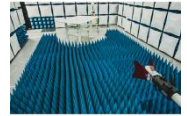




ELEMENT MATERIALS TECHNOLOGY

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<http://www.element.com>



MEASUREMENT REPORT FCC PART 15.247 / ISED RSS-247 Bluetooth (HDR)

Applicant Name:

Apple Inc.
One Apple Park Way
Cupertino, CA 95014
United States

Date of Testing:

09/15/2025 - 11/12/2025

Test Report Issue Date:

1/23/2026

Test Site/Location:

Element Materials Technology, Morgan Hill, CA, USA

Test Report Serial No.:

1C2509100081-07-R3.BCG

FCC ID:

BCGA3461

IC:

579C-A3461

APPLICANT:

Apple Inc.

Application Type:

Certification

Model/HVIN:

A3461

EUT Type:

Tablet Device

Max. RF Output Power:

99.083 mW (19.96 dBm) Peak Conducted

Frequency Range:

2404 – 2476MHz

FCC Classification:

Digital Transmission System (DTS)

FCC Rule Part(s):

Part 15 Subpart C (15.247)

ISED Specification:

RSS-247 Issue 4

Test Procedure(s):

ANSI C63.10:2020 + Cor. 1:2023 + C63.10a:2024 + Errata to
C63.10a:2024, KDB 558074 D01 v05r02

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 ANSI C63.10:2020 + Cor. 1:2023 + C63.10a:2024 + Errata to C63.10a:2024 and KDB 558074 D01 v05r02. Test results reported herein relate only to the item(s) tested.

This revised Test Report (S/N: 1C2509100081-07-R3.BCG) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose accordingly.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

RJ Ortanez
Executive Vice President



FCC ID: BCGA3461 IC: 579C-A3461	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Revision Summary

Revision	Date	Comments	Revised By
-	12/17/2025	Initial Release	WKR007077
R1	12/24/2025	Addressed Client's comments for ISED ID & Section 7.4	WKR017014
R2	01/08/2026	Addressed TCB comments in Section 2.2, 7.2 ,7.4, 7.5, and 7.8	WKR007111
R3	1/23/2026	Addressed TCB comments in sections 7.4 & 7.5	WKR016833

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1.0 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.

1.2 Element Materials Technology Test Location

These measurement tests were conducted at the Element Materials Technology facility located at 18855 Adams Court, Morgan Hill, CA 95037. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

1.3 Test Facility / Accreditations

Measurements were performed at Element Materials Technology located in Morgan Hill, CA 95037, U.S.A.

- Element Materials Technology is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.02 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- Element Washington DC LLC TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- Element Materials Technology facility is a registered (22831) test laboratory with the site description on file with ISED.
- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreements (MRAs).

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Tablet Device FCC ID: BCGA3461, IC: 579C-A3461**. The data found in this test report was taken with the EUT operating in Bluetooth HDR mode. While in HDR mode, the Bluetooth transmitter hops pseudo-randomly between 73 channels.

Test Device Serial No.: GTXJ5DDQJ6, FCXW3FN0FT, DLXHKM0001N00013YY, DLXHKM0001L00013YY

2.2 Device Capabilities

This device contains the following capabilities:

802.11b/g/n/ax/be WLAN, 802.11a/n/ac/ax/be UNII (5GHz and 6GHz), 802.15.4, Bluetooth (1x, EDR, LE, HDR, HDT), Narrowband (NB) UNII (5GHz and 6GHz), WPT.

This device supports BT Beamforming.

This device supports channel puncturing and channel bandwidth reduction.

HDR		HDT	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
01	2404	01	2404
:	:	:	:
38	2441	37	2440
:	:	:	:
73	2476	73	2476

Table 2-1. Bluetooth HDR Frequency / Channel Operations

This device is capable of operating in hopping and non-hopping mode. The EUT can hop between 73 different channels in the 2400 – 2483.5MHz band.

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Group	Mode	Data Rate (Mbps)	Modulation	Bandwidth (MHz)
1	HDR4	4	Pi/4-DQPSK	2
2	HDR8	8	Pi/4-DQPSK	4
3	HDRPS2	2	OQPSK	2
	XHDRPS2	2		
4	HDRPM4	4	OQPSK	4
	HDRPM6	6		
	HDRPM8	8		
	XHDRPM4	4		
	XHDRPM6	6		
	XHDRPM8	8		
5	HDRPM12	12	16QAM	4
	HDRPM16	16		
	XHDRPM12	12		
	XHDRPM16	16		
6	HDT2	2	Pi/4-QPSK	2
	HDT3	3		
7	HDT4	4	8PSK	2
8	HDT6	6	16QAM	2
	HDT8	8		

Table 2-2. Bluetooth HDR/HDT Configuration

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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, and detector = peak per the guidance of Section 6.0 b) of KDB 558074 D01 v05r02 and ANSI C63.10:2020 + Cor. 1:2023 + C63.10a:2024 + Errata to C63.10a:2024. 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:

HDR/HDT Mode		Antenna WF7b		Antenna WF2b		TxBF	
		Duty Cycle [%]	DCCF [dB]	Duty Cycle [%]	DCCF [dB]	Duty Cycle [%]	DCCF [dB]
HDR4	ePA	77.750	1.093	77.947	1.082	77.750	1.093
	iPA	77.750	1.093	77.947	1.082	77.750	1.093
HDR8	ePA	96.850	0.139	97.230	0.122	77.965	1.081
	iPA	96.850	0.139	97.230	0.122	77.965	1.081
HDRPS2	ePA	92.130	0.356	92.003	0.362	91.981	0.363
	iPA	92.130	0.356	92.003	0.362	91.981	0.363
XHDRPS2	ePA	98.878	0.049	98.311	0.074	98.924	0.047
	iPA	98.878	0.049	98.311	0.074	98.924	0.047
XHDRPM6	ePA	86.636	0.623	86.238	0.643	86.636	0.623
	iPA	86.636	0.623	86.238	0.643	86.636	0.623
XHDRPM8	ePA	91.854	0.369	91.854	0.369	91.854	0.369
	iPA	91.854	0.369	91.854	0.369	91.854	0.369
HDRPM16	ePA	89.392	0.487	89.598	0.477	89.805	0.467
	iPA	89.392	0.487	89.598	0.477	89.805	0.467
XHDRPM16	ePA	87.781	0.566	87.700	0.570	87.660	0.572
	iPA	87.781	0.566	87.700	0.570	87.660	0.572
HDT2	ePA	96.183	0.169	96.427	0.158	96.006	0.177
	iPA	96.183	0.169	96.427	0.158	96.006	0.177
HDT8	ePA	89.681	0.473	89.372	0.488	88.797	0.516
	iPA	89.681	0.473	89.372	0.488	88.797	0.516

Table 2-3. Measured Duty Cycles

TxBF = Antenna WF7b + Antenna WF2b

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This device supports simultaneous transmission operations, which allows multiple transmitters to transmit simultaneously on the same antenna. The table below shows all configurations possible.

Antenna	Simultaneous Tx Config	Bluetooth 2.4GHz	Thread	WLAN	NB UNII	WIFI 5GHz	WIFI 6GHz
		BDR, EDR, LE HDR, HDT	802.15.4	802.11 b/g/n/ax/be	BDR, EDR, LE HDR, HDT	802.11 a/n/ac/ax/be	802.11 a/ax/be
Ant WF7b	Config 1	✓	✗	✗	✗	✓	✗
Ant WF7b	Config 2	✓	✗	✗	✗	✗	✓
Ant WF7b	Config 3	✗	✓	✗	✗	✓	✗
Ant WF7b	Config 4	✗	✓	✗	✗	✗	✓
Ant WF7b	Config 5	✗	✗	✓	✓	✗	✗
Ant WF7b	Config 6	✗	✗	✓	✗	✓	✗
Ant WF7b	Config 7	✗	✗	✓	✗	✗	✓

Table 2-4. Simultaneous Transmission Configurations

✓ = Support; ✗ = Not Support

Note:

All the above simultaneous transmission configurations have been tested and the worst-case configuration was found to be Config 1 and reported in RF Bluetooth and RF UNII 5GHz OFDM test reports.

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2.3 Antenna Description

The following antenna gains provided by manufacturer were used for testing.

Frequency [GHz]	Antenna Gain (dBi)	
	Antenna WF7b	Antenna WF2b
2.4	1.2	0.4

Table 2-5. Highest Antenna Gain

2.4 Test Support Equipment

1	Apple MacBook Pro w/AC/DC Adapter	Model: Model:	A2141 A2166	S/N: S/N:	C02H604EQ05D C4H042705ZNPM0WA6
2	Apple USB-C Cable	Model:	Spartan	S/N:	GXK1336018XKTR024
3	USB-C Cable w/ AC Adapter	Model: Model:	A2795 A2305	S/N: S/N:	DWH80115BK826GV19 C4H95160004PF4F4V
4	Apple Pencil	Model:	A2538	S/N:	KJ26TCFXJW
5	DC Power Supply	Model:	KPS3010D	S/N:	N/A

Table 2-6. Test Support Equipment List

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2.5 Test Configuration

The EUT was tested per the guidance of ANSI C63.10:2020 + Cor. 1:2023 + C63.10a:2024 + Errata to C63.10a:2024 and KDB 558074 D01 v05r02. ANSI C63.10:2020 + Cor. 1:2023 + C63.10a:2024 + Errata to C63.10a:2024 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing. See Sections 3.2 for AC line conducted emissions test setups, 3.3 for radiated emissions test setups, and 7.2, 7.3, 7.4, 7.5, 7.6, and 7.7 for antenna port conducted emissions test setups.

There are two vendors of the WiFi/Bluetooth radio modules, variant 1 and variant 2. Both radio modules have the same mechanical outline, same on-board antenna matching circuit, identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances. The worst case configuration was found between the two variants. The EUT was also investigated with and without charger.

For emissions from 1GHz – 18GHz, low, mid, and high channels were tested with highest power and worst case configuration. The emissions below 1GHz and above 18GHz were tested with the highest transmitting power and the worst case channel were reported.

7.7

The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report.

For AC line conducted and radiated test below 1GHz, following configuration were investigated and the worst case was reported.

- EUT powered by AC/DC adaptor via USB-C cable with wire charger
- EUT powered by host PC via USB-C cable with wire charger

BT rates have been categorized into multiple groups (see Table 2-2), with each group evaluated and only the worst-case rate per group was reported.

For conducted emissions, the following are the worst case BT rates for testing:

1. HDR4
2. HDR8
3. HDRPS2
4. XHDRPM6
5. HDRPM16
6. HDT2

For radiated band edge, the following are the worst case BT rates for testing:

1. HDR4
2. HDR8
3. XHDRPS2
4. XHDRPM8
5. XHDRPM16
6. HDT8

For radiated spurious emission, the following are the worst case BT rates for testing:

1. HDR4

2.6 Software and Firmware

The test was conducted with firmware version 23D40 installed on the EUT.

2.7 EMI Suppression Device(s)/Modifications

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

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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10:2020 + Cor. 1:2023 + C63.10a:2024 + Errata to C63.10a:2024) and the guidance provided in KDB 558074 D01 v05r02 were used in the measurement of the EUT.

Deviation from measurement procedure.....None

3.2 AC Line Conducted Emissions

The line-conducted facility is located inside a 7m x 3.66m x 2.7m shielded enclosure. The shielded enclosure is manufactured by AP Americas. The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 65-5. A 1m x 1.5m 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, 50Ω/50μH 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. The external power line filter is an EPCOS 2X60A Power Line Filter (100dB Attenuation, 14kHz-18GHz) and the two EPCOs 2X48A filters (100dB Minimum Insertion Loss, 14kHz – 10GHz). 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. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to 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 groundplane. Power cables for support equipment were routed down to the second LISN while ensuring that the 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 spectrum analyzer and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The spectrum was scanned from 150kHz to 30MHz with a spectrum analyzer. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is 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.

Line conducted emissions test results are shown in Section 7.10. Automated test software was used to perform the AC line conducted emissions testing. Automated measurement software utilized is Rohde & Schwarz EMC32, Version 10.50.40.

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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. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. 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 above 1GHz. An 80cm tall test table made of Styrodur is placed on top of the turn table. For measurements above 1GHz, an additional Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

Per KDB 414788 D01 v01r01, radiated emission test sites other than open-field test sites (e.g., shielded anechoic chambers), may be employed for emission measurements below 30MHz if characterized so that the measurements correspond to those obtained at an open-field test site. To determine test site equivalency, a reference sample transmitting at 149kHz was measured on an open field test site (asphalt with no ground plane) and then measured in the 3m semi-anechoic chamber. A calibrated 60cm loop antenna was rotated about its vertical axis while the reference device was rotated through the X, Y and Z axis in order to capture the worst case level. A maximum deviation of 2.77dB at 149kHz was measured when comparing the 3 meter semi-anechoic chamber to the open field site.

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 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 was placed on top of the 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, mode of operation, 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.

3.4 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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4.0 ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 antenna(s) of the EUT are **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

The EUT complies with the requirement of §15.203.

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5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.23-2012. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty ($\pm$ dB)
Conducted Bench Top Measurements	2.00
Line Conducted Disturbance	1.88
Radiated Disturbance (<30MHz)	4.24
Radiated Disturbance (30MHz - 1GHz)	4.96
Radiated Disturbance (1 - 18GHz)	5.18
Radiated Disturbance (>18GHz)	5.18

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6.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance with the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	N9020A	MXA Signal Analyzer	7/7/2025	Biennial	7/7/2027	MY56470202
Anritsu	ML2496A	Power Meter	2/10/2025	Annual	2/10/2026	1306009
Anritsu	MA2411B	Pulse Power Sensor	2/10/2025	Annual	2/10/2026	1315051
Anritsu	MA2411B	Pulse Power Sensor	2/10/2025	Annual	2/10/2026	1339027
ATM	180-442-KF	20dB Nominal Gain Horn Antenna	3/24/2025	Annual	3/24/2026	T058601-02
ETS-Lindgren	3117	Double Ridged Guide Horn (1-18 GHz)	4/16/2025	Annual	4/16/2026	218555
Fairview Microwave/MCL	FMCA1975-36/BW-K10-2W44+	30MHz-40GHz RF Cable/Attenuator *	6/10/2025	Annual	6/10/2026	-
Keysight Technology	N9040B	UXA Signal Analyzer	6/9/2025	Annual	6/9/2026	MY57212015
Rohde & Schwarz	TS-PR18	Pre-Amplifier (1GHz - 18GHz)	8/6/2025	Annual	8/6/2026	101639
Rohde & Schwarz	FSW43	Spectrum Analyzer 2Hz to 43GHz	8/5/2025	Annual	8/5/2026	104093
Rohde & Schwarz	ESW44	EMI Test Receiver 2Hz to 44 GHz	5/13/2025	Annual	5/13/2026	101867
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	11/15/2024	Annual	11/15/2025	102326
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	10/14/2025	Annual	10/14/2026	102328
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	6/3/2025	Annual	6/3/2026	100052
Rohde & Schwarz	HFH2-Z2	Loop Antenna	5/12/2025	Annual	5/12/2026	100546
Rohde & Schwarz	ENV216	Two-Line V-Network	4/24/2025	Annual	4/24/2026	101364
Schwarzbeck	VULB 9162	Bilog Antenna (30MHz - 6GHz)	7/17/2025	Annual	7/17/2026	00302

Table 6-1. Test Equipment List

Note:

- For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
- * denotes passive equipment that have been internally verified/calibrated.

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7.0 TEST RESULTS

7.1 Summary

Company Name: Apple Inc.
 FCC ID: BCGA3461
 IC: 579C-A3461
 FCC Classification: Digital Transmission System (DTS)
 Number of Channels: 73

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	RSS-247 [6.3.1(a)]	6dB Bandwidth	> 500kHz	CONDUCTED	PASS	Section 7.3
2.1049	RSS-Gen [6.7]	Occupied Bandwidth	N/A		N/A	Section 7.2
15.247(b)(3)	RSS-247 [6.3.2]	Transmitter Output Power	< 1 Watt		PASS	Sections 7.4
15.247(e)	RSS-247 [6.3.1(b)]	Transmitter Power Spectral Density	< 8dBm / 3kHz Band		PASS	Section 7.5
15.247(d)	RSS-247 [6.6]	Band Edge / Out-of-Band Emissions	≥ 20dBc		PASS	Sections 7.6, 7.7
15.205 15.209	RSS-Gen [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 (RSS-Gen [8.9])	RADIATED	PASS	Sections 7.8, 7.9
15.207	RSS-Gen [8.8]	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 limits (RSS-Gen [8.8])	AC LINE CONDUCTED	PASS	Section 7.10

Table 7-1. Summary of Test Results

Notes:

- All modes of operation were investigated. The test results shown in the following sections represent the worst case emissions.
- 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.
- All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.
- For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is Element “Conducted Automation,” Version 1.5.0.
- For radiated testing, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is Element “Chamber Automation,” Version 3.6.1.

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7.2 99% Occupied Bandwidth

§2.1049; RSS-Gen [6.7]

Test Overview and Limit

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

ANSI C63.10:2020 + Cor. 1:2023 + C63.10a:2024 + Errata to C63.10a:2024 – Subclause 11.8.2 Option 2

KDB 558074 D01 v05r02 – Section 8.2

RSS-Gen [6.7]

Test Settings

1. The signal analyzers' automatic bandwidth measurement capability of the spectrum analyzer was used to perform the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Span = between 1.5x to 5x the OBW
3. RBW = in the range of 1- 5% of the OBW
4. VBW $\geq 3 \times$ RBW
5. Detector = Peak
6. Trace mode = max hold
7. Sweep = auto couple
8. The trace was allowed to stabilize
9. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-1. Test Instrument & Measurement Setup

Test Notes

All supported modulation, antenna (including TxBF mode) and power schemes have been tested on the unit and only worst case configuration is reported.

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7.2.1 Antenna WF7b

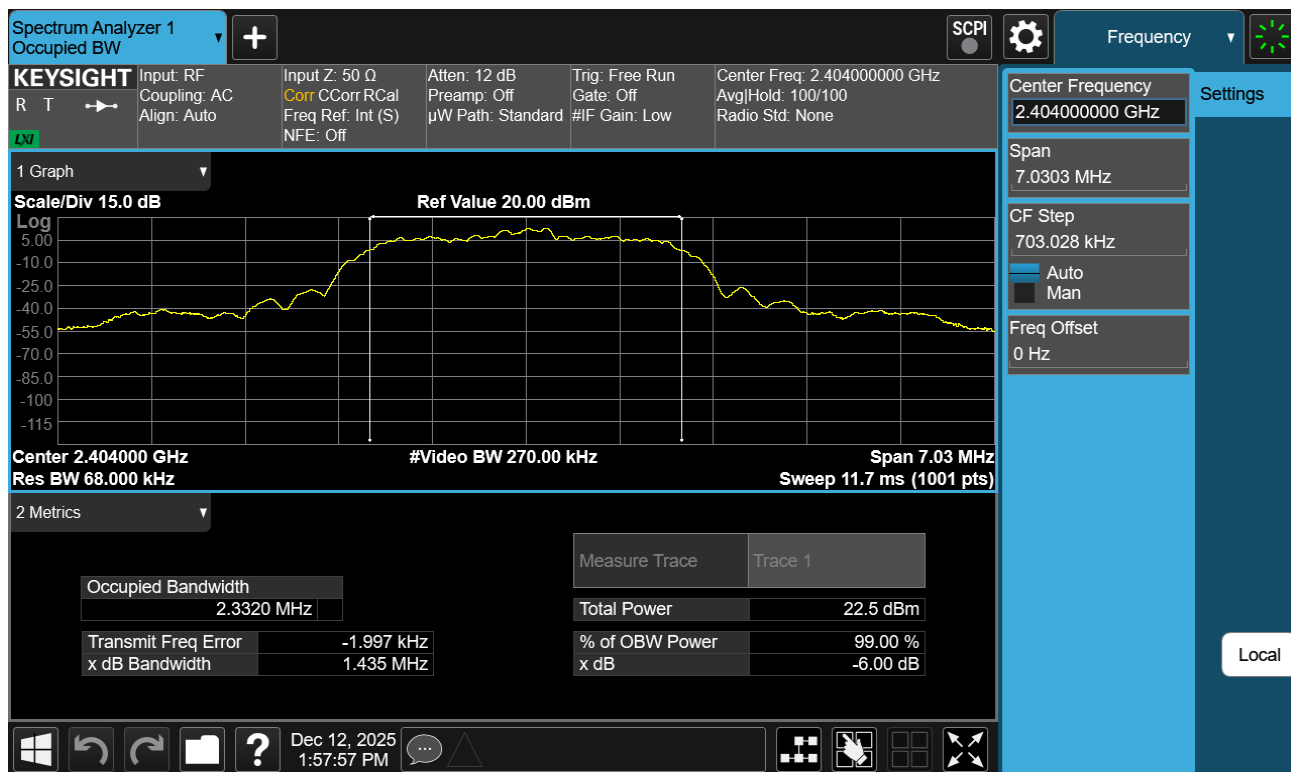
Frequency [MHz]	Mode	Power Scheme	Channel	Measured 99% Occupied Bandwidth [MHz]
2404	HDR4	ePA	1	2.33
2441	HDR4	ePA	38	2.34
2476	HDR4	ePA	73	2.33
2404	HDR8	ePA	1	4.67
2441	HDR8	ePA	38	4.68
2476	HDR8	ePA	73	4.68
2404	HDRPS2	ePA	1	2.37
2441	HDRPS2	ePA	38	2.38
2476	HDRPS2	ePA	73	2.38
2404	XHDRPM6	ePA	1	4.74
2441	XHDRPM6	ePA	38	4.74
2476	XHDRPM6	ePA	73	4.74
2404	HDRPM16	ePA	1	4.70
2441	HDRPM16	ePA	38	4.70
2476	HDRPM16	ePA	73	4.71
2404	HDT2	ePA	1	2.38
2440	HDT2	ePA	37	2.38
2476	HDT2	ePA	73	2.38

Table 7-2. 99% OBW Measurements Antenna WF7b

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Plot 7-1. 99% OBW Plot Antenna WF7b (Bluetooth (HDR4), 4Mbps, ePA – Ch. 1)

