

MEASUREMENT REPORT
FCC Part 15.407 802.11ax WiFi 6E (OFDMA)

Applicant Name:
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Date of Testing:
5/30 - 8/9/2023
Test Report Issue Date:
8/9/2023
Test Site/Location:
Element lab., Columbia, MD, USA
Test Report Serial No.:
1M2304260063-18.A3L

FCC ID:	A3LSMS711B
APPLICANT:	Samsung Electronics Co., Ltd.

Application Type: Certification
Model: SM-S711B/DS
Additional Model(s): SM-S711B
EUT Type: Portable Handset
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)
Test Procedure(s): ANSI C63.10-2013, KDB 987594 D02 v01r01,
KDB 648474 D03 v01r04

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.

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.



R.J. 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	11.236	10.51
	6	6435 - 6515	11.531	10.62
	7	6535 - 6875	11.500	10.61
	8	6895 - 7115	11.172	10.48
40	5	5965 - 6405	19.181	12.83
	6	6445 - 6525	18.008	12.55
	7	6565 - 6845	18.749	12.73
	8	6885 - 7085	19.289	12.85
80	5	5985 - 6385	19.794	12.97
	6	6465	18.508	12.67
	7	6545 - 6865	19.658	12.94
	8	6945 - 7025	19.862	12.98
160	5	6025 - 6345	19.881	12.98
	6	6505	19.303	12.86
	7	6665 - 6825	19.288	12.85
	8	6985	19.689	12.94

EUT Overview

Note: Data above are max conducted power values.

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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 **Samsung Electronics Co., Ltd. Portable Handset FCC ID: A3LSMS711B**. 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.: 1359M, 1270M, 1264M

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR (FR1), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz and 6GHz), Bluetooth (1x, EDR, LE), NFC, Wireless Power Transfer

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 (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 (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 (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 (160MHz BW) Frequency / Channel Operations

Notes:

- 6GHz NII operation is possible in 20MHz, 40MHz, 80MHz, and 160MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, 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:

Mode	Bandwidth [MHz]	Tone	Duty Cycle
		802.11ax NII RU 6E	20
		52T	99.3
		106T	99.3
		242T	99.3
802.11ax NII RU 6E	40	26T	99.4
		52T	99.4
		106T	99.3
		242T	99.3
		484T	99.3
802.11ax NII RU 6E	80	26T	99.4
		52T	99.4
		106T	99.3
		242T	99.4
		484T	99.3
		996T	99.4
802.11ax NII RU 6E	160	26T	99.4
		52T	99.4
		106T	99.4
		242T	99.3
		484T	99.4
		996T	99.3

Table 2-5. Measured Duty Cycles

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

WiFi Configurations		SISO		CDD		SDM	
		ANT1	ANT2	ANT1	ANT2	ANT1	ANT2
6 GHz	11ax	x	x	✓	✓	✓	✓

Table 2-6. Frequency / Channel Operations

✓ = Support; x = NOT Support
SISO = Single Input Single Output
SDM = Spatial Diversity Multiplexing – MIMO function
CDD = Cyclic Delay Diversity - 2Tx Function

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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	144.1	136.1	122.5
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	288.2	272.2	245
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	432.4	408.3	367.5
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	575.5	544.4	490
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	864.7	816.7	735
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	575.5	544.4	490	1152.9	1088.9	980
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	1297.1	1225	1102.5
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	1441.2	1361.1	1225
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	1729.4	1633.3	1470
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	1921.6	1814.8	1633.3
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	2161.8	2041.7	1837.5
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	2402	2268.5	2041.7
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	288.2	272.2	245
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	575.5	544.4	490
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	864.7	816.7	735
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	575.5	544.4	490	1152.9	1088.9	980
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	1729.4	1633.3	1470
5	2	14.1	13.3	12	28.2	26.7	24	60	56.7	51	137.6	130	117	275.3	260	234	575.5	544.4	490	1152.9	1088.9	980	2305.9	2188.9	1980
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	2594.2	2472.2	2205
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	2882.4	2722.2	2450
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	3458.8	3266.6	2940
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	4123.6	3916.6	3540
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	4323.6	4116.6	3750
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	4516.6	4301.7	3900

Table 2-7. 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 2-8. Power Operation

✓= Support; ✗ = NOT Support

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2.3 Antenna Description

The following antenna gains were used for the testing.

Frequency	Ant1 Peak Gain [dBi]	Ant2 Peak Gain [dBi]	Directional Gain [dBi]
5925 MHz	-2.96	-3.02	0.02
6025 MHz	-3.01	-4.86	-0.88
6125 MHz	-4.57	-3.31	-0.91
6225 MHz	-3.07	-2.78	0.09
6325 MHz	-3.59	-3.42	-0.49
6425 MHz	-4.89	-4.00	-1.42
6525 MHz	-2.36	-3.17	0.25
6625MHz	-3.81	-3.43	-0.61
6725MHz	-3.63	-4.11	-0.86
6825MHz	-3.65	-5.95	-1.71
6925MHz	-3.77	-5.29	-1.49
7025MHz	-4.06	-4.83	-1.43
7125MHz	-4.44	-5.25	-1.83

Table 2-9 Antenna Peak Gain per Frequency

	Ant1 Peak Gain [dBi]	Ant2 Peak Gain [dBi]	Directional Gain [dBi]
5925 – 6425 MHz	-3.07	-2.78	0.09
6425 – 6525 MHz	-2.36	-3.17	0.25
6525 – 6875 MHz	-2.36	-3.17	0.25
6875 – 7125 MHz	-4.06	-4.83	-1.43

Table 2-10. Antenna Peak Gain

2.4 Test Configuration

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.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat on an authorized wireless charging pad (WCP) Model: EP-N5100 while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

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2.5 Software and Firmware

The test was conducted with firmware version S711BXXU0_0627_0900_devFull 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
-	AP2-001	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	AP2-001
-	AP2-002	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	AP2-002
-	ETS-001	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	ETS-001
-	ETS-002	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	ETS-002
-	WL25-1	Conducted Cable Set (25GHz)	1/12/2023	Annual	1/12/2024	WL25-1
-	WL40-1	Conducted Cable Set (40GHz)	1/12/2023	Annual	1/12/2024	WL40-1
Anritsu	MA24408A	Microwave Peak Power Sensor	6/1/2022	Annual	8/30/2023	11675
Anritsu	MA24408A	Microwave Peak Power Sensor	4/12/2022	Annual	8/30/2023	11676
EMCO	3115	Horn Antenna (1-18GHz)	8/8/2022	Biennial	8/8/2024	9704-5182
EMCO	3116	Horn Antenna (18-40GHz)	7/20/2021	Biennial	8/30/2023	9203-2178
Keysight Technologies	N9030A	PXA Signal Analyzer (3Hz-26.5GHz)	9/6/2022	Annual	9/6/2023	MYS4490576
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	3/15/2023	Annual	3/15/2024	MYS2350166
Keysight Technologies	N9038A	MXE EMI Receiver	1/21/2022	Annual	7/31/2023	MYS1210133
Pasternack	NMLC-2	Line Conducted Emissions Cable (NM)	1/11/2023	Annual	1/11/2024	NMLC-2
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Test Antenna	9/28/2022	Biennial	9/28/2024	101058
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	8/29/2022	Annual	8/29/2023	100342
Rohde & Schwarz	ESW44	EMI Test Receiver (2Hz-44GHz)	3/1/2023	Annual	3/1/2024	101716
Rohde & Schwarz	VULB9162	Bi-Log Antenna	2/21/2023	Biennial	2/21/2025	00301
Solar Electronics	8012-50-R-24-BNC	Line Impedance Stabilization Network	9/21/2021	Biennial	9/21/2023	310233
Sunol	DRH-118	Horn Antenna (1-18GHz)	2/14/2022	Biennial	2/14/2024	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	8/30/2022	Biennial	8/30/2024	A051107
Sunol	JB6	JB6 Antenna	3/2/2023	Biennial	3/2/2025	A082816

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: Samsung Electronics Co., Ltd.
 FCC ID: A3LSMS711B
 FCC Classification: 15E 6GHz Low Power Dual Client (6CD)

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1046, 15.407(a)(11)	Maximum Conducted Output Power	N/A	CONDUCTED	PASS	Section 7.3
15.407(a)(8), 15.407(a)(7)	Maximum Radiated Output Power	< 24dBm over the frequency band of operation <30dBm over the frequency band of operation when connecting to a standard power access point		PASS	Section 7.3
2.1049, 15.407(a)(10)	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), 15.407(a)(7)	Maximum Power Spectral Density	< -1dBm/MHz e.i.r.p. <17dBm/MHz when operating with a standard power access point		PASS	Section 7.4
15.407(b)(7)	In-Band Emissions	EUT must meet the limits detailed in 15.407(b)(6)		PASS	Section 7.5
15.407(d)(6)	Contention Based Protocol	EUT must detect AWGN signal with 90% (or better) certainty	RADIATED	PASS	Section 7.6
15.407(b)(6)	Undesirable Emissions	< -27dBm/MHz e.i.r.p. outside of the 5.925 – 7.125GHz band		PASS	Section 7.7
15.205, 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS	Section 7.7
15.407	AC Conducted Emissions 150kHz – 30MHz	<FCC 15.207 limits	LINE CONDUCTED	PASS	Please 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) 802.11ax OFDMA testing was performed for all signal tone configurations as specified by the 802.11ax standard. Worst case results are determined and reported per the guidance provided at the October 2018 TCB Workshop.
- 8) Only one RU index could be selected at a time, so no contiguous or non-contiguous RUs were considered for testing.

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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

None.

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	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 26dB Bandwidth	Antenna-2 26dB Bandwidth
Band 5	5935	2	ax (20MHz)	21.21	20.46
	6175	45	ax (20MHz)	21.25	20.44
	6415	93	ax (20MHz)	21.37	20.59
	5695	3	ax (40MHz)	41.89	41.69
	6165	43	ax (40MHz)	40.72	41.55
	6405	91	ax (40MHz)	41.50	40.97
	5985	7	ax (80MHz)	85.69	84.53
	6145	39	ax (80MHz)	79.42	79.43
	6385	87	ax (80MHz)	83.93	84.64
	6025	15	ax (160MHz)	167.25	166.11
	6185	47	ax (160MHz)	165.14	165.96
6345	79	ax (160MHz)	161.07	158.40	
Band 6	6345	97	ax (20MHz)	21.12	21.11
	6475	105	ax (20MHz)	20.87	20.94
	6515	113	ax (20MHz)	20.70	20.55
	6445	99	ax (40MHz)	41.74	40.88
	6485	107	ax (40MHz)	41.37	41.20
	6525	115	ax (40MHz)	39.66	38.35
	6465	103	ax (80MHz)	84.71	84.19
	6505	111	ax (160MHz)	160.66	159.16
Band 7	6535	117	ax (20MHz)	21.36	20.35
	6695	149	ax (20MHz)	21.00	20.56
	6875	185	ax (20MHz)	20.53	20.47
	6565	123	ax (40MHz)	42.95	41.04
	6685	155	ax (40MHz)	41.84	41.11
	6845	179	ax (40MHz)	41.62	40.76
	6545	119	ax (80MHz)	85.07	84.18
	6705	151	ax (80MHz)	85.05	83.96
	6865	183	ax (80MHz)	82.83	84.13
	6665	143	ax (160MHz)	166.94	166.63
6825	175	ax (160MHz)	165.81	166.02	
Band 8	6895	189	ax (20MHz)	21.51	20.36
	6995	209	ax (20MHz)	20.87	20.72
	7115	233	ax (20MHz)	21.41	20.56
	6885	187	ax (40MHz)	39.15	38.47
	6965	211	ax (40MHz)	42.77	40.87
	7085	227	ax (40MHz)	39.23	38.34
	6945	199	ax (80MHz)	84.29	83.79
	7025	215	ax (80MHz)	84.38	84.30
6985	207	ax (160MHz)	167.29	165.07	

Table 7-2. Occupied Bandwidth of Test Results – Partial Tone

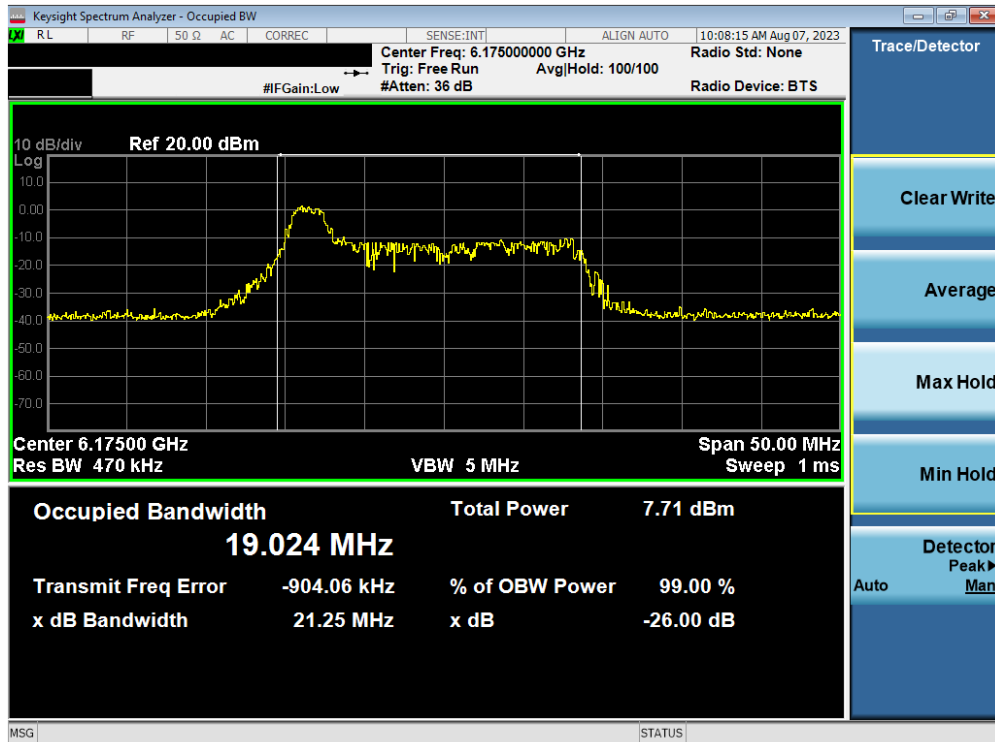
sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 26dB Bandwidth	Antenna-2 26dB Bandwidth
Band 5	5935	2	ax (20MHz)	23.95	23.59
	6175	45	ax (20MHz)	23.28	22.91
	6415	93	ax (20MHz)	24.29	22.87
	5695	3	ax (40MHz)	45.54	44.98
	6165	43	ax (40MHz)	46.63	45.88
	6405	91	ax (40MHz)	46.14	46.27
	5985	7	ax (80MHz)	92.43	91.24
	6145	39	ax (80MHz)	93.09	93.33
	6385	87	ax (80MHz)	89.85	90.20
	6025	15	ax (160MHz)	173.39	168.77
	6185	47	ax (160MHz)	169.49	172.79
6345	79	ax (160MHz)	180.91	170.95	
Band 6	6345	97	ax (20MHz)	23.14	22.99
	6475	105	ax (20MHz)	23.71	22.28
	6515	113	ax (20MHz)	23.47	23.05
	6445	99	ax (40MHz)	45.32	46.50
	6485	107	ax (40MHz)	45.65	45.60
	6525	115	ax (40MHz)	44.99	46.23
	6465	103	ax (80MHz)	93.06	92.18
6505	111	ax (160MHz)	173.12	168.95	
Band 7	6535	117	ax (20MHz)	23.46	22.84
	6695	149	ax (20MHz)	23.61	22.76
	6875	185	ax (20MHz)	23.23	23.03
	6565	123	ax (40MHz)	46.75	45.94
	6685	155	ax (40MHz)	44.60	45.68
	6845	179	ax (40MHz)	46.85	45.77
	6545	119	ax (80MHz)	91.22	91.04
	6705	151	ax (80MHz)	91.50	89.97
	6865	183	ax (80MHz)	92.46	92.84
	6665	143	ax (160MHz)	172.32	171.13
6825	175	ax (160MHz)	167.78	169.50	
Band 8	6895	189	ax (20MHz)	23.90	23.31
	6995	209	ax (20MHz)	23.78	22.71
	7115	233	ax (20MHz)	23.58	22.89
	6885	187	ax (40MHz)	46.20	45.82
	6965	211	ax (40MHz)	45.48	46.92
	7085	227	ax (40MHz)	46.54	45.04
	6945	199	ax (80MHz)	92.13	92.96
	7025	215	ax (80MHz)	90.61	92.65
6985	207	ax (160MHz)	169.75	168.35	

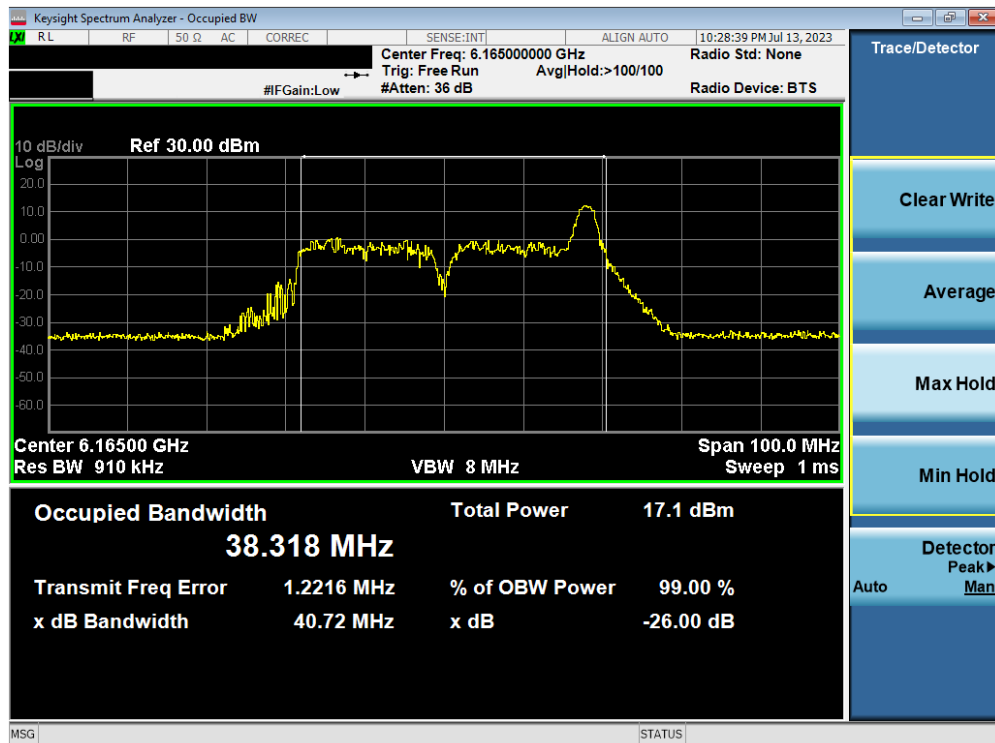
Table 7-3. Occupied Bandwidth of Test Results – Full Tone

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7.2.1 MIMO Antenna-1 Bandwidth Measurements - (Partial Tones)

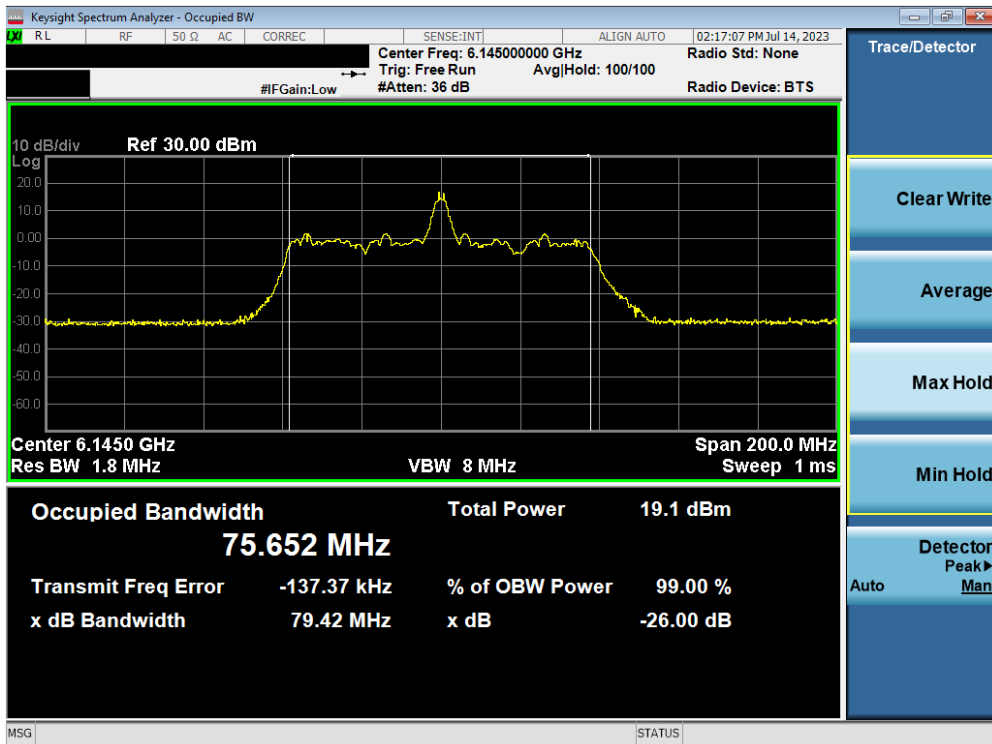


Plot 7-1. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 45)

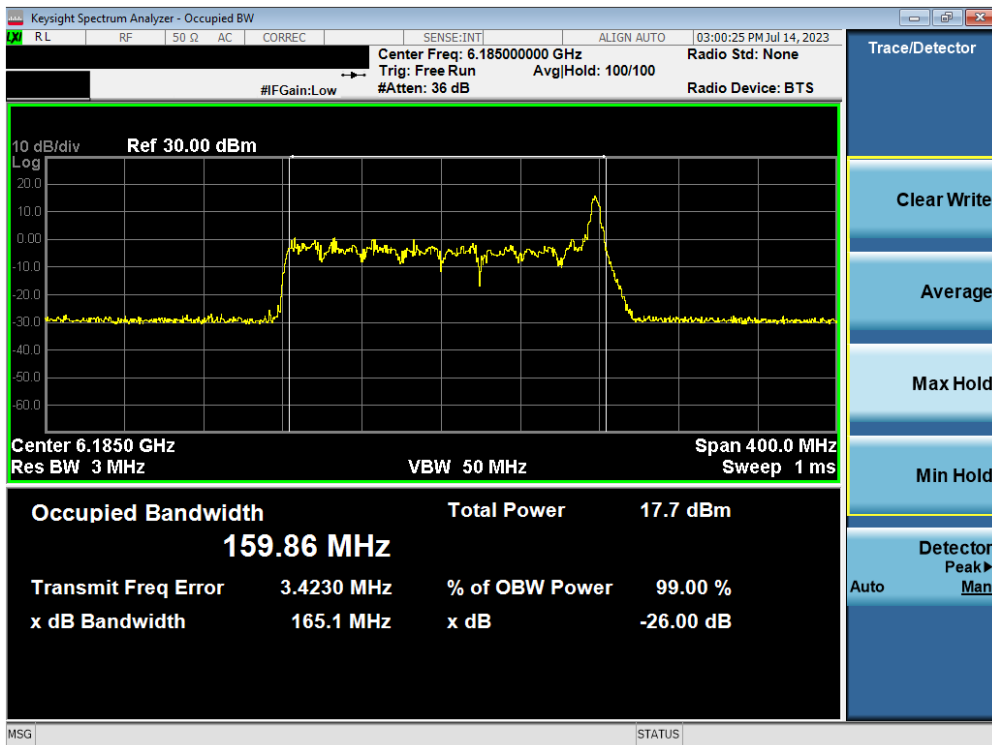


Plot 7-2. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 43)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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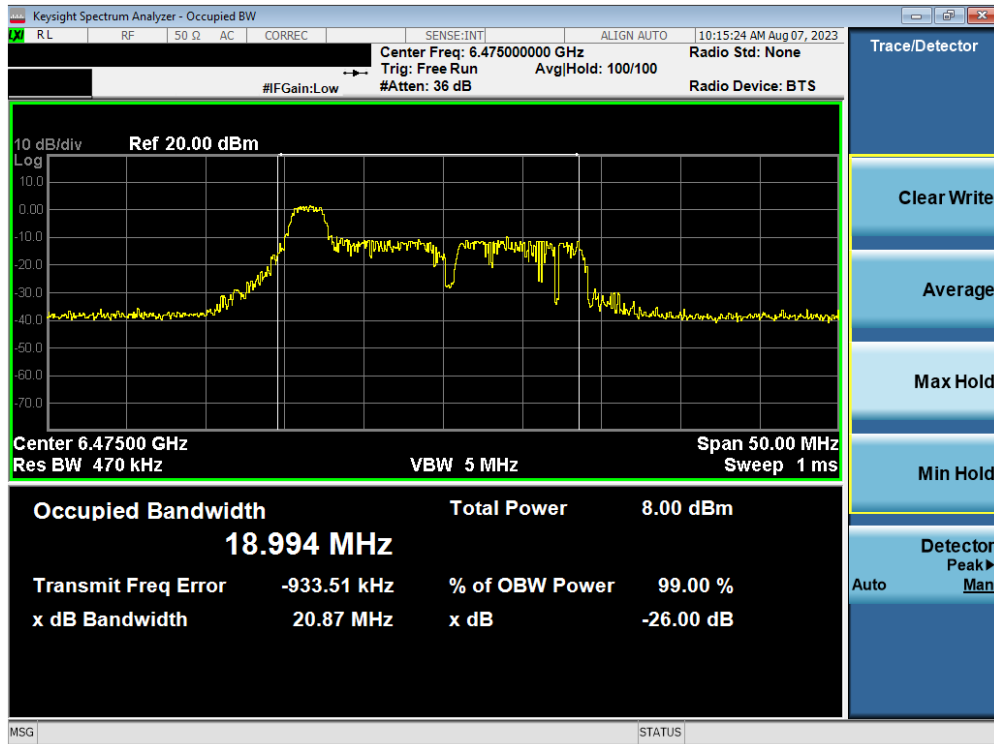
Plot 7-3. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 39)



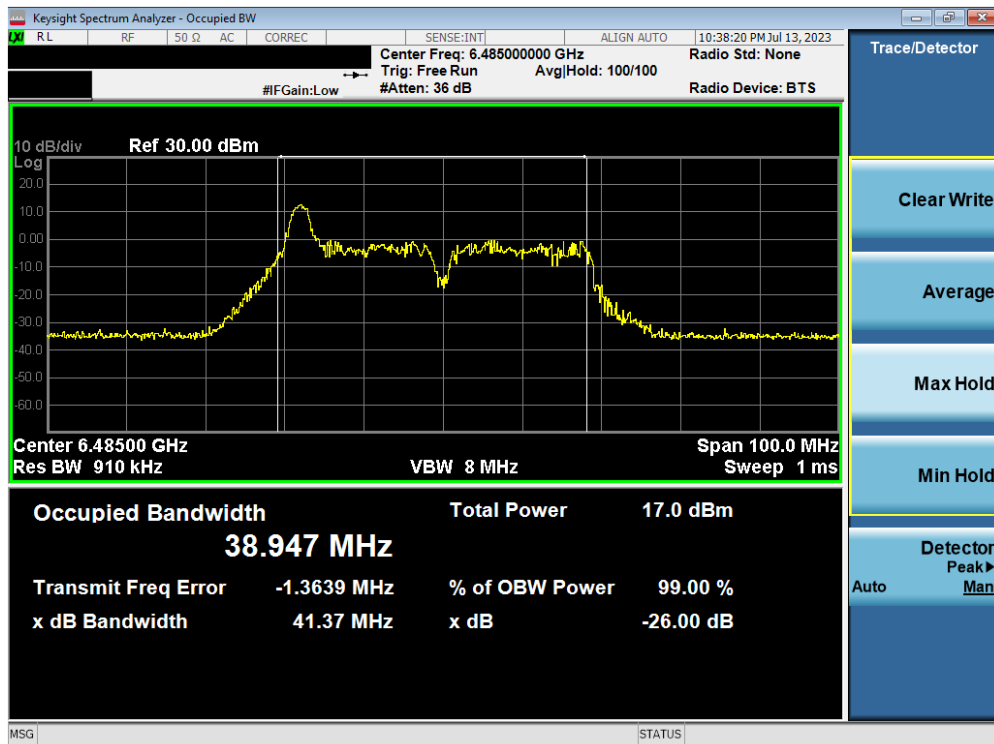
Plot 7-4. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 47)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-1 Bandwidth Measurements - (Partial Tones)

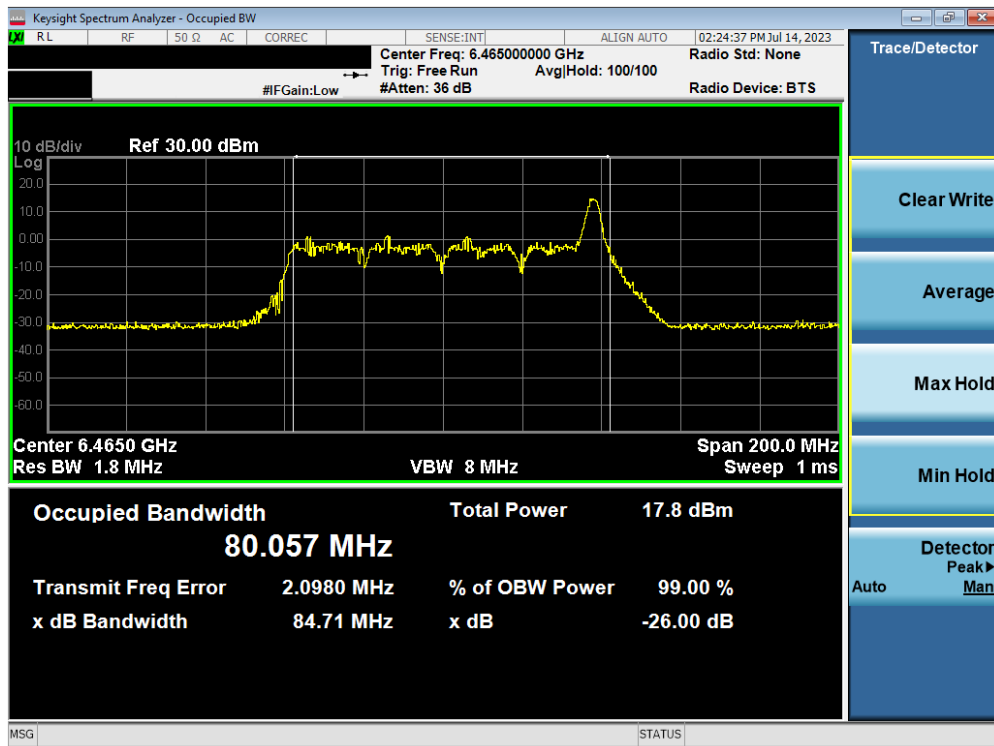


Plot 7-5. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 105)

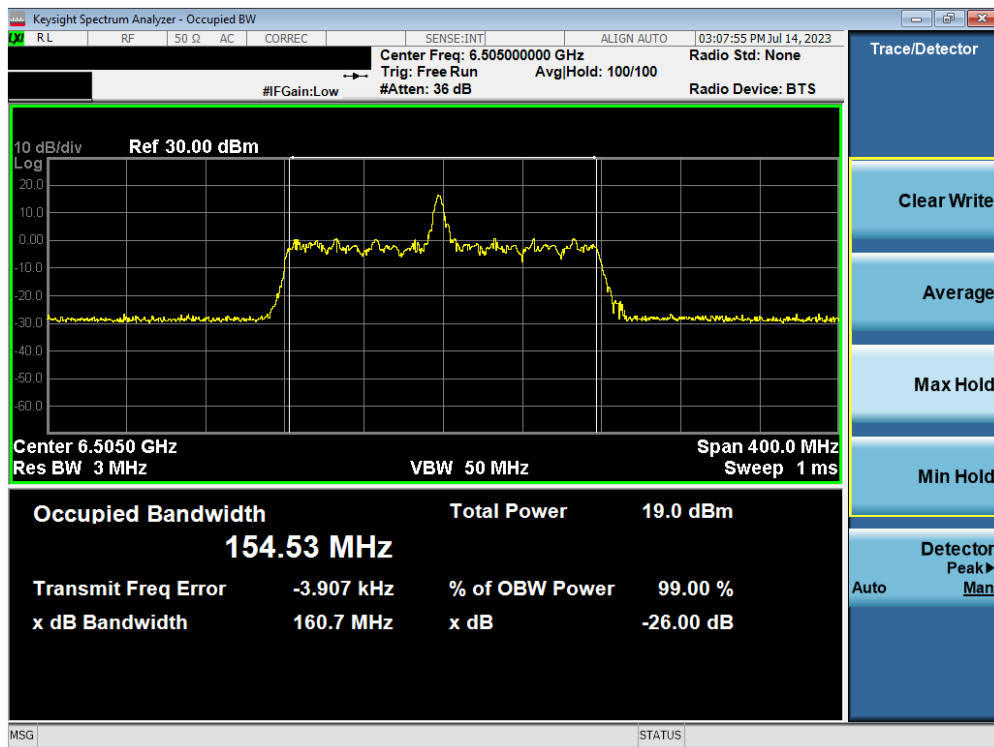


Plot 7-6. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 107)

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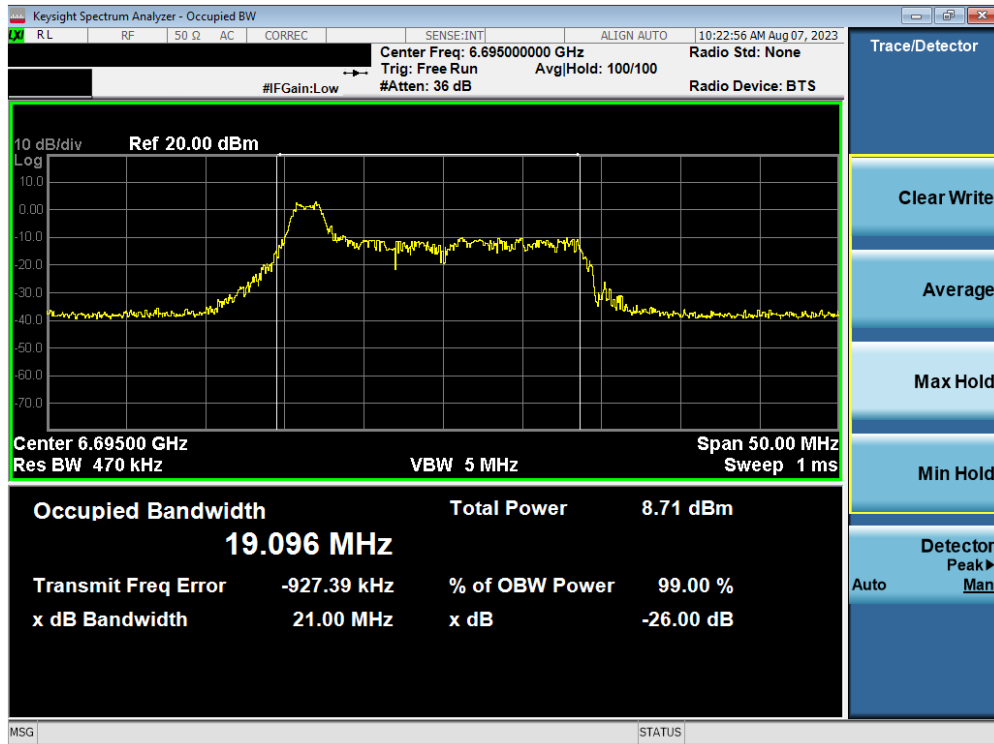
Plot 7-7. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 103)



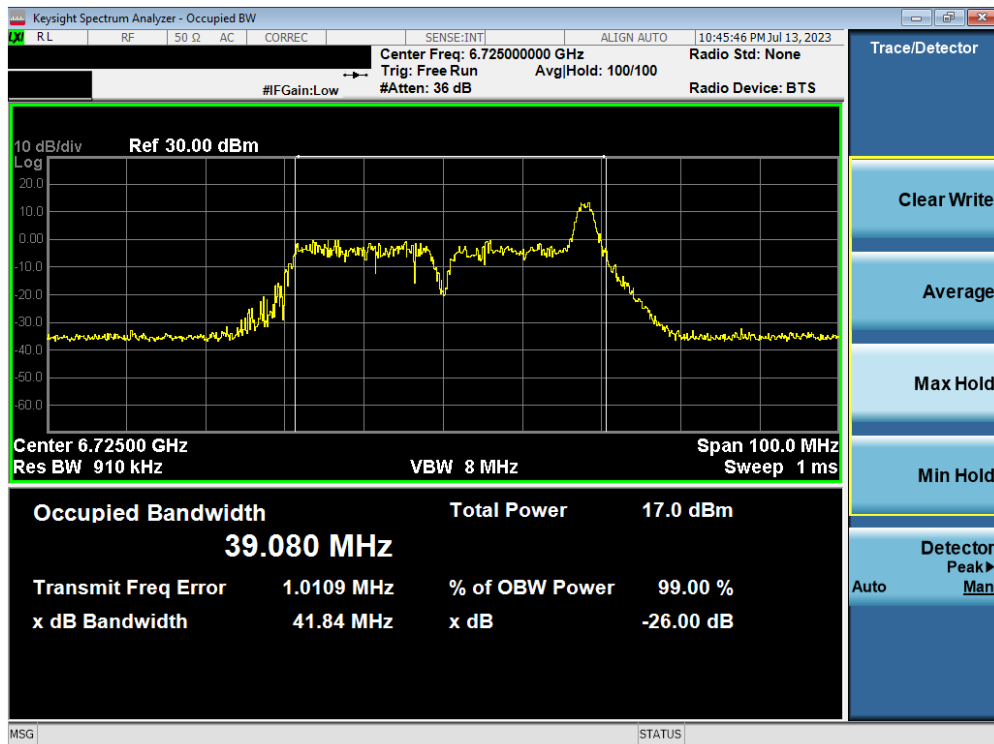
Plot 7-8. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 111)

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MIMO Antenna-1 Bandwidth Measurements - (Partial Tones)

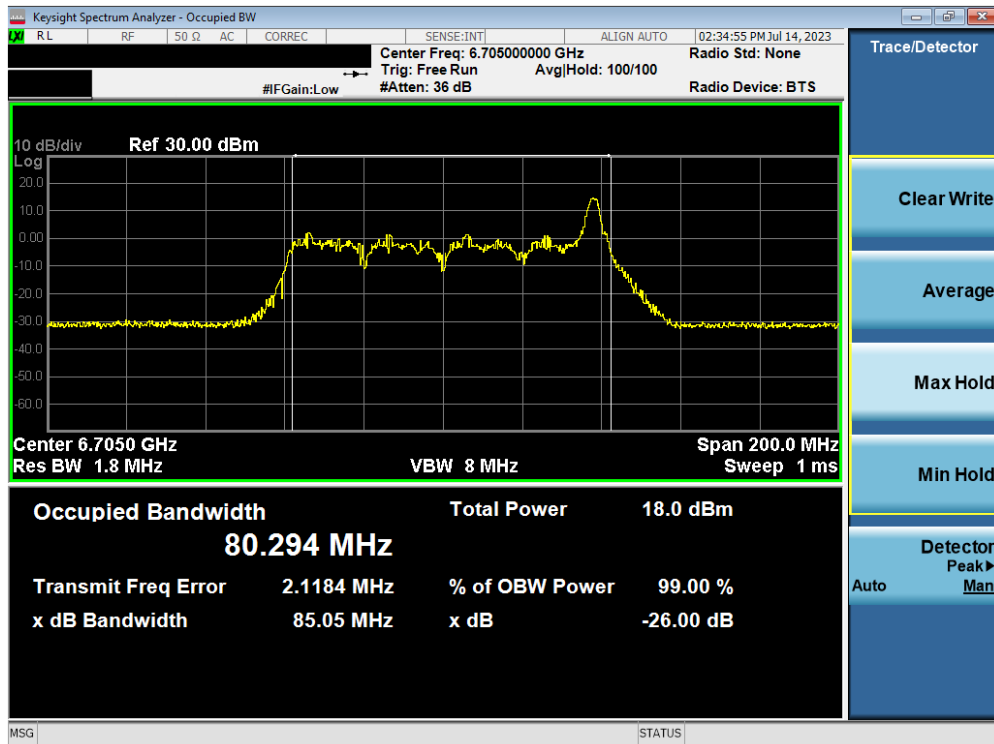


Plot 7-9. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 149)

