



Element Suwon
13, Heungdeok 1-ro, Giheung-gu, Yongin-si,
Gyeonggi-do, 16954 South Korea
Tel. 031.660.7319 / Fax 031.660.7318
<http://www.element.com>

MEASUREMENT REPORT FCC PART 15.247 Bluetooth

Applicant Name:

Samsung Electronics Co., Ltd.
129, Samsung-ro,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:

03/26/2024 – 05/02/2024

Test Report Issue Date:

05/02/2024

Test Site/Location:

Element Lab. Yongin-Si, Gyeonggi-do, South Korea

Test Report Serial No.:

1M2401250007-09-R1.A3L

FCC ID:

A3LNP960XMA

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type:

Certification

Model:

NP960XMA

Additional Model(s):

NP960XMB, NP964XMA, NP964XMB

EUT Type:

Portable Computing Device

Max. RF Output Power:

52.167 mW (17.17 dBm) Peak Conducted

Frequency Range:

2402 – 2480MHz

Type of Modulation:

GFSK, $\pi/4$ -DQPSK, 8DPSK

FCC Classification:

FCC Part 15 Spread Spectrum Transmitter (DSS)

Test Procedure(s):

ANSI C63.10-2013, KDB 558074 D01 v05r02,
KDB 484596 D01 v02r03

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and has been tested in accordance with the measurement procedures specified in ANSI C63.10-2013 (See Test Report). These measurements were performed with no deviation from the standards. Test results reported herein relate only to the item(s) tested.

This revised Test Report (S/N: 1M2401250007-09-R1.A3L) supersedes and replaces the previously issued test report (S/N: 1M2401250007-09.A3L) 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 of it 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.

Prepared by

Reviewed by

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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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 Innovation, Science and Economic Development Canada.

1.2 Element Test Location

These measurement tests were conducted at the Element Suwon Laboratory located at 13, Heungdeok 1-ro, Giheung-gu, Yongin-si, Gyeonggi-do, 16954, South Korea. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

Measurements were performed at Element Materials Technology Suwon, Ltd. located in Yongin-si, Gyeonggi-do, 16954, South Korea.

- Element Materials Technology Suwon, Ltd. is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation(A2LA) with Certificate number 2041.04 for Specific Absorption Rate (SAR), and Electromagnetic Compatibility (EMC) & Telecommunications testing for FCC and Innovation, Science, and Economic Development Canada rules.
- Element Materials Technology Suwon, Ltd. facility is accredited, designated, and recognized in accordance with the provision of Radio Wave Act and International Standard ISO/IEC 17025:2017 under the National Radio Research Agency.
 - Designation Number / CABID: KR0169
 - Test Firm Registration Number of FCC: 417945
 - Test Firm Registration Number of ISSED: 26168

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Computing Device FCC ID: A3LNP960XMA**. The test data contained in this report pertains only to the emissions due to the EUT's Bluetooth transmitter.

- This Bluetooth module has been tested by a Bluetooth Qualification Lab, and we confirm the following:
 - A) The hopping sequence is pseudorandom
 - B) All channels are used equally on average
 - C) The receiver input bandwidth equals the transmit bandwidth
 - D) The receiver hops in sequence with the transmit signal
- 15.247(g): In accordance with the Bluetooth Industry Standard, the system is designed to comply with all of the regulations in Section 15.247 when the transmitter is presented with a continuous data (or information) system.
- 15.247(h): In accordance with the Bluetooth Industry Standard, the system does not coordinate its channels selection/ hopping sequence with other frequency hopping systems for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.
- 15.247(h): The EUT employs Adaptive Frequency Hopping (AFH) which identifies sources of interference namely devices operating in 802.11 WLAN and excludes them from the list of available channels. The process of re-mapping reduces the number of test channels from 79 channels to a minimum number of 20 channels.

Test Device Serial No.: 0791F, 1105D

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), Bluetooth (1x, EDR, LE)

Ch.	Frequency (MHz)
00	2402
:	:
39	2441
:	:
78	2480

Table 2-1. Frequency/ Channel Operations

Note: This device is capable of operating in hopping and non-hopping mode. The EUT can hop between 79 different channels in the 2400 – 2483.5MHz band.

2.3 Antenna Description

This device is only used with its integral antennas as shown in the documentation of this filing. The antenna gains for this device are as shown in the table below:

Frequency [GHz]	Antenna 1 Gain (dBi)	Antenna 2 Gain (dBi)	Directional Gain (dBi)
2.4	-1.62	-1.82	1.29

Table 2-2. Antenna Peak Gain

Note: This device is capable of operating in hopping and non-hopping mode. The EUT can hop between 79 different channels in the 2400 – 2483.5MHz band.

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2.4 Test Configuration

The EUT was tested per the guidance of ANSI C63.10-2013. ANSI C63.10-2013 was also 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, 7.9 for radiated emissions test setups, and 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, and 7.8 for antenna port conducted emissions test setups.

2.5 Software and Firmware

The test was conducted with firmware version REV0.1 and software version Windows 11 installed on the EUT.

2.6 EMI Suppression Device(s)/Modifications

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

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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedure described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) was 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 10'x16'x9' shielded enclosure. The shielded enclosure is manufactured by SY cooperation RF Enclosures. The line-conducted facility is located inside a 7m x 3.66m x 2.7m shielded enclosure. 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 ETS Lindgren Model LPRX-4X30 (100dB Attenuation, 14kHz-18GHz) and the two EMI/RFI filters are ETS Lindgren Model LRW-2030-S1 (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 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 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 7.12. The EMI Receiver mode of the R&S ESW was used to perform AC line conducted emissions testing. Automated test software was used to perform the AC line conducted emissions testing.

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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.

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.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 414788 D01 v01r01.

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 antennas 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 C63.10-2013. 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	1.37
Conducted Disturbance	3.09
Radiated Disturbance (<1GHz)	3.94
Radiated Disturbance (>1GHz)	4.75
Radiated Disturbance (>18GHz)	4.84

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6.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	N9030A	PXA Signal Analyzer	7/6/2023	Annual	7/3/2024	MY49432391
Anritsu	S820E	Cable and Antenna Analyzer	7/4/2023	Annual	7/3/2024	1839097
Anritsu	TOSLKFS0A-40	Calibration Kit	N/A	-	N/A	1825024
Com-Power	AL-130R	Active Loop Antenna	10/21/2022	Biennial	10/20/2024	10160045
Fairview Microwave	FM2CP1122-10	Coupler	7/4/2023	Annual	7/3/2024	1946
Keysight Technologies	N9030B	PXA Signal Analyzer	7/4/2023	Annual	7/3/2024	MY57143276
Mini-Circuits	BW-N10W5+	Attenuator	1/11/2024	Annual	1/10/2025	TEMPNO.01-151
NARDA	180-442A-KF	Horn Antenna (Small)	1/16/2024	Annual	1/15/2025	T058701-03
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	7/4/2023	Annual	7/3/2024	116851
Rohde & Schwarz	TS-PR1840	Preamplifier	7/6/2023	Annual	7/5/2024	100049
Rohde & Schwarz	ENV216	Two-Line V-Network	4/6/2024	Annual	4/5/2025	101319
Rohde & Schwarz	ESW43	EMI TEST Receiver	7/5/2023	Annual	7/4/2024	101761
Rohde & Schwarz	TS-SFUNIT-Rx	Shielded Filter Unit	1/11/2024	Annual	1/10/2025	102151
Schwarzbeck	VULB9162	Broadband TRILOG Antenna	6/1/2023	Biennial	5/31/2025	9162-217
Sunol Sciences	DRH-118	Horn Antenna	1/26/2023	Biennial	1/25/2025	A102416-1

Table 6-1. Annual Test Equipment Calibration Schedule

Notes:

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.

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7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LNP960XMA
 Method/System: Frequency Hopping Spread Spectrum (FHSS)
 Number of Channels: 79

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(1)(iii)	RSS-247 [5.1(1)]	20dB Bandwidth	N/A	CONDUCTED	PASS	Section 7.2
15.247(b)(1)	RSS-247 [5.4(2)]	Peak Transmitter Output Power	< 1 Watt if ≥ 75 non-overlapping channels used		PASS	Section 7.3
15.247(a)(1)	RSS-247 [5.1(2)]	Channel Separation	> 2/3 of 20 dB BW for systems with Output Power < 125mW		PASS	Section 7.5
15.247(a)(1)(iii)	RSS-247 [5.1(4)]	Number of Channels	> 15 Channels		PASS	Section 7.7
15.247(a)(1)(iii)	RSS-247 [5.1(4)]	Time of Occupancy	< 0.4 sec in 31.6 sec period		PASS	Section 7.6
15.247(d)	RSS-247 [5.5]	Band Edge / Out-of-Band Emissions	Conducted > 20dBc		PASS	Section 7.4, Section 7.8
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-247 limits)	RADIATED	PASS	Section 7.9, Section 7.10, Section 7.11
15.207	RSS-Gen [8.8]	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 limits (RSS-Gen [8.8] limits)	LINE CONDUCTED	PASS	Section 7.12

Table 7-1. Summary of Test Results

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) 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, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) 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, attenuators, and couplers.
- 4) 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 “BT Auto,” Version 3.5.
- 5) For radiated band edge, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is “Chamber Automation,” Version 1.3.1.

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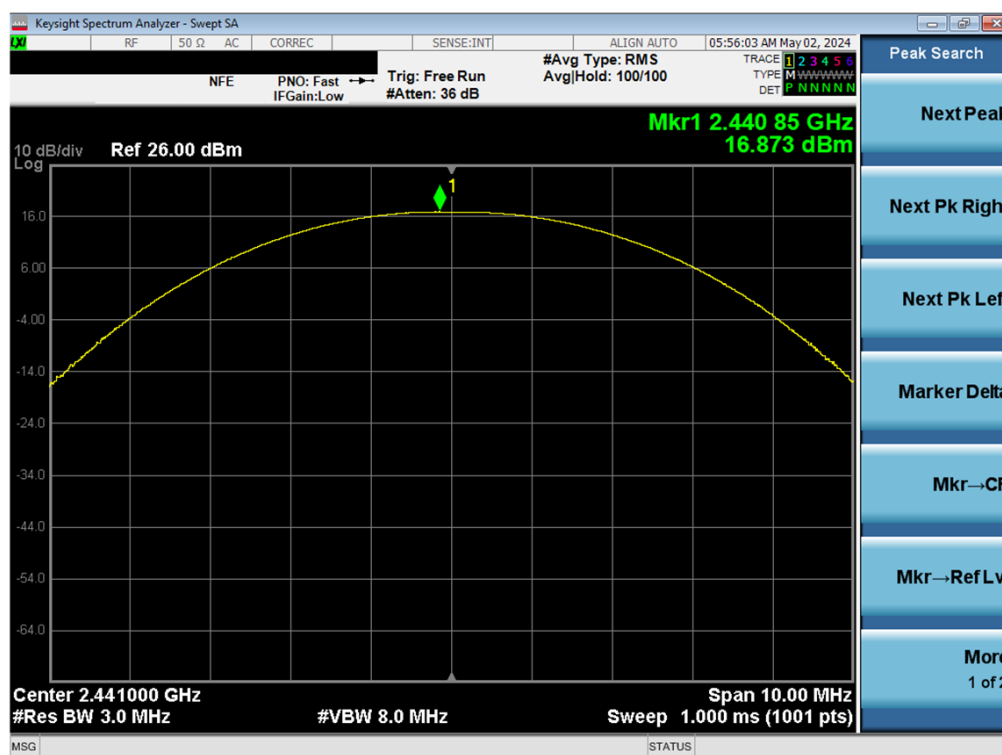
6) Data was leveraged from Model NP960XMA for the certification of NP960XMB. See Table 7-2 for spot-check results.

FCC Rules	Test Item	Test Case	Units	Limit	Reference Model:	Variant Model:	Deviation	Max Deviation	Pass/Fail
15.247(b)(1)	Conducted Output Power	1Mbps, Ch. 39, Ant1	dBm	N/A	NP960XMA	NP960XMB	0.30	3	PASS
15.209	Radiated Spurious Emissions	1 Mbps, Ch.39, Dual	dBm	53.98	9.55	8.63	0.92	3	PASS
15.209	Radiated Band Edge Emissions	3 Mbps, Ch.78, Dual	dBm	53.98	34.71	37.03	2.32	3	PASS

Table 7-2. Summary of Spot-checks Results

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Peak Conducted Power	
			[dBm]	[mW]
2441	1.0	39	16.87	48.674

Table 7-3. Conducted Output Power Measurements (Spot-check)



Plot 7-1. Peak Conducted Power Plot (Spot-check, 1Mbps – Ch. 39)

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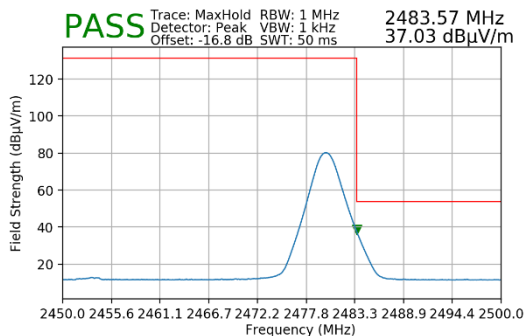


Worst Case Mode: Bluetooth
Worst Case Data Rate: 1 Mbps
Measurement Distance: 3 Meters
Operating Frequency: 2441MHz
Channel: 39

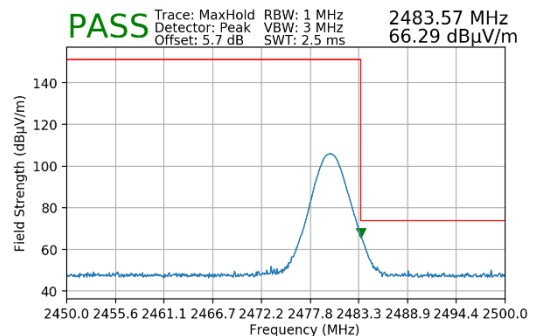
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4882.00	Avg	H	152	342	-78.55	2.68	-22.50	8.63	53.98	-45.35
4882.00	Peak	H	152	342	-66.20	2.68	0.00	43.48	73.98	-30.50

Table 7-4. Radiated Spurious Emission Measurements - Dual (spot-check)

Worst Case Mode: Bluetooth
Worst Case Data Rate: 3 Mbps
Measurement Distance: 3 Meters
Operating Frequency: 2480MHz
Channel: 78



Plot 7-2. Radiated Restricted Upper Band Edge Measurement (Average) – Dual



Plot 7-3. Radiated Restricted Upper Band Edge Measurement (Peak) – Dual

7) Each spot check test on the EUT was performed using the same procedure and setting that were used to perform the test on the corresponding reference device. And the worst-case RSE data is determined by an actual emission and not by noise floor.

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7.2 20dB Bandwidth Measurement

§15.247 (a.1.iii); RSS-247 [5.1(1)]

Test Overview and Limit

The bandwidth at 20dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

Test Procedure Used

ANSI C63.10-2013 – Section 6.9.2

Test Settings

1. The signal analyzers' automatic bandwidth measurement capability of the spectrum analyzer was used to perform the 20dB bandwidth measurement. The "X" dB bandwidth parameter was set to $X = 20$. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% OBW
3. VBW $\geq 3 \times$ RBW
4. Reference level set to keep signal from exceeding maximum input mixer level for linear operation.
5. Detector = Peak
6. Trace mode = max hold
7. Sweep = auto couple
8. The trace was allowed to stabilize

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

None

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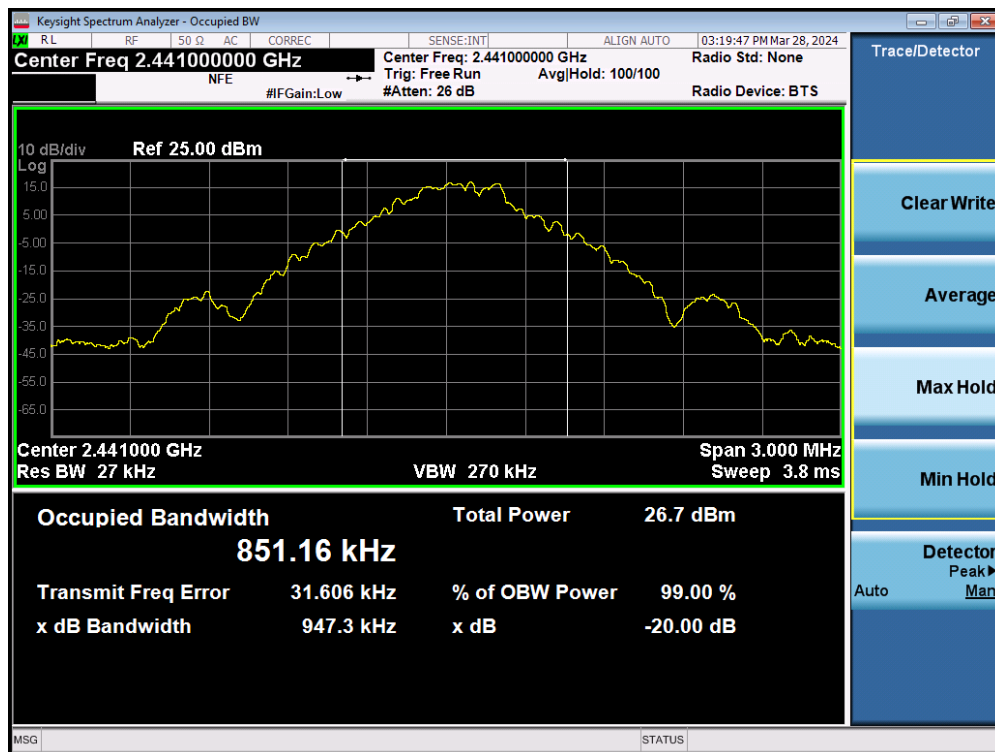
Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	20dB Bandwidth Test Results [kHz]
2402	1.0	GFSK	0	945.30
2441	1.0	GFSK	39	947.30
2480	1.0	GFSK	78	946.50
2402	2.0	$\pi/4$ -DQPSK	0	1337.00
2441	2.0	$\pi/4$ -DQPSK	39	1337.00
2480	2.0	$\pi/4$ -DQPSK	78	1337.00
2402	3.0	8DPSK	0	1305.00
2441	3.0	8DPSK	39	1309.00
2480	3.0	8DPSK	78	1304.00

Table 7-5. Conducted 20dB Bandwidth Measurements – Ant1

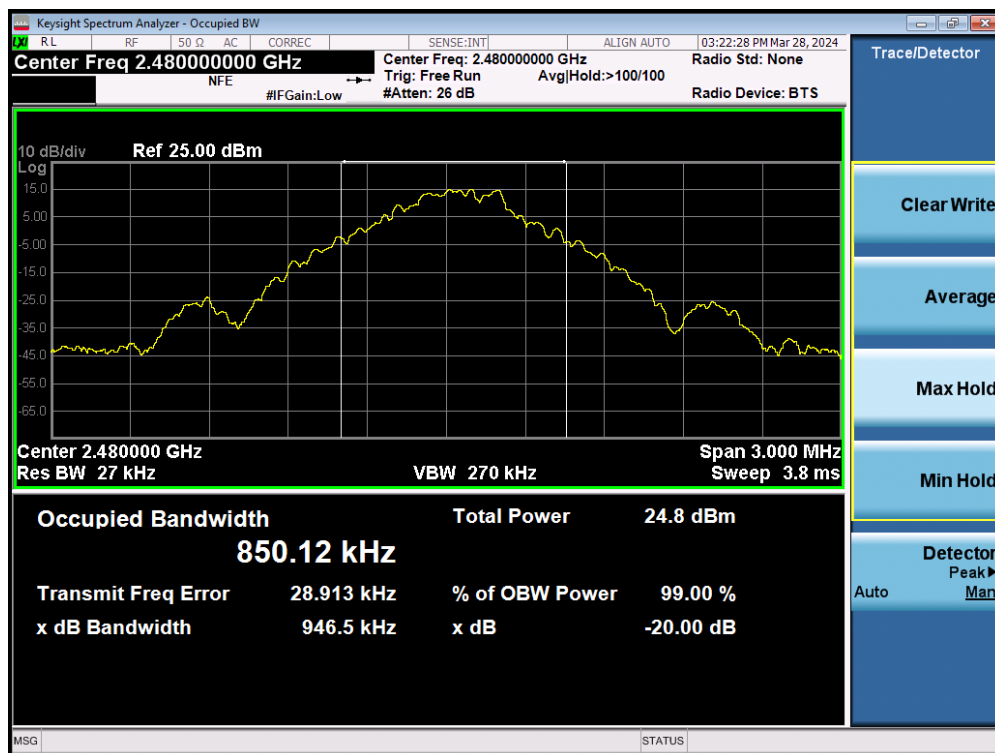


Plot 7-4. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 0) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 15 of 139

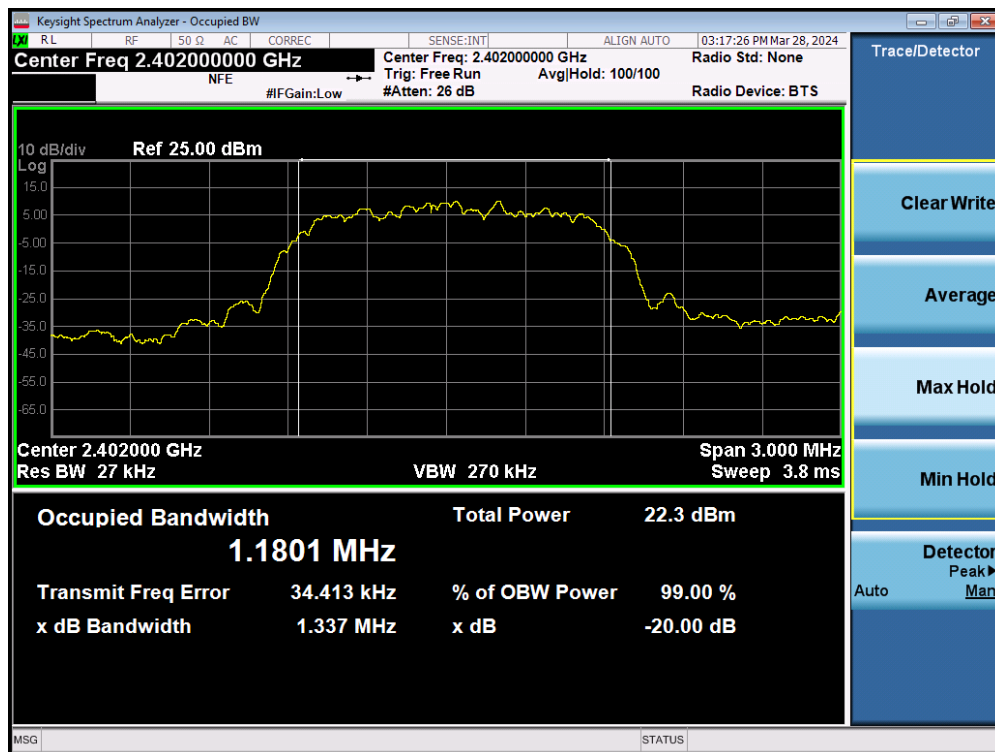


Plot 7-5. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 39) – Ant 1



Plot 7-6. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 78) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 16 of 139

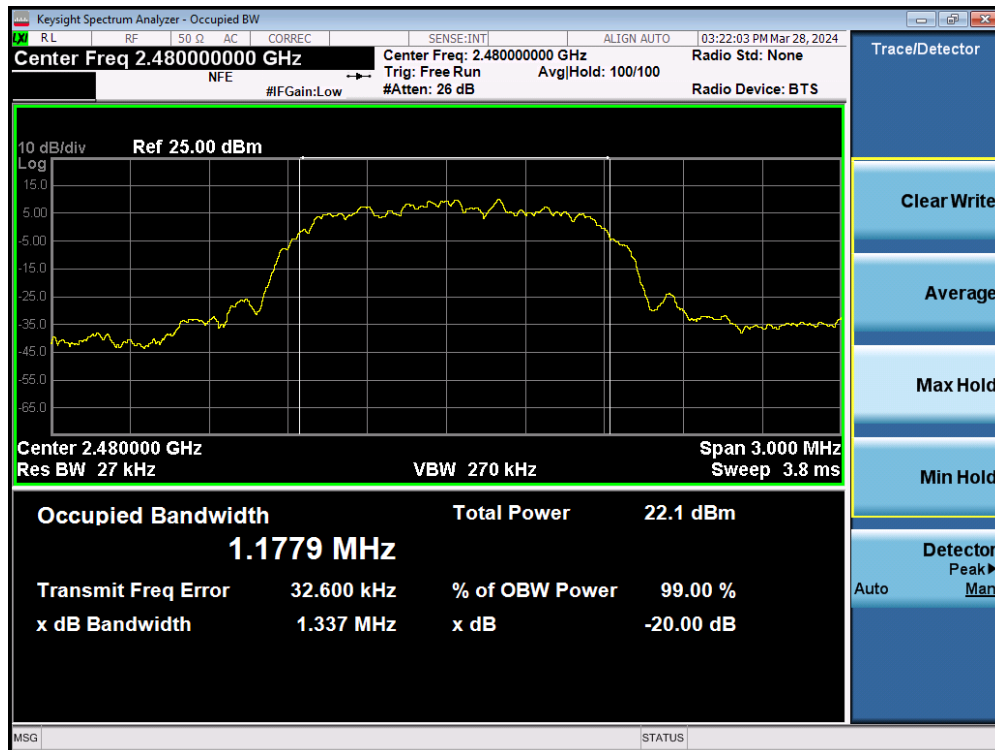


Plot 7-7. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 0) – Ant 1

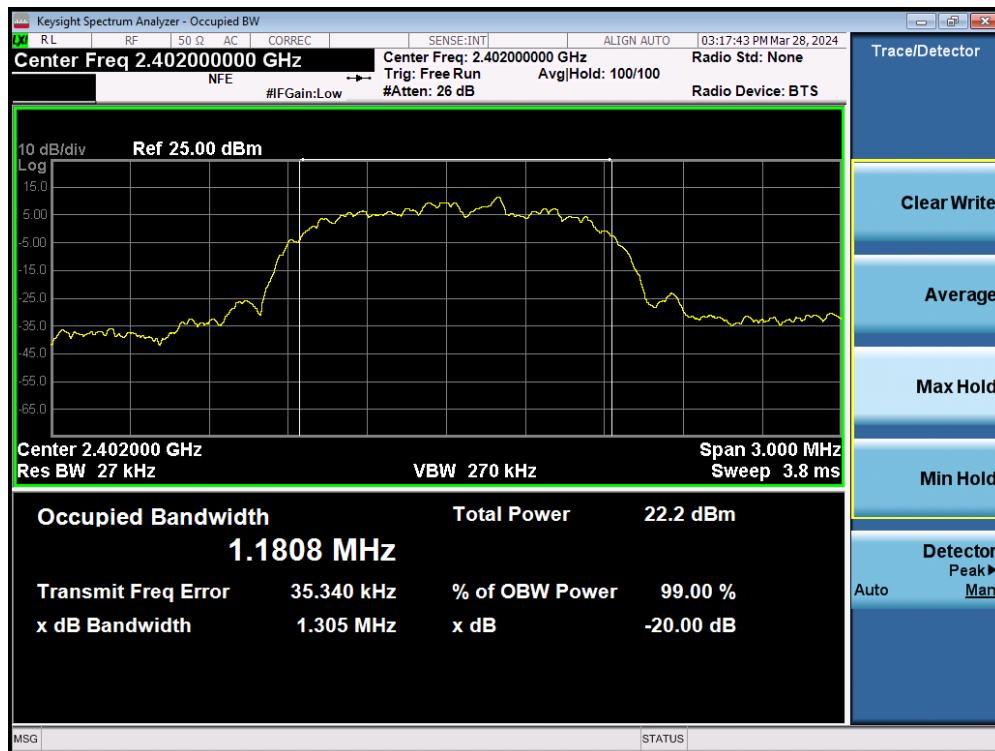


Plot 7-8. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 39) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 17 of 139



Plot 7-9. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 78) – Ant 1

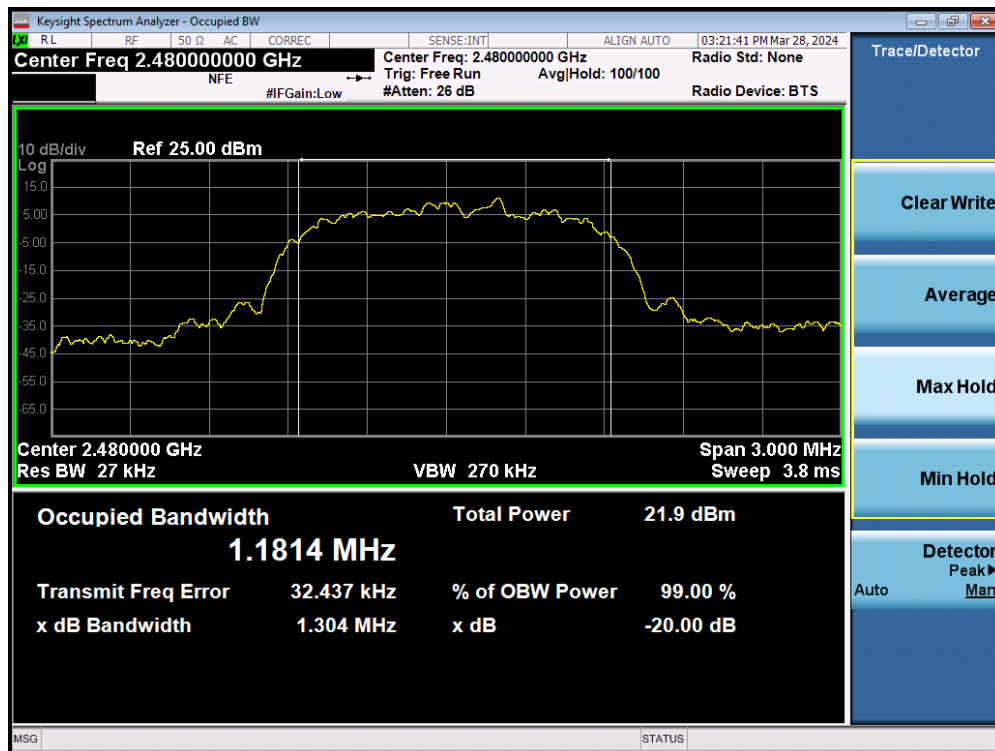


Plot 7-10. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 0) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 18 of 139



