



427 West 12800 South
Draper, UT 84020

Test Report Certification

FCC ID	SWX-UTC
ISED ID	6545A-UTC
Equipment Under Test	UT-Conference
Test Report Serial Number	TR5711_01
Date of Test(s)	8, 10, 14-16 December 2020
Report Issue Date	13 January 2021

Test Specification	Applicant
47 CFR FCC Part 15, Subpart E	Ubiquiti Inc. 685 Third Avenue New York, NY 10019 U.S.A.



NVLAP LAB CODE 600241-0

Certification of Engineering Report

This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart E. This report may be reproduced in full. Partial reproduction of this report may only be made with the written consent of the laboratory. The results in this report apply only to the sample tested.

Applicant	Ubiquiti Inc.
Manufacturer	Ubiquiti Inc.
Brand Name	UniFi-Talk
Model Number	UT-Conference
FCC ID	SWX-UTC
ISED ID	6545A-UTC

On this 13th day of January 2021, I individually and for Unified Compliance Laboratory certify that the statements made in this engineering report are true, complete and correct to the best of my knowledge and are made in good faith.

Although NVLAP has accredited the Unified Compliance Laboratory testing facilities, this report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the U.S. federal government.

Unified Compliance Laboratory



Written By: Noah Vickers



Reviewed By: Joseph W. Jackson

Revision History		
Revision	Description	Date
01	Original Report Release	13 January 2021

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1 Client Information

1.1 Applicant

Company	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.
Contact Name	Mark Feil
Title	Compliance Manager

1.2 Manufacturer

Company	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.
Contact Name	Mark Feil
Title	Compliance Manager

2 Equipment Under Test (EUT)

2.1 Identification of EUT

Brand Name	UniFi-Talk
Model Number	UT-Conference
Serial Number	7483C29FFD36
Dimensions (cm)	21.5 x 21.5 x 6

2.2 Description of EUT

The UT-Conference is a full featured PoE+ conference speaker system. The UT-Conference has a capacitive touch pad to adjust user volume, mute status, and displays volume levels with an intuitive LED ring display. The UT-Conference is powered by PoE+ and has a second port for power and data passthrough to a second device. The UT-Conference is designed for indoor use.

Band	Modulation Bandwidth	Frequency (MHz)
UNII-1	20 MHz	5180, 5200, 5220, 5240
	40 MHz	5190, 5230
	80 MHz	5210
UNII-3	20 MHz	5745, 5765, 5785, 5805, 5825
	40 MHz	5755, 5795
	80 MHz	5775

This report covers the circuitry of the device subject to FCC Part 15, Subpart E. The circuitry of the device subject to FCC Part 15 Subpart B was found to be compliant and is covered under a separate Unified Compliance Laboratory report.

2.3 EUT and Support Equipment

The EUT and support equipment used during the test are listed below.

Brand Name Model Number Serial Number	Description	Name of Interface Ports / Interface Cables
BN: UniFi-Talk MN: UT-Conference (Note 1) SN: 7483C29FFD36	VoIP Conference Phone	See Section 2.4
BN: Ubiquiti MN: U-POE-af SN: N/A	PoE Power Adapter	Shielded or Un-Shielded Cat 5e cable (Note 2)
BN: Dell	Laptop Personal Computer	Shielded or Un-Shielded Cat 5e

MN: XPS 13 SN: N/A		cable (Note 2)
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Notes: (1) EUT

(2) Interface port connected to EUT (See Section 2.4)

The support equipment listed above was not modified in order to achieve compliance with this standard.

2.4 Interface Ports on EUT

Name of Ports	No. of Ports Fitted to EUT	Cable Description/Length
Ethernet/PoE	1	Un-Shielded Cat 5e Cable / 3m
Ethernet	1	N/A

2.5 Operating Environment

Power Supply	120 VAC
AC Mains Frequency	60 Hz
Temperature	20.3 – 24.5 °C
Humidity	13.91 – 22.95%
Barometric Pressure	1025 mBar

2.6 Operating Modes

The UT-Conference was tested using test software in order to enable to constant transmission of over 98% All emission modes of 802.11 a/n/ac were investigated.

2.7 EUT Exercise Software

EUT firmware version 1.0 was used to operate the transmitter using a constant transmit mode.

2.8 Block Diagram of Test Configuration

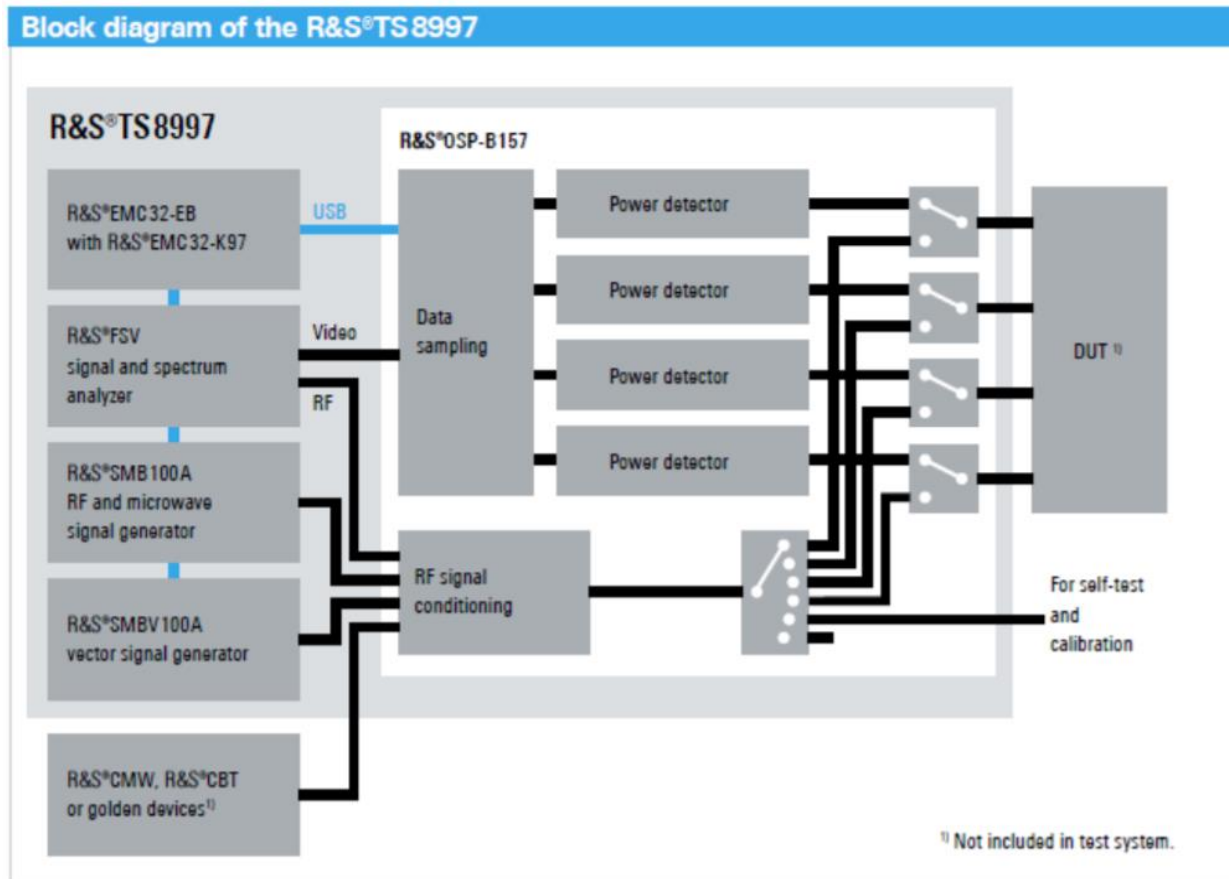


Diagram 1: Test Configuration Block Diagram

2.9 Modification Incorporated/Special Accessories on EUT

There were no modifications made to the EUT during testing to comply with the specification.

