



427 West 12800 South
Draper, UT 84020

Test Report Certification

FCC ID	SWX-UDW
ISED ID	6545A-UDW
Equipment Under Test	UDW
Test Report Serial Number	TR7073_02
Date of Test(s)	12 February; 29 March; 8, 12, 25 April 2022
Report Issue Date	24 May 2022

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	UniFi
Model Number	UDW
FCC ID	SWX-UDW
ISED ID	6545A-UDW

On this 24th day of May 2022, 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: Clay Allred



Reviewed By: Richard L. Winter

Revision History		
Revision	Description	Date
01	Original Report Release	27 April 2022
02	Removed misplaced UNII-1 data and added Correct UNII-3 Data	24 May, 2022

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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	UDW
Serial Number	2F3AB46NCM9W
Dimensions (cm)	54.9 54.9 54.9 54.9 54.9

2.2 Description of EUT

The Dream Wall is a standalone UniFi OS gateway controller which facilitates high-density PoE switching with integrated (17) gigabit RJ45 ports [(12x PoE and 5x non-PoE)]. The Dream Wall also promotes high-speed WAN and LAN connection with its (2) 10 GbE SFP ports and dual-band WiFi radio. The 2x2 2.4GHz WiFi radio and 5GHz 4x4 radio delivers a 2.7 Gbps aggregate throughput rate. The Dream Wall is equipped with a built-in Bluetooth for set up, and its 1.3" LCM touchscreen concisely displays critical system and status insights needed for device monitoring and configuration.

The table below show the channels used within the different modulation bandwidths.

Band	WiFi Mode	Modulation Bandwidth	Modulation Type	Frequency (MHz)
UNII-3	a	20 MHz	OFDM	5745, 5775, 5825
	n	20 MHz	HT	5745, 5775, 5825
	n	40 MHz	HT	5755, 5775, 5795
	ac	20 MHz	VHT	5745, 5775, 5825
	ac	40 MHz	VHT	5755, 5775, 5795
	ac	80 MHz	VHT	5775
	ax	20 MHz	HE	5745, 5775, 5825
	ax	40 MHz	HE	5755, 5775, 5795
	ax	80 MHz	HE	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 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: UDW (1) SN: 2F3AB46NCM9W	EUT	See Section 2.4
BN: Dell MN: XPS SN: N/A	Laptop Computer	Ethernet Non-Shielded Cat 5e
BN: HP MN: Spectre x360 SN: N/A	Laptop Computer	USB to Serial EUT Connection

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
10 GbE SFP WAN	1	Copper Direct Attach Cable
10 GbE SFP LAN	1	Copper Direct Attach Cable
2.5 GbE RJ45 WAN	1	Un-shielded Cat 5e Cable
PoE, PoE+, PoE++	12 (4, 4, 4)	Un-shielded Cat 5e Cable
Gigabit Ethernet	5	Un-shielded Cat 5e Cable
AC Power	1	3 Conductor Cable NEMA 5-15P (AC)

2.5 Operating Environment

Power Supply	120 Volts ac
AC Mains Frequency	60 Hz
Temperature	22-24.8 °C
Humidity	20.7-24.37 %
Barometric Pressure	1007 mBar

2.6 Operating Modes

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

For Conducted emission the device was setup as in normal operation, with the PoE output ports loaded with resistive loads equivalent to 90% (320W) of its max PoE output.

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

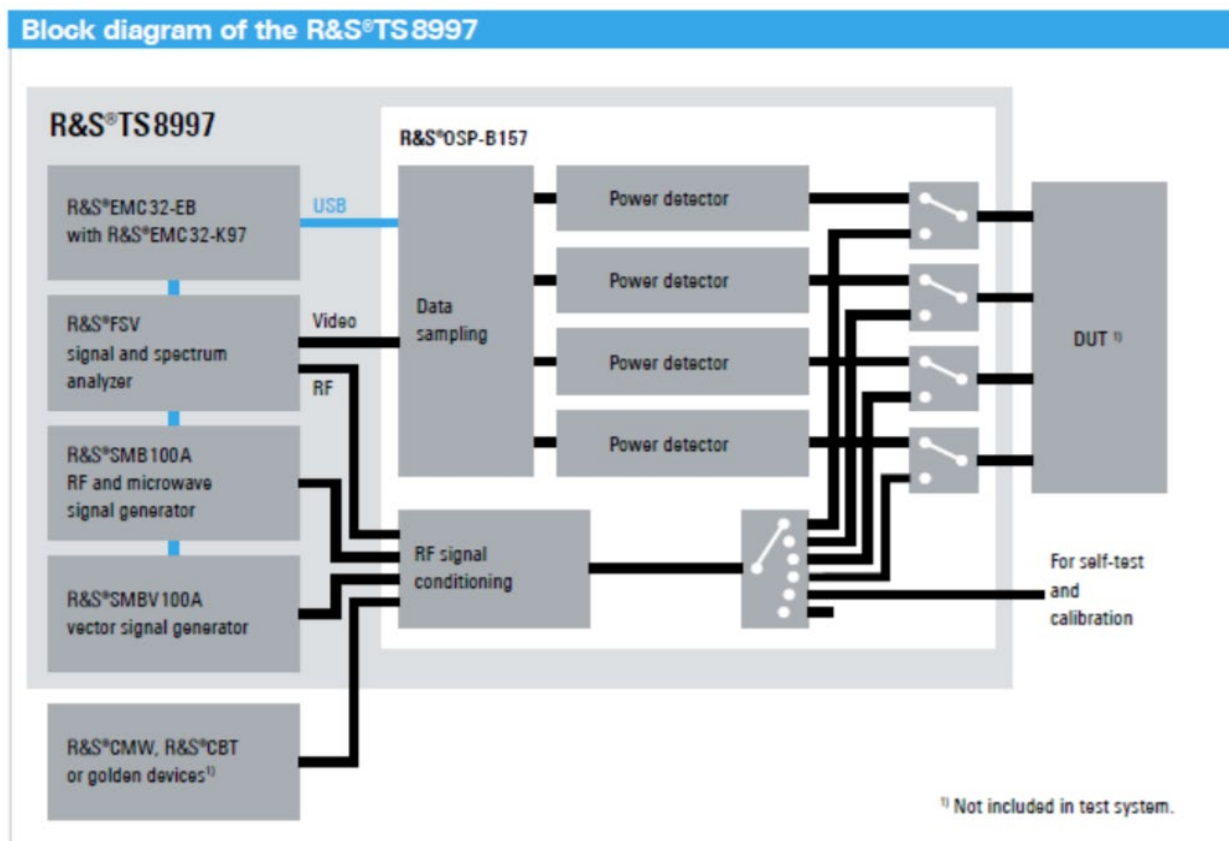


Diagram 1: Test Configuration Block Diagram

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	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 40000	N/A
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	5725 to 5850	Compliant

