



427 West 12800 South
Draper, UT 84020

Test Report Certification

FCC ID	SWX-U6EPIW
ISED ID	6545A-U6EPIW
Equipment Under Test	U6-Enterprise-IW
Test Report Serial Number	TR6801_01
Date of Test(s)	15 November; 1, 2 December 2021 and 4 January 2022
Report Issue Date	14 January 2022

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



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-Enterprise-IW
FCC ID	SWX-U6EPIW
ISED ID	6545A-U6EPIW

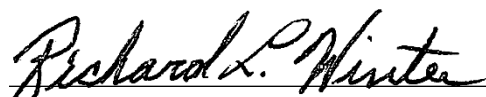
On this 14th day of January 2022, I individually and for Unified Compliance Laboratory certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge and are made in good faith.

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: Joseph W. Jackson



Reviewed By: Richard L. Winter

Revision History		
Revision	Description	Date
01	Original Report Release	14 January 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	U6-Enterprise-IW
Serial Number	68D79A0505E9
Dimensions (cm)	16.0 x 15.7 x 3.4

2.2 Description of EUT

The U6-Enterprise-IW is an in-wall mounted access point with four-stream WiFi 6 that provides up to 5.3+ Gbps aggregate throughput rate. The U6-Enterprise-IW has 2.4 GHz (2x2), 5 GHz (4x4) and 6 GHz (4x4) transmitters. The U6-Enterprise-IW has an Ethernet port for data transfer and is powered by an 802.3at PoE Power Adapter. The U6-Enterprise-IW has a Bluetooth management radio to achieve setup and operation. The U6-Enterprise-IW is designed for indoor use.

Band	WiFi Mode	Modulation Bandwidth	Modulation Type	Frequency (MHz)
UNII-1	a	20 MHz	OFDM	5180, 5200, 5210, 5240
	n	20 MHz	HT	5180, 5200, 5210, 5240
	n	40 MHz	HT	5190, 5230
	ac	20 MHz	VHT	5180, 5200, 5210, 5240
	ac	40 MHz	VHT	5190, 5230
	ac	80 MHz	VHT	5210
	ax	20 MHz	HE	5180, 5200, 5210, 5240
	ax	40 MHz	HE	5190, 5230
	ax	80 MHz	HE	5210

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-Enterprise-IW (Note 1)	WiFi Access Point	See Section 2.4

SN: 68D79A0505E9		
BN: Ubiquiti MN: UPOE-at SN: N/A	PoE Power Adapter	Shielded or Un-Shielded Cat 5e cable (Note 2)
BN: Dell MN: XPS 13 SN: N/A	Laptop Personal 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
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 Volts ac to 48 Volts PoE Power
AC Mains Frequency	60 Hz
Temperature	22.1 – 23.7 °C
Humidity	16.9 – 29.3 %
Barometric Pressure	1015 mBar

2.6 Operating Modes

The U6-Enterprise-IW 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.

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

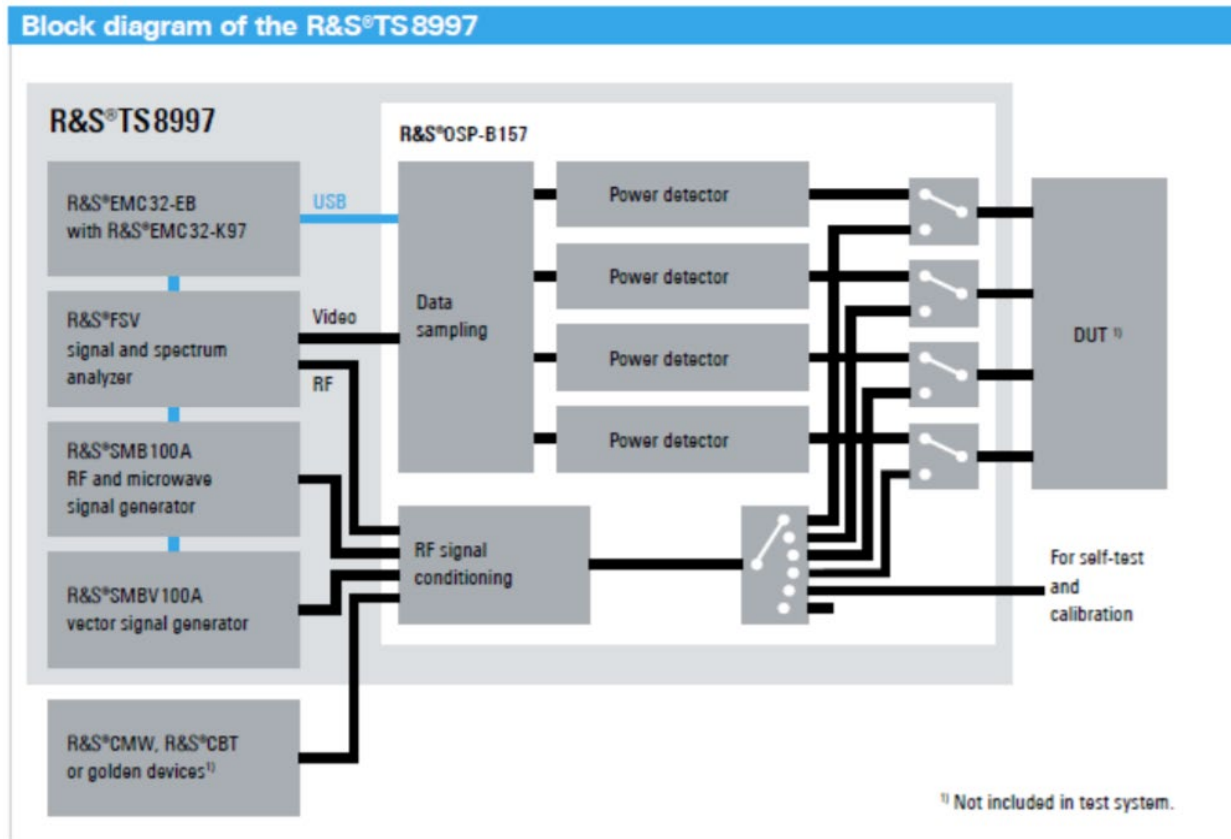


Diagram 1: Test Configuration Block Diagram

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	5180 to 5210	Compliant
15.407(e)	RSS-247 §6.2.2, §6.2.3	Peak Output Power	5180 to 5210	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	5180 to 5210	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-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 1: List of equipment used for Conducted Emissions Testing at Mains Port

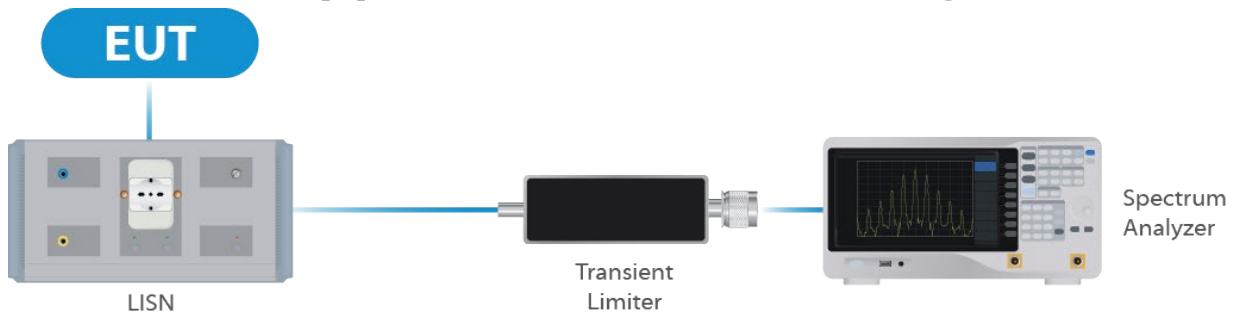


Figure 1: Conducted Emissions Test

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

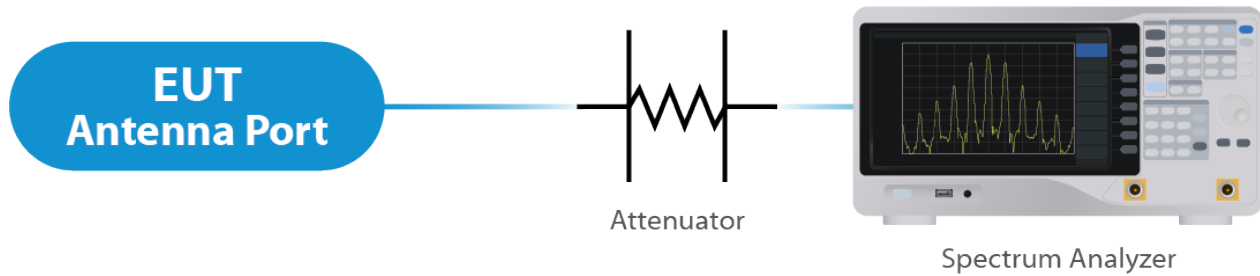


Figure 2: Direct Connect at the Antenna Port Test

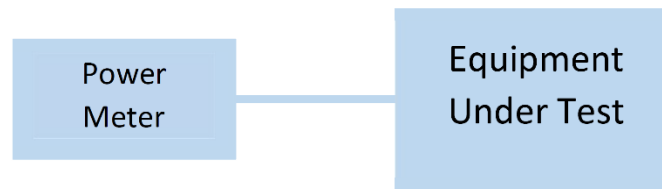


Figure 3: Output Power Measurement

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	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

