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MEASUREMENT REPORT
FCC Part 15.407 802.11be WiFi 6GHz (OFDMA)

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

Date of Testing:
12/15/2023 – 1/11/2024
Test Report Issue Date:
1/18/2024
Test Site/Location:
Element lab., Gyeonggi-do, South Korea
Test Report Serial No.:
1M2312180128-07.A3L

FCC ID:	**A3LSMX910**
IC:	**649E-SMX910**
APPLICANT:	**Samsung Electronics Co., Ltd.**

Application Type:	Class II Permissive Change
Model/HVIN:	SM-X910
EUT Type:	Portable Tablet
Frequency Range:	5935 – 7115MHz
Modulation Type:	OFDMA
FCC Classification:	15E 6GHz Low Power Dual Client (6CD)
FCC Rule Part(s):	Part 15 Subpart E (15.407)
ISED Specification:	RSS-248 Issue 2
Test Procedure(s):	ANSI C63.10-2013, KDB 987594 D02 v01r01,
Class II Permissive Change:	Enabling WiFi 7 functionality via software
Original Grant Date:	06/08/2023

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.

Prepared by

Reviewed by

TABLE OF CONTENTS

Channel Bandwidth [MHz]	IEEE Mode	UNII Band	Tx Frequency [MHz]	MIMO	
				Max. Power [mW]	Max. Power [dBm]
20	802.11be	5	5935 - 6415	15.00	11.76
	802.11be	6	6435 - 6515	13.52	11.31
	802.11be	7	6535 - 6875	13.55	11.32
	802.11be	8	6895 - 7115	10.99	10.41
160	802.11be	5	6025 - 6345	45.60	16.59
	802.11be	6	6505	41.40	16.17
	802.11be	7	6665 - 6825	45.71	16.60
	802.11be	8	6985	43.05	16.34
320	802.11be	5	6105 - 6265	46.88	16.71
	802.11be	6	6425	46.77	16.70
	802.11be	7	6585 - 6745	47.64	16.78
	802.11be	8	6905	49.43	16.94

EUT Overview – Conducted Power

Note:

The powers in the table above are maximum conducted powers. The maximum EIRP's are determined from the relevant tables in Section 7.3 of this report.

1 INTRODUCTION

1.1 Scope

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

1.2 Element Test Location

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

1.3 Test Facility / Accreditations

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

- Element Materials Technology Suwon, Ltd. is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation(A2LA) with Certificate number 2041.04 for Specific Absorption Rate (SAR), and Electromagnetic Compatibility (EMC) & Telecommunications testing for FCC and Innovation, Science, and Economic Development Canada rules.

- Element Materials Technology Suwon, Ltd. facility is accredited, designated, and recognized in accordance with the provision of Radio Wave Act and International Standard ISO/IEC 17025:2017 under the National Radio Research Agency.

  - Designation Number / CABID: KR0169
  - Test Firm Registration Number of FCC: 417945
  - Test Firm Registration Number of ISED: 26168

2 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Electronics Co., Ltd. Portable Tablet FCC: A3LSMX910, IC: 649E-SMX910**. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter while operating in the 6GHz band.

Test Device Serial No.: 0150M, 4628G, 3657M

2.2 Device Capabilities

This device contains the following capabilities:

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

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

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

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

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

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

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

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

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

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

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

Notes:

1. 6GHz NII operation is possible in 20MHz, 40MHz, 80MHz, 160MHz, and 320MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section B)2)b) of ANSI C63.10-2013. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Band	Bandwidth	Tone Type	Tone Size	MIMO (1+2)	
				Duty Cycle [%]	Radiated DCCF [dB]
6GHz	20MHz	MRU	52+26T	99.05	N/A
			106+26T	99.40	N/A
	40MHz	MRU	52+26T	99.28	N/A
			106+26T	99.21	N/A
	80MHz	MRU	52+26T	98.94	N/A
			106+26T	99.16	N/A
			484+242T	99.34	N/A
	160MHz	MRU	52+26T	99.32	N/A
			106+26T	99.24	N/A
			484+242T	99.31	N/A
			996+484T	99.23	N/A
			966+484+242T	99.62	N/A
	320MHz	RU	26T	98.11	N/A
			52T	98.70	N/A
			106T	99.32	N/A
			242T	99.22	N/A
			484T	99.26	N/A
			996T	99.19	N/A
			2x996T	99.16	N/A
			4x996T	98.03	N/A
		MRU	52+26T	99.28	N/A
			106+26T	99.08	N/A
			484+242T	98.97	N/A
			996+484T	98.90	N/A
			966+484+242T	99.58	N/A
			2x996+484T	99.20	N/A
			3x996T	99.04	N/A
			3x996+484T	98.91	N/A

Table 2-6. Measured Duty Cycles

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

WiFi Configurations		SISO		CDD		SDM	
		ANT1	ANT2	ANT1	ANT2	ANT1	ANT2
	11ax	✓	✓	✓	✓	✓	✓
	11be	✓	✓	✓	✓	✓	✓

Table 2-7. Frequency / Channel Operations

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

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

MCS Index		Spatial Stream	OFDMA (802.11ax/be)																					OFDMA (802.11be)		
			26T			52T			106T			242T			484T			996T			2x996T			4x996T		
HE	EHT		0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI
0	0	1	0.9	0.8	0.8	1.8	1.7	1.5	3.8	3.5	3.2	8.6	8.1	7.3	17.2	16.3	14.6	36	34	30.6	72.1	68.1	61.3	144.1	136.1	122.5
1	1	1	1.8	1.7	1.5	3.5	3.3	3	7.5	7.1	6.4	17.2	16.3	14.6	34.4	32.5	29.3	72.1	68.1	61.3	144.1	136.1	122.5	288.2	272.2	245
2	2	1	2.6	2.5	2.3	5.3	5	4.5	11.3	10.6	9.6	25.8	24.4	21.9	51.6	48.8	43.9	108.1	102.1	91.9	216.2	204.2	183.8	432.4	408.3	367.5
3	3	1	3.5	3.3	3	7.1	6.7	6	15	14.2	12.8	34.4	32.5	29.3	68.8	65	58.5	144.1	136.1	122.5	288.2	272.2	245	576.5	544.4	490
4	4	1	5.3	5	4.5	10.6	10	9	22.5	21.3	19.1	51.6	48.8	43.9	103.2	97.5	87.8	216.2	204.2	183.8	432.4	408.3	367.5	864.7	816.7	735
5	5	1	7.1	6.7	6	14.1	13.3	12	30	28.3	25.5	68.8	65	58.5	137.6	130	117	288.2	272.2	245	576.5	544.4	490	1152.9	1088.9	980
6	6	1	7.9	7.5	6.8	15.9	15	13.5	33.8	31.9	28.7	77.4	73.1	65.8	154.9	146.3	131.6	324.3	306.3	275.6	648.5	612.5	551.3	1297.1	1225	1102.5
7	7	1	8.8	8.3	7.5	17.6	16.7	15	37.5	35.4	31.9	86	81.3	73.1	172.1	162.5	146.3	360.3	340.3	306.3	720.6	680.6	612.5	1441.2	1361.1	1225
8	8	1	10.6	10	9	21.2	20	18	45	42.5	38.3	103.2	97.5	87.8	206.5	195	175.5	432.4	408.3	367.5	864.7	816.7	735	1729.4	1633.3	1470
9	9	1	11.8	11.1	10	23.5	22.2	20	50	47.2	42.5	114.7	108.3	97.5	229.4	216.7	195	480.4	453.7	408.3	960.8	907.4	816.7	1921.6	1814.8	1633.3
10	10	1	13.2	12.5	11.3	26.5	25	22.5	56.3	53.1	47.8	129	121.9	109.7	258.1	243.8	219.4	540.4	510.4	459.4	1080.9	1020.8	918.8	2161.8	2041.7	1837.5
11	11	1	14.7	13.9	12.5	29.4	27.8	25	62.5	59	53.1	143.4	135.4	121.9	286.8	270.8	243.8	600.5	567.1	510.4	1201	1134.3	1020.8	2402	2268.5	2041.7
	12	1	15.9	15	13.5	31.8	30	27	67.5	63.8	57.4	154.9	146.3	131.6	309.7	292.5	263.3	648.5	612.5	551.3	1297.1	1225	1102.5	2594.1	2450	2205
	13	1	17.6	16.7	15	35.3	33.3	30	75	70.8	63.8	172.1	162.5	146.3	344.1	325	292.5	720.6	680.6	612.5	1441.2	1361.1	1225	2882.4	2722.2	2450
0	0	2	1.8	1.7	1.5	3.5	3.3	3	7.5	7.1	6.4	17.2	16.3	14.6	34.4	32.5	29.3	72.1	68.1	61.3	144.1	136.1	122.5	288.2	272.2	245
1	1	2	3.5	3.3	3	7.1	6.7	6	15	14.2	12.8	34.4	32.5	29.3	68.8	65	58.5	144.1	136.1	122.5	288.2	272.2	245	576.5	544.4	490
2	2	2	5.3	5	4.5	10.6	10	9	22.5	21.3	19.1	51.6	48.8	43.9	103.2	97.5	87.8	216.2	204.2	183.8	432.4	408.3	367.5	864.7	816.7	735
3	3	2	7.1	6.7	6	14.1	13.3	12	30	28.3	25.5	68.8	65	58.5	137.6	130	117	288.2	272.2	245	576.5	544.4	490	1152.9	1088.9	980
4	4	2	10.6	10	9	21.2	20	18	45	42.5	38.3	103.2	97.5	87.8	206.5	195	175.5	432.4	408.3	367.5	864.7	816.7	735	1729.4	1633.3	1470
5	5	2	14.1	13.3	12	28.2	26.7	24	60	56.7	51	137.6	130	117	275.3	260	234	576.5	544.4	490	1152.9	1088.9	980	2305.9	2177.8	1960
6	6	2	15.9	15	13.5	31.8	30	27	67.5	63.8	57.4	154.9	146.3	131.6	309.7	292.5	263.3	648.5	612.5	551.3	1297.1	1225	1102.5	2594.1	2450	2205
7	7	2	17.6	16.7	15	35.3	33.3	30	75	70.8	63.8	172.1	162.5	146.3	344.1	325	292.5	720.6	680.6	612.5	1441.2	1361.1	1225	2882.4	2722.2	2450
8	8	2	21.2	20	18	42.4	40	36	90	85	76.5	206.5	195	175.5	412.9	390	351	864.7	816.7	735	1729.4	1633.3	1470	3458.8	3266.7	2940
9	9	2	23.5	22.2	20	47.1	44.4	40	100	94.4	85	229.4	216.7	195	458.8	433.3	390	960.8	907.4	816.7	1921.6	1814.8	1633.3	3843.1	3629.6	3266.7
10	10	2	26.5	25	22.5	52.9	50	45	112.5	106.3	95.6	258.1	243.8	219.4	516.2	487.5	438.8	1080.9	1020.8	918.8	2161.8	2041.7	1837.5	4323.5	4083.3	3675
11	11	2	29.4	27.8	25	58.8	55.6	50	125	118.1	106.3	286.8	270.8	243.8	573.5	541.7	487.5	1201	1134.3	1020.8	2402	2268.5	2041.7	4803.9	4537	4083.3
	12	2	31.8	30	27	63.5	60	54	135	127.5	114.8	309.7	292.5	263.3	619.4	585	526.5	1297.1	1225	1102.5	2594.1	2450	2205	5188.2	4900	4410
	13	2	35.3	33.3	30	70.6	66.7	60	150	141.7	127.5	344.1	325	292.5	688.2	650	585	1441.2	1361.1	1225	2882.4	2722.2	2450	5764.7	5444.4	4900

Table 2-8. Supported Data Rates

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

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

Table 2-9. Power Operation

✓= Support; ✖ = NOT Support

2.3 Antenna Description

The following antenna gains were used for the testing.

Frequency (MHz)	Ant1 Peak Gain [dBi]	Ant2 Peak Gain [dBi]	Directional Gain [dBi]
5915	-6.89	-7.84	-4.34
6015	-6.14	-8.42	-4.20
6115	-6.17	-7.98	-4.02
6215	-5.99	-8.27	-4.05
6315	-7.21	-9.47	-5.26
6350	-7.45	-9.9	-5.58
6415	-8.71	-11.1	-6.81
6515	-9.73	-11.8	-7.69
6615	-10.6	-12.5	-8.49
6700	-9.74	-12.75	-8.10
6715	-9.9	-12.5	-8.09
6815	-9.96	-12.5	-8.13
6915	-9.92	-11.7	-7.75
7015	-9.82	-11.8	-7.74
7100	-10.26	-12.29	-8.21
7125	-10.1	-13.2	-8.50

Table 2-10 Antenna Peak Gain per Frequency

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 radiated emissions test setups, and 7.2, 7.3, 7.4, 7.5 and 7.6 for antenna port conducted emissions test setups.

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

2.5 Software and Firmware

The test was conducted with firmware version X910XXU1BWL3 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 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) and the guidance provided in KDB 987594 D02 v01r01 were used in the measurement of the EUT**.**

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

3.2 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.

3.3 Environmental Conditions

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

4 ANTENNA REQUIREMENTS

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

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

Conclusion:

The EUT complies with the requirement of §15.203.

5 MEASUREMENT UNCERTAINTY

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

Contribution	Expanded Uncertainty (±dB)
Contention Based Protocol Conducted Measurements	0.86
Conducted Bench Top Measurements	1.95
Line Conducted Disturbance	3.09
Radiated Disturbance (<1GHz)	4.10
Radiated Disturbance (>1GHz)	4.82
Radiated Disturbance (>18GHz)	4.96

6 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	N9030A	PXA Signal Analyzer	7/6/2023	Annual	7/3/2024	MY49432391
Antritsu	S820E	Cable and Antenna Analyzer	7/4/2023	Annual	7/3/2024	1839097
Antritsu	TOSLKF50A-40	Calibration Kit	N/A	-	N/A	1825024
Com-Power	AL-130R	Active Loop Antenna	10/21/2022	Biennial	10/20/2024	10160045
Fairview Microwave	FM2CP1122-10	Coupler	7/4/2023	Annual	7/3/2024	1946
Keysight Technologies	N9030B	PXA Signal Analyzer	4/6/2023	Annual	4/5/2024	MY57142018
Mini-Circuits	BW-N10W5+	Attenuator	4/6/2023	Annual	4/5/2024	TEMPNO.01-151
Rohde & Schwarz	TS-PR18	Preamplifier	7/6/2023	Annual	7/5/2024	102141
Rohde & Schwarz	TS-PR1840	Preamplifier	7/6/2023	Annual	7/5/2024	100049
Rohde & Schwarz	ENV216	Two-Line V-Network	4/7/2023	Annual	4/6/2024	101319
Rohde & Schwarz	ESW43	EMI TEST Receiver	7/5/2023	Annual	7/4/2024	101761
Rohde & Schwarz	TS-SFUNIT-Rx	Shielded Filter Unit	1/13/2023	Annual	1/12/2024	102151
Schwarzbeck	VULB9162	Broadband TRILOG Antenna	6/1/2023	Biennial	5/31/2025	9162-217
Sunol Sciences	DRH-118	Horn Antenna	1/26/2023	Biennial	1/25/2025	A102416-1
TESTEK	-	LISN Extension Cord	4/7/2023	Annual	4/6/2024	N/A

Table 6-1. Annual Test Equipment Calibration Schedule

Note:

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

7 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics CO., Ltd.
FCC ID: A3LSMX910
IC: 649E-SMX910
FCC Classification: 15E 6GHz Low Power Dual Client (6CD)

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1046, 15.407(a)(11)	RSS-Gen [6.12]	Maximum Conducted Output Power	N/A	CONDUCTED	PASS	Section 7.3
15.407(a)(8), 15.407(a)(7)	RSS-248 [4.5.3]	Maximum Radiated Output Power	< 24dBm over the frequency band of operation <30dBm over the frequency band of operation when connecting to a standard power access point		PASS	Section 7.3
2.1049, 15.407(a)(10)	RSS-Gen [6.7], RSS-248 [4.4]	Occupied Bandwidth/ 26dB Bandwidth	99% of the occupied bandwidth of any channel must be contained within each of its respective U-NII sub bands The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz.		PASS	Section 7.2
15.407(a)(8), 15.407(a)(7)	RSS-248 [4.5.3]	Maximum Power Spectral Density	< -1dBm/MHz e.i.r.p. <17dBm/MHz when operating with a standard power access point		PASS	Section 7.4
15.407(b)(7)	RSS-248 [4.6.2]	In-Band Emissions	EUT must meet the limits detailed in 15.407(b)(6)		PASS	Section 7.5
15.407(d)(6)	RSS-248 [4.7]	Contention Based Protocol	EUT must detect AWGN signal with 90% (or better) certainty		PASS	Section 7.6
15.407(b)(6)	RSS-248 [4.6.2]	Undesirable Emissions	< -27dBm/MHz e.i.r.p. outside of the 5.925 – 7.125GHz band	RADIATED	PASS	Section 7.7
15.205, 15.209	RSS-Gen [8.9]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		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 1.3.1.
6) Per 15.407(a)(7), a device operating under the control of a standard power access point in 5.925-6.425 GHz and 6.525-6.875 GHz bands must not have the maximum power spectral density exceed 17 dBm/MHz e.i.r.p., must limit the maximum e.i.r.p. over the frequency band of operation not exceed 30 dBm, and must limit its power to no more than 6 dB below its associated standard power access point's authorized transmit power. Compliance to this clause is addressed via submission of an attestation following Appendix B of KDB 987594 D01 v01r03.
7) 802.11ax/be OFDMA testing was performed for all signal tone configurations as specified by the 802.11ax standard. Worst case results are determined and reported per the guidance provided at the October 2018 TCB Workshop.
8) Only one RU index could be selected at a time, so no contiguous or non-contiguous RUs were considered for testing.

7.2 26dB Bandwidth Measurement

Test Overview and Limit

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

Test Procedure Used

ANSI C63.10-2013 – Section 12.4

Test Settings

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

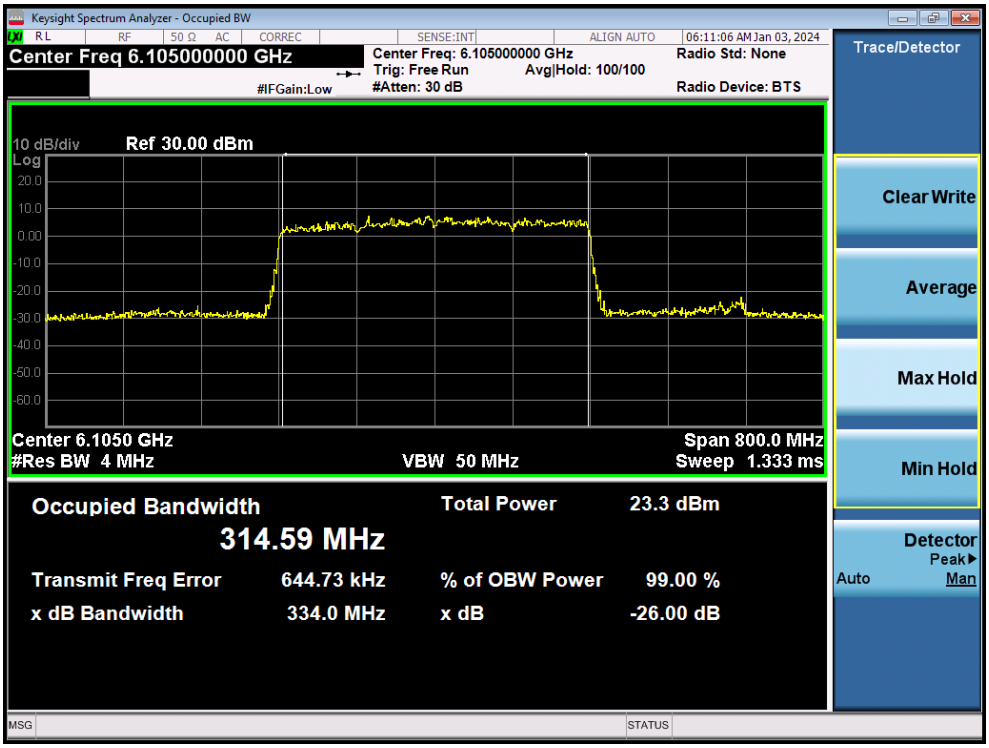
Test Notes

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

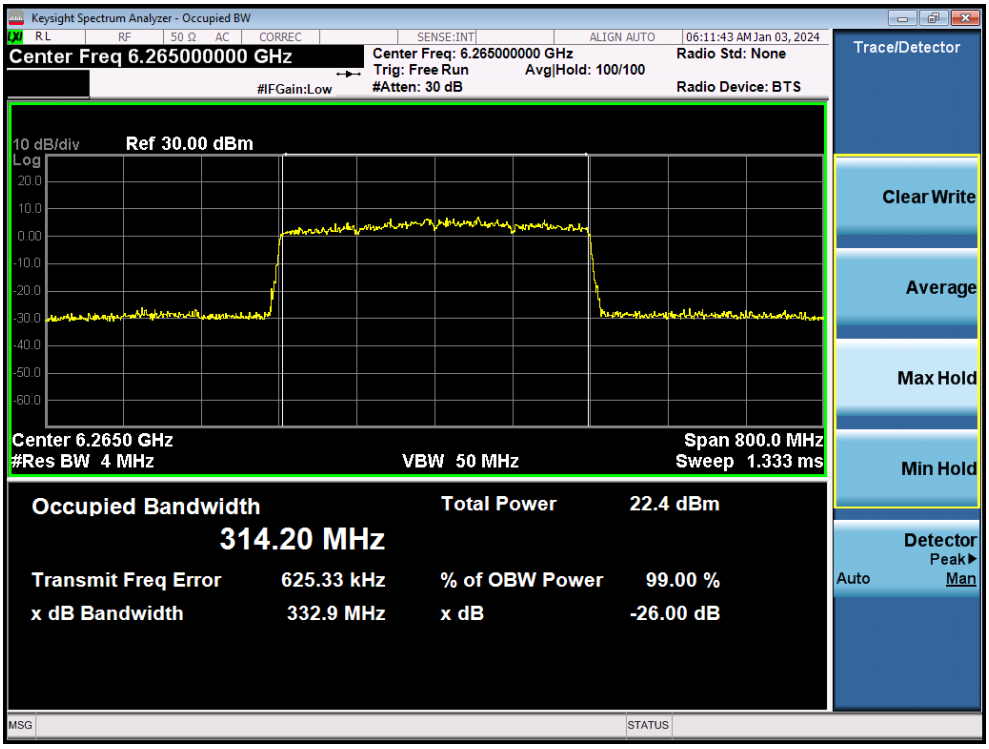
	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 26dB Bandwidth [MHz]	Antenna-2 6dB Bandwidth [MHz]	Antenna-1 Occupied Bandwidth [MHz]	Antenna-2 Occupied Bandwidth [MHz]
Band 5	6105	31	be (320MHz)*	334.00	332.60	314.59	314.91
	6265	63	be (320MHz)*	332.90	333.10	314.20	315.44
Band 5/6/7	6425	95	be (320MHz)*	332.10	333.00	313.87	314.45
Band 6/7	6585	127	be (320MHz)*	333.90	333.20	315.39	314.25
Band 7/8	6745	159	be (320MHz)*	333.00	330.30	315.33	313.03
Band 7/8	6905	191	be (320MHz)*	333.10	330.60	315.02	314.36

Table 7-2. 26dB Bandwidth Measurements – Full Tones

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

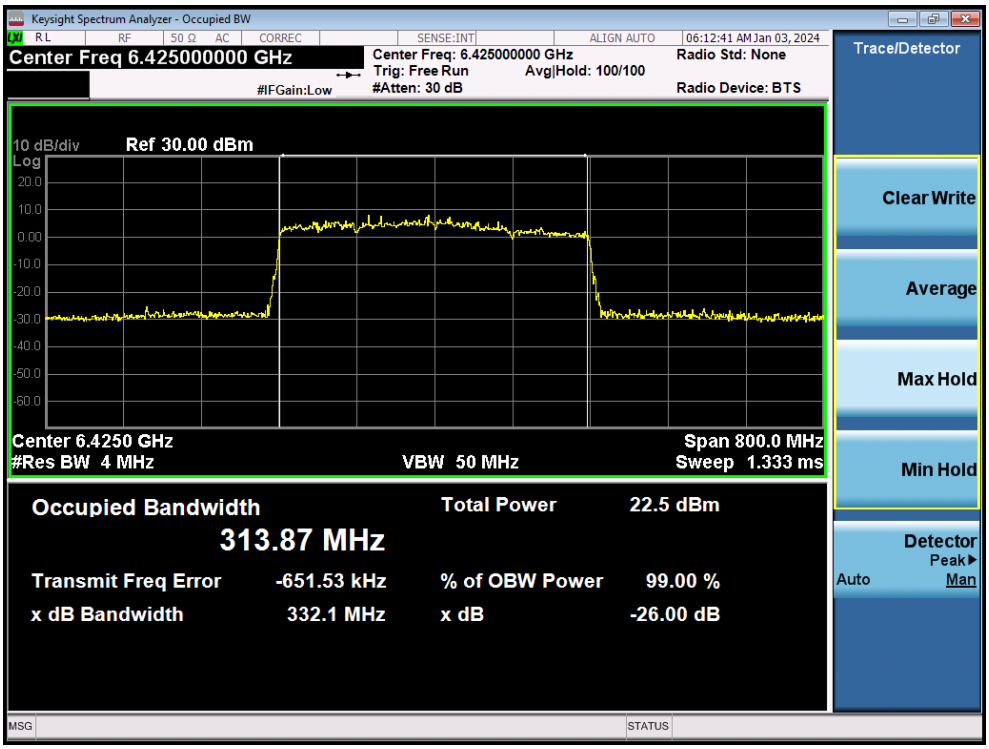


Plot 7-1. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802.11be (Full Tones) (UNII Band 5) – Ch. 31)



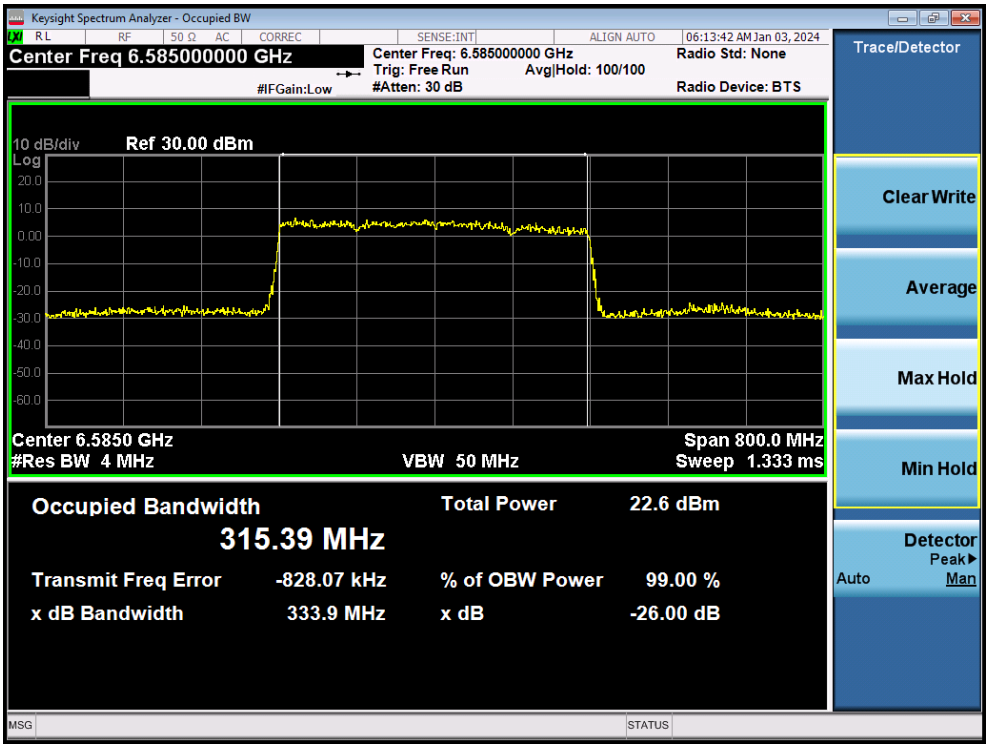
Plot 7-2. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802.11be (Full Tones) (UNII Band 5) – Ch. 63)

MIMO Antenna-1 Bandwidth Measurements - (Full Tones) – (UNII Band 5/6)



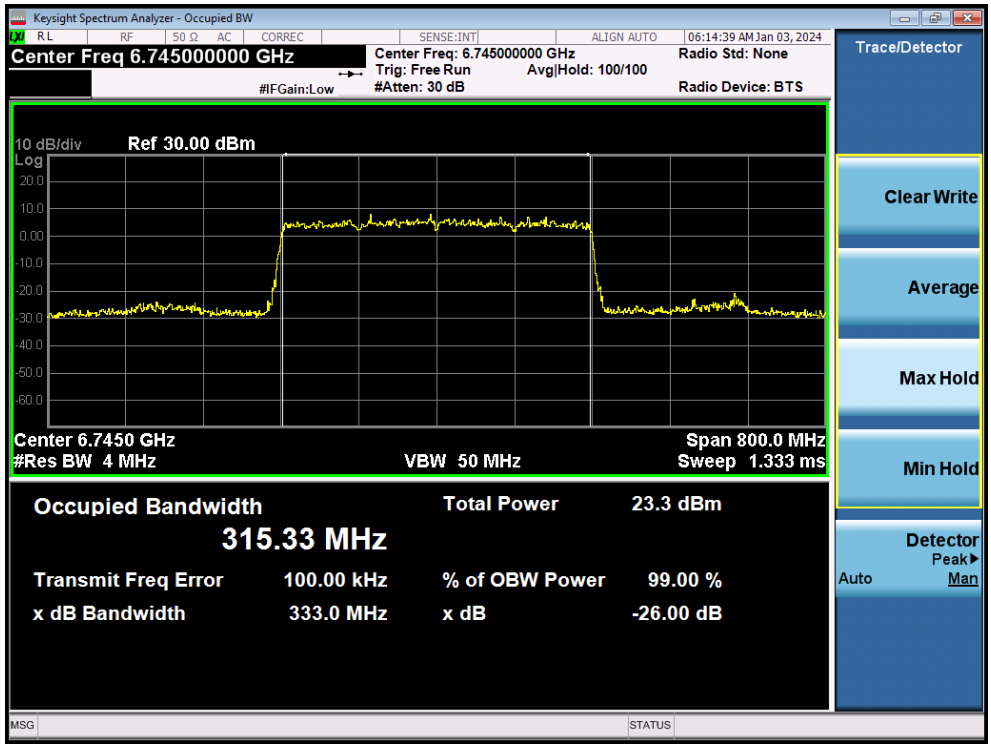
Plot 7-3. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802.11ax/be (26 Tones) (UNII Band 5/6/7) – Ch. 95)

