

Test Model

Band-edge Conducted Emissions
Channel 3: 2422MHz

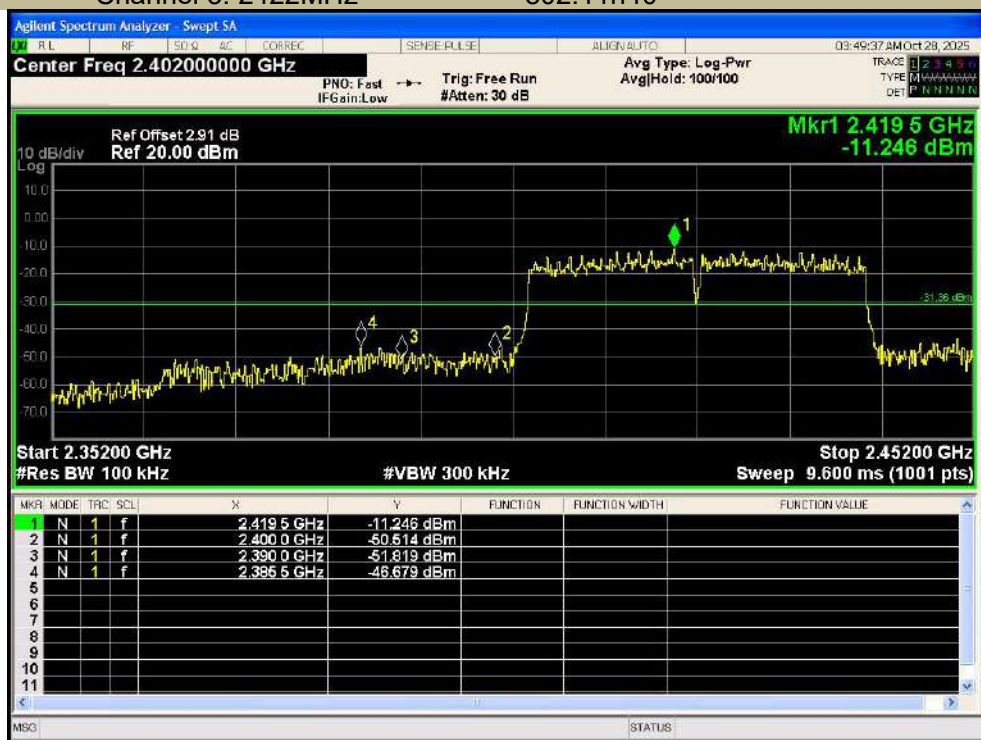
802.11n40



Test Model

Band-edge Conducted Emissions
Channel 3: 2422MHz

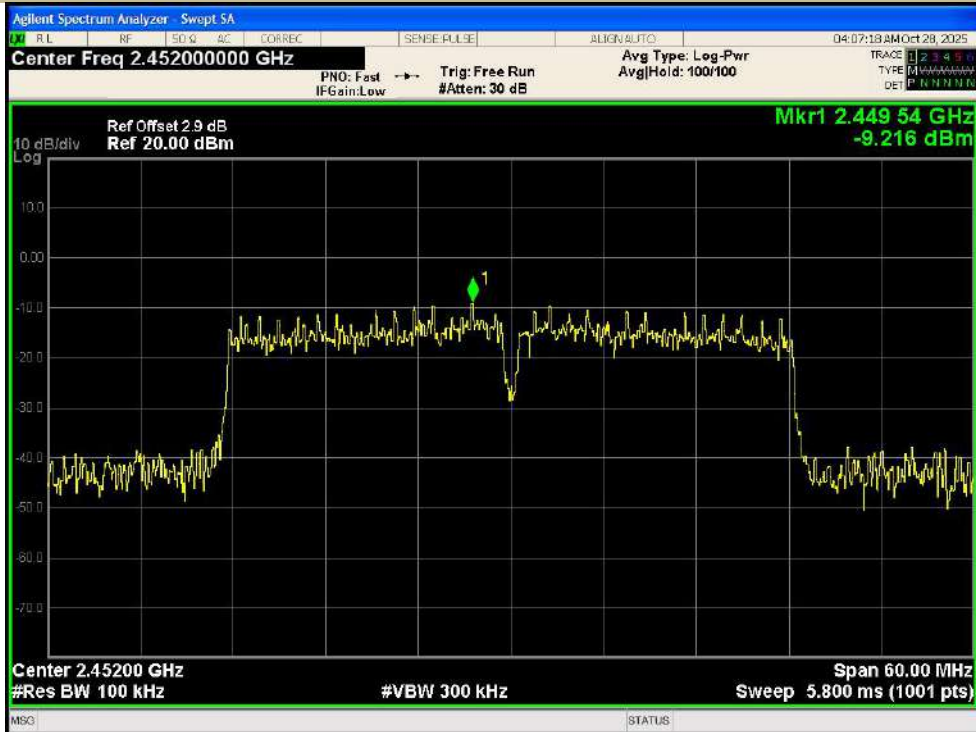
802.11n40



Test Model

Band-edge Conducted Emissions
Channel 6: 2452MHz

802.11n40



Test Model

Band-edge Conducted Emissions
Channel 9: 2452MHz

802.11n40



6. -6 dB Bandwidth and 99% Bandwidth Measurement

6.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method:ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

6.2.Test Setup



6.3.Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. 6dB: Set RBW = shall be in the range of 1%% to 5% of the OBW but not less than 100 kHz.
Set the VBW $\geq [3 \times \text{RBW}]$.
Detector = peak.
Trace mode = max-hold.
Sweep = No faster than coupled (auto) time.
Allow the trace to stabilize.

99%: Set RBW = 1%~5% of 99% bandwidth, VBW $\geq [3 \times \text{RBW}]$, Sweep = Auto.

6.4.Test Result

Antenna 0 TX:

Operation Mode	Channel Number	Channel Frequency (MHz)	Measurement Bandwidth (MHz)	Limit (kHz)	Verdict
802.11b	1	2412	8.287	>500	PASS
	6	2437	7.588	>500	PASS
	11	2462	7.041	>500	PASS
802.11g	1	2412	16.292	>500	PASS
	6	2437	16.047	>500	PASS
	11	2462	15.663	>500	PASS
802.11n20	1	2412	16.94	>500	PASS
	6	2437	17.155	>500	PASS
	11	2462	16.611	>500	PASS
802.11n40	1	2422	35.392	>500	PASS
	6	2437	35.402	>500	PASS
	11	2452	35.1	>500	PASS

