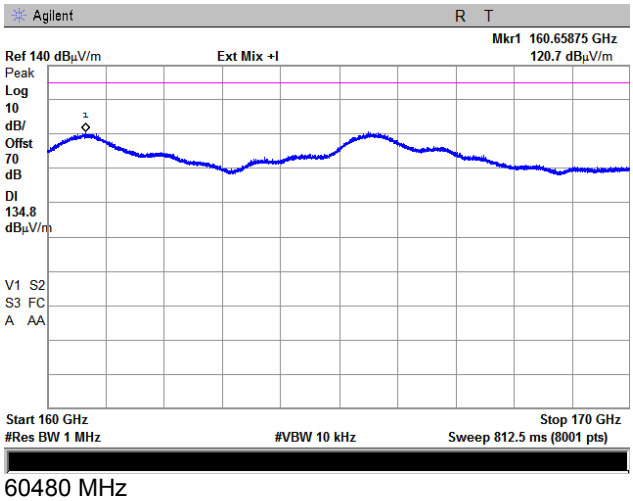


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

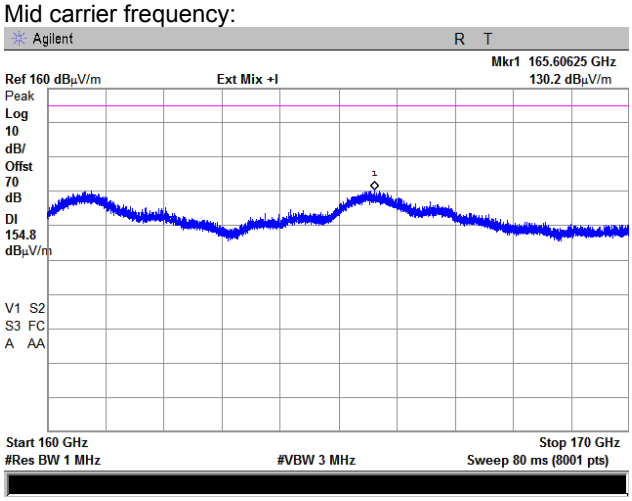
Plot 7.4.61 Spurious emission measurements in 160 – 170 GHz range

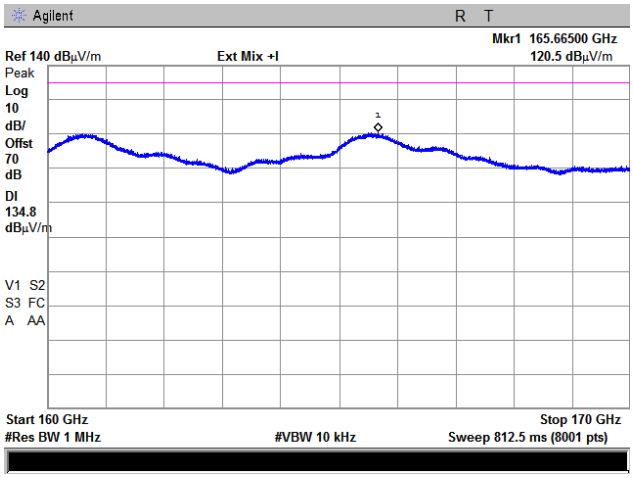
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency: 58320 MHz





Mid carrier frequency: 60480 MHz



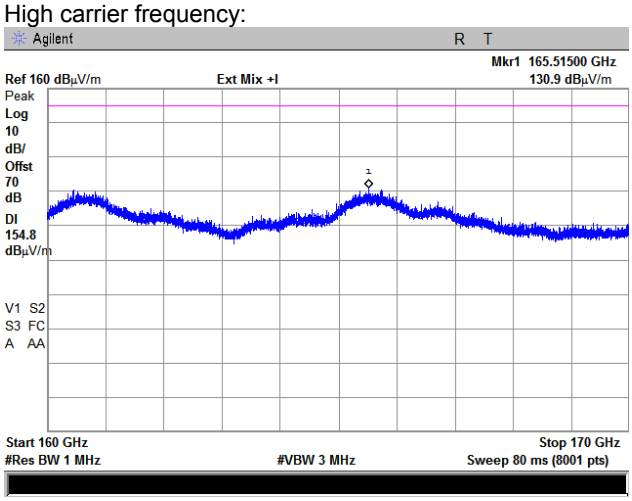


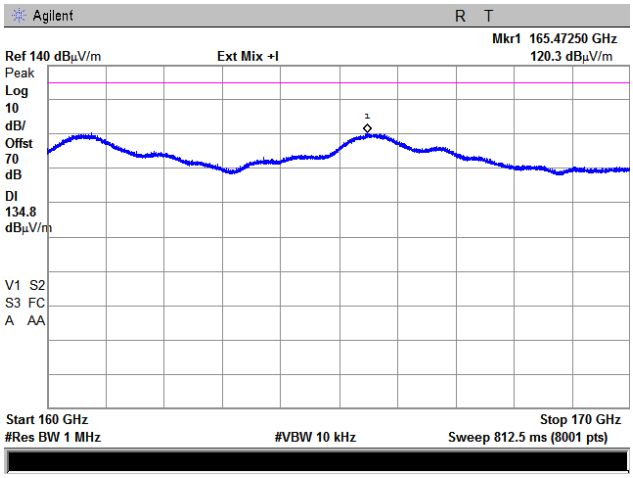
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.62 Spurious emission measurements in 160 – 170 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

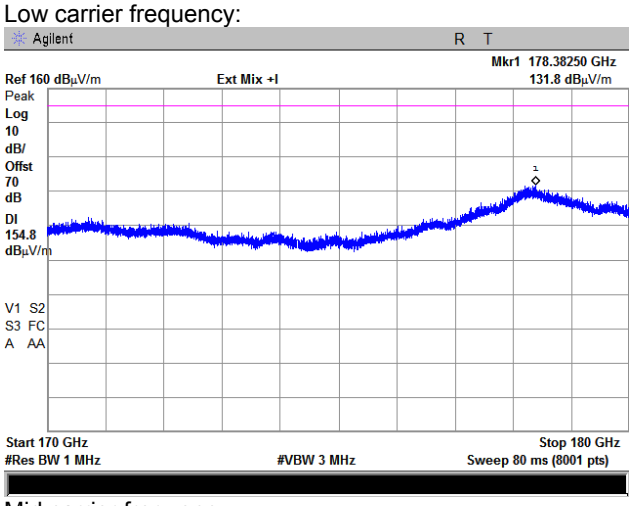




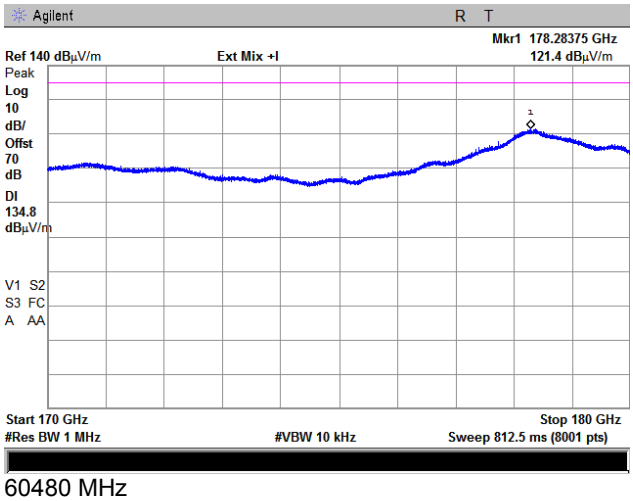
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.63 Spurious emission measurements in 170 – 180 GHz range

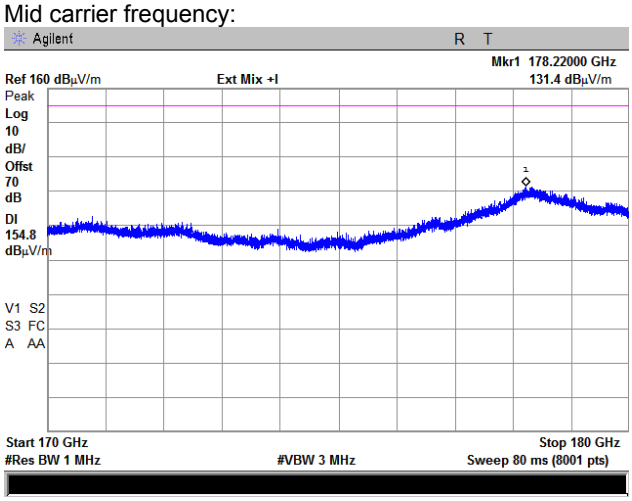
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:

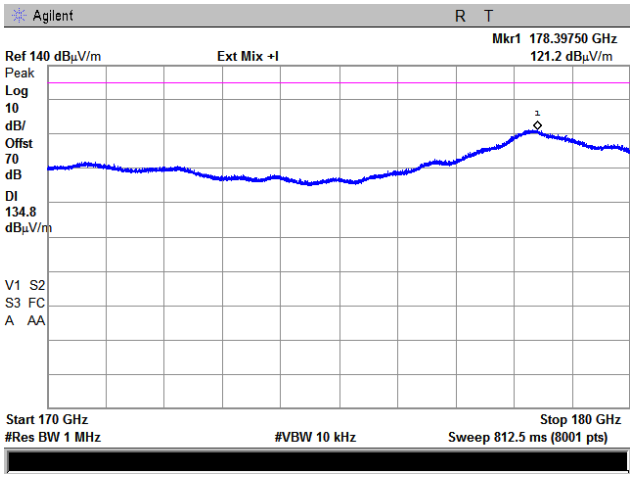


DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:
60480 MHz



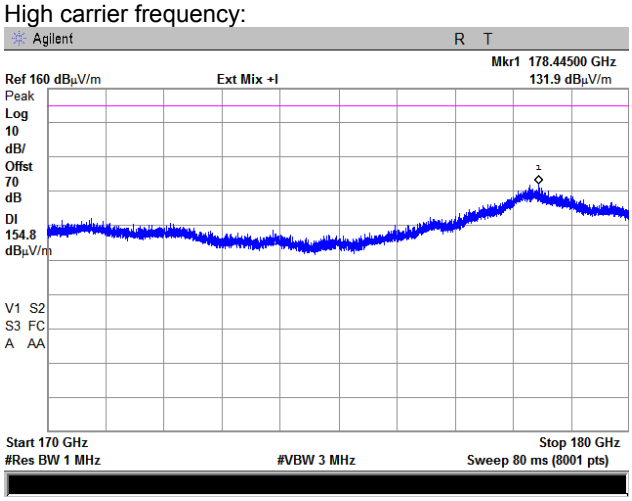


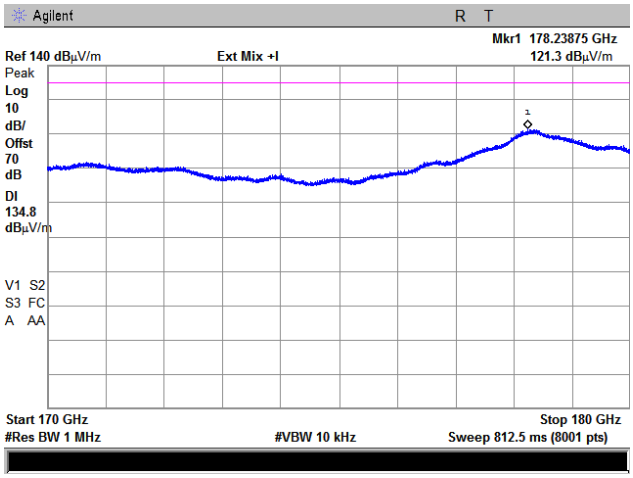
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.64 Spurious emission measurements in 170 – 180 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

