UNIFIED COMPLIANCE LABORATORY

427 West 12800 South
Draper, UT 84020

Test Report

Certification

FCC ID	SWX-U7PROM
ISED ID	6545A-U7PROM
Equipment Under Test	U7-Pro-Max
Test Report Serial Number	TR8788_02
Date of Test(s)	9 – 11, 18 January and 27 – 28 February 2024
Report Issue Date	12 March 2024

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	UBIQUITI
Model Number	U7-Pro-Max
FCC ID	SWX-U7PROM
ISED ID	6545A-U7PROM

On this 26th day of February 2024, 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: Evan J. Hartzell

Reviewed By: Richard L. Winter

Revision History		
Revision	**Description**	**Date**
01	Original Report Release	12 March 2024
02	Amended Section 5.4	28 March 2024

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1 Client Information

1.1 Applicant

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

1.2 Manufacturer

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

2 Equipment Under Test (EUT)

2.1 Identification of EUT

Brand Name	UBIQUITI
Model Number	U7-Pro-Max
Serial Number	1FB 64B
Dimensions (cm)	20.6 x 20.6 x 4.6

2.2 Description of EUT

The U7-Pro-Max is a PoE powered WiFi 7 access point with a 2.5 GbE PoE port. The U7-Pro-Max provides a 12.2 Gbps aggregate throughput rate. The U7-Pro-Max transmits in the 2.4 GHz, 5 GHz, and 6 GHz frequency bands and uses integral antennas and a dedicated spectral scanning radio. The U7-Pro-Max is powered by an 802.3at PoE power adapter. The U7-Pro-Max has a receiver York Scanner Module.

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

Band	WiFi Mode	Modulation Bandwidth	Modulation Type	Frequency (MHz)
UNII-1	a	20 MHz	OFDM	5180, 5200, 5210, 5240
	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: UBIQUITI MN: U7-Pro-Max SN: 1FB 64B	Access Point	PoE Input / Shielded
BN: UBIQUITI MN: GP-h480-065G SN: N/A	PoE Injector	PoE Output / Shielded Cat 5E to U7-Pro-Max, and Ethernet / unshielded Cat 5E to PC
BN: DELL	Laptop PC	Ethernet / un-shielded Cat 5E

MN: XPS 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
PoE Input	1	7m Shielded Cat 5E
PoE Output (PoE Injector)	1	7m Shielded Cat 5E to U7-Pro-Max PoE Input
LAN (PoE Injector)	1	unshielded Cat 5E to Laptop PC
AC (PoE Injector)	1	3 Conductor power cord to AC mains/80cm

2.5 Operating Environment

Power Supply	120 VAC
AC Mains Frequency	60 Hz
Temperature	20.6-23 °C
Humidity	14.85-23.86 %
Barometric Pressure	1012 mBar

2.6 Operating Modes

The U7-Pro-Max 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/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

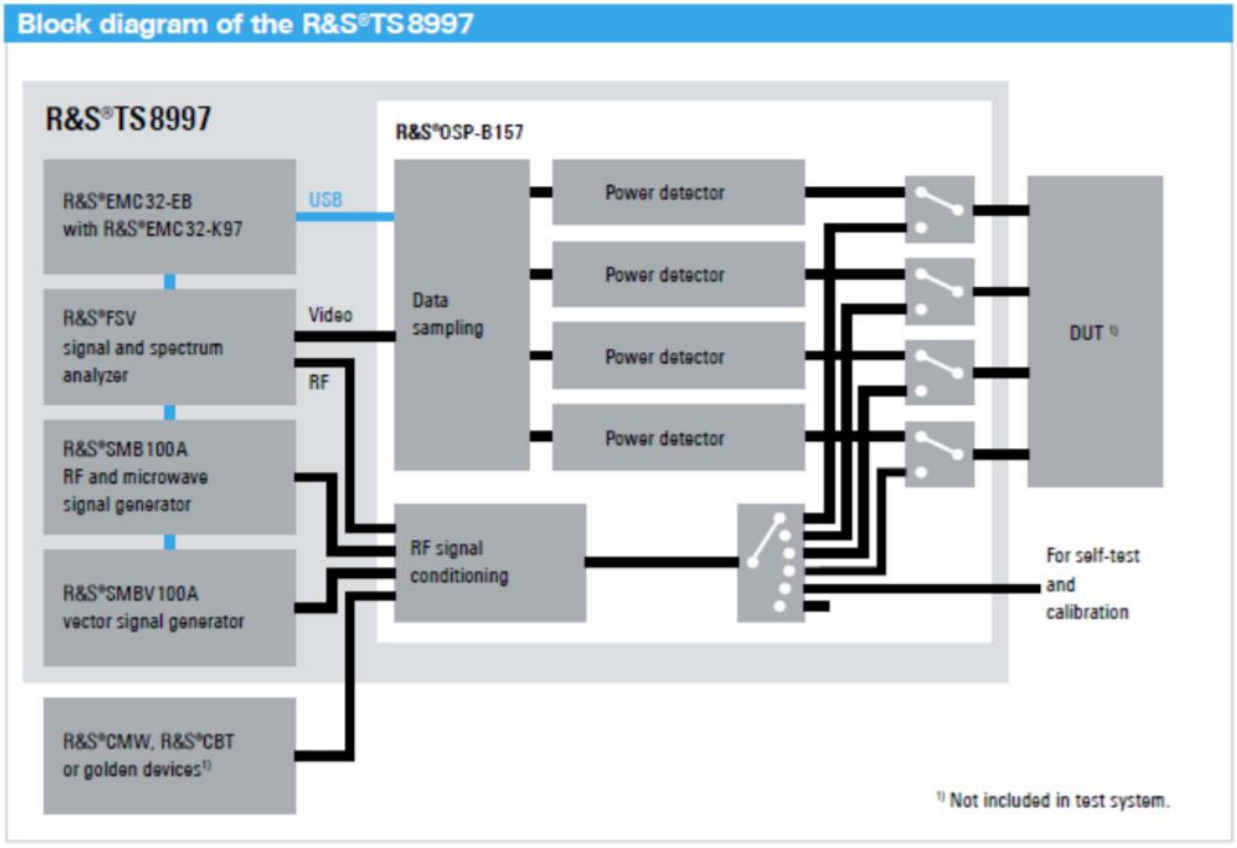


Diagram 1: Test Configuration Block Diagram

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 Located at 427 West 12800 South, Draper, UT 84020. Unified Compliance Laboratory is accredited by National Voluntary Laboratory Accreditation Program (NVLAP); NVLAP Code 600241-0 which is effective until 30 June 2024. This site has also been registered with Innovations, Science and Economic Development (ISED) department as was accepted under Appendix B, Phase 1 procedures of the APEC Tel MRA for Canadian recognition. ISED No.: 25346, effective until 30 June 2024.

Unified Compliance Laboratory has been assigned Designation Number US5037 by the FCC and Conformity Assessment Number US0223 by ISED.

