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MEASUREMENT REPORT
FCC PART 15.407 802.11a/n/ac/ax/be (OFDM)

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

Date of Testing:
07/30/2024 - 06/23/2025
Test Report Issue Date:
6/26/2025
Test Site/Location:
Element Lab., Columbia, MD, USA
Test Report Serial No.:
1M2406060046-06.A3L

FCC ID:	**A3LSMI610**
APPLICANT:	**Samsung Electronics Co., Ltd.**

Application Type:	Certification
Model:	SM-I610
EUT Type:	Portable Device
Frequency Range:	5180 – 5885MHz
Modulation Type:	OFDM
FCC Equipment Class:	Unlicensed National Information Infrastructure TX (NII)
FCC Rule Part(s):	Part 15 Subpart E (15.407)
Test Procedure(s):	ANSI C63.10-2013, 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.

RJ Ortanez
Executive Vice President

ACCREDITED
CERT #2041.01

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Channel Bandwidth [MHz]	UNII Band	Tx Frequency [MHz]	Ant1		Ant2		MIMO	
			Max. Power [mW]	Max. Power [dBm]	Max. Power [mW]	Max. Power [dBm]	Max. Power [mW]	Max. Power [dBm]
20	1	5180 - 5240	31.55	14.99	31.55	14.99	61.24	17.87
	2A	5260 - 5320	31.41	14.97	30.48	14.84	56.62	17.53
	2C	5500 - 5720	31.33	14.96	31.05	14.92	61.09	17.86
	3	5745 - 5825	15.42	11.88	15.42	11.88	29.92	14.76
40	1	5190 - 5230	31.48	14.98	31.48	14.98	57.68	17.61
	2A	5270 - 5310	31.41	14.97	29.44	14.69	60.39	17.81
	2C	5510 - 5710	31.48	14.98	30.83	14.89	58.48	17.67
	3	5755 - 5795	15.42	11.88	14.62	11.65	29.58	14.71
80	1	5210	31.12	14.93	29.85	14.75	58.08	17.64
	2A	5290	30.90	14.90	27.86	14.45	57.68	17.61
	2C	5530 - 5690	31.48	14.98	29.11	14.64	57.81	17.62
	3	5775	14.42	11.59	14.96	11.75	28.97	14.62
160	1/2A	5250	28.91	14.61	31.33	14.96	57.15	17.57
	2C	5570	29.79	14.74	30.20	14.80	57.02	17.56

Figure 1 EUT Overview

1.0 INTRODUCTION

1.1 Scope

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

1.2 Element Test Location

Measurements were conducted at the Element laboratory(ies) indicated in Section 1.3 below. All measurement facilities are compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

1.3 Test Facility / Accreditations

Measurements were performed at Element lab located in Columbia, MD 21046, U.S.A. ("MD")

- 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).

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Device FCC ID: A3LSMI610**. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter.

Test Device Serial No.: 1192M, 1166M, 1266M, 1184M

2.2 Device Capabilities

This device contains the following capabilities:

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

Band 1		Band 2A		Band 2C		Band 3	
Ch.	**Frequency (MHz)**	**Ch.**	**Frequency (MHz)**	**Ch.**	**Frequency (MHz)**	**Ch.**	**Frequency (MHz)**
36	5180	52	5260	100	5500	149	5745
:	:	:	:	:	:	:	:
40	5200	56	5280	120	5600	157	5785
:	:	:	:	:	:	:	:
48	5240	64	5320	144	5720	165	5825

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

Band 1		Band 2A		Band 2C		Band 3	
Ch.	**Frequency (MHz)**	**Ch.**	**Frequency (MHz)**	**Ch.**	**Frequency (MHz)**	**Ch.**	**Frequency (MHz)**
38	5190	54	5270	102	5510	151	5755
:	:	:	:	:	:	:	:
46	5230	62	5310	118	5590	159	5795
				:	:		
				142	5710		

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

Band 1		Band 2A		Band 2C		Band 3	
Ch.	**Frequency (MHz)**	**Ch.**	**Frequency (MHz)**	**Ch.**	**Frequency (MHz)**	**Ch.**	**Frequency (MHz)**
42	5210	58	5290	106	5530	155	5775
				:	:		
				122	5610		
				:	:		
				138	5690		

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

Band 1/2A		Band 2C	
Ch.	**Frequency (MHz)**	**Ch.**	**Frequency (MHz)**
50	5250	114	5570

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

Notes:

1. 5GHz NII operation is possible in 20MHz, 40MHz, 80MHz, and 160MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, 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:

802.11 Mode/Band		ANT1	ANT2	MIMO (1+2)
		Duty Cycle [%]	Duty Cycle [%]	Duty Cycle [%]
5GHz	a	96.58	96.58	93.79
	n (HT20)	92.49	96.16	92.93
	ac (VHT20)	92.67	96.21	92.91
	ax (HE20)	99.63	99.60	99.67
	be (EHT20)	99.63	99.60	99.69
	n (HT40)	96.05	96.10	96.18
	ac (VHT40)	95.95	96.11	92.81
	ax (HE40)	99.54	99.51	99.71
	be (EHT40)	99.62	99.62	99.71
	ac (VHT80)	95.82	95.04	92.40
	ax (HE80)	99.49	99.52	99.71
	be (EHT80)	99.34	99.40	99.71
	ac (VHT160)	91.79	91.95	92.28
	ax (HE160)	99.43	99.63	99.69
	be (EHT160)	99.49	99.58	99.71

Table 2-5. Measured Duty Cycles

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

WiFi Configurations		SISO		SDM		CDD	
		ANT1	ANT2	ANT1	ANT2	ANT1	ANT2
5GHz	11a	✓	✓	×	×	✓	✓
	11n	✓	✓	✓	✓	✓	✓
	11ac	✓	✓	✓	✓	✓	✓
	11ax	✓	✓	✓	✓	✓	✓
	11be	✓	✓	✓	✓	✓	✓

Table 2-6. Antenna / Technology Configuration

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

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

802.11a	MCS Index			Spatial Stream	OFDM (802.11n/802.11ac)				OFDM (802.11ac)				OFDM (802.11ax)											
20MHz					20MHz		40MHz		80MHz		160MHz		20MHz			40MHz			80MHz			160MHz		
	HT	VHT	HE		0.8µs GI	0.4µs GI	0.8µs GI	0.4µs GI	0.8µs GI	0.4µs GI	0.8µs GI	0.4µs 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
6	0	0	0	1	6.5	7.2	13.5	15	29.3	32.5	58.5	65	8.6	8.1	7.3	17.2	16.3	14.6	36	34	30.6	72.1	68.1	61.3
9	1	1	1	1	13	14.4	27	30	58.5	65	117	130	17.2	16.3	14.6	34.4	32.5	29.3	72.1	68.1	61.3	144.1	136.1	122.5
12	2	2	2	1	19.5	21.7	40.5	45	87.8	97.5	175.5	195	25.8	24.4	21.9	51.6	48.8	43.9	108.1	102.1	91.9	216.2	204.2	183.8
18	3	3	3	1	26	28.9	54	60	117	130	234	260	34.4	32.5	29.3	68.8	65	58.5	144.1	136.1	122.5	288.2	272.2	245
24	4	4	4	1	39	43.3	81	90	175.5	195	351	390	51.6	48.8	43.9	103.2	97.5	87.8	216.2	204.2	183.8	432.4	408.3	367.5
36	5	5	5	1	52	57.8	108	120	234	260	468	520	68.8	65	58.5	137.6	130	117	288.2	272.2	245	576.5	544.4	490
48	6	6	6	1	58.5	65	121.5	135	263.3	292.5	526.5	585	77.4	73.1	65.8	154.9	146.3	131.6	324.3	306.3	275.6	648.5	612.5	551.3
54	7	7	7	1	65	72.2	135	150	292.5	325	585	650	86	81.3	73.1	172.1	162.5	146.3	360.3	340.3	306.3	720.6	680.6	612.5
		8	8	1	78	86.7	162	180	351	390	702	780	103.2	97.5	87.8	206.5	195	175.5	432.4	408.3	367.5	864.7	816.7	735
	`	9	9	1	N/A	N/A	180	200	390	433.3	780	866.7	114.7	108.3	97.5	229.4	216.7	195	480.4	453.7	408.3	960.8	907.4	816.7
			10	1									129	121.9	109.7	258.1	243.8	219.4	540.4	510.4	459.4	1080.9	1020.8	918.8
			11	1									143.4	135.4	121.9	286.8	270.8	243.8	600.5	567.1	510.4	1201	1134.3	1020.8
6	8	0	0	2	13	14.4	27	30	58.5	65	117	130	17.2	16.3	14.6	34.4	32.5	29.3	72.1	68.1	61.3	144.1	136.1	122.5
9	9	1	1	2	26	28.9	54	60	117	130	234	260	34.4	32.5	29.3	68.8	65	58.5	144.1	136.1	122.5	288.2	272.2	245
12	10	2	2	2	39	43.3	81	90	175.5	195	351	390	51.6	48.8	43.9	103.2	97.5	87.8	216.2	204.2	183.8	432.4	408.3	367.5
18	11	3	3	2	52	57.8	108	120	234	260	468	520	68.8	65	58.5	137.6	130	117	288.2	272.2	245	576.5	544.4	490
24	12	4	4	2	78	86.7	162	180	351	390	702	780	103.2	97.5	87.8	206.5	195	175.5	432.4	408.3	367.5	864.7	816.7	735
36	13	5	5	2	104	115.6	216	240	468	520	936	1040	137.6	130	117	275.3	260	234	576.5	544.4	490	1152.9	1088.9	980
48	14	6	6	2	117	130	243	270	526.5	585	1053	1170	154.9	146.3	131.6	309.7	292.5	263.3	648.5	612.5	551.3	1297.1	1225	1102.5
54	15	7	7	2	130	144.4	270	300	585	650	1170	1300	172.1	162.5	146.3	344.1	325	292.5	720.6	680.6	612.5	1441.2	1361.1	1225
		8	8	2	156	173.3	324	360	702	780	1404	1560	206.5	195	175.5	412.9	390	351	864.7	816.7	735	1729.4	1633.3	1470
		9	9	2	N/A	N/A	360	400	780	866.7	1560	1733.3	229.4	216.7	195	458.8	433.3	390	960.8	907.4	816.7	1921.6	1814.8	1633.3
			10	2									258.1	243.8	219.4	516.2	487.5	438.8	1080.9	1020.8	918.8	2161.8	2041.7	1837.5
			11	2									286.8	270.8	243.8	573.5	541.7	487.5	1201	1134.3	1020.8	2402	2268.5	2041.7

Table 2-7. Supported Data Rates

2.3 Antenna Description

The following antenna gains were used for the testing.

Frequency [GHz]	Antenna 1 Gain (dBi)	Antenna 2 Gain (dBi)	Directional Gain (dBi)
5.15-5.25	-3.24	-2.54	-1.83
5.25-5.35	-4.53	-4.06	-1.16
5.47-5.725	-5.18	-4.56	0.40
5.725-5.85	-5.27	-5.17	0.11
5.85-5.895	-5.27	-5.17	-1.94

Table 2-8. Antenna Peak Gain by Band

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, 7.6 for radiated emissions test setups, and 7.2, 7.3, 0, and 7.5 for antenna port conducted emissions test setups.

2.5 Software and Firmware

The test was conducted with software/firmware version I610UEU0AXGP 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.

3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) was used in the measurement of the EUT.

Deviation from measurement procedure…….……..……..None

3.2 AC Line Conducted Emissions

The line-conducted facility is located inside a 10'x16'x9' shielded enclosure. The shielded enclosure is manufactured by 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.

Line conducted emissions test results are shown in Section 7.7. The EMI Receiver mode of the Agilent MXE was used to perform AC line conducted emissions testing.

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).

4.0 ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:
"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antennas of the EUT are **permanently attached.**
- There are no provisions for connection to an external antenna.

Conclusion:

The EUT complies with the requirement of §15.203.

5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (±dB)
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

Table 5-1. Measurement Uncertainty Budget – MD

6.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	WL25-1	Conducted Cable Set (25GHz)	4/2/2024	Annual	4/2/2025	WL25-1
-	WL25-2	Conducted Cable Set (25GHz)	4/2/2024	Annual	4/2/2025	WL25-2
-	WL40-1	Conducted Cable Set (40GHz)	4/2/2024	Annual	4/2/2025	WL40-1
-	AP1-002	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	AP1-002
-	ETS-001	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	ETS-001
-	ETS-002	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	ETS-002
-	MD 1M 18-40	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	MD 1M 18-40
Anritsu	MA24408A	Microwave Peak Power Sensor	5/21/2024	Annual	5/21/2025	11675
Anritsu	MA24408A	Microwave Peak Power Sensor	4/10/2024	Annual	4/10/2025	12798
ETS-Lindgren	3116C	Horn Antenna (18-40GHz)	2/27/2023	Biennial	2/27/2025	218893
Rohde & Schwarz	TC-TA18	Vivaldi Antenna	2/23/2023	Biennial	2/23/2025	26040036
Rohde & Schwarz	FSW26	Signal and Spectrum Analyzer (26.5GHz)	3/8/2024	Annual	3/8/2025	103187
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	9/25/2023	Annual	9/25/2024	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/11/2023	Annual	9/11/2024	100348
Rohde & Schwarz	ESW44	EMI Test Receiver (44GHz)	4/5/2024	Annual	4/5/2025	101716
Pasternak	NMLC-2	EMI Test Receiver (2Hz to 44GHz)	4/2/2024	Annual	4/2/2025	NMLC-2
Rohde & Schwarz	ENV216	Two-Line V-Network	1/31/2023	Biennial	1/31/2025	101379
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	4/9/2024	Annual	4/9/2025	MY52350166
Keysight Technologies	N9020A	MXA Signal Analyzer	4/11/2024	Annual	4/11/2025	MY54500644
Keysight Technologies	N9030A	PXA Signal Analyzer	2/29/2024	Annual	3/1/2025	MY55410501
Keysight Technologies	N9030B	PXA Signal Analyzer, Multi-touch	9/19/2024	Annual	9/19/2025	MY57141001
Sunol	JB6	JB6 Antenna	3/2/2023	Biennial	3/2/2025	A082816
Sunol	JB5	Bi-Log Antenna (20M-5GHz)	9/11/2024	Biennial	9/11/2026	A051107
Rohde & Schwarz	SMW200A	Vector Signal Generator	4/4/2024	Annual	4/4/2025	109456

Table 6-1. Test Equipment Calibration Table – MD

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.

7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
FCC ID: A3LSMI610
FCC Classification: Unlicensed National Information Infrastructure (NII)

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
N/A	RSS-Gen [6.6]	26dB Bandwidth	N/A	CONDUCTED	PASS	Section 7.2
15.407(e)	RSS-Gen [6.6]	6dB Bandwidth	>500kHz(5725-5850MHz and 5850 – 5895MHz)		PASS	Section 7.3
15.407 (a)(1)(iv), (a)(2), (a)(3)	RSS-247 [6.2]	Maximum Conducted Output Power	Maximum conducted powers must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])		PASS	Section 0
15.407 (a)(1)(iv), (a)(2), (a)(3)	RSS-247 [6.2]	Maximum Power Spectral Density	Maximum power spectral density must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])		PASS	Section 7.5
15.407(h)	RSS-247 [6.3]	Dynamic Frequency Selection	See DFS Test Report		PASS	See DFS Test Report
15.407(b)(1), (b)(2), (b)(3), (b)(4)	RSS-247 [6.2]	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 15.407(b) (RSS-247 [6.2])	RADIATED	PASS	Section 7.6
15.205, 15.407(b)(1), (b)(4), (b)(5), (b)(6)	RSS-Gen [8.9]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-Gen [8.9])		PASS	Section 7.6
15.407	RSS-Gen [8.8]	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 (RSS-Gen [8.8]) limits	LINE CONDUCTED	PASS	Section 7.7

Table 7-1. Summary of Test Results

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 1.5.0.
6) All cases were investigated; a subset of the taken plots were included to represent relevant settings and measurements.

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.

The 26dB bandwidth is used to determine the conducted power limits.

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 x 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.

MIMO 26dB Bandwidth Measurements

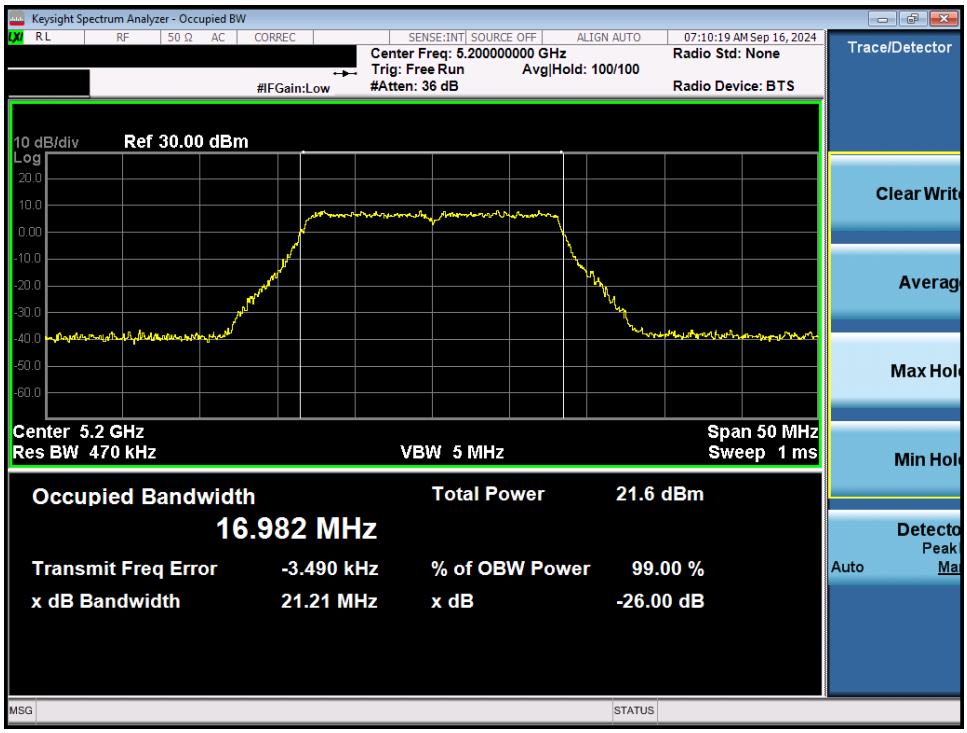
	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 26dB Bandwidth [MHz]	Antenna-2 26dB Bandwidth [MHz]
Band 1	5180	36	a	21.14	20.70
	5200	40	a	21.21	20.65
	5240	48	a	21.24	20.80
	5180	36	n	21.69	20.91
	5200	40	n	21.68	21.09
	5240	48	n	21.55	20.97
	5180	36	be SU	21.45	21.94
	5200	40	be SU	21.86	21.95
	5240	48	be SU	21.37	21.72
	5190	38	n	42.66	42.35
	5230	46	n	42.75	43.21
	5190	38	be SU	42.59	42.08
	5230	46	be SU	42.90	42.33
	5210	42	ac	94.88	93.30
	5210	42	be SU	88.69	90.34
Band 1/2A	5250	50	ac	177.58	176.83
	5250	50	be SU	175.54	175.71
Band 2A	5260	52	a	21.39	21.36
	5280	56	a	21.47	21.18
	5320	64	a	20.87	21.05
	5260	52	n	21.69	20.97
	5280	56	n	21.46	20.83
	5320	64	n	22.03	21.11
	5260	52	be SU	21.76	22.03
	5280	56	be SU	21.76	21.85
	5320	64	be SU	21.85	21.89
	5270	54	n	42.65	42.12
	5310	62	n	42.78	42.63
	5270	54	be SU	42.97	41.99
	5310	62	be SU	42.73	42.86
	5290	58	ac	93.94	90.56
	5290	58	be SU	89.23	91.37
Band 2C	5500	100	a	21.34	21.00
	5600	120	a	21.29	21.27
	5720	144	a	21.66	21.22
	5500	100	n	21.78	21.29
	5600	120	n	21.41	20.86
	5720	144	n	21.73	21.02
	5500	100	be SU	21.64	21.38
	5600	120	be SU	21.83	22.17
	5720	144	be SU	21.80	22.22
	5510	102	n	42.94	43.22
	5590	118	n	43.50	42.82
	5710	142	n	43.72	42.98
	5510	102	be SU	42.95	42.23
	5590	118	be SU	42.85	43.17
	5710	142	be SU	42.79	42.99
	5530	106	ac	92.02	91.02
	5610	122	ac	91.65	92.06
	5690	138	ac	93.49	91.98
	5530	106	be SU	91.75	88.28
	5610	122	be SU	88.40	90.90
	5690	138	be SU	93.20	88.80
	5570	114	ac	175.71	179.43
	5570	114	be SU	178.19	178.07

Table 7-2. Bands 1, 2A, 2C Conducted 26dB Bandwidth Measurements MIMO

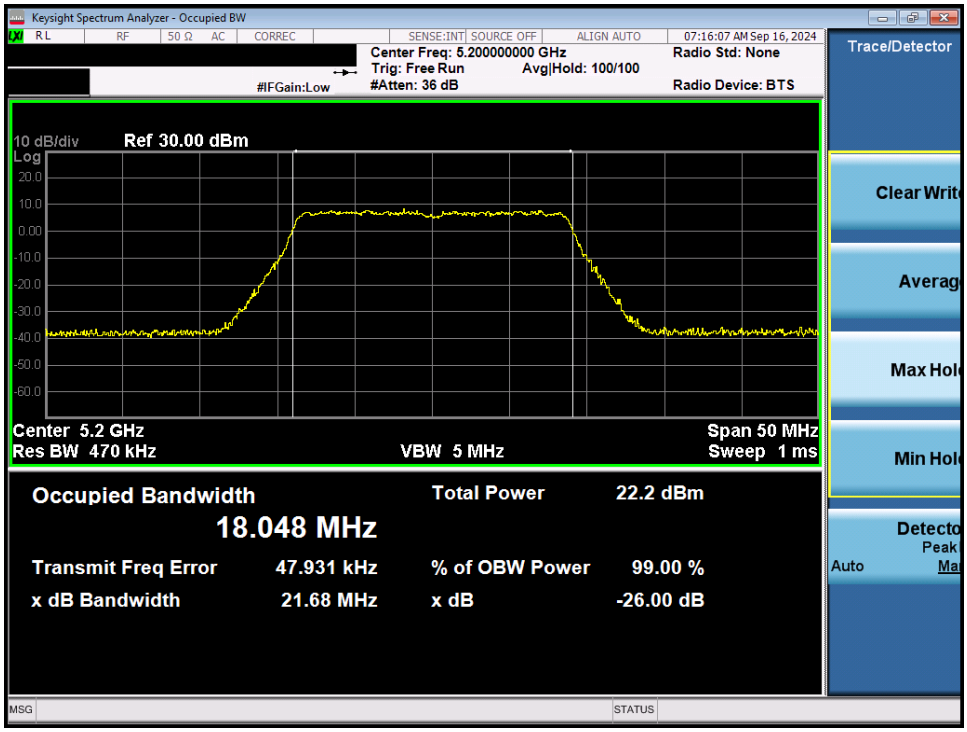
	Frequency [MHz]	Channel	802.11 MODE	Puncture Size [MHz]	Antenna-1 26dB Bandwidth [MHz]	Antenna-2 26dB Bandwidth [MHz]
Band 1	5210	42	be	20	90.65	90.31
Band 1/2A	5250	50	be	20	171.54	162.14
	5250	50	be	40	173.98	173.17
Band 2A	5290	58	be	20	91.82	89.31
Band 2C	5610	122	be	20	90.88	89.85
	5570	114	be	20	175.34	174.02
	5570	114	be	40	173.69	175.94

Table 7-3. Bands 1, 2A, 2C Conducted 26dB Bandwidth Measurements MIMO - Punctured

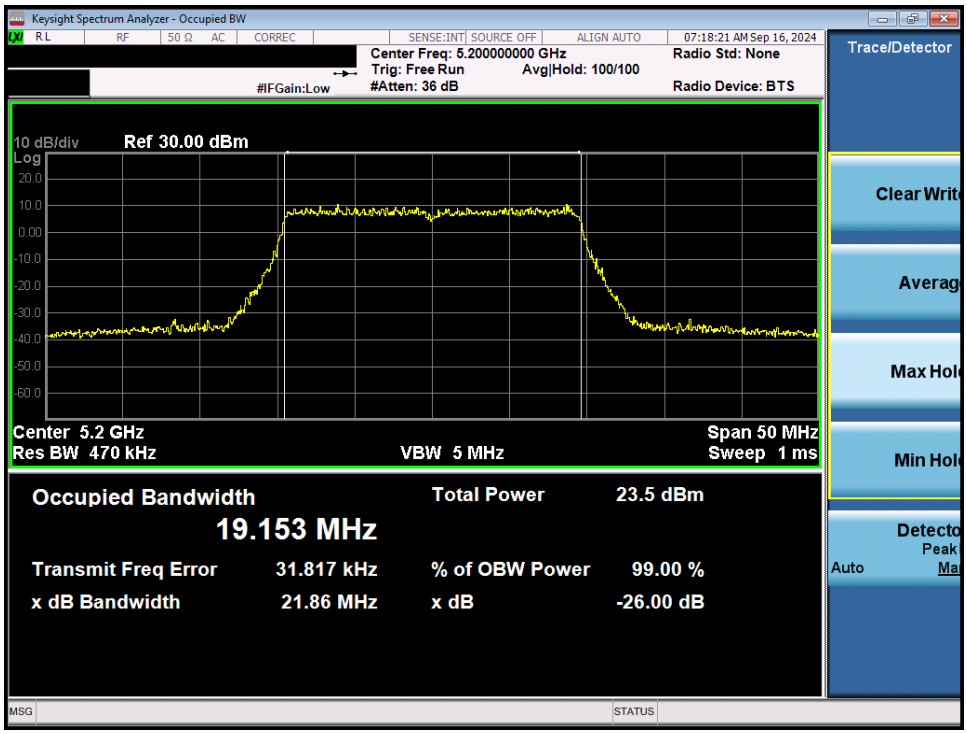
7.2.1 MIMO Antenna-1 26dB Bandwidth Measurements



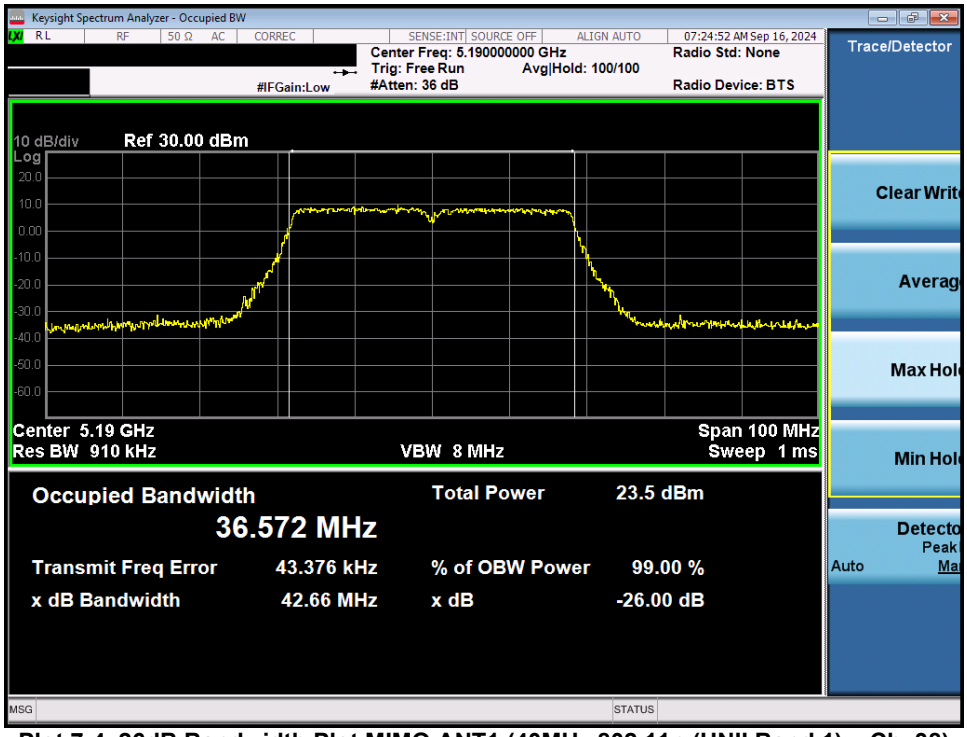
Plot 7-1. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11a (UNII Band 1) – Ch. 40)



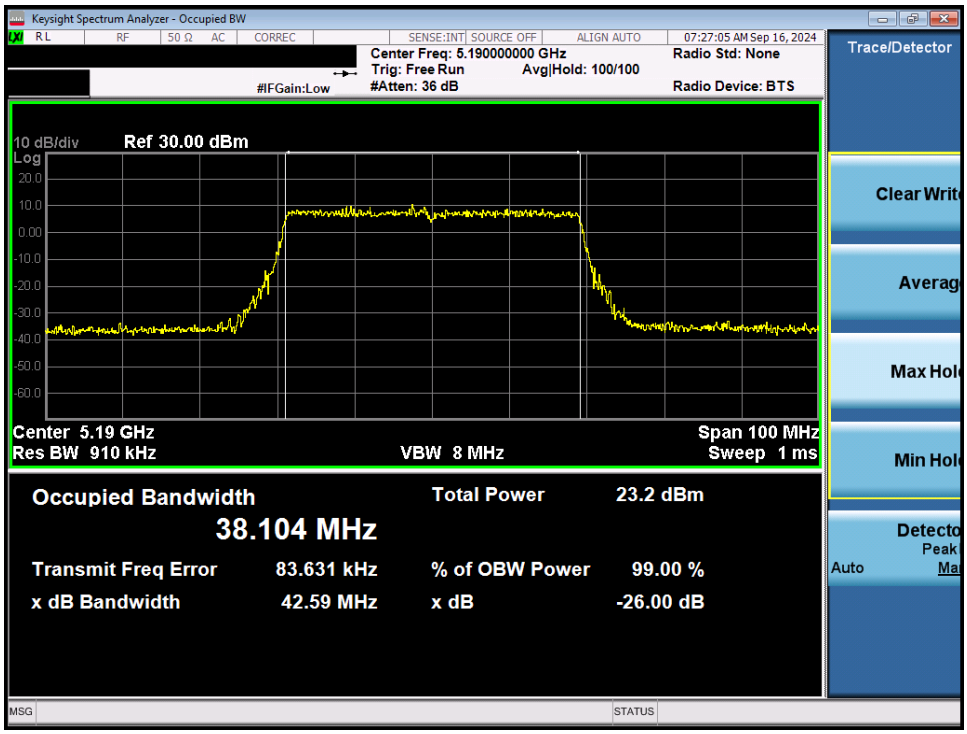
Plot 7-2. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11n (UNII Band 1) – Ch. 40)



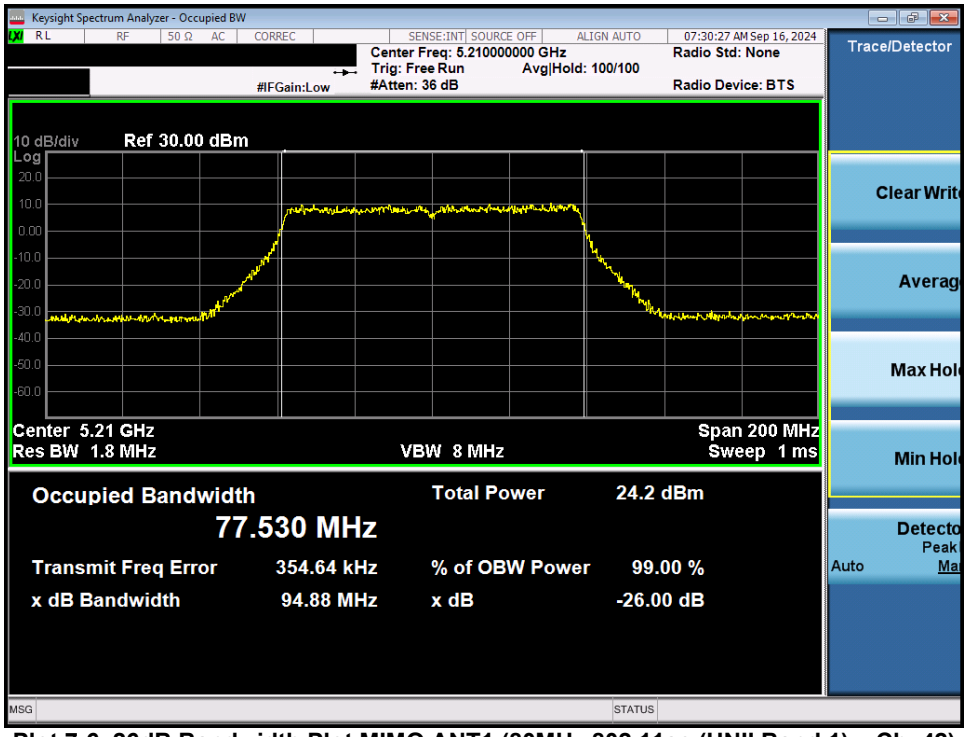
Plot 7-3. 26dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax/be (UNII Band 1) – Ch. 40)



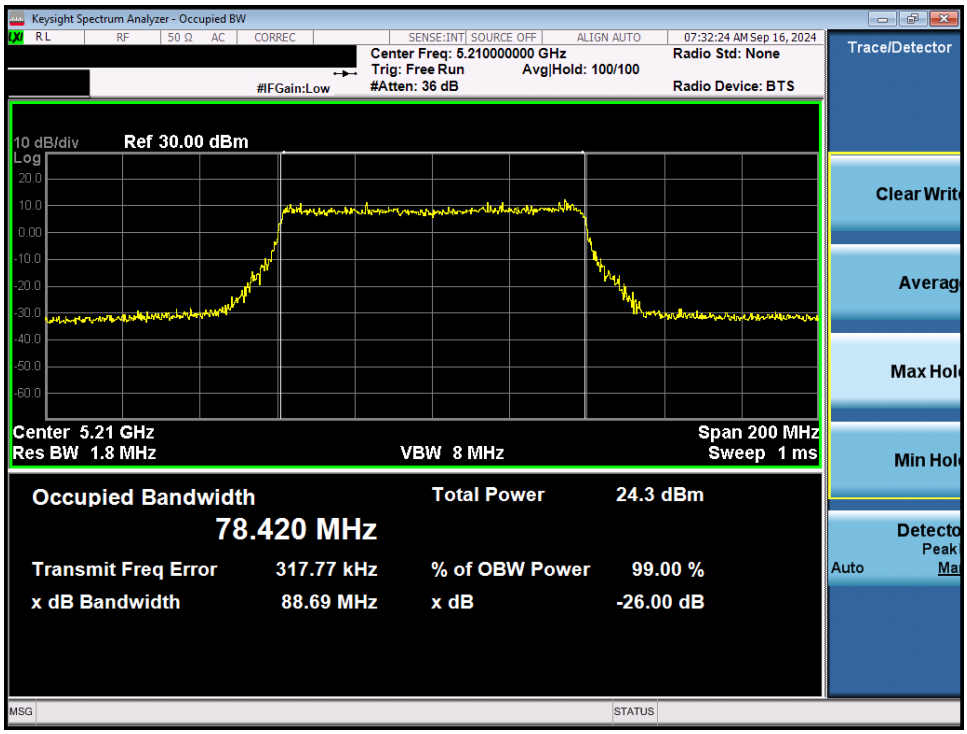
Plot 7-4. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11n (UNII Band 1) – Ch. 38)



