NVLAP Lab Code 200087-0

Rogers Labs, a division of The Compatibility Center LLC

7915 Nieman Rd.
Lenexa, KS 66214
Phone / Fax (913) 660-0666

47CFR, PART 15C - Intentional Radiators
47CFR Paragraph 15.255

Application For Grant of Certification

Percy Behavioral Sleep Monitoring Platform
FCC ID: 2BOQ7-PERCY10
57.0-64.0 GHz

Percy Sleep Inc

4555 Dexter St NW
Washington, D.C. 20007

Test Report Number: 250506
Test Date: May 6, 2025

Authorized Signatory:

Patrick Powell
Rogers Labs, a division of The Compatibility Center LLC
FCC Designation: US5305
ISED Registration: 3041A

Revisions

Revision 1 Initial release – Issued May 19, 2025

Revision 2 Issued May 28, 2025 – Revised per review by TCB.

Executive Summary

The following information is submitted for consideration in obtaining Grant of Certification for License Exempt Digital Transmission System Intentional Radiator operating under Code of Federal Regulations Title 47 (47CFR) Part 15C paragraph 15.255, operation in the 57 to 71 GHz band.

Name of Applicant: Percy Sleep Inc
4555 Dexter St NW
Washington, D.C. 20007

Model: PERCY BEHAVIORAL SLEEP MONITORING PLATFORM
FCC ID: 2BOQ7-PERCY10
Operating Frequency Range: 60.5 – 62.5 GHz

PERCY BEHAVIORAL SLEEP MONITORING PLATFORM was chosen for transmitter configuration testing and used for final measurements.

Opinion / Interpretation of Results

Item	Test Condition	Test Procedure	FCC Specification	Worst Margin	Results
AC Line Conducted Emissions (150kHz - 30MHz	AC LINE CONDUCTED	ANSI C63.10-2020 Subclause 6.2.	15.207	21.7 dB	Complies
99% Occupied Bandwidth	RADIATED	ANSI C63.10: 2020, 9.4	15.215(c)	N/A	Complies
-20dB Occupied Bandwidth	RADIATED	ANSI C63.10: 2020, 9.3	15.215(c)	N/A	Complies
Equivalent Isotropic Radiated Power	RADIATED	ANSI C63.10: 2020, 9.8 & Annex L	15.255(c)(2)(iii)(A)	5.0 dB	Complies
Radiated Spurious Emissions (Above 40GHz)	RADIATED	ANSI C63.10: 2020, 4, 9 & Annex L	15.255(d), 15.205	Very wide margin	Complies
Radiated Spurious Emissions (1 - 40GHz)	RADIATED	ANSI C63.10: 2020, 9 & Annex L	15.255(d), 15.205, 15.209	49.26 dB	Complies
Radiated Spurious Emissions (Below 1GHz)	RADIATED	ANSI C63.10: 2020, 6.3, 6.4, 9.11.	15.205, 15.209	3.8 dB	Complies
Frequency Stability	RADIATED	ANSI C63.10: 2020, 6.8, 9.5	15.255(f)	Very wide margin	Complies
Duty Cycle / OFF Time	RADIATED	ANSI C63.10: 2020, 9 & Annex L	15.255(c)(2)(iii)(A)	Very wide margin	Complies

NVLAP Lab Code 200087-0

Equipment Tested

Model: PERCY BEHAVIORAL SLEEP MONITORING PLATFORM

Percy Sleep Inc
4555 Dexter St NW
Washington, D.C. 20007

Equipment	Model / PN	Serial Number
Radiated EUT #1	Percy Behavioral Sleep Monitoring Platform	28cdc10dd04d
USB Type A cable	N/A	N/A
Power Adapter	BW-20AC	N/A

Test results in this report relate only to the items tested. Worst-case configuration data recorded in this report.

Equipment Operational Modes

Mode#	Transmitter Type	Transmit Frequency (GHz)
1	FDS	60.5 ~ 62.5

Antenna Requirements

Per CFR 15.203, "An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

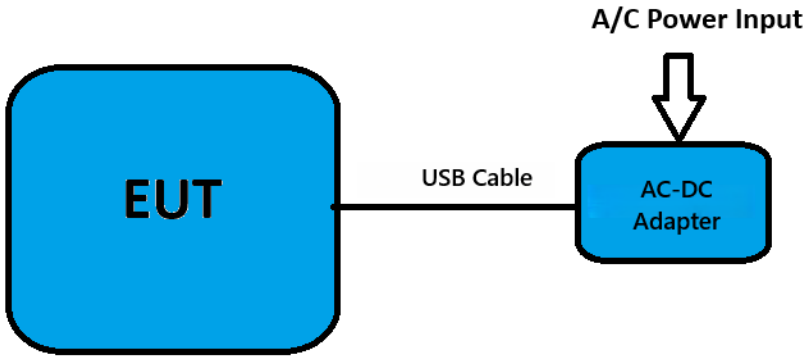
- The antenna of this device is permanently attached / built-into the sensor module.
- There are no provisions for connecting to external antennae.

Conclusion: this product complies with the requirements of CFR paragraph 15.203.

Equipment Function

The EUT is a Behavioral Sleep Monitoring Platform incorporating a 60.5-62.5GHz Field Disturbance Sensor (FDS) and several other non-RF sensors for monitoring a person while sleeping. It also includes a pre-certified WiFi module (FCC ID: 2ABCB-PICOW) for communicating video and status information.

Equipment Configuration



Application for Certification

(1) Manufacturer: Percy Sleep Inc
4555 Dexter St NW
Washington, D.C. 20007

(2) Identification: Model: Percy Behavioral Sleep Monitoring Platform
FCC ID: 2BOQ7-PERCY10

(3) Instruction Book:
Refer to Exhibit for Instruction Manual.

(4) Description of Circuit Functions:
Refer to Exhibit of Operational Description.

(5) Block Diagram with Frequencies:
Refer to Exhibit of Operational Description.

(6) Report of Measurements:
Report of measurements follows in this Report.

(7) Photographs: Construction, Component Placement, etc.:
Refer to Exhibit for photographs of equipment.

(8) List of Peripheral Equipment Necessary for operation. The equipment operates from external alternating current power input to a PoE adaptor which supplies 48V DC to the EUT. The EUT provides interface ports for power, loads and communications as presented in this filing.

(9) Transition Provisions of 47CFR 15.37 are not requested.

(10) Not Applicable. The unit is not a scanning receiver.

(11) Since this EUT operates in the 57-71 GHz range, this report details compliance with provisions of 47CFR 15.255.

(12) The equipment is not software defined and this section is not applicable.

(13) Not applicable as this unit is not a U-NII device.

(14) Contain at least one drawing or photograph showing the test set-up for each of the required types of tests applicable to the device for which certification is requested. These drawings or photographs must show enough detail to confirm other information contained in the test report. Any photographs used must be focused originals without glare or dark spots and must clearly show the test configuration used. This information is provided in this report and Test Setup Exhibits provided with the application filing.

Applicable Standards

The following information is submitted in accordance with the eCFR (electronic Title 47 Code of Federal Regulations) (47CFR), dated March 6, 2025: Part 2, Subpart J, Part 15C Paragraph 15.255. Test procedures used are the established Methods of Measurement of Radio-Noise Emissions as described in ANSI C63.10-2020. This report documents compliance for the EUT operations.

Test Procedures

AC Line Conducted Emission Test Procedure

Testing for the AC line-conducted emissions were performed as required in 47CFR 15C, RSS-247 Issue 2, RSS-GEN and specified in ANSI C63.10-2020. The test setup, including the EUT, was arranged in the test configurations as presented during testing. The test configuration was placed on a 1 x 1.5-meter bench, 0.8 meters high located in a screen room. The power lines of the system were isolated from the power source using a standard LISN with a 50-µHy choke. EMI was coupled to the spectrum analyzer through a 0.1 µF capacitor internal to the LISN. The LISN was positioned on the floor beneath the wooden bench supporting the EUT. The power lines and cables were draped over the back edge of the table. Refer to diagram one showing typical test arrangement and photographs in exhibits for EUT placement used during testing.

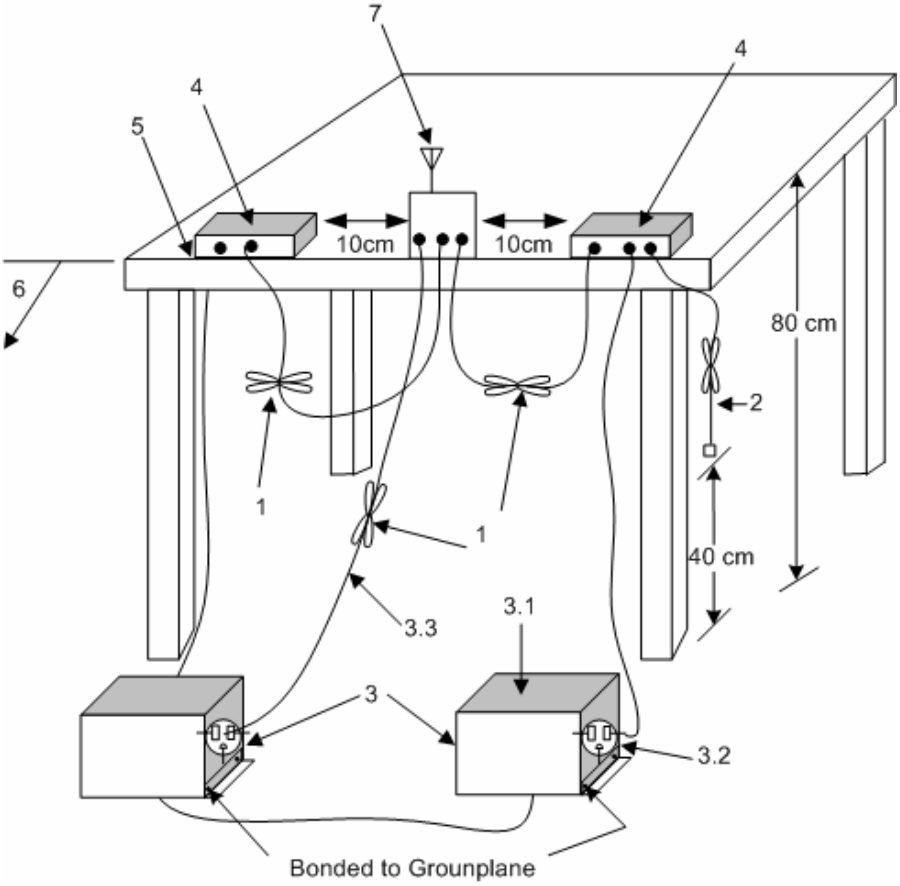
Radiated Emission Procedure

Radiated emissions testing was performed as required in 47CFR 15C and specified in ANSI C63.10-2020. The EUT was placed on a rotating 0.9 x 1.2-meter platform, elevated as required above the ground plane at a distance of 3 meters from the FSM antenna. For 57-71GHz radiated testing, adjustments were made for appropriate far field distance. EMI energy was maximized by equipment placement permitting orientation in three orthogonal axes, raising, and lowering the FSM antenna, changing the antenna polarization, and by rotating the turntable. Each emission was maximized before data was taken and recorded. The frequency spectrum from 9 kHz to 200 GHz was searched for emissions during preliminary investigation. Refer to diagrams two and three showing typical test setup. Refer to photographs in the test setup exhibits for specific EUT placement during testing.

Antenna Port Conducted Emission Test Procedure

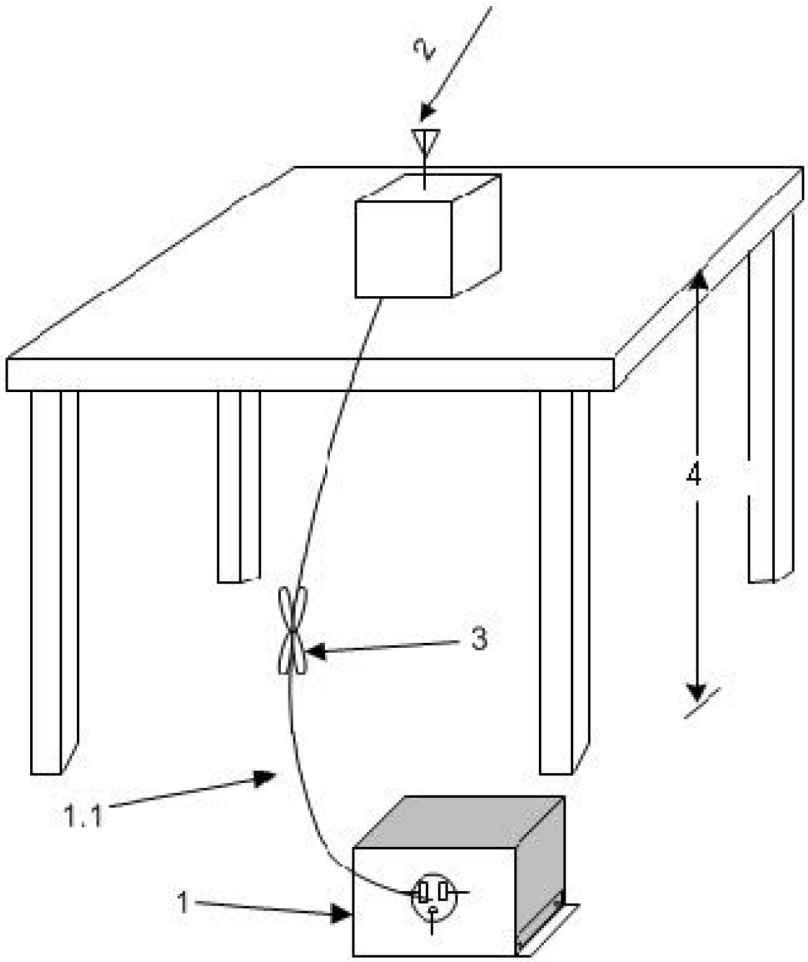
The EUT was not equipped with a conducted antenna port connection.

Diagram 1 Test arrangement for power-line conducted emissions



1. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long see (see 6.2.3.1).
2. I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m (see 6.2.2).
3. EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN can be placed on top of, or immediately beneath, reference ground plane (see 6.2.2 and 6.2.3).
   3.1 All other equipment powered from additional LISN(s).
   3.2 Multiple-outlet strip can be used for multiple power cords of non-EUT equipment.
   3.3 LISN at least 80 cm from nearest part of EUT chassis.
4. Non-EUT components of EUT system being tested.
5. Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop (see 6.2.3.1).
6. Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane (see 6.2.2 for options).
7. Antenna may be integral or detachable. If detachable, the antenna shall be attached for this test

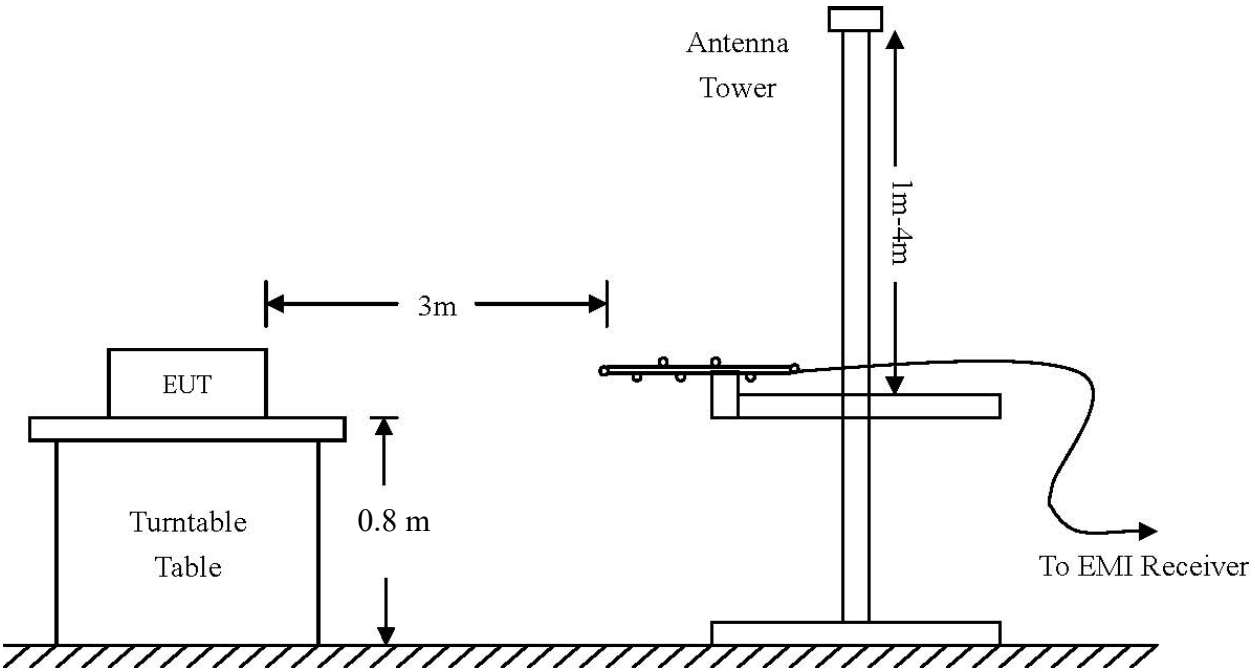
Diagram 2 Test arrangement for radiated emissions of tabletop equipment



