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Emissions
Test Report

EUT Name: eero 6 and eero 6 Extender

Model No.: N010001 and Q010001

CFR 47 Part 15.247: 2020 and RSS 247 Issue 2, 2017

Prepared for:

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Prepared by:

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Revisions

Revision No.	Date MM/DD/YYYY	Reason for Change	Author
0	06/23/2020	Original Document	N/A

Note: Latest revision report will replace all previous reports.

Statement of Compliance

Aplicant:	eero LLC 660 3rd Street San Francisco, CA 94107
Requester / Applicant:	eero LLC +1 415-738-7972
Name of Equipment:	eero 6 and eero 6 Extender
Model No.	N010001 and Q010001
Type of Equipment:	Intentional Radiator
Application of Regulations:	CFR 47 Part 15.247: 2020 and RSS 247 Issue 2, 2017
Test Dates:	June 5, 2020 to June 10, 2020

Guidance Documents:

Emissions: ANSI C63.10-2013, KDB 558074 D01 DTS Measurement Guidance v05r02

Test Methods:

Emissions: ANSI C63.10-2013, KDB 558074 D01 DTS Measurement Guidance v05r02

The electromagnetic compatibility test and documented data described in this report has been performed and recorded by TUV Rheinland, in accordance with the standards and procedures listed herein. As the responsible authorized agent of the EMC laboratory, I hereby declare that the equipment described above has been shown to be compliant with the EMC requirements of the stated regulations and standards based on these results. If any special accessories and/or modifications were required for compliance, they are listed in the Executive Summary of this report.

This report must not be used to claim product endorsement by A2LA or any agency of the U.S. Government. This report contains data that are not covered by A2LA accreditation. This report shall not be reproduced except in full, without the written authorization of TUV Rheinland of North America.

Kerwinn Corpuz

Test Engineer Date June 23, 2020

James Borrott

Reviewer Signatory Date August 31, 2020

Testing Cert #3331.02 **US1131** **2932M**

1 Executive Summary

1.1 Scope

This report is intended to document the status of conformance with the requirements of the CFR 47 Part 15.247: 2020 and RSS 247 Issue 2, 2017 based on the results of testing performed on June 5, 2020 to June 10, 2020 on the eero 6 and eero 6 Extender Model N010001 and Q010001 manufactured by eero LLC This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report. The 2405 MHz to 2480 MHz frequency band is covered in this document.

1.3 Summary of Test Results

Table 1: Summary of Test Results

Test	Test Method ANSI C63.10	Test Parameters	Measured Value	Result
Spurious Emission in Transmitted Mode	CFR47 15.209, CFR47 15.247 (d), RSS-GEN Sect.8.9	Class B	-0.74 dB (Margin)	**Complied**
Restricted Bands of Operation	CFR47 15.205, RSS GEN Sect.8.10	Class B		**Complied**
AC Power Conducted Emission	CFR47 15.207, RSS-GEN Sect.8.8	Class B	-9.63 dB (Margin)	**Complied**
Occupied Bandwidth	CFR47 15.247 (a), RSS GEN 6.7, RSS 247 Sect.5.2 (a)	$\geq$ 500 kHz	1.556 MHz (DTS) 2.213 MHz (99%)	**Complied**
Maximum Output Power	CFR47 15.247 (b), RSS 247 Sect. 5.4 (d)	30 dBm w/ 6 dBi antenna	+17.32 dBm	**Complied**
Peak Power Spectral Density	CFR47 15.247 (e), RSS 247 Sect. 5.2 (b)	8 dBm/ 3 kHz	-7.86 dBm	**Complied**
Out of Band Emission	CFR47 15.247 (d), RSS 247 Sect.5.5	-30 dBr	-18.68 dB (Margin)	**Complied**

1.4 Special Accessories

No special accessories were necessary in order to achieve compliance.

1.5 Equipment Modifications

None

2 Laboratory Information

2.1 Accreditations & Endorsements

2.1.1 US Federal Communications Commission

TUV Rheinland of North America at 1279 Quarry Ln, Pleasanton, CA 94566 is recognized by the commission for performing testing services for the general public on a fee basis. These laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (US1131). The laboratory scope of accreditation includes: Title 47 CFR Parts 15, 18, and 90. The accreditation is updated every 3 years.

2.1.2 NIST / A2LA

TUV Rheinland of North America is accredited by the National Voluntary Laboratory Accreditation Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Guide 17025:2017 and ISO 9002 (Lab Code Testing Cert #3331.02). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.3 Canada

TUV Rheinland of North America at the 1279 Quarry Ln, Pleasanton, CA 94566 address is accredited by Industry Canada for performing testing services for the general public on a fee basis. This laboratory test facilities have been fully described in reports submitted to and accepted by Industry Canada (File Number 2932M). This reference number is the indication to the Industry Canada Certification Officers that the site meets the requirements of RSS 212, Issue 1 (Provisional). The accreditation is updated every 3 years.

2.1.4 Japan – VCCI

The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) is a group that consists of Information Technology Equipment (ITE) manufacturers and EMC test laboratories. The purpose of the Council is to take voluntary control measures against electromagnetic interference from Information Technology Equipment, and thereby contribute to the development of a socially beneficial and responsible state of affairs in the realm of Information Technology Equipment in Japan. TUV Rheinland of North America at 1279 Quarry Ln, Pleasanton, CA 94566 has been assessed and approved in accordance with the Regulations for Voluntary Control Measures.

VCCI Registration No. for Pleasanton: A-0326

2.1.5 Acceptance by Mutual Recognition Arrangement

The United States has an established agreement with specific countries under the Asia Pacific Laboratory Accreditation Corporation (APLAC) Mutual Recognition Arrangement. Under this agreement, all TUV Rheinland at 1279 Quarry Ln, Pleasanton, CA 94566 test results and test reports within the scope of the laboratory NIST / A2LA accreditation will be accepted by each member country.

2.2 Test Facilities

All of the test facilities are located at 1279 Quarry Lane, Pleasanton, California 94566, USA.

2.2.1 Emission Test Facility

The Semi-Anechoic chamber and AC Line Conducted measurement facility used to collect the radiated and conducted data has been constructed in accordance with ANSI C63.7:1992. The site has been measured in accordance with and verified to comply with the theoretical normalized site attenuation requirements of ANSI C63.4-2014, at a test distance of 3 and 5 meters. The site is listed with the FCC and accredited by A2LA (Lab Code Testing Cert #3331.02). The 3/5-meter semi-anechoic chamber used to collect the radiated data has been verified to comply with the theoretical normalized site attenuation requirements of ANSI C63.4-2014, at a test distance of 3 meter and 5 meters. A report detailing this site can be obtained from TUV Rheinland of North America.

2.2.2 Immunity Test Facility

ESD, EFT, Surge, PQF: These tests are performed in an environmentally controlled room with a 3.7 m x 4.8 m x 3.175 mm thick aluminum floor connected to PE ground.

For ESD testing, tabletop equipment is placed on an insulated mat with a surface resistivity of 10^9 Ohms/square on a 1.6 m x 0.8 m x 0.8 m high non-conductive table with a 3.175 mm aluminum top (Horizontal Coupling Plane). The HCP is connected to the main ground plane via a low impedance ground strap through two 470-kΩ resistors. The Vertical Coupling Plane consists of an aluminum plate 50 cm x 50 cm x 3.175 mm thick. The VCP is connected to the main ground plane via a low impedance ground strap through two 470-kΩ resistors.

For EFT, Surge, PQF, the HCP and VCP are removed.

RF Field Immunity testing is performed in a 7.3m x 4.3m x 4.1m anechoic chamber.

RF Conducted and Magnetic Field Immunity testing is performed on a 4.8m x 3.7m x 3.175mm thick aluminum ground plane.

All test areas allow a minimum distance of 1 meter from the EUT to walls or conducting objects.

2.3 Measurement Uncertainty

Two types of measurement uncertainty are expressed in this report, per *ISO Guide To The Expression Of Uncertainty In Measurement*, 1st Edition, 1995.

The Combined Standard Uncertainty is the standard uncertainty of the result of a measurement when that result is obtained from the values of a number of other quantities; it is equal to the positive square root of the sum of the variances or co-variances of these other quantities, weighted according to how the measurement result varies with changes in these quantities. The term *standard uncertainty* is the result of a measurement expressed as a standard deviation.

2.3.1 Sample Calculation – radiated & conducted emissions

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

Field Strength (dBμV/m) = RAW - AMP + CBL + ACF

Where: RAW = Measured level before correction (dBμV)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB/m)

$$\mu V/m = 10^{\frac{dB\mu V/m}{20}}$$

Sample radiated emissions calculation @ 30 MHz

Measurement +Antenna Factor–Amplifier Gain+Cable loss=Radiated Emissions (dBuV/m)

25 dBuV/m + 17.5 dB – 20 dB + 1.0 dB = 23.5 dBuV/m

2.3.2 Measurement Uncertainty

Per CISPR 16-4-2	**U_{lab}**	**U_{cispr}**
Radiated Disturbance @ 10 meters		
30 – 1,000 MHz	2.25 dB	4.51 dB
Radiated Disturbance @ 3 meters		
30 – 1,000 MHz	2.26 dB	4.52 dB
1 – 6 GHz	2.12 dB	4.25 dB
6 – 40 GHz	2.47 dB	4.93 dB
Conducted Disturbance @ Mains Terminals		
150 kHz – 30 MHz	1.09 dB	2.18 dB
Disturbance Power		
30 MHz – 300 MHz	3.92 dB	4.3 dB

Voltech PM6000A

The estimated combined standard uncertainty for harmonic current and flicker measurements is ± 5.0%.	Per CISPR 16-4-2 Methods

Measurement Uncertainty - EMC Immunity

The estimated combined standard uncertainty for ESD immunity measurements is ± 8.2%.	Per IEC 61000-4-2
The estimated combined standard uncertainty for radiated immunity measurements is ± 4.10 dB.	Per IEC 61000-4-3
The estimated combined standard uncertainty for conducted immunity measurements with CDN is ± 3.66 dB	Per IEC 61000-4-6
The estimated combined standard uncertainty for power frequency magnetic field immunity is ± 2.9%.	Per IEC 61000-4-8
The estimated combined standard uncertainty for EFT fast transient immunity measurements is ± 2.6%.	Per IEC 61000-4-4
The estimated combined standard uncertainty for surge immunity measurements is ± 2.6%.	Per IEC 61000-4-5
The estimated combined standard uncertainty for voltage variation and interruption measurements is ± 1.74%.	Per IEC 61000-4-11

Measurement Uncertainty – Radio Testing

The estimated combined standard uncertainty for frequency error measurements is ± 3.88 Hz
The estimated combined standard uncertainty for carrier power measurements is ± 0.70 dB.
The estimated combined standard uncertainty for adjacent channel power measurements is ± 1.47 dB.
The estimated combined standard uncertainty for modulation frequency response measurements is ± 0.46 dB.
The estimated combined standard uncertainty for transmitter conducted emission measurements is ± 2.06 dB

The expanded uncertainty at a level of 95% confidence is obtained by multiplying the combined standard uncertainty by a coverage factor of 2. Compliance criteria are not based on measurement uncertainty.

2.4 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2017. Equipment calibration records are kept on file at the test facility.

3 Product Information

3.1 Product Description

The Model N010001 and Q010001, eero 6 and eero 6 Extender, is a 2x2 home WiFi router. It is intended to operate as a dual band (2.4GHz and 5GHz) wireless router over 20 MHz, 40 MHz and 80 MHz channels. The router will be in compliance with regulatory standards of regions it will be operating in.

Model differences:
N010001, eero 6 Gateway, contains two RJ45 ports and USB-C AC/DC adapter port.
Q010001, eero 6 Extender, USB-C AC/DC adapter port; No RJ45 ports. BLE/802.15.4 RF circuitry has been removed.
Both have the same WLAN radio hardware.
Model N010001 is considered worst case and used for testing.

3.2 Equipment Configuration

A description of the equipment configuration is given in the Test Plan Section. The EUT was tested as called for in the test standard and was configured and operated in a manner consistent with its intended use. The EUT was connected to rated power and allowed to reach intended operating conditions. The placement of the EUT system components was guided by the test standard and selected to represent typical installation conditions.

In the case of an EUT that can operate in more than one configuration, preliminary testing was performed to determine the configuration that produced maximum radiation.

The final configuration was selected to produce the worst case radiation for emissions testing and to place the EUT in the most susceptible state for immunity testing.

3.3 Operating Mode

A description of the operation mode is given in the Test Plan Section. In the case of an EUT that can operate in more than one state, preliminary testing was performed to determine the operating mode that produced maximum radiation.

The final operating mode was selected to produce the worst case radiation for emissions testing and to place the EUT in the most susceptible state for immunity testing.

3.4 Unique Antenna Connector

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 manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of CFR47 Parts 15.211, 15.213, 15.217, 15.219, or 15.221.

3.4.1 Results

The N010001 has 3 internal antennas. BLE and ZigBee uses 1 Stamped Metal, Planar Inverted F, Antenna and 2 Flex PCB for WiFi in the band 2.4 GHz and 5 GHz.

The Q010001 has 2 internal antennas, 2 Flex PCB for WiFi in the band 2.4 GHz and 5 GHz.

Max Antenna Gain		**Antenna Type**		
	dBi			
BLE/ZigBee (2.4-2483.5 GHz)	3.46	Stamped metal, Planar Inverted F		
Wi-Fi			**Antenna 1 (dBi)**	**Antenna 2 (dBi)**
2.4-2483.5 GHz	3.72	Flexible Printed Circuit Board (FPCB)	3.72	3.25
U-NII-1 (5.15-5.25 GHz)	3.42	Flexible Printed Circuit Board (FPCB)	2.52	3.42
U-NII-2A (5.25-5.35 GHz)	2.37		1.69	2.37
U-NII-2C (5.47-5.725 GHz)	3.57		2.72	3.57
U-NII-3 (5.725-5.85 GHz)	4.17		4.04	4.17

3.5 Duty Cycle

The N010001, were measured for the duty cycle.

3.5.1 Results

Mode	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Factor (dB)
Standard	100	0	100	0
Notes: EUT was configured and measured for the duty cycle. All measurements use 100% duty cycle.				

Figure 1: Zigbee Duty Cycle

4 Emissions

Testing was performed in accordance with CFR 47 Part 15.247: 2020 and RSS 247 Issue 2, 2017. These test methods are listed under the laboratory's A2LA Scope of Accreditation. This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Procedures described in section 8 of the standard were used.

4.1 Output Power Requirements

The maximum output power requirement is the maximum equivalent isotropic radiated power delivering at the transmitting antenna under specified conditions of measurements in the presence of modulation.

The maximum output power and harmonics shall not exceed CFR47 Part 15.247 (b):2020 and RSS 247: 2017 Sect. 5.4 (d).

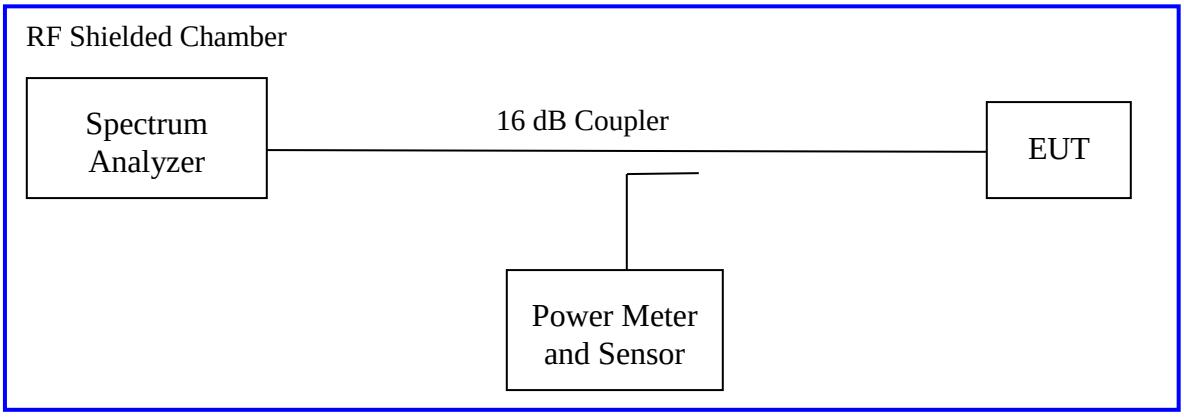
The maximum transmitted powers are

Band 2400-2483.5 MHz: 1 W

4.1.1 Test Method

The ANSI C63.10-2013 Section 11.9.2.2.2. conducted method was used to measure the channel power output. The preliminary investigation was performed at different data rate/ chain to determine the highest power output for each mode. The worst findings were conducted on 3 channels in each operating range per CFR47 Part 15.247(b): 2020 and RSS 247 Sect. 5.4 (d). This test was conducted on 3 channels of Sample. The worst mode result indicated below.

Test Setup:



Method AVGSA-1 of "KDB 558074 – DTS Measurement Guidance v05r02" applies since the EUT continuously transmits with duty cycle greater than 98%. Sample detector was used.

4.1.2 Results

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 2: RF Output Power at the Antenna Port – Test Results

Test Date: June 10, 2020	**Test By:** Kerwinn Corpuz
Test Method: Conducted Measurements	**Power Setting:** Fixed at 20 dBm
Antenna Type: Stamped Metal	**Max. Antenna Gain:** 3.46 dBi
Operating Mode: Uncorrelated	**Signal State**: Modulated at 250 kbps
Ambient Temp.: 21 °C	**Relative Humidity:** 37%

Wireless Router (Zigbee)

Frequency (MHz)	Limit [dBm]	Output [dBm]	Duty Cycle [dB]	∑ Power [dBm]	Margin [dB]
2405	+30.00	17.27			-12.73
2440	+30.00	17.01			-12.99
2475	+30.00	17.32			-12.68
2480	+30.00	14.41			-15.59

Note: The EUT transmitted at 100% duty cycle.