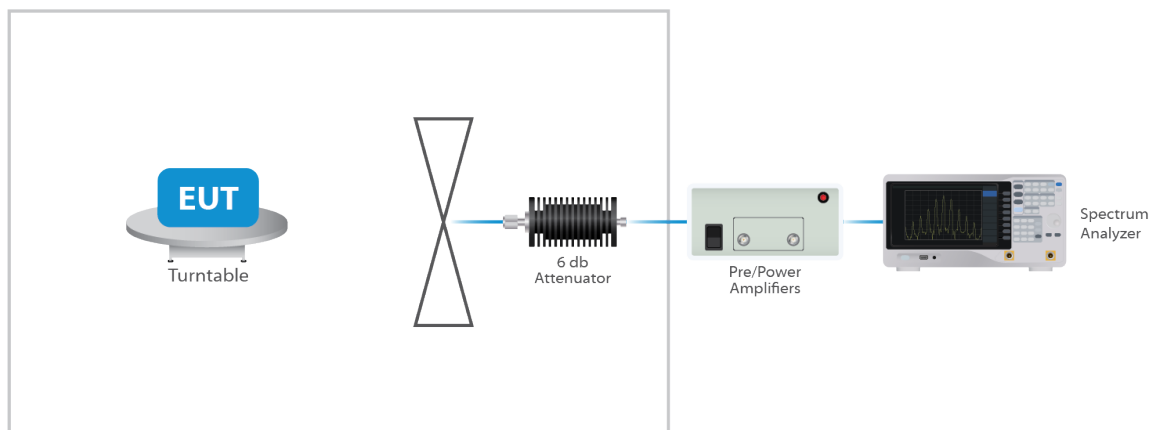


Figure 4: Radiated Emissions Test

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 folding antenna structure. The maximum gain of the antenna per chain is 5.8 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 NANT ≤ 4;

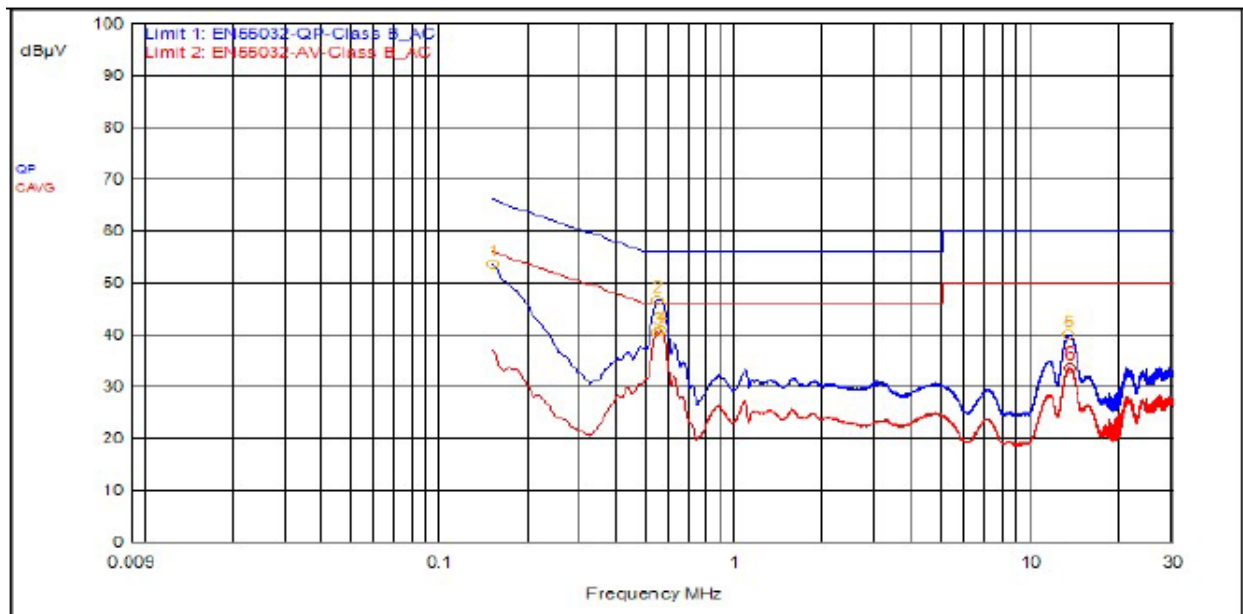
For PSD measurements when Nss=1: Array Gain = 10 log(Nant/Nss) dB = 6.02dB

Results

The EUT complied with the specification

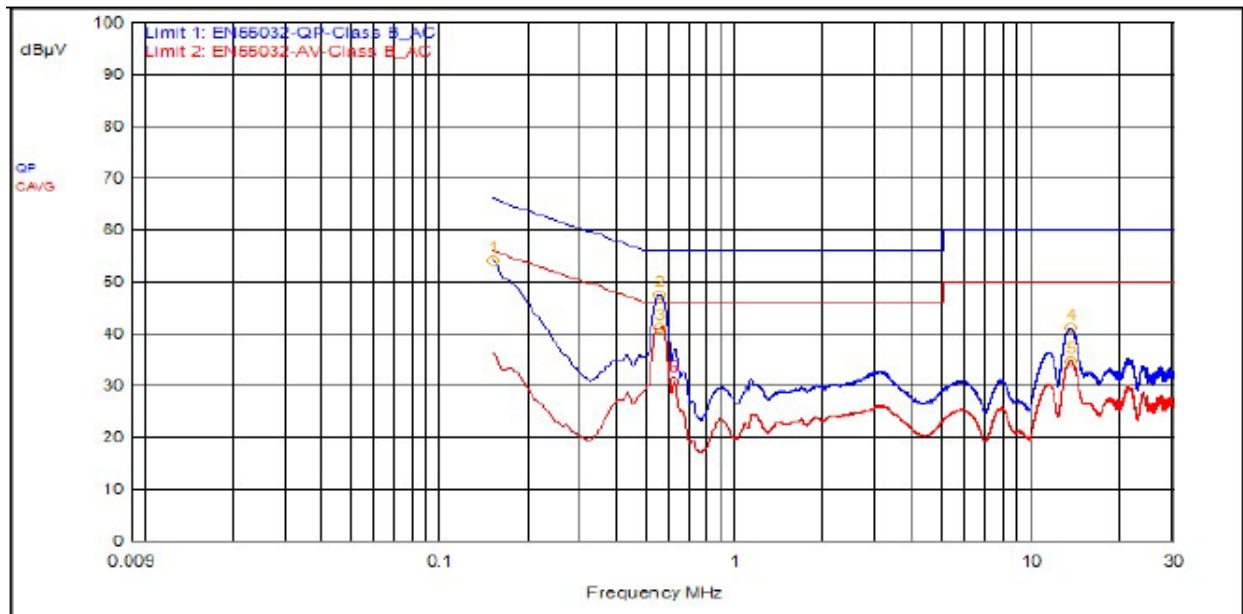
5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
2	543,000kHz	9.5	0.1		QPeak	37.1	46.7	56.0	-9.3		
1	150,000kHz	9.5	0.0		QPeak	44.2	53.7	66.0	-12.3		
5	13.161MHz	9.6	0.3		QPeak	30.0	39.9	60.0	-20.1		
3	540,000kHz	9.5	0.1		C_AVG	30.8	40.5			46.0	-5.5
4	558,000kHz	9.5	0.1		C_AVG	31.0	40.7			46.0	-5.3
6	13.260MHz	9.6	0.3		C_AVG	23.6	33.5			50.0	-16.5

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	549,000kHz	9.5	0.1		QPeak	37.9	47.5	56.0	-8.5		
1	150,000kHz	9.5	0.0		QPeak	44.6	54.1	66.0	-11.9		
4	13.266MHz	9.6	0.3		QPeak	31.1	41.0	60.0	-19.0		
3	549,000kHz	9.5	0.1		C_AVG	31.5	41.2			46.0	-4.8
5	13.260MHz	9.6	0.3		C_AVG	24.9	34.8			50.0	-15.2
6	612,000kHz	9.5	0.2		C_AVG	21.0	30.7			46.0	-15.3

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)	Emissions 26 dB Bandwidth (MHz)
a 20	5180	16.6	19.8
a 20	5210	17.8	35.2
a 20	5240	27.4	44.4
n 20	5180	17.8	20.7
n 20	5210	18.1	28.7
n 20	5240	27.9	45.0
n 40	5190	36.3	120.0
n 40	5230	36.3	39.6
ac 20	5180	17.8	21.1
ac 20	5210	18.3	29.4
ac 20	5240	28.8	46.9
ac 40	5190	36.3	120.0
ac 40	5230	36.3	39.5
ac 80	5210	75.5	240.0
ax 20	5180	19.1	21.5
ax 20	5210	19.2	25.1
ax 20	5240	22.7	45.5
ax 40	5190	37.8	118.1
ax 40	5230	38.0	39.8
ax 80	5210	77.0	240.0

