



427 West 12800 South
Draper, UT 84020

Test Report Certification

FCC ID	SWX-U6EXTR
ISED ID	6545A-U6EXTR
Equipment Under Test	U6-Extender
Test Report Serial Number	TR6477_04
Date of Tests	13, 15, 19-20 July; 5, 26 August; 10, 13 September 2021
Report Issue Date	23 September 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
Model Number	U6-Extender
FCC ID	SWX-U6EXTR
ISED ID	6545A-U6EXTR

On this 23rd day of September 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: Kimberly Rodriguez



Reviewed By: Richard L. Winter

Revision History		
Revision	Description	Date
01	Original Report Release	23 September 2021
02	Amend Section 5.7 and Deleted Setup Diagrams in Section 4	2 December 2021
03	Amended Sections 2.7 and 5.4 – Firmware, FCC Reference and Output Power	7 December 2021
04	Amended Section 5.4 FCC Reference	8 December 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
Model Number	U6-Extender
Serial Number	68D79A1F2912
Dimensions (cm)	16.97 x 11.22 x 3.22

2.2 Description of EUT

The U6-Extender is a WiFi 6 access point to increase a home or office's wireless coverage. With its dual-band design and 5.3+ Gbps aggregate throughput rate, the U6-Extender delivers strong connectivity needed to support device-dense networks. The U6-Extender includes a 5 GHz 4x4 MU-MIMO transceiver and a 2.4 GHz 2x2 MIMO transceiver. The access point fits any standard US duplex wall outlet and is powered by AC Mains power. The U6-Extender provides a Bluetooth BLE management radio to be used with the UniFi Network web application or mobile app.

Band	Modulation Bandwidth	Frequency (MHz)
UNII-2A	20 MHz	5260, 5265, 5270, 5275, 5280, 5285, 5290, 5295, 5300, 5305, 5310, 5315, 5320
	40 MHz	5270, 5275, 5280, 5285, 5290, 5295, 5300, 5305, 5310
	80 MHz	5290
	160 MHz	5250
UNII-2C	20 MHz	5500, 5505, 5510, 5515, 5520, 5525, 5530, 5535, 5540, 5545, 5550, 5555, 5560, 5565, 5570, 5575, 5580, 5585, 5590, 5595, 5600, 5605*, 5610*, 5615*, 5620*, 5625*, 5630*, 5635*, 5640*, 5645*, 5650, 5655, 5660, 5665, 5670, 5675, 5680, 5685, 5690, 5695, 5700, 5705, 5710, 5715, 5720
	40 MHz	5510, 5515, 5520, 5525, 5530, 5535, 5540, 5545, 5550, 5555, 5560, 5565, 5570, 5575, 5580, 5585, 5590, 5595, 5600, 5605*, 5610*, 5615*, 5620*, 5625*, 5630*, 5635*, 5640*, 5645*, 5650, 5655, 5660, 5665, 5670, 5675, 5680, 5685, 5690, 5695, 5700, 5705, 5710
	80 MHz	5530, 5535, 5540, 5545, 5550, 5555, 5560, 5565, 5570, 5575, 5580, 5585, 5590, 5595, 5600, 5605*, 5610*, 5615*, 5620*, 5625*, 5630*, 5635*, 5640*, 5645*, 5650, 5655, 5660, 5665, 5670, 5675, 5680, 5685, 5690
	160 MHz	5570
* Frequency not applicable in Canada		

Table 1: UNII-2A and UNII-2C Channel Settings

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 test 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 MN: U6-Extender SN: 68D79A1F2912	WiFi Access Point	See Section 2.4
BN: Dell MN: XPS 13 SN: N/A	Laptop PC	Shielded or Un-Shielded Cat 5e cable (Note 2)

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
AC Power	1	N/A

2.5 Operating Environment

Power Supply	120/240 VAC
AC Mains Frequency	50/60 Hz
Temperature	25.3-26.8 °C
Humidity	37.04-40.05 %
Barometric Pressure	1012 mBar

2.6 Operating Modes

The U6-Extender was tested using test software in order to enable to constant transmission of over 98%. All emission modes of 802.11 a/n/ac/ax were investigated. All measurements are reported with the worst-case mode (802.11 ax) unless otherwise stated.

2.7 EUT Exercise Software

EUT firmware version 5.60 was used to operate the transmitter using a constant transmit mode.

2.8 Block Diagram of Test Configuration

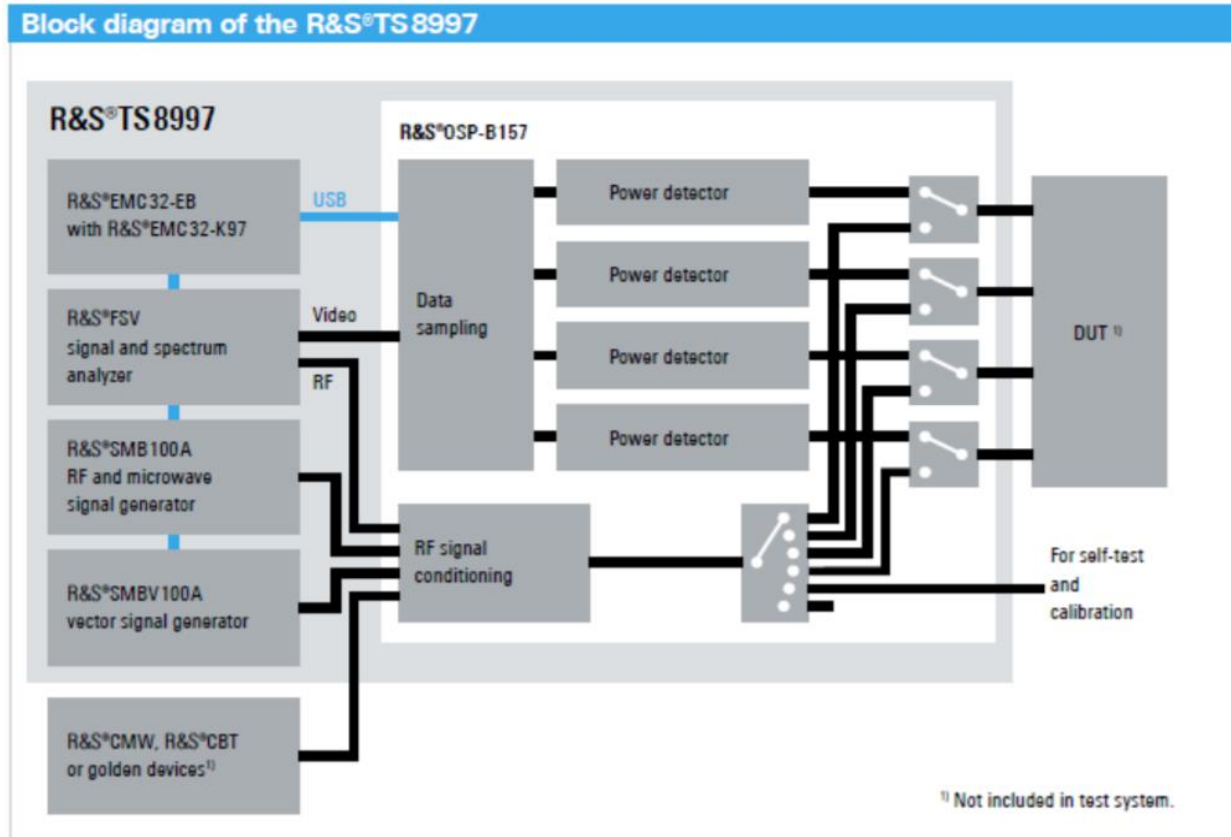


Diagram 1: Test Configuration Block Diagram

2.9 Modification Incorporated/Special Accessories on EUT

The following modifications were made to the EUT by the Client during testing to comply with the specification. This report is not complete without an accompanying signed attestation, that the product will have all the documented modifications incorporated into the product when manufactured and place on the market.

