

MEASUREMENT REPORT
FCC Part 15.407 / ISED RSS-248 802.11ax/be WiFi 6E (OFDMA)

Applicant Name:
 Microsoft Corporation
 One Microsoft Way
 Redmond, WA 98052
 United States

Date of Testing:
 01/03/2024 - 04/01/2024
Test Report Issue Date:
 4/26/2024
Test Site/Location:
 Element lab., Columbia, MD, USA
Test Report Serial No.:
 1M2312190129-12-R2.C3K


FCC ID:	C3K2076
IC:	3048A-2076
APPLICANT:	Microsoft Corporation

Application Type: Certification
Model: 2076
EUT Type: Portable Computing Device
Frequency Range: 5935 – 7115MHz
Modulation Type: OFDMA
FCC Classification: 15E 6GHz Low Power Dual Client (6CD)
FCC Rule Part(s): Part 15 Subpart E (15.407)
ISED Specification: RSS-248 Issue 2
Test Procedure(s): ANSI C63.10-2013, KDB 987594 D02 v02r01
 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 was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

This revised Test Report (S/N: 1M2312190129-12-R2.C3K) supersedes and replaces the previously issued test report (S/N: 1M2312190129-12-R1.C3K) 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.



RJ Ortanez
 Executive Vice President



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Channel Bandwidth [MHz]	UNII Band	Tx Frequency [MHz]	MIMO	
			Max. Power [mW]	Max. Power [dBm]
20	5	5935 - 6415	12.18	10.86
	6	6435 - 6515	10.69	10.29
	7	6535 - 6875	11.23	10.50
	8	6895 - 7115	13.40	11.27
40	5	5965 - 6405	24.37	13.87
	6	6445 - 6525	20.41	13.10
	7	6565 - 6845	22.19	13.46
	8	6885 - 7085	28.52	14.55
80	5	5985 - 6385	41.60	16.19
	6	6465	37.90	15.79
	7	6545 - 6865	39.74	15.99
	8	6945 - 7025	49.13	16.91
160	5	6025 - 6345	71.49	18.54
	6	6505	61.63	17.90
	7	6665 - 6825	65.18	18.14
	8	6985	84.93	19.29
320	5	6105 - 6265	117.50	20.70
	6	6425	95.66	19.81
	7	6585 - 6745	100.48	20.02
	8	6905	128.45	21.09

EUT Overview – Low Power Indoor Client – EIRP

Channel Bandwidth [MHz]	UNII Band	Tx Frequency [MHz]	MIMO	
			Max. Power [mW]	Max. Power [dBm]
20	5	5935 - 6415	768.83	28.86
	7	6535 - 6875	739.44	28.69
40	5	5965 - 6405	969.90	29.87
	7	6565 - 6845	942.19	29.74
80	5	5985 - 6385	991.25	29.96
	7	6545 - 6865	964.82	29.84
160	5	6025 - 6345	678.90	28.32
	7	6665 - 6825	951.74	29.79
320	5	6105 - 6265	681.15	28.33

EUT Overview – Standard Power Client - EIRP

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1 INTRODUCTION

1.1 Scope

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

1.2 Element Test Location

These measurement tests were conducted at the Element laboratory located at 7185 Oakland Mills Road, Columbia, MD 21046. 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 lab located in Columbia, MD 21046, U.S.A.

- Element Washington DC LLC is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 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 Washington DC LLC facility is a registered (2451B) 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 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Microsoft Corporation Portable Computing Device FCC ID: C3K2076**. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter while operating in the 6GHz band.

Test Device Serial No.: 1P4X2, 1P4S2, 1P4R2, 1P4D2, 9V9V, 0GJ12

2.2 Device Capabilities

This device contains the following capabilities:

802.11b/g/n/ac/ax/be WLAN, 802.11a/n/ac/ax/be UNII (5GHz and 6GHz), Bluetooth (1x, EDR, LE)

Band 5		Band 6		Band 7		Band 8	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
2	5935	97	6435	117	6535	189	6895
:	:	:	:	:	:	:	:
45	6175	105	6475	149	6695	209	6995
:	:	:	:	:	:	:	:
93	6415	113	6515	185	6875	233	7115

Table 2-1. 802.11ax/be (20MHz) Frequency / Channel Operations

Band 5		Band 6		Band 7		Band 8	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
3	5965	99	6445	123	6565	187	6885
:	:	:	:	:	:	:	:
43	6165	107	6485	155	6725	211	7005
:	:	:	:	:	:	:	:
91	6405	115	6525	179	6845	227	7085

Table 2-2. 802.11ax/be (40MHz BW) Frequency / Channel Operations

Band 5		Band 6		Band 7		Band 8	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
7	5985	103	6465	119	6545	199	6945
:	:			:	:	:	:
39	6145			151	6705	215	7025
:	:			:	:		
87	6385			183	6865		

Table 2-3. 802.11ax/be (80MHz BW) Frequency / Channel Operations

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Band 5		Band 6		Band 7		Band 8	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
15	6025	111	6505	143	6665	207	6985
:	:			:	:		
47	6185			175	6825		
:	:						
79	6345						

Table 2-4. 802.11ax/be (160MHz BW) Frequency / Channel Operations

Band 5		Band 6		Band 7		Band 8	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
31	6105	95	6425	127	6585	191	6905
63	6265			159	6745		

Table 2-5. 802.11be (320MHz BW) Frequency / Channel Operations

Notes:

- 6GHz NII operation is possible in 20MHz, 40MHz, 80MHz, 160MHz, and 320MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section B)2)b) of ANSI C63.10-2013. 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:

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Band	Bandwidth	Tone Type	Tone Size	MIMO (1+2)
				Duty Cycle [%]
6GHz	20MHz	RU	26T	98.77
			52T	99.15
			106T	99.14
			242T	98.54
		MRU	52+26T	99.15
			106+26T	98.45
	40MHz	RU	26T	99.20
			52T	99.24
			106T	99.14
			242T	98.54
			484T	97.32
	80MHz	RU	26T	99.24
			52T	99.19
			106T	99.14
			242T	98.54
			484T	97.44
		996T	96.08	
		MRU	484+242T	97.00
	160MHz	RU	26T	99.24
			52T	99.19
			106T	99.14
			242T	98.54
			484T	97.44
			996T	96.13
			2x996T	95.72
		MRU	996+484T	96.61
		320MHz	RU	26T
	52T			99.24
	106T			99.19
	242T			98.54
484T	97.49			
996T	96.31			
2x996T	95.74			
4x996T	99.65			
MRU	2x996+484T		95.04	
	3x996T		96.45	
	3x996+484T		95.99	

Table 2-6. Measured Duty Cycles

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2. The device employs MIMO technology. Below are the possible configurations.

WiFi Configurations		SISO		CDD		SDM	
		ANT1	ANT2	ANT1	ANT2	ANT1	ANT2
6 GHz	11a	✓	✓	✓	✓	✗	✗
	11ax	✓	✓	✓	✓	✓	✓
	11be	✓	✓	✓	✓	✓	✓

Table 2-7. Frequency / Channel Operations

✓ = Support; ✗ = NOT Support

SISO = Single Input Single Output

SDM = Spatial Diversity Multiplexing – MIMO function

CDD = Cyclic Delay Diversity - 2Tx Function

3. The device supports the following data rates (shown in Mbps):

MCS Index	Spatial Stream	OFDMA (802.11ax)																				
		26T			52T			106T			242T			484T			996T			2x996T		
		0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI
0	1	0.9	0.8	0.8	1.8	1.7	1.5	3.8	3.5	3.2	8.6	8.1	7.3	17.2	16.3	14.6	36	34	30.6	72.1	68.1	61.3
1	1	1.8	1.7	1.5	3.5	3.3	3	7.5	7.1	6.4	17.2	16.3	14.6	34.4	32.5	29.3	72.1	68.1	61.3	144.1	136.1	122.5
2	1	2.6	2.5	2.3	5.3	5	4.5	11.3	10.6	9.6	25.8	24.4	21.9	51.6	48.8	43.9	108.1	102.1	91.9	216.2	204.2	183.8
3	1	3.5	3.3	3	7.1	6.7	6	15	14.2	12.8	34.4	32.5	29.3	68.8	65	58.5	144.1	136.1	122.5	288.2	272.2	245
4	1	5.3	5	4.5	10.6	10	9	22.5	21.3	19.1	51.6	48.8	43.9	103.2	97.5	87.8	216.2	204.2	183.8	432.4	408.3	367.5
5	1	7.1	6.7	6	14.1	13.3	12	30	28.3	25.5	68.8	65	58.5	137.6	130	117	288.2	272.2	245	576.5	544.4	490
6	1	7.9	7.5	6.8	15.9	15	13.5	33.8	31.9	28.7	77.4	73.1	65.8	154.9	146.3	131.6	324.3	306.3	275.6	648.5	612.5	551.3
7	1	8.8	8.3	7.5	17.6	16.7	15	37.5	35.4	31.9	86	81.3	73.1	172.1	162.5	146.3	360.3	340.3	306.3	720.6	680.6	612.5
8	1	10.6	10	9	21.2	20	18	45	42.5	38.3	103.2	97.5	87.8	206.5	195	175.5	432.4	408.3	367.5	864.7	816.7	735
9	1	11.8	11.1	10	23.5	22.2	20	50	47.2	42.5	114.7	108.3	97.5	229.4	216.7	195	480.4	453.7	408.3	960.8	907.4	816.7
10	1	13.2	12.5	11.3	26.5	25	22.5	56.3	53.1	47.8	129	121.9	109.7	258.1	243.8	219.4	540.4	510.4	459.4	1080.9	1020.8	918.8
11	1	14.7	13.9	12.5	29.4	27.8	25	62.5	59	53.1	143.4	135.4	121.9	286.8	270.8	243.8	600.5	567.1	510.4	1201	1134.3	1020.8
0	2	1.8	1.7	1.5	3.5	3.3	3	7.5	7.1	6.4	17.2	16.3	14.6	34.4	32.5	29.3	72.1	68.1	61.3	144.1	136.1	122.5
1	2	3.5	3.3	3	7.1	6.7	6	15	14.2	12.8	34.4	32.5	29.3	68.8	65	58.5	144.1	136.1	122.5	288.2	272.2	245
2	2	5.3	5	4.5	10.6	10	9	22.5	21.3	19.1	51.6	48.8	43.9	103.2	97.5	87.8	216.2	204.2	183.8	432.4	408.3	367.5
3	2	7.1	6.7	6	14.1	13.3	12	30	28.3	25.5	68.8	65	58.5	137.6	130	117	288.2	272.2	245	576.5	544.4	490
4	2	10.6	10	9	21.2	20	18	45	42.5	38.3	103.2	97.5	87.8	206.5	195	175.5	432.4	408.3	367.5	864.7	816.7	735
5	2	14.1	13.3	12	28.2	26.7	24	60	56.7	51	137.6	130	117	275.3	260	234	576.5	544.4	490	1152.9	1088.9	980
6	2	15.9	15	13.5	31.8	30	27	67.5	63.8	57.4	154.9	146.3	131.6	309.7	292.5	263.3	648.5	612.5	551.3	1297.1	1225	1102.5
7	2	17.6	16.7	15	35.3	33.3	30	75	70.8	63.8	172.1	162.5	146.3	344.1	325	292.5	720.6	680.6	612.5	1441.2	1361.1	1225
8	2	21.2	20	18	42.4	40	36	90	85	76.5	206.5	195	175.5	412.9	390	351	864.7	816.7	735	1729.4	1633.3	1470
9	2	23.5	22.2	20	47.1	44.4	40	100	94.4	85	229.4	216.7	195	458.8	433.3	390	960.8	907.4	816.7	1921.6	1814.8	1633.3
10	2	26.5	25	22.5	52.9	50	45	112.5	106.3	95.6	258.1	243.8	219.4	516.2	487.5	438.8	1080.9	1020.8	918.8	2161.8	2041.7	1837.5
11	2	29.4	27.8	25	58.8	55.6	50	125	118.1	106.3	286.8	270.8	243.8	573.5	541.7	487.5	1201	1134.3	1020.8	2402	2268.5	2041.7

Table 2-8. Supported Data Rates

4. The device supports either Standard Power (SP) or Low Power Indoor (LPI) operation in the following UNII bands:

UNII Band	Standard Power (SP)	Low Power Indoor (LPI)
UNII 5	✓	✓
UNII 6	✗	✓
UNII 7	✓	✓
UNII 8	✗	✓

Table 2-9. Power Operation

✓ = Support; ✗ = NOT Support

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2.3 Antenna Description

The following antenna gains were used for the testing.

	Ant1 Peak Gain [dBi]	Ant2 Peak Gain [dBi]	Directional Gain [dBi]
5925 – 6425 MHz	3.90	4.80	7.37
6425 – 6525 MHz	2.80	4.80	6.87
6525 – 6875 MHz	3.30	4.70	7.04
6875 – 7125 MHz	4.20	5.50	7.88

Table 2-10. Antenna Peak Gain

2.4 Test Configuration

The device has either an OLED or LCD display type. Testing was performed with both display types and only worst-case emissions are reported.

ANSI C63.10-2013 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 and 7.6 for antenna port conducted emissions test setups.

This device supports operation under control of either a low-power indoor access point or standard power access point for frequency ranges 5925 – 6425 MHz and 6525 – 6875 MHz. Power for the EUT may vary depending on whether the device is connected to a standard access point (SP Operation) or a low-power indoor access point (LPI Operation). In cases where these targets differ two data sets have been provided to demonstrate compliance. The worst-case emissions data is shown in this report.

2.5 Software and Firmware

The test was conducted with firmware version 2024.111.46 installed on the EUT.

2.6 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 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 C63.10-2013) and the guidance provided in KDB 987594 D02 v01r01 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 10'x16'x9' shielded enclosure. The shielded enclosure is manufactured by ETS Lindgren RF Enclosures. 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.

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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 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 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)
Contention Based Protocol Conducted Measurements	0.86
Conducted Bench Top Measurements	1.13
Line Conducted Disturbance	3.09
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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6 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 to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
N/A	WL25-1	Conducted Cable Set (25GHz)	11/15/2023	Annual	11/15/2024	WL25-1
N/A	WL25-2	WLAN Cable Set (25GHz)	11/15/2023	Annual	11/15/2024	WL25-2
N/A	WL40-1	WLAN Cable Set (40GHz)	11/15/2023	Annual	11/15/2024	WL40-1
N/A	ETS-001	EMC Cable and Switch System	11/15/2023	Annual	11/15/2024	ETS-001
N/A	ETS-002	EMC Cable and Switch System	11/15/2023	Annual	11/15/2024	ETS-002
N/A	AP1-002	EMC Cable and Switch System	11/15/2023	Annual	11/15/2024	AP1-002
N/A	AP2-001	EMC Cable and Switch System	11/15/2023	Annual	11/15/2024	AP2-001
N/A	AP2-002	EMC Cable and Switch System	11/15/2023	Annual	11/15/2024	AP2-002
Anritsu	MA2411B	Pulse Power Sensor	11/8/2023	Annual	11/8/2024	1027293
Anritsu	MA2411B	Pulse Power Sensor	6/14/2023	Annual	6/14/2024	1911105
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	4/13/2022	Biennial	4/13/2024	121034
Keysight Technologies	N9038A	MXE EMI Receiver	8/30/2023	Annual	8/30/2024	MY51210133
Keysight Technologies	N9030A	PXA Signal Analyzer	2/29/2024	Annual	3/1/2025	MY55410501
Keysight Technologies	N9020A	MXA Signal Analyzer	3/15/2023	Annual	3/15/2024	MY54500644
Pasternack	NMLC-2	Line Conducted Emissions Cable (NM)	11/15/2023	Annual	11/15/2024	NMLC-2
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	9/25/2023	Annual	9/25/2024	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/11/2023	Annual	9/11/2024	100348
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	2/15/2024	Annual	2/15/2025	103200
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	3/15/2023	Biennial	3/15/2025	102136
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	3/15/2023	Biennial	3/15/2025	102132
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	1/11/2024	Annual	1/11/2025	102151
Sunol Sciences	DRH-118	Horn (Small)	2/21/2024	Biennial	2/21/2026	A050307
Sunol Sciences	JB5	Bi-Log Antenna (30M-5GHz)	8/30/2022	Biennial	8/30/2024	A051107

Table 6-1. Annual Test Equipment Calibration Schedule

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.

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7 TEST RESULTS

7.1 Summary

Company Name: Microsoft Corporation
 FCC ID: C3K2076
 FCC Classification: 15E 6GHz Low Power Dual Client (6CD)

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1046, 15.407(a)(12)	RSS-Gen [6.12]	Maximum Conducted Output Power	N/A	CONDUCTED	PASS	Section 7.3
15.407(a)(8)	RSS-Gen [6.7, RSS-248 [4.5.3]	Maximum Radiated Output Power (LPI)	< 24dBm over the frequency band of operation		PASS	Section 7.3
15.407(a)(7)	RSS-Gen [6.7, RSS-248 [4.5.5]	Maximum Radiated Output Power (SP)	< 30dBm over the frequency band of operation		PASS	Section 7.3
2.1049, 15.407(a)(11)	RSS-248 [4.4]	Occupied Bandwidth/ 26dB Bandwidth	99% of the occupied bandwidth of any channel must be contained within each of its respective U-NII sub bands. The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz.		PASS	Section 7.2
15.407(a)(8)	RSS-248 [4.5.3]	Maximum Power Spectral Density (LPI)	< -1dBm/MHz e.i.r.p.		PASS	Section 7.4
15.407(a)(7)	RSS-248 [4.5.5]	Maximum Power Spectral Density (SP)	< 17dBm/MHz e.i.r.p.		PASS	Section 7.4
15.407(a)(7)	RSS-248 [4.5.5(c)]	Power Reduction Verification for standard client device	EUT must limit its power to no more than 6 dB below its associated standard power access point's authorized transmit power		PASS	Attestation
15.407(b)(7)	RSS-248 [4.6.2]	In-Band Emissions	EUT must meet the limits detailed in RSS-248 [4.6.2]		PASS	Section 7.5
15.407(d)(6)	RSS-248 [4.7.2]	Contention Based Protocol	EUT must detect AWGN signal with 90% (or better) certainty	PASS	Section 7.6	
15.407(b)(6)	RSS-248 [4.6.2]	Undesirable Emissions	< -27dBm/MHz e.i.r.p. outside of the 5.925 – 7.125GHz band	RADIATED	PASS	Section 7.7
15.205, 15.209	RSS-Gen [8.9]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions shall comply with RSS-Gen (8.9) limits		PASS	Section 7.7
15.407(b)(9)	RSS-Gen [8.8]	AC Conducted Emissions (150kHz – 30MHz)	< RSS-Gen [8.8] limits	LINE CONDUCTED	PASS	See UNII 6E OFDM Report

Table 7-1. Summary of Test Results

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Notes:

- 1) All channels, modes, and modulations/data rates were investigated among all UNII bands. 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 and attenuators used as part of the system to connect the EUT to the analyzer 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 and attenuators.
- 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 Element "UNII Automation," Version 4.7.
- 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 Element "Chamber Automation," Version 1.3.1.
- 6) Per 15.407(a)(7), a device operating under the control of a standard power access point in 5.925-6.425 GHz and 6.525-6.875 GHz bands must not have the maximum power spectral density exceed 17 dBm/MHz e.i.r.p., must limit the maximum e.i.r.p. over the frequency band of operation not exceed 30 dBm, and must limit its power to no more than 6 dB below its associated standard power access point's authorized transmit power. Compliance to this clause is addressed via submission of an attestation following Appendix B of KDB 987594 D01 v01r03.
- 7) 802.11be OFDMA testing was performed for all signal tone configurations as specified by the 802.11be standard. Worst case results are determined and reported per the guidance provided at the October 2018 TCB Workshop.
- 8) Data was leveraged from test report 1M2311170118-12, FCC ID: C3K2085. See Table 7-2 for spot-check results.

FCC Rules	Test Item	Test Cases	Units	Limit	Reference FCC ID: 2085	Variant FCC ID: 2076	Deviation	Max Deviation	Pass/Fail
2.1046, 15.407(a)(8)	Conducted Output Power	Ch.45, 802.11a, MIMO	dBm	30.00	28.40	28.59	0.19	3.00	PASS
15.209	Radiated Spurious Emissions	Ch.45, 802.11a, MIMO	dBuV/m	53.98	35.73	36.42	0.69	3.00	PASS
15.209	Radiated Band Edge Emissions	Ch.2, 802.11be, MIMO	dBuV/m	68.20	65.86	66.35	0.49	3.00	PASS

Table 7-2. Summary of Spot-checks

6GHz WIFI (20MHz 802.11a MIMO)						Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]						
			ANT1	ANT2	MIMO				
UNII-5	6175	45	18.03	18.38	21.22	7.37	28.59	30.00	-1.41

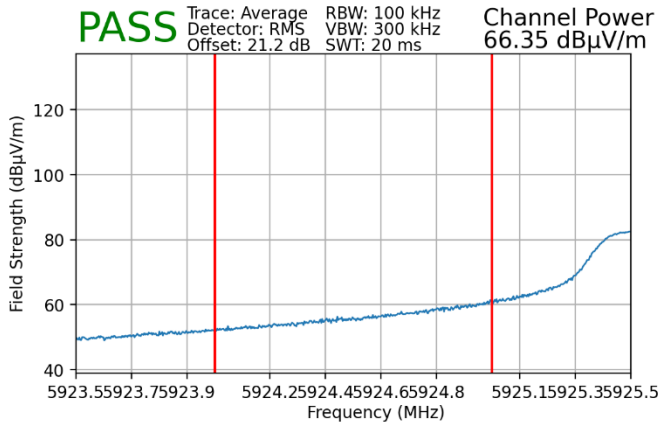
Table 7-3. Conducted Output Power Measurements (Spot-check)

Mode	Antenna	UNII Band	Channel	Test Channel Freq. [MHz]	Restricted	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
802.11a	MIMO	5	45	6175	*	18525.00	Average	H	150	195	-62.39	1.35	-9.54	36.42	53.98	-17.56
					*	18525.00	Peak	H	150	195	-51.24	1.35	-9.54	47.57	73.98	-26.41

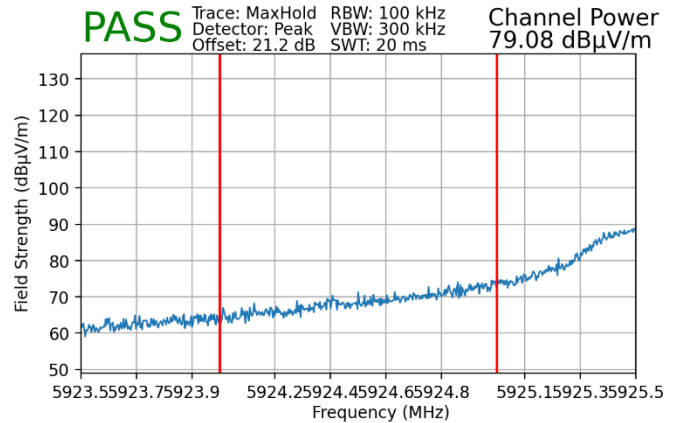
Table 7-4. Radiated Spurious Emission Measurements (Spot-check)

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Worst Case Mode: 802.11be
 Worst Case Transfer Rate: MCS0
 Distance of Measurements: 3 Meters
 Operating Frequency: 5935MHz
 Channel: 2



Plot 7-1. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5) (Spot-check)



Plot 7-2. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5) (Spot-check)

- 9) 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.
- 10) This report contains the data from the originally filed reference model (FCC ID: C3K2085), and all test cases were performed to verify the variant EUT is still in compliance with the spot checked results to the reference device and was performed using the guidance of ANSI C63.10-2013.

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7.2 26dB Bandwidth Measurement

Test Overview and Limit

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

Test Procedure Used

ANSI C63.10-2013 – Section 12.4

Test Settings

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

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

In this section, the bandwidth data tables (Tables 7-5 and 7-6) include mainly the 26dB bandwidth measurements. For partial tone operation, all values in Table 7-5 are 26dB bandwidth measurements. For full-tone operation in Table 7-6, in case of 320MHz operation, an occupied bandwidth measurement was included in the table to demonstrate compliance. Thus, all measurements in the tables are 26dB bandwidth measurements except for the 320MHz bandwidth cases for full-tone operation which are occupied bandwidth measurements.

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	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 26dB Bandwidth [MHz]	Antenna-2 26dB Bandwidth [MHz]
Band 5	5935	2	be (20MHz)	20.84	20.65
	6175	45	be (20MHz)	20.88	20.72
	6415	93	be (20MHz)	20.38	20.57
	5965	3	be (40MHz)	23.06	22.16
	6165	43	be (40MHz)	22.25	22.56
	6405	91	be (40MHz)	23.48	22.24
	5985	7	be (80MHz)	30.39	31.06
	6145	39	be (80MHz)	30.80	31.92
	6385	87	be (80MHz)	30.65	30.04
	6025	15	be (160MHz)	35.27	36.14
	6185	47	be (160MHz)	37.82	37.33
	6345	79	be (160MHz)	35.61	38.80
	6105	31	be (320MHz)	39.94	38.41
	6265	63	be (320MHz)	38.39	39.36
Band 6	6435	97	be (20MHz)	20.26	20.61
	6475	105	be (20MHz)	20.08	20.39
	6515	113	be (20MHz)	20.41	20.66
	6445	99	be (40MHz)	22.62	23.27
	6485	107	be (40MHz)	22.48	22.70
	6525	115	be (40MHz)	22.24	23.19
	6465	103	be (80MHz)	30.50	29.33
	6505	111	be (160MHz)	39.12	38.05
Band 5/6/7	6425	95	be (320MHz)	42.82	37.77
Band 7	6695	117	be (20MHz)	20.22	20.63
	6695	149	be (20MHz)	20.83	20.33
	6875	185	be (20MHz)	20.30	20.52
	6565	123	be (40MHz)	22.60	22.95
	6685	155	be (40MHz)	23.03	22.49
	6845	179	be (40MHz)	22.14	22.00
	6545	119	be (80MHz)	30.06	29.34
	6705	151	be (80MHz)	32.28	28.39
	6865	183	be (80MHz)	29.57	30.05
	6665	143	be (160MHz)	39.18	37.44
	6825	175	be (160MHz)	40.55	39.98
Band 6/7	6585	127	be (320MHz)	42.47	42.91
Band 7/8	6745	159	be (320MHz)	43.17	40.03
Band 8	7115	189	be (20MHz)	21.02	20.56
	6995	209	be (20MHz)	20.16	20.57
	7115	233	be (20MHz)	20.82	20.60
	6885	187	be (40MHz)	23.08	21.98
	6965	211	be (40MHz)	22.35	22.35
	7085	227	be (40MHz)	23.08	22.68
	6945	199	be (80MHz)	26.15	28.96
	7025	215	be (80MHz)	27.79	29.12
6985	207	be (160MHz)	38.07	41.85	
Band 7/8	6905	191	be (320MHz)	41.94	40.97

Table 7-5 Occupied Bandwidth measurements – 26 Tone

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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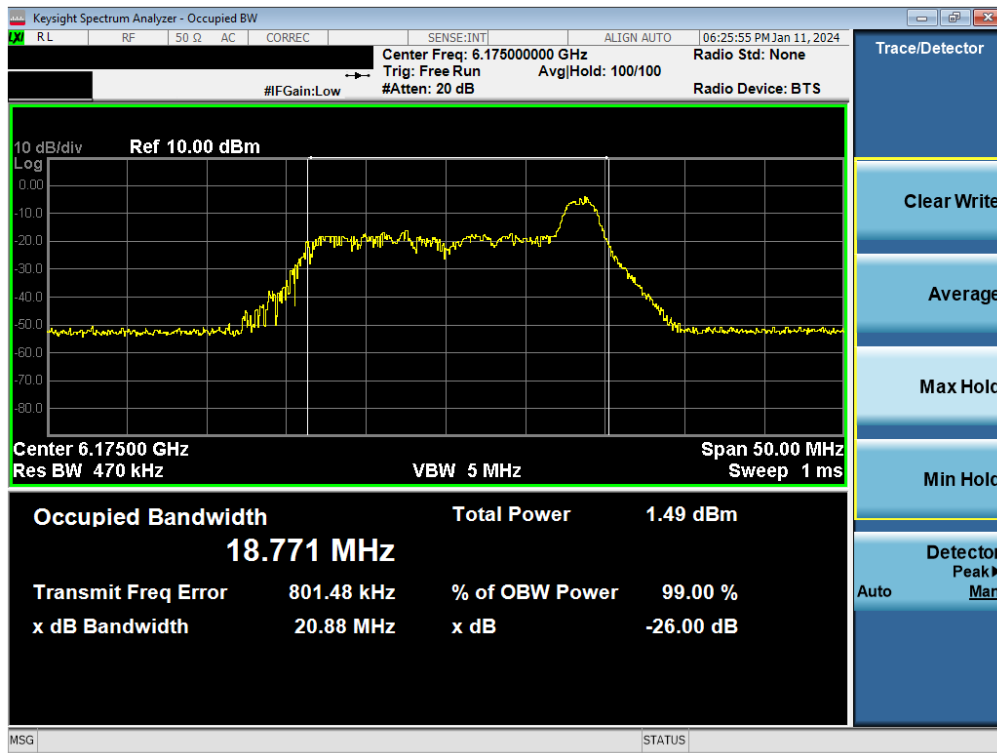
	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 26dB Bandwidth [MHz]	Antenna-2 26dB Bandwidth [MHz]
Band 5	5935	2	be (20MHz)	22.20	22.04
	6175	45	be (20MHz)	22.33	21.86
	6415	93	be (20MHz)	22.39	22.40
	5965	3	be (40MHz)	44.40	44.62
	6165	43	be (40MHz)	45.84	44.39
	6405	91	be (40MHz)	45.18	44.95
	5985	7	be (80MHz)	90.64	89.89
	6145	39	be (80MHz)	95.09	90.12
	6385	87	be (80MHz)	91.54	89.39
	6025	15	be (160MHz)	175.44	174.73
	6185	47	be (160MHz)	172.85	175.49
	6345	79	be (160MHz)	175.83	173.73
	6105	31	be (320MHz)	314.49	314.37
	6265	63	be (320MHz)	315.02	314.30
Band 6	6435	97	be (20MHz)	22.24	22.41
	6475	105	be (20MHz)	22.08	22.22
	6515	113	be (20MHz)	22.16	21.99
	6445	99	be (40MHz)	44.17	43.83
	6485	107	be (40MHz)	44.52	44.50
	6525	115	be (40MHz)	45.54	45.06
	6465	103	be (80MHz)	92.39	87.32
6505	111	be (160MHz)	176.39	171.81	
Band 5/6/7	6425	95	be (320MHz)	314.30	314.40
Band 7	6695	117	be (20MHz)	22.21	22.17
	6695	149	be (20MHz)	22.39	22.53
	6875	185	be (20MHz)	22.14	22.26
	6565	123	be (40MHz)	44.37	44.72
	6685	155	be (40MHz)	44.97	44.38
	6845	179	be (40MHz)	45.25	44.64
	6545	119	be (80MHz)	91.58	87.93
	6705	151	be (80MHz)	92.92	88.00
	6865	183	be (80MHz)	90.82	88.69
	6665	143	be (160MHz)	174.26	174.69
6825	175	be (160MHz)	175.16	173.26	
Band 6/7	6585	127	be (320MHz)	314.50	314.29
Band 7/8	6745	159	be (320MHz)	314.58	314.12
Band 8	7115	189	be (20MHz)	21.97	22.07
	6995	209	be (20MHz)	22.14	21.91
	7115	233	be (20MHz)	22.49	22.29
	6885	187	be (40MHz)	44.64	44.40
	6965	211	be (40MHz)	45.17	44.19
	7085	227	be (40MHz)	45.18	44.64
	6945	199	be (80MHz)	92.46	89.26
	7025	215	be (80MHz)	92.68	89.51
6985	207	be (160MHz)	177.91	172.79	
Band 7/8	6905	191	be (320MHz)	314.60	313.66

Table 7-6 Occupied Bandwidth measurements – Full tone

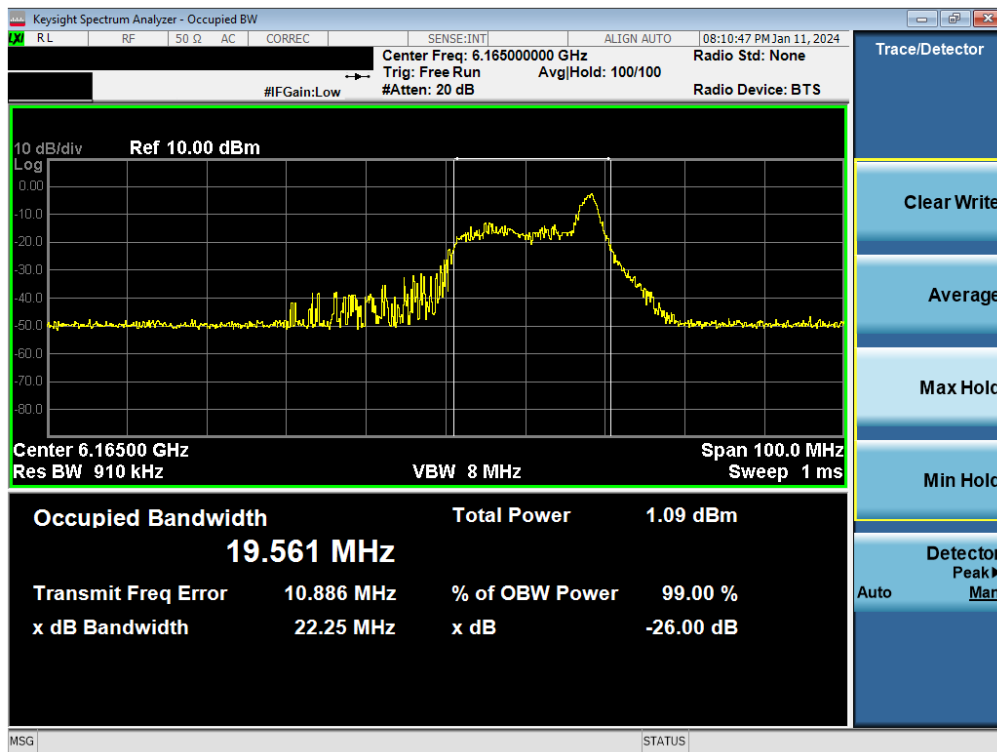
Note: *Occupied Bandwidth Measurement was used to demonstrate compliance.

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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7.2.1 MIMO Antenna-1 Bandwidth Measurements - (Partial Tones)

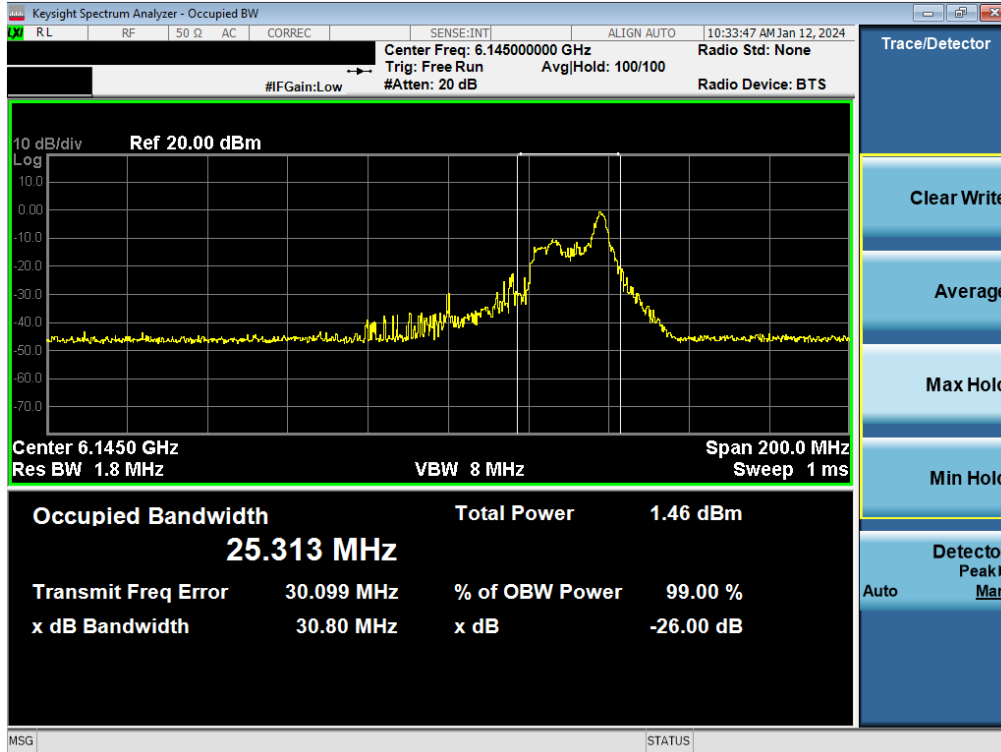


Plot 7-3. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11be (26 Tones) (UNII Band 5) – Ch. 45)

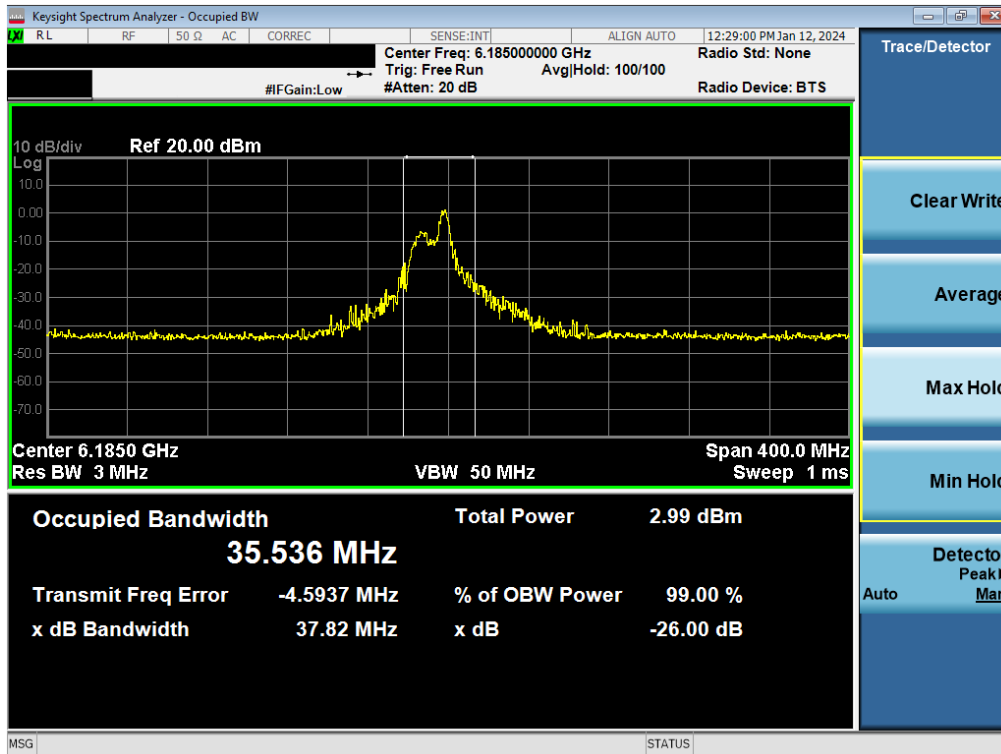


Plot 7-4. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11be (26 Tones) (UNII Band 5) – Ch. 43)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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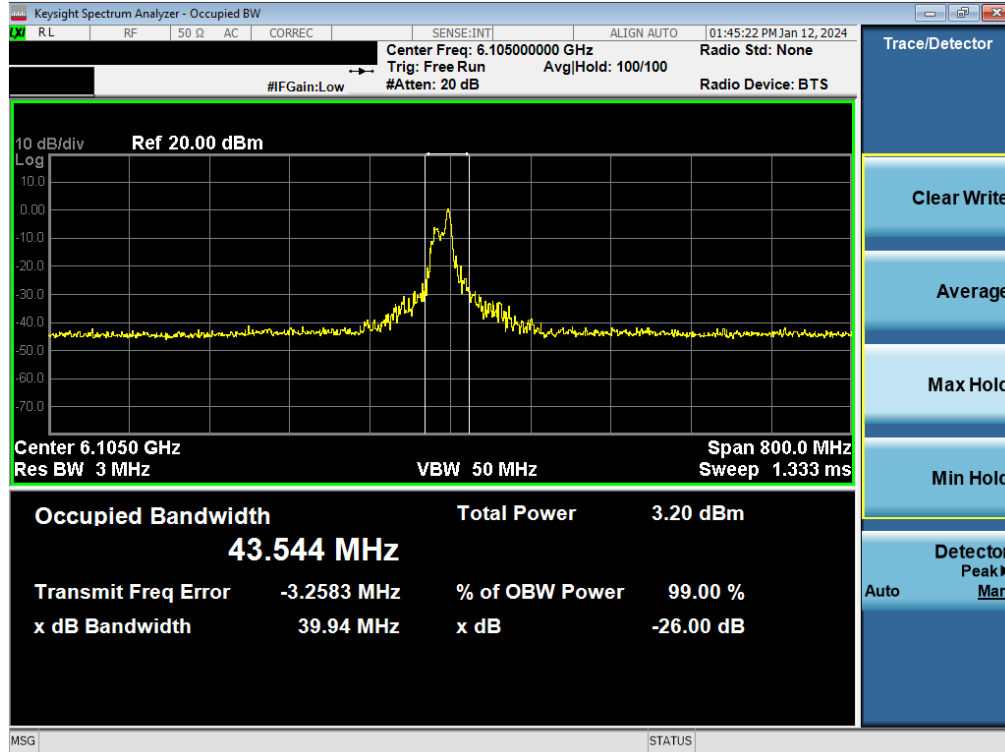