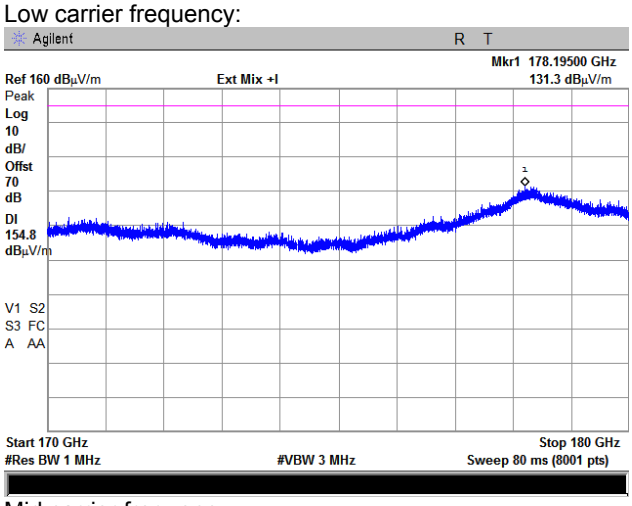


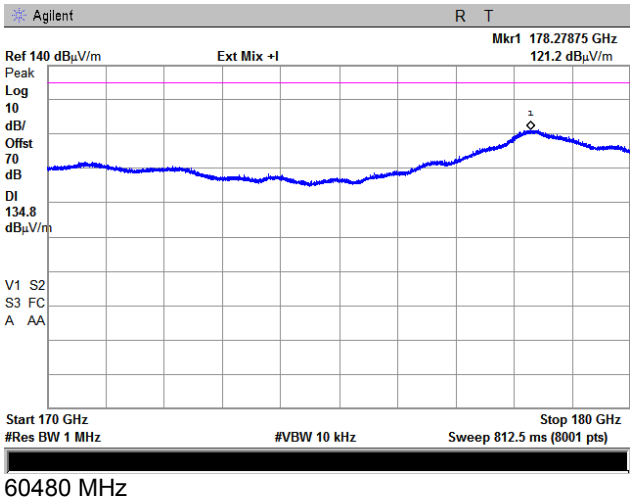


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

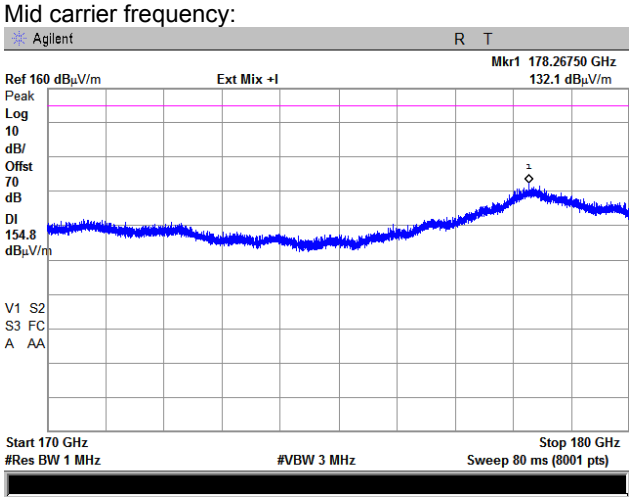
Plot 7.4.65 Spurious emission measurements in 170 – 180 GHz range

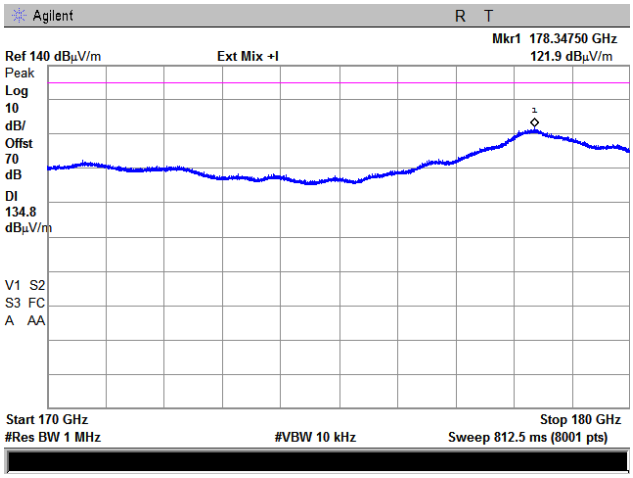
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency: 58320 MHz





Mid carrier frequency: 60480 MHz



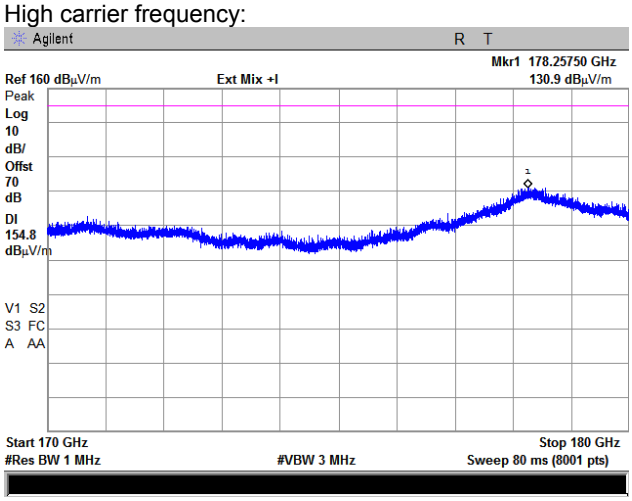


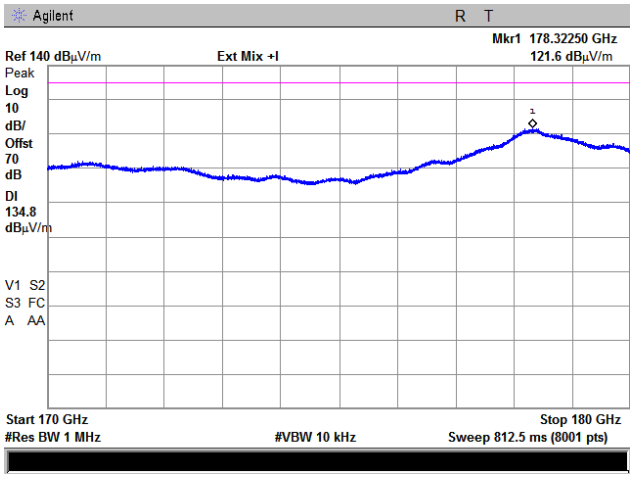
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.66 Spurious emission measurements in 170 – 180 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

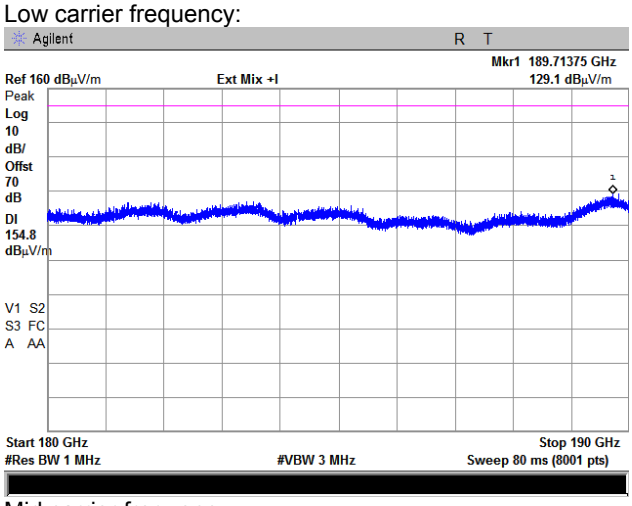


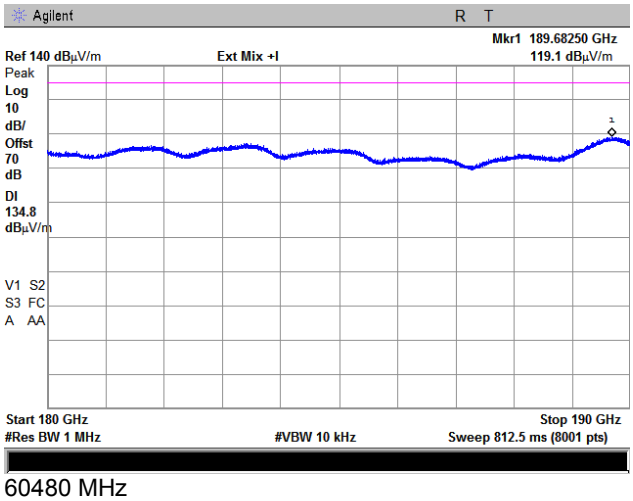


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

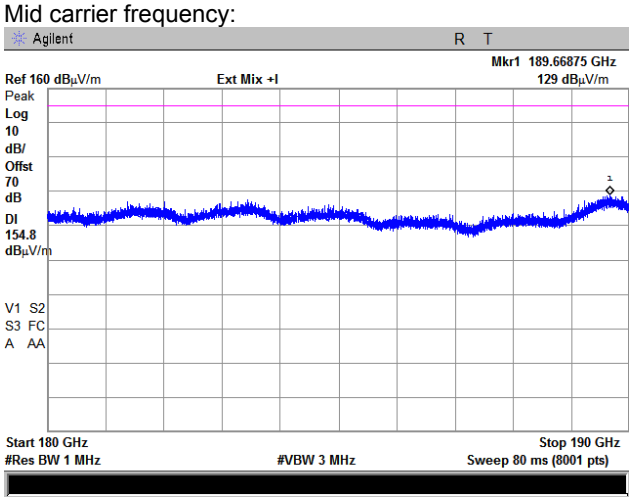
Plot 7.4.67 Spurious emission measurements in 180 – 190 GHz range

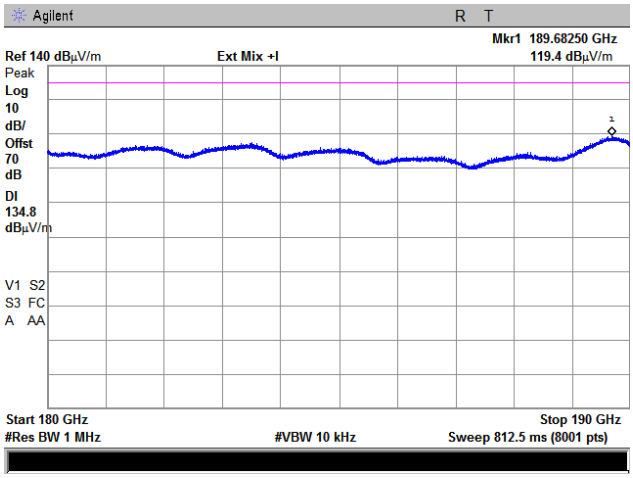
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency: 58320 MHz