4 Test Equipment

4.1 Conducted Emissions at Mains Ports

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
EMI Receiver	AFJ	FFT3010	UCL-2500	7/13/2023	7/13/2024
LISN	AFJ	LS16C/10	UCL-2512	5/26/2023	5/26/2024
ISN	Teseq	ISN T800	UCL-2974	6/27/2022	6/27/2024
LISN	Com-Power	LIN-120C	UCL-2612	1/24/2023	1/24/2024
AC Power Source	Laplace Instruments	AC1000A	UCL-2857	N/A	N/A
Test Software	UCL	Revision 1	UCL-3107	N/A	N/A

Table 1: List of equipment used for Conducted Emissions Testing at Mains Port

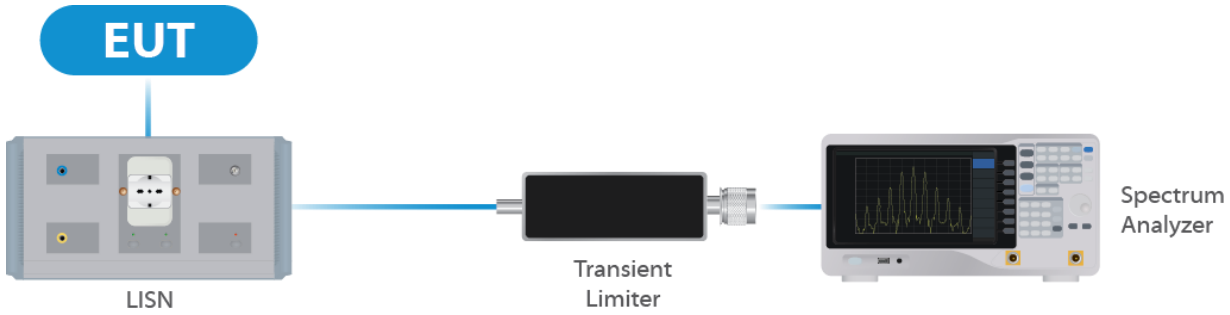


Figure 1: Conducted Emissions Test

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	11/27/2023	11/27/2024
Signal Generator	R&S	SMB100A	UCL-2864	N/A	N/A
Vector Signal Generator	R&S	SMBV100A	UCL-2873	N/A	N/A
Switch Extension	R&S	OSP-B157WX	UCL-2867	2/22/2023	2/22/2024
Switch Extension	R&S	OSP-150W	UCL-2870	2/22/2023	2/22/2024

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

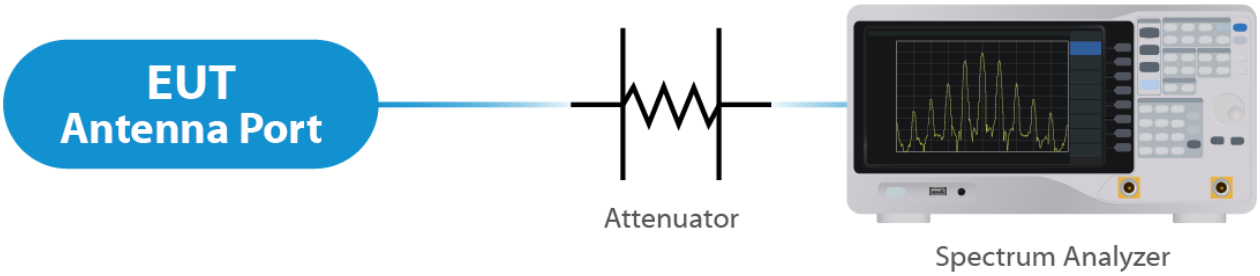


Figure 2: Direct Connect at the Antenna Port Test

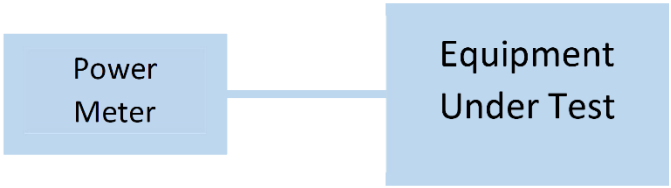


Figure 3: Output Power Measurement

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	1/27/2023	1/27/2024
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	1/19/2024	1/19/2026
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3062	2/22/2023	2/22/2025
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3071	1/11/2023	1/11/2025
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	9/22/2022	9/22/2024
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	1/27/2023	1/27/2025
15 - 40 GHz Horn Antenna	Scwarzbeck	BBHA 9170	UCL-2487	6/09/2022	6/09/2024
1 – 18 GHz Amplifier	Com-Power	PAM 118A	UCL-3833	1/19/2024	1/19/2026
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 3: List of equipment used for Radiated Emissions

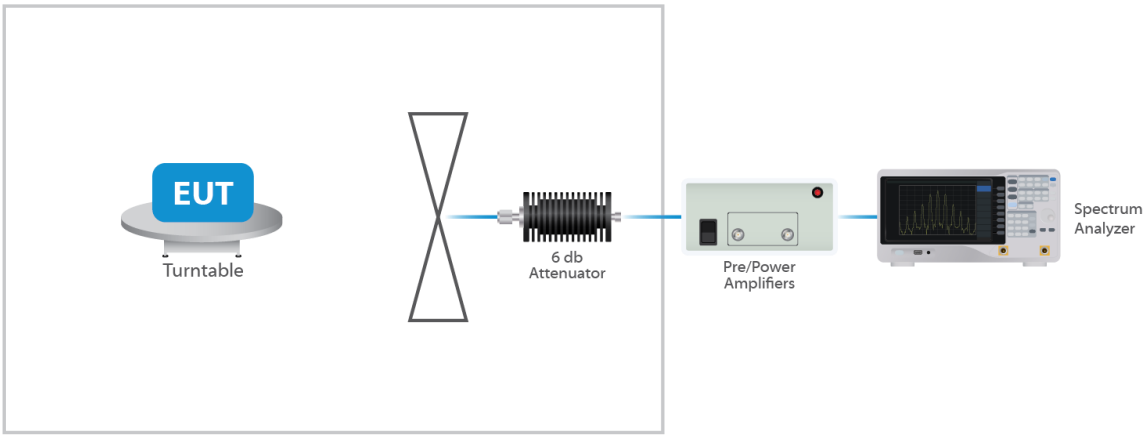


Figure 4: Radiated Emissions Test

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 integrated antenna structure. Per the manufacturer, the Maximum gain of the antenna per chain 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 CDD transmissions, directional gain is calculated as follows.

Array Gain = 10 log(NANT/NSS) dB
NANT = number of transmit antennas and
NSS = number of spatial streams. NSS = 1 considered worst case.

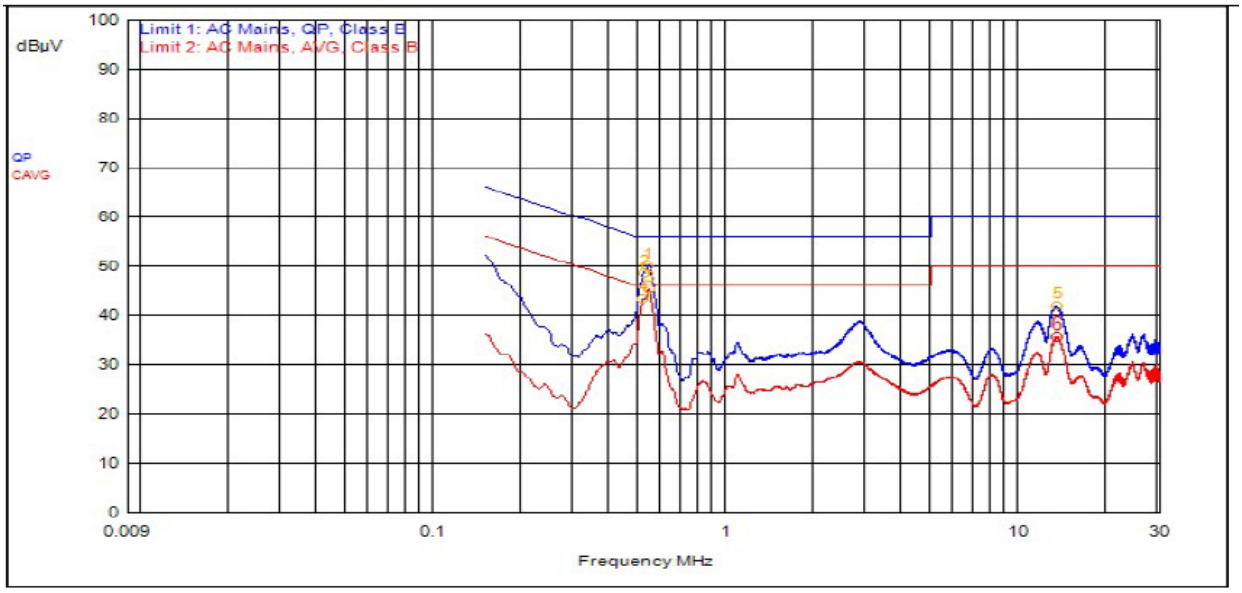
For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for NANT ≤ 4;
For PSD measurements when Nss=1: Array Gain = 10 log(NANT/NSS) dB + Antenna Gain (dBi). Or 6.02 dB + 6 dBi = 12.02 dBi.