MIMO Antenna-1 Bandwidth Measurements - (Full Tones) – (UNII Band 6/7)

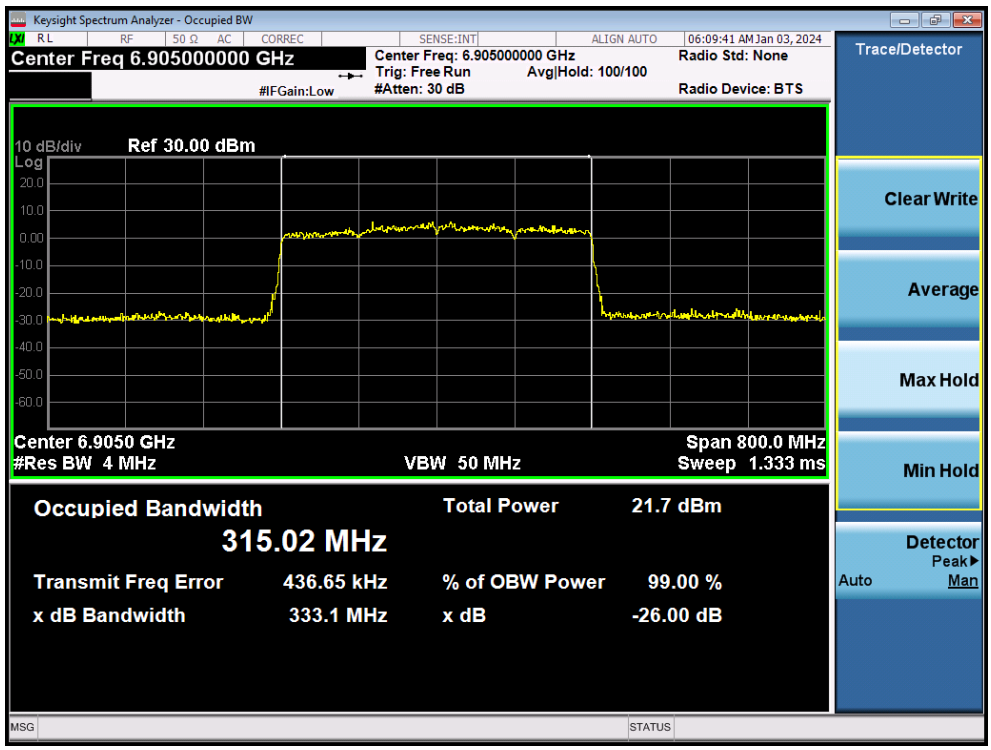


Plot 7-4. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802.11ax/be (Full Tones) (UNII Band 6/7) – Ch. 127)

MIMO Antenna-1 Bandwidth Measurements - (Full Tones) – (UNII Band 7/8)

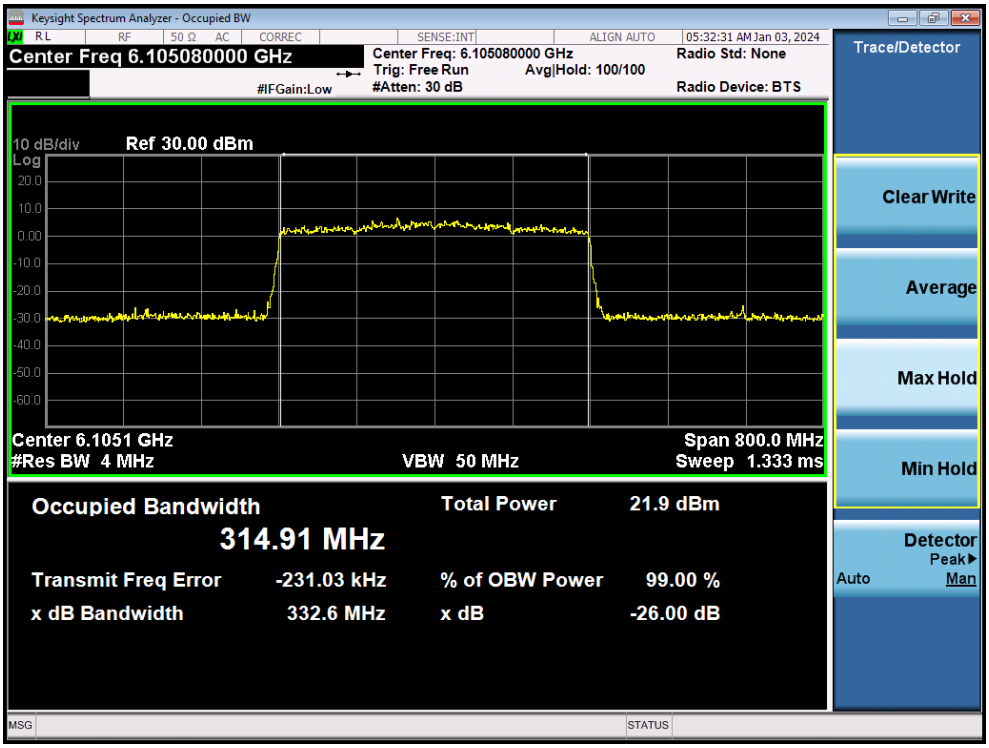


Plot 7-5. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802.11be (Full Tones) (UNII Band 8) – Ch. 159)

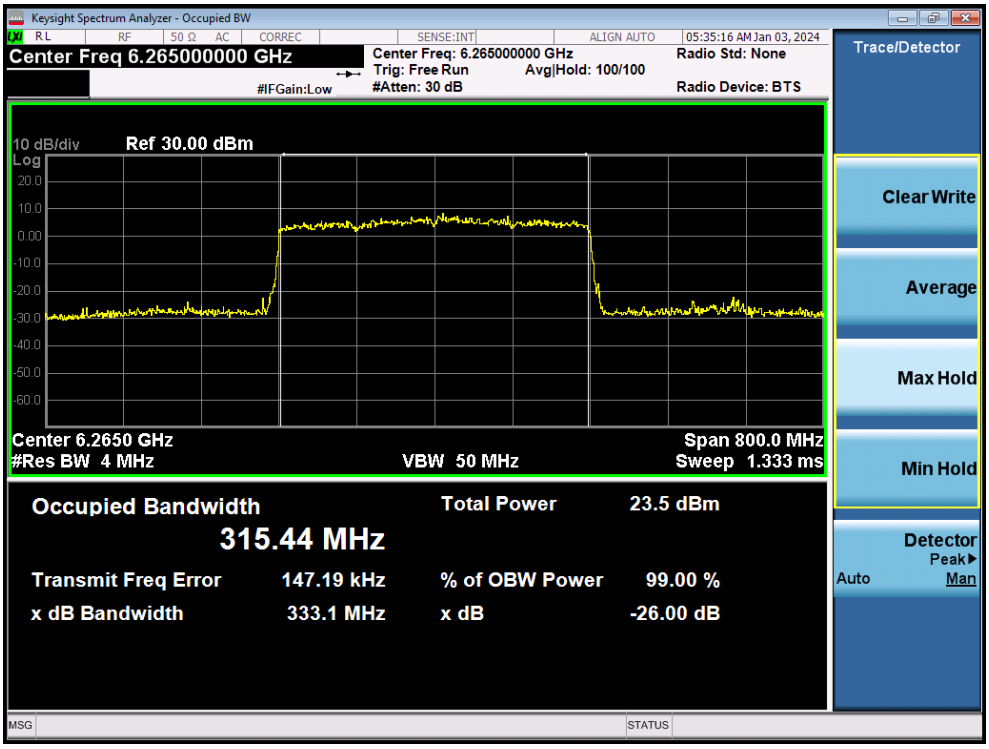


Plot 7-6. Occupied Bandwidth Plot MIMO ANT1 (320MHz BW 802.11be (Full Tones) (UNII Band 7/8) – Ch. 191)

7.2.2 MIMO Antenna-2 Bandwidth Measurements - (Full Tones)

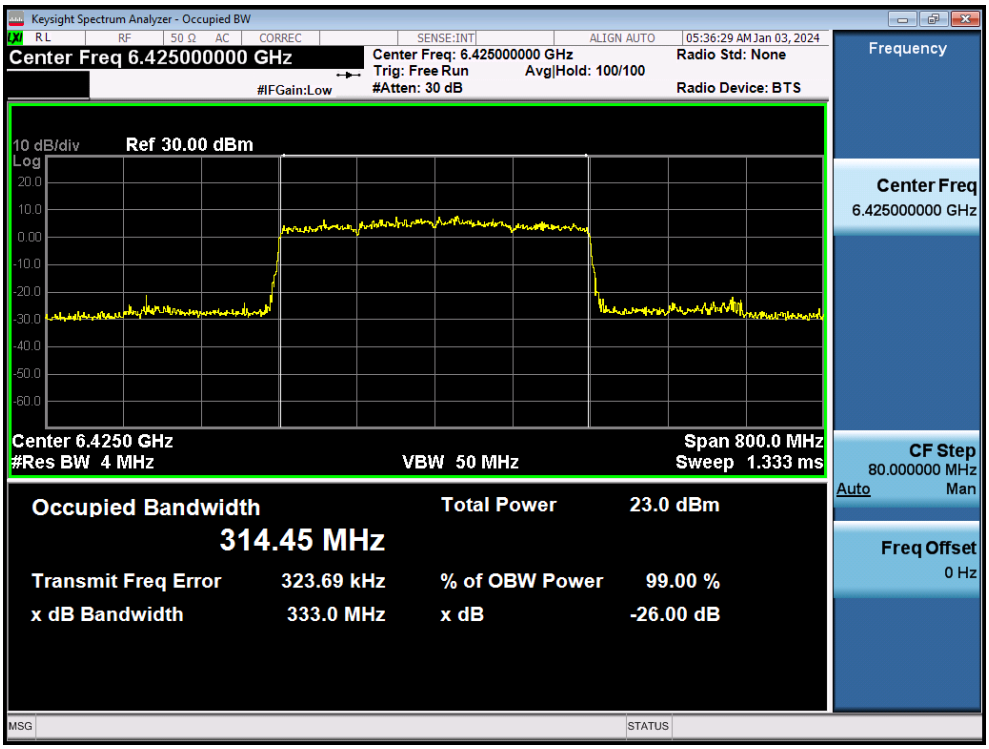


Plot 7-7. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802.11be (Full Tones) (UNII Band 5) – Ch. 31)



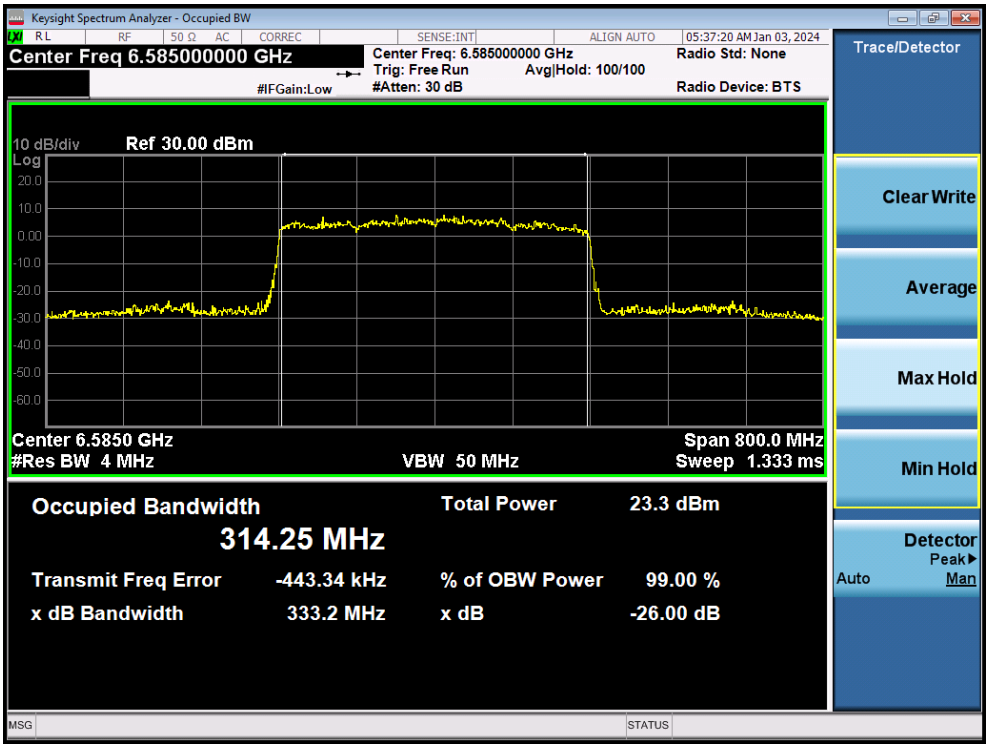
Plot 7-8. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802.11be (Full Tones) (UNII Band 5) – Ch. 63)

MIMO Antenna-2 Bandwidth Measurements - (Full Tones) – (UNII Band 5/6)



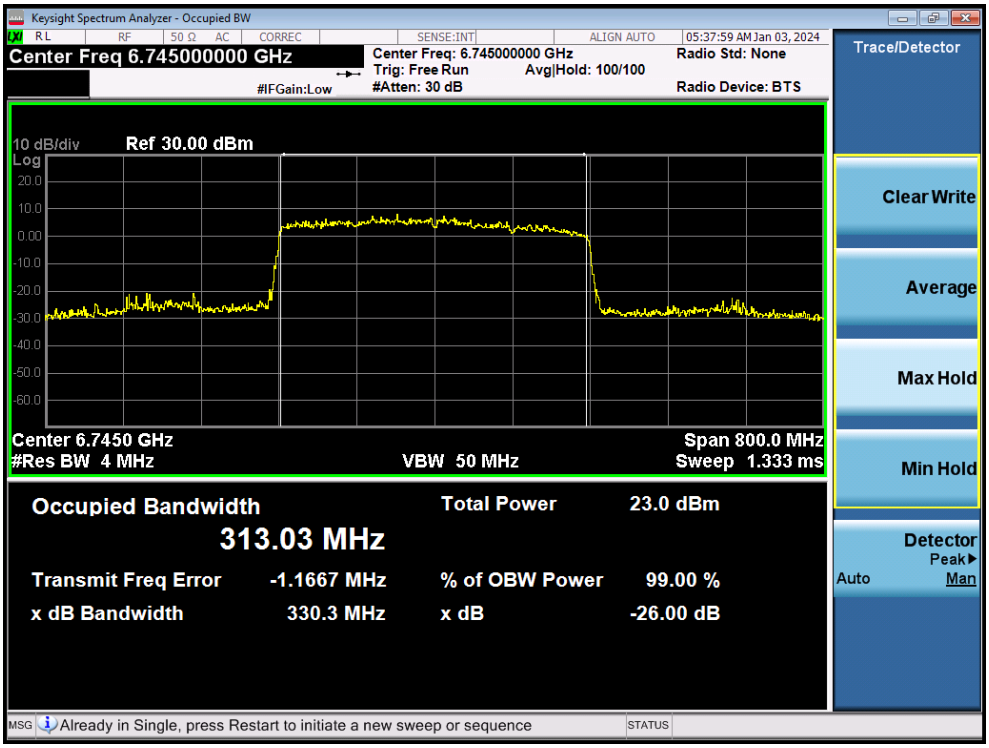
Plot 7-9. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802.11be (26 Tones) (UNII Band 5/6/7) – Ch. 95)

MIMO Antenna-2 Bandwidth Measurements - (Full Tones) – (UNII Band 6/7)

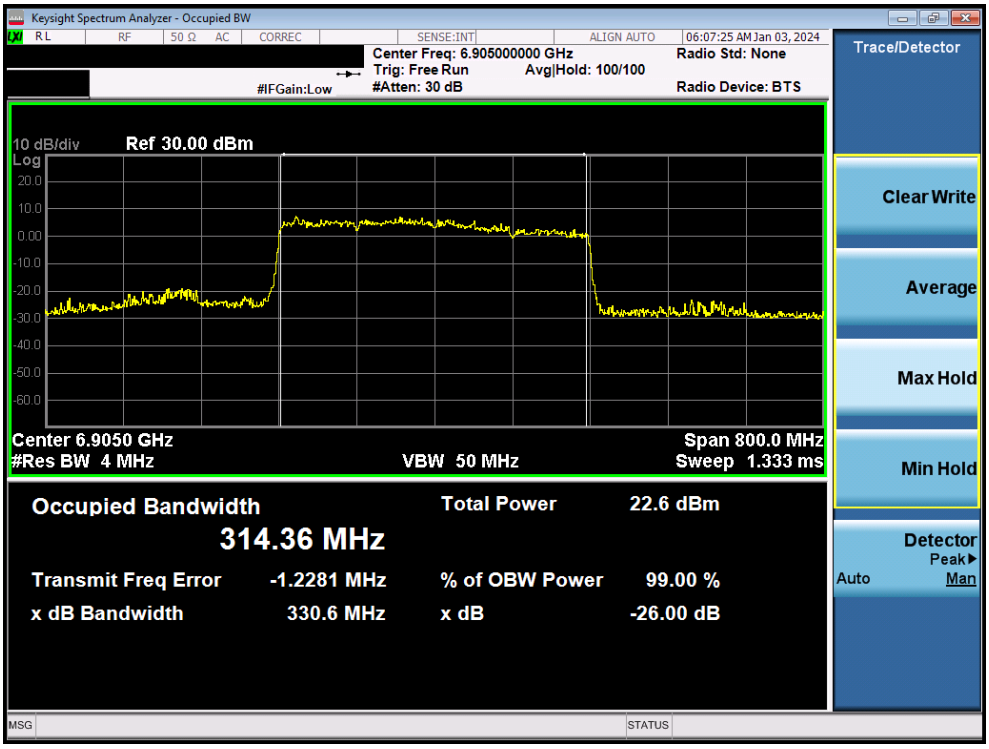


Plot 7-10. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802.11be (Full Tones) (UNII Band 6/7) – Ch. 127)

MIMO Antenna-2 Bandwidth Measurements - (Full Tones) – (UNII Band 7/8)



Plot 7-11. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802.11be (Full Tones) (UNII Band 8) – Ch. 159)



Plot 7-12. Occupied Bandwidth Plot MIMO ANT2 (320MHz BW 802.11be (Full Tones) (UNII Band 7/8) – Ch. 191)

7.3 UNII Output Power Measurement

Test Overview and Limits

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

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

Test Procedure Used

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

Test Settings

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

Test Setup

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

Figure 7-2. Test Instrument & Measurement Setup

Test Notes

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

MIMO Maximum Conducted Output Power Measurements

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm) RU Index 71 ANT1	ANT2	MIMO	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
	5	5935	2	52+26T	3.98	4.24	7.12	-4.34	2.8	24.0	-21.22
		6175	45	52+26T	6.26	6.61	9.45	-4.05	5.4	24.0	-18.60
	6	6475	105	52+26T	5.28	7.23	9.37	-7.69	1.7	24.0	-22.32
	7	6695	149	52+26T	5.51	6.56	9.08	-8.10	1.0	24.0	-23.02
	8	6995	209	52+26T	5.74	5.21	8.49	-7.74	0.8	24.0	-23.25

Table 7-3. MIMO BW 802.11be (UNII) Maximum Conducted Output Power – 52+26T

20MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm) RU Index 82 ANT1	ANT2	MIMO	83 ANT1	ANT2	MIMO	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
	5	5935	2	106+26T	5.58	5.71	8.66	5.64	5.82	8.74	-4.34	4.4	24.0	-19.60
		6175	45	106+26T	8.45	8.85	11.66	8.56	8.94	11.76	-4.05	7.7	24.0	-16.29
	6	6475	105	106+26T	7.26	9.13	11.31	7.16	9.15	11.28	-7.69	3.6	24.0	-20.38
	7	6695	149	106+26T	7.63	8.89	11.32	7.58	8.92	11.31	-8.10	3.2	24.0	-20.78
	8	7115	233	106+26T	7.72	7.02	10.39	7.65	7.13	10.41	-8.50	1.9	24.0	-22.09

Table 7-4. MIMO BW 802.11be (UNII) Maximum Conducted Output Power – 106+26T

160MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm) MRU Index 94 ANT1	ANT2	MIMO	95 ANT1	ANT2	MIMO	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
	5	6025	15	996+484T	13.41	13.75	16.59	13.38	13.73	16.57	-4.20	12.4	24.0	-11.61
	6	6505	111	996+484T	13.87	12.31	16.17	13.68	12.28	16.05	-7.69	8.5	24.0	-15.52
	7	6665	143	996+484T	13.26	13.89	16.60	13.24	13.84	16.56	-8.10	8.5	24.0	-15.50
	8	6985	207	996+484T	13.78	12.82	16.34	13.75	12.79	16.31	-8.10	8.2	24.0	-15.76

Table 7-5. MIMO BW 802.11be (UNII) Maximum Conducted Output Power – 996+484T

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm) RU Index 69 ANT1	ANT2	MIMO	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
	5	6105	31	4x996T	13.94	12.65	16.35	-4.02	12.3	24.0	-11.67
		6265	63	4x996T	13.41	13.23	16.33	-4.05	12.3	24.0	-11.72
	6	6425	95	4x996T	13.11	13.53	16.34	-6.81	9.5	24.0	-14.47
	7	6585	127	4x996T	13.47	13.63	16.56	-8.49	8.1	24.0	-15.93
		6745	159	4x996T	13.73	13.45	16.60	-8.09	8.5	24.0	-15.49
	8	6905	191	4x996T	12.63	13.61	16.16	-7.75	8.4	24.0	-15.59

Table 7-6. MIMO BW 802.11be (UNII) Maximum Conducted Output Power – 4x996T

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm) MRU Index 105 ANT1	ANT2	MIMO	11106 ANT1	ANT2	MIMO	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
	5	6105	31	3x996+484T	13.87	12.41	16.21	13.75	12.45	16.16	-4.02	12.2	24.0	-11.81
	6	6425	95	3x996+484T	13.21	13.86	16.56	13.42	13.94	16.70	-6.81	9.9	24.0	-14.11
	7	6745	159	3x996+484T	13.88	13.32	16.62	13.82	13.61	16.73	-8.09	8.6	24.0	-15.36
	8	6905	191	3x996+484T	13.94	13.74	16.85	13.87	13.98	16.94	-7.75	9.2	24.0	-14.81

Table 7-7. MIMO BW 802.11be (UNII) Maximum Conducted Output Power – 3x996+484T

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm) MRU Index 104 ANT1	ANT2	MIMO	11104 ANT1	ANT2	MIMO	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
	5	6105	31	3x996T	13.95	12.72	16.39	13.82	12.94	16.41	-4.02	12.4	24.0	-11.61
	6	6425	95	3x996T	12.72	13.59	16.19	13.05	13.66	16.38	-6.81	9.6	24.0	-14.43
	7	6745	159	3x996T	13.86	13.41	16.65	13.78	13.75	16.78	-8.09	8.7	24.0	-15.31
	8	6905	191	3x996T	13.49	13.53	16.52	13.43	13.74	16.60	-7.75	8.8	24.0	-15.15

Table 7-8. MIMO BW 802.11be (UNII) Maximum Conducted Output Power – 3x996T

320MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm) MRU Index 100 ANT1	ANT2	MIMO	11103 ANT1	ANT2	MIMO	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
	5	6105	31	2x996+484T	13.95	13.43	16.71	13.93	13.24	16.61	-4.02	12.7	24.0	-11.31
	6	6425	95	2x996+484T	13.56	13.75	16.67	13.51	13.72	16.63	-6.81	9.9	24.0	-14.14
	7	6745	159	2x996+484T	13.87	13.67	16.78	13.84	13.38	16.63	-8.09	8.7	24.0	-15.31
	8	6905	191	2x996+484T	13.41	13.71	16.57	13.41	13.38	16.41	-7.75	8.8	24.0	-15.18

Table 7-9. MIMO BW 802.11be (UNII) Maximum Conducted Output Power – 2x996+484T

Sample MIMO Calculation:

At 5935MHz in 802.11be (20MHz BW – 52+26 Tones) mode, the average conducted output power was measured to be 3.98 dBm for Antenna-1 and 4.24 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(3.98 dBm + 4.24 dBm) = (2.500 mW + 2.655 mW) = 4.155 mW = 7.12 dBm

Sample Directional Gain Calculation:

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

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

Sample e.i.r.p. Calculation:

At 5935MHz in 802.11ax (20MHz BW – 26 Tones) mode, the average MIMO conducted power was calculated to be 1.63 dBm with directional gain of -2.85 dBi.

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

7.12 dBm + -4.34 dBi = 2.78 dBm

7.4 Maximum Power Spectral Density

Test Overview and Limit

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

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

Test Procedure Used

ANSI C63.10-2013 – Section 12.3.2.2
ANSI C63.10-2013 – Section 14.3.2.2 Measure-and-Sum Technique

Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. RBW = 1MHz
4. VBW = 3MHz
5. Number of sweep points ≥ 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 7-3. Test Instrument & Measurement Setup

Test Notes

None.

