

PART 15C RF & RSS-247 TEST REPORT

FCC ID:	A3LSMS741B	Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea Certification
Model (s):	SM-S741B/DS, SM-S741B	
Device Type:	Portable Handset	
Report Issue Date:	July 24, 2026	

The measurement evaluations presented in this report are based on the maximum performance of the tested device(s), which has been shown to be capable of compliance with the applicable technical requirements specified herein and has been tested in accordance with the measurement procedures outlined in 47CFR §2.947, ANSI C63.10-2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024.

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This document has been revised and replaces all previously issued versions of this document with the same Test Report S/N.



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Technical Manager

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1. DUT Specifics

1.1. Device under Test

The manufacturer has confirmed that the device is within operational tolerances expected for production units and has the same physical, mechanical, and thermal characteristics expected for production units. The serial number of the device used for each test is indicated alongside the results.

1.2. Maximum Power per Mode

Table 1-1 Maximum Conducted Peak Power Summary

Band	Operating Mode	Band Width	Frequency Range			Max Peak Power	
		[MHz]	[MHz]			[dBm]	[W]
DTS	802.11b	20	2412	-	2472	26.54	0.451
	802.11g	20	2412	-	2472	24.69	0.294
	802.11n	20	2412	-	2472	24.63	0.290
	802.11ac	20	2412	-	2472	23.60	0.229
	802.11ax	20	2412	-	2472	28.83	0.764

1.3. Supported Bands Operation

Table 1-2 Support Bandwidths List

Band	Supported Bandwidth [MHz]	
	20	40
DTS	✓	

(Note : ✓ indicates Supported)

1.4. Description of Antennas

The antenna gain values are provided by the manufacturer in the antenna specification document. The document is included in the certification filing as a public exhibit. The highest antenna gain for each operating frequency band is applied during the compliance evaluation.

Table 1-3 Antenna Operating Configurations

Band	Mode	SISO		MIMO	
		Ant 1	Ant 2	Ant 1	Ant 2
DTS	802.11b	✓	✓	✓	✓
	802.11g	✓	✓	✓	✓
	802.11n	✓	✓	✓	✓
	802.11ac	✓	✓	✓	✓
	802.11ax	✓	✓	✓	✓

(✓ indicates Supported)

Table 1-4 Maximum Antenna Peak Gain by Operating Band

Antenna Gain	DTS [dBi]
Antenna 1	-5.03
Antenna 2	-6.47
Directional Gain	-2.71

Note 1 : The DUT incorporates an internal, permanently attached antenna which cannot be replaced by the end-user. Therefore, DUT complies with the requirements of §15.203

Note 2 : Per KDB 662911 D01 v02r01, the directional gain for MIMO operations with unequal antenna gains and equal transmit powers was calculated as follows

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

2. Executive Summary

2.1. Device Description

The DUT is a portable wireless handset designed to operate across multiple communication standards and frequency bands. This report covers the complete compliance testing of 2.4GHz WLAN (DTS) in accordance with the applicable standards and regulatory requirements.

2.2. Summary of Test Results

The DUT has been tested according to the following specifications. The test period was from June 17, 2026 through July 03, 2026.

Test Condition	Test Item	FCC	ISED	Limit	Test Result	Reference
Conducted	maximum peak conducted output power	§15.247(b)	RSS-247(6.3)	< 1 Watt	PASS	Section 5.4
	Maximum Power Spectral Density	§15.247(e)	RSS-247(6.3)	< 8 dBm / 3 kHz	PASS	Section 5.5
	6dB Bandwidth	§15.247(a)	RSS-247(6.3)	> 500 kHz	PASS	Section 5.6
	Conducted Spurious Emissions	§15.247(d)	RSS-247(6.6)	> 20 dBc	PASS	Section 5.7
	AC Conducted Emissions	§15.207	RSS-Gen(8.8)	The DUT shall comply with the limits specified in §15.207	PASS	Section 7.0
Radiated	Unwanted Emissions Outside of the Band	§15.247(d) §15.205 §15.209	RSS-247(6.6) RSS-Gen(8.9) RSS-Gen(8.10)	Undesirable emission must meet the limits detailed in 15.247(d) & RSS-247(6.6)	PASS	Section 6

2.3. Test Guidance Applied

Testing was performed in accordance with the following rules, standards, and guidance:

- ANSI C63.10 - 2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024
- ANSI C63.4 - 2014 + C63.4a - 2017
- RSS-Gen Issue 5
- RSS-247 Issue 4
- FCC 47 CFR Part 2
- FCC 47 CFR Part 15
- KDB 662911 D01 v02r01
- KDB 558074 D01 v05r02

2.4. NGTL Test Site Location

All measurement operations were conducted at the NGTL testing facility.

- Location: 52-7, Choha-ro, Mohyeon-eup, Cheoin-gu, Yongin-si, Gyeonggi-do, Republic of Korea.
- Site Compliance: The measurement environments strictly adhere to the site validation requirements specified in ANSI C63.4-2014+C63.a-2017 and FCC KDB 414788 D01.
- Accreditations: Fully accredited to ISO/IEC 17025 and designated by the National Radio Research Agency (RRA) as a Conformity Assessment Body (CAB) under the MRAs, maintaining official testing recognition from the FCC and ISED.

FCC Designation Number	FCC Test Firm Registration Number
KR0179	985720
ISED CAB identifier	ISED Company Number
KR0179	35746

3. Description of Tests

Testing of the DUT was conducted in accordance with the methodologies outlined in ANSI C63.10-2020 and KDB 558074 D01 15.247 Meas Guidance v05r02. For details regarding the test configuration, refer to the following sections:

- Antenna Port Conducted Test : Sections 5.1
- Radiated Emissions Test : Sections 6.1
- AC Line Conducted Test : Sections 7.1

- All tests were conducted under the environmental conditions specified below

Ambient Temperature : 22 - 26°C

Relative Humidity : 41 - 49 % RH

- Data Referencing is applied for the following tests:

Test Condition	Test Item	Data Referencing [Applied / Full]	Referred Data and Spot-Checks
Conducted	Maximum Peak Conducted Output Power	Applied	Section 12
	Maximum Power Spectral Density	Applied	Section 12
	6dB Bandwidth	Applied	Section 12
Radiated	Radiated Spurious Emissions	Applied	Section 12
	Radiated Band Edge	Applied	Section 12

4. Reference Test Results

4.1. Duty Cycle

4.1.1. Test Method

The measurement was performed using the zero-span mode of the spectrum analyzer in accordance with ANSI C63.10-2020.

4.1.2. Test Results

Table 4-1 OFDM MIMO Operation Duty Cycle

Mode		On Time [ms]	Period [ms]	Duty Cycle [%]	DCCF [dB]
802.11	b	8.820	8.917	98.91	N/A
802.11	g	2.829	2.936	96.35	0.16
802.11	n	5.031	5.140	97.88	0.09
802.11	ac	5.035	5.142	97.92	0.09
802.11	ax	5.447	5.466	99.65	N/A

Table 4-2 OFDMA MIMO Operation Duty Cycle

Mode		On Time [ms]	Period [ms]	Duty Cycle [%]	DCCF [dB]
HE20	26T	2.596	2.621	99.05	N/A
HE20	52T	2.591	2.616	99.04	N/A
HE20	106T	2.436	2.461	98.98	N/A
HE20	242T	2.356	2.381	98.95	N/A

Note: Duty cycle evaluation was performed in zero-span mode using a spectrum analyzer. The center frequency was set to the operating frequency of the transmission, with RBW $\geq$ 20 MHz, VBW $\geq$ 50 MHz, and the detector set to Peak. The selected measurement parameters satisfied the requirement that both RBW and VBW exceed 50/T, and the sweep configuration provided more than 100 points across the transmission duration.

5. Conducted Test Results

5.1. Test Configuration

All operating modes, channels, and data rates across the DTS bands were investigated; the results documented herein represent the worst-case emissions. Since the SISO output power in MIMO is identical to the SISO power, all tests were conducted in MIMO. Preliminary test results confirm that this configuration effectively covers all SISO test conditions.

In terms of bandwidth, testing was performed on OFDM and OFDMA Full Tone, which represent the widest bandwidth per frequency band. For Partial Tone, testing was conducted on the 802.11ax HE20 RU 26T, 52T, 106T configurations, as these represent the narrowest bandwidths and highest power density.

All spectrum analyzer plots incorporate pre-loaded correction factors to compensate for external path losses (cables, couplers, splitters and attenuators) across the measured frequency range.

Conducted emissions were captured using automated test software 'NGTL ATE' Ver. 0.00.

5.2. Conducted Measurement Setup

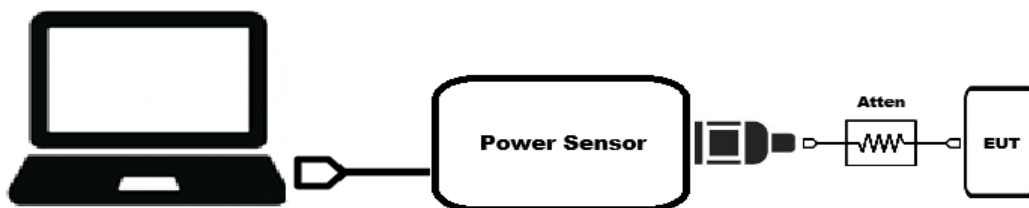


Figure 5-1 Conducted Power Measurement Setup

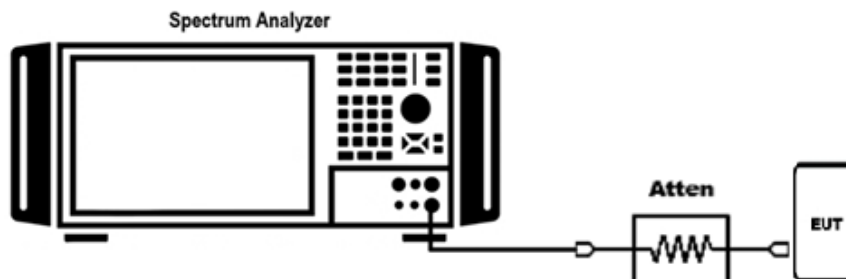


Figure 5-2 Conducted Measurement Setup

5.3. Conducted Measurement Sample

Serial Number(s) :

ZDH0498M, ZDH0475M, ZEJ0881M

5.4. The Maximum Output Power

5.4.1. Regulatory Limit

§Part. 15.247(b)

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power.

§RSS-247 - Section 6.3

For DTS operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W, and the e.i.r.p. shall not exceed 4 W, except as provided in section 6.5 a) and b).
As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power.

5.4.2. Test Method

ANSI C63.10-2020, clause 11.9.1.2 Peak power meter method & clause 11.9.2.3.2 method AVGPM-G

5.4.3. Test Procedure

- a) Connect the DUT to a wideband gated RF power meter.
- b) Apply an offset to the power meter to compensate for the insertion losses of the cables and attenuators connected between the DUT and the power sensor.
- c) Configure the DUT to transmit at its maximum power control level.
- d) Adjust the gate parameters on the power meter to ensure that the power is measured only during the active transmission period of the DUT.

5.4.4. Sample Calculation

$$\text{MIMO } P_T = P_T (\text{Ant1}) + P_T (\text{Ant2})$$

$$= 23.45 \text{ dBm} + 22.86 \text{ dBm} = 221.31 \text{ mW} + 193.20 \text{ mW} = 414.51 \text{ mW}$$

$$= 10 \log (414.51 \text{ mW}) = 26.18 \text{ dBm}$$

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

$$= 10 \log [(10^{-5.03/20} + 10^{-6.47/20})^2 / 2] \text{ dBi} = -2.71 \text{ dBi}$$

$$\text{ERP or EIRP} = P_{\text{Cond}} + G_{\text{EUT}} = 26.18 \text{ dBm} + (-2.71 \text{ dBi}) = 23.47 \text{ dBm}$$

P_{Cond} is the measured power at feedpoint of the EUT antenna, in dBm

G_{EUT} is the gain of the EUT radiating element(antenna), in dBi. (in dBd ERP)

Test Note

- ✓ The output power was measured during the transmitter ON time at the maximum power control level using a gated RF power meter. No duty cycle correction factor was applied.

5.4.5. Test Results

Table 5-1 OFDM MIMO Maximum Output Power

Mode	freq. [MHz]	CH. [No.]	Peak Power [dBm]			Average Power [dBm]			LIMIT [dBm]	Margin [dB]
			Ant1	Ant2	MIMO	Ant1	Ant2	MIMO		
802.11 b	2412	1	23.45	22.86	26.18	21.07	20.48	23.80	30	-3.82
	2437	6	23.2	23.83	26.54	20.65	21.24	23.97	30	-3.46
	2462	11	23.61	22.91	26.28	21.10	20.37	23.76	30	-3.72
	2467	12	8.53	7.91	11.24	6.04	5.47	8.77	30	-18.76
	2472	13	-2.73	0.14	1.95	-5.15	-2.38	-0.54	30	-28.05
802.11 g	2412	1	21.44	20.04	23.81	18.47	17.98	21.24	30	-6.19
	2437	6	21.08	21.64	24.38	18.28	18.89	21.61	30	-5.62
	2462	11	21.38	21.96	24.69	16.29	16.40	19.36	30	-5.31
	2467	12	8.23	7.9	11.08	5.40	4.95	8.19	30	-18.92
	2472	13	-1.81	0.76	2.67	-4.72	-2.29	-0.33	30	-27.33
802.11 n(HT20)	2412	1	21.96	21.26	24.63	19.14	18.36	21.78	30	-5.37
	2437	6	21.6	21.58	24.60	18.87	19.06	21.98	30	-5.40
	2462	11	20.72	20.89	23.82	15.23	15.34	18.30	30	-6.18
	2467	12	8.5	7.54	11.06	5.55	4.70	8.16	30	-18.94
	2472	13	-1.92	0.73	2.61	-4.62	-2.11	-0.18	30	-27.39
802.11 ac(VHT20)	2412	1	20.64	20.13	23.40	16.72	16.21	19.48	30	-6.60
	2437	6	20.56	20.61	23.60	16.46	16.96	19.73	30	-6.40
	2462	11	20.15	20.02	23.10	14.22	14.32	17.28	30	-6.90
	2467	12	8.35	7.87	11.13	5.68	5.13	8.42	30	-18.87
	2472	13	-1.77	0.86	2.75	-4.73	-2.14	-0.23	30	-27.25
802.11 ax(HE20)	2412	1	22.31	22.49	25.41	16.35	16.47	19.42	30	-4.59
	2437	6	22.19	23.16	25.71	15.83	17.24	19.60	30	-4.29
	2462	11	20.16	20.19	23.19	14.17	14.21	17.20	30	-6.81
	2467	12	8.24	7.66	10.97	5.52	5.02	8.29	30	-19.03
	2472	13	-2.21	0.26	2.21	-4.99	-2.51	-0.57	30	-27.79

Table 5-2 OFDM MIMO Maximum Output Power – e.i.r.p

Mode	freq. [MHz]	CH. [MHz]	Peak e.i.r.p [dBm]	e.i.r.p [dBm]	LIMIT [dBm]	Margin [dB]
			MIMO	MIMO		
802.11 b	2412	1	23.47	21.09	36	-12.53
	2437	6	23.83	21.26	36	-12.17
	2462	11	23.57	21.05	36	-12.43
	2467	12	8.53	6.06	36	-27.47
	2472	13	-0.76	-3.25	36	-36.76
802.11 g	2412	1	21.10	18.53	36	-14.90
	2437	6	21.67	18.90	36	-14.33
	2462	11	21.98	16.65	36	-14.02
	2467	12	8.37	5.48	36	-27.63
	2472	13	-0.04	-3.04	36	-36.04
802.11 n(HT20)	2412	1	21.92	19.07	36	-14.08
	2437	6	21.89	19.27	36	-14.11
	2462	11	21.11	15.59	36	-14.89
	2467	12	8.35	5.45	36	-27.65
	2472	13	-0.10	-2.89	36	-36.10
802.11 ac(VHT20)	2412	1	20.69	16.77	36	-15.31
	2437	6	20.89	17.02	36	-15.11
	2462	11	20.39	14.57	36	-15.61
	2467	12	8.42	5.71	36	-27.58
	2472	13	0.04	-2.94	36	-35.96
802.11 ax(HE20)	2412	1	22.70	16.71	36	-13.30
	2437	6	23.00	16.89	36	-13.00
	2462	11	20.48	14.49	36	-15.52
	2467	12	8.26	5.58	36	-27.74
	2472	13	3.01	-3.27	36	-32.99

Table 5-3 OFDMA MIMO Maximum Output Power

Mode	freq. [MHz]	CH. [No.]	Tone	Index	Peak Power [dBm]			Average Power [dBm]			Limit [dBm]	Margin [dB]
					Ant1	Ant2	MIMO	Ant1	Ant2	MIMO		
802.11ax (HE20)	2412	1	26T	0	13.27	11.65	15.55	10.40	9.23	12.86	30.00	-14.45
				4	12.97	11.57	15.34	10.01	8.99	12.54	30.00	-14.66
				8	12.66	11.79	15.26	9.81	9.40	12.62	30.00	-14.74
	2437	6	26T	0	12.05	11.98	15.03	9.46	9.43	12.46	30.00	-14.97
				4	11.99	12.03	15.02	9.21	9.18	12.21	30.00	-14.98
				8	13.53	13.41	16.48	10.21	9.71	12.98	30.00	-13.52
	2462	11	26T	0	12.59	12.27	15.44	10.07	9.46	12.79	30.00	-14.56
				4	12.16	11.84	15.01	9.67	8.74	12.24	30.00	-14.99
				8	11.62	11.15	14.40	9.08	8.60	11.86	30.00	-15.60
	2467	12	26T	0	8.13	8.56	11.36	5.36	5.83	8.61	30.00	-18.64
				4	7.35	7.77	10.58	4.82	5.09	7.97	30.00	-19.42
				8	7.24	7.08	10.17	4.74	4.62	7.69	30.00	-19.83
	2472	13	26T	0	-1.71	0.06	2.27	-4.27	-2.31	-0.17	30.00	-27.73
				4	-2.46	-1.05	1.31	-4.93	-3.30	-1.03	30.00	-28.69
				8	-2.83	-1.90	0.67	-5.52	-4.47	-1.95	30.00	-29.33
802.11ax (HE20)	2412	1	52T	37	15.88	14.86	18.41	13.36	12.32	15.88	30.00	-11.59
				38	15.34	14.76	18.07	13.14	12.11	15.67	30.00	-11.93
				40	15.35	14.74	18.07	12.80	12.51	15.67	30.00	-11.93
	2437	6	52T	37	14.98	15.06	18.03	12.23	12.42	15.34	30.00	-11.97
				38	14.74	14.93	17.85	12.13	12.33	15.24	30.00	-12.15
				40	15.53	15.11	18.34	12.99	12.64	15.83	30.00	-11.66
	2462	11	52T	37	15.19	14.90	18.06	12.97	12.28	15.65	30.00	-11.94
				38	15.09	14.49	17.81	12.66	11.88	15.30	30.00	-12.19
				40	14.01	13.86	16.95	12.09	11.62	14.87	30.00	-13.05
	2467	12	52T	37	8.48	8.56	11.53	5.13	5.77	8.47	30.00	-18.47
				38	8.62	8.16	11.41	4.99	5.43	8.23	30.00	-18.59
				40	8.26	7.47	10.89	4.85	4.75	7.81	30.00	-19.11
	2472	13	52T	37	-1.66	0.30	2.44	-4.46	-2.35	-0.27	30.00	-27.56
				38	-2.03	-0.52	1.80	-4.75	-2.91	-0.72	30.00	-28.20
				40	-2.73	-1.54	0.92	-5.38	-4.18	-1.73	30.00	-29.08
802.11ax (HE20)	2412	1	106T	53	22.47	22.65	25.57	14.63	14.57	17.61	30.00	-4.43
				54	22.25	22.90	25.60	14.17	14.81	17.51	30.00	-4.40
	2437	6	106T	53	22.08	22.93	25.54	13.71	14.91	17.36	30.00	-4.46
				54	22.12	23.27	25.74	14.21	15.03	17.65	30.00	-4.26
	2462	11	106T	53	22.59	22.54	25.58	14.82	14.71	17.78	30.00	-4.42
				54	22.41	22.61	25.52	14.17	14.44	17.32	30.00	-4.48
	2467	12	106T	53	8.46	8.32	11.40	5.11	5.62	8.38	30.00	-18.60
				54	8.27	7.88	11.09	4.74	4.82	7.79	30.00	-18.91
	2472	13	106T	53	-1.73	0.05	2.26	-4.54	-2.61	-0.46	30.00	-27.74
				54	-2.42	-0.91	1.41	-5.07	-3.86	-1.41	30.00	-28.59
802.11ax (HE20)	2412	1	242T	61	24.82	25.21	28.03	16.41	16.62	19.53	30.00	-1.97
	2437	6	242T	61	24.93	26.55	28.83	16.08	17.57	19.90	30.00	-1.17
	2462	11	242T	61	23.17	23.01	26.10	14.37	14.56	17.48	30.00	-3.90
	2467	12	242T	61	8.37	8.51	11.45	5.56	5.53	8.56	30.00	-18.55
	2472	13	242T	61	-1.40	0.01	2.37	-4.39	-2.85	-0.54	30.00	-27.63

Table 5-4 OFDMA MIMO Maximum Output Power – e.i.r.p

Mode	freq. [MHz]	CH. [MHz]	Tone	Index	Peak e.i.r.p [dBm]	e.i.r.p [dBm]	LIMIT [dBm]	Margin [dB]
					MIMO	MIMO		
802.11ax (HE20)	2412	1	26T	0	12.84	10.15	36.00	-23.16
				4	12.63	9.83	36.00	-23.37
				8	12.55	9.91	36.00	-23.45
	2437	6	26T	0	12.32	9.75	36.00	-23.68
				4	12.31	9.50	36.00	-23.69
				8	13.77	10.27	36.00	-22.23
	2462	11	26T	0	12.73	10.08	36.00	-23.27
				4	12.30	9.53	36.00	-23.70
				8	11.69	9.15	36.00	-24.31
	2467	12	26T	0	8.65	5.90	36.00	-27.35
				4	7.87	5.26	36.00	-28.13
				8	7.46	4.98	36.00	-28.54
	2472	13	26T	0	-0.44	-2.88	36.00	-36.44
				4	-1.40	-3.74	36.00	-37.40
				8	-2.04	-4.66	36.00	-38.04
802.11ax (HE20)	2412	1	52T	37	15.70	13.17	36.00	-20.30
				38	15.36	12.96	36.00	-20.64
				40	15.36	12.96	36.00	-20.64
	2437	6	52T	37	15.32	12.63	36.00	-20.68
				38	15.14	12.53	36.00	-20.86
				40	15.63	13.12	36.00	-20.37
	2462	11	52T	37	15.35	12.94	36.00	-20.65
				38	15.10	12.59	36.00	-20.90
				40	14.24	12.16	36.00	-21.76
	2467	12	52T	37	8.82	5.76	36.00	-27.18
				38	8.70	5.52	36.00	-27.30
				40	8.18	5.10	36.00	-27.82
	2472	13	52T	37	-0.27	-2.98	36.00	-36.27
				38	-0.91	-3.43	36.00	-36.91
				40	-1.79	-4.44	36.00	-37.79
802.11ax (HE20)	2412	1	106T	53	22.86	14.90	36.00	-13.14
				54	22.89	14.80	36.00	-13.11
	2437	6	106T	53	22.83	14.65	36.00	-13.17
				54	23.03	14.94	36.00	-12.97
	2462	11	106T	53	22.87	15.07	36.00	-13.13
				54	22.81	14.61	36.00	-13.19
	2467	12	106T	53	8.69	5.67	36.00	-27.31
				54	8.38	5.08	36.00	-27.62
	2472	13	106T	53	-0.45	-3.17	36.00	-36.45
				54	-1.30	-4.12	36.00	-37.30
802.11ax (HE20)	2412	1	242T	61	25.32	16.82	36.00	-10.68
	2437	6	242T	61	26.12	17.19	36.00	-9.88
	2462	11	242T	61	23.39	14.77	36.00	-12.61
	2467	12	242T	61	8.74	5.85	36.00	-27.26
	2472	13	242T	61	-0.34	-3.25	36.00	-36.34

5.5. The Maximum Power Spectral Density

5.5.1. Regulatory Limits

Part. 15.247(e)

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RSS-247 - Section 6.3

The transmitter power spectral density conducted from the transmitter to the antenna(s) shall not be greater than 8 dBm/3 kHz band during any time interval of continuous transmission.

5.5.2. Test Method

ANSI C63.10-2020, clause 11.10.2 Method PKPSD (peak PSD)

5.5.3. Test Procedure

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span > 1.5 times the DTS bandwidth
- c) $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ / $\text{RBW} = 10 \text{ kHz}$
- d) $\text{VBW} \geq [3 \times \text{RBW}]$
- e) Detector = Peak
- f) Sweep Time = Auto (Coupled) or sufficient to investigate
- g) Trace mode = Max-Hold
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If the measured value exceeds the requirement, reduce the RBW (but not below 3 kHz) and repeat the measurement.

5.5.4. Sample Calculation

$$\text{MIMO } P_T = P_T (\text{Ant1}) + P_T (\text{Ant2})$$

$$= 0.22 \text{ dBm} + (-1.65) \text{ dBm} = 1.05 \text{ mW} + 0.68 \text{ mW} = 1.73 \text{ mW}$$

$$= 10 \log (1.73 \text{ mW}) = 2.39 \text{ dBm}$$

Test Note

- ✓ All insertion losses between the DUT and the spectrum analyzer, including cables and attenuators, were included in the measurement results.
- ✓ Plots representing the worst-case scenarios for each table are included.