The testing was performed according to the procedures in ANSI C63.10-2013, KDB 789033 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 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-6754	12/8/2021	12/8/2022
LISN	AFJ	LS16C/10	UCL-6749	12/6/2021	12/6/2023
Cat6 ISN	Teseq	ISN T8-Cat6	UCL-2971	1/30/2022	1/30/2023
ISN	Teseq	ISN T800	UCL-2974	6/4/2021	6/4/2022
LISN	Com-Power	LIN-120C	UCL-2612	1/6/2022	1/6/2023
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

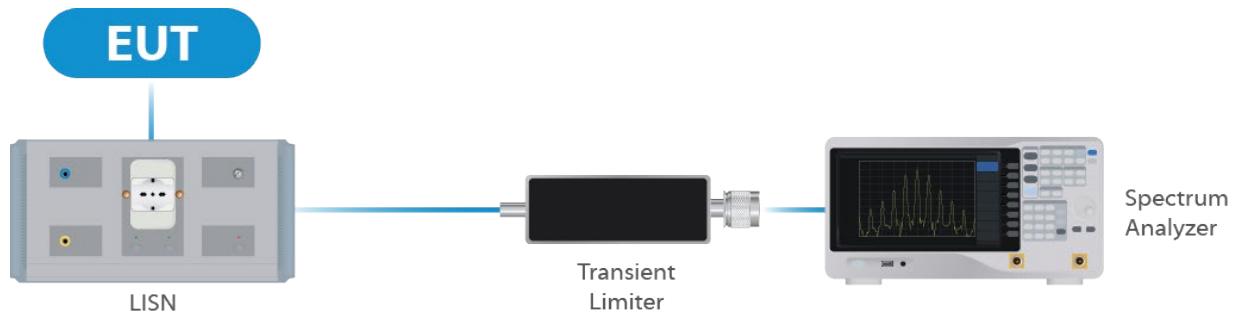


Figure 1: Conducted Emissions Test

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	1/03/2022	1/03/2023
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	1/03/2022	1/03/2023
Switch Extension	R&S	OSP-150W	UCL-2870	1/03/2022	1/03/2023

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

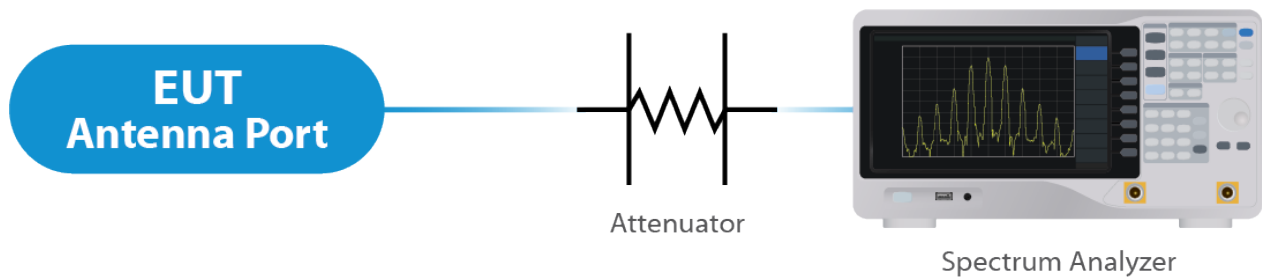


Figure 2: Direct Connect at the Antenna Port Test

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	6/21/2021	6/21/2022
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	10/7/2021	10/7/2022
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	11/16/2022
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	10/7/2021	10/7/2022
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 3: List of equipment used for Radiated Emissions

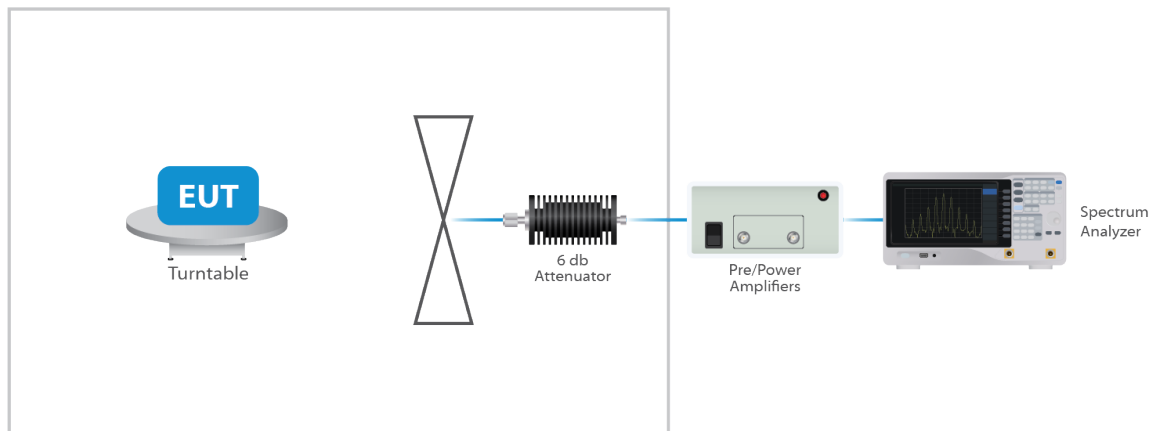


Figure 3: Radiated Emissions Test

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 folding antenna structure. The maximum gain of the antenna is 6 dBi. This is an 802.11 device and utilizes CDD as described in KDB 662911 D01. The antenna is not user replaceable.

