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	TR9089_07
Date of Tests	23, 29 February; 11, 25 April; 5, 20 June 2024
Report Issue Date	26 June 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

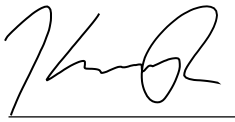
This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart E. This report may be reproduced in full. Partial reproduction of this report may only be made with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

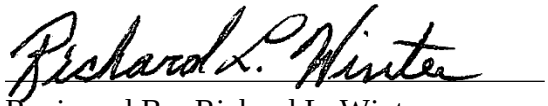
On this 26th day of June 2024, I individually and for Unified Compliance Laboratory certify that the statements made in this engineering report are true, complete and correct to the best of my knowledge and are made in good faith.

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: Kimberly Rodriguez



Reviewed By: Richard L. Winter

Revision History		
Revision	**Description**	**Date**
01	Original Report Release	26 June 2024
02	Amend Standard to RSS-248 in Section 3.3.1 and Amend Section 5.4	19 September 2024
03	Amended KDB Reference in Sections 5.3, 5.4 and 5.4	27 September 2024
04	Added Detection Level Formula in Section 5.7	28 October 2024
05	Amended Section 2.2	29 October 2024
06	Amended Section 5.7	30 October 2024
07	Amended Sections 5.3 and 5.4	6 November 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	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 802.3at 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-8	be (EHT20)	6895	TP11
		7015	TP12
		7115	TP11
	be (EHT40)	6925	TP14
		7005	TP15
		7085	TP15
	be (EHT80)	6945	TP17
		7025	TP18
	be (EHT160)	6985	TP20
	be (EHT320)	6905	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	19.6-22.3 °C
Humidity	21.12-32.11 %
Barometric Pressure	1020 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

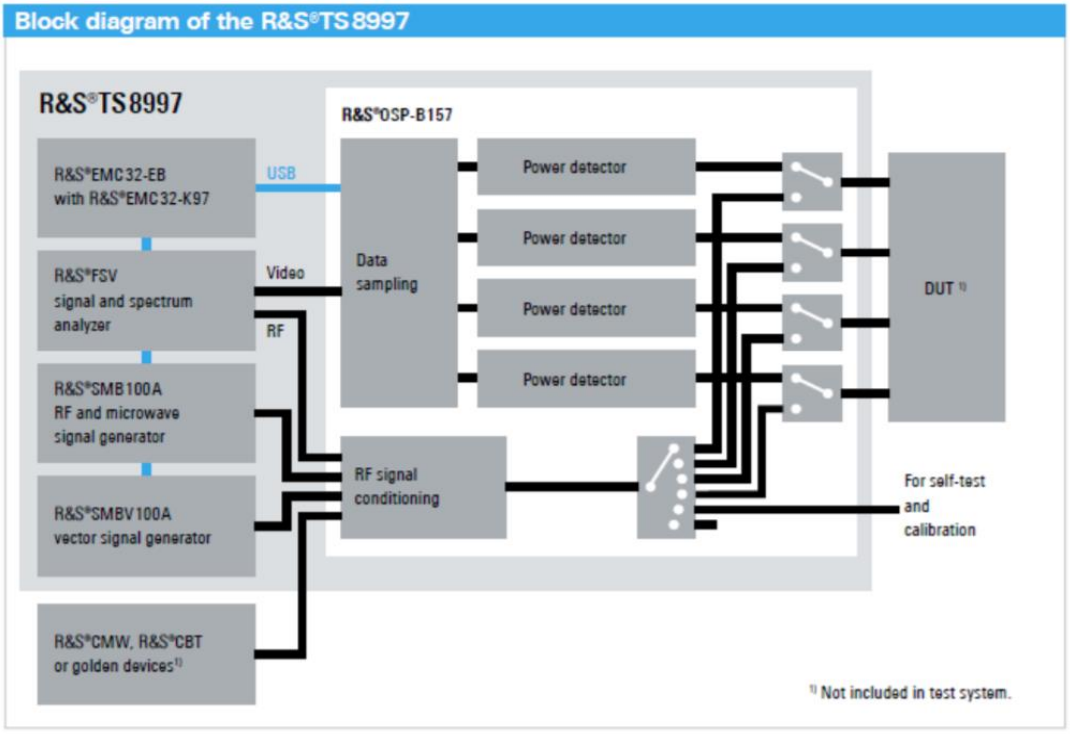


Diagram 1: Test Configuration Block Diagram

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(c)	RSS-248 §4.4	Bandwidth Requirement	6875 to 7115	Compliant
15.407(e)	RSS-248 §4.5	Peak Output Power[1]	6875 to 7115	Compliant
15.407(f)	RSS-248 §4.6	Antenna Conducted Spurious Emissions[1]	0.009 to 40000	N/A
15.407(g)	RSS-248 §4.6	Radiated Spurious Emissions	0.009 to 40000	Compliant
15.407(h)	RSS-248 §4.5	Peak Power Spectral Density[1]	6875 to 7115	Compliant
15.407(d)	RSS-248 §4.7	Contention Based Protocol	6875 to 7115	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 chamber 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

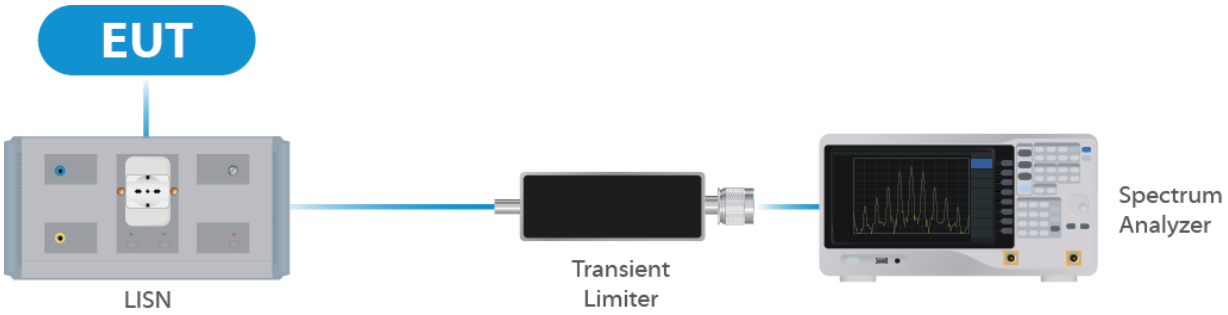


Figure 1: Conducted Emissions Test

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

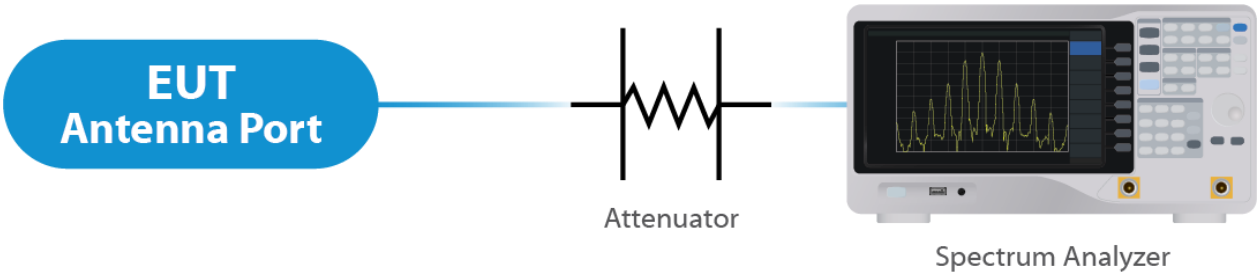


Figure 2: Direct Connect at the Antenna Port Test

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	1/11/2023	1/11/2025
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	9/22/2022	9/22/2024
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	1/27/2023	1/27/2025
15 - 40 GHz Horn Antenna	Scwarzbeck	BBHA 9170	UCL-2487	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