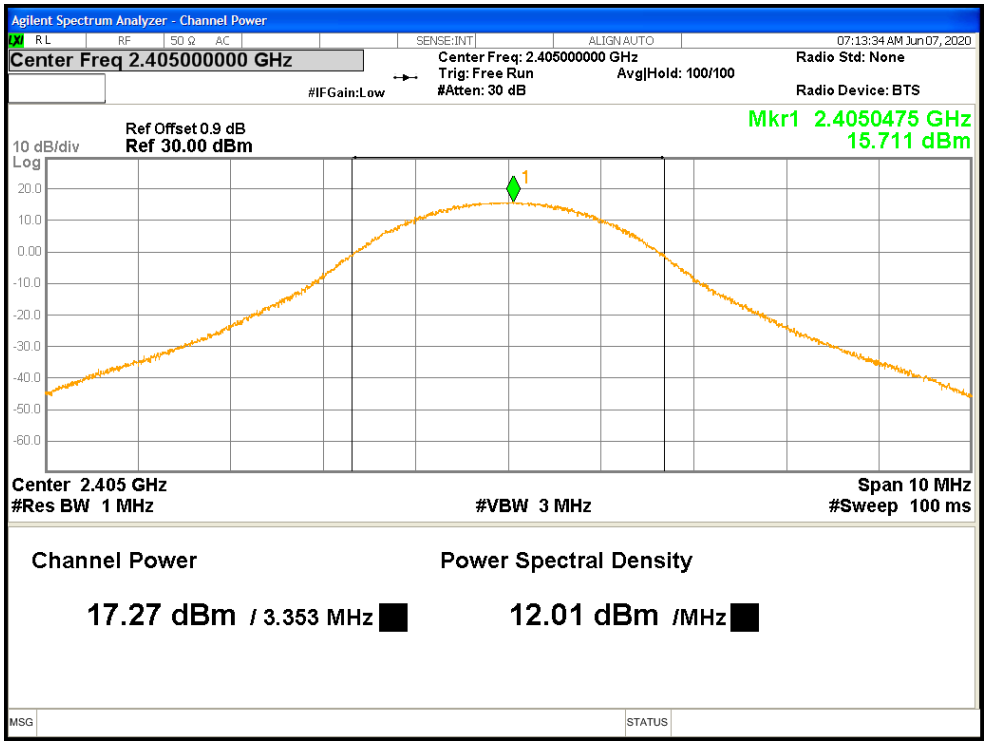


Figure 2: **Zigbee** Maximum Conducted Output Power at 2405 MHz

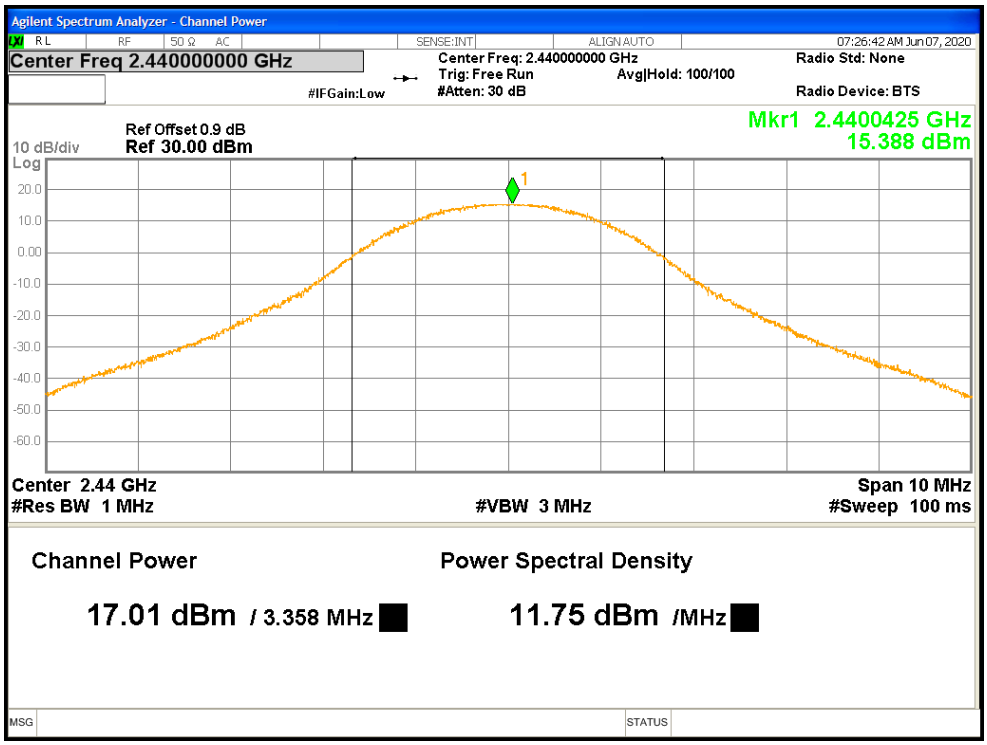


Figure 3: **Zigbee** Maximum Conducted Output Power at 2440 MHz

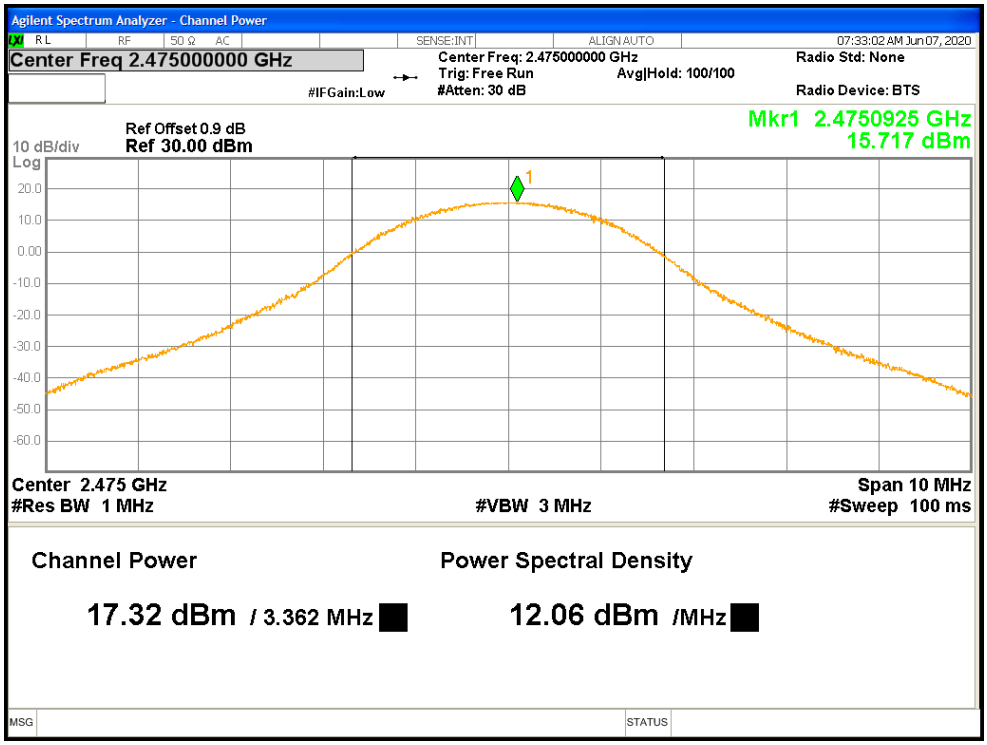


Figure 4: **Zigbee** Maximum Conducted Output Power at 2475 MHz

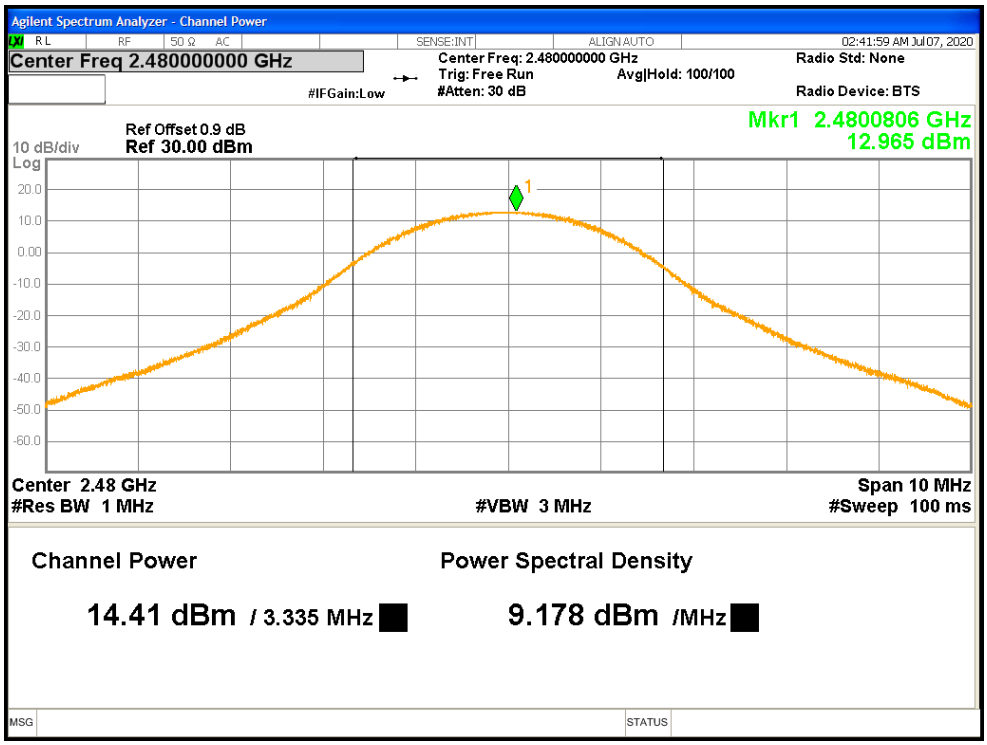


Figure 5: **Zigbee** Maximum Conducted Output Power at 2480 MHz

4.2 Occupied Bandwidth

The occupied bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency.

The 99% bandwidth is the bandwidth in which 99% of the transmitted power occupied.

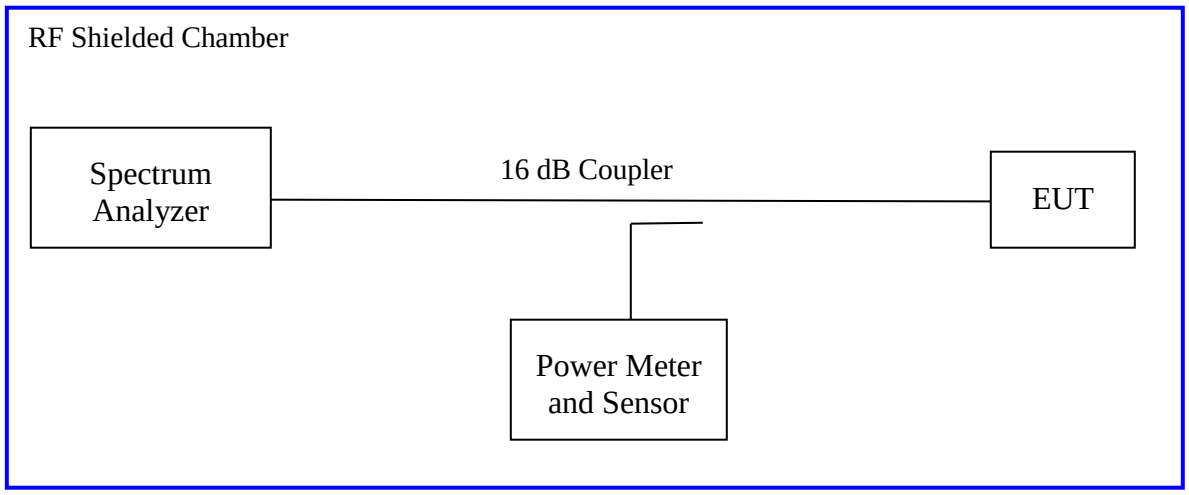
The minimum 6 dB bandwidth shall be at least 500 kHz.

The bandwidth shall be at least 500 kHz per Section CFR47 15.247(a2) 2020 and RSS 247 Sect.5.2 (a): 2017

4.2.1 Test Method

The conducted method was used to measure the occupied bandwidth according to ANSI C63.10:2013 Section 11.8.1. The measurement was performed with modulation per CFR47 15.247(a) (2) 2020 and RSS Gen Sect. 6.7 2019. The preliminary investigation was performed to find the narrowest 6 dB bandwidth for each operational mode at different data rates. This worst finding was performed on 3 channels in each operating frequency range; 2400 MHz to 2483.5 MHz. This test was conducted on 3 channels in each mode of Sample. The worst sample result indicated below.

Test Setup:



4.2.2 Results

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 3: Occupied Bandwidth – Test Results

Test Date: June 10, 2020	**Test By:** Kerwinn Corpuz
Test Method: Conducted Measurements	**Power Setting:** Fixed at 20 dBm
Antenna Type: Stamped Metal	**Max. Antenna Gain:** 3.46 dBi
Operating Mode: Uncorrelated	**Signal State**: Modulated at 250 kbps
Ambient Temp.: 21 °C	**Relative Humidity:** 37%

Wireless Router (Zigbee)

Frequency (MHz)	Limit (kHz)	99% Bandwidth (MHz)	6 dB Bandwidth (MHz)	Results
2405	500	2.208	1.556	Pass
2440	500	2.213	1.553	Pass
2480	500	2.203	1.547	Pass