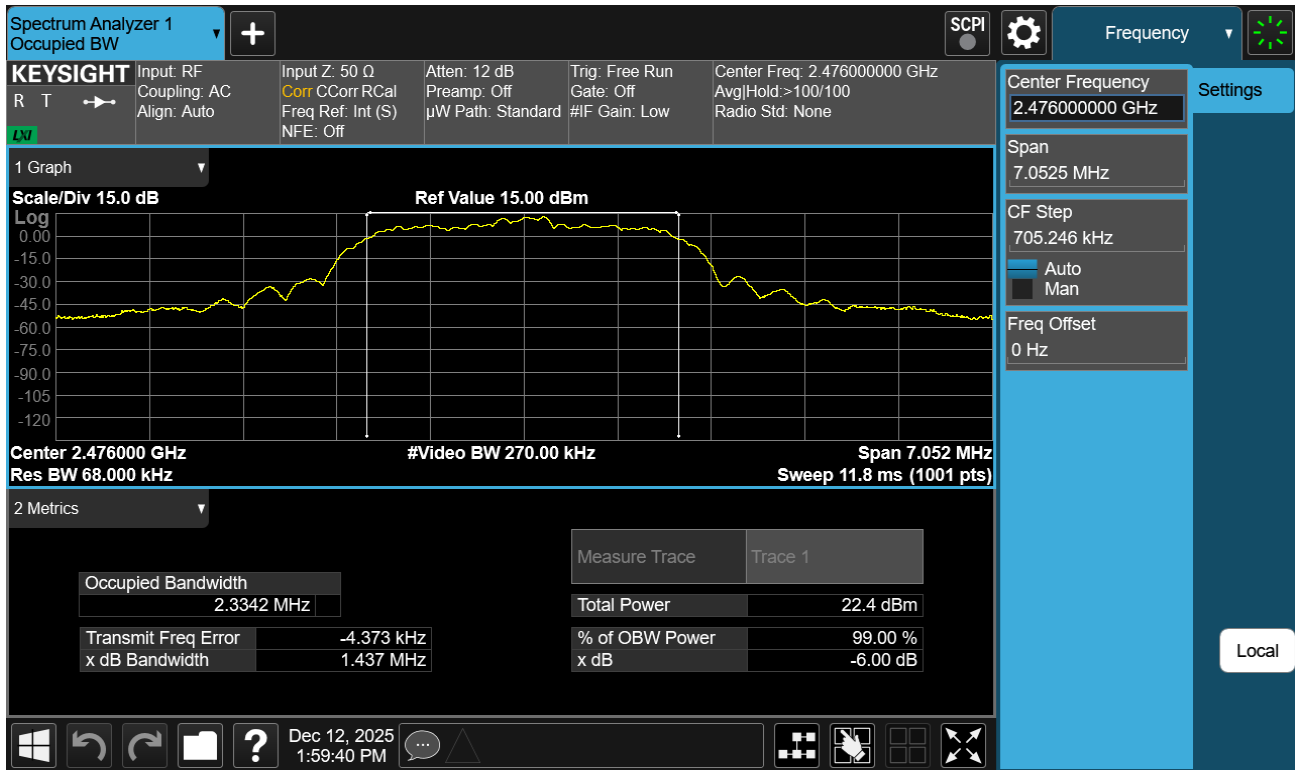


Plot 7-2. 99% OBW Plot Antenna WF7b (Bluetooth (HDR4), 4Mbps, ePA – Ch. 38)

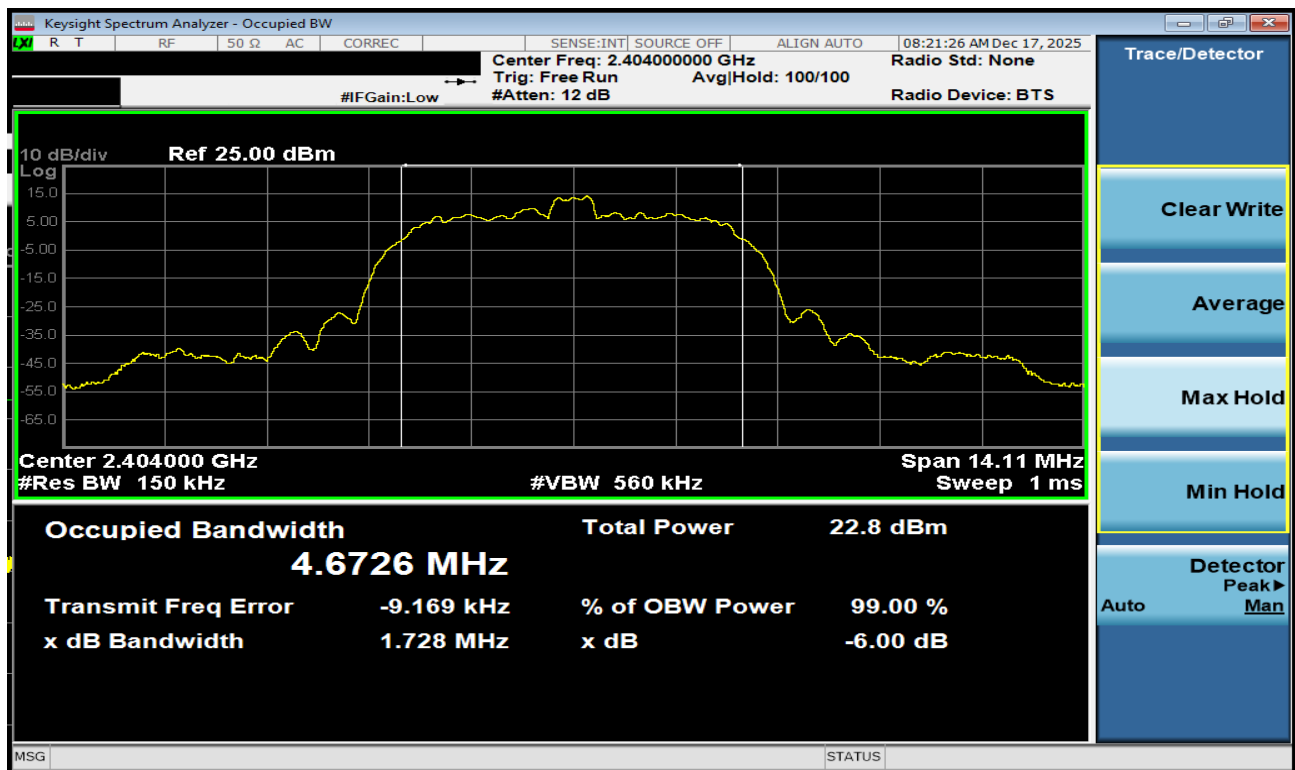
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-3. 99% OBW Plot Antenna WF7b (Bluetooth (HDR4), 4Mbps, ePA – Ch. 73)

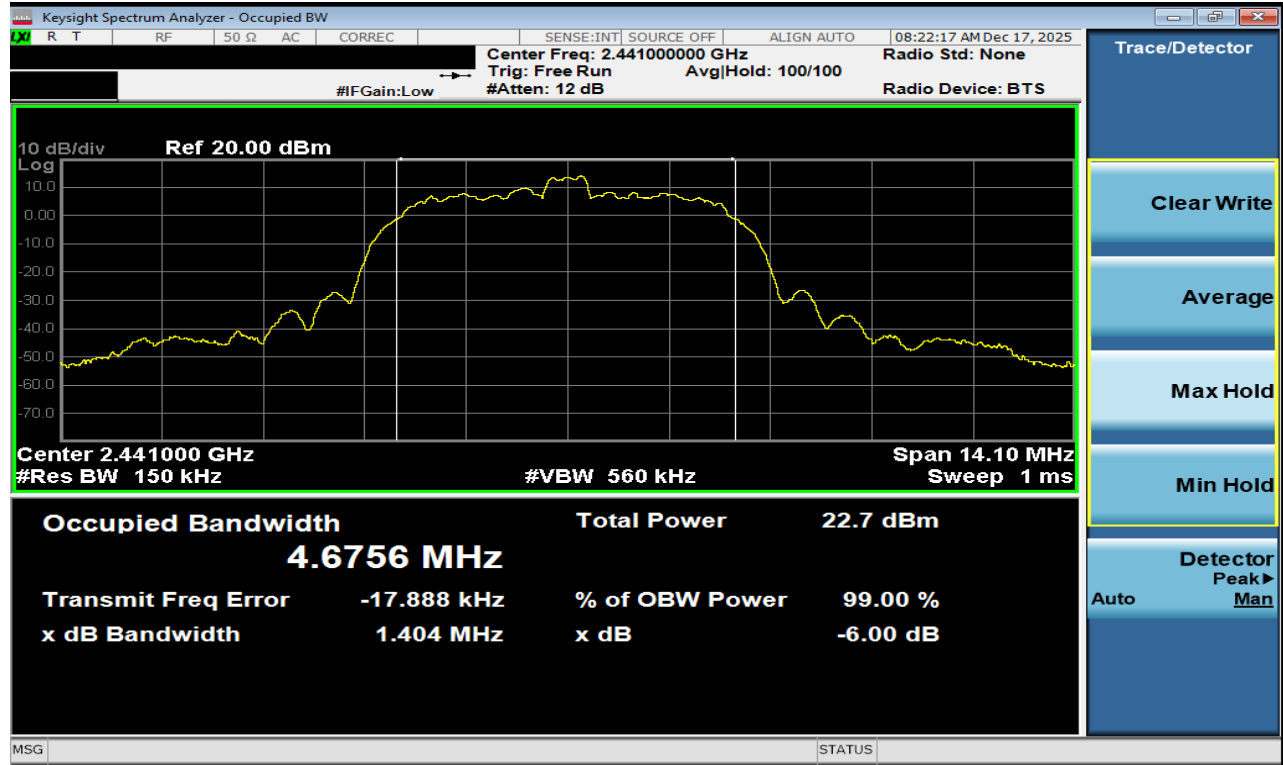


Plot 7-4. 99% OBW Plot Antenna WF7b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 1)

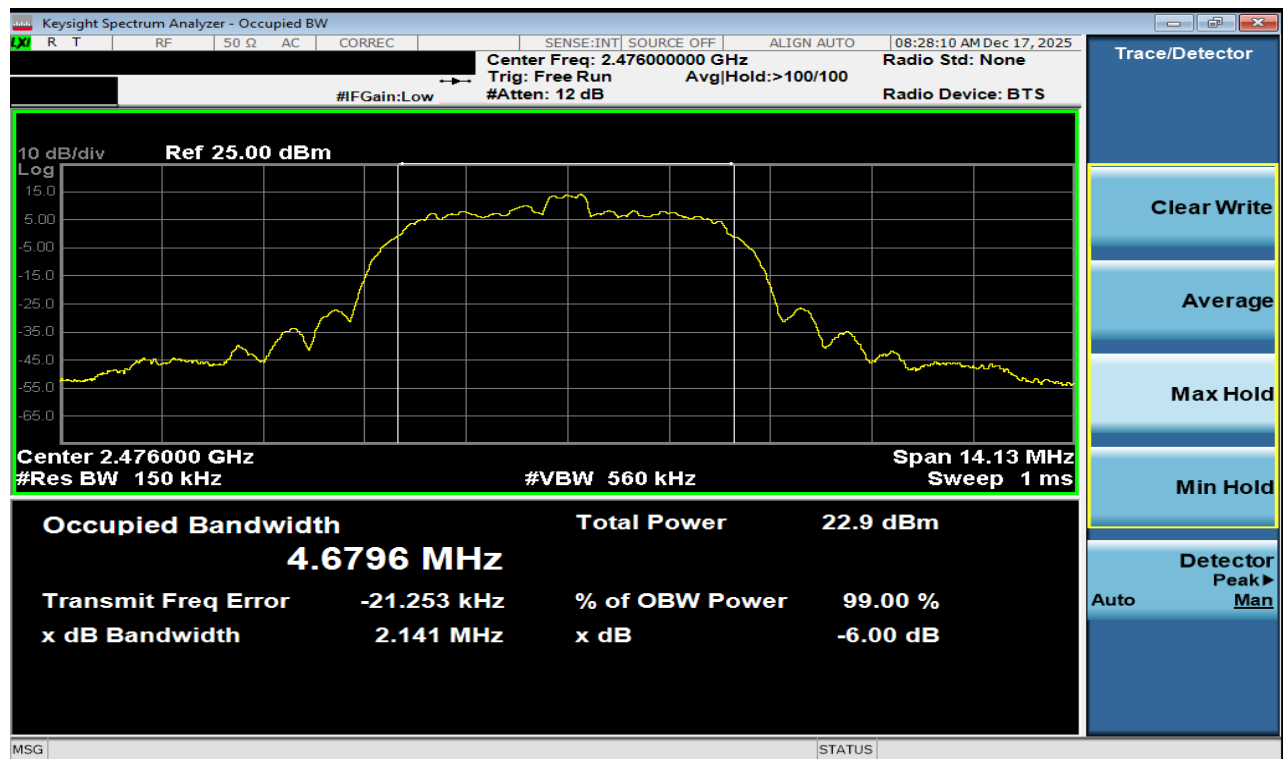
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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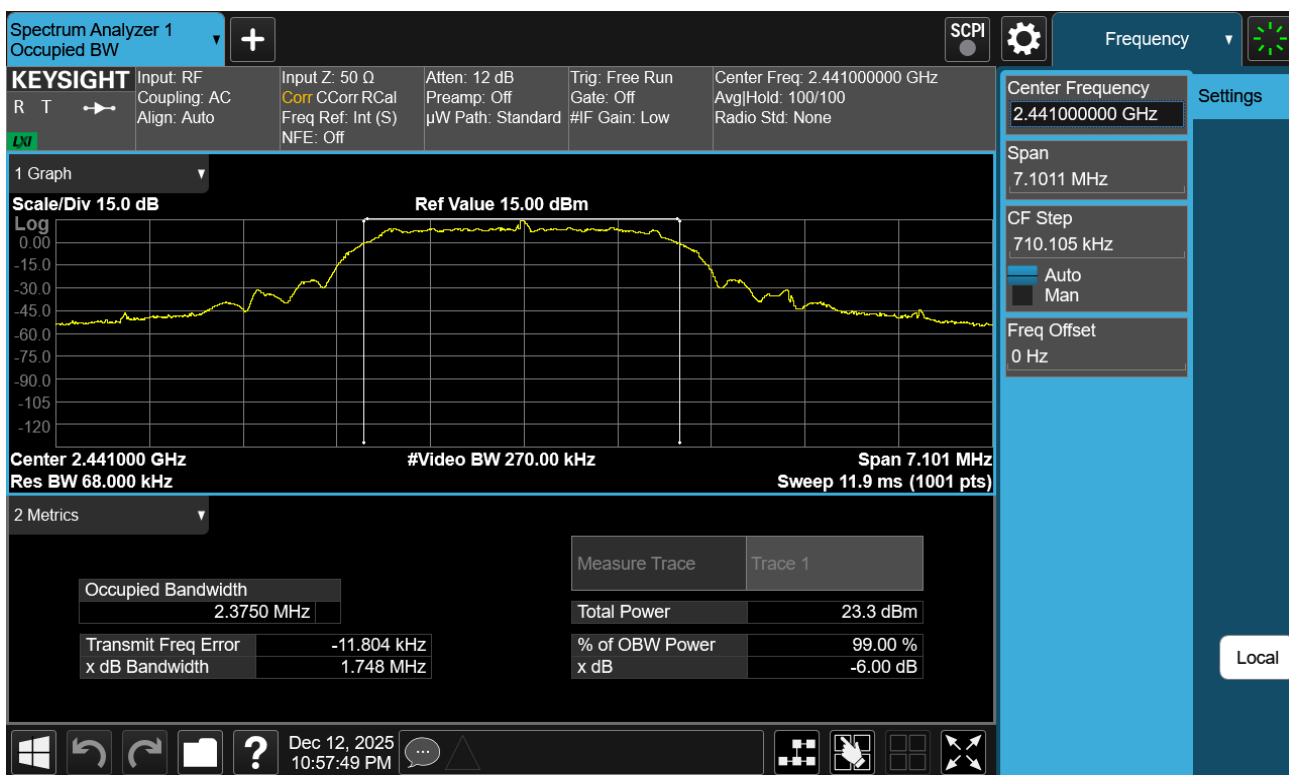
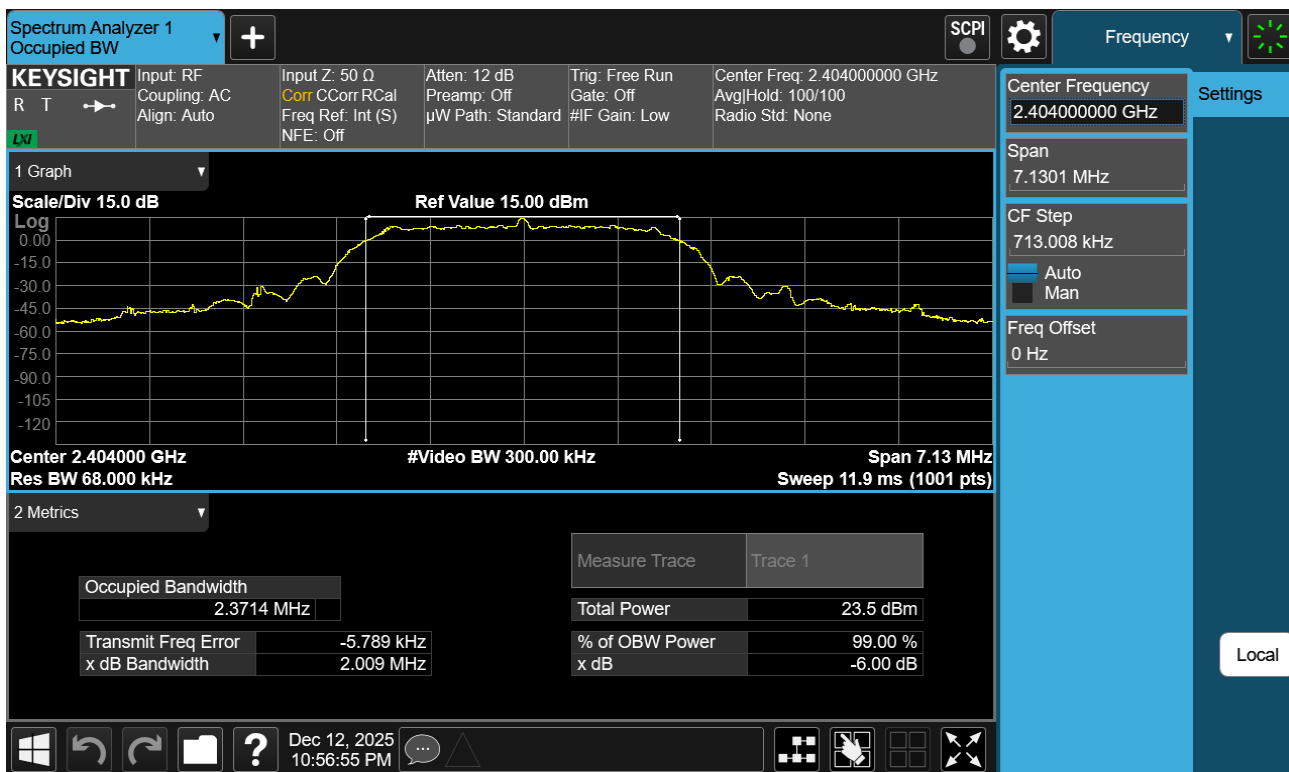


Plot 7-5. 99% OBW Plot Antenna WF7b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 38)



Plot 7-6. 99% OBW Plot Antenna WF7b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 73)

