UNIFIED COMPLIANCE LABORATORY

427 West 12800 South
Draper, UT 84020

Test Report

Certification

FCC ID	SWX-E7
ISED ID	6545A-E7
Equipment Under Test	E7
Test Report Serial Number	TR9467_04
Date of Tests	21 – 23 February; 5 - 7 March; 11 April; 6 June; 6 November 2024
Report Issue Date	4 November 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

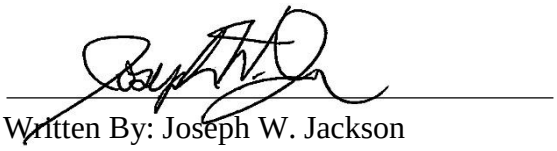
This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart E. This report may be reproduced in full. Partial reproduction of this report may only be made with 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	E7
FCC ID	SWX-E7
ISED ID	6545A-E7

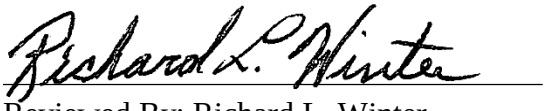
On this 4th day of November 2024, I individually and for Unified Compliance Laboratory certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge and are made in good faith.

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	4 November 2024
02	Amended Sections 5.3 with Corrected Measurements, 5.4 with Corrected Limit and Nss_1 Data and 5.6 with Corrected Limit and Nss_1 Data	6 November 2024
03	Added Nss_1 Limit to Section 5.6	7 November 2024
04	Removed Tables in Sections 5.4 and 5.6	8 November 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	E7
Serial Number	1FD62F
Dimensions (cm)	25 x 25 x 4.35

2.2 Description of EUT

The E7 is a WiFi 7 access point with (1) 10GbE PoE port and (1) 1GbE PoE port. The E7 transmits in the 2.4 GHz, 5 GHz, and 6 GHz frequency bands using integral antennas and is powered by an 802.3bt PoE power adapter.

This device does not support channel puncturing.

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	TP9
		6195, 6415	TP11
	be (EHT40)	5965	TP13
		6205, 6405	TP14
	be (EHT80)	5985	TP15
		6225	TP17
		6385	TP18
	be (EHT160)	6025	TP18
		6185	TP20
		6325	TP21
	be (EHT320)	6265	TP20

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: E7 SN: 1FD62F	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 E7, 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 E7 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	21.2 – 23.7 °C
Humidity	25.6 – 33.2 %
Barometric Pressure	1012 mBar

2.6 Operating Modes

The E7 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.

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

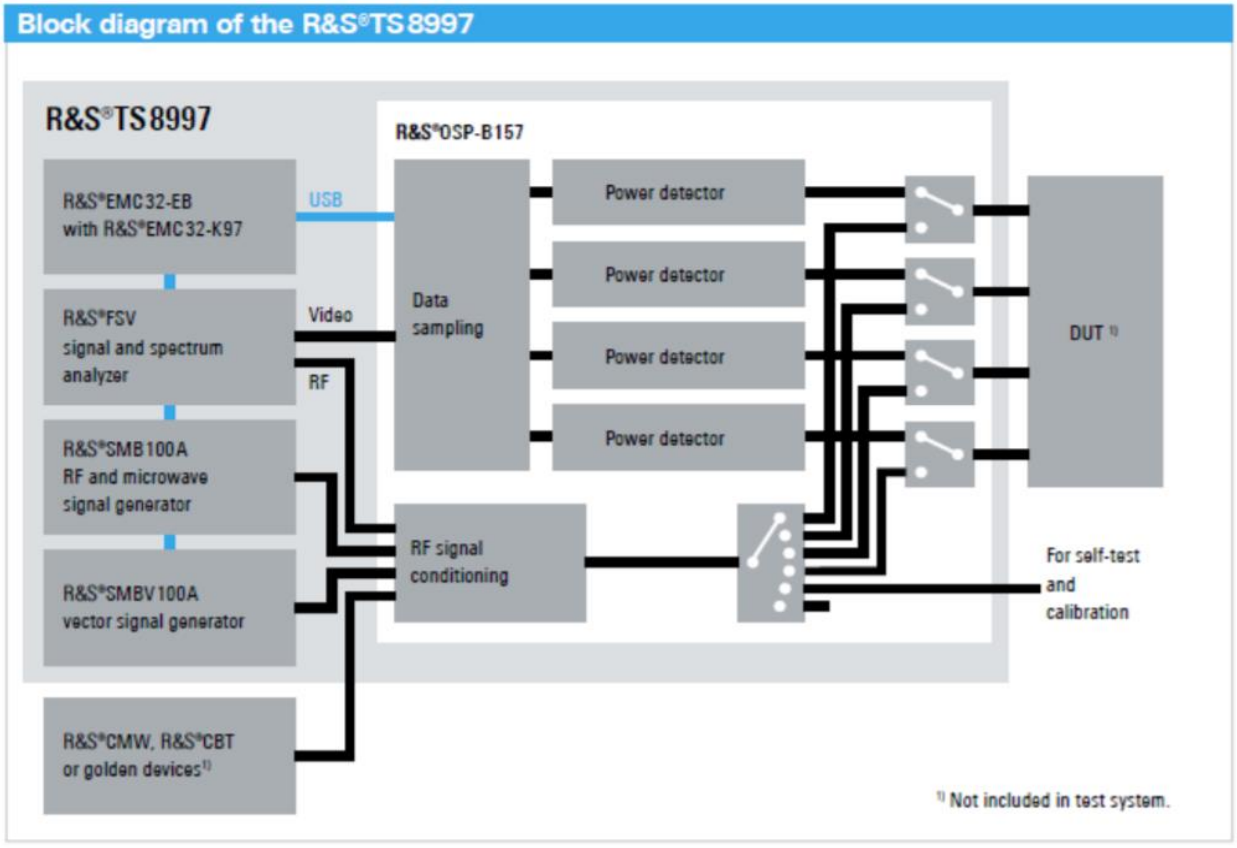


Diagram 1: Test Configuration Block Diagram

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-248 §4.4	Bandwidth Requirement	5955 to 6415	Compliant
15.407(a)	RSS-248 §4.5	Peak Output Power[1]	5955 to 6415	Compliant
15.407(f)	RSS-248 §4.6	Antenna Conducted Spurious Emissions[1]	0.009 to 40000	N/A
15.407(a)	RSS-248 §4.6	Radiated Spurious Emissions	0.009 to 40000	Compliant
15.407(a)	RSS-248 §4.5	Peak Power Spectral Density[1]	5955 to 6415	Compliant
15.407(d)	RSS-248 §4.7	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 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 2025. 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 2025.

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	6/27/2023	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

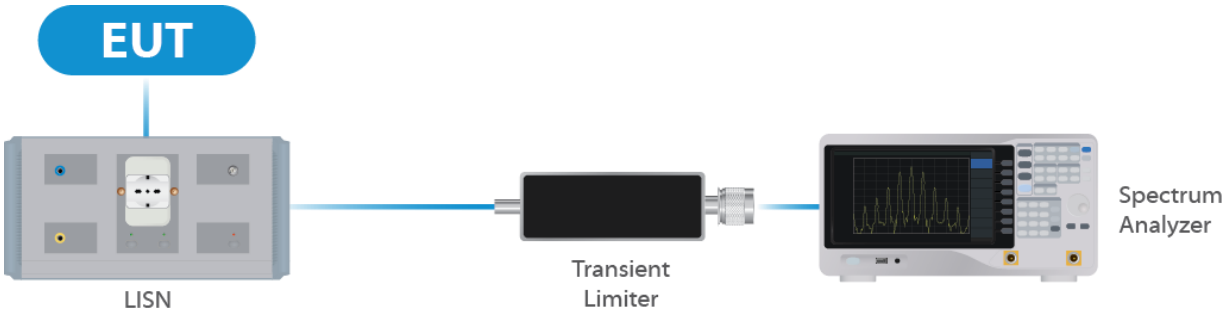


Figure 1: Conducted Emissions Test

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	4/12/2024	4/19/2025
Switch Extension	R&S	OSP-150W	UCL-2870	4/12/2024	4/19/2025

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

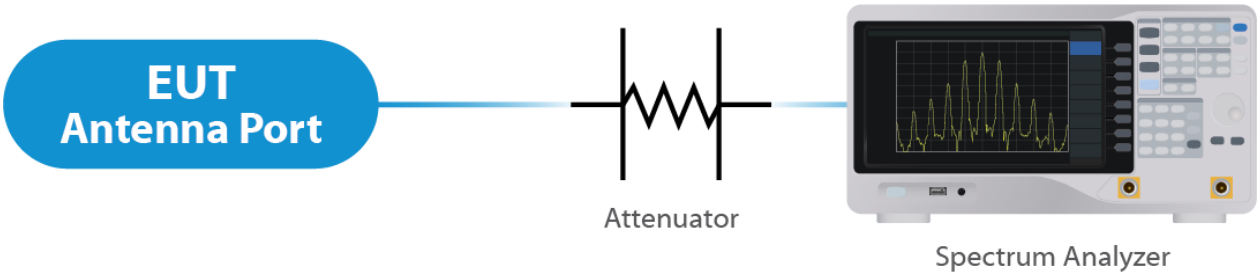


Figure 2: Direct Connect at the Antenna Port Test

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	3/10/2023	3/10/2025
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