Test Model -6dB Bandwidth
Channel 1: 2412MHz 802.11b



Test Model -6dB Bandwidth
Channel 1: 2437MHz 802.11b



Test Model -6dB Bandwidth
Channel 11: 2462MHz 802.11b



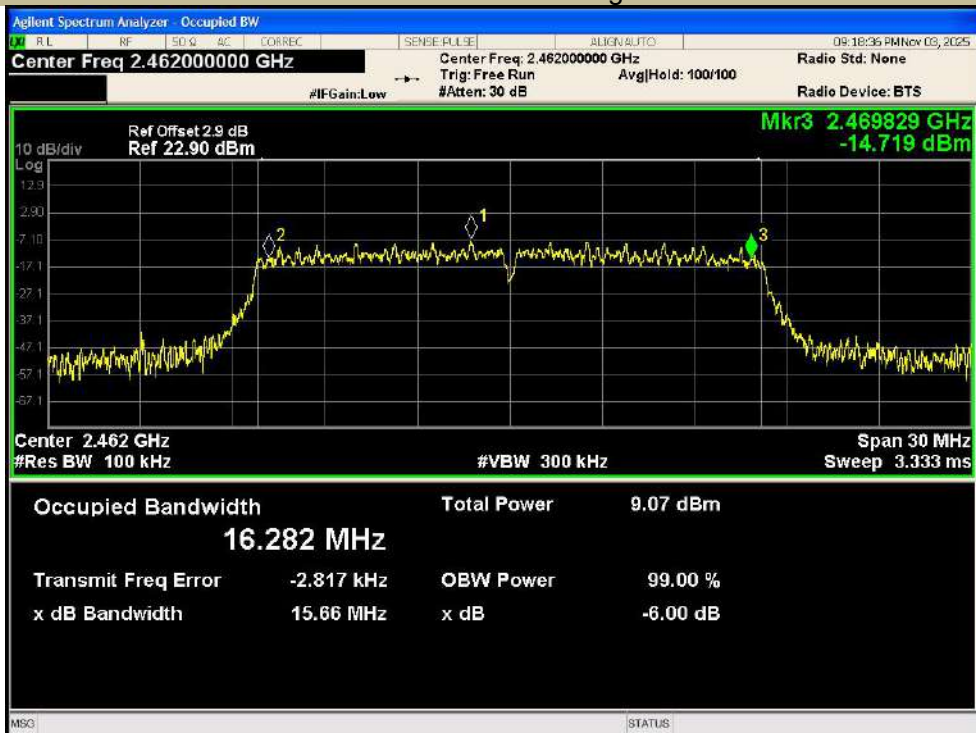
Test Model -6dB Bandwidth
Channel 1: 2412MHz 802.11g



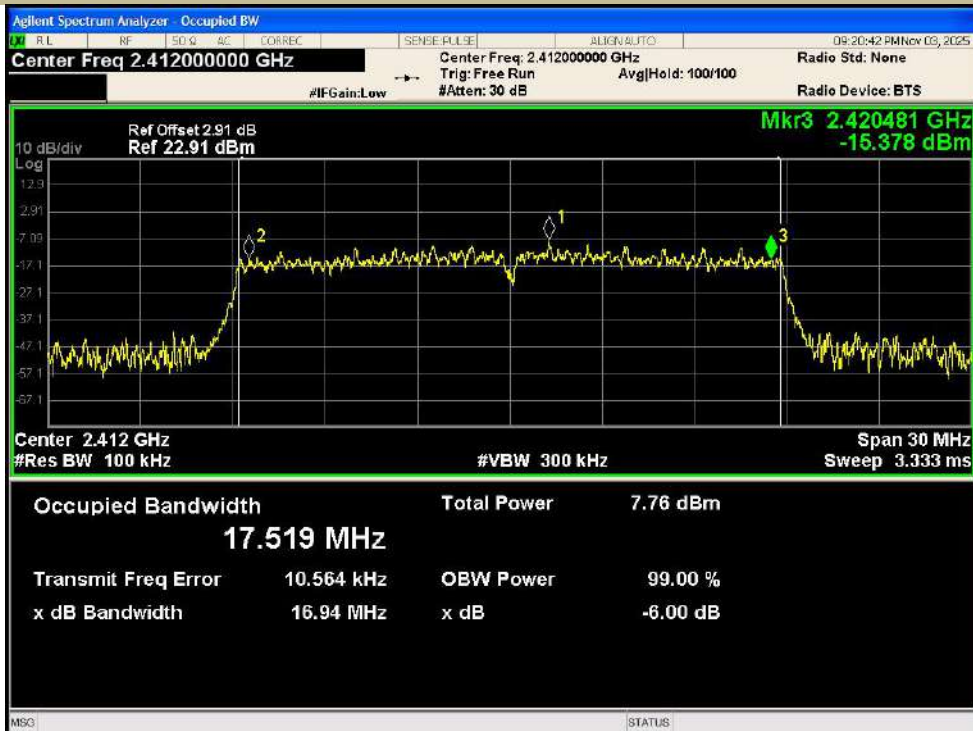
Test Model -6dB Bandwidth
Channel 6: 2437MHz 802.11g



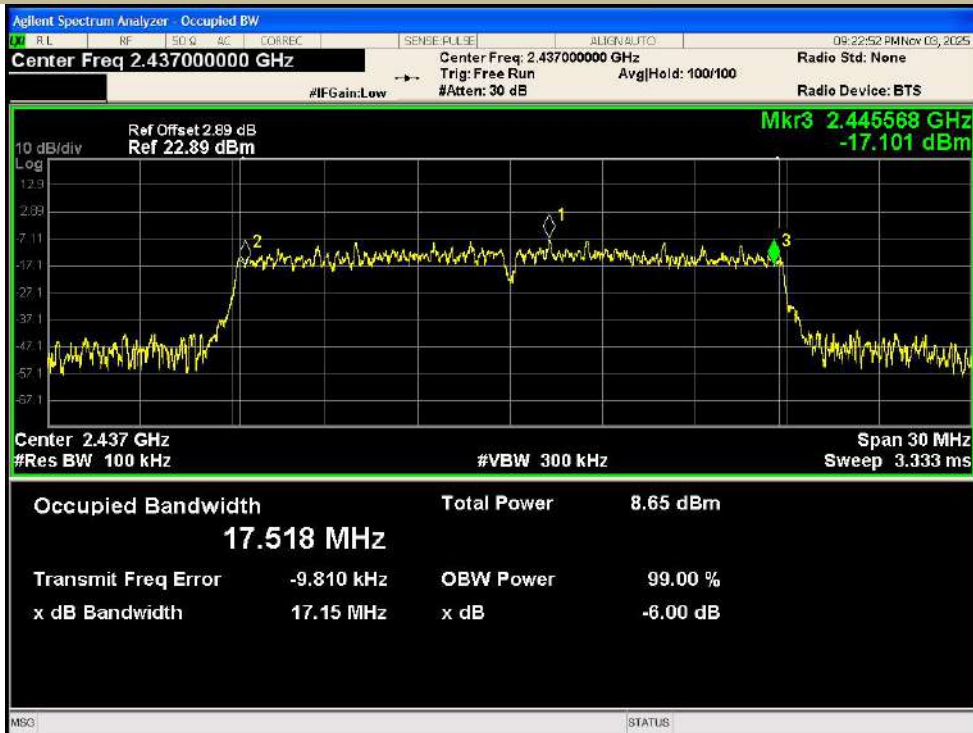
Test Model -6dB Bandwidth
Channel 11: 2462MHz 802.11g



