



427 West 12800 South
Draper, UT 84020

Test Report Certification

FCC ID	SWX-UG3TE
ISED ID	6545A-UG3TE
Equipment Under Test	UTP-G3-Touch-Enterprise
Test Report Serial Number	TR8468_02
Date of Test(s)	2 – 3, 9 and 17 – 18 August 2023
Report Issue Date	1 May 2025

Test Specification	Applicant
47 CFR FCC Part 15, Subpart E	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.



NVLAP LAB CODE 600241-0

Certification of Engineering Report

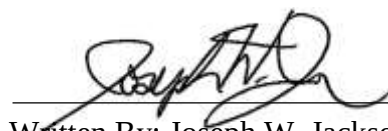
This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart E. This report may be reproduced in full. Partial reproduction of this report may only be made with 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	UBIQUITI
Model Number	UTP-G3-Touch-Enterprise
FCC ID	SWX-UG3TE
ISED ID	6545A-UG3TE

On this 1st day of May 2025, 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: Joseph W. Jackson
Reviewed By: Richard L. Winter

Revision History		
Revision	Description	Date
01	Original Report Release	8 September 2023
02	Change FCC and ISED ID Code, Model Name and Issue Date	1 May 2025

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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	Alex Macon
Title	Compliance

1.2 Manufacturer

Company	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.
Contact Name	Alex Macon
Title	Compliance

2 Equipment Under Test (EUT)

2.1 Identification of EUT

Brand Name	UBIQUITI
Model Number	UTP-G3-Touch-Enterprise
Serial Number	0418D6A3F63B
Dimensions (cm)	25.4 x 13.5 x 18.3

2.2 Description of EUT

The UniFi Talk Phone G3 Touch Enterprise (UTP-G3-Touch-Enterprise) is an 802.3at PoE+ powered desk phone with touch screen, camera and easy setup with UniFi Talk service via Bluetooth. The UTP-G3-Touch-Enterprise has an Ethernet port and WiFi connection with 2.4GHz and 5GHz radio. The UTP-Touch-Enterprise can also be powered via USB-C 5V DC power supply.

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
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
* 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: UBQUITI MN: UTP-G3-Touch-Enterprise SN: 0418D6A3F63B	UniFi Telephone Set	See section 2.4
BN: Dell MN: XPS SN: N/A	Laptop Computer	USB Cable (See Note 2)
BN: UBQUITI MN: E015-1G050300VU SN: N/A	USB-C Power Adapter	USB-C 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
Ethernet Port	1	Unshielded Cat 5e Ethernet Cable
AC (PoE Injector)	1	3 Conductor power cord/80cm
AC (USB-C)	1	2 conductor/2 meters

2.5 Operating Environment

Power Supply	120 VAC to 48V PoE or USB-C Power
AC Mains Frequency	60 Hz
Temperature	22.0 – 26.5 °C
Humidity	33.2 – 47.4 %
Barometric Pressure	1019 mBar

2.6 Operating Modes

The UTP-G3-Touch-Enterprise was tested using test software in order to enable to constant transmission. The measurements within this report are corrected to reference a 100% duty cycle. All emission modes of 802.11 a/ac were investigated. All measurements are reported with the worst-case mode (802.11ac) unless otherwise stated.

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

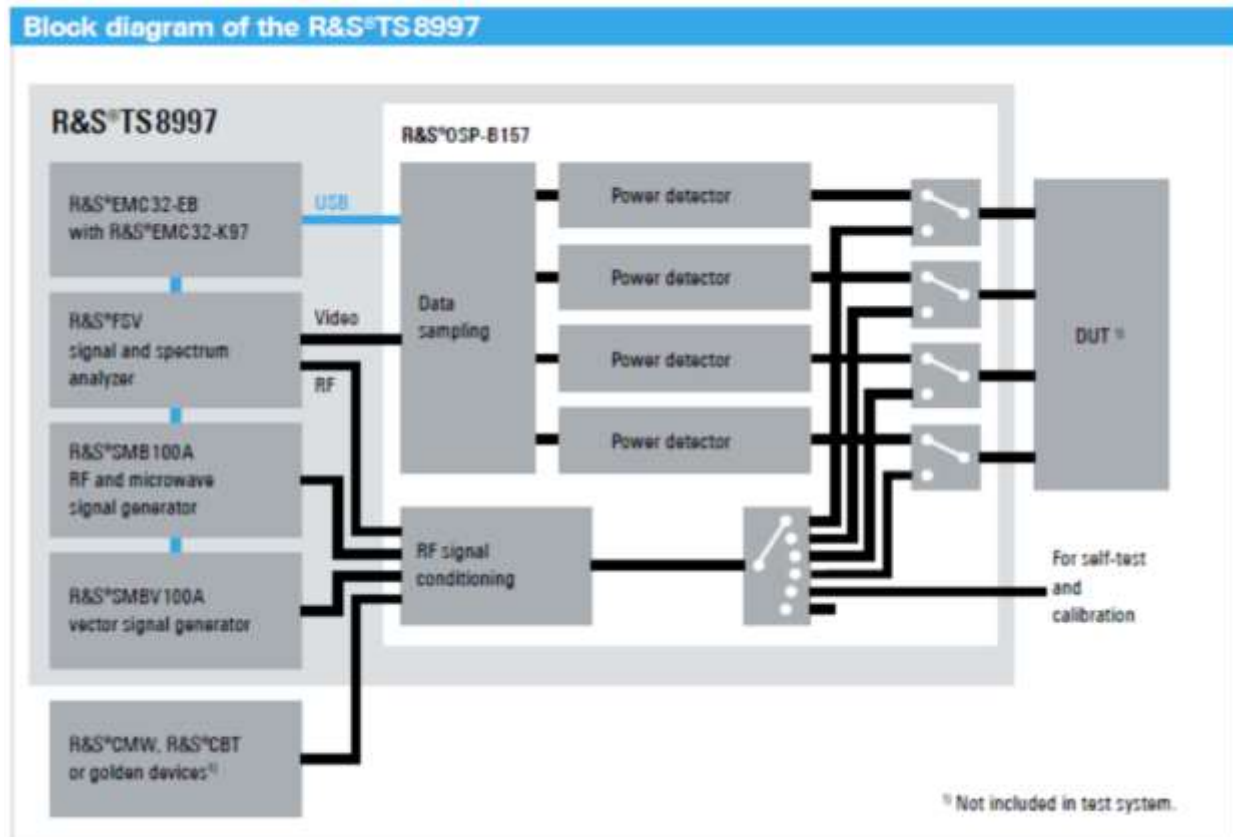


Diagram 1: Test Configuration Block Diagram

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(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 and 10-Meter chambers 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 2024. 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 2024.