Note: The narrower bandwidth was measured at250 kbps and 100% duty cycle

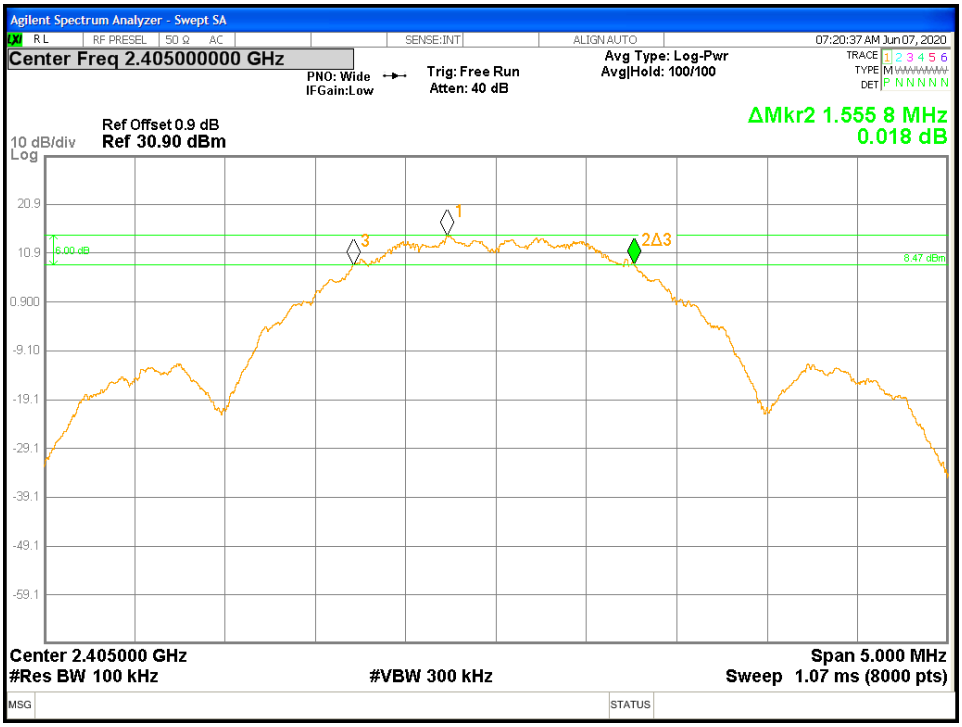


Figure 6: DTS Bandwidth-Transmitter -2405 MHz

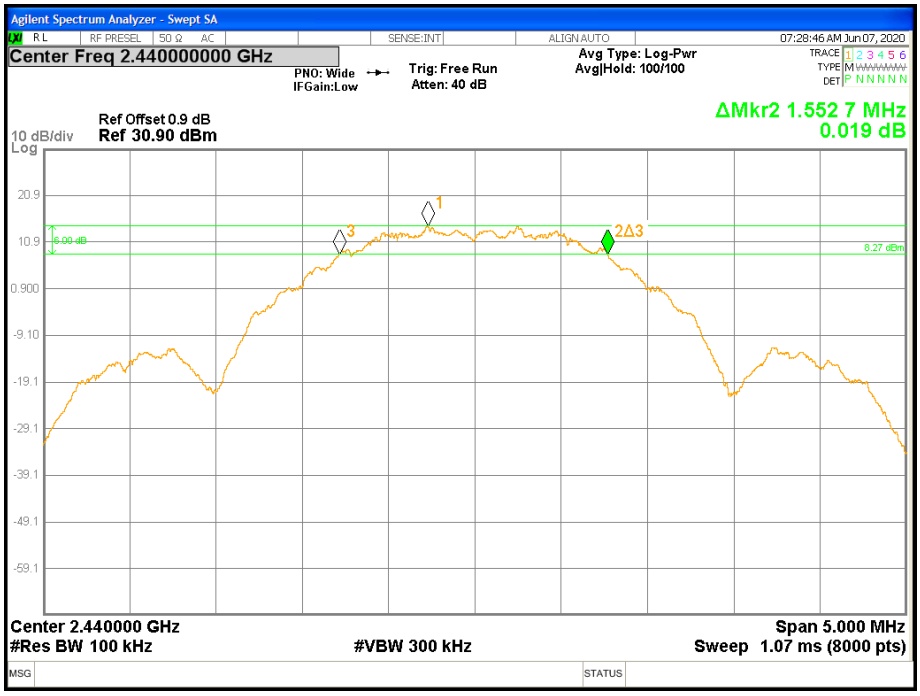


Figure 7: DTS Bandwidth-Transmitter -2440 MHz

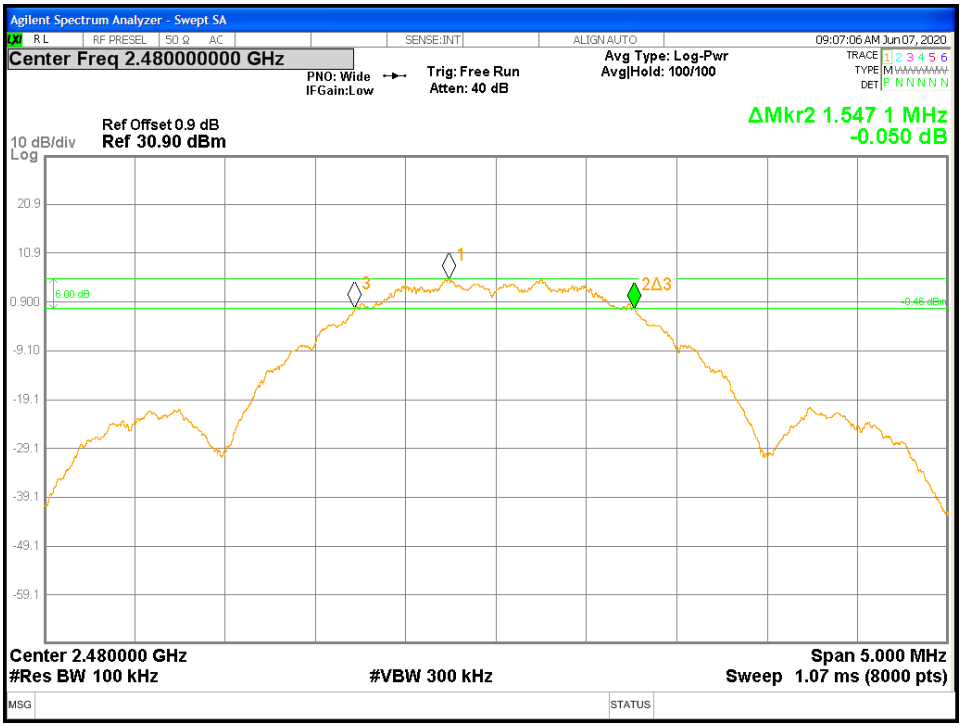


Figure 8: DTS Bandwidth-Transmitter -2480 MHz

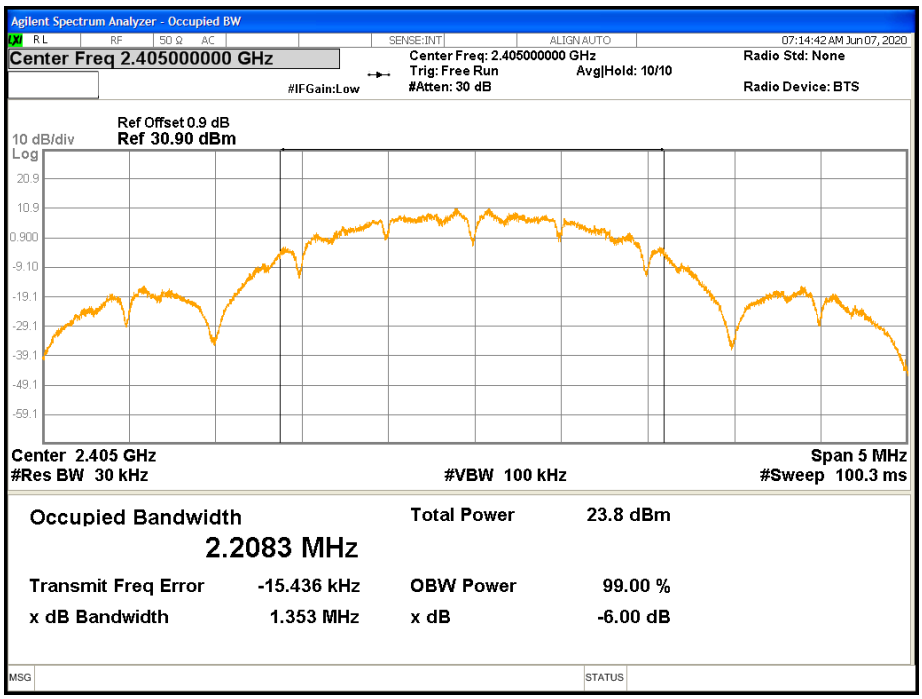


Figure 9: 99% Bandwidth-Transmitter -2405 MHz

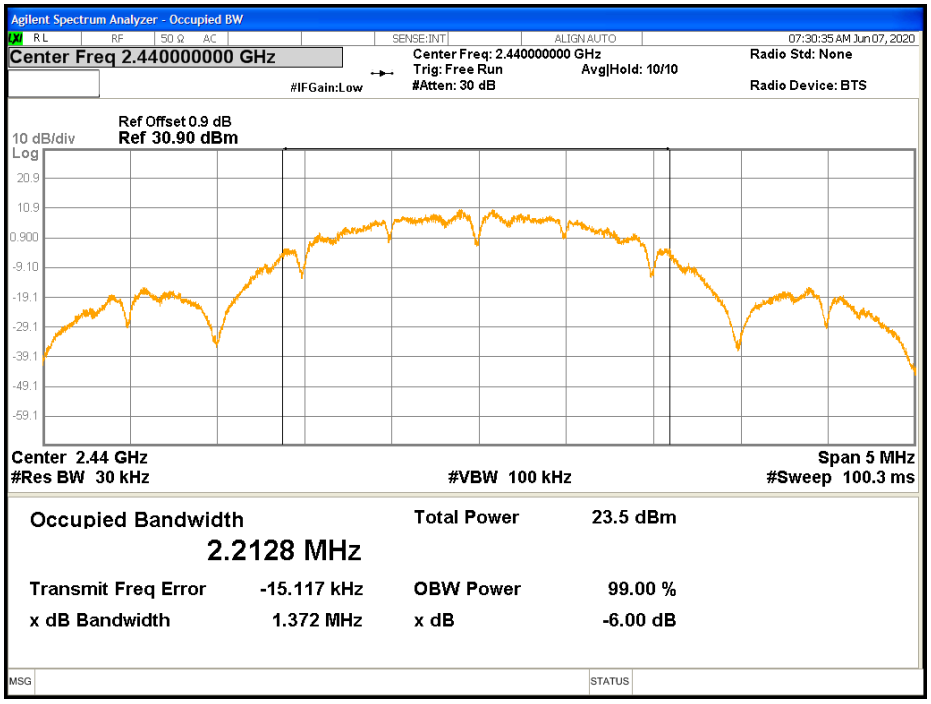


Figure 10: 99% Bandwidth-Transmitter -2440 MHz

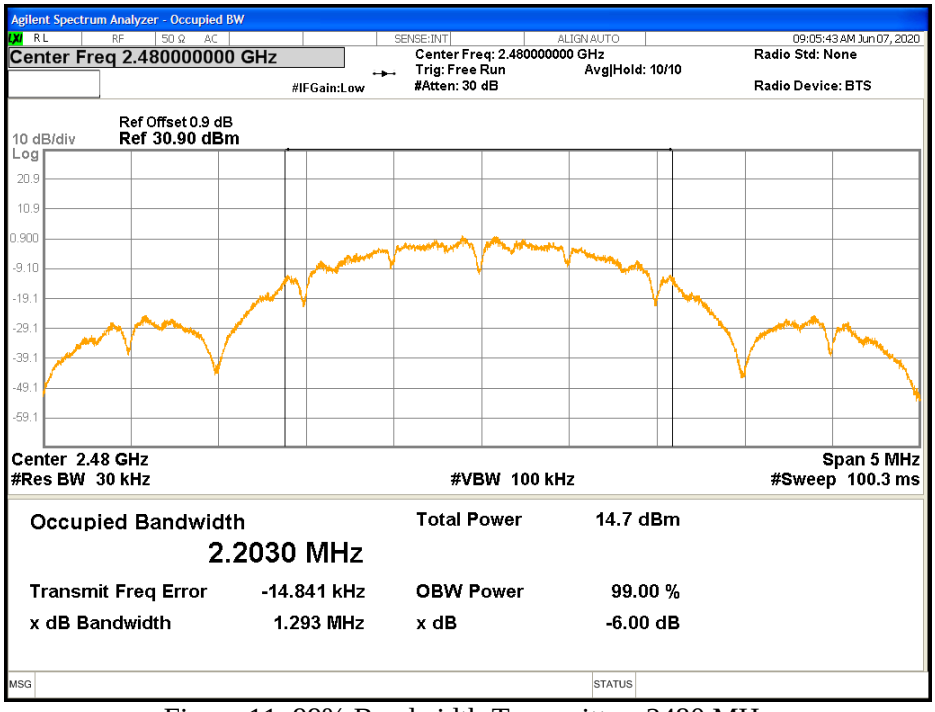


Figure 11: 99% Bandwidth-Transmitter -2480 MHz

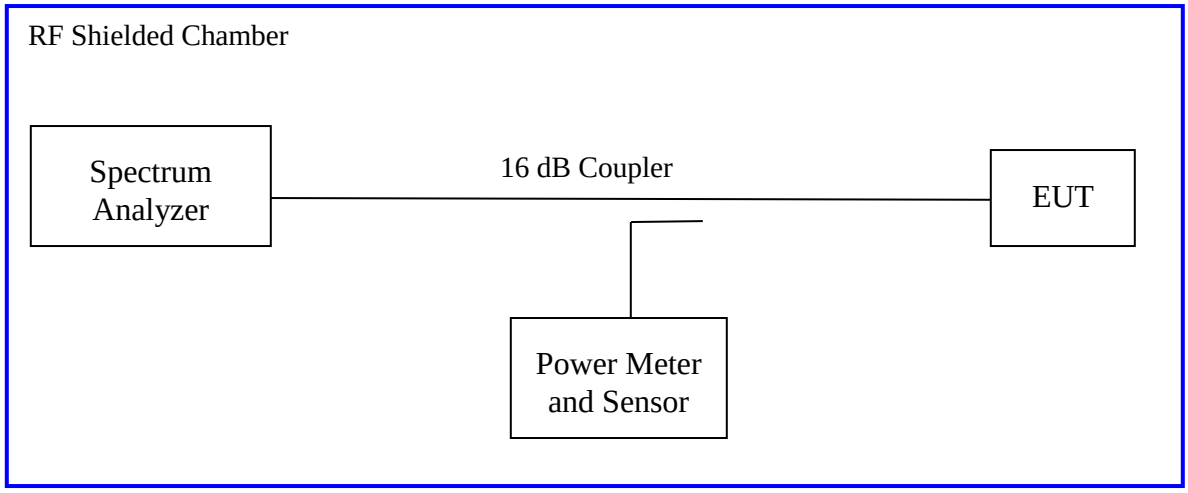
4.3 Peak Power Spectral Density

According to the CFR47 Part 15.247 (e) and RSS 247 Sect.5.2 (b), the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.3.1 Test Method

The conducted method was used to measure the channel power output per ANSI C63.10-2013 Section 11.10.3. The measurement was performed with modulation per CFR47 Part 15.247 (e) and RSS 247 Sect.5.2 (b). The pre-evaluation was performed to find the worst modes. The worst findings were conducted on 3 channels in each operating frequency range of 2400 MHz to 2483.5 MHz. This test was conducted on 3 channels of Sample. The worst sample result indicated below.

Test Setup:



4.3.2 Results

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 4: Peak Power Spectral Density – Test Results

Test Date: June 10, 2020	**Test By:** Kerwinn Corpuz
Test Method: Conducted Measurements	**Power Setting:** Fixed at 20 dBm
Antenna Type: Stamped Metal	**Max. Antenna Gain:** 3.46 dBi
Operating Mode: Uncorrelated	**Signal State**: Modulated at 250 kbps
Ambient Temp.: 21 °C	**Relative Humidity:** 37%

Wireless Router (Zigbee)

Freq. (MHz)	Config.	Output [dBm]	CF [dB]	Max. PPSD [dBm]	Limit [dBm]	Margin [dB]
2405	Zigbee	7.57	-15.23	-7.66	8.00	-15.66
2440	Zigbee	7.37	-15.23	-7.86	8.00	-15.86
2475	Zigbee	7.53	-15.23	-7.70	8.00	-15.70
2480	Zigbee	5.27	-15.23	-9.96	8.00	-17.96

Note: CF accounted for the measured RBW.
The bandwidth ratio is 10*log (3kHz/100kHz) or -15.23 dB.
EUT transmitted at 100% duty cycle.