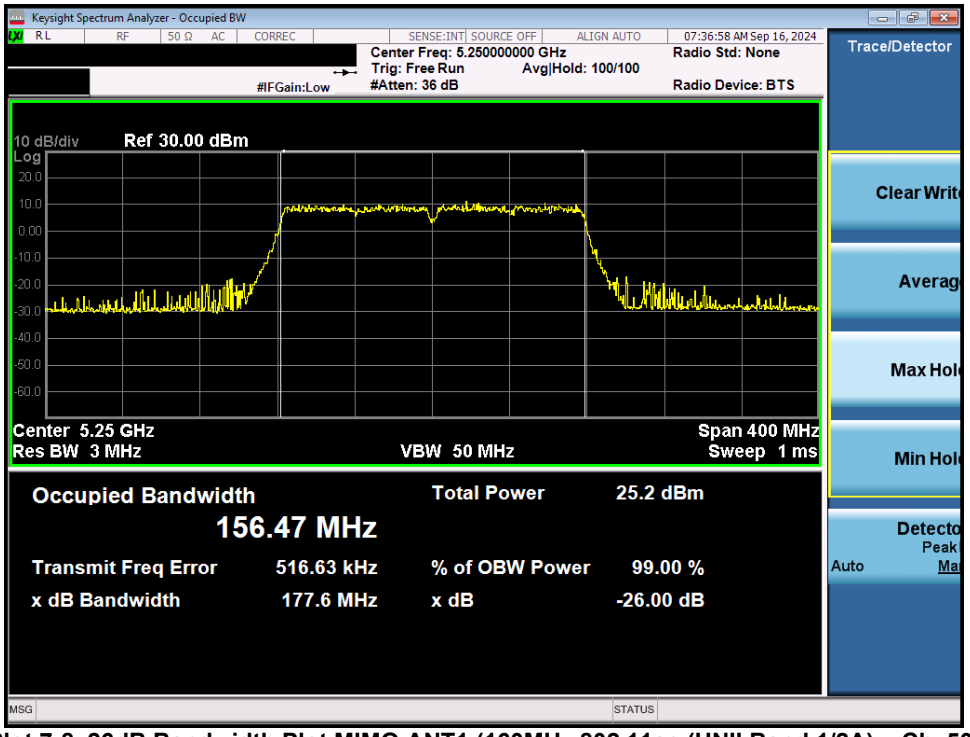
Plot 7-5. 26dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax/be (UNII Band 1) – Ch. 38)



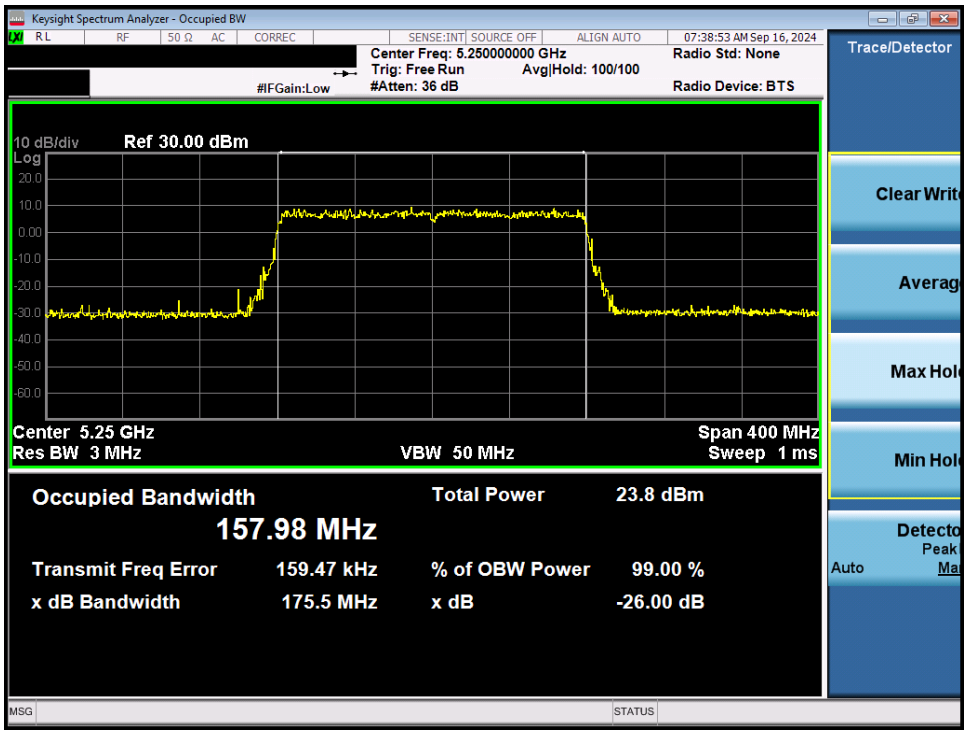
Plot 7-6. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ac (UNII Band 1) – Ch. 42)



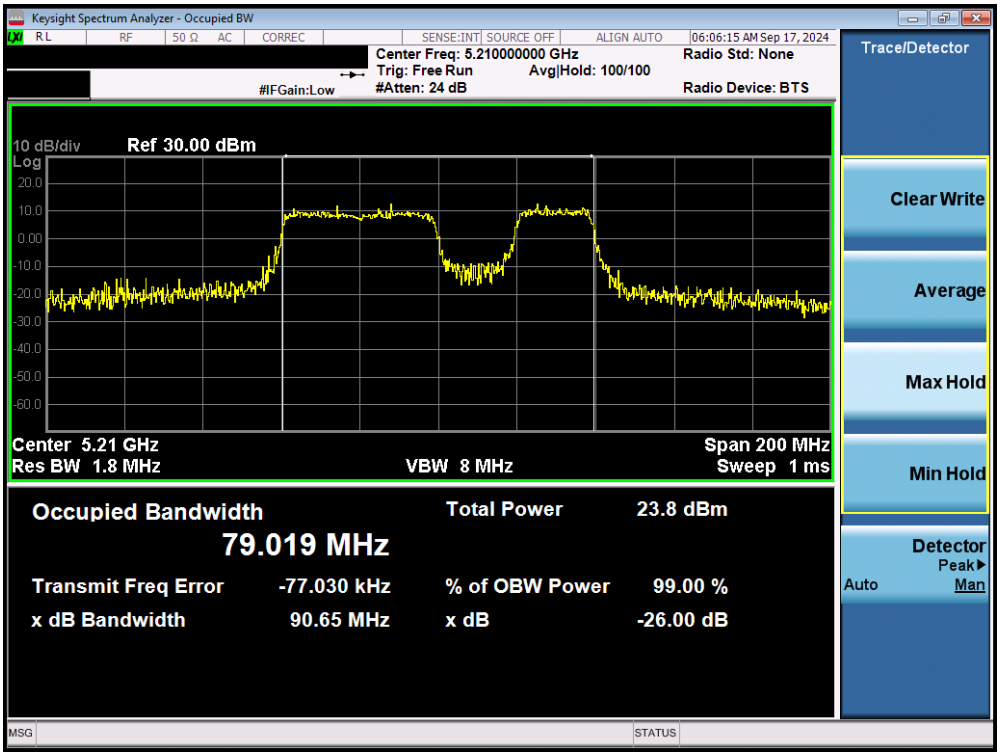
Plot 7-7. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ax/be (UNII Band 1) – Ch. 42)



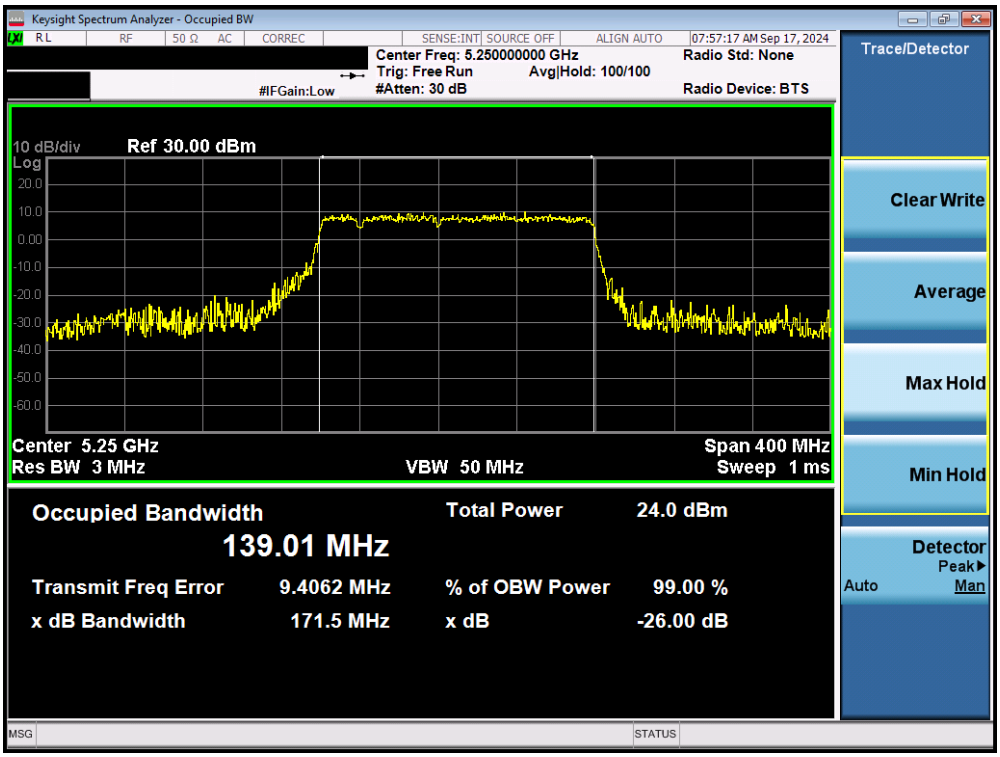
Plot 7-8. 26dB Bandwidth Plot MIMO ANT1 (160MHz 802.11ac (UNII Band 1/2A) – Ch. 50)



Plot 7-9. 26dB Bandwidth Plot MIMO ANT1 (160MHz 802.11ax/be (UNII Band 1/2A) – Ch. 50)

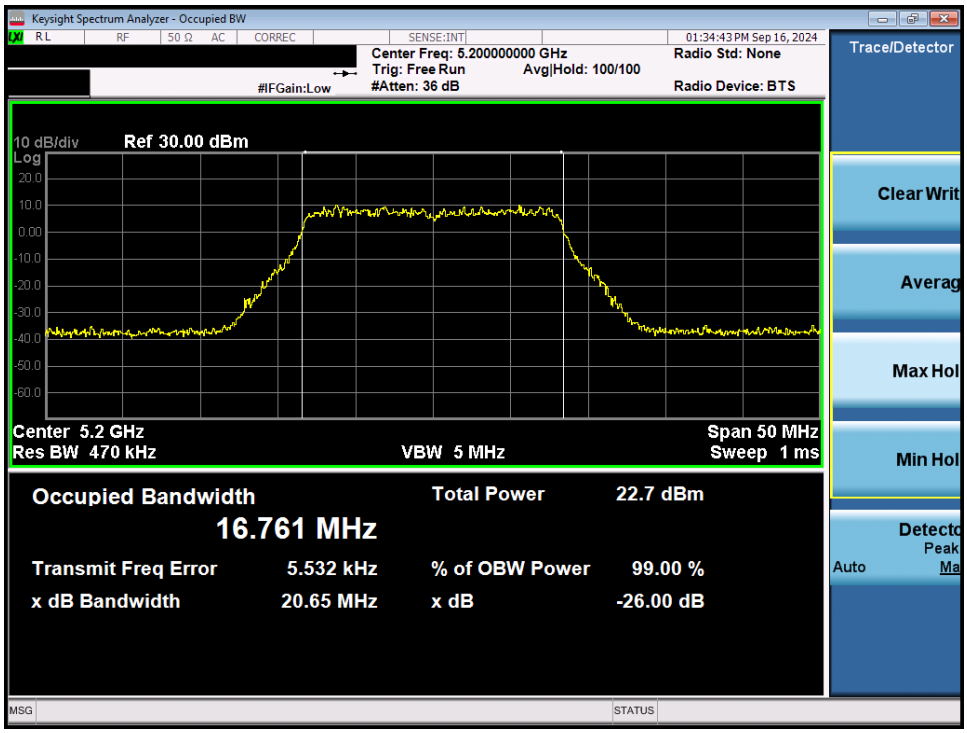


Plot 7-10. 26dB Bandwidth Plot MIMO ANT1 (80MHz 802.11be (20MHz Puncture Tones) (UNII Band 1) – Ch. 42)

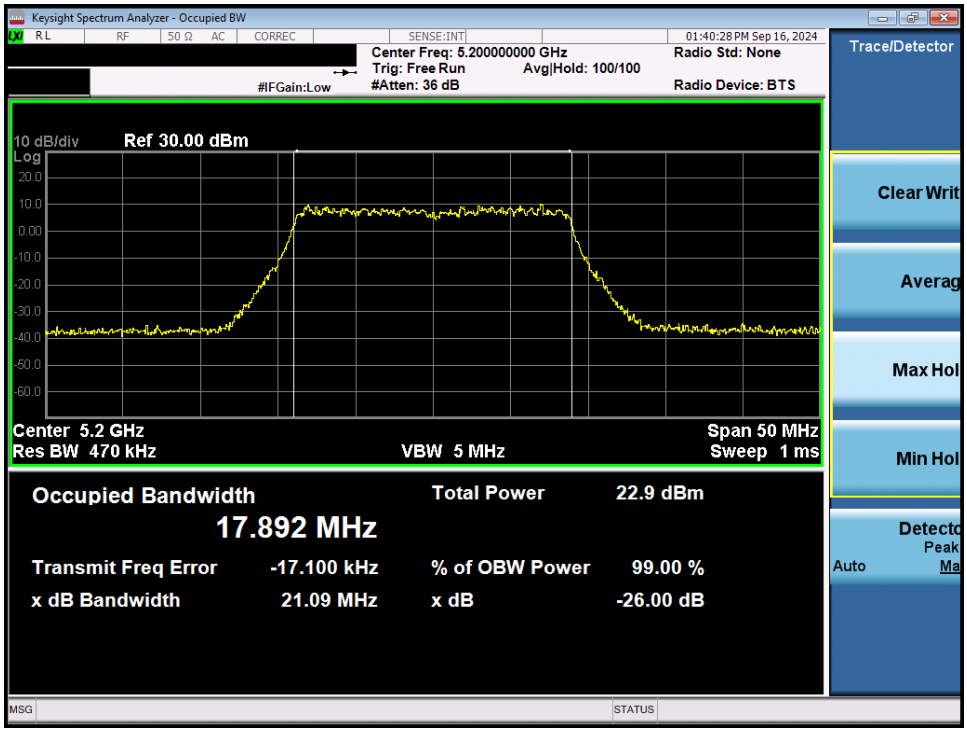


Plot 7-11. 26dB Bandwidth Plot MIMO ANT1 (160MHz 802.11be (20MHz Puncture) (UNII Band 1/2A) – Ch. 50)

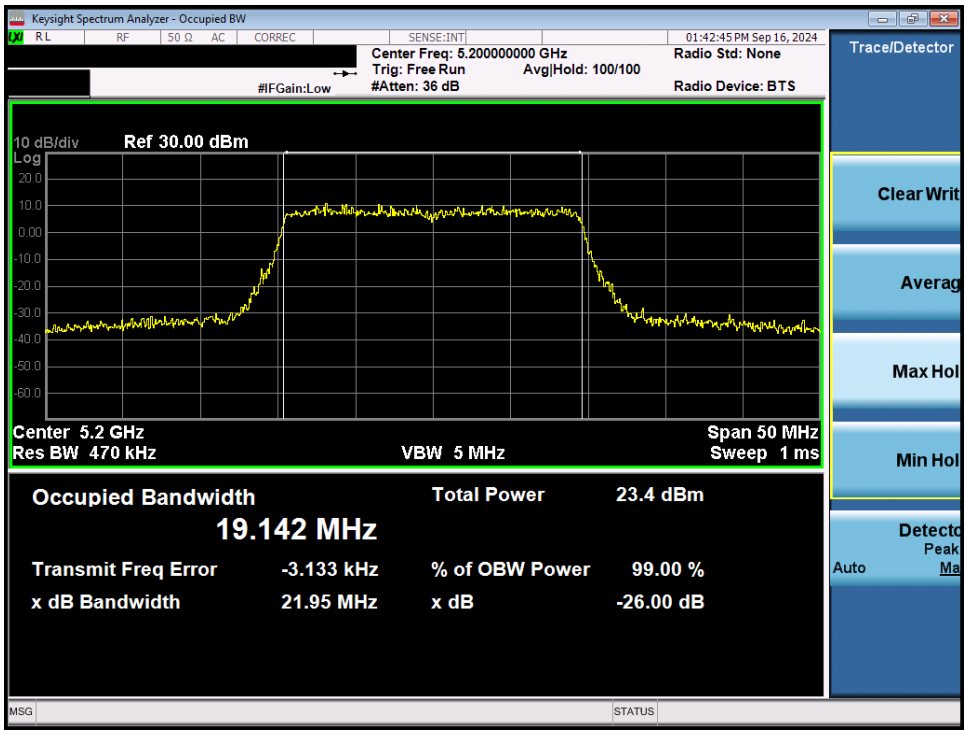
7.2.2 MIMO Antenna-2 26dB Bandwidth Measurements



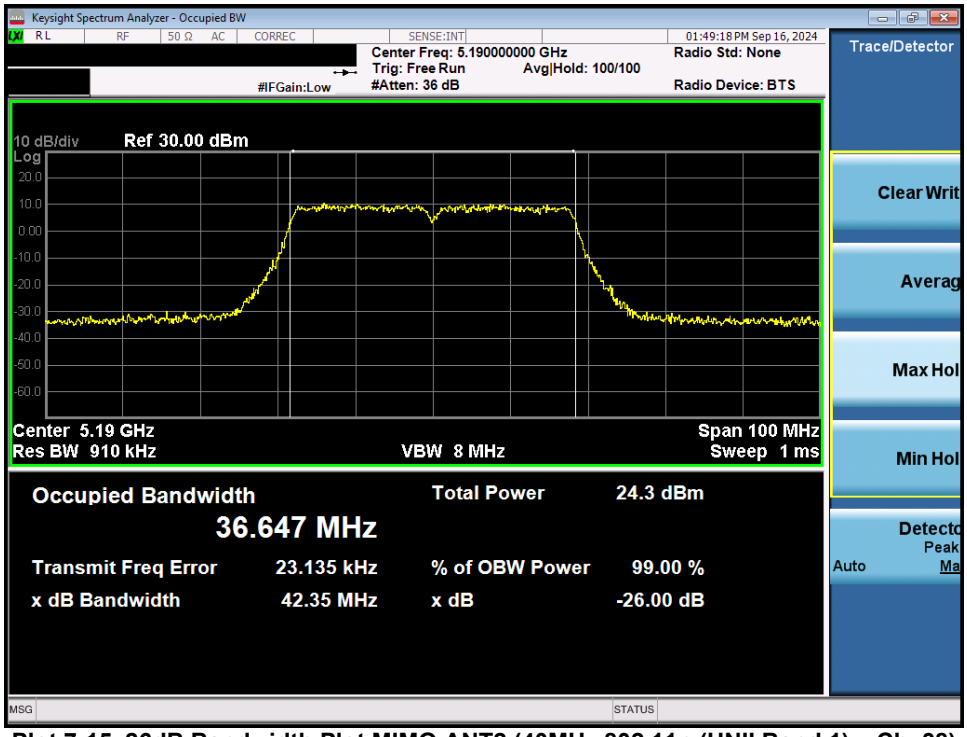
Plot 7-12. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11a (UNII Band 1) – Ch. 40)



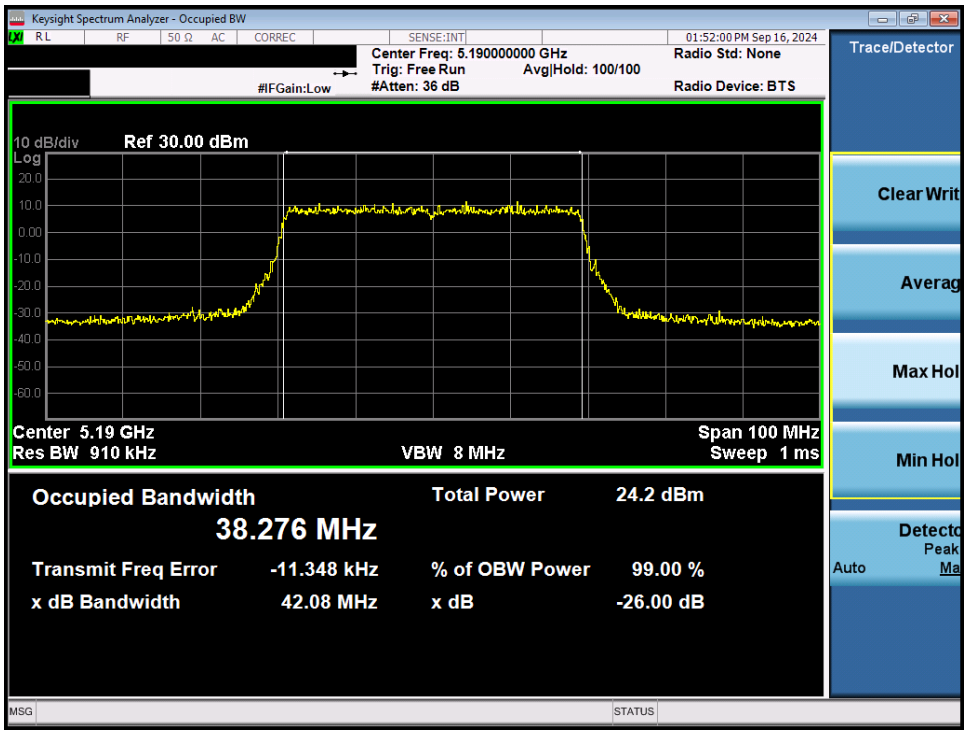
Plot 7-13. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11n (UNII Band 1) – Ch. 40)



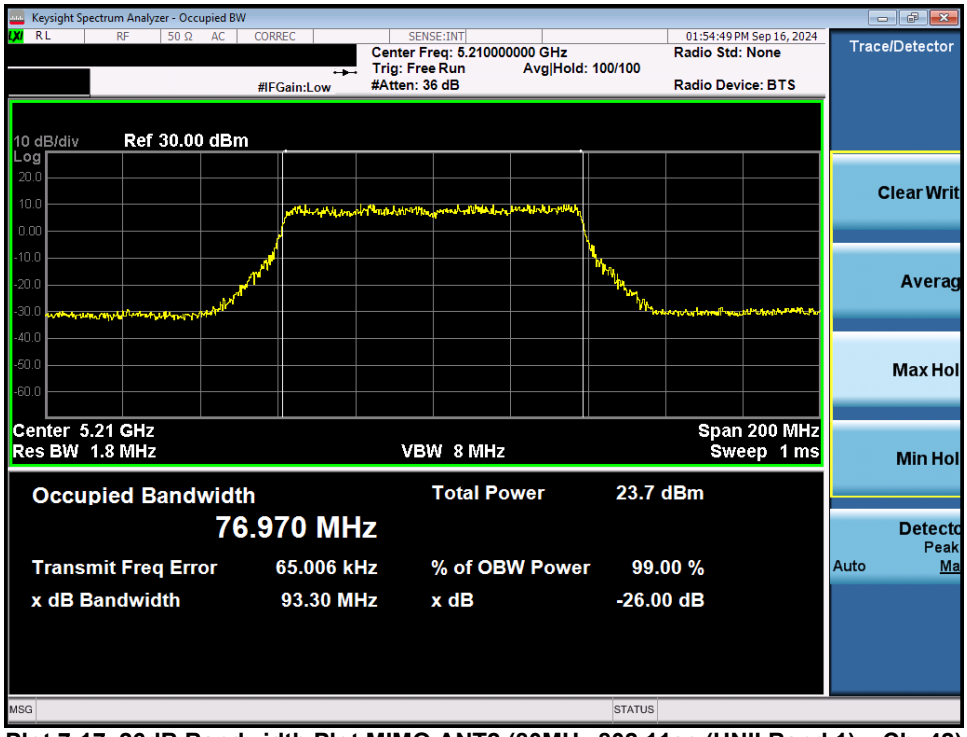
Plot 7-14. 26dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax/be (UNII Band 1) – Ch. 40)



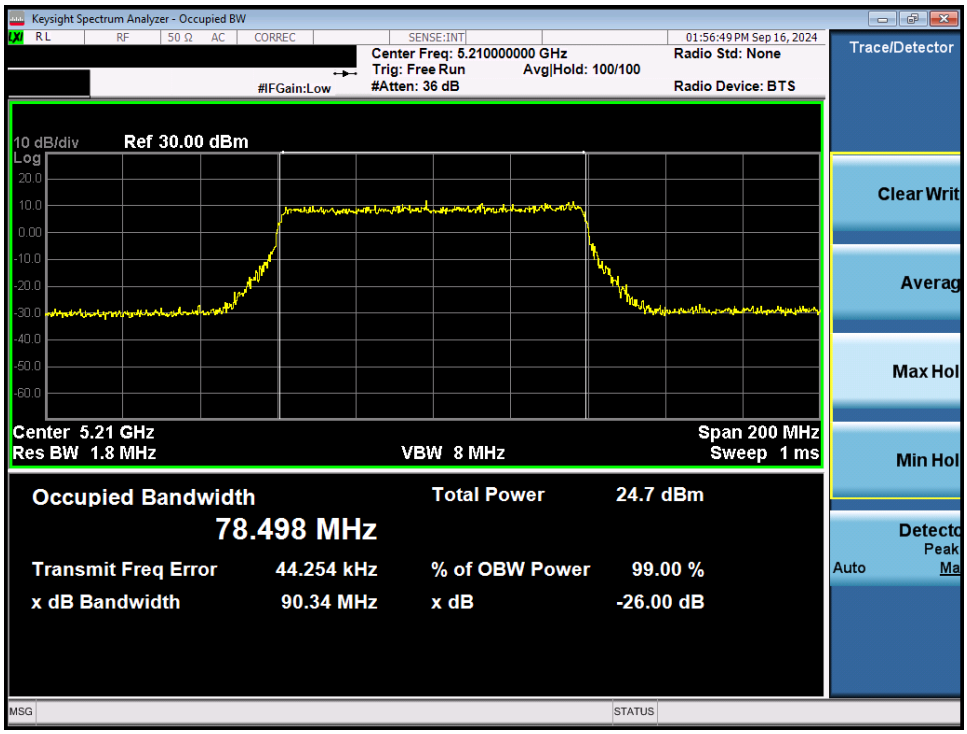
Plot 7-15. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11n (UNII Band 1) – Ch. 38)



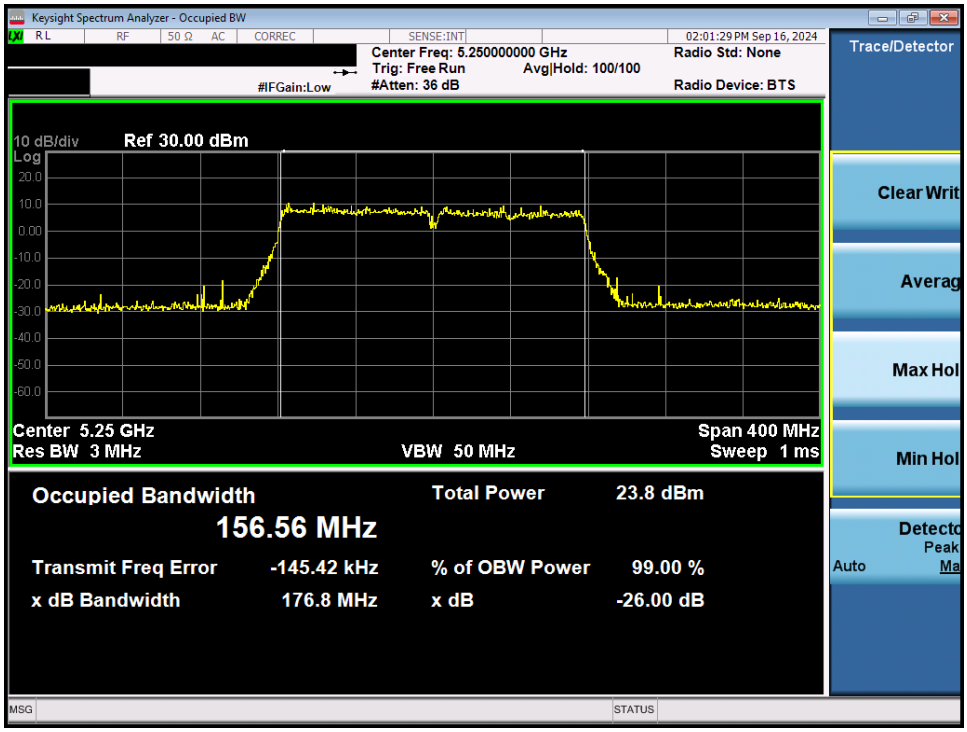
Plot 7-16. 26dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax/be (UNII Band 1) – Ch. 38)



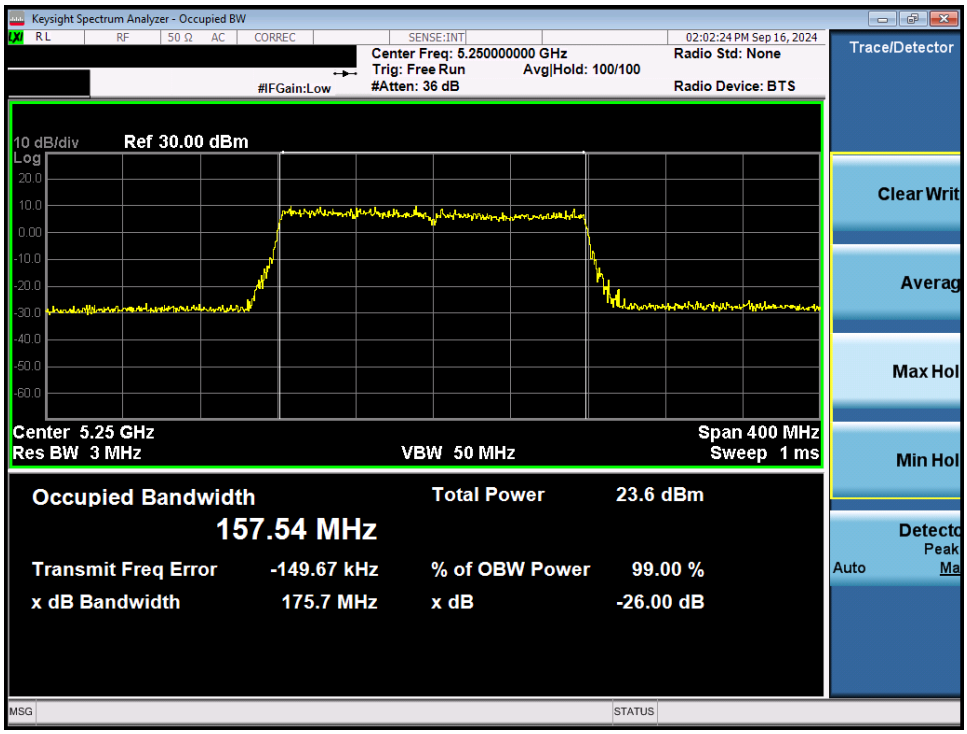
Plot 7-17. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ac (UNII Band 1) – Ch. 42)



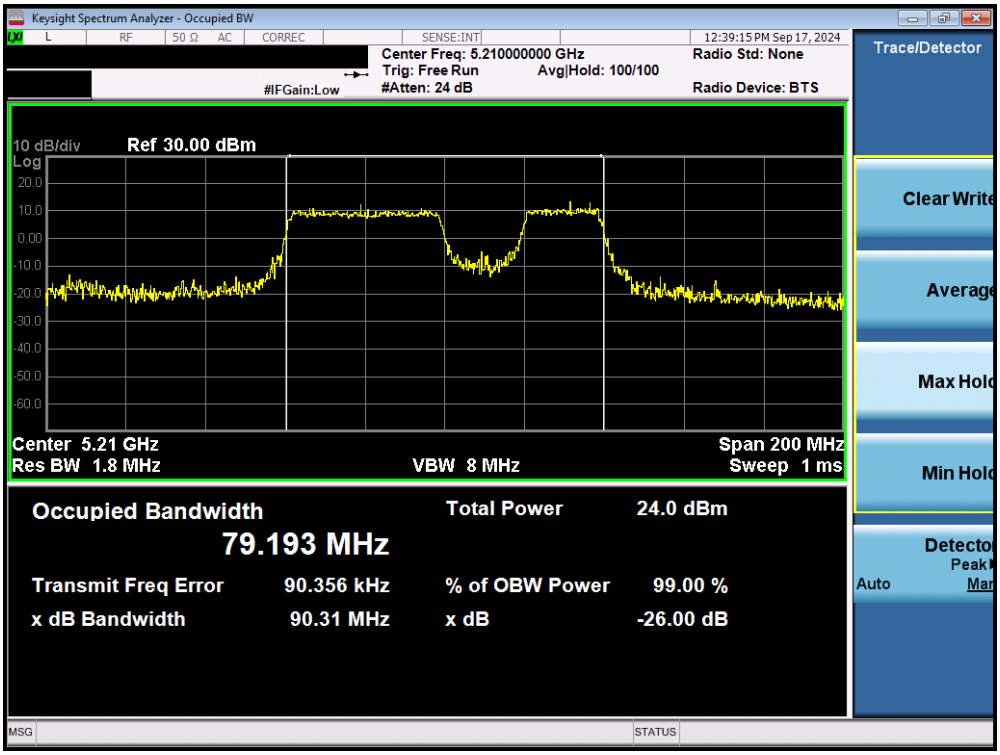
Plot 7-18. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ax/be (UNII Band 1) – Ch. 42)



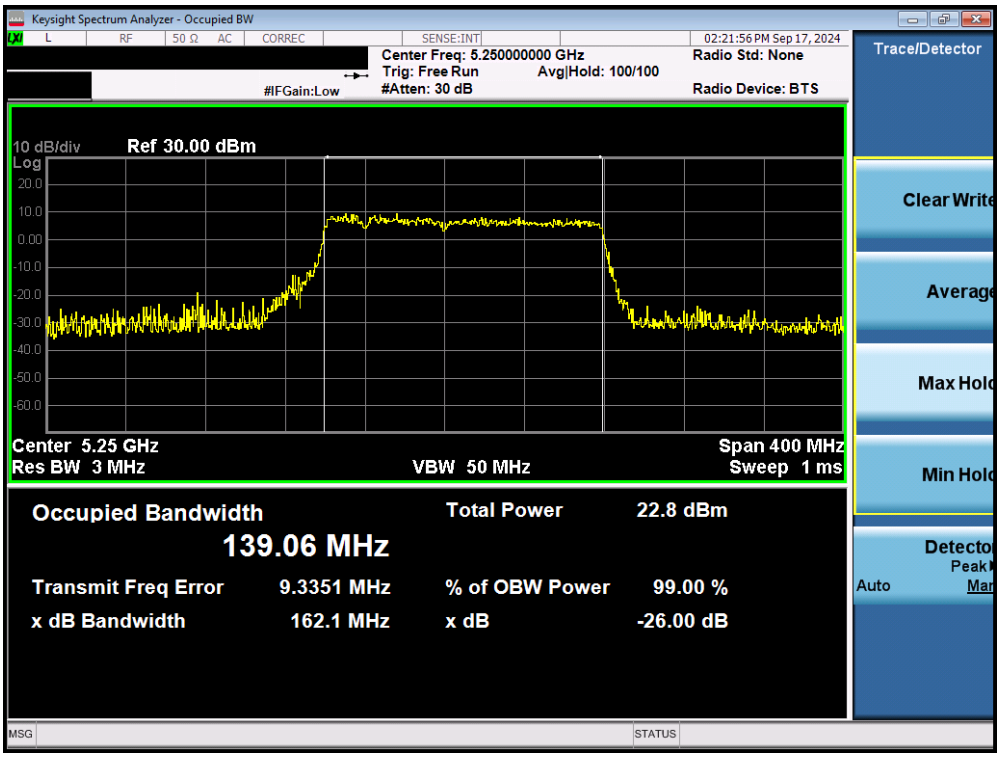
Plot 7-19. 26dB Bandwidth Plot MIMO ANT2 (160MHz 802.11ac (UNII Band 1/2A) – Ch. 50)



Plot 7-20. 26dB Bandwidth Plot MIMO ANT2 (160MHz 802.11ax/be (UNII Band 1/2A) – Ch. 50)



Plot 7-21. 26dB Bandwidth Plot MIMO ANT2 (80MHz 802.11be (20MHz Puncture) (UNII Band 1) – Ch. 42)



Plot 7-22. 26dB Bandwidth Plot MIMO ANT2 (160MHz 802.11be (20MHz Puncture) (UNII Band 1/2A) – Ch. 50)

7.3 6dB Bandwidth Measurement

Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the 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 6dB bandwidth.