Plot 7-5. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802. 11be (26 Tones) (UNII Band 5) – Ch. 39)



Plot 7-6. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802. 11be (26 Tones) (UNII Band 5) – Ch. 47)

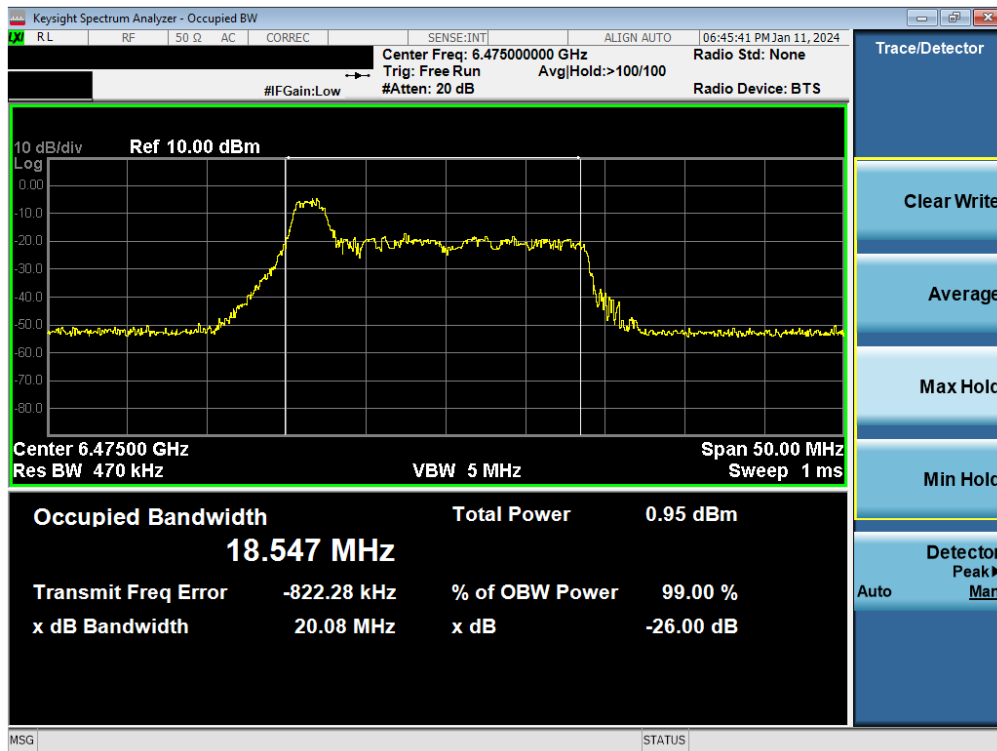
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 23 of 278



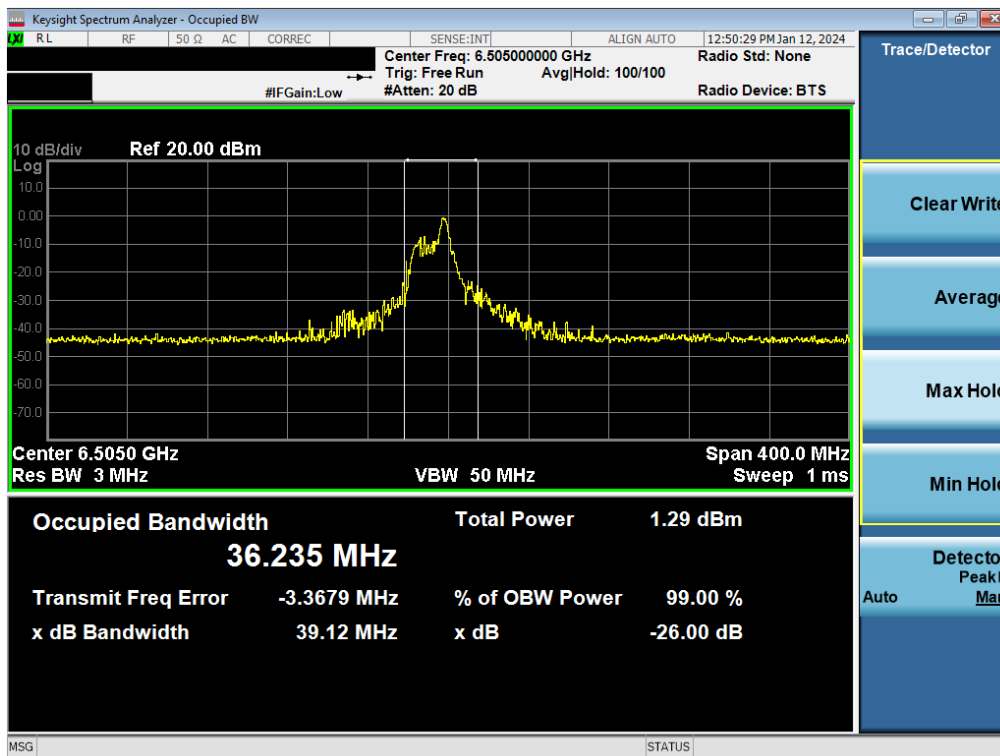
Plot 7-7. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802. 11be (26 Tones) (UNII Band 5) – Ch. 31)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 24 of 278

MIMO Antenna-1 Bandwidth Measurements - (Partial Tones)

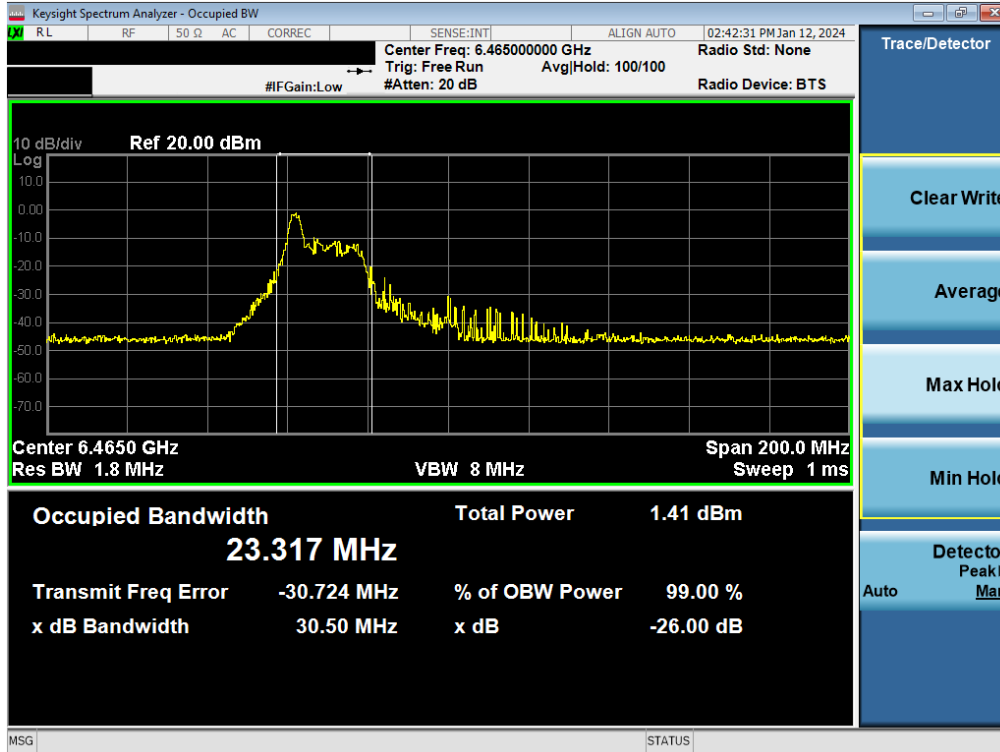


Plot 7-8. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11be (26 Tones) (UNII Band 6) – Ch. 105)

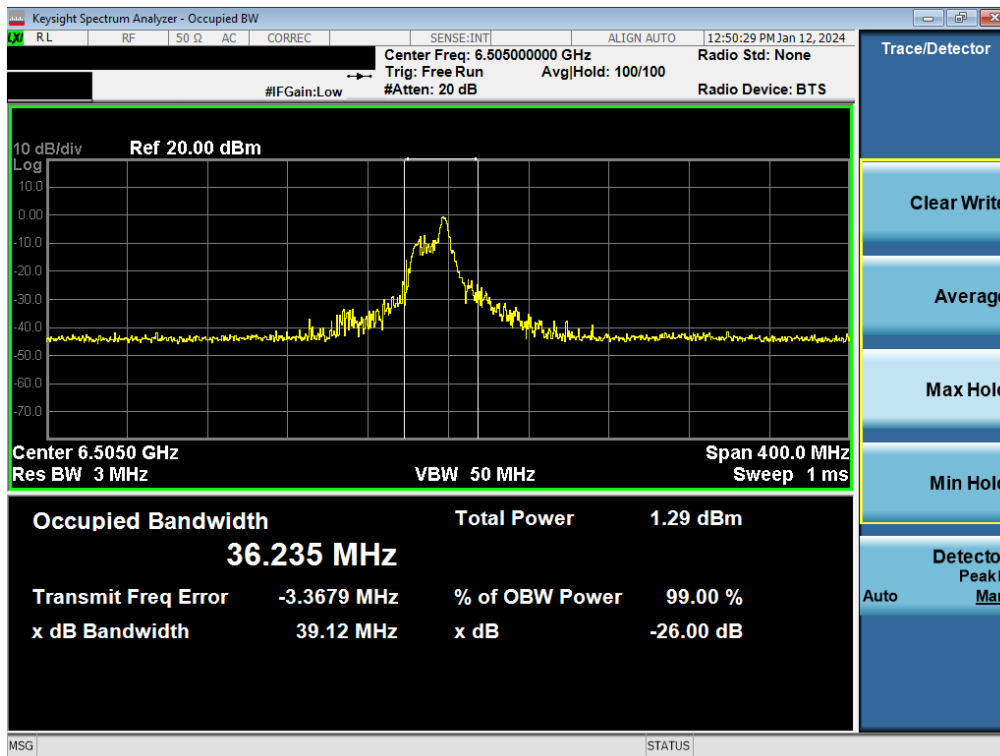


Plot 7-9. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11be (26 Tones) (UNII Band 6) – Ch. 107)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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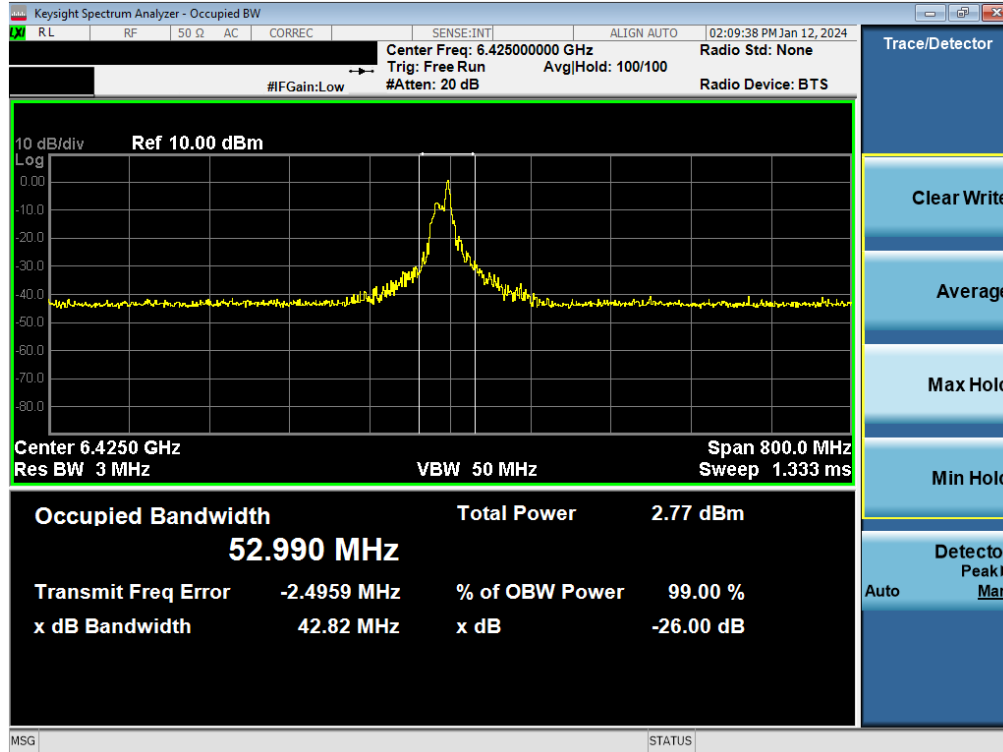


Plot 7-10. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802. 11be (26 Tones) (UNII Band 6) – Ch. 103)



Plot 7-11. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802. 11be (26 Tones) (UNII Band 6) – Ch. 111)

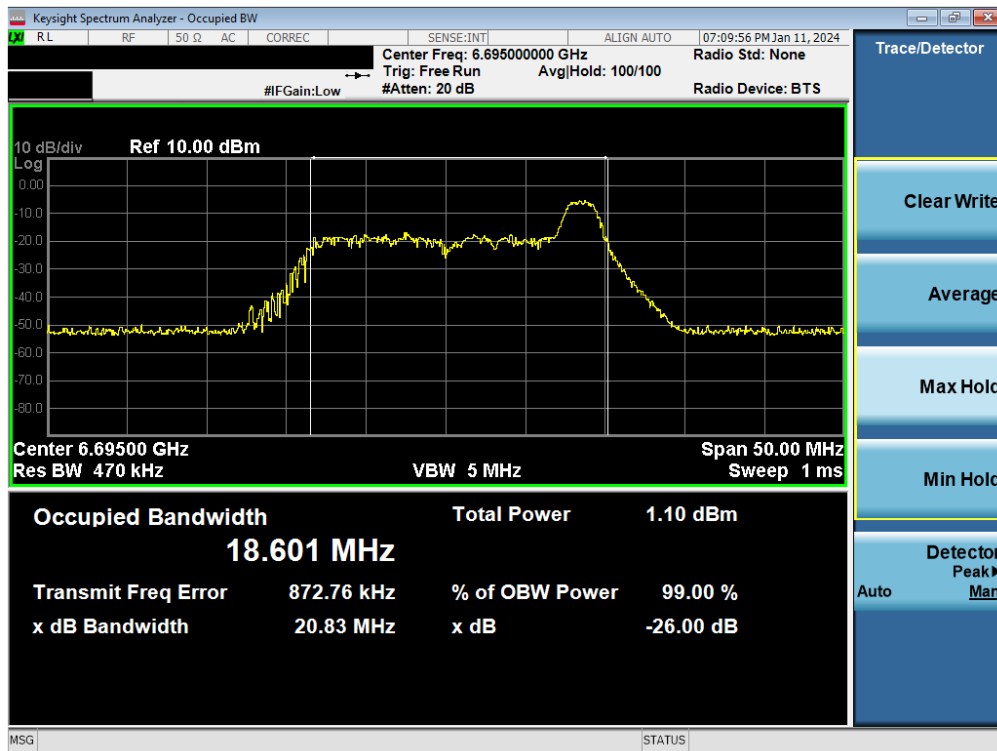
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 26 of 278



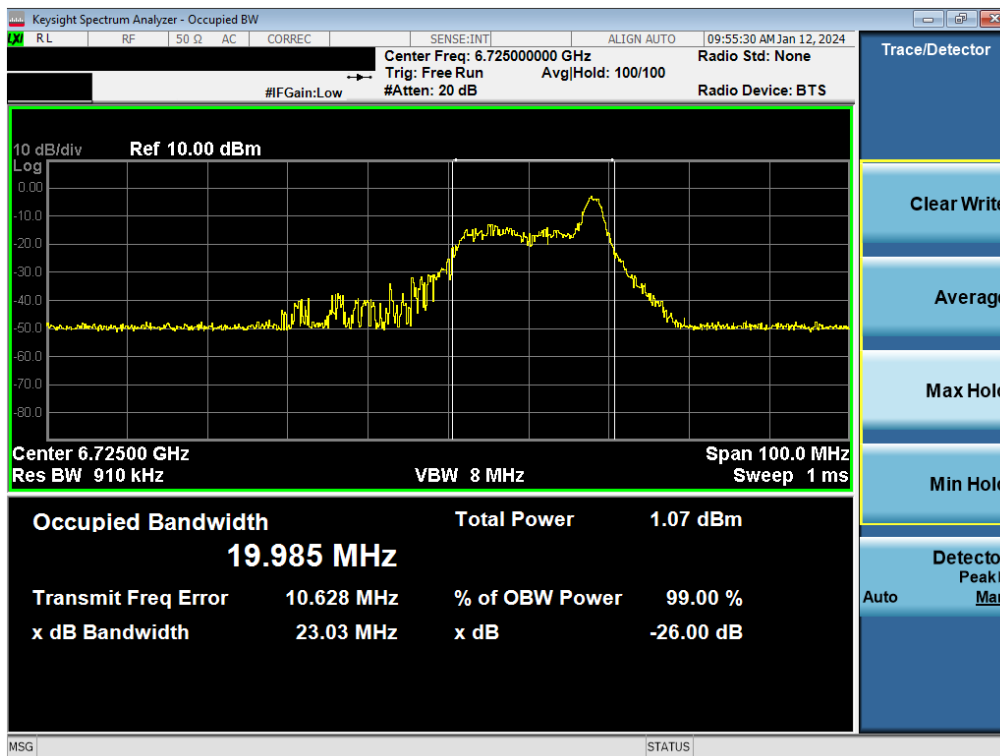
Plot 7-12. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802. 11be (26 Tones) (UNII Band 6) – Ch. 95)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-1 Bandwidth Measurements - (Partial Tones)

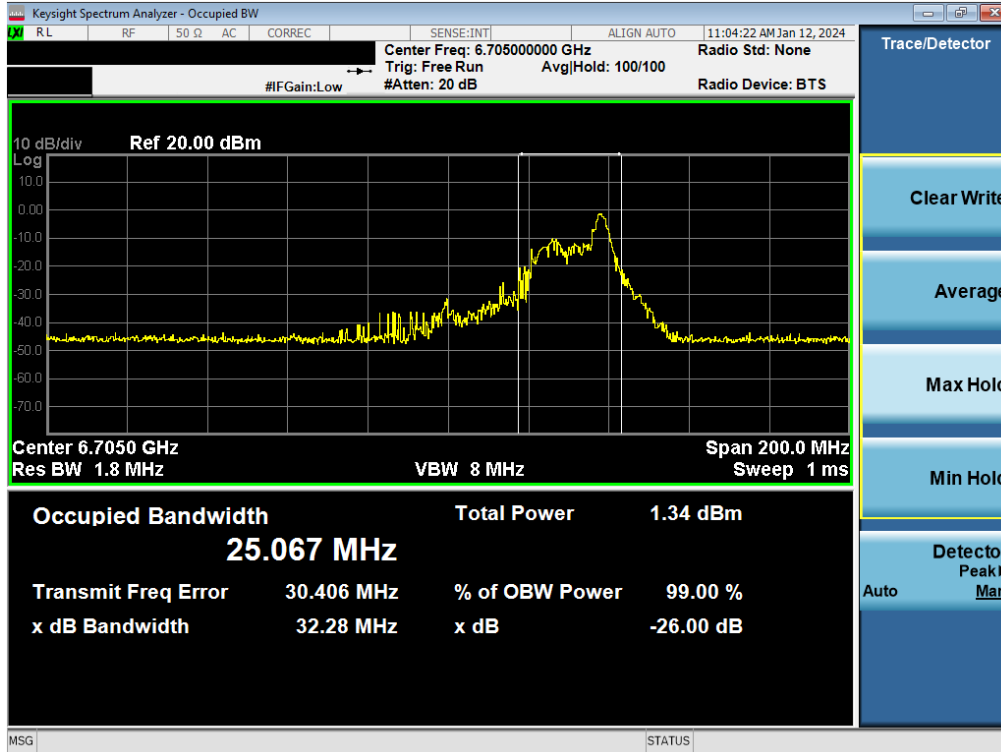


Plot 7-13. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802. 11be (26 Tones) (UNII Band 7) – Ch. 149)

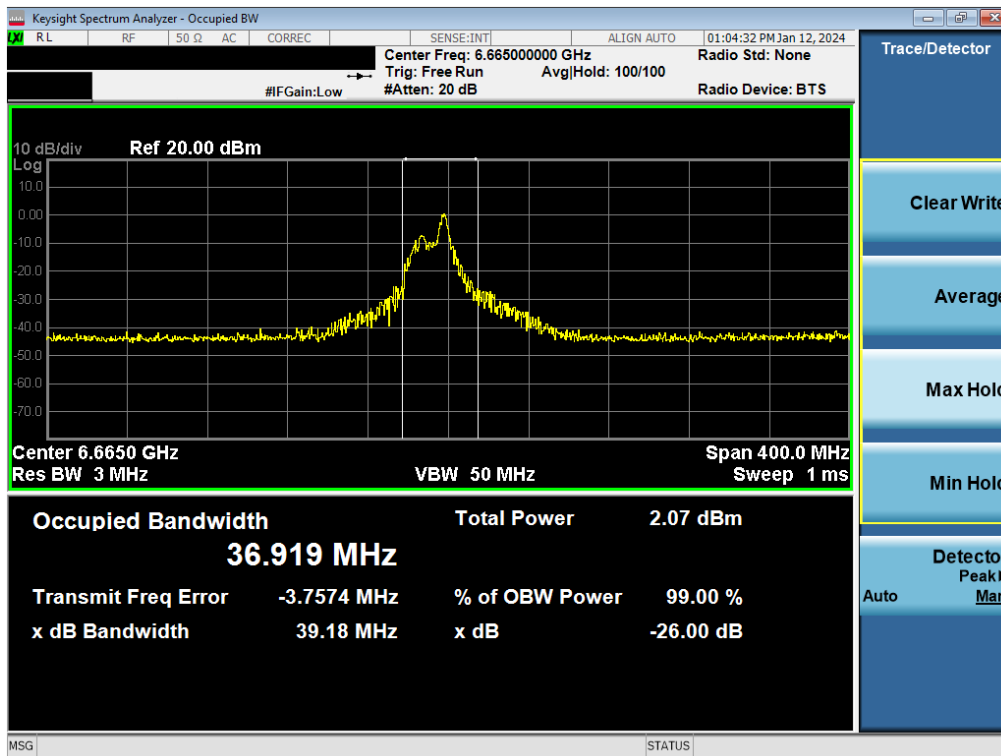


Plot 7-14. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802. 11be (26 Tones) (UNII Band 7) – Ch. 155)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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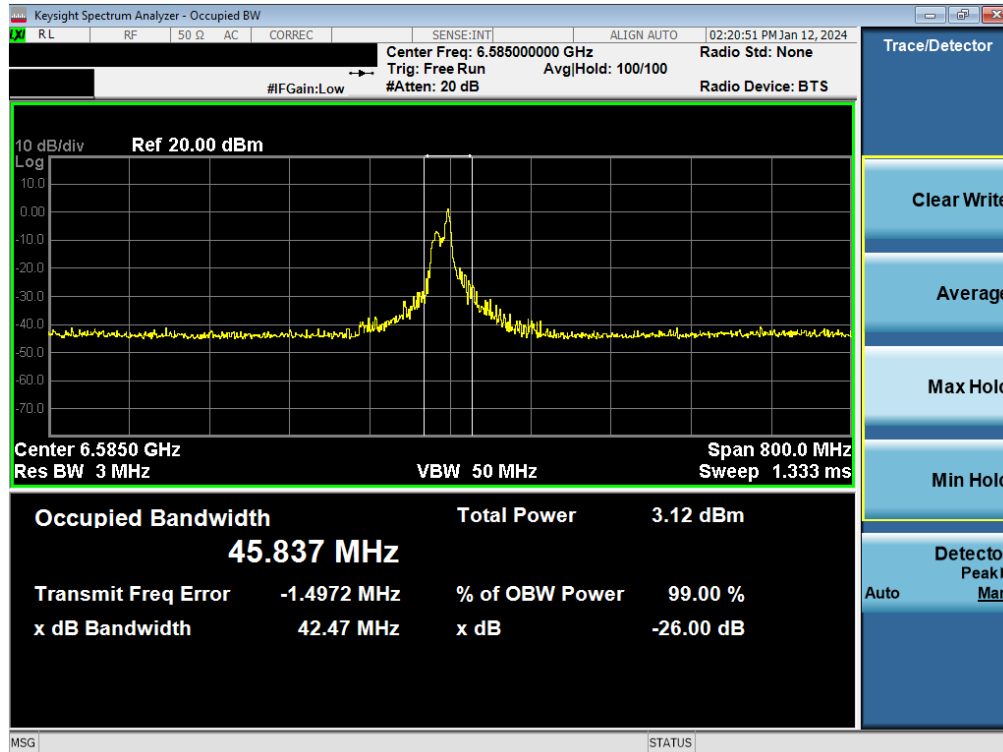


Plot 7-15. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802. 11be (26 Tones) (UNII Band 7) – Ch. 151)



Plot 7-16. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802. 11be (26 Tones) (UNII Band 7) – Ch. 143)

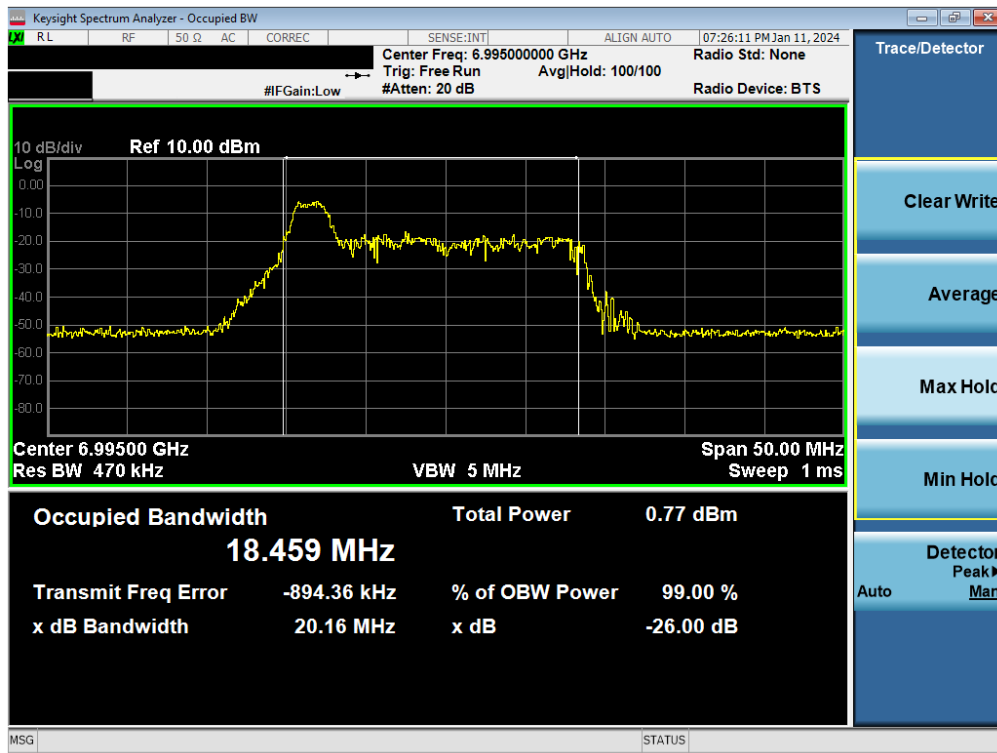
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 29 of 278



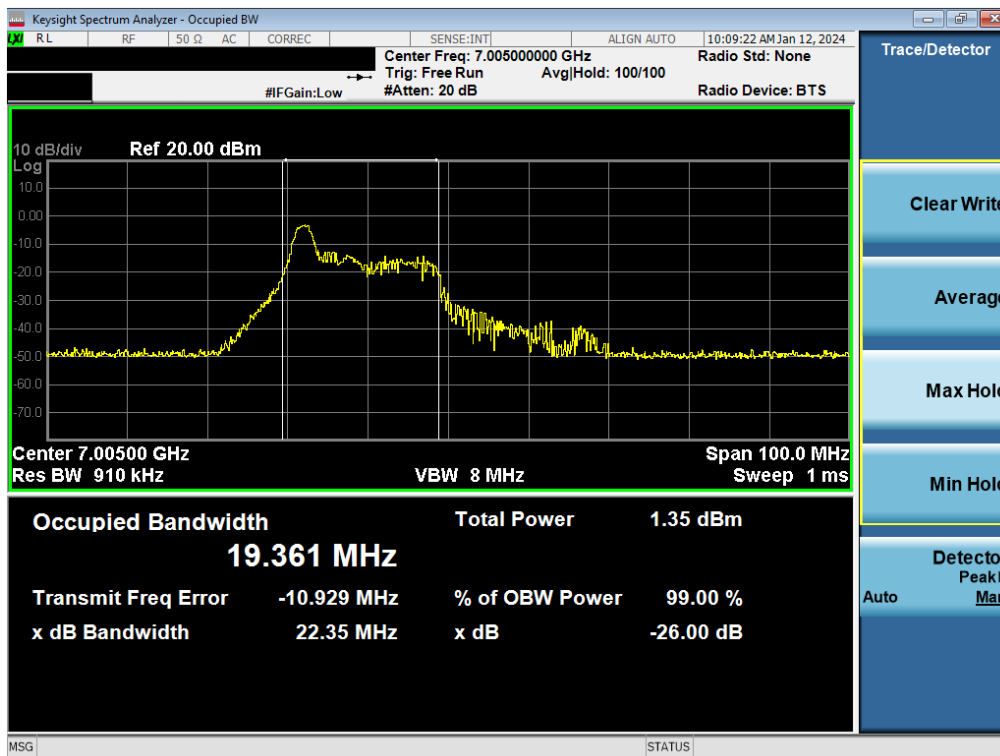
Plot 7-17. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802. 11be (26 Tones) (UNII Band 7) – Ch. 127)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-1 Bandwidth Measurements - (Partial Tones)

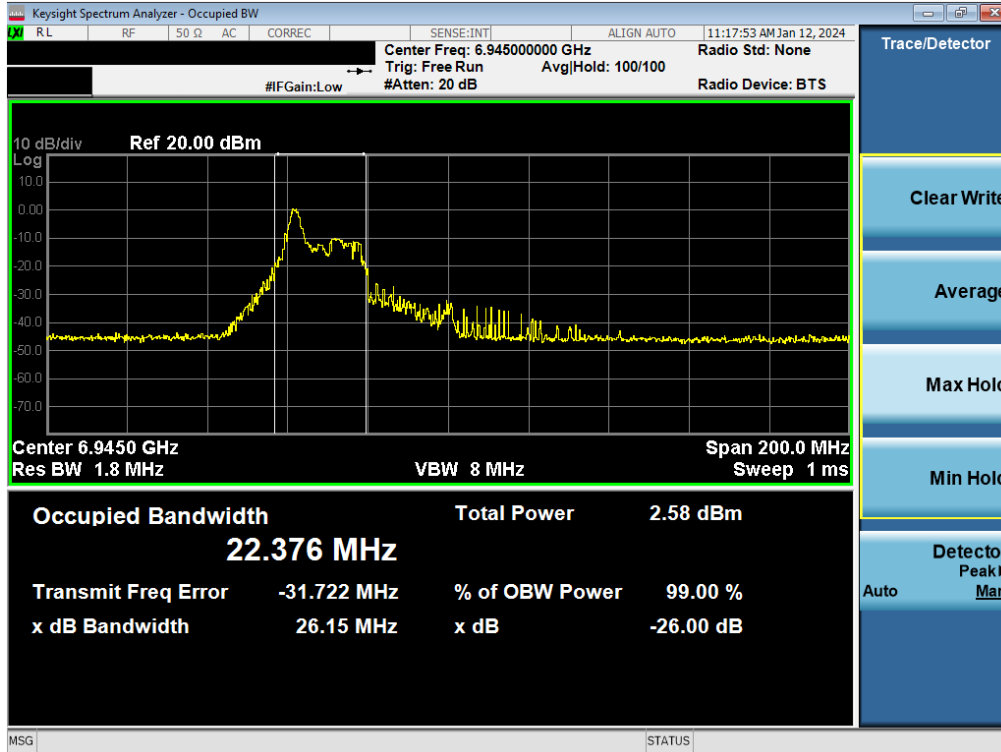


Plot 7-18. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11be (26 Tones) (UNII Band 8) – Ch. 209)

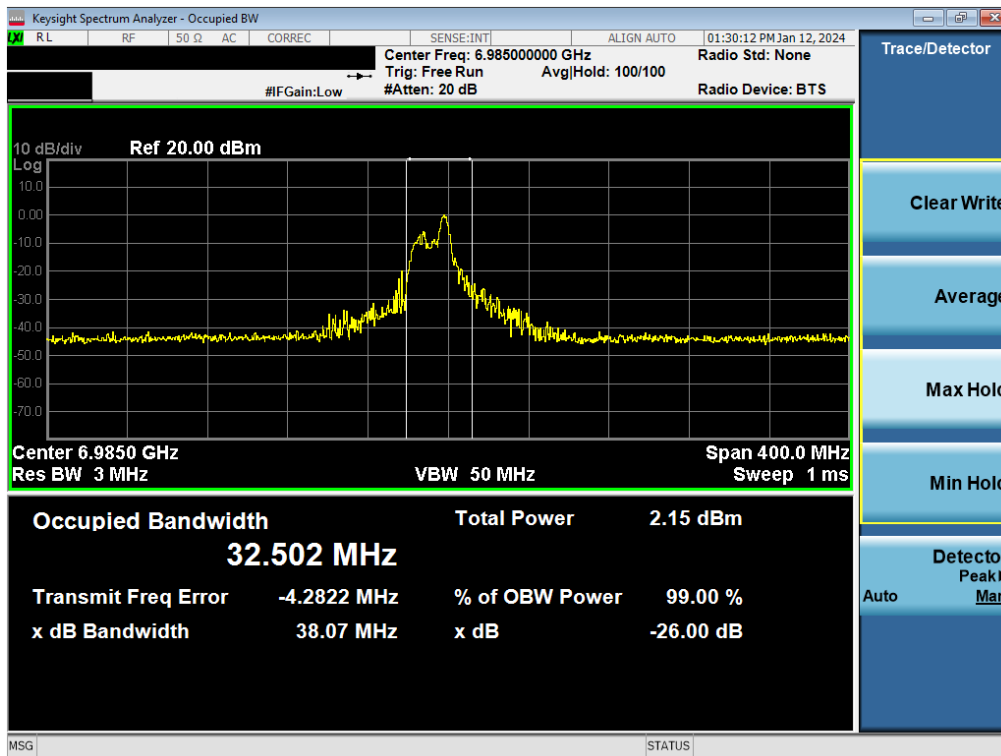


Plot 7-19. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11be (26 Tones) (UNII Band 8) – Ch. 211)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 31 of 278

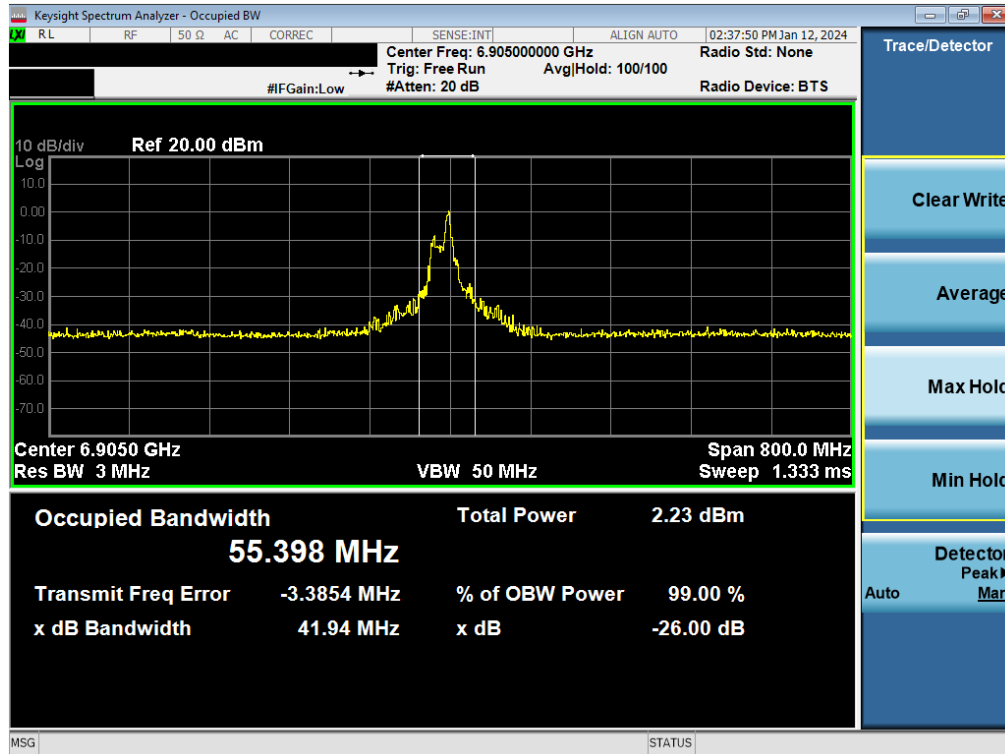


Plot 7-20. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802. 11be (26 Tones) (UNII Band 8) – Ch. 199)



Plot 7-21. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802. 11be (26 Tones) (UNII Band 8) – Ch. 207)

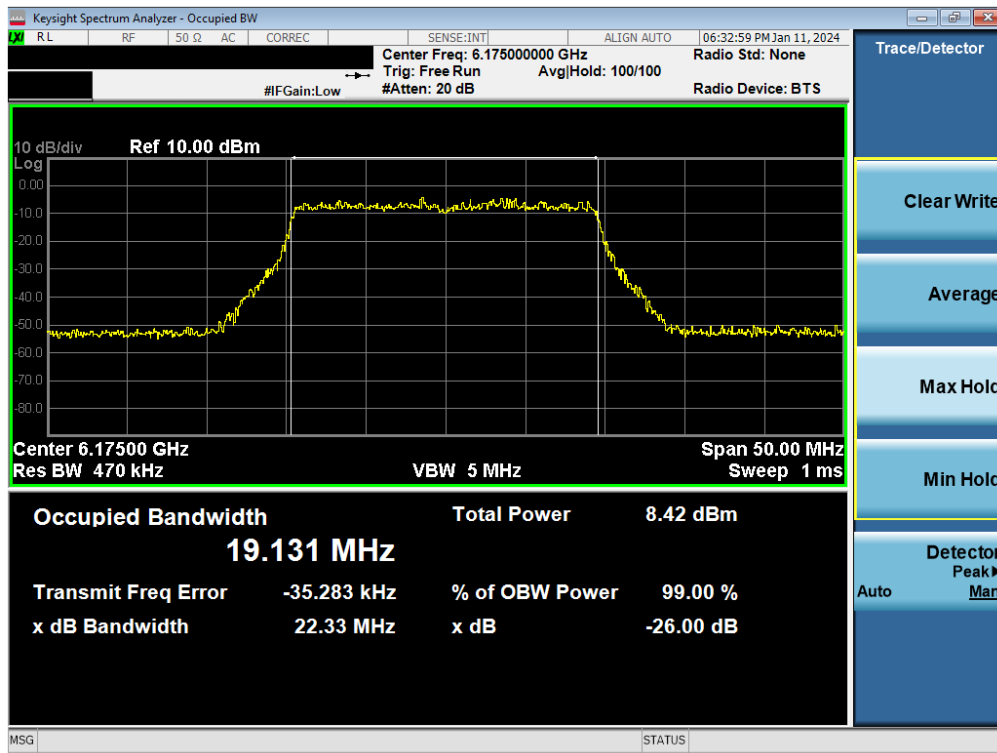
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 32 of 278



