UNIFIED COMPLIANCE LABORATORY

427 West 12800 South
Draper, UT 84020

Test Report

Certification

FCC ID	SWX-U7PRO
IC ID	6545A-U7PRO
Equipment Under Test	U7-Pro
Test Report Serial Number	TR8580_01
Date of Tests	8 September and 4-5, 16-17 October 2023
Report Issue Date	24 October 2023

Test Specification	Applicant
47 CFR FCC Part 15, Subpart C RSS-GEN Issue 5	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

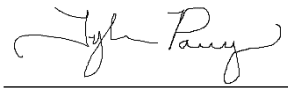
This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart C. This report may be reproduced in full. Partial reproduction of this report may only be made with 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
FCC ID	SWX-U7PRO
IC ID	6545A-U7PRO

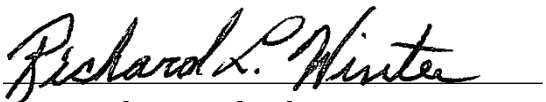
On this 24th day of October 2023, I individually and for Unified Compliance Laboratory certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge and are made in good faith.

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: Tyler Parry



Reviewed By: Richard L. Winter

Revision History		
Revision	**Description**	**Date**
01	Original Report Release	24 October 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

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
Serial Number	9AZ 003
Dimensions (cm)	20.6 x 20.6 x 4.6

2.2 Description of EUT

The U7-Pro is a PoE powered WiFi 7 access point with a 2.5 GbE PoE port. The U7-Pro provides a 9.3 Gbps aggregate throughput rate. The U7-Pro transmits in the 2.4 GHz, 5 GHz and 6 GHz frequency bands and uses integrated antennas. The U7-Pro is powered from an 802.3at PoE power adapter.

This report covers the circuitry of the device subject to FCC Part 15, Subpart C. 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 SN: 9AZ 003	Access Point	PoE Input / Shielded Cat 5E cable
BN: UBIQUITI MN: GP-h480-065G SN: N/A	PoE Injector	PoE Output / Shielded Cat 5E to U7-Pro, and Ethernet / unshielded Cat 5E to PC
BN: DELL MN: XPS SN: N/A	Laptop PC	Ethernet / un-shielded Cat 5E

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 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	22.4 – 25.3 °C
Humidity	28.3 – 33.5 %
Barometric Pressure	1019 mBar

2.6 Operating Modes

The U7-Pro was connected to a personal computer laptop and tested using test software in order to enable constant duty cycle greater than or equal to 98% of the Wi-Fi transceiver. All emission modes of 802.11 b/g/n/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

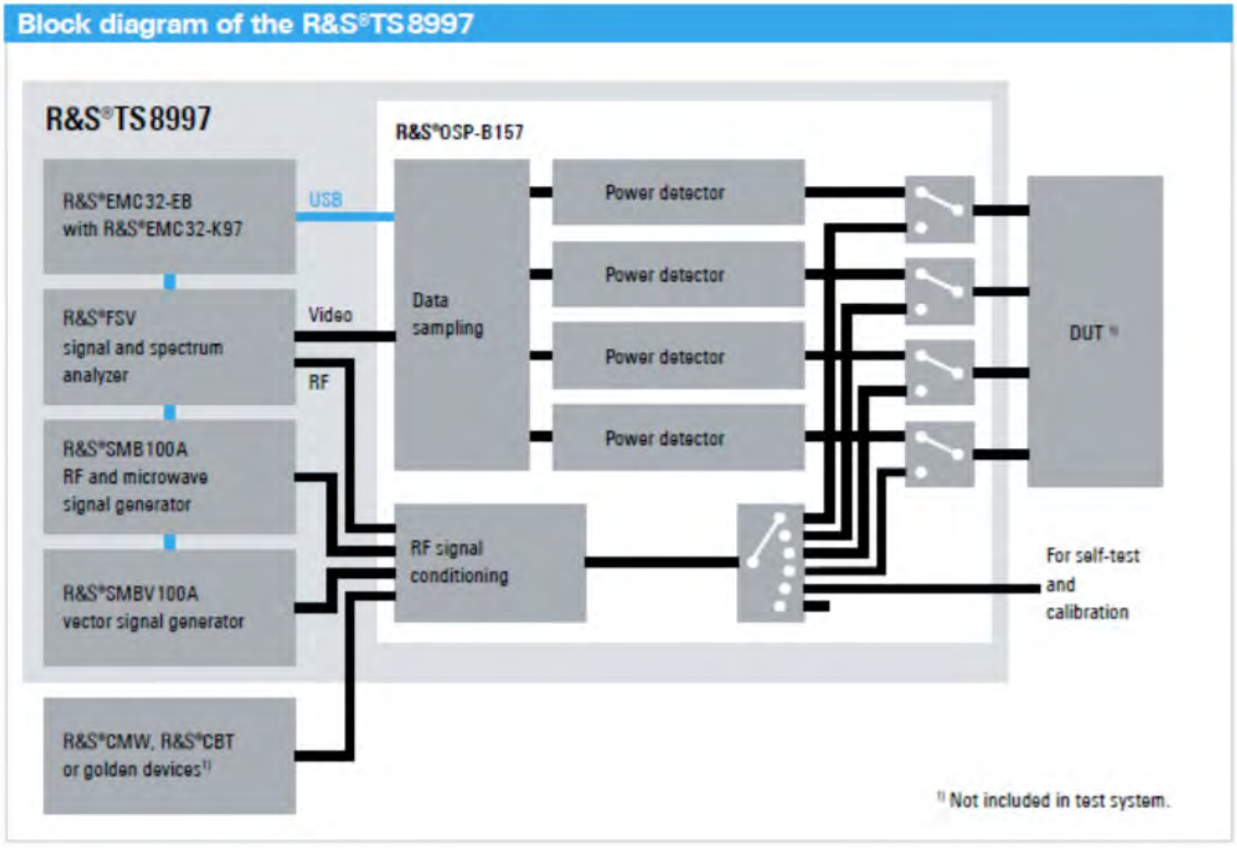


Diagram 1: Test Configuration Block Diagram

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 C 15.203, 15.207 and 15.247 Limits and methods of measurement of radio interference characteristics of radio frequency 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 15.203

See test standard for details.

3.2.2 47 CFR FCC Part 15 Section 15.207

See test standard for details.

3.2.3 47 CFR FCC Part 15 Section 15.247

See test standard for details.

3.3 FCC Part 15, Subpart C

3.3.1 Summary of Tests

FCC Section	ISED Section	Environmental Phenomena	Frequency Range (MHZ)	Result
15.203	N/A	Antenna requirements	Structural Requirement	Compliant
15.207	RSS-Gen	Conducted Disturbance at Mains Port	0.15 to 30	Compliant
15.247(a)	RSS-247 § 5.2	Bandwidth Requirement	2412 to 2462	Compliant
15.247(b)	RSS-247 § 5.4	Peak Output Power	2412 to 2462	Compliant
15.247(d)	RSS-247 § 5.4	Antenna Conducted Spurious Emissions	0.009 to 26000	N/A
15.247(d)	RSS-247 § 5.4	Radiated Spurious Emissions	0.009 to 26000	Compliant
15.247(e)	RSS-247 § 5.2	Peak Power Spectral Density	2412 to 2462	Compliant
The testing was performed according to the procedures in ANSI C63.10-2013, KDB 558074 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 and 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-6754	2/22/2023	2/22/2024
LISN	AFJ	LS16C/10	UCL-6749	12/6/2021	12/6/2023
ISN	Teseq	ISN T800	UCL-2974	6/27/203	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

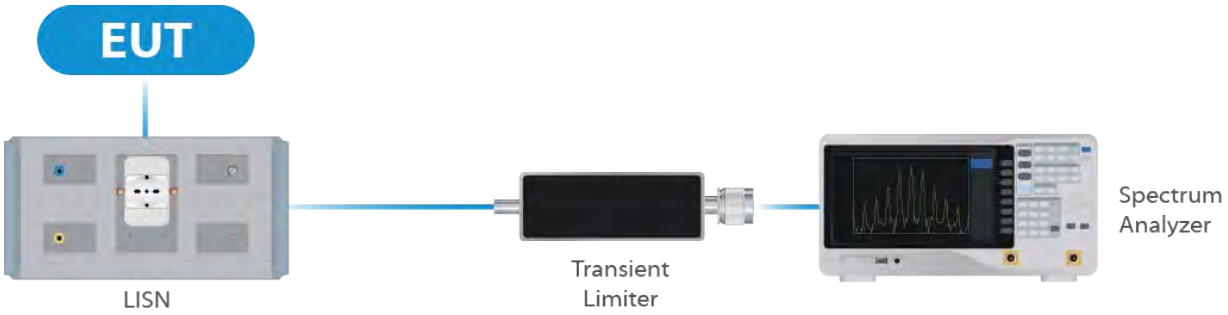


Figure 1: Conducted Emissions Test

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	11/7/2022	11/7/2023
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	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

