

MEASUREMENT REPORT

FCC ID : 2BH7FGE400
Applicant : TP-Link Systems Inc.
Application Type : Certification
Product : BE6500 Dual-Band Wi-Fi 7 Gaming Router
Model No. : Archer GE400
Brand Name : tp-link
FCC Classification : Unlicensed National Information Infrastructure (NII)
FCC Rule Part(s) : Part15 Subpart E (Section 15.407)
Received Date : January 10, 2025
Test Date : January 21 ~ February 24, 2025

Tested By : Owen Tsai
(Peter Tsai)
Reviewed By : Paddy Chen
(Paddy Chen)
Approved By : Chenz Ker
(Chenz Ker)



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB 789033 and KDB 291074. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Taiwan) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2501TW0109-U5	1.0	Original Report	2025-03-29	

CONTENTS

Description	Page
1. INTRODUCTION	7
1.1. Scope	7
1.2. MRT Test Location	7
2. PRODUCT INFORMATION	8
2.1. Equipment Description.....	8
2.2. Product Specification Subjective to this Report.....	9
2.3. Working Frequencies for this report	10
2.4. Description of Available Antennas	11
2.5. Test Mode	12
2.6. Configuration of Test System.....	13
2.7. Test System Details.....	14
2.8. Description of Test Software	14
2.9. Applied Standards	14
2.10. Duty Cycle	15
2.11. Test Configuration	19
2.12. EMI Suppression Device(s)/Modifications	19
2.13. Labeling Requirements.....	19
3. DESCRIPTION OF TEST	20
3.1. Evaluation Procedure	20
3.2. AC Line Conducted Emissions	20
3.3. Radiated Emissions	21
4. ANTENNA REQUIREMENTS.....	22
5. TEST EQUIPMENT CALIBRATION DATE	23
6. MEASUREMENT UNCERTAINTY.....	24
7. TEST RESULT	25
7.1. Summary	25
7.2. 26dB Bandwidth Measurement.....	26
7.2.1. Test Limit	26
7.2.2. Test Procedure used.....	26
7.2.3. Test Setting.....	26
7.2.4. Test Setup	26
7.2.5. Test Result.....	27
7.3. 6dB Bandwidth Measurement.....	38

7.3.1. Test Limit	38
7.3.2. Test Procedure used.....	38
7.3.3. Test Setting.....	38
7.3.4. Test Setup	38
7.3.5. TestResult.....	39
7.4. Output Power Measurement	50
7.4.1. Test Limit	50
7.4.2. Test Procedure Used	50
7.4.3. Test Setting.....	50
7.4.4. Test Setup	50
7.4.5. Test Result.....	51
7.5. Power Spectral Density Measurement	53
7.5.1. Test Limit	53
7.5.2. Test Procedure Used	53
7.5.3. Test Setting.....	53
7.5.4. Test Setup	53
7.5.5. Test Result.....	54
7.6. Frequency Stability Measurement.....	96
7.6.1. Test Limit	96
7.6.2. Test Procedure	96
7.6.3. Test Procedure	97
7.6.4. Test Result.....	97
7.7. Radiated Spurious Emission Measurement	98
7.7.1. Test Limit	98
7.7.2. Test Procedure Used	98
7.7.3. Test Setting.....	98
7.7.4. Test Setup	100
7.7.5. Test Result.....	101
7.8. Radiated Restricted Band Edge Measurement	153
7.8.1. Test Limit	153
7.8.2. Test Procedure Used	154
7.8.3. Test Setting.....	154
7.8.4. Test Setup	155
7.8.5. Test Result.....	156
7.9. AC Conducted Emissions Measurement.....	204
7.9.1. Test Limit	204
7.9.2. Test Procedure	204
7.9.3. Test Setup	205
7.9.4. Test Result.....	206

8. CONCLUSION.....	208
Appendix A : Test Setup Photograph	209
Appendix B : EUT Photograph.....	209
Appendix C : Internal Photograph	209

General Information

Applicant	TP-Link Systems Inc.
Applicant Address	10 Mauchly, Irvine, CA 9261
Manufacturer	TP-Link Systems Inc.
Manufacturer Address	10 Mauchly, Irvine, CA 92618
Test Site	MRT Technology (Taiwan) Co., Ltd
Test Site Address	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)
MRT FCC Registration No.	291082
FCC Rule Part(s)	Part 15.407

Test Facility / Accreditations

1. MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm.
2. MRT facility is an IC registered (MRT Reg. No. 21723) test laboratory with the site description on file at Industry Canada.
3. MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC (Designation Number: TW3261), Industry Canada, EU and TELEC Rules.

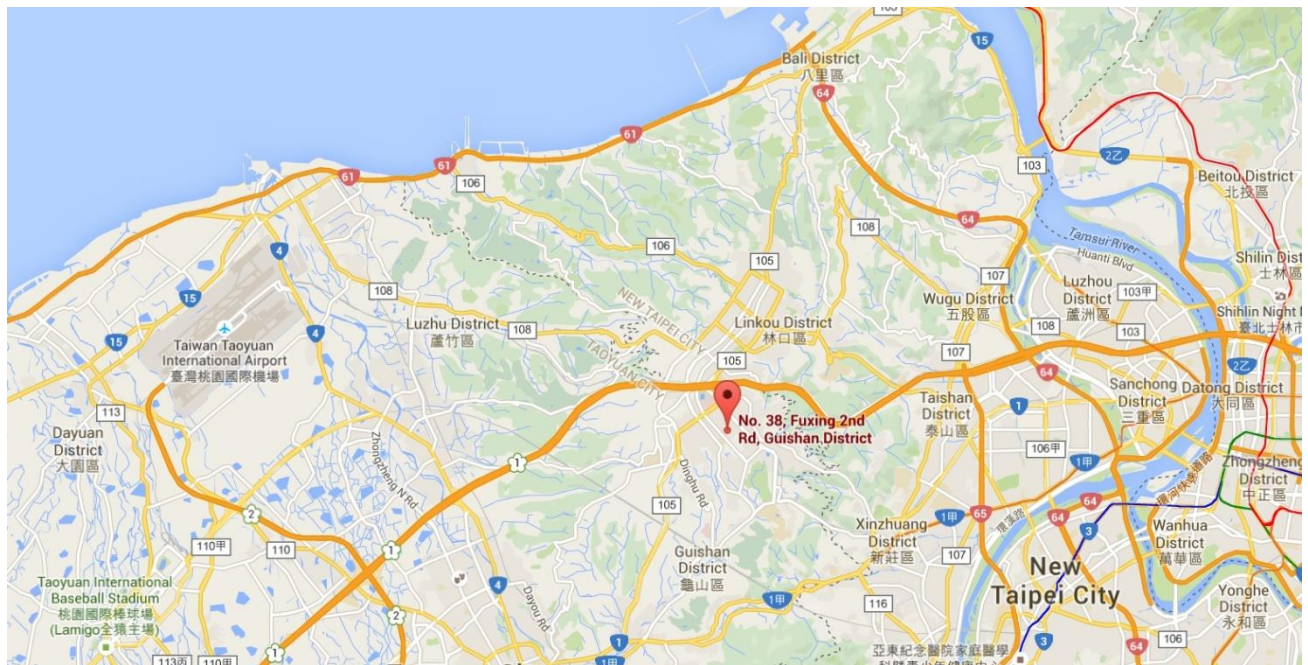
1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada and Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).



2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name:	BE6500 Dual-Band Wi-Fi 7 Gaming Router
Model No.:	Archer GE400
Brand Name:	tp-link
Wi-Fi Specification	802.11a/b/g/n/ac/ax/be
EUT Identification No.	#1-1 (Conducted) #1-2 (Radiated)
Accessory	
Adapter	BRAND: MASS POWER MODEL: NBS30D120250VU INPUT: 100 - 240V ~ 50/60Hz 0.8A. OUTPUT: DC 12.0V / 2.5A

2.2. Product Specification Subjective to this Report

Frequency Range:	For 802.11a/n-HT20/ac-VHT20/ax-HE20/be-EHT20: 5845MHz, 5865MHz, 5885MHz For 802.11n-HT40/ac-VHT40/ax-HE40/be-EHT40: 5835MHz, 5875MHz For 802.11ac-VHT80/ax-HE80/be-EHT80: 5855MHz For 802.11ac-VHT160/ax-HE160/be-EHT160: 5815MHz
Type of Modulation:	802.11a/n/ac: OFDM 802.11ax/be: OFDMA
Data Rate:	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 600Mbps 802.11ac: up to 3466.7Mbps 802.11ax: up to 4804Mbps 802.11be: up to 5764Mbps

Note: For other features of this EUT, test report will be issued separately.

2.3. Working Frequencies for this report

802.11a/n-HT20/ac-VHT20/ax-HE20/be-EHT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
169	5845 MHz	173	5865 MHz	177	5885 MHz

802.11n-HT40/ac-VHT40/ax-HE40/be-EHT40

Channel	Frequency	Channel	Frequency	Channel	Frequency
167	5835 MHz	175	5875 MHz	--	--

802.11ac-VHT80/ax-HE80/be-EHT80

Channel	Frequency	Channel	Frequency	Channel	Frequency
171	5855 MHz	--	--	--	--

802.11ac-VHT160/ax-HE160/be-EHT160

Channel	Frequency	Channel	Frequency	Channel	Frequency
163	5815 MHz	--	--	--	--

2.4. Description of Available Antennas

Antenna Type	Frequency Band (MHz)	Tx Paths	Number of spatial streams	Max Antenna Gain (dBi)	Beamforming Directional Gain(dBi)	CDD Directional Gain (dBi)	
						For Power	For PSD
Wi-Fi Antenna							
Dipole	2412 ~ 2462	2	1	6.33	7.63	4.65	7.63
	5150 ~ 5250	4	1	7.22	11.91	5.90	11.91
	5250 ~ 5350	4	1	7.87	12.76	6.77	12.76
	5470 ~ 5725	4	1	8.60	12.35	6.39	12.35
	5725 ~ 5895	4	1	8.42	11.90	6.22	11.90

Remark:

- The device supports CDD Mode and Beamforming mode, details refer to the table as below.
- CDD signals are correlated, the directional gain as follows,
When $N_{ss}=1$, for power measurements: the max directional gain (each angle) = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N_{ANT}]$
For power spectral density (PSD) measurements: the max directional gain (each angle) = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$
- Beamforming signals are correlated, the directional gain as follows,
the max directional gain (each angle) = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$
- The information as above is from the antenna report.