2.10 Deviation, Opinions Additional Information or Interpretations from Test Standard

There were no deviations, opinions, additional information or interpretations from the test specification.

3 Test Specification, Method and Procedures

3.1 Test Specification

Title	47 CFR FCC Part 15, Subpart E, Section 15.407 Limits and methods of measurement of radio interference characteristics of Unlicensed National Information Infrastructure Devices
Purpose of Test	The tests were performed to demonstrate initial compliance

3.2 Methods & Procedures

3.2.1 47 CFR FCC Part 15 Section 15.407

See test standard for details.

3.3 FCC Part 15, Subpart E

3.3.1 Summary of Tests

FCC Section	ISED Section	Environmental Phenomena	Frequency Range (MHZ)	Result
15.407(a)	N/A	Antenna requirements	Structural Requirement	Compliant
15.407(b)	RSS-Gen	Conducted Disturbance at Mains Port	0.15 to 30	Compliant
15.407(c)	RSS-247 §6.2.2, §6.2.3	Bandwidth Requirement	5150 to 5250	Compliant
15.407(e)	RSS-247 §6.2.2, §6.2.3	Peak Output Power	5150 to 5250	Compliant
15.407(f)	RSS-247 §6.2.2, §6.2.3	Antenna Conducted Spurious Emissions	0.009 to 40000	Compliant
15.407(g)	RSS-247 §6.2.2, §6.2.3	Radiated Spurious Emissions	0.009 to 40000	Compliant
15.407(h)	RSS-247 §6.2.2, §6.2.3	Peak Power Spectral Density	5150 to 5250	Compliant

The testing was performed according to the procedures in ANSI C63.10-2013, KDB 789033 and 47 CFR Part 15.

3.4 Results

In the configuration tested, the EUT complied with the requirements of the specification.

3.5 Test Location

Testing was performed at the Unified Compliance Laboratory 10-Meter chamber located at 427 West 12800 South, Draper, UT 84020. Unified Compliance Laboratory is accredited by National Voluntary Laboratory Accreditation Program (NVLAP); NVLAP Code 600241-0 which is effective until 30 June 2021. This site has also been registered with Innovations, Science and Economic Development (ISED)

department as was accepted under Appendix B, Phase 1 procedures of the APEC Tel MRA for Canadian recognition. ISED No.: 25346, effective until June 30, 2021. Unified Compliance Laboratory has been assigned Conformity Assessment Number US0223 by ISED.

4 Test Equipment

4.1 Conducted Emissions at Mains Ports

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
EMI Receiver	AFJ	FFT3010	UCL-2500	9/18/2020	9/18/2021
LISN	AFJ	LS16C/10	UCL-2512	5/26/2020	5/26/2021
Cat6 ISN	Teseq	ISN T8-Cat6	UCL-2971	5/18/2020	5/18/2021
ISN	Teseq	ISN T800	UCL-2974	6/1/2020	6/1/2021
LISN	Com-Power	LIN-120C	UCL-2612	5/19/2020	5/19/2021
AC Power Source	Laplace Instruments	AC1000A	UCL-2857	N/A	N/A
Test Software	UCL	Revision 1	UCL-3107	N/A	N/A

Table 1: List of equipment used for Conducted Emissions Testing at Mains Port

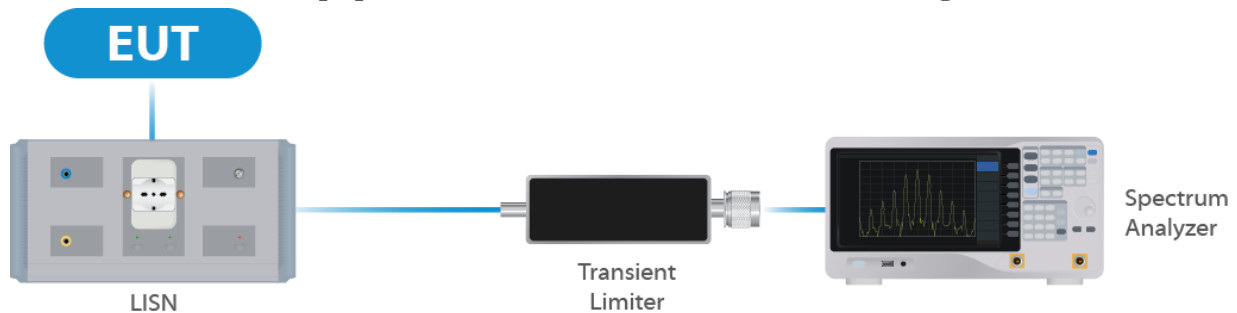


Figure 1: Conducted Emissions Test

4.2 Direct Connect at the Antenna Port Tests

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
Spectrum Analyzer	R&S	FSV40	UCL-2861	8/24/2020	8/24/2021
Signal Generator	R&S	SMB100A	UCL-2864	N/A	N/A
Vector Signal Generator	R&S	SMBV100A	UCL-2873	N/A	N/A
Switch Extension	R&S	OSP-B157WX	UCL-2867	8/25/2020	8/25/2021
Switch Extension	R&S	OSP-150W	UCL-2870	8/21/2020	8/21/2021

Table 2: List of equipment used for Direct Connect at the Antenna Port

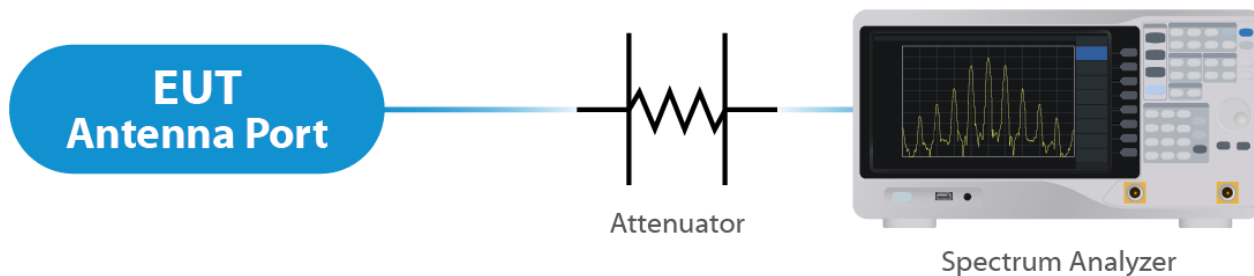


Figure 2: Direct Connect at the Antenna Port Test

4.3 Radiated Emissions

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
EMI Receiver	Keysight	N9038A	UCL-2778	6/1/2020	6/1/2021
Pre-Amplifier	Sonoma Instruments	310N	UCL-2889	9/10/2020	9/10/2021
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	7/8/2020	7/8/2021
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	5/20/2020	5/20/2021
15 - 40 GHz Horn Antenna	Scwarzbeck	BBHA 9170	UCL-2487	5/21/2020	5/21/2021
18 – 40 GHz Amplifier	Com-Power	PAM 118A	UCL-3833	1/28/2020	1/28/2021
0.5 – 18 GHz Amplifier	Scwarzbeck	BBV 9718C	UCL-2493	1/24/2020	1/24/2021
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 3:List of equipment used for Radiated Emissions

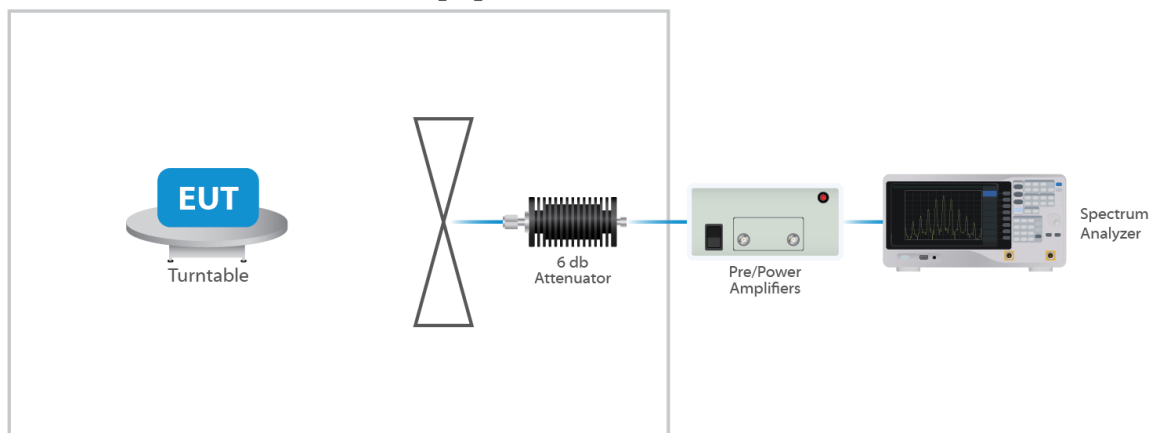


Figure 3: Radiated Emissions Test

4.4 Equipment Calibration

All applicable equipment is calibrated using either an independent calibration laboratory or Unified Compliance Laboratory personnel at intervals defined in ANSI C63.4:2014 following outlined calibration procedures. All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and is available for examination upon request.