Results

The EUT complied with the specification

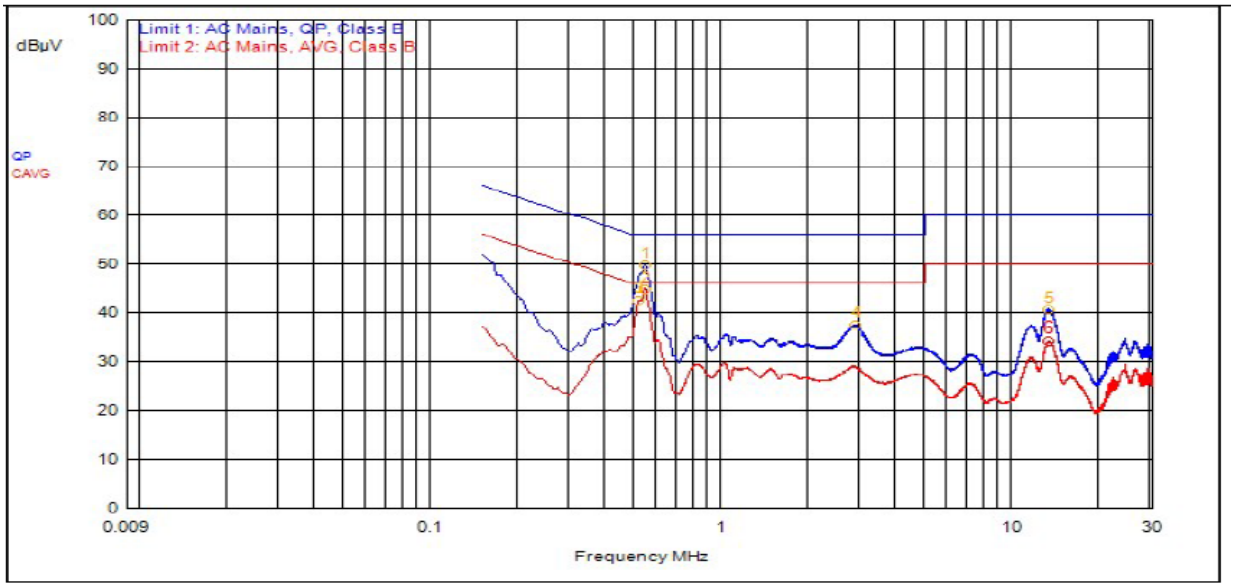
5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.	P/F
MU	MHz	dB	dB	dB	Type	dBµV	dBµV	dBµV	dB	dBµV	dB	P/F
1	537,000kHz	12.41	0.00		QPeak	37.70	50.11	56.00	-5.89			
2	519,000kHz	12.42	0.00		QPeak	36.28	48.70	56.00	-7.30			
5	13.263	12.40	0.20		QPeak	29.24	41.84	60.00	-18.16			
3	540,000kHz	12.41	0.00		C_AVG	32.82	45.23			46.00	-0.77	
4	516,000kHz	12.42	0.00		C_AVG	30.97	43.39			46.00	-2.61	
6	13.320	12.41	0.20		C_AVG	22.93	35.54			50.00	-14.46	

5.2.2 Neutral



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.	P/F
MU	MHz	dB	dB	dB	Type	dBµV	dBµV	dBµV	dB	dBµV	dB	P/F
1	540,000kHz	12.42	0.00		QPeak	37.28	49.70	56.00	-6.30			
4	2.862	12.29	0.10		QPeak	25.08	37.47	56.00	-18.53			
5	13.215	12.43	0.20		QPeak	28.02	40.65	60.00	-19.35			
2	543,000kHz	12.42	0.00		C_AVG	32.44	44.86			46.00	-1.14	
3	516,000kHz	12.43	0.00		C_AVG	30.17	42.60			46.00	-3.40	
6	13.200	12.42	0.20		C_AVG	21.42	34.04			50.00	-15.96	

Result

The EUT complied with the specification limit.

5.3 §15.403(i) 26 dB Emissions Bandwidth

Nominal BW (MHz)	Frequency (MHz)	99% Bandwidth (MHz)	Emissions 26 dB Bandwidth (MHz)
ax 20 MHz	5180	19.10	23.20
ax 20 MHz	5210	19.20	36.30
ax 20 MHz	5240	20.20	53.00
ax 40 MHz	5190	38.25	43.65
ax 40 MHz	5230	38.25	42.75
ax 80 MHz	5210	78.00	139.00

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 29.33 dBm or 857.04 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 6 dBi.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured EIRP	Measured PSD
a 20 MHz	5180	Mcs0_Nss4	21	25.10	31.10	10.08
a 20 MHz	5210	Mcs0_Nss4	24	27.90	33.90	12.85
a 20 MHz	5240	Mcs0_Nss4	26	29.28	35.28	14.21
ax 20 MHz	5180	Mcs0_Nss4	19	23.21	29.21	7.65
ax 20 MHz	5210	Mcs0_Nss4	24	27.94	33.94	5.22
ax 20 MHz	5240	Mcs0_Nss4	26	29.33	35.33	13.76
ax 40 MHz	5190	Mcs0_Nss4	17	21.27	27.27	2.94
ax 40 MHz	5230	Mcs0_Nss4	22	26.26	32.26	7.40
ax 80 MHz	5210	Mcs0_Nss4	17	20.98	26.98	-0.54

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured EIRP	Measured PSD
a 20 MHz	5180	Mcs0_Nss1	21	25.10	31.10	10.08
a 20 MHz	5210	Mcs0_Nss1	22	25.90	31.90	10.85
a 20 MHz	5240	Mcs0_Nss1	22	25.28	31.28	10.21
ax 20 MHz	5180	Mcs0_Nss1	19	23.21	29.21	7.65
ax 20 MHz	5210	Mcs0_Nss1	24	27.94	33.94	5.22
ax 20 MHz	5240	Mcs0_Nss1	23	26.33	32.33	10.76
ax 40 MHz	5190	Mcs0_Nss1	17	21.27	27.27	2.94
ax 40 MHz	5230	Mcs0_Nss1	22	26.26	32.26	7.40
ax 80 MHz	5210	Mcs0_Nss1	17	20.98	26.98	-0.54

Result

In the configuration tested, the maximum summed average RF output power was less than 1 watt; 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 6 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

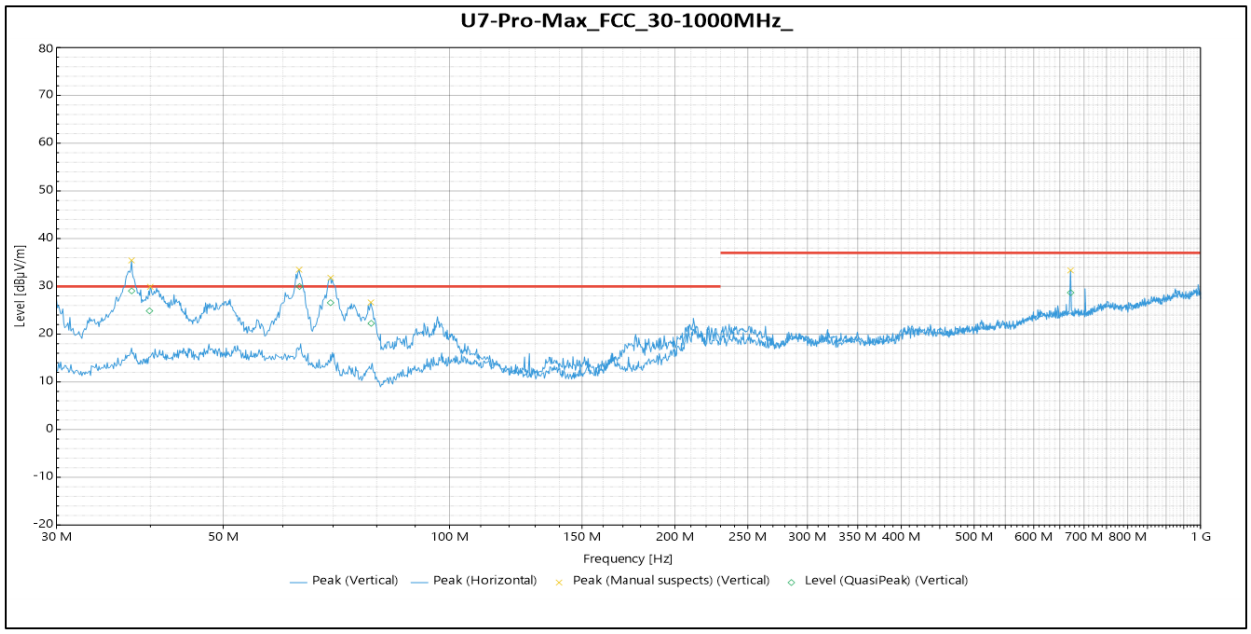
The EUT uses various power settings based on the channel in use. In order to reduce test time, the radiated spurious emissions at the lowest, middle, and highest channel were measured at the maximum power of TP30, as this setting was found to be worst case for spurious emissions. Power was subsequently reduced during in-band and band edge testing. The band edge at the restricted band ending at 5240 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

