



8. BANDWIDTH TEST

8.1 LIMIT

FCC Part15 15.247, Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)	Bandwidth	N/A	2400-2483.5	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

8.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as shown in the block diagram below.
- Spectrum Setting: RBW= 30KHz, VBW=100KHz, Sweep time = Auto.

8.3 TEST SETUP



8.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

8.5 TEST RESULTS

Note: The test data please refer to APPENDIX 1.



9. OUTPUT POWER TEST

9.1 LIMIT

FCC Part 15.247, Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)&(b)(1)	Output Power	1 W or 0.125W	2400-2483.5	PASS
		if channel separation > 2/3 bandwidth provided the systems operate with an output power no greater than 125 mW (20.97 dBm)		

9.2 TEST PROCEDURE

This is an RF-conducted test to evaluate maximum peak output power. Use a direct connection between the antenna port of the unlicensed wireless device and the spectrum analyzer, through suitable attenuation. The hopping shall be disabled for this test:

a) Use the following spectrum analyzer settings:

- 1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- 2) RBW > 20 dB bandwidth of the emission being measured.
- 3) VBW $\geq$ RBW.
- 4) Sweep: Auto.
- 5) Detector function: Peak.
- 6) Trace: Max hold.

b) Allow trace to stabilize.

c) Use the marker-to-peak function to set the marker to the peak of the emission.

d) The indicated level is the peak output power, after any corrections for external attenuators and cables.

e) A plot of the test results and setup description shall be included in the test report.

NOTE—A peak responding power meter may be used, where the power meter and sensor system video bandwidth is greater than the occupied bandwidth of the unlicensed wireless device, rather than a spectrum analyzer.

PKPM1 Peak power meter method:

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 DSS bandwidth and shall use a fast-responding diode detector.



9.3 TEST SETUP



9.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

9.5 TEST RESULTS

Note: The test data please refer to APPENDIX 1.



10. ANTENNA REQUIREMENT

10.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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.

10.2 EUT ANTENNA

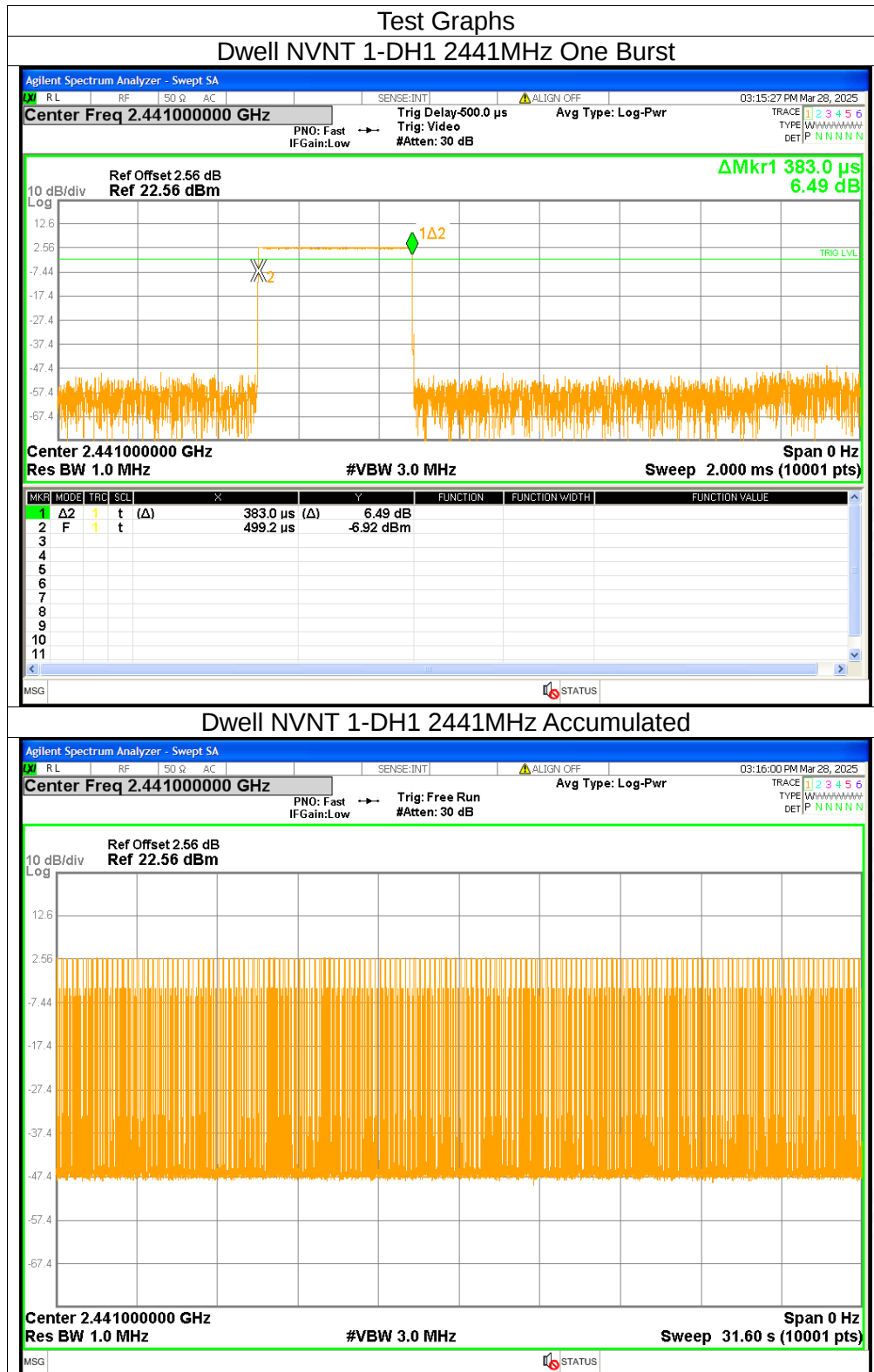
The EUT antenna is PCB Antenna. It comply with the standard requirement.



APPENDIX 1-TEST DATA

1. Dwell Time

Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	0.383	121.411	317	31600	<=400	Pass
NVNT	1-DH3	2441	1.639	260.601	159	31600	<=400	Pass
NVNT	1-DH5	2441	2.887	308.909	107	31600	<=400	Pass
NVNT	2-DH1	2441	0.392	123.48	315	31600	<=400	Pass
NVNT	2-DH3	2441	1.644	259.752	158	31600	<=400	Pass
NVNT	2-DH5	2441	2.892	292.092	101	31600	<=400	Pass
NVNT	3-DH1	2441	0.392	123.088	314	31600	<=400	Pass
NVNT	3-DH3	2441	1.643	257.951	157	31600	<=400	Pass
NVNT	3-DH5	2441	2.894	350.174	121	31600	<=400	Pass

