



427 West 12800 South
 Draper, UT 84020

Test Report Certification

FCC ID	SWX-LTUXR
ISED ID	6545A-LTUXR
Equipment Under Test	LTU-XR
Test Report Serial Number	TR6325_01
Date of Test(s)	23 – 29 June and 9 July 2021
Report Issue Date	6 August 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	LTU
Model Number	LTU-XR
FCC ID	SWX-LTUXR
ISED ID	6545A-LTUXR

On this 6th day of August 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: Joseph W. Jackson



Reviewed By: Alex Macon

Revision History		
Revision	Description	Date
01	Original Report Release	6 August 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	LTU
Model Number	LTU-XR
Serial Number	68D79A1F2C26
Dimensions (cm)	74.7 x 52.5 x 34.7

2.2 Description of EUT

The LTU-XR is a high-performance point-to-multi-point transceiver operating in the 5 GHz WiFi band. The LTU-XR is designed to provide 550 Mbps wireless throughput and allows independent transmit and receive channel configurations to avoid local interference. The LTU-XR has an integrated Bluetooth transceiver for system management control. The LTU-XR is powered from a Model POE-24V-12W-G-WH PoE Power adapter.

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

Band	WiFi Mode	Modulation Bandwidth	Modulation Type	Frequency (MHz)
UNII-3	n	10 MHz	HT	5730, 5790, 5845
	n	20 MHz	HT	5735, 5790, 5840
	n	30 MHz	HT	5740, 5790, 5835
	ac	40 MHz	VHT	5750, 5790, 5825
	ac	50 MHz	VHT	5750, 5790, 5825

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: LTU MN: LTU-XR (Note 1) SN: 68D79A1F2C26	Wireless Transceiver	See Section 2.4
BN: Ubiquiti MN: POE-24V-12W-G-WH (Note 1)	PoE Power Adapter	Shielded or Un-Shielded Cat 5e cable (Note 2)

SN: N/A		
BN: Dell MN: XPS 13 SN: N/A	Laptop Computer	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 Mains	1	3 conductor power cord/80cm
PoE	1	Shielded or Un-Shielded Cat 5e Cable/> 3 meters
Data	1	Shielded or Un-Shielded Cat 5e Cable/> 3 Meters

2.5 Operating Environment

Power Supply	120 Vac to 24 Volt PoE Power
AC Mains Frequency	60 Hz
Temperature	20.6 – 27.5 °C
Humidity	31.0 – 49.5 %
Barometric Pressure	1011 mBar

2.6 Operating Modes

The LTU-XR was tested using test software in order to enable to constant transmission of over 98%. All emission modes of 802.11 n/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

