Test Report - Products

Prüfbericht - Produkte

Certificate # 3331.02

TÜVRheinland®

Test Report No.: *Prüfbericht-Nr.:*	US24VSTB.002 Rev.02	**Order No.:** *Auftrags-Nr.:*	234207130 P01051904	Page 1 of 134 *Seite 1 von 134*
Client Reference No.: *Kunden-Referenz-Nr.:*	2503932	**Order date:** *Auftragsdatum:*	04/17/2023	
Client: *Auftraggeber:*	Omnifi Inc. 6801 Koll Center Pkwy. Ste. 145 Pleasanton, CA 94566 U.S.A.			
Test item: *Prüfgegenstand:*	Omnifi Wi-Fi Node			
Identification/ Type No.: *Bezeichnung / Typ-Nr.*	OWI2GB-55			
Order content: *Auftrags-Inhalt:*	Test Report			
Test specification: *Prüfgrundlage:*	CFR 47 Part 15.407: 2024 Emissions: ANSI C63.10-2013, KDB 789033 D02 General UNII Test Procedures New Rules v02r01, KDB 662911 D01 Multiple Transmitter Output v02r01			
Date of sample receipt: *Wareneingangsdatum:*	September 27th, 2023			
Test sample No: *Prüfmuster-Nr.:*	0M0003, 0M0011			
Testing period: *Prüfzeitraum:*	November 27th, 2023 - February 9th, 2024			
Place of testing: *Ort der Prüfung:*	5015 Brandin Ct. Fremont, CA 94538			
Testing laboratory: *Prüflaboratorium:*	TUV Rheinland of North America			
Test result*: *Prüfergebnis*:*	Pass			

compiled by: zusammengestellt von:	Osvaldo Casorla	**authorized by:** genehmigt von:	Isaac Aguilar
Date: January 13, 2025 Datum:	Osvaldo Casorla	**Date: January 13, 2025** Ausstellungsdatum:	Isaac Aguilar
Position / Stellung:	Expert	**Position** / Stellung:	Expert

Others / *Sonstiges*:

Condition of the test item at delivery: *Zustand des Prüfgegenstandes bei Anlieferung:* Test item complete and undamaged

* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
** Legende:*	*P(ass) = entspricht o.g. Prüfgrundlage(n)*	*F(ail) = entspricht nicht o.g. Prüfgrundlage(n)*	*N/A = nicht anwendbar*	*N/T = nicht getestet*

Remarks
Anmerkungen

1	The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request. *Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.* *Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.*
2	As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. *Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben.*
3	Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report. *Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben.* *Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.*
4	Electromagnetic Compatibility Test Report. The above product was found to be Compliant to the above test standard(s).

Remarks
Anmerkungen

1	**Product details:** *Produktdetails:*	Wi-Fi Access Point functionality in a strip
2	**Dimensions / Weight:** *Maße / Gewicht:*	43 mm x 19.1 mm x 454.5 mm / 3 kg
3	**Operating elements:** *Bedienelemente:*	12 VDC-60 VDC, 15 W: 1.25 A at 12V, 250 mA at 60 V
4	**Equipment / Accessories:** *Ausstattung / Zubehör:*	None
5	**Used materials:** *Verwendete Materialien:*	AC/DC Power Supply model: SDI65-24-U was provided to comply with AC Conducted Emissions requirements.
6	**Other:** *Sonstiges:*	Test sample(s), as well sample information, description, product details and intended usage was provided by customer.
7	**Test sample obtaining:** *Prüfmusterbereitstellung:*	☒ Sending by customer ☐ Sampling by TÜV Rheinland Group ☐ others:

Revisions

Revision No.	Date MM/DD/YYYY	Reason for Change	Author
1	11/05/2024	Original Report	OC
2	11/13/2025	Added Antenna: Molex 208482-0200 in Section 6.3	OC

Note: Latest revision report will replace all previous reports.

1 Executive Summary

1.1 Scope

This report is intended to document the status of conformance with the requirements of the CFR 47 Part 15.407: 2024 based on the results of testing performed on November 27th, 2023 to February 9th, 2024 on the Omnifi Wi-Fi Node Model OWI2GB-55 manufactured by Omnifi Inc. This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report. The 5150 MHz – 5250 MHz and 5725 MHz to 5850 MHz frequency bands are covered in this document.

1.3 Summary of Test Results

Table 1: Summary of Test Results

Test	Test Method ANSI C63.10:2013	Measured Value	Result
Duty Cycle	Information Only	See Section 3.5	N/A
Spurious Emission in Transmit Mode	CFR47 15.209, CFR47 15.407 (b)	0.01 dB Margin	**Complied**
Restricted Bands of Operation	CFR47 15.205		**Complied**
AC Power Conducted Emission	CFR47 15.207	15.05 dB Margin	**Complied**
Occupied Bandwidth	CFR47 15.407 (a) & (e)	DTS BW: 15.90 MHz	**Complied**
Maximum Output Power	CFR47 15.407 (a)	UNII1: 29.48 dBm UNII3: 29.67 dBm	**Complied**
Power Spectral Density	CFR47 15.407 (a)	UNII1: 16.71 dBm/ MHz UNII3: 13.32 dBm/ 500kHz	**Complied**

Note: 1. Measurements are conducted 2x2 total power.

1.4 Special Accessories

No special accessories were necessary in order to achieve compliance.

1.5 Equipment Modifications

None

2 Laboratory Information

2.1.1 US Federal Communications Commission

TUV Rheinland of North America EMC test facilities located at 1279 Quarry Lane, Ste. A, Pleasanton, CA, 94566, and 5015 Brandin Ct, Fremont, CA 94538, are recognized by the Commission for performing testing services for the general public on a fee basis. These laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (Registration No. US1131). The laboratory Scopes of Accreditation include Title 47 CFR Parts 15, 18 and 90. The accreditations are updated every three years.

2.1.2 A2LA

TUV Rheinland of North America is accredited by the National Voluntary Laboratory Accreditation Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Guide 17025:2017. The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.3 Industry Canada

The Pleasanton 5-meter Semi-Anechoic Chamber, Registration No. 2932M-1, has been accepted by Industry Canada to perform testing to 3 and 5 meters based on the test procedures described in ANSI C63.4-2014. The Fremont 10-meter Semi-Anechoic Chamber, Registration No. 2932D-1, has been accepted by Industry Canada to perform testing to 3 and 10 meters based on the test procedures described in ANSI C63.4-2014.

2.1.4 Japan – VCCI

The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) is a group that consists of Information Technology Equipment (ITE) manufacturers and EMC test laboratories. The purpose of the Council is to take voluntary control measures against electromagnetic interference from Information Technology Equipment, and thereby contribute to the development of a socially beneficial and responsible state of affairs in the realm of Information Technology Equipment in Japan. TUV Rheinland of North America EMC test facilities located at 1279 Quarry Lane, Ste. A, Pleasanton, CA, 94566, and 5015 Brandin Ct, Fremont, CA 94538, have been assessed and approved in accordance with the Regulations for Voluntary Control Measures.

VCCI Registration No. for Pleasanton: A-0399
VCCI Registration No. for Fremont: A-0409

2.1.5 Acceptance by Mutual Recognition Arrangement

The United States has an established agreement with specific countries under the Asia Pacific Laboratory Accreditation Corporation (APLAC) Mutual Recognition Arrangement. Under this agreement, all TUV Rheinland at 1279 Quarry Ln, Pleasanton, CA 94566 test results and test reports within the scope of the laboratory NIST / A2LA accreditation will be accepted by each member country.

2.2 Test Facilities & EMC Software

Test facilities are located at 5015 Brandin Ct, Fremont, California, 94538, USA and 1279 Quarry Lane, Pleasanton, California 94566, USA (Fremont is the Pleasanton Annex).

2.2.1 Emission Test Facility

The Semi-Anechoic Chambers and AC Line Conducted measurement facilities used to collect radiated and conducted emissions data have been constructed in accordance with ANSI C63.7:1992. The Fremont 10 meter semi-anechoic chamber has been measured in accordance with and verified to comply with the theoretical volumetric normalized site attenuation of ANSI C63.4-2014 and SVSWR requirements of CISPR 16-1-4 Consol. Ed. 3.0 (2010-04), at test distances of 3 and 10 meters. This site has been described in reports dated November 1st, 2006, submitted to the FCC, and accepted by letter dated November 28, 2006. The site is listed with the FCC and accredited by A2LA (Testing Certificate #3331.02). The Pleasanton 5 meter semi-anechoic chamber has been verified to comply with the theoretical volumetric normalized site attenuation of ANSI C63.4-2014 and SVSWR requirements of CISPR 16-1-4 Consol. Ed. 3.0 (2010-04) at a test distance of 3 meters. This site has been described in reports dated November 1st, 2006, submitted to the FCC, and accepted by letter dated November 28, 2006. The site is listed with the FCC and accredited by A2LA (Testing Certificate #3331.02).

2.2.2 Immunity Test Facility

ESD, EFT, Surge, PQF: These tests are performed in an environmentally controlled room with a 3.7 m x 4.8 m x 3.175 mm thick aluminum floor connected to PE ground.

For ESD testing, tabletop equipment is placed on an insulated mat with a surface resistivity of 10^9 Ohms/square on a 1.6 m x 0.8 m x 0.8 m high non-conductive table with a 3.175 mm aluminum top (Horizontal Coupling Plane). The HCP is connected to the main ground plane via a low impedance ground strap through two 470-kΩ resistors. The Vertical Coupling Plane consists of an aluminum plate 50 cm x 50 cm x 3.175 mm thick. The VCP is connected to the main ground plane via a low impedance ground strap through two 470-kΩ resistors.