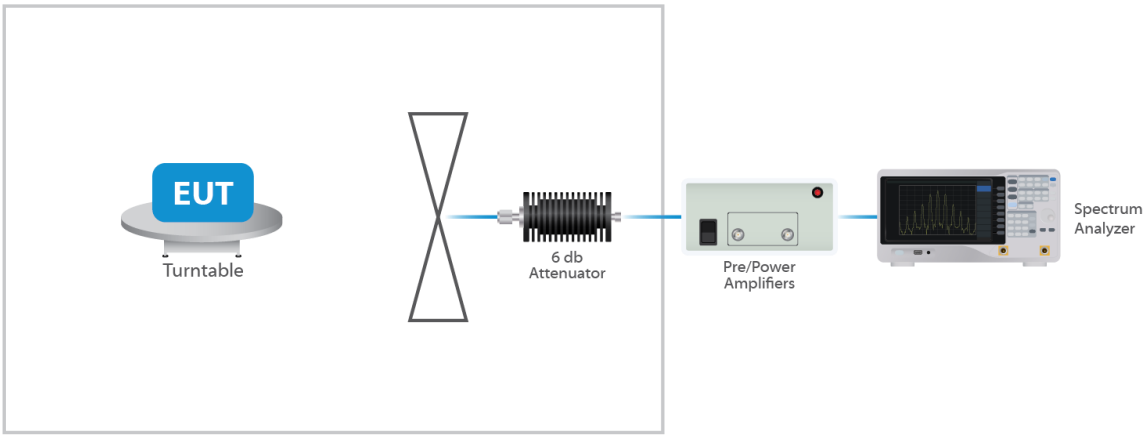


Figure 3: Radiated Emissions Test

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	5/3/2024	5/3/2025
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

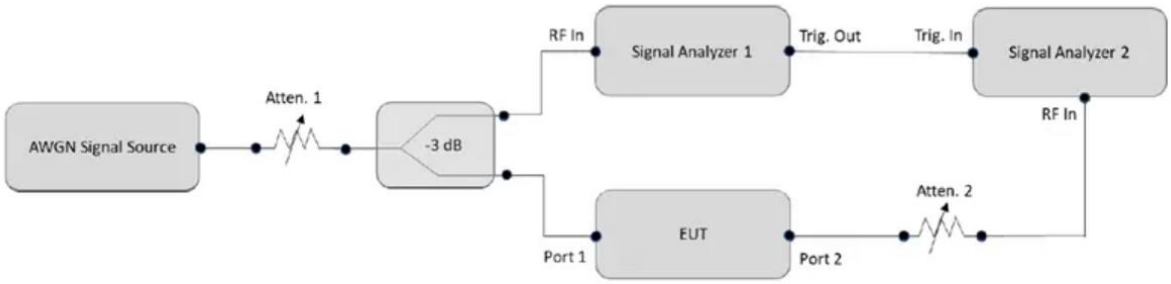


Figure 1. CBP conducted test setup diagram. Source: KDB 987594 D02 V01r01

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 internal antenna. 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.

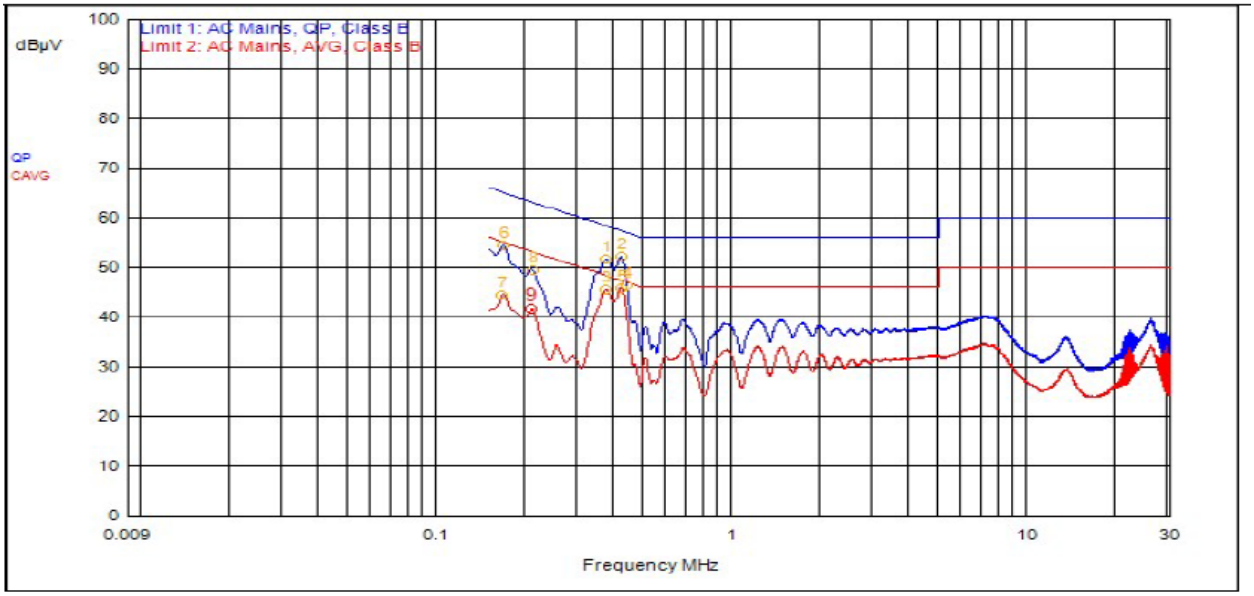
For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for NANT ≤ 4;
For PSD measurements, when Nss=1: Directional Gain = 10 log(NANT/NSS) dB + Antenna Gain (dBi), or (6.02 dB + 6 dBi) = 12.02 dBi.

Results

The EUT complied with the specification

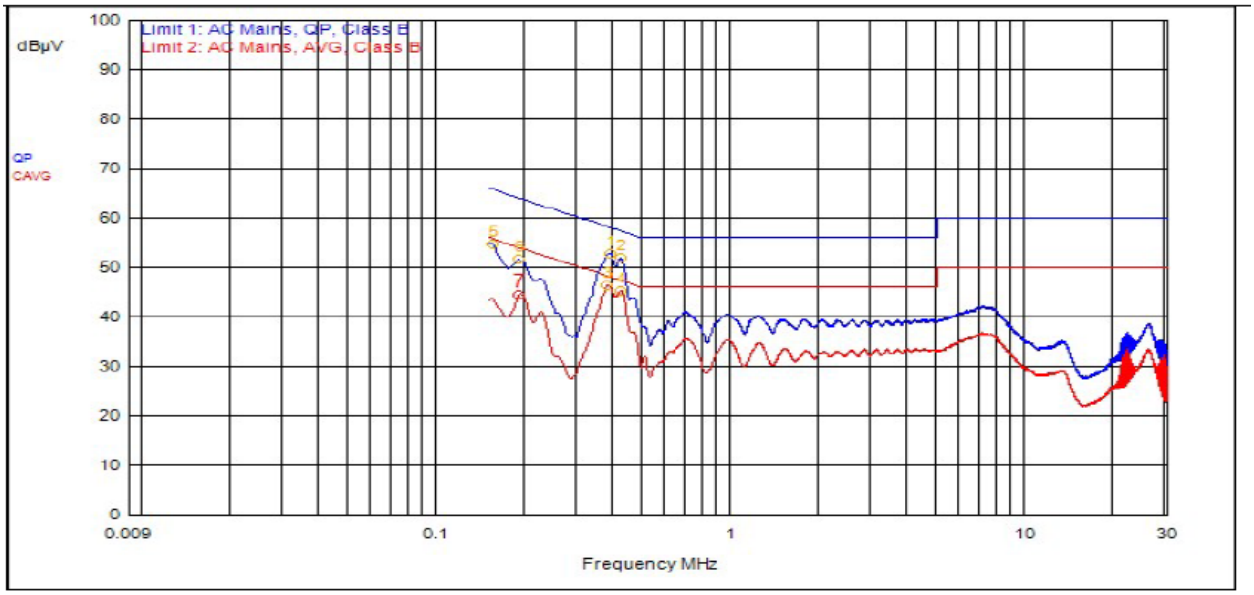
5.2 Conducted Emissions at Mains Ports Data

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
2	417,000kHz	12.39	0.00		QPeak	39.76	52.15	57.51	-5.36			
1	369,000kHz	12.37	0.00		QPeak	39.39	51.76	58.52	-6.77			
6	168,000kHz	12.35	0.00		QPeak	42.03	54.38	65.06	-10.68			
4	438,000kHz	12.40	0.00		QPeak	33.97	46.37	57.10	-10.73			
8	210,000kHz	12.37	0.00		QPeak	37.09	49.46	63.21	-13.75			
3	369,000kHz	12.37	0.00		C_AVG	33.20	45.57			48.52	-2.96	
5	417,000kHz	12.39	0.00		C_AVG	33.55	45.94			47.51	-1.56	
7	165,000kHz	12.36	0.00		C_AVG	31.95	44.31			55.21	-10.90	
9	207,000kHz	12.37	0.00		C_AVG	29.23	41.60			53.32	-11.72	

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	384,000kHz	12.39	0.00		QPeak	40.41	52.80	58.19	-5.40			
2	417,000kHz	12.40	0.00		QPeak	39.46	51.86	57.51	-5.65			
5	153,000kHz	12.37	0.00		QPeak	42.36	54.73	65.84	-11.11			
6	189,000kHz	12.41	0.00		QPeak	39.28	51.69	64.08	-12.39			
3	375,000kHz	12.39	0.00		C_AVG	33.92	46.31			48.39	-2.08	
4	417,000kHz	12.40	0.00		C_AVG	32.90	45.30			47.51	-2.21	
7	189,000kHz	12.41	0.00		C_AVG	32.07	44.48			54.08	-9.60	

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 662911 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	33.7	51.2
be 20	6195	21.3	44.3
be 20	6415	31.7	52.5
be 40	5965	63.3	102.8
be 40	6205	38.3	96.0
be 40	6405	60.5	99.5
be 80	5985	121.5	191.0
be 80	6225	78.5	157.0
be 80	6385	130.0	221.5
be 160	6025	160.0	167.0
be 160	6185	165.0	241.0
be 160	6325	165.0	279.0
be 320	6265	317.5	336.0

Result

All chains were tested and the highest bandwidth per chain is reported above.
For channels with a nominal bandwidth of 320 MHz, compliance is demonstrated by way of the 99% bandwidth. 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 662911 D01. Please see associated annex for details on instrument settings.