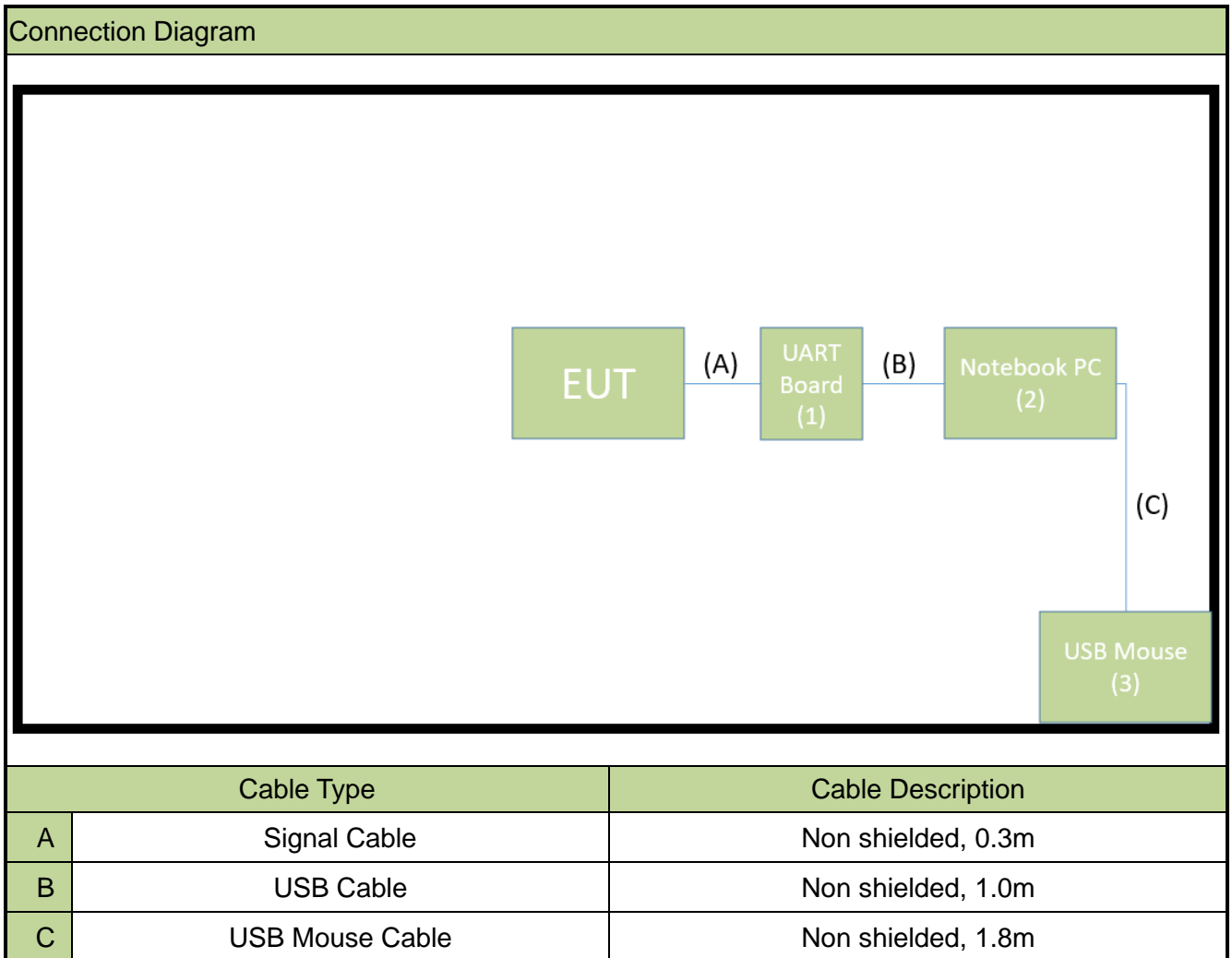
Test Mode	Tx Paths	CDD Mode	Beamforming Mode
802.11b/g/n (DTS)	2	√	X
802.11ax/be (DTS)	2	√	√
802.11a/n (NII)	4	√	X
802.11ac/ax/be (NII)	4	√	√

2.5. Test Mode

CDD Mode
Mode 1: Transmit by 802.11a_Nss=1 (6Mbps)
Mode 2: Transmit by 802.11ac-VHT20_Nss=1 (MCS0)
Mode 3: Transmit by 802.11ac-VHT40_Nss=1 (MCS0)
Mode 4: Transmit by 802.11ac-VHT80_Nss=1 (MCS0)
Mode 5: Transmit by 802.11ac-VHT160_Nss=1 (MCS0)
Mode 6: Transmit by 802.11ax-HE20_Nss=1 (MCS0)
Mode 7: Transmit by 802.11ax-HE40_Nss=1 (MCS0)
Mode 8: Transmit by 802.11ax-HE80_Nss=1 (MCS0)
Mode 9: Transmit by 802.11ax-HE160_Nss=1 (MCS0)
Mode 10: Transmit by 802.11be-EHT20_Nss=1 (MCS0)
Mode 11: Transmit by 802.11be-EHT40_Nss=1 (MCS0)
Mode 12: Transmit by 802.11be-EHT80_Nss=1 (MCS0)
Mode 13: Transmit by 802.11be-EHT160_Nss=1 (MCS0)
<p>Remark:</p> <ol style="list-style-type: none"> 1. For Radiated emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power. 2. This device supports 4 N_{ss} and the power level of 4 N_{ss} is less than or equal to the power of 1 N_{ss}. The worst case is N_{ss}=1. 3. 802.11n and 802.11ac have same modulation type and same power value, so we only show 802.11ac test data in report. 4. For beamforming operation, the manufacturer automatically reduces power based on a factor calculated as the difference between the beamforming directional gain and the CDD directional power gain. Thus, only the CDD mode was evaluated in this report. 5. EUT supports one configuration only in 802.11ax/be full RU mode. 6. As Designated by manufacturer, the lowest data rate was the worst condition, so all the tests were done with lowest data rate.

2.6. Configuration of Test System

The device was tested per the guidance ANSI C63.10: 2013 was used to reference the appropriate EUT setup for radiated emissions testing and AC line conducted testing.



2.7. Test System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	UART Board	Arduino	CH340	N/A	N/A
2	Notebook PC	Lenovo	20Y7-006KTW	N/A	Non-shielded, 0.8m
3	USB Mouse	Logitech	M90	N/A	N/A

2.8. Description of Test Software

The test utility software used during testing was “accessMTool”, the version is ver REL_3_3_0_1.

Note: Final power setting please refer to operational description.

2.9. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15.407
- KDB 789033 D02v02r01
- KDB 291074 D02v01
- KDB 662911 D01v02r01
- ANSI C63.10-2013

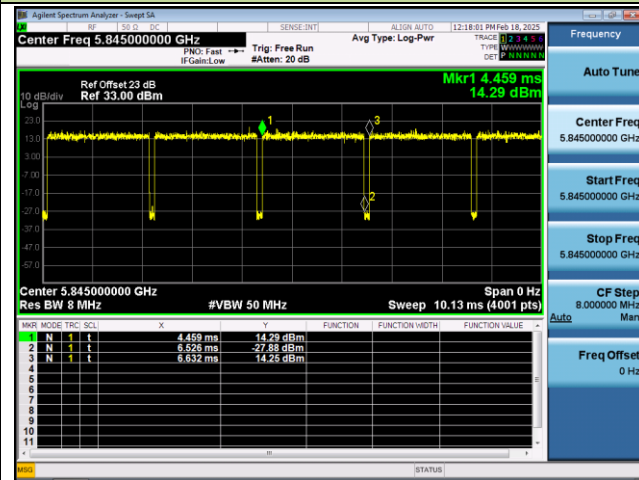
2.10. Duty Cycle

5GHz (NII) operation is possible in 20MHz, 40MHz, 80MHz and 160MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz. The RBW and VBW were both greater than $50/T$, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

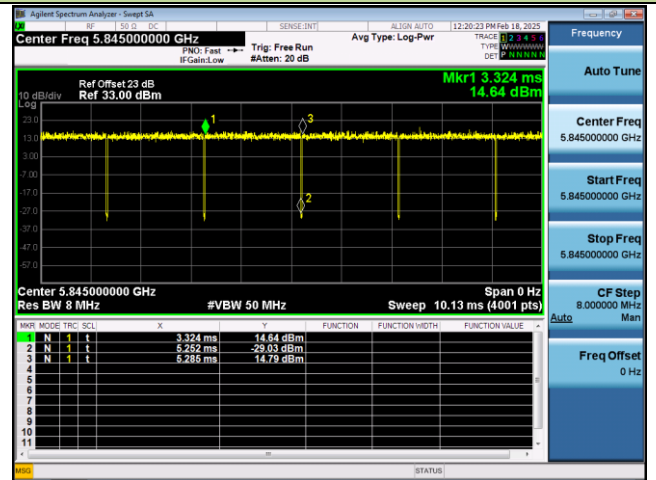
Test Mode	Duty Cycle
802.11a	94.63%
802.11ac-VHT20	97.83%
802.11ac-VHT40	96.79%
802.11ac-VHT80	93.16%
802.11ac-VHT160	89.04%
802.11ax-HE20	97.87%
802.11ax-HE40	95.91%
802.11ax-HE80	92.48%
802.11ax-HE160	90.03%
802.11be-EHT20	98.14%
802.11be-EHT 40	96.20%
802.11be-EHT 80	92.43%
802.11be-EHT 160	88.79%

