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	TR8823_01
Date of Test(s)	8 – 11, 16, 22 January; 5, 12, 28 – 29 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 13th 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: Joseph W. Jackson

Reviewed By: Richard L. Winter

Revision History		
Revision	**Description**	**Date**
01	Original Report Release	12 March 2024

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-Max
Serial Number	1FB64B
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.

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.

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

Band	Modulation Bandwidth	Frequency (MHz)	Maximum Power Setting
UNII-5	be (EHT20)	5955, 6135, 6185	TP13
		6195	TP14
		6415	TP12
	be (EHT40)	5965, 6405	TP16
		6205	TP17
	be (EHT80)	5985, 6225	TP20
		6385	TP19
	be (EHT160)	6025, 6325	TP21
		6185	TP22
	be (EHT320)	6265	TP21

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	Access Point	See Section 2.4

MN: U7-Pro-Max SN: F4E2C61FB6AF		
BN: UBIQUITI MN: GP-H480-065G SN: N/A	PoE Injector	Shielded or Un-shielded cat 5e cable
BN: DELL MN: XPS SN: N/A	Laptop PC	Shielded or Un-shielded cat 5e cable

Notes: (1) EUT
(2) Interface port connected to EUT (See Section 2.4)

The support equipment listed above was not modified in order to achieve compliance with this standard.

2.4 Interface Ports on EUT

Name of Ports	No. of Ports Fitted to EUT	Cable Description/Length
AC Mains	1	3 conductor power cord/80cm
PoE	1	Shielded or Un-Shielded Cat 5e Cable/> 3 meters
Data	1	Shielded or Un-Shielded Cat 5e Cable/> 3 Meters

2.5 Operating Environment

Power Supply	120 Volts AC to 48 Volts PoE
AC Mains Frequency	60 Hz
Temperature	20.9 – 21.8 °C
Humidity	16.1 – 27.4 %
Barometric Pressure	1009 mBar

2.6 Operating Modes

The U7-Pro-Max was tested using test software in order to enable to constant transmission. The measurements within this report are corrected to reference a 100% duty cycle. All emission modes of 802.11be were investigated. All measurements are reported with the worst-case mode (802.11be) unless otherwise stated.

This device does not support Channel Puncturing.

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

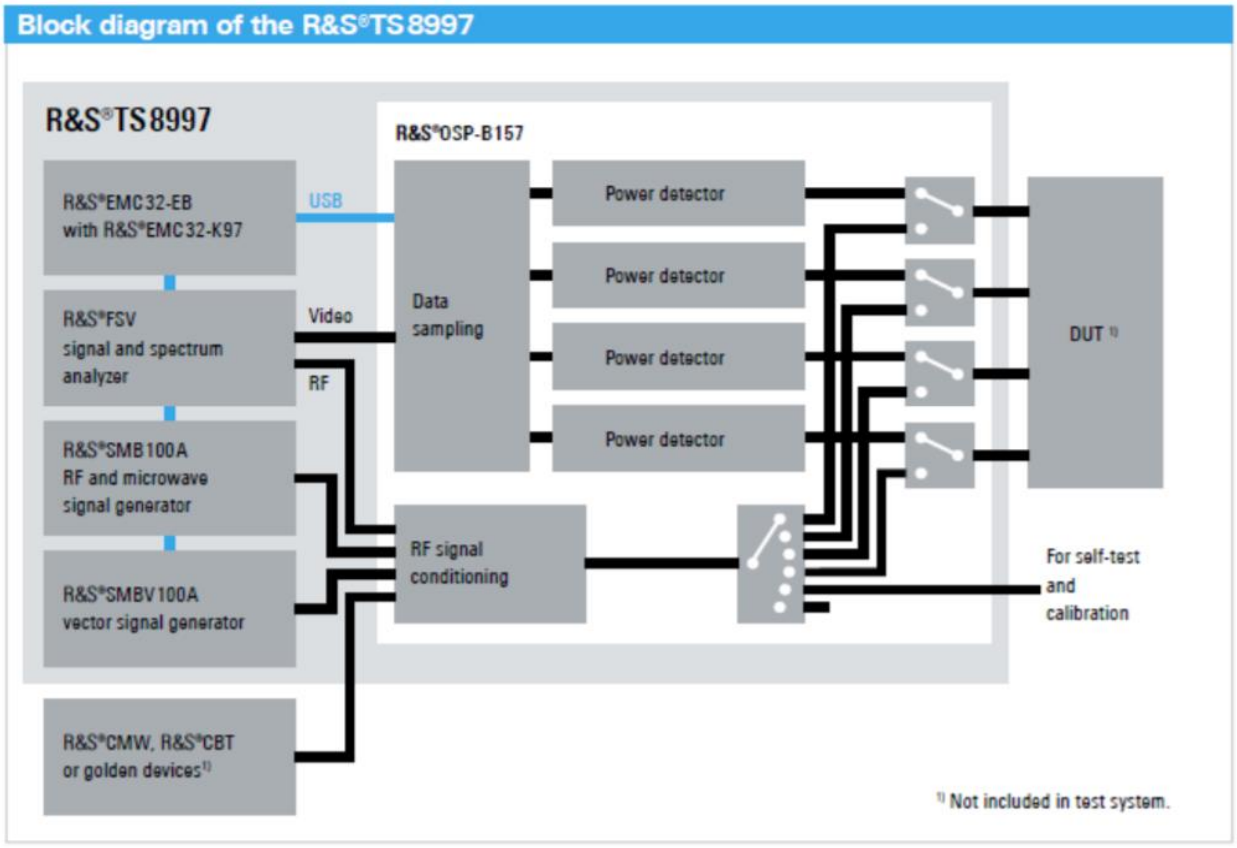


Diagram 1: Test Configuration Block Diagram

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
15.203	N/A	Antenna requirements	Structural Requirement	Compliant
15.207	RSS-Gen	Conducted Disturbance at Mains Port	0.15 to 30	Compliant
15.407(a)	RSS-247 §6.2.2, §6.2.3	Bandwidth Requirement	5955 to 6415	Compliant
15.407(a)	RSS-247 §6.2.2, §6.2.3	Peak Output Power[1]	5955 to 6415	Compliant
15.407(f)	RSS-247 §6.2.2, §6.2.3	Antenna Conducted Spurious Emissions[1]	0.009 to 40000	N/A
15.407(a)	RSS-247 §6.2.2, §6.2.3	Radiated Spurious Emissions	0.009 to 40000	Compliant
15.407(a)	RSS-247 §6.2.2, §6.2.3	Peak Power Spectral Density[1]	5955 to 6415	Compliant
15.407(d)	RSS-247 §6.2.2, §6.2.3	Contention Based Protocol	5955 to 6415	Compliant

The testing was performed according to the procedures in ANSI C63.10-2013, KDB 789033, KDB 987594 and 47 CFR Part 15. Where applicable, KDB 662911 was followed to sum required measurements.

Note [1]: Various RU modes were considered for RF Power, PSD, and Spurious Emissions, and the "single client" RU mode is the worst case - the results herein are "single client" RU mode.

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 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	AFJ	LS16C\10	UCL-6749	1/29/2024	1/29/2025
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

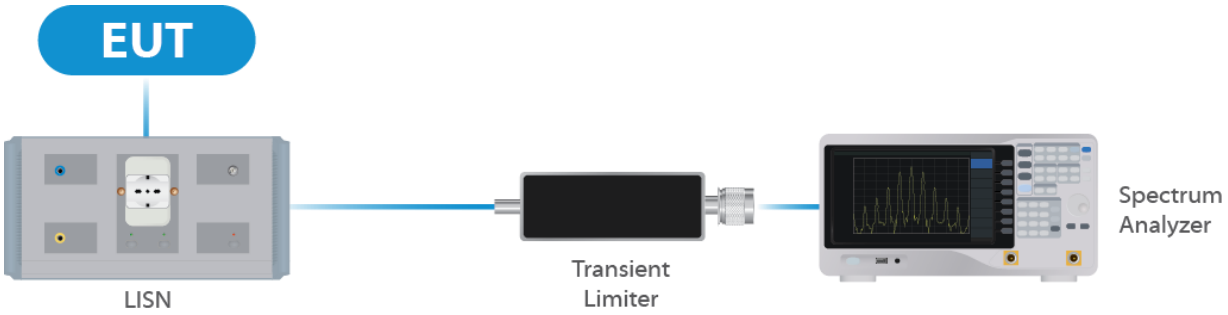


Figure 1: Conducted Emissions Test

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	3/20/2024
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

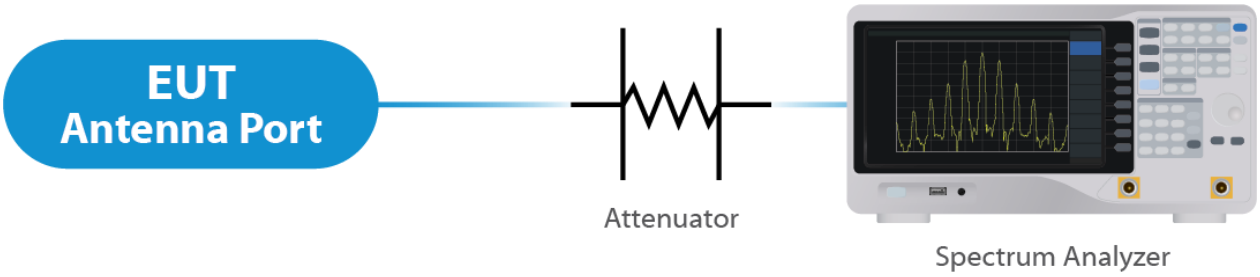


Figure 2: Direct Connect at the Antenna Port Test

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	1/25/2024	1/29/2025
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	1/19/2024	1/19/2026
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	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