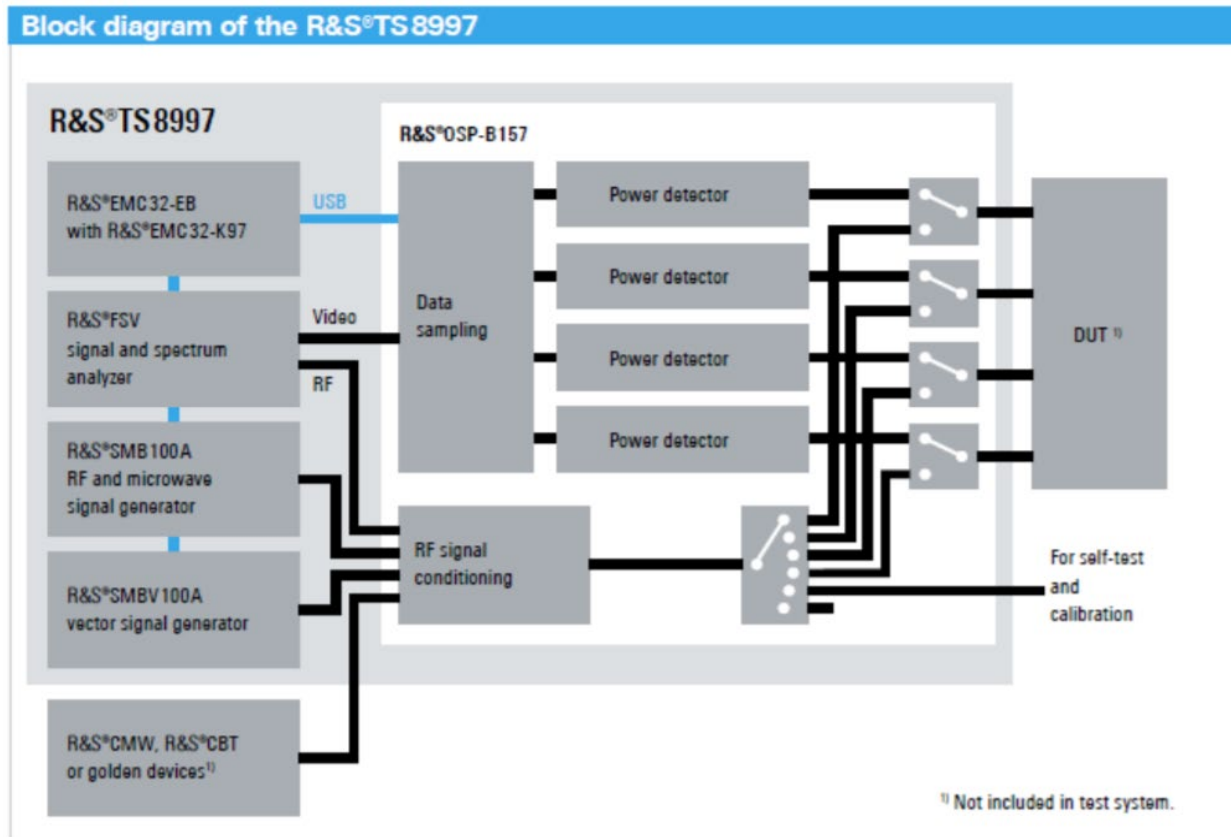


Diagram 1: Test Configuration Block Diagram

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(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 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	9/17/2021
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 1: List of equipment used for Conducted Emissions Testing at Mains Port

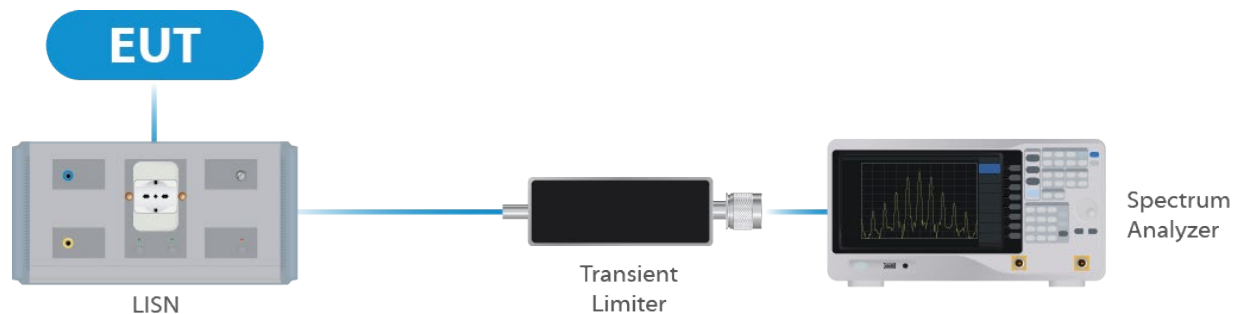


Figure 1: Conducted Emissions Test

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

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

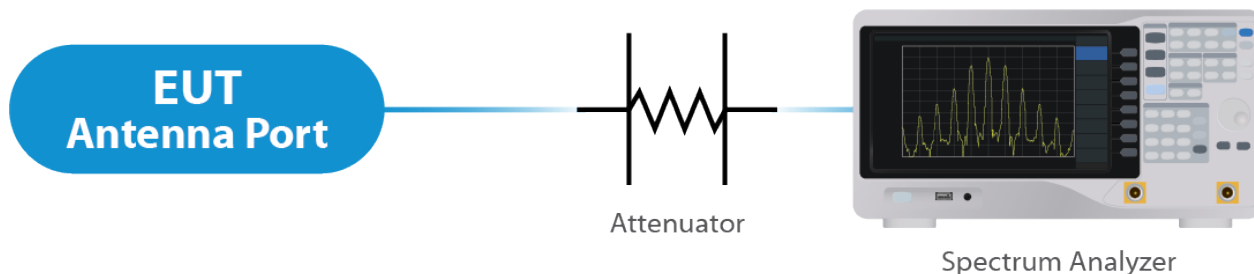


Figure 2: Direct Connect at the Antenna Port Test



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	9/10/2021
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 3:List of equipment used for Radiated Emissions