Unified Compliance Laboratory has been assigned Designation Number US5037 by the FCC and 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-6754	2/22/2023	2/22/2024
LISN	AFJ	LS16C/10	UCL-6749	12/6/2021	12/6/2023
ISN	Teseq	ISN T800	UCL-2974	6/27/2022	6/27/2024
LISN	Com-Power	LIN-120C	UCL-2612	1/24/2023	1/24/2024
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

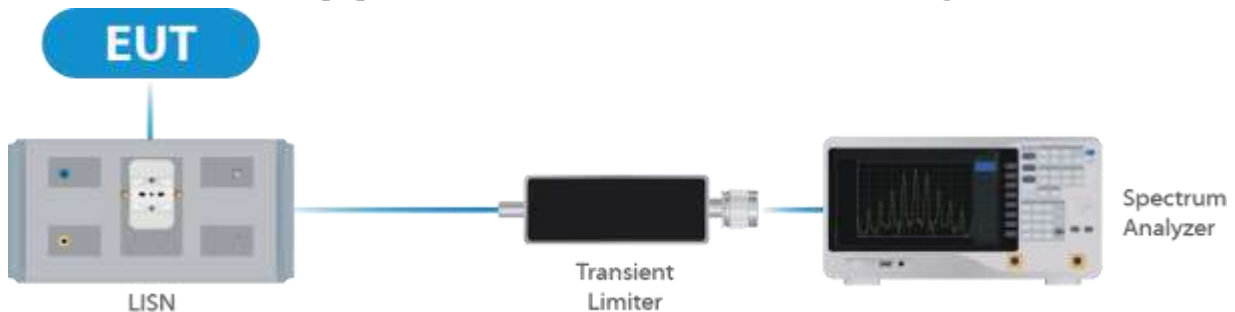


Figure 1: Conducted Emissions Test

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	11/7/2022	11/7/2023
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	2/22/2023	2/22/2024
Switch Extension	R&S	OSP-150W	UCL-2870	2/22/2023	2/22/2024

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

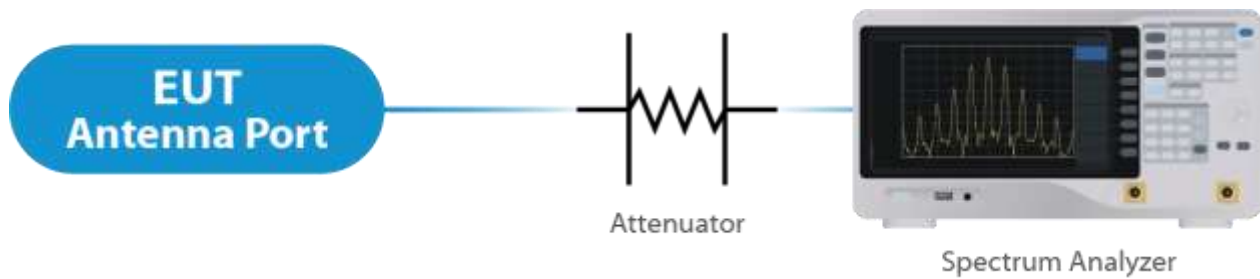


Figure 2: Direct Connect at the Antenna Port Test



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	1/27/2023	1/27/2024
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	10/7/2021	10/7/2023
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3062	2/22/2023	2/22/2025
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3071	1/11/2023	1/11/2025
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	9/22/2022	9/22/2024
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	1/27/2023	1/27/2025
15 - 40 GHz Horn Antenna	Scwarzbeck	BBHA 9170	UCL-2487	6/09/2022	6/09/2024
1 – 18 GHz Amplifier	Com-Power	PAM 118A	UCL-3833	12/9/2022	12/9/2023
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 4: List of equipment used for Radiated Emissions

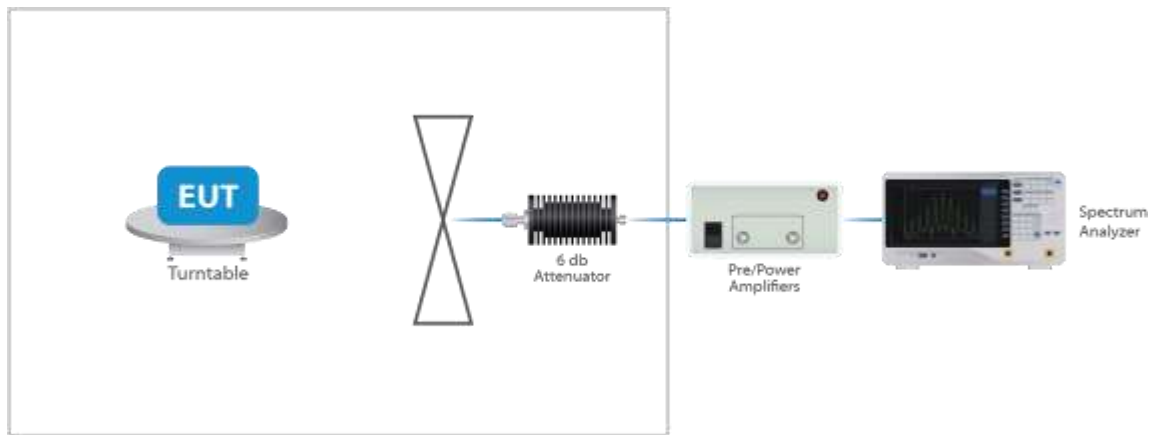


Figure 4: Radiated Emissions Test

4.4 DFS Testing

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
Vector Signal Generator	R&S	SMBV100A	UCL-2873	N/A	N/A
Spectrum Analyzer	Keysight	N9010B	UCL-7069	4/25/2022	4/25/2023