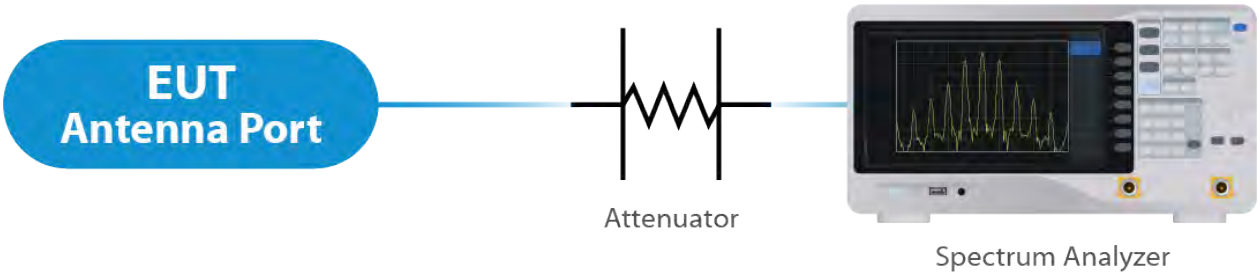


Figure 2: Direct Connect at the Antenna Port Test

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	10/7/2021	11/7/2023
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	12/9/2022	12/9/2023
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 3: List of equipment used for Radiated Emissions

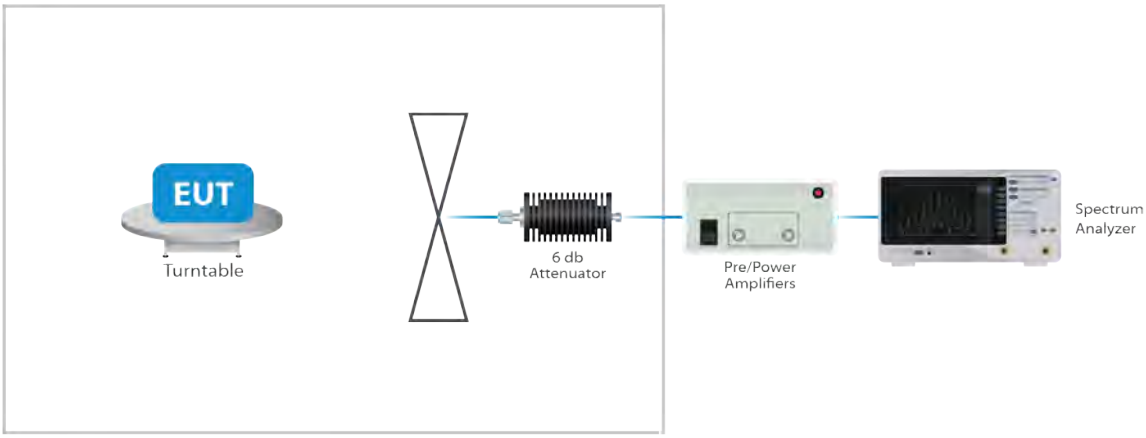


Figure 3: Radiated Emissions Test

4.4 Equipment Calibration

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

4.5 Measurement Uncertainty

Test	Uncertainty (± 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 as per the manufacturer, the maximum gain of the antenna per chain is 4 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 Array Gain = 10 log(NANT/NSS) dB = 3.01dB

Results

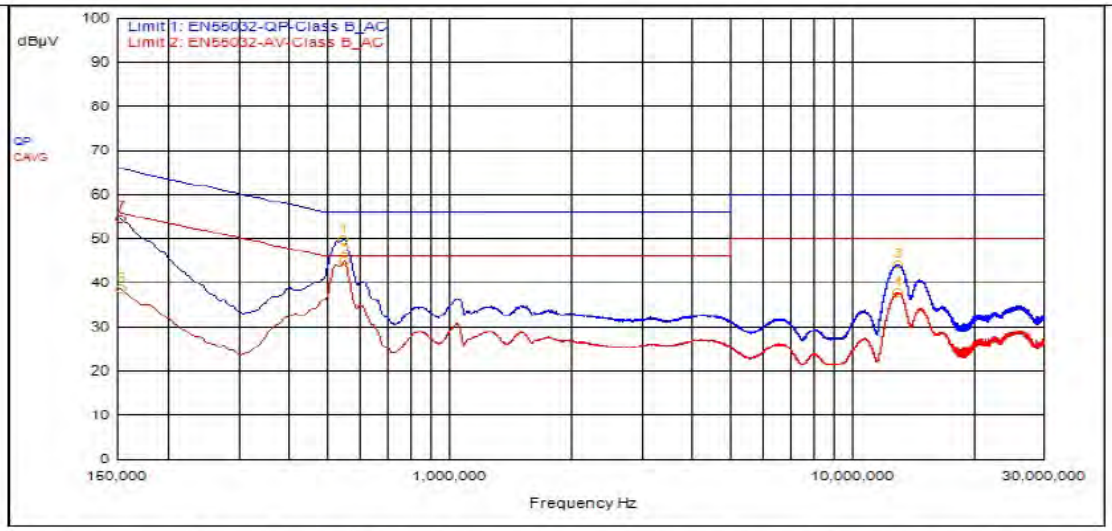
The EUT complied with the specification

5.2 Conducted Emissions at Mains Ports Data

Result

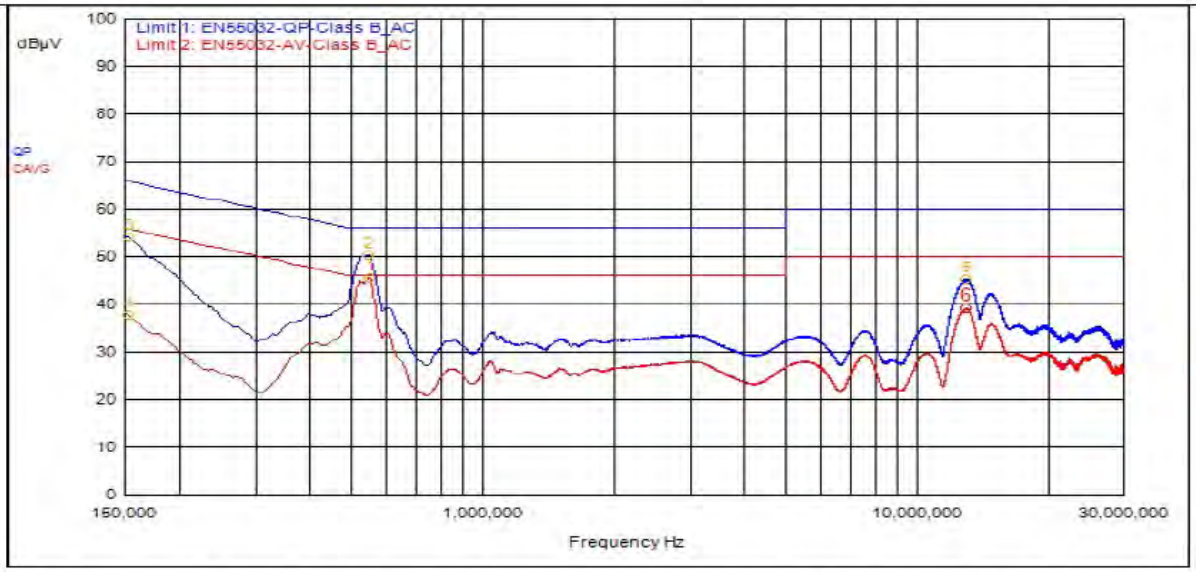
The EUT complied with the specification limit.

5.2.1 Conducted Emissions Plot – 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	546,000kHz	12.18	0.00		QPeak	37.58	49.76	56.00	-6.24			
5	150,000kHz	12.21	0.00		QPeak	42.89	55.10	66.00	-10.90			
7	153,000kHz	12.21	0.00		QPeak	42.12	54.33	65.84	-11.50			
3	12.993	12.29	0.00		QPeak	31.97	44.26	60.00	-15.74			
2	549,000kHz	12.18	0.00		C_AVG	32.76	44.94			46.00	-1.06	
4	12.966	12.29	0.00		C_AVG	25.48	37.77			50.00	-12.23	
6	153,000kHz	12.21	0.00		C_AVG	26.39	38.60			55.84	-17.24	

5.2.2 Conducted Emissions Plot – 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
2	546,000kHz	12.23	0.00		QPeak	38.16	50.39	56.00	-5.61			
3	153,000kHz	12.26	0.00		QPeak	41.82	54.08	65.84	-11.76			
5	12.996	12.27	0.00		QPeak	33.02	45.29	60.00	-14.71			
1	549,000kHz	12.23	0.00		C_AVG	33.22	45.45			46.00	-0.55	
4	153,000kHz	12.26	0.00		C_AVG	25.61	37.87			55.84	-17.96	
6	12.981	12.27	0.00		C_AVG	26.77	39.04			50.00	-10.96	

5.3 §15.247(a)(2) Emissions Bandwidth

All chains were measured under the guidance of KDB 558074 Section 8.2. and KDB 66291 D01. Please see associated annex for details on instrument settings.