In the 5.725 – 5.850GHz band and 5.850 – 5.895GHz band, the 6dB bandwidth must be ≥ 500 kHz.

Test Procedure Used

ANSI C63.10-2013 – Section 6.9.2

Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. 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 = 100 kHz
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple

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

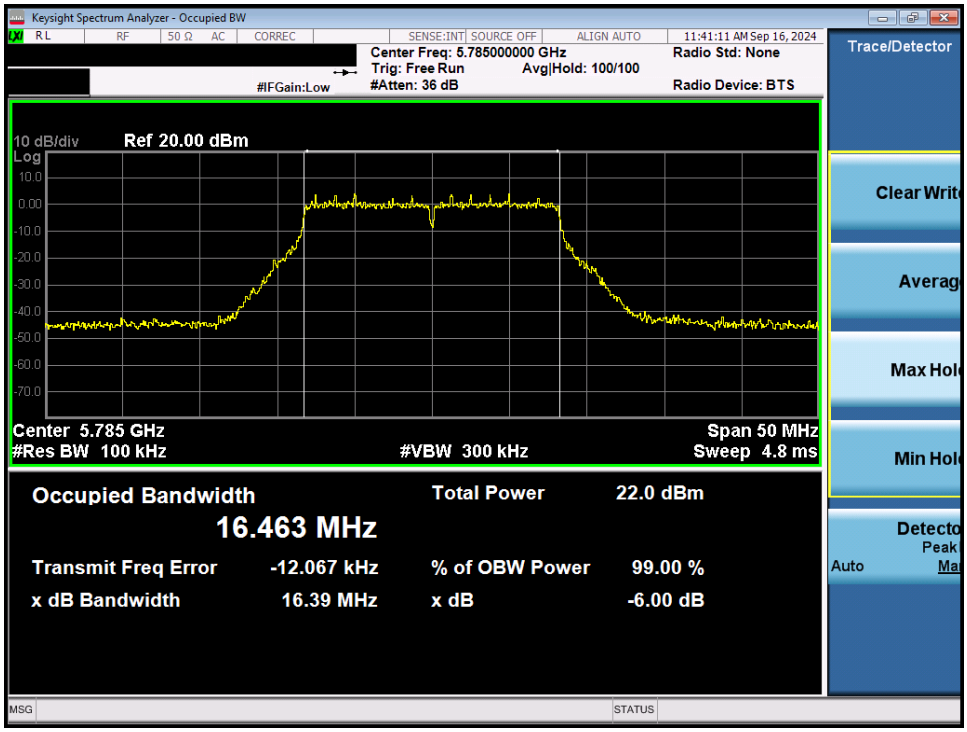
None.

MIMO 6dB Bandwidth Measurements

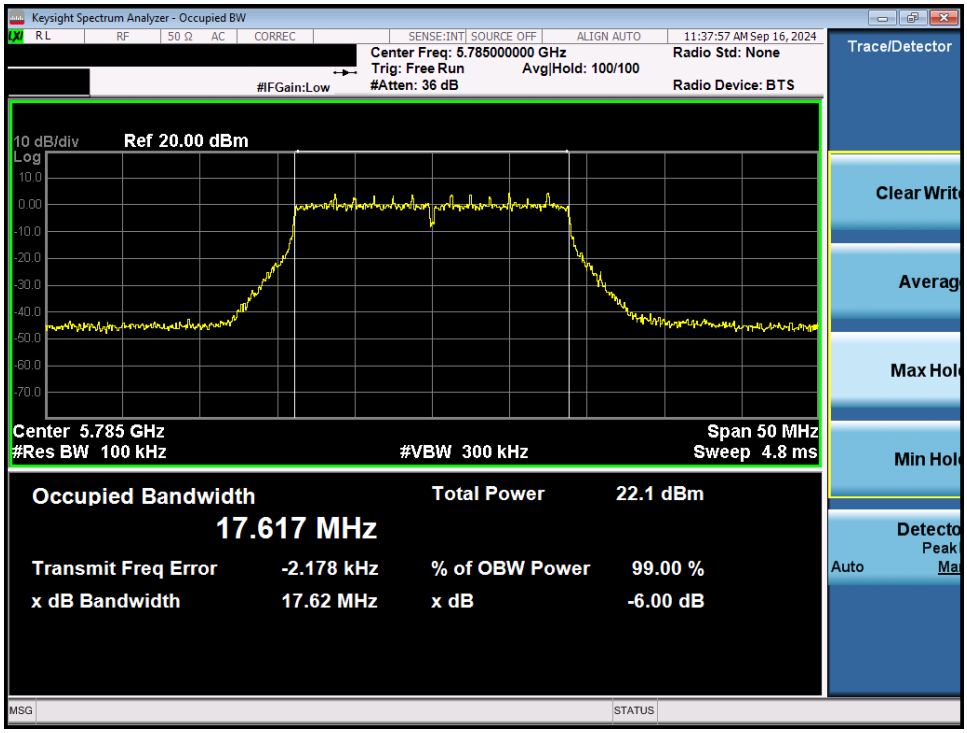
	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 6dB Bandwidth [MHz]	Antenna-2 6dB Bandwidth [MHz]
Band 3	5745	149	a	16.37	16.42
	5785	157	a	16.39	16.43
	5825	165	a	16.39	16.37
	5745	149	n	17.63	17.65
	5785	157	n	17.62	17.63
	5825	165	n	17.62	17.65
	5745	149	be SU	19.11	19.04
	5785	157	be SU	19.06	19.02
	5825	165	be SU	19.09	19.08
	5755	151	n	36.50	36.54
	5795	159	n	36.50	36.53
	5755	151	be SU	38.13	38.24
	5795	159	be SU	38.17	38.41
	5775	155	ac	76.50	76.55
	5775	155	be SU	78.19	78.21

Table 7-4. Band 3 Conducted 6dB Bandwidth Measurements MIMO

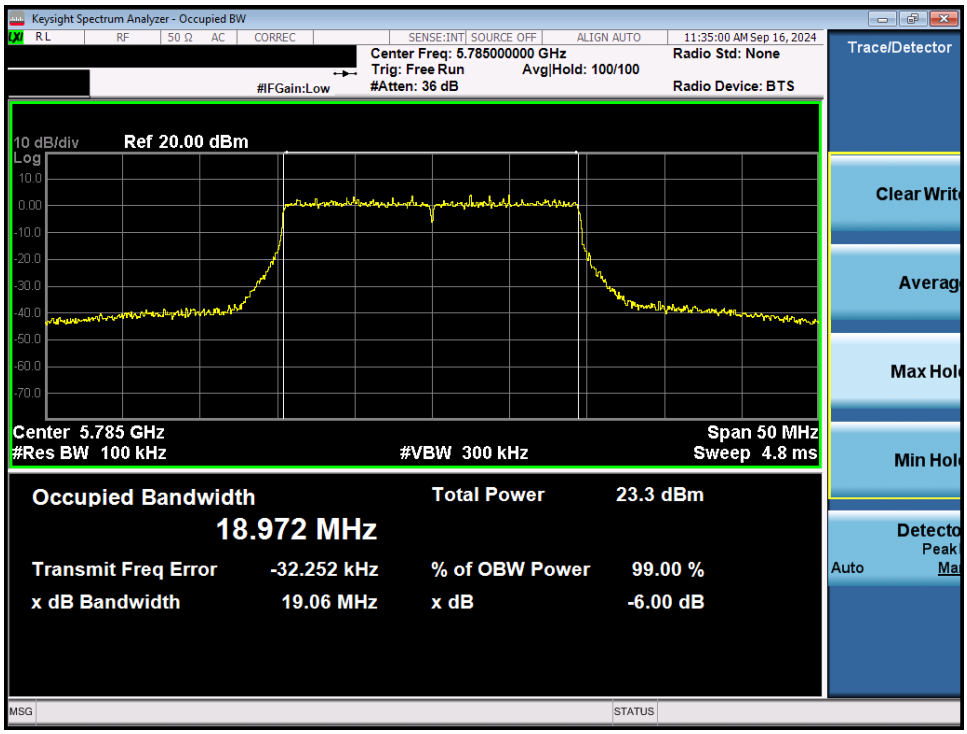
7.3.1 MIMO Antenna-1 6dB Bandwidth Measurements



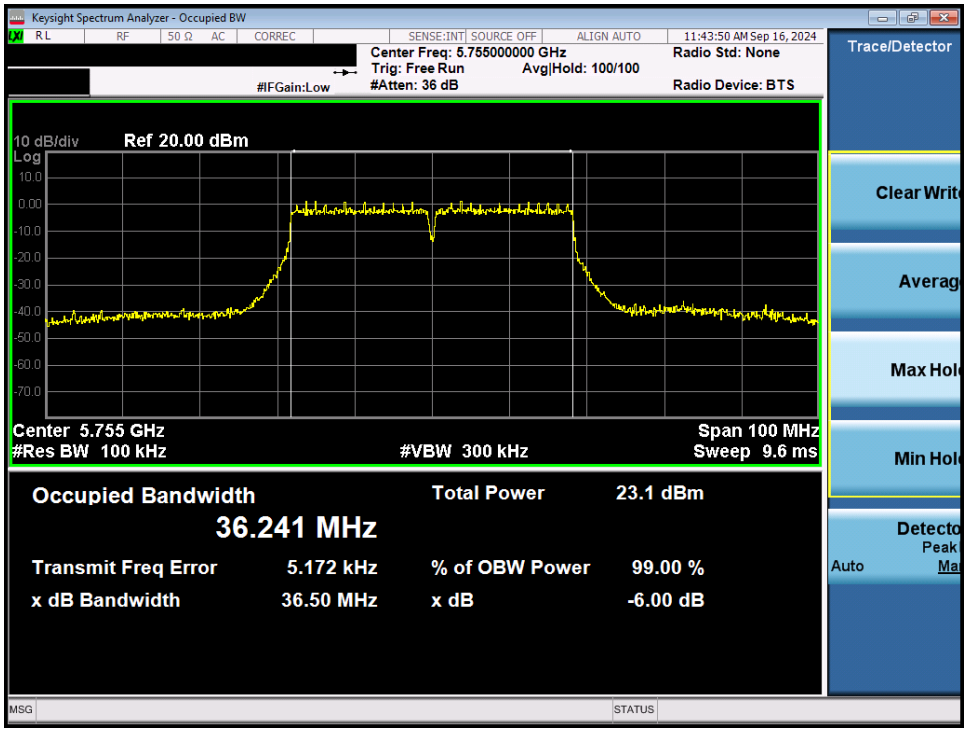
Plot 7-23. 6dB Bandwidth Plot MIMO ANT1 (20MHz 802.11a (UNII Band 3) – Ch.157)



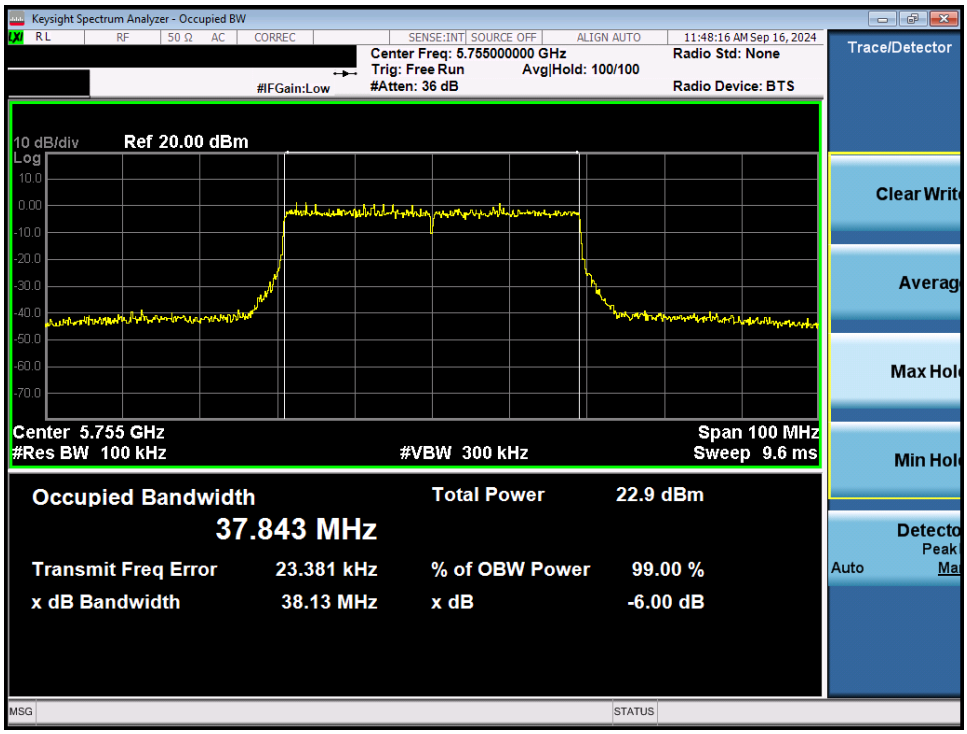
Plot 7-24. 6dB Bandwidth Plot MIMO ANT1 (20MHz 802.11n (UNII Band 3) – Ch.157)



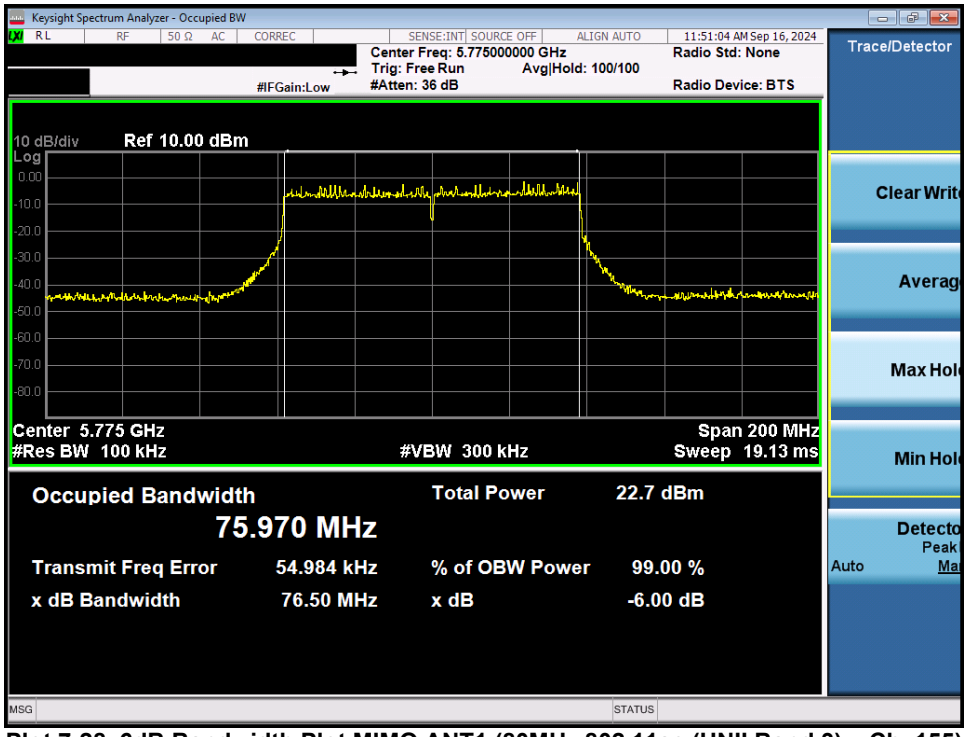
Plot 7-25. 6dB Bandwidth Plot MIMO ANT1 (20MHz 802.11ax/be (UNII Band 3) – Ch.157)



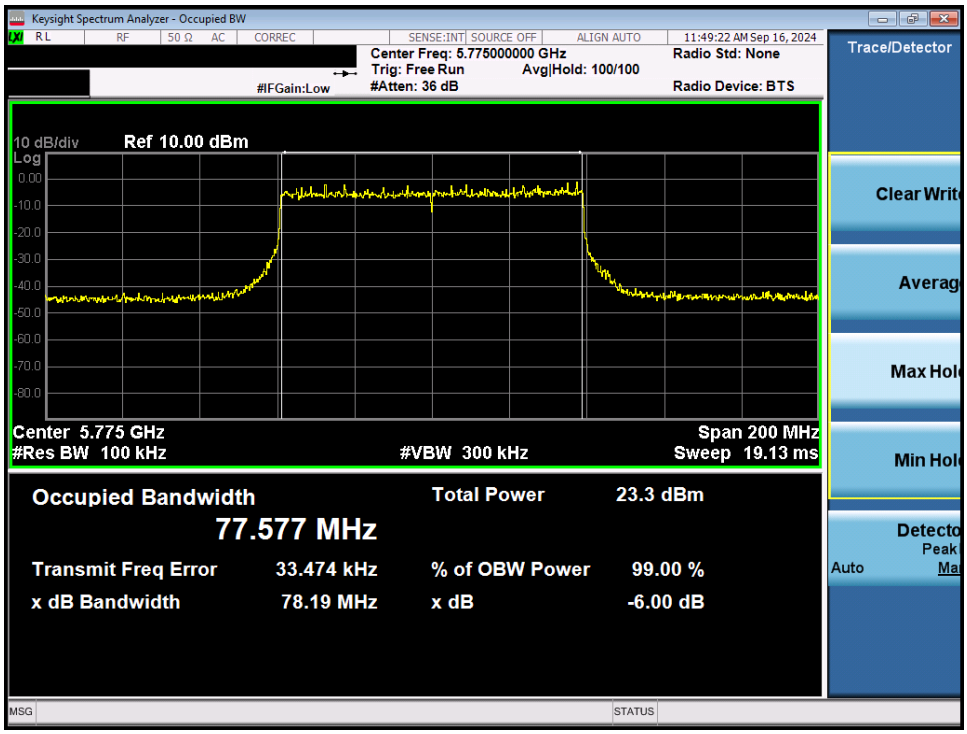
Plot 7-26. 6dB Bandwidth Plot MIMO ANT1 (40MHz 802.11n (UNII Band 3) – Ch. 151)



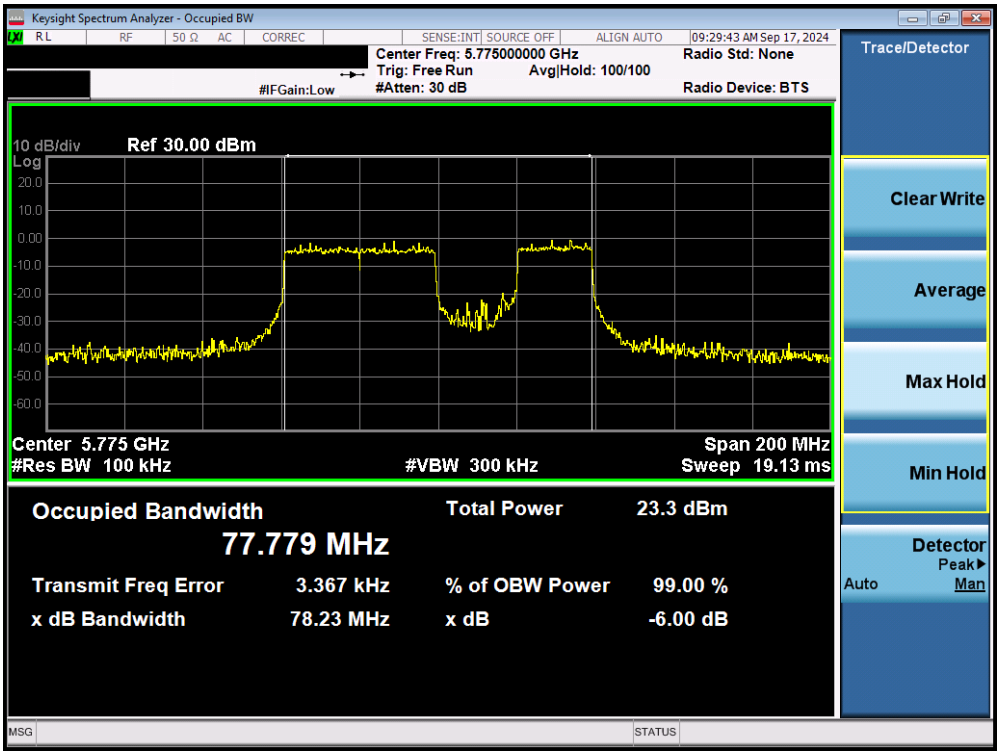
Plot 7-27. 6dB Bandwidth Plot MIMO ANT1 (40MHz 802.11ax/be (UNII Band 3) – Ch. 151)



Plot 7-28. 6dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ac (UNII Band 3) – Ch. 155)

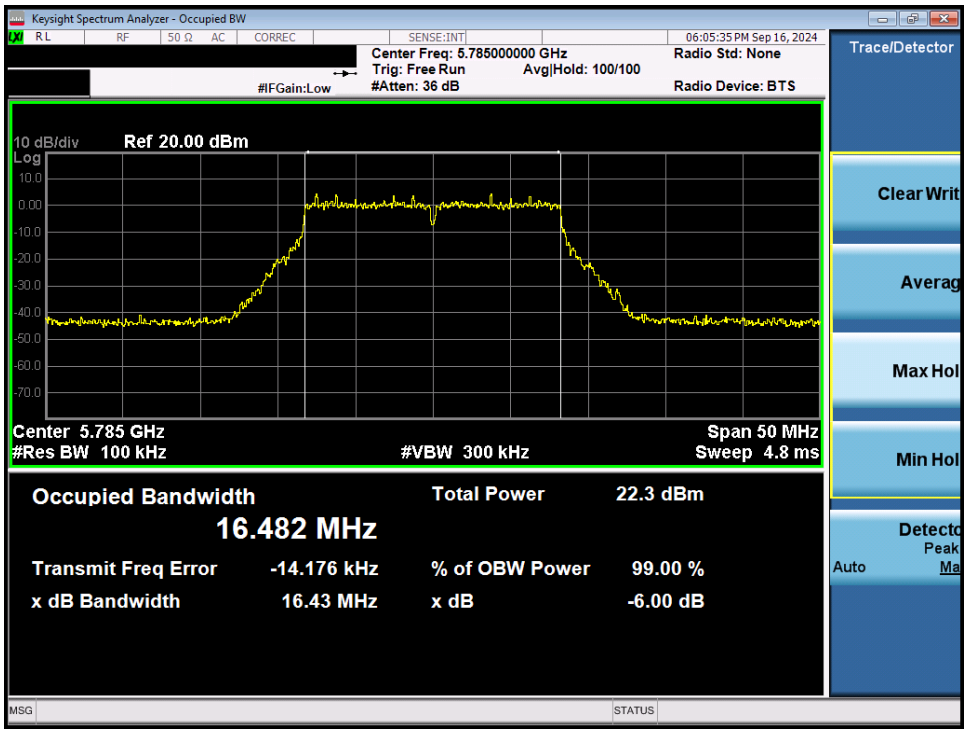


Plot 7-29. 6dB Bandwidth Plot MIMO ANT1 (80MHz 802.11ax/be (UNII Band 3) – Ch. 155)

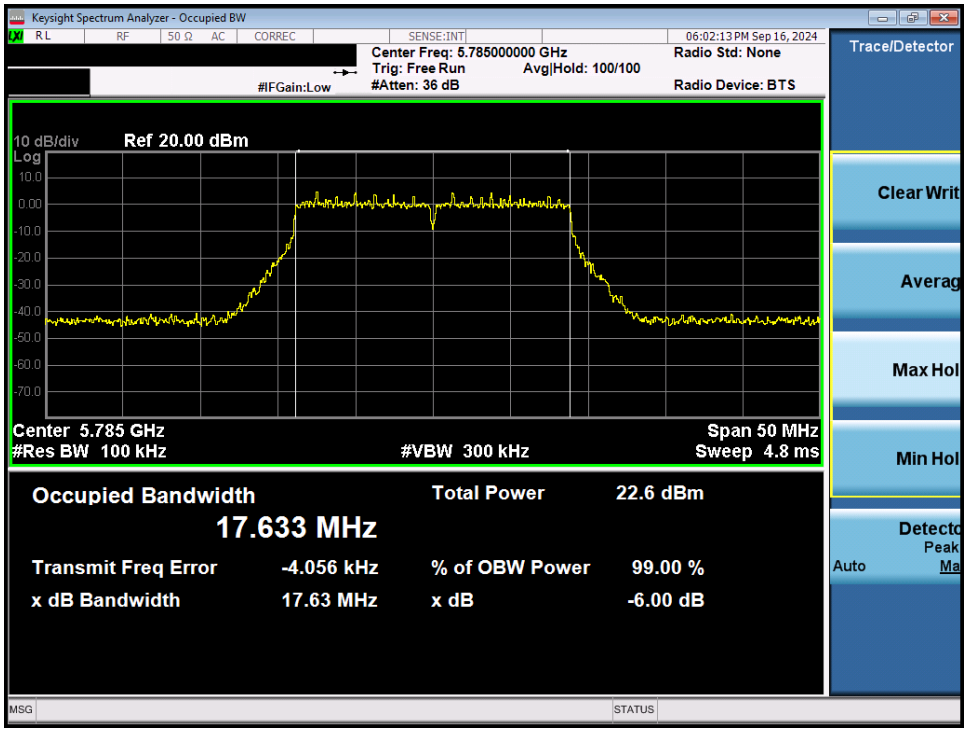


Plot 7-30. 6dB Bandwidth Plot MIMO ANT1 (80MHz 802.11be (20MHz Puncture) (UNII Band 3) – Ch. 155)

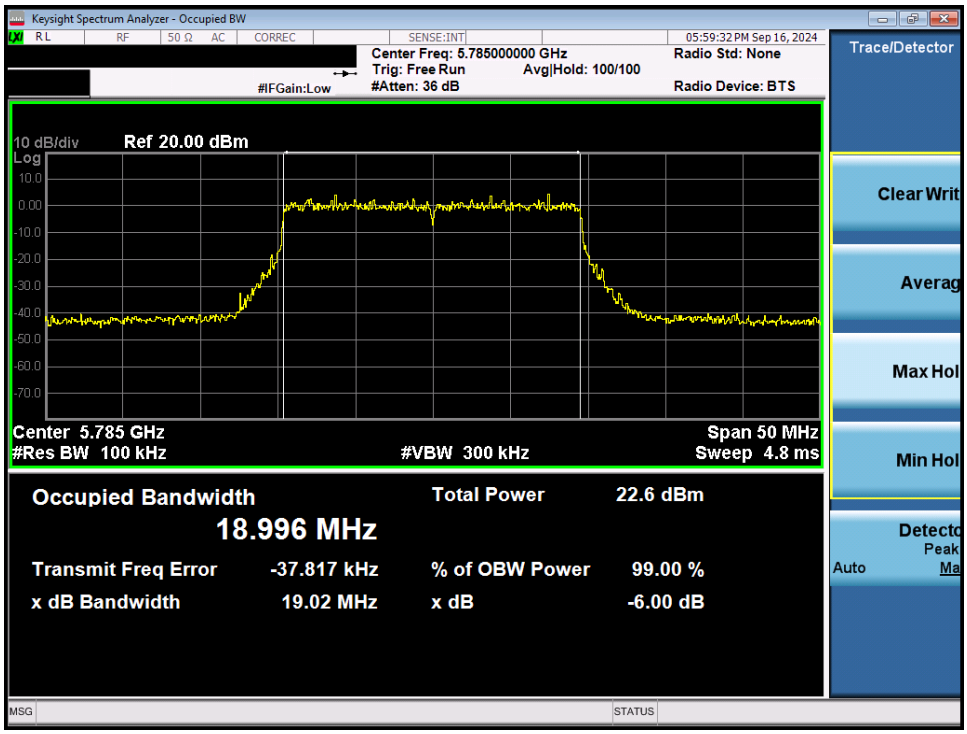
7.3.2 MIMO Antenna-2 6dB Bandwidth Measurements



Plot 7-31. 6dB Bandwidth Plot MIMO ANT2 (20MHz 802.11a (UNII Band 3) – Ch.157)

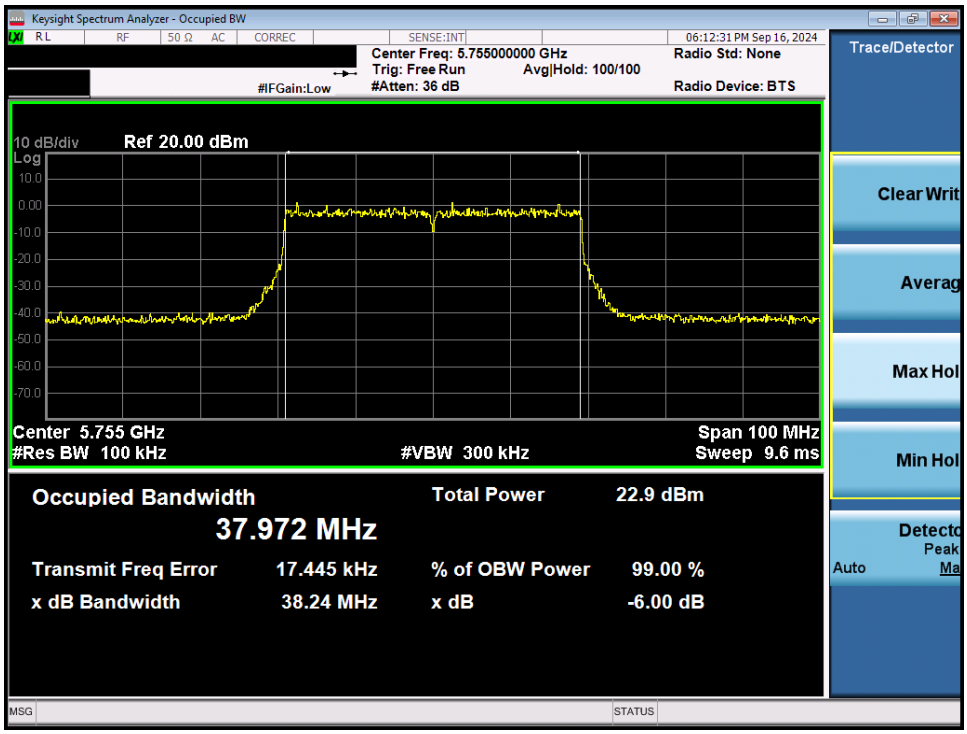


Plot 7-32. 6dB Bandwidth Plot MIMO ANT2 (20MHz 802.11n (UNII Band 3) – Ch.157)