Plot 7-11. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 39) – Ant 1

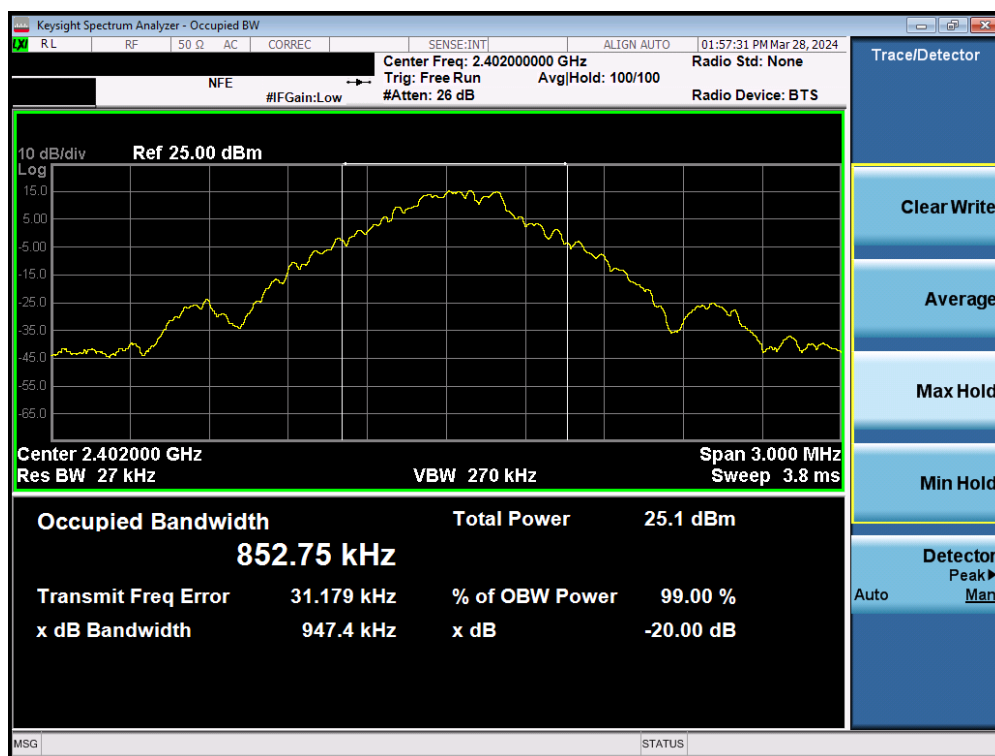


Plot 7-12. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 78) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 19 of 139

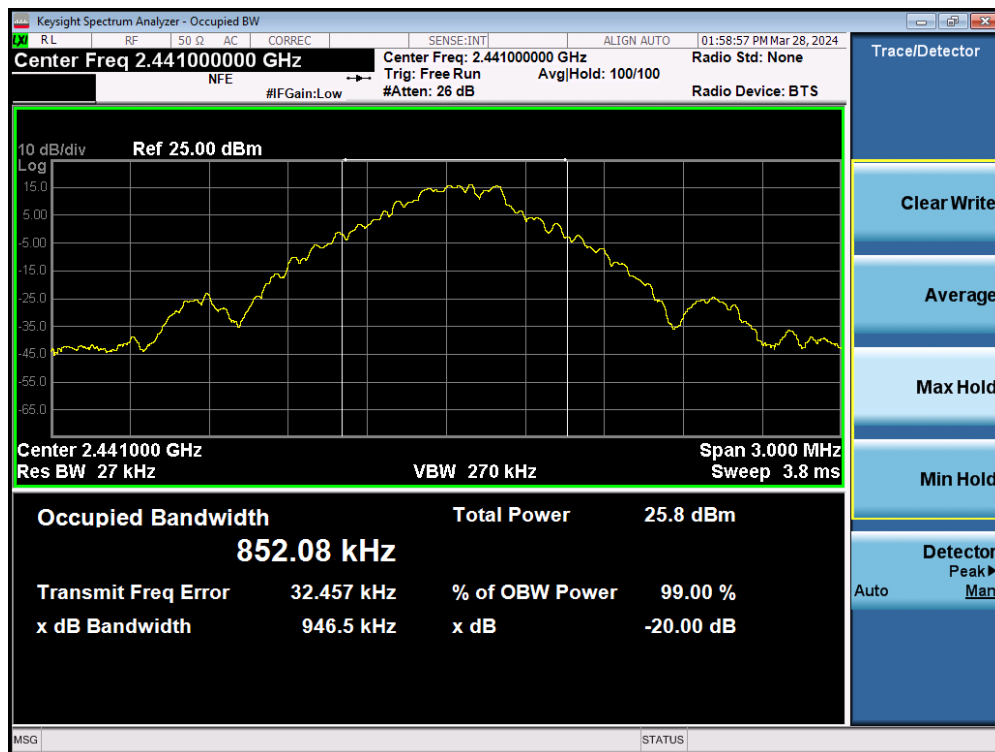
Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	20dB Bandwidth Test Results [kHz]
2402	1.0	GFSK	0	947.40
2441	1.0	GFSK	39	946.50
2480	1.0	GFSK	78	947.00
2402	2.0	$\pi/4$ -DQPSK	0	1338.00
2441	2.0	$\pi/4$ -DQPSK	39	1337.00
2480	2.0	$\pi/4$ -DQPSK	78	1336.00
2402	3.0	8DPSK	0	1307.00
2441	3.0	8DPSK	39	1306.00
2480	3.0	8DPSK	78	1305.00

Table 7-6. Conducted 20dB Bandwidth Measurements – Ant 2

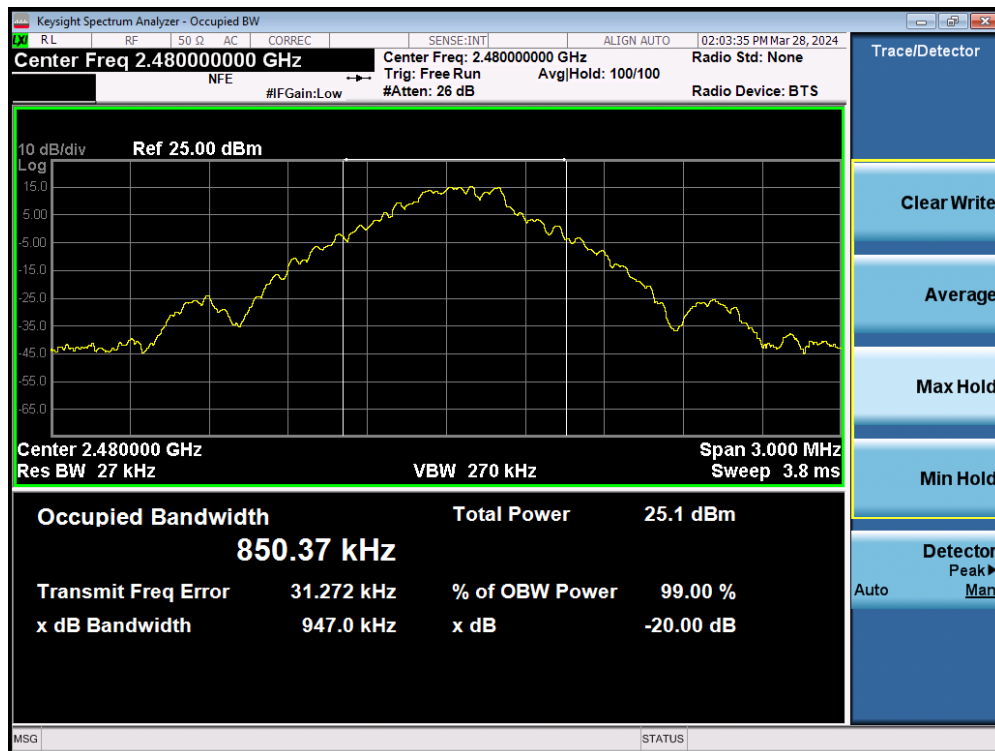


Plot 7-13. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 0) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 20 of 139

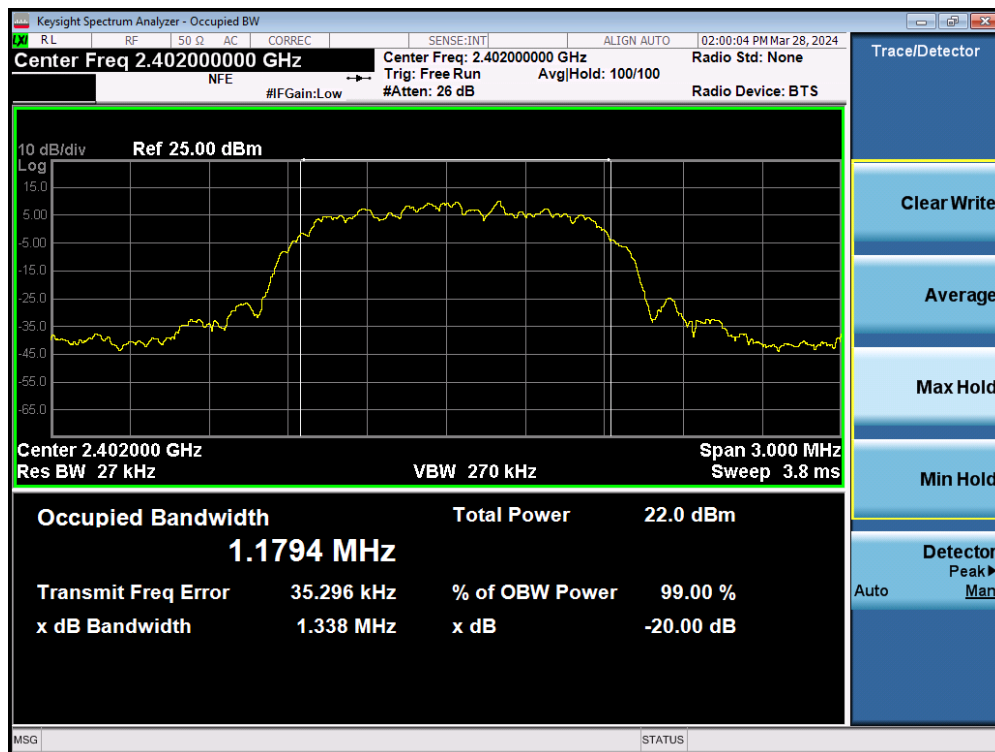


Plot 7-14. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 39) – Ant 2

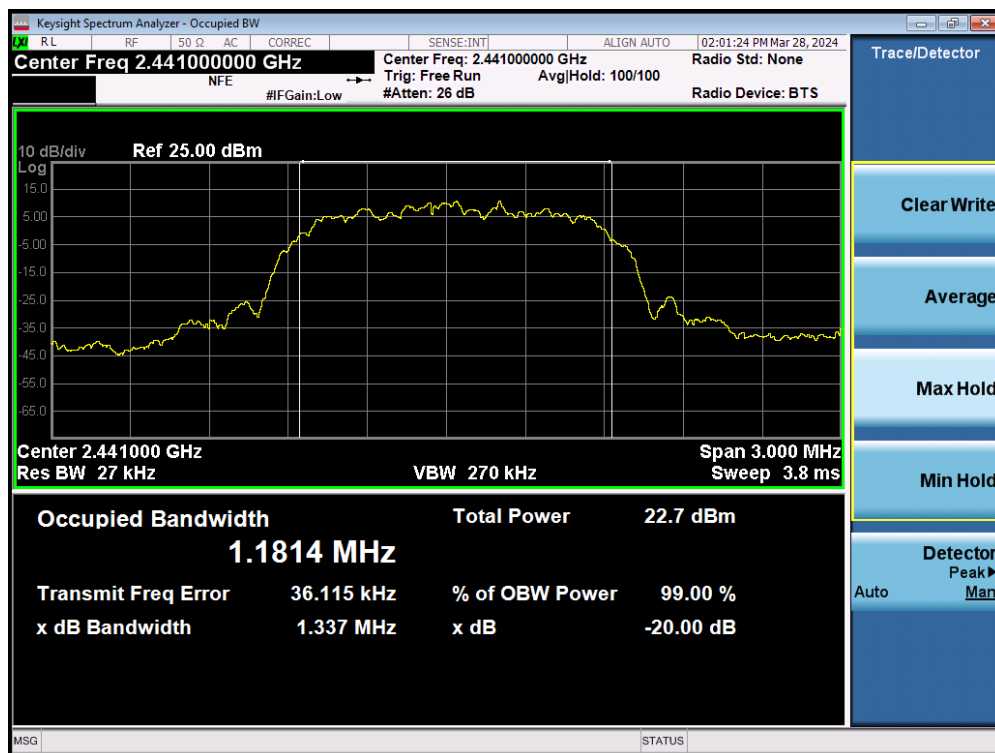


Plot 7-15. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 78) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 21 of 139



Plot 7-16. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 0) – Ant 2

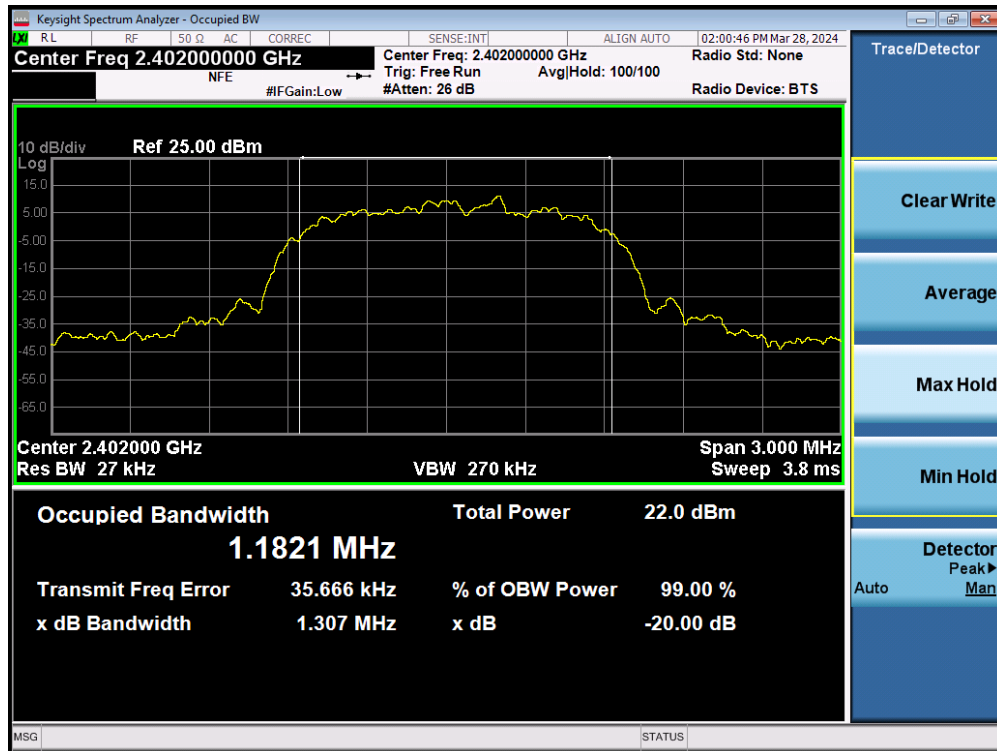


Plot 7-17. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 39) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 22 of 139

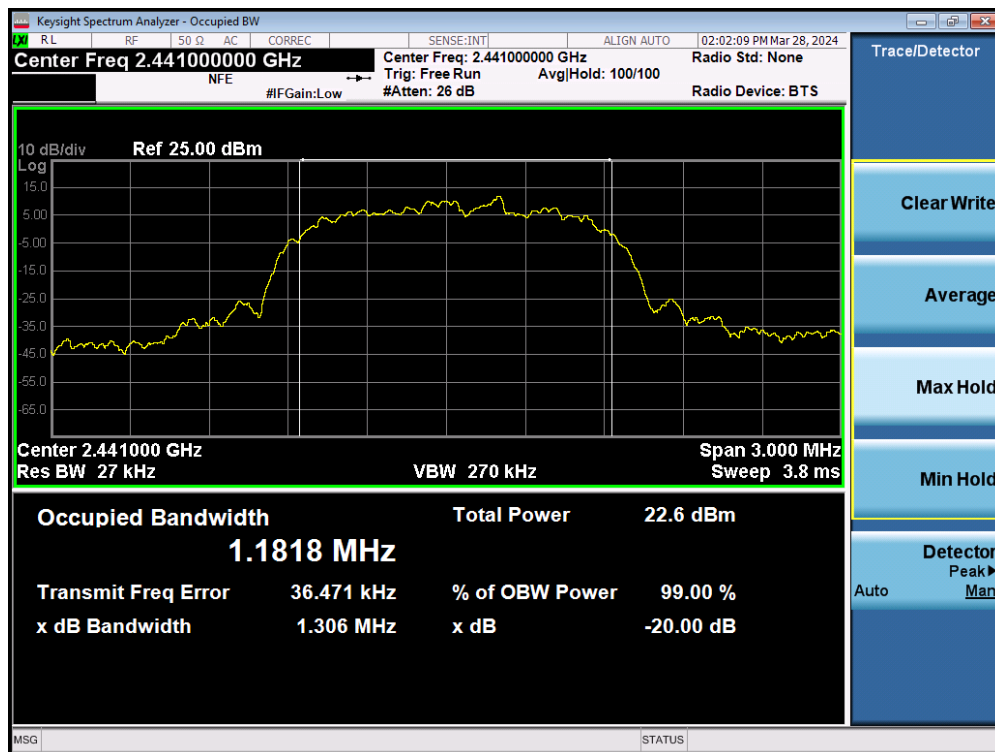


Plot 7-18. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 78) – Ant 2

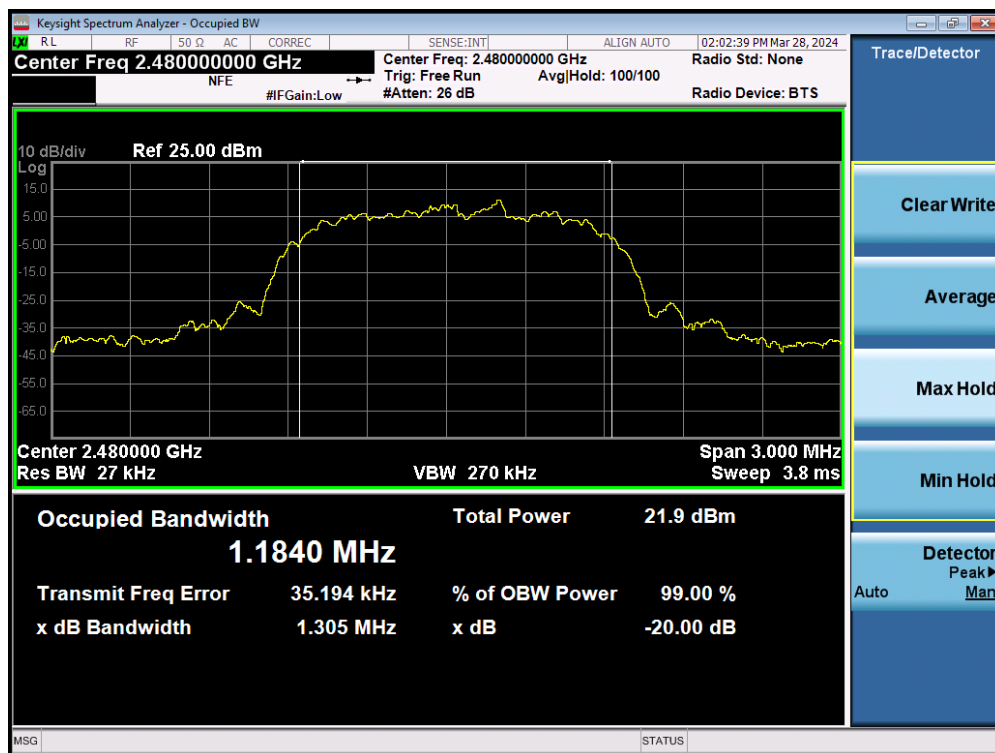


Plot 7-19. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 0) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 23 of 139



Plot 7-20. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 39) – Ant 2

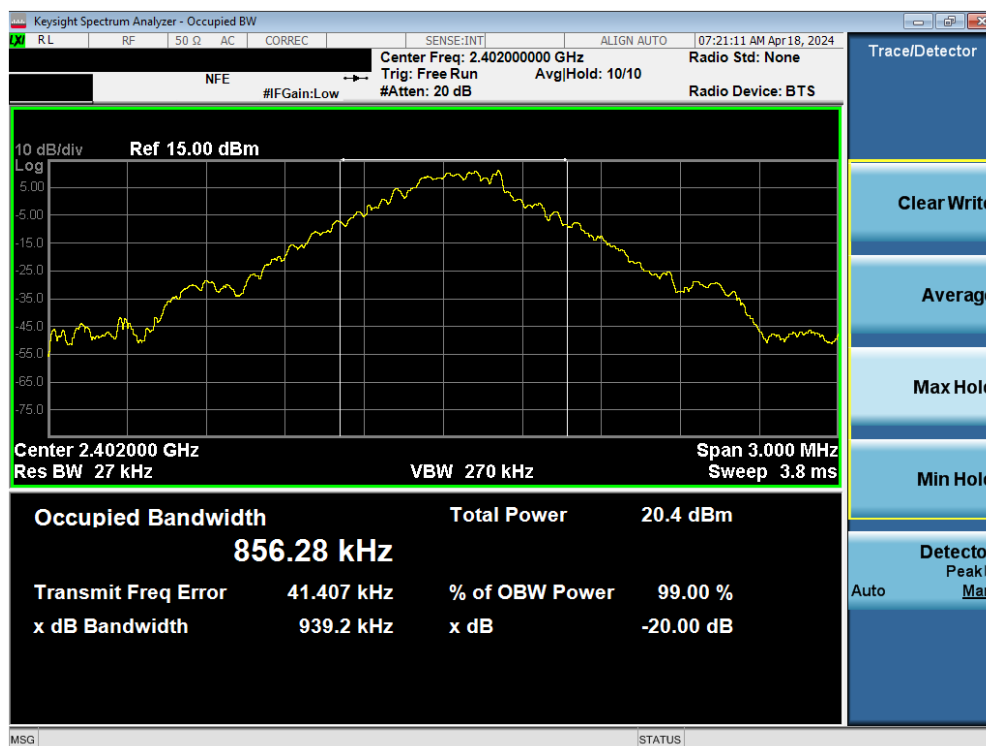


Plot 7-21. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 78) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 24 of 139

Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	20dB Bandwidth Test Results [kHz]
2402	1.0	GFSK	0	939.20
2441	1.0	GFSK	39	928.90
2480	1.0	GFSK	78	952.70
2402	2.0	$\pi/4$ -DQPSK	0	1347.00
2441	2.0	$\pi/4$ -DQPSK	39	1342.00
2480	2.0	$\pi/4$ -DQPSK	78	1301.00
2402	3.0	8DPSK	0	1262.00
2441	3.0	8DPSK	39	1308.00
2480	3.0	8DPSK	78	1330.00

Table 7-7. Conducted 20dB Bandwidth Measurements – Dual Ant1



Plot 7-22. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 0) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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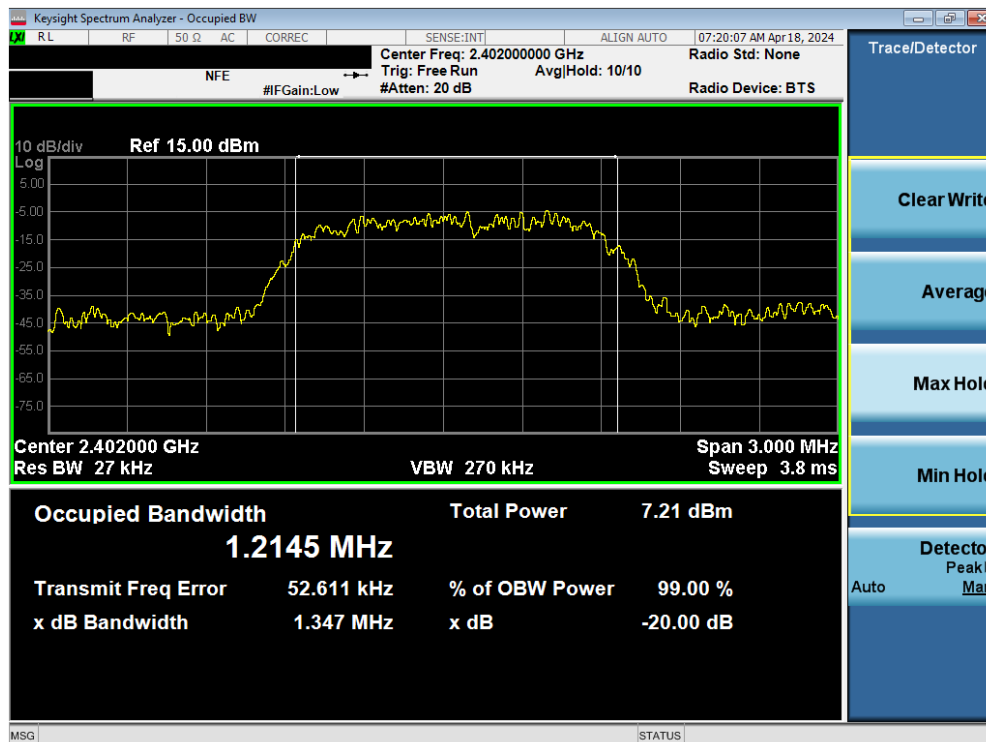


Plot 7-23. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 39) – Dual Ant 1

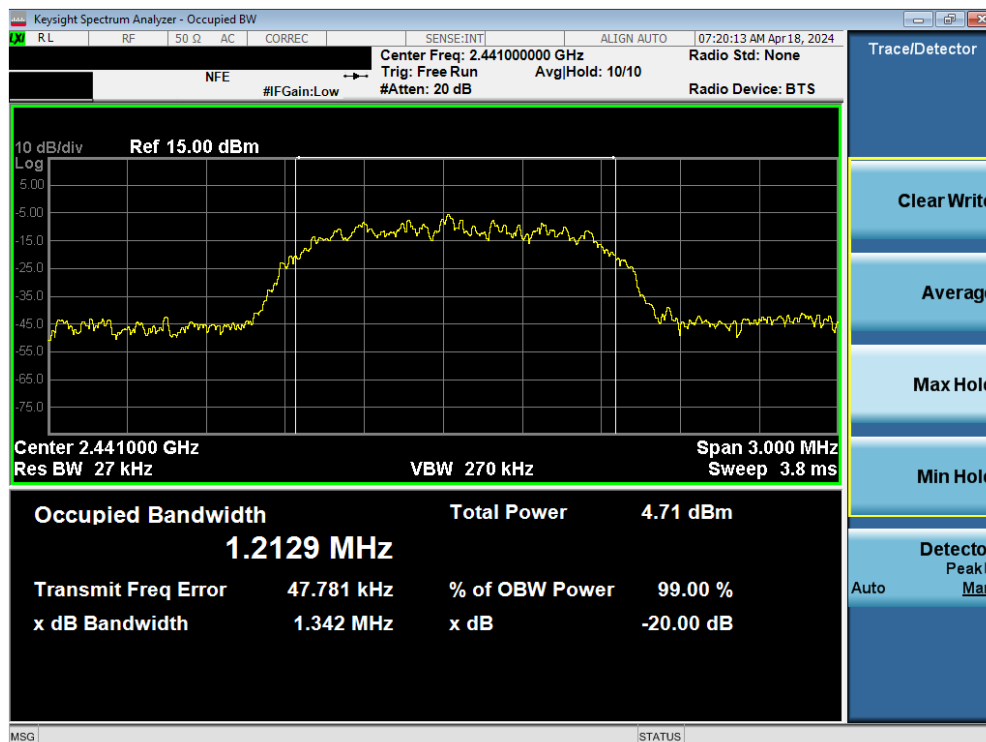


Plot 7-24. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 78) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 26 of 139

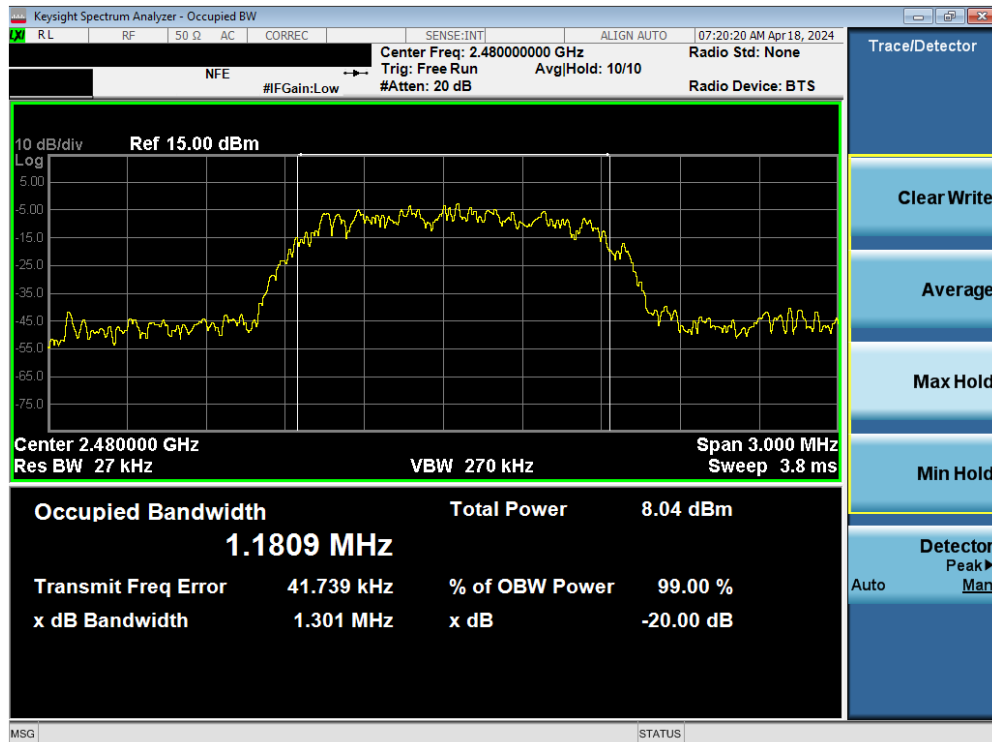


Plot 7-25. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 0) – Dual Ant 1

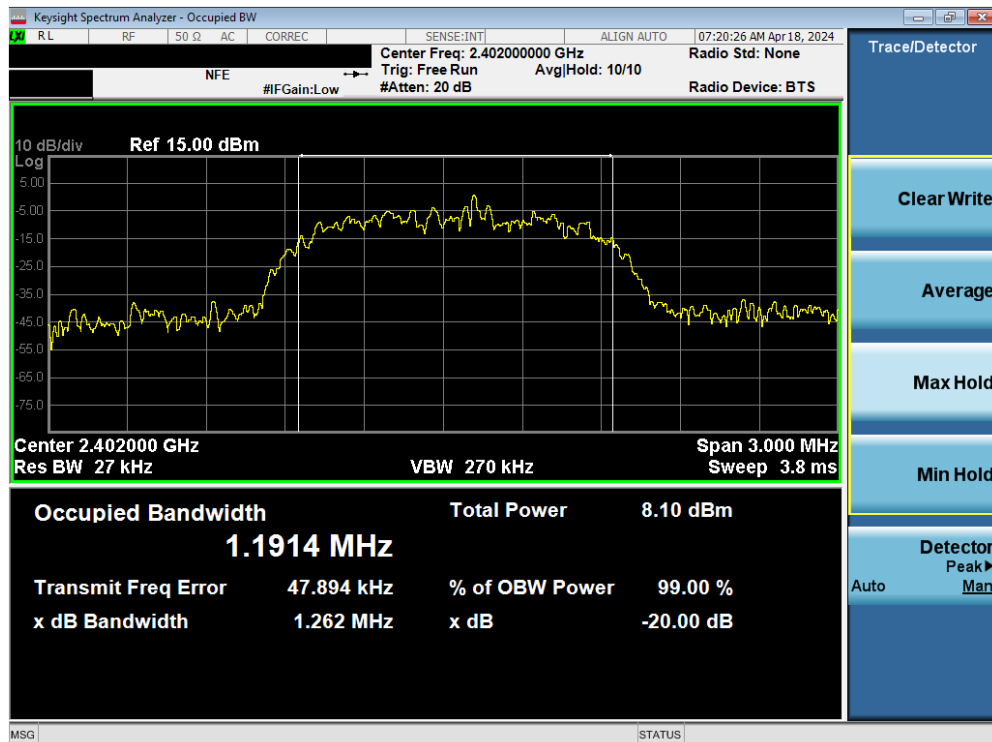


Plot 7-26. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 39) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 27 of 139