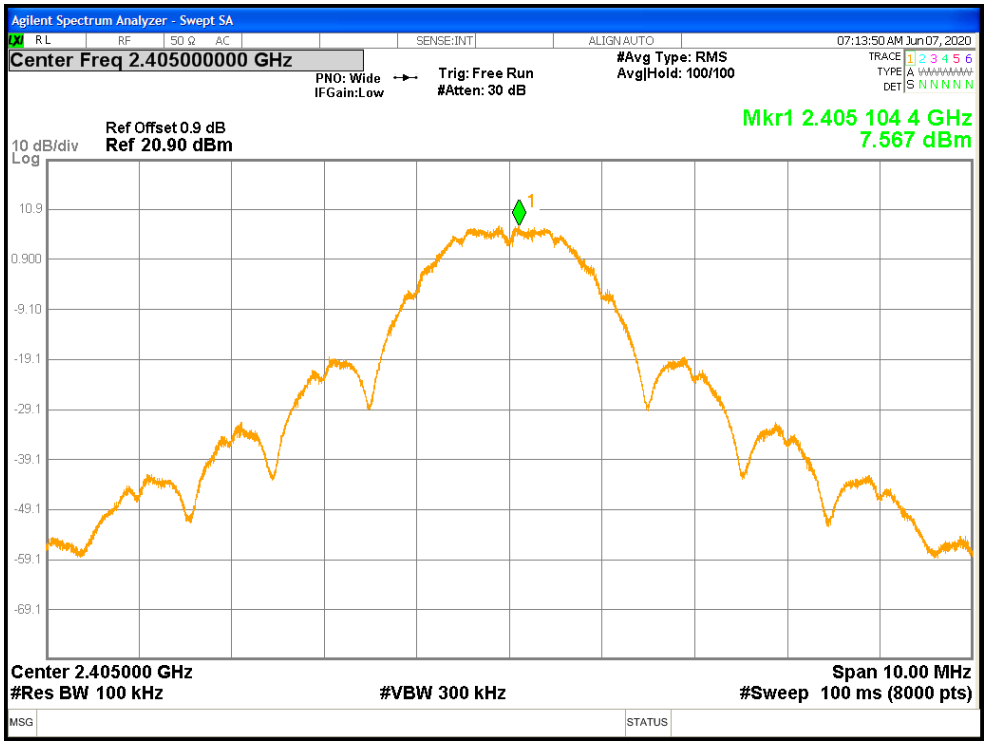


Figure 12: **Zigbee** Maximum Power Spectral Density-2405 MHz

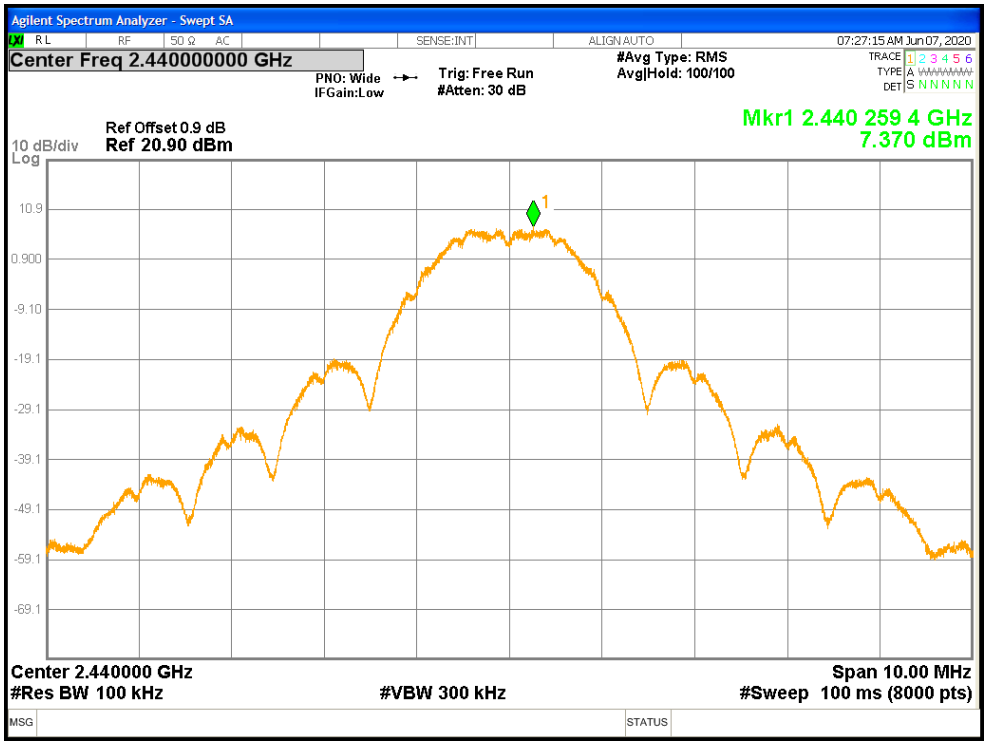


Figure 13: **Zigbee** Maximum Power Spectral Density-2440 MHz

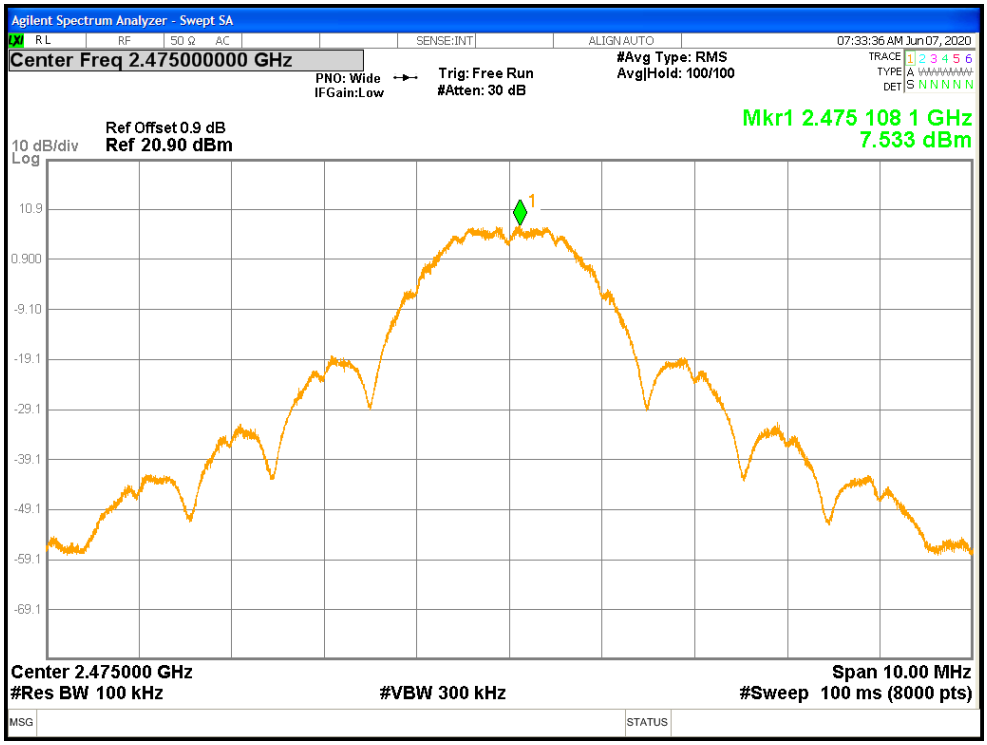


Figure 14: **Zigbee** Maximum Power Spectral Density-2475 MHz

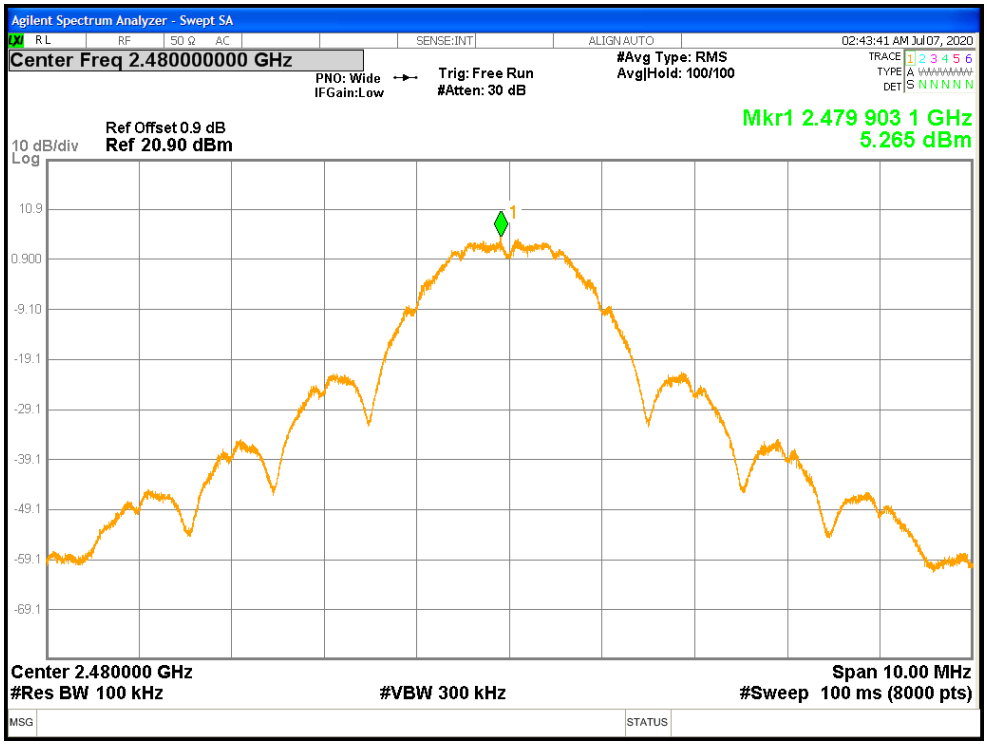


Figure 15: **Zigbee** Maximum Power Spectral Density-2480 MHz

4.4 Out of Band Emissions

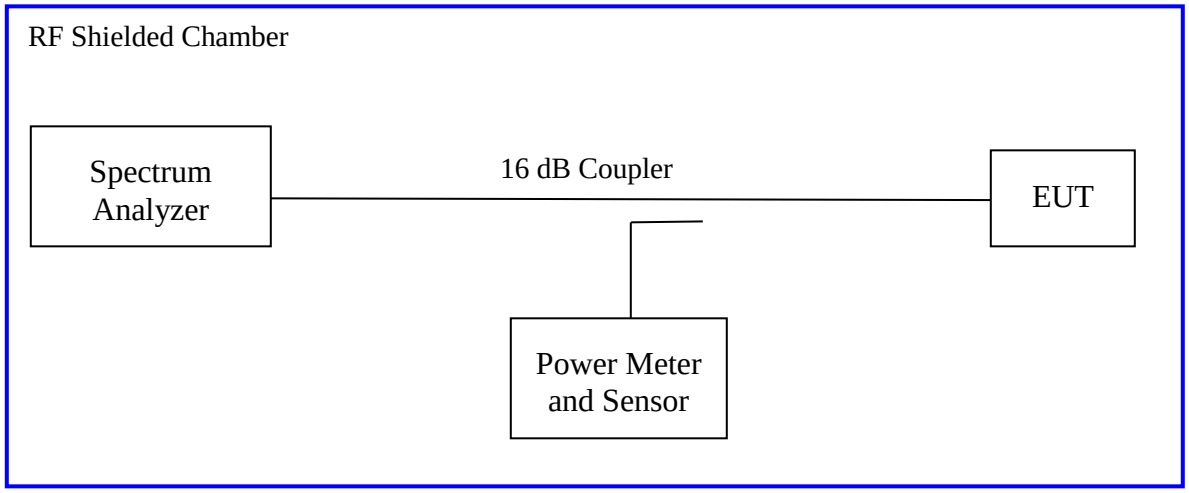
The setup was identical to RF output power measurement. Intentional radiators operating under the alternative provisions to the general emission limits, must be designed to ensure that the 20 dB or 30 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If the frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Since the transmitter complies with the conducted power limits base on the use of RMS averaging per CFR47 Part 15.247(b)(3), any frequency outside the band of 2400MHz to 2483.5MHz, the power output level must be below 30db from the in-band transmitting signal; CFR 47 Part 15.215, 15.247(d) and RSS-247 Sect.5.5.

4.4.1 Test Method

The conducted method was used to measure the out-of-band emission requirement. The measurement was performed with modulation per CFR47 15.247(4) (d) 2020 and *RSS-247 Sect.5.5: 2017*. This test was conducted on 3 channels of Sample. The worst sample result indicated below.

Test Setup:



4.4.2 Results

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 5: Out of Band Emissions – Test Results

Test Date: June 10, 2020	**Test By:** Kerwinn Corpuz
Test Method: Conducted Measurements	**Power Setting:** Fixed at 20 dBm
Antenna Type: Stamped Metal	**Max. Antenna Gain:** 3.46 dBi
Operating Mode: Uncorrelated	**Signal State**: Modulated at 250 kbps
Ambient Temp.: 21 °C	**Relative Humidity:** 37%

Wireless Router (Zigbee)

Operating Channel	Out of Band Level (dBm)	30 dBc Level (dBm)	Margin (dB)
2405 MHz	-33.96	-15.28	-18.68
2440 MHz	-33.44	-16.40	-17.04
2480 MHz	-41.71	-18.44	-23.27

Note: dBc is defined as the level below the main carrier.

The band-edge level must be lower than the 30dBc level.

The maximum out of band emission on each individual output is at least 30 dB below the maximum in-band PSD on that output.

(*) The band-edge is compared to the highest -30dBc level of the test mode.