Mode	Frequency (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth (MHz)
b	2412	13.0	7.2
	2437	12.8	6.6
	2462	12.9	7.2
g	2412	16.6	14.8
	2437	16.9	15.6
	2462	16.7	16.4
n 20	2412	17.7	17.7
	2437	17.7	12.7
	2462	17.7	17.7
n 40	2422	36.3	36.4
	2437	36.3	36.4
	2452	36.3	35.4
ax 20	2412	19.0	17.6
	2437	19.0	17.8
	2462	18.9	18.7
ax 40	2422	38.3	37.8
	2437	37.8	37.3
	2452	37.8	35.4

Result

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

In the configuration tested, the 6 dB bandwidth was greater than 500 kHz; therefore, the EUT complied with the requirements of the specification (see spectrum analyzer plot within the Annex).

5.4 §15.247(b)(3) Maximum Average Output Power

All chains were measured and summed under the guidance of KDB 558074 Section 8.3.2.3. 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 25.29 dBm or 338.06 mW. The limit is 30 dBm or 1 Watt when using antennas with 6 dBi or less gain. The antenna has a gain of 4 dBi.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power *	Measured EIRP
b 20	2412	Mcs0	22	24.32	28.32
	2417	Mcs0	22	24.49	28.49
	2422	Mcs0	22	24.54	28.54
	2427	Mcs0	22	24.62	28.62
	2432	Mcs0	22	24.70	28.70
	2437	Mcs0	23	25.26	29.26
	2442	Mcs0	23	25.29	29.29
	2447	Mcs0	23	25.02	29.02
	2452	Mcs0	23	25.03	29.03
	2457	Mcs0	23	25.02	29.02
	2462	Mcs0	23	25.28	29.28
g 20	2412	Mcs0	20	22.11	26.11
	2417	Mcs0	21	23.27	27.27
	2422	Mcs0	22	24.30	28.30
	2427	Mcs0	22	24.35	28.35
	2432	Mcs0	22	24.36	28.36
	2437	Mcs0	23	25.10	29.10
	2442	Mcs0	23	24.96	28.96
	2447	Mcs0	23	24.78	28.78
	2452	Mcs0	23	24.80	28.80
	2457	Mcs0	21	23.49	27.49
	2462	Mcs0	20	22.20	26.20
n 20	2412	Mcs0	21	23.15	27.15
	2417	Mcs0	21	23.10	27.10
	2422	Mcs0	22	24.16	28.16
	2427	Mcs0	22	24.20	28.20
	2432	Mcs0	22	24.31	28.31

	2437	Mcs0	23	25.02	29.02
	2442	Mcs0	23	24.88	28.88
	2447	Mcs0	23	24.68	28.68
	2452	Mcs0	22	23.96	27.96
	2457	Mcs0	21	23.51	27.51
	2462	Mcs0	19	21.40	25.40
n 40	2422	Mcs0	19	21.46	25.46
	2437	Mcs0	21	23.56	27.56
	2452	Mcs0	18	20.66	24.66
ax 20	2412	Mcs0	19	21.25	25.25
	2417	Mcs0	20	22.14	26.14
	2422	Mcs0	22	24.14	28.14
	2427	Mcs0	22	24.24	28.24
	2432	Mcs0	22	24.34	28.34
	2437	Mcs0	23	25.01	29.01
	2442	Mcs0	22	24.28	28.28
	2447	Mcs0	22	24.13	28.13
	2452	Mcs0	22	24.07	28.07
	2457	Mcs0	20	22.10	26.10
	2462	Mcs0	18	20.35	24.35
ax 40	2422	Mcs0	18	20.47	24.47
	2437	Mcs0	20	22.42	26.42
	2452	Mcs0	18	20.70	24.70

Result

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

* Gated EIRP shown in the Annex is the conducted measurement

5.5 §15.247(d) 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 table 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 tuned to the upper and lower channels. These demonstrate compliance with the provisions of this section at the band edges.

The emissions must be attenuated 30 dB below the highest power spectral density level measured within the authorized band as measured with a 100 kHz RBW.

Result

Conducted spurious emissions were attenuated 30 dB or more below the fundamental; therefore, the EUT complies with the specification.

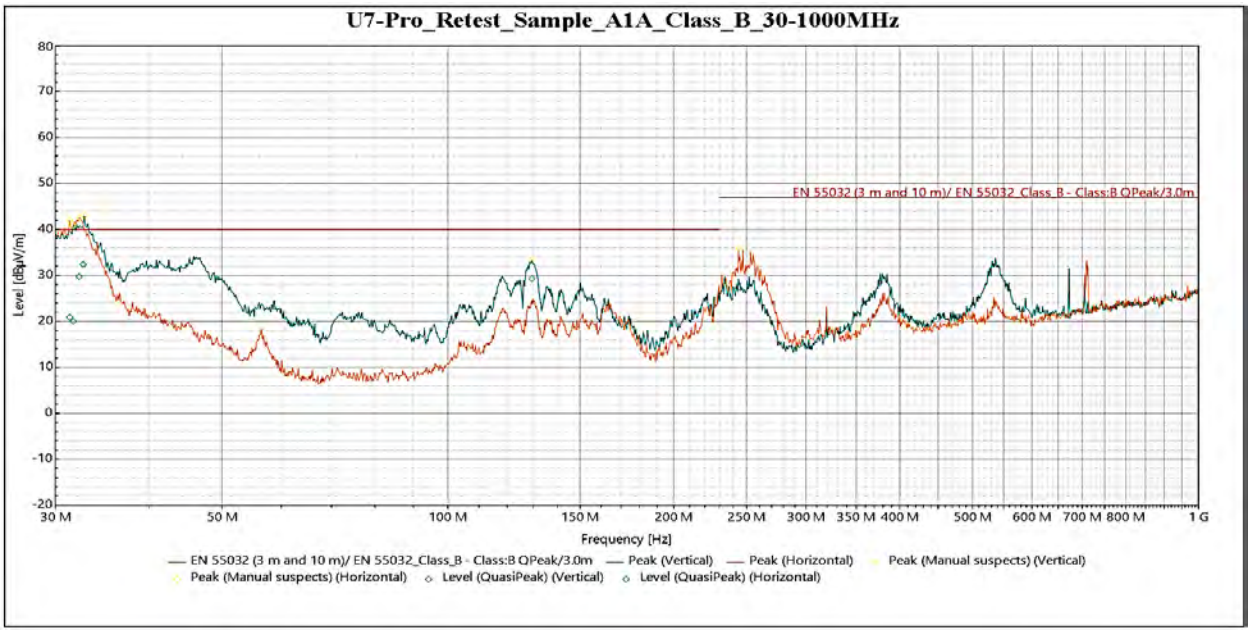
5.5.2 Radiated Spurious Emissions in the Restricted Bands of §15.205

The frequency range from the lowest frequency generated or used in the device to the tenth harmonic of the highest fundamental emissions was investigated to measure any radiated emissions in the restricted bands. The following tables show measurements of any emissions that fell into the restricted bands of §15.205. The tables show the worst-case emissions measured from the EUT. For frequencies above 18.0 GHz, a measurement distance of 1 meter was used. The noise floor was a minimum of 6 dB below the limits. The emissions in the restricted bans must meet the limits specified in §15.209. Tabular data for each of the spurious emissions is shown below for each of the units. Plots of the band edges are also shown.