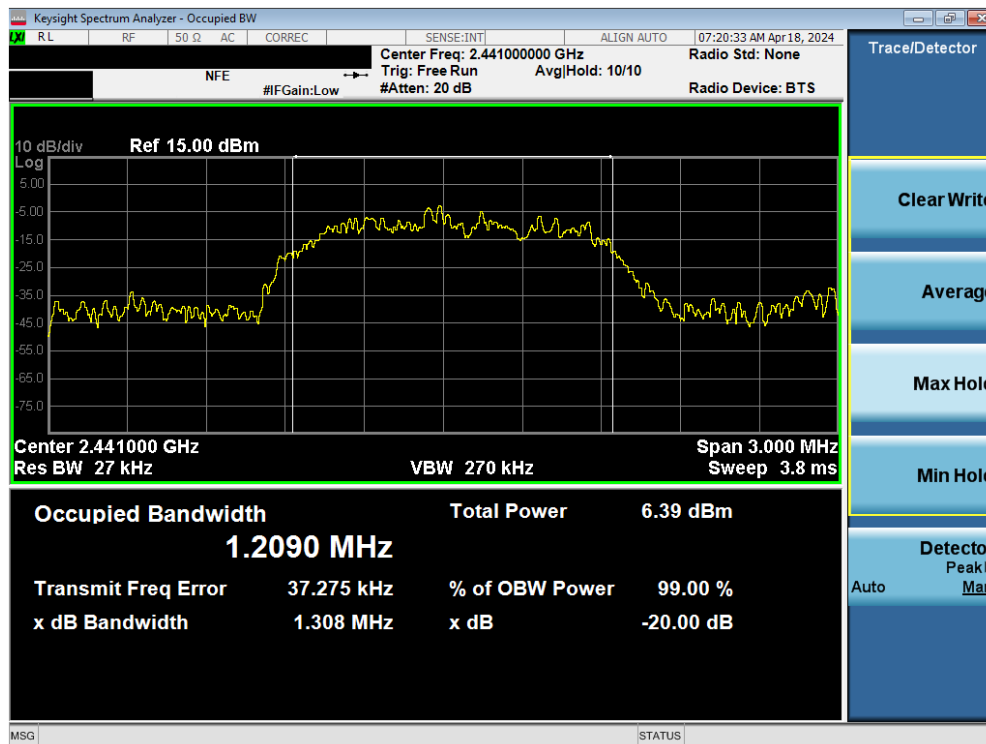


Plot 7-27. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 78) – Dual Ant 1

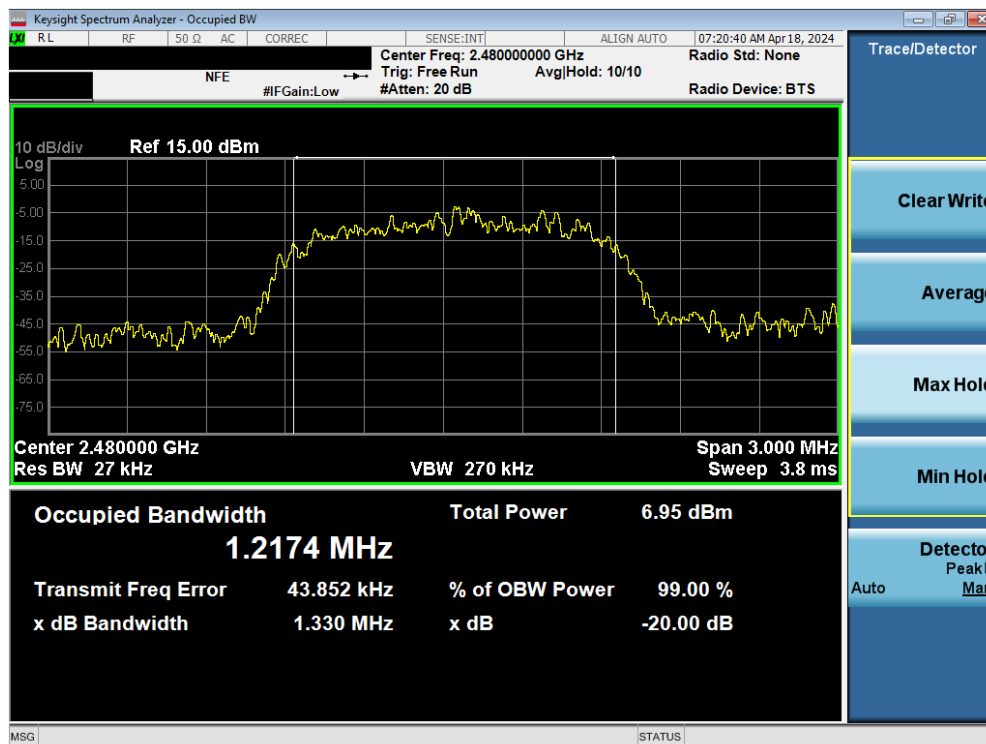


Plot 7-28. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 0) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 28 of 139



Plot 7-29. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 39) – Dual Ant 1

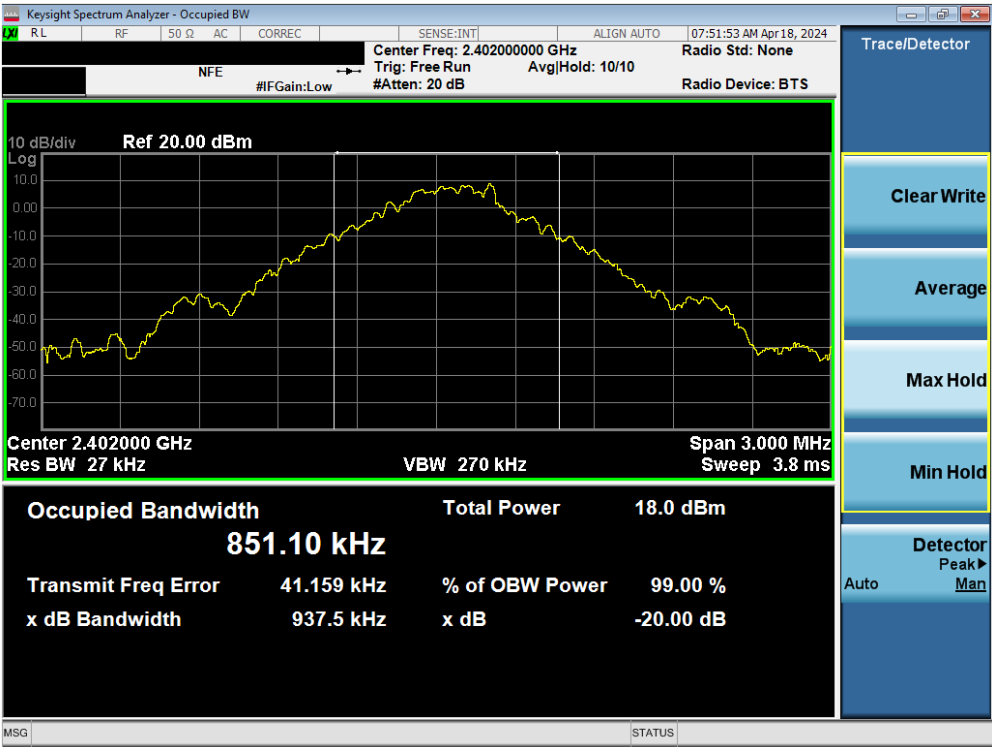


Plot 7-30. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 78) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 29 of 139

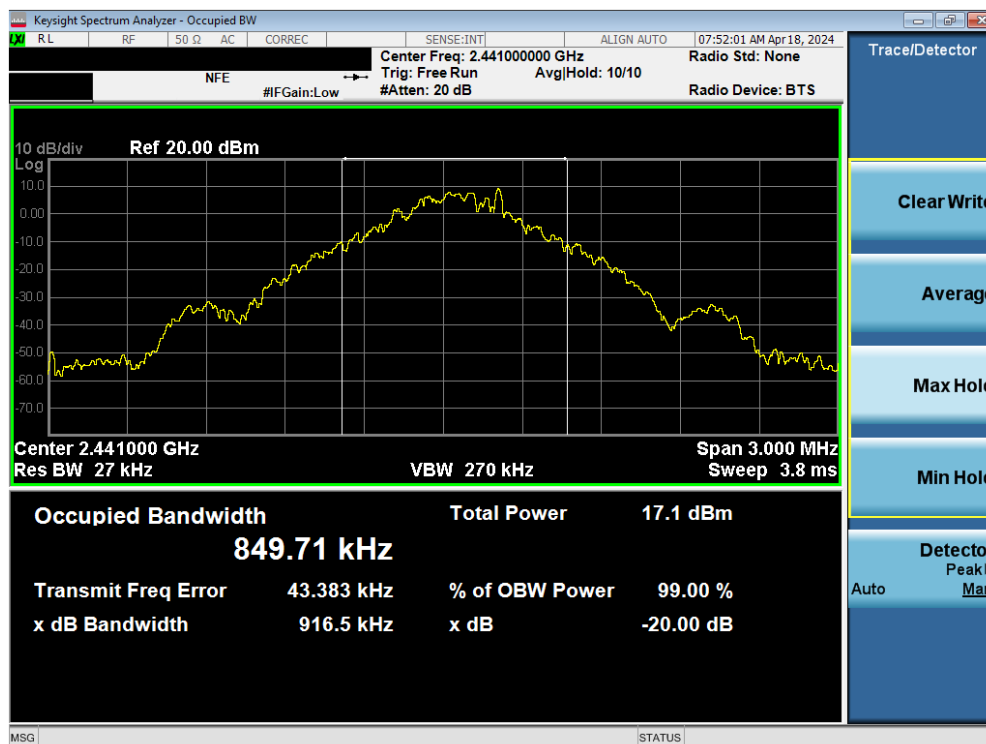
Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	20dB Bandwidth Test Results [kHz]
2402	1.0	GFSK	0	937.50
2441	1.0	GFSK	39	916.50
2480	1.0	GFSK	78	934.20
2402	2.0	$\pi/4$ -DQPSK	0	1353.00
2441	2.0	$\pi/4$ -DQPSK	39	1283.00
2480	2.0	$\pi/4$ -DQPSK	78	1350.00
2402	3.0	8DPSK	0	1321.00
2441	3.0	8DPSK	39	1322.00
2480	3.0	8DPSK	78	1286.00

Table 7-8. Conducted 20dB Bandwidth Measurements – Dual Ant 2



Plot 7-31. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 0) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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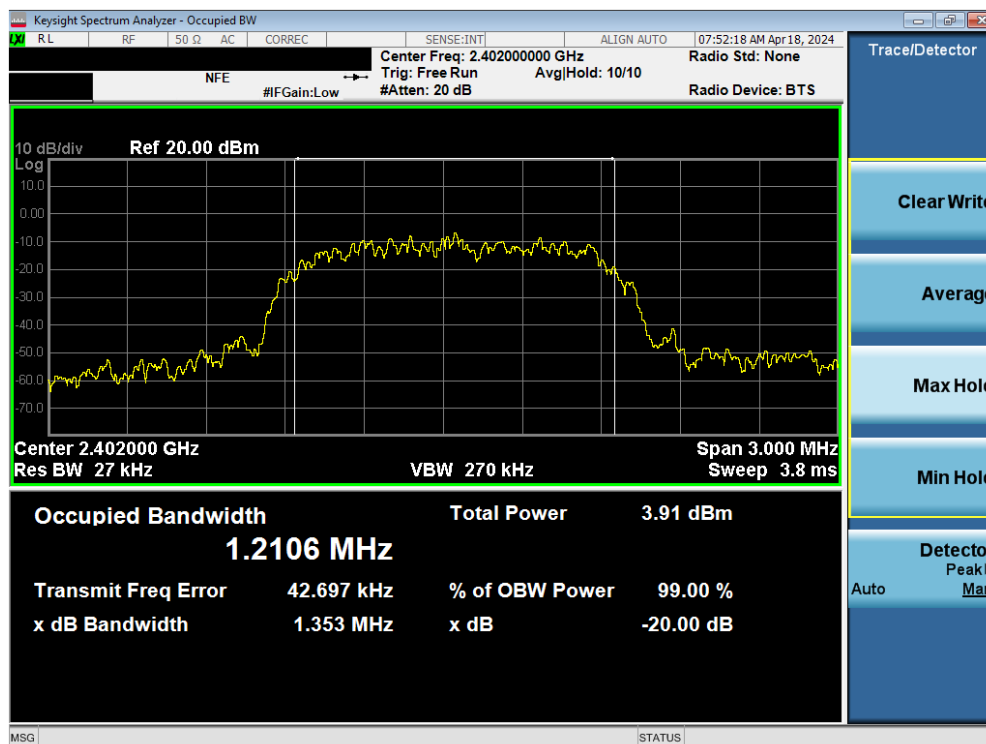


Plot 7-32. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 39) – Dual Ant 2

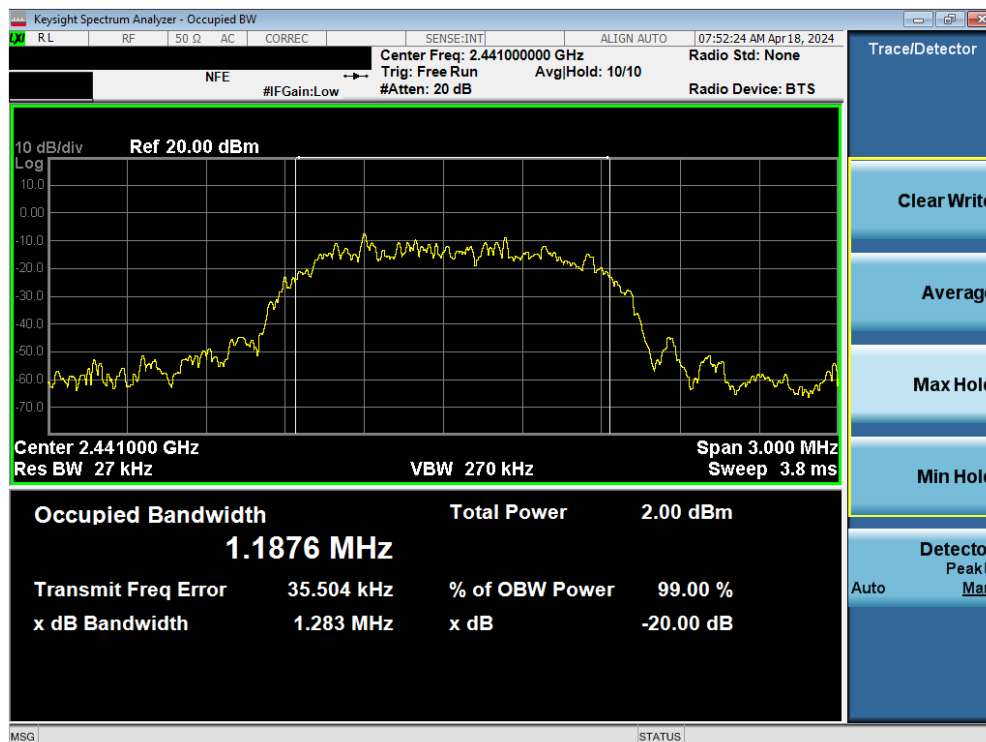


Plot 7-33. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 78) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 31 of 139

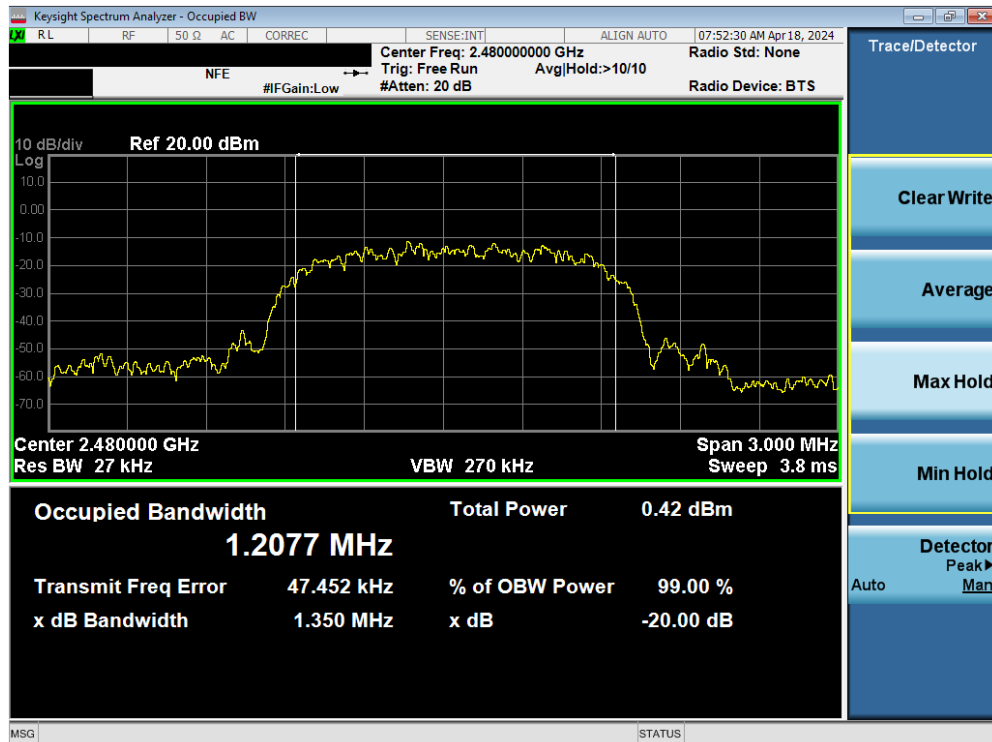


Plot 7-34. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 0) – Dual Ant 2

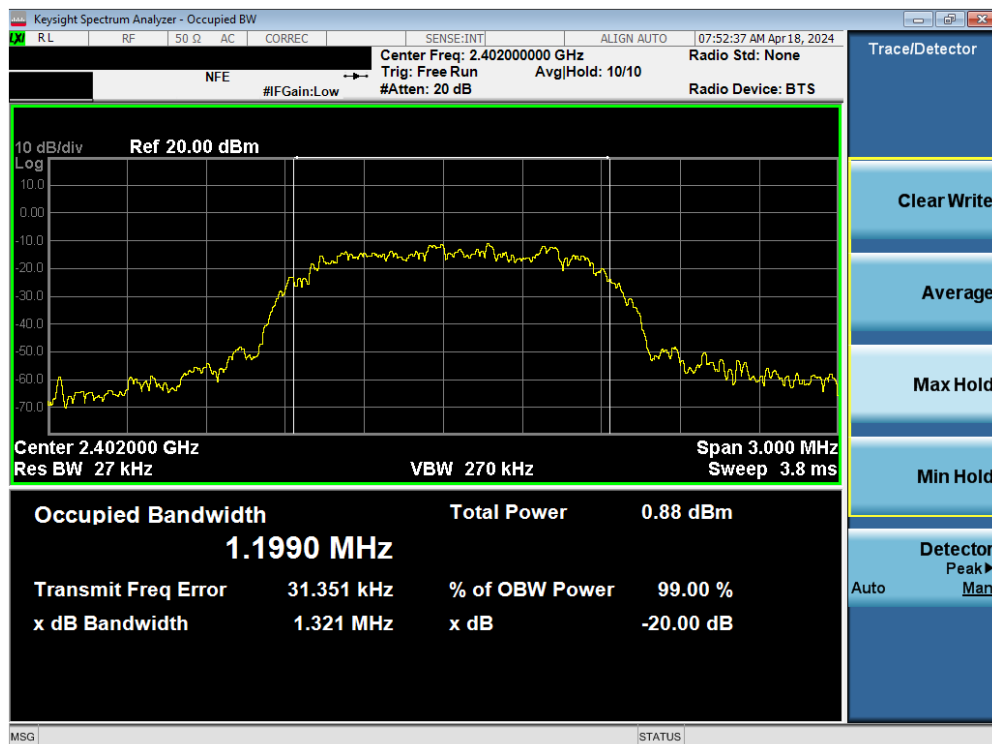


Plot 7-35. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 39) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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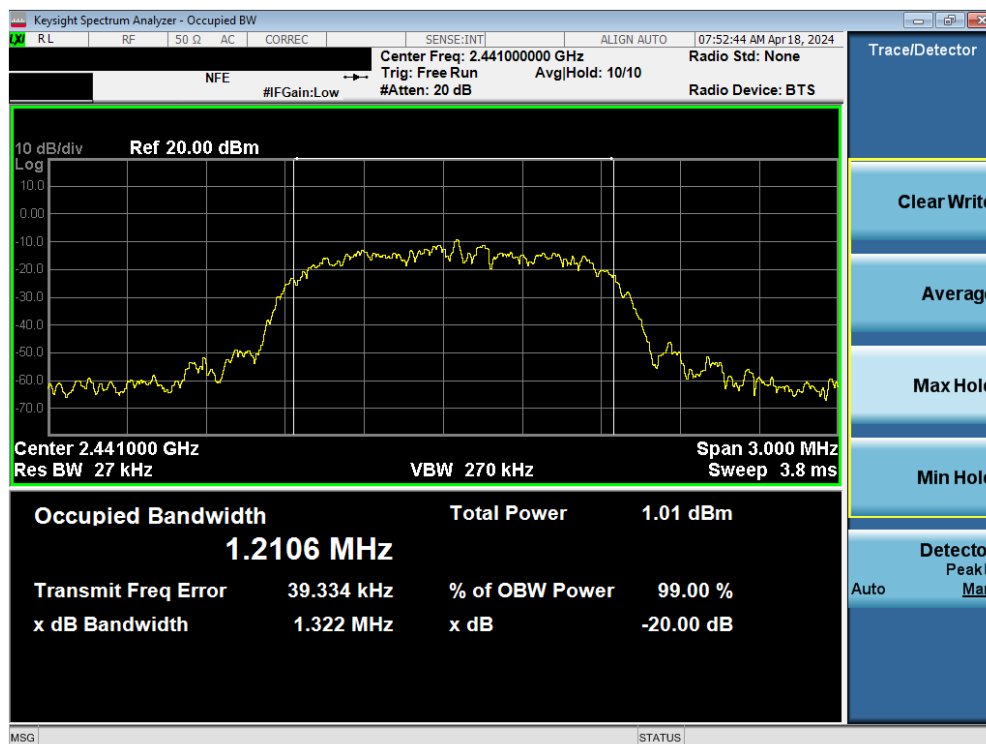


Plot 7-36. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 78) – Dual Ant 2



Plot 7-37. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 0) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-38. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 39) – Dual Ant 2



Plot 7-39. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 78) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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7.3 Output Power Measurement

§15.247 (b.1); RSS-247 [5.4(2)]

Test Overview and Limits

Measurement is made while the EUT is operating in non-hopping transmission mode. The powers shown below were measured using a spectrum analyzer with a Bluetooth signaling test set (Agilent Model: N4010A) used only to maintain a Bluetooth link with the EUT. Average power measurements are performed using the analyzer's "burst power" function with RBW = 3MHz. The burst power function triggers on a single set burst set to maximum power and measures the maximum average power on the on-time.

The maximum permissible output power is 1 Watt.

Test Procedure Used

ANSI C63.10-2013 – Section 7.8.5

ANSI C63.10-2013 – Section 11.9.2.3.2 method AVGPM-G

Test Settings

Peak Power Measurement

1. Span = approximately 5x 20dB bandwidth, centered on hopping channel
2. RBW > 20dB bandwidth of emission being measured
3. VBW ≥ RBW
4. Sweep = auto
5. Detector = peak
6. Trace mode = max hold
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

Note

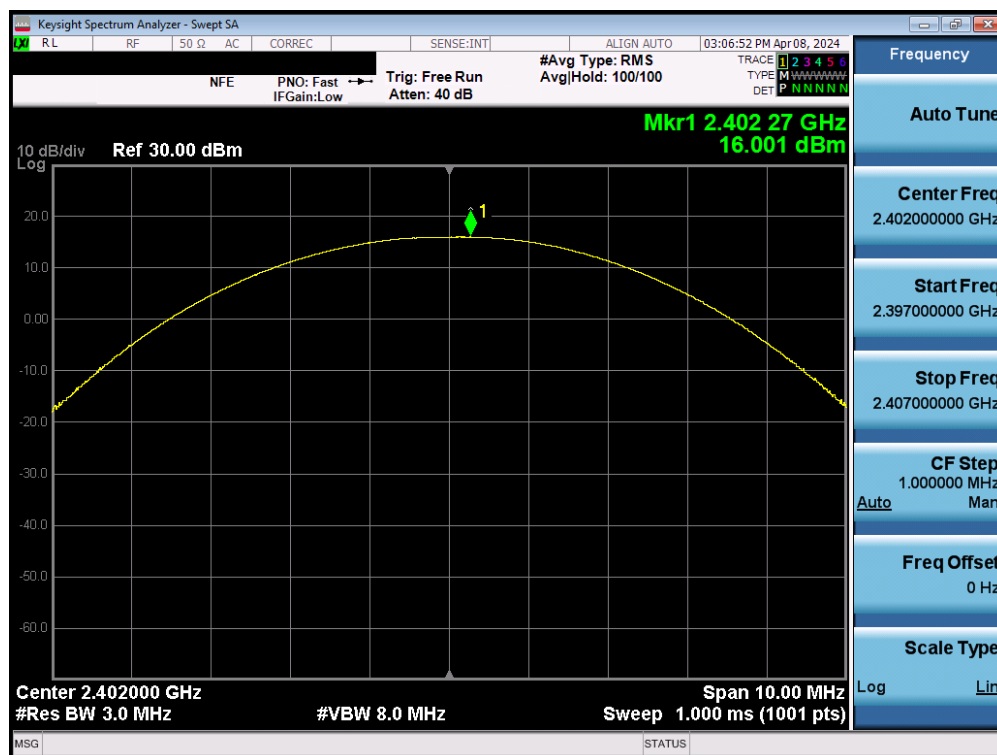
Final results were obtained using calibrated couplers, attenuators, and cables. The following formula was used:

$$\text{Output Power (dBm)} = \text{Raw Analyzer Level (dBm)} + \text{Cable Loss (dB)} + \text{Loss in Directional Coupler/Insertion Loss (dB)}$$

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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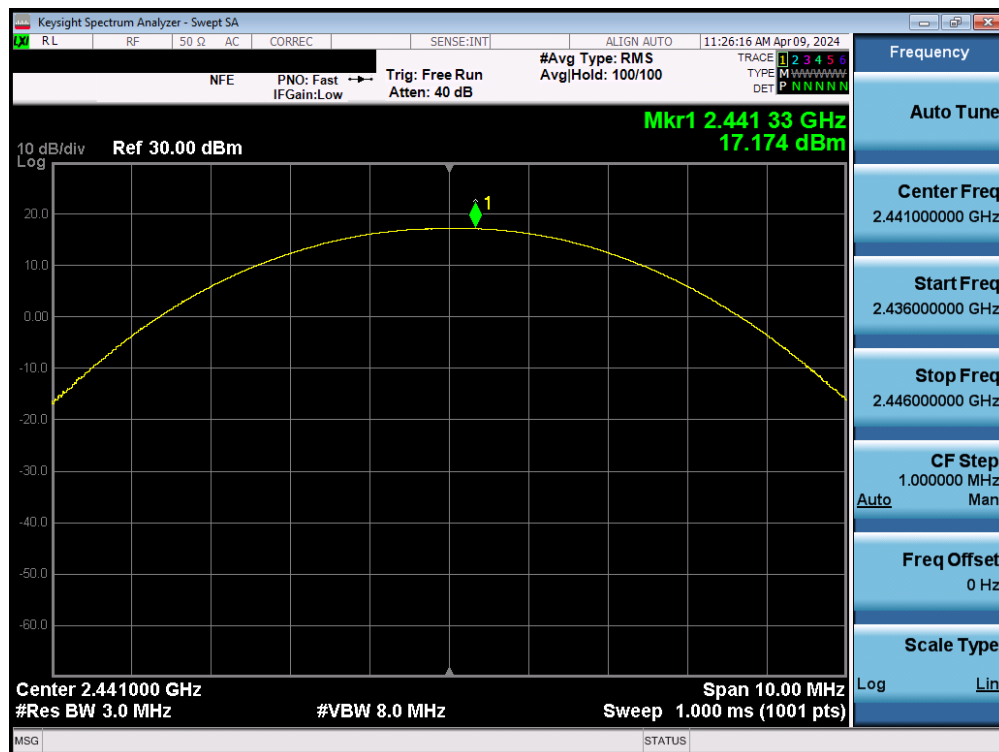
Frequency [MHz]	Data Rate [Mbps]	Channel No.	Peak Conducted Power		Avg Conducted Power	
			[dBm]	[mW]	[dBm]	[mW]
2402	1.0	0	16.00	39.820	15.71	37.196
2441	1.0	39	17.17	52.167	16.95	49.534
2480	1.0	78	15.67	36.872	15.41	34.746
2402	2.0	0	14.05	25.398	11.01	12.607
2441	2.0	39	15.11	32.464	12.25	16.788
2480	2.0	78	13.49	22.315	10.58	11.424
2402	3.0	0	14.60	28.860	11.05	12.741
2441	3.0	39	15.76	37.662	12.22	16.657
2480	3.0	78	14.12	25.805	10.58	11.424