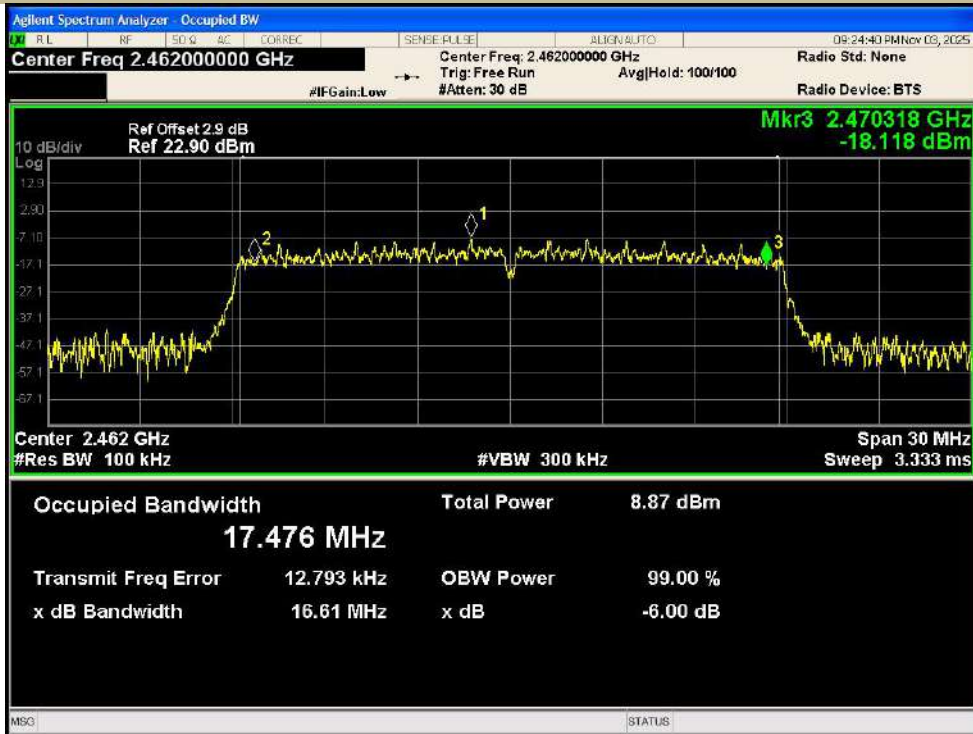
Test Model -6dB Bandwidth
Channel 1: 2412MHz 802.11n20



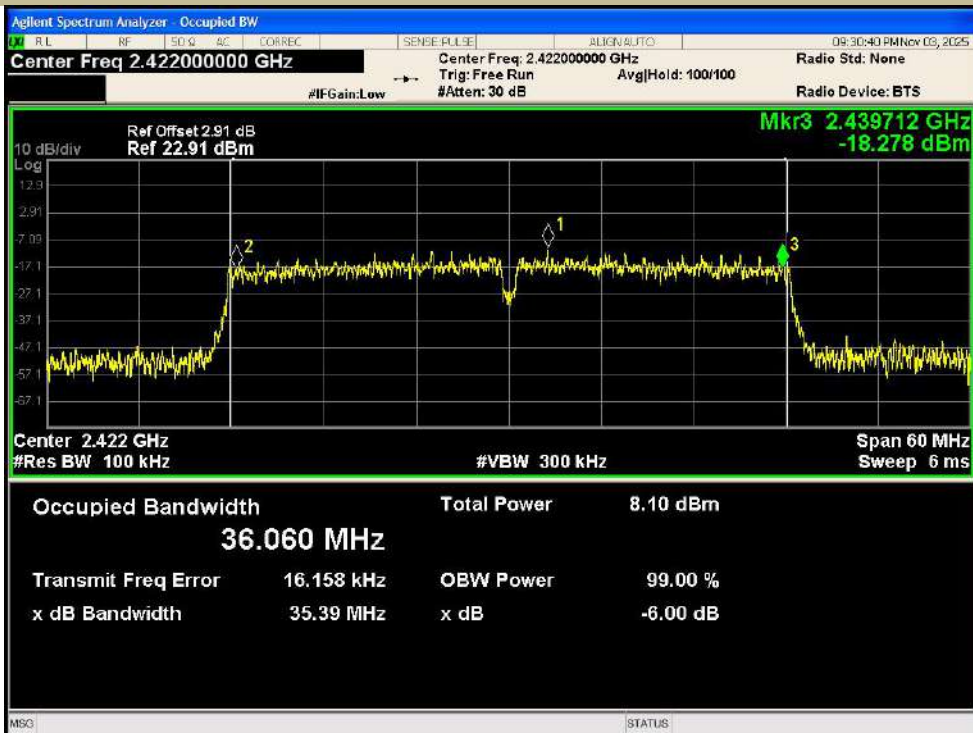
Test Model -6dB Bandwidth
Channel 6: 2437MHz 802.11n20



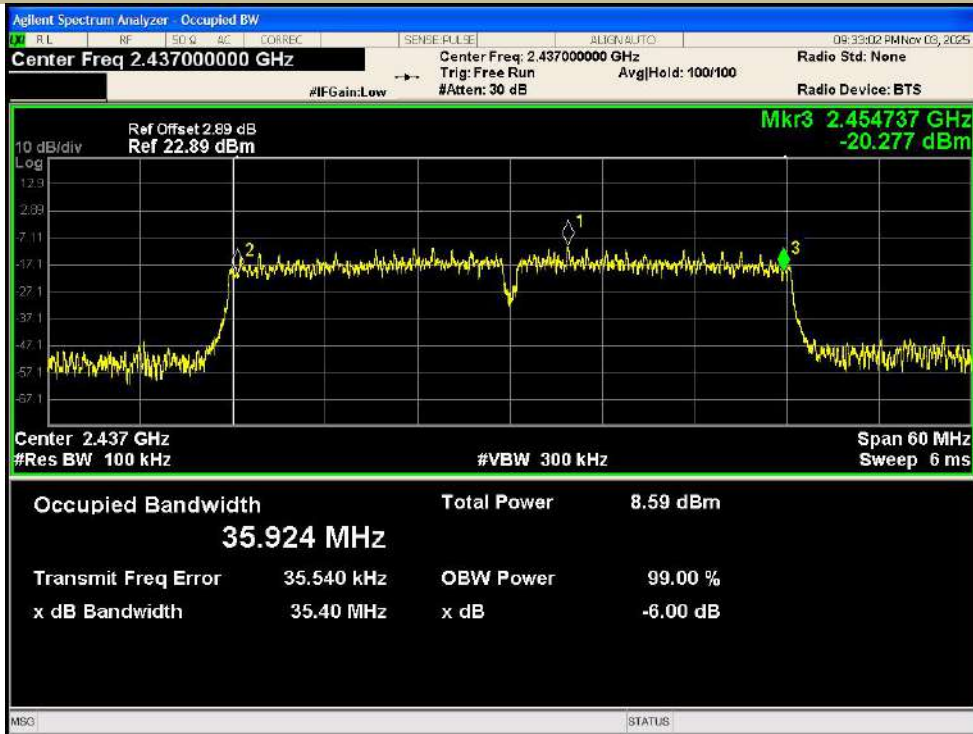
Test Model -6dB Bandwidth
Channel 11: 2462MHz 802.11n20