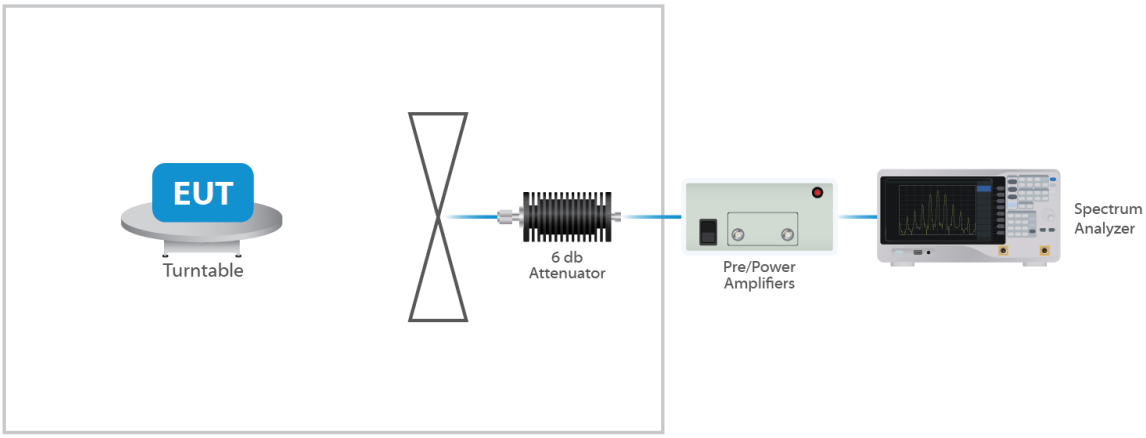


Figure 3: Radiated Emissions Test

4.4 Contention Base Protocol Tests

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
Spectrum Analyzer	Keysight	N9010B EXA	UCL-7069	4/25/2023	4/25/2024
Signal Generator	Keysight	MXG-B	UCL-6291	6/29/2023	6/29/2024
MIMO Test Set	Keysight	X8750A	UCL-7373	9/19/2023	9/19/2024

Table 4: List of equipment used for Direct Connect at the Antenna Port

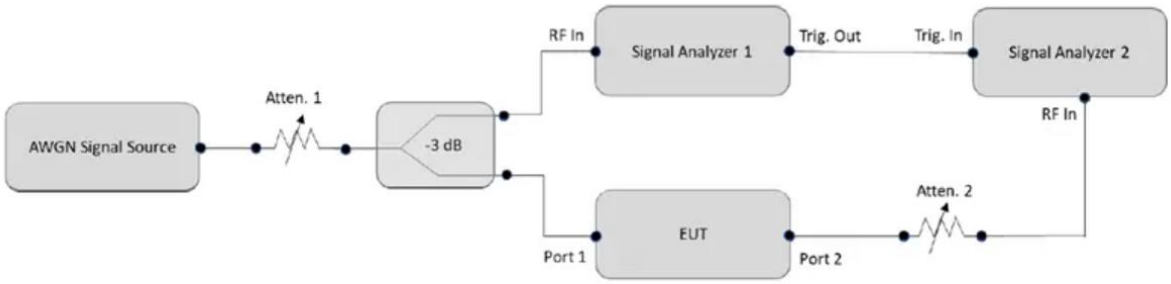


Figure 1. CBP conducted test setup diagram. Source: KDB 987594 D02 V01r01

Figure 4: Contention Base Protocol Test

4.5 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.

4.6 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 5.9 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.

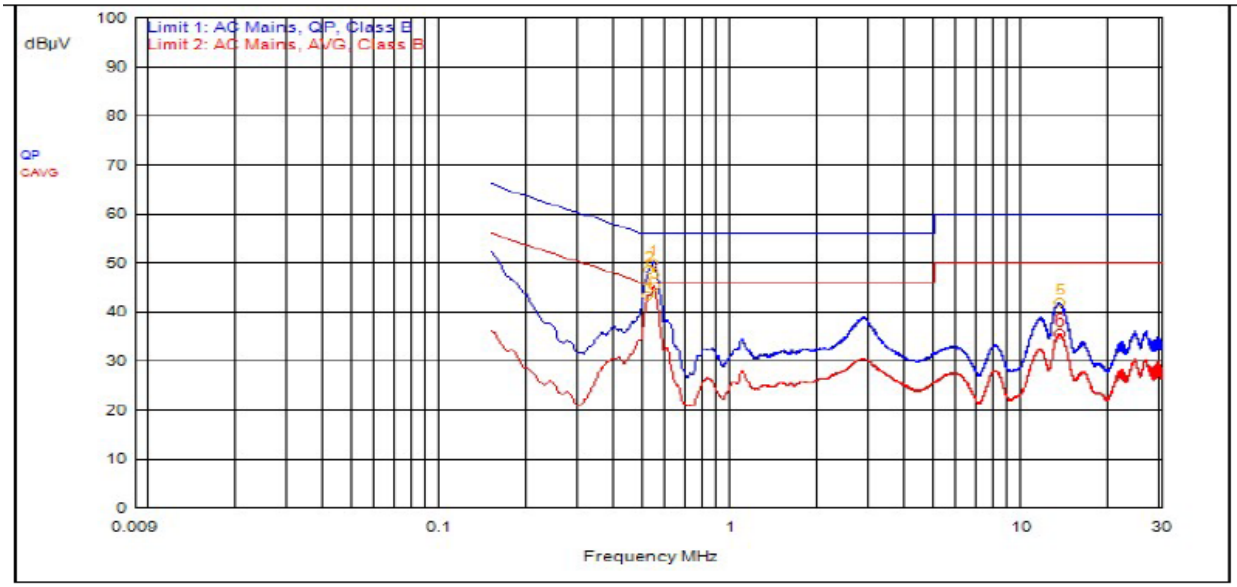
For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for NANT ≤ 4;
For PSD measurements when Nss=1: Array Gain = 10 log(NANT/NSS) dB + Antenna Gain (dBi). Or 3.01 dB + 5.9 dBi = 8.91 dBi.

Results

The EUT complied with the specification

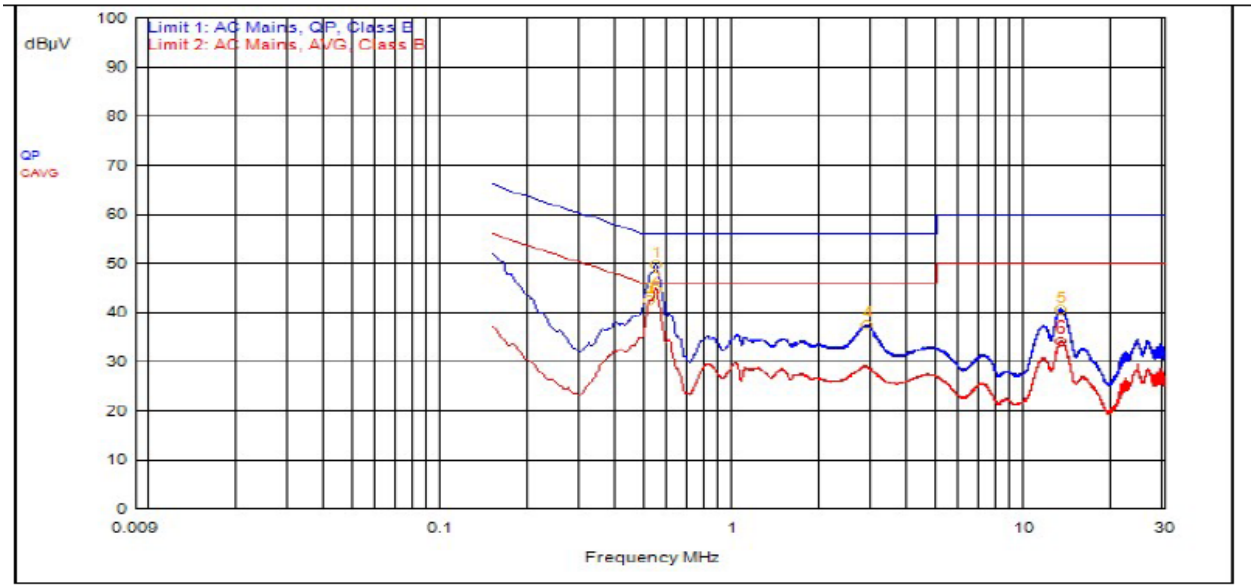
5.2 Conducted Emissions at Mains Ports Data

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

All chains were measured under the guidance of KDB 789033 Section II.C. and KDB 66291 D01. Please see associated annex for details on instrument settings.

Nominal BW (MHz)	Frequency (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)
be 20	5955	19.1	22.7
be 20	6195	19.1	22.7
be 20	6415	19.2	22.2
be 40	5965	38.0	42.8
be 40	6205	38.3	43.8
be 40	6405	38.3	41.6
be 80	5985	78.0	87.5
be 80	6225	78.0	87.5
be 80	6385	78.0	85.5
be 160	6025	157.0	168.0
be 160	6185	157.0	171.0
be 160	6325	157.0	168.0
be 320	6265	317.5	337.2

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)(3) Maximum Average Output Power

All chains were measured and summed under the guidance of KDB 789033 Section II. E.2. and KDB 66291 D01. Please see associated annex for details on instrument settings.

The maximum average RF conducted output power measured for this device was 23.08 dBm or 203.24 mW. The limit is 30 dBm EIRP, or 1 watt EIRP. The antenna has a gain of 5.9 dBi.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	EIRP	Measured PSD
EHT 20	5955	Mcs0_Nss2	13	13.78	19.68	-1.68
EHT 20	6195	Mcs0_Nss2	14	14.40	20.30	-1.45
EHT 20	6415	Mcs0_Nss2	12	14.48	20.38	-1.86
EHT 40	5965	Mcs0_Nss2	16	16.66	22.56	-1.75
EHT 40	6205	Mcs0_Nss2	17	17.41	23.31	-1.45
EHT 40	6405	Mcs0_Nss2	16	18.28	24.18	-1.11
EHT 80	5985	Mcs0_Nss2	20	20.45	26.35	-1.04
EHT 80	6225	Mcs0_Nss2	20	20.67	26.57	-0.98
EHT 80	6385	Mcs0_Nss2	19	21.14	27.04	-1.37
EHT 160	6025	Mcs0_Nss2	21	21.99	27.89	-1.85
EHT 160	6185	Mcs0_Nss2	22	22.97	28.87	-1.31
EHT 160	6325	Mcs0_Nss2	21	23.08	28.98	-2.00
EHT 320	6265	Mcs0_Nss2	21	22.92	28.82	-1.36

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	EIRP	Measured PSD
EHT 20	5955	Mcs0_Nss1	10	10.69	16.59	-4.75
EHT 20	6195	Mcs0_Nss1	11	11.86	17.76	-4.08
EHT 20	6415	Mcs0_Nss1	10	12.39	18.29	-4.18
EHT 40	5965	Mcs0_Nss1	13	13.84	19.74	-4.51
EHT 40	6205	Mcs0_Nss1	14	14.77	20.67	-4.36
EHT 40	6405	Mcs0_Nss1	13	15.24	21.14	-4.30

EHT 80	5985	Mcs0_Nss1	16	16.83	22.73	-4.57
EHT 80	6225	Mcs0_Nss1	17	17.68	23.58	-4.20
EHT 80	6385	Mcs0_Nss1	16	18.24	24.14	-4.43
EHT 160	6025	Mcs0_Nss1	19	19.81	25.71	-4.29
EHT 160	6185	Mcs0_Nss1	19	19.98	25.88	-4.57
EHT 160	6325	Mcs0_Nss1	19	20.86	26.76	-4.40

Result

In the configuration tested, the maximum average RF outpower was less than 1 watt EIRP; therefore, the EUT compiled with the requirements of the specification (see spectrum analyzer plots in attached Annex).

