UNIFIED COMPLIANCE LABORATORY

427 West 12800 South
Draper, UT 84020

Test Report

Certification

FCC ID	SWX-UDBS
ISED ID	6545A-UDBS
Equipment Under Test	UDB-Switch
Test Report Serial Number	TR10401_02
Date of Test(s)	29 August; 11 - 13 September 2024; 24 March; 3 June; 20 August; 16 - 17 September 2025
Report Issue Date	6 October 2025

Test Specification	Applicant
47 CFR FCC Part 15, Subpart E RSS-248, Issue 3 (October 2024)	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

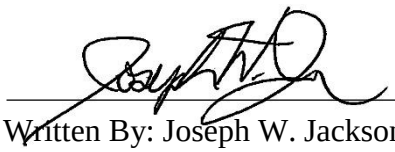
This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart E and RSS-248, Issue 3 (October 2024). This report may be reproduced in full. Partial reproduction 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 with the specifications provided by the manufacturer.

Applicant	Ubiquiti Inc.
Manufacturer	Ubiquiti Inc.
Brand Name	UBIQUITI
Model Number	UDB-Switch
FCC ID	SWX-UDBS
ISED ID	6545A-UDBS

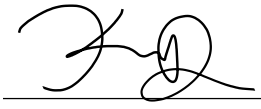
On this 6th day of October 2025, I individually and for Unified Compliance Laboratory certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge and are made in good faith. Unified Compliance laboratory is not responsible for incorrect information provided by the manufacturer.

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: Kimberly DeBole

Revision History		
Revision	**Description**	**Date**
01	Original Report Release	10/6/2025
02	Modified Section 2.6 and CBP Trail Table	11/11/2025

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	UDB-Switch
Serial Number	05B1B5
Dimensions (cm)	21.3 x 11.3 x 3.3

2.2 Description of EUT

The UDB-Switch is a compact PoE+ switch with one (1) 10 GbE port and seven (7) 2.5 GbE ports. The UDB-Switch has 2x2 5GHz and 2x2 6 GHz dual-band WiFi 7 transmitters with a wireless uplink of up to 8.4 Gbps capacity. The UDB-Switch is and indoor device and is powered from a 54 volts DC power adapter with 60 watts' capacity.

This device does not support channel puncturing.

For CDD transmission, direction 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 + 8 dBi = 11.01 dBi.

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 (EHT 20)	5955, 5975, 5995, 6015, 6035, 6055, 6075, 6095, 6115, 6135, 6155, 6175, 6195, 6215, 6235, 6255, 6275, 6295, 6315, 6335, 6355, 6375, 6395	TP8
		6415	TP9
	be (EHT 40)	5965, 6005, 6045, 6085, 6125, 6165	TP11
		6405	TP12

	be (EHT 80)	5985, 6065	TP15
		6145, 6225, 6305	TP14
		6385	TP15
	be (EHT 160)	6025, 6185, 6325	TP17
	be (EHT 320)	6265	TP19

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: UDB-Switch (Note 1) SN: 05B1B5	WiFi Switch	See Section 2.4
BN: UBIQUITI MN: ADS-60SH-54-354060E SN: N/A	Power Adapter	2 Conductor power cord to AC mains/80cm
BN: Dell MN: XPS 13 SN: N/A	Laptop Personal Computer	Unshielded Cat 5e cable/1 meters

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

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

2.4 Interface Ports on EUT

Name of Ports	No. of Ports Fitted to EUT	Cable Description/Length
AC (PoE Injector)	1	3 Conductor power cord to AC mains/80cm
LAN (PoE Injector)	8	unshielded Cat 5e cable/1 meters

2.5 Operating Environment

Power Supply	120 Volts AC Mains to 54 Volts DC
AC Mains Frequency	60 Hz
Temperature	21.1 - 23.6 °C
Humidity	26.7 - 31.4 %
Barometric Pressure	1021 mBar

2.6 Operating Modes

The UDB-Switch 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 802.11 be were investigated. All measurements are reported with the worst-case mode (802.11be maximum conducted output power and maximum power spectral density) 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

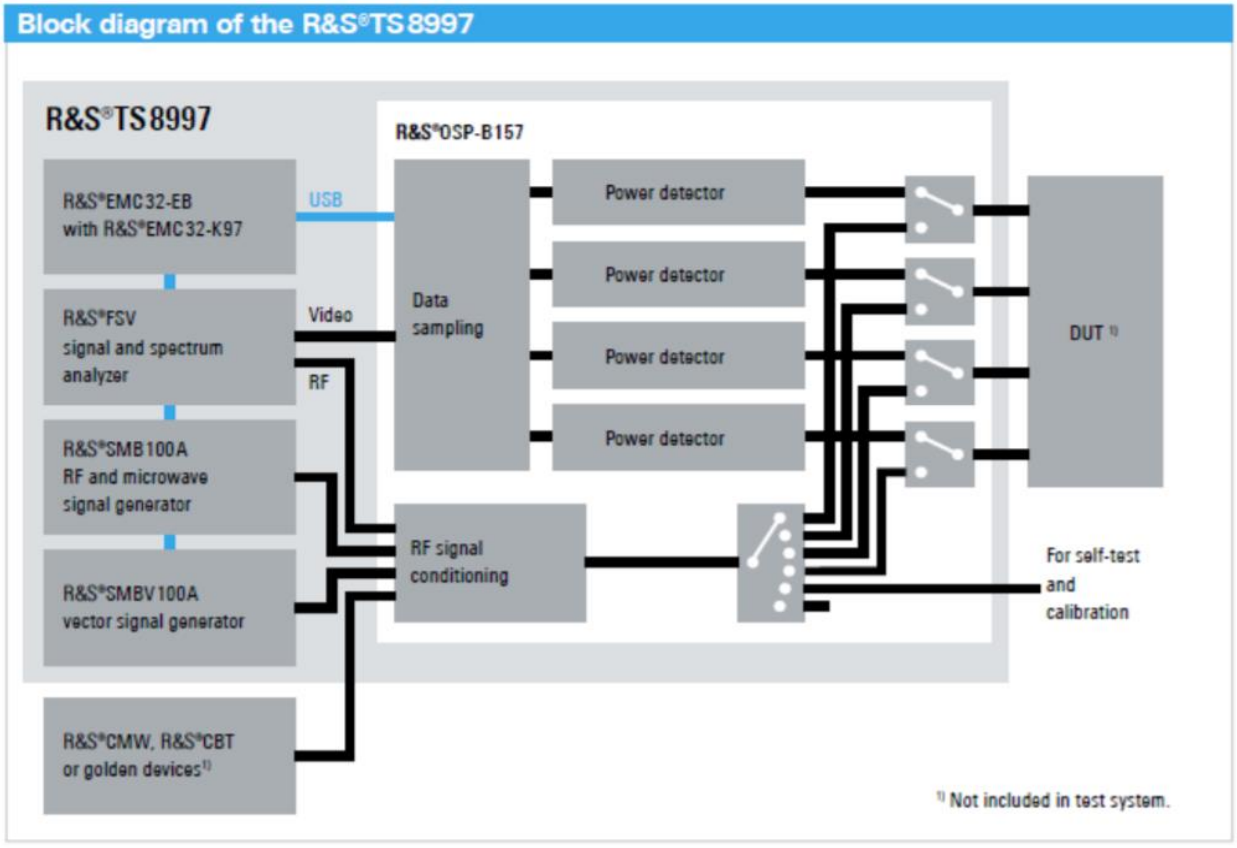


Diagram 1: Test Configuration Block Diagram

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(b)	RSS-248 §4.6	Antenna Conducted Spurious Emissions[1]	0.009 to 40000	N/A Note[2]
15.209	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.
Note [2]: Radiated Spurious was performed per 15.209 with the antenna unterminated.

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 2026. 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 2026.