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(a)	RSS-247 §6.2.2, §6.2.3	Bandwidth Requirement	5260 to 5570	Compliant
15.407(a)	RSS-247 §6.2.2, §6.2.3	Peak Output Power	5260 to 5570	Compliant
15.407(b)	RSS-247 §6.2.2, §6.2.3	Antenna Conducted Spurious Emissions	0.009 to 40000	Compliant
15.407(b)	RSS-247 §6.2.2, §6.2.3	Radiated Spurious Emissions	0.009 to 40000	Compliant
15.407(a)	RSS-247 §6.2.2, §6.2.3	Peak Power Spectral Density	5260 to 5570	Compliant
15.407(h)	RSS-247 §6.3	DFS Requirements	5260 to 5570	Compliant

The testing was performed according to the procedures in ANSI C63.10-2013, KDB 558074 and 47 CFR Part 15. Where applicable, KDB 662911 was followed to sum required measurements.

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 #3-Meter# #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 2022. 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 30 June 2022. 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	3/17/2022
LISN	AFJ	LS16C/10	UCL-2512	5/26/2020	5/26/2022
Cat6 ISN	Teseq	ISN T8-Cat6	UCL-2971	5/18/2020	5/18/2022
ISN	Teseq	ISN T800	UCL-2974	6/4/2021	6/4/2022
LISN	Com-Power	LIN-120C	UCL-2612	5/19/2021	5/19/2022
AC Power Source	Laplace Instruments	AC1000A	UCL-2857	N/A	N/A
Test Software	UCL	Revision 1	UCL-3107	N/A	N/A

Table 2: List of equipment used for Conducted Emissions Testing at Mains Port

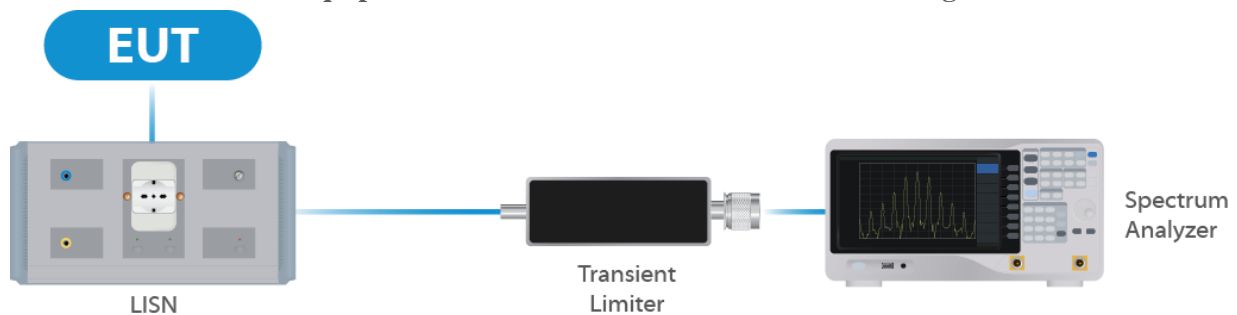


Figure 1: Conducted Emissions Test

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	10/23/2021
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	9/8/2020	10/24/2021
Switch Extension	R&S	OSP-150W	UCL-2870	3/3/2021	3/3/2022

Table 3: List of equipment used for Direct Connect at the Antenna Port

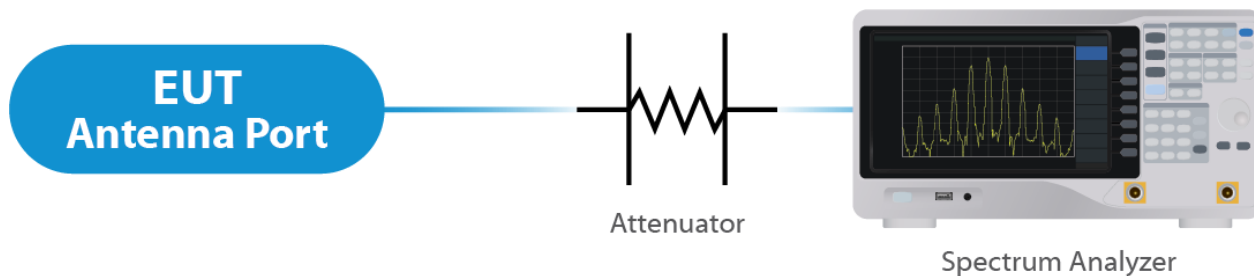


Figure 2: Direct Connect at the Antenna Port Test



Figure 3: Output Power Measurement

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	6/21/2021	6/21/2022
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	9/10/2020	10/10/2021
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3062	8/28/2020	8/27/2022
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3071	5/19/2020	5/19/2022
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	7/8/2021	7/8/2022
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	11/16/2020	11/16/2021
15 - 40 GHz Horn Antenna	Scwarzbeck	BBHA 9170	UCL-2487	5/21/2020	5/21/2022
1 – 18 GHz Amplifier	Com-Power	PAM 118A	UCL-3833	9/29/2020	9/29/2021
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 4: List of equipment used for Radiated Emissions