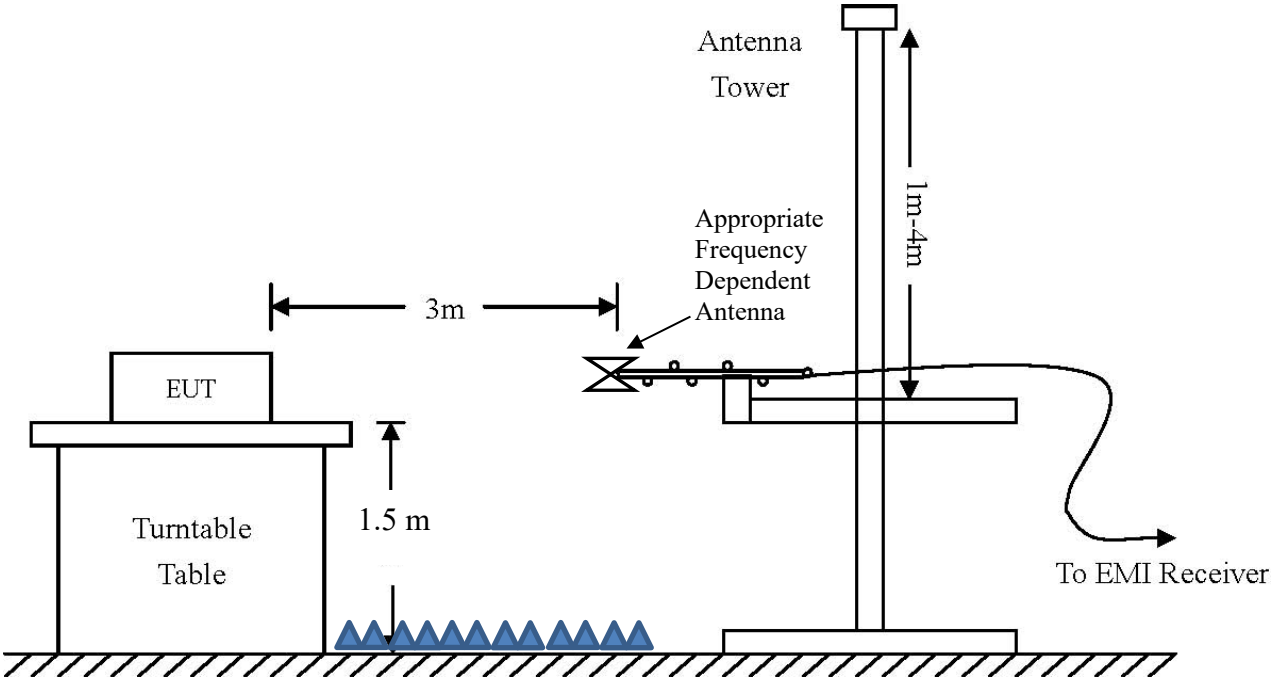
1. A LISN is optional for radiated measurements between 30 MHz and 1000 MHz but not allowed for measurements below 30 MHz and above 1000 MHz (see 6.3.1). If used, then connect EUT to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. The LISN may be placed on top of, or immediately beneath, the reference ground plane (see 6.2.2 and 6.2.3.2).
   1.1. LISN spaced at least 80 cm from the nearest part of the EUT chassis.
2. Antenna can be integral or detachable, depending on the EUT (see 6.3.1).
3. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long (see 6.3.1).
4. For emission measurements at or below 1 GHz, the table height shall be 80 cm. For emission measurements above 1 GHz, the table height shall be 1.5 m for measurements, except as otherwise specified (see 6.3.1 and 6.6.3.1).

Diagram 3 Test arrangement for radiated emissions tested in Semi-Anechoic Chamber (SAC) and Outdoor Area Test Site (OATS)

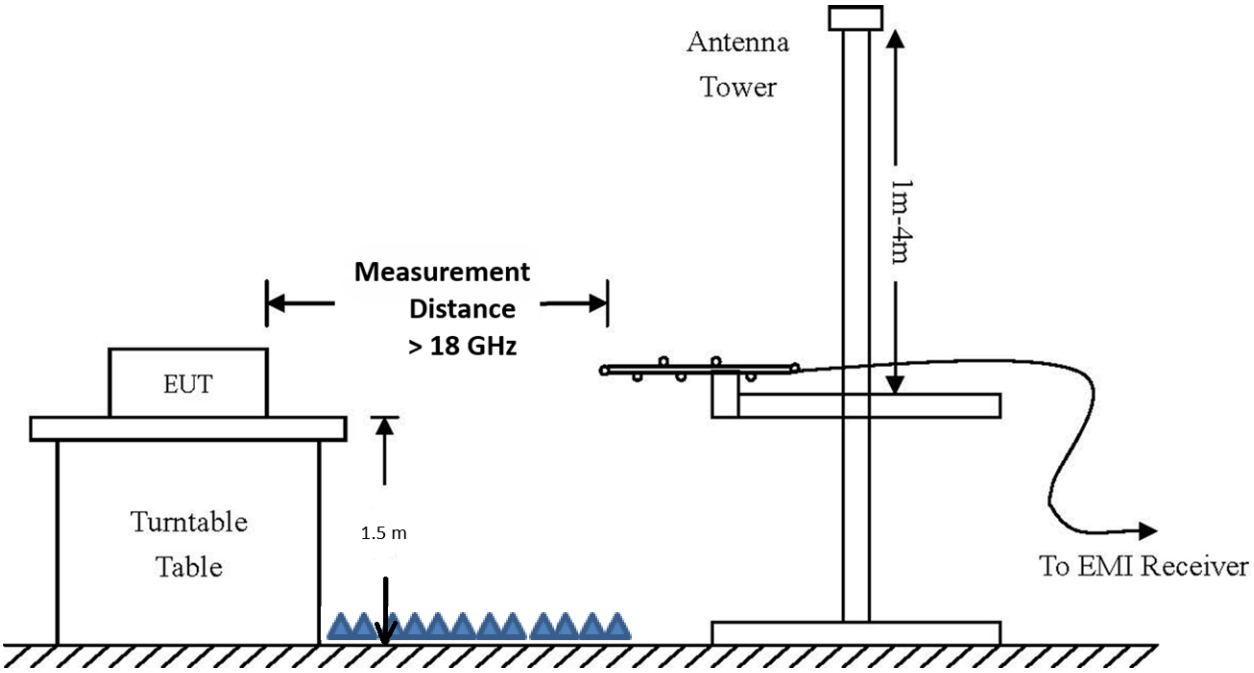
Below 1 GHz



1-18 GHz:



18-200 GHz



Radiated Emissions Measurement Distance

The measurement antenna is in the far field of the EUT per formula 2D2/γ, where D is the larger between the dimensions of the measurement antenna and the transmitting antenna of the EUT. In this case, "D" is the largest dimension of the measurement antenna. The EUT is manipulated through all orthogonal planes representative of its typical use and for both polarities of the measurement antenna to achieve the highest signal level. The worst-case position found was used for all radiated testing.

Table 1 Far-Field Distance & Measurement Distance per Frequency Range

Frequency Range [GHz]	Wavelength [centimeters]	Farfield Distance [meters]	Measurement Distance [meters]
18-40	0.750	0.650	1.00
40-60	0.526	0.740	1.00
60-83	0.500	0.498	0.50
61.64	**0.486**	**0.371**	**0.50**
71-90	0.333	0.426	0.50
90-140	0.214	0.374	0.50
123.28	**0.243**	**0.329**	**0.50**
140-220	0.136	0.320	0.50

Test Site Locations

Conducted EMI	AC line conducted emissions testing performed in a shielded screen room located at Rogers Labs, a division of The Compatibility Center LLC, 7915 Nieman Rd., Lenexa, KS (or satellite location).
Antenna port	Antenna port conducted emissions testing was performed in a shielded screen room located at Rogers Labs, a division of The Compatibility Center LLC, 7915 Nieman Rd., Lenexa, KS (or satellite location).
Radiated EMI	The radiated emissions tests were performed at the 3 meters Semi-Anechoic Chamber (SAC) located at Rogers Labs, a division of The Compatibility Center LLC, 7915 Nieman Rd., Lenexa, KS or at the 3 meters Outdoor Area Test Site (OATS) in the satellite location.

Registered Site information: FCC Site: US5305, ISED: 3041A, CAB Identifier: US0096

NVLAP Accreditation Lab code 200087-0

Units of Measurements

Conducted EMI	Data presented in dBµV; dB referenced to one microvolt
Antenna port Conducted	Data is in dBm; dB referenced to one milliwatt
Radiated EMI	Data presented in dBµV/m; dB referenced to one microvolt per meter

Note: The limit is expressed for a measurement in dBµV/m when the measurement is taken at a distance of 3 or 10 meters. Data taken for this report was taken at distance of 3 meters. Sample calculation demonstrates corrected field strength reading for Semi-Anechoic Chamber using the measurement reading and correcting for receive antenna factor, cable losses, and amplifier gains.

Sample Calculation:

RFS = Radiated Field Strength, FSM = Field Strength Measured

A.F. = Receive antenna factor, Losses = attenuators/cable losses, Gain = amplification gains

RFS (dBµV/m @ 3m) = FSM (dBµV) + A.F. (dB/m) + Losses (dB) - Gain (dB)

Frequency: 9 kHz-30 MHz	Frequency: 30 MHz- 1 GHZ	Frequency: Above 1 GHz
Loop Antenna	Broadband Biconilog	Horn
RBW = 9 kHz	RBW = 120 kHz	RBW = 1 MHz
VBW = 30 kHz	VBW = 500 kHz	VBW = 3 MHz
Sweep time = Auto	Sweep time = Auto	Sweep time = Auto
Detector = PK, QP	Detector = PK, QP	Detector = PK, AV
Antenna Height 1m	Antenna Height 1-4m	Antenna Height 1-4m

Note: for frequency range above 18GHz, ANSI C63.10:2020 and FCC KDB 364244 D01 v01r02 were followed.

Environmental Conditions

Ambient Temperature 22.7° C

Relative Humidity 51.0 %

Atmospheric Pressure 1016.7 mb

Statement of Modifications and Deviations

No modifications to the EUT were required for the equipment to demonstrate compliance with the 47CFR Part 15C emission requirements. There were no deviations to the specifications.

Test Results

The following information is submitted supporting compliance with the requirements of 47CFR, Subpart C, paragraph 15.255 and other sections of Part 15.

Summary

Item	Test Condition	Test Procedure	FCC Specification	Worst Margin	Results
AC Line Conducted Emissions (150kHz - 30MHz	AC LINE CONDUCTED	ANSI C63.10-2020 Subclause 6.2.	15.207	21.7 dB	Complies
99% Occupied Bandwidth	RADIATED	ANSI C63.10: 2020, 9.4	15.215(c)	N/A	Complies
-20dB Occupied Bandwidth	RADIATED	ANSI C63.10: 2020, 9.3	15.215(c)	N/A	Complies
Equivalent Isotropic Radiated Power	RADIATED	ANSI C63.10: 2020, 9.8 & Annex L	15.255(c)(2)(iii)(A)	5.0 dB	Complies
Radiated Spurious Emissions (Above 40GHz)	RADIATED	ANSI C63.10: 2020, 4, 9 & Annex L	15.255(d), 15.205	Very wide margin	Complies
Radiated Spurious Emissions (1 - 40GHz)	RADIATED	ANSI C63.10: 2020, 9 & Annex L	15.255(d), 15.205, 15.209	49.26 dB	Complies
Radiated Spurious Emissions (Below 1GHz)	RADIATED	ANSI C63.10: 2020, 6.3, 6.4, 9.11.	15.205, 15.209	3.8 dB	Complies
Frequency Stability	RADIATED	ANSI C63.10: 2020, 6.8, 9.5	15.255(f)	Very wide margin	Complies
Duty Cycle / OFF Time	RADIATED	ANSI C63.10: 2020, 9 & Annex L	15.255(c)(2)(iii)(A)	Very wide margin	Complies

20dB Emission Bandwidth

47 CFR §15.255(c)(2)(iii), §15.215(c)

Test Overview

The emission bandwidth is defined as the instantaneous frequency range occupied by a steady state radiated signal with modulation, outside which the radiated power spectral density never exceeds 20 dB below the maximum radiated power spectral density in the band, as measured with a 10 MHz resolution bandwidth spectrum analyzer.

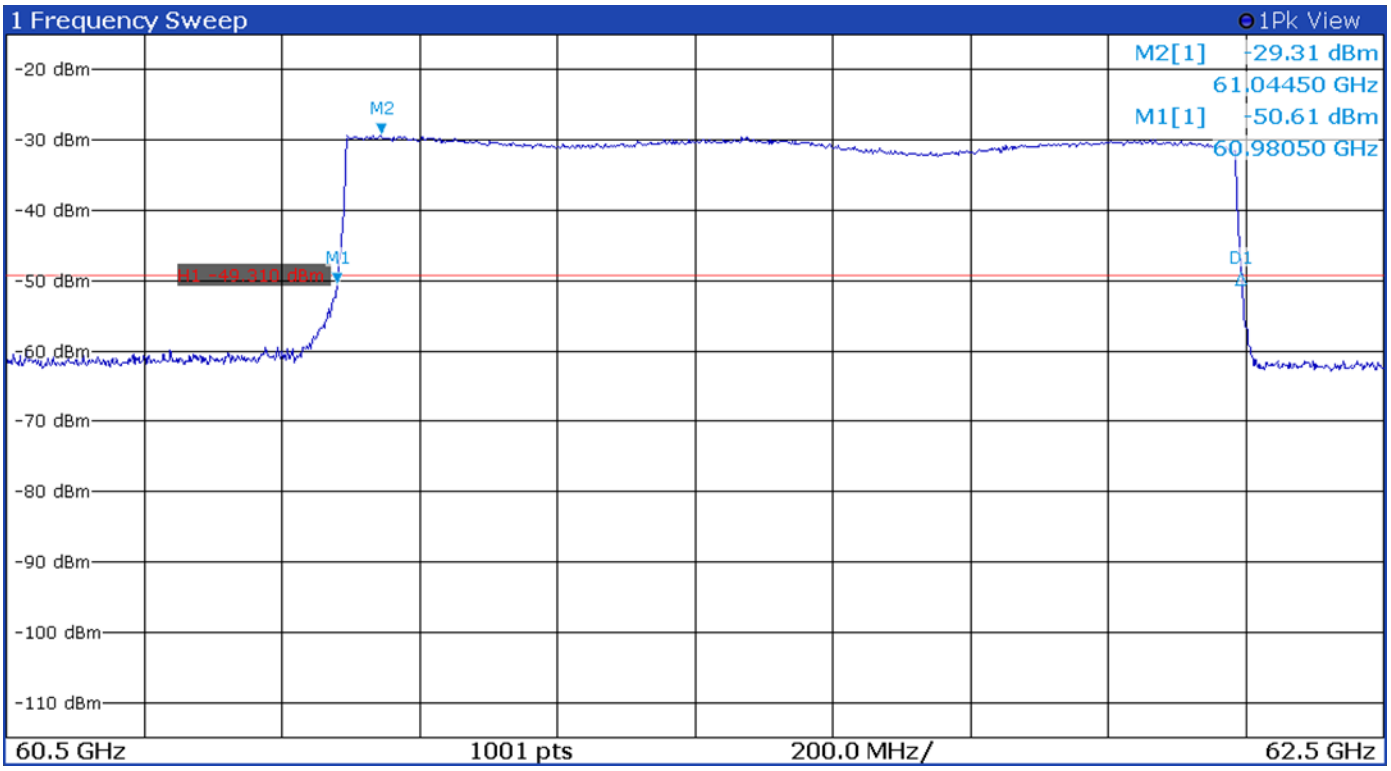
Test Procedure

ANSI C63.10-2020 Subclause 9.3

Test Setup

1. See Diagram 3 (18-200 GHz) for setup. Radiated measurements were taken in the far field.
2. All modes of operation were tried with the worst case configuration results being reported here.