5.5.5. Test Results

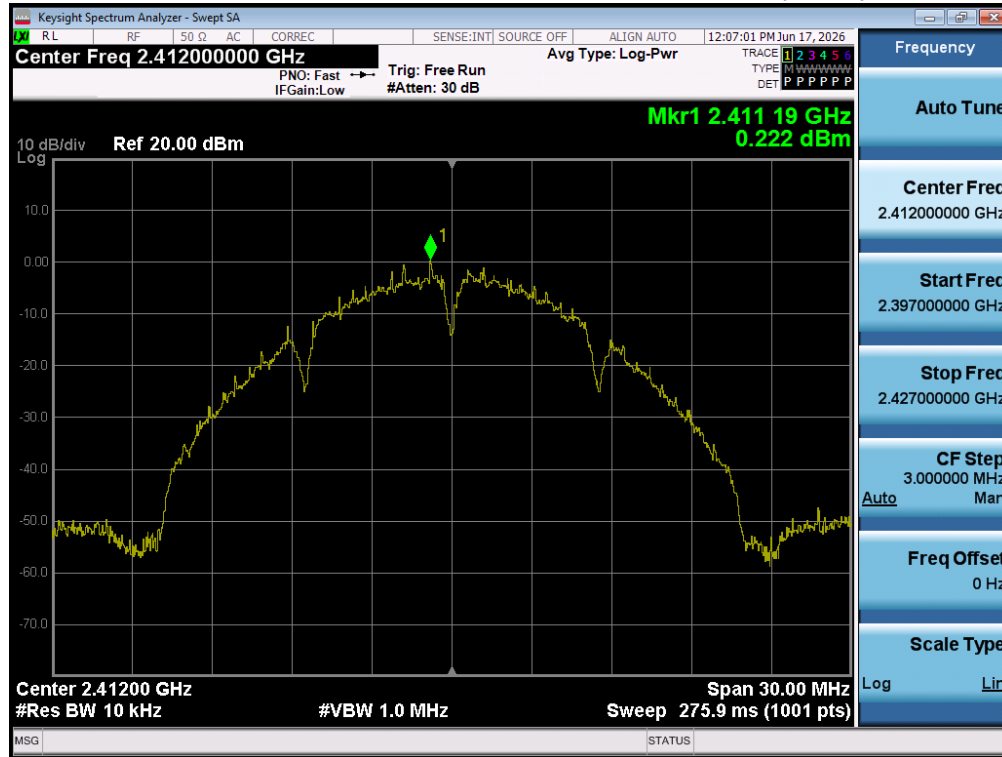
Table 5-5 OFDM MIMO Peak PSD

Mode	freq. [MHz]	CH. [No.]	PSD [dBm]			Limit [dBm / 3kHz]	Margin [dB]
			Ant1	Ant2	MIMO		
802.11 b	2412	1	0.22	-1.65	2.39	8.00	-5.61
	2437	6	0.39	-0.84	2.83	8.00	-5.17
	2462	11	0.57	-0.30	3.16	8.00	-4.84
802.11 g	2412	1	-5.12	-4.35	-1.71	8.00	-9.71
	2437	6	-5.19	-4.57	-1.86	8.00	-9.86
	2462	11	-6.28	-6.86	-3.55	8.00	-11.55
802.11 n(HT20)	2412	1	-4.35	-2.95	-0.58	8.00	-8.58
	2437	6	-3.87	-3.10	-0.46	8.00	-8.46
	2462	11	-5.43	-5.87	-2.63	8.00	-10.63
802.11 ax(HE20)	2412	1	-7.85	-7.33	-4.57	8.00	-12.57
	2437	6	-8.22	-6.83	-4.46	8.00	-12.46
	2462	11	-8.90	-8.05	-5.44	8.00	-13.44

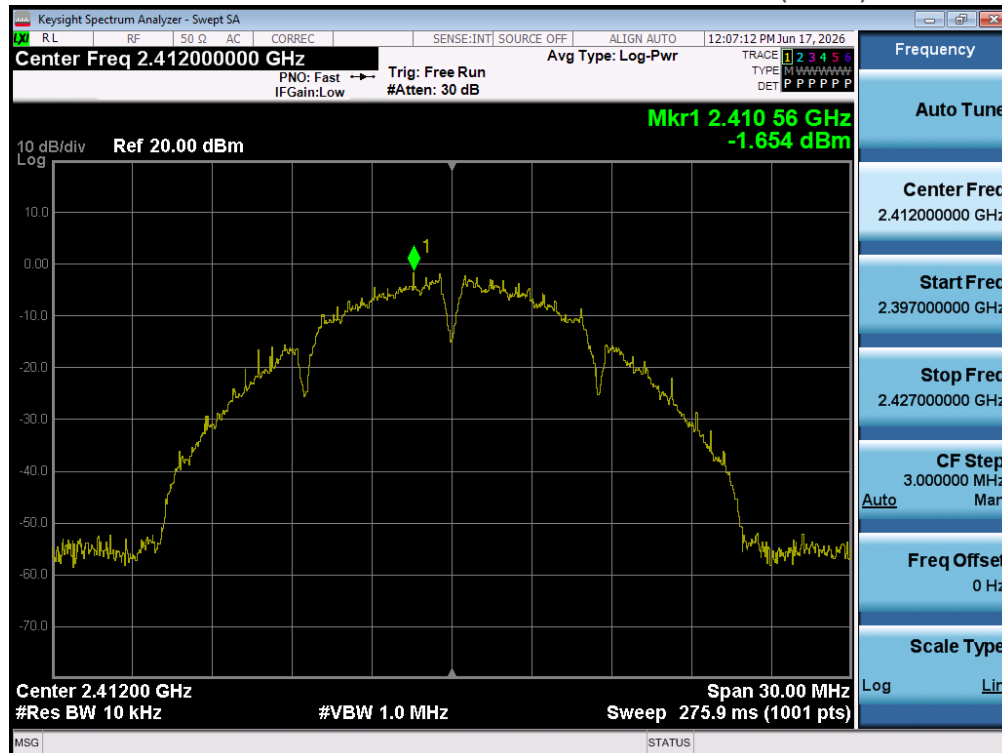
Table 5-6 OFDMA MIMO Peak PSD

Mode	freq. [MHz]	CH. [No.]	Tone	Index	PSD [dBm]			Limit [dBm / 3kHz]	Margin [dB]
					Ant1	Ant2	MIMO		
802.11ax (HE20)	2412	1	26T	0	-3.89	-4.90	-1.36	8.00	-9.36
				4	-4.92	-5.32	-2.11	8.00	-10.11
				8	-5.64	-4.25	-1.88	8.00	-9.88
	2437	6	26T	0	-5.58	-4.63	-2.07	8.00	-10.07
				4	-5.51	-4.77	-2.11	8.00	-10.11
				8	-5.19	-3.87	-1.47	8.00	-9.47
	2462	11	26T	0	-5.57	-4.00	-1.71	8.00	-9.71
				4	-5.28	-6.04	-2.63	8.00	-10.63
				8	-6.03	-5.17	-2.57	8.00	-10.57
802.11ax (HE20)	2412	1	52T	37	-4.86	-4.49	-1.66	8.00	-9.66
				38	-3.68	-4.71	-1.16	8.00	-9.16
				40	-4.45	-3.62	-1.01	8.00	-9.01
	2437	6	52T	37	-4.71	-4.26	-1.47	8.00	-9.47
				38	-4.87	-4.44	-1.64	8.00	-9.64
				40	-4.07	-3.50	-0.76	8.00	-8.76
	2462	11	52T	37	-3.96	-4.65	-1.28	8.00	-9.28
				38	-4.34	-4.32	-1.32	8.00	-9.32
				40	-5.48	-4.65	-2.03	8.00	-10.03
802.11ax (HE20)	2412	1	106T	53	-5.64	-5.46	-2.54	8.00	-10.54
				54	-6.33	-5.87	-3.09	8.00	-11.09
	2437	6	106T	53	-6.85	-5.86	-3.32	8.00	-11.32
				54	-5.97	-5.64	-2.79	8.00	-10.79
	2462	11	106T	53	-5.07	-5.83	-2.43	8.00	-10.43
				54	-7.15	-6.20	-3.64	8.00	-11.64
802.11ax (HE20)	2412	1	242T	61	-6.73	-5.89	-3.28	8.00	-11.28
	2437	6	242T	61	-7.68	-4.86	-3.03	8.00	-11.03
	2462	11	242T	61	-7.83	-7.78	-4.80	8.00	-12.80

Plot 5-1 802.11b CH.1 OFDM MIMO Peak PSD – (ANT1)



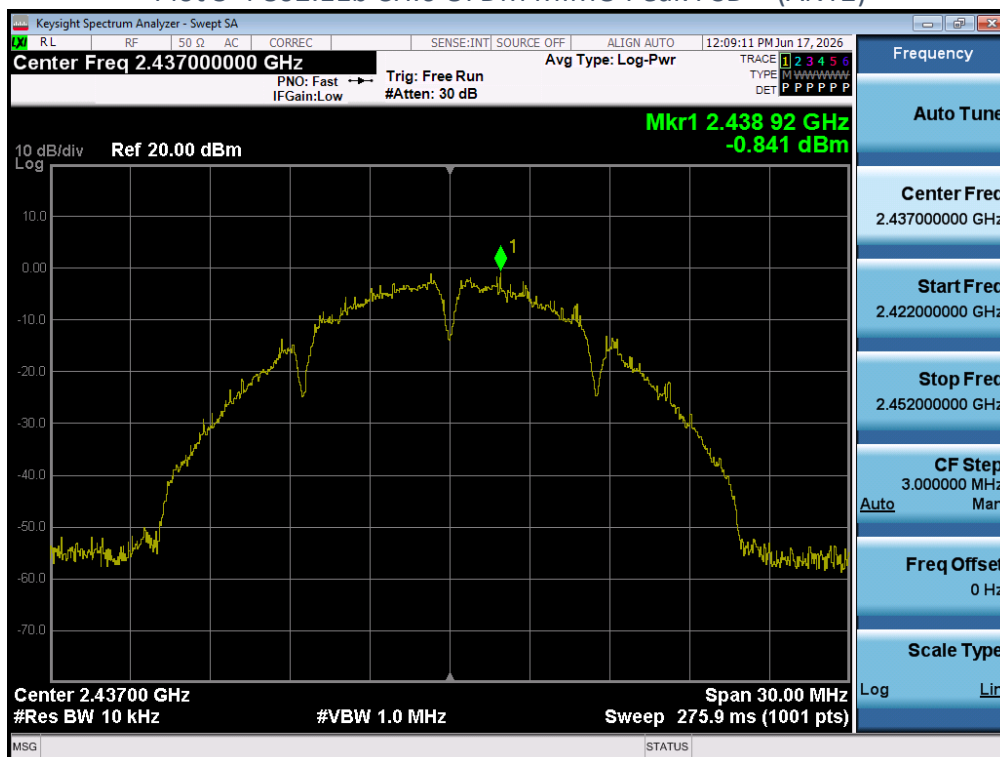
Plot 5-2 802.11b CH.1 OFDM MIMO Peak PSD – (ANT2)



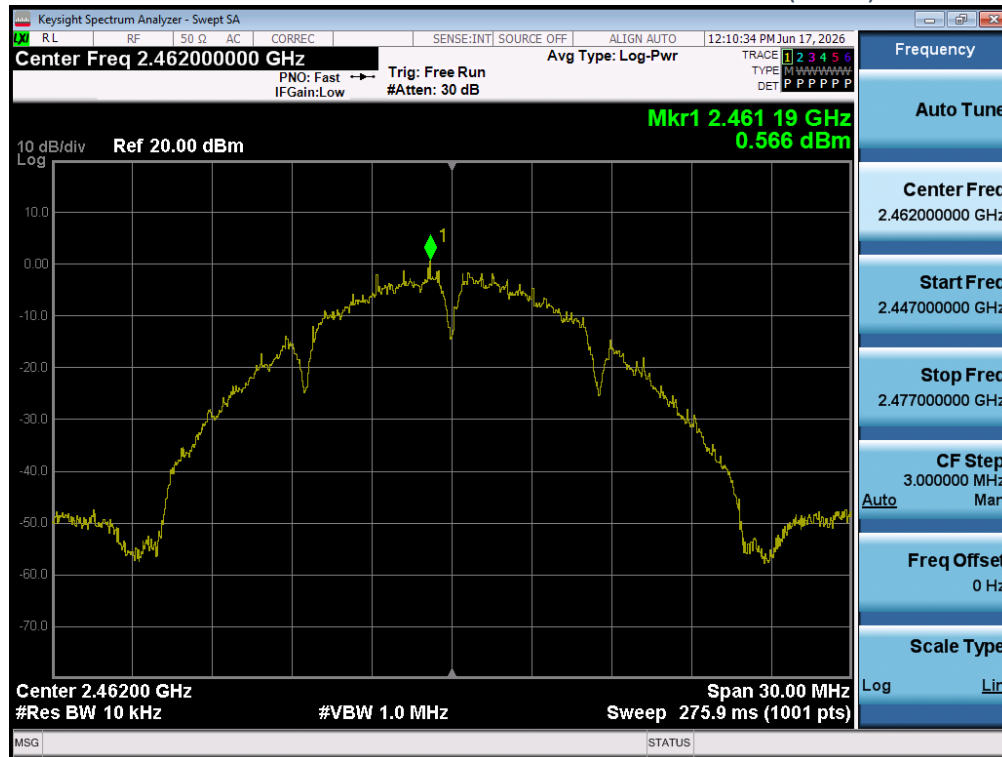
Plot 5-3 802.11b CH.6 OFDM MIMO Peak PSD – (ANT1)



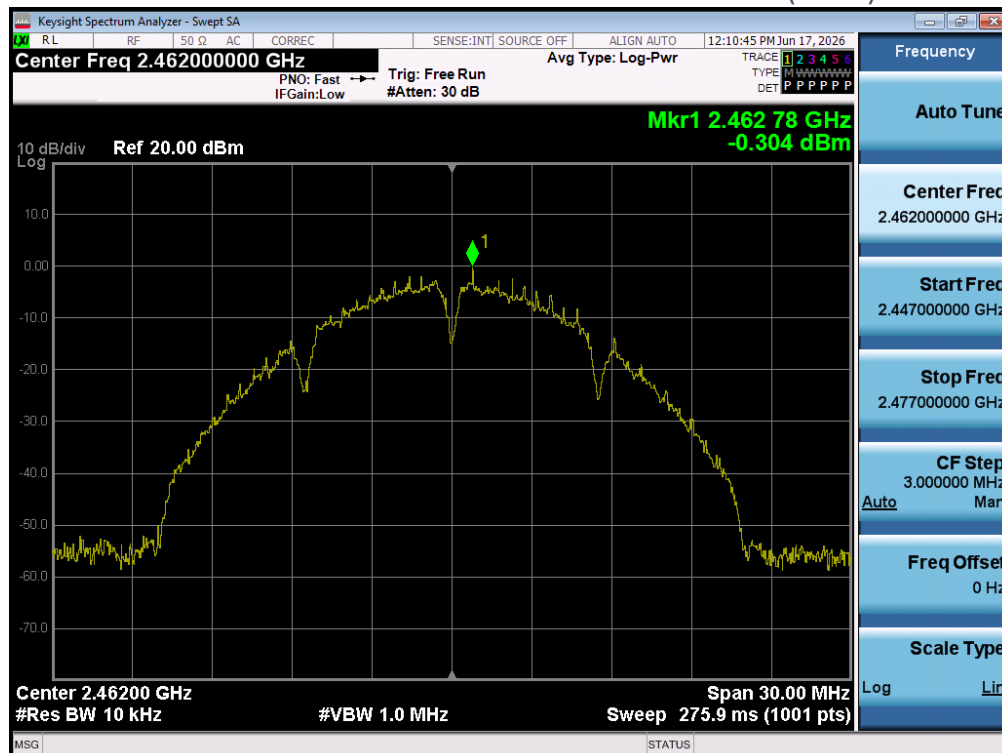
Plot 5-4 802.11b CH.6 OFDM MIMO Peak PSD – (ANT2)



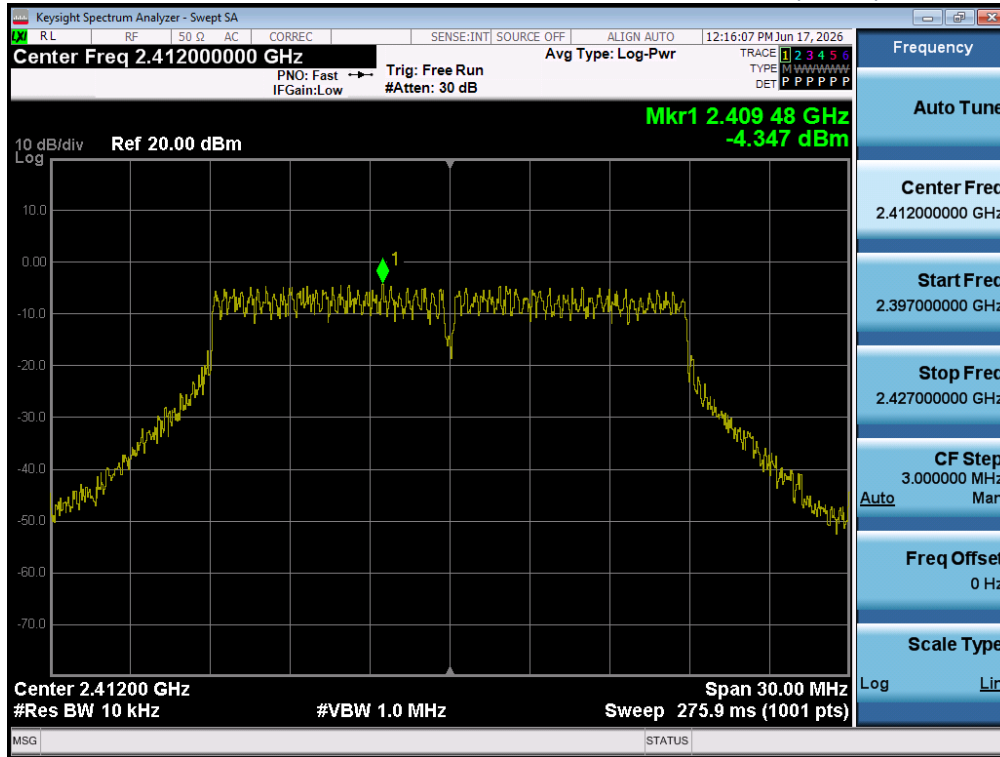
Plot 5-5 802.11b CH.11 OFDM MIMO Peak PSD – (ANT1)



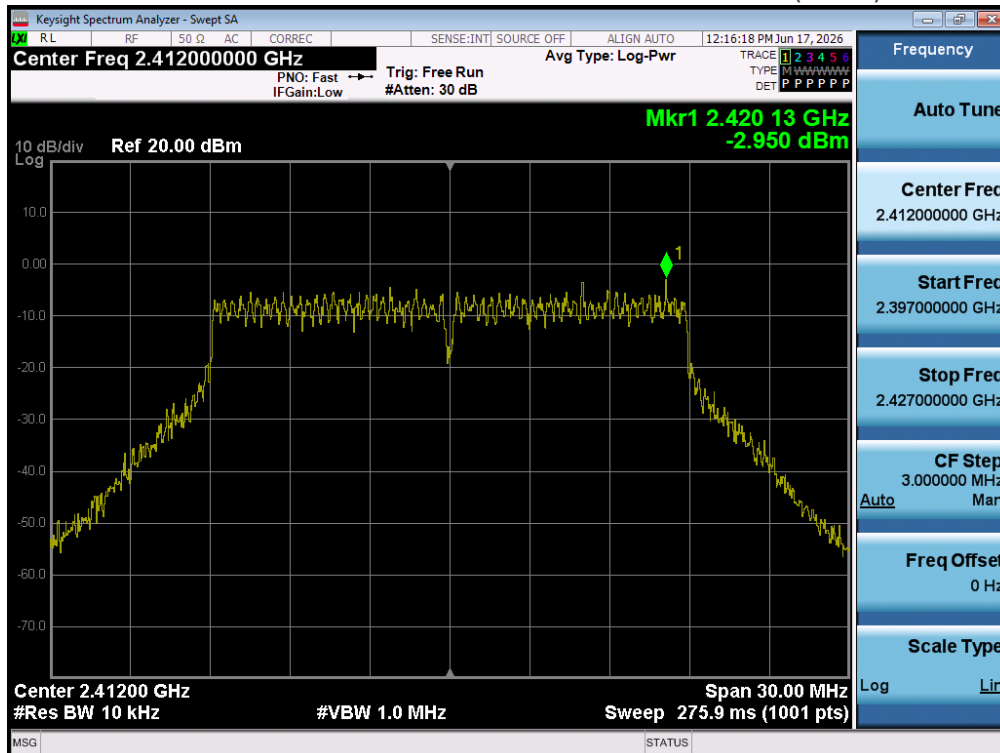
Plot 5-6 802.11b CH.11 OFDM MIMO Peak PSD – (ANT2)



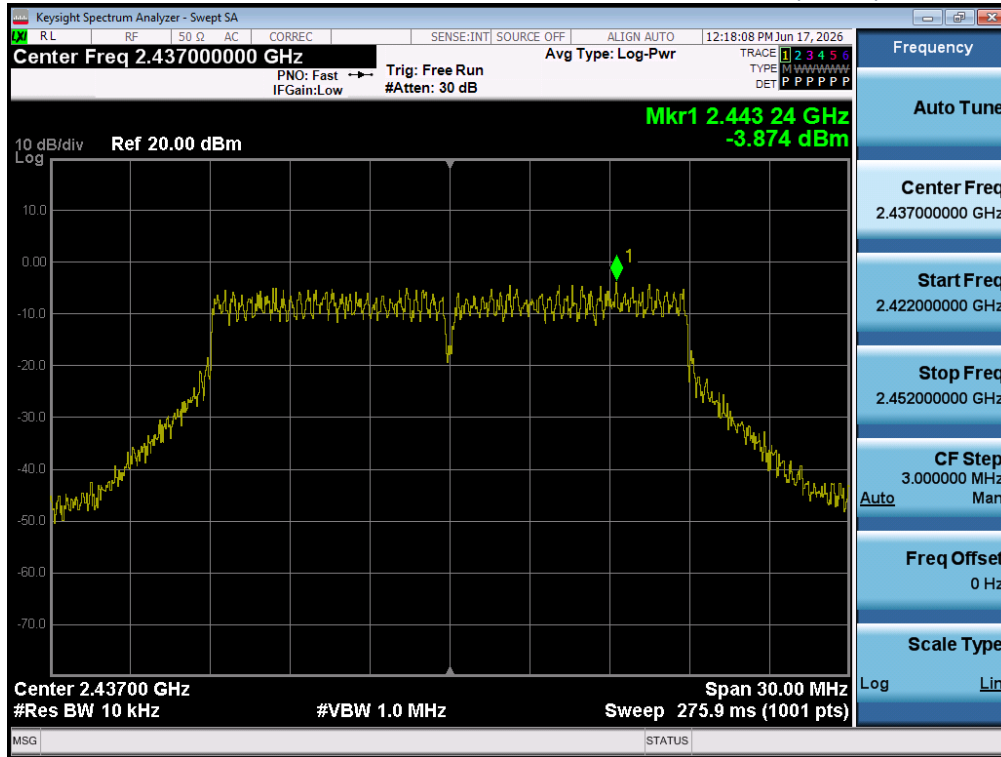
Plot 5-7 802.11n20 CH.1 OFDM MIMO Peak PSD – (ANT1)



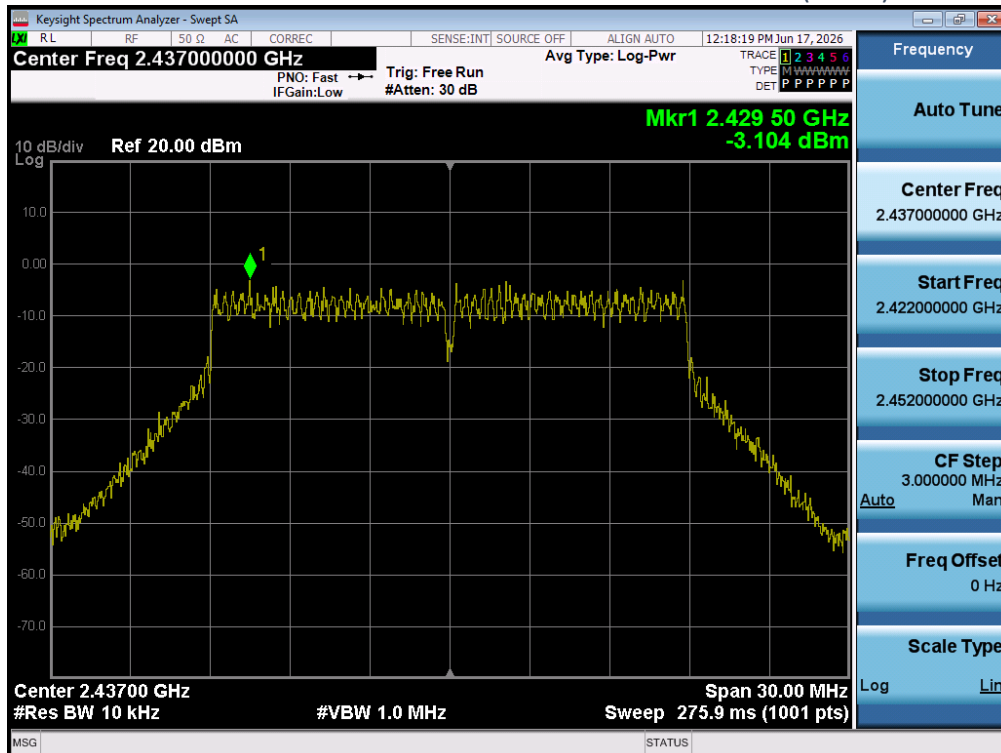
Plot 5-8 802.11n20 CH.1 OFDM MIMO Peak PSD – (ANT2)