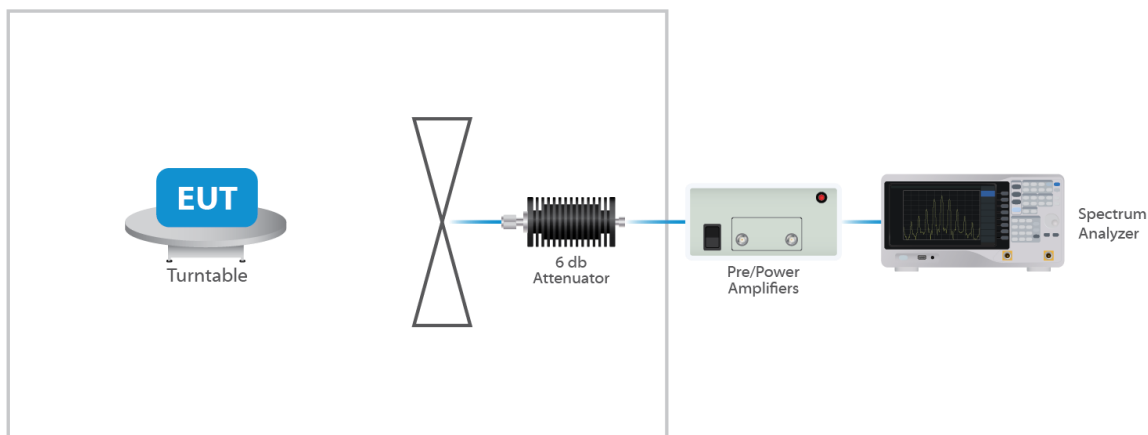


Figure 4: Radiated Emissions Test

4.4 DFS Testing

4.4.1 Master Test Set Up

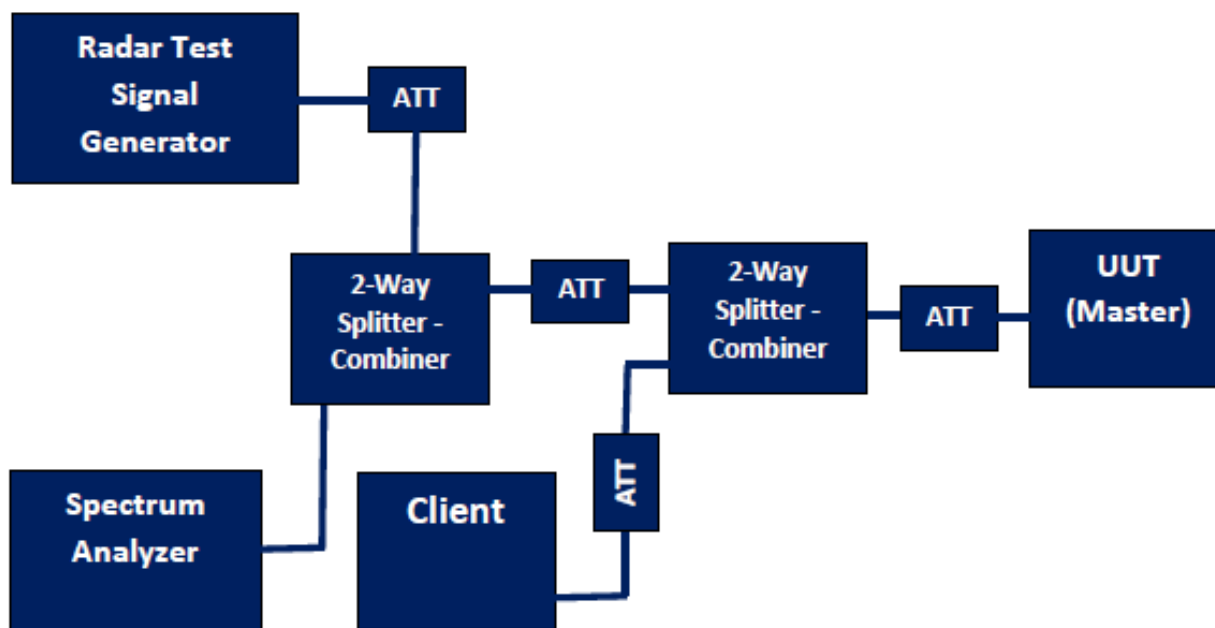


Figure 5: DFS Test Set Up - Master

4.5 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.

4.6 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

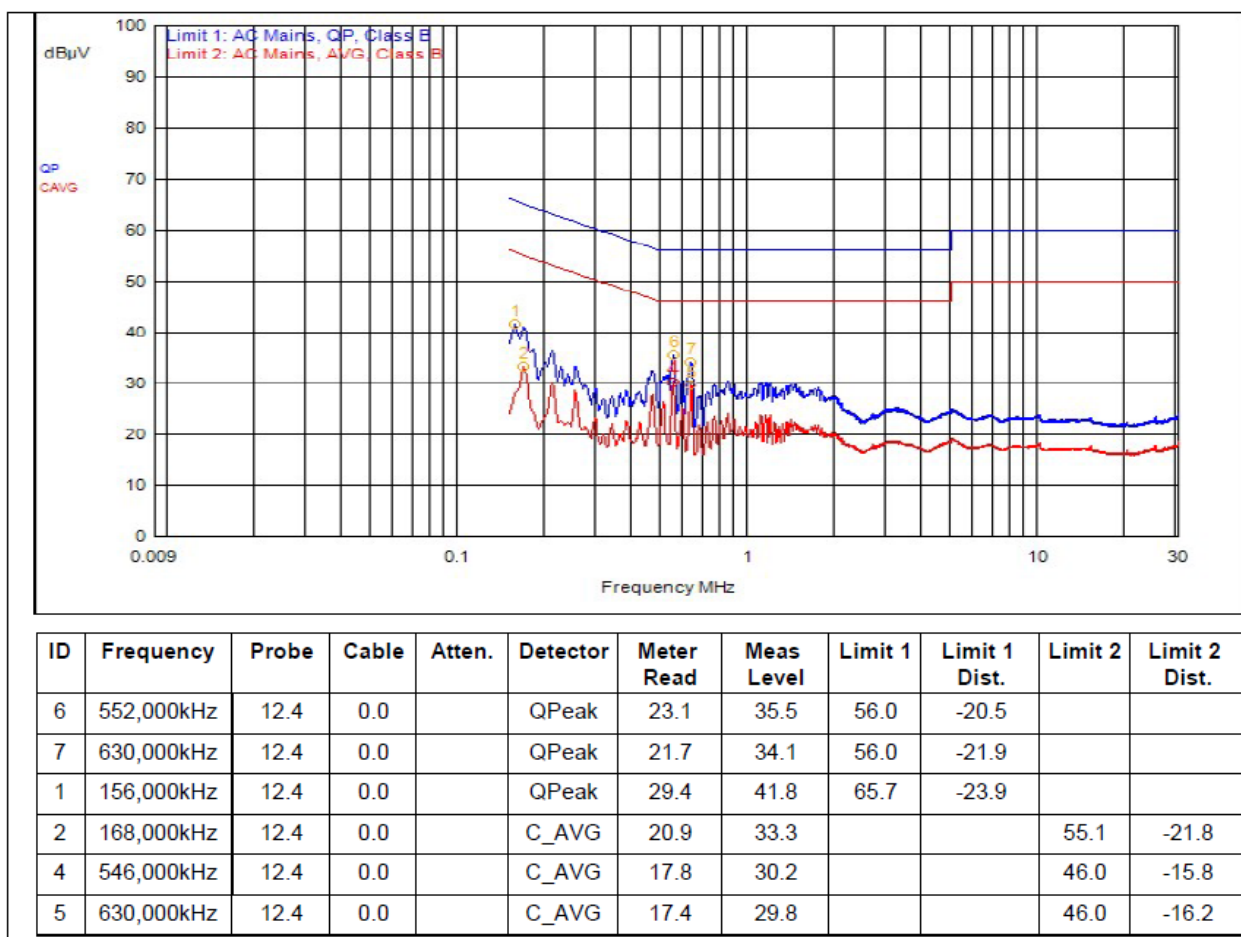
The EUT uses an integral. The Maximum gain of the antenna is 6 dBi. The antenna is not user replaceable.