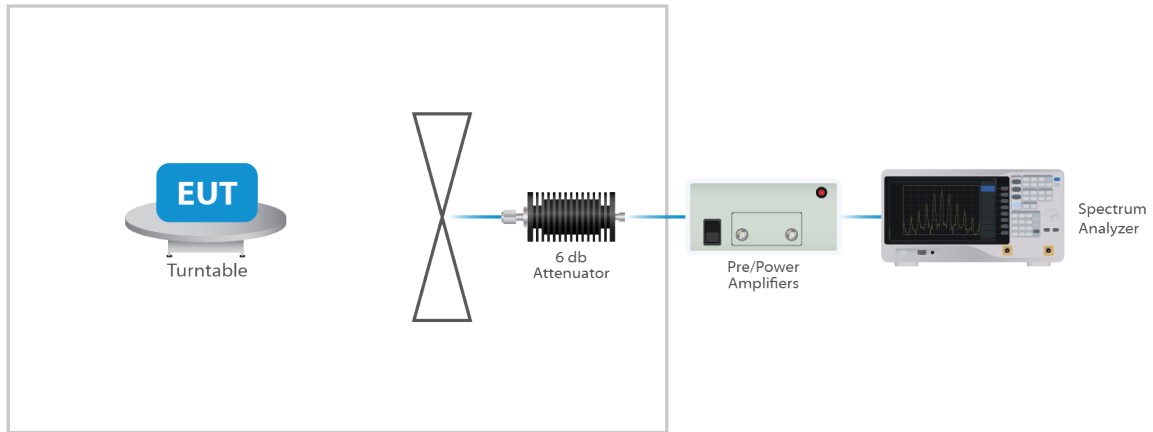


Figure 4: Radiated Emissions Test

4.4 Equipment Calibration

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

4.5 Measurement Uncertainty

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

5 Test Results

5.1 §15.203 Antenna Requirements

The EUT uses an integral antenna and an optional accessory dish antenna. The Maximum gain of the integral antenna is 3 dBi and the optional dish antenna is 29 dBi. The integral antenna is not user replaceable while the optional dish antenna is user replaceable.

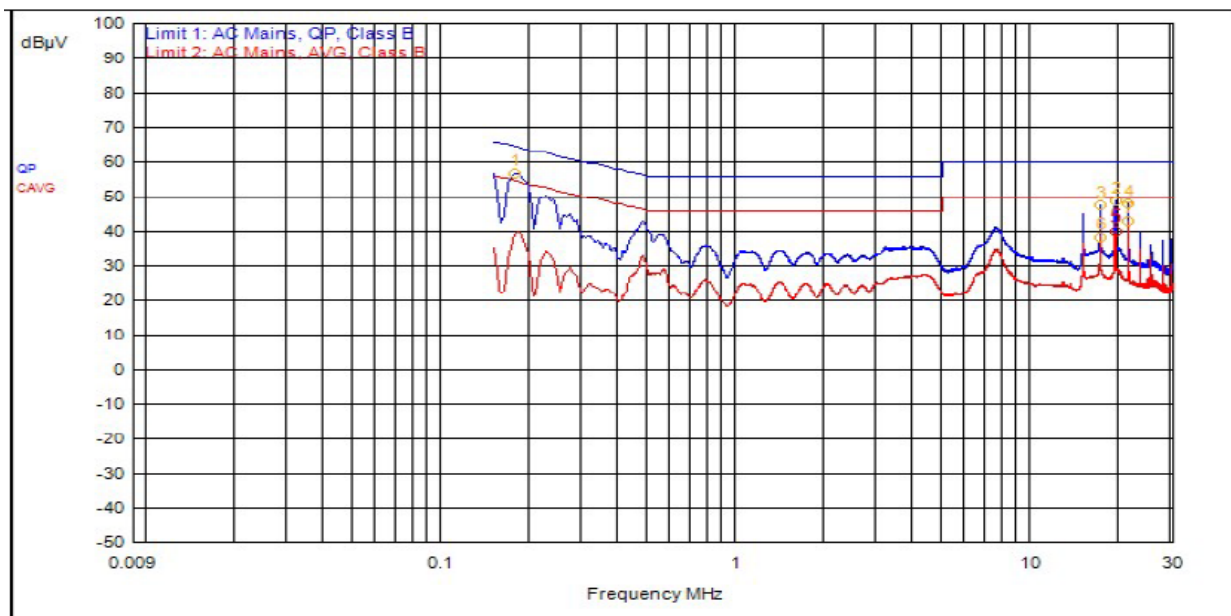
The 2 chains of the radio are cross-polarized.