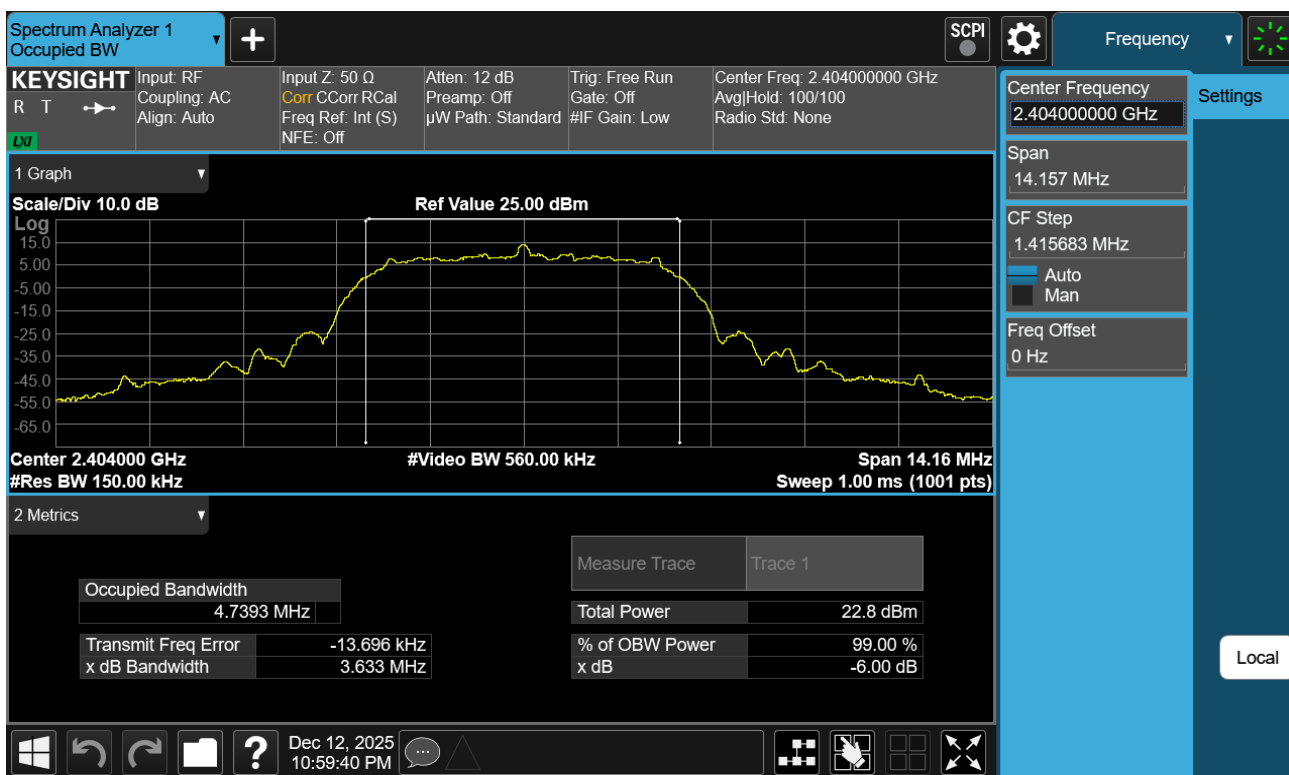
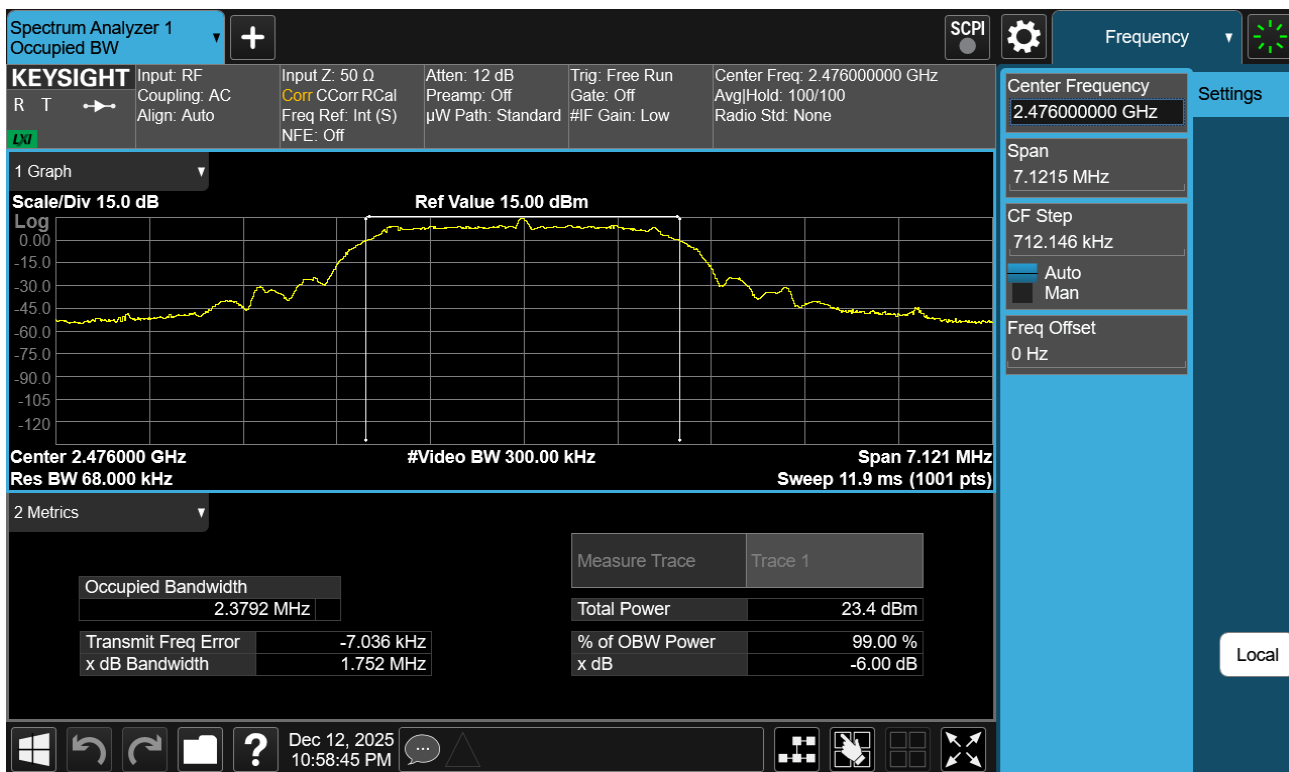
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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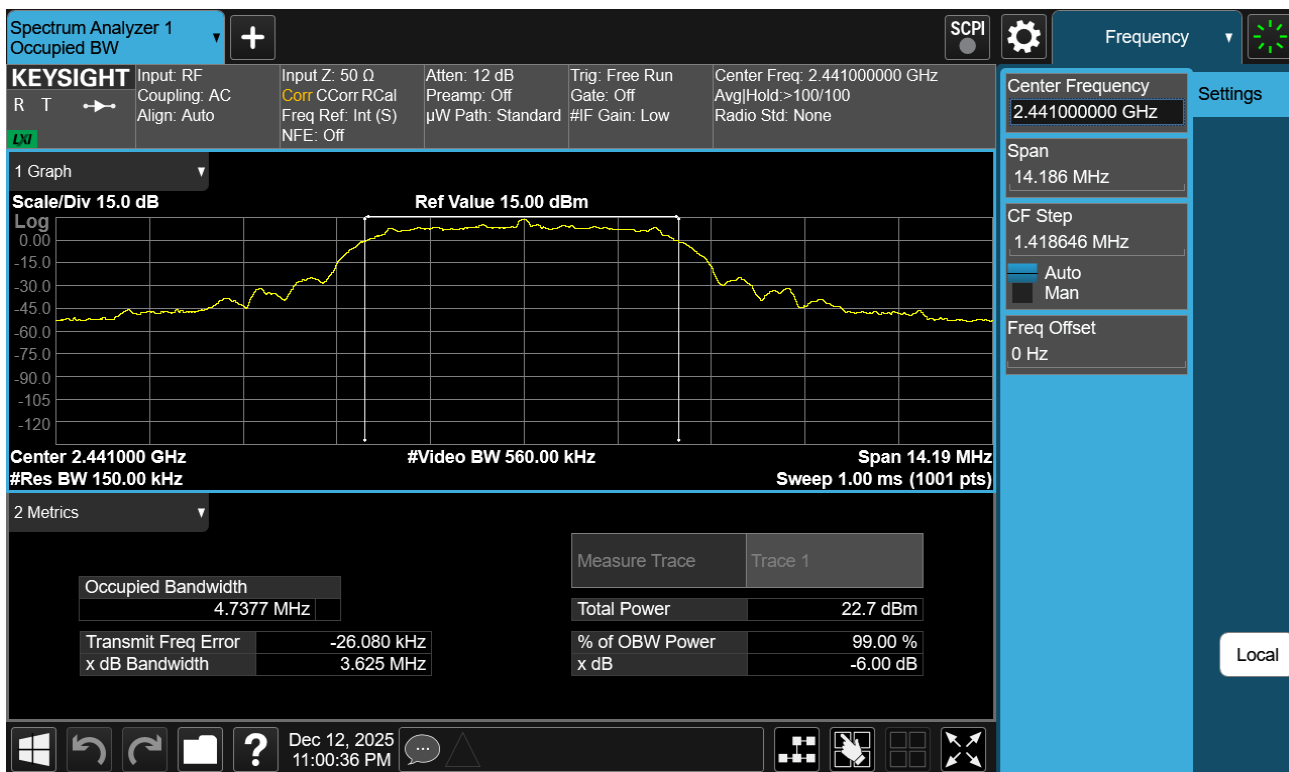
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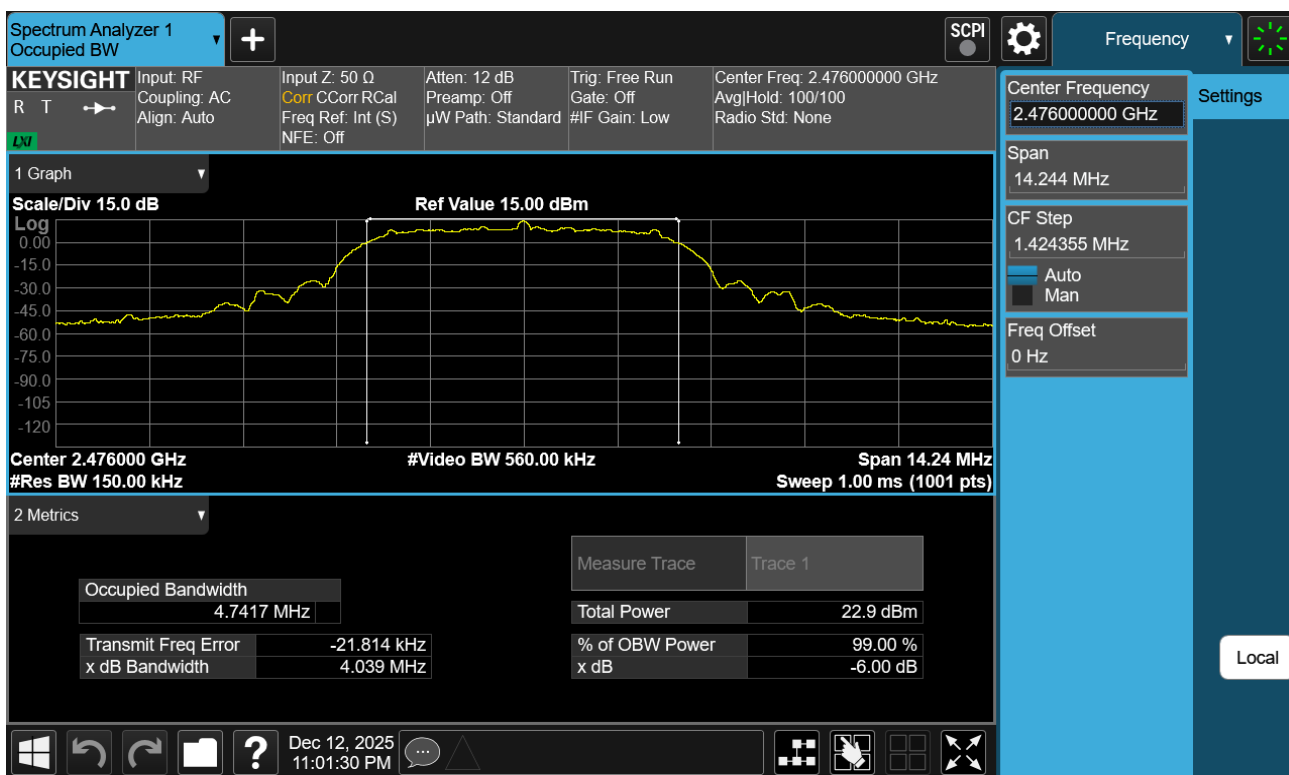
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-11. 99% OBW Plot Antenna WF7b (Bluetooth (XHDRPM6), 6Mbps, ePA – Ch. 38)

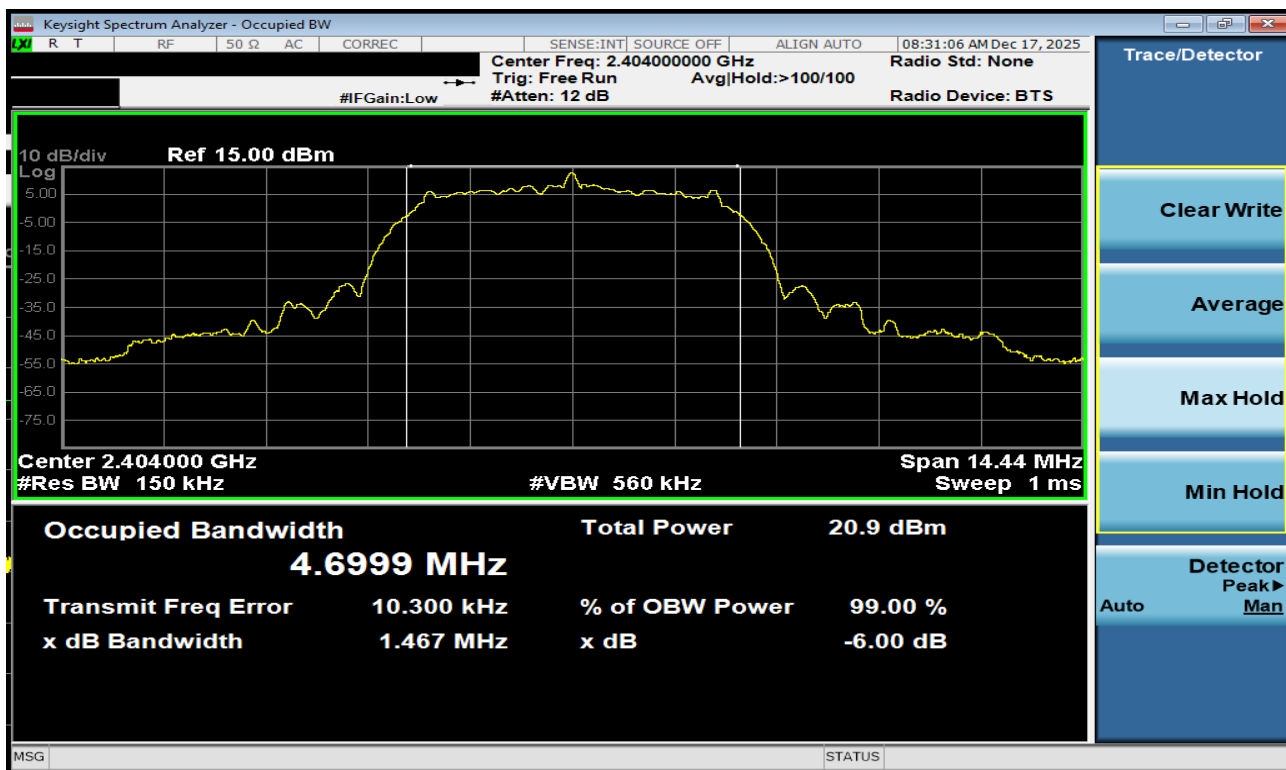


Plot 7-12. 99% OBW Plot Antenna WF7b (Bluetooth (XHDRPM6), 6Mbps, ePA – Ch. 73)

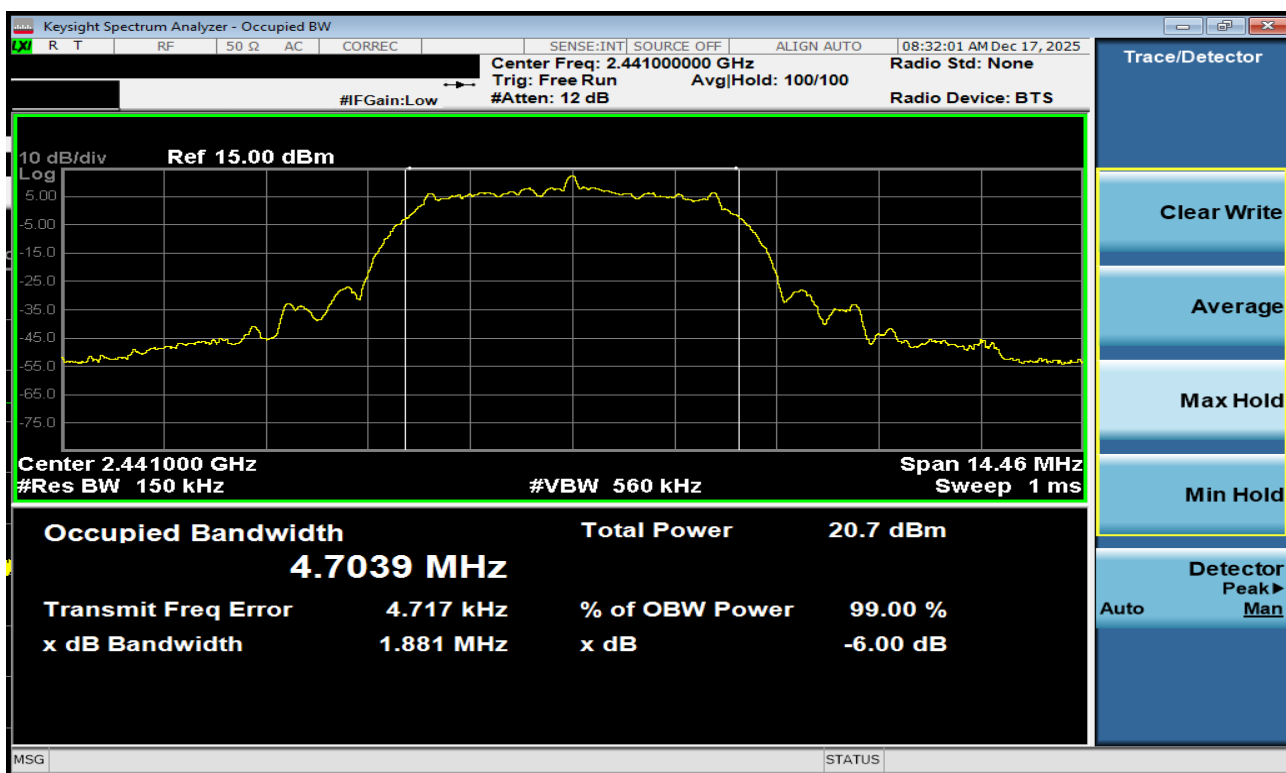
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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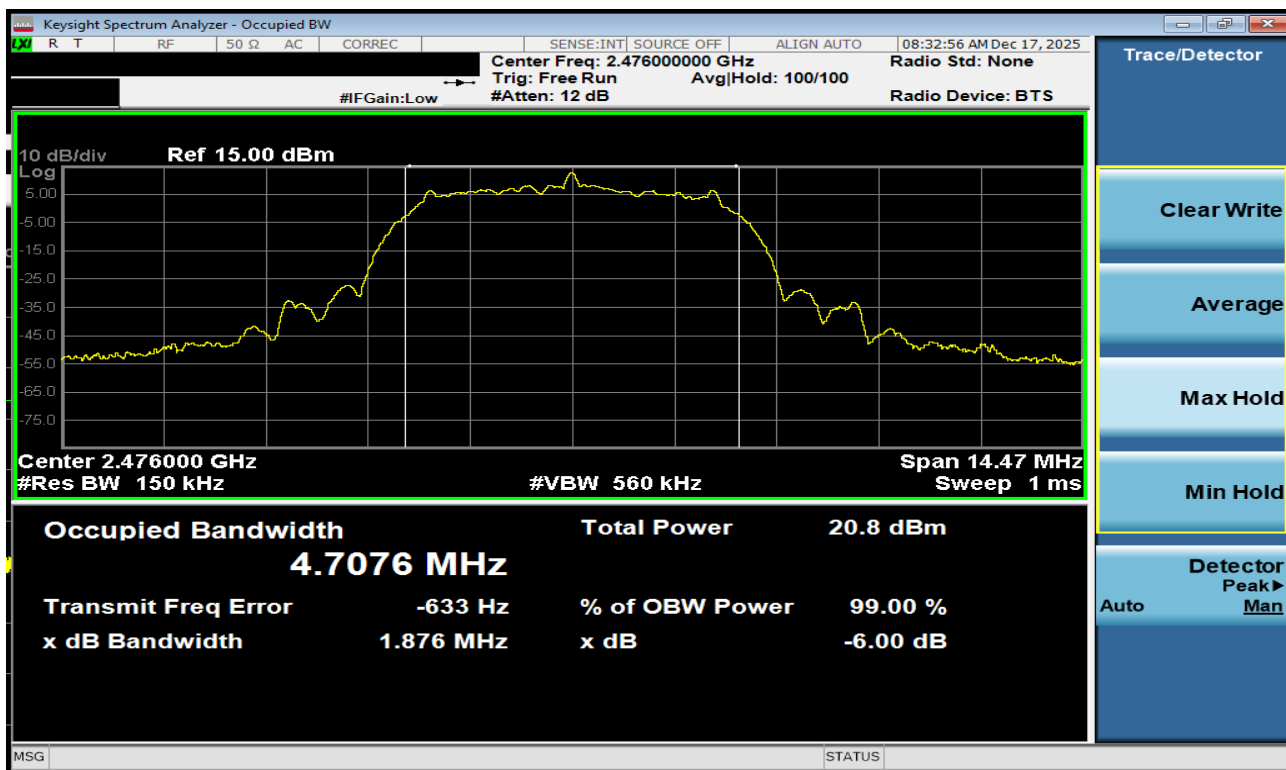
Plot 7-13. 99% OBW Plot Antenna WF7b (Bluetooth (HDRPM16), 16Mbps, ePA – Ch. 1)



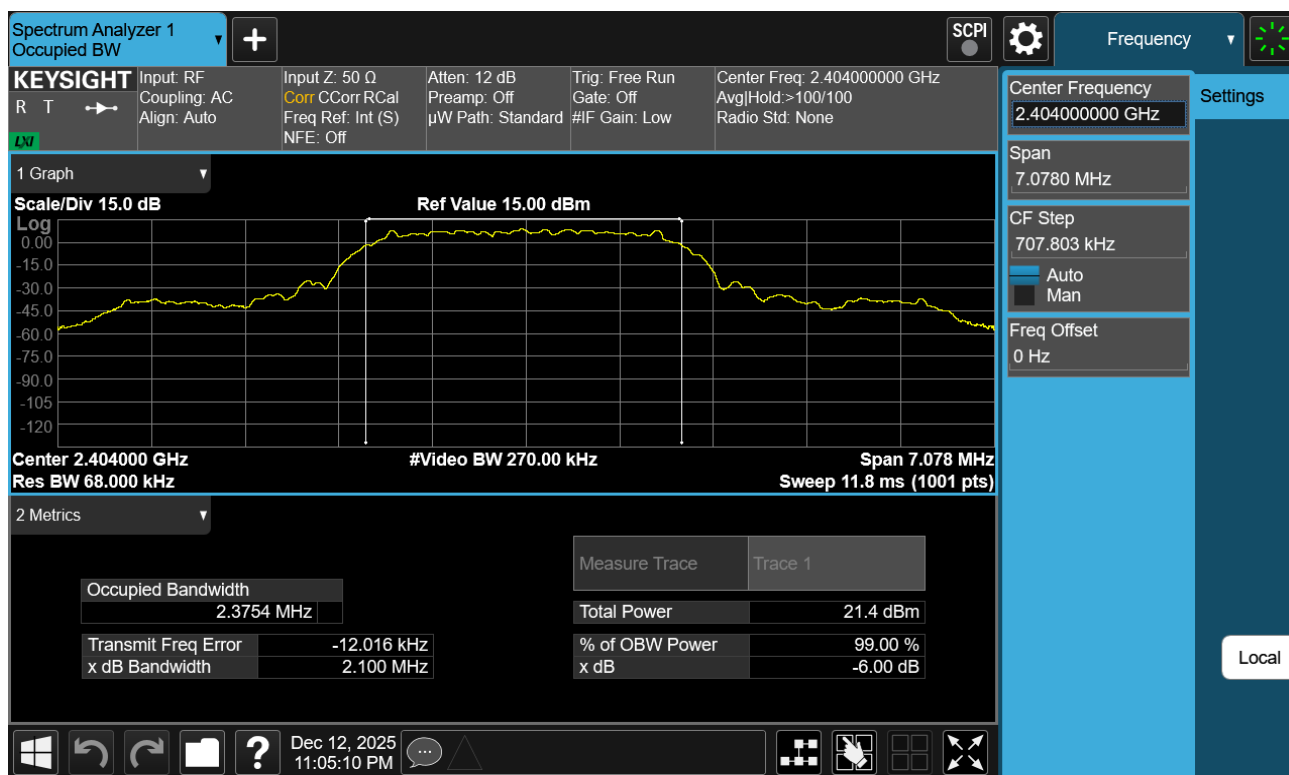
Plot 7-14. 99% OBW Plot Antenna WF7b (Bluetooth (HDRPM16), 16Mbps, ePA – Ch. 38)

FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-15. 99% OBW Plot Antenna WF7b (Bluetooth (HDRPM16), 16Mbps, ePA – Ch. 73)

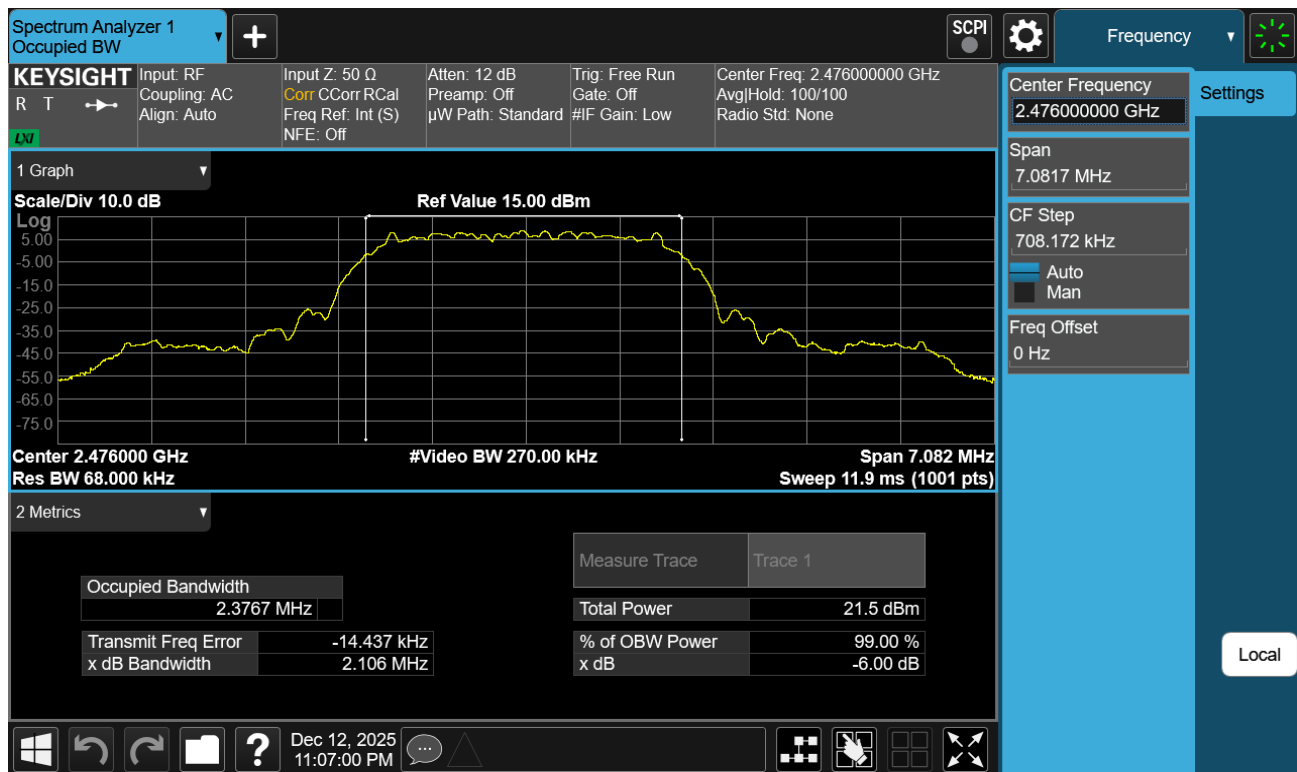


Plot 7-16. 99% OBW Plot Antenna WF7b (Bluetooth (HDT2), 2Mbps, ePA – Ch. 1)

FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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7.2.2 Antenna WF2b

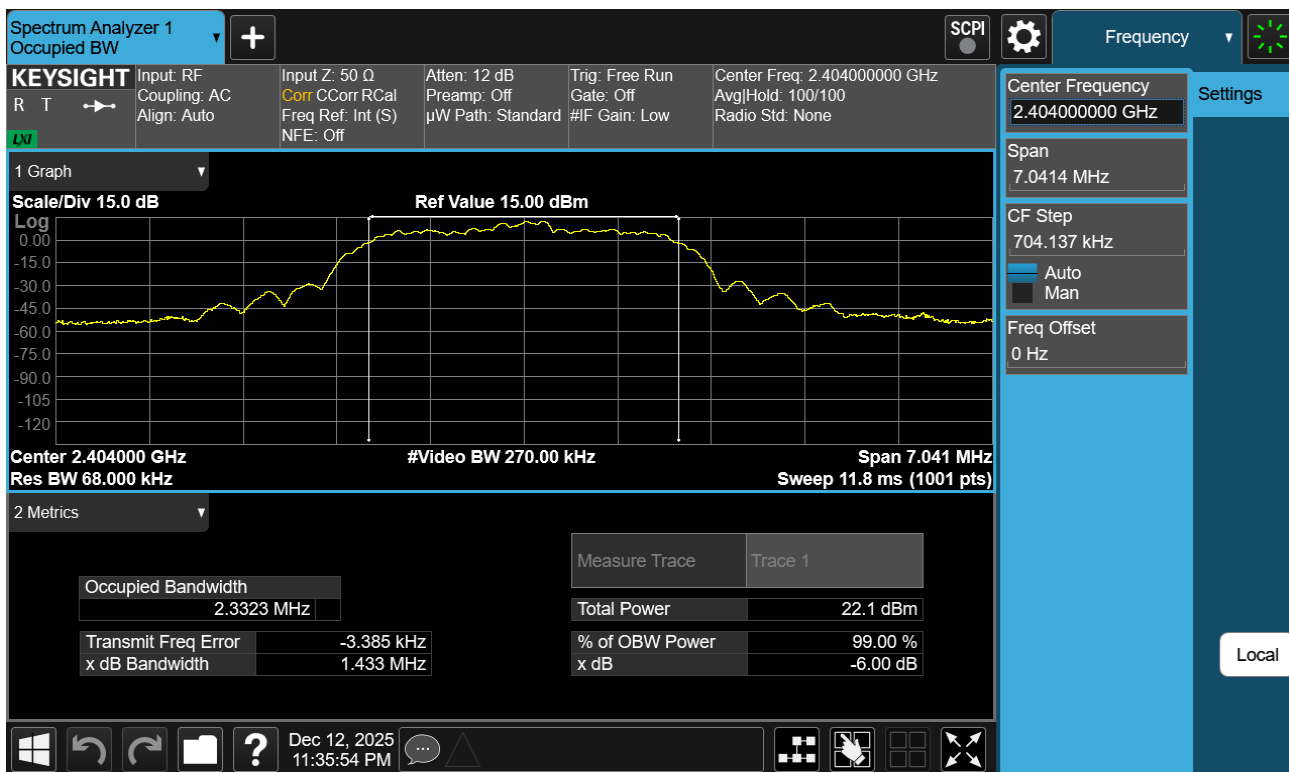
Frequency [MHz]	Mode	Power Scheme	Channel	Measured 99% Occupied Bandwidth [MHz]
2404	HDR4	ePA	1	2.33
2441	HDR4	ePA	38	2.33
2476	HDR4	ePA	73	2.33
2404	HDR8	ePA	1	4.67
2441	HDR8	ePA	38	4.68
2476	HDR8	ePA	73	4.68
2404	HDRPS2	ePA	1	2.38
2441	HDRPS2	ePA	38	2.38
2476	HDRPS2	ePA	73	2.38
2404	XHDRPM6	ePA	1	4.74
2441	XHDRPM6	ePA	38	4.75
2476	XHDRPM6	ePA	73	4.75
2404	HDRPM16	ePA	1	4.70
2441	HDRPM16	ePA	38	4.70
2476	HDRPM16	ePA	73	4.70
2404	HDT2	ePA	1	2.37
2440	HDT2	ePA	37	2.38
2476	HDT2	ePA	73	2.38

Table 7-3. 99% OBW Measurements Antenna WF2b

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Plot 7-19. 99% OBW Plot Antenna WF2b (Bluetooth (HDR4), 4Mbps, ePA – Ch. 1)

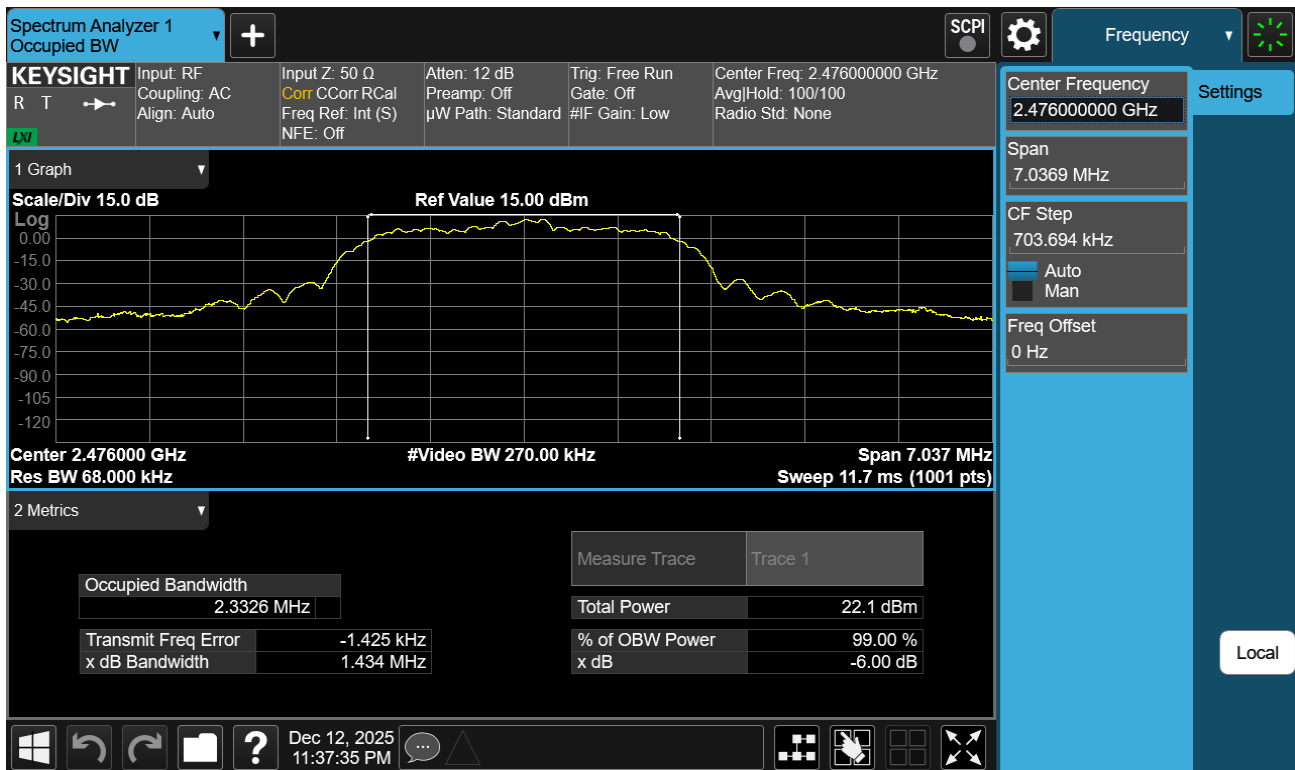


Plot 7-20. 99% OBW Plot Antenna WF2b (Bluetooth (HDR4), 4Mbps, ePA – Ch. 38)

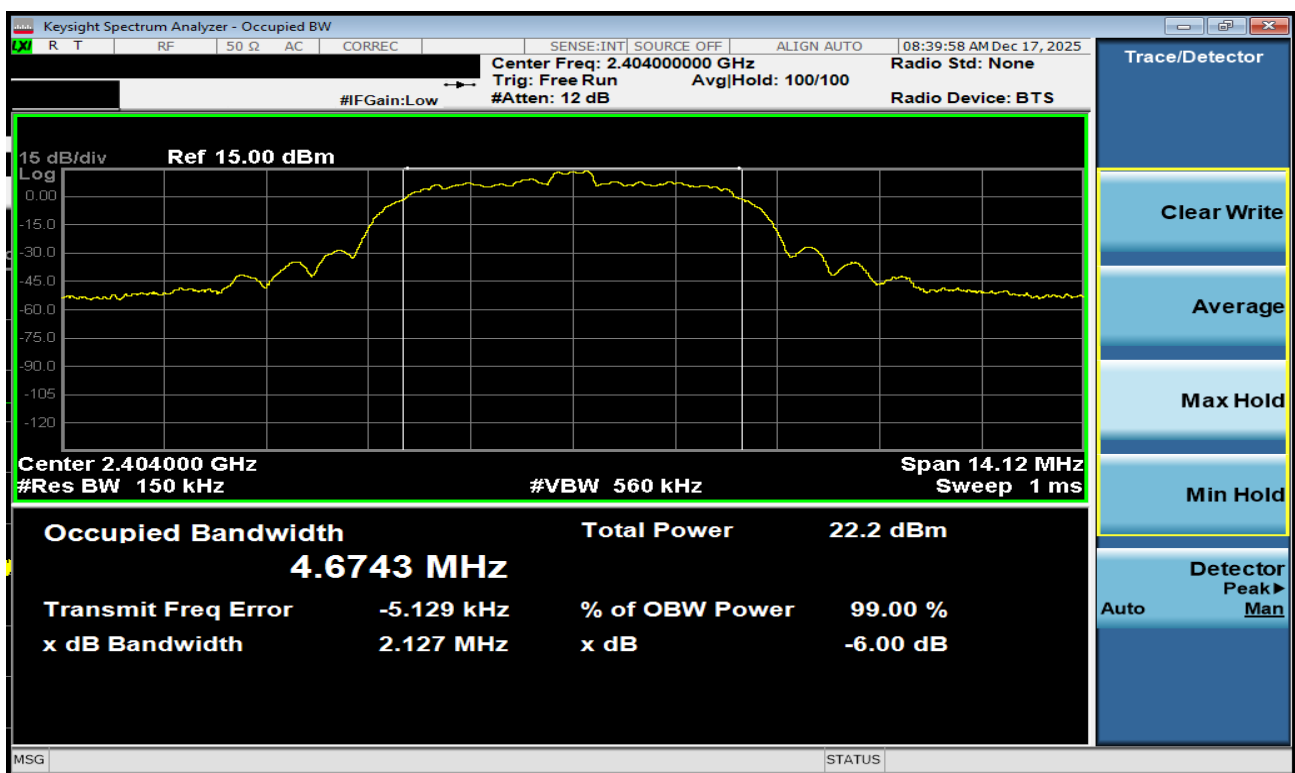
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-21. 99% OBW Plot Antenna WF2b (Bluetooth (HDR4), 4Mbps, ePA – Ch. 73)

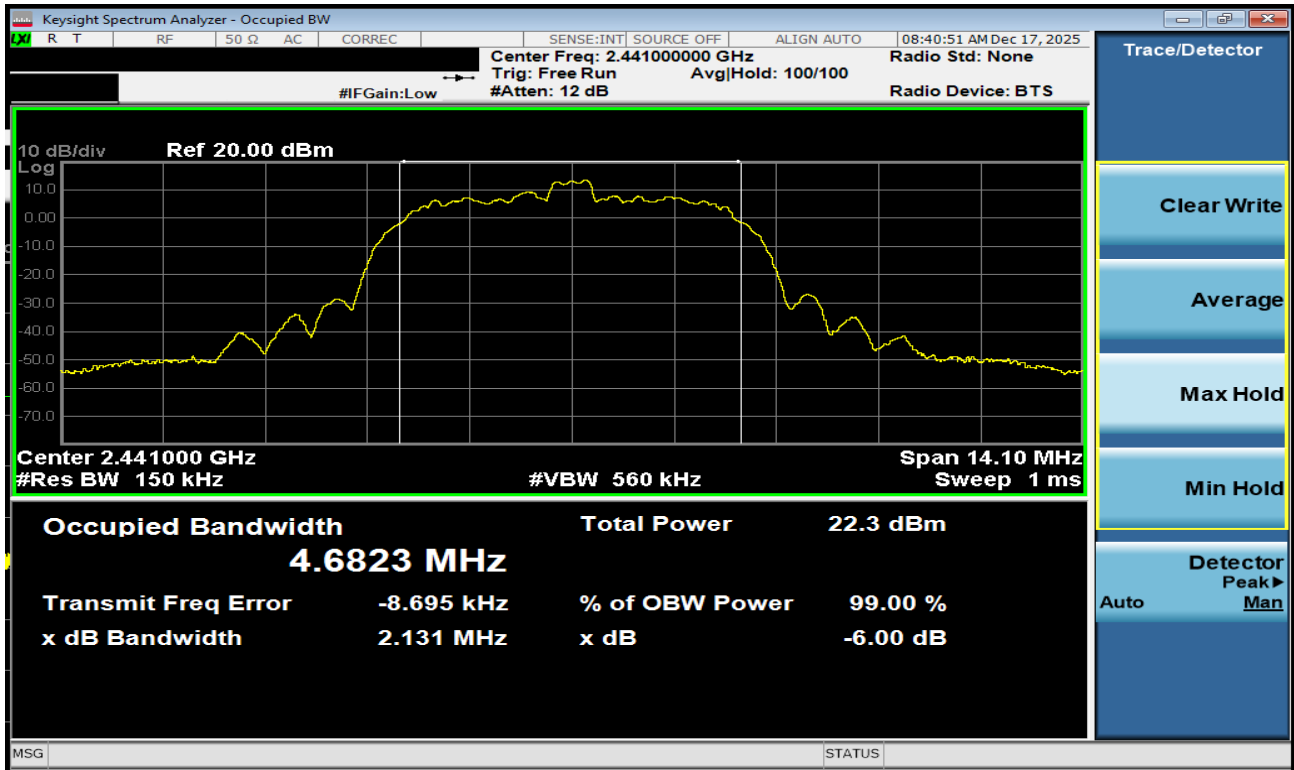


Plot 7-22. 99% OBW Plot Antenna WF2b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 1)

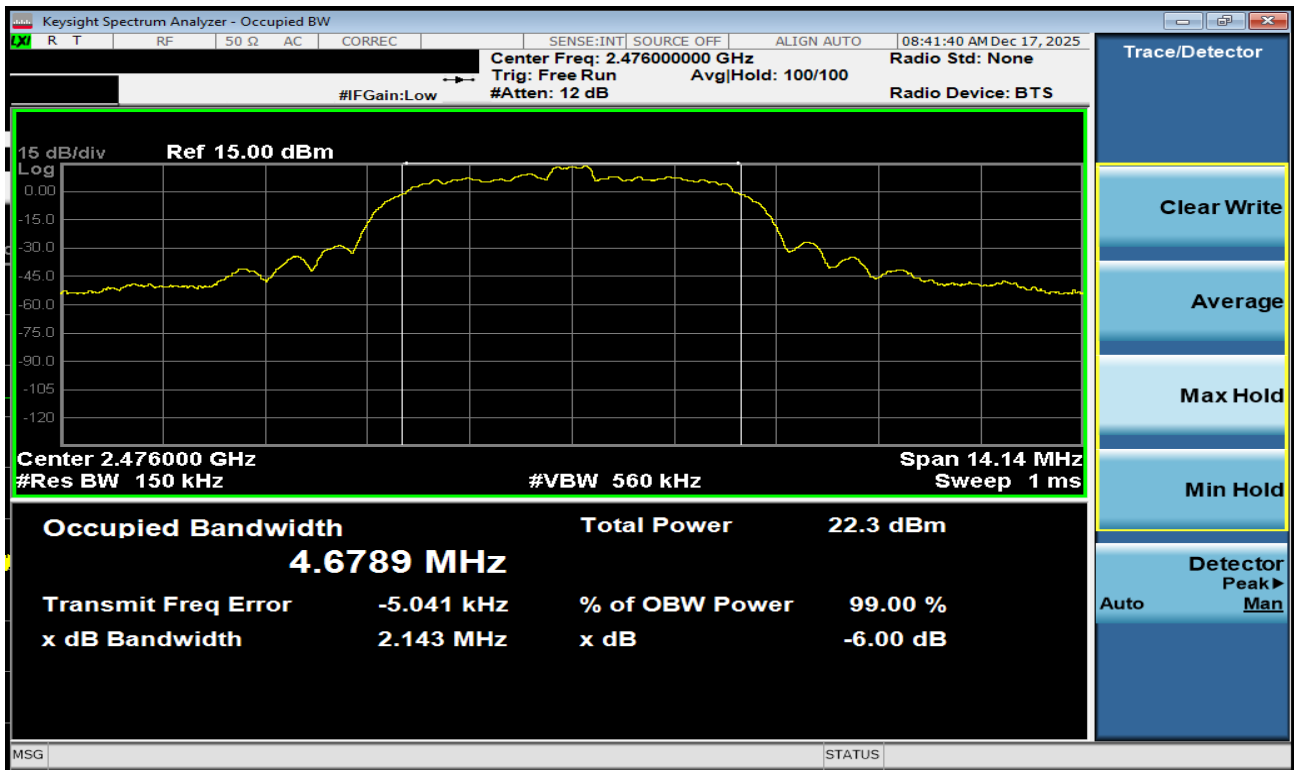
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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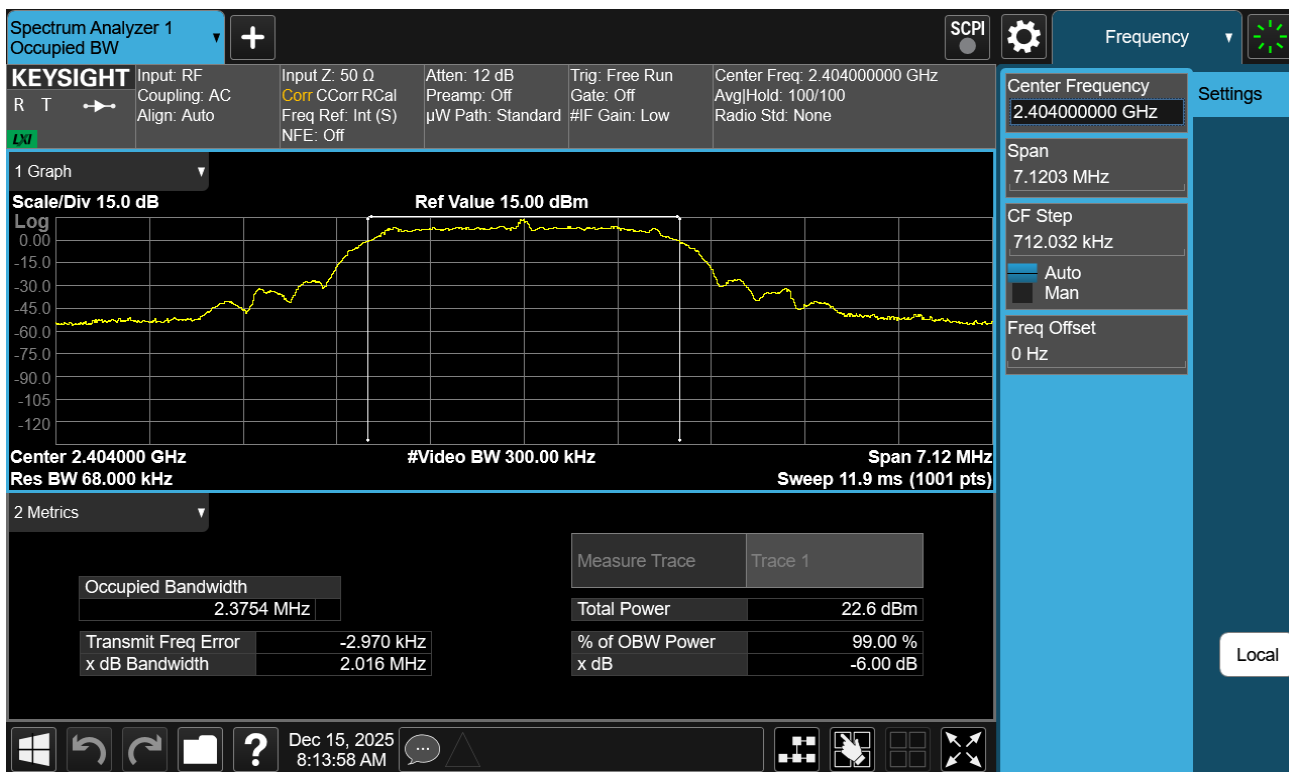


Plot 7-23. 99% OBW Plot Antenna WF2b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 38)

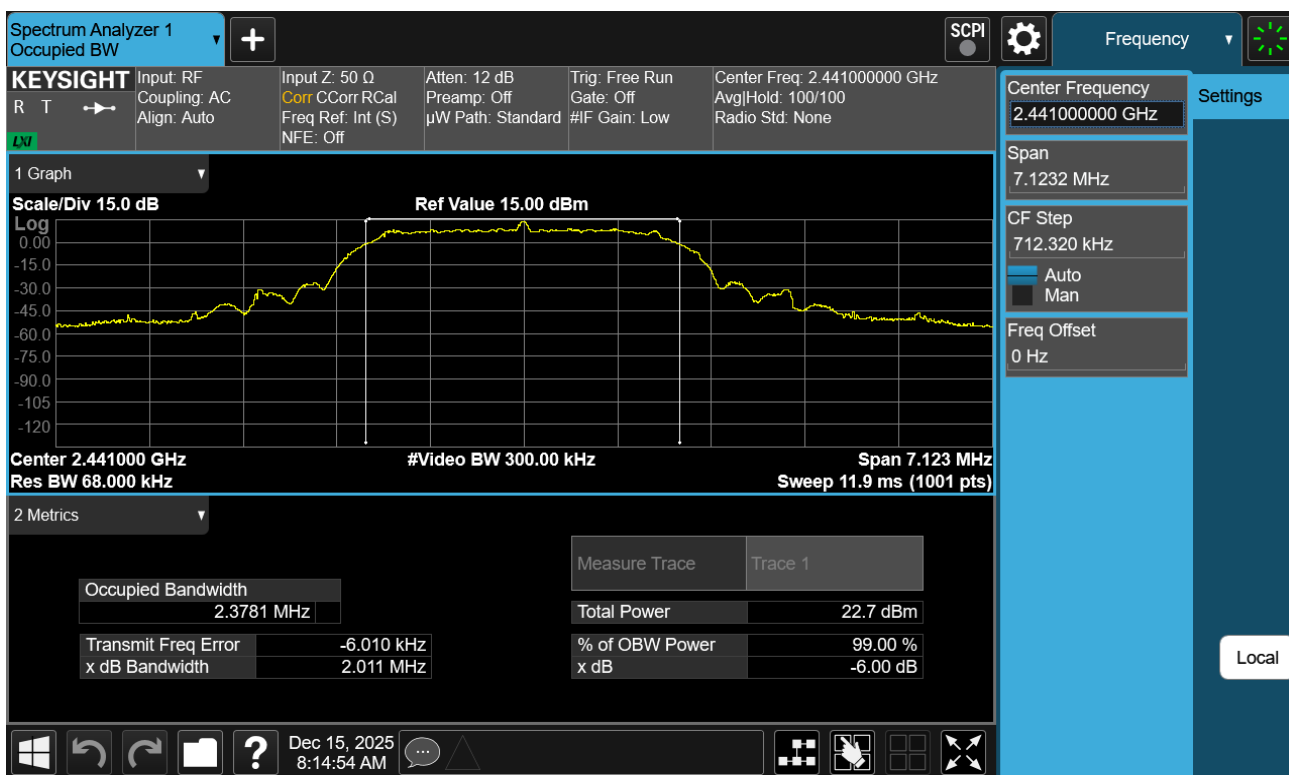


Plot 7-24. 99% OBW Plot Antenna WF2b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 73)

FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-25. 99% OBW Plot Antenna WF2b (Bluetooth (HDRPS2), 2Mbps, ePA – Ch. 1)

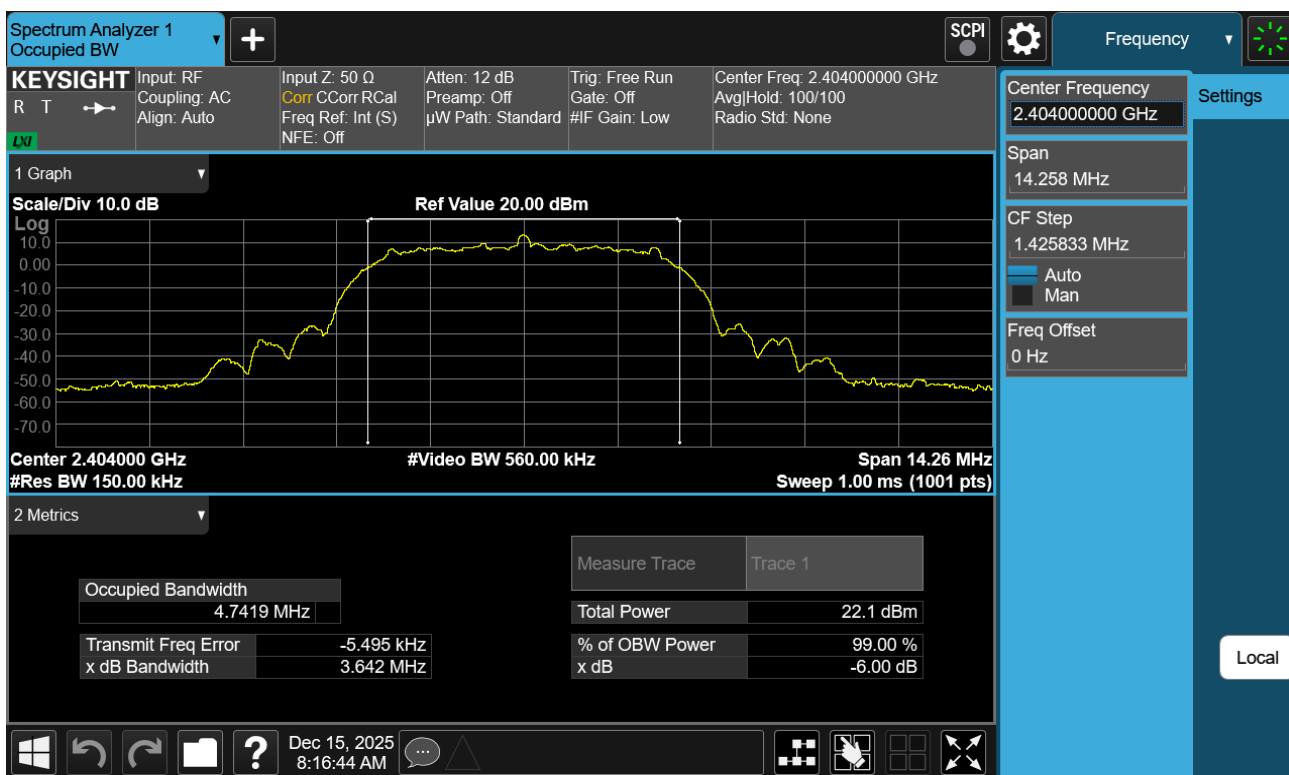
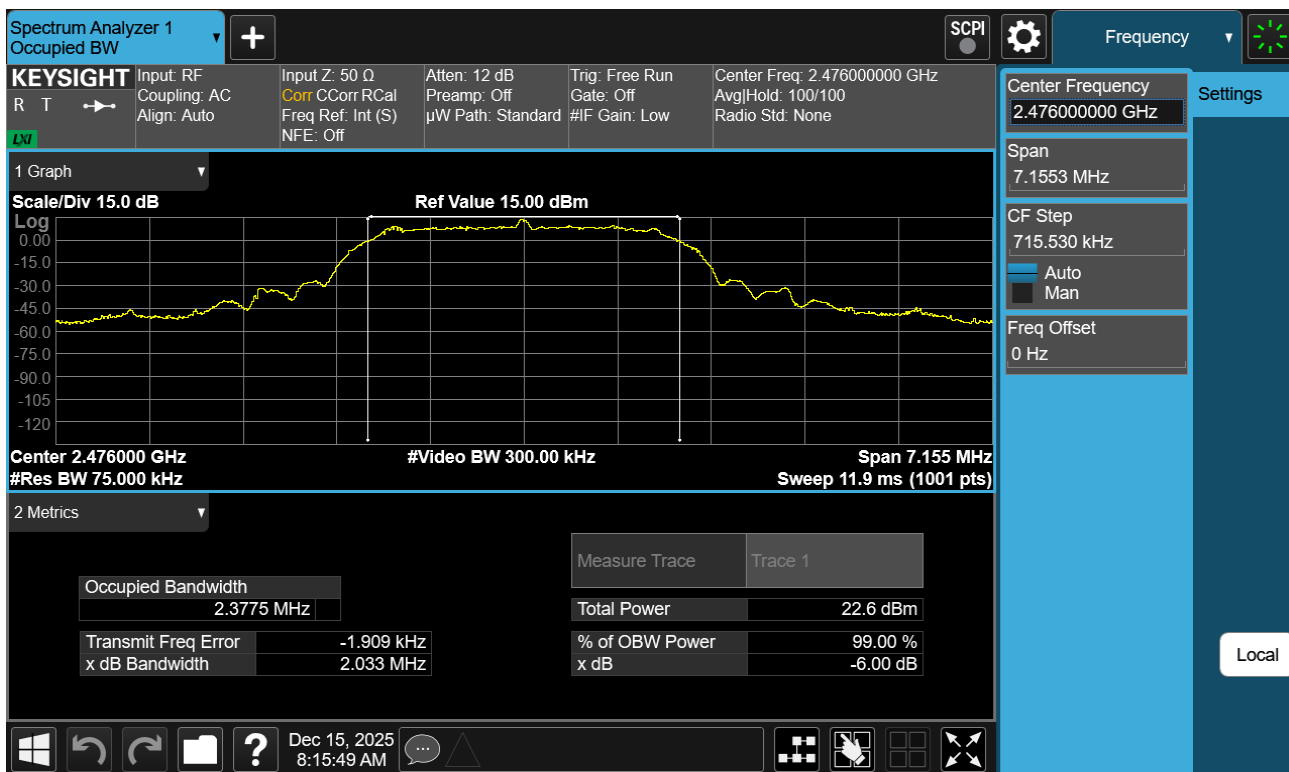


Plot 7-26. 99% OBW Plot Antenna WF2b (Bluetooth (HDRPS2), 2Mbps, ePA – Ch. 38)

FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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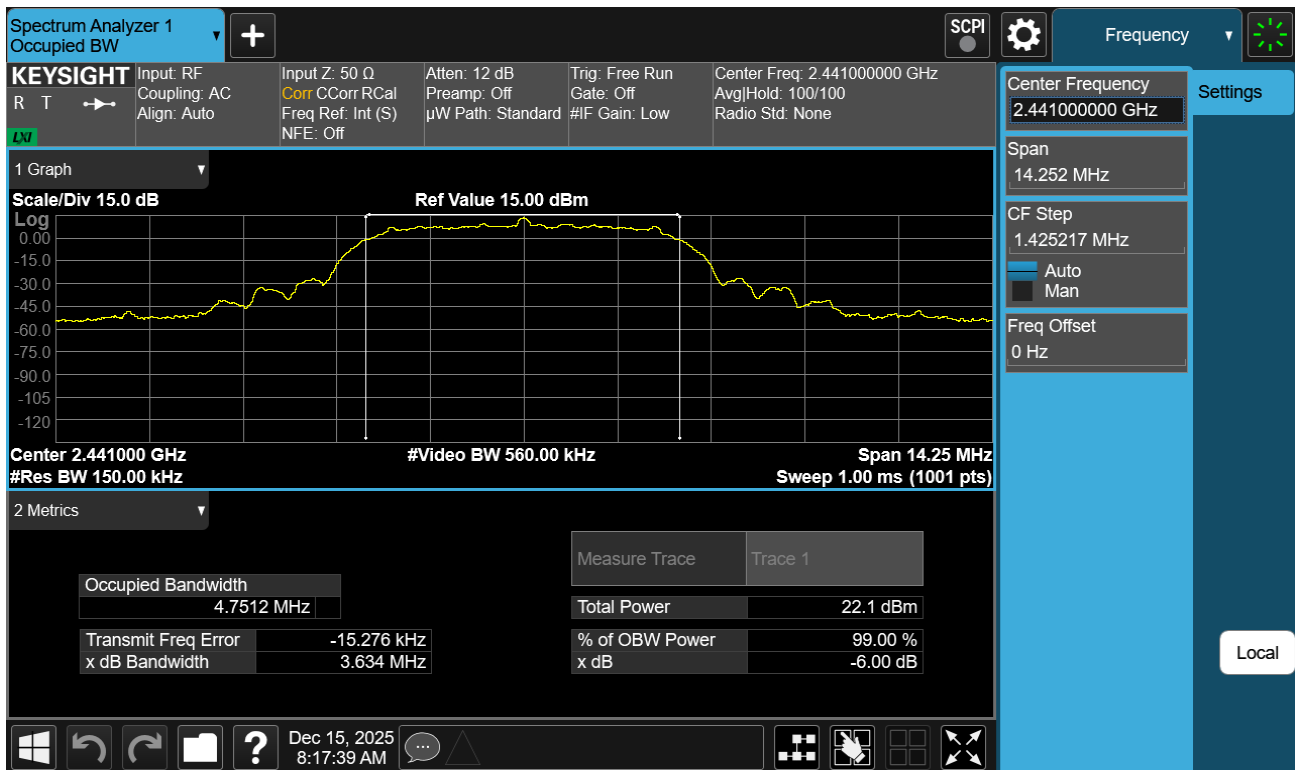
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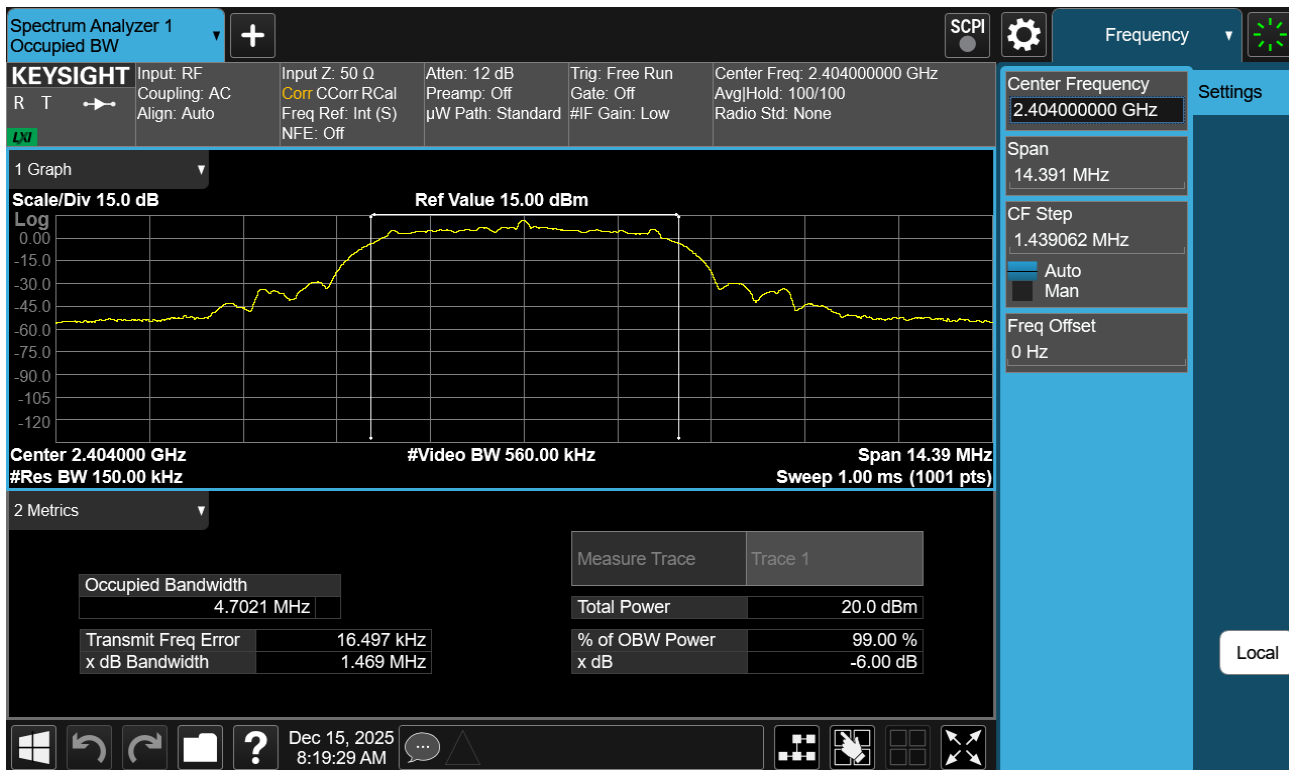
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-31. 99% OBW Plot Antenna WF2b (Bluetooth (HDRPM16), 16Mbps, ePA – Ch. 1)

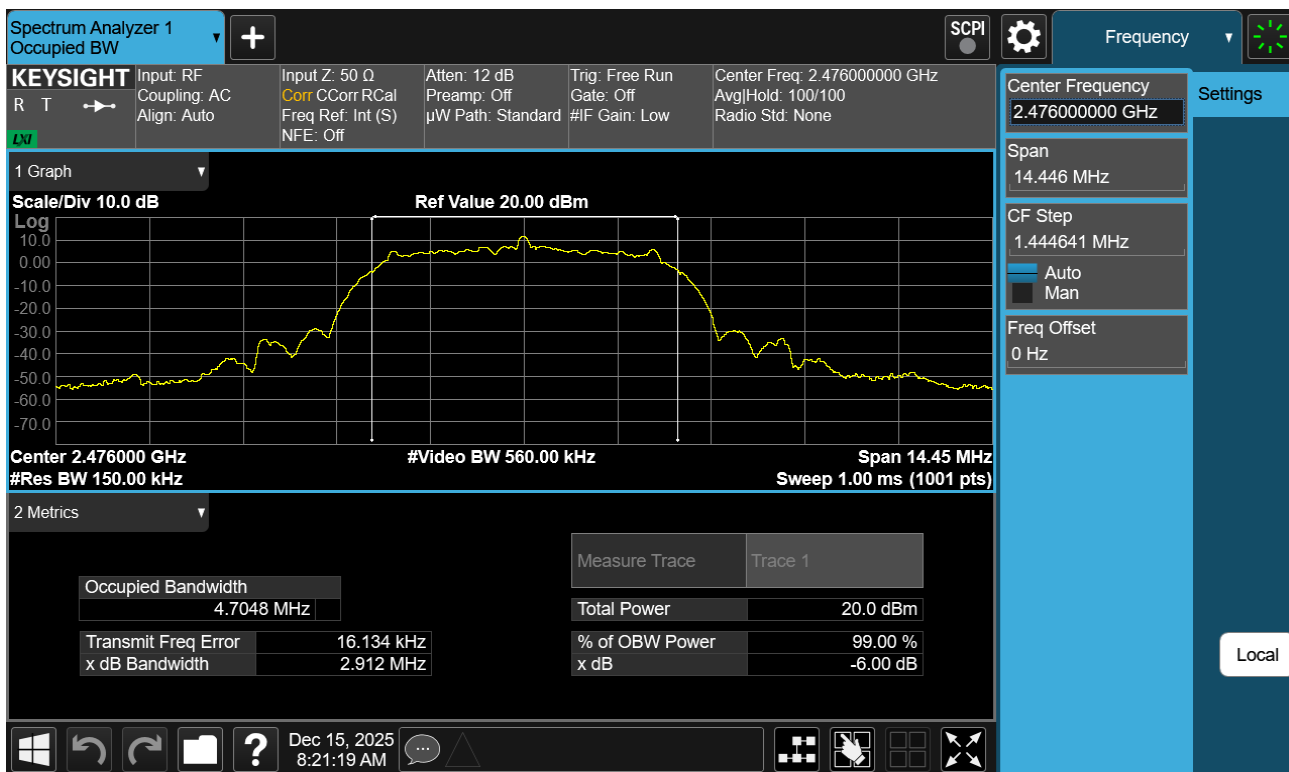


Plot 7-32. 99% OBW Plot Antenna WF2b (Bluetooth (HDRPM16), 16Mbps, ePA – Ch. 38)

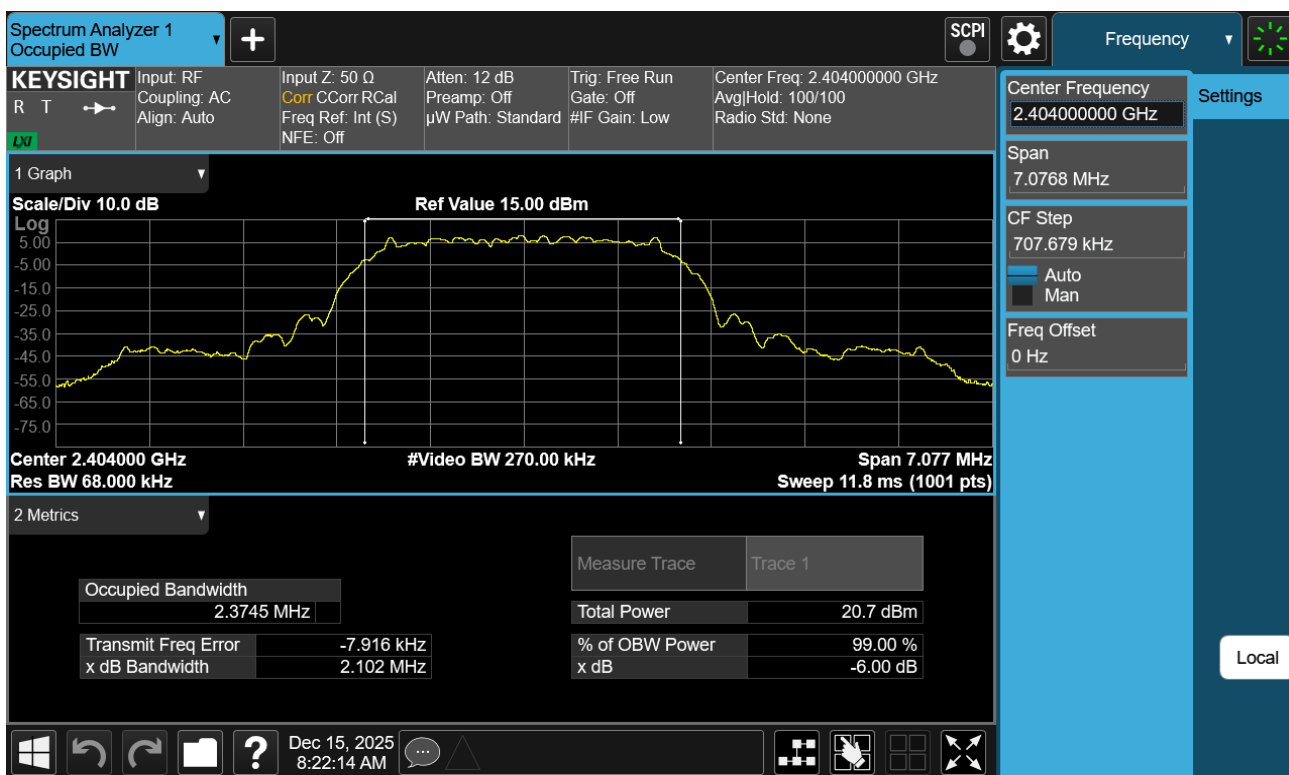
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-33. 99% OBW Plot Antenna WF2b (Bluetooth (HDRPM16), 16Mbps, ePA – Ch. 73)

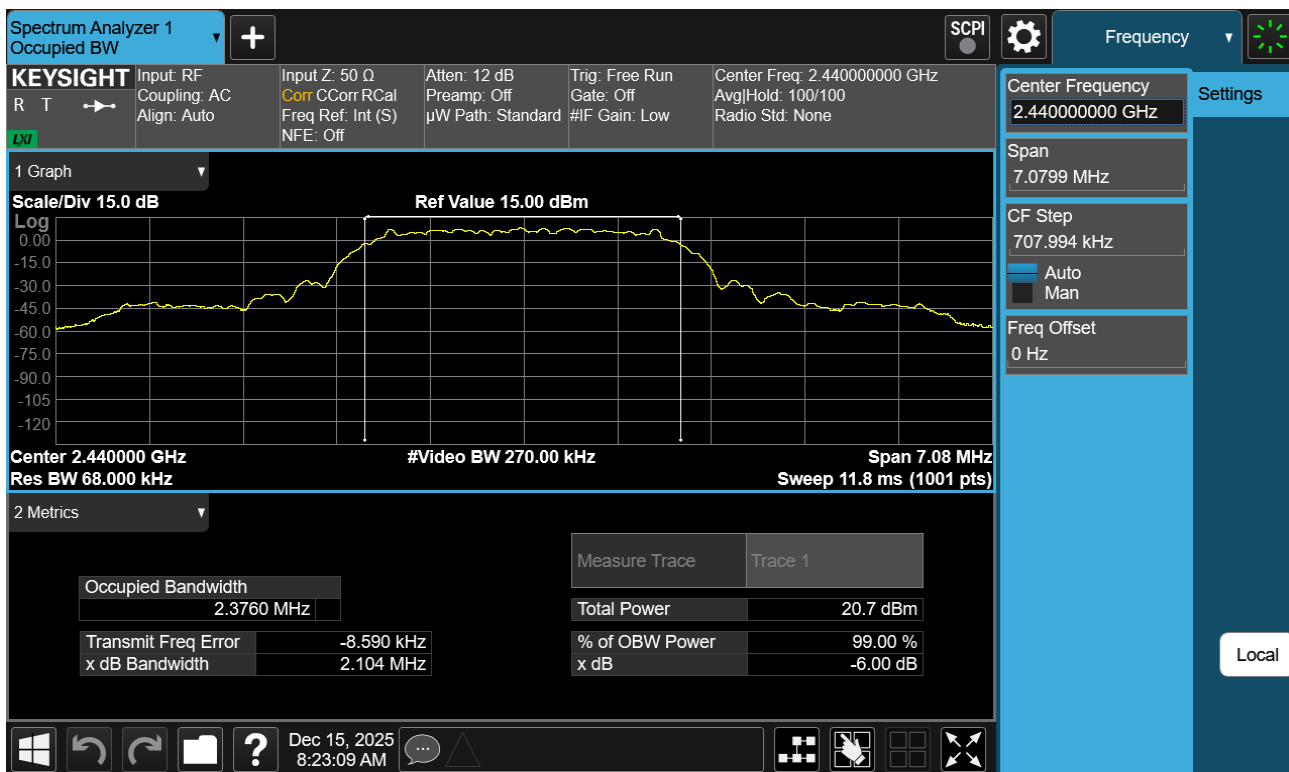


Plot 7-34. 99% OBW Plot Antenna WF2b (Bluetooth (HDT2), 2Mbps, ePA – Ch. 1)