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)(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 28.99 dBm or 792.50 mW. The limit is 30 dBm, or 1 Watt when using an antenna with 6 dBi (indoor/outdoor access point) or less gain. The antenna has a gain of 5.8 dBi.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured EIRP	Measured PSD
OFDM 20	5180	Mcs0_Nss4	38	22.90	28.70	8.73
OFDM 20	5210	Mcs0_Nss4	47	27.00	32.80	12.87
OFDM 20	5240	Mcs0_Nss4	56	28.62	34.42	14.39
HT 20	5180	Mcs0_Nss4	38	22.64	28.44	7.35
HT 20	5210	Mcs0_Nss4	47	26.97	32.77	11.83
HT 20	5240	Mcs0_Nss4	56	28.91	34.71	13.62
HT 40	5190	Mcs0_Nss4	28	18.40	24.20	-0.12
HT 40	5230	Mcs0_Nss4	41	24.53	30.33	6.26
VHT 20	5180	Mcs0_Nss4	38	22.59	28.39	7.28
VHT 20	5210	Mcs0_Nss4	47	26.92	32.72	11.85
VHT 20	5240	Mcs0_Nss4	56	28.92	34.72	13.63
VHT 40	5190	Mcs0_Nss4	28	18.36	24.16	-0.20
VHT 40	5230	Mcs0_Nss4	41	24.54	30.34	6.22
VHT 80	5210	Mcs0_Nss4	26	17.42	23.22	-4.41
HE 20	5180	Mcs0_Nss4	36	22.11	27.91	6.54
HE 20	5210	Mcs0_Nss4	45	26.71	32.51	11.37
HE 20	5240	Mcs0_Nss4	56	28.99	34.79	13.44
HE 40	5190	Mcs0_Nss4	27	18.04	23.84	-0.72
HE 40	5230	Mcs0_Nss4	41	24.65	30.45	6.19
HE 80	5210	Mcs0_Nss4	24	16.81	22.61	-4.76

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured EIRP	Measured PSD
OFDM 20	5180	Mcs0_Nss1	38	22.90	28.70	8.73
OFDM 20	5210	Mcs0_Nss1	45	25.00	30.80	10.87
OFDM 20	5240	Mcs0_Nss1	50	25.62	31.42	11.39
HT 20	5180	Mcs0_Nss1	38	22.64	28.44	7.35
HT 20	5210	Mcs0_Nss1	46	25.97	31.77	10.83
HT 20	5240	Mcs0_Nss1	50	25.91	31.71	10.62
HT 40	5190	Mcs0_Nss1	28	18.40	24.20	-0.12
HT 40	5230	Mcs0_Nss1	41	24.53	30.33	6.26
VHT 20	5180	Mcs0_Nss1	38	22.59	28.39	7.28
VHT 20	5210	Mcs0_Nss1	46	25.92	31.72	10.85
VHT 20	5240	Mcs0_Nss1	50	25.92	31.72	10.63
VHT 40	5190	Mcs0_Nss1	28	18.36	24.16	-0.20
VHT 40	5230	Mcs0_Nss1	41	24.54	30.34	6.22
VHT 80	5210	Mcs0_Nss1	26	17.42	23.22	-4.41
HE 20	5180	Mcs0_Nss1	36	22.11	27.91	6.54
HE 20	5210	Mcs0_Nss1	45	26.71	32.51	11.37
HE 20	5240	Mcs0_Nss1	50	25.99	31.79	10.44
HE 40	5190	Mcs0_Nss1	27	18.04	23.84	-0.72
HE 40	5230	Mcs0_Nss1	41	24.65	30.45	6.19
HE 80	5210	Mcs0_Nss1	24	16.81	22.61	-4.76

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) 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 5.8 dBi accounted for to demonstrate compliance with the provisions of this section at the band edges, the emissions must remain below -27 dBm EIRP.

Result

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

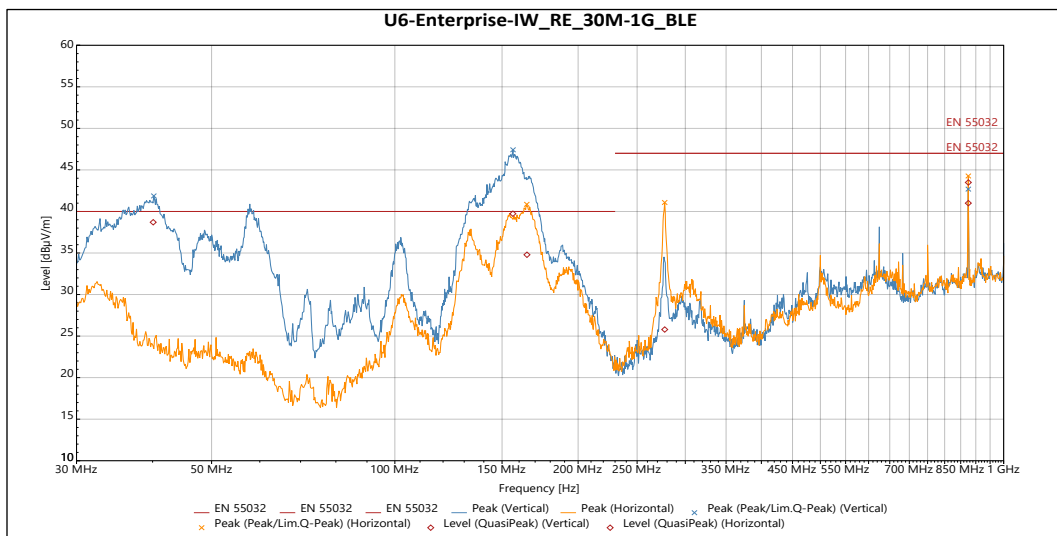
5.5.2 Radiated Spurious Emissions in the Restricted Bands of § 15.205

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 TP56, as this setting was found to be worst case for spurious emissions. Power was subsequently reduced during in-band and band edge testing. The band edge at the restricted band ending at 5180 MHz was measured using radiated measurement. All emissions modes were tested, and the worst-case measurement are shown below. For frequencies above 1 GHz, a measurement of 3 meters was used. For frequencies below 1 GHz, a measurement distance of 10 meters was used.

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

Result

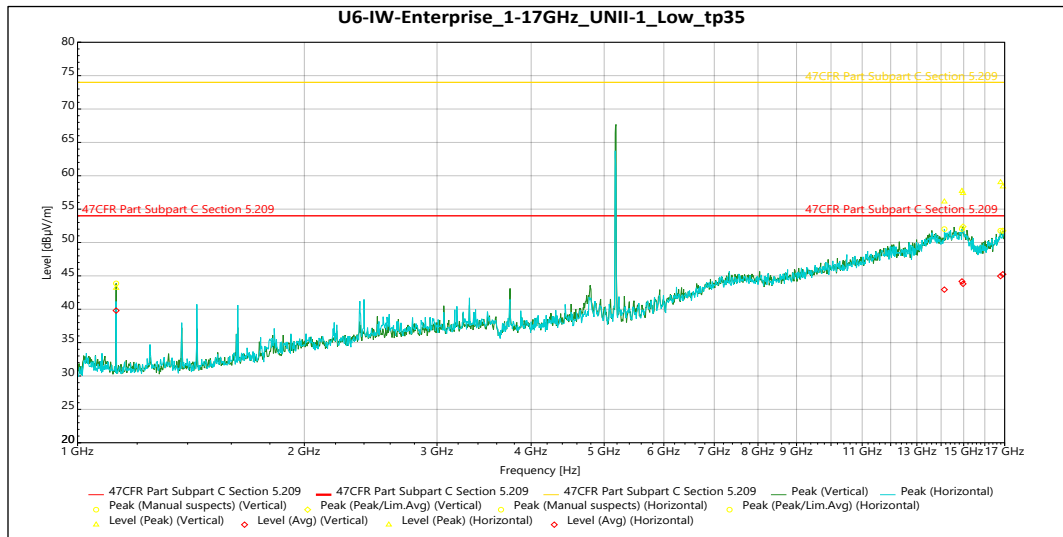
All emissions in the restricted bands of § 15.205 met the limits specified in § 15.209; therefore, the EUT complies with the specification. All emissions met the limits specified in § 15.407(b). Representative band edge plots are included in this report.



QuasiPeak

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
40.093 MHz	38.695	40	-1.305	323	1.134	Vertical	-6.283
156.27 MHz	39.728	40	-0.272	183	1	Vertical	-12.25
875 MHz	41.003	47	-5.997	207	1.858	Vertical	2.897
164.82 MHz	34.788	40	-5.212	186	2.602	Horizontal	-11.693
277.52 MHz	25.79	47	-21.21	66	3.292	Horizontal	-7.248
875.02 MHz	43.49	47	-3.51	97	2.246	Horizontal	2.897

Table 4: Radiated Emissions 30 – 1000 MHz



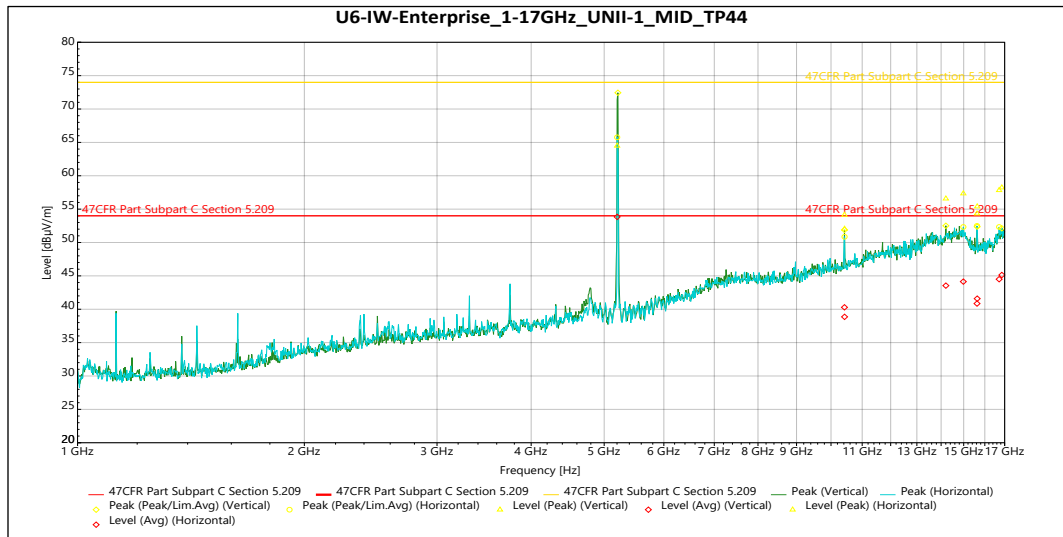
Peak

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
1.1252 GHz	43.2	74	-30.8	2	3.279	Vertical	-12.086
14.972 GHz	57.388	74	-16.612	41	1.875	Vertical	14.735
16.909 GHz	58.376	74	-15.624	355	1.817	Vertical	17.198
14.14 GHz	56.121	74	-17.879	37	3.806	Horizontal	14.298
14.921 GHz	57.714	74	-16.286	349	1.5	Horizontal	15.118
16.788 GHz	59.023	74	-14.977	213	3.253	Horizontal	16.845