Mid carrier frequency: 60480 MHz



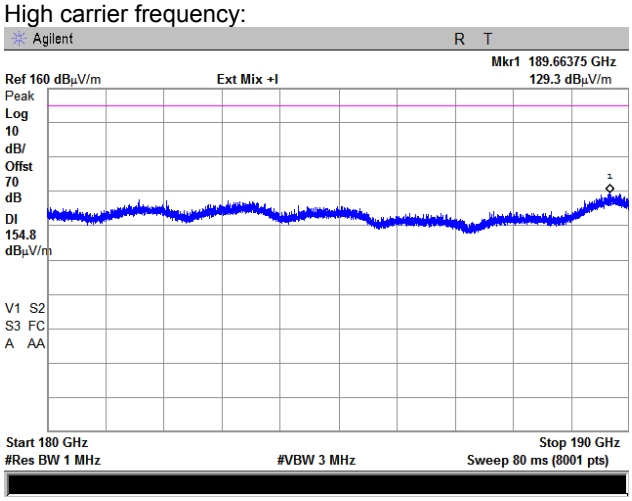


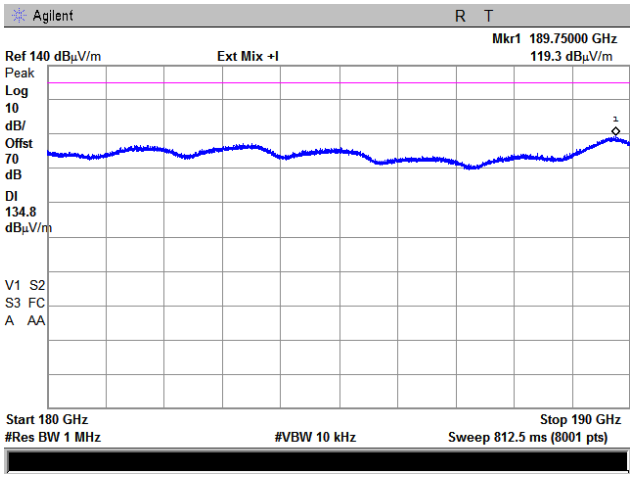
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.68 Spurious emission measurements in 180 – 190 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

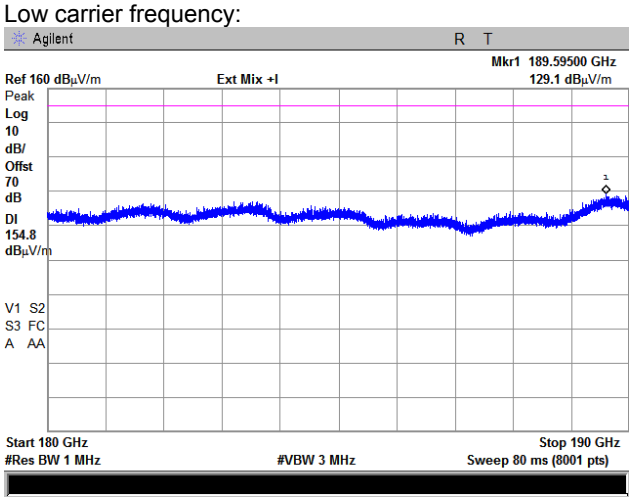




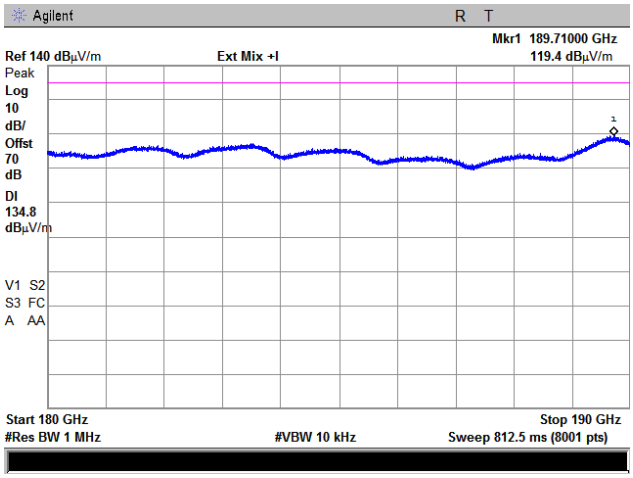
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.69 Spurious emission measurements in 180 – 190 GHz range

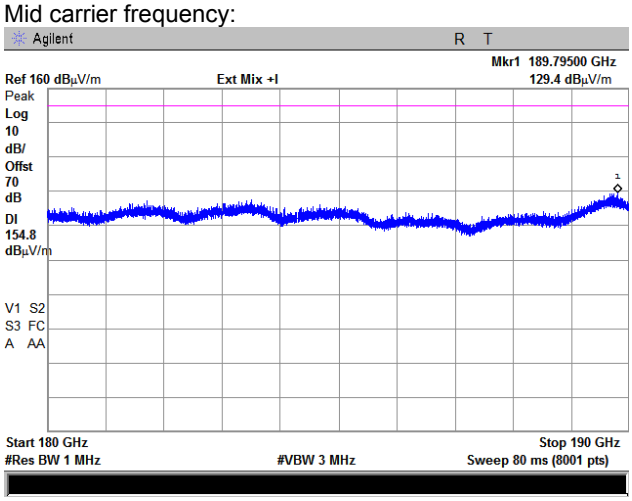
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency:



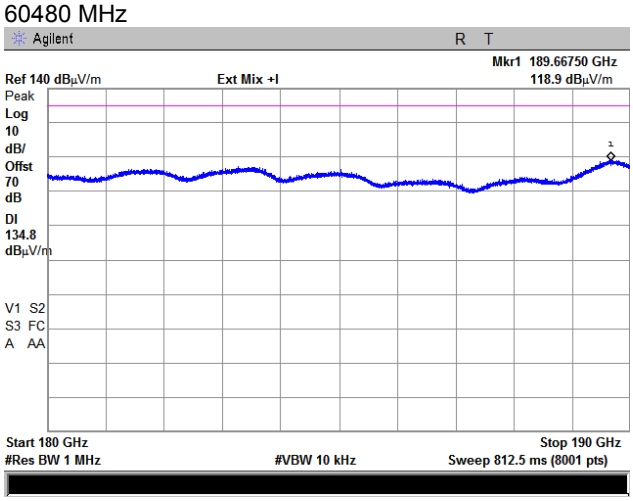
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz
58320 MHz



Mid carrier frequency:



60480 MHz

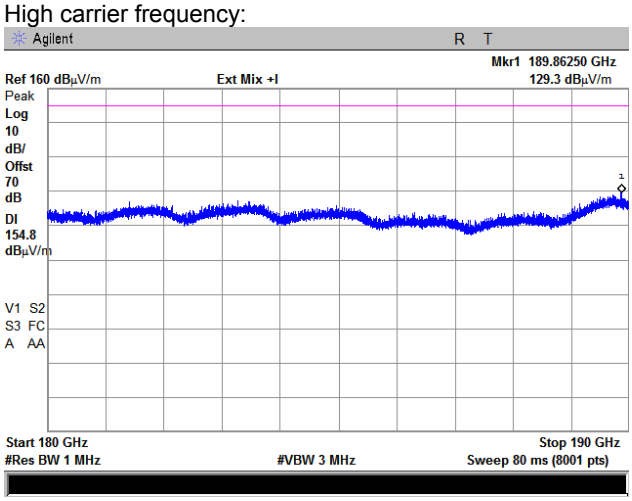


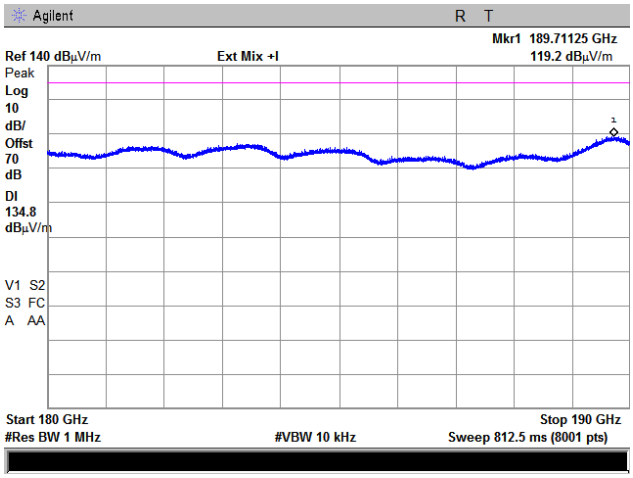
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.70 Spurious emission measurements in 180 – 190 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

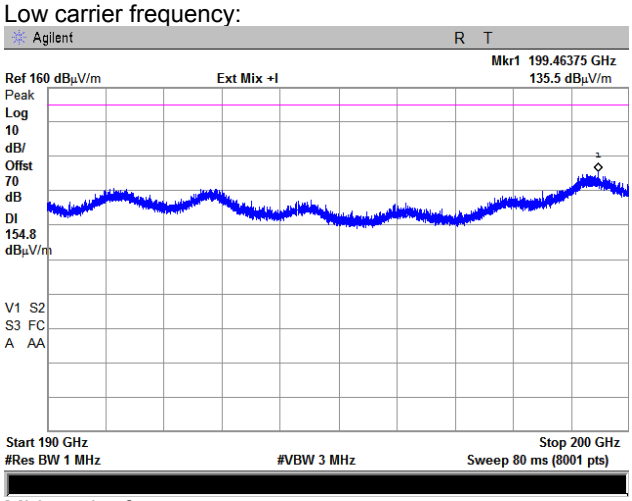


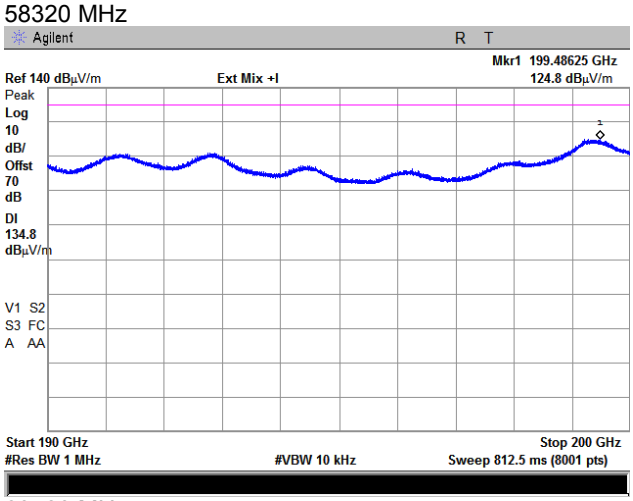


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

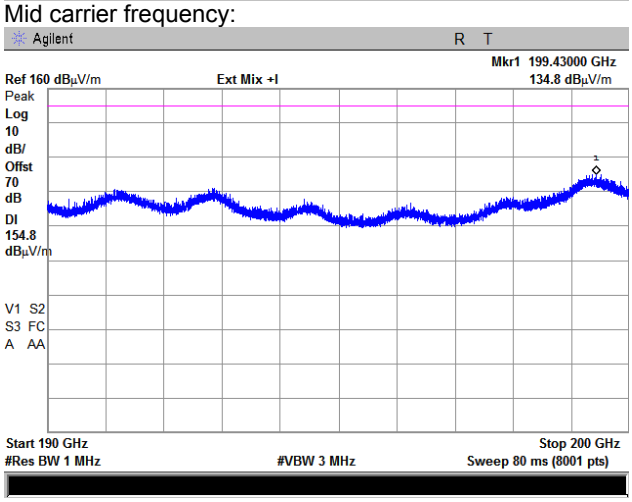
Plot 7.4.71 Spurious emission measurements in 190 – 200 GHz range