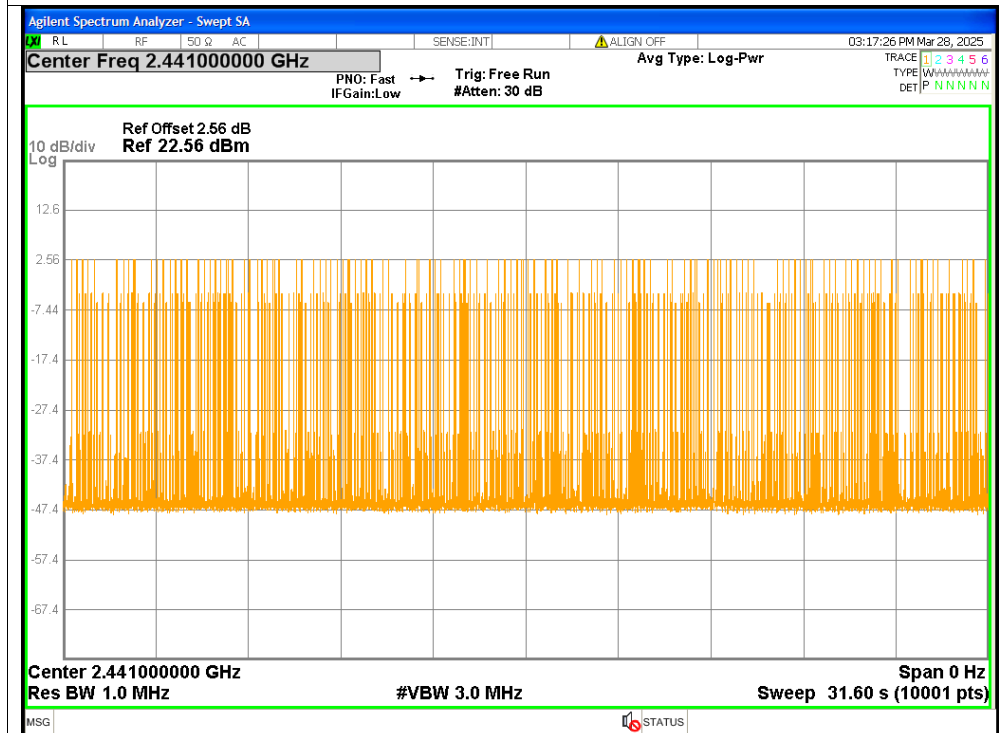




Dwell NVNT 1-DH3 2441MHz One Burst

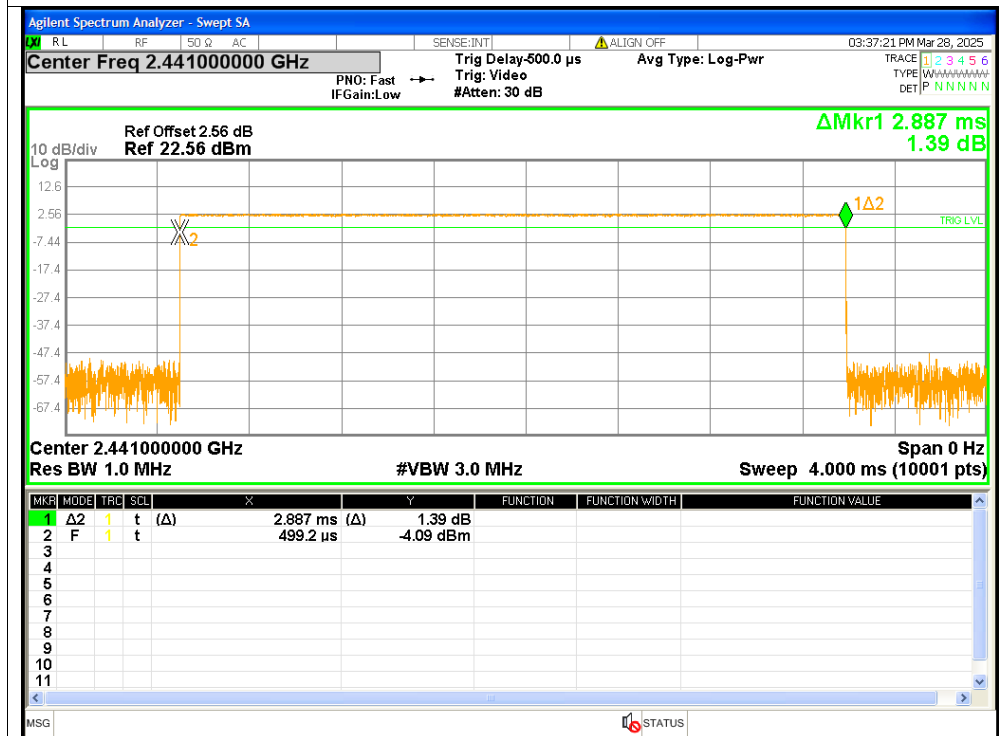


Dwell NVNT 1-DH3 2441MHz Accumulated

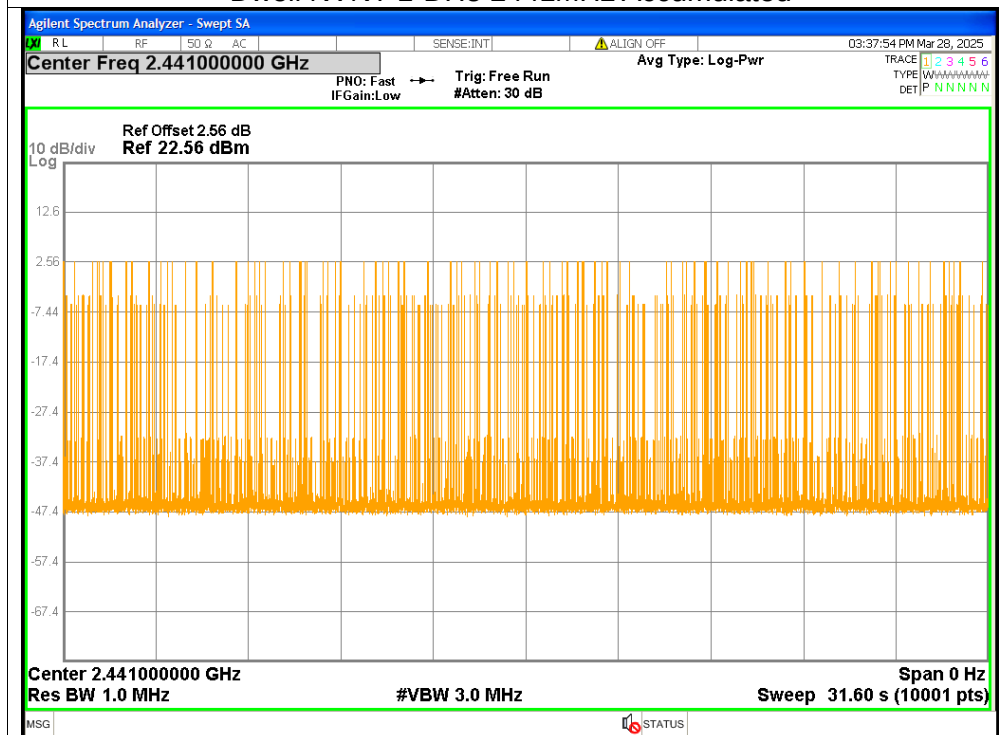




Dwell NVNT 1-DH5 2441MHz One Burst



Dwell NVNT 1-DH5 2441MHz Accumulated