Figure 1 20dB Emissions Bandwidth



Marker Table:

Type	Ref	Trace	X-Value	Y-Value
M1		1	60.98 GHz	-50.6 dBm
D1	M1	1	1.312 GHz	1.7 dB
M2		1	61.04 GHz	-29.3 dBm

Settings:

Center Freq: 61.5 GHz	Freq Offset: 0 Hz	Start: 60.5 GHz	Stop: 62.5 GHz
Span: 2 GHz	RBW: 10 MHz	Filter Type: Channel	VBW: 10 MHz
SWT: 6 ms	Ref Level: -15 dBm	Level Offset: 0 dB	Rf Att: 10 dB
Input: 1 AC	Preamplifier: OFF	Preselector: Off	

Test Results

Measured 20 dB Bandwidth = 1.312 GHz

Summary of Results for 20dB Emission Bandwidth

The EUT demonstrated compliance with the spurious emissions requirements of 47 CFR §15.255(c)(2)(iii) and §15.215(c).

99% Occupied Bandwidth

47 CFR §15.255(c)(2)(iii), §15.215(c)

Test Overview

The occupied bandwidth (99% emission bandwidth) is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

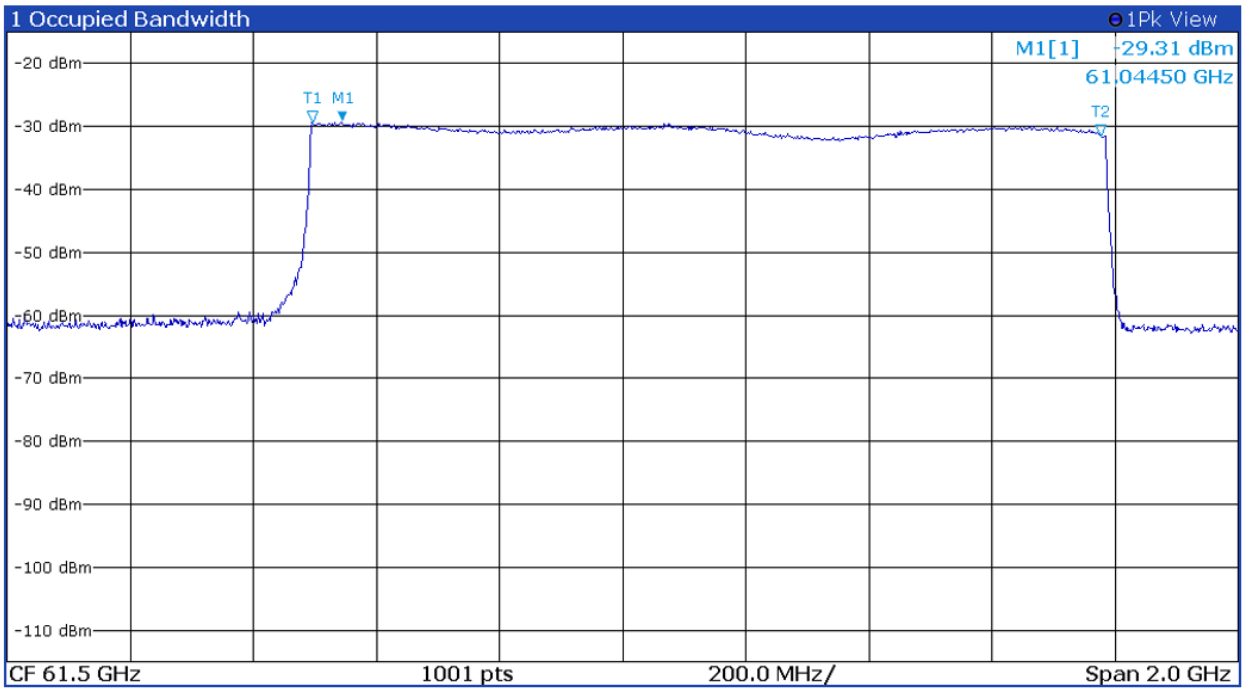
Test Procedure

ANSI C63.10-2020 Subclause 9.4

Test Setup

1. See Diagram 3 (18-200 GHz) for setup. Radiated measurements were taken in the far field.
2. All modes of operation were tried with the worst case configuration results being reported here.

Figure 2 99% Occupied Bandwidth



Settings:

Center Freq: 61.5 GHz	Freq Offset: 0 Hz	Start: 60.5 GHz	Stop: 62.5 GHz
Span: 2 GHz	RBW: 10 MHz	Filter Type: Channel	VBW: 10 MHz
SWT: 6 ms	Ref Level: -15 dBm	Level Offset: 0 dB	Rf Att: 10 dB
Input: 1 AC	Preamplifier: OFF	Preselector: Off	

Marker Table:

Type	Ref	Trace	X-Value	Y-Value	Function	Func Result
M1		1	61.04 GHz	-29.3 dBm	Occ Bw	1.28 GHz
T1		1	61 GHz	-29.5 dBm	Occ Bw Centroid	61.64 GHz
T2		1	62.28 GHz	-31.6 dBm	Occ Bw Freq Offset	137.5 MHz

Test Results

Measured 99% Occupied Bandwidth = 1.28 GHz

Summary of Results for 99% Occupied Bandwidth

The EUT demonstrated compliance with the requirements of 47 CFR 15.255(c)(2)(iii).

Equivalent Isotropic Radiated Power

§15.255(c)(2)(iii)(A)

Test Overview

Within the 57.0-64.0 GHz band, the peak EIRP shall not exceed 14 dBm.

Test Procedure

ANSI C63.10-2020 Subclause 9.8 & Annex L; FCC KDB 364244 D01 v01r01

Test Setup

1. See Diagram 3 (18-200 GHz) for setup. Radiated measurements were taken in the far field.
2. All modes of operation were tried with the worst case configuration results being reported here.
3. The measurement equipment included a horn antenna and mixer to convert the 57-71 GHz fundamentals down to a frequency in the range of our ESW 44 receiver with maximum frequency capability of 44 GHz.
4. Per guidance in KDB 364244 D01 v01r01, to capture the peak EIRP with the spectrum analyzer, we implemented a minimum 1 MHz RBW in conjunction with the peak hold function while sweeping in free run mode until the maximum amplitude was captured. The numbers presented were acquired in this manner.

Sample Calculations

Calculating Field Strength:

$$EIRP = 21.98 - 20 \log(\lambda) + 20 \log(d_{MEAS}) + P - G + DCF$$

Where:

EIRP is the equivalent isotropic radiated power, in dBm
λ is the wavelength of the emission under investigation [300/f(MHz)], in m
d_{MEAS} is the measurement distance, in m
P is the power measured at the output of the measurement antenna, in dBm
G is the gain of the measurement antenna, in dBi
DCF is the desensitization correction factor defined by following equation:

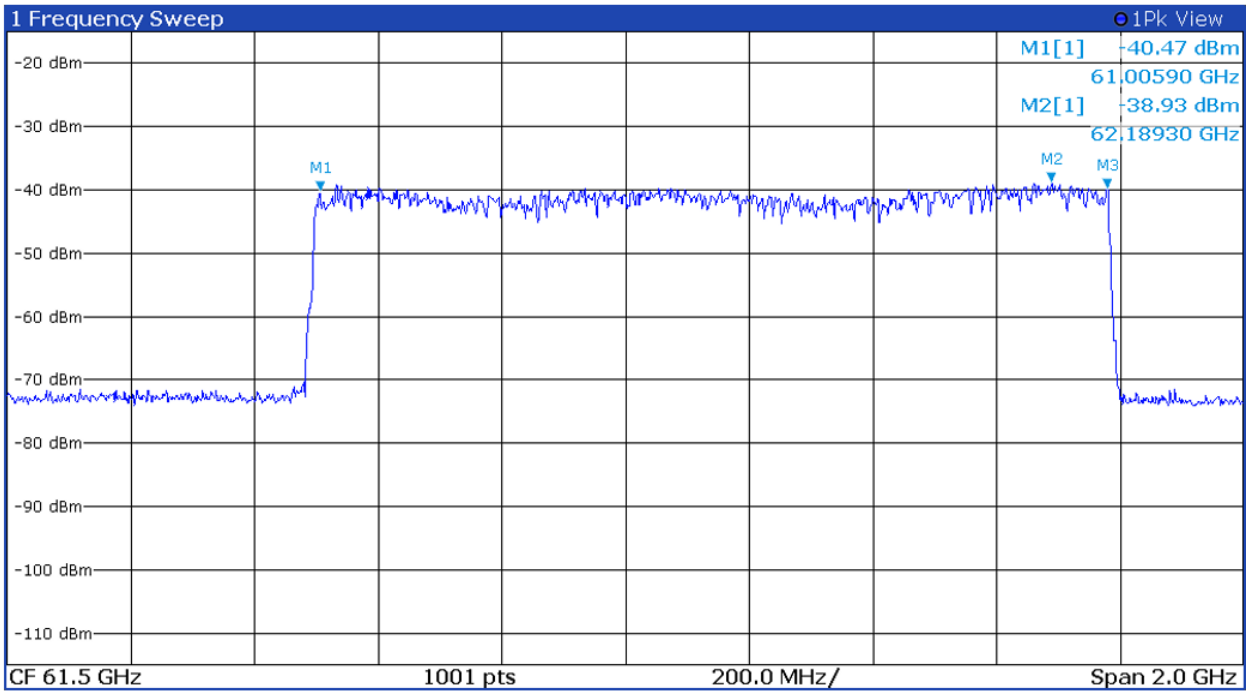
$$\alpha = \frac{1}{\sqrt{1 + \left(\frac{2\ln(2)}{\pi}\right)^2 \left(\frac{BW_{Chirp}}{T_{Chirp} B^2}\right)^2}}$$

Where:

α is the reduction in amplitude
*BW*Chirp is the FMCW Chirp Bandwidth
*T*Chirp is the FMCW Chirp Time
B is the 3 dB IF Bandwidth = RBW

Chirp Bandwidth = 1.5 GHz, Chirp time = 10 us, RBW = 1 MHz
Reduction in amplitude = 0.0174
DCF = -17.6 dBm

Figure 3 EIRP Power



Center Freq: 61.5 GHz	Freq Offset: 0 Hz	Start: 60.5 GHz	Stop: 62.5 GHz
Span: 2 GHz	RBW: 1 MHz	Filter Type: Channel	VBW: 3 MHz
SWT: 200 ms	Ref Level: -15 dBm	Level Offset: 0 dB	Rf Att: 10 dB
Input: 1 AC	Preamplifier: OFF	Preselector: Off	

Type	Ref	Trace	X-Value	Y-Value	Function	Func Result
M1		1	61.01 GHz	-40.5 dBm		
M2		1	62.19 GHz	-38.9 dBm		
M3		1	62.28 GHz	-39.9 dBm		

Test Results

Table 1 EIRP Power

Frequency (GHz)	λ (m)	Test distance (m)	EUT Peak Measured (dBm)	DCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
61.01	0.00492	0.5	-40.47	-17.59	4.07	14.00	-9.93
62.19	0.00482	0.5	-38.93	-17.59	5.77	14.00	-8.23
62.28	0.00482	0.5	-39.91	-17.59	4.81	14.00	-9.19

* Measurement already includes all factors (antennas, cables, attenuation, etc)

Summary of Results for E.I.R.P. Power

The EUT demonstrated compliance with the Peak EIRP requirements of §15.255(c)(2)(iii)(A) with a worst case margin of 8.23 dB.

Duty Cycle, Off Time Requirement

§15.255(c)(2)(iii)(A)

Test Overview

Within the 57.0-64.0 GHz band, the sum of continuous transmitter off-times of at least two milliseconds shall equal at least 25.5 milliseconds within any contiguous interval of 33 milliseconds.

Test Procedure

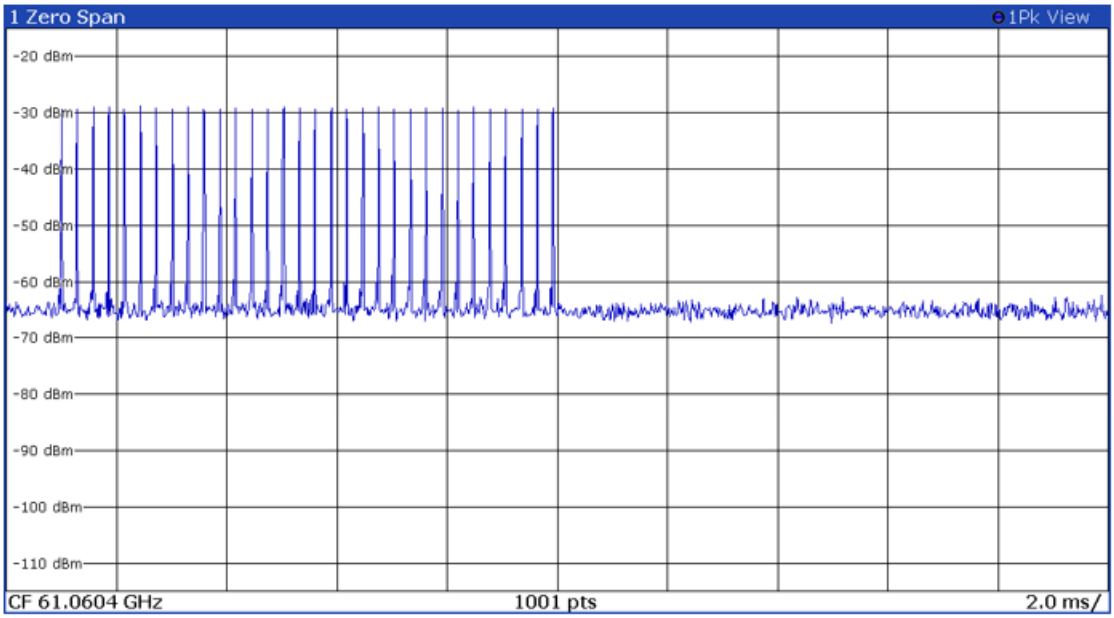
§15.255(c)(2)(iii)(A), ANSI C63.10-2020 Annex L

Test Setup

1. See Diagram 3 (18-200 GHz) for setup. Radiated measurements were taken in the far field.
2. All modes of operation were tried with the worst case configuration results being reported here.
3. The measurement equipment included a horn antenna and mixer to convert the 57-71 GHz fundamentals down to a frequency in the range of our ESW 44 receiver with maximum frequency capability of 44 GHz.

Test Results

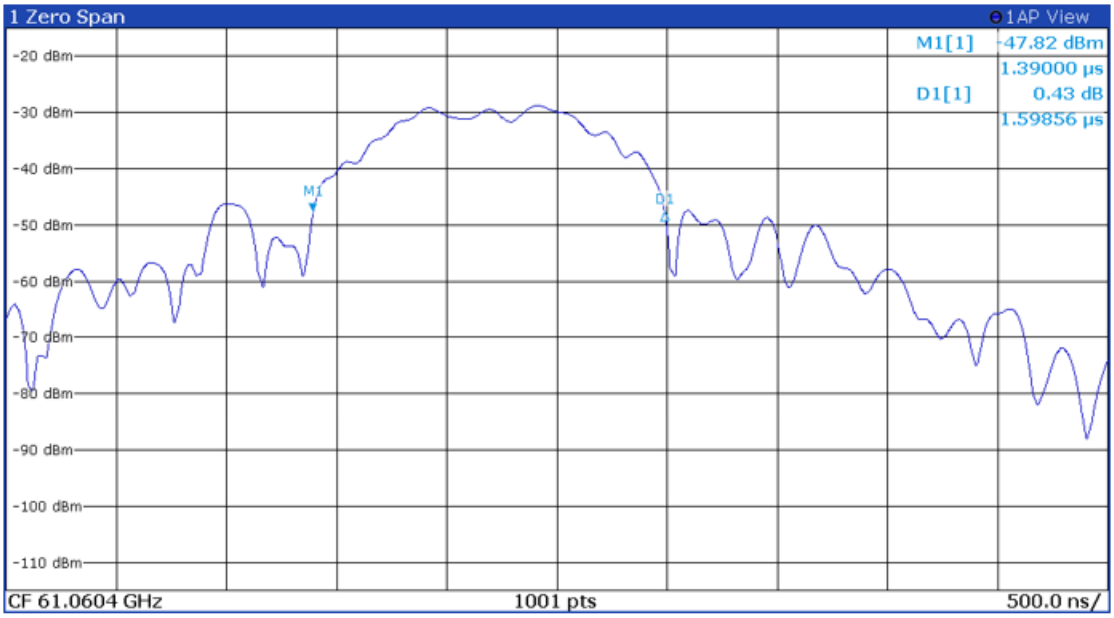
Figure 4A Duty Cycle / Off Time (# Pulses in a Pulse train)



Center Freq: 61.06 GHz	Freq Offset: 0 Hz	RBW: 10 MHz	Filter Type: Channel
VBW: 10 MHz	SWT: 20 ms	Ref Level: -15 dBm	Level Offset: 0 dB
Rf Att: 10 dB	Input: 1 AC	Preamplifier: OFF	Preselector: Off

Total number of pulses in a single pulse train is 32. Hence, number of gaps between pulses is 31.