4.5 Measurement Uncertainty

Test	Uncertainty (\pm dB)	Confidence (%)
Conducted Emissions	1.44	95
Radiated Emissions (9 kHz to 30 MHz)	2.50	95
Radiated Emissions (30 MHz to 1 GHz)	4.38	95
Radiated Emissions (1 GHz to 18 GHz)	4.37	95
Radiated Emissions (18 GHz to 40 GHz)	3.93	95
Direct Connect Tests	K Factor	Value
Emissions Bandwidth	2	2.0%
Output Power	2	1.0 dB
Peak Power Spectral Density	2	1.3 dB
Band Edge	2	0.8 dB
Transmitter Spurious Emissions	2	1.8 dB

5 Test Results

5.1 §15.203 Antenna Requirements

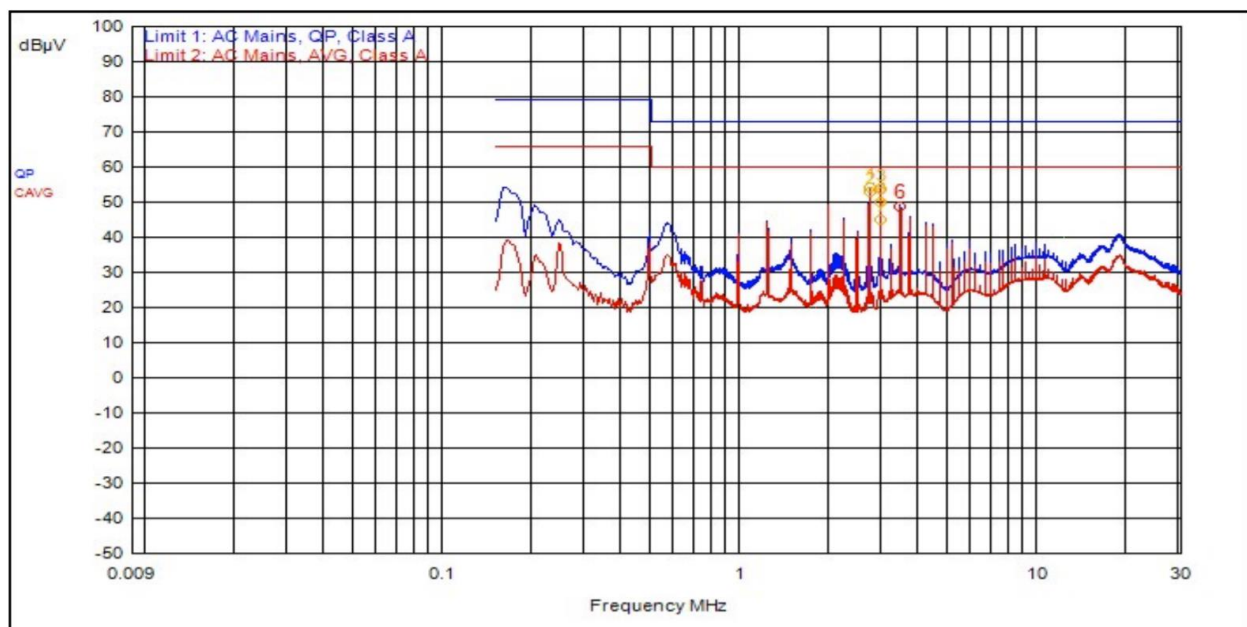
The EUT uses an integral antenna. The Maximum gain of the antenna is 5.2 dBi. The antenna is not user replaceable.

Results

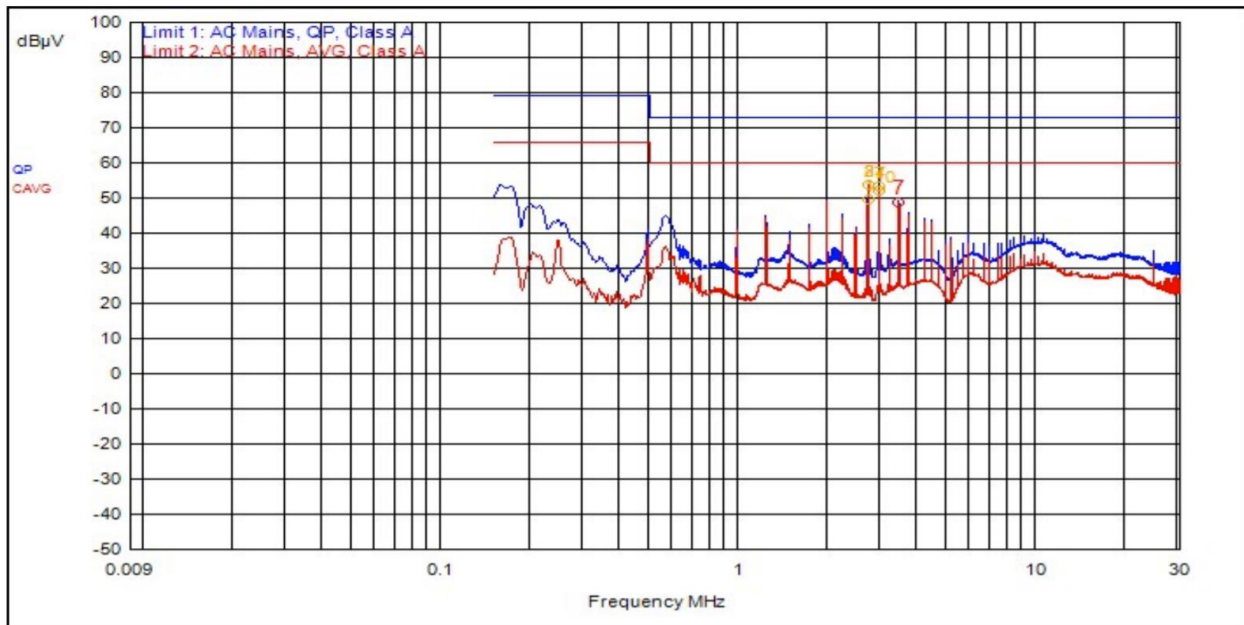
The EUT complied with the specification

5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



5.2.2 Neutral



Result

The EUT complied with the specification limit.

5.3 §15.403(i) 26 dB Emissions Bandwidth

Nominal BW (MHz)	Frequency (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)
20	5180	17.8	21.6
20	5210	17.8	22.6
20	5240	17.8	21.9
40	5190	36.3	39.8
40	5210	36.5	40.5
40	5230	36.3	39.9
80	5210	75.5	83

Result

The bandwidths are reported for information purposes. Please see Annex for all bandwidth measurements.