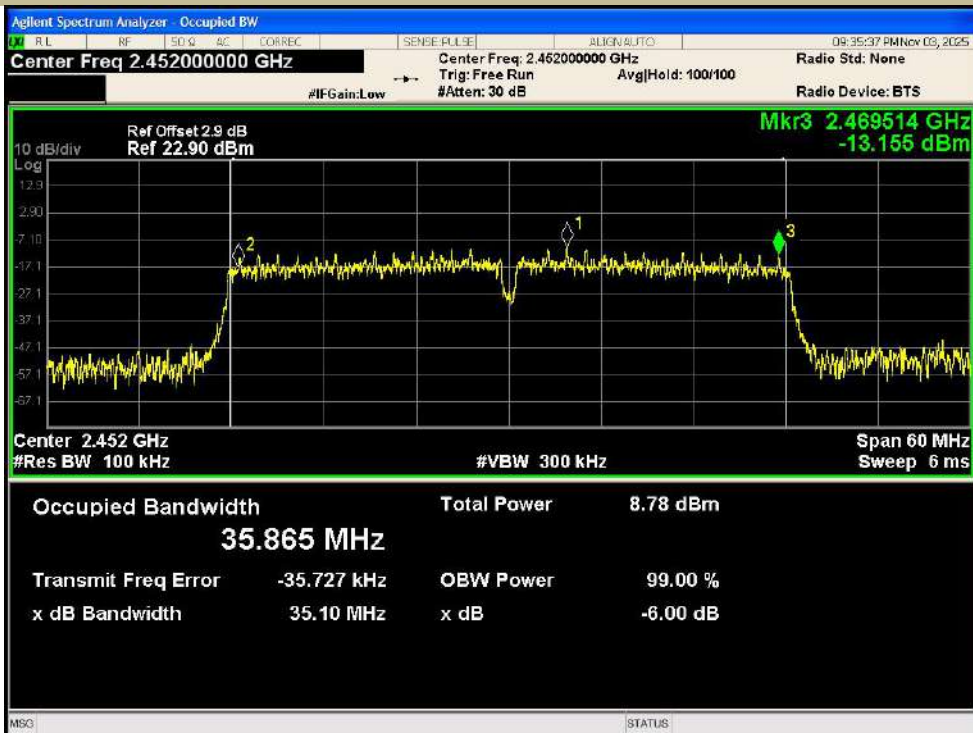
Test Model -6dB Bandwidth
Channel 3: 2422MHz 802.11n40



Test Model -6dB Bandwidth
Channel 6: 2437MHz 802.11n40



Test Model -6dB Bandwidth
Channel 9: 2452MHz 802.11n40



Antenna 1 TX:

Operation Mode	Channel Number	Channel Frequency (MHz)	Measurement Bandwidth (MHz)	Limit (kHz)	Verdict
802.11b	1	2412	7.045	>500	PASS
	6	2437	8.349	>500	PASS
	11	2462	8.267	>500	PASS
802.11g	1	2412	15.783	>500	PASS
	6	2437	16.079	>500	PASS
	11	2462	16.368	>500	PASS
802.11n20	1	2412	16.635	>500	PASS
	6	2437	16.953	>500	PASS
	11	2462	16.584	>500	PASS
802.11n40	1	2422	35.377	>500	PASS
	6	2437	35.105	>500	PASS
	11	2452	35.722	>500	PASS

Test Model -6dB Bandwidth
Channel 1: 2412MHz 802.11b



Test Model -6dB Bandwidth
Channel 1: 2437MHz 802.11b



Test Model -6dB Bandwidth
Channel 11: 2462MHz 802.11b



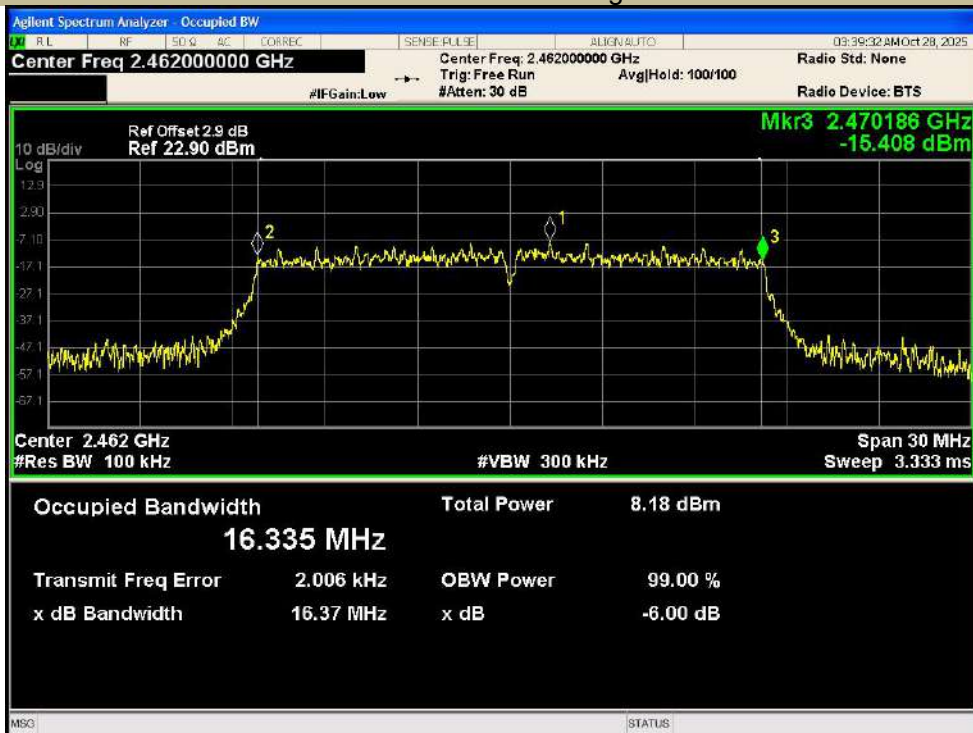
Test Model -6dB Bandwidth
Channel 1: 2412MHz 802.11g