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	2/27/2025	2/27/2026
LISN	AFJ	LS16C/10	UCL-6749	3/3/2025	3/3/2026
ISN	Teseq	ISN T800	UCL-2971	3/31/2025	3/31/2026
AC Power Source	Laplace Instruments	AC1000A	UCL-2857	N/A	N/A
Test Software	AFJ	AFJ FFT3010	UCL-3107	N/A	N/A

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

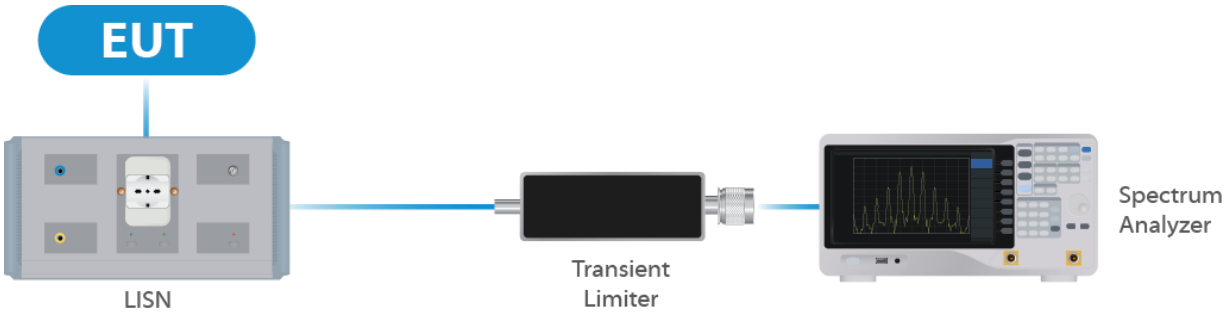


Figure 1: Conducted Emissions Test

4.2 Direct Connect at the Antenna Port Tests

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
Spectrum Analyzer	R&S	FSV40	UCL-2861	1/16/2025	1/16/2026
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	4/28/2025	1/16/2026
Switch Extension	R&S	OSP-150W	UCL-2870	4/28/2025	1/16/2026
Test Software	R&S	EMC32	UCL-9442	--	--

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

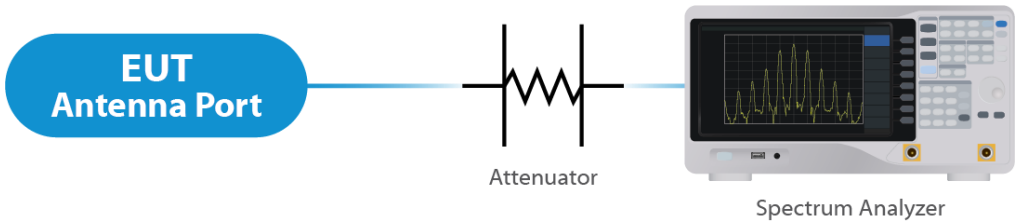


Figure 2: Direct Connect at the Antenna Port Test

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	12/27/2024	12/27/2025
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	1/19/2024	1/19/2026
Broadband Antenna	ETS-Lindgren	3142E	UCL-9782	2/6/2025	2/6/2026
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	4/2/2025	4/2/2027
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	2/11/2025	2/4/2027
10 - 40 GHz Horn Antenna	ETS-Lindgren	3116C	UCL-7209	6/6/2024	6/6/2026
1 – 18 GHz Amplifier	Com-Power	PAM 118A	UCL-3833	7/22/2025	7/22/2026
Test Software	Nexio	BatEMC	UCL-5253 & UCL-5249	N/A	N/A

Table 3: List of equipment used for Radiated Emissions

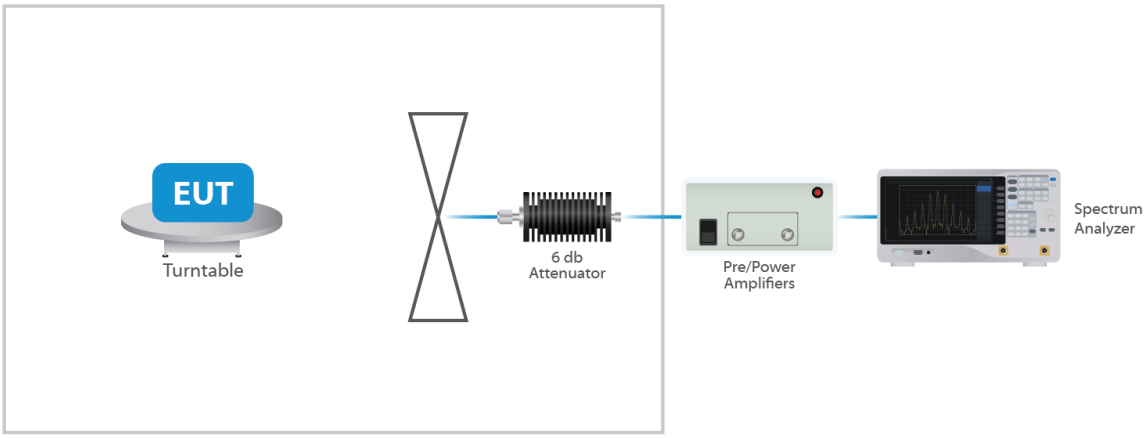


Figure 3: Radiated Emissions Test

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	5/20/2025	5/20/2026
Signal Generator	Keysight	MXG-B	UCL-6291	6/28/2024	6/22/2026
MIMO Test Set	Keysight	X8750A	UCL-7372	9/24/2024	10/07/2025

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

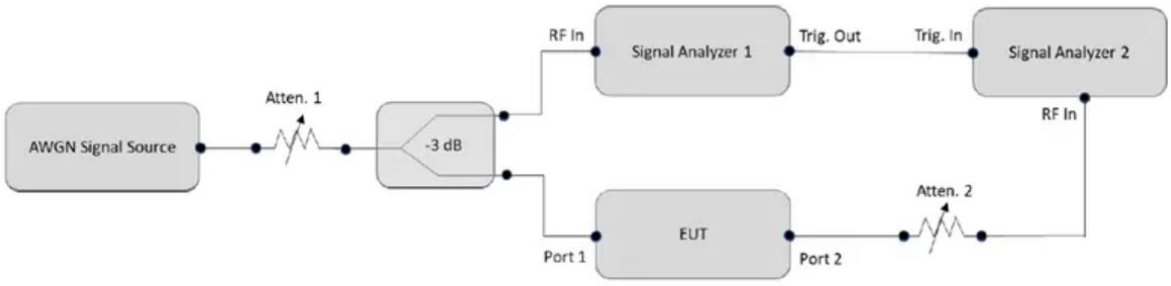


Figure 1. CBP conducted test setup diagram. Source: KDB 987594 D02 V01r01

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 integral antenna. Per the manufacturer, the Maximum gain of the antenna per chain is 8 dBi. This is an 802.11 device and utilizes CDD as described in KDB 662911 D01. The antenna is not user replaceable.

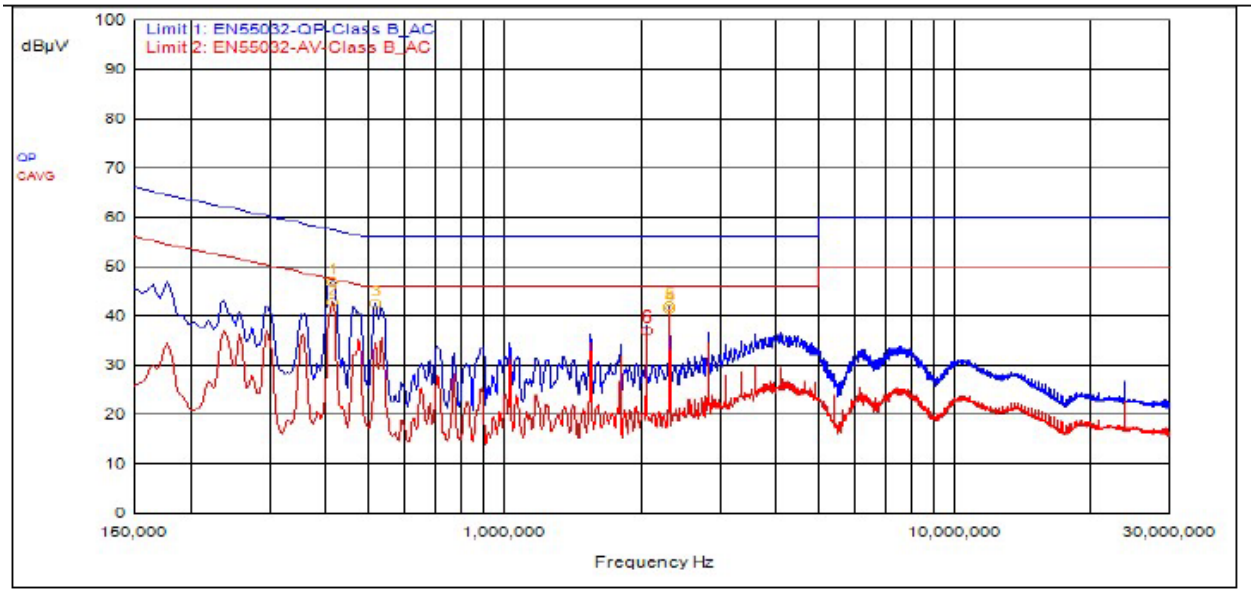
See Section 2.2 for directional gain calculation.