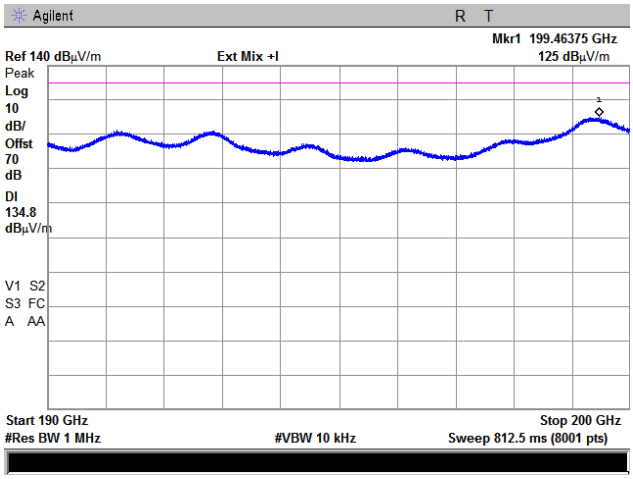
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency: 58320 MHz





Mid carrier frequency: 60480 MHz



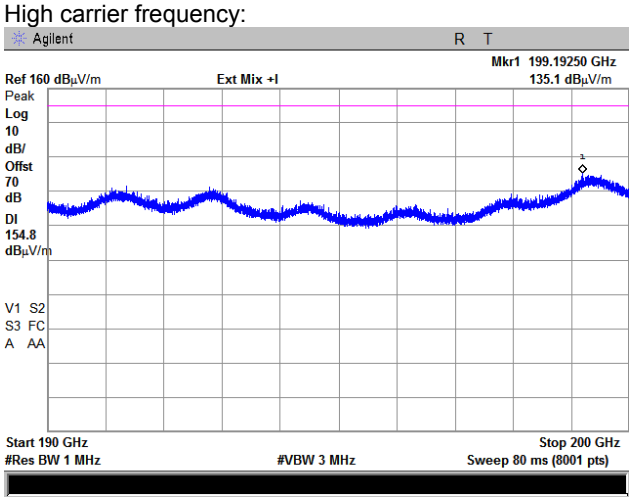


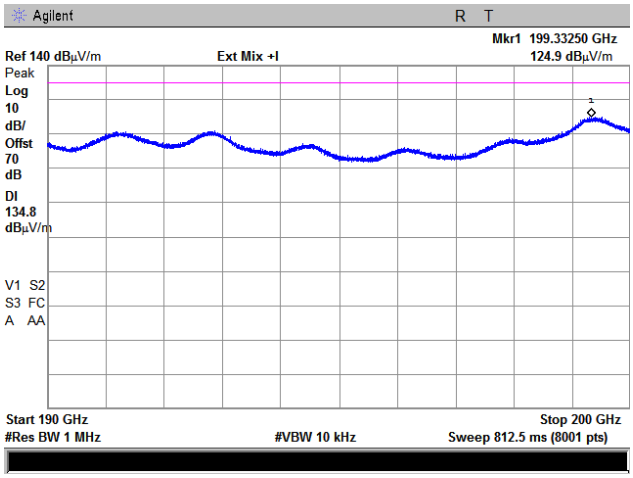
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.72 Spurious emission measurements in 190 – 200 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: BPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz

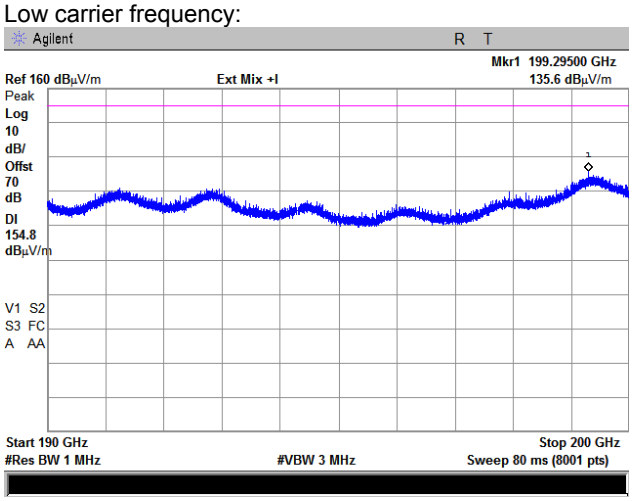


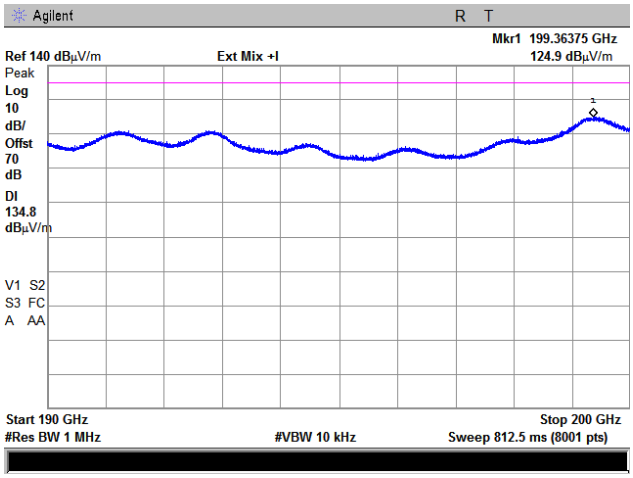


Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

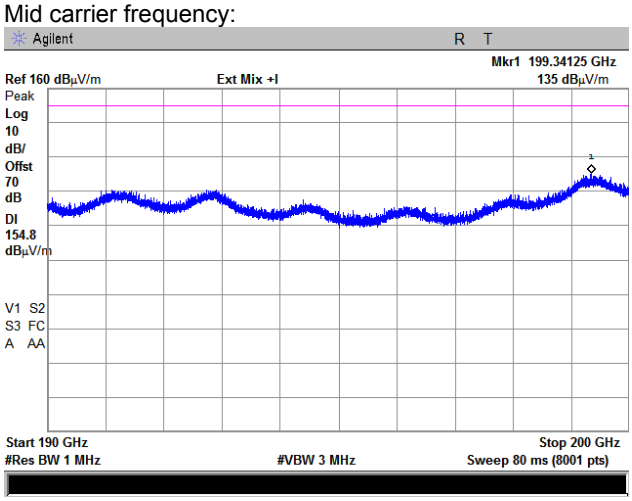
Plot 7.4.73 Spurious emission measurements in 190 – 200 GHz range

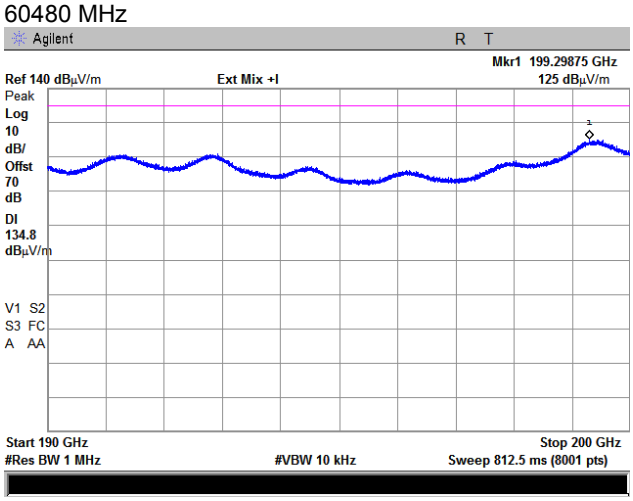
TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
Low carrier frequency: 58320 MHz





Mid carrier frequency: 60480 MHz



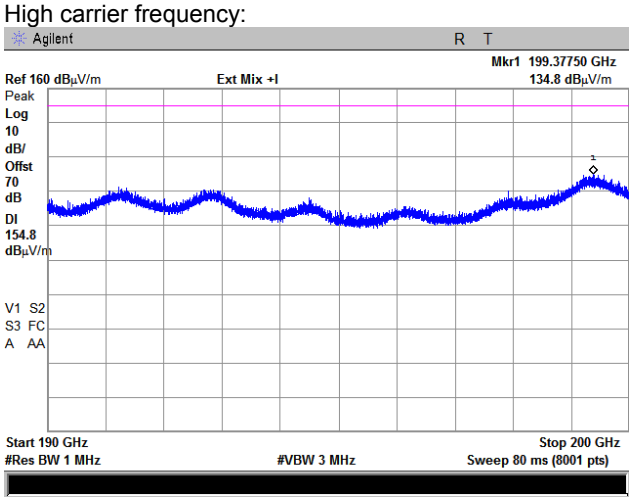


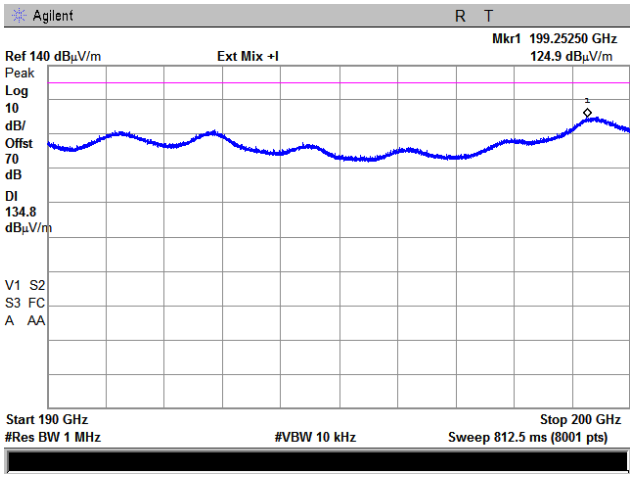
Test specification:	FCC Section 15.255(d)(3), RSS-210 section J.3, Out of band radiated emissions above 40 GHz		
Test procedure:	ANSI C63.10, Sections 9.9, 9.12		
Test mode:	Compliance	Verdict:	PASS
Date(s):	03-Jun-20		
Temperature: 24 ºC	Relative Humidity: 45 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

Plot 7.4.74 Spurious emission measurements in 190 – 200 GHz range

TEST SITE: OATS
TEST DISTANCE: 0.01 m
MODULATION: QPSK
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak RBW = 1 MHz; VBW = 3 MHz
DETECTOR: Peak RBW = 1 MHz; VBW = 10 kHz

High carrier frequency: 64800 MHz





Test specification:	FCC Section 15.255(f), RSS-210 section J.6, Frequency stability		
Test procedure:	ANSI C63.10, Section 9.14		
Test mode:	Compliance	Verdict:	PASS
Date(s):	15-Jun-20		
Temperature: 24 ºC	Relative Humidity: 47 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

7.5 Frequency stability test

7.5.1 General

This test was performed to measure frequency stability of transmitter RF carrier. Specification test limits are given in Table 7.5.1.