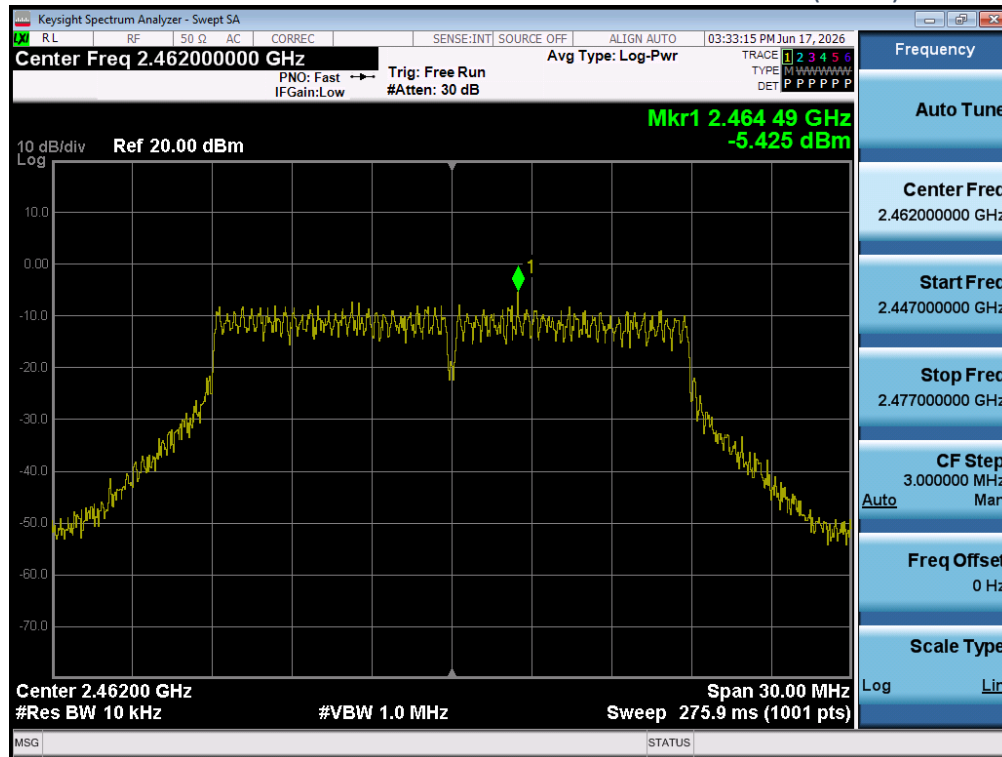
Plot 5-9 802.11n20 CH.6 OFDM MIMO Peak PSD – (ANT1)



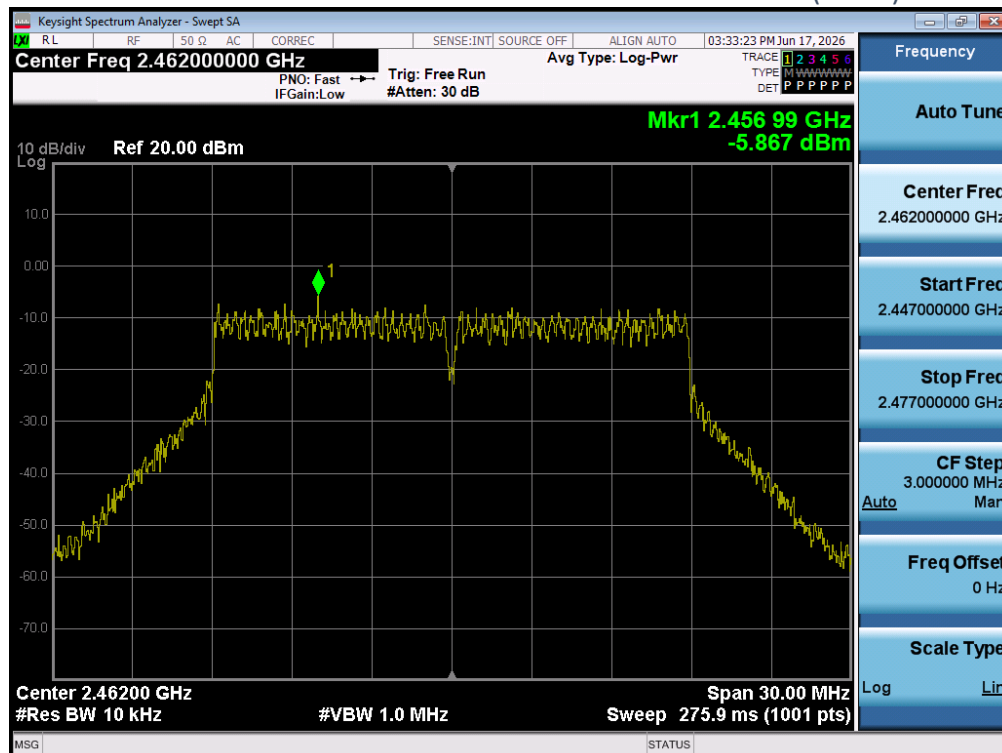
Plot 5-10 802.11n20 CH.6 OFDM MIMO Peak PSD – (ANT2)



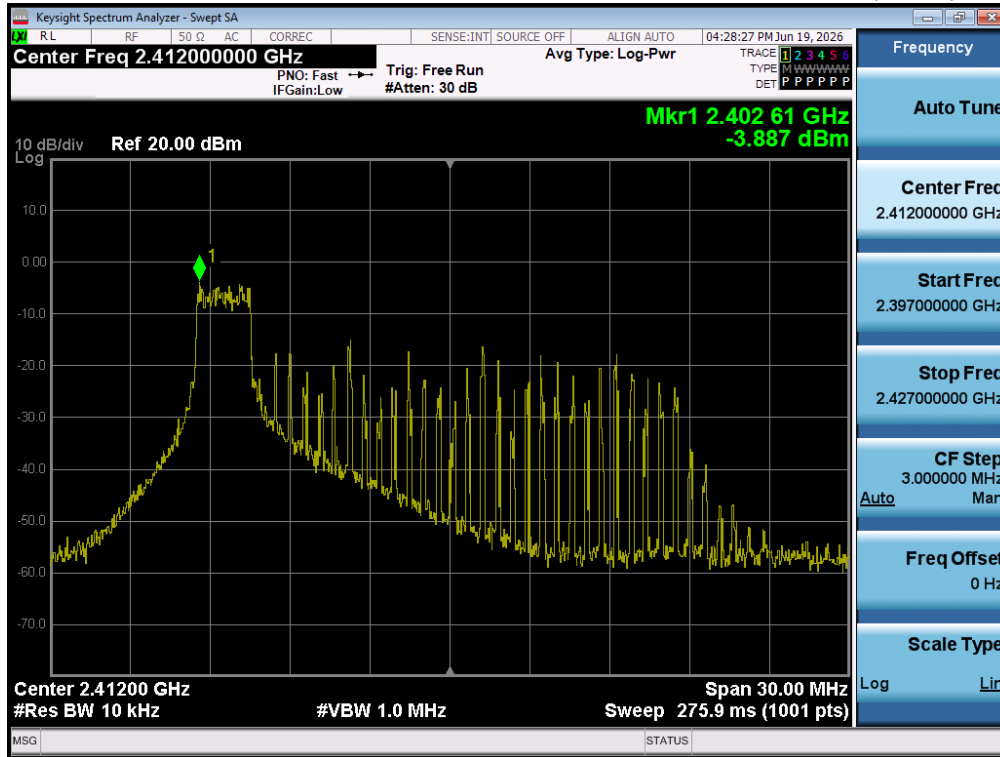
Plot 5-11 802.11n20 CH.11 OFDM MIMO Peak PSD – (ANT1)



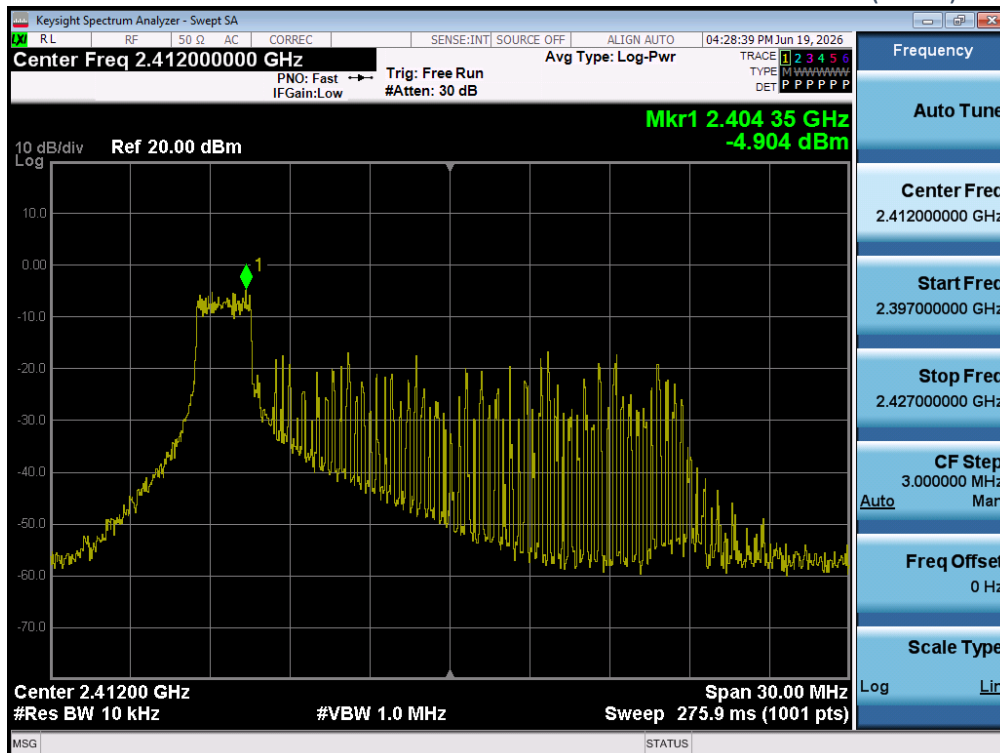
Plot 5-12 802.11n20 CH.11 OFDM MIMO Peak PSD – (ANT2)



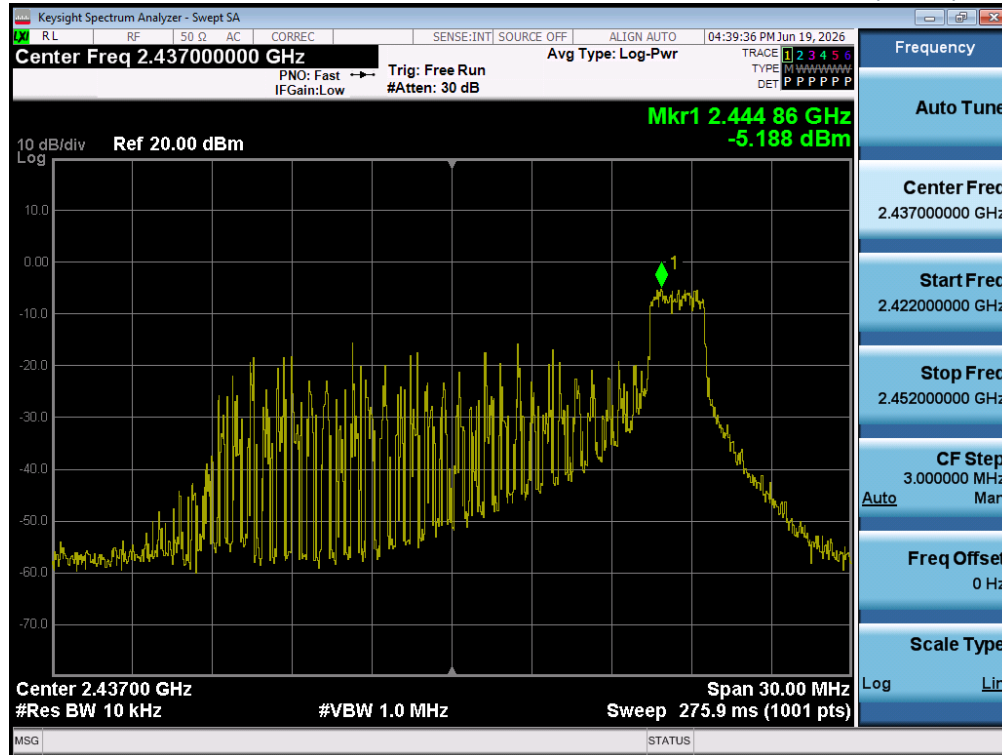
Plot 5-13 802.11ax20 CH.1 OFDMA MIMO 26 Tone Peak PSD - (Ant 1)



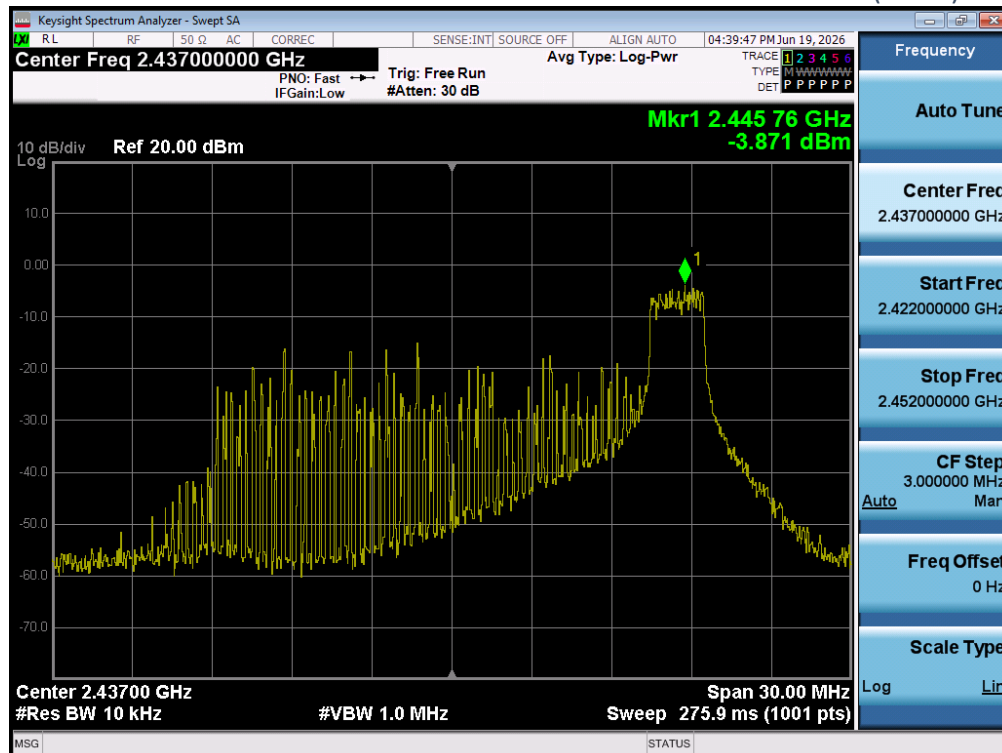
Plot 5-14 802.11ax20 CH.1 OFDMA MIMO 26 Tone Peak PSD - (Ant 2)



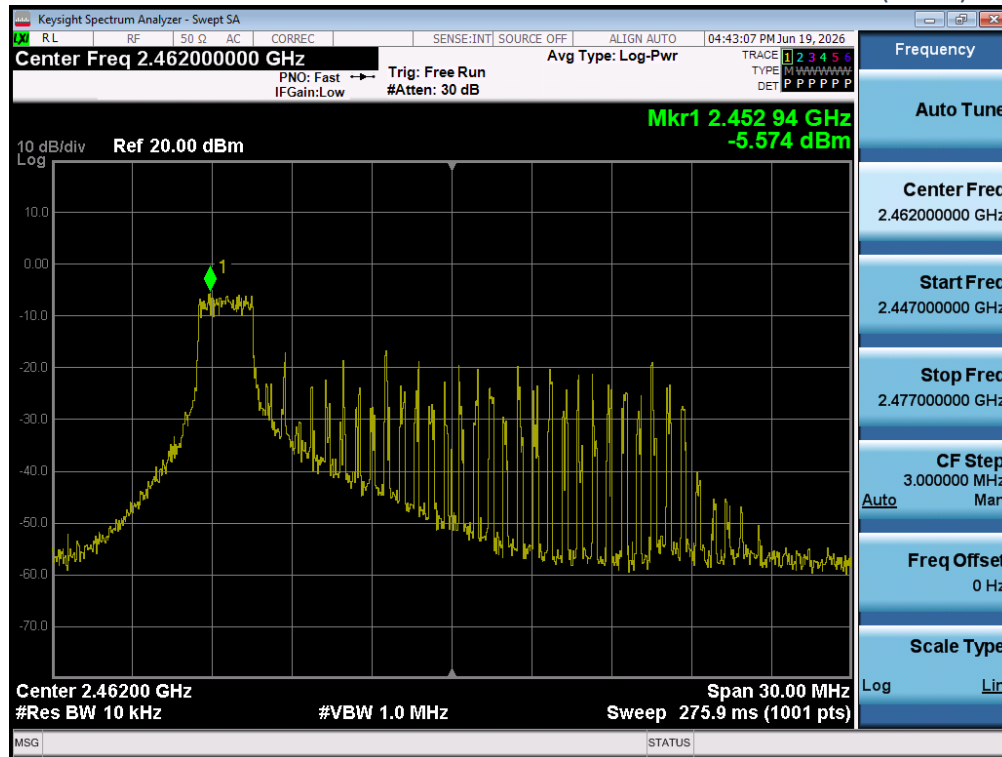
Plot 5-15 802.11ax20 CH.6 OFDMA MIMO 26 Tone Peak PSD - (Ant 1)



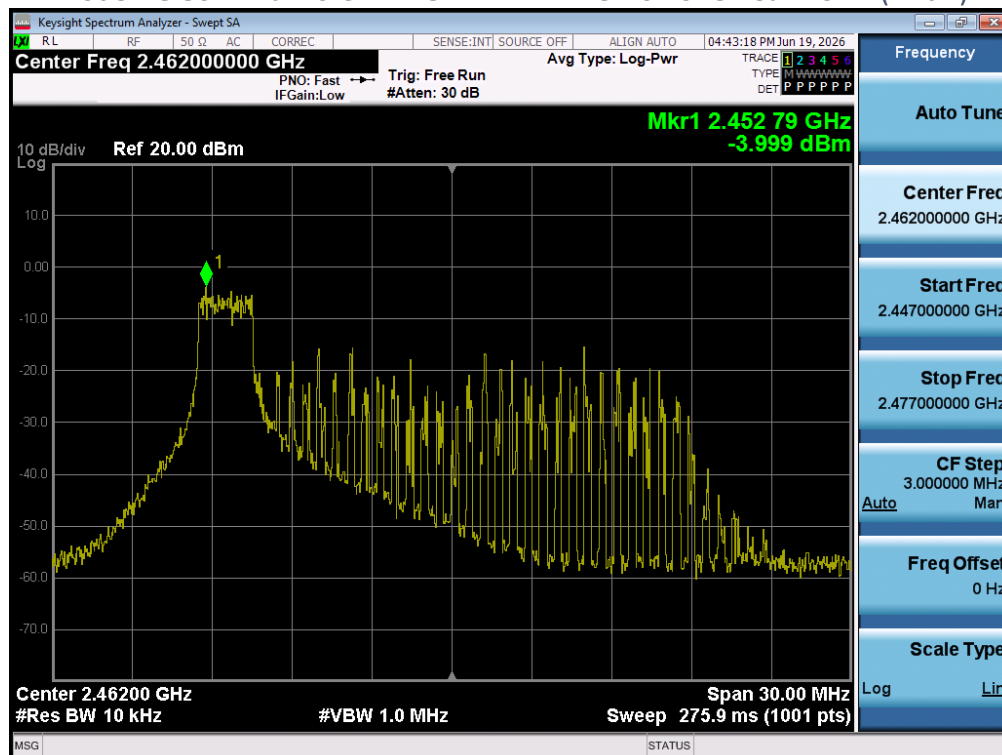
Plot 5-16 802.11ax20 CH.6 OFDMA MIMO 26 Tone Peak PSD - (Ant 2)



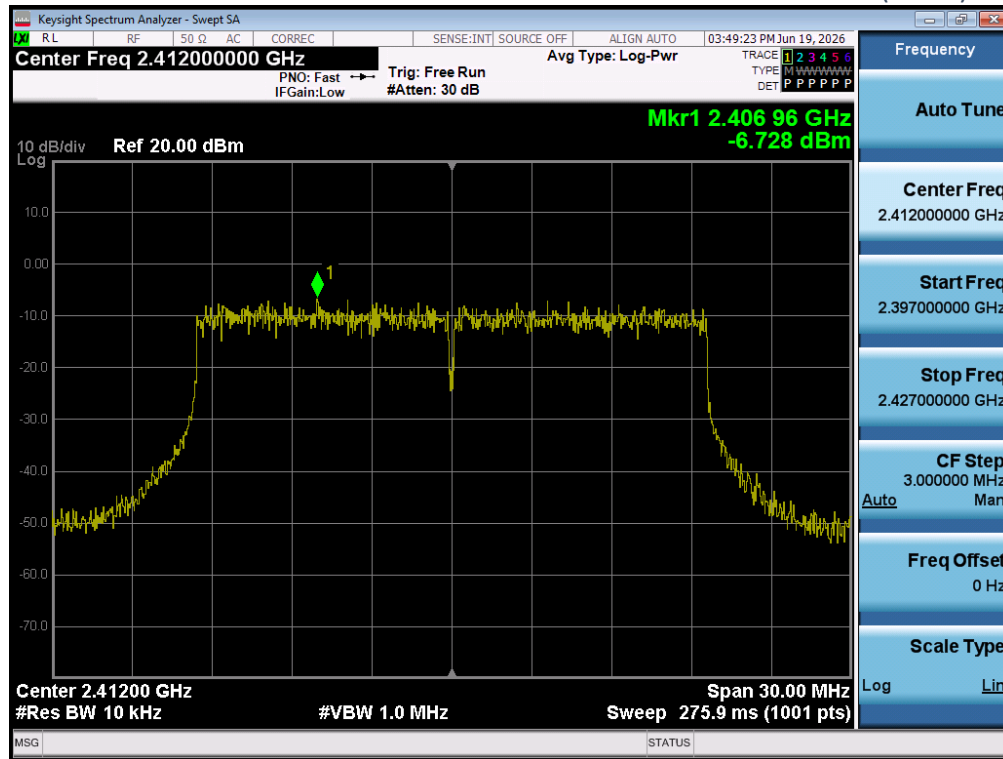
Plot 5-17 802.11ax20 CH.11 OFDMA MIMO 26 Tone Peak PSD - (Ant 1)



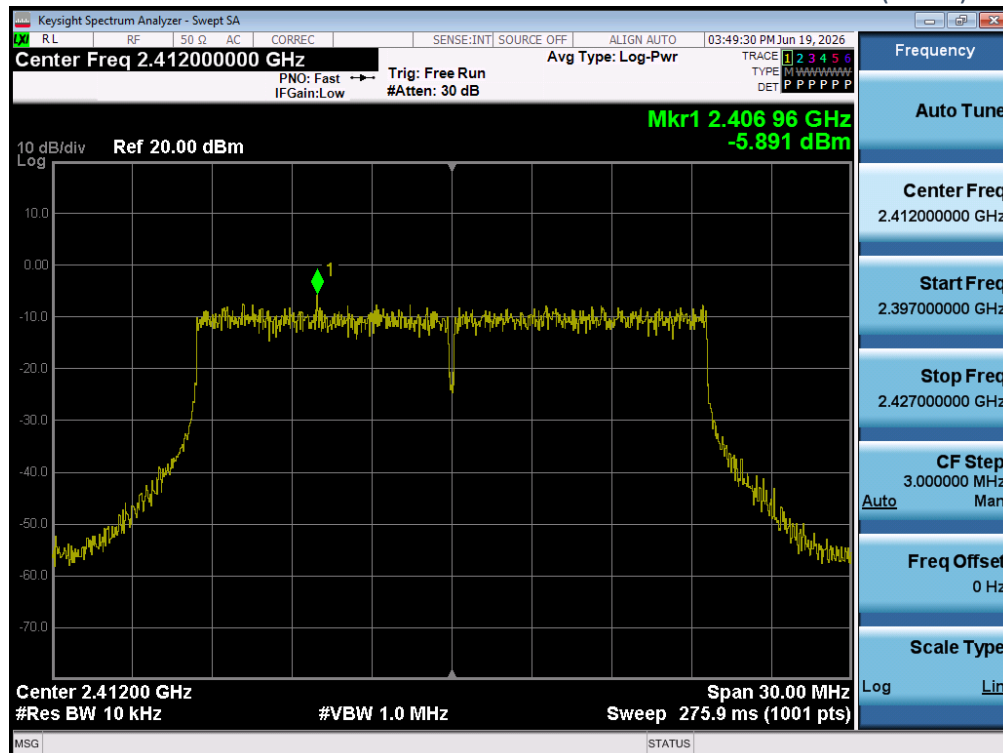
Plot 5-18 802.11ax20 CH.11 OFDMA MIMO 26 Tone Peak PSD - (Ant 2)



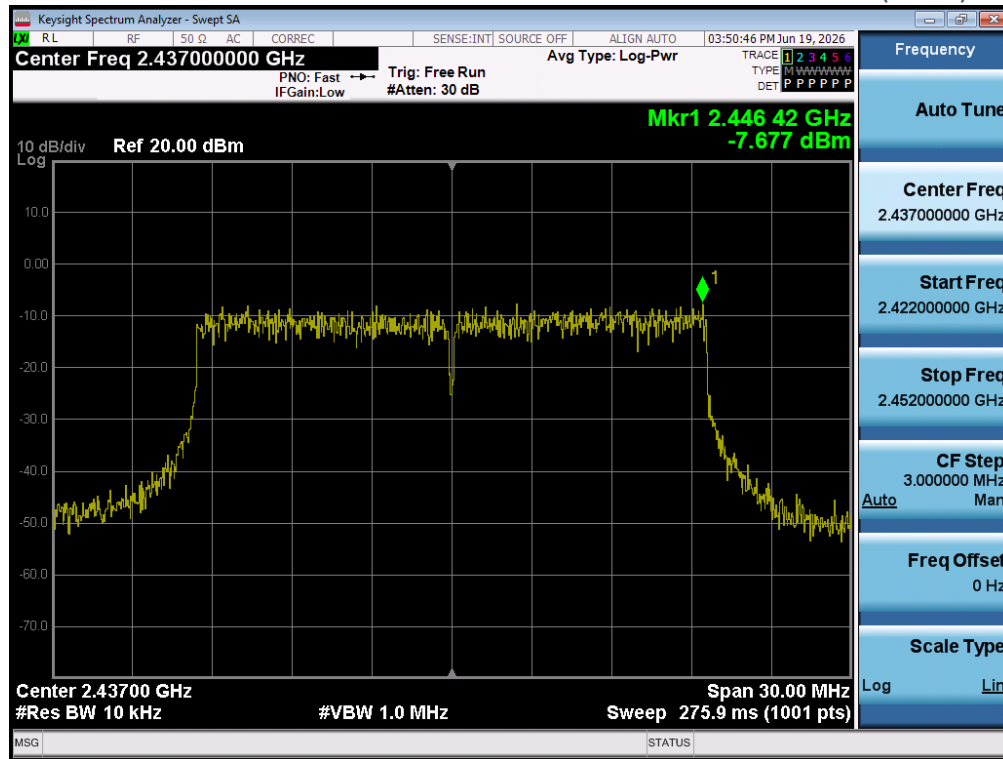
Plot 5-19 802.11ax20 CH.1 OFDMA MIMO 242 Tone Peak PSD - (Ant 1)