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

Result

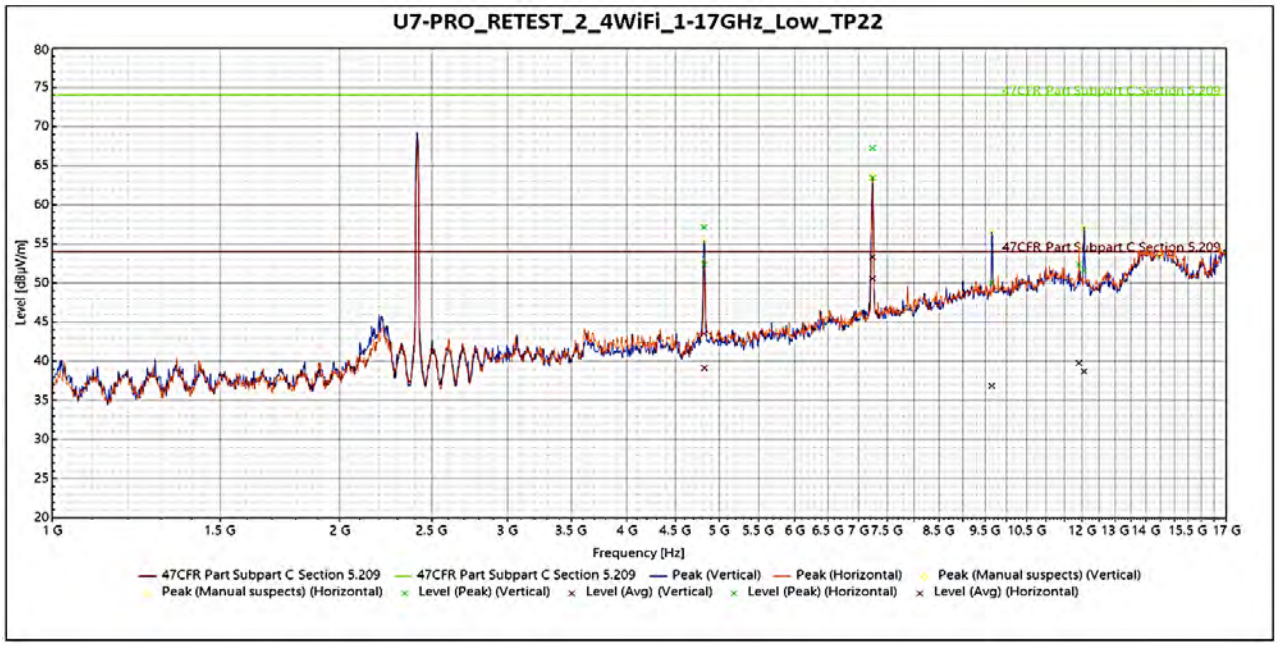
All emissions in the restricted bands of §15.205 met the limits specified in §15.209; therefore, the EUT complies with the specification.



QuasiPeak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
31.692 MHz	20.029	40	-19.971	69	2.759	Vertical	-8.569
32.681 MHz	32.403	40	-7.597	199	1	Vertical	-9.148
129.41 MHz	29.287	40	-10.713	341	1.138	Vertical	-14.232
31.369 MHz	20.912	40	-19.088	251	1.143	Horizontal	-8.51
32.273 MHz	29.759	40	-10.241	50	3.298	Horizontal	-8.831
243.82 MHz	27.376	47	-19.624	278	1.52	Horizontal	-15.915

Table 4: Spurious Emissions 30-1000 MHz



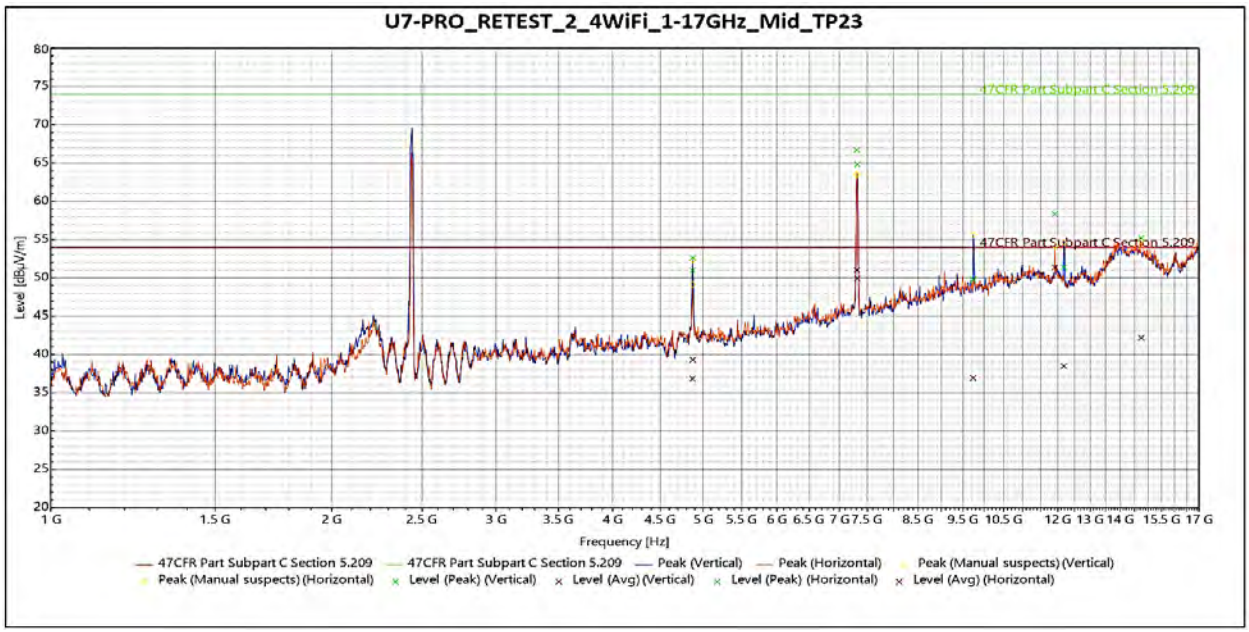
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.819 GHz	57.14	74	-16.86	106	1.628	Vertical	-5.977
7.2374 GHz	67.248	74	-6.752	60	1.632	Vertical	0.854
9.6491 GHz	50.013	74	-23.987	65	2.133	Vertical	5.554
12.056 GHz	51.595	74	-22.405	347	1.632	Vertical	8.514
4.8245 GHz	52.372	74	-21.628	123	2.637	Horizontal	-5.972
7.2381 GHz	63.443	74	-10.557	97	2.136	Horizontal	0.86
11.91 GHz	52.338	74	-21.662	106	2.133	Horizontal	8.285

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.819 GHz	43.534	54	-10.466	106	1.628	Vertical	-5.977
7.2374 GHz	53.338	54	-0.662	60	1.632	Vertical	0.854
9.6491 GHz	36.855	54	-17.145	65	2.133	Vertical	5.554
12.056 GHz	38.721	54	-15.279	347	1.632	Vertical	8.514
4.8245 GHz	39.136	54	-14.864	123	2.637	Horizontal	-5.972
7.2381 GHz	50.573	54	-3.427	97	2.136	Horizontal	0.86
11.91 GHz	39.806	54	-14.194	106	2.133	Horizontal	8.285

Table 5: Spurious Emissions Lowest Frequency 1-17 GHz



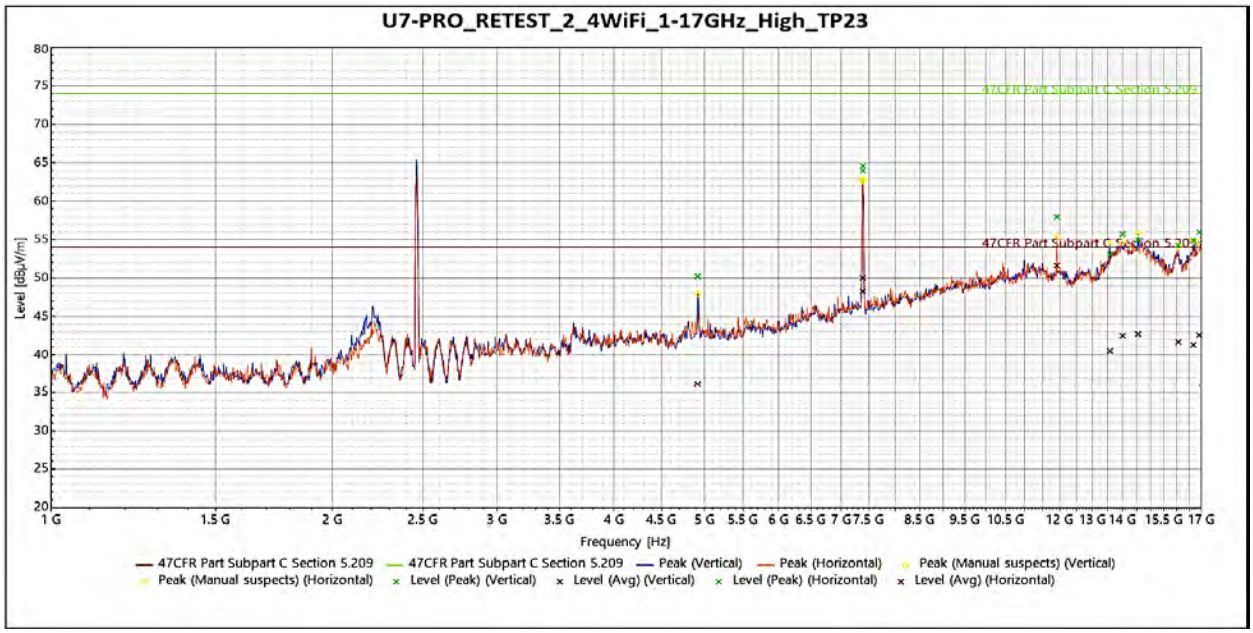
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.873 GHz	50.988	74	-23.012	129	2.337	Horizontal	-5.917
7.3165 GHz	64.843	74	-9.157	97	2.639	Horizontal	0.851
11.91 GHz	58.346	74	-15.654	95	1.63	Horizontal	8.285
14.744 GHz	55.21	74	-18.79	114	3.143	Horizontal	11.414
4.8755 GHz	52.665	74	-21.335	108	1.631	Vertical	-5.914
7.3092 GHz	66.716	74	-7.284	59	1.632	Vertical	0.857
9.7358 GHz	49.766	74	-24.234	242	1.63	Vertical	5.702
12.18 GHz	51.425	74	-22.575	189	1.632	Vertical	8.448