Table 7.5.1 Frequency stability limits

Assigned frequency, MHz	Maximum allowed frequency displacement
58320	NA
60480	
64800	

7.5.2 Test procedure

7.5.2.1 The EUT was set up as shown in Figure 7.5.1, energized and its proper operation was checked.

7.5.2.2 The EUT power was turned off. Temperature within test chamber was set to +30˚C and a period of time sufficient to stabilize all of the oscillator circuit components was allowed.

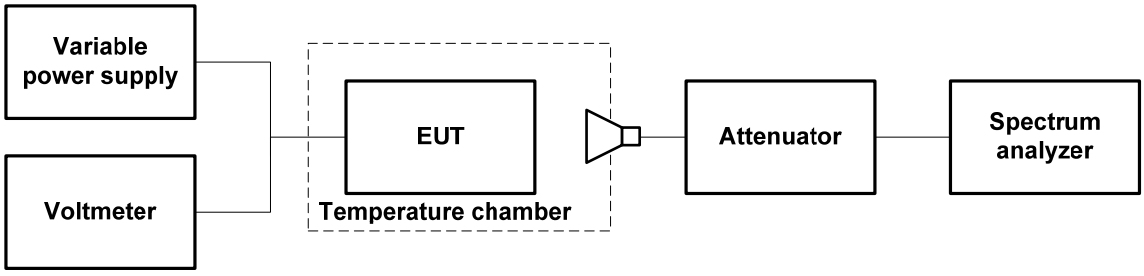
7.5.2.3 The EUT was powered on and carrier frequency was measured at start up moment and then every minute until frequency had been stabilized or 10 minutes elapsed whichever reached the last. The EUT was powered off.

7.5.2.4 The above procedure was repeated at 0˚C and at the lowest test temperature.

7.5.2.5 The EUT was powered on and carrier frequency was measured at start up moment and at the end of stabilization period at the rest of test temperatures and voltages. The EUT was powered off.

7.5.2.6 Frequency displacement was calculated and compared with the limit as provided in Table 7.5.2.

Figure 7.5.1 Frequency stability test setup



Test specification:	**FCC Section 15.255(f), RSS-210 section J.6, Frequency stability**		
Test procedure:	ANSI C63.10, Section 9.14		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Jun-20		
Temperature: 24 ºC	**Relative Humidity:** 47 %	**Air Pressure:** 1010 hPa	**Power:** 55 VDC
Remarks:			

Table 7.5.2 Frequency stability test results

ASSIGNED FREQUENCY RANGE: 57000 – 71000 MHz
NOMINAL POWER VOLTAGE: 55 V
TEMPERATURE STABILIZATION PERIOD: 20 min
POWER DURING TEMPERATURE TRANSITION: Off
SPECTRUM ANALYZER MODE: Counter
RESOLUTION BANDWIDTH: 3 kHz
VIDEO BANDWIDTH: 10 kHz
MODULATION: Unmodulated

T, ºC	Voltage, V	Frequency, MHz							Max frequency drift, kHz	
		Start up	1st min	2nd min	3rd min	4th min	5th min	10th min	Positive	Negative
Low frequency 58.32 GHz										
-30	nominal	58320.2971	NA	NA	NA	NA	NA	58320.2982	298.2	NA
-20	nominal	58320.3285	58320.3254	58320.3261	58320.3292	58320.3311	58320.3320	58320.3535	353.5	NA
-10	nominal	58320.3263	NA	NA	NA	NA	NA	58320.3264	326.4	NA
0	nominal	58320.0914	58320.0974	58320.1046	58320.1078	58320.1128	58320.1158	58320.1325	132.5	NA
10	nominal	58320.2979	NA	NA	NA	NA	NA	58320.0541	54.1	NA-
20	+15%	58319.9567	NA	NA	NA	NA	NA	58319.9567	NA	-43.3
20	nominal	58319.9508	NA	NA	NA	NA	NA	58319.9508	NA	-49.2
20	-15%	58319.9556	NA	NA	NA	NA	NA	58319.9556	NA	-44.4
30	nominal	58319.8634	58319.86228	58319.86122	58319.86060	58319.86124	58319.86042	58319.8596	NA	-140.4
40	nominal	58319.8596	NA	NA	NA	NA	NA	58319.7898	NA	-210.2
50	nominal	58319.7898	NA	NA	NA	NA	NA	58319.8049	NA	-195.1
60	nominal	58319.8049	NA	NA	NA	NA	NA	58319.9257	NA	-74.3
Mid frequency 60.48GHz										
-30	nominal	60480.3134	NA	NA	NA	NA	NA	60480.3135	313.5	NA
-20	nominal	60480.3659	60480.3655	60480.3664	60480.3658	60480.3686	60480.3675	60480.3684	368.4	NA
-10	nominal	60480.3231	NA	NA	NA	NA	NA	60480.3237	323.7	NA
0	nominal	60480.1873	60480.1907	60480.1924	60480.1953	60480.1945	60480.1965	60480.2020	202	NA
10	nominal	60480.3422	NA	NA	NA	NA	NA	60480.0048	4.8	NA
20	+15%	60479.9599	NA	NA	NA	NA	NA	60479.9599	NA	-40.1
20	nominal	60479.9632	NA	NA	NA	NA	NA	60479.9633	NA	-36.7
20	-15%	60479.9639	NA	NA	NA	NA	NA	60479.9639	NA	-36.1
30	nominal	60479.8693	60479.8669	60479.86563	60479.8649	60479.8644	60479.8629	60479.8621	NA	-137.9
40	nominal	60479.8621	NA	NA	NA	NA	NA	60479.7800	NA	-220
50	nominal	60479.7800	NA	NA	NA	NA	NA	60479.7955	NA	-204.5
60	nominal	60479.7955	NA	NA	NA	NA	NA	60479.9401	NA	-59.9
High frequency 64.80 GHz										
-30	nominal	64800.3519	NA	NA	NA	NA	NA	64800.3511	351.1	NA
-20	nominal	64800.3952	64800.3961	64800.3922	64800.3926	64800.3945	64800.3958	64800.3954	395.4	NA
-10	nominal	64800.3406	NA	NA	NA	NA	NA	64800.3409	340.9	NA
0	nominal	64800.2281	64800.2240	64800.2294	64800.2297	64800.2327	64800.2335	64800.2365	236.5	NA
10	nominal	64800.3999	NA	NA	NA	NA	NA	64800.0315	31.5	NA
20	+15%	64800.3995	NA	NA	NA	NA	NA	64799.9640	NA	-36.0
20	nominal	64800.3992	NA	NA	NA	NA	NA	64799.9626	NA	-37.4
20	-15%	64800.3996	NA	NA	NA	NA	NA	64799.6335	NA	-366.5
30	nominal	64799.9437	64799.9186	64799.9168	64799.9139	64799.9129	64799.9111	64799.9054	NA	-94.6
40	nominal	64799.9054	NA	NA	NA	NA	NA	64799.7651	NA	-234.9
50	nominal	64799.7644	NA	NA	NA	NA	NA	64799.7775	NA	-222.5
60	nominal	64799.7775	NA	NA	NA	NA	NA	64799.9557		-44.3

* - Reference frequency

Reference numbers of test equipment used

HL 0493	HL 0771	HL 2171	HL 5376	HL 5380			

Full description is given in Appendix A.

Test specification:	FCC Section 15.207(a)/RSS-Gen 8.8, Conducted emission		
Test procedure:	ANSI C63.10 section 6.2		
Test mode:	Compliance	Verdict:	PASS
Date(s):	15-Jun-20		
Temperature: 23 ºC	Relative Humidity: 47 %	Air Pressure: 1010 hPa	Power: 120 VAC, 50 Hz
Remarks:			

7.6 Conducted emissions

7.6.1 General

This test was performed to measure the common mode conducted emissions at the EUT power port. The specification test limits are given in Table 7.6.1.

Table 7.6.1 Limits for conducted emissions

Frequency, MHz	Class B limit, dB(μV)	
	QP	AVRG
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5.0	56	46
5.0 - 30	60	50

* The limit decreases linearly with the logarithm of frequency.

7.6.2 Test procedure

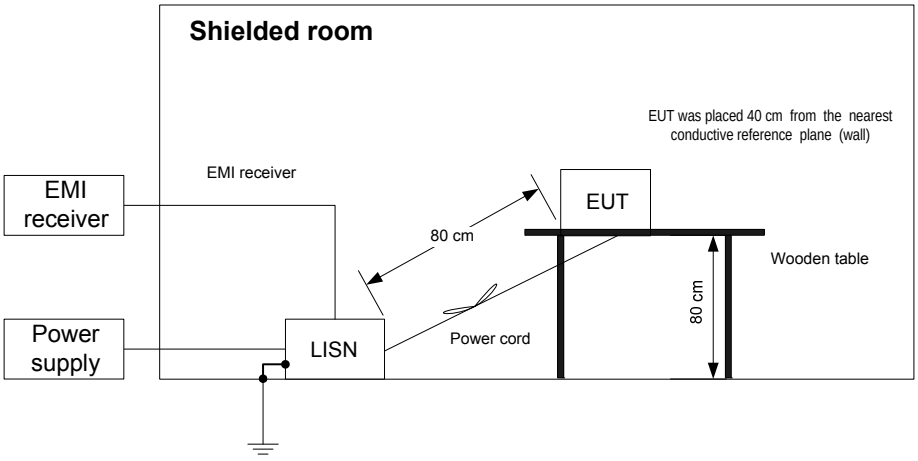
7.6.2.1 The EUT was set up as shown in Figure 7.6.1 and the associated photographs, energized and the EUT performance was checked.

7.6.2.2 The measurements were performed at the EUT power terminals with the LISN connected to the EMI receiver in the frequency range referred to in Table 7.6.2. The unused coaxial connector of the LISN was terminated with 50 Ohm.

7.6.2.3 The position of the EUT cables was varied to find the highest emission.

7.6.2.4 The worst test results with respect to the limits were recorded in Table 7.6.2 and shown in the associated plots.