The maximum average RF conducted output power measured for this device was 29.77 dBm or 948.42 mW. The limit is 36 dBm EIRP. The antenna has a gain of 6 dBi.

The Nss1 test data is being shown representing worse case.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	EIRP
EHT20	5955	Mcs0_Nss1	31	29.19	35.19
EHT20	6195	Mcs0_Nss1	27	29.77	35.77
EHT20	6415	Mcs0_Nss1	30	29.06	35.06
EHT40	5965	Mcs0_Nss1	31	29.43	35.43
EHT40	6205	Mcs0_Nss1	26	29.75	35.75
EHT40	6405	Mcs0_Nss1	31	28.87	34.87
EHT80	5985	Mcs0_Nss1	31	29.70	35.70
EHT80	6225	Mcs0_Nss1	26	29.11	35.11
EHT80	6385	Mcs0_Nss1	31	28.84	34.84
EHT160	6025	Mcs0_Nss1	21	25.65	31.68
EHT160	6185	Mcs0_Nss1	25	28.88	34.88
EHT160	6325	Mcs0_Nss1	27	29.73	35.73
EHT 320	6265	Mcs0_Nss1	22	25.54	31.54

Result

In the configuration tested, the maximum average RF outpower was less than 36 dBm EIRP; therefore, the EUT compiled with the requirements of the specification (see spectrum analyzer plots in attached Annex).

***Gated EIRP shown in the Annex is the conducted measurement**

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 6 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.

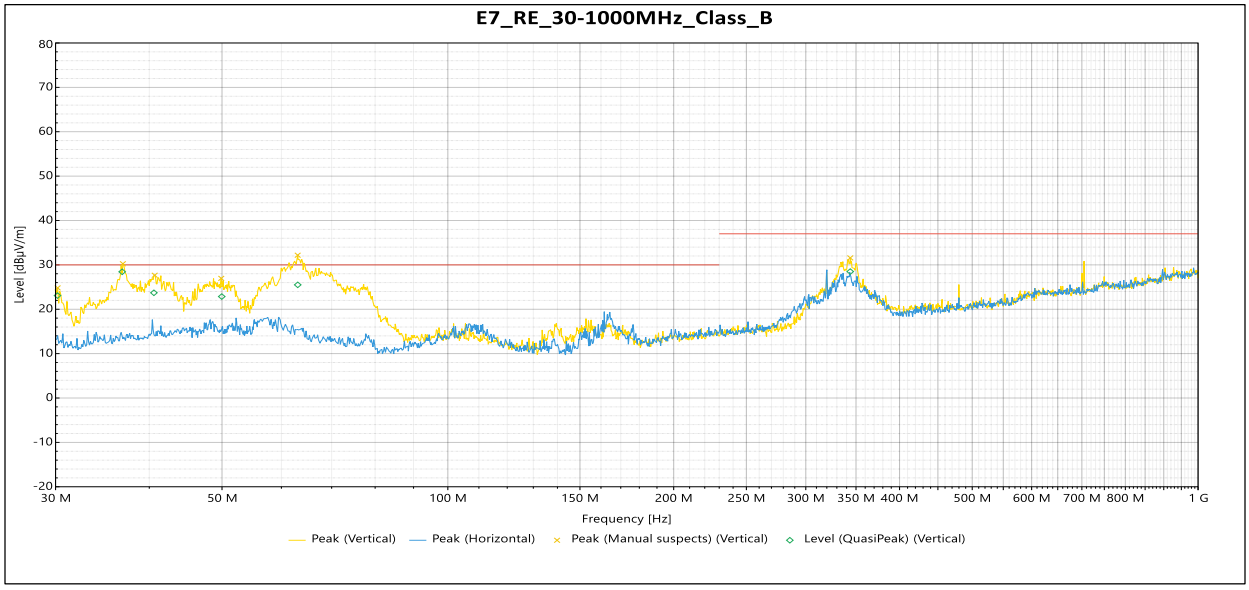
5.5.2 Radiated Spurious Emissions in the Restricted Bands of § 15.205

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 TP31.

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

Result

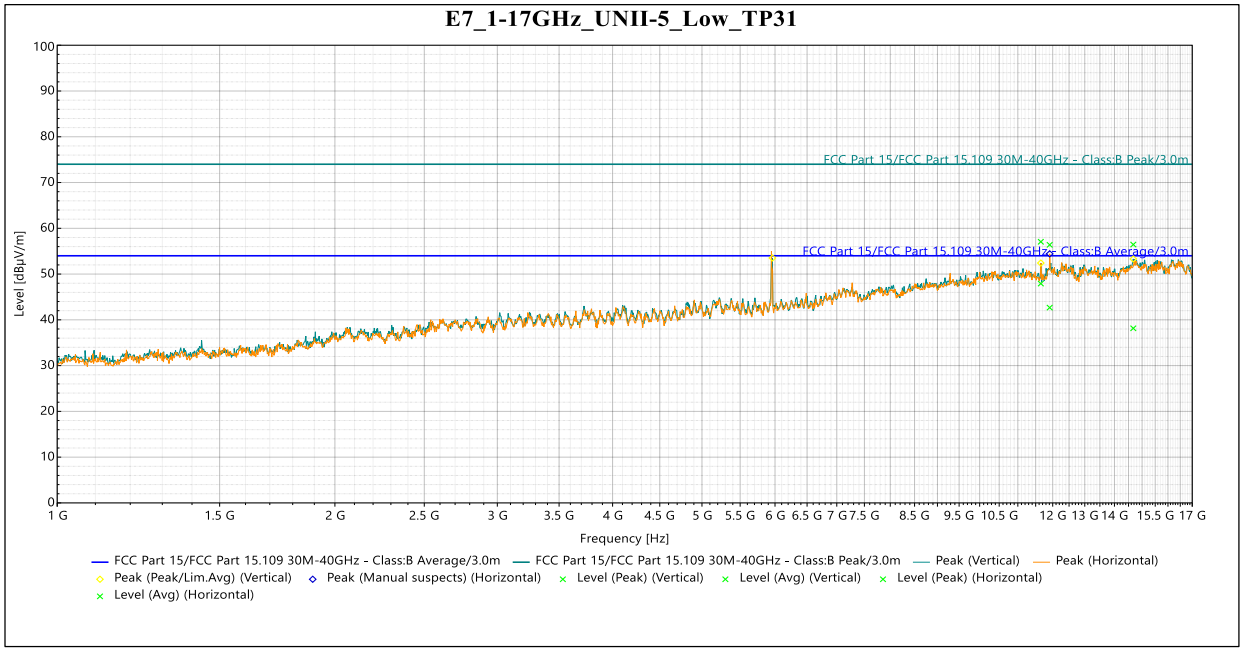
All emissions in the restricted bands of § 15.205 met the limits specified in § 15.209; therefore, the EUT complies with the specification. See Annex for Conducted Band edge plots.



QuasiPeak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
30.18 MHz	23.082	30	-6.918	188	1.048	Vertical	-16.017
36.804 MHz	28.443	30	-1.557	92	1.043	Vertical	-14.791
40.572 MHz	23.712	30	-6.288	122	2.344	Vertical	-13.478
49.964 MHz	22.859	30	-7.141	322	2.392	Vertical	-12.202
63.085 MHz	25.502	30	-4.498	341	3.518	Vertical	-14.826
343.85 MHz	28.495	37	-8.505	65	4.006	Vertical	-10.869
NOTE: No significant emissions were observed in the horizontal orientation of the antenna							

Table 5: Radiated Emissions 30 – 1000 MHz



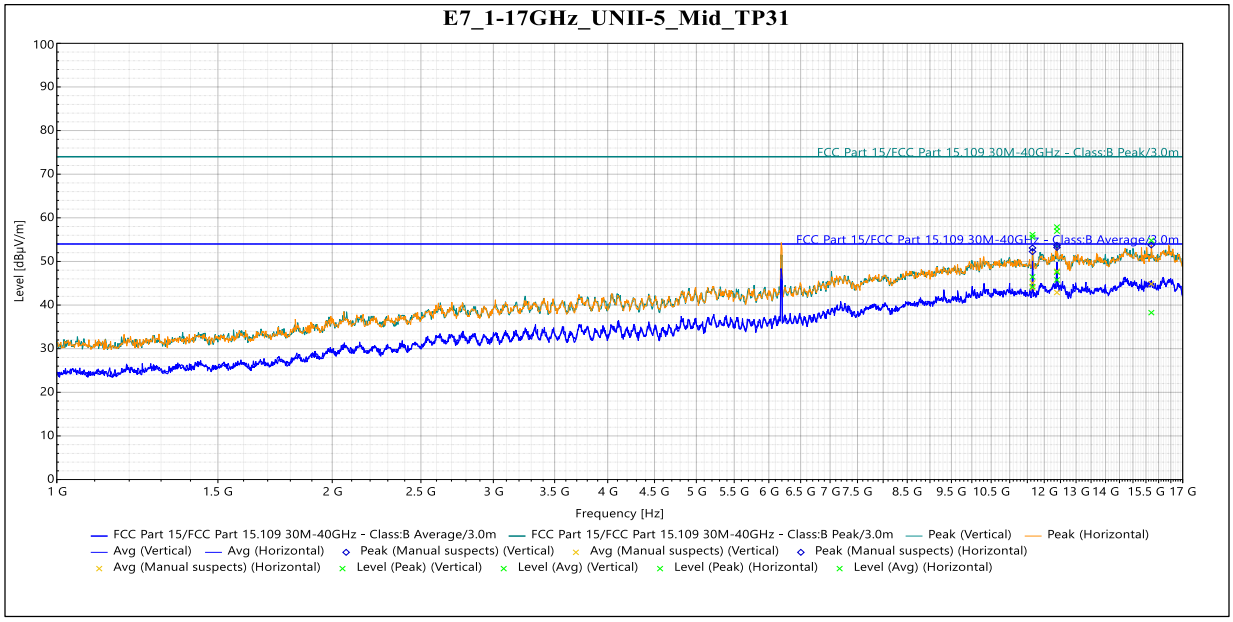
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.65 GHz	57.057	74	-16.943	11	1.809	Vertical	14.5
14.674 GHz	56.446	74	-17.554	48	1.809	Vertical	17.128
11.91 GHz	56.388	74	-17.612	62	1.991	Horizontal	16.544