Test Model -6dB Bandwidth
Channel 6: 2437MHz 802.11g



Test Model -6dB Bandwidth
Channel 11: 2462MHz 802.11g



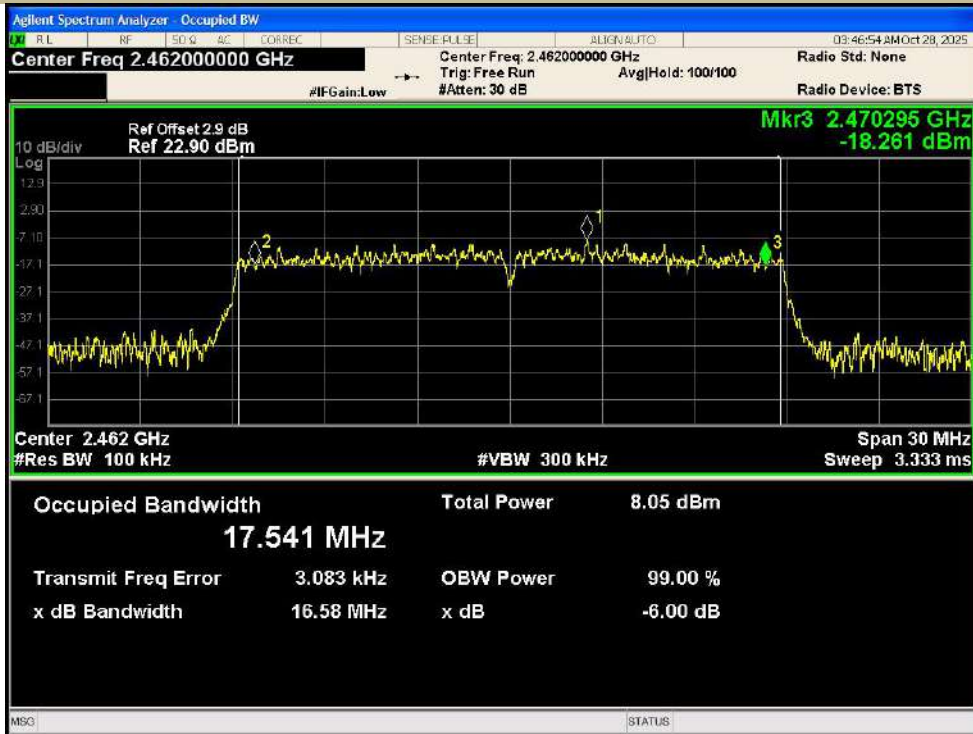
Test Model -6dB Bandwidth
Channel 1: 2412MHz 802.11n20



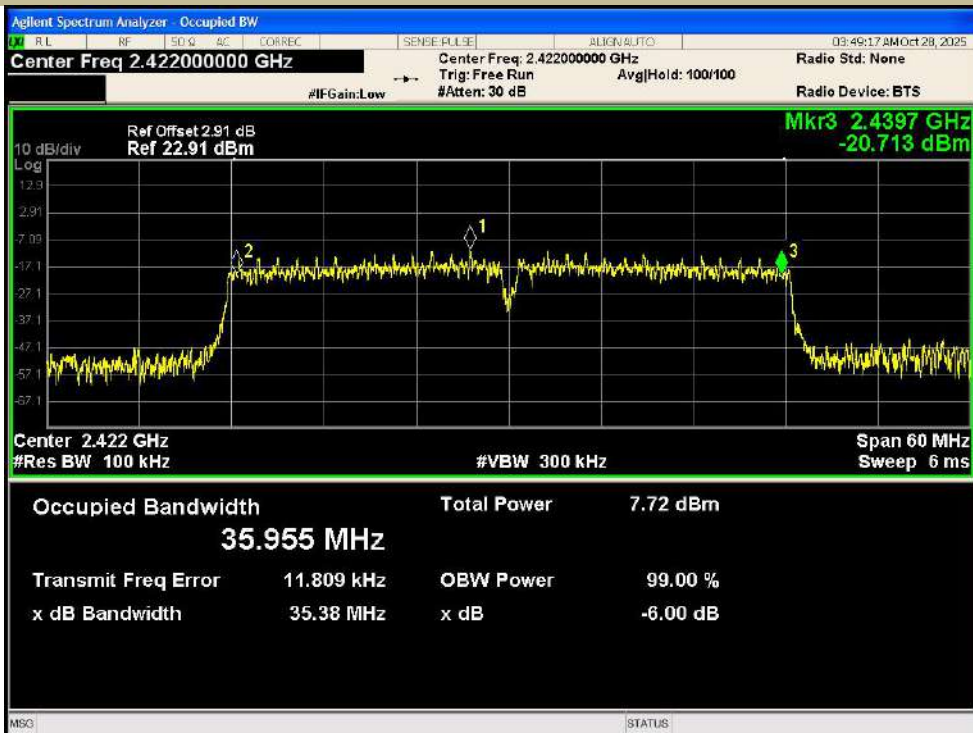
Test Model -6dB Bandwidth
Channel 6: 2437MHz 802.11n20



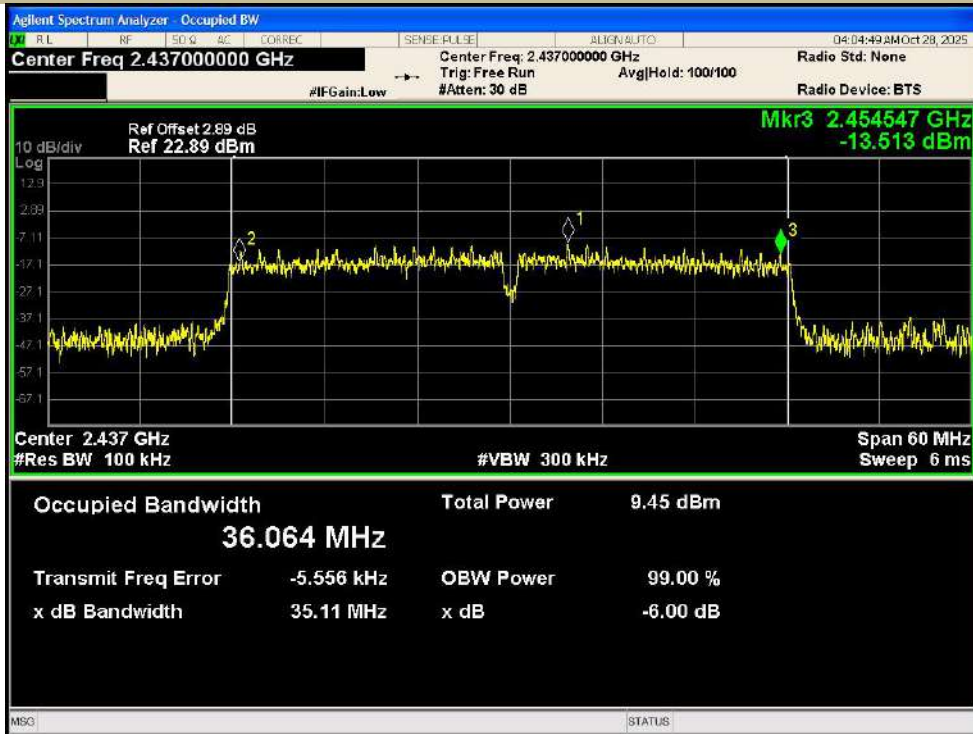
Test Model -6dB Bandwidth
Channel 11: 2462MHz 802.11n20