Results

The EUT complied with the specification

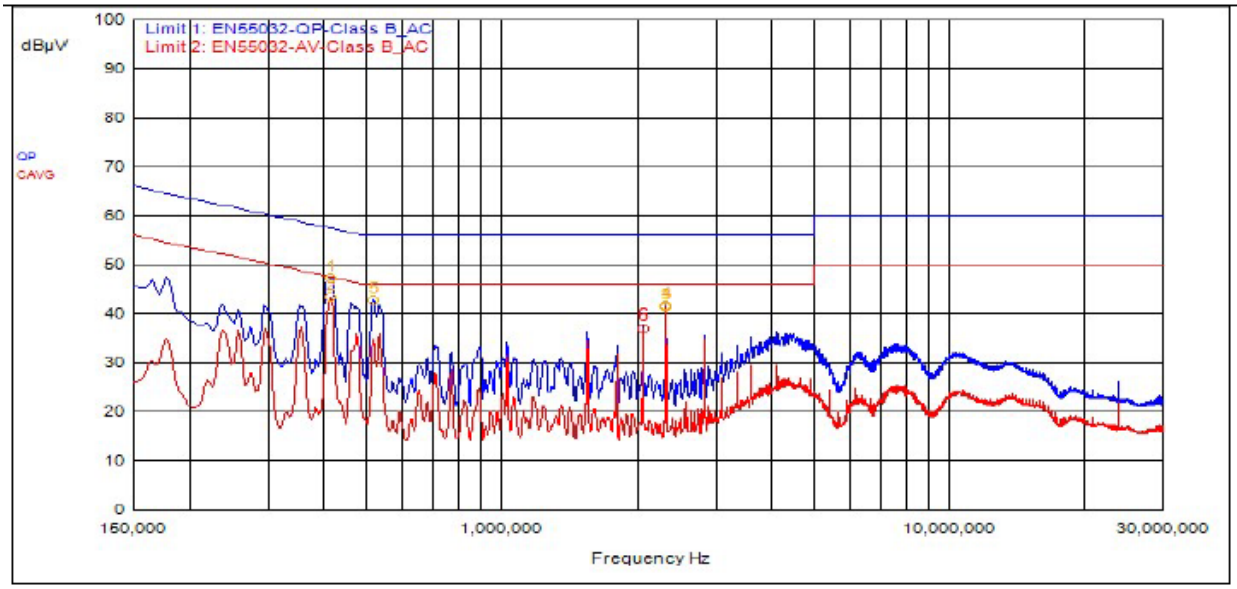
5.2 §15.207 Conducted Emissions at Mains Ports Data

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	414,000kHz	9.49			QPeak	37.35	46.84	57.57	-10.72			
3	516,000kHz	9.49			QPeak	32.89	42.38	56.00	-13.62			
5	2.322	9.59			QPeak	32.35	41.94	56.00	-14.06			
2	414,000kHz	9.49			C_AVG	33.35	42.84			47.57	-4.73	
4	2.322	9.59			C_AVG	31.75	41.34			46.00	-4.66	
6	2.064	9.60			C_AVG	27.36	36.96			46.00	-9.04	

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	414,000kHz	9.64			QPeak	37.64	47.28	57.57	-10.29			
5	516,000kHz	9.63			QPeak	33.06	42.69	56.00	-13.31			
4	2.322	9.57			QPeak	32.20	41.77	56.00	-14.23			
2	414,000kHz	9.64			C_AVG	33.69	43.33			47.57	-4.24	
3	2.322	9.57			C_AVG	31.93	41.50			46.00	-4.50	
6	2.064	9.57			C_AVG	27.49	37.06			46.00	-8.94	

Result

The EUT complied with the specification limit.

5.3 §15.407(a) 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)
20	5955	19.3	23.8
20	6195	19.3	22.4
20	6415	19.3	23.1
40	5965	38.5	42.2
40	6205	38.5	43.4
40	6405	38.5	43.1
80	5985	79.0	88.0
80	6225	79.0	85.5
80	6385	79.0	85.5
160	6025	160.0	168.0
160	6185	160.0	170.0
160	6325	160.0	171.0
320	6265	317.5	340.2

Result

All chains were tested and the highest bandwidth per chain is reported above. For the 320 MHz emissions bandwidth the 99% bandwidth was used. 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.

See Section 2.2 for directional gain calculation.

The maximum average RF conducted output power measured for this device was 20.92 dBm or 123.59 mW. The limit is 30 dBm EIRP, or 1 watt EIRP. The antenna has a gain of 8 dBi.

Nss>1

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Total Summed Output Power* (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm) EIRP	Margin (dBm)
EHT 20	5955	Mcs0_Nss2	8	8.57	8	16.57	30	-13.43
EHT 20	6195	Mcs0_Nss2	8	9.36	8	17.36	30	-12.64
EHT 20	6415	Mcs0_Nss2	9	9.85	8	17.85	30	-12.15
EHT 40	5965	Mcs0_Nss2	11	12.12	8	20.21	30	-9.79
EHT 40	6205	Mcs0_Nss2	11	12.41	8	20.41	30	-9.59
EHT 40	6405	Mcs0_Nss2	12	12.84	8	20.84	30	-9.16
EHT 80	5985	Mcs0_Nss2	15	15.38	8	23.38	30	-6.62
EHT 80	6225	Mcs0_Nss2	14	15.62	8	23.62	30	-6.38
EHT 80	6385	Mcs0_Nss2	15	15.78	8	23.78	30	-6.22
EHT 160	6025	Mcs0_Nss2	17	17.81	8	25.81	30	-4.19
EHT 160	6185	Mcs0_Nss2	17	18.58	8	26.58	30	-3.42
EHT 160	6325	Mcs0_Nss2	17	18.55	8	26.55	30	-3.45
EHT 320	6265	Mcs0_Nss2	19	20.92	8	28.92	30	-1.08

Nss=1

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Total Summed Output Power* (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm) EIRP	Margin (dBm)
EHT 20	5955	Mcs0_Nss1	4	4.29	8	12.29	30	-17.71
EHT 20	6195	Mcs0_Nss1	4	5.46	8	13.46	30	-16.54
EHT 20	6415	Mcs0_Nss1	4	4.97	8	12.97	30	-17.03
EHT 40	5965	Mcs0_Nss1	7	7.65	8	15.65	30	-14.35
EHT 40	6205	Mcs0_Nss1	7	8.01	8	16.01	30	-13.99
EHT 40	6405	Mcs0_Nss1	8	8.49	8	16.49	30	-13.51
EHT 80	5985	Mcs0_Nss1	10	10.29	8	18.29	30	-11.71
EHT 80	6225	Mcs0_Nss1	10	11.31	8	19.31	30	-10.69
EHT 80	6385	Mcs0_Nss1	11	11.41	8	19.41	30	-10.59
EHT 160	6025	Mcs0_Nss1	12	12.56	8	20.56	30	-9.44
EHT 160	6185	Mcs0_Nss1	12	12.90	8	20.90	30	-9.10
EHT 160	6325	Mcs0_Nss1	12	13.12	8	21.12	30	-8.88
EHT 320	6265	Mcs0_Nss1	14	16.63	8	24.63	30	-5.37

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).