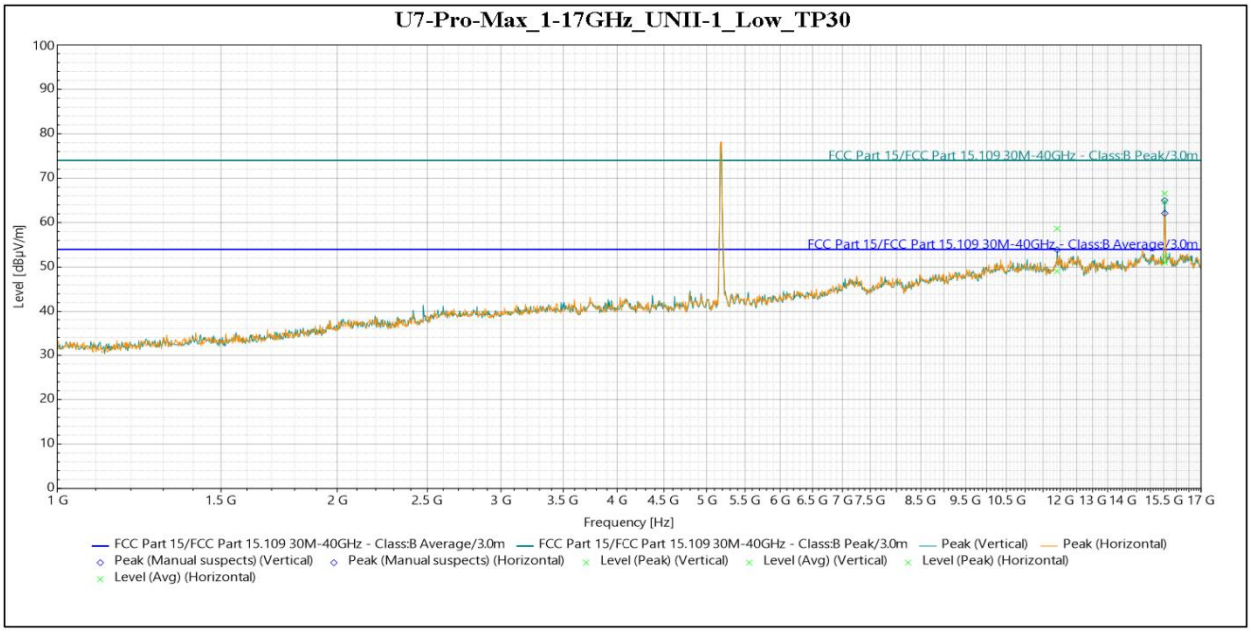
All emissions in the restricted bands of § 15.205 met the limits specified in § 15.209; therefore, the EUT complies with the specification. All emissions me the limits specified in § 15.407(b). Representative band edge plots are included in this report.

EUT



Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
37.769 MHz	29.054	30	-0.946	215	1.821	Vertical	-14.696
39.89 MHz	24.87	30	-5.13	75	1.108	Vertical	-13.531
63.164 MHz	29.972	30	-0.028	123	3.455	Vertical	-14.834
69.458 MHz	26.573	30	-3.427	99	3.459	Vertical	-16.754
78.66 MHz	22.249	30	-7.751	272	3.715	Vertical	-19.447
671.8 MHz	28.679	37	-8.321	77	2.965	Vertical	-6.121
No Significant Emissions Were Observed in the Horizontal Orientation of the Antenna							

Table 4: Radiated Emissions 30 – 1000 MHz



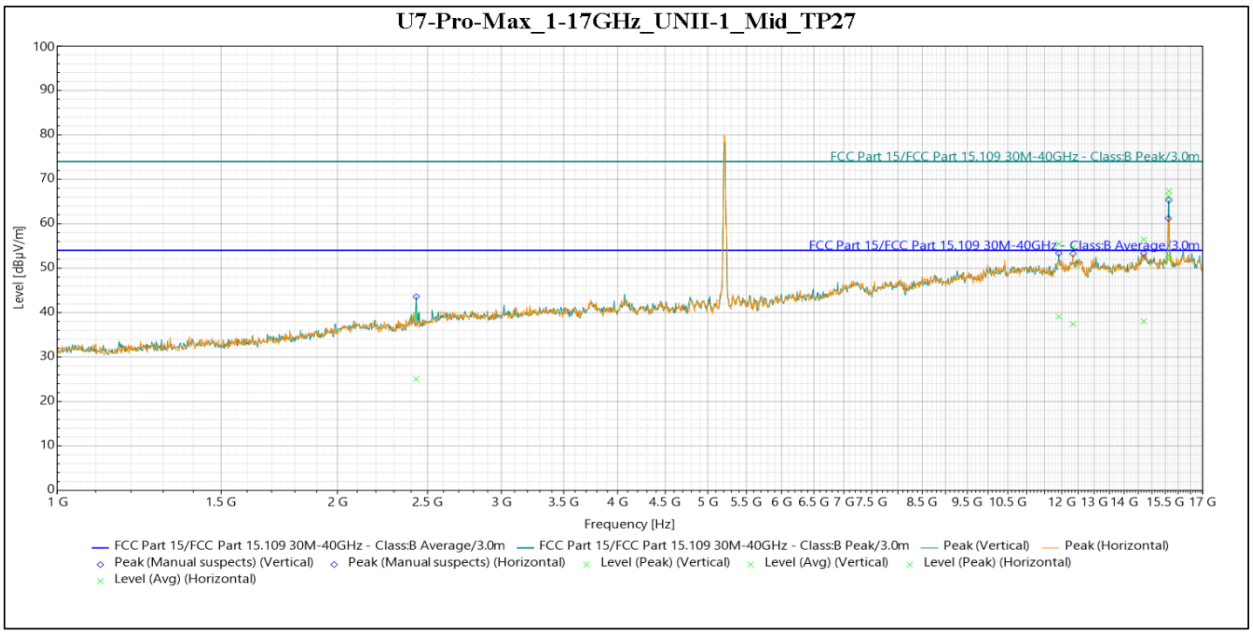
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.91 GHz	58.654	74	-15.346	349	1.638	Vertical	16.544
15.539 GHz	66.546	74	-7.454	28	1.643	Vertical	15.887
15.543 GHz	64.769	74	-9.231	19	2	Horizontal	15.873

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.91 GHz	49.066	54	-4.934	349	1.638	Vertical	16.544
15.539 GHz	52.375	54	-1.625	28	1.643	Vertical	15.887
15.543 GHz	51.028	54	-2.972	19	2	Horizontal	15.873