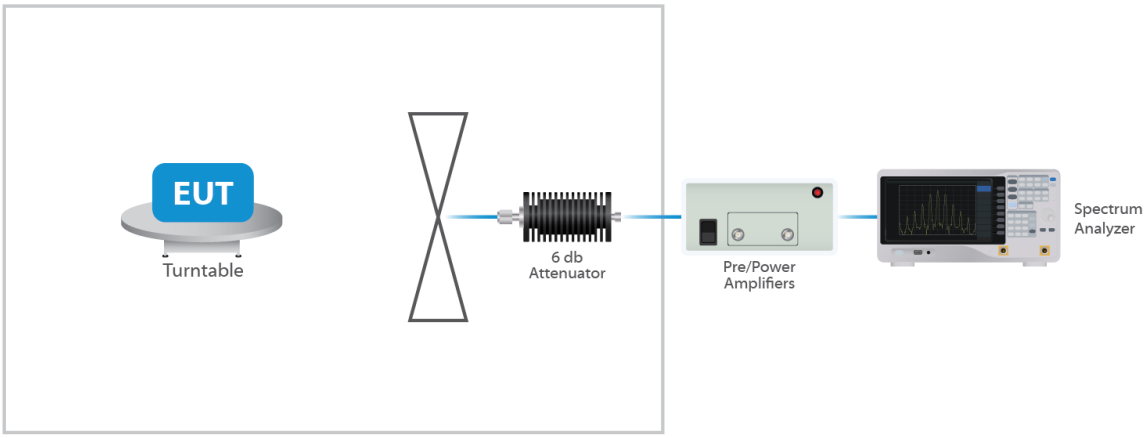


Figure 3: Radiated Emissions Test

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

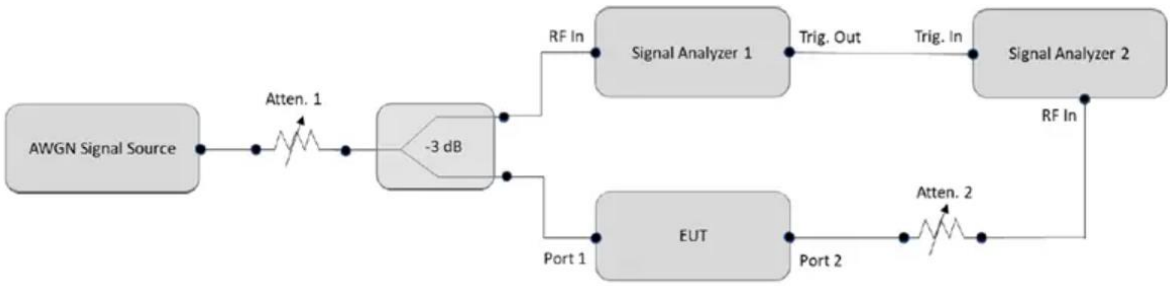


Figure 1. CBP conducted test setup diagram. Source: KDB 987594 D02 V01r01

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 integral 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.

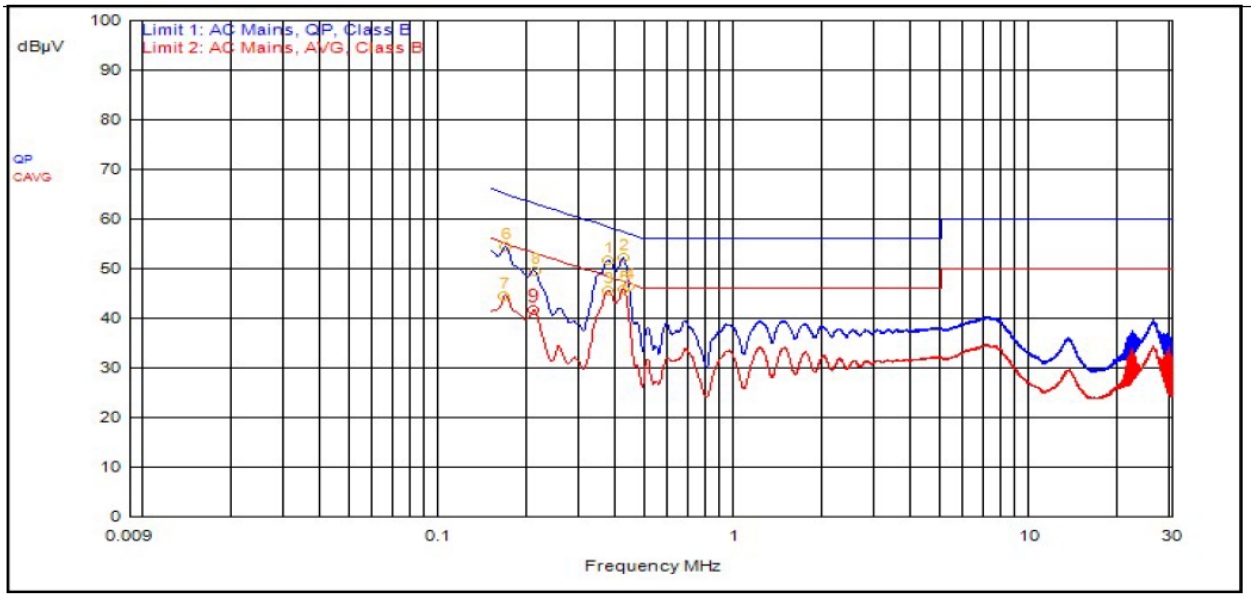
For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for NANT ≤ 4;
For PSD measurements when Nss=1: Array Gain = 10 log(NANT/NSS) dB + Antenna Gain (dBi). Or 6.02 dB + 6 dBi = 12.02 dBi.

Results

The EUT complied with the specification

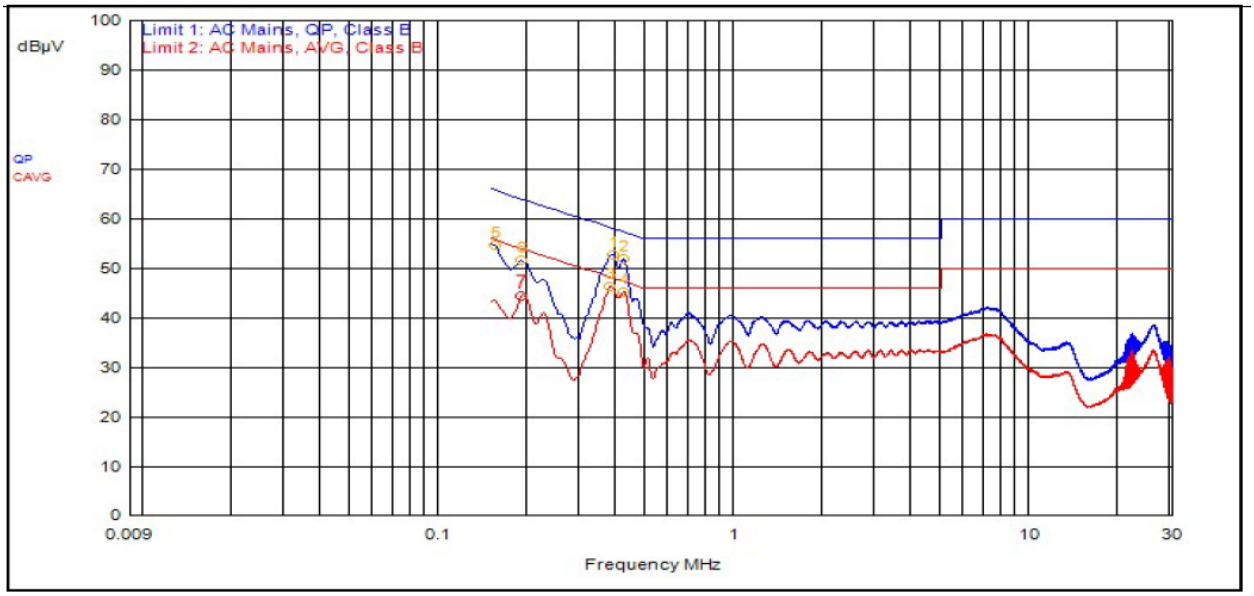
5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.	P/F
MU	MHz	dB	dB	dB	Type	dBµV	dBµV	dBµV	dB	dBµV	dB	P/F
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)
20	6895	19.50	23.30
20	7015	19.25	23.30
20	7115	19.25	23.00
40	6925	38.25	43.83
40	7005	38.25	44.13
40	7085	38.25	45.78
80	6945	78.00	90.00
80	7025	78.50	87.50
160	6985	158.00	171.00
320	6905	128.75	338.73