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

5.5 §15.407(b)(7) Spurious Emissions

5.5.1 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 (dBi) + Cable Loss (dB) - Pre-Amplifier Gain (dB), 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)
32.22 MHz	37.75	40	-2.25	202	1.64	Vertical	-10.97
35.86 MHz	39.92	40	-0.28	324	1.13	Vertical	-10.09
38.61 MHz	36.77	40	-3.23	327	1.13	Vertical	-9.21
41.85 MHz	36.46	40	-3.54	28	1.13	Vertical	-8.43
101.59 MHz	35.27	40	-4.73	307	1.13	Vertical	-8.93
129.84 MHz	31.52	40	-8.48	229	1.13	Vertical	-12.48
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)
10.31 GHz	58.11	74.0	-15.89	317	3.307	Vertical	11.38
11.10 GHz	57.10	74.0	-16.90	49	3.802	Vertical	11.84
14.69 GHz	59.40	74.0	14.60	37	1.838	Vertical	15.05
14.70 GHz	59.64	74.0	-14.36	12	1.638	Vertical	15.14
10.31 GHz	60.26	74.0	-13.74	104	3.798	Horizontal	11.38
12.39 GHz	58.04	74.0	-15.96	103	3.307	Horizontal	13.80
12.44 GHz	57.69	74.0	-16.31	198	3.307	Horizontal	13.52
14.66 GHz	58.62	74.0	-15.38	263	3.798	Horizontal	14.50
14.68 GHz	58.74	74.0	-15.26	339	2.325	Horizontal	14.75

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.31 GHz	46.05	54.0	-7.95	317	3.307	Vertical	11.38
11.10 GHz	43.52	54.0	-10.48	49	3.802	Vertical	11.84
14.69 GHz	46.46	54.0	-7.54	37	1.838	Vertical	15.05
14.70 GHz	46.63	54.0	-7.37	12	1.638	Vertical	15.14
10.31 GHz	51.08	54.0	-2.92	104	3.798	Horizontal	11.38
12.39 GHz	44.93	54.0	-9.07	103	3.307	Horizontal	13.80
12.44 GHz	44.69	54.0	-9.31	198	3.307	Horizontal	13.52
14.66 GHz	45.69	54.0	-8.31	263	3.798	Horizontal	14.50
14.68 GHz	45.83	54.0	-8.17	339	2.325	Horizontal	14.75

Table 6: Radiated Emissions 1 – 17 GHz at the Lowest Frequency

Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.31 GHz	60.62	74.0	-13.38	103	3.317	Vertical	11.38
12.39 GHz	58.84	74.0	-15.16	131	1.5	Vertical	13.81
12.42 GHz	58.36	74.0	-15.64	15	2.133	Vertical	13.61
14.67 GHz	59.85	74.0	-14.15	22	3.142	Vertical	14.73
14.69 GHz	59.61	74.0	-14.39	218	2.825	Vertical	14.97
10.31 GHz	59.96	74.0	-14.04	12	3.81	Horizontal	11.38
12.35 GHz	58.09	74.0	-15.91	1	1.5	Horizontal	13.56
12.43 GHz	57.54	74.0	-16.46	311	1.632	Horizontal	13.56
14.78 GHz	59.46	74.0	-14.54	250	3.81	Horizontal	14.03

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.31 GHz	51.33	54.0	-2.67	103	3.317	Vertical	11.38
12.39 GHz	45.65	54.0	-8.35	131	1.5	Vertical	13.81
12.42 GHz	45.40	54.0	-8.60	15	2.133	Vertical	13.61
14.67 GHz	46.32	54.0	-7.68	22	3.142	Vertical	14.73
14.69 GHz	46.55	54.0	-7.45	218	2.825	Vertical	14.97
10.31 GHz	50.13	54.0	-3.87	12	3.81	Horizontal	11.38
12.35 GHz	44.76	54.0	9.24	1	1.5	Horizontal	13.56
12.43 GHz	44.55	54.0	-9.45	311	1.632	Horizontal	13.56
14.78 GHz	45.68	54.0	-8.32	250	3.81	Horizontal	14.03

Table 7: Radiated Emissions 1 – 17 GHz at the Middle Frequency

Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.31 GHz	60.87	74.0	-13.13	104	3.319	Vertical	11.38
14.70 GHz	59.76	74.0	-14.24	291	3.81	Vertical	15.10
14.71 GHz	59.69	74.0	-14.31	17	2.827	Vertical	15.05
10.31 GHz	60.20	74.0	-13.80	54	1.5	Horizontal	11.38
12.38 GHz	58.90	74.0	-15.10	220	3.644	Horizontal	13.92
12.39 GHz	57.86	74.0	-16.14	329	2.828	Horizontal	13.83

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.31 GHz	51.55	54.0	-2.45	104	3.319	Vertical	11.38
14.70 GHz	46.79	54.0	-7.21	291	3.81	Vertical	15.10
14.71 GHz	46.56	54.0	-7.44	17	2.827	Vertical	15.05
10.31 GHz	52.00	54.0	-2.00	54	1.5	Horizontal	11.38
12.38 GHz	45.29	54.0	-8.71	220	3.644	Horizontal	13.92
12.39 GHz	44.78	54.0	-9.22	329	2.828	Horizontal	13.83

Table 8: Radiated Emissions 1 – 17 GHz at the Highest Frequency

Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
18.59 GHz	64.00	74.0	-10.00	47	Vertical	-0.16
18.60 GHz	59.97	74.0	-14.03	80	Vertical	-0.14
24.78 GHz	57.78	74.0	-16.22	29	Vertical	1.93
33.80 GHz	56.17	74.0	-17.83	217	Vertical	5.59
18.59 GHz	59.49	74.0	-14.51	76	Horizontal	-0.17
33.80 GHz	55.97	74.0	-18.03	1	Horizontal	5.32
34.91 GHz	57.28	74.0	-16.72	359	Horizontal	6.25
39.28 GHz	56.19	74.0	-17.81	27	Horizontal	4.33

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
18.59 GHz	49.94	54.0	-4.06	47	Vertical	-0.16
18.60 GHz	44.41	54.0	-9.59	80	Vertical	-0.14
24.78 GHz	44.12	54.0	-9.88	29	Vertical	1.93
33.80 GHz	42.75	54.0	-11.25	217	Vertical	5.59
18.59 GHz	45.48	54.0	-8.52	76	Horizontal	-0.17
33.80 GHz	42.69	54.0	-11.31	1	Horizontal	5.32
34.91 GHz	43.80	54.0	-10.20	359	Horizontal	6.25
39.28 GHz	42.67	54.0	-11.33	27	Horizontal	4.33

Table 9: Radiated Emissions 17 – 40 GHz at the Middle Frequency (worse case)

5.6 §15.407(a) Maximum Power Spectral Density

All chains were measured and summed under the guidance of KDB 789033 Section II. F. and KDB 662911 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 5 dBm EIRP in any 1 MHz band during any time interval of continuous transmission. Results of this testing are summarized.

See Section 2.2 for directional gain calculation.

Nss>1

Modulation (BW)	Freq. (MHz)	Data Rate	TP Setting	Total Sum PSD EIRP (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dBm)
EHT20	5955	Mcs0_Nss2	8	-3.43	8	-3	-0.43
EHT20	6195	Mcs0_Nss2	8	-3.67	8	-3	-0.67
EHT20	6415	Mcs0_Nss2	9	-3.81	8	-3	-0.81
EHT40	5965	Mcs0_Nss2	11	-3.56	8	-3	-0.56
EHT40	6205	Mcs0_Nss2	11	-3.70	8	-3	-0.70
EHT40	6405	Mcs0_Nss2	12	-3.90	8	-3	-0.90
EHT80	5985	Mcs0_Nss2	15	-3.08	8	-3	-0.08
EHT80	6225	Mcs0_Nss2	14	-3.42	8	-3	-0.42
EHT80	6385	Mcs0_Nss2	15	-3.56	8	-3	-0.56
EHT160	6025	Mcs0_Nss2	17	-3.01	8	-3	-0.01
EHT160	6185	Mcs0_Nss2	17	-3.15	8	-3	-0.15
EHT160	6325	Mcs0_Nss2	17	-3.26	8	-3	-0.26
EHT 320	6265	Mcs0_Nss2	19	-3.91	8	-3	-0.91

Nss=1

Modulation (BW)	Freq. (MHz)	Data Rate	TP Setting	Total Sum PSD EIRP (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dBm)
EHT20	5955	Mcs0_Nss1	4	-8.36	8	-8.01	-0.35
EHT20	6195	Mcs0_Nss1	4	-8.12	8	-8.01	-0.11
EHT20	6415	Mcs0_Nss1	4	-8.95	8	-8.01	-0.94
EHT40	5965	Mcs0_Nss1	7	-8.38	8	-8.01	-0.37
EHT40	6205	Mcs0_Nss1	7	-8.29	8	-8.01	-0.28
EHT40	6405	Mcs0_Nss1	8	-8.57	8	-8.01	-0.56
EHT80	5985	Mcs0_Nss1	10	-8.68	8	-8.01	-0.67
EHT80	6225	Mcs0_Nss1	10	-8.21	8	-8.01	-0.20
EHT80	6385	Mcs0_Nss1	11	-8.52	8	-8.01	-0.51
EHT160	6025	Mcs0_Nss1	12	-8.69	8	-8.01	-0.68
EHT160	6185	Mcs0_Nss1	12	-9.01	8	-8.01	-1.00
EHT160	6325	Mcs0_Nss1	12	-9.14	8	-8.01	-1.13
EHT 320	6265	Mcs0_Nss1	14	-8.37	8	-8.01	-0.36

Result

The maximum average power spectral density was less than the limit of 5 dBm EIRP (adjusted limit of -3 for Nss>1 and -6.01 for Nss=1); therefore, the EUT complies with the specification.