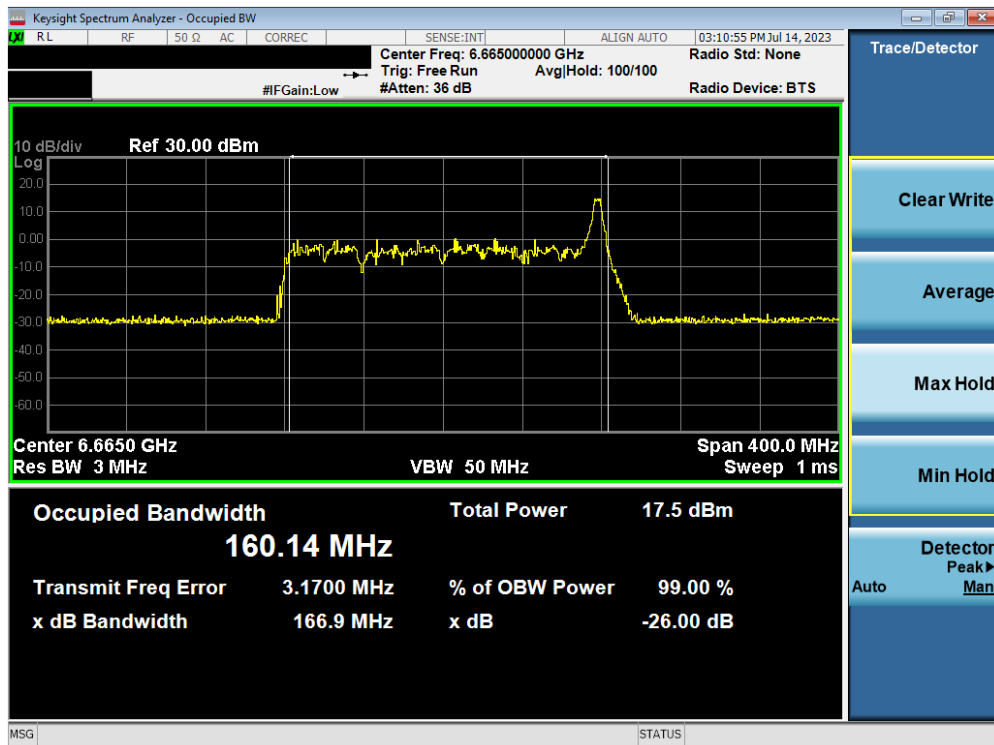


Plot 7-10. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 155)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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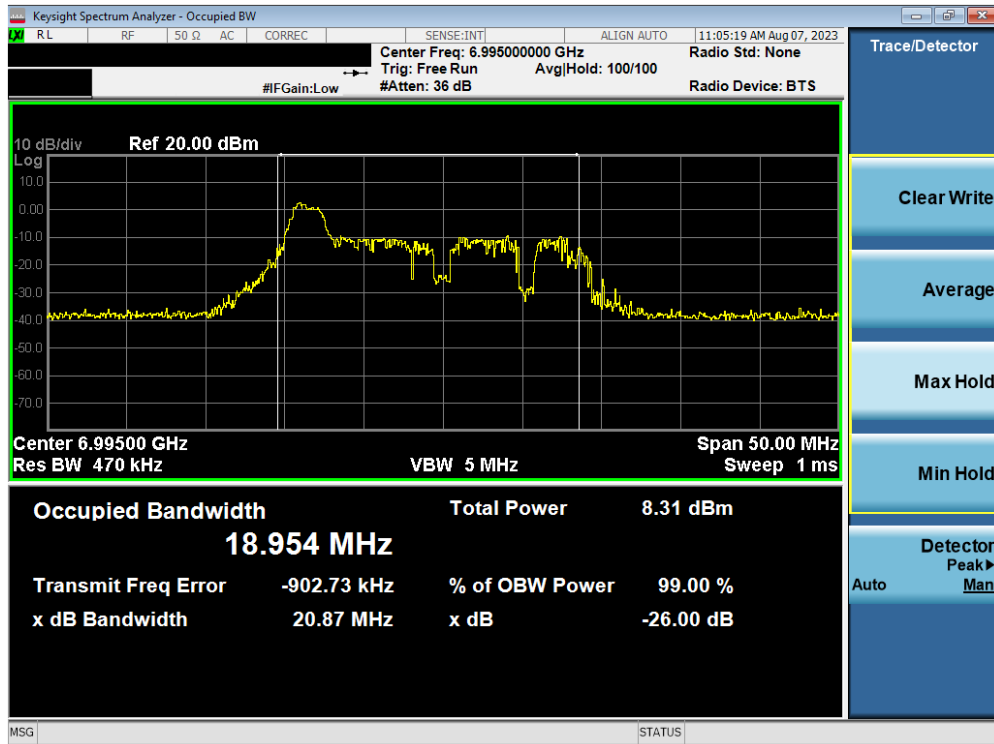
Plot 7-11. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 151)



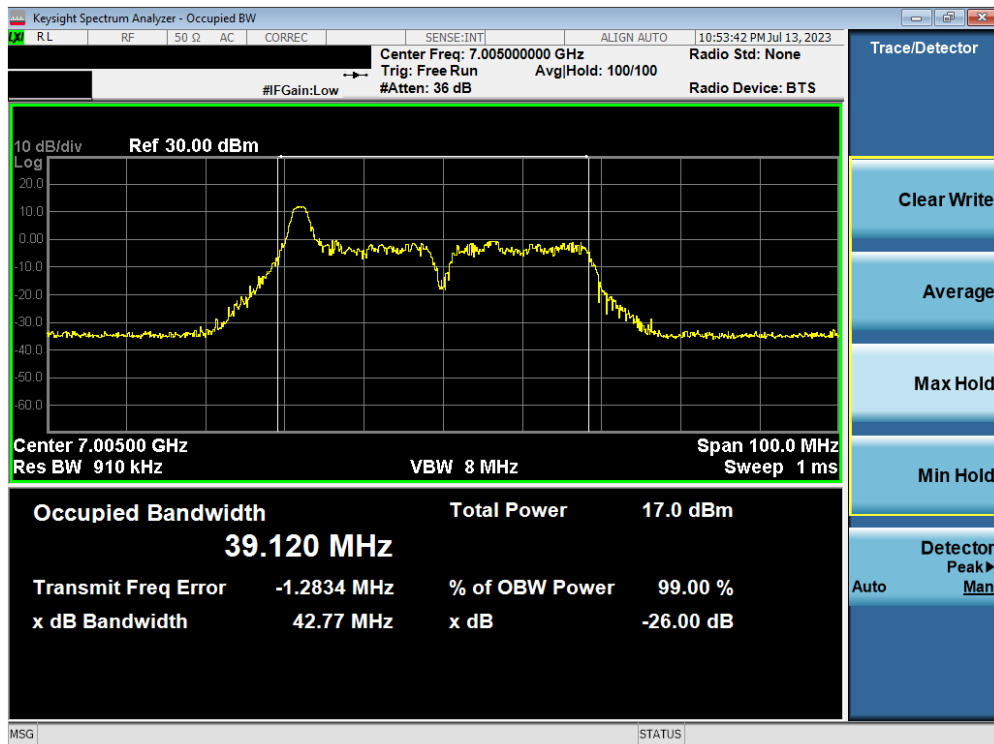
Plot 7-12. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 143)

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MIMO Antenna-1 Bandwidth Measurements - (Partial Tones)

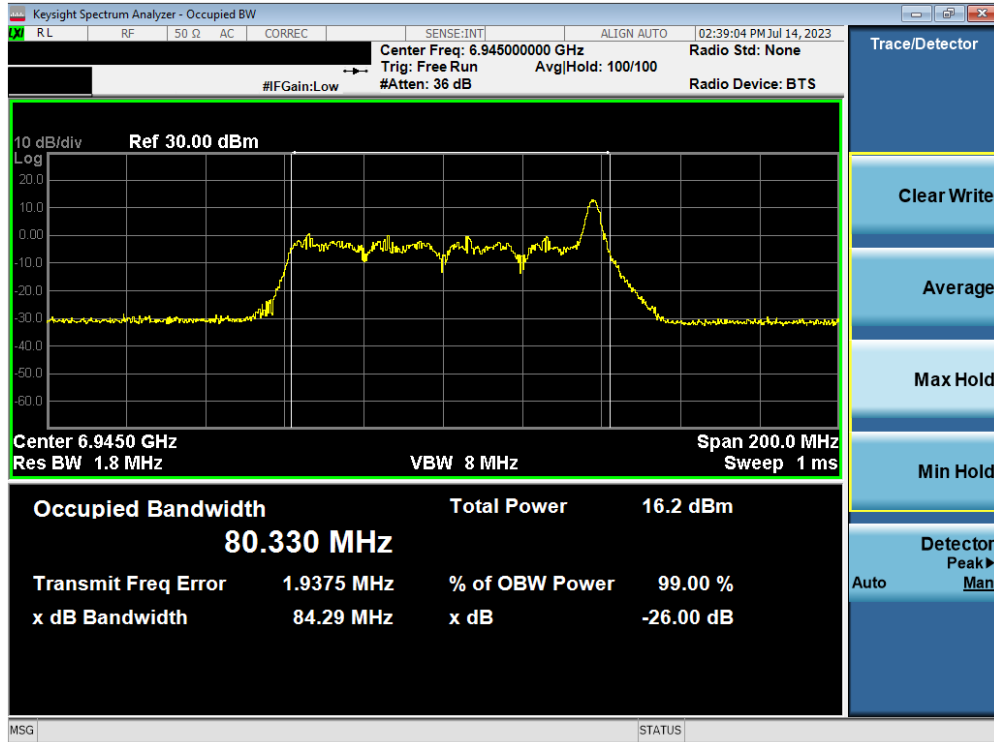


Plot 7-13. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 209)

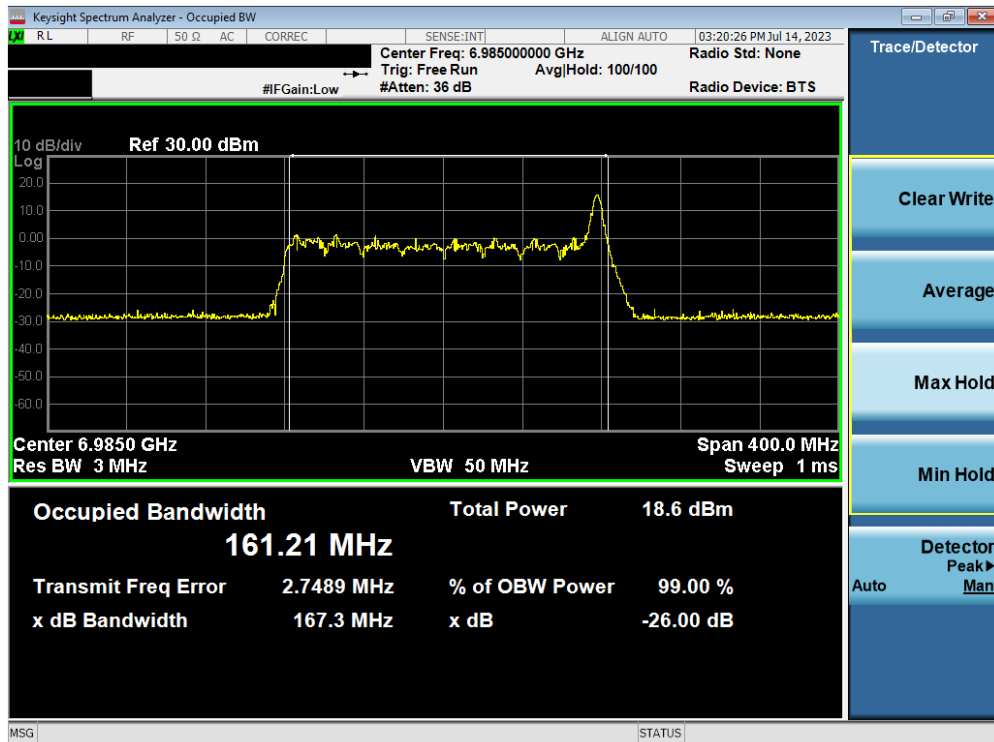


Plot 7-14. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 211)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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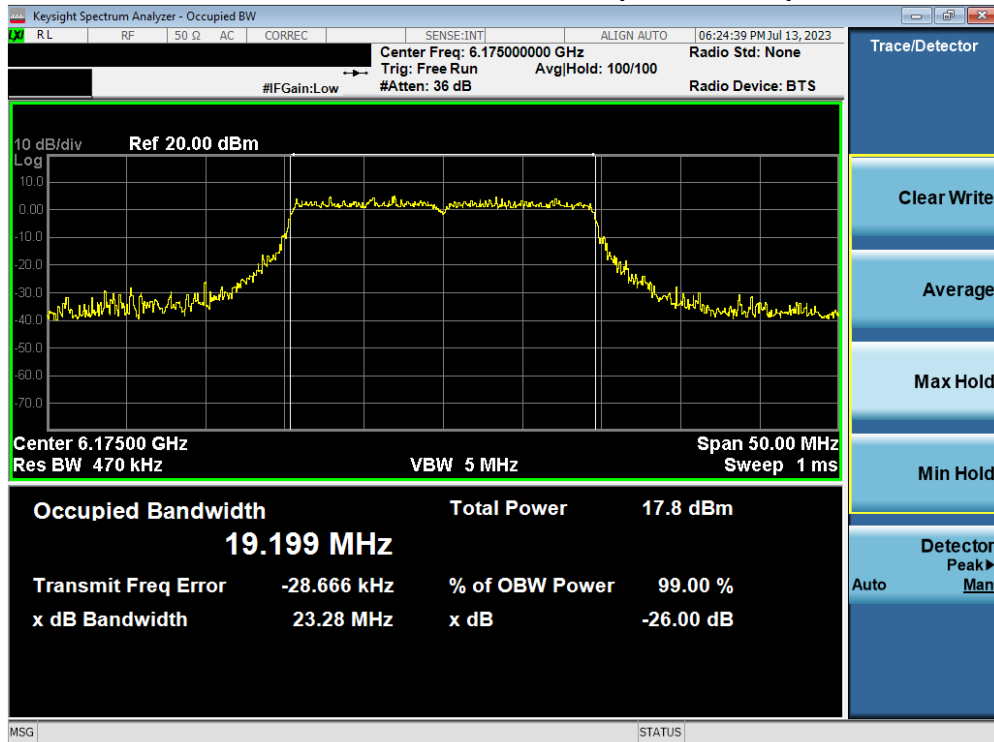
Plot 7-15. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 199)



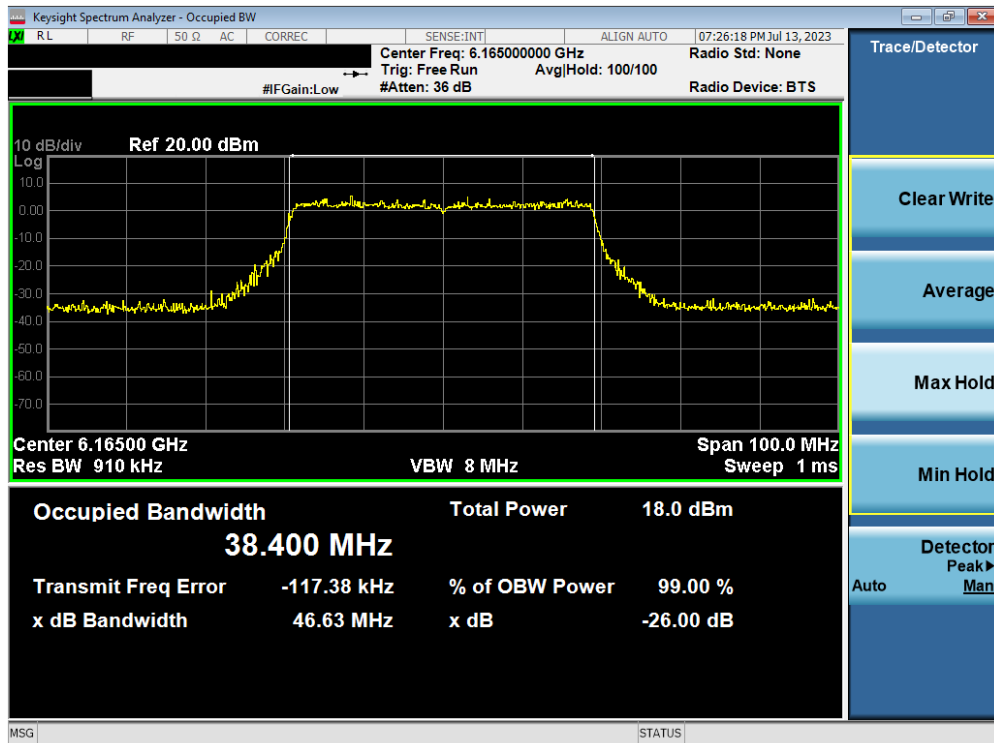
Plot 7-16. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 207)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.2.2 MIMO Antenna-1 Bandwidth Measurements - (Full Tones)

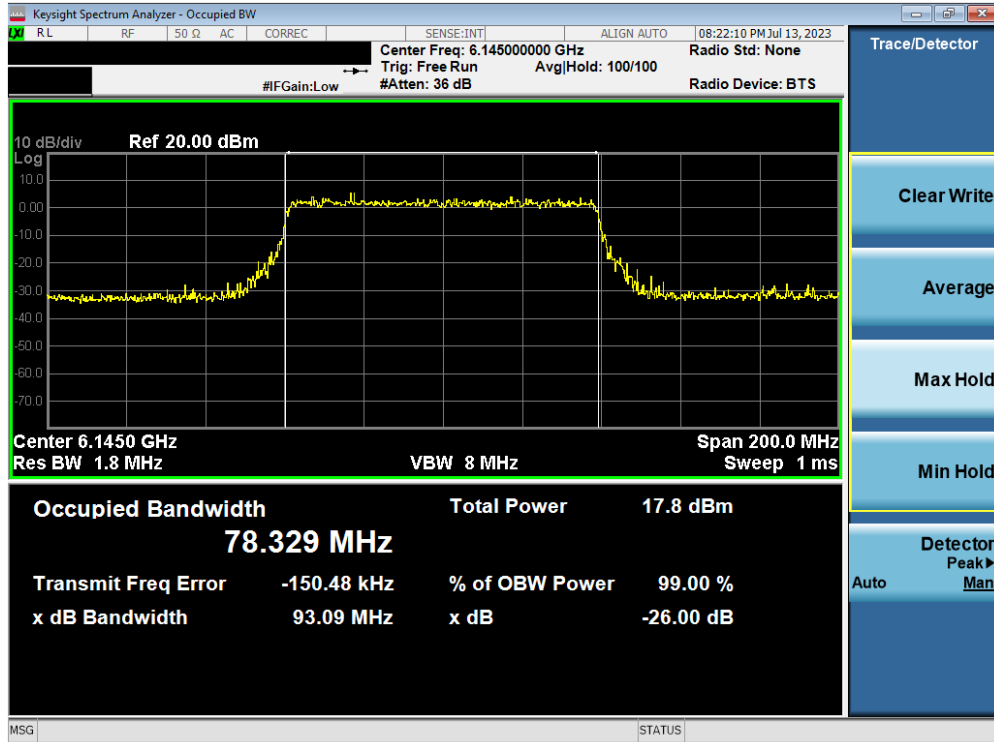


Plot 7-17. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 45)

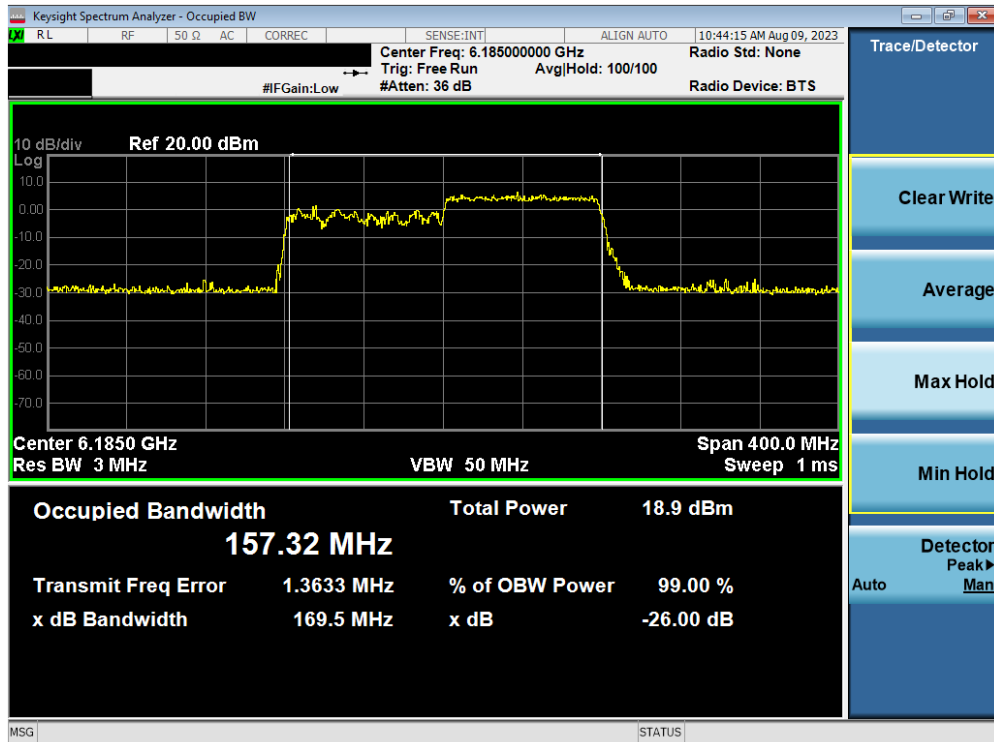


Plot 7-18. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 43)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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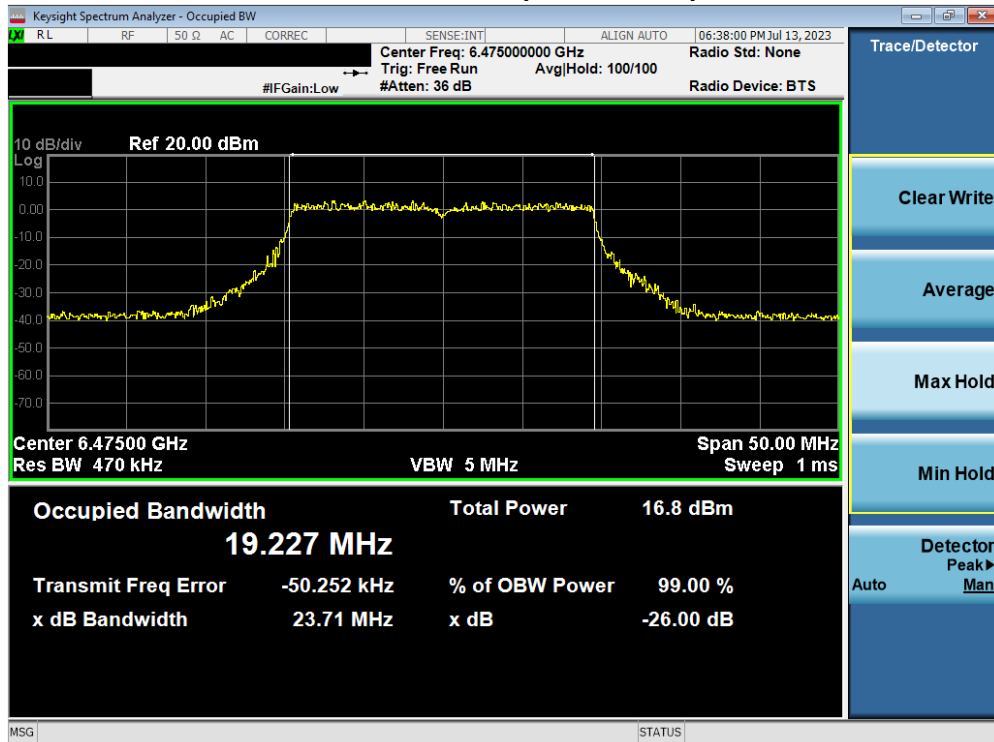
Plot 7-19. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 39)



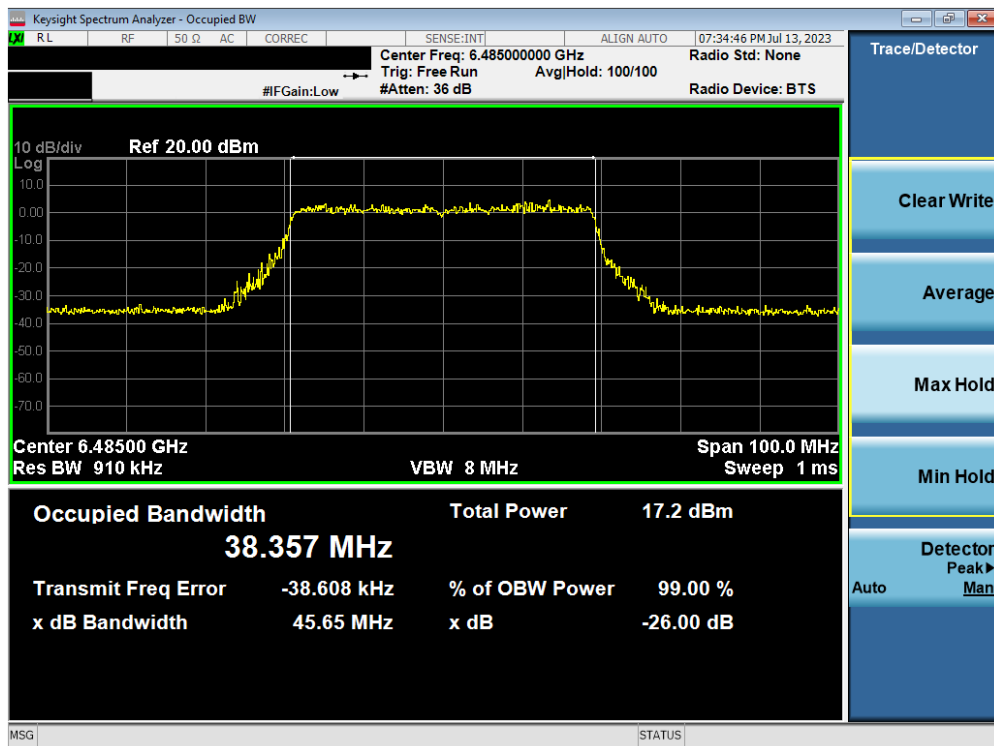
Plot 7-20. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 47)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-1 Bandwidth Measurements - (Full Tones)

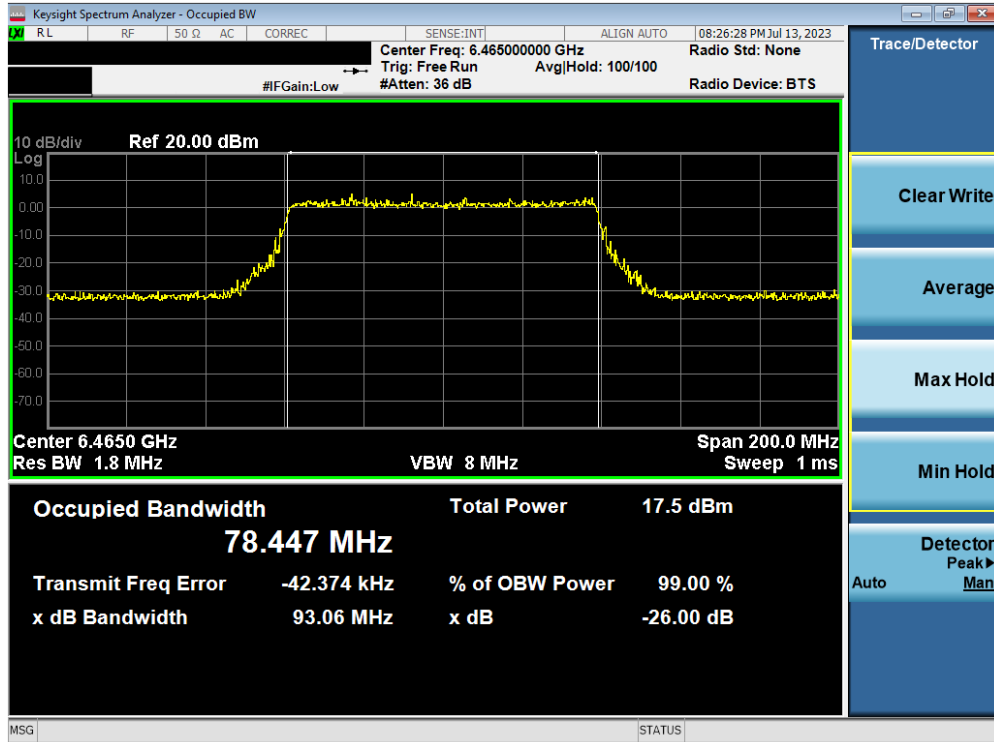


Plot 7-21. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 105)

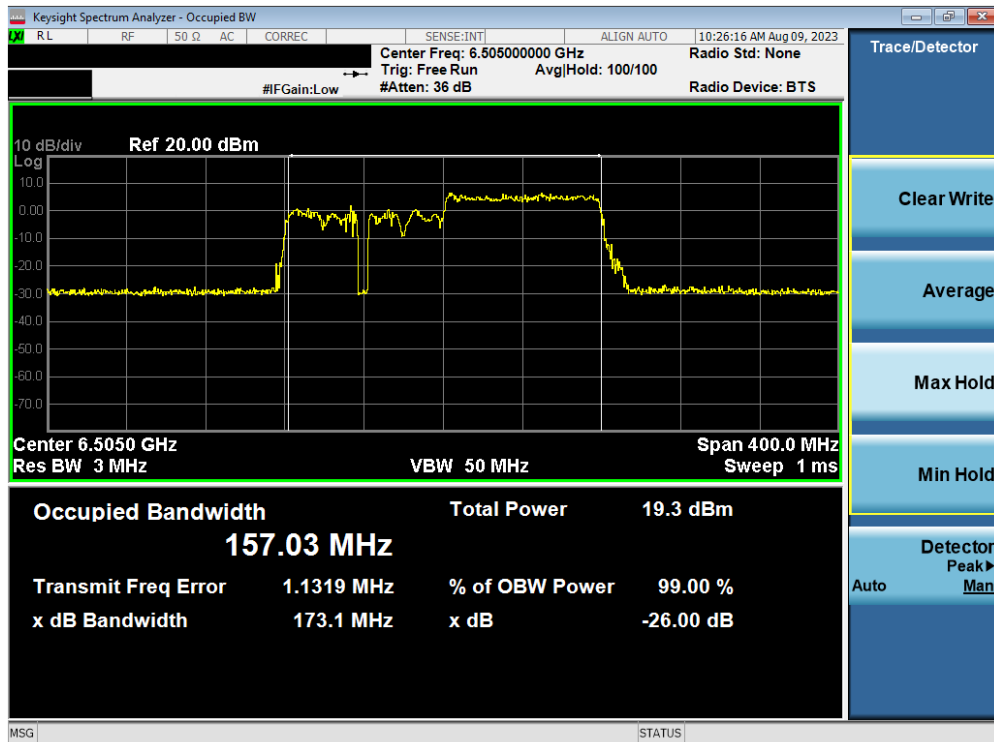


Plot 7-22. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 107)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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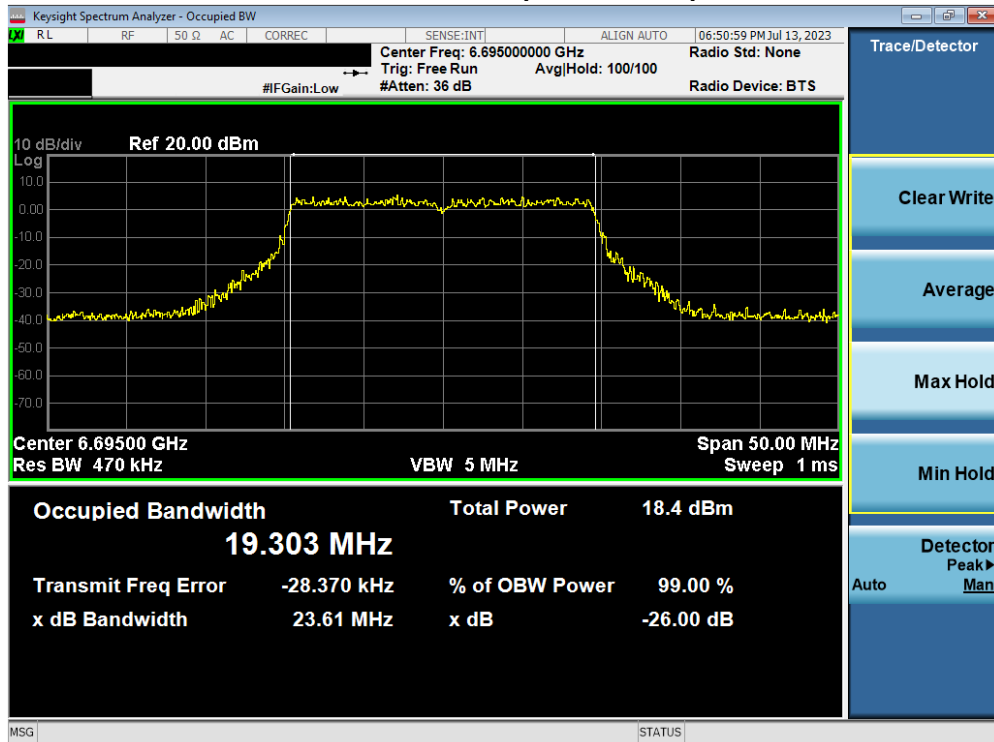
Plot 7-23. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 103)



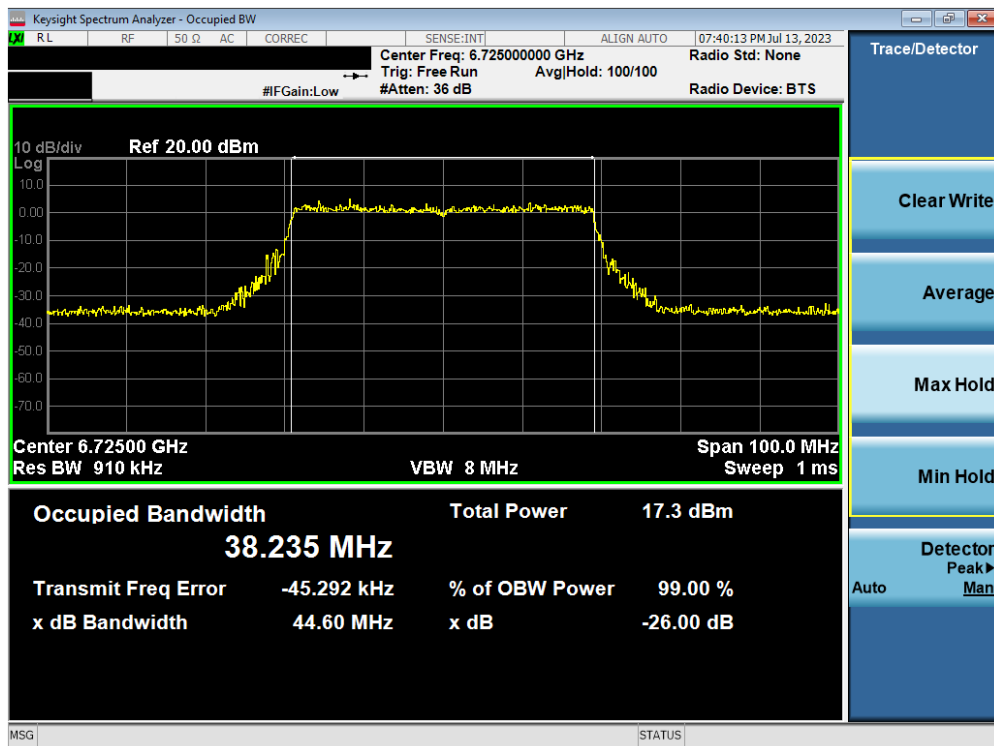
Plot 7-24. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 111)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-1 Bandwidth Measurements - (Full Tones)

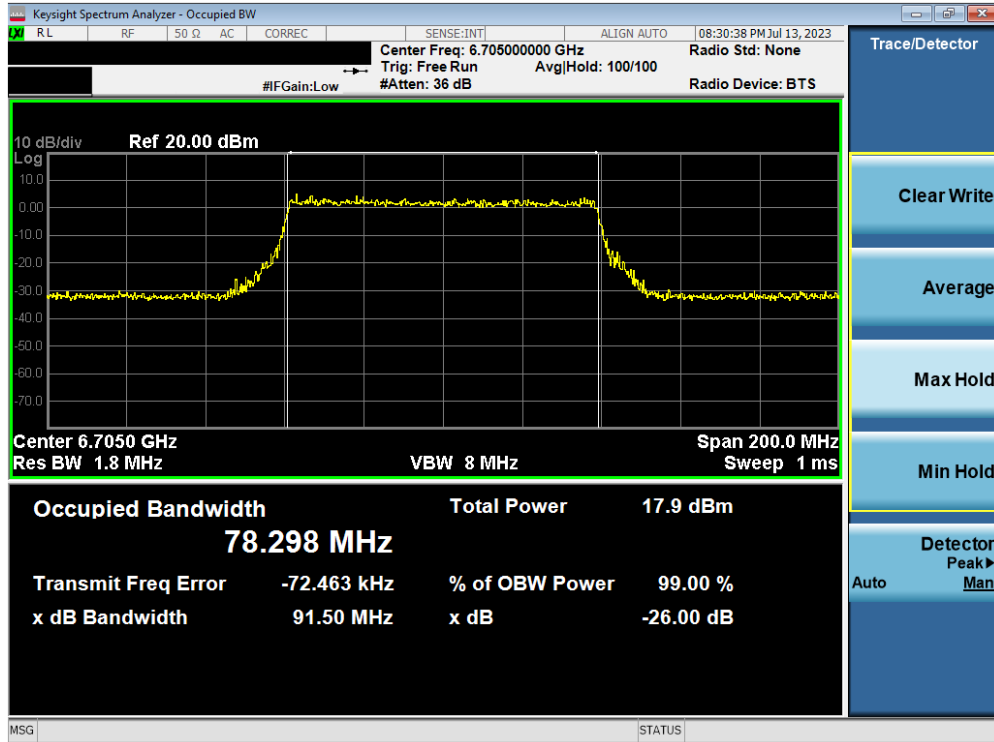


Plot 7-25. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 149)

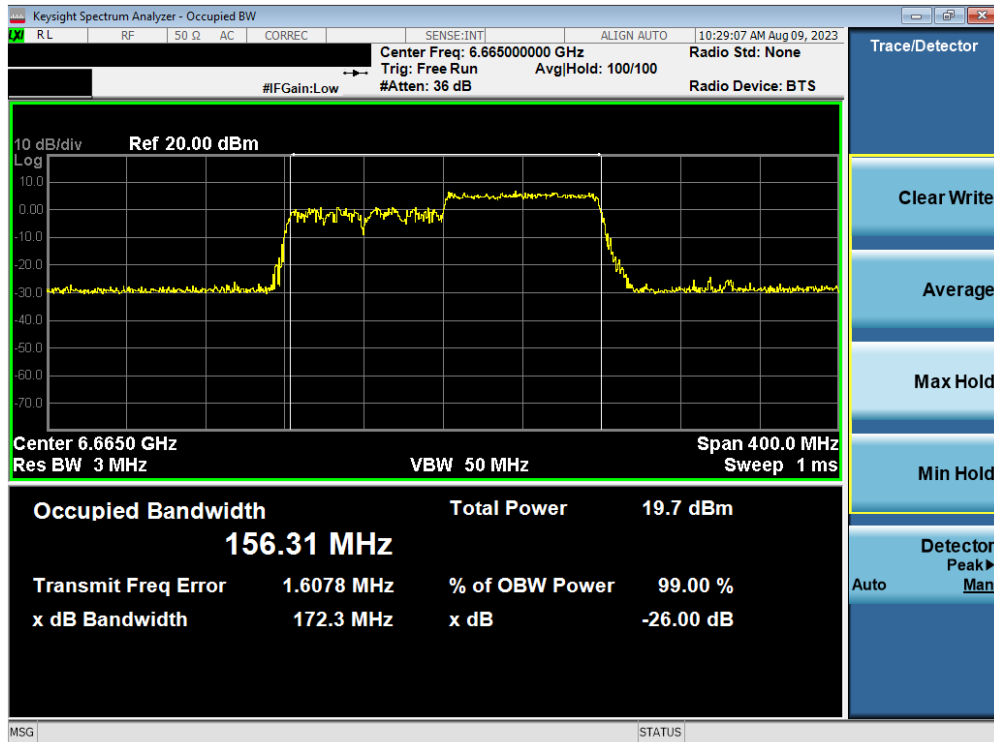


Plot 7-26. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 155)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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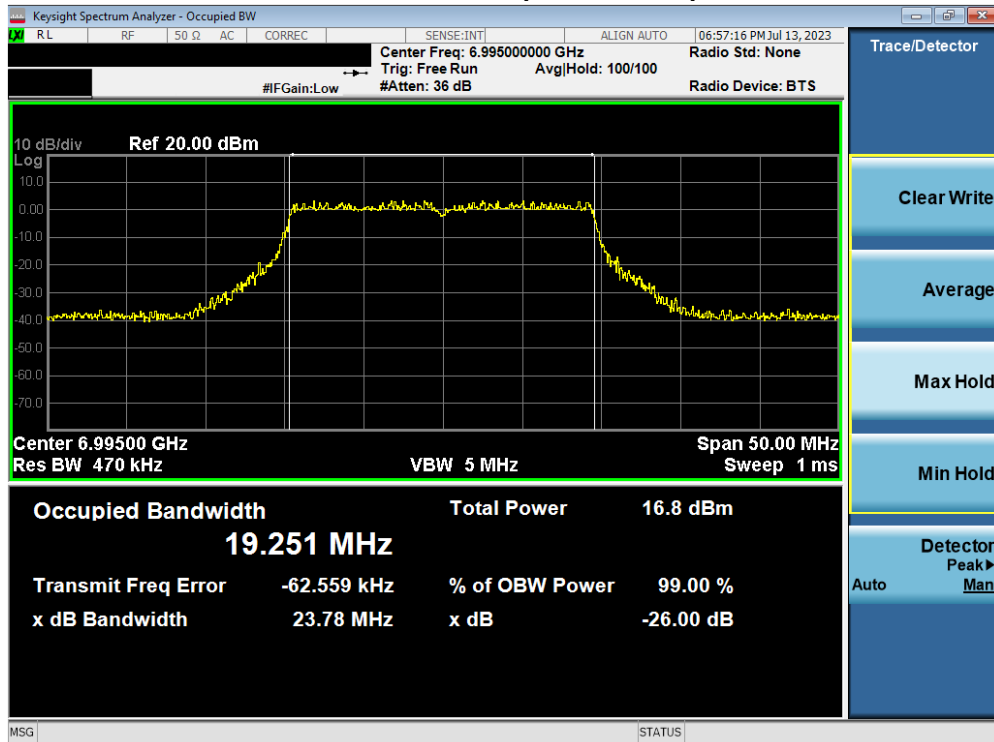
Plot 7-27. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 151)



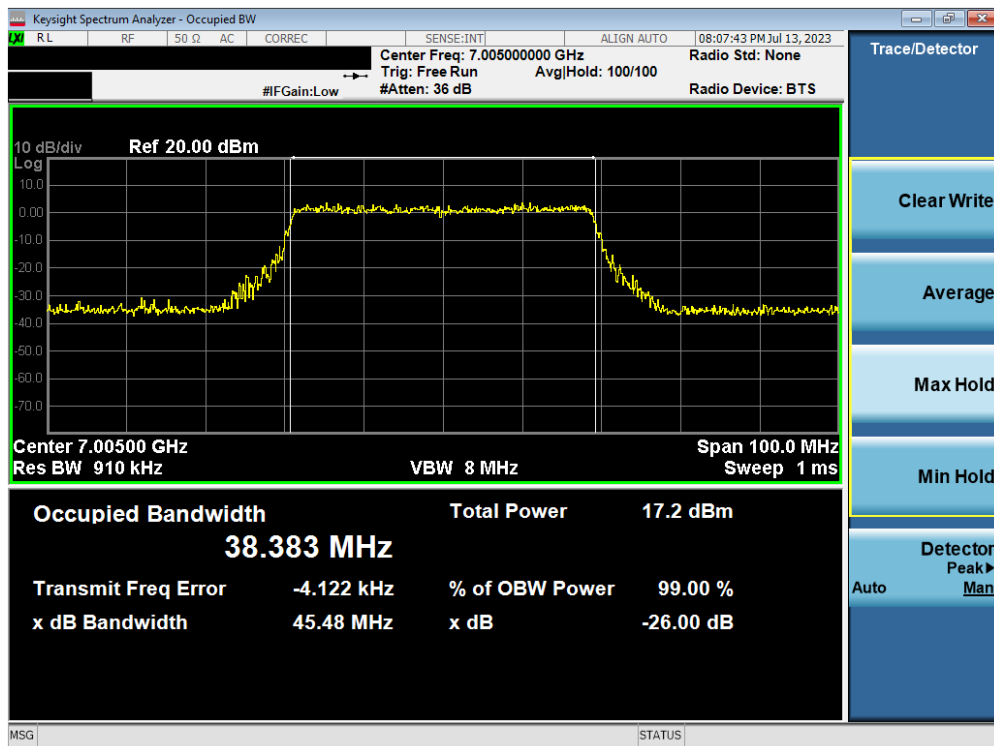
Plot 7-28. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 143)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-1 Bandwidth Measurements - (Full Tones)