Duty Cycle (T = Transmission Duration)

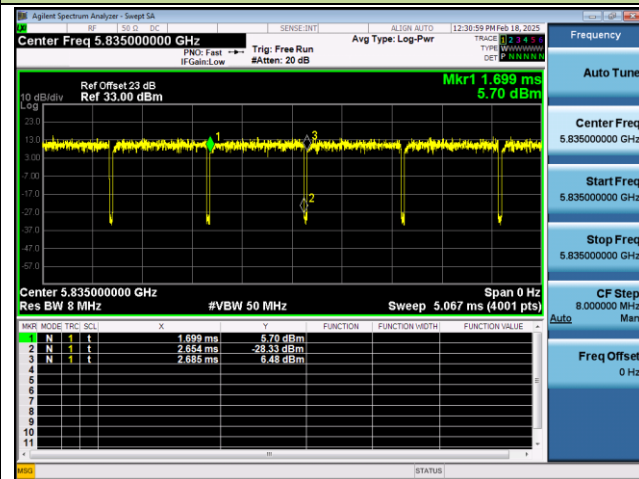
802.11a



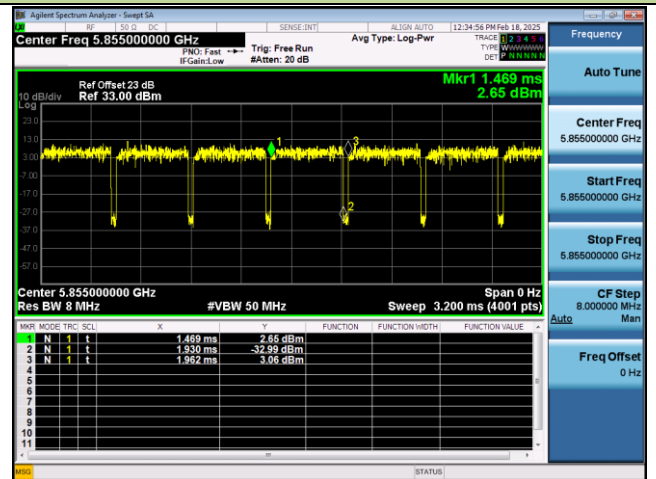
802.11ac-VHT20



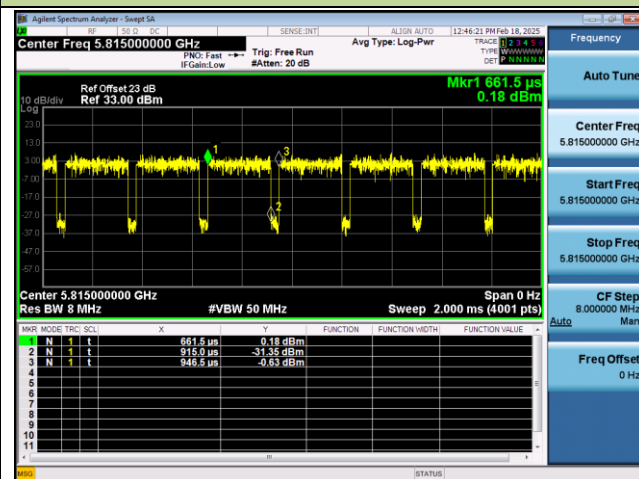
802.11ac-VHT40



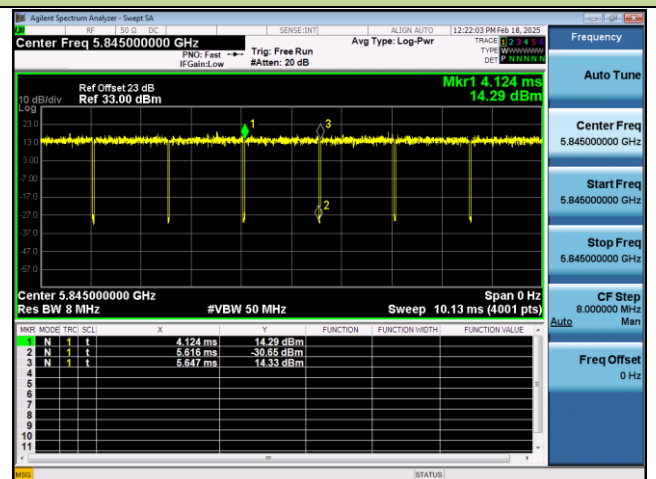
802.11ac-VHT80



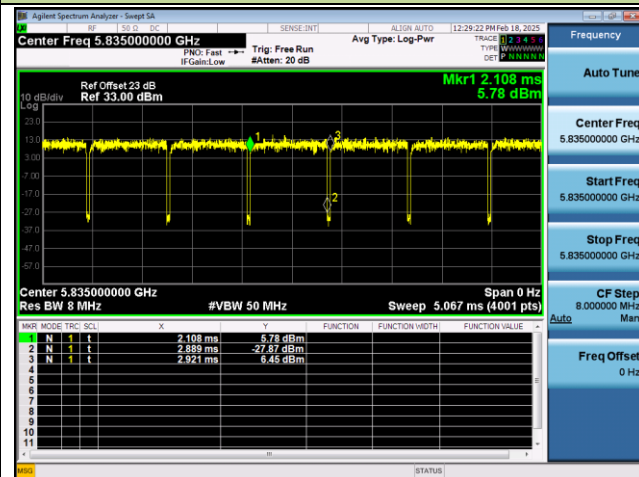
802.11ac-VHT160



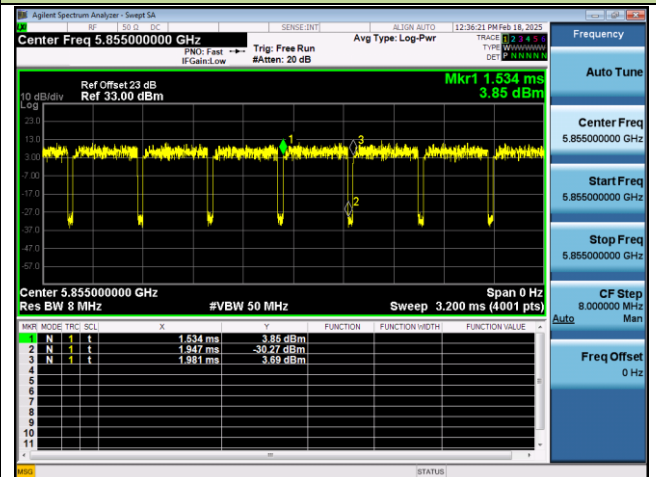
802.11ax-HE20



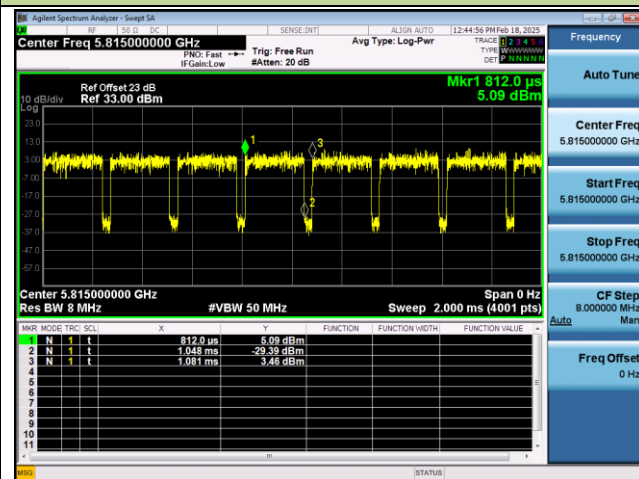
802.11ax-HE40



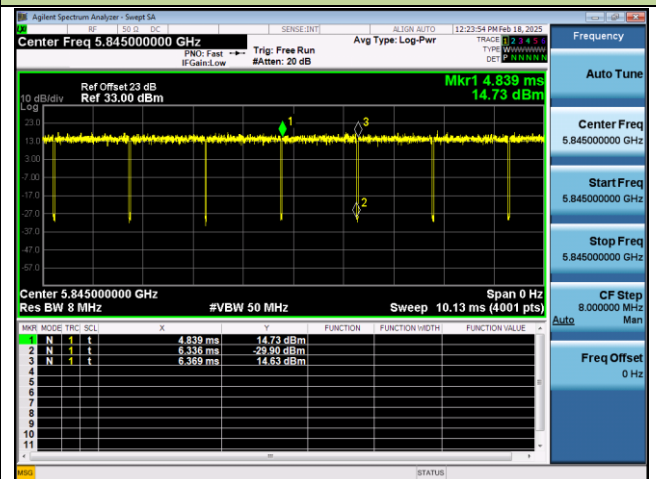
802.11ax-HE80



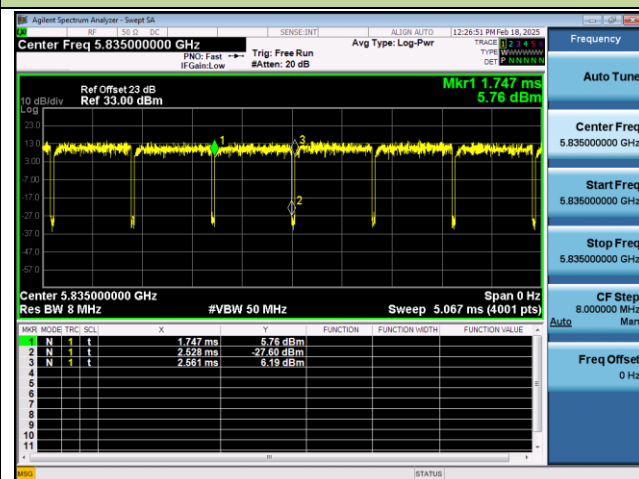
802.11ax-HE160



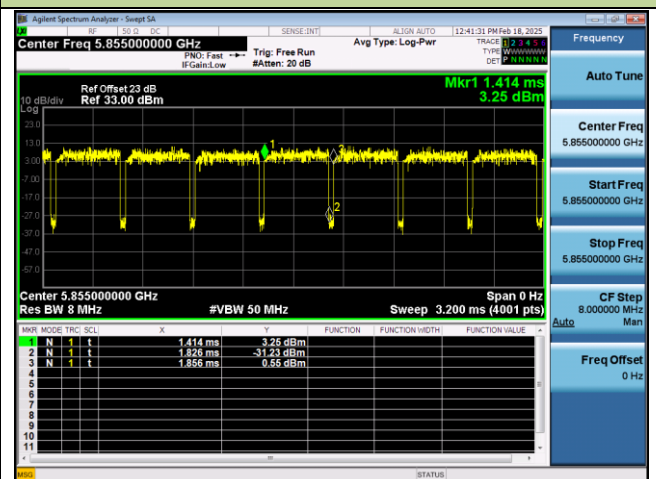
802.11be-EHT20



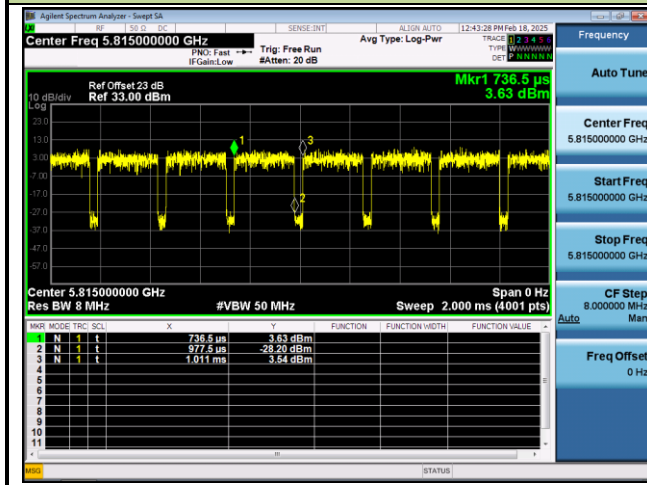
802.11be-EHT40



802.11be-EHT80



802.11be-EHT160



2.11. Test Configuration

The device was tested per the guidance of KDB 789033 D02v02r01. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

2.12. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

2.13. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase.

However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

3. DESCRIPTION OF TEST

3.1. Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013), and the guidance provided in KDB 789033 D02v02r01 were used in the measurement.

3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 8'x4'x4' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50 Ω /50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions are used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.

3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions. According to 3dB Beam-Width of horn antenna, the horn antenna should be always directed to the EUT when rising height.

4. ANTENNA REQUIREMENTS

KDB 291074 D01v01: An Indoor Access point in the U-NII-4 band (5.850-5.895 GHz) and U-NII -3 & -4 span channels must use an integrated antenna

- The antenna of the device is built in and locked inside the enclosure.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2025/4/21
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2025/3/5
Cable	Rosnol	N1C50-RG400-B 1C50-500CM	MRTTWE00013	1 year	2025/6/14

Radiated Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2025/5/7
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00086	1 year	2025/11/5
Broadband Hornantenna	RFSPIN	DRH18-E	MRTTWA00087	1 year	2025/5/20
Broadband Preamplifier	EMC Instruments corporation	EMC118A45SE	MRTTWA00088	1 year	2025/5/14
Breitband Hornantenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2025/3/26
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2025/3/21
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2025/3/5
Signal Analyzer	R&S	FSVA3044	MRTTWA00092	1 year	2025/6/20
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00034	1 year	2025/6/25
Cable	HUBERSUHNER	EMC105-NM-NM -3000	MRTTWE00035	1 year	2025/6/25
Temperature/Humidity Meter	TFA	35.1083	MRTTWA00050	1 year	2025/6/2

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2025/9/24