Results

The EUT complied with the specification

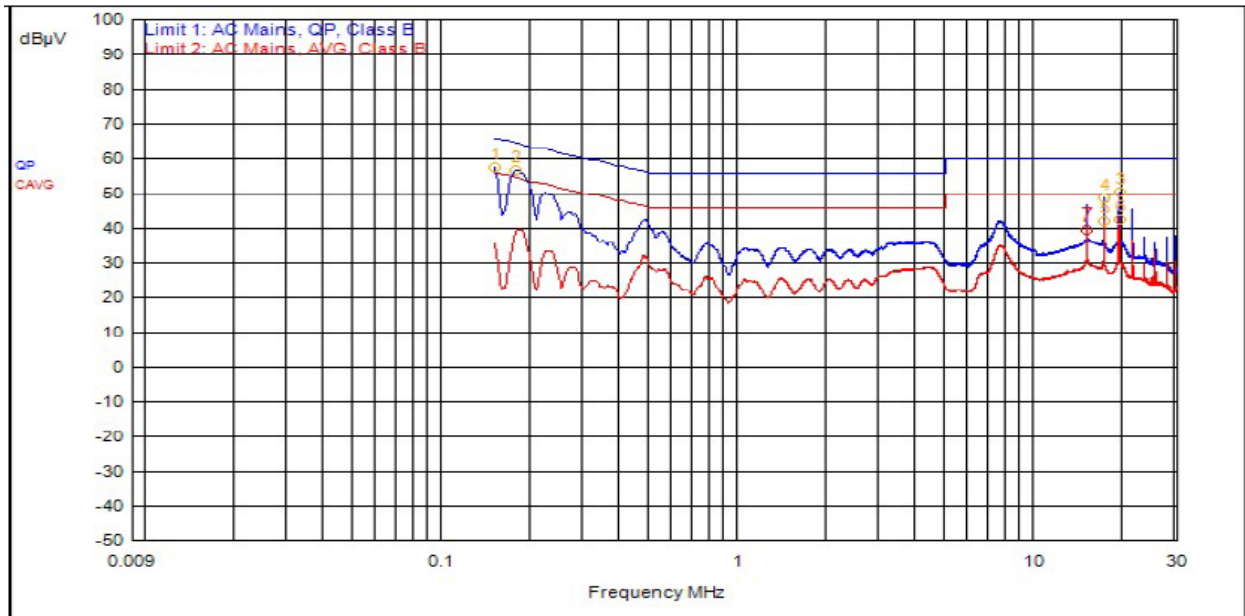
5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
1	177,000kHz	12.4	0.0		QPeak	44.2	56.6	64.6	-8.0		
2	19.074MHz	12.3	0.2		QPeak	36.1	48.6	60.0	-11.4		
4	21.195MHz	12.3	0.2		QPeak	35.3	47.8	60.0	-12.2		
3	16.956MHz	12.4	0.2		QPeak	35.0	47.6	60.0	-12.4		
5	19.074MHz	12.3	0.2		C_AVG	27.4	39.9			50.0	-10.1
6	16.953MHz	12.4	0.2		C_AVG	25.6	38.2			50.0	-11.8
7	21.195MHz	12.3	0.2		C_AVG	30.4	42.8			50.0	-7.2

5.2.2 Neutral



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
2	177,000kHz	12.4	0.0		QPeak	44.2	56.6	64.6	-8.0		
1	150,000kHz	12.4	0.0		QPeak	45.1	57.4	66.0	-8.6		
3	19.080MHz	12.3	0.2		QPeak	37.8	50.3	60.0	-9.7		
4	16.959MHz	12.4	0.2		QPeak	36.3	48.9	60.0	-11.1		
5	16.959MHz	12.4	0.2		C_AVG	29.4	42.0			50.0	-8.0
6	19.077MHz	12.3	0.2		C_AVG	30.2	42.7			50.0	-7.3
7	14.838MHz	12.5	0.2		C_AVG	26.9	39.6			50.0	-10.4

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)
HT 10	5730	9.4	10.45
HT 10	5790	9.4	10.45
HT 10	5845	9.4	10.45
HT 20	5735	18.8	20.8
HT 20	5790	18.8	20.8
HT 20	5840	18.8	20.8
HT 30	5740	28.2	31.35
HT 30	5790	28.2	31.2
HT 30	5835	28.2	31.35
VHT 40	5745	37.75	41.55
VHT 40	5790	37.75	41.55
VHT 40	5830	37.75	41.55
VHT 50	5750	47.25	52.25
VHT 50	5790	47.25	52.25
VHT 50	5825	47.25	52.25

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 §15.403(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 22.76 dBm or 188.80 mW. The limit is 30 dBm, or 1 Watt when using antennas with 6 dBi or less gain. The integral antenna has a gain of 3 dBi with the dish antenna having a gain of 29 dBi. TP setting reflected are with the 3 dBi antenna.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured EIRP	Measured PSD
HT 10	5730	Mcs0	22	22.76	25.76	7.61
HT 10	5790	Mcs0	22	22.25	25.25	7.27
HT 10	5845	Mcs0	22	22.35	25.35	7.08
HT 20	5735	Mcs0	22	22.23	25.23	4.16
HT 20	5790	Mcs0	22	22.28	25.28	4.50
HT 20	5840	Mcs0	22	22.22	25.22	3.96
HT 30	5740	Mcs0	22	22.16	25.16	2.36
HT 30	5790	Mcs0	22	22.28	25.28	2.48
HT 30	5835	Mcs0	22	22.14	25.14	1.93
VHT 40	5745	Mcs0	22	22.07	25.07	1.15
VHT 40	5790	Mcs0	22	22.23	25.23	1.06
VHT 40	5830	Mcs0	22	21.98	24.98	0.75
VHT 50	5750	Mcs0	22	22.07	25.07	- 0.06
VHT 50	5790	Mcs0	22	22.11	25.11	0.05
VHT 50	5825	Mcs0	22	21.95	24.95	- 0.11