4.4.1 Client Test Set Up

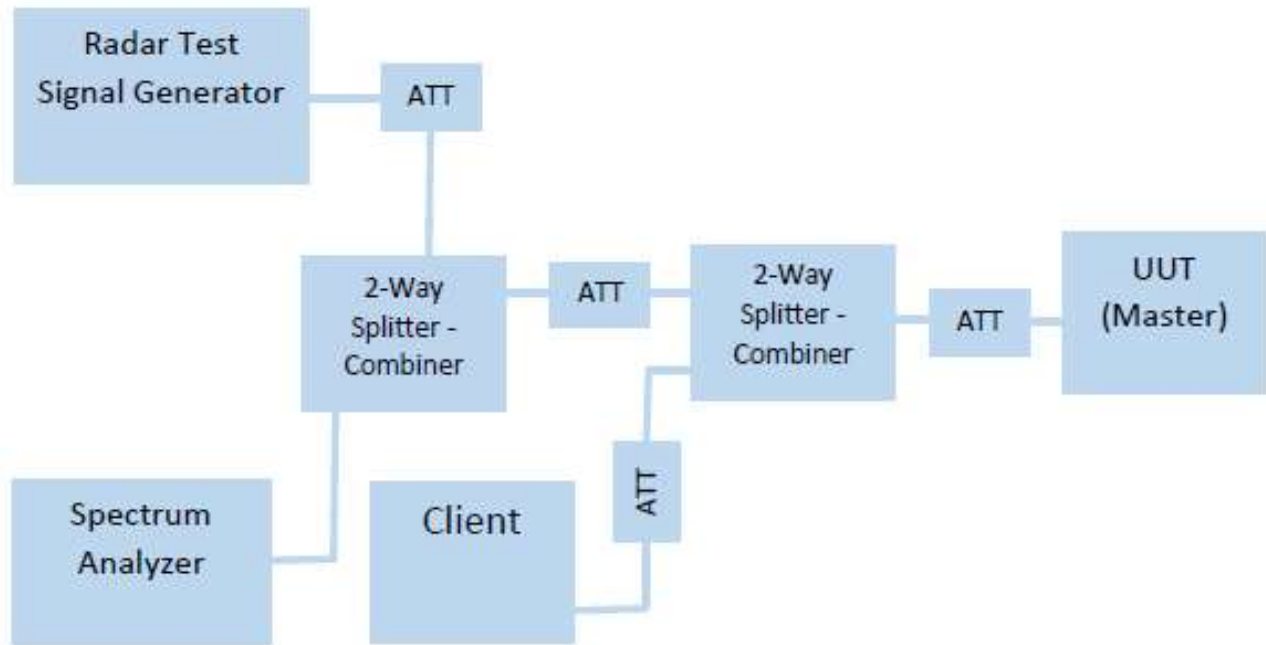


Figure 5: DFS Test Set Up – Client

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

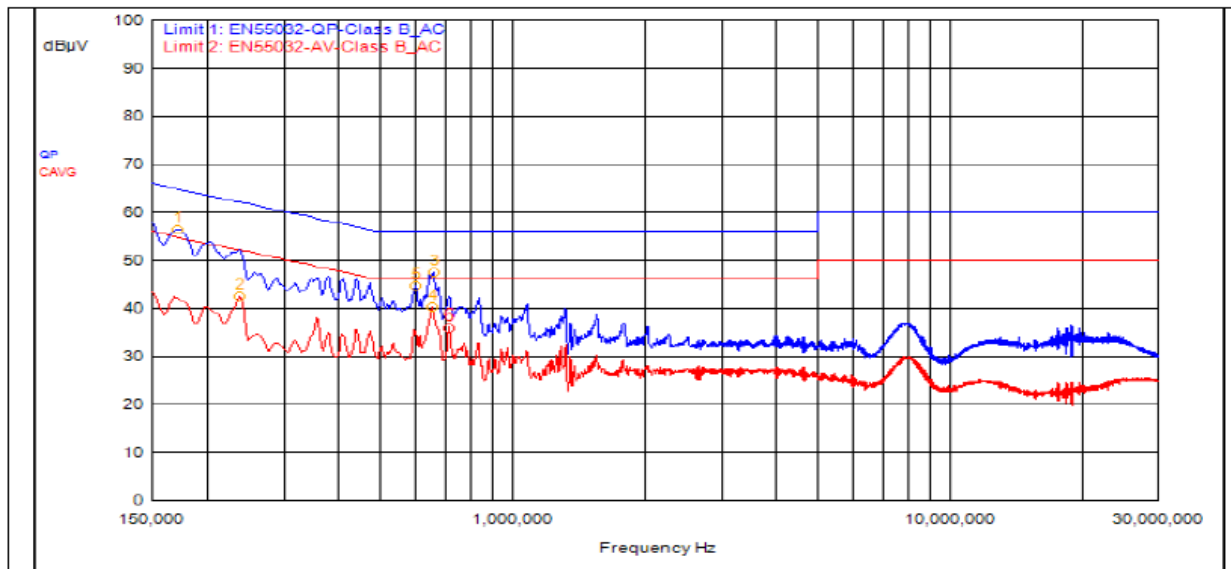
The EUT uses an integrated antenna structure. Per the manufacturer, the Maximum gain of the antenna is 4.2 dBi. This is an 802.11 device and utilizes CDD as described in KDB 662911 D01. The antenna is not user replaceable.

Results

The EUT complied with the specification

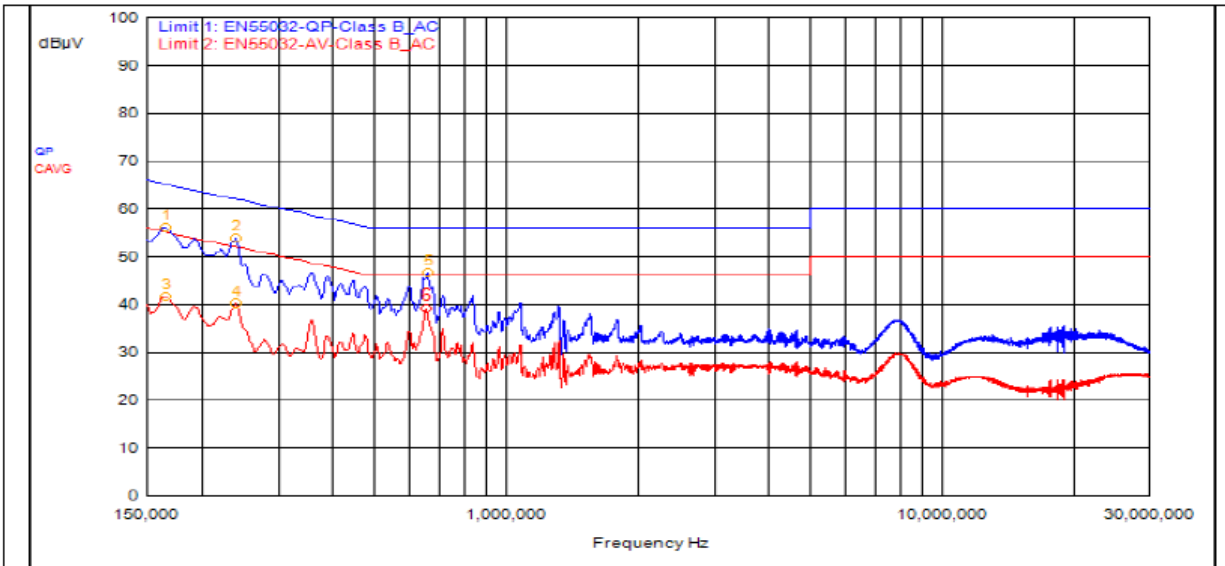
5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.	P/F
MU	MHz	dB	dB	dB	Type	dBμV	dBμV	dBμV	dB	dBμV	dB	P/F
1	171,000kHz	12.26	0.00		QPeak	44.11	56.37	64.91	-8.54			
3	660,000kHz	12.22	0.00		QPeak	35.16	47.38	56.00	-8.62			
5	600,000kHz	12.22	0.00		QPeak	32.54	44.76	56.00	-11.24			
2	237,000kHz	12.25	0.00		C_AVG	30.19	42.44			52.20	-9.76	
4	654,000kHz	12.22	0.00		C_AVG	28.17	40.39			46.00	-5.61	
6	714,000kHz	12.21	0.00		C_AVG	23.76	35.97			46.00	-10.03	