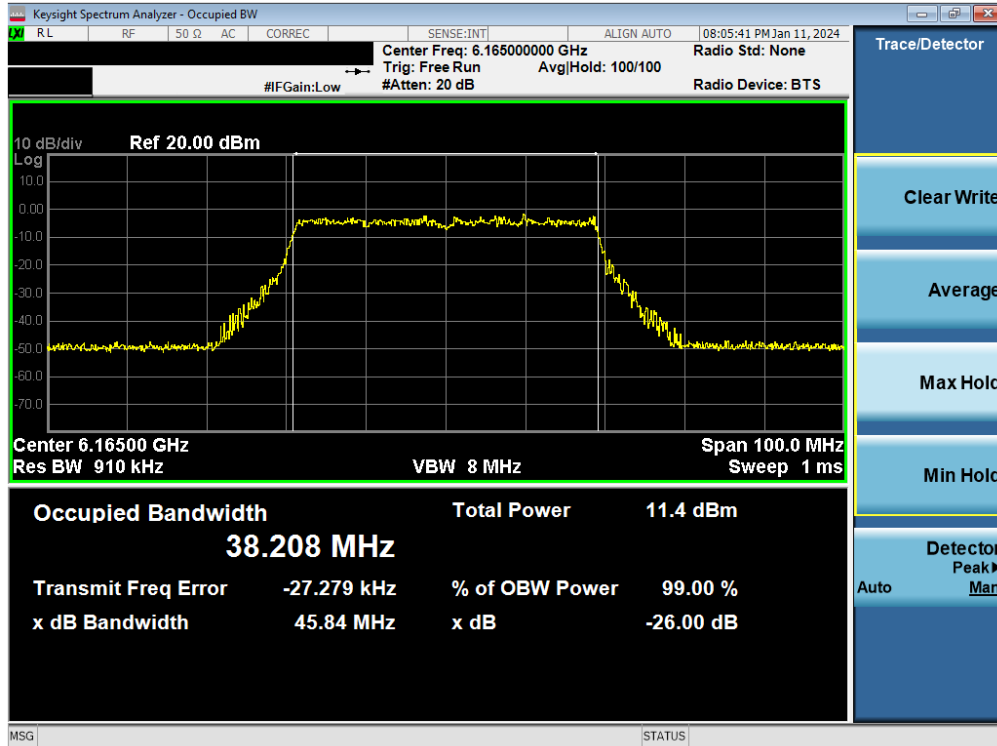
Plot 7-22. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802. 11be (26 Tones) (UNII Band 8) – Ch. 191)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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7.2.2 MIMO Antenna-1 Bandwidth Measurements - (Full Tones)

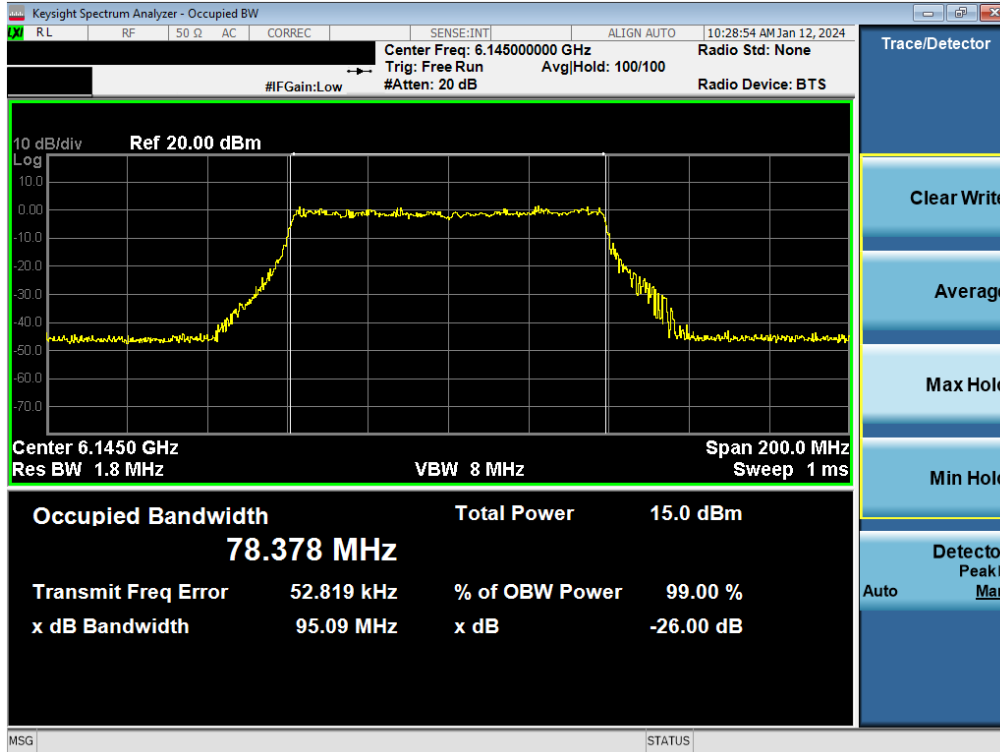


Plot 7-23. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802. 11be (Full Tone) (UNII Band 5) – Ch. 45)

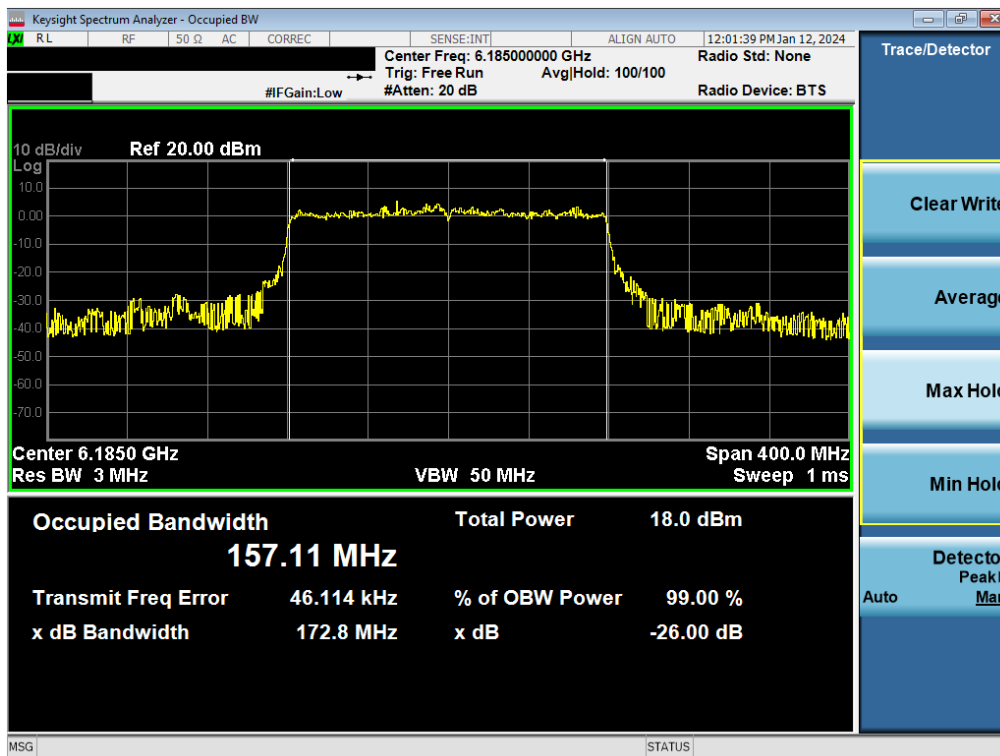


Plot 7-24. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802. 11be (Full Tone) (UNII Band 5) – Ch. 43)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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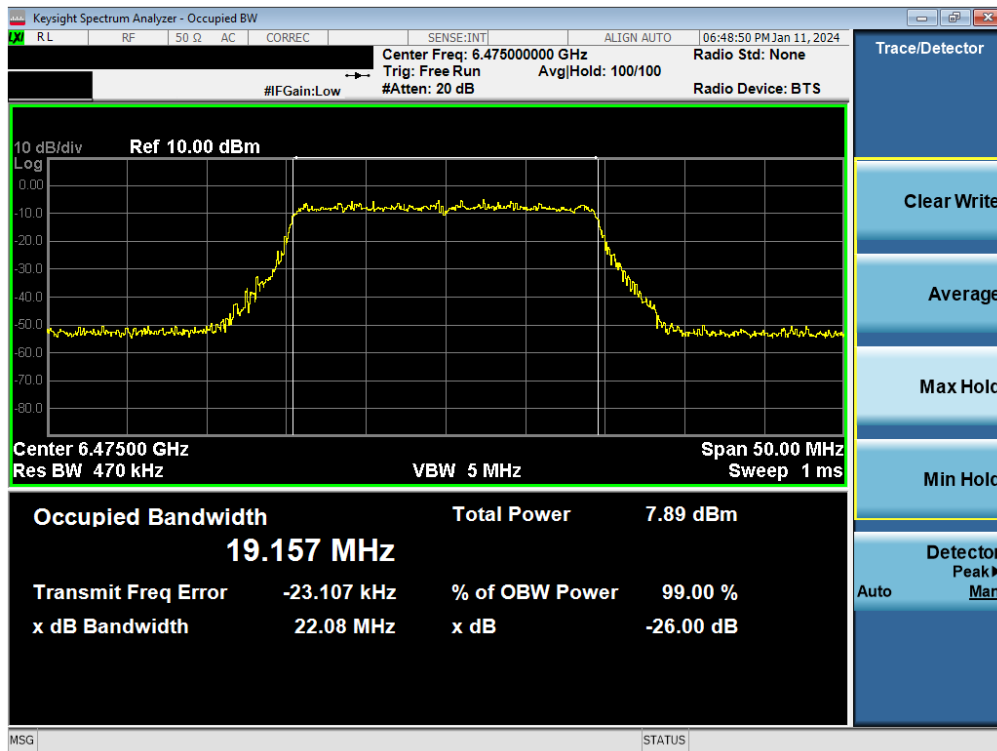
Plot 7-25. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802. 11be (Full Tone) (UNII Band 5) – Ch. 39)



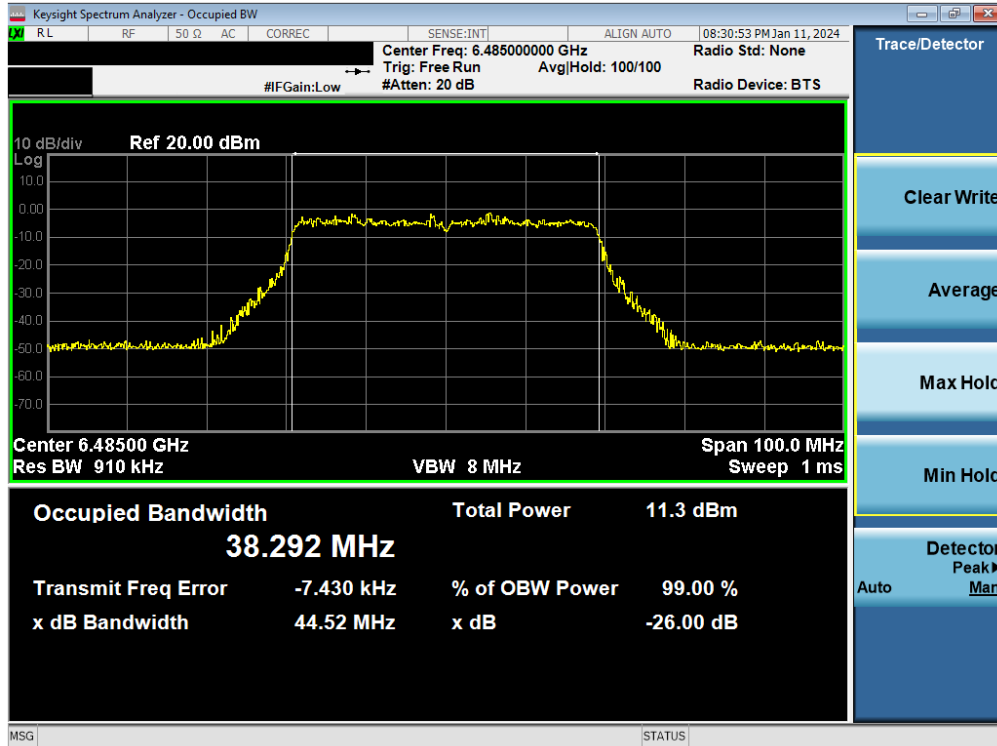
Plot 7-26. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802. 11be (Full Tone) (UNII Band 5) – Ch. 47)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-1 Bandwidth Measurements - (Full Tones)

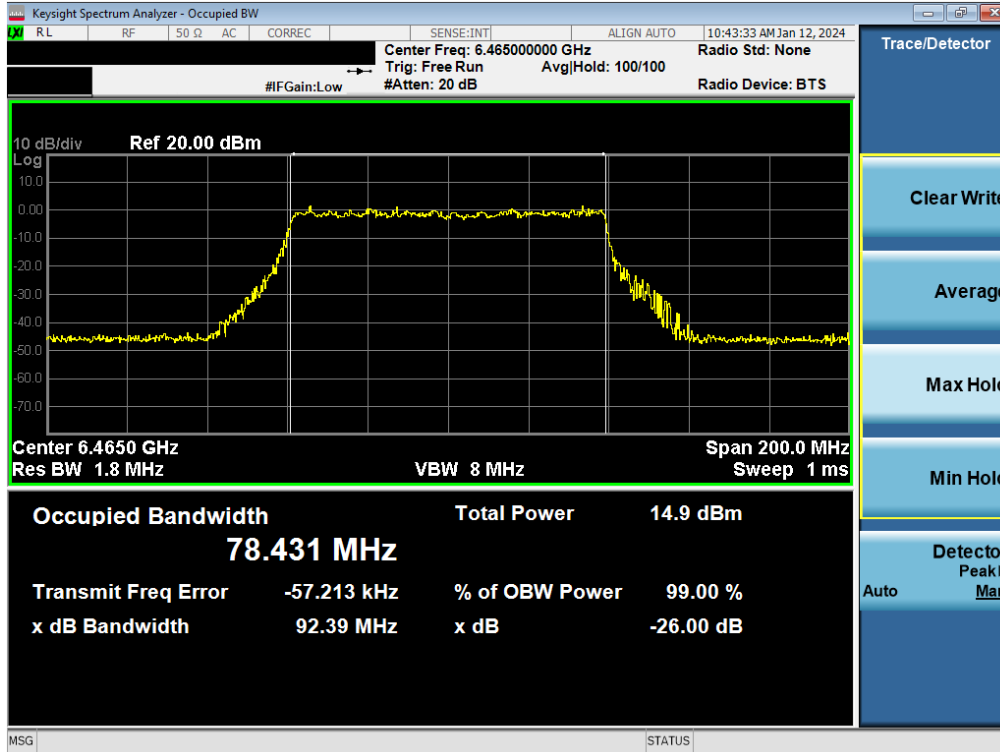


Plot 7-28. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802. 11be (Full Tone) (UNII Band 6) – Ch. 105)

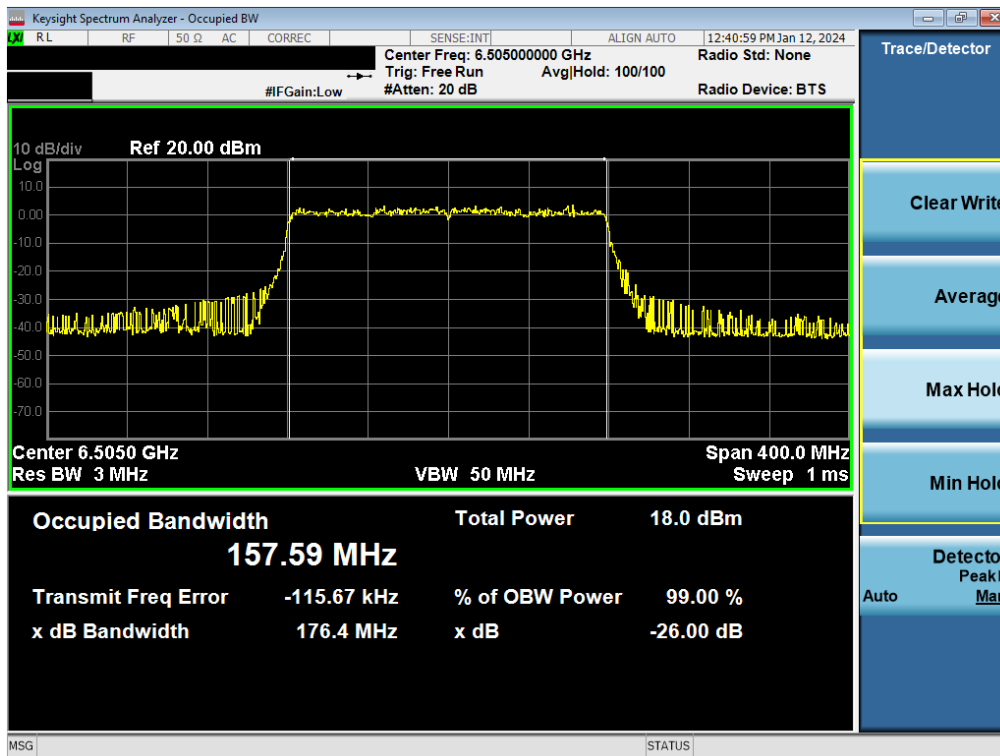


Plot 7-29. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802. 11be (Full Tone) (UNII Band 6) – Ch. 107)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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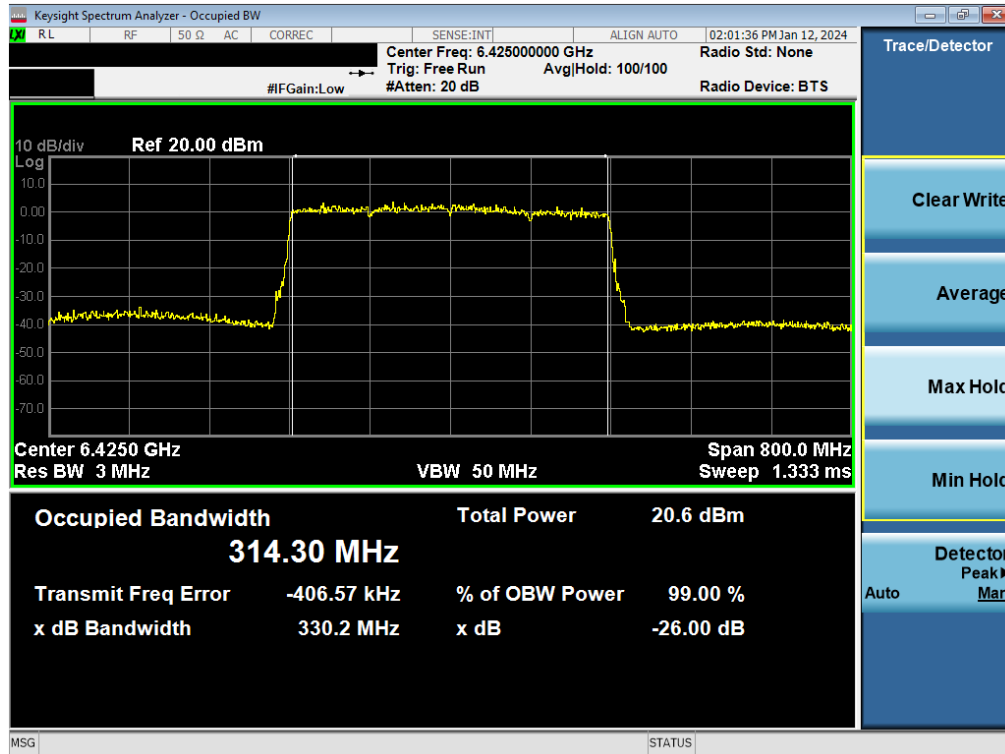


Plot 7-30. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802. 11be (Full Tone) (UNII Band 6) – Ch. 103)



Plot 7-31. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802. 11be (Full Tone) (UNII Band 6) – Ch. 111)

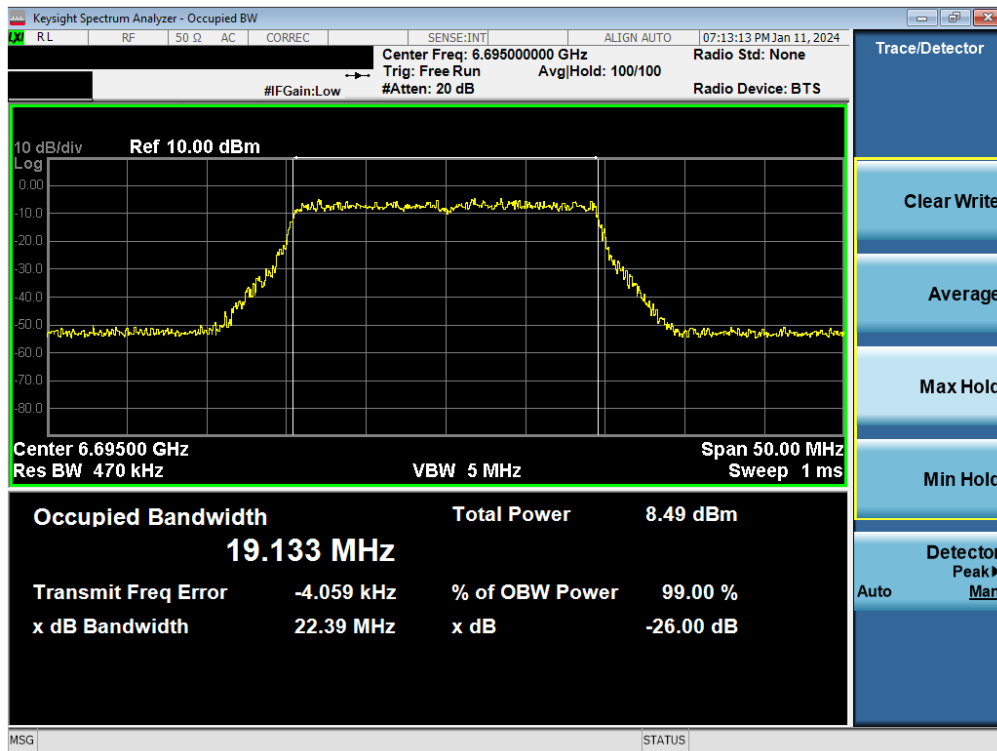
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 38 of 278



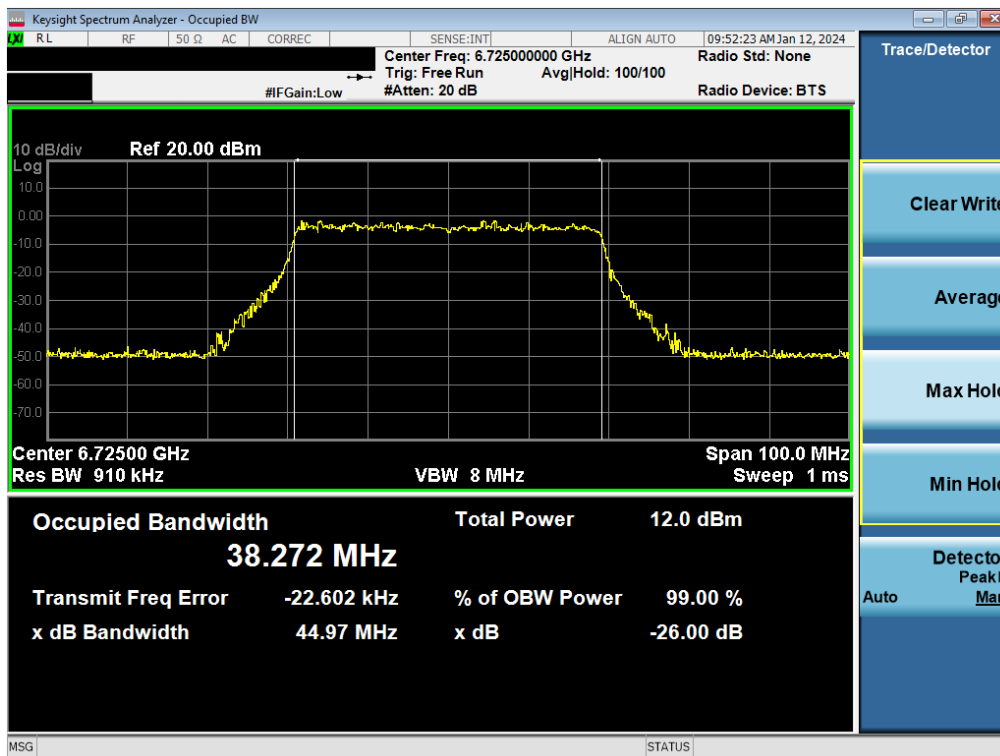
Plot 7-32. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802. 11be (Full Tones) (UNII Band 6) – Ch. 95)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-1 Bandwidth Measurements - (Full Tones)

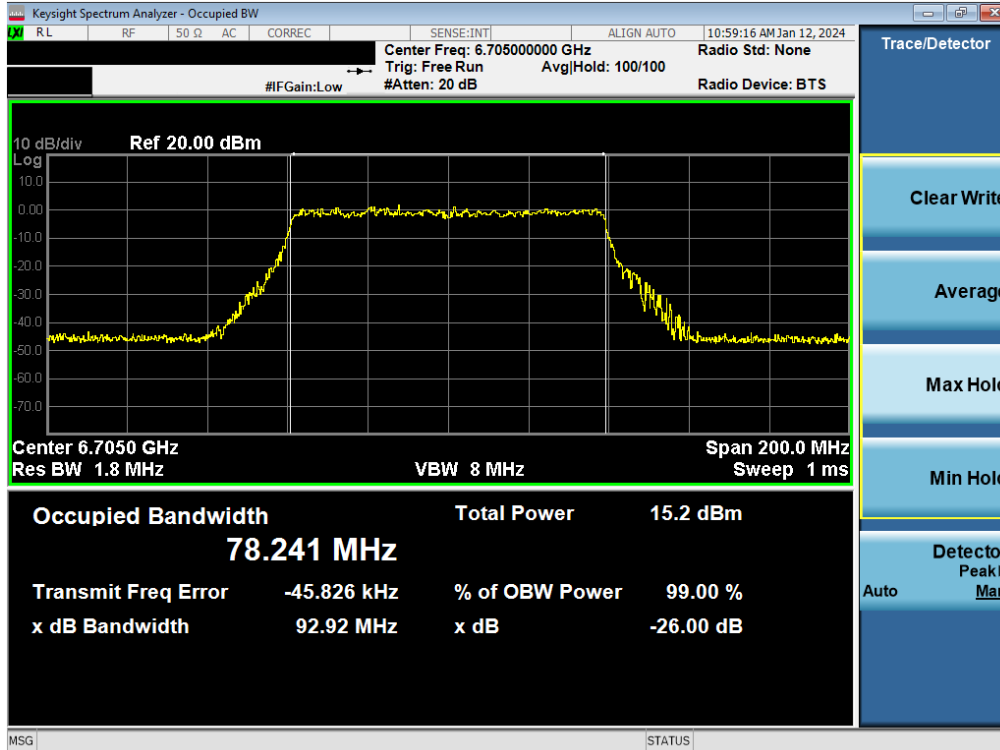


Plot 7-33. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802. 11be (Full Tone) (UNII Band 7) – Ch. 149)

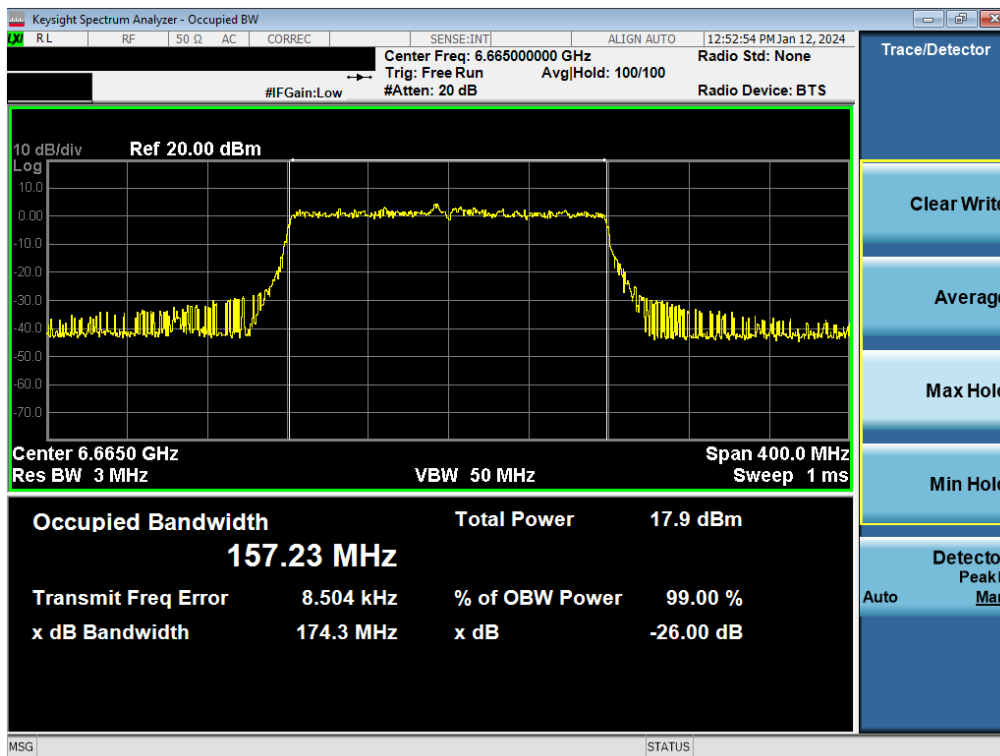


Plot 7-34. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802. 11be (Full Tone) (UNII Band 7) – Ch. 155)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 40 of 278

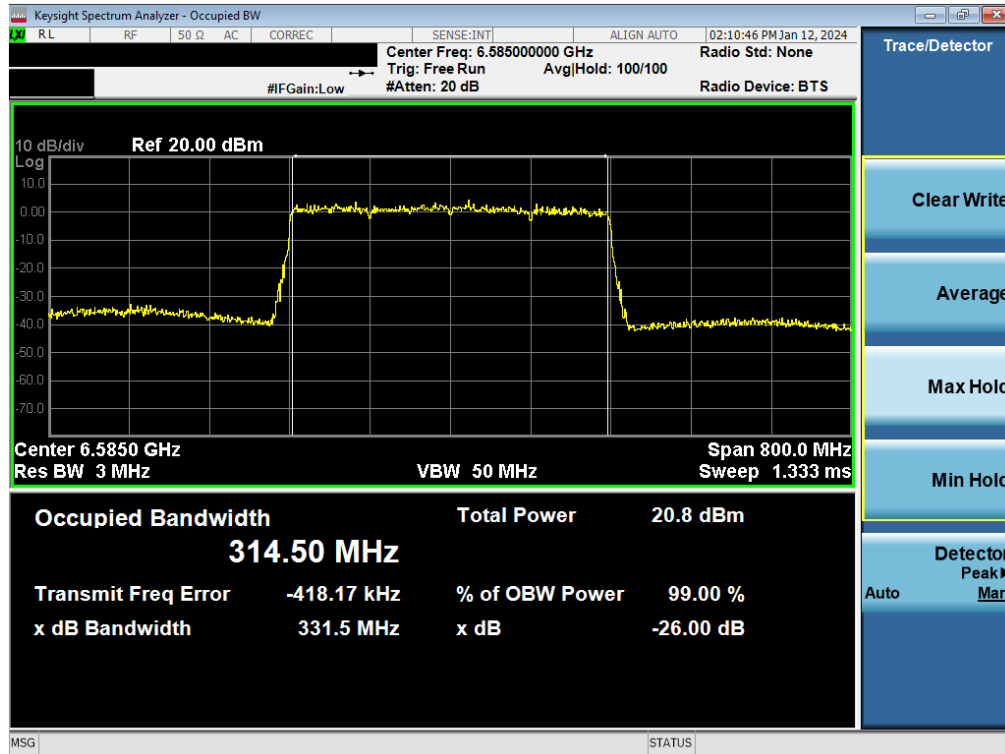


Plot 7-35. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802. 11be (Full Tone) (UNII Band 7) – Ch. 151)



Plot 7-36. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802. 11be (Full Tone) (UNII Band 7) – Ch. 143)

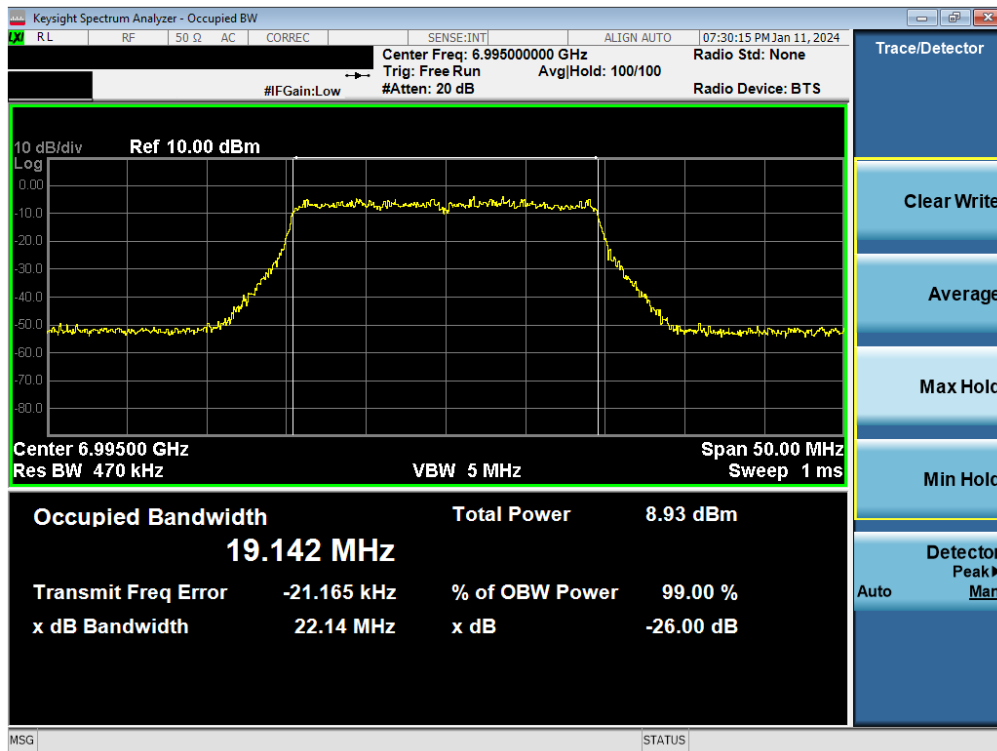
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 41 of 278



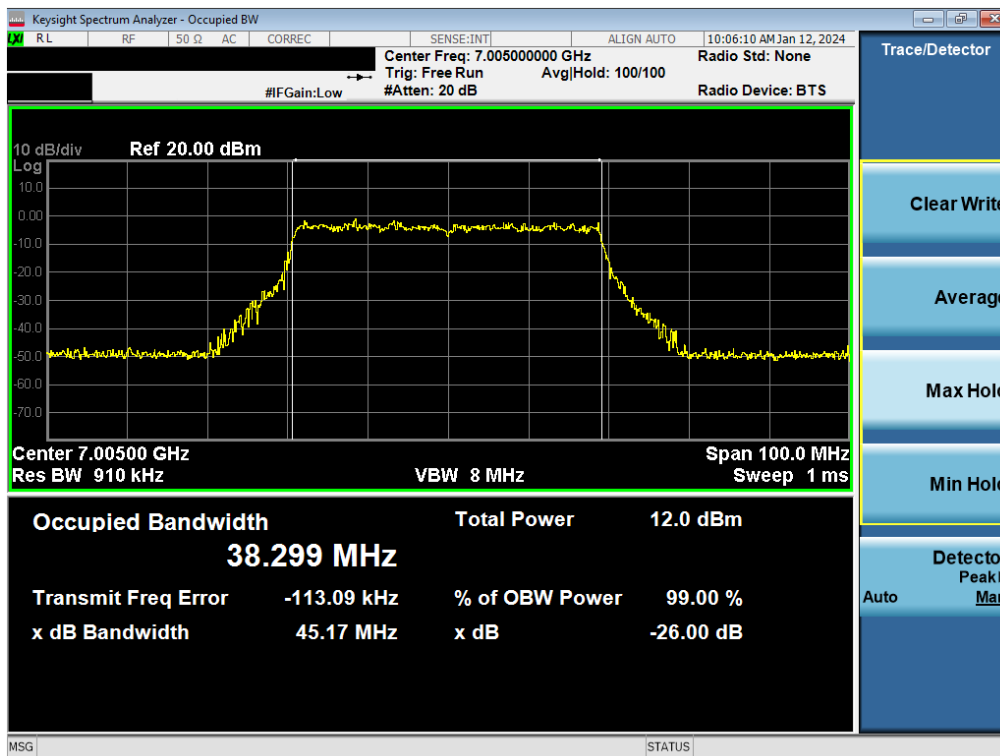
Plot 7-37. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802. 11be (Full Tone) (UNII Band 7) – Ch. 127)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-1 Bandwidth Measurements - (Full Tones)

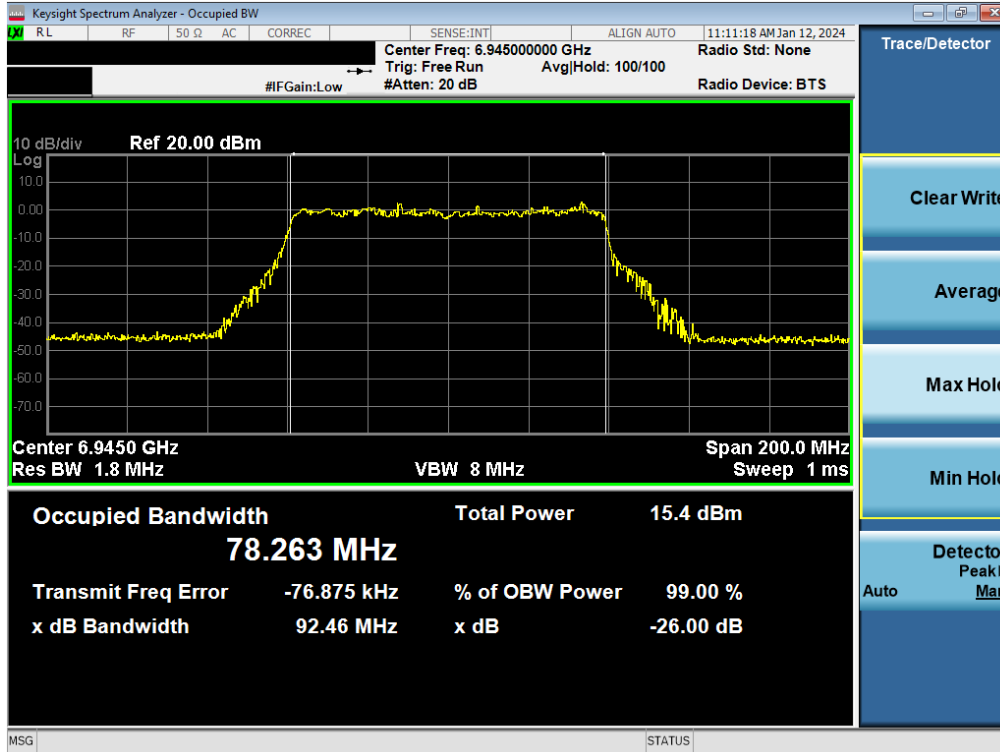


Plot 7-38. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11be (Full Tone) (UNII Band 8) – Ch. 209)

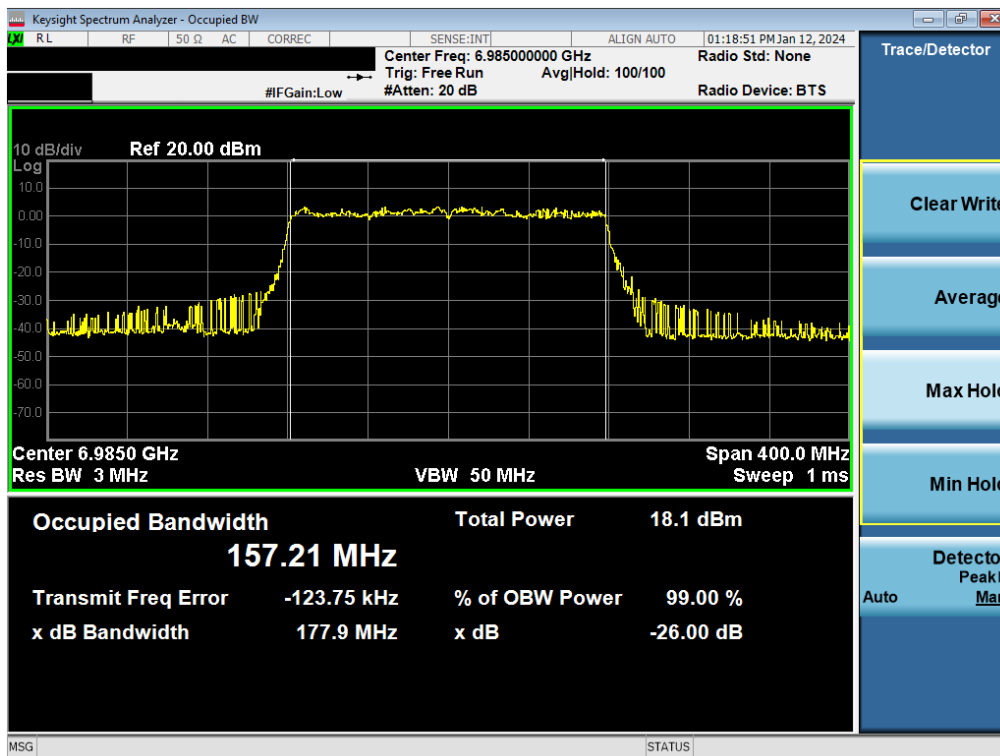


Plot 7-39. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11be (Full Tone) (UNII Band 8) – Ch. 211)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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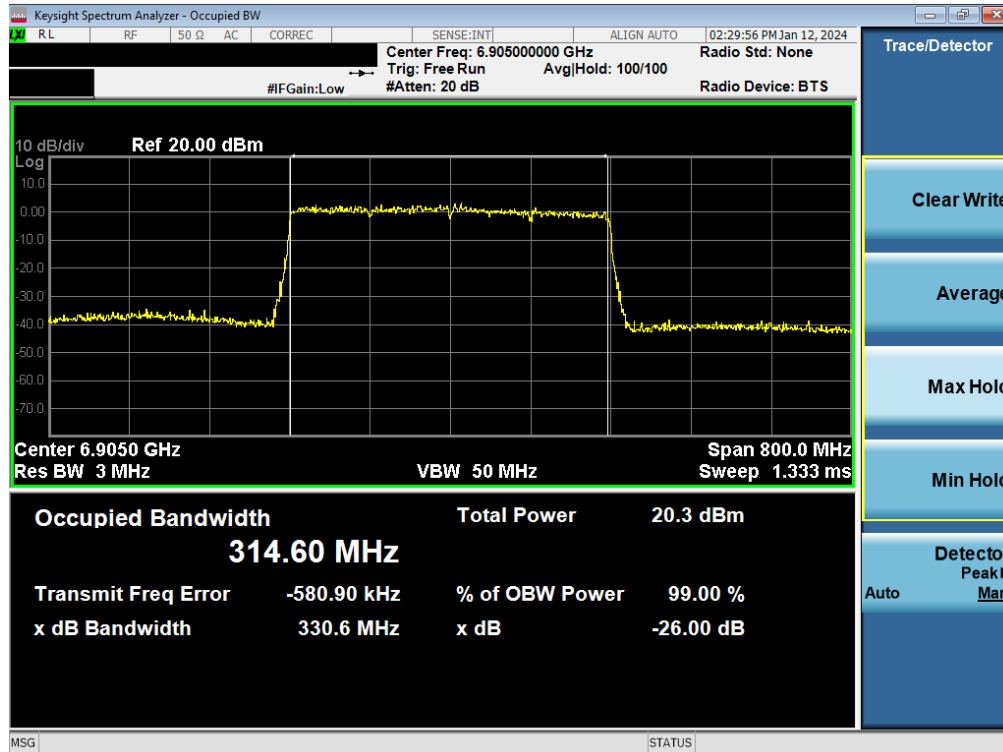