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.8755 GHz	39.329	54	-14.671	108	1.631	Vertical	-5.914
7.3092 GHz	51.031	54	-2.969	59	1.632	Vertical	0.857
9.7358 GHz	36.931	54	-17.069	242	1.63	Vertical	5.702
12.18 GHz	38.495	54	-15.505	189	1.632	Vertical	8.448
4.873 GHz	36.855	54	-17.145	129	2.337	Horizontal	-5.917
7.3165 GHz	49.929	54	-4.071	97	2.639	Horizontal	0.851
11.91 GHz	51.386	54	-2.614	95	1.63	Horizontal	8.285
14.744 GHz	42.186	54	-11.814	114	3.143	Horizontal	11.414

Table 6: Spurious Emissions Middle Frequency 1-17 GHz



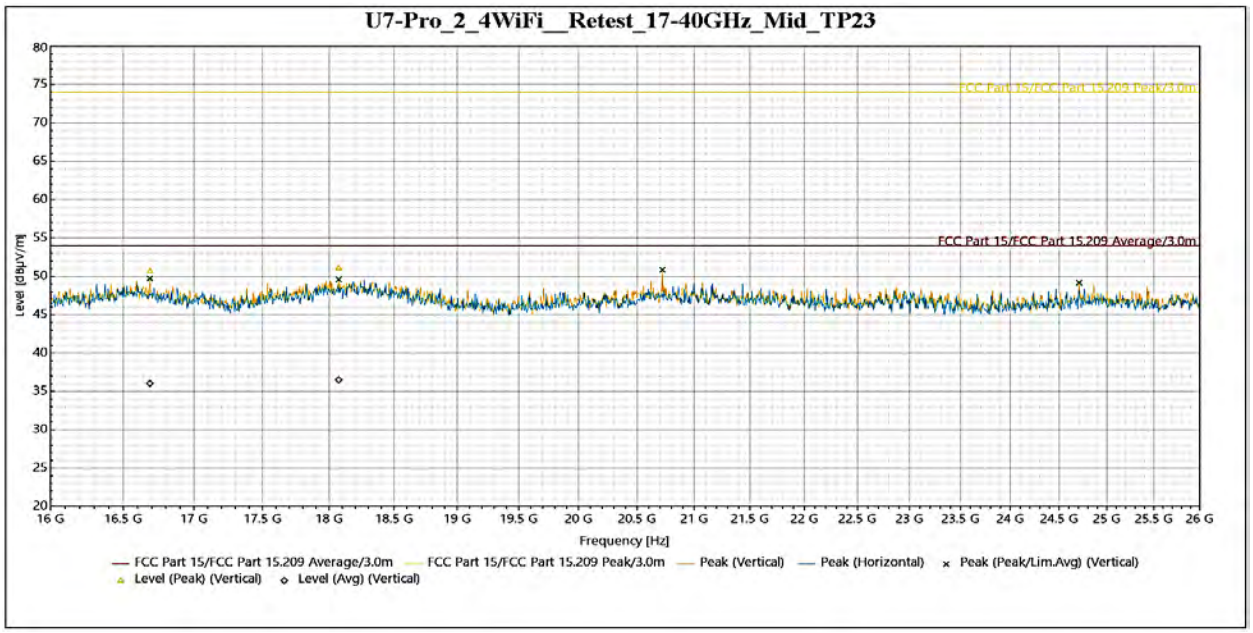
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.9178 GHz	50.22	74	-23.78	109	1.833	Vertical	-5.867
7.3844 GHz	63.983	74	-10.017	165	2.146	Vertical	0.803
13.573 GHz	53.095	74	-20.905	237	3.311	Vertical	10.001
14.547 GHz	54.921	74	-19.079	274	4	Vertical	11.832
16.67 GHz	54.883	74	-19.117	136	2.146	Vertical	12.159
7.3839 GHz	64.582	74	-9.418	112	2.65	Horizontal	0.804
11.91 GHz	57.959	74	-16.041	89	1.5	Horizontal	8.285
14.002 GHz	55.709	74	-18.291	273	4	Horizontal	11.091
16.063 GHz	54.249	74	-19.751	345	2.146	Horizontal	10.542
16.907 GHz	55.966	74	-18.034	51	1.638	Horizontal	13.192

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.9178 GHz	36.153	54	-17.847	109	1.833	Vertical	-5.867
7.3844 GHz	48.24	54	-5.76	165	2.146	Vertical	0.803
13.573 GHz	40.501	54	-13.499	237	3.311	Vertical	10.001
14.547 GHz	42.708	54	-11.292	274	4	Vertical	11.832
16.67 GHz	41.287	54	-12.713	136	2.146	Vertical	12.159
7.3839 GHz	50.027	54	-3.973	112	2.65	Horizontal	0.804
11.91 GHz	51.626	54	-2.374	89	1.5	Horizontal	8.285
14.002 GHz	42.492	54	-11.508	273	4	Horizontal	11.091
16.063 GHz	41.636	54	-12.364	345	2.146	Horizontal	10.542
16.907 GHz	42.585	54	-11.415	51	1.638	Horizontal	13.192

Table 7: Spurious Emissions Highest Frequency 1-17 GHz



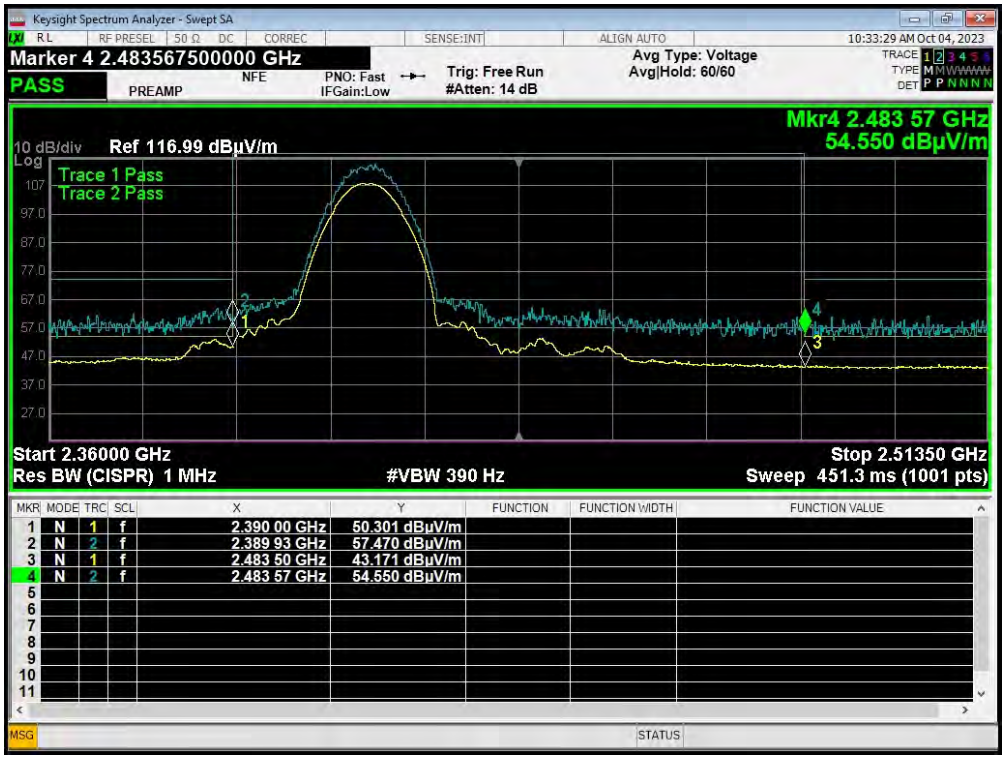
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
16.687 GHz	50.646	74	-23.354	316	Vertical	-0.247
18.072 GHz	51.036	74	-22.964	186	Vertical	-0.515
No emissions of significance	-	-	-	-	Horizontal	-