MIMO Power Spectral Density Measurements

	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Antenna-1 Gain [dBi]	Antenna-2 Gain [dBi]	Summed MIMO Power Density [dBm]	Directional Gain [dBi]	EIRP [dBm]	Max EIRP [dBm]	Margin [dB]
Band 5	6105	31	be (320MHz)	0.79	-1.56	-6.17	-7.98	2.78	-4.02	-1.24	-1	-0.24
	6265	63	be (320MHz)	-0.21	-0.08	-5.99	-8.27	2.87	-4.05	-1.18	-1	-0.18
Band 5/6/7	6425	95	be (320MHz)	0.16	0.85	-8.71	-11.10	3.53	-6.81	-3.28	-1	-2.28
Band 6/7	6585	127	be (320MHz)	0.80	0.07	-10.60	-12.50	3.46	-8.49	-5.02	-1	-4.02
Band 7/8	6745	159	be (320MHz)	0.26	0.70	-9.90	-12.50	3.49	-8.09	-4.60	-1	-3.60
Band 7/8	6905	191	be (320MHz)	-0.11	1.95	-9.92	-11.70	4.05	-7.75	-3.70	-1	-2.70

Table 7-10. MIMO e.i.r.p. Conducted Power Spectral Density Measurements (26 Tones)

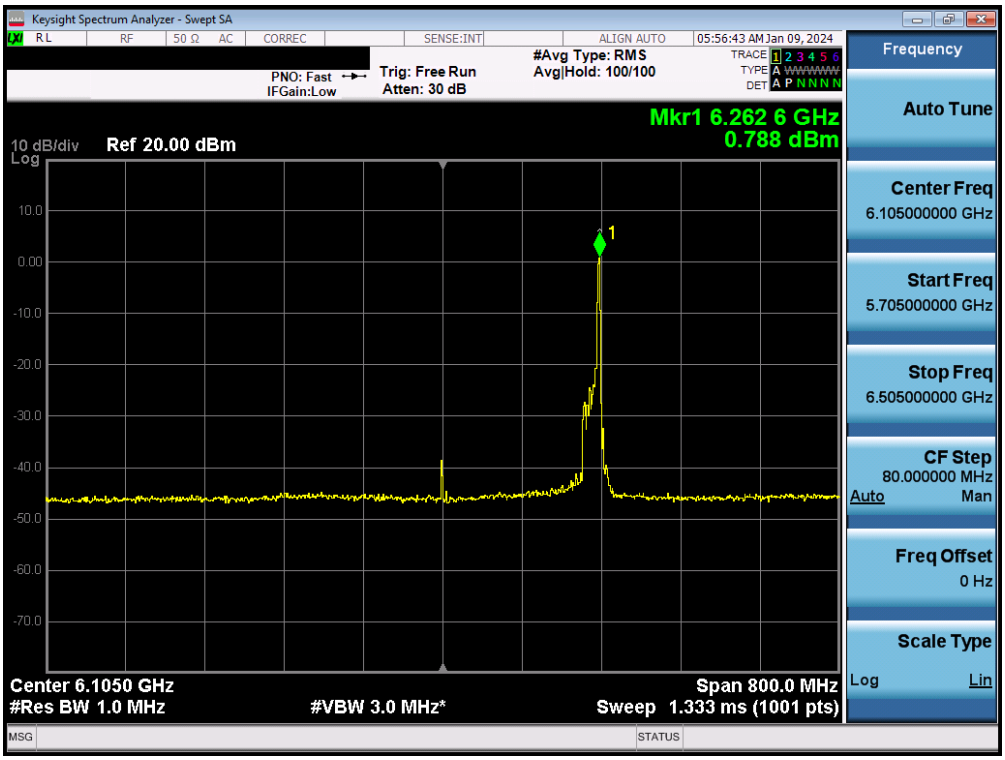
	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Antenna-1 Gain [dBi]	Antenna-2 Gain [dBi]	Summed MIMO Power Density [dBm]	Directional Gain [dBi]	EIRP [dBm]	Max EIRP [dBm]	Margin [dB]
Band 5	6105	31	be (320MHz)	-8.69	-9.87	-6.17	-7.98	-6.23	-4.02	-10.25	-1	-9.25
	6265	63	be (320MHz)	-9.11	-8.41	-5.99	-8.27	-5.74	-4.05	-9.78	-1	-8.78
Band 5/6/7	6425	95	be (320MHz)	-8.92	-8.46	-8.71	-11.10	-5.67	-6.81	-12.48	-1	-11.48
Band 6/7	6585	127	be (320MHz)	-9.22	-8.49	-10.60	-12.50	-5.83	-8.49	-14.32	-1	-13.32
Band 7/8	6745	159	be (320MHz)	-9.15	-8.84	-9.90	-12.50	-5.99	-8.09	-14.08	-1	-13.08
Band 7/8	6905	191	be (320MHz)	-10.31	-9.05	-9.92	-11.70	-6.62	-7.75	-14.38	-1	-13.38

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

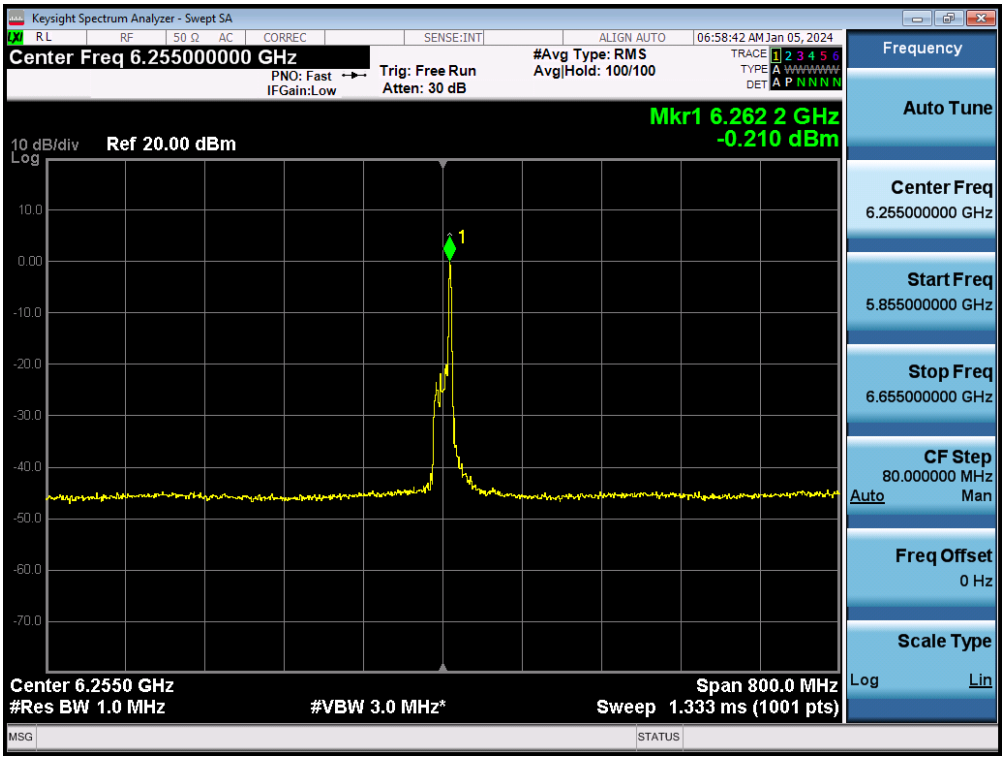
	Frequency [MHz]	Channel	802.11 MODE	MRU Cases	MRU Index	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Antenna-1 Gain [dBi]	Antenna-2 Gain [dBi]	Summed MIMO Power Density [dBm]	Directional Gain [dBi]	EIRP [dBm]	Max EIRP [dBm]	Margin [dB]
Band 5	5935	2	be (20MHz)	52T+26T	71	-3.59	-4.69	-6.89	-7.84	-1.09	-4.34	-5.44	-1	-4.44
	5935	2	be (20MHz)	106T+26T	82	-3.38	-4.44	-6.89	-7.84	-0.86	-4.34	-5.20	-1	-4.20
	5935	2	be (20MHz)	106T+26T	83	-3.60	-4.51	-6.89	-7.84	-1.02	-4.34	-5.36	-1	-4.36
	6175	45	be (20MHz)	52T+26T	71	-0.18	-1.41	-5.99	-8.27	2.26	-4.05	-1.78	-1	-0.78
	6175	45	be (20MHz)	106T+26T	82	-0.58	-0.72	-5.99	-8.27	2.36	-4.05	-1.68	-1	-0.68
	6175	45	be (20MHz)	106T+26T	83	-0.18	-0.79	-5.99	-8.27	2.54	-4.05	-1.51	-1	-0.51
	5985	7	be (80MHz)	242T+484T	90	-1.33	-2.17	-6.14	-8.42	1.28	-4.20	-2.91	-1	-1.91
	5985	7	be (80MHz)	242T+484T	91	-1.35	-2.39	-6.14	-8.42	1.17	-4.20	-3.02	-1	-2.02
	6025	15	be (160MHz)	996T+484T	94	-6.68	-6.66	-6.14	-8.42	-3.66	-4.20	-7.85	-1	-6.85
	6025	15	be (160MHz)	996T+484T	95	-6.37	-6.59	-6.14	-8.42	-3.47	-4.20	-7.66	-1	-6.66
	6105	31	be (320MHz)	2x996T+484T	00100	-7.43	-8.12	-6.17	-7.98	-4.75	-4.02	-8.77	-1	-7.77
	6105	31	be (320MHz)	3x996T	00104	-8.52	-9.68	-6.17	-7.98	-6.05	-4.02	-10.07	-1	-9.07
	6105	31	be (320MHz)	3x996T+484T	00105	-9.12	-10.40	-6.17	-7.98	-6.70	-4.02	-10.72	-1	-9.72
	6105	31	be (320MHz)	2x996T+484T	11103	-7.45	-8.25	-6.17	-7.98	-4.82	-4.02	-8.84	-1	-7.84
	6105	31	be (320MHz)	3x996T	11104	-8.08	-9.50	-6.17	-7.98	-5.72	-4.02	-9.74	-1	-8.74
	6105	31	be (320MHz)	3x996T+484T	11106	-8.83	-10.28	-6.17	-7.98	-6.49	-4.02	-10.50	-1	-9.50
Band 6	6475	105	be (20MHz)	52T+26T	71	-1.61	-0.79	-9.73	-11.80	1.83	-7.69	-5.86	-1	-4.86
	6475	105	be (20MHz)	106T+26T	82	-1.62	-0.93	-9.73	-11.80	1.75	-7.69	-5.95	-1	-4.95
	6475	105	be (20MHz)	106T+26T	83	-1.77	-0.94	-9.73	-11.80	1.68	-7.69	-6.02	-1	-5.02
	6465	103	be (80MHz)	242T+484T	90	-2.56	-2.35	-8.71	-11.10	0.55	-6.81	-6.26	-1	-5.26
	6465	103	be (80MHz)	242T+484T	91	-2.10	-2.30	-8.71	-11.10	0.81	-6.81	-6.00	-1	-5.00
	6505	111	be (160MHz)	996T+484T	94	-6.64	-6.77	-9.73	-11.80	-3.70	-7.69	-11.39	-1	-10.39
	6505	111	be (160MHz)	996T+484T	95	-6.01	-6.76	-9.73	-11.80	-3.36	-7.69	-11.06	-1	-10.06
Band 5/6/7	6425	95	be (320MHz)	2x996T+484T	00100	-7.27	-7.05	-8.71	-11.10	-4.15	-6.81	-10.96	-1	-9.96
	6425	95	be (320MHz)	3x996T	00104	-8.58	-7.85	-8.71	-11.10	-5.19	-6.81	-12.00	-1	-11.00
	6425	95	be (320MHz)	3x996T+484T	00105	-8.31	-8.51	-8.71	-11.10	-5.40	-6.81	-12.21	-1	-11.21
	6425	95	be (320MHz)	2x996T+484T	11103	-6.96	-6.88	-8.71	-11.10	-3.91	-6.81	-10.72	-1	-9.72
	6425	95	be (320MHz)	3x996T	11104	-8.64	-7.83	-8.71	-11.10	-5.21	-6.81	-12.02	-1	-11.02
	6425	95	be (320MHz)	3x996T+484T	11106	-8.27	-8.03	-8.71	-11.10	-5.14	-6.81	-11.95	-1	-10.95
Band 7	6695	149	be (20MHz)	52T+26T	71	-1.41	-0.70	-9.74	-12.75	1.97	-8.10	-6.14	-1	-5.14
	6695	149	be (20MHz)	106T+26T	82	-1.20	-0.26	-9.74	-12.75	2.31	-8.10	-5.80	-1	-4.80
	6695	149	be (20MHz)	106T+26T	83	-1.45	-0.70	-9.74	-12.75	1.95	-8.10	-6.15	-1	-5.15
	6705	151	be (80MHz)	242T+484T	90	-2.06	-1.84	-9.74	-12.75	1.06	-8.10	-7.04	-1	-6.04
	6705	151	be (80MHz)	242T+484T	91	-1.80	-1.63	-9.74	-12.75	1.29	-8.10	-6.81	-1	-5.81
	6665	143	be (160MHz)	996T+484T	94	-6.06	-5.73	-9.74	-12.75	-2.88	-8.10	-10.99	-1	-9.99
	6665	143	be (160MHz)	996T+484T	95	-6.14	-5.44	-9.74	-12.75	-2.76	-8.10	-10.87	-1	-9.87
Band 6/7	6745	159	be (320MHz)	2x996T+484T	00100	-7.89	-6.83	-9.90	-12.50	-4.32	-8.09	-12.41	-1	-11.41
	6745	159	be (320MHz)	3x996T	00104	-7.99	-7.25	-9.90	-12.50	-4.60	-8.09	-12.69	-1	-11.69
	6745	159	be (320MHz)	3x996T+484T	00105	-9.89	-7.99	-9.90	-12.50	-5.83	-8.09	-13.92	-1	-12.92
	6745	159	be (320MHz)	2x996T+484T	11103	-7.94	-6.92	-9.90	-12.50	-4.39	-8.09	-12.48	-1	-11.48
	6745	159	be (320MHz)	3x996T	11104	-8.12	-7.57	-9.90	-12.50	-4.83	-8.09	-12.92	-1	-11.92
	6745	159	be (320MHz)	3x996T+484T	11106	-9.74	-8.27	-9.90	-12.50	-5.93	-8.09	-14.02	-1	-13.02
Band 8	6995	209	be (20MHz)	52T+26T	71	-1.37	-1.70	-9.82	-11.80	1.48	-7.74	-6.26	-1	-5.26
	7115	233	be (20MHz)	106T+26T	82	-1.00	-2.08	-10.10	-13.20	1.50	-8.50	-7.00	-1	-6.00
	7115	233	be (20MHz)	106T+26T	83	-1.32	-2.22	-10.10	-13.20	1.26	-8.50	-7.24	-1	-6.24
	7025	215	be (80MHz)	242T+484T	90	-1.12	-2.84	-9.82	-11.80	1.11	-7.74	-6.63	-1	-5.63
	7025	215	be (80MHz)	242T+484T	91	-1.54	-2.65	-9.82	-11.80	0.95	-7.74	-6.79	-1	-5.79
	6985	207	be (160MHz)	996T+484T	94	-5.57	-6.61	-9.82	-11.80	-3.04	-7.74	-10.79	-1	-9.79
	6985	207	be (160MHz)	996T+484T	95	-5.56	-5.50	-9.82	-11.80	-2.52	-7.74	-10.27	-1	-9.27
Band 7/8	6905	191	be (320MHz)	2x996T+484T	00100	-7.25	-6.31	-9.92	-11.70	-3.74	-7.75	-11.50	-1	-10.50
	6905	191	be (320MHz)	3x996T	00104	-8.18	-6.71	-9.92	-11.70	-4.37	-7.75	-12.12	-1	-11.12
	6905	191	be (320MHz)	3x996T+484T	00105	-7.62	-6.44	-9.92	-11.70	-3.98	-7.75	-11.73	-1	-10.73
	6905	191	be (320MHz)	2x996T+484T	11103	-7.50	-6.22	-9.92	-11.70	-3.80	-7.75	-11.56	-1	-10.56
	6905	191	be (320MHz)	3x996T	11104	-7.92	-7.13	-9.92	-11.70	-4.50	-7.75	-12.25	-1	-11.25
	6905	191	be (320MHz)	3x996T+484T	11106	-7.64	-9.66	-9.92	-11.70	-5.52	-7.75	-13.27	-1	-12.27

Table 7-12. MIMO e.i.r.p. Conducted Power Spectral Density Measurements – MRU

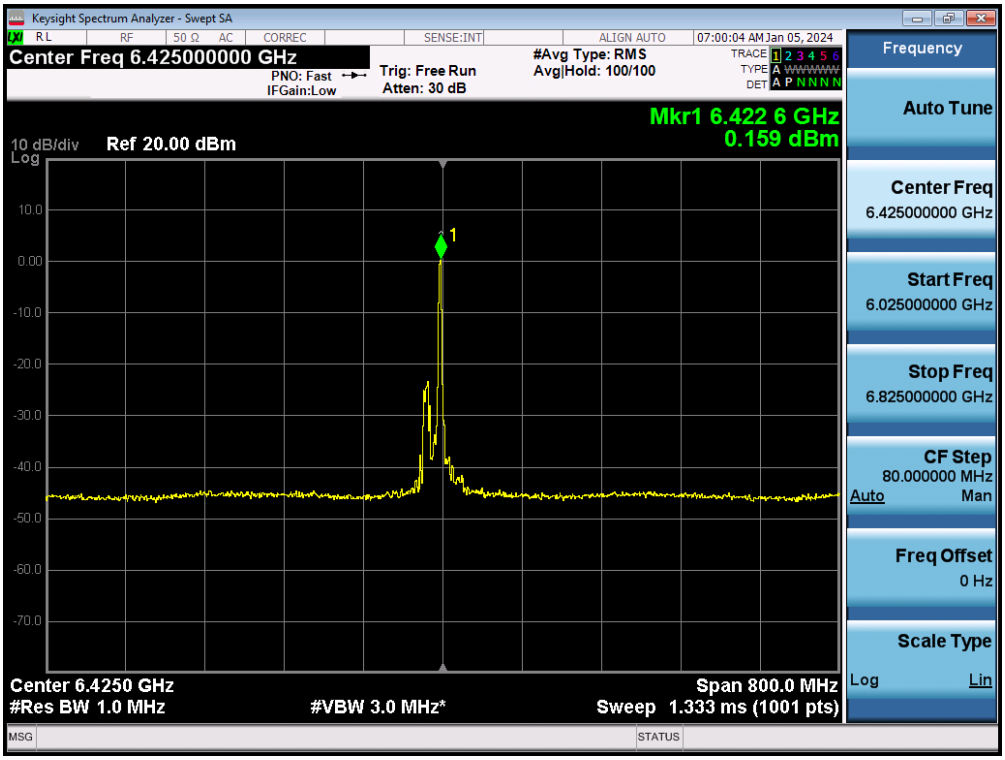
7.4.1 MIMO Antenna-1 Power Spectral Measurements – (26 Tones)



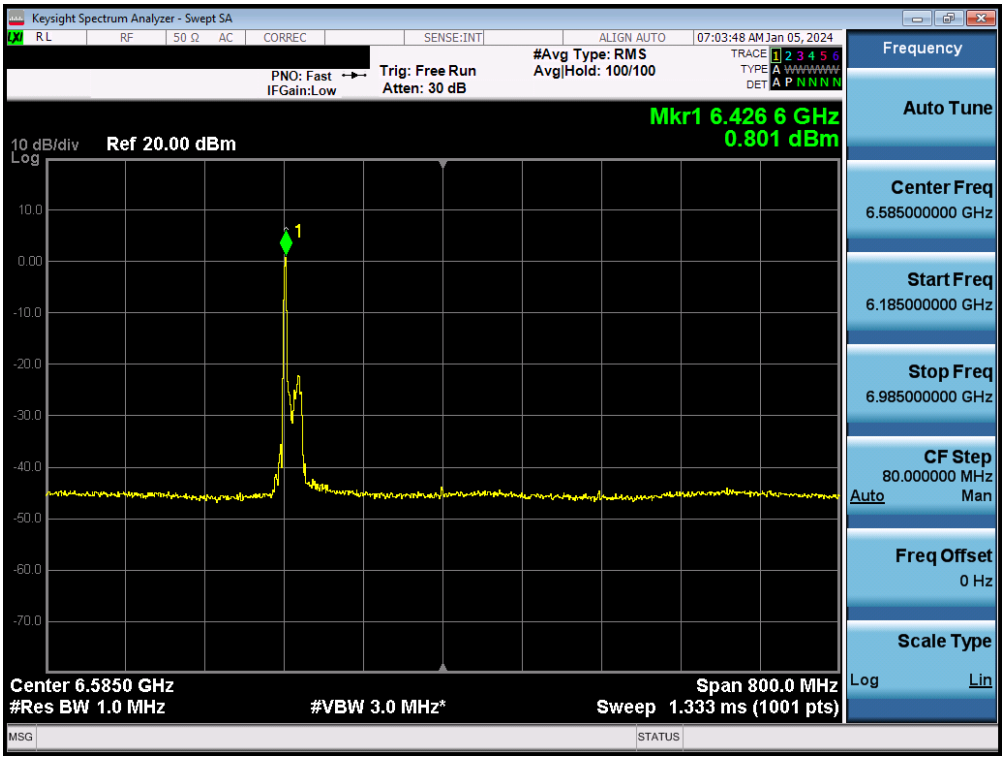
Plot 7-13. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (26 Tones) (UNII Band 5) – Ch. 45)



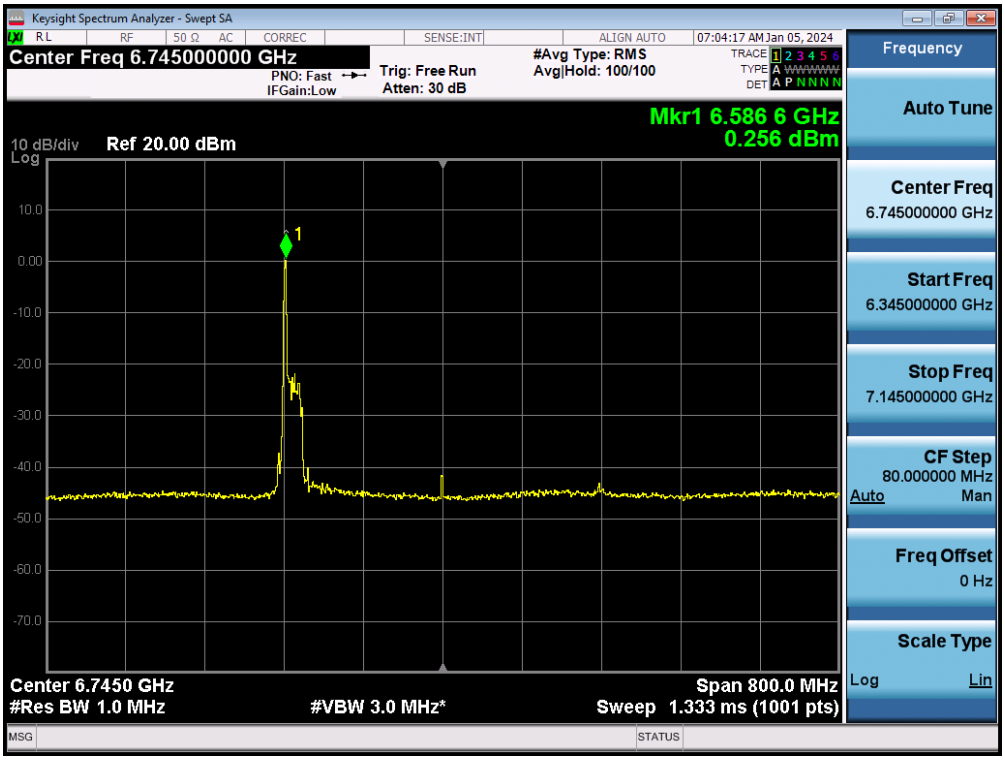
Plot 7-14. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (26 Tones) (UNII Band 5) – Ch. 63)



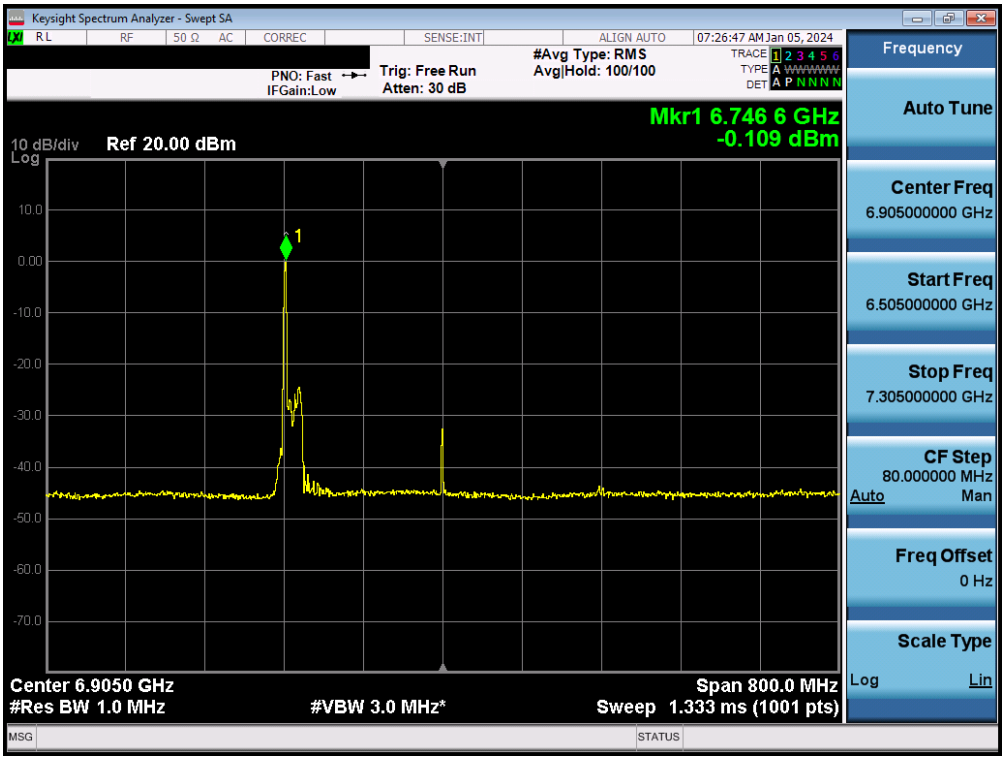
Plot 7-15. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (26 Tones) (UNII Band 5/6/7) – Ch. 95)



Plot 7-16. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (26 Tones) (UNII Band 6/7) – Ch. 127)

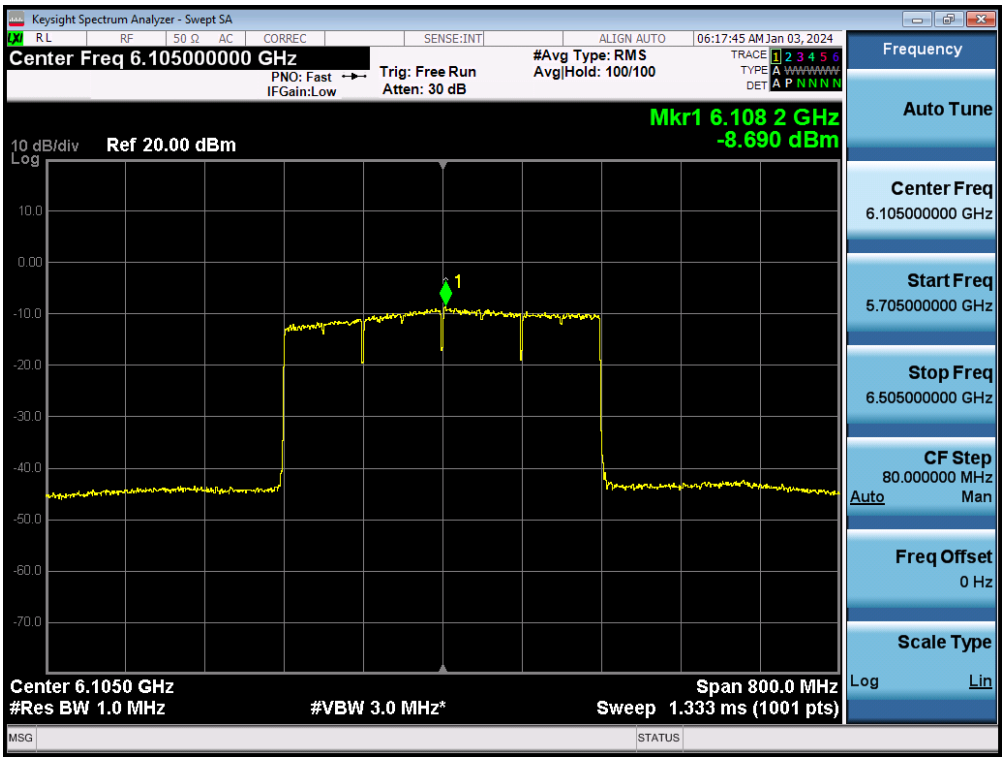


Plot 7-17. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (26 Tones) (UNII Band 7/8) – Ch. 159)

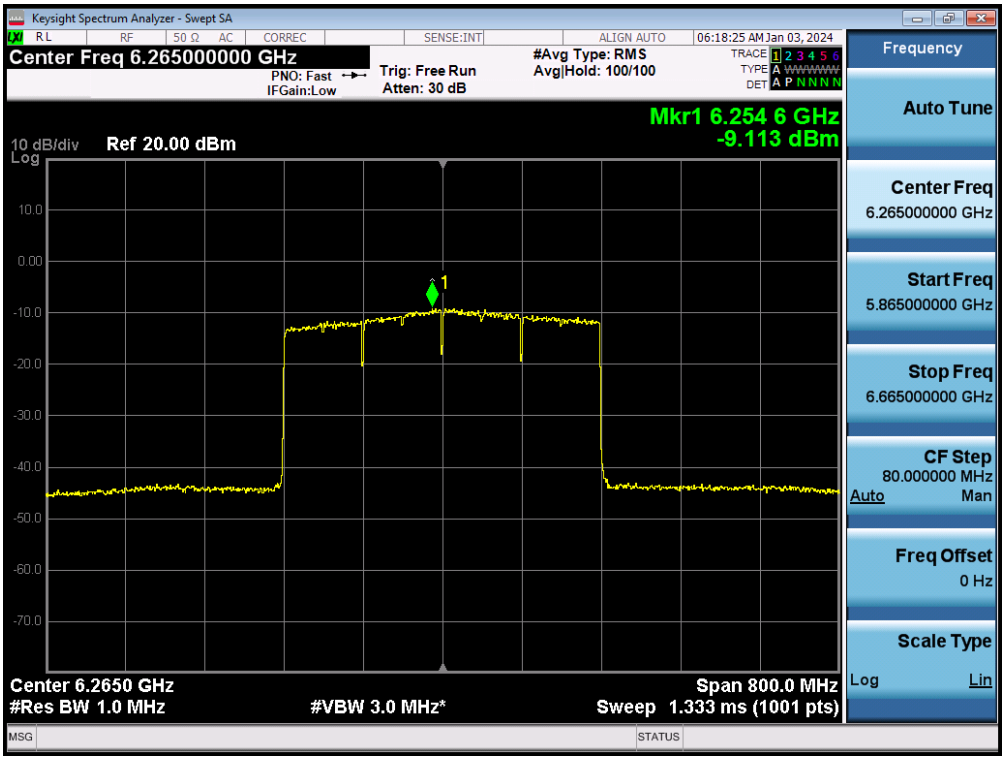


Plot 7-18. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (26 Tones) (UNII Band 7/8) – Ch. 191)

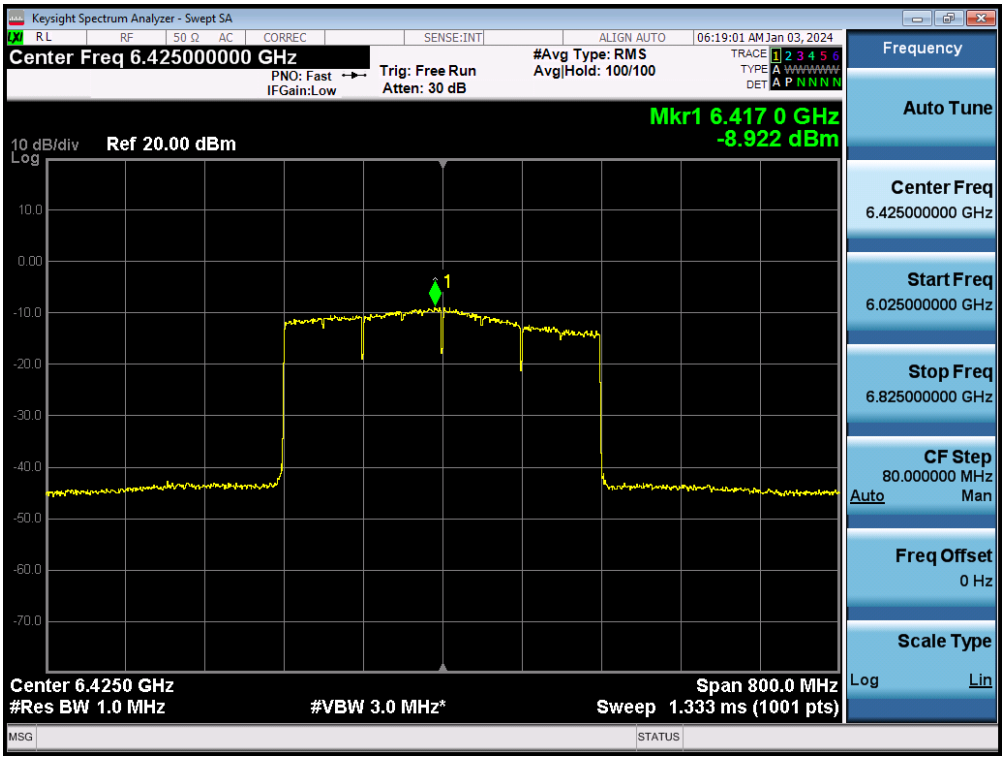
7.4.2 MIMO Antenna-1 Power Spectral Measurements - (Full Tones)