Plot 7-40. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802. 11be (Full Tone) (UNII Band 8) – Ch. 199)



Plot 7-41. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802. 11be (Full Tone) (UNII Band 8) – Ch. 207)

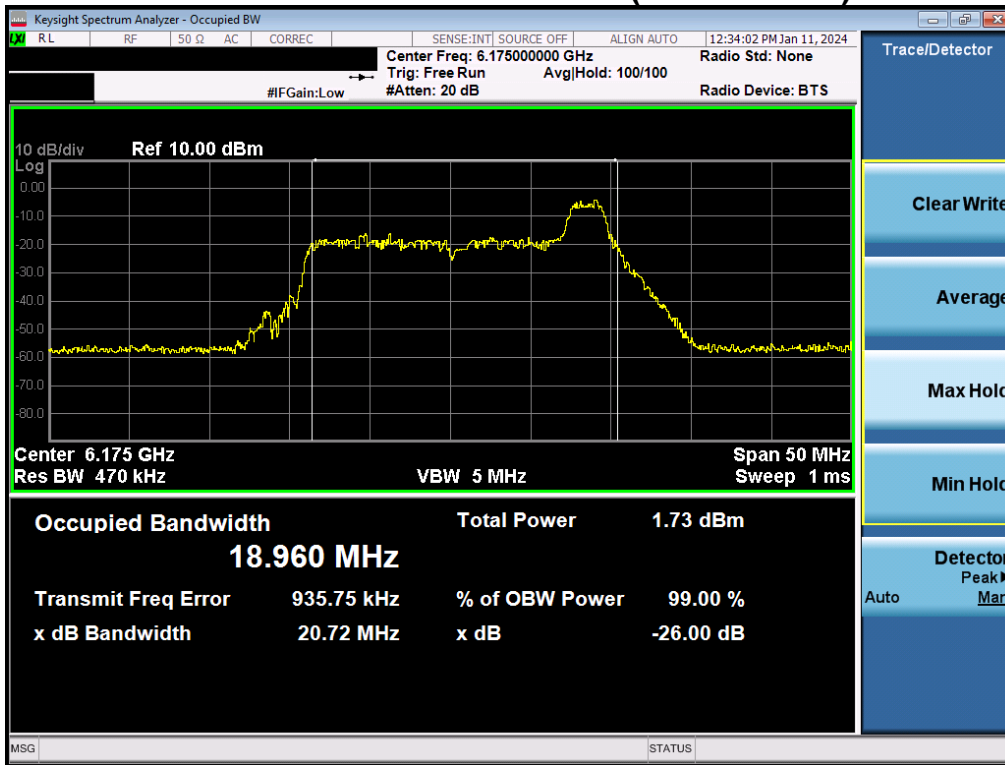
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 44 of 278



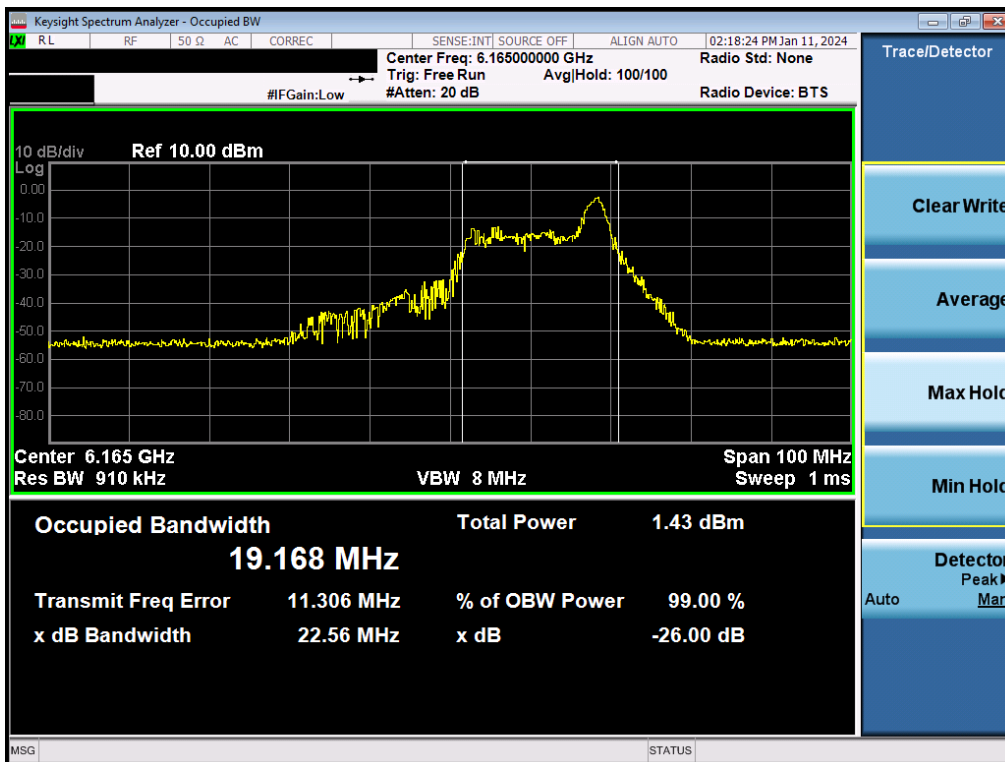
Plot 7-42. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802. 11be (Full Tones) (UNII Band 8) – Ch. 191)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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7.2.3 MIMO Antenna-2 Bandwidth Measurements – (Partial Tones)

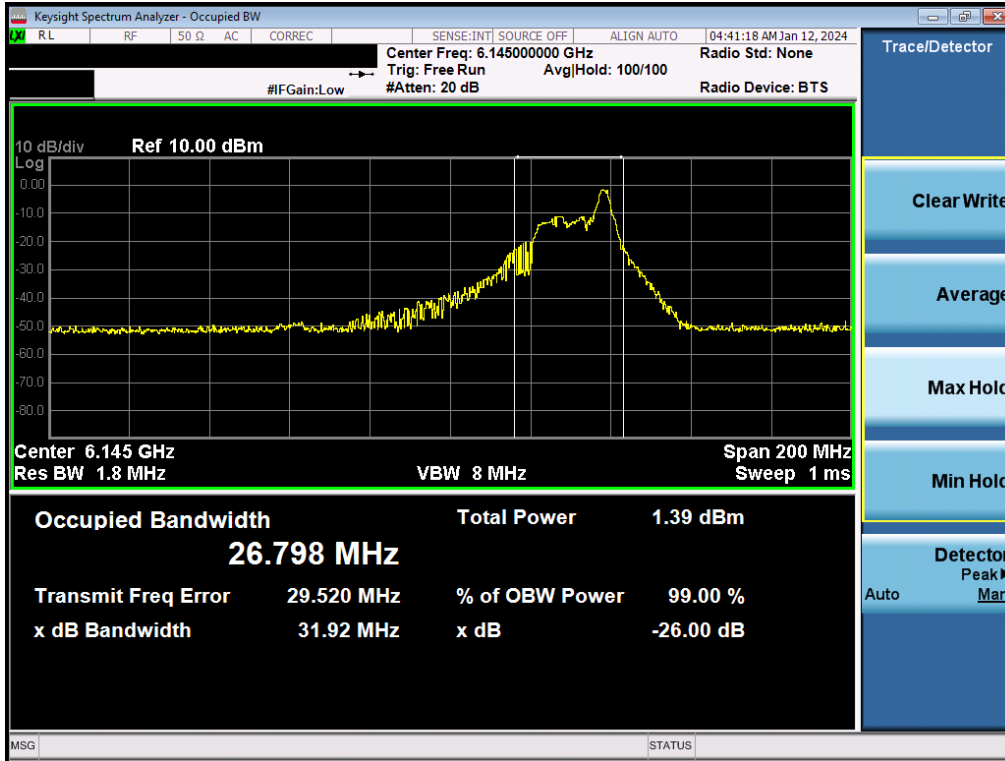


Plot 7-43. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802. 11be (26 Tones) (UNII Band 5) – Ch. 45)

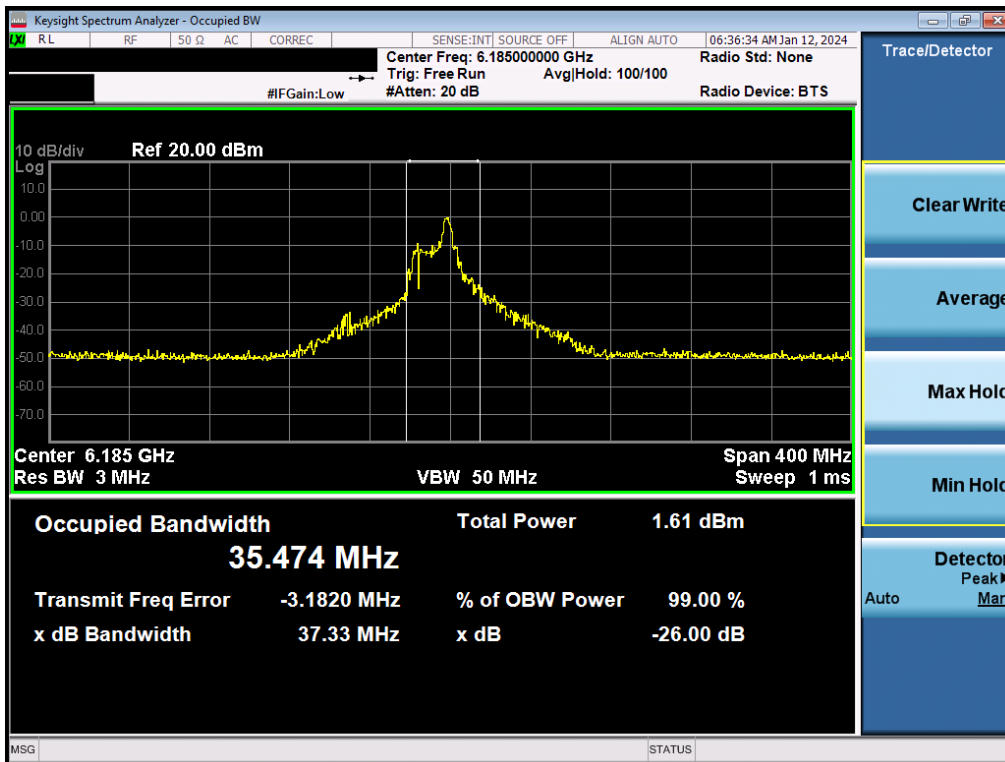


Plot 7-44. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802. 11be (26 Tones) (UNII Band 5) – Ch. 43)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 46 of 278

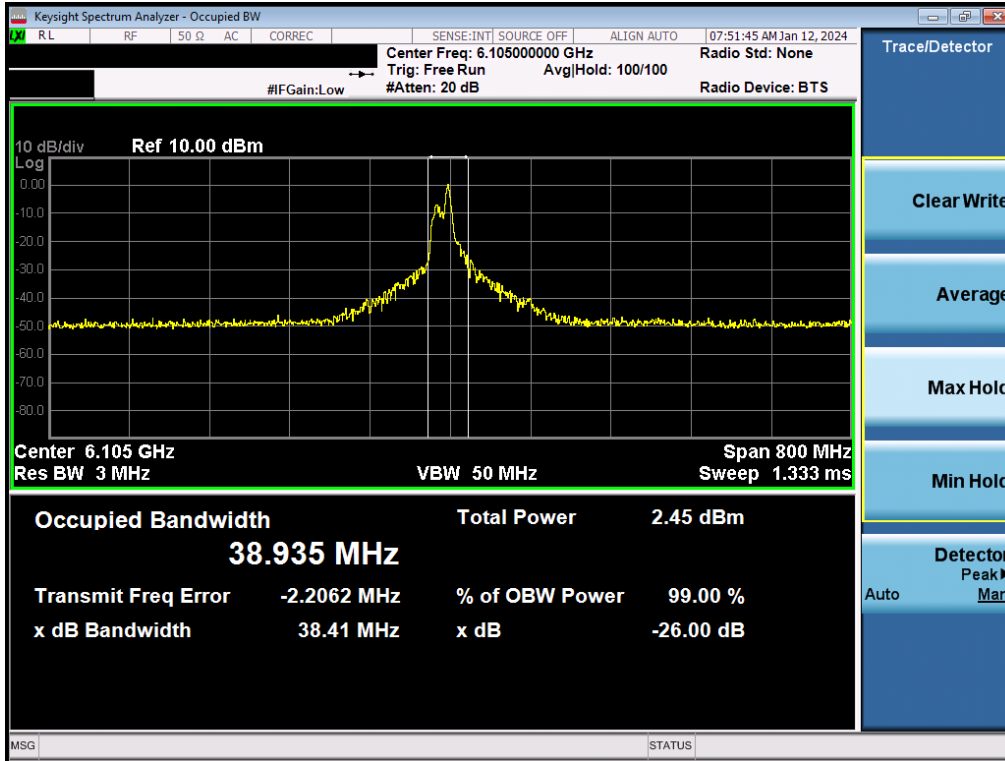


Plot 7-45. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802. 11be (26 Tones) (UNII Band 5) – Ch. 39)



Plot 7-46. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802. 11be (26 Tones) (UNII Band 5) – Ch. 47)

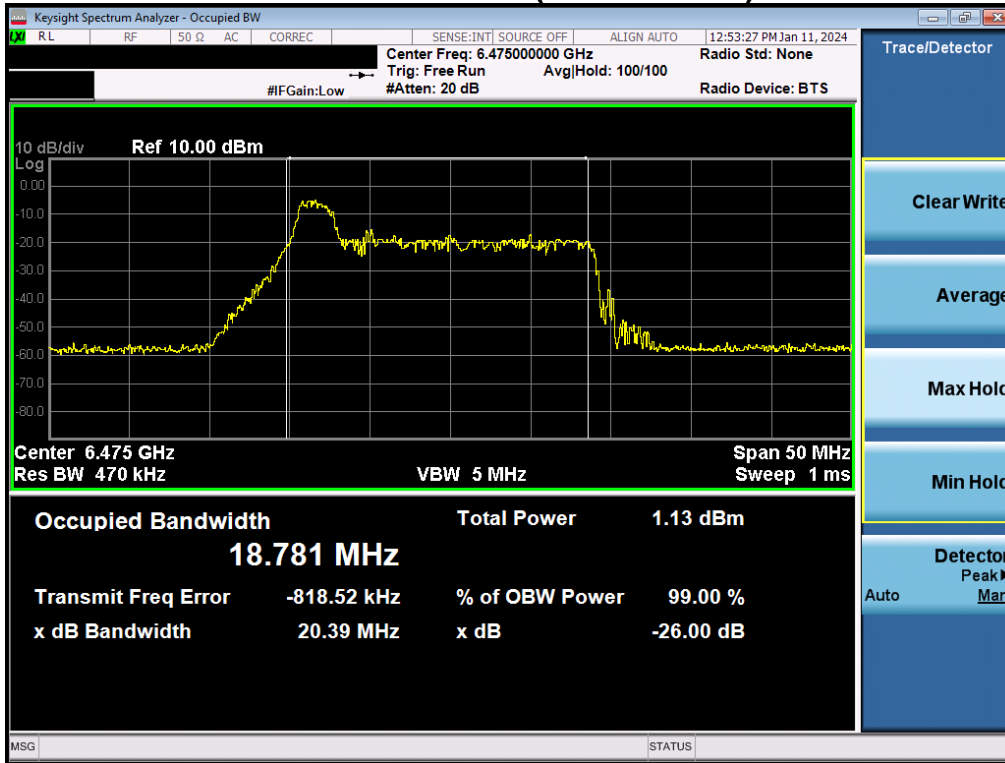
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 47 of 278



Plot 7-47. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802. 11be (26 Tones) (UNII Band 5) – Ch. 31)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 48 of 278

MIMO Antenna-2 Bandwidth Measurements – (Partial Tones)

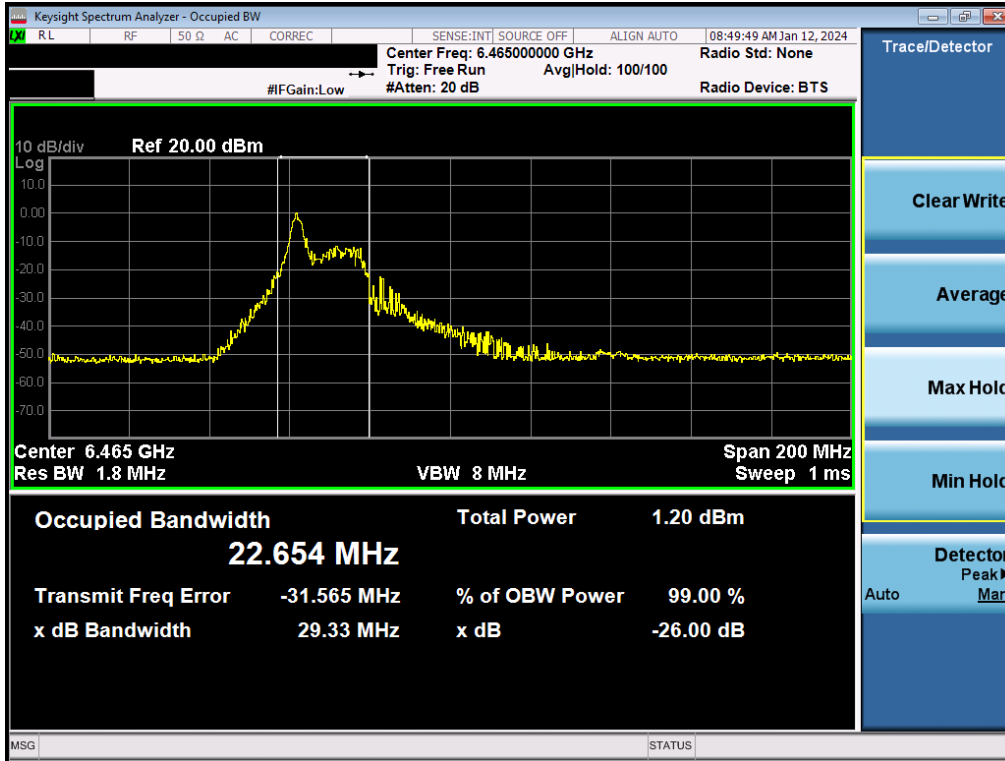


Plot 7-48. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802. 11be (26 Tones) (UNII Band 6) – Ch. 105)

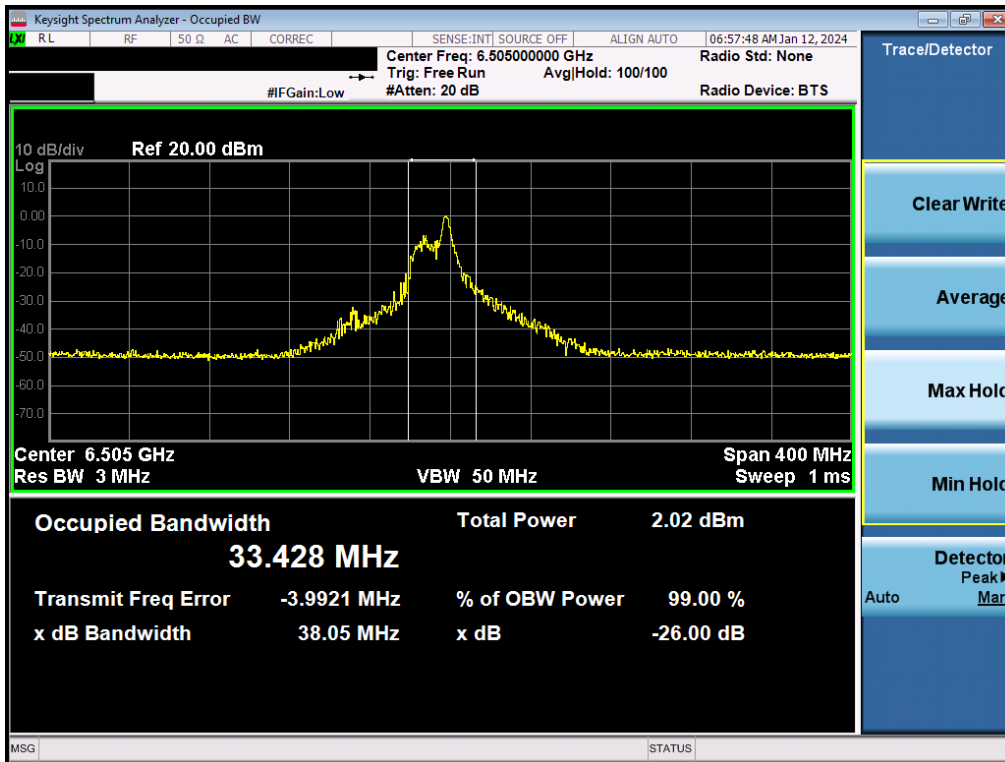


Plot 7-49. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802. 11be (26 Tones) (UNII Band 6) – Ch. 107)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 49 of 278

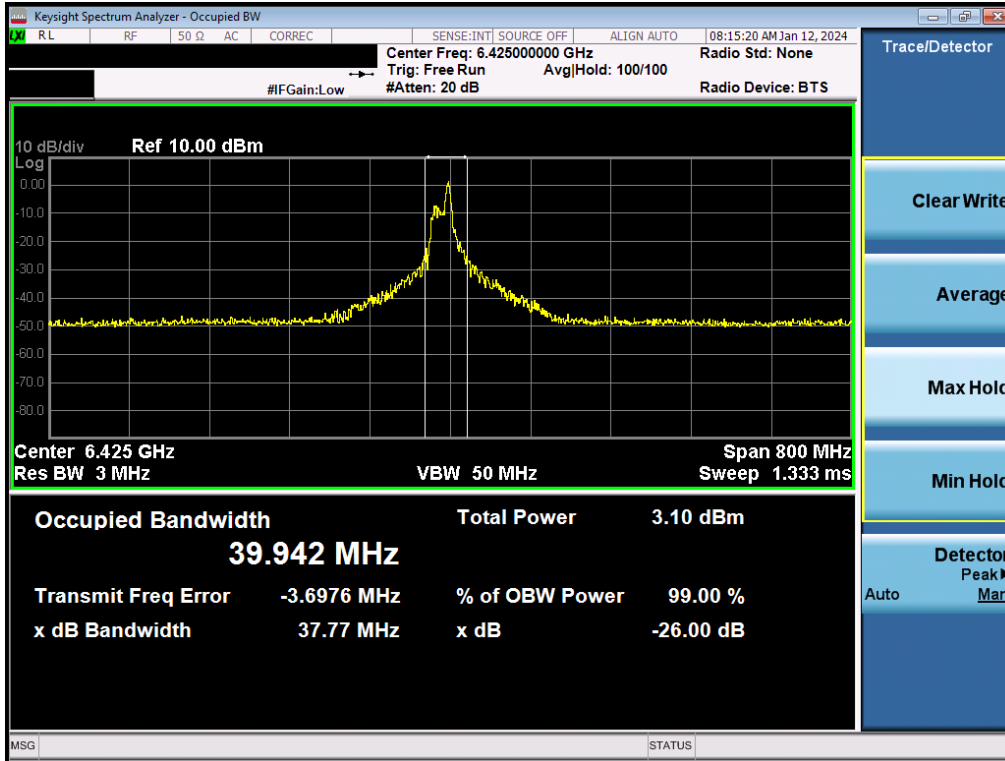


Plot 7-50. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802. 11be (26 Tones) (UNII Band 6) – Ch. 103)



Plot 7-51. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802. 11be (26 Tones) (UNII Band 6) – Ch. 111)

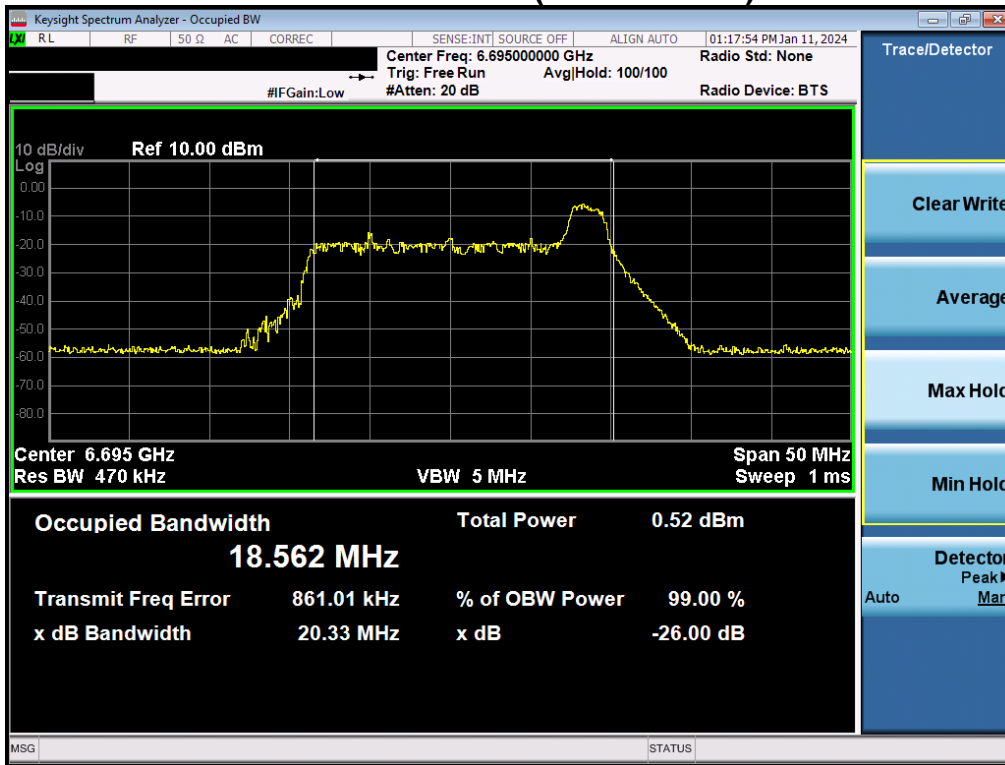
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 50 of 278



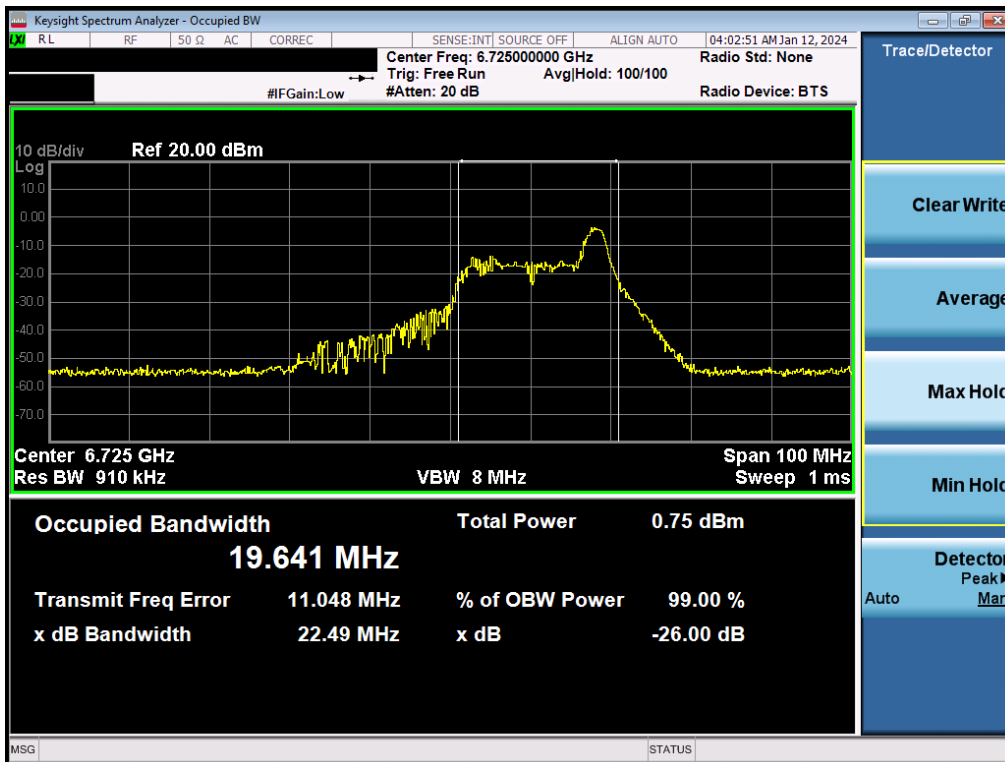
Plot 7-52. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802. 11be (26 Tones) (UNII Band 6) – Ch. 95)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 51 of 278

MIMO Antenna-2 Bandwidth Measurements – (Partial Tones)

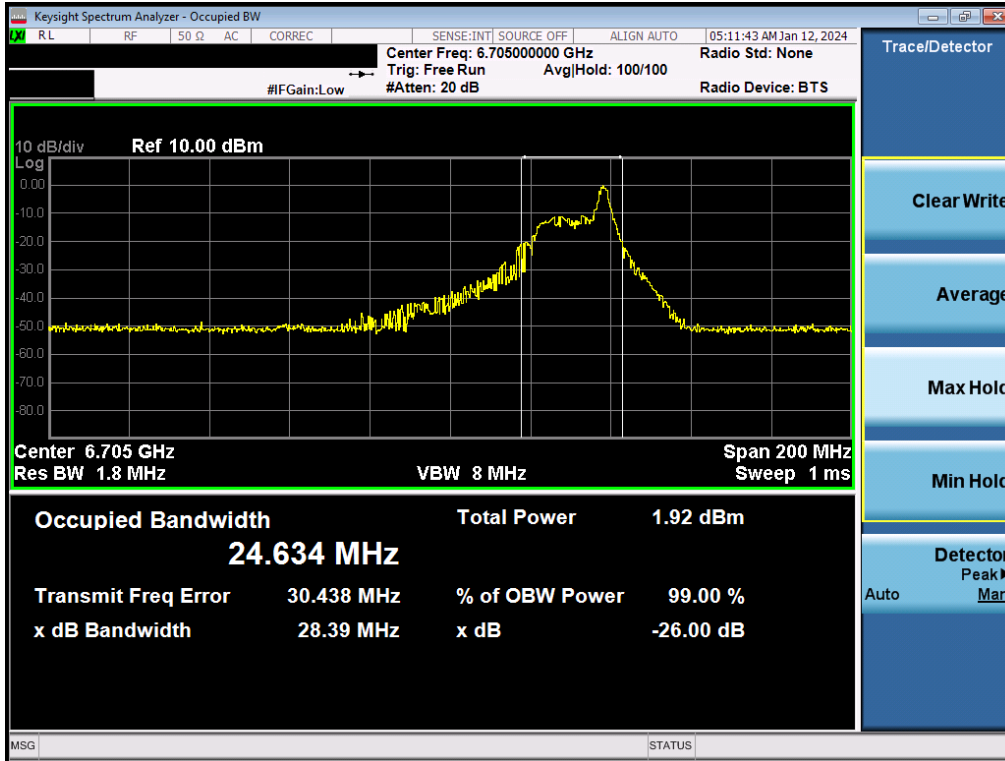


Plot 7-53. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802. 11be (26 Tones) (UNII Band 7) – Ch. 149)

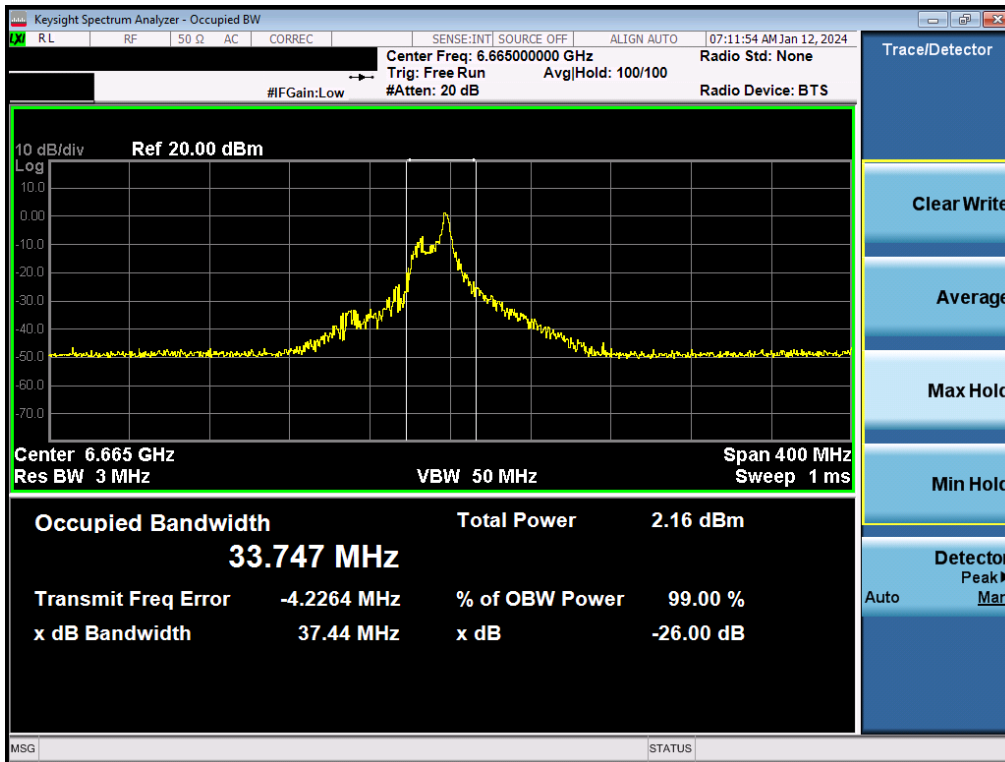


Plot 7-54. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802. 11be (26 Tones) (UNII Band 7) – Ch. 155)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 52 of 278

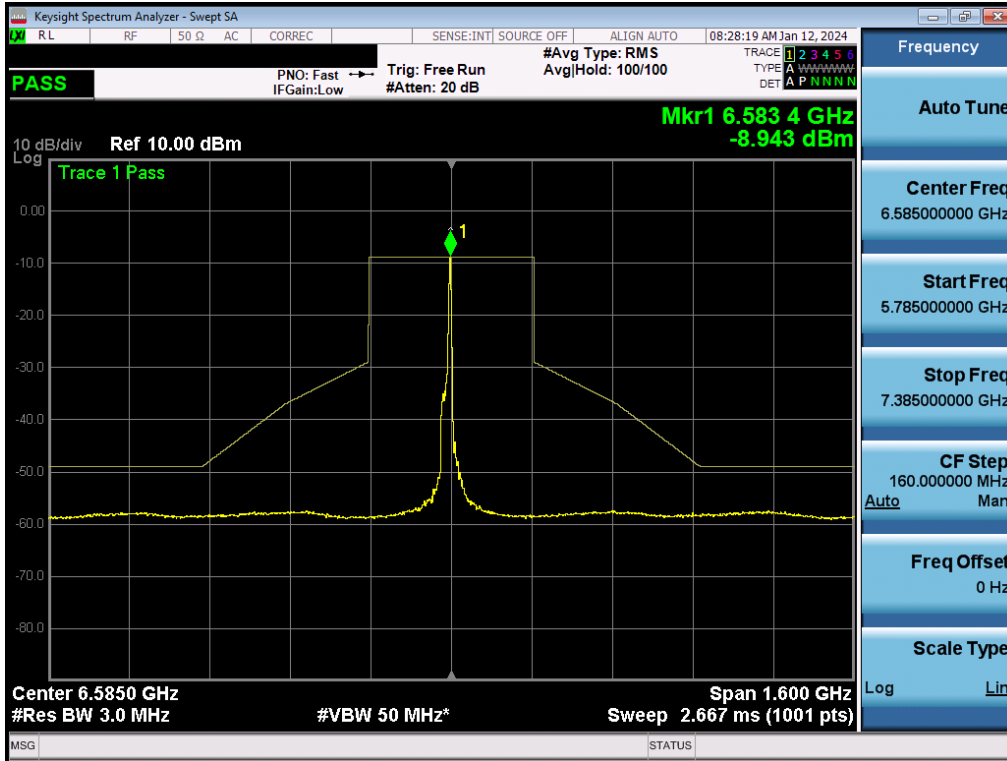


Plot 7-55. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802. 11be (26 Tones) (UNII Band 7) – Ch. 151)



Plot 7-56. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802. 11be (26 Tones) (UNII Band 7) – Ch. 143)

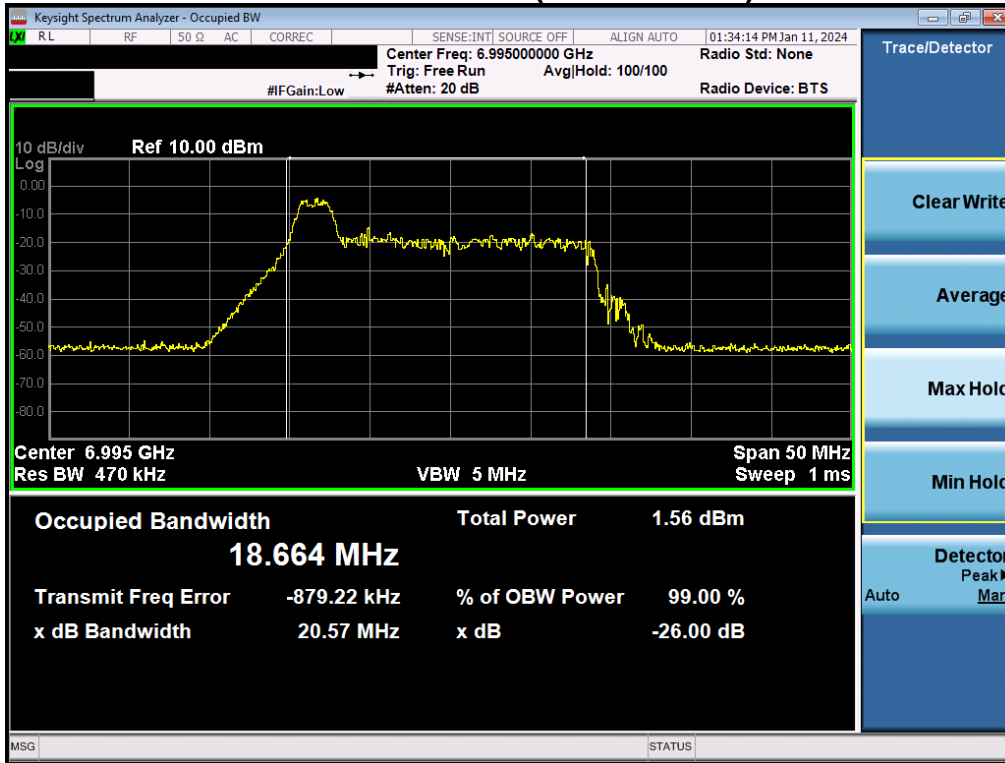
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 53 of 278



Plot 7-57. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802. 11be (26 Tones) (UNII Band 7) – Ch. 127)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 54 of 278

MIMO Antenna-2 Bandwidth Measurements – (Partial Tones)



Plot 7-58. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802. 11be (26 Tones) (UNII Band 8) – Ch. 209)