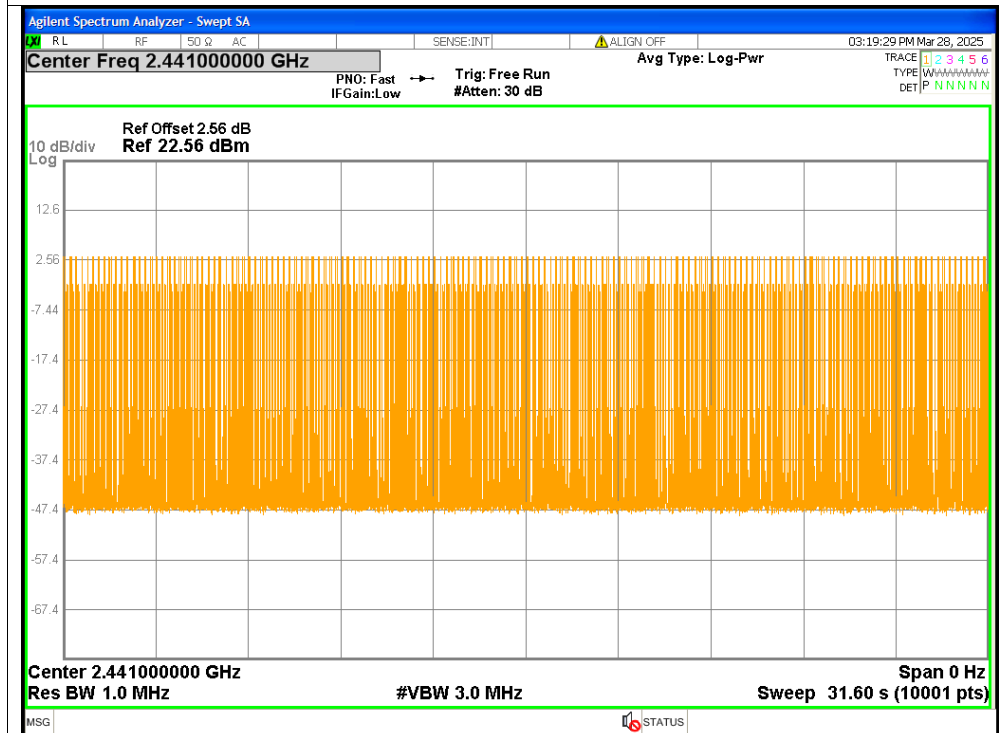




Dwell NVNT 2-DH1 2441MHz One Burst

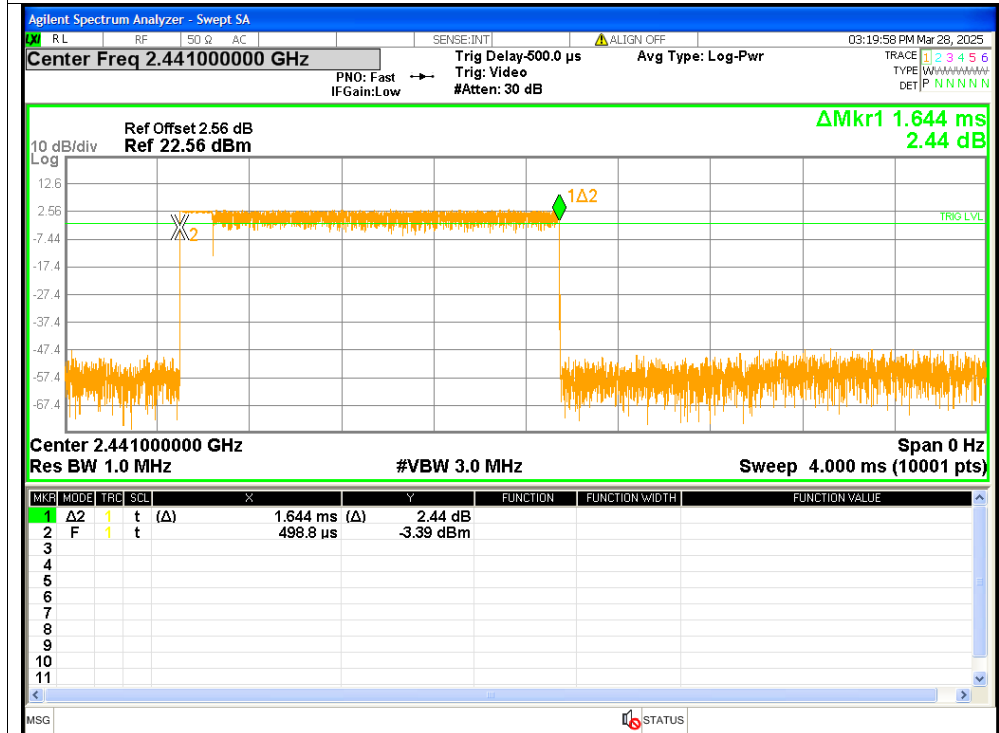


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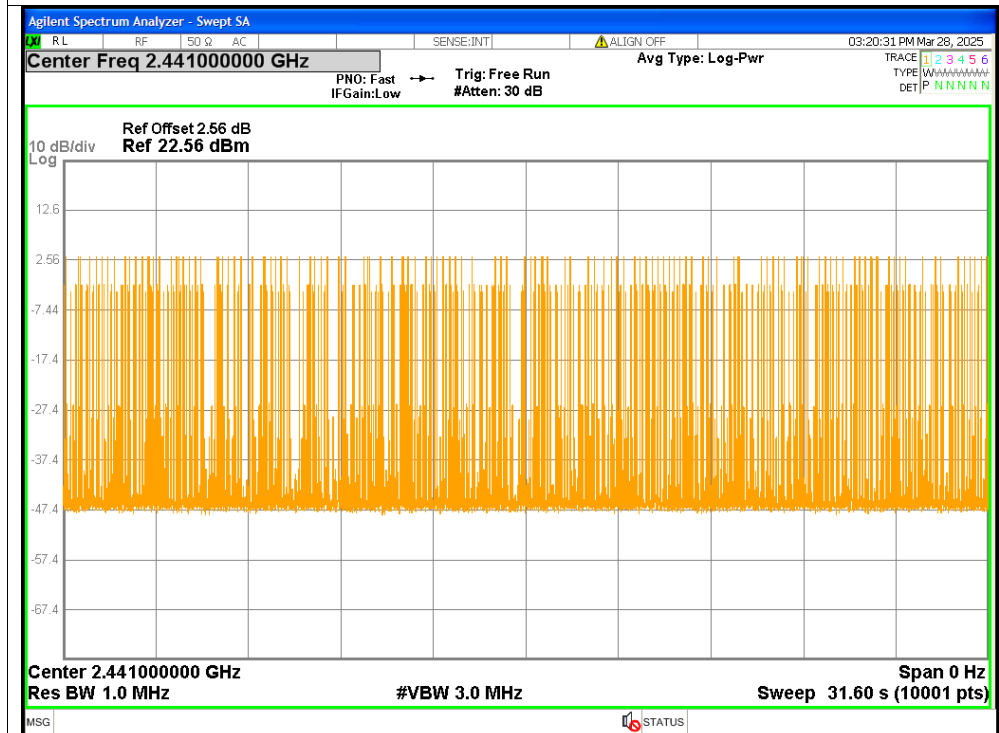




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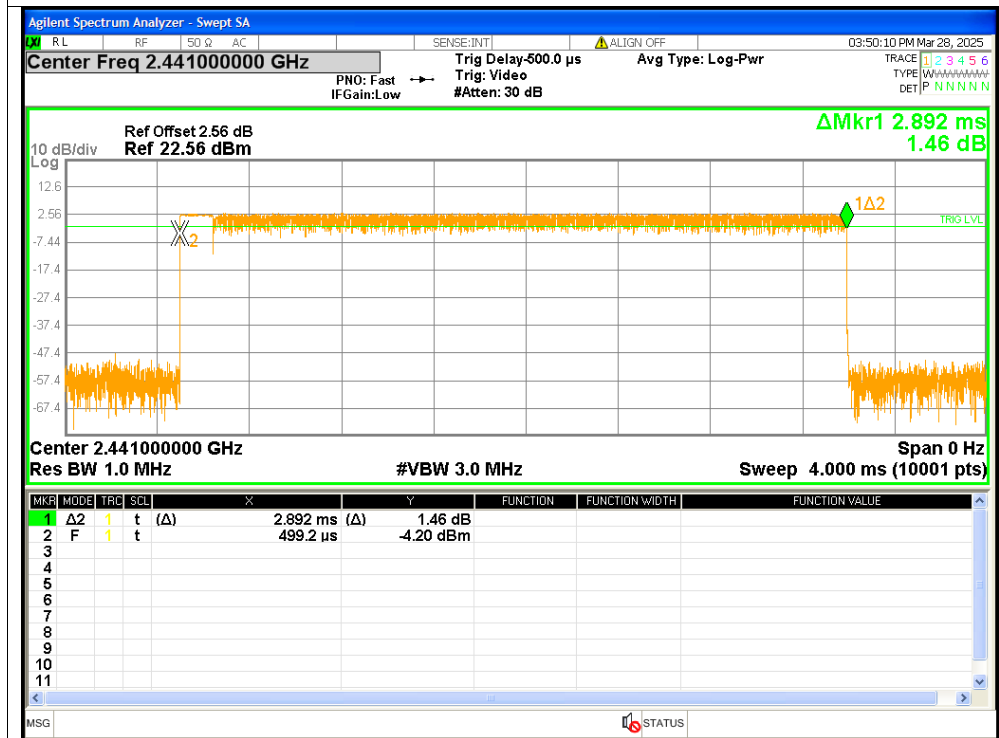