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



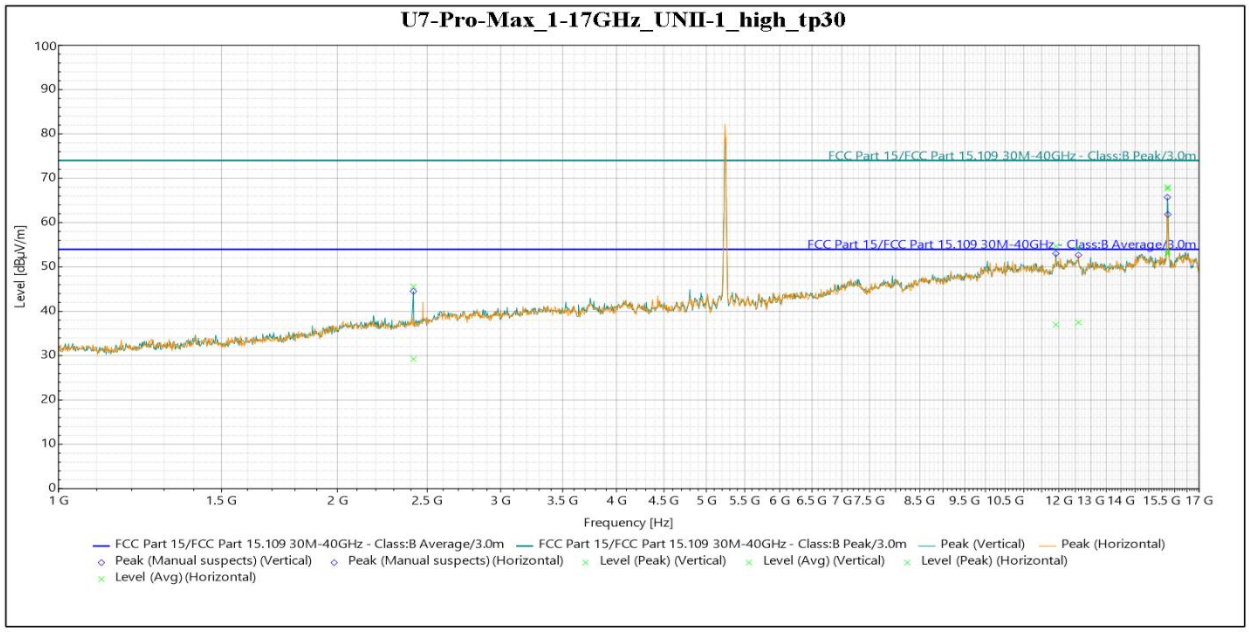
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
2.4307 GHz	39.477	74	-34.523	170	2.181	Vertical	-3.481
11.91 GHz	55.439	74	-18.561	3	2.747	Vertical	16.544
15.638 GHz	67.369	74	-6.631	37	2	Vertical	15.878
12.337 GHz	54.733	74	-19.267	74	3.798	Horizontal	16.601
14.697 GHz	56.449	74	-17.551	176	2.902	Horizontal	17.425
15.621 GHz	66.264	74	-7.736	41	2.539	Horizontal	15.785

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
2.4307 GHz	25.074	54	-28.926	170	2.181	Vertical	-3.481
11.91 GHz	39.115	54	-14.885	3	2.747	Vertical	16.544
15.638 GHz	52.803	54	-1.197	37	2	Vertical	15.878
12.337 GHz	37.435	54	-16.565	74	3.798	Horizontal	16.601
14.697 GHz	38.063	54	-15.937	176	2.902	Horizontal	17.425

Table 6: Transmitting on the Middle Frequency 5210 MHz



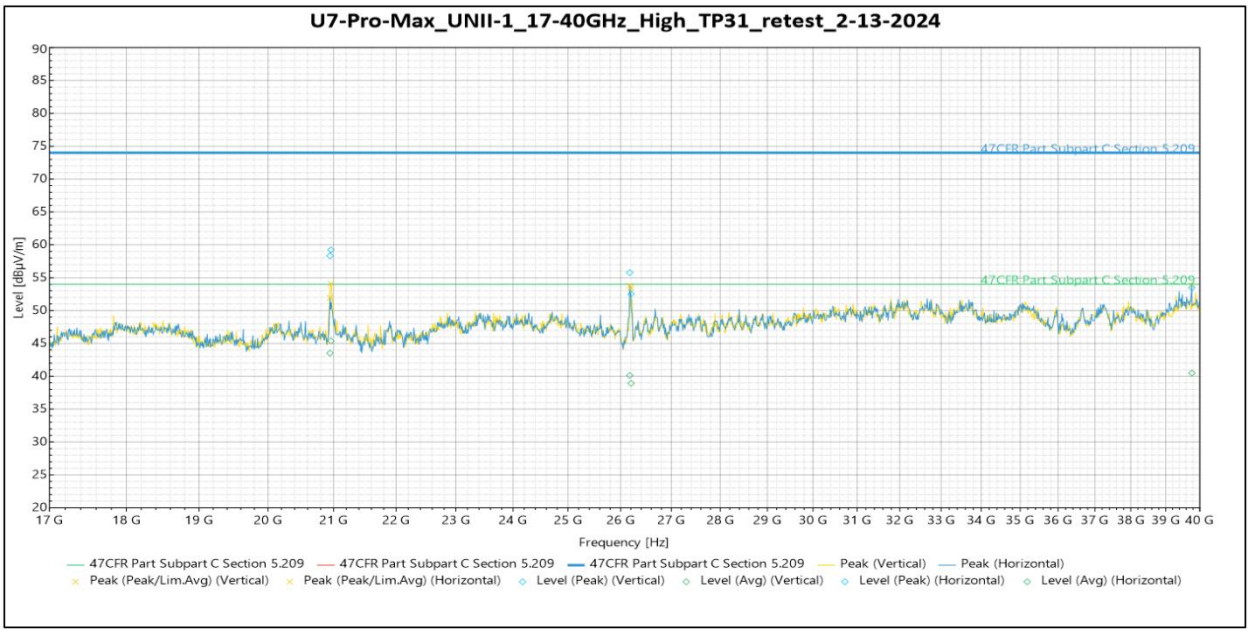
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
2.4154 GHz	45.603	74	-28.397	333	1.5	Vertical	-3.423
11.91 GHz	54.709	74	-19.291	263	3.096	Vertical	16.544
15.713 GHz	67.666	74	-6.334	35	2.539	Vertical	16.107
12.6 GHz	54.32	74	-19.68	193	3.803	Horizontal	16.774
15.729 GHz	67.993	74	-6.007	23	2.721	Horizontal	15.974

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
2.4154 GHz	29.25	54	-24.75	333	1.5	Vertical	-3.423
11.91 GHz	36.973	54	-17.027	263	3.096	Vertical	16.544
15.713 GHz	52.971	54	-1.029	35	2.539	Vertical	16.107
12.6 GHz	37.45	54	-16.55	193	3.803	Horizontal	16.774
15.729 GHz	53.365	54	-0.635	23	2.721	Horizontal	15.974

Table 7: Transmitting on the Highest Frequency 5240 MHz



Peak

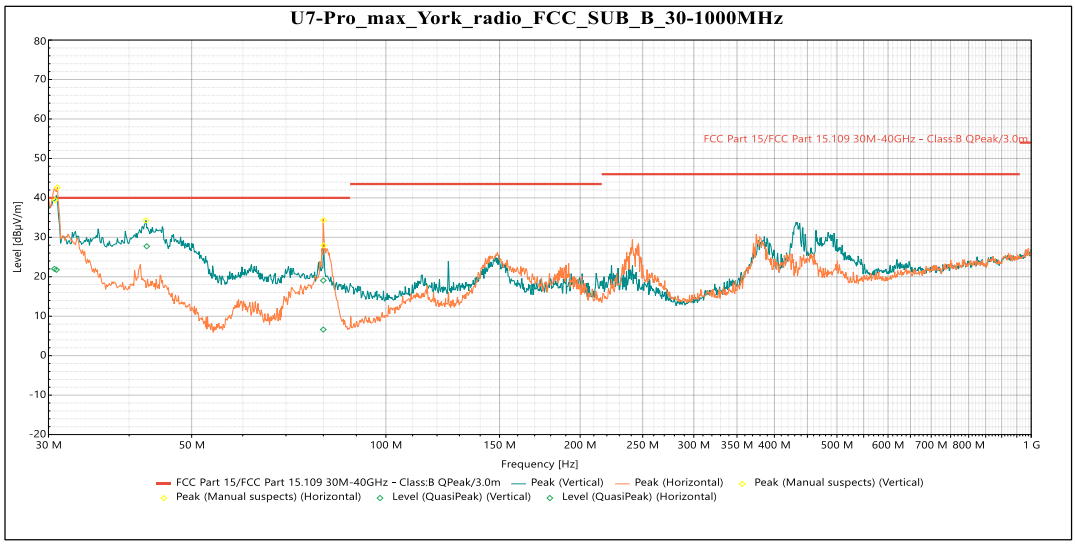
Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
20.959 GHz	59.233	74	-14.767	81	Vertical	-0.258
26.202 GHz	52.52	74	-21.48	29	Vertical	-0.391
20.944 GHz	58.333	74	-15.667	49	Horizontal	-0.499
26.176 GHz	55.768	74	-18.232	101	Horizontal	-0.038
39.763 GHz	53.484	74	-20.516	65	Horizontal	1.907