For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for $N_{ANT} \leq 4$;

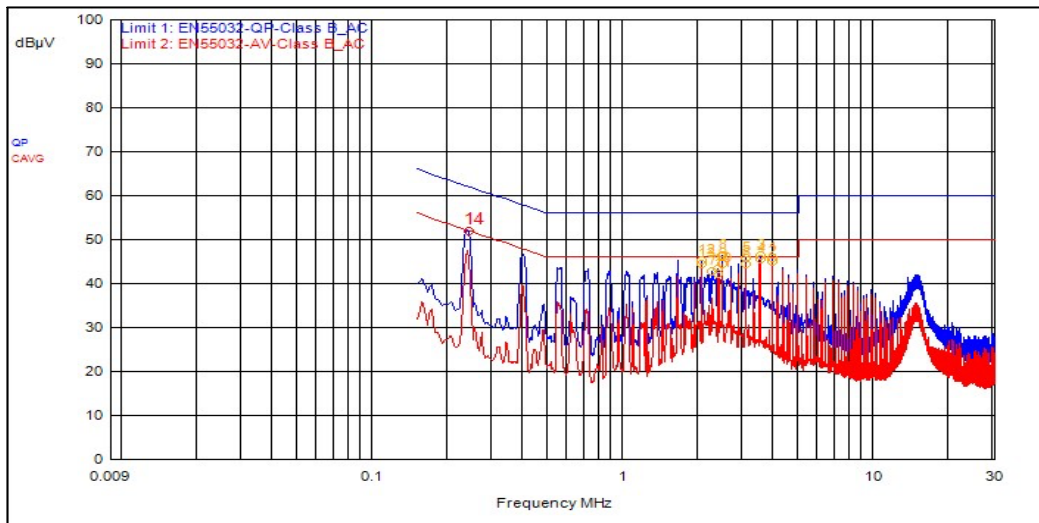
For PSD measurements when $N_{ss}=1$: Array Gain = $10 \log(N_{ant}/N_{ss})$ dB = 6.02dB

Results

The EUT complied with the specification

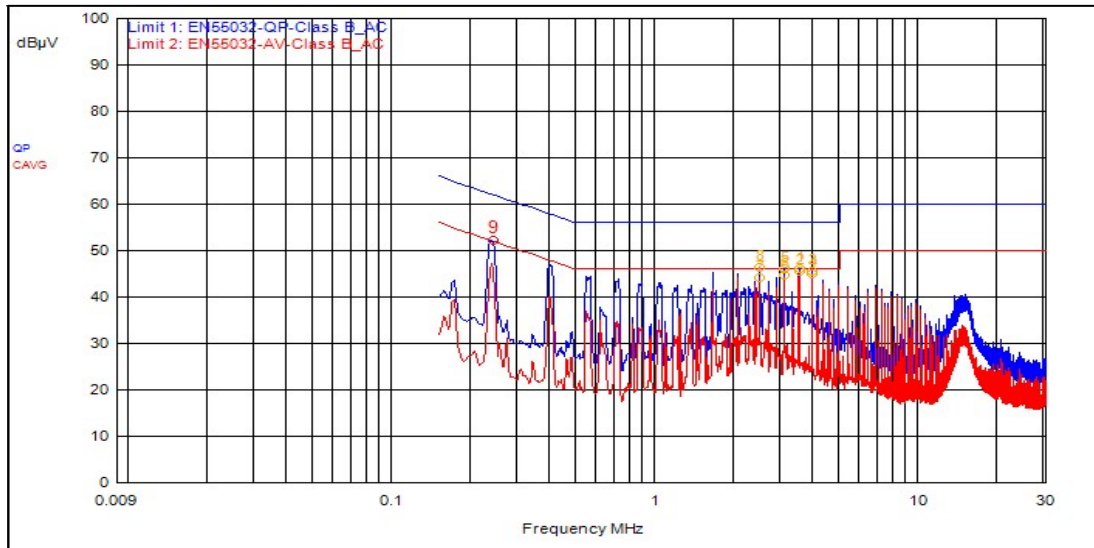
5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
8	2.451MHz	9.5	0.8		QPeak	36.1	46.4	56.0	-9.6		
3	3.474MHz	9.5	0.7		QPeak	36.0	46.3	56.0	-9.7		
1	3.882MHz	9.5	0.7		QPeak	35.6	45.9	56.0	-10.1		
5	3.066MHz	9.5	0.8		QPeak	35.6	45.9	56.0	-10.1		
14	240.000kHz	9.5	0.0		QPeak	42.4	52.0	62.1	-10.1		
12	2.043MHz	9.5	0.6		QPeak	35.2	45.3	56.0	-10.7		
10	2.376MHz	9.5	0.7		QPeak	33.1	43.4	56.0	-12.6		
7	2.247MHz	9.5	0.7		QPeak	32.7	42.9	56.0	-13.1		
2	3.882MHz	9.5	0.7		C_AVG	34.8	45.1			46.0	-0.9
4	3.474MHz	9.5	0.7		C_AVG	35.3	45.5			46.0	-0.5
6	3.066MHz	9.5	0.8		C_AVG	34.1	44.4			46.0	-1.6
9	2.451MHz	9.5	0.8		C_AVG	34.1	44.4			46.0	-1.6
11	2.376MHz	9.5	0.7		C_AVG	31.9	42.2			46.0	-3.8
13	2.043MHz	9.5	0.6		C_AVG	34.2	44.4			46.0	-1.6

5.2.2 Neutral



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
8	2.451MHz	9.5	0.8		QPeak	36.0	46.3	56.0	-9.7		
1	3.474MHz	9.6	0.7		QPeak	35.9	46.2	56.0	-9.8		
5	3.066MHz	9.6	0.8		QPeak	35.7	46.1	56.0	-9.9		
9	240,000kHz	9.5	0.0		QPeak	42.5	52.1	62.1	-10.0		
3	3.882MHz	9.6	0.7		QPeak	35.4	45.6	56.0	-10.4		
2	3.474MHz	9.6	0.7		C_AVG	35.3	45.6			46.0	-0.4
4	3.882MHz	9.6	0.7		C_AVG	34.7	45.0			46.0	-1.0
6	3.066MHz	9.6	0.8		C_AVG	34.3	44.6			46.0	-1.4
7	2.451MHz	9.5	0.8		C_AVG	33.9	44.2			46.0	-1.8

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.