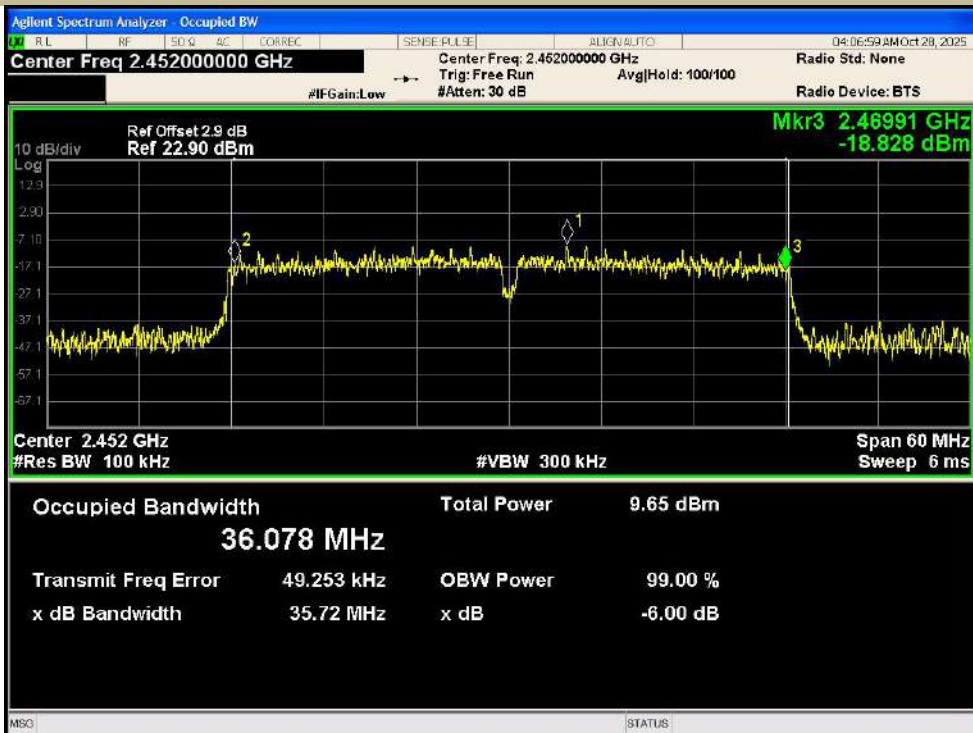
Test Model -6dB Bandwidth
Channel 3: 2422MHz 802.11n40



Test Model -6dB Bandwidth
Channel 6: 2437MHz 802.11n40



Test Model -6dB Bandwidth
Channel 9: 2452MHz 802.11n40



7. Maximum Output Power

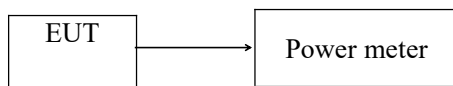
7.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
KDB 662911 D01 Multiple Transmitter Output v02r01

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Output Power	1 watt or 30dBm	2400-2483.5	PASS

7.2.Test Setup



7.3.Test Procedure

1. The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum output power setting and enable the EUT transmit continuously.
4. Measure the conducted output power with cable loss and record the results in the test report.
5. Measure and record the results in the report.

7.4.Test Result

Mode	Frequency (MHz)	Ant 0		Ant 1		Test Result
		Maximum Conducted Output Power (dBm)	Limit (dBm)	Maximum Conducted Output Power (dBm)	Limit (dBm)	
b	2412	9.45	30	8.81	30	PASS
b	2437	10.43	30	9.31	30	PASS
b	2462	10.5	30	9.39	30	PASS
g	2412	6.07	30	6.06	30	PASS
g	2437	6.91	30	6.31	30	PASS
g	2462	7.32	30	6.57	30	PASS
n20	2412	5.92	30	5.75	30	PASS
n20	2437	6.77	30	6.28	30	PASS
n20	2462	7.11	30	6.31	30	PASS
n40	2422	6.27	30	5.81	30	PASS
n40	2437	6.66	30	7.65	30	PASS
n40	2452	6.77	30	7.66	30	PASS

8. Power Spectral density

8.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
KDB 662911 D01 Multiple Transmitter Output v02r01

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (e)	Power Spectral Density	8dBm/3kHz	2400-2483.5	PASS

8.2.Test Setup



8.3.Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set instrument center frequency to DTS channel center frequency
3. Set span to > 1.5 times the OBW.
4. Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
5. Set VBW $\geq [3 \times \text{RBW}]$
6. Detector = power averaging (rms) or sample detector (when rms not available).
7. Ensure that the number of measurement points in the sweep $\geq [2 \times \text{span} / \text{RBW}]$.
8. Sweep time = auto couple.
9. Employ trace averaging (rms) mode over a minimum of 100 traces.
10. Use the peak marker function to determine the maximum amplitude level.
11. If the measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat(note that this might require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).
12. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

8.4. Test Result

Note: Because the antenna gain is greater than 6dBi, so the output power limit shall be reduced.

Antenna 0 TX:

Operation Mode	Frequency (MHz)	Power density (dBm/3kHz)	(dBm/3kHz) Limit	Test Result
802.11b	2412	-3.42	8	PASS
	2437	-2.4	8	PASS
	2462	-0.89	8	PASS
802.11g	2412	-8.14	8	PASS
	2437	-7.43	8	PASS
	2462	-8.21	8	PASS
802.11n20	2412	-8.82	8	PASS
	2437	-7.6	8	PASS
	2462	-7.62	8	PASS
802.11n40	2422	-11.16	8	PASS
	2437	-10.35	8	PASS
	2452	-10.22	8	PASS

