



427 West 12800 South  
 Draper, UT 84020

## Test Report Certification

<b>FCC ID</b>	SWX-UTC
<b>ISED ID</b>	6545A-UTC
<b>Equipment Under Test</b>	UT-Conference
<b>Test Report Serial Number</b>	TR5711_01
<b>Date of Test(s)</b>	4 - 5 November 2020 and 8, 10, 15 - 16 December 2020
<b>Report Issue Date</b>	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

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## 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.

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

On this 13<sup>th</sup> 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



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Written By: Noah Vickers



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Reviewed By: Joseph W. Jackson

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<b>Revision History</b>		
<b>Revision</b>	<b>Description</b>	<b>Date</b>
01	Original Report Release	13 January 2021

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# 1 Client Information

## 1.1 Applicant

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

## 1.2 Manufacturer

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

## 2 Equipment Under Test (EUT)

### 2.1 Identification of EUT

<b>Brand Name</b>	UniFi-Talk
<b>Model Number</b>	UT-Conference
<b>Serial Number</b>	7483C29FFD36
<b>Dimensions (cm)</b>	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.

<b>Band</b>	<b>Modulation Bandwidth</b>	<b>Frequency (MHz)</b>
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.

<b>Brand Name Model Number Serial Number</b>	<b>Description</b>	<b>Name of Interface Ports / Interface Cables</b>
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

<b>Power Supply</b>	120 VAC
<b>AC Mains Frequency</b>	60 Hz
<b>Temperature</b>	20.4 – 24.5 °C
<b>Humidity</b>	13.91 – 28.86 %
<b>Barometric Pressure</b>	1019 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