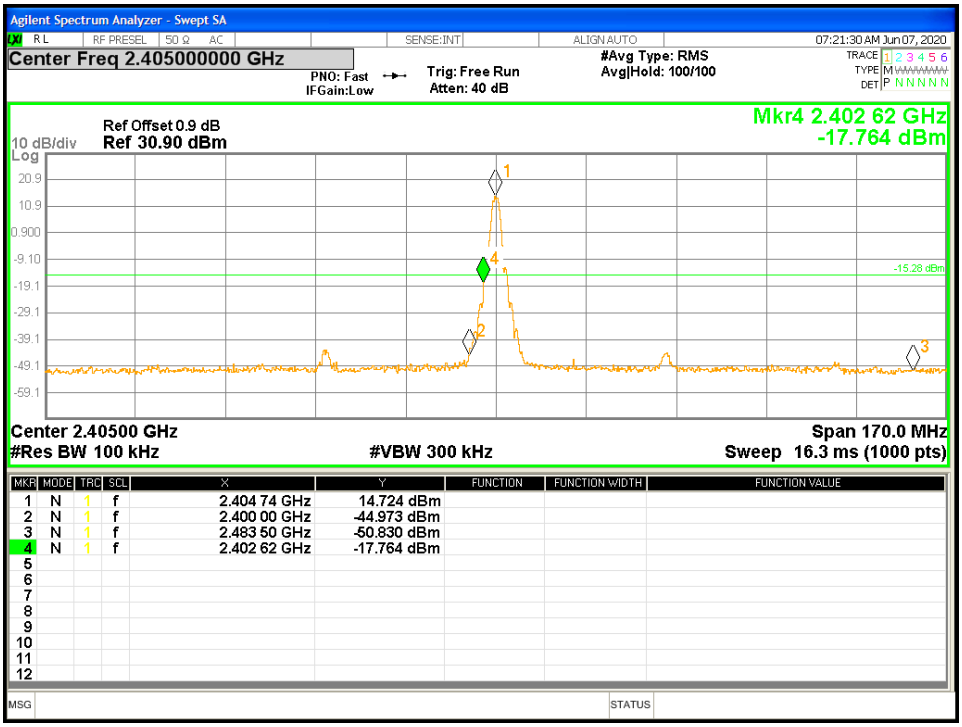


Figure 16: **Zigbee** Conducted Band Edge at 2405 MHz

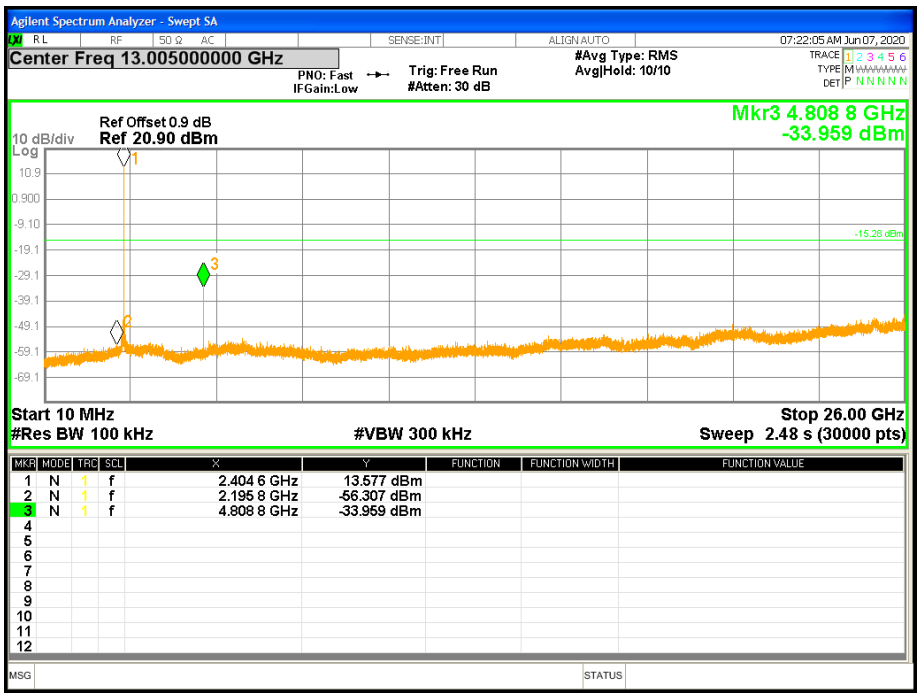


Figure 17: **Zigbee** Out of band Emission at 2405 MHz

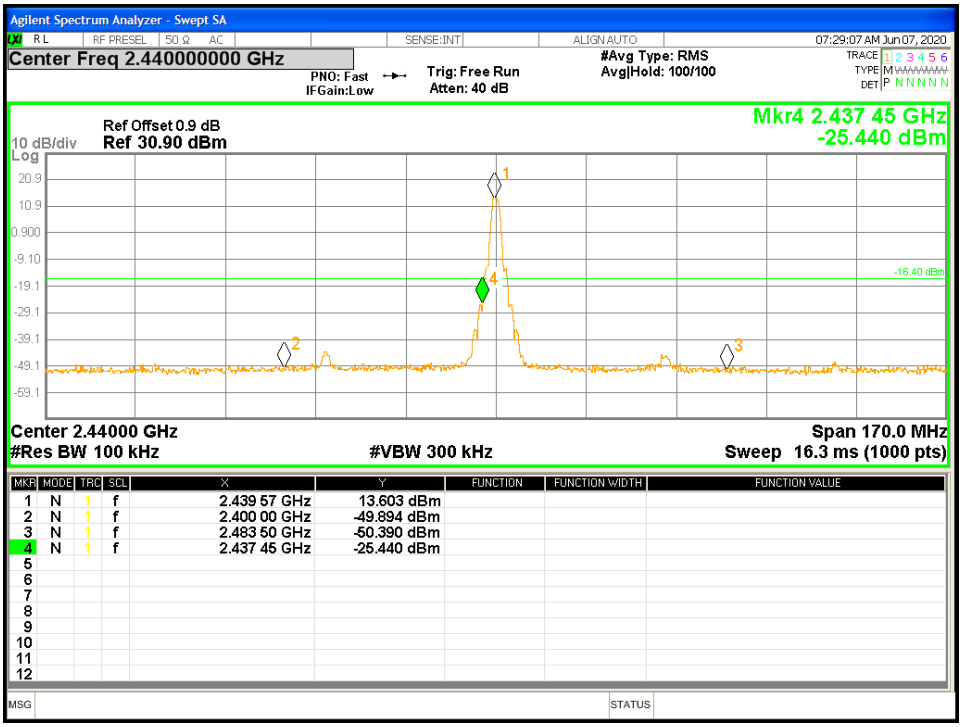


Figure 18: **Zigbee** Conducted Band Edge at 2440 MHz

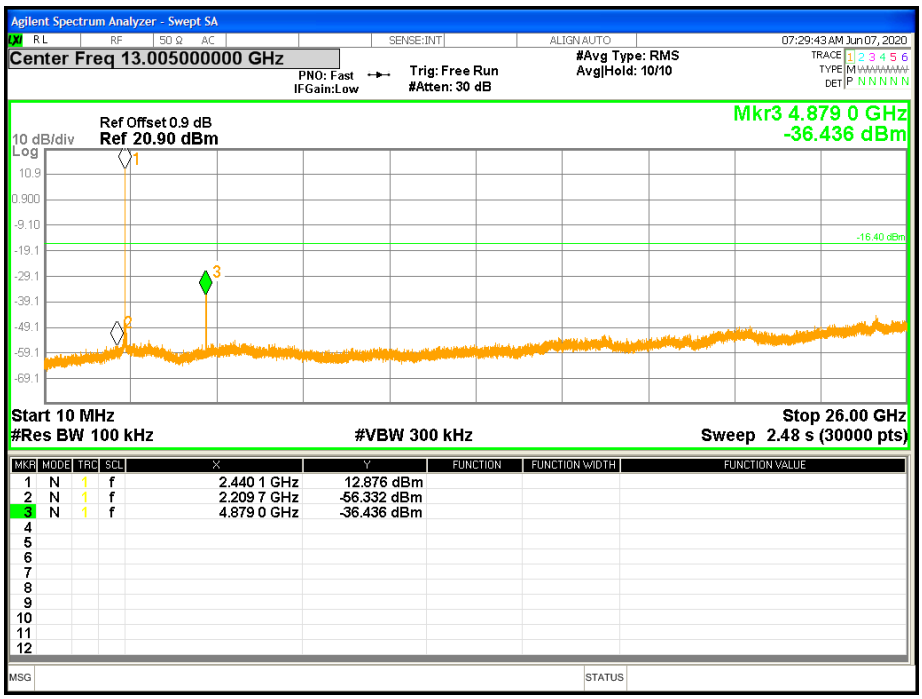


Figure 19: **Zigbee** Out of band Emission at 2440 MHz

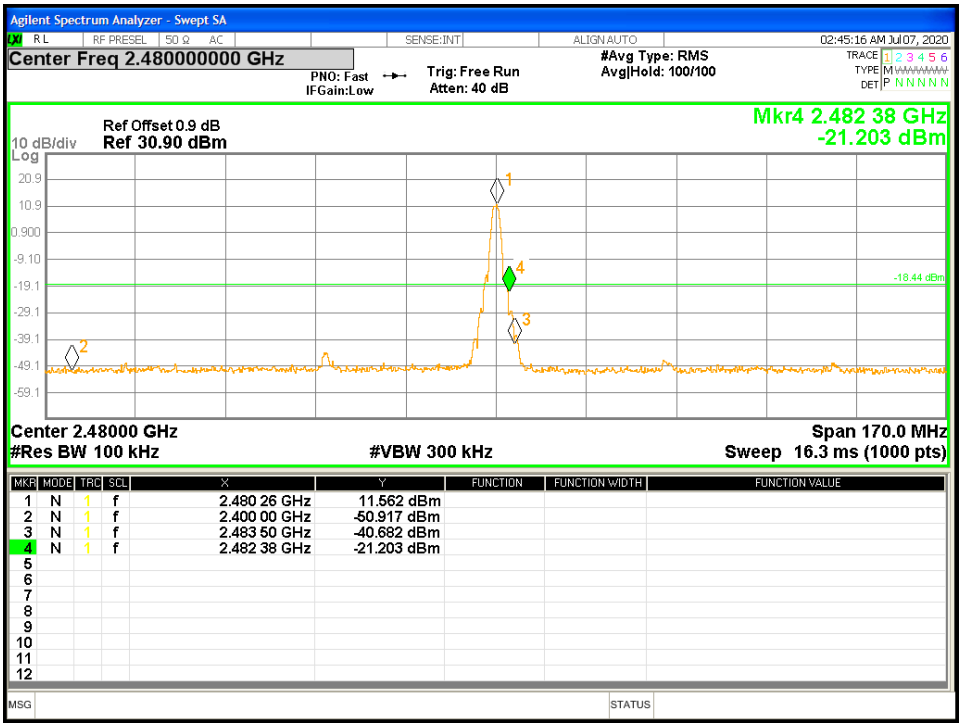


Figure 20: **Zigbee** Conducted Band Edge at 2480 MHz

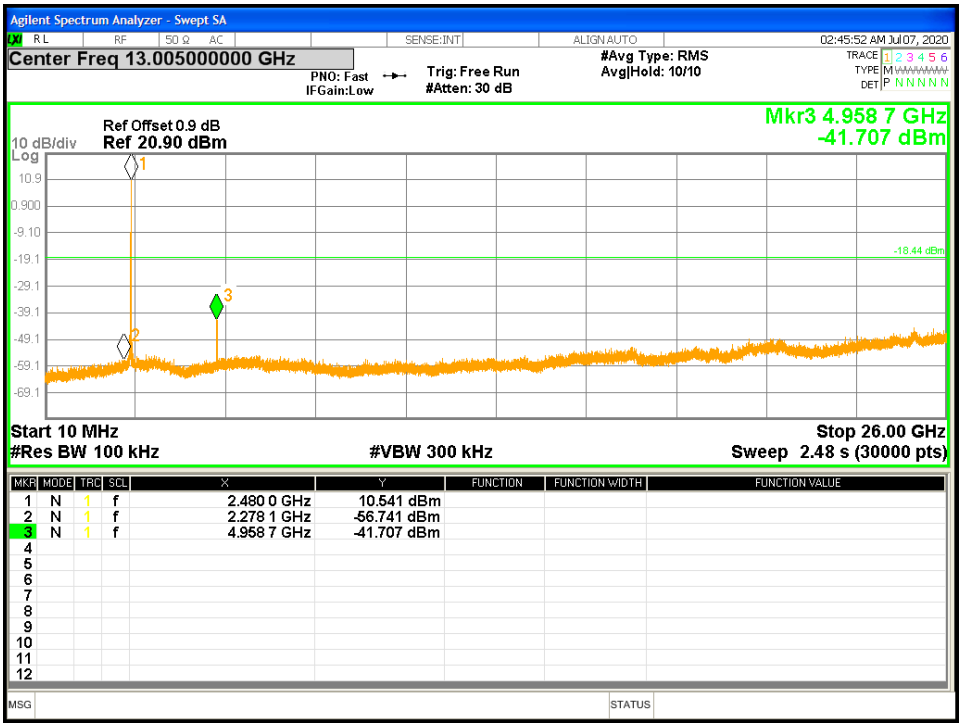


Figure 21: **Zigbee** Out of band Emission at 2480 MHz

4.5 Transmit Spurious Emissions

Transmitter spurious emissions are emissions outside the frequency range of the equipment when the equipment is in transmit mode; per requirement of CFR47 15.205, 15.209, 15.247(d), RSS-Gen Sect. 8.9, RSS-Gen Sect. 8.10.

4.5.1 Test Methodology

4.5.1.1 Preliminary Test

A test program that controls instrumentation and data logging was used to automate the preliminary RF emission test procedure. The frequency range of interest was divided into sub-ranges to yield a frequency resolution of approximately 120 kHz and provide a reading at each frequency for no more than 12° of turntable rotation. For each frequency sub-range the turntable was rotated 360° while peak emission data was recorded and plotted over the frequency range of interest in horizontal and vertical antenna polarization's.

Preliminary emission profile testing was performed inside the anechoic chamber. The EUT was placed on a 1.0m x 1.5m non-conductive table 80cm (<1 GHz) and 150cm (>1 GHz) above the floor. The EUT was positioned as shown in the setup photographs. The receiving antenna was placed at a distance of 3m at a fixed height of 1m. Measurement equipment was located outside of the chamber. A video camera was placed inside the chamber to view the EUT.

Pres-scans were performed to determine the worst case configuration for data rate; 1 Mbps and 2 Mbps

4.5.1.2 Final Test

For each frequency measured, the peak emission was maximized by manipulating the receiving antenna from 1 to 4 meters above the ground plane and placing it at the position that produced the maximum signal strength reading. The turntable was then rotated through 360° while observing the peak signal and placing the EUT at the position that produced maximum radiation. The six highest emissions relative to the limit were measured unless such emissions were more than 20 dB below the limit. If less than six emissions are within 20 dB of the limit, than the noise level of the receiver is measured at frequencies where emissions are expected. Multiples of all oscillator and microprocessor frequencies were also checked.

Final testing was performed on an NSA compliant test site. The EUT was placed on a 1.0m x 1.5m non-conductive table 80cm (<1 GHz) and 150cm (>1 GHz) above the ground plane. The placement of EUT and cables were the same as for preliminary testing and is shown in the setup photographs.

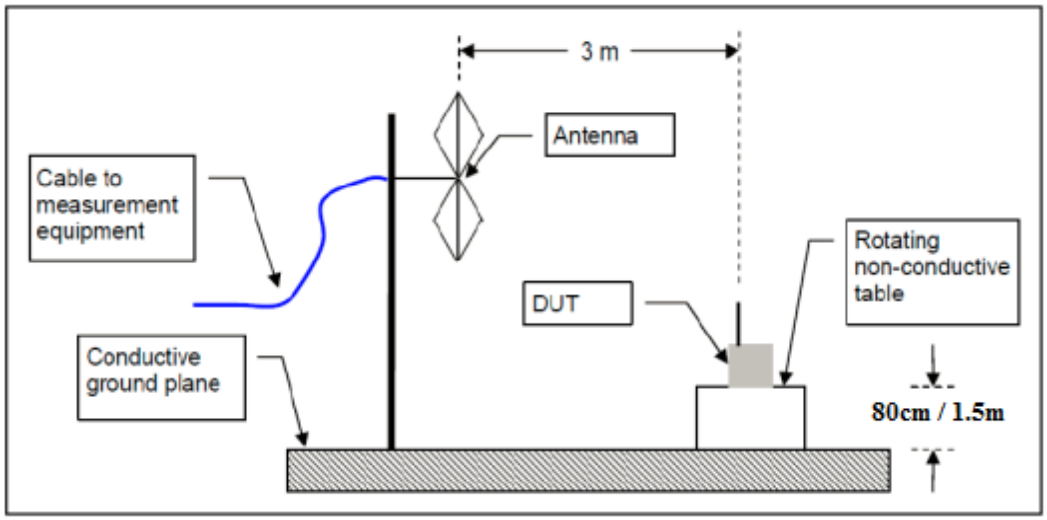
The final scans performed on the worst axis, Y-Axis, for three operating channels in each operating mode;

2405 MHz, 2440 MHz, and 2480 MHz

4.5.1.3 Deviations

None.

Test Setup:



4.5.2 Transmitter Spurious Emission Limit

The spurious emissions of the transmitter shall not exceed the values in CFR47 Part 15.205, 15.209: 2020 and RSS Gen Sect. 8.10: 2019.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100 **	3
88-216	150 **	3
216-960	200 **	3
Above 960	500	3

All harmonics and spurious emission which are outside of the restricted band shall be 20dB below the in-band emission.

4.5.3 Test Results

The final measurement data was taken under the worst case operating modes, configurations, and/or cable positions. It also reflects the results including any modifications and/or special accessories listed in Sections 1.4 and test plan.

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 6: Transmit Spurious Emission at Band-Edge Requirements

Test Date: June 5, 2020	**Test By:** Kerwinn Corpuz
Test Method: Radiated Measurements	**Power Setting:** Fixed at 20 dBm
Antenna Type: Stamped Metal	**Max. Antenna Gain:** 3.46 dBi
Operating Mode: Uncorrelated	**Signal State**: Modulated at 250 kbps
Ambient Temp.: 21 °C	**Relative Humidity:** 39%

Band-Edge Results (Zigbee)

Freq.	Edge Freq.	Pol	Ant.	Tbl.	Det.	Level	Duty Cycle	Limit	Margin	Note
MHz	MHz	V/H	cm	Deg	Pk/Avg	dBuV/m	dB	dBuV/m	dB	
2405	2372.91	V	100	50	Pk	61.77	--	74.00	-12.23	Plot 22: Lower Edge
2405	2373.19	V	100	50	Avg	50.20	--	54.00	-3.80	Plot 23: Lower Edge
2405	2373.12	H	153	139	Pk	62.80	--	74.00	-11.20	Plot 24: Lower Edge
2405	2373.05	H	153	139	Avg	51.91	--	54.00	-2.09	Plot 25: Lower Edge
2480	2483.50	V	133	260	Pk	75.14	2.38	74.00	-1.24	Plot 26: Upper Edge
2480	2483.50	H	169	136	Pk	75.64	2.38	74.00	-0.74	Plot 27: Upper Edge

Note: 1. The emissions were measured at the adjacent restricted band of the fundamental signal.
2. All the band-edge measurements met the restricted band requirements of CFR47 15.205.
3. Band-edge measurement plots use a wider span than 2 MHz to evaluate additional spectrum bands for in-band leakage and spurious emission.
4. The EUT worst case operational Duty Cycle is 76%. Therefore, 2.38 dB is subtracted from the peak corrected level at the edge of the signal according to KDB 558074, Section 11(a).