Results

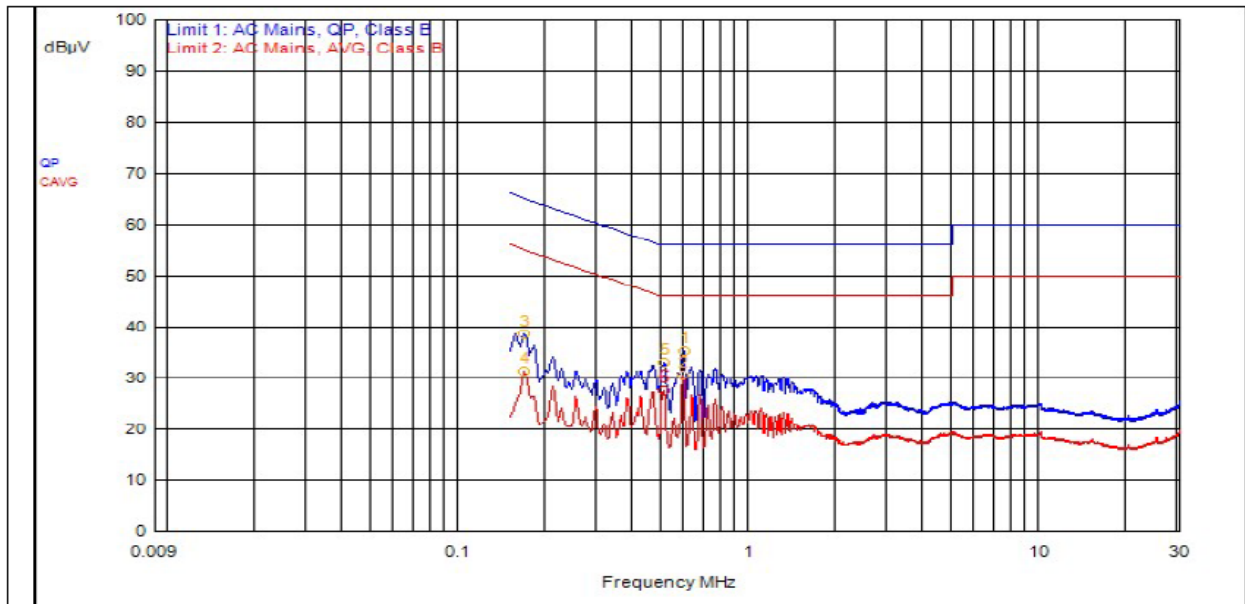
The EUT complied with the specification

5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



5.2.2 Neutral



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
1	591,000kHz	12.4	0.0		QPeak	22.8	35.2	56.0	-20.8		
5	507,000kHz	12.4	0.0		QPeak	20.5	33.0	56.0	-23.0		
3	168,000kHz	12.4	0.0		QPeak	26.3	38.6	65.1	-26.4		
2	588,000kHz	12.4	0.0		C_AVG	18.1	30.5			46.0	-15.5
4	168,000kHz	12.4	0.0		C_AVG	19.0	31.4			55.1	-23.7
6	504,000kHz	12.4	0.0		C_AVG	15.0	27.5			46.0	-18.5

Result

The EUT complied with the specification limit.

5.3 §15.403(i) 26 dB Emissions Bandwidth

5.3.1 UNII-2A

Mode	Nominal BW (MHz)	Frequency (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)
a	20	5260	16.60	20.20
a	20	5280	16.60	20.60
a	20	5320	16.60	19.70
ac	20	5260	17.70	21.40
ac	20	5280	17.80	21.00

ac	20	5320	17.80	20.90
ac	40	5270	36.25	39.45
ac	40	5310	36.25	38.85
ac	80	5290	75.50	82.50
ac	160	5250	153.00	166.00
ax	20	5260	19.10	21.70
ax	20	5280	19.30	22.10
ax	20	5320	19.10	21.40
ax	40	5270	37.75	40.05
ax	40	5310	37.75	40.05
ax	80	5290	77.50	82.50
ax	160	5250	155.00	165.00
n	20	5260	17.70	20.70
n	20	5280	17.80	21.00
n	20	5320	17.80	21.10
n	40	5270	36.25	39.15
n	40	5310	36.25	38.85

5.3.2 UNII-2C

Mode	Nominal BW (MHz)	Frequency (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)
a	20	5500	16.70	19.90
a	20	5600	16.70	20.60
a	20	5720	16.70	20.90
ac	20	5500	17.70	20.50
ac	20	5600	17.90	21.00
ac	20	5720	17.80	20.70
ac	40	5510	36.25	39.45

ac	40	5590	36.00	39.15
ac	40	5710	36.25	39.60
ac	80	5530	75.50	83.50
ac	80	5610	75.50	83.00
ac	80	5690	75.50	82.50
ac	160	5570	153.00	167.00
ax	20	5500	17.70	20.80
ax	20	5600	17.80	20.90
ax	20	5720	17.70	21.00
ax	40	5510	36.25	39.60
ax	40	5590	36.25	39.60
ax	40	5710	36.25	40.20
ax	80	5530	75.50	83.00
ax	80	5610	75.50	82.00
ax	80	5690	75.50	83.00
ax	160	5570	155.00	166.00
n	20	5500	17.80	20.90
n	20	5600	17.80	20.80
n	20	5720	17.70	20.90
n	40	5510	36.25	39.30
n	40	5590	36.25	39.60
n	40	5710	36.25	39.30

Result

The 26 dB bandwidths are reported for information purposes. Please see Annex for all bandwidth measurements.

5.4 §15.407(a)(2) Maximum Average Output Power

The maximum average RF conducted output power measured for this device was 23.99 dBm or 250.61 mW. The limit is 24 dBm or 250 mW when using antennas with 6 dBi or less gain. The antenna has a maximum gain of 6 dBi.