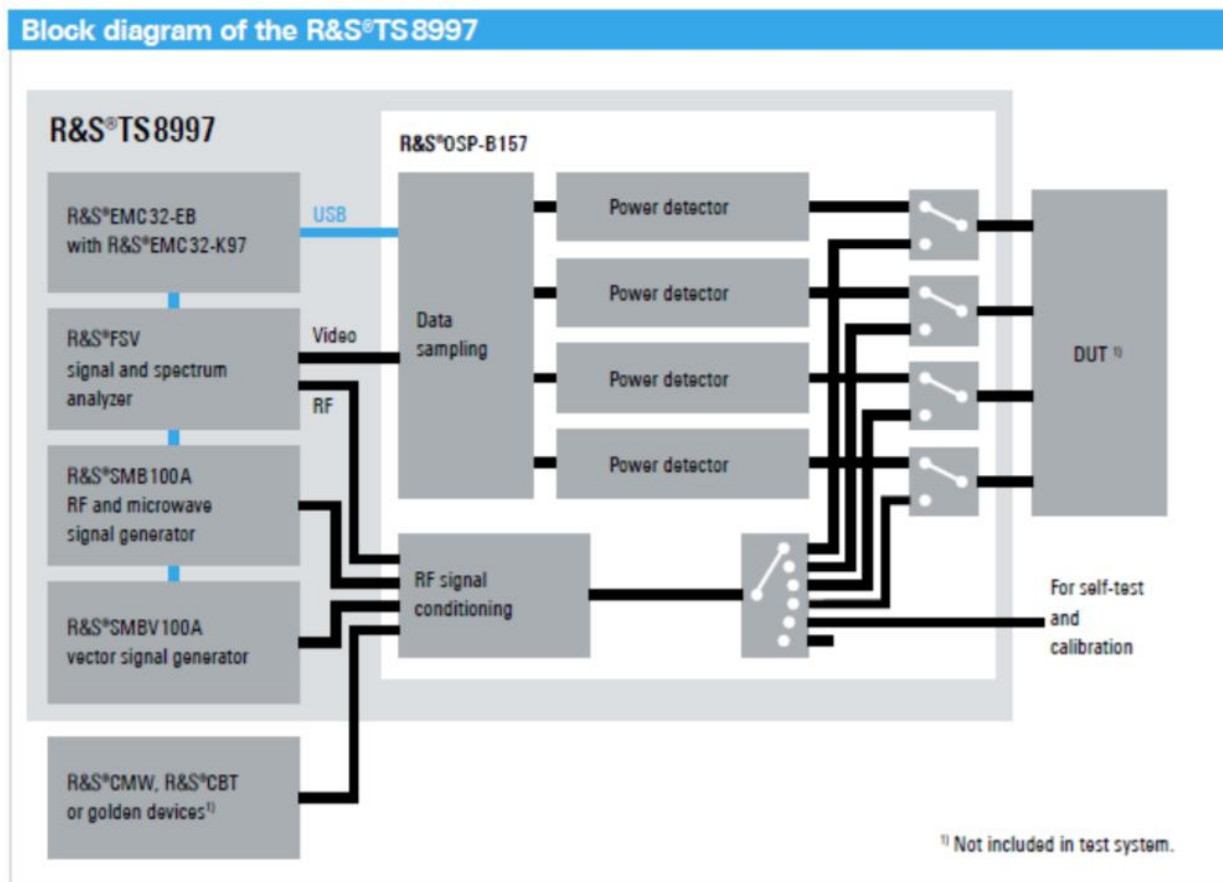


Diagram 1: Test Configuration Block Diagram

## 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

<b>Title</b>	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
<b>Purpose of Test</b>	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	5725 to 5850	Compliant
15.407(e)	RSS-247 §6.2.2, §6.2.3	Peak Output Power	5725 to 5850	Compliant
15.407(f)	RSS-247 §6.2.2, §6.2.3	Antenna Conducted Spurious Emissions	0.009 to 25000	Compliant
15.407(g)	RSS-247 §6.2.2, §6.2.3	Radiated Spurious Emissions	0.009 to 25000	Compliant
15.407(h)	RSS-247 §6.2.2, §6.2.3	Peak Power Spectral Density	5725 to 5850	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