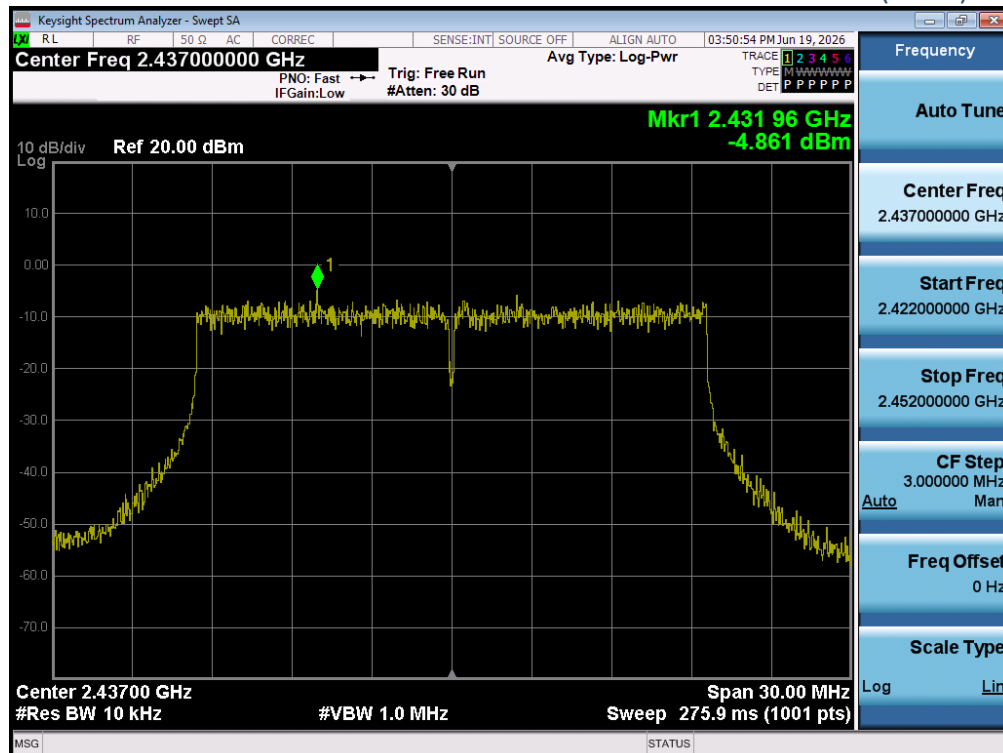
Plot 5-20 802.11ax20 CH.1 OFDMA MIMO 242 Tone Peak PSD - (Ant 2)



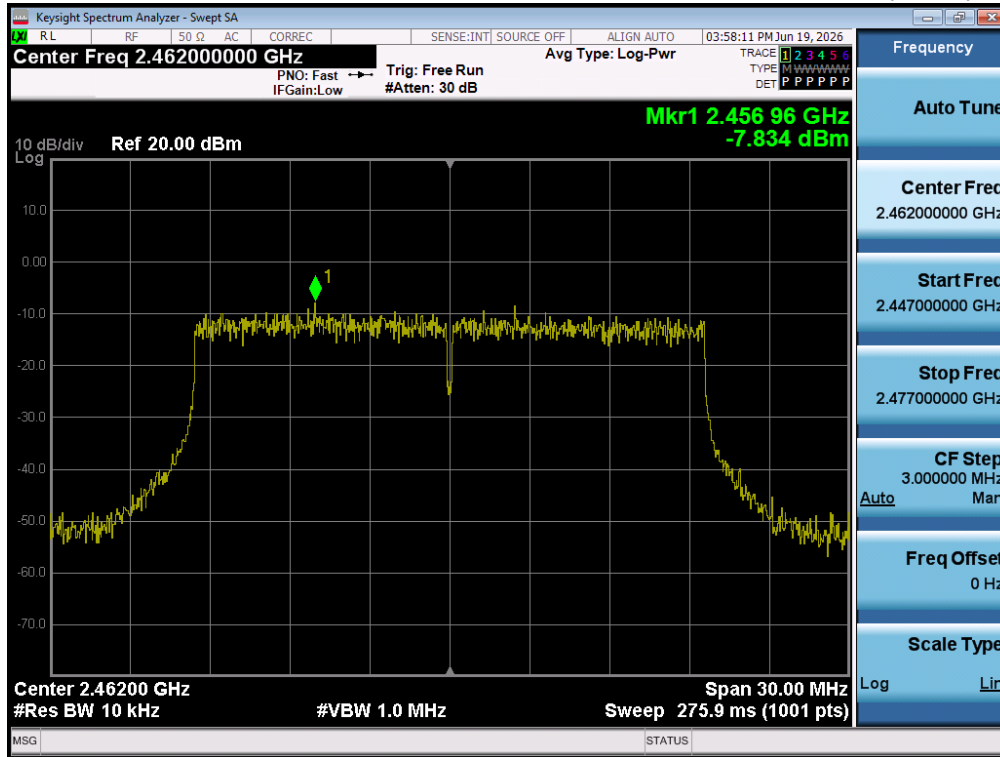
Plot 5-21 802.11ax20 CH.6 OFDMA MIMO 242 Tone Peak PSD - (Ant 1)



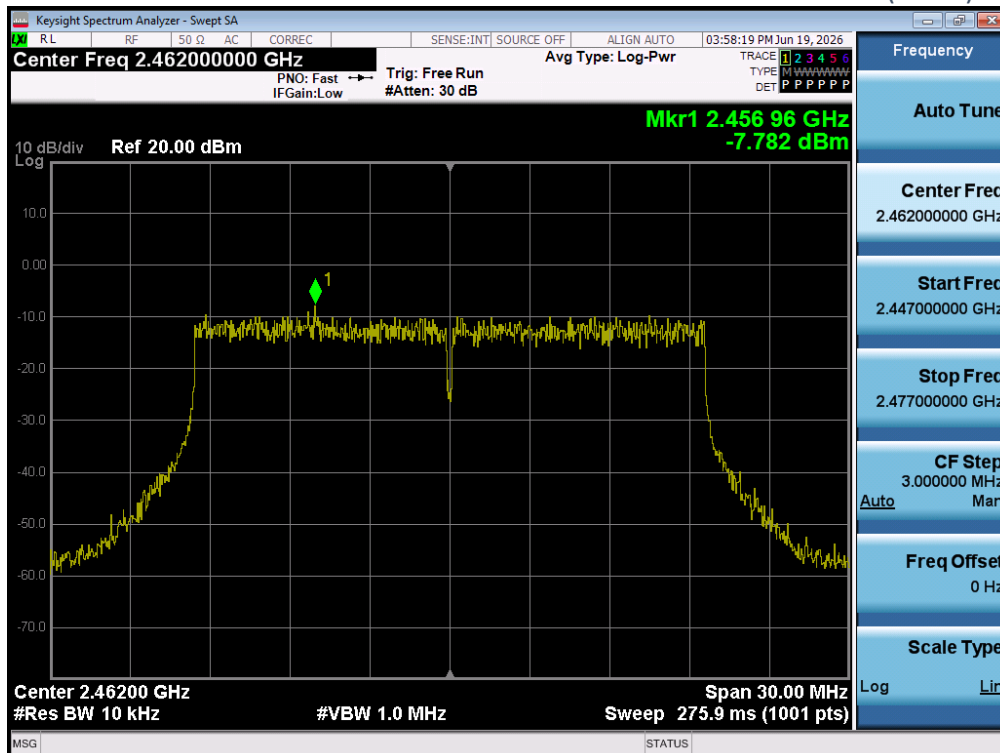
Plot 5-22 802.11ax20 CH.6 OFDMA MIMO 242 Tone Peak PSD - (Ant 2)



Plot 5-23 802.11ax20 CH.11 OFDMA MIMO 242 Tone Peak PSD - (Ant 1)



Plot 5-24 802.11ax20 CH.11 OFDMA MIMO 242 Tone Peak PSD - (Ant 2)



5.6. 6dB Bandwidth

5.6.1. Regulatory Limit

Part. 15.247(a)

(2) Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

RSS-247 - Section 6.3

For operation in the 902–928 MHz and 2400–2483.5 MHz bands, the minimum 6 dB bandwidth shall not be less than 500 kHz.

RSS-Gen – Section 6.7

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs

5.6.2. Test Method

ANSI C63.10-2020, clause 11.8 Option 2

5.6.3. Test Procedure

The procedure for this method is as follows:

- a) Set RBW = 100 kHz.
- b) Set the VBW $\geq [3 \times \text{RBW}]$.
- c) Detector = Peak
- d) Trace mode = Max-Hold
- e) Sweep Time = Auto (Coupled) or sufficient to investigate
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “–6 dB down amplitude”. If a marker is below this “–6 dB down amplitude” value, then it shall be as close as possible to this value.

Test Note

- ✓ The automatic bandwidth measurement function of the spectrum analyzer was used.
- ✓ Plots representing the worst-case scenarios for each table are included.

5.6.4. Test Results

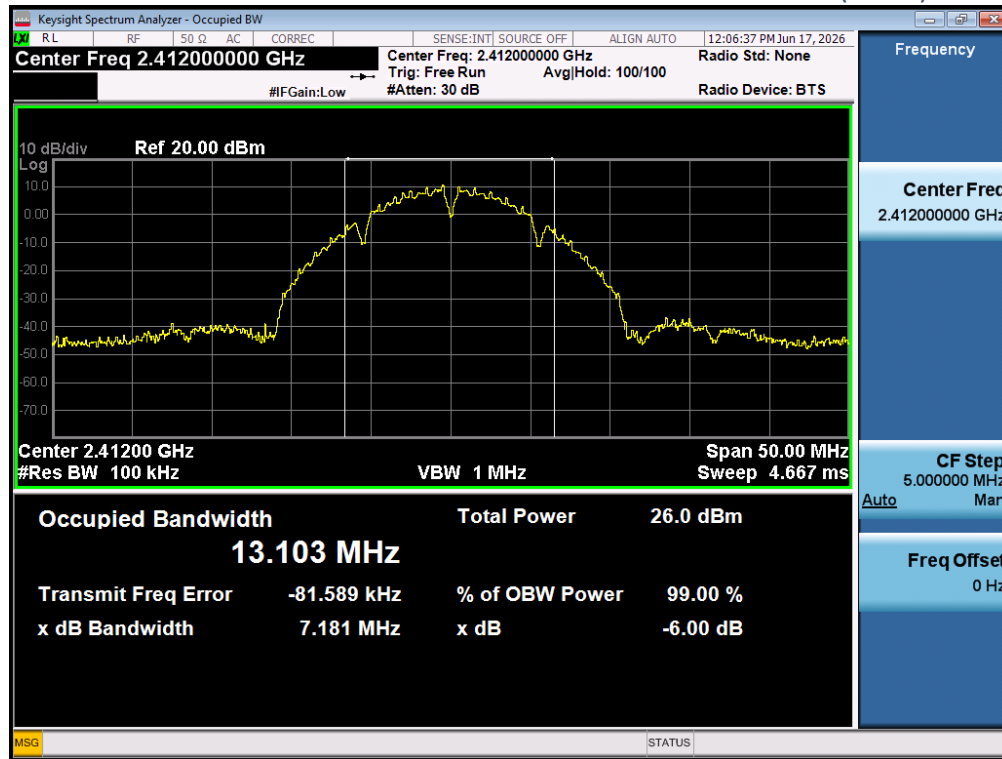
Table 5-7 OFDM 6dB Bandwidth & Occupied Bandwidth

Mode	freq. [MHz]	CH. [MHz]	6dB Bandwidth [MHz]		Occupied Bandwidth [MHz]	
			Ant1	Ant2	Ant1	Ant2
802.11 b	2412	1	7.18	7.21	13.10	13.16
	2437	6	7.18	7.19	13.12	13.17
	2462	11	7.65	7.62	13.12	13.14
	2472	13	7.51	7.54	15.40	13.90
802.11 g	2412	1	16.38	16.44	16.68	16.63
	2437	6	16.42	16.41	16.65	16.63
	2462	11	16.38	16.37	16.62	16.61
	2472	13	16.42	16.34	18.12	16.93
802.11 n(HT20)	2412	1	17.65	17.67	17.74	17.75
	2437	6	17.62	17.69	17.79	17.76
	2462	11	17.66	17.68	17.74	17.77
	2472	13	17.69	17.68	18.28	17.87
802.11 ax(HE20)	2412	1	18.78	19.01	19.02	19.03
	2437	6	19.07	18.99	19.07	19.03
	2462	11	18.96	18.99	19.03	19.04
	2472	13	19.00	19.03	19.28	19.14

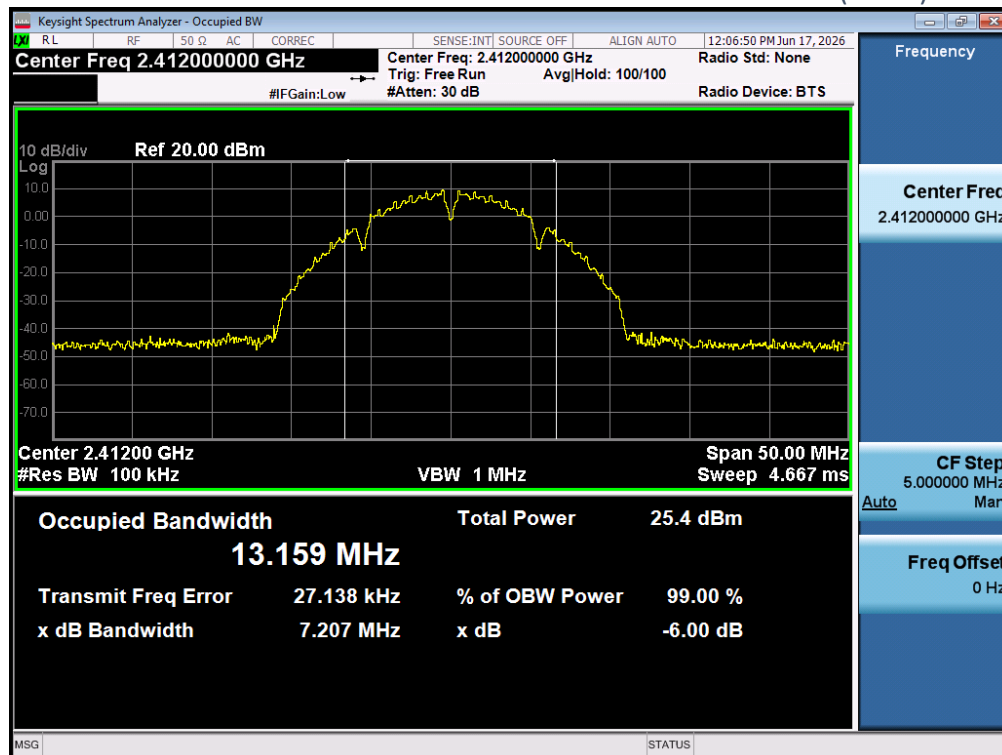
Table 5-8 OFDMA 6dB Bandwidth & Occupied Bandwidth

Mode	freq. [MHz]	CH. [MHz]	Tone	Index	6dB Bandwidth [MHz]		Occupied Bandwidth [MHz]	
					Ant1	Ant2	Ant1	Ant2
802.11ax (HE20)	2412	1	26T	0	2.12	2.12	17.27	17.12
				4	2.64	2.64	16.10	16.23
				8	2.06	2.05	17.15	17.86
	2437	6	26T	0	2.08	2.12	17.60	17.92
				4	2.65	2.66	14.82	13.96
				8	2.09	2.10	17.68	18.36
	2462	11	26T	0	2.15	2.11	18.01	17.64
				4	2.63	2.65	15.60	16.36
				8	2.06	2.08	17.94	17.61
	2472	13	26T	0	2.07	2.12	18.66	18.13
				4	2.65	2.65	16.53	16.67
				8	2.09	2.09	18.01	18.12
	2412	1	242T	61	18.97	18.98	18.98	19.00
	2437	6	242T	61	19.00	18.98	19.01	18.99
	2462	11	242T	61	18.89	18.98	18.98	19.01
	2472	13	242T	61	18.98	19.00	19.09	19.02

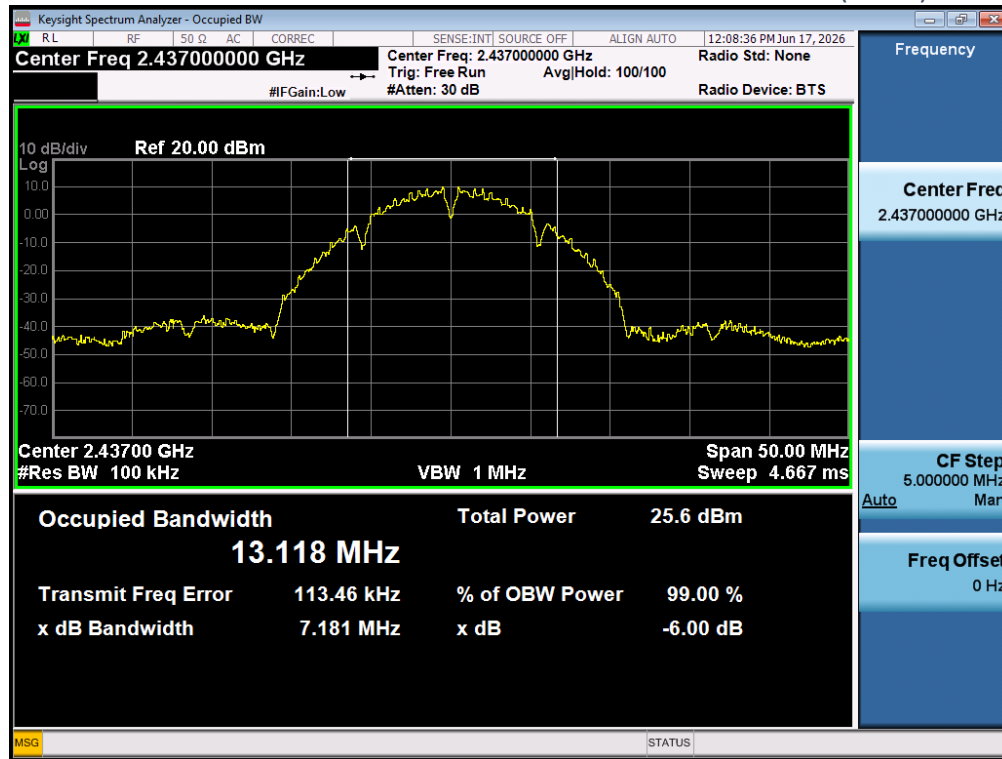
Plot 5-25 802.11b CH.1 OFDM 6 dB Bandwidth & OBW – (ANT1)



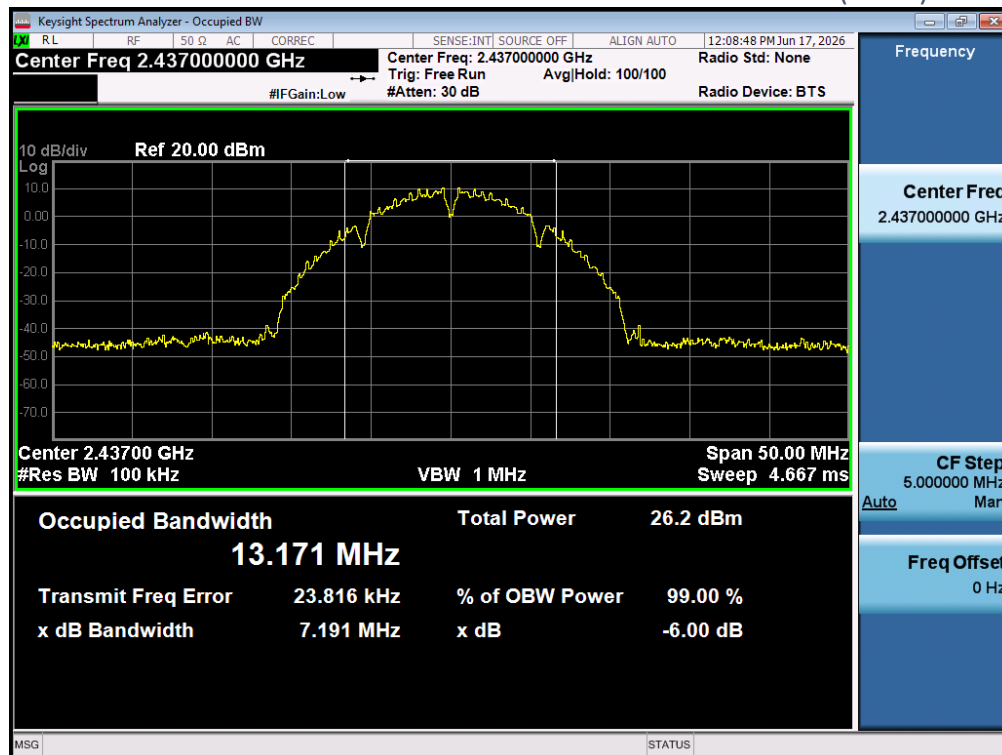
Plot 5-26 802.11b CH.1 OFDM 6 dB Bandwidth & OBW – (ANT2)



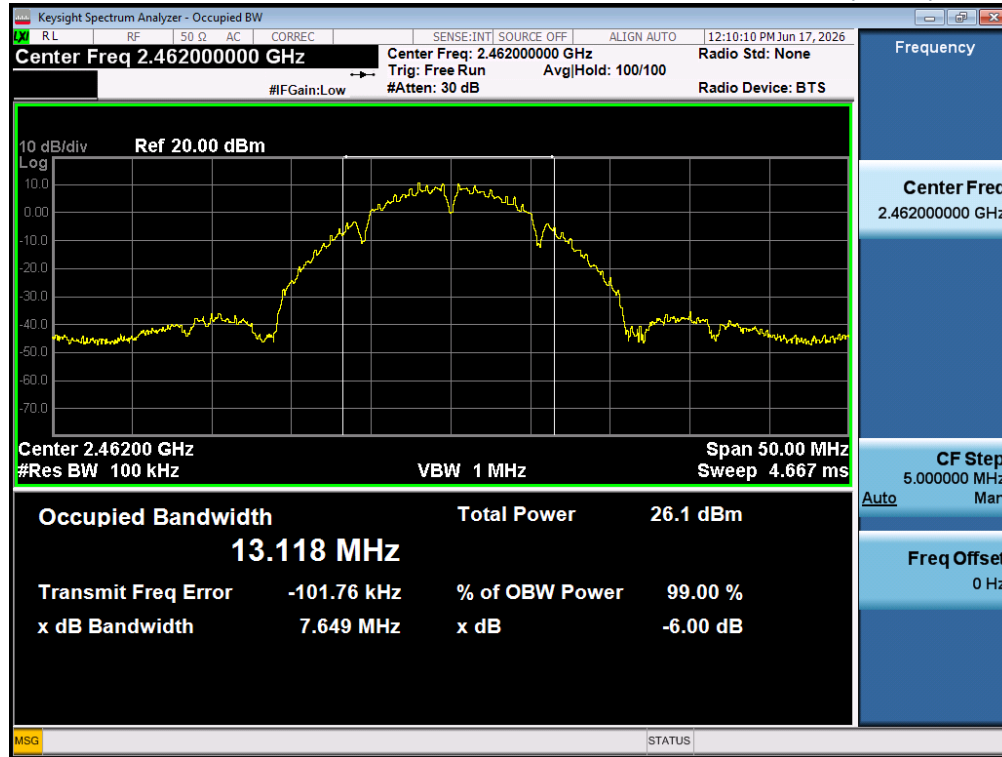
Plot 5-27 802.11b CH.6 OFDM 6 dB Bandwidth & OBW – (ANT1)



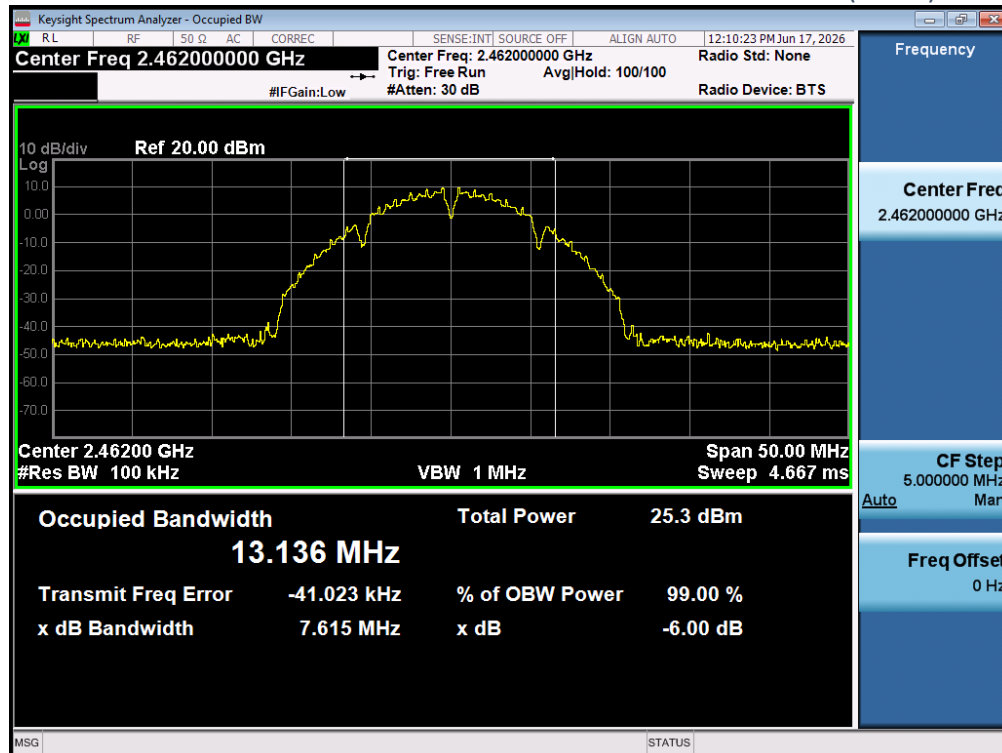
Plot 5-28 802.11b CH.6 OFDM 6 dB Bandwidth & OBW – (ANT2)