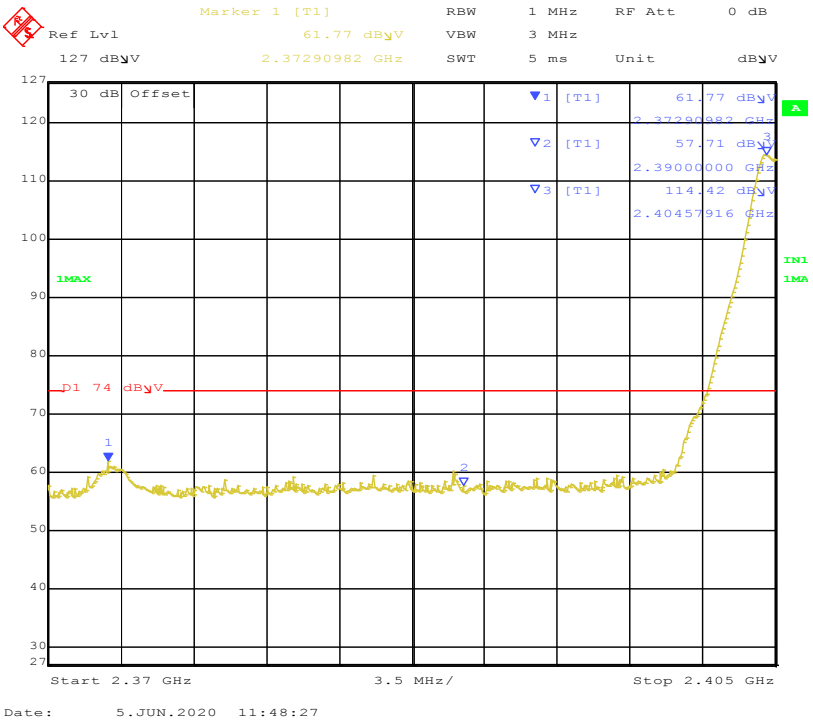


Figure 22: Band-edge-2405 MHz-V-Pk

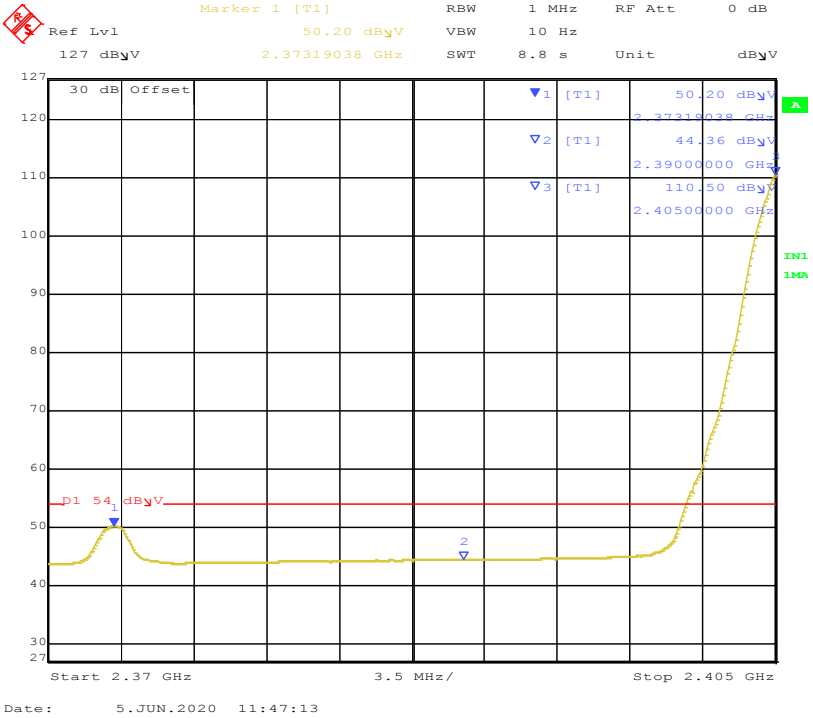


Figure 23: Band-edge-2405 MHz-V-Avg

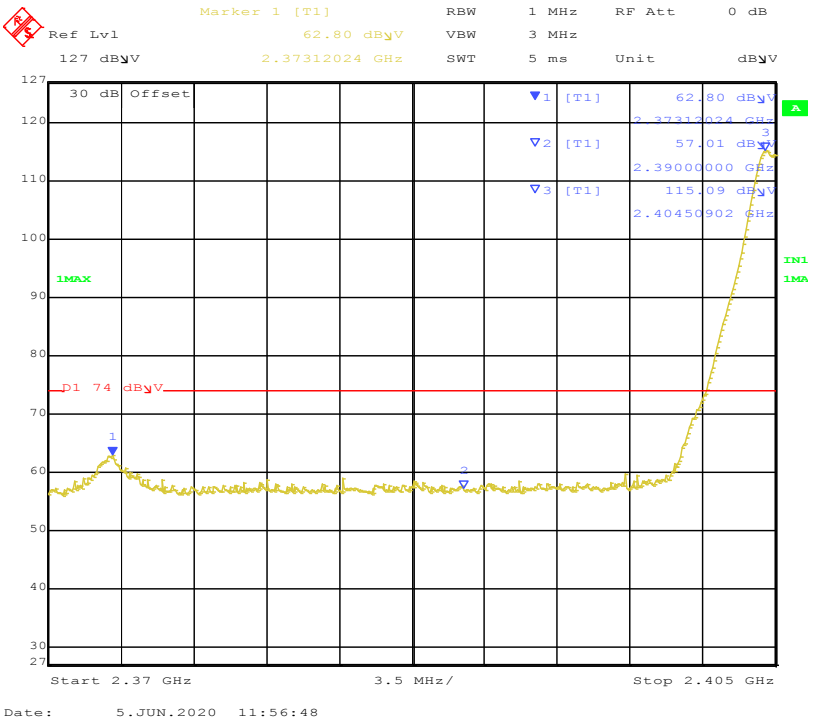


Figure 24: Band-edge-2405 MHz-H-Pk

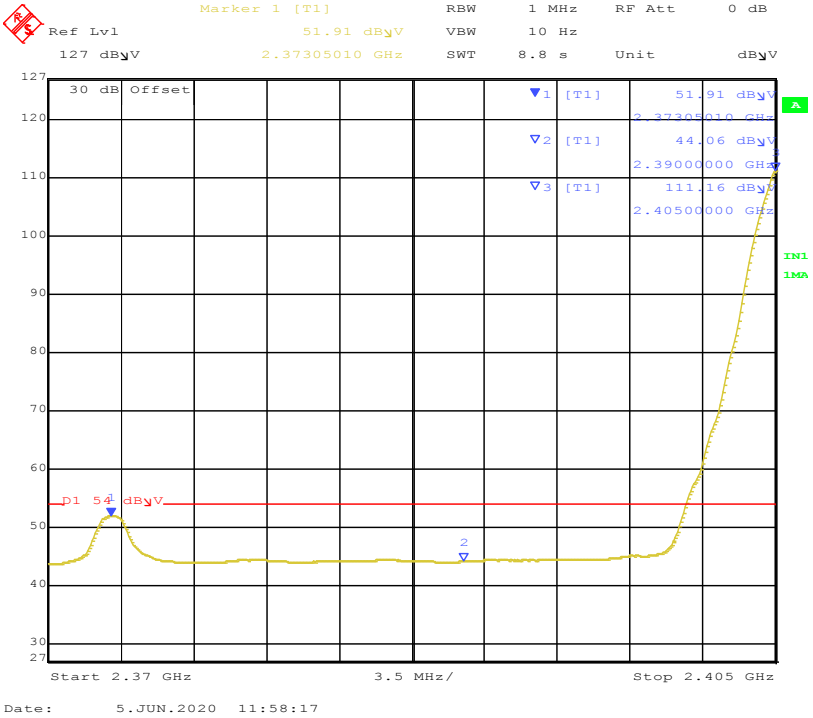


Figure 25: Band-edge-2405 MHz-H-Avg

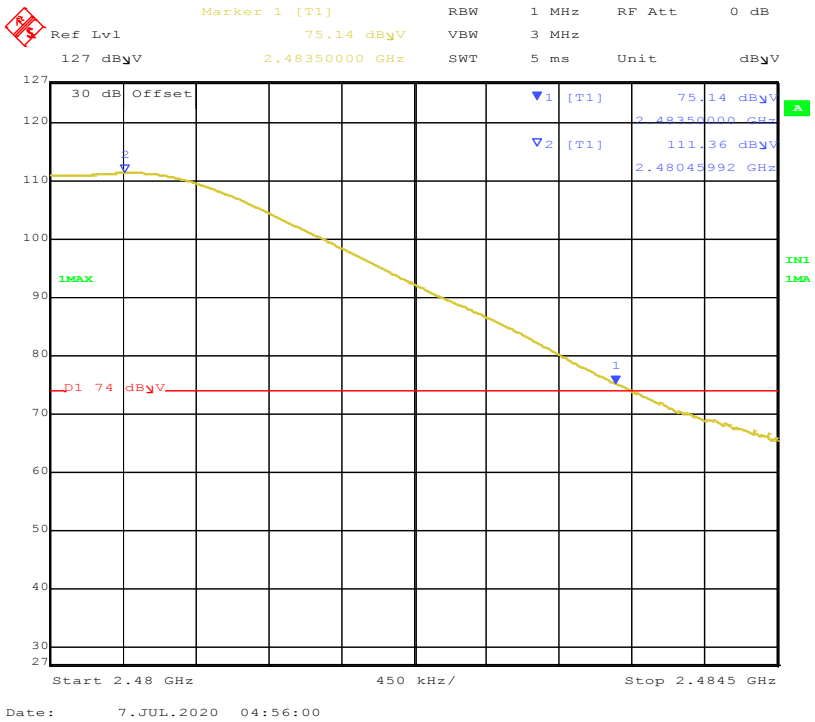


Figure 26: Band-edge-2480 MHz-V-Pk

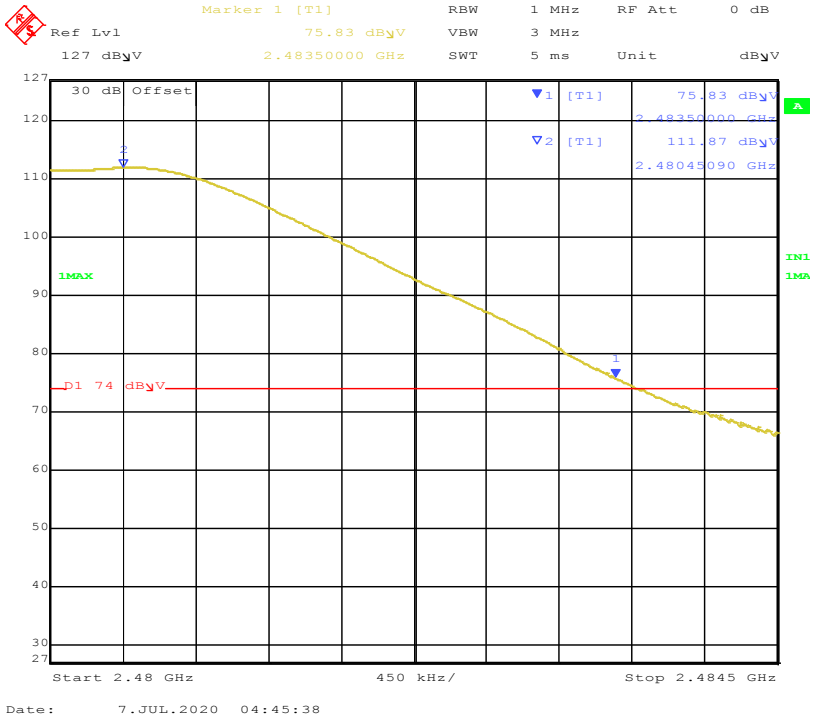


Figure 27: Band-edge-2480 MHz-H-Pk

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EUT Name	eero 6 and eero 6 Extender	**Date**	June 9, 2020
EUT Model	N010001	**Temp / Hum in**	21°C / 38%rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	Zigbee, 250 kbps	**Line AC / Freq**	110Vac / 60 Hz
Standard	CFR47 Part 15 Subpart C / RSS-GEN	**RBW / VBW**	See Note
Dist/Ant Used	3m / JB3 and EMCO 6502	**Performed by**	Kerwinn Corpuz

9 kHz to 1 GHz, Transmit at 2440 MHz

Freq.	Raw	Cbl	AF	Level	Det.	Pol.	Hght.	Azt	Limit	Margin	Result
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
0.92	29.60	2.29	10.44	42.34	Pk	V	100	12	68.32	-25.99	Pass
1.57	25.22	2.32	10.60	38.14	Pk	V	100	12	63.68	-25.54	Pass
201.20	40.09	3.29	-15.32	28.06	QP	H	130	280	43.50	-15.44	Pass
63.34	55.47	2.70	-20.46	37.71	QP	V	160	190	40.00	-2.29	Pass
71.37	50.48	2.76	-19.98	33.27	QP	V	141	270	40.00	-6.74	Pass
78.96	45.37	2.78	-20.28	27.88	QP	V	152	148	40.00	-12.12	Pass
85.64	44.47	2.81	-20.67	26.61	QP	V	152	6	40.00	-13.39	Pass
106.31	41.72	2.90	-16.19	28.44	QP	V	121	254	43.50	-15.06	Pass

Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 3.2 dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Note: The worst case emission was observed on Channel 2440 MHz.
RBW and VBW set per ANSI C63.4 and C63.10.
Emissions below 30 MHz, detected noise floor.

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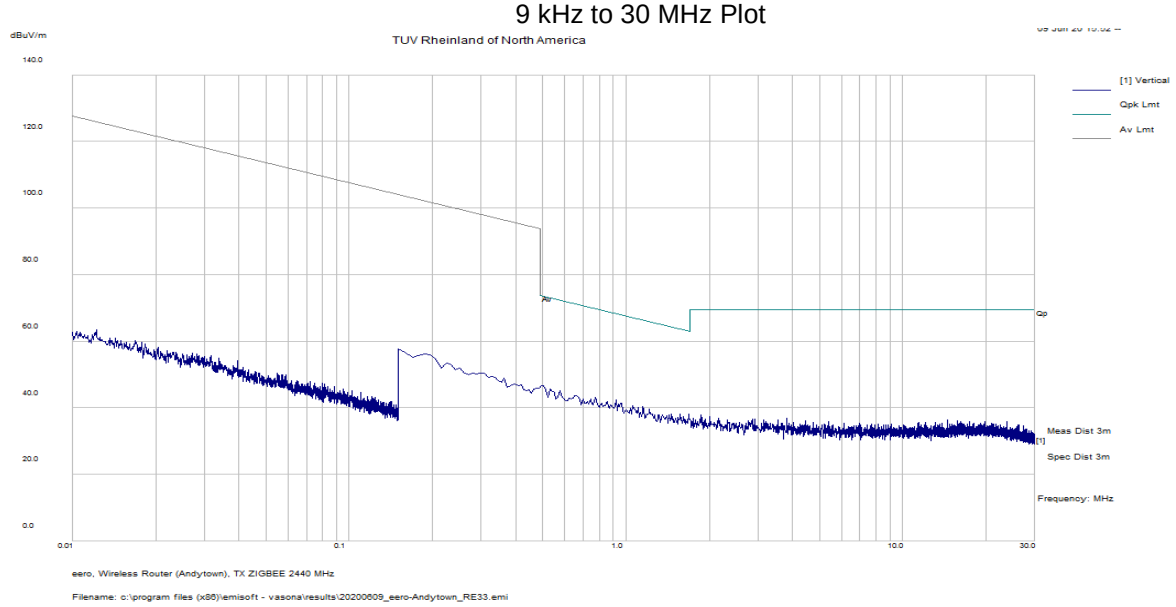
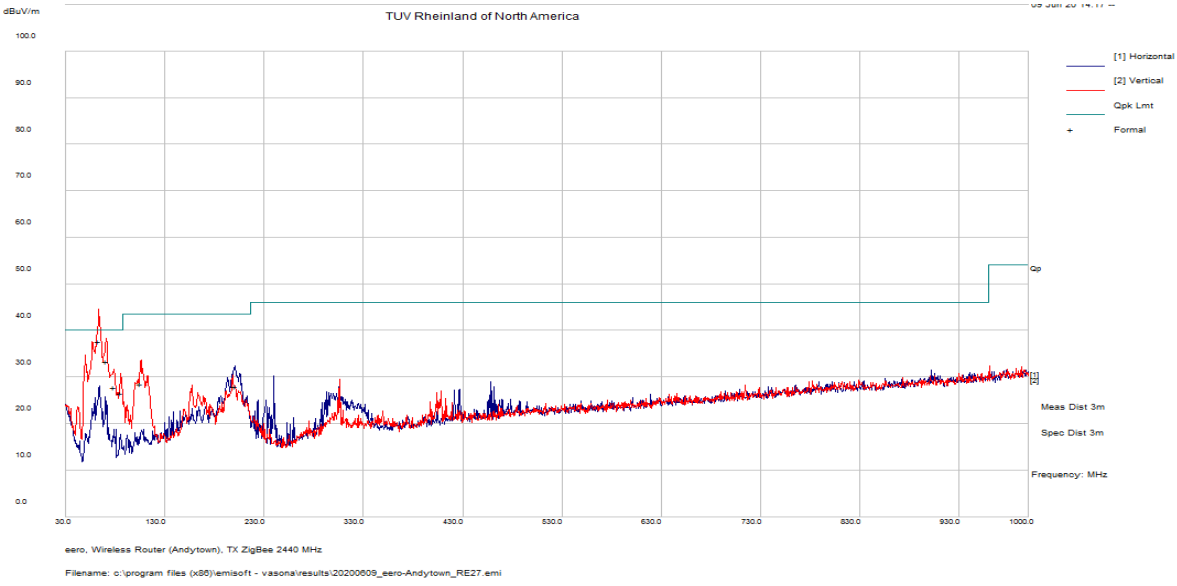
EUT Name	eero 6 and eero 6 Extender	**Date**	June 9, 2020
EUT Model	N010001	**Temp / Hum in**	21°C / 38%rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	Zigbee, 250 kbps; TX at 2440 MHz	**Line AC / Freq**	110Vac / 60 Hz
Standard	CFR47 Part 15 Subpart C / RSS-GEN	**RBW / VBW**	See Note
Dist/Ant Used	3m / 6502 & JB3	**Date**	Kerwinn Corpuz

9 kHz to 30 MHz Plot



30 MHz to 1 GHz Plot



Notes: RBW and VBW set per ANSI C63.4 and C63.10.

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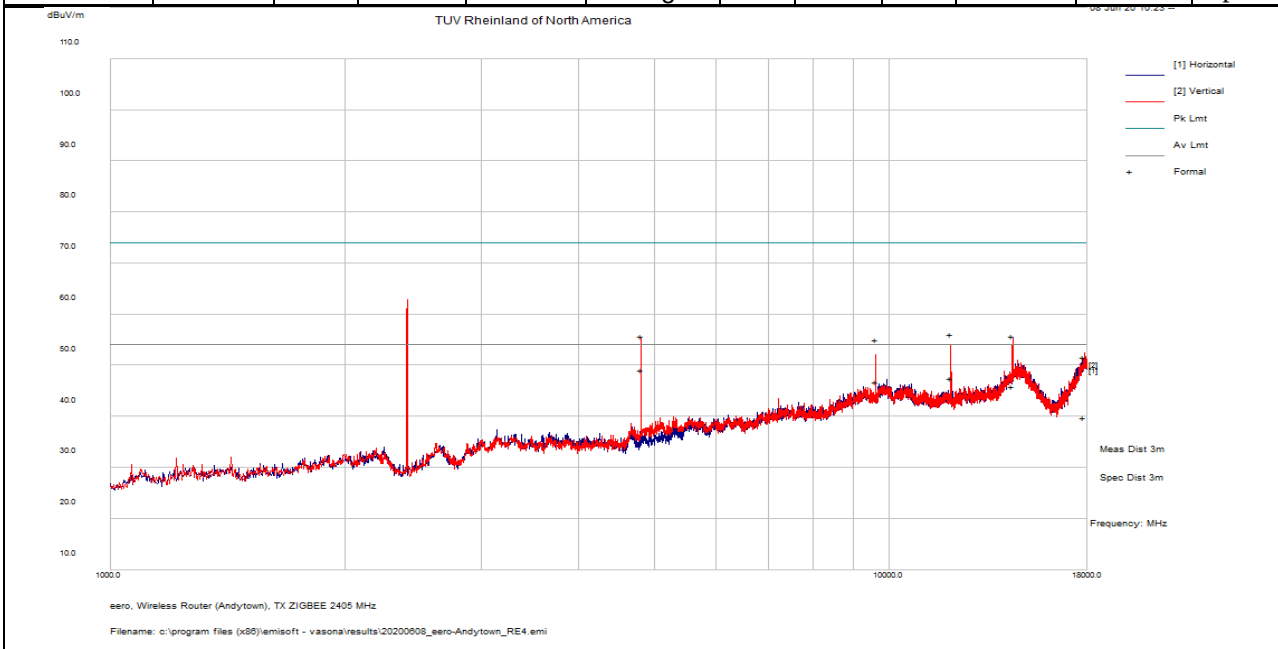
EUT Name	eero 6 and eero 6 Extender	**Date**	June 8, 2020
EUT Model	N010001	**Temp / Hum in**	21°C / 39%rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	Zigbee, 250 kbps; TX at 2405 MHz (Low Chan)	**Line AC / Freq**	110Vac / 60 Hz
Standard	CFR47 Part 15 Subpart C / RSS-GEN	**RBW / VBW**	1 MHz / 3 MHz
Dist/Ant Used	3m / EMCO-3115, 1m / ComPower-AHA840	**Performed by**	Kerwinn Corpuz

Emission band 1 – 18 GHz

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
4808.96	77.45	1.89	-23.57	55.77	Pk	V	101	110	74.00	-18.24	Harmonics*
4808.96	70.79	1.89	-23.57	49.11	Avg	V	101	110	54.00	-4.89	Harmonics*
9621.79	68.17	2.75	-15.97	54.95	Pk	V	258	48	74.00	-19.05	Harmonics*
9621.79	59.98	2.75	-15.97	46.76	Avg	V	258	48	54.00	-7.24	Harmonics*
12027.38	69.74	3.19	-16.88	56.05	Pk	V	223	58	74.00	-17.95	Harmonics
12027.38	61.22	3.19	-16.88	47.53	Avg	V	223	58	54.00	-6.47	Harmonics
14432.90	65.96	3.53	-13.69	55.81	Pk	V	246	360	74.00	-18.19	Harmonics*
14432.90	56.00	3.53	-13.69	45.84	Avg	V	246	360	54.00	-8.16	Harmonics*
17838.76	55.35	4.09	-7.92	51.52	Pk	V	135	20	74.00	-22.48	Spurious
17838.76	43.60	4.09	-7.92	39.77	Avg	V	135	20	54.00	-14.23	Spurious



Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 3.2dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: All emissions passed the spurious emission limit.
(*) Non-restricted band emission.
Emission at 2405 MHz is the fundamental.

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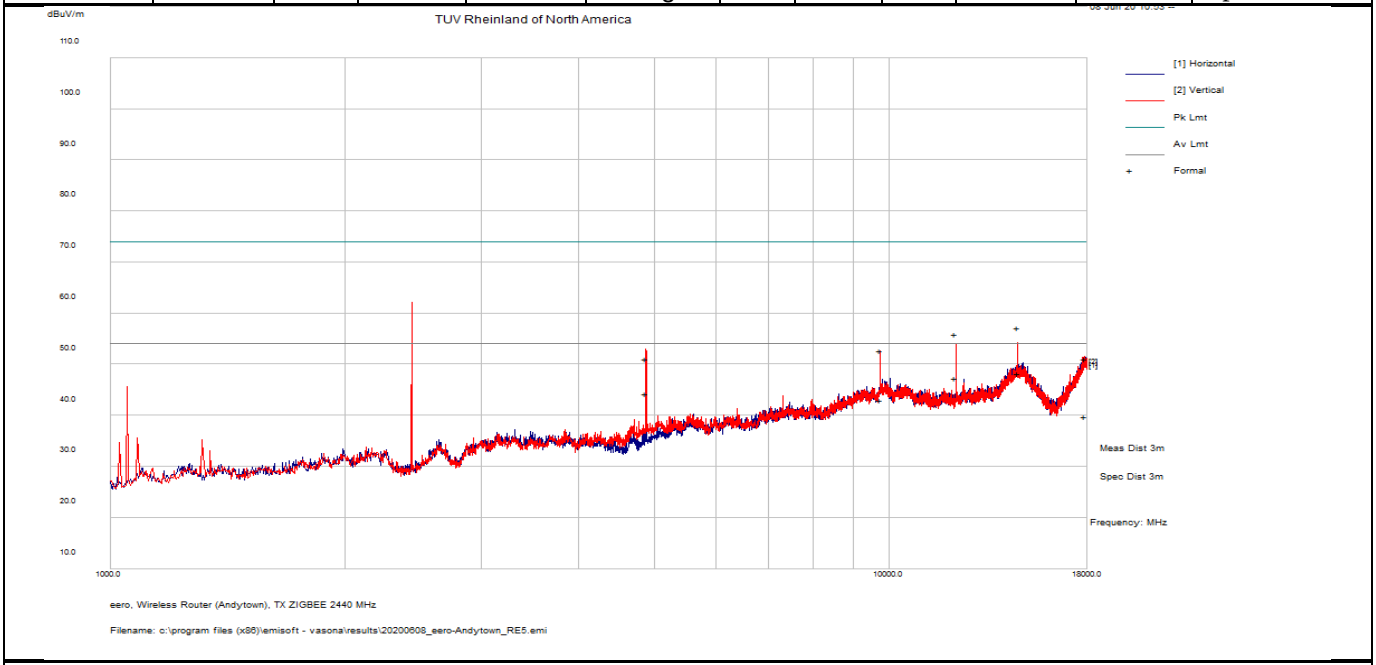
EUT Name	eero 6 and eero 6 Extender	**Date**	June 8, 2020
EUT Model	N010001	**Temp / Hum in**	21°C / 39%rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	Zigbee, 250 kbps; TX at 2440 MHz (Mid Chan)	**Line AC / Freq**	110Vac / 60 Hz
Standard	CFR47 Part 15 Subpart C / RSS-GEN	**RBW / VBW**	1 MHz / 3 MHz
Dist/Ant Used	3m / EMCO-3115, 1m / ComPower-AHA840	**Performed by**	Kerwinn Corpuz

Emission band 1 – 18 GHz

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
4879.00	72.35	1.90	-23.15	51.10	Pk	V	116	58	74.00	-22.90	Harmonics*
4879.00	65.43	1.90	-23.15	44.18	Avg	V	116	58	54.00	-9.82	Harmonics*
9762.02	65.57	2.89	-15.79	52.67	Pk	V	226	272	74.00	-21.33	Harmonics*
9762.02	55.98	2.89	-15.79	43.08	Avg	V	226	272	54.00	-10.92	Harmonics*
12202.42	69.48	3.30	-16.92	55.86	Pk	V	244	54	74.00	-18.14	Harmonics
12202.42	60.94	3.30	-16.92	47.32	Avg	V	244	54	54.00	-6.68	Harmonics
14642.72	66.47	3.58	-12.85	57.20	Pk	V	186	352	74.00	-16.80	Harmonics*
14642.72	57.41	3.58	-12.85	48.14	Avg	V	186	352	54.00	-5.86	Harmonics*
17877.60	54.71	4.10	-7.73	51.08	Pk	V	187	174	74.00	-22.92	Spurious
17877.60	43.42	4.10	-7.73	39.79	Avg	V	187	174	54.00	-14.21	Spurious



Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 3.2dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: All emissions passed the spurious emission limit.
(*) Non-restricted band emission.
Emission at 2440 MHz is the fundamental.