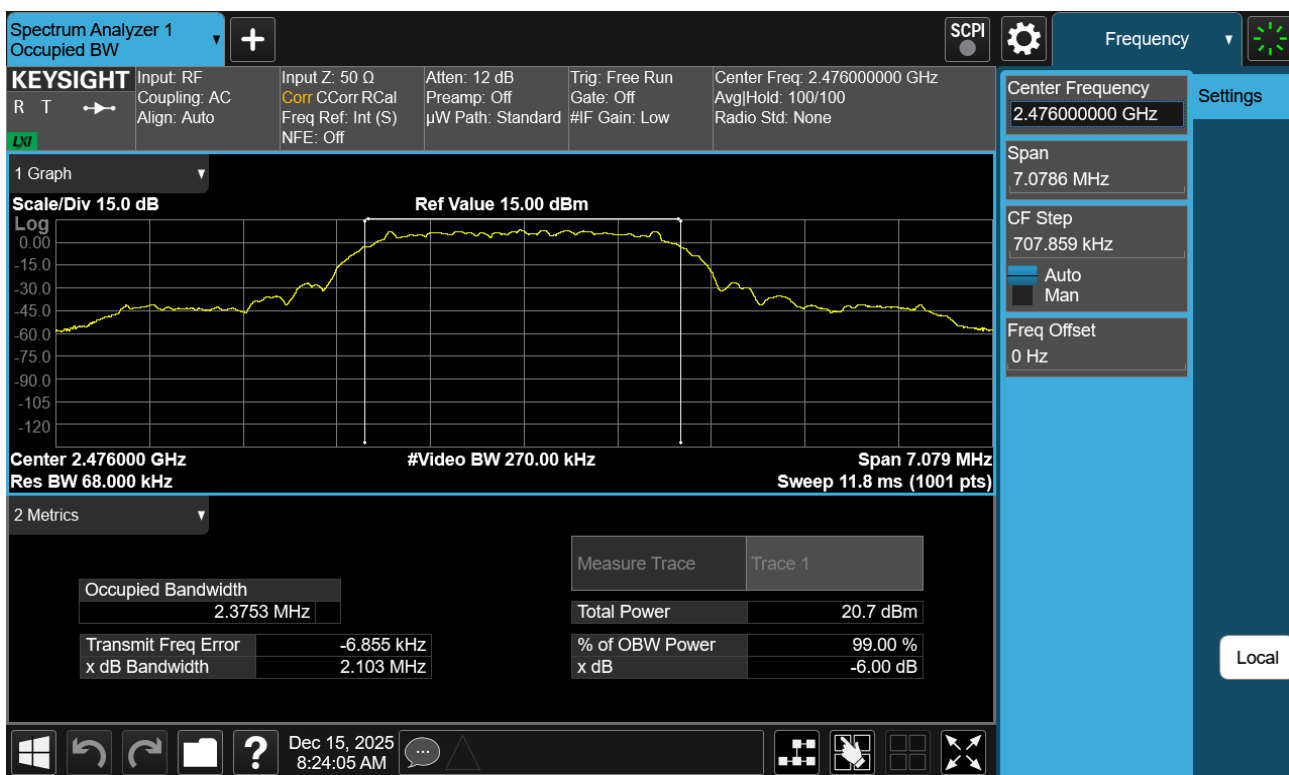
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-35. 99% OBW Plot Antenna WF2b (Bluetooth (HDT2), 2Mbps, ePA – Ch. 37)



Plot 7-36. 99% OBW Plot Antenna WF2b (Bluetooth (HDT2), 2Mbps, ePA – Ch. 73)

FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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7.3 6 dB Bandwidth Measurement

§15.247(a)(2); RSS-247 [6.3.1(a)]

Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the transmitter antenna terminal of the EUT while the EUT is operating at maximum power and at the appropriate frequencies. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible 6dB bandwidth is 500 kHz.

Test Procedure Used

ANSI C63.10:2020 + Cor. 1:2023 + C63.10a:2024 + Errata to C63.10a:2024 – Subclause 11.8.2 Option 2
KDB 558074 D01 v05r02 – Section 8.2

Test Settings

1. The signal analyzers' automatic bandwidth measurement capability of the spectrum analyzer was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to $X = 6$. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 100kHz
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-2. Test Instrument & Measurement Setup

Test Notes

All supported modulation, antenna (including TxBF mode) and power schemes have been tested on the unit and only worst case configuration is reported.

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7.3.1 Antenna WF7b

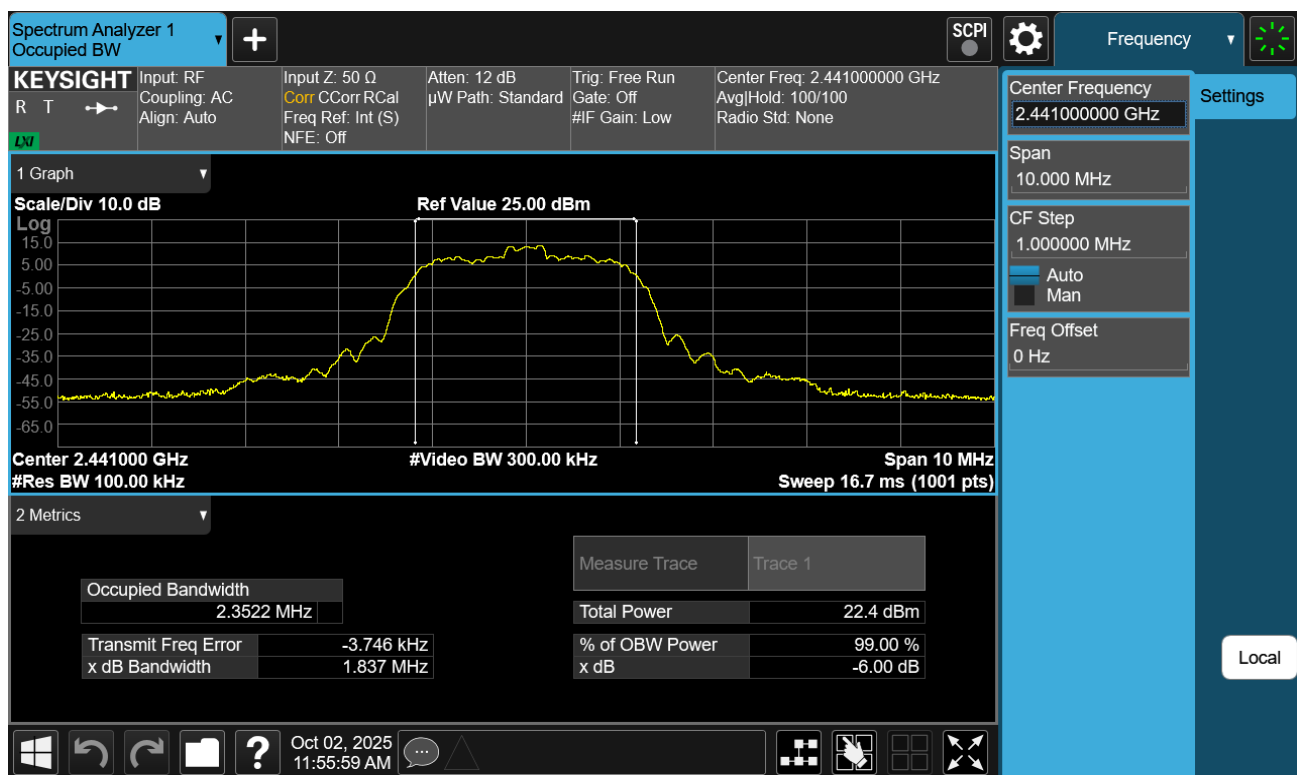
Frequency [MHz]	Mode	Power Scheme	Channel	Measured 6dB Bandwidth [MHz]	Minimum 6dB Bandwidth [MHz]	Pass/Fail
2404	HDR4	ePA	1	1.58	0.50	Pass
2441	HDR4	ePA	38	1.84	0.50	Pass
2476	HDR4	ePA	73	1.67	0.50	Pass
2404	HDR8	ePA	1	0.56	0.50	Pass
2441	HDR8	ePA	38	0.56	0.50	Pass
2476	HDR8	ePA	73	0.56	0.50	Pass
2404	HDRPS2	ePA	1	2.09	0.50	Pass
2441	HDRPS2	ePA	38	2.09	0.50	Pass
2476	HDRPS2	ePA	73	2.08	0.50	Pass
2404	XHDRPM6	ePA	1	4.06	0.50	Pass
2441	XHDRPM6	ePA	38	4.06	0.50	Pass
2476	XHDRPM6	ePA	73	4.07	0.50	Pass
2404	HDRPM16	ePA	1	1.21	0.50	Pass
2441	HDRPM16	ePA	38	2.53	0.50	Pass
2476	HDRPM16	ePA	73	2.57	0.50	Pass
2404	HDT2	ePA	1	2.12	0.50	Pass
2440	HDT2	ePA	37	2.12	0.50	Pass
2476	HDT2	ePA	73	2.12	0.50	Pass

Table 7-4. 6dB BW Measurements Antenna WF7b

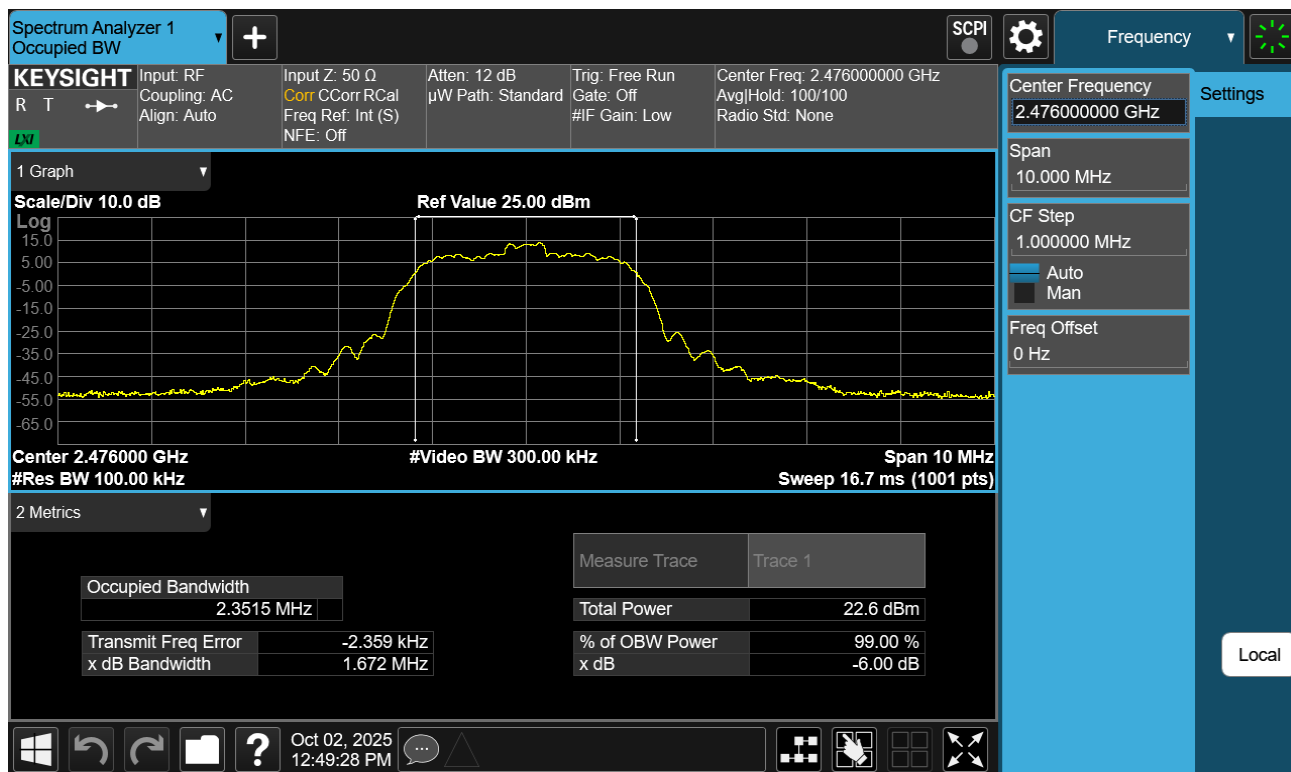
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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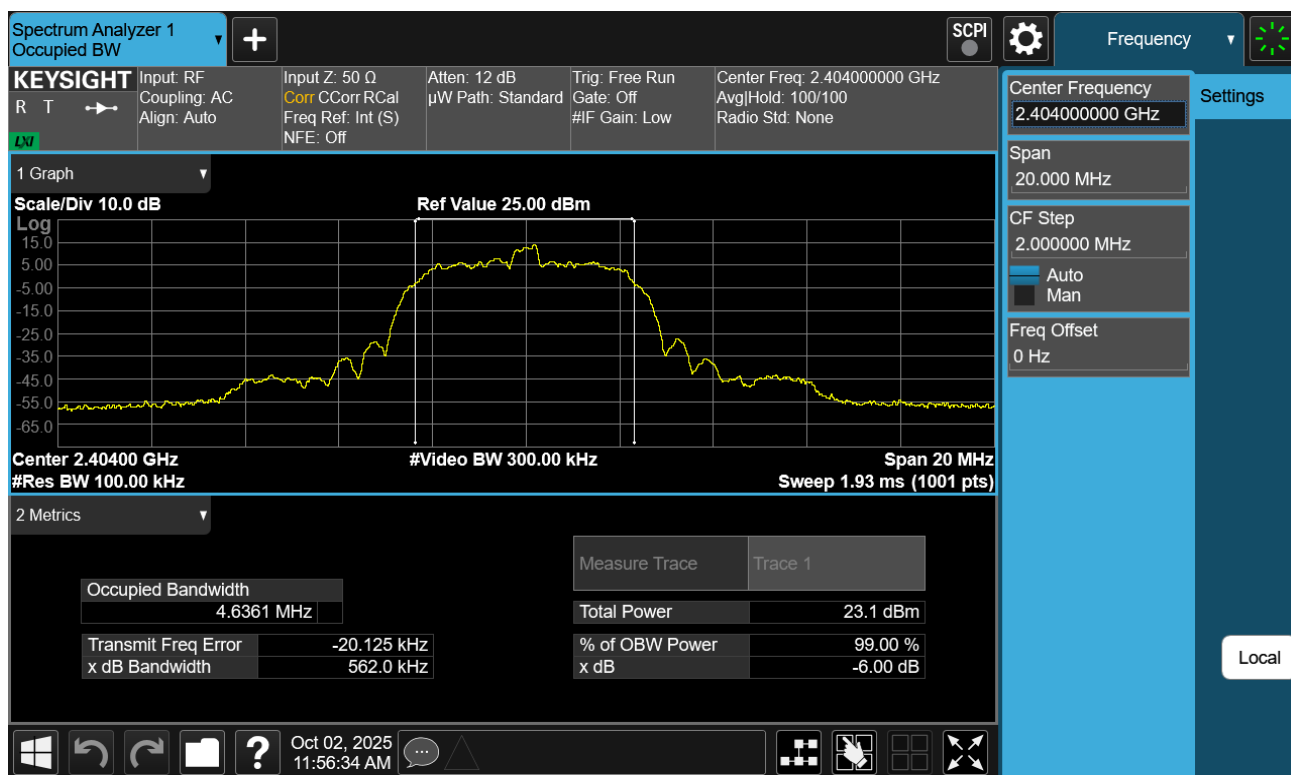
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Plot 7-39. 6dB BW Plot Antenna WF7b (Bluetooth (HDR4), 4Mbps, ePA – Ch. 73)

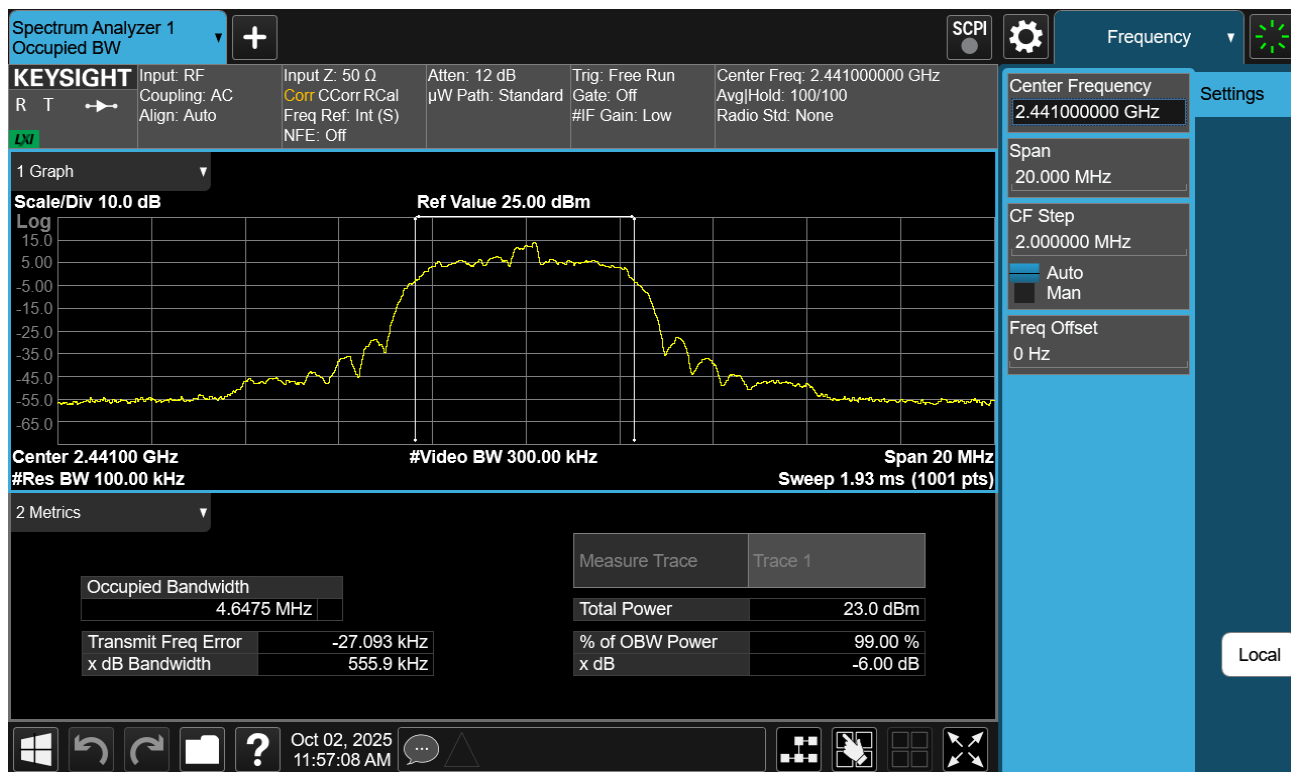


Plot 7-40. 6dB BW Plot Antenna WF7b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 1)

FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-41. 6dB BW Plot Antenna WF7b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 38)

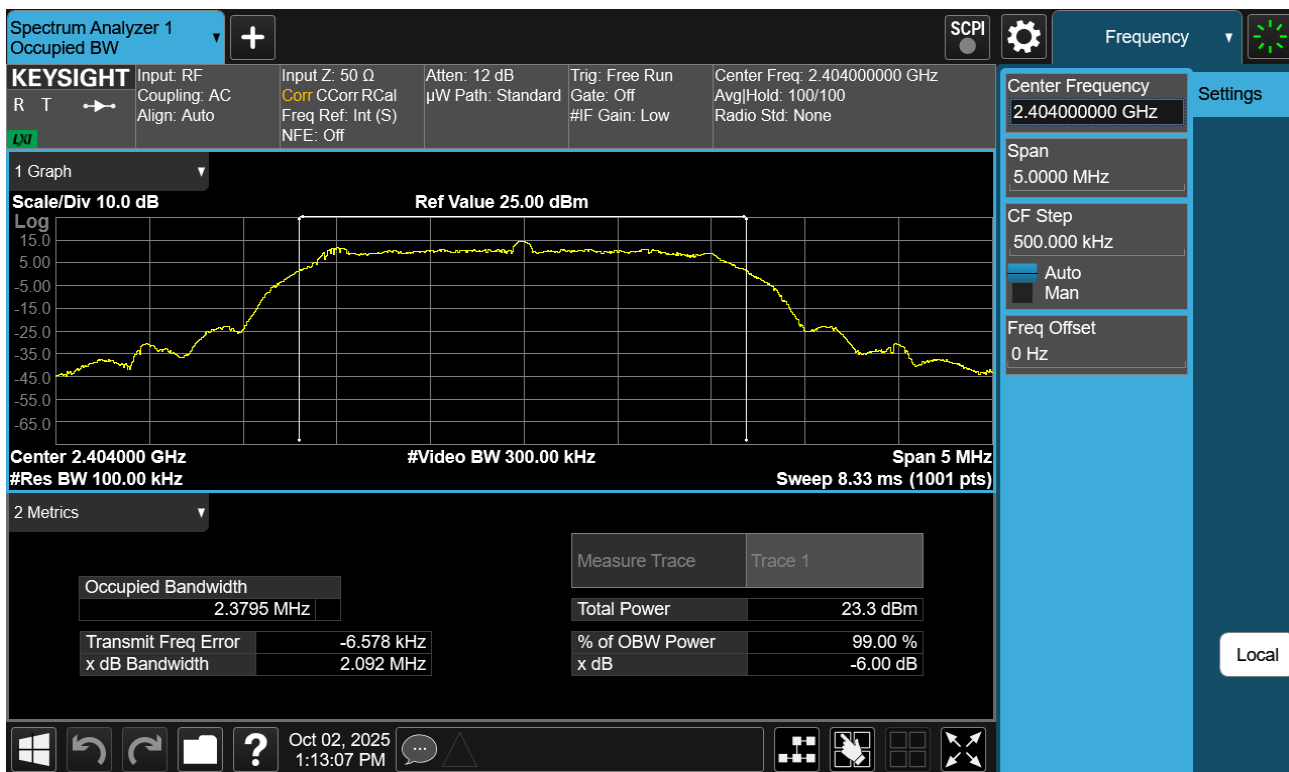


Plot 7-42. 6dB BW Plot Antenna WF7b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 73)