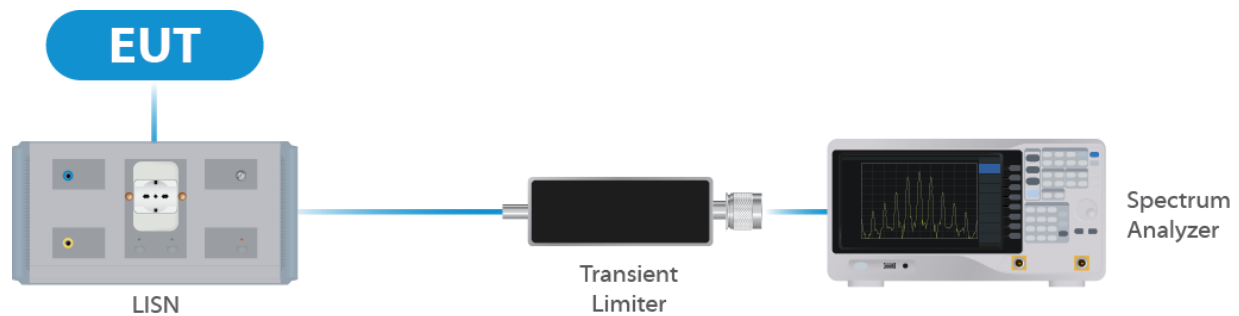


Figure 1: Conducted Emissions Test

### 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

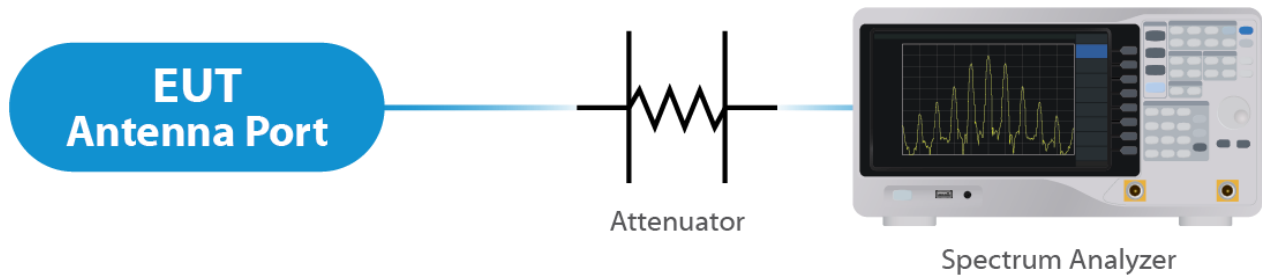


Figure 2: Direct Connect at the Antenna Port Test

### 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

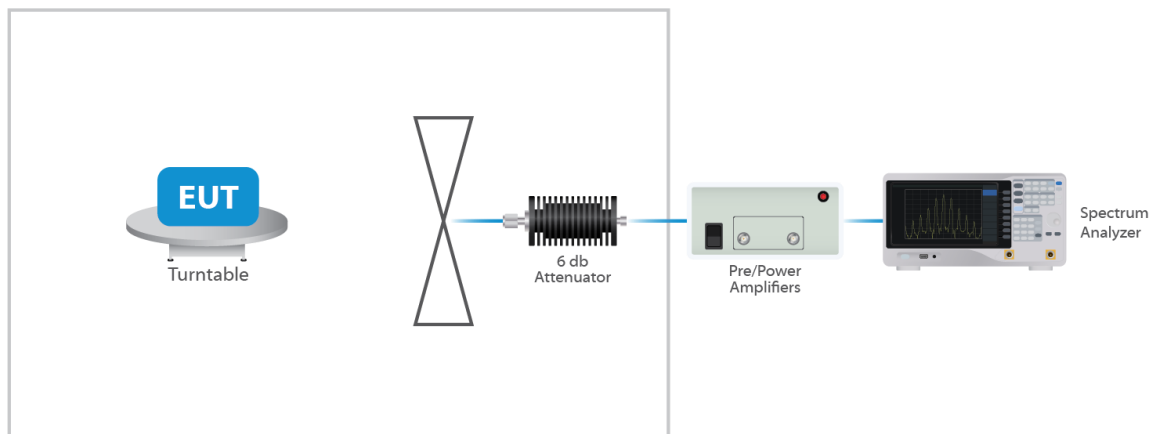


Figure 3: Radiated Emissions Test

## 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
<b>Direct Connect Tests</b>	<b>K Factor</b>	<b>Value</b>
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

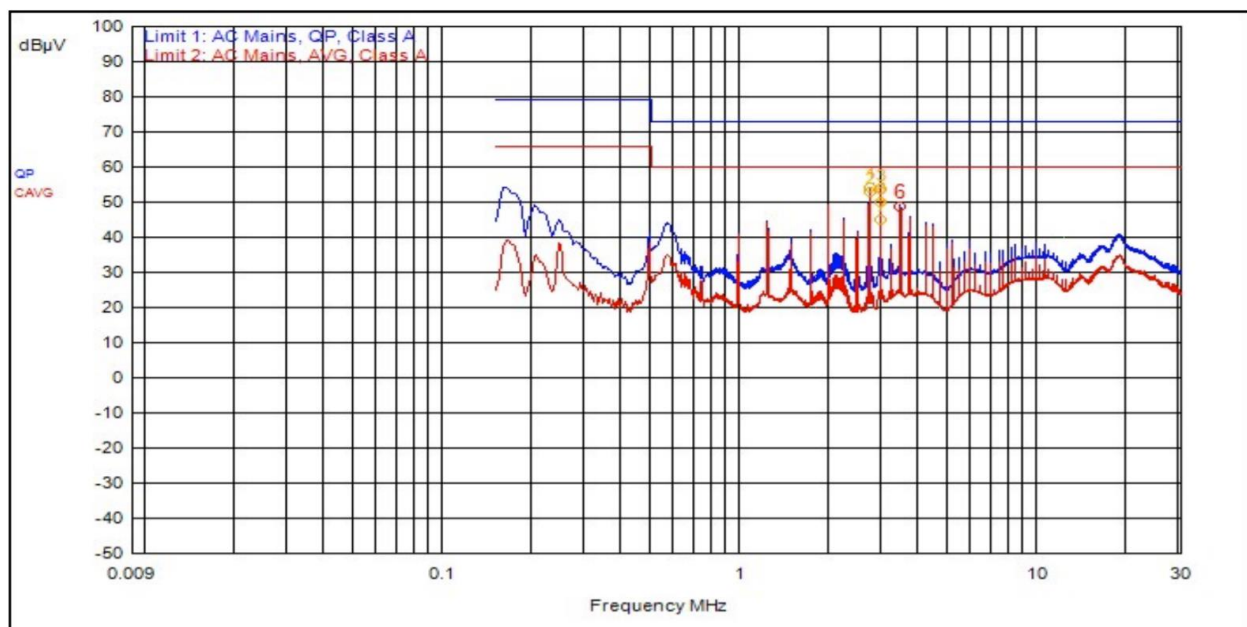
The EUT uses an integral antenna. The Maximum gain of the antenna is 5.2 dBi. The antenna is not user replaceable.