For EFT, Surge, PQF, the HCP and VCP are removed.

RF Field Immunity testing is performed in a 7.3 m x 4.3 m x 4.1 m anechoic chamber.

RF Conducted and Magnetic Field Immunity testing is performed on a 4.8 m x 3.7 m x 3.175 mm thick aluminum ground plane.

All test areas allow a minimum distance of 1 meter from the EUT to walls or conducting objects.

2.2.3 Sample Calculation – radiated & conducted emissions

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

Field Strength (dBμV/m) = RAW - AMP + CBL + ACF

Where: RAW = Measured level before correction (dBμV)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB/m)

$$\mu V/m = 10^{\frac{dB\mu V/m}{20}}$$

Sample radiated emissions calculation @ 30 MHz

Measurement +Antenna Factor–Amplifier Gain+Cable loss=Radiated Emissions (dBuV/m)

25 dBuV/m + 17.5 dB – 20 dB + 1.0 dB = 23.5 dBuV/m

2.2.4 Measurement Uncertainty

Per CISPR 16-4-2	**U_{lab}**	**U_{cispr}**
Radiated Disturbance @ 10 meters		
30 – 1,000 MHz	2.25 dB	4.51 dB
Radiated Disturbance @ 3 meters		
30 – 1,000 MHz	2.26 dB	4.52 dB
1 – 6 GHz	2.12 dB	4.25 dB
6 – 40 GHz	2.47 dB	4.93 dB
Conducted Disturbance @ Mains Terminals		
150 kHz – 30 MHz	1.09 dB	2.18 dB
Disturbance Power		
30 MHz – 300 MHz	3.92 dB	4.3 dB

Voltech PM6000A

The estimated combined standard uncertainty for harmonic current and flicker measurements is ± 5.0%.	Per CISPR 16-4-2 Methods

Measurement Uncertainty - EMC Immunity

The estimated combined standard uncertainty for ESD immunity measurements is ± 8.2%.	Per IEC 61000-4-2
The estimated combined standard uncertainty for radiated immunity measurements is ± 4.10 dB.	Per IEC 61000-4-3
The estimated combined standard uncertainty for conducted immunity measurements with CDN is ± 3.66 dB	Per IEC 61000-4-6
The estimated combined standard uncertainty for power frequency magnetic field immunity is ± 2.9%.	Per IEC 61000-4-8
The estimated combined standard uncertainty for EFT fast transient immunity measurements is ± 2.6%.	Per IEC 61000-4-4
The estimated combined standard uncertainty for surge immunity measurements is ± 2.6%.	Per IEC 61000-4-5
The estimated combined standard uncertainty for voltage variation and interruption measurements is ± 1.74%.	Per IEC 61000-4-11

Measurement Uncertainty – Radio Testing

The estimated combined standard uncertainty for frequency error measurements is ± 3.88 Hz
The estimated combined standard uncertainty for carrier power measurements is ± 0.70 dB.
The estimated combined standard uncertainty for adjacent channel power measurements is ± 1.47 dB.
The estimated combined standard uncertainty for modulation frequency response measurements is ± 0.46 dB.
The estimated combined standard uncertainty for transmitter conducted emission measurements is ± 2.06 dB

The expanded uncertainty at a level of 95% confidence is obtained by multiplying the combined standard uncertainty by a coverage factor of 2. Compliance criteria are not based on measurement uncertainty. on measurement uncertainty.

2.3 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2017. Equipment calibration records are kept on file at the test facility.

3 Product Information

3.1 Product Description

The Model OWI2GB-55, Omnifi Wi-Fi Node, is a 2x2 2.4GHz / 5GHz Wi-Fi Access Point functionality in a strip. It is intended to operate as a 5GHz band wireless over 20 MHz, 40 MHz, 80 MHz, 160 MHz channels. The node will be in compliance with regulatory standards of regions it will be operating in.

3.2 Equipment Configuration

A description of the equipment configuration is given in the Test Plan Section. The EUT was tested as called for in the test standard and was configured and operated in a manner consistent with its intended use. The EUT was connected to rated power and allowed to reach intended operating conditions. The placement of the EUT system components was guided by the test standard and selected to represent typical installation conditions.

In the case of an EUT that can operate in more than one configuration, preliminary testing was performed to determine the configuration that produced maximum radiation.

The final configuration was selected to produce the worst case radiation for emissions testing and to place the EUT in the most susceptible state for immunity testing.

3.3 Operating Mode

A description of the operation mode is given in the Test Plan Section. In the case of an EUT that can operate in more than one state, preliminary testing was performed to determine the operating mode that produced maximum radiation.

The final operating mode was selected to produce the worst case radiation for emissions testing and to place the EUT in the most susceptible state for immunity testing.

3.4 Unique Antenna Connector

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of CFR47 Parts 15.211, 15.213, 15.217, 15.219, or 15.221.

3.4.1 Results

The OWI2GB-55 has internal antennas, professional installed and no access to end-user. 2 Omni Antennas dedicated for WiFi in the band 5 GHz that has a maximum gain of 5.7 dBi in Unii 1 and 5.9 dBi in Unii 3.

Refer to Table 9 for additional antenna information.

3.5 Duty Cycle

The OWI2GB-55 was measured using Power Meter for the duty cycle.
Calculation of transmit duty cycle. Duty cycle (%) = (ON time / Period) * 100%

3.5.1 Results

Mode	Measured Duty Cycle (%)	Duty Cycle Correction Factor (dB)
802.11a 20 MHz (No HT) – UNII 1	50.1	-3.00
802.11n HT20 20 MHz – UNII 1	49.8	-3.03
802.11ax 20 MHz (No HT) – UNII 1	39.8	-4.00
802.11ac 20 MHz (No HT) – UNII 1	78.3	-1.06
802.11n HT40 – UNII 1	48.9	-3.11
802.11ax HT40 – UNII 1	37.1	-4.31
802.11ac VHT40 – UNII 1	40.4	-3.94
802.11ax HT80 – UNII 1	37.5	-4.26
802.11ac VHT80 – UNII 1	37.5	-4.26
802.11ax HT160 – UNII 1	39.9	-3.99
802.11ac VHT160 – UNII 1	47.3	-3.25
802.11a 20 MHz (No HT) – UNII 3	50.1	-3.00
802.11n HT20 20 MHz – UNII 3	49.8	-3.03
802.11ax 20 MHz (No HT) – UNII 3	39.8	-4.00
802.11ac 20 MHz (No HT) – UNII 3	78.3	-1.06
802.11n HT40 – UNII 3	48.9	-3.11
802.11ax HT40 – UNII 3	37.1	-4.31
802.11ac VHT40 – UNII 3	40.5	-3.93
802.11ax HT80 – UNII 3	37.5	-4.26
802.11ac VHT80 – UNII 3	46.7	-3.31

4 Emissions

Testing was performed in accordance with CFR 47 Part 15.407: 2024. These test methods are listed under the laboratory's A2LA Scope of Accreditation. This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Procedures described in section 8 of the standard were used.

The EUT is a 2x2 MIMO mode, and the in-band and out-band measurements were also made in accordance with KDB 662911 D01 v02r01.

4.1 Output Power Requirements

The maximum output power requirement is the maximum equivalent isotropic radiated power delivering at the transmitting antenna under specified conditions of measurements in the presence of modulation.

The maximum transmitted power limits per CFR47 Part 15.407 are

Part 15.407(a)(1)(iv) – Band 5150-5250 MHz:1 W.

Part 15.407(a)(2) – Band 5250-5350 MHz, 5470-5725 MHz:250 mW or 11 dBm + 10Log B.

Part 15.407(a)(3) – Band 5725-5825 MHz:1 W

Note: B is the 99% emission bandwidth.

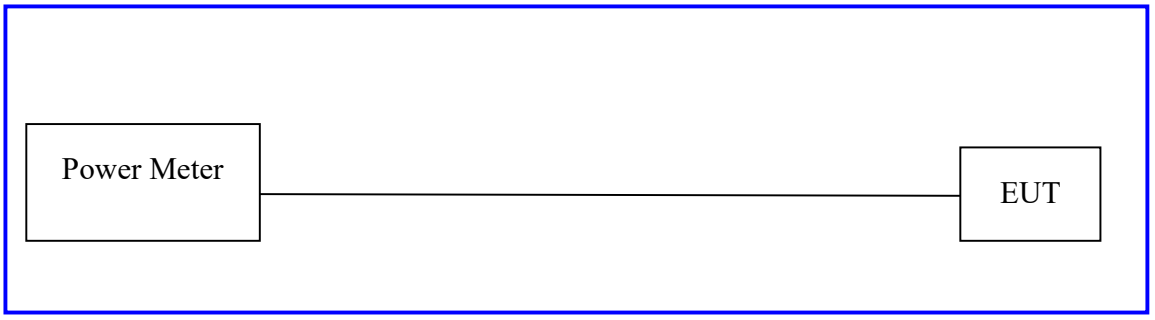
4.1.1 Test Method

The ANSI C63.10-2013 Section 12.3.3.2 conducted method was used to measure the channel power output. The preliminary investigation was performed at different data rate/ chain to determine the highest power output for each mode. The worst findings were conducted on 3 channels in each operating range per CFR47 Part 15.407(a). The worst mode results indicated below.

Method 3(b) of KDB 789033 D02 – Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices.