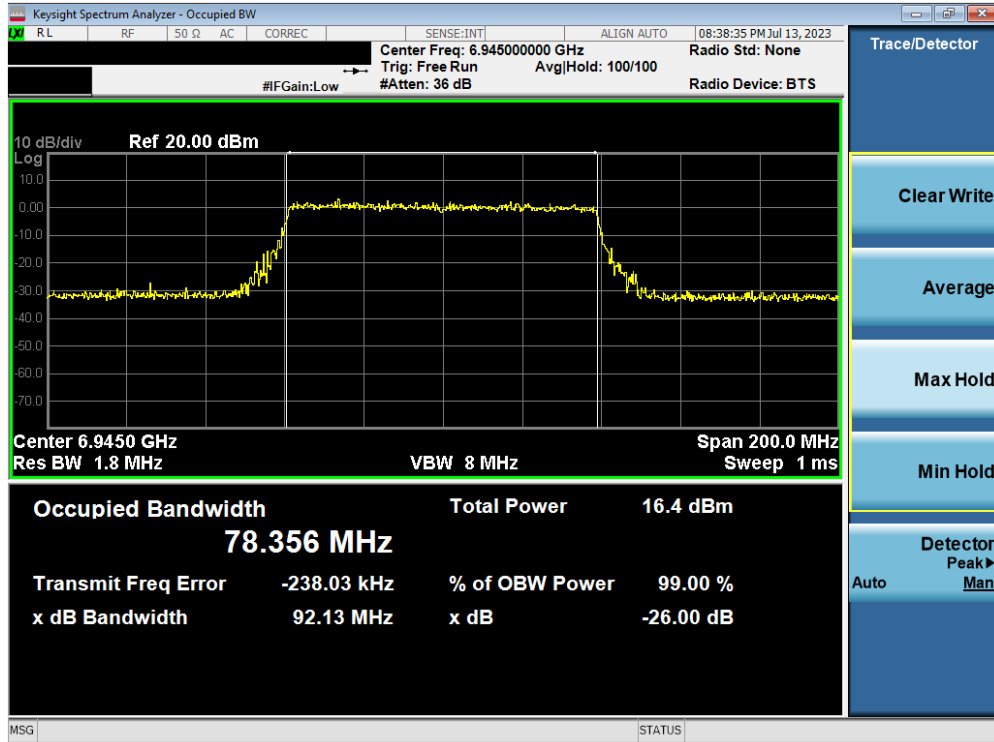


Plot 7-29. Occupied Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 209)

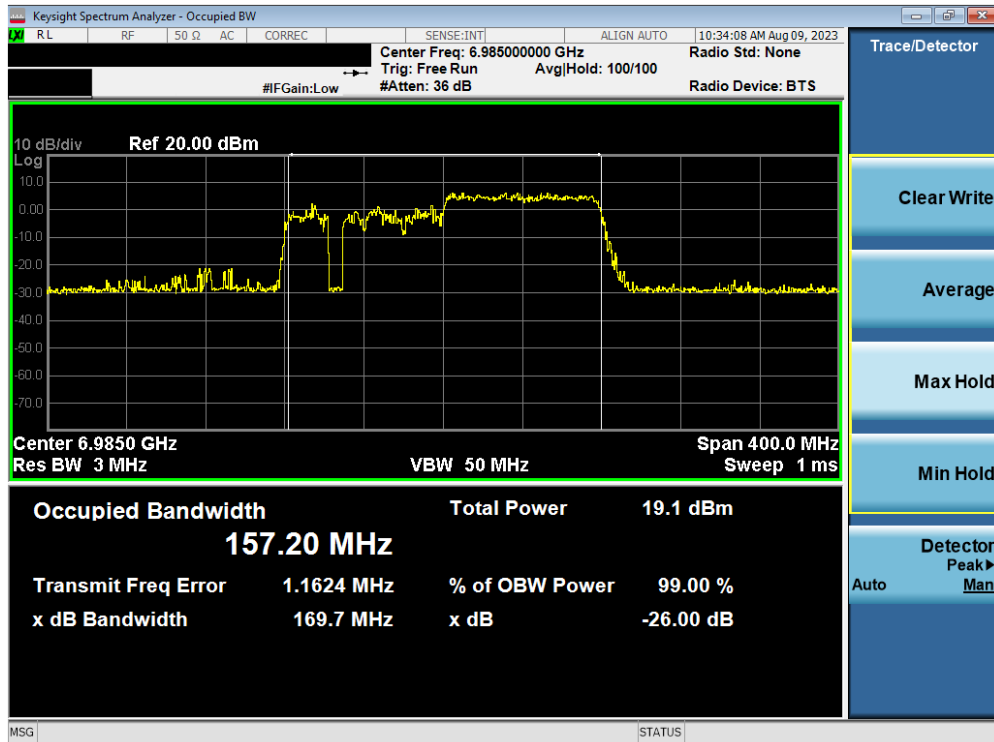


Plot 7-30. Occupied Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 211)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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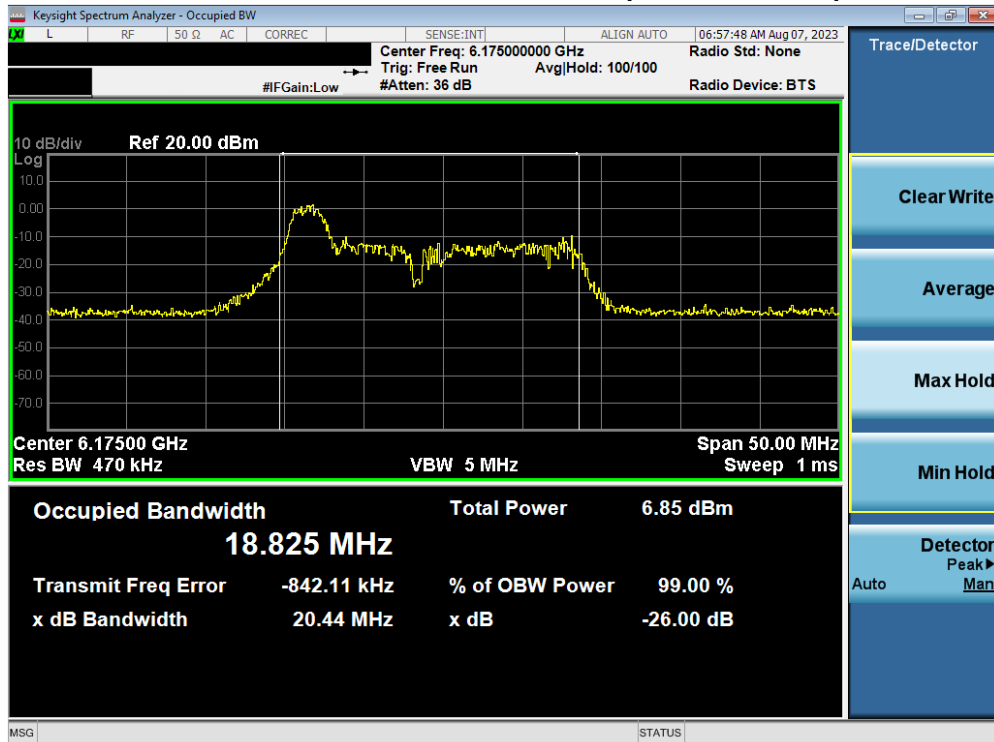
Plot 7-31. Occupied Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 199)



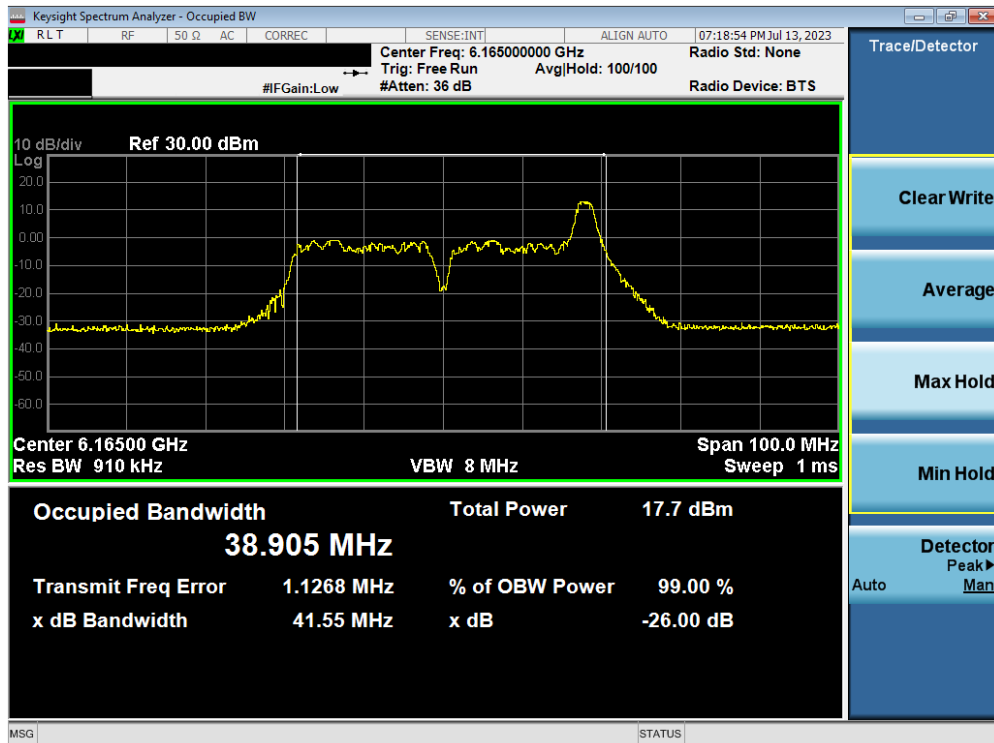
Plot 7-32. Occupied Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 207)

sFCC ID: A3LSMS711B		MEASUREMENT REPORT		Approved by: Technical Manager
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7.2.3 MIMO Antenna-2 Bandwidth Measurements – (Partial Tones)

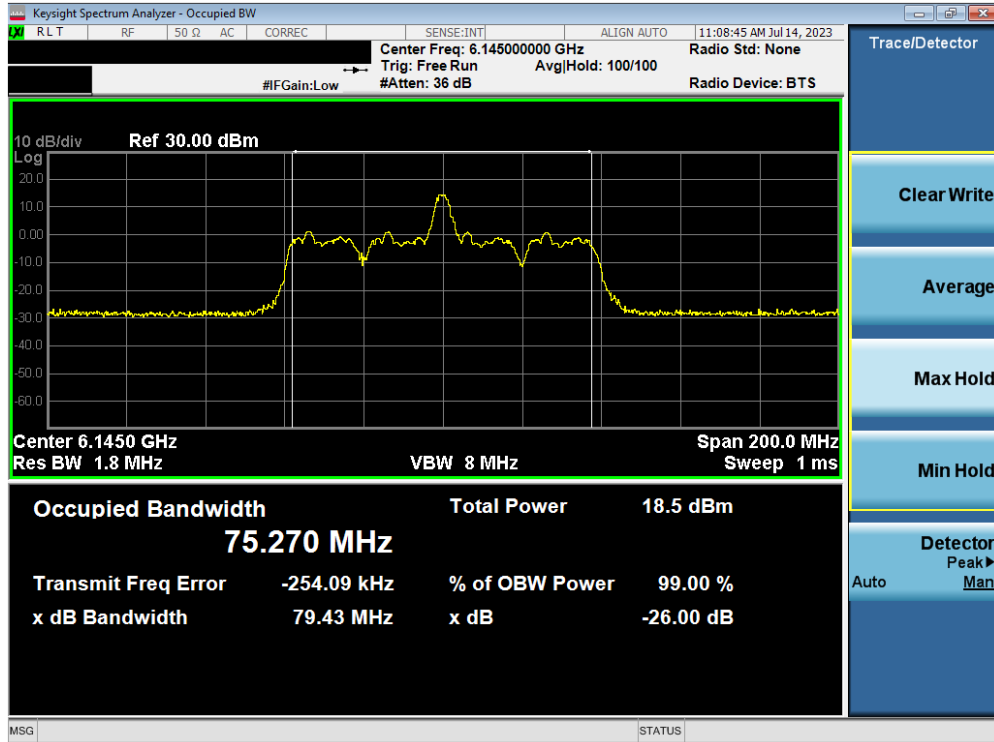


Plot 7-33. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 45)

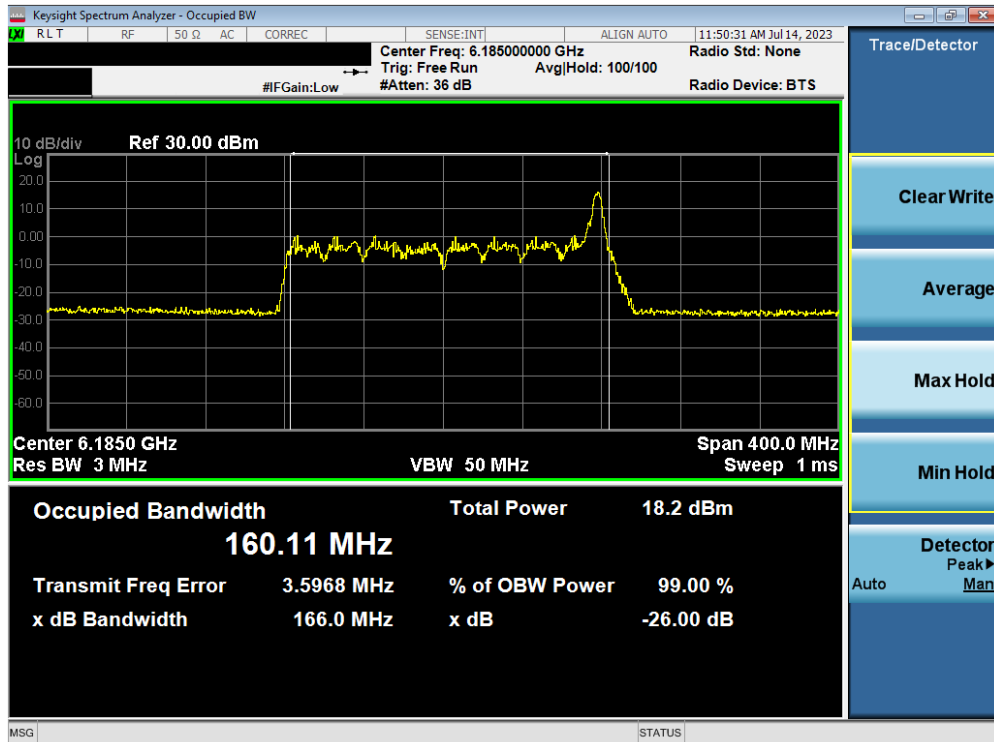


Plot 7-34. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 43)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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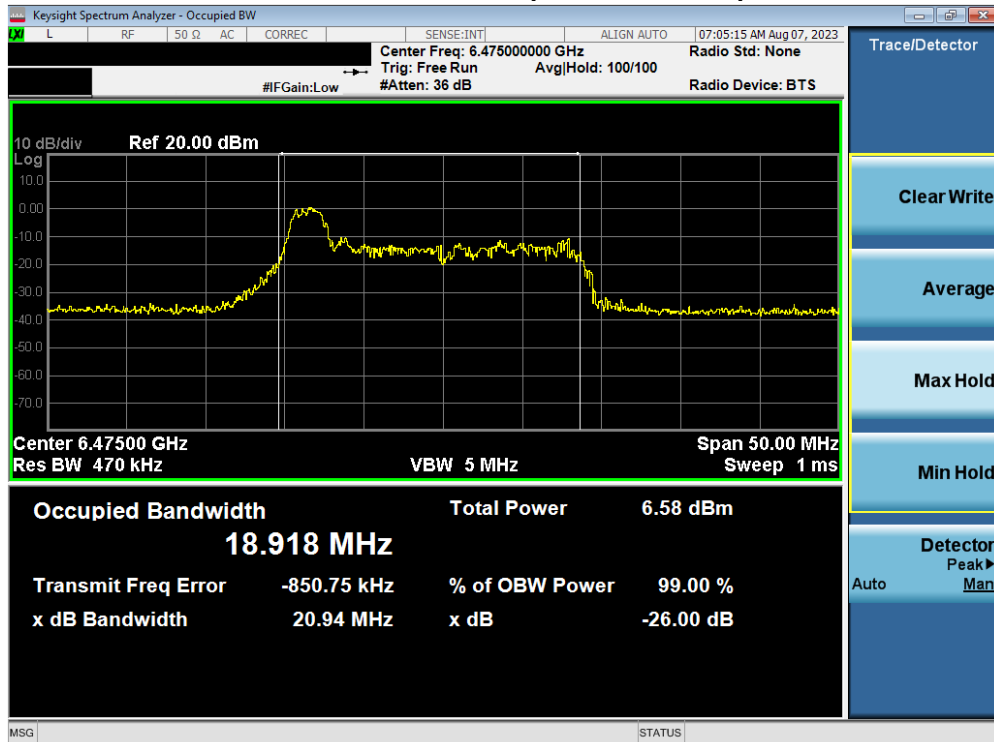
Plot 7-35. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 39)



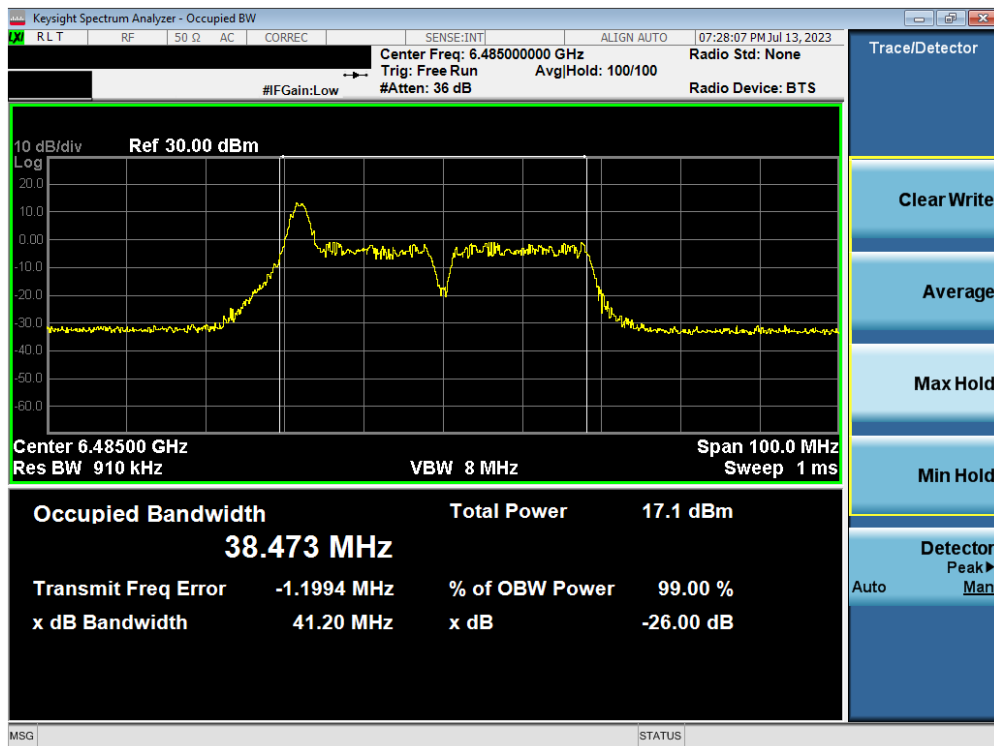
Plot 7-36. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 47)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-2 Bandwidth Measurements – (Partial Tones)

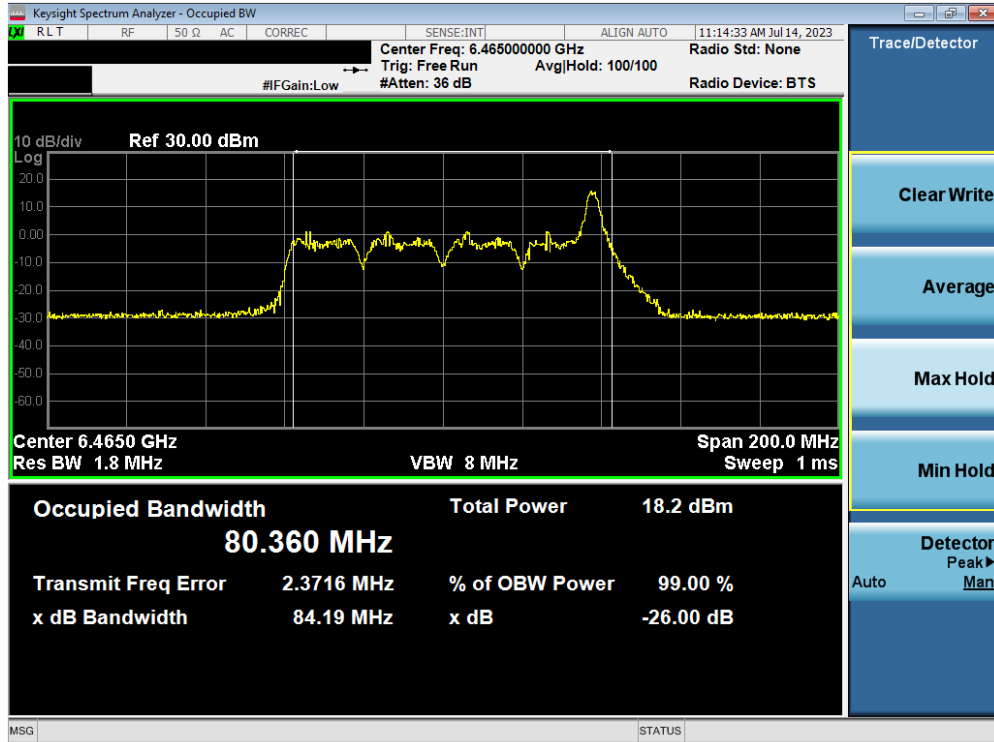


Plot 7-37. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802.11 ax (26 Tones) (UNII Band 6) – Ch. 105)

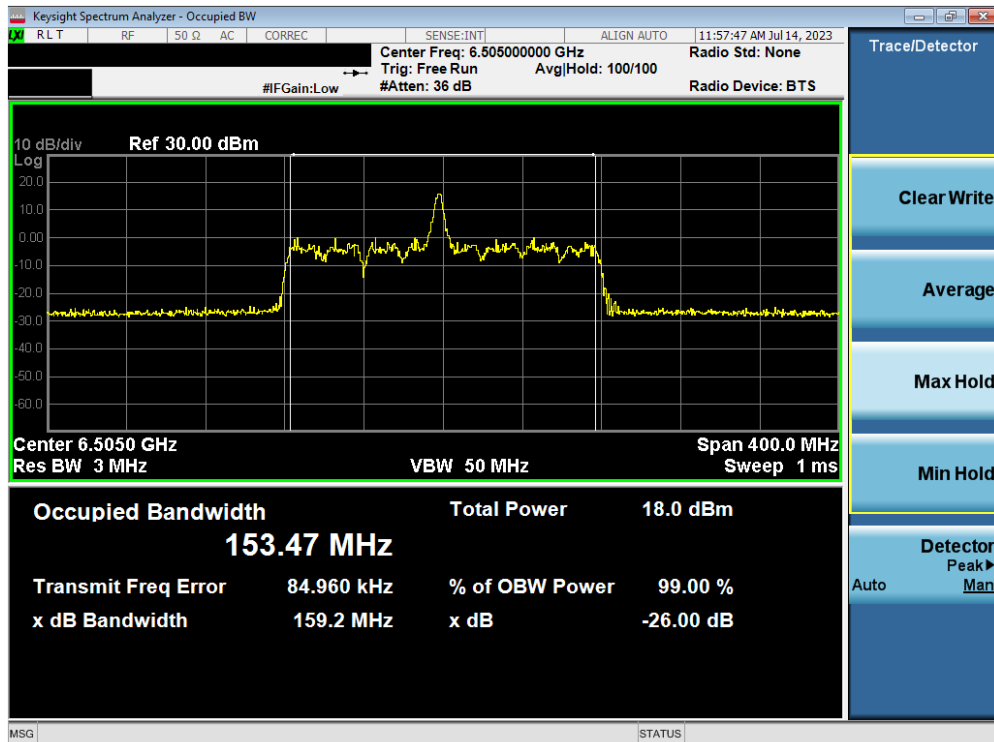


Plot 7-38. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802.11 ax (26 Tones) (UNII Band 6) – Ch. 107)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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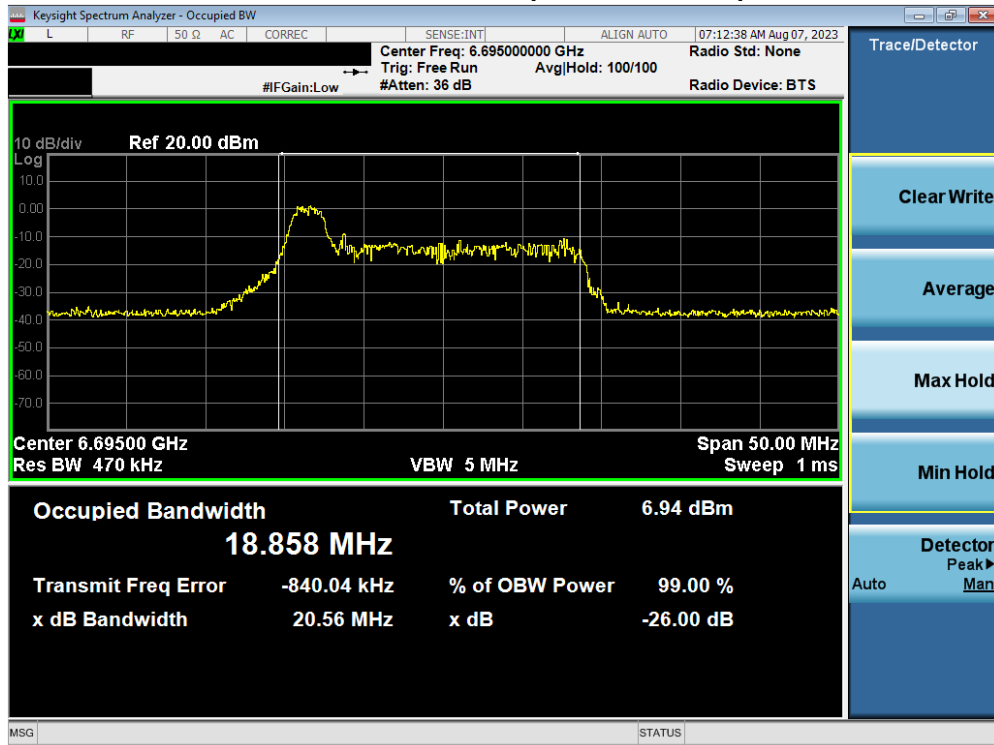
Plot 7-39. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 103)



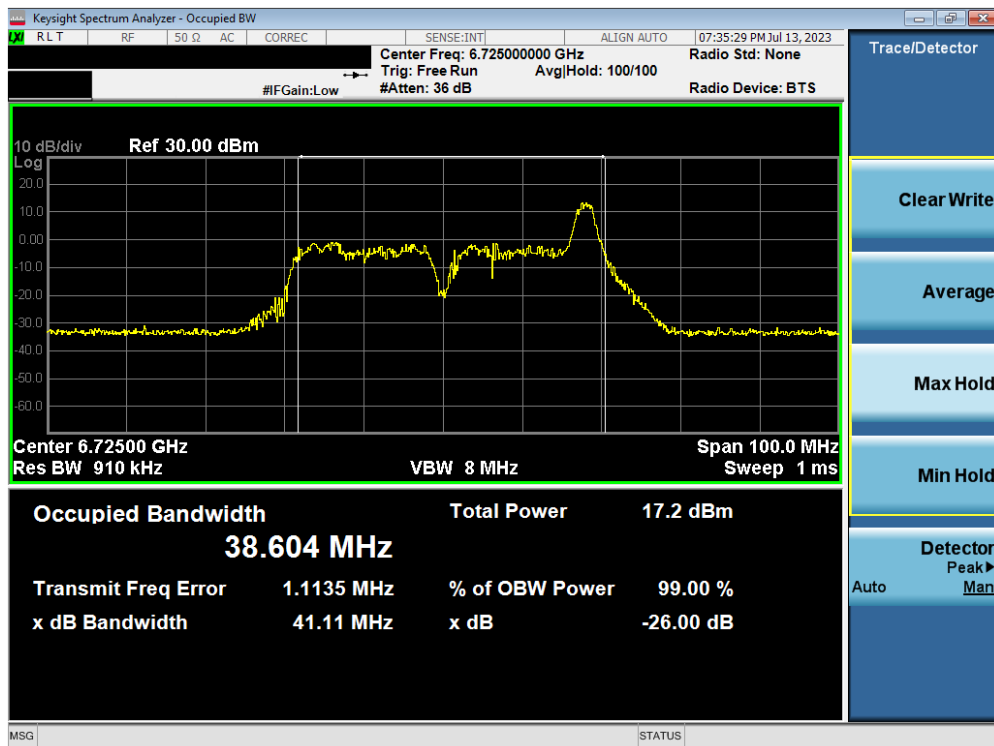
Plot 7-40. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 111)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-2 Bandwidth Measurements – (Partial Tones)

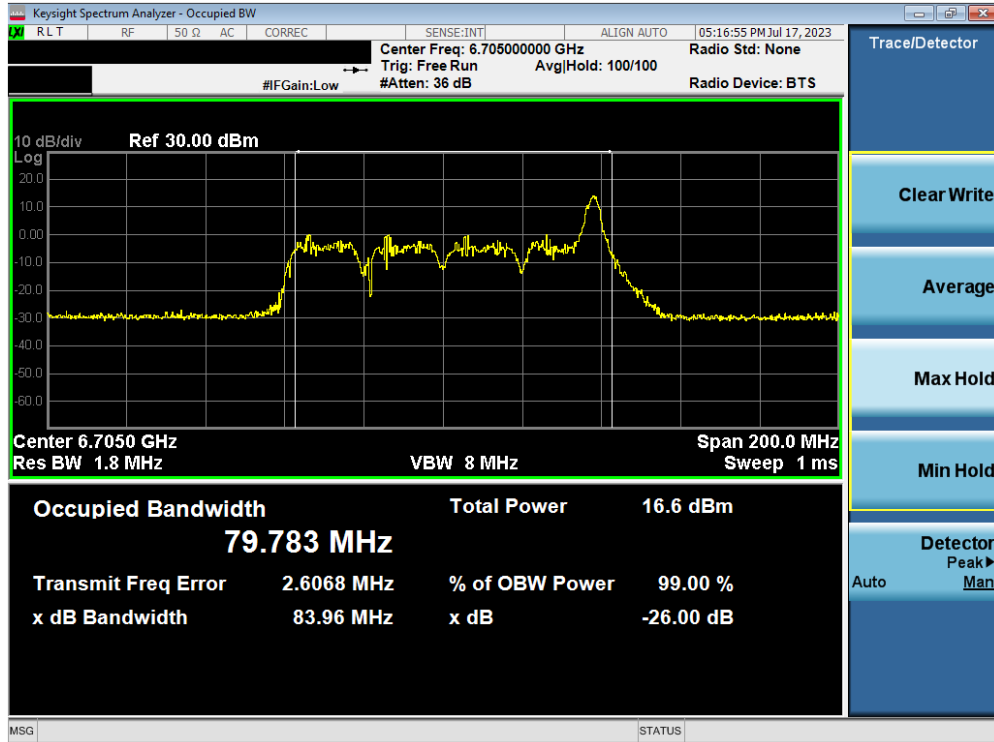


Plot 7-41. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802.11 ax (26 Tones) (UNII Band 7) – Ch. 149)

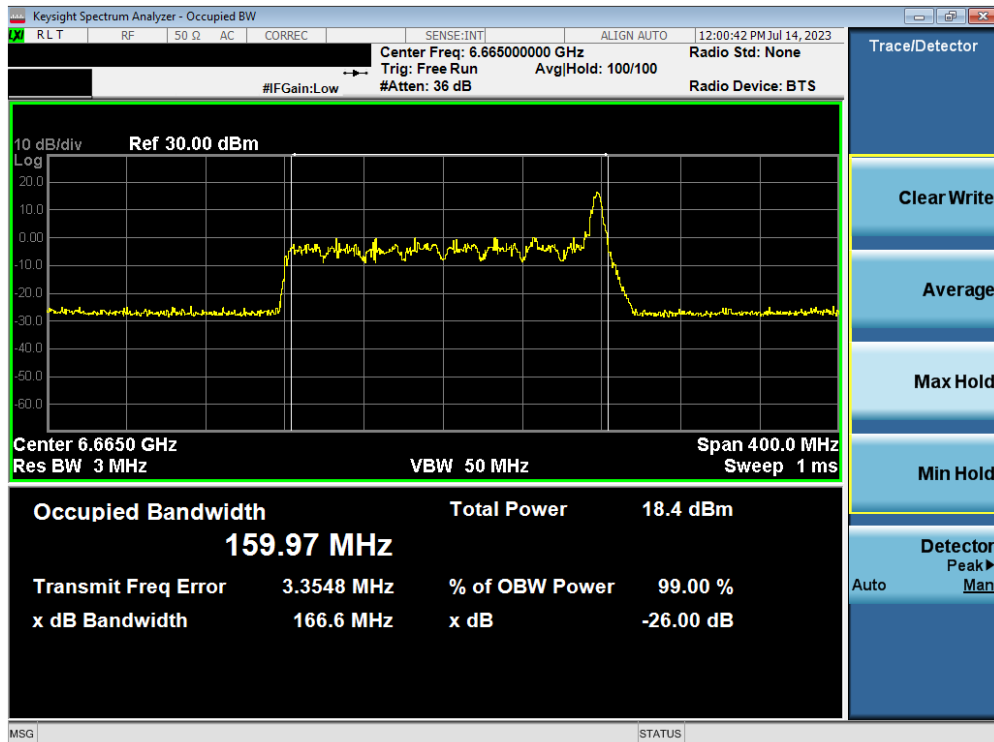


Plot 7-42. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802.11 ax (26 Tones) (UNII Band 7) – Ch. 155)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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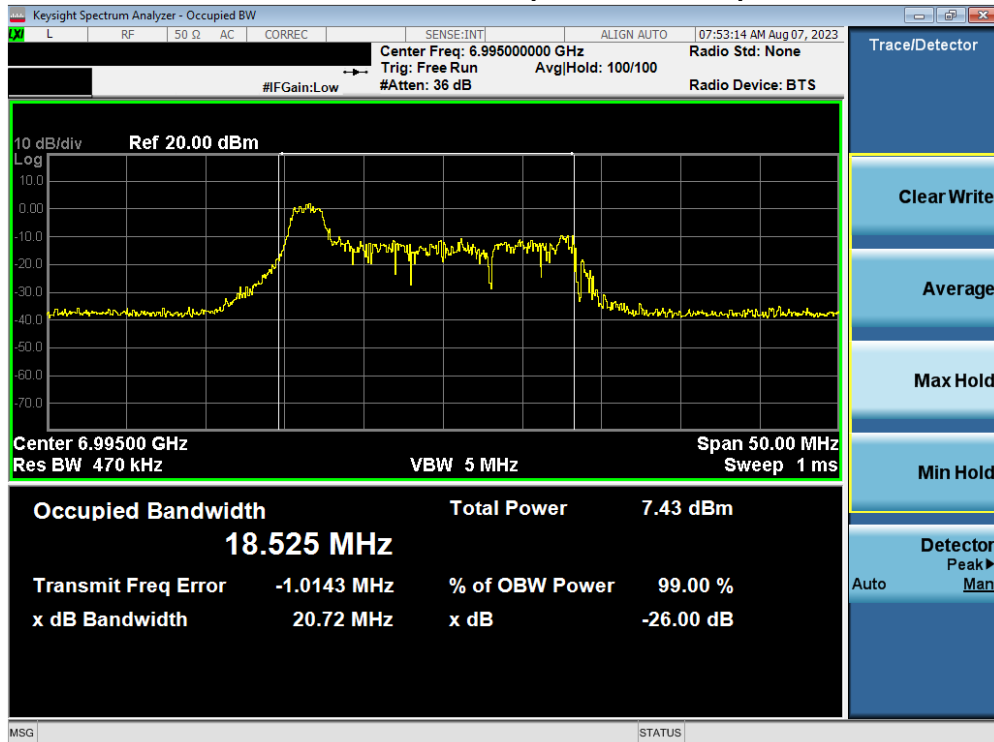
Plot 7-43. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 151)



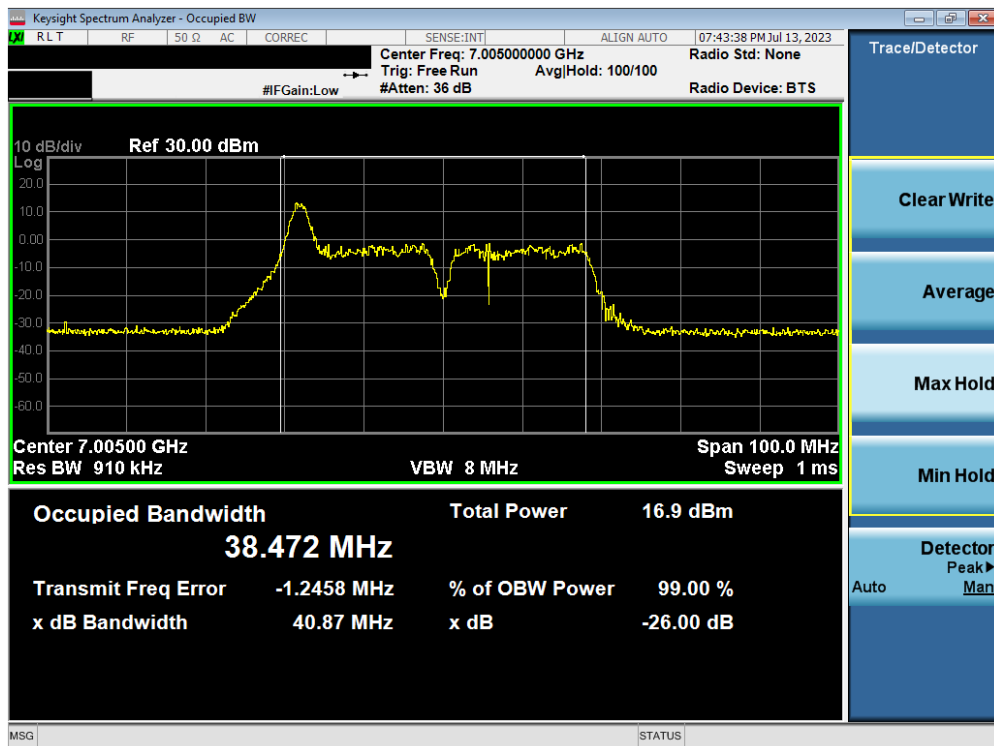
Plot 7-44. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 143)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-2 Bandwidth Measurements – (Partial Tones)

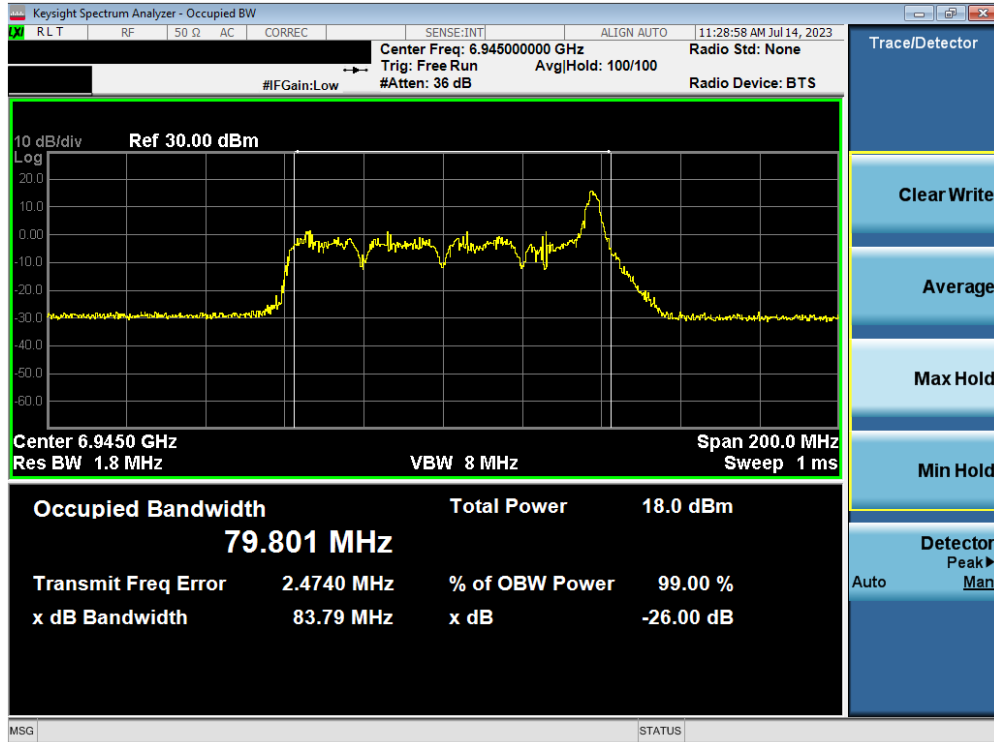


Plot 7-45. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 209)