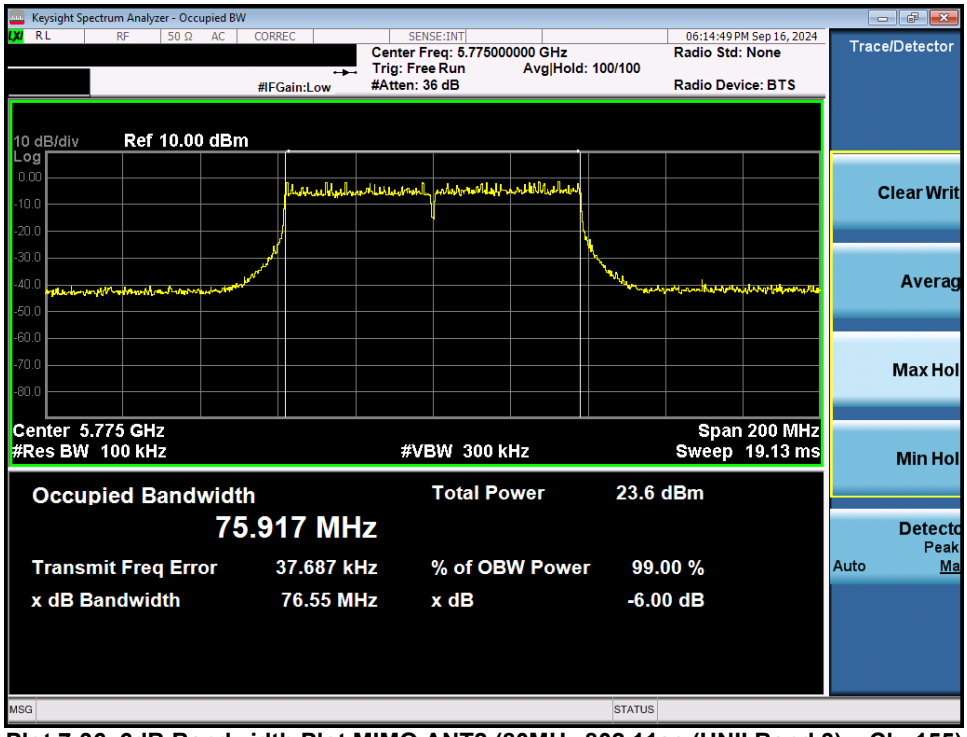


Plot 7-33. 6dB Bandwidth Plot MIMO ANT2 (20MHz 802.11ax/be (UNII Band 3) – Ch.157)

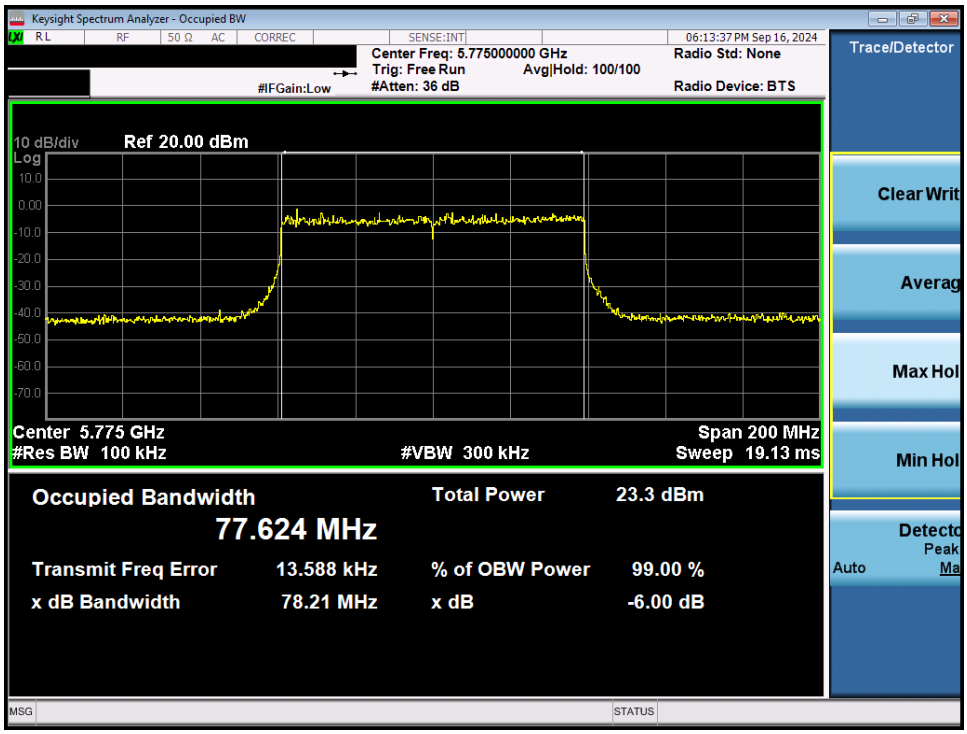
Plot 7-34. 6dB Bandwidth Plot MIMO ANT2 (40MHz 802.11n (UNII Band 3) – Ch. 151)



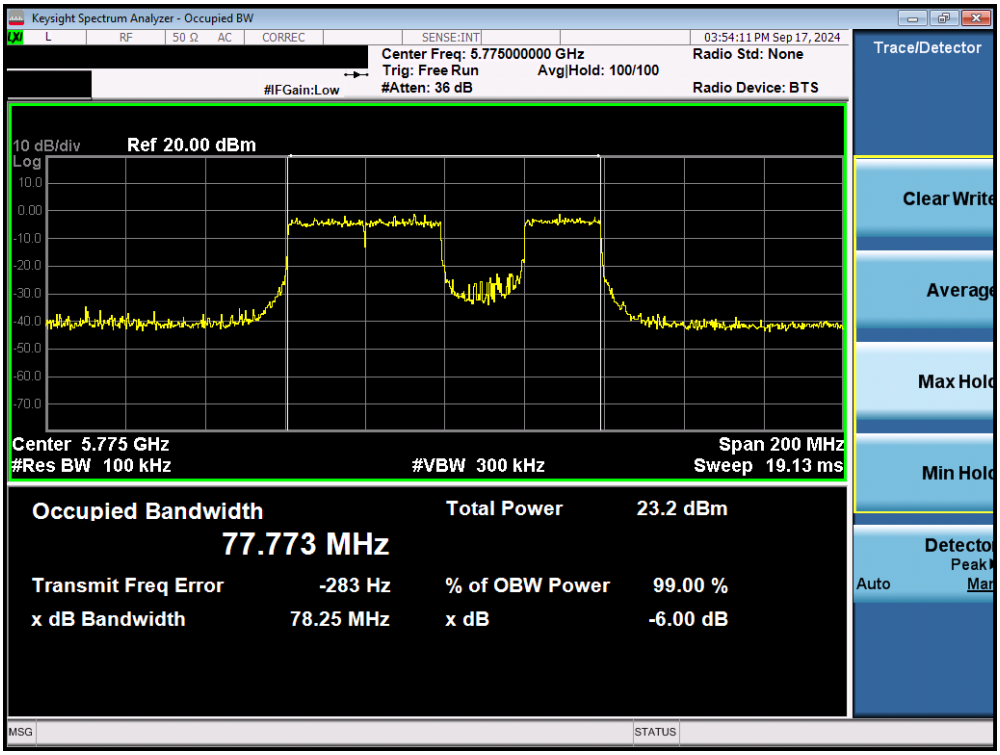
Plot 7-35. 6dB Bandwidth Plot MIMO ANT2 (40MHz 802.11ax/be (UNII Band 3) – Ch. 151)



Plot 7-36. 6dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ac (UNII Band 3) – Ch. 155)



Plot 7-37. 6dB Bandwidth Plot MIMO ANT2 (80MHz 802.11ax/be (UNII Band 3) – Ch. 155)



Plot 7-38. 6dB Bandwidth Plot MIMO ANT2 (80MHz 802.11be (20MHz Puncture) (UNII Band 3) – Ch. 155)

7.4 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.

The output power limits are as specified in the tables below.

UNII Band	Frequency Range	Maximum Conducted Power Limit	Maximum e.i.r.p
		FCC	FCC
UNII 1	5.15 – 5.25GHz	23.98dBm (250mW)	N/A
UNII 2A	5.25 – 5.35GHz	The lesser of 23.98dBm (250mW) **or** 11dBm + $10\log_{10}B$	N/A
UNII 2C	5.47 – 5.725GHz		
UNII 3	5.725 – 5.850GHz	30dBm (1W)	N/A
UNII 4	5.850 – 5.895GHz	N/A	30dBm (1W)

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 7-3. Test Instrument & Measurement Setup

Test Notes

None.

SISO ANT1 Maximum Conducted Output Power Measurements

5GHz WIFI (20MHz 802.11a SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5180	36	14.93	23.98	-9.05	-3.24	11.69	30.00	-18.31
	5200	40	14.92	23.98	-9.06	-3.24	11.68	30.00	-18.32
	5220	44	14.93	23.98	-9.05	-3.24	11.69	30.00	-18.31
	5240	48	11.78	23.98	-12.20	-3.24	8.54	30.00	-21.46
UNII-2A	5260	52	14.95	23.98	-9.03	-3.24	11.71	30.00	-18.29
	5280	56	14.97	23.98	-9.01	-3.24	11.73	30.00	-18.27
	5300	60	14.75	23.98	-9.23	-3.24	11.51	30.00	-18.49
	5320	64	14.78	23.98	-9.20	-3.24	11.54	30.00	-18.46
UNII-2C	5500	100	14.53	23.98	-9.45	-4.53	10.00	30.00	-20.00
	5600	120	14.87	23.98	-9.11	-4.53	10.34	30.00	-19.66
	5720	144	14.94	23.98	-9.04	-4.53	10.41	30.00	-19.59
UNII-3	5745	149	11.81	30.00	-18.19	-5.18	6.63	30.00	-23.37
	5785	157	11.84	30.00	-18.16	-5.18	6.66	30.00	-23.34
	5825	165	11.83	30.00	-18.17	-5.18	6.65	30.00	-23.35

Table 7-5. SISO ANT1 20MHz BW 802.11a (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11n SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5180	36	14.89	23.98	-9.09	-3.24	11.65	30.00	-18.35
	5200	40	14.82	23.98	-9.16	-3.24	11.58	30.00	-18.42
	5220	44	14.82	23.98	-9.16	-3.24	11.58	30.00	-18.42
	5240	48	11.88	23.98	-12.10	-3.24	8.64	30.00	-21.36
UNII-2A	5260	52	14.74	23.98	-9.24	-3.24	11.50	30.00	-18.50
	5280	56	14.79	23.98	-9.19	-3.24	11.55	30.00	-18.45
	5300	60	14.67	23.98	-9.31	-3.24	11.43	30.00	-18.57
	5320	64	14.53	23.98	-9.45	-3.24	11.29	30.00	-18.71
UNII-2C	5500	100	14.17	23.98	-9.81	-4.53	9.64	30.00	-20.36
	5600	120	14.62	23.98	-9.36	-4.53	10.09	30.00	-19.91
	5720	144	14.56	23.98	-9.42	-4.53	10.03	30.00	-19.97
UNII-3	5745	149	11.75	30.00	-18.25	-5.18	6.57	30.00	-23.43
	5785	157	11.71	30.00	-18.29	-5.18	6.53	30.00	-23.47
	5825	165	11.82	30.00	-18.18	-5.18	6.64	30.00	-23.36

Table 7-6. SISO ANT1 20MHz BW 802.11n (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11ac SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5180	36	14.88	23.98	-9.10	-3.24	11.64	30.00	-18.36
	5200	40	14.78	23.98	-9.20	-3.24	11.54	30.00	-18.46
	5220	44	14.81	23.98	-9.17	-3.24	11.57	30.00	-18.43
	5240	48	11.91	23.98	-12.07	-3.24	8.67	30.00	-21.33
UNII-2A	5260	52	14.70	23.98	-9.28	-3.24	11.46	30.00	-18.54
	5280	56	14.81	23.98	-9.17	-3.24	11.57	30.00	-18.43
	5300	60	14.69	23.98	-9.29	-3.24	11.45	30.00	-18.55
	5320	64	14.99	23.98	-8.99	-3.24	11.75	30.00	-18.25
UNII-2C	5500	100	14.64	23.98	-9.34	-4.53	10.11	30.00	-19.89
	5600	120	14.58	23.98	-9.40	-4.53	10.05	30.00	-19.95
	5720	144	14.51	23.98	-9.47	-4.53	9.98	30.00	-20.02
UNII-3	5745	149	11.72	30.00	-18.28	-5.18	6.54	30.00	-23.46
	5785	157	11.68	30.00	-18.32	-5.18	6.50	30.00	-23.50
	5825	165	11.88	30.00	-18.12	-5.18	6.70	30.00	-23.30

Table 7-7. SISO ANT1 20MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11ax SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5180	36	14.56	23.98	-9.42	-3.24	11.32	30.00	-18.68
	5200	40	14.40	23.98	-9.58	-3.24	11.16	30.00	-18.84
	5220	44	14.38	23.98	-9.60	-3.24	11.14	30.00	-18.86
	5240	48	11.43	23.98	-12.55	-3.24	8.19	30.00	-21.81
UNII-2A	5260	52	14.82	23.98	-9.16	-3.24	11.58	30.00	-18.42
	5280	56	14.87	23.98	-9.11	-3.24	11.63	30.00	-18.37
	5300	60	14.79	23.98	-9.19	-3.24	11.55	30.00	-18.45
	5320	64	14.66	23.98	-9.32	-3.24	11.42	30.00	-18.58
UNII-2C	5500	100	14.29	23.98	-9.69	-4.53	9.76	30.00	-20.24
	5600	120	13.63	23.98	-10.35	-4.53	9.10	30.00	-20.90
	5720	144	14.13	23.98	-9.85	-4.53	9.60	30.00	-20.40
UNII-3	5745	149	11.34	30.00	-18.66	-5.18	6.16	30.00	-23.84
	5785	157	11.45	30.00	-18.55	-5.18	6.27	30.00	-23.73
	5825	165	11.52	30.00	-18.48	-5.18	6.34	30.00	-23.66

Table 7-8. SISO ANT1 20MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11be SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5180	36	14.55	23.98	-9.43	-3.24	11.31	30.00	-18.69
	5200	40	14.98	23.98	-9.00	-3.24	11.74	30.00	-18.26
	5220	44	14.99	23.98	-8.99	-3.24	11.75	30.00	-18.25
	5240	48	11.63	23.98	-12.35	-3.24	8.39	30.00	-21.61
UNII-2A	5260	52	14.60	23.98	-9.38	-3.24	11.36	30.00	-18.64
	5280	56	14.60	23.98	-9.38	-3.24	11.36	30.00	-18.64
	5300	60	14.94	23.98	-9.04	-3.24	11.70	30.00	-18.30
	5320	64	14.90	23.98	-9.08	-3.24	11.66	30.00	-18.34
UNII-2C	5500	100	14.96	23.98	-9.02	-4.53	10.43	30.00	-19.57
	5600	120	14.82	23.98	-9.16	-4.53	10.29	30.00	-19.71
	5720	144	14.90	23.98	-9.08	-4.53	10.37	30.00	-19.63
UNII-3	5745	149	11.87	30.00	-18.13	-5.18	6.69	30.00	-23.31
	5785	157	11.88	30.00	-18.12	-5.18	6.70	30.00	-23.30
	5825	165	11.66	30.00	-18.34	-5.18	6.48	30.00	-23.52

Table 7-9. SISO ANT1 20MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11n SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5190	38	14.68	23.98	-9.30	-3.24	11.44	30.00	-18.56
	5230	46	14.80	23.98	-9.18	-3.24	11.56	30.00	-18.44
UNII-2A	5270	54	14.61	23.98	-9.37	-3.24	11.37	30.00	-18.63
	5310	62	14.51	23.98	-9.47	-3.24	11.27	30.00	-18.73
UNII-2C	5510	102	14.54	23.98	-9.44	-4.53	10.01	30.00	-19.99
	5590	118	14.57	23.98	-9.41	-4.53	10.04	30.00	-19.96
	5630	126	14.30	23.98	-9.68	-4.53	9.77	30.00	-20.23
	5710	142	14.35	23.98	-9.63	-4.53	9.82	30.00	-20.18
UNII-3	5755	151	11.56	30.00	-18.44	-5.18	6.38	36.00	-29.62
	5795	159	11.63	30.00	-18.37	-5.18	6.45	36.00	-29.55

Table 7-10. SISO ANT1 40MHz BW 802.11n (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11ac SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5190	38	14.77	23.98	-9.21	-3.24	11.53	30.00	-18.47
	5230	46	14.76	23.98	-9.22	-3.24	11.52	30.00	-18.48
UNII-2A	5270	54	14.55	23.98	-9.43	-3.24	11.31	30.00	-18.69
	5310	62	14.50	23.98	-9.48	-3.24	11.26	30.00	-18.74
UNII-2C	5510	102	14.57	23.98	-9.41	-4.53	10.04	30.00	-19.96
	5590	118	14.40	23.98	-9.58	-4.53	9.87	30.00	-20.13
	5630	126	14.87	23.98	-9.11	-4.53	10.34	30.00	-19.66
	5710	142	14.91	23.98	-9.07	-4.53	10.38	30.00	-19.62
UNII-3	5755	151	11.61	30.00	-18.39	-5.18	6.43	36.00	-29.57
	5795	159	11.73	30.00	-18.27	-5.18	6.55	36.00	-29.45

Table 7-11. SISO ANT1 40MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11ax SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5190	38	14.71	23.98	-9.27	-3.24	11.47	30.00	-18.53
	5230	46	14.65	23.98	-9.33	-3.24	11.41	30.00	-18.59
UNII-2A	5270	54	14.48	23.98	-9.50	-3.24	11.24	30.00	-18.76
	5310	62	14.97	23.98	-9.01	-3.24	11.73	30.00	-18.27
UNII-2C	5510	102	14.50	23.98	-9.48	-4.53	9.97	30.00	-20.03
	5590	118	14.34	23.98	-9.64	-4.53	9.81	30.00	-20.19
	5630	126	14.16	23.98	-9.82	-4.53	9.63	30.00	-20.37
	5710	142	14.22	23.98	-9.76	-4.53	9.69	30.00	-20.31
UNII-3	5755	151	11.52	30.00	-18.48	-5.18	6.34	36.00	-29.66
	5795	159	11.62	30.00	-18.38	-5.18	6.44	36.00	-29.56

Table 7-12. SISO ANT1 40MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11be SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5190	38	14.98	23.98	-9.00	-3.24	11.74	30.00	-18.26
	5230	46	14.90	23.98	-9.08	-3.24	11.66	30.00	-18.34
UNII-2A	5270	54	14.50	23.98	-9.48	-3.24	11.26	30.00	-18.74
	5310	62	14.88	23.98	-9.10	-3.24	11.64	30.00	-18.36
UNII-2C	5510	102	14.98	23.98	-9.00	-4.53	10.45	30.00	-19.55
	5590	118	14.76	23.98	-9.22	-4.53	10.23	30.00	-19.77
	5630	126	14.90	23.98	-9.08	-4.53	10.37	30.00	-19.63
	5710	142	14.85	23.98	-9.13	-4.53	10.32	30.00	-19.68
UNII-3	5755	151	11.63	30.00	-18.37	-5.18	6.45	36.00	-29.55
	5795	159	11.72	30.00	-18.28	-5.18	6.54	36.00	-29.46

Table 7-13. SISO ANT1 40MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (80MHz 802.11ac SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5210	42	14.60	23.98	-9.38	-3.24	11.36	30.00	-18.64
UNII-2A	5290	58	14.69	23.98	-9.29	-3.24	11.45	30.00	-18.55
UNII-2C	5530	106	14.65	23.98	-9.33	-4.53	10.12	30.00	-19.88
	5610	122	14.77	23.98	-9.21	-4.53	10.24	30.00	-19.76
	5690	138	14.98	23.98	-9.00	-4.53	10.45	30.00	-19.55
UNII-3	5775	155	11.31	30.00	-18.69	-5.18	6.13	36.00	-29.87

Table 7-14. SISO ANT1 80MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (80MHz 802.11ax SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5210	42	14.54	23.98	-9.44	-3.24	11.30	30.00	-18.70
UNII-2A	5290	58	14.76	23.98	-9.22	-3.24	11.52	30.00	-18.48
UNII-2C	5530	106	14.66	23.98	-9.32	-4.53	10.13	30.00	-19.87
	5610	122	14.35	23.98	-9.63	-4.53	9.82	30.00	-20.18
	5690	138	14.52	23.98	-9.46	-4.53	9.99	30.00	-20.01
UNII-3	5775	155	11.28	30.00	-18.72	-5.18	6.10	36.00	-29.90

Table 7-15. SISO ANT1 80MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (80MHz 802.11be SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5210	42	14.93	23.98	-9.05	-3.24	11.69	30.00	-18.31
UNII-2A	5290	58	14.90	23.98	-9.08	-3.24	11.66	30.00	-18.34
UNII-2C	5530	106	14.90	23.98	-9.08	-4.53	10.37	30.00	-19.63
	5610	122	14.70	23.98	-9.28	-4.53	10.17	30.00	-19.83
	5690	138	14.97	23.98	-9.01	-4.53	10.44	30.00	-19.56
UNII-3	5775	155	11.59	30.00	-18.41	-5.18	6.41	36.00	-29.59

Table 7-16. SISO ANT1 80MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11ac SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1/2A	5250	50	14.57	23.98	-9.41	-3.24	11.33	30.00	-18.67
UNII-2C	5570	114	14.53	23.98	-9.45	-4.53	10.00	30.00	-20.00

Table 7-17. SISO ANT1 160MHzBW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11ax SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1/2A	5250	50	14.61	23.98	-9.37	-3.24	11.37	30.00	-18.63
UNII-2C	5570	114	14.74	23.98	-9.24	-4.53	10.21	30.00	-19.79

Table 7-18. SISO ANT1 160MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11be SISO ANT1)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1/2A	5250	50	14.22	23.98	-9.76	-3.24	10.98	30.00	-19.02
UNII-2C	5570	114	14.40	23.98	-9.58	-4.53	9.87	30.00	-20.13

Table 7-19. SISO ANT1 160MHz BW 802.11be (UNII) Maximum Conducted Output Power

SISO ANT2 Maximum Conducted Output Power Measurements

5GHz WIFI (20MHz 802.11a SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5180	36	14.66	23.98	-9.32	-2.54	12.12	30.00	-17.88
	5200	40	14.72	23.98	-9.26	-2.54	12.18	30.00	-17.82
	5220	44	14.59	23.98	-9.39	-2.54	12.05	30.00	-17.95
	5240	48	11.43	23.98	-12.55	-2.54	8.89	30.00	-21.11
UNII-2A	5260	52	14.48	23.98	-9.50	-2.54	11.94	30.00	-18.06
	5280	56	14.65	23.98	-9.33	-2.54	12.11	30.00	-17.89
	5300	60	14.63	23.98	-9.35	-2.54	12.09	30.00	-17.91
	5320	64	14.57	23.98	-9.41	-2.54	12.03	30.00	-17.97
UNII-2C	5500	100	14.79	23.98	-9.19	-4.06	10.73	30.00	-19.27
	5600	120	14.58	23.98	-9.40	-4.06	10.52	30.00	-19.48
	5720	144	14.69	23.98	-9.29	-4.06	10.63	30.00	-19.37
UNII-3	5745	149	11.87	30.00	-18.13	-4.56	7.31	30.00	-22.69
	5785	157	11.42	30.00	-18.58	-4.56	6.86	30.00	-23.14
	5825	165	11.88	30.00	-18.12	-4.56	7.32	30.00	-22.68

Table 7-20. SISO ANT2 20MHz BW 802.11a (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11n SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5180	36	14.91	23.98	-9.07	-2.54	12.37	30.00	-17.63
	5200	40	14.91	23.98	-9.07	-2.54	12.37	30.00	-17.63
	5220	44	14.87	23.98	-9.11	-2.54	12.33	30.00	-17.67
	5240	48	11.69	23.98	-12.29	-2.54	9.15	30.00	-20.85
UNII-2A	5260	52	14.65	23.98	-9.33	-2.54	12.11	30.00	-17.89
	5280	56	14.30	23.98	-9.68	-2.54	11.76	30.00	-18.24
	5300	60	14.72	23.98	-9.26	-2.54	12.18	30.00	-17.82
	5320	64	14.71	23.98	-9.27	-2.54	12.17	30.00	-17.83
UNII-2C	5500	100	14.92	23.98	-9.06	-4.06	10.86	30.00	-19.14
	5600	120	14.73	23.98	-9.25	-4.06	10.67	30.00	-19.33
	5620	124	14.62	23.98	-9.36	-4.06	10.56	30.00	-19.44
	5720	144	14.86	23.98	-9.12	-4.06	10.80	30.00	-19.20
UNII-3	5745	149	11.52	30.00	-18.48	-4.56	6.96	30.00	-23.04
	5785	157	11.62	30.00	-18.38	-4.56	7.06	30.00	-22.94
	5825	165	11.44	30.00	-18.56	-4.56	6.88	30.00	-23.12

Table 7-21. SISO ANT2 20MHz BW 802.11n (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11ac SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5180	36	14.94	23.98	-9.04	-2.54	12.40	30.00	-17.60
	5200	40	14.93	23.98	-9.05	-2.54	12.39	30.00	-17.61
	5220	44	14.84	23.98	-9.14	-2.54	12.30	30.00	-17.70
	5240	48	11.56	23.98	-12.42	-2.54	9.02	30.00	-20.98
UNII-2A	5260	52	14.72	23.98	-9.26	-2.54	12.18	30.00	-17.82
	5280	56	14.32	23.98	-9.66	-2.54	11.78	30.00	-18.22
	5300	60	14.72	23.98	-9.26	-2.54	12.18	30.00	-17.82
	5320	64	14.77	23.98	-9.21	-2.54	12.23	30.00	-17.77
UNII-2C	5500	100	14.51	23.98	-9.47	-4.06	10.45	30.00	-19.55
	5600	120	14.69	23.98	-9.29	-4.06	10.63	30.00	-19.37
	5620	124	14.18	23.98	-9.80	-4.06	10.12	30.00	-19.88
	5720	144	14.87	23.98	-9.11	-4.06	10.81	30.00	-19.19
UNII-3	5745	149	11.53	30.00	-18.47	-4.56	6.97	30.00	-23.03
	5785	157	11.63	30.00	-18.37	-4.56	7.07	30.00	-22.93
	5825	165	11.55	30.00	-18.45	-4.56	6.99	30.00	-23.01

Table 7-22. SISO ANT2 20MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11ax SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5180	36	14.52	23.98	-9.46	-2.54	11.98	30.00	-18.02
	5200	40	14.51	23.98	-9.47	-2.54	11.97	30.00	-18.03
	5220	44	14.98	23.98	-9.00	-2.54	12.44	30.00	-17.56
	5240	48	11.77	23.98	-12.21	-2.54	9.23	30.00	-20.77
UNII-2A	5260	52	14.77	23.98	-9.21	-2.54	12.23	30.00	-17.77
	5280	56	14.40	23.98	-9.58	-2.54	11.86	30.00	-18.14
	5300	60	14.40	23.98	-9.58	-2.54	11.86	30.00	-18.14
	5320	64	14.84	23.98	-9.14	-2.54	12.30	30.00	-17.70
UNII-2C	5500	100	14.64	23.98	-9.34	-4.06	10.58	30.00	-19.42
	5600	120	14.24	23.98	-9.74	-4.06	10.18	30.00	-19.82
	5620	124	14.23	23.98	-9.75	-4.06	10.17	30.00	-19.83
	5720	144	14.52	23.98	-9.46	-4.06	10.46	30.00	-19.54
UNII-3	5745	149	11.72	30.00	-18.28	-4.56	7.16	30.00	-22.84
	5785	157	11.69	30.00	-18.31	-4.56	7.13	30.00	-22.87
	5825	165	11.77	30.00	-18.23	-4.56	7.21	30.00	-22.79

Table 7-23. SISO ANT2 20MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11be SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5180	36	14.99	23.98	-8.99	-2.54	12.45	30.00	-17.55
	5200	40	14.97	23.98	-9.01	-2.54	12.43	30.00	-17.57
	5220	44	14.90	23.98	-9.08	-2.54	12.36	30.00	-17.64
	5240	48	11.86	23.98	-12.12	-2.54	9.32	30.00	-20.68
UNII-2A	5260	52	14.50	23.98	-9.48	-2.54	11.96	30.00	-18.04
	5280	56	14.80	23.98	-9.18	-2.54	12.26	30.00	-17.74
	5300	60	14.65	23.98	-9.33	-2.54	12.11	30.00	-17.89
	5320	64	14.59	23.98	-9.39	-2.54	12.05	30.00	-17.95
UNII-2C	5500	100	14.90	23.98	-9.08	-4.06	10.84	30.00	-19.16
	5600	120	14.64	23.98	-9.34	-4.06	10.58	30.00	-19.42
	5620	124	14.65	23.98	-9.33	-4.06	10.59	30.00	-19.41
	5720	144	14.40	23.98	-9.58	-4.06	10.34	30.00	-19.66
UNII-3	5745	149	11.53	30.00	-18.47	-4.56	6.97	30.00	-23.03
	5785	157	11.55	30.00	-18.45	-4.56	6.99	30.00	-23.01
	5825	165	11.33	30.00	-18.67	-4.56	6.77	30.00	-23.23

Table 7-24. SISO ANT2 20MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11n SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5190	38	14.78	23.98	-9.20	-3.24	11.54	30.00	-18.46
	5230	46	14.75	23.98	-9.23	-3.24	11.51	30.00	-18.49
UNII-2A	5270	54	14.11	23.98	-9.87	-3.24	10.87	30.00	-19.13
	5310	62	14.10	23.98	-9.88	-3.24	10.86	30.00	-19.14
UNII-2C	5510	102	14.19	23.98	-9.79	-4.53	9.66	30.00	-20.34
	5590	118	14.21	23.98	-9.77	-4.53	9.68	30.00	-20.32
	5630	126	14.26	23.98	-9.72	-4.53	9.73	30.00	-20.27
	5710	142	14.44	23.98	-9.54	-4.53	9.91	30.00	-20.09
UNII-3	5755	151	11.58	30.00	-18.42	-5.18	6.40	36.00	-29.60
	5795	159	11.65	30.00	-18.35	-5.18	6.47	36.00	-29.53

Table 7-25. SISO ANT2 40MHz BW 802.11n (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11ac SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5190	38	14.86	23.98	-9.12	-3.24	11.62	30.00	-18.38
	5230	46	14.61	23.98	-9.37	-3.24	11.37	30.00	-18.63
UNII-2A	5270	54	14.60	23.98	-9.38	-3.24	11.36	30.00	-18.64
	5310	62	14.69	23.98	-9.29	-3.24	11.45	30.00	-18.55
UNII-2C	5510	102	14.68	23.98	-9.30	-4.53	10.15	30.00	-19.85
	5590	118	14.69	23.98	-9.29	-4.53	10.16	30.00	-19.84
	5630	126	14.69	23.98	-9.29	-4.53	10.16	30.00	-19.84
	5710	142	14.89	23.98	-9.09	-4.53	10.36	30.00	-19.64
UNII-3	5755	151	11.52	30.00	-18.48	-5.18	6.34	36.00	-29.66
	5795	159	11.50	30.00	-18.50	-5.18	6.32	36.00	-29.68

Table 7-26. SISO ANT2 40MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11ax SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5190	38	14.75	23.98	-9.23	-3.24	11.51	30.00	-18.49
	5230	46	14.50	23.98	-9.48	-3.24	11.26	30.00	-18.74
UNII-2A	5270	54	14.50	23.98	-9.48	-3.24	11.26	30.00	-18.74
	5310	62	14.58	23.98	-9.40	-3.24	11.34	30.00	-18.66
UNII-2C	5510	102	14.56	23.98	-9.42	-4.53	10.03	30.00	-19.97
	5590	118	14.57	23.98	-9.41	-4.53	10.04	30.00	-19.96
	5630	126	14.55	23.98	-9.43	-4.53	10.02	30.00	-19.98
	5710	142	14.71	23.98	-9.27	-4.53	10.18	30.00	-19.82
UNII-3	5755	151	11.49	30.00	-18.51	-5.18	6.31	36.00	-29.69
	5795	159	11.36	30.00	-18.64	-5.18	6.18	36.00	-29.82

Table 7-27. SISO ANT2 40MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11be SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
UNII-1	5190	38	14.98	23.98	-9.00	-3.24	11.74	30.00	-18.26
	5230	46	14.80	23.98	-9.18	-3.24	11.56	30.00	-18.44
UNII-2A	5270	54	14.55	23.98	-9.43	-3.24	11.31	30.00	-18.69
	5310	62	14.60	23.98	-9.38	-3.24	11.36	30.00	-18.64
UNII-2C	5510	102	14.55	23.98	-9.43	-4.53	10.02	30.00	-19.98
	5590	118	14.55	23.98	-9.43	-4.53	10.02	30.00	-19.98
	5630	126	14.54	23.98	-9.44	-4.53	10.01	30.00	-19.99
	5710	142	14.39	23.98	-9.59	-4.53	9.86	30.00	-20.14
UNII-3	5755	151	11.40	30.00	-18.60	-5.18	6.22	36.00	-29.78
	5795	159	11.51	30.00	-18.49	-5.18	6.33	36.00	-29.67

Table 7-28. SISO ANT2 40MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (80MHz 802.11ac SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
JNII-1	5210	42	14.46	23.98	-9.52	-2.54	11.92	30.00	-18.08
NII-2A	5290	58	14.32	23.98	-9.66	-2.54	11.78	30.00	-18.22
UNII-2C	5530	106	14.56	23.98	-9.42	-4.06	10.50	30.00	-19.50
	5610	122	14.34	23.98	-9.64	-4.06	10.28	30.00	-19.72
	5690	138	14.62	23.98	-9.36	-4.06	10.56	30.00	-19.44
JNII-3	5775	155	11.75	30.00	-18.25	-4.56	7.19	36.00	-28.81

Table 7-29. SISO ANT2 80MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (80MHz 802.11ax SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
JNII-1	5210	42	14.45	23.98	-9.53	-2.54	11.91	30.00	-18.09
NII-2A	5290	58	14.45	23.98	-9.53	-2.54	11.91	30.00	-18.09
UNII-2C	5530	106	14.61	23.98	-9.37	-4.06	10.55	30.00	-19.45
	5610	122	14.36	23.98	-9.62	-4.06	10.30	30.00	-19.70
	5690	138	14.64	23.98	-9.34	-4.06	10.58	30.00	-19.42
JNII-3	5775	155	11.56	30.00	-18.44	-4.56	7.00	36.00	-29.00

Table 7-30. SISO ANT2 80MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (80MHz 802.11be SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
JNII-1	5210	42	14.75	23.98	-9.23	-2.54	12.21	30.00	-17.79
NII-2A	5290	58	14.45	23.98	-9.53	-2.54	11.91	30.00	-18.09
UNII-2C	5530	106	14.40	23.98	-9.58	-4.06	10.34	30.00	-19.66
	5610	122	14.48	23.98	-9.50	-4.06	10.42	30.00	-19.58
	5690	138	14.39	23.98	-9.59	-4.06	10.33	30.00	-19.67
JNII-3	5775	155	11.29	30.00	-18.71	-4.56	6.73	36.00	-29.27