Avg

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
1.1252 GHz	39.799	54	-14.201	2	3.279	Vertical	-12.086
14.972 GHz	43.813	54	-10.187	41	1.875	Vertical	14.735
16.909 GHz	45.238	54	-8.762	355	1.817	Vertical	17.198
14.14 GHz	42.944	54	-11.056	37	3.806	Horizontal	14.298
14.921 GHz	44.167	54	-9.833	349	1.5	Horizontal	15.118
16.788 GHz	44.974	54	-9.026	213	3.253	Horizontal	16.845

Table 5: Radiated Emissions on the Lowest Frequency 5180 MHz 1 – 17 GHz



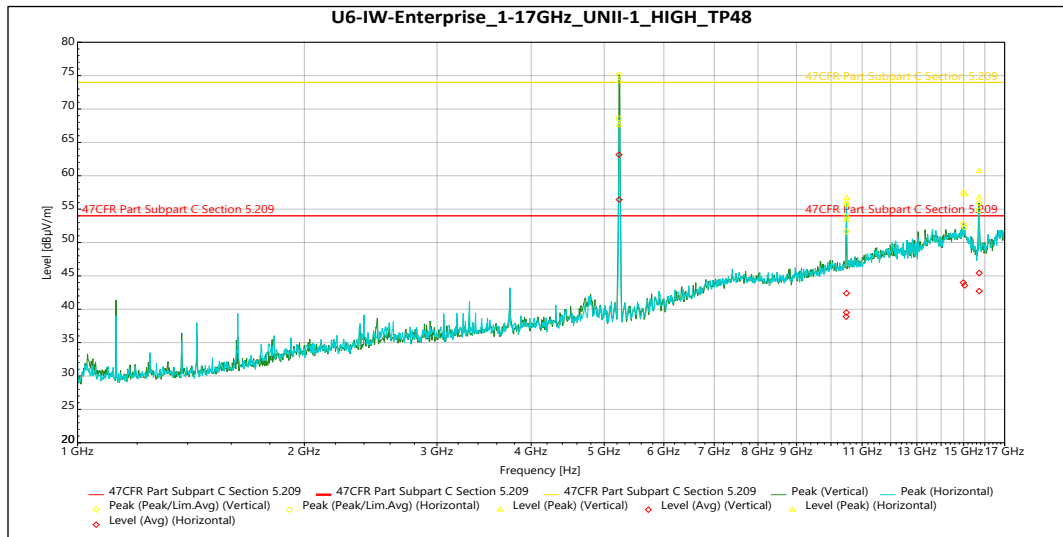
Peak

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.42 GHz	54.137	74	-19.863	183	1.638	Vertical	10.057
14.205 GHz	56.57	74	-17.43	313	2.361	Vertical	14.521
15.633 GHz	55.389	74	-18.611	36	2.177	Vertical	11.94
16.855 GHz	58.23	74	-15.77	114	2.538	Vertical	17.015
5.2023 GHz	64.491	74	-9.509	46	3.627	Horizontal	1.213
10.423 GHz	52.036	74	-21.964	316	3.265	Horizontal	10.091
14.984 GHz	57.34	74	-16.66	275	3.799	Horizontal	14.972
15.624 GHz	54.329	74	-19.671	289	2.3	Horizontal	11.963
16.717 GHz	57.827	74	-16.173	359	1.636	Horizontal	16.299

Avg

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.42 GHz	40.285	54	-13.715	183	1.638	Vertical	10.057
14.205 GHz	43.541	54	-10.459	313	2.361	Vertical	14.521
15.633 GHz	41.589	54	-12.411	36	2.177	Vertical	11.94
16.855 GHz	45.125	54	-8.875	114	2.538	Vertical	17.015
5.2023 GHz	53.84	54	-0.16	46	3.627	Horizontal	1.213
10.423 GHz	38.855	54	-15.145	316	3.265	Horizontal	10.091
14.984 GHz	44.139	54	-9.861	275	3.799	Horizontal	14.972
15.624 GHz	40.854	54	-13.146	289	2.3	Horizontal	11.963
16.717 GHz	44.502	54	-9.498	359	1.636	Horizontal	16.299

Table 6: Radiated Emissions on the Middle Frequency 5210 MHz 1 – 17 GHz



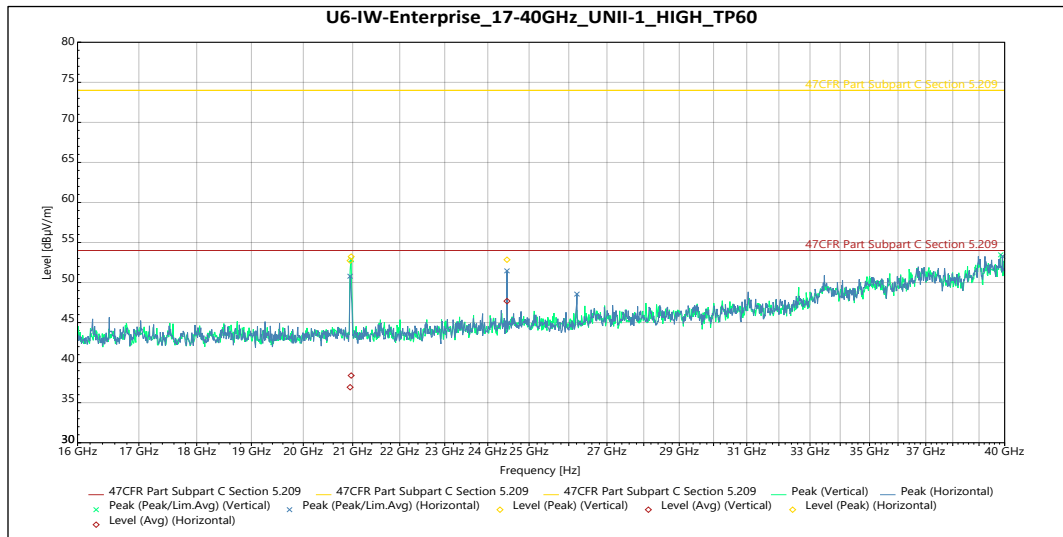
Peak

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
5.2318 GHz	74.125	74	0.125	314	1.652	Vertical	1.397
10.482 GHz	53.401	74	-20.599	205	3.096	Vertical	10.134
14.98 GHz	57.493	74	-16.507	78	2.049	Vertical	14.893
15.727 GHz	56.737	74	-17.263	355	2.926	Vertical	12.037
5.2334 GHz	67.602	74	-6.398	49	3.804	Horizontal	1.388
10.471 GHz	55.668	74	-18.332	60	2.919	Horizontal	10.089
10.485 GHz	56.675	74	-17.325	61	3.077	Horizontal	10.167
15.048 GHz	57.214	74	-16.786	340	3.063	Horizontal	14.717
15.726 GHz	60.69	74	-13.31	357	1.99	Horizontal	12.033

Avg

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
5.2318 GHz	63.159	54	9.159	314	1.652	Vertical	1.397
10.482 GHz	39.51	54	-14.49	205	3.096	Vertical	10.134
14.98 GHz	44.004	54	-9.996	78	2.049	Vertical	14.893
15.727 GHz	42.722	54	-11.278	355	2.926	Vertical	12.037
5.2334 GHz	56.426	54	2.426	49	3.804	Horizontal	1.388
10.471 GHz	38.896	54	-15.104	60	2.919	Horizontal	10.089
10.485 GHz	42.391	54	-11.609	61	3.077	Horizontal	10.167
15.048 GHz	43.57	54	-10.43	340	3.063	Horizontal	14.717
15.726 GHz	45.422	54	-8.578	357	1.99	Horizontal	12.033