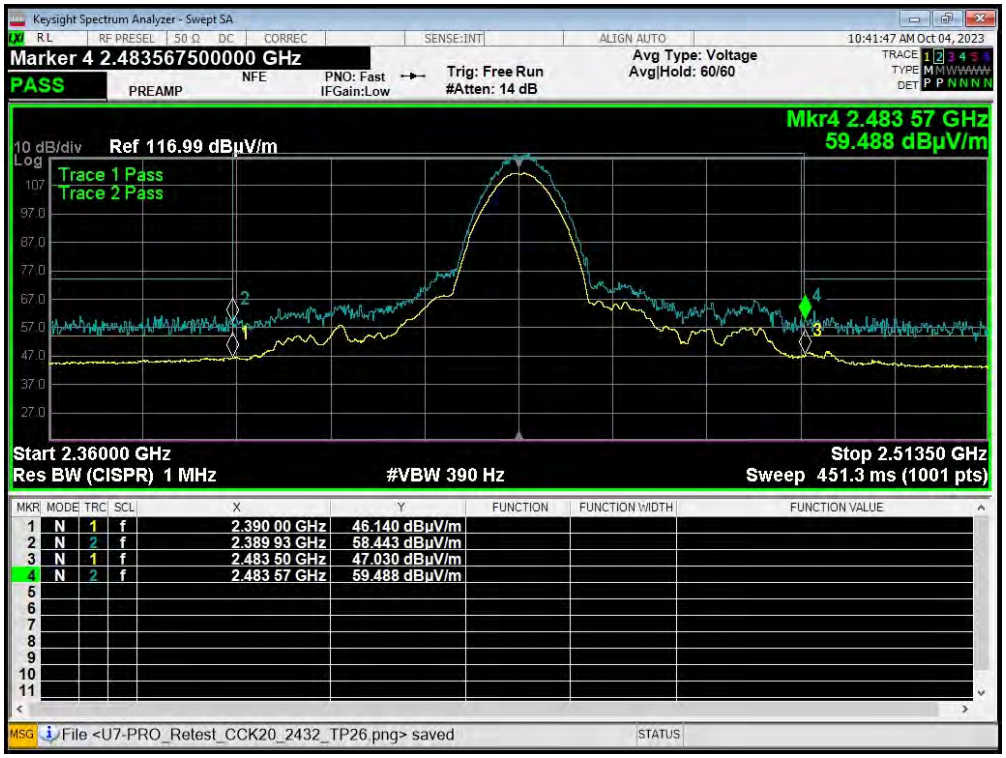
Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
16.687 GHz	36.044	54	-17.956	316	Vertical	-0.247
18.072 GHz	36.509	54	-17.491	186	Vertical	-0.515
No emissions of significance	-	-	-	-	Horizontal	-

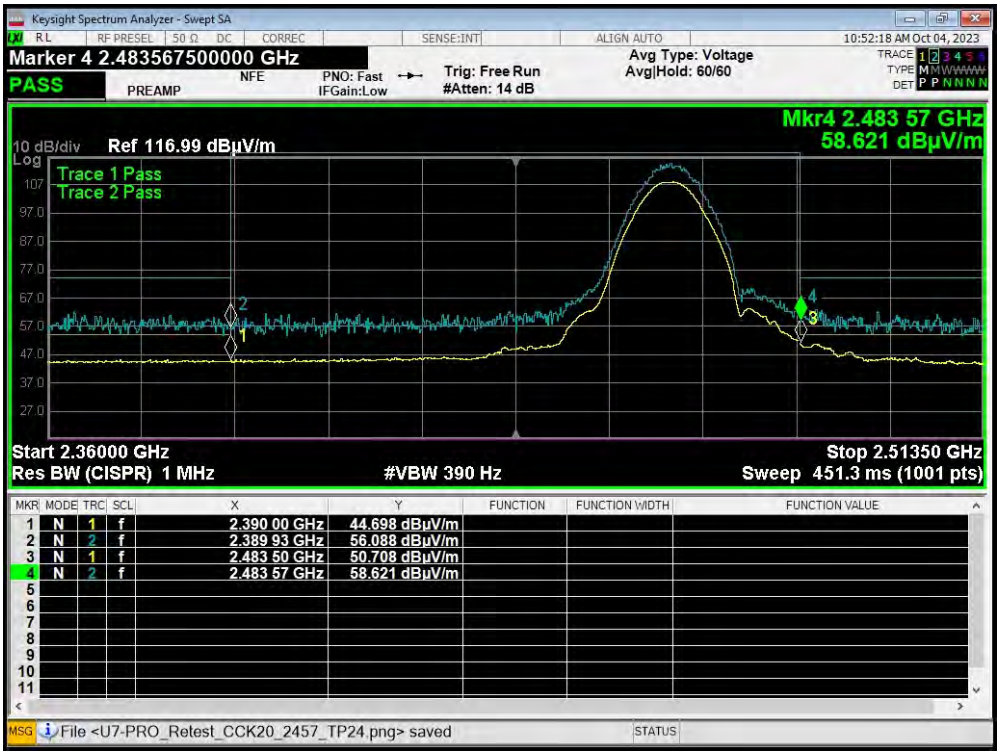
Table 8: Spurious Emissions Middle Frequency 17-40 GHz