When the device operates with multiple antenna ports, i.e. MIMO device, each port is measured. The summation of each antenna ports are reported as the Total Power.

Test Setup:



4.1.2 Results

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 2: RF Output Power at the Antenna Port – Test Results

FCC							
Date: November 27th, 2023 to February 9th, 2024			**Tested By:** Osvaldo Casorla				
Test Method: Conducted Measurements			**Power Setting:** See test plan.				
Antenna Type: Omni			**Max Antenna Gain:** UNII1 = 5.7 dBi; UNII3 = 5.9 dBi				
Operating Mode: Uncorrelated			**Signal State:** See Section 3.5.1				
Ambient Temp.: 22 - 23 °C			**Relative Humidity:** 35 - 38%				
U-NII-1 (5150-5250MHz)							
Freq Band	**Bandwidth (MHz)**	**Mode**	**Frequency (MHz)**	**Power (dBm)**		**Power Limit**	**Margin**
				Port 1	**Port 2**	**(dBm)**	**(dB)**
5150-5250MHz	20	802.11a	5180	23.73	24.17	30.00	5.83
			5220	24.30	24.69	30.00	5.31
			5240	24.34	24.17	30.00	5.66
Freq Band	**Bandwidth (MHz)**	**Mode**	**Frequency (MHz)**	**Total Power**		**Power Limit**	**Margin**
				(dBm)		**(dBm)**	**(dB)**
5150-5250MHz	20	802.11n	5180	26.40		30.00	3.60
			5220	26.90		30.00	3.10
			5240	26.70		30.00	3.30
		802.11ax	5180	24.90		30.00	5.10
			5220	25.15		30.00	4.85
			5240	25.19		30.00	4.81
		802.11ac	5180	29.18		30.00	0.82
			5220	29.48		30.00	0.52
			5240	29.21		30.00	0.79
5150-5250MHz	40	802.11n	5190	25.10		30.00	4.90
			5230	25.30		30.00	4.70
		802.11ax	5190	25.13		30.00	4.87
			5230	25.32		30.00	4.68
		802.11ac	5190	24.62		30.00	5.38
			5230	24.83		30.00	5.17
Note. Total Power = 10*Log10 (10a/10 + 10b/10)							

FCC	
Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 5.7 dBi; UNII3 = 5.9 dBi
Operating Mode: Uncorrelated	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-1 (5150-5250MHz)

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Total Power (dBm)	Power Limit (dBm)	Margin (dB)
5150-5250MHz	80	802.11ax	5210	25.61	30.00	4.39
		802.11ac	5210	25.30	30.00	4.70
5150-5250MHz	160	802.11ax	5250	22.40	30.00	7.60
		802.11ac	5250	28.82	30.00	1.18

Note. Total Power = 10*Log10 (10a/10 + 10b/10)

FCC	
Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 5.7 dBi; UNII3 = 5.9 dBi
Operating Mode: Uncorrelated	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-3 (5725-5850MHz)

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Power (dBm)		Power Limit	Margin
				Port 1	Port 2	(dBm)	(dB)
5725-5825MHz	20	802.11a	5745	25.58	27.12	30.00	2.88
			5785	25.00	25.46	30.00	4.54
			5805	25.52	25.09	30.00	4.48

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Total Power	Power Limit	Margin
				(dBm)	(dBm)	(dB)
5725-5825MHz	20	802.11n	5745	29.55	30.00	0.45
			5785	28.31	30.00	1.69
			5805	28.38	30.00	1.62
		802.11ax	5745	29.67	30.00	0.34
			5785	28.49	30.00	1.51
			5805	28.54	30.00	1.47
		802.11ac	5745	29.40	30.00	0.60
			5785	28.19	30.00	1.81
			5805	28.26	30.00	1.74
5725-5825MHz	40	802.11n	5755	25.49	30.00	4.52
			5795	25.06	30.00	4.95
		802.11ax	5755	26.11	30.00	3.89
			5795	25.86	30.00	4.14
		802.11ac	5755	25.61	30.00	4.39
			5795	25.55	30.00	4.45
5725-5825MHz	80	802.11ax	5775	26.85	30.00	3.15
		802.11ac	5775	26.54	30.00	3.46

Note: 1. Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of the Report, portion of plots are placed in the report.
Note 2. Total Power = 10*Log10 (10a/10 + 10b/10)

FCC	
Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 8.7 dBi; UNII3 = 8.9 dBi
Operating Mode: Beamforming	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-1 (5150-5250MHz)

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Power (dBm)		Power Limit	Margin
				Port 1	Port 2	(dBm)	(dB)
5150-5250MHz	20	802.11a	5180	23.56	23.82	27.30	3.48
			5220	23.92	24.42	27.30	2.88
			5240	23.92	23.81	27.30	3.38

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Total Power	Power Limit	Margin
				(dBm)	(dBm)	(dB)
5150-5250MHz	20	802.11n	5180	26.78	27.30	0.52
			5220	27.23	27.30	0.07
			5240	26.93	27.30	0.37
		802.11ax	5180	26.87	27.30	0.44
			5220	27.29	27.30	0.01
			5240	27.08	27.30	0.22
		802.11ac	5180	26.73	27.30	0.57
			5220	27.16	27.30	0.14
			5240	26.89	27.30	0.41
5150-5250MHz	40	802.11n	5190	25.42	27.30	1.88
			5230	25.62	27.30	1.68
		802.11ax	5190	25.71	27.30	1.59
			5230	25.97	27.30	1.33
		802.11ac	5190	25.28	27.30	2.02
			5230	25.41	27.30	1.89

Note: 1. Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of the Report, portion of plots are placed in the report.
Note 2. Total Power = 10*Log10 (10a/10 + 10b/10)

FCC	
Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 8.7 dBi; UNII3 = 8.9 dBi
Operating Mode: Beamforming	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-1 (5150-5250MHz)

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Total Power (dBm)	Power Limit (dBm)	Margin (dB)
5150-5250MHz	80	802.11ax	5210	27.28	27.30	0.02
		802.11ac	5210	25.74	27.30	1.56
5150-5250MHz	160	802.11ax	5250	22.44	27.30	4.86
		802.11ac	5250	22.11	27.30	5.19

Note: 1. Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of the Report, portion of plots are placed in the report.
Note 2. Total Power = 10*Log10 (10a/10 + 10b/10)

FCC	
Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 8.7 dBi; UNII3 = 8.9 dBi
Operating Mode: Beamforming	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-3 (5725-5850MHz)

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Power (dBm)		Power Limit	Margin
				Port 1	Port 2	(dBm)	(dB)
5725-5825MHz	20	802.11a	5745	24.25	23.49	27.10	2.85
			5785	23.13	22.51	27.10	3.97
			5805	23.19	21.75	27.10	3.91

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Total Power	Power Limit	Margin
				(dBm)	(dBm)	(dB)
5725-5825MHz	20	802.11n	5745	27.07	27.10	0.03
			5785	25.95	27.10	1.15
			5805	25.70	27.10	1.41
		802.11ax	5745	27.07	27.10	0.03
			5785	26.02	27.10	1.08
			5805	25.75	27.10	1.35
		802.11ac	5745	26.90	27.10	0.20
			5785	25.84	27.10	1.26
			5805	25.54	27.10	1.56
5725-5825MHz	40	802.11n	5755	22.82	27.10	4.28
			5795	22.66	27.10	4.44
		802.11ax	5755	22.32	27.10	4.78
			5795	22.22	27.10	4.88
		802.11ac	5755	22.19	27.10	4.91
			5795	22.13	27.10	4.97
5725-5825MHz	80	802.11ax	5775	20.18	27.10	6.93
		802.11ac	5775	20.12	27.10	6.98

Note: 1. Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of the Report, portion of plots are placed in the report.
Note 2. Total Power = 10*Log10 (10a/10 + 10b/10)

4.2 Occupied Bandwidth

The occupied bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency.

The 99% bandwidth is the bandwidth in which 99% of the transmitted power occupied.

The minimum 6 dB bandwidth shall be at least 500 kHz per Section CFR47 15.407(e).

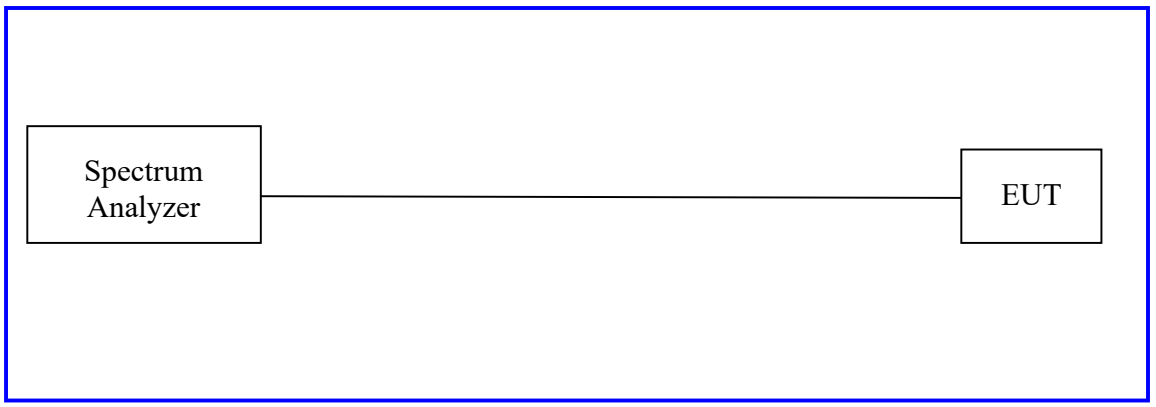
The 26 dB bandwidth is defined the bandwidth of 26 dBr from highest transmitted level of the fundamental frequency.