Table 7: Radiated Emissions on the Highest Frequency 5240 MHz 1 – 17 GHz



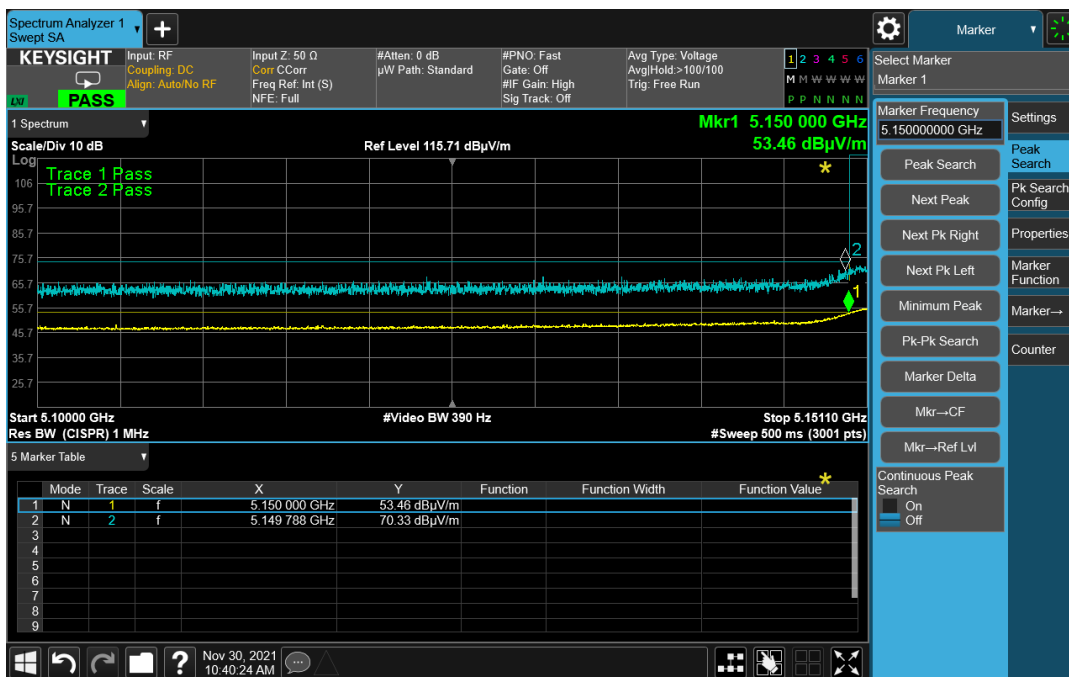
Peak

Frequency	Level (dBμV/m)	Limit (dBμV/m) (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
20.969 GHz	53.241	74	-20.759	33	Vertical	-5.534
20.947 GHz	52.74	74	-21.26	34	Horizontal	-5.706
24.46 GHz	52.847	74	-21.153	53	Horizontal	-5.498

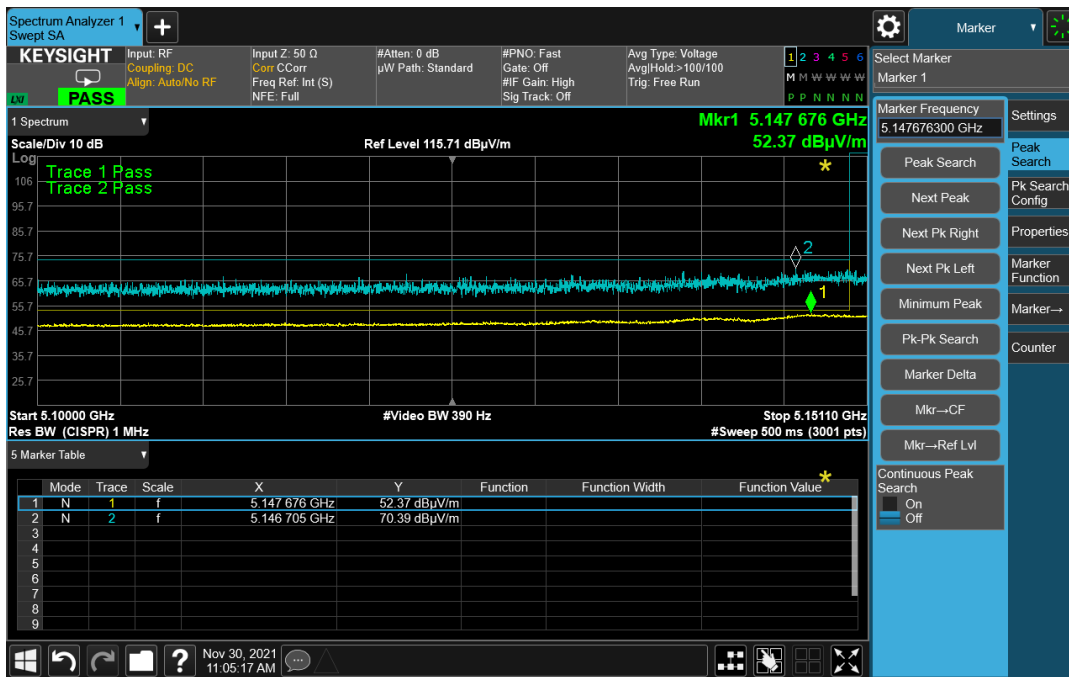
Avg

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
20.969 GHz	38.393	54	-15.607	33	Vertical	-5.534
20.947 GHz	36.93	54	-17.07	34	Horizontal	-5.706
24.46 GHz	47.679	54	-6.321	53	Horizontal	-5.498

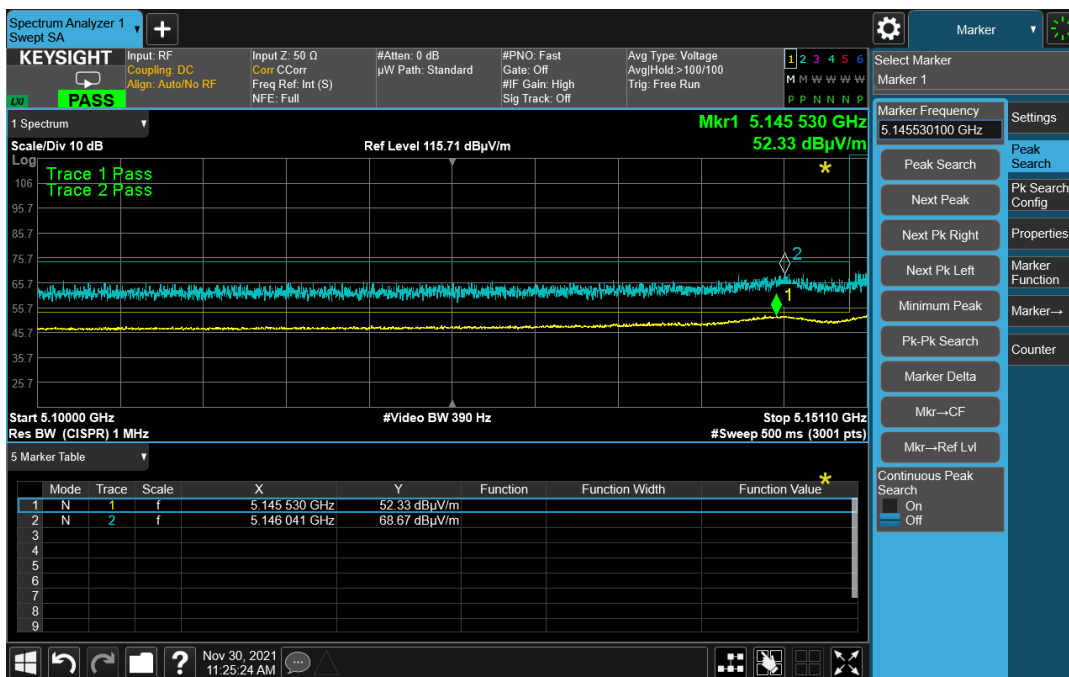
Table 8: Radiated Emissions on the Highest Frequency 5240 MHz 17 – 40 GHz (worse case)



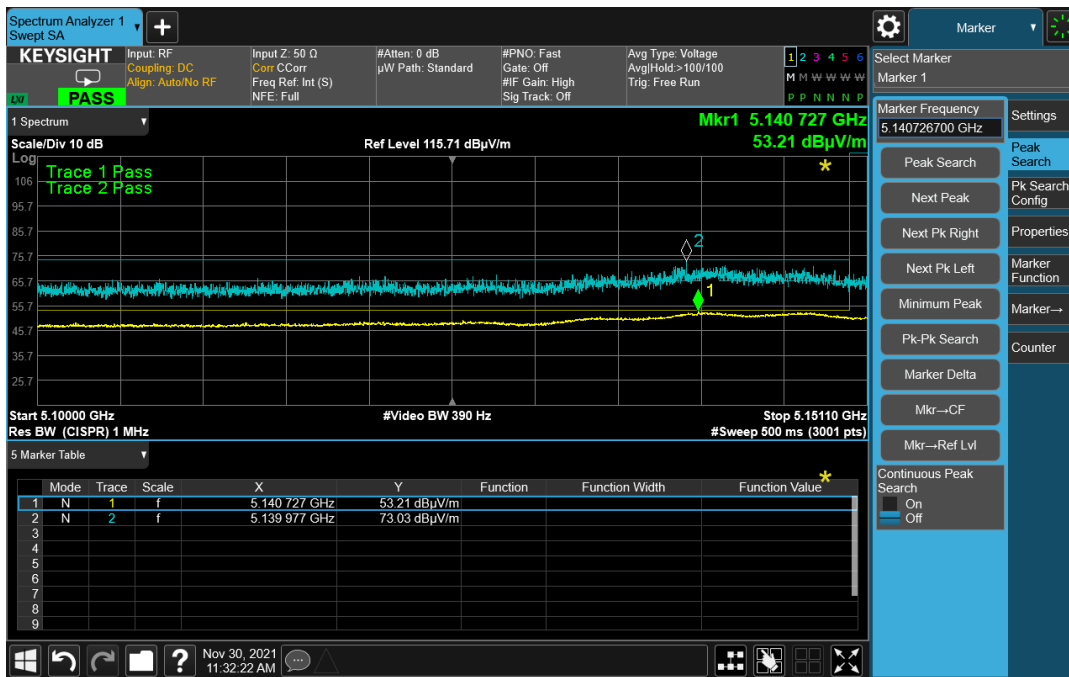
Graph 1: Radiated Lower Band Edge Plot – a Mode