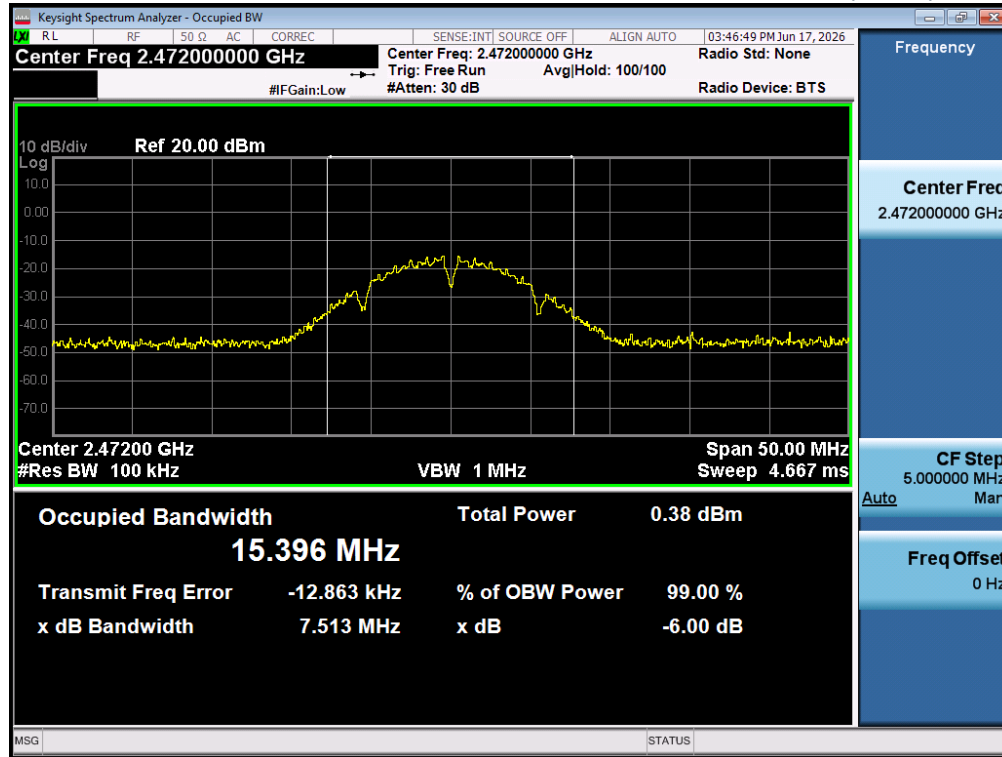
Plot 5-29 802.11b CH.11 OFDM 6 dB Bandwidth & OBW – (ANT1)



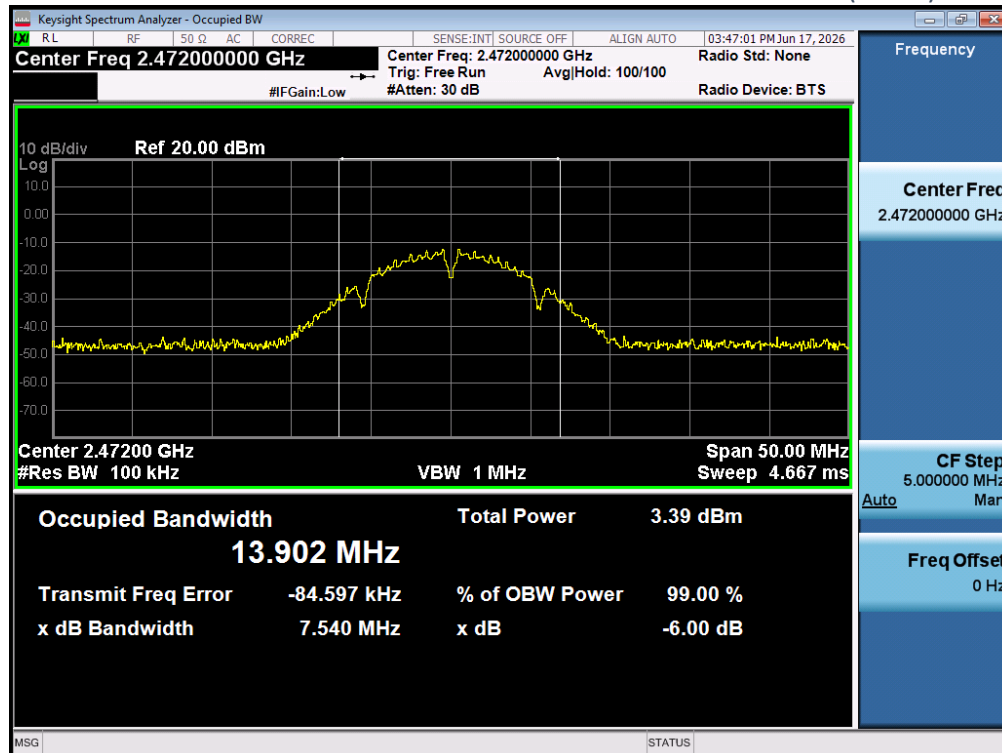
Plot 5-30 802.11b CH.11 OFDM 6 dB Bandwidth & OBW – (ANT2)



Plot 5-31 802.11b CH.13 OFDM 6 dB Bandwidth & OBW – (ANT1)



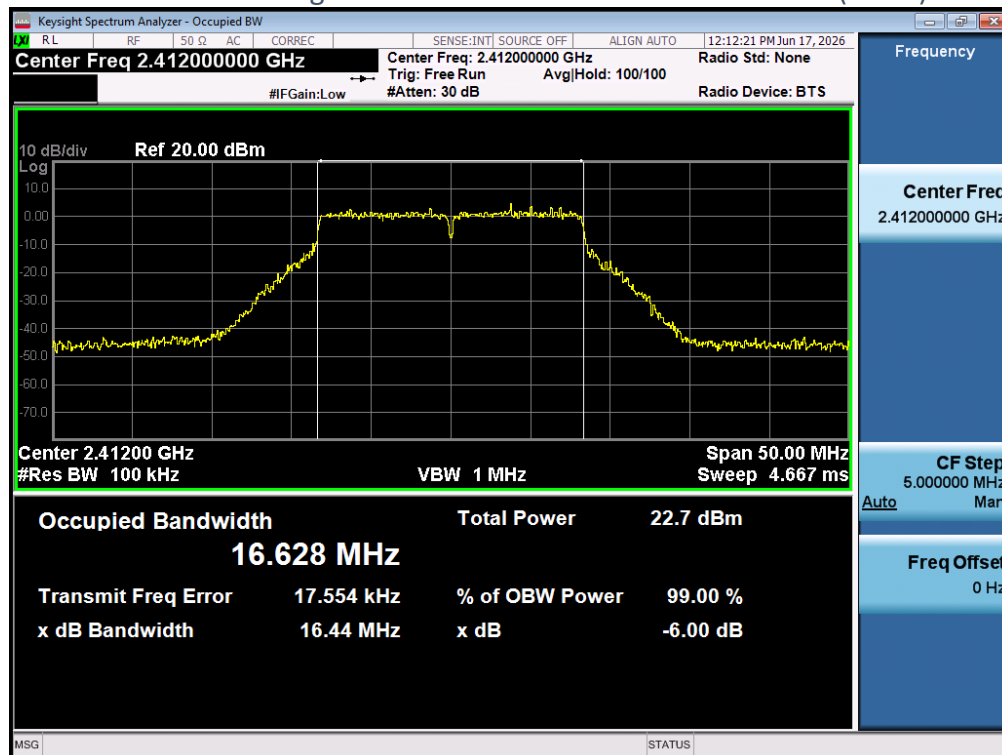
Plot 5-32 802.11b CH.13 OFDM 6 dB Bandwidth & OBW – (ANT2)



Plot 5-33 802.11g CH.1 OFDM 6 dB Bandwidth & OBW – (ANT1)



Plot 5-34 802.11g CH.1 OFDM 6 dB Bandwidth & OBW – (ANT2)



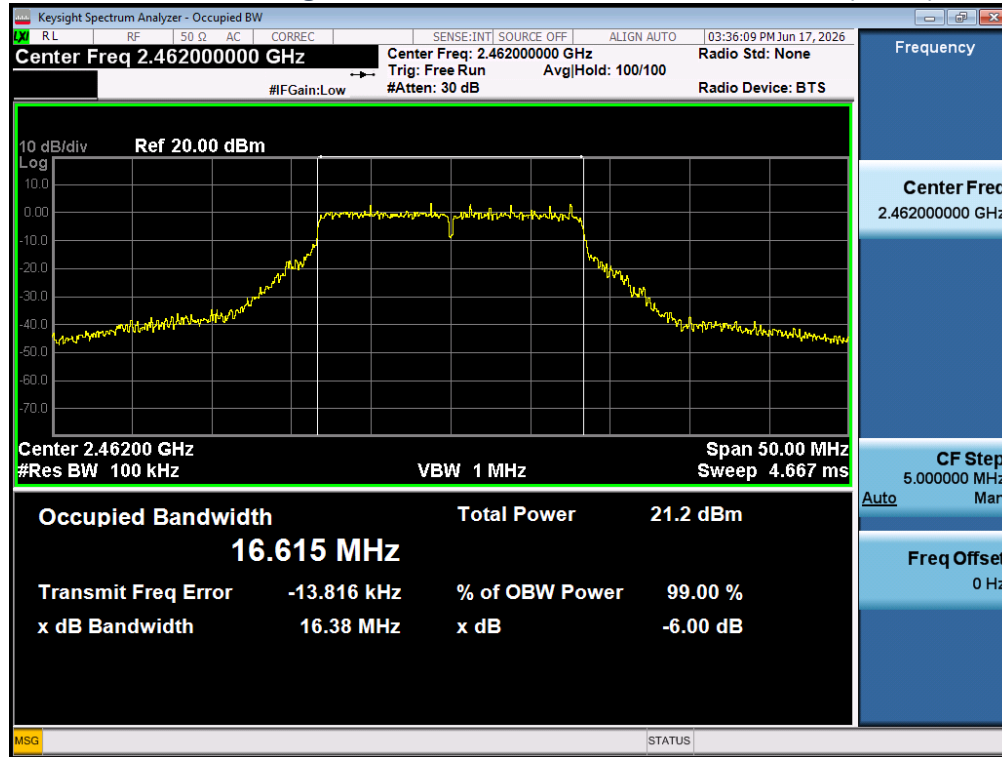
Plot 5-35 802.11g CH.6 OFDM 6 dB Bandwidth & OBW – (ANT1)



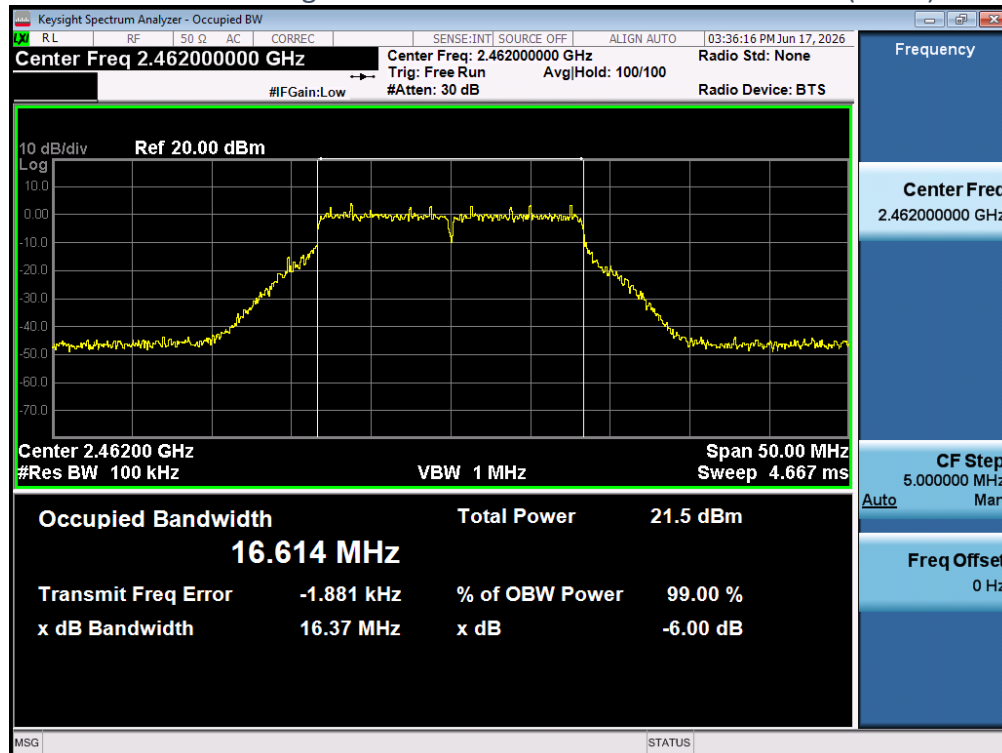
Plot 5-36 802.11g CH.6 OFDM 6 dB Bandwidth & OBW – (ANT2)



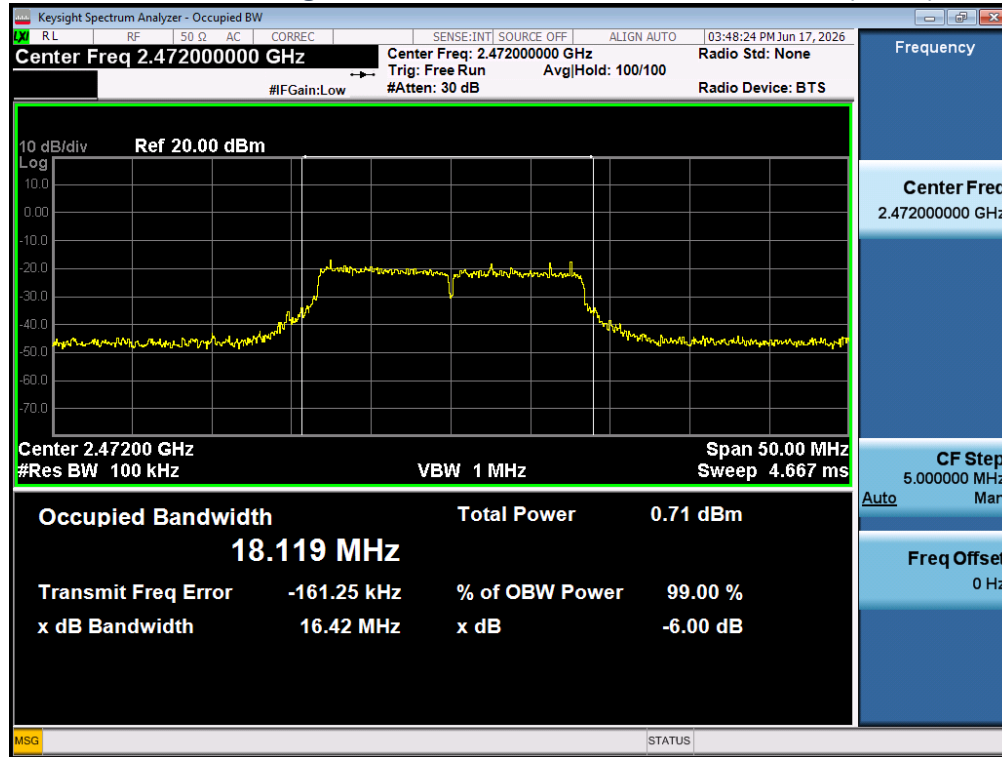
Plot 5-37 802.11g CH.11 OFDM 6 dB Bandwidth & OBW – (ANT1)



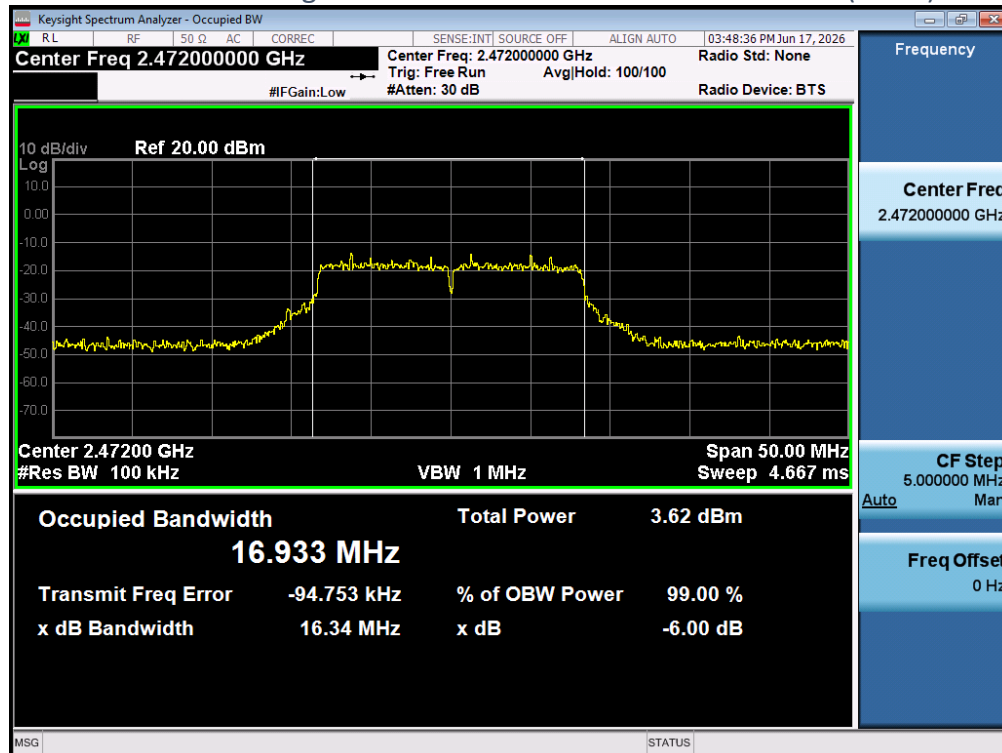
Plot 5-38 802.11g CH.11 OFDM 6 dB Bandwidth & OBW – (ANT2)



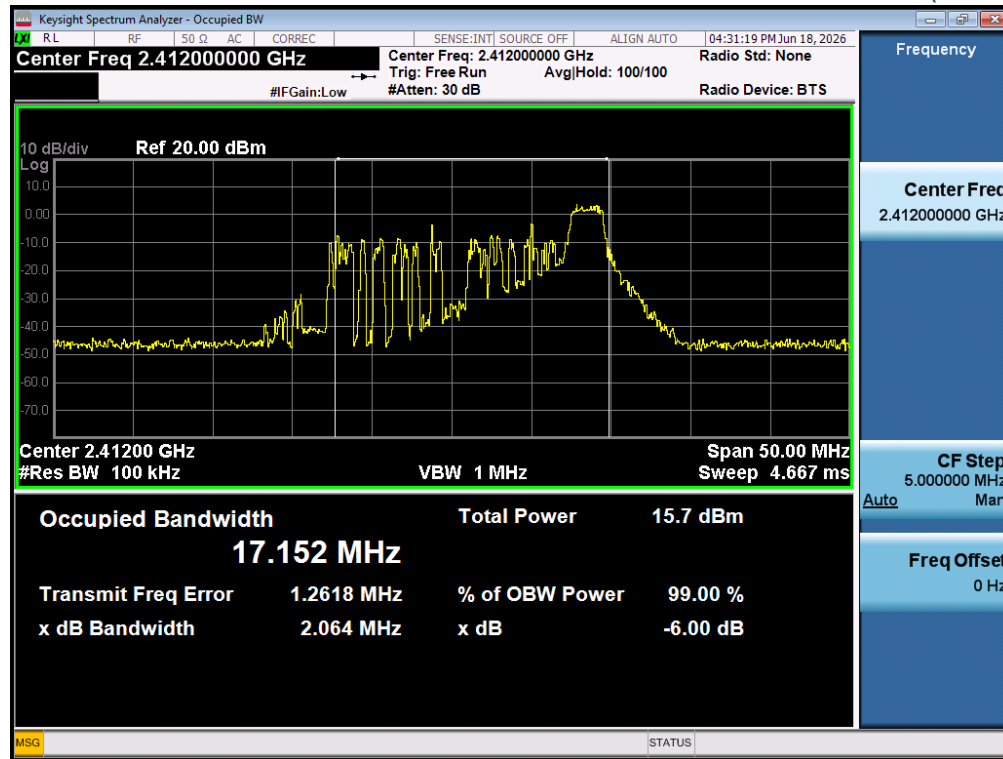
Plot 5-39 802.11g CH.13 OFDM 6 dB Bandwidth & OBW – (ANT1)



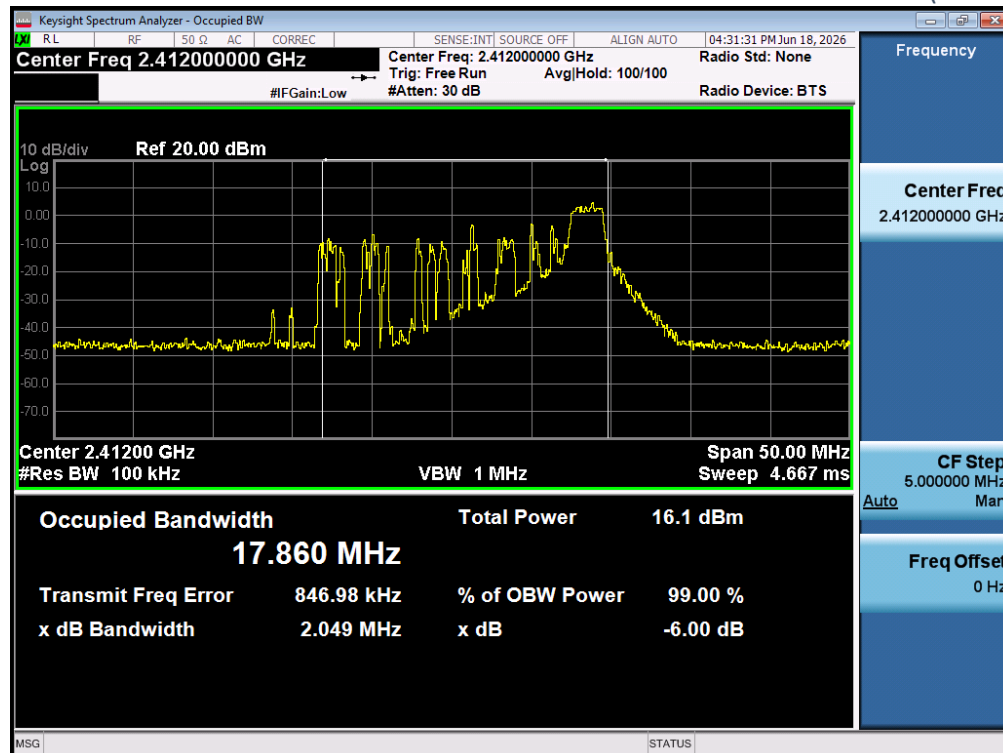
Plot 5-40 802.11g CH.13 OFDM 6 dB Bandwidth & OBW – (ANT2)



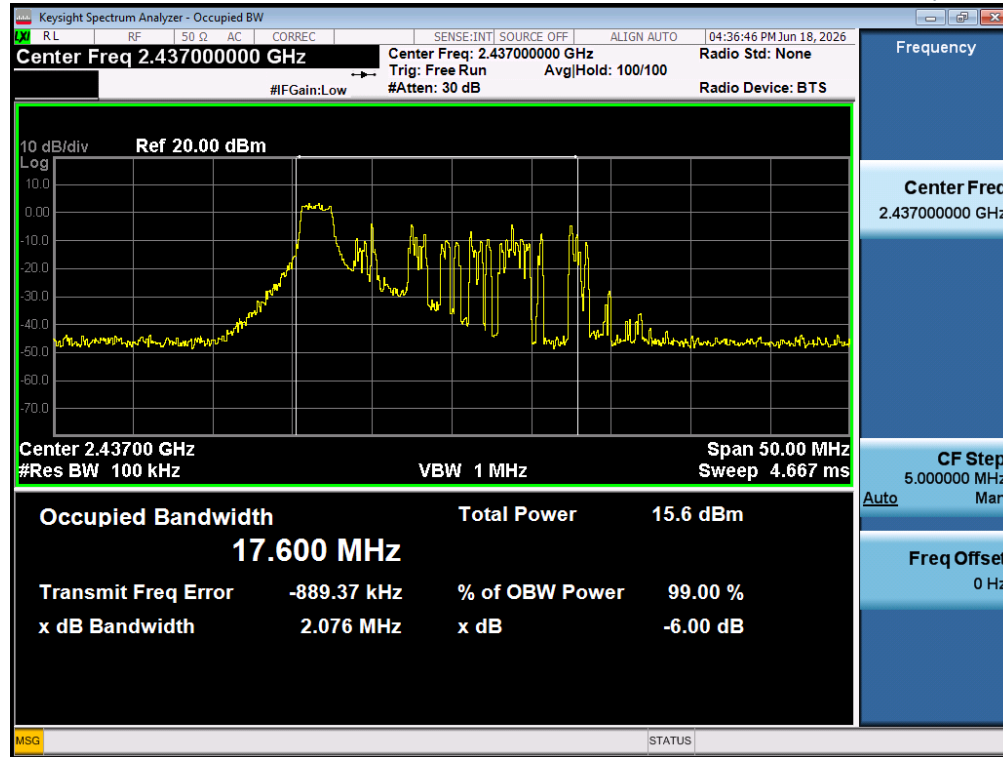
Plot 5-41 802.11ax20 CH.1 OFDMA 26 Tone 6 dB Bandwidth & OBW – (Ant 1)