There is no restriction limits for the bandwidth. The 26 dB bandwidth was used to determine the limit for maximum conducted output power per CFR47 Part 15.407(a).

4.2.1 Test Method

The conducted method was used to measure the occupied bandwidth. The measurement was performed with modulation per CFR47 15.407(a)&(e). The preliminary investigation was performed to find the narrowest 26 dB bandwidth for each operational mode at different data rates. This worst finding was performed on 3 channels in each operating frequency range. The worst results indicated below.

Test Setup:



4.2.2 Results

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 3: Occupied Bandwidth – Test Results

Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 5.7 dBi; UNII3 = 5.9 dBi
Operating Mode: Uncorrelated	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-1 (5150-5250MHz)					
Frequency (MHz)	**Mode**	**Bandwidth (MHz)**	**99% Bandwidth (MHz)**	**26 dB Bandwidth (MHz)**	**Limit (kHz)**
5180	802.11a	20	16.80	21.60	NA
5220			17.00	23.80	NA
5240			17.00	26.30	NA
5180	802.11n		17.90	22.50	NA
5220			17.90	26.40	NA
5240			18.00	26.60	NA
5180	802.11ax		19.00	26.80	NA
5220			19.00	28.40	NA
5240			19.00	30.90	NA
5180	802.11ac		19.60	28.90	NA
5220			22.80	34.20	NA
5240			21.40	32.80	NA
5190	802.11n	40	36.50	40.08	NA
5230			36.50	40.53	NA
5190	802.11ax		37.75	40.38	NA
5230			37.75	40.08	NA
5190	802.11ac		36.75	40.23	NA
5230			36.75	40.23	NA
5210	802.11ax	80	77.00	82.50	NA
5210	802.11ac		77.00	160.00	NA
5250	802.11ax	160	156.00	314.00	NA
5250	802.11ac		156.00	288.00	NA

Note: 1 Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of The report, Highlighted Plots are placed in the report.

Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 5.7 dBi; UNII3 = 5.9 dBi
Operating Mode: Uncorrelated	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-3 (5725-5850MHz)

Frequency (MHz)	Mode	Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth (MHz)	Limit (kHz)
5745	802.11a	20	35.20	16.40	500
5785			35.60	16.25	500
5805			34.60	16.20	500
5745	802.11n		35.60	17.60	500
5785			35.90	17.65	500
5805			34.60	17.25	500
5745	802.11ax		35.80	16.90	500
5785			36.40	17.80	500
5805			35.00	18.10	500
5745	802.11ac		35.60	16.95	500
5785			35.90	17.30	500
5805			34.90	16.95	500
5755	802.11n	40	62.50	35.45	500
5795			55.00	36.40	500
5755	802.11ax		65.00	36.50	500
5795			58.00	37.75	500
5755	802.11ac		65.00	35.85	500
5795			61.50	35.85	500
5775	802.11ax	80	106.00	75.25	500
5775	802.11ac		108.00	75.45	500

Note: 1 Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of The report, Highlighted Plots are placed in the report.

Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 8.7 dBi; UNII3 = 8.9 dBi
Operating Mode: Beamforming	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-1 (5150-5250MHz)

Frequency (MHz)	Mode	Bandwidth (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	Limit (kHz)
5180	802.11a	20	16.60	21.30	NA
5220			16.60	20.90	NA
5240			16.60	20.90	NA
5180	802.11n		17.90	22.40	NA
5220			17.90	23.70	NA
5240			17.90	25.50	NA
5180	802.11ax		19.00	21.00	NA
5220			19.00	20.90	NA
5240			19.00	21.10	NA
5180	802.11ac		17.80	21.10	NA
5220			17.80	21.10	NA
5240			17.80	21.80	NA
5190	802.11n	40	40.98	40.98	NA
5230			36.75	40.83	NA
5190	802.11ax		40.08	40.08	NA
5230			37.50	39.93	NA
5190	802.11ac		40.23	40.23	NA
5230			36.75	40.23	NA
5210	802.11ax	80	77.50	83.00	NA
5210	802.11ac		76.00	97.50	NA
5250	802.11ax	160	156.00	320.00	NA
5250	802.11ac		156.00	320.00	NA

Note: 1 Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of The report, Highlighted Plots are placed in the report.

Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 8.7 dBi; UNII3 = 8.9 dBi
Operating Mode: Beamforming	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-3 (5725-5850MHz)

Frequency (MHz)	Mode	Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth (MHz)	Limit (kHz)
5745	802.11a	20	27.80	16.35	500
5785			25.00	15.90	500
5805			20.00	16.35	500
5745	802.11n		29.70	17.55	500
5785			28.20	16.75	500
5805			22.80	17.60	500
5745	802.11ax		29.30	18.35	500
5785			27.80	18.75	500
5805			21.50	18.70	500
5745	802.11ac		26.70	17.60	500
5785			24.50	17.30	500
5805			19.30	17.65	500
5755	802.11n	40	44.00	35.50	500
5795			37.75	35.80	500
5755	802.11ax		39.00	36.45	500
5795			38.25	36.50	500
5755	802.11ac		42.75	35.45	500
5795			37.75	35.85	500
5775	802.11ax	80	77.50	75.25	500
5775	802.11ac		76.50	75.50	500

Note: 1 Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of The report, Highlighted Plots are placed in the report.