Figure 7.6.1 Setup for conducted emission measurements, table-top EUT



Test specification:	**FCC Section 15.207(a)/RSS-Gen 8.8, Conducted emission**		
Test procedure:	ANSI C63.10 section 6.2		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	15-Jun-20		
Temperature: 23 ºC	**Relative Humidity:** 47 %	**Air Pressure:** 1010 hPa	**Power:** 120 VAC, 50 Hz
Remarks:			

Table 7.6.2 Conducted emission test results

LINE: AC mains
EUT SET UP: TABLE-TOP
TEST SITE: SHIELDED ROOM
DETECTORS USED: PEAK / QUASI-PEAK / AVERAGE
FREQUENCY RANGE: 150 kHz - 30 MHz
RESOLUTION BANDWIDTH: 9 kHz

L1

	Frequency [MHz]	QPeak [dBµV]	Limit 55022bqp [dBµV]	Delta [dB]	Avg [dBµV]	Limit 55022bav [dBµV]	Delta [dB]	Factor LISN HL 3.. [dB]	Factor DC Limite.. [dB]	Factor Cable HL .. [dB]
1	0.15	49.35	66.00	-16.65	39.19	56.00	-16.81	0.08	10.00	0.11
2	0.15409	46.31	65.78	-19.47	36.35	55.78	-19.43	0.08	10.00	0.12
3	0.36268	38.76	58.67	-19.91	31.35	48.67	-17.32	0.09	10.00	0.14
4	2.409725	34.63	56.00	---	27.65	46.00	-18.35	0.15	10.00	0.29
5	3.16433	35.86	56.00	---	29.17	46.00	-16.83	0.17	10.00	0.33
6	3.43427	40.53	56.00	-15.47	34.25	46.00	-11.75	0.18	10.00	0.34
7	3.65922	49.51	56.00	-6.49	44.12	46.00	-1.88	0.19	10.00	0.35
8	7.554945	40.00	60.00	-20.00	33.81	50.00	-16.19	0.37	10.00	0.48
9	8.19503	48.87	60.00	-11.13	42.83	50.00	-7.17	0.39	10.00	0.50
10	9.595855	53.83	60.00	-6.17	47.79	50.00	-2.21	0.44	10.00	0.55
11	21.00082	34.35	60.00	---	32.84	50.00	-17.16	0.93	10.00	0.79
12	27.002895	33.35	60.00	---	30.24	50.00	-19.76	1.08	10.00	0.91

L2

	Frequency [MHz]	QPeak [dBµV]	Limit 55022bqp [dBµV]	Delta [dB]	Avg [dBµV]	Limit 55022bav [dBµV]	Delta [dB]	Factor LISN HL 3.. [dB]	Factor DC Limite.. [dB]	Factor Cable HL .. [dB]
1	0.15	49.67	66.00	-16.33	39.13	56.00	-16.87	0.08	10.00	0.11
2	0.15409	46.72	65.78	-19.06	36.29	55.78	-19.49	0.08	10.00	0.12
3	0.32587	34.44	59.56	---	30.09	49.56	-19.47	0.09	10.00	0.13
4	2.50584	35.25	56.00	---	29.01	46.00	-16.99	0.15	10.00	0.30
5	3.10707	35.08	56.00	---	28.64	46.00	-17.36	0.17	10.00	0.32
6	3.3811	39.82	56.00	-16.18	33.33	46.00	-12.67	0.18	10.00	0.34
7	3.661265	50.46	56.00	-5.54	45.65	46.00	-0.35	0.19	10.00	0.35
8	8.405665	50.48	60.00	-9.52	44.12	50.00	-5.88	0.40	10.00	0.51
9	9.743095	54.84	60.00	-5.16	48.73	50.00	-1.27	0.44	10.00	0.55
10	20.75542	34.48	60.00	---	31.42	50.00	-18.58	0.93	10.00	0.78
11	21.00082	35.48	60.00	---	34.00	50.00	-16.00	0.93	10.00	0.79
12	27.00494	34.39	60.00	---	31.29	50.00	-18.71	1.08	10.00	0.91

Reference numbers of test equipment used

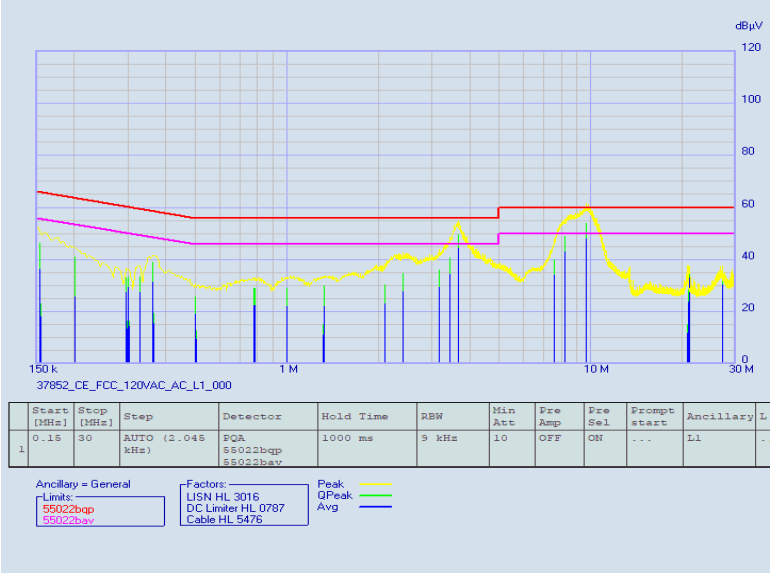
HL 3016	HL 2382	HL 0495	HL 2383	HL 2888	HL 0787	HL 5707	HL 5476

Full description is given in Appendix A.

Test specification:	FCC Section 15.207(a)/RSS-Gen 8.8, Conducted emission		
Test procedure:	ANSI C63.10 section 6.2		
Test mode:	Compliance	Verdict:	PASS
Date(s):	15-Jun-20		
Temperature: 23 ºC	Relative Humidity: 47 %	Air Pressure: 1010 hPa	Power: 120 VAC, 50 Hz
Remarks:			

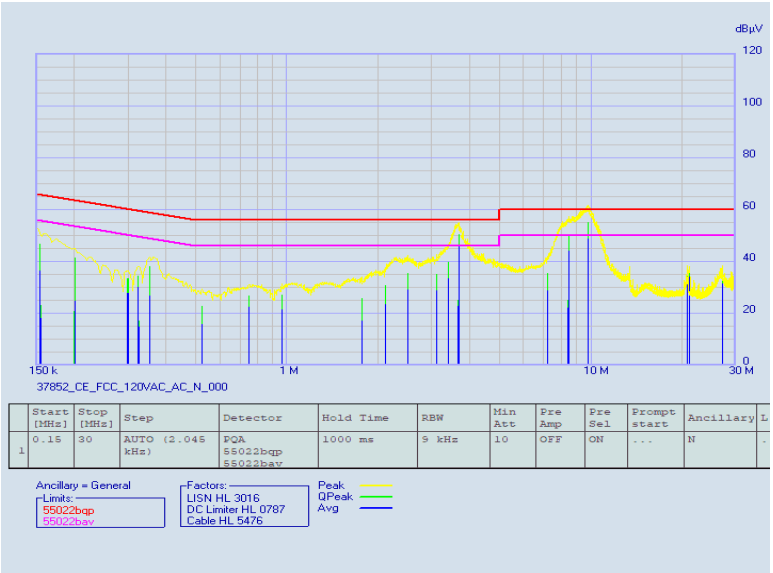
Plot 7.6.1 Conducted emission measurements, AC mains input of PoE

LINE: L1
LIMIT: QUASI-PEAK, AVERAGE
DETECTOR: PEAK



Plot 7.6.2 Conducted emission measurements, AC mains input of PoE

LINE: N
LIMIT: QUASI-PEAK, AVERAGE
DETECTOR: PEAK



Test specification:	Section 15.203, RSS-Gen section 6.8, Antenna requirement		
Test procedure:	Visual inspection / supplier declaration		
Test mode:	Compliance	Verdict:	PASS
Date(s):	15-Jun-20		
Temperature: 23 ºC	Relative Humidity: 47 %	Air Pressure: 1010 hPa	Power: 55 VDC
Remarks:			

7.7 Antenna requirements

The EUT was verified for compliance with antenna requirements. A transmitter shall be designed to ensure that no antenna other than that furnished by the responsible party will be used with the device. It may be either permanently attached or employs a unique antenna connector for every antenna proposed for use with the EUT. This requirement does not apply to professionally installed transmitters.
The rationale for compliance with the above requirements was either visual inspection results or supplier declaration. The summary of results is provided in Table 7.7.1.

Table 7.7.1 Antenna requirements

Requirement	Rationale	Verdict
The transmitter antenna is permanently attached	Visual inspection	Comply
The transmitter employs a unique antenna connector	NA	
The transmitter requires professional installation	NA	

8 APPENDIX A Test equipment and ancillaries used for tests

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal./ Check	Due Cal./ Check
0446	Antenna, Loop, Active, 10 (9) kHz - 30 MHz	EMCO	6502	2857	24-Feb-20	24-Feb-21
0493	Temperature Chamber -45…175 deg C	Thermotron	S-1.2 Mini-Max	14016	17-Jun-20	17-Jun-21
0495	Autotransformer 0-255V, 10A	Variac	EMPL01	495	06-May-20	06-May-21
0747	Mixer, Millimeter Wave Harmonic 90 - 140 GHZ	Oleson Microwave Labs	M08HW	F80429-1	19-May-20	19-May-23
0770	Antenna Standard Gain Horn, 40-60 GHz WR-19, U-band, 24 dB mid-band gain	Quinstar Technology	QWH-1900-AA	118	05-Aug-19	05-Aug-20
0771	Antenna Standard Gain Horn, 60-90 GHz, WR-12, 24 dB mid-band gain	Quinstar Technology	QWH-1200-AA	111	05-Aug-19	05-Aug-20
0772	Antenna Standard Gain Horn, 75-110 GHz, WR-10, 24 dB mid-band gain	Quinstar Technology	QWH-0800-AA	110	05-Aug-19	05-Aug-20
0787	Transient Limiter 9 kHz-200 MHz	Hewlett Packard	11947A	3107A01877	08-Oct-19	08-Oct-20
1312	Mixer Millimeter Wave Harmonic 140-220 GHz	Oleson Microwave Labs	M05HWD	G91112-1	19-May-20	19-May-23
2171	Multimeter	Fluke	177	79960418	21-Jul-19	21-Jul-20
2382	Transformer, Isolation, 230/230, 1.8 kVA	Taiyo Yuden, Inc.	LGY1.8-21	FJ0411	03-Feb-20	03-Feb-21
2383	Transformer, Isolation, 230/230, 1.8 kVA	Taiyo Yuden, Inc.	LGY1.8-21	EJ0180	05-Aug-19	05-Aug-20
2888	LISN Two-line V-Network 50 Ohm / 50 uH + 5 Ohm, 16A, MIL STD 461E, CISPR 16-1	Rolf Heine	NNB-2/16Z	02/10018	17-Mar-20	17-Mar-21
2909	Spectrum analyzer, ESA-E, 100 Hz to 26.5 GHz	Agilent Technologies	E4407B	MY41444762	05-Apr-20	05-Apr-21
3016	LISN, Two-line V-network, 9 kHz to 30 MHz, (50 uH+5 Ohm), CISPR16-1, MIL-461E	Rohde & Schwarz	ESH 3-Z5	892239/002	09-Feb-20	09-Feb-21
3235	Harmonic mixer 40 to 60 GHz	Agilent Technologies	11970U	MY30030182	30-Jan-20	30-Jan-23
3291	Attenuator, direct reading, 60 to 90 GHz, 0.2 W	Quinstar Technology	QAD-E00000	10381009	24-Sep-19	24-Sep-21
3293	Frequency multiplier, input 20-30 GHz, output 60-90 GHz	Quinstar Technology	QPM-75003E	10381003	01-Apr-20	01-Apr-21
3306	Harmonic mixer 75 to 110 GHz	Agilent Technologies	11970W	MY25210273	30-Jan-20	30-Jan-23
3329	Antenna Standard Gain Horn, 140-220 GHz, WR-5, 24 dB mid-band gain	Quinstar Technology	NA	3329	19-Aug-19	19-Aug-20
3433	Test Cable , DC-18 GHz, 1.5 m, SMA - SMA	Mini-Circuits	CBL-5FT-SMSM+	25679	13-Apr-20	13-Apr-21