5.2.2 Neutral



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.	P/F
MU	MHz	dB	dB	dB	Type	dBμV	dBμV	dBμV	dB	dBμV	dB	P/F
2	240,000kHz	12.32	0.00		QPeak	41.47	53.79	62.10	-8.31			
1	165,000kHz	12.23	0.00		QPeak	43.92	56.15	65.21	-9.06			
5	660,000kHz	12.17	0.00		QPeak	34.52	46.69	56.00	-9.31			
3	165,000kHz	12.23	0.00		C_AVG	29.50	41.73			55.21	-13.47	
4	240,000kHz	12.32	0.00		C_AVG	27.95	40.27			52.10	-11.83	
6	654,000kHz	12.17	0.00		C_AVG	27.03	39.20			46.00	-6.80	

Result

The EUT complied with the specification limit.

5.3 §15.403(i) 26 dB Emissions Bandwidth

All chains were measured under the guidance of KDB 789033 Section II.C. and KDB 66291 D01. Please see associated annex for details on instrument settings.

5.3.1 UNII-2A

Nominal BW (MHz)	Frequency (MHz)	99% Bandwidth (MHz)	Emissions 26 dB Bandwidth (MHz)
20	5260	17.2	24.0
20	5280	17.1	24.7
20	5320	17.0	23.6
20	5260	17.1	24.8
20	5280	17.2	26.7
20	5320	17.0	24.8
40	5270	36.5	50.6
40	5310	36.8	55.5
80	5290	75.5	111.5

5.3.2 UNII-2C

Nominal BW (MHz)	Frequency (MHz)	99% Bandwidth (MHz)	Emissions 26 dB Bandwidth (MHz)
20	5500	17.7	27.8
20	5600	18.6	33.7
20	5720	23.5	38.3
20	5500	18.5	29.3
20	5600	19.1	33.7
20	5720	24.4	42.5
40	5510	37.3	65.6
40	5590	37.8	73.7
40	5710	40.5	80.3

80	5530	75.5	122.5
80	5610	76.5	138.5
80	5690	77.0	147.5

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

All chains were measured and summed under the guidance of KDB 789033 Section II. E.2. and KDB 66291 D01. Please see associated annex for details on instrument settings.

The maximum average RF conducted output power measured for this device was 15.67 dBm or 36.90 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 4.2 dBi.

5.4.1 UNII-2A

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured EIRP	Measured PSD
OFDM 20	5260	Mcs0	16	14.07	18.27	1.53
OFDM 20	5280	Mcs0	16	14.21	18.41	1.45
OFDM 20	5320	Mcs0	16	14.00	18.20	1.66
VHT 20	5260	Mcs0	16	14.09	18.29	1.28
VHT 20	5280	Mcs0	16	14.21	18.41	1.33
VHT 20	5320	Mcs0	16	14.01	18.21	1.25
VHT 40	5270	Mcs0	16	13.94	18.14	-1.95
VHT 40	5310	Mcs0	16	14.09	18.29	-2.05
VHT 80	5290	Mcs0	16	13.85	18.05	-5.13

5.4.2 UNII-2C

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured EIRP	Measured PSD
OFDM 20	5500	Mcs0	20	14.65	18.85	2.04
OFDM 20	5600	Mcs0	20	15.36	19.56	2.73
OFDM 20	5720	Mcs0	20	15.64	19.84	2.93
VHT 20	5500	Mcs0	20	14.68	18.88	1.87
VHT 20	5600	Mcs0	20	15.38	19.58	2.51
VHT 20	5720	Mcs0	20	15.67	19.87	2.70
VHT 40	5510	Mcs0	20	14.62	18.82	-1.15
VHT 40	5590	Mcs0	20	15.03	19.23	-0.44
VHT 40	5710	Mcs0	20	15.32	19.52	-0.47
VHT 80	5530	Mcs0	20	14.45	18.65	-4.17
VHT 80	5610	Mcs0	20	14.84	19.04	-3.75

VHT 80	5690	Mcs0	20	15.07	19.27	-3.77
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Result

In the configuration tested, the maximum average RF output power 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 range from the lowest frequency generated or used in the device to the tenth harmonic of the highest fundamental frequency was 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 4.2 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

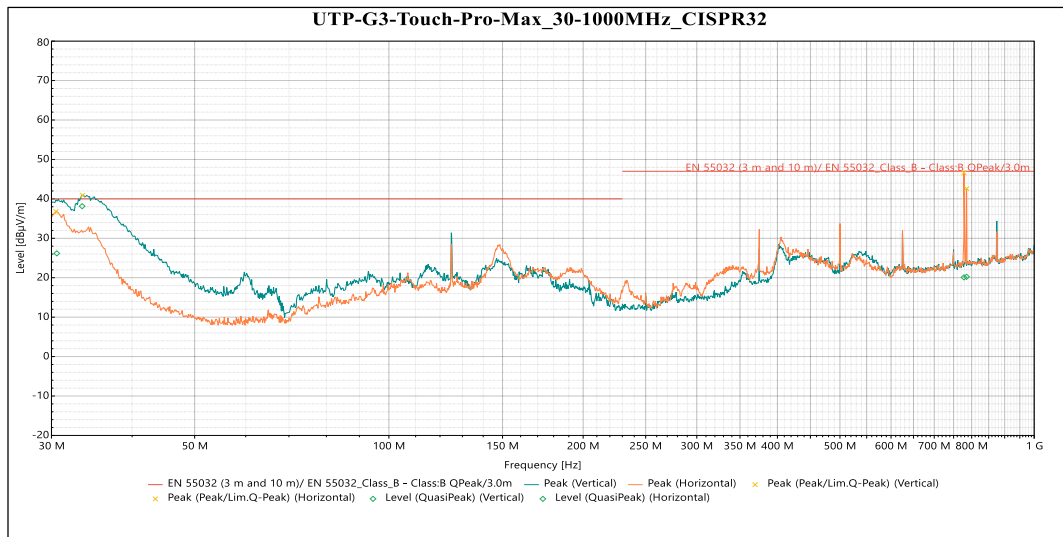
Conducted spurious emissions were below -27 dBm; therefore, the EUT complies with the specification. See Annex for results.