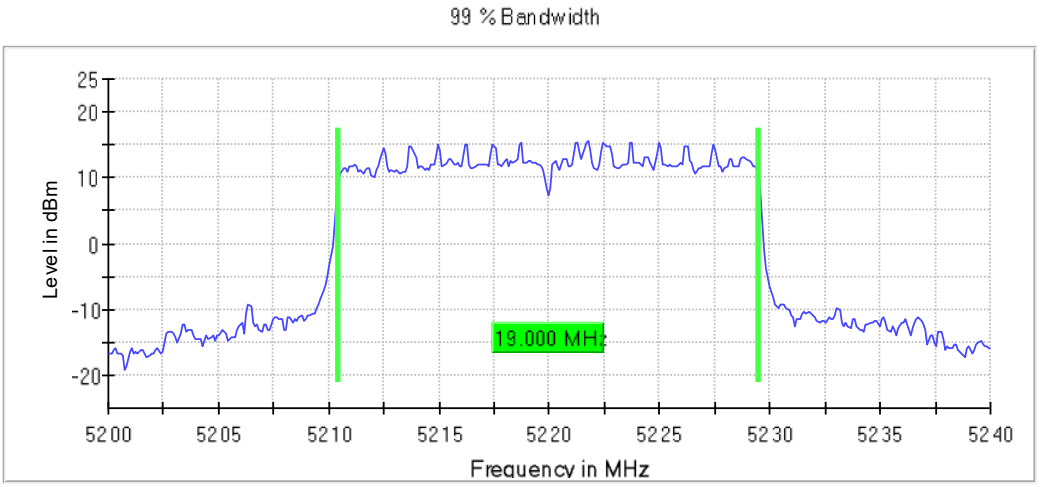


Figure 1: Occupied Bandwidth-5220 MHz-802.11ax HE20

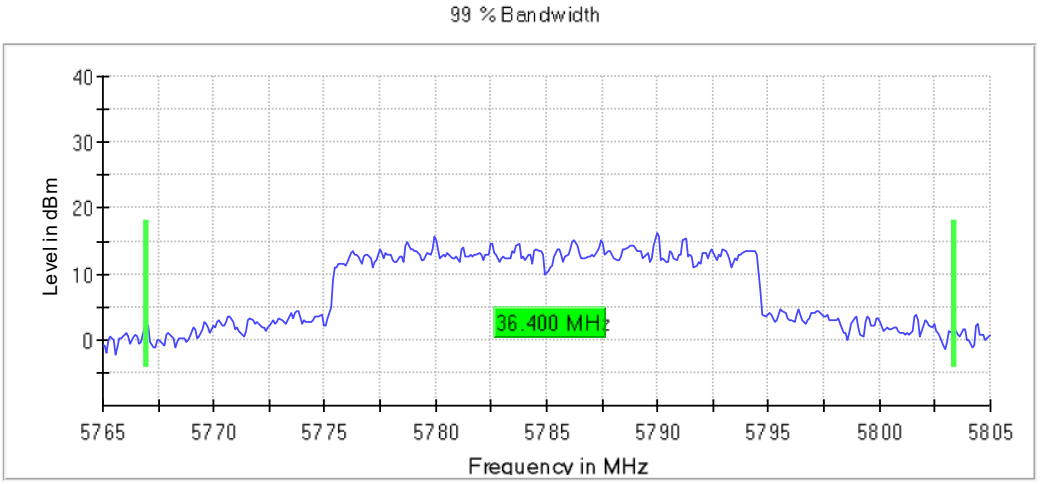


Figure 2: Occupied Bandwidth-5805 MHz-802.11ax HE20

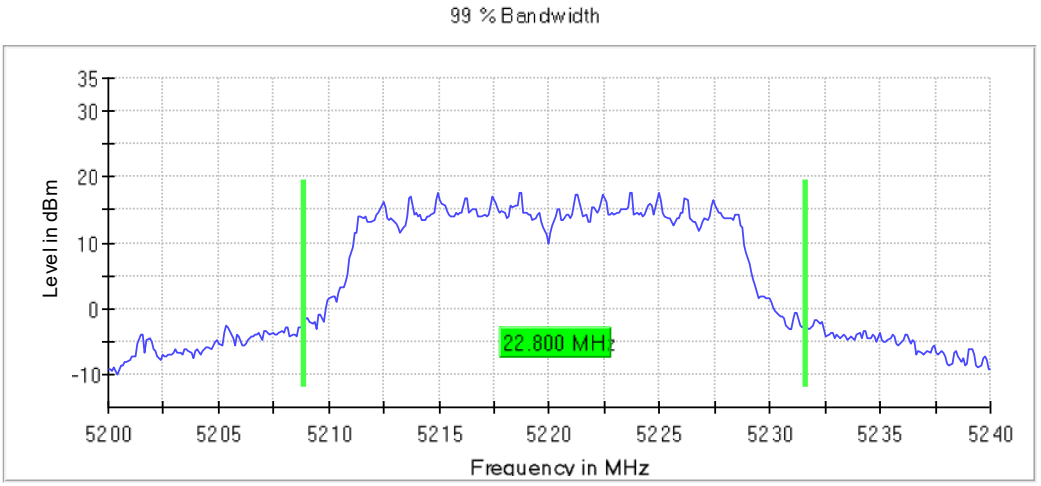


Figure 3: Occupied Bandwidth-5220 MHz-802.11ac VHT20

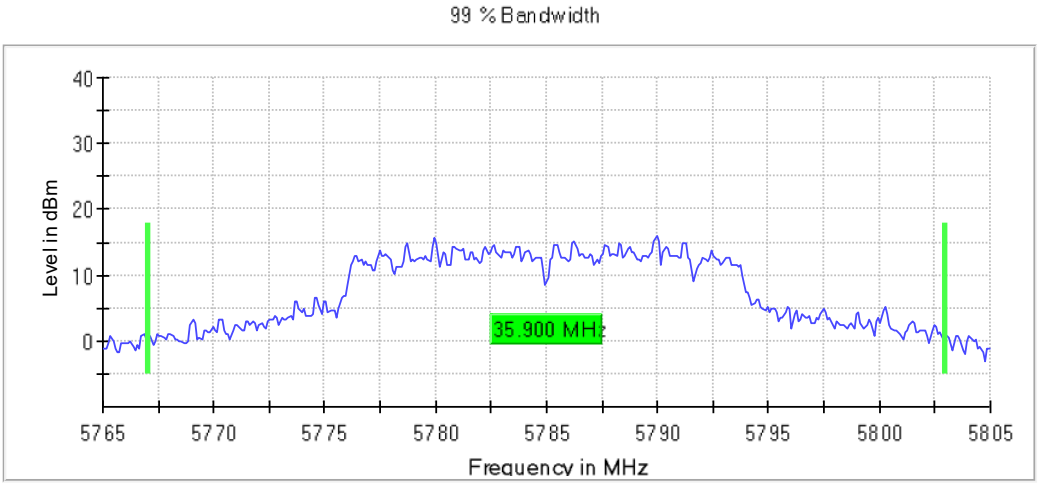


Figure 4: Occupied Bandwidth-5785 MHz-802.11n HT20

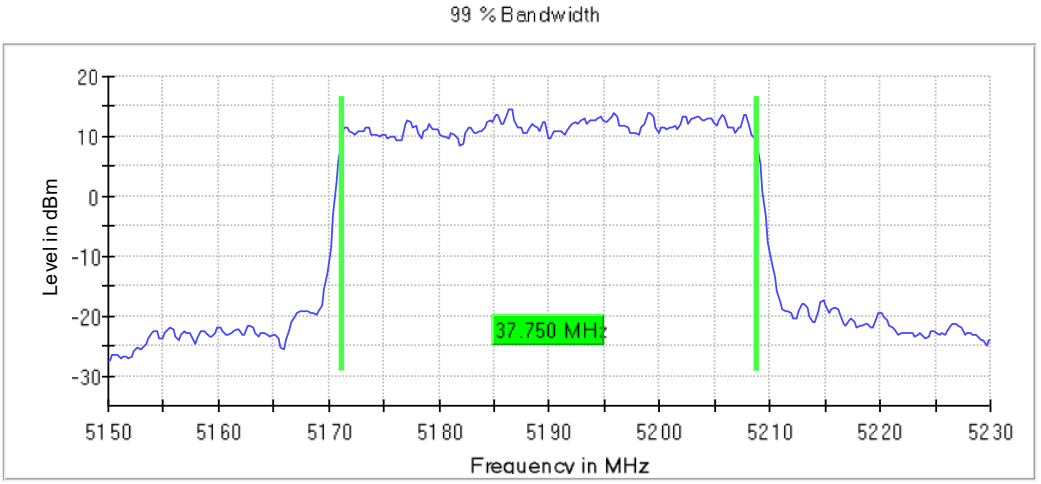


Figure 5: Occupied Bandwidth-5190 MHz-802.11ax HE40

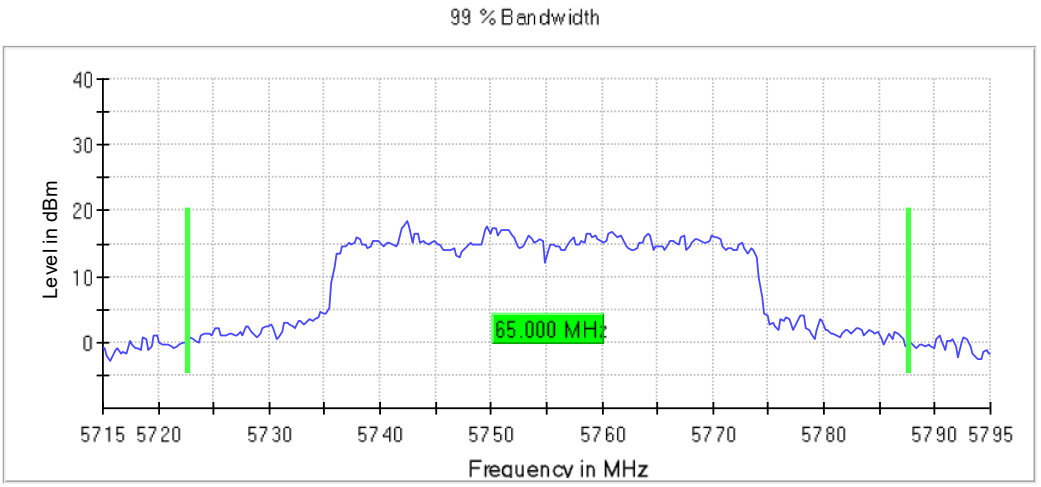


Figure 6: Occupied Bandwidth-5755 MHz-802. 11ax HE40

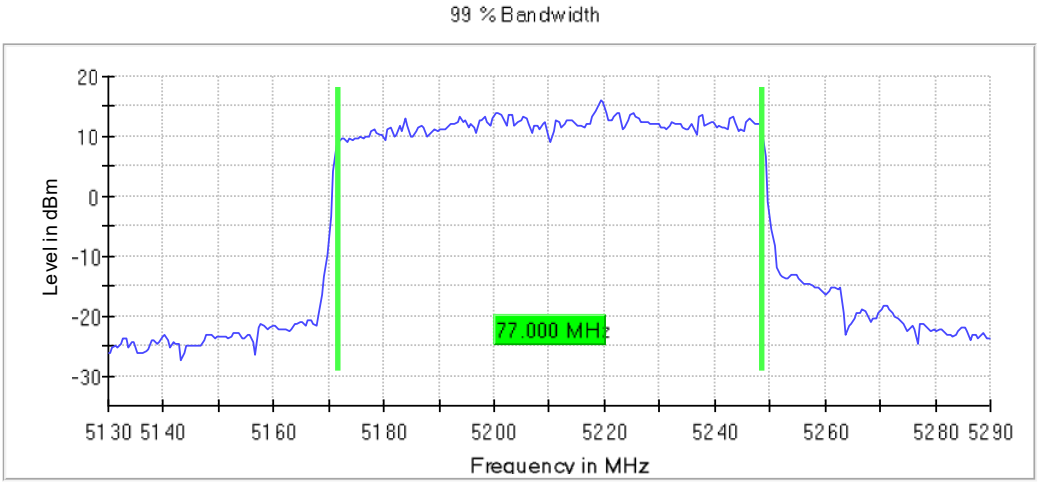


Figure 7: Occupied Bandwidth-5210 MHz-802.11ac VHT80

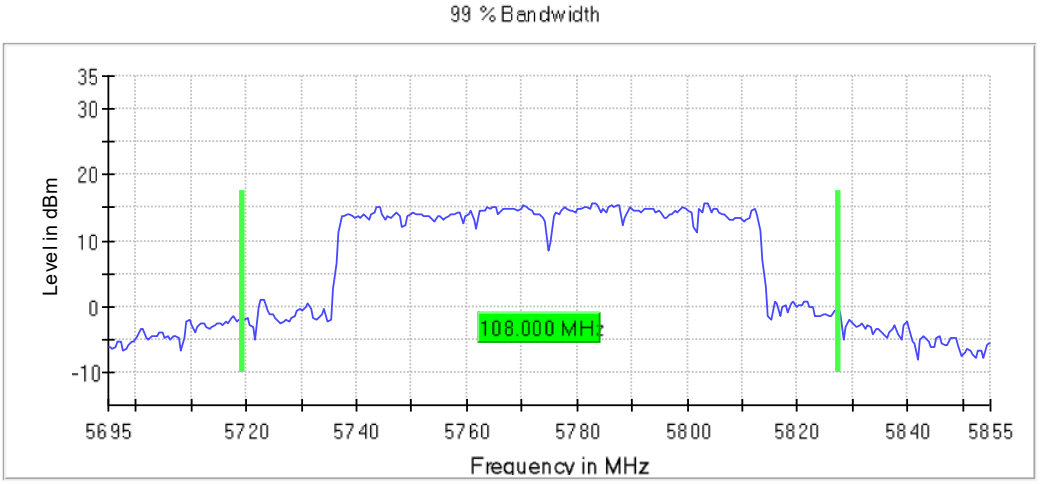


Figure 8: Occupied Bandwidth-5775 MHz-802.11ac VHT80

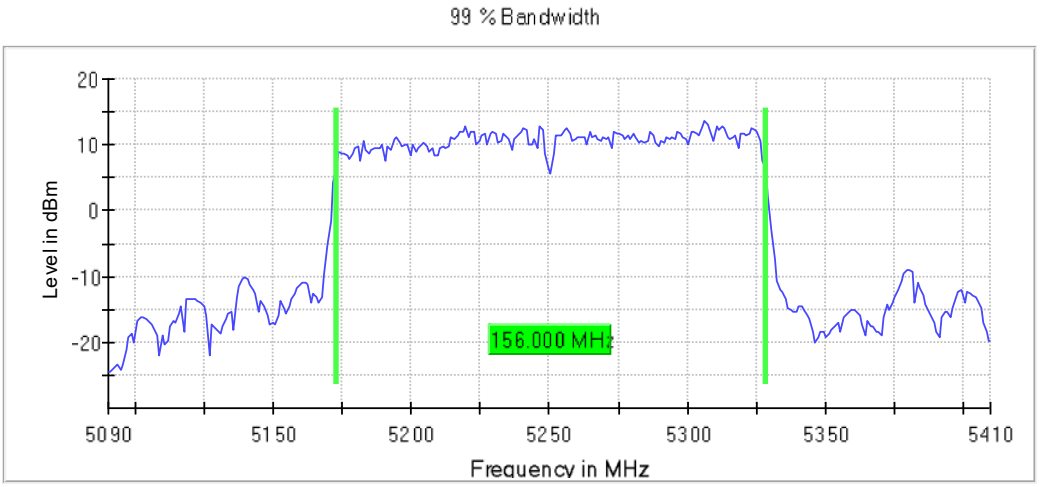


Figure 9: Occupied Bandwidth-5250 MHz-802.11ac VHT160

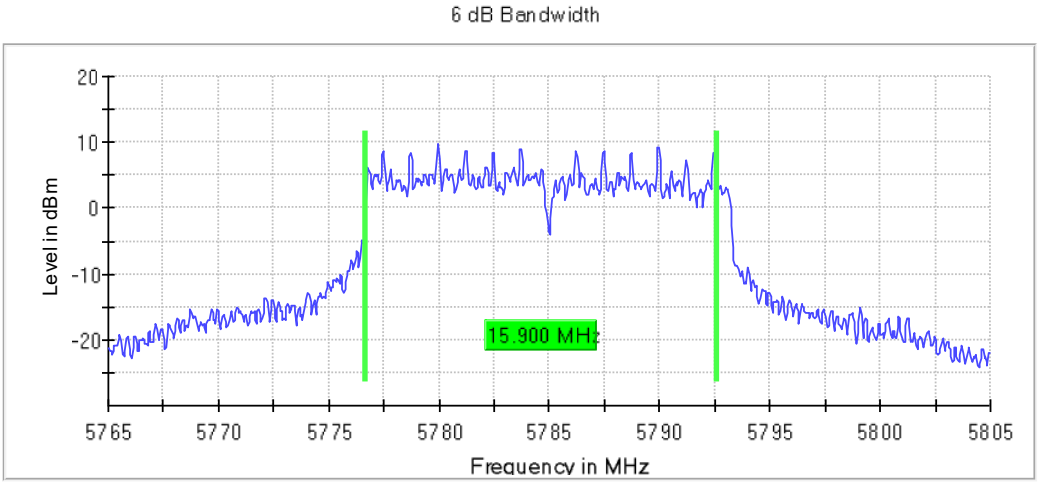


Figure 10: 6 dB Bandwidth-5785 MHz-802.11a20 BF

4.3 Power Spectral Density

According to the CFR47 Part 15.407 (a), the spectral power density output of the antenna port shall be as followed listed below during any time interval of continuous transmission.

The power spectral density limits per CFR47 Part 15.407 (a):

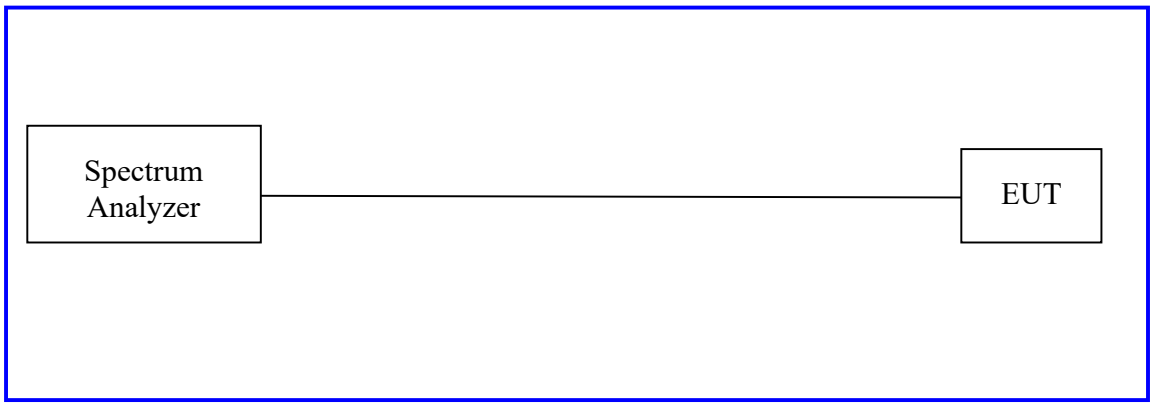
Band 5150-5250 MHz, 5250-5350 MHz, and 5470-5725 MHz: 11 dBm in any 1 MHz band

Band 5725-5850 MHz: 30 dBm in any 500 kHz band.

4.3.1 Test Method

The conducted method was used to measure the channel power output per ANSI C63.10-2013 Section 12.5. The measurement was performed with modulation per CFR47 Part 15.407 (a). The pre-evaluation was performed to find the worst modes. The worst findings were conducted on 3 channels in each operating frequency range. The worst sample result indicated below.

Test Setup:



4.3.2 Results

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 4: Peak Power Spectral Density at the Antenna Port – Test Results

FCC							
Date: November 27th, 2023 to February 9th, 2024			**Tested By:** Osvaldo Casorla				
Test Method: Conducted Measurements			**Power Setting:** See test plan.				