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 23.72 dBm or 235.50 mW. The limit is 30 dBm EIRP. The antenna has a gain of 6 dBi.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power *	EIRP	Measured PSD
HE20	6895	Mcs0_Nss4	11	15.26	21.26	-1.13
HE20	7015	Mcs0_Nss4	12	15.11	21.11	-1.40
HE20	7115	Mcs0_Nss4	11	14.10	20.10	-1.78
HE40	6925	Mcs0_Nss4	14	17.75	23.75	-1.13
HE40	7005	Mcs0_Nss4	15	18.05	24.05	-1.51
HE40	7085	Mcs0_Nss4	15	17.85	23.85	-1.52
HE80	6945	Mcs0_Nss4	17	20.60	26.60	-1.38
HE80	7025	Mcs0_Nss4	18	20.77	26.77	-1.57
HE160	6985	Mcs0_Nss4	20	23.08	29.08	-1.99
HE320	6905	Mcs0_Nss4	20	23.72	29.72	-4.13

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power *	EIRP	Measured PSD
HE20	6895	Mcs0_Nss1	2	2.34	8.34	-7.27
HE20	7015	Mcs0_Nss1	2	0.83	6.83	-7.94
HE20	7115	Mcs0_Nss1	2	0.95	6.95	-7.30
HE40	6925	Mcs0_Nss1	5	4.99	10.99	-7.22
HE40	7005	Mcs0_Nss1	5	3.89	9.89	-8.13
HE40	7085	Mcs0_Nss1	5	3.27	9.27	-8.07
HE80	6945	Mcs0_Nss1	8	7.63	13.63	-7.43
HE80	7025	Mcs0_Nss1	8	6.23	12.23	-8.24
HE160	6985	Mcs0_Nss1	11	10.47	16.47	-7.45

HE320	6905	Mcs0_Nss1	13	13.26	19.26	-7.50

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 6 dBi accounted for. These demonstrate compliance with the provisions of this section at the band edges.
The emissions must be remain below -27 dBm EIRP.

Result

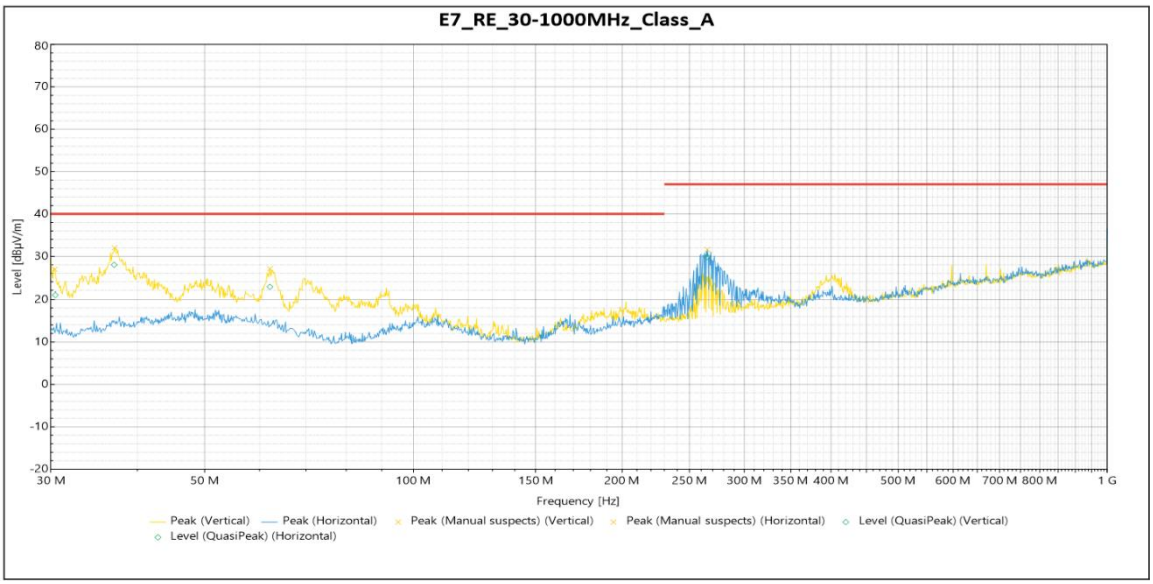
Conducted spurious emissions were attenuated below the limit; therefore, the EUT complies with the specification.

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

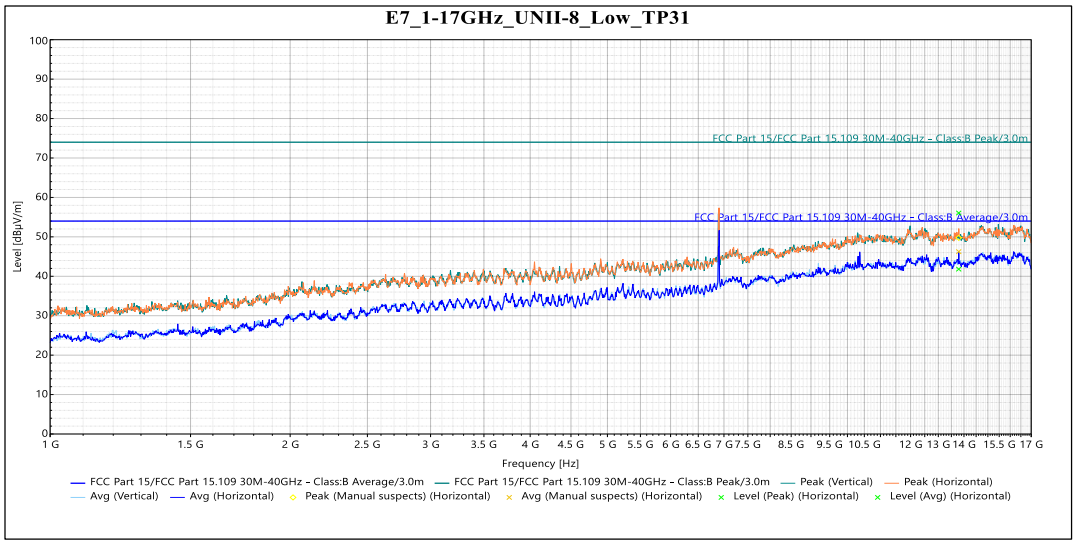
All emissions in the restricted bands of § 15.205 met the limits specified in § 15.209; therefore, the EUT complies with the specification. See Annex for Conducted Band edge plots.