Table 7-9. Conducted Output Power Measurements– Ant 1

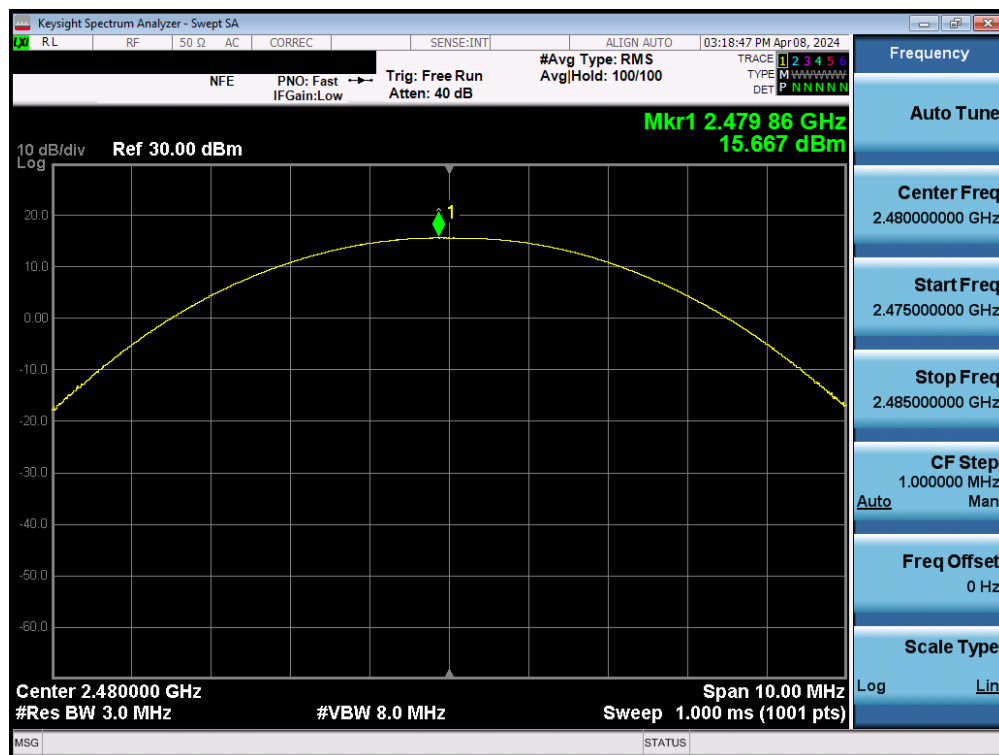


Plot 7-40. Peak Conducted Power (1Mbps – Ch. 0) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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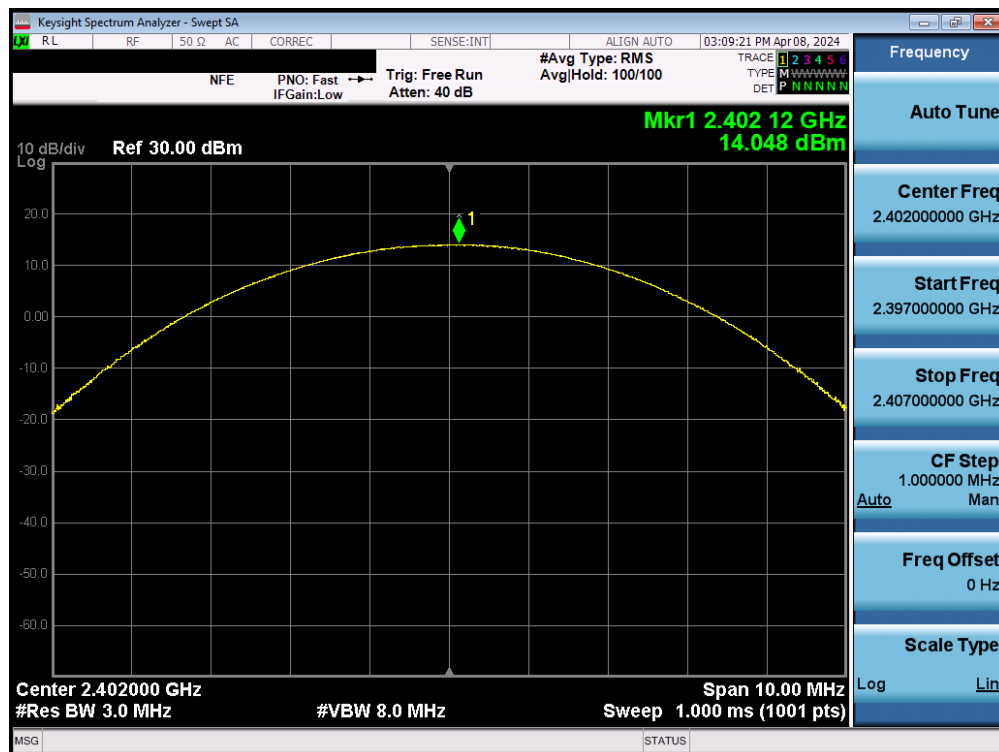


Plot 7-41. Peak Conducted Power (1Mbps – Ch. 39) – Ant 1

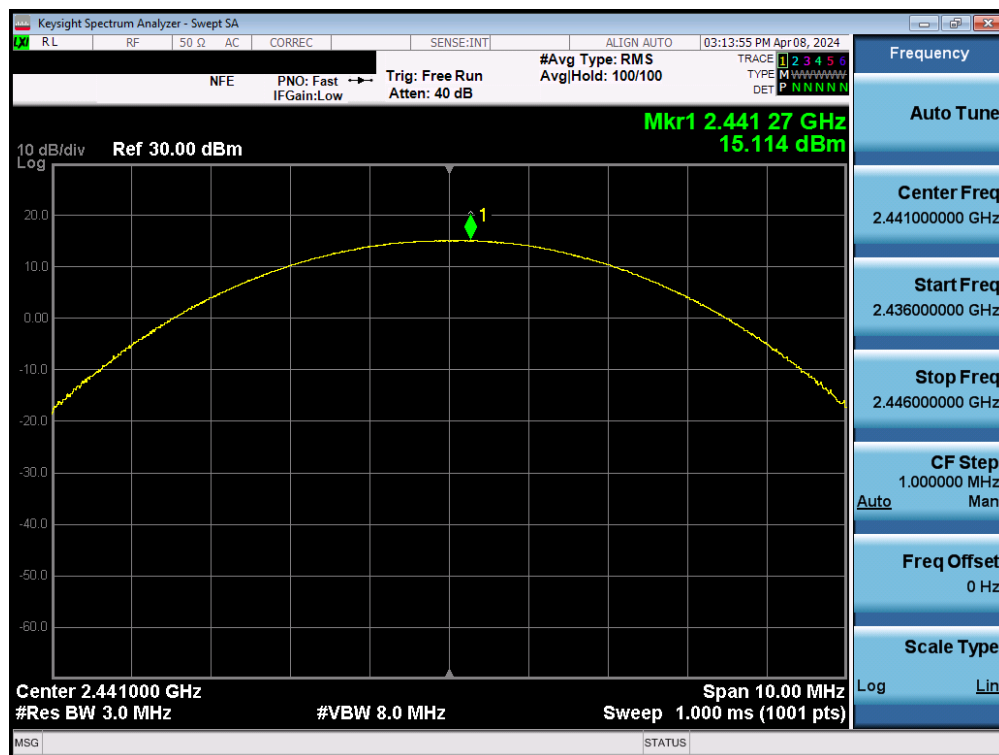


Plot 7-42. Peak Conducted Power (1Mbps – Ch. 78) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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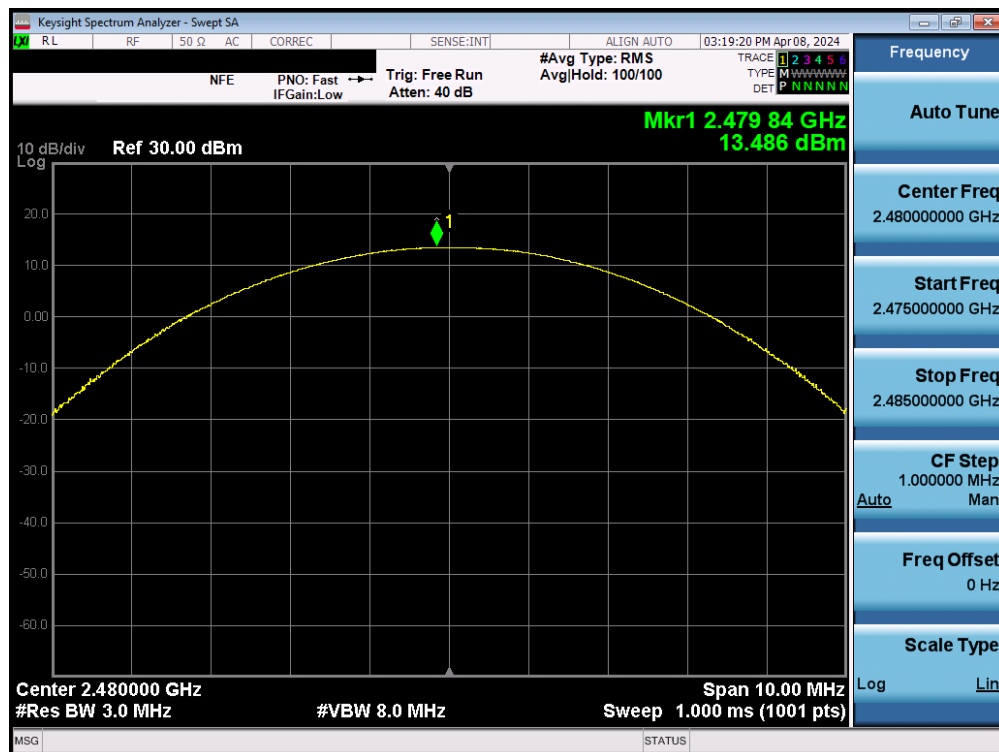


Plot 7-43. Peak Conducted Power (2Mbps – Ch. 0) – Ant 1

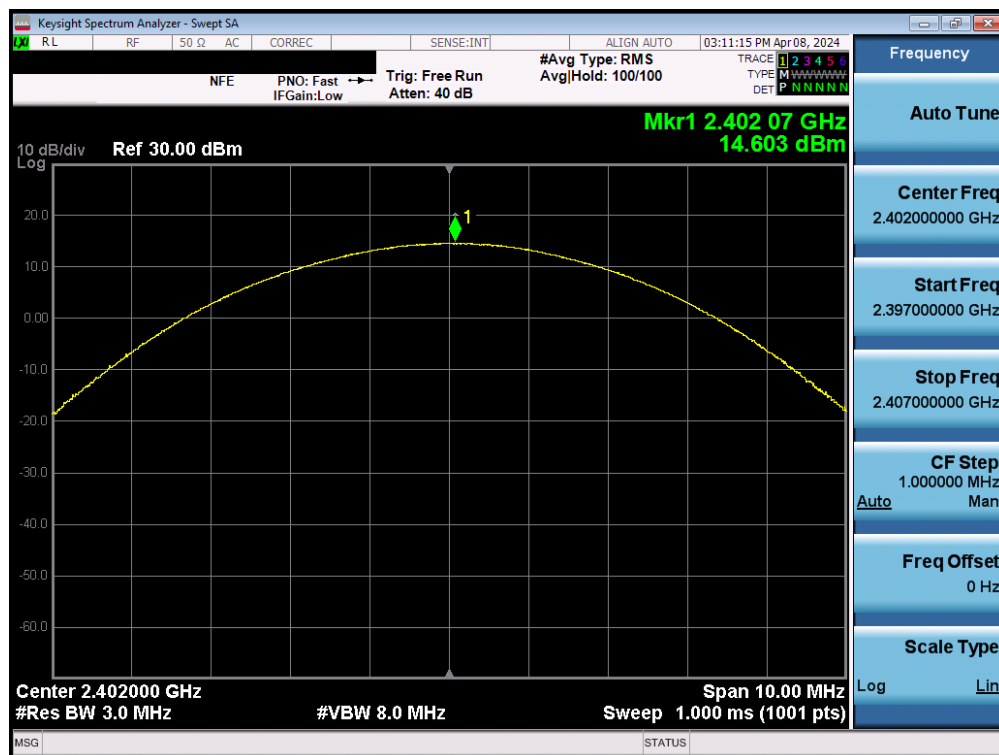


Plot 7-44. Peak Conducted Power (2Mbps – Ch. 39) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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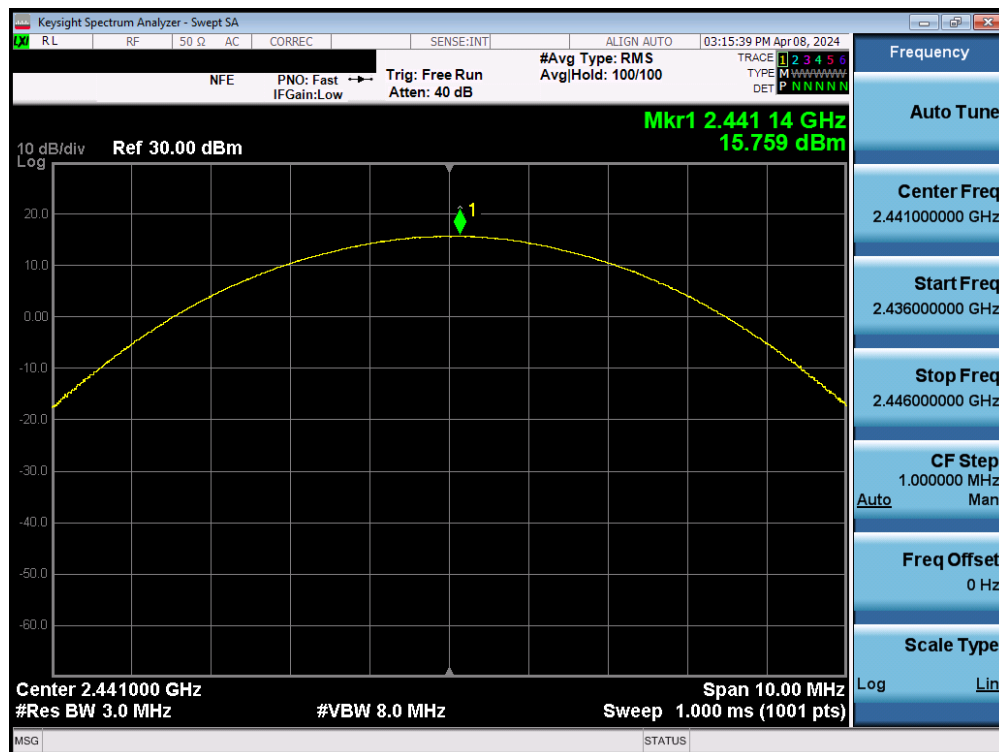


Plot 7-45. Peak Conducted Power (2Mbps – Ch. 78) – Ant 1

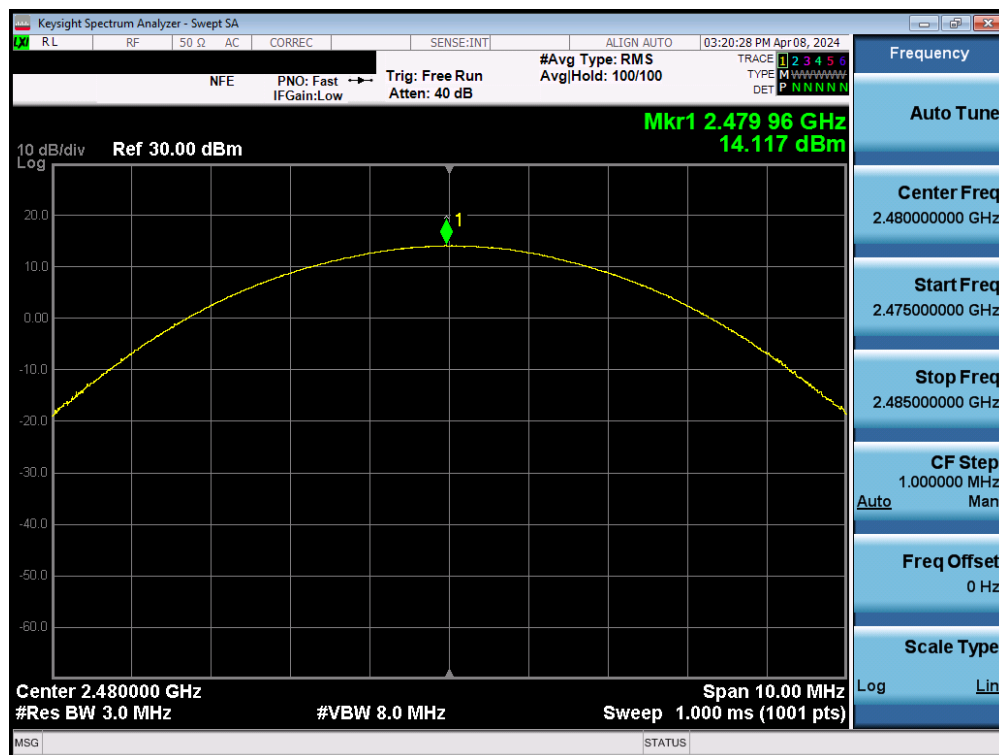


Plot 7-46. Peak Conducted Power (3Mbps – Ch. 0) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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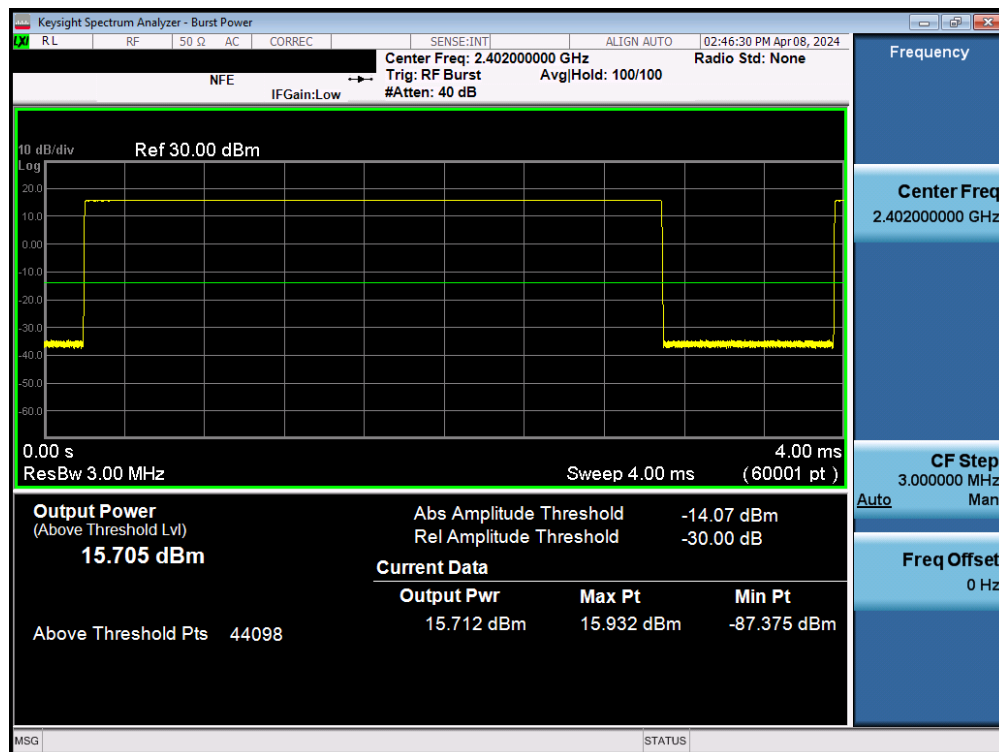


Plot 7-47. Peak Conducted Power (3Mbps – Ch. 39) – Ant 1

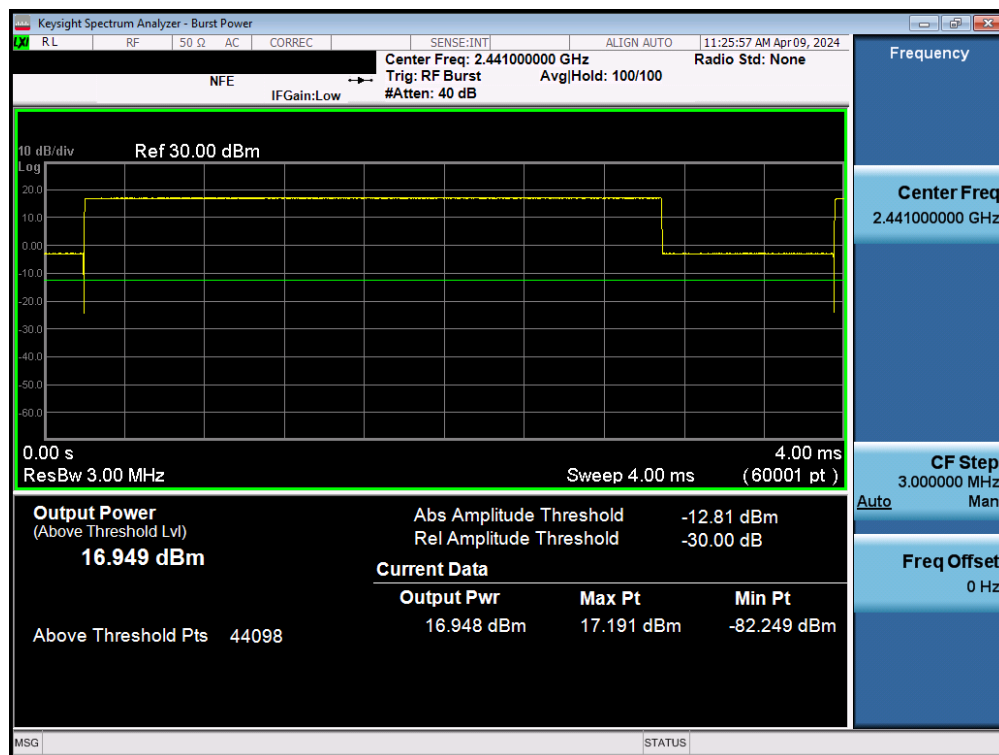


Plot 7-48. Peak Conducted Power (3Mbps – Ch. 78) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 40 of 139

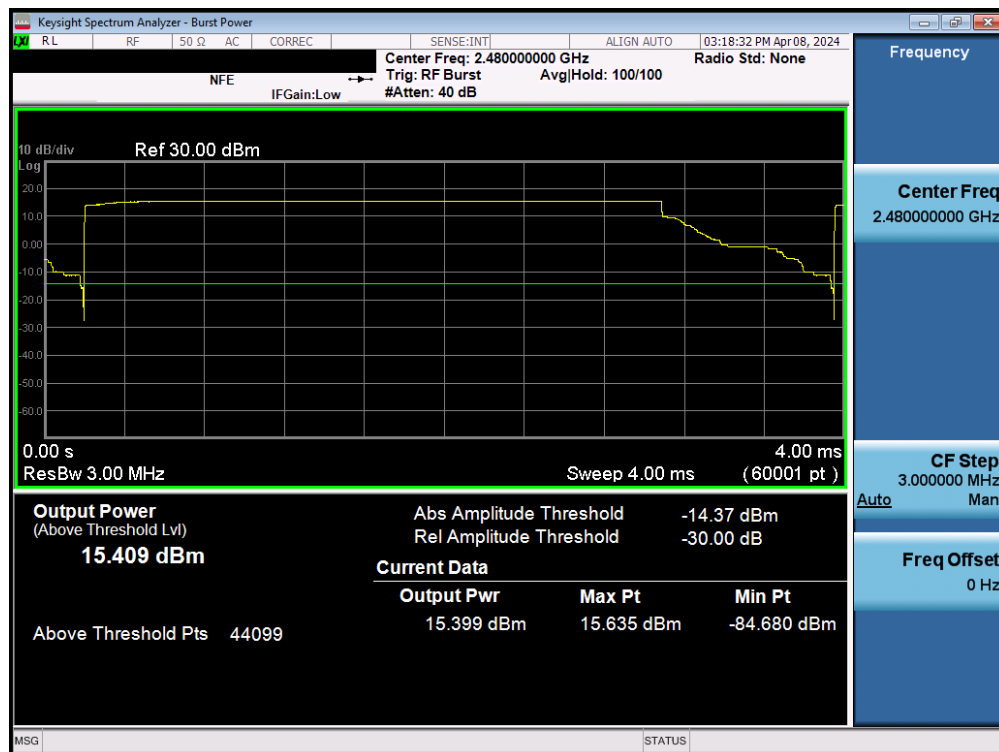


Plot 7-49. Average Conducted Power (1Mbps – Ch. 0) – Ant 1

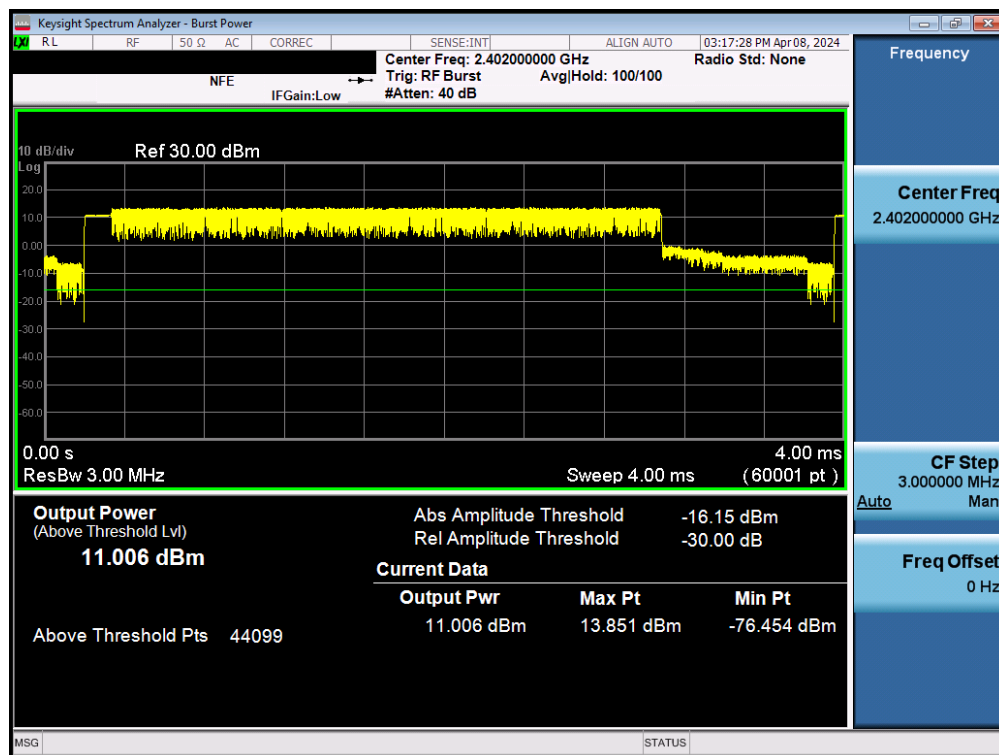


Plot 7-50. Average Conducted Power (1Mbps – Ch. 39) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 41 of 139

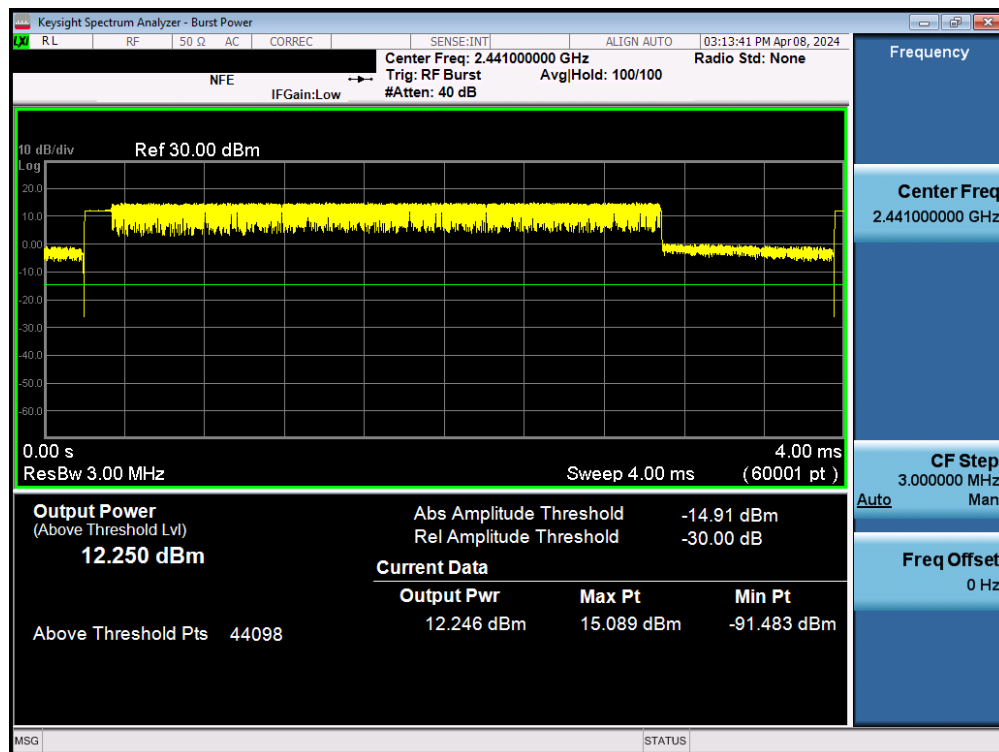


Plot 7-51. Average Conducted Power (1Mbps – Ch. 78) – Ant 1

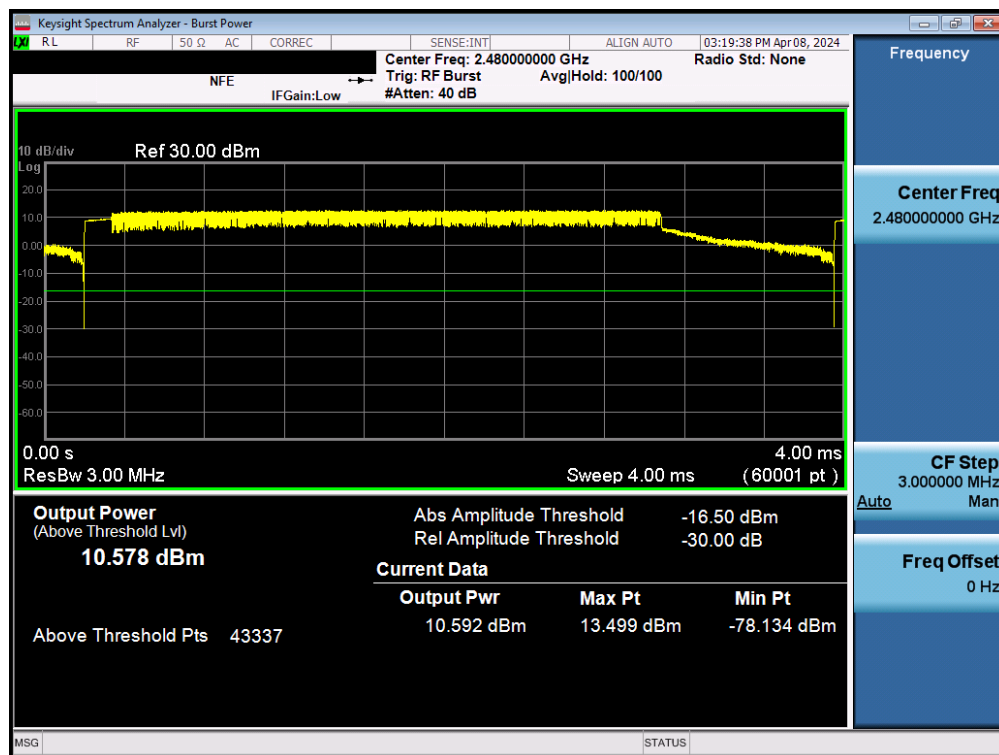


Plot 7-52. Average Conducted Power (2Mbps – Ch. 0) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 42 of 139