Antenna Type: Omni			**Max Antenna Gain:** UNII1 = 5.7 dBi; UNII3 = 5.9 dBi				
Operating Mode: Uncorrelated			**Signal State:** See Section 3.5.1				
Ambient Temp.: 22 - 23 °C			**Relative Humidity:** 35 - 38%				
U-NII-1 (5150-5250MHz)							
Freq Band	**Bandwidth (MHz)**	**Mode**	**Frequency (MHz)**	**PSD (dBm/MHz)**		**PSD Limit**	**Margin**
				Port 1	**Port 2**	**(dBm/MHz)**	**(dB)**
5150-5250MHz	20	802.11a	5180	9.40	10.50	17.00	4.00
			5220	10.30	10.40	17.00	3.78
			5240	9.80	10.30	17.00	3.93
Freq Band	**Bandwidth (MHz)**	**Mode**	**Frequency (MHz)**	**Total PSD**		**PSD Limit**	**Margin**
				(dBm/MHz)		**(dBm/MHz)**	**(dB)**
5150-5250MHz	20	802.11n	5180	12.01		17.00	4.99
			5220	12.42		17.00	4.58
			5240	12.81		17.00	4.19
		802.11ax	5180	9.16		17.00	7.84
			5220	9.42		17.00	7.58
			5240	9.38		17.00	7.62
		802.11ac	5180	16.56		17.00	0.44
			5220	16.71		17.00	0.29
			5240	16.44		17.00	0.56
5150-5250MHz	40	802.11n	5190	7.73		17.00	9.27
			5230	7.72		17.00	9.28
		802.11ax	5190	6.40		17.00	10.61
			5230	6.49		17.00	10.51
		802.11ac	5190	6.79		17.00	10.21
			5230	6.83		17.00	10.17
Note: 1. Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of the Report, portion of plots are placed in the report. **Note:** 2. Duty Cycle Correction Factor, 10 log (1/D), where D is the duty cycle, included in the measured results. **Note 3.** Total Power = 10*Log10 (10a/10 + 10b/10)							

FCC	
Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 5.7 dBi; UNII3 = 5.9 dBi
Operating Mode: Uncorrelated	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-1 (5150-5250MHz)

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Margin (dB)
5150-5250MHz	80	802.11ax	5210	4.11	17.00	12.89
		802.11ac	5210	4.06	17.00	12.94
5150-5250MHz	160	802.11ax	5250	-1.36	30.00	31.36
		802.11ac	5250	0.35	30.00	29.65

Note: 1. Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of the Report, portion of plots are placed in the report.
Note: 2. Duty Cycle Correction Factor, 10 log (1/D), where D is the duty cycle, included in the measured results.
Note 3. Total Power = 10*Log10 (10a/10 + 10b/10)