Table 7-31. SISO ANT2 80MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11ac SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
JII-1/2A	5250	50	14.74	23.98	-9.24	-2.54	12.20	30.00	-17.80
NII-2C	5570	114	14.64	23.98	-9.34	-4.06	10.58	30.00	-19.42

Table 7-32. SISO ANT2 160MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11ax SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
JII-1/2A	5250	50	14.96	23.98	-9.02	-2.54	12.42	30.00	-17.58
NII-2C	5570	114	14.80	23.98	-9.18	-4.06	10.74	30.00	-19.26

Table 7-33. SISO ANT2 160MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11be SISO ANT2)				Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]						
JII-1/2A	5250	50	14.33	23.98	-9.65	-2.54	11.79	30.00	-18.21
NII-2C	5570	114	14.10	23.98	-9.88	-4.06	10.04	30.00	-19.96

Table 7-34. SISO ANT2 160MHz BW 802.11be (UNII) Maximum Conducted Output Power

MIMO Maximum Conducted Output Power Measurements

5GHz WIFI (20MHz 802.11a MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5180	36	14.66	14.48	17.58	23.98	-6.40	0.13	17.71	30.00	-12.29
	5200	40	14.70	14.35	17.54	23.98	-6.44	0.13	17.67	30.00	-12.33
	5220	44	14.71	14.24	17.49	23.98	-6.49	0.13	17.62	30.00	-12.38
	5240	48	11.56	11.21	14.40	23.98	-9.58	0.13	14.53	30.00	-15.47
UNII-2A	5260	52	14.76	13.71	17.28	23.98	-6.70	0.13	17.41	30.00	-12.59
	5280	56	14.70	13.95	17.35	23.98	-6.63	0.13	17.48	30.00	-12.52
	5300	60	14.51	13.71	17.14	23.98	-6.84	0.13	17.27	30.00	-12.73
	5320	64	14.99	13.89	17.49	23.98	-6.49	0.13	17.62	30.00	-12.38
UNII-2C	5500	100	14.72	13.38	17.11	23.98	-6.87	-1.28	15.83	30.00	-14.17
	5600	120	14.52	14.08	17.32	23.98	-6.66	-1.28	16.03	30.00	-13.97
	5620	124	14.90	14.16	17.56	23.98	-6.42	-1.28	16.27	30.00	-13.73
	5720	144	14.85	13.67	17.31	23.98	-6.67	-1.28	16.03	30.00	-13.97
UNII-3	5745	149	11.68	10.87	14.30	30.00	-15.70	-1.85	12.45	36.00	-23.55
	5785	157	11.66	10.80	14.26	30.00	-15.74	-1.85	12.41	36.00	-23.59
	5825	165	11.73	10.95	14.37	30.00	-15.63	-1.85	12.51	36.00	-23.49

Table 7-35. MIMO 20MHz BW 802.11a (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11n MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5180	36	14.99	14.73	17.87	23.98	-6.11	0.13	18.00	30.00	-12.00
	5200	40	14.58	14.10	17.36	23.98	-6.62	0.13	17.49	30.00	-12.51
	5220	44	14.57	13.92	17.27	23.98	-6.71	0.13	17.40	30.00	-12.60
	5240	48	11.91	11.52	14.73	23.98	-9.25	0.13	14.86	30.00	-15.14
UNII-2A	5260	52	14.58	13.44	17.06	23.98	-6.92	0.13	17.19	30.00	-12.81
	5280	56	14.49	13.68	17.11	23.98	-6.87	0.13	17.24	30.00	-12.76
	5300	60	14.78	13.90	17.37	23.98	-6.61	0.13	17.50	30.00	-12.50
	5320	64	14.77	13.61	17.24	23.98	-6.74	0.13	17.37	30.00	-12.63
UNII-2C	5500	100	14.49	13.07	16.85	23.98	-7.13	-1.28	15.57	30.00	-14.43
	5620	124	14.69	13.85	17.30	23.98	-6.68	-1.28	16.02	30.00	-13.98
	5720	144	14.64	13.36	17.06	23.98	-6.92	-1.28	15.78	30.00	-14.22
UNII-3	5745	149	11.97	11.05	14.54	30.00	-15.46	-1.85	12.69	36.00	-23.31
	5785	157	11.91	11.07	14.52	30.00	-15.48	-1.85	12.67	36.00	-23.33
	5825	165	11.88	11.11	14.52	30.00	-15.48	-1.85	12.67	36.00	-23.33

Table 7-36. MIMO 20MHz BW 802.11n (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11ac MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5180	36	14.60	14.16	17.40	23.98	-6.58	0.13	17.53	30.00	-12.47
	5200	40	14.55	14.11	17.35	23.98	-6.63	0.13	17.48	30.00	-12.52
	5220	44	14.55	13.97	17.28	23.98	-6.70	0.13	17.41	30.00	-12.59
	5240	48	11.40	10.98	14.21	23.98	-9.77	0.13	14.34	30.00	-15.66
UNII-2A	5260	52	14.53	13.47	17.04	23.98	-6.94	0.13	17.17	30.00	-12.83
	5280	56	14.47	13.67	17.10	23.98	-6.88	0.13	17.23	30.00	-12.77
	5300	60	14.79	13.95	17.40	23.98	-6.58	0.13	17.53	30.00	-12.47
	5320	64	14.77	13.60	17.23	23.98	-6.75	0.13	17.36	30.00	-12.64
UNII-2C	5500	100	14.99	13.46	17.30	23.98	-6.68	-1.28	16.02	30.00	-13.98
	5600	120	14.30	13.78	17.06	23.98	-6.92	-1.28	15.78	30.00	-14.22
	5620	124	14.67	13.89	17.31	23.98	-6.67	-1.28	16.03	30.00	-13.97
	5720	144	14.61	13.37	17.04	23.98	-6.94	-1.28	15.76	30.00	-14.24
UNII-3	5745	149	11.55	11.25	14.41	30.00	-15.59	-1.85	12.56	36.00	-23.44
	5785	157	11.91	11.55	14.74	30.00	-15.26	-1.85	12.89	36.00	-23.11
	5825	165	11.54	11.95	14.76	30.00	-15.24	-1.85	12.91	36.00	-23.09

Table 7-37. MIMO 20MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11ax MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5180	36	14.49	14.22	17.37	23.98	-6.61	0.13	17.50	30.00	-12.50
	5200	40	14.46	14.12	17.30	23.98	-6.68	0.13	17.43	30.00	-12.57
	5220	44	14.53	13.90	17.24	23.98	-6.74	0.13	17.37	30.00	-12.63
	5240	48	11.53	10.89	14.23	23.98	-9.75	0.13	14.36	30.00	-15.64
UNII-2A	5260	52	14.48	13.46	17.01	23.98	-6.97	0.13	17.14	30.00	-12.86
	5280	56	14.39	13.76	17.10	23.98	-6.88	0.13	17.23	30.00	-12.77
	5300	60	14.81	14.10	17.48	23.98	-6.50	0.13	17.61	30.00	-12.39
	5320	64	14.75	13.84	17.33	23.98	-6.65	0.13	17.46	30.00	-12.54
UNII-2C	5500	100	14.98	13.75	17.42	23.98	-6.56	-1.28	16.14	30.00	-13.86
	5600	120	14.34	14.07	17.22	23.98	-6.76	-1.28	15.94	30.00	-14.06
	5620	124	14.56	13.98	17.29	23.98	-6.69	-1.28	16.01	30.00	-13.99
	5720	144	14.54	13.41	17.02	23.98	-6.96	-1.28	15.74	30.00	-14.26
UNII-3	5745	149	11.93	11.07	14.53	30.00	-15.47	-1.85	12.68	36.00	-23.32
	5785	157	11.82	11.05	14.46	30.00	-15.54	-1.85	12.61	36.00	-23.39
	5825	165	11.55	11.03	14.31	30.00	-15.69	-1.85	12.45	36.00	-23.55

Table 7-38. MIMO 20MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (20MHz 802.11be MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5180	36	14.73	14.64	17.70	23.98	-6.28	0.13	17.83	30.00	-12.17
	5200	40	14.80	14.72	17.77	23.98	-6.21	0.13	17.90	30.00	-12.10
	5220	44	14.76	14.40	17.59	23.98	-6.39	0.13	17.72	30.00	-12.28
	5240	48	11.56	11.39	14.49	23.98	-9.49	0.13	14.62	30.00	-15.38
UNII-2A	5260	52	14.80	13.90	17.38	23.98	-6.60	0.13	17.51	30.00	-12.49
	5280	56	14.74	14.28	17.53	23.98	-6.45	0.13	17.66	30.00	-12.34
	5300	60	14.53	14.20	17.38	23.98	-6.60	0.13	17.51	30.00	-12.49
	5320	64	14.40	14.06	17.24	23.98	-6.74	0.13	17.37	30.00	-12.63
UNII-2C	5500	100	14.82	14.87	17.86	23.98	-6.12	-1.28	16.58	30.00	-13.42
	5600	120	14.50	14.74	17.63	23.98	-6.35	-1.28	16.35	30.00	-13.65
	5620	124	14.60	14.57	17.60	23.98	-6.38	-1.28	16.31	30.00	-13.69
	5720	144	14.50	13.90	17.22	23.98	-6.76	-1.28	15.94	30.00	-14.06
UNII-3	5745	149	11.67	11.09	14.40	30.00	-15.60	-1.85	12.55	36.00	-23.45
	5785	157	11.66	11.11	14.40	30.00	-15.60	-1.85	12.55	36.00	-23.45
	5825	165	11.77	11.18	14.50	30.00	-15.50	-1.85	12.64	36.00	-23.36

Table 7-39. MIMO 20MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11n MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5190	38	13.52	13.43	16.49	23.98	-7.49	0.13	16.62	30.00	-13.38
	5230	46	14.60	14.24	17.43	23.98	-6.55	0.13	17.56	30.00	-12.44
UNII-2A	5270	54	14.61	13.78	17.23	23.98	-6.75	0.13	17.36	30.00	-12.64
	5310	62	14.42	13.58	17.03	23.98	-6.95	0.13	17.16	30.00	-12.84
UNII-2C	5510	102	14.98	13.66	17.38	23.98	-6.60	-1.28	16.10	30.00	-13.90
	5590	118	14.55	13.98	17.28	23.98	-6.70	-1.28	16.00	30.00	-14.00
	5630	126	14.40	13.71	17.08	23.98	-6.90	-1.28	15.80	30.00	-14.20
	5710	142	14.57	13.70	17.17	23.98	-6.81	-1.28	15.89	30.00	-14.11
UNII-3	5755	151	11.54	10.98	14.28	30.00	-15.72	-1.85	12.43	36.00	-23.57
	5795	159	11.53	10.99	14.28	30.00	-15.72	-1.85	12.43	36.00	-23.57

Table 7-40. MIMO 40MHz BW 802.11n (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11ac MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5190	38	14.64	14.43	17.55	23.98	-6.43	0.13	17.68	30.00	-12.32
	5230	46	14.53	14.24	17.40	23.98	-6.58	0.13	17.53	30.00	-12.47
UNII-2A	5270	54	14.62	13.82	17.25	23.98	-6.73	0.13	17.38	30.00	-12.62
	5310	62	14.92	14.01	17.50	23.98	-6.48	0.13	17.63	30.00	-12.37
UNII-2C	5510	102	14.58	13.41	17.04	23.98	-6.94	-1.28	15.76	30.00	-14.24
	5590	118	14.49	13.93	17.23	23.98	-6.75	-1.28	15.95	30.00	-14.05
	5630	126	14.97	14.18	17.60	23.98	-6.38	-1.28	16.32	30.00	-13.68
	5710	142	14.59	13.61	17.14	23.98	-6.84	-1.28	15.86	30.00	-14.14
UNII-3	5755	151	11.56	10.99	14.29	30.00	-15.71	-1.85	12.44	36.00	-23.56
	5795	159	11.96	11.43	14.71	30.00	-15.29	-1.85	12.86	36.00	-23.14

Table 7-41. MIMO 40MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11ax MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5190	38	14.63	14.57	17.61	23.98	-6.37	0.13	17.74	30.00	-12.26
	5230	46	14.55	14.37	17.47	23.98	-6.51	0.13	17.60	30.00	-12.40
UNII-2A	5270	54	14.58	13.93	17.28	23.98	-6.70	0.13	17.41	30.00	-12.59
	5310	62	14.97	14.17	17.60	23.98	-6.38	0.13	17.73	30.00	-12.27
UNII-2C	5510	102	14.65	13.26	17.02	23.98	-6.96	-1.28	15.74	30.00	-14.26
	5590	118	14.59	14.02	17.32	23.98	-6.66	-1.28	16.04	30.00	-13.96
	5630	126	14.51	13.78	17.17	23.98	-6.81	-1.28	15.89	30.00	-14.11
	5710	142	14.66	13.78	17.25	23.98	-6.73	-1.28	15.97	30.00	-14.03
UNII-3	5755	151	11.56	10.96	14.28	30.00	-15.72	-1.85	12.43	36.00	-23.57
	5795	159	11.58	11.01	14.31	30.00	-15.69	-1.85	12.46	36.00	-23.54

Table 7-42. MIMO 40MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (40MHz 802.11be MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5190	38	14.60	14.53	17.58	23.98	-6.40	0.13	17.71	30.00	-12.29
	5230	46	14.54	14.32	17.44	23.98	-6.54	0.13	17.57	30.00	-12.43
UNII-2A	5270	54	14.65	14.10	17.39	23.98	-6.59	0.13	17.52	30.00	-12.48
	5310	62	14.99	14.60	17.81	23.98	-6.17	0.13	17.94	30.00	-12.06
UNII-2C	5510	102	14.80	14.51	17.67	23.98	-6.31	-1.28	16.39	30.00	-13.61
	5590	118	14.45	14.60	17.54	23.98	-6.44	-1.28	16.26	30.00	-13.74
	5630	126	14.65	14.60	17.64	23.98	-6.34	-1.28	16.36	30.00	-13.64
	5710	142	14.90	14.30	17.62	23.98	-6.36	-1.28	16.34	30.00	-13.66
UNII-3	5755	151	11.89	11.30	14.62	30.00	-15.38	-1.85	12.77	36.00	-23.23
	5795	159	11.72	11.08	14.42	30.00	-15.58	-1.85	12.57	36.00	-23.43

Table 7-43. MIMO 40MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (80MHz 802.11ac MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5210	42	14.22	13.77	17.01	23.98	-6.97	0.13	17.14	30.00	-12.86
UNII-2A	5290	58	14.92	14.26	17.61	23.98	-6.37	0.13	17.74	30.00	-12.26
UNII-2C	5530	106	14.55	13.26	16.96	23.98	-7.02	-1.28	15.68	30.00	-14.32
	5610	122	14.75	14.00	17.40	23.98	-6.58	-1.28	16.12	30.00	-13.88
	5690	138	14.07	13.11	16.63	23.98	-7.35	-1.28	15.35	30.00	-14.65
UNII-3	5775	155	11.56	11.01	14.30	30.00	-15.70	-1.85	12.45	36.00	-23.55

Table 7-44. MIMO 80MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (80MHz 802.11ax MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5210	42	14.94	14.30	17.64	23.98	-6.34	0.13	17.77	30.00	-12.23
UNII-2A	5290	58	14.94	13.83	17.43	23.98	-6.55	0.13	17.56	30.00	-12.44
UNII-2C	5530	106	14.84	13.29	17.14	23.98	-6.84	-1.28	15.86	30.00	-14.14
	5610	122	14.54	13.75	17.17	23.98	-6.81	-1.28	15.89	30.00	-14.11
	5690	138	14.58	13.34	17.01	23.98	-6.97	-1.28	15.73	30.00	-14.27
UNII-3	5775	155	11.99	10.21	14.20	30.00	-15.80	-1.85	12.35	36.00	-23.65

Table 7-45. MIMO 80MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (80MHz 802.11be MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
UNII-1	5210	42	14.58	14.34	17.47	23.98	-6.51	0.13	17.60	30.00	-12.40
UNII-2A	5290	58	14.40	14.08	17.25	23.98	-6.73	0.13	17.38	30.00	-12.62
UNII-2C	5530	106	14.19	14.04	17.13	23.98	-6.85	-1.28	15.85	30.00	-14.15
	5610	122	14.45	14.40	17.44	23.98	-6.54	-1.28	16.16	30.00	-13.84
	5690	138	14.90	14.30	17.62	23.98	-6.36	-1.28	16.34	30.00	-13.66
UNII-3	5775	155	11.89	11.31	14.62	30.00	-15.38	-1.85	12.77	36.00	-23.23

Table 7-46. MIMO 80MHz BW 802.11be (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11ac MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
A	5250	50	14.81	13.50	17.21	23.98	-6.77	0.13	17.34	30.00	-12.66
	5570	114	14.36	13.01	16.75	23.98	-7.23	-1.28	15.47	30.00	-14.53

Table 7-47. MIMO 160MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11ax MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
A	5250	50	14.92	13.61	17.32	23.98	-6.66	0.13	17.45	30.00	-12.55
	5570	114	14.47	13.12	16.86	23.98	-7.12	-1.28	15.58	30.00	-14.42

Table 7-48. MIMO 160MHz BW 802.11ax (UNII) Maximum Conducted Output Power

5GHz WIFI (160MHz 802.11be MIMO)						Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Directional Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]								
			ANT1	ANT2	MIMO						
A	5250	50	14.80	14.30	17.57	23.98	-6.41	0.13	17.70	30.00	-12.30
	5570	114	14.50	14.60	17.56	23.98	-6.42	-1.28	16.28	30.00	-13.72

Table 7-49. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power

Note:

Per ANSI C63.10-2013 and KDB 662911 v02r01 Section E)1), the conducted powers at Antenna 1 and Antenna 2 were first measured separately during MIMO transmission as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

Per ANSI C63.10-2013 Section 14.4.3, the directional gain is calculated using the following formula, where G_N is the gain of the nth antenna and N_{ANT}, the total number of antennas used.

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

Sample MIMO Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average conducted output power was measured to be 17.51 dBm for Antenna 1 and 17.68 dBm for Antenna 2.

Antenna 1 + Antenna 2 = MIMO

(17.51 dBm + 17.68 dBm) = (56.364 mW + 58.614 mW) = 114.978 mW = 20.61 dBm

Sample e.i.r.p Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average MIMO conducted power was calculated to be 20.61 dBm with directional gain of -1.71 dBi.

e.i.r.p. (dBm) = Conducted Power (dBm) + Ant gain (dBi)

20.61 dBm + -1.71 dBi = 18.90 dBm

7.5 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.

The output power density limits are as specified in the tables below.

UNII Band	Frequency Range	Maximum Conducted Power Limit
		FCC
UNII 1	5.15 – 5.25GHz	11dBm/MHz
UNII 2A	5.25 – 5.35GHz	
UNII 2C	5.47 – 5.725GHz	
UNII 3	5.725 – 5.850GHz	30dBm/500kHz
UNII 4	5.850 – 5.895GHz	14dBm/MHz e.i.r.p

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.2.3 (Method SA-2) (← if you applied duty cycle correction factor)
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 ≥ 2 x (span/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 7-4. Test Instrument & Measurement Setup

Summed MIMO Power Spectral Density Measurements

	Frequency [MHz]	Channel	802.11 MODE	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	DCCF [dB]	MIMO Summed PSD [dBm]	PSD Limit [dBm]	Margin [dB]
Band 1	5180	36	a	3.59	3.13	0.28	6.65	11.00	-4.35
	5200	40	a	3.92	2.94	0.28	6.75	11.00	-4.25
	5240	48	a	3.84	2.93	0.28	6.70	11.00	-4.30
	5180	36	n	3.25	2.35	0.32	6.15	11.00	-4.85
	5200	40	n	3.34	2.55	0.32	6.29	11.00	-4.71
	5240	48	n	3.28	2.39	0.32	6.19	11.00	-4.81
	5180	36	be SU	3.38	2.60	0.00	6.02	11.00	-4.98
	5200	40	be SU	3.44	2.43	0.00	5.98	11.00	-5.02
	5240	48	be SU	3.33	2.53	0.00	5.96	11.00	-5.04
	5190	38	n	0.97	0.26	0.17	3.81	11.00	-7.19
	5230	46	n	0.93	-0.03	0.17	3.65	11.00	-7.35
	5190	38	be SU	0.52	-0.41	0.00	3.09	11.00	-7.91
	5230	46	be SU	0.13	-0.52	0.00	2.82	11.00	-8.18
	5210	42	ac	-2.77	-2.99	0.34	0.47	11.00	-10.53
	5210	42	be SU	-2.87	-2.70	0.00	0.23	11.00	-10.77
Band 1/2A	5250	50	ac	-7.59	-8.37	0.35	-4.60	11.00	-15.60
	5250	50	be SU	-7.70	-7.65	0.00	-4.67	11.00	-15.67
Band 2A	5260	52	a	4.15	3.25	0.28	7.01	11.00	-3.99
	5280	56	a	3.84	2.26	0.28	6.41	11.00	-4.59
	5320	64	a	3.28	2.55	0.28	6.22	11.00	-4.78
	5260	52	n	3.86	2.58	0.32	6.60	11.00	-4.40
	5280	56	n	3.67	2.50	0.32	6.45	11.00	-4.55
	5320	64	n	3.69	2.70	0.32	6.55	11.00	-4.45
	5260	52	be SU	3.82	2.62	0.00	6.27	11.00	-4.73
	5280	56	be SU	3.57	2.42	0.00	6.05	11.00	-4.95
	5320	64	be SU	3.23	2.36	0.00	5.83	11.00	-5.17
	5270	54	n	0.68	-0.02	0.17	3.53	11.00	-7.47
	5310	62	n	0.60	0.61	0.17	3.78	11.00	-7.22
	5270	54	be SU	0.96	-0.21	0.00	3.42	11.00	-7.58
	5310	62	be SU	-0.54	-0.95	0.00	2.27	11.00	-8.73
	5290	58	ac	-3.46	-4.39	0.34	-0.55	11.00	-11.55
	5290	58	be SU	-3.80	-4.30	0.00	-1.03	11.00	-12.03
Band 2C	5500	100	a	3.06	3.01	0.28	6.33	11.00	-4.67
	5600	120	a	3.17	3.56	0.28	6.66	11.00	-4.34
	5720	144	a	3.81	3.67	0.28	7.03	11.00	-3.97
	5500	100	n	3.03	2.89	0.32	6.29	11.00	-4.71
	5600	120	n	2.33	3.13	0.32	6.08	11.00	-4.92
	5720	144	n	3.39	3.52	0.32	6.78	11.00	-4.22
	5500	100	be SU	2.65	3.10	0.00	5.89	11.00	-5.11
	5600	120	be SU	1.83	2.07	0.00	4.96	11.00	-6.04
	5720	144	be SU	2.51	2.54	0.00	5.54	11.00	-5.46
	5510	102	n	0.37	0.14	0.17	3.44	11.00	-7.56
	5590	118	n	-0.49	0.06	0.17	2.98	11.00	-8.02
	5710	142	n	0.40	0.63	0.17	3.70	11.00	-7.30
	5510	102	be SU	-0.58	-1.47	0.00	2.01	11.00	-8.99
	5590	118	be SU	-1.27	-0.36	0.00	2.22	11.00	-8.78
	5710	142	be SU	-0.49	-0.56	0.00	2.49	11.00	-8.51
	5530	106	ac	-3.80	-3.70	0.34	-0.40	11.00	-11.40
	5610	122	ac	-4.27	-4.65	0.34	-1.10	11.00	-12.10
	5690	138	ac	-3.94	-2.64	0.34	0.11	11.00	-10.89
	5530	106	be SU	-4.22	-4.03	0.00	-1.11	11.00	-12.11
	5610	122	be SU	-3.69	-3.12	0.00	-0.38	11.00	-11.38
	5690	138	be SU	-2.71	-3.15	0.00	0.09	11.00	-10.91
	5570	114	ac	-7.56	-7.59	0.35	-4.22	11.00	-15.22
	5570	114	be SU	-8.48	-6.62	0.00	-4.44	11.00	-15.44

Table 7-50. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements

	Frequency [MHz]	Channel	802.11 MODE	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	DCCF [dB]	MIMO Summed PSD [dBm]	PSD Limit [dBm]	Margin [dB]
Band 3	5745	149	a	0.96	1.10	0.28	4.32	30.00	-25.68
	5785	157	a	1.26	0.86	0.28	4.35	30.00	-25.65
	5825	165	a	1.00	0.57	0.28	4.08	30.00	-25.92
	5745	149	n	0.80	0.55	0.32	4.01	30.00	-25.99
	5785	157	n	0.93	0.59	0.32	4.09	30.00	-25.91
	5825	165	n	1.01	0.74	0.32	4.21	30.00	-25.79
	5745	149	be SU	0.75	0.75	0.00	3.76	30.00	-26.24
	5785	157	be SU	0.93	0.85	0.00	3.90	30.00	-26.10
	5825	165	be SU	0.87	0.25	0.00	3.58	30.00	-26.42
	5755	151	n	-2.00	-1.77	0.17	1.30	30.00	-28.70
	5795	159	n	-1.81	-1.67	0.17	1.44	30.00	-28.56
	5755	151	be SU	-2.49	-2.51	0.00	0.51	30.00	-29.49
	5795	159	be SU	-2.01	-2.27	0.00	0.87	30.00	-29.13
	5775	155	ac	-6.05	-6.21	0.34	-2.78	30.00	-32.78
	5775	155	be SU	-5.37	-5.93	0.00	-2.63	30.00	-32.63

Table 7-51. Band 3 MIMO Conducted Power Spectral Density Measurements

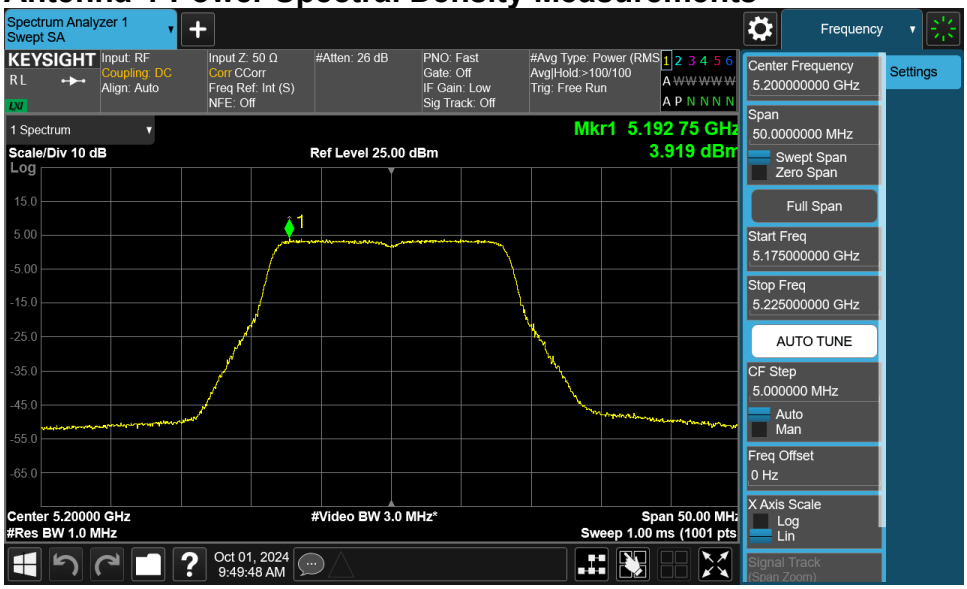
	Frequency [MHz]	Channel	802.11 MODE	Puncture Size [MHz]	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	DCCF [dB]	MIMO Summed PSD [dBm]	PSD Limit [dBm]	Margin [dB]
ıd 1	5210	42	be	20	-1.60	-2.52	0.00	0.98	11.00	-10.02
Band 1/2A	5250	50	be	20	-4.82	-5.48	0.00	-2.13	11.00	-13.13
	5250	50	be	40	-4.93	-7.43	0.00	-3.00	11.00	-14.00
Band 2A	5290	58	be	20	-1.24	-2.17	0.00	1.33	11.00	-9.67
Band 2C	5610	122	be	20	-1.78	-1.86	0.00	1.19	11.00	-9.81
	5570	114	be	20	-6.60	-6.49	0.00	-3.53	11.00	-14.53
	5570	114	be	40	-7.19	-6.76	0.00	-3.96	11.00	-14.96

Table 7-52. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements - Puncture

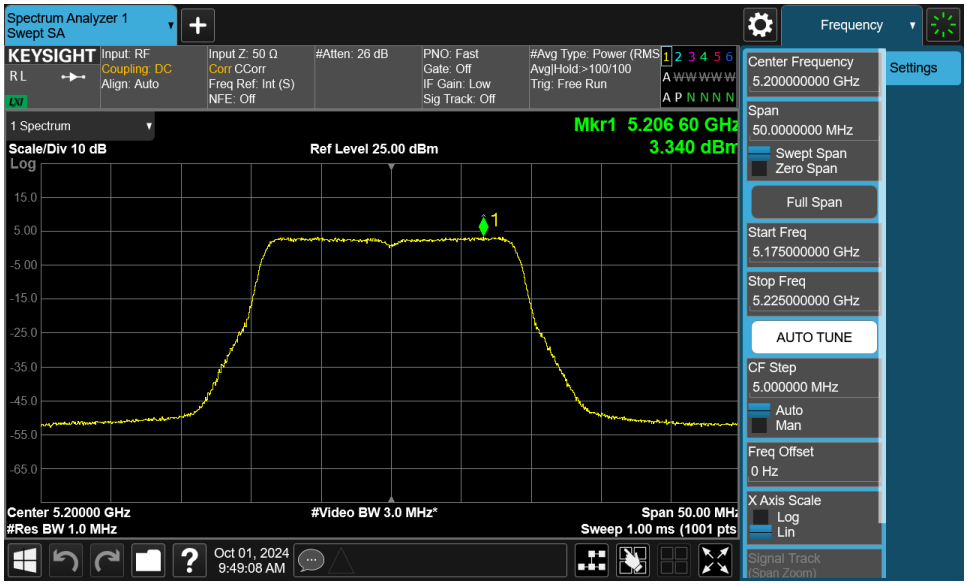
	Frequency [MHz]	Channel	802.11 MODE	Puncture Size [MHz]	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	DCCF [dB]	MIMO Summed PSD [dBm]	PSD Limit [dBm]	Margin [dB]
Band 3	5775	155	be	20	-3.46	-3.71	0.00	-0.57	30.00	-30.57

Table 7-53. Band 3 MIMO Conducted Power Spectral Density Measurements - Puncture

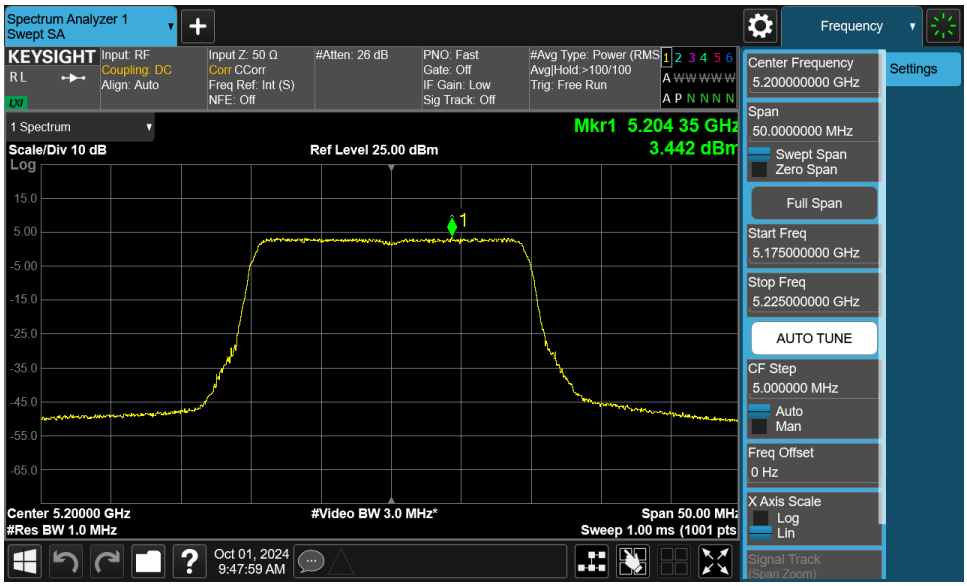
7.5.1 MIMO Antenna-1 Power Spectral Density Measurements



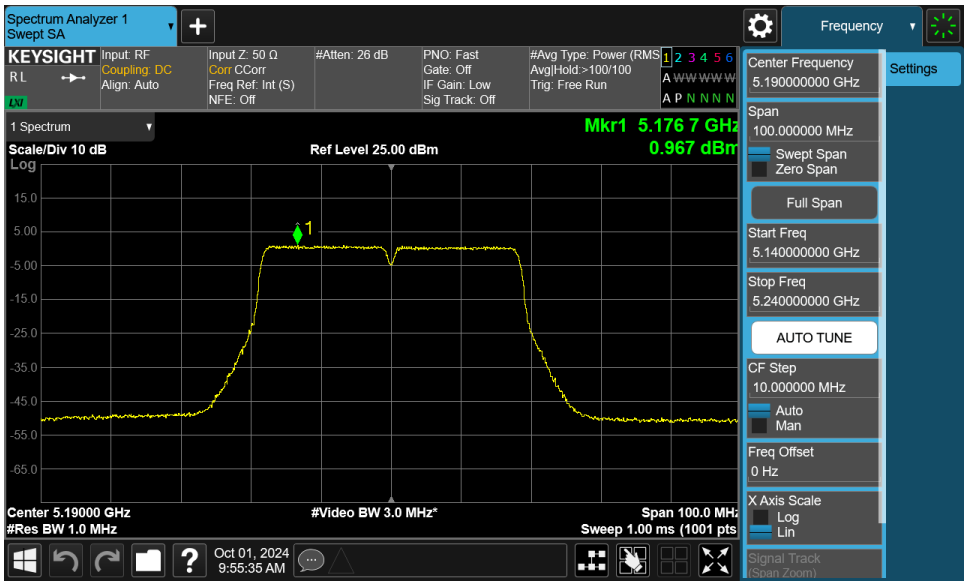
Plot 7-39. Power Spectral Density Plot MIMO ANT1 (20MHz 802.11a (UNII Band 1) – Ch. 40)