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2025/8/12
USB Wideband Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2025/3/12

Test Software

Software	Version	Function
e3	9.160520a	EMI Test Software

6. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

AC Conducted Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 150kHz~30MHz: $\pm 2.53\text{dB}$
Radiated Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 9kHz ~ 1GHz: $\pm 4.25\text{dB}$ 1GHz ~ 40GHz: $\pm 4.45\text{dB}$
Conducted Power (Carrier Power / Power Density)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 0.84\text{dB}$
Conducted Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 2.65\text{ dB}$
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 3.3\%$
Temp. / Humidity
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 0.82^\circ\text{C} / \pm 3\%$
Frequency Error
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 78.4\text{Hz}$

7. TEST RESULT

7.1. Summary

FCC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.407(a)	26dB Bandwidth	N/A	Conducted	Pass	Section 7.2
15.407(e)	6dB Bandwidth	$\geq 500\text{kHz}$		Pass	Section 7.3
15.407(a)(3)(ii)	Maximum Conducted Output Power	Refer to section 7.4		Pass	Section 7.4
15.407(a)(3)(ii) (12)	Peak Power Spectral Density	Refer to section 7.5		Pass	Section 7.5
15.407(g)	Frequency Stability	N/A		Pass	Section 7.6
15.407(b)(5)	Undesirable Emissions	Refer to Section 7.7	Radiated	Pass	Section 7.7
15.205, 15.209 15.407(b)(5)(i), (8), (9)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		Pass	Section 7.8
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 7.9

Notes:

- Determining compliance is based on the test results met the regulation limits or requirements declared by clients, and the test results don't take into account the value of measurement uncertainty.
- The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- Output power test was verified over all data rates of each mode (data refers to operational description), and then choose the maximum power output (low data rate) for final test of each channel.
- For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.

7.2. 26dB Bandwidth Measurement

7.2.1. Test Limit

N/A

7.2.2. Test Procedure used

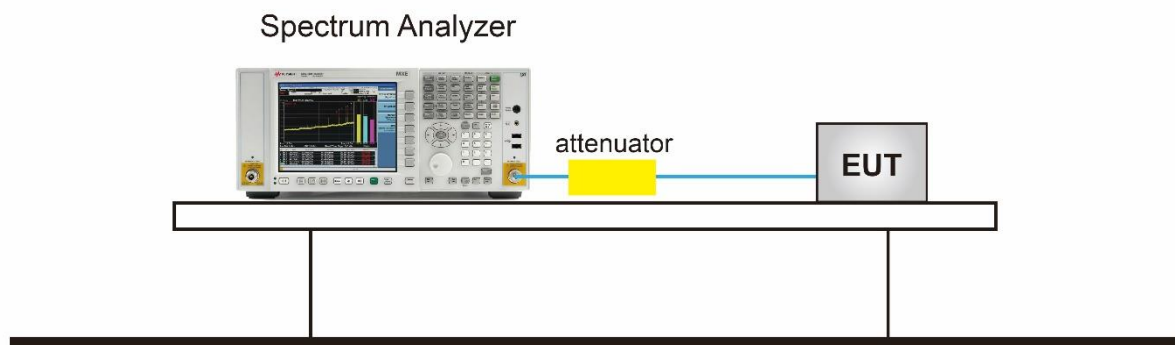
KDB 789033 D02v02r01- Section II)C.1) (26dB Bandwidth)

KDB 789033 D02v02r01- Section II)D) (99% Bandwidth)

7.2.3. Test Setting

1. The analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to $X = 26$. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediated power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth.
3. $VBW \geq 3 \times RBW$.
4. Detector = Peak.
5. Trace mode = max hold.

7.2.4. Test Setup



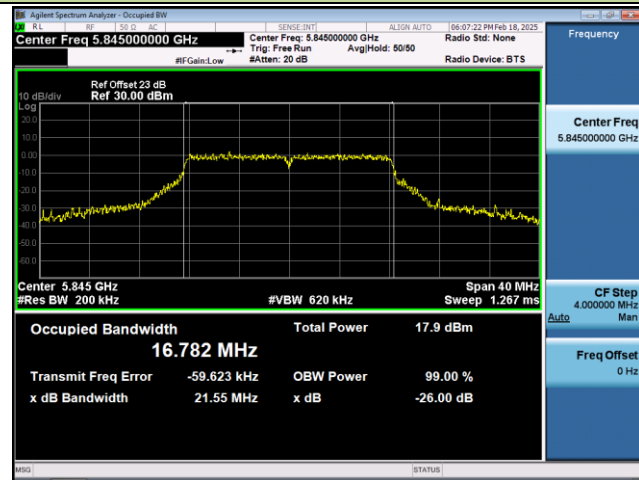
7.2.5.Test Result

Product	BE6500 Dual-Band Wi-Fi 7 Gaming Router	Test Engineer	Peter
Test Site	SR6	Test Date	2025/2/18