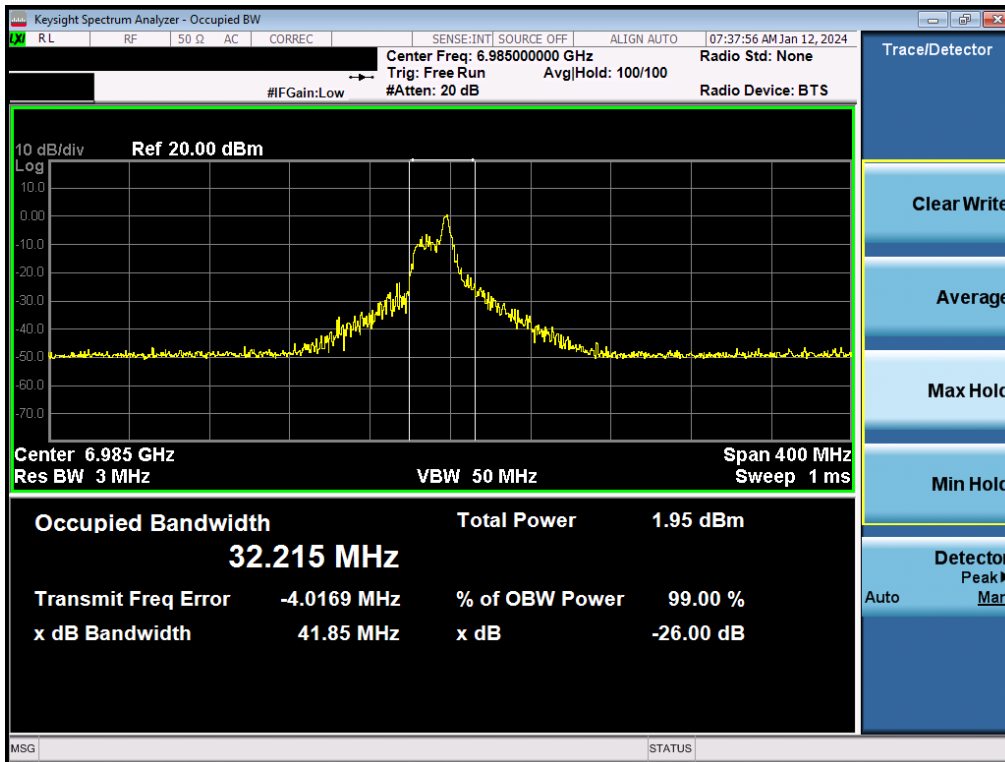


Plot 7-59. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802. 11be (26 Tones) (UNII Band 8) – Ch. 211)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 55 of 278

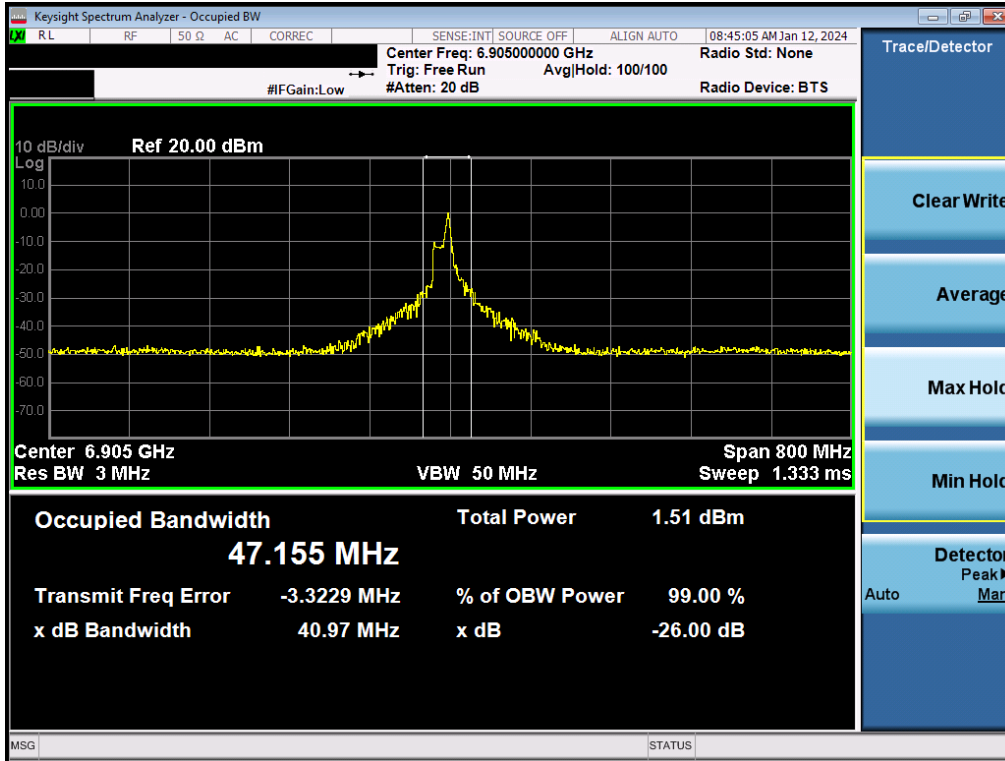


Plot 7-60. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802. 11be (26 Tones) (UNII Band 8) – Ch. 199)



Plot 7-61. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802. 11be (26 Tones) (UNII Band 8) – Ch. 207)

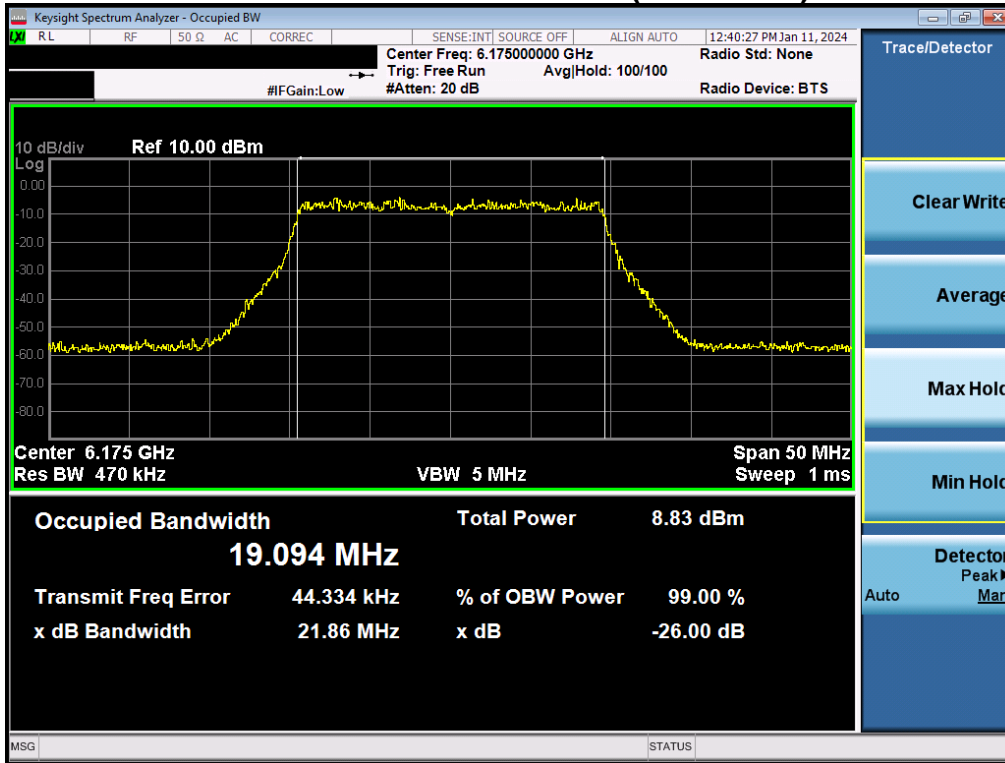
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 56 of 278



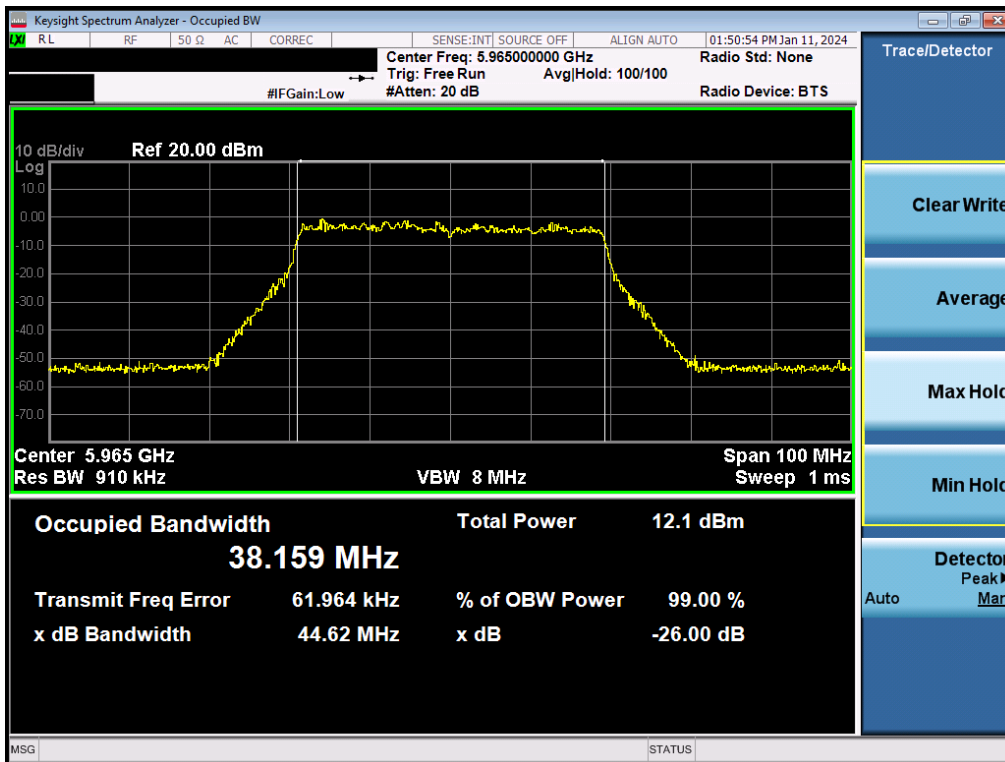
Plot 7-62. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802. 11be (26 Tones) (UNII Band 8) – Ch. 191)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 57 of 278

7.2.4 MIMO Antenna-2 Bandwidth Measurements – (Full Tones)

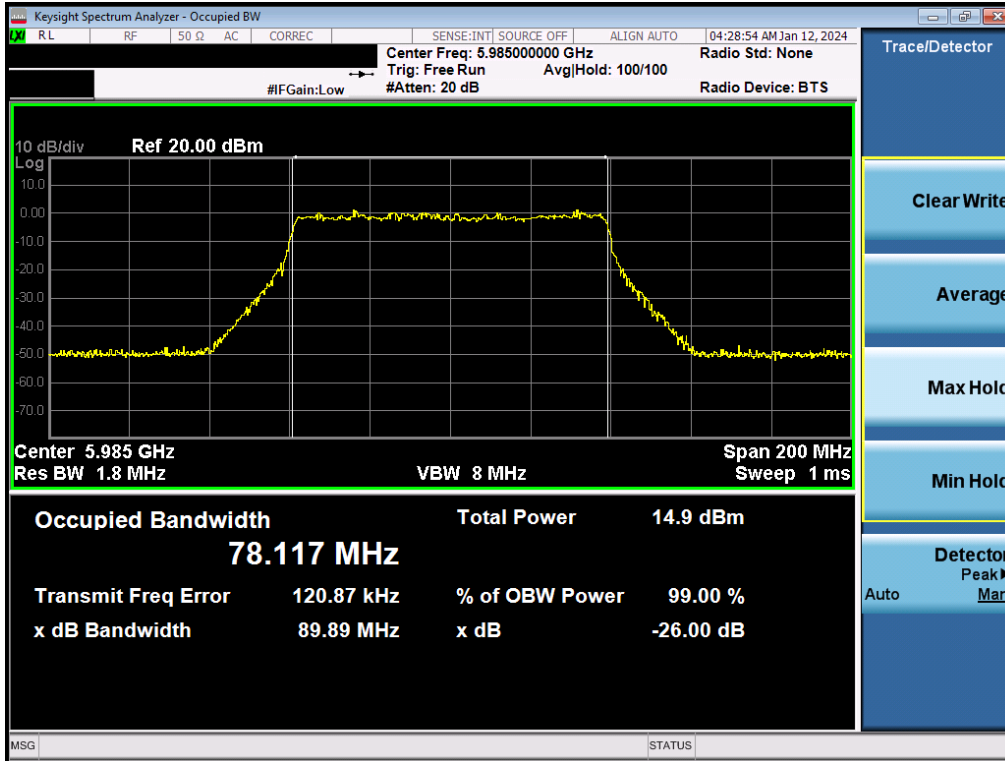


Plot 7-63. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802. 11be (Full Tone) (UNII Band 5) – Ch. 45)

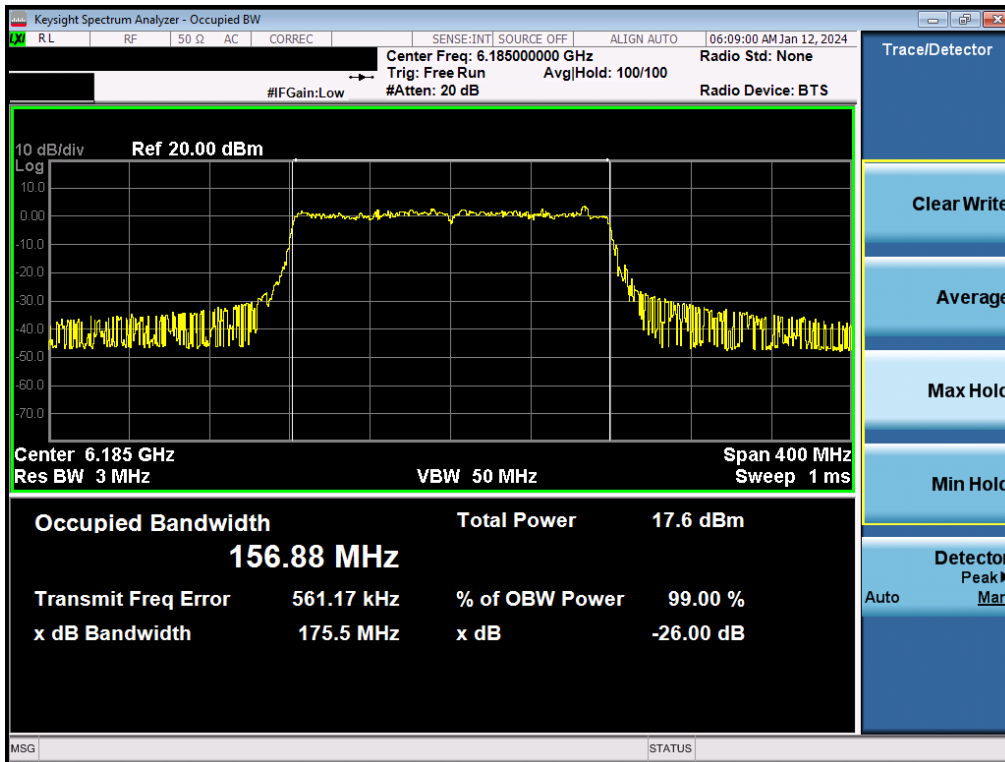


Plot 7-64. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802. 11be (Full Tone) (UNII Band 5) – Ch. 43)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 58 of 278

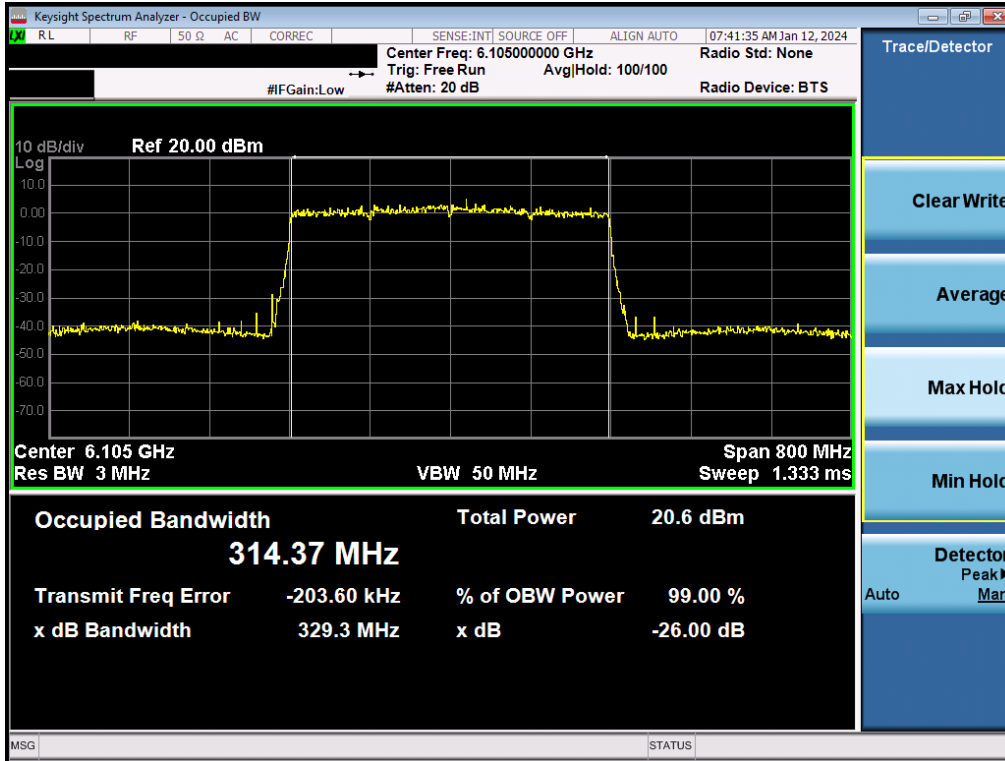


Plot 7-65. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802. 11be (Full Tone) (UNII Band 5) – Ch. 39)



Plot 7-66. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802. 11be (Full Tone) (UNII Band 5) – Ch. 47)

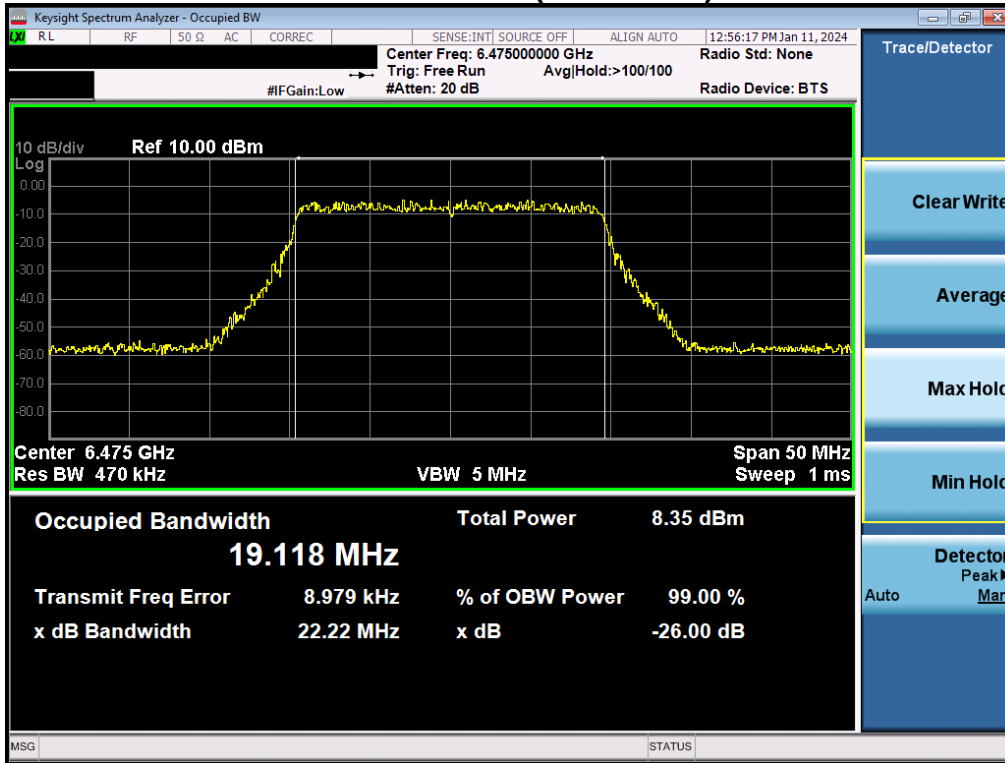
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 59 of 278



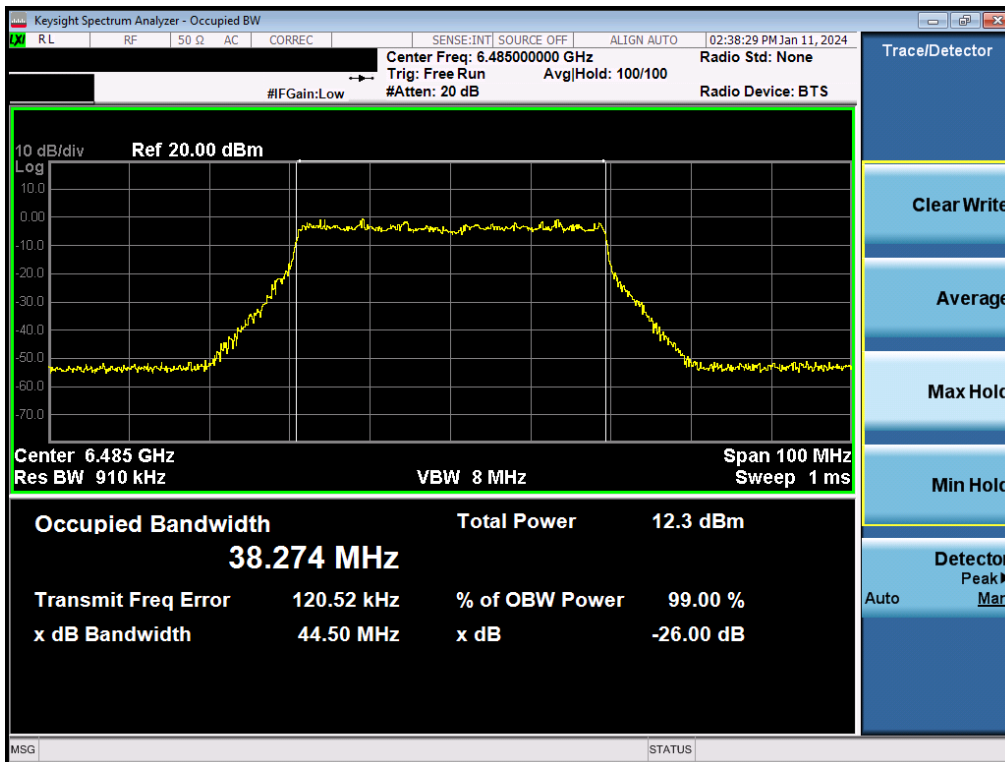
Plot 7-67. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802. 11be (26 Tones) (UNII Band 5) – Ch. 31)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 60 of 278

MIMO Antenna-2 Bandwidth Measurements – (Full Tones)

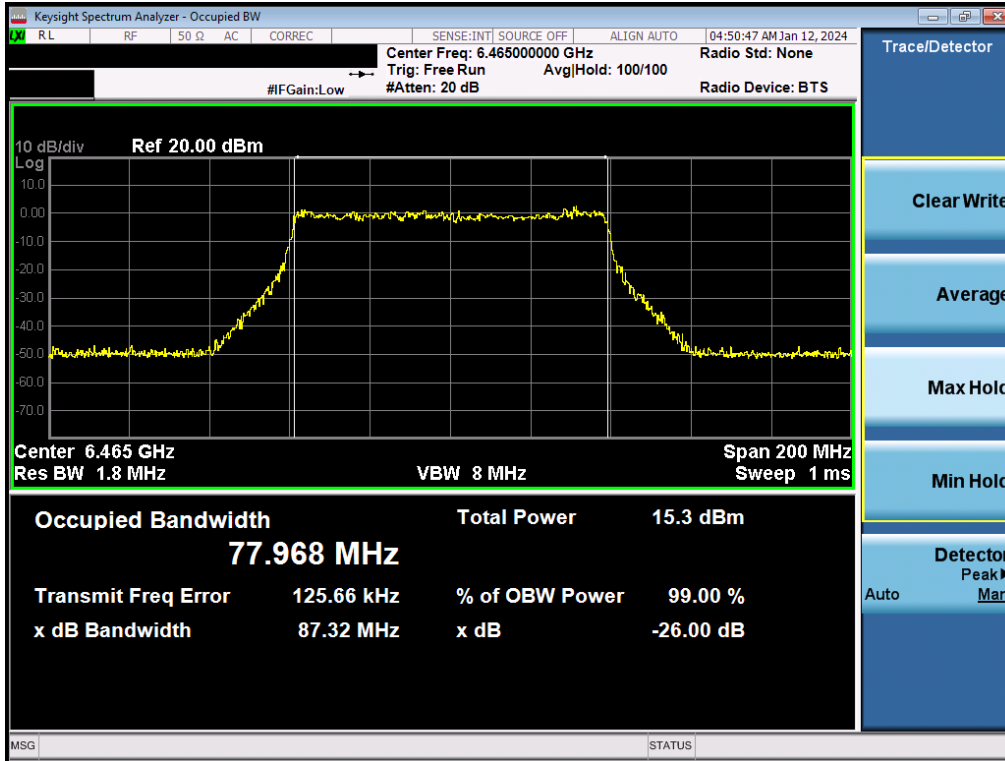


Plot 7-68. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802. 11be (Full Tone) (UNII Band 6) – Ch. 105)

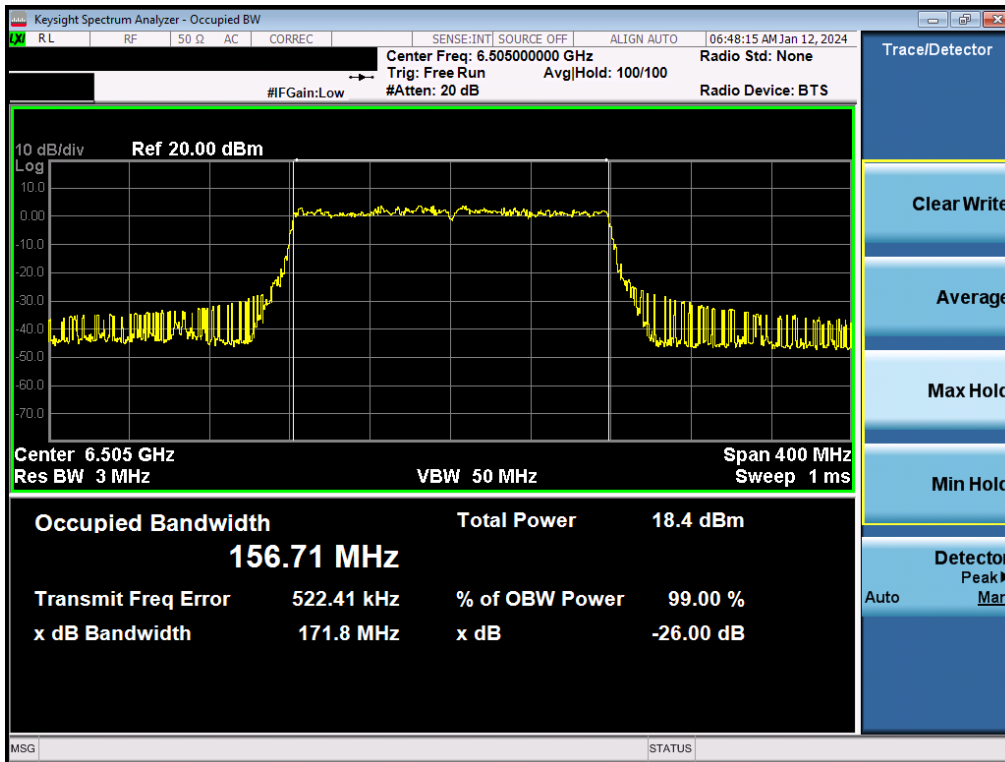


Plot 7-69. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802. 11be (Full Tone) (UNII Band 6) – Ch. 107)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 61 of 278

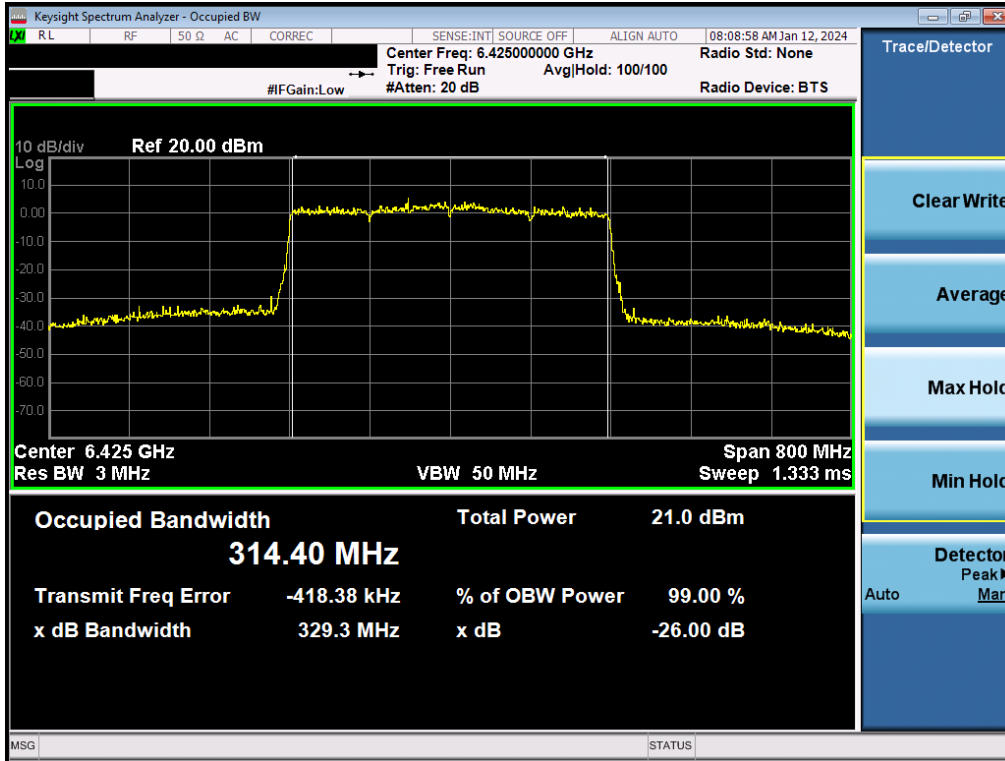


Plot 7-70. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802. 11be (Full Tone) (UNII Band 6) – Ch. 103)



Plot 7-71. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802. 11be (Full Tone) (UNII Band 6) – Ch. 111)

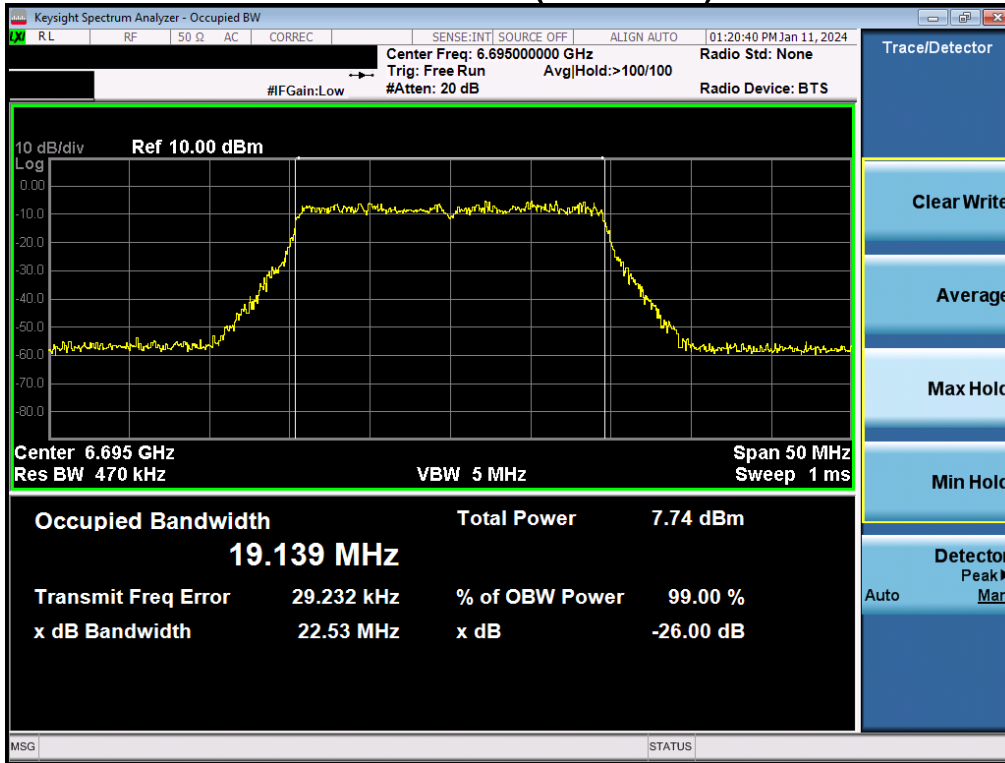
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 62 of 278



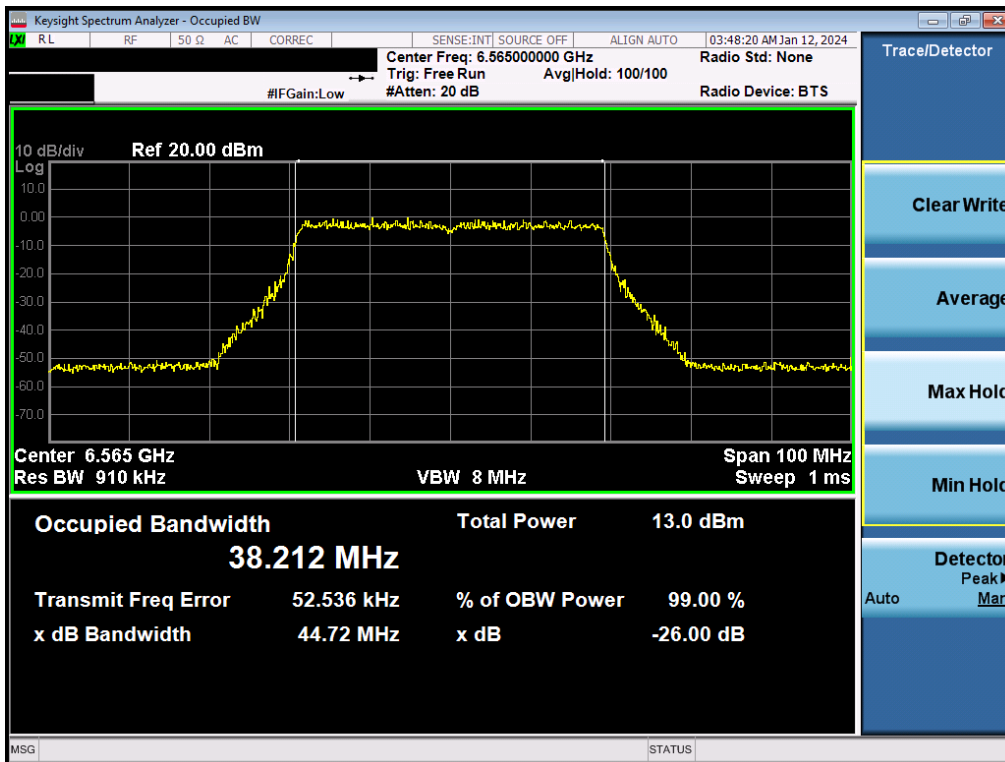
Plot 7-72. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802. 11be (Full Tones) (UNII Band 6) – Ch. 95)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 63 of 278

MIMO Antenna-2 Bandwidth Measurements – (Full Tones)

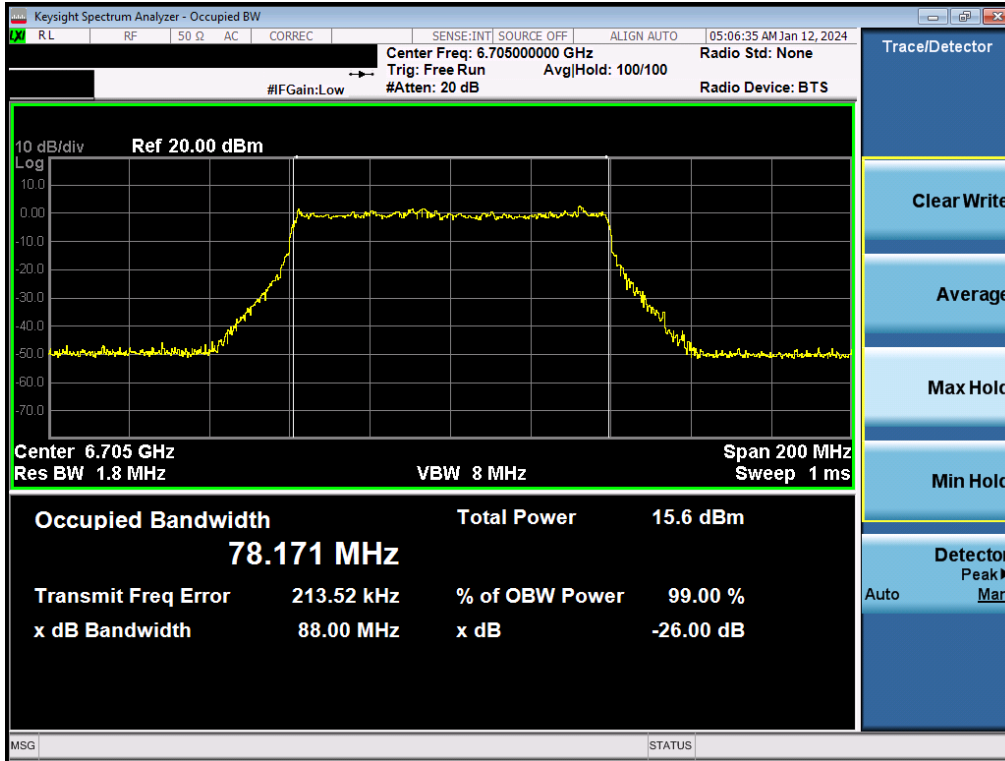


Plot 7-73. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802.11be (Full Tone) (UNII Band 7) – Ch. 149)

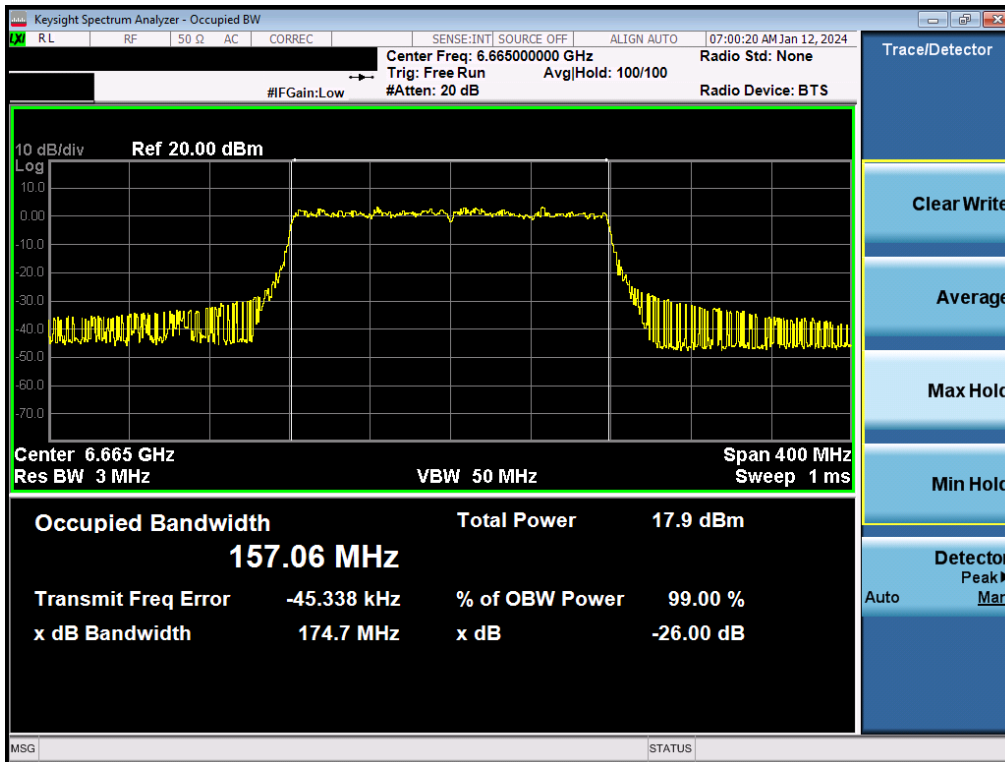


Plot 7-74. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802.11be (Full Tone) (UNII Band 7) – Ch. 155)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 64 of 278