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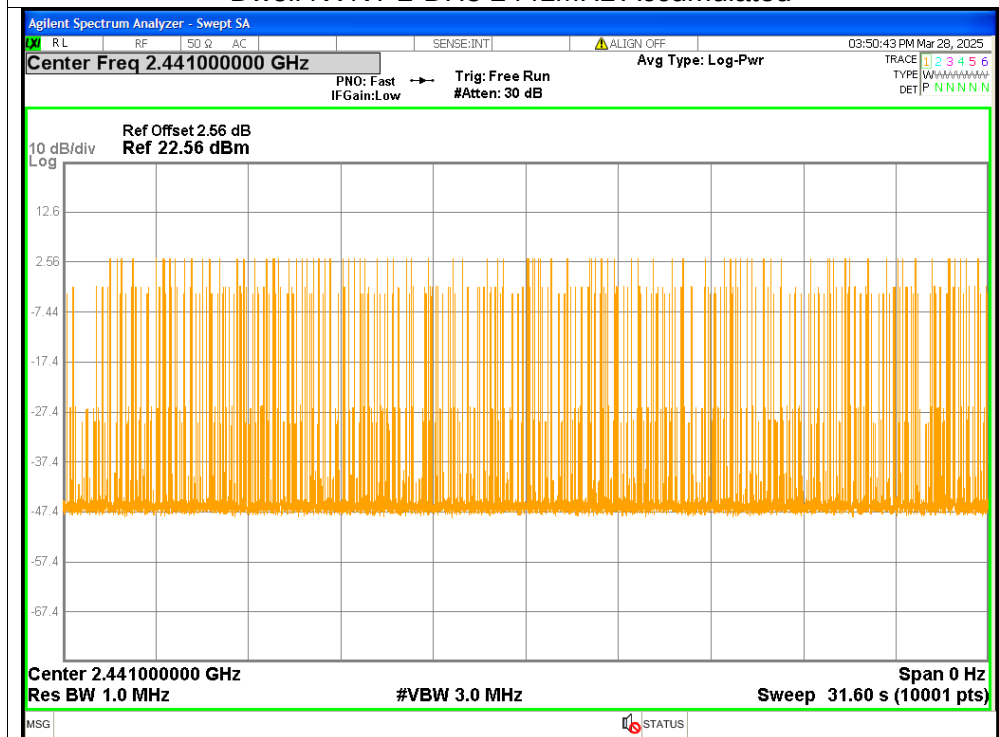




Dwell NVNT 2-DH5 2441MHz One Burst

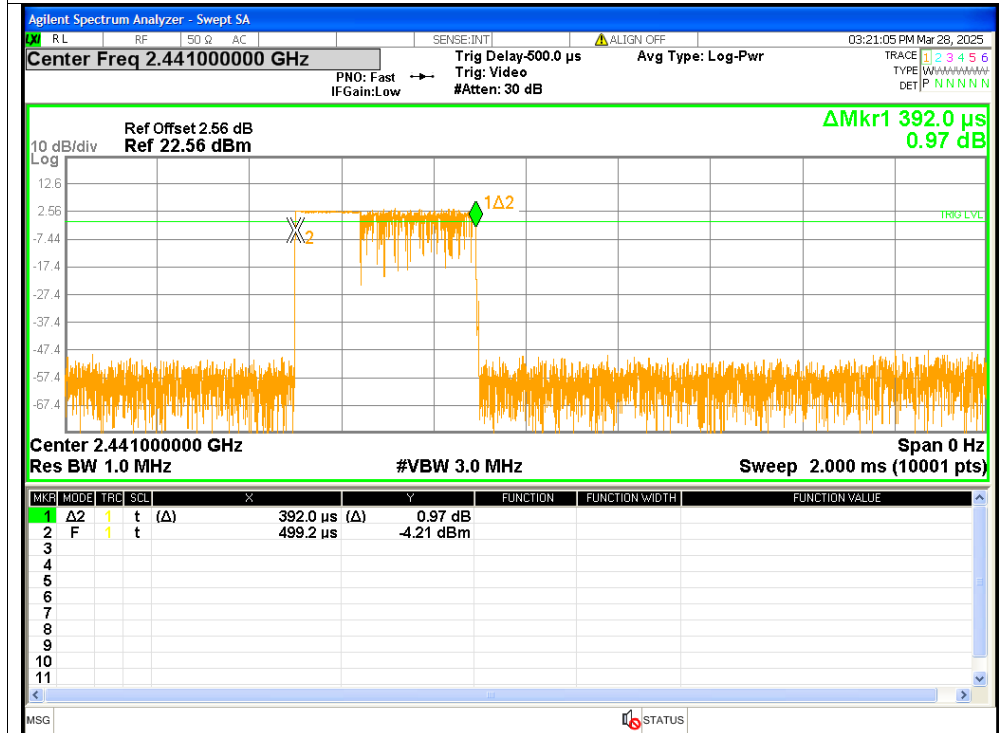


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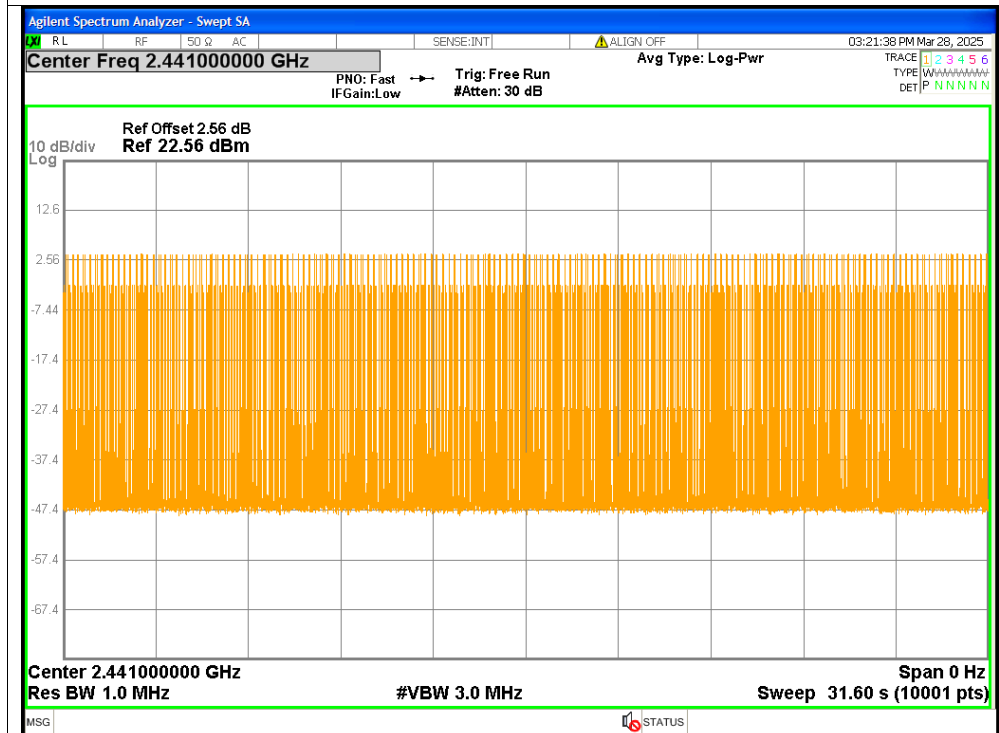