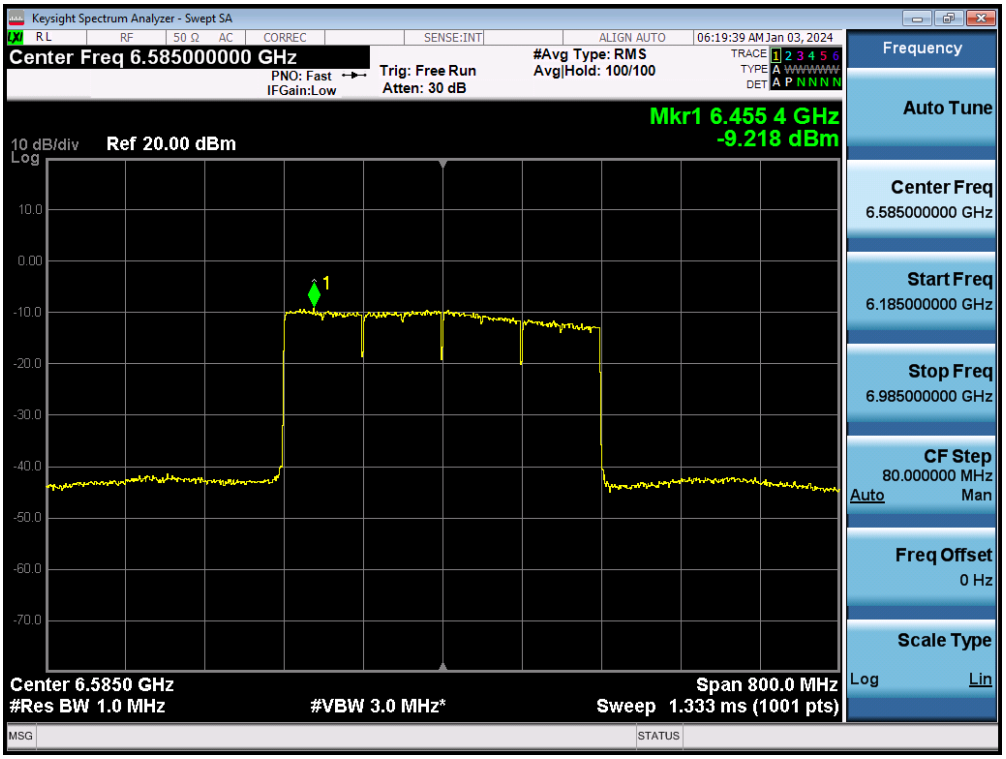
Plot 7-19. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (Full Tone) (UNII Band 5) – Ch. 31)



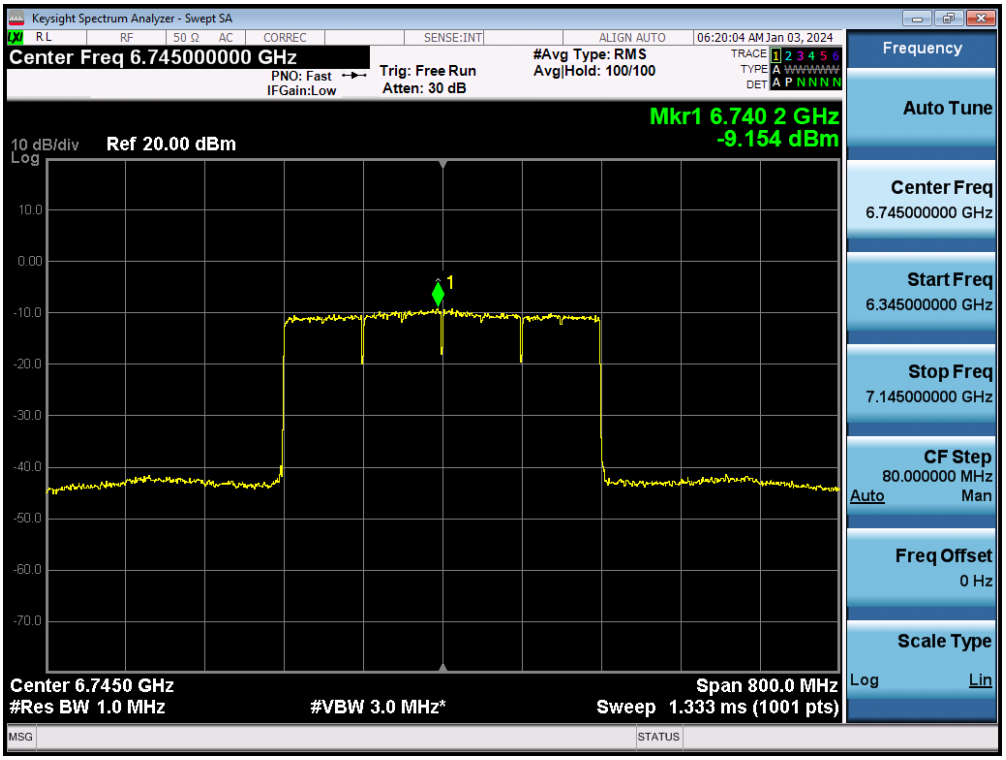
Plot 7-20. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (Full Tone) (UNII Band 5) – Ch. 63)



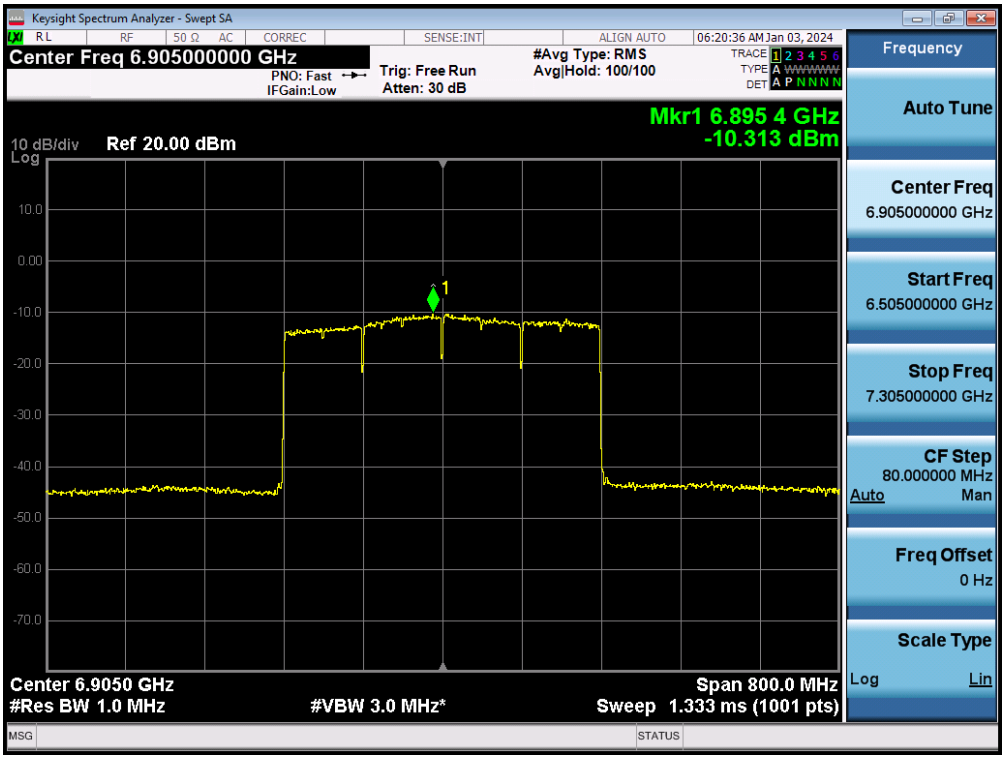
Plot 7-21. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (Full Tone) (UNII Band 5/6/7) – Ch. 95)



Plot 7-22. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (Full Tone) (UNII Band 6/7) – Ch. 127)

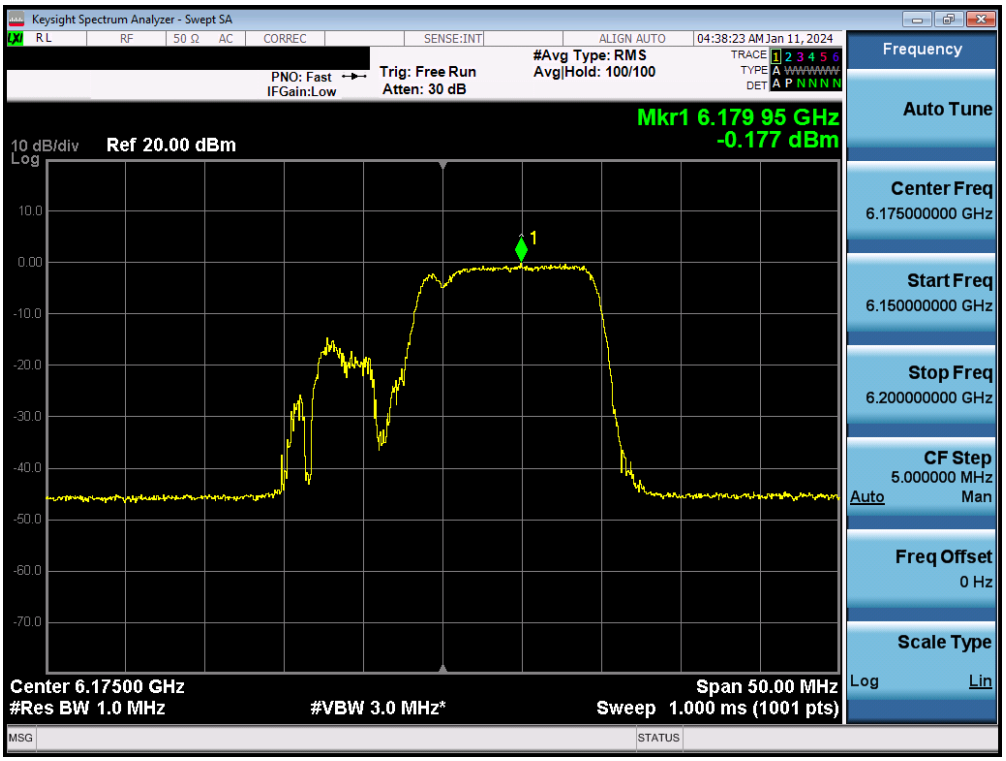


Plot 7-23. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (Full Tone) (UNII Band 7/8) – Ch. 159)



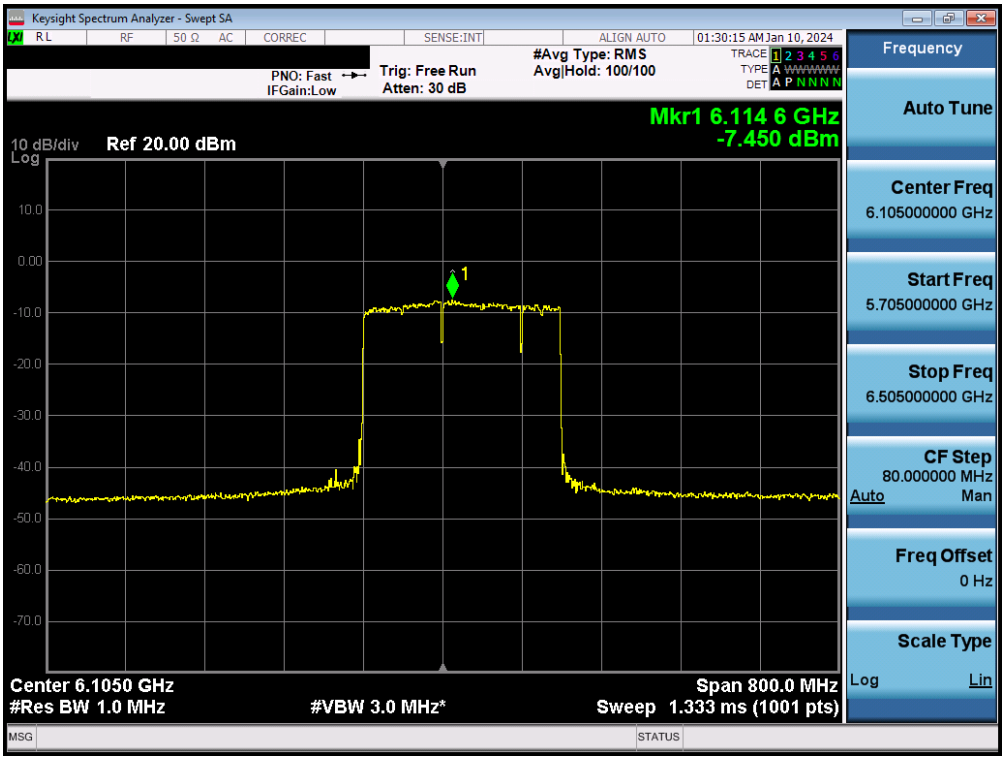
Plot 7-24. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (Full Tone) (UNII Band 7/8) – Ch. 191)

7.4.3 MIMO Antenna-1 Power Spectral Measurements - (MRU)

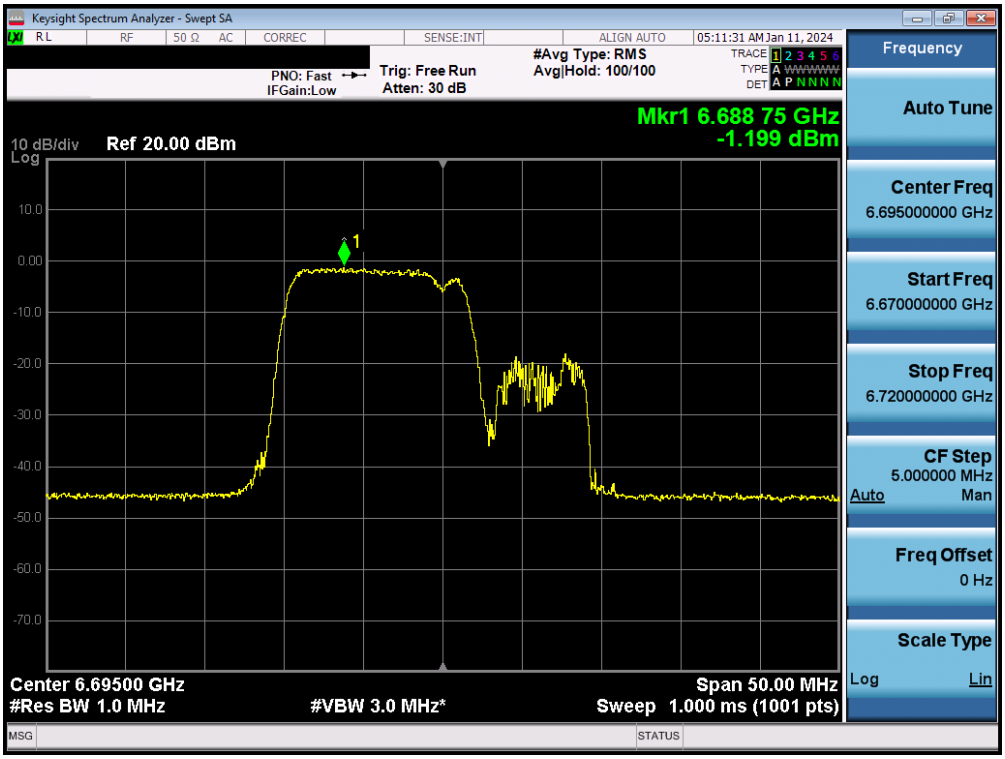


Plot 7-25. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (106+26 Tone) (UNII Band 5) – Ch. 45)

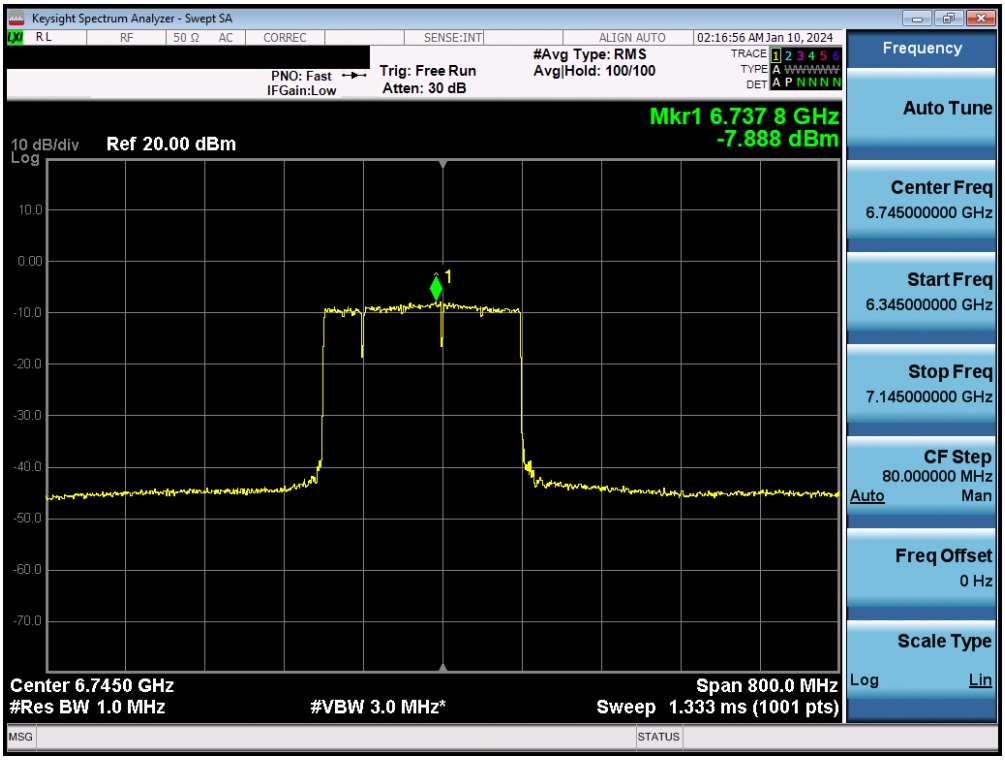
Plot 7-26. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (52+26 Tone) (UNII Band 6) – Ch. 105)



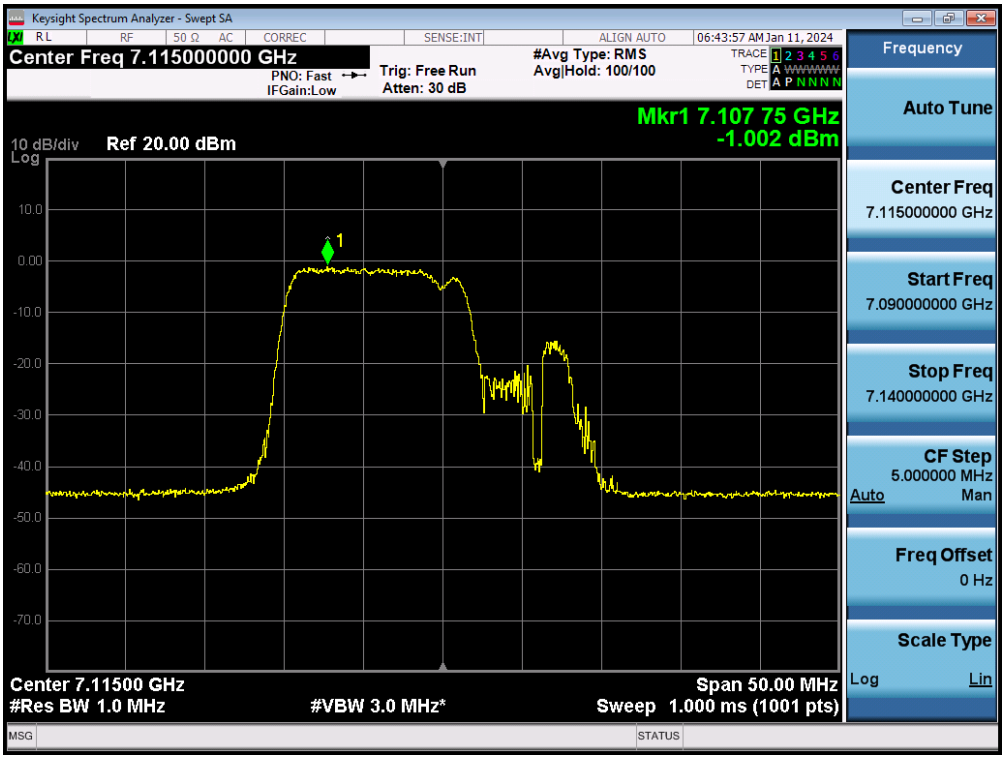
Plot 7-27. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (2x996+484 Tone) (UNII Band 5/6/7) – Ch. 95)



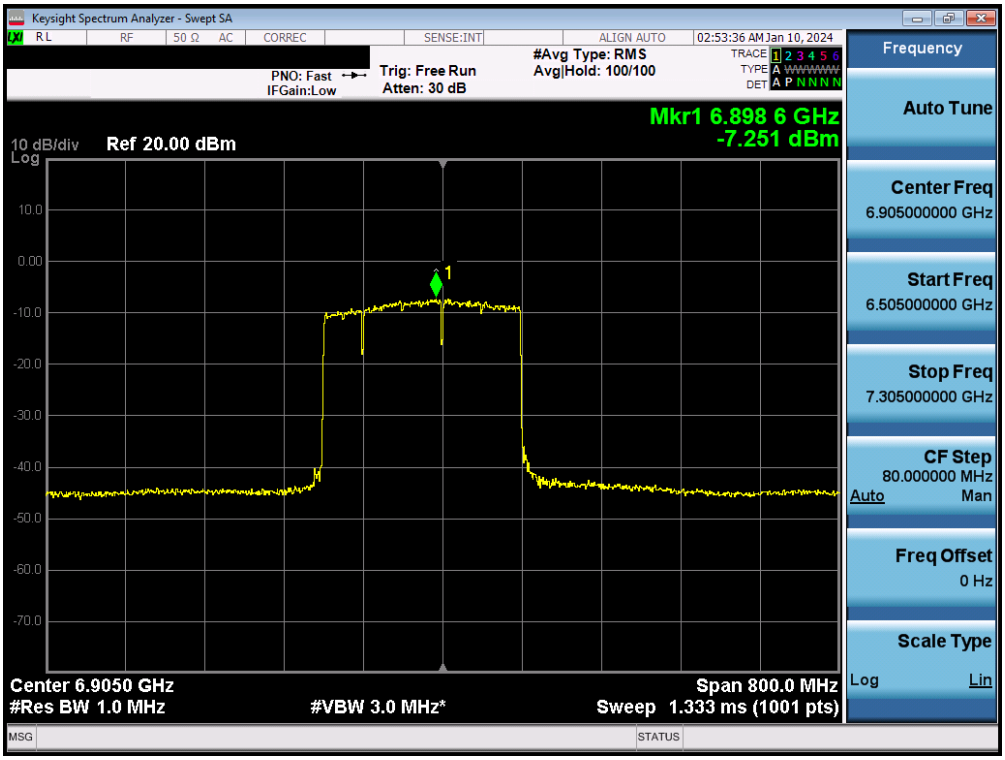
Plot 7-28. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (106+26 Tone) (UNII Band 7) – Ch. 149)



Plot 7-29. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (2x996+484 Tone) (UNII Band 6/7) – Ch. 159)

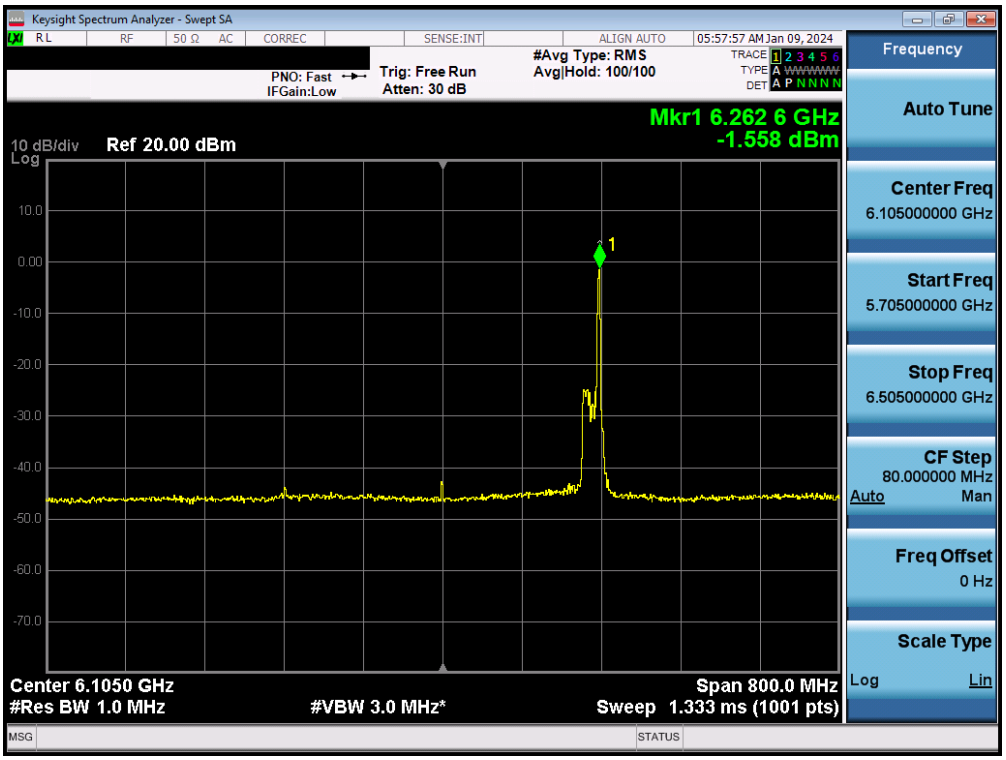


Plot 7-30. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (106+26 Tone) (UNII Band 8) – Ch. 233)

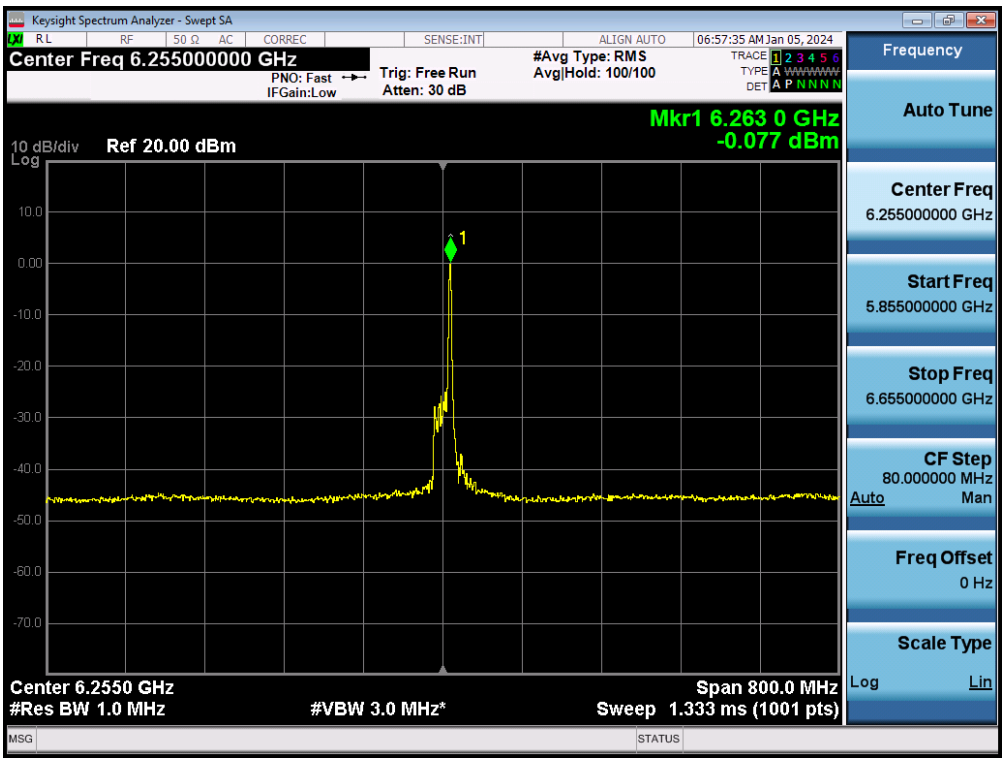


Plot 7-31. Power Spectral Density Plot MIMO ANT1 (320MHz BW 802.11be (2x996+484 Tone) (UNII Band 8) – Ch. 233)