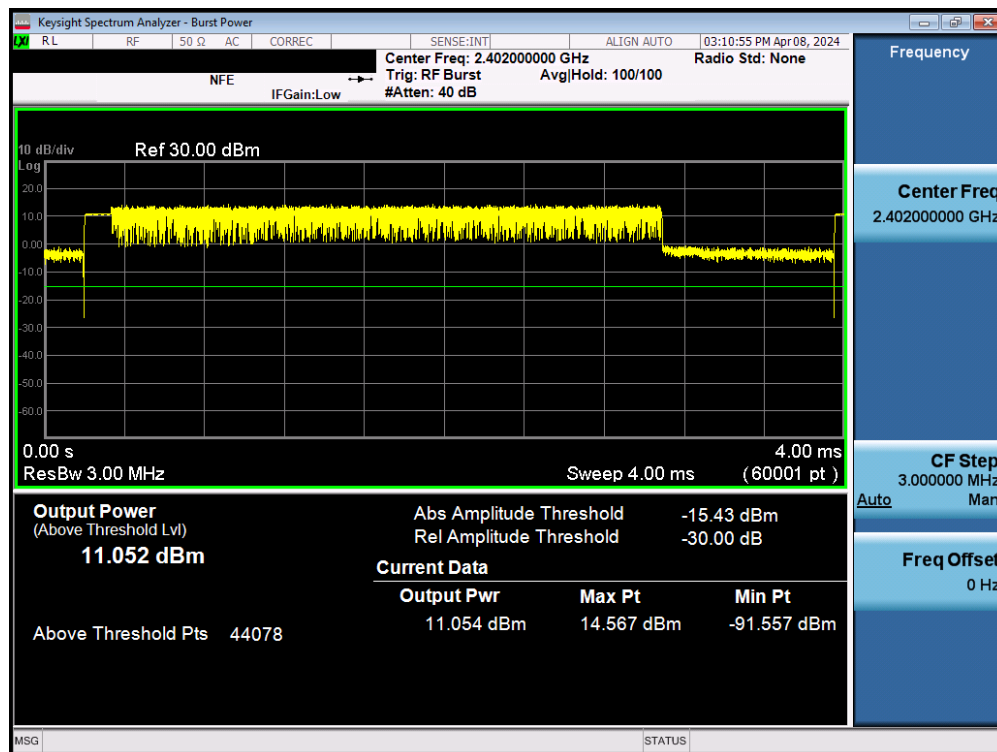


Plot 7-53. Average Conducted Power (2Mbps – Ch. 39) – Ant 1

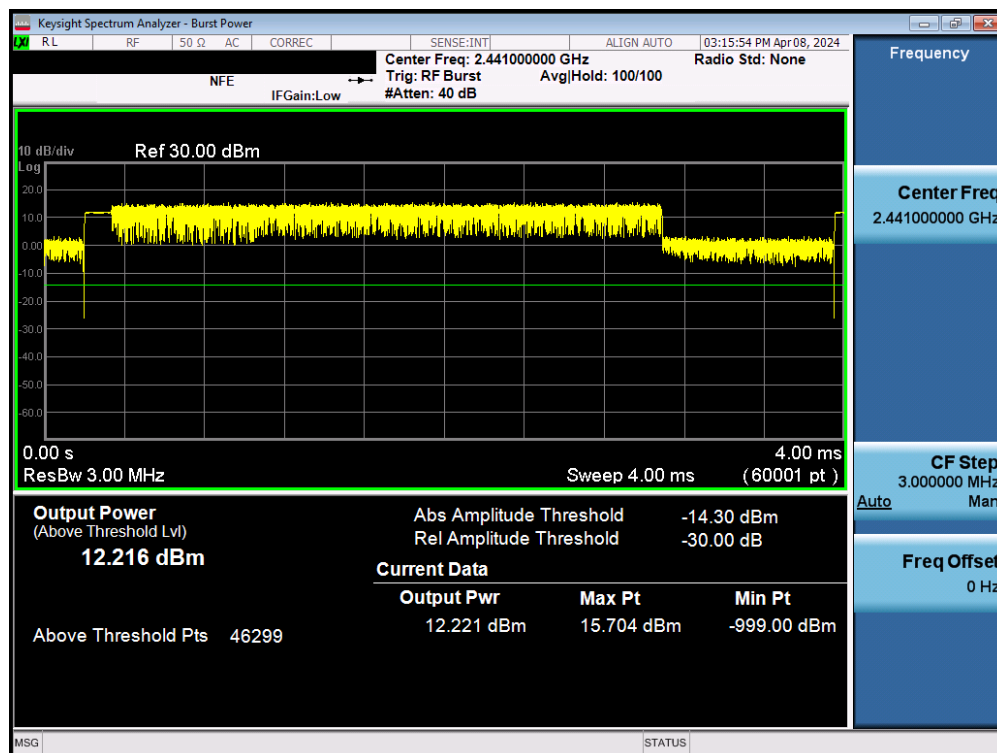


Plot 7-54. Average Conducted Power (2Mbps – Ch. 78) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 43 of 139

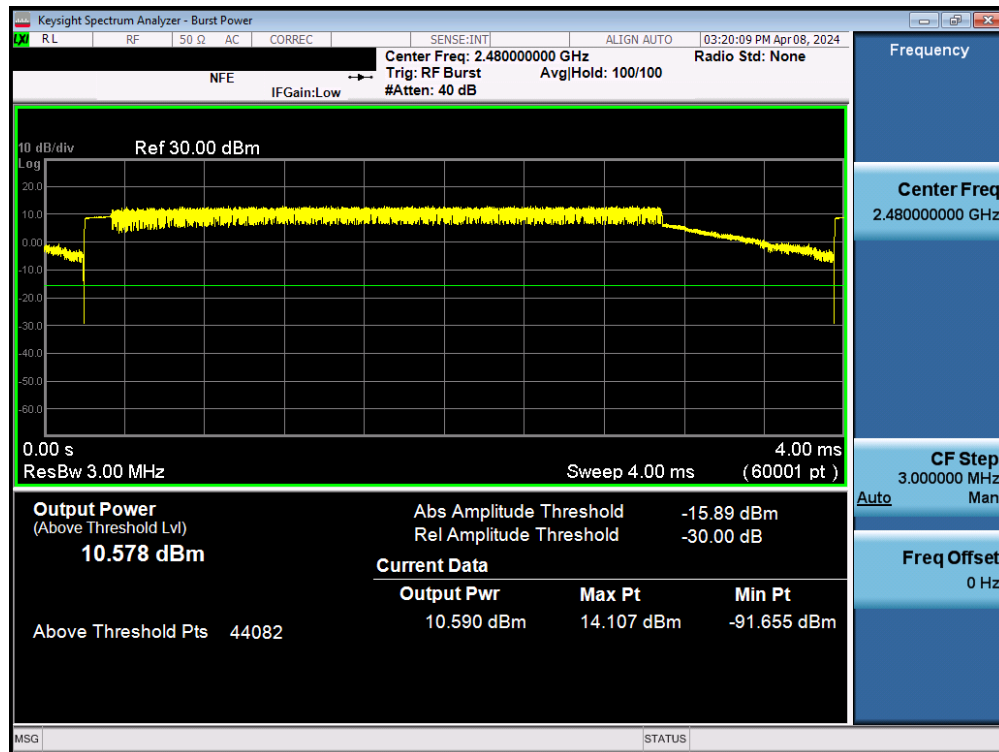


Plot 7-55. Average Conducted Power (3Mbps – Ch. 0) – Ant 1



Plot 7-56. Average Conducted Power (3Mbps – Ch. 39) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 44 of 139

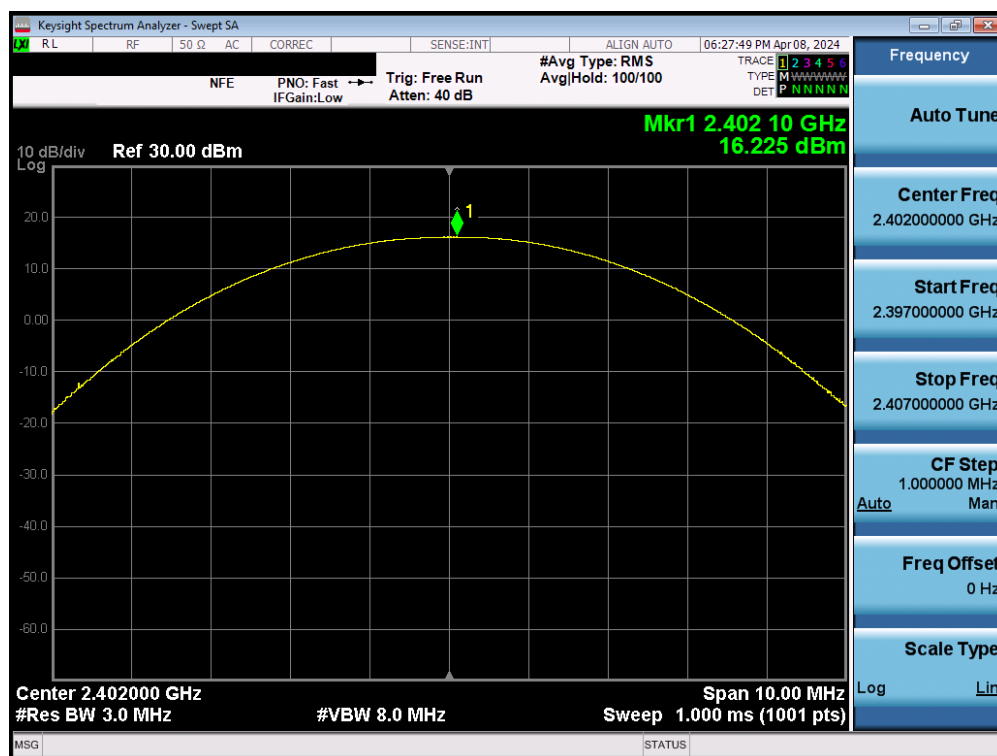


Plot 7-57. Average Conducted Power (3Mbps – Ch. 78) – Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 45 of 139

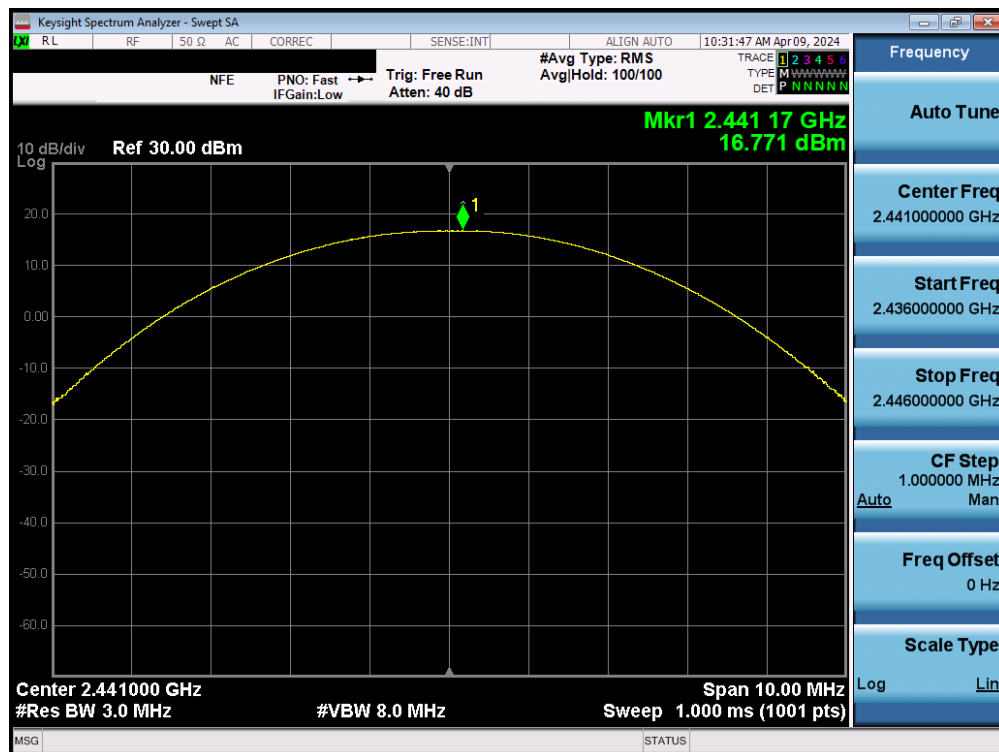
Frequency [MHz]	Data Rate [Mbps]	Channel No.	Peak Conducted Power		Avg Conducted Power	
			[dBm]	[mW]	[dBm]	[mW]
2402	1.0	0	16.23	41.928	15.83	38.300
2441	1.0	39	16.77	47.544	16.45	44.106
2480	1.0	78	16.20	41.716	15.82	38.177
2402	2.0	0	13.93	24.717	10.97	12.511
2441	2.0	39	14.66	29.208	11.71	14.839
2480	2.0	78	13.88	24.406	10.99	12.569
2402	3.0	0	14.57	28.655	10.96	12.468
2441	3.0	39	15.15	32.727	11.70	14.798
2480	3.0	78	14.32	27.008	10.94	12.417

Table 7-10. Conducted Output Power Measurements– Ant 2

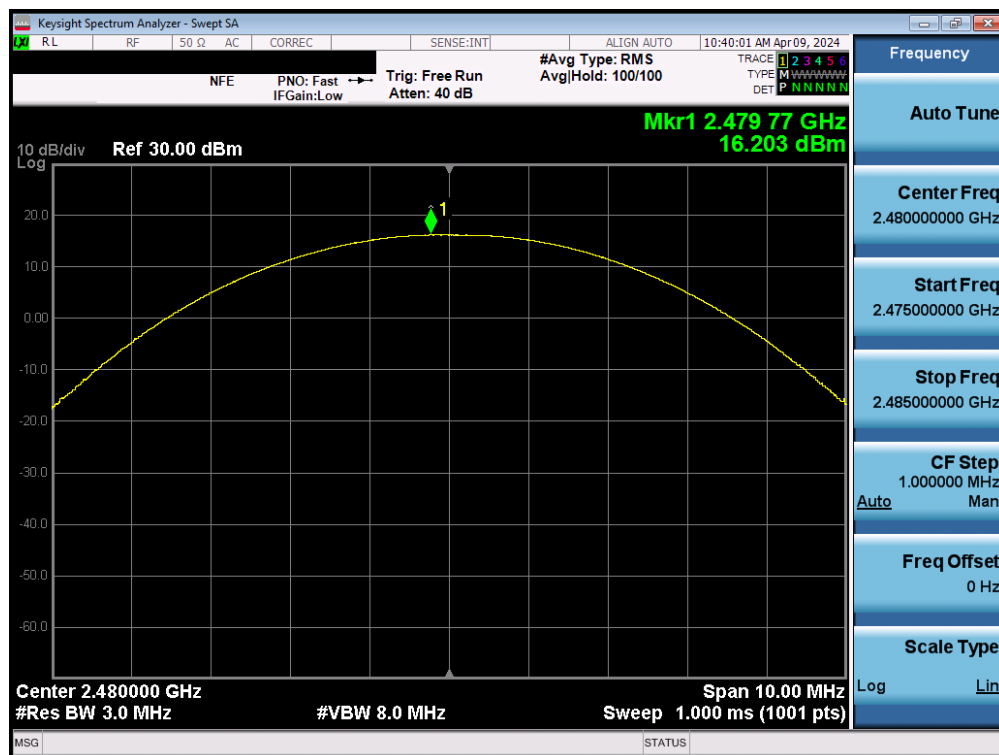


Plot 7-58. Peak Conducted Power (1Mbps – Ch. 0) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 46 of 139

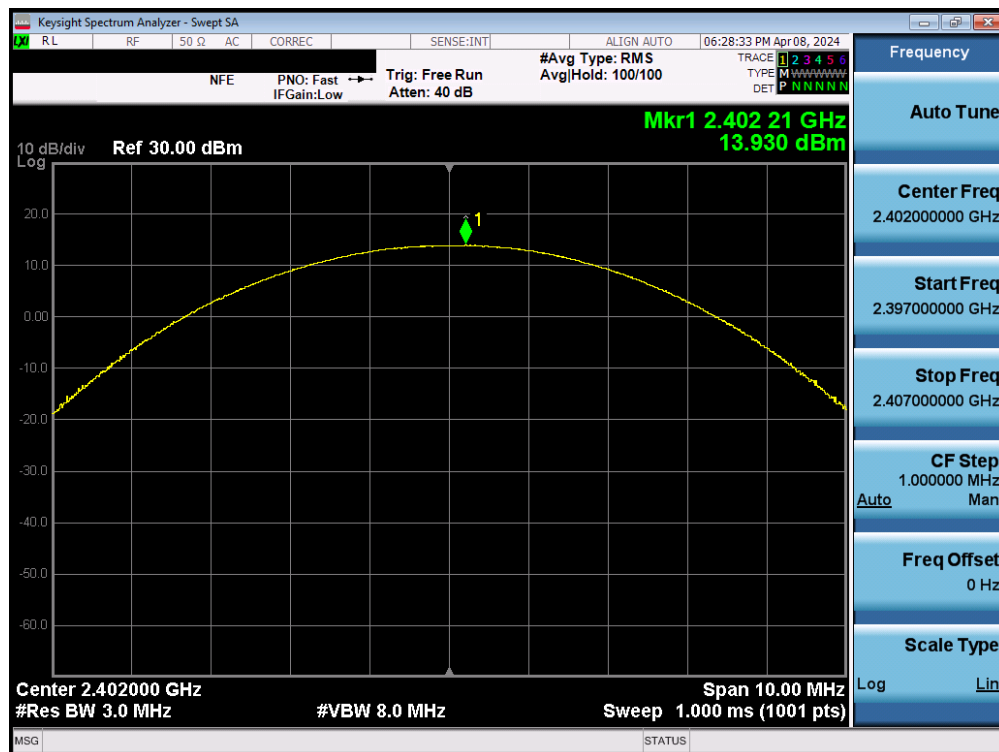


Plot 7-59. Peak Conducted Power (1Mbps – Ch. 39) – Ant 2

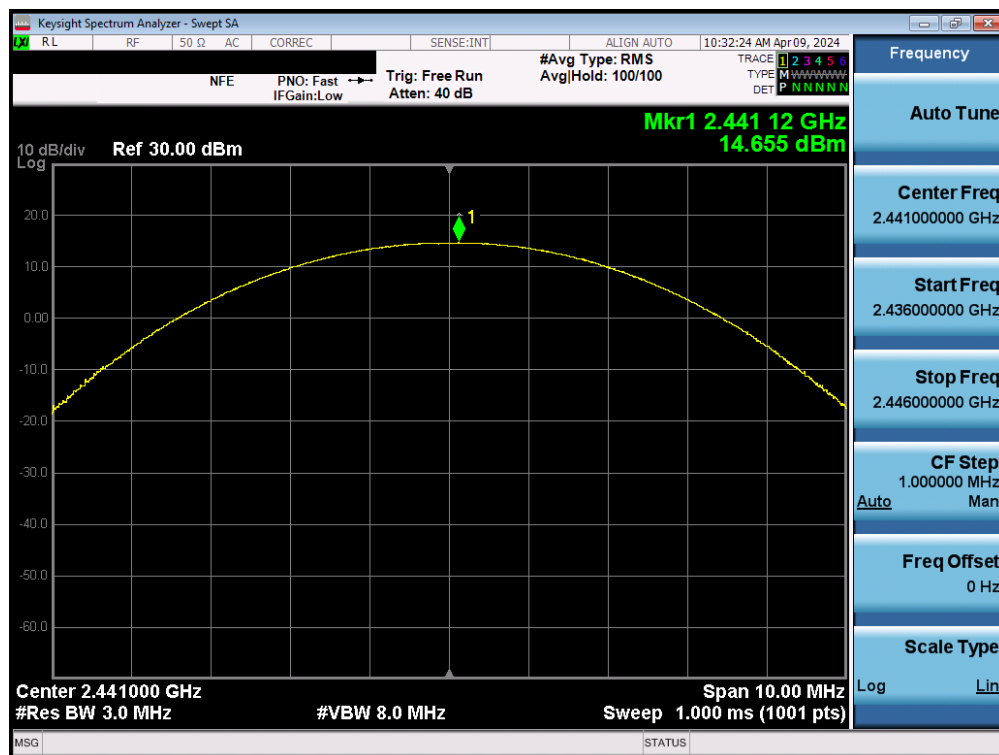


Plot 7-60. Peak Conducted Power (1Mbps – Ch. 78) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 47 of 139

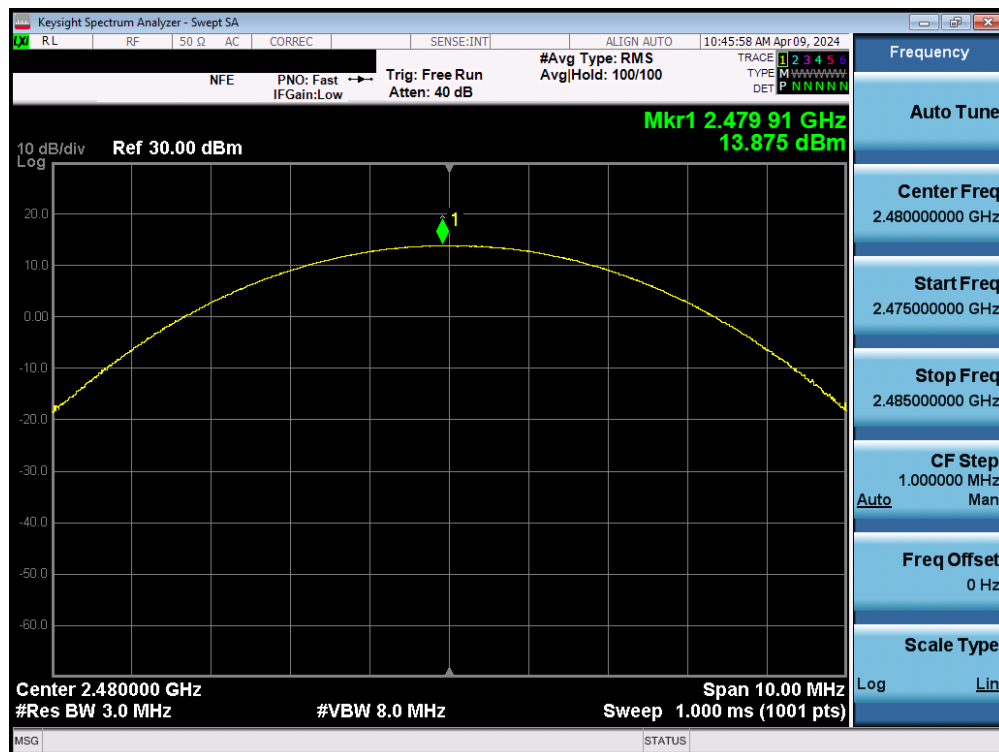


Plot 7-61. Peak Conducted Power (2Mbps – Ch. 0) – Ant 2

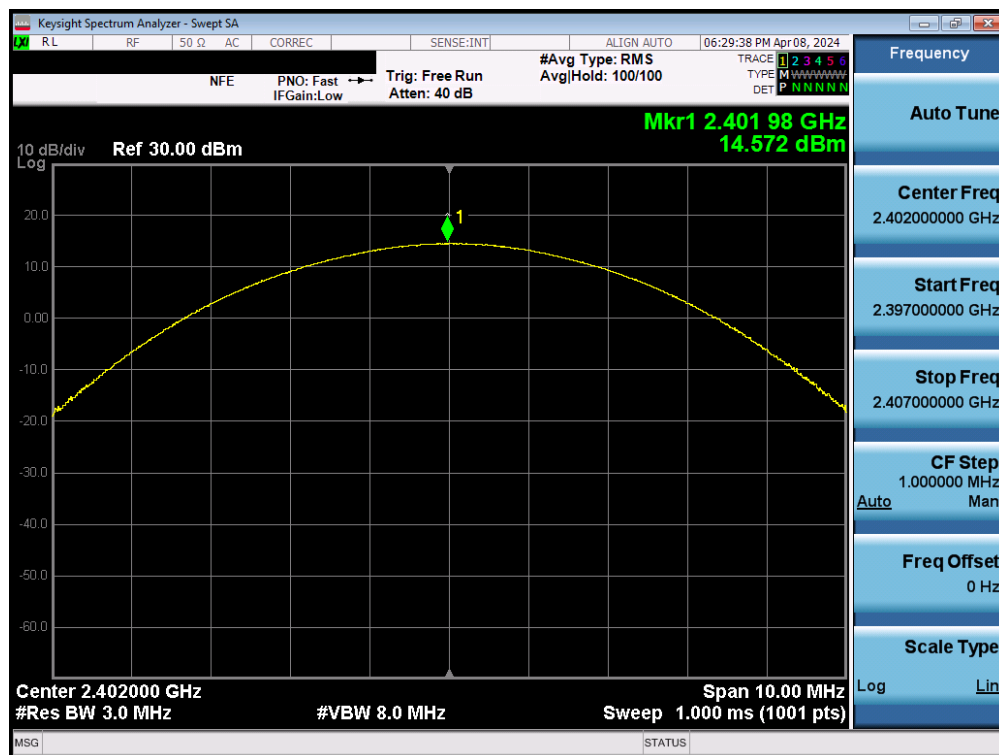


Plot 7-62. Peak Conducted Power (2Mbps – Ch. 39) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 48 of 139

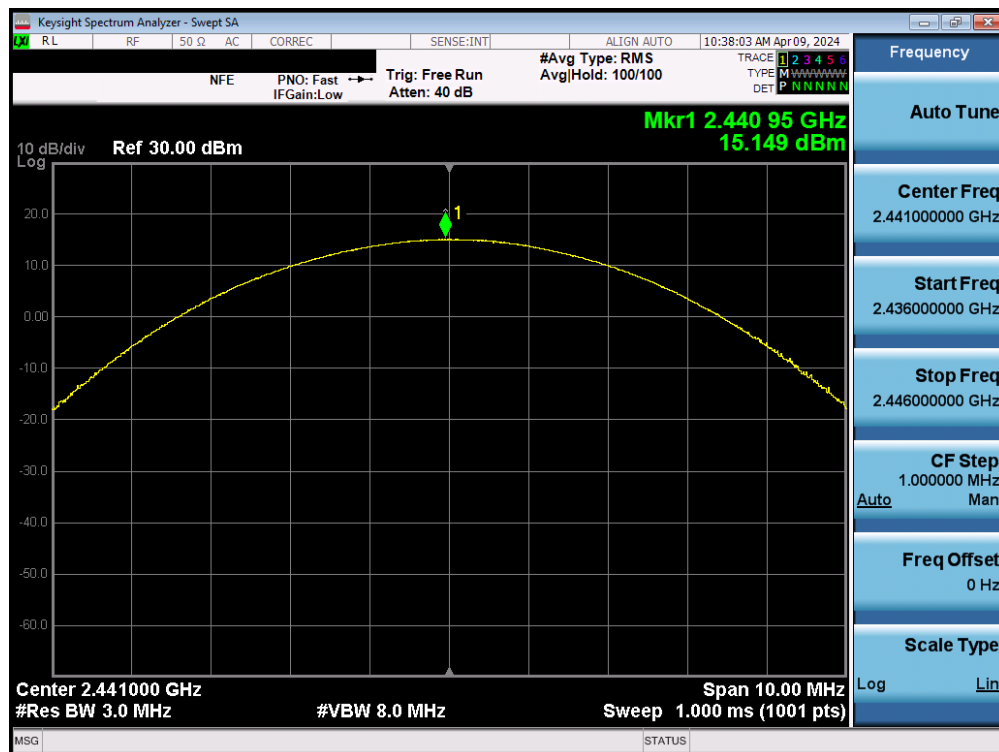


Plot 7-63. Peak Conducted Power (2Mbps – Ch. 78) – Ant 2

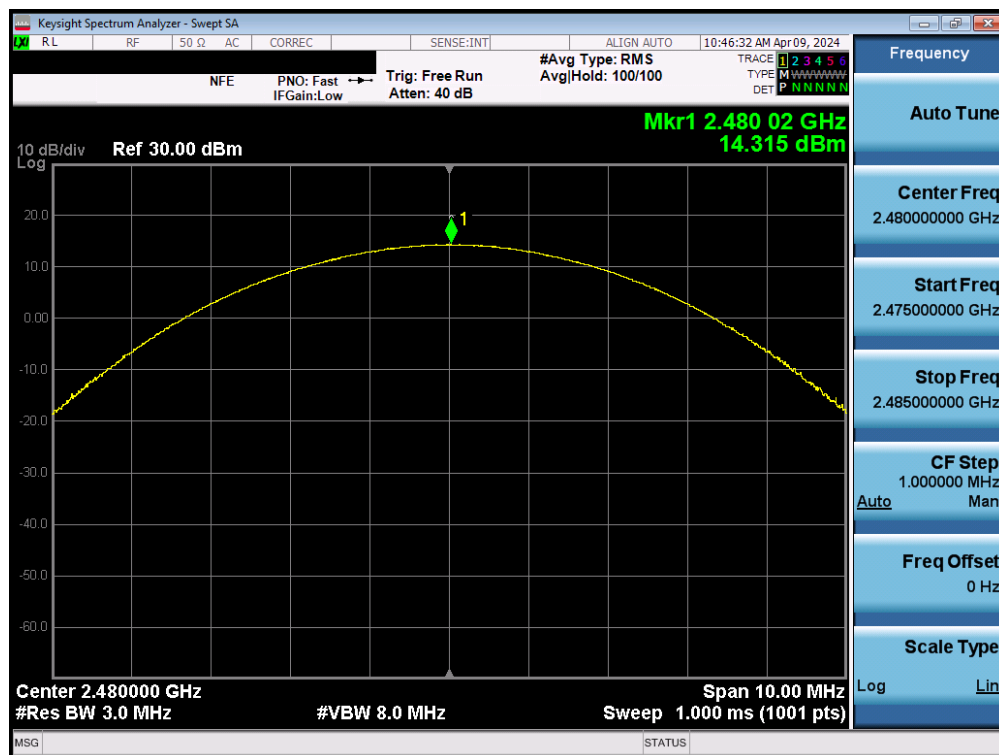


Plot 7-64. Peak Conducted Power (3Mbps – Ch. 0) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 49 of 139

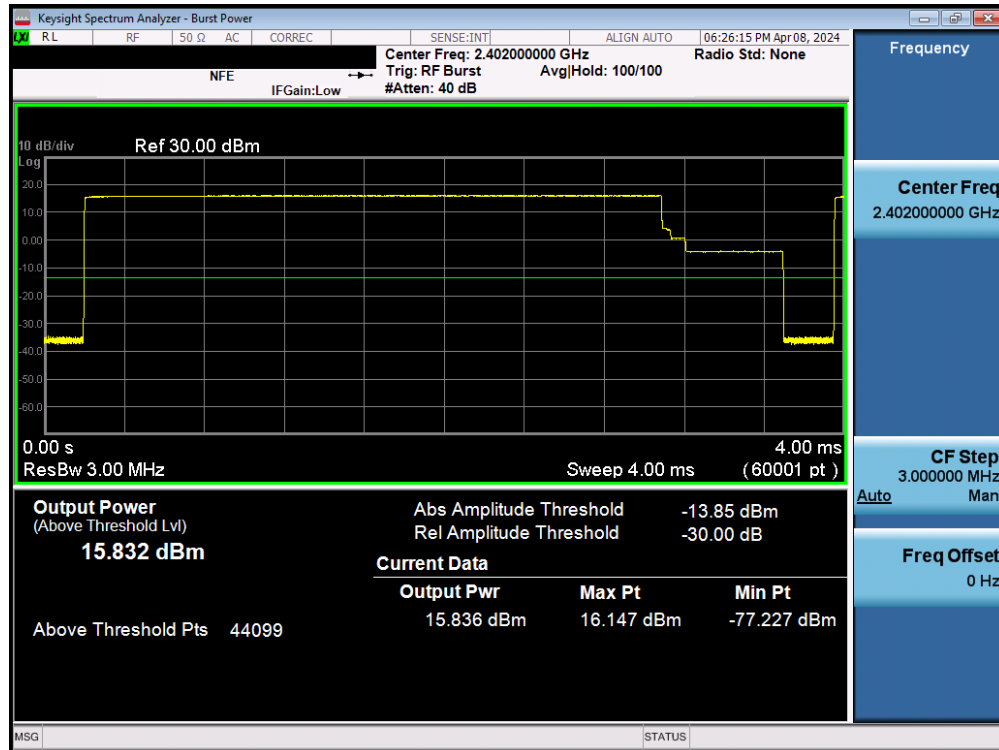


Plot 7-65. Peak Conducted Power (3Mbps – Ch. 39) – Ant 2

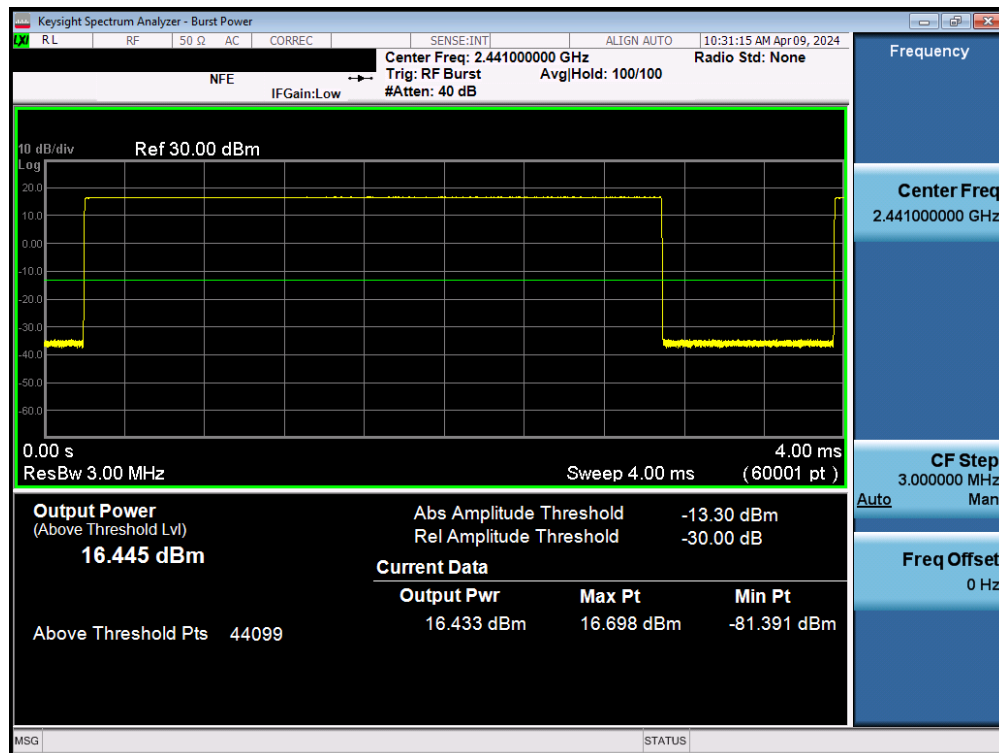


Plot 7-66. Peak Conducted Power (3Mbps – Ch. 78) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 50 of 139