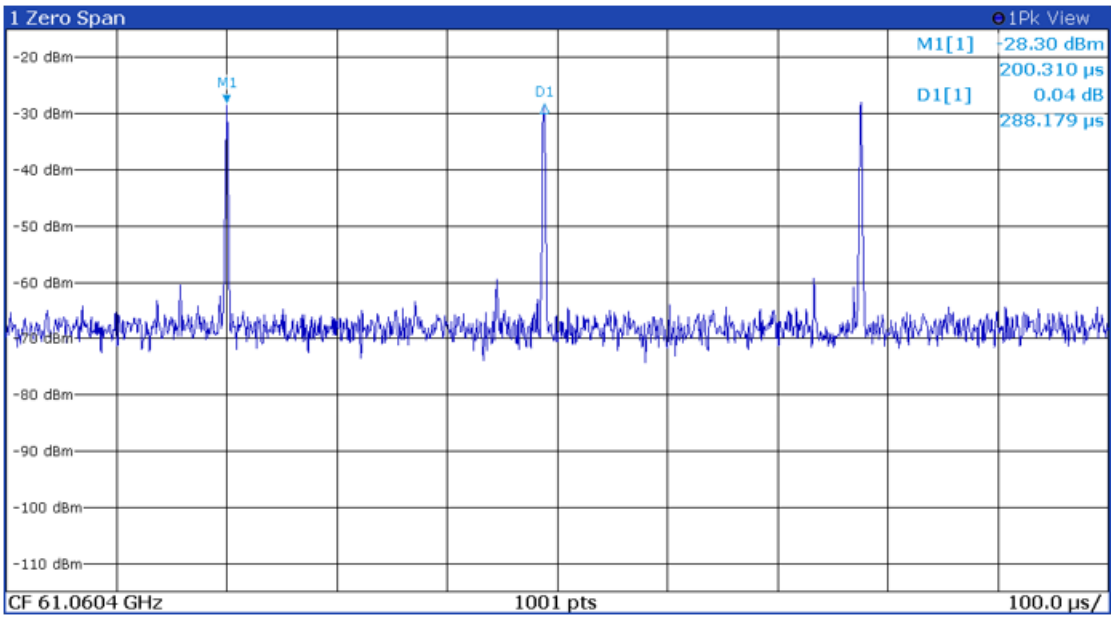
Figure 4B Duty Cycle / Off Time (Pulse Width)



Center Freq: 61.06 GHz	Freq Offset: 0 Hz	RBW: 10 MHz	Filter Type: Channel
VBW: 10 MHz	SWT: 5 µs	Ref Level: -15 dBm	Level Offset: 0 dB
Rf Att: 10 dB	Input: 1 AC	Preamplifier: OFF	Preselector: Off

Pulse width is 1.6 us

Figure 4C Duty Cycle / Off Time (Time between pulses)



Time between pulses is 288.2 us

Off time between each pulse in a pulse train is:

Total time between pulses (288.2us) – Pulse width (1.6us) = 286.6us

Total accumulated OFF Time during a full pulse train of 32 pulses is:

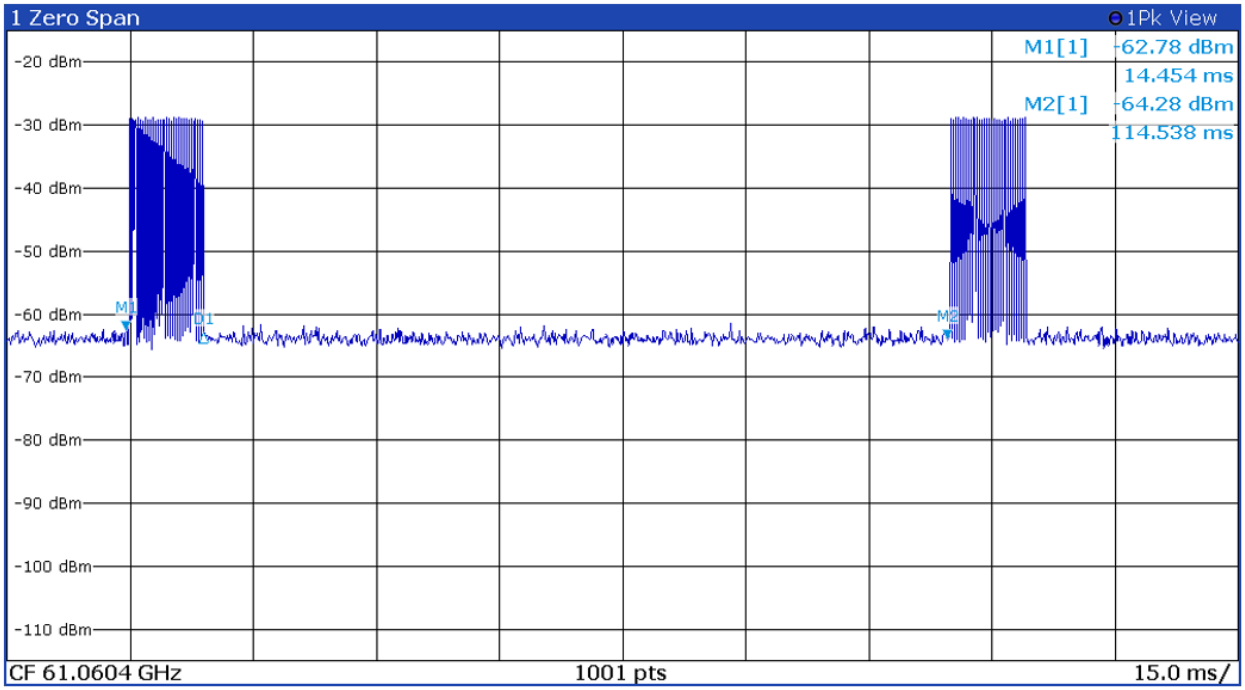
Number of gaps (31) x Off time between pulses (286.6us) = **8.9ms**

note that this is greater than 2ms of accumulated off time

Total accumulated ON Time during a full pulse train of 32 pulses is:

Number of gaps (32) x Pulse Width (1.6us) = **0.0512 ms**

Figure 4D Duty Cycle / Off Time Calculation Plot



Center Freq: 61.06 GHz	Freq Offset: 0 Hz	RBW: 10 MHz	Filter Type: Channel
VBW: 10 MHz	SWT: 150 ms	Ref Level: -15 dBm	Level Offset: 0 dB
Rf Att: 10 dB	Input: 1 AC	Preamplifier: OFF	Preselector: Off

Marker Table:

Type	Ref	Trace	X-Value	Y-Value
M1		1	14.45 ms	-62.78 dBm
D1	M1	1	9.557 ms	-0.05084 dB
M2		1	114.5 ms	-64.28 dBm

Total period of a pulse train is M2 – M1 = 114.5 – 14.45 = 100.05 ms
This is well in excess of 33ms

Calculations

Over a 33ms timeframe:

Total Tx OFF Time = 33ms - ON time during pulse train (0.0512 ms) = 32.9 ms

Limit: Minimum OFF Time within 33ms time period is 25.5 ms

Summary of Results for Duty Cycle / Off Time

This demonstrates compliance with the OFF Time requirements of §15.255(c)(2)(iii)(A).

Radiated Spurious Emissions (Above 40GHz)

§15.255(d), §15.205

Test Overview

The power density of any emissions outside the 57-71 GHz band shall consist solely of spurious emissions. Between 40 GHz and 200 GHz, the level of these emissions shall not exceed 90 pW/cm^2 at a distance of 3 meters. The levels of the spurious emissions shall not exceed the level of the fundamental emission.

Test Procedure

ANSI C63.10-2020 Subclauses 9.10, 4.1.5.2.8 & Annex L.

Test Setup

1. The emissions are measured in a radiated test setup while the EUT is operating at its maximum duty cycle, at maximum power and at the appropriate frequencies.
2. Scan the spectrum from 40 GHz to 200 GHz
3. Receiver setup:
    a. RBW = 1 MHz
    b. VBW = 3 MHz
    c. Detector = Peak
    d. Trace Mode = Max Hold
    e. Sweep Time = auto couple
    f. Number of Sweep points =/> 2 x Span/RBW
4. Compare results to the limit.

Note: See Diagram 3 (18-200 GHz) for setup. Radiated measurements were taken in the far field at 3m, per regulation.

Test Notes

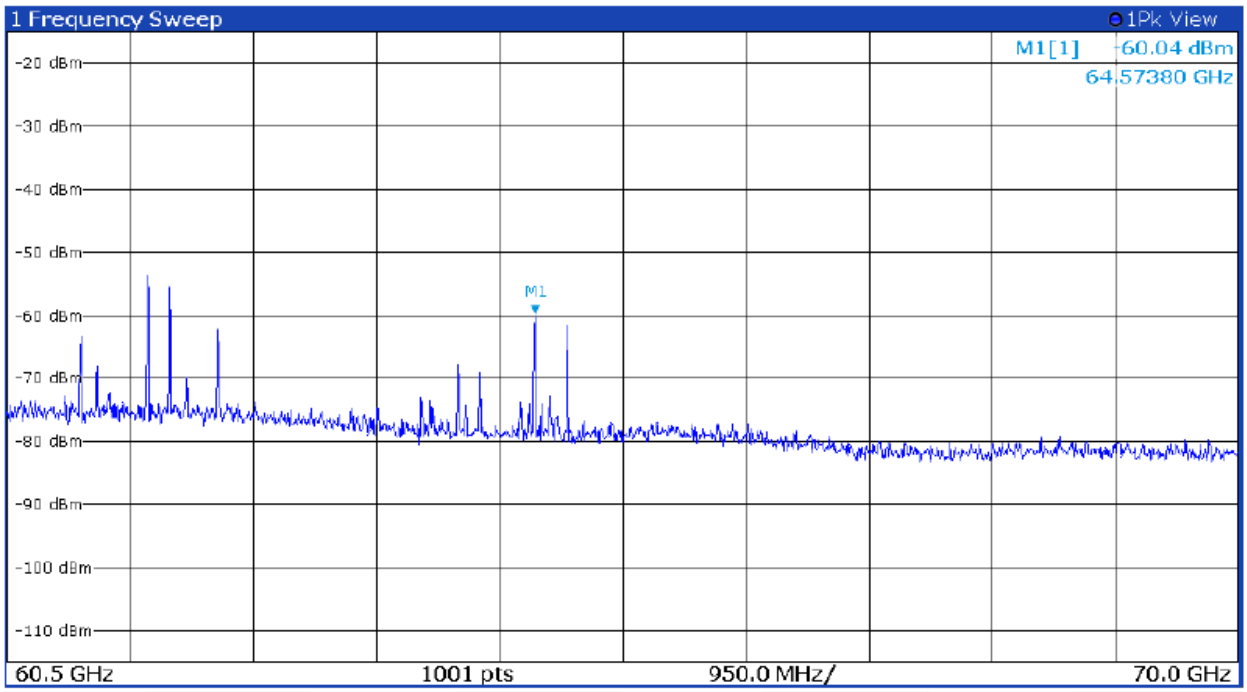
1. Once again, all modes of operation were evaluated and the worst case configurations were used for this report.
2. Emissions above 40 GHz were made using horn antennas, harmonic mixers and our ESW 44 spectrum analyzer receiver supporting these configurations.
3. Measurements were made in the far field and in our 3m semi-anechoic chamber. Refer to table 1-1 for distance vs frequency calculations.
4. Note that all plots below were with antenna in Horizontal polarization as that was the clear worst case.

Sample Calculations

- Field Strength Level [dBuV/m] = Analyzer Level [dBm] + 107 + AFCL [dBm]
- AFCL [dBm] = Antenna Factor [dBm] + Cable Loss [dB] – Preamplifier Gain [dB]
  - Please note that all AFCL factors are already included in our measurements
- RSE EIRP [dBm] = $E_{measured}$ [dBuV/m] + 20 $\log_{10}$ (distance measured) – 104.7
- PD (Power Density in pW/cm^2) = EIRP [pW] / ($4\pi D^2$)
  - D = the distance at which the power density limit is specified, in m

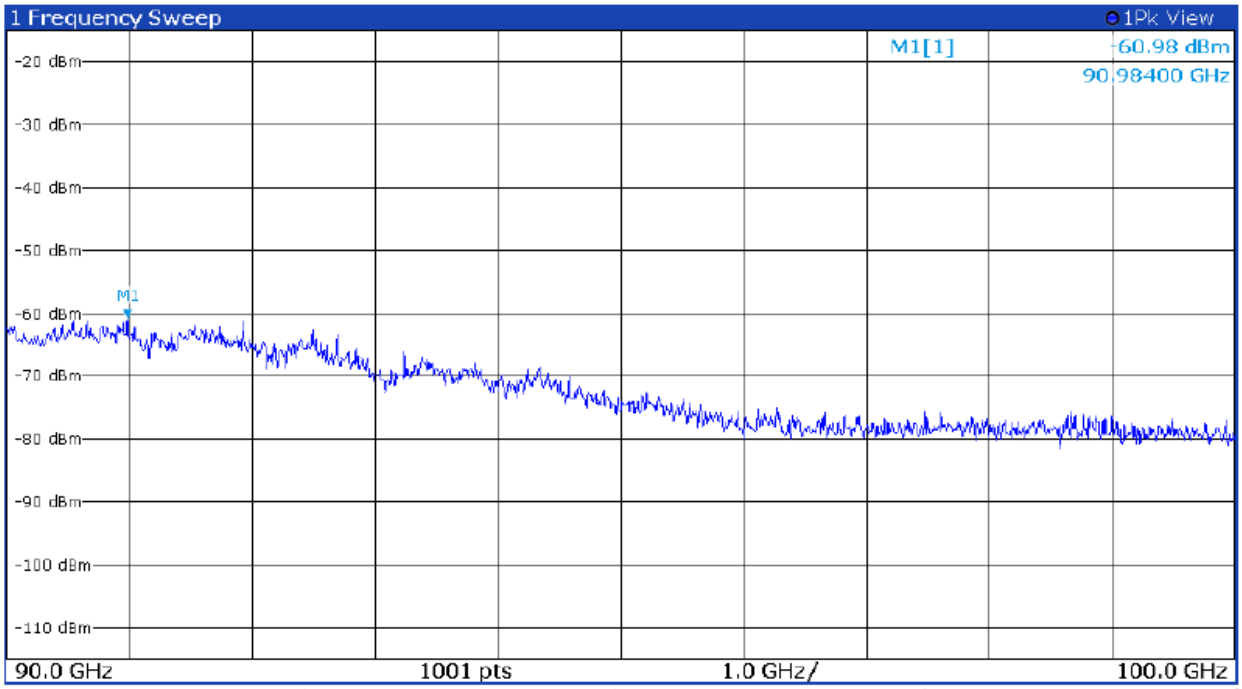
Test Results

Figure 5 Radiated Spurious Emissions 60.5 - 70 GHz



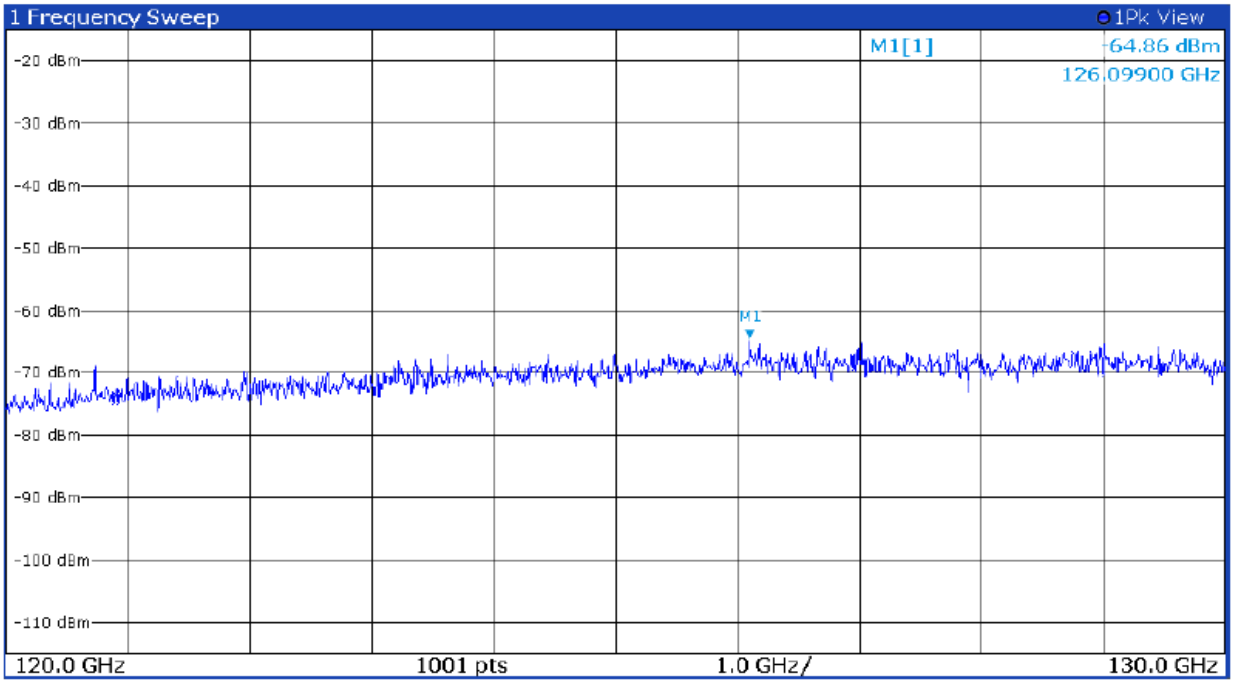
Center Freq: 65.25 GHz	Freq Offset: 0 Hz	Start: 60.5 GHz	Stop: 70 GHz
Span: 9.5 GHz	RBW: 1 MHz	Filter Type: Channel	VBW: 3 MHz
SWT: 65.7 ms	Ref Level: -15 dBm	Level Offset: 0 dB	Rf Att: 10 dB
Input: 1 AC	Preamplifier: OFF	Preselector: Off	