5.4.1 UNII-2A

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power*	Measured PSD
OFDM 20	5260	Mcs0	40	23.97	9.79
OFDM 20	5280	Mcs0	39	23.79	9.14
OFDM 20	5320	Mcs0	39	23.9	9.61
HT 20	5260	Mcs0	40	23.73	8.26
HT 20	5280	Mcs0	40	23.84	8.33
HT 20	5320	Mcs0	39	23.67	8.07
HT 40	5270	Mcs0	39	23.78	5.37
HT 40	5310	Mcs0	38	23.46	4.89
VHT 20	5260	Mcs0	40	23.71	8.22
VHT 20	5280	Mcs0	40	23.82	8.26
VHT 20	5320	Mcs0	39	23.65	8.04
VHT 40	5270	Mcs0	39	23.72	5.33
VHT 40	5310	Mcs0	39	23.98	5.33
VHT80	5290	Mcs0	39	23.77	2.08
VHT160	5250	Mcs0	39	23.67	-0.3
HE20	5260	Mcs0	39	23.77	8.06
HE20	5280	Mcs0	39	23.95	8.15
HE20	5320	Mcs0	38	23.61	7.74
HE40	5270	Mcs0	39	23.86	5.23
HE40	5310	Mcs0	38	23.62	4.87
HE80	5290	Mcs0	38	23.52	1.68
HE160	5250	Mcs0	39	23.93	-0.12

5.4.2 UNII-2C

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power*	Measured PSD
OFDM 20	5500	Mcs0	39	23.63	9.51
OFDM 20	5600	Mcs0	39	23.7	9.68
OFDM 20	5720	Mcs0	40	23.9	9.6
HT 20	5500	Mcs0	40	23.87	8.59
HT 20	5600	Mcs0	40	23.61	8.38
HT 20	5720	Mcs0	40	23.64	8.25
HT 40	5510	Mcs0	39	23.63	5.26
HT 40	5590	Mcs0	40	23.99	5.66
HT 40	5710	Mcs0	40	23.78	5.15
VHT 20	5500	Mcs0	40	23.83	8.57
VHT 20	5600	Mcs0	40	23.59	8.36
VHT 20	5720	Mcs0	40	23.6	8.2
VHT 40	5510	Mcs0	39	23.63	5.33
VHT 40	5590	Mcs0	39	23.45	5.1
VHT 40	5710	Mcs0	40	23.78	5.06
VHT80	5530	Mcs0	40	23.99	2.89
VHT80	5610	Mcs0	40	23.61	2.39
VHT80	5690	Mcs0	40	23.57	1.97
VHT160	5570	Mcs0	39	23.42	-0.42
HE20	5500	Mcs0	40	23.77	8.38
HE20	5600	Mcs0	40	23.59	8.24
HE20	5720	Mcs0	40	23.59	8.07
HE40	5510	Mcs0	39	23.62	5.16
HE40	5590	Mcs0	40	23.95	5.55
HE40	5710	Mcs0	40	23.76	5.07
HE80	5530	Mcs0	40	23.97	2.89
HE80	5610	Mcs0	40	23.6	2.22
HE80	5690	Mcs0	40	23.6	1.63

HE160	5570	Mcs0	39	23.64	-0.3
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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.

5.5 §15.407(b) Spurious Emissions

5.5.1 Conducted Spurious Emissions

The frequency ranges from the lowest frequency generated or used in the device to the tenth harmonic of the highest fundamental frequency were investigated to measure any antenna-conducted emissions. The graphs show the measurement data from spurious emissions noted across the frequency range when transmitting at the lowest frequency, middle frequency and upper frequency. Shown below are plots with the EUT turned to the upper and lower channels with the antenna gain of 6 dBi accounted for. These demonstrate compliance with the provisions of this section at the band edges.

The emissions must be below -27 dBm EIRP.

Result

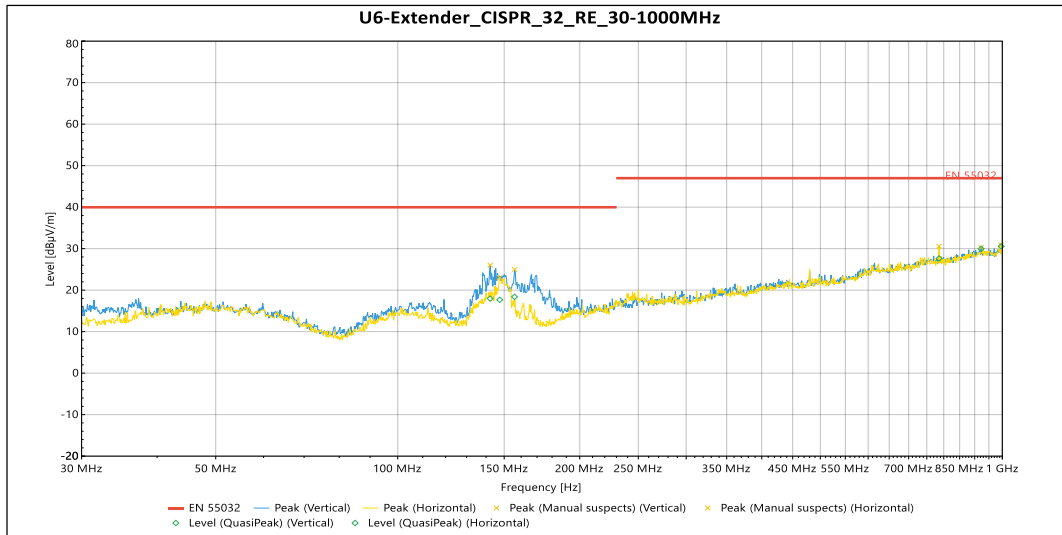
Conducted spurious emissions were below -27 dBm; therefore, the EUT complies with the specification. See Annex for results.

5.5.2 Radiated Spurious Emissions in the Restricted Bands of § 15.205

The frequency ranges from the lowest frequency generated or used in the device to the tenth harmonic of the highest fundamental emissions were investigated to measure any radiated emissions in the restricted bands. For frequencies above 18.0 GHz. The emissions in the restricted bans must meet the limits specified in § 15.209. Conducted measurement results are included in the Annex. Radiated data with the EUT transmitting into a load is included below. All emissions between the required frequencies were investigated, the following plots represent the worst case. The “fail” is the transmitted signal exceeding the spurious limit.

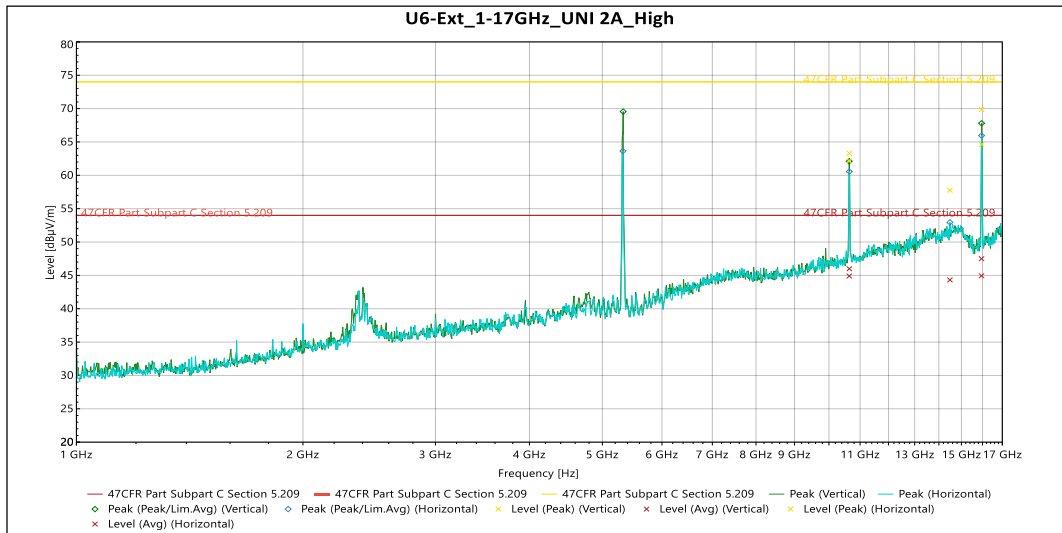
Correction Factor = Antenna Factor + Cable Loss - Pre-Amplifier Gain, and is added to the Receiver reading.