5.5 §15.407(b)(7) Spurious Emissions

5.5.1 Conducted Spurious Emissions

The frequency 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 5.9 dBi accounted for. These demonstrate compliance with the provisions of this section at the band edges.

The emissions must be remaining below -27 dBm EIRP.

Result

Conducted spurious emissions were attenuated below the limit; therefore, the EUT complies with the specification.

5.5.2 Radiated Spurious Emissions in the Restricted Bands of § 15.205

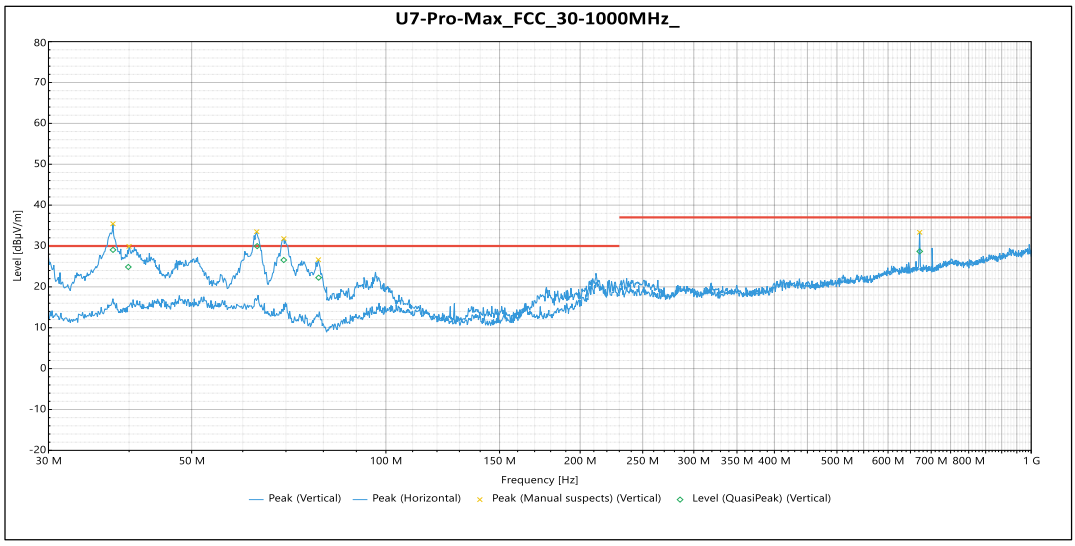
The EUT uses various power settings based on the channel in use. In order to reduce test time, the radiated spurious emissions at the lowest, middle, and highest channel were measured at the maximum power of TP22.

Correction Factor = Antenna Factor + Cable Loss - Pre-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. See Annex for Conducted Band edge plots.

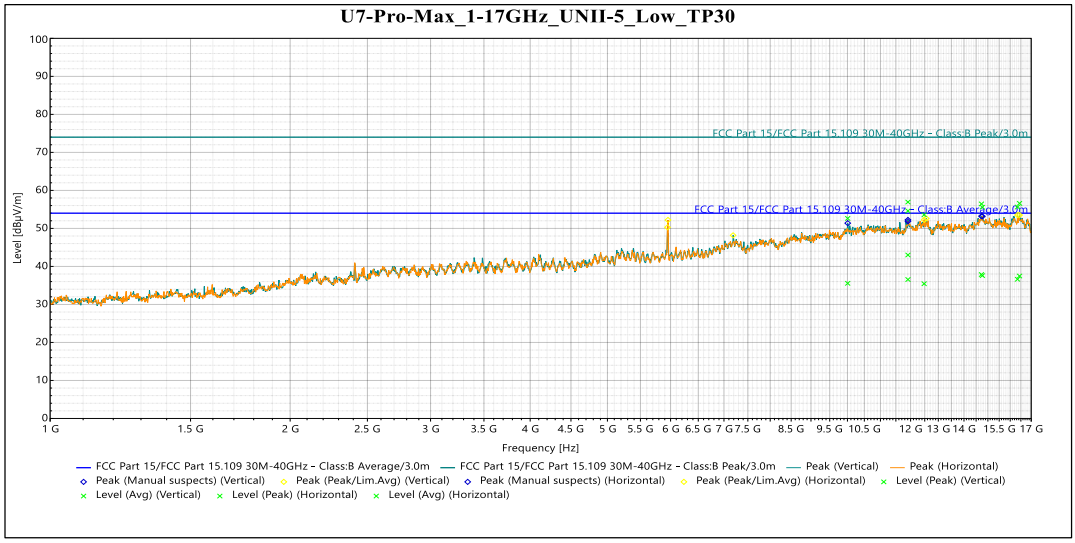
EUT



QuasiPeak

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
NOTE: No significant emissions were observed in the horizontal orientation of the antenna							

Table 5: Radiated Emissions 30 – 1000 MHz



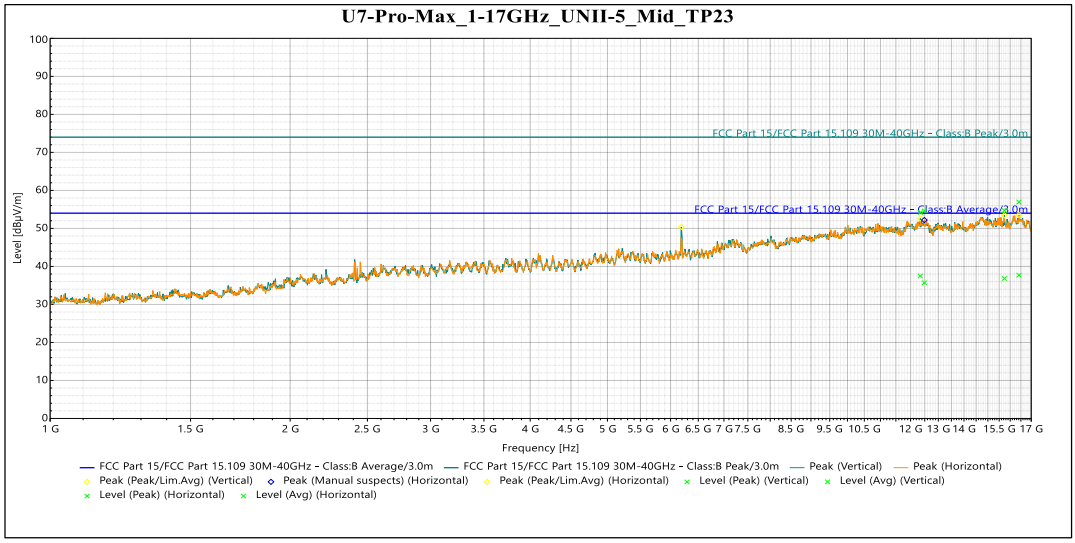
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.007 GHz	52.632	74	-21.368	71	3.1	Vertical	14.165
11.909 GHz	56.931	74	-17.069	176	1.697	Vertical	16.545
14.726 GHz	56.442	74	-17.558	51	1.638	Vertical	17.219
16.437 GHz	56.585	74	-17.415	314	1.643	Vertical	18.223
11.91 GHz	54.601	74	-19.399	69	1.638	Horizontal	16.544
12.48 GHz	53.58	74	-20.42	33	4	Horizontal	16.425
14.764 GHz	55.571	74	-18.429	58	1.5	Horizontal	16.967
16.341 GHz	55.62	74	-18.38	121	2.177	Horizontal	17.286

Avg

Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.007 GHz	1	35.546	54	-18.454	71	3.1	Vertical	14.165
11.909 GHz	1	42.996	54	-11.004	176	1.697	Vertical	16.545
14.726 GHz	1	37.868	54	-16.132	51	1.638	Vertical	17.219
16.437 GHz	1	37.466	54	-16.534	314	1.643	Vertical	18.223
11.91 GHz	2	36.547	54	-17.453	69	1.638	Horizontal	16.544
12.48 GHz	2	35.445	54	-18.555	33	4	Horizontal	16.425
14.764 GHz	2	37.569	54	-16.431	58	1.5	Horizontal	16.967
16.341 GHz	2	36.624	54	-17.376	121	2.177	Horizontal	17.286