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.65 GHz	47.918	54	-6.082	11	1.809	Vertical	14.5
14.674 GHz	38.149	54	-15.851	48	1.809	Vertical	17.128
11.91 GHz	42.673	54	-11.327	62	1.991	Horizontal	16.544

Table 6: Radiated Emissions 1 – 17 GHz Lowest Frequency



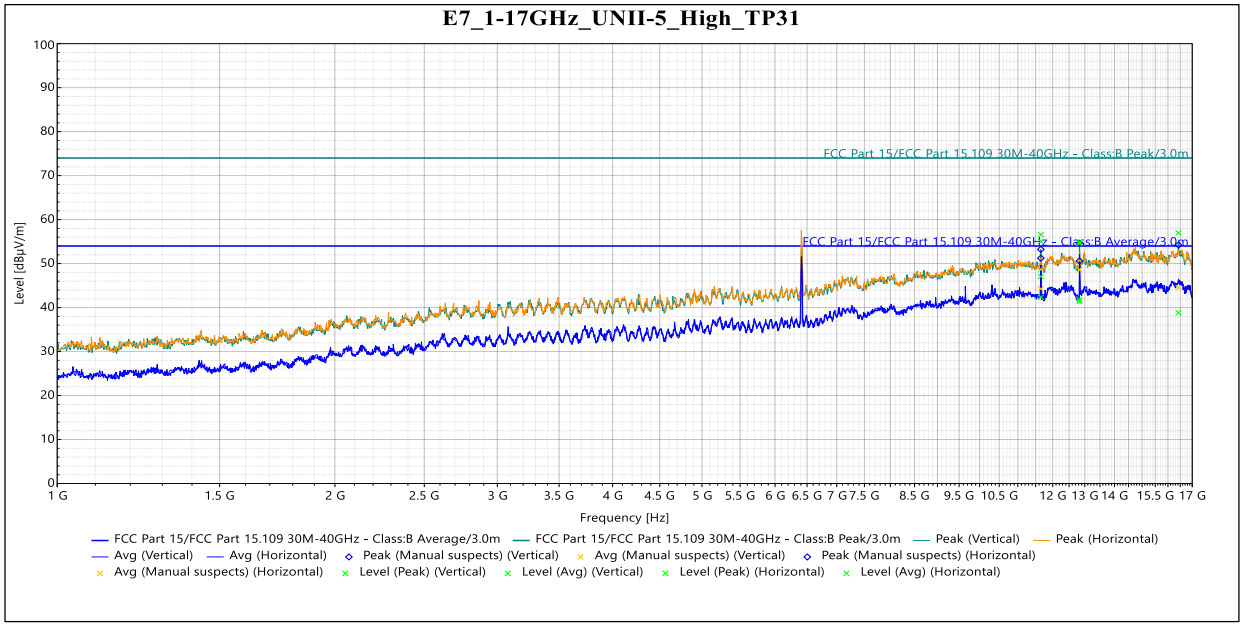
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.65 GHz	56.137	74	-17.863	17	1.808	Vertical	14.5
12.39 GHz	56.945	74	-17.055	11	1.63	Vertical	16.348
11.65 GHz	55.515	74	-18.485	29	2.709	Horizontal	14.5
12.39 GHz	57.887	74	-16.113	322	2.71	Horizontal	16.348
15.711 GHz	54.81	74	-19.19	106	3.973	Horizontal	16.123

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.65 GHz	46.464	54	-7.536	17	1.808	Vertical	14.5
12.39 GHz	45.767	54	-8.233	11	1.63	Vertical	16.348
11.65 GHz	44.232	54	-9.768	29	2.709	Horizontal	14.5
12.39 GHz	47.525	54	-6.475	322	2.71	Horizontal	16.348
15.711 GHz	38.261	54	-15.739	106	3.973	Horizontal	16.123

Table 7: Radiated Emissions 1 – 17 GHz Middle Frequency



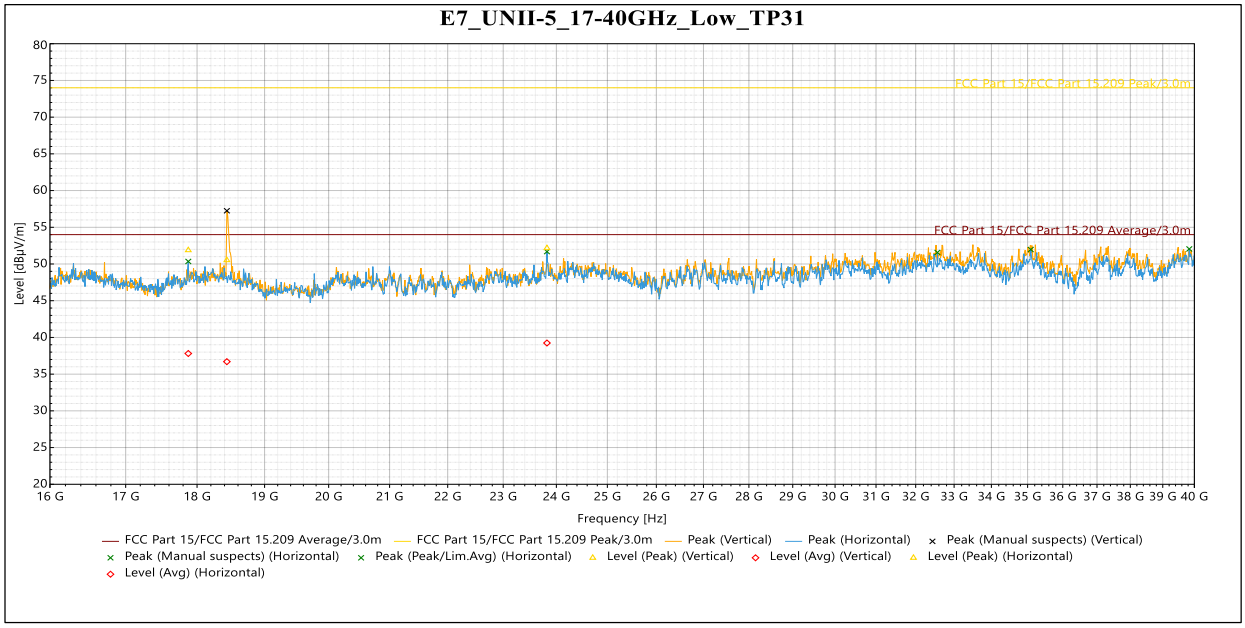
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.65 GHz	55.045	74	-18.955	43	3.611	Vertical	14.5
12.83 GHz	54.602	74	-19.398	292	1.704	Vertical	15.007
16.427 GHz	56.993	74	-17.007	17	1.632	Vertical	18.214
11.65 GHz	56.59	74	-17.41	27	1.632	Horizontal	14.5
12.83 GHz	54.952	74	-19.048	48	2.17	Horizontal	15.007

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.65 GHz	42.338	54	-11.662	43	3.611	Vertical	14.5
12.83 GHz	41.823	54	-12.177	292	1.704	Vertical	15.007
16.427 GHz	38.846	54	-15.154	17	1.632	Vertical	18.214
11.65 GHz	47.049	54	-6.951	27	1.632	Horizontal	14.5
12.83 GHz	41.414	54	-12.586	48	2.17	Horizontal	15.007

Table 8: Radiated Emissions 1 – 17 GHz Highest Frequency



Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
18.435 GHz	50.523	74	-23.477	210	Vertical	-0.27
17.874 GHz	51.88	74	-22.12	328	Horizontal	-0.42
23.82 GHz	52.162	74	-21.838	24	Horizontal	0.799

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
18.435 GHz	36.704	54	-17.296	210	Vertical	-0.27
17.874 GHz	37.807	54	-16.193	328	Horizontal	-0.42
23.82 GHz	39.239	54	-14.761	24	Horizontal	0.799

Table 9: Radiated Emissions 17 – 40 GHz Lowest Frequency (worst 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 23 dBm EIRP in any 1 MHz band during any time interval of continuous transmission.

For the Nss = 1 case, the PSD Directional Gain = 10 log(NANT/NSS) dB + Antenna Gain (dBi) or (6.02 dB + 6 dBi) = 12.02 dBi. Thus, for the Nss =1 case, the EIRP PSD limit is 16.98.

The Nss1 test data is being shown representing worse case.

Results of this testing are summarized.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Measured PSD
EHT20	5955	Mcs0_Nss1	31	13.66
EHT20	6195	Mcs0_Nss1	27	13.59
EHT20	6415	Mcs0_Nss1	30	12.45
EHT40	5965	Mcs0_Nss1	31	10.78
EHT40	6205	Mcs0_Nss1	26	10.55
EHT40	6405	Mcs0_Nss1	31	9.33
EHT80	5985	Mcs0_Nss1	31	8.20
EHT80	6225	Mcs0_Nss1	26	7.07
EHT80	6385	Mcs0_Nss1	31	6.18
EHT160	6025	Mcs0_Nss1	21	1.40
EHT160	6185	Mcs0_Nss1	25	4.16
EHT160	6325	Mcs0_Nss1	27	5.57
EHT 320	6265	Mcs0_Nss1	22	-0.56

Result

The maximum average power spectral density was less than the limit of 23 dBm EIRP (16.98 dBm EIRP for Nss_1); therefore, the EUT complies with the specification.