Nominal BW (MHz)	Frequency (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)
OFDM 20	5745	31.7	40.0
OFDM 20	5775	32.9	40.0
OFDM 20	5825	31.2	40.0
VHT 20	5745	25.0	38.7
VHT 20	5775	32.8	40.0
VHT 20	5825	31.1	40.0
VHT 40	5755	36.8	62.0
VHT 40	5775	40.25	78.5
VHT 40	5795	48.3	77.3
VHT 80	5775	75.0	157.0
HE 20	5745	19.4	37.2
HE 20	5775	33.8	40.0
HE 20	5825	30.4	40.0
HE 40	5755	37.8	53.9
HE 40	5775	40.0	74.5
HE 40	5795	39.3	69.9
HE 80	5775	77.0	86.0
HT 20	5745	32.2	40.0
HT 20	5775	33.0	40.0
HT 20	5825	33.5	40.0
HT 40	5755	40.5	71.3
HT 40	5775	43.0	77.1
HT 40	5795	42.0	75.8

Result

All chains were tested and the highest bandwidth per chain is reported above.

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

5.4 §15.407(a)(3) 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 34.9 dBm or 855.07 mW. The limit is 30 dBm, or 1 Watt. The antenna has a gain of 6 dBi.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power *	Measured EIRP	Measured PSD
OFDM 20	5745	Mcs0	30.0	28.9	34.9	11.7
OFDM 20	5775	Mcs0	30.0	28.6	34.6	11.4
OFDM 20	5825	Mcs0	30.0	28.5	34.5	11.0
VHT 20	5745	Mcs0	20.5	26.9	32.9	9.8
VHT 20	5775	Mcs0	30.0	28.8	34.8	11.3
VHT 20	5825	Mcs0	22.0	27.6	33.6	10.3
VHT 40	5755	Mcs0	18.0	24.8	30.8	5.6
VHT 40	5775	Mcs0	19.0	25.8	31.8	6.6
VHT 40	5795	Mcs0	19.5	26.3	32.3	7.2
VHT 80	5775	Mcs0	16.5	23.2	29.2	0.5
HE 20	5745	Mcs0	20.5	26.4	32.4	8.6
HE 20	5775	Mcs0	30.0	28.7	34.7	10.6
HE 20	5825	Mcs0	22.0	27.1	33.1	9.1
HE 40	5755	Mcs0	18.5	24.6	30.6	4.8
HE 40	5775	Mcs0	20.0	25.9	31.9	6.2
HE 40	5795	Mcs0	20.0	25.9	31.9	6.2
HE 80	5775	Mcs0	17.0	23.0	29.0	0.0
HT 20	5745	Mcs0	22.0	28.3	34.3	11.1
HT 20	5775	Mcs0	30.0	28.8	34.8	11.4
HT 20	5825	Mcs0	21.0	28.6	34.6	10.7
HT 40	5755	Mcs0	19.5	26.4	32.4	7.2
HT 40	5775	Mcs0	19.0	25.8	31.8	6.5
HT 40	5795	Mcs0	19.0	25.8	31.8	6.6

Result

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

* Gated EIRP shown in the Annex is the conducted measurement

5.5 §15.407(b)(7) 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 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 within the annex below are plots with the EUT turned to the upper and lower channels with the antenna gain of 12 dBi accounted for. These demonstrate compliance with the provisions of this section at the band edges.

All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Result

Conducted spurious emissions were attenuated below the limit; therefore, the EUT complies with the specification.

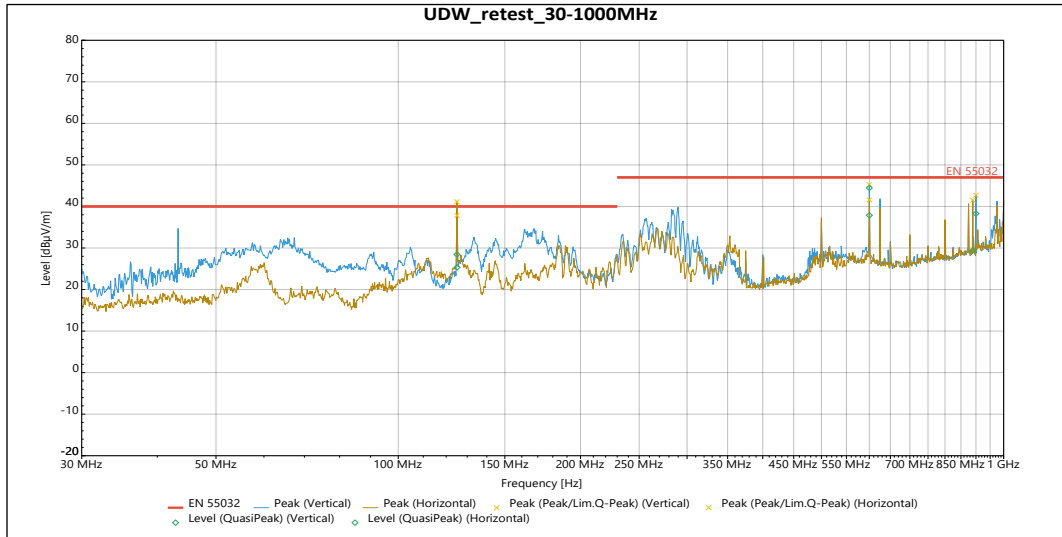
5.5.2 Radiated Spurious Emissions in the Restricted Bands of § 15.205

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 TP55.