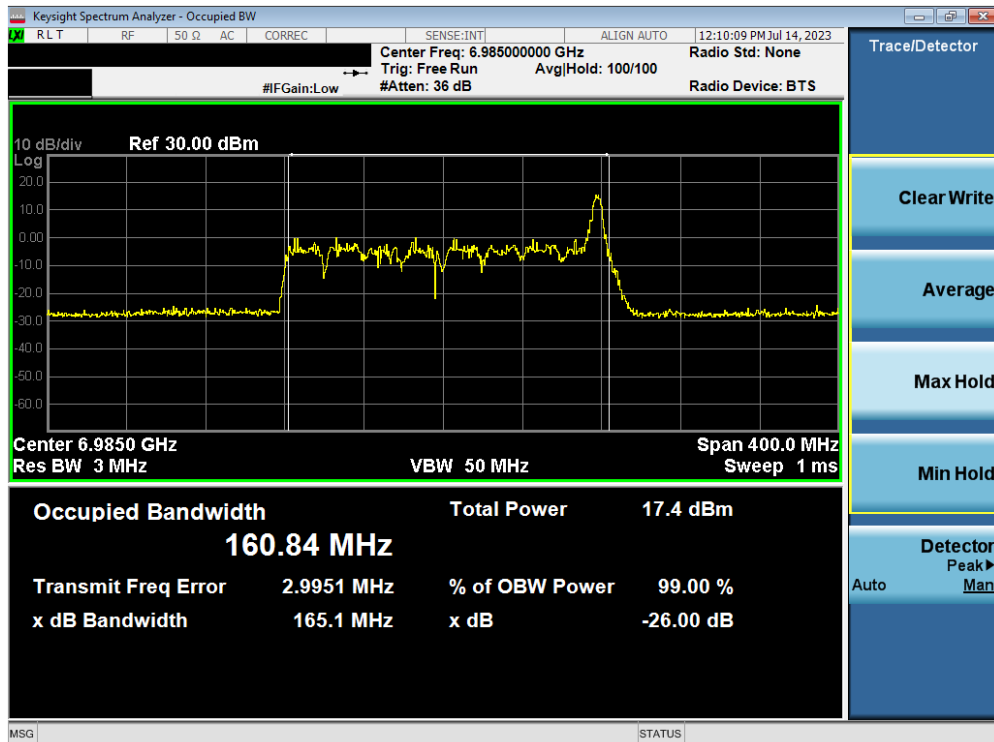


Plot 7-46. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 211)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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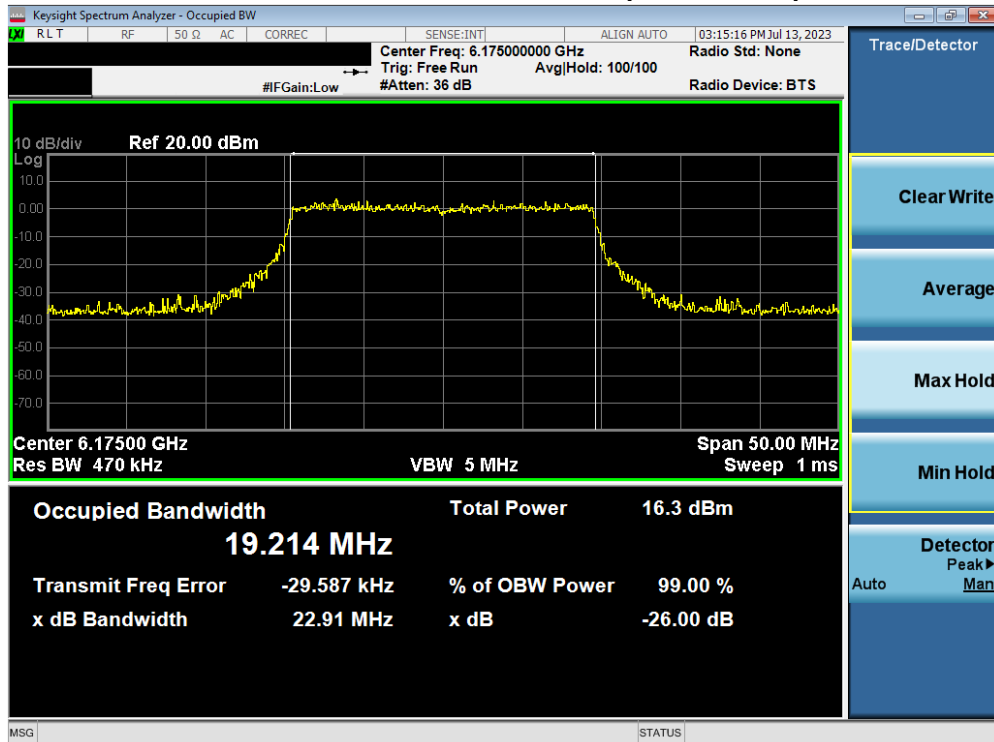
Plot 7-47. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 199)



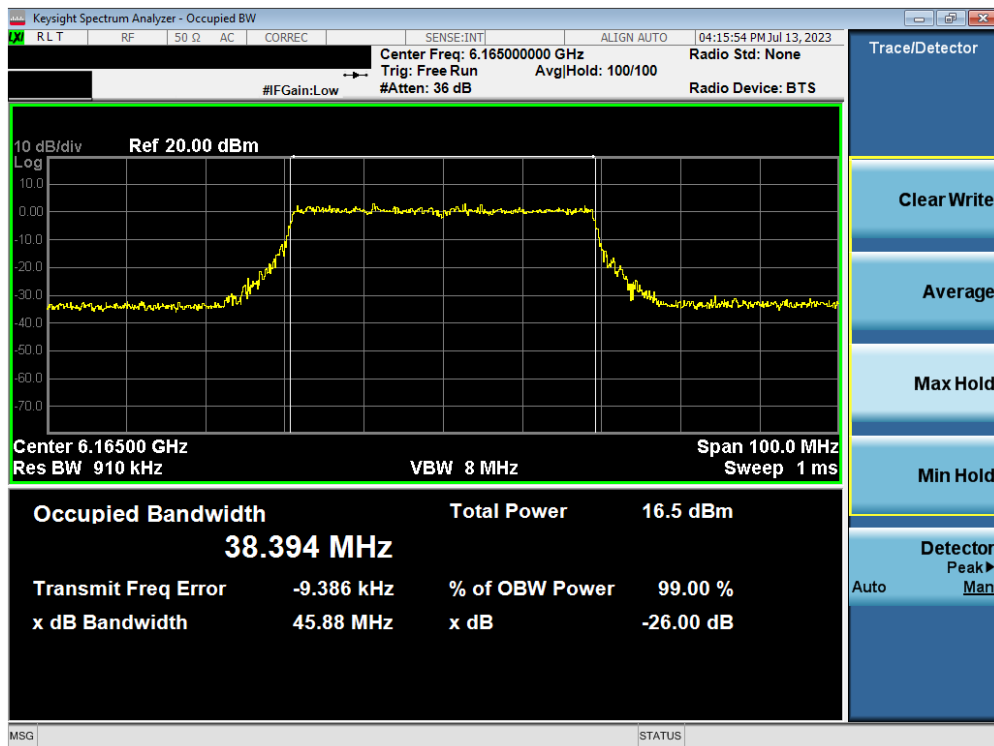
Plot 7-48. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 207)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.2.4 MIMO Antenna-2 Bandwidth Measurements – (Full Tones)

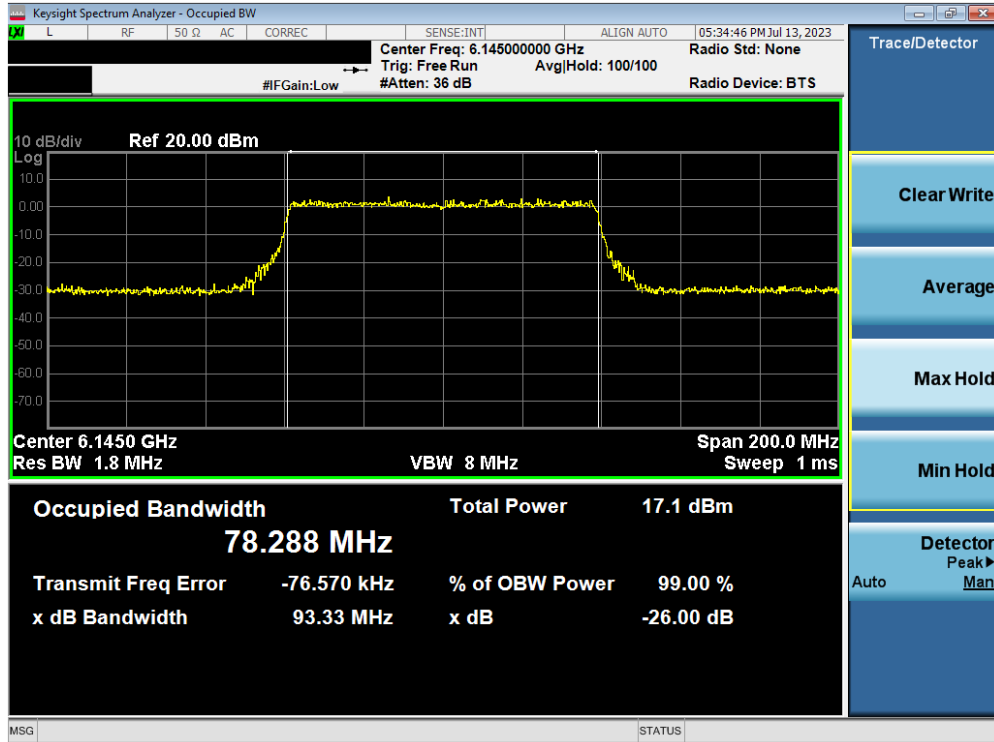


Plot 7-49. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 45)

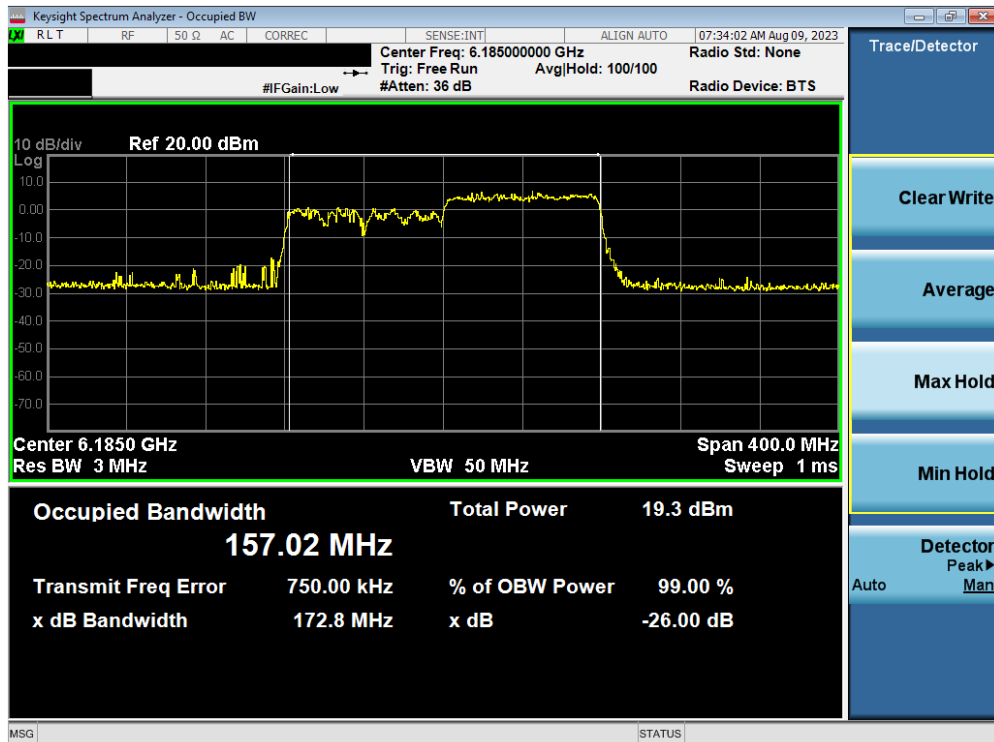


Plot 7-50. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 43)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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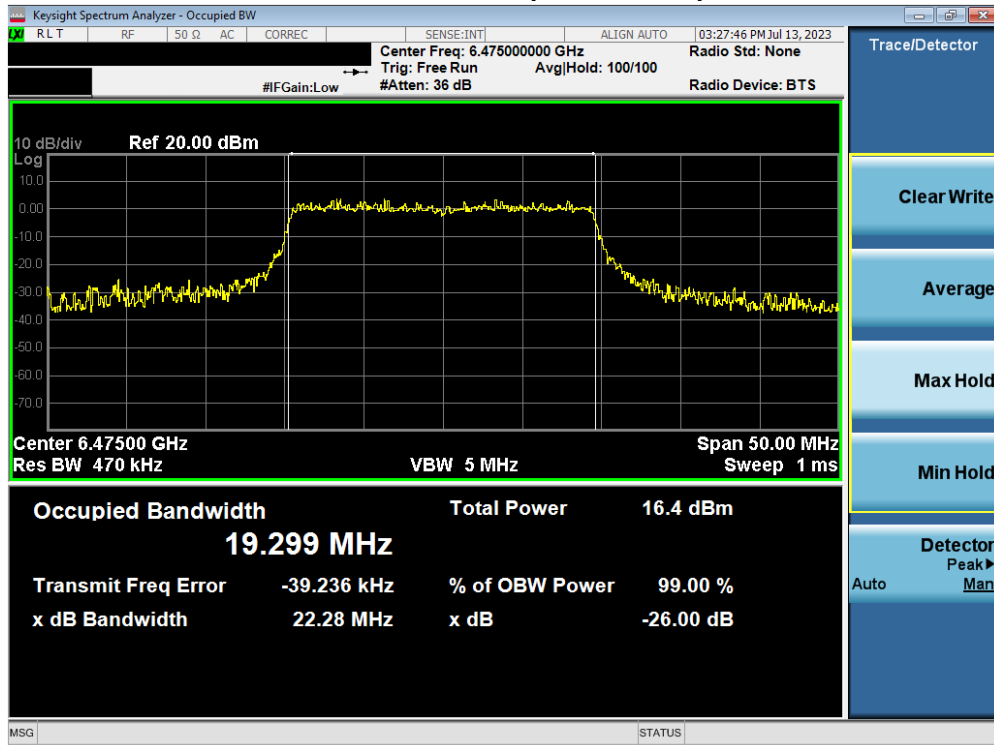
Plot 7-51. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 39)



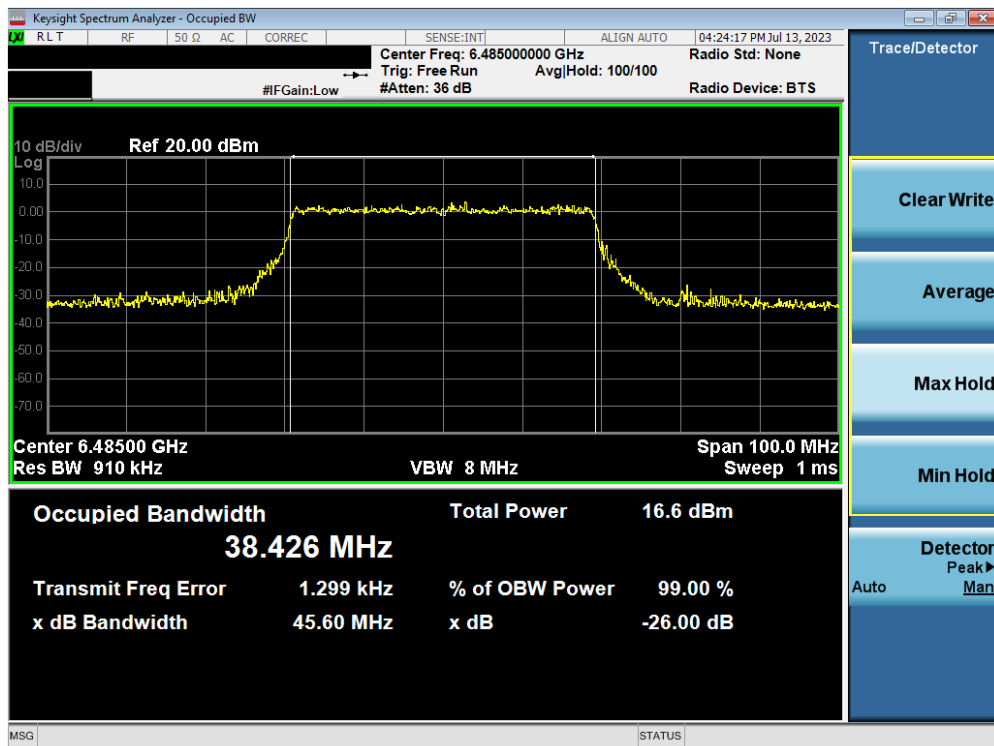
Plot 7-52. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 47)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-2 Bandwidth Measurements – (Full Tones)

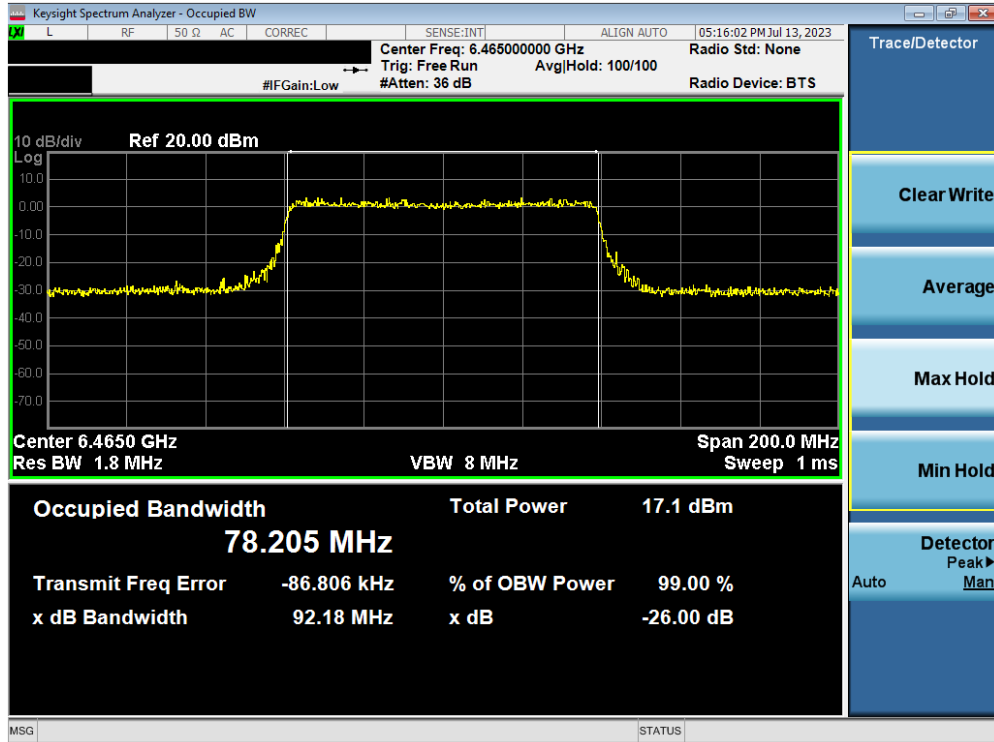


Plot 7-53. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 105)

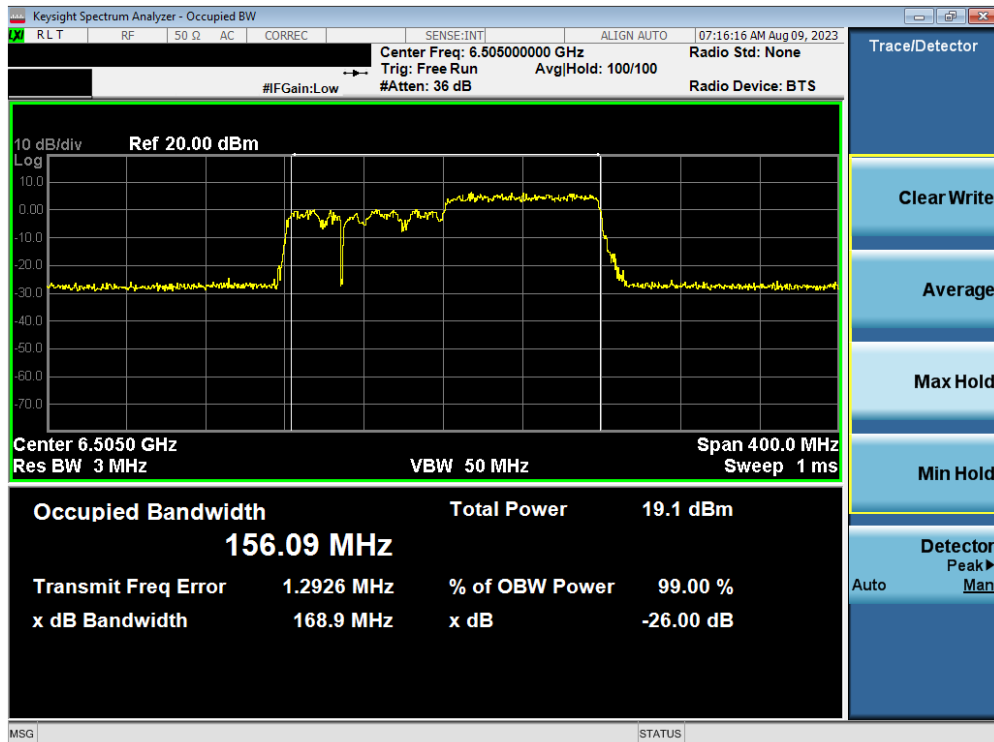


Plot 7-54. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 107)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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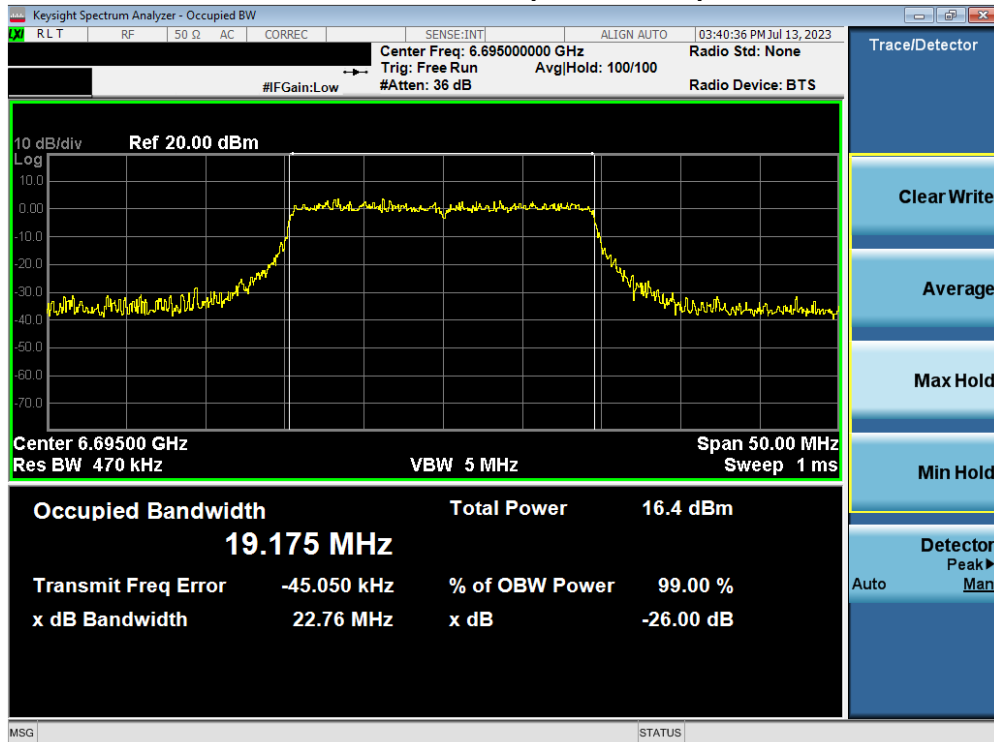
Plot 7-55. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 103)



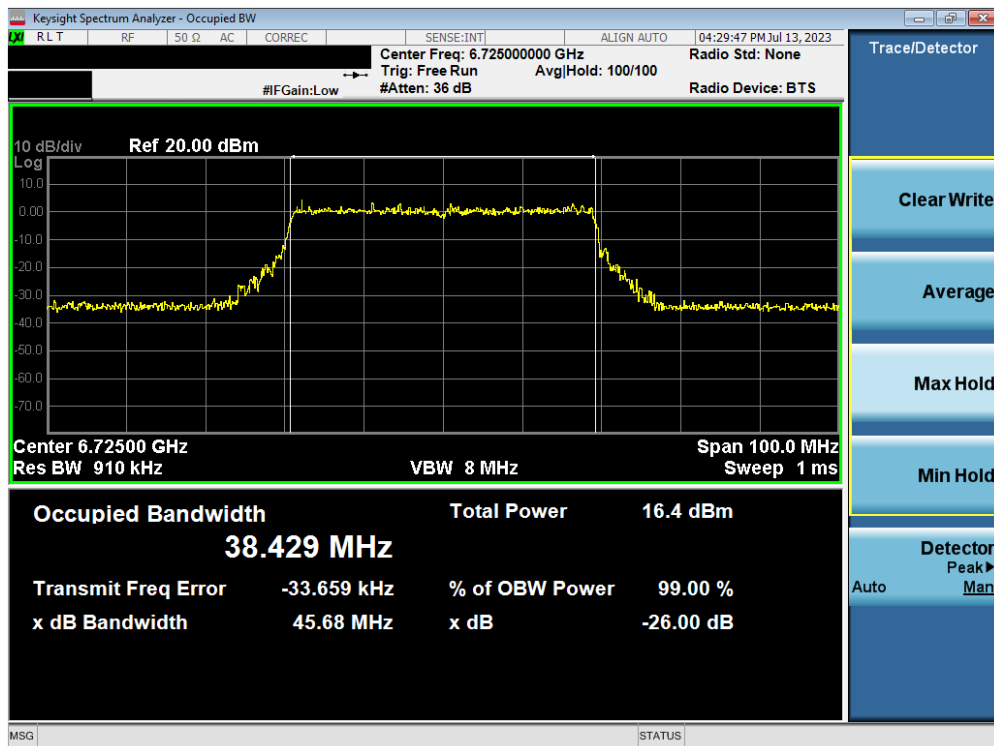
Plot 7-56. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 111)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-2 Bandwidth Measurements – (Full Tones)

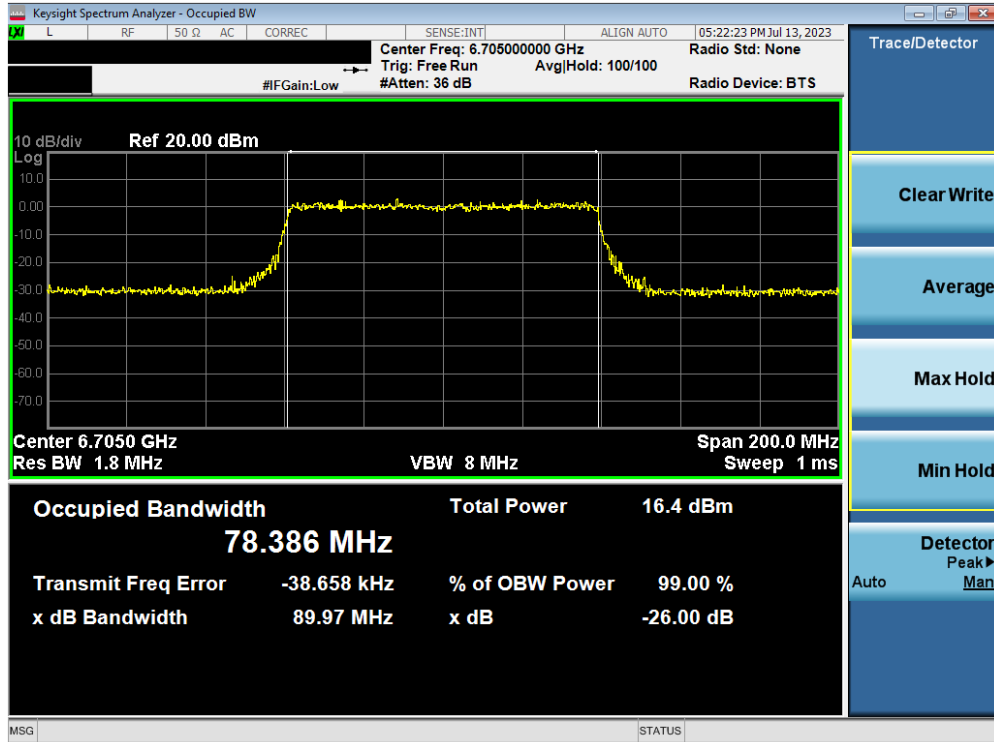


Plot 7-57. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 149)

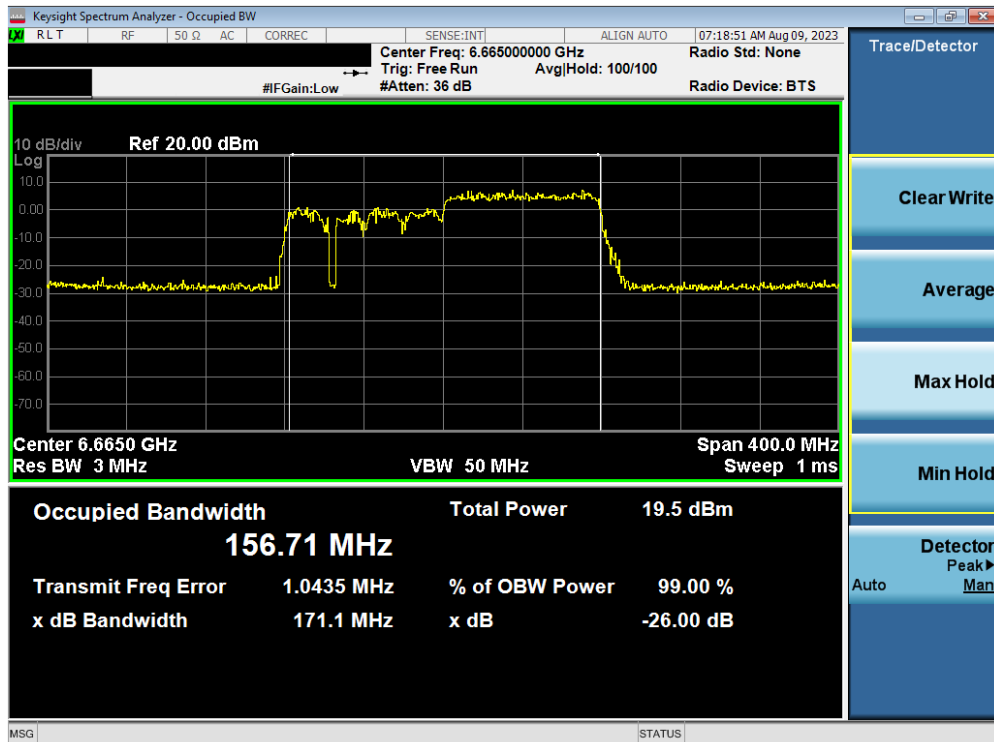


Plot 7-58. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 155)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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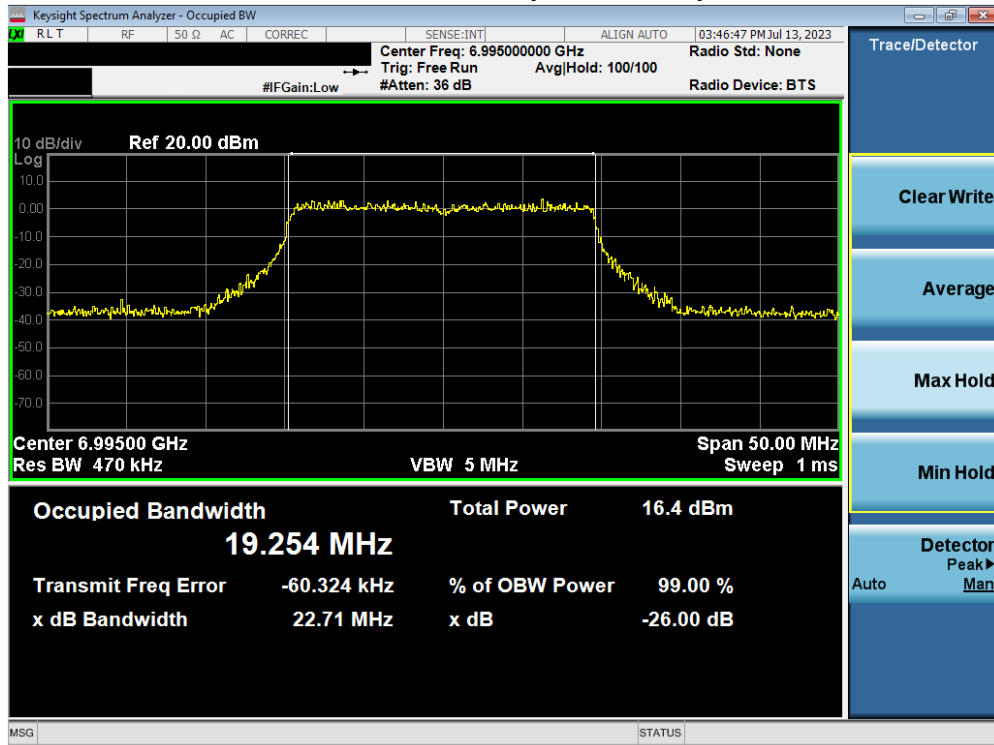
Plot 7-59. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 151)



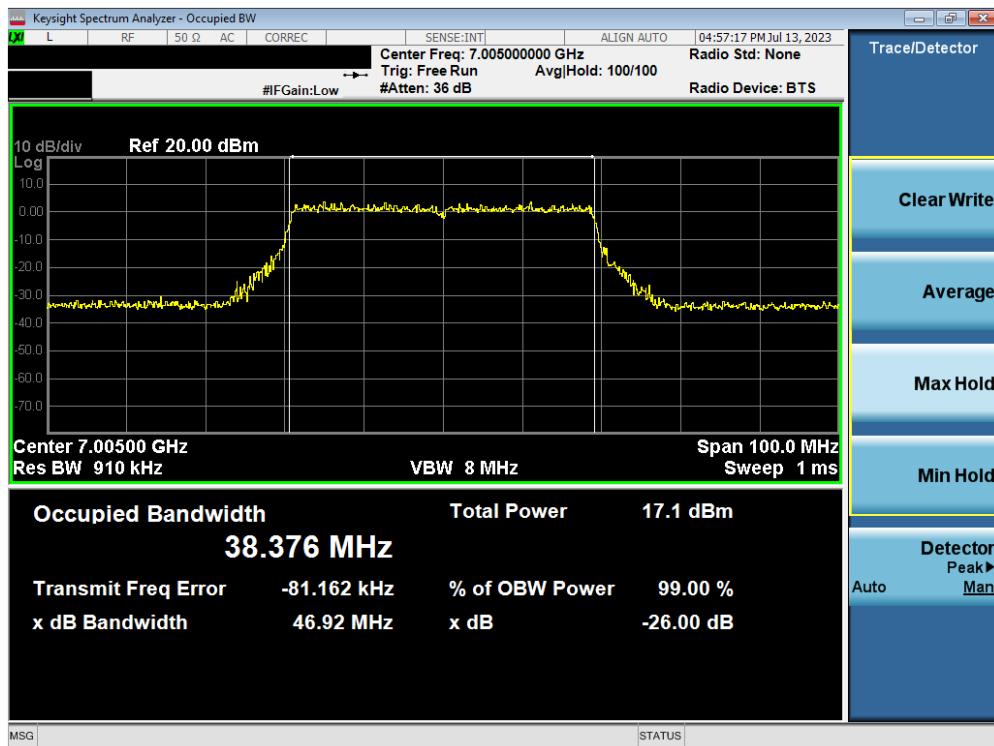
Plot 7-60. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 143)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-2 Bandwidth Measurements – (Full Tones)

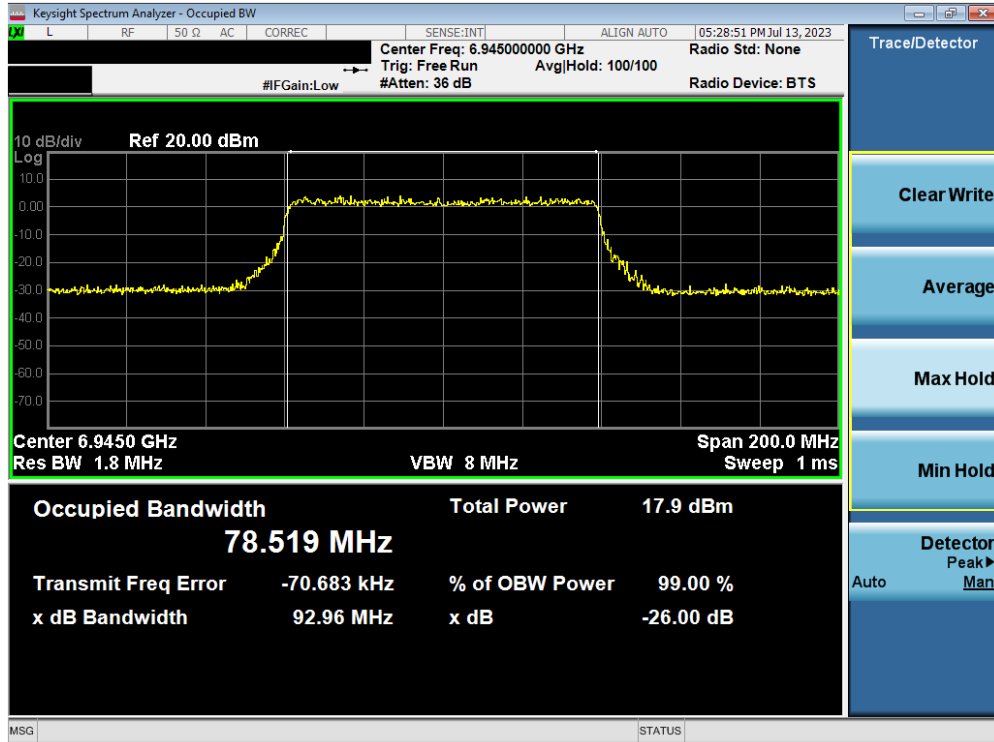


Plot 7-61. Occupied Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 209)

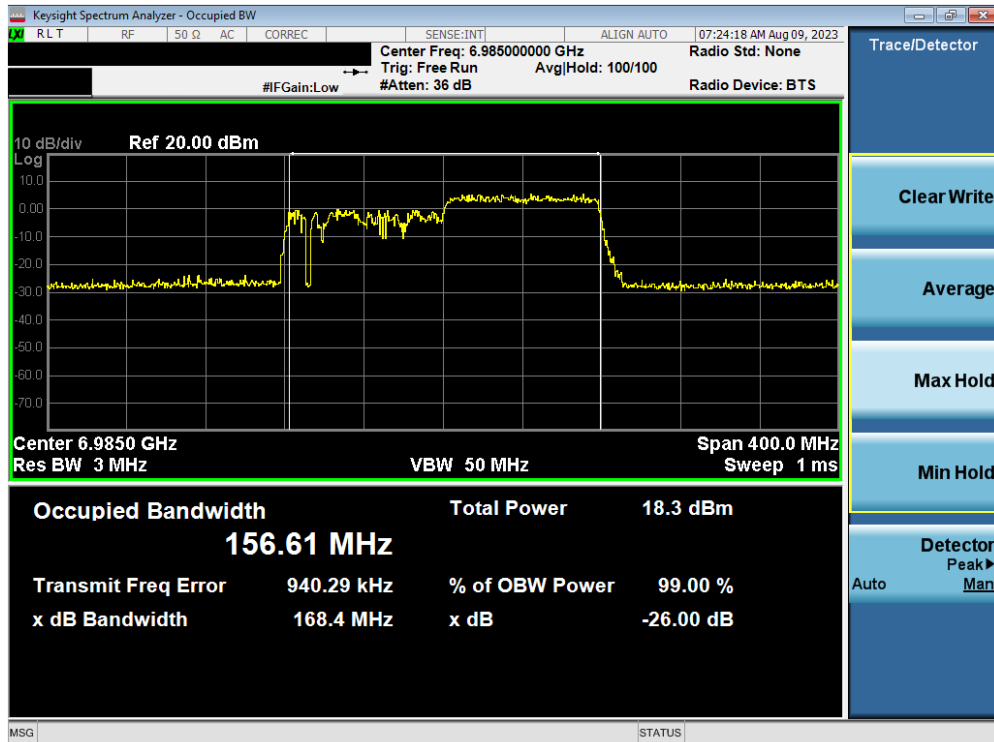


Plot 7-62. Occupied Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 211)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-63. Occupied Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 199)



Plot 7-64. Occupied Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 207)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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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 the tighter low power indoor access point limit of 24dBm e.i.r.p. for both cases.