Dwell NVNT 3-DH1 2441MHz One Burst

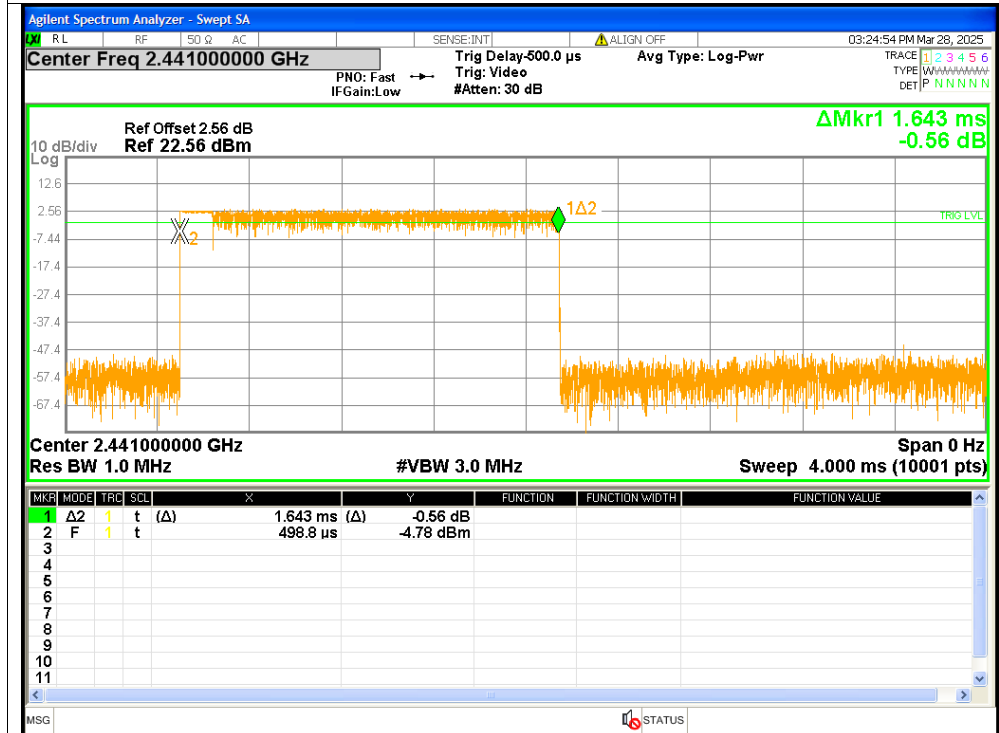


Dwell NVNT 3-DH1 2441MHz Accumulated

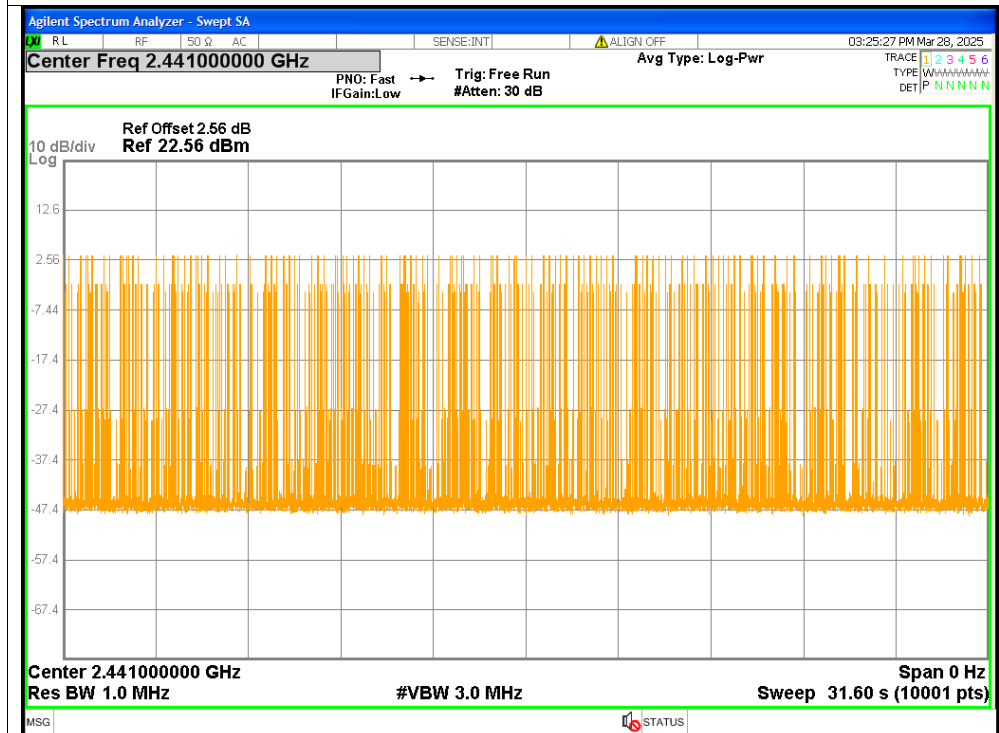




Dwell NVNT 3-DH3 2441MHz One Burst



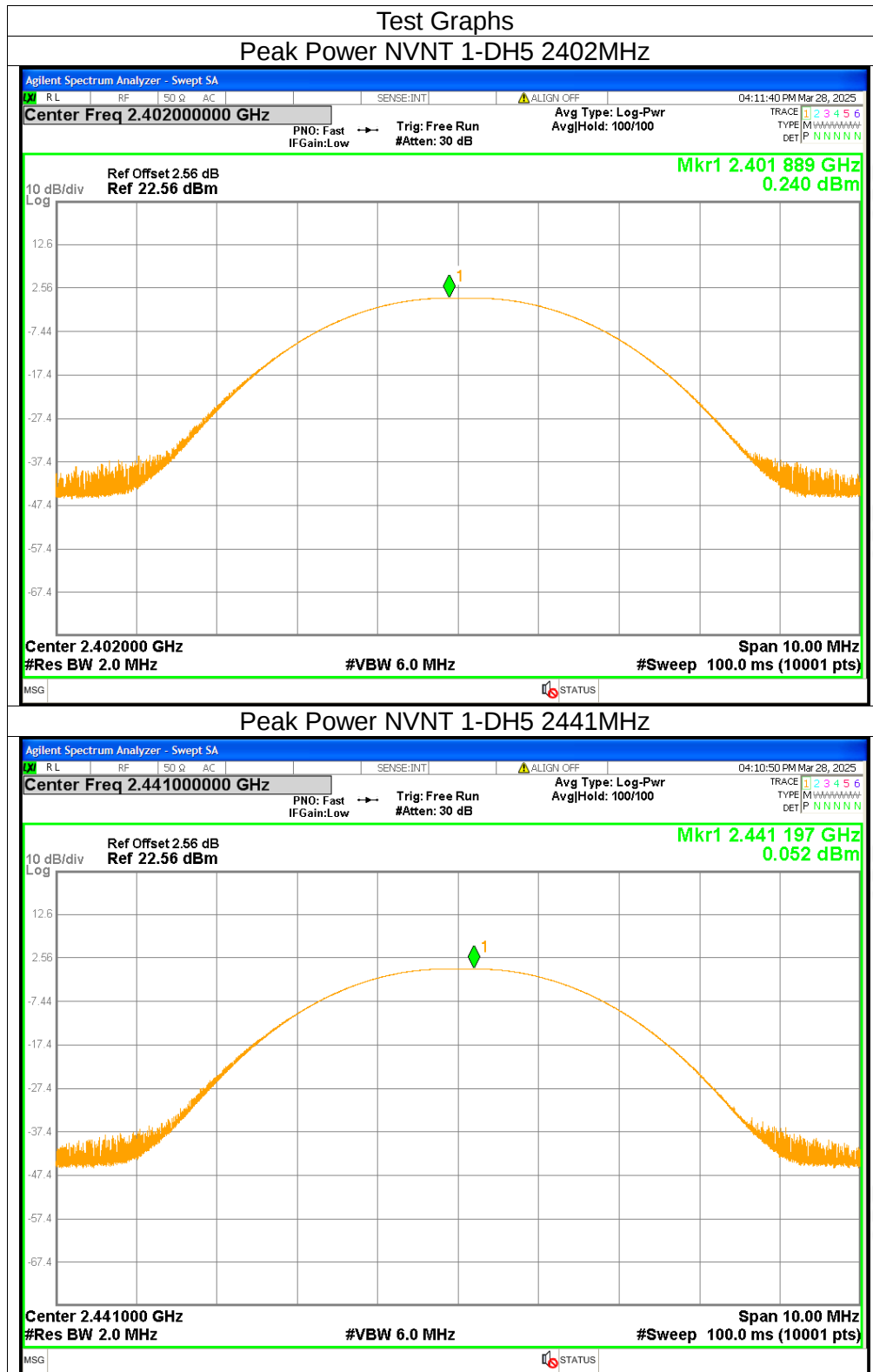
Dwell NVNT 3-DH3 2441MHz Accumulated