5.5.2 Radiated Spurious Emissions in the Restricted Bands of § 15.205

The frequency range from the lowest frequency generated or used in the device to the tenth harmonic of the highest fundamental emissions was 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.

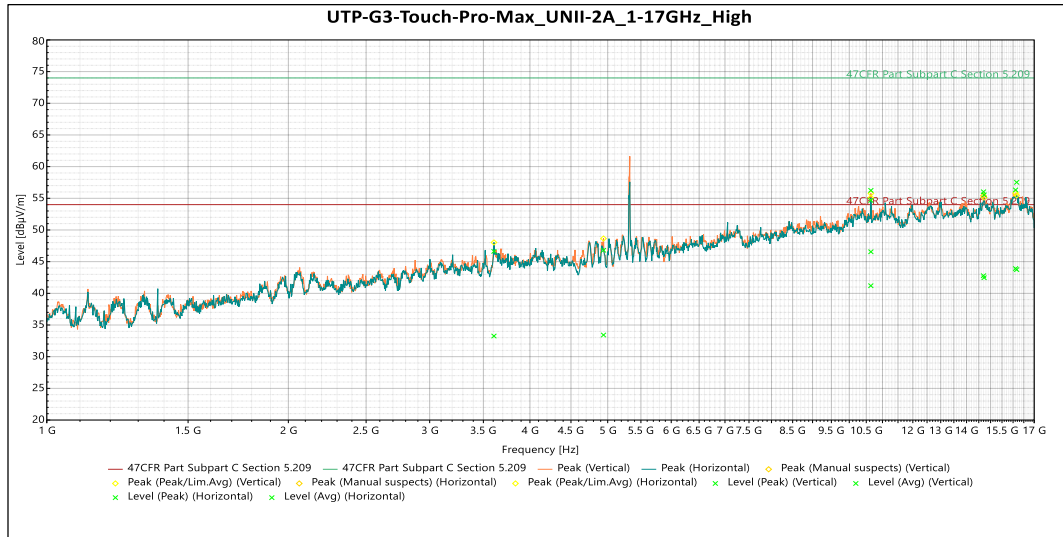
5.5.3 UNII-2A



QuasiPeak

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
33.471 MHz	38.136	40	-1.864	192	1	Vertical	-9.673
30.577 MHz	26.176	40	-13.824	243	1.138	Horizontal	-8.105
778.43 MHz	20.085	47	-26.915	244	1.677	Horizontal	-5.11
785.71 MHz	20.231	47	-26.769	88	3.121	Horizontal	-5.112

Graph 1: Radiated Emissions within 30MHz - 1GHz



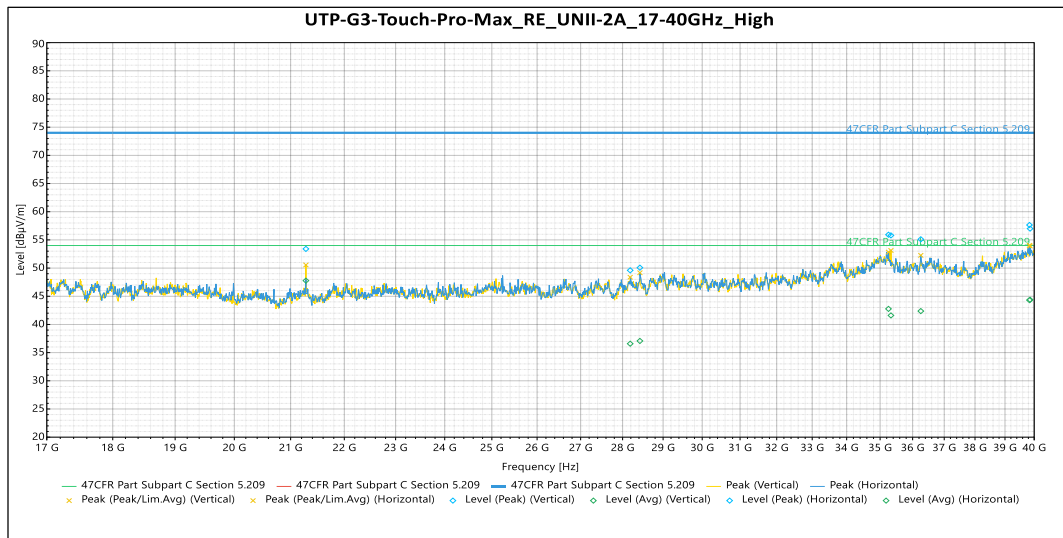
Peak

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.9402 GHz	46.801	74	-27.199	340	1.834	Vertical	-3.231
10.64 GHz	56.252	74	-17.748	228	2.146	Vertical	8.467
14.699 GHz	56.03	74	-17.97	229	4	Vertical	11.688
16.115 GHz	56.324	74	-17.676	29	3.798	Vertical	12.964
3.6076 GHz	46.617	74	-27.383	3	1.834	Horizontal	-4.904
10.638 GHz	54.67	74	-19.33	202	2.142	Horizontal	8.463
14.723 GHz	55.551	74	-18.449	284	3.153	Horizontal	11.39
16.166 GHz	57.516	74	-16.484	165	3.307	Horizontal	13.076

Avg

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.9402 GHz	33.42	54	-20.58	340	1.834	Vertical	-3.231
10.64 GHz	46.556	54	-7.444	228	2.146	Vertical	8.467
14.699 GHz	42.784	54	-11.216	229	4	Vertical	11.688
16.115 GHz	43.905	54	-10.095	29	3.798	Vertical	12.964
3.6076 GHz	33.256	54	-20.744	3	1.834	Horizontal	-4.904
10.638 GHz	41.204	54	-12.796	202	2.142	Horizontal	8.463
14.723 GHz	42.459	54	-11.541	284	3.153	Horizontal	11.39
16.166 GHz	43.743	54	-10.257	165	3.307	Horizontal	13.076