#### Results

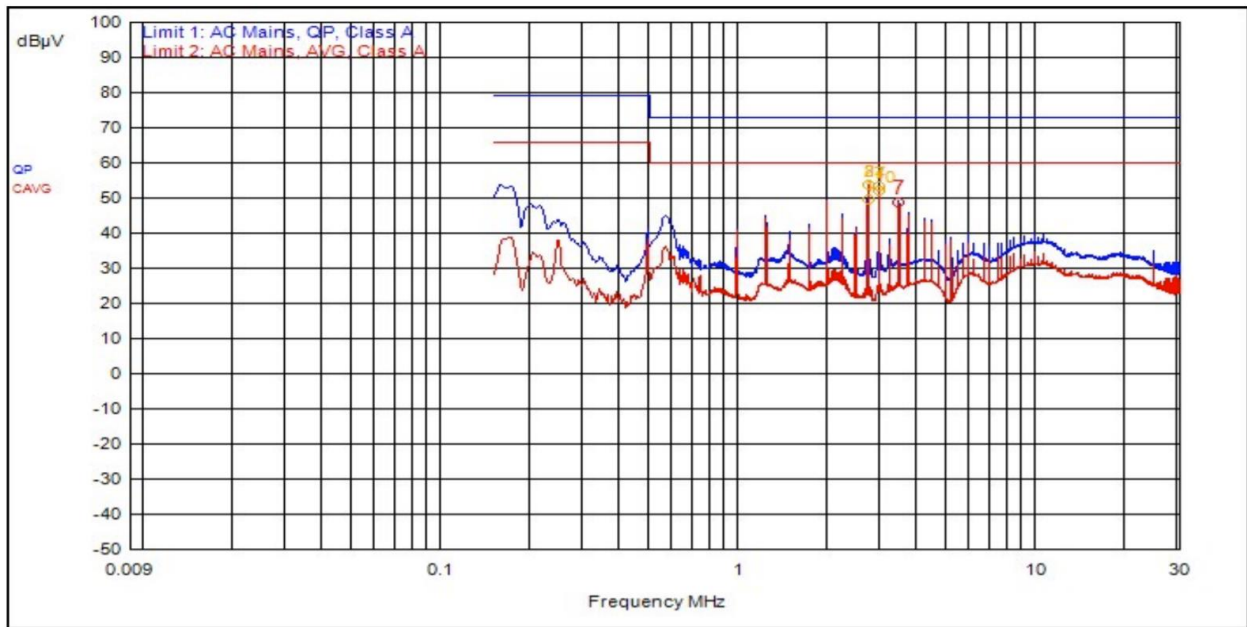
The EUT complied with the specification

### 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) Emissions Bandwidth

Nominal BW (MHz)	Frequency (MHz)	99% Bandwidth (MHz)	6dB Bandwidth (MHz)	26 dB Bandwidth (MHz)
20	5745	18.2	17.8	27.7
20	5775	17.9	15.2	28.8
20	5825	18.0	17.7	29.7
40	5755	36.5	35.2	52.2
40	5775	36.5	35.5	45.6
40	5795	36.5	36.4	62.9
80	5775	76	72.6	104.5

**Result**

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

## 5.4 §15.403(a)(3) Maximum Average Output Power

The maximum average RF conducted output power measured for this device was 17.6 dBm or 57.5 mW. The limit is 30 dBm, or 1 watt. 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	5745	Mcs0	30	17.6	22.8	1.4
OFDM 20	5775	Mcs0	30	17.4	22.6	1.3
OFDM 20	5825	Mcs0	30	17.4	22.6	0.7
HT 20	5745	Mcs0	30	17	22.2	0.5
HT 20	5775	Mcs0	30	17.1	22.3	0.3
HT 20	5825	Mcs0	30	16.8	22	-0.4
HT 40	5755	Mcs0	30	17.1	22.3	-0.7
HT 40	5775	Mcs0	30	16.9	22.1	-0.8
HT 40	5795	Mcs0	30	17.3	22.5	-0.4
VHT 20	5745	Mcs0	30	17	22.2	0.4
VHT 20	5775	Mcs0	30	17	22.2	0.4
VHT 20	5825	Mcs0	30	17	22.2	0.4
VHT 40	5755	Mcs0	30	17	22.2	-0.6
VHT 40	5775	Mcs0	30	17	22.2	-0.8
VHT 40	5795	Mcs0	30	17.3	22.5	-0.4
VHT80	5775	Mcs0	30	17.1	22.3	-2.1