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MIMO Maximum Conducted Output Power Measurements (26 Tones)

Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. margin	
				RU Index: 0			RU Index: 4			RU Index: 8							
				ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO					
20MHz BW	5	2	26T	-1.52	-1.53	1.49	-1.91	-1.75	1.18	-1.71	-1.52	1.40	0.02	1.51	24.0	-22.49	
			26T	-1.51	-1.54	1.49	-1.79	-1.64	1.30	-1.89	-2.09	1.02	-0.91	0.58	24.0	-23.42	
			26T	-2.23	-2.31	0.74	-1.68	-1.93	1.21	-2.09	-2.46	0.74	-1.42	-0.22	24.0	-24.22	
	6	105	26T	-1.73	-1.87	1.21	-1.85	-1.70	1.24	-1.72	-2.11	1.10	-1.42	-0.19	24.0	-24.19	
			26T	-1.58	-2.49	1.00	-1.93	-2.55	0.78	-1.49	-2.66	0.97	-1.42	-0.42	24.0	-24.42	
			26T	-1.57	-2.17	1.15	-1.54	-2.37	1.08	-1.83	-2.77	0.74	0.25	1.41	24.0	-22.59	
	7	117	26T	-1.84	-1.97	1.11	-1.78	-1.62	1.31	-1.49	-1.77	1.38	0.25	1.64	24.0	-22.36	
			26T	-2.02	-2.41	0.80	-1.72	-1.92	1.19	-1.80	-2.65	0.81	-0.86	0.34	24.0	-23.66	
			26T	-2.12	-1.75	1.08	-2.38	-1.75	0.96	-2.12	-2.07	0.92	-1.71	-0.63	24.0	-24.63	
	8	189	26T	-1.61	-2.09	1.17	-1.99	-1.98	1.03	-1.65	-2.23	1.08	-1.49	-0.32	24.0	-24.32	
			26T	-1.69	-1.76	1.29	-2.15	-1.83	1.02	-1.49	-1.94	1.30	-1.43	-0.13	24.0	-24.13	
			26T	-2.43	-1.17	1.26	-1.74	-2.88	0.74	-1.99	-1.85	1.09	-1.83	-0.57	24.0	-24.57	
40MHz BW	5	3	26T	-2.20	-2.39	0.72	-1.98	-2.09	0.98	-1.75	-1.80	1.24	0.02	1.26	24.0	-22.74	
			26T	-2.20	-2.14	0.84	-1.99	-1.89	1.07	-1.69	-1.89	1.22	-0.91	0.31	24.0	-23.69	
			26T	-2.00	-2.20	0.91	-1.80	-1.89	1.17	-1.27	-3.01	0.96	-1.42	-0.26	24.0	-24.26	
	6	99	26T	-2.06	-2.23	0.87	-2.06	-2.23	0.87	-1.85	-2.44	0.88	-1.42	-0.55	24.0	-24.55	
			26T	-2.14	-2.18	0.85	-2.14	-2.04	0.92	-2.35	-2.25	0.71	0.25	1.18	24.0	-22.82	
			26T	-2.11	-2.30	0.81	-1.90	-2.37	0.88	-2.04	-2.30	0.84	0.25	1.14	24.0	-22.86	
	7	123	26T	-2.24	-1.55	1.13	-2.24	-1.48	1.17	-2.03	-1.55	1.23	0.25	1.48	24.0	-22.52	
			26T	-2.17	-2.22	0.82	-2.31	-2.08	0.82	-2.24	-2.08	0.85	-0.86	-0.01	24.0	-24.01	
			26T	-2.46	-2.10	0.73	-2.39	-2.03	0.80	-2.18	-1.96	0.94	-1.71	-0.77	24.0	-24.77	
	8	187	26T	-2.31	-2.54	0.59	-2.38	-2.61	0.52	-2.03	-2.33	0.83	-1.49	-0.65	24.0	-24.65	
			26T	-2.04	-2.17	0.91	-1.90	-2.31	0.91	-2.04	-2.17	0.91	-1.43	-0.52	24.0	-24.52	
			26T	-2.23	-2.33	0.73	-2.09	-2.47	0.73	-1.81	-2.40	0.92	-1.83	-0.91	24.0	-24.91	
80MHz BW	5	7	26T	-1.57	-1.73	1.36	-1.54	-2.99	0.81	-1.64	-2.87	0.80	-0.88	0.49	24.0	-23.51	
			26T	-1.40	-1.69	1.47	-1.57	-1.56	1.45	-2.07	-1.85	1.05	-0.91	0.56	24.0	-23.44	
			26T	-1.70	-1.74	1.29	-2.02	-1.41	1.31	-1.38	-1.75	1.45	-1.42	0.03	24.0	-23.97	
	6	103	26T	-1.63	-1.67	1.36	-2.15	-1.71	1.09	-1.83	-1.35	1.43	-1.42	0.00	24.0	-24.00	
			26T	-1.43	-1.69	1.45	-2.11	-1.41	1.26	-2.20	-1.35	1.26	0.25	1.71	24.0	-22.29	
			26T	-1.28	-2.51	1.16	-1.52	-2.52	1.02	-1.35	-2.22	1.25	-0.86	0.39	24.0	-23.61	
	7	183	26T	-1.48	-1.58	1.48	-2.09	-1.86	1.04	-1.96	-1.78	1.14	-1.71	-0.23	24.0	-24.23	
			26T	-2.52	-1.50	1.03	-2.89	-1.46	0.89	-3.01	-1.35	0.91	-1.49	-0.46	24.0	-24.46	
			26T	-1.41	-1.63	1.49	-1.66	-1.89	1.24	-1.56	-1.93	1.27	-1.43	0.07	24.0	-23.93	
	160MHz BW	5	15	26T	-1.48	-1.80	1.37	-1.84	-1.69	1.25	-1.72	-1.80	1.25	-0.88	0.50	24.0	-23.50
				26T	-2.23	-1.50	1.16	-2.14	-1.38	1.27	-2.48	-1.23	1.20	0.09	1.35	24.0	-22.65
				26T	-2.50	-1.58	0.99	-2.19	-1.24	1.32	-1.60	-1.61	1.41	-0.49	0.91	24.0	-23.09
6		111	26T	-1.94	-1.86	1.11	-1.92	-1.24	1.44	-2.17	-1.52	1.18	0.25	1.70	24.0	-22.30	
			26T	-2.25	-1.71	1.04	-2.35	-1.34	1.19	-2.66	-1.34	1.06	-0.61	0.59	24.0	-23.41	
			26T	-2.48	-1.23	1.20	-2.61	-1.24	1.14	-3.20	-1.25	0.89	-1.71	-0.51	24.0	-24.51	
7		143	26T	-2.25	-1.71	1.04	-2.35	-1.34	1.19	-2.66	-1.34	1.06	-0.61	0.59	24.0	-23.41	
			26T	-2.48	-1.23	1.20	-2.61	-1.24	1.14	-3.20	-1.25	0.89	-1.71	-0.51	24.0	-24.51	
			26T	-1.69	-1.86	1.24	-2.20	-1.75	1.04	-2.41	-1.83	0.90	-1.43	-0.19	24.0	-24.19	

Table 7-4. MIMO 802.11ax (UNII) Maximum Conducted Output Power – 26T

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2304260063-18.A3L	Test Dates: 5/30 - 8/9/2023	EUT Type: Portable Handset	Page 54 of 173

MIMO Maximum Conducted Output Power Measurements (52 Tones)

Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. margin		
				RU Index: 37			RU Index: 39			RU Index: 40								
				ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
20MHz BW	5	5935	2	52T	-0.72	-0.19	2.56	-0.64	-0.22	2.59	-0.70	-0.43	2.45	0.02	2.61	24.0	-21.39	
		6175	45	52T	-0.52	-0.41	2.55	-0.37	-0.15	2.75	-0.46	-0.21	2.68	-0.91	1.84	24.0	-22.16	
		6415	93	52T	-0.11	-1.98	2.07	-0.08	-2.06	2.05	-0.11	-0.17	2.87	-1.42	1.45	24.0	-22.55	
	6	6435	97	52T	-0.71	-0.42	2.45	-0.73	-0.37	2.46	-0.73	-0.37	2.46	-1.42	1.04	24.0	-22.96	
		6475	105	52T	-0.23	-0.71	2.55	-0.14	-0.61	2.64	-0.14	-0.61	2.64	-1.42	1.22	24.0	-22.78	
		6515	113	52T	-0.41	-1.10	2.27	-0.55	-0.98	2.25	-0.55	-0.98	2.25	0.25	2.52	24.0	-21.48	
	7	6535	117	52T	-0.42	-1.12	2.25	-0.39	-1.02	2.32	-0.39	-1.02	2.32	0.25	2.57	24.0	-21.43	
		6695	149	52T	-0.56	-0.09	2.69	-0.44	-0.02	2.79	-0.44	-0.02	2.79	-0.86	1.93	24.0	-22.07	
		6875	185	52T	-0.13	-0.32	2.79	-1.54	-0.50	2.02	-1.54	-0.50	2.02	-1.71	1.08	24.0	-22.92	
	8	6895	189	52T	-0.48	-0.28	2.63	-0.62	-0.31	2.55	-0.59	0.28	2.88	-1.49	1.39	24.0	-22.61	
		6995	209	52T	-1.40	-0.30	2.20	-1.10	-0.41	2.27	-1.21	-0.02	2.44	-1.43	1.01	24.0	-22.99	
		7115	233	52T	-2.16	-0.09	2.01	-1.85	-0.21	2.06	-1.68	0.63	2.64	-1.83	0.81	24.0	-23.19	
40MHz BW	5	5965	3	52T	-0.57	-0.22	2.62	-0.67	-0.15	2.61	-0.44	-0.36	2.61	0.02	2.64	24.0	-21.36	
		6165	43	52T	-0.43	-0.53	2.53	-0.34	-0.47	2.61	-0.47	-0.55	2.50	-0.91	1.70	24.0	-22.30	
		6405	91	52T	-0.88	-0.64	2.25	-0.93	-0.59	2.25	-0.66	-0.69	2.34	-1.42	0.91	24.0	-23.09	
	6	6445	99	52T	-0.84	-0.14	2.53	-0.63	-0.13	2.64	-0.91	-0.35	2.39	-1.42	1.21	24.0	-22.79	
		6485	107	52T	-0.48	-0.85	2.35	-0.41	-0.78	2.42	-0.69	-0.99	2.17	0.25	2.67	24.0	-21.33	
		6525	115	52T	-0.12	-1.26	2.36	-0.21	-1.12	2.37	-0.33	-1.40	2.18	0.25	2.62	24.0	-21.38	
	7	6565	123	52T	-0.50	-0.92	2.31	-0.36	-0.78	2.45	-0.64	-1.06	2.17	0.25	2.70	24.0	-21.30	
		6725	155	52T	-0.09	-0.21	2.86	-0.17	-0.07	2.89	-0.01	-0.35	2.83	-0.86	2.03	24.0	-21.97	
		6845	179	52T	-0.66	-0.11	2.63	-0.59	-0.34	2.55	-0.73	-0.10	2.61	-1.71	0.92	24.0	-23.08	
	8	6885	187	52T	-1.56	-0.27	2.14	-1.42	-0.20	2.24	-1.63	-0.34	2.07	-1.49	0.76	24.0	-23.24	
		7005	211	52T	-0.90	-0.08	2.54	-0.69	-0.26	2.54	-1.11	-0.15	2.41	-1.43	1.11	24.0	-22.89	
		7085	227	52T	-0.47	-0.37	2.59	-0.26	-0.11	2.83	-0.68	-0.12	2.62	-1.83	1.00	24.0	-23.00	
80MHz BW	5	5985	7	52T	-0.82	-0.35	2.43	-0.78	-0.34	2.46	-0.57	-0.20	2.63	-0.88	1.75	24.0	-22.25	
		6145	39	52T	-0.32	-0.52	2.59	-0.28	-0.48	2.63	-0.21	-0.27	2.77	-0.91	1.86	24.0	-22.14	
		6385	87	52T	-0.81	-0.16	2.54	-0.76	-0.11	2.59	-0.55	-0.11	2.69	-1.42	1.26	24.0	-22.74	
	6	6465	103	52T	-1.34	-0.55	2.08	-1.29	-0.46	2.16	-1.15	-0.32	2.30	-1.42	0.87	24.0	-23.13	
		6545	119	52T	-0.51	-0.89	2.31	-0.59	-0.38	2.53	-0.38	-0.17	2.74	0.25	2.99	24.0	-21.01	
		6705	151	52T	-0.11	-0.39	2.76	-0.10	-0.43	2.75	-0.03	-0.29	2.85	-0.86	2.00	24.0	-22.00	
	7	6865	183	52T	-0.89	-0.01	2.58	-0.99	-0.01	2.54	-0.78	-0.29	2.48	-1.71	0.87	24.0	-23.13	
		6945	199	52T	-1.44	-0.41	2.12	-1.09	-0.70	2.12	-0.95	-0.49	2.30	-1.49	0.81	24.0	-23.19	
		7025	215	52T	-0.32	-0.26	2.72	-0.26	-0.20	2.78	-0.19	-0.17	2.83	-1.43	1.40	24.0	-22.60	
	160MHz BW	5	6025	15	52T	-0.59	-0.23	2.60	-0.62	-0.17	2.62	-0.67	-0.23	2.57	-0.88	1.75	24.0	-22.25
			6185	47	52T	-0.28	-0.12	2.81	-0.33	-0.08	2.81	-0.43	-0.18	2.71	0.09	2.90	24.0	-21.10
			6345	79	52T	-0.69	-0.45	2.44	-0.75	-0.38	2.45	-0.81	-0.41	2.40	-0.49	1.95	24.0	-22.05
6		6505	111	52T	-0.54	-0.79	2.35	-0.42	-0.81	2.40	-0.33	-0.79	2.46	0.25	2.71	24.0	-21.29	
		6665	143	52T	-0.17	-0.01	2.92	-0.24	-0.21	2.79	-0.28	-0.09	2.83	-0.61	2.31	24.0	-21.69	
		6825	175	52T	-0.33	-0.05	2.82	-0.46	-0.10	2.73	-0.19	-0.11	2.86	-1.71	1.15	24.0	-22.85	
8		6985	207	52T	-0.36	-0.04	2.81	-0.32	-0.37	2.67	-0.41	-0.23	2.69	-1.43	1.39	24.0	-22.61	

Table 7-5. MIMO 802.11ax (UNII) Maximum Conducted Output Power – 52T

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2304260063-18.A3L	Test Dates: 5/30 - 8/9/2023	EUT Type: Portable Handset	Page 55 of 173

MIMO Maximum Conducted Output Power Measurements (106 Tones)

Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. margin				
				RU Index: 53			RU Index: 54			N/A										
				ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO								
20MHz BW	5	2	106T	4.75	4.03	7.42	4.61	4.53	7.58				0.02	7.60	24.0	-16.40				
				6175	45	106T	4.73	4.64	7.70	4.62	4.84	7.74				-0.91	6.83	24.0	-17.17	
				6415	93	106T	4.97	3.27	7.21	4.69	4.87	7.79				-1.42	6.37	24.0	-17.63	
	6	106T	6435	97	106T	4.98	3.25	7.21	4.87	3.16	7.11				-1.42	5.79	24.0	-18.21		
			6475	105	106T	4.99	3.00	7.12	4.86	3.21	7.12				-1.42	5.70	24.0	-18.30		
			6515	113	106T	4.99	2.81	7.05	4.92	3.11	7.12				0.25	7.37	24.0	-16.63		
	7	106T	6535	117	106T	4.52	3.42	7.02	4.63	3.35	7.05				0.25	7.30	24.0	-16.70		
			6695	149	106T	4.59	4.01	7.32	4.80	3.04	7.02				-0.86	6.46	24.0	-17.54		
			6875	185	106T	4.54	3.96	7.27	4.62	3.45	7.08				-1.71	5.56	24.0	-18.44		
	8	106T	6895	189	106T	4.75	3.62	7.23	4.81	3.57	7.24				-1.49	5.76	24.0	-18.24		
			6995	209	106T	4.99	4.54	7.78	4.89	4.25	7.59				-1.43	6.35	24.0	-17.65		
			7115	233	106T	4.75	3.62	7.23	4.65	3.69	7.21				-1.83	5.41	24.0	-18.59		
40MHz BW	5	3	106T	4.09	4.71	7.42	3.90	4.51	7.22	3.99	4.48	7.25	0.02	7.44	24.0	-16.56				
				6165	43	106T	4.69	4.88	7.80	4.59	4.79	7.70	4.88	7.80	0.02	6.89	24.0	-17.11		
				6405	91	106T	4.49	4.28	7.40	4.38	4.26	7.33	4.52	4.43	7.48	-1.42	6.06	24.0	-17.94	
	6	106T	6445	99	106T	4.85	4.16	7.53	4.73	4.07	7.42	4.88	4.20	7.56	-1.42	6.14	24.0	-17.86		
			6485	107	106T	4.71	4.23	7.49	4.61	4.09	7.36	4.80	4.29	7.56	0.25	7.82	24.0	-16.18		
			6525	115	106T	4.65	4.24	7.46	4.51	4.09	7.31	4.71	4.27	7.51	0.25	7.76	24.0	-16.24		
	7	106T	6565	123	106T	4.78	4.02	7.42	4.63	4.00	7.33	4.80	4.02	7.44	0.25	7.69	24.0	-16.31		
			6725	155	106T	4.20	4.64	7.43	4.09	4.58	7.35	4.25	4.71	7.49	-0.86	6.64	24.0	-17.36		
			6845	179	106T	4.86	4.66	7.77	4.66	4.33	7.51	4.67	4.35	7.52	-1.71	6.05	24.0	-17.95		
	8	106T	6885	187	106T	4.78	4.45	7.63	4.56	4.20	7.39	4.63	4.12	7.39	-1.49	6.14	24.0	-17.86		
			7005	211	106T	4.54	4.21	7.39	4.81	4.55	7.69	4.81	4.53	7.68	-1.43	6.27	24.0	-17.73		
			7085	227	106T	4.57	4.34	7.47	4.85	4.69	7.78	4.84	4.63	7.74	-1.83	5.96	24.0	-18.04		
80MHz BW	5	7	106T	4.23	4.30	7.27	4.02	4.45	7.25	4.40	4.88	7.65	-0.88	6.78	24.0	-17.22				
				6145	39	106T	4.53	3.92	7.24	4.55	4.86	7.72	4.60	4.88	7.75	-0.91	6.85	24.0	-17.15	
				6385	87	106T	4.67	3.85	7.29	4.52	4.76	7.65	4.77	4.83	7.81	-1.42	6.39	24.0	-17.61	
	6	106T	6465	103	106T	4.72	3.52	7.17	4.67	4.08	7.39	4.88	4.38	7.65	-1.42	6.22	24.0	-17.78		
			6545	119	106T	4.74	3.31	7.09	4.61	3.84	7.25	4.84	4.13	7.51	0.25	7.76	24.0	-16.24		
			6705	151	106T	3.61	4.69	7.19	3.62	4.65	7.18	3.71	4.78	7.29	-0.86	6.43	24.0	-17.57		
	7	106T	6865	183	106T	4.88	4.07	7.50	4.61	4.34	7.48	4.48	4.12	7.32	-1.71	5.79	24.0	-18.21		
			6945	199	106T	4.73	3.21	7.04	4.88	3.31	7.18	4.87	3.14	7.10	-1.49	5.69	24.0	-18.31		
			7025	215	106T	4.26	4.01	7.15	4.38	4.48	7.44	4.75	4.88	7.83	-1.43	6.40	24.0	-17.60		
	160MHz BW	5	15	106T	4.78	4.52	7.66	4.67	4.21	7.46	4.66	4.03	7.37	-0.88	6.78	24.0	-17.22			
					6185	47	106T	4.74	3.70	7.26	4.66	3.81	7.27	4.79	4.07	7.46	0.09	7.54	24.0	-16.46
					6345	79	106T	4.63	4.04	7.35	4.56	4.39	7.49	4.78	4.88	7.84	-0.49	7.35	24.0	-16.65
6		106T	6505	111	106T	4.46	4.16	7.32	4.83	4.59	7.72	4.78	4.46	7.63	0.25	7.98	24.0	-16.02		
			6665	143	106T	4.88	4.63	7.77	4.65	4.20	7.44	4.87	4.22	7.57	-0.61	7.16	24.0	-16.84		
			6825	175	106T	4.79	3.81	7.34	4.62	3.44	7.08	4.87	3.22	7.13	-1.71	5.63	24.0	-18.37		
7		106T	6985	207	106T	4.82	4.13	7.50	4.88	4.30	7.61	4.88	4.10	7.52	-1.43	6.18	24.0	-17.82		

Table 7-6. MIMO 802.11ax (UNII) Maximum Conducted Output Power – 106T

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2304260063-18.A3L	Test Dates: 5/30 - 8/9/2023	EUT Type: Portable Handset	Page 56 of 173

MIMO Maximum Conducted Output Power Measurements (242 Tones)

Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. margin							
				RU Index: 61			N/A			N/A													
				ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO											
20MHz BW	5	2	242T	7.85	7.11	10.51							0.02	10.53	24.0	-13.47							
				6175	45	242T	7.99	6.15	10.18						-0.91	9.27	24.0	-14.73					
				6415	93	242T	7.98	6.25	10.21						-1.42	8.79	24.0	-15.21					
	6	97	242T	7.86	7.33	10.61							-1.42	9.19	24.0	-14.81							
				6475	105	242T	7.99	7.19	10.62						-1.42	9.20	24.0	-14.80					
				6515	113	242T	7.47	6.95	10.23						0.25	10.48	24.0	-13.52					
	7	117	242T	7.72	7.47	10.61							0.25	10.86	24.0	-13.14							
				6695	149	242T	7.78	6.08	10.02						-0.86	9.17	24.0	-14.83					
				6875	185	242T	7.44	7.31	10.39						-1.71	8.67	24.0	-15.33					
	8	189	242T	7.89	6.84	10.41							-1.49	8.92	24.0	-15.08							
				6995	209	242T	7.42	7.14	10.29						-1.43	8.87	24.0	-15.13					
				7115	233	242T	7.69	7.24	10.48						-1.83	8.66	24.0	-15.34					
40MHz BW	5	3	242T	9.46	9.98	12.74	9.37	9.94	12.67				0.02	12.76	24.0	-11.24							
				6165	43	242T	9.76	9.88	12.83	9.71	9.79	12.76				-0.91	11.92	24.0	-12.08				
				6405	91	242T	9.48	9.31	12.41	9.49	9.43	12.47				-1.42	11.05	24.0	-12.95				
	6	99	242T	9.88	9.14	12.54	9.92	9.12	12.55				-1.42	11.13	24.0	-12.87							
				6485	107	242T	9.73	9.19	12.48	9.79	9.16	12.50				0.25	12.75	24.0	-11.25				
				6525	115	242T	9.73	9.22	12.49	9.75	9.29	12.53				0.25	12.79	24.0	-11.21				
	7	123	242T	9.81	8.87	12.37	9.85	9.01	12.46				0.25	12.72	24.0	-11.28							
				6725	155	242T	9.29	9.67	12.49	9.30	9.63	12.48				-0.86	11.63	24.0	-12.37				
				6845	179	242T	9.89	9.54	12.73	9.76	9.40	12.59				-1.71	11.02	24.0	-12.98				
	8	187	242T	9.82	9.39	12.62	9.69	9.18	12.45				-1.49	11.13	24.0	-12.87							
				7005	211	242T	9.98	9.70	12.85	9.93	9.51	12.73				-1.43	11.43	24.0	-12.57				
				7085	227	242T	9.63	9.27	12.46	9.99	9.64	12.83				-1.83	11.00	24.0	-13.00				
80MHz BW	5	7	242T	9.12	9.80	12.48	9.46	9.99	12.74	9.45	9.97	12.73				-0.88	11.87	24.0	-12.13				
				6145	39	242T	9.54	9.50	12.53	9.67	9.99	12.84	9.61	9.99	12.81				-0.91	11.93	24.0	-12.07	
				6385	87	242T	9.67	9.46	12.58	9.51	9.47	12.50	9.62	9.52	12.58				-1.42	11.16	24.0	-12.84	
	6	103	242T	9.86	9.26	12.58	9.80	9.17	12.51	9.99	9.31	12.67				-1.42	11.25	24.0	-12.75				
				6545	119	242T	9.89	9.02	12.48	9.74	8.93	12.36	9.96	9.09	12.56				0.25	12.81	24.0	-11.19	
				6705	151	242T	8.75	9.94	12.40	8.69	9.80	12.29	8.81	9.90	12.40				-0.86	11.54	24.0	-12.46	
	7	183	242T	9.99	9.86	12.94	9.75	9.55	12.66	9.66	9.35	12.52				-1.71	11.22	24.0	-12.78				
				6945	199	242T	9.88	8.44	12.23	9.62	8.42	12.07	9.98	8.47	12.30				-1.49	10.81	24.0	-13.19	
				7025	215	242T	9.93	9.99	12.97	9.65	9.68	12.68	9.48	9.45	12.47				-1.43	11.54	24.0	-12.46	
	160MHz BW	5	15	242T	9.95	9.53	12.75	9.83	9.32	12.59	9.81	9.19	12.52				-0.88	11.88	24.0	-12.12			
					6185	47	242T	9.87	8.89	12.42	9.88	8.90	12.43	9.93	9.22	12.60				0.09	12.68	24.0	-11.32
					6345	79	242T	9.72	9.22	12.49	9.72	9.56	12.65	9.94	9.99	12.97				-0.49	12.48	24.0	-11.52
6		111	242T	9.67	9.32	12.51	9.99	9.70	12.86	9.99	9.56	12.79				0.25	13.11	24.0	-10.89				
				6665	143	242T	9.61	9.27	12.45	9.84	9.32	12.60	9.98	9.36	12.69				-0.61	12.09	24.0	-11.91	
7		175	242T	9.99	9.01	12.54	9.85	8.42	12.20	9.78	8.06	12.01				-1.71	10.82	24.0	-13.18				
				6985	207	242T	9.56	9.59	12.59	9.87	9.71	12.80	9.64	9.29	12.48				-1.43	11.37	24.0	-12.63	

Table 7-7. MIMO 802.11ax (UNII) Maximum Conducted Output Power – 242T

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2304260063-18.A3L	Test Dates: 5/30 - 8/9/2023	EUT Type: Portable Handset	Page 57 of 173

MIMO Maximum Conducted Output Power Measurements (484 Tones)

Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. margin	
				RU Index: 65			N/A			N/A							
				ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO					
40MHz BW	5965	3	484T	9.47	9.98	12.74							0.02	12.76	24.0	-11.24	
	6165	43	484T	9.74	9.88	12.82							-0.91	11.91	24.0	-12.09	
	6405	91	484T	9.52	9.44	12.49							-1.42	11.06	24.0	-12.94	
	6445	99	484T	9.94	9.11	12.55							-1.42	11.13	24.0	-12.87	
	6485	107	484T	9.80	9.26	12.55							0.25	12.80	24.0	-11.20	
	6525	115	484T	9.42	9.01	12.23							0.25	12.48	24.0	-11.52	
	6565	123	484T	9.87	9.02	12.47							0.25	12.73	24.0	-11.27	
	6725	155	484T	9.32	9.62	12.48							-0.86	11.63	24.0	-12.37	
	6845	179	484T	9.90	9.49	12.71							-1.71	11.00	24.0	-13.00	
	6885	187	484T	9.96	9.55	12.77							-1.49	11.28	24.0	-12.72	
	7005	211	484T	9.98	9.62	12.81							-1.43	11.39	24.0	-12.61	
	7085	227	484T	9.61	9.26	12.45							-1.83	10.62	24.0	-13.38	
80MHz BW	5985	7	484T	9.09	9.66	12.39	9.37	9.92	12.66				-0.88	11.78	24.0	-12.22	
	6145	39	484T	9.34	9.35	12.35	9.57	9.96	12.78				-0.91	11.87	24.0	-12.13	
	6385	87	484T	9.99	9.86	12.93	9.98	9.93	12.97				-1.42	11.54	24.0	-12.46	
	6465	103	484T	9.83	9.14	12.51	9.95	9.20	12.60				-1.42	11.18	24.0	-12.82	
	6545	119	484T	9.79	9.01	12.43	9.87	9.04	12.49				0.25	12.74	24.0	-11.26	
	6705	151	484T	8.64	9.90	12.33	8.78	9.79	12.32				-0.86	11.47	24.0	-12.53	
	6865	183	484T	9.83	9.64	12.74	9.94	9.72	12.84				-1.71	11.13	24.0	-12.87	
	6945	199	484T	9.78	8.29	12.11	9.98	8.40	12.27				-1.49	10.79	24.0	-13.21	
	7025	215	484T	9.79	9.84	12.83	9.91	9.98	12.96				-1.43	11.53	24.0	-12.47	
	160MHz BW	6025	15	484T	9.94	9.29	12.64	9.91	9.25	12.60	9.72	9.04	12.40	-0.88	11.76	24.0	-12.24
		6185	47	484T	9.71	8.90	12.33	9.87	8.95	12.44	9.86	9.02	12.47	0.09	12.56	24.0	-11.44
		6345	79	484T	9.98	9.57	12.79	9.74	9.42	12.59	9.83	9.80	12.82	-0.49	12.33	24.0	-11.67
6505		111	484T	9.89	9.75	12.83	9.96	9.60	12.80	9.81	9.49	12.67	0.25	13.09	24.0	-10.91	
6665		143	484T	9.99	9.69	12.85	9.82	9.31	12.58	9.98	9.29	12.66	-0.61	12.25	24.0	-11.75	
6825		175	484T	9.93	8.85	12.44	9.85	8.42	12.20	9.79	8.04	12.01	-1.71	10.72	24.0	-13.28	
6985		211	484T	9.93	9.78	12.86	9.94	9.70	12.83	9.82	9.34	12.60	-1.43	11.44	24.0	-12.56	

Table 7-8. MIMO 802.11ax (UNII) Maximum Conducted Output Power – 484T

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2304260063-18.A3L	Test Dates: 5/30 - 8/9/2023	EUT Type: Portable Handset	Page 58 of 173

MIMO Maximum Conducted Output Power Measurements (996 Tones)

80MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. margin
					RU Index: 67			N/A						
					ANT1	ANT2	MIMO	N/A	ANT2	MIMO				
80MHz BW	5	5985	7	996T	9.37	9.95	12.68				-0.88	11.80	24.0	-12.20
		6145	39	996T	9.58	9.87	12.73				-0.91	11.83	24.0	-12.17
		6385	87	996T	9.94	9.73	12.85				-1.42	11.42	24.0	-12.58
	6	6465	103	996T	9.78	9.01	12.42				-1.42	11.00	24.0	-13.00
		6545	119	996T	9.73	8.94	12.36				0.25	12.62	24.0	-11.38
		6705	151	996T	8.58	9.75	12.22				-0.86	11.36	24.0	-12.64
	7	6865	183	996T	9.92	9.78	12.86				-1.71	11.15	24.0	-12.85
		6945	199	996T	9.98	8.59	12.35				-1.49	10.86	24.0	-13.14
		7025	215	996T	9.96	9.98	12.98				-1.43	11.55	24.0	-12.45

160MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)						Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. margin
					RU Index: 67 (L)			RU Index: 67 (U)						
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO				
160MHz BW	5	6025	15	996T	9.86	9.36	12.63	9.94	9.42	12.70	-0.88	11.82	24.0	-12.18
		6185	47	996T	9.87	8.95	12.44	9.99	9.22	12.63	0.09	12.72	24.0	-11.28
		6345	79	996T	9.75	9.42	12.60	9.97	9.98	12.98	-0.49	12.49	24.0	-11.51
6	6505	111	996T	9.89	9.55	12.73	9.98	9.61	12.81	0.25	13.06	24.0	-10.94	
	6665	143	996T	9.81	9.29	12.57	9.75	9.01	12.40	-0.61	11.96	24.0	-12.04	
7	6825	175	996T	9.75	8.51	12.18	9.97	8.29	12.22	-1.71	10.51	24.0	-13.49	
	6985	207	996T	9.99	9.87	12.94	9.87	9.75	12.82	-1.43	11.52	24.0	-12.48	

Table 7-9. MIMO 802.11ax (UNII) Maximum Conducted Output Power – 996T

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2304260063-18.A3L	Test Dates: 5/30 - 8/9/2023	EUT Type: Portable Handset	Page 59 of 173

MIMO Maximum Conducted Output Power Measurements (2*996 Tones)

160MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)			Directional Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. margin
					RU Index: 68						
					ANT1	ANT2	MIMO				
5	6025	15	2x996T	9.48	9.83	12.67	-0.88	11.79	24.0	-12.21	
	6185	47	2x996T	9.85	9.02	12.46	0.09	12.55	24.0	-11.45	
	6345	79	2x996T	9.81	9.71	12.77	-0.49	12.28	24.0	-11.72	
6	6505	111	2x996T	9.76	9.37	12.58	0.25	12.83	24.0	-11.17	
7	6665	143	2x996T	9.99	9.38	12.71	-0.61	12.10	24.0	-11.90	
	6825	175	2x996T	9.83	8.90	12.40	-1.71	10.69	24.0	-13.31	
8	6985	207	2x996T	9.73	9.68	12.71	-1.43	11.29	24.0	-12.71	

Table 7-10. MIMO 802.11ax (UNII) Maximum Conducted Output Power – 2*996T

Sample MIMO Calculation:

At 5935MHz in 802.11ax (20MHz BW – 26 Tones) mode, the average conducted output power was measured to be -1.52 dBm for Antenna-1 and -1.53 dBm for Antenna-2.

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

$$(-1.52 \text{ dBm} + -1.53 \text{ dBm}) = (0.70 \text{ mW} + 0.70 \text{ mW}) = 1.40 \text{ mW} = 1.49 \text{ dBm}$$

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.

$$\text{Directional gain} = 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{\text{ANT}}] \text{ dBi}$$

Sample e.i.r.p. Calculation:

At 5935MHz in 802.11ax (20MHz BW – 26 Tones) mode, the average MIMO conducted power was calculated to be 1.49 dBm with directional gain of 0.02 dBi.

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

$$1.49 \text{ dBm} + 0.02 \text{ dBi} = 1.51 \text{ dBm}$$

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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

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 the tighter low power indoor access point limit of -1dBm/MHz e.i.r.p. for both cases.

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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]	Antenna-1 Gain [dBi]	Antenna-2 Gain [dBi]	Summed MIMO Power Density [dBm]	Directional Gain [dBi]	EIRP [dBm]	Max EIRP [dBm]	Margin [dB]
Band 5	5935	2	ax (20MHz)	-4.92	-5.17	-2.96	-3.02	-2.03	0.02	-2.01	-1	-1.01
	6175	45	ax (20MHz)	-4.71	-4.45	-4.57	-3.31	-1.57	-0.91	-2.47	-1	-1.47
	6415	93	ax (20MHz)	-5.91	-5.68	-4.89	-4.00	-2.79	-1.42	-4.21	-1	-3.21
	5965	3	ax (40MHz)	-3.48	-4.88	-2.96	-3.02	-1.11	0.02	-1.09	-1	-0.09
	6165	43	ax (40MHz)	-3.27	-4.72	-4.57	-3.31	-0.92	-0.91	-1.83	-1	-0.83
	6405	91	ax (40MHz)	-3.61	-5.76	-4.89	-4.00	-1.54	-1.42	-2.96	-1	-1.96
	5985	7	ax (80MHz)	-3.95	-4.87	-3.01	-4.86	-1.38	-0.88	-2.25	-1	-1.25
	6145	39	ax (80MHz)	-3.51	-2.77	-4.57	-3.31	-0.12	-0.91	-1.02	-1	-0.02
	6385	87	ax (80MHz)	-3.89	-5.20	-4.89	-4.00	-1.49	-1.42	-2.91	-1	-1.91
	6025	15	ax (160MHz)	-3.51	-4.66	-3.01	-4.86	-1.04	-0.88	-1.91	-1	-0.91
Band 6	6185	47	ax (160MHz)	-4.26	-4.17	-3.07	-2.78	-1.20	0.09	-1.12	-1	-0.12
	6345	79	ax (160MHz)	-4.28	-6.11	-3.59	-3.42	-2.09	-0.49	-2.58	-1	-1.58
	6345	97	ax (20MHz)	-4.86	-4.62	-3.59	-3.42	-1.73	-0.49	-2.22	-1	-1.22
	6475	105	ax (20MHz)	-5.14	-5.60	-4.89	-4.00	-2.35	-1.42	-3.78	-1	-2.78
	6515	113	ax (20MHz)	-5.62	-5.88	-2.36	-3.17	-2.74	0.25	-2.48	-1	-1.48
	6445	99	ax (40MHz)	-3.07	-4.60	-4.89	-4.00	-0.76	-1.42	-2.18	-1	-1.18
	6485	107	ax (40MHz)	-3.76	-4.90	-2.36	-3.17	-1.28	0.25	-1.03	-1	-0.03
	6525	115	ax (40MHz)	-3.75	-5.47	-2.36	-3.17	-1.51	0.25	-1.26	-1	-0.26
	6465	103	ax (80MHz)	-4.24	-5.06	-4.89	-4.00	-1.62	-1.42	-3.04	-1	-2.04
	6505	111	ax (160MHz)	-4.24	-4.68	-2.36	-3.17	-1.44	0.25	-1.19	-1	-0.19
Band 7	6535	117	ax (20MHz)	-4.97	-4.40	-2.36	-3.17	-1.66	0.25	-1.41	-1	-0.41
	6695	149	ax (20MHz)	-5.15	-4.89	-3.63	-4.11	-2.01	-0.86	-2.87	-1	-1.87
	6875	185	ax (20MHz)	-6.07	-4.91	-3.65	-5.95	-2.44	-1.71	-4.16	-1	-3.16
	6565	123	ax (40MHz)	-4.15	-4.63	-2.36	-3.17	-1.37	0.25	-1.12	-1	-0.12
	6685	155	ax (40MHz)	-3.05	-4.81	-3.63	-4.11	-0.83	-0.86	-1.69	-1	-0.69
	6845	179	ax (40MHz)	-3.70	-4.25	-3.77	-5.29	-0.96	-1.49	-2.44	-1	-1.44
	6545	119	ax (80MHz)	-3.47	-5.31	-2.36	-3.17	-1.28	0.25	-1.02	-1	-0.02
	6705	151	ax (80MHz)	-3.26	-4.46	-3.63	-4.11	-0.81	-0.86	-1.66	-1	-0.66
	6865	183	ax (80MHz)	-4.25	-4.25	-3.65	-5.95	-1.24	-1.71	-2.95	-1	-1.95
	6665	143	ax (160MHz)	-3.49	-4.10	-3.81	-3.43	-0.77	-0.61	-1.38	-1	-0.38
Band 8	6825	175	ax (160MHz)	-2.36	-3.34	-3.65	-5.95	0.19	-1.71	-1.53	-1	-0.53
	6895	189	ax (20MHz)	-5.19	-5.04	-3.77	-5.29	-2.10	-1.49	-3.59	-1	-2.59
	6995	209	ax (20MHz)	-5.48	-4.75	-4.06	-4.83	-2.09	-1.43	-3.51	-1	-2.51
	7115	233	ax (20MHz)	-5.06	-2.97	-4.44	-5.25	-0.88	-1.83	-2.71	-1	-1.71
	6885	187	ax (40MHz)	-3.36	-3.47	-3.77	-5.29	-0.41	-1.49	-1.89	-1	-0.89
	6965	211	ax (40MHz)	-3.13	-3.87	-4.06	-4.83	-0.47	-1.43	-1.90	-1	-0.90
	7085	227	ax (40MHz)	-3.50	-4.31	-4.44	-5.25	-0.87	-1.83	-2.70	-1	-1.70
	6945	199	ax (80MHz)	-3.14	-2.04	-3.77	-5.29	0.46	-1.49	-1.03	-1	-0.03
	7025	215	ax (80MHz)	-4.18	-3.36	-4.06	-4.83	-0.74	-1.43	-2.17	-1	-1.17
	6985	207	ax (160MHz)	-2.22	-3.61	-4.06	-4.83	0.15	-1.43	-1.28	-1	-0.28

Table 7-11. MIMO e.i.r.p. Conducted Power Spectral Density Measurements (26 Tones)

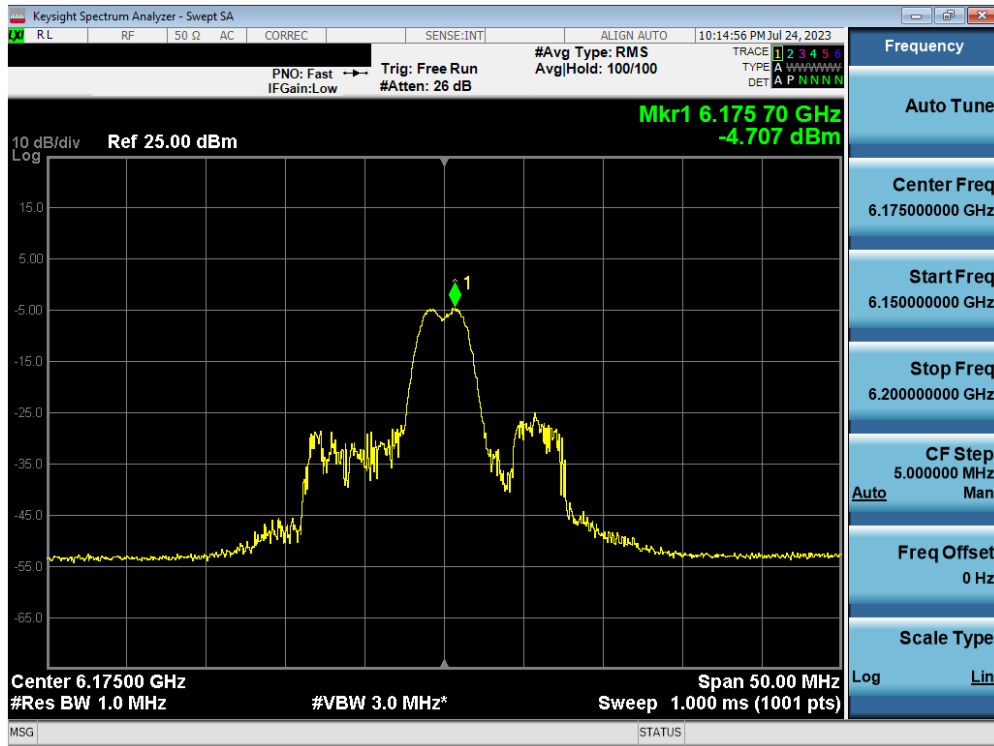
sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Antenna-1 Gain [dBi]	Antenna-2 Gain [dBi]	Summed MIMO Power Density [dBm]	Directional Gain [dBi]	EIRP [dBm]	Max EIRP [dBm]	Margin [dB]
Band 5	5935	2	ax (20MHz)	-3.94	-4.88	-2.96	-3.02	-1.38	0.02	-1.36	-1	-0.36
	6175	45	ax (20MHz)	-3.70	-5.62	-4.57	-3.31	-1.54	-0.91	-2.45	-1	-1.45
	6415	93	ax (20MHz)	-3.75	-5.44	-4.89	-4.00	-1.50	-1.42	-2.93	-1	-1.93
	5965	3	ax (40MHz)	-5.24	-6.79	-2.96	-3.02	-2.94	0.02	-2.92	-1	-1.92
	6165	43	ax (40MHz)	-5.25	-6.56	-4.57	-3.31	-2.84	-0.91	-3.75	-1	-2.75
	6405	91	ax (40MHz)	-5.49	-6.67	-4.89	-4.00	-3.03	-1.42	-4.45	-1	-3.45
	5985	7	ax (80MHz)	-8.80	-9.87	-3.01	-4.86	-6.29	-0.88	-7.17	-1	-6.17
	6145	39	ax (80MHz)	-8.68	-9.51	-4.57	-3.31	-6.07	-0.91	-6.97	-1	-5.97
	6385	87	ax (80MHz)	-8.49	-9.00	-4.89	-4.00	-5.73	-1.42	-7.15	-1	-6.15
	6025	15	ax (160MHz)	-9.22	-9.58	-3.01	-4.86	-6.39	-0.88	-7.26	-1	-6.26
6185	47	ax (160MHz)	-9.36	-8.75	-3.07	-2.78	-6.03	0.09	-5.95	-1	-4.95	
6345	79	ax (160MHz)	-5.58	-9.21	-3.59	-3.42	-4.02	-0.49	-4.51	-1	-3.51	
Band 6	6435	97	ax (20MHz)	-3.55	-4.58	-4.89	-4.00	-1.02	-1.42	-2.44	-1	-1.44
	6475	105	ax (20MHz)	-3.62	-4.30	-4.89	-4.00	-0.93	-1.42	-2.36	-1	-1.36
	6515	113	ax (20MHz)	-4.15	-4.81	-2.36	-3.17	-1.46	0.25	-1.20	-1	-0.20
	6445	99	ax (40MHz)	-5.97	-6.35	-4.89	-4.00	-3.14	-1.42	-4.57	-1	-3.57
	6485	107	ax (40MHz)	-5.95	-6.33	-2.36	-3.17	-3.12	0.25	-2.87	-1	-1.87
	6525	115	ax (40MHz)	-6.32	-7.09	-2.36	-3.17	-3.68	0.25	-3.42	-1	-2.42
	6465	103	ax (80MHz)	-9.25	-9.37	-4.89	-4.00	-6.30	-1.42	-7.72	-1	-6.72
6505	111	ax (160MHz)	-8.64	-8.74	-2.36	-3.17	-5.68	0.25	-5.43	-1	-4.43	
Band 7	6535	117	ax (20MHz)	-4.17	-4.41	-2.36	-3.17	-1.28	0.25	-1.02	-1	-0.02
	6695	149	ax (20MHz)	-4.00	-5.69	-3.63	-4.11	-1.75	-0.86	-2.61	-1	-1.61
	6875	185	ax (20MHz)	-4.36	-4.48	-3.65	-5.95	-1.41	-1.71	-3.13	-1	-2.13
	6565	123	ax (40MHz)	-6.56	-6.36	-2.36	-3.17	-3.45	0.25	-3.20	-1	-2.20
	6685	155	ax (40MHz)	-5.48	-6.73	-3.63	-4.11	-3.05	-0.86	-3.91	-1	-2.91
	6845	179	ax (40MHz)	-5.50	-6.46	-3.65	-5.95	-2.94	-1.71	-4.66	-1	-3.66
	6545	119	ax (80MHz)	-9.67	-9.39	-2.36	-3.17	-6.52	0.25	-6.27	-1	-5.27
	6705	151	ax (80MHz)	-8.51	-10.43	-3.63	-4.11	-6.35	-0.86	-7.21	-1	-6.21
	6865	183	ax (80MHz)	-8.78	-9.25	-3.65	-5.95	-6.00	-1.71	-7.71	-1	-6.71
	6665	143	ax (160MHz)	-8.68	-8.36	-3.81	-3.43	-5.51	-0.61	-6.12	-1	-5.12
6825	175	ax (160MHz)	-9.44	-8.54	-3.65	-5.95	-5.96	-1.71	-7.67	-1	-6.67	
Band 8	6895	189	ax (20MHz)	-2.95	-3.63	-3.77	-5.29	-0.26	-1.49	-1.75	-1	-0.75
	6995	209	ax (20MHz)	-2.40	-3.11	-4.06	-4.83	0.27	-1.43	-1.16	-1	-0.16
	7115	233	ax (20MHz)	-2.46	-3.22	-4.44	-5.25	0.19	-1.83	-1.64	-1	-0.64
	6885	187	ax (40MHz)	-6.20	-6.58	-3.77	-5.29	-3.37	-1.49	-4.86	-1	-3.86
	6965	211	ax (40MHz)	-5.91	-5.87	-3.77	-5.29	-2.88	-1.49	-4.37	-1	-3.37
	7085	227	ax (40MHz)	-5.48	-6.58	-4.44	-5.25	-2.99	-1.83	-4.81	-1	-3.81
	6945	199	ax (80MHz)	-9.73	-8.91	-3.77	-5.29	-6.29	-1.49	-7.78	-1	-6.78
	7025	215	ax (80MHz)	-8.80	-8.67	-4.06	-4.83	-5.73	-1.43	-7.15	-1	-6.15
	6985	207	ax (160MHz)	-8.96	-9.47	-4.06	-4.83	-6.20	-1.43	-7.62	-1	-6.62