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal./ Check	Due Cal./ Check
3434	Test Cable , DC-18 GHz, 1.5 m, SMA - SMA	Mini-Circuits	CBL-5FT-SMSM+	25683	13-Apr-20	13-Apr-21
3536	Antenna Standard Gain Horn, 90-140 GHz, WR-8, 24 dB mid-band gain	Quinstar Technology	QWH-FPRR00	11159004001	25-Jun-20	25-Jun-21
3818	PSA Series Spectrum Analyzer, 3 Hz- 44 GHz	Agilent Technologies	E4446A	MY48250288	27-Apr-20	27-Apr-21
3901	Microwave Cable Assembly, 40.0 GHz, 3.5 m, SMA/SMA	Huber-Suhner	SUCOFLEX 102A	1225/2A	06-Apr-20	06-Apr-21
3903	Microwave Cable Assembly, 40.0 GHz, 1.5 m, SMA/SMA	Huber-Suhner	SUCOFLEX 102A	1226/2A	06-Apr-20	06-Apr-21
4011	Temp. & Humidity Meter, (-50 - +70) deg, (20 - 99)% RH	Mad Electronics	HTC-1	NA	11-Aug-19	11-Aug-20
4023	Diplexer for use OML mixers with Agilent spectrum analyzer	Oleson Microwave Labs	DPL.26	NA	01-Apr-20	01-Apr-21
4360	EMI Test Receiver, 20 Hz to 40 GHz.	Rohde & Schwarz	ESU40	100322	20-Jan-20	20-Jan-21
4856	Amplifier, solid state, 18 GHz to 40 GHz, 20 dBm output power	Quinstar Technology	QGW-18402023-JO	16779001001	27-May-20	27-May-21
4933	Active Horn Antenna, 1 GHz to 18 GHz	COM-POWER CORPORATION	AHA-118	701046	06-Jan-20	06-Jan-21
4956	Active horn antenna, 18 to 40 GHz	COM-POWER CORPORATION	AHA-840	105004	29-Jan-20	29-Jan-21
5112	RF cable, 40 GHz, 5.5 m, K-type	Huber-Suhner	SF102EA/11SK/11SK/5500MM	502494/2EA	19-Apr-20	19-Apr-21
5288	Trilog Antenna, 25 MHz - 8 GHz, 100W	Frankonia	ALX-8000E	00809	08-Feb-19	08-Feb-22
5309	Antenna Mast, 1-4 meter, Pneumatic polarization	Frankonia	FMB 1-4	NA	23-Apr-20	23-Apr-21
5311	Controller	Dolev Ltd	FC-06	FC06.1-2016-024	23-Apr-20	23-Apr-21
5360	Broadband detector, 55 to 90 GHz	Pacific Millimeter Products, Inc	ED	200	17-Jul-19	17-Jul-20
5376	EXA Signal Analyzer, 10 Hz - 32 GHz	Keysight Technologies	N9010B	MY57470404	18-Mar-20	18-Mar-21
5377	USB Thermocouple Power Sensor, DC-120 GHz	Keysight Technologies	U8489A	US56430158	13-Jun-20	13-Jun-21
5379	1/4" Free-field Micriphone Preamplifier	Bruel & Kjaer	2670	3166281	06-Aug-18	06-Aug-20
5380	Wavequide Harmonic Mixer 55-90GHz	Keysight Technologies	M1971E	MY56130239	01-Jun-20	01-Jun-21
5404	RF cable, 18 GHz, N-N, 6 m	Huber-Suhner	SF118/11N(x2)	500024/18	11-Aug-19	11-Aug-20
5476	Cable, BNC/BNC, 10.5 m	Western wire	MIL-C-17G	NA	14-May-20	14-May-21

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal./ Check	Due Cal./ Check
5665	Cable SF118/11N(x2)/6M, 18 GHz, 11N/11N	Huber-Suhner	SF118	501644/118	19-Apr-20	19-Apr-21
5707	EMI receiver	PMM / Narda	PMM 9010F	060WW91101	22-Nov-19	22-Nov-21
5710	Oscilloscope, 500 MHz, digital 4 channel	Rohde & Schwarz	RTM3004	103436	04-Dec-20	04-Dec-21

9 APPENDIX B Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

Test description	Expanded uncertainty
Conducted emissions with LISN	9 kHz to 150 kHz: ± 3.9 dB 150 kHz to 30 MHz: ± 3.8 dB
Radiated emissions at 10 m measuring distance Horizontal polarization Vertical polarization	 Biconilog antenna: ± 5.0 dB Biconical antenna: ± 5.0 dB Log periodic antenna: ± 5.1 dB Double ridged horn antenna: ± 5.3 dB Biconilog antenna: ± 5.5 dB Biconical antenna: ± 5.5 dB Log periodic antenna: ± 5.6 dB Double ridged horn antenna: ± 5.8 dB
Radiated emissions at 3 m measuring distance Horizontal polarization Vertical polarization	 Biconilog antenna: ± 5.3 dB Biconical antenna: ± 5.0 dB Log periodic antenna: ± 5.3 dB Double ridged horn antenna: ± 5.3 dB Biconilog antenna: ± 6.0 dB Biconical antenna: ± 5.7 dB Log periodic antenna: ± 6.0 dB Double ridged horn antenna: ± 6.0 dB
Conducted emissions at RF antenna connector	9 kHz to 2.9 GHz: ± 2.6 dB 2.9 GHz to 6.46 GHz: ± 3.5 dB 6.46 GHz to 13.2 GHz: ± 4.3 dB 13.2 GHz to 22.0 GHz: ± 5.0 dB 22.0 GHz to 26.8 GHz: ± 5.5 dB 26.8 GHz to 40.0 GHz: ± 4.8 dB

Hermon Laboratories is accredited by A2LA for calibration according to present requirements of ISO/IEC 17025 and NCSL Z540-1. The accreditation is granted to perform calibration of parameters that are listed in the Scope of Hermon Laboratories Accreditation.

Hermon Laboratories calibrates its reference and transfer standards by calibration laboratories accredited to ISO/IEC 17025 by a mutually recognized Accreditation Body or by a recognized national metrology institute. All reference and transfer standards used in the calibration system are traceable to national or international standards.

In-house calibration of all test and measurement equipment is performed on a regular basis according to Hermon Laboratories calibration procedures, manufacturer calibration/verification procedures or procedures defined in the relevant standards. The Hermon Laboratories test and measurement equipment is calibrated within the tolerances specified by the manufacturers and/or by the relevant standards.

10 APPENDIX C Test facility description

Tests were performed at Hermon Laboratories Ltd., which is a fully independent, private, EMC, Radio, Safety, Environmental and Telecommunication testing facility.
Hermon Laboratories is recognized and accredited by the Federal Communications Commission (USA) for relevant parts of Code of Federal Regulations 47 (CFR 47), Test Firm Registration Number is 927748, Designation Number is IL1001; Recognized by Innovation, Science and Economic Development Canada for wireless and terminal testing (ISED), ISED #2186A, CAB identifier is IL1001; Certified by VCCI, Japan (the registration numbers are R-10808 for OATS, R-11082 for anechoic chamber, G-10869 for RE measurements above 1 GHz, C-10845 for conducted emissions site and T-11606 for conducted emissions at telecommunication ports).
The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing, environmental simulation and calibration (for exact scope please refer to Certificate No. 839.01, 839.03 and 839.04).

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11 APPENDIX D Specification references

47CFR part 15: 2019	Radio Frequency Devices.
ANSI C63.2: 2016	American National Standard for Instrumentation-Electromagnetic Noise and Field Strength, 10 kHz to 40 GHz-Specifications.
ANSI C63.10: 2013	American National Standard of Procedures for Compliance Testing of Unlicemsed Wireless Devices
RSS-210 Issue 10: 2019	Licence-Exempt Radio Apparatus:Category I Equipment
RSS-Gen Issue 5 with Am.1: 2019	General Requirements for Compliance of Radio Apparatus

12 APPENDIX E Test equipment correction factors

Antenna factor
loop antenna
Model 6502, S/N 2857, HL 0446

Frequency, MHz	Magnetic antenna factor, dB	Electric antenna factor, dB
0.009	-32.8	18.7
0.010	-33.8	17.7
0.020	-38.3	13.2
0.050	-41.1	10.4
0.075	-41.3	10.2
0.100	-41.6	9.9
0.150	-41.7	9.8
0.250	-41.6	9.9
0.500	-41.8	9.8
0.750	-41.9	9.7
1.000	-41.4	10.1
2.000	-41.5	10.0
3.000	-41.4	10.2
4.000	-41.4	10.1
5.000	-41.5	10.1
10.000	-41.9	9.6
15.000	-41.9	9.6
20.000	-42.2	9.3
25.000	-42.8	8.7
30.000	-44.0	7.5

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field strength in dB(μV/m).

Antenna factor
Standard gain horn antenna
Quinstar Technology
Model QWH
Ser.No.112, HL 0768, 0769, 0770, 0771, 0772

Frequency min, GHz	Frequency max, GHz	Antenna factor, dB(1/m)
18.000	26.500	32.01
26.500	40.000	35.48
40.000	60.000	39.03
60.000	90.000	42.55
90.000	140.000	46.23
140.000	220.000	50.11

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Antenna factor
Trilog antenna
Model ALX-8000E, Frankonia, S/N 00809, HL 5288, 30-1000 MHz

Frequency, MHz	Antenna factor, dB/m		
	Vert Up	Vert Down	Delta
30	-51.19	-51.28	0.09
35	-44.03	-44.12	0.09
40	-43.07	-43.12	0.05
45	-39.61	-39.79	0.18
50	-37.84	-38.14	0.3
60	-34.93	-34.9	0.03
70	-29.76	-29.66	0.1
80	-27.69	-27.82	0.13
90	-29.05	-29.07	0.02
100	-31.19	-31.19	0
120	-31.61	-31.6	0.01
140	-28.13	-28.06	0.07
160	-27.71	-27.75	0.04
180	-26.19	-26.15	0.04
200	-28.2	-28.15	0.05
250	-27.45	-27.47	0.02
300	-29.61	-29.63	0.02
400	-31.77	-31.78	0.01
500	-32.81	-32.81	0
600	-33.64	-33.61	0.03
700	-34.21	-34.21	0
800	-35.66	-35.66	0
900	-36.99	-36.91	0.08
1000	-38	-37.91	0.09

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Antenna factor
Active Horn Antenna,
Com-Power Corporation, model: AHA-118, s/n 701046, HL 4933

Frequency, MHz	Measured antenna factor (with preamplifier), dB/m
1000	-16.1
1500	-15.1
2000	-10.9
2500	-11.9
3000	-11.1
3500	-10.6
4000	-8.6
4500	-8.3
5000	-5.9
5500	-5.7
6000	-3.3
6500	-4.0
7000	-2.2
7500	-1.7
8000	1.1
8500	-0.8
9000	-1.5
9500	-0.2

Frequency, MHz	Measured antenna factor (with preamplifier), dB/m
10000	1.8
10500	1.0
11000	0.3
11500	-0.5
12000	3.1
12500	1.4
13000	-0.3
13500	-0.4
14000	2.5
14500	2.2
15000	1.9
15500	0.5
16000	2.1
16500	1.2
17000	0.6
17500	3.1
18000	4.2

The antenna factor shall be added to receiver reading in dBμV to obtain field strength in dBμV/m.