### 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 plot in attached Annex).



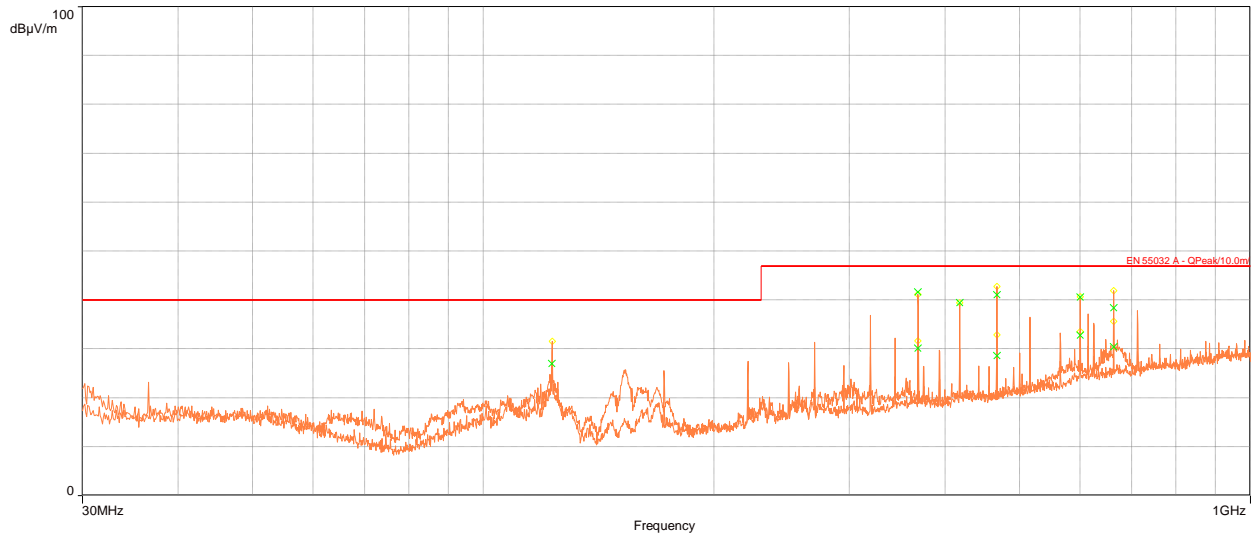
## **5.5 §15.407(b)(7) Spurious Emissions**