Graph 2: Radiated Emissions Highest Channel 1 GHz – 17 GHz (worse case)



Peak

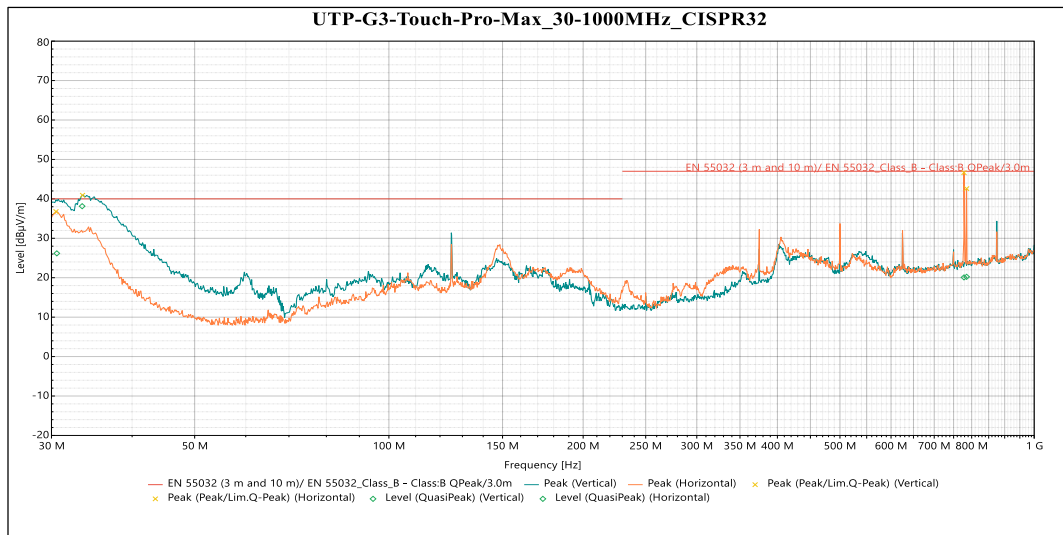
Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
21.28 GHz	53.395	74	-20.605	177	Vertical	-1.972
28.185 GHz	49.605	74	-24.395	20	Vertical	-1.898
35.33 GHz	55.804	74	-18.196	158	Vertical	3.923
39.857 GHz	56.999	74	-17.001	234	Vertical	6.44
28.423 GHz	50.074	74	-23.926	294	Horizontal	-1.366
35.255 GHz	55.923	74	-18.077	350	Horizontal	5.357
36.257 GHz	55.115	74	-18.885	280	Horizontal	4.58
39.837 GHz	57.638	74	-16.362	130	Horizontal	6.488

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
21.28 GHz	47.767	54	-6.233	177	Vertical	-1.972
28.185 GHz	36.582	54	-17.418	20	Vertical	-1.898
35.33 GHz	41.6	54	-12.4	158	Vertical	3.923
39.857 GHz	44.385	54	-9.615	234	Vertical	6.44
28.423 GHz	37.075	54	-16.925	294	Horizontal	-1.366
35.255 GHz	42.757	54	-11.243	350	Horizontal	5.357
36.257 GHz	42.373	54	-11.627	280	Horizontal	4.58
39.837 GHz	44.312	54	-9.688	130	Horizontal	6.488

Graph 3: Radiated Emissions Highest Channel 17 GHz – 40 GHz (worse case)

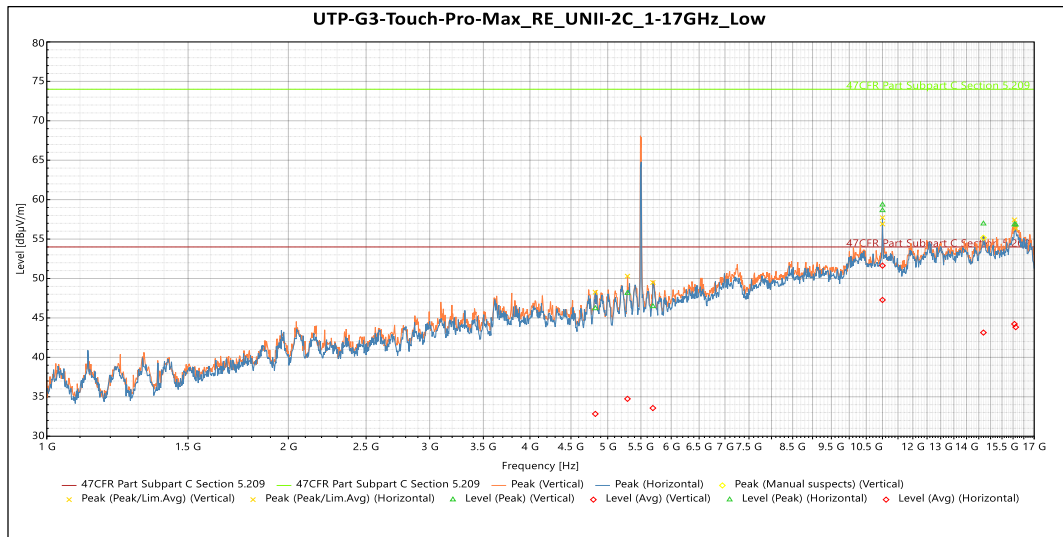
5.5.4 UNII-2C



QuasiPeak

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
33.471 MHz	38.136	40	-1.864	192	1	Vertical	-9.673
30.577 MHz	26.176	40	-13.824	243	1.138	Horizontal	-8.105
778.43 MHz	20.085	47	-26.915	244	1.677	Horizontal	-5.11
785.71 MHz	20.231	47	-26.769	88	3.121	Horizontal	-5.112