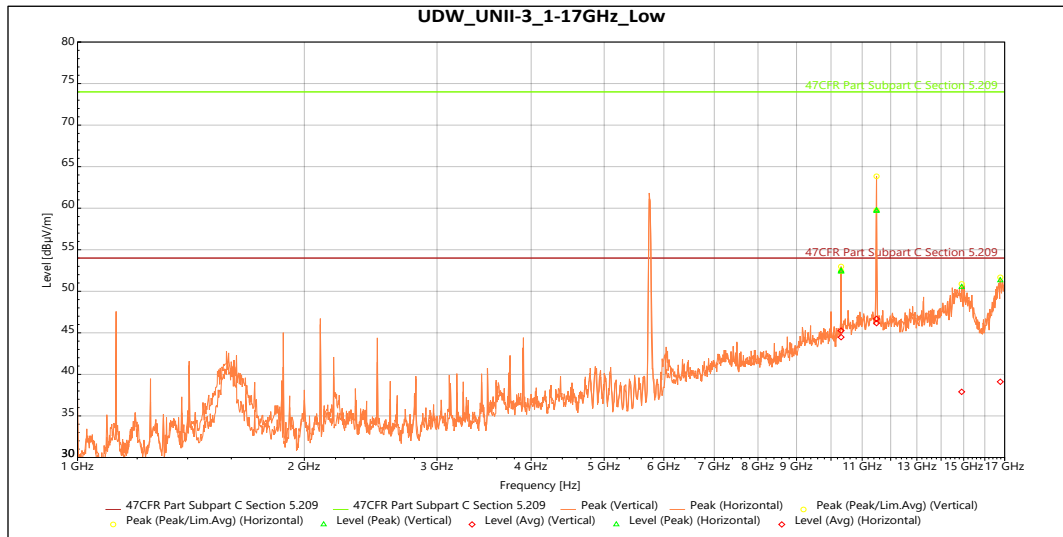
Correction Factor = Antenna Factor + Cable Loss - Pre-Amplifier Gain, and is added to the Receiver reading.

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.


Table 4: Worst Case Radiated Emissions 30 – 1000 MHz

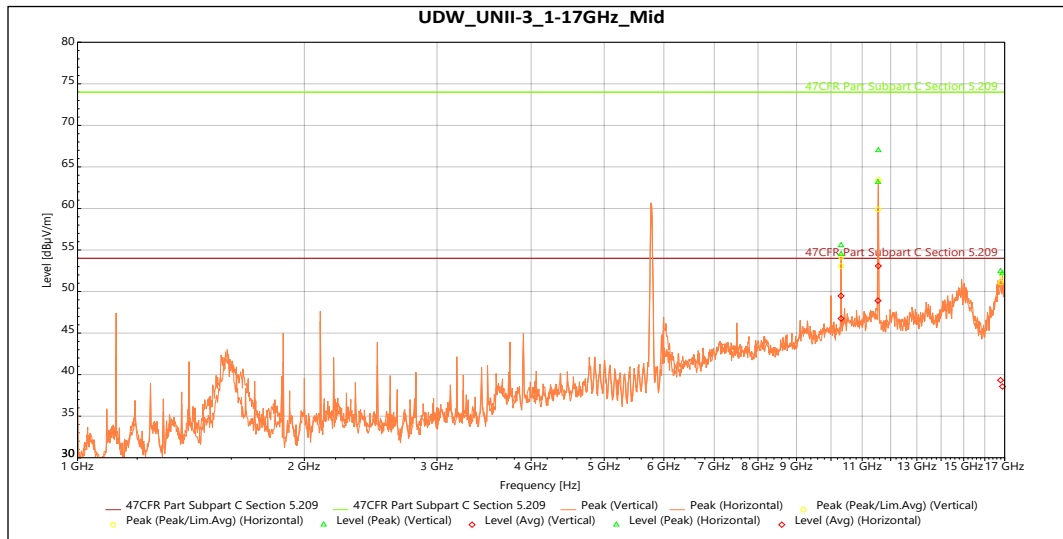
Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Meas. Time	RBW (Hz)	Meas.Time (s)	Correction (dB)
125 MHz	1	28.455	40	-11.545	182	1.151	Vertical	15	120000	0.001	-15.927
600 MHz	1	44.461	47	-2.539	341	3.635	Vertical	15	120000	0.001	-4.383
899.95 MHz	1	38.246	47	-8.754	219	2.161	Vertical	15	120000	0.001	-0.127
125.05 MHz	2	25.335	40	-14.665	330	2.853	Horizontal	15	120000	0.001	-15.931
600 MHz	2	37.868	47	-9.132	77	1.331	Horizontal	15	120000	0.001	-4.383
889.34 MHz	2	29.449	47	-17.551	358	1.132	Horizontal	15	120000	0.001	-0.575


Table 5: Worst Case Radiated Emissions Transmitting on the Low Channel 1 – 17 GHz
Peak

Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Meas. Time (s)	RBW (Hz)	Meas.Time (s)	Correction (dB)
10.313 GHz	1	52.468	74	-21.532	227	3.798	Vertical	5	1000000	0	0.873
11.492 GHz	1	59.749	74	-14.251	256	2.816	Vertical	5	1000000	0	3.069
16.777 GHz	1	51.308	74	-22.692	312	3.798	Vertical	5	1000000	0	8.953
10.313 GHz	2	52.357	74	-21.643	187	3.798	Horizontal	5	1000000	0	0.873
11.493 GHz	2	59.663	74	-14.337	182	3.307	Horizontal	5	1000000	0	3.025
14.908 GHz	2	50.519	74	-23.481	45	3.307	Horizontal	5	1000000	0	7.233