Table 4: 3 dBi Antenna

Modulation (BW)	Frequency (MHz)	Data Rate	Conducted Output Power
HT 10	5730	Mcs0	- 3.24
HT 10	5790	Mcs0	- 3.75
HT 10	5845	Mcs0	- 3.65
HT 20	5735	Mcs0	- 3.77
HT 20	5790	Mcs0	- 3.72
HT 20	5840	Mcs0	- 3.78
HT 30	5740	Mcs0	- 3.84
HT 30	5790	Mcs0	- 3.72
HT 30	5835	Mcs0	- 3.86
VHT 40	5745	Mcs0	- 3.93
VHT 40	5790	Mcs0	- 3.77
VHT 40	5830	Mcs0	- 4.02
VHT 50	5750	Mcs0	- 3.93
VHT 50	5790	Mcs0	- 3.89
VHT 50	5825	Mcs0	- 4.05

Table 5: 29 dBi Antenna

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).

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 are plots with the EUT turned to the upper and lower channels with the antenna gain of 3 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.

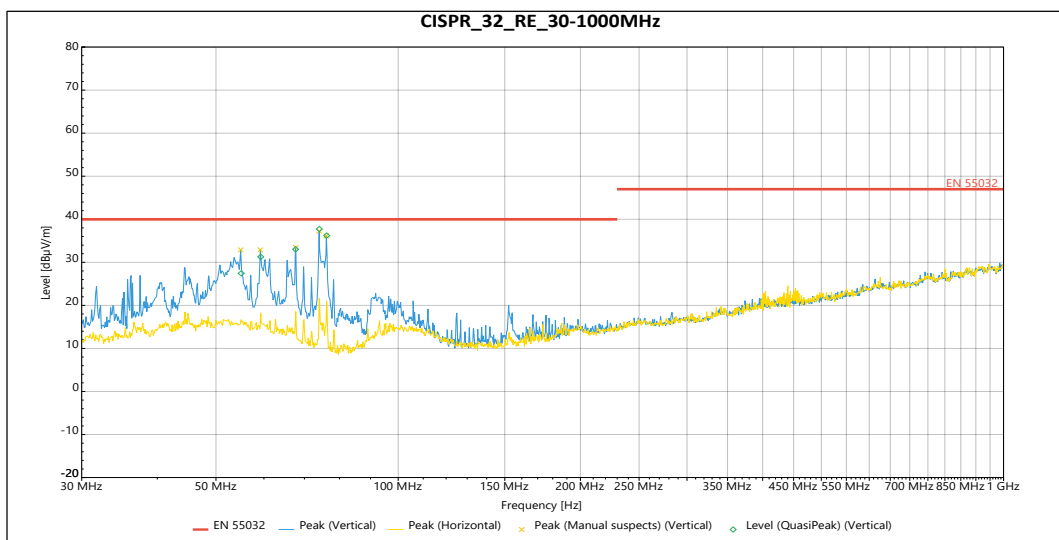
5.5.2 Radiated Spurious Emissions in the Restricted Bands of § 15.205

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 TP22.

Correction Factor = Antenna Factor + Cable Loss - Pre-amp 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.