5.4 §15.403(a)(1) Maximum Average Output Power

The maximum average RF conducted output power measured for this device was 17.1 dBm or 51.29 mW. The limit is 30 dBm, or 1 watt when using antennas with 23 dBi or less gain. The antenna has a gain of 5.2 dBi.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured EIRP	Measured PSD
OFDM 20	5180	Mcs0	8	8.9	14.1	-4
OFDM 20	5210	Mcs0	25	17	22.2	3.7
OFDM 20	5240	Mcs0	25	16.9	22.1	3.7
HT 20	5180	Mcs0	8	8.9	14.1	-4.4
HT 20	5210	Mcs0	25	17	22.2	3.4
HT 20	5240	Mcs0	25	17.1	22.3	3.5
HT 40	5190	Mcs0	8	9.2	14.4	-3
HT 40	5230	Mcs0	25	16.8	22	4.4
VHT 20	5180	Mcs0	8	8.8	14	-4.5
VHT 20	5210	Mcs0	25	16.7	21.9	3.1
VHT 20	5240	Mcs0	25	16.8	22	3.2
VHT 40	5190	Mcs0	8	9.8	15	-5.6
VHT 40	5230	Mcs0	25	16.3	21.5	0.9
VHT80	5210	Mcs0	10	16.4	21.6	-0.8

Result

In the configuration tested, the maximum average RF outpower was less than 1 watt; therefore, the EUT complied with the requirements of the specification (see spectrum analyzer plots in attached Annex).

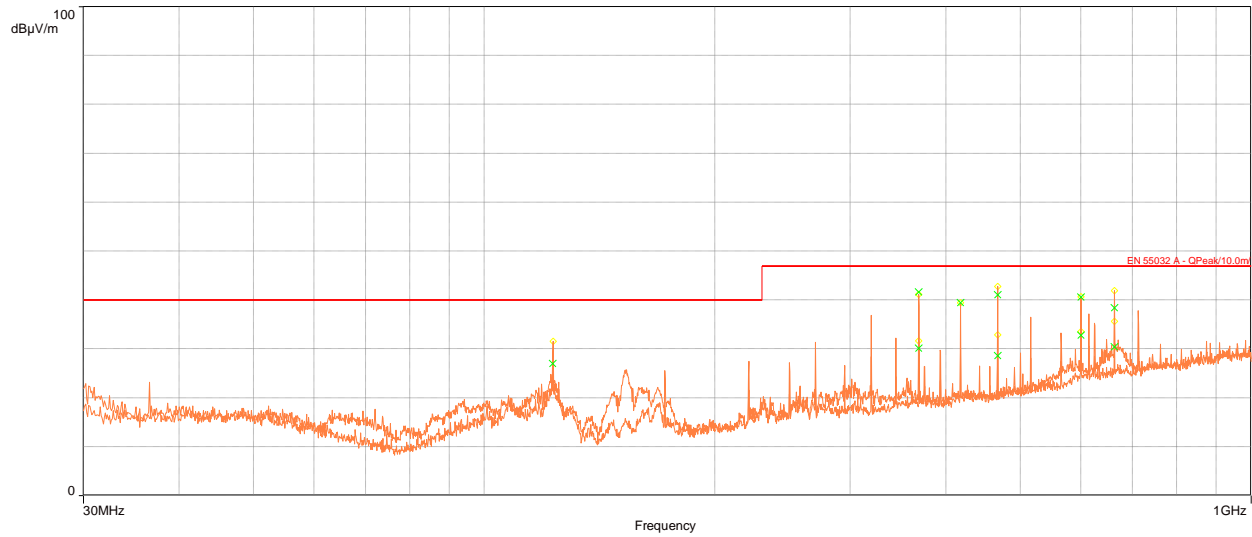
5.5 §15.407(b) Spurious Emissions

5.5.1 Radiated Spurious Emissions in the Restricted Bands of § 15.205

The EUT uses various power settings based on the channel in use. In order to reduce test time, the radiated spurious emissions at the lowest, middle, and highest channel were measured at the maximum power of TP 25, as this setting was found to be worst case for spurious emissions. Power was subsequently reduced during in-band and band edge testing. The band edge at the restricted band ending at 5150 MHz was measured using radiated measurement. All emissions modes were tested and the worst-case measurements are shown below.

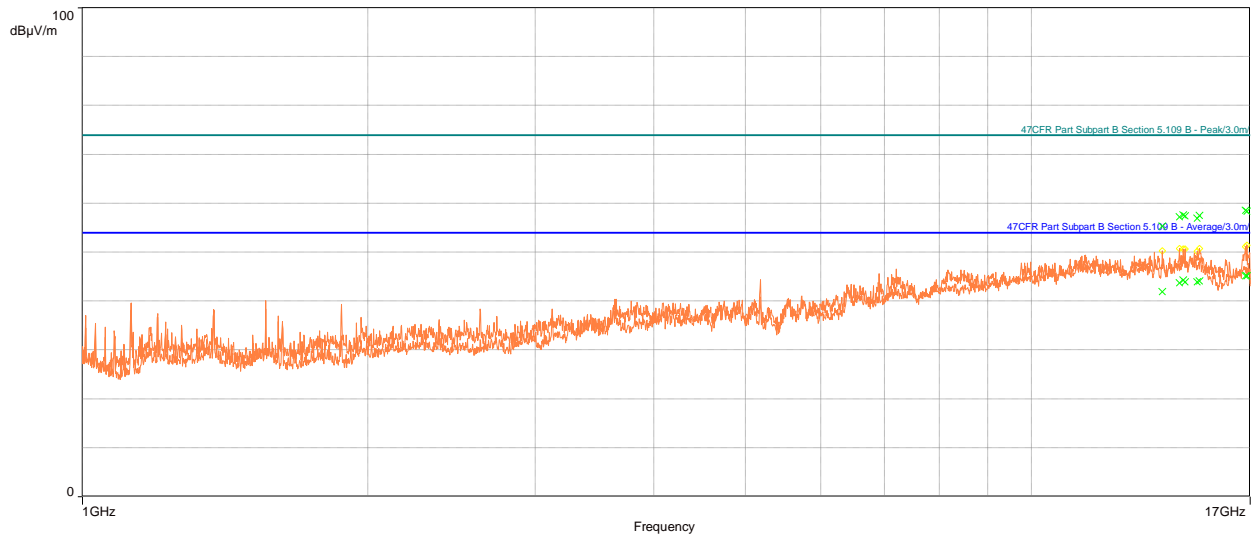
Result

All emissions in the restricted bands of § 15.205 met the limits specified in § 15.209; therefore, the EUT complies with the specification. See Annex for Conducted Band edge plots.