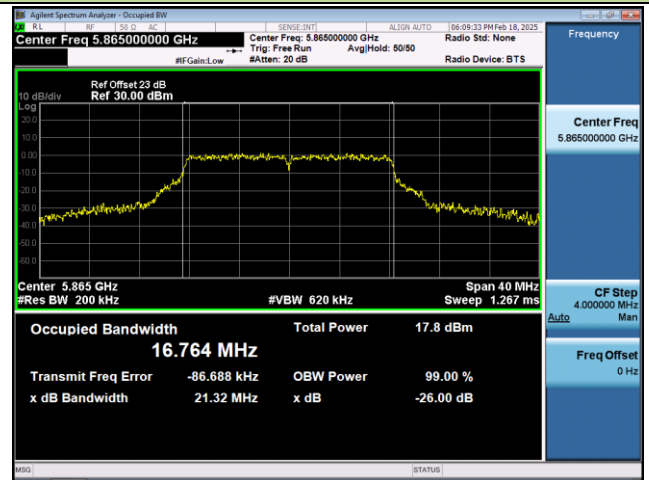
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Ant 1					
802.11a	6Mbps	169	5845	21.550	16.782
802.11a	6Mbps	173	5865	21.320	16.764
802.11a	6Mbps	177	5885	21.500	16.910
802.11ac-VHT20	MCS0	169	5845	21.360	17.960
802.11ac-VHT20	MCS0	173	5865	21.700	17.896
802.11ac-VHT20	MCS0	177	5885	23.820	17.955
802.11ac-VHT40	MCS0	167	5835	48.020	36.476
802.11ac-VHT40	MCS0	175	5875	46.370	36.419
802.11ac-VHT80	MCS0	171	5855	88.720	75.978
802.11ac-VHT160	MCS0	163	5815	162.600	154.580
802.11ax-HE20	MCS0	169	5845	22.190	19.057
802.11ax-HE20	MCS0	173	5865	21.680	19.134
802.11ax-HE20	MCS0	177	5885	23.830	19.126
802.11ax-HE40	MCS0	167	5835	41.820	37.863
802.11ax-HE40	MCS0	175	5875	42.020	37.777
802.11ax-HE80	MCS0	171	5855	83.680	77.288
802.11ax-HE160	MCS0	163	5815	161.700	156.140
802.11be-EHT20	MCS0	169	5845	26.290	19.095
802.11be-EHT20	MCS0	173	5865	30.020	19.112
802.11be-EHT20	MCS0	177	5885	21.520	19.063
802.11be-EHT40	MCS0	167	5835	43.600	37.816
802.11be-EHT40	MCS0	175	5875	47.080	37.858
802.11be-EHT80	MCS0	171	5855	84.230	77.473
802.11be-EHT160	MCS0	163	5815	161.700	156.120

802.11a 26dB Bandwidth & 99% Bandwidth

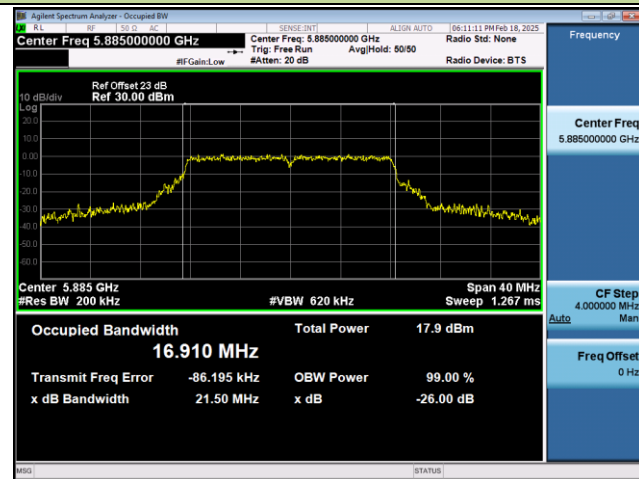
Channel 169 (5845MHz)



Channel 173 (5865MHz)



Channel 177 (5885MHz)

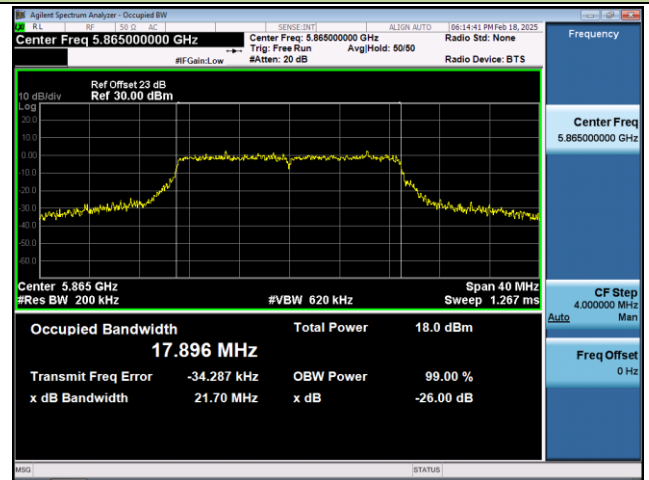


802.11ac-VHT20 26dB Bandwidth & 99% Bandwidth

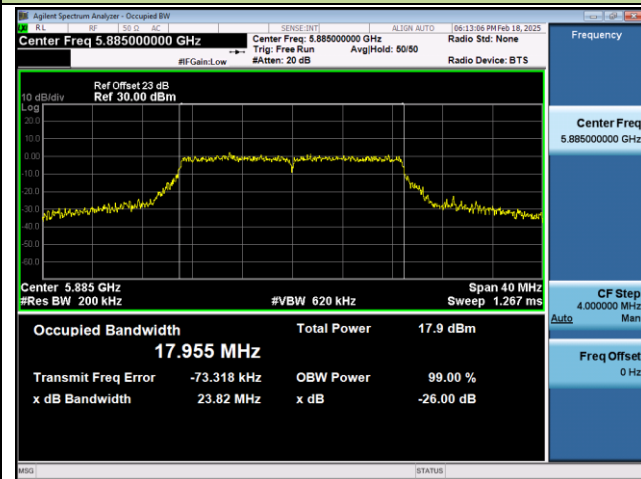
Channel 169 (5845MHz)



Channel 173 (5865MHz)



Channel 177 (5885MHz)



802.11ac-VHT40 26dB Bandwidth & 99% Bandwidth

Channel 167 (5835MHz)

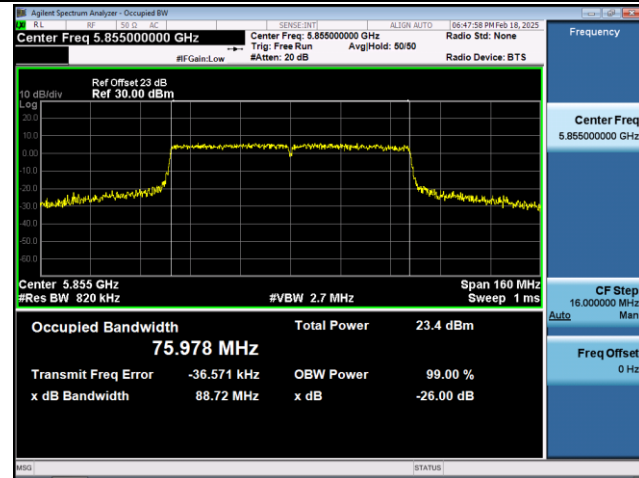


Channel 175 (5875MHz)



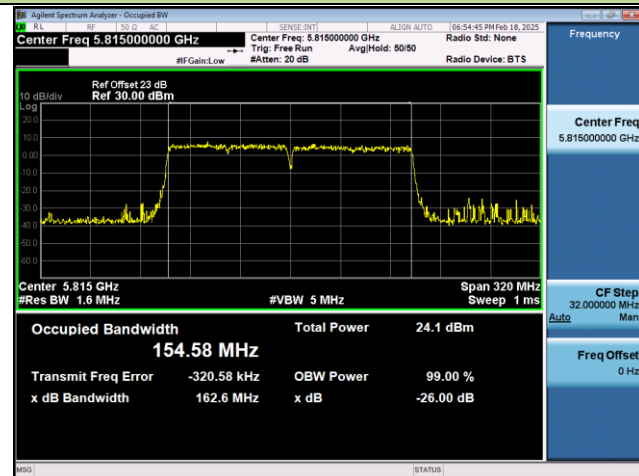
802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth

Channel 171 (5855MHz)



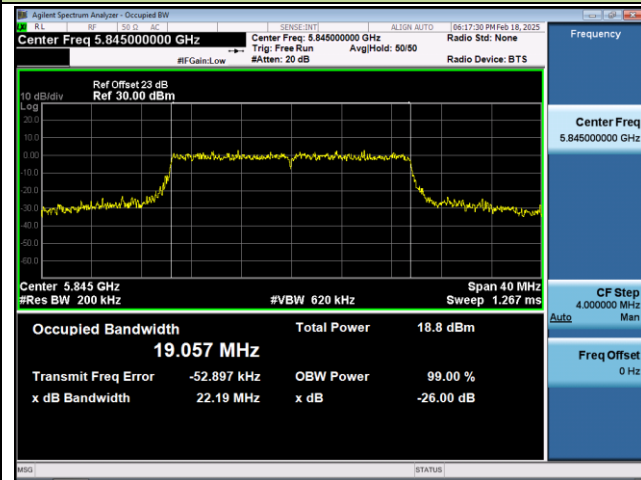
802.11ac-VHT160 26dB Bandwidth & 99% Bandwidth

Channel 163 (5815MHz)

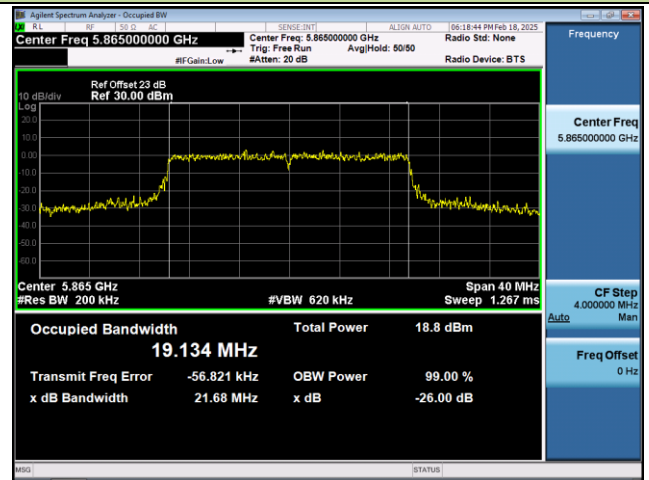


802.11ax-HE20 26dB Bandwidth & 99% Bandwidth

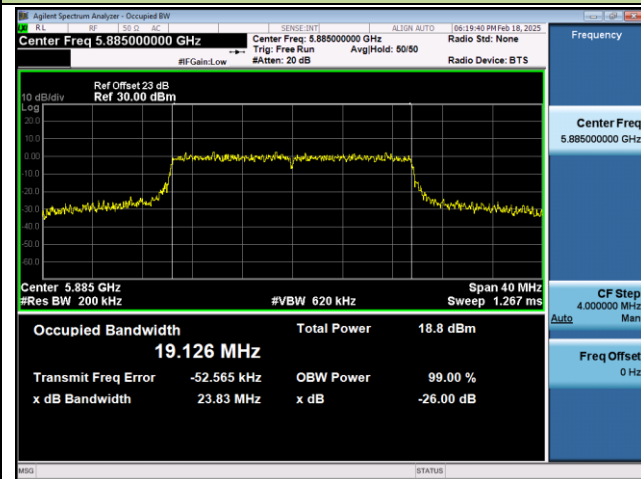
Channel 169 (5845MHz)