QuasiPeak

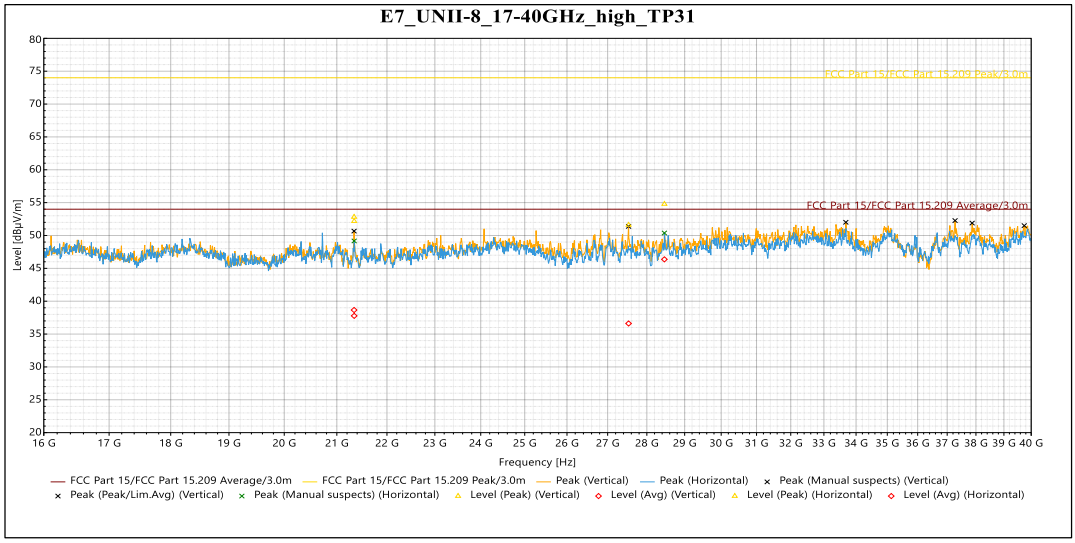
Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
30.455 MHz	21.073	40	-18.927	106	0.999	Vertical	-16.07
37.03 MHz	28.019	40	-11.981	238	1.132	Vertical	-14.769
62.105 MHz	22.817	40	-17.183	331	3.17	Vertical	-14.457
265.26 MHz	29.89	47	-17.11	95	3.35	Horizontal	-13.638

Table 5: Spurious Emissions within 30-1000 MHz



Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
13.79 GHz	Peak	56.047	74	-17.953	91	1.63	Horizontal	15.284
13.79 GHz	AVG	41.808	54	-12.192	91	1.63	Horizontal	15.284

Table 6: Radiated Emissions on 1-17GHz Transmitting on the Lowest Frequency



Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
21.339 GHz	Peak	52.817	74	-21.183	352	Vertical	0.283
27.53 GHz	Peak	51.595	74	-22.405	169	Vertical	1.147
21.339 GHz	AVG	38.663	54	-15.337	352	Vertical	0.283
27.53 GHz	AVG	36.612	54	-17.388	169	Vertical	1.147
21.341 GHz	Peak	52.182	74	-21.818	23	Horizontal	0.293
28.46 GHz	Peak	54.791	74	-19.209	72	Horizontal	-0.392
21.341 GHz	AVG	37.77	54	-16.23	23	Horizontal	0.293
28.46 GHz	AVG	46.367	54	-7.633	72	Horizontal	-0.392

Table 7: Radiated Emissions on 17-40GHz Transmitting on the Highest Frequency

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. As per KDB 662911, When the EUT is using spatial-multiplexing in HE modes, there is not additional array gain to accommodate. When the EUT uses Nss=1 data rates, the antenna gain is 6 dBi + Array gain of 6.02 dB which is a total of 12.02 dBi.
Results of this testing are summarized.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power *	Measured PSD
HE20	6895	Mcs0_Nss4	11	15.26	-1.13
HE20	7015	Mcs0_Nss4	12	15.11	-1.40
HE20	7115	Mcs0_Nss4	11	14.10	-1.78
HE40	6925	Mcs0_Nss4	14	17.75	-1.13
HE40	7005	Mcs0_Nss4	15	18.05	-1.51
HE40	7085	Mcs0_Nss4	15	17.85	-1.52
HE80	6945	Mcs0_Nss4	17	20.60	-1.38
HE80	7025	Mcs0_Nss4	18	20.77	-1.57
HE160	6985	Mcs0_Nss4	20	23.08	-1.99
HE320	6905	Mcs0_Nss4	20	23.72	-4.13

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power *	Measured PSD
HE20	6895	Mcs0_Nss1	2	2.34	-7.27
HE20	7015	Mcs0_Nss1	2	0.83	-7.94
HE20	7115	Mcs0_Nss1	2	0.95	-7.30
HE40	6925	Mcs0_Nss1	5	4.99	-7.22
HE40	7005	Mcs0_Nss1	5	3.89	-8.13
HE40	7085	Mcs0_Nss1	5	3.27	-8.07
HE80	6945	Mcs0_Nss1	8	7.63	-7.43
HE80	7025	Mcs0_Nss1	8	6.23	-8.24
HE160	6985	Mcs0_Nss1	11	10.47	-7.45
HE320	6905	Mcs0_Nss1	13	13.26	-7.50

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.