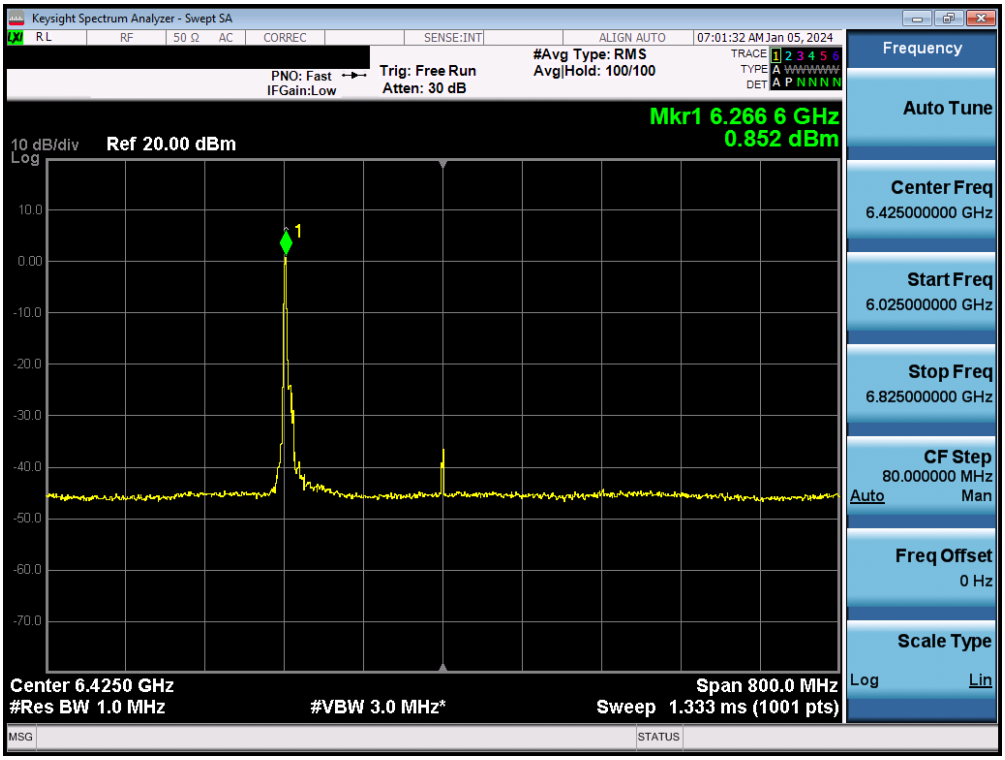
7.4.4 MIMO Antenna-2 Power Spectral Measurements – (26 Tones)



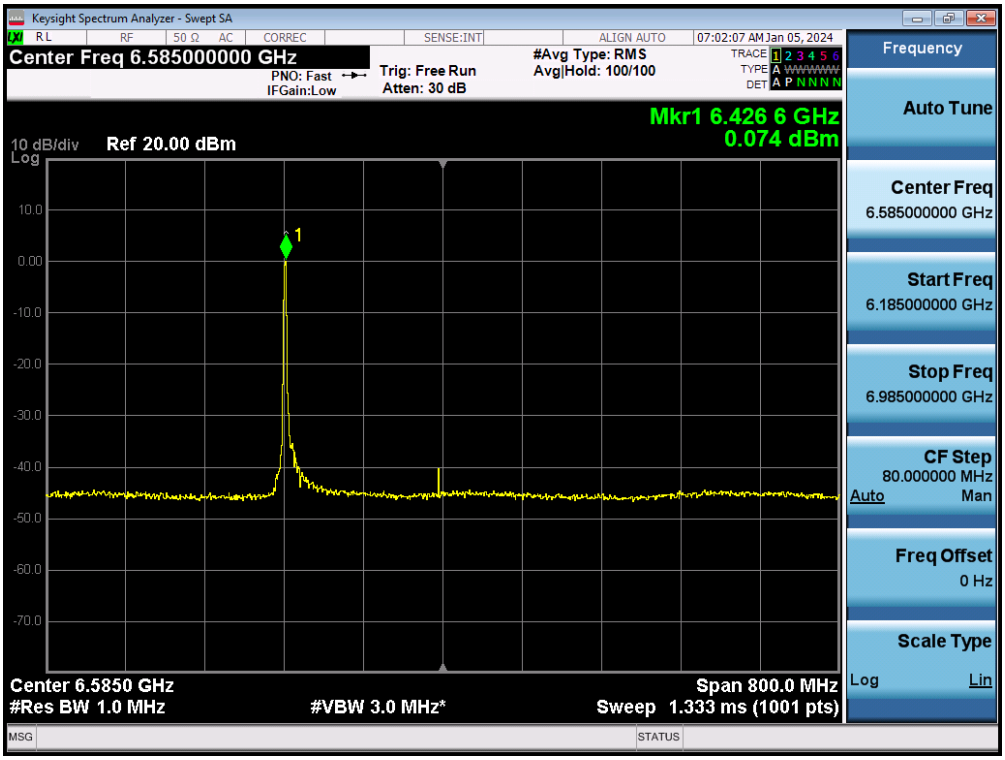
Plot 7-32. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (26 Tones) (UNII Band 5) – Ch. 45)



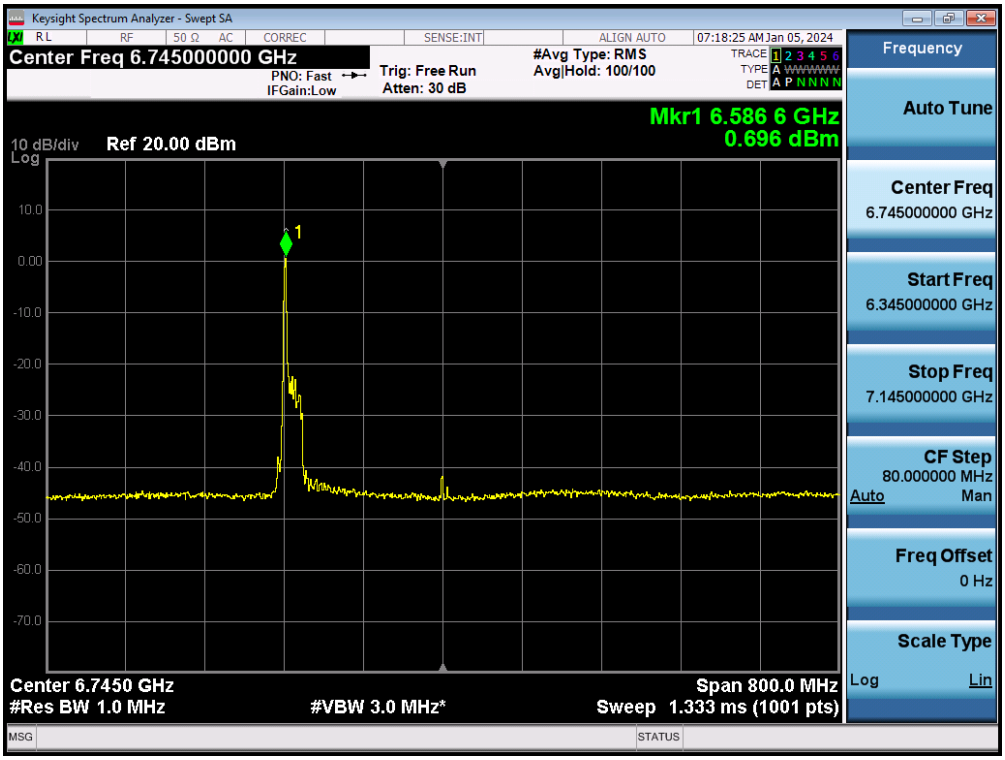
Plot 7-33. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (26 Tones) (UNII Band 5) – Ch. 63)



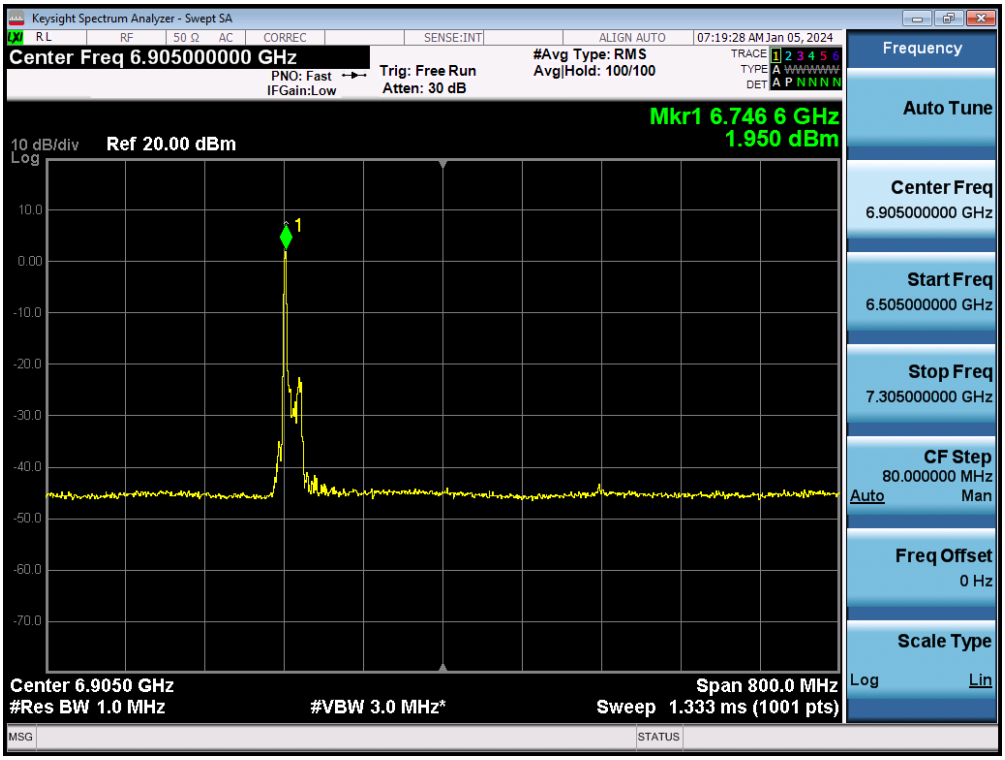
Plot 7-34. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (26 Tones) (UNII Band 5/6/7) – Ch. 95)



Plot 7-35. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (26 Tones) (UNII Band 6/7) – Ch. 127)

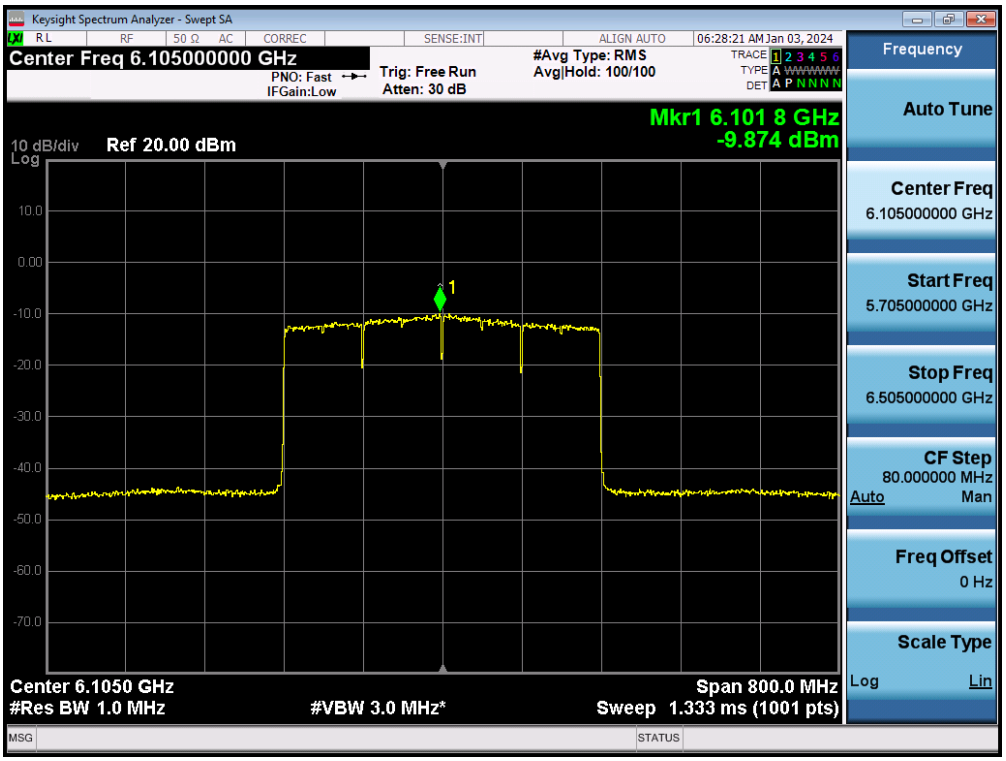


Plot 7-36. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (26 Tones) (UNII Band 7/8) – Ch. 159)

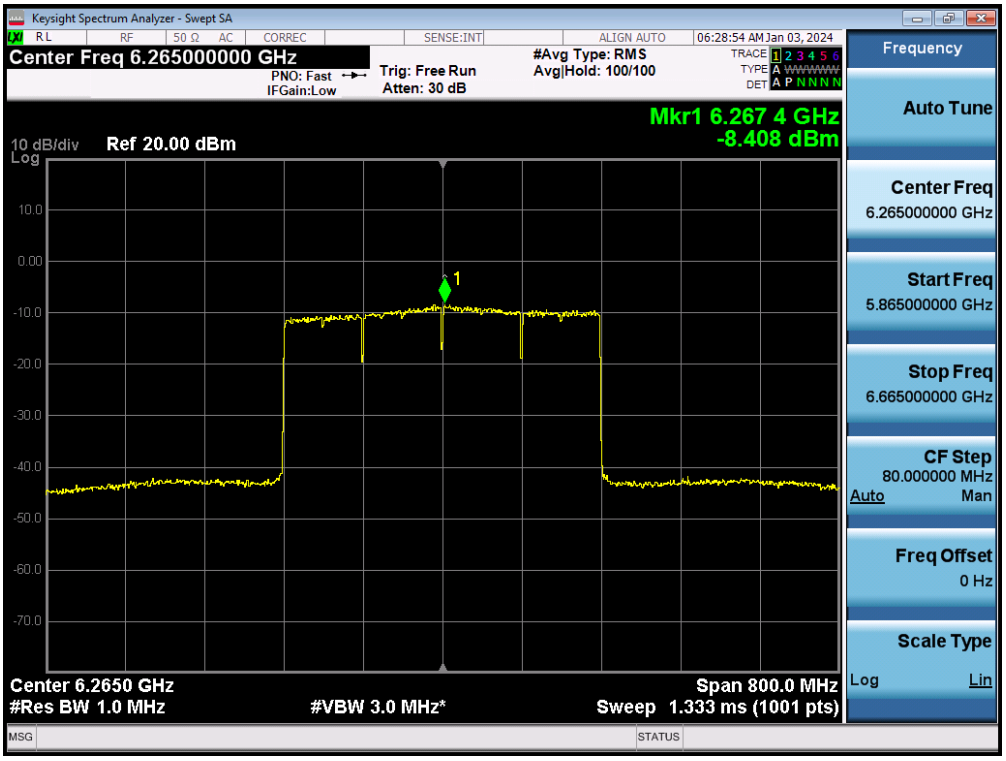


Plot 7-37. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (26 Tones) (UNII Band 7/8) – Ch. 191)

7.4.5 MIMO Antenna-2 Power Spectral Measurements - (Full Tones)

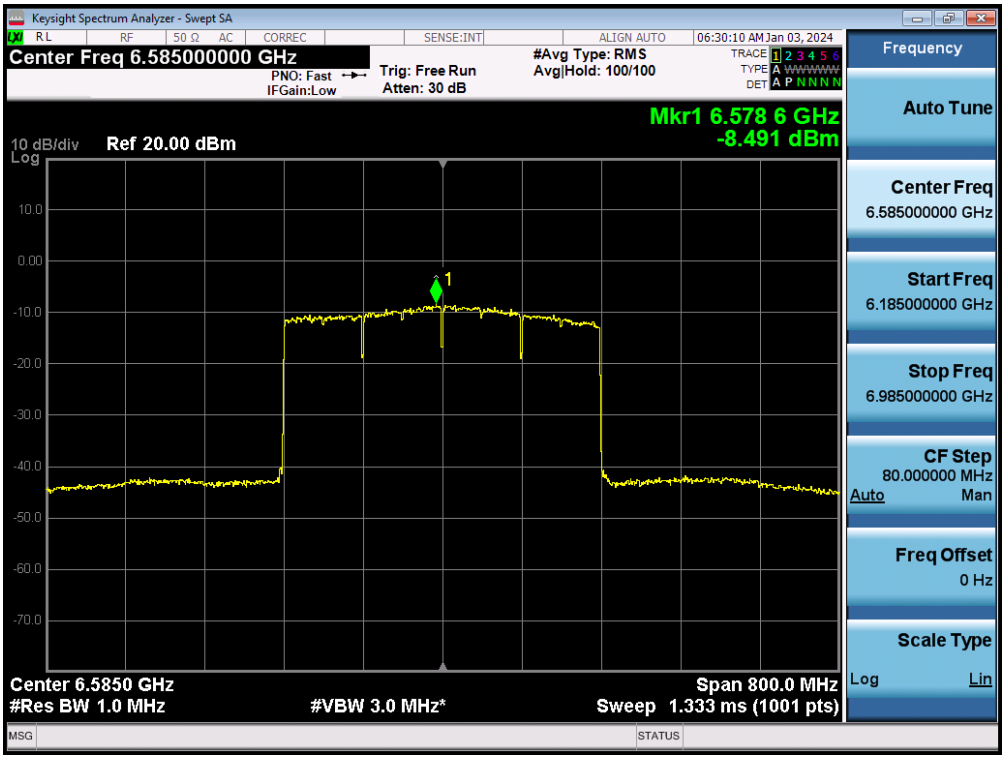


Plot 7-38. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (Full Tone) (UNII Band 5) – Ch. 31)

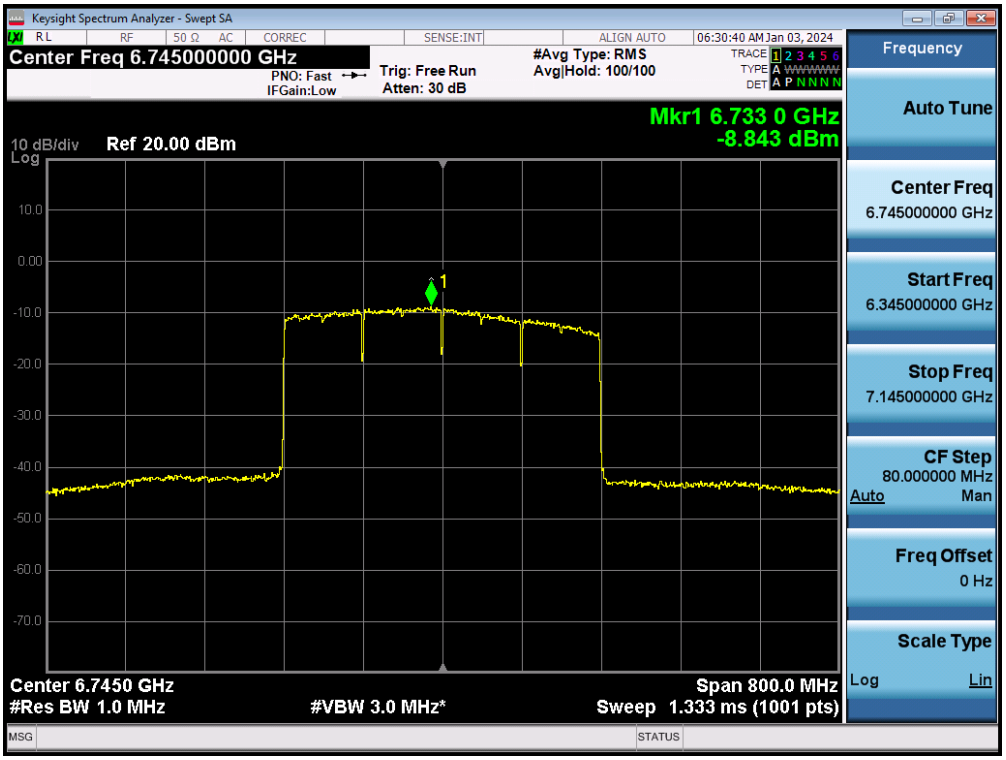


Plot 7-39. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (Full Tone) (UNII Band 5) – Ch. 63)

Plot 7-40. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (Full Tone) (UNII Band 5/6/7) – Ch. 95)



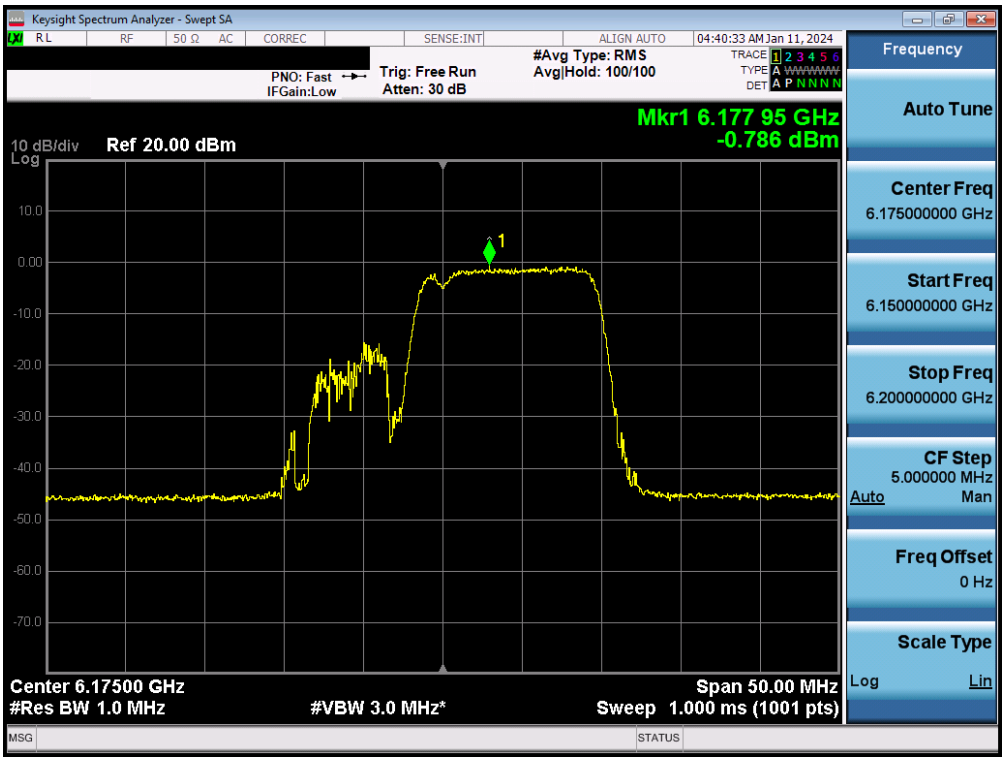
Plot 7-41. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (Full Tone) (UNII Band 6/7) – Ch. 127)



Plot 7-42. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (Full Tone) (UNII Band 7/8) – Ch. 159)

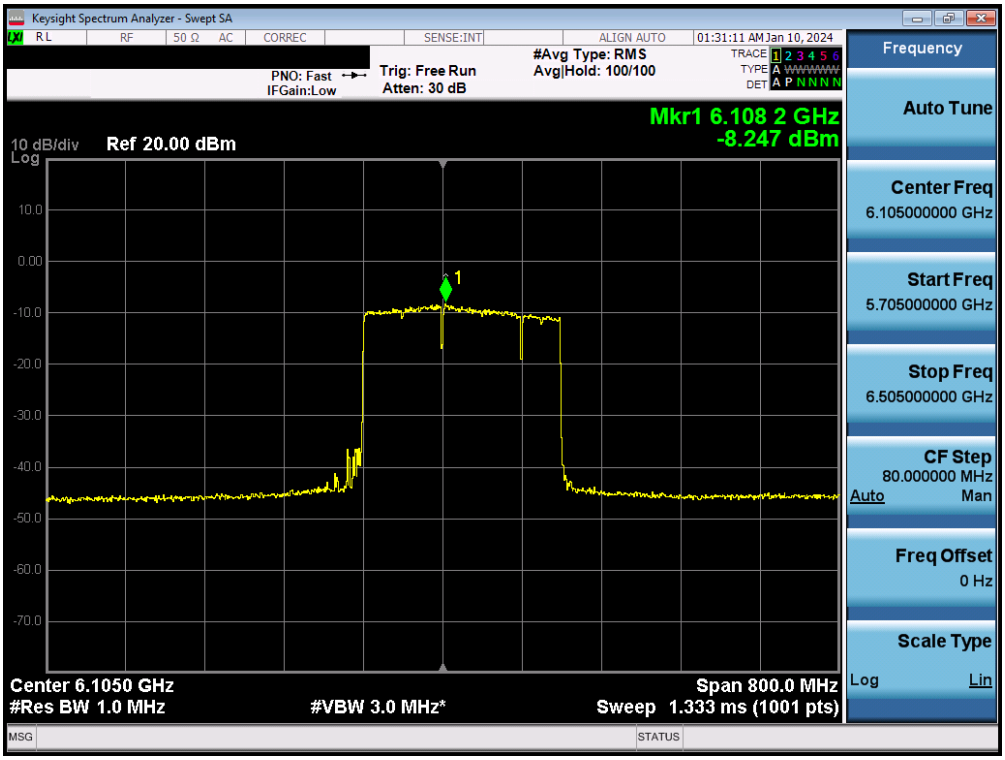
Plot 7-43. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (Full Tone) (UNII Band 7/8) – Ch. 191)

7.4.6 MIMO Antenna-2 Power Spectral Measurements - (MRU)

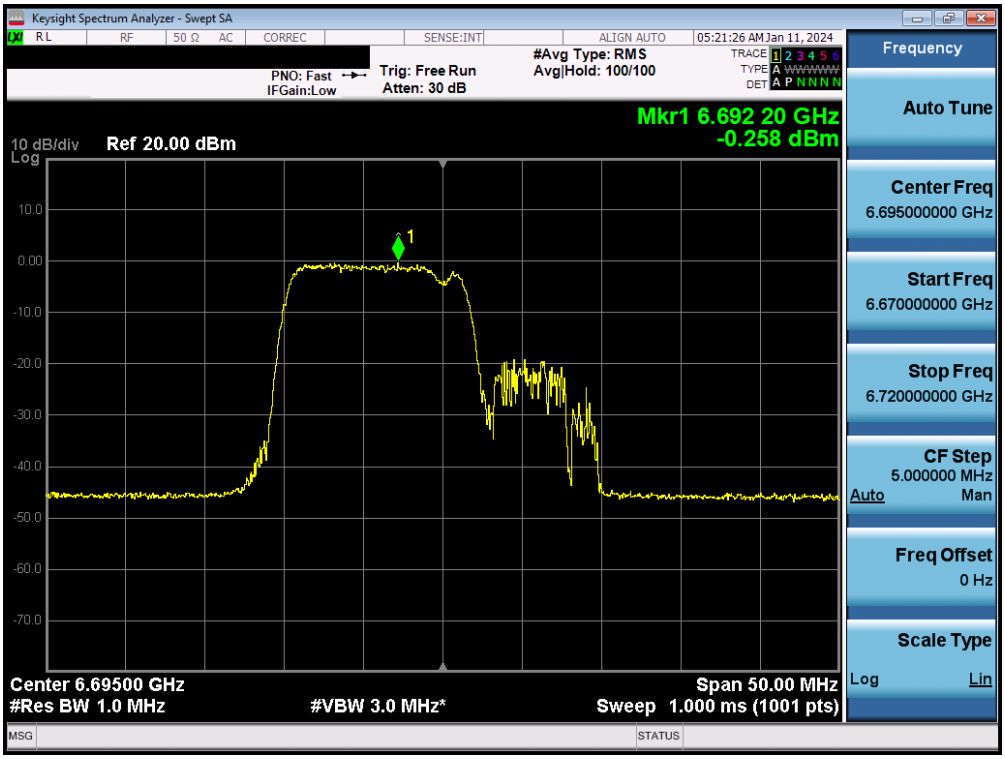


Plot 7-44. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11be (106+26 Tone) (UNII Band 5) – Ch. 45)

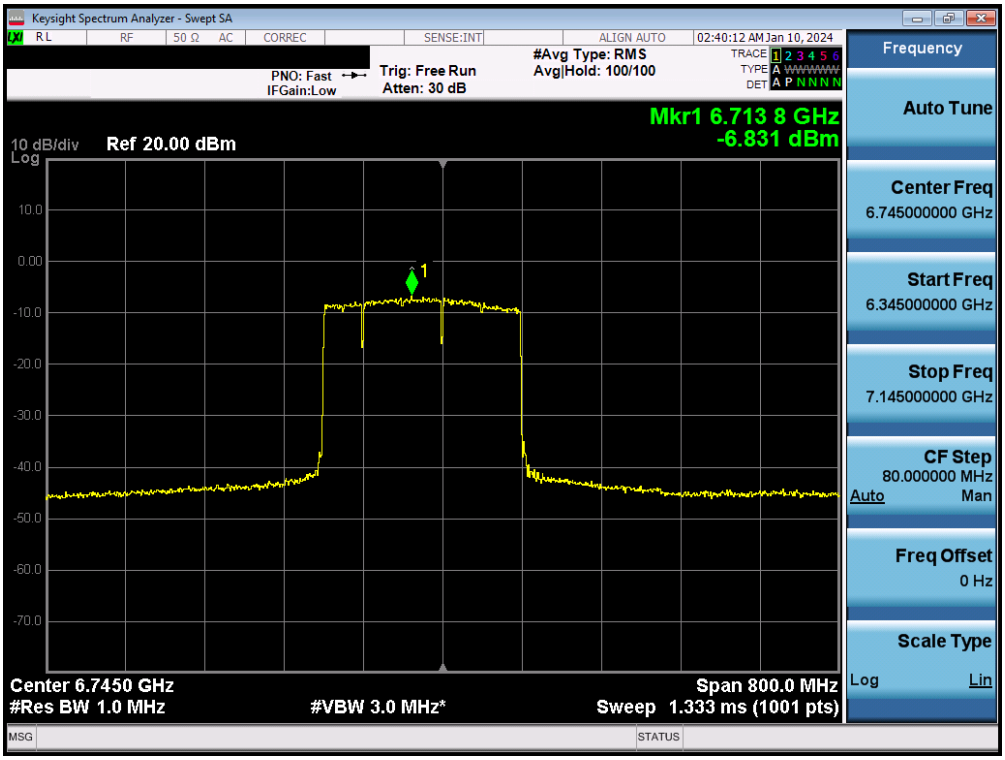
Plot 7-45. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11be (52+26 Tone) (UNII Band 6) – Ch. 105)