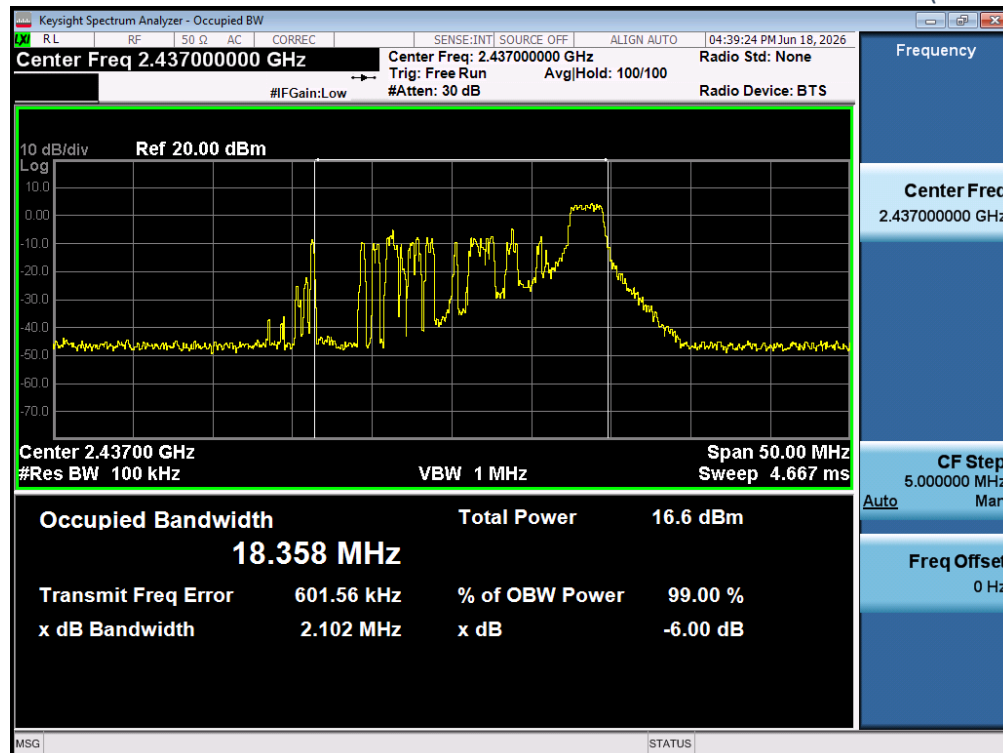
Plot 5-42 802.11ax20 CH.1 OFDMA 26 Tone 6 dB Bandwidth & OBW – (ANT2)



Plot 5-43 802.11ax20 CH.6 OFDMA 26 Tone 6 dB Bandwidth & OBW – (Ant 1)



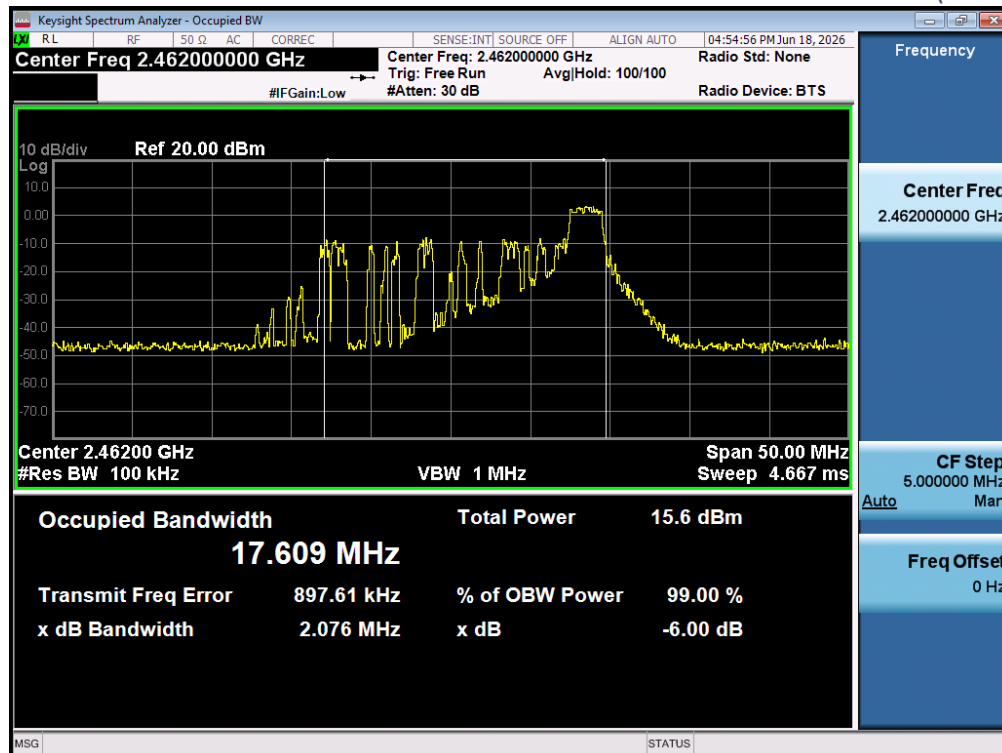
Plot 5-44 802.11ax20 CH.6 OFDMA 26 Tone 6 dB Bandwidth & OBW – (ANT2)



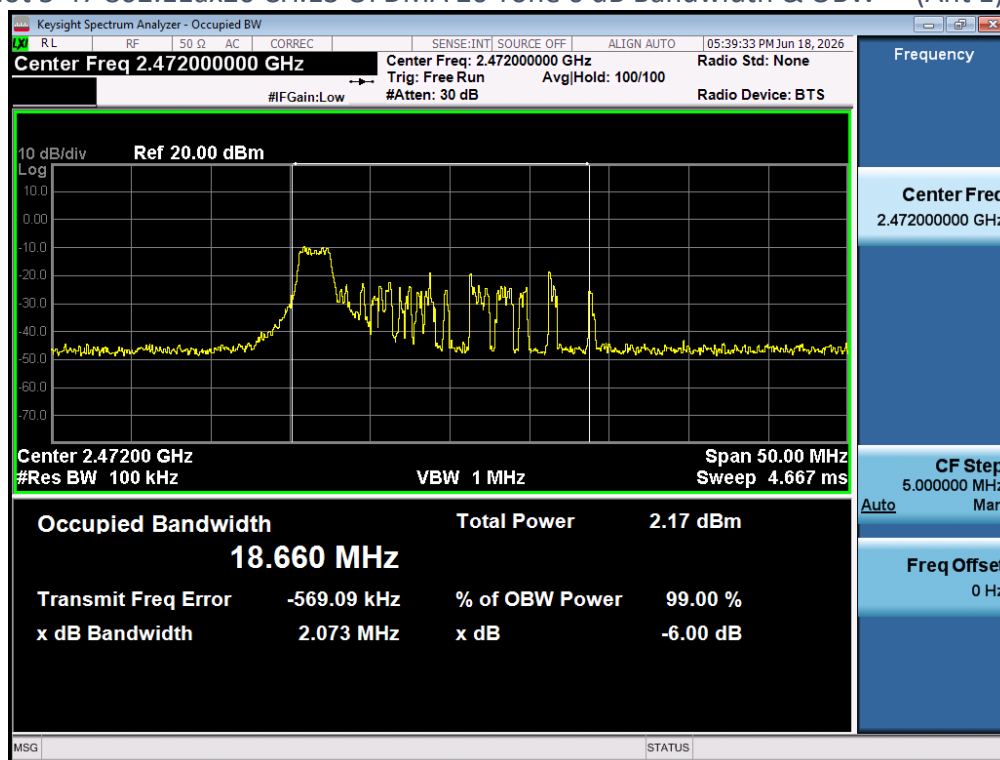
Plot 5-45 802.11ax20 CH.11 OFDMA 26 Tone 6 dB Bandwidth & OBW – (Ant 1)



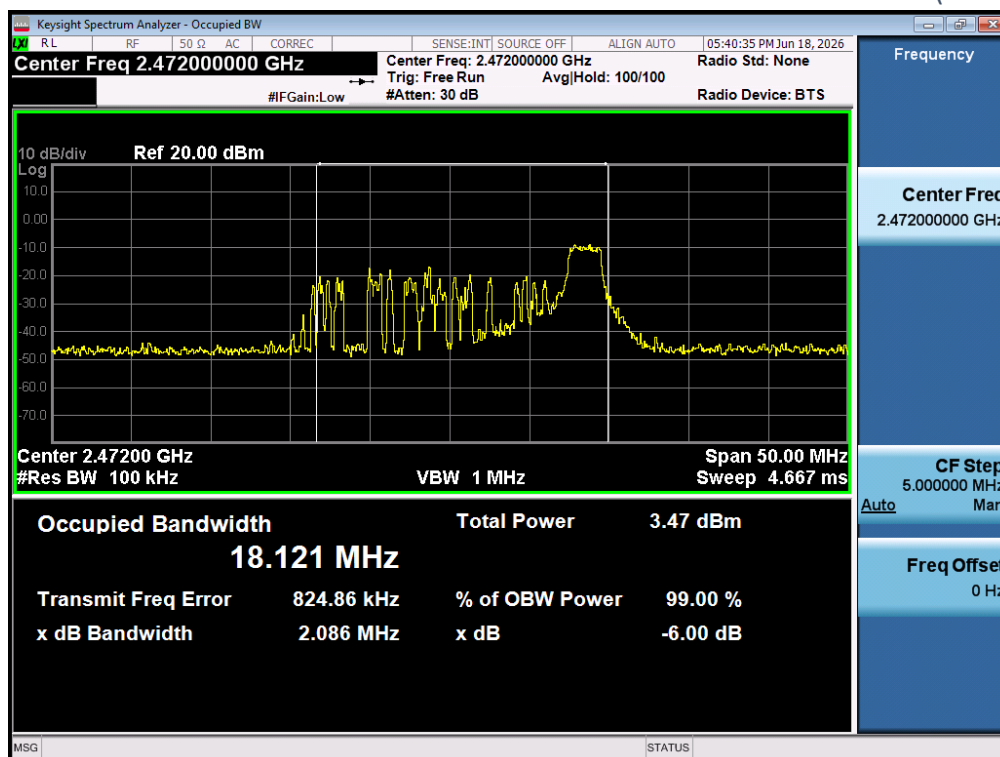
Plot 5-46 802.11ax20 CH.11 OFDMA 26 Tone 6 dB Bandwidth & OBW – (ANT2)



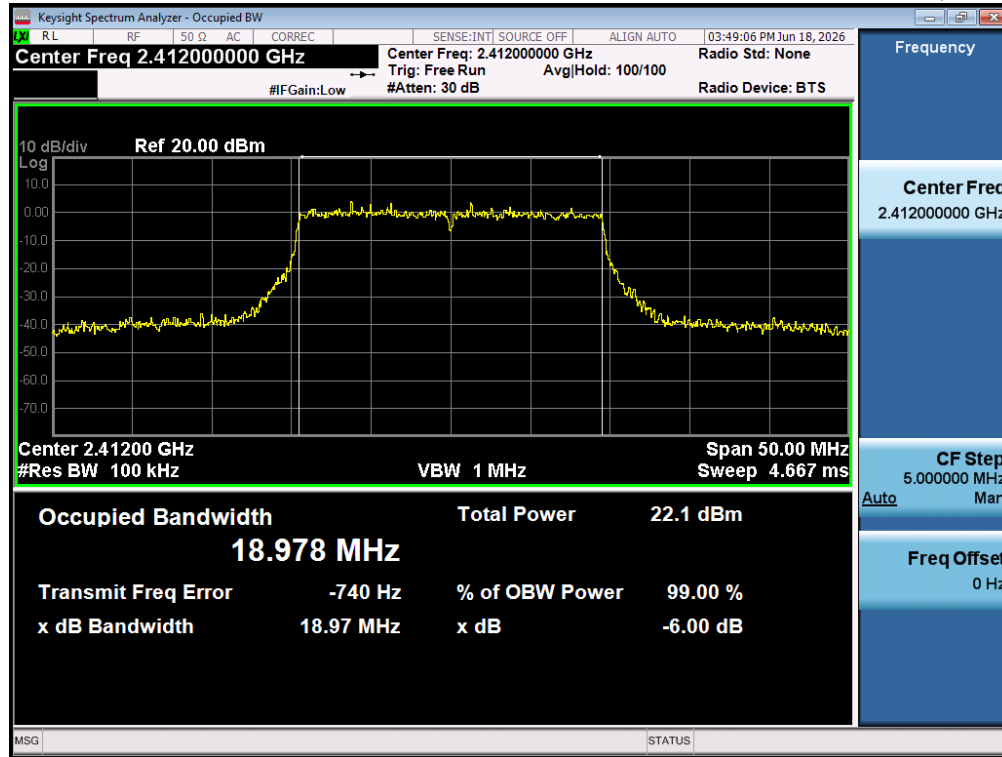
Plot 5-47 802.11ax20 CH.13 OFDMA 26 Tone 6 dB Bandwidth & OBW – (Ant 1)



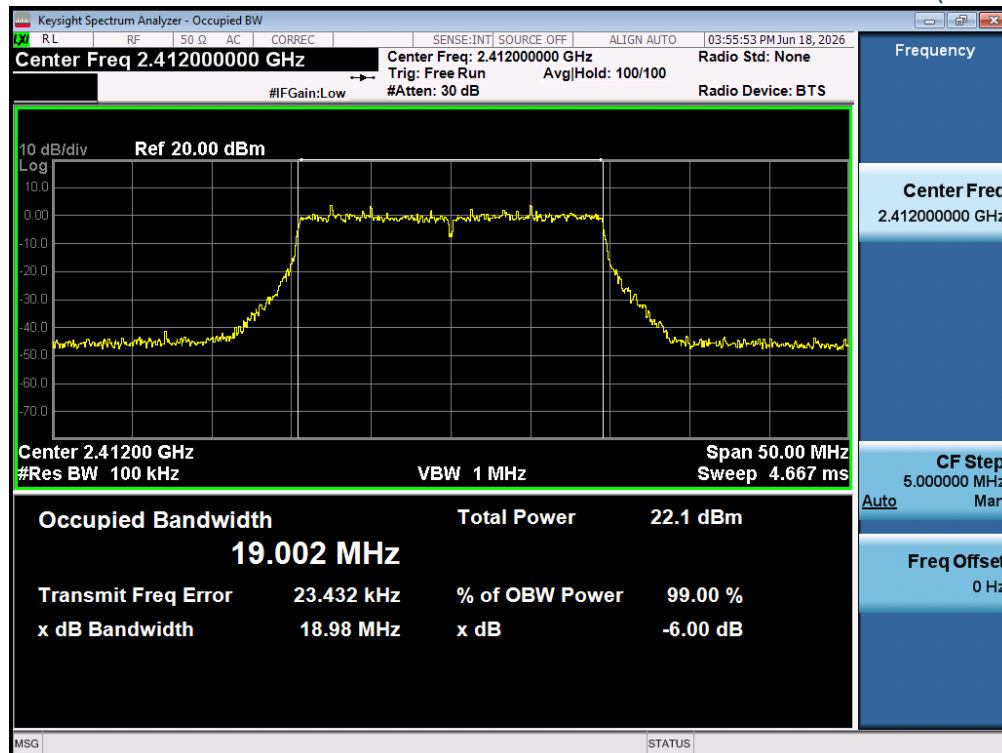
Plot 5-48 802.11ax20 CH.13 OFDMA 26 Tone 6 dB Bandwidth & OBW – (ANT2)



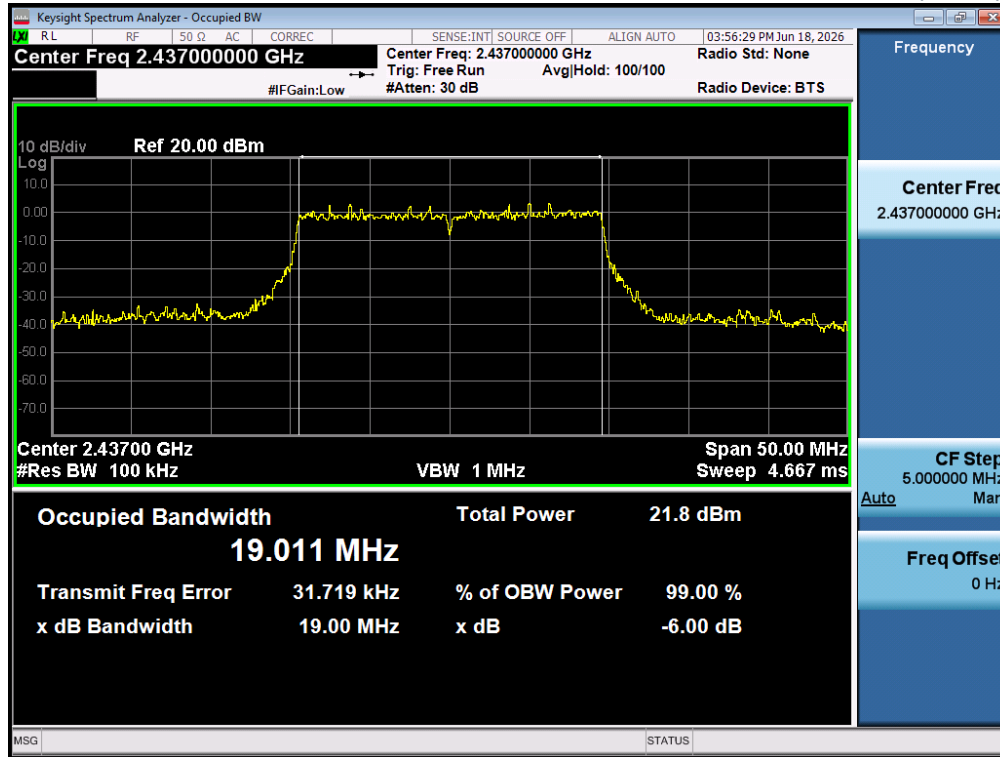
Plot 5-49 802.11ax20 CH.1 OFDMA 242 Tone 6 dB Bandwidth & OBW – (Ant 1)



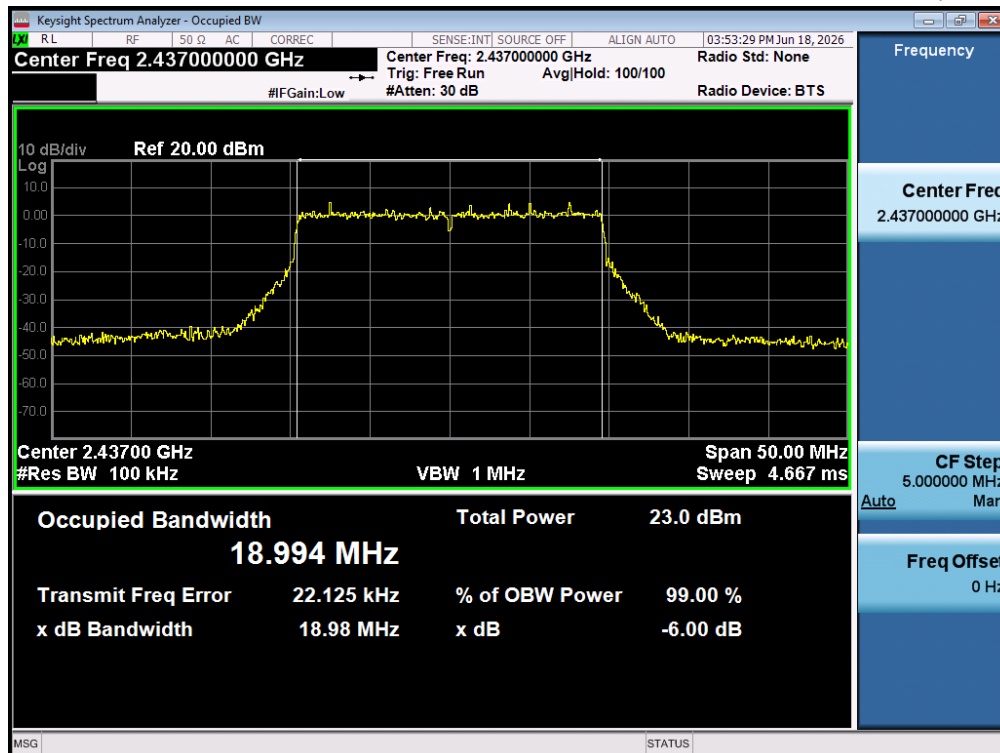
Plot 5-50 802.11ax20 CH.1 OFDMA 242 Tone 6 dB Bandwidth & OBW – (ANT2)



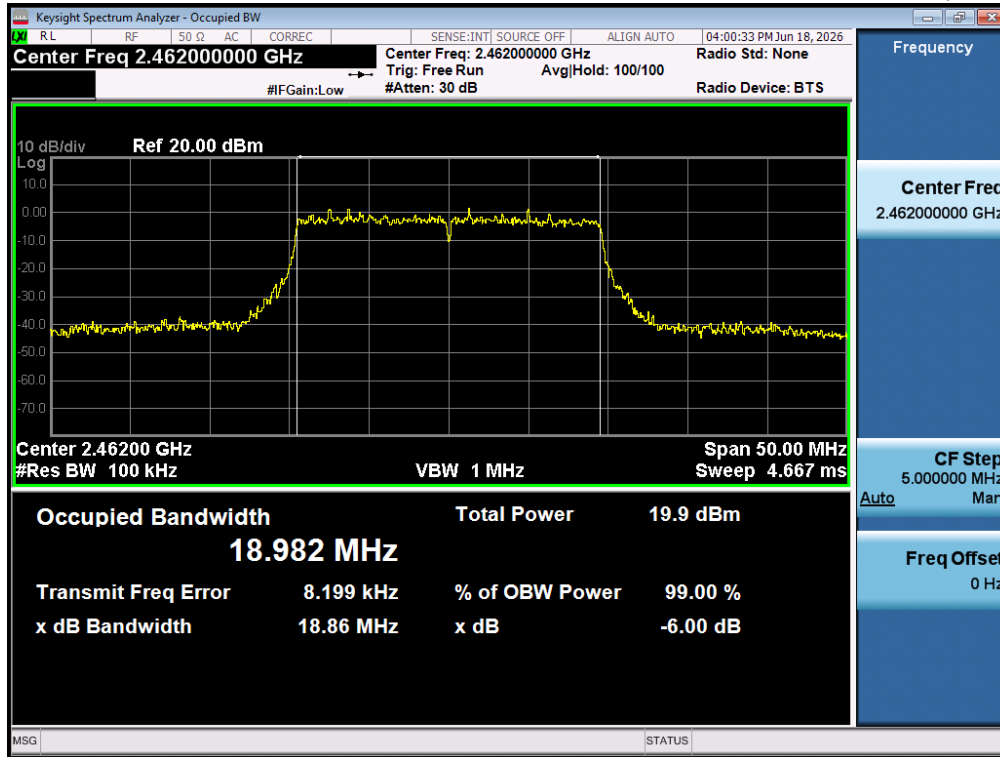
Plot 5-51 802.11ax20 CH.6 OFDMA 242 Tone 6 dB Bandwidth & OBW – (Ant 1)



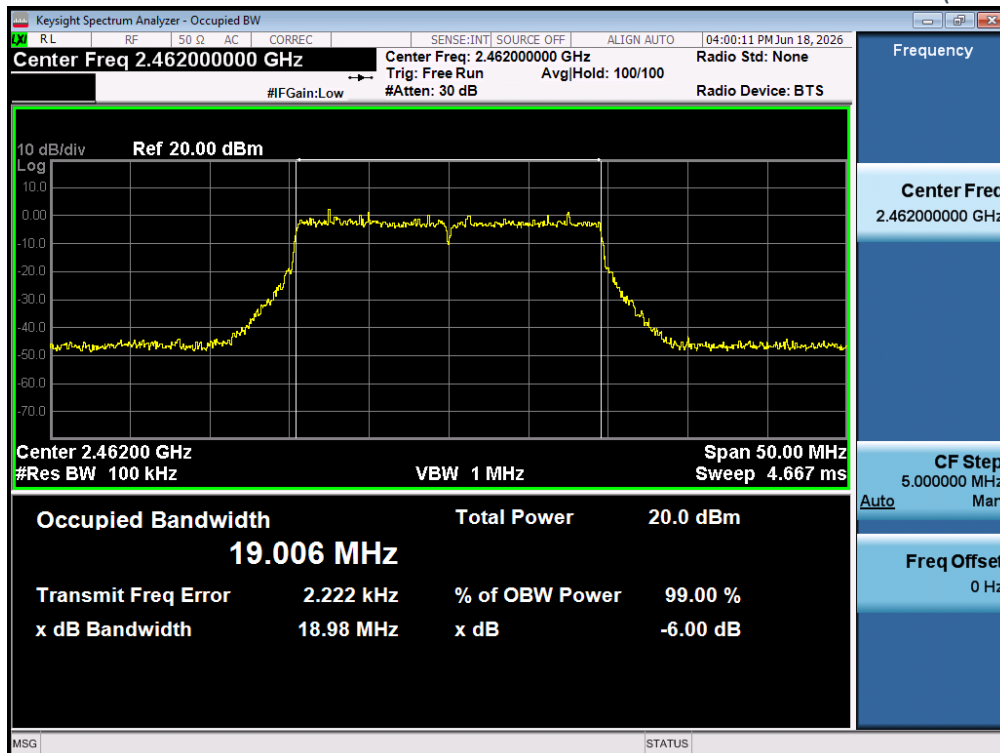
Plot 5-52 802.11ax20 CH.6 OFDMA 242 Tone 6 dB Bandwidth & OBW – (ANT2)