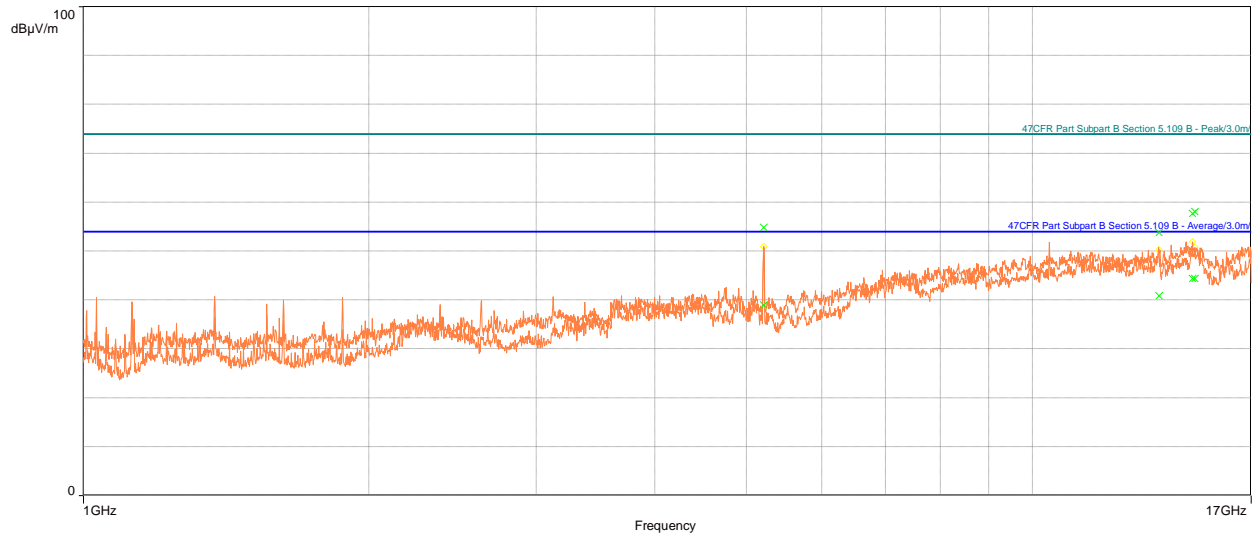
Frequency (MHz)	Det.	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarization	Correction (dB)
122.82	QP	27.04	40.00	-12.96	301.00	1.33	Vertical	-16.22
368.66	QP	30.18	47.00	-16.82	347.00	1.09	Vertical	-10.24
467	QP	28.65	47.00	-18.35	324.00	2.30	Vertical	-8.46
600.03	QP	32.76	47.00	-14.24	87.00	2.37	Vertical	-4.92
663.6	QP	30.42	47.00	-16.58	13.00	1.91	Vertical	-4.70
368.64	QP	41.67	47.00	-5.33	250.00	2.38	Horizontal	-10.24
417.78	QP	39.47	47.00	-7.53	350.00	2.14	Horizontal	-8.86
466.9	QP	41.11	47.00	-5.89	183.00	1.75	Horizontal	-8.47
600.02	QP	40.56	47.00	-6.44	44.00	1.68	Horizontal	-4.92
663.49	QP	38.42	47.00	-8.58	83.00	1.43	Horizontal	-4.70

Table 4: 30 MHz – 1 GHz Worst Case



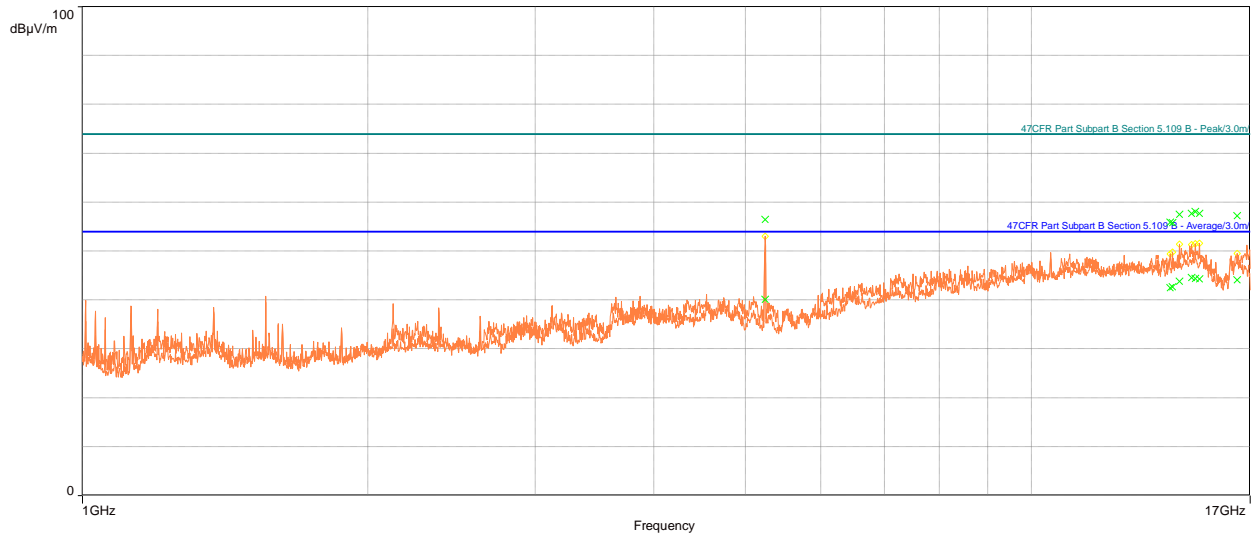
Frequency (MHz)	Det.	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarization	Correction (dB)
14954	A	43.90	54.00	-10.10	189.00	2.47	Vertical	17.33
15028	A	44.14	54.00	-9.86	2.00	3.45	Vertical	17.32
16816	A	45.14	54.00	-8.86	155.00	3.23	Vertical	18.62
16870	A	45.14	54.00	-8.86	90.00	3.08	Vertical	19.03
13742	A	41.93	54.00	-12.07	340.00	1.51	Horizontal	15.03
14328	A	43.77	54.00	-10.23	148.00	1.75	Horizontal	16.51
14452	A	44.27	54.00	-9.73	200.00	2.80	Horizontal	17.15
14516	A	43.91	54.00	-10.09	164.00	2.67	Horizontal	16.80
14954	P	56.92	74.00	-17.08	189.00	2.47	Vertical	17.33
15028	P	57.50	74.00	-16.50	2.00	3.45	Vertical	17.32
16816	P	58.61	74.00	-15.39	155.00	3.23	Vertical	18.62
16870	P	58.35	74.00	-15.65	90.00	3.08	Vertical	19.03
13742	P	55.30	74.00	-18.70	340.00	1.51	Horizontal	15.03
14328	P	57.22	74.00	-16.78	148.00	1.75	Horizontal	16.51
14452	P	57.59	74.00	-16.41	200.00	2.80	Horizontal	17.15
14516	P	57.45	74.00	-16.55	164.00	2.67	Horizontal	16.80

Table 5: Transmitting on the Lowest Frequency 5180 MHz



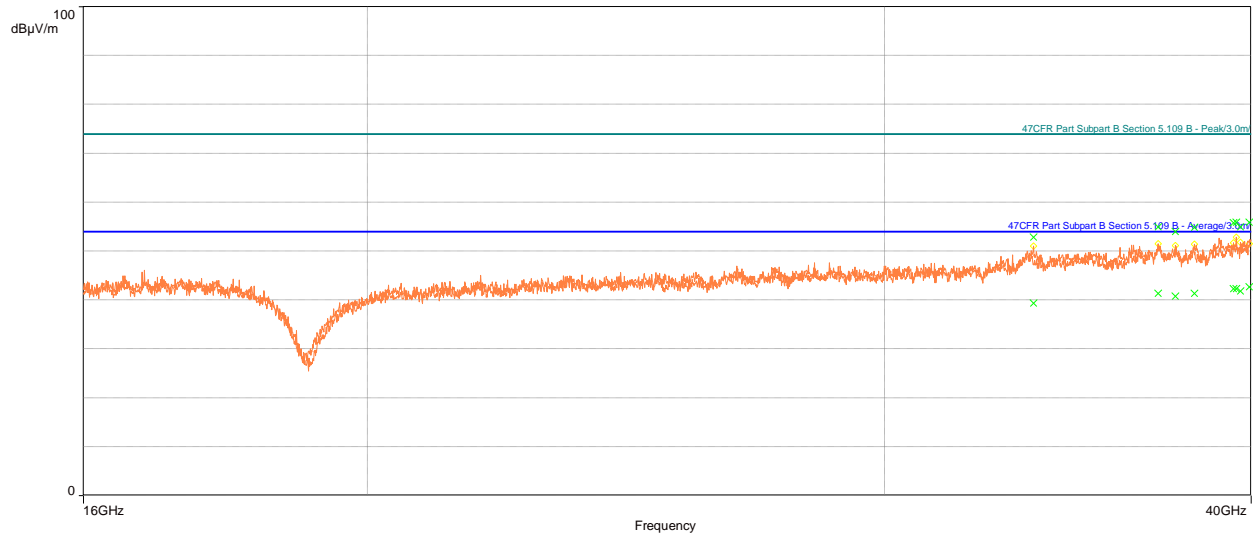
Frequency (MHz)	Det.	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarization	Correction (dB)
13596	A	40.93	54.00	-13.07	25.00	3.34	Vertical	14.94
14747	A	44.39	54.00	-9.61	73.00	3.32	Vertical	17.54
14834	A	44.40	54.00	-9.60	3.00	1.89	Vertical	17.65
13596	P	53.81	74.00	-20.19	25.00	3.34	Vertical	14.94
14747	P	57.70	74.00	-16.30	73.00	3.32	Vertical	17.54
14834	P	58.06	74.00	-15.94	3.00	1.89	Vertical	17.65