5.6.1 OFDMA RU Check

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

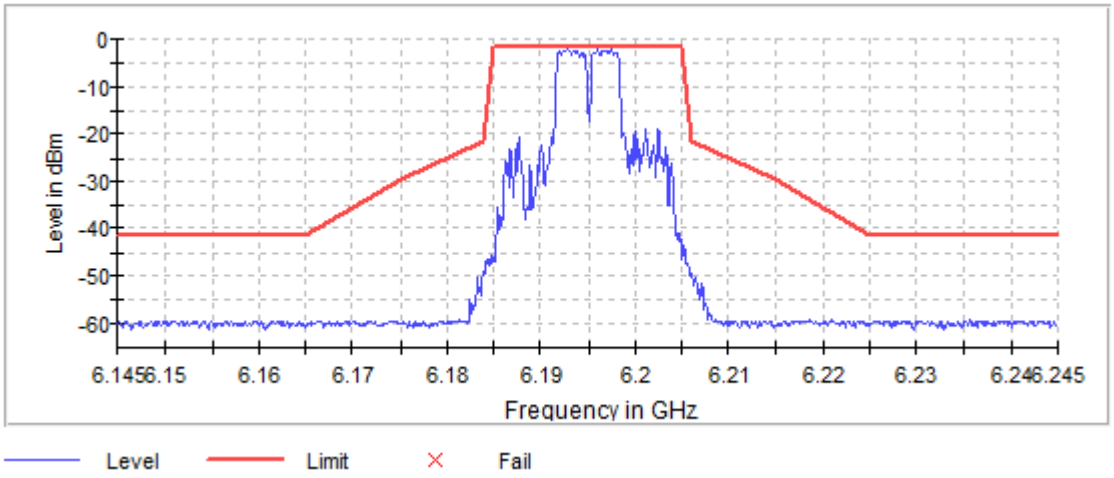


Figure 5: 6195 20MHz RU Verification - Center

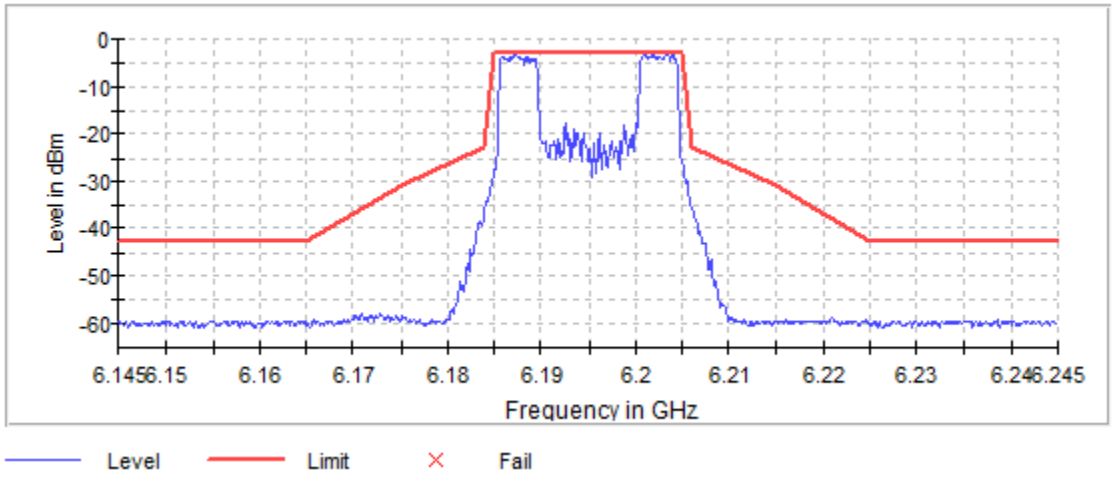


Figure 6: 6195 20MHz RU Verification - Edge

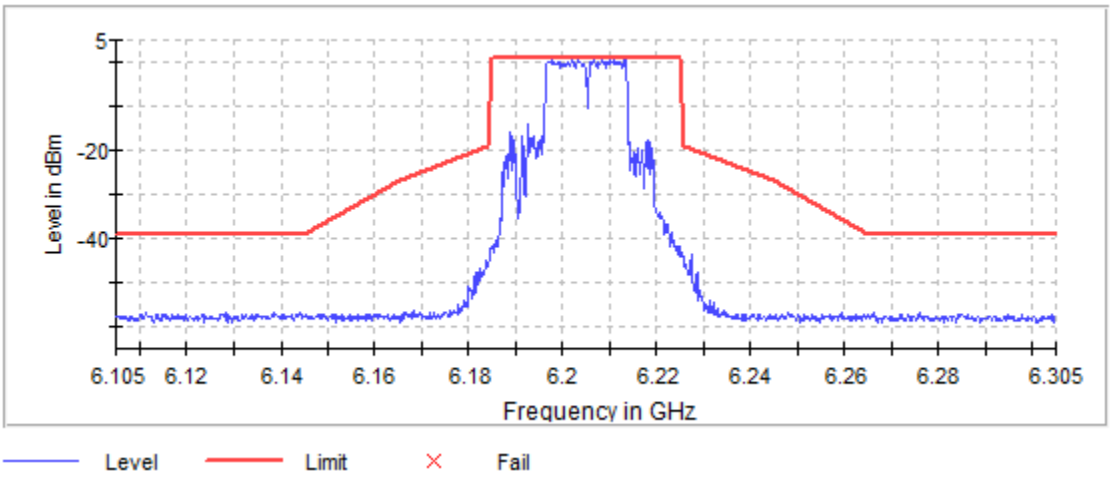


Figure 7: 6205 40MHz RU Verification - Center

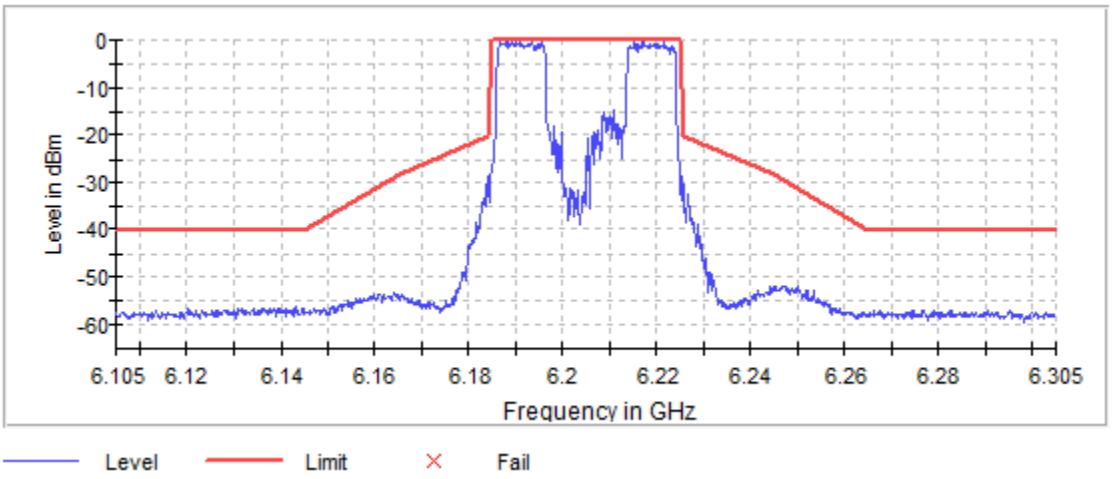


Figure 8: 6205 40MHz RU Verification - Edge

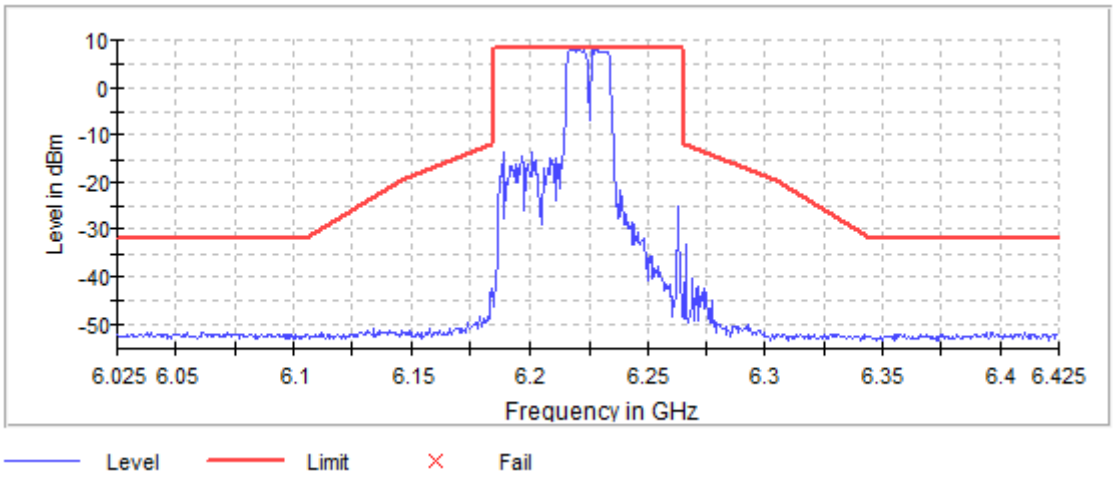


Figure 9: 6225 80MHz RU Verification - Center

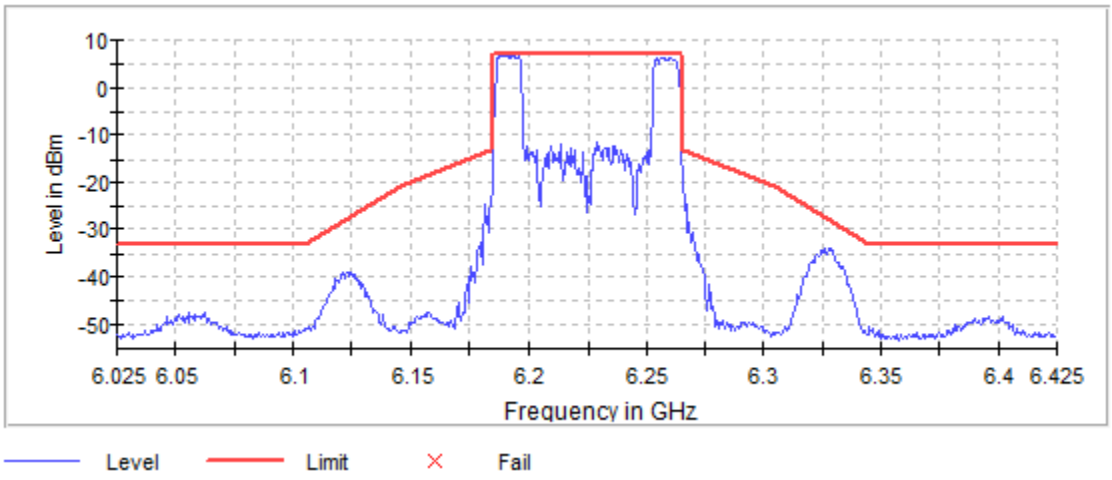


Figure 10: 6225 80MHz RU Verification - Edge

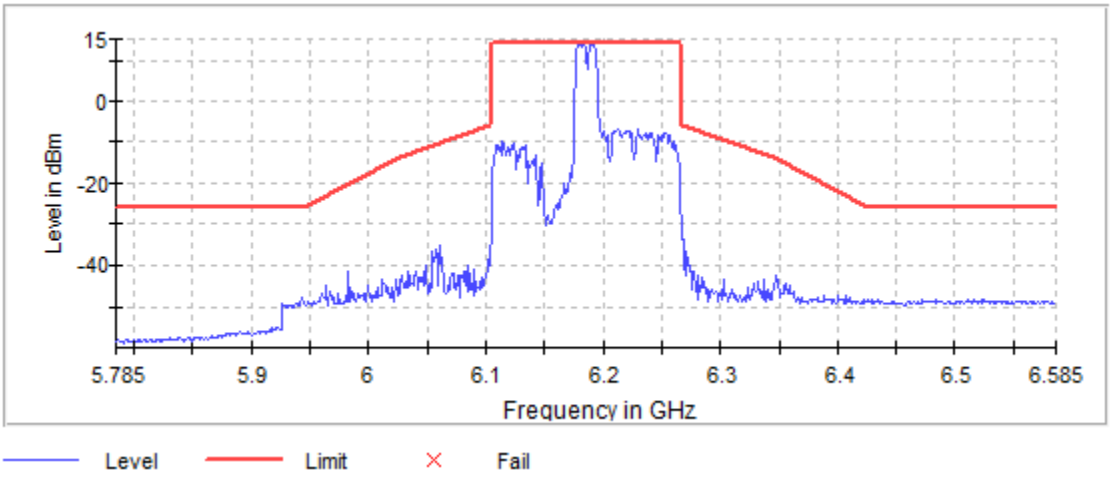


Figure 11: 6185 160MHz RU Verification - Center

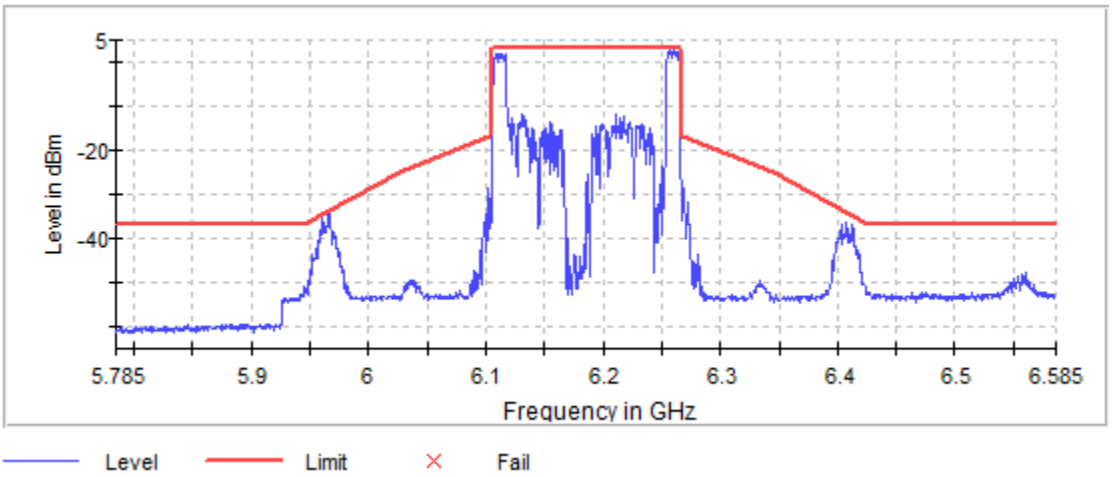