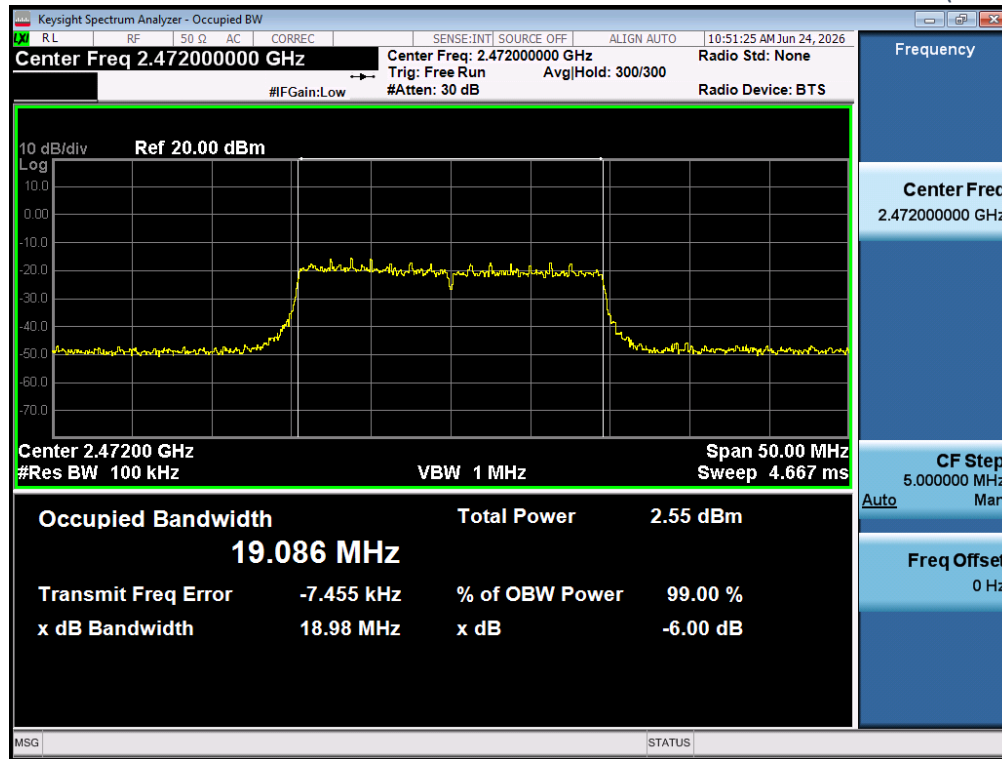
Plot 5-53 802.11ax20 CH.11 OFDMA 242 Tone 6 dB Bandwidth & OBW – (Ant 1)



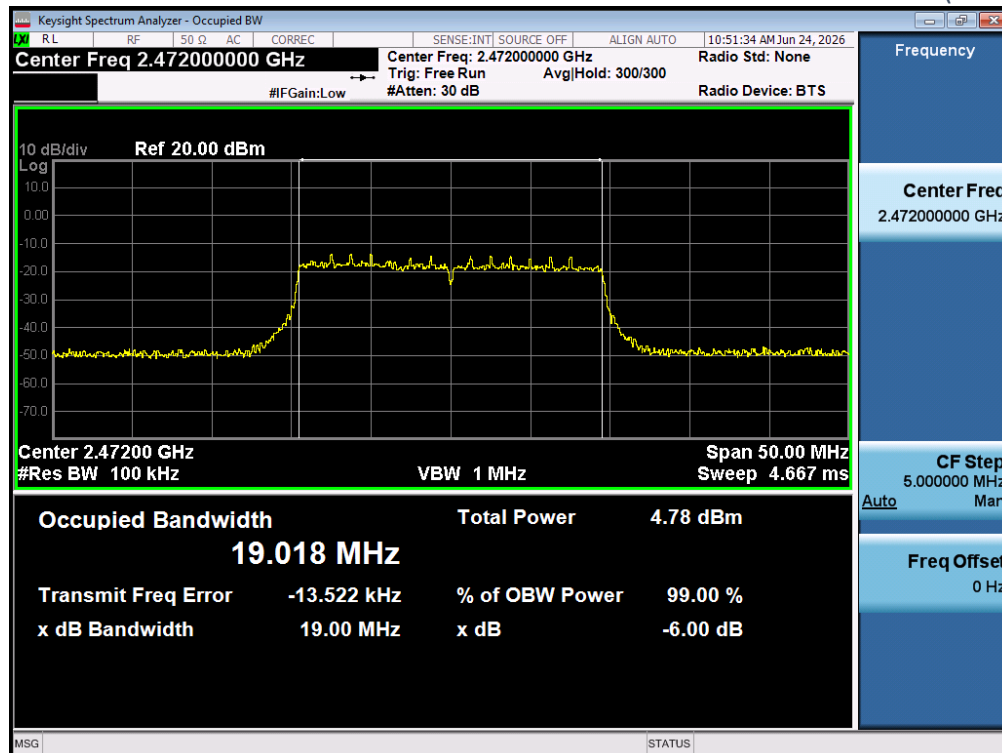
Plot 5-54 802.11ax20 CH.11 OFDMA 242 Tone 6 dB Bandwidth & OBW – (ANT2)



Plot 5-55 802.11ax20 CH.13 OFDMA 242 Tone 6 dB Bandwidth & OBW – (Ant 1)



Plot 5-56 802.11ax20 CH.13 OFDMA 242 Tone 6 dB Bandwidth & OBW – (ANT2)



5.7. Conducted Spurious Emissions

5.7.1. Regulatory Limit

Part. 15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

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In any 100 kHz bandwidth outside the frequency band in which the spread spectrum device, digitally modulated device, or hybrid system is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power – based on either an RF conducted or a radiated measurement – provided that the transmitter demonstrates compliance with the peak conducted power limits.

5.7.2. Test Method

ANSI C63.10 – 2020, clause 11.11

ANSI C63.10 – 2020, clause 11.12

5.7.3. Test Procedure

Band Edge Measurement.

- a) Set the start and stop frequencies such that the band edge is placed in the center of the plot.
- b) Set the span large enough to capture all out-of-band emissions near the band edge.
- c) RBW = 100 kHz
- d) VBW $\geq 3 \times$ RBW
- e) Detector = Peak
- f) Number of sweep points $\geq 2 \times$ SPAN/RBW
- g) Trace mode = Max-Hold
- h) Use the peak marker to locate the highest out-of-band emission, then use the delta marker function to measure the emission level relative to the fundamental.

Spurious Emissions Measurement.

Establish a reference level by using the following procedure:

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set the span to ≥ 1.5 times the DTS bandwidth
- c) RBW = 100 kHz
- d) VBW $\geq [3 \times \text{RBW}]$.
- e) Detector = peak
- f) Sweep Time = Auto (Coupled) or sufficient to investigate
- g) Trace mode = Max-Hold
- h) Allow trace to fully stabilize
- i) Use the peak marker function to determine the maximum PSD level.

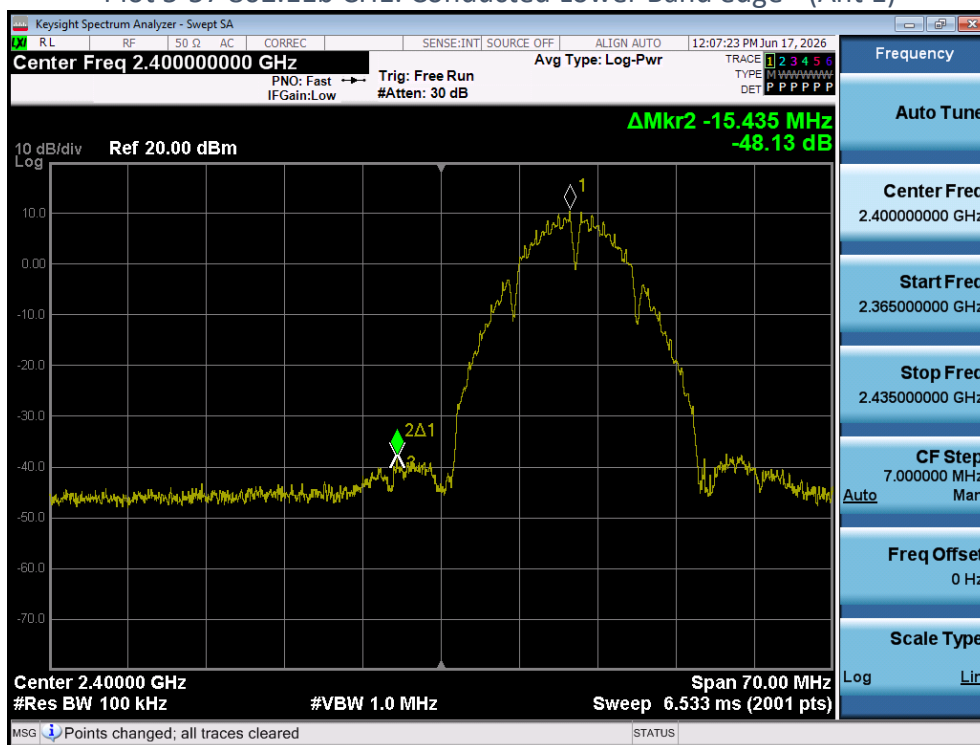
Establish an emission level by using the following procedure:

- a) Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.
- b) RBW = 1 MHz
- c) VBW $\geq [3 \times \text{RBW}]$
- d) Detector = peak
- e) Sweep Time = Auto (Coupled) or sufficient to investigate
- f) Trace mode = Max-Hold
- g) Allow trace to fully stabilize
- h) Use the peak marker function to determine the maximum amplitude level.

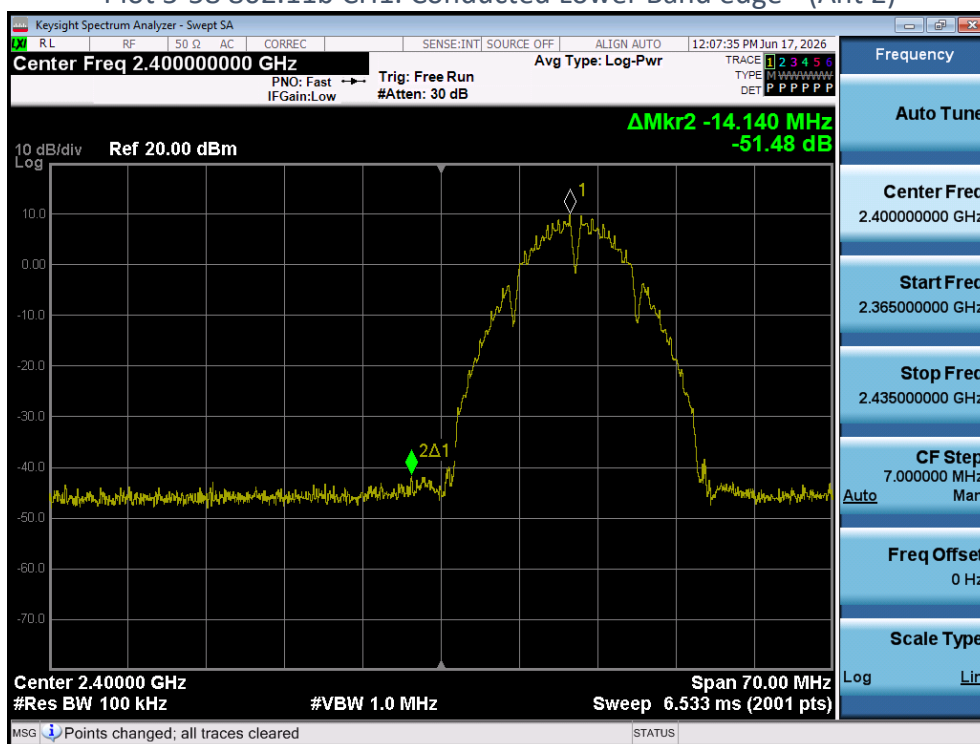
Test Note

- ✓ The number of points can also be increased for large spans to retain frequency resolution.
- ✓ The channel found to contain the maximum PSD level can be used to establish the reference level.
- ✓ Out-of-band conducted spurious emissions were investigated for all data rates. However, the traces in the following plots were measured with a 1 MHz RBW to reduce test time, so the display line may not necessarily appear to be 20 dB below the level of the fundamental in a 1 MHz bandwidth. If there is no compliance margin or a non-conformity occurs, reduce the RBW to 100 kHz to repeat the measurement.

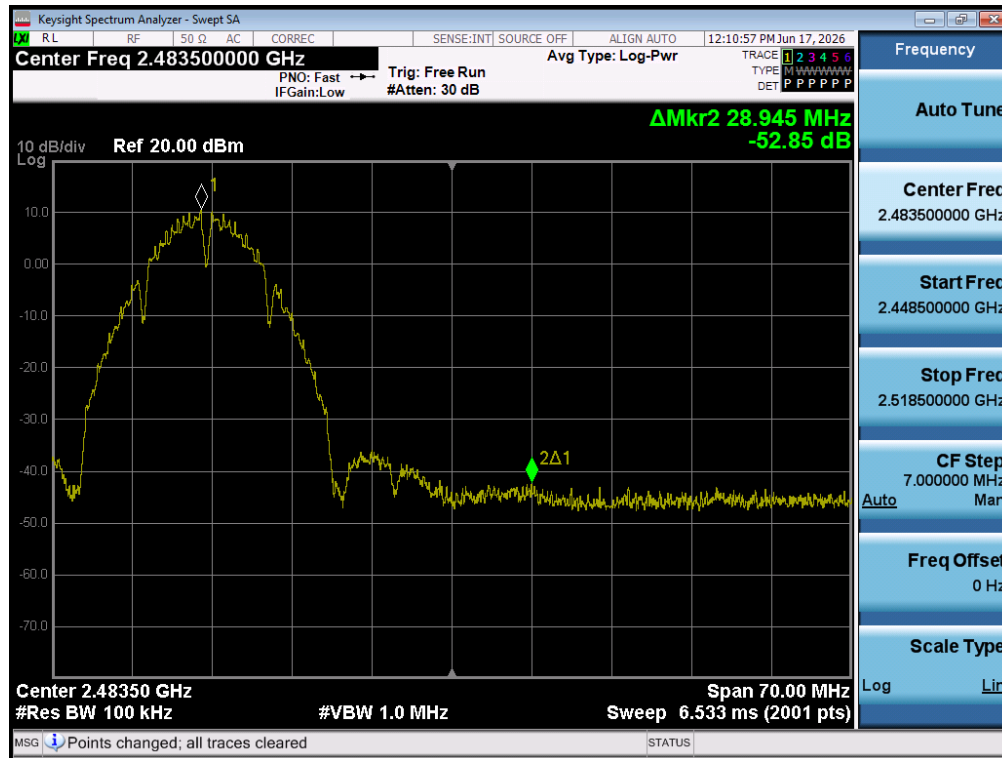
Plot 5-57 802.11b CH1. Conducted Lower Band edge - (Ant 1)



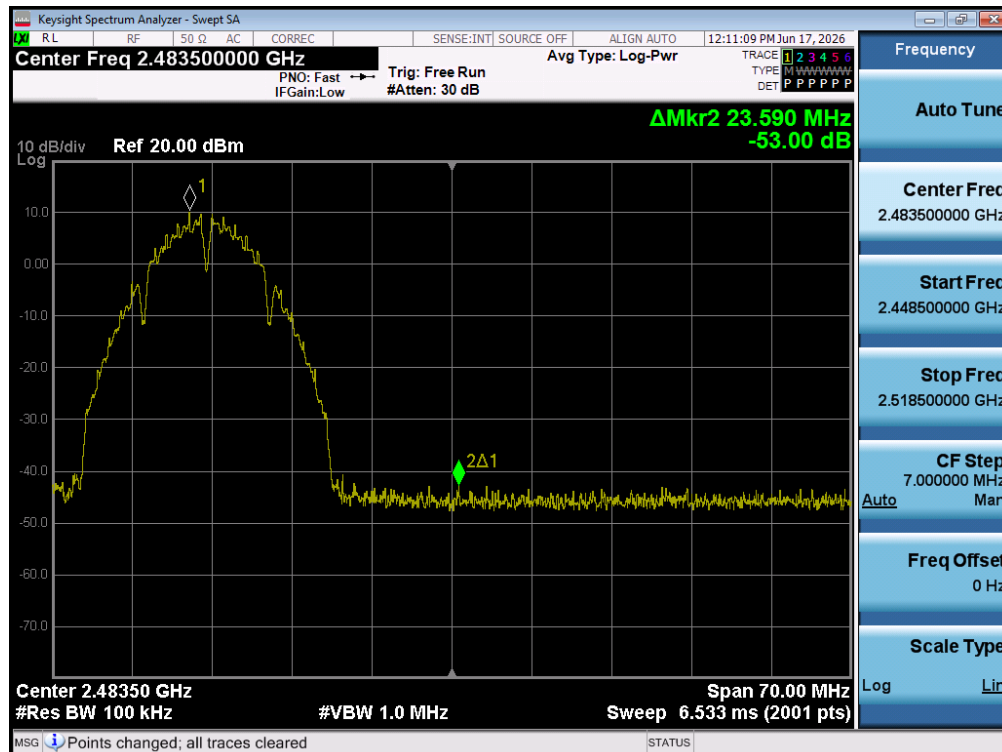
Plot 5-58 802.11b CH1. Conducted Lower Band edge - (Ant 2)



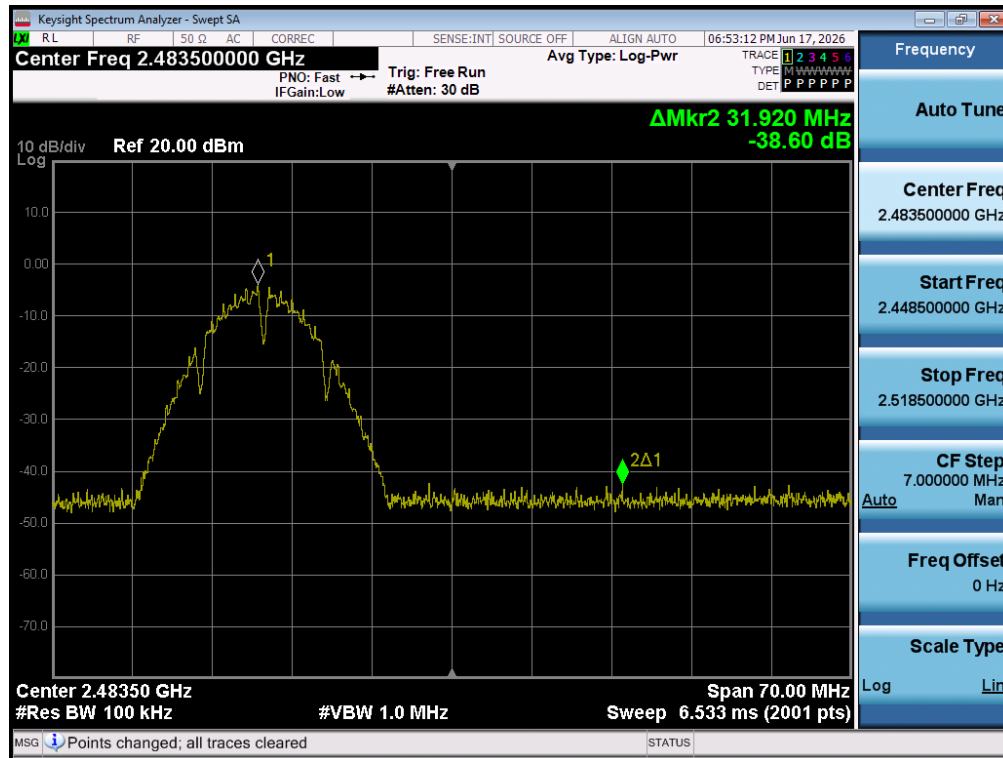
Plot 5-59 802.11b CH11. Conducted Upper Band edge - (Ant 1)



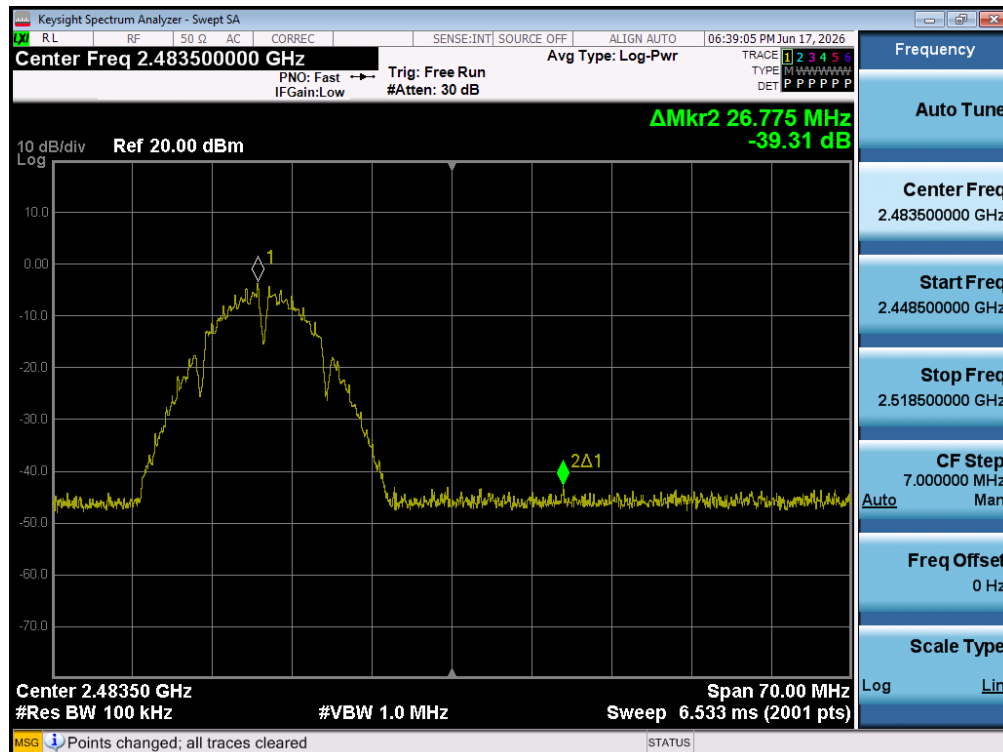
Plot 5-60 802.11b CH11. Conducted Upper Band edge - (Ant 2)

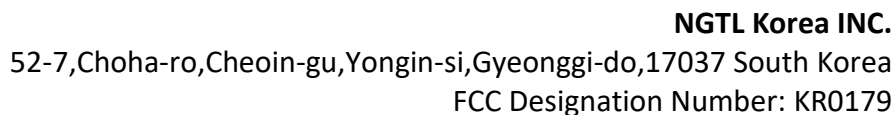


Plot 5-61 802.11b CH12. Conducted Upper Band edge - (Ant 1)

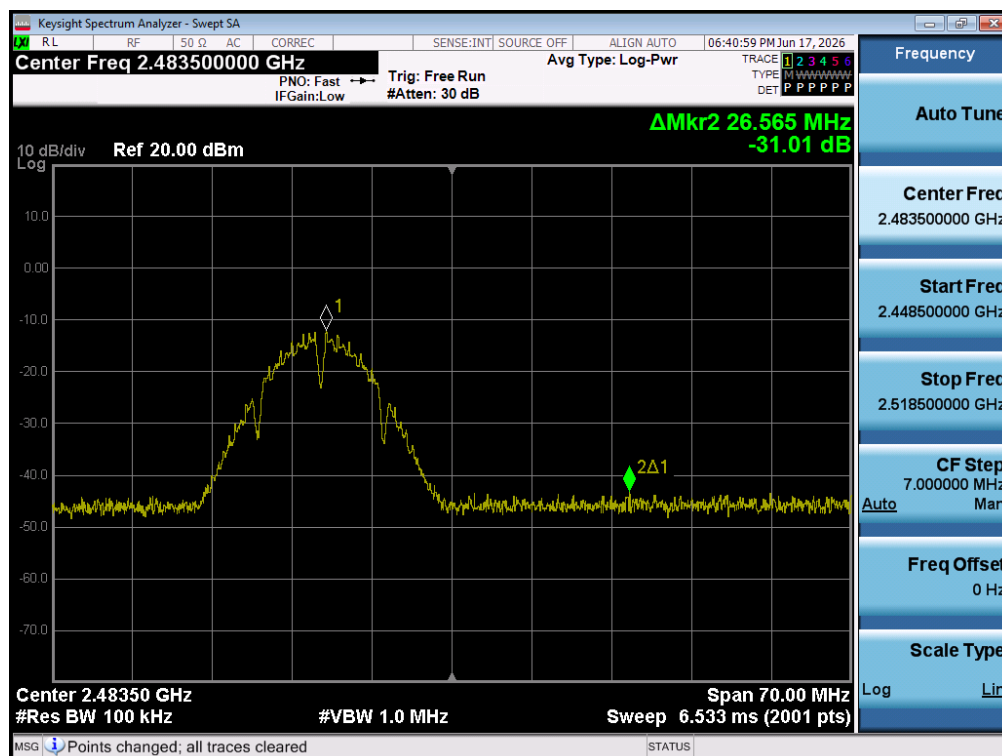


Plot 5-62 802.11b CH12. Conducted Upper Band edge - (Ant 2)