Avg

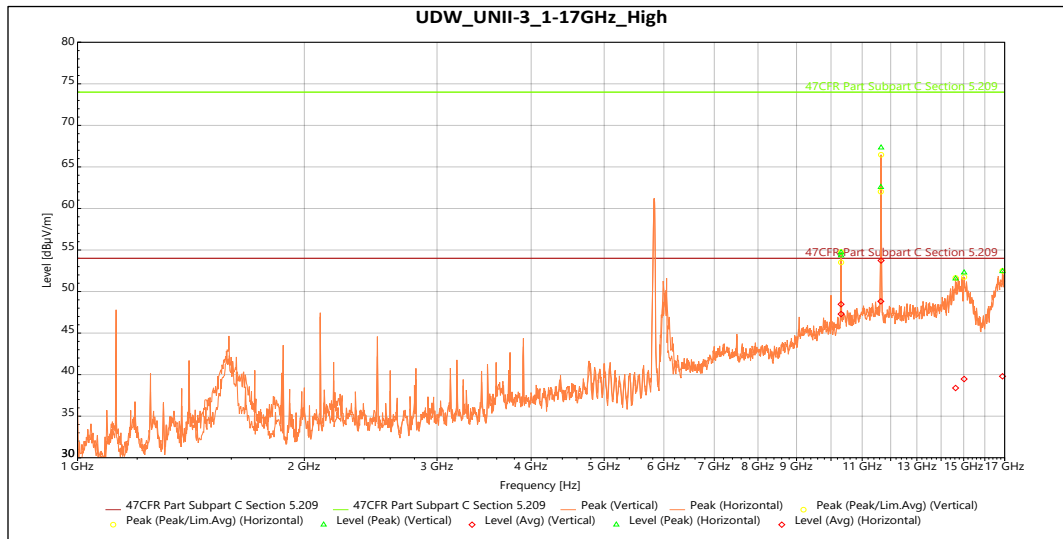
Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Meas. Time (s)	RBW (Hz)	Meas.Time (s)	Correction (dB)
10.313 GHz	1	44.485	54	-9.515	227	3.798	Vertical	5	1000000	0	0.873
11.492 GHz	1	46.684	54	-7.316	256	2.816	Vertical	5	1000000	0	3.069
16.777 GHz	1	39.106	54	-14.894	312	3.798	Vertical	5	1000000	0	8.953
10.313 GHz	2	45.271	54	-8.729	187	3.798	Horizontal	5	1000000	0	0.873
11.493 GHz	2	46.172	54	-7.828	182	3.307	Horizontal	5	1000000	0	3.025
14.908 GHz	2	37.897	54	-16.103	45	3.307	Horizontal	5	1000000	0	7.233


Table 6: Worst Case Radiated Emissions Transmitting on the Middle Channel 1 – 17 GHz
Peak

Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Meas. Time (s)	RBW (Hz)	Meas.Time (s)	Correction (dB)
10.313 GHz	1	54.487	74	-19.513	189	1.647	Vertical	5	1000000	0	0.873
11.543 GHz	1	63.178	74	-10.822	246	1.643	Vertical	5	1000000	0	2.856
16.788 GHz	1	52.428	74	-21.572	198	2.146	Vertical	5	1000000	0	8.969
10.313 GHz	2	55.568	74	-18.432	221	2.321	Horizontal	5	1000000	0	0.873
11.556 GHz	2	66.998	74	-7.002	252	2.654	Horizontal	5	1000000	0	2.934
16.887 GHz	2	52.179	74	-21.821	26	1.643	Horizontal	5	1000000	0	9.405

Avg

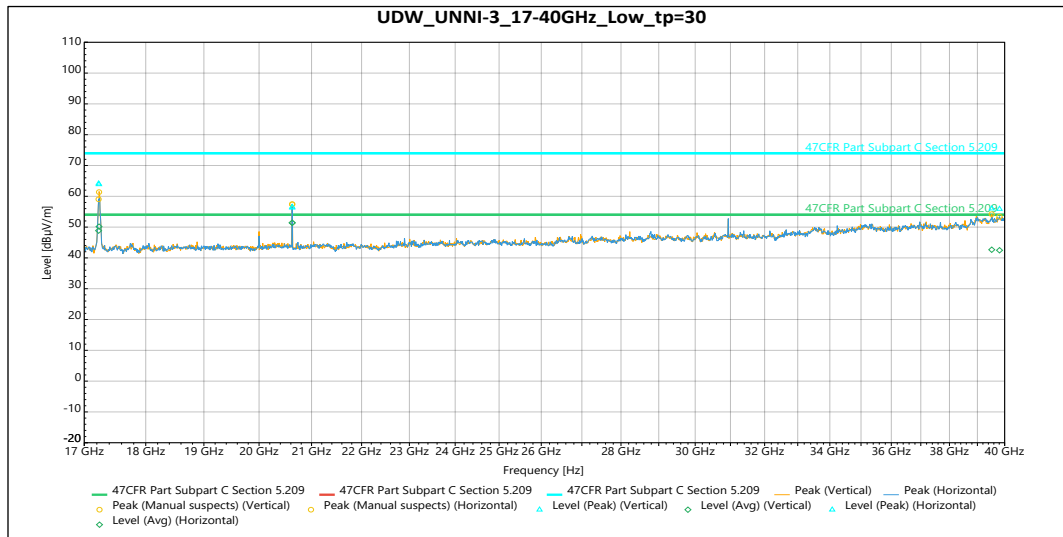
Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Meas. Time (s)	RBW (Hz)	Meas.Time (s)	Correction (dB)
10.313 GHz	1	46.749	54	-7.251	189	1.647	Vertical	5	1000000	0	0.873
11.543 GHz	1	48.9	54	-5.1	246	1.643	Vertical	5	1000000	0	2.856
16.788 GHz	1	39.328	54	-14.672	198	2.146	Vertical	5	1000000	0	8.969
10.313 GHz	2	49.479	54	-4.521	221	2.321	Horizontal	5	1000000	0	0.873
11.556 GHz	2	53.082	54	-0.918	252	2.654	Horizontal	5	1000000	0	2.934
16.887 GHz	2	38.571	54	-15.429	26	1.643	Horizontal	5	1000000	0	9.405