Test Model Power Spectral Density Channel 1: 2412MHz 802.11b



Test Model Power Spectral Density Channel 6: 2437MHz 802.11b



Test Model Power Spectral Density Channel 11: 2462MHz 802.11b



Test Model Power Spectral Density Channel 1: 2412MHz 802.11g



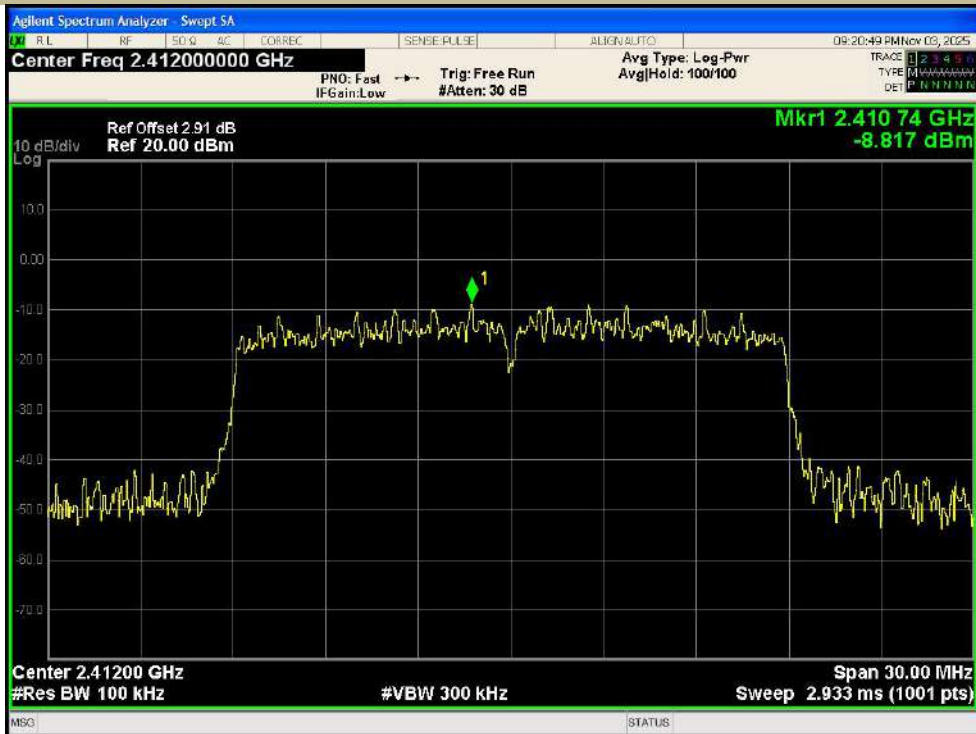
Test Model Power Spectral Density Channel 6: 2437MHz 802.11g



Test Model Power Spectral Density Channel 11: 2462MHz 802.11g



Test Model Power Spectral Density Channel 1: 2412MHz 802.11n20



Test Model Power Spectral Density Channel 6: 2437MHz 802.11n20



Test Model Power Spectral Density Channel 11: 2462MHz 802.11n20



Test Model Power Spectral Density Channel 3: 2422MHz 802.11n40



Test Model

Power Spectral Density
Channel 6: 2437MHz

802.11n40



Test Model

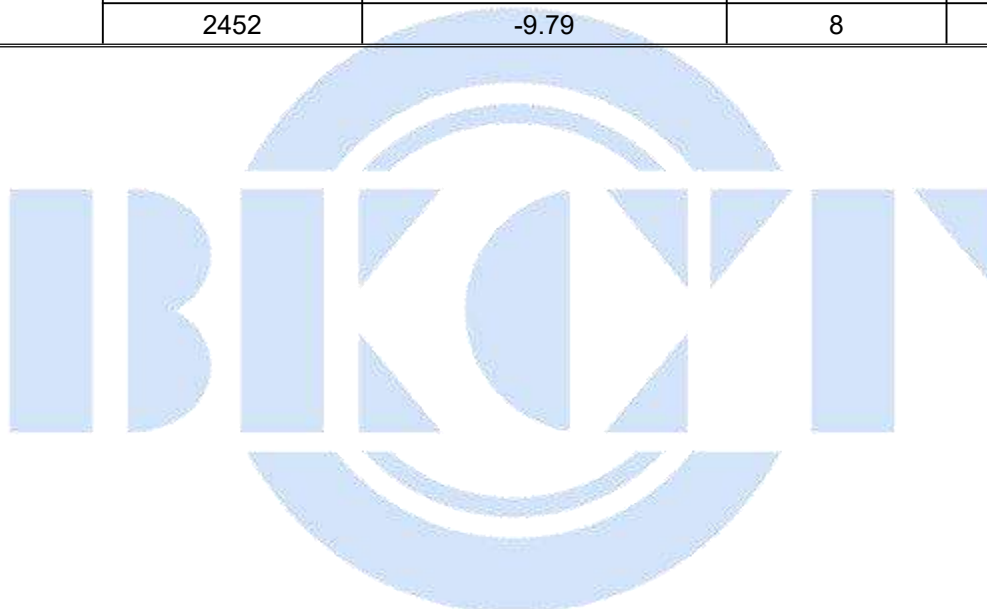
Power Spectral Density
Channel 9: 2452MHz

802.11n40



Antenna 1 TX:

Operation Mode	Frequency (MHz)	Power density (dBm/3kHz)	(dBm/3kHz) Limit	Test Result
802.11b	2412	-3.4	8	PASS
	2437	-3.31	8	PASS
	2462	-3.12	8	PASS
802.11g	2412	-8.43	8	PASS
	2437	-9.19	8	PASS
	2462	-8.49	8	PASS
802.11n20	2412	-8.76	8	PASS
	2437	-8.71	8	PASS
	2462	-8.62	8	PASS
802.11n40	2422	-11.38	8	PASS
	2437	-9.15	8	PASS
	2452	-9.79	8	PASS