Table 6: Radiated Emissions 1 – 17 GHz Lowest Frequency



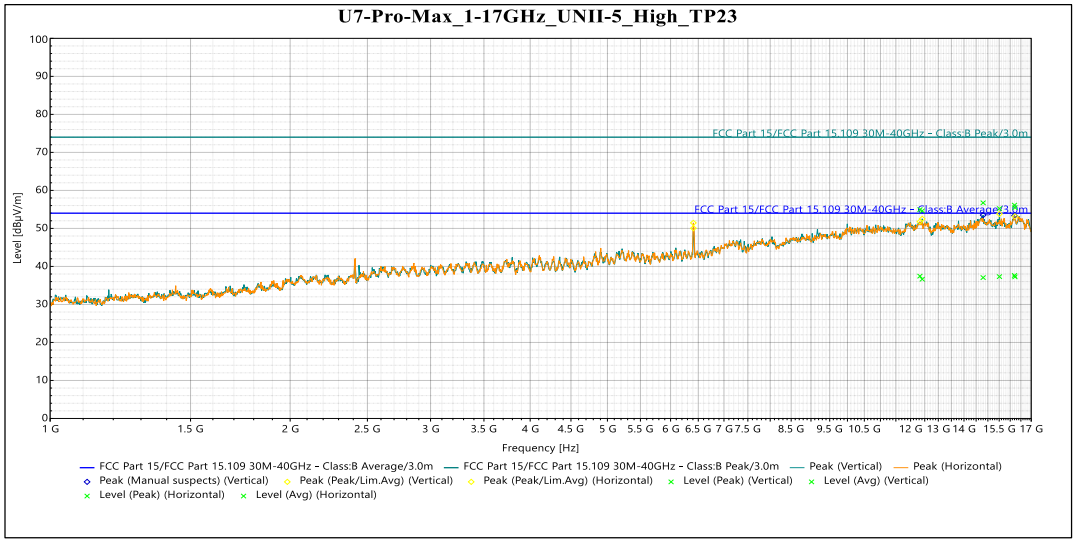
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
12.341 GHz	54.178	74	-19.822	130	3.1	Vertical	16.582
15.735 GHz	54.67	74	-19.33	43	3.1	Vertical	15.924
12.486 GHz	54.602	74	-19.398	162	1.522	Horizontal	16.443
16.411 GHz	56.942	74	-17.058	135	2	Horizontal	18.047

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
12.341 GHz	37.498	54	-16.502	130	3.1	Vertical	16.582
15.735 GHz	36.833	54	-17.167	43	3.1	Vertical	15.924
12.486 GHz	35.691	54	-18.309	162	1.522	Horizontal	16.443
16.411 GHz	37.692	54	-16.308	135	2	Horizontal	18.047

Table 7: Radiated Emissions 1 – 17 GHz Middle Frequency



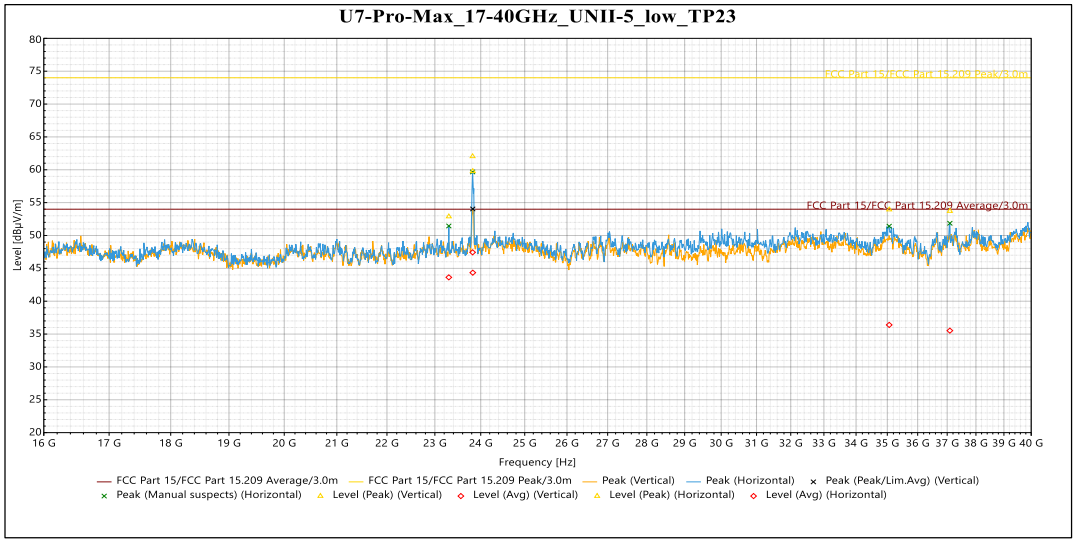
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
12.41 GHz	54.624	74	-19.376	48	2.041	Vertical	16.312
14.797 GHz	56.734	74	-17.266	39	3.797	Vertical	16.736
15.511 GHz	55.213	74	-18.787	84	2.398	Vertical	15.986
16.2 GHz	56.121	74	-17.879	7	2.001	Vertical	18.025
12.329 GHz	54.939	74	-19.061	173	1.692	Horizontal	16.639
16.221 GHz	55.463	74	-18.537	289	3.978	Horizontal	17.744

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
12.41 GHz	36.631	54	-17.369	48	2.041	Vertical	16.312
14.797 GHz	37.062	54	-16.938	39	3.797	Vertical	16.736
15.511 GHz	37.31	54	-16.69	84	2.398	Vertical	15.986
16.2 GHz	37.618	54	-16.382	7	2.001	Vertical	18.025
12.329 GHz	37.444	54	-16.556	173	1.692	Horizontal	16.639
16.221 GHz	37.246	54	-16.754	289	3.978	Horizontal	17.744

Table 8: Radiated Emissions 1 – 17 GHz Highest Frequency



Peak

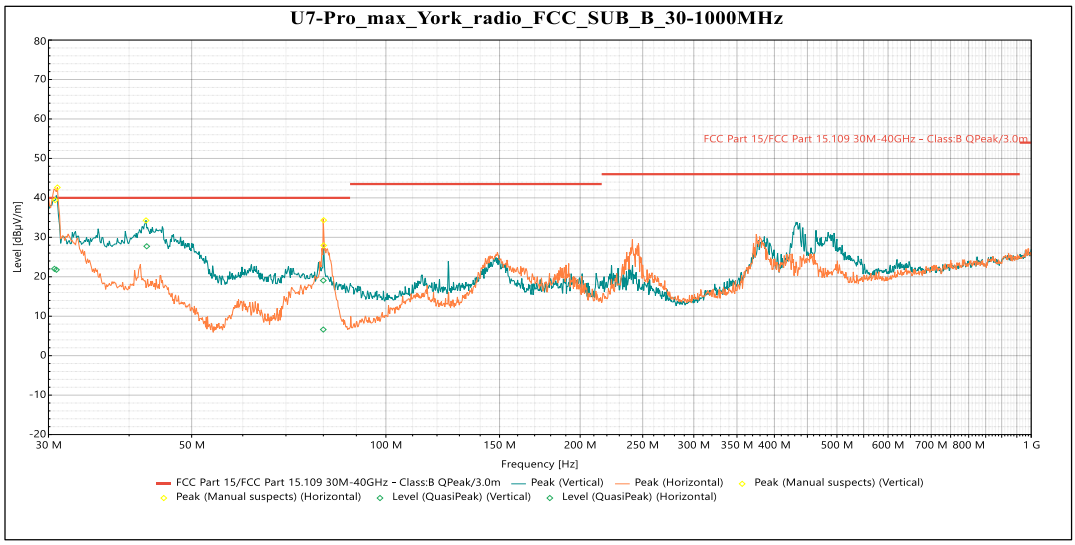
Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
23.824 GHz	59.785	74	-14.215	64	Vertical	0.812
23.3 GHz	52.879	74	-21.121	17	Horizontal	0.407
23.82 GHz	62.039	74	-11.961	16	Horizontal	0.799
35.062 GHz	53.935	74	-20.065	147	Horizontal	3.183
37.092 GHz	53.721	74	-20.279	301	Horizontal	4.231

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
23.824 GHz	44.338	54	-9.662	64	Vertical	0.812
23.3 GHz	43.629	54	-10.371	17	Horizontal	0.407
23.82 GHz	47.443	54	-6.557	16	Horizontal	0.799
35.062 GHz	36.388	54	-17.612	147	Horizontal	3.183
37.092 GHz	35.516	54	-18.484	301	Horizontal	4.231

Table 9: Radiated Emissions 17 – 40 GHz Lowest Frequency (worse case)

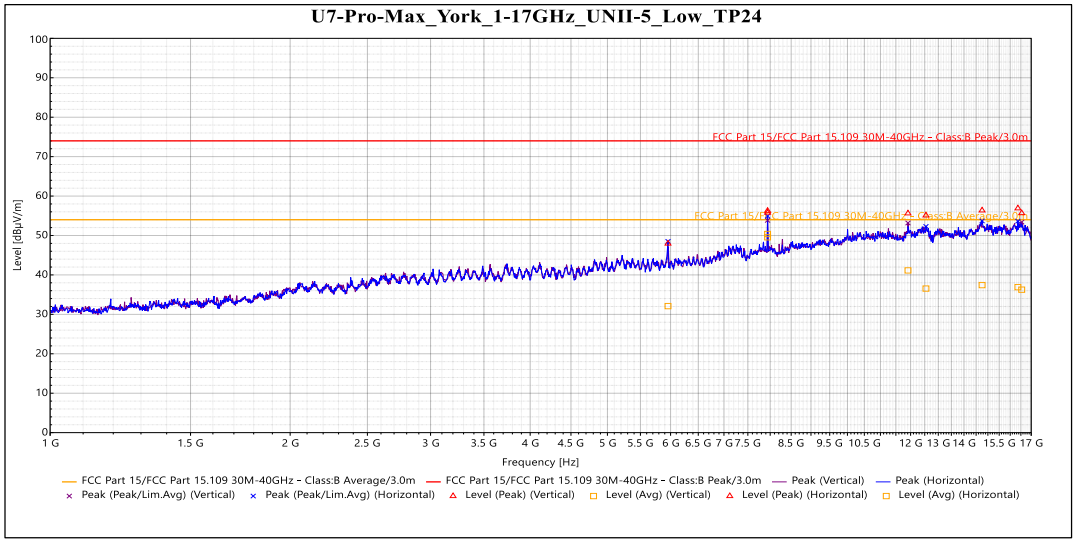
York Module



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 10: Radiated Emissions 30 – 1000 MHz