Table 7: Worst Case Radiated Emissions Transmitting on the High Channel 1 – 17 GHz
Peak

Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Meas. Time (s)	RBW (Hz)	Meas.Time (s)	Correction (dB)
10.313 GHz	1	54.327	74	-19.673	207	2.816	Vertical	5	1000000	0	0.873
11.645 GHz	1	62.573	74	-11.427	271	2.764	Vertical	5	1000000	0	2.436
14.633 GHz	1	51.561	74	-22.439	145	3.724	Vertical	5	1000000	0	6.091
16.889 GHz	1	52.443	74	-21.557	102	3.285	Vertical	5	1000000	0	9.382
10.313 GHz	2	54.705	74	-19.295	221	2.299	Horizontal	5	1000000	0	0.873
11.654 GHz	2	67.318	74	-6.682	245	2.721	Horizontal	5	1000000	0	2.729
15.02 GHz	2	52.276	74	-21.724	140	2.164	Horizontal	5	1000000	0	7.373

Avg

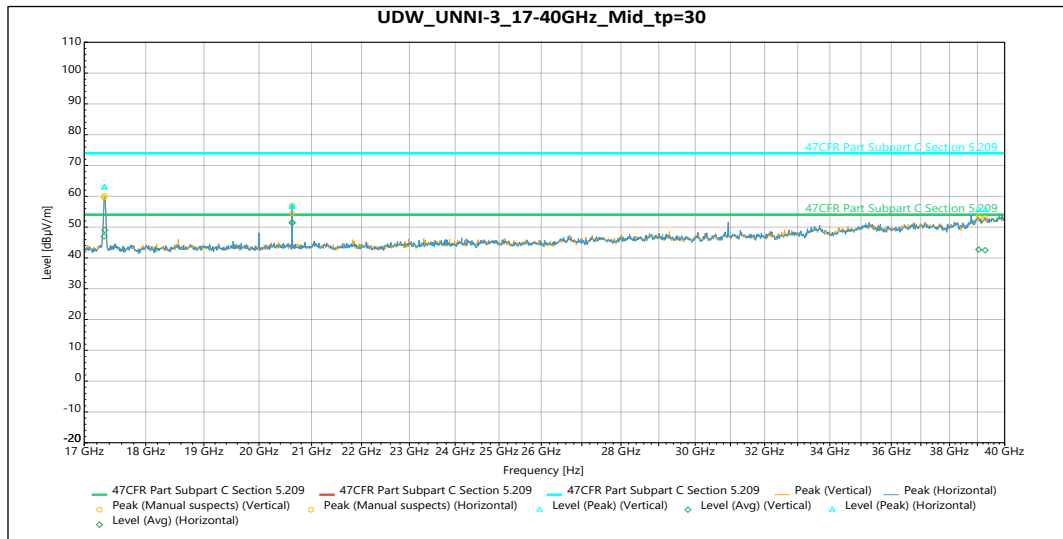
Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Meas. Time (s)	RBW (Hz)	Meas.Time (s)	Correction (dB)
10.313 GHz	1	47.289	54	-6.711	207	2.816	Vertical	5	1000000	0	0.873
11.645 GHz	1	48.823	54	-5.177	271	2.764	Vertical	5	1000000	0	2.436
14.633 GHz	1	38.393	54	-15.607	145	3.724	Vertical	5	1000000	0	6.091
16.889 GHz	1	39.802	54	-14.198	102	3.285	Vertical	5	1000000	0	9.382
10.313 GHz	2	48.475	54	-5.525	221	2.299	Horizontal	5	1000000	0	0.873
11.654 GHz	2	53.734	54	-0.266	245	2.721	Horizontal	5	1000000	0	2.729
15.02 GHz	2	39.469	54	-14.531	140	2.164	Horizontal	5	1000000	0	7.373


Table 8: Worst Case Radiated Emissions Transmitting on the Low Channel 17 – 40 GHz
Peak

Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Meas. Time (s)	RBW	Meas.Time	Correction (dB)
17.235 GHz	1	63.883	74	-10.117	35	Vertical	5	1000000	0	-5.68
20.626 GHz	1	56.533	74	-17.467	35	Vertical	5	1000000	0	-5.625
39.523 GHz	1	56.008	74	-17.992	126	Vertical	5	1000000	0	3.404
17.228 GHz	2	64.116	74	-9.884	35	Horizontal	5	1000000	0	-5.7
20.626 GHz	2	56.301	74	-17.699	35	Horizontal	5	1000000	0	-5.625
39.81 GHz	2	55.887	74	-18.113	56	Horizontal	5	1000000	0	3.507

Avg

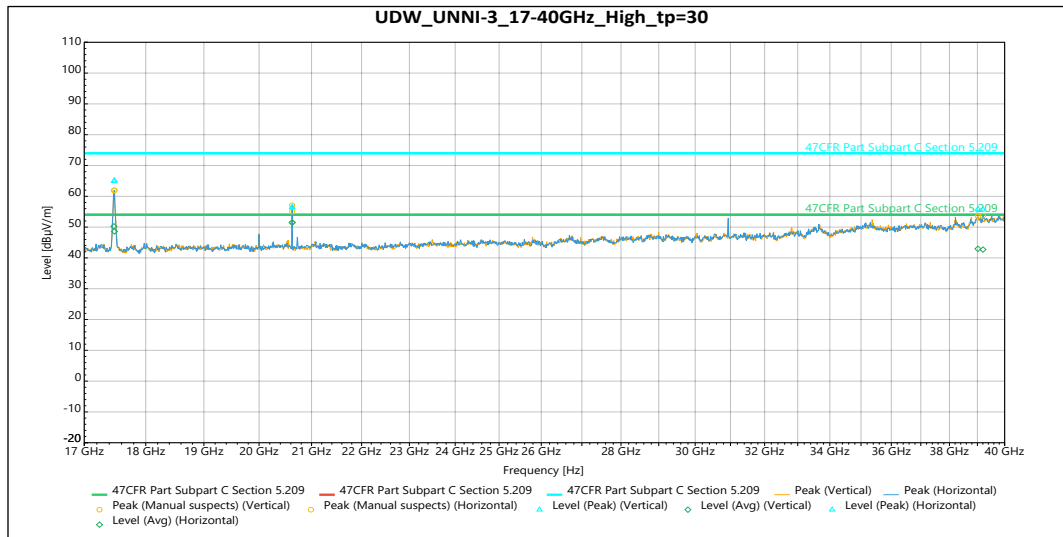
Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Meas. Time (s)	RBW	Meas.Time	Correction (dB)
17.235 GHz	1	50.162	54	-3.838	35	Vertical	5	1000000	0	-5.68
20.626 GHz	1	51.406	54	-2.594	35	Vertical	5	1000000	0	-5.625
39.523 GHz	1	42.664	54	-11.336	126	Vertical	5	1000000	0	3.404
17.228 GHz	2	48.846	54	-5.154	35	Horizontal	5	1000000	0	-5.7
20.626 GHz	2	51.365	54	-2.635	35	Horizontal	5	1000000	0	-5.625
39.81 GHz	2	42.476	54	-11.524	56	Horizontal	5	1000000	0	3.507