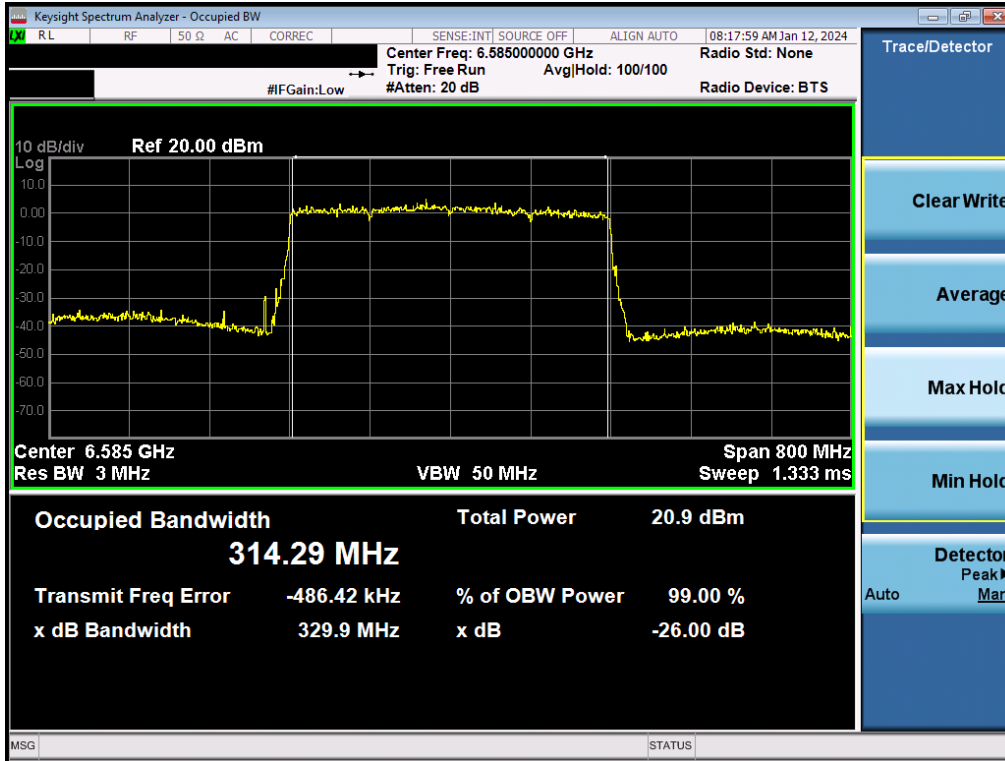


Plot 7-75. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802. 11be (Full Tone) (UNII Band 7) – Ch. 151)



Plot 7-76. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802. 11be (Full Tone) (UNII Band 7) – Ch. 143)

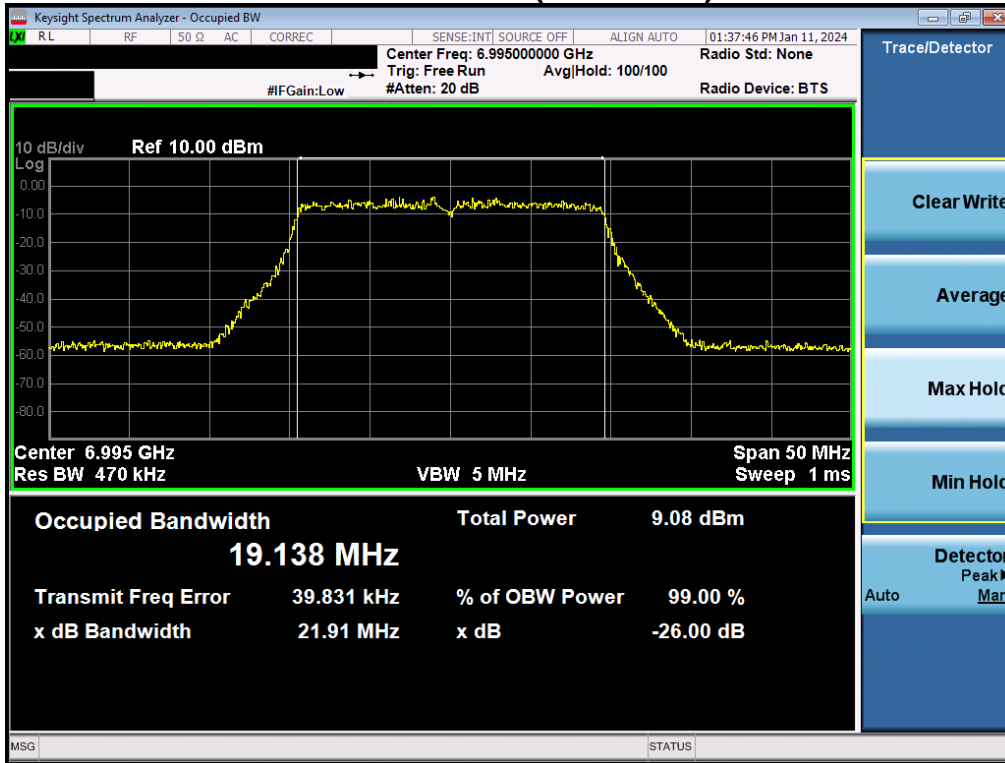
FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 65 of 278



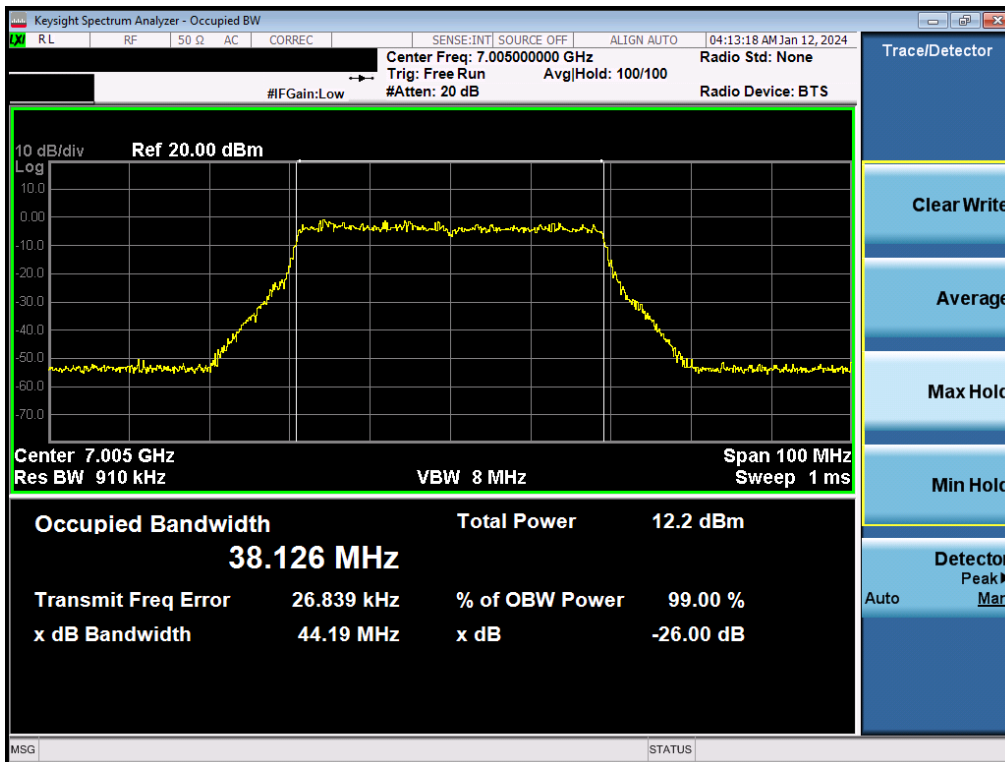
Plot 7-77. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802. 11be (Full Tone) (UNII Band 7) – Ch. 127)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 66 of 278

MIMO Antenna-2 Bandwidth Measurements – (Full Tones)

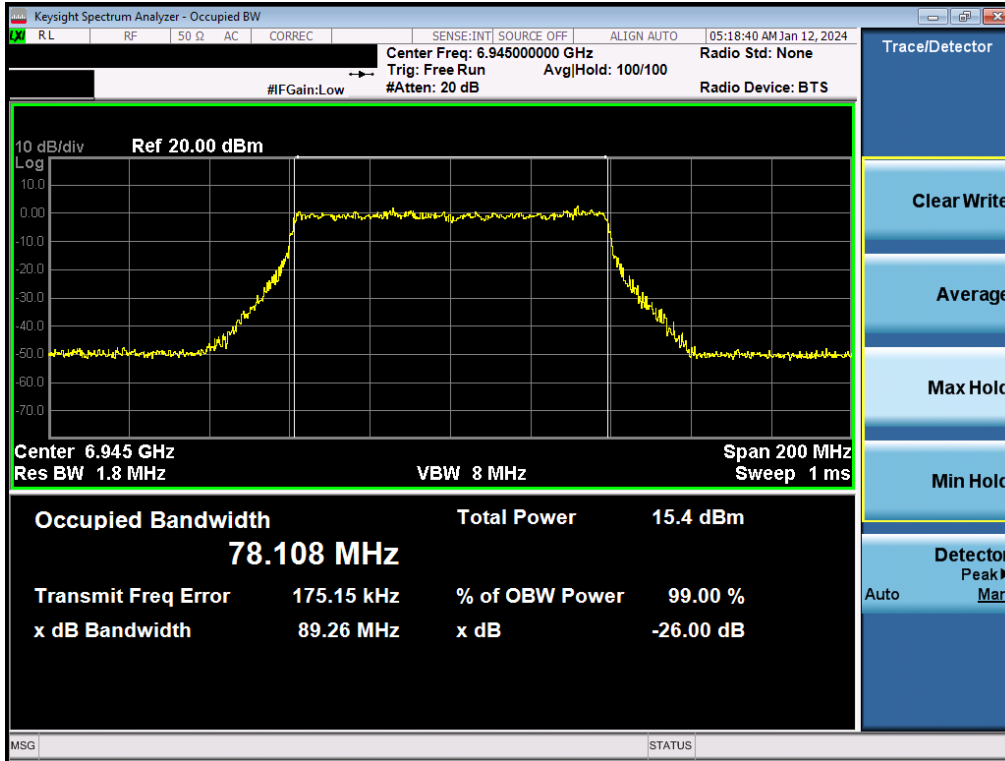


Plot 7-78. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802. 11be (Full Tone) (UNII Band 8) – Ch. 209)

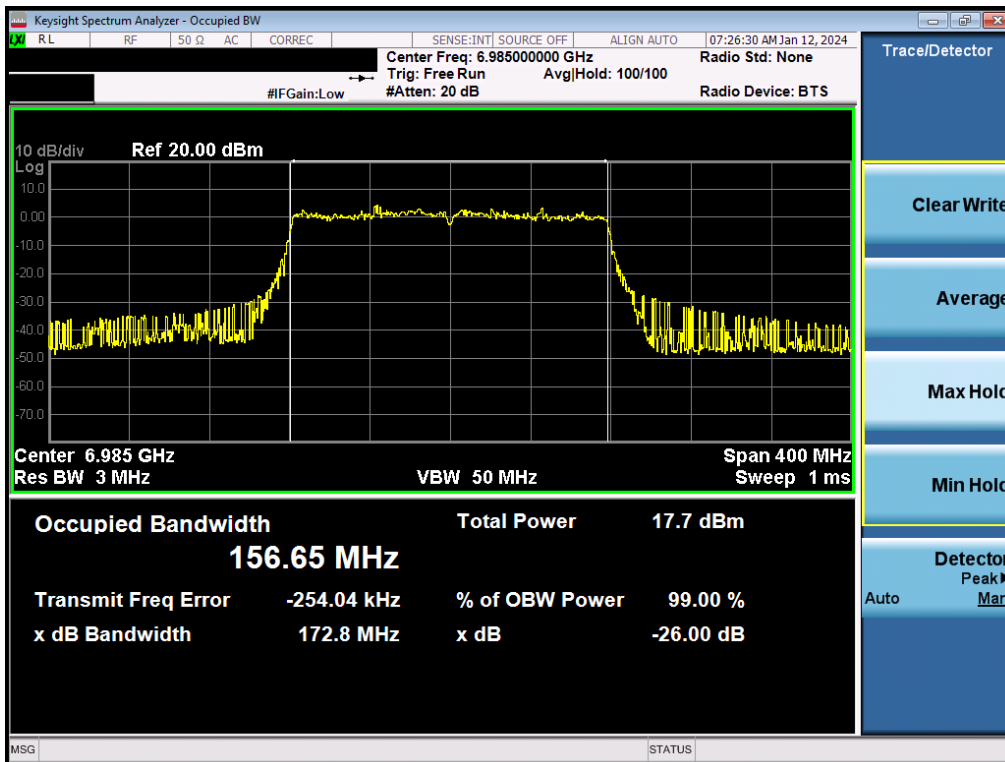


Plot 7-79. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802. 11be (Full Tone) (UNII Band 8) – Ch. 211)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 67 of 278

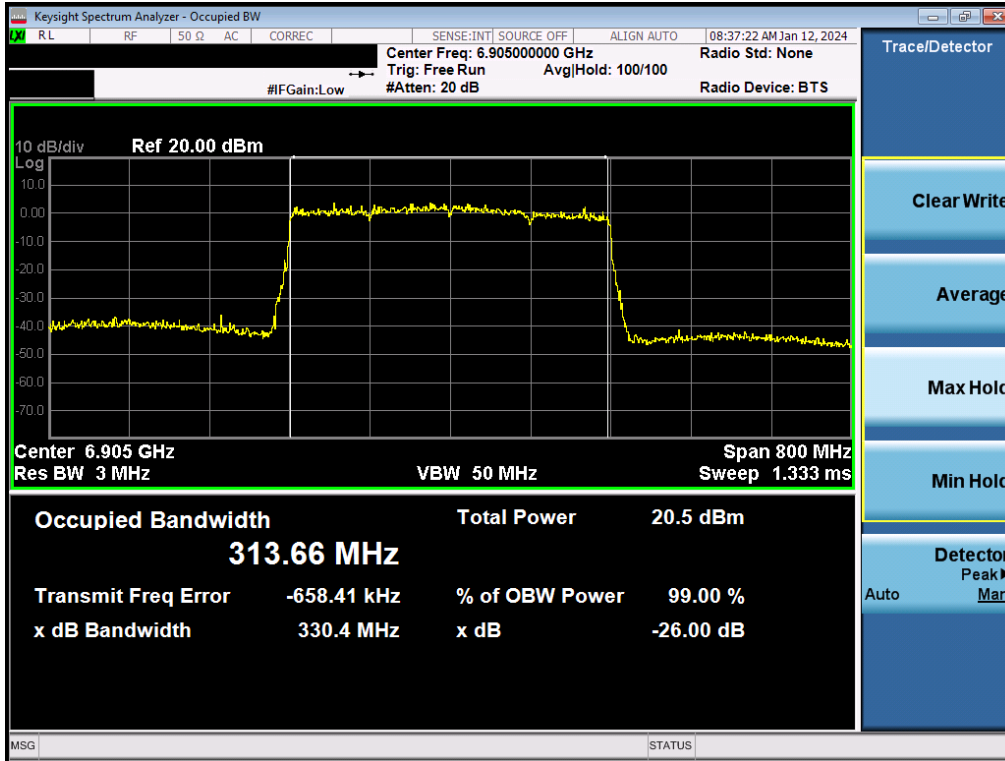


Plot 7-80. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802. 11be (Full Tone) (UNII Band 8) – Ch. 199)



Plot 7-81. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802. 11be (Full Tone) (UNII Band 8) – Ch. 207)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 68 of 278



Plot 7-82. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802. 11be (Full Tones) (UNII Band 8) – Ch. 191)

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 69 of 278

7.3 UNII Output Power Measurement

Test Overview and Limits

A transmitter antenna terminal of the EUT is connected to the input of an RF pulse power sensor. Measurement is made using a broadband average power meter while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013, and at the appropriate frequencies.

For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum e.i.r.p. over the frequency band of operation must not exceed 24 dBm. For client devices operating under the control of a standard power access point, the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm and the device must limit its power to no more than 6 dB below its associated standard power access point's authorized transmit power.

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.3.2 Method PM-G
ANSI C63.10-2013 – Section 14.2 Measure-and-Sum Technique

Test Settings

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

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

Compliance for this device while operating under the control of either an indoor low power access point or a standard power access point is demonstrated by applying either the low power indoor access point limit of 24dBm e.i.r.p. or the standard power access point limit of 30dBm e.i.r.p. as shown in the tables.

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 70 of 278



MIMO Maximum Conducted Output Power Measurements (26 Tones)

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index												
					0			4			8						
ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO									
5	5935	2	26T	-9.24	-9.09	-6.15	-9.63	-9.47	-6.54	-9.18	-9.03	7.37	1.28	24.0	-22.72		
	6175	45	26T	-8.72	-8.65	-5.67	-9.10	-9.04	-6.06	-8.70	-8.63	7.37	1.72	24.0	-22.28		
	6415	93	26T	-8.99	-8.56	-5.76	-9.46	-8.99	-6.21	-9.07	-8.65	7.37	1.61	24.0	-22.39		
6	6435	93	26T	-9.11	-8.66	-5.82	-9.16	-8.92	-5.92	-9.26	-8.63	7.37	1.05	24.0	-22.95		
	6475	105	26T	-9.27	-8.59	-5.90	-9.67	-8.95	-6.30	-9.30	-8.57	7.37	0.99	24.0	-23.04		
	6515	113	26T	-9.28	-8.69	-5.96	-9.21	-8.58	-5.88	-9.31	-8.79	7.37	0.96	24.0	-23.01		
7	6535	117	26T	-9.44	-8.79	-6.10	-9.33	-8.73	-6.01	-9.39	-8.80	7.04	1.03	24.0	-22.97		
	6695	149	26T	-8.97	-8.12	-6.04	-8.92	-8.07	-5.98	-9.04	-8.12	7.04	1.06	24.0	-22.94		
	6875	185	26T	-8.76	-8.77	-5.75	-8.77	-8.61	-5.68	-8.91	-8.77	7.04	1.36	24.0	-22.64		
8	6895	189	26T	-8.93	-8.73	-5.82	-8.90	-8.69	-5.78	-9.07	-8.80	7.88	2.10	24.0	-21.90		
	6995	209	26T	-9.32	-8.66	-5.97	-9.33	-8.59	-5.93	-9.49	-8.70	7.88	1.95	24.0	-22.05		
	7115	233	26T	-9.21	-8.72	-5.95	-9.28	-8.76	-6.00	-9.06	-8.58	7.88	2.08	24.0	-21.92		

Table 7-7. MIMO 20MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power - LPI

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index												
					0			4			8						
ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO									
5	5935	2	26T	-2.19	-1.71	1.07	-2.22	-1.83	0.99	-2.12	-1.77	7.37	8.44	30.0	-21.56		
	6175	45	26T	9.16	9.29	12.23	9.26	8.92	12.10	9.13	9.23	12.19	7.37	19.61	30.0	-10.39	
	6415	93	26T	9.18	9.49	12.35	9.00	9.30	12.16	9.13	9.49	12.32	7.37	19.72	30.0	-10.28	
7	6535	117	26T	8.61	9.26	11.99	8.33	8.93	11.96	8.98	9.23	11.91	7.04	19.03	30.0	-10.97	
	6695	149	26T	8.91	9.23	12.08	8.90	9.32	12.12	8.84	9.12	11.99	7.04	19.16	30.0	-10.84	
	6855	181	26T	9.12	9.22	12.18	9.04	9.18	12.12	8.97	9.12	12.06	7.04	19.22	30.0	-10.78	

Table 7-8. MIMO 20MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power - SP

MIMO Maximum Conducted Output Power Measurements (52 Tones)

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index												
					37			39			40						
ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO									
5	5935	2	52T	-6.49	-6.35	-3.41	-6.14	-6.00	-3.06	-6.49	-6.35	-3.41	7.37	4.31	24.0	-19.69	
	6175	45	52T	-5.88	-5.77	-2.82	-6.10	-6.00	-3.04	-5.90	-5.82	-2.85	7.37	4.56	24.0	-19.44	
	6435	97	52T	-6.07	-5.68	-2.86	-6.35	-5.97	-3.15	-6.14	-5.77	-2.94	7.37	4.51	24.0	-19.49	
6	6435	97	52T	-6.20	-5.75	-2.96	-6.48	-5.99	-3.22	-6.26	-5.81	-3.02	6.87	3.91	24.0	-20.09	
	6475	105	52T	-6.26	-5.67	-2.94	-6.50	-5.90	-3.18	-6.29	-5.69	-2.97	6.87	3.92	24.0	-20.08	
	6515	113	52T	-6.28	-5.79	-3.02	-6.57	-6.04	-3.29	-6.34	-5.68	-2.99	6.87	3.88	24.0	-20.12	
7	6535	117	52T	-6.12	-5.84	-2.97	-5.83	-5.51	-2.65	-6.17	-5.85	-3.00	7.04	4.38	24.0	-19.62	
	6695	149	52T	-5.85	-5.16	-2.99	-6.03	-5.33	-3.16	-5.89	-5.12	-2.99	7.04	4.05	24.0	-19.95	
	6875	185	52T	-5.64	-5.62	-2.62	-5.94	-5.80	-2.86	-5.78	-5.64	-2.70	7.04	4.42	24.0	-19.58	
8	6895	189	52T	-5.81	-5.65	-2.72	-6.06	-5.84	-2.94	-5.98	-5.67	-2.81	7.88	5.16	24.0	-18.84	
	6995	209	52T	-6.08	-5.69	-2.87	-6.66	-6.16	-3.39	-6.27	-5.72	-2.98	7.88	5.02	24.0	-18.98	
	7115	233	52T	-5.92	-5.59	-2.74	-6.32	-6.22	-3.36	-6.11	-5.80	-2.94	7.88	5.14	24.0	-18.86	

Table 7-9. MIMO 20MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power - LPI

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index												
					37			39			40						
ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO									
5	5935	2	52T	0.99	1.38	4.20	0.88	1.13	4.02	1.10	1.31	4.22	11.59	30.0	-18.41		
	6175	45	52T	11.78	11.52	14.66	11.45	11.64	14.55	11.70	11.46	14.59	7.37	22.04	30.0	-7.96	
	6415	93	52T	11.44	11.62	14.54	11.72	11.85	14.80	11.37	11.48	14.44	7.37	22.17	30.0	-7.83	
7	6535	117	52T	11.21	11.88	14.57	11.02	11.66	14.36	11.12	11.77	14.46	7.04	21.60	30.0	-8.40	
	6695	149	52T	11.57	11.94	14.77	11.58	11.59	14.60	11.47	11.86	14.68	7.04	21.81	30.0	-8.19	
	6855	181	52T	11.72	11.77	14.75	11.96	11.96	14.97	11.56	11.69	14.63	7.04	22.01	30.0	-7.99	

Table 7-10. MIMO 20MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power - SP

MIMO Maximum Conducted Output Power Measurements (106 Tones)

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index									
					53			54						
ANT1	ANT2	MIMO	ANT1	ANT2	MIMO									
5	5935	2	106T	-3.85	-3.67	-0.75	-3.77	-3.66	-0.70	7.37	6.67	24.0	-17.33	
	6175	45	106T	-3.49	-3.39	-0.43	-3.49	-3.42	-0.44	7.37	6.94	24.0	-17.06	
	6415	93	106T	-3.68	-3.29	-0.47	-3.71	-3.34	-0.51	7.37	6.90	24.0	-17.10	
6	6435	97	106T	-3.79	-3.35	-0.55	-3.83	-3.43	-0.61	6.87	6.31	24.0	-17.69	
	6475	105	106T	-3.84	-3.26	-0.53	-3.85	-3.33	-0.57	6.87	6.34	24.0	-17.66	
	6515	113	106T	-3.87	-3.41	-0.62	-3.92	-3.42	-0.65	6.87	6.24	24.0	-17.76	
7	6535	117	106T	-3.46	-3.19	-0.32	-3.49	-3.18	-0.32	7.04	6.73	24.0	-17.28	
	6695	149	106T	-3.68	-4.03	-0.84	-3.69	-3.95	-0.81	7.04	6.23	24.0	-17.77	
	6875	185	106T	-3.51	-3.62	-0.56	-3.62	-3.46	-0.52	7.04	6.51	24.0	-17.49	
8	6895	189	106T	-3.68	-3.49	-0.57	-3.76	-3.49	-0.61	7.88	7.31	24.0	-16.69	
	6995	209	106T	-3.46	-3.02	-0.22	-3.59	-3.04	-0.30	7.88	7.66	24.0	-16.34	
	7115	233	106T	-3.30	-3.01	-0.14	-3.45	-3.11	-0.26	7.88	7.74	24.0	-16.26	

Table 7-11. MIMO 20MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power - LPI

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index									
					53			54						
ANT1	ANT2	MIMO	ANT1	ANT2	MIMO									
5	5935	2	106T	2.94	3.12	6.04	2.83	3.05	5.95	7.37	13.41	30.0	-16.59	
	6175	45	106T	15.31	15.43	18.38	15.28	15.36	18.33	7.37	25.75	30.0	-4.25	
	6415	93	106T	14.87	15.23	18.06	14.83	15.13	17.99	7.37	25.43	30.0	-4.57	
7	6535	117	106T	14.90	15.48	18.21	14.83	15.41	18.14	7.04	25.25	30.0	-4.75	
	6695	149	106T	15.13	15.31	18.23	15.03	15.31	18.18	7.04	25.27	30.0	-4.73	
	6855	181	106T	15.05	14.93	18.00	14.92	14.86	17.90	7.04	25.04	30.0	-4.96	

Table 7-12. MIMO 20MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power - SP

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 71 of 278

MIMO Maximum Conducted Output Power Measurements (242 Tones)

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)			Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index						
					61						
					ANT1	ANT2	MIMO				
5	5935	2	242T	0.20	0.34	3.28	7.37	10.65	24.0	-13.35	
	6175	45	242T	0.49	0.46	3.49	7.37	10.86	24.0	-13.14	
	6415	93	242T	-0.29	0.05	2.89	7.37	10.26	24.0	-13.74	
6	6435	97	242T	0.38	0.45	3.42	6.87	10.29	24.0	-13.71	
	6475	105	242T	0.19	0.49	3.35	6.87	10.22	24.0	-13.78	
	6515	113	242T	0.16	0.48	3.33	6.87	10.20	24.0	-13.80	
7	6535	117	242T	0.05	0.36	3.22	7.04	10.26	24.0	-13.74	
	6695	149	242T	0.19	-0.10	3.06	7.04	10.10	24.0	-13.90	
	6875	185	242T	0.42	0.49	3.47	7.04	10.50	24.0	-13.50	
8	6895	189	242T	0.26	0.49	3.39	7.88	11.27	24.0	-12.73	
	6995	209	242T	0.09	0.21	3.16	7.88	11.04	24.0	-12.96	
	7115	233	242T	0.01	0.49	3.26	7.88	11.15	24.0	-12.85	

Table 7-13. MIMO 20MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power – LPI

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)			Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index						
					61						
					ANT1	ANT2	MIMO				
5	5935	2	242T	6.32	6.68	9.51	7.37	16.89	30.0	-13.11	
	6175	45	242T	18.57	18.38	21.49	7.37	28.86	30.0	-1.14	
	6415	93	242T	18.22	18.71	21.48	7.37	28.85	30.0	-1.15	
7	6535	117	242T	18.31	18.86	21.61	7.04	28.64	30.0	-1.36	
	6695	149	242T	18.54	18.74	21.65	7.04	28.69	30.0	-1.31	
	6855	181	242T	18.40	18.45	21.43	7.04	28.47	30.0	-1.53	

Table 7-14. MIMO 20MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power – SP

MIMO Maximum Conducted Output Power Measurements (484 Tones)

40MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)			Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index						
					65						
					ANT1	ANT2	MIMO				
5	5965	3	484T	2.92	3.49	6.22	7.37	13.59	24.0	-10.41	
	6005	11	484T	2.84	3.42	6.15	7.37	13.52	24.0	-10.48	
	6165	43	484T	3.00	3.30	6.16	7.37	13.53	24.0	-10.47	
	6405	91	484T	3.24	3.72	6.50	7.37	13.87	24.0	-10.13	
6	6445	99	484T	2.53	3.60	6.11	6.87	12.98	24.0	-11.02	
	6485	107	484T	2.63	3.73	6.23	6.87	13.09	24.0	-10.91	
	6525	115	484T	2.66	3.72	6.23	6.87	13.10	24.0	-10.90	
	6565	123	484T	2.87	3.58	6.25	7.04	13.29	24.0	-10.71	
7	6685	147	484T	3.12	3.69	6.42	7.04	13.46	24.0	-10.54	
	6845	179	484T	2.94	3.17	6.06	7.04	13.10	24.0	-10.90	
	6885	187	484T	3.14	3.47	6.32	7.88	14.20	24.0	-9.80	
8	7005	211	484T	3.60	3.71	6.67	7.88	14.55	24.0	-9.45	
	7085	227	484T	3.34	3.43	6.40	7.88	14.28	24.0	-9.72	

Table 7-15. MIMO 40MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power – LPI

40MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)			Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index						
					65						
					ANT1	ANT2	MIMO				
5	5965	3	484T	17.99	17.92	20.96	7.37	28.33	30.0	-1.67	
	6005	11	484T	19.48	19.49	22.50	7.37	29.87	30.0	-0.13	
	6165	43	484T	19.42	19.49	22.47	7.37	29.84	30.0	-0.16	
	6405	91	484T	17.91	17.98	20.95	7.37	28.33	30.0	-1.67	
7	6565	123	484T	17.42	17.99	20.73	7.04	27.76	30.0	-2.24	
	6685	147	484T	19.54	19.84	22.70	7.04	29.74	30.0	-0.26	
	6845	179	484T	14.69	14.31	17.51	7.04	24.55	30.0	-5.45	

Table 7-16. MIMO 40MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power – SP

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 72 of 278

MIMO Maximum Conducted Output Power Measurements (996 Tones)

80MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)			Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index						
					67						
					ANT1	ANT2	MIMO				
5	5985	7	996T	5.44	5.58	8.52	7.37	15.89	24.0	-8.11	
	6145	39	996T	5.40	5.82	8.63	7.37	16.00	24.0	-8.00	
	6385	87	996T	5.50	6.10	8.82	7.37	16.19	24.0	-7.81	
6	6465	103	996T	5.62	6.18	8.92	6.87	15.79	24.0	-8.21	
	6545	119	996T	5.58	6.28	8.95	7.04	15.99	24.0	-8.01	
7	6705	151	996T	5.31	5.79	8.56	7.04	15.60	24.0	-8.40	
	6865	183	996T	5.70	5.61	8.67	7.04	15.71	24.0	-8.29	
	6945	199	996T	5.98	6.06	9.03	7.88	16.91	24.0	-7.09	
8	7025	215	996T	6.09	5.80	8.96	7.88	16.84	24.0	-7.16	

Table 7-17. MIMO 80MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power – LPI

80MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)			Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index						
					67						
					ANT1	ANT2	MIMO				
5	5985	7	996T	17.51	17.65	20.59	7.37	27.96	30.0	-2.04	
	6145	39	996T	17.54	17.64	20.60	7.37	27.97	30.0	-2.03	
	6385	87	996T	17.49	17.84	20.68	7.37	28.05	30.0	-1.95	
7	6625	135	996T	19.46	19.87	22.68	7.04	29.72	30.0	-0.28	
	6705	151	996T	19.66	19.93	22.81	7.04	29.84	30.0	-0.16	
	6785	167	996T	19.41	19.81	22.62	7.04	29.66	30.0	-0.34	

Table 7-18. MIMO 80MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power – SP

MIMO Maximum Conducted Output Power Measurements (2x996 Tones)

160MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)			Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index						
					68						
					ANT1	ANT2	MIMO				
5	6025	15	2x996T	7.71	7.98	10.86	7.37	18.23	24.0	-5.77	
	6185	47	2x996T	8.13	8.00	11.08	7.37	18.45	24.0	-5.55	
	6345	79	2x996T	8.08	8.24	11.17	7.37	18.54	24.0	-5.46	
6	6505	111	2x996T	7.67	8.34	11.03	6.87	17.90	24.0	-6.10	
	6665	143	2x996T	7.87	8.30	11.10	7.04	18.14	24.0	-5.86	
7	6825	175	2x996T	7.74	7.95	10.86	7.04	17.90	24.0	-6.10	
8	6985	207	2x996T	8.31	8.48	11.41	7.88	19.29	24.0	-4.71	

Table 7-19. MIMO 160MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power – LPI

160MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)			Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index						
					68						
					ANT1	ANT2	MIMO				
5	6025	15	2x996T	17.89	17.99	20.95	7.37	28.32	30.0	-1.68	
	6185	47	2x996T	17.86	17.99	20.93	7.37	28.31	30.0	-1.69	
	6345	79	2x996T	17.86	17.99	20.93	7.37	28.31	30.0	-1.69	
7	6665	143	2x996T	18.42	18.75	21.60	7.04	28.64	30.0	-1.36	

Table 7-20. MIMO 160MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power – SP

MIMO Maximum Conducted Output Power Measurements (4x996 Tones)

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)			Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index						
					69						
					ANT1	ANT2	MIMO				
5	6105	31	4x996T	10.28	10.36	13.33	7.37	20.70	24.0	-3.30	
	6265	63	4x996T	9.63	10.12	12.89	7.37	20.27	24.0	-3.73	
6	6425	95	4x996T	9.68	10.17	12.94	6.87	19.81	24.0	-4.19	
	6585	127	4x996T	9.53	10.30	12.94	7.04	19.98	24.0	-4.02	
7	6745	159	4x996T	9.76	10.18	12.98	7.04	20.02	24.0	-3.98	
	6905	191	4x996T	9.95	10.42	13.20	7.88	21.09	24.0	-2.91	

Table 7-21. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – LPI

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)			Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					RU Index						
					69						
					ANT1	ANT2	MIMO				
5	6105	31	4x996T	17.98	17.73	20.87	7.37	28.24	30.0	-1.76	
	6265	63	4x996T	17.91	17.99	20.96	7.37	28.33	30.0	-1.67	

Table 7-22. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – SP

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 73 of 278

MIMO Maximum Conducted Output Power Measurements (MRU)

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					MRU1			MRU5						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6105	31	3x996+484T	7.94	8.16	11.06	7.70	7.88	10.80	7.37	18.44	24.0	-5.56	
6	6425	95	3x996+484T	7.76	8.34	11.07	7.61	8.15	10.90	6.87	17.94	24.0	-6.06	
7	6585	127	3x996+484T	7.61	8.46	11.06	7.41	8.29	10.88	7.04	18.10	24.0	-5.90	
8	6905	191	3x996+484T	7.95	8.35	11.16	7.84	8.15	11.01	7.88	19.05	24.0	-4.95	

Table 7-23. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – 3*996+484T – LPI

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					MRU1			MRU5						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6105	31	3x996+484T	17.86	17.99	20.93	17.70	17.86	20.79	7.37	28.31	30.0	-1.69	

Table 7-24. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – 3*996+484T – SP

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					MRU1			MRU4						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6105	31	3x996T	8.13	8.39	11.27	8.27	8.42	11.36	7.37	18.73	24.0	-5.27	
6	6425	95	3x996T	7.66	8.27	10.99	7.84	8.47	11.18	6.87	18.04	24.0	-5.96	
7	6585	127	3x996T	7.96	8.35	11.17	7.62	8.10	10.87	7.04	18.21	24.0	-5.79	
8	6905	191	3x996T	8.13	8.49	11.33	7.94	8.37	11.17	7.88	19.21	24.0	-4.79	

Table 7-25. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – 3*996T– LPI

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					MRU1			MRU4						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6105	31	3x996T	17.55	17.80	20.69	17.27	17.52	20.41	7.37	28.06	30.0	-1.94	

Table 7-26. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – 3*996T– SP

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					MRU5			MRU7						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6105	31	2x996+484T	8.20	8.44	11.33	7.92	8.30	11.12	7.37	18.70	24.0	-5.30	
6	6425	95	2x996+484T	7.77	8.38	11.09	7.47	8.07	10.79	6.87	17.96	24.0	-6.04	
7	6585	127	2x996+484T	7.68	8.49	11.12	7.41	8.13	10.79	7.04	18.15	24.0	-5.85	
8	6905	191	2x996+484T	8.04	7.95	11.01	7.87	8.49	11.20	7.88	19.08	24.0	-4.92	

Table 7-27. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – 2*996+484T– LPI

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					MRU5			MRU7						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6105	31	2x996+484T	17.58	17.86	20.73	17.57	17.88	20.74	7.37	28.11	30.0	-1.89	

Table 7-28. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – 2*996+484T– SP

160MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					MRU1			MRU4						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6185	47	996+484T	5.99	6.48	9.25	6.07	6.49	9.30	7.37	16.67	24.0	-7.33	
6	6505	111	996+484T	5.74	6.38	9.09	5.81	6.49	9.17	6.87	16.04	24.0	-7.96	
7	6665	143	996+484T	5.53	6.04	8.80	5.69	6.24	8.98	7.04	16.02	24.0	-7.98	
8	6985	207	996+484T	5.60	6.10	8.87	5.78	6.22	9.02	7.88	16.90	24.0	-7.10	

Table 7-29. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power – 996+484T– LPI

160MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					MRU1			MRU4						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6025	15	996+484T	17.56	17.92	20.75	17.64	17.96	20.81	7.37	28.18	30.0	-1.82	
	6185	47	996+484T	17.61	17.86	20.75	17.72	17.92	20.83	7.37	28.20	30.0	-1.80	
	6345	79	996+484T	17.22	17.73	20.50	17.58	17.99	20.80	7.37	28.17	30.0	-1.83	
	6665	143	996+484T	19.38	19.65	22.52	19.59	19.88	22.75	7.04	29.79	30.0	-0.21	

Table 7-30. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power – 996+484T– SP

80MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dB]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					MRU1			MRU3						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6145	39	242+484T	3.47	3.93	6.72	3.37	3.79	6.59	7.37	14.09	24.0	-9.91	
6	6465	103	242+484T	3.18	3.99	6.62	3.01	3.99	6.54	6.87	13.48	24.0	-10.52	
7	6705	151	242+484T	3.09	3.73	6.43	3.02	3.63	6.35	7.04	13.47	24.0	-10.53	
8	6945	199	242+484T	3.48	3.99	6.75	3.43	3.96	6.71	7.88	14.64	24.0	-9.36	

Table 7-31. MIMO 80MHz BW 802.11be (UNII) Maximum Conducted Output Power – 484+242T– LPI

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80MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					MRU1		MRU2		MRU3					
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6145	39	242+484T	19.61	19.55	22.59	19.55	19.48	22.53	7.37	29.96	30.0	-0.04	
7	6705	151	242+484T	19.59	19.90	22.76	19.51	19.81	22.67	7.04	29.80	30.0	-0.20	

Table 7-32. MIMO 80MHz BW 802.11be (UNII) Maximum Conducted Output Power – 484+242T– SP

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					82			83						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6175	45	106+26T	-3.44	-3.32	-0.37	-3.42	-3.33	-0.36	7.37	7.01	24.0	-16.99	
6	6475	105	106+26T	-3.87	-3.18	-0.50	-3.86	-3.18	-0.49	6.87	6.37	24.0	-17.63	
7	6695	149	106+26T	-3.16	-3.44	-0.29	-3.17	-3.38	-0.27	7.04	6.77	24.0	-17.23	
8	6995	209	106+26T	-3.26	-3.01	-0.12	-3.34	-3.01	-0.16	7.88	7.76	24.0	-16.24	

Table 7-33. MIMO 20MHz BW 802.11be (UNII) Maximum Conducted Output Power – 106+26T – LPI

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index									
					82			83						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6175	45	106+26T	15.31	15.44	18.39	15.28	15.42	18.36	7.37	25.76	30.0	-4.24	
7	6695	149	106+26T	15.11	15.34	18.24	15.09	15.34	18.23	7.04	25.27	30.0	-4.73	

Table 7-34. MIMO 20MHz BW 802.11be (UNII) Maximum Conducted Output Power – 106+26T – SP

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index												
					70			71			72						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6175	45	52+26T	-6.02	-5.87	-2.93	-6.14	-5.95	-3.03	-5.99	-5.83	-2.90	7.37	4.47	24.0	-19.53	
6	6475	105	52+26T	-6.42	-5.73	-3.05	-6.52	-5.90	-3.19	-6.43	-5.85	-3.12	6.87	3.82	24.0	-20.18	
7	6695	149	52+26T	-5.56	-5.81	-2.87	-5.51	-5.76	-2.62	-5.56	-5.79	-2.66	7.04	4.41	24.0	-19.59	
8	6995	209	52+26T	-6.28	-6.07	-3.16	-6.41	-6.17	-3.28	-6.36	-6.08	-3.21	7.88	4.72	24.0	-19.28	

Table 7-35. MIMO 20MHz BW 802.11be (UNII) Maximum Conducted Output Power – 52+26T – LPI

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					MRU Index												
					70			71			72						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
5	6175	45	52+26T	11.43	11.64	14.55	11.52	11.68	14.61	11.51	11.66	14.59	7.37	21.98	30.0	-8.02	
7	6695	149	52+26T	11.54	11.57	14.56	11.61	11.65	14.64	11.59	11.63	14.62	7.04	21.68	30.0	-8.32	

Table 7-36. MIMO 20MHz BW 802.11be (UNII) Maximum Conducted Output Power – 52+26T– SP

Sample MIMO Calculation:

At 5935MHz in 802.11be (20MHz BW – 26 Tones) LPI mode, the average conducted output power was measured to be -9.24 dBm for Antenna-1 and -9.09 dBm for Antenna-2.

$$\text{Antenna 1} + \text{Antenna 2} = \text{MIMO}$$

$$(-9.24 \text{ dBm} + -9.09 \text{ dBm}) = (0.119 \text{ mW} + 0.123 \text{ mW}) = 0.242 \text{ mW} = -6.15 \text{ dBm}$$

Sample Directional Gain Calculation:

Per ANSI C63.10-2013 Section 14.4.3, the directional gain is calculated using the following formula, where GN is the gain of the nth antenna and NANT, the total number of antennas used.