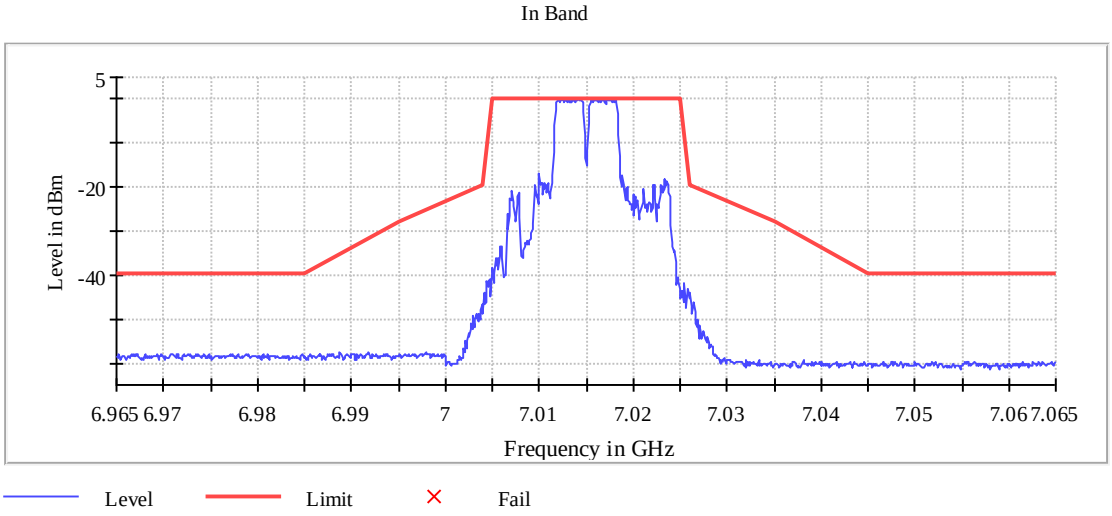


Figure 5: 7015 20MHz RU Vérification - Center

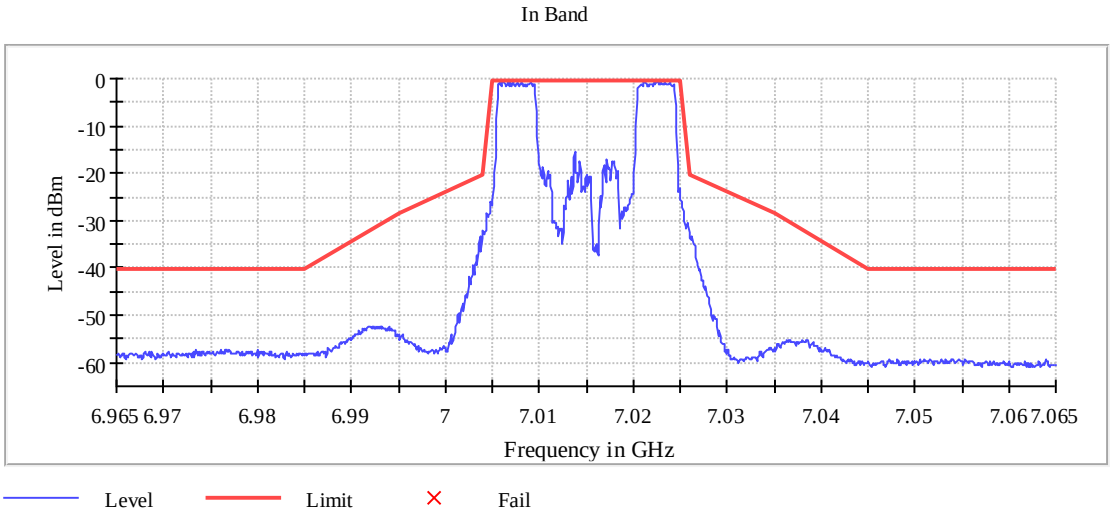


Figure 6: 7015 20MHz RU Vérification - Edge

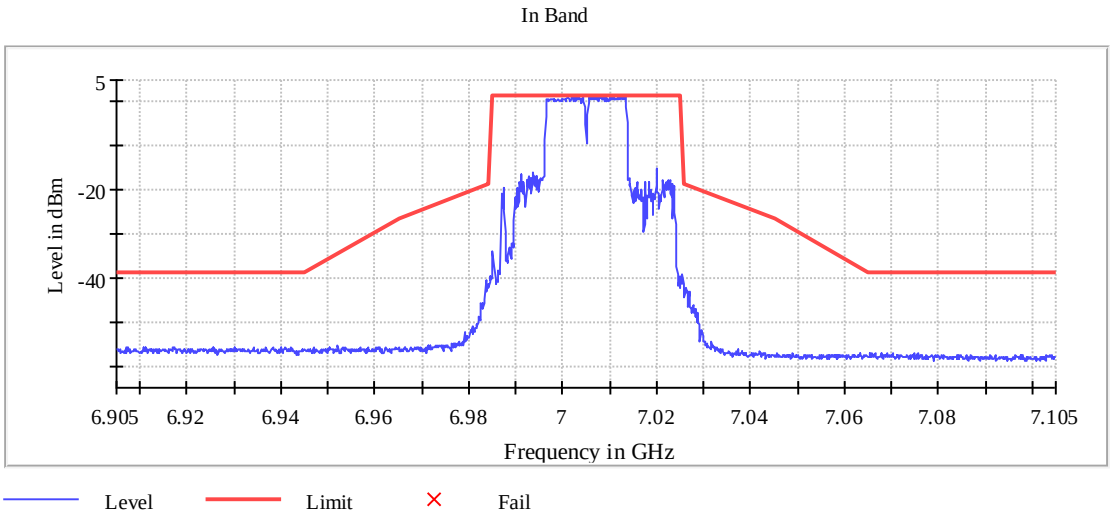


Figure 7: 7005 40MHz RU Vérification - Center

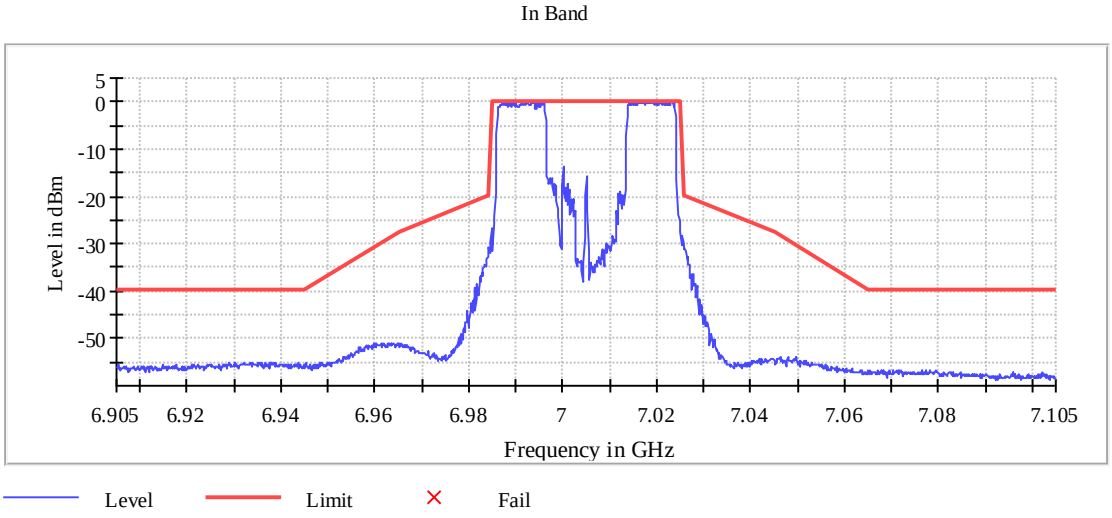


Figure 8: 7005 40MHz RU Vérification - Edge

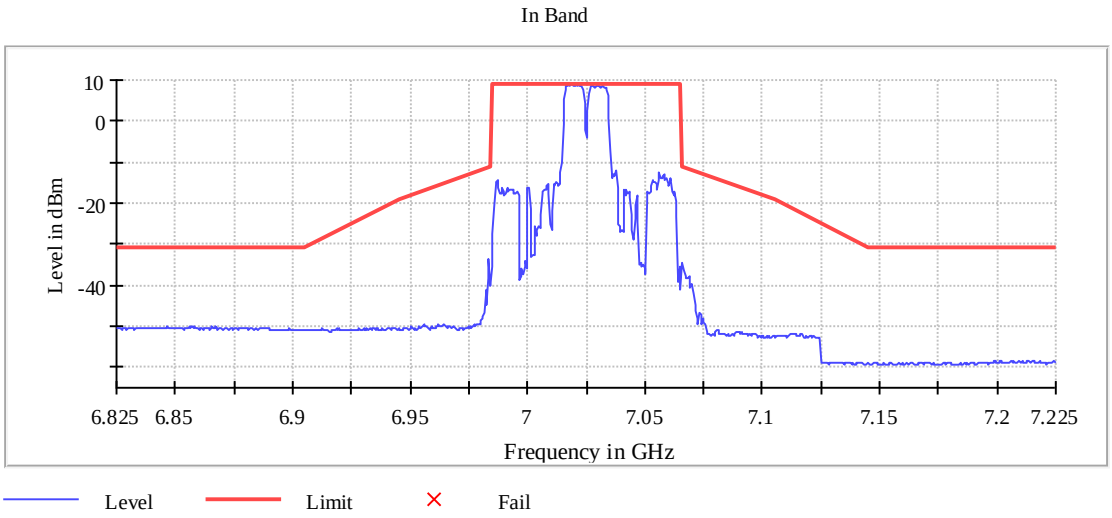


Figure 9: 7025 80MHz RU Vérification - Center

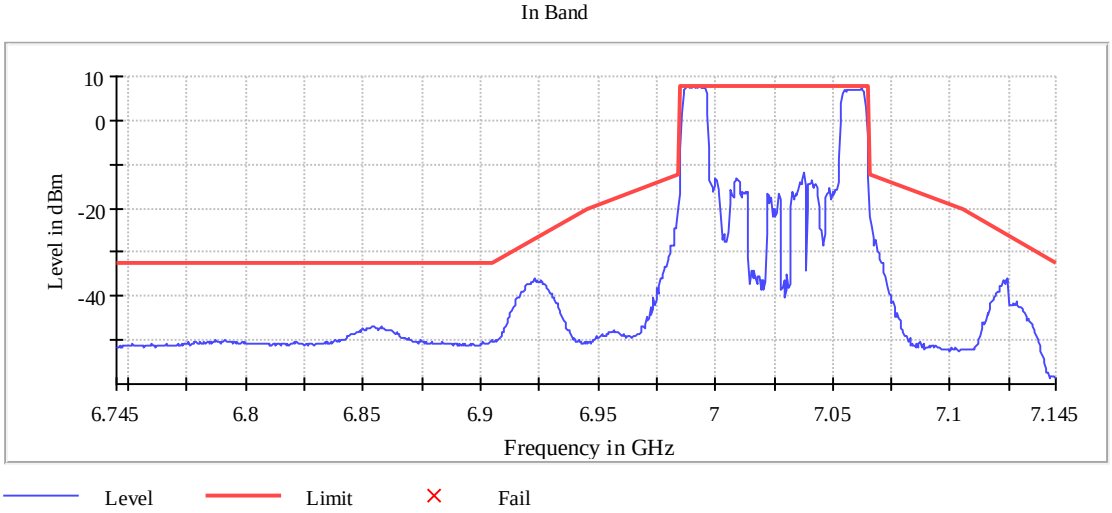