SOP 1 Radiated Emissions

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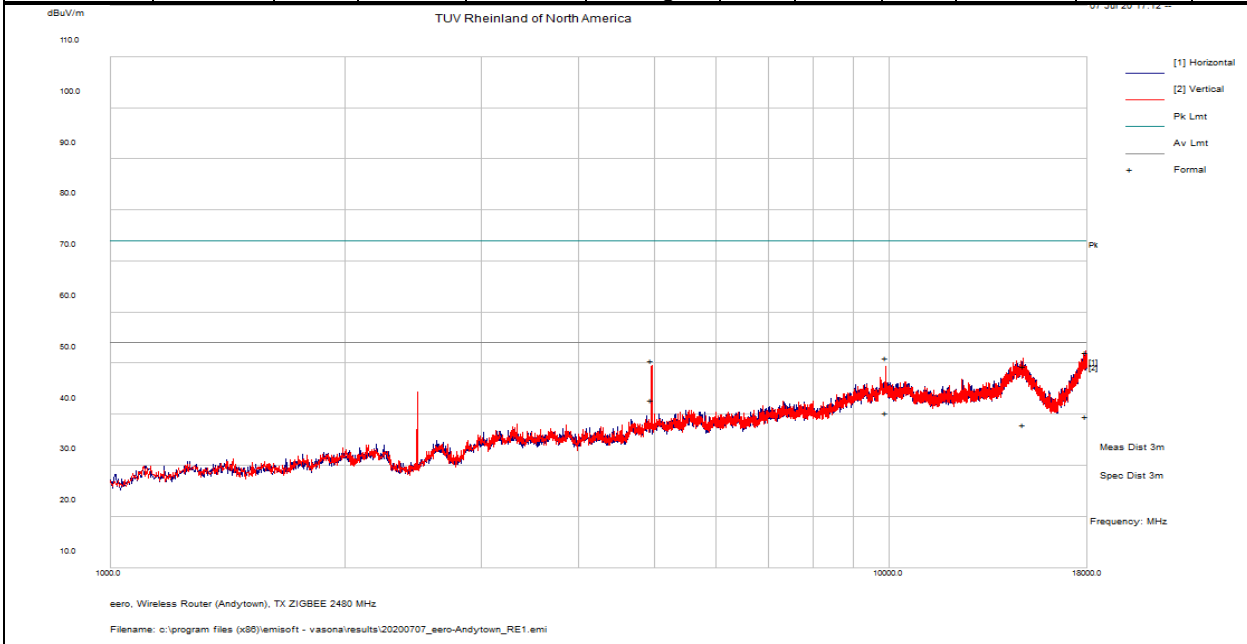
EUT Name	eero 6 and eero 6 Extender	**Date**	June 8, 2020
EUT Model	N010001	**Temp / Hum in**	21°C / 39%rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	Zigbee, 250 kbps; TX at 2480 MHz (Hi Chan)	**Line AC / Freq**	110Vac / 60 Hz
Standard	CFR47 Part 15 Subpart C / RSS-GEN	**RBW / VBW**	1 MHz / 3 MHz
Dist/Ant Used	3m / EMCO-3115, 1m / ComPower-AHA840	**Performed by**	Kerwinn Corpuz

Emission band 1 – 18 GHz

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
4960.98	71.74	1.85	-23.10	50.49	Pk	V	167	116	74.00	-23.51	Harmonics
4960.98	64.12	1.85	-23.10	42.87	Avg	V	167	116	54.00	-11.13	Harmonics
9918.08	63.77	2.97	-15.64	51.10	Pk	V	115	48	74.00	-22.90	Harmonics*
9918.08	52.92	2.97	-15.64	40.25	Avg	V	115	48	54.00	-13.75	Harmonics*
14909.87	58.87	3.61	-12.97	49.50	Pk	V	165	286	74.00	-24.50	Spurious
14909.87	47.29	3.61	-12.97	37.93	Avg	V	165	286	54.00	-16.07	Spurious
17911.41	55.91	4.11	-7.94	52.09	Pk	V	194	284	74.00	-21.91	Spurious
17911.41	43.49	4.11	-7.94	39.67	Avg	V	194	284	54.00	-14.33	Spurious



Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 3.2dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

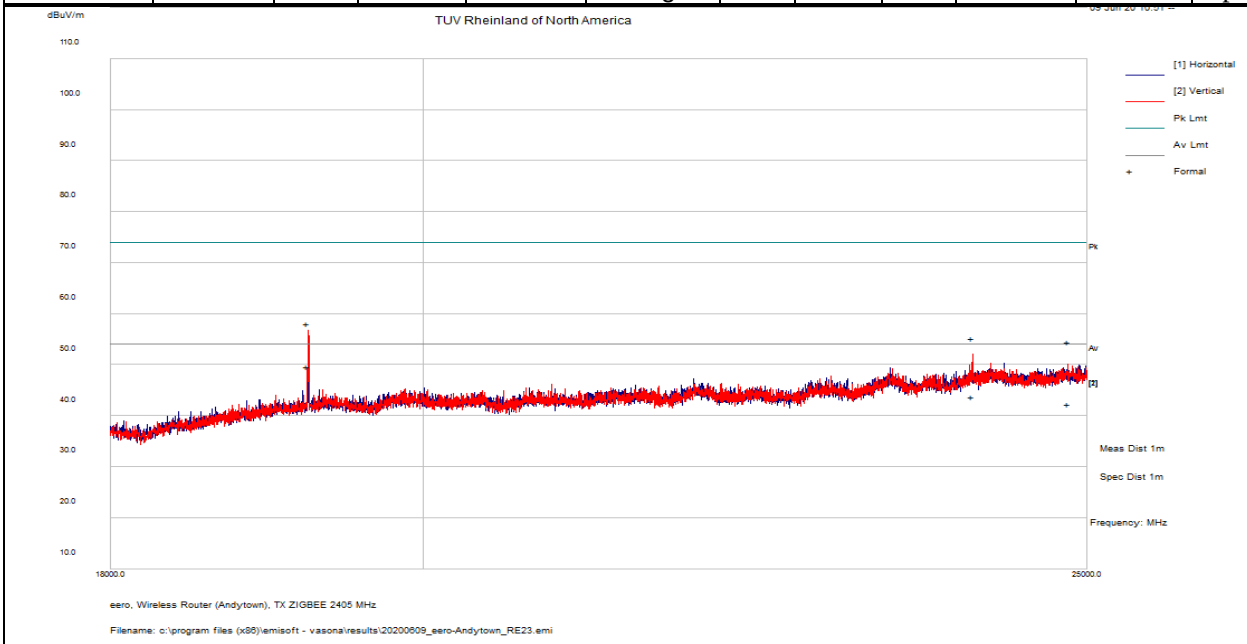
Notes: All emissions passed the spurious emission limit.
(*) Non-restricted band emission.

SOP 1 Radiated Emissions — Tracking # 32062471.001 Page 6 of 8

EUT Name	eero 6 and eero 6 Extender	**Date**	June 9, 2020
EUT Model	N010001	**Temp / Hum in**	21°C / 38%rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	Zigbee, 250 kbps; TX at 2405 MHz (Low Chan)	**Line AC / Freq**	110Vac / 60 Hz
Standard	CFR47 Part 15 Subpart C / RSS-GEN	**RBW / VBW**	1 MHz / 3 MHz
Dist/Ant Used	3m / EMCO-3115, 1m / ComPower-AHA840	**Performed by**	Kerwinn Corpuz

Emission band 18 – 25 GHz

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
19235.73	50.65	7.20	0.17	58.02	Pk	V	156	36	74.00	-15.98	Harmonics
19235.73	42.29	7.20	0.17	49.66	Avg	V	156	36	54.00	-4.34	Harmonics
24054.84	44.67	8.09	2.49	55.25	Pk	V	163	6	74.00	-18.75	Spurious
24054.84	33.10	8.09	2.49	43.68	Avg	V	163	6	54.00	-10.32	Spurious
24837.61	43.88	8.19	2.36	54.43	Pk	V	171	298	74.00	-19.57	Spurious
24837.61	31.75	8.19	2.36	42.30	Avg	V	171	298	54.00	-11.70	Spurious



Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 3.2dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

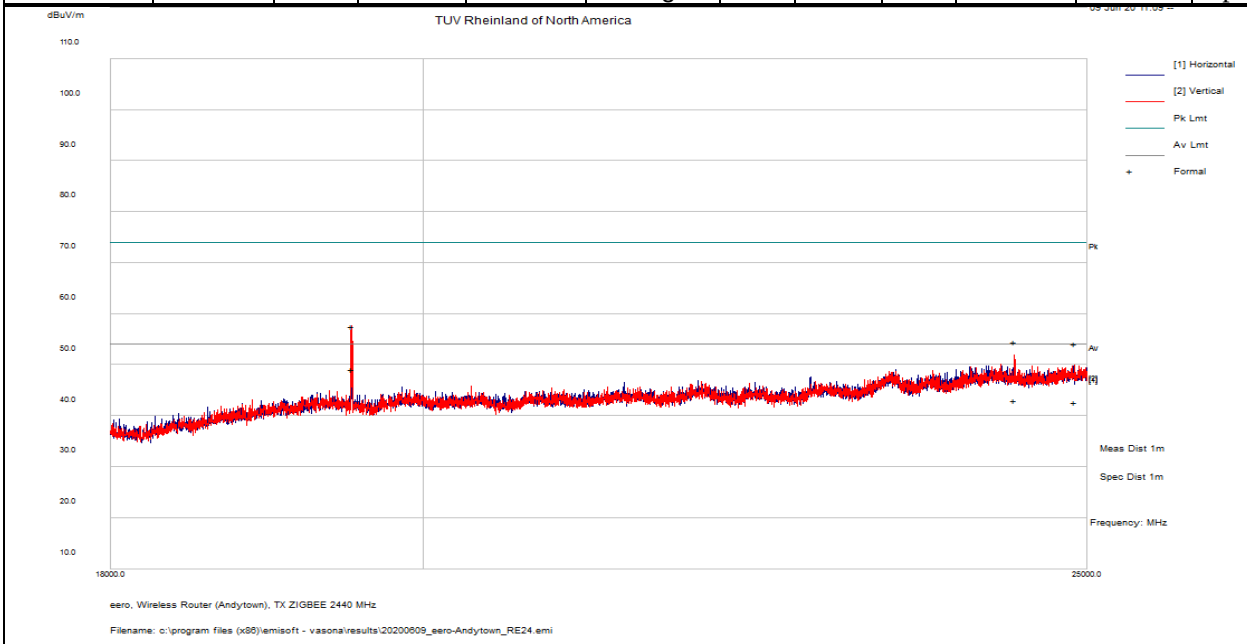
Notes: All emissions passed the spurious emission limit.
(*) Non-restricted band emission.

SOP 1 Radiated Emissions — Tracking # 32062471.001 Page 7 of 8

EUT Name	eero 6 and eero 6 Extender	**Date**	June 9, 2020
EUT Model	N010001	**Temp / Hum in**	21°C / 38%rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	Zigbee, 250 kbps; TX at 2440 MHz (Mid Chan)	**Line AC / Freq**	110Vac / 60 Hz
Standard	CFR47 Part 15 Subpart C / RSS-GEN	**RBW / VBW**	1 MHz / 3 MHz
Dist/Ant Used	3m / EMCO-3115, 1m / ComPower-AHA840	**Performed by**	Kerwinn Corpuz

Emission band 18 – 25 GHz

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
19523.82	49.30	7.25	0.93	57.49	Pk	V	168	22	74.00	-16.51	Harmonics
19523.82	40.94	7.25	0.93	49.13	Avg	V	168	22	54.00	-4.88	Harmonics
24394.55	44.11	8.09	2.28	54.48	Pk	V	162	48	74.00	-19.52	Spurious
24394.55	32.72	8.09	2.28	43.08	Avg	V	162	48	54.00	-10.92	Spurious
24900.01	43.75	8.16	2.24	54.15	Pk	V	114	259	74.00	-19.85	Spurious
24900.01	32.16	8.16	2.24	42.56	Avg	V	114	259	54.00	-11.44	Spurious



Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 3.2dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

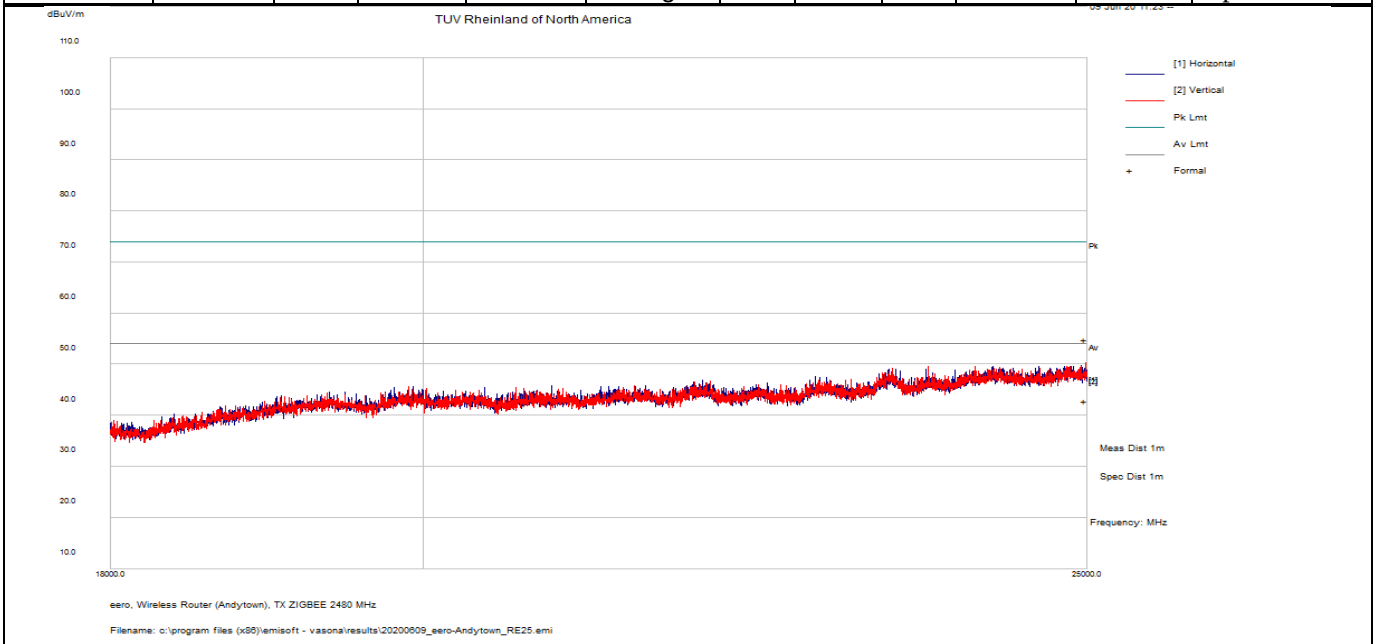
Notes: All emissions passed the spurious emission limit.
(*) Non-restricted band emission.

SOP 1 Radiated Emissions — Tracking # 32062471.001 Page 8 of 8

EUT Name	eero 6 and eero 6 Extender	**Date**	June 9, 2020
EUT Model	N010001	**Temp / Hum in**	21°C / 38%rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	Zigbee, 250 kbps; TX at 2480 MHz (Hi Chan)	**Line AC / Freq**	110Vac / 60 Hz
Standard	CFR47 Part 15 Subpart C / RSS-GEN	**RBW / VBW**	1 MHz / 3 MHz
Dist/Ant Used	3m / EMCO-3115, 1m / ComPower-AHA840	**Performed by**	Kerwinn Corpuz

Emission band 18 – 25 GHz

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
24983.79	44.24	8.18	2.45	54.86	Pk	V	232	214	74.00	-19.14	Spurious
24983.79	32.23	8.18	2.45	42.85	Avg	V	232	214	54.00	-11.15	Spurious



Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 3.2dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: All emissions passed the spurious emission limit.
(*) Non-restricted band emission.

4.5.4 Sample Calculation

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

Field Strength (dBμV/m) = FIM - AMP + CBL + ACF

Where: FIM = Field Intensity Meter (dBμV)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB/m)

$$\mu V/m = 10^{\frac{dB\mu V/m}{20}}$$

4.6 AC Conducted Emissions

Testing was performed in accordance with ANSI C63.10: 2013. These test methods are listed under the laboratory's A2LA Scope of Accreditation.

This test measures the levels emanating from the EUT's AC input port, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices.

The AC conducted emissions of equipment under test shall not exceed the values in CFR47 Part 15.207: 2020 and RSS Gen: 2019 Sect. 8.8.

4.6.1 Test Methodology

A test program that controls instrumentation and data logging was used to automate the AC Power Line Conducted emission test procedure. The frequency range of interest was divided into sub-ranges such as to yield a frequency resolution of 9 kHz. Each phase and neutral of the AC power line were measured with respect to ground. Measurements were performed using a set of 50μH / 50Ω LISNs.

Testing is performed in Lab 5. The setup photographs clearly identify which site was used. The vertical ground plane used in the semi-anechoic chamber is a 2m x 2m solid aluminum frame and panel, and it is bonded to the horizontal ground plane.

In the case of tabletop equipment, the EUT is placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane and 40cm from a vertical ground reference plane. The rear of the EUT was positioned flush with the backside of the table and directly over the LISNs. The power and I/O cables were routed over the edge of the table and bundled approximately 40cm from the ground plane. Support equipment was powered from a separate LISN.