Channel 173 (5865MHz)

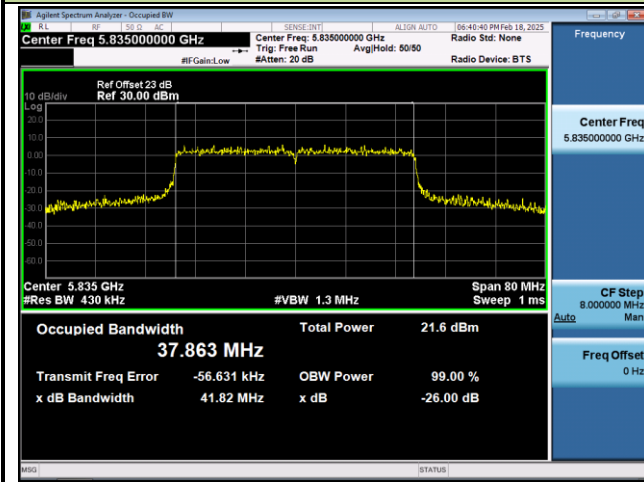


Channel 177 (5885MHz)



802.11 ax-HE40 26dB Bandwidth & 99% Bandwidth

Channel 167 (5835MHz)

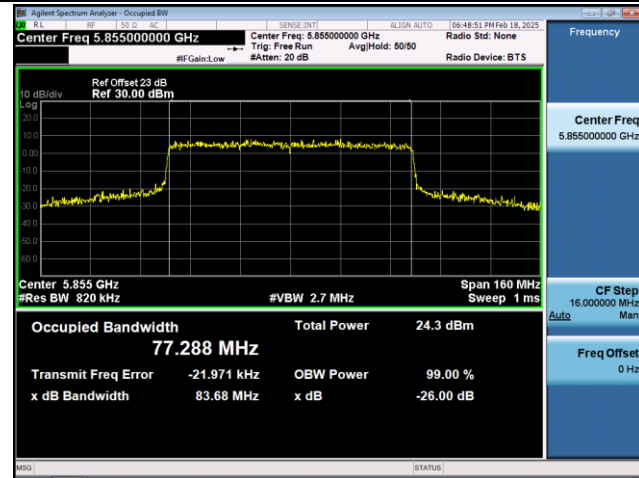


Channel 175 (5875MHz)



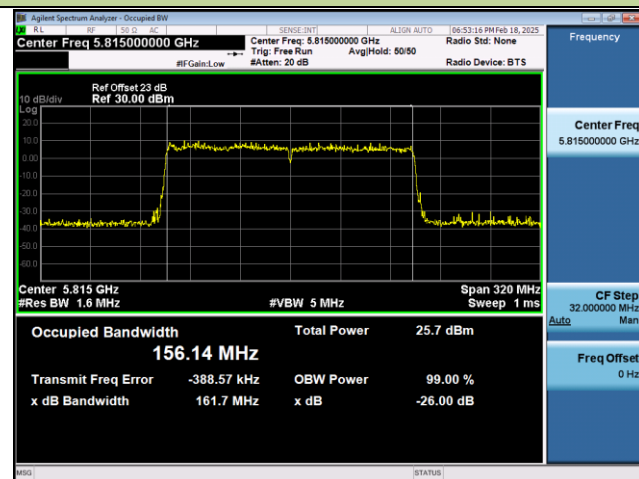
802.11 ax-HE80 26dB Bandwidth & 99% Bandwidth

Channel 171 (5855MHz)



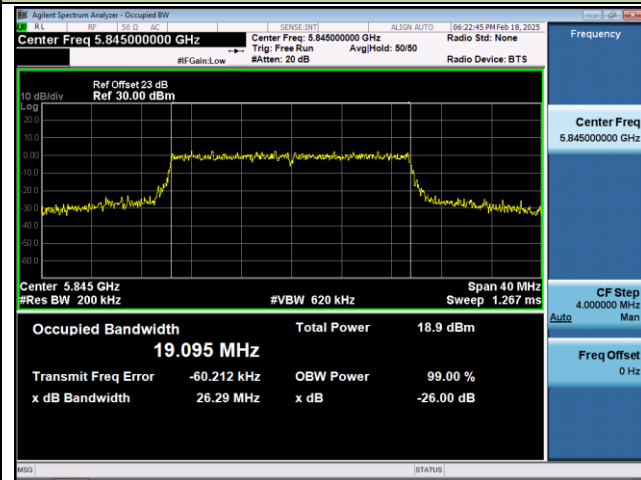
802.11 ax-HE160 26dB Bandwidth & 99% Bandwidth

Channel 163 (5815MHz)

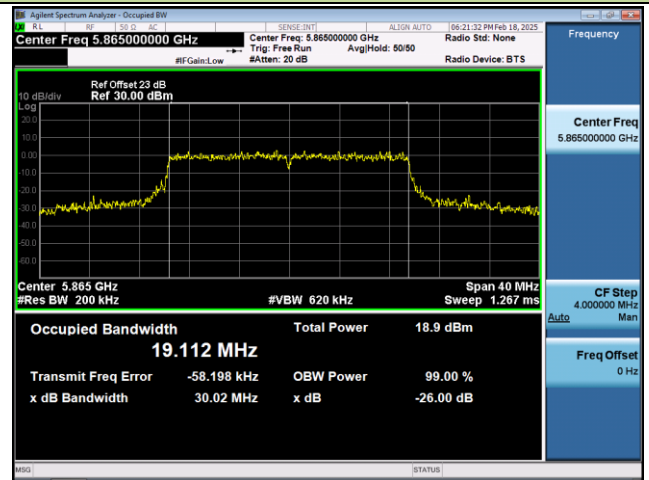


802.11be-EHT20 26dB Bandwidth & 99% Bandwidth

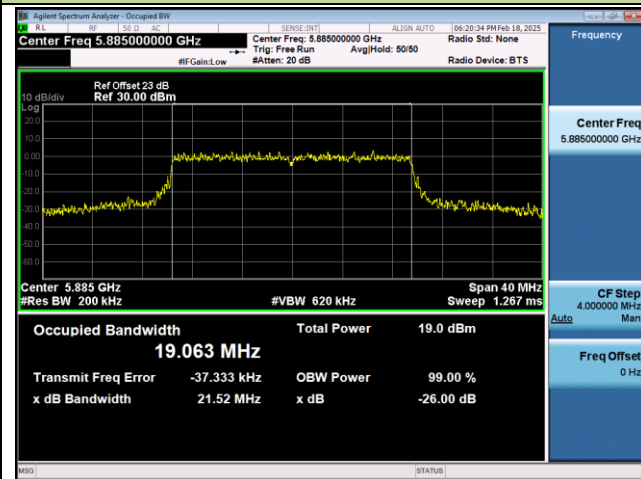
Channel 169 (5845MHz)



Channel 173 (5865MHz)



Channel 177 (5885MHz)

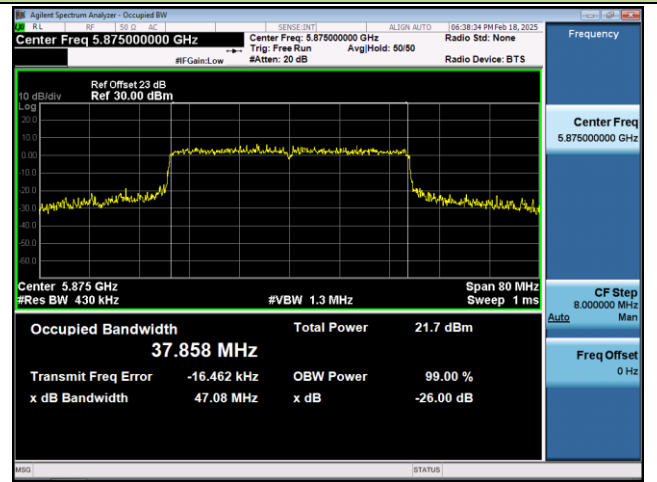


802.11be-EHT40 26dB Bandwidth & 99% Bandwidth

Channel 167 (5835MHz)

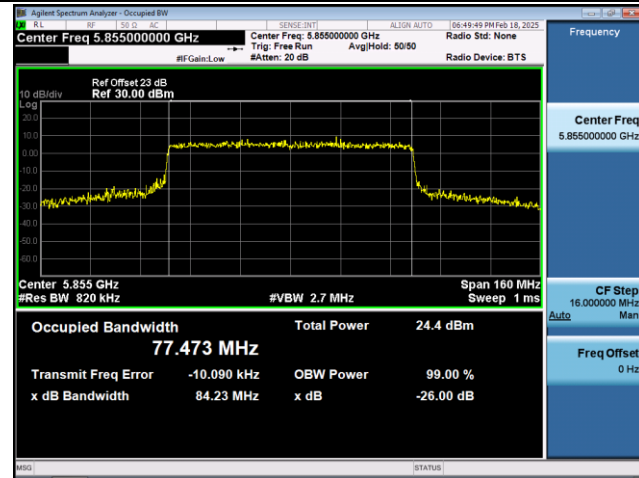


Channel 175 (5875MHz)