Figure 10: 7025 80MHz RU Vérification - Edge

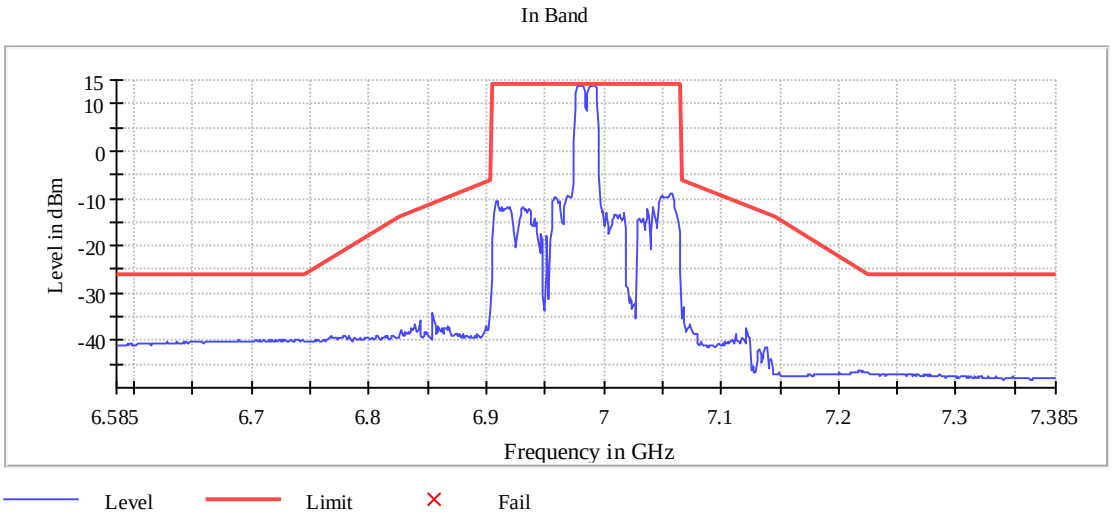


Figure 11: 6985 160MHz RU Vérification - Center

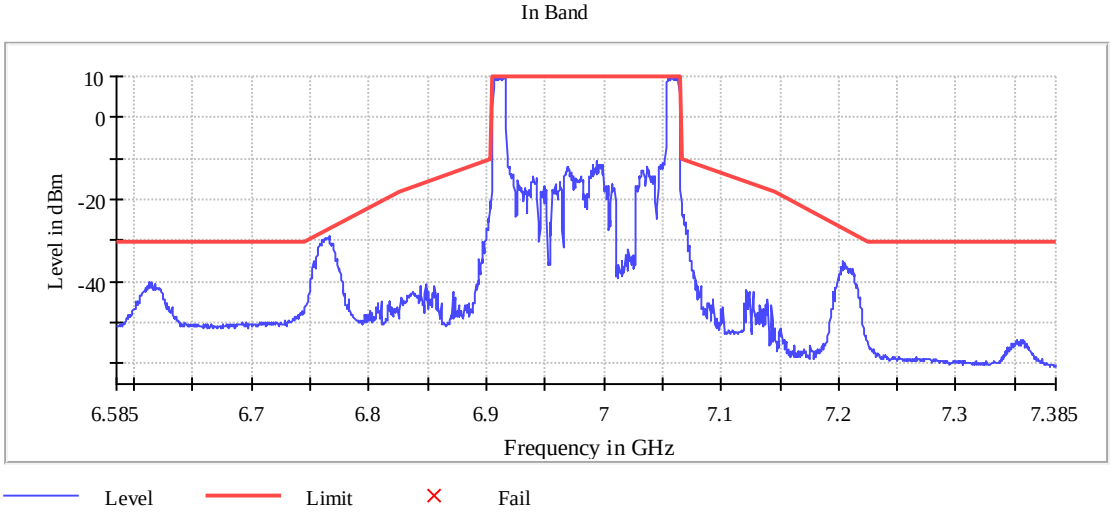


Figure 12: 6985 160MHz RU Vérification - Edge

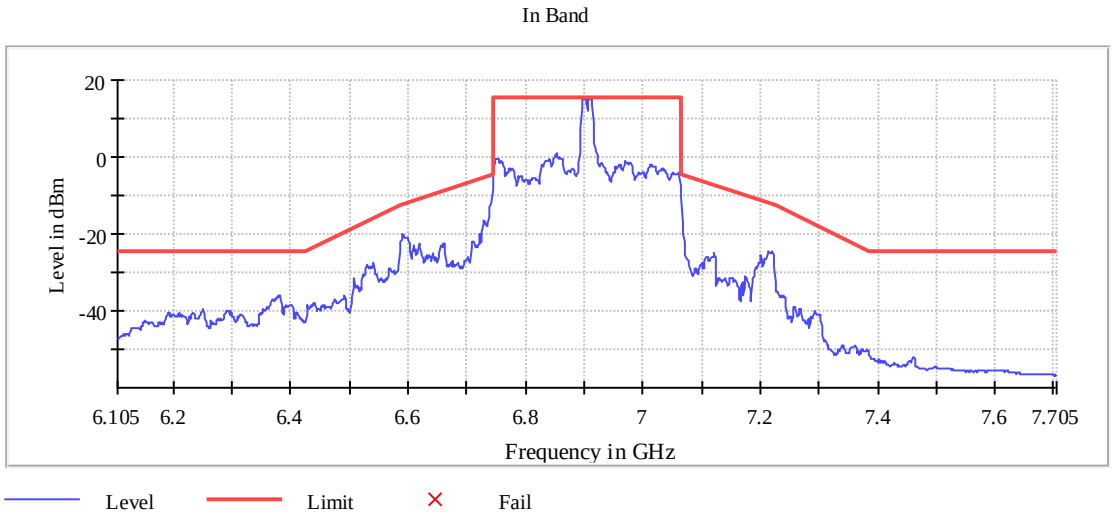


Figure 13: 6905 320MHz RU Vérification – Center

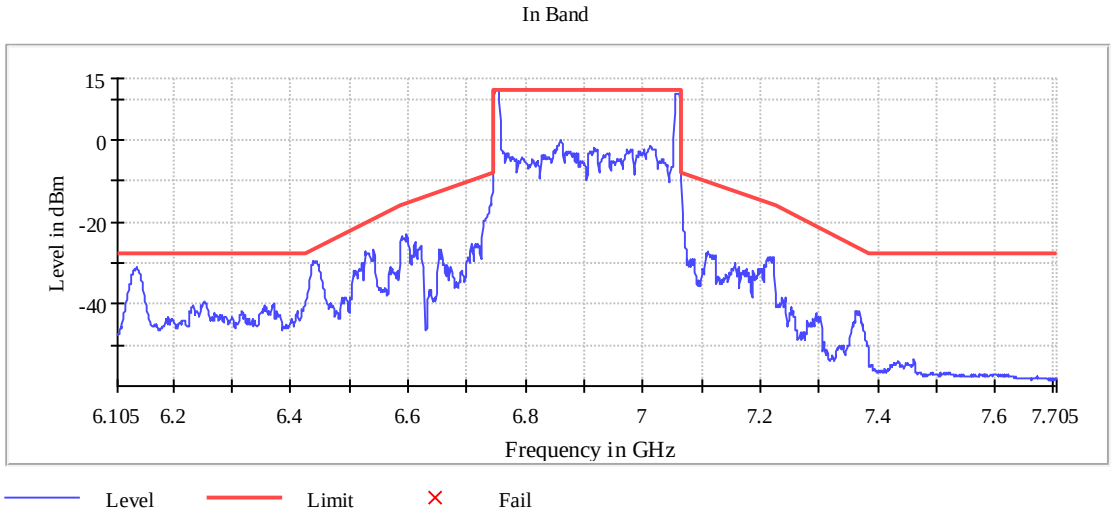


Figure 14: 6905 320MHz RU Vérification - Edge

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.