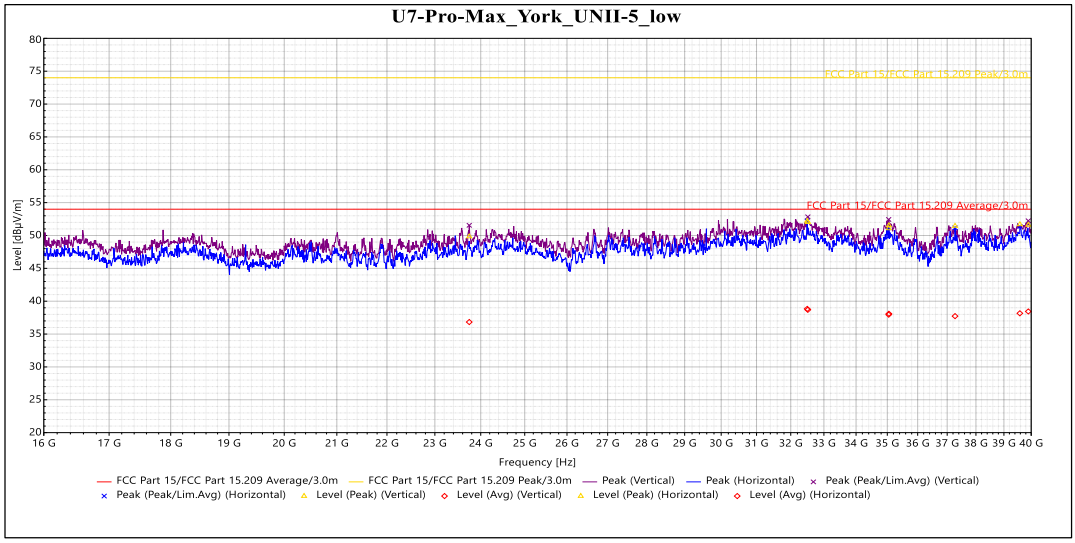
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
7.9399 GHz	56.266	74	-17.734	30	1.529	Vertical	10.975
11.91 GHz	55.611	74	-18.389	1	1.632	Vertical	16.544
16.54 GHz	55.666	74	-18.334	88	1.99	Vertical	18.355
5.956 GHz	47.963	74	-26.037	292	3.81	Horizontal	6.863
7.9403 GHz	55.805	74	-18.195	2	1.532	Horizontal	10.975
12.544 GHz	55.088	74	-18.912	139	1.631	Horizontal	16.612
14.752 GHz	56.364	74	-17.636	334	3.073	Horizontal	17.048
16.359 GHz	56.887	74	-17.113	209	3.108	Horizontal	17.445

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
7.9399 GHz	50.378	54	-3.622	30	1.529	Vertical	10.975
11.91 GHz	41.142	54	-12.858	1	1.632	Vertical	16.544
16.54 GHz	36.257	54	-17.743	88	1.99	Vertical	18.355
5.956 GHz	32.089	54	-21.911	292	3.81	Horizontal	6.863
7.9403 GHz	49.536	54	-4.464	2	1.532	Horizontal	10.975
12.544 GHz	36.541	54	-17.459	139	1.631	Horizontal	16.612
14.752 GHz	37.417	54	-16.583	334	3.073	Horizontal	17.048
16.359 GHz	36.889	54	-17.111	209	3.108	Horizontal	17.445

Table 11: Radiated Emissions 1 – 17 GHz on the Lowest Frequency (worse case)



Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
23.7455954 GHz	49.843	74	-24.157	269	Vertical	1.646
32.5116902 GHz	52.034	74	-21.966	169	Vertical	2.498
35.0454945 GHz	51.073	74	-22.927	126	Vertical	3.358
39.8929215 GHz	51.609	74	-22.391	187	Vertical	3.22
32.4931821 GHz	52.206	74	-21.794	54	Horizontal	2.338
35.0513556 GHz	51.529	74	-22.471	75	Horizontal	3.296
37.2706662 GHz	51.443	74	-22.557	28	Horizontal	4.148
39.5814093 GHz	51.693	74	-22.307	305	Horizontal	2.624

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
23.7455954 GHz	36.833	54	-17.167	269	Vertical	1.646
32.5116902 GHz	38.694	54	-15.306	169	Vertical	2.498
35.0454945 GHz	37.953	54	-16.047	126	Vertical	3.358
39.8929215 GHz	38.439	54	-15.561	187	Vertical	3.22
32.4931821 GHz	38.826	54	-15.174	54	Horizontal	2.338
35.0513556 GHz	38.089	54	-15.911	75	Horizontal	3.296
37.2706662 GHz	37.733	54	-16.267	28	Horizontal	4.148
39.5814093 GHz	38.163	54	-15.837	305	Horizontal	2.624

Table 12: Radiated Emissions 17 – 40 GHz on the Lowest Frequency (worse case)

5.6 §15.407(a) Maximum Power Spectral Density

The maximum average power spectral density conducted from the intentional radiator of the antenna shall not be greater than 5 dBm EIRP in any 1 MHz band during any time interval of continuous transmission. Results of this testing are summarized.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured PSD
EHT 20	5955	Mcs0_Nss2	13	13.78	-1.68
EHT 20	6195	Mcs0_Nss2	14	14.40	-1.45
EHT 20	6415	Mcs0_Nss2	12	14.48	-1.86
EHT 40	5965	Mcs0_Nss2	16	16.66	-1.75
EHT 40	6205	Mcs0_Nss2	17	17.41	-1.45
EHT 40	6405	Mcs0_Nss2	16	18.28	-1.11
EHT 80	5985	Mcs0_Nss2	20	20.45	-1.04
EHT 80	6225	Mcs0_Nss2	20	20.67	-0.98
EHT 80	6385	Mcs0_Nss2	19	21.14	-1.37
EHT 160	6025	Mcs0_Nss2	21	21.99	-1.85
EHT 160	6185	Mcs0_Nss2	22	22.97	-1.31
EHT 160	6325	Mcs0_Nss2	21	23.08	-2.00
EHT 320	6265	Mcs0_Nss2	21	22.92	-1.36

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured PSD
EHT 20	5955	Mcs0_Nss1	10	10.69	-4.75
EHT 20	6195	Mcs0_Nss1	11	11.86	-4.08
EHT 20	6415	Mcs0_Nss1	10	12.39	-4.18
EHT 40	5965	Mcs0_Nss1	13	13.84	-4.51
EHT 40	6205	Mcs0_Nss1	14	14.77	-4.36
EHT 40	6405	Mcs0_Nss1	13	15.24	-4.30
EHT 80	5985	Mcs0_Nss1	16	16.83	-4.57

EHT 80	6225	Mcs0_Nss1	17	17.68	-4.20
EHT 80	6385	Mcs0_Nss1	16	18.24	-4.43
EHT 160	6025	Mcs0_Nss1	19	19.81	-4.29
EHT 160	6185	Mcs0_Nss1	19	19.98	-4.57
EHT 160	6325	Mcs0_Nss1	19	20.86	-4.40

Result

The maximum average power spectral density was less than the limit of 5 dBm EIRP; therefore, the EUT complies with the specification.

5.6.1 OFDMA RU Check

If EUT supports OFDMA multiple partial Resource Unit (RU) configurations were verified and the worst case mode was tested.