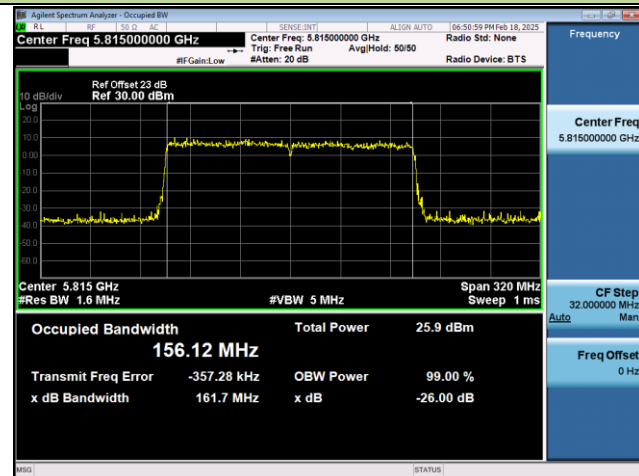
802.11be-EHT80 26dB Bandwidth & 99% Bandwidth

Channel 171 (5855MHz)



802.11be-EHT160 26dB Bandwidth & 99% Bandwidth

Channel 163 (5815MHz)



7.3. 6dB Bandwidth Measurement

7.3.1. Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

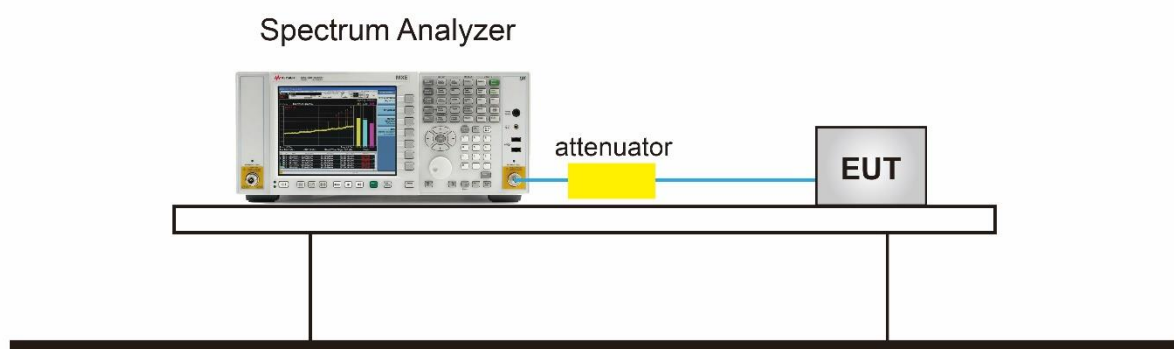
7.3.2. Test Procedure used

KDB 789033 D02v02r01- Section C.2

7.3.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW $3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.3.4. Test Setup



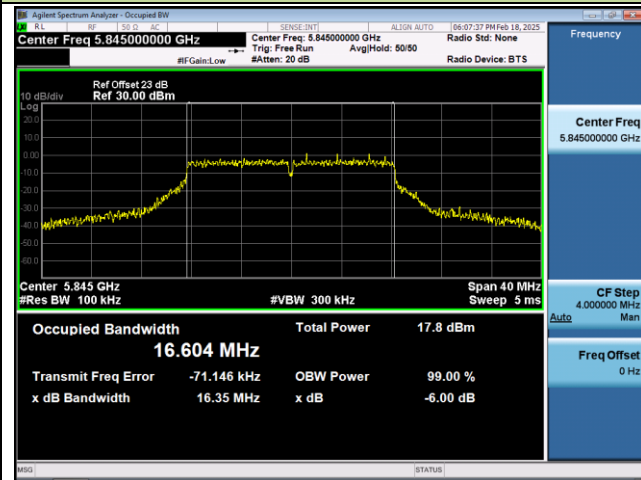
7.3.5.TestResult

Product	BE6500 Dual-Band Wi-Fi 7 Gaming Router	Test Engineer	Peter
Test Site	SR6	Test Date	2025/2/18

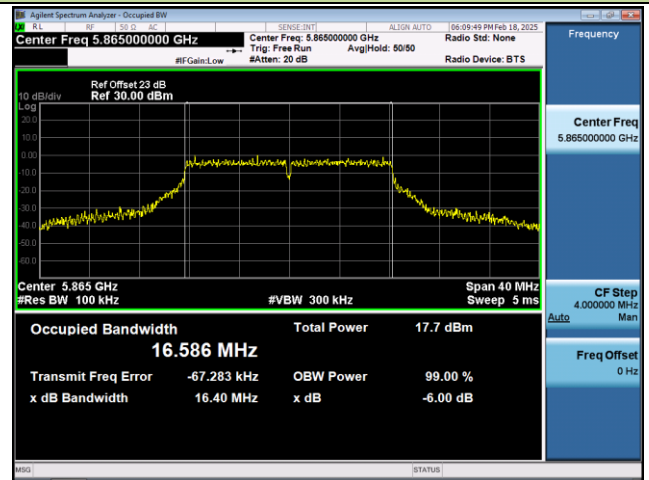
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Ant 1						
802.11a	6Mbps	169	5845	16.350	≥ 0.5	Pass
802.11a	6Mbps	173	5865	16.400	≥ 0.5	Pass
802.11a	6Mbps	177	5885	16.330	≥ 0.5	Pass
802.11ac-VHT20	MCS0	169	5845	17.590	≥ 0.5	Pass
802.11ac-VHT20	MCS0	173	5865	17.580	≥ 0.5	Pass
802.11ac-VHT20	MCS0	177	5885	17.600	≥ 0.5	Pass
802.11ac-VHT40	MCS0	167	5835	36.390	≥ 0.5	Pass
802.11ac-VHT40	MCS0	175	5875	36.440	≥ 0.5	Pass
802.11ac-VHT80	MCS0	171	5855	76.100	≥ 0.5	Pass
802.11ac-VHT160	MCS0	163	5815	155.900	≥ 0.5	Pass
802.11ax-HE20	MCS0	169	5845	19.030	≥ 0.5	Pass
802.11ax-HE20	MCS0	173	5865	18.840	≥ 0.5	Pass
802.11ax-HE20	MCS0	177	5885	18.850	≥ 0.5	Pass
802.11ax-HE40	MCS0	167	5835	37.500	≥ 0.5	Pass
802.11ax-HE40	MCS0	175	5875	37.450	≥ 0.5	Pass
802.11ax-HE80	MCS0	171	5855	76.430	≥ 0.5	Pass
802.11ax-HE160	MCS0	163	5815	156.100	≥ 0.5	Pass
802.11be-EHT20	MCS0	169	5845	18.920	≥ 0.5	Pass
802.11be-EHT20	MCS0	173	5865	18.940	≥ 0.5	Pass
802.11be-EHT20	MCS0	177	5885	18.910	≥ 0.5	Pass
802.11be-EHT40	MCS0	167	5835	37.350	≥ 0.5	Pass
802.11be-EHT40	MCS0	175	5875	36.980	≥ 0.5	Pass
802.11be-EHT80	MCS0	171	5855	76.610	≥ 0.5	Pass
802.11be-EHT160	MCS0	163	5815	155.700	≥ 0.5	Pass

802.11a 6dB Bandwidth

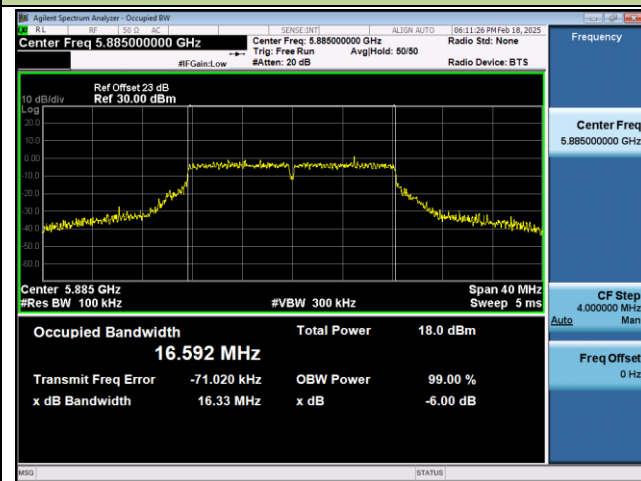
Channel 169 (5845MHz)



Channel 173 (5865MHz)

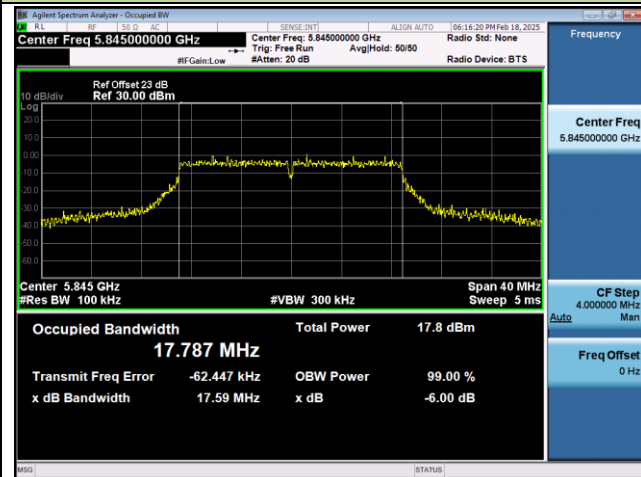


Channel 177 (5885MHz)