5.5.3 UNII-2A



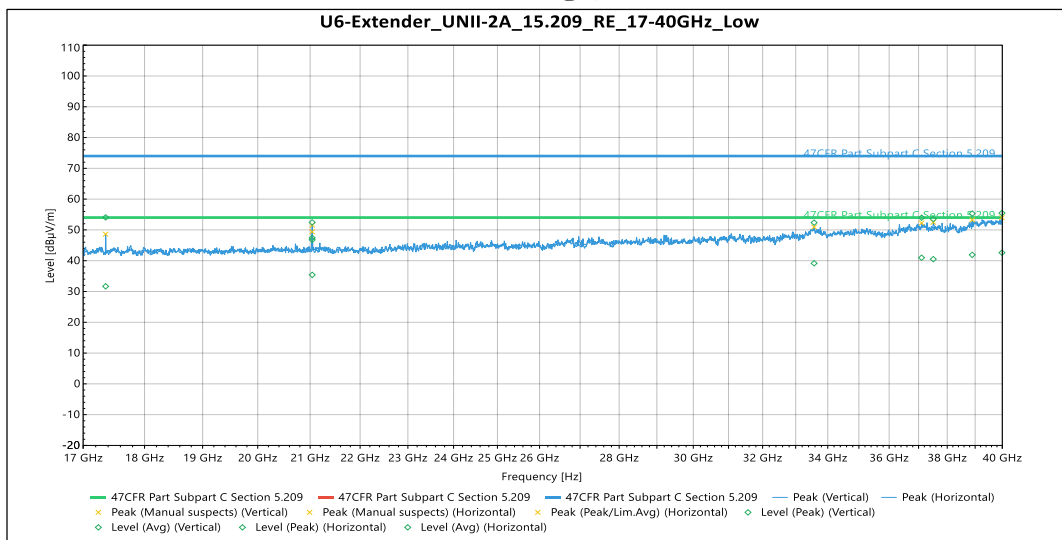
Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Meas. Time	RBW	Meas. Time	Correction (dB)
QuasiPeak	142.23 MHz	17.972	40	-22.028	148	1.004	Vertical	15	120000	0.001	-17.752
QuasiPeak	156.02 MHz	18.388	40	-21.612	137	1.054	Vertical	15	120000	0.001	-17.394
QuasiPeak	922.4 MHz	29.956	47	-17.044	349	1.596	Vertical	15	120000	0.001	-0.048
QuasiPeak	147.48 MHz	17.668	40	-22.332	69	3.616	Horizontal	15	120000	0.001	-17.844
QuasiPeak	785.92 MHz	27.651	47	-19.349	134	3.8	Horizontal	15	120000	0.001	-2.989
QuasiPeak	995.7 MHz	30.555	47	-16.445	337	2.117	Horizontal	15	120000	0.001	1.052

Table 5: Radiated Emissions – 30 – 1000 MHz



Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Meas. Time (s)	RBW	Meas. Time	Correction (dB)
Peak	10.642 GHz	62.145	74	-11.855	205	2.747	Vertical	5	1000000	0	10.533
Peak	15.954 GHz	69.874	74	-4.126	225	1.824	Vertical	5	1000000	0	12.587

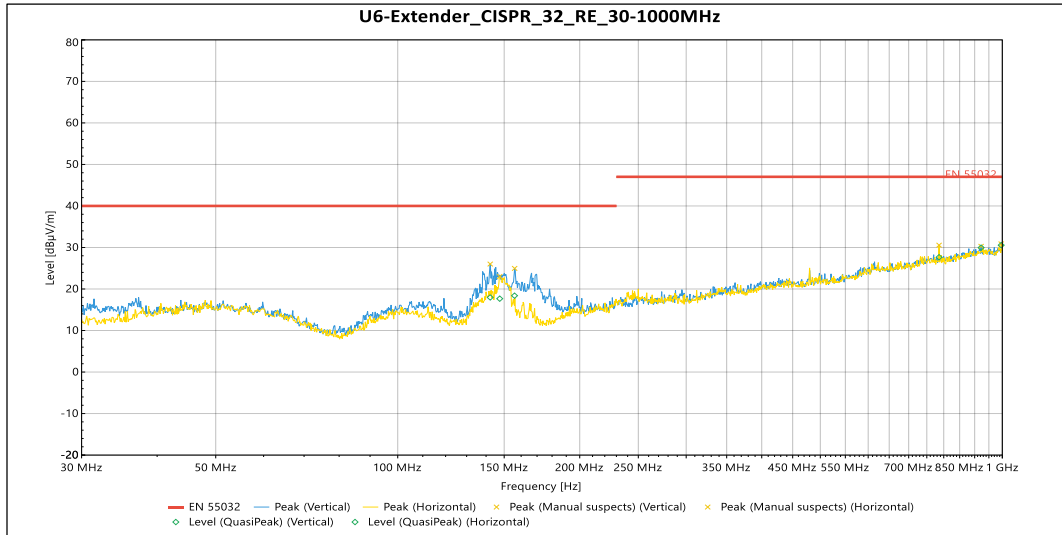
Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Meas. Time (s)	RBW	Meas.Time	Correction (dB)
Avg	10.642 GHz	44.902	54	-9.098	205	2.747	Vertical	5	1000000	0	10.533
Avg	15.954 GHz	44.945	54	-9.055	225	1.824	Vertical	5	1000000	0	12.587
Peak	10.645 GHz	63.295	74	-10.705	260	1.5	Horizontal	5	1000000	0	10.567
Peak	14.481 GHz	57.759	74	-16.241	292	2.721	Horizontal	5	1000000	0	14.822
Peak	15.953 GHz	64.624	74	-9.376	181	2.725	Horizontal	5	1000000	0	12.597
Avg	10.645 GHz	45.99	54	-8.01	260	1.5	Horizontal	5	1000000	0	10.567
Avg	14.481 GHz	44.318	54	-9.682	292	2.721	Horizontal	5	1000000	0	14.822
Avg	15.953 GHz	47.502	54	-6.498	181	2.725	Horizontal	5	1000000	0	12.597

Table 6: Radiated Emissions High, 1 – 17 GHz (Worst-Case)


Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Meas. Time (s)	RBW	Meas.Time	Correction (dB)
Peak	21.04 GHz	52.454	74	-21.546	185	Vertical	5	1000000	0	-5.68
Peak	37.104 GHz	53.968	74	-20.032	80	Vertical	5	1000000	0	1.409
Peak	39.987 GHz	55.481	74	-18.519	130	Vertical	5	1000000	0	3.599
Avg	21.04 GHz	46.76	54	-7.24	185	Vertical	5	1000000	0	-5.68
Avg	37.104 GHz	40.96	54	-13.04	80	Vertical	5	1000000	0	1.409
Avg	39.987 GHz	42.592	54	-11.408	130	Vertical	5	1000000	0	3.599
Peak	17.36 GHz	54.076	74	-19.924	110	Horizontal	5	1000000	0	-5.88
Peak	21.041 GHz	47.415	74	-26.585	237	Horizontal	5	1000000	0	-5.675
Peak	33.571 GHz	52.36	74	-21.64	132	Horizontal	5	1000000	0	1.045
Peak	37.511 GHz	53.548	74	-20.452	53	Horizontal	5	1000000	0	1.46
Peak	38.896 GHz	55.312	74	-18.688	156	Horizontal	5	1000000	0	2.963
Avg	17.36 GHz	31.683	54	-22.317	110	Horizontal	5	1000000	0	-5.88
Avg	21.041 GHz	35.396	54	-18.604	237	Horizontal	5	1000000	0	-5.675
Avg	33.571 GHz	39.16	54	-14.84	132	Horizontal	5	1000000	0	1.045
Avg	37.511 GHz	40.498	54	-13.502	53	Horizontal	5	1000000	0	1.46
Avg	38.896 GHz	41.905	54	-12.095	156	Horizontal	5	1000000	0	2.963

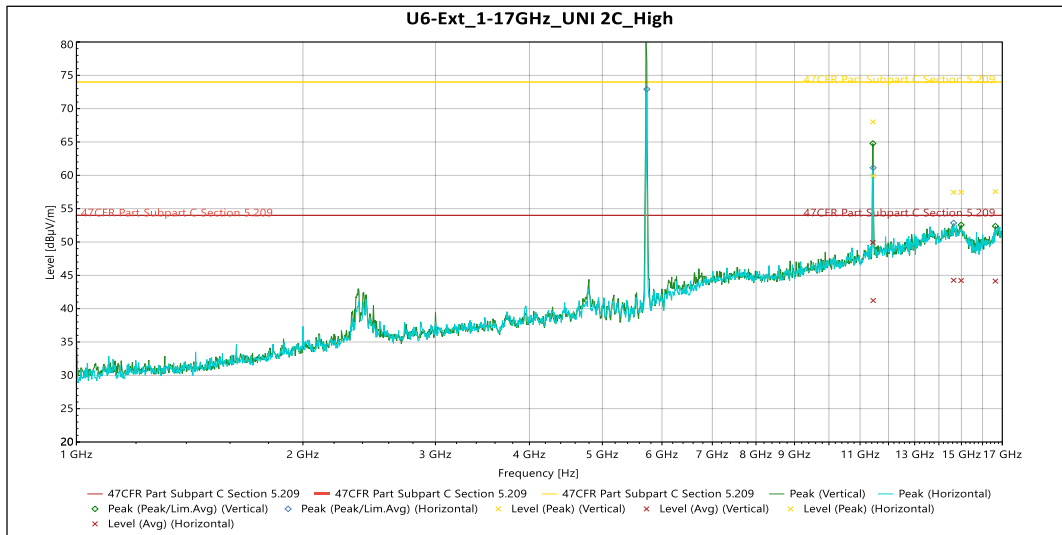
Table 7: Radiated Emissions Low, 17 – 40 GHz (Worst-Case)

5.5.4 UNII-2C

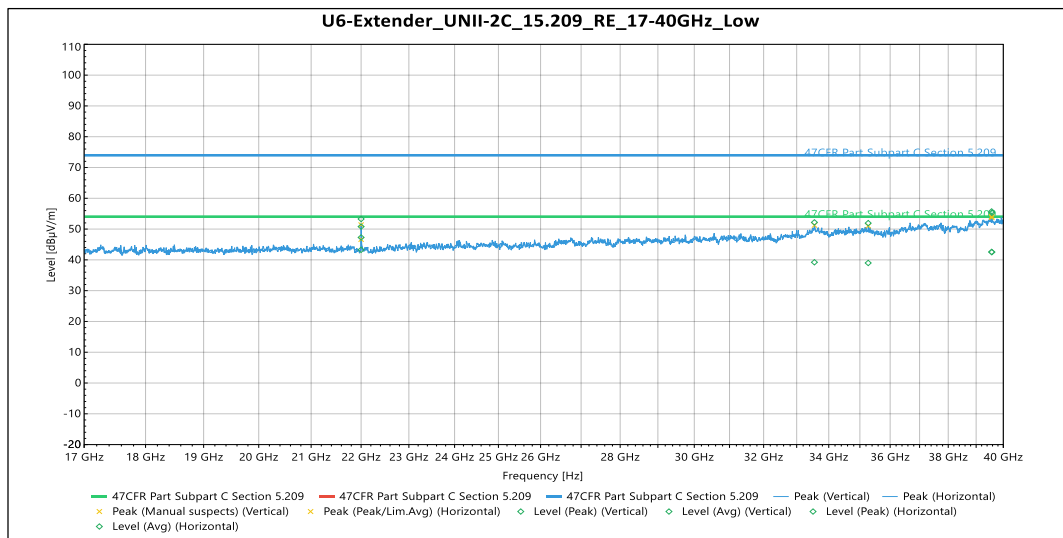


Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Meas. Time	RBW	Meas.Time	Correction (dB)
QuasiPeak	142.23 MHz	17.972	40	-22.028	148	1.004	Vertical	15	120000	0.001	-17.752
QuasiPeak	156.02 MHz	18.388	40	-21.612	137	1.054	Vertical	15	120000	0.001	-17.394
QuasiPeak	922.4 MHz	29.956	47	-17.044	349	1.596	Vertical	15	120000	0.001	-0.048
QuasiPeak	147.48 MHz	17.668	40	-22.332	69	3.616	Horizontal	15	120000	0.001	-17.844
QuasiPeak	785.92 MHz	27.651	47	-19.349	134	3.8	Horizontal	15	120000	0.001	-2.989
QuasiPeak	995.7 MHz	30.555	47	-16.445	337	2.117	Horizontal	15	120000	0.001	1.052

Table 8: Radiated Emissions – 30 – 1000 MHz



Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Meas. Time (s)	RBW	Meas.Time	Correction (dB)
Peak	11.441 GHz	68.007	74	-5.993	167	1.688	Vertical	5	1000000	0	12.339
Peak	14.988 GHz	57.461	74	-16.539	152	2.729	Vertical	5	1000000	0	14.95
Peak	16.642 GHz	57.566	74	-16.434	70	1.643	Vertical	5	1000000	0	15.789
Avg	11.441 GHz	49.939	54	-4.061	167	1.688	Vertical	5	1000000	0	12.339
Avg	14.988 GHz	44.224	54	-9.776	152	2.729	Vertical	5	1000000	0	14.95
Avg	16.642 GHz	44.127	54	-9.873	70	1.643	Vertical	5	1000000	0	15.789
Peak	11.451 GHz	59.908	74	-14.092	106	3.617	Horizontal	5	1000000	0	12.456
Peak	14.647 GHz	57.454	74	-16.546	18	3.798	Horizontal	5	1000000	0	15.095
Avg	11.451 GHz	41.218	54	-12.782	106	3.617	Horizontal	5	1000000	0	12.456
Avg	14.647 GHz	44.259	54	-9.741	18	3.798	Horizontal	5	1000000	0	15.095