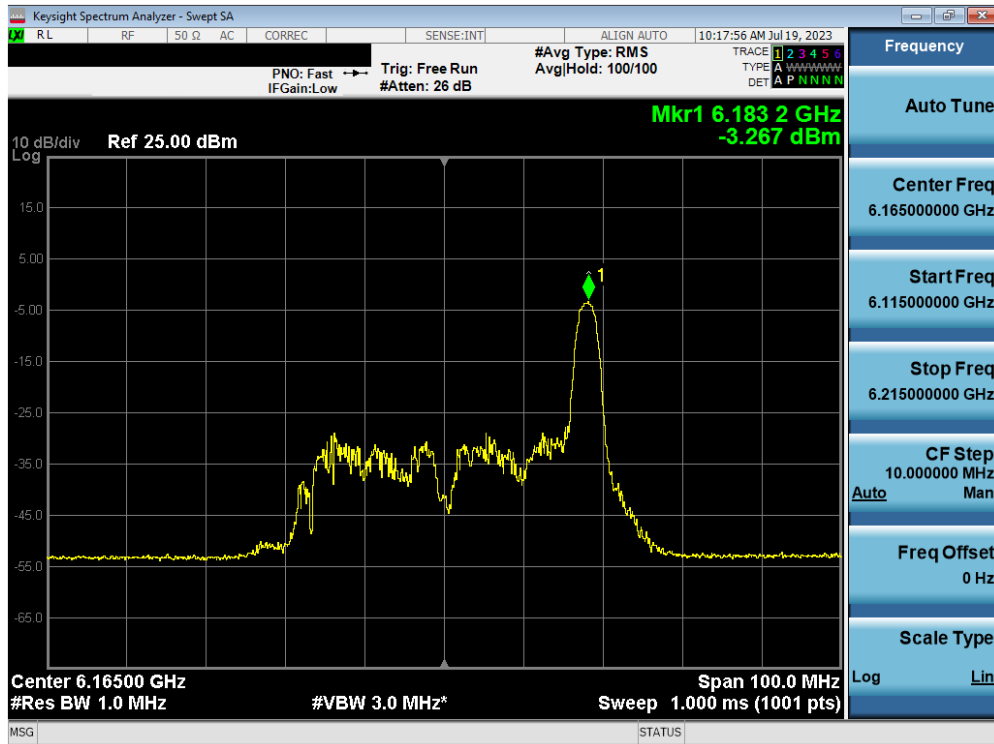
Table 7-12. MIMO e.i.r.p. Conducted Power Spectral Density Measurements (Full Tones)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.4.1 MIMO Antenna-1 Power Spectral Density Measurements

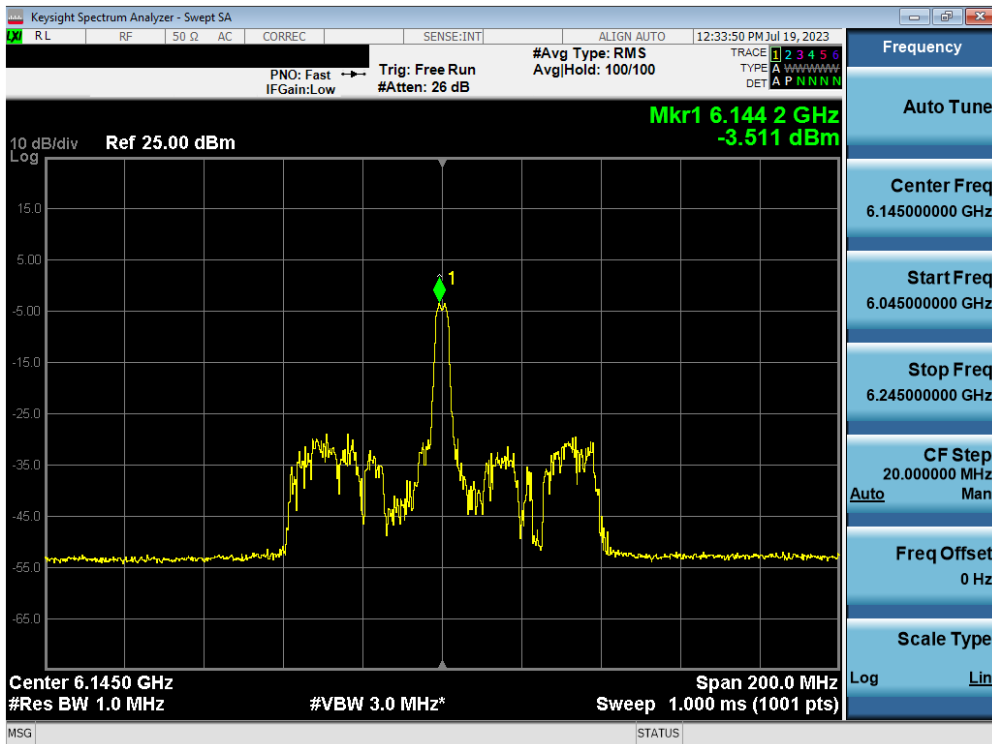


Plot 7-65. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 45)

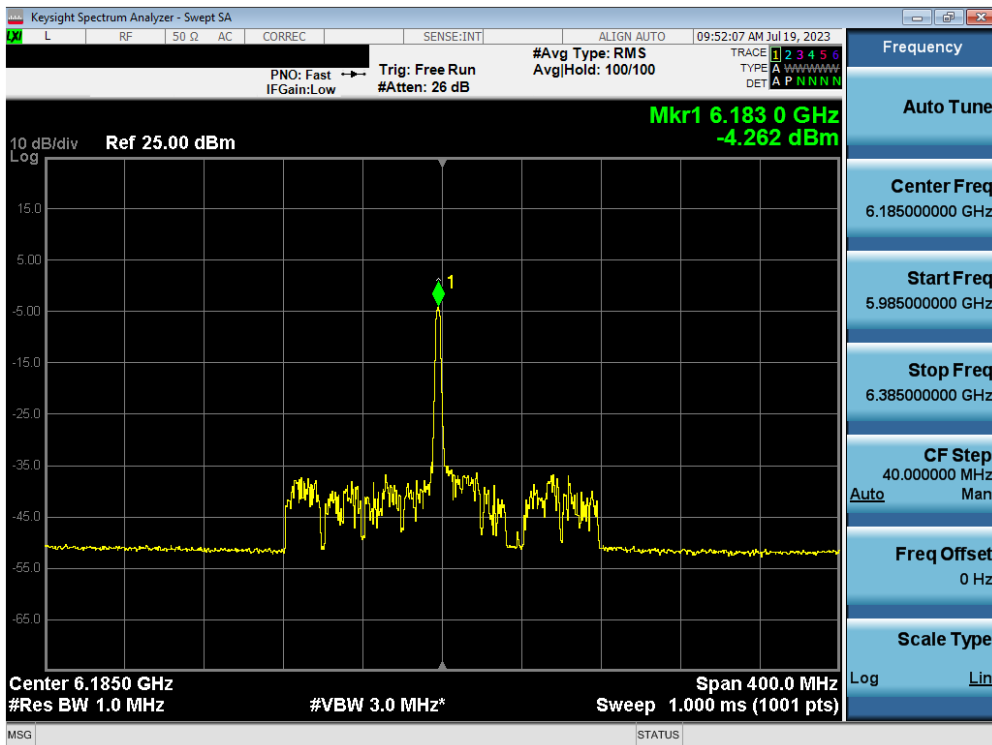


Plot 7-66. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 43)

sFCC ID: A3LSMS711B		MEASUREMENT REPORT		Approved by:
				Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		
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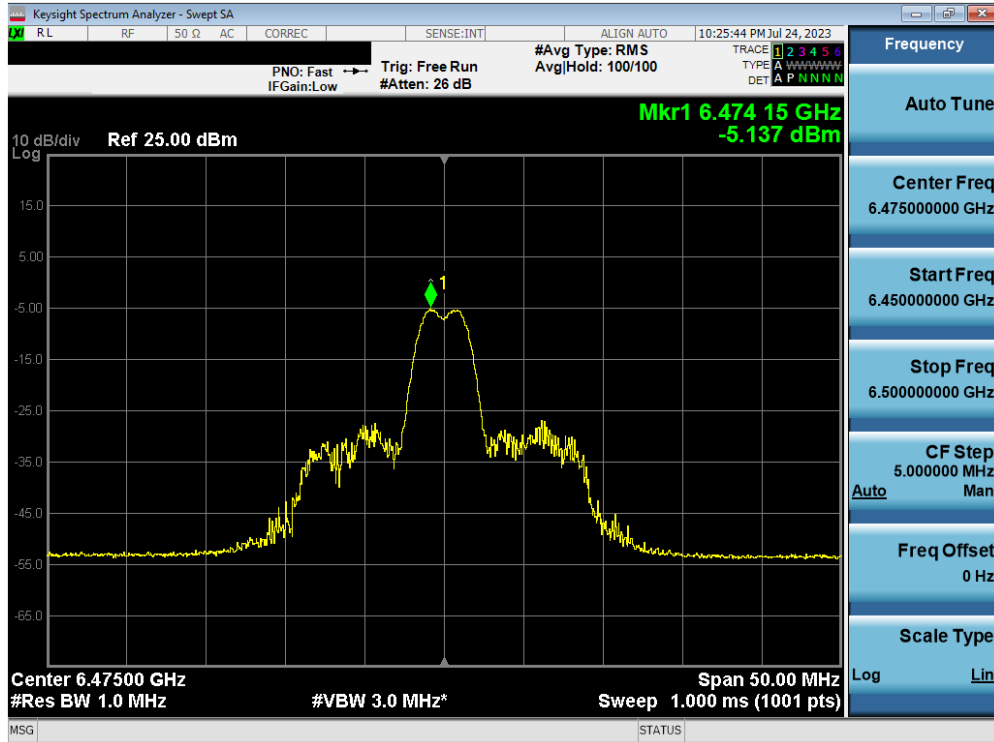


Plot 7-67. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 39)

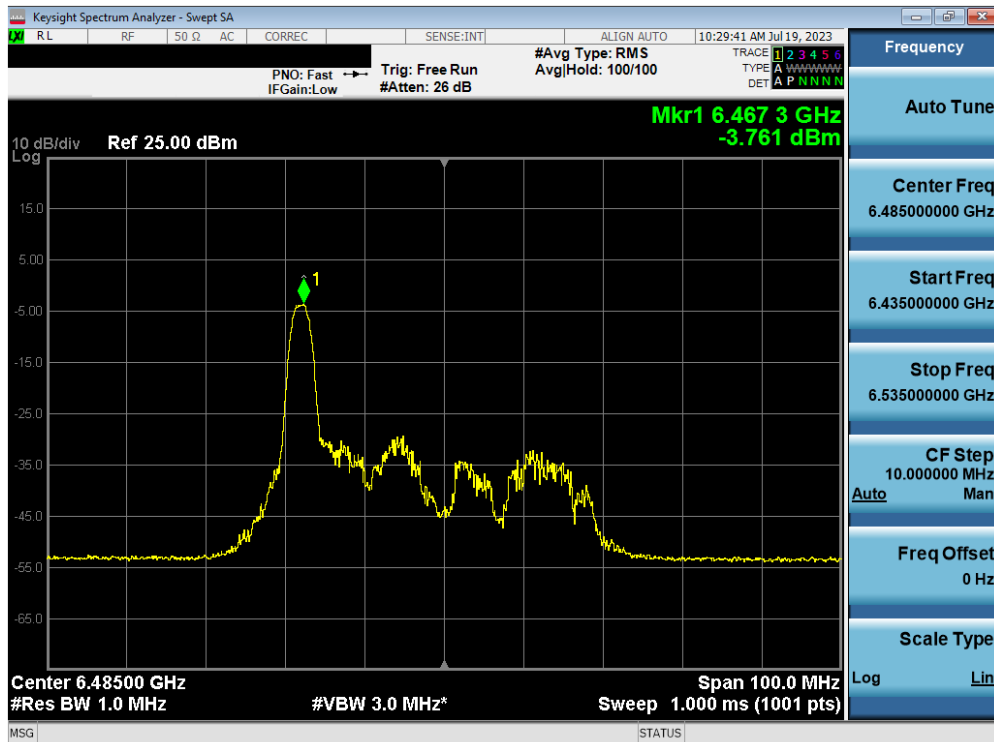


Plot 7-68. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 47)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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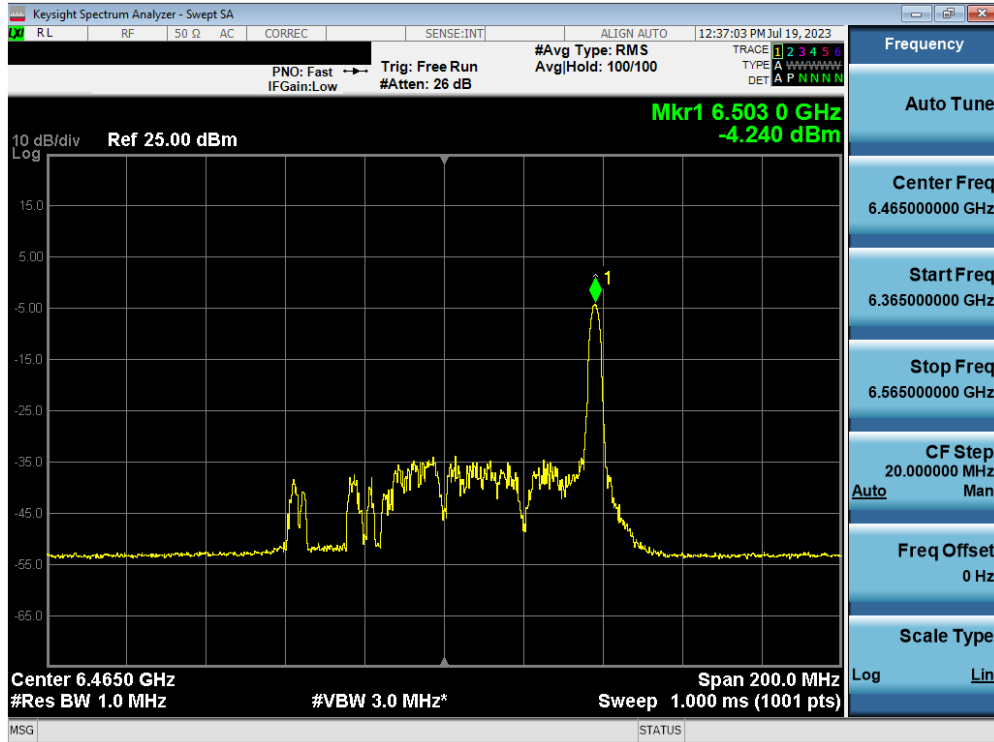


Plot 7-69. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 105)

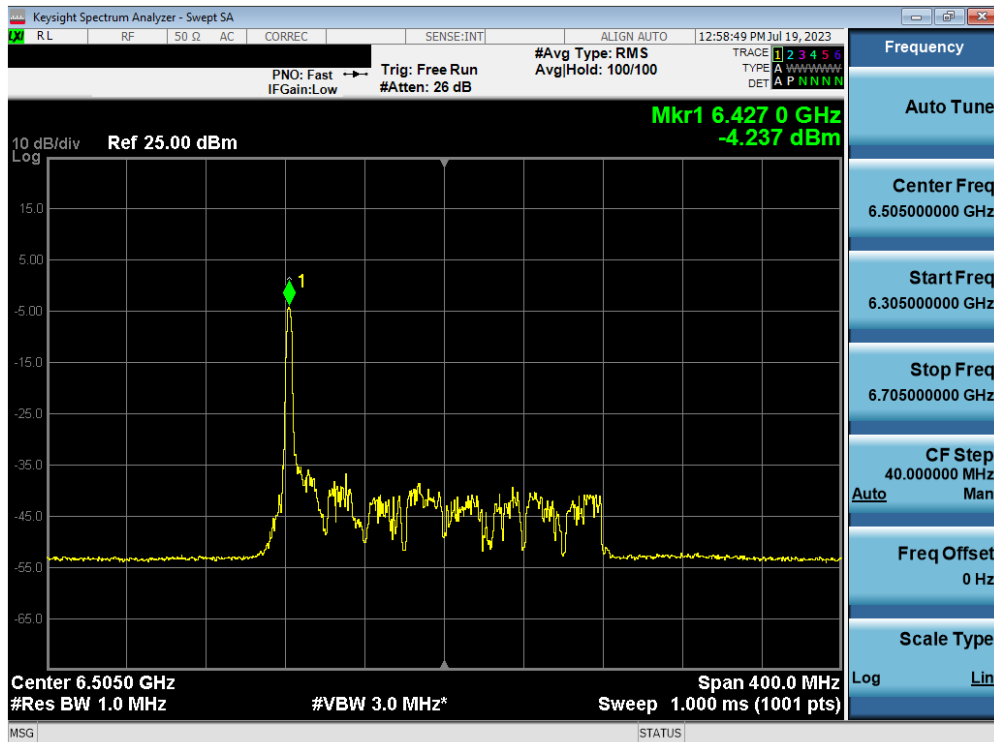


Plot 7-70. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 107)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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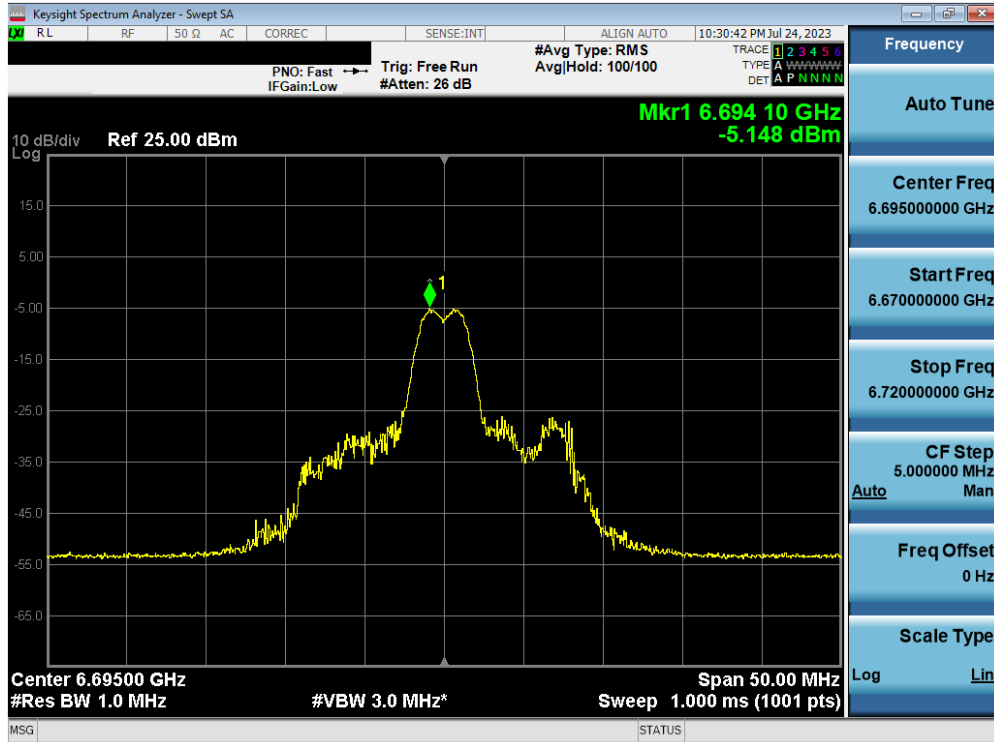


Plot 7-71. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 103)

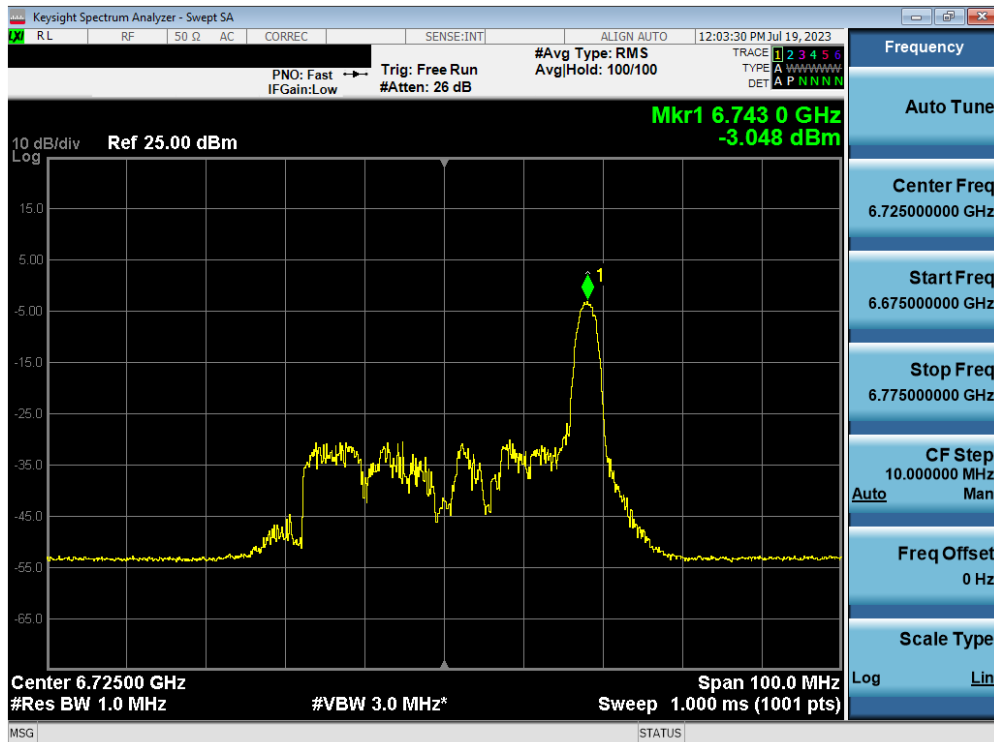


Plot 7-72. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 111)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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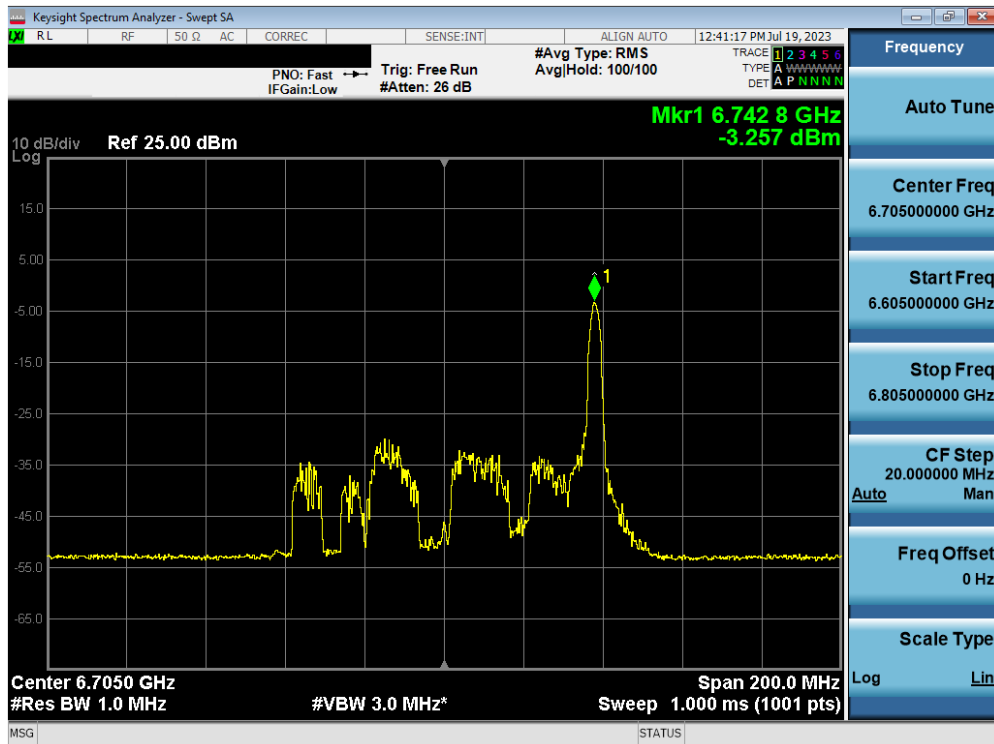


Plot 7-73. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 149)

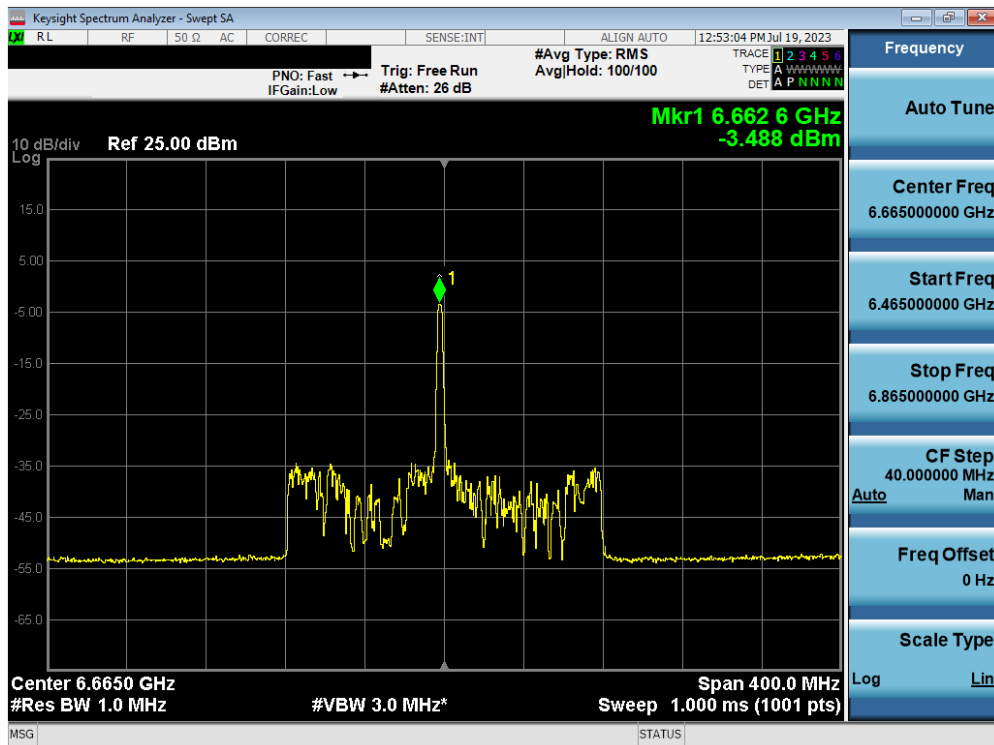


Plot 7-74. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 155)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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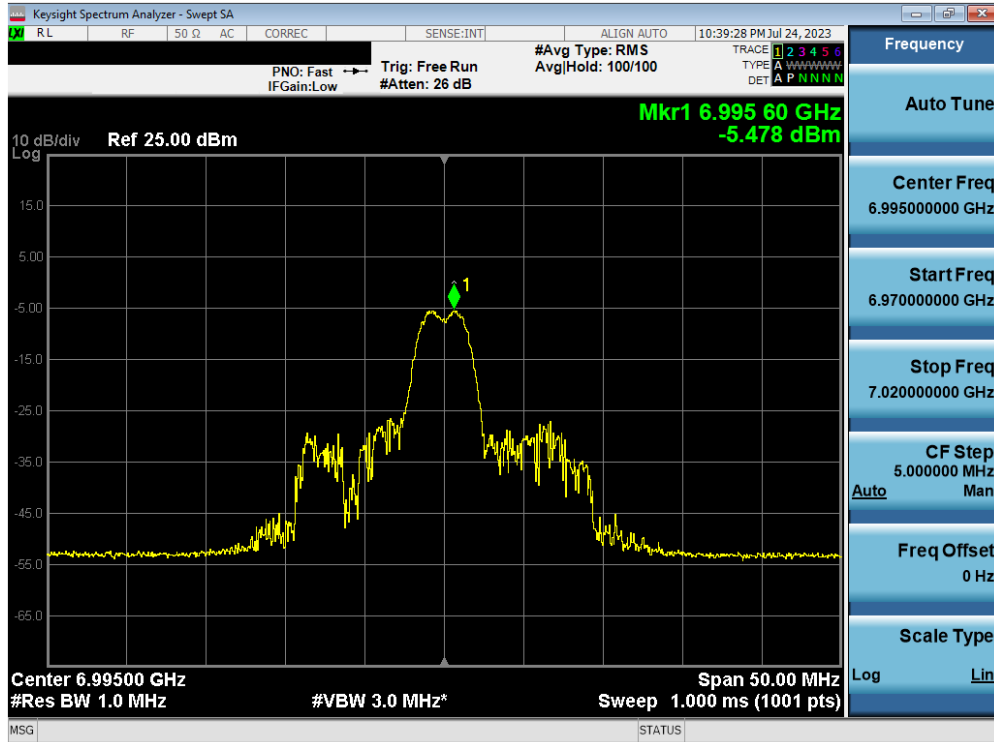


Plot 7-75. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 151)

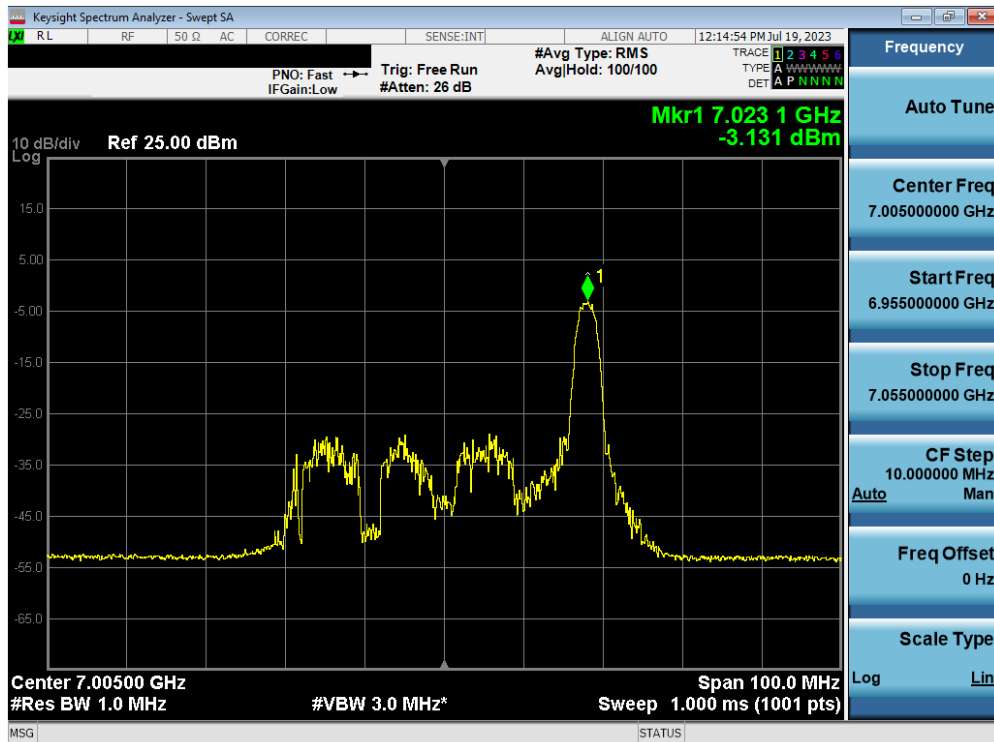


Plot 7-76. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 143)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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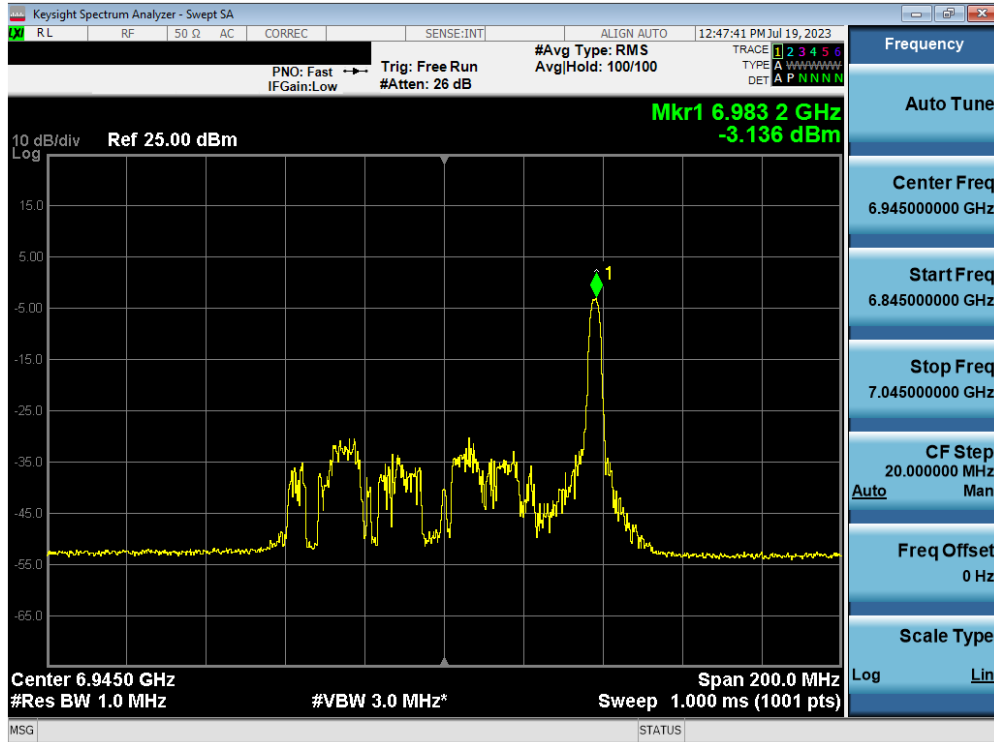


Plot 7-77. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 209)

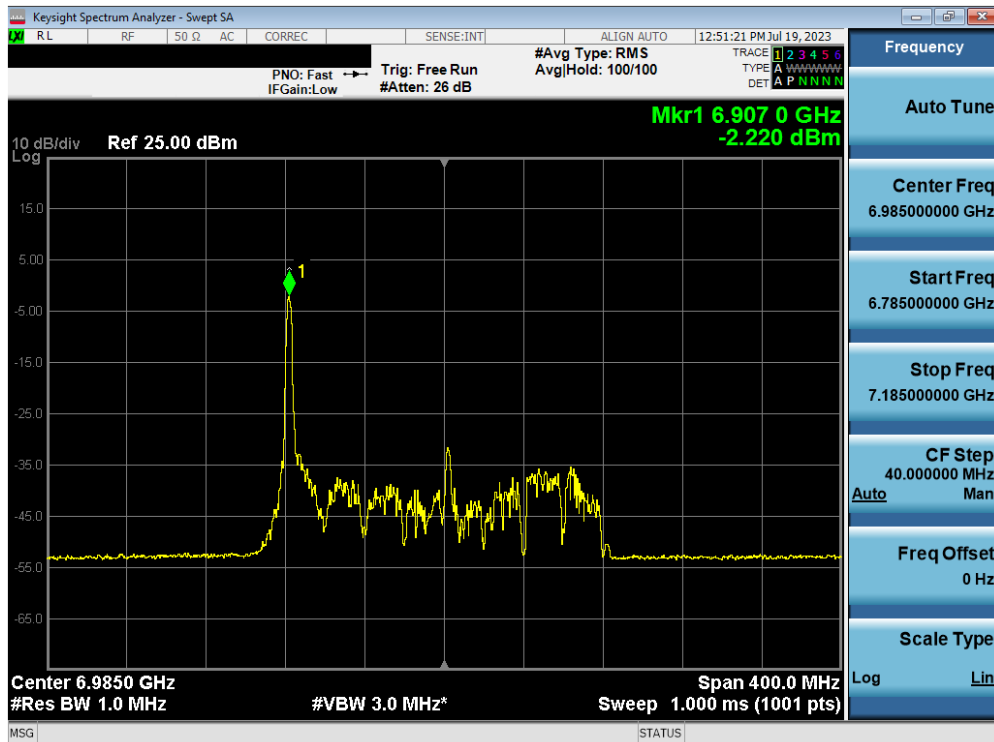


Plot 7-78. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 211)

sFCC ID: A3LSMS711B		MEASUREMENT REPORT		Approved by:
				Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 70 of 173
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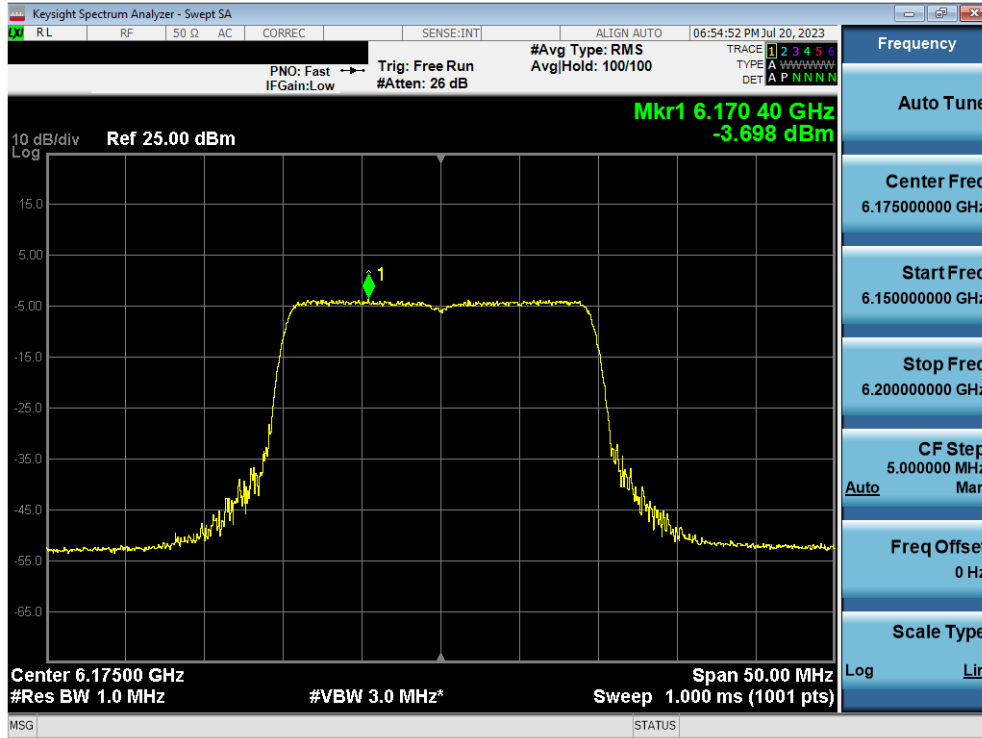


Plot 7-79. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 199)