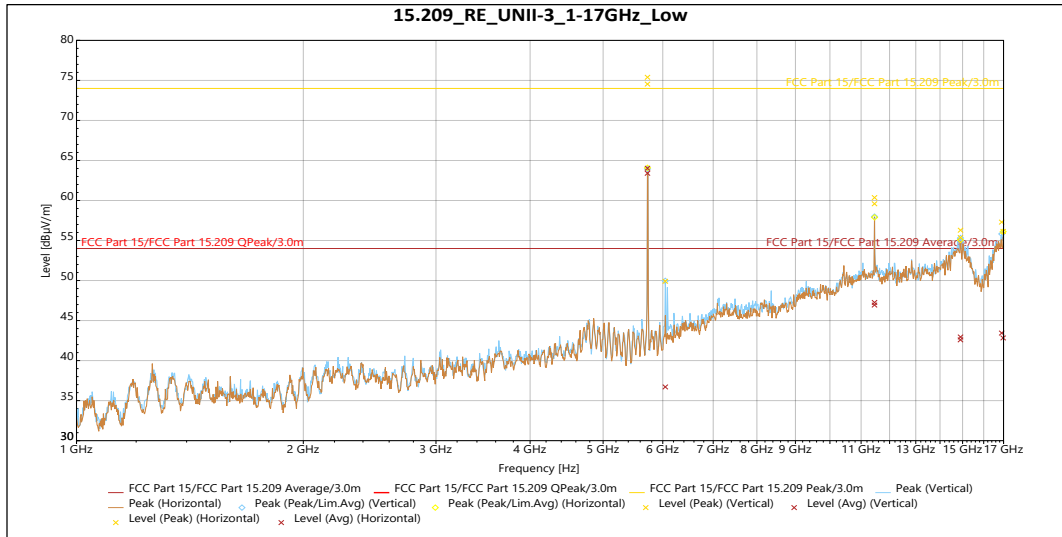


Vertical

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
QuasiPeak	55.046 MHz	27.43	40	-12.57	230	3.751	Vertical	-12.734
QuasiPeak	59.28 MHz	31.266	40	-8.734	113	3.983	Vertical	-13.298
QuasiPeak	67.692 MHz	33.008	40	-6.992	157	3.974	Vertical	-15.527
QuasiPeak	74.077 MHz	37.732	40	-2.268	93	3.955	Vertical	-18.014
QuasiPeak	76.184 MHz	36.207	40	-3.793	321	3.914	Vertical	-18.687

Horizontal: No significant emissions were observed in this orientation of the antenna.

Table 6: Radiated Emissions 30 – 1000 MHz



Vertical

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	6.0468 GHz	49.914	74	-24.086	51	2.156	Vertical	-6.931
Peak	11.46 GHz	59.587	74	-14.413	37	2.672	Vertical	5.939
Peak	14.906 GHz	56.292	74	-17.708	181	1.643	Vertical	10.116
Peak	16.905 GHz	57.296	74	-16.704	144	4	Vertical	11.631

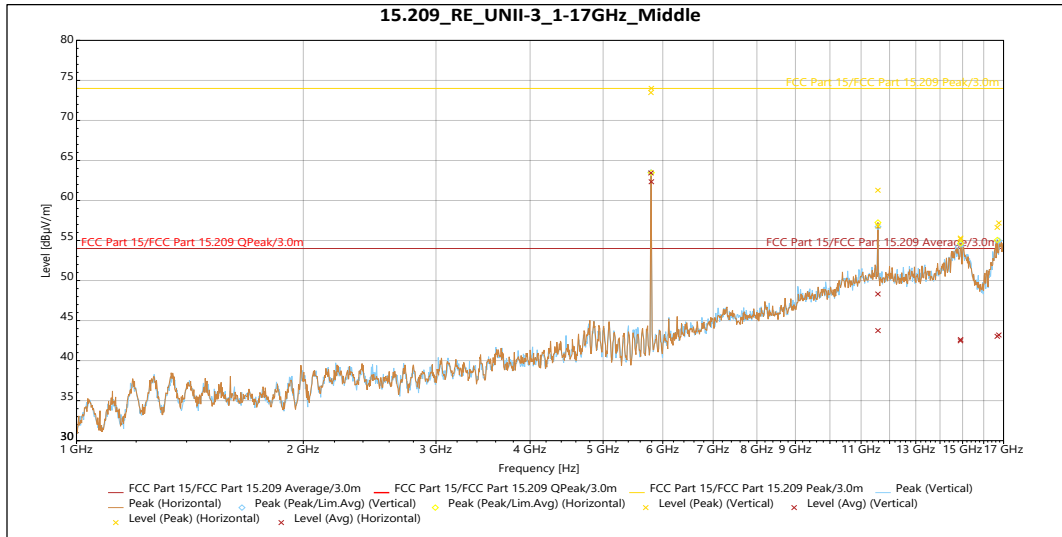
Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	6.0468 GHz	36.706	54	-17.294	51	2.156	Vertical	-6.931
Avg	11.46 GHz	46.937	54	-7.063	37	2.672	Vertical	5.939
Avg	14.906 GHz	42.954	54	-11.046	181	1.643	Vertical	10.116
Avg	16.905 GHz	43.442	54	-10.558	144	4	Vertical	11.631

Horizontal

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	11.461 GHz	60.358	74	-13.642	164	4	Horizontal	5.973
Peak	14.903 GHz	55.374	74	-18.626	94	3.784	Horizontal	9.948
Peak	16.981 GHz	56.138	74	-17.862	191	2.32	Horizontal	11.421

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	11.461 GHz	47.265	54	-6.735	164	4	Horizontal	5.973
Avg	14.903 GHz	42.591	54	-11.409	94	3.784	Horizontal	9.948
Avg	16.981 GHz	42.835	54	-11.165	191	2.32	Horizontal	11.421