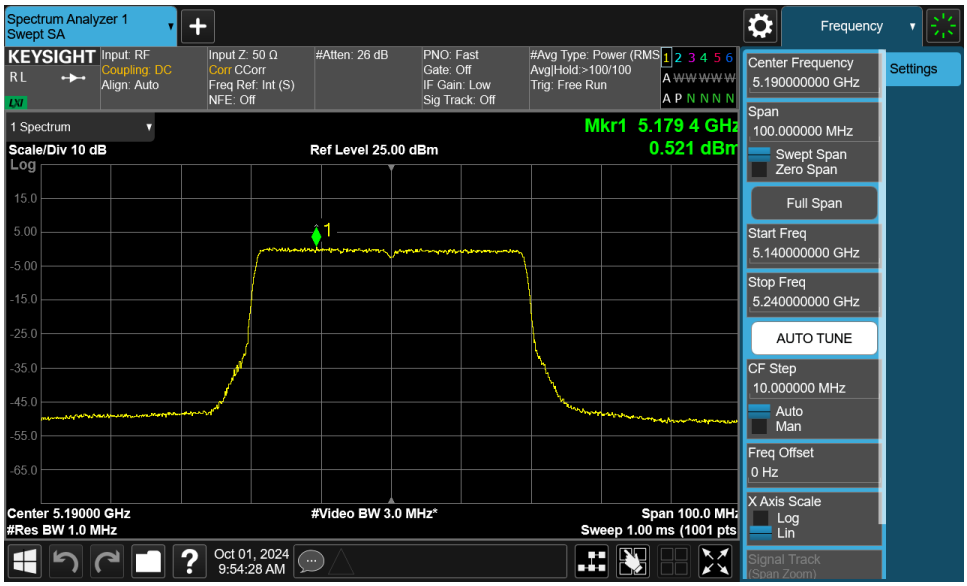
Plot 7-40. Power Spectral Density Plot MIMO ANT1 (20MHz 802.11n (UNII Band 1) – Ch. 40)



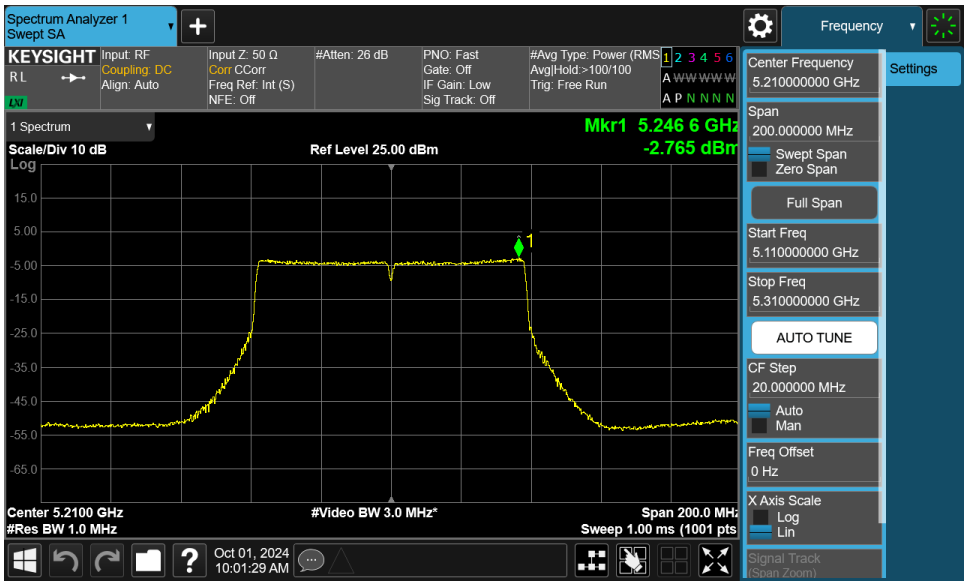
Plot 7-41. Power Spectral Density Plot MIMO ANT1 (20MHz 802.11ax/be (UNII Band 1) – Ch. 40)



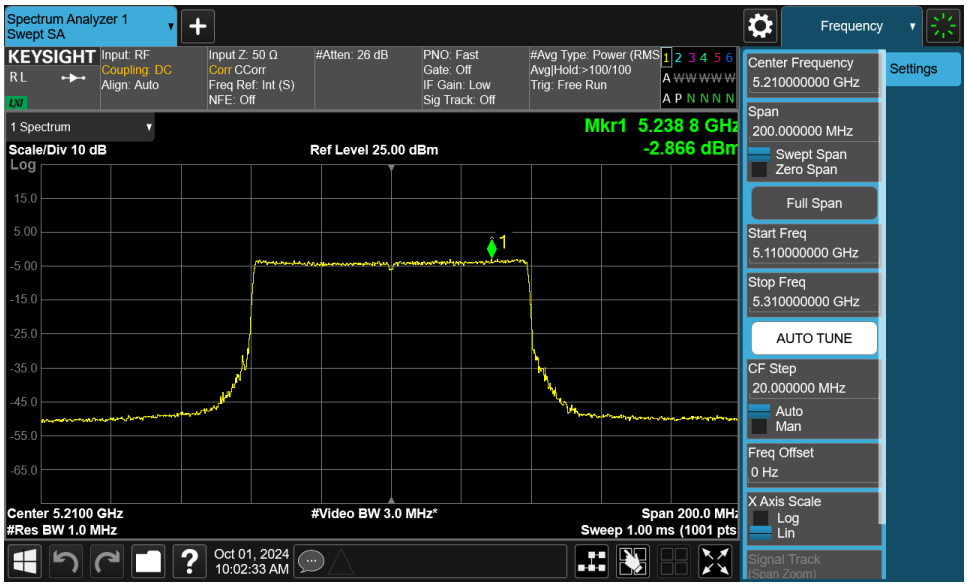
Plot 7-42. Power Spectral Density Plot MIMO ANT1 (40MHz 802.11n (UNII Band 1) – Ch. 38)



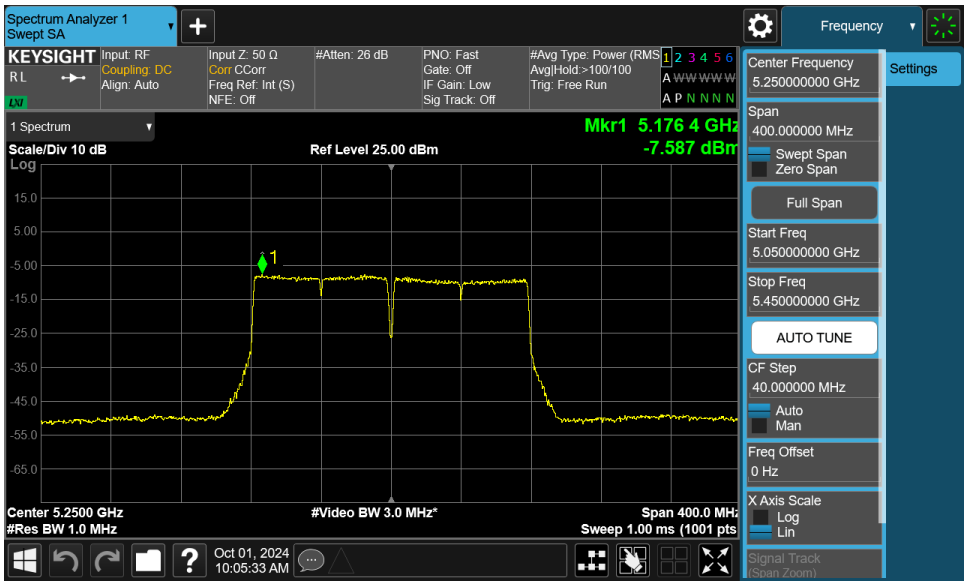
Plot 7-43. Power Spectral Density Plot MIMO ANT1 (40MHz 802.11ax/be (UNII Band 1) – Ch. 38)



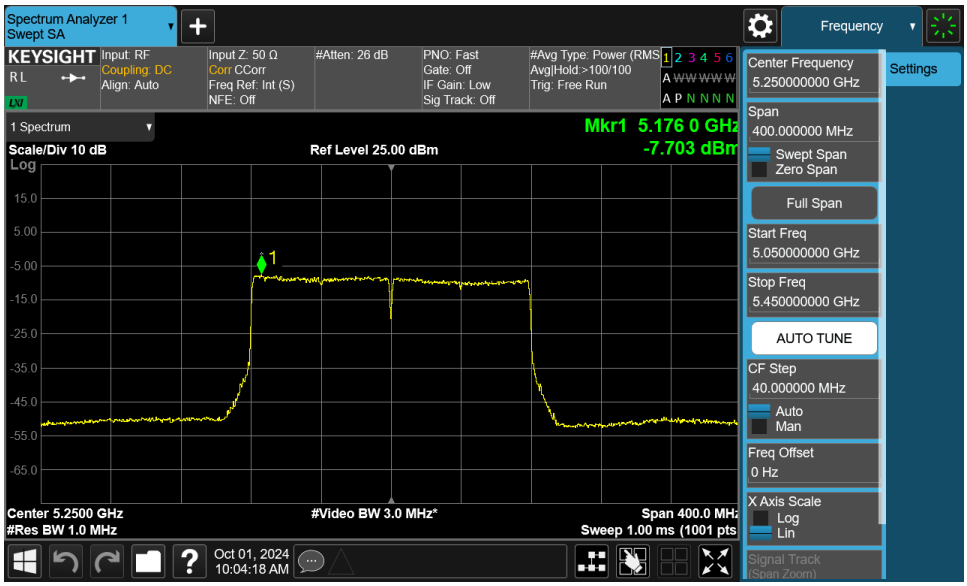
Plot 7-44. Power Spectral Density Plot MIMO ANT1 (80MHz 802.11ac (UNII Band 1) – Ch. 42)



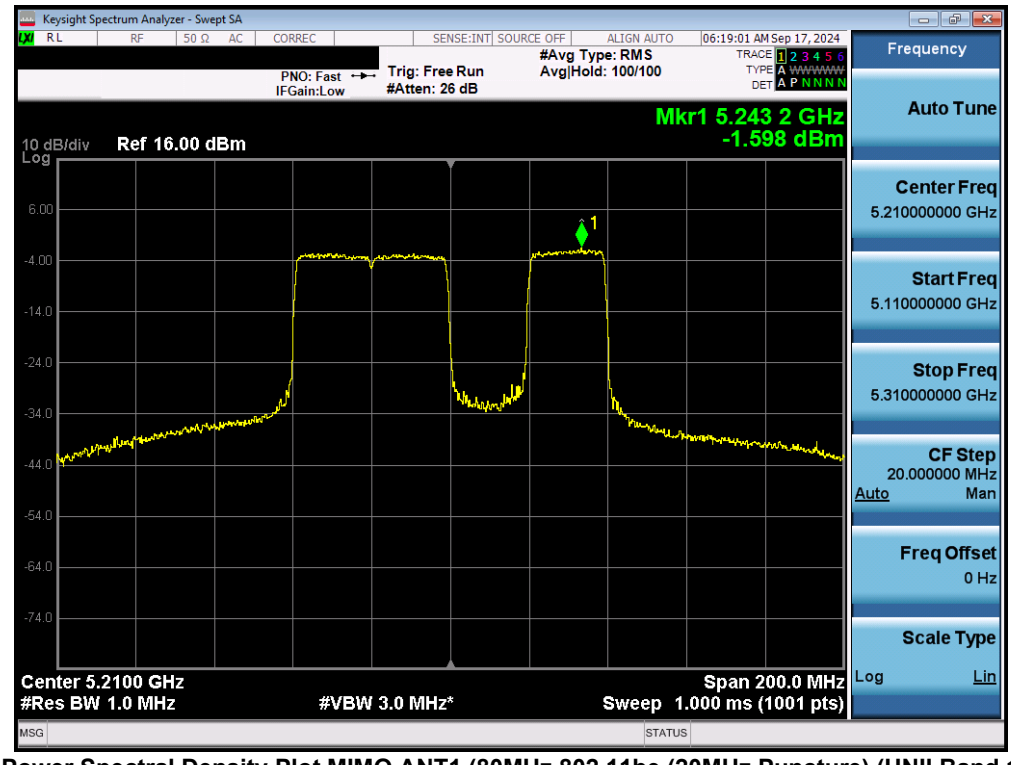
Plot 7-45. Power Spectral Density Plot MIMO ANT1 (80MHz 802.11ax/be (UNII Band 1) – Ch. 42)



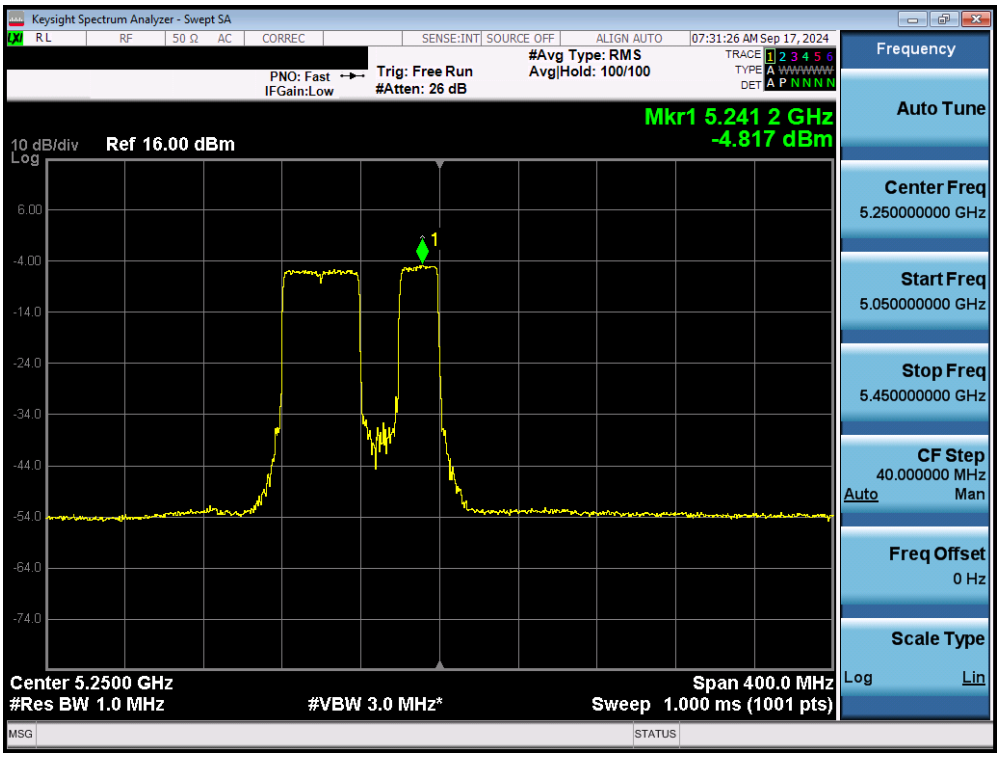
Plot 7-46. Power Spectral Density Plot MIMO ANT1 (160MHz 802.11ac (UNII Band 1/2A) – Ch. 50)



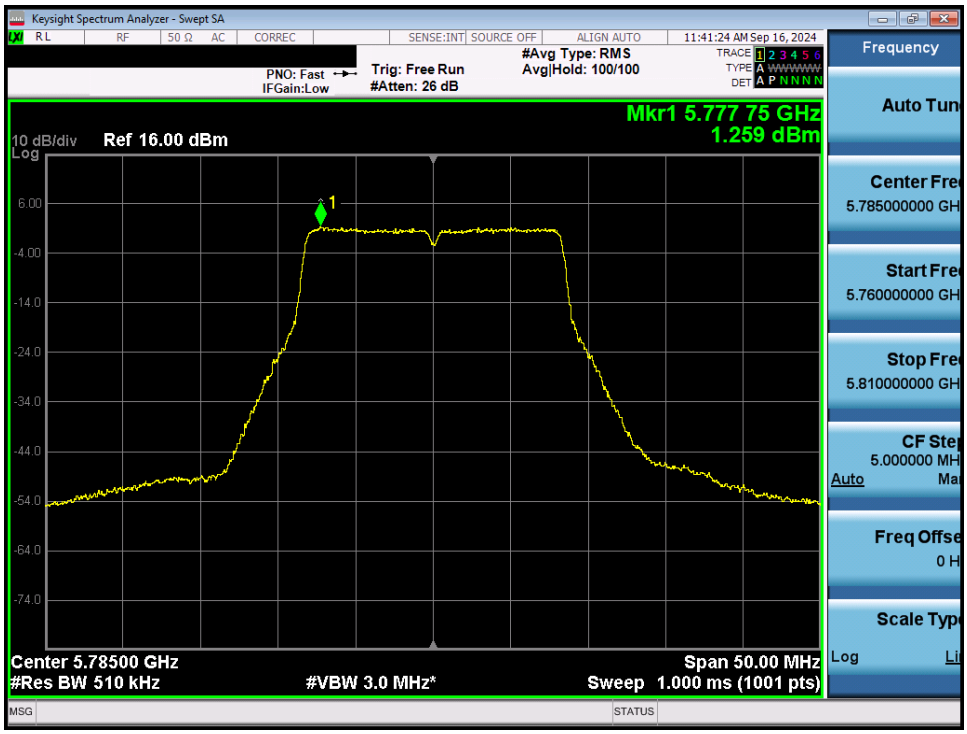
Plot 7-47. Power Spectral Density Plot MIMO ANT1 (160MHz 802.11ax/be (UNII Band 1/2A) – Ch. 50)



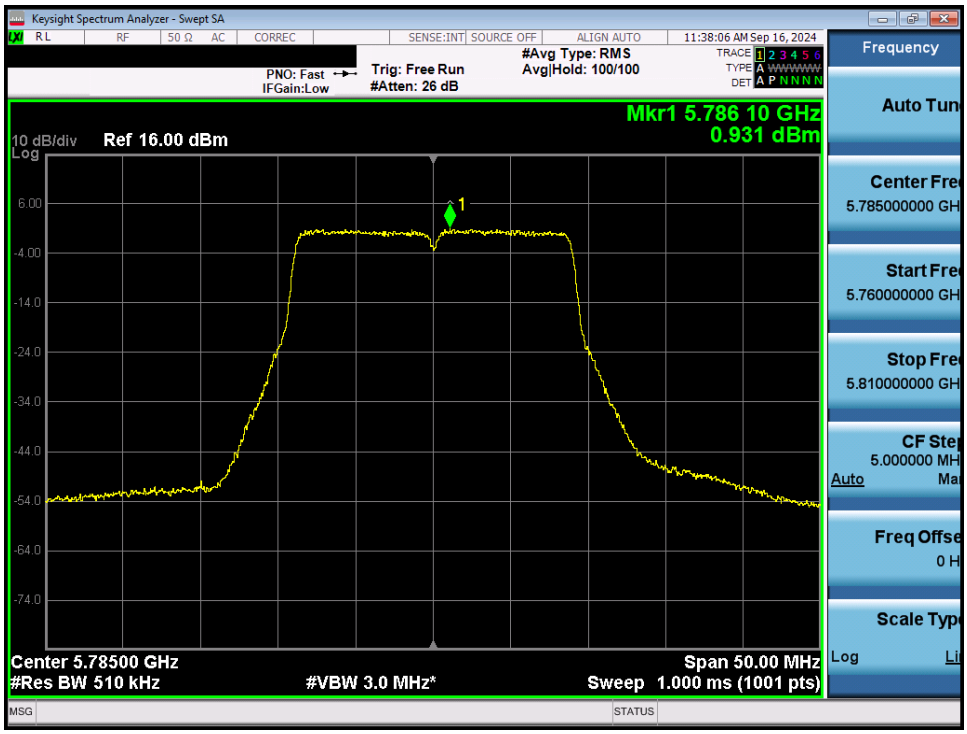
Plot 7-48. Power Spectral Density Plot MIMO ANT1 (80MHz 802.11be (20MHz Puncture) (UNII Band 1) – Ch. 42)



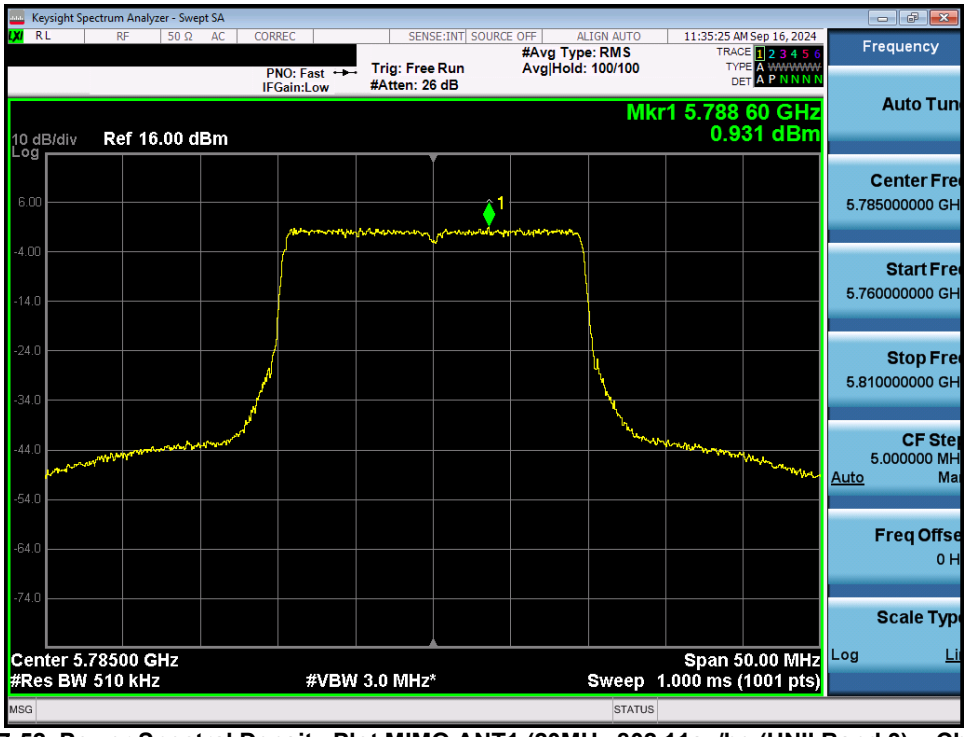
Plot 7-49. Power Spectral Density Plot MIMO ANT1 (160MHz 802.11be (40MHz Puncture) (UNII Band 1/2A) – Ch. 50)



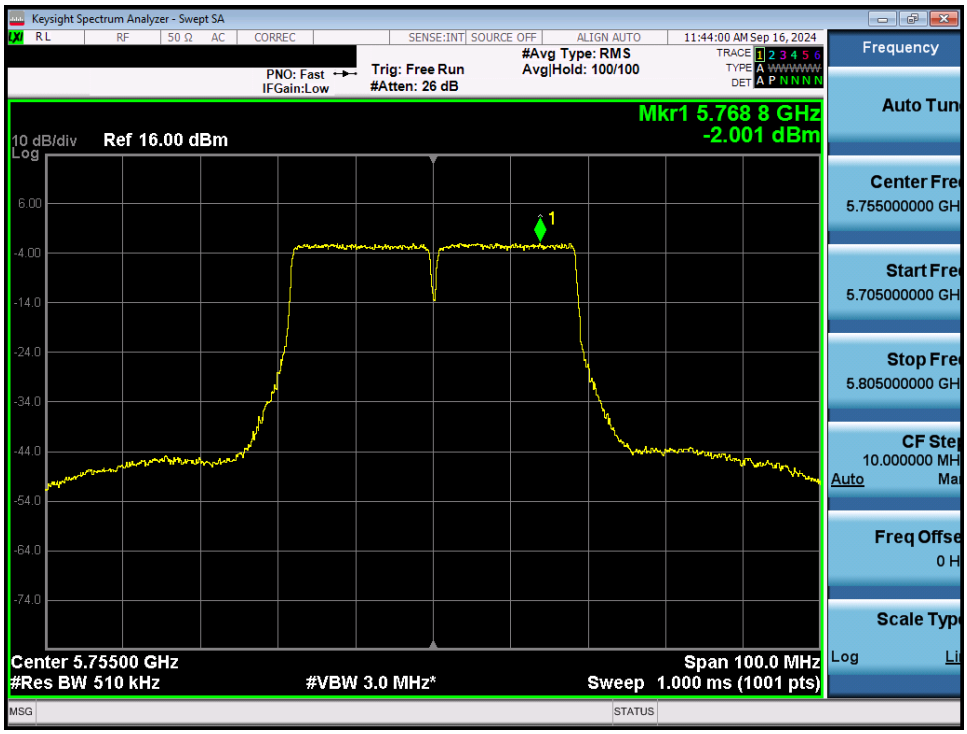
Plot 7-50. Power Spectral Density Plot MIMO ANT1 (20MHz 802.11a (UNII Band 3) – Ch.157)



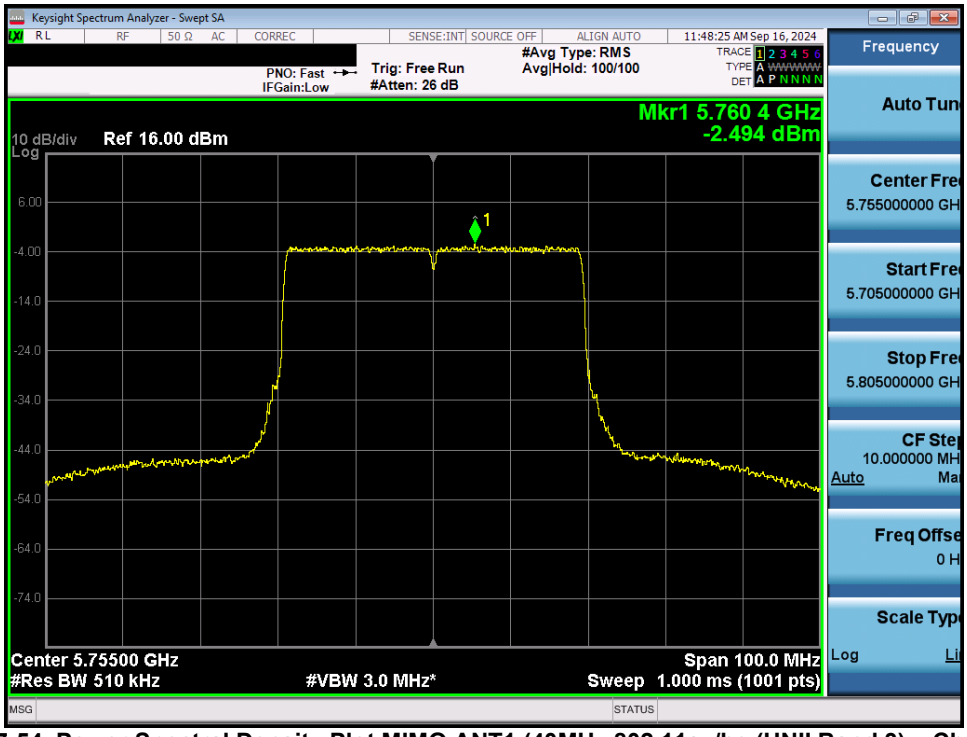
Plot 7-51. Power Spectral Density Plot MIMO ANT1 (20MHz 802.11n (UNII Band 3) – Ch.157)



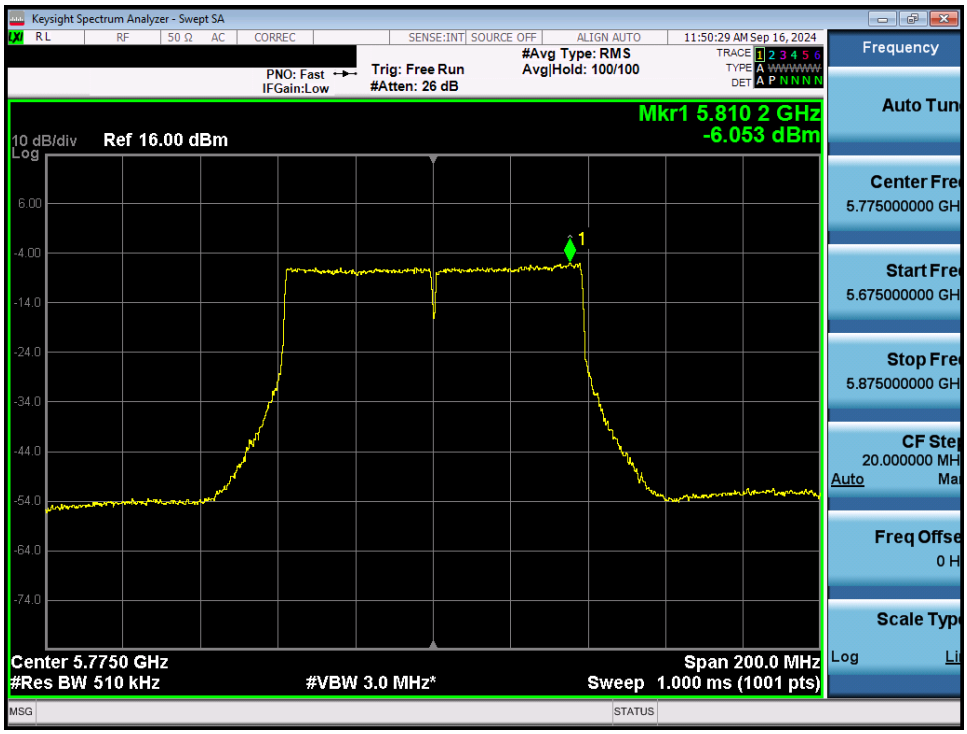
Plot 7-52. Power Spectral Density Plot MIMO ANT1 (20MHz 802.11ax/be (UNII Band 3) – Ch.157)



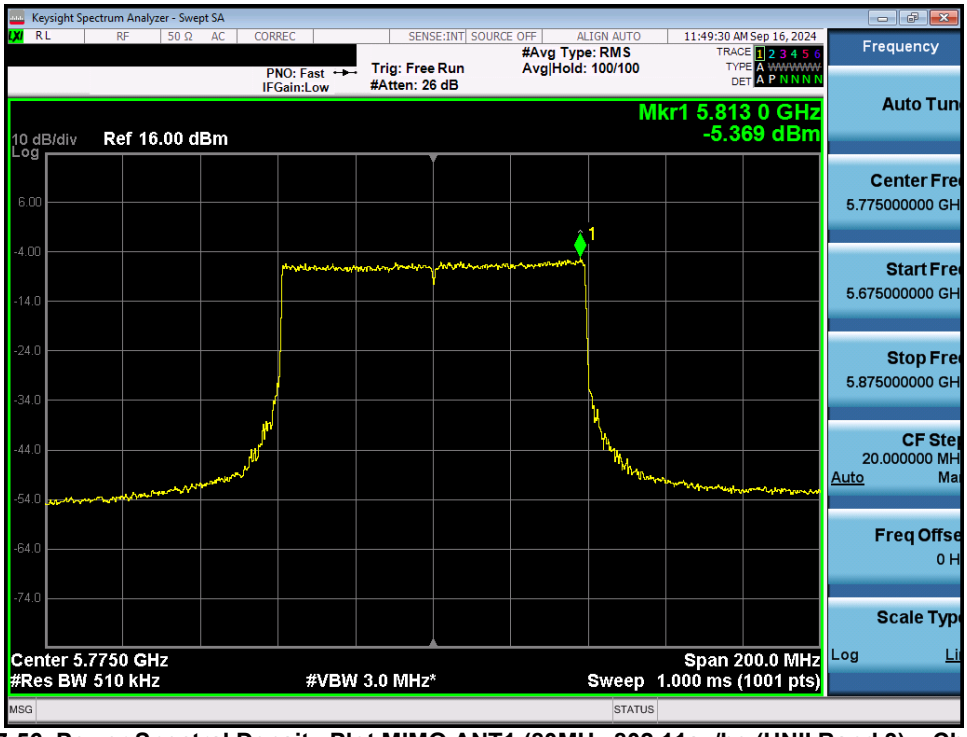
Plot 7-53. Power Spectral Density Plot MIMO ANT1 (40MHz 802.11n (UNII Band 3) – Ch. 151)



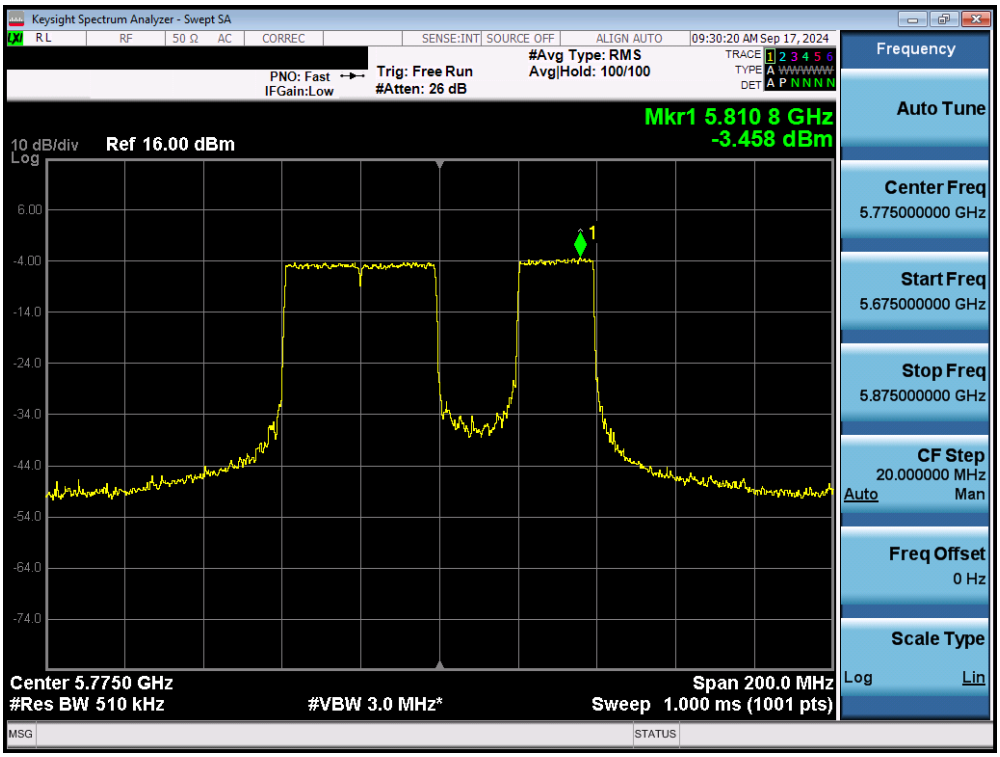
Plot 7-54. Power Spectral Density Plot MIMO ANT1 (40MHz 802.11ax/be (UNII Band 3) – Ch. 151)



Plot 7-55. Power Spectral Density Plot MIMO ANT1 (80MHz 802.11ac (UNII Band 3) – Ch. 155)