Figure 6 Radiated Spurious Emissions 90 - 100 GHz



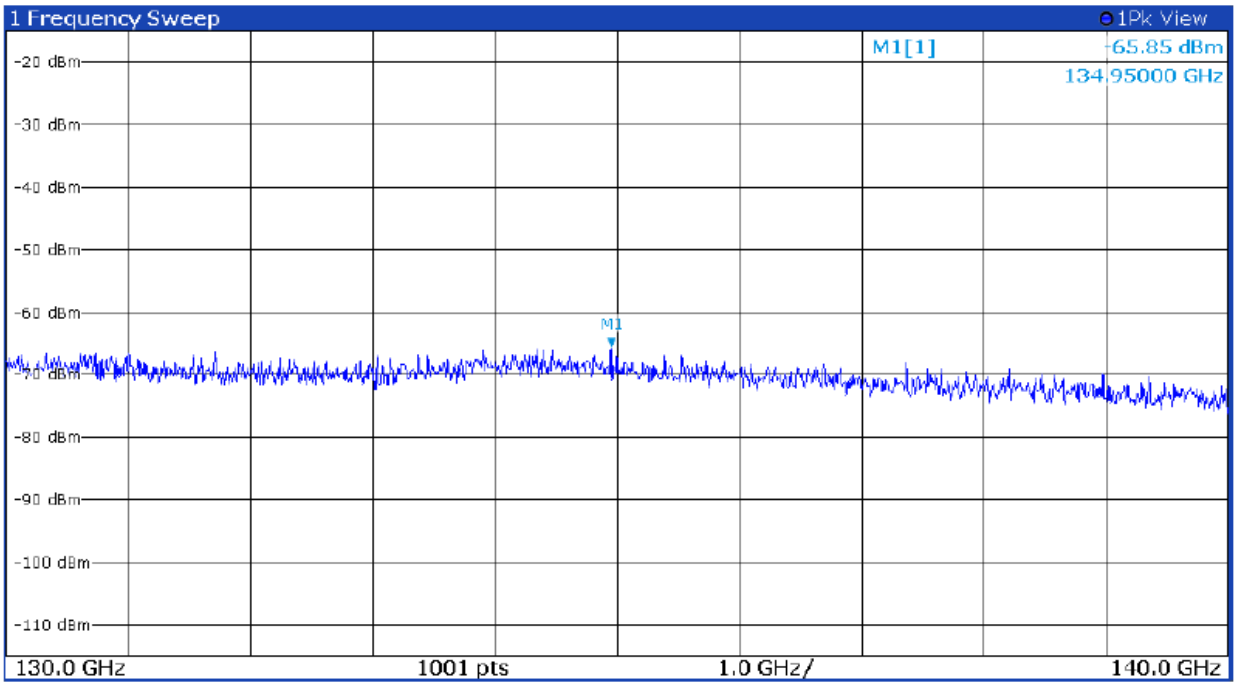
Center Freq: 95 GHz	Freq Offset: 0 Hz	Start: 90 GHz	Stop: 100 GHz
Span: 10 GHz	RBW: 1 MHz	Filter Type: Channel	VBW: 3 MHz
SWT: 69.1 ms	Ref Level: -15 dBm	Level Offset: 0 dB	Rf Att: 10 dB
Input: 1 AC	Preamplifier: OFF	Preselector: Off	

Figure 7 Radiated Spurious Emissions 120 - 130 GHz



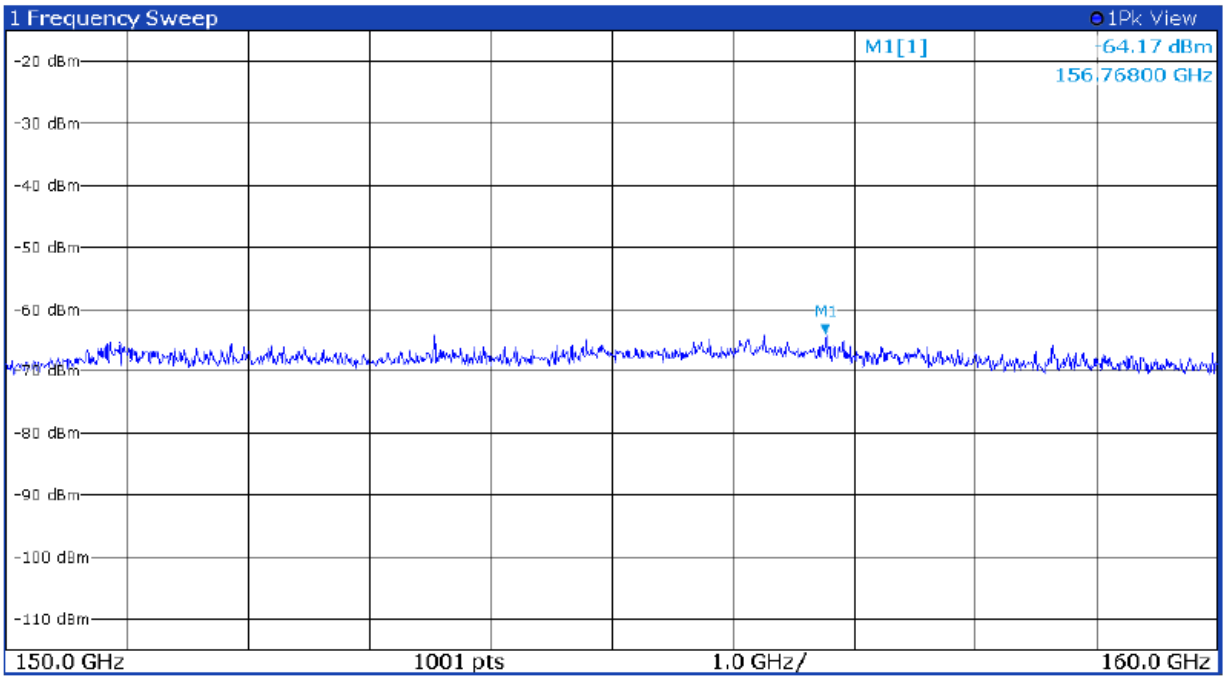
Center Freq: 125 GHz	Freq Offset: 0 Hz	Start: 120 GHz	Stop: 130 GHz
Span: 10 GHz	RBW: 1 MHz	Filter Type: Channel	VBW: 3 MHz
SWT: 69.1 ms	Ref Level: -15 dBm	Level Offset: 0 dB	Rf Att: 10 dB
Input: 1 AC	Preamplifier: OFF	Preselector: Off	

Figure 8 Radiated Spurious Emissions 130 - 140 GHz



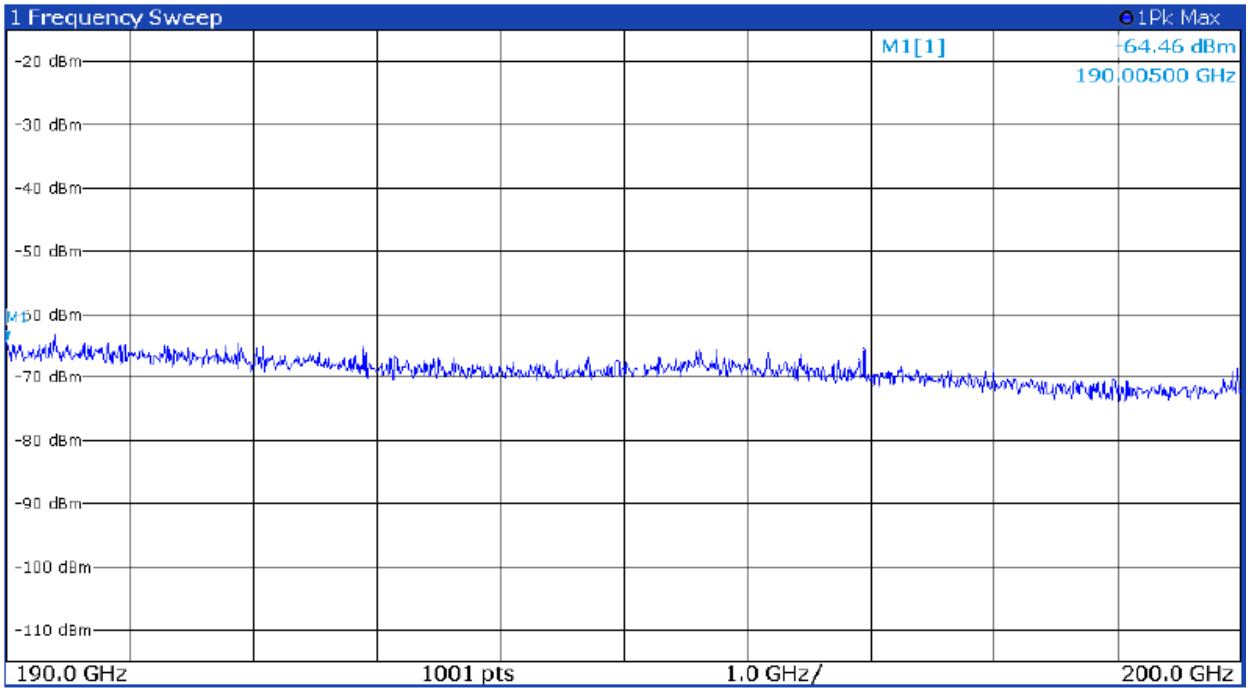
Center Freq: 135 GHz	Freq Offset: 0 Hz	Start: 130 GHz	Stop: 140 GHz
Span: 10 GHz	RBW: 1 MHz	Filter Type: Channel	VBW: 3 MHz
SWT: 69.1 ms	Ref Level: -15 dBm	Level Offset: 0 dB	Rf Att: 10 dB
Input: 1 AC	Preamplifier: OFF	Preselector: Off	

Figure 9 Radiated Spurious Emissions 150 - 160 GHz



Center Freq: 155 GHz	Freq Offset: 0 Hz	Start: 150 GHz	Stop: 160 GHz
Span: 10 GHz	RBW: 1 MHz	Filter Type: Channel	VBW: 3 MHz
SWT: 69.1 ms	Ref Level: -15 dBm	Level Offset: 0 dB	Rf Att: 10 dB
Input: 1 AC	Preamplifier: OFF	Preselector: Off	

Figure 10 Radiated Spurious Emissions 190 - 200 GHz



Center Freq: 195 GHz	Freq Offset: 0 Hz	Start: 190 GHz	Stop: 200 GHz
Span: 10 GHz	RBW: 1 MHz	Filter Type: Channel	VBW: 3 MHz
SWT: 69.1 ms	Ref Level: -15 dBm	Level Offset: 0 dB	Rf Att: 10 dB
Input: 1 AC	Preamplifier: OFF	Preselector: Off	

Table 2 Radiated Spurious Emissions above 40 GHz

Frequency (GHz)	Test Distance (m)	Antenna Polarization	Measured Peak EIRP (dBm)*	E (dBuV/m)	Peak EIRP (dBm)	Peak Power (pW)	Power Density @ 3m (pW/cm2)	Power Density Limit@ 3 meters (pW/cm	Pass/Fail
64.57	0.5	H	-60.04	46.96	-63.76	420.7	3.72	90	PASS
90.98	0.5	H	-60.98	46.02	-64.70	338.8	3.00	90	PASS
126.10	0.5	H	-64.85	42.15	-68.57	139.0	1.23	90	PASS
134.95	0.5	H	-65.85	41.15	-69.57	110.4	0.98	90	PASS
156.77	0.5	H	-64.17	42.83	-67.89	162.5	1.44	90	PASS
190.01	0.5	H	-64.46	42.54	-68.18	152.0	1.34	90	PASS

* Measurement already includes all factors (antennas, cables, attenuation, etc)

Summary of Results for Radiated Emissions (Above 40 GHz)

The EUT demonstrated compliance with the spurious emissions requirements of §15.255(d) by a minimum margin of 86.3 pW/cm2.

Radiated Spurious Emissions (1 - 40GHz)

§15.255(d); §15.205; §15.209

Test Overview

The power density of any emissions outside the 57-71 GHz band shall consist solely of spurious emissions. Radiated emissions below 40 GHz shall not exceed the general limits in § 15.209. The levels of the spurious emissions shall not exceed the level of the fundamental emission.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table below per Section 15.209.

Frequency (MHz)	Field Strength (uV/m)	Measured Distance (meters)
960 - 40,000	500.000	3

Test Procedure

ANSI C63.10-2020 Subclause 6.3-6.6 & 9.11.

Test Setup

1. The emissions are measured in a radiated test setup while the EUT is operating at its maximum duty cycle, at maximum power and at the appropriate frequencies.
2. Scan the spectrum from 1 GHz to 40 GHz
3. Receiver setup (Average Field Strength):
    a. Analyzer center frequency set to that of radiated emission of interest
    b. RBW = 1 MHz
    c. VBW = 3 MHz
    d. Detector = power average (RMS)
    e. Trace (RMS) averaging performed over at least 100 traces
    f. Sweep Time = auto
    g. Number of Sweep points =/> 2 x Span/RBW
4. Receiver setup (Peak Field Strength):
    a. Analyzer center frequency set to that of radiated emission of interest
    b. RBW = 1 MHz
    c. VBW = 3 MHz
    d. Detector = Peak
    e. Trace mode = max hold
    f. Trace was stabilized over at least 100 traces
    g. Sweep Time = auto
    h. Number of Sweep points =/> 2 x Span/RBW

Note: See Diagram 3 (1 - 40 GHz) for setup. Radiated measurements were taken in the far field at 3m, per regulation.

Test Notes

1. Once again, all modes of operation were evaluated and the worst case configurations were used for this report.
2. Emissions 1 – 18 GHz were measured at 3m test distance while emissions from 18 – 40 GHz were measured at 1m with the application of a distance correction factor.
3. The plots that follow were used for the purpose of emission identification. Any emissions within 20dB of the limit are fully investigated and the results are shown in this section.
4. Note that all plots below were with antenna in Horizontal polarization as that was the clear worst case.