FCC	
Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 5.7 dBi; UNII3 = 5.9 dBi
Operating Mode: Uncorrelated	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-3 (5725-5850MHz)

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	PSD (dBm/500kHz)		PSD Limit	Margin
				Port 1	Port 2	(dBm/500kHz)	(dB)
5725-5825MHz	20	802.11a	5745	8.20	4.70	30.00	21.80
			5785	7.30	8.50	30.00	21.50
			5805	8.20	7.90	30.00	21.80

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Total PSD	PSD Limit	Margin
				(dBm/500kHz)	(dBm/500kHz)	(dB)
5725-5825MHz	20	802.11n	5745	11.92	30.00	18.08
			5785	10.77	30.00	19.23
			5805	10.83	30.00	19.18
		802.11ax	5745	12.33	30.00	17.67
			5785	10.08	30.00	19.92
			5805	11.52	30.00	18.48
		802.11ac	5745	13.32	30.00	16.68
			5785	12.22	30.00	17.78
			5805	12.71	30.00	17.29
5725-5825MHz	40	802.11n	5755	4.65	30.00	25.35
			5795	4.68	30.00	25.32
		802.11ax	5755	4.17	30.00	25.83
			5795	4.16	30.00	25.84
		802.11ac	5755	5.00	30.00	25.00
			5795	4.81	30.00	25.19
5725-5825MHz	80	802.11ax	5775	2.40	30.00	27.60
		802.11ac	5775	2.93	30.00	27.07

Note: 1. Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of the Report, portion of plots are placed in the report.
Note: 2. Duty Cycle Correction Factor, 10 log (1/D), where D is the duty cycle, included in the measured results.
Note 3. Total Power = 10*Log10 (10a/10 + 10b/10)

FCC	
Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 8.7 dBi; UNII3 = 8.9 dBi
Operating Mode: Beamforming	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-1 (5150-5250MHz)

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	PSD (dBm/MHz)		PSD Limit	Margin
				Port 1	Port 2	(dBm/MHz)	(dB)
5150-5250MHz	20	802.11a	5180	7.40	8.70	14.30	5.60
			5220	8.60	9.00	14.30	5.30
			5240	7.60	8.70	14.30	5.60

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Total PSD	PSD Limit	Margin
				(dBm/MHz)	(dBm/MHz)	(dB)
5150-5250MHz	20	802.11n	5180	11.95	14.30	2.36
			5220	12.27	14.30	2.03
			5240	12.22	14.30	2.08
		802.11ax	5180	11.60	14.30	2.70
			5220	11.58	14.30	2.72
			5240	11.38	14.30	2.93
		802.11ac	5180	11.01	14.30	3.29
			5220	11.39	14.30	2.91
			5240	10.91	14.30	3.39
5150-5250MHz	40	802.11n	5190	7.81	14.30	6.49
			5230	7.79	14.30	6.51
		802.11ax	5190	6.96	14.30	7.34
			5230	7.20	14.30	7.10
		802.11ac	5190	7.16	14.30	7.14
			5230	7.31	14.30	6.99

Note: 1. Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of the Report, portion of plots are placed in the report.
Note: 2. Duty Cycle Correction Factor, 10 log (1/D), where D is the duty cycle, included in the measured results.
Note 3. Total Power = 10*Log10 (10a/10 + 10b/10)

FCC	
Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 8.7 dBi; UNII3 = 8.9 dBi
Operating Mode: Beamforming	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-1 (5150-5250MHz)

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Margin (dB)
5150-5250MHz	80	802.11ax	5210	6.42	14.30	7.88
		802.11ac	5210	5.27	14.30	9.03
5150-5250MHz	160	802.11ax	5250	-1.02	14.30	15.32
		802.11ac	5250	-1.30	14.30	15.60

Note: 1. Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of the Report, portion of plots are placed in the report.
Note: 2. Duty Cycle Correction Factor, 10 log (1/D), where D is the duty cycle, included in the measured results.
Note 3. Total Power = 10*Log10 (10a/10 + 10b/10)

FCC	
Date: November 27th, 2023 to February 9th, 2024	**Tested By:** Osvaldo Casorla
Test Method: Conducted Measurements	**Power Setting:** See test plan.
Antenna Type: Omni	**Max Antenna Gain:** UNII1 = 8.7 dBi; UNII3 = 8.9 dBi
Operating Mode: Beamforming	**Signal State:** See Section 3.5.1
Ambient Temp.: 22 - 23 °C	**Relative Humidity:** 35 - 38%

U-NII-3 (5725-5850MHz)

Freq Band	Bandwidth (MHz)	Mode	Frequency (MHz)	Total PSD (dBm/500kHz)		PSD Limit	Margin
				Port 1	Port 2	(dBm/500kHz)	(dB)
5725-5825MHz	20	802.11a	5745	5.10	4.80	27.10	22.00
			5785	4.30	3.60	27.10	22.80
			5805	4.50	3.40	27.10	22.60
Freq Band	**Bandwidth (MHz)**	**Mode**	**Frequency (MHz)**	**Total PSD**		**PSD Limit**	**Margin**
				(dBm/500kHz)		**(dBm/500kHz)**	**(dB)**
5725-5825MHz	20	802.11n	5745	9.41		27.10	17.69
			5785	8.17		27.10	18.93
			5805	8.15		27.10	18.95
		802.11ax	5745	8.76		27.10	18.34
			5785	7.56		27.10	19.54
			5805	7.63		27.10	19.47
		802.11ac	5745	7.94		27.10	19.16
			5785	6.98		27.10	20.12
			5805	6.99		27.10	20.11
5725-5825MHz	40	802.11n	5755	1.76		27.10	25.34
			5795	1.30		27.10	25.80
		802.11ax	5755	0.30		27.10	26.80
			5795	-0.44		27.10	27.54
		802.11ac	5755	1.03		27.10	26.07
			5795	0.73		27.10	26.37
5725-5825MHz	80	802.11ax	5775	-3.63		27.10	30.73
		802.11ac	5775	-3.65		27.10	30.75

Note: 1. Plots for all the measurements stated above were taken. To reduce complexity and bulkiness of the Report, portion of plots are placed in the report.
Note: 2. Duty Cycle Correction Factor, 10 log (1/D), where D is the duty cycle, included in the measured results.
Note 3. Total Power = 10*Log10 (10a/10 + 10b/10)