Table 9: Worst Case Radiated Emissions Transmitting on the Middle Channel 17 – 40 GHz
Peak

Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Meas. Time (s)	RBW	Meas.Time	Correction (dB)
17.326 GHz	1	63	74	-11	3	Vertical	5	1000000	0	-6.05
20.626 GHz	1	56.827	74	-17.173	35	Vertical	5	1000000	0	-5.625
39.045 GHz	1	55.607	74	-18.393	122	Vertical	5	1000000	0	3.159
17.317 GHz	2	62.801	74	-11.199	3	Horizontal	5	1000000	0	-6.133
20.626 GHz	2	56.46	74	-17.54	35	Horizontal	5	1000000	0	-5.625
39.28 GHz	2	55.51	74	-18.49	87	Horizontal	5	1000000	0	3.093

Avg

Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Meas. Time (s)	RBW	Meas.Time	Correction (dB)
17.326 GHz	1	49.074	54	-4.926	3	Vertical	5	1000000	0	-6.05
20.626 GHz	1	51.381	54	-2.619	35	Vertical	5	1000000	0	-5.625
39.045 GHz	1	42.705	54	-11.295	122	Vertical	5	1000000	0	3.159
17.317 GHz	2	46.982	54	-7.018	3	Horizontal	5	1000000	0	-6.133
20.626 GHz	2	51.487	54	-2.513	35	Horizontal	5	1000000	0	-5.625
39.28 GHz	2	42.478	54	-11.522	87	Horizontal	5	1000000	0	3.093


Table 10: Worst Case Radiated Emissions Transmitting on the High Channel 17 – 40 GHz
Peak

Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Meas. Time (s)	RBW	Meas.Time	Correction (dB)
17.475 GHz	1	64.913	74	-9.087	26	Vertical	5	1000000	0	-6.007
20.626 GHz	1	56.516	74	-17.484	35	Vertical	5	1000000	0	-5.625
39.019 GHz	1	55.886	74	-18.114	77	Vertical	5	1000000	0	3.352
17.485 GHz	2	65.15	74	-8.85	26	Horizontal	5	1000000	0	-6.022
20.626 GHz	2	56.331	74	-17.669	35	Horizontal	5	1000000	0	-5.625
39.204 GHz	2	55.685	74	-18.315	209	Horizontal	5	1000000	0	3.477

Avg

Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Meas. Time (s)	RBW	Meas.Time	Correction (dB)
17.475 GHz	1	50.244	54	-3.756	26	Vertical	5	1000000	0	-6.007
20.626 GHz	1	51.45	54	-2.55	35	Vertical	5	1000000	0	-5.625
39.019 GHz	1	42.951	54	-11.049	77	Vertical	5	1000000	0	3.352
17.485 GHz	2	48.597	54	-5.403	26	Horizontal	5	1000000	0	-6.022
20.626 GHz	2	51.528	54	-2.472	35	Horizontal	5	1000000	0	-5.625
39.204 GHz	2	42.712	54	-11.288	209	Horizontal	5	1000000	0	3.477

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 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	Conducted Output Power *	Measured EIRP	Measured PSD
OFDM 20	5745	Mcs0	30.0	28.9	34.9	11.7
OFDM 20	5775	Mcs0	30.0	28.6	34.6	11.4
OFDM 20	5825	Mcs0	30.0	28.5	34.5	11.0
VHT 20	5745	Mcs0	20.5	26.9	32.9	9.8
VHT 20	5775	Mcs0	30.0	28.8	34.8	11.3
VHT 20	5825	Mcs0	22.0	27.6	33.6	10.3
VHT 40	5755	Mcs0	18.0	24.8	30.8	5.6
VHT 40	5775	Mcs0	19.0	25.8	31.8	6.6
VHT 40	5795	Mcs0	19.5	26.3	32.3	7.2
VHT 80	5775	Mcs0	16.5	23.2	29.2	0.5
HE 20	5745	Mcs0	20.5	26.4	32.4	8.6
HE 20	5775	Mcs0	30.0	28.7	34.7	10.6
HE 20	5825	Mcs0	22.0	27.1	33.1	9.1
HE 40	5755	Mcs0	18.5	24.6	30.6	4.8
HE 40	5775	Mcs0	20.0	25.9	31.9	6.2
HE 40	5795	Mcs0	20.0	25.9	31.9	6.2
HE 80	5775	Mcs0	17.0	23.0	29.0	0.0
HT 20	5745	Mcs0	22.0	28.3	34.3	11.1
HT 20	5775	Mcs0	30.0	28.8	34.8	11.4
HT 20	5825	Mcs0	21.0	28.6	34.6	10.7
HT 40	5755	Mcs0	19.5	26.4	32.4	7.2
HT 40	5775	Mcs0	19.0	25.8	31.8	6.5
HT 40	5795	Mcs0	19.0	25.8	31.8	6.6

Result

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

-- End of Test Report --