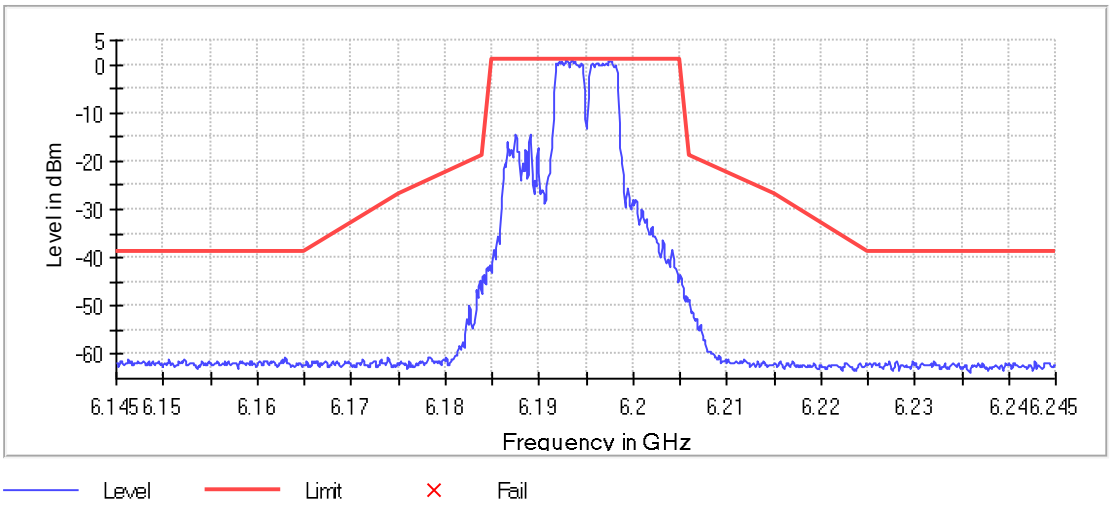


Figure 5: 6195 20MHz RU Vérification - Center

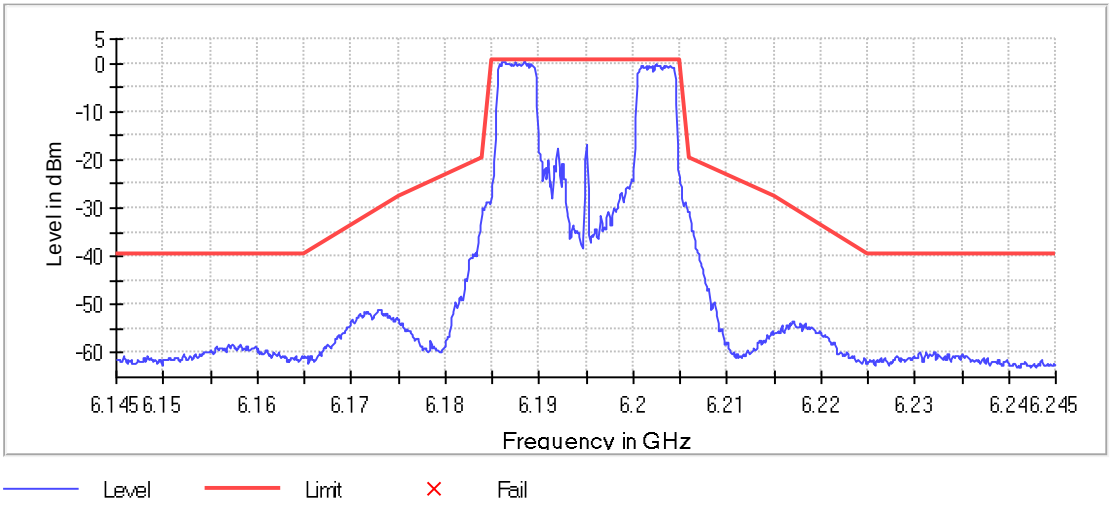


Figure 6: 6195 20MHz RU Vérification - Edge

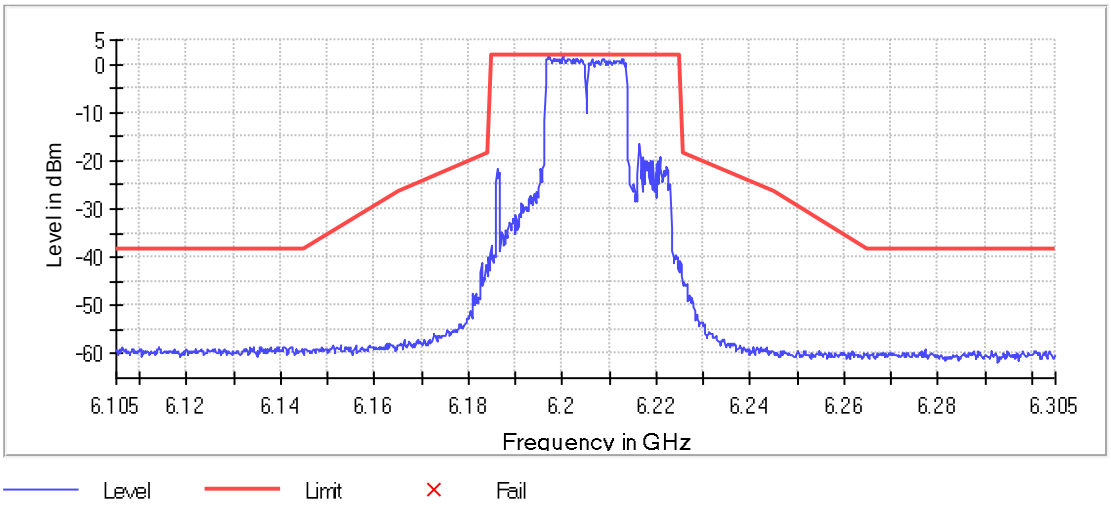


Figure 7: 6205 40MHz RU Vérification - Center

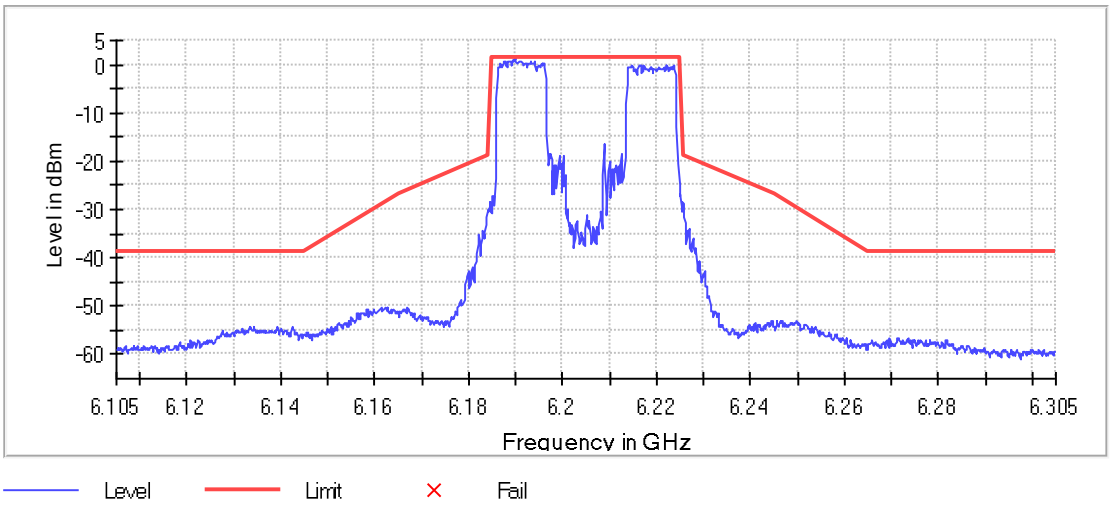


Figure 8: 6205 40MHz RU Vérification - Edge

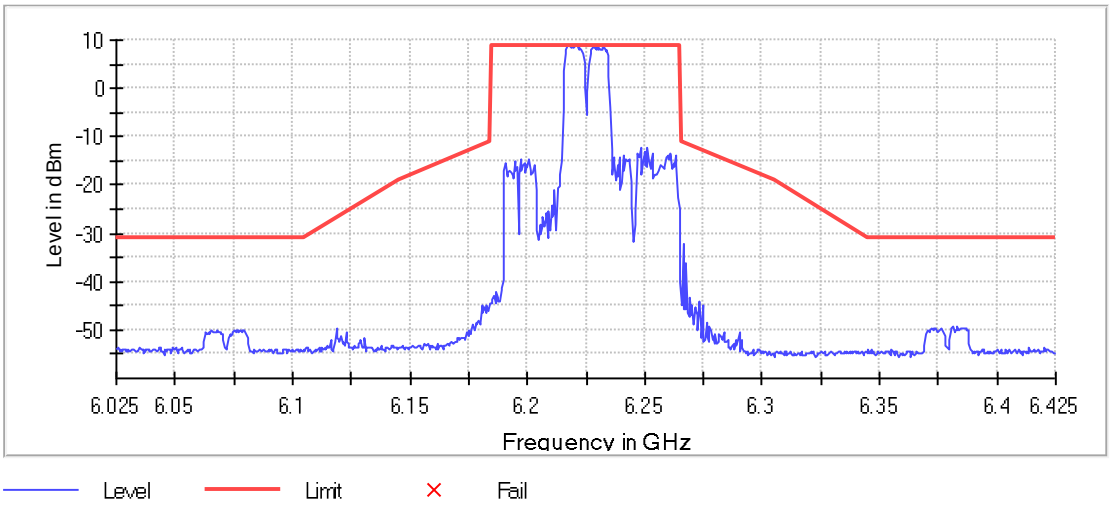


Figure 9: 6225 80MHz RU Vérification - Center

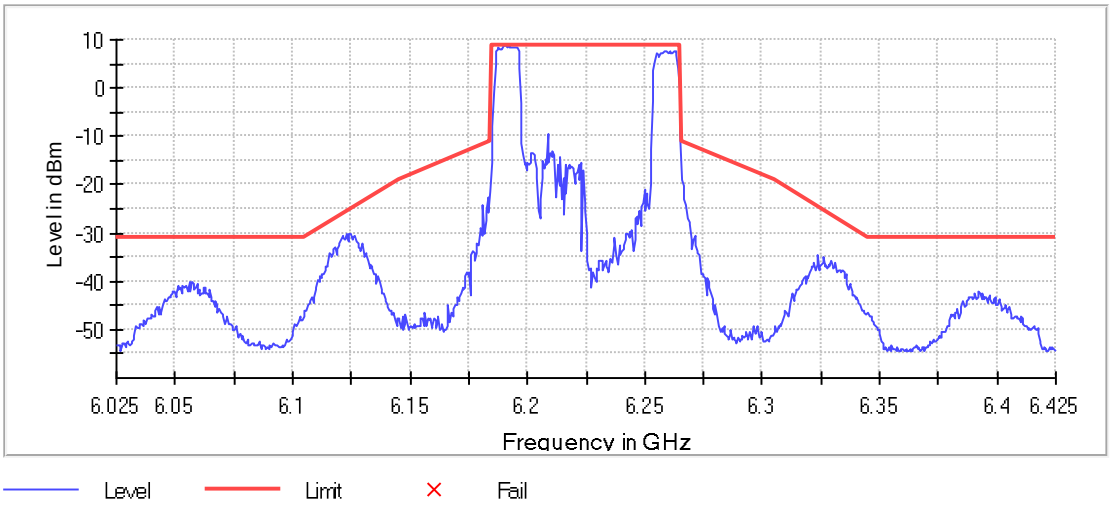


Figure 10: 6225 80MHz RU Vérification – Edge

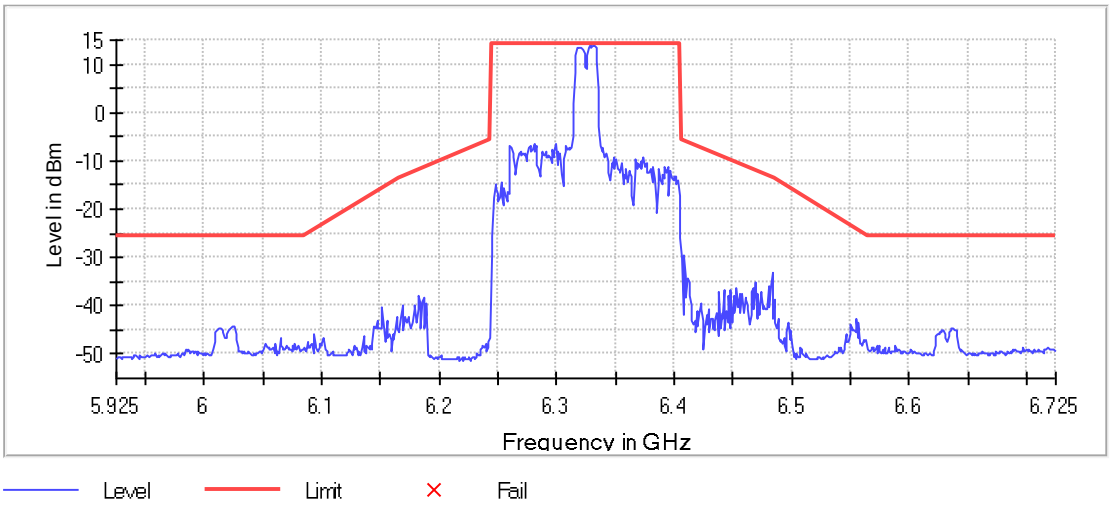


Figure 11: 6325 160MHz RU Vérification - Center

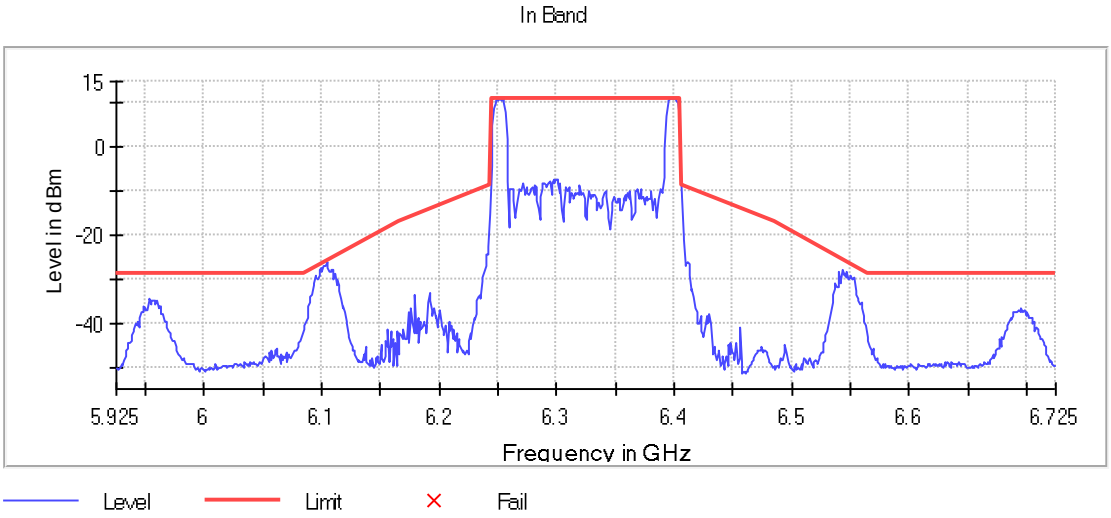


Figure 12: 6325 160MHz RU Vérification - Edge

5.7 §15.407(d) Contention Based Protocol

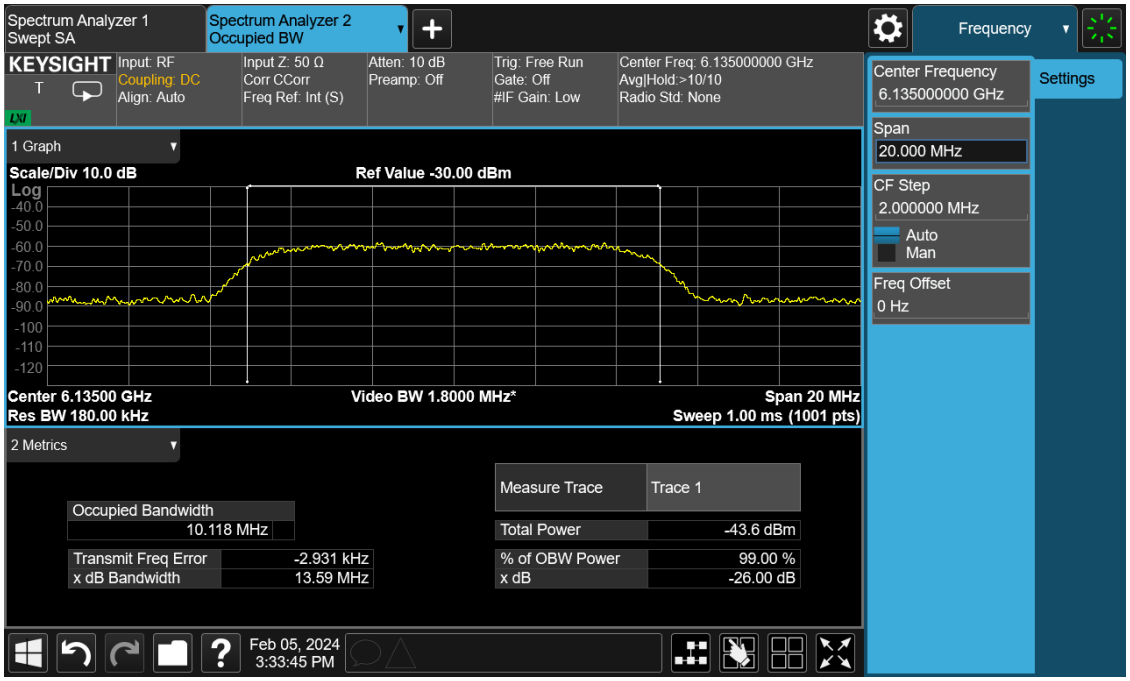
This product was tested and found to be compliant with the requirements of Contention-based Protocol as specified in FCC Part 15.407 and KDB 987594 D02.