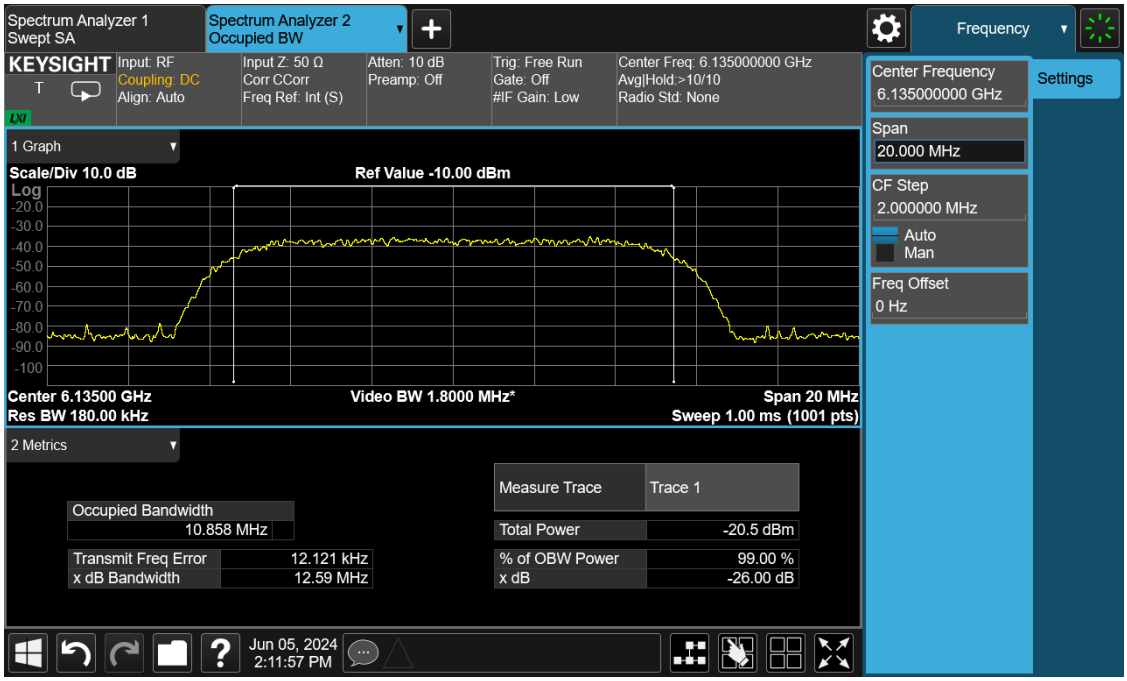
Initially the test setup was connected directly to the signal source with all splitters (splitters terminated with a 50-ohm loads on unused ports) and cables in place to verify the AWGN signal is 10MHz wide at a signal level of less than or equal to -62dBm and for conducted measurements the threshold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

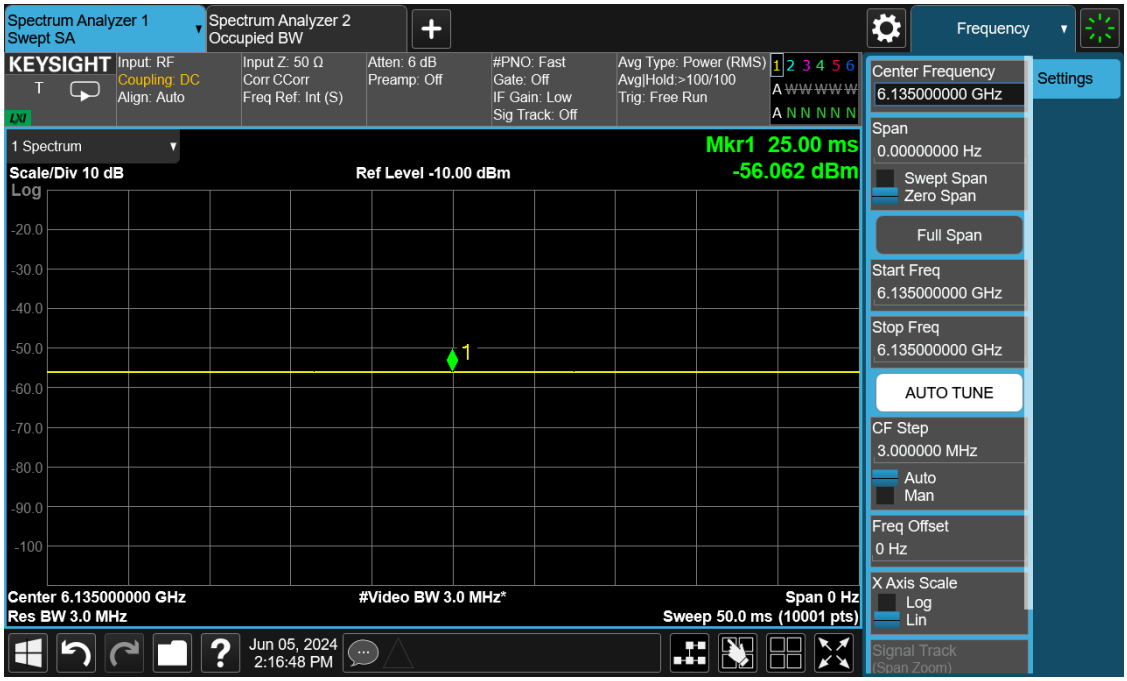
Starting at the levels established above, the AWGN signal was introduced to the DUT and increased to determine a threshold level at where the DUT will terminate with at least a 90% detection rate. The level at the DUT, which the 90% detection rate was achieved was recorded as the “Sensitivity Level”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

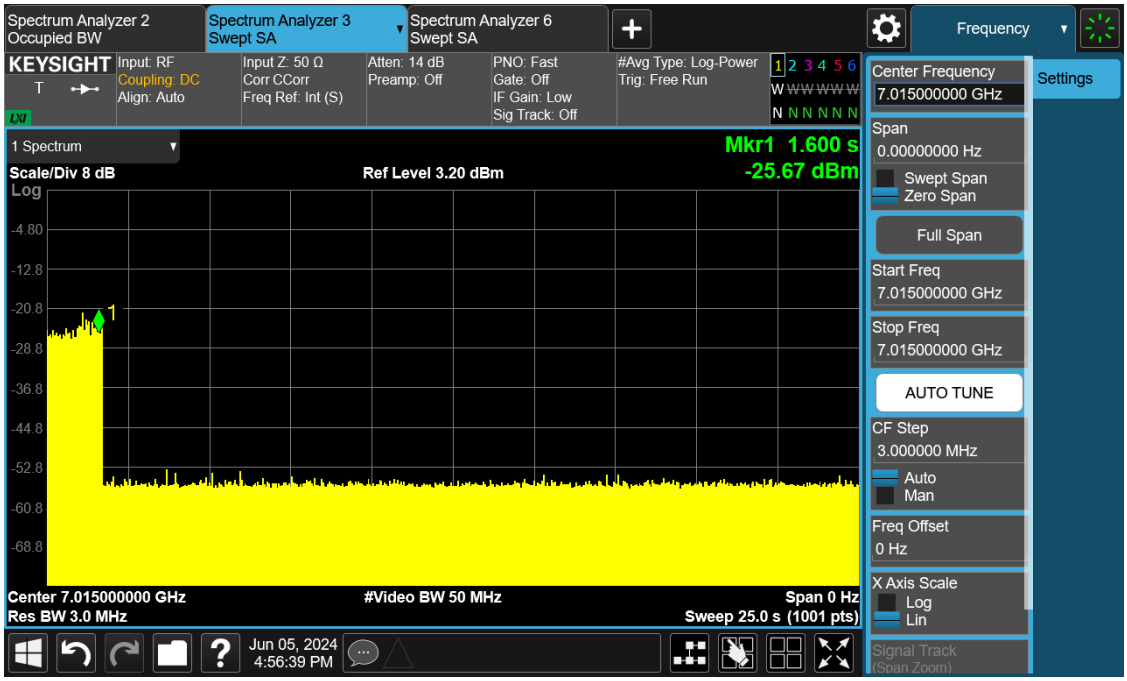
Testing shall be repeated at each applicable channel and bandwidth as noted in Table 1 of KDB 987594 D02.