Table 6: Transmitting on the Middle Frequency 5210 MHz



Frequency (MHz)	Det.	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarization	Correction (dB)
13995	A	42.46	54.00	-11.54	62.00	2.48	Vertical	15.23
14086	A	42.71	54.00	-11.29	358.00	2.84	Vertical	15.69
16479	A	44.13	54.00	-9.87	129.00	1.88	Vertical	17.27
14326	A	43.87	54.00	-10.13	168.00	2.59	Horizontal	16.53
14744	A	44.54	54.00	-9.46	205.00	4.00	Horizontal	17.54
14880	A	44.36	54.00	-9.64	206.00	3.75	Horizontal	17.43
15036	A	44.28	54.00	-9.72	334.00	2.31	Horizontal	17.33
13995	P	55.86	74.00	-18.14	62.00	2.48	Vertical	15.23
14086	P	55.83	74.00	-18.17	358.00	2.84	Vertical	15.69
16479	P	57.25	74.00	-16.75	129.00	1.88	Vertical	17.27
14326	P	57.55	74.00	-16.45	168.00	2.59	Horizontal	16.53
14744	P	57.72	74.00	-16.28	205.00	4.00	Horizontal	17.54
14880	P	58.11	74.00	-15.89	206.00	3.75	Horizontal	17.43
15036	P	57.73	74.00	-16.27	334.00	2.31	Horizontal	17.33

Table 7: Transmitting on the Highest Frequency 5240 MHz



Frequency (MHz)	Det.	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
33717	A	39.33	54.00	-14.67	253.00	Vertical	2.25
37186	A	41.35	54.00	-12.65	83.00	Vertical	2.63
38261	A	41.33	54.00	-12.67	35.00	Vertical	2.43
39531	A	42.35	54.00	-11.65	36.00	Vertical	4.06
37692	A	40.75	54.00	-13.25	29.00	Horizontal	2.46
39451	A	42.30	54.00	-11.70	358.00	Horizontal	4.48
39665	A	41.88	54.00	-12.12	208.00	Horizontal	4.38
39937	A	42.70	54.00	-11.30	139.00	Horizontal	4.77
33717	P	52.89	74.00	-21.11	253.00	Vertical	2.25
37186	P	54.95	74.00	-19.05	83.00	Vertical	2.63
38261	P	54.86	74.00	-19.14	35.00	Vertical	2.43
39531	P	55.88	74.00	-18.12	36.00	Vertical	4.06
37692	P	53.99	74.00	-20.01	29.00	Horizontal	2.46
39451	P	55.82	74.00	-18.18	358.00	Horizontal	4.48
39665	P	54.95	74.00	-19.05	208.00	Horizontal	4.38
39937	P	55.93	74.00	-18.07	139.00	Horizontal	4.77

Table 8 Transmitting on the Middle Frequency 5200 MHz (worst case)