Antenna factor
Active Horn Antenna,
Com-Power Corporation, model: AHA-840, s/n 105004, HL 4956

Frequency, MHz	Measured antenna factor (with preamplifier), dB/m
18000	2.5
18500	0.5
19000	-1.0
19500	-2.4
20000	-2.5
20500	-2.2
21000	-2.0
21500	-2.7
22000	-3.7
22500	-3.8
23000	-3.7
23500	-5.0
24000	-4.5
24500	-5.0
25000	-4.7
25500	-4.4
26000	-4.3
26500	-5.6
27000	-4.3
27500	-4.9
28000	-5.2
28500	-4.4

Frequency, MHz	Measured antenna factor (with preamplifier), dB/m
29000	-2.7
29500	-2.6
30000	-1.4
30500	-1.5
31000	-1.0
31500	-2.6
32000	-3.3
32500	-3.3
33000	-5.1
33500	-5.2
34000	-1.5
34500	-5.4
35000	-3.3
35500	-4.2
36000	-2.8
36500	-2.6
37000	-1.0
38000	1.8
38500	2.8
39000	1.3
39500	1.3
40000	0.3

The antenna factor shall be added to receiver reading in dBμV to obtain field strength in dBμV/m.

Cable loss
Test Cable, Mini-Circuits, CBL-5FT-SMSM+, SMA-SMA, 18 GHz, 1.5 m, S/N 25679
Mini-Circuits, HL 3433

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10.0	0.06	9000	2.01
100	0.17	9500	2.06
500	0.41	10000	2.05
1000	0.58	10500	2.18
1500	0.72	11000	2.26
2000	0.86	11500	2.28
2500	0.96	12000	2.43
3000	1.04	12500	2.53
3500	1.13	13000	2.52
4000	1.23	13500	2.56
4500	1.31	14000	2.60
5000	1.41	14500	2.59
5500	1.49	15000	2.67
6000	1.55	15500	2.76
6500	1.63	16000	2.86
7000	1.71	16500	2.91
7500	1.78	17000	2.95
8000	1.86	17500	3.02
8500	1.92	18000	3.07

Cable loss
Test Cable, Mini-Circuits, CBL-5FT-SMSM+, SMA-SMA, 18 GHz, 1.5 m, S/N 25683
Mini-Circuits, HL 3434

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10.0	0.06	9000	1.96
100	0.16	9500	2.01
500	0.40	10000	2.01
1000	0.57	10500	2.14
1500	0.72	11000	2.21
2000	0.85	11500	2.24
2500	0.95	12000	2.36
3000	1.03	12500	2.47
3500	1.11	13000	2.46
4000	1.21	13500	2.50
4500	1.29	14000	2.53
5000	1.39	14500	2.53
5500	1.46	15000	2.62
6000	1.52	15500	2.70
6500	1.60	16000	2.80
7000	1.68	16500	2.86
7500	1.75	17000	2.88
8000	1.83	17500	2.94
8500	1.88	18000	3.00

Cable loss
Microwave Cable Assembly, Huber-Suhner, 40 GHz, 3.5 m, SMA-SMA, S/N 1225/2A
HL 3901

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.09	9500	4.29	21000	6.67
100	0.41	10000	4.40	22000	6.92
500	0.93	10500	4.52	23000	7.00
1000	1.33	11000	4.64	24000	7.18
1500	1.63	11500	4.76	25000	7.29
2000	1.90	12000	4.87	26000	7.55
2500	2.12	12500	4.99	27000	7.70
3000	2.33	13000	5.11	28000	7.88
3500	2.50	13500	5.20	29000	8.02
4000	2.67	14000	5.31	30000	8.15
4500	2.82	14500	5.42	31000	8.35
5000	2.99	15000	5.51	32000	8.40
5500	3.16	15500	5.58	33000	8.62
6000	3.32	16000	5.68	34000	8.73
6500	3.51	16500	5.78	35000	8.78
7000	3.65	17000	5.91	36000	8.94
7500	3.79	17500	5.99	37000	9.21
8000	3.92	18000	6.07	38000	9.37
8500	4.04	19000	6.36	39000	9.45
9000	4.18	20000	6.49	40000	9.52

Cable loss
Microwave Cable Assembly, Huber-Suhner, 40 GHz, 1.5 m, SMA-SMA, S/N 1226/2A
HL 3903

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	-0.02	9500	1.84	21000	2.98
100	0.15	10000	1.86	22000	3.07
500	0.38	10500	1.93	23000	3.13
1000	0.56	11000	1.99	24000	3.21
1500	0.69	11500	2.04	25000	3.26
2000	0.82	12000	2.10	26000	3.48
2500	0.90	12500	2.15	27000	3.44
3000	0.98	13000	2.21	28000	3.53
3500	1.06	13500	2.25	29000	3.59
4000	1.11	14000	2.29	30000	3.66
4500	1.17	14500	2.34	31000	3.70
5000	1.24	15000	2.36	32000	3.79
5500	1.32	15500	2.40	33000	3.88
6000	1.40	16000	2.45	34000	3.94
6500	1.50	16500	2.48	35000	3.91
7000	1.56	17000	2.56	36000	4.05
7500	1.62	17500	2.58	37000	4.22
8000	1.68	18000	2.60	38000	4.25
8500	1.74	19000	2.84	39000	4.27
9000	1.78	20000	2.88	40000	4.33

Cable loss
RF Cable, Huber-Suhner, 40 GHz, 5.5 m, K type,
SF102EA/11SK/11SK/5500MM, S/N 502494/2EA
HL 5112

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
100	0.69	20500	10.18
200	0.97	21000	10.32
300	1.18	21500	10.47
500	1.52	22000	10.60
1000	2.14	22500	10.75
1500	2.62	23000	10.87
2000	3.03	23500	11.00
2500	3.40	24000	11.12
3000	3.73	24500	11.23
3500	4.04	25000	11.35
4000	4.33	25500	11.52
4500	4.60	26000	11.64
5000	4.86	26500	11.73
5500	5.10	27000	11.84
6000	5.34	27500	11.93
6500	5.57	28000	12.05
7000	5.79	28500	12.19
7500	6.00	29000	12.33
8000	6.21	29500	12.44
8500	6.43	30000	12.53
9000	6.62	30500	12.58
9500	6.82	31000	12.71
10000	7.01	31500	12.86
10500	7.17	32000	13.00
11000	7.34	32500	13.11
11500	7.51	33000	13.24
12000	7.68	33500	13.33
12500	7.84	34000	13.44
13000	8.00	34500	13.58
13500	8.16	35000	13.69
14000	8.32	35500	13.81
14500	8.48	36000	13.93
15000	8.63	36500	14.05
15500	8.77	37000	14.24
16000	8.92	37500	14.28
16500	9.08	38000	14.38
17000	9.23	38500	14.50
17500	9.37	39000	14.61
18000	9.51	39500	14.70
18500	9.66	40000	14.83
19000	9.78		
19500	9.92		
20000	10.07		

Cable loss
RF Cable, Huber-Suhner, 18 GHz, 6 m,
SF118/11N(x2), S/N 500024/18
HL 5404

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
0.1	0.02	5500	3.62
50	0.23	6000	3.73
100	0.32	6500	3.83
200	0.46	7000	3.92
300	0.56	7500	4.04
400	0.64	8000	4.11
500	0.72	8500	4.19
600	0.79	9000	4.28
700	0.86	9500	4.37
800	0.92	10000	4.46
900	0.97	10500	3.62
1000	1.03	11000	3.73
1100	1.08	11500	3.83
1200	1.14	12000	3.92
1300	1.17	12500	4.04
1400	1.22	13000	4.11
1500	1.27	13500	4.19
1600	1.31	14000	4.28
1700	1.35	14500	4.37
1800	1.39	15000	4.46
1900	1.43	15500	4.54
2000	1.48	16000	4.60
2500	1.66	16500	4.70
3000	1.82	17000	4.80
3500	1.98	17500	4.87
4000	2.12	18000	4.93
4500	2.26		
5000	2.40		

Cable loss
Cable, BNC/BNC, 10.5 m MIL-C-17G
Western wire, HL 5476

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
0.01	0.12	270	3.07
10	0.56	280	3.13
20	0.79	290	3.19
30	0.97	300	3.26
40	1.11	310	3.32
50	1.25	320	3.40
60	1.37	330	3.46
70	1.48	340	3.52
80	1.58	350	3.58
90	1.68	360	3.62
100	1.79	370	3.70
110	1.88	380	3.75
120	1.96	390	3.82
130	2.05	400	3.87
140	2.12	410	3.93
150	2.20	420	3.98
160	2.29	430	4.06
170	2.37	440	4.11
180	2.44	450	4.18
190	2.51	460	4.22
200	2.58	470	4.27
210	2.66	480	4.35
220	2.74	490	4.39
230	2.80	500	4.45
240	2.87		
250	2.93		
260	3.01		

13 APPENDIX F Abbreviations and acronyms

A	ampere
AC	alternating current
A/m	ampere per meter
AM	amplitude modulation
AVRG	average (detector)
BB	broad band
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
dB(μV)	decibel referred to one microvolt
dB(μV/m)	decibel referred to one microvolt per meter
dB(μA)	decibel referred to one microampere
dBΩ	decibel referred to one Ohm
DC	direct current
EIRP	equivalent isotropically radiated power
ERP	effective radiated power
EUT	equipment under test
F	frequency
GHz	gigahertz
GND	ground
H	height
HL	Hermon laboratories
Hz	hertz
ITE	information technology equipment
k	kilo
kHz	kilohertz
LISN	line impedance stabilization network
LO	local oscillator
m	meter
MHz	megahertz
min	minute
mm	millimeter
ms	millisecond
μs	microsecond
NA	not applicable
NB	narrow band
NT	not tested
OATS	open area test site
Ω	Ohm
QP	quasi-peak
PM	pulse modulation
PS	power supply
RE	radiated emission
RF	radio frequency
rms	root mean square
Rx	receive
s	second
T	temperature
Tx	transmit
V	volt
VA	volt-ampere

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