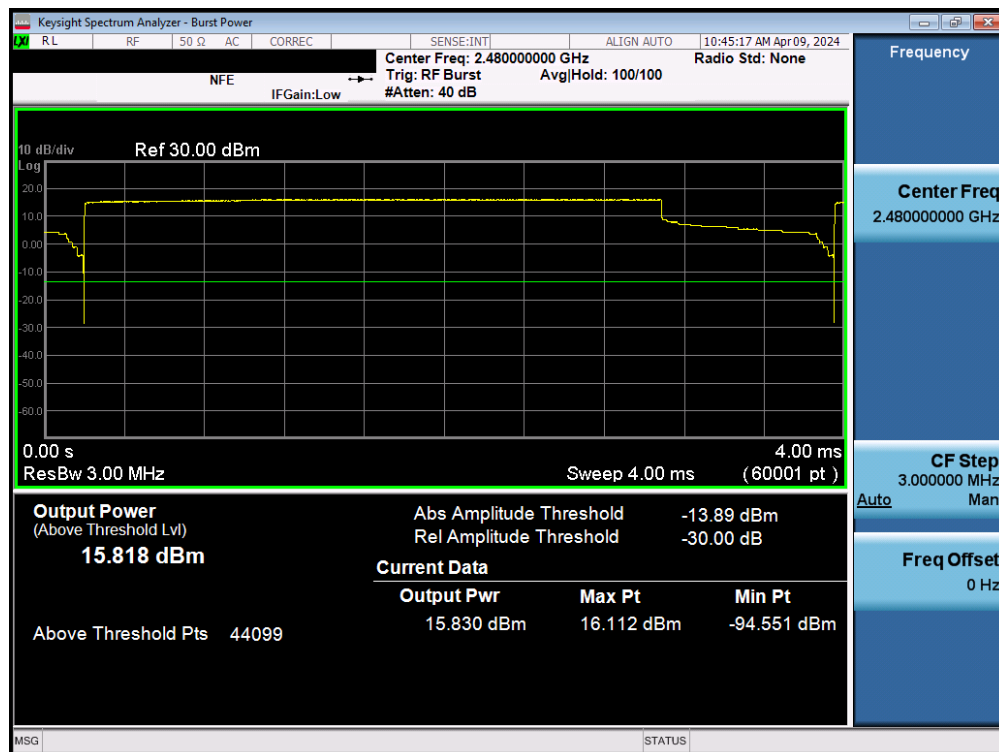


Plot 7-67. Average Conducted Power (1Mbps – Ch. 0) – Ant 2

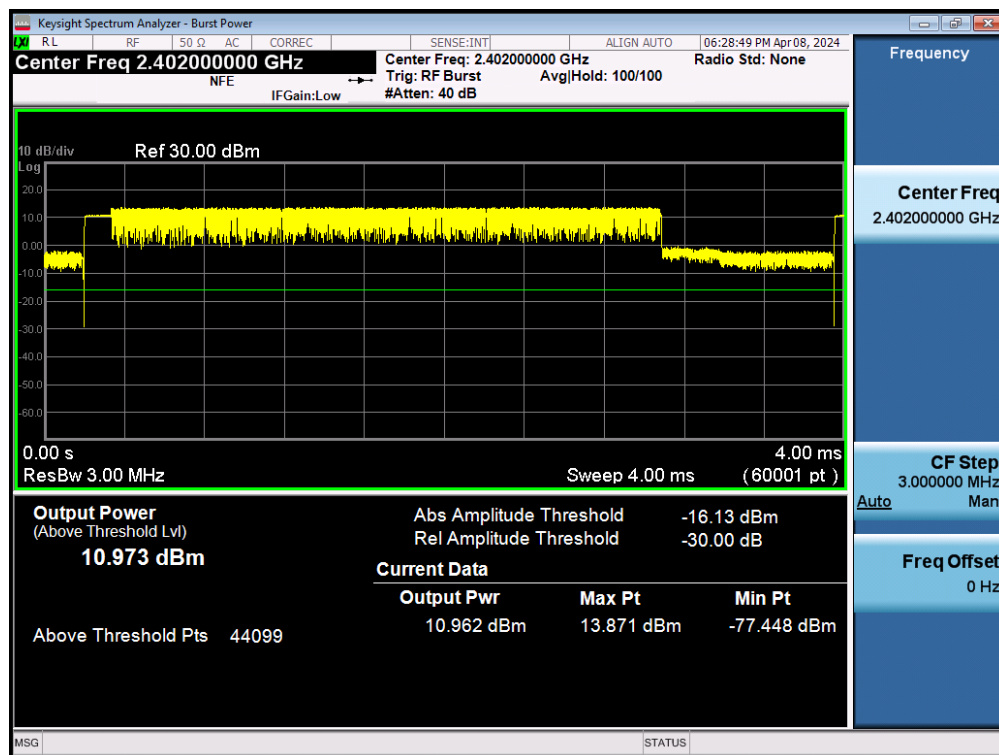


Plot 7-68. Average Conducted Power (1Mbps – Ch. 39) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 51 of 139

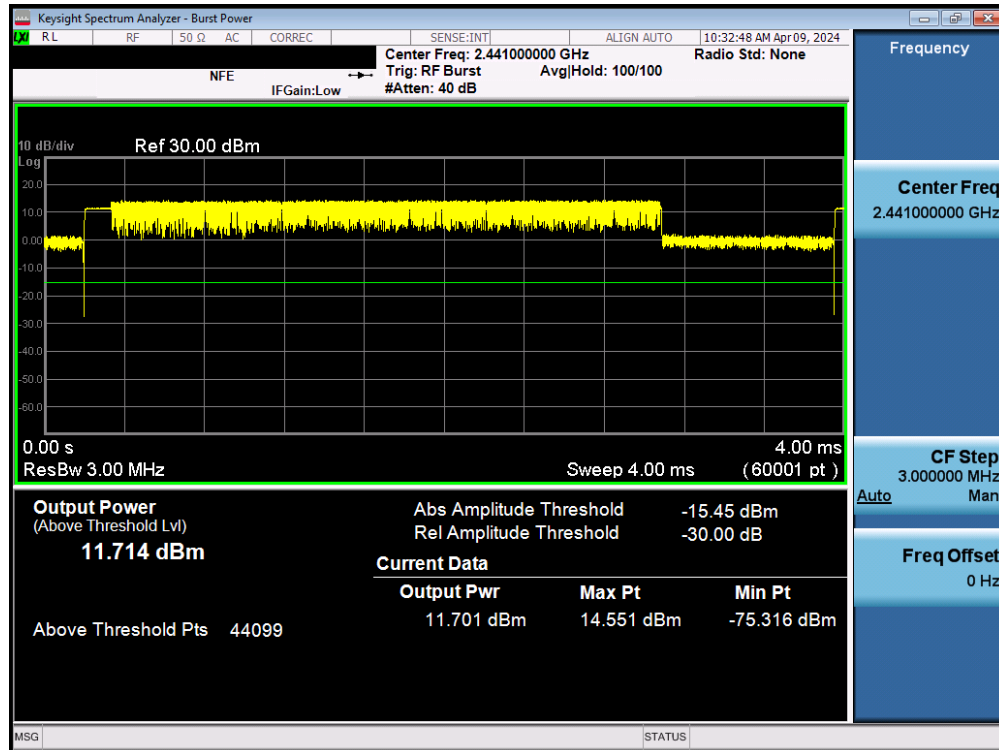


Plot 7-69. Average Conducted Power (1Mbps – Ch. 78) – Ant 2

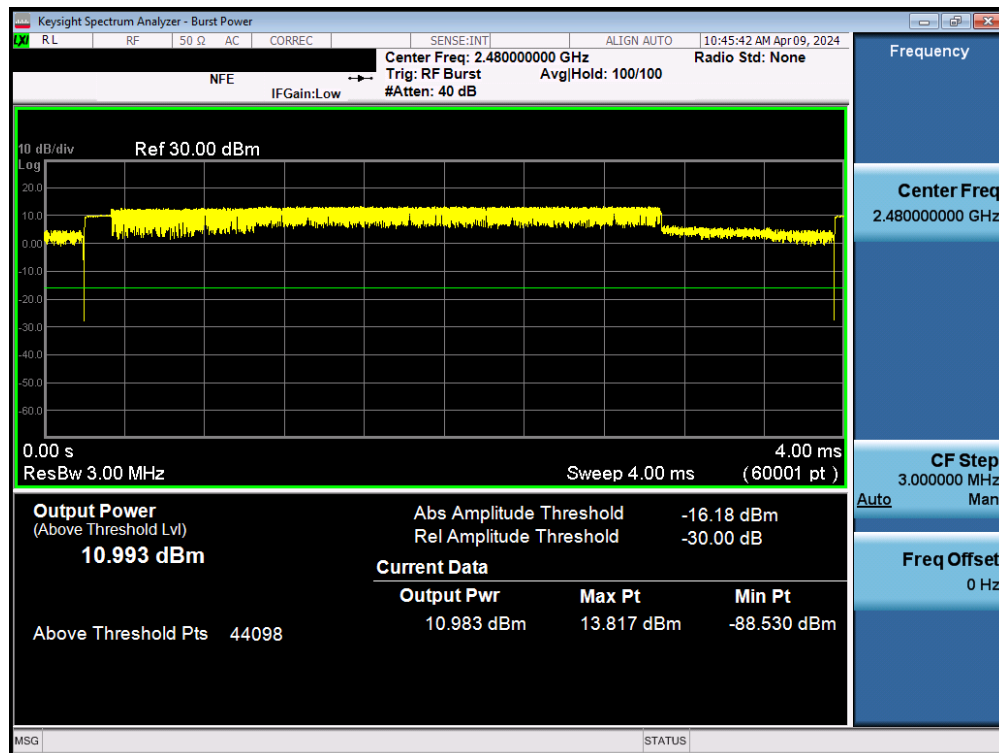


Plot 7-70. Average Conducted Power (2Mbps – Ch. 0) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 52 of 139

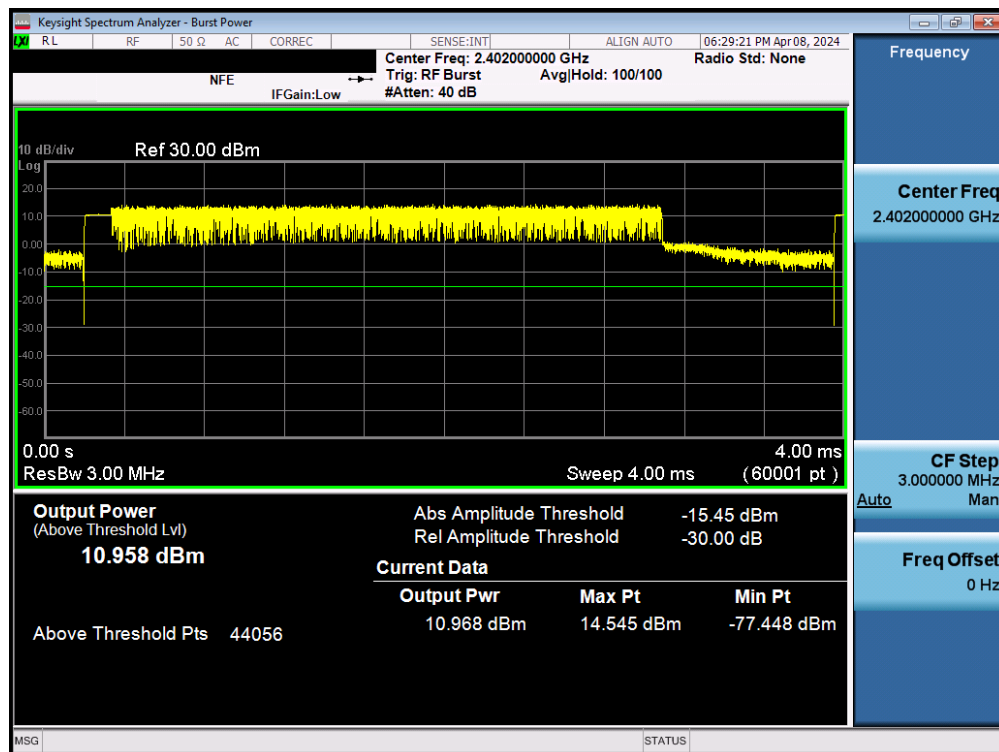


Plot 7-71. Average Conducted Power (2Mbps – Ch. 39) – Ant 2

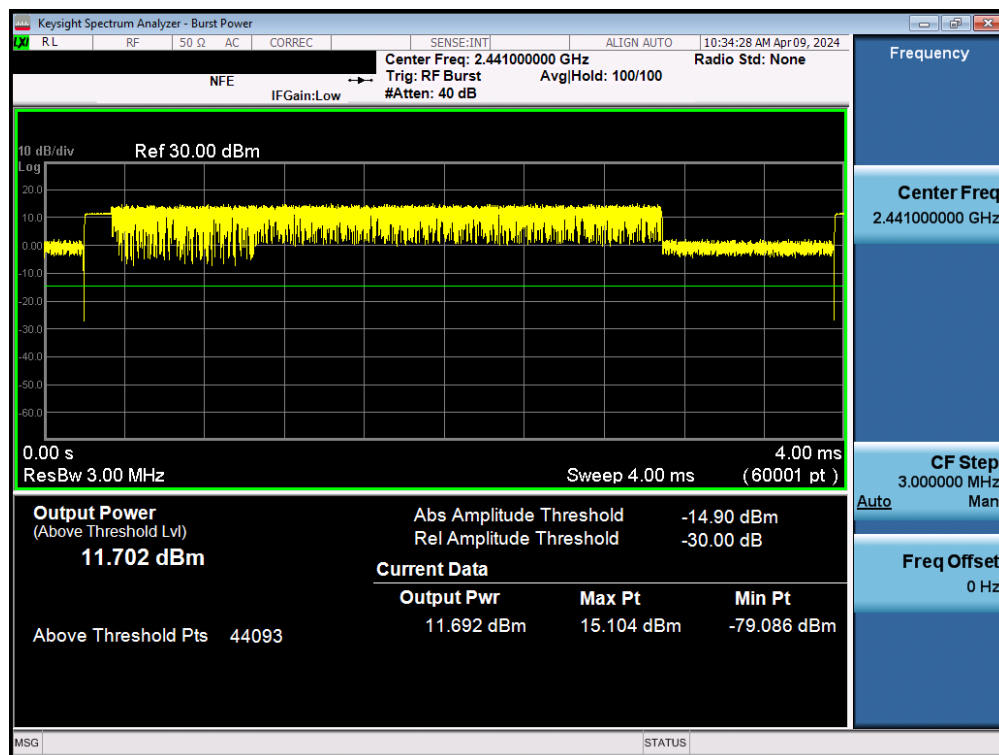


Plot 7-72. Average Conducted Power (2Mbps – Ch. 78) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 53 of 139

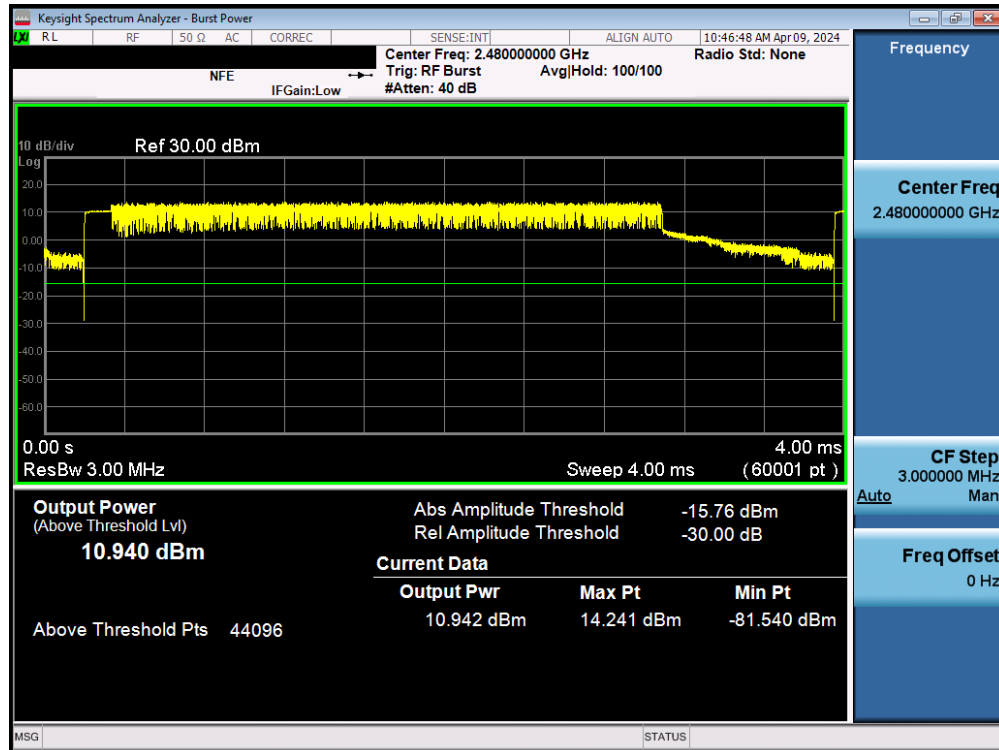


Plot 7-73. Average Conducted Power (3Mbps – Ch. 0) – Ant 2



Plot 7-74. Average Conducted Power (3Mbps – Ch. 39) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 54 of 139

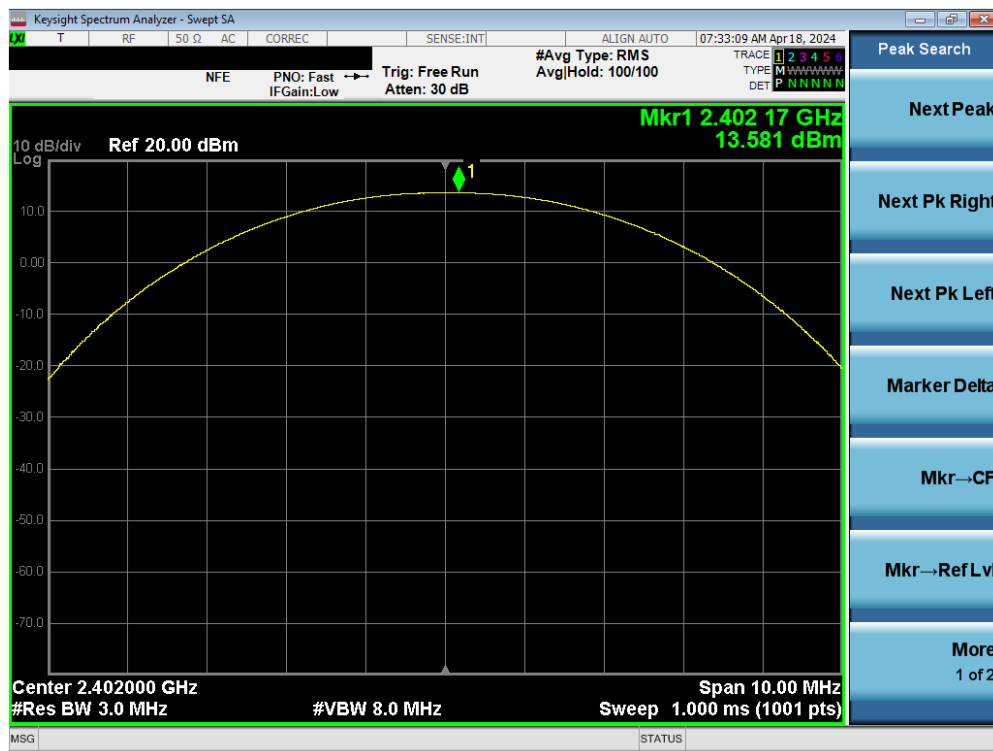


Plot 7-75. Average Conducted Power (3Mbps – Ch. 78) – Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 55 of 139

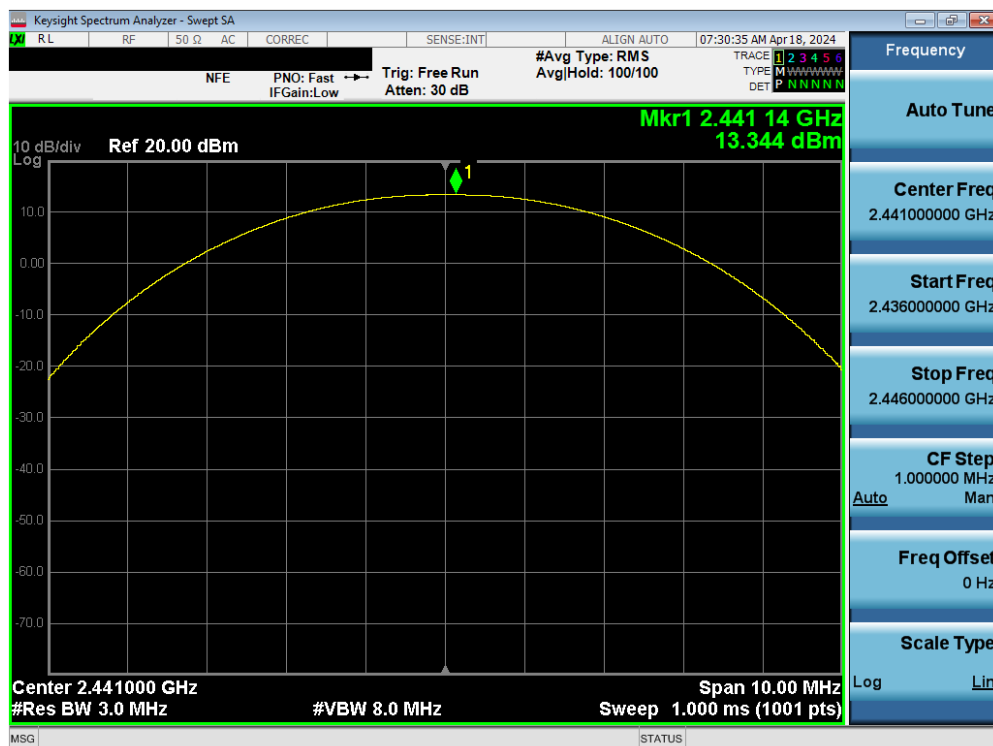
Frequency [MHz]	Data Rate [Mbps]	Channel No.	Peak Conducted Power		Avg Conducted Power		Peak Conducted Power		Avg Conducted Power		Peak Conducted Power		Avg Conducted Power	
			[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]
2402	1.0	0	13.58	22.809	12.90	19.494	11.99	15.816	11.77	15.024	15.87	38.625	15.38	34.518
2441	1.0	39	13.34	21.597	12.89	19.472	11.89	15.453	11.92	15.570	15.69	37.050	15.45	35.042
2480	1.0	78	14.06	25.462	12.59	18.172	11.95	15.668	11.91	15.517	16.14	41.130	15.27	33.689
2402	2.0	0	13.45	22.146	10.67	11.665	12.28	16.916	10.29	10.681	15.92	39.062	13.49	22.346
2441	2.0	39	13.35	21.622	10.57	11.397	12.58	18.105	10.10	10.242	15.99	39.727	13.35	21.640
2480	2.0	78	13.65	23.158	10.42	11.026	11.62	14.534	9.23	8.382	15.76	37.692	12.88	19.408
2402	3.0	0	13.72	23.523	10.52	11.275	12.66	18.433	10.07	10.160	16.23	41.957	13.31	21.435
2441	3.0	39	13.54	22.615	10.64	11.574	13.03	20.072	10.04	10.086	16.30	42.688	13.36	21.660
2480	3.0	78	13.93	24.712	10.36	10.862	12.03	15.951	9.21	8.328	16.09	40.663	12.83	19.190

Table 7-11. Conducted Output Power Measurements– Dual Ant

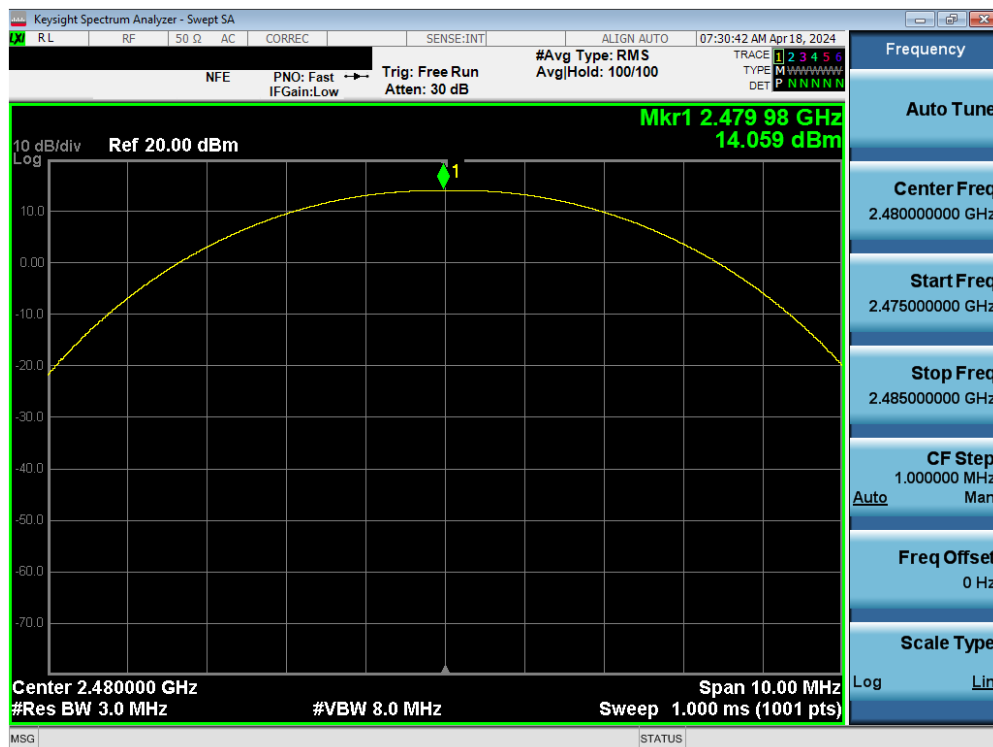


Plot 7-76. Peak Conducted Power (1Mbps – Ch. 0) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 56 of 139

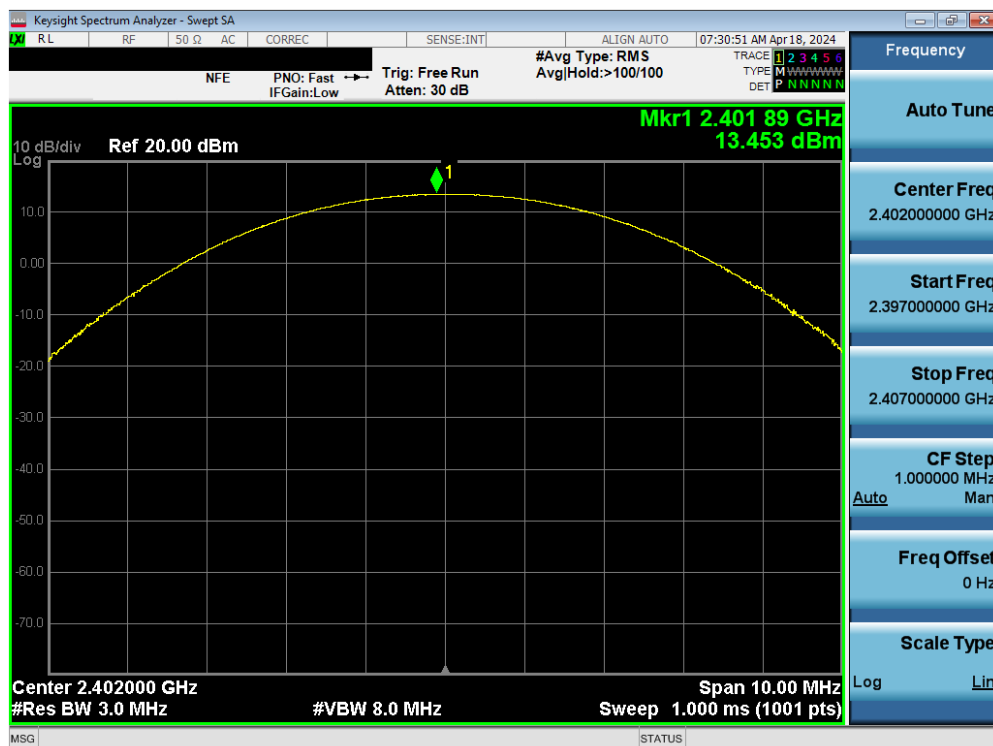


Plot 7-77. Peak Conducted Power (1Mbps – Ch. 39) – Dual Ant 1

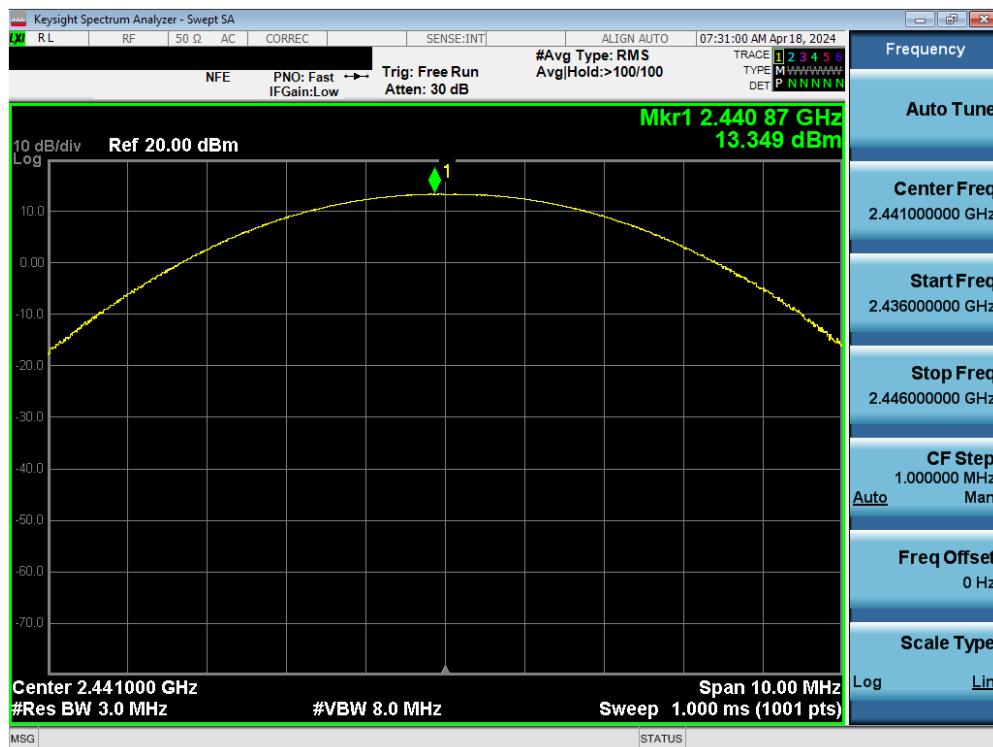


Plot 7-78. Peak Conducted Power (1Mbps – Ch. 78) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 57 of 139