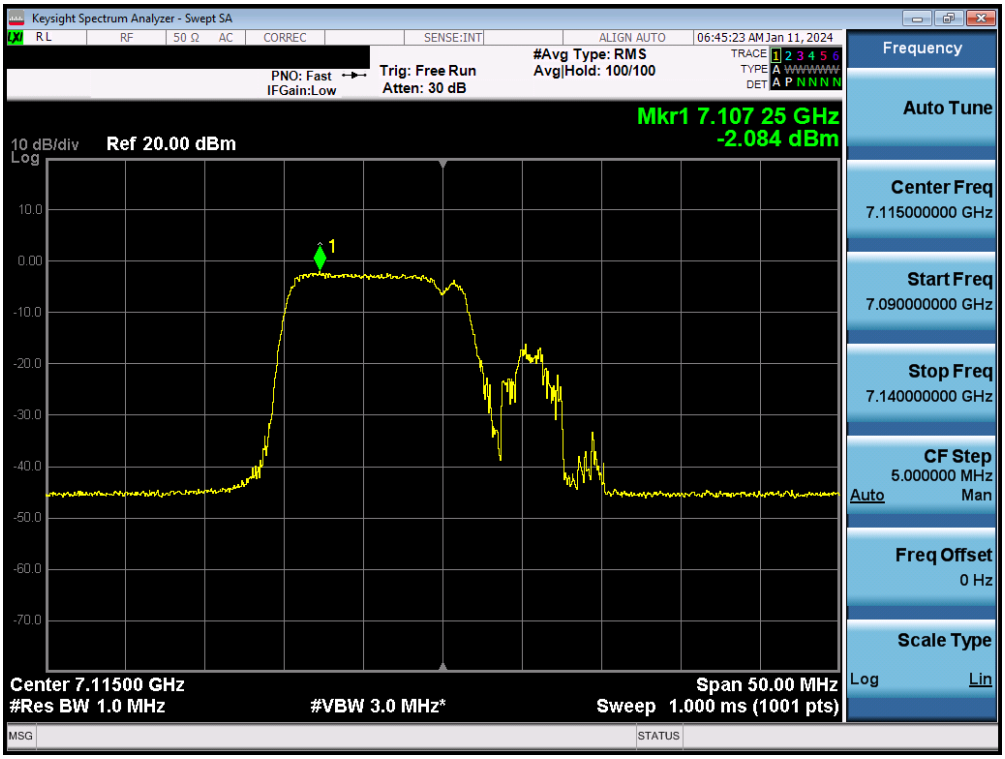
Plot 7-46. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (2x996+484 Tone) (UNII Band 5/6/7) – Ch. 95)



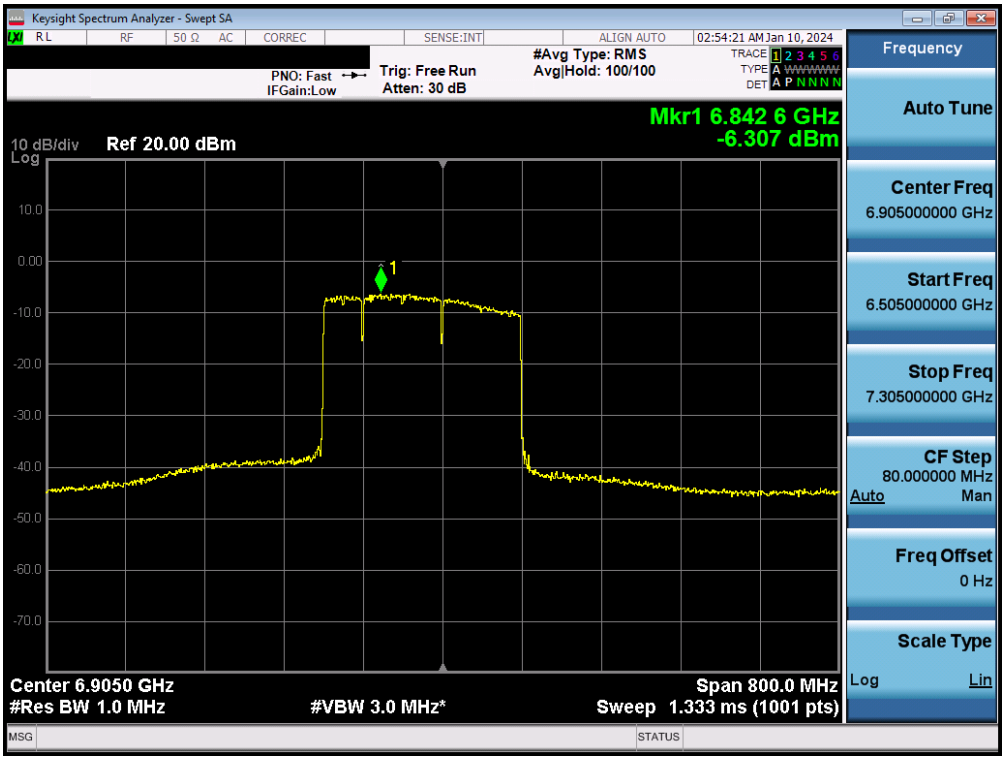
Plot 7-47. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11be (106+26 Tone) (UNII Band 7) – Ch. 149)



Plot 7-48. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (2x996+484 Tone) (UNII Band 6/7) – Ch. 159)



Plot 7-49. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11be (106+26 Tone) (UNII Band 8) – Ch. 233)



Plot 7-50. Power Spectral Density Plot MIMO ANT2 (320MHz BW 802.11be (2x996+484 Tone) (UNII Band 8) – Ch. 233)

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.

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

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

Sample MIMO Calculation:

At 6105MHz in 802.11be (20MHz BW) mode, the average conducted power spectral density was measured to be 0.79 dBm for Antenna-1 and -1.56 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(0.79 dBm + -1.56 dBm) = (1.199 mW + 0.698 mW) = 1.897 mW = 2.78 dBm

Sample e.i.r.p Power Spectral Density Calculation:

At 6105 MHz in 802.11be (20MHz BW) mode, the average MIMO power density was calculated to be -1.00 dBm with directional gain of -4.02 dBi.

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

2.78 dBm + -4.02 dBi = -1.24 dBm

7.5 In-Band Emissions

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.

For transmitters operating within the 5.925-7.125 GHz bands: Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

Test Procedure Used

KDB 987594 D02 v01r01

Test Settings

1. Connect output of the antenna port to a spectrum analyzer or EMI receiver, with appropriate attenuation, as to not damage the instrumentation.
2. Set the reference level of the measuring equipment in accordance with procedure 4.1.5.2 of ANSI C63.10-2013.
3. Measure the 26 dB EBW using the test procedure 12.4.1 of ANSI C63.10-2013. (This will be used to determine the channel edge.)
4. Measure the power spectral density (which will be used for emissions mask reference) using the following procedure:
    a) Set the span to encompass the entire 26 dB EBW of the signal.
    b) Set RBW = same RBW used for 26 dB EBW measurement.
    c) Set VBW ≥ 3 X RBW
    d) Number of points in sweep ≥ [2 X span / RBW].
    e) Sweep time = auto.
    f) Detector = RMS (i.e., power averaging)
    g) Trace average at least 100 traces in power averaging (rms) mode.
    h) Use the peak search function on the instrument to find the peak of the spectrum.
5. For the purposes of developing the emission mask, the channel bandwidth is defined as the 26 dB EBW.
6. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:
    a) Suppressed by 20 dB at 1 MHz outside of the channel edge. (The channel edge is defined as the 26-dB point on either side of the carrier center frequency.)
    b) Suppressed by 28 dB at one channel bandwidth from the channel center.
    c) Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.
7. Adjust the span to encompass the entire mask as necessary.
8. Clear trace.
9. Trace average at least 100 traces in power averaging (rms) mode.
10. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.

Test Setup

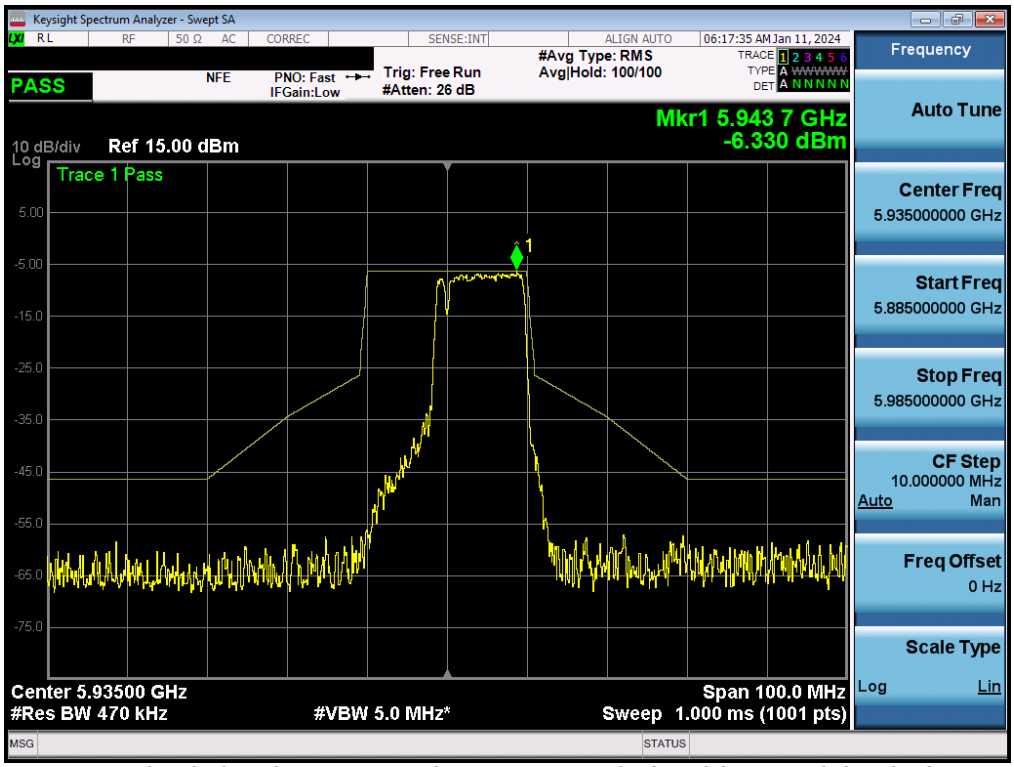
The EUT and measurement equipment were set up as shown in the diagram below.

Figure 7-4. Test Instrument & Measurement Setup

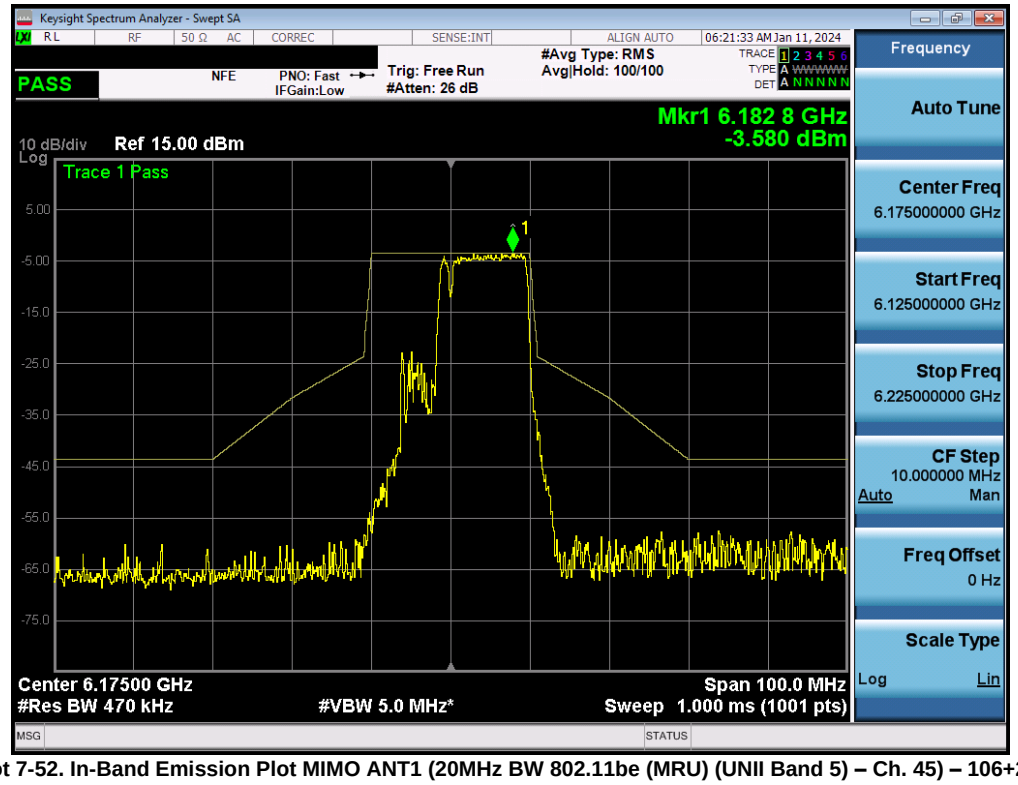
Test Notes

None.

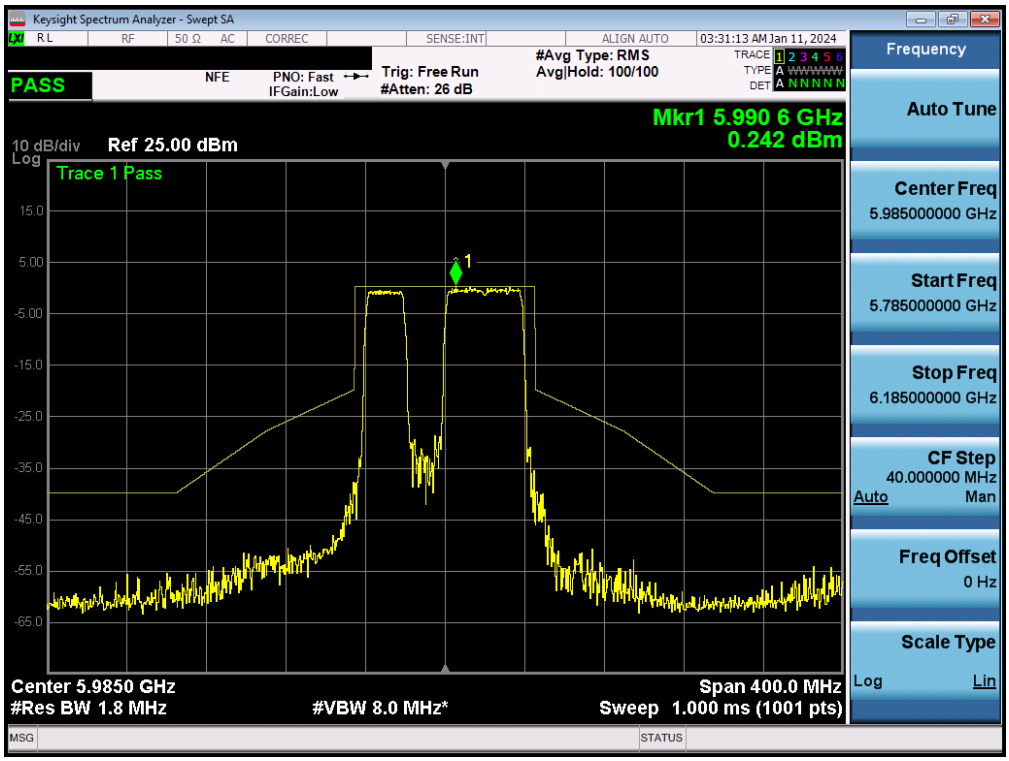
7.5.1 MIMO Antenna-1 In-Band Emission - (MRU) – (UNII Band 5)



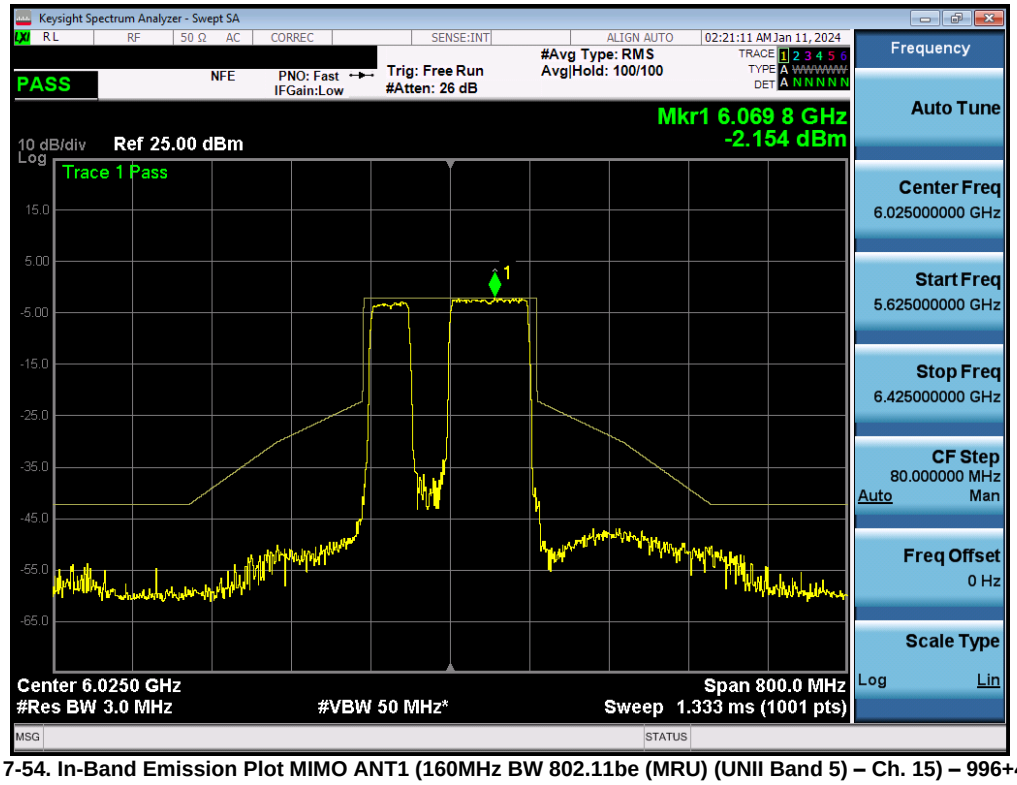
Plot 7-51. In-Band Emission Plot MIMO ANT1 (20MHz BW 802.11be (MRU) (UNII Band 5) – Ch. 2) – 106+26T



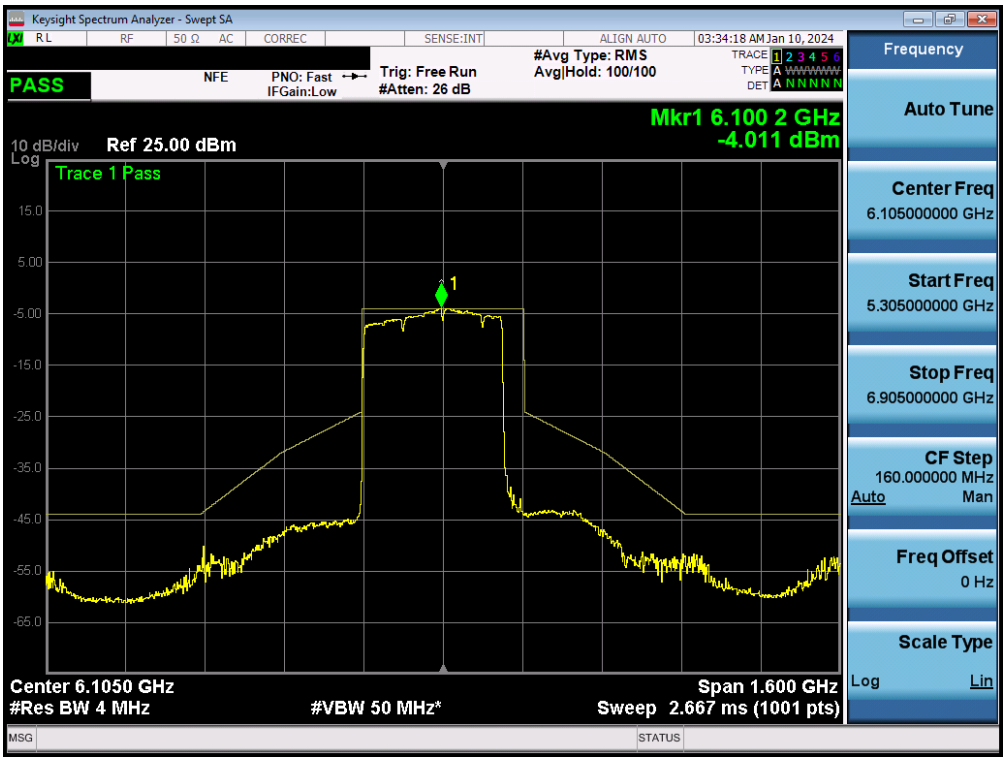
Plot 7-52. In-Band Emission Plot MIMO ANT1 (20MHz BW 802.11be (MRU) (UNII Band 5) – Ch. 45) – 106+26T



Plot 7-53. In-Band Emission Plot MIMO ANT1 (80MHz BW 802.11be (MRU) (UNII Band 5) – Ch. 7) – 242+484T

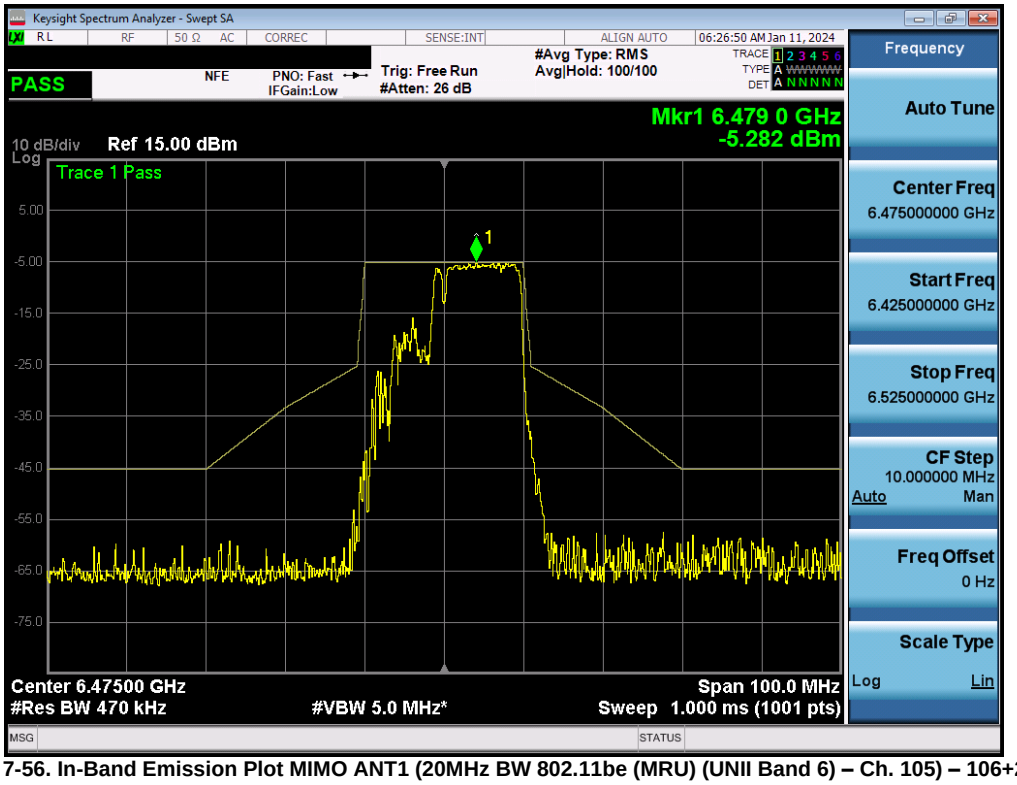


Plot 7-54. In-Band Emission Plot MIMO ANT1 (160MHz BW 802.11be (MRU) (UNII Band 5) – Ch. 15) – 996+484T

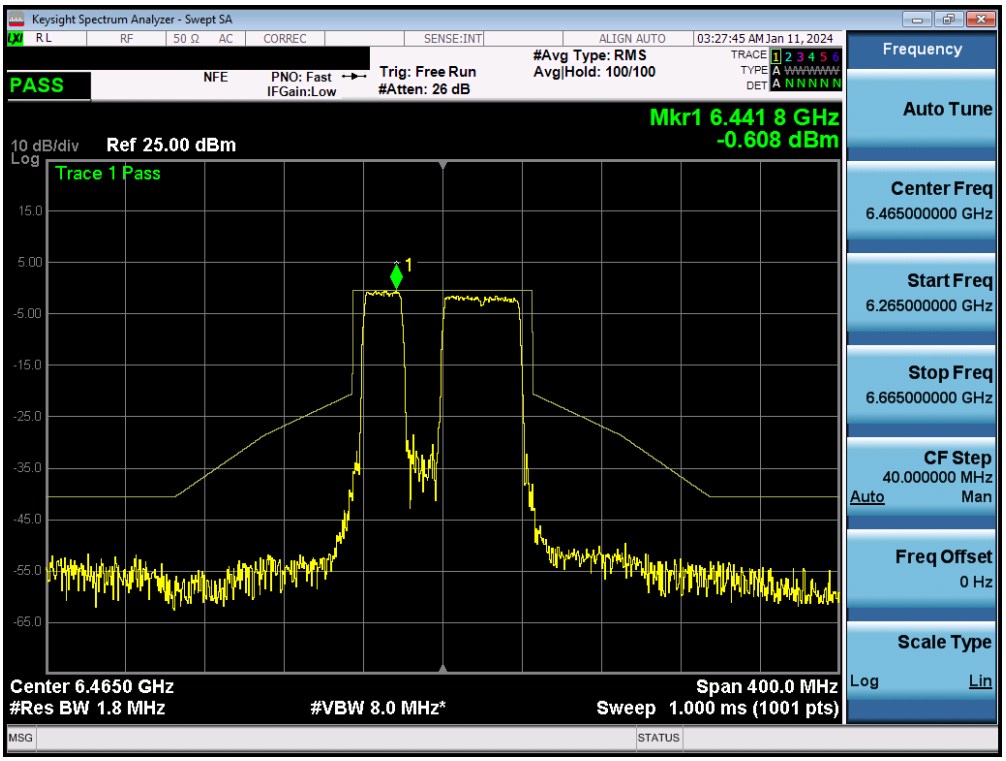


Plot 7-55. In-Band Emission Plot MIMO ANT1 (320MHz BW 802.11be (MRU) (UNII Band 5) – Ch. 31) – 3x996+484T

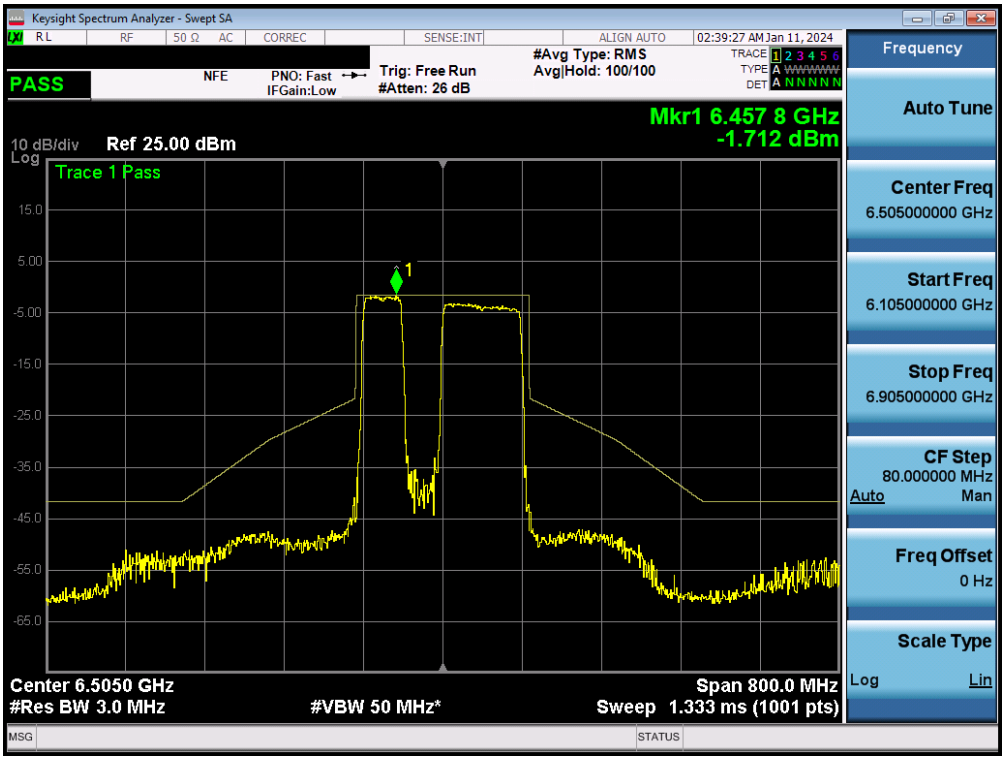
MIMO Antenna-1 In-Band Emission - (MRU) – (UNII Band 6)