### **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 30.

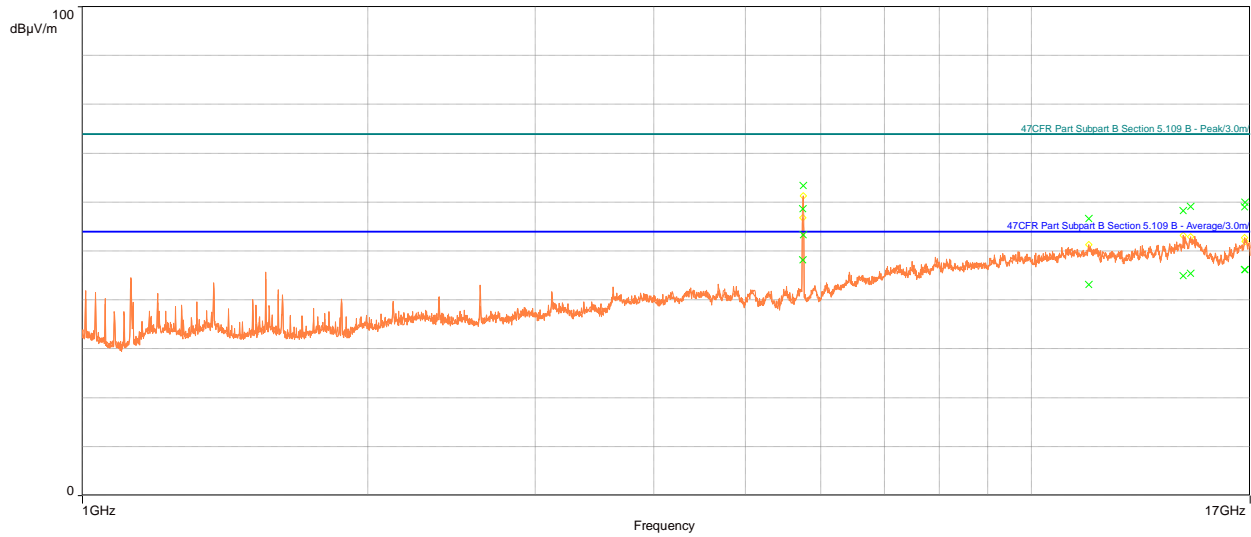
#### **Result**

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



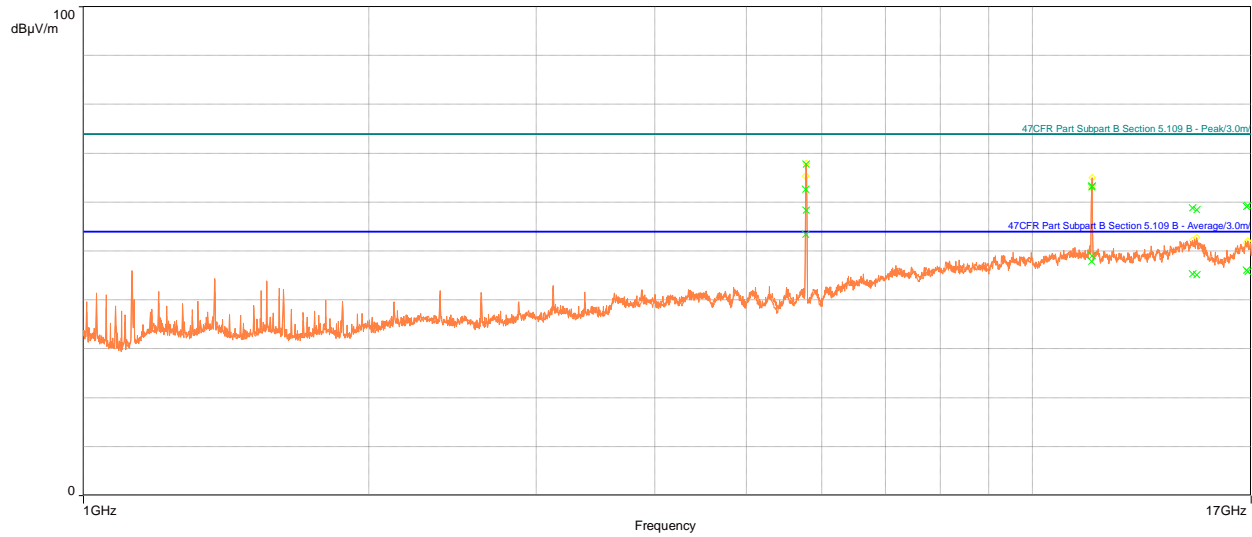
Frequency (MHz)	Det.	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarization	Correction (dB)
122.82	QP	27.04	40.00	-12.96	301.00	1.33	Vertical	-16.22
368.66	QP	30.18	47.00	-16.82	347.00	1.09	Vertical	-10.24
467	QP	28.65	47.00	-18.35	324.00	2.30	Vertical	-8.46
600.03	QP	32.76	47.00	-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