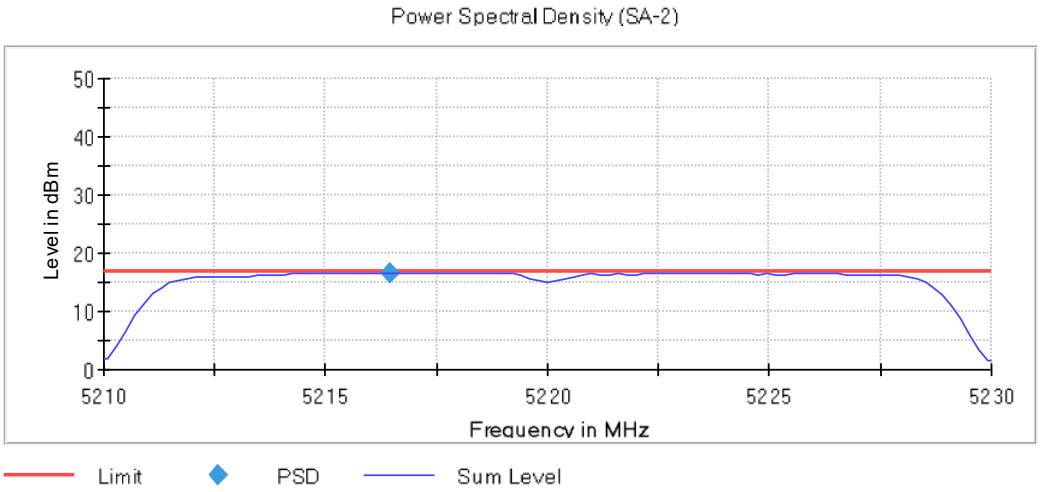


Figure 11: FCC Uncorrelated Power Spectral Density-5220 MHz-802.11ac VHT 20

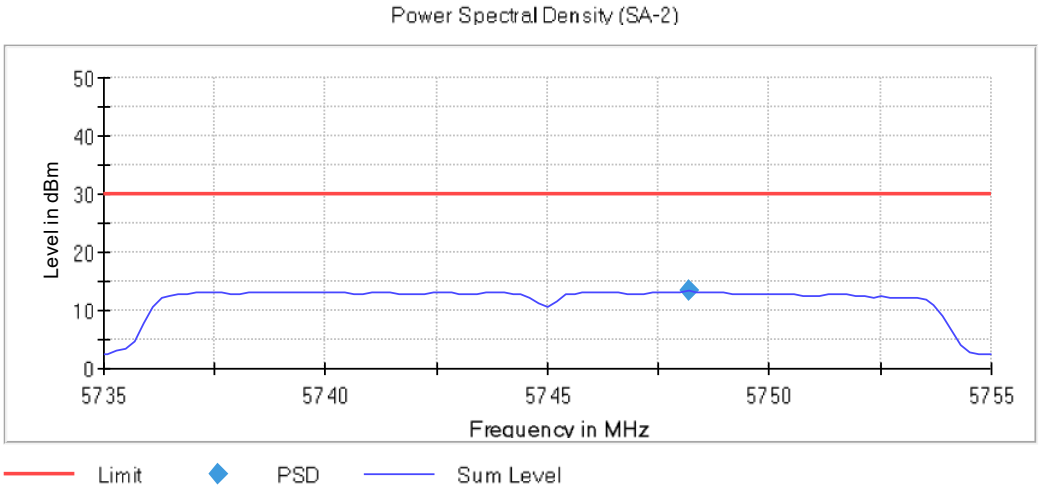


Figure 12: FCC Uncorrelated Power Spectral Density-5745 MHz-802.11ac VHT20

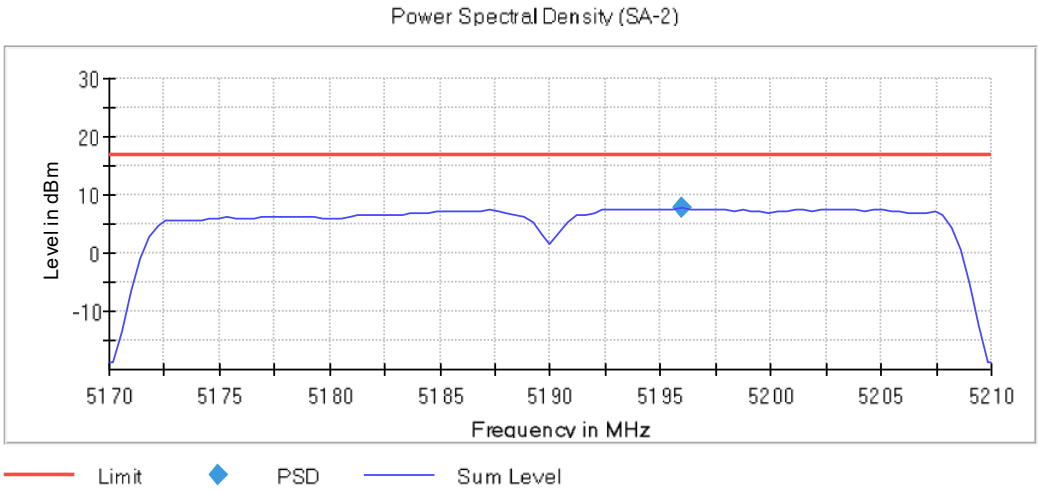


Figure 13: FCC Uncorrelated Power Spectral Density-5190 MHz-802.11n-HT MCSO-4MHz

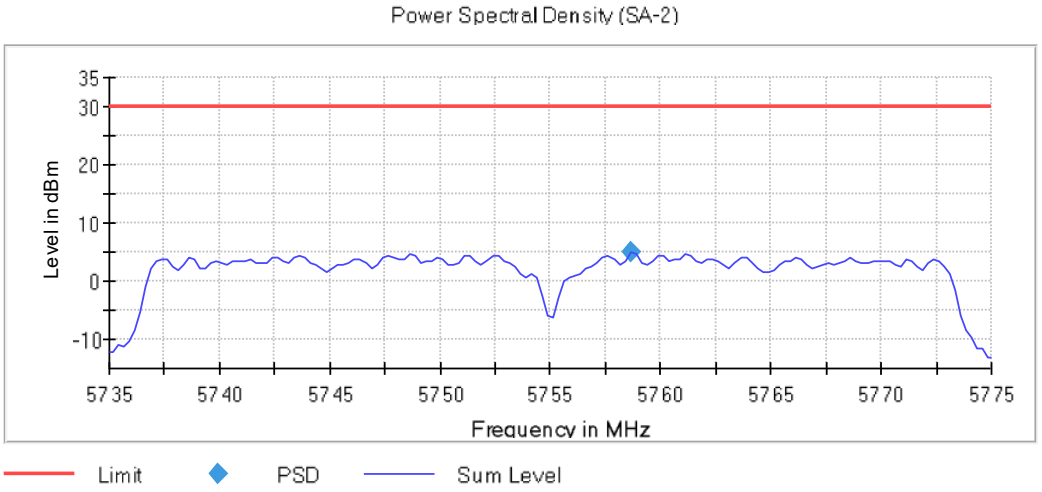


Figure 14: FCC Uncorrelated Power Spectral Density-5755 MHz-802.11ac VHT40

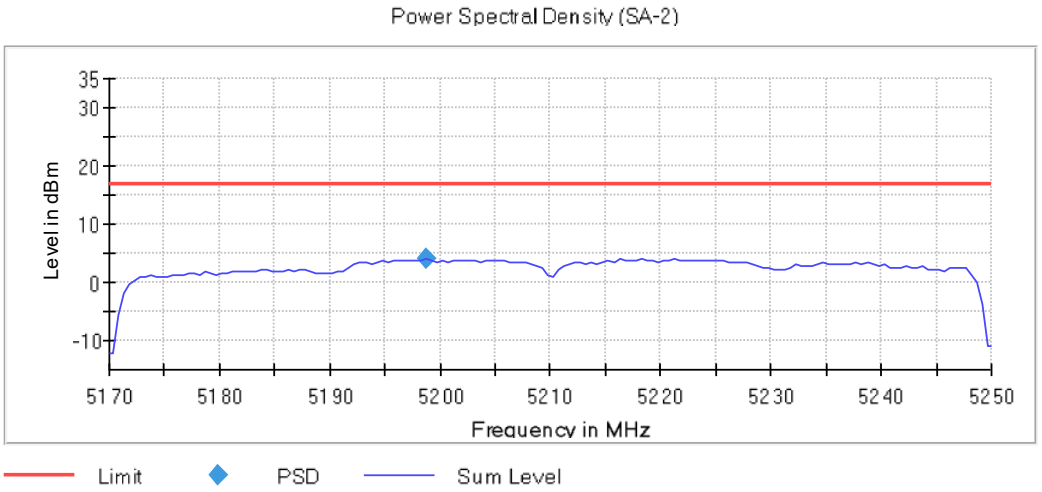


Figure 15: FCC Uncorrelated Power Spectral Density-5210 MHz-802.11ax-HE80

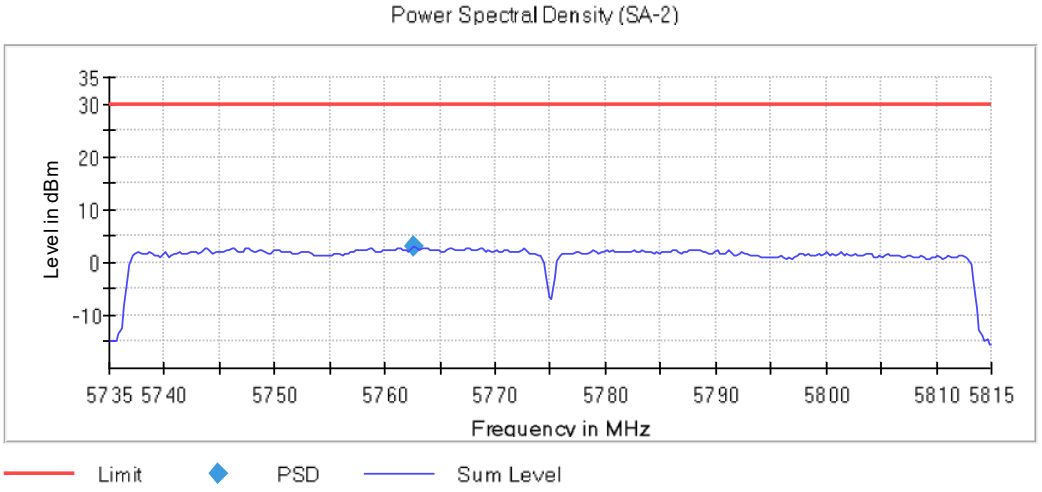


Figure 16: FCC Uncorrelated Power Spectral Density-5775 MHz-802.11ac-VHT80

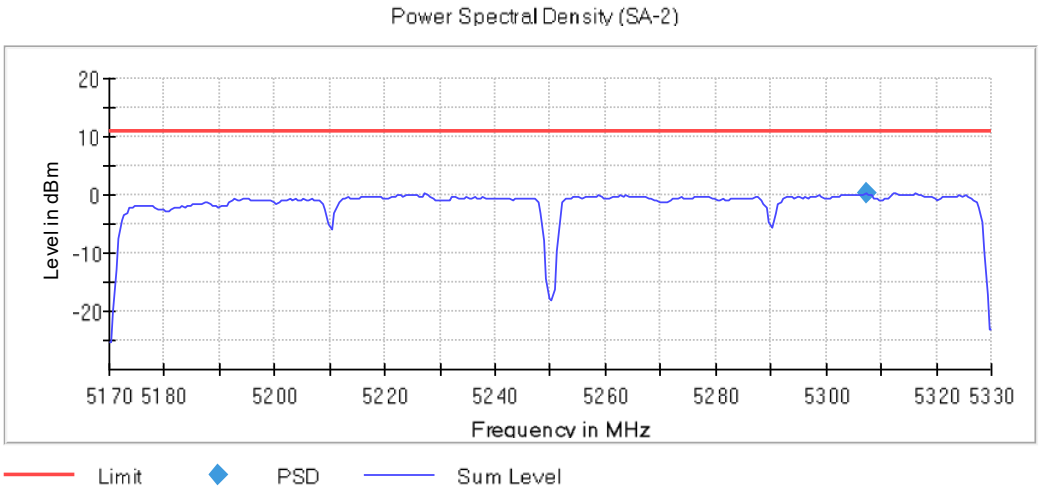


Figure 17: FCC Uncorrelated Power Spectral Density-5250 MHz-802.11ac-VHT160