Sample Calculations

- Field Strength Level [dBuV/m] = Analyzer Level [dBm] + 107 + AFCL [dBm]
- AFCL [dBm] = Antenna Factor [dBm] + Cable Loss [dB] – Preamplifier Gain [dB]
- Margin [dB] = Field Strength Level [dBuV/m] – Limit [dBuV/m]
- RSE EIRP [dBm] = $E_{measured}$ [dBuV/m] + 20 $\log_{10}$ (distance measured) – 104.7
- PD (Power Density in pW/cm^2) = EIRP [pW] / ($4\pi D^2$)

Test Results

Figure 11 Radiated Spurious Emissions 1 – 3 GHz (Horizontal)

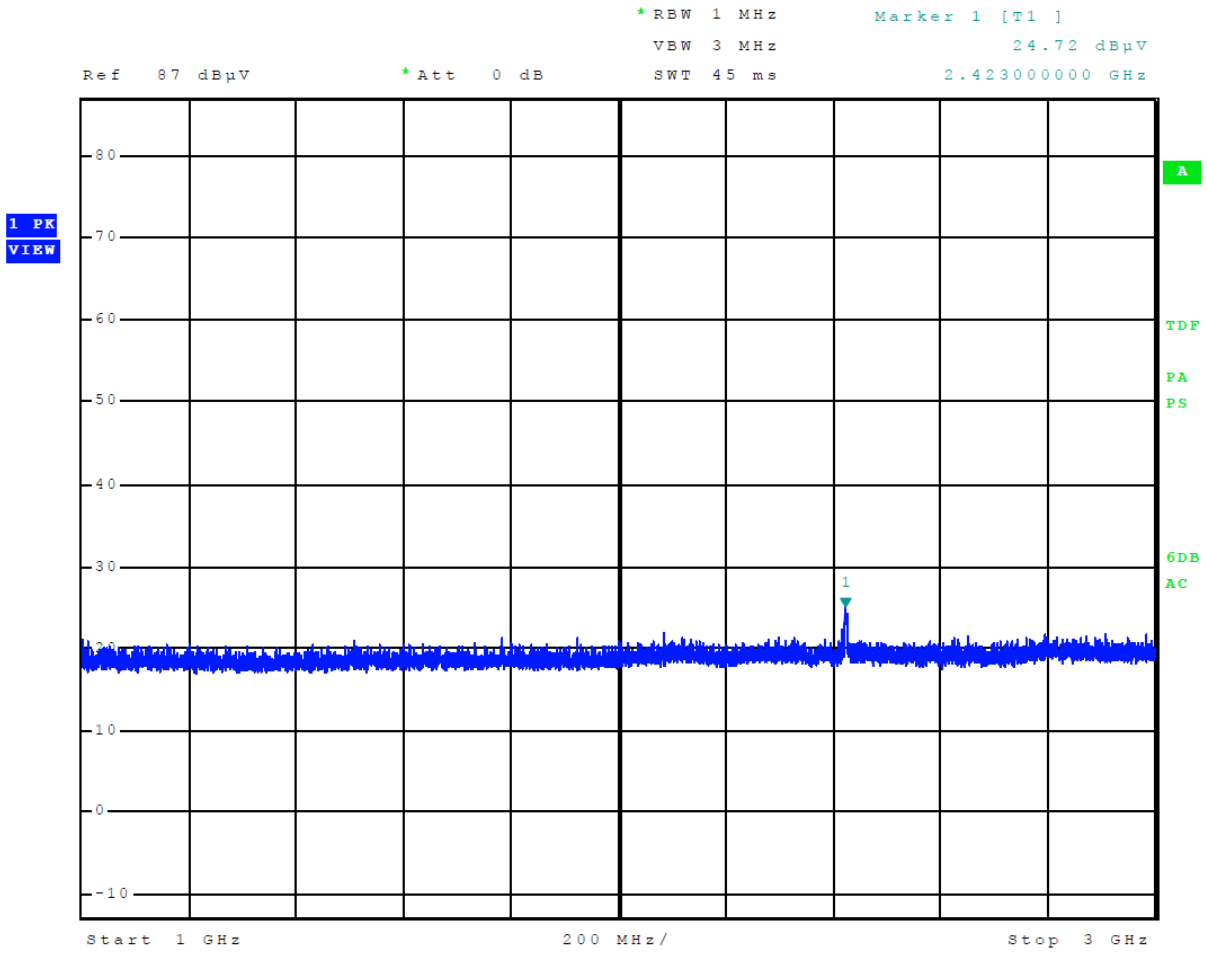


Figure 12 Radiated Spurious Emissions 3 - 6 GHz (Horizontal)

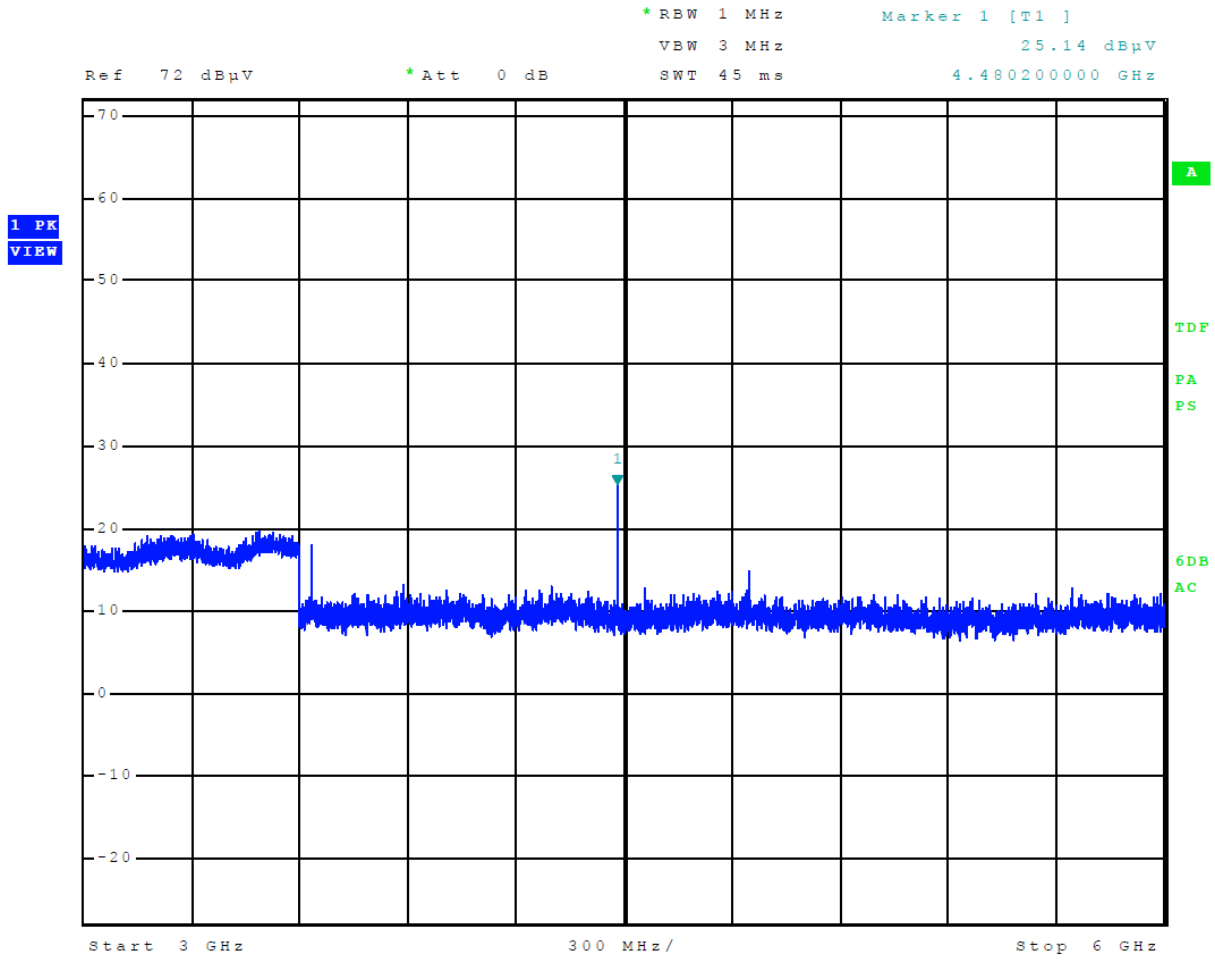


Figure 13 Radiated Spurious Emissions 6 - 18 GHz (Horizontal)

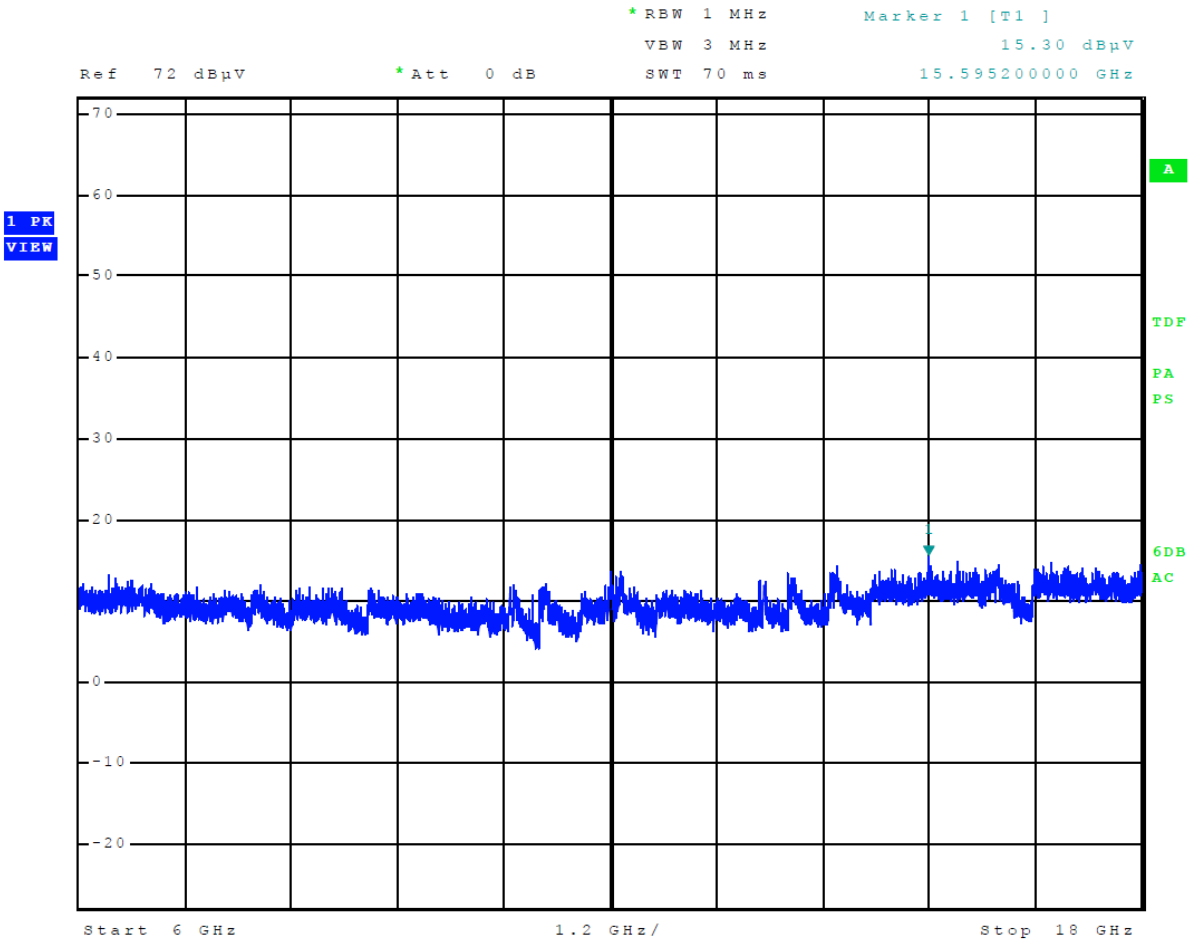


Figure 14 Radiated Spurious Emissions 18 - 40 GHz (Horizontal)

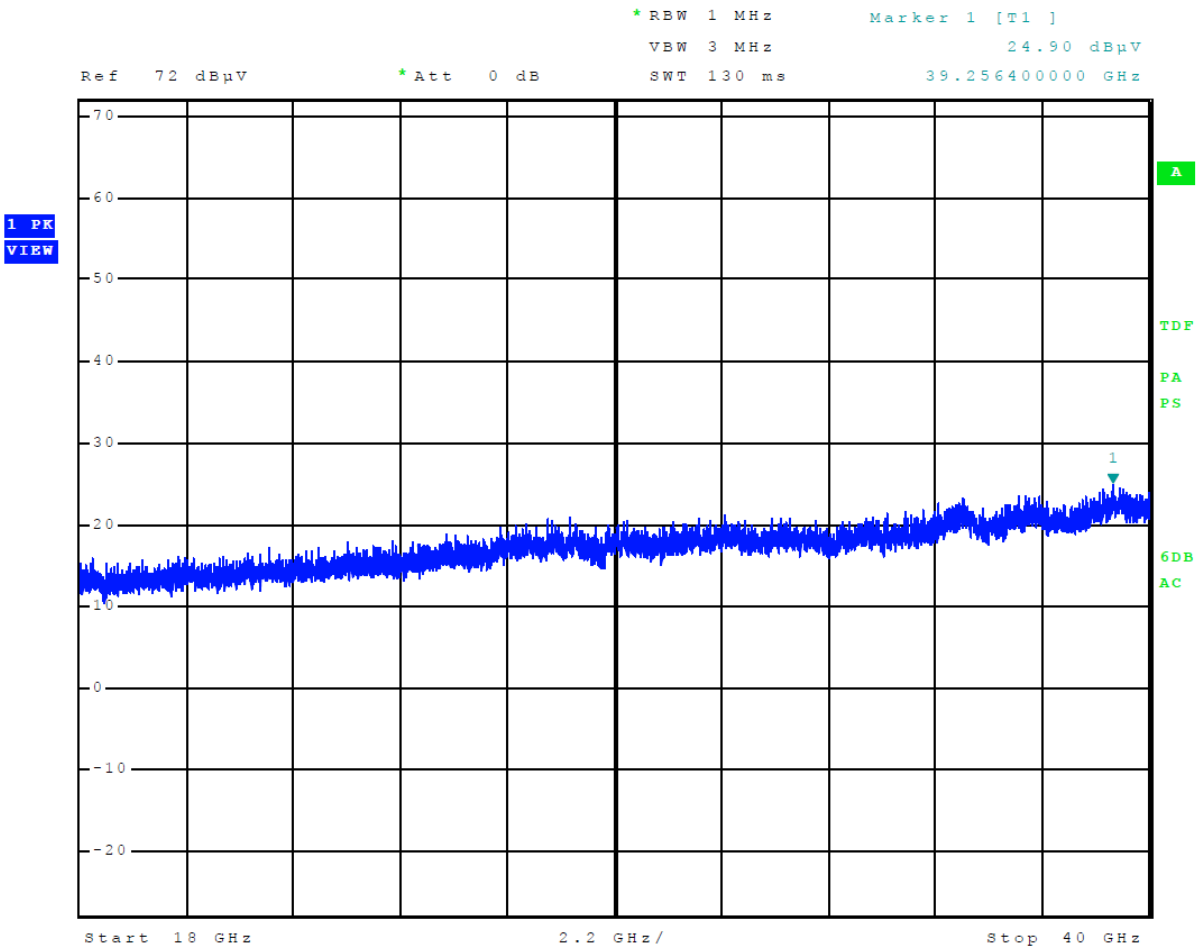


Table 3 Radiated Spurious Emissions 1 – 18 GHz

Frequency (GHz)	Antenna Polarization	Detector	Field Strength @ 3 meters (dBuV/m)	Field Strength Limit @ 3 meters (dBuV/m)	Margin (dB)	Pass/Fail
2.42	H	Peak	24.72	73.98	-49.26	PASS
4.48	H	Peak	25.14	73.98	-48.84	PASS
15.59	H	Peak	15.30	73.98	-58.68	PASS

Summary of Results for Radiated Emissions (1 – 40 GHz)

The EUT demonstrated compliance with the spurious emissions requirements of §15.255(d), §15.205 and §15.209 with a worst case margin of 49.26 dB.

Radiated Spurious Emissions (below 1 GHz)

§15.205, 15.209

Test Overview

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emission are reported in this section.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table below per Section 15.209.

Frequency (MHz)	Field Strength (uV/m)	Measured Distance (meters)
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30.00	30	30
30.00 - 88.00	100	3
88.00 - 216.00	150	3
216.00 - 960.00	200	3
960 - 40,000	500	3

Test Procedure

ANSI C63.10-2020 Subclauses 6.4 & 6.5.