Initially the test setup was connected directly to the signal source with all splitters (splitters terminated with a 50-ohm loads on unused ports) and cables in place to verify the AWGN signal is 10MHz wide at a signal level of less than or equal to -82dBm and for conducted measurements the threshold was adjusted for an antenna gain of 0 dBi. The level at the signal generator required to achieve the required signal level at the DUT was recorded for use during testing.

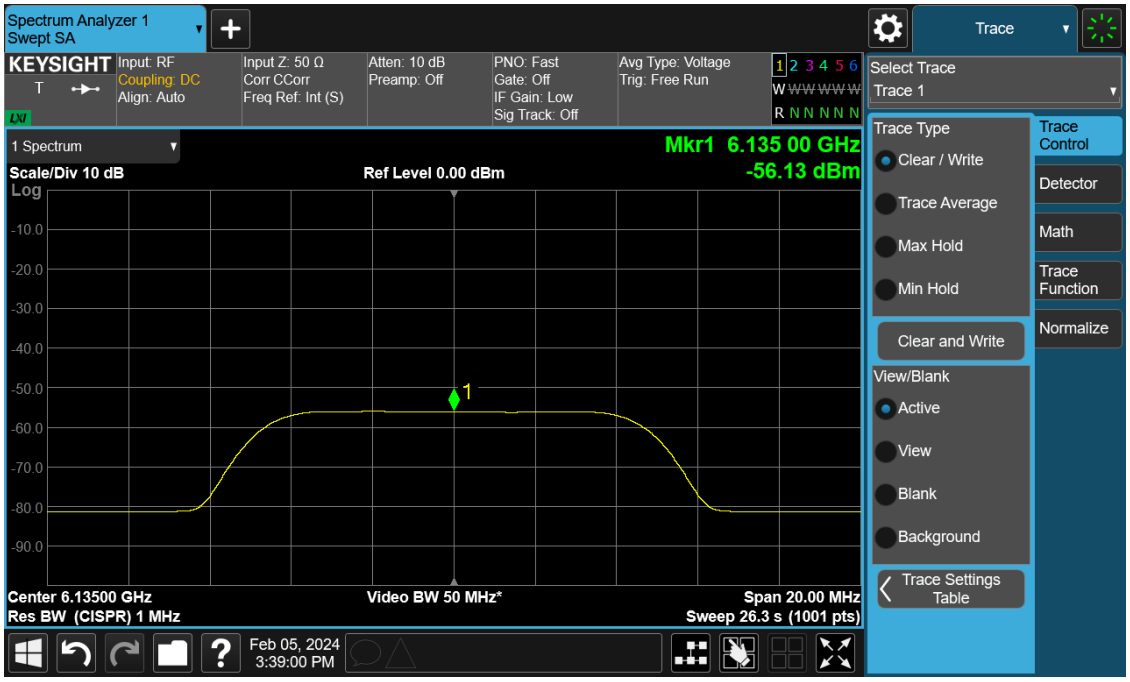
The DUT was connected as shown in figure 4 above and set to transmit at a constant duty cycle at each frequency and bandwidth noted in the table below and verified to be communicating with the companion device as intended.

Starting at the levels established above, the AWGN signal was introduced to the DUT and increased to determine a threshold level at where the DUT will terminate with at least a 90% detection rate. The level at the DUT, which the 90% detection rate was achieved was recorded as the “Sensitivity Level” below.

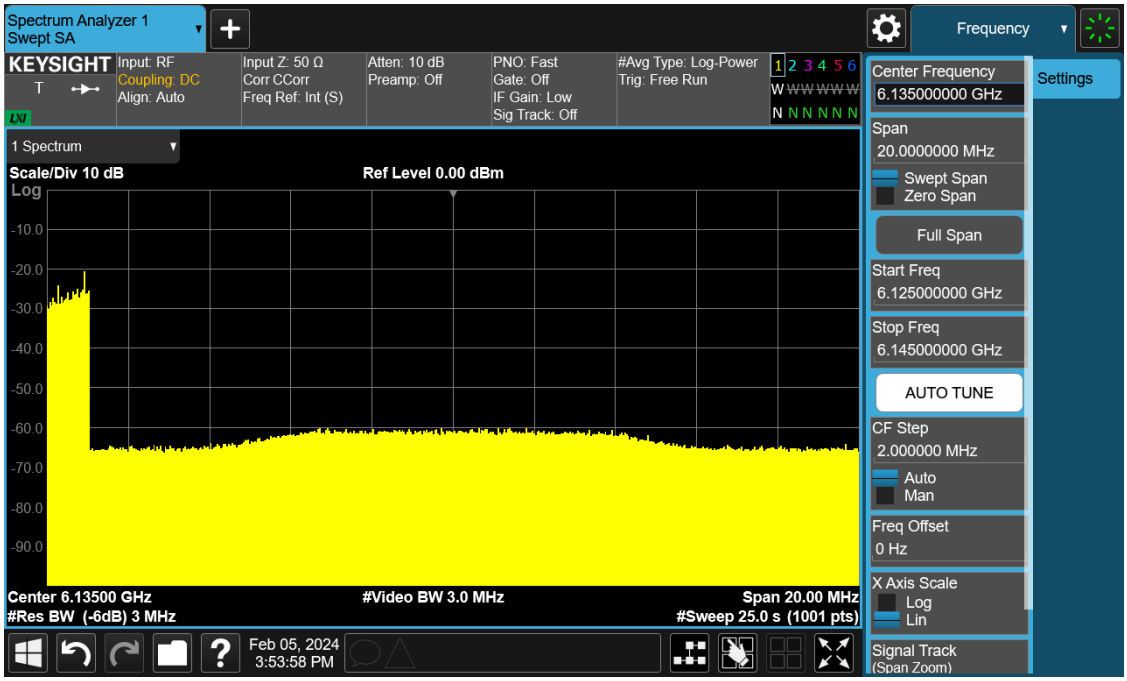
Testing shall be repeated at each applicable channel and bandwidth as noted in Table 1 of KDB 987594 D02.