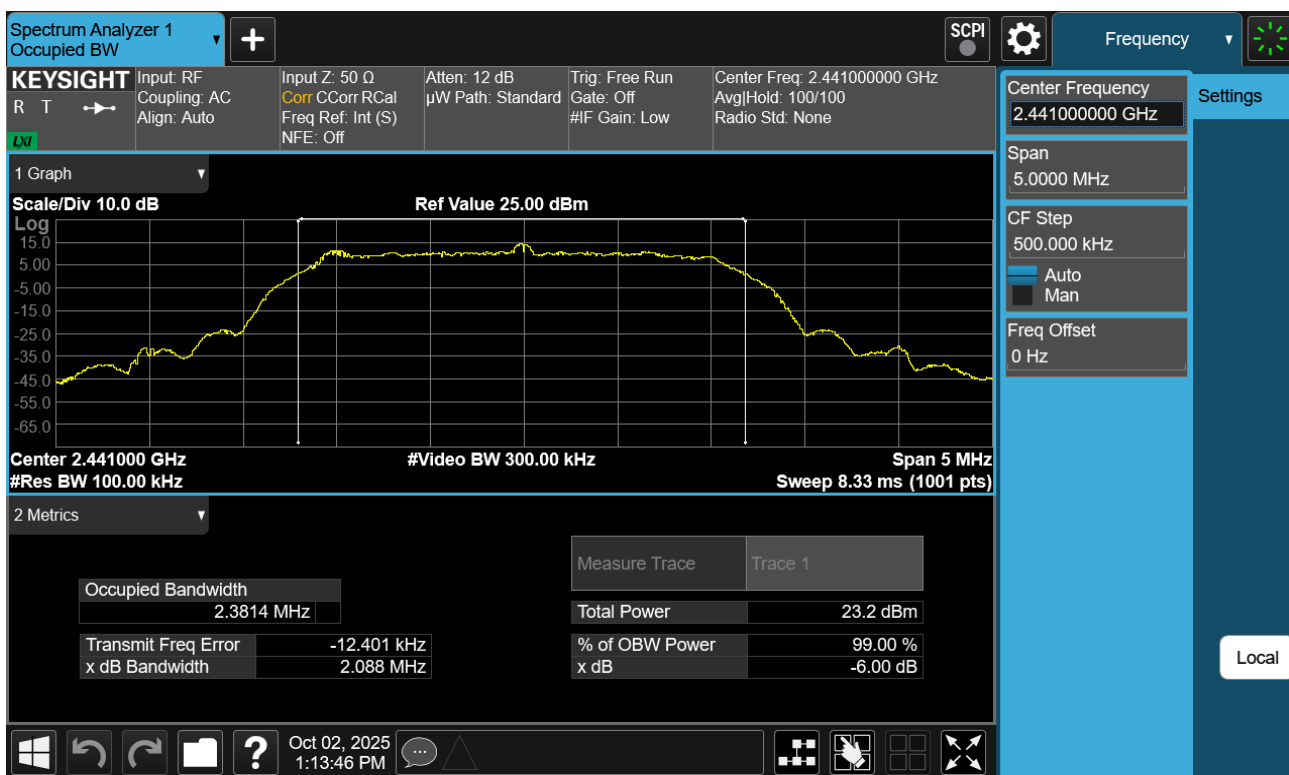
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-43. 6dB BW Plot Antenna WF7b (Bluetooth (HDRPS2), 2Mbps, ePA – Ch. 1)

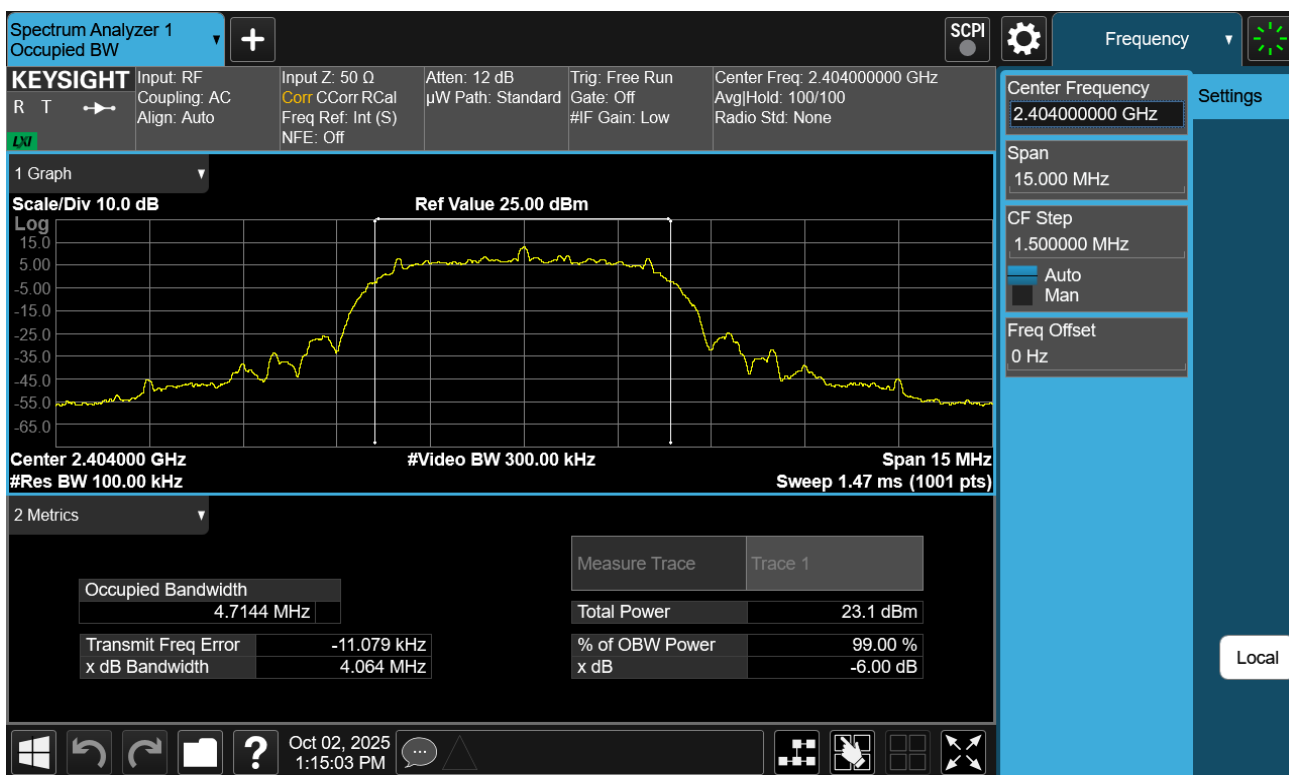


Plot 7-44. 6dB BW Plot Antenna WF7b (Bluetooth (HDRPS2), 2Mbps, ePA – Ch. 38)

FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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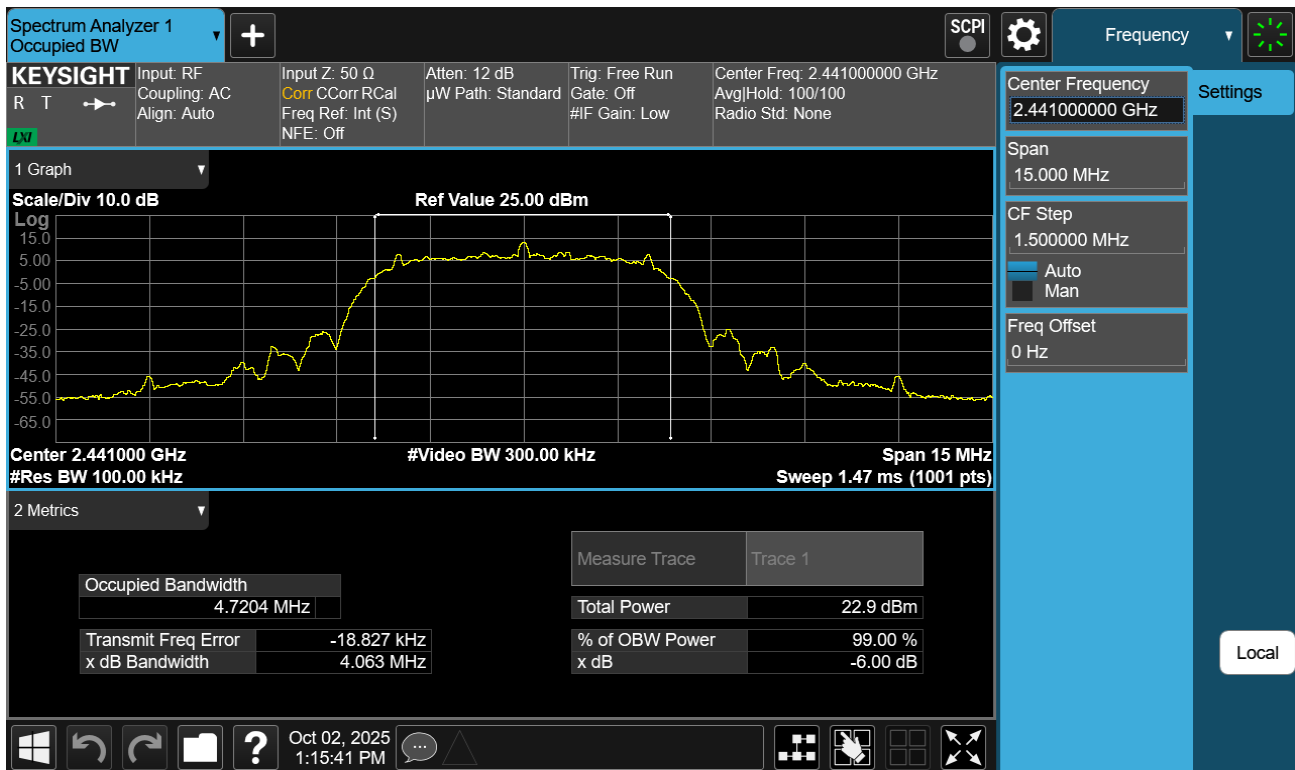
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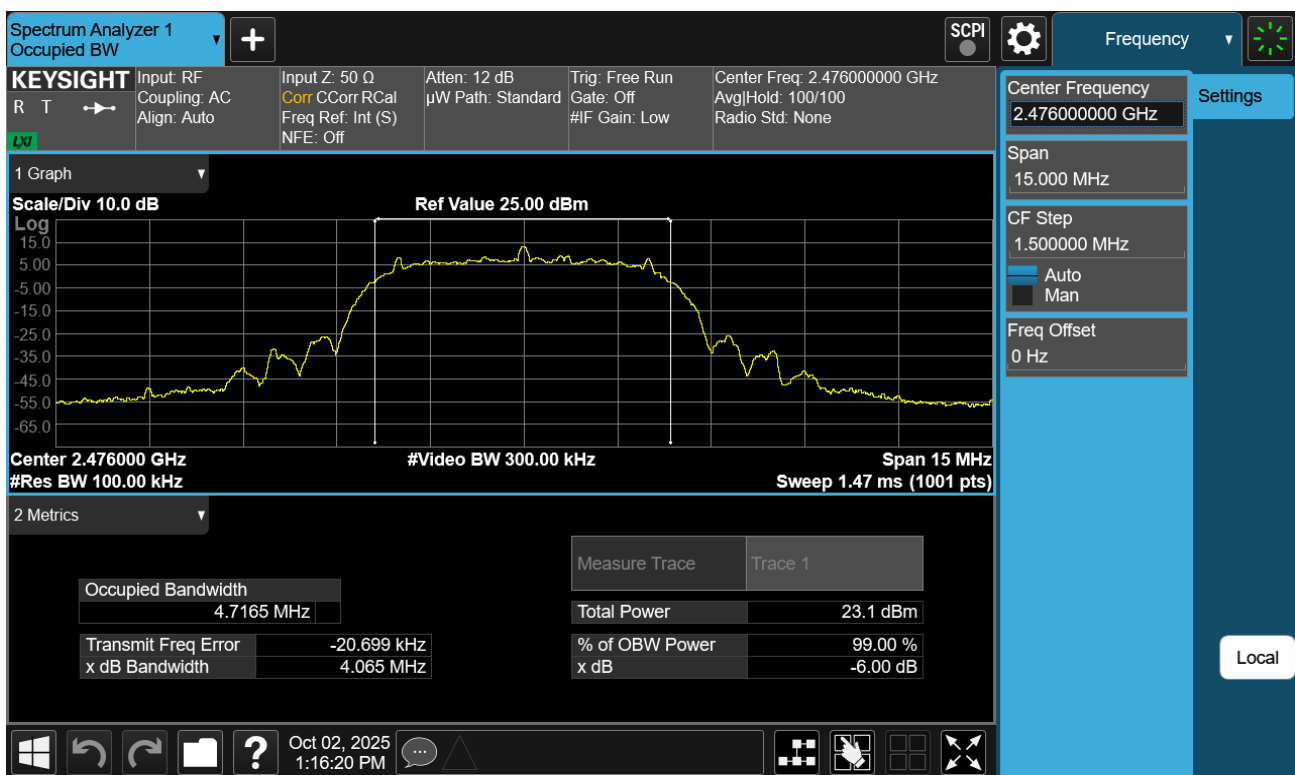
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-47. 6dB BW Plot Antenna WF7b (Bluetooth (XHDRPM6), 6Mbps, ePA – Ch. 38)

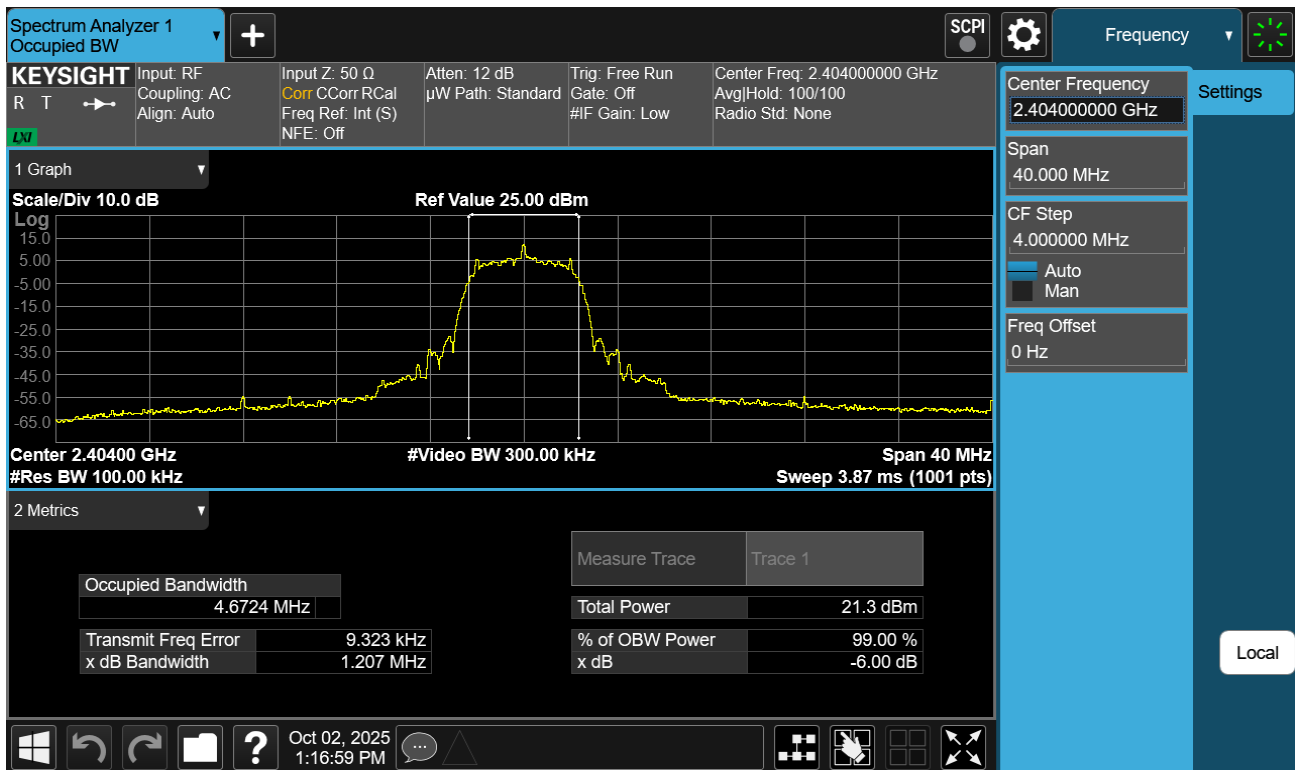


Plot 7-48. 6dB BW Plot Antenna WF7b (Bluetooth (XHDRPM6), 6Mbps, ePA – Ch. 73)

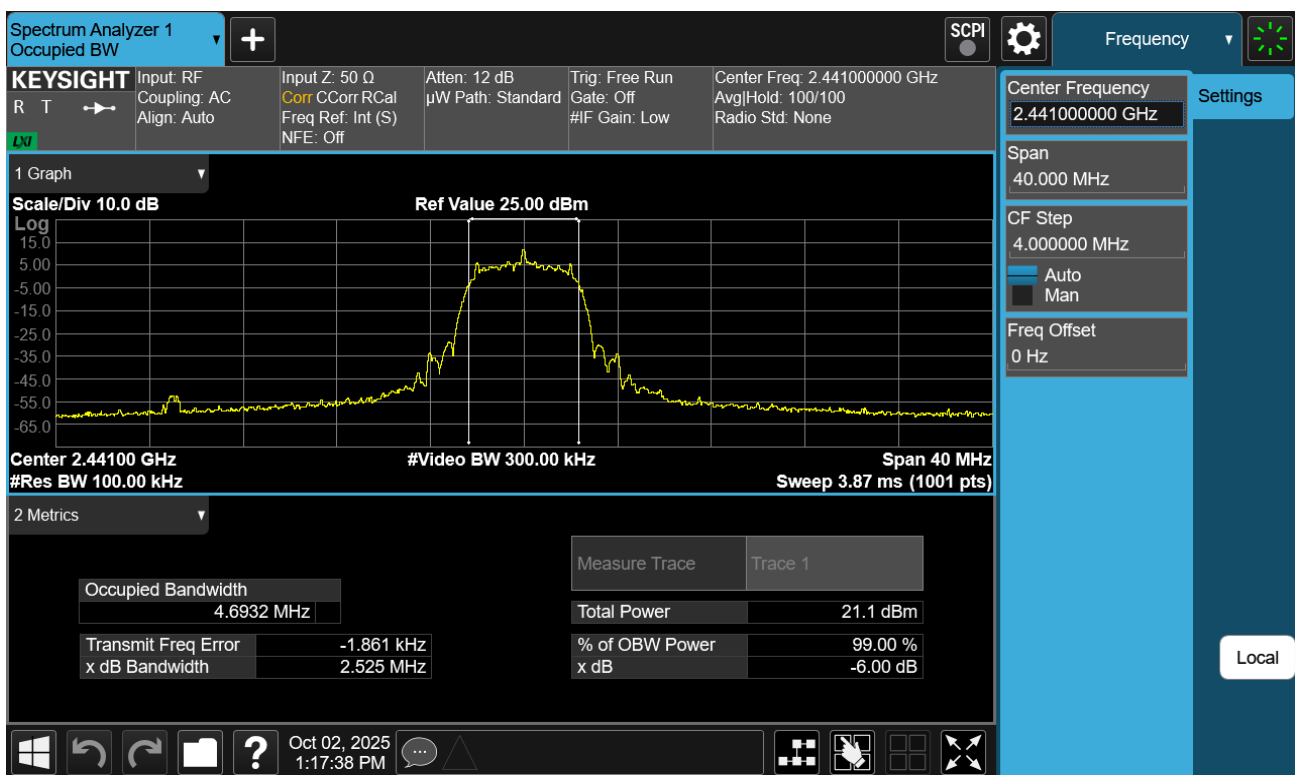
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-49. 6dB BW Plot Antenna WF7b (Bluetooth (HDRPM16), 16Mbps, ePA – Ch. 1)

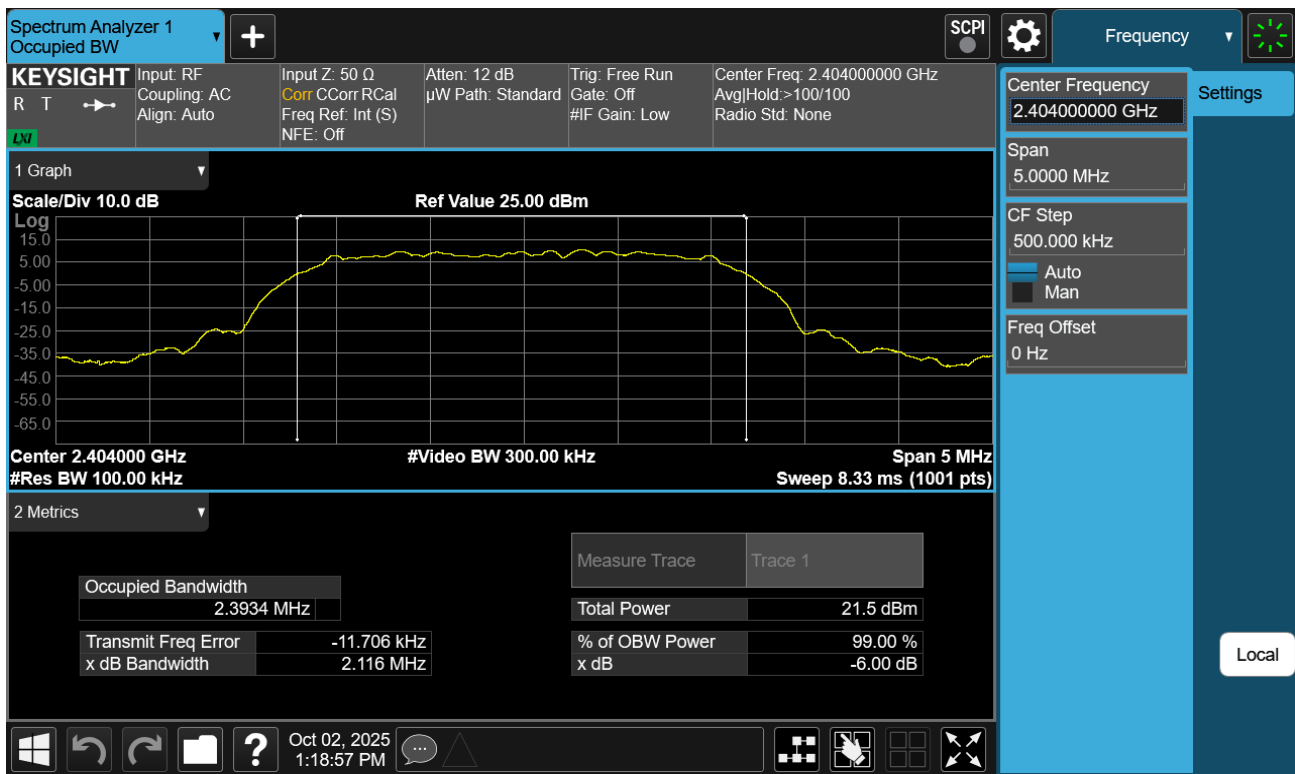
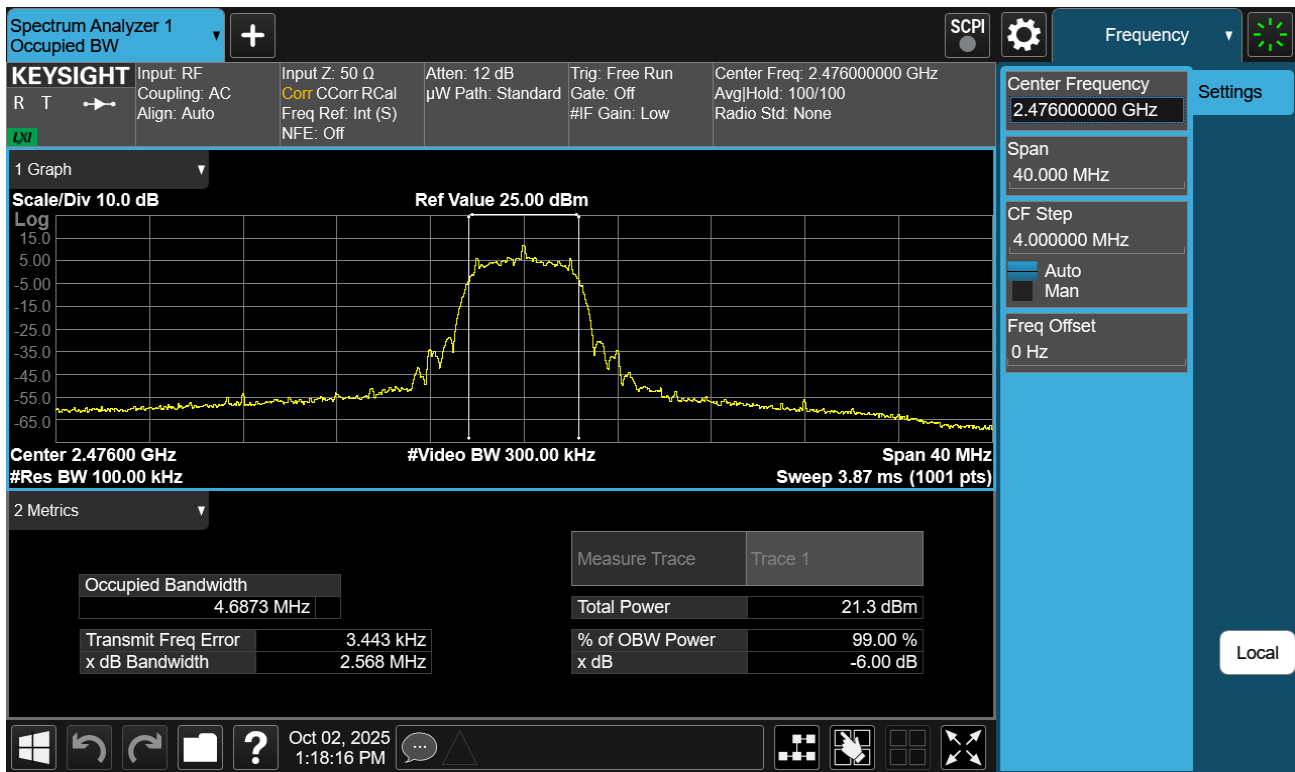