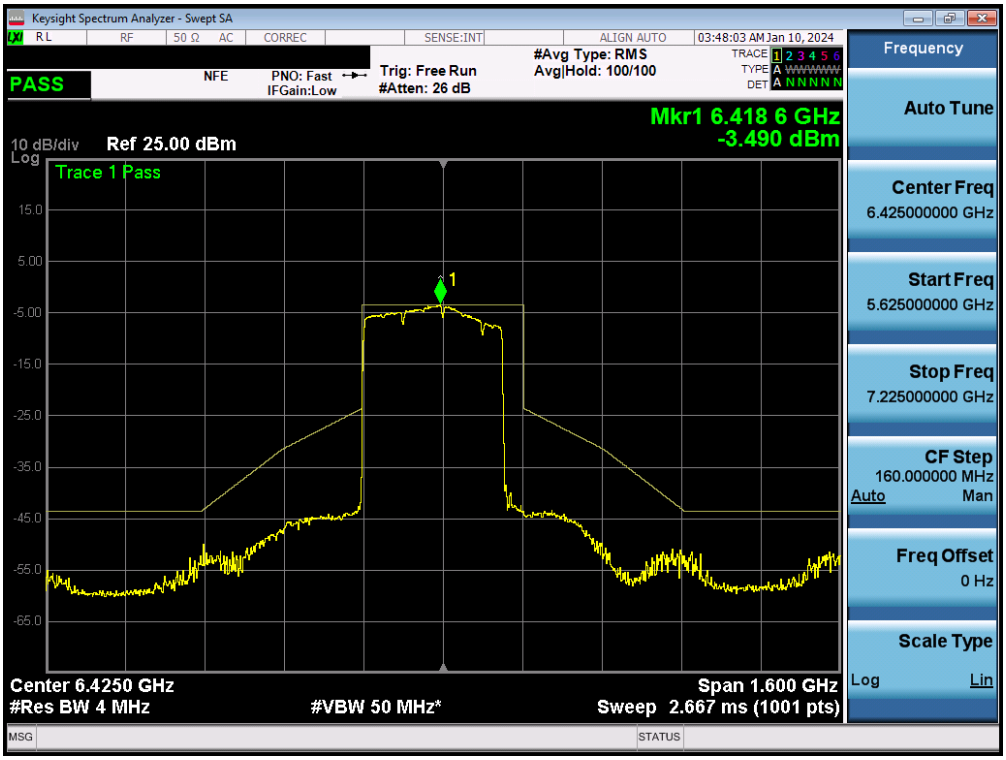
Plot 7-56. In-Band Emission Plot MIMO ANT1 (20MHz BW 802.11be (MRU) (UNII Band 6) – Ch. 105) – 106+26T



Plot 7-57. In-Band Emission Plot MIMO ANT1 (80MHz BW 802.11be (MRU) (UNII Band 6) – Ch. 103) – 242+484T

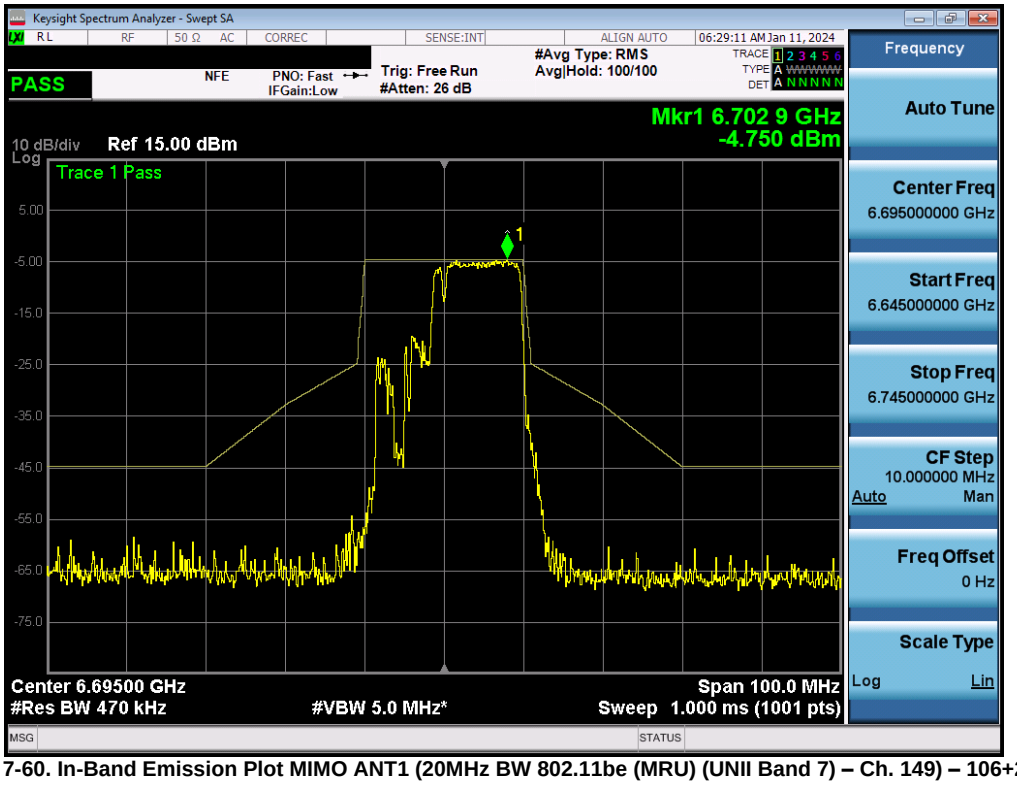


Plot 7-58. In-Band Emission Plot MIMO ANT1 (160MHz BW 802.11be (MRU) (UNII Band 6) – Ch. 111) – 996+484T

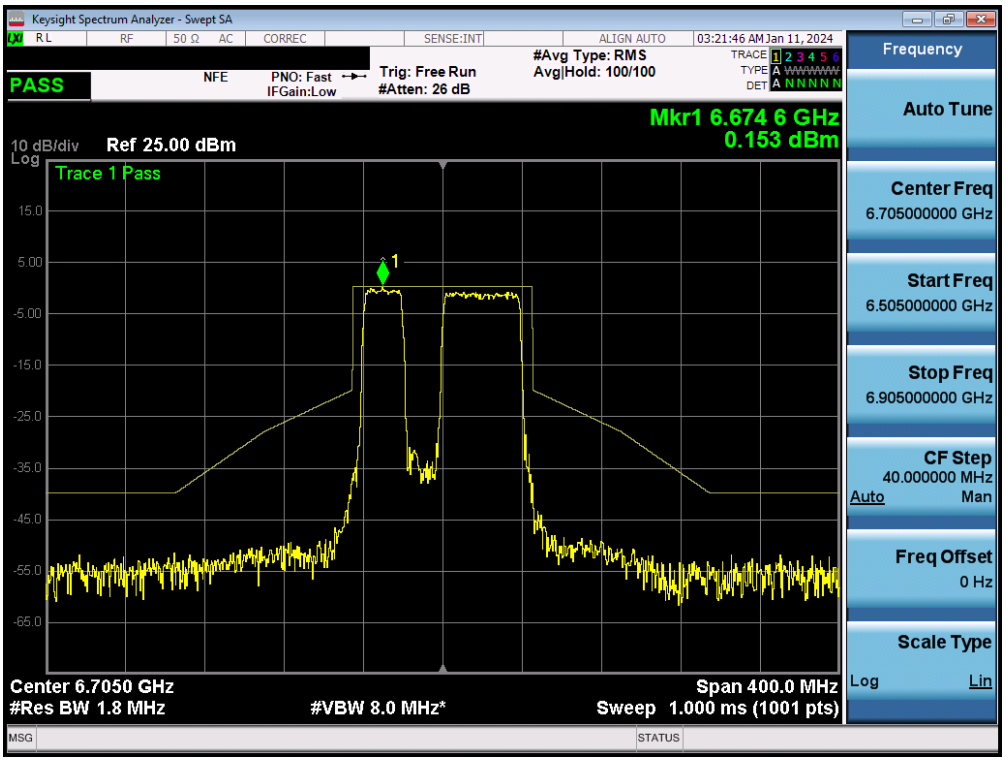


Plot 7-59. In-Band Emission Plot MIMO ANT1 (320MHz BW 802.11be (MRU) (UNII Band 5/6/7) – Ch. 95) – 3x996+484T

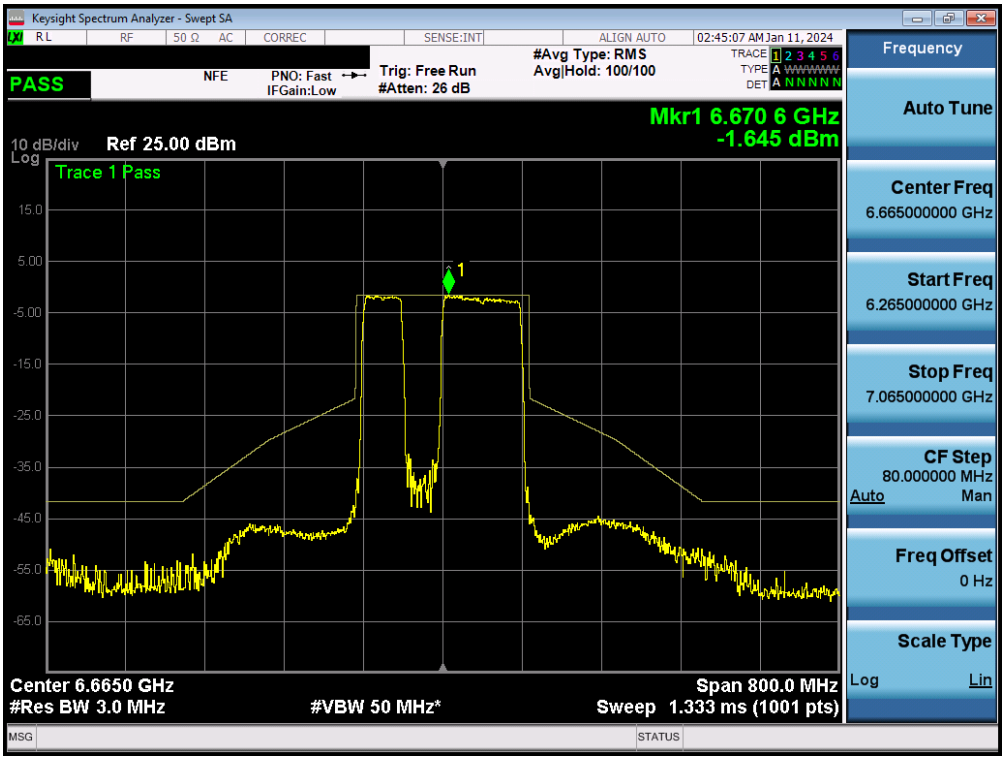
MIMO Antenna-1 In-Band Emission - (MRU) – (UNII Band 7)



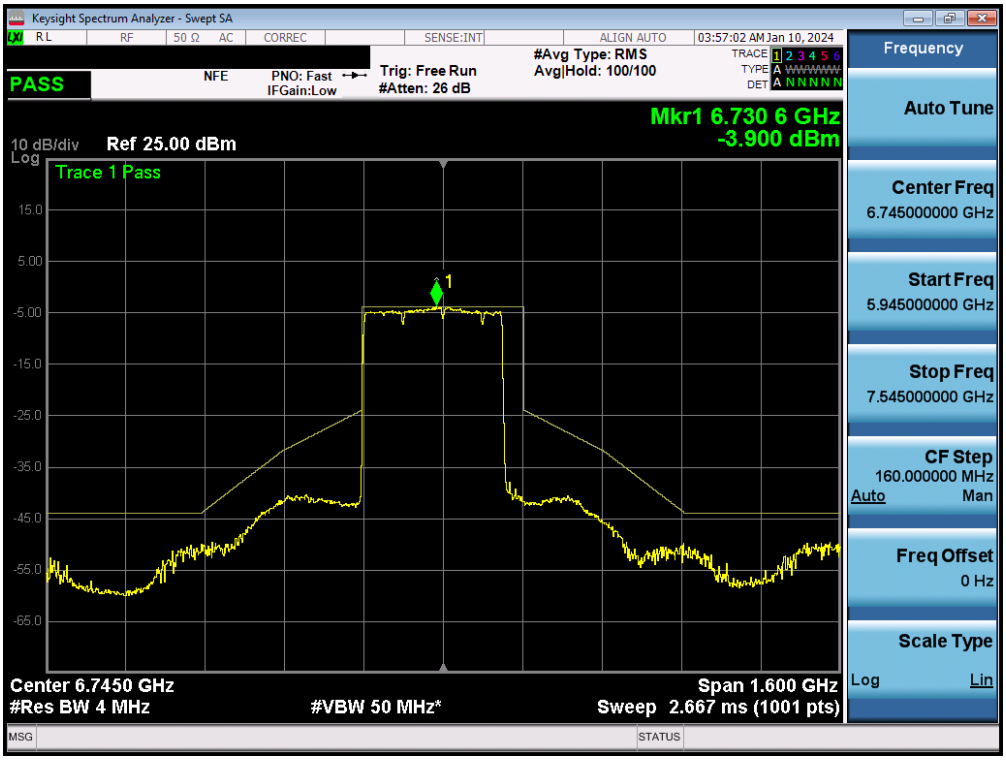
Plot 7-60. In-Band Emission Plot MIMO ANT1 (20MHz BW 802.11be (MRU) (UNII Band 7) – Ch. 149) – 106+26T



Plot 7-61. In-Band Emission Plot MIMO ANT1 (80MHz BW 802.11be (MRU) (UNII Band 7) – Ch. 151) – 242+484T

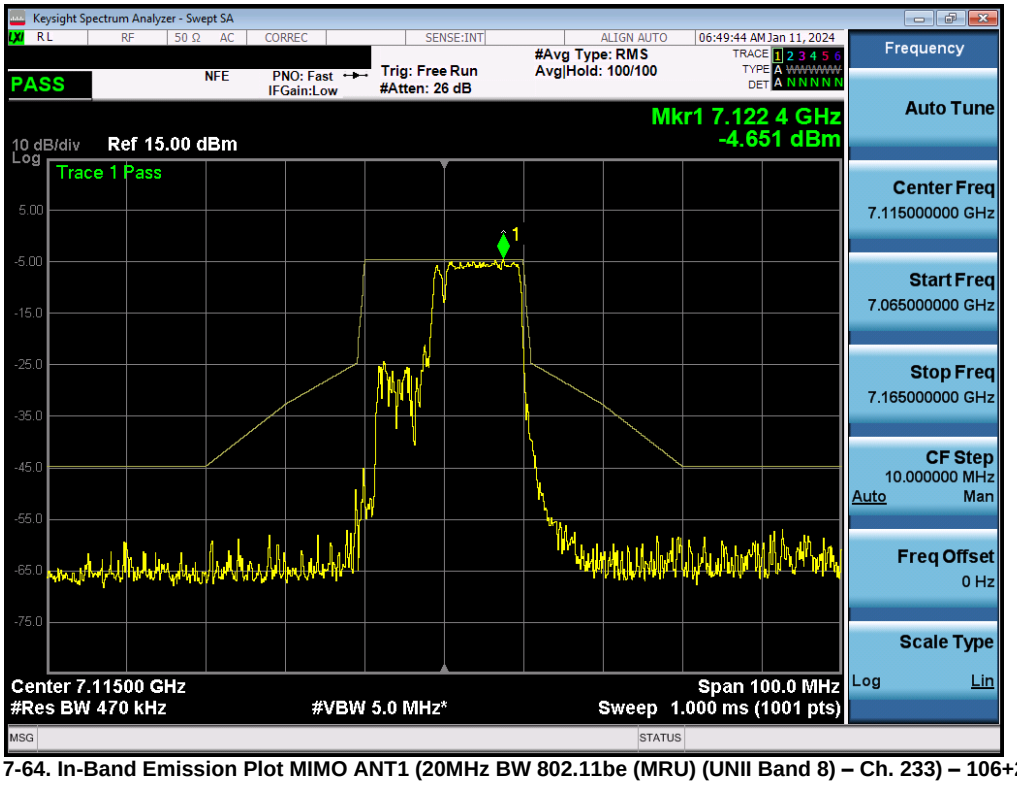


Plot 7-62. In-Band Emission Plot MIMO ANT1 (160MHz BW 802.11be (MRU) (UNII Band 7) – Ch. 143) – 996+484T

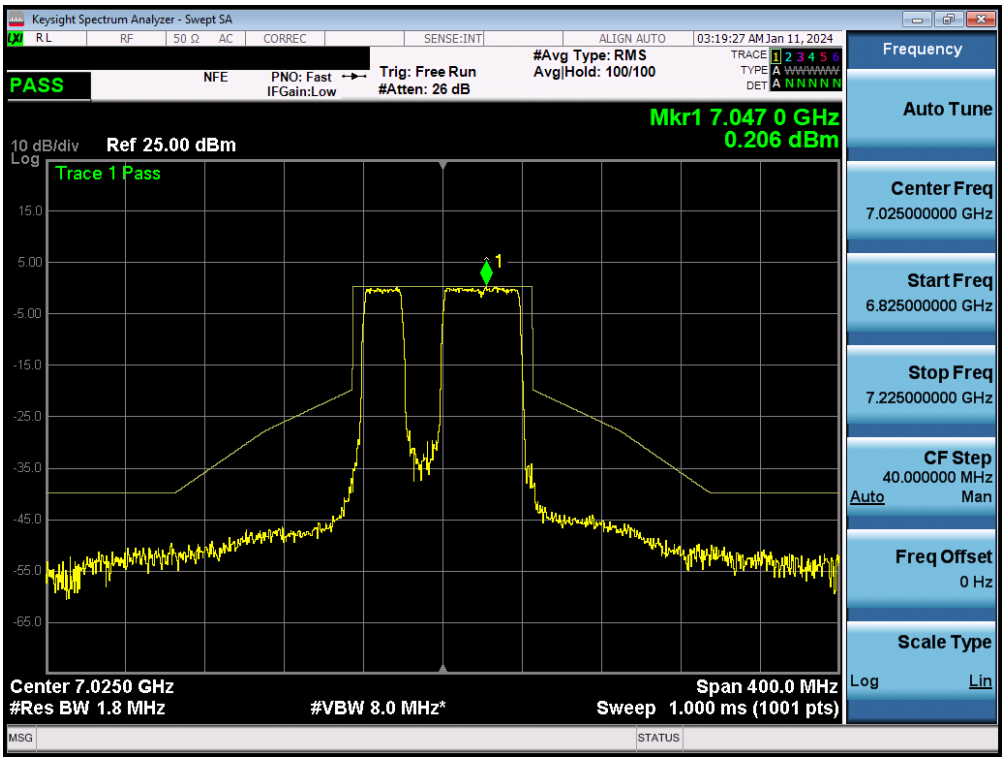


Plot 7-63. In-Band Emission Plot MIMO ANT1 (320MHz BW 802.11be (MRU) (UNII Band 6/7) – Ch. 159) – 3x996+484T

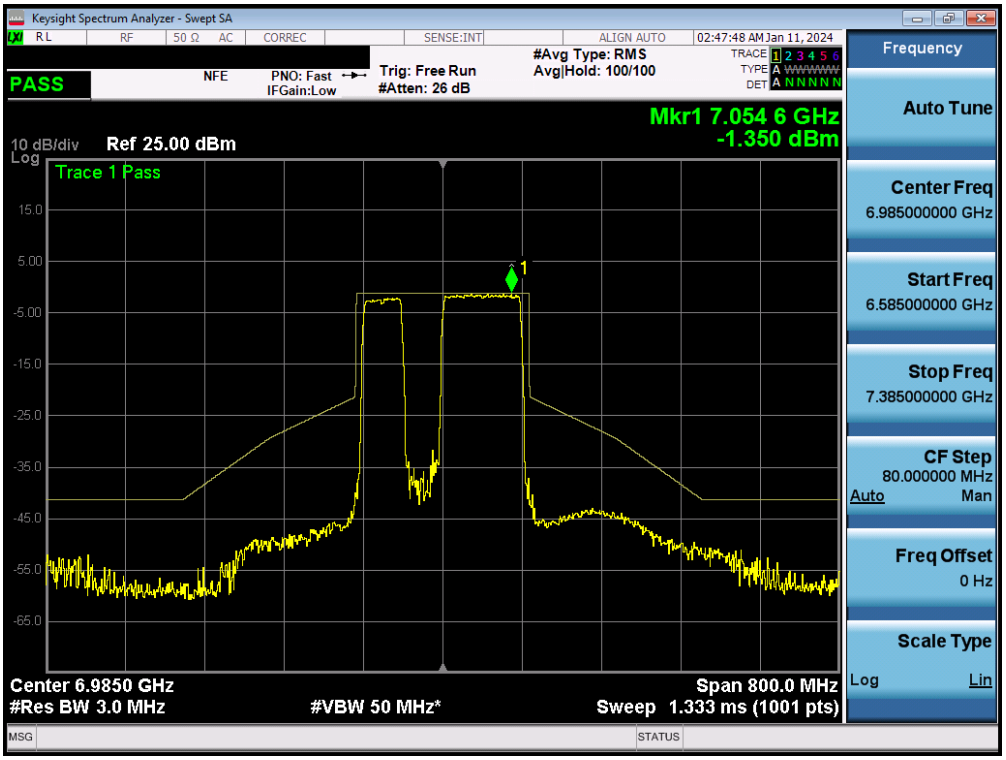
MIMO Antenna-1 In-Band Emission - (MRU) – (UNII Band 8)



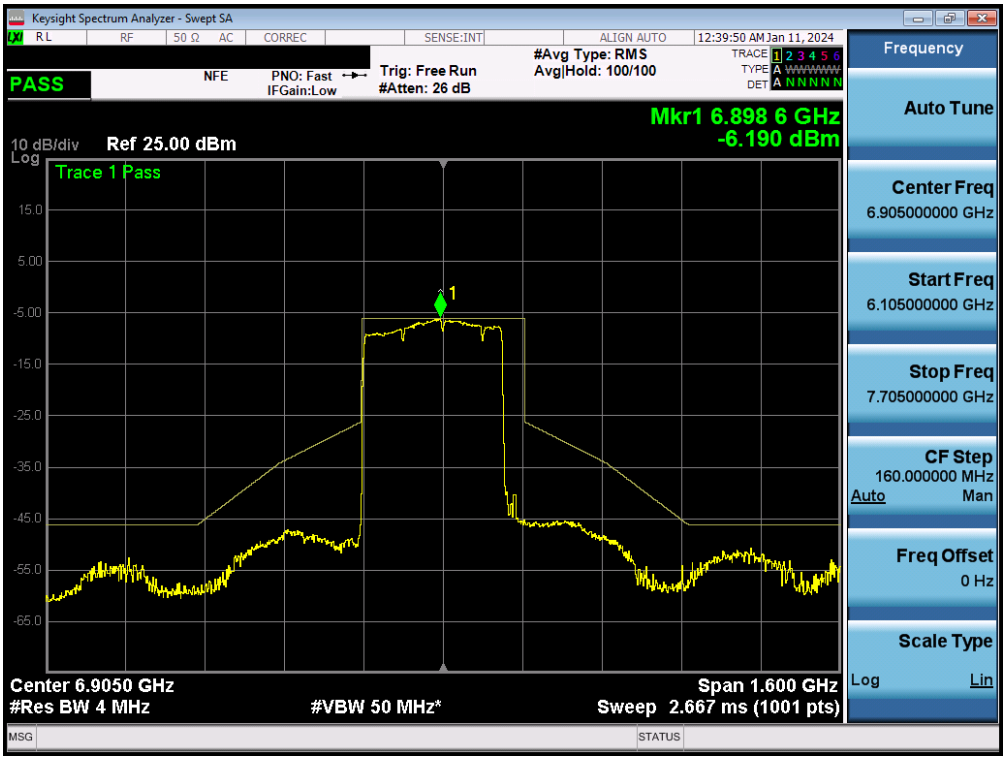
Plot 7-64. In-Band Emission Plot MIMO ANT1 (20MHz BW 802.11be (MRU) (UNII Band 8) – Ch. 233) – 106+26T



Plot 7-65. In-Band Emission Plot MIMO ANT1 (80MHz BW 802.11be (MRU) (UNII Band 8) – Ch. 215) – 242+484T

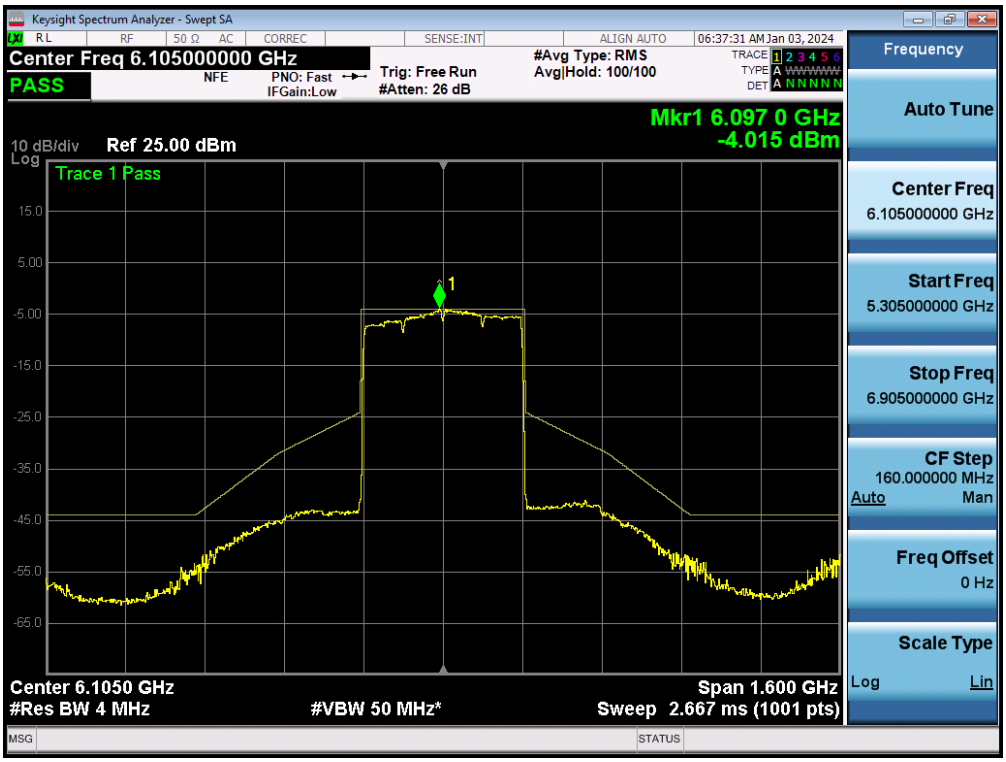


Plot 7-66. In-Band Emission Plot MIMO ANT1 (160MHz BW 802.11be (MRU) (UNII Band 8) – Ch. 207) – 996+484T



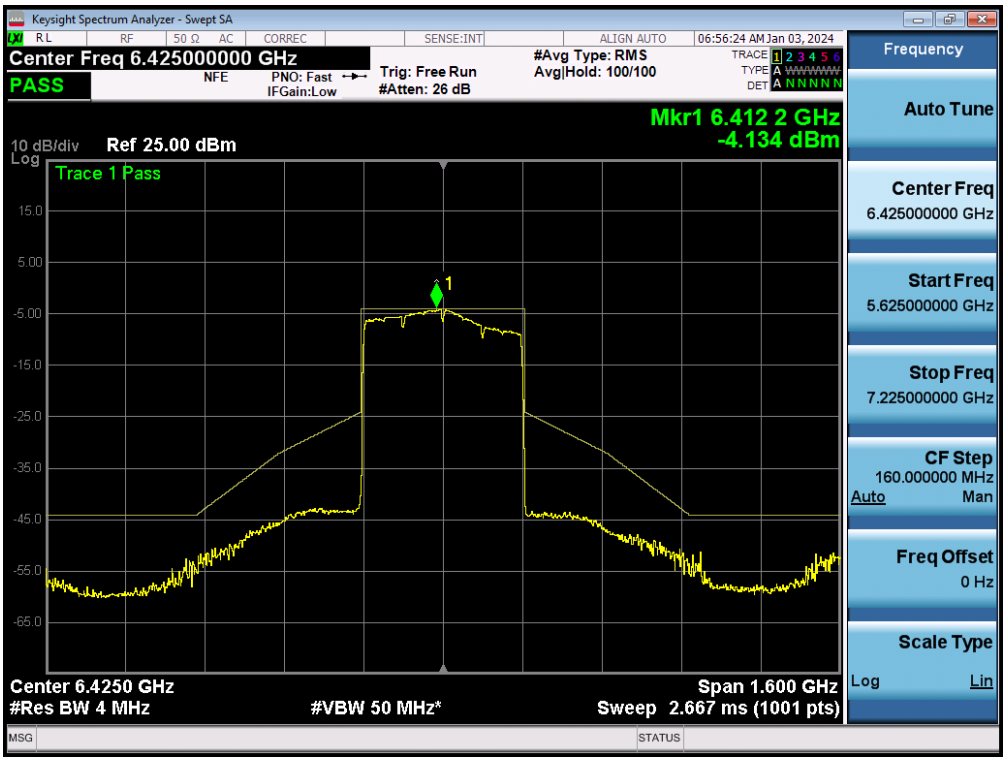
Plot 7-67. In-Band Emission Plot MIMO ANT1 (320MHz BW 802.11be (MRU) (UNII Band 8) – Ch. 211) – 3x996+484T