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
20.959 GHz	45.383	54	-8.617	81	Vertical	-0.258
26.202 GHz	38.916	54	-15.084	29	Vertical	-0.391
20.944 GHz	58.333	74	-15.667	49	Horizontal	-0.499
26.176 GHz	55.768	74	-18.232	101	Horizontal	-0.038
39.763 GHz	53.484	74	-20.516	65	Horizontal	1.907

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

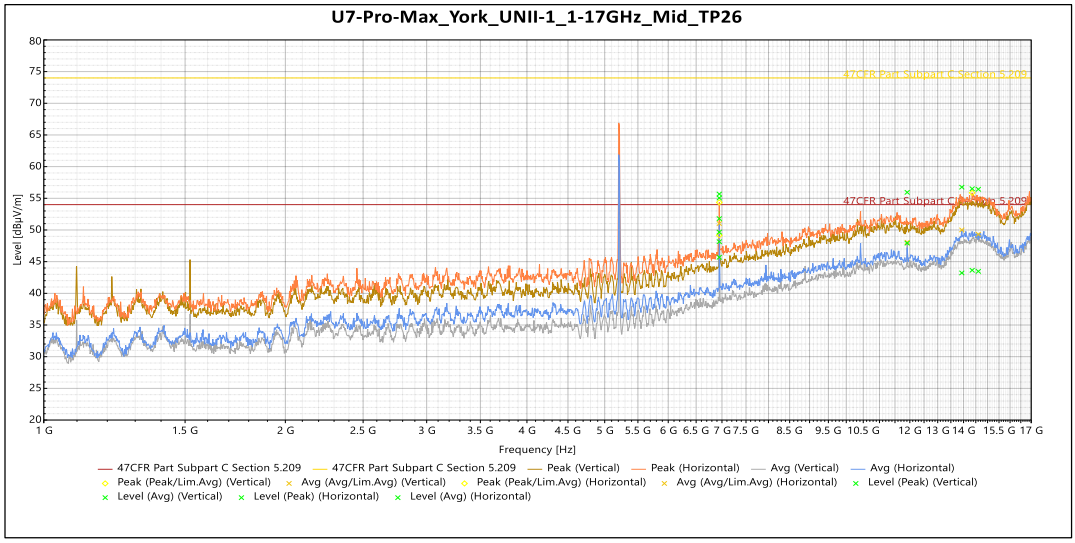
York Module



QuasiPeak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
30.64 MHz	22.014	40	-17.986	307	1.128	Vertical	-8.155
42.595 MHz	27.726	40	-12.274	36	1.132	Vertical	-16.243
79.988 MHz	19.05	40	-20.95	289	2.207	Vertical	-20.517
30.865 MHz	21.773	40	-18.227	265	3.65	Horizontal	-8.335
79.98 MHz	6.624	40	-33.376	296	3.868	Horizontal	-20.517

Table 9: Radiated Emissions 30 – 1000 MHz



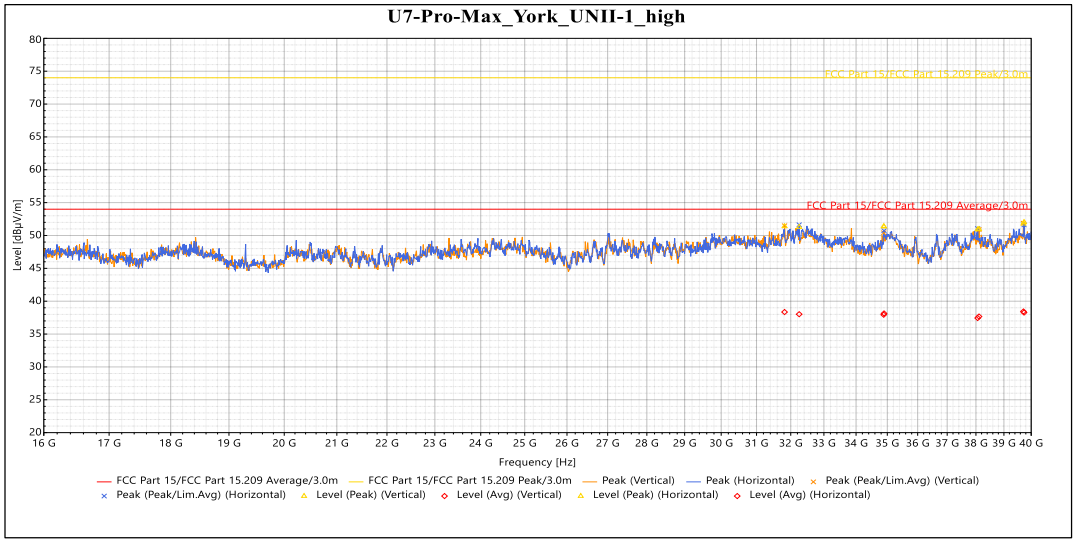
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
6.9467 GHz	51.788	74	-22.212	152	2.828	Vertical	-0.678
11.91 GHz	55.939	74	-18.061	116	2.339	Vertical	8.285
14.608 GHz	56.426	74	-17.574	180	4	Vertical	11.587
6.9467 GHz	55.05	74	-18.95	83	2.639	Horizontal	-0.678
6.9471 GHz	55.666	74	-18.334	79	2.339	Horizontal	-0.675
13.931 GHz	56.756	74	-17.244	318	1.63	Horizontal	11.01
14.351 GHz	56.511	74	-17.489	351	3.142	Horizontal	11.877

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
6.9467 GHz	45.687	54	-8.313	152	2.828	Vertical	-0.678
11.91 GHz	47.916	54	-6.084	116	2.339	Vertical	8.285
14.608 GHz	43.474	54	-10.526	180	4	Vertical	11.587
6.9467 GHz	49.663	54	-4.337	83	2.639	Horizontal	-0.678
6.9471 GHz	48.15	54	-5.85	79	2.339	Horizontal	-0.675
13.931 GHz	43.217	54	-10.783	318	1.63	Horizontal	11.01
14.351 GHz	43.637	54	-10.363	351	3.142	Horizontal	11.877

Table 10: Radiated Emissions 1 – 17 GHz on the Middle Frequency (worse case)