Plot 7-50. 6dB BW Plot Antenna WF7b (Bluetooth (HDRPM16), 16Mbps, ePA – Ch. 38)

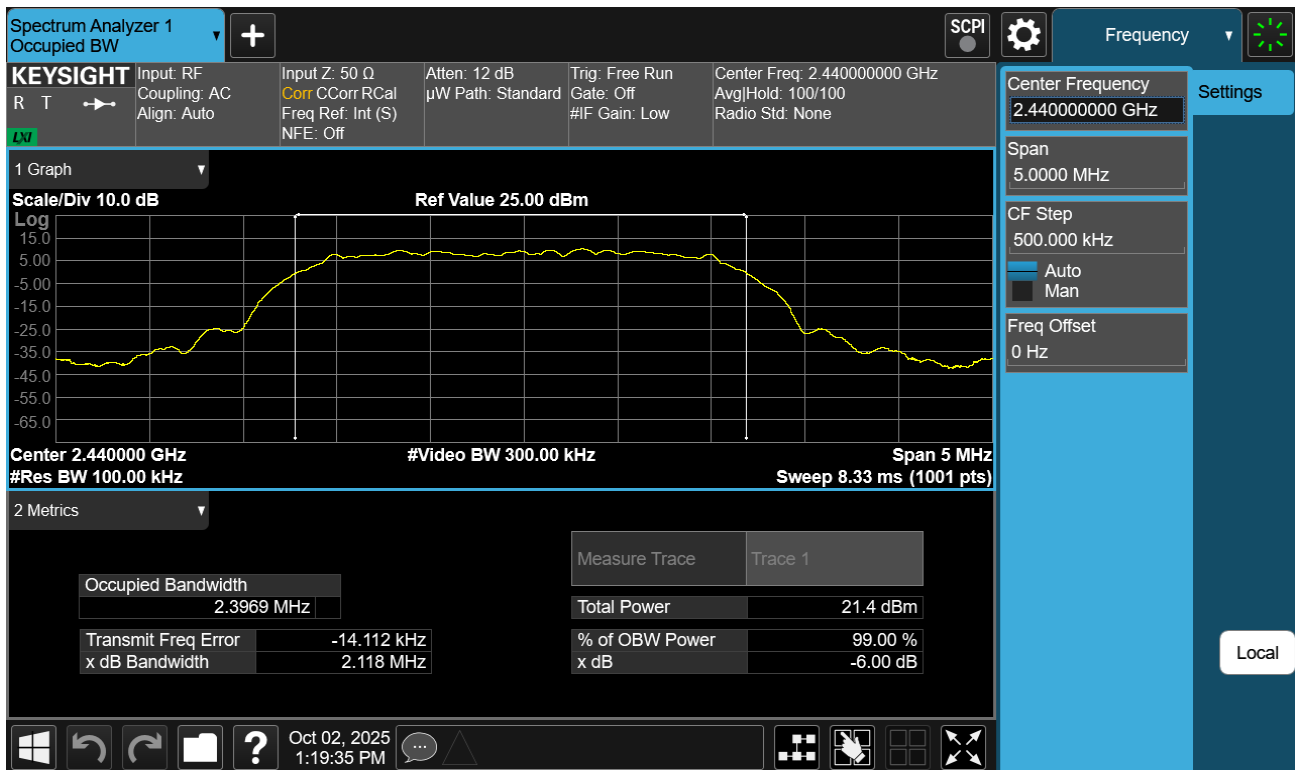
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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7.3.2 Antenna WF2b

Frequency [MHz]	Mode	Power Scheme	Channel	Measured 6dB Bandwidth [MHz]	Minimum 6dB Bandwidth [MHz]	Pass/Fail
2404	HDR4	ePA	1	1.58	0.50	Pass
2441	HDR4	ePA	38	1.58	0.50	Pass
2476	HDR4	ePA	73	1.77	0.50	Pass
2404	HDR8	ePA	1	0.57	0.50	Pass
2441	HDR8	ePA	38	0.56	0.50	Pass
2476	HDR8	ePA	73	0.56	0.50	Pass
2404	HDRPS2	ePA	1	2.08	0.50	Pass
2441	HDRPS2	ePA	38	2.09	0.50	Pass
2476	HDRPS2	ePA	73	2.09	0.50	Pass
2404	XHDRPM6	ePA	1	4.07	0.50	Pass
2441	XHDRPM6	ePA	38	4.06	0.50	Pass
2476	XHDRPM6	ePA	73	4.06	0.50	Pass
2404	HDRPM16	ePA	1	4.05	0.50	Pass
2441	HDRPM16	ePA	38	2.68	0.50	Pass
2476	HDRPM16	ePA	73	2.69	0.50	Pass
2404	HDT2	ePA	1	2.12	0.50	Pass
2440	HDT2	ePA	37	2.12	0.50	Pass
2476	HDT2	ePA	73	2.12	0.50	Pass

Table 7-5. 6dB BW Measurements Antenna WF2b

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Plot 7-55. 6dB BW Plot Antenna WF2b (Bluetooth (HDR4), 4Mbps, ePA – Ch. 1)

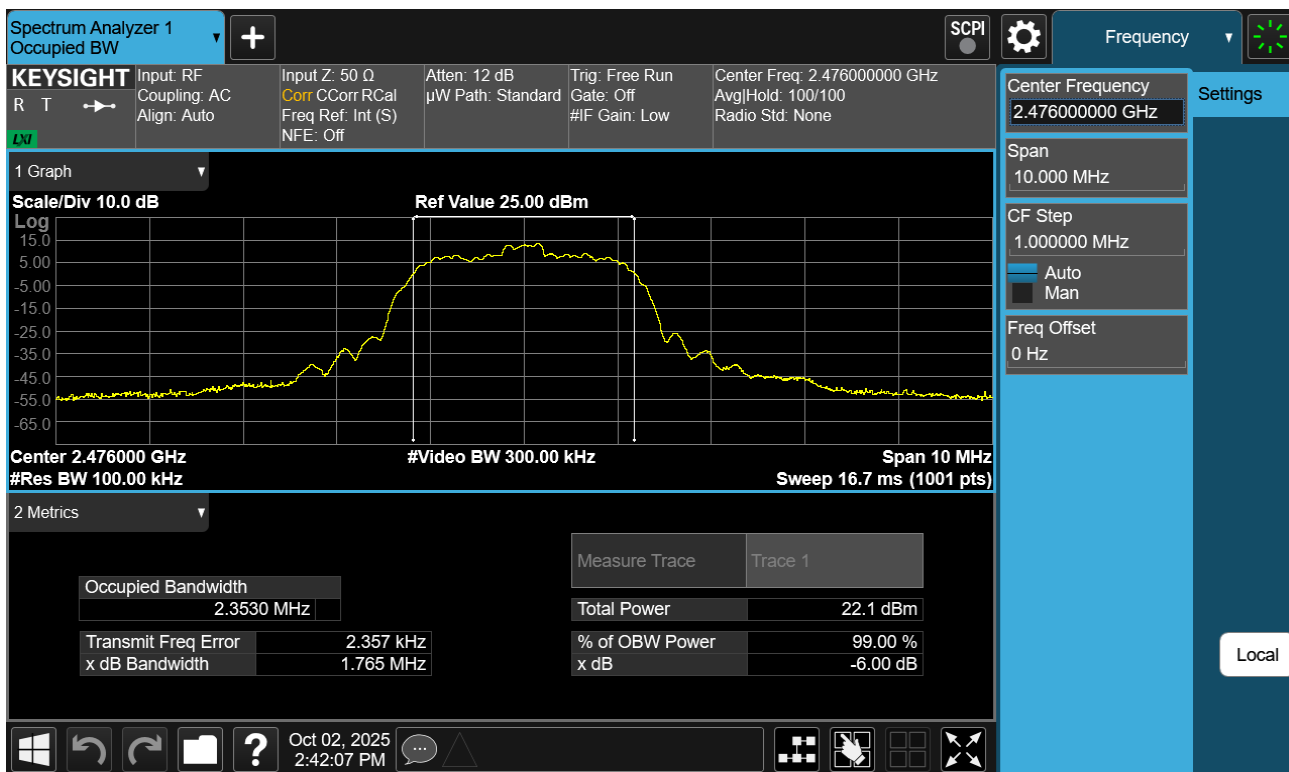


Plot 7-56. 6dB BW Plot Antenna WF2b (Bluetooth (HDR4), 4Mbps, ePA – Ch. 38)

FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-57. 6dB BW Plot Antenna WF2b (Bluetooth (HDR4), 4Mbps, ePA – Ch. 73)

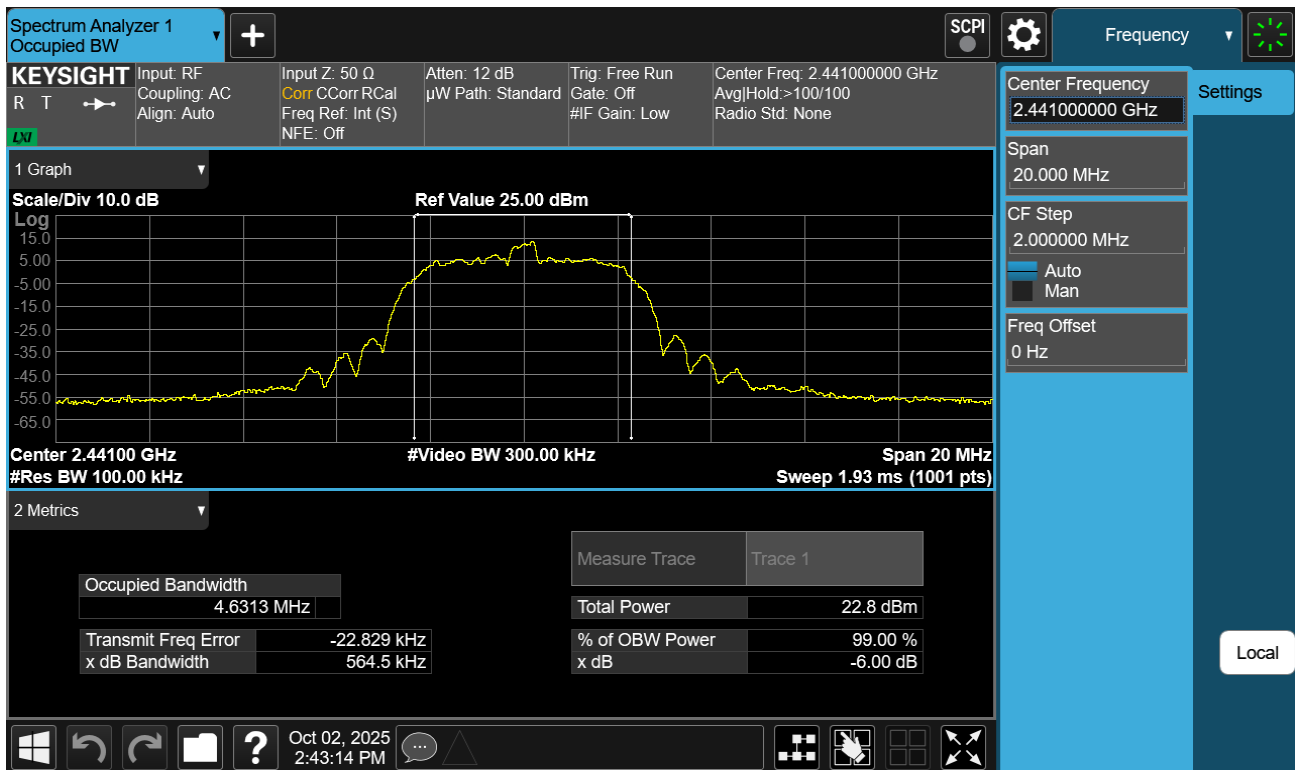


Plot 7-58. 6dB BW Plot Antenna WF2b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 1)

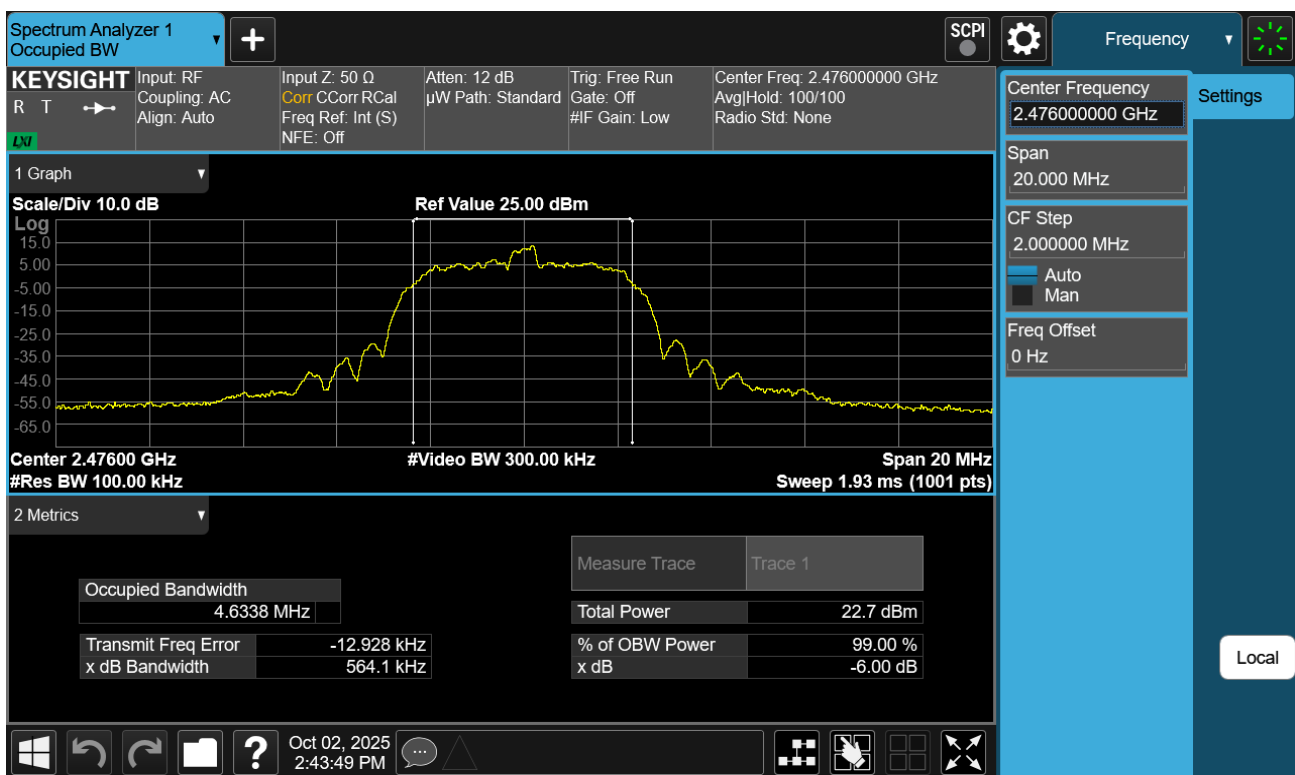
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2509100081-07-R3.BCG	Test Dates: 09/15/2025 - 11/12/2025	EUT Type: Tablet Device	Page 52 of 222

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Plot 7-59. 6dB BW Plot Antenna WF2b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 38)

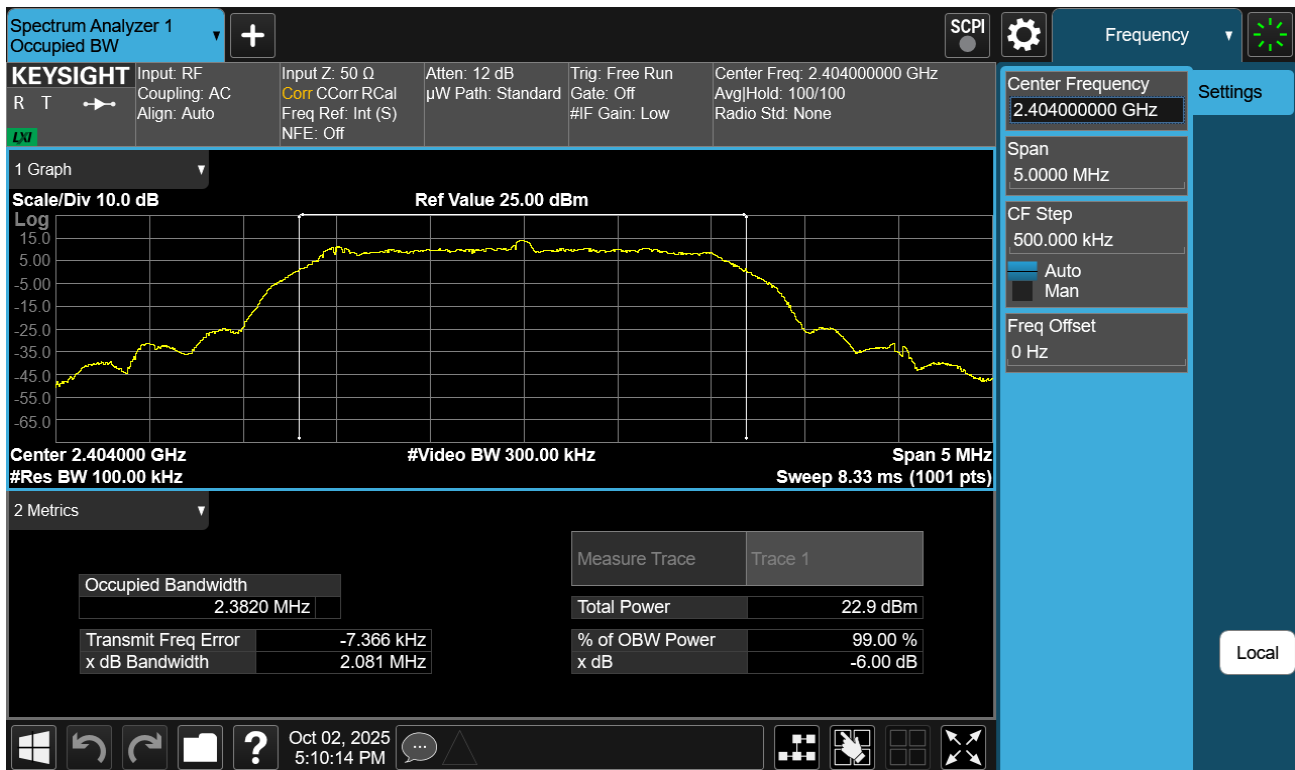


Plot 7-60. 6dB BW Plot Antenna WF2b (Bluetooth (HDR8), 8Mbps, ePA – Ch. 73)

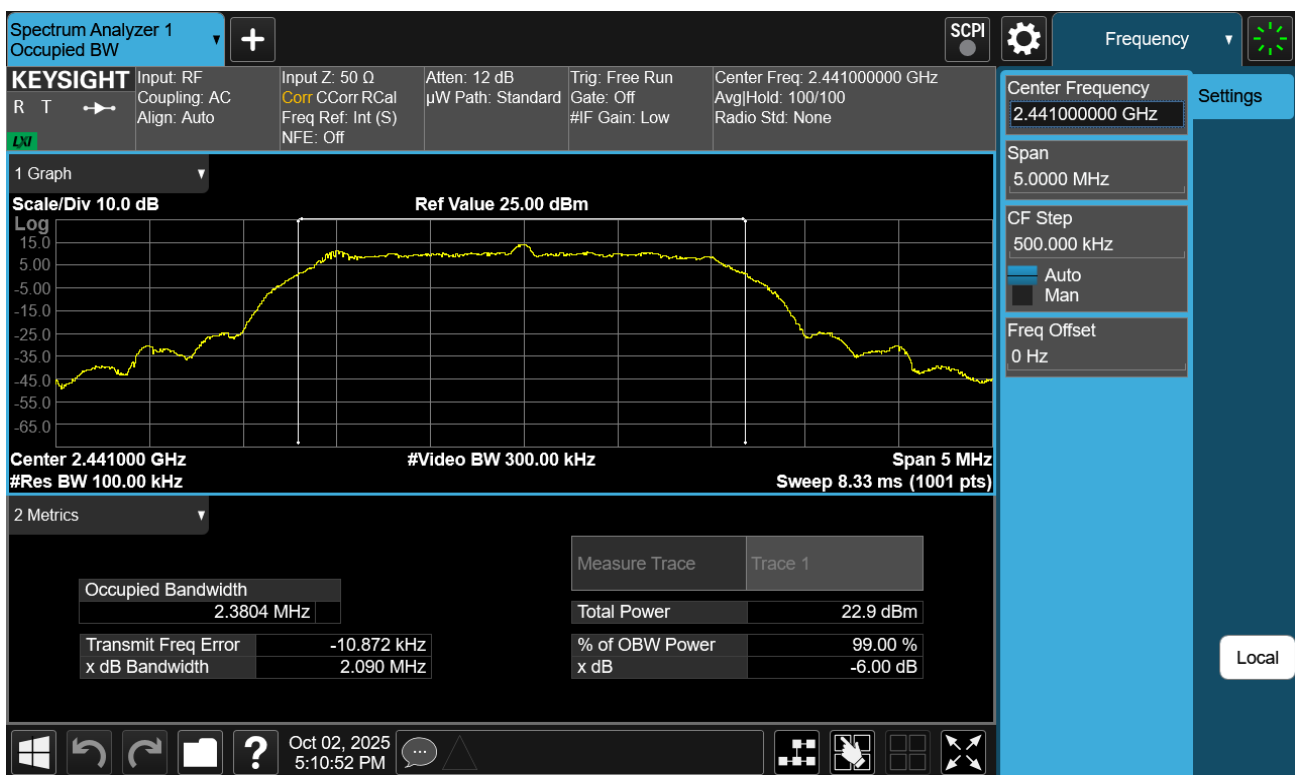
FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2509100081-07-R3.BCG	Test Dates: 09/15/2025 - 11/12/2025	EUT Type: Tablet Device	Page 53 of 222

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Plot 7-61. 6dB BW Plot Antenna WF2b (Bluetooth (HDRPS2), 2Mbps, ePA – Ch. 1)



Plot 7-62. 6dB BW Plot Antenna WF2b (Bluetooth (HDRPS2), 2Mbps, ePA – Ch. 38)

FCC ID: BCGA3461 IC: 579C-A3461		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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