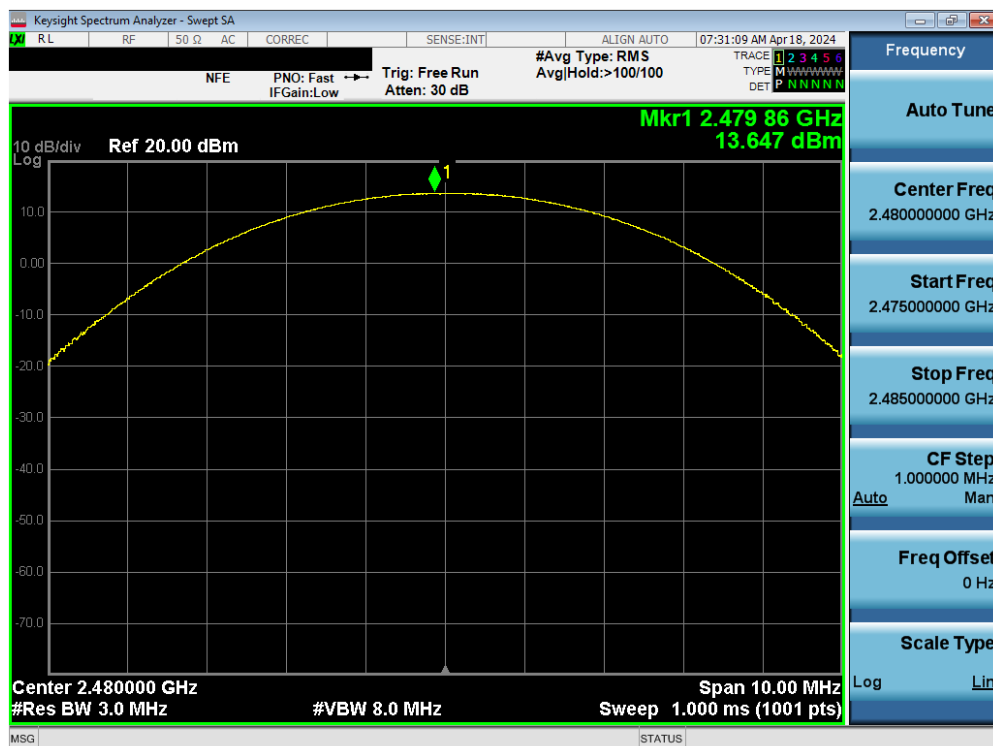


Plot 7-79. Peak Conducted Power (2Mbps – Ch. 0) – Dual Ant 1



Plot 7-80. Peak Conducted Power (2Mbps – Ch. 39) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 58 of 139

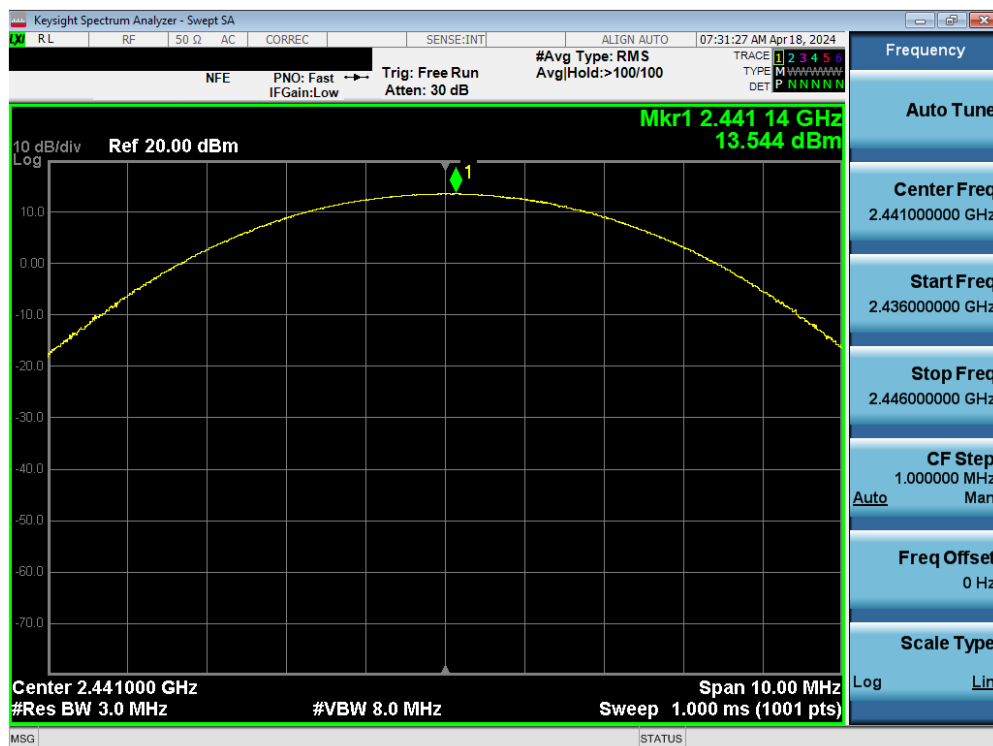


Plot 7-81. Peak Conducted Power (2Mbps – Ch. 78) – Dual Ant 1

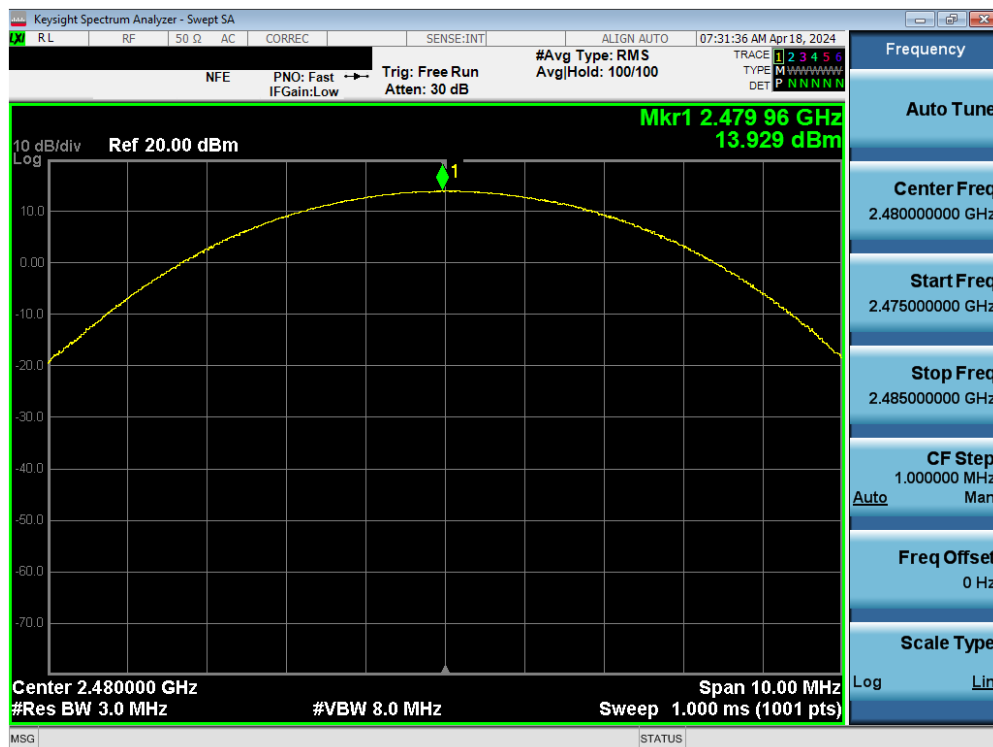


Plot 7-82. Peak Conducted Power (3Mbps – Ch. 0) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 59 of 139

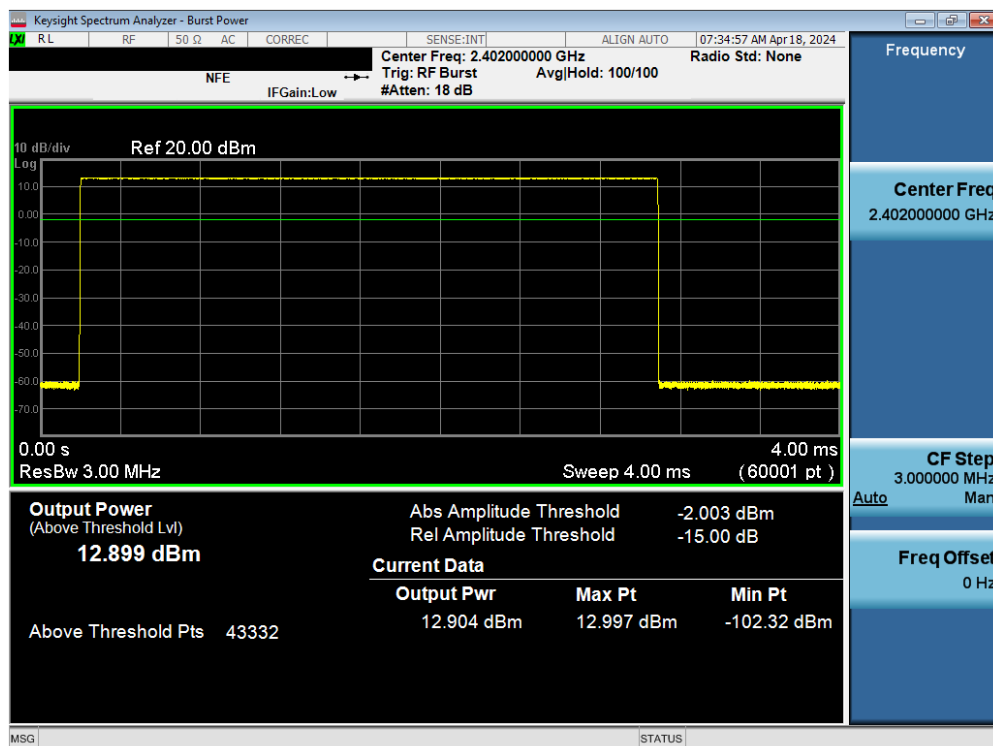


Plot 7-83. Peak Conducted Power (3Mbps – Ch. 39) – Dual Ant 1

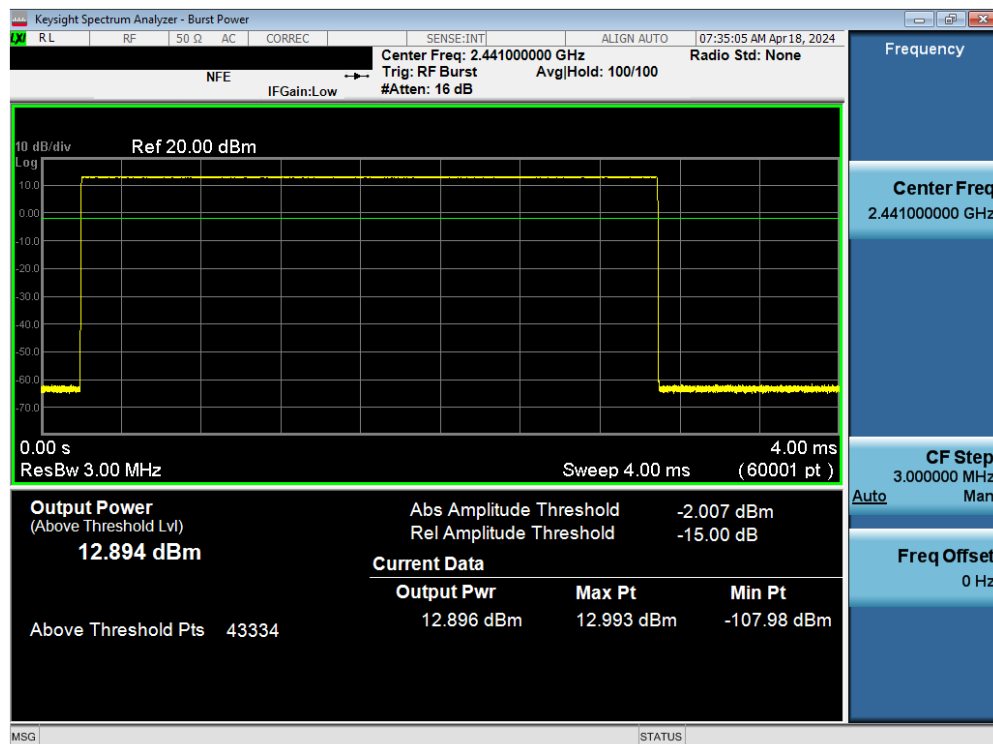


Plot 7-84. Peak Conducted Power (3Mbps – Ch. 78) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 60 of 139

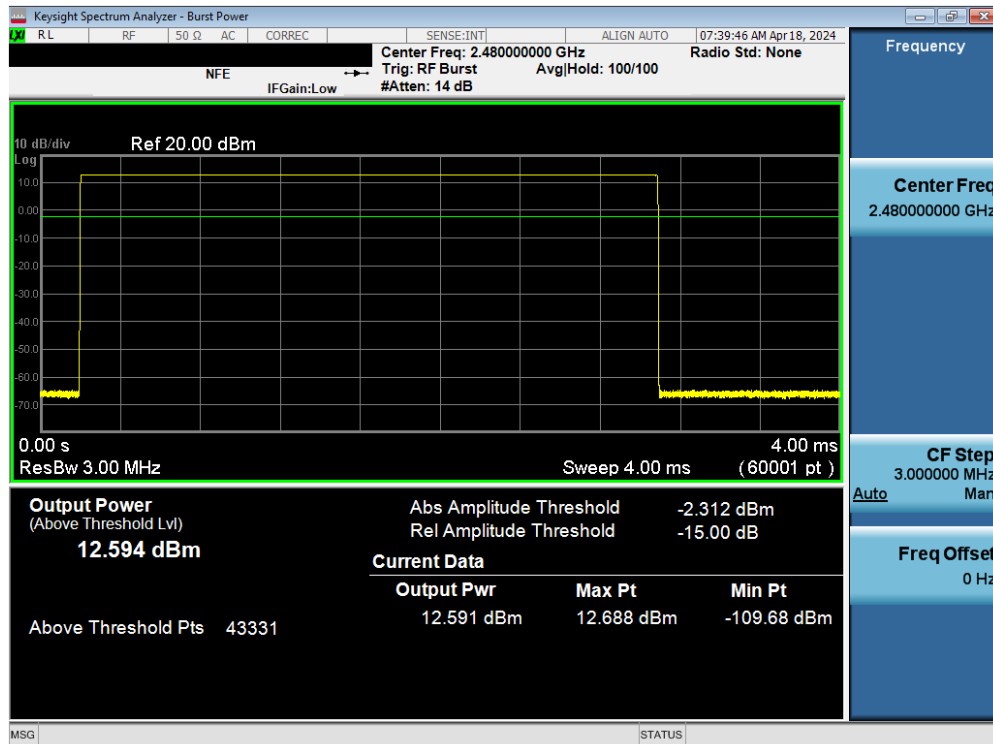


Plot 7-85. Average Conducted Power (1Mbps – Ch. 0) – Dual Ant 1

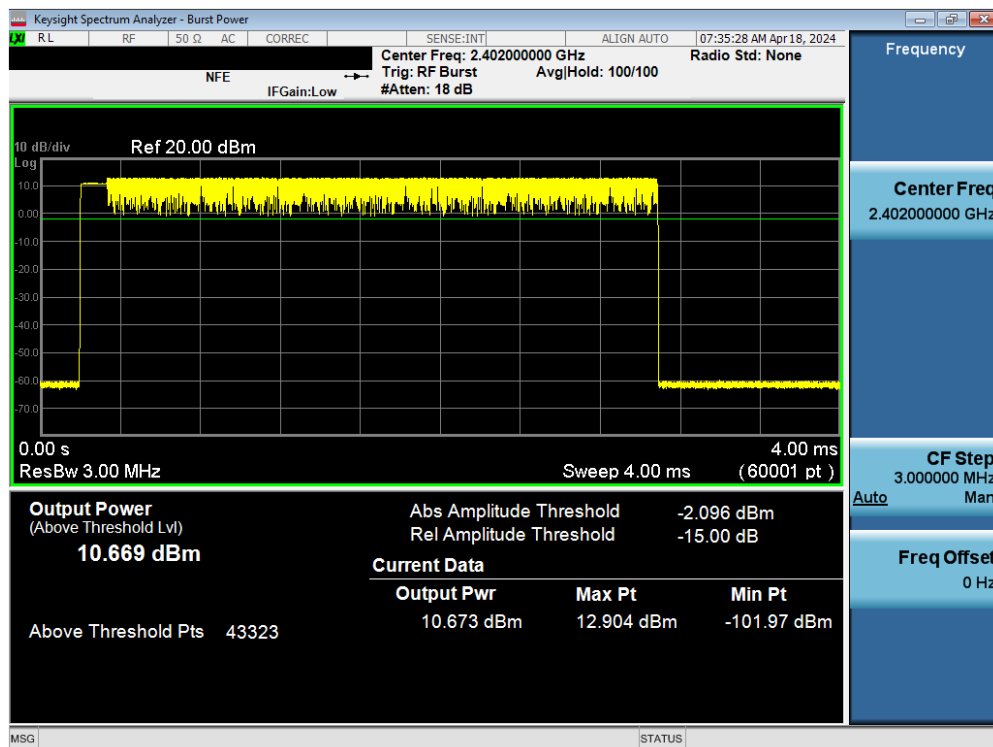


Plot 7-86. Average Conducted Power (1Mbps – Ch. 39) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 61 of 139

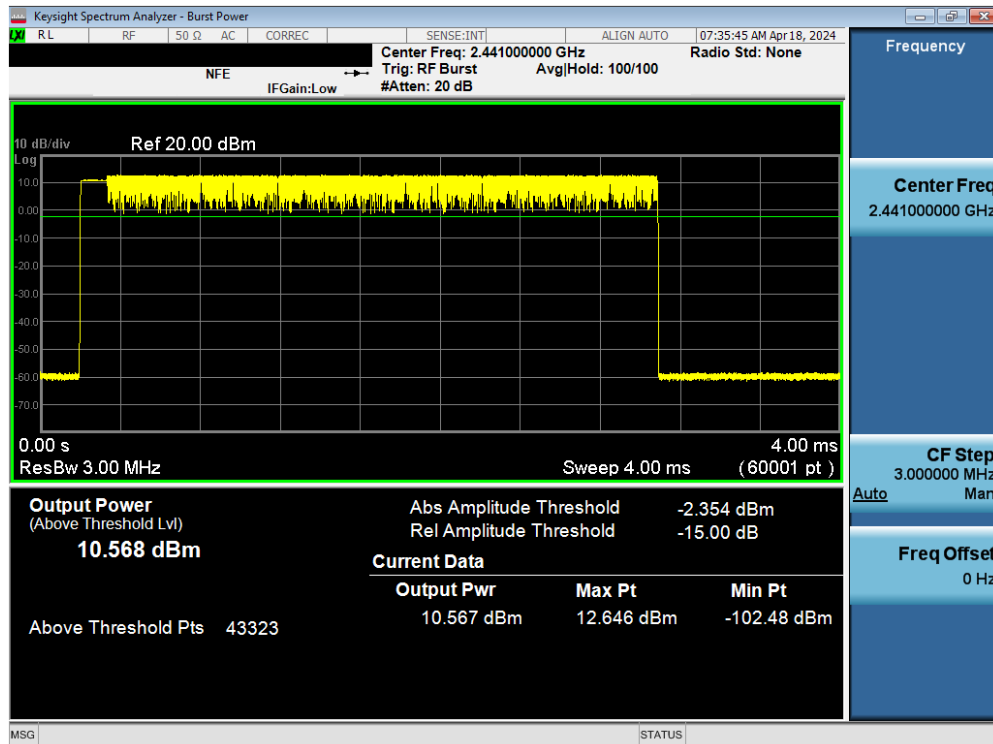


Plot 7-87. Average Conducted Power (1Mbps – Ch. 78) – Dual Ant 1

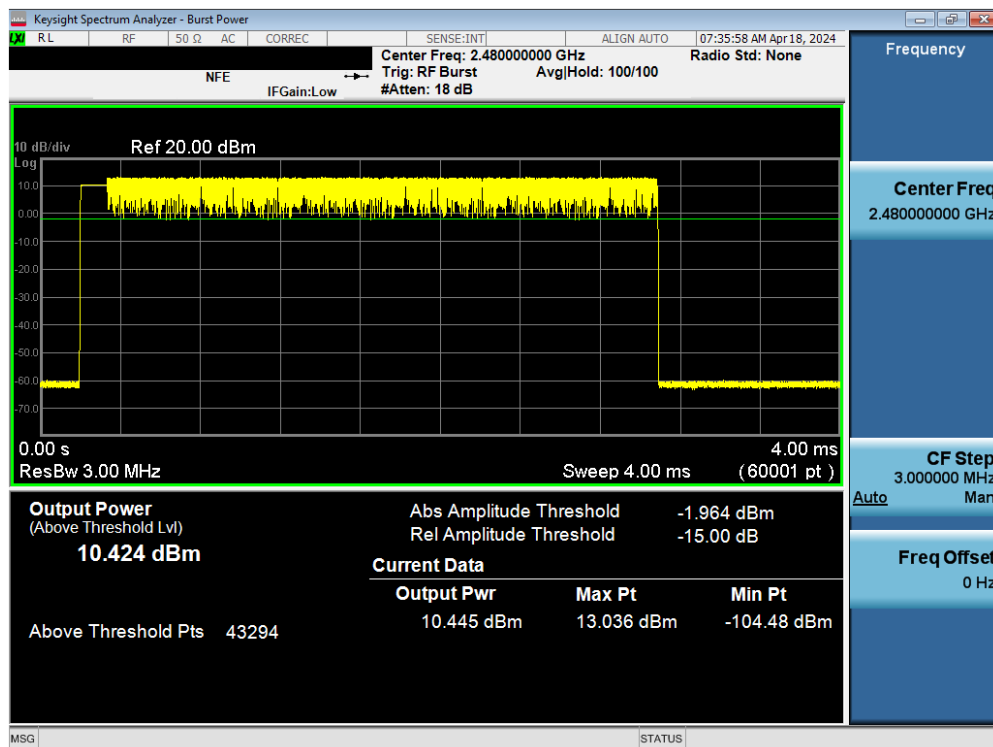


Plot 7-88. Average Conducted Power (2Mbps – Ch. 0) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 62 of 139

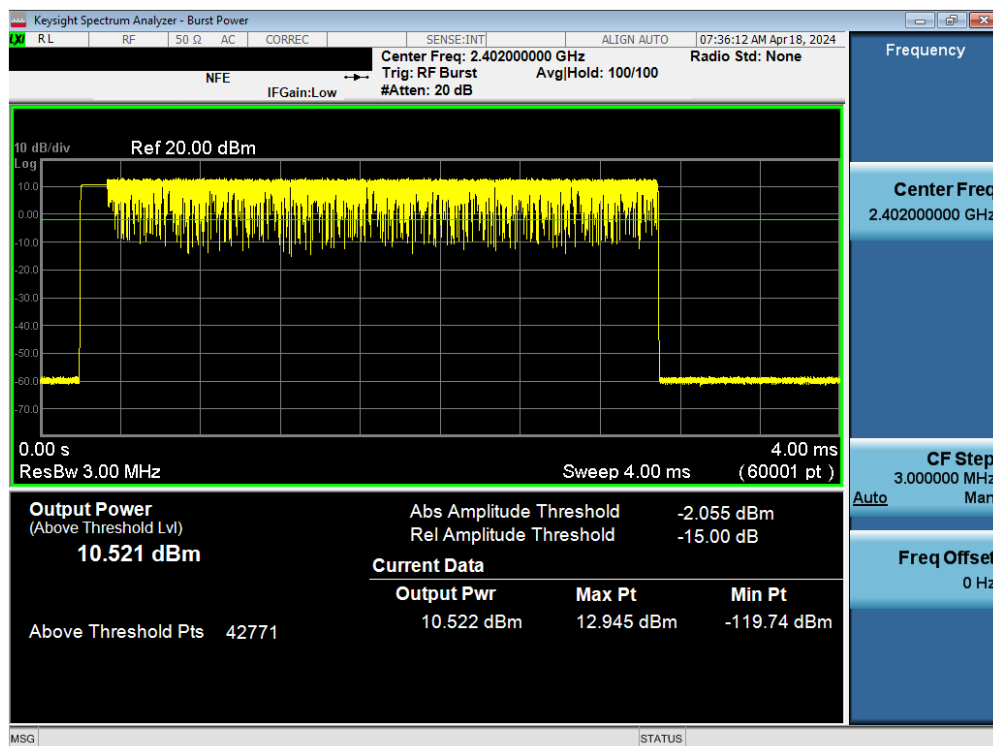


Plot 7-89. Average Conducted Power (2Mbps – Ch. 39) – Dual Ant 1

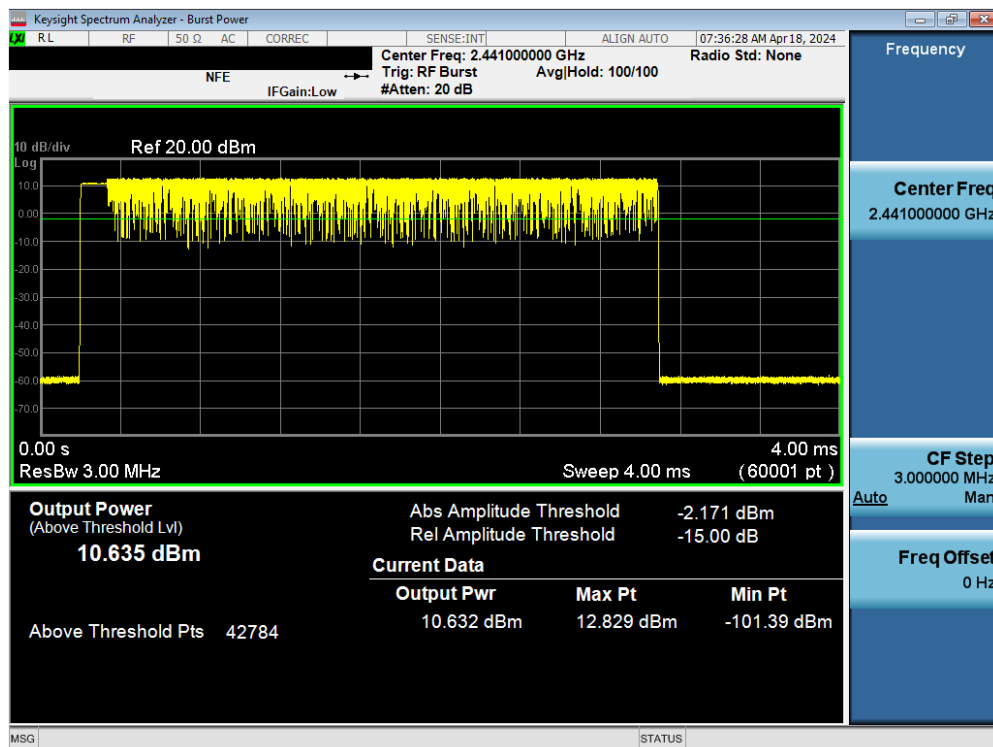


Plot 7-90. Average Conducted Power (2Mbps – Ch. 78) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 63 of 139