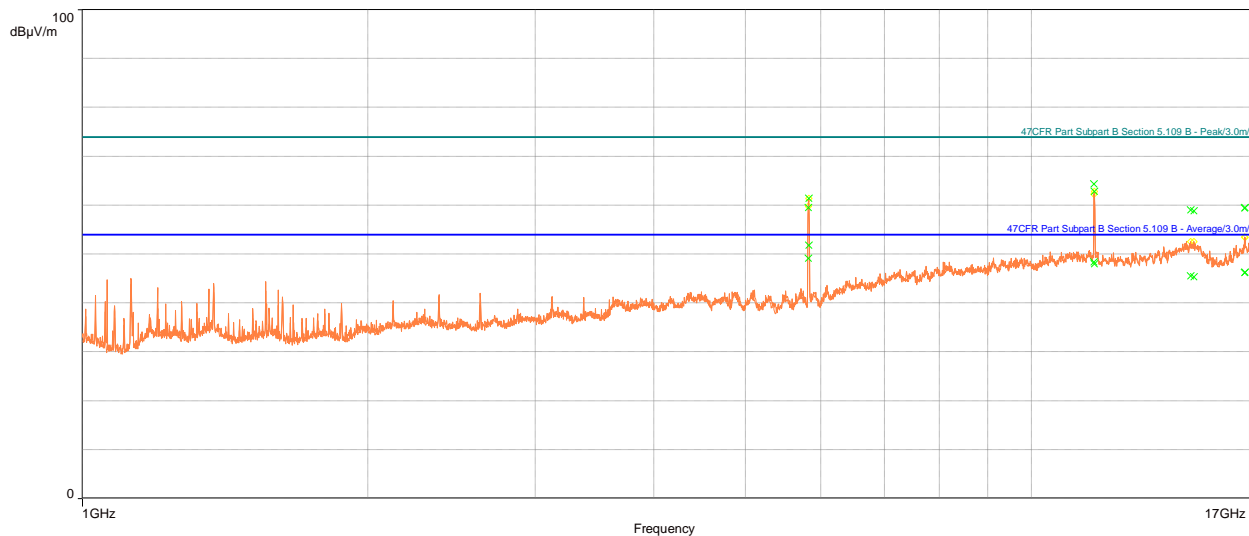
Frequency (MHz)	Det.	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarization	Correction (dB)
14446	A	44.96	54.00	-9.04	346.00	3.82	Vertical	17.20
16784	A	46.17	54.00	-7.83	152.00	2.72	Vertical	18.72
11490	A	43.15	54.00	-10.85	171.00	3.69	Horizontal	14.97
14720	A	45.44	54.00	-8.56	89.00	1.92	Horizontal	17.66
16774	A	46.18	54.00	-7.82	295.00	3.71	Horizontal	18.69
14446	P	58.23	74.00	-15.77	346.00	3.82	Vertical	17.20
16784	P	59.99	74.00	-14.01	152.00	2.72	Vertical	18.72
11490	P	56.62	74.00	-17.38	171.00	3.69	Horizontal	14.97
14720	P	59.16	74.00	-14.84	89.00	1.92	Horizontal	17.66
16774	P	59.05	74.00	-14.95	295.00	3.71	Horizontal	18.69

**Table 5: Transmitting on the Lowest Frequency 5745 MHz**



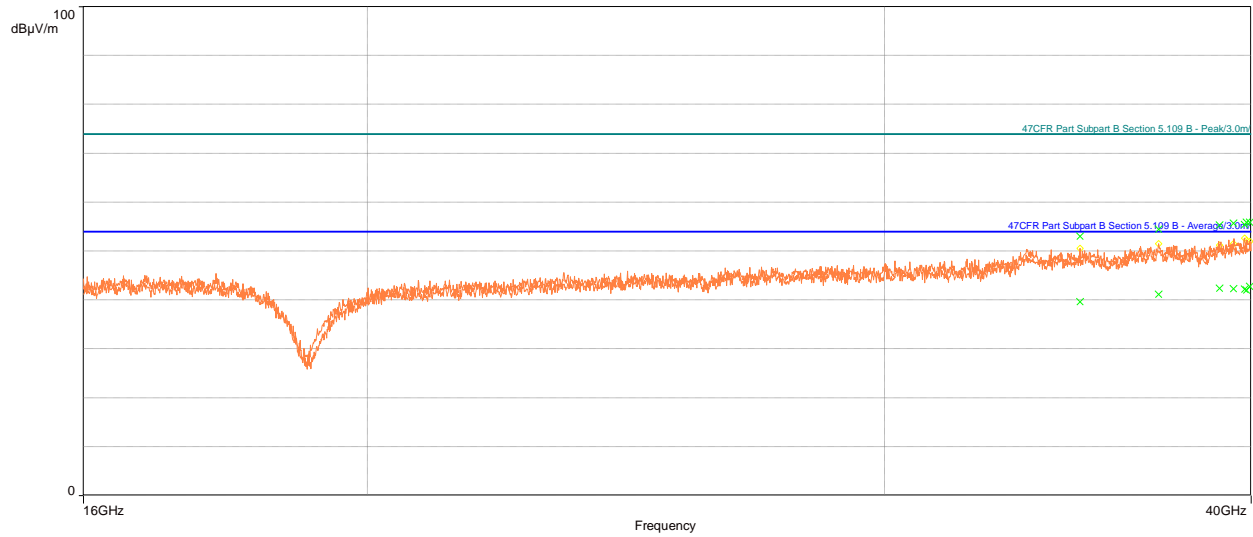
Frequency (MHz)	Det.	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarization	Correction (dB)
11554	A	49.09	54.00	-4.91	93.00	3.35	Vertical	14.72
14743	A	45.31	54.00	-8.69	301.00	1.92	Vertical	17.54
16805	A	46.08	54.00	-7.92	86.00	2.86	Vertical	18.65
11549	A	47.93	54.00	-6.07	165.00	3.59	Horizontal	14.75
14906	A	45.18	54.00	-8.82	358.00	3.93	Horizontal	17.60
16875	A	45.79	54.00	-8.21	26.00	2.12	Horizontal	18.88
11554	P	63.31	74.00	-10.69	93.00	3.35	Vertical	14.72
14743	P	58.81	74.00	-15.19	301.00	1.92	Vertical	17.54
16805	P	59.13	74.00	-14.87	86.00	2.86	Vertical	18.65
11549	P	63.11	74.00	-10.89	165.00	3.59	Horizontal	14.75
14906	P	58.45	74.00	-15.55	358.00	3.93	Horizontal	17.60
16875	P	59.34	74.00	-14.66	26.00	2.12	Horizontal	18.88