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.

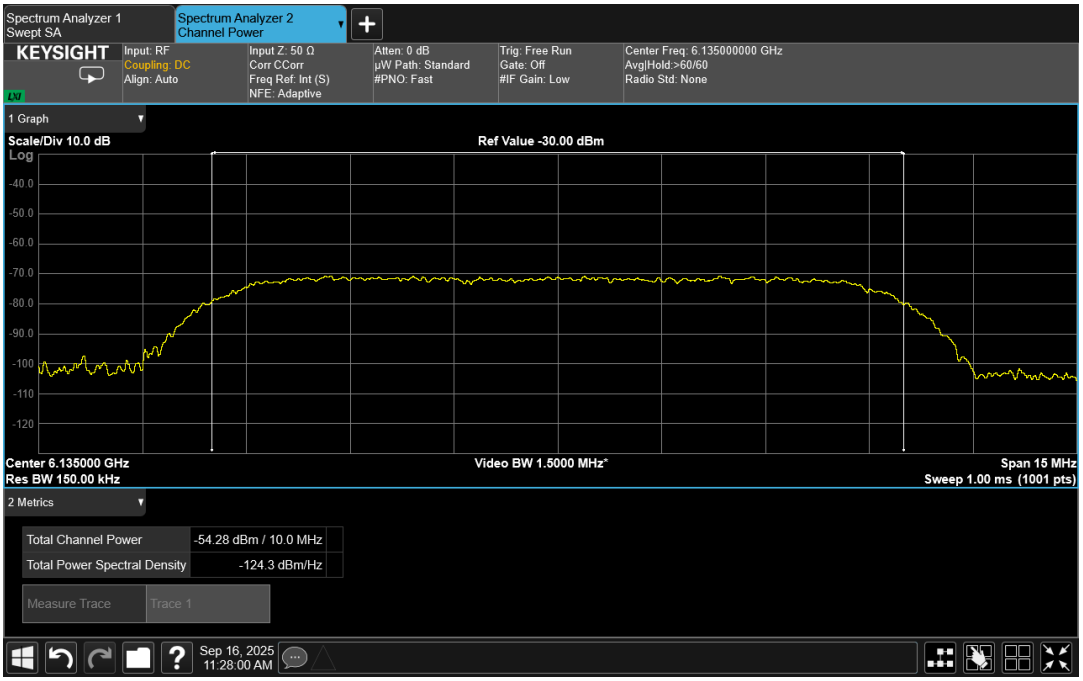
Initially the test setup was connected directly to the signal source with all splitters (splitters terminated with a 50-ohm loads on unused ports) and cables in place to verify the AWGN signal is 10MHz wide at a signal level of less than or equal to -62dBm and for conducted measurements the threshold was adjusted for an antenna gain of 8 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.

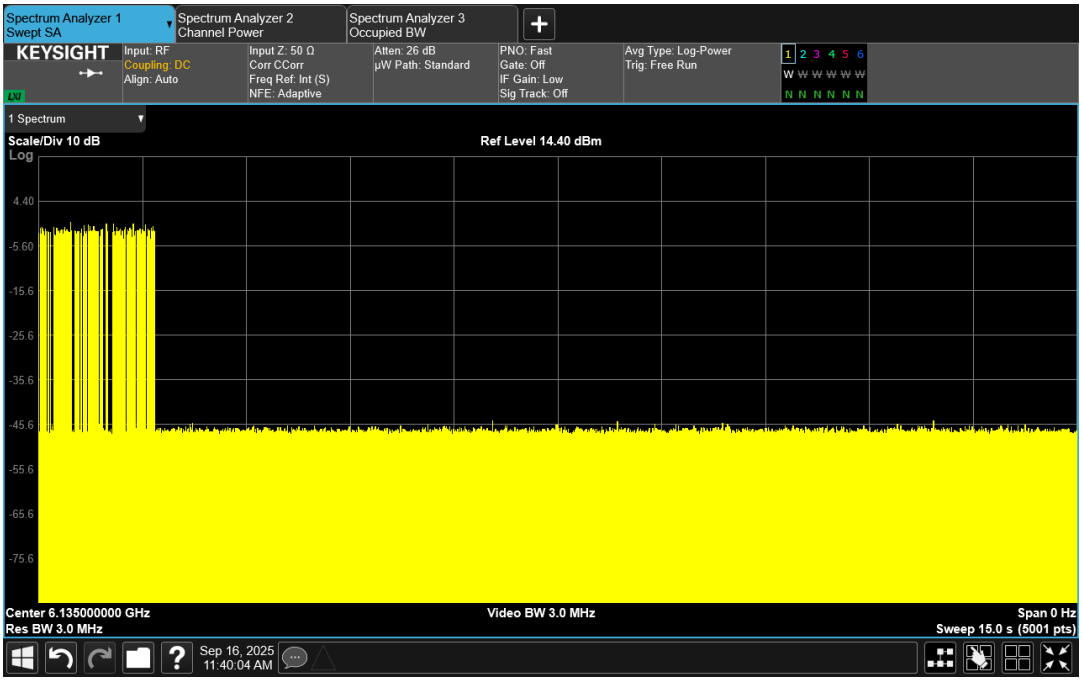
Starting at the levels established above, the AWGN signal was introduced to the DUT and increased to determine a threshold level at where the DUT will terminate with at least a 90% detection rate. The level at the DUT, which the 90% detection rate was achieved was recorded as the “Sensitivity Level”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

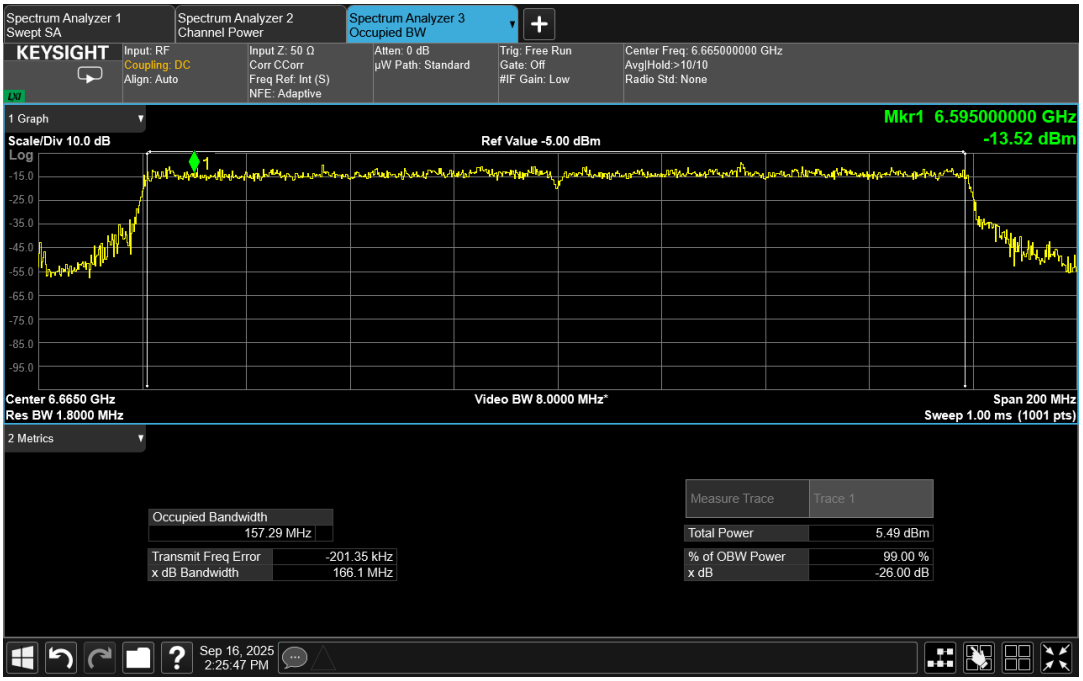
Testing shall be repeated at each applicable channel and bandwidth as noted in Table 1 of KDB 987594 D02.