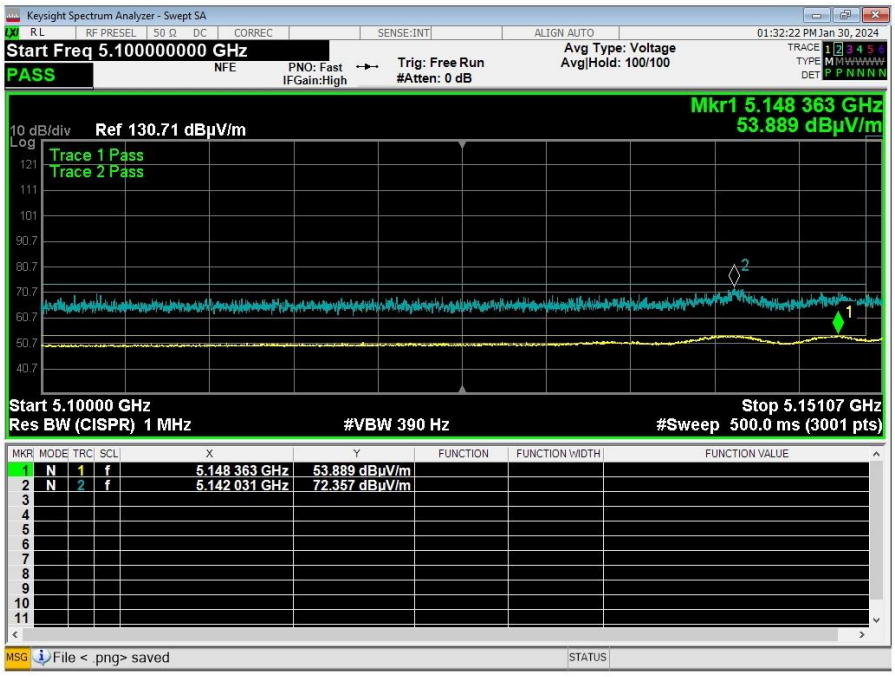
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
31.8173883 GHz	51.401	74	-22.599	30	Vertical	1.962
34.8840335 GHz	51.402	74	-22.598	273	Vertical	3.033
38.1087059 GHz	50.983	74	-23.017	70	Vertical	3.313
39.7134684 GHz	51.804	74	-22.196	247	Vertical	2.874
32.2517426 GHz	51.281	74	-22.719	6	Horizontal	1.531
34.8938577 GHz	51.343	74	-22.657	341	Horizontal	3.333
38.0615728 GHz	50.932	74	-23.068	153	Horizontal	3.252
39.7349193 GHz	52.032	74	-21.968	156	Horizontal	2.852

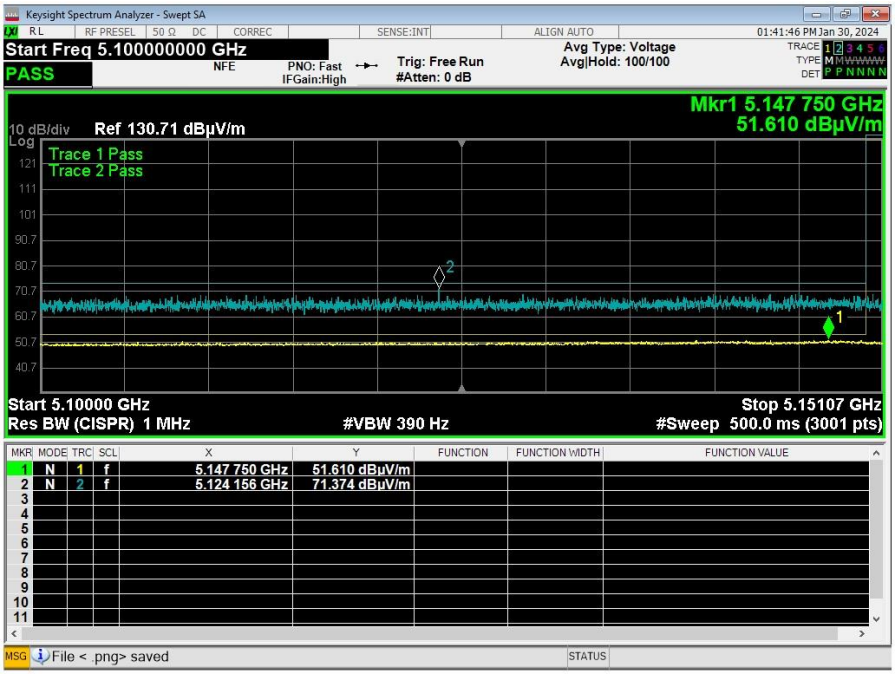
Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
31.8173883 GHz	38.351	54	-15.649	30	Vertical	1.962
34.8840335 GHz	37.942	54	-16.058	273	Vertical	3.033
38.1087059 GHz	37.673	54	-16.327	70	Vertical	3.313
39.7134684 GHz	38.444	54	-15.556	247	Vertical	2.874
32.2517426 GHz	38.021	54	-15.979	6	Horizontal	1.531
34.8938577 GHz	38.143	54	-15.857	341	Horizontal	3.333
38.0615728 GHz	37.442	54	-16.558	153	Horizontal	3.252
39.7349193 GHz	38.272	54	-15.728	156	Horizontal	2.852

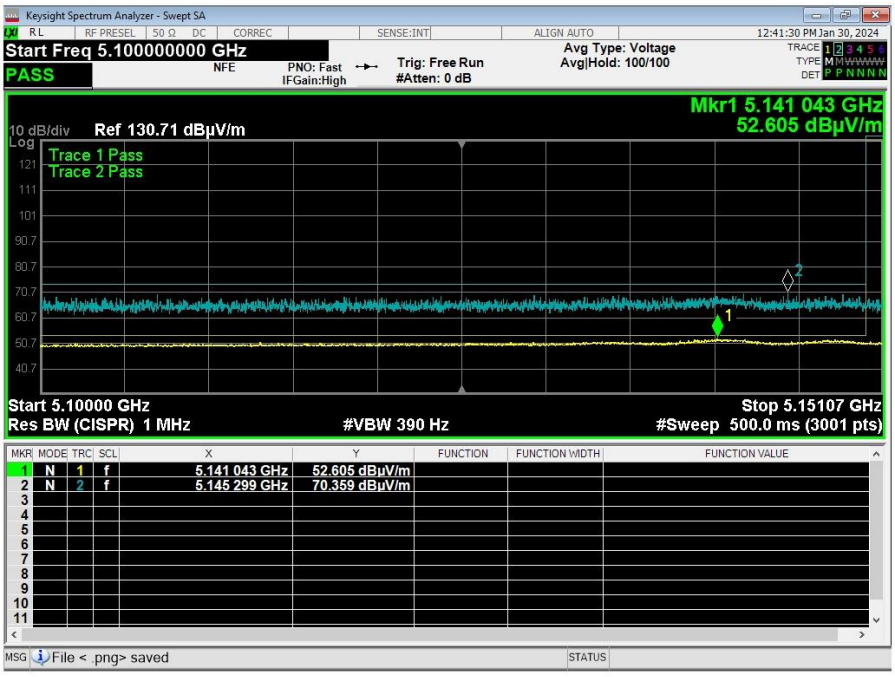
Table 11: Radiated Emissions 17 – 40 GHz on the Highest Frequency (worse case)



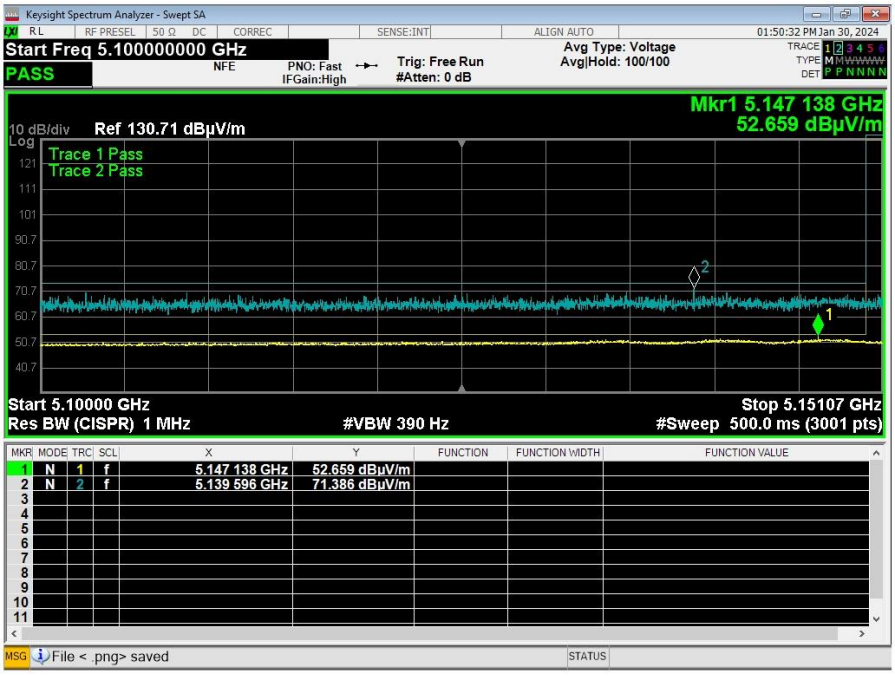
Graph 12: Band Edge a Mode 20 MHz, 5180 MHz