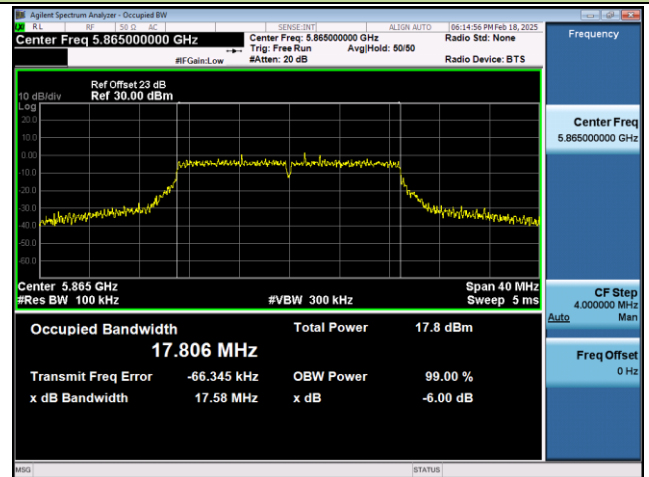


802.11ac-VHT20 6dB Bandwidth

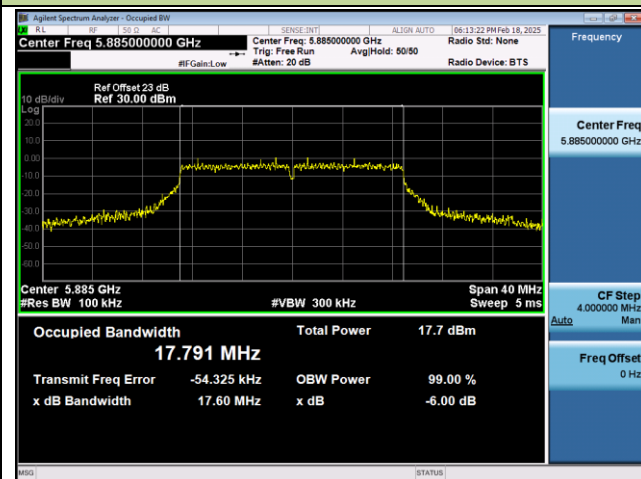
Channel 169 (5845MHz)



Channel 173 (5865MHz)



Channel 177 (5885MHz)

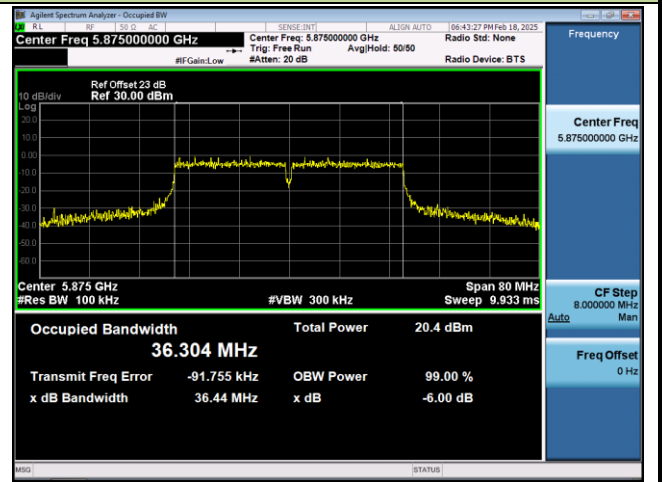


802.11ac-VHT40 6dB Bandwidth

Channel 167 (5835MHz)

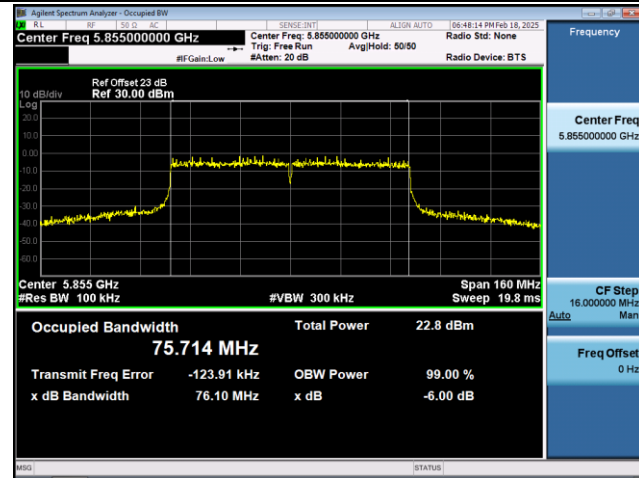


Channel 175 (5875MHz)



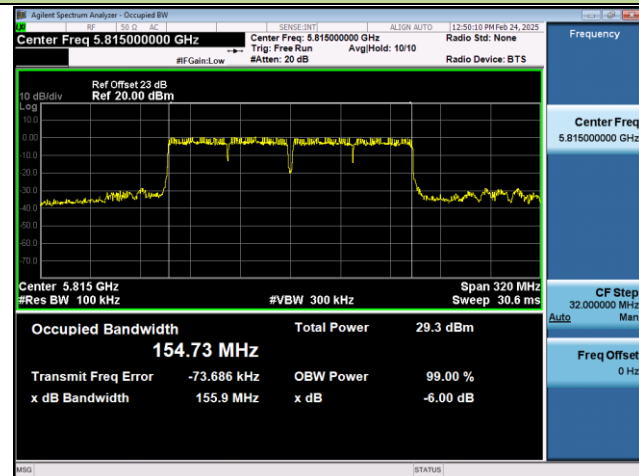
802.11ac-VHT80 6dB Bandwidth

Channel 171 (5855MHz)



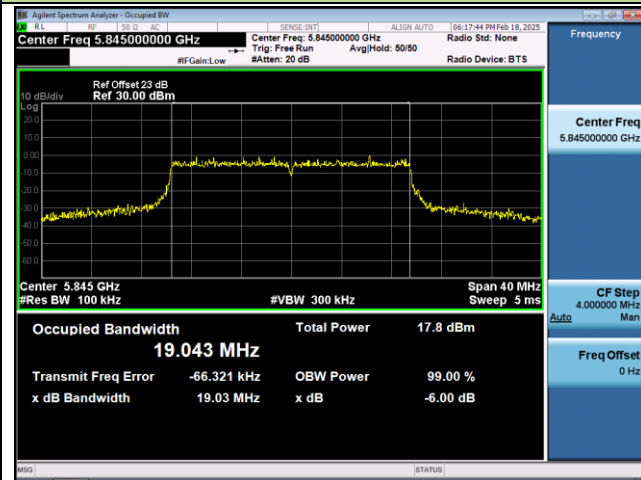
802.11ac-VHT160 6dB Bandwidth

Channel 163 (5815MHz)

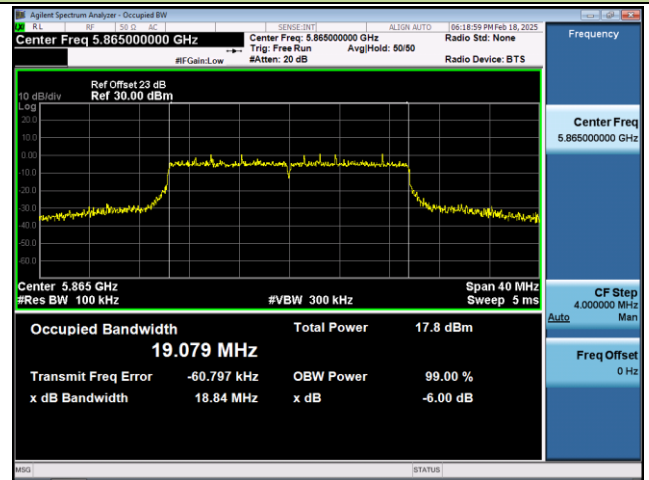


802.11ax-HE20 6dB Bandwidth

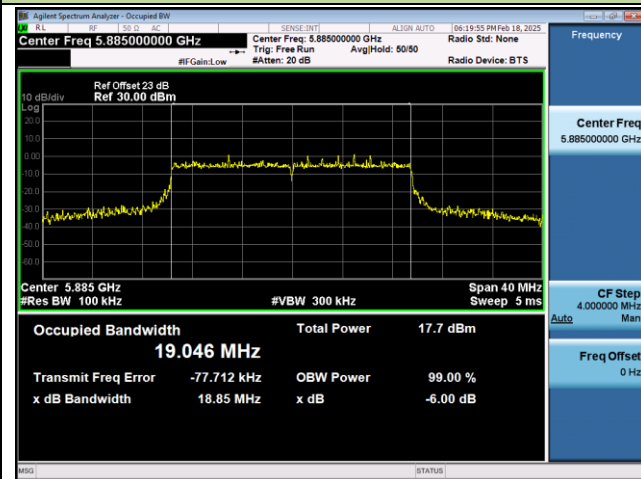
Channel 169 (5845MHz)



Channel 173 (5865MHz)

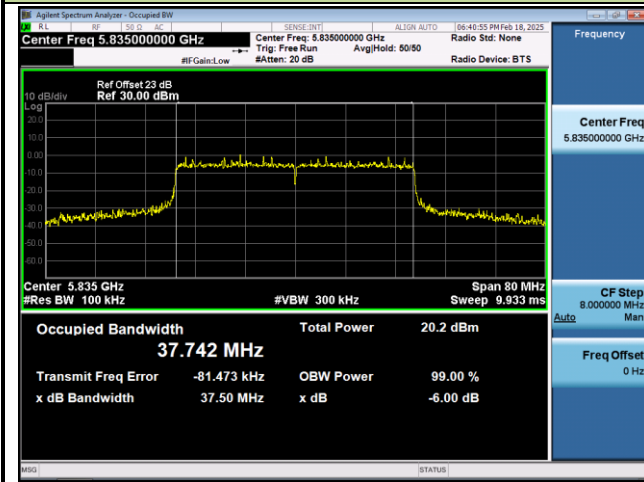


Channel 177 (5885MHz)



802.11 ax-HE40 6dB Bandwidth

Channel 167 (5835MHz)



Channel 175 (5875MHz)