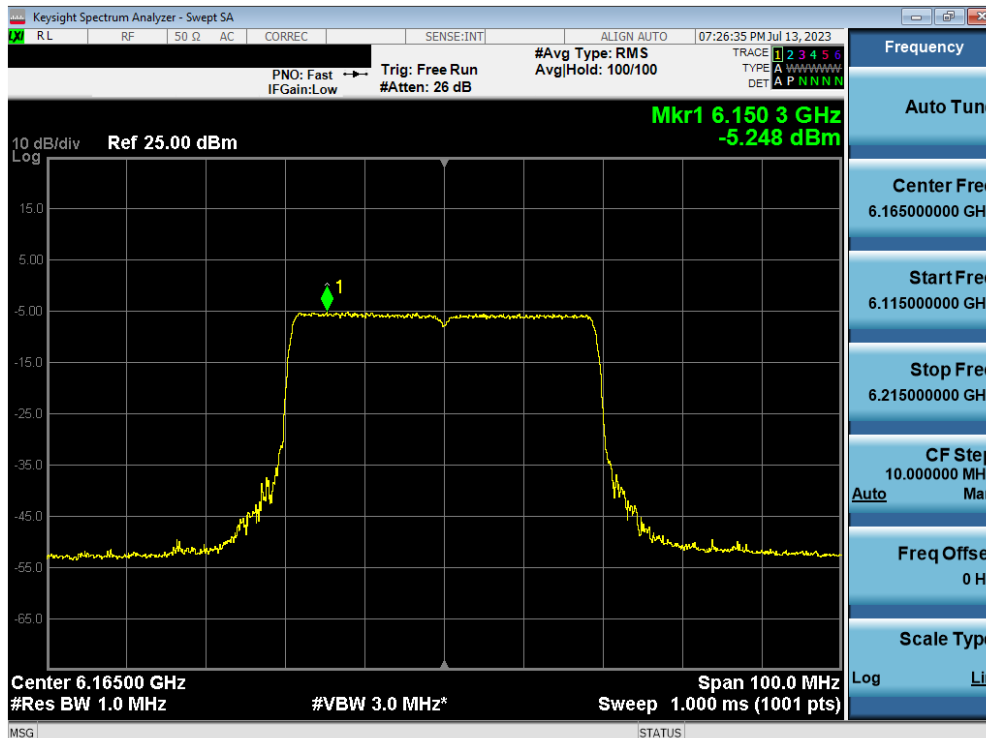


Plot 7-80. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 207)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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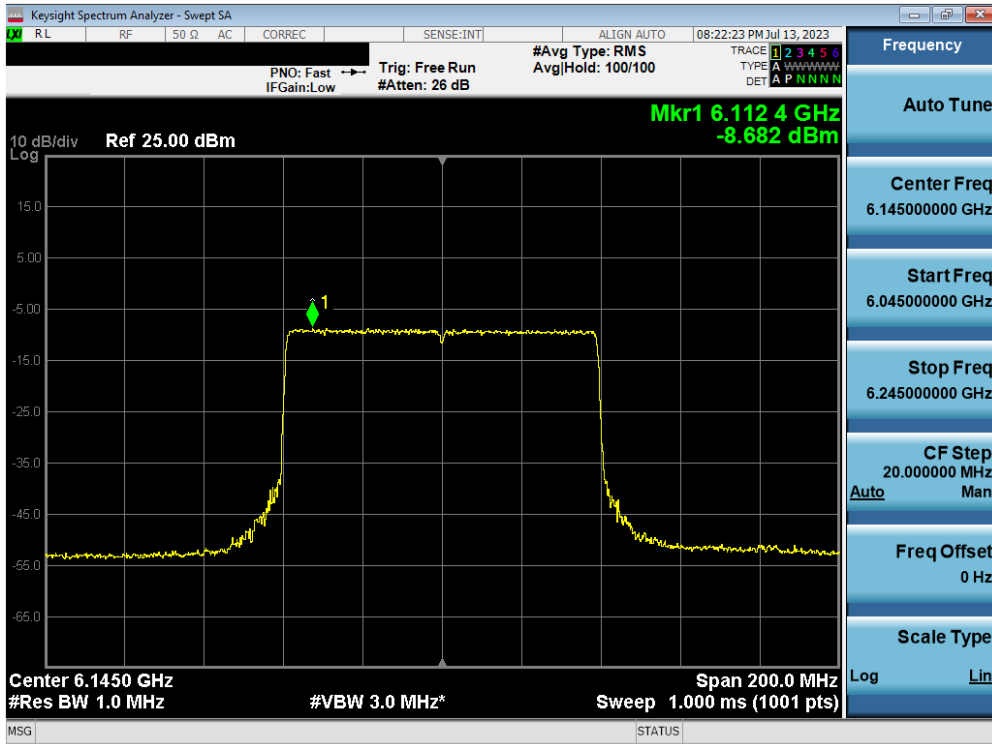


Plot 7-81. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 45)

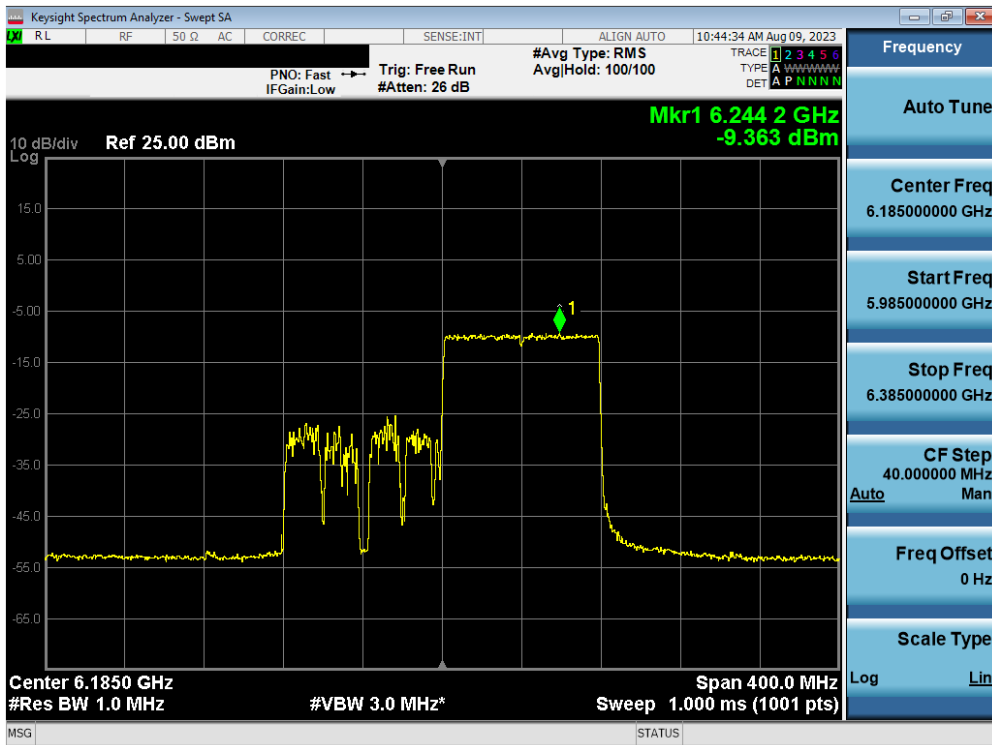


Plot 7-82. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 43)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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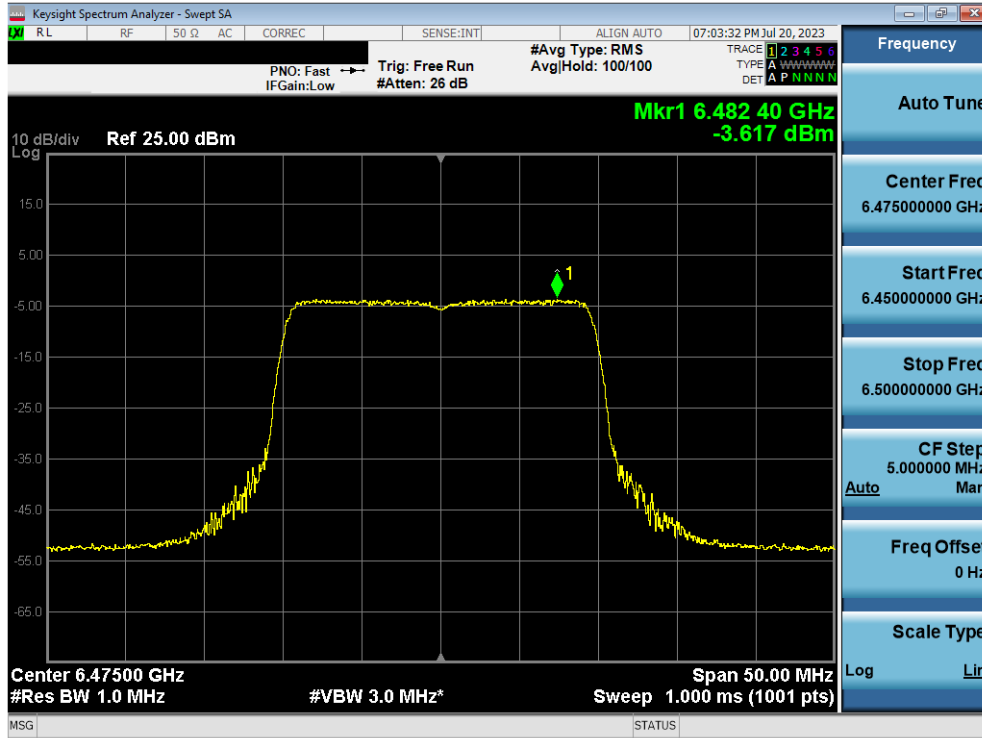


Plot 7-83. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 39)

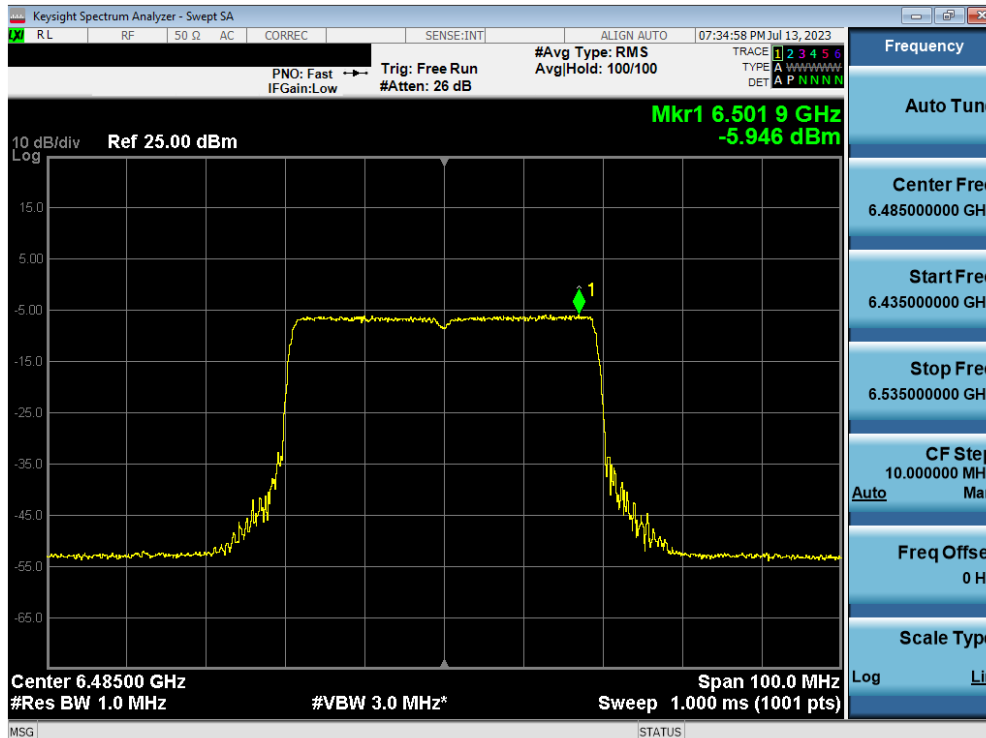


Plot 7-84. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 47)

sFCC ID: A3LSMS711B		MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2304260063-18.A3L	Test Dates: 5/30 - 8/9/2023	EUT Type: Portable Handset	Page 73 of 173	

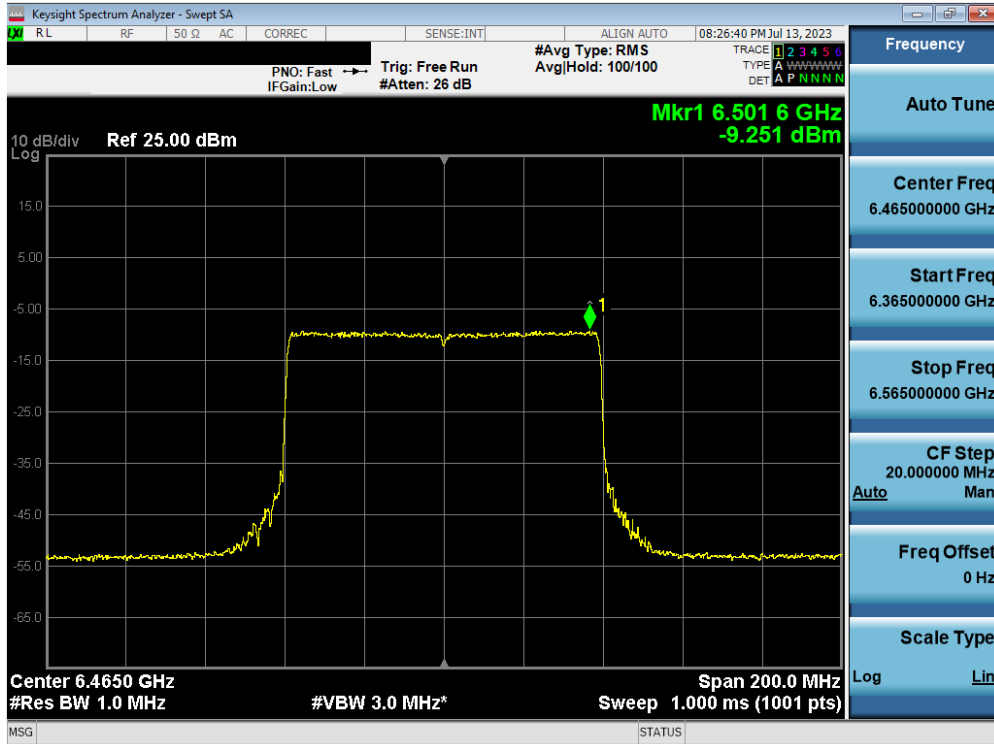


Plot 7-85. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 105)

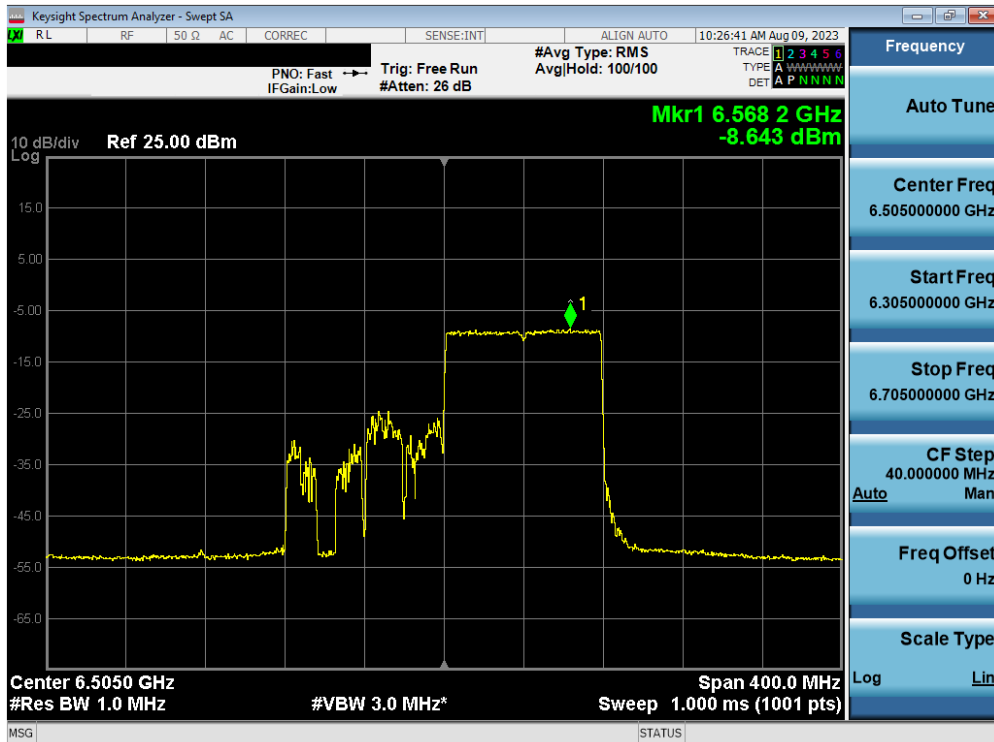


Plot 7-86. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 107)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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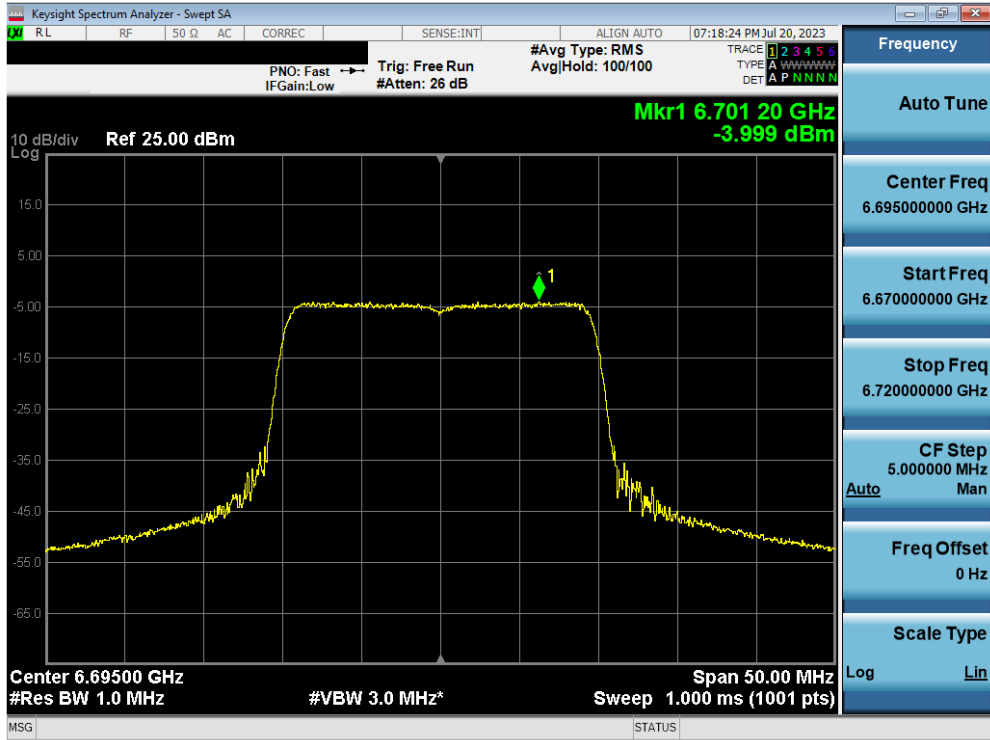


Plot 7-87. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 103)

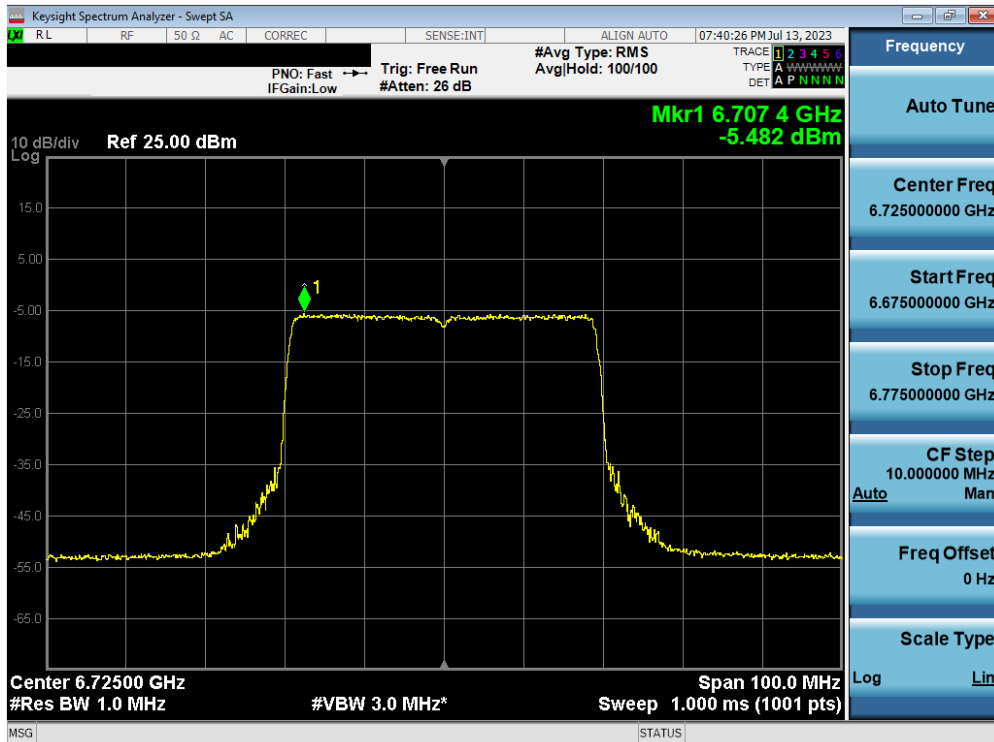


Plot 7-88. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (Full Tone) (UNII Band 6) – Ch. 111)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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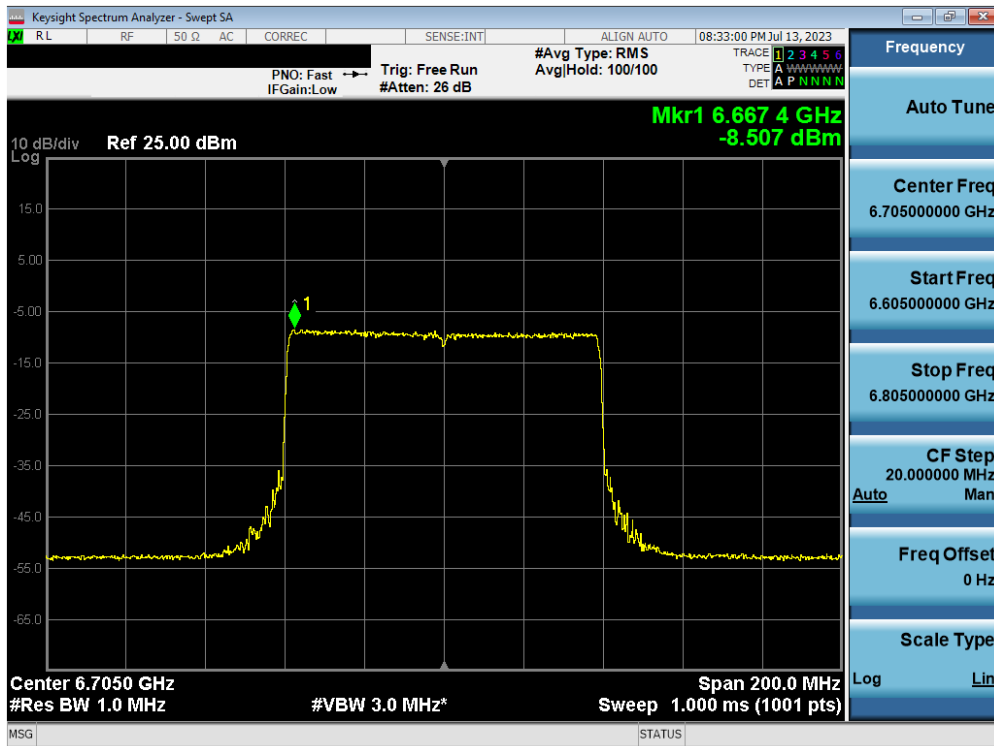


Plot 7-89. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 149)

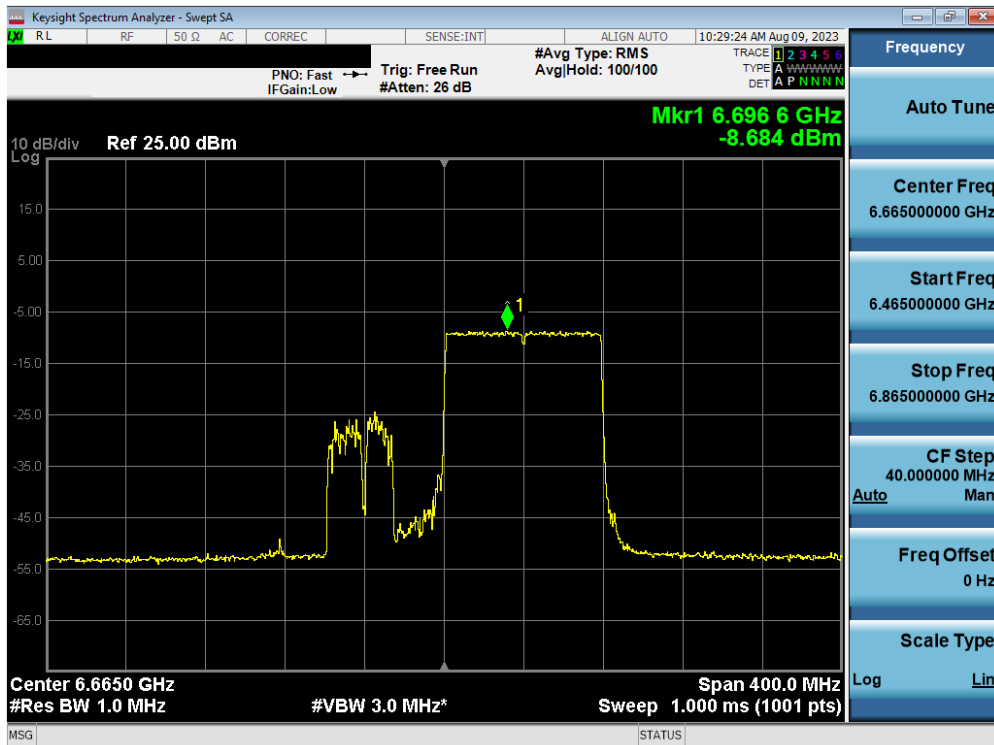


Plot 7-90. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 155)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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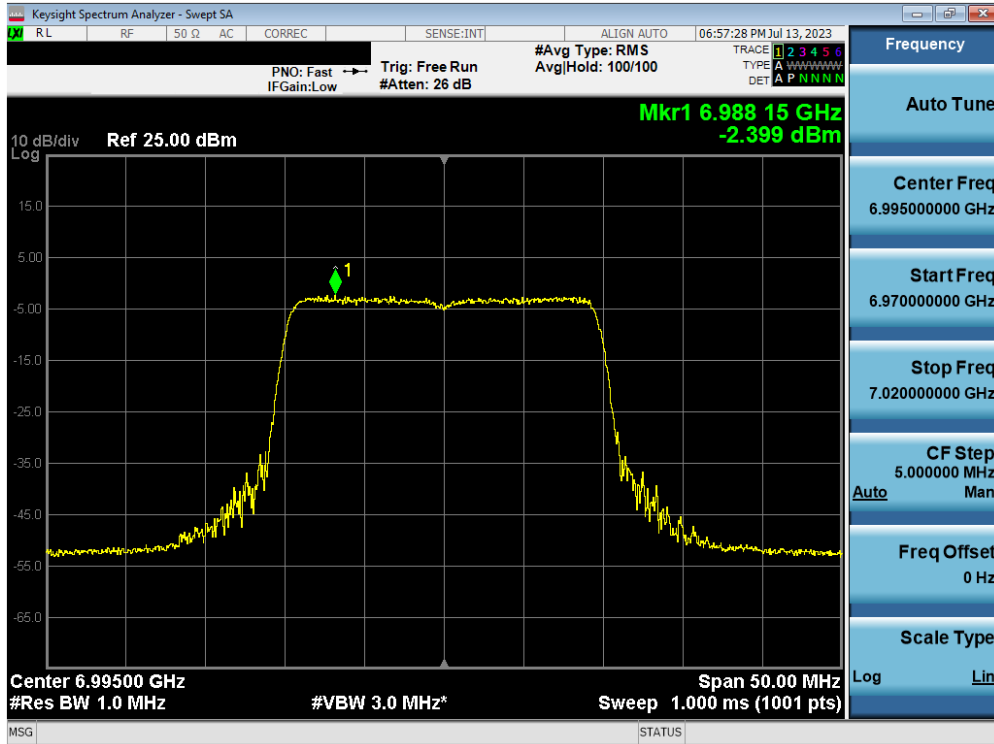


Plot 7-91. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 151)

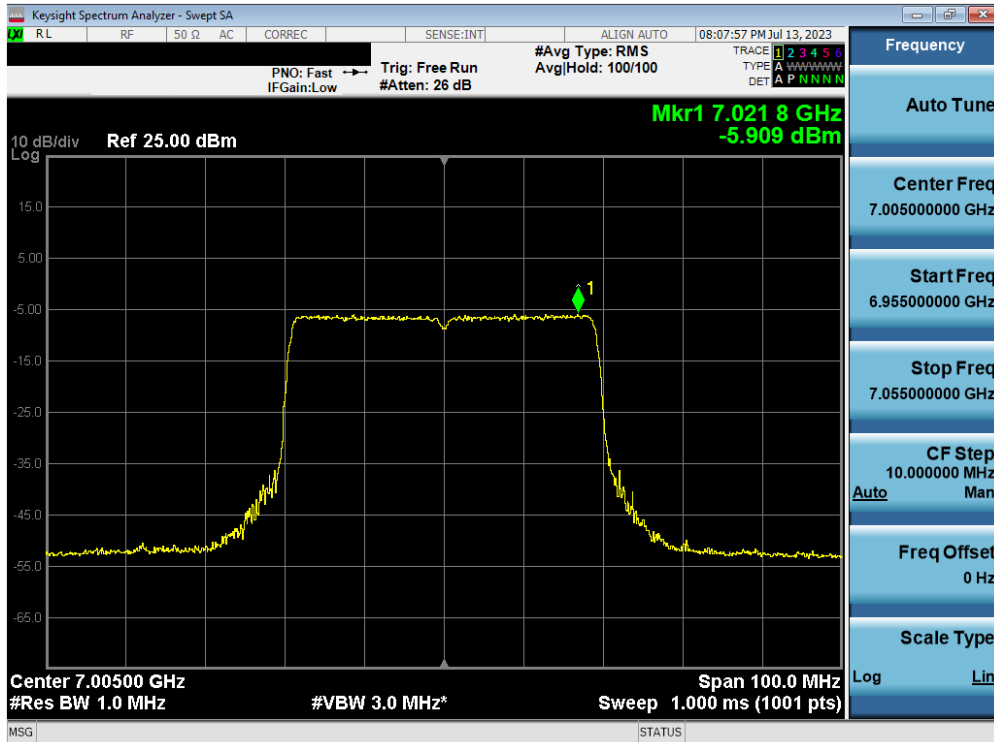


Plot 7-92. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (Full Tone) (UNII Band 7) – Ch. 143)

sFCC ID: A3LSMS711B		MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2304260063-18.A3L	Test Dates: 5/30 - 8/9/2023	EUT Type: Portable Handset	Page 77 of 173	

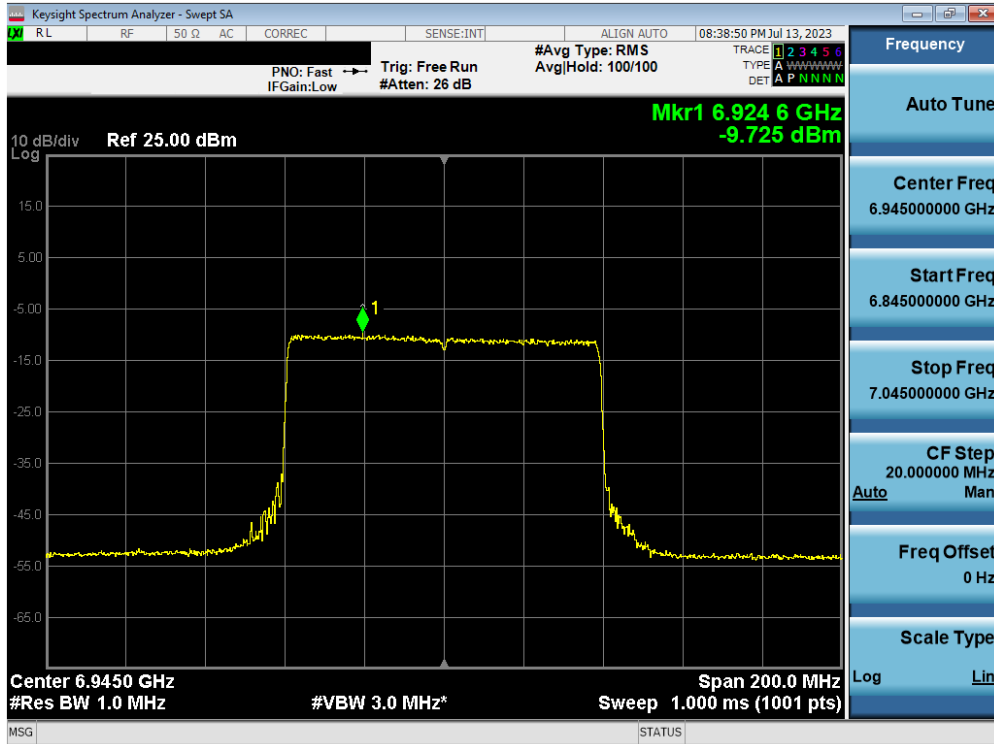


Plot 7-93. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 209)

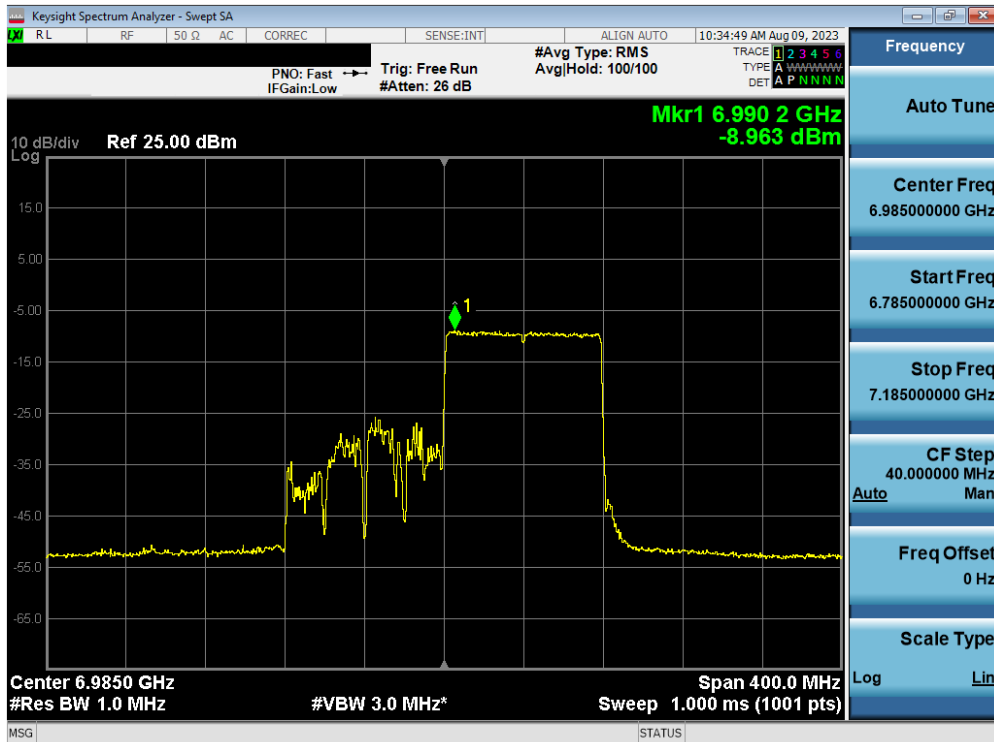


Plot 7-94. Power Spectral Density Plot MIMO ANT1 (40MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 211)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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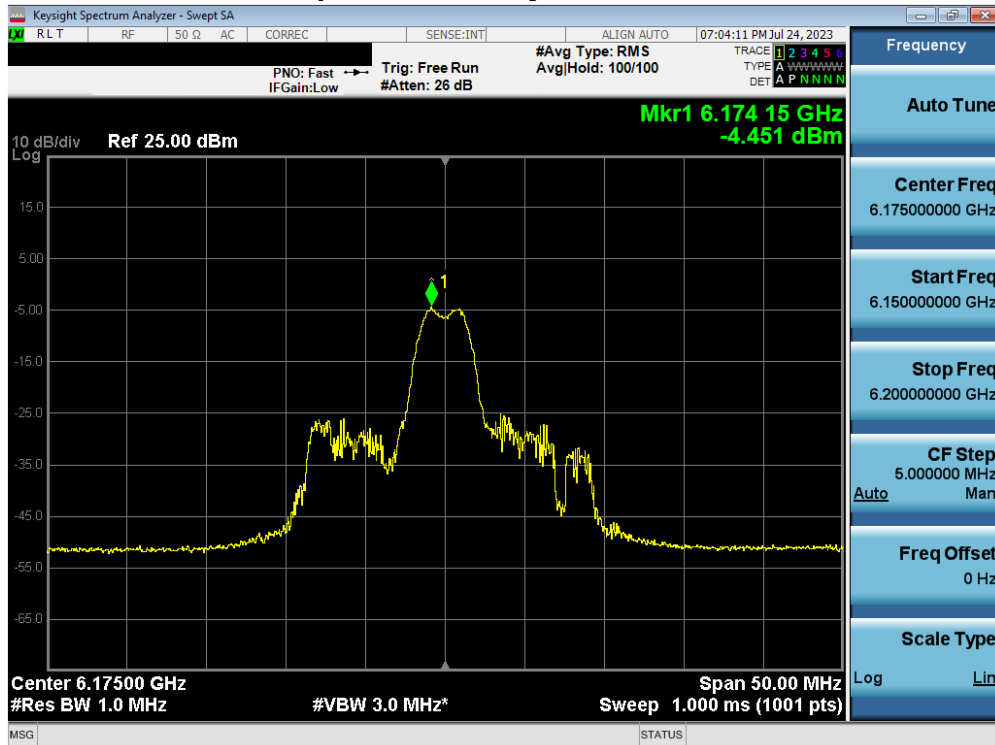
Plot 7-95. Power Spectral Density Plot MIMO ANT1 (80MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 199)



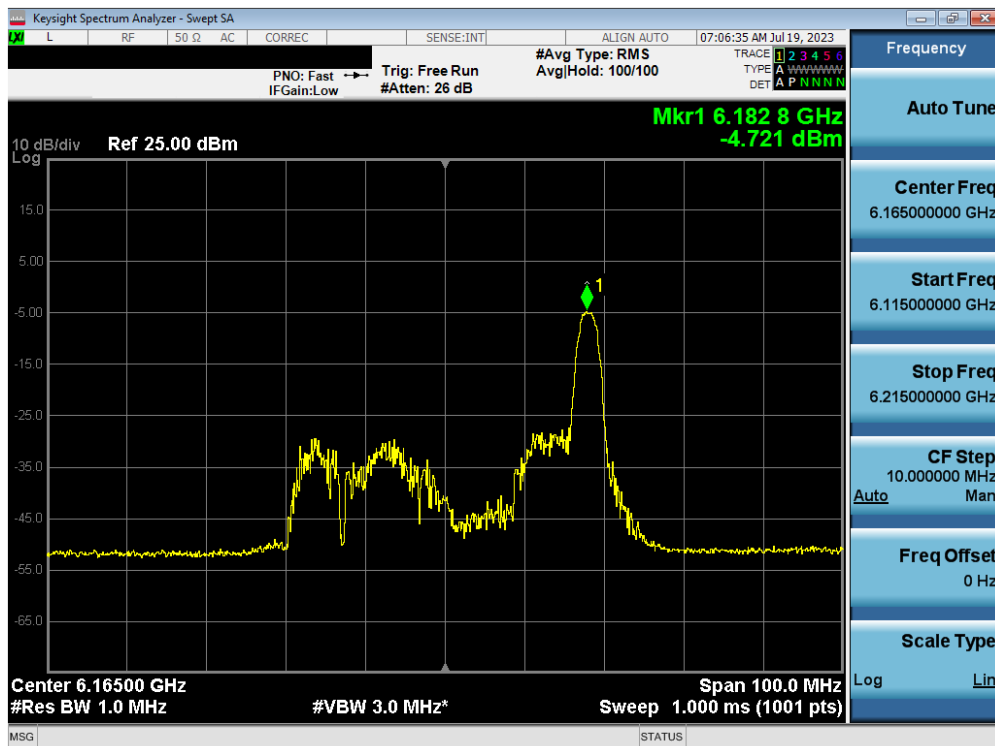
Plot 7-96. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11ax (Full Tone) (UNII Band 8) – Ch. 207)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.4.2 MIMO Antenna-2 Power Spectral Density Measurements

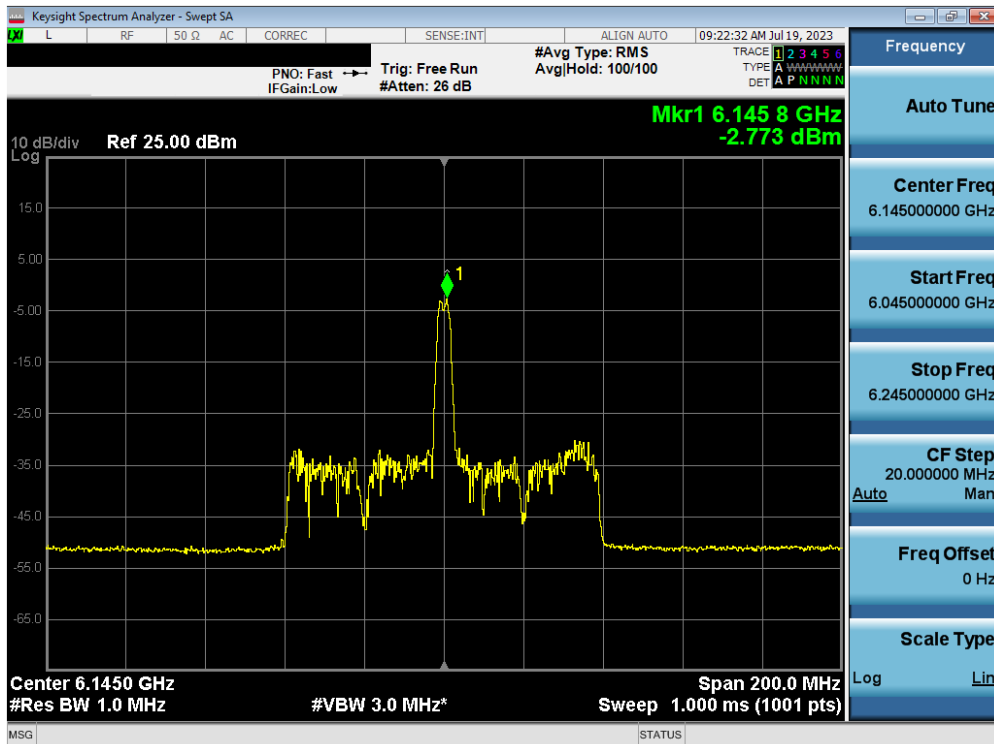


Plot 7-97. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 45)