Test Setup

1. Receiver setup (Quasi-Peak Field Strength):
    a. Analyzer center frequency set to that of radiated emission of interest
    b. RBW = 120 kHz (from 30MHz – 1GHz)
    c. VBW = 300 kHz
    d. Detector = Quasi-Peak
    e. Sweep Time = auto
    f. Trace mode = max hold
    g. Trace was stabilized over at least 100 traces
2. Receiver setup (Peak Field Strength):
    a. Analyzer center frequency set to that of radiated emission of interest
    b. RBW = 120 kHz
    c. VBW = 300 kHz
    d. Detector = Peak
    e. Sweep Time = auto
    f. Trace mode = max hold

Note: See Diagram 3 (< 1 GHz) for setup. Radiated measurements were taken in the far field at 3m, per regulation.

Test Notes

1. Once again, all modes of operation were evaluated and the worst case configurations were used for this report.
2. All transmitters (60 GHz and 2.4 GHz pre-certified wifi module) were on.
3. All emissions lying in the restricted bands specified in §15.205 are below the limit shown in above table at beginning of this section.
4. Emissions were measured at 3 meter distance.
5. No spurious emissions were detected within 20dB of the limit below 30MHz.
6. The plots that follow were used for the purpose of emission identification. Any emissions within 20dB of the limit are fully investigated and the results are shown in this section.

Test Results

Figure 15 Radiated Spurious Emissions 30 MHz – 1 GHz (Horizontal / All Tx On)

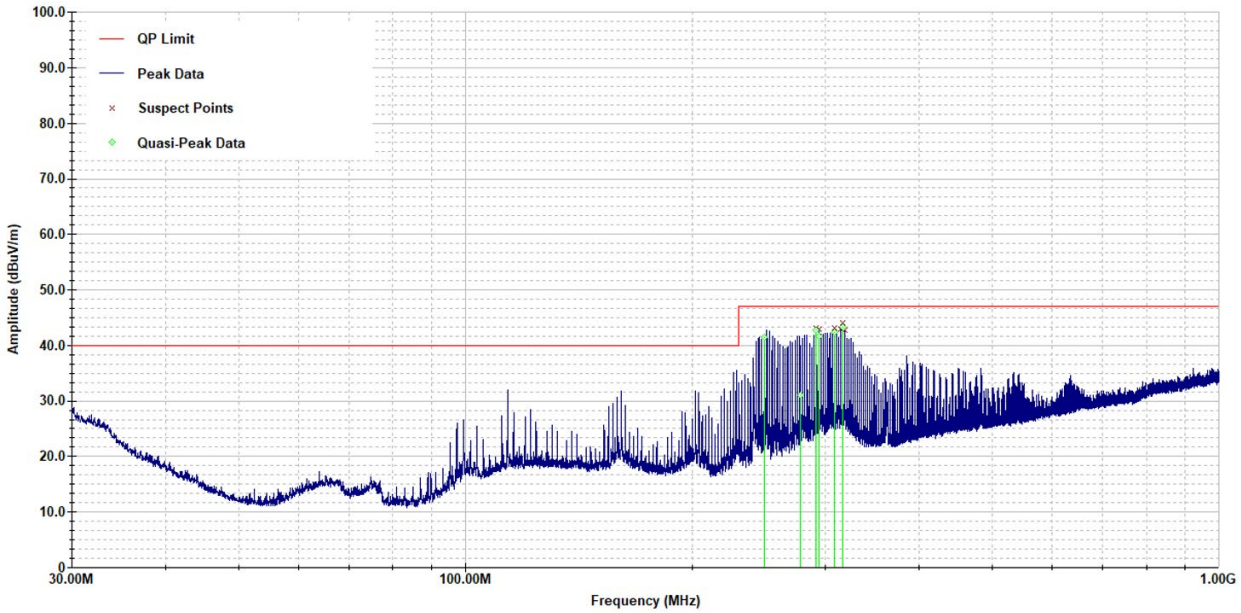


Figure 16 Radiated Spurious Emissions 30 MHz – 1 GHz (Vertical / All Tx On)

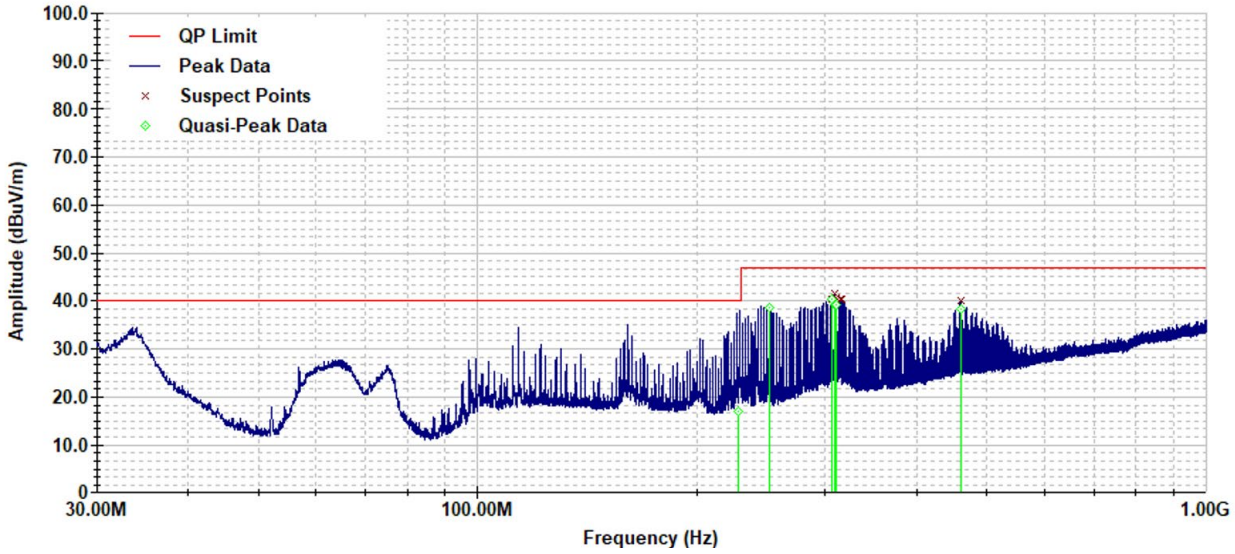


Table 4 Radiated Spurious Emissions 30 MHz – 1 GHz (Horizontal Polarization)

Frequency (GHz)	Antenna Orientation	Turntable Azimuth (Degrees)	Antenna Height (cm)	Peak (dBuV/m)	Quasi-Peak (dBuV/m)	Limit @ 3m (dBuV/m)	Margin (dB)	Pass/Fail
249.0	H	198	137	42.9	41.5	47	-5.5	PASS
277.8	H	189	184	35.4	30.9	47	-16.1	PASS
292.0	H	213	150	44.6	42.7	47	-4.4	PASS
294.1	H	230	137	43.4	41.6	47	-5.4	PASS
308.4	H	221	118	44.3	42.5	47	-4.6	PASS
316.6	H	216	118	45.6	43.2	47	-3.8	PASS

Other emissions present had amplitudes at least 20 dB below the limit. Peak and Quasi-Peak amplitude emissions are recorded for frequency range below 1000 MHz.

Table 5 Radiated Spurious Emissions 30 MHz – 1 GHz (Vertical Polarization)

Frequency (GHz)	Antenna Orientation	Turntable Azimuth (Degrees)	Antenna Height (cm)	Peak (dBuV/m)	Quasi-Peak (dBuV/m)	Limit @ 3m (dBuV/m)	Margin (dB)	Pass/Fail
228.2	V	216	102	23.3	17.1	40	-22.9	PASS
251.0	V	240	102	39.5	38.7	47	-8.4	PASS
306.4	V	179	150	41.5	40.5	47	-6.6	PASS
308.4	V	172	150	40.3	39.2	47	-7.8	PASS
310.5	V	182	145	40.5	39.1	47	-7.9	PASS
460.0	V	205	102	39.7	38.2	47	-8.8	PASS

Other emissions present had amplitudes at least 20 dB below the limit. Peak and Quasi-Peak amplitude emissions are recorded for frequency range below 1000 MHz.

Summary of Results for Radiated Emissions (below 1 GHz)

The EUT demonstrated compliance with the spurious emissions requirements of §15.255(d), §15.205 and §15.209. The EUT demonstrated a minimum margin of -3.8 dB below the requirement. Other emissions were present with amplitudes at least 20 dB below the limit and worst-case amplitudes recorded.

AC Line Conducted EMI

§15.207

Test Overview

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for AC Line conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are being reported.

All conducted emissions must not exceed the limits shown in the table below (refer to CFR section 15.207).

Class B 15.107 AC Mains	dBuV Quasi-Peak	dBuV Average
0.15 - 0.5	66 to 56*	56 to 46*
0.5 - 5	56.00	46.00
5 to 30	60.00	50.00

* Decreases with the logarithm of the frequency.

Test Procedure

ANSI C63.10-2020 Subclause 6.2.

Test Setup

1. Receiver setup (Quasi-Peak Field Strength):
    a. Analyzer center frequency set to that of radiated emission of interest
    b. RBW = 9 kHz (from 150kHz - 30MHz)
    c. Detector = Quasi-Peak
    d. Sweep Time = auto
    e. Trace mode = max hold
    f. Trace was allowed to stabilize
2. Receiver setup (Average Field Strength):
    a. Analyzer center frequency set to that of radiated emission of interest
    b. RBW = 9 kHz (from 150kHz - 30MHz)
    c. Detector = RMS
    d. Sweep Time = auto
    e. Trace mode = max hold

f. Trace was allowed to stabilize

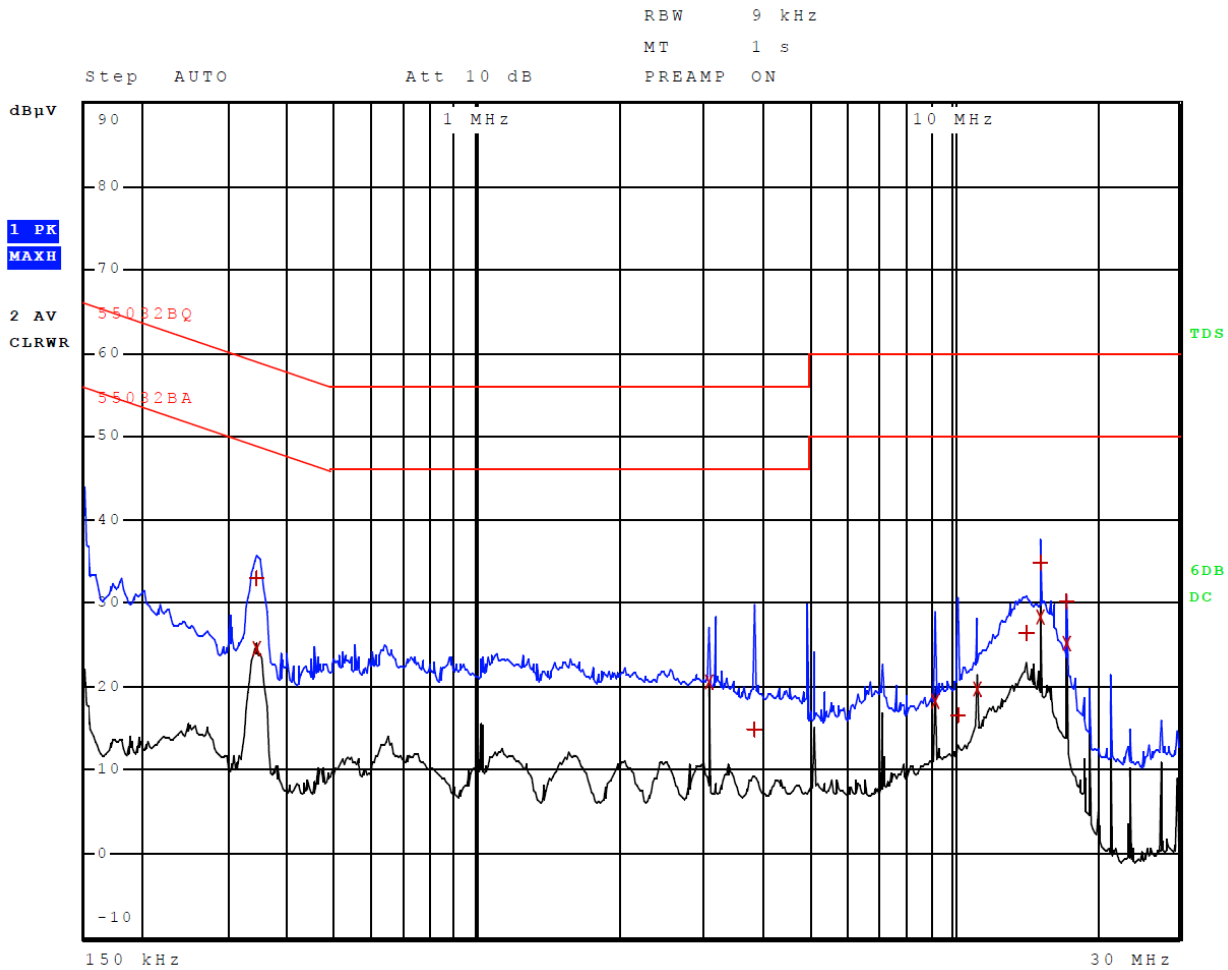
Note: See Diagram 1 for setup.

Test Notes

1. Once again, all modes of operation were evaluated and the worst case configurations were used for this report.
2. All transmitters (60 GHz and 2.4 GHz pre-certified wifi module) were on.
3. The limits from 150kHz to 30MHz are specified in CFR Part 15.207.
4. No spurious emissions were detected within 20dB of the limit below 150kHz.
5. Traces shown in plots below were made using quasi-peak and average detectors.
6. The following configuration was used for testing: EUT powered by AC~DC adapter via AC power from public utility.

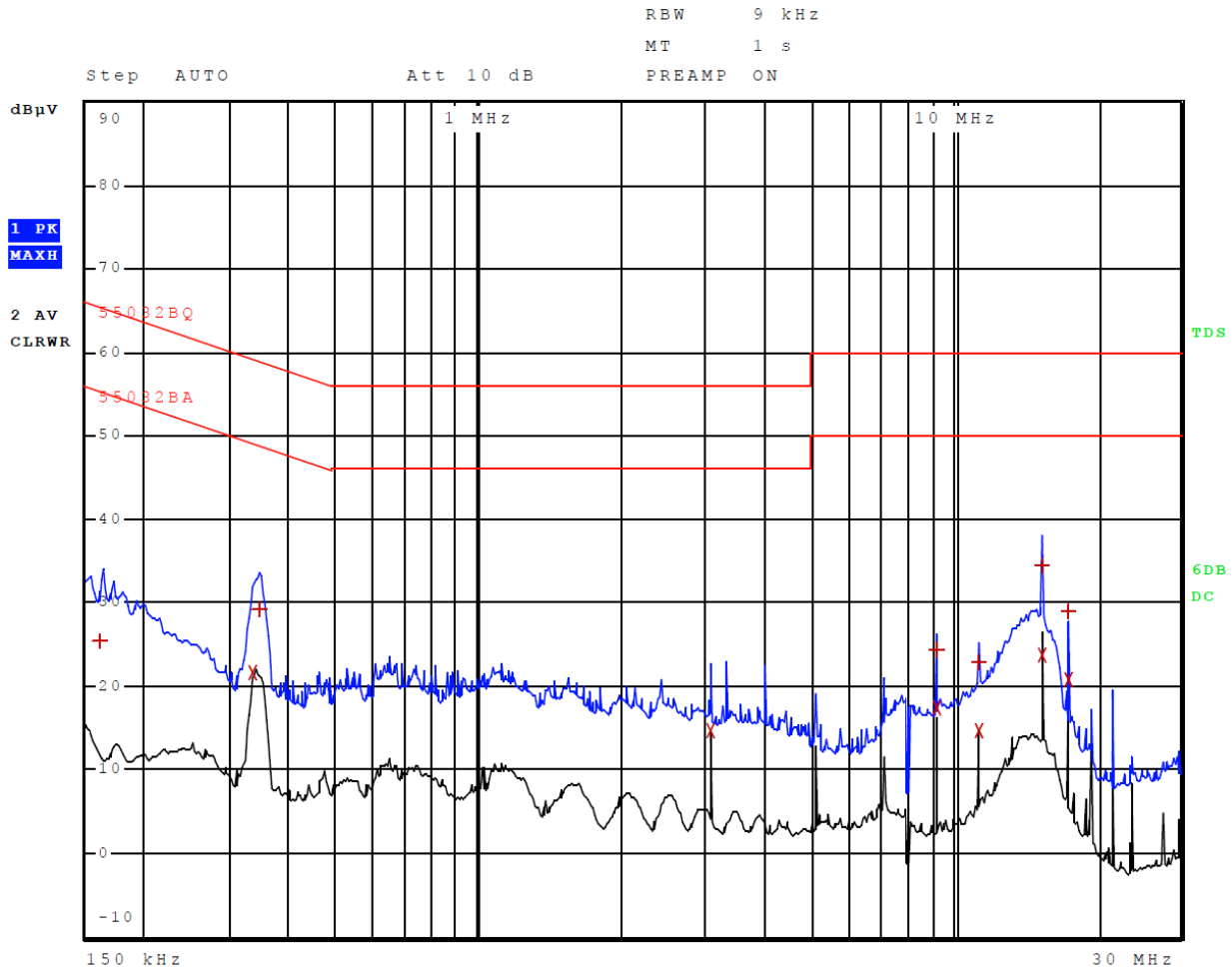
Test Results

Figure 15 AC Line Conducted Emissions Data L1 (All Tx On)



Other emissions present had amplitudes at least 20 dB below the limit.