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] \text{ dBi}$$

Sample e.i.r.p. Calculation:

At 5935MHz in 802.11be (20MHz BW – 26 Tones) LPI mode, the average MIMO conducted power was calculated to be -6.15 dBm with directional gain of 7.37 dBi.

$$\text{e.i.r.p. (dBm)} = \text{Conducted Power (dBm)} + \text{Ant gain (dBi)}$$

$$-6.15 \text{ dBm} + 7.37 \text{ dBi} = 1.28 \text{ dBm}$$

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7.4 Maximum Power Spectral Density

Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013, and at the appropriate frequencies. Method SA-1, as defined in ANSI C63.10-2013, was used to measure the power spectral density.

In the 5.925-7.125 GHz bands, the maximum power spectral density must not exceed -1 dBm e.i.r.p. in any 1-megahertz band. For client devices, except for fixed client devices as defined in this subpart, operating under the control of a standard power access point in 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum power spectral density must not exceed 17 dBm/MHz e.i.r.p.

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.2.2

ANSI C63.10-2013 – Section 14.3.2.2 Measure-and-Sum Technique

Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. RBW = 1MHz
4. VBW = 3MHz
5. Number of sweep points $\geq 2 \times (\text{span}/\text{RBW})$
6. Sweep time = auto
7. Detector = power averaging (RMS)
8. Trigger was set to free run for all modes
9. Trace was averaged over 100 sweeps
10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

Test Setup

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



Figure 7-3. Test Instrument & Measurement Setup

Test Notes

None

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MIMO Power Spectral Density Measurements

	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Directional Gain [dBi]	DCCF	EIRP [dBm]	Max EIRP [dBm]	Margin [dB]
Band 5	5935	2	be (20MHz)	-11.49	-11.60	-8.53	7.37	0.00	-1.16	-1	-0.16
	6175	45	be (20MHz)	-12.08	-11.43	-8.73	7.37	0.00	-1.36	-1	-0.36
	6415	93	be (20MHz)	-12.07	-11.67	-8.85	7.37	0.00	-1.48	-1	-0.48
	5965	3	be (40MHz)	-12.17	-11.51	-8.82	7.37	0.00	-1.45	-1	-0.45
	6165	43	be (40MHz)	-11.95	-11.54	-8.73	7.37	0.00	-1.36	-1	-0.36
	6405	91	be (40MHz)	-11.94	-11.52	-8.71	7.37	0.00	-1.34	-1	-0.34
	5985	7	be (80MHz)	-12.42	-11.59	-8.97	7.37	0.00	-1.60	-1	-0.60
	6145	39	be (80MHz)	-12.72	-11.62	-9.13	7.37	0.00	-1.75	-1	-0.75
	6385	87	be (80MHz)	-12.02	-11.58	-8.78	7.37	0.00	-1.41	-1	-0.41
	6025	15	be (160MHz)	-12.71	-12.32	-9.50	7.37	0.00	-2.13	-1	-1.13
	6185	47	be (160MHz)	-12.62	-12.05	-9.31	7.37	0.00	-1.94	-1	-0.94
6345	79	be (160MHz)	-12.20	-11.66	-8.91	7.37	0.00	-1.54	-1	-0.54	
6105	31	be (320MHz)	-12.13	-12.15	-9.13	7.37	0.00	-1.76	-1	-0.76	
6265	63	be (320MHz)	-11.43	-11.55	-8.48	7.37	0.00	-1.10	-1	-0.10	
Band 6	6435	97	be (20MHz)	-12.16	-11.80	-8.97	6.87	0.00	-2.10	-1	-1.10
	6475	105	be (20MHz)	-12.23	-11.73	-8.96	6.87	0.00	-2.09	-1	-1.09
	6515	113	be (20MHz)	-12.25	-11.52	-8.86	6.87	0.00	-1.99	-1	-0.99
	6445	99	be (40MHz)	-12.24	-11.74	-8.97	6.87	0.00	-2.10	-1	-1.10
	6485	107	be (40MHz)	-12.46	-11.75	-9.08	6.87	0.00	-2.21	-1	-1.21
	6525	115	be (40MHz)	-11.99	-11.71	-8.84	6.87	0.00	-1.97	-1	-0.97
	6465	103	be (80MHz)	-12.35	-12.14	-9.23	6.87	0.00	-2.36	-1	-1.36
6505	111	be (160MHz)	-12.69	-12.20	-9.43	6.87	0.00	-2.56	-1	-1.56	
Band 5/6/7	6425	95	be (320MHz)	-11.43	-11.40	-8.41	6.87	0.00	-1.54	-1	-0.54
Band 7	6695	117	be (20MHz)	-12.14	-11.93	-9.02	7.04	0.00	-1.98	-1	-0.98
	6695	149	be (20MHz)	-12.42	-11.89	-9.13	7.04	0.00	-2.10	-1	-1.10
	6875	185	be (20MHz)	-12.28	-11.26	-8.73	7.04	0.00	-1.69	-1	-0.69
	6565	123	be (40MHz)	-12.34	-11.67	-8.98	7.04	0.00	-1.94	-1	-0.94
	6725	155	be (40MHz)	-12.16	-11.43	-8.77	7.04	0.00	-1.73	-1	-0.73
	6845	179	be (40MHz)	-11.96	-11.50	-8.71	7.04	0.00	-1.67	-1	-0.67
	6545	119	be (80MHz)	-12.55	-12.14	-9.33	7.04	0.00	-2.29	-1	-1.29
	6705	151	be (80MHz)	-12.34	-12.02	-9.17	7.04	0.00	-2.13	-1	-1.13
	6865	183	be (80MHz)	-11.93	-11.92	-8.91	7.04	0.00	-1.88	-1	-0.88
	6665	143	be (160MHz)	-12.60	-13.24	-9.89	7.04	0.00	-2.85	-1	-1.85
6825	175	be (160MHz)	-11.66	-11.37	-8.51	7.04	0.00	-1.47	-1	-0.47	
Band 6/7	6585	127	be (320MHz)	-11.68	-11.29	-8.47	7.04	0.00	-1.43	-1	-0.43
Band 7/8	6745	159	be (320MHz)	-11.86	-11.79	-8.81	7.04	0.00	-1.78	-1	-0.78
Band 8	6895	189	be (20MHz)	-12.54	-11.59	-9.03	7.88	0.00	-1.14	-1	-0.14
	6995	209	be (20MHz)	-12.52	-11.64	-9.05	7.88	0.00	-1.16	-1	-0.16
	7115	233	be (20MHz)	-12.52	-11.69	-9.08	7.88	0.00	-1.19	-1	-0.19
	6885	187	be (40MHz)	-12.47	-11.69	-9.05	7.88	0.00	-1.17	-1	-0.17
	6965	211	be (40MHz)	-12.52	-12.07	-9.28	7.88	0.00	-1.39	-1	-0.39
	7085	227	be (40MHz)	-12.29	-12.25	-9.26	7.88	0.00	-1.38	-1	-0.38
	6945	199	be (80MHz)	-12.29	-11.95	-9.10	7.88	0.00	-1.22	-1	-0.22
	7025	215	be (80MHz)	-12.43	-11.88	-9.13	7.88	0.00	-1.25	-1	-0.25
6985	207	be (160MHz)	-13.88	-12.77	-10.28	7.88	0.00	-2.40	-1	-1.40	
Band 7/8	6985	191	be (320MHz)	-12.24	-11.64	-8.92	7.88	0.00	-1.03	-1	-0.03

Table 7-37. MIMO e.i.r.p. Conducted Power Spectral Density Measurements (26 Tones) - LPI

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	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Directional Gain [dBi]	DCCF	EIRP [dBm]	Max EIRP [dBm]	Margin [dB]
Band 5	5935	2	be (20MHz)	-4.65	-4.49	-1.56	7.37	0.00	5.81	17	-11.19
	6175	45	be (20MHz)	6.07	6.70	9.40	7.37	0.00	16.77	17	-0.23
	6415	93	be (20MHz)	5.71	5.86	8.79	7.37	0.00	16.17	17	-0.83
	5965	3	be (40MHz)	-4.15	-4.00	-1.06	7.37	0.00	6.31	17	-10.69
	6165	43	be (40MHz)	6.46	6.63	9.56	7.37	0.00	16.93	17	-0.07
	6405	91	be (40MHz)	5.80	6.35	9.09	7.37	0.00	16.47	17	-0.53
	5985	7	be (80MHz)	-4.45	-4.34	-1.38	7.37	0.00	5.99	17	-11.01
	6145	39	be (80MHz)	6.36	6.57	9.48	7.37	0.00	16.85	17	-0.15
	6385	87	be (80MHz)	6.17	6.69	9.45	7.37	0.00	16.82	17	-0.18
	6025	15	be (160MHz)	-5.27	-5.67	-2.45	7.37	0.00	4.92	17	-12.08
Band 7	6185	47	be (160MHz)	6.22	6.36	9.30	7.37	0.00	16.67	17	-0.33
	6345	79	be (160MHz)	5.83	6.52	9.20	7.37	0.00	16.57	17	-0.43
	6105	31	be (320MHz)	6.22	5.76	9.01	7.37	0.00	16.38	17	-0.62
	6695	117	be (20MHz)	6.34	6.65	9.51	7.04	0.00	16.55	17	-0.45
	6695	149	be (20MHz)	5.07	5.45	8.27	7.04	0.00	15.31	17	-1.69
	6855	181	be (20MHz)	5.72	6.06	8.90	7.04	0.00	15.94	17	-1.06
	6565	123	be (40MHz)	5.72	6.48	9.13	7.04	0.00	16.16	17	-0.84
	6725	155	be (40MHz)	5.16	5.68	8.44	7.04	0.00	15.48	17	-1.52
	6845	179	be (40MHz)	6.14	6.16	9.16	7.04	0.00	16.20	17	-0.80
	6625	135	be (80MHz)	5.61	6.37	9.01	7.04	0.00	16.05	17	-0.95
6705	151	be (80MHz)	5.86	5.71	8.79	7.04	0.00	15.83	17	-1.17	
6785	167	be (80MHz)	5.58	5.19	8.40	7.04	0.00	15.44	17	-1.56	
6665	143	be (160MHz)	6.60	5.96	9.30	7.04	0.00	16.34	17	-0.66	

Table 7-38. MIMO e.i.r.p. Conducted Power Spectral Density Measurements (26 Tones) - SP

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 78 of 278

	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Directional Gain [dBi]	DCCF	EIRP [dBm]	Max EIRP [dBm]	Margin [dB]
Band 5	5935	2	be (20MHz)	-11.74	-11.49	-8.60	7.37	0.00	-1.23	-1	-0.23
	6175	45	be (20MHz)	-11.88	-11.65	-8.75	7.37	0.00	-1.38	-1	-0.38
	6415	93	be (20MHz)	-12.07	-11.76	-8.90	7.37	0.00	-1.53	-1	-0.53
	5965	3	be (40MHz)	-11.87	-12.08	-8.96	7.37	0.12	-1.47	-1	-0.47
	6165	43	be (40MHz)	-11.72	-11.46	-8.58	7.37	0.12	-1.09	-1	-0.09
	6405	91	be (40MHz)	-11.84	-11.39	-8.60	7.37	0.12	-1.11	-1	-0.11
	5985	7	be (80MHz)	-12.26	-12.02	-9.13	7.37	0.17	-1.59	-1	-0.59
	6145	39	be (80MHz)	-12.67	-12.14	-9.39	7.37	0.17	-1.84	-1	-0.84
	6385	87	be (80MHz)	-12.41	-11.82	-9.09	7.37	0.17	-1.55	-1	-0.55
	6025	15	be (160MHz)	-12.39	-11.89	-9.12	7.37	0.19	-1.56	-1	-0.56
	6185	47	be (160MHz)	-12.46	-11.98	-9.20	7.37	0.19	-1.64	-1	-0.64
	6345	79	be (160MHz)	-12.18	-11.42	-8.77	7.37	0.19	-1.21	-1	-0.21
	6105	31	be (320MHz)	-12.05	-11.72	-8.87	7.37	0.00	-1.50	-1	-0.50
6265	63	be (320MHz)	-12.31	-11.90	-9.09	7.37	0.00	-1.72	-1	-0.72	
Band 6	6435	97	be (20MHz)	-11.92	-11.78	-8.84	6.87	0.00	-1.97	-1	-0.97
	6475	105	be (20MHz)	-12.13	-11.85	-8.98	6.87	0.00	-2.11	-1	-1.11
	6515	113	be (20MHz)	-12.20	-11.61	-8.88	6.87	0.00	-2.02	-1	-1.02
	6445	99	be (40MHz)	-12.12	-11.59	-8.83	6.87	0.12	-1.85	-1	-0.85
	6485	107	be (40MHz)	-12.04	-11.45	-8.72	6.87	0.12	-1.74	-1	-0.74
	6525	115	be (40MHz)	-11.88	-11.61	-8.73	6.87	0.12	-1.74	-1	-0.74
	6465	103	be (80MHz)	-12.20	-11.96	-9.07	6.87	0.17	-2.03	-1	-1.03
	6505	111	be (160MHz)	-12.37	-12.23	-9.29	6.87	0.19	-2.23	-1	-1.23
Band 5/6/7	6425	95	be (320MHz)	-12.12	-11.92	-9.01	6.87	0.00	-2.14	-1	-1.14
Band 7	6695	117	be (20MHz)	-12.02	-11.13	-8.54	7.04	0.00	-1.50	-1	-0.50
	6695	149	be (20MHz)	-11.95	-12.25	-9.09	7.04	0.00	-2.05	-1	-1.05
	6875	185	be (20MHz)	-11.93	-11.64	-8.77	7.04	0.00	-1.73	-1	-0.73
	6565	123	be (40MHz)	-12.29	-11.49	-8.86	7.04	0.12	-1.70	-1	-0.70
	6725	155	be (40MHz)	-12.20	-12.07	-9.12	7.04	0.12	-1.96	-1	-0.96
	6845	179	be (40MHz)	-11.84	-12.23	-9.02	7.04	0.12	-1.86	-1	-0.86
	6545	119	be (80MHz)	-12.65	-11.81	-9.20	7.04	0.17	-1.99	-1	-0.99
	6705	151	be (80MHz)	-12.41	-12.22	-9.30	7.04	0.17	-2.10	-1	-1.10
	6865	183	be (80MHz)	-12.33	-12.12	-9.21	7.04	0.17	-2.00	-1	-1.00
	6665	143	be (160MHz)	-12.51	-11.44	-8.93	7.04	0.19	-1.70	-1	-0.70
6825	175	be (160MHz)	-12.42	-12.03	-9.21	7.04	0.19	-1.98	-1	-0.98	
Band 6/7	6585	127	be (320MHz)	-12.66	-11.43	-8.99	7.04	0.00	-1.95	-1	-0.95
Band 7/8	6745	159	be (320MHz)	-12.39	-12.13	-9.24	7.04	0.00	-2.21	-1	-1.21
Band 8	6895	189	be (20MHz)	-12.29	-11.71	-8.98	7.88	0.00	-1.10	-1	-0.10
	6995	209	be (20MHz)	-12.29	-12.00	-9.13	7.88	0.00	-1.25	-1	-0.25
	7115	233	be (20MHz)	-12.39	-11.52	-8.93	7.88	0.00	-1.04	-1	-0.04
	6885	187	be (40MHz)	-12.07	-12.29	-9.16	7.88	0.12	-1.16	-1	-0.16
	6965	211	be (40MHz)	-12.12	-12.24	-9.17	7.88	0.12	-1.16	-1	-0.16
	7085	227	be (40MHz)	-12.42	-12.22	-9.31	7.88	0.12	-1.30	-1	-0.30
	6945	199	be (80MHz)	-12.03	-12.41	-9.20	7.88	0.17	-1.15	-1	-0.15
	7025	215	be (80MHz)	-12.16	-12.39	-9.26	7.88	0.17	-1.21	-1	-0.21
6985	207	be (160MHz)	-12.12	-12.19	-9.15	7.88	0.19	-1.07	-1	-0.07	
Band 7/8	6905	191	be (320MHz)	-12.61	-12.22	-9.40	7.88	0.00	-1.51	-1	-0.51

Table 7-39. MIMO e.i.r.p. Conducted Power Spectral Density Measurements (Full Tones) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 79 of 278

	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Directional Gain [dBi]	DCCF	EIRP [dBm]	Max EIRP [dBm]	Margin [dB]
Band 5	5935	2	be (20MHz)	-5.59	-5.52	-2.55	7.37	0.00	4.83	17	-12.17
	6175	45	be (20MHz)	5.82	6.66	9.27	7.37	0.00	16.64	17	-0.36
	6415	93	be (20MHz)	6.28	6.66	9.49	7.37	0.00	16.86	17	-0.14
	5965	3	be (40MHz)	2.67	2.90	5.80	7.37	0.12	13.17	17	-3.83
	6165	43	be (40MHz)	4.68	5.30	8.01	7.37	0.12	15.39	17	-1.61
	6405	91	be (40MHz)	2.70	3.15	5.94	7.37	0.12	13.31	17	-3.69
	5985	7	be (80MHz)	2.07	1.50	4.80	7.37	0.17	12.17	17	-4.83
	6145	39	be (80MHz)	1.68	1.14	4.43	7.37	0.17	11.80	17	-5.20
	6385	87	be (80MHz)	1.68	1.16	4.44	7.37	0.17	11.81	17	-5.19
	6025	15	be (160MHz)	-1.96	-1.49	1.29	7.37	0.19	8.66	17	-8.34
6185	47	be (160MHz)	-1.44	-0.90	1.85	7.37	0.19	9.22	17	-7.78	
6345	79	be (160MHz)	-2.55	-2.42	0.52	7.37	0.19	7.89	17	-9.11	
6105	31	be (320MHz)	-3.98	-4.45	-1.20	7.37	0.00	6.17	17	-10.83	
Band 7	6695	117	be (20MHz)	6.00	6.75	9.40	7.04	0.00	16.44	17	-0.56
	6695	149	be (20MHz)	6.44	6.70	9.58	7.04	0.00	16.62	17	-0.38
	6855	181	be (20MHz)	6.53	6.24	9.40	7.04	0.00	16.43	17	-0.57
	6565	123	be (40MHz)	2.85	3.35	6.12	7.04	0.12	13.15	17	-3.85
	6725	155	be (40MHz)	3.84	4.66	7.28	7.04	0.12	14.32	17	-2.68
	6845	179	be (40MHz)	3.48	3.61	6.56	7.04	0.12	13.60	17	-3.40
	6625	135	be (80MHz)	1.80	1.65	4.73	7.04	0.17	11.77	17	-5.23
	6705	151	be (80MHz)	1.18	1.66	4.43	7.04	0.17	11.47	17	-5.53
	6785	167	be (80MHz)	1.33	1.79	4.58	7.04	0.17	11.62	17	-5.38
	6665	143	be (160MHz)	-2.15	-2.90	0.50	7.04	0.19	7.54	17	-9.46

Table 7-40. MIMO e.i.r.p. Conducted Power Spectral Density Measurements (Full Tones) - SP

	Frequency [MHz]	Channel	802.11 MODE	MRU Cases	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Directional Gain [dBi]	DCCF	EIRP [dBm]	Max EIRP [dBm]	Margin [dB]
Band 5	6145	39	be (80MHz)	484+242T	-12.24	-11.78	-8.99	7.37	0.13	-1.49	-1	-0.49
	6185	47	be (160MHz)	996+484T	-11.99	-11.79	-8.88	7.37	0.15	-1.35	-1	-0.35
	6105	31	be (320MHz)	3x996+484T	-13.04	-13.15	-10.09	7.37	0.22	-2.49	-1	-1.49
	6105	31	be (320MHz)	3x996T	-12.15	-12.16	-9.14	7.37	0.16	-1.61	-1	-0.61
	6105	31	be (320MHz)	2x996+484T	-11.95	-11.65	-8.79	7.37	0.18	-1.24	-1	-0.24
Band 6	6465	103	be (80MHz)	484+242T	-12.19	-12.28	-9.22	6.87	0.13	-2.23	-1	-1.23
	6505	111	be (160MHz)	996+484T	-11.99	-11.50	-8.72	6.87	0.15	-1.71	-1	-0.71
Band 5/6/7	6425	95	be (320MHz)	3x996+484T	-12.84	-12.42	-9.62	6.87	0.22	-2.53	-1	-1.53
	6425	95	be (320MHz)	3x996T	-11.80	-11.64	-8.71	6.87	0.16	-1.68	-1	-0.68
	6425	95	be (320MHz)	2x996+484T	-12.08	-11.54	-8.79	6.87	0.18	-1.74	-1	-0.74
Band 7	6705	151	be (80MHz)	484+242T	-12.05	-11.52	-8.76	7.04	0.13	-1.60	-1	-0.60
	6665	143	be (160MHz)	996+484T	-12.10	-11.83	-8.95	7.04	0.15	-1.77	-1	-0.77
Band 7/8	6745	159	be (320MHz)	3x996+484T	-13.39	-11.93	-10.14	7.04	0.22	-2.88	-1	-1.88
	6745	159	be (320MHz)	3x996T	-12.46	-11.89	-9.16	7.04	0.16	-1.96	-1	-0.96
	6745	159	be (320MHz)	2x996+484T	-11.82	-11.79	-8.80	7.04	0.18	-1.58	-1	-0.58
Band 8	6945	199	be (80MHz)	484+242T	-12.68	-12.64	-9.65	7.88	0.13	-1.64	-1	-0.64
	6985	207	be (160MHz)	996+484T	-12.21	-12.59	-9.39	7.88	0.15	-1.35	-1	-0.35
Band 7/8	6905	191	be (320MHz)	3x996+484T	-13.08	-13.55	-10.30	7.88	0.22	-2.19	-1	-1.19
	6905	191	be (320MHz)	3x996T	-13.18	-12.88	-10.02	7.88	0.16	-1.98	-1	-0.98
	6905	191	be (320MHz)	2x996+484T	-12.09	-12.65	-9.35	7.88	0.18	-1.29	-1	-0.29

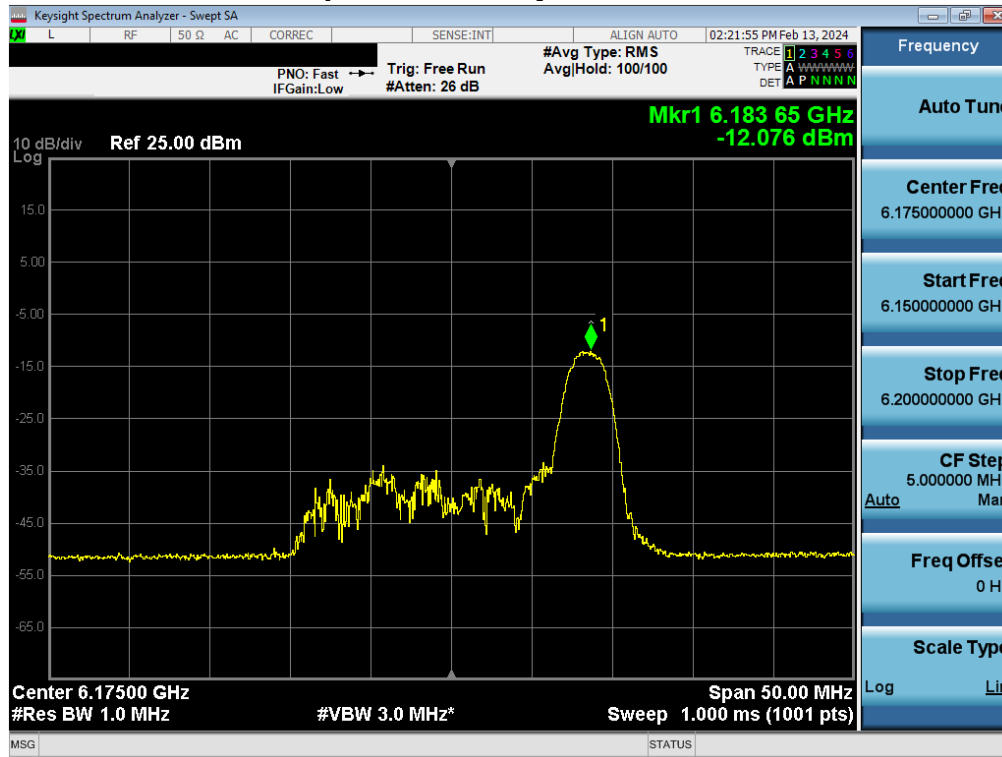
Table 7-41. MIMO e.i.r.p. Conducted Power Spectral Density Measurements (MRU) - LPI

	Frequency [MHz]	Channel	802.11 MODE	MRU Cases	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Directional Gain [dBi]	DCCF	EIRP [dBm]	Max EIRP [dBm]	Margin [dB]
Band 5	6145	39	be (80MHz)	484+242T	2.86	3.07	5.98	7.37	0.13	13.48	17	-3.52
	6185	47	be (160MHz)	996+484T	-1.03	-1.17	1.91	7.37	0.15	9.43	17	-7.57
	6105	31	be (320MHz)	3x996+484T	-3.65	-3.75	-0.69	7.37	0.22	6.90	17	-10.10
	6105	31	be (320MHz)	3x996T	-3.56	-4.15	-0.83	7.37	0.16	6.70	17	-10.30
	6105	31	be (320MHz)	2x996+484T	-2.63	-2.91	0.25	7.37	0.18	7.80	17	-9.20
Band 7	6705	151	be (80MHz)	484+242T	2.90	3.29	6.11	7.04	0.13	13.28	17	-3.72
	6665	143	be (160MHz)	996+484T	0.05	0.27	3.17	7.04	0.15	10.36	17	-6.64

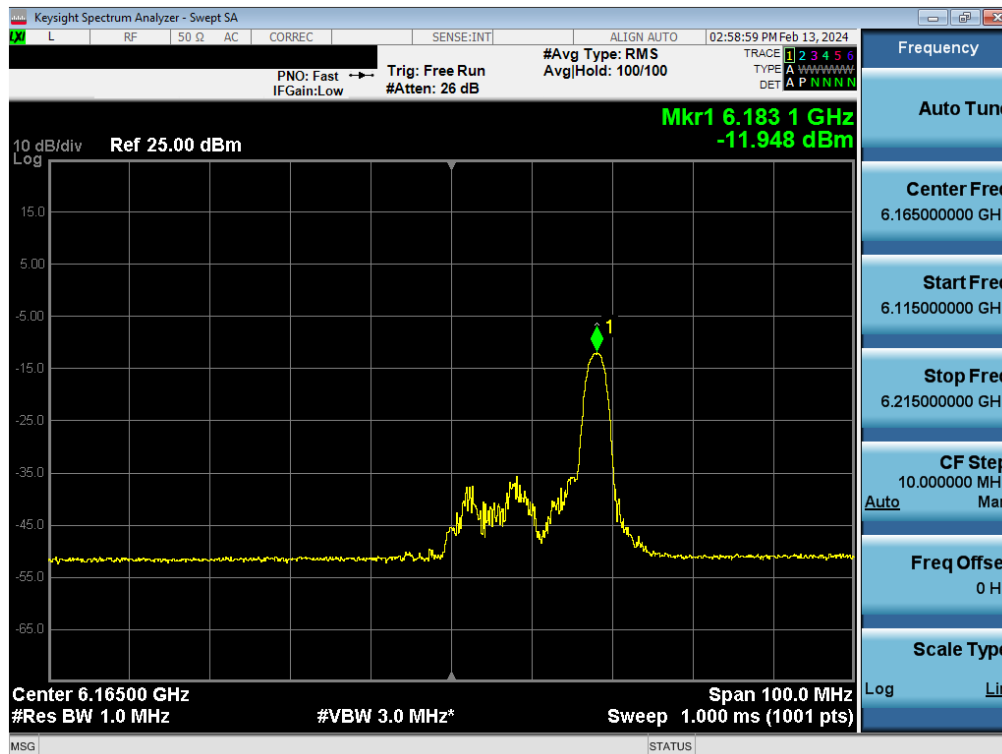
Table 7-42. MIMO e.i.r.p. Conducted Power Spectral Density Measurements (MRU) - SP

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 80 of 278

7.4.1 MIMO Antenna-1 Power Spectral Density Measurements

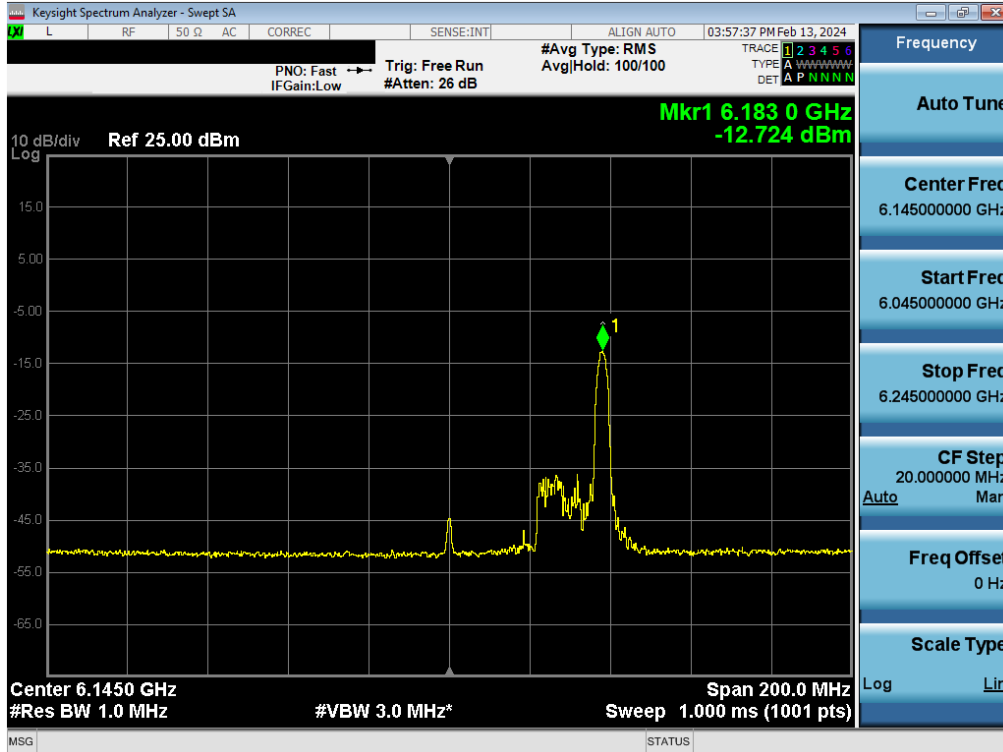


Plot 7-83. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (26 Tones) (UNII Band 5) – Ch. 45) - LPI

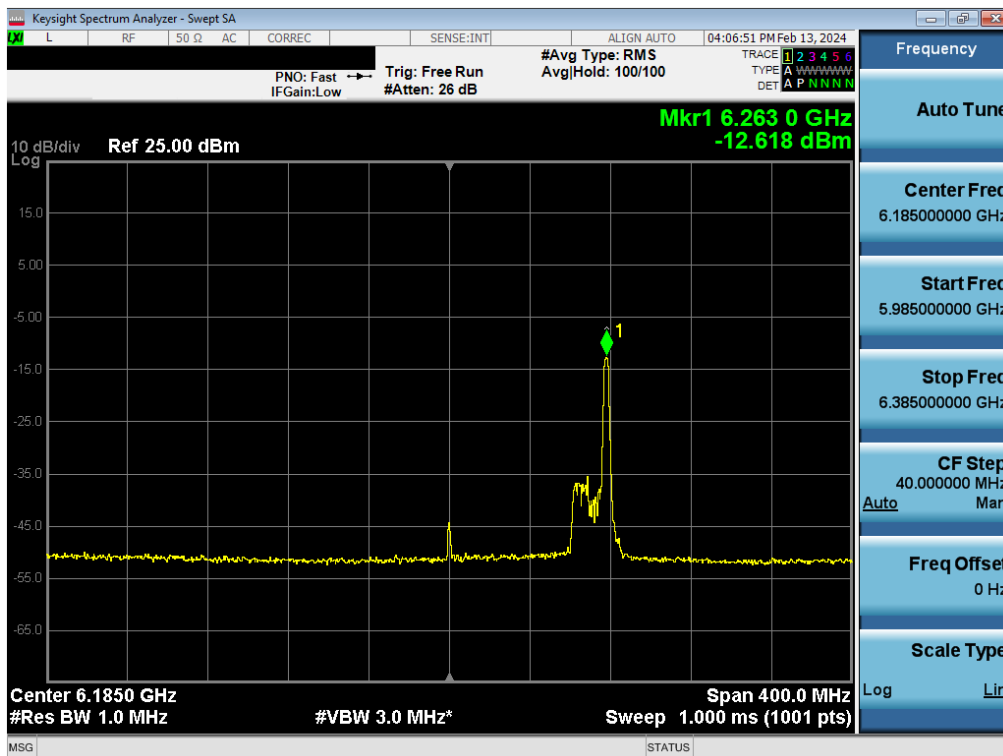


Plot 7-84. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11be (26 Tones) (UNII Band 5) – Ch. 43) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 81 of 278

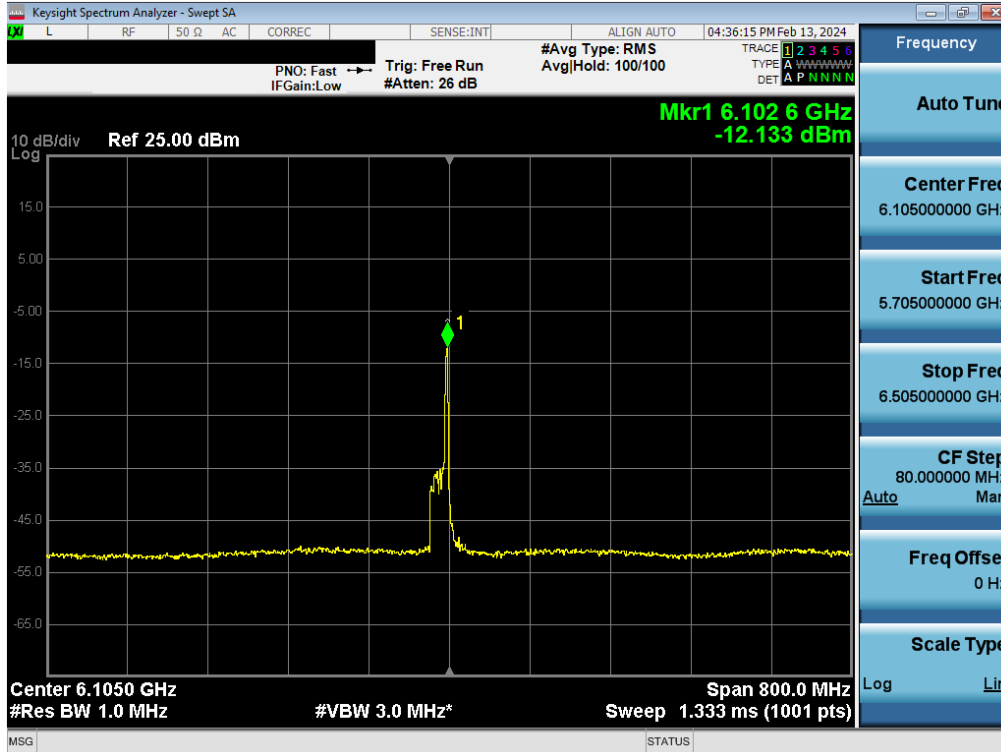


Plot 7-85. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11be (26 Tones) (UNII Band 5) – Ch. 39) - LPI

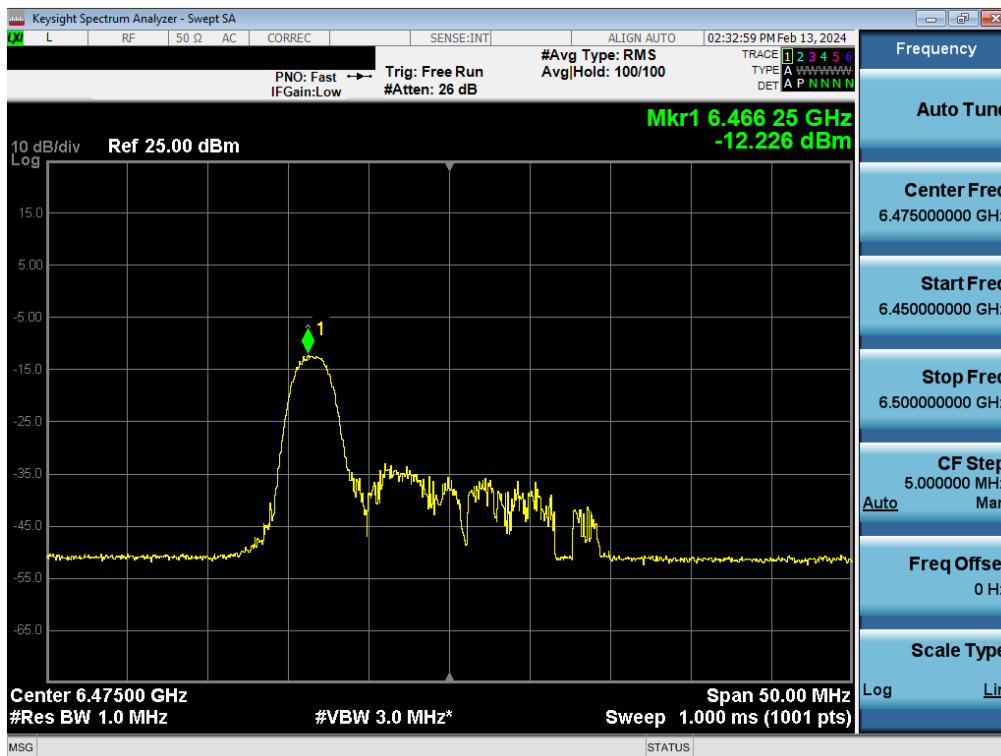


Plot 7-86. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11be (26 Tones) (UNII Band 5) – Ch. 47) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 82 of 278

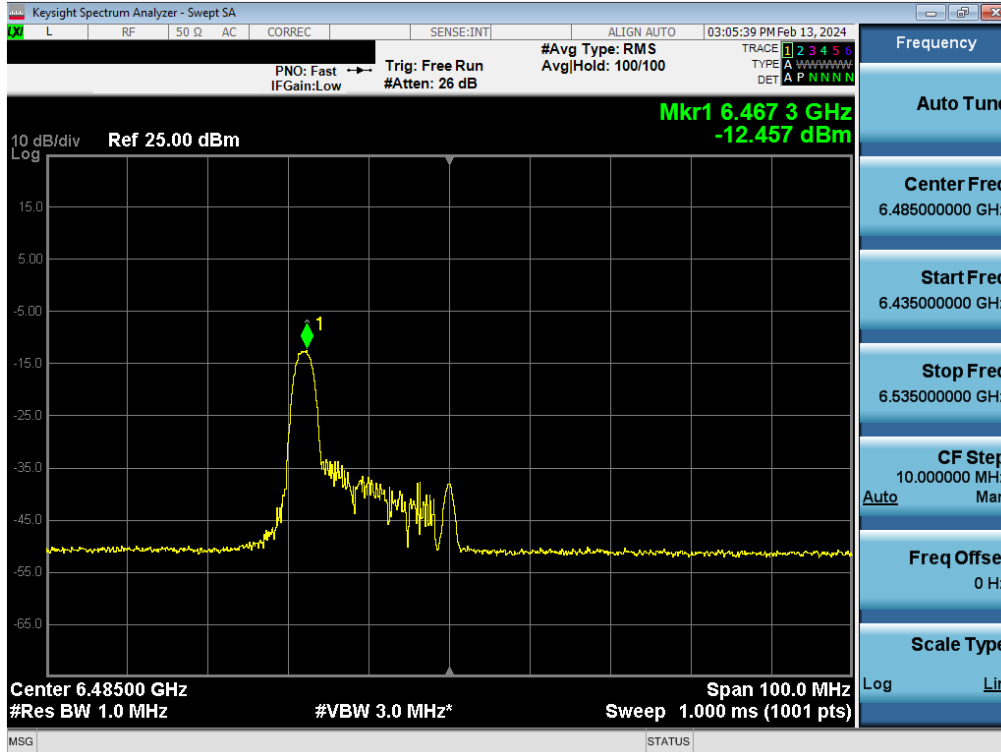


Plot 7-87. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (26 Tones) (UNII Band 5) – Ch. 31) - LPI