Table 9: Radiated Emissions High, 1 – 17 GHz (Worst-Case)


Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Meas. Time (s)	RBW	Meas.Time	Correction (dB)
Peak	22 GHz	50.807	74	-23.193	194	Vertical	5	1000000	0	-5.66
Peak	35.272 GHz	51.925	74	-22.075	195	Vertical	5	1000000	0	0.789
Peak	39.575 GHz	55.288	74	-18.712	40	Vertical	5	1000000	0	3.342
Avg	22 GHz	43.269	54	-10.731	194	Vertical	5	1000000	0	-5.66
Avg	35.272 GHz	38.992	54	-15.008	195	Vertical	5	1000000	0	0.789
Avg	39.575 GHz	42.503	54	-11.497	40	Vertical	5	1000000	0	3.342
Peak	22 GHz	53.28	74	-20.72	241	Horizontal	5	1000000	0	-5.66
Peak	33.55 GHz	52.183	74	-21.817	215	Horizontal	5	1000000	0	1.221
Peak	39.567 GHz	55.731	74	-18.269	228	Horizontal	5	1000000	0	3.348
Avg	22 GHz	47.279	54	-6.721	241	Horizontal	5	1000000	0	-5.66
Avg	33.55 GHz	39.225	54	-14.775	215	Horizontal	5	1000000	0	1.221
Avg	39.567 GHz	42.578	54	-11.422	228	Horizontal	5	1000000	0	3.348

Table 10: Radiated Emissions Low, 17 – 40 GHz (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 11 dBm in any 1 MHz band during any time interval of continuous transmission. Results of this testing are summarized. With a 6 dBi antenna, the conducted limit for power spectral density is 11 dBm.

5.6.1 UNII-2A

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured PSD
OFDM 20	5260	Mcs0_Nss4	40	23.97	9.79
OFDM 20	5280	Mcs0_Nss4	39	23.79	9.14
OFDM 20	5320	Mcs0_Nss4	39	23.9	9.61
HT 20	5260	Mcs0_Nss4	40	23.73	8.26
HT 20	5280	Mcs0_Nss4	40	23.84	8.33
HT 20	5320	Mcs0_Nss4	39	23.67	8.07
HT 40	5270	Mcs0_Nss4	39	23.78	5.37
HT 40	5310	Mcs0_Nss4	38	23.46	4.89
VHT 20	5260	Mcs0_Nss4	40	23.71	8.22
VHT 20	5280	Mcs0_Nss4	40	23.82	8.26
VHT 20	5320	Mcs0_Nss4	39	23.65	8.04
VHT 40	5270	Mcs0_Nss4	39	23.72	5.33
VHT 40	5310	Mcs0_Nss4	39	23.98	5.33
VHT80	5290	Mcs0_Nss4	39	23.77	2.08
VHT160	5250	Mcs0_Nss4	39	23.67	-0.3
HE20	5260	Mcs0_Nss4	39	23.77	8.06
HE20	5280	Mcs0_Nss4	39	23.95	8.15
HE20	5320	Mcs0_Nss4	38	23.61	7.74
HE40	5270	Mcs0_Nss4	39	23.86	5.23
HE40	5310	Mcs0_Nss4	38	23.62	4.87
HE80	5290	Mcs0_Nss4	38	23.52	1.68
HE160	5250	Mcs0_Nss4	39	23.93	-0.12

5.6.2 UNII-2C

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured PSD
OFDM 20	5500	Mcs0_Nss4	39	23.63	9.51
OFDM 20	5600	Mcs0_Nss4	39	23.7	9.68
OFDM 20	5720	Mcs0_Nss4	40	23.9	9.6
HT 20	5500	Mcs0_Nss4	40	23.87	8.59
HT 20	5600	Mcs0_Nss4	40	23.61	8.38
HT 20	5720	Mcs0_Nss4	40	23.64	8.25
HT 40	5510	Mcs0_Nss4	39	23.63	5.26
HT 40	5590	Mcs0_Nss4	40	23.99	5.66
HT 40	5710	Mcs0_Nss4	40	23.78	5.15
VHT 20	5500	Mcs0_Nss4	40	23.83	8.57
VHT 20	5600	Mcs0_Nss4	40	23.59	8.36
VHT 20	5720	Mcs0_Nss4	40	23.6	8.2
VHT 40	5510	Mcs0_Nss4	39	23.63	5.33
VHT 40	5590	Mcs0_Nss4	39	23.45	5.1
VHT 40	5710	Mcs0_Nss4	40	23.78	5.06
VHT80	5530	Mcs0_Nss4	40	23.99	2.89
VHT80	5610	Mcs0_Nss4	40	23.61	2.39
VHT80	5690	Mcs0_Nss4	40	23.57	1.97
VHT160	5570	Mcs0_Nss4	39	23.42	-0.42
HE20	5500	Mcs0_Nss4	40	23.77	8.38
HE20	5600	Mcs0_Nss4	40	23.59	8.24
HE20	5720	Mcs0_Nss4	40	23.59	8.07
HE40	5510	Mcs0_Nss4	39	23.62	5.16
HE40	5590	Mcs0_Nss4	40	23.95	5.55
HE40	5710	Mcs0_Nss4	40	23.76	5.07

HE80	5530	Mcs0_Nss4	40	23.97	2.89
HE80	5610	Mcs0_Nss4	40	23.6	2.22
HE80	5690	Mcs0_Nss4	40	23.6	1.63
HE160	5570	Mcs0_Nss4	39	23.64	-0.3

Result

The maximum average power spectral density was less than the limit of 8 dBm; therefore, the EUT complies with the specification.

5.7 DFS Requirement

This product is a master with radar detection. The outcome of the required DFS tests is located in the DFS Annex. The product passes all required DFS tests for a master with radar detection.

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
<i>Non-Occupancy Period</i>	Yes	Not Required	Yes
<i>DFS Detection Threshold</i>	Yes	Not Required	Yes
<i>Channel Availability Check Time</i>	Yes	Not Required	Not Required
<i>U-NII Detection Bandwidth</i>	Yes	Not Required	Yes

Requirement	Operational Mode	
	Master Client Without Radar Detection	Client With Radar Detection
<i>DFS Detection Threshold</i>	Yes	Not Required
<i>Channel Closing Transmission Time</i>	Yes	Yes
<i>Channel Move Time</i>	Yes	Yes
<i>U-NII Detection Bandwidth</i>	Yes	Not Required

-- End of Test Report --