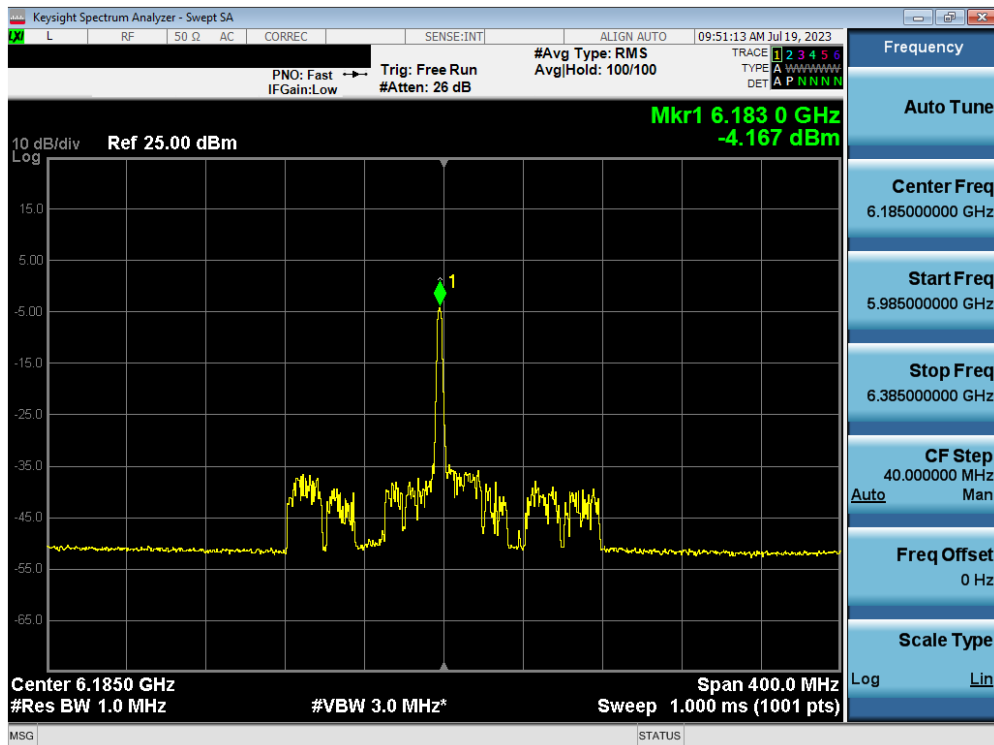


Plot 7-98. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 43)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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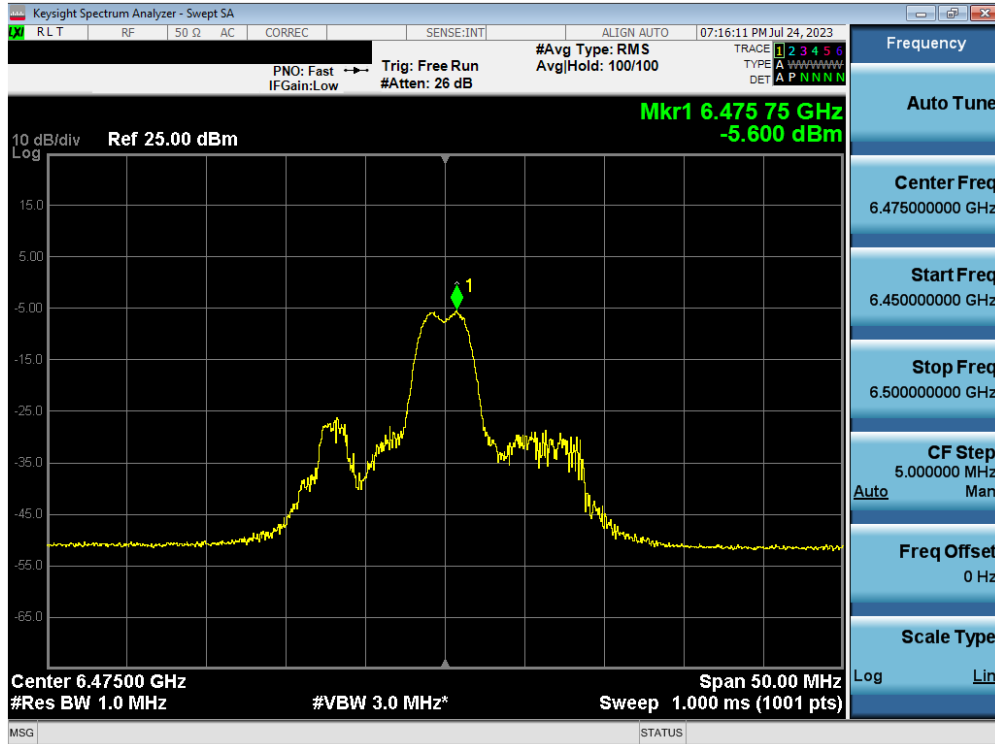


Plot 7-99. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 39)

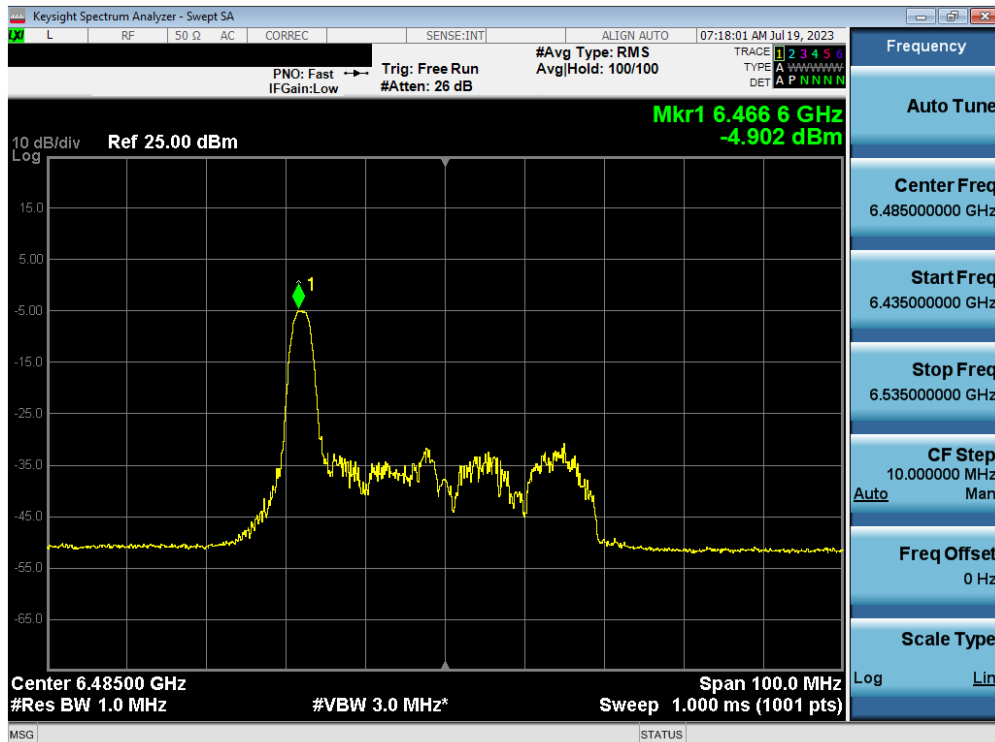


Plot 7-100. Power Spectral Density Plot MIMO ANT2 (160MHz BW 802.11ax (26 Tones) (UNII Band 5) – Ch. 47)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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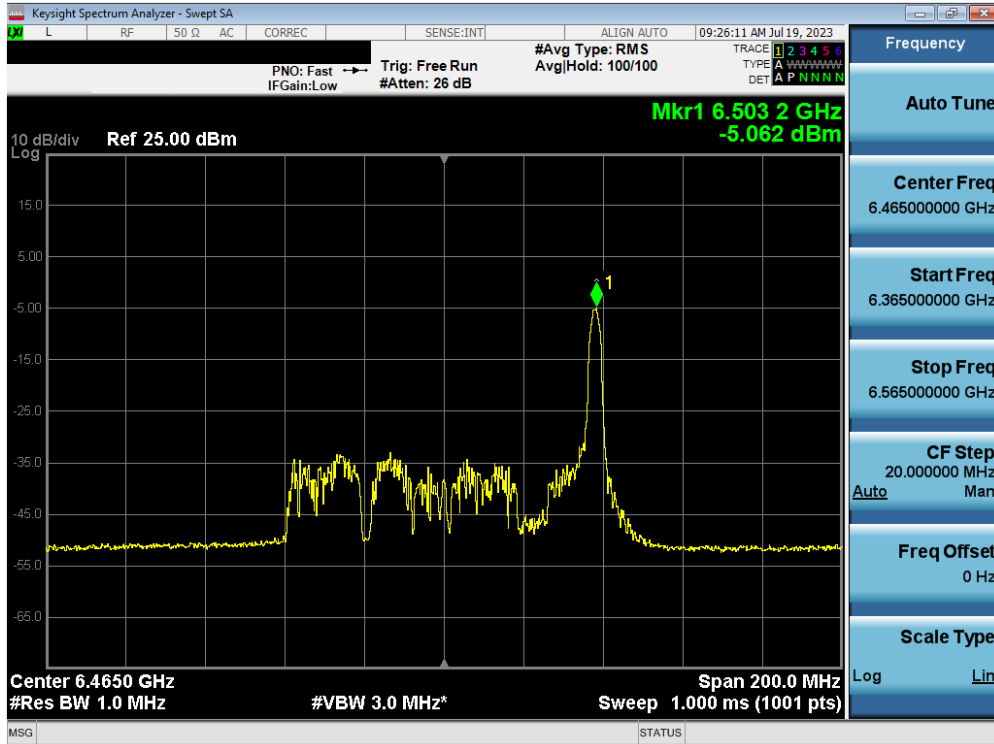


Plot 7-101. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 105)

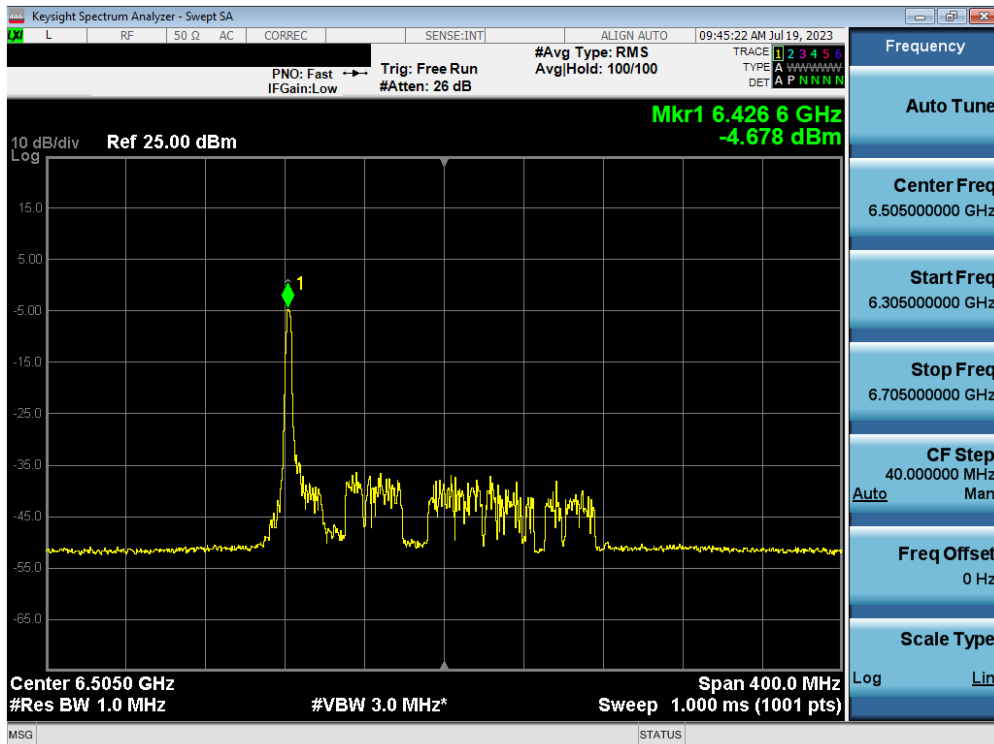


Plot 7-102. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 107)

sFCC ID: A3LSMS711B		MEASUREMENT REPORT		Approved by: Technical Manager
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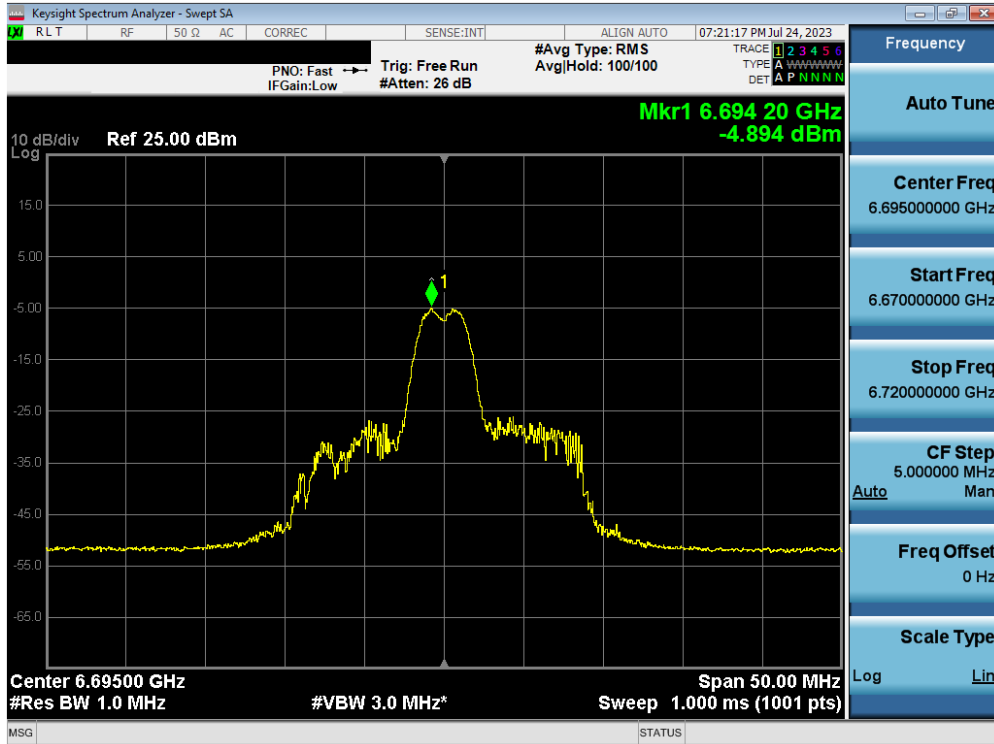


Plot 7-103. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 103)

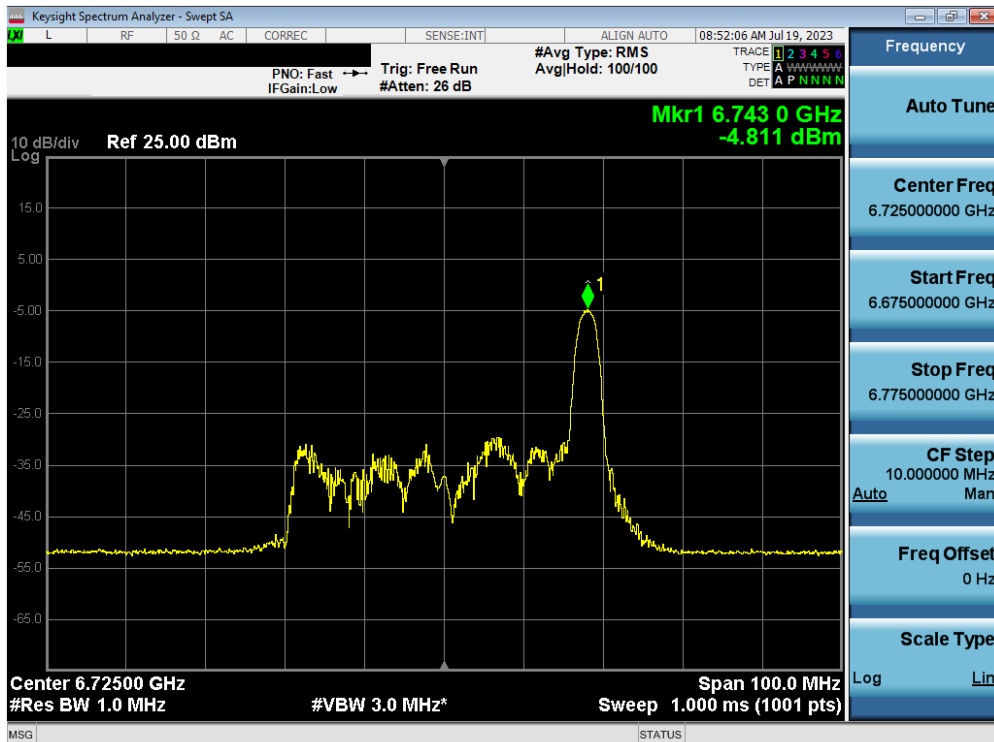


Plot 7-104. Power Spectral Density Plot MIMO ANT2 (160MHz BW 802.11ax (26 Tones) (UNII Band 6) – Ch. 111)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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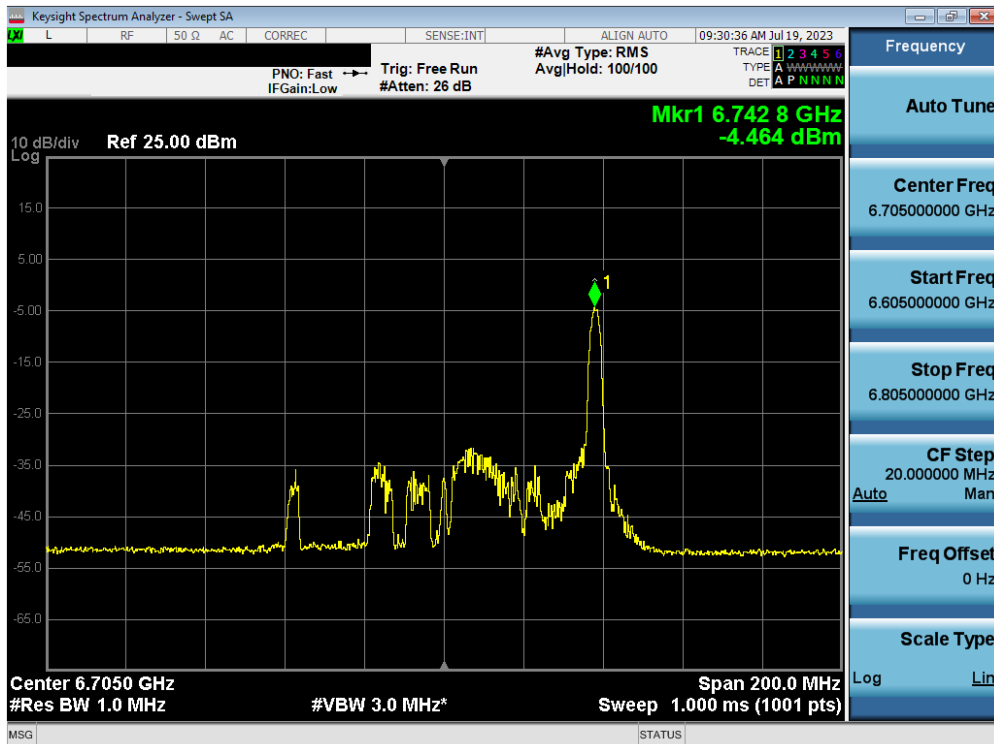


Plot 7-105. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 149)

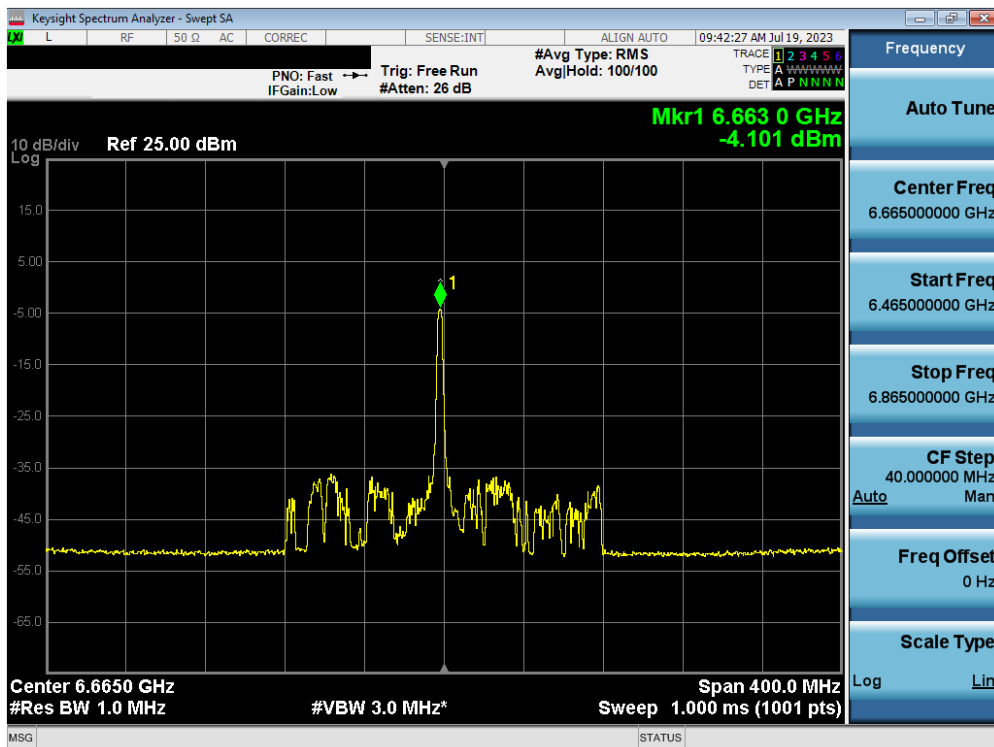


Plot 7-106. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 155)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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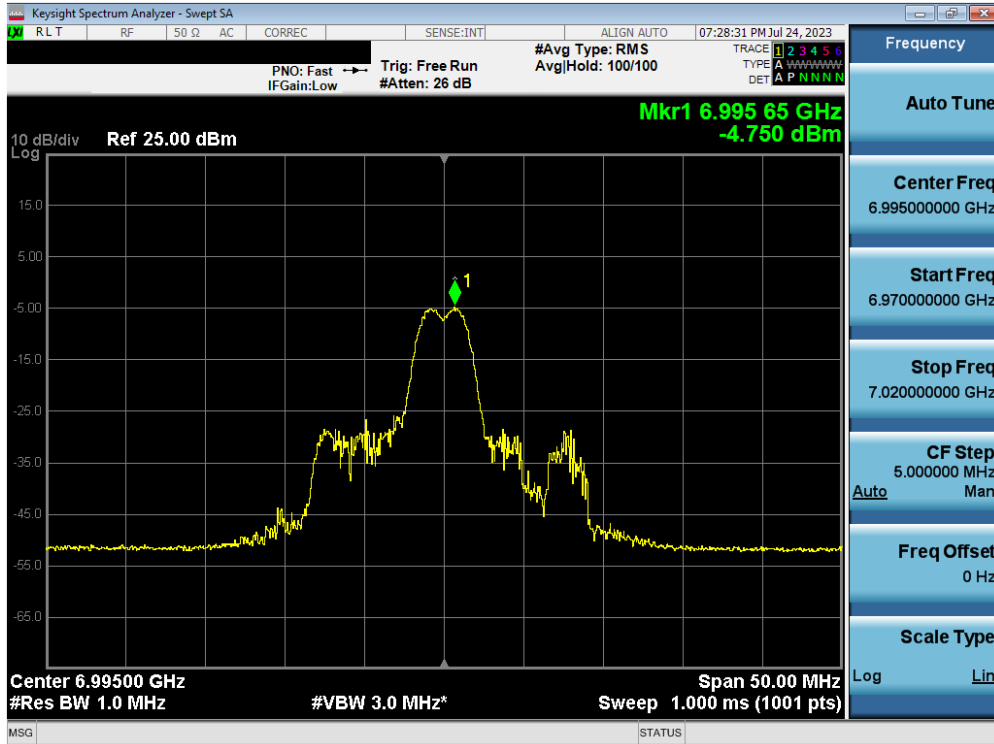


Plot 7-107. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 151)

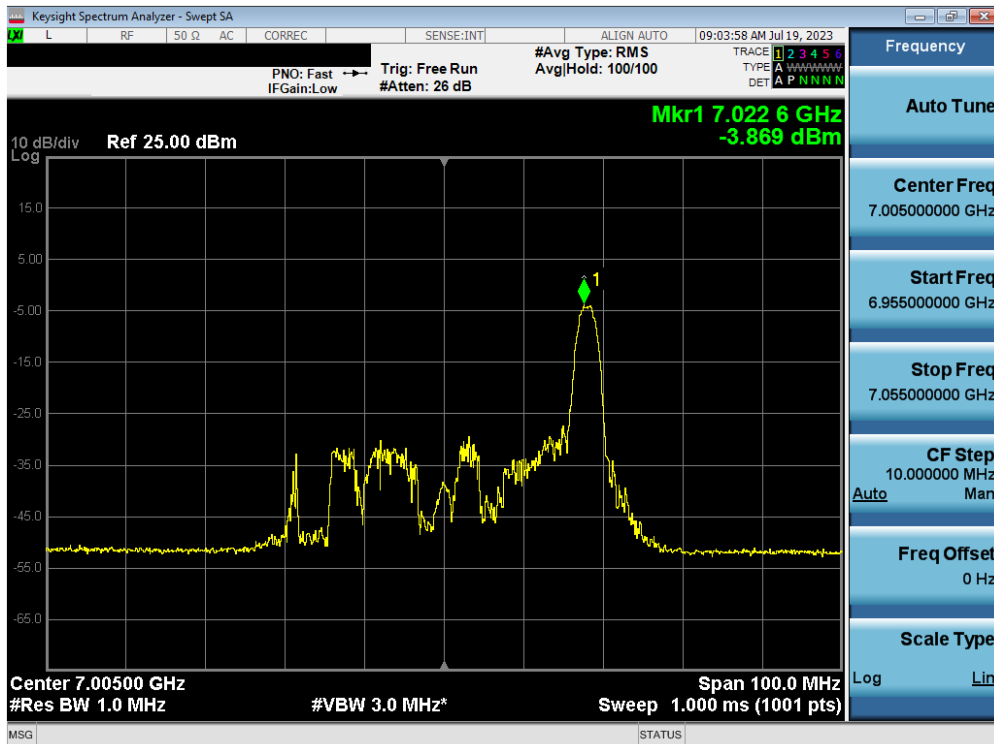


Plot 7-108. Power Spectral Density Plot MIMO ANT2 (160MHz BW 802.11ax (26 Tones) (UNII Band 7) – Ch. 143)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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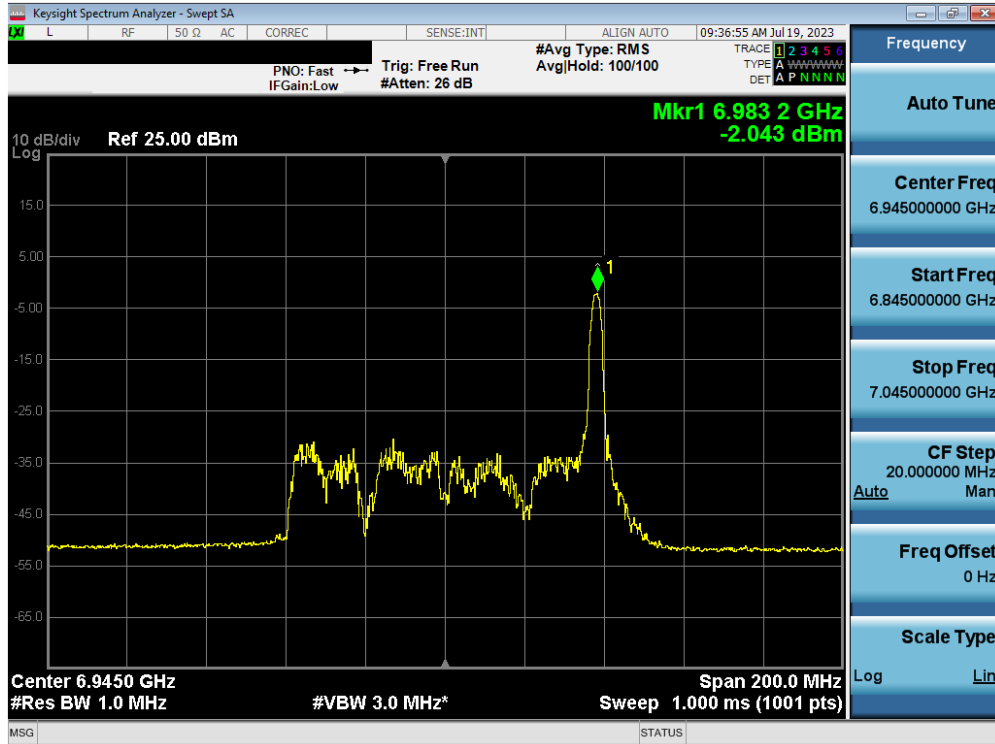


Plot 7-109. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 209)

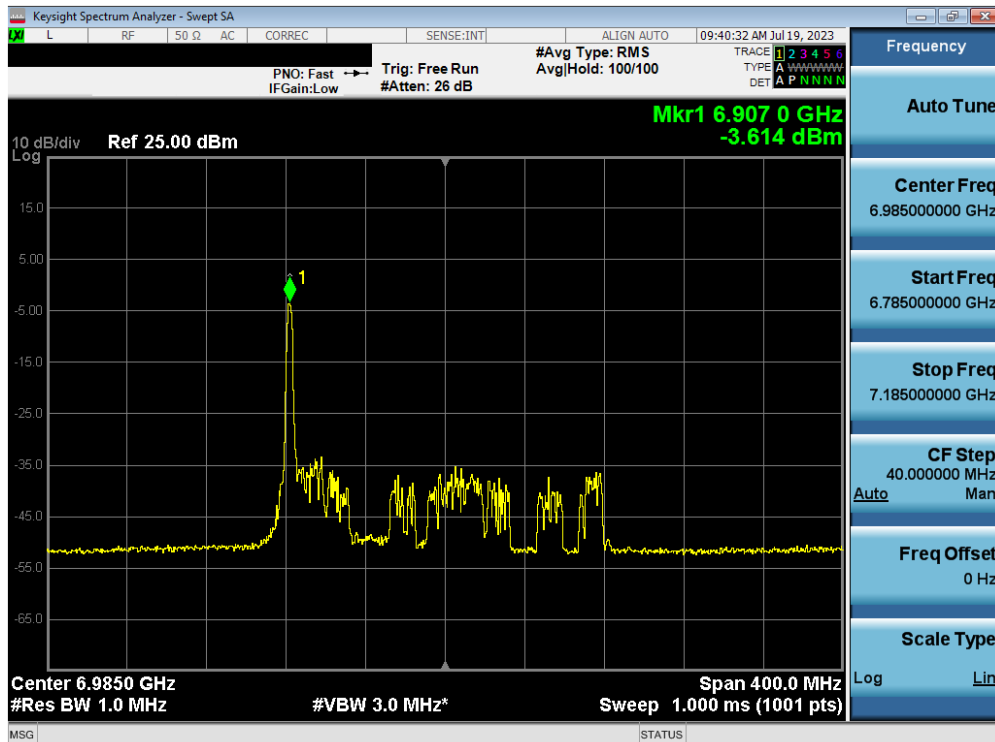


Plot 7-110. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 211)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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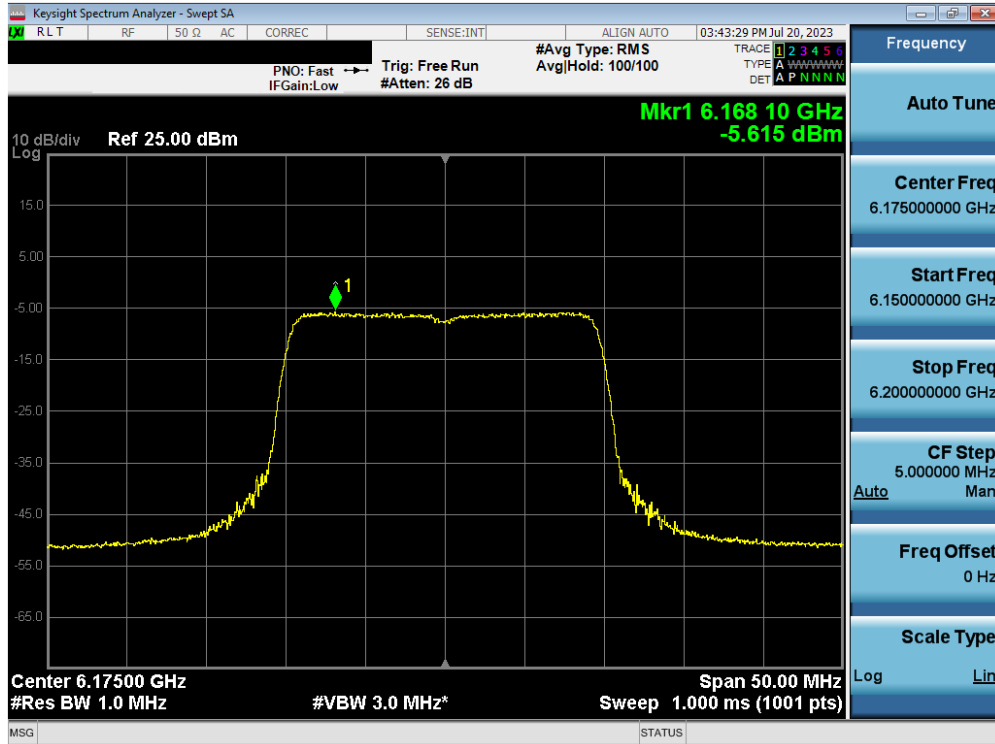


Plot 7-111. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 199)

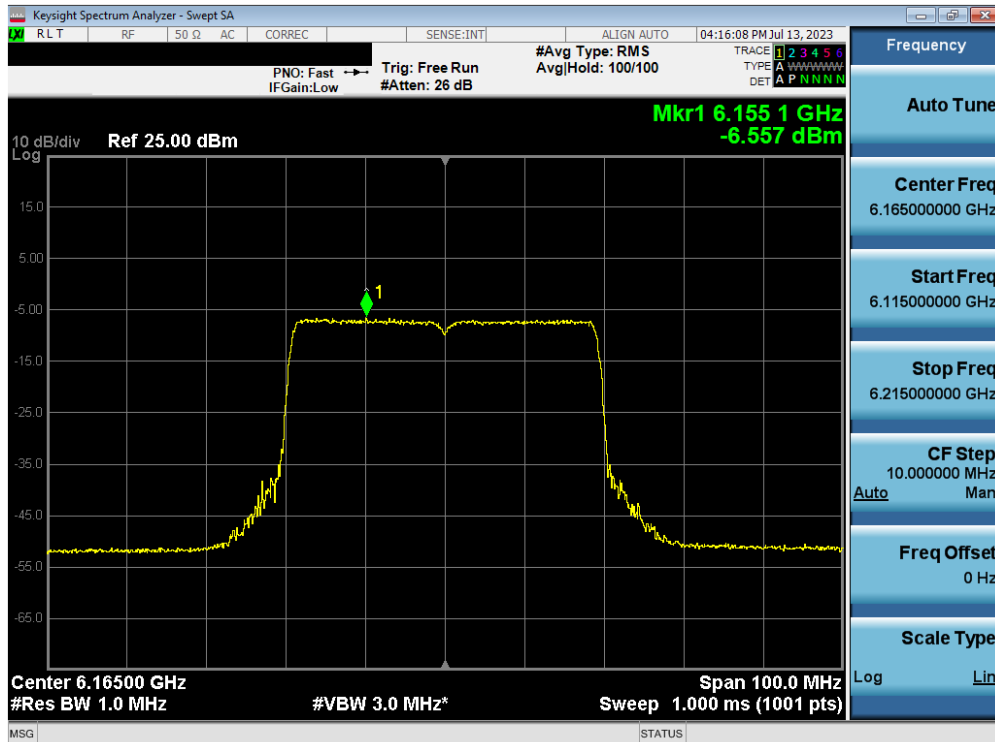


Plot 7-112. Power Spectral Density Plot MIMO ANT2 (160MHz BW 802.11ax (26 Tones) (UNII Band 8) – Ch. 207)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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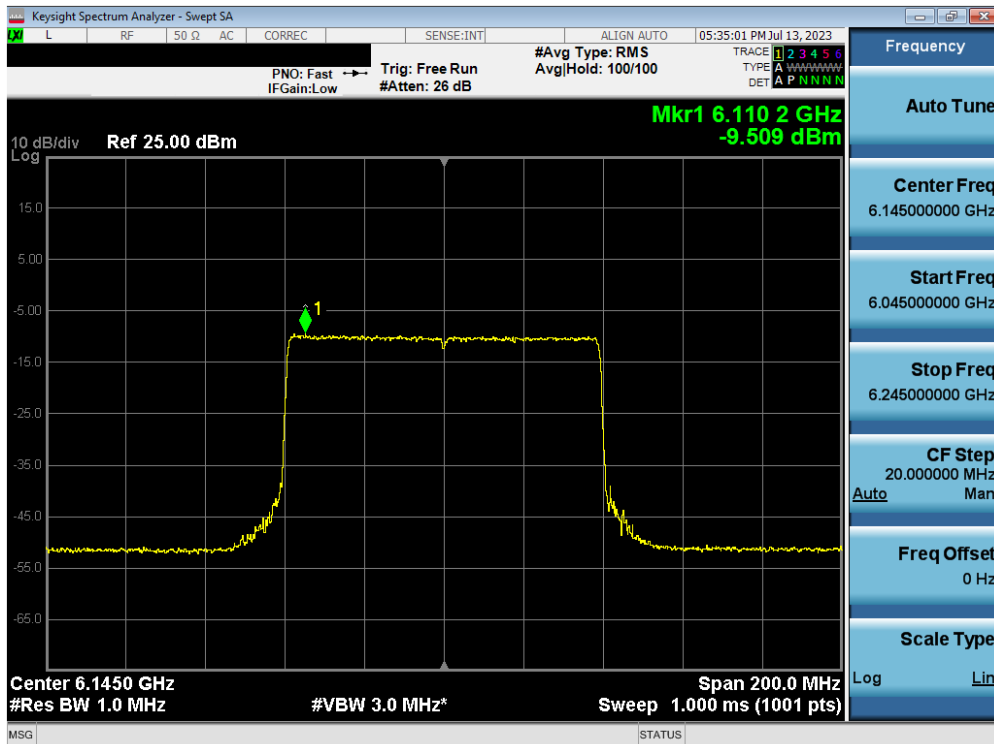


Plot 7-113. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 45)

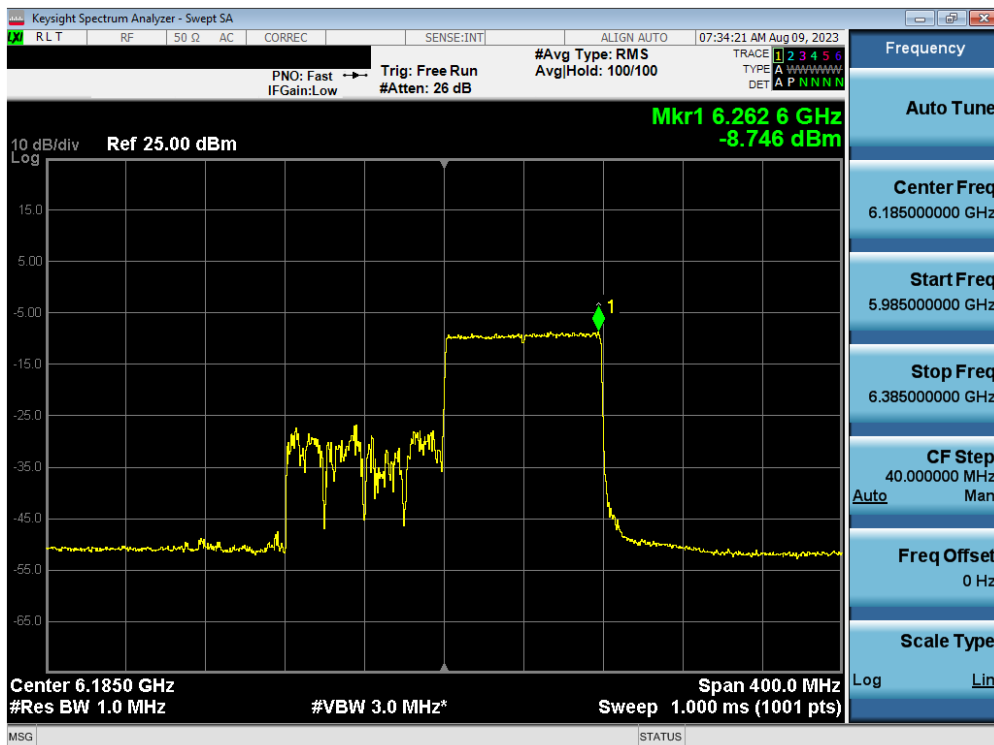


Plot 7-114. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 43)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-115. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax (Full Tone) (UNII Band 5) – Ch. 39)



Plot 7-116. Power Spectral Density Plot MIMO ANT2 (160MHz BW 802.11ax (996 Tone) (UNII Band 5) – Ch. 47)

sFCC ID: A3LSMS711B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2304260063-18.A3L	Test Dates: 5/30 - 8/9/2023	EUT Type: Portable Handset	Page 89 of 173