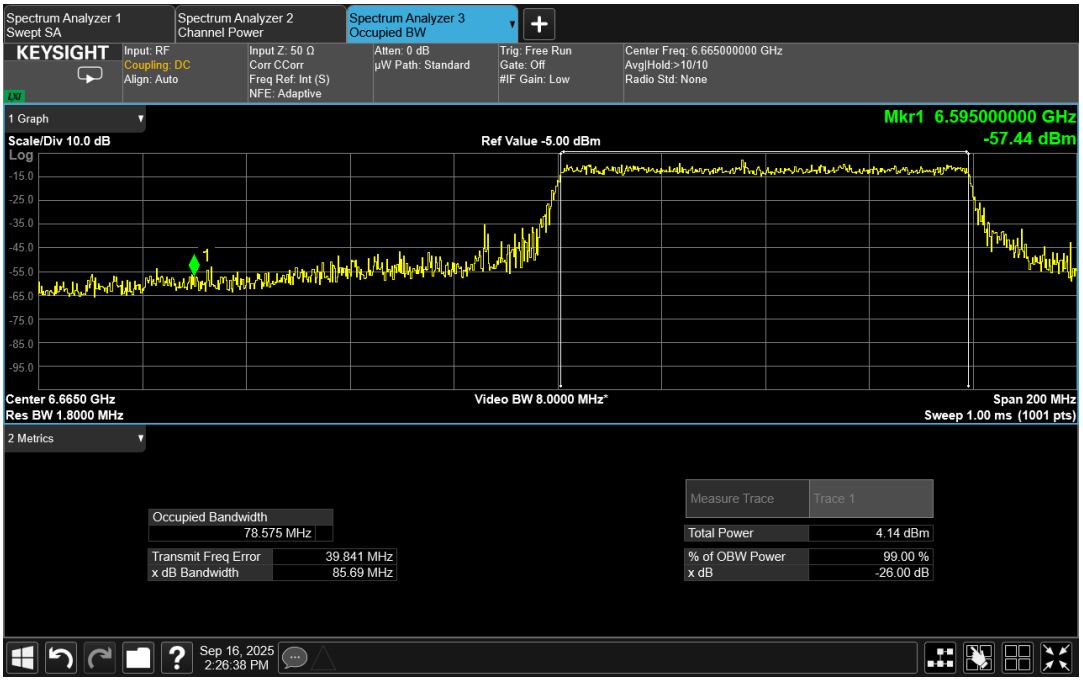
Plot 1: AWGN Signal BW/Power Details



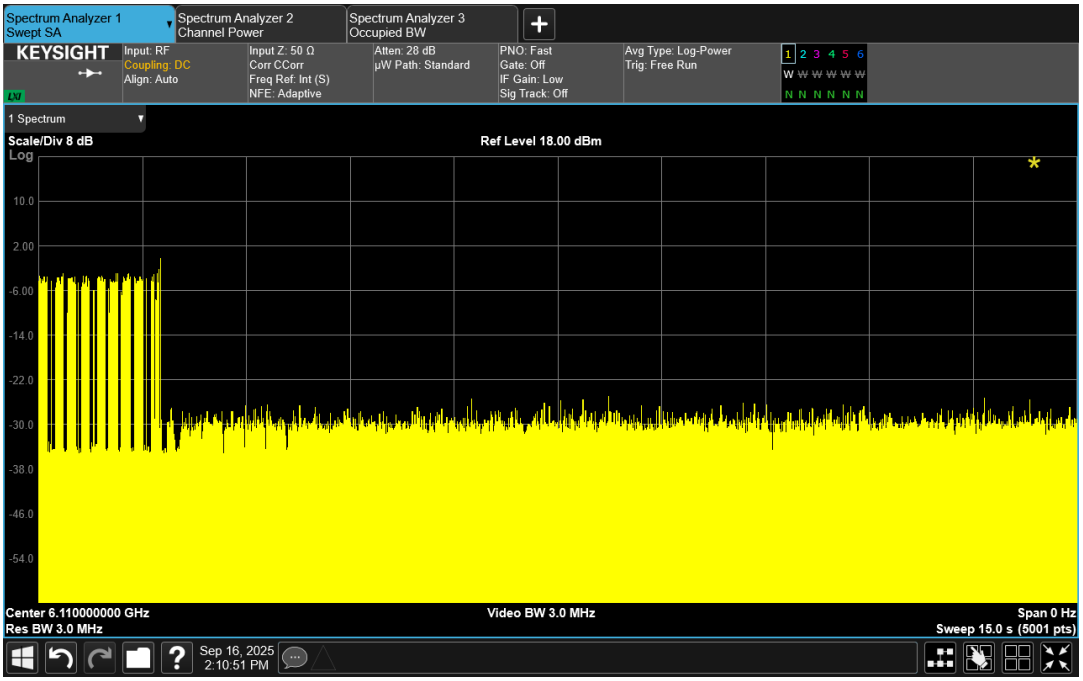
Plot 2: AWGN Signal Detection 20MHz



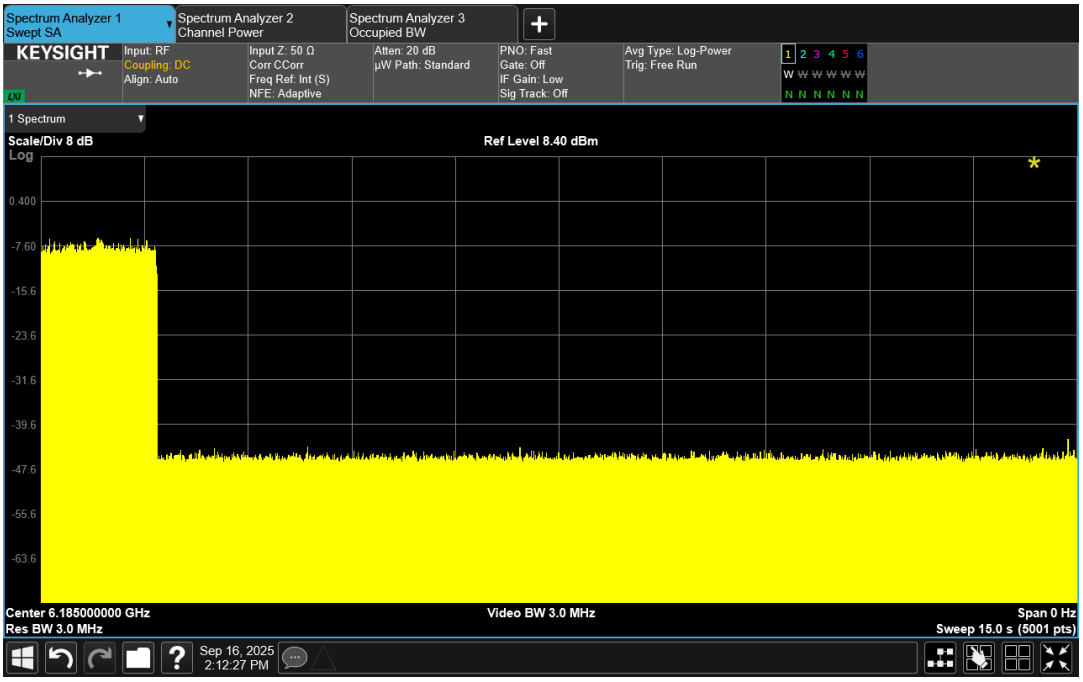
Plot 3: EUT 160MHz Bandwidth



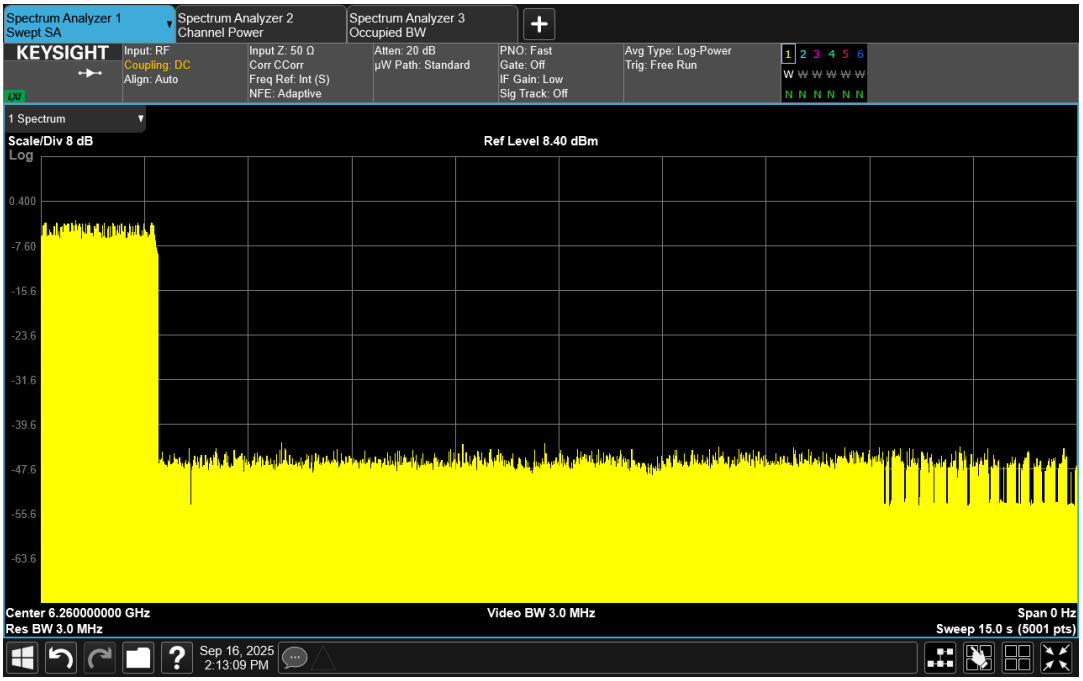
Plot 4: EUT 160MHz Bandwidth Reduction



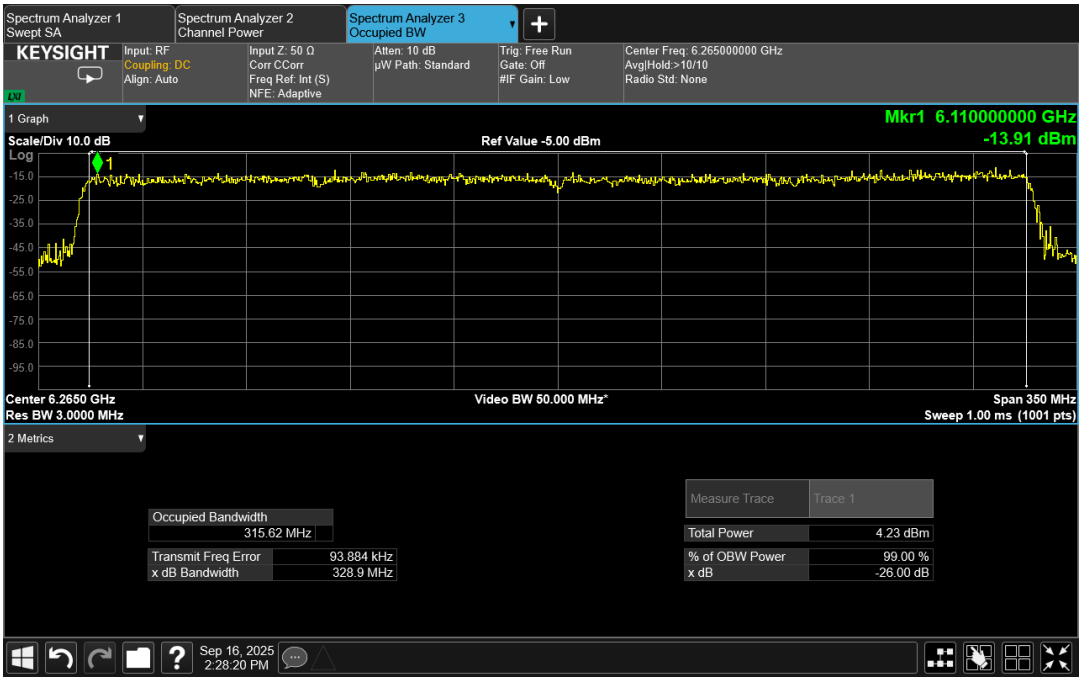
Plot 5: AWGN Signal Detection 160MHz



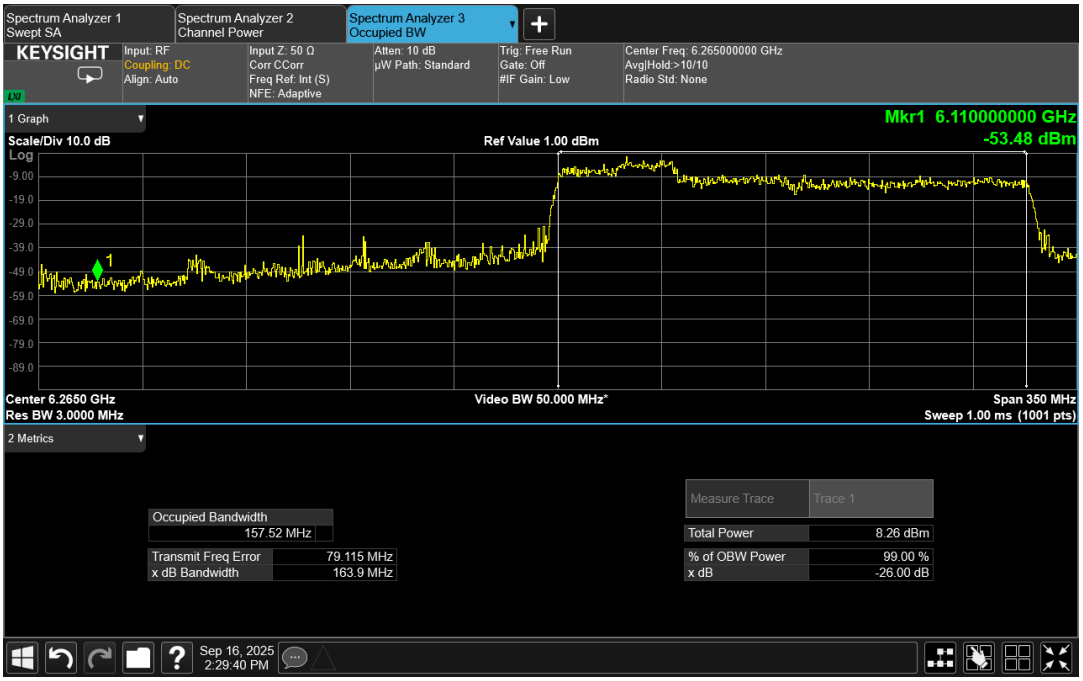
Plot 6: AWGN Signal Detection 160MHz



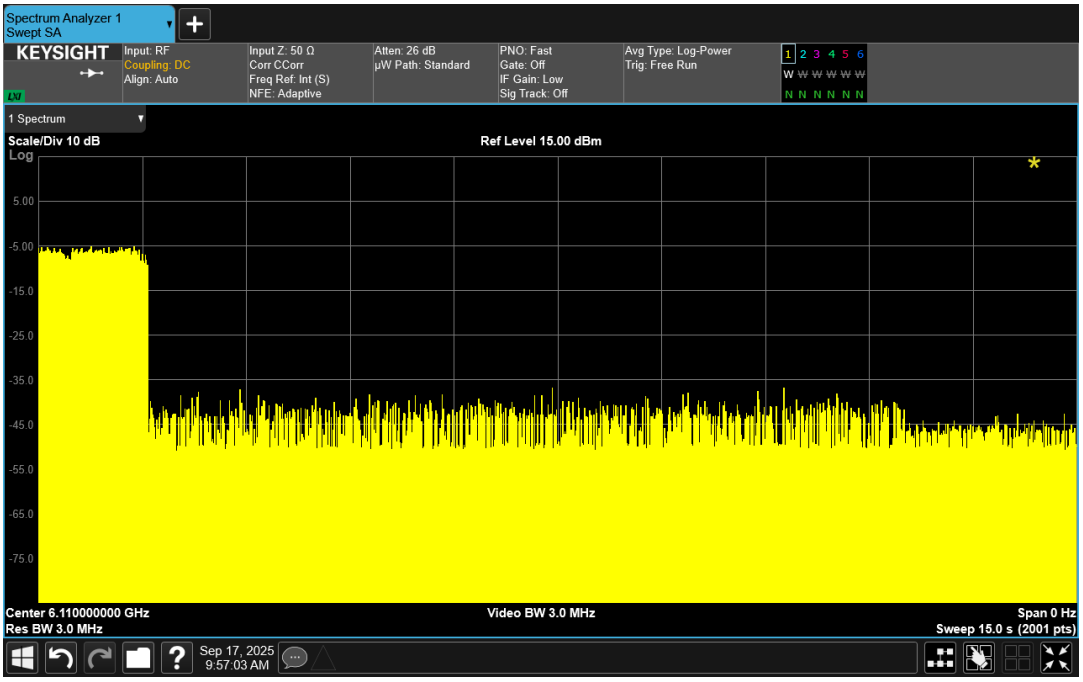
Plot 7: AWGN Signal Detection 160MHz



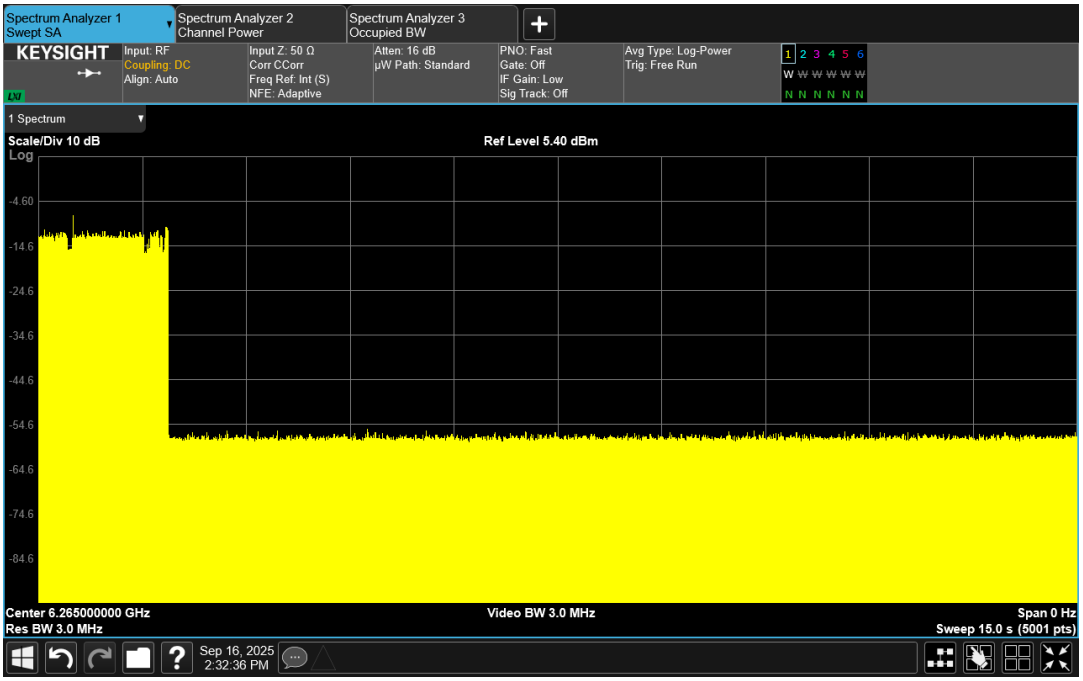
Plot 8: EUT 320MHz Bandwidth



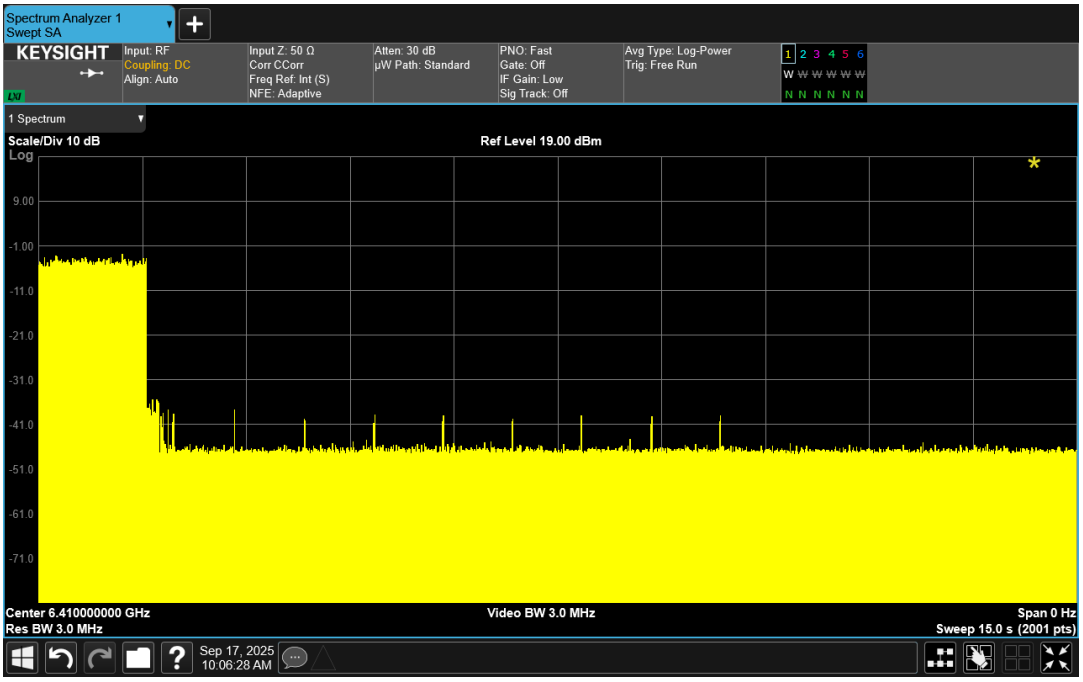
Plot 9: EUT 320MHz Bandwidth Reduction



Plot 10: AWGN Signal Detection 320MHz