Figure 12: 6185 160MHz RU Verification – Edge

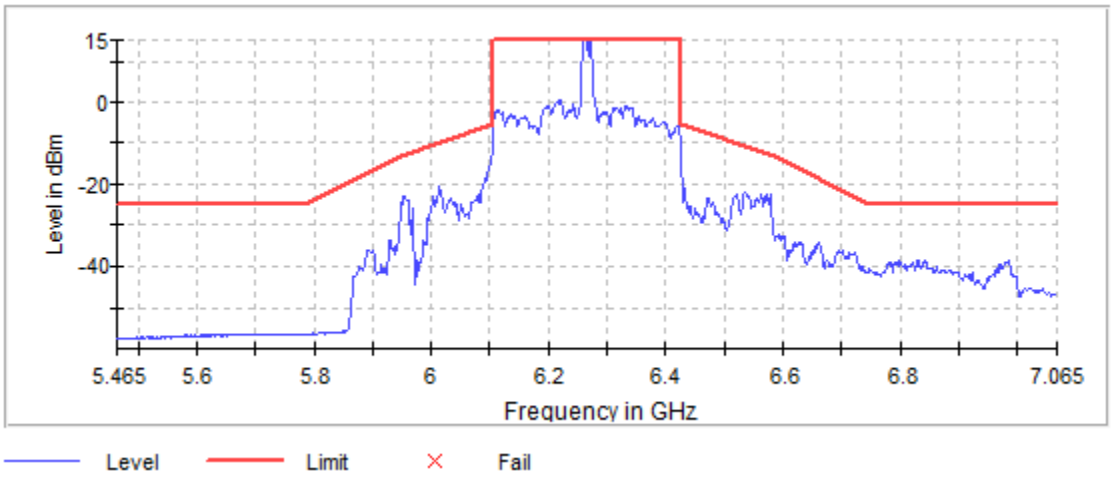


Figure 13: 6265 320MHz RU Verification - Center

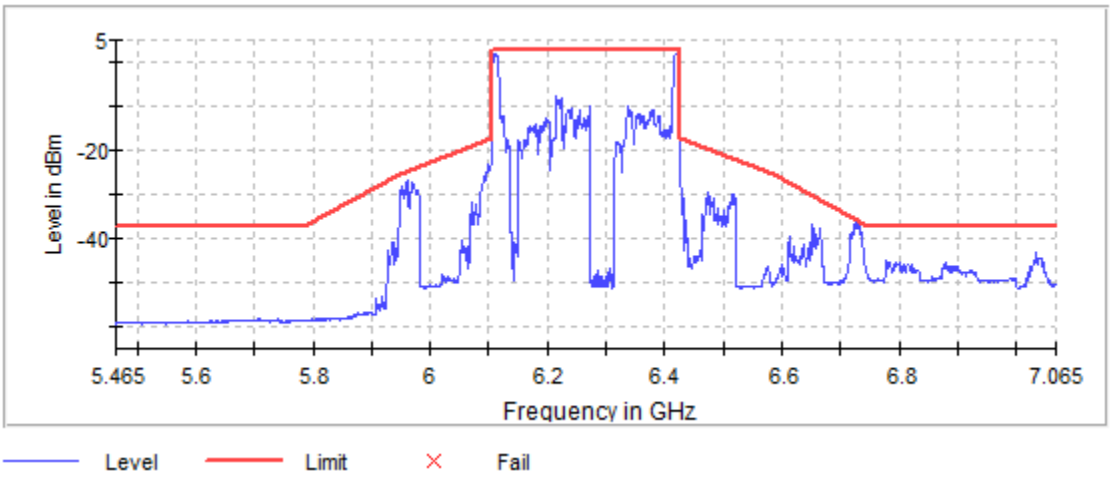


Figure 14: 6265 320MHz RU Verification - Edge

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.

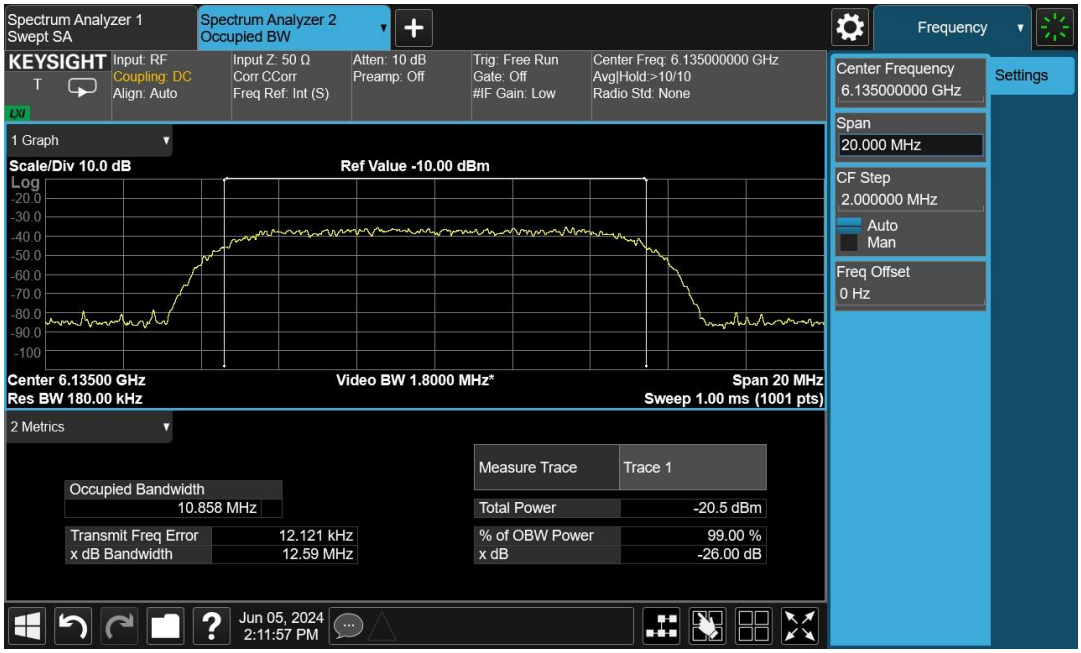
Initially the test setup was connected directly to the signal source with all splitters (splitters terminated with a 50-ohm loads on unused ports) and cables in place to verify the AWGN signal is 10MHz wide at a signal level of less than or equal to -82dBm and for conducted measurements the threshold was adjusted for an antenna gain of 6 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.