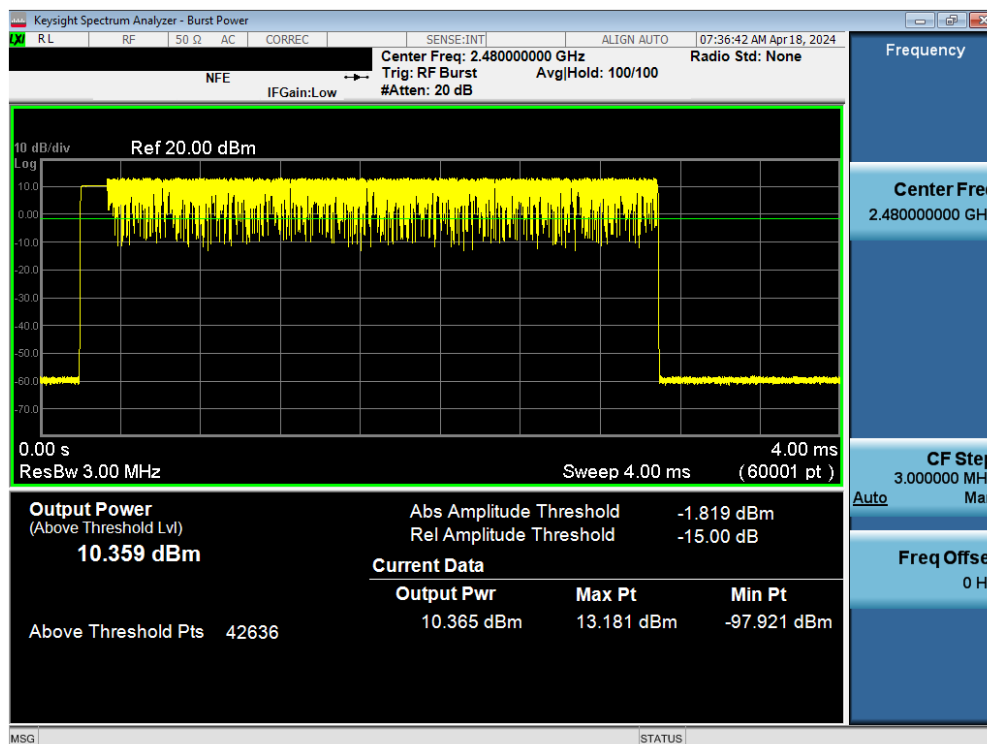


Plot 7-91. Average Conducted Power (3Mbps – Ch. 0) – Dual Ant 1



Plot 7-92. Average Conducted Power (3Mbps – Ch. 39) – Dual Ant 1

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 64 of 139

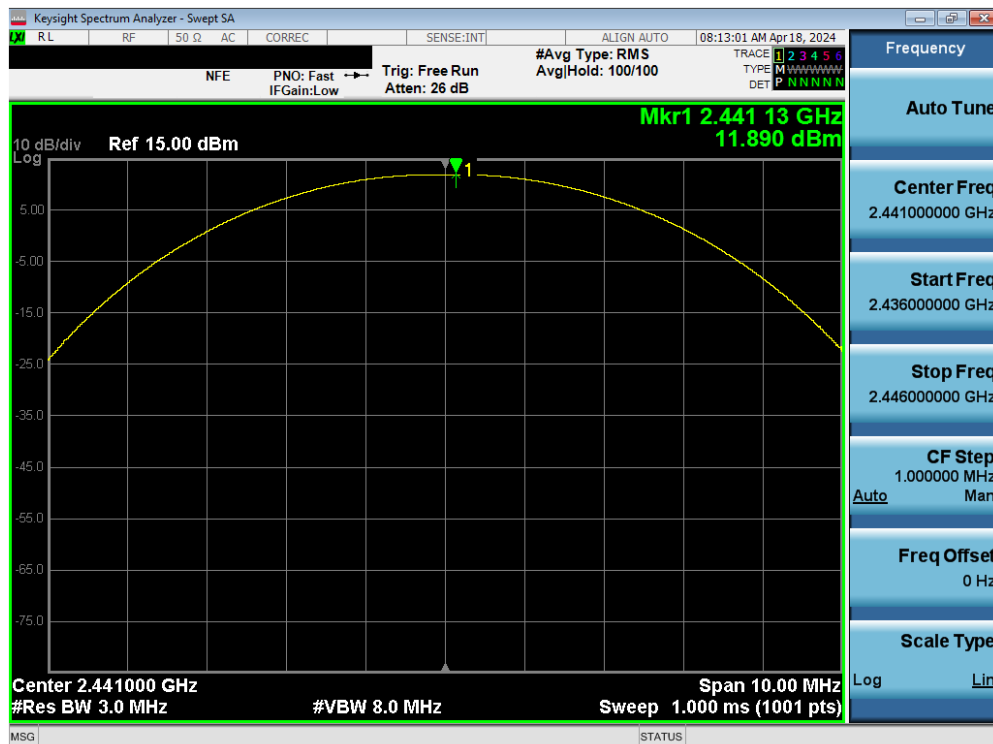


Plot 7-93. Average Conducted Power (3Mbps – Ch. 78) – Dual Ant 1

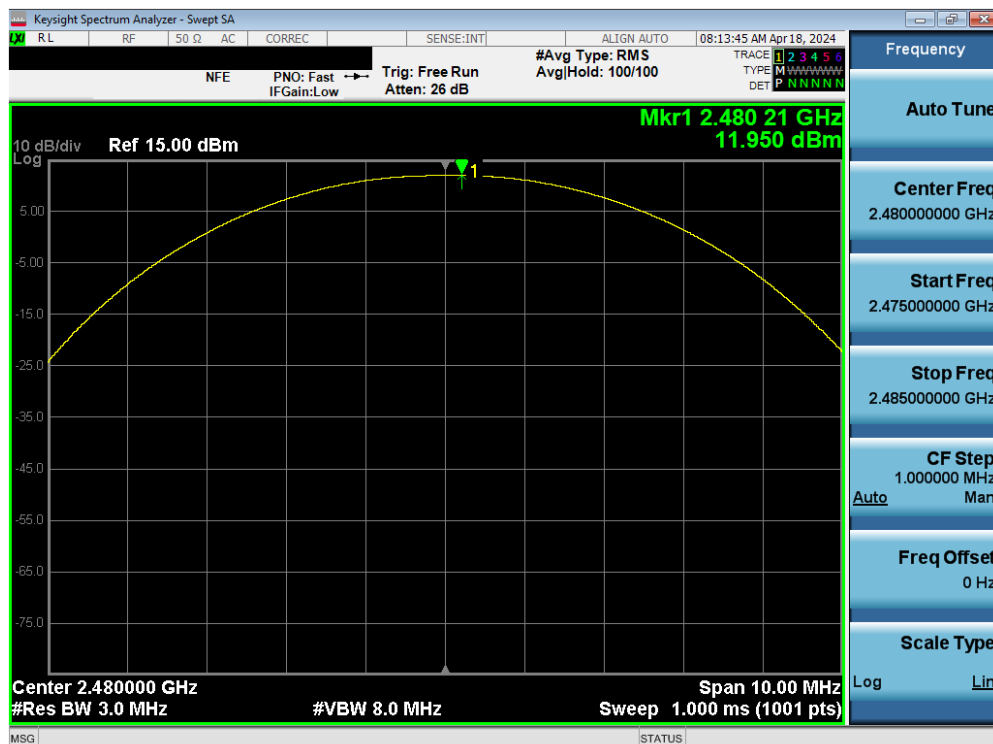


Plot 7-94. Peak Conducted Power (1Mbps – Ch. 0) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 65 of 139

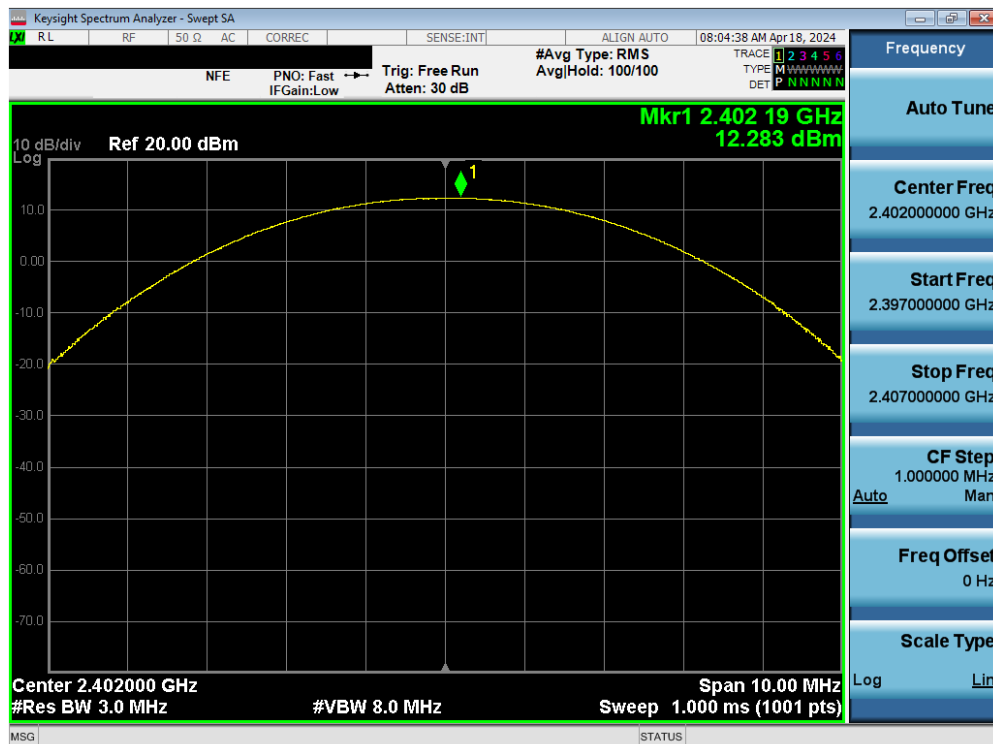


Plot 7-95. Peak Conducted Power (1Mbps – Ch. 39) – Dual Ant 2

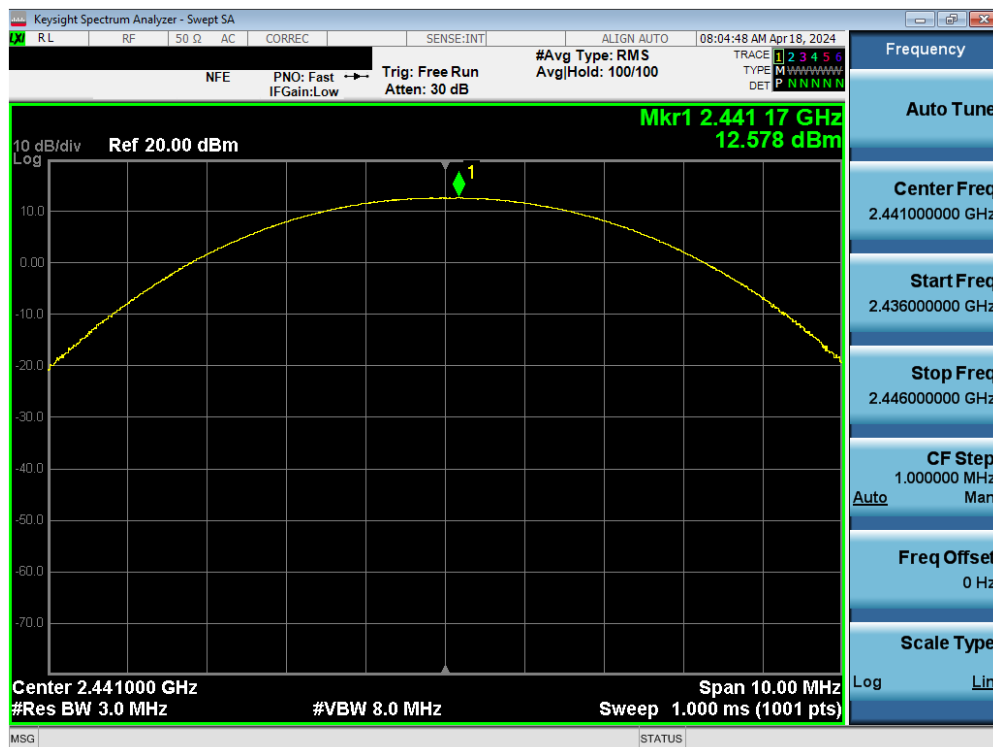


Plot 7-96. Peak Conducted Power (1Mbps – Ch. 78) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 66 of 139



Plot 7-97. Peak Conducted Power (2Mbps – Ch. 0) – Dual Ant 2

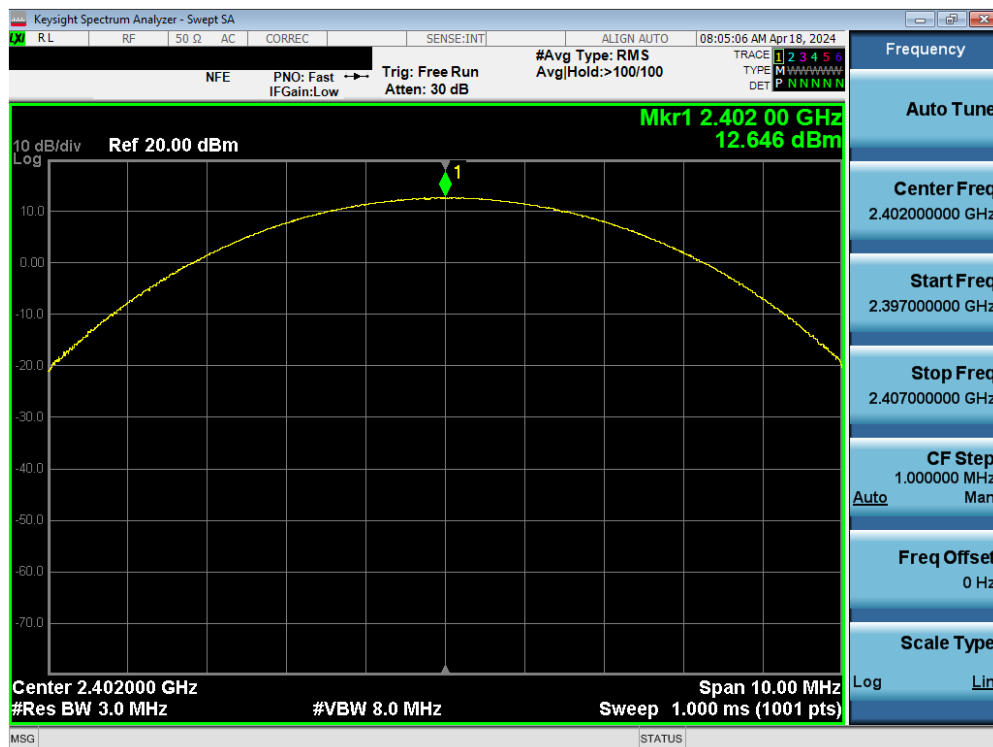


Plot 7-98. Peak Conducted Power (2Mbps – Ch. 39) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 67 of 139

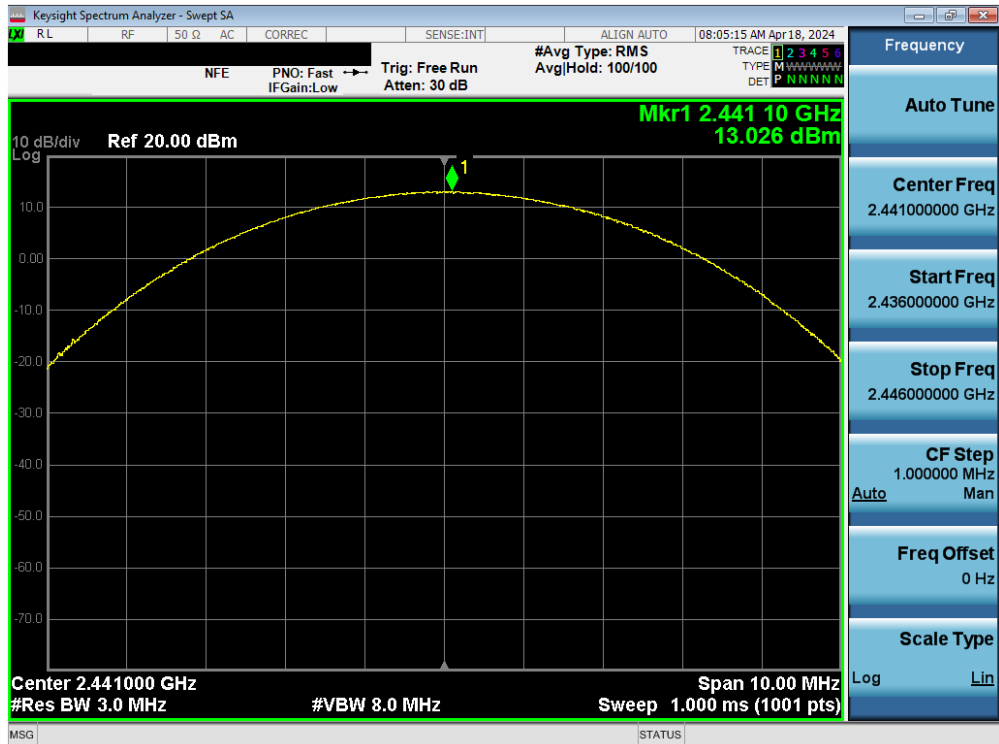


Plot 7-99. Peak Conducted Power (2Mbps – Ch. 78) – Dual Ant 2

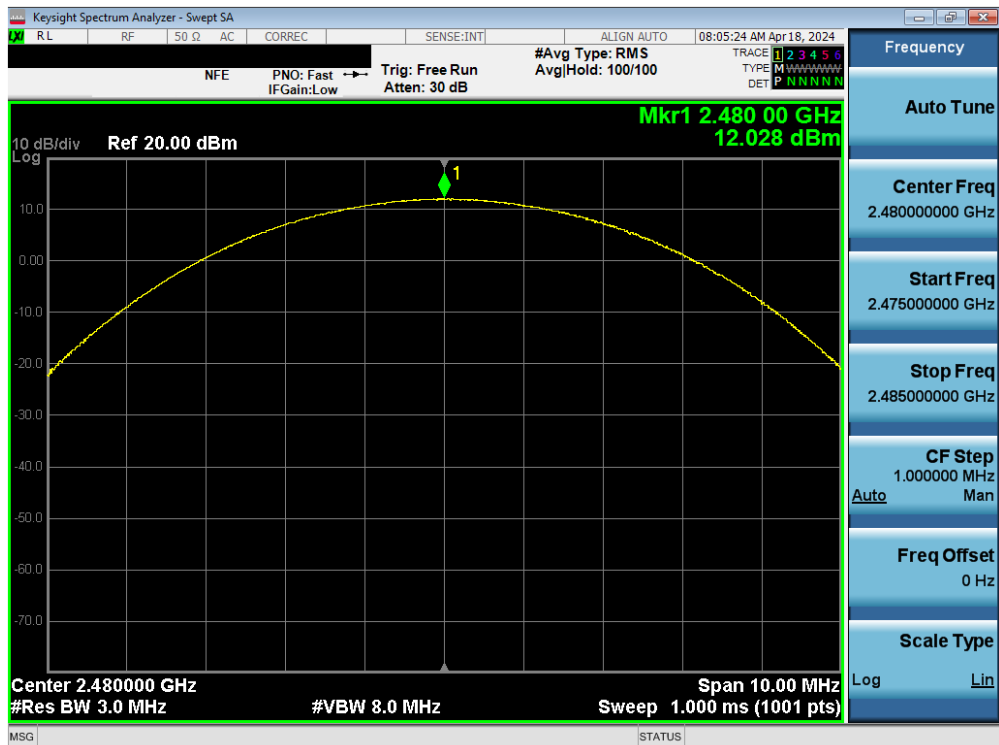


Plot 7-100. Peak Conducted Power (3Mbps – Ch. 0) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 68 of 139

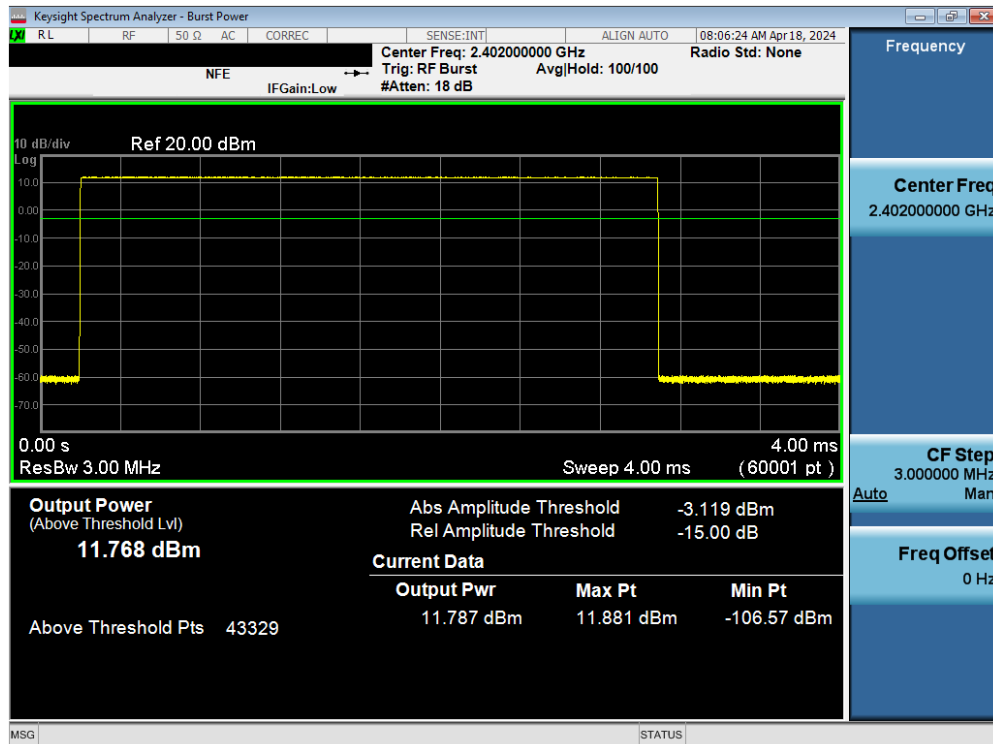


Plot 7-101. Peak Conducted Power (3Mbps – Ch. 39) – Dual Ant 2

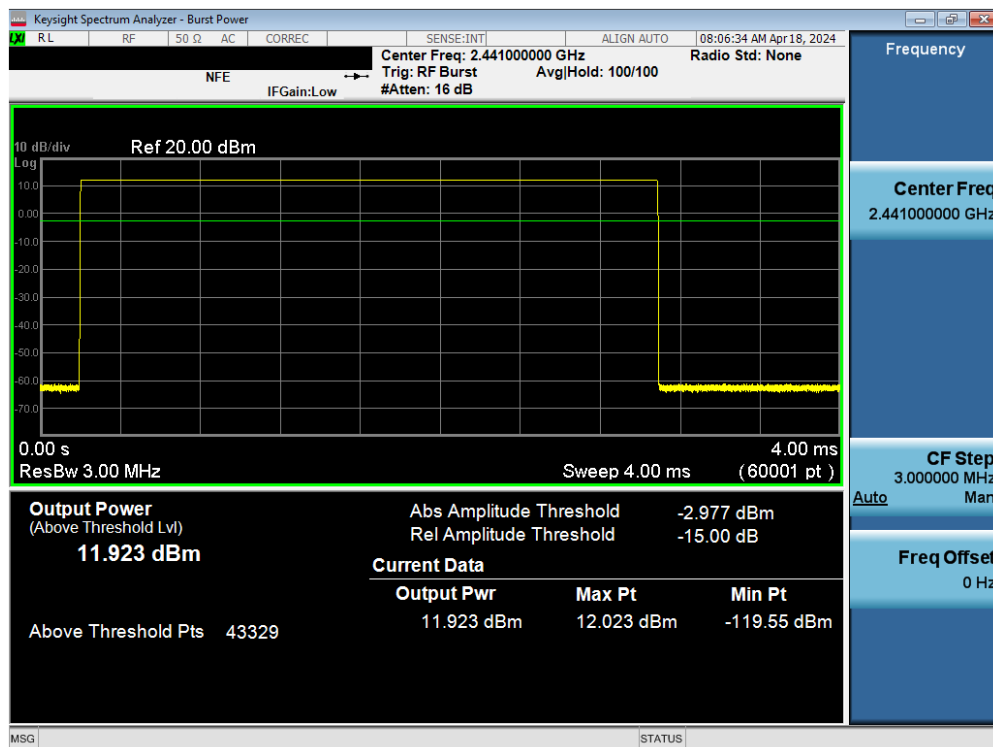


Plot 7-102. Peak Conducted Power (3Mbps – Ch. 78) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 69 of 139

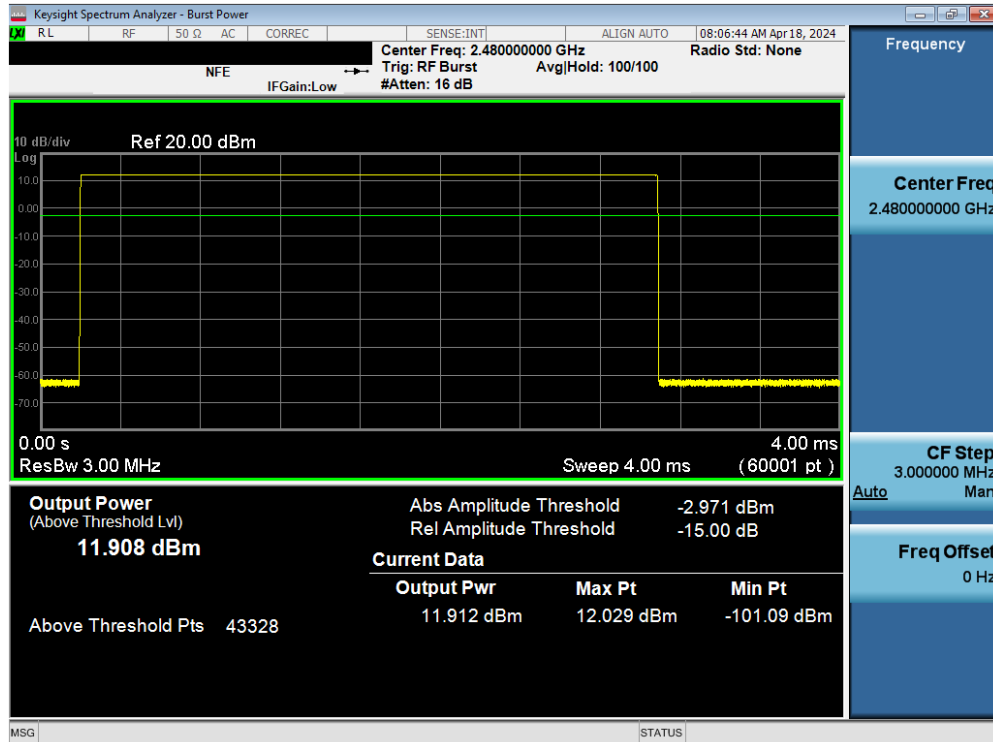


Plot 7-103. Average Conducted Power (1Mbps – Ch. 0) – Dual Ant 2

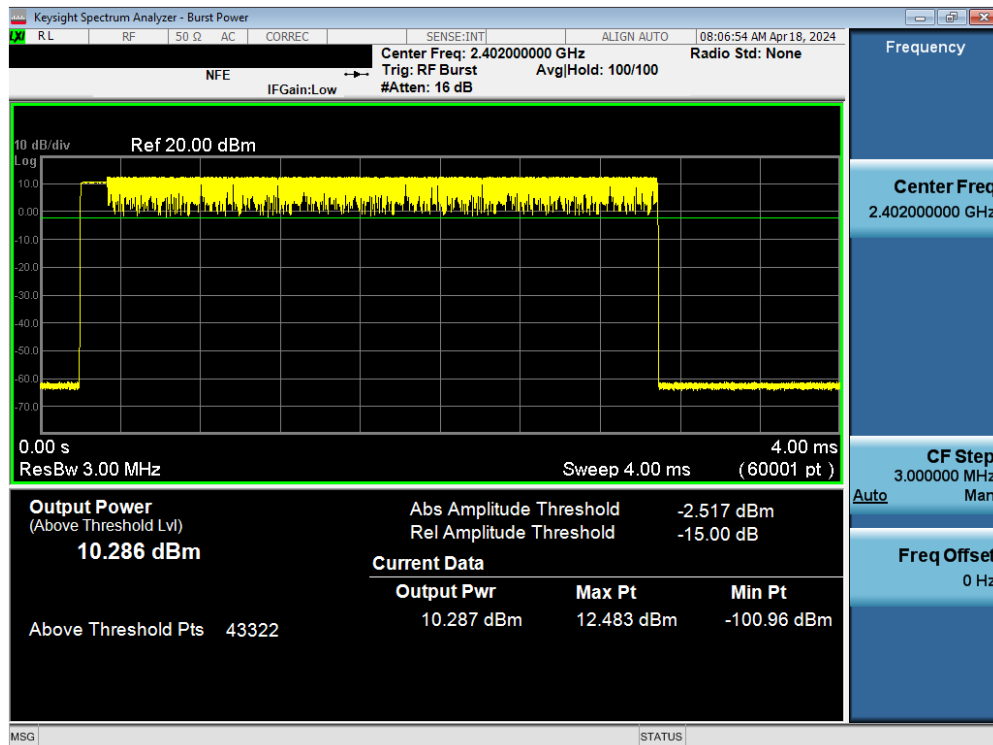


Plot 7-104. Average Conducted Power (1Mbps – Ch. 39) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 70 of 139

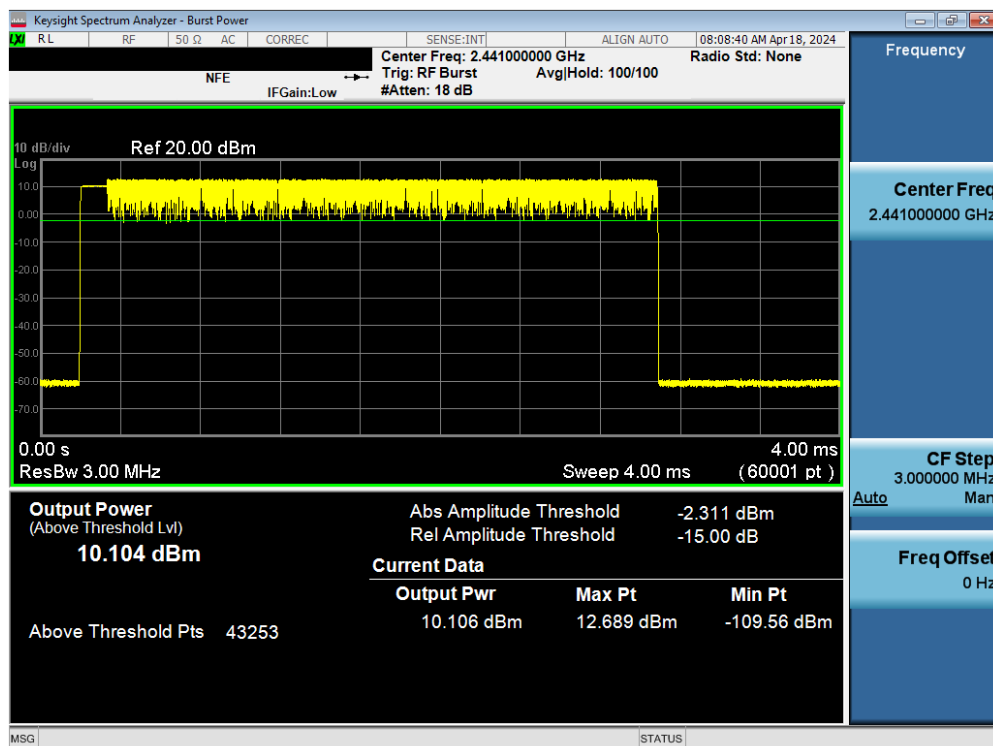


Plot 7-105. Average Conducted Power (1Mbps – Ch. 78) – Dual Ant 2

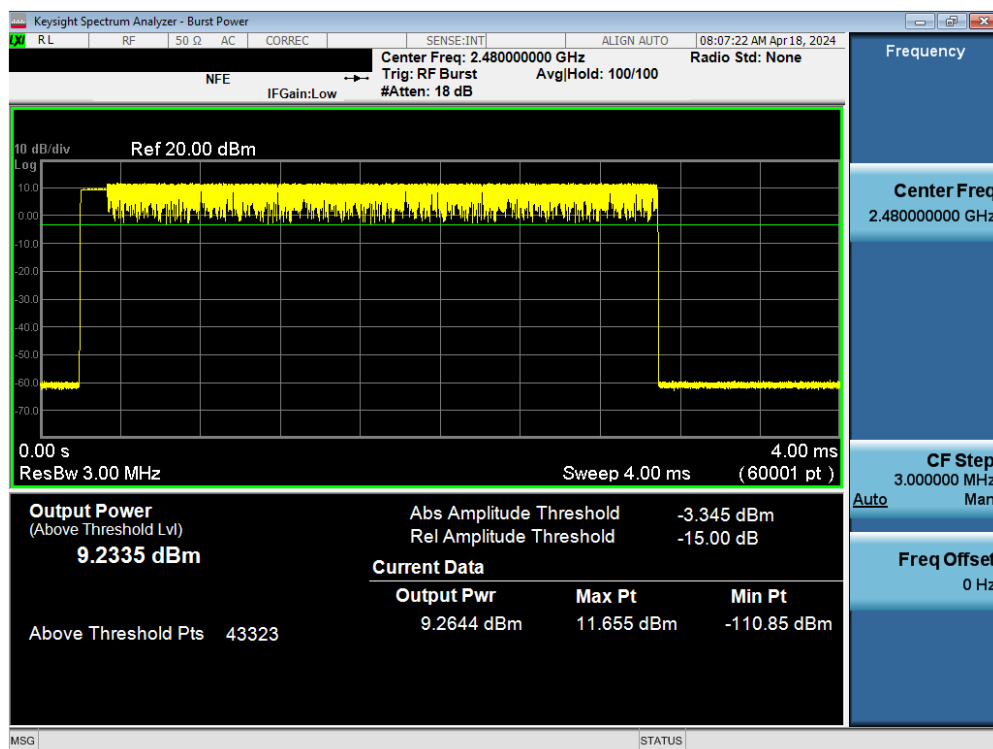


Plot 7-106. Average Conducted Power (2Mbps – Ch. 0) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 71 of 139



Plot 7-107. Average Conducted Power (2Mbps – Ch. 39) – Dual Ant 2



Plot 7-108. Average Conducted Power (2Mbps – Ch. 78) – Dual Ant 2

FCC ID: A3LNP960XMA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2401250007-09-R1.A3L	Test Dates: 03/26/2024-05/02/2024	EUT Type: Portable Computing Device	Page 72 of 139