Table 7: Transmitting on the Lowest Frequency 5730 MHz 1 – 17 GHz



Vertical

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	11.583 GHz	56.808	74	-17.192	321	2.191	Vertical	5.996
Peak	14.904 GHz	55.196	74	-18.804	141	2.164	Vertical	10.004
Peak	16.759 GHz	57.188	74	-16.812	81	1.647	Vertical	11.531

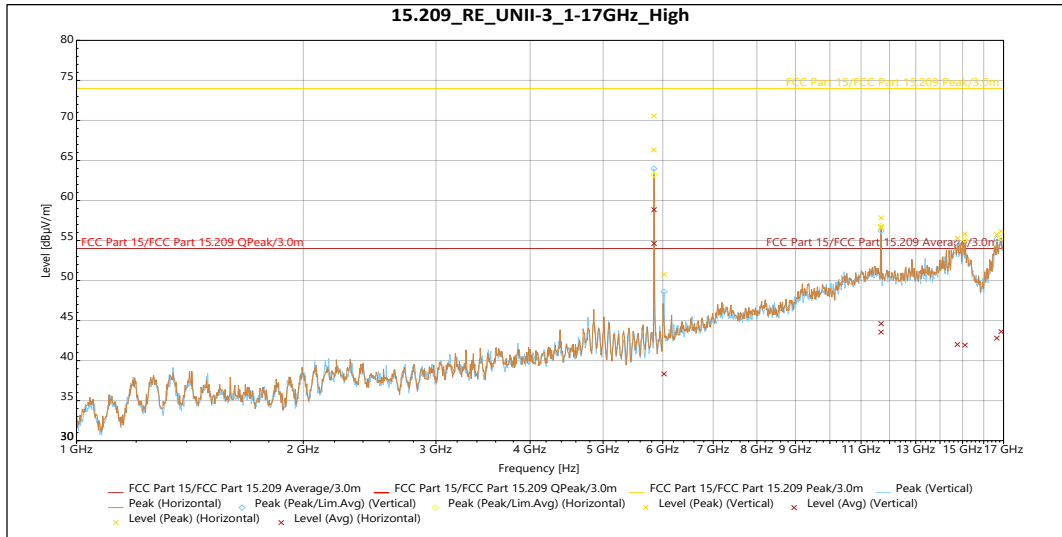
Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	11.583 GHz	43.755	54	-10.245	321	2.191	Vertical	5.996
Avg	14.904 GHz	42.471	54	-11.529	141	2.164	Vertical	10.004
Avg	16.759 GHz	43.205	54	-10.795	81	1.647	Vertical	11.531

Horizontal

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	11.581 GHz	61.282	74	-12.718	156	4	Horizontal	6.004
Peak	14.908 GHz	55.309	74	-18.691	152	2.32	Horizontal	10.069
Peak	16.677 GHz	56.641	74	-17.359	46	2.151	Horizontal	11.394

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	11.581 GHz	48.325	54	-5.675	156	4	Horizontal	6.004
Avg	14.908 GHz	42.627	54	-11.373	152	2.32	Horizontal	10.069
Avg	16.677 GHz	43.034	54	-10.966	46	2.151	Horizontal	11.394

Table 8: Transmitting on the Middle Frequency 5790 MHz 1 – 17 GHz



Vertical

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	6.0236 GHz	50.757	74	-23.243	314	2.146	Vertical	-7.238
Peak	11.693 GHz	56.712	74	-17.288	44	3.656	Vertical	5.978
Peak	14.765 GHz	55.281	74	-18.719	21	3.793	Vertical	8.94
Peak	16.658 GHz	55.777	74	-18.223	20	2.812	Vertical	11.163