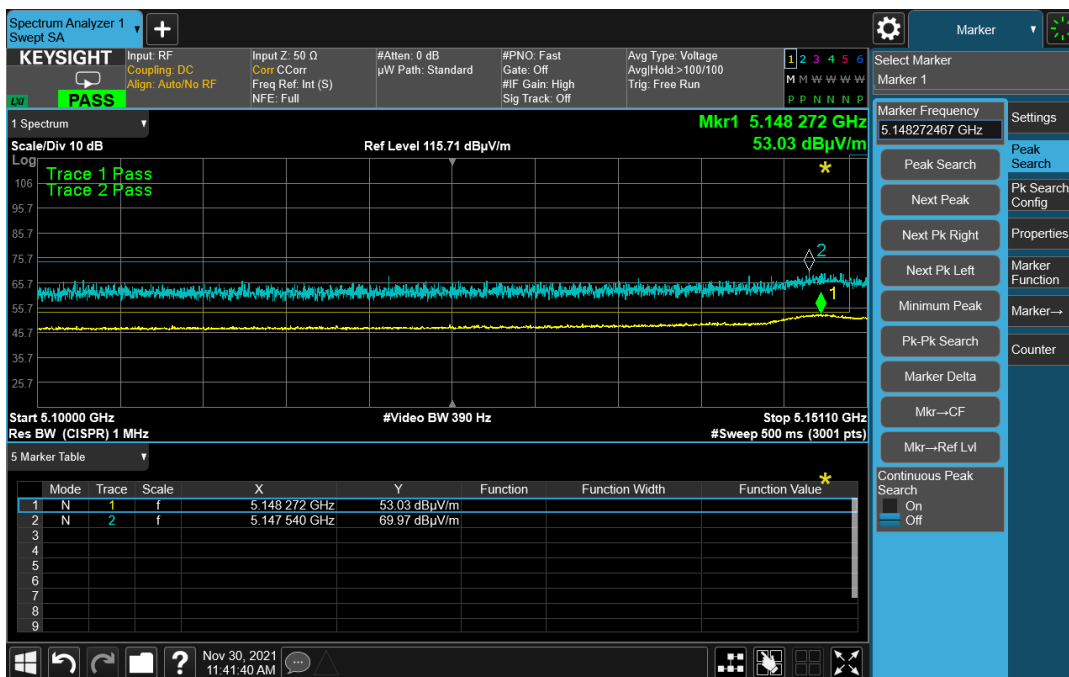
Graph 2: Radiated Upper Band Edge Plot – a Mode



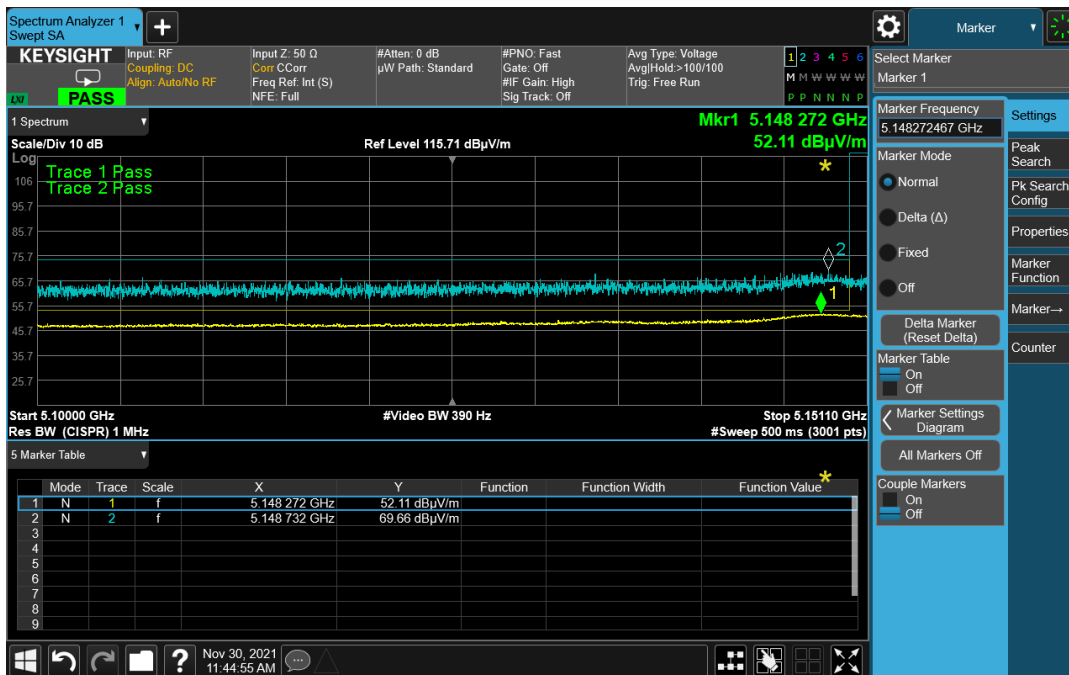
Graph 3: Radiated Lower Band Edge Plot – n Mode 20 MHz



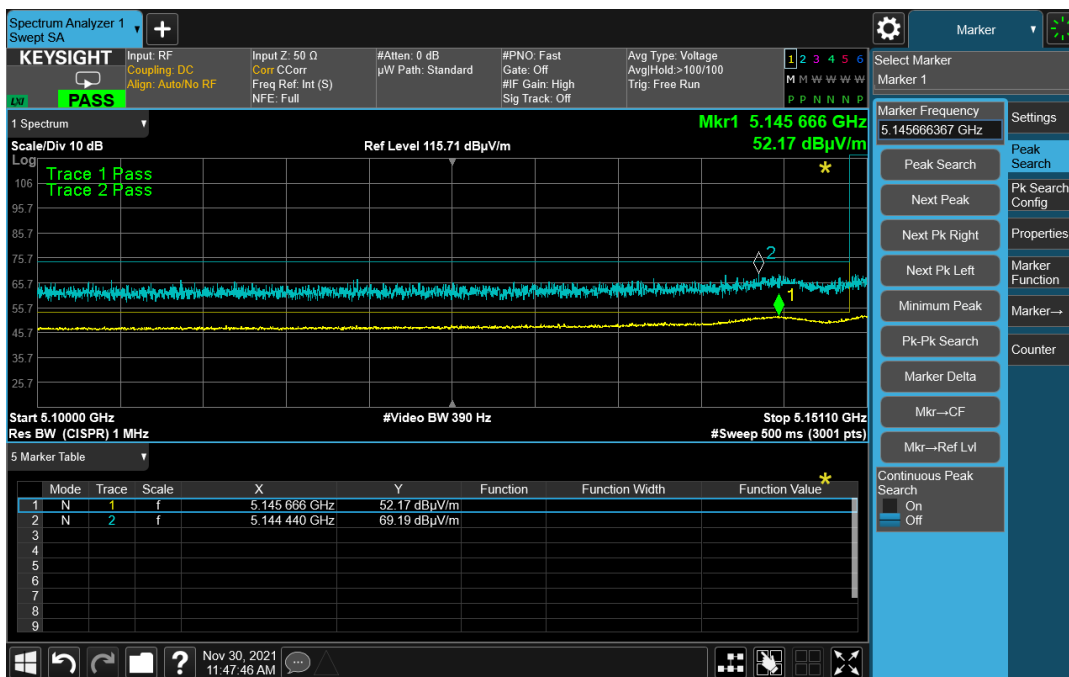
Graph 4: Radiated Upper Band Edge Plot – n Mode 20 MHz



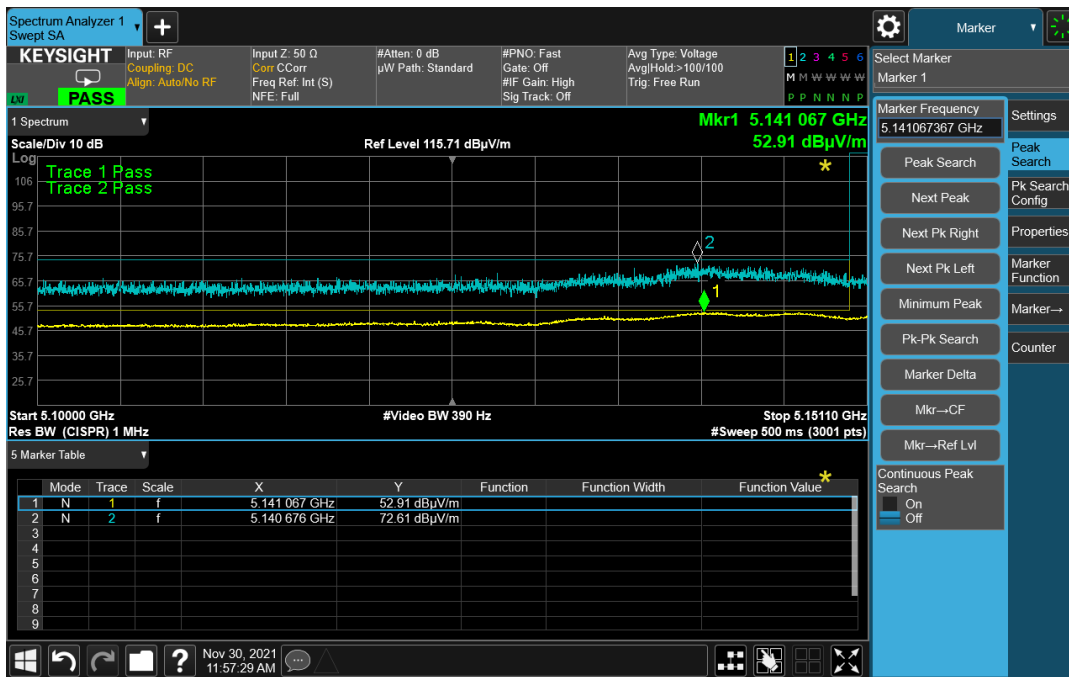
Graph 5: Radiated Lower Band Edge Plot – n Mode 40 MHz