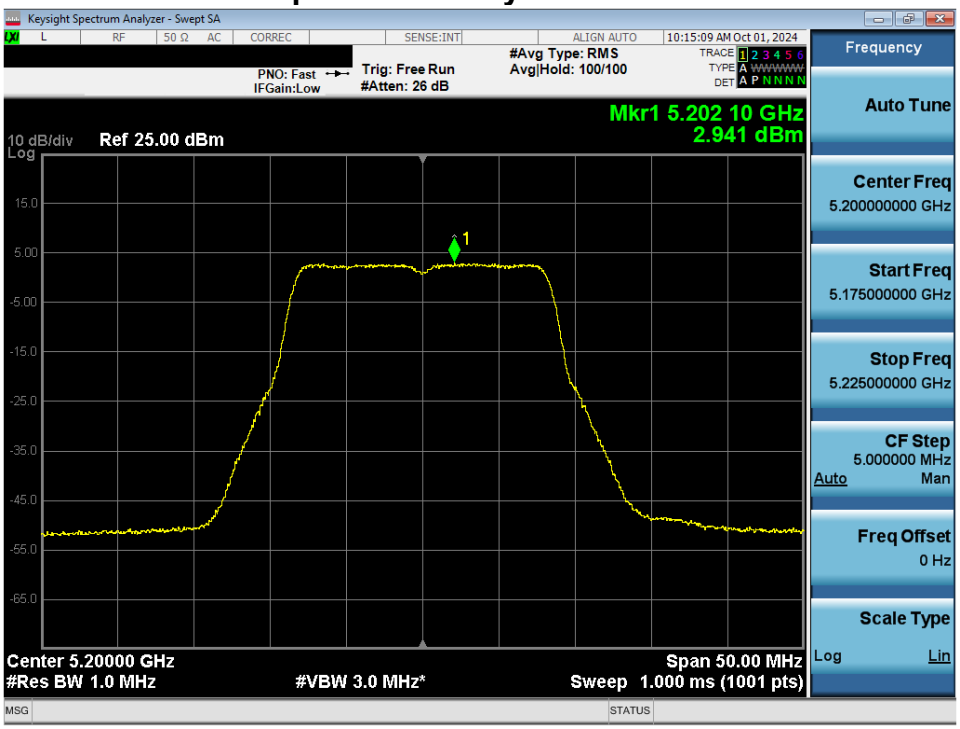


Plot 7-56. Power Spectral Density Plot MIMO ANT1 (80MHz 802.11ax/be (UNII Band 3) – Ch. 155)

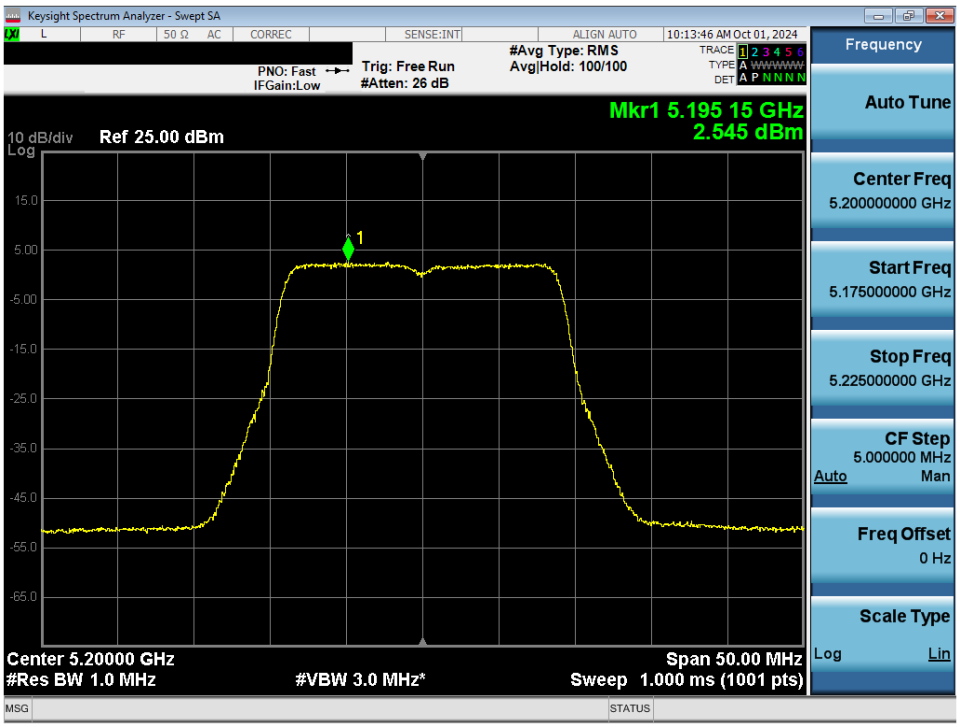


Plot 7-57. Power Spectral Density Plot MIMO ANT1 (80MHz 802.11be (20MHz Puncture) (UNII Band 3) – Ch. 155)

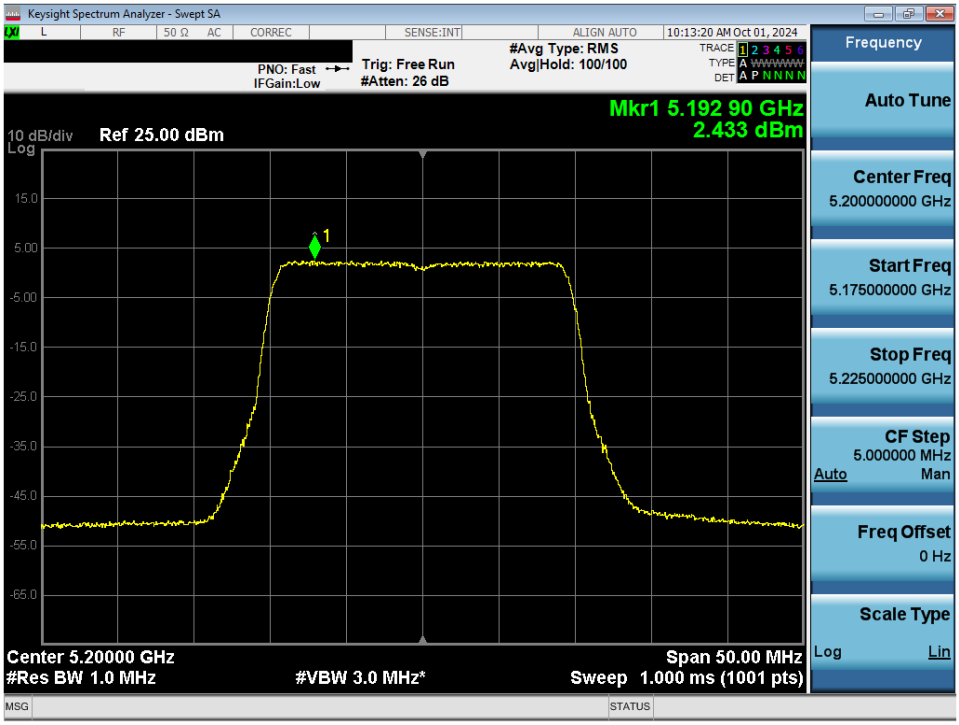
7.5.2 MIMO Antenna-2 Power Spectral Density Measurements



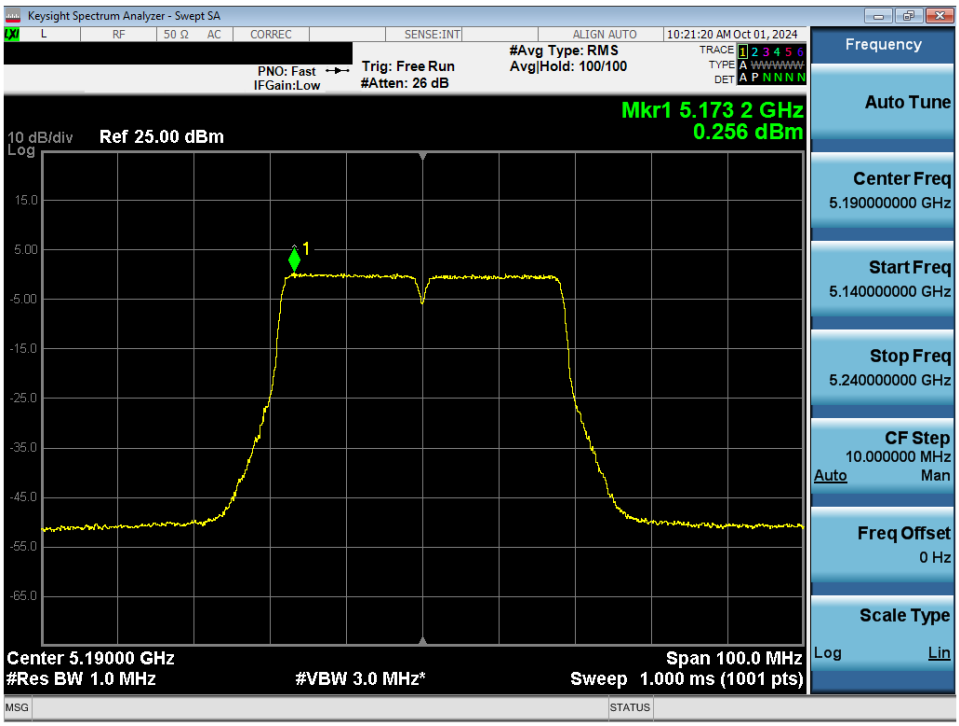
Plot 7-58. Power Spectral Density Plot MIMO ANT2 (20MHz 802.11a (UNII Band 1) – Ch. 40)



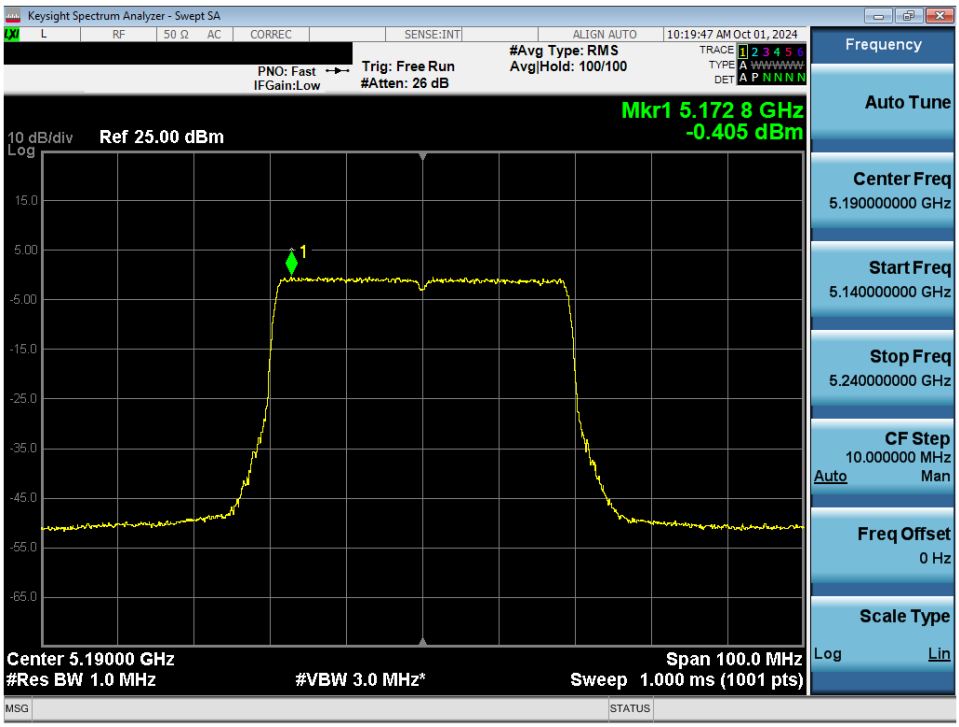
Plot 7-59. Power Spectral Density Plot MIMO ANT2 (20MHz 802.11n (UNII Band 1) – Ch. 40)



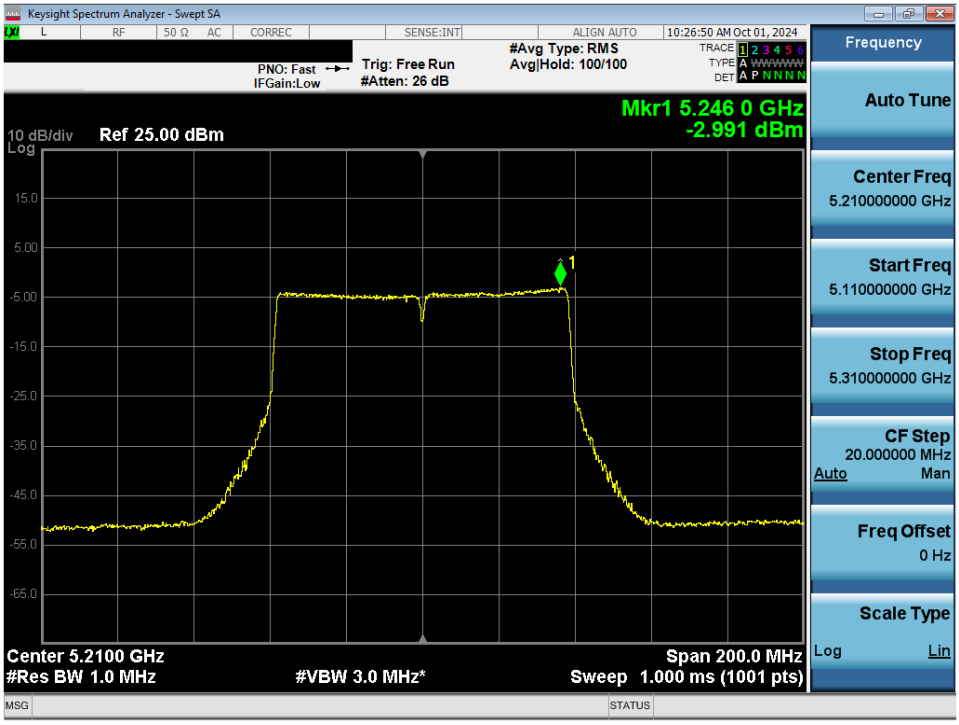
Plot 7-60. Power Spectral Density Plot MIMO ANT2 (20MHz 802.11ax/be (UNII Band 1) – Ch. 40)



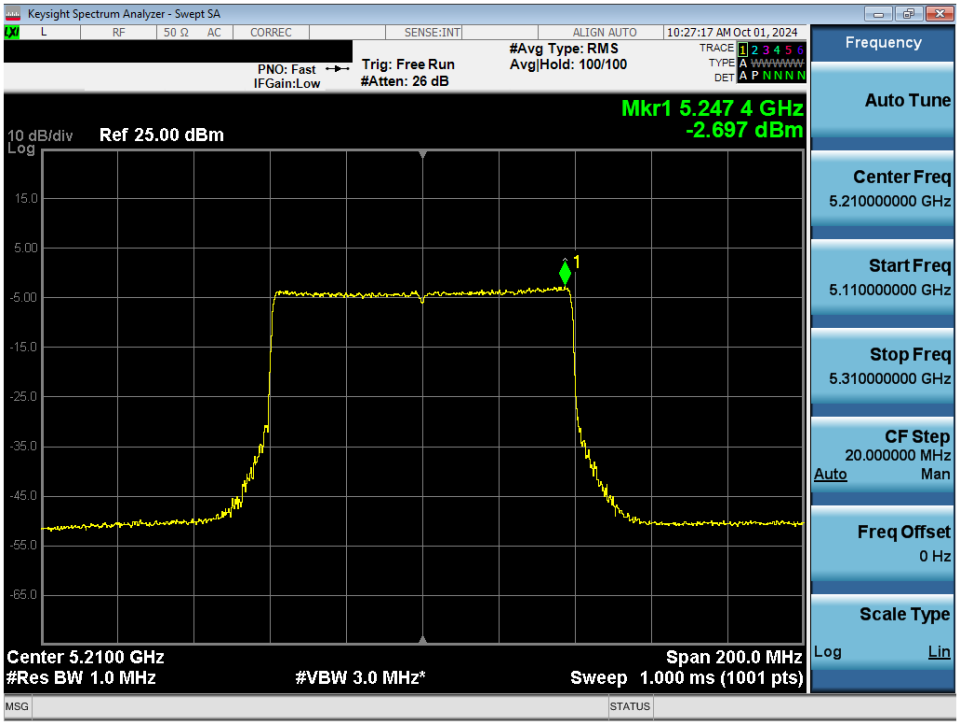
Plot 7-61. Power Spectral Density Plot MIMO ANT2 (40MHz 802.11n (UNII Band 1) – Ch. 38)



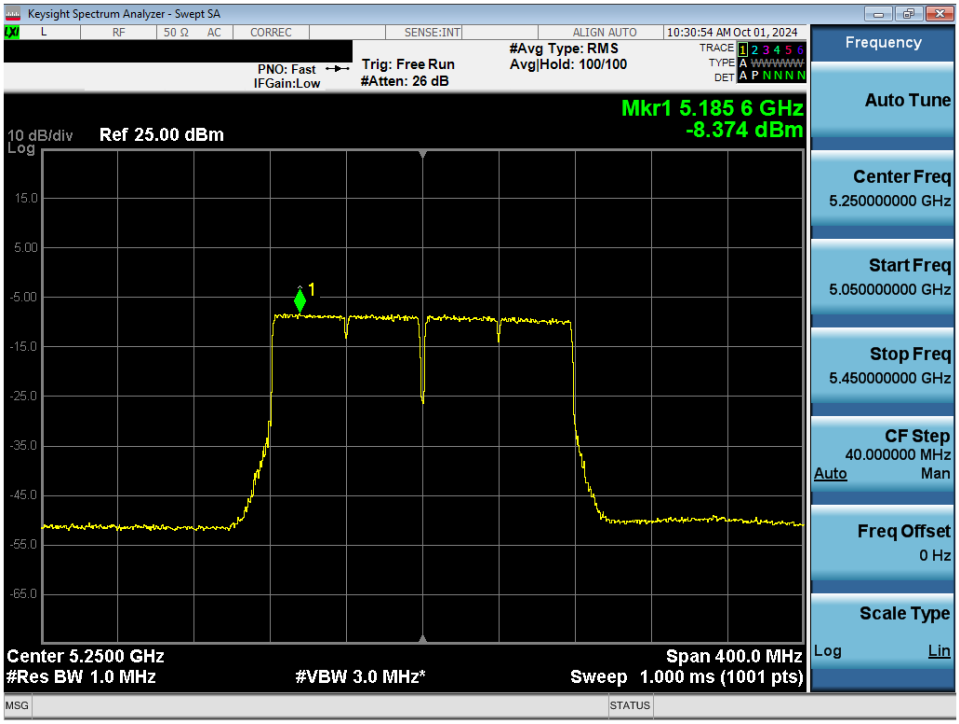
Plot 7-62. Power Spectral Density Plot MIMO ANT2 (40MHz 802.11ax/be (UNII Band 1) – Ch. 38)



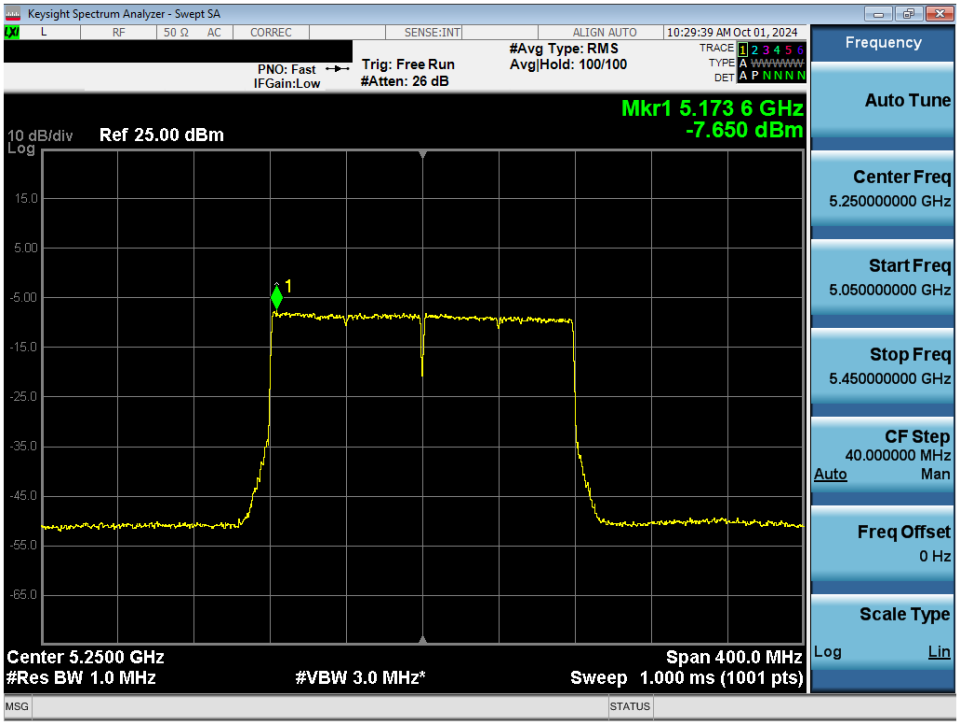
Plot 7-63. Power Spectral Density Plot MIMO ANT2 (80MHz 802.11ac (UNII Band 1) – Ch. 42)



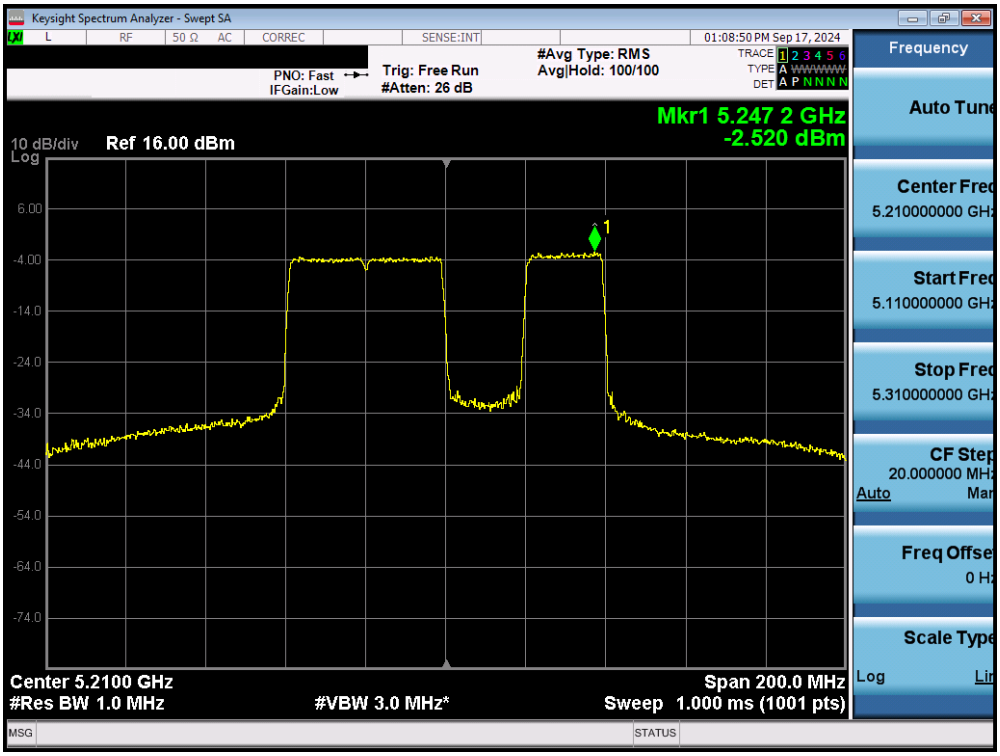
Plot 7-64. Power Spectral Density Plot MIMO ANT2 (80MHz 802.11ax/be (UNII Band 1) – Ch. 42)



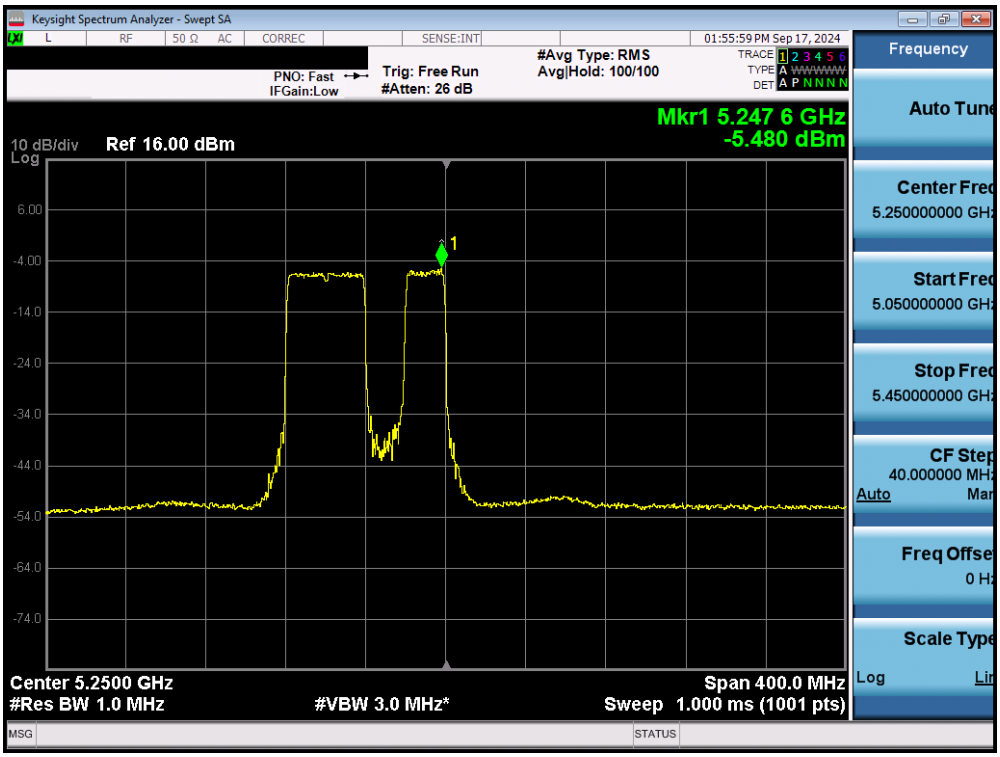
Plot 7-65. Power Spectral Density Plot MIMO ANT2 (160MHz 802.11ac (UNII Band 1/2A) – Ch. 50)



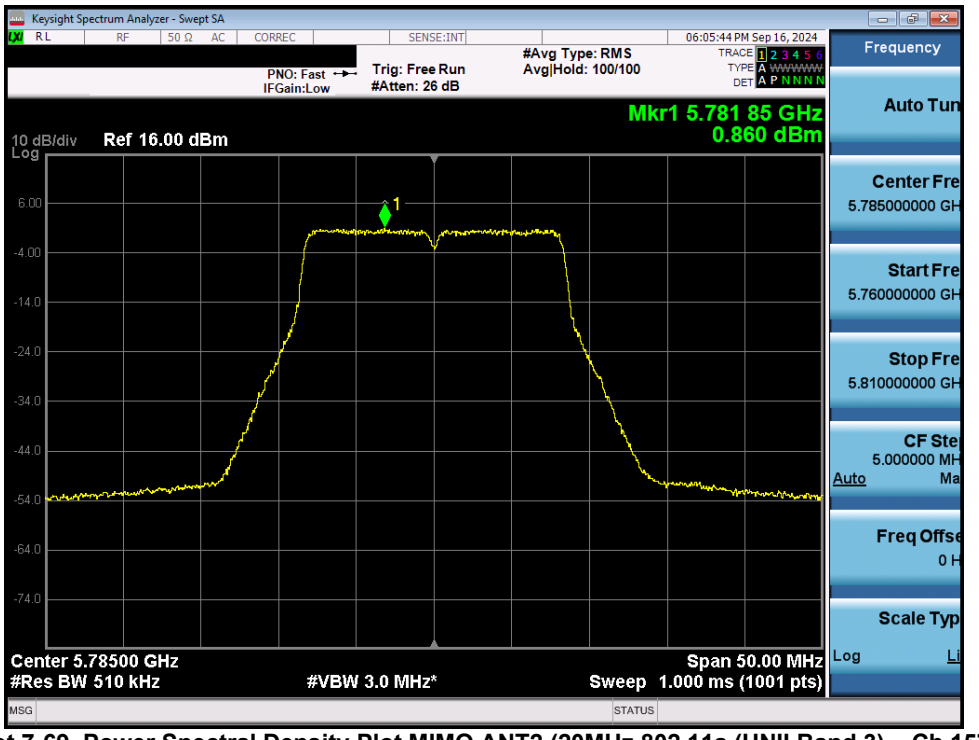
Plot 7-66. Power Spectral Density Plot MIMO ANT2 (160MHz 802.11ax/be (UNII Band 1/2A) – Ch. 50)



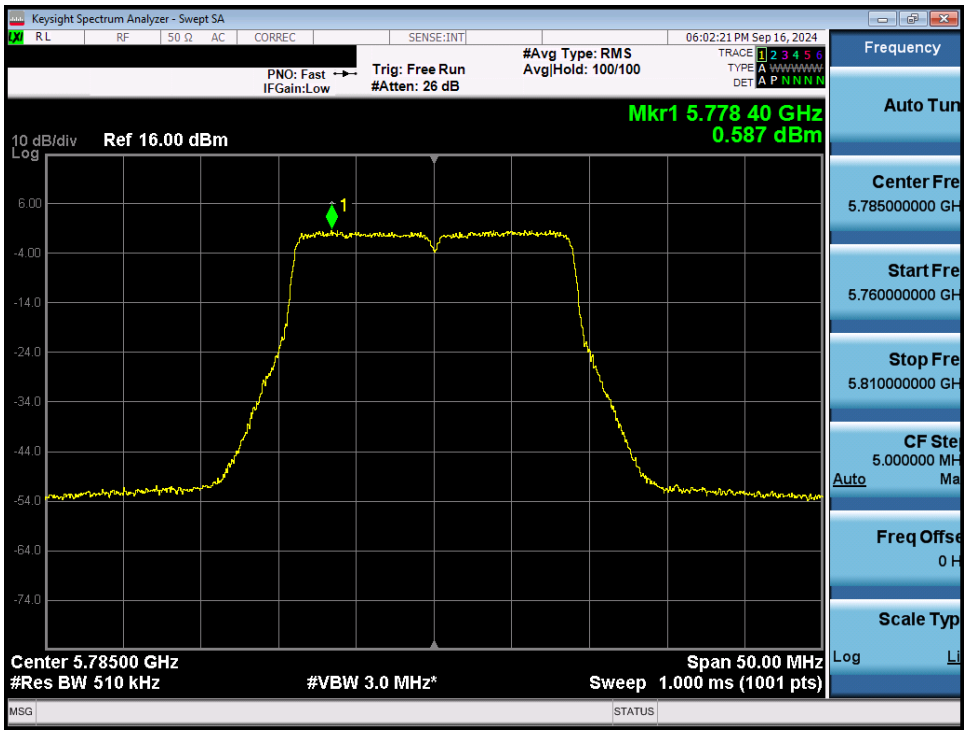
Plot 7-67. Power Spectral Density Plot MIMO ANT2 (80MHz 802.11be (20MHz Puncture) (UNII Band 1) – Ch. 42)



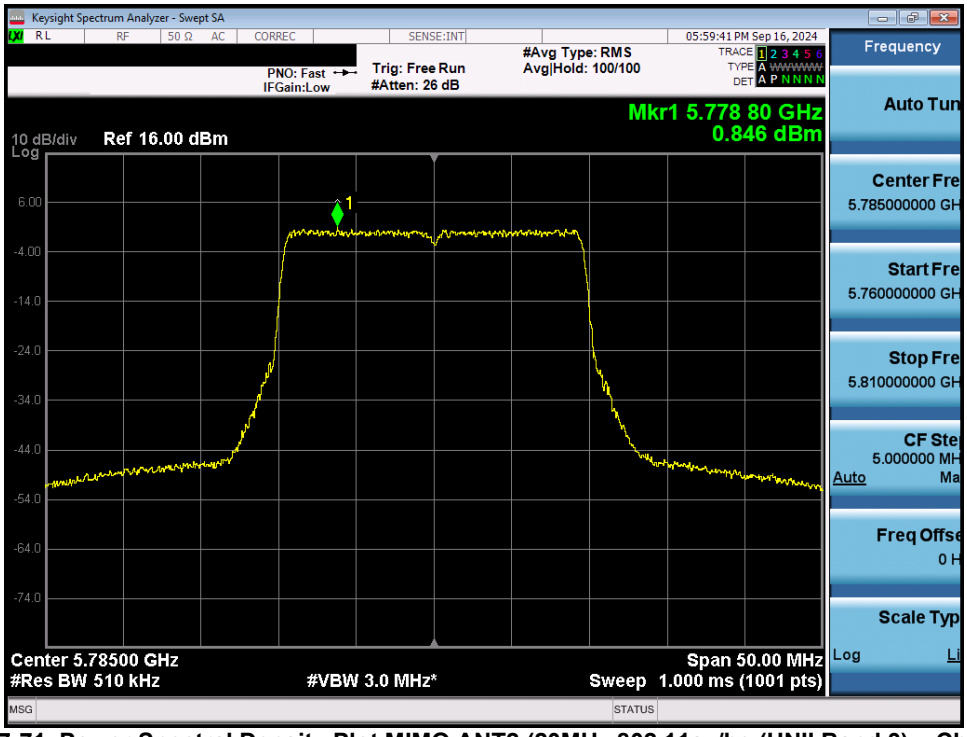
Plot 7-68. Power Spectral Density Plot MIMO ANT2 (160MHz 802.11be (40MHz Puncture) (UNII Band 1/2A) – Ch. 50)