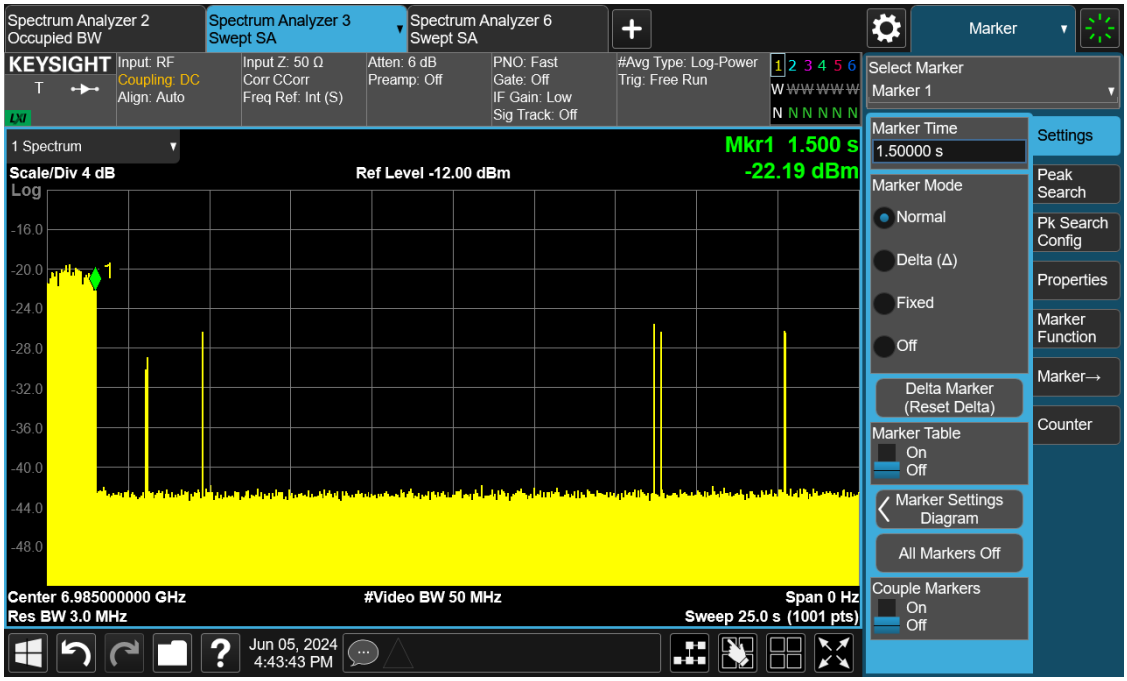
Plot 1: AWGN Signal BW Details



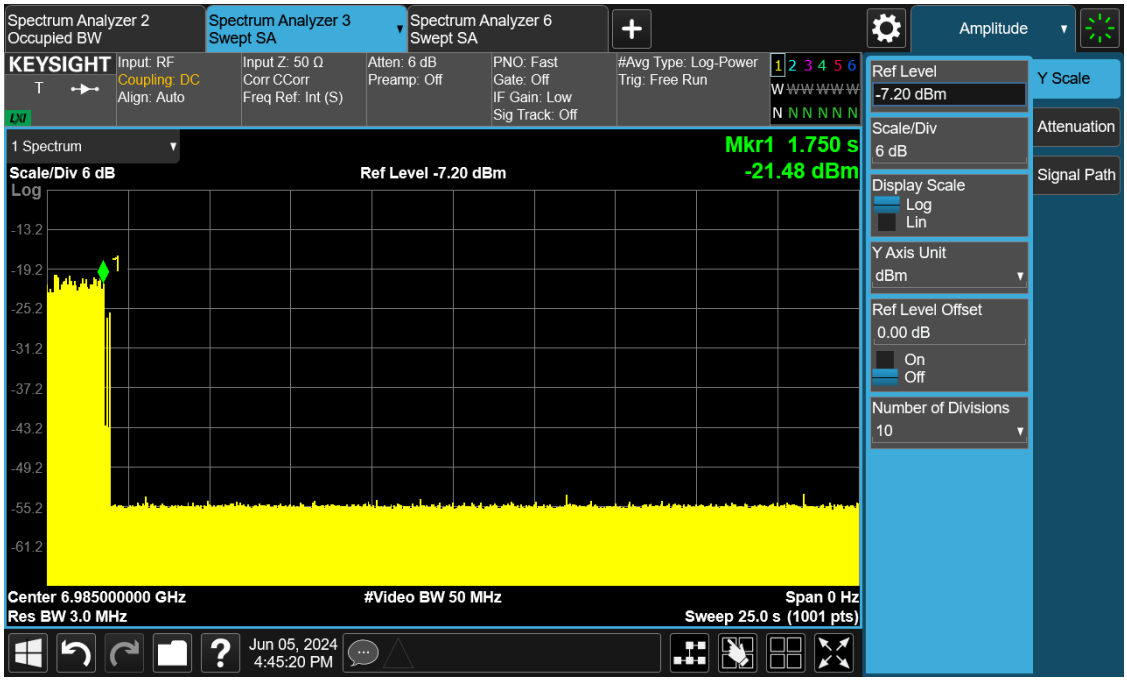
Plot 2: AWGN Signal Level Details



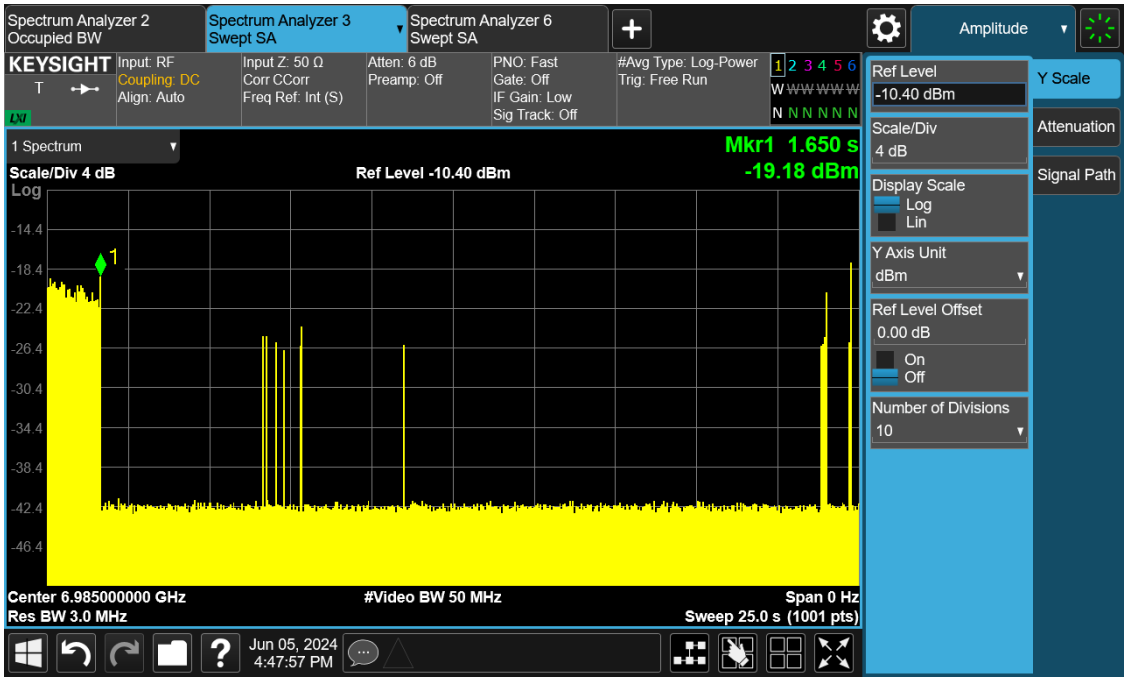
Plot 3: AWGN Signal Detection 20MHz



Plot 4: AWGN Signal Detection 160MHz



Plot 5: AWGN Signal Detection 160MHz



Plot 6: AWGN Signal Detection 160MHz

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

Min. Antenna Gain (dBi)	6		Ports: 6G0,1,2,3		AWGN Clock
Max Threshold Level (TL)	-56		J44,43,36,42		25MHz

Table 8: 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 –