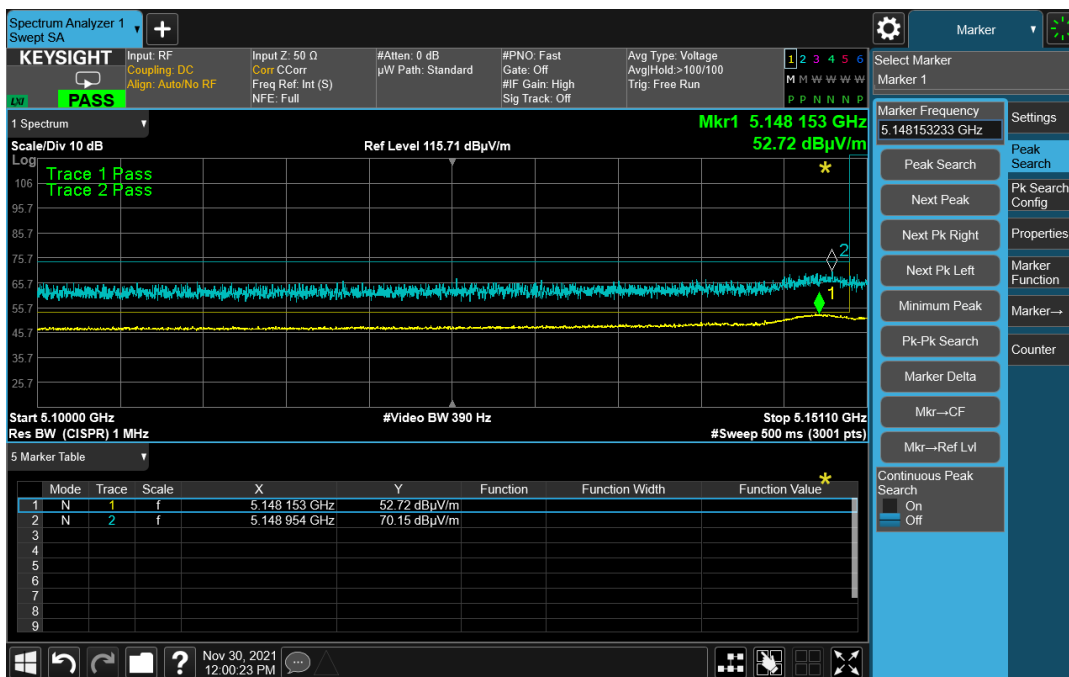
Graph 6: Radiated Upper Band Edge Plot – n Mode 40 MHz



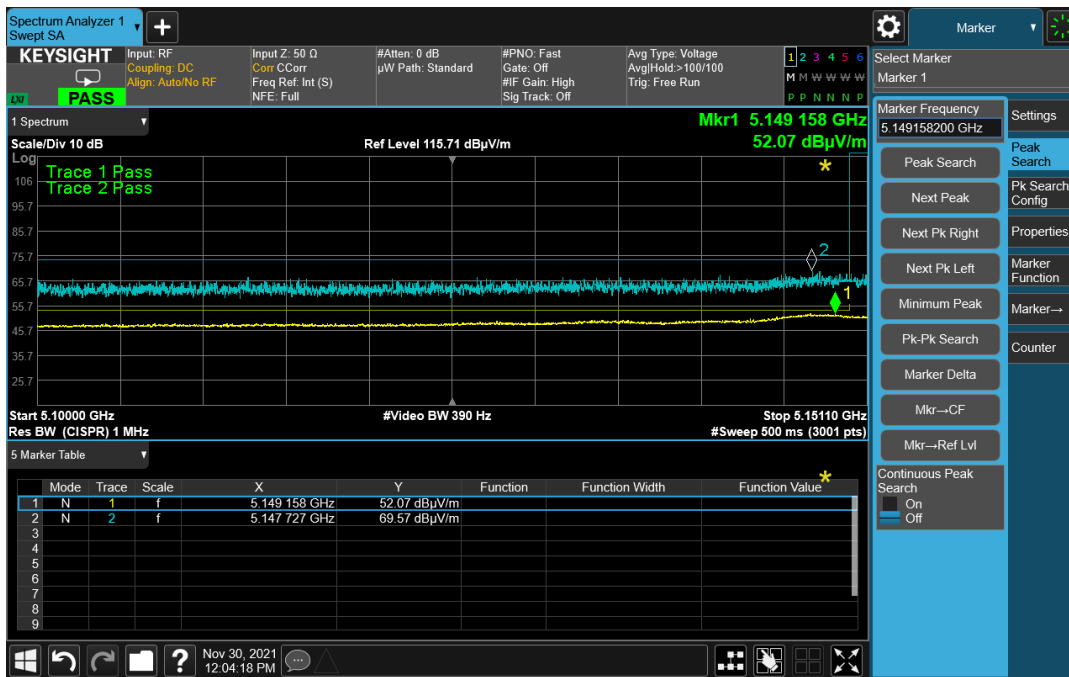
Graph 7: Radiated Lower Band Edge Plot – ac Mode 20 MHz



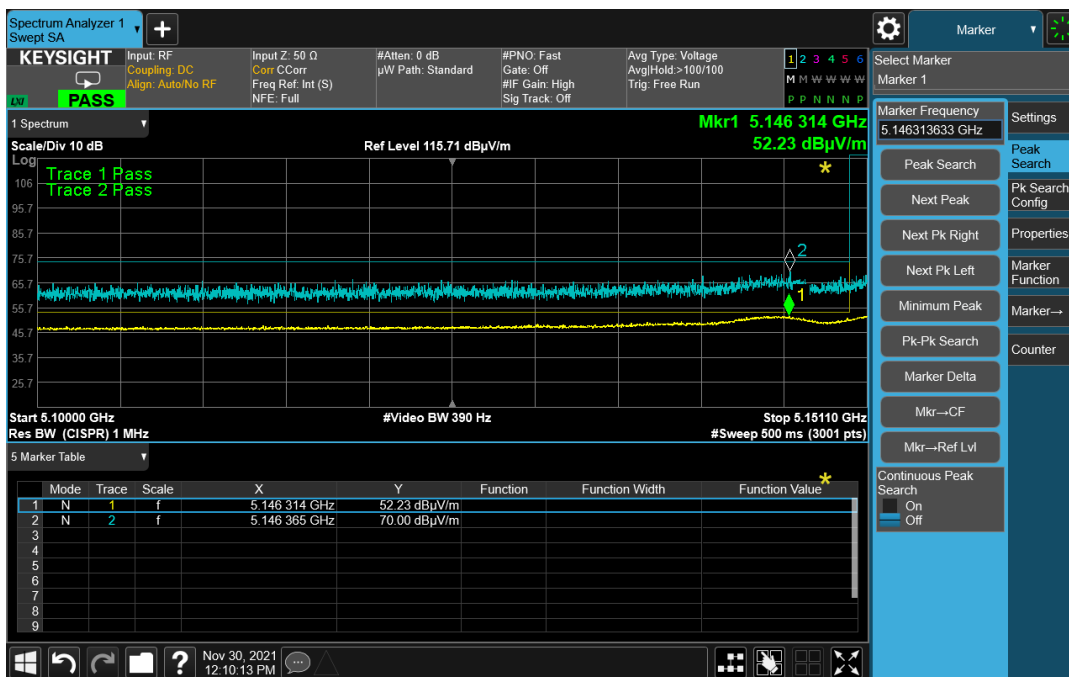
Graph 8: Radiated Upper Band Edge Plot – ac Mode 20 MHz



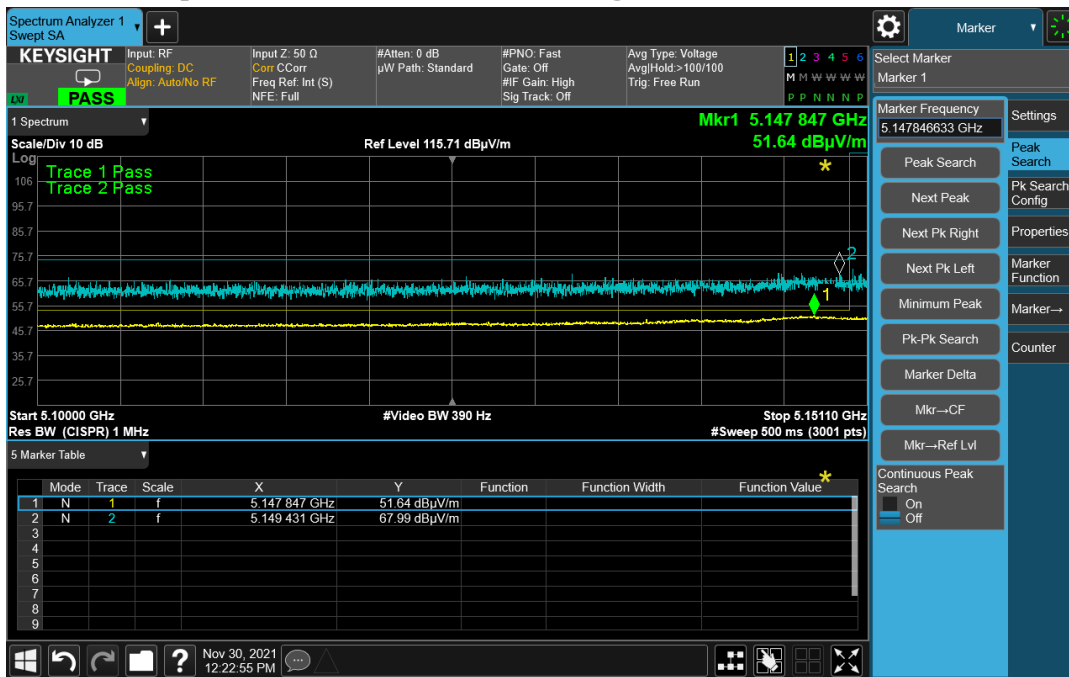
Graph 9: Radiated Lower Band Edge Plot – ac Mode 40 MHz