Figure 16 AC Line Conducted Emissions Data L2 (All Tx On)



Other emissions present had amplitudes at least 20 dB below the limit.

Table 6 AC Line Conducted Emissions Data L1 (All Tx On)

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	342.000000000 kHz	33.03	Quasi Peak	-26.12
2	342.000000000 kHz	24.54	Average	-24.61
2	3.070000000 MHz	20.57	Average	-25.43
1	3.842000000 MHz	14.98	Quasi Peak	-41.02
2	9.219900000 MHz	18.30	Average	-31.70
1	10.311900000 MHz	16.64	Quasi Peak	-43.36
2	11.263900000 MHz	19.72	Average	-30.28
1	14.323900000 MHz	26.50	Quasi Peak	-33.50
2	15.359900000 MHz	28.30	Average	-21.70
1	15.359900000 MHz	34.86	Quasi Peak	-25.14
2	17.407900000 MHz	25.10	Average	-24.90
1	17.407900000 MHz	30.20	Quasi Peak	-29.80

Other emissions present had amplitudes at least 20 dB below the limit.

Table 7 AC Line Conducted Emissions Data L2 (All Tx On)

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	162.000000000 kHz	25.38	Quasi Peak	-39.98
2	338.000000000 kHz	21.69	Average	-27.56
1	346.000000000 kHz	29.12	Quasi Peak	-29.94
2	3.070000000 MHz	14.59	Average	-31.41
2	9.215900000 MHz	17.51	Average	-32.49
1	9.215900000 MHz	24.44	Quasi Peak	-35.56
2	11.263900000 MHz	14.67	Average	-35.33
1	11.263900000 MHz	22.90	Quasi Peak	-37.10
2	15.359900000 MHz	23.73	Average	-26.27
1	15.359900000 MHz	34.38	Quasi Peak	-25.62
2	17.407900000 MHz	20.84	Average	-29.16
1	17.407900000 MHz	28.88	Quasi Peak	-31.12

Other emissions present had amplitudes at least 20 dB below the limit.

Summary of Results for AC Line Conducted Emissions

The EUT demonstrated compliance with the AC Line Conducted Emissions requirements of 47CFR §15.207. The EUT demonstrated a minimum margin of -21.7 dB below the requirement. Other emissions were present with amplitudes at least 20 dB below the limit and worst-case amplitudes recorded.

Frequency Stability

§15.255(f)

Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.10-2020 Subclause 9.14. The frequency stability of the transmitter is measured while varying the following operating conditions:

1. Temperature: varied from -20C to +50C in 10C increments.
2. Primary supply voltage: The primary supply voltage is varied from 85% to 115% of rated input.

Fundamental emissions must be contained within the frequency bands specified in the according rule pars (57 – 71 GHz) during all conditions of operation.

Test Procedure

ANSI C63.10-2020 Subclause 6.8 & 9.5.

Test Setup

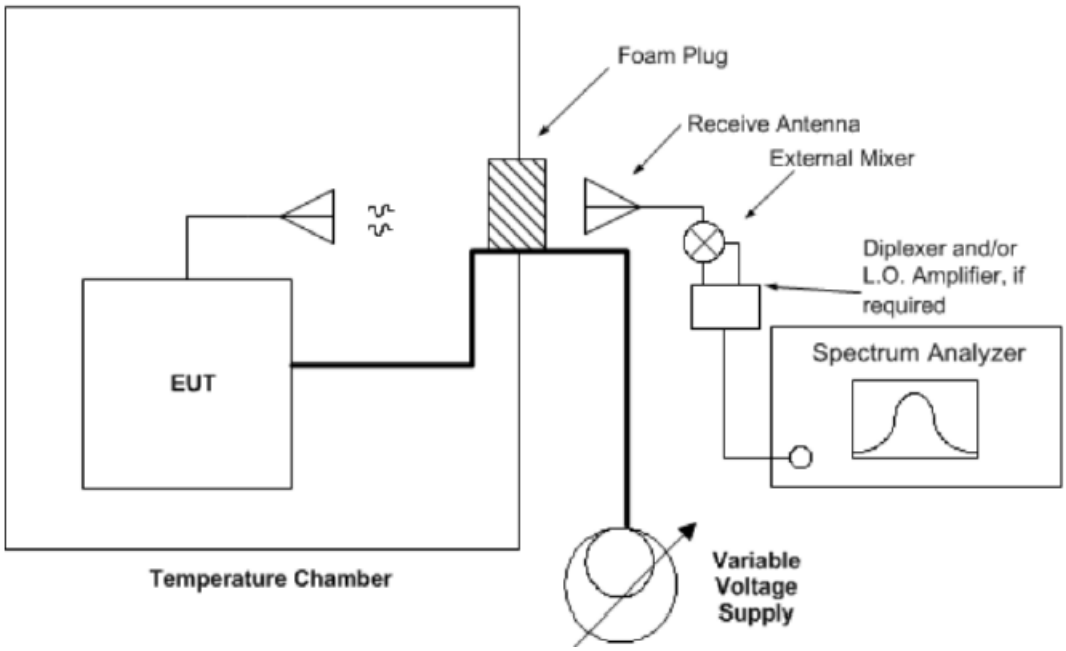
1. The spectral mask of the EUT emissions is measured at ambient room temp and nominal operating voltage for reference.
2. EUT primary supply voltage is varied between 85% and 115% of nominal (at room temp) and frequency variation is recorded.
3. With primary supply voltage set to nominal, the EUT operating temperature is varied from -20C to +50C. Frequency variation is then recorded.

Note: see diagram 4 for the test setup.

Test Notes

1. The spectrum mask of the EUT emission (notably F_{low} and F_{high}) is measured at ambient room temperature and nominal operating voltage to provide a reference.
2. EUT primary supply voltage is varied between 85% and 115% of the nominal supply voltage (at room temperature). Frequency excursion of the EUT emission mask is recorded at each of these conditions.
3. With EUT primary supply voltage at nominal level, frequency excursion of the EUT emission mask is recorded while varying the temperature between -20 and +50C.

Diagram 4 Frequency Stability Test Setup



Test Results

Table 8 Frequency Stability Measurements

Test Conditions	Transmitter Frequency Range (GHz)		Pass/Fail
	f_{low}	f_{high}	
-20 deg C / V_{nom}	60.9685	62.2972	PASS
-10 deg C / V_{nom}	60.9685	62.2972	PASS
0 deg C / V_{nom}	60.9685	62.2972	PASS
+10 deg C / V_{nom}	60.9685	62.2972	PASS
+20 deg C / V_{nom}	60.9685	62.2972	PASS
+30 deg C / V_{nom}	60.9705	62.2972	PASS
+40 deg C / V_{nom}	60.9685	62.2972	PASS
+50 deg C / V_{nom}	60.9685	62.2972	PASS
+20 deg C / 85% Voltage	60.9685	62.2972	PASS
+20 deg C / 115% Voltage	60.9685	62.2972	PASS

Summary of Results for Frequency Stability

The EUT demonstrated compliance with the spurious emissions requirements of §15.255(f).

Annex

- Annex A Measurement Uncertainty Calculations
- Annex B Test Equipment
- Annex C Laboratory Certificate of Accreditation

Annex A Measurement Uncertainty Calculations

The measurement uncertainty was calculated for all measurements listed in this test report according To CISPR 16–4. Result of measurement uncertainty calculations are recorded below. Component and process variability of production devices similar to those tested may result in additional deviations. The manufacturer has the sole responsibility of continued compliance.

Measurement	Expanded Measurement Uncertainty $U_{(lab)}$
3 Meter Horizontal 0.009-1000 MHz Measurements	4.16
3 Meter Vertical 0.009-1000 MHz Measurements	4.33
3 Meter Measurements 1-18 GHz	5.46
3 Meter Measurements 18-40 GHz	5.16
10 Meter Horizontal Measurements 0.009-1000 MHz	4.15
10 Meter Vertical Measurements 0.009-1000 MHz	4.32
AC Line Conducted	1.75
Antenna Port Conducted power	1.17
Frequency Stability	1.00E-11
Temperature	1.6˚C
Humidity	3%

Annex B Test Equipment

Equipment	Manufacturer	Model (SN)	Band	Cal Date(m/d/y)	Due
☒ LISN	FCC	FCC-LISN-50-25-10(1PA) (160611)	.15-30MHz	3/20/2025	3/20/2026
☒ Cable	Huber & Suhner Inc.	Sucoflex102ea(L10M)(303073)	9kHz-40 GHz	9/16/2024	9/16/2025
☒ Cable	Huber & Suhner Inc.	Sucoflex102ea(1.5M)(303069)	9kHz-40 GHz	9/16/2024	9/16/2025
☒ Cable	Belden	RG-58 (L1-CAT3-11509)	9kHz-30 MHz	9/16/2024	9/16/2025
☐ Cable	Belden	RG-58 (L2-CAT3-11509)	9kHz-30 MHz	9/16/2024	9/16/2025
☒ Antenna	Com Power	AL-130 (121055)	.001-30 MHz	9/16/2024	9/16/2025
☐ Antenna:	EMCO	6509	.001-30 MHz	9/16/2024	9/16/2026
☒ Antenna	ARA	BCD-235-B (169)	20-350MHz	9/16/2024	9/16/2025
☒ Antenna	Sunol	JB-6 (A100709)	30-1000 MHz	9/16/2024	9/16/2025
☐ Antenna	ETS-Lindgren	3147 (40582)	200-1000MHz	9/16/2024	9/16/2026
☒ Antenna	ETS-Lindgren	3117 (200389)	1-18 GHz	3/17/2025	3/17/2027
☒ Antenna	Com Power	AH-118 (10110)	1-18 GHz	9/16/2024	9/16/2026
☒ Antenna	Com Power	AH-840 (101046)	18-40 GHz	3/17/2025	3/17/2027
☒ Analyzer	Rohde & Schwarz	ESU40 (100108)	20Hz-40GHz	7/8/2024	7/8/2025
☒ Analyzer	Rohde & Schwarz	ESW44 (101534)	20Hz-44GHz	1/21/2025	1/21/2026
☒ Analyzer	Rohde & Schwarz	FS-Z60, 90, 140, and 220	40GHz-220GHz	12/22/2017	12/22/2027
☐ Amplifier	Com-Power	PA-010 (171003)	100Hz-30MHz	9/16/2024	9/16/2025
☐ Amplifier	Com-Power	CPPA-102 (01254)	1-1000 MHz	9/16/2024	9/16/2025
☒ Amplifier	Com-Power	PAM-118A (551014)	0.5-18 GHz	9/16/2024	9/16/2025
☒ Amplifier	Com-Power	PAM-840A (461328)	18-40 GHz	9/16/2024	9/16/2025
☒ Pwr Sensor	Rohde & Schwarz	NRP33T	0.05-33 GHz	9/26/2023	9/26/2025
☒ Generator	Rohde & Schwarz	SMBV100A6 (260771)	20Hz-6 GHz	3/19/2025	3/19/2026
☐ RF Filter	Micro-Tronics	BRC50722 (009).9G notch	30-18000 MHz	3/21/2025	3/21/2026
☐ RF Filter	Micro-Tronics	HPM50117 (063) 3G HPF	30-18000 MHz	3/21/2025	3/21/2026
☒ RF Filter	Micro-Tronics	BRM50702 (172) 2G notch	30-18000 MHz	3/21/2025	3/21/2026
☒ RF Filter	Micro-Tronics	BRC50703 (G102) 5G notch	30-18000 MHz	3/21/2025	3/21/2026
☒ RF Filter	Micro-Tronics	BRC50705 (024) 5G notch	30-18000 MHz	3/21/2025	3/21/2026
☐ Attenuator	Fairview	SA6NFNF100W-40 (1625)	30-18000 MHz	3/21/2025	3/21/2026
☒ Attenuator	Mini-Circuits	VAT-3W2+ (1445)	30-6000 MHz	3/21/2025	3/21/2026
☒ Attenuator	Mini-Circuits	VAT-3W2+ (1735)	30-6000 MHz	3/21/2025	3/21/2026
☒ Attenuator	Mini-Circuits	VAT-6W2+ (1438)	30-6000 MHz	3/21/2025	3/21/2026
☒ Weather station	Davis	6152 (A70927D44N)		7/11/2024	7/11/2025

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Equipment	Manufacturer	Model (SN)	Band	Cal Date(m/d/y)	Due
☐ Frequency Counter: Leader		LDC-825 (8060153)		3/19/2025	3/19/2026
☐ ISN	Com-Power	Model ISN T-8 (600111)		3/19/2025	3/19/2026
☐ LISN	Compliance Design	FCC-LISN-2.Mod.cd,(126)	.15-30MHz	9/16/2024	9/16/2025
☐ LISN:	Com-Power	Model LI-220A		9/16/2024	9/16/2026
☒ LISN:	Com-Power	Model LI-550C		9/16/2024	9/16/2025
☒ Cable	Huber & Suhner Inc.	Sucoflex102ea(1.5M)(303072)	9kHz-40 GHz	9/16/2024	9/16/2025
☒ Cable	Huber & Suhner Inc.	Sucoflex102ea(L1M)(281183)	9kHz-40 GHz	9/16/2024	9/16/2025
☒ Cable	Huber & Suhner Inc.	Sucoflex102ea(4M)(281184)	9kHz-40 GHz	9/16/2024	9/16/2025
☒ Cable	Huber & Suhner Inc.	Sucoflex102ea(L10M)(317546)	9kHz-40 GHz	9/16/2024	9/16/2025
☒ Cable	Time Microwave	4M-750HF290-750 (L4M)	9kHz-24 GHz	9/16/2024	9/16/2025
☒ Cable	Mini-Circuits	KBL-2M-LOW+ (23090329)	9kHz-40 GHz	3/22/2025	3/22/2026
☒ Analyzer	HP	8562A (3051A05950)	9kHz-125GHz	3/20/2025	3/20/2026
☐ Antenna:	Solar	9229-1 & 9230-1		2/5/2025	2/5/2026
☐ CDN:	Com-Power	Model CDN M325E		9/16/2024	9/16/2025
☐ Oscilloscope Scope: Tektronix		MDO 4104		2/5/2025	2/5/2026
☐ EMC Transient Generator HVT		TR 3000		2/5/2025	2/5/2026
☐ AC Power Source (Ametech, California Instruments)				2/5/2025	2/5/2026
☒ Field Intensity Meter: EFM-018				2/5/2025	2/5/2026
☒ ESD Simulator: MZ-15				2/5/2025	2/5/2026
☐ Injection Clamp Luthi Model EM101				not required	
☐ R.F. Power Amp ACS 230-50W				not required	
☐ R.F. Power Amp EIN Model: A301				not required	
☐ R.F. Power Amp A.R. Model: 10W 1010M7				not required	
☐ R.F. Power Amp A.R. Model: 50U1000				not required	
☒ Temperature Chamber				not required	
☒ Shielded Room				not required	

NVLAP Lab Code 200087-0

Annex C Laboratory Certificate of Accreditation

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 200087-0

Rogers Labs, a division of The Compatibility Center LLC
Lenexa, KS

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique on ISO/IEC 17025).

2025-03-11 through 2026-03-31
Effective Dates

For the National Voluntary Laboratory Accreditation Program