Graph 4: Radiated Emissions within 30MHz - 1GHz



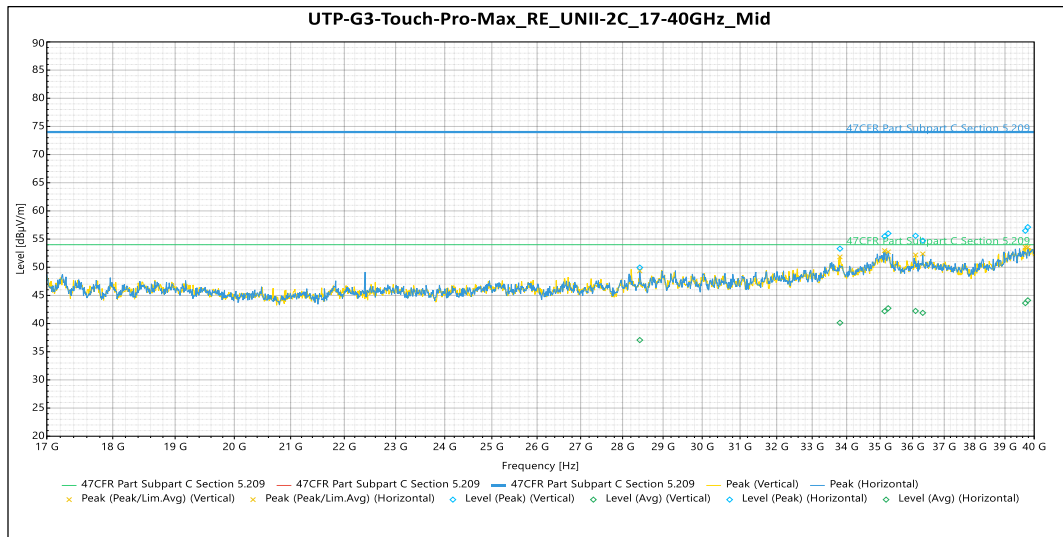
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
5.2922 GHz	48.154	74	-25.846	298	3.798	Vertical	-1.898
11 GHz	58.637	74	-15.363	184	3.307	Vertical	9.118
14.696 GHz	56.948	74	-17.052	188	3.802	Vertical	11.657
16.063 GHz	56.844	74	-17.156	34	2.816	Vertical	12.691
4.8257 GHz	46.21	74	-27.79	266	3.802	Horizontal	-3.436
5.6924 GHz	46.475	74	-27.525	13	3.802	Horizontal	-1.933
11 GHz	59.354	74	-14.646	202	3.798	Horizontal	9.118
16.122 GHz	56.83	74	-17.17	237	1.834	Horizontal	12.968

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
5.2922 GHz	34.74	54	-19.26	298	3.798	Vertical	-1.898
11 GHz	51.629	54	-2.371	184	3.307	Vertical	9.118
14.696 GHz	43.142	54	-10.858	188	3.802	Vertical	11.657
16.063 GHz	44.226	54	-9.774	34	2.816	Vertical	12.691
4.8257 GHz	32.833	54	-21.167	266	3.802	Horizontal	-3.436
5.6924 GHz	33.571	54	-20.429	13	3.802	Horizontal	-1.933
11 GHz	47.282	54	-6.718	202	3.798	Horizontal	9.118
16.122 GHz	43.829	54	-10.171	237	1.834	Horizontal	12.968

Graph 5: Radiated Emission Lowest Channel 1 – 17 GHz (worse case)



Peak

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
33.803 GHz	53.287	74	-20.713	58	Vertical	2.875
35.138 GHz	55.493	74	-18.507	153	Vertical	5.091
36.092 GHz	55.58	74	-18.42	268	Vertical	4.019
39.695 GHz	56.473	74	-17.527	342	Vertical	5.764
28.42 GHz	49.94	74	-24.06	332	Horizontal	-1.391
35.246 GHz	56.004	74	-17.996	105	Horizontal	5.347
36.318 GHz	54.718	74	-19.282	256	Horizontal	4.165
39.78 GHz	57.116	74	-16.884	65	Horizontal	6.318

Avg

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
33.803 GHz	40.129	54	-13.871	58	Vertical	2.875
35.138 GHz	42.191	54	-11.809	153	Vertical	5.091
36.092 GHz	42.243	54	-11.757	268	Vertical	4.019
39.695 GHz	43.632	54	-10.368	342	Vertical	5.764
28.42 GHz	37.068	54	-16.932	332	Horizontal	-1.391
35.246 GHz	42.72	54	-11.28	105	Horizontal	5.347
36.318 GHz	41.905	54	-12.095	256	Horizontal	4.165
39.78 GHz	44.123	54	-9.877	65	Horizontal	6.318

Graph 6: Radiated Emissions Middle Channel 17 GHz – 40 GHz (worse case)

5.6 §15.407(a) Maximum Power Spectral Density

All chains were measured and summed under the guidance of KDB 789033 Section II. F. and KDB 66291 D01. Please see associated annex for details on instrument settings.

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 4.2 dBi antenna, the conducted limit for power spectral density is 11 dBm. As per KDB 662911, When the EUT is using spatial-multiplexing in HT to HE modes, there is not additional array gain to accommodate. Results of this testing are summarized.

5.6.1 UNII-2A

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured PSD
OFDM 20	5260	Mcs0	16	14.07	1.53
OFDM 20	5280	Mcs0	16	14.21	1.45
OFDM 20	5320	Mcs0	16	14.00	1.66
VHT 20	5260	Mcs0	16	14.09	1.28
VHT 20	5280	Mcs0	16	14.21	1.33
VHT 20	5320	Mcs0	16	14.01	1.25
VHT 40	5270	Mcs0	16	13.94	-1.95
VHT 40	5310	Mcs0	16	14.09	-2.05
VHT 80	5290	Mcs0	16	13.85	-5.13

5.6.2 UNII-2C

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured PSD
OFDM 20	5500	Mcs0	20	14.65	2.04
OFDM 20	5600	Mcs0	20	15.36	2.73
OFDM 20	5720	Mcs0	20	15.64	2.93
VHT 20	5500	Mcs0	20	14.68	1.87
VHT 20	5600	Mcs0	20	15.38	2.51
VHT 20	5720	Mcs0	20	15.67	2.70
VHT 40	5510	Mcs0	20	14.62	-1.15
VHT 40	5590	Mcs0	20	15.03	-0.44

VHT 40	5710	Mcs0	20	15.32	-0.47
VHT 80	5530	Mcs0	20	14.45	-4.17
VHT 80	5610	Mcs0	20	14.84	-3.75
VHT 80	5690	Mcs0	20	15.07	-3.77

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

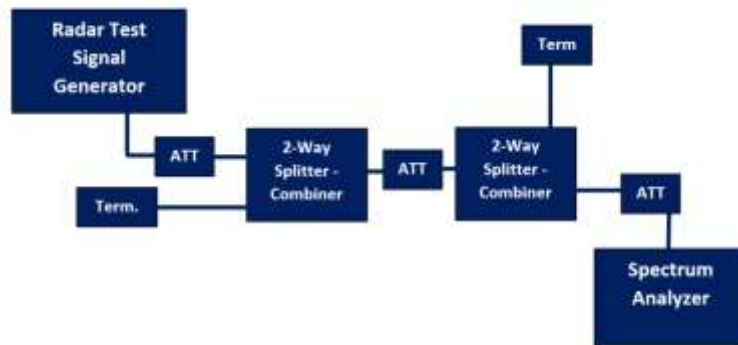
This product is a client without radar detection. The outcome of the required DFS tests is located in this section. DFS testing was performed following the test procedures as outlined in KDB 905462.