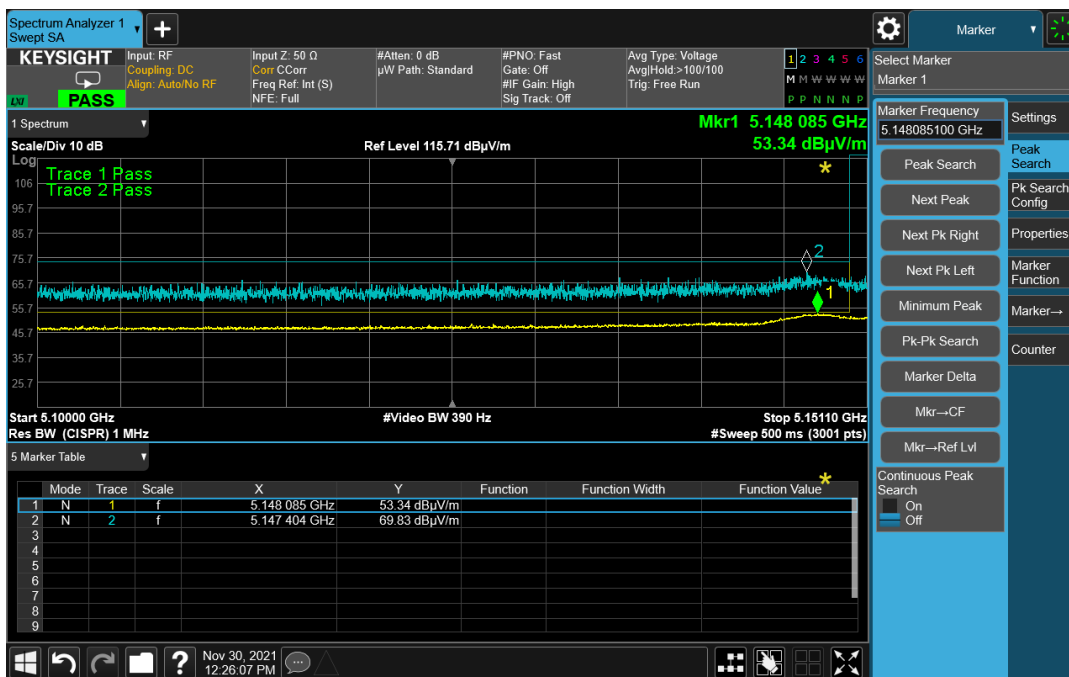
Graph 10: Radiated Upper Band Edge Plot – ac Mode 40 MHz



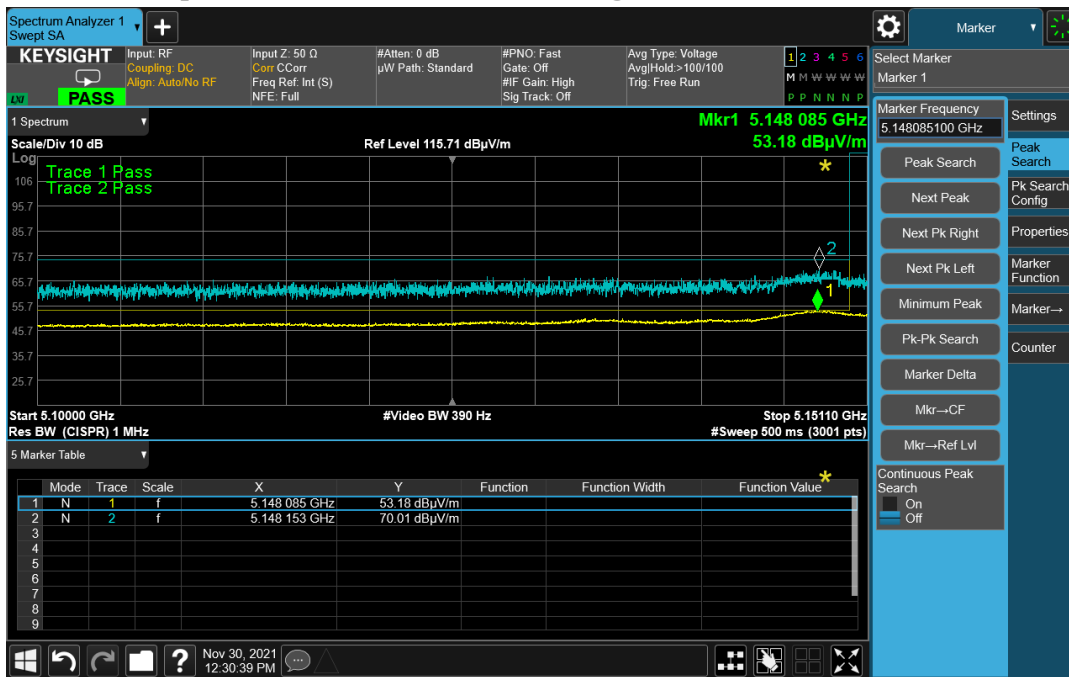
Graph 11: Radiated Lower Band Edge Plot – ax Mode 20 MHz



Graph 12: Radiated Upper Band Edge Plot – ax Mode 20 MHz



Graph 13: Radiated Lower Band Edge Plot – ax Mode 40 MHz



Graph 14: Radiated Upper Band Edge Plot – ax Mode 40 MHz

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 17 dBm in any 1 MHz band during any time interval of continuous transmission.

As per KDB 662911, when the EUT is using spatial-multiplexing in HT to HE modes, there is not additional array gain to accommodate. When the EUT uses Nss=1 data rates, the antenna gain is 5.8 dBi + Array gain of 6.02 dB which is a total of 11.82 dBi

Results of this testing are summarized.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Measured PSD
OFDM 20	5180	Mcs0_Nss4	38	8.73
OFDM 20	5210	Mcs0_Nss4	47	12.87
OFDM 20	5240	Mcs0_Nss4	56	14.39
HT 20	5180	Mcs0_Nss4	38	7.35
HT 20	5210	Mcs0_Nss4	47	11.83
HT 20	5240	Mcs0_Nss4	56	13.62
HT 40	5190	Mcs0_Nss4	28	-0.12
HT 40	5230	Mcs0_Nss4	41	6.26
VHT 20	5180	Mcs0_Nss4	38	7.28
VHT 20	5210	Mcs0_Nss4	47	11.85
VHT 20	5240	Mcs0_Nss4	56	13.63
VHT 40	5190	Mcs0_Nss4	28	-0.20
VHT 40	5230	Mcs0_Nss4	41	6.22
VHT 80	5210	Mcs0_Nss4	26	-4.41
HE 20	5180	Mcs0_Nss4	36	6.54
HE 20	5210	Mcs0_Nss4	45	11.37
HE 20	5240	Mcs0_Nss4	56	13.44
HE 40	5190	Mcs0_Nss4	27	-0.72
HE 40	5230	Mcs0_Nss4	41	6.19
HE 80	5210	Mcs0_Nss4	24	-4.76

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Measured PSD
OFDM 20	5180	Mcs0_Nss1	38	8.73
OFDM 20	5210	Mcs0_Nss1	45	10.87
OFDM 20	5240	Mcs0_Nss1	50	11.39
HT 20	5180	Mcs0_Nss1	38	7.35
HT 20	5210	Mcs0_Nss1	46	10.83
HT 20	5240	Mcs0_Nss1	50	10.62
HT 40	5190	Mcs0_Nss1	28	-0.12
HT 40	5230	Mcs0_Nss1	41	6.26
VHT 20	5180	Mcs0_Nss1	38	7.28
VHT 20	5210	Mcs0_Nss1	46	10.85
VHT 20	5240	Mcs0_Nss1	50	10.63
VHT 40	5190	Mcs0_Nss1	28	-0.20
VHT 40	5230	Mcs0_Nss1	41	6.22
VHT 80	5210	Mcs0_Nss1	26	-4.41
HE 20	5180	Mcs0_Nss1	36	6.54
HE 20	5210	Mcs0_Nss1	45	11.37
HE 20	5240	Mcs0_Nss1	50	10.44
HE 40	5190	Mcs0_Nss1	27	-0.72
HE 40	5230	Mcs0_Nss1	41	6.19
HE 80	5210	Mcs0_Nss1	24	-4.76

Result

The maximum summed average power spectral density was less than the limit of 17dBm while in Nss4 and less than 11.82 dBm in Nss1; therefore, the EUT complies with the specification.

-- End of Test Report --