Test Model Power Spectral Density Channel 1: 2412MHz 802.11b



Test Model Power Spectral Density Channel 6: 2437MHz 802.11b



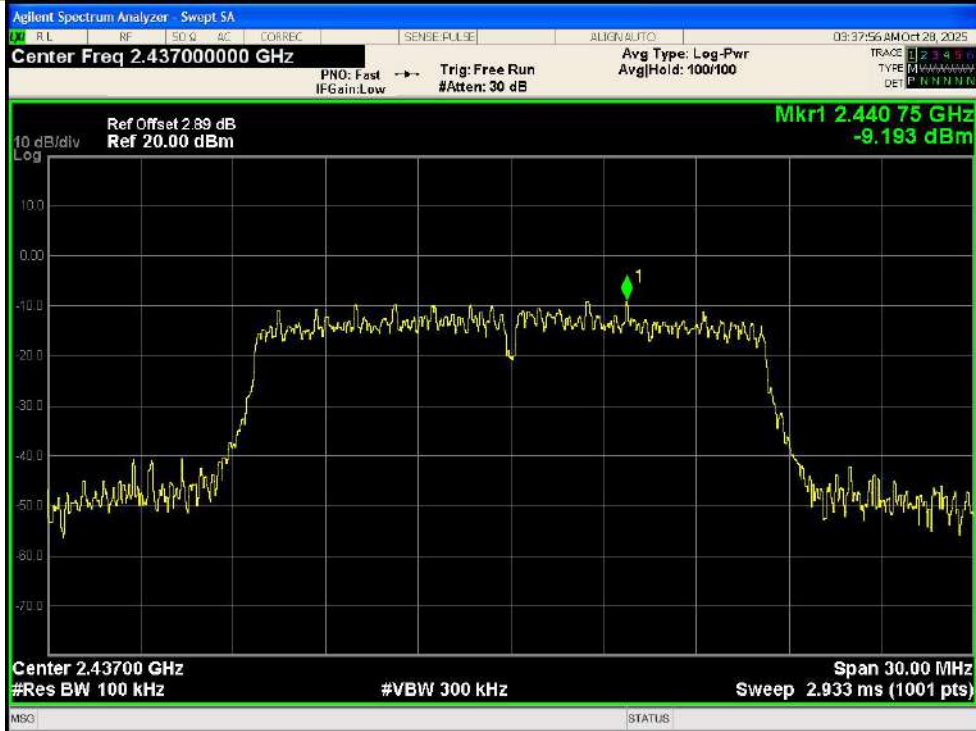
Test Model Power Spectral Density Channel 11: 2462MHz 802.11b



Test Model Power Spectral Density Channel 1: 2412MHz 802.11g



Test Model Power Spectral Density Channel 6: 2437MHz 802.11g



Test Model Power Spectral Density Channel 11: 2462MHz 802.11g



Test Model

Power Spectral Density
Channel 1: 2412MHz

802.11n20



Test Model

Power Spectral Density
Channel 6: 2437MHz

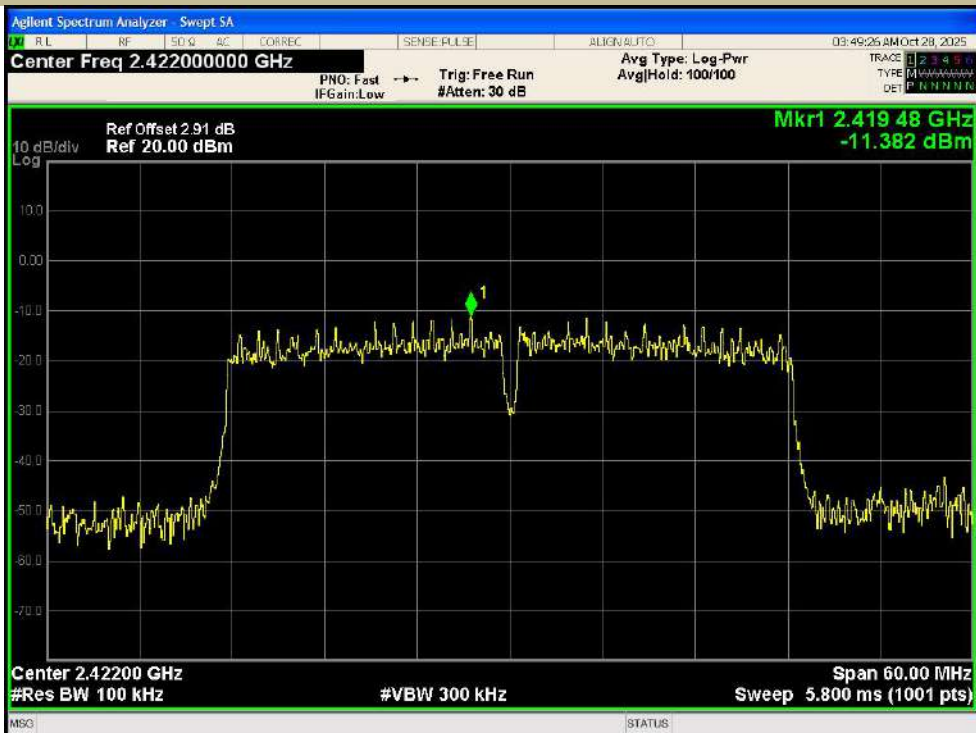
802.11n20



Test Model Power Spectral Density
Channel 11: 2462MHz 802.11n20



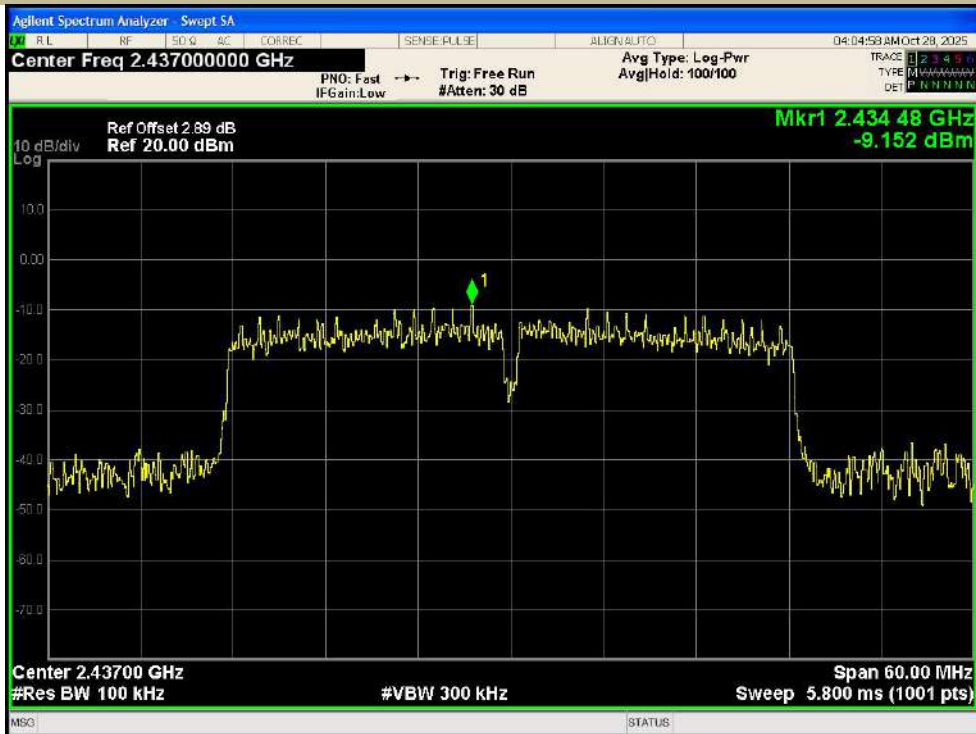
Test Model Power Spectral Density
Channel 3: 2422MHz 802.11n40



Test Model

Power Spectral Density
Channel 6: 2437MHz

802.11n40



Test Model

Power Spectral Density
Channel 9: 2452MHz

802.11n40



9. Antenna Requirement

According to the FCC Part 15 Paragraph 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. This product has an ceramic antenna fulfill the requirement of this section.