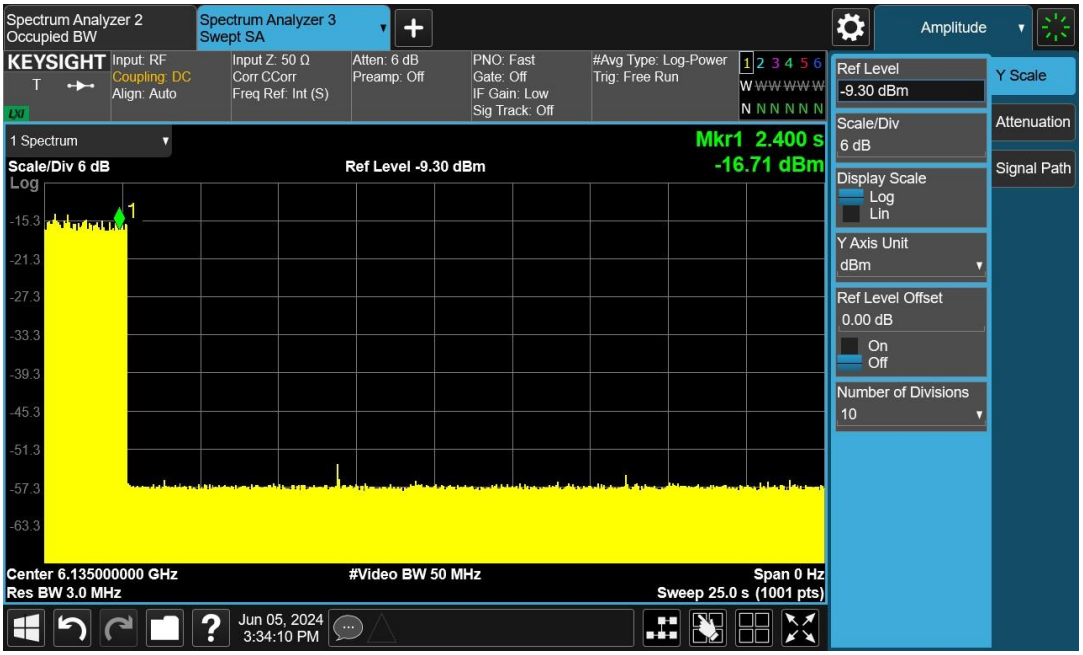
Any measurement below the sensitivity level will result in the Tx minimal and any further measurement below the sensitivity level will result in Tx on.

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

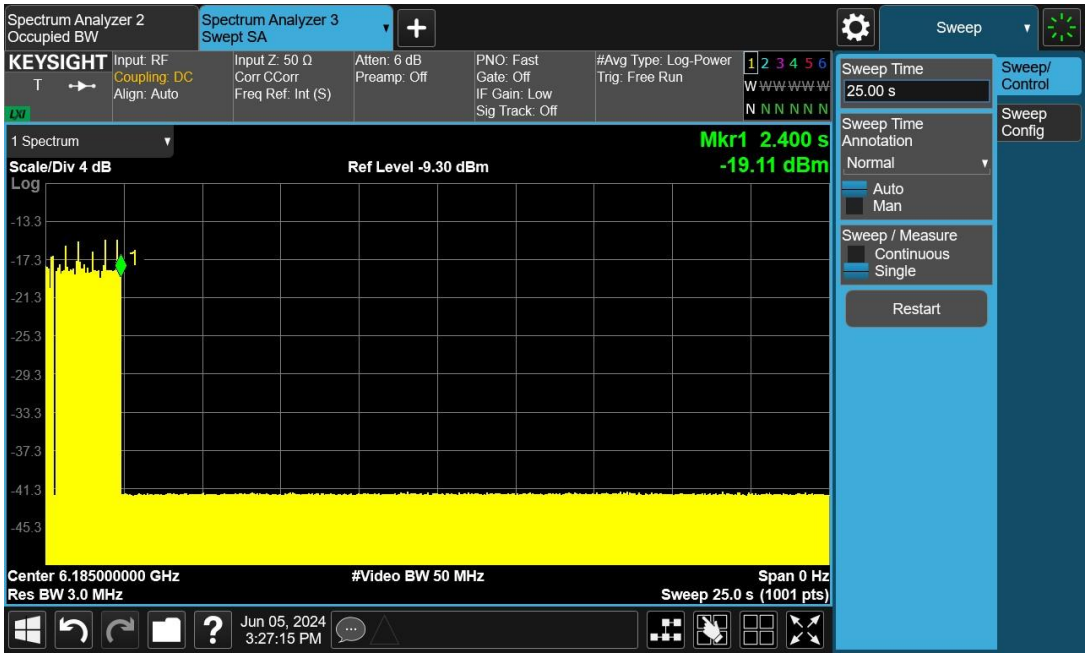


Plot 1: AWGN Signal BW Details

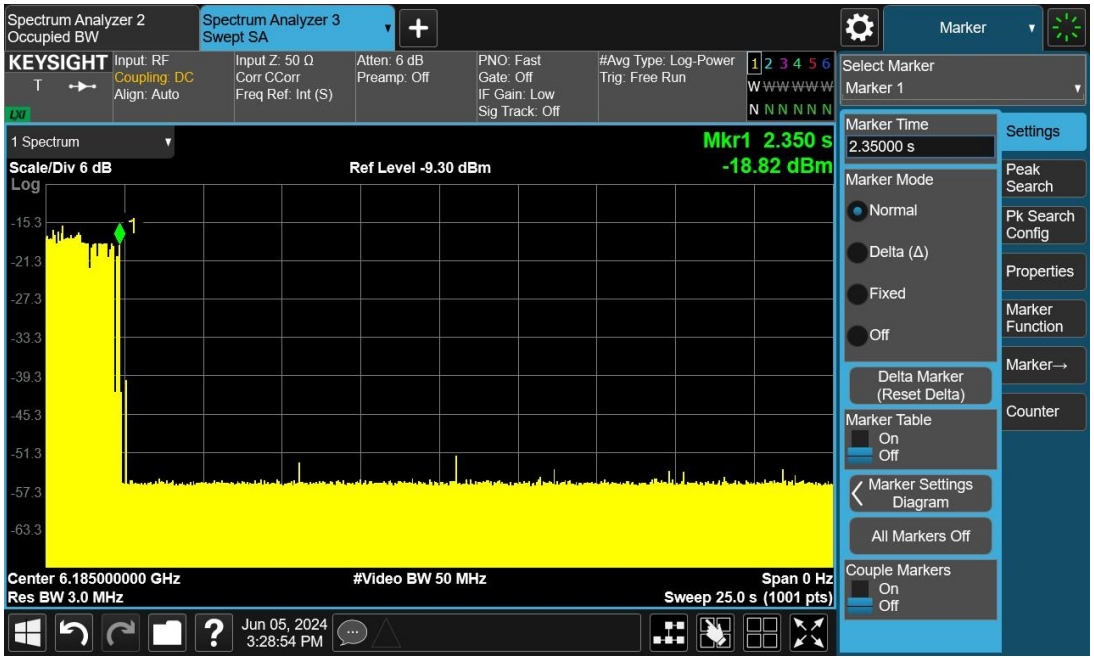
Plot 2: AWGN Signal Level Details



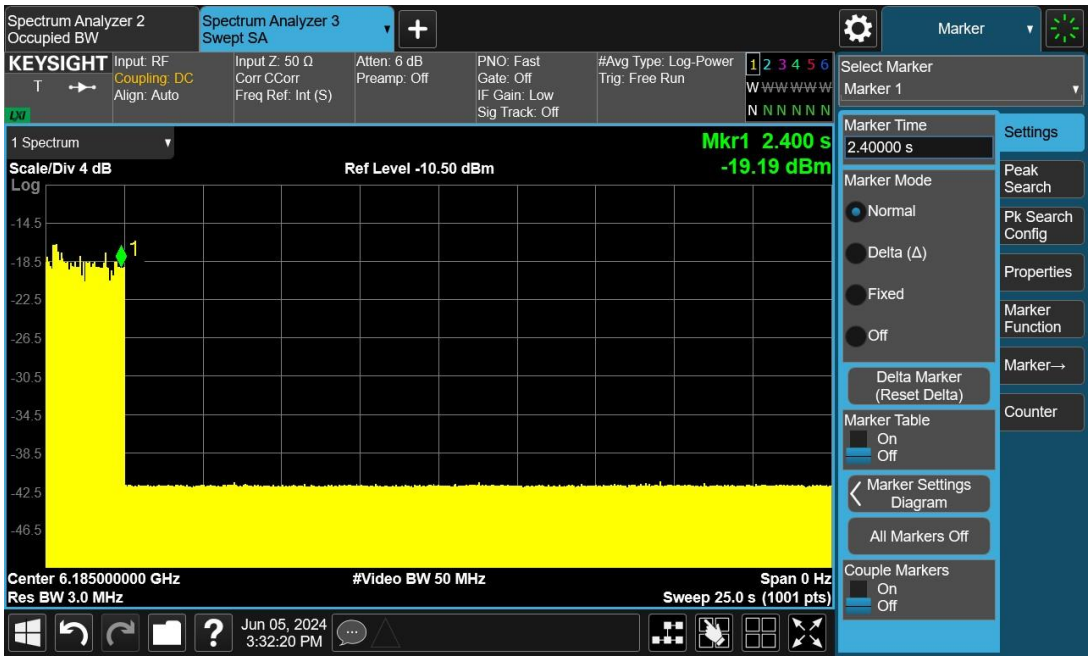
Plot 3: AWGN Signal Detection Details 20 MHz BW, 6135