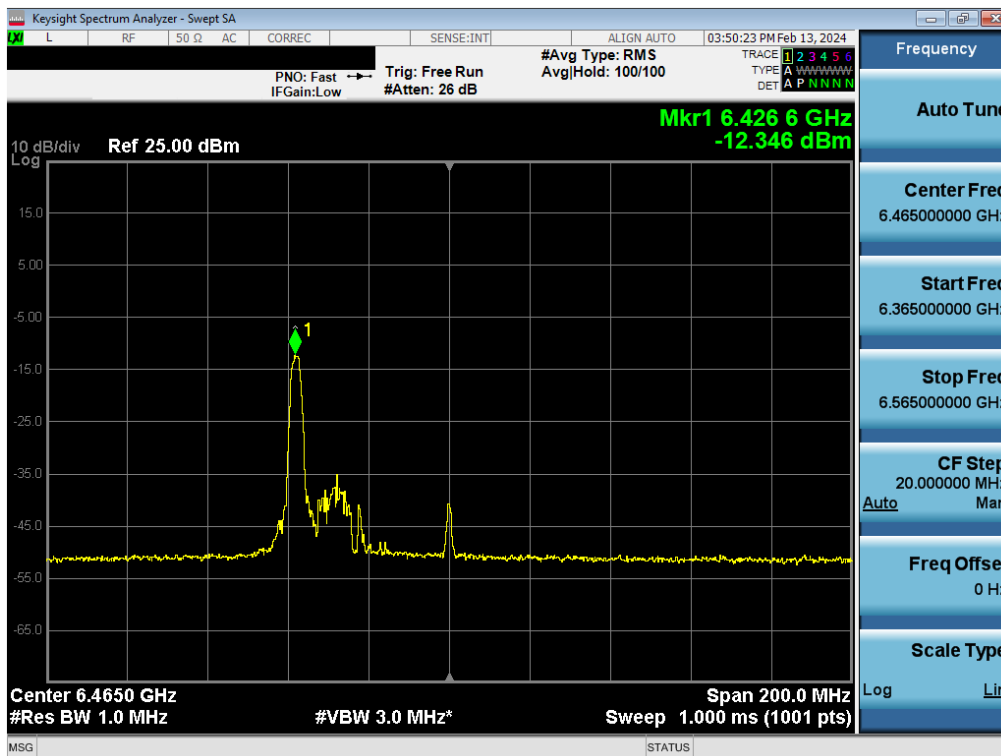


Plot 7-88. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (26 Tones) (UNII Band 6) – Ch. 105) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 83 of 278

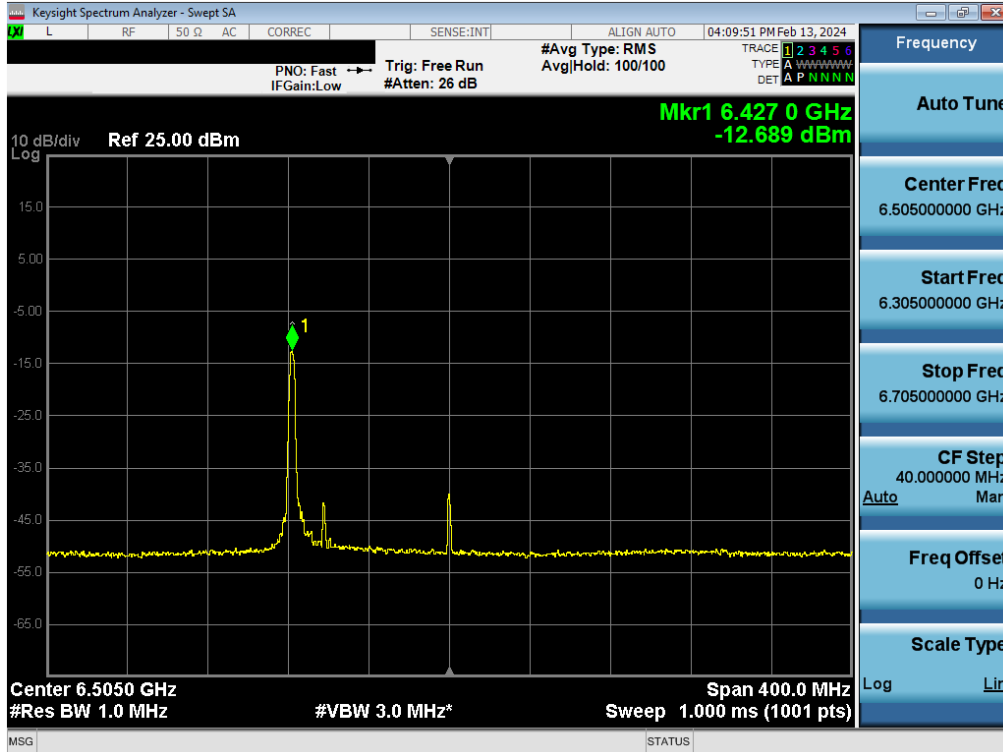


Plot 7-89. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11be (26 Tones) (UNII Band 6) – Ch. 107) - LPI

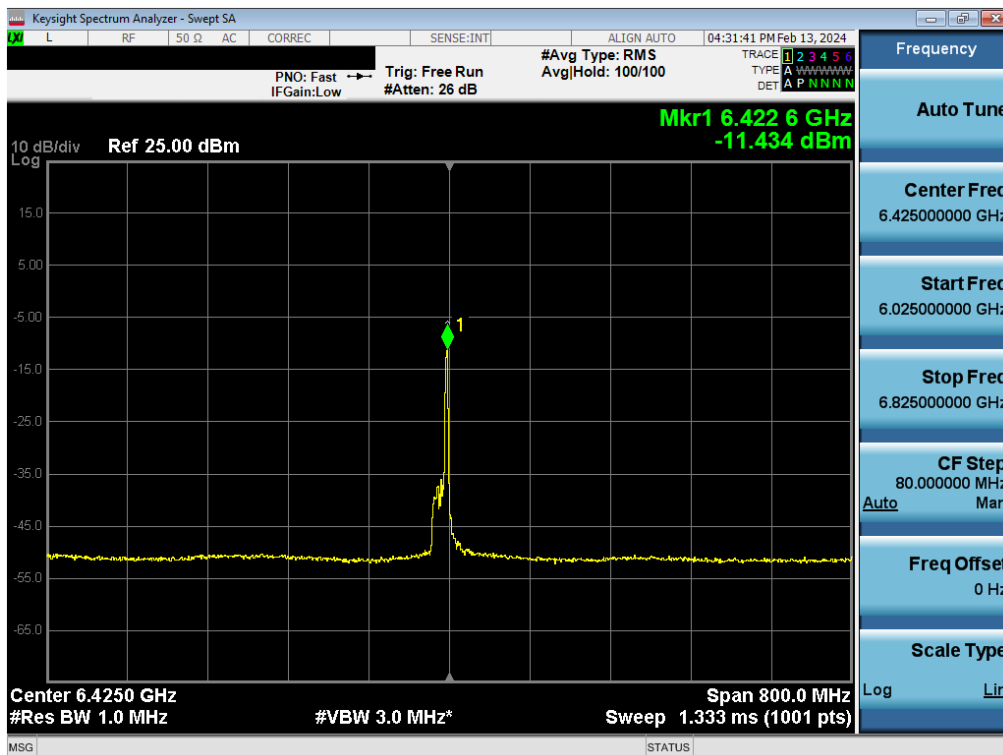


Plot 7-90. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11be (26 Tones) (UNII Band 6) – Ch. 103) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 84 of 278

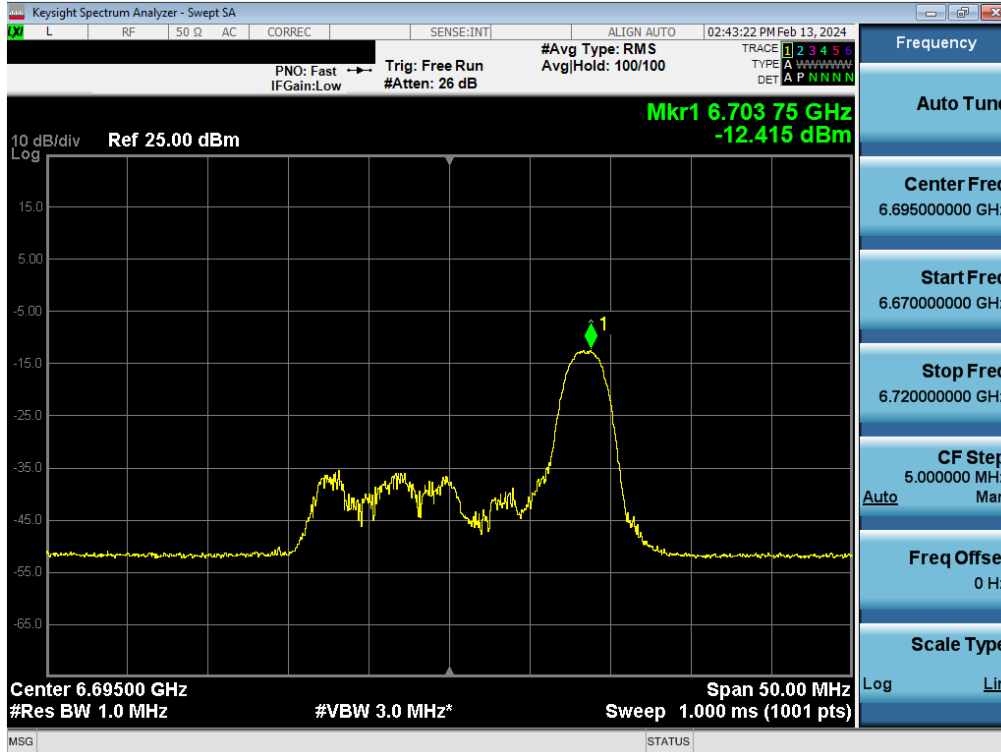


Plot 7-91. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11be (26 Tones) (UNII Band 6) – Ch. 111) - LPI

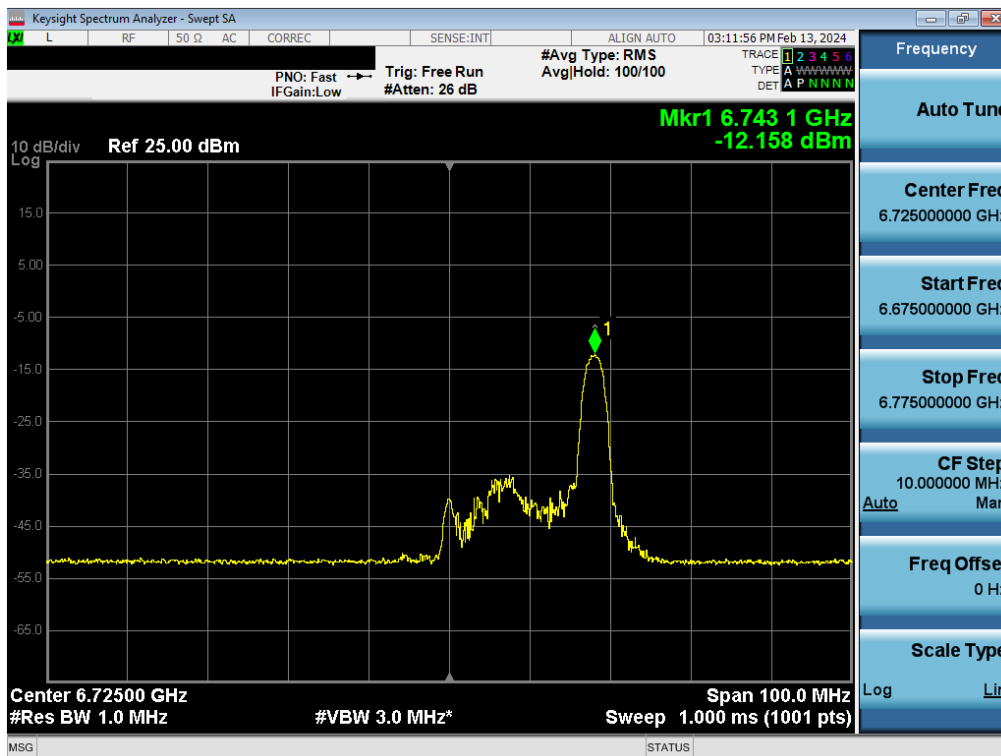


Plot 7-92. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (26 Tones) (UNII Band 6) – Ch. 95) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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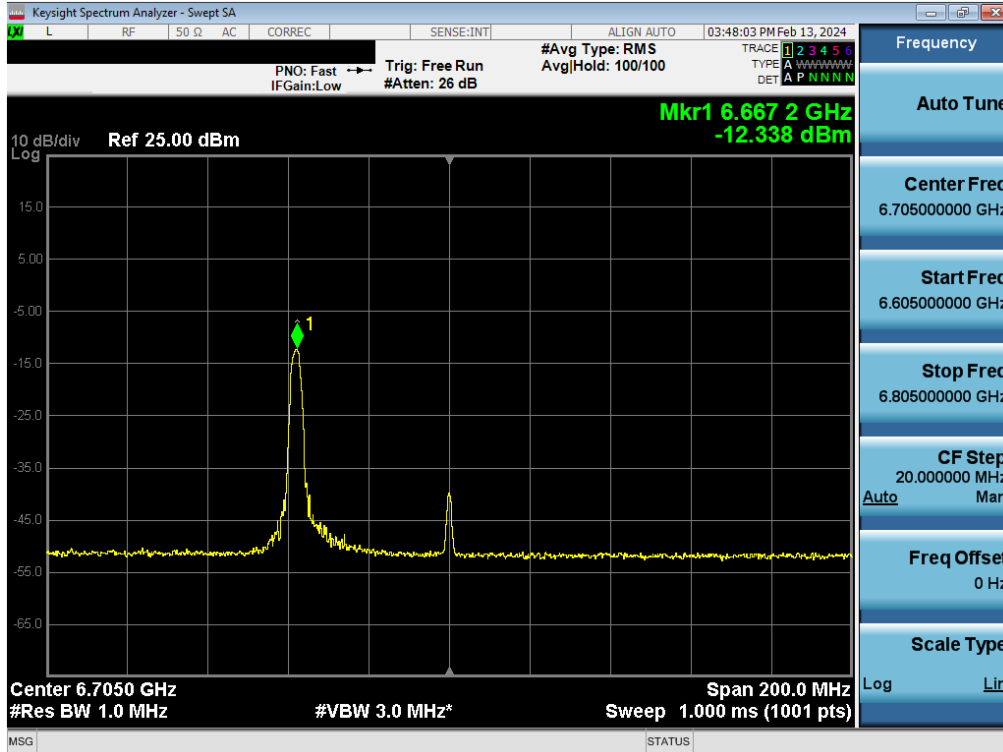


Plot 7-93. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (26 Tones) (UNII Band 7) – Ch. 149) - LPI

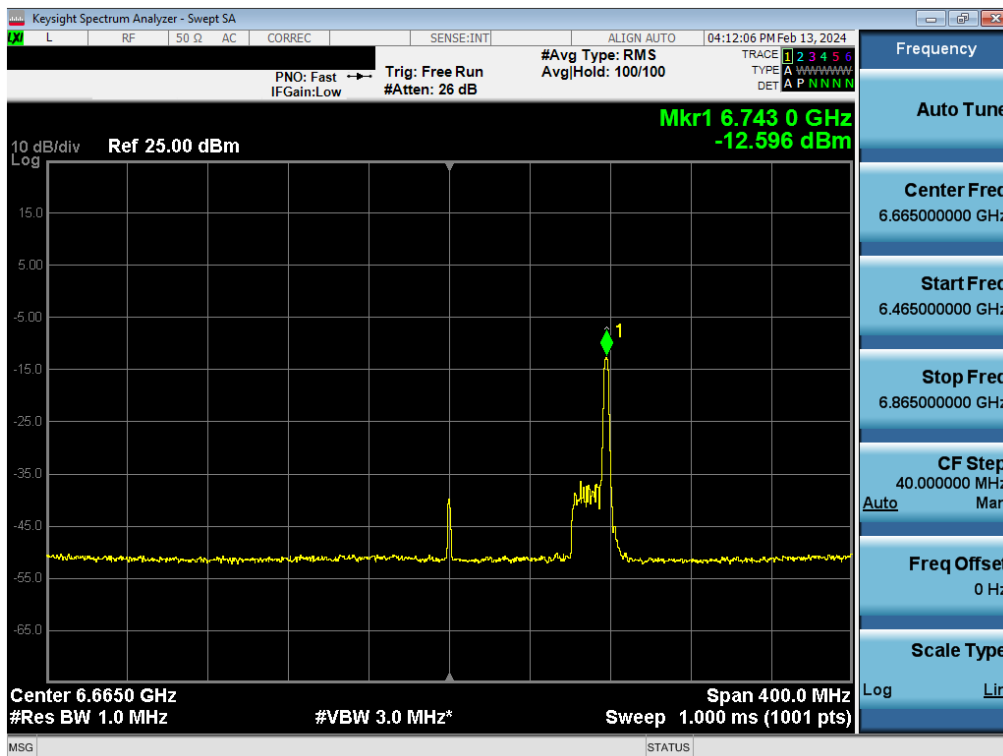


Plot 7-94. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11be (26 Tones) (UNII Band 7) – Ch. 155) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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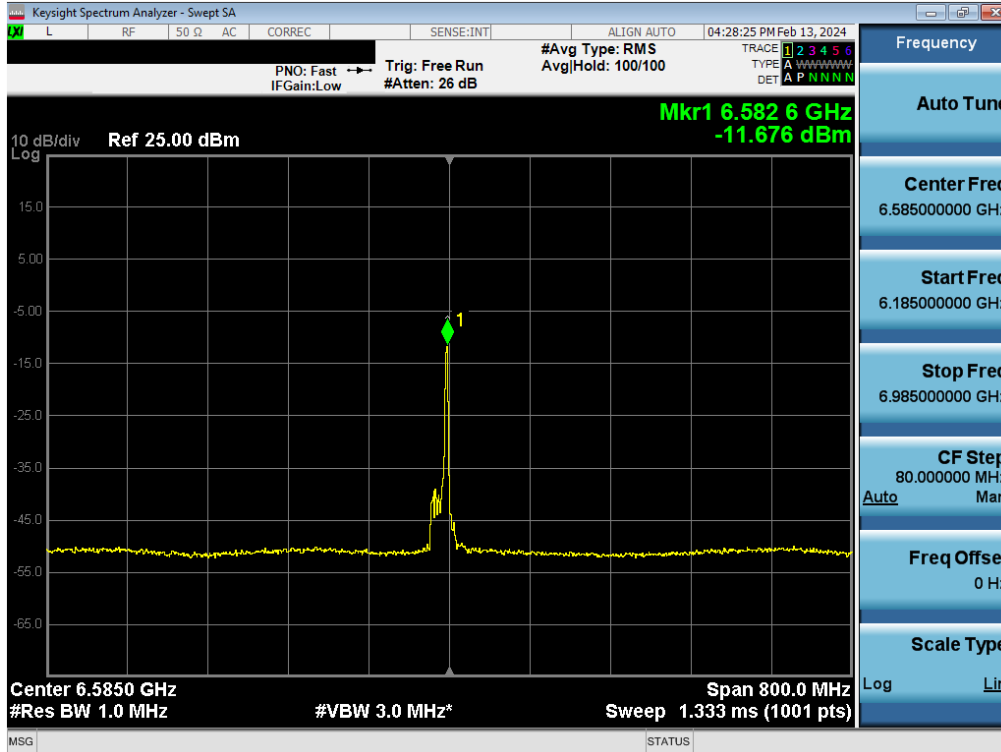


Plot 7-95. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11be (26 Tones) (UNII Band 7) – Ch. 151) - LPI

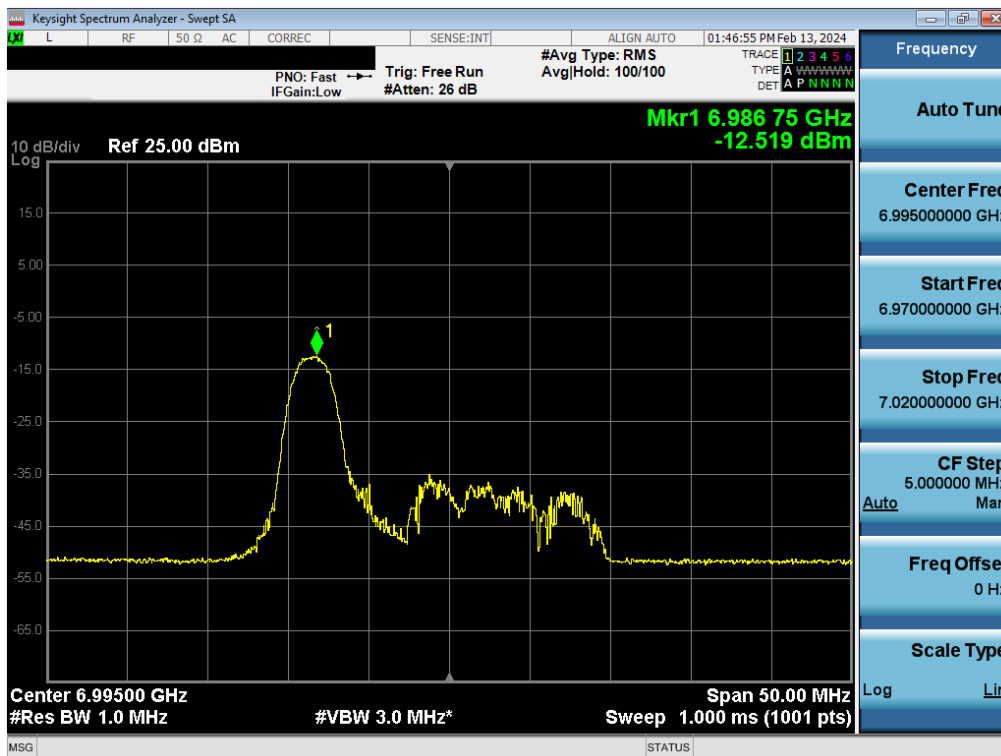


Plot 7-96. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11be (26 Tones) (UNII Band 7) – Ch. 143) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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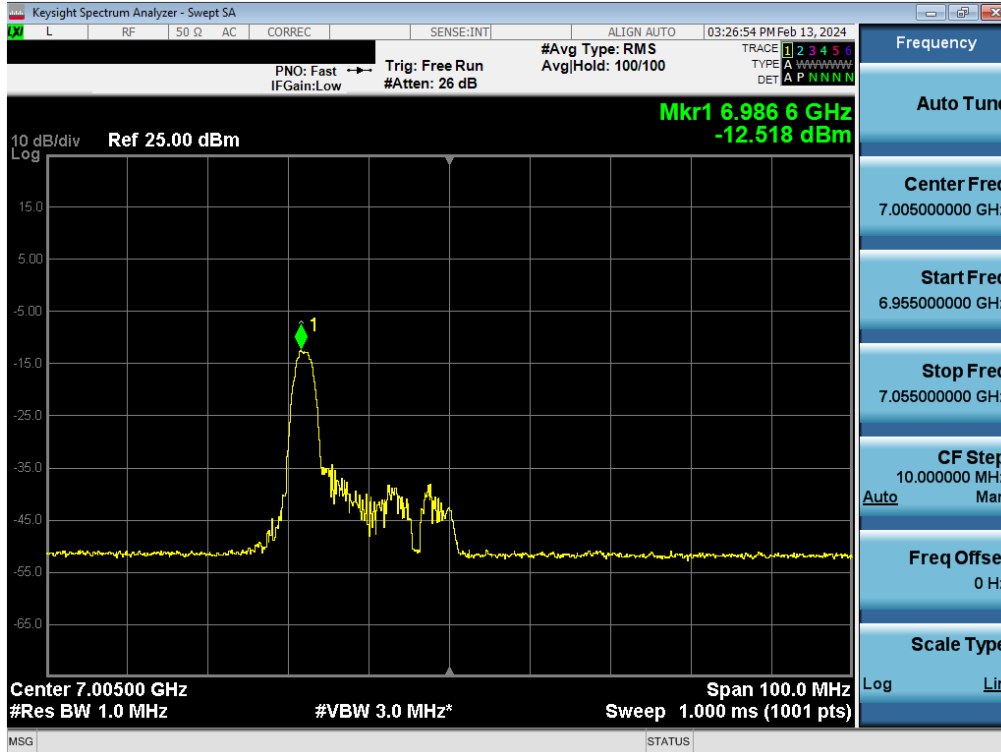


Plot 7-97. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (26 Tones) (UNII Band 7) – Ch. 127) - LPI

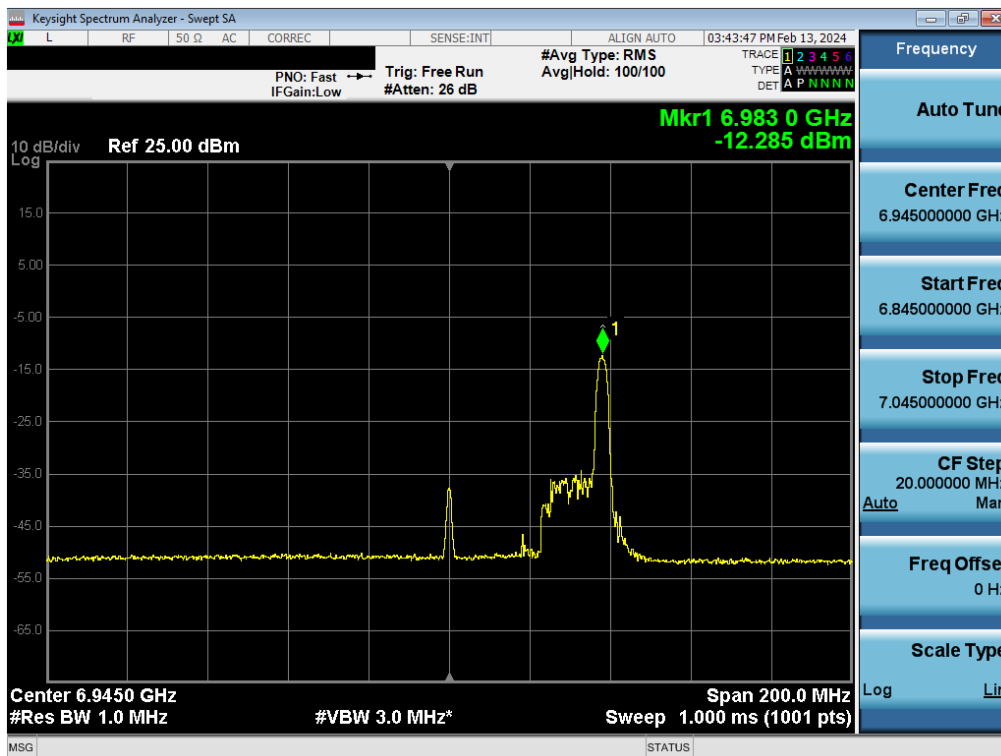


Plot 7-98. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (26 Tones) (UNII Band 8) – Ch. 209) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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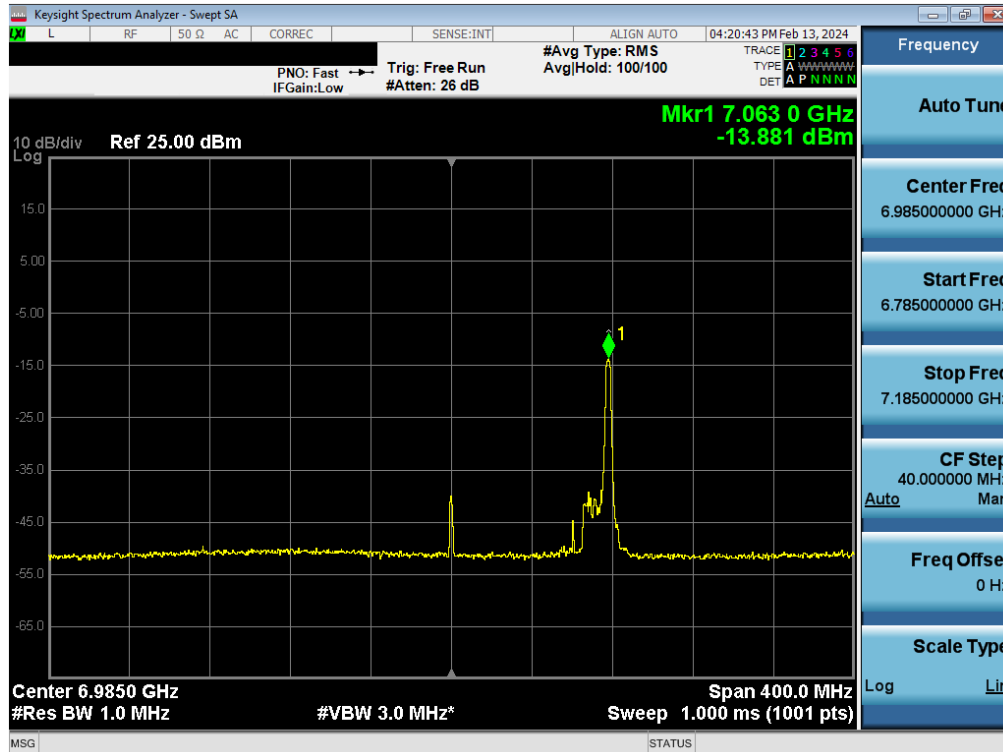


Plot 7-99. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11be (26 Tones) (UNII Band 8) – Ch. 211) - LPI

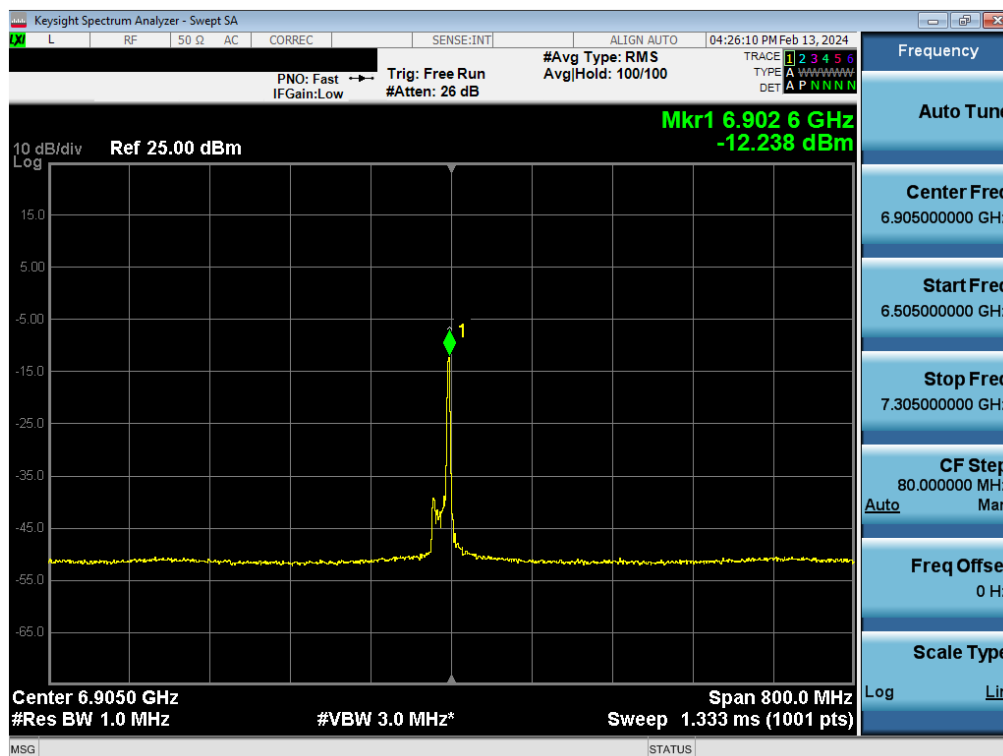


Plot 7-100. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11be (26 Tones) (UNII Band 8) – Ch. 199) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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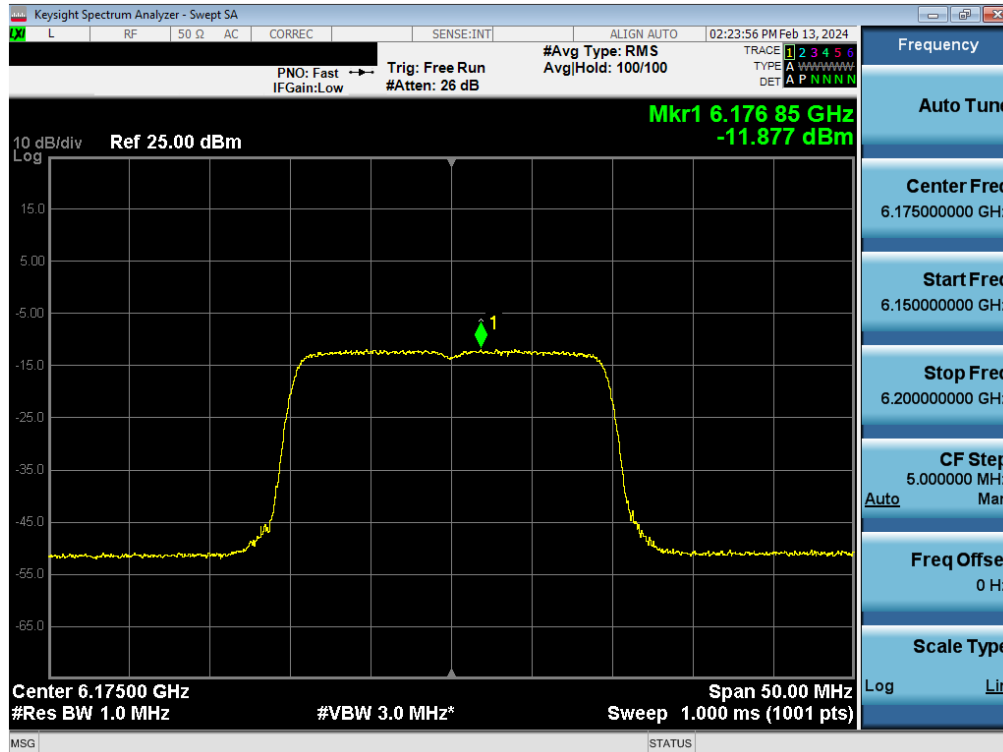


Plot 7-101. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11be (26 Tones) (UNII Band 8) – Ch. 207) - LPI

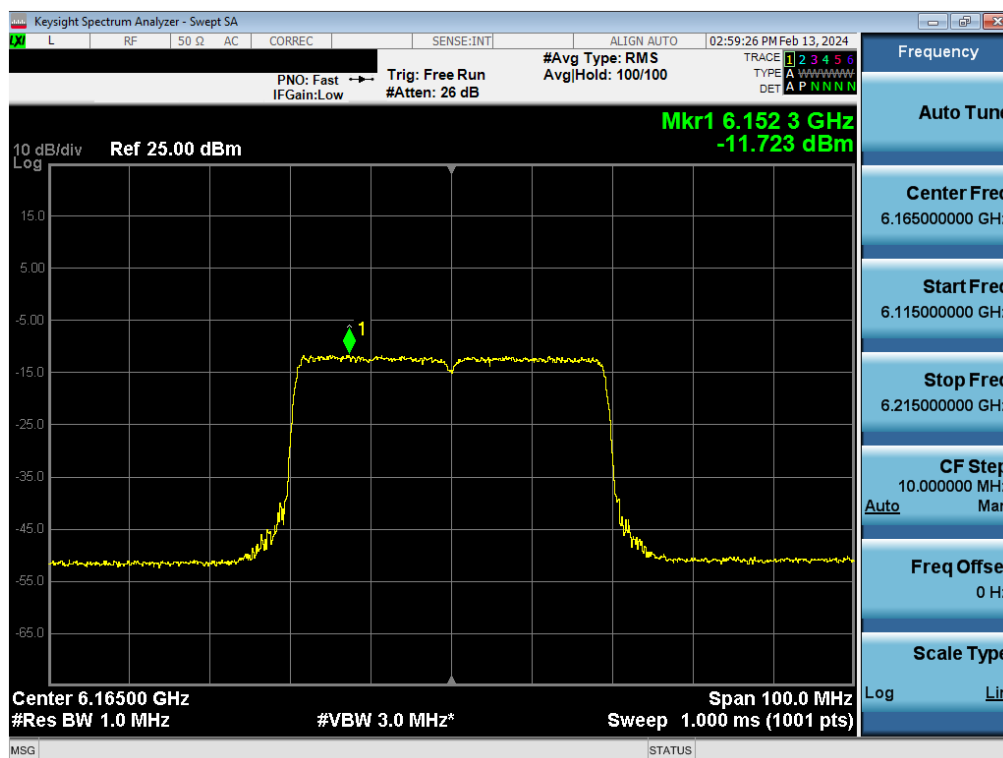


Plot 7-102. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (26 Tones) (UNII Band 8) – Ch. 191) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312190129-12-R2.C3K	Test Dates: 01/03/2024 - 04/01/2024	EUT Type: Portable Computing Device	Page 90 of 278

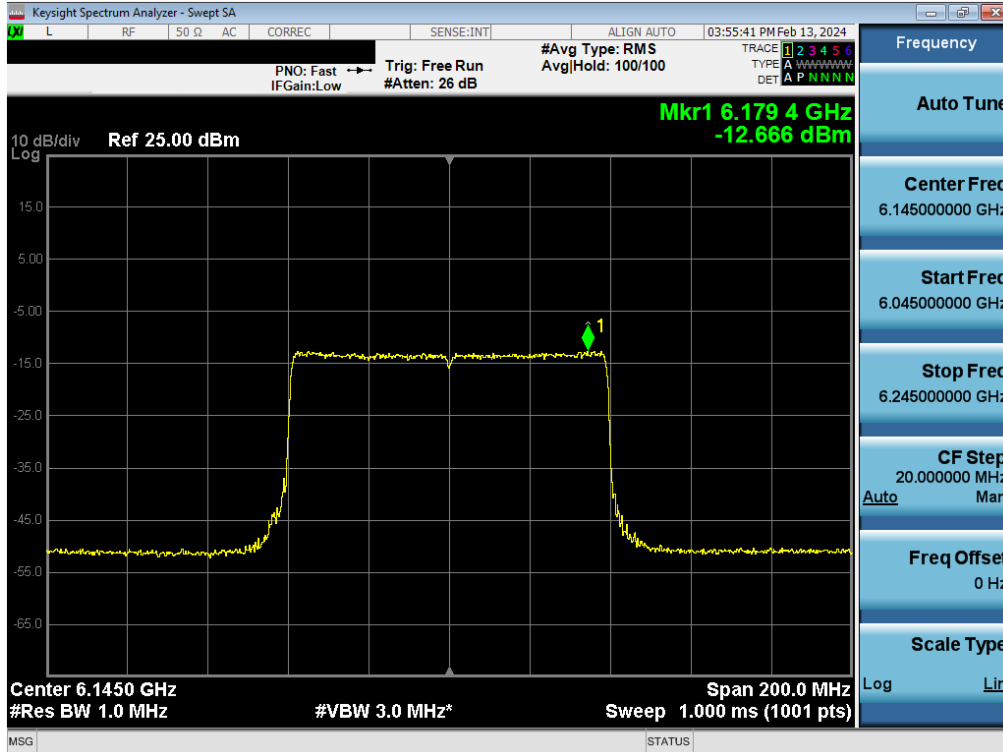


Plot 7-103. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (Full Tone) (UNII Band 5) – Ch. 45) - LPI

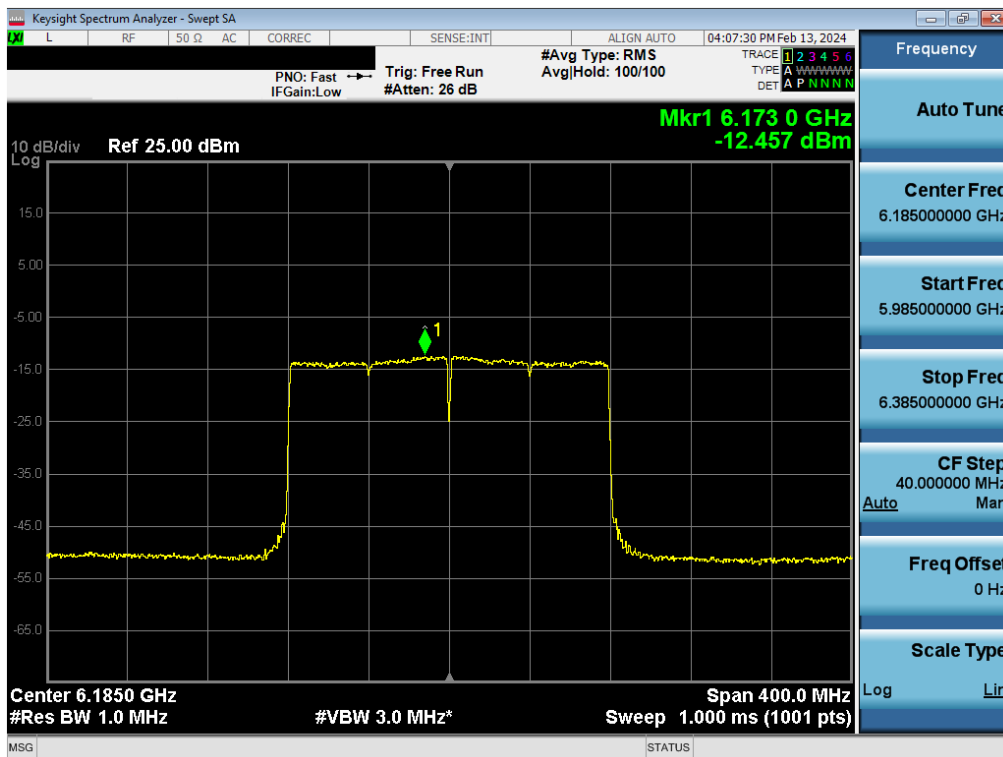


Plot 7-104. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11be (Full Tone) (UNII Band 5) – Ch. 43) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-105. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11be (Full Tone) (UNII Band 5) – Ch. 39) - LPI



Plot 7-106. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11be (Full Tone) (UNII Band 5) – Ch. 47) - LPI

FCC ID: C3K2076 IC: 3048A-2076	MEASUREMENT REPORT		Approved by: Technical Manager
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