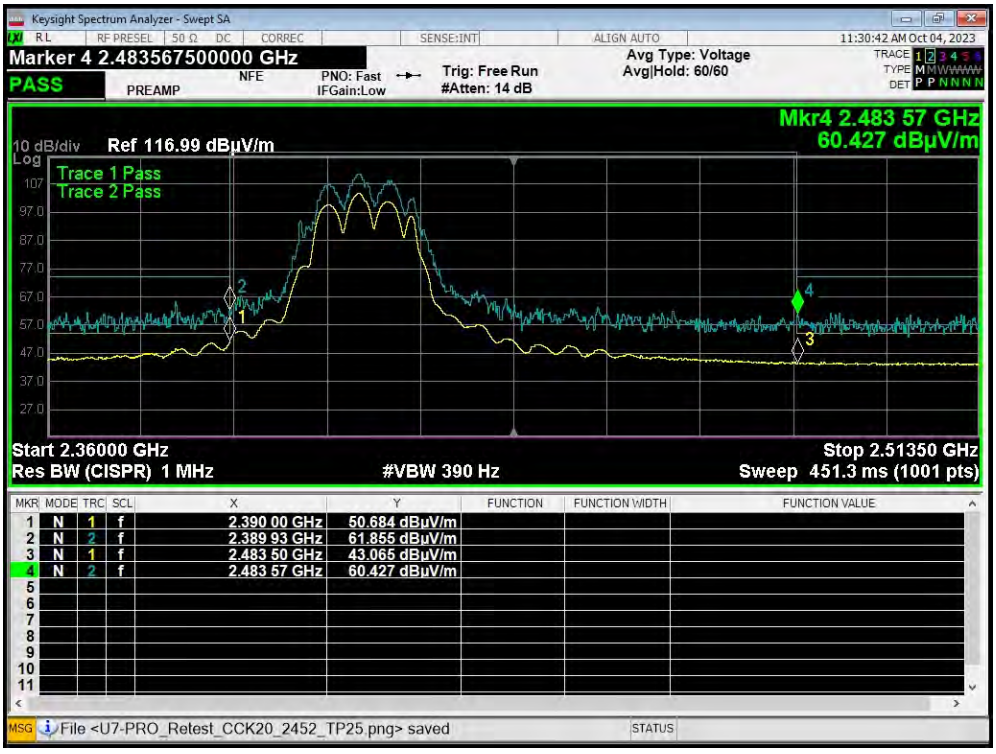
Plot 1: CCK 20 MHz 2412 MHz



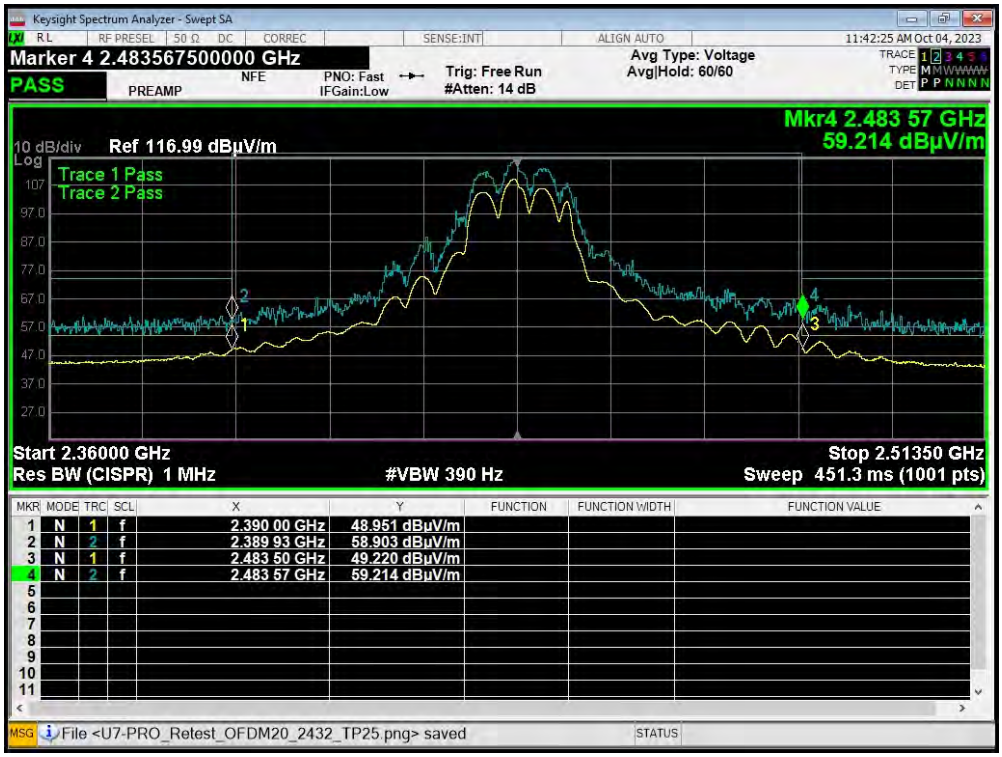
Plot 2: CCK 20 MHz 2437 MHz



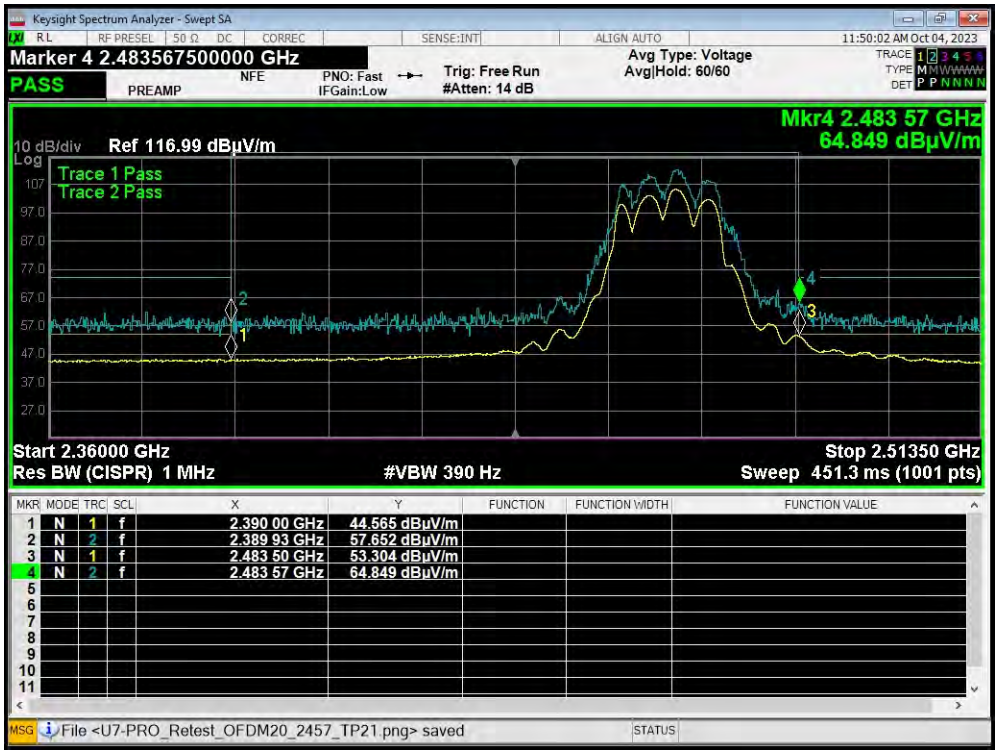
Plot 3: CCK 20 MHz 2462 MHz



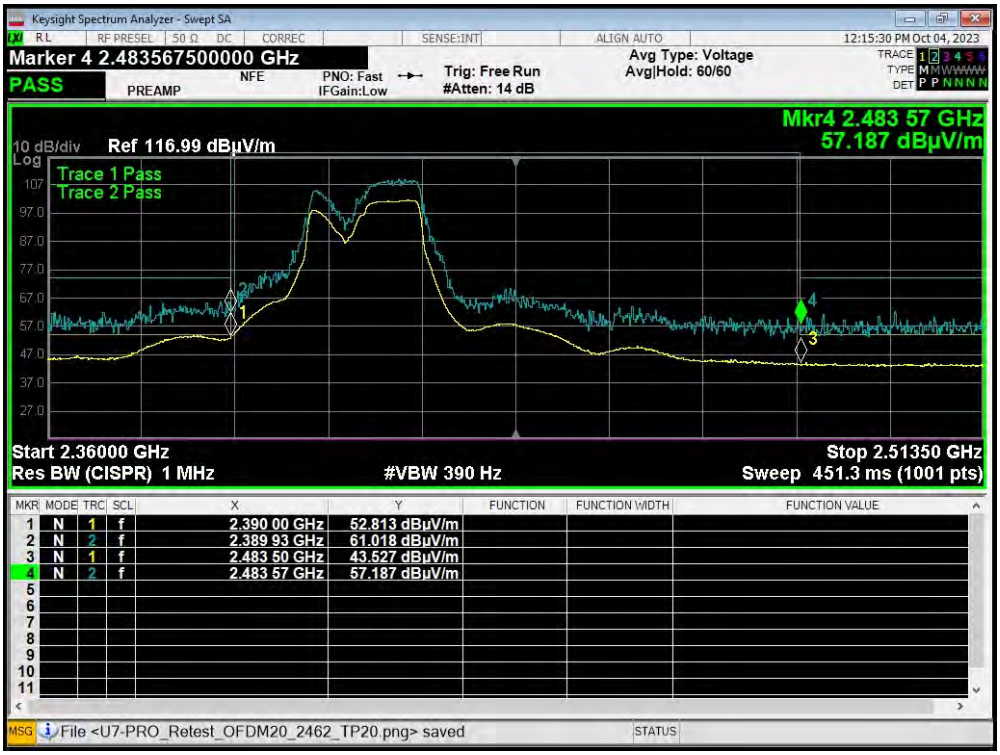
Plot 4: OFDM 20 MHz 2412 MHz



Plot 5: OFDM 20 MHz 2437 MHz

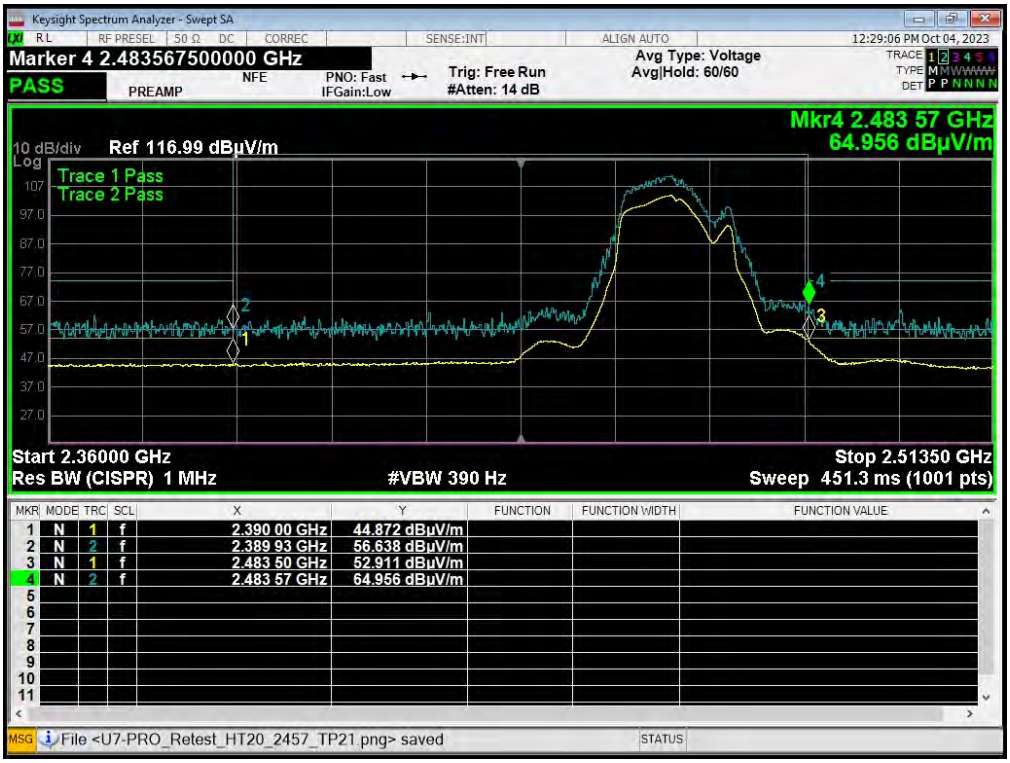


Plot 6: OFDM 20 MHz 2462 MHz



Plot 7: HT 20 MHz 2412 MHz

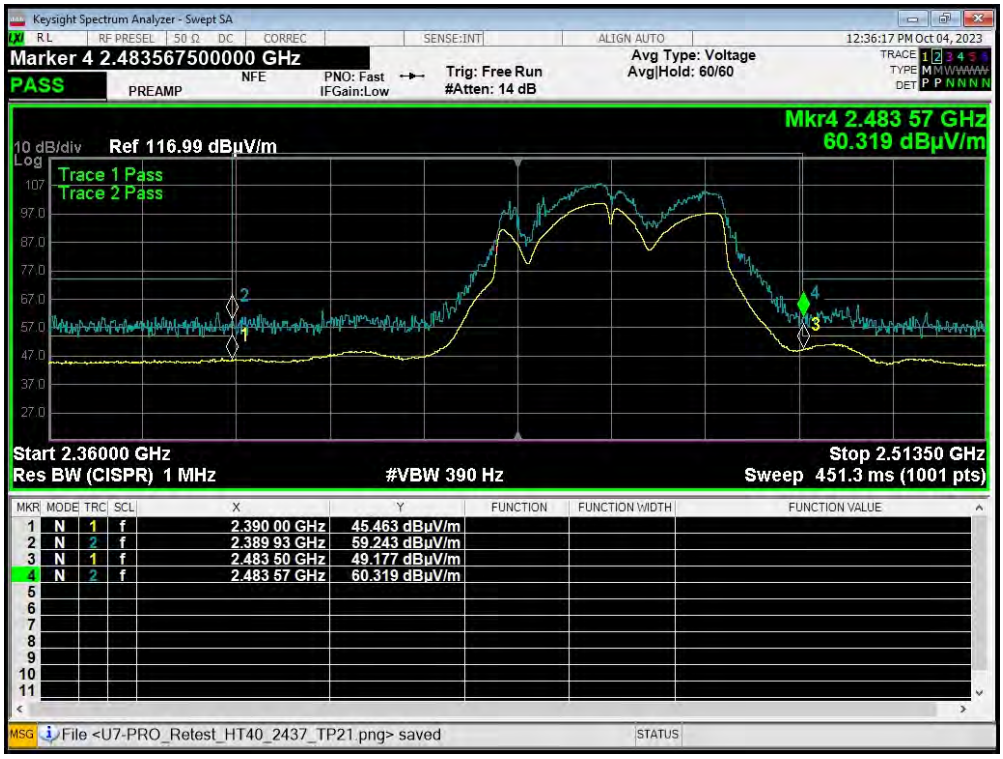
Plot 8: HT 20 MHz 2437 MHz



Plot 9: HT 20 MHz 2462 MHz

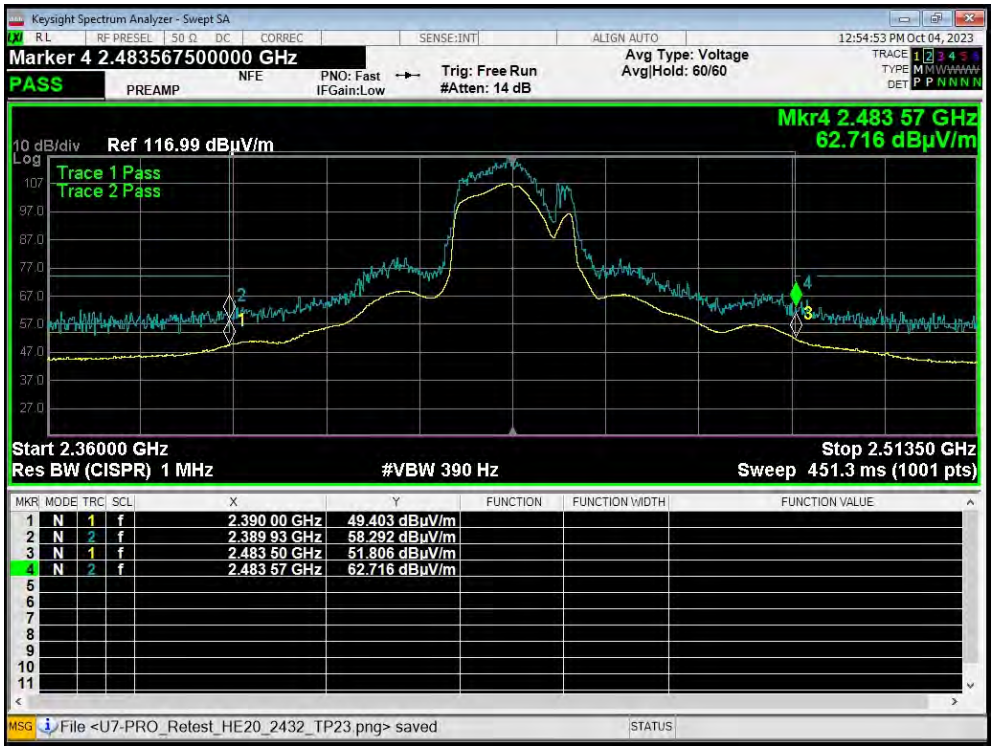
Plot 10: HT 40 MHz 2422 MHz

Plot 11: HT 40 MHz 2437 MHz

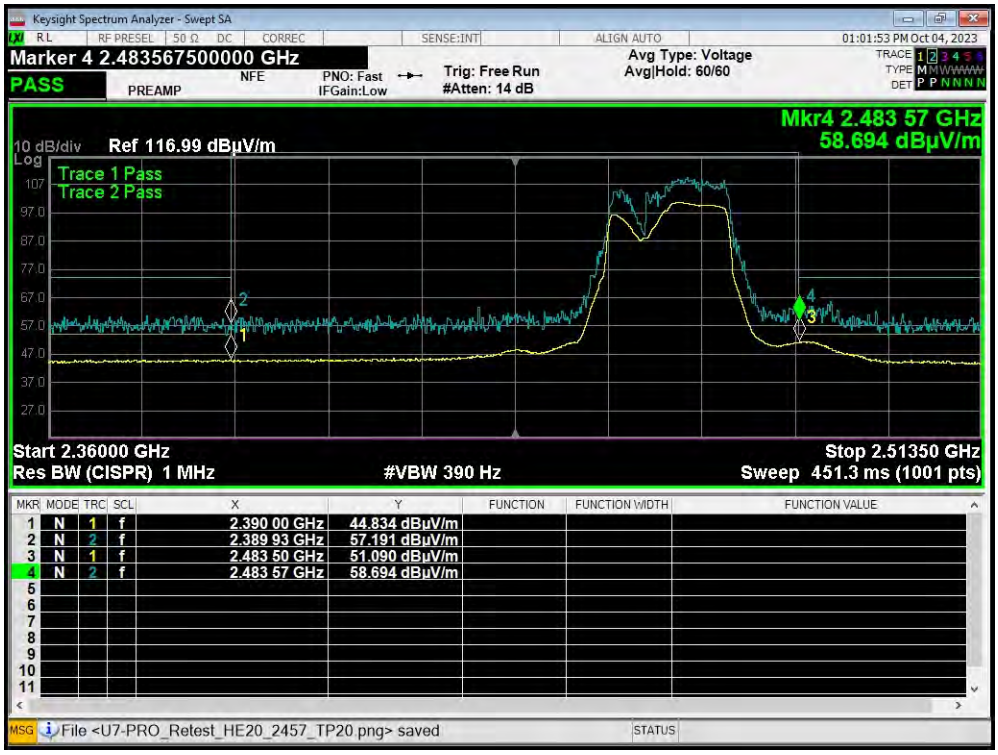


Plot 12: HT 40 MHz 2452 MHz

Plot 13: HE 20 MHz 2412 MHz



Plot 14: HE 20 MHz 2437 MHz



Plot 15: HE 20 MHz 2462 MHz

Plot 16: HE 40 MHz 2422 MHz

Plot 17: HE 40 MHz 2437 MHz

Plot 18: HE 40 MHz 2452 MHz

5.6 §15.247(e) Maximum Average Power Spectral Density

All chains were measured and summed under the guidance of KDB 558074 Section 8.4. 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 8 dBm in any 3 kHz band during any time interval of continuous transmission. The antenna gain is 4 dBi + the (Nss=1) Array gain of 3.01 dB, which is a total of 7.01 dBi (Nss=1) Directional gain. Thus, when Nss=1 the limit is adjusted and becomes 6.99 dBm

Mode	Frequency (MHz)	Measurement (dBm)	Criteria (dBm)
b	2412	-0.50	8.0
	2437	0.31	8.0
	2462	0.26	8.0
g	2412	-9.43	8.0
	2437	-6.64	8.0
	2462	-9.56	8.0
n 20	2412	-10.17	8.0
	2437	-8.54	8.0
	2462	-12.10	8.0
n 40	2422	-14.93	8.0
	2437	-12.99	8.0
	2452	-15.54	8.0
ax 20	2412	-12.44	8.0
	2437	-8.72	8.0
	2462	-13.64	8.0
ax 40	2422	-15.33	8.0
	2437	-13.87	8.0
	2452	-15.37	8.0

Result

The maximum average power spectral density was less than the limit of 8 dBm; therefore, the EUT complies with the specification.

-- End of Test Report --