**Table 6: Transmitting on the Middle Frequency 5775 MHz**



Frequency (MHz)	Det.	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarization	Correction (dB)
11642	A	48.42	54.00	-5.58	235.00	3.22	Vertical	14.66
14711	A	45.53	54.00	-8.47	355.00	3.58	Vertical	17.71
16778	A	46.24	54.00	-7.76	263.00	3.08	Vertical	18.71
11646	A	48.04	54.00	-5.96	140.00	3.11	Horizontal	14.62
14829	A	45.34	54.00	-8.66	251.00	3.56	Horizontal	17.71
16785	A	46.26	54.00	-7.74	2.00	2.73	Horizontal	18.72
11642	P	64.35	74.00	-9.65	235.00	3.22	Vertical	14.66
14711	P	59.05	74.00	-14.95	355.00	3.58	Vertical	17.71
16778	P	59.43	74.00	-14.57	263.00	3.08	Vertical	18.71
11646	P	62.83	74.00	-11.17	140.00	3.11	Horizontal	14.62
14829	P	58.85	74.00	-15.15	251.00	3.56	Horizontal	17.71
16785	P	59.51	74.00	-14.49	2.00	2.73	Horizontal	18.72

**Table 7: Transmitting on the Highest Frequency 5825 MHz**



Frequency (MHz)	Det.	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
34977	A	39.63	54.00	-14.37	92.00	Vertical	2.23
37204	A	41.15	54.00	-12.85	97.00	Vertical	2.66
39801	A	42.18	54.00	-11.82	66.00	Vertical	4.03
39025	A	42.39	54.00	-11.61	94.00	Horizontal	4.12
39452	A	42.34	54.00	-11.66	246.00	Horizontal	4.49
39851	A	42.05	54.00	-11.95	337.00	Horizontal	4.13
39956	A	42.77	54.00	-11.23	128.00	Horizontal	4.73
34977	P	53.01	74.00	-20.99	92.00	Vertical	2.23
37204	P	54.47	74.00	-19.53	97.00	Vertical	2.66
39801	P	55.40	74.00	-18.60	66.00	Vertical	4.03
39025	P	55.31	74.00	-18.69	94.00	Horizontal	4.12
39452	P	55.74	74.00	-18.26	246.00	Horizontal	4.49
39851	P	55.86	74.00	-18.14	337.00	Horizontal	4.13
39956	P	55.92	74.00	-18.08	128.00	Horizontal	4.73

**Table 8: Transmitting on the Middle Frequency 5775 MHz (worst case)**

## 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 30 dBm in any 500 kHz 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	5745	Mcs0	30	1.4
OFDM 20	5775	Mcs0	30	1.3
OFDM 20	5825	Mcs0	30	0.7
HT 20	5745	Mcs0	30	0.5
HT 20	5775	Mcs0	30	0.3
HT 20	5825	Mcs0	30	-0.4
HT 40	5755	Mcs0	30	-0.7
HT 40	5775	Mcs0	30	-0.8
HT 40	5795	Mcs0	30	-0.4
VHT 20	5745	Mcs0	30	0.4
VHT 20	5775	Mcs0	30	0.4
VHT 20	5825	Mcs0	30	0.4
VHT 40	5755	Mcs0	30	-0.6
VHT 40	5775	Mcs0	30	-0.8
VHT 40	5795	Mcs0	30	-0.4
VHT80	5775	Mcs0	30	-2.1

### Result

The maximum average power spectral density was less than the limit of 30 dBm; therefore, the EUT complies with the specification.

-- End of Test Report --