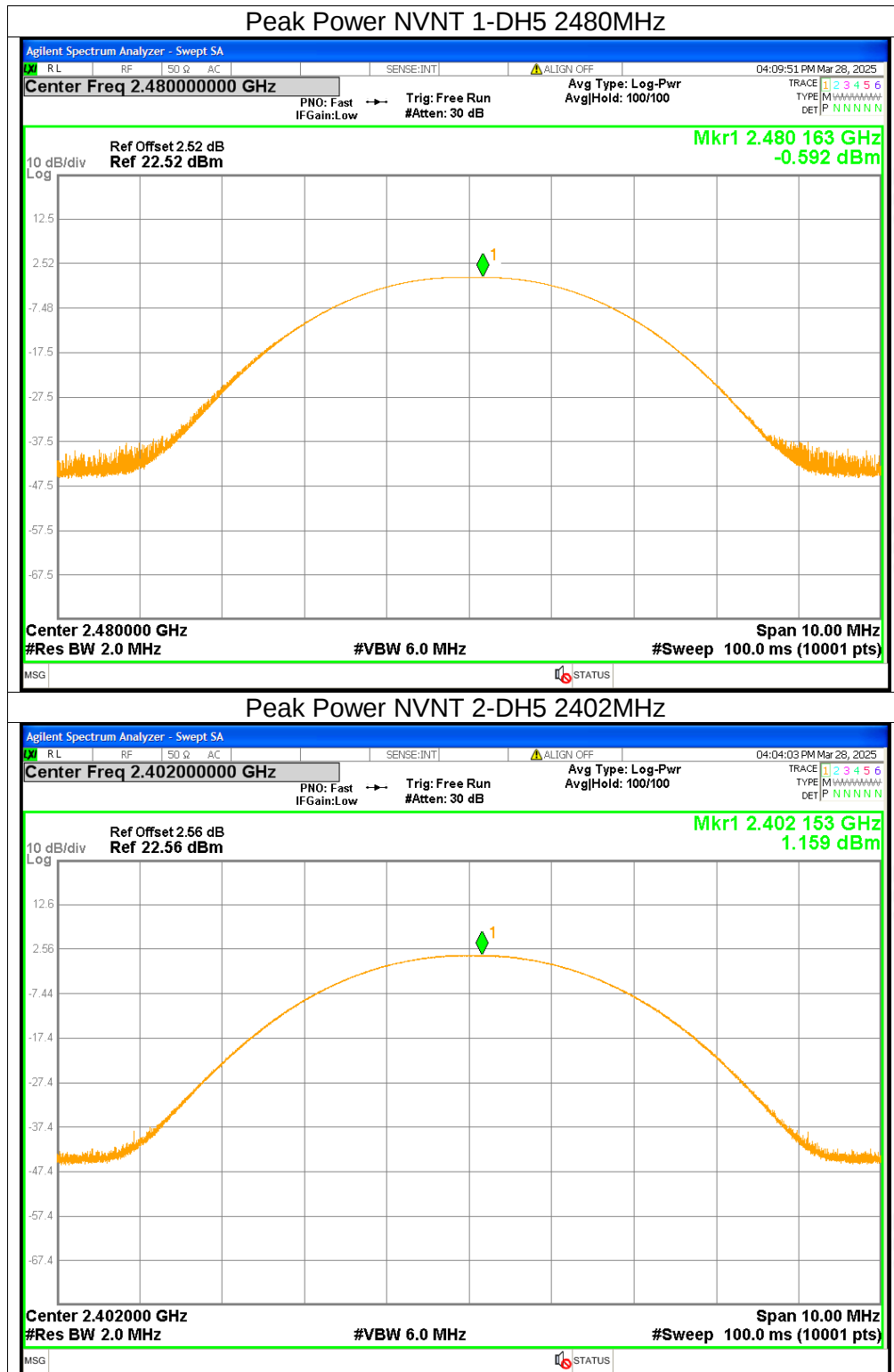


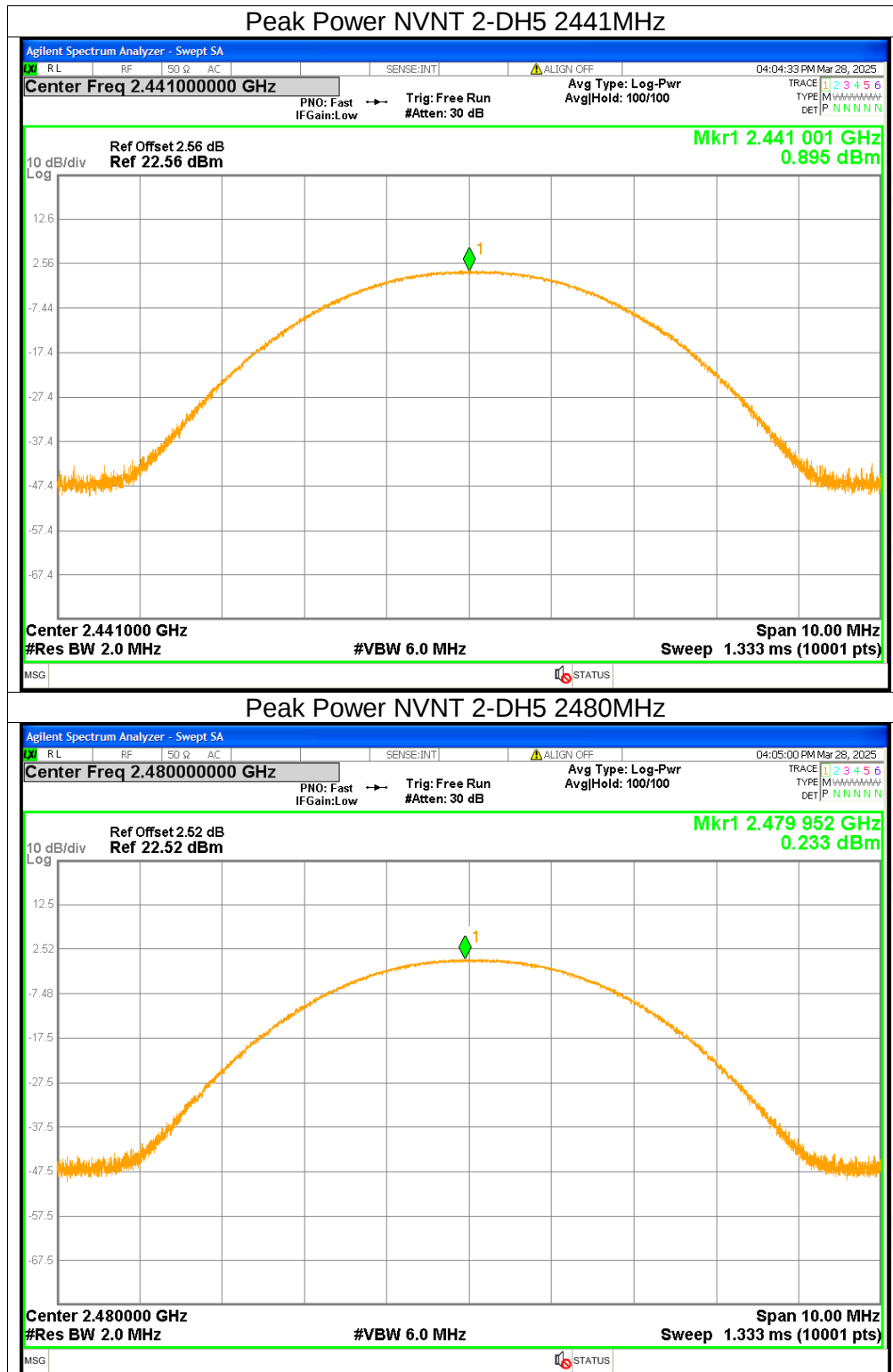


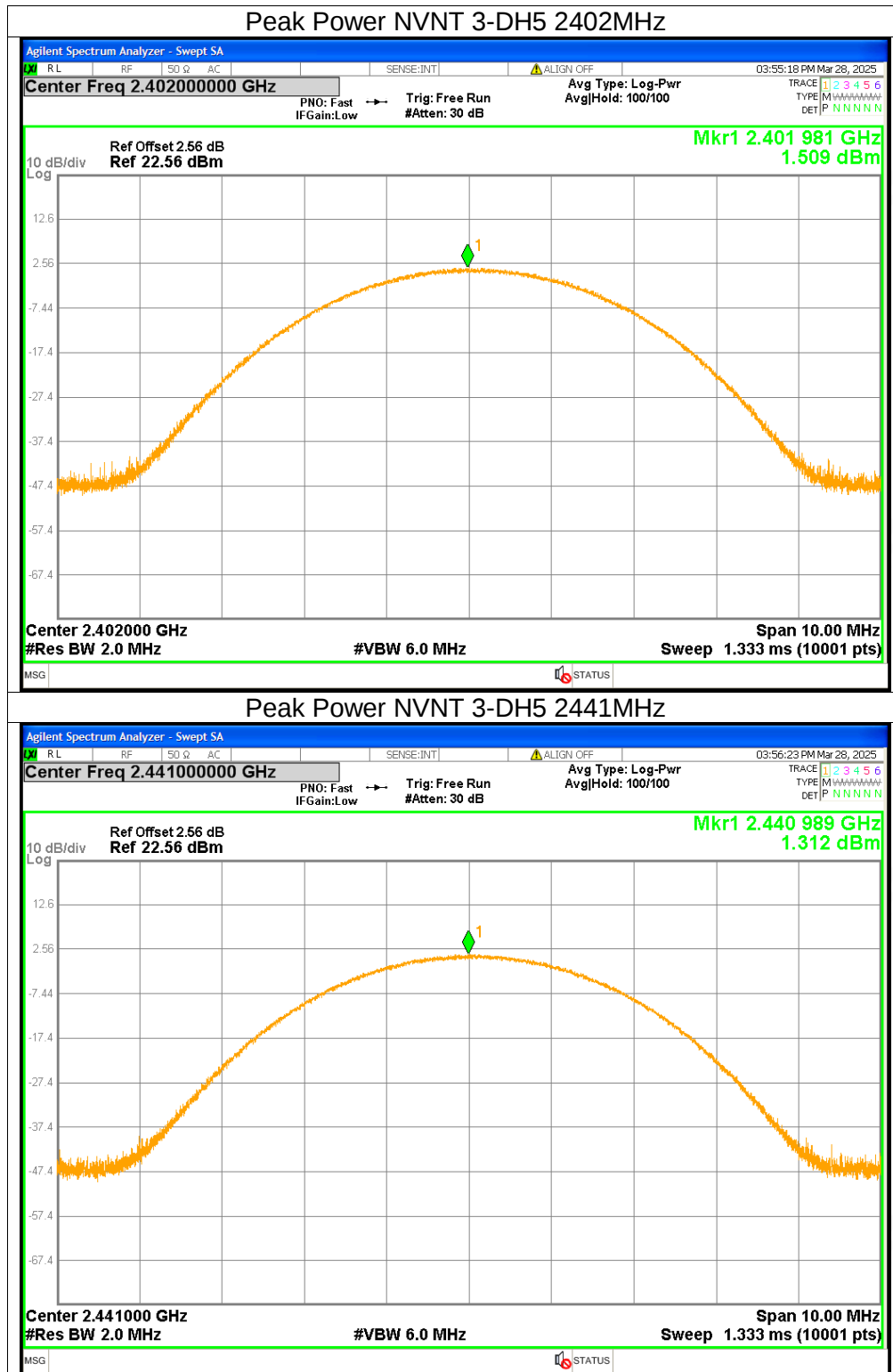
2. Maximum Peak Conducted Output Power

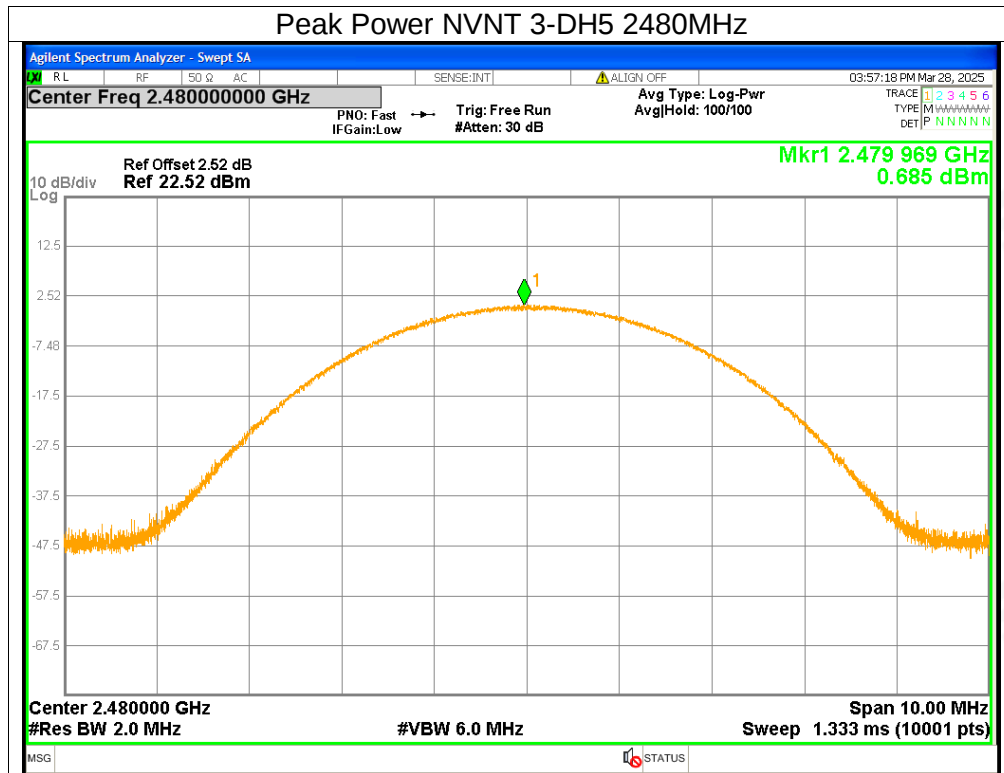
Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	0.24	<=21	Pass
NVNT	1-DH5	2441	0.05	<=21	Pass
NVNT	1-DH5	2480	-0.59	<=21	Pass
NVNT	2-DH5	2402	1.16	<=21	Pass
NVNT	2-DH5	2441	0.9	<=21	Pass
NVNT	2-DH5	2480	0.23	<=21	Pass
NVNT	3-DH5	2402	1.51	<=21	Pass
NVNT	3-DH5	2441	1.31	<=21	Pass
NVNT	3-DH5	2480	0.69	<=21	Pass