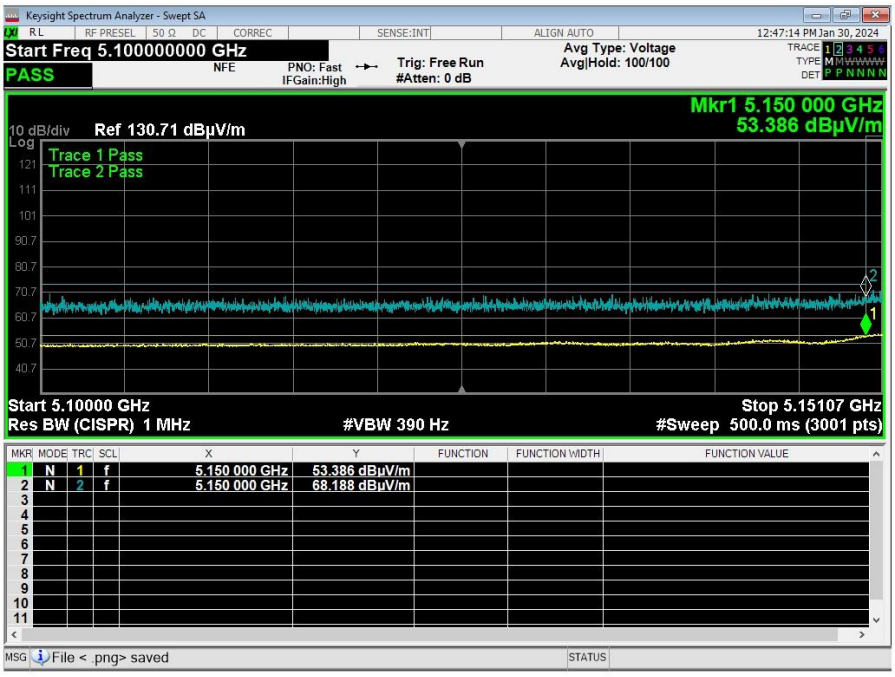
Graph 13: Band Edge a Mode 20 MHz, 5240 MHz



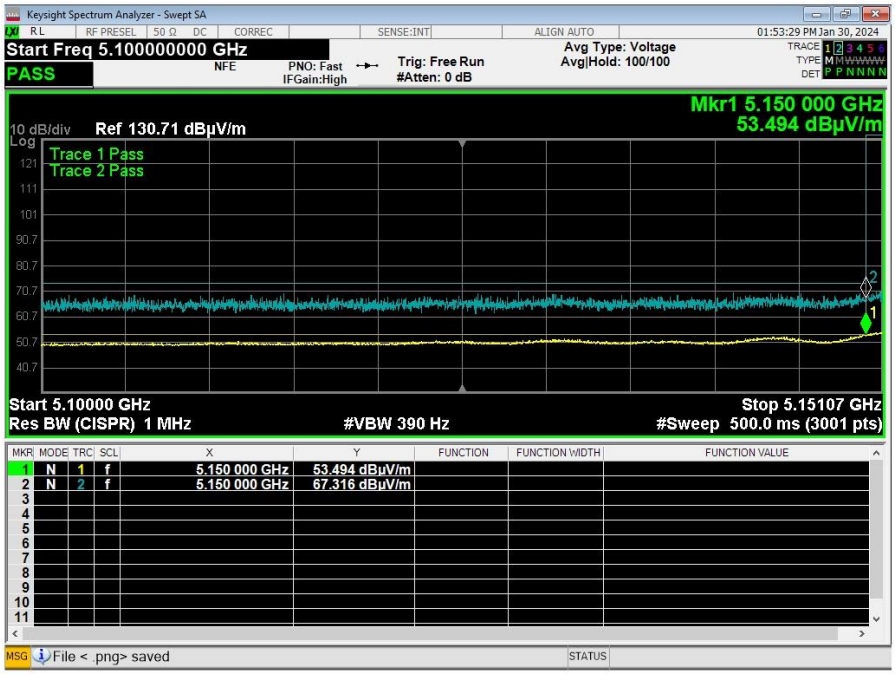
Graph 14: Band Edge ax Mode 20 MHz, 5180 MHz



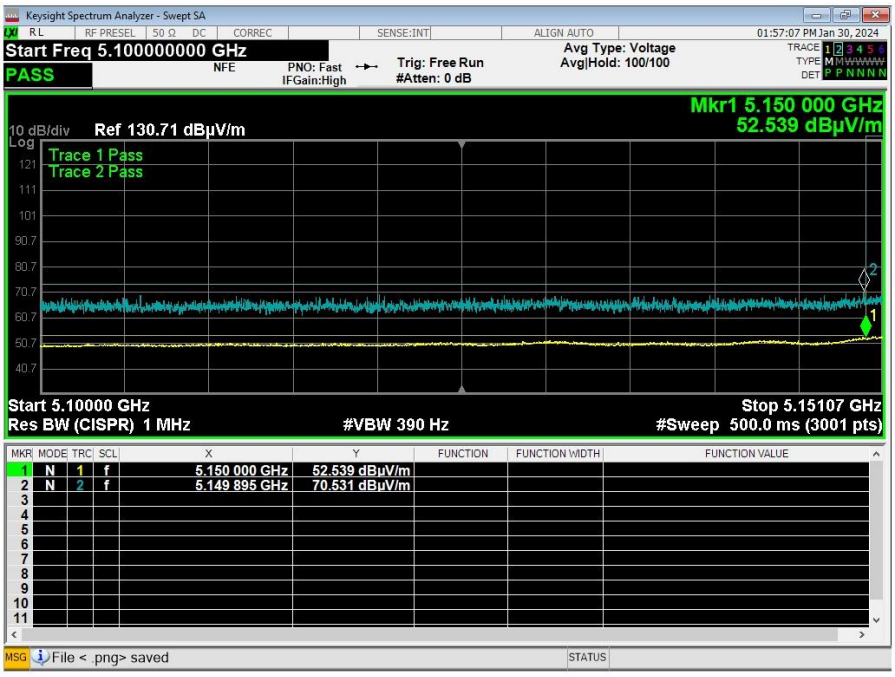
Graph 15: Band Edge ax Mode 20 MHz, 5240 MHz



Graph 16: Band Edge ax Mode 40 MHz, 5190 MHz



Graph 17: Band Edge ax Mode 40 MHz, 5230 MHz



Graph 18: Band Edge ax Mode 80 MHz, 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. Results of this testing are summarized.
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 6 dBi + Array gain of 6.02 dB which is a total of 12.02 dBi.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Measured PSD
a 20 MHz	5180	Mcs0_Nss4	21	10.08
a 20 MHz	5210	Mcs0_Nss4	24	12.85
a 20 MHz	5240	Mcs0_Nss4	26	14.21
ax 20 MHz	5180	Mcs0_Nss4	19	7.65
ax 20 MHz	5210	Mcs0_Nss4	24	5.22
ax 20 MHz	5240	Mcs0_Nss4	26	13.76
ax 40 MHz	5190	Mcs0_Nss4	17	2.94
ax 40 MHz	5230	Mcs0_Nss4	22	7.40
ax 80 MHz	5210	Mcs0_Nss4	17	-0.54

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Measured PSD
a 20 MHz	5180	Mcs0_Nss1	21	10.08
a 20 MHz	5210	Mcs0_Nss1	22	10.85
a 20 MHz	5240	Mcs0_Nss1	22	10.21
ax 20 MHz	5180	Mcs0_Nss1	19	7.65
ax 20 MHz	5210	Mcs0_Nss1	24	5.22
ax 20 MHz	5240	Mcs0_Nss1	23	10.76
ax 40 MHz	5190	Mcs0_Nss1	17	2.94
ax 40 MHz	5230	Mcs0_Nss1	22	7.40
ax 80 MHz	5210	Mcs0_Nss1	17	-0.54

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 --