The product passes all required DFS tests for a client without radar detection.

Information	Status
Possible Antenna/s	Integral
Antenna used for test	Integral
Operating mode	Client
If Client	SWX-UDM
Port used for testing	J15
EIRP range	> 200 milliwatts
Impedance of port	50 ohms
Channel loading technique	Data transfer was enacted to achieve a minimum channel loading of approximately 17%
Antenna measurement technique	See note 1
Time of power-on cycle	25s
Detection threshold level	-64 dBm

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 or Client Client Without Radar Detection	Client Without 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



Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP $\geq$ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	

5.7.1 Channel Availability Check (CAC)

The EUT shall perform a CAC to ensure that there is no radar operating on the channel. After the power-up sequence, at-least 1 minute shall be monitored on the intended operating frequency. For initial CAC, the EUT does not emit beacon, control, or data signals on the test channel until the power-up sequence has been completed and the UNII device checks for radar waveforms for one minute on the test channel. This test does not use any radar waveforms. The markers in the associated plots indicate initial beacons.

For radar burst at the beginning of the CAC. To verify successful radar detection on the selected channel during a period equal to the beginning of the CAC time, visual indication on the EUT of successful detection of the radar burst will be recorded and reported. Observation of the radar burst is show on the associated plot to be within the beginning of the CAC time. Emissions will continue to be monitored for the remaining 300 seconds.

For radar burst at the end of the CAC. To verify successful radar detection on the selected channel during a period equal to the end of the CAC time, visual indication on the EUT of successful detection of the radar burst will be recorded and reported. Observation of the radar

burst is show on the associated plot to be within the end of the CAC time. Emissions will continue to be monitored for the remaining 300 seconds.

A spectrum analyzer is used as a monitor to verify that the EUT has vacated the channel within the channel closing transmission time and channel move time, and does not transmit on a channel during the non-occupancy period after the detection and channel move.

5.7.2 In-service Monitoring

Channel Move Time	10 seconds
Channel Closing Transmission Time	200 ms + aggregate of 60 ms over remaining 10 second period
Non-occupancy period	Minimum 30 minutes

Verified during in-service monitoring: channel closing transmission time and channel move time. The transmissions were observed at the end of the radar burst on the operating channel for a duration of greater than 10 seconds. The transmissions were measured and recorded during the observation time. This was compared to the channel move time and channel closing time limits. One 12 second plot is reported for the short pulse radar type 0. A 60 ms plot is also provided to verify closing time for the aggregate transmission time starting from 200 ms after the end of the radar signal to the completion of the channel move.

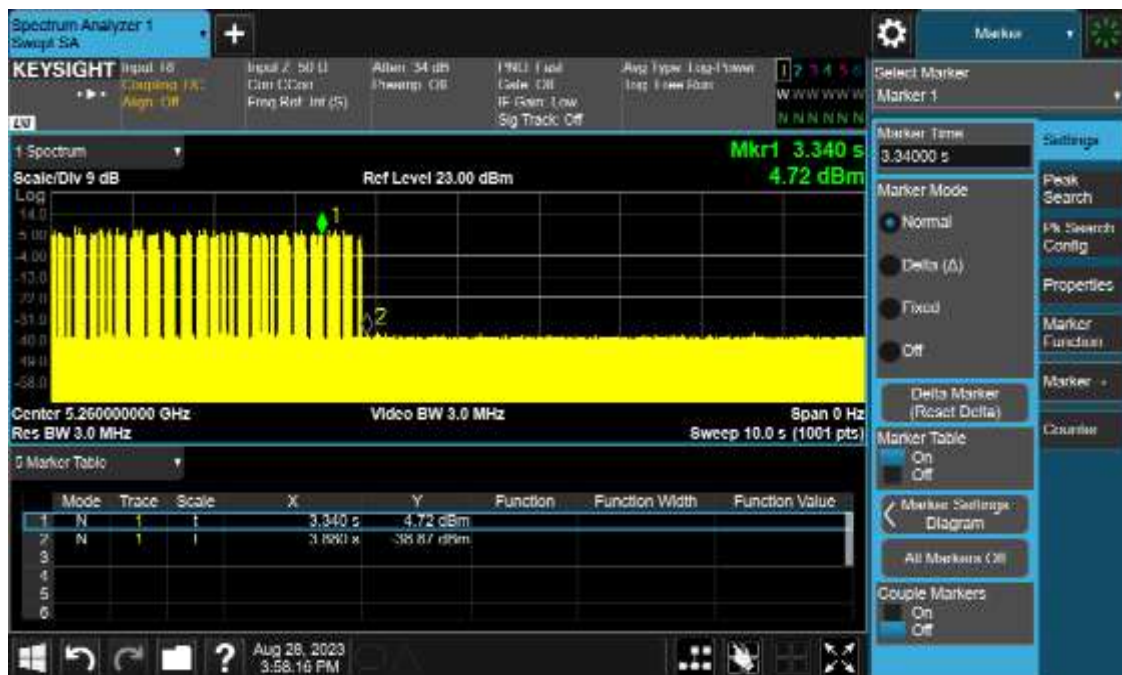
During the 30 minutes observation time, the EUT did not make any transmissions on a channel after a radar signal was detected.

Please see plots below.

A spectrum analyzer is used as a monitor to verify that the EUT has vacated the channel within the channel closing transmission time and channel move time, and does not transmit on a channel during the non-occupancy period after the detection and channel move.



Plot 1: Close



Plot 2: Move

5.7.3 Detection Probability

For statistical performance check. Demonstrating a minimum channel loading of approximately 17% or greater of the test. Observe the transmissions of the EUT at the end of the burst on the operating channel for duration greater than 10 seconds for short pulse radar type 1-4 and 6 to ensure detection occurs. Then observe the transmissions of the EUT at the end of the burst on the operating channel for duration greater than 22 seconds for long pulse radar type 5 to ensure detection occurs. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trial runs.

Please see data below.

Radar Type	Min successful detection (%)	Minimum Trials
1	60	30
2	60	30
3	60	30
4	60	30
Types 1 - 4	80	120
5	80	30
6	70	30

-- End of Test Report --