Plot 11: AWGN Signal Detection 320MHz



Plot 12: AWGN Signal Detection 320MHz

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

Band	BW_{EUT}	F_{c1}	F_{c2}	Reduce Tx AWGN Level (dBm)	Stop Tx AWGN Level (dBm)	Adjusted Power (dBm)	Limit (dBm)	Margin (dB)	Result Detection >90%
UNII-5 5.925 - 6.425 GHz	20	6135	6135	-51	-40	-58.2	-54	-4.2	Pass
	160	6185	6110	-44	-38	-56.2	-54	-2.2	Pass
			6185	-48	-46	-64.2	-54	-10.2	Pass
			6260	-48	-46	-64.2	-54	-10.2	Pass
	320	6265	6110	-46	-44	-62.2	-54	-8.2	Pass
			6265	-50	-46	-64.2	-54	-10.2	Pass
			6410	-41	-38	-56.2	-54	-2.2	Pass
UNII-6 6.425 - 6.525 GHz	20	6455	6455	-51	-43	-61.2	-54	-7.2	Pass
	160	6505	6430	-48	-39	-57.2	-54	-3.2	Pass
			6505	-51	-48	-66.2	-54	-12.2	Pass
			6580	-50	-48	-66.2	-54	-12.2	Pass
UN1I-7 6.525 - 6.875 GHz	20	6695	6695	-51	-43	-61.2	-54	-7.2	Pass
	160	6665	6595	-45	-44	-62.2	-54	-8.2	Pass
			6665	-48	-46	-64.2	-54	-10.2	Pass
			6740	-46	-41	-59.2	-54	-5.2	Pass
	320	6745	6590	-56	-50	-68.2	-54	-14.2	Pass
			6745	-40	-36	-54.2	-54	-0.2	Pass
			6890	-45	-41	-59.2	-54	-5.2	Pass
UNII-8 6.875 - 7.125 GHz	20	7015	7015	-51	-44	-62.2	-54	-8.2	Pass
	160	6985	6910	-42	-37	-55.2	-54	-1.2	Pass
			6985	-44	-37	-55.2	-54	-1.2	Pass
			7060	-44	-37	-55.2	-54	-1.2	Pass

Antenna Gain (dBi)	8
Max Threshold Level (TL)	-54

Ports	Path Loss (dBm)
CH3,CH2	-18.2

AWGN BW (Clock)
24MHz

Table 10: Trial Table

CBP Path Loss is – 18.2 dB
Detection Level = Injected AWGN Power (dBm) – Antenna Gaiin (dBi) + Path Loss (dB)

Result

The EUT complies with the specification.

-- End of Test Report --