7.5.2 MIMO Antenna-1 In-Band Emission - (Full Tones)

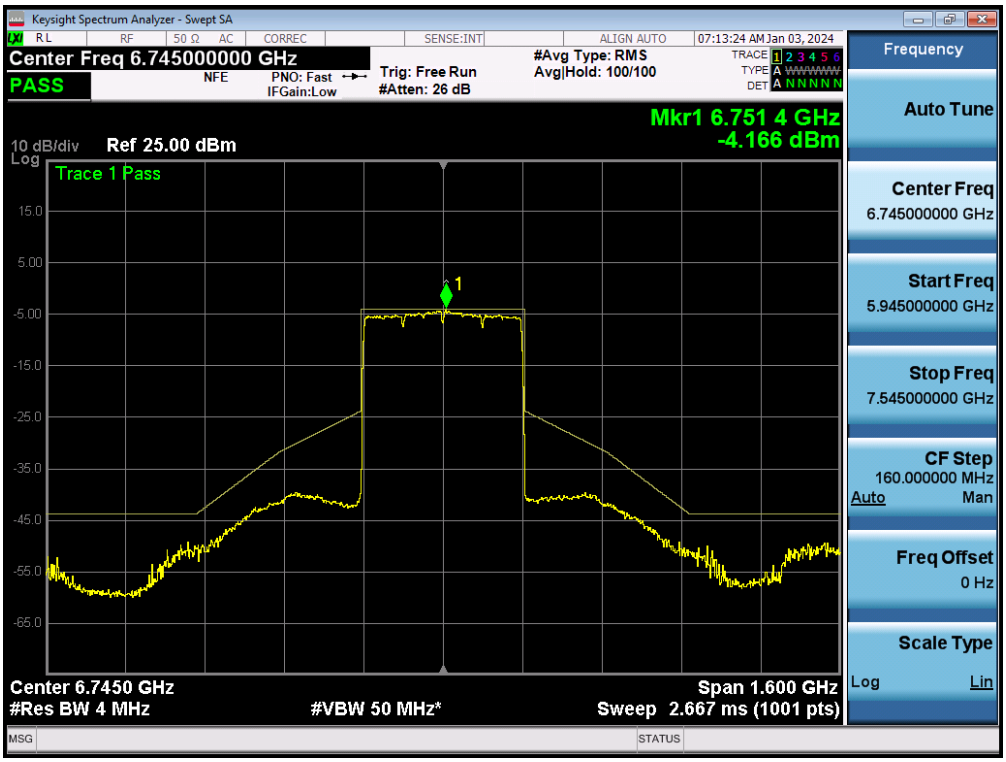


Plot 7-68. In-Band Emission Plot MIMO ANT1 (320MHz BW 802.11be (Full Tone) (UNII Band 5) – Ch. 31)

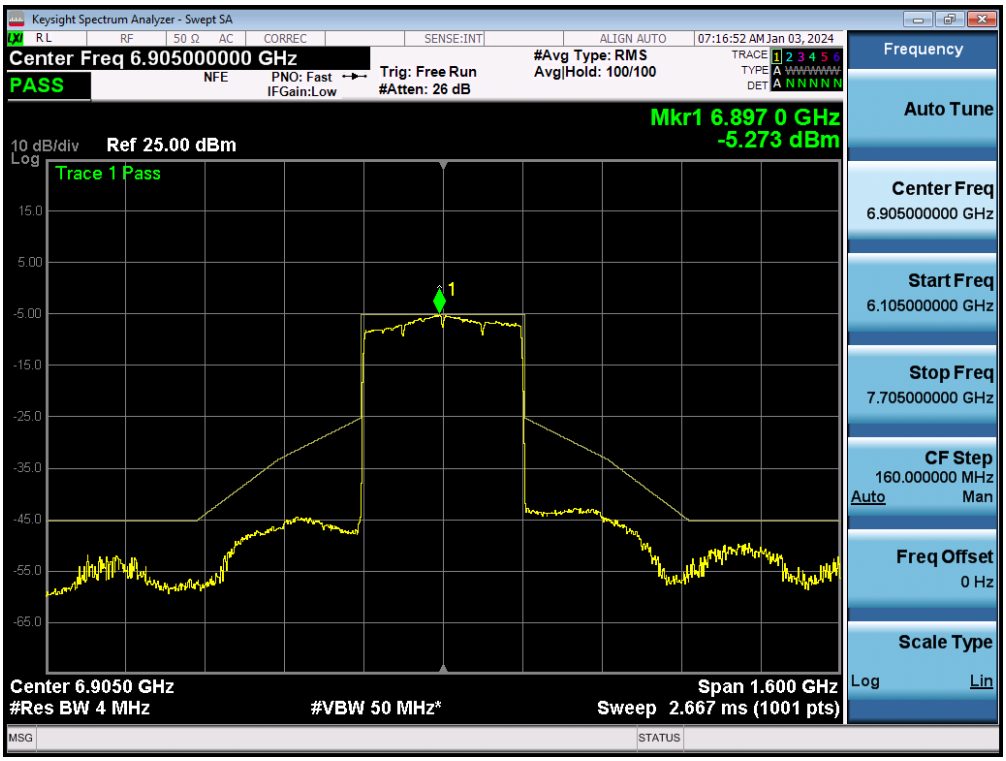
Plot 7-69. In-Band Emission Plot MIMO ANT1 (320MHz BW 802.11be (Full Tone) (UNII Band 5) – Ch. 63)



Plot 7-70. In-Band Emission Plot MIMO ANT1 (320MHz BW 802.11be (Full Tone) (UNII Band 5/6/7) – Ch. 95)

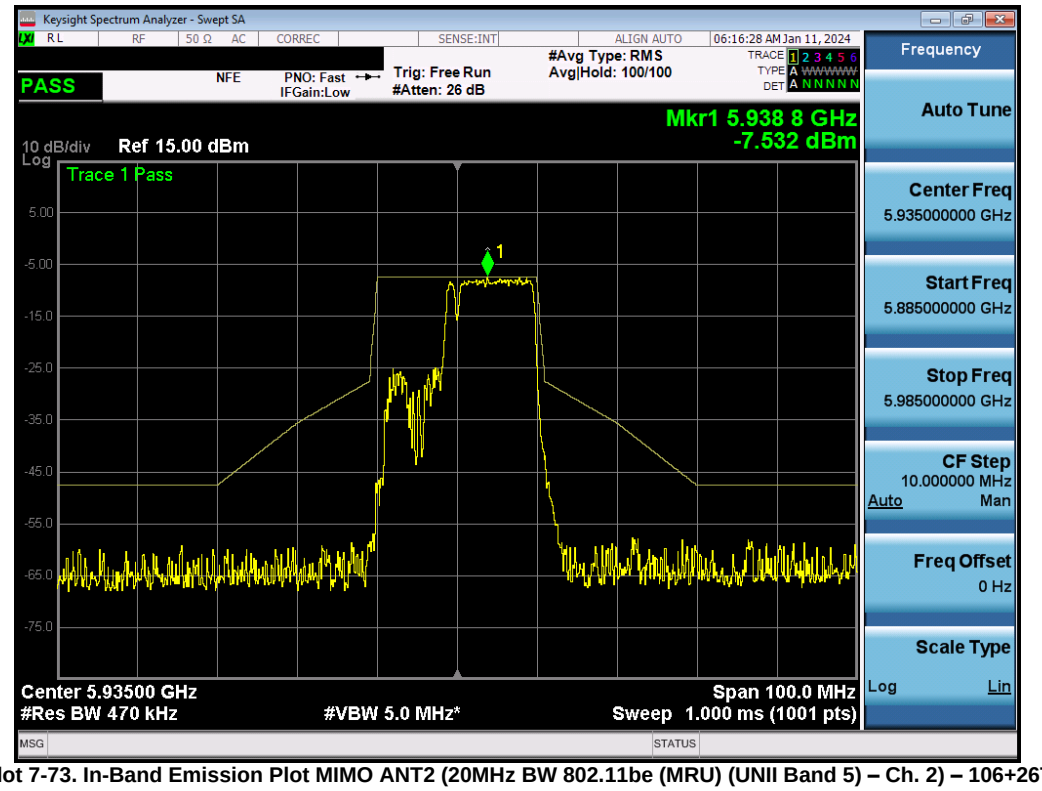


Plot 7-71. In-Band Emission Plot MIMO ANT1 (320MHz BW 802.11be (Full Tone) (UNII Band 6/7) – Ch. 159)

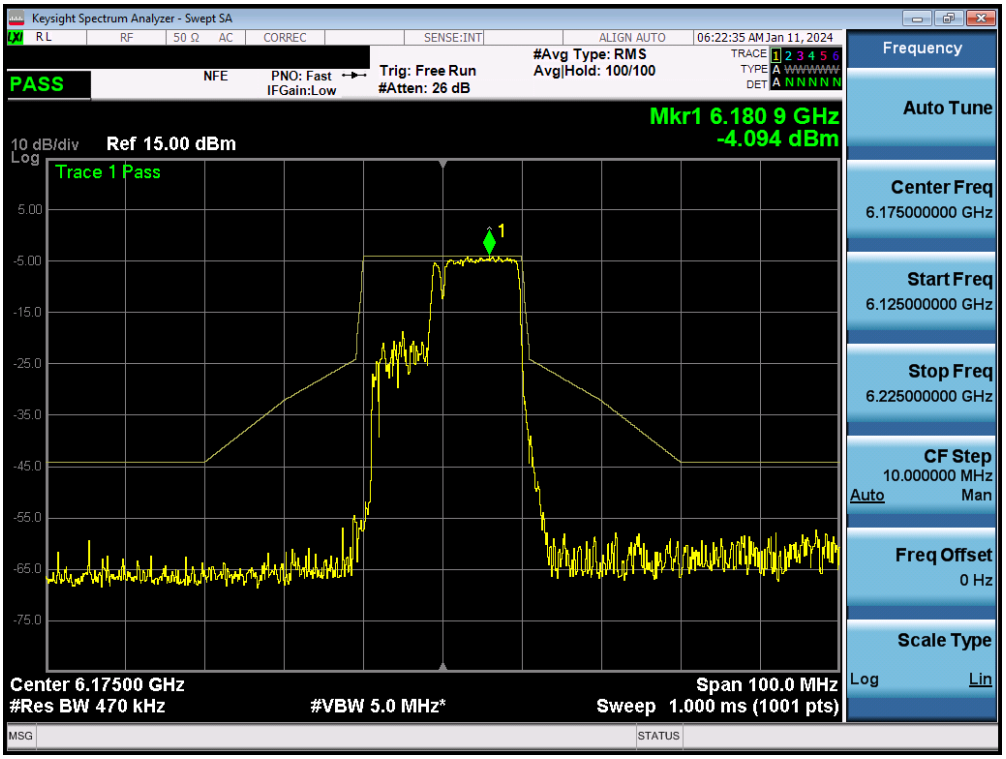


Plot 7-72. In-Band Emission Plot MIMO ANT1 (320MHz BW 802.11be (Full Tone) (UNII Band 7/8) – Ch. 191)

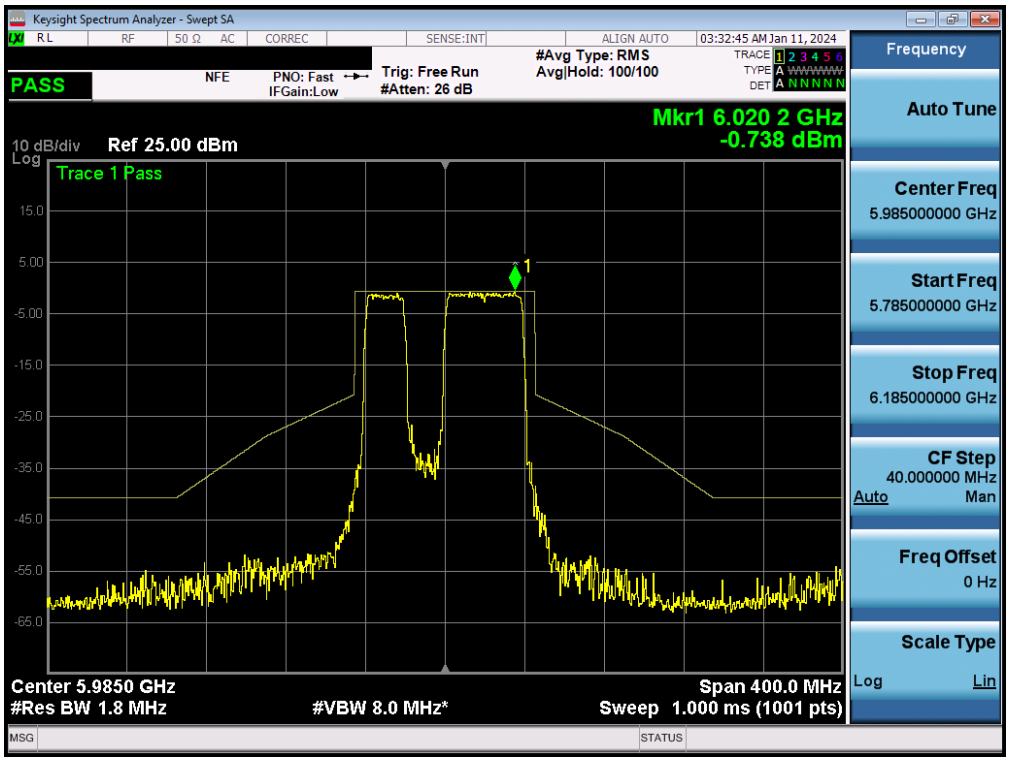
7.5.3 MIMO Antenna-2 In-Band Emission - (MRU) – (UNII Band 5)



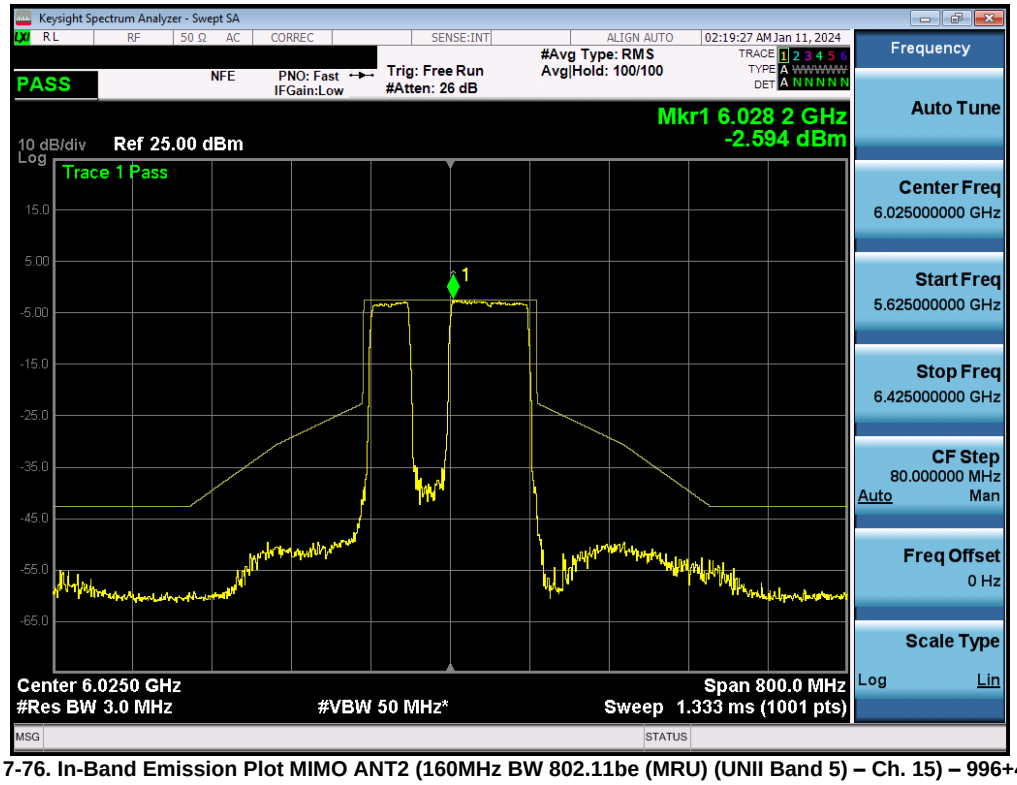
Plot 7-73. In-Band Emission Plot MIMO ANT2 (20MHz BW 802.11be (MRU) (UNII Band 5) – Ch. 2) – 106+26T



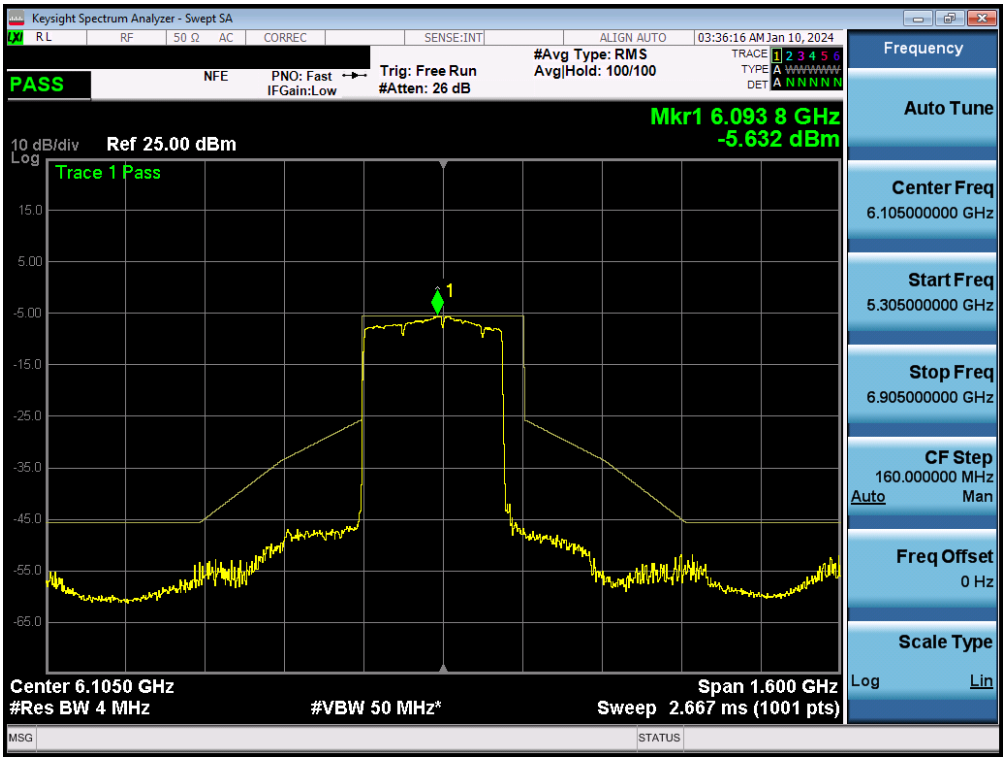
Plot 7-74. In-Band Emission Plot MIMO ANT2 (20MHz BW 802.11be (MRU) (UNII Band 5) – Ch. 45) – 106+26T



Plot 7-75. In-Band Emission Plot MIMO ANT2 (80MHz BW 802.11be (MRU) (UNII Band 5) – Ch. 7) – 242+484T

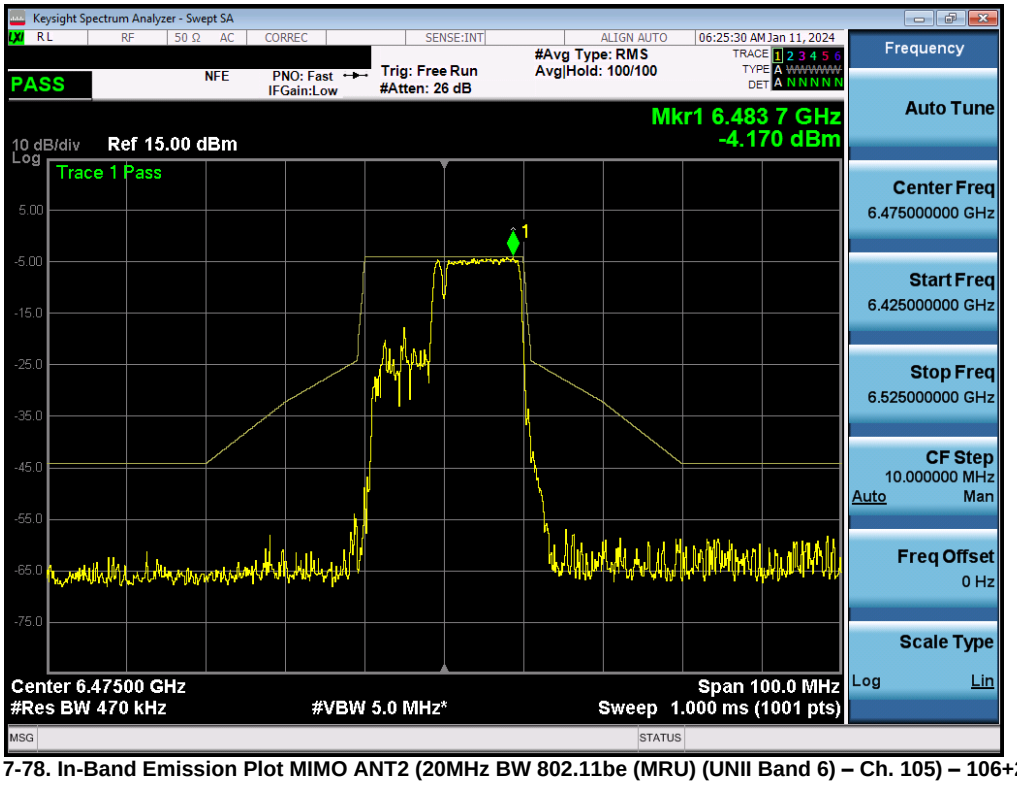


Plot 7-76. In-Band Emission Plot MIMO ANT2 (160MHz BW 802.11be (MRU) (UNII Band 5) – Ch. 15) – 996+484T

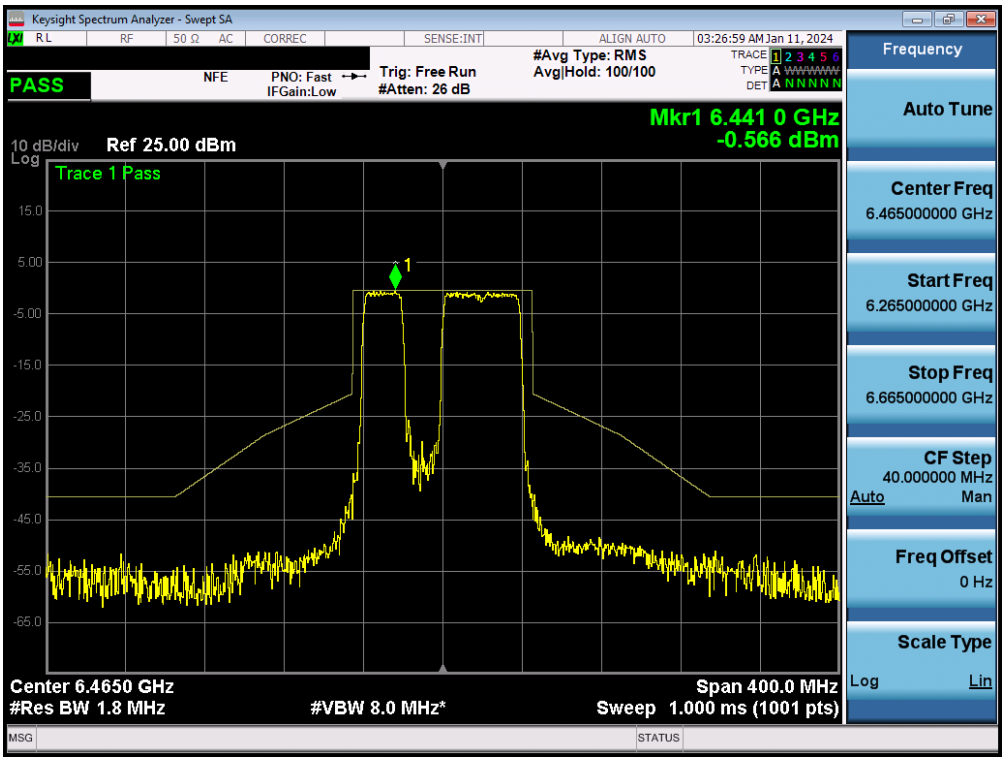


Plot 7-77. In-Band Emission Plot MIMO ANT2 (320MHz BW 802.11be (MRU) (UNII Band 5) – Ch. 31) – 3x996+484T

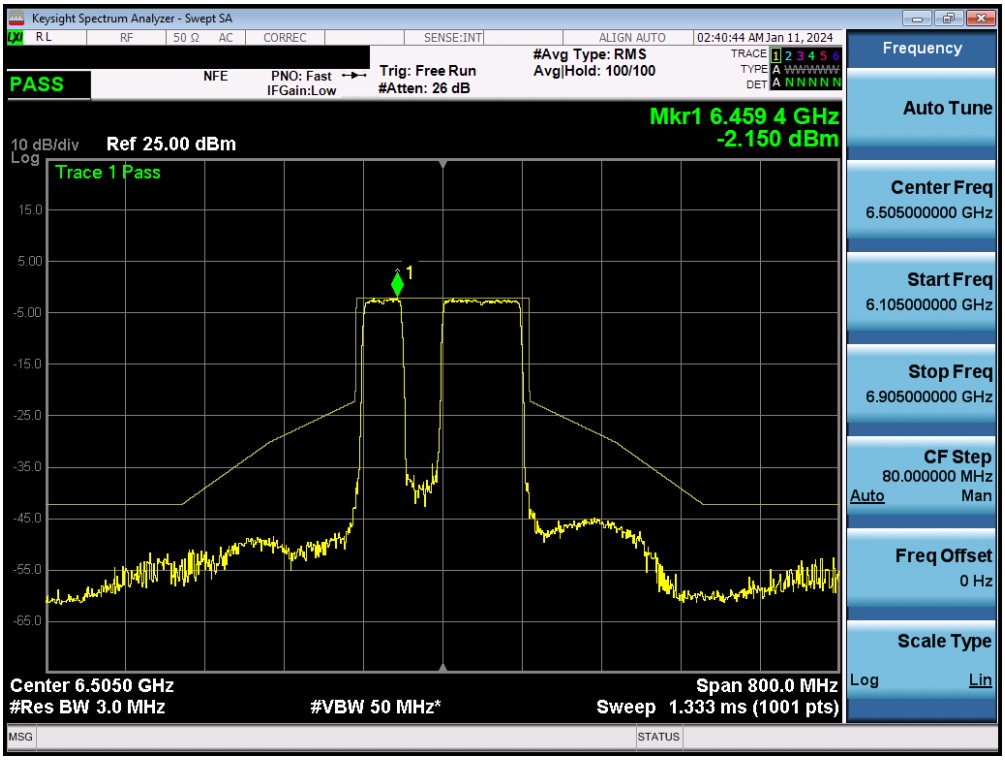
MIMO Antenna-2 In-Band Emission - (MRU) – (UNII Band 6)



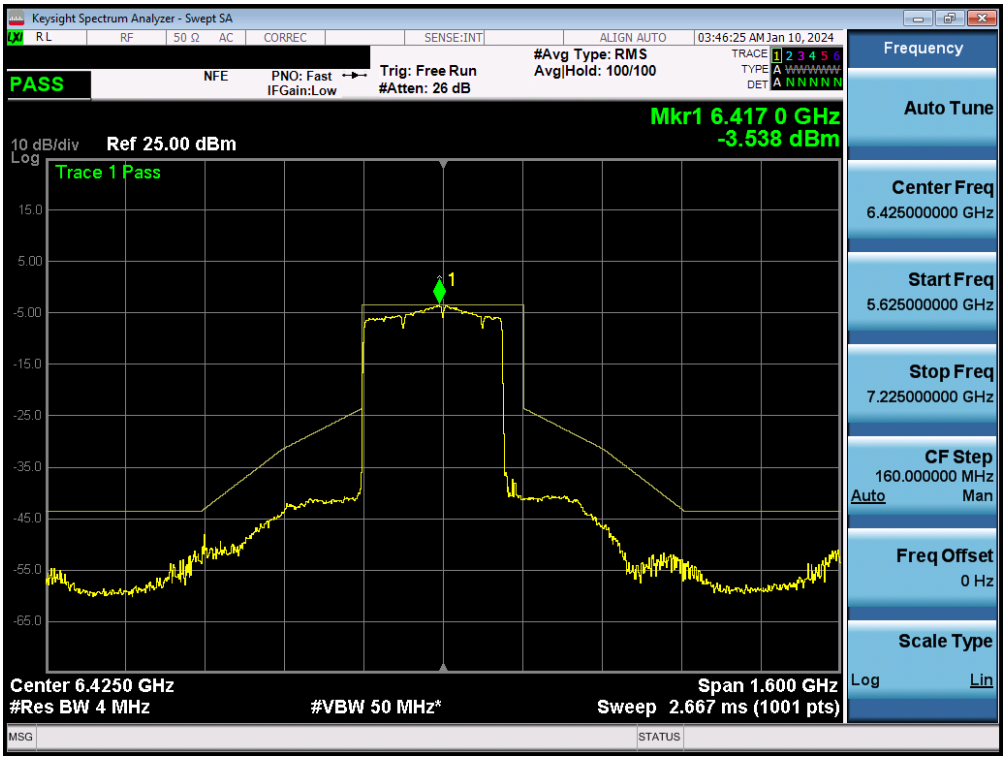
Plot 7-78. In-Band Emission Plot MIMO ANT2 (20MHz BW 802.11be (MRU) (UNII Band 6) – Ch. 105) – 106+26T



Plot 7-79. In-Band Emission Plot MIMO ANT2 (80MHz BW 802.11be (MRU) (UNII Band 6) – Ch. 103) – 242+484T



Plot 7-80. In-Band Emission Plot MIMO ANT2 (160MHz BW 802.11be (MRU) (UNII Band 6) – Ch. 111) – 996+484T



Plot 7-81. In-Band Emission Plot MIMO ANT2 (320MHz BW 802.11be (MRU) (UNII Band 5/6/7) – Ch. 95) – 3x996+484T