4.6.1.1 Deviations

There were no deviations from this test methodology.

4.6.2 Test Results

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 7: AC Conducted Emissions – Test Results

Test Conditions: Conducted Measurement	**Test Date:** June 10, 2020
Antenna Type: Integrated	**Power Level:** See Test Plan
AC Power: 110Vac / 60 Hz	**Configuration:** Tabletop
Ambient Temperature: 22° C	**Relative Humidity:** 35% RH

Configuration	Frequency Range	Test Result
Line 1 (Hot)	0.15 to 30 MHz	Pass
Line 2 (Neutral)	0.15 to 30 MHz	Pass

SOP 2 Conducted Emissions

Tracking # 32062471.001 Page 1 of 4

EUT Name	eero 6 and eero 6 Extender	**Date**	June 10, 2020
EUT Model	N010001	**Temp / Hum in**	23° C / 35% rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	TX at 2440 MHz (Mid Channel)	**Line AC / Freq**	110 Vac/60 Hz
Standard	CFR47 Part 15.207 / RSS-GEN Sect. 8.8	**RBW / VBW**	9 kHz / 30 kHz
Lab/LISN	Lab #5 /Com-Power, Line 1	**Performed by**	Kerwinn Corpuz

Frequency	Raw	Limiter	Ins. Loss	Level	Detector	Line	Limit	Margin	Result
MHz	dBuV	dB	dB	dBuV		Line	dBuV	dB	
0.170	37.01	9.95	0.08	47.04	QP	Live	64.98	-17.94	Pass
0.170	19.41	9.95	0.08	29.44	Avg	Live	54.98	-25.54	Pass
0.199	35.47	9.95	0.07	45.49	QP	Live	63.65	-18.16	Pass
0.199	19.66	9.95	0.07	29.68	Avg	Live	53.65	-23.96	Pass
0.256	31.30	9.96	0.06	41.31	QP	Live	61.56	-20.25	Pass
0.256	15.48	9.96	0.06	25.50	Avg	Live	51.56	-26.07	Pass
0.437	26.78	9.97	0.04	36.80	QP	Live	57.12	-20.32	Pass
0.437	18.11	9.97	0.04	28.13	Avg	Live	47.12	-18.99	Pass
0.530	36.35	9.98	0.04	46.37	QP	Live	56.00	-9.63	Pass
0.530	19.90	9.98	0.04	29.92	Avg	Live	46.00	-16.08	Pass
1.396	23.28	10.00	0.04	33.32	QP	Live	56.00	-22.68	Pass
1.396	14.48	10.00	0.04	24.52	Avg	Live	46.00	-21.48	Pass

Spec Margin = QP./Ave. - Limit, ± Uncertainty

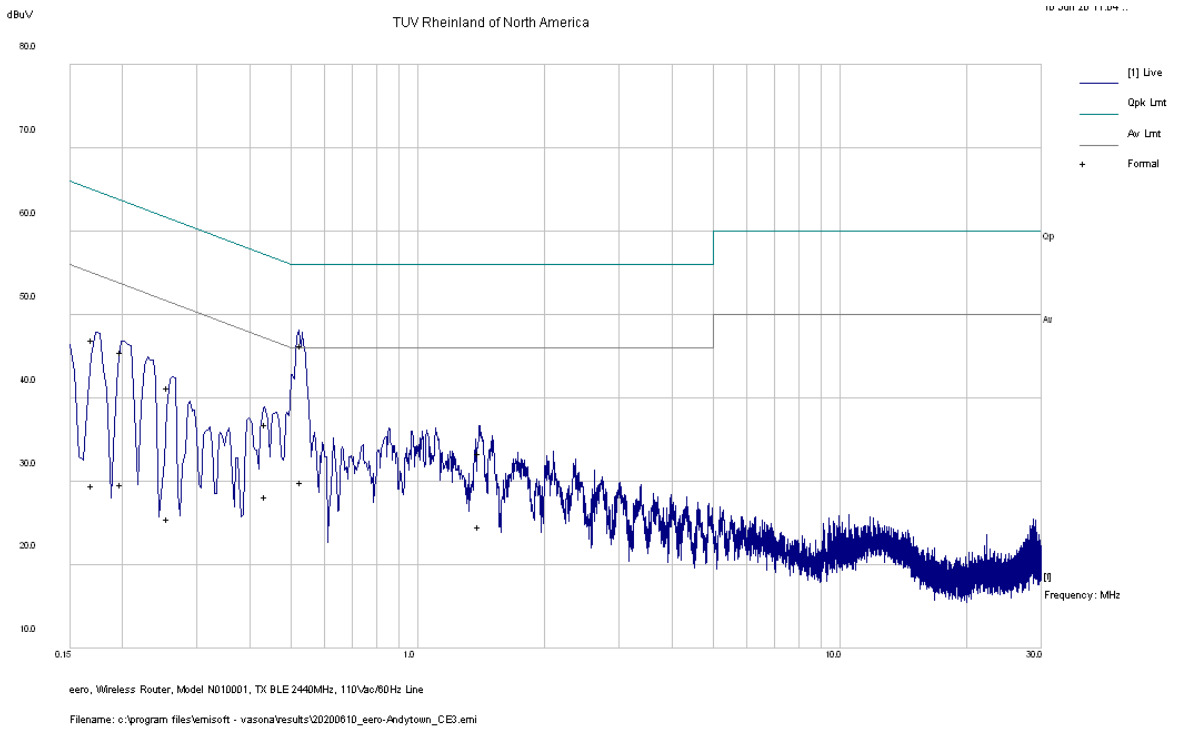
Combined Standard Uncertainty $u_c(y)$ = ± 2.18 dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: EUT was setup as table top equipment.
Result is extracted from report #32062471.001 (BLE).

SOP 2 Conducted Emissions — Tracking # 32062471.001 Page 2 of 4

EUT Name	eero 6 and eero 6 Extender	**Date**	June 10, 2020
EUT Model	N010001	**Temp / Hum in**	23° C / 35% rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	TX at 2440 MHz (Mid Channel)	**Line AC / Freq**	110 Vac/60 Hz
Standard	CFR47 Part 15.207 / RSS-GEN Sect. 8.8	**RBW / VBW**	9 kHz / 30 kHz
Lab/LISN	Lab #5 /Com-Power, Line 1	**Performed by**	Kerwinn Corpuz

150 kHz to 30 MHz Plot for Line 1 (Hot)



Notes: Meets FCC Class B limit.

SOP 2 Conducted Emissions

Tracking # 32062471.001 Page 3 of 4

EUT Name	eero 6 and eero 6 Extender	**Date**	June 10, 2020
EUT Model	N010001	**Temp / Hum in**	23° C / 35% rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	TX at 2440 MHz (Mid Channel)	**Line AC / Freq**	110 Vac/60 Hz
Standard	CFR47 Part 15.207 / RSS-GEN Sect. 8.8	**RBW / VBW**	9 kHz / 30 kHz
Lab/LISN	Lab #5 /Com-Power, Line 2	**Performed by**	Kerwinn Corpuz

Frequency	Raw	Limiter	Ins. Loss	Level	Detector	Line	Limit	Margin	Result
MHz	dBuV	dB	dB	dBuV		Line	dBuV	dB	
0.176	35.71	9.95	0.08	45.74	QP	Neutral	64.69	-18.95	Pass
0.176	17.01	9.95	0.08	27.04	Avg	Neutral	54.69	-27.64	Pass
0.200	35.21	9.95	0.07	45.23	QP	Neutral	63.62	-18.39	Pass
0.200	16.76	9.95	0.07	26.78	Avg	Neutral	53.62	-26.84	Pass
0.229	33.35	9.95	0.06	43.36	QP	Neutral	62.50	-19.14	Pass
0.229	14.59	9.95	0.06	24.61	Avg	Neutral	52.50	-27.90	Pass
0.429	29.60	9.97	0.04	39.61	QP	Neutral	57.27	-17.66	Pass
0.429	14.51	9.97	0.04	24.52	Avg	Neutral	47.27	-22.75	Pass
0.528	34.63	9.98	0.04	44.65	QP	Neutral	56.00	-11.35	Pass
0.528	14.84	9.98	0.04	24.86	Avg	Neutral	46.00	-21.14	Pass
0.851	26.58	9.99	0.04	36.61	QP	Neutral	56.00	-19.39	Pass
0.851	15.62	9.99	0.04	25.65	Avg	Neutral	46.00	-20.35	Pass
0.176	35.71	9.95	0.08	45.74	QP	Neutral	64.69	-18.95	Pass
0.176	17.01	9.95	0.08	27.04	Avg	Neutral	54.69	-27.64	Pass

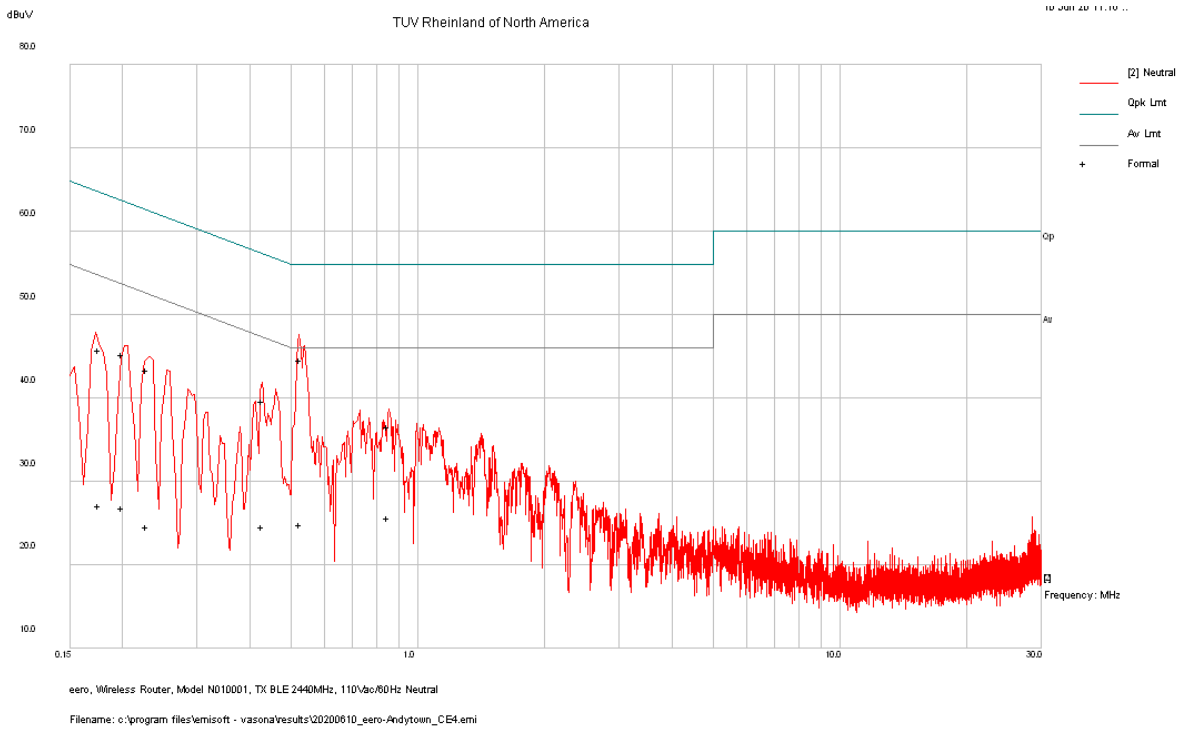
Spec Margin = QP./Ave. - Limit, ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 2.18 dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: EUT was setup as table top equipment.
Result is extracted from report #32062471.001 (BLE).

SOP 2 Conducted Emissions		Tracking # 32062471.001 Page 4 of 4	
EUT Name	eero 6 and eero 6 Extender	**Date**	June 10, 2020
EUT Model	N010001	**Temp / Hum in**	23° C / 35% rh
EUT Serial	NA4V-0034-0FZS-B958	**Temp / Hum out**	N/A
EUT Config.	TX at 2440 MHz (Mid Channel)	**Line AC / Freq**	110 Vac/60 Hz
Standard	CFR47 Part 15.207 / RSS-GEN Sect. 8.8	**RBW / VBW**	9 kHz / 30 kHz
Lab/LISN	Lab #5 /Com-Power, Line 2	**Performed by**	Kerwinn Corpuz

150 kHz to 30 MHz Plot for Line 2 (Neutral)



Note: Meets FCC Class B Limit.

5 Test Equipment List

5.1 Equipment List

Equipment	Manufacturer	Model #	Serial/Inst #	Last Cal mm/dd/yyyy	Next Cal mm/dd/yyyy
Loop Antenna	EMCO	6502	62531	07/01/2019	07/01/2021
Bilog Antenna	Sunol Sciences	JB3	A102606	08/01/2018	08/01/2020
Horn Ant. (1-18GHz)	Sunol Sciences	3115	9211-3969	06/20/2019	06/20/2021
Horn Ant. w/ Pre-Amp	Com-Power	AHA-840	105005	08/26/2019	08/26/2020
EMI Receiver	Agilent	N9038A	MY52260210	02/15/2020	02/15/2021
Spectrum Analyzer	Agilent	N9030A	MY52350885	10/26/2019	10/26/2020
EMI Receiver	Rohde & Schwarz	ESIB40	100180	09/20/2019	09/20/2020
Preamplifier	Sonoma Inst.	310	185516	02/12/2020	02/12/2021
Preamplifier	Miteq	TTA1800-30-HG	184252	02/12/2020	02/12/2021
RF Power Meter	Agilent	E4418A	MY45103902	02/13/2020	02/13/2021
Power Sensor	Agilent	8481A	US37295801	02/13/2020	02/13/2021
Thermometer	Extech Instruments	SD700	A095319	03/18/2020	03/18/2021
Thermo Chamber	Espec	BTZ-133	0613436	12/20/2019	12/20/2020
Signal Generator	Anritsu	MG3694A	042803	02/13/2020	02/13/2021
Notch Filter	Micro-Tronics	BRM50702	37	VBU	VBU

* Calibration of equipment past due for re-calibration will be performed expeditiously. If any equipment is found to be out of tolerance at that time, affected customers will be notified accordingly.

6 EMC Test Plan

6.1 Introduction

This section provides a description of the Equipment Under Test (EUT), configurations, operating conditions, and performance acceptance criteria. It is an overview of information provided by the manufacturer so that the test laboratory may perform the requested testing.

6.2 Customer

Table 8: Customer Information

Company Name	eero LLC
Address	660 3rd Street
City, State, Zip	San Francisco, CA 94107
Country	USA

Table 9: Technical Contact Information

Name	eero LLC
E-mail	cliff@eero.com
Phone	+1 415-738-7972

6.3 Equipment Under Test (EUT)

Table 10: EUT Specifications

EUT Specification	
AC Power Input	100-240V AC, 50 – 60 Hz, 0.5A
DC Power Input	5 VDC, 3 A, 15W
Environment	Indoor
Operating Temperature Range:	0 to 35 degrees C
Multiple Feeds:	☐ Yes and how many ☒ No
Product Marketing Name (PMN)	N010001 and Q010001
Hardware Version Identification Number (HVIN)	N010001 and Q010001
Firmware Version Identification Number (FVIN)	eeroOS 5.0.0
Operating Mode	IEEE 802.15.4
Transmitter Frequency Band	2405 MHz to 2480 MHz
Max. Measured Power Output	+17.32 dBm
Power Setting @ Operating Channel	+20 dBm (max)
Antenna Type	Stamped Metal, Planar Inverted F (3.46 dBi)
Modulation Type	☐ AM ☐ FM ☐ DSSS ☐ OFDM ☒ Other describe: GFSK
Date Rate	250 kbps
TX/RX Chain (s)	1
Directional Gain Type	☒ Uncorrelated ☒ No Beam-Forming ☐ Other describe:
Type of Equipment	☒ Table Top ☐ Wall-mount ☐ Floor standing cabinet ☐ Other
Note: 1. eero test image 4470b6a83278; Fri may 29 18:01:48 UTC 2020. 2. Support laptop interface software: PTC_QPG7015M_RPi v1.3.0.0.	

Table 11: Interface Specifications

Interface Type	Cabled with what type of cable?	Is the cable shielded?	Maximum potential length of the cable?	Metallic (M), Coax (C), Fiber (F), or Not Applicable?
RJ45	Terminated to Host Ethernet Port	☒ No	☒ Metric:2m	☒ N/A

Table 12: Supported Equipment

Equipment	Manufacturer	Model	Serial	Used for
Laptop	DELL	Latitude 5420	GBGHMQ1	Set test mode

Table 13: Description of Sample used for Testing

Device	Serial Number	Configuration	Used For
N010001	NA4V-0034-0FZS-B958	Radiated Sample	Radiated Emissions. Conducted Emission
N010001	NA4V-003K-J9V4-FP58	Conducted Sample	Output Power, Occupied Bandwidth, Conducted Spurious Emissions, Peak Power Spectral Density
Note: Conducted sample, a soldered pigtail was in place of the stamped metal antenna for test purposes only.			

Table 14: Description of Test Configuration used for Radiated Measurement.

Device	Antenna	Mode	Setup Description
N010001	Integrated	Transmit & Receive	N010001 positioned tabletop.
Note: This is the final setup configuration used for testing on its normal positioned.			

Table 15: Final Test Mode for 2405 MHz to 2480MHz Band (Zigbee)

Test	N010001
Occupied Bandwidth	2405, 2440, 2480 MHz @ 250 kbps
Output Power	2405, 2440, 2480 MHz @ 250 kbps
Peak Power Spectral Density	2405, 2440, 2480 MHz @ 250 kbps
Out-of-Band (-30 dBr)	2405, 2440, 2480 MHz @ 250 kbps
Band-Edge (Radiated)	2405, 2480 MHz @ 250 kbps
Transmitted Spurious Emission	2405, 2440, 2480 MHz @ 250 kbps
AC Conducted Emission	2440 MHz @ 1 Mbps (Extracted result from BLE)
Note: EUT transmits at 100% duty cycle.	

6.4 Test Specifications

Table 16: Test Specifications

Emissions and Immunity	
Rules & Regulations / Standard	**Requirement**
CFR 47 Part 15.247: 2020	All
RSS 247 Issue 2, 2017	All

END OF REPORT