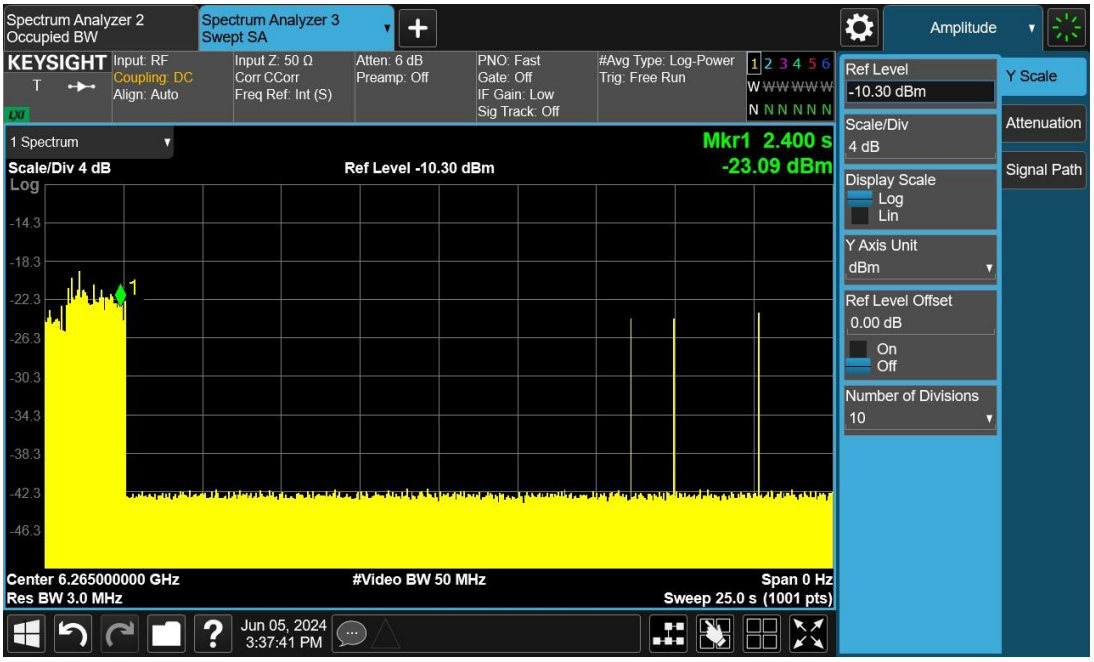
Plot 4: AWGN Signal Detection Details 160 MHz BW, 6185 – 6110



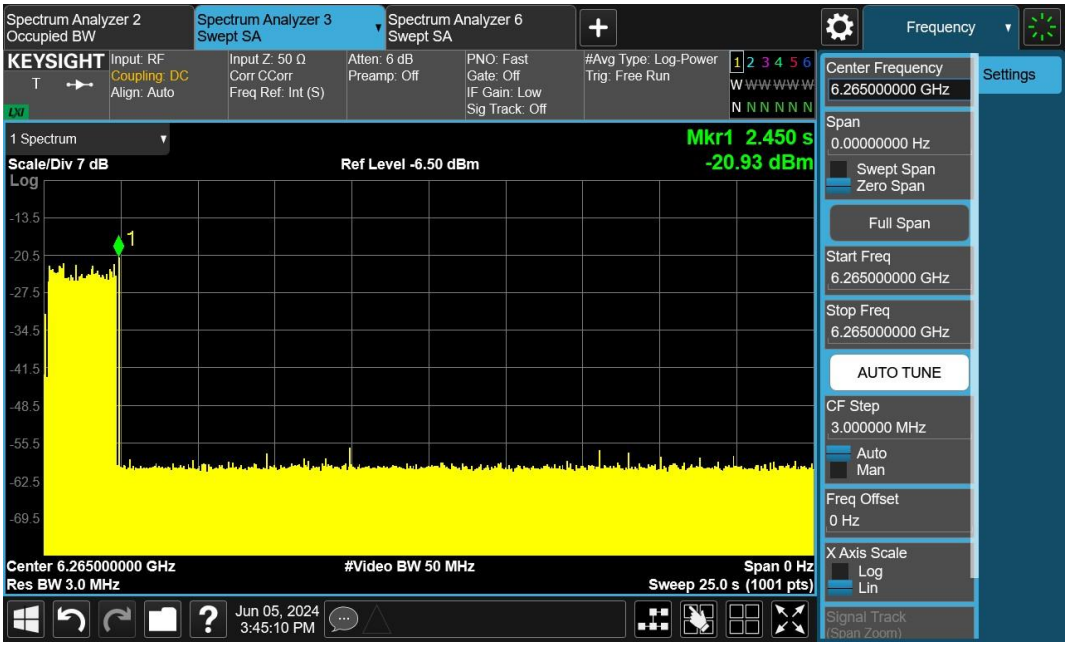
Plot 5: AWGN Signal Detection Details 160 MHz BW, 6185



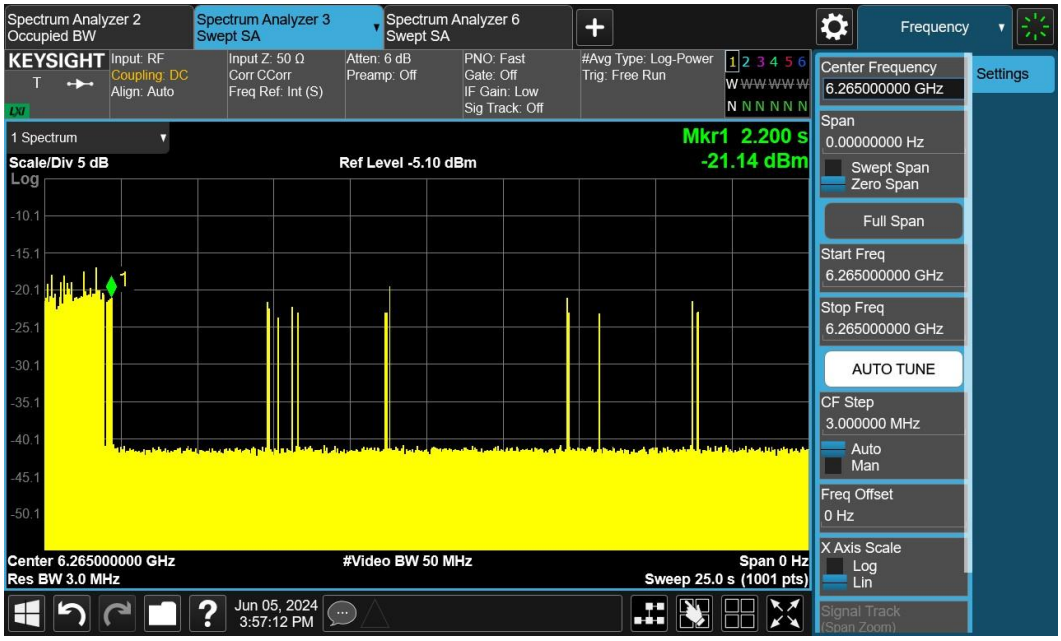
Plot 6: AWGN Signal Detection Details 160 MHz BW, 6185 – 6260



Plot 7: AWGN Signal Detection Details 320 MHz BW, 6265 – 6110



Plot 8: AWGN Signal Detection Details 320 MHz BW, 6265



Plot 9: AWGN Signal Detection Details 320 MHz BW, 6265 – 6410

Contention Based Protocol 987594 D02 U-NNI 6 GHz EMC Measurement

Band	BW_{EUT}	F_{c1}	F_{c2}	Signal Power Level (dBm)	Detection Rate (%)	Margin (dB)
UNII-5 5.925 - 6.425GHz	20	6135	6135	-70.3	100	14.3
	160	6185	6110	-66	100	10
			6185	-70.3	100	14.3
			6260	-71.5	100	15.5
	320	6265	6110	-57.7	100	1.7
			6265	-74.3	100	18.3
			6410	-56.7	100	0.7
UNII-6 6.425 - 6.525GHz	20	6455	6455	-74.3	100	18.3
	160	6505	6430	-69.6	100	13.6
			6505	-71.5	100	15.5
			6580	-62.3	100	6.3
UN1I-7 6.525 - 6.875GHz	20	6695	6695	-75	100	19
	160	6665	6595	-62.3	100	6.3
			6665	-71.5	100	15.5
			6740	-66.9	100	10.9
	320	6745	6590	-57.6	100	1.6
			6745	-74.3	100	18.3
			6860	-66.9	100	10.9
UNII-8 6.875 - 7.125GHz	20	7015	7015	-75.3	100	19.3
	160	6985	6910	-61.3	100	5.3
			6985	-69.6	100	13.6
			7060	-57.6	100	1.6

Table 10: Trial Table

CBP Path Loss is – 22 dB

Detection Level = Injected AWGN Power (dBm) – Antenna Gain (dBi) + Path Loss (dB)

Result

The EUT complies with the specification.

-- End of Test Report --