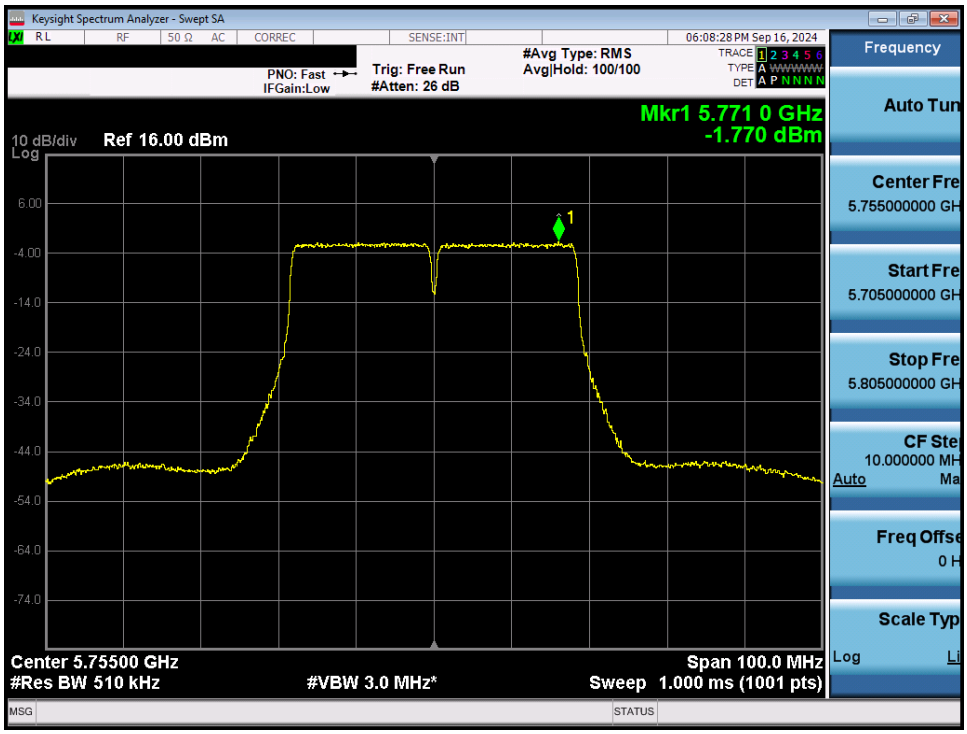
Plot 7-69. Power Spectral Density Plot MIMO ANT2 (20MHz 802.11a (UNII Band 3) – Ch.157)



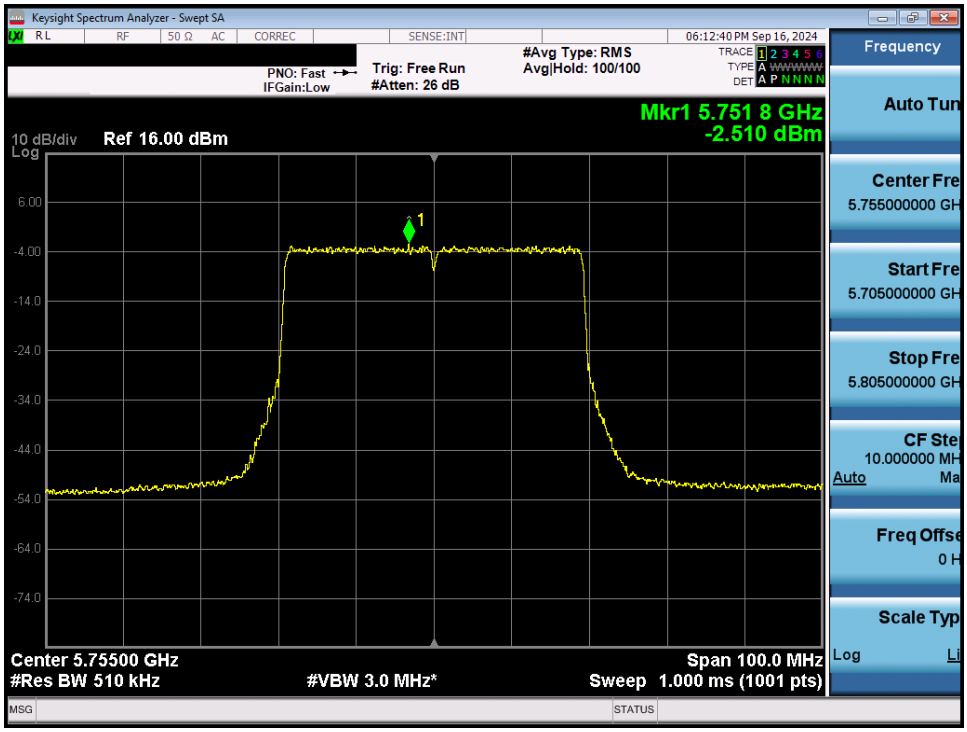
Plot 7-70. Power Spectral Density Plot MIMO ANT2 (20MHz 802.11n (UNII Band 3) – Ch.157)



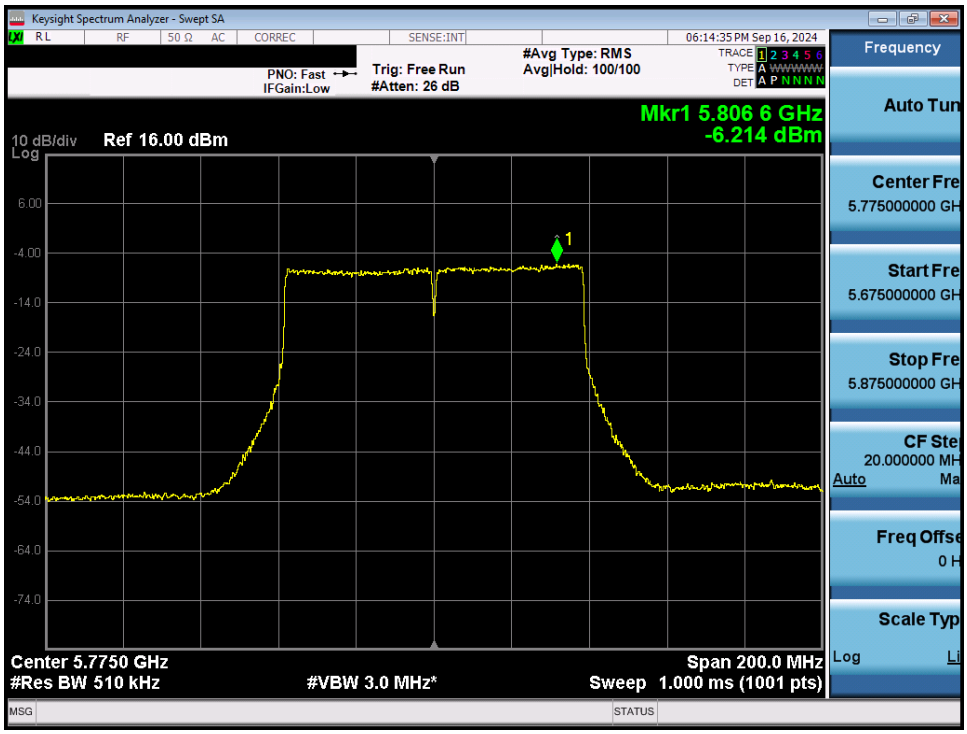
Plot 7-71. Power Spectral Density Plot MIMO ANT2 (20MHz 802.11ax/be (UNII Band 3) – Ch.157)



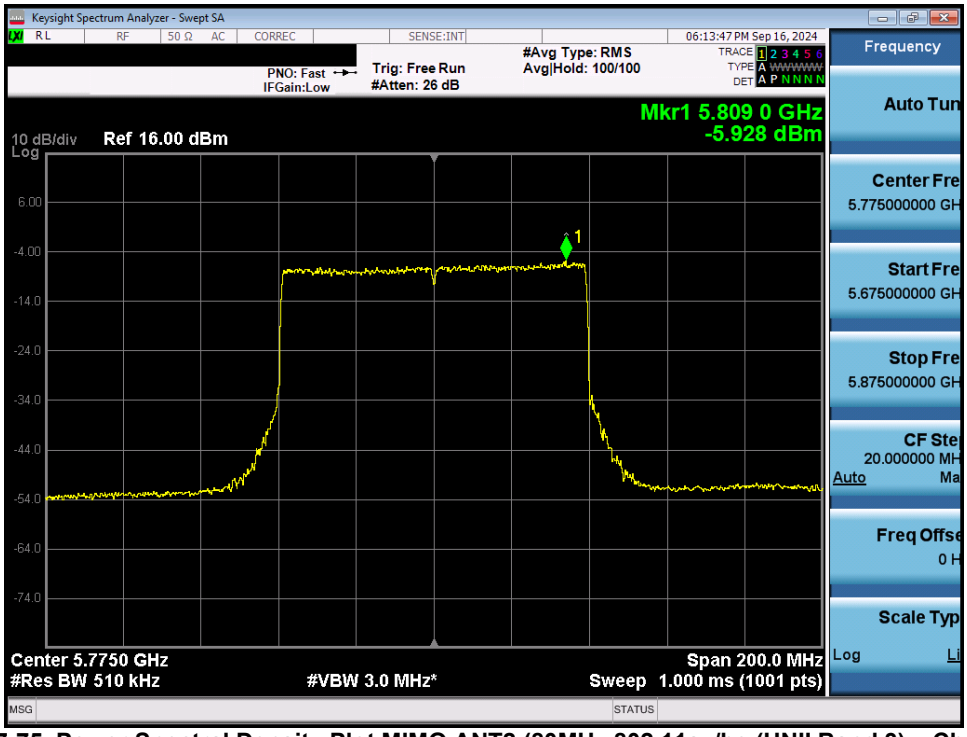
Plot 7-72. Power Spectral Density Plot MIMO ANT2 (40MHz 802.11n (UNII Band 3) – Ch. 151)



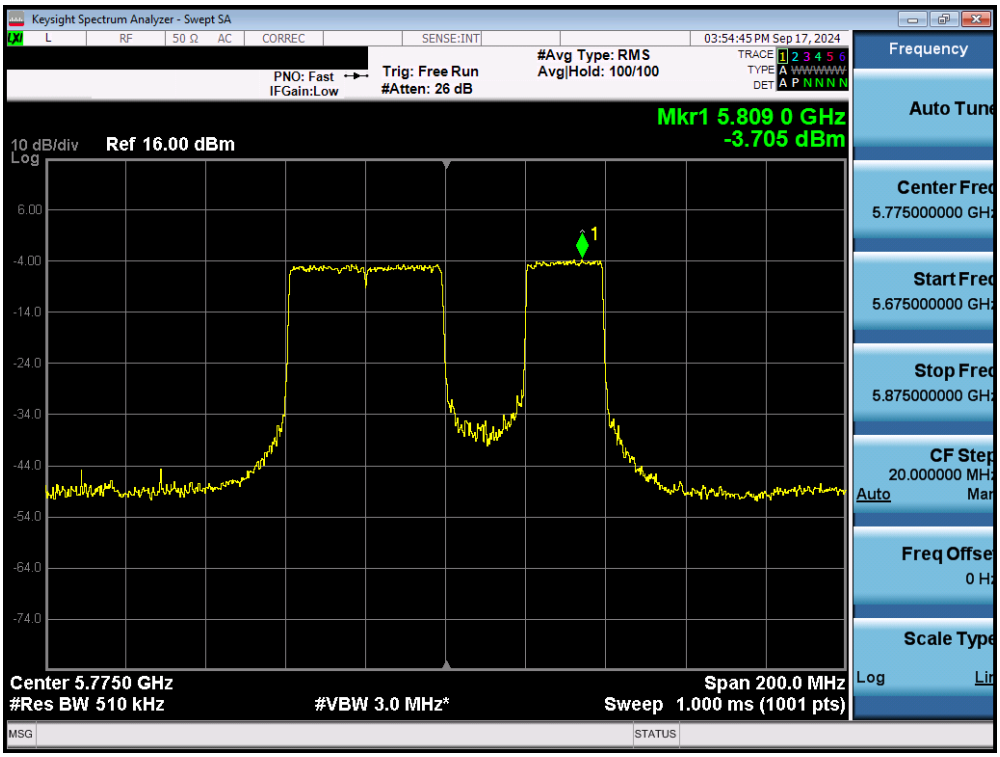
Plot 7-73. Power Spectral Density Plot MIMO ANT2 (40MHz 802.11ax/be (UNII Band 3) – Ch. 151)



Plot 7-74. Power Spectral Density Plot MIMO ANT2 (80MHz 802.11ac (UNII Band 3) – Ch. 155)



Plot 7-75. Power Spectral Density Plot MIMO ANT2 (80MHz 802.11ax/be (UNII Band 3) – Ch. 155)



Plot 7-76. Power Spectral Density Plot MIMO ANT2 (80MHz 802.11be (20MHz Puncture) (UNII Band 3) – Ch. 155)

Note:

Per ANSI C63.10-2013 Section 14.3.2.2 and KDB 662911 v02r01 Section E)2), the power spectral density at Antenna-1 and Antenna-2 were first measured separately as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

Sample MIMO Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average conducted power spectral density was measured to be 7.10 dBm for Antenna 1 and 7.14 dBm for Antenna 2.

Antenna 1 + Antenna 2 = MIMO

(7.10 dBm + 7.14 dBm) = (5.129 mW + 5.176 mW) = 10.305 mW = 10.13 dBm

7.6 Radiated Emission Measurements

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna 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. All channels, modes, and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst-case emissions are reported in this section.

For transmitters operating in the 5.15-5.25 GHz and 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of −27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

For transmitters operating in the 5.850 – 5.895 GHz band: all emissions at or above 5.895GHz shall not exceed an e.i.r.p. of -5dBm/MHz and shall decrease linearly up to an e.i.r.p. of -27dBm/MHz at or above 5.925GHz, and all emissions below 5.725 GHz shall not exceed an e.i.r.p. of -27dBm/MHz at 5.65 GHz increasing linearly to 10dBm/MHz at 5.7GHz and from 5.7GHz increasing linearly to a level of 15.6dMb/MHz at 5.72GHz, and from 5.72GHz increasing linearly to a level of 27dBm/MHz at 5.725GHz.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 6 of RSS-Gen (8.10) must not exceed the limits shown in the table below per FCC §15.209 and RSS-Gen (8.9).

Frequency	Field Strength [μV/m]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400\F (kHz)	300
0.490 – 1.705 MHz	24000\F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 7-54. Radiated Limits

Test Procedures Used

ANSI C63.10-2013 – Sections 12.7.7.2, 12.7.6, 12.7.5 (Radiated Spurious Emissions)
ANSI C63.10-2013 – Section 12.7.4.4 (Band Edge Measurements)

Test Settings – Above 1GHz

Average Field Strength Measurements (Method AD – Average Detection)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be ≥ 2 x span\\RBW)
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize.

Test Settings – Below 1GHz

Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize.

Test Setup

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

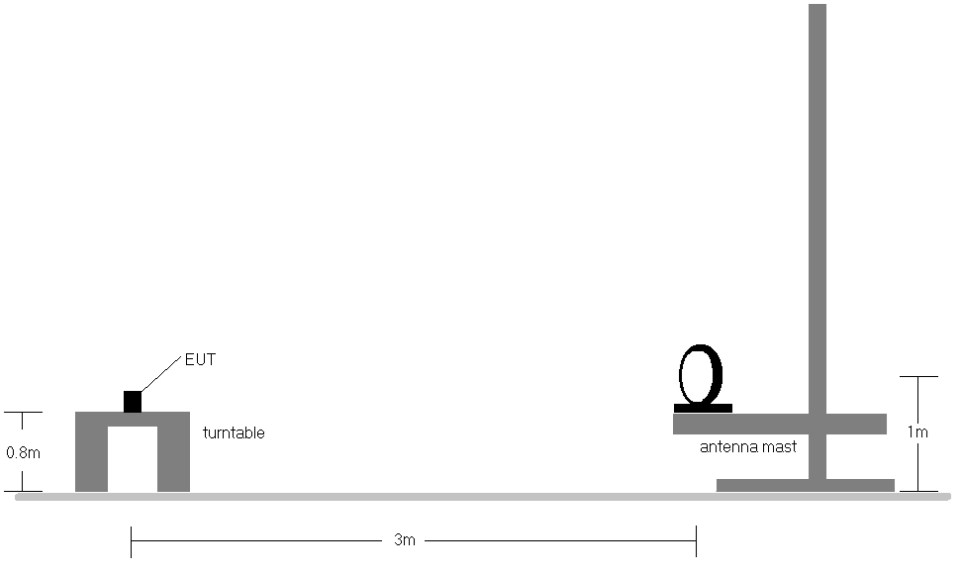


Figure 7-5. Radiated Test Setup < 30MHz

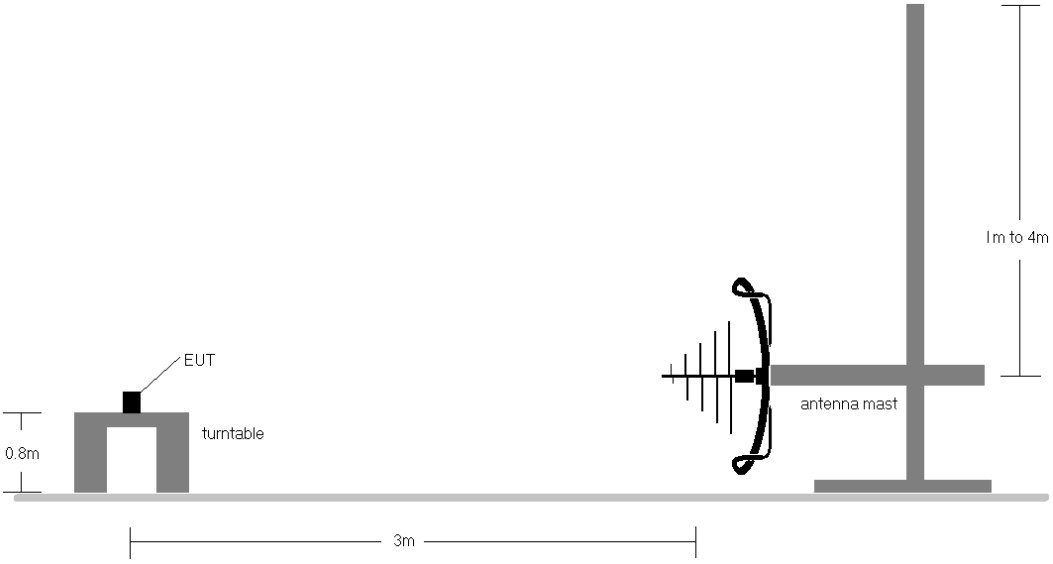


Figure 7-6. Radiated Test Setup < 1GHz

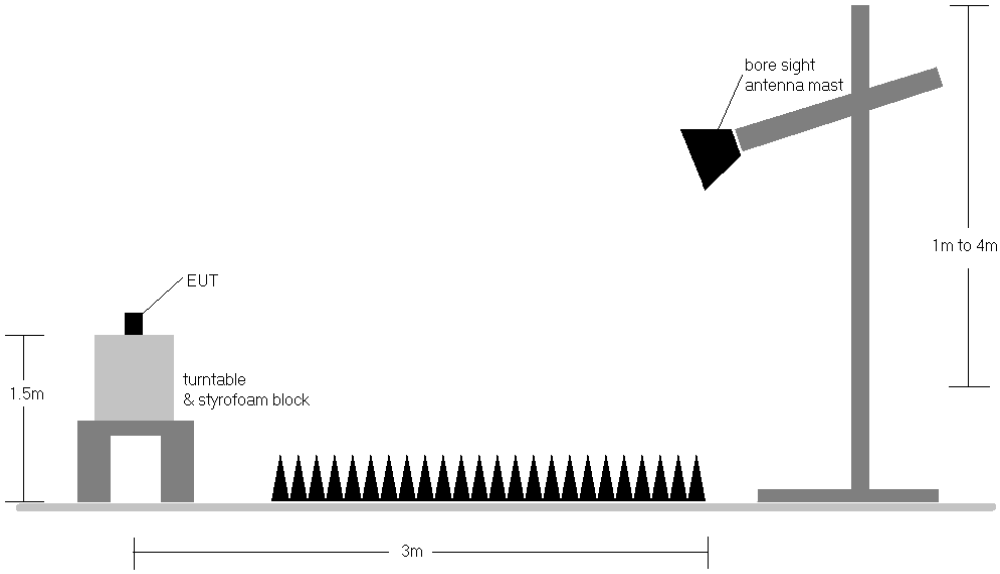


Figure 7-7. Radiated Test Setup > 1GHz

Test Notes

1. All spurious emissions lying in restricted bands specified in §15.205 are below the limits shown in §15.209. All spurious emissions that do not lie in a restricted band are subject to an average limit of -27dBm/MHz. At 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
2. All spurious emissions that do not lie in a restricted band are subject to a peak limit not to exceed 20dB of the average limit [68.2dBμV/m]. If a peak measurement passes the average limit, it was determined no further investigation is necessary.
3. The antenna is manipulated through typical positions, polarity, and length during the tests. The EUT is manipulated through three orthogonal planes.
4. This unit was tested with an external battery pack (Model: EB-P3400)
5. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported, however emissions whose levels were not within 20dB of the respective limits were not reported.
6. Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1-meter test distance with the application of a distance correction factor.
7. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section.
8. The "-" shown in the following RSE tables are used to denote a noise floor measurement.
9. In the case where a peak-detector measurement passed the given RMS limit it was determined sufficient to demonstrate compliance.
10. The results recorded using the broadband antenna are known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.

Sample Calculations

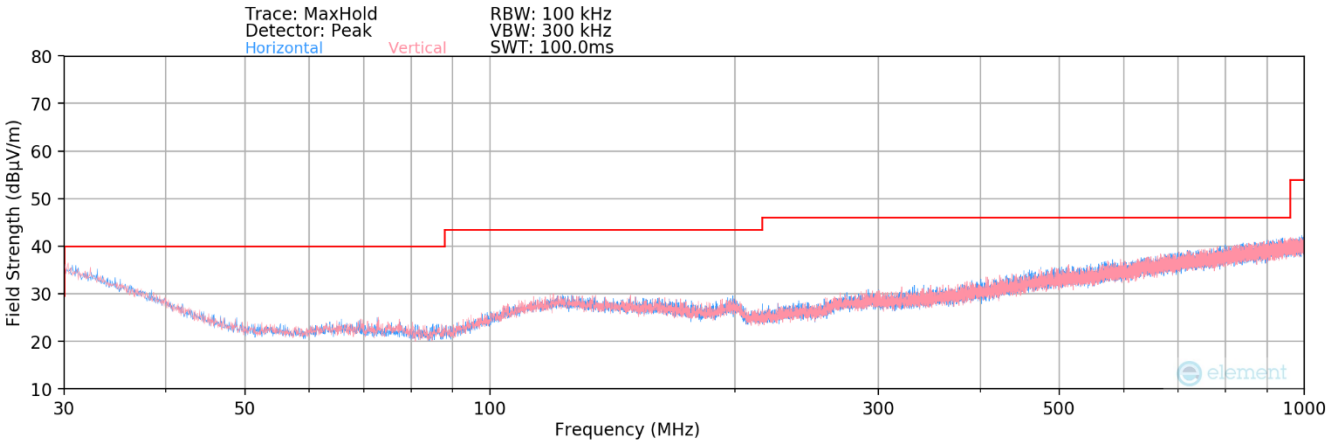
Determining Spurious Emissions Levels

- Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$
- AFCL $_{[dB/m]}$ = Antenna Factor $_{[dB/m]}$ + Cable Loss $_{[dB]}$
- Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$

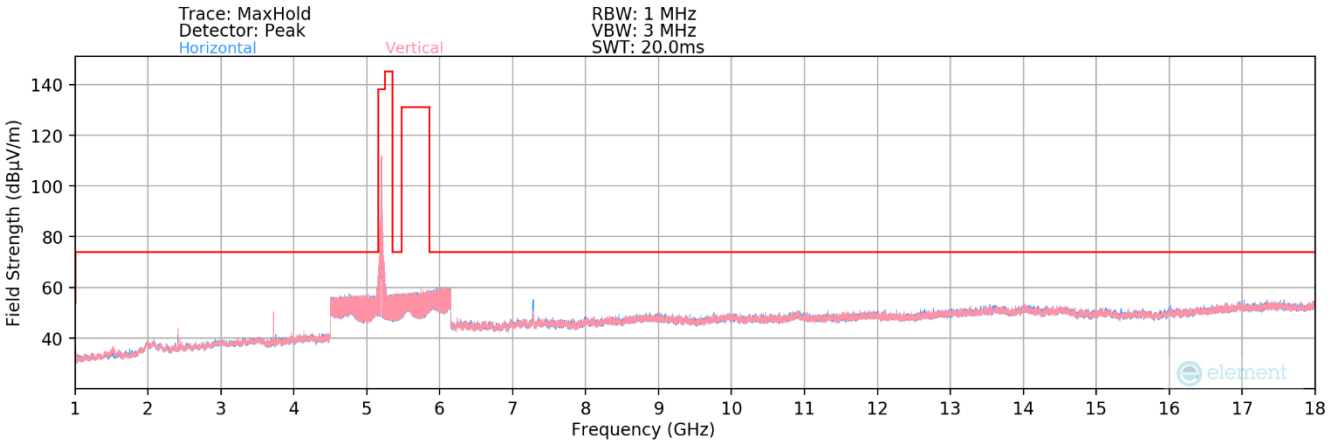
Radiated Band Edge Measurement Offset

- The amplitude offset shown in the radiated restricted band edge plots was calculated using the formula: Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gai

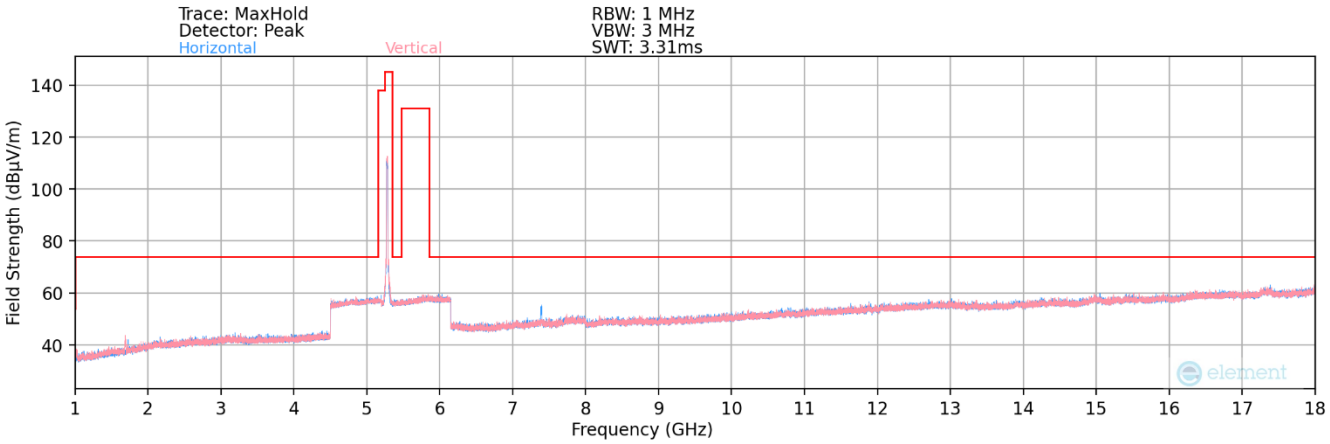
7.6.1 MIMO Radiated Spurious Emission Measurements



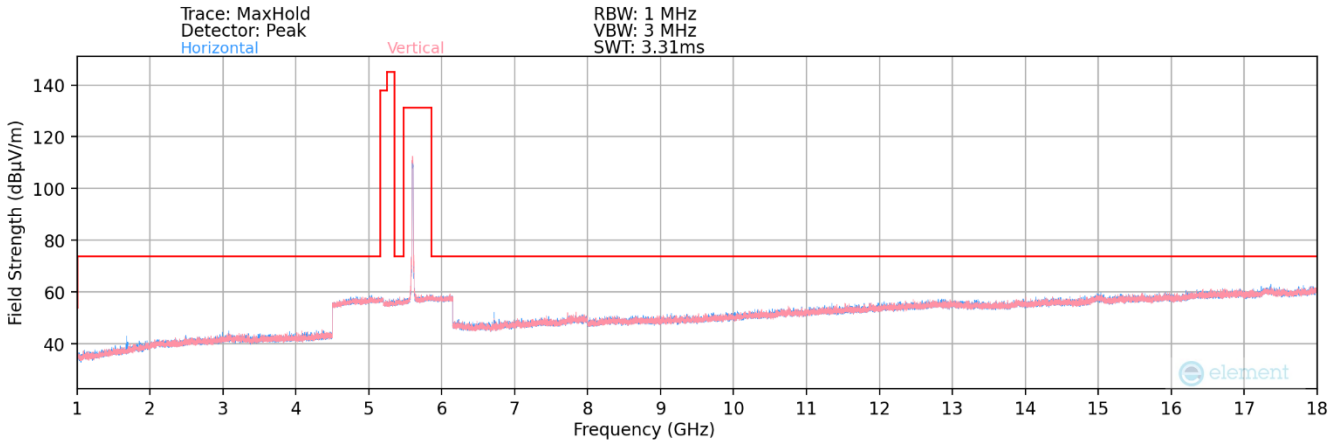
Plot 7-77. Radiated Spurious Plot below 1GHz MIMO (802.11a)



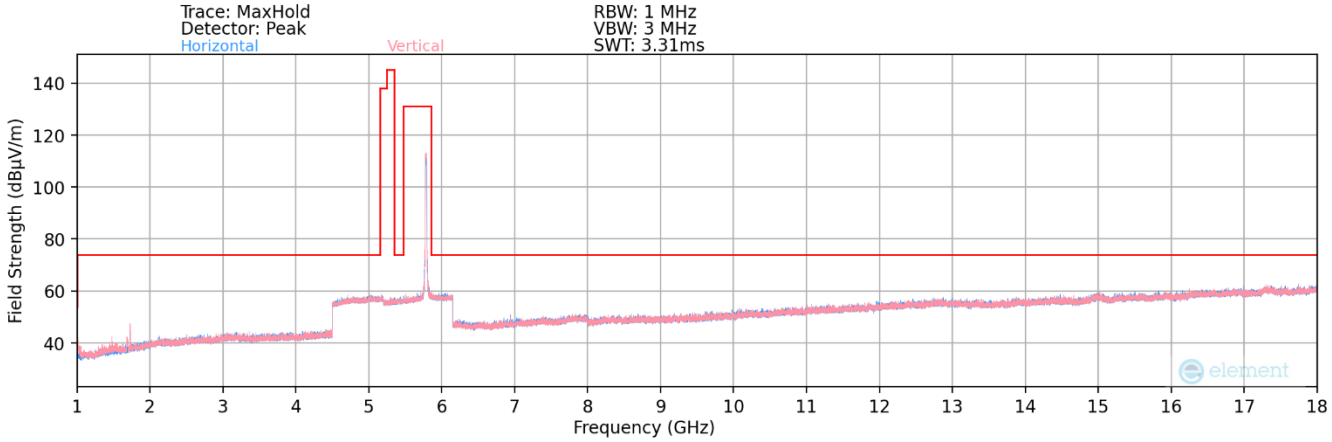
Plot 7-78. Radiated Spurious Plot above 1GHz MIMO (802.11ax – UNII Band 1 Ch. 40)



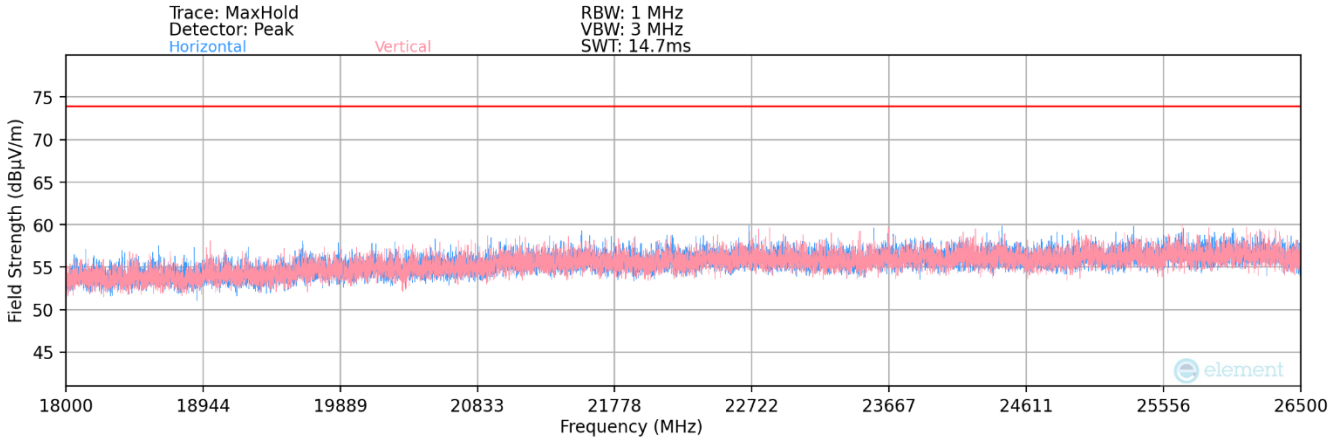
Plot 7-79. Radiated Spurious Plot above 1GHz MIMO (802.11ax – UNII Band 2A Ch. 56)



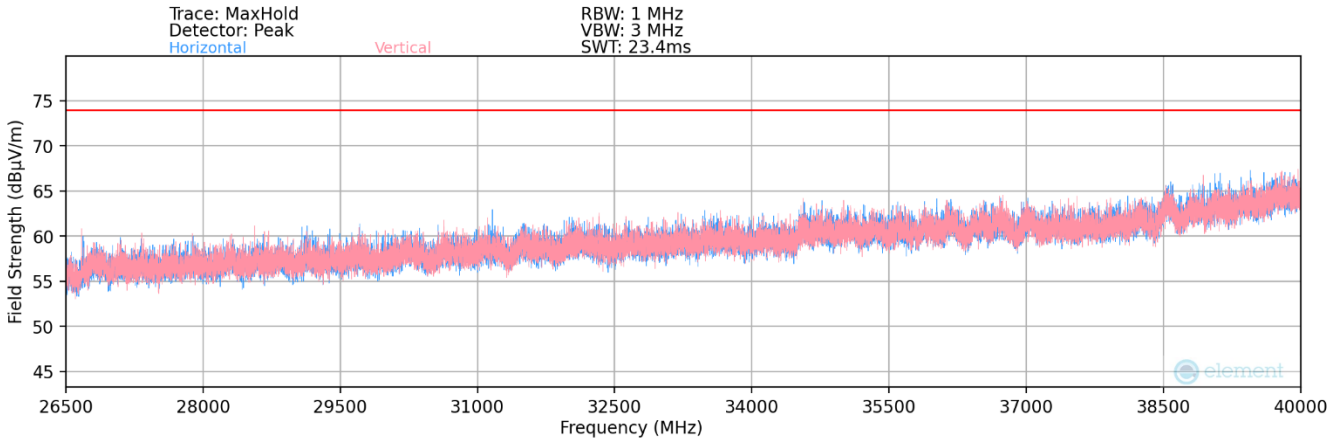
Plot 7-80. Radiated Spurious Plot above 1GHz MIMO (802.11ax – UNII Band 2C Ch. 120)



Plot 7-81. Radiated Spurious Plot above 1GHz MIMO (802.11ax – UNII Band 3 Ch. 157)



Plot 7-82. Radiated Spurious Plot 18GHz – 26.5GHz MIMO (802.11ax)



Plot 7-83. Radiated Spurious Plot 26.5GHz – 40GHz MIMO (802.11ax)