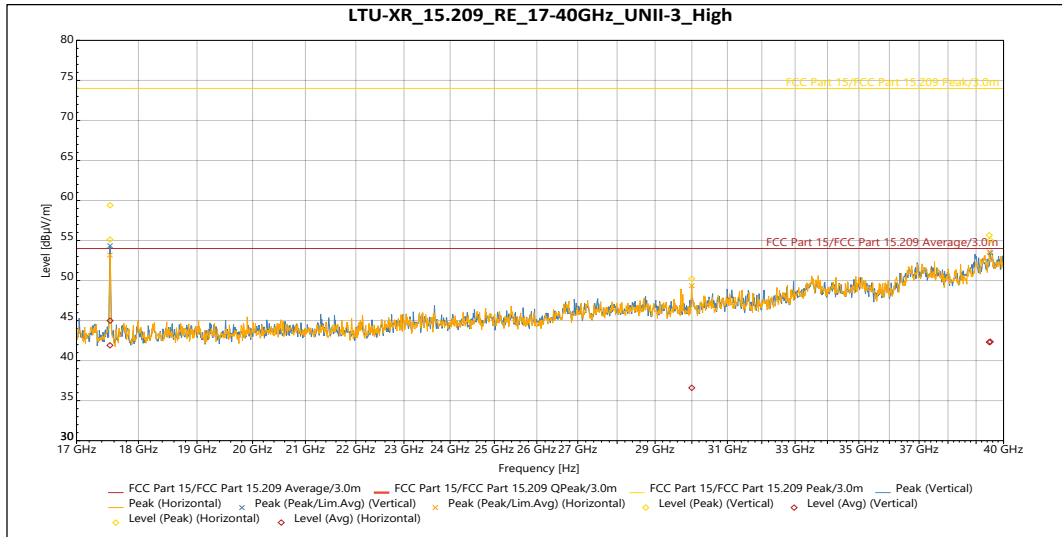
Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	6.0236 GHz	38.341	54	-15.659	314	2.146	Vertical	-7.238
Avg	11.693 GHz	43.563	54	-10.437	44	3.656	Vertical	5.978
Avg	14.765 GHz	42.023	54	-11.977	21	3.793	Vertical	8.94
Avg	16.658 GHz	42.805	54	-11.195	20	2.812	Vertical	11.163

Horizontal

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	11.694 GHz	57.836	74	-16.164	223	1.829	Horizontal	5.97
Peak	15.11 GHz	55.81	74	-18.19	352	2.659	Horizontal	9.031
Peak	16.879 GHz	56.162	74	-17.838	199	2.168	Horizontal	12.152

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	11.694 GHz	44.618	54	-9.382	223	1.829	Horizontal	5.97
Avg	15.11 GHz	41.933	54	-12.067	352	2.659	Horizontal	9.031
Avg	16.879 GHz	43.625	54	-10.375	199	2.168	Horizontal	12.152

Table 9: Transmitting on the Highest Frequency 5845 MHz 1 – 17 GHz



Vertical

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
Peak	17.535 GHz	59.404	74	-14.596	42	Vertical	-6.02
Peak	39.517 GHz	55.043	74	-18.957	96	Vertical	3.254

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
Avg	17.535 GHz	44.987	54	-9.013	42	Vertical	-6.02
Avg	39.517 GHz	42.351	54	-11.649	96	Vertical	3.254

Horizontal

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
Peak	17.533 GHz	55.105	74	-18.895	136	Horizontal	-6.024
Peak	29.997 GHz	50.226	74	-23.774	359	Horizontal	-2.727
Peak	39.478 GHz	55.668	74	-18.332	123	Horizontal	3.263

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
Avg	17.533 GHz	41.911	54	-12.089	136	Horizontal	-6.024
Avg	29.997 GHz	36.597	54	-17.403	359	Horizontal	-2.727
Avg	39.478 GHz	42.313	54	-11.687	123	Horizontal	3.263

Table 10: Transmitting on the Highest Frequency 5845 MHz 17 – 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 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
HT 10	5730	Mcs0	22	7.61
HT 10	5790	Mcs0	22	7.27
HT 10	5845	Mcs0	22	7.08
HT 20	5735	Mcs0	22	4.16
HT 20	5790	Mcs0	22	4.50
HT 20	5840	Mcs0	22	3.96
HT 30	5740	Mcs0	22	2.36
HT 30	5790	Mcs0	22	2.48
HT 30	5835	Mcs0	22	1.93
VHT 40	5745	Mcs0	22	1.15
VHT 40	5790	Mcs0	22	1.06
VHT 40	5830	Mcs0	22	0.75
VHT 50	5750	Mcs0	22	- 0.06
VHT 50	5790	Mcs0	22	0.05
VHT 50	5825	Mcs0	22	- 0.11

Table 11: 3 dBi Antenna

Modulation (BW)	Frequency (MHz)	Data Rate	Measured PSD
HT 10	5730	Mcs0	- 18.39
HT 10	5790	Mcs0	- 18.73
HT 10	5845	Mcs0	- 18.92
HT 20	5735	Mcs0	- 21.84
HT 20	5790	Mcs0	- 21.50
HT 20	5840	Mcs0	- 22.04
HT 30	5740	Mcs0	- 23.64
HT 30	5790	Mcs0	- 23.52
HT 30	5835	Mcs0	- 24.07
VHT 40	5745	Mcs0	- 24.85
VHT 40	5790	Mcs0	- 24.94
VHT 40	5830	Mcs0	- 25.25
VHT 50	5750	Mcs0	- 26.06
VHT 50	5790	Mcs0	- 25.95
VHT 50	5825	Mcs0	- 26.11

Table 12: 29 dBi Antenna

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 --