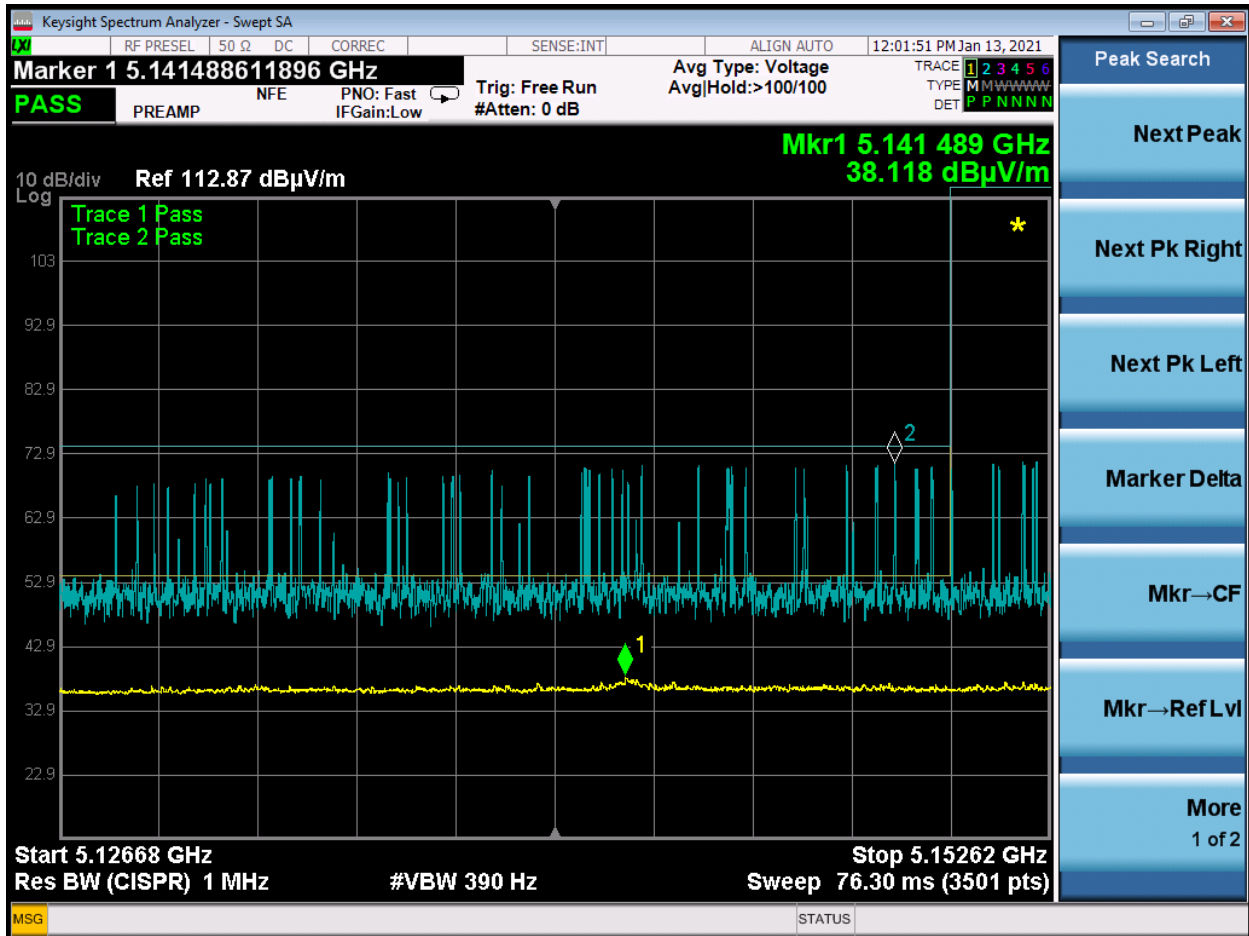


Figure 4: 20 MHz 5180 MHz Band Edge

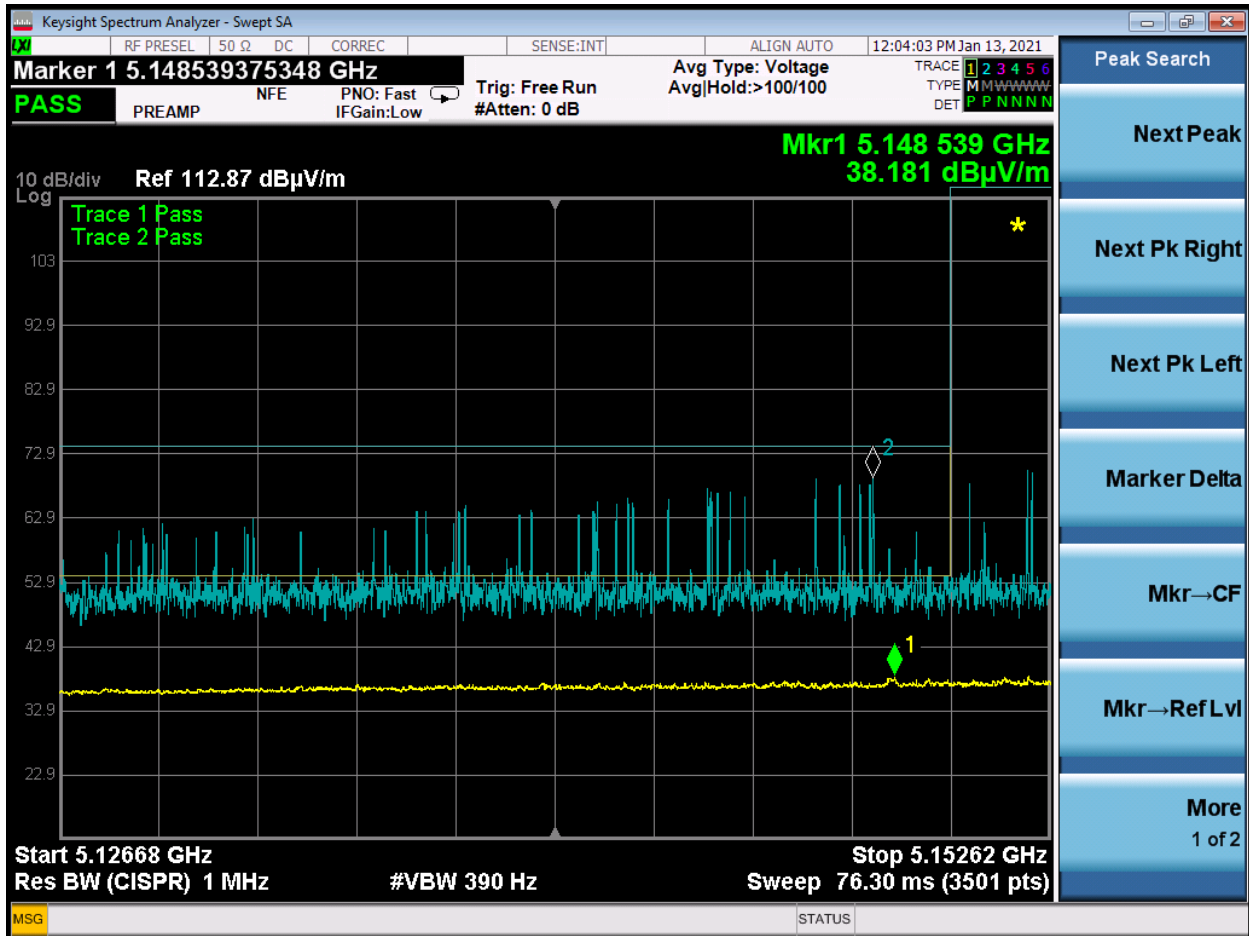


Figure 5: 20 MHz 5210 MHz Band Edge

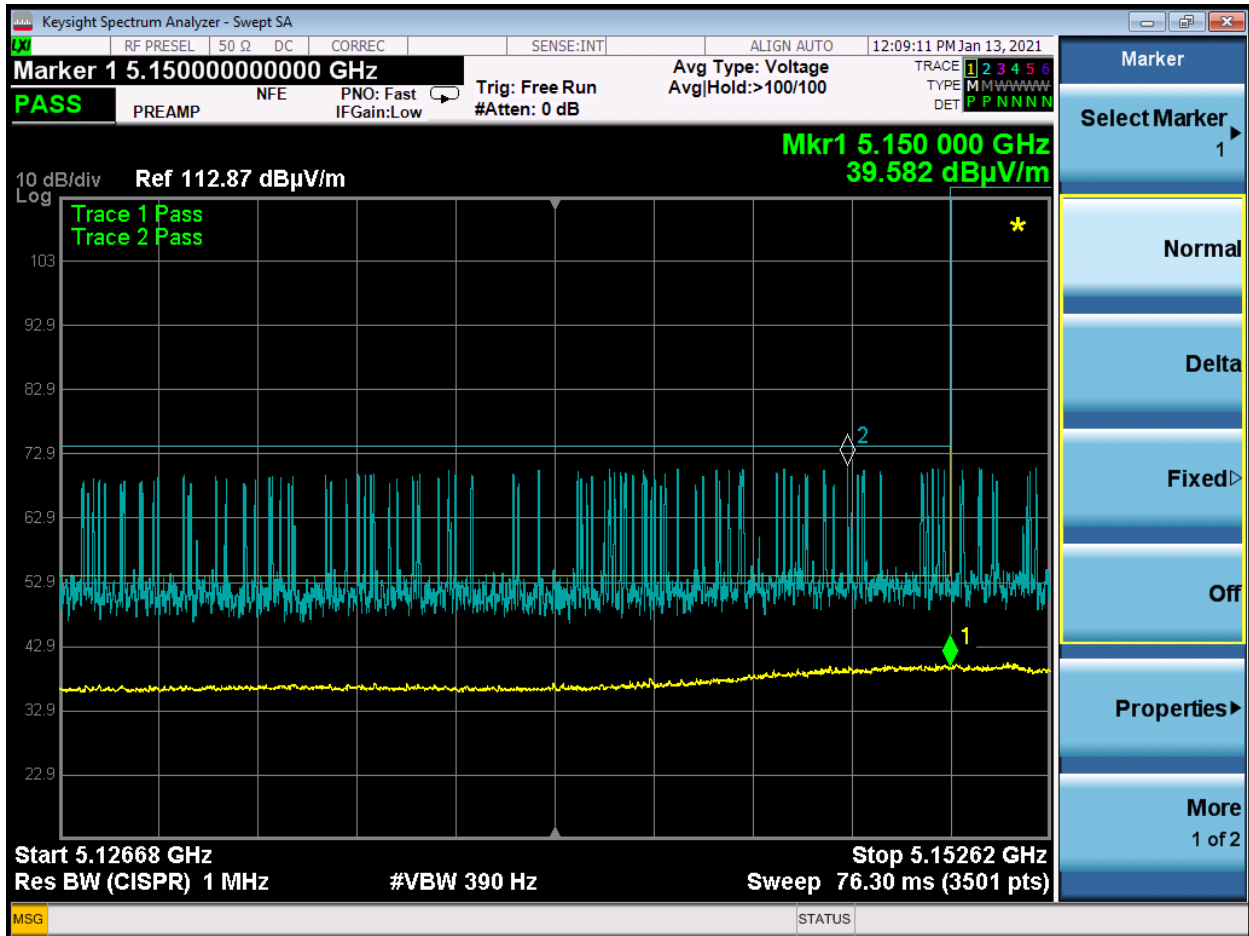


Figure 6: 40 MHz 5190 MHz Band Edge

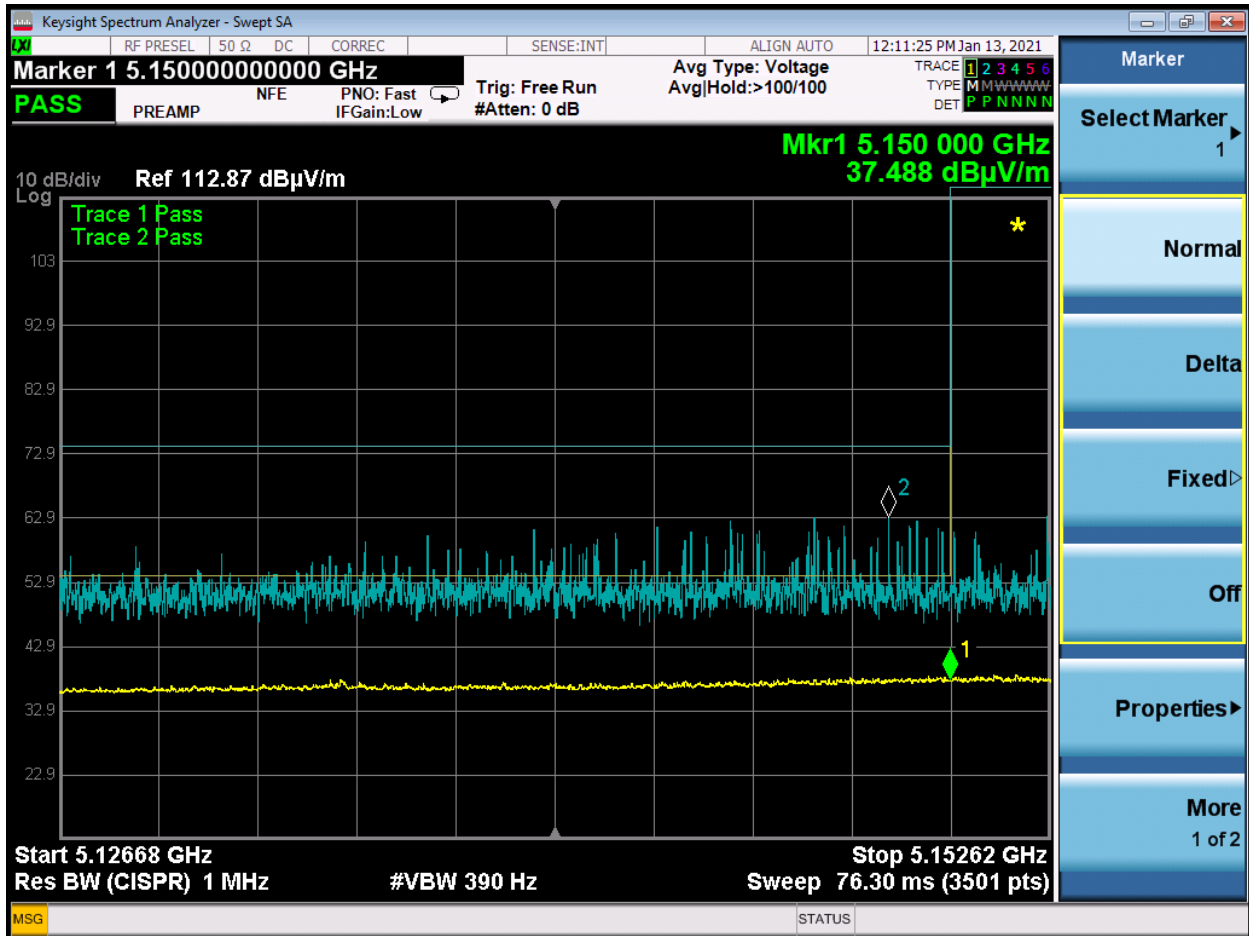


Figure 7: 40 MHz 5230 MHz Band Edge

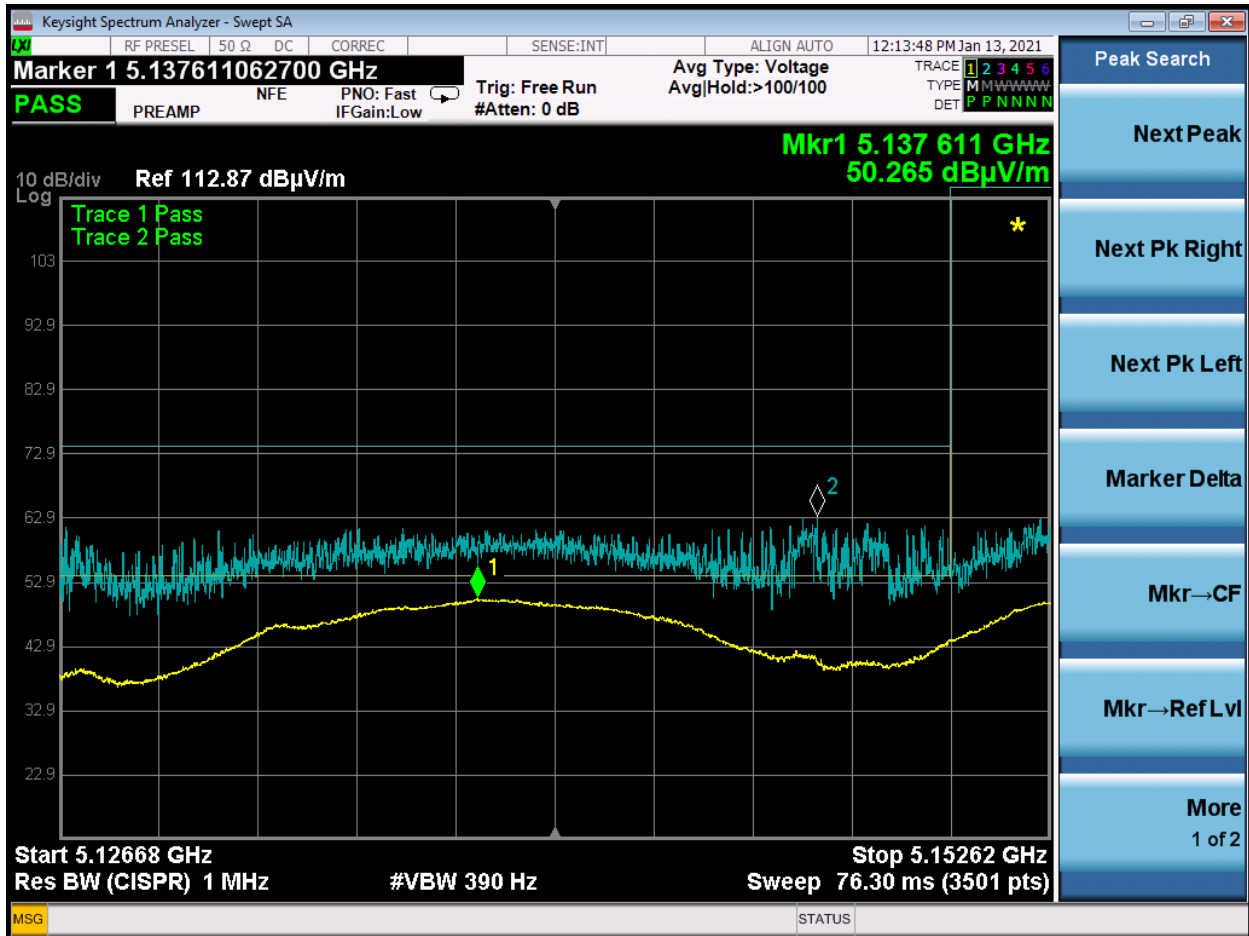


Figure 8: 80 MHz 5210 MHz Band Edge

5.6 §15.407(a) Maximum Power Spectral Density

The maximum average power spectral density conducted from the intentional radiator of the antenna shall not be greater than 17 dBm in any 1 MHz band during any time interval of continuous transmission. Results of this testing are summarized.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Measured PSD
OFDM 20	5180	Mcs0	8	-4
OFDM 20	5210	Mcs0	25	3.7
OFDM 20	5240	Mcs0	25	3.7
HT 20	5180	Mcs0	8	-4.4
HT 20	5210	Mcs0	25	3.4
HT 20	5240	Mcs0	25	3.5
HT 40	5190	Mcs0	8	-3
HT 40	5230	Mcs0	25	4.4
VHT 20	5180	Mcs0	8	-4.5
VHT 20	5210	Mcs0	25	3.1
VHT 20	5240	Mcs0	25	3.2
VHT 40	5190	Mcs0	8	-5.6
VHT 40	5230	Mcs0	25	0.9
VHT80	5210	Mcs0	10	-0.8

Result

The maximum average power spectral density was less than the limit of 17dBm; therefore, the EUT complies with the specification.

-- End of Test Report --