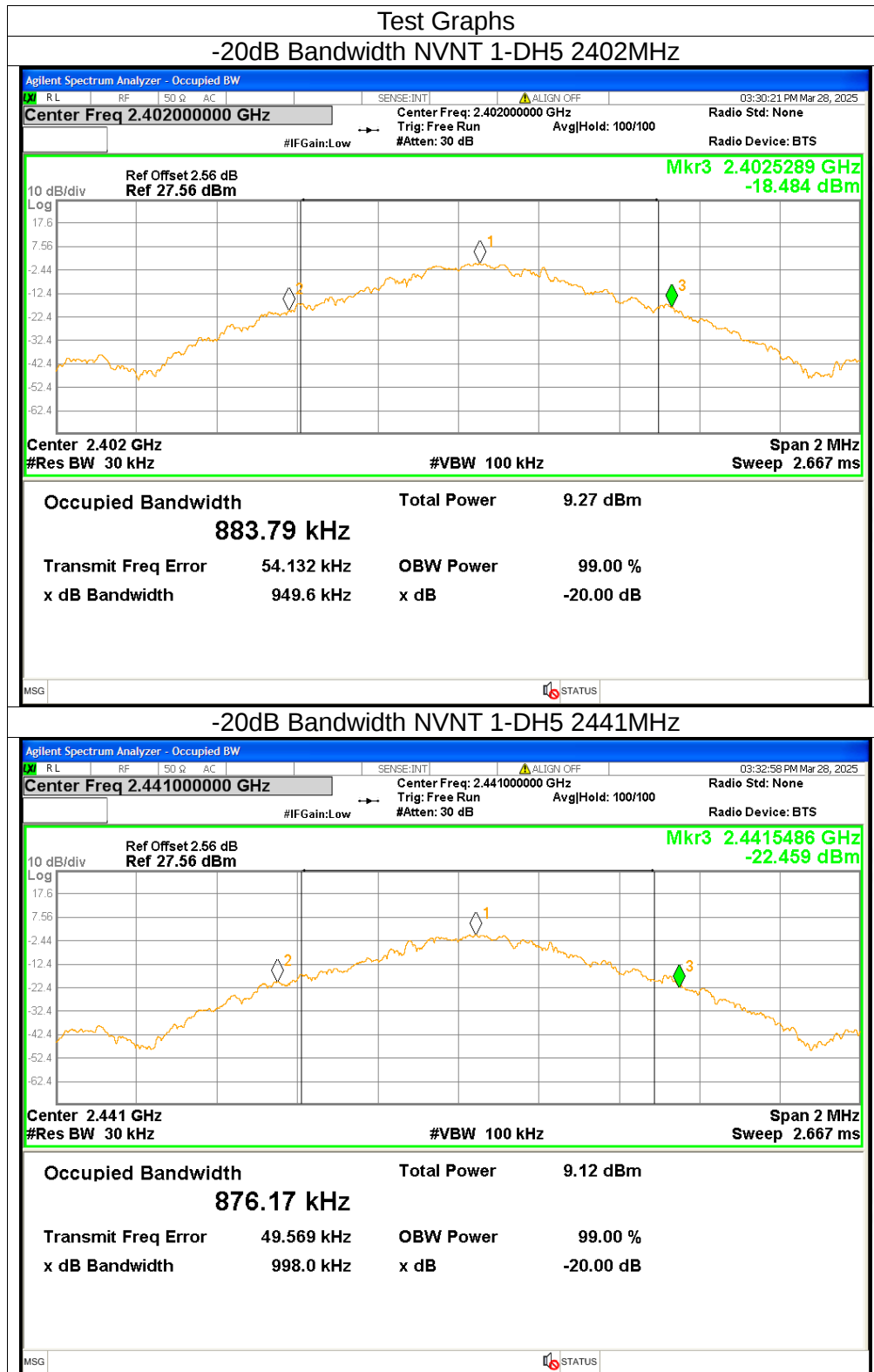


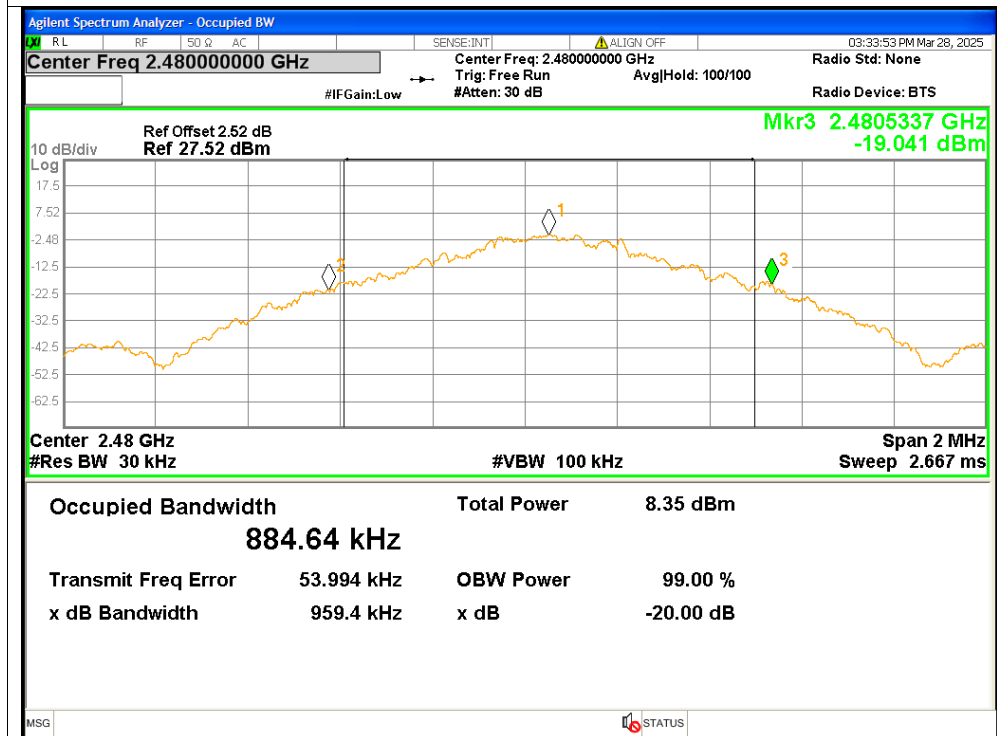
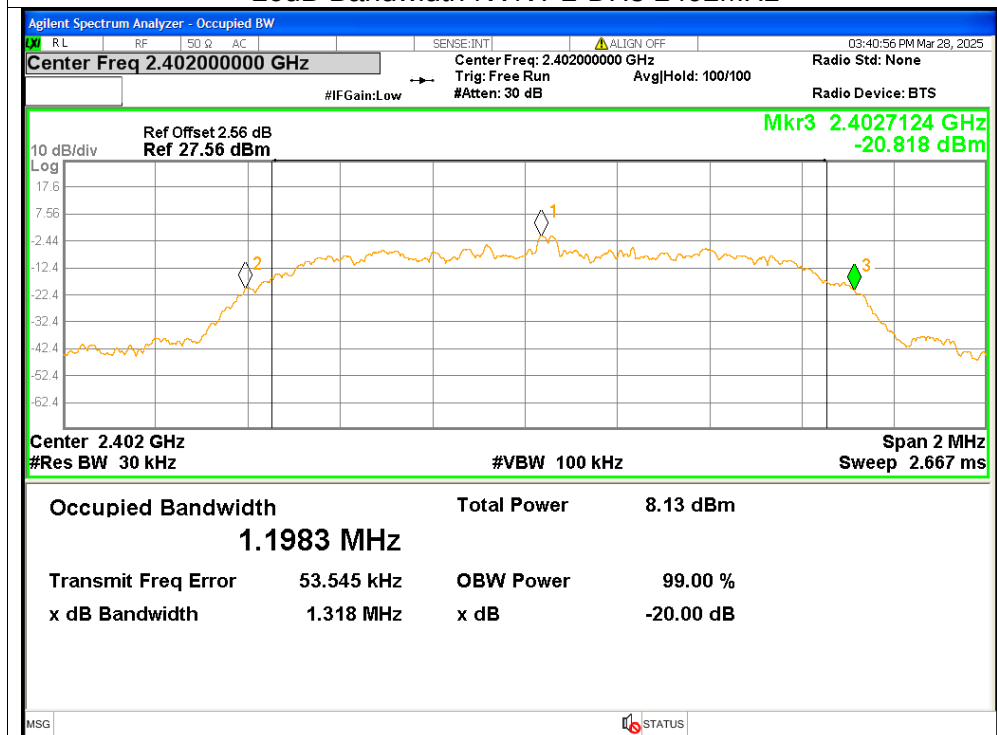