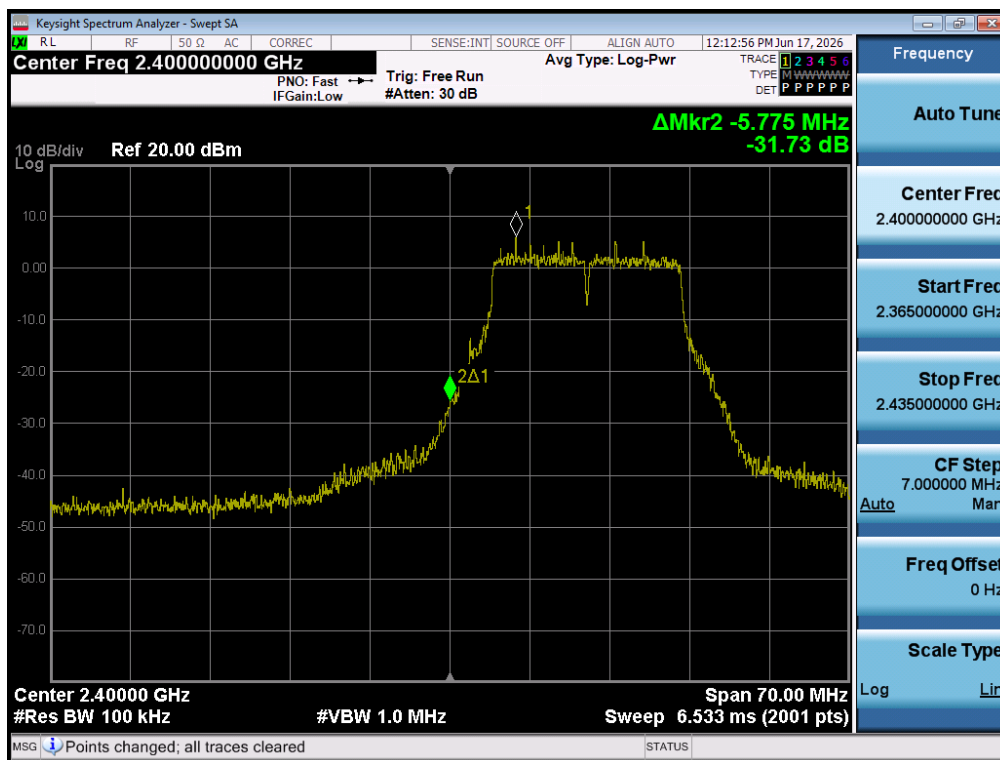




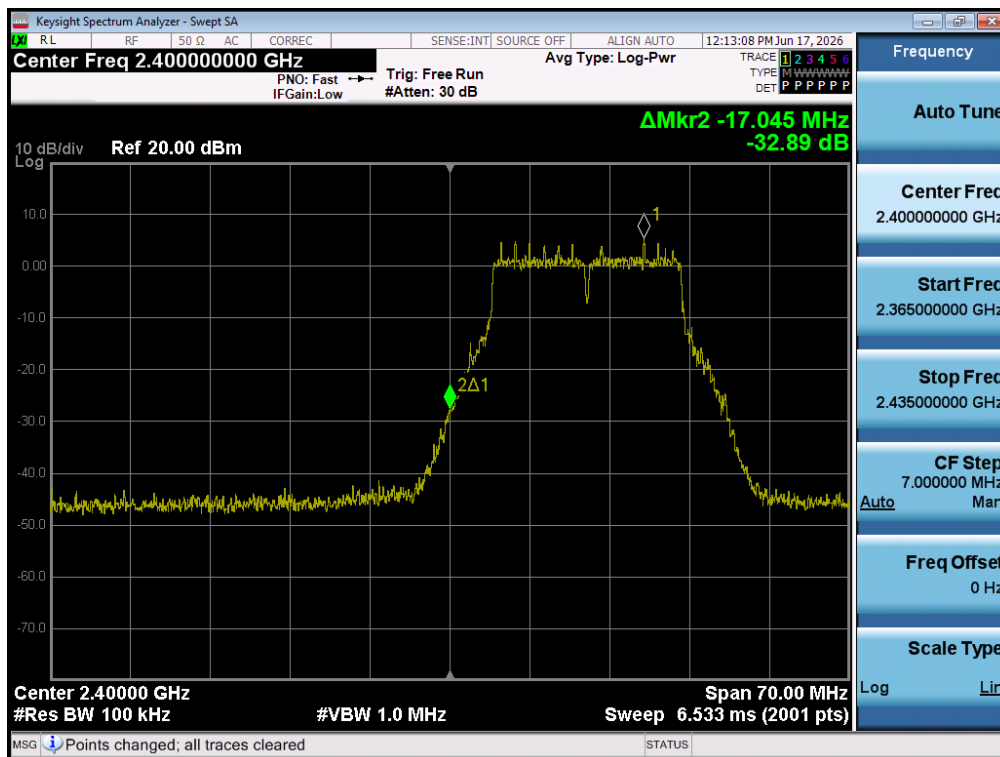
Plot 5-63 802.11b CH13. Conducted Upper Band edge - (Ant 1)



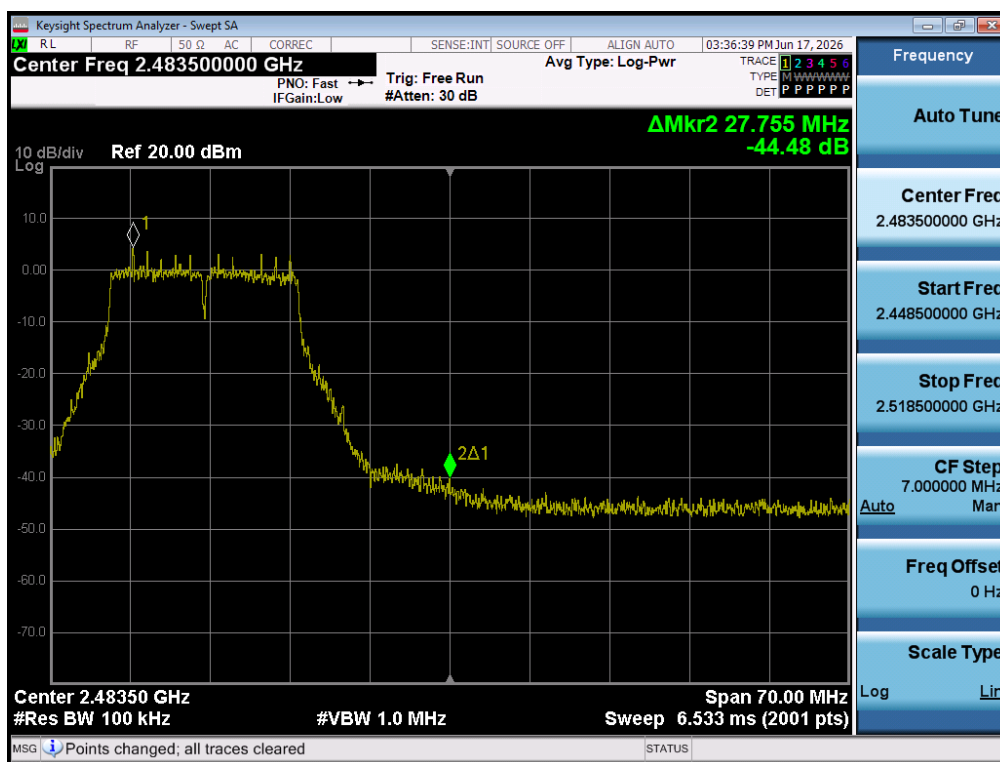
Plot 5-65 802.11g CH1. Conducted Lower Band edge - (Ant 1)



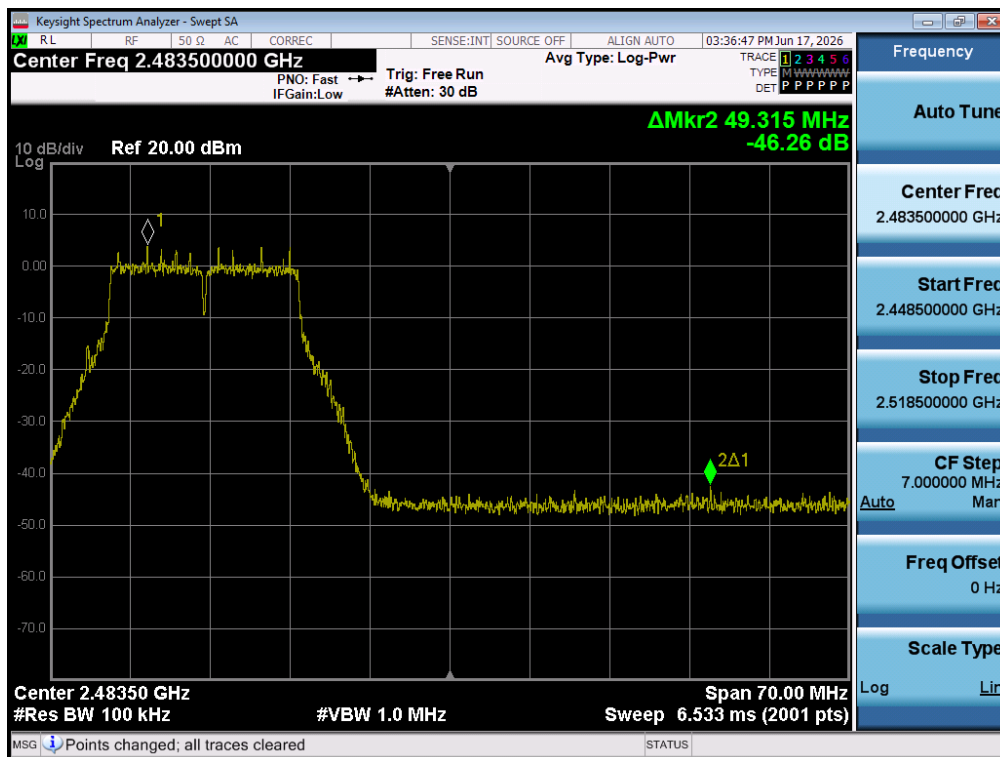
Plot 5-66 802.11g CH1. Conducted Lower Band edge - (Ant 2)



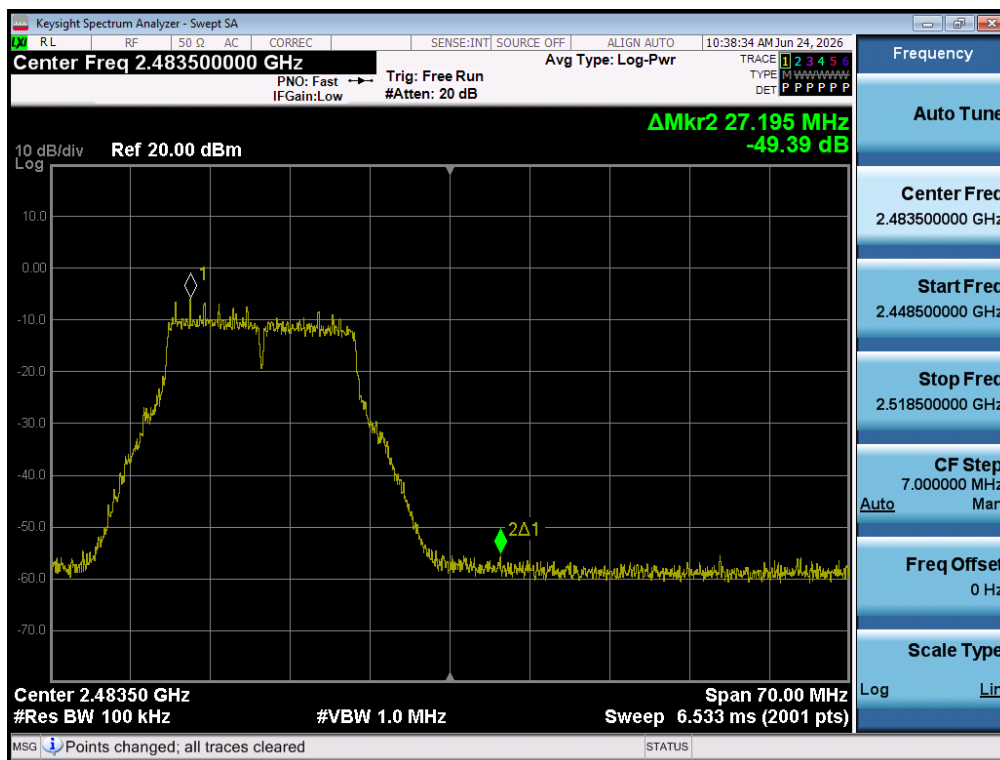
Plot 5-67 802.11g CH11. Conducted Upper Band edge - (Ant 1)



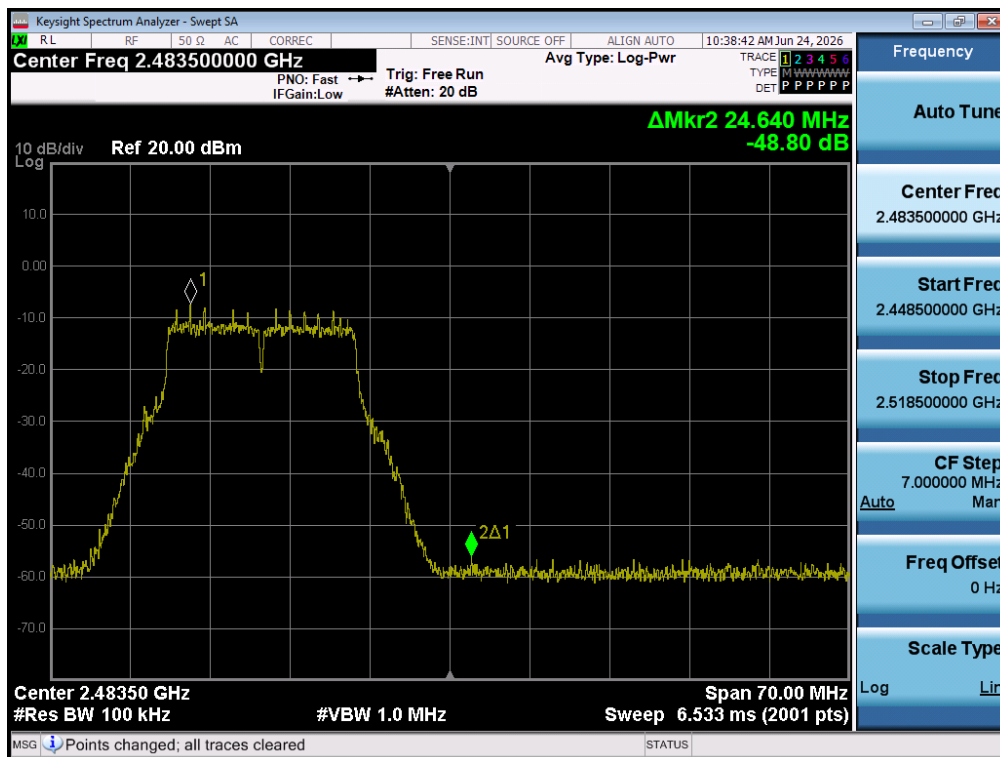
Plot 5-68 802.11g CH11. Conducted Upper Band edge - (Ant 2)



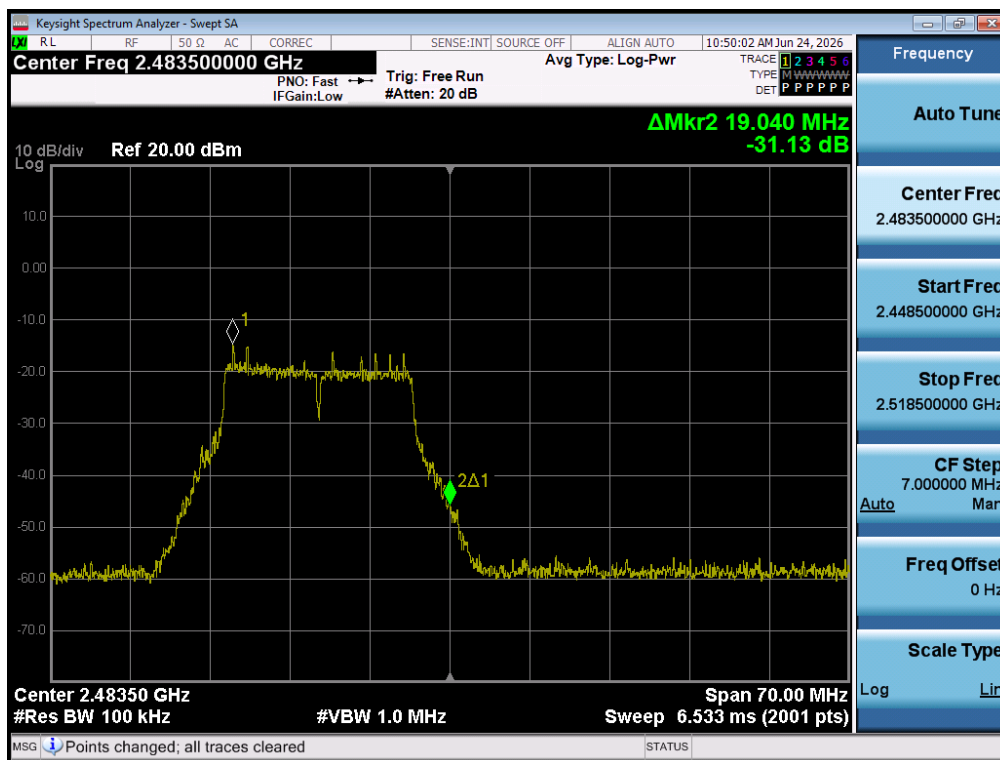
Plot 5-69 802.11g CH12. Conducted Upper Band edge - (Ant 1)



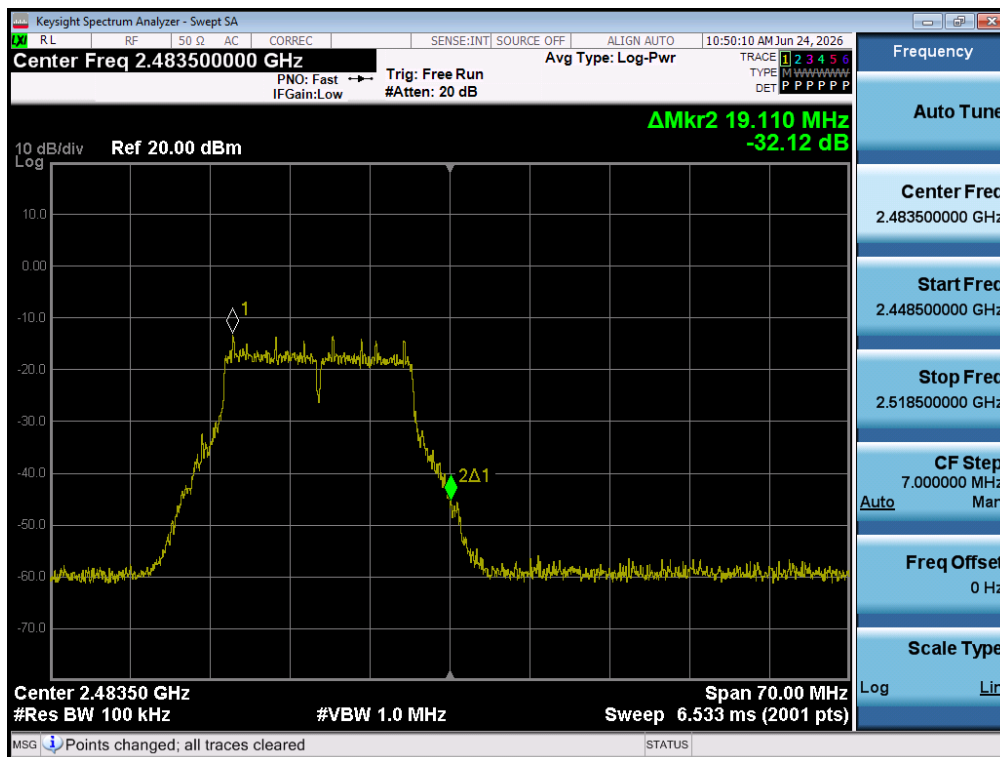
Plot 5-70 802.11g CH12. Conducted Upper Band edge - (Ant 2)



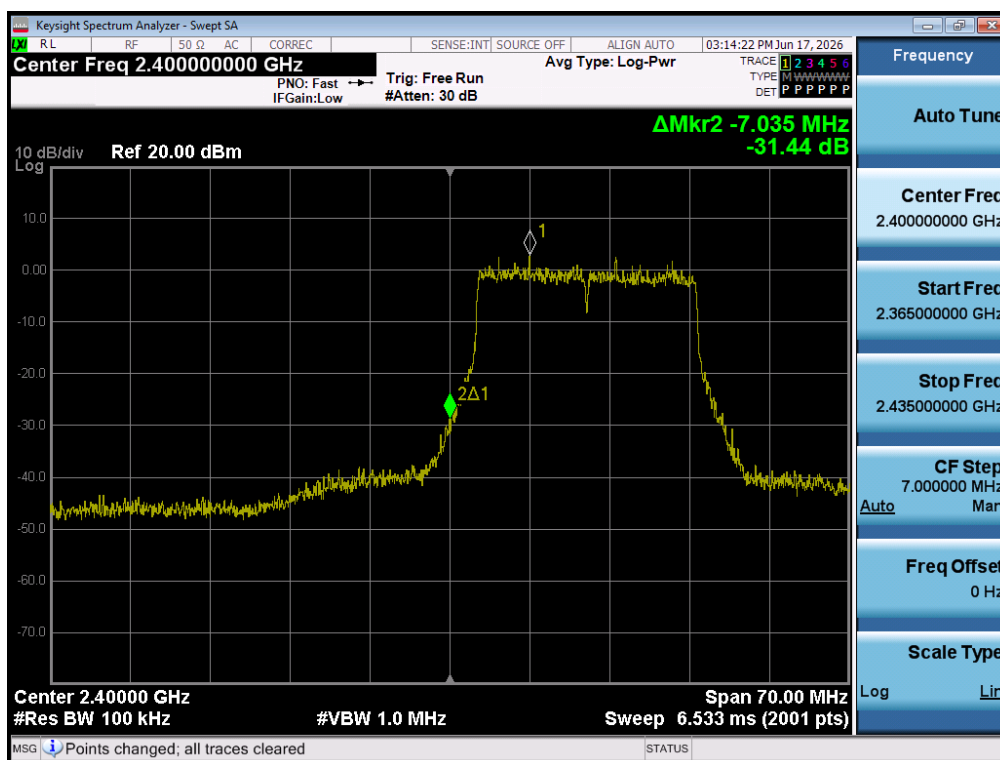
Plot 5-71 802.11g CH13. Conducted Upper Band edge - (Ant 1)



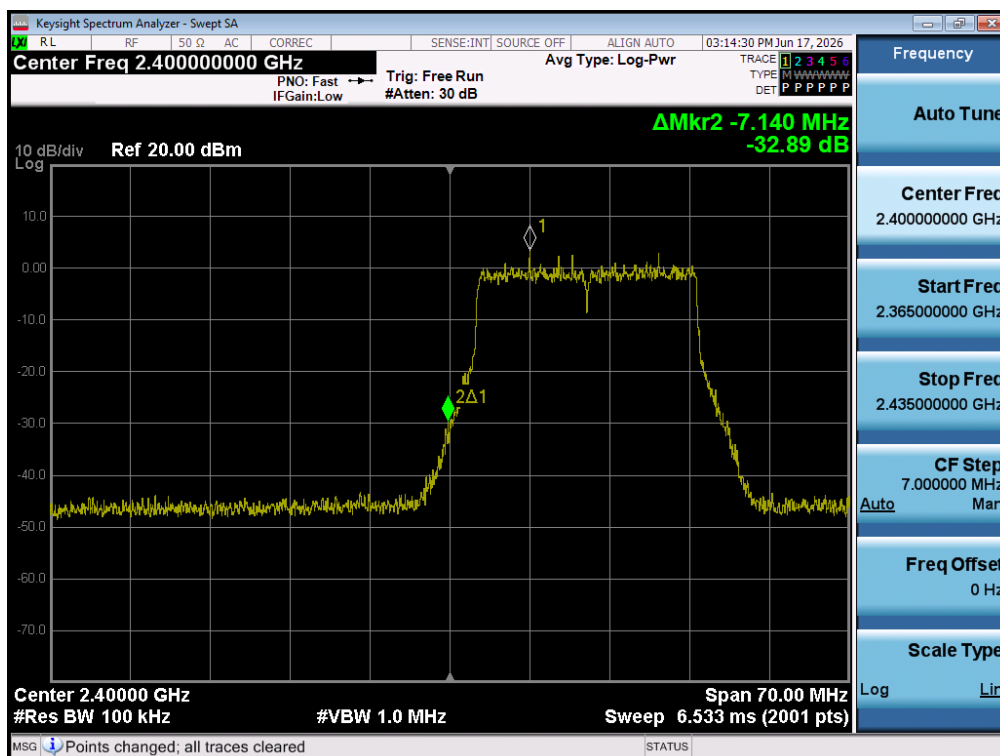
Plot 5-72 802.11g CH13. Conducted Upper Band edge - (Ant 2)



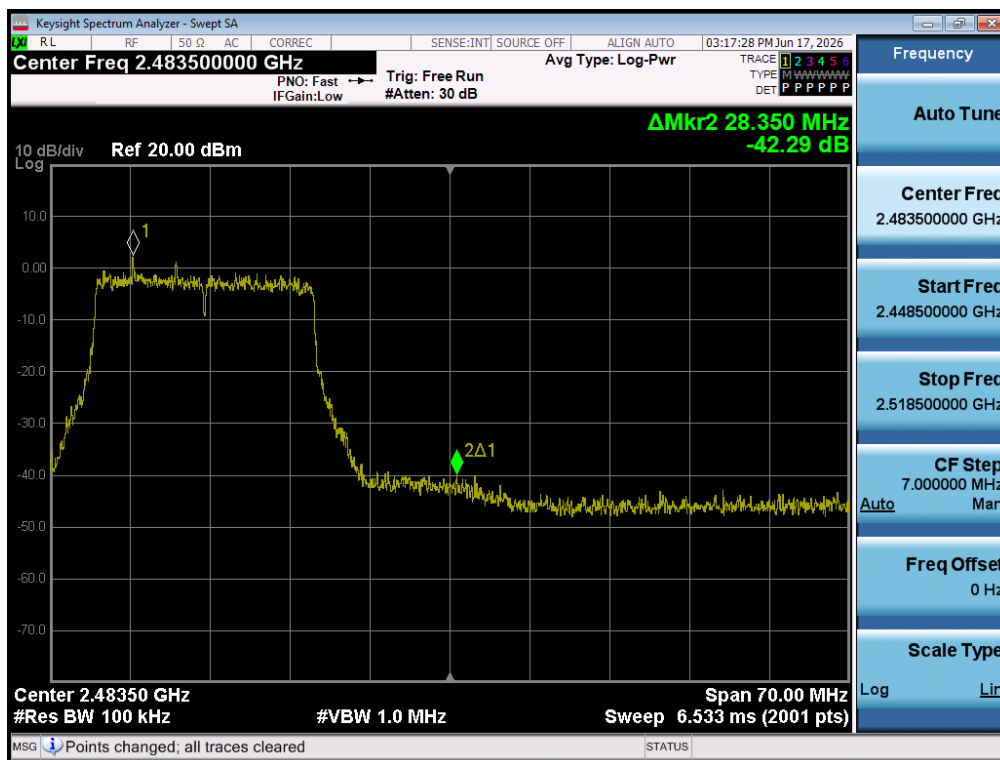
Plot 5-73 802.11ax20 CH1. Conducted Lower Band edge - (Ant 1)



Plot 5-74 802.11ax20 CH1. Conducted Lower Band edge - (Ant 2)



Plot 5-75 802.11ax20 CH11. Conducted Upper Band edge - (Ant 1)



Plot 5-76 802.11ax20 CH11. Conducted Upper Band edge - (Ant 2)