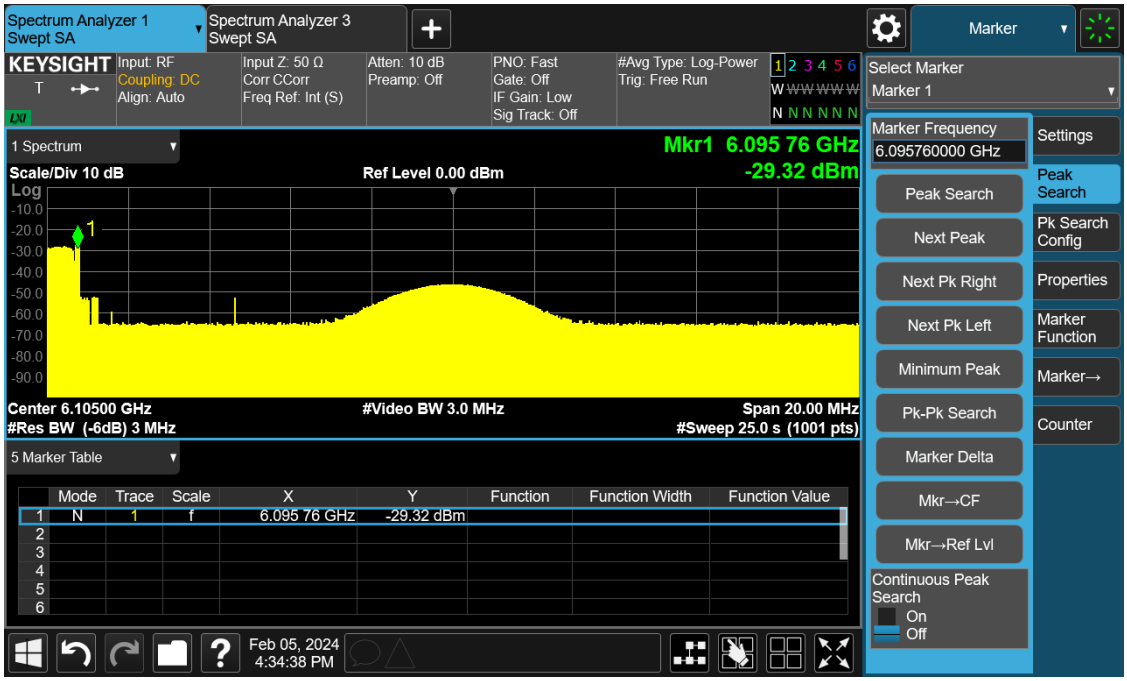
Plot 1: Signal BW Details



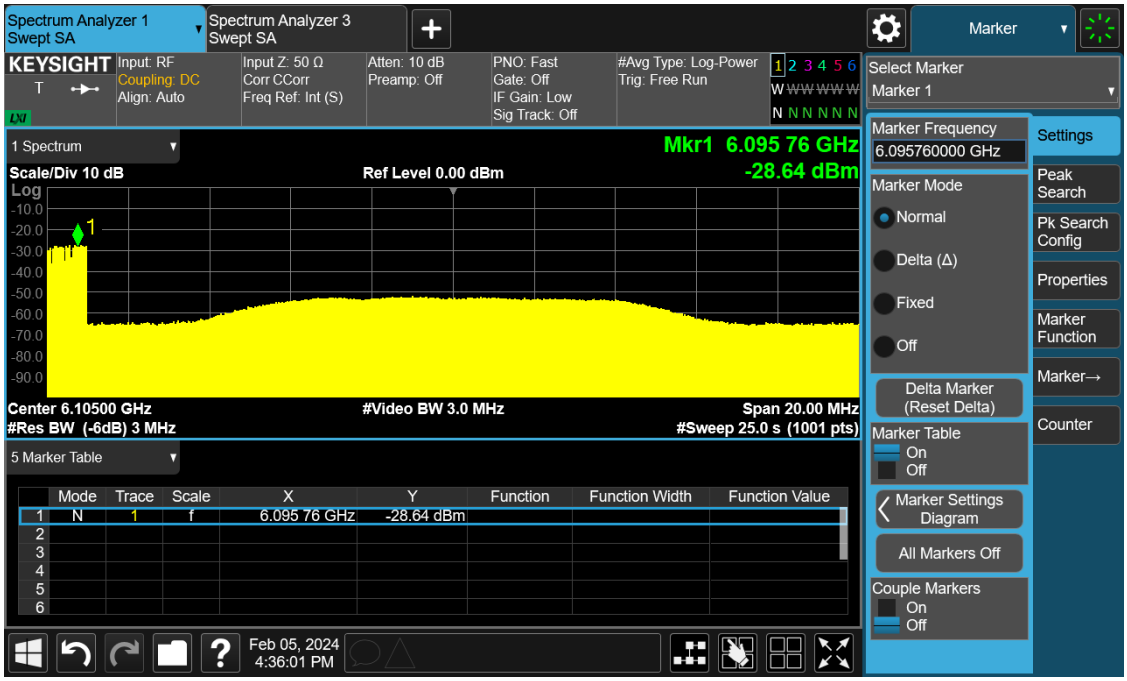
Plot 2: AWGN Signal Level Details



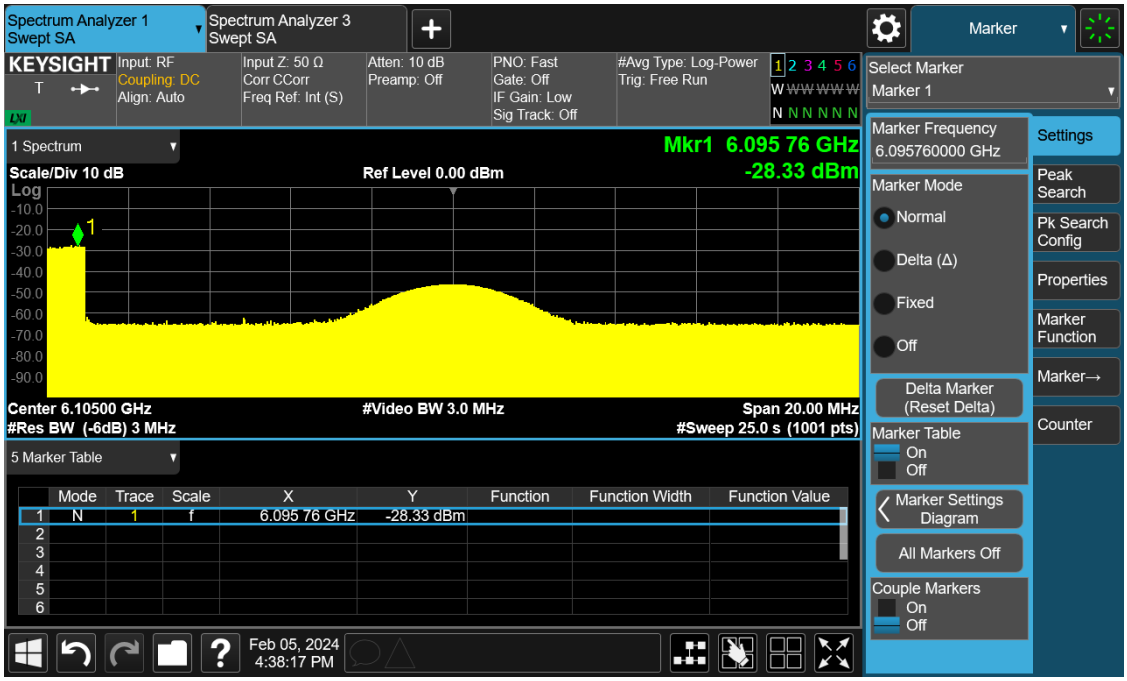
Plot 3: AWGN Signal Detection Details 20 MHz BW 6135



Plot 4: AWGN Signal Detection Details 320 MHz BW 6105 – 5950



Plot 5: AWGN Signal Detection Details 320 MHz BW 6105



Plot 6: AWGN Signal Detection Details 160MHz BW 6105 – 6250

Contention Based Protocol 987594 D02 U-NNI 6 GHz EMC Measurement							
Band	BW_{EUT}	F_{c1}	F_{c2}	Signal Power Level (dBm)	Limit (dBm)	Detection Rate (%)	Margin (dB)
UNII-5 5.925 - 6.425GHz	20	6135	6135	-76	-56.1	100	19.9
	160	6185	6110	-67	-56.1	100	10.9
			6185	-76	-56.1	100	19.9
			6260	-73	-56.1	100	16.9
	320	6105	5950	-62	-56.1	100	5.9
			6105	-67	-56.1	100	10.9
			6250	-67	-56.1	100	10.9
UNII-6 6.425 - 6.525GHz	20	6455	6455	-65	-56.1	100	8.9
	160	6505	6430	-67	-56.1	100	10.9
			6505	-74	-56.1	100	17.9
			6580	-65	-56.1	100	8.9
UN1I-7 6.525 - 6.875GHz	20	6695	6695	-76	-56.1	100	19.9
	160	6665	6595	-67	-56.1	100	10.9
			6665	-76	-56.1	100	19.9
			6740	-65	-56.1	100	8.9
	320	6745	6590	-60	-56.1	100	3.9
			6745	-76	-56.1	100	19.9
			6890	-62	-56.1	100	5.9
UNII-8 6.875 - 7.125GHz	20	7015	7015	-76	-56.1	100	19.9
	160	6985	6910	-72	-56.1	100	15.9
			6985	-76	-56.1	100	19.9
			7060	-67	-56.1	100	10.9

Table 13: Trial Table

Result

The EUT complies with the specification.

-- End of Test Report --