UNIFIED COMPLIANCE LABORATORY

427 West 12800 South
Draper, UT 84020

Test Report

Certification

FCC ID	SWX-WAVEPRO
Equipment Under Test	Wave-Pro
Test Report Serial Number	TR7801_02
Date of Test(s)	19, 20, 26 July; 5, 17 August 2022
Report Issue Date	6 January 2023

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

NVLAP TESTING ilac-MRA

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.

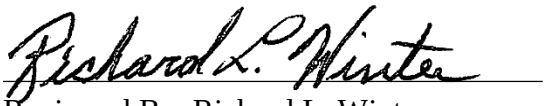
Applicant	Ubiquiti Inc.
Manufacturer	Ubiquiti Inc.
Brand Name	airFiber
Model Number	Wave-Pro
FCC ID	SWX-WAVEPRO

On this 6th 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	6 January 2023
02	Amended Section 5.1 and 5.4	12 May 2023

Table of Contents

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 Manager

1.2 Manufacturer

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

2 Equipment Under Test (EUT)

2.1 Identification of EUT

Brand Name	airFiber
Model Number	Wave-Pro
Serial Number	A26196
Dimensions (cm)	42.4 x 42.4 x 16.6

2.2 Description of EUT

The Wave-Pro is a client 60 GHz point-to-point customer premise equipment that features wave technology with a 2.5 Gbps throughput rate. The Wave-Pro is also equipped with a 5 GHz WiFi 6 backup radio to sustain connectivity during a 60 GHz link disruption caused by inclement weather conditions. A Bluetooth LE transceiver is included for device management. The Wave-Pro is an outdoor device and has an Ethernet port which is used for data transfer and to provide power using an Ubiquiti U-POE-at 48-volt PoE power adapter.

Band	WiFi Mode	Modulation Bandwidth	Modulation Type	Frequency (MHz)
UNII-1	ax	20 MHz	HE	5165, 5175, 5185, 5200, 5210, 5220, 5230, 5240
	ax	40 MHz	HE	5175, 5185, 5200, 5215, 5230
	ax	80 MHz	HE	5200, 5205, 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: airFiber MN: Wave-Pro (Note 1) SN: A26196	Wireless Access Point	See Section 2.4
BN: Ubiquiti MN: U-POE-at SN: N/A	PoE Power Adapter	Shielded or Un-shielded cat 5e cable
BN: Dell MN: XPS 13	Laptop Computer	Shielded or Un-shielded cat 5e cable

SN: N/A		

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 (PoE Injector)	1	3 conductor power cord/80cm
LAN (PoE Injector)	1	Shielded or Un-shielded cat 5e cable/1 meter
Data	1	Shielded or Un-shielded cat 5e cable/1 meter

2.5 Operating Environment

Power Supply	120 Volts ac to 48 Volts PoE
AC Mains Frequency	60 Hz
Temperature	22.5 – 24.4 °C
Humidity	24.1 – 36.1 %
Barometric Pressure	1011 mBar

2.6 Operating Modes

The Wave-Pro 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 ax were investigated.

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

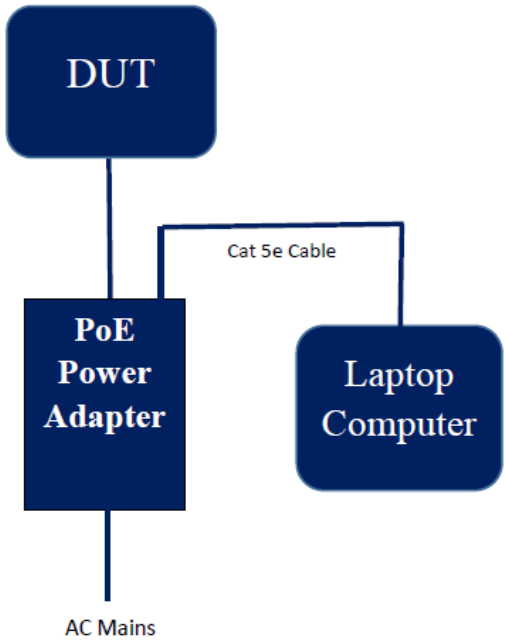


Diagram 1: Test Configuration Block Diagram

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	Environmental Phenomena	Frequency Range (MHZ)	Result
15.407(a)	Antenna requirements	Structural Requirement	Compliant
15.407(b)	Conducted Disturbance at Mains Port	0.15 to 30	Compliant
15.407(c)	Bandwidth Requirement	5180 to 5210	Compliant
15.407(e)	Peak Output Power	5180 to 5210	Compliant
15.407(f)	Antenna Conducted Spurious Emissions	0.009 to 40000	N/A
15.407(g)	Radiated Spurious Emissions	0.009 to 40000	Compliant
15.407(h)	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 2023. 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 2023. 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	6/27/2022	6/27/2023
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

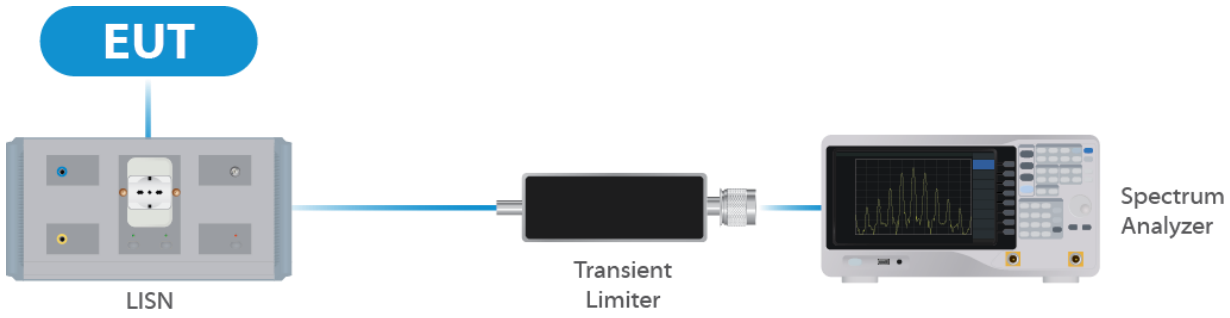


Figure 1: Conducted Emissions Test

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	2/03/2023
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	2/03/2023
Switch Extension	R&S	OSP-150W	UCL-2870	1/03/2022	2/03/2023

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

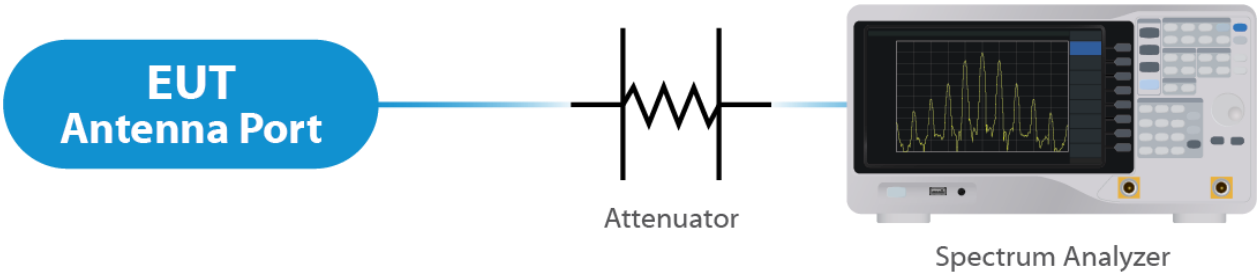


Figure 2: Direct Connect at the Antenna Port Test

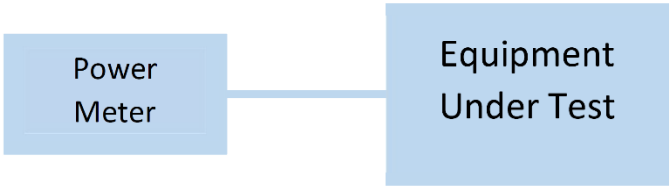


Figure 3: Output Power Measurement

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	1/4/2022	1/4/2023
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	10/7/2021	11/7/2022
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3062	9/13/2022	9/13/2024
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3071	6/08/2022	6/22/2024
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	9/22/2022	9/22/2024
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	11/16/2020	11/16/2022
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	10/7/2021	11/7/2022
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 3: List of equipment used for Radiated Emissions

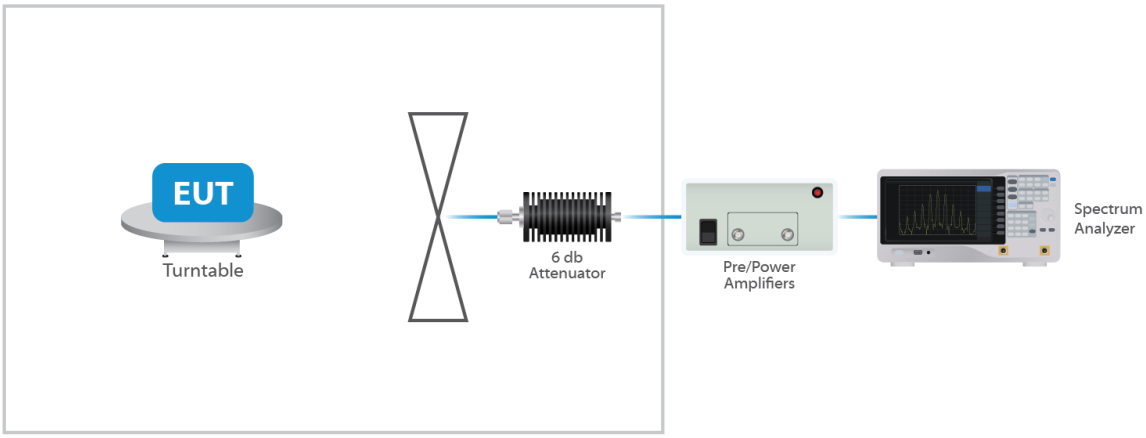


Figure 4: Radiated Emissions Test

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 (± 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

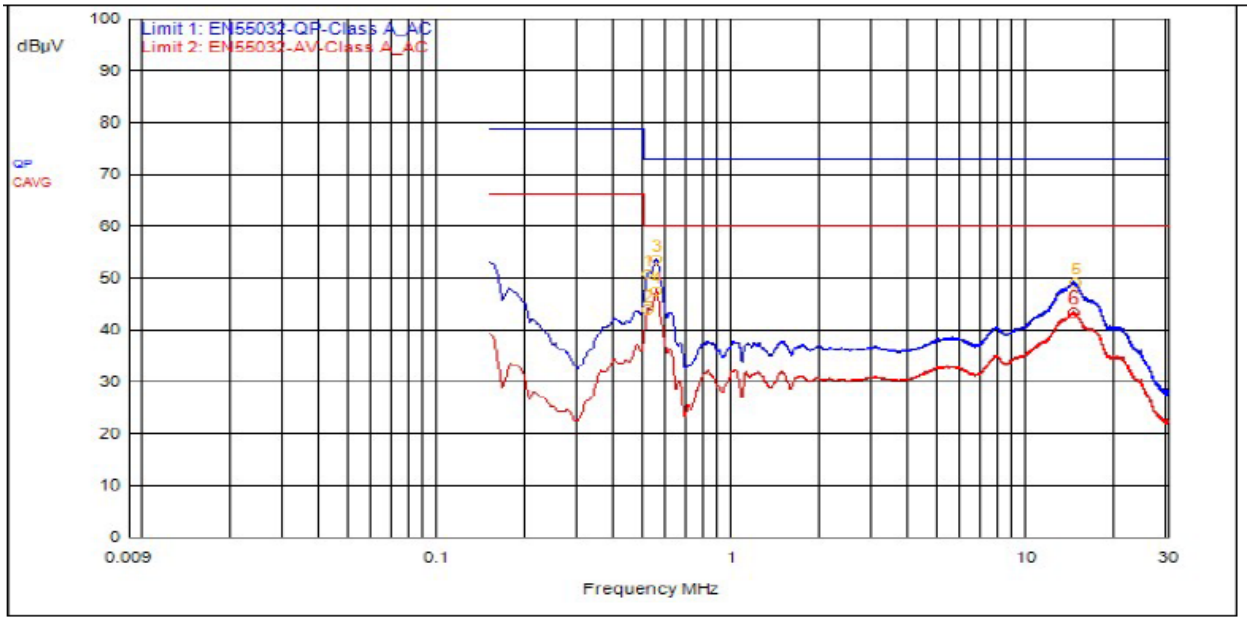
The EUT uses an integral antenna. The maximum gain of the antenna is 22.0 dBi. This is an 802.11 device and utilizes CDD as described in KDB 662911 D01. The antenna is not user replaceable.
For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for NANT ≤ 4;
For PSD measurements when Nss=1: Array Gain = 10 log(Nant/Nss) dB = 3.01dB

Results

The EUT complied with the specification

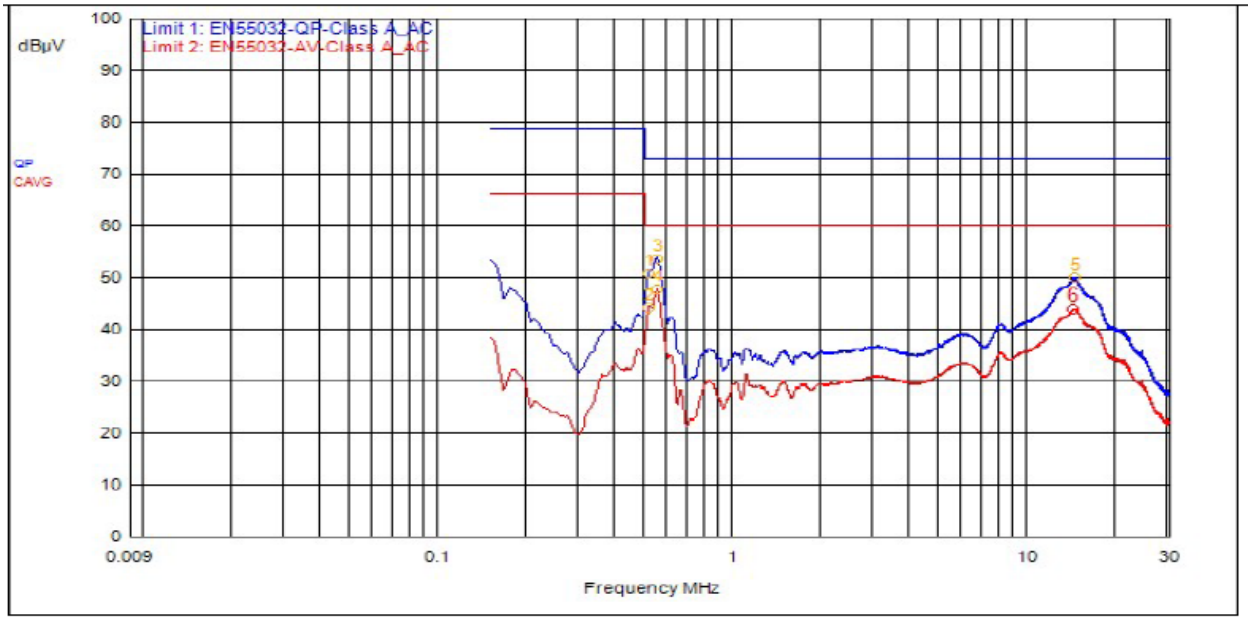
5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
3	546,000kHz	9.5	0.1		QPeak	43.8	53.5	73.0	-19.5		
1	516,000kHz	9.5	0.1		QPeak	41.2	50.8	73.0	-22.2		
5	14.385MHz	9.7	0.2		QPeak	39.4	49.3	73.0	-23.7		
2	513,000kHz	9.5	0.1		C_AVG	34.4	44.0			60.0	-16.0
4	549,000kHz	9.5	0.1		C_AVG	38.0	47.6			60.0	-12.4
6	14.334MHz	9.7	0.2		C_AVG	33.5	43.4			60.0	-16.6

5.2.2 Neutral



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
3	549,000kHz	9.5	0.1		QPeak	44.1	53.7	73.0	-19.3		
1	513,000kHz	9.5	0.1		QPeak	41.1	50.8	73.0	-22.2		
5	14.319MHz	9.6	0.2		QPeak	40.0	49.9	73.0	-23.1		
2	513,000kHz	9.5	0.1		C_AVG	34.4	44.1			60.0	-15.9
4	549,000kHz	9.5	0.1		C_AVG	38.0	47.7			60.0	-12.3
6	14.154MHz	9.6	0.2		C_AVG	34.2	44.0			60.0	-16.0

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)
20	5165	19.1	21.5
20	5200	19.2	21.1
20	5240	19.2	24.7
40	5175	37.8	40.1
40	5200	38.0	39.9
40	5230	37.5	40.2
80	5195	77.0	83.0
80	5200	77.5	81.5
80	5210	77.0	83.0

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.

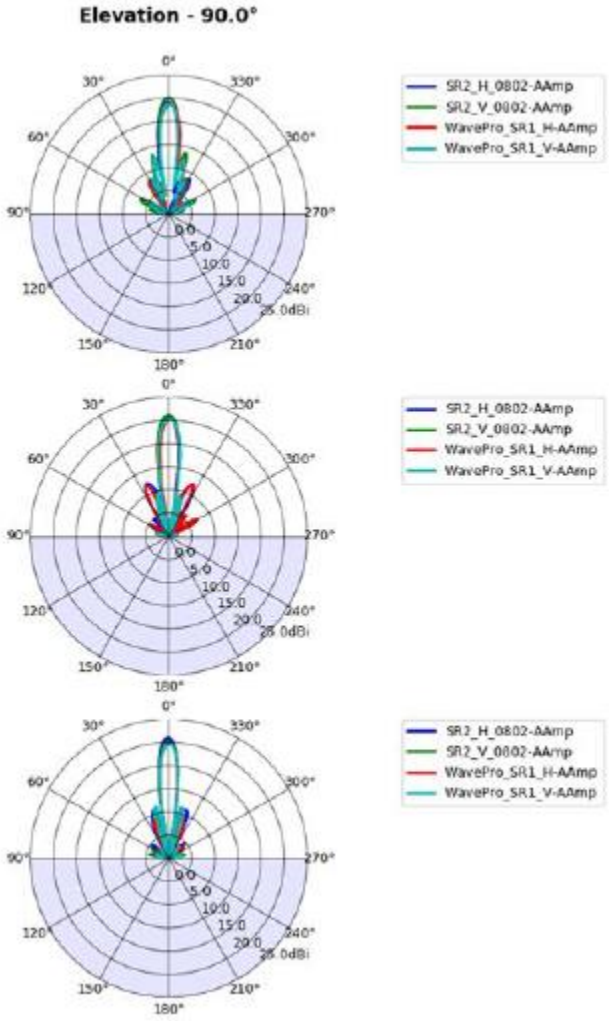
The maximum average RF conducted output power measured for this device was 24.89 dBm or 308.32 mW. The limit is 30 dBm, or 1 Watt when using an antenna with 23 dBi (Fixed point to point) or less gain. The antenna has a gain of 22.0 dBi.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured EIRP	Measured PSD
HE 20	5165	Mcs0	12	6.69	28.69	-8.89
HE 20	5200	Mcs0	40	20.90	42.90	5.82
HE 20	5240	Mcs0	48	24.89	46.89	9.73
HE 40	5175	Mcs0	18	10.12	32.12	-7.90
HE 40	5200	Mcs0	29	15.47	37.47	-2.73
HE 40	5230	Mcs0	39	20.94	42.94	2.57
HE 80	5195	Mcs0	17	9.84	31.84	-11.37
HE 80	5200	Mcs0	19	10.87	32.87	-10.24
HE 80	5210	Mcs0	22	11.91	33.91	-9.19

5.4.1 §15.407(a)(1)(i) Power Limit Elevation Angle 30+ Degrees Antenna Gain

The maximum average RF conducted output power measured for this device at 30+ degrees antenna gain was 15.96 dBm or 39.45 mW. The limit is 21 dBm, or 125 mW when using an antenna with 6 dBi (Fixed point to point) or less gain. The antenna has a gain of 5.0 dBi.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured EIRP	Measured PSD
HE 20	5165	Mcs0	12	6.47	11.47	-9.06
HE 20	5200	Mcs0	29	15.57	20.57	-0.14
HE 20	5240	Mcs0	30	15.96	20.96	0.27
HE 40	5175	Mcs0	18	9.96	14.96	-8.79
HE 40	5200	Mcs0	29	15.46	20.46	-3.18
HE 40	5230	Mcs0	29	15.52	20.52	-3.29
HE 80	5195	Mcs0	17	9.70	14.70	-11.83
HE 80	5200	Mcs0	19	10.76	15.76	-10.92
HE 80	5210	Mcs0	22	11.77	16.77	-9.92



Antenna Plots Above 30° Elevation

Result

In the configuration tested, the maximum summed average RF output power was less than 1 watt, and 125 mW; therefore, the EUT compiled 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 22.0 dBi accounted for. These demonstrate compliance with the provisions of this section at the band edges.

The emissions must be remain below -27 dBm EIRP.

Result

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

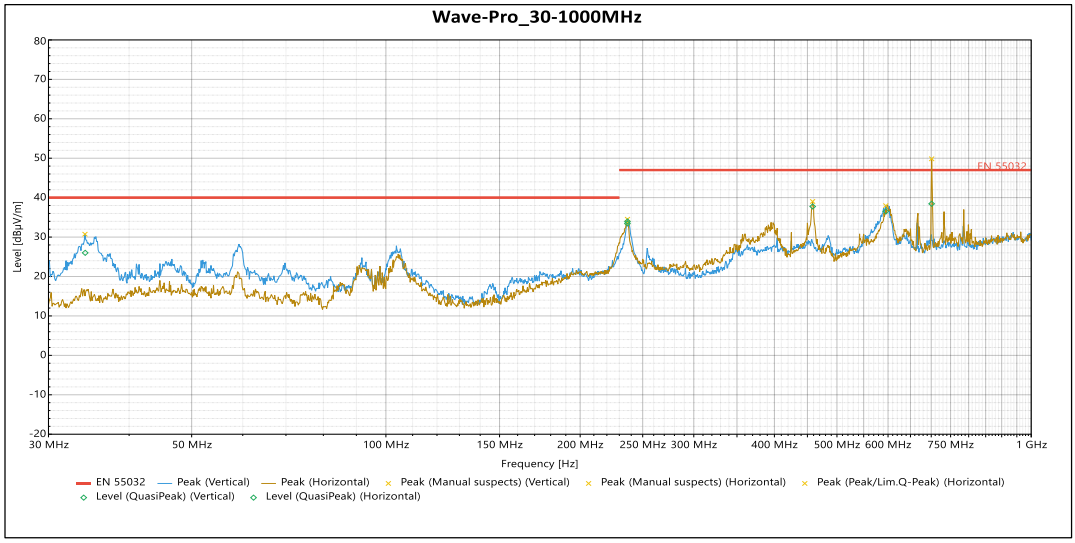
5.5.2 Radiated Spurious Emissions in the Restricted Bands of § 15.205

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 TP49, 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 5150 MHz was measured using radiated measurement or conducted at the antenna port methods. [For radiated] 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

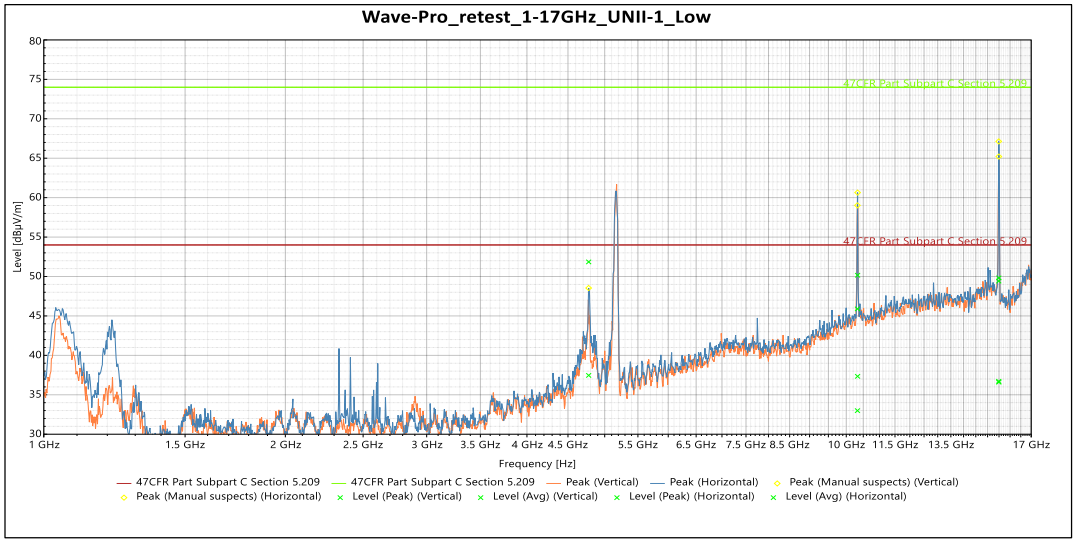
All emissions in the restricted bands of § 15.205 met the limits specified in § 15.209; therefore, the EUT complies with the specification. All emissions me the limits specified in § 15.407(b). Representative band edge plots are included in this report. See Annex for Conducted Band edge plots.



QuasiPeak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
34.199 MHz	26.004	40	-13.996	79	1.063	Vertical	-14.947
236.8 MHz	33.945	47	-13.055	115	1.004	Vertical	-12.533
595.17 MHz	36.5	47	-10.5	137	2.317	Vertical	-4.79
236.75 MHz	33.447	47	-13.553	166	3.863	Horizontal	-12.536
458.53 MHz	37.758	47	-9.242	118	1.849	Horizontal	-7.95
700.94 MHz	38.441	47	-8.559	153	1.218	Horizontal	-3.922

Table 4: Radiated Emissions 30 – 1000 MHz



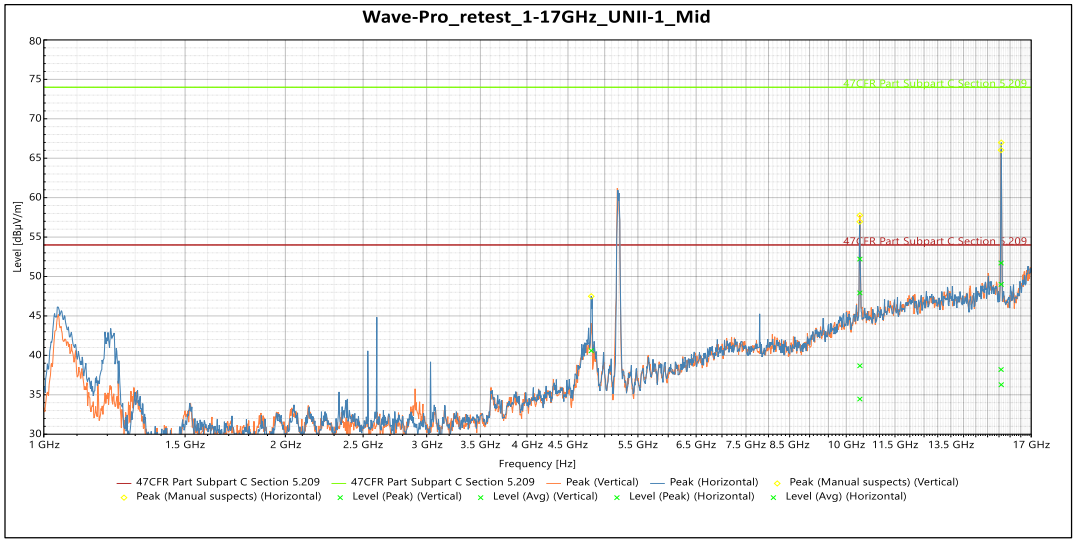
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.326 GHz	45.886	74	-28.114	262	1.5	Vertical	1.421
15.492 GHz	49.825	74	-24.175	205	1.638	Vertical	5.611
4.7754 GHz	51.852	74	-22.148	340	2.146	Horizontal	-10.561
10.33 GHz	50.155	74	-23.845	343	2.146	Horizontal	1.423
15.488 GHz	49.421	74	-24.579	218	2.65	Horizontal	5.67

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.326 GHz	32.988	54	-21.012	262	1.5	Vertical	1.421
15.492 GHz	36.604	54	-17.396	205	1.638	Vertical	5.611
4.7754 GHz	37.459	54	-16.541	340	2.146	Horizontal	-10.561
10.33 GHz	37.343	54	-16.657	343	2.146	Horizontal	1.423
15.488 GHz	36.714	54	-17.286	218	2.65	Horizontal	5.67

Table 5: Radiated Emissions Transmitting on the Lowest Frequency 5165 MHz 1 – 17 GHz



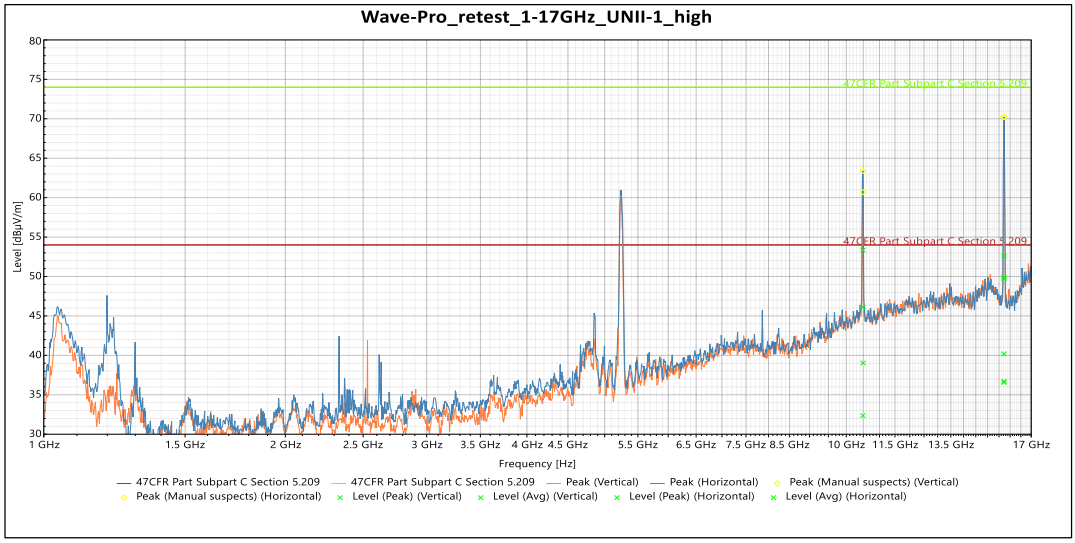
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.399 GHz	52.213	74	-21.787	241	2.142	Vertical	2.02
15.593 GHz	51.705	74	-22.295	234	3.656	Vertical	4.947
4.8111 GHz	40.589	74	-33.411	9	3.311	Horizontal	-10.35
10.398 GHz	47.916	74	-26.084	244	3.307	Horizontal	1.995
15.6 GHz	48.998	74	-25.002	207	3.798	Horizontal	5.074

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.399 GHz	38.68	54	-15.32	241	2.142	Vertical	2.02
15.593 GHz	38.198	54	-15.802	234	3.656	Vertical	4.947
4.8111 GHz	26.861	54	-27.139	9	3.311	Horizontal	-10.35
10.398 GHz	34.458	54	-19.542	244	3.307	Horizontal	1.995
15.6 GHz	36.277	54	-17.723	207	3.798	Horizontal	5.074

Table 6: Radiated Emissions Transmitting on the Middle Frequency 5200 MHz 1 – 17 GHz



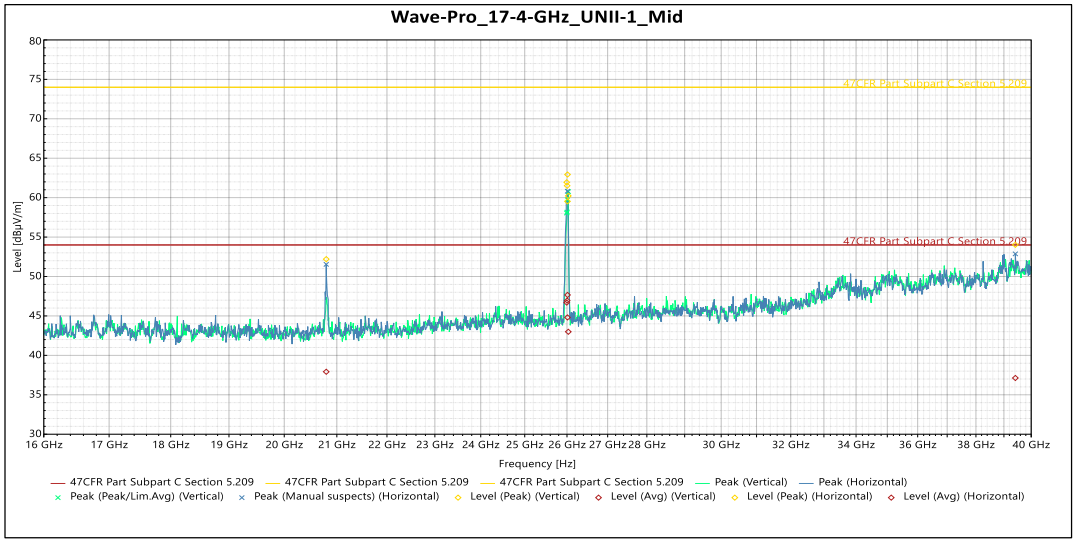
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.493 GHz	53.34	74	-20.66	350	2.142	Vertical	1.681
15.728 GHz	49.71	74	-24.29	235	4	Vertical	5.085
10.488 GHz	46.115	74	-27.885	319	3.307	Horizontal	1.497
15.72 GHz	52.597	74	-21.403	233	2.816	Horizontal	5.057
15.721 GHz	49.917	74	-24.083	219	2.816	Horizontal	5.07

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.493 GHz	39.041	54	-14.959	350	2.142	Vertical	1.681
15.728 GHz	36.7	54	-17.3	235	4	Vertical	5.085
10.488 GHz	32.356	54	-21.644	319	3.307	Horizontal	1.497
15.72 GHz	40.188	54	-13.812	233	2.816	Horizontal	5.057
15.721 GHz	36.568	54	-17.432	219	2.816	Horizontal	5.07

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



Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
25.994 GHz	61.952	74	-12.048	257	Vertical	-5.499
26.004 GHz	61.507	74	-12.493	257	Vertical	-5.329
26.013 GHz	62.933	74	-11.067	259	Vertical	-5.171
26.032 GHz	60.216	74	-13.784	257	Vertical	-5.121
20.795 GHz	52.198	74	-21.802	255	Horizontal	-5.362
26.012 GHz	59.532	74	-14.468	261	Horizontal	-5.188
39.416 GHz	54.016	74	-19.984	144	Horizontal	4.037

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
25.994 GHz	46.695	54	-7.305	257	Vertical	-5.499
26.004 GHz	46.945	54	-7.055	257	Vertical	-5.329
26.013 GHz	47.66	54	-6.34	259	Vertical	-5.171
26.032 GHz	42.987	54	-11.013	257	Vertical	-5.121
20.795 GHz	37.919	54	-16.081	255	Horizontal	-5.362
26.012 GHz	44.815	54	-9.185	261	Horizontal	-5.188
39.416 GHz	37.133	54	-16.867	144	Horizontal	4.037

Table 8: Radiated Emissions Transmitting on the Middle Frequency 5200 MHz 17 – 40 GHz (worse case)

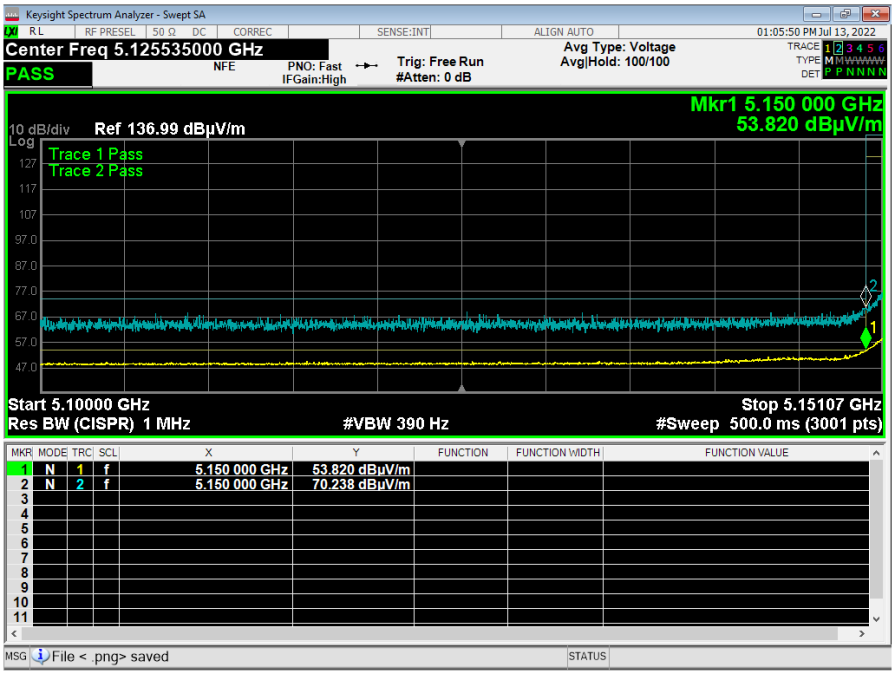


Figure 5: Band Edge HE20 5165 MHz

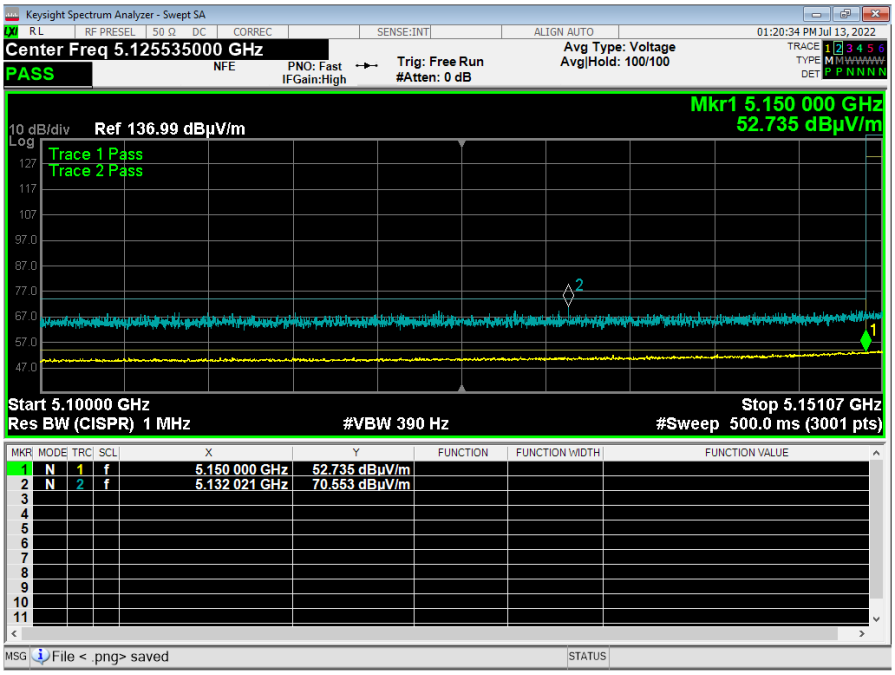


Figure 6: Band Edge HE20 5200 MHz

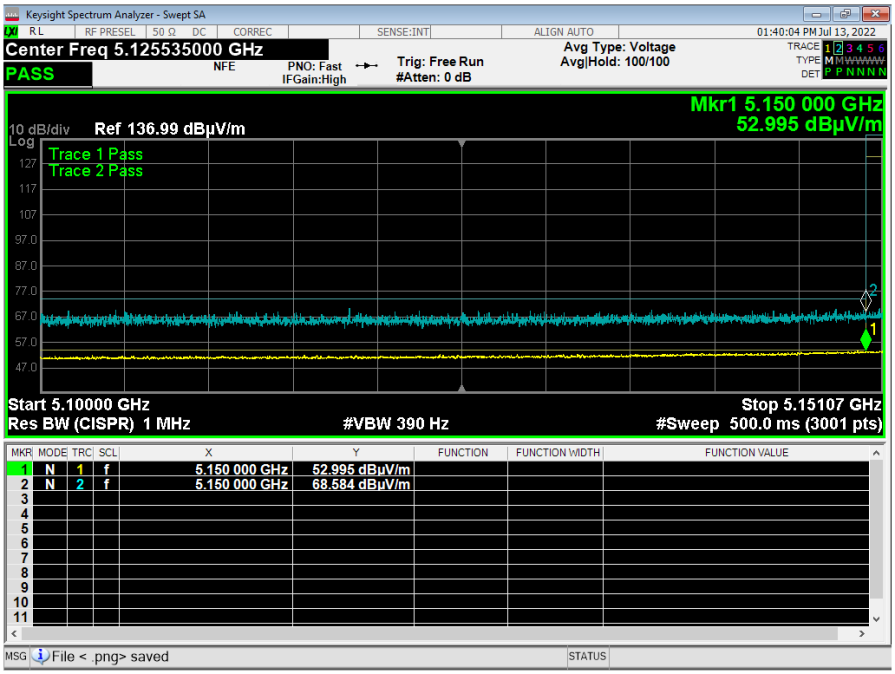


Figure 7: Band Edge HE20 5240 MHz

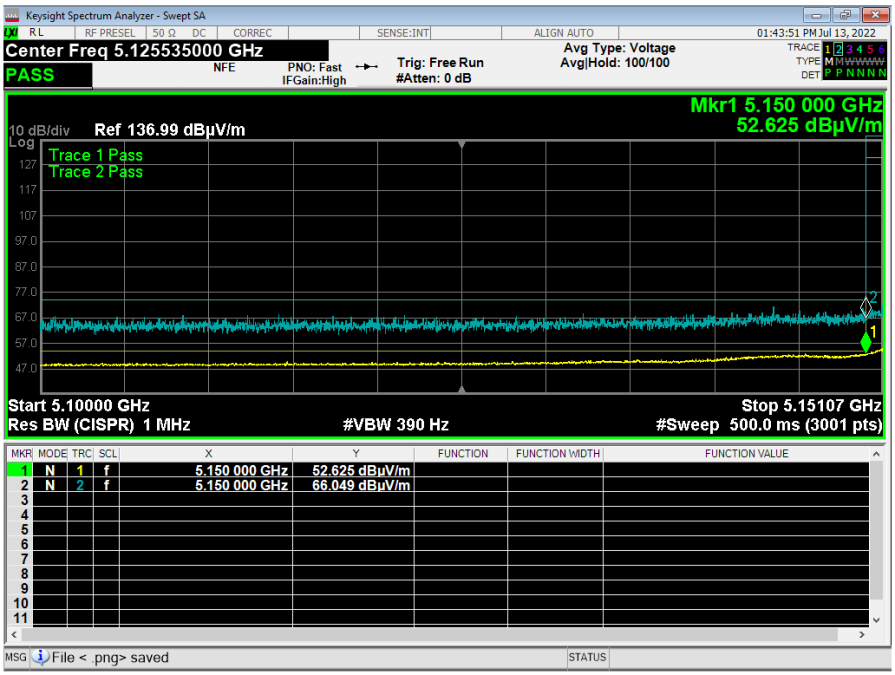


Figure 8: Band Edge HE40 5175MHz

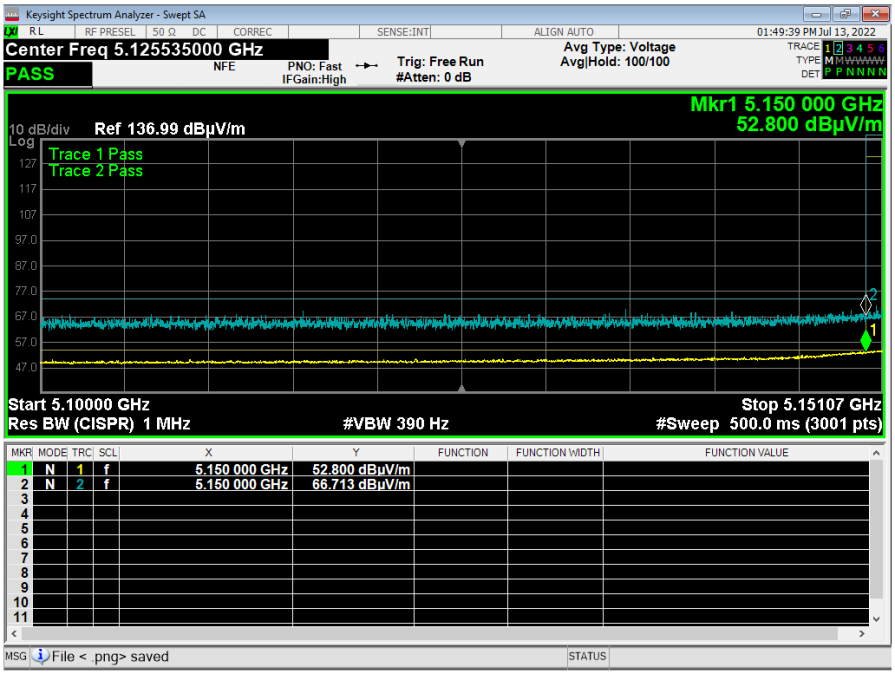


Figure 9: Band Edge HE40 5200 MHz

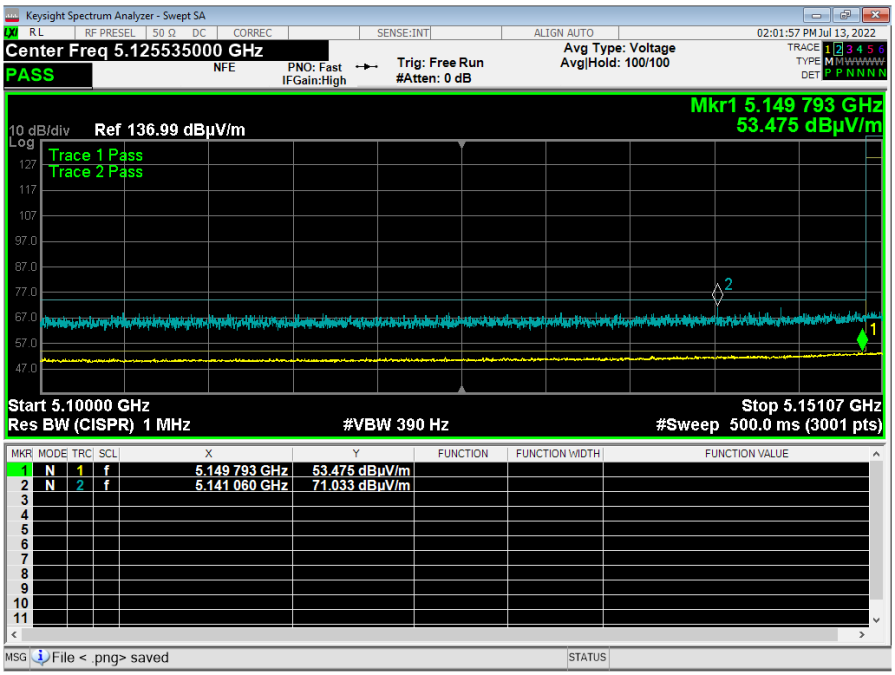


Figure 10: Band Edge HE40 5230 MHz

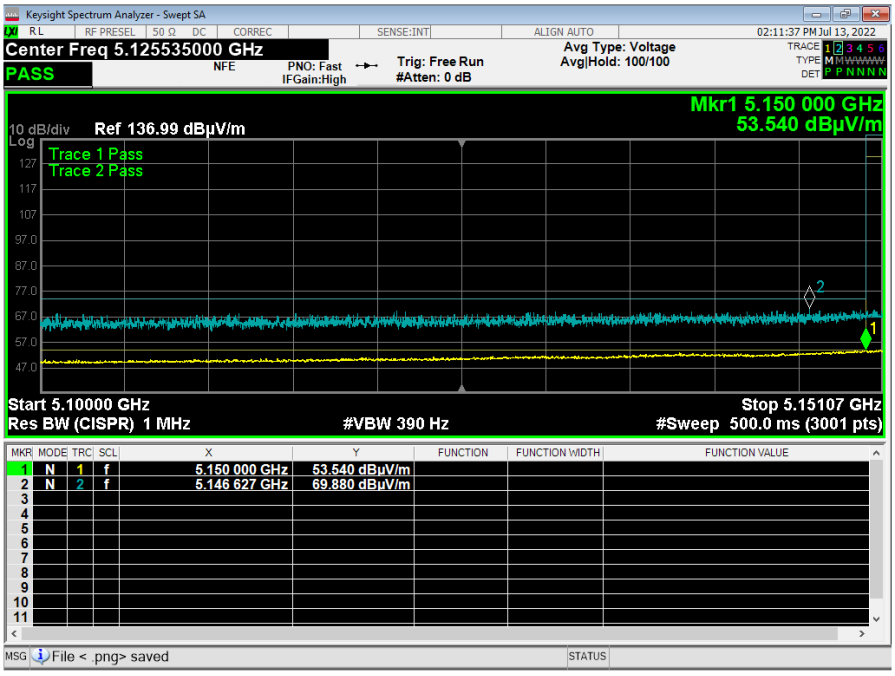


Figure 11: Band Edge HE80 5200 MHz

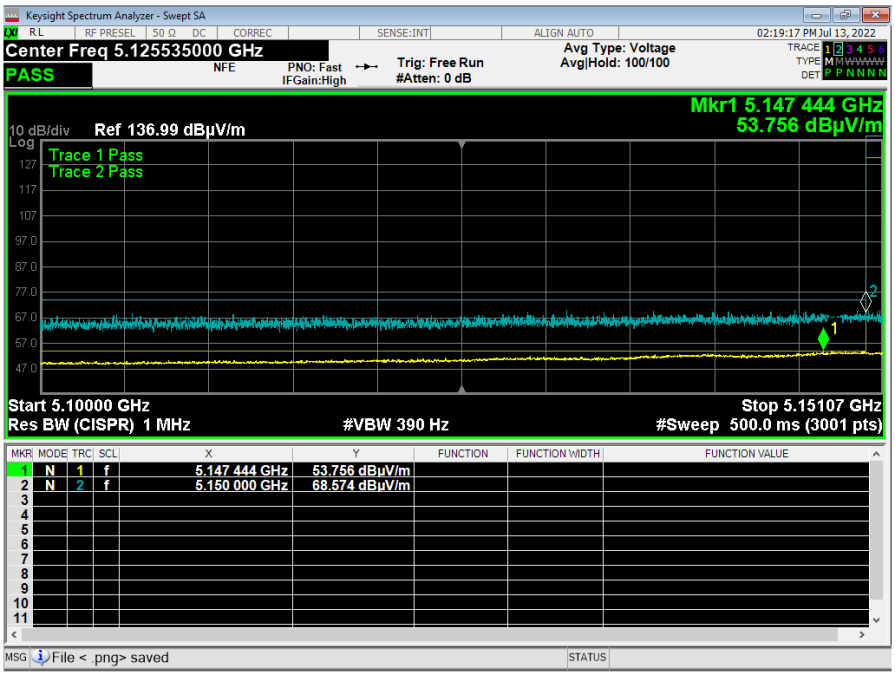


Figure 12: Band Edge HE80 5210 MHz

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.
Results of this testing are summarized.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Measured PSD
HE 20	5165	Mcs0	12	-8.89
HE 20	5200	Mcs0	40	5.82
HE 20	5240	Mcs0	48	9.73
HE 40	5175	Mcs0	18	-7.90
HE 40	5200	Mcs0	29	-2.73
HE 40	5230	Mcs0	39	2.57
HE 80	5195	Mcs0	17	-11.37
HE 80	5200	Mcs0	19	-10.24
HE 80	5210	Mcs0	22	-9.19

Result

The maximum summed average power spectral density was less than the limit of 17dBm; therefore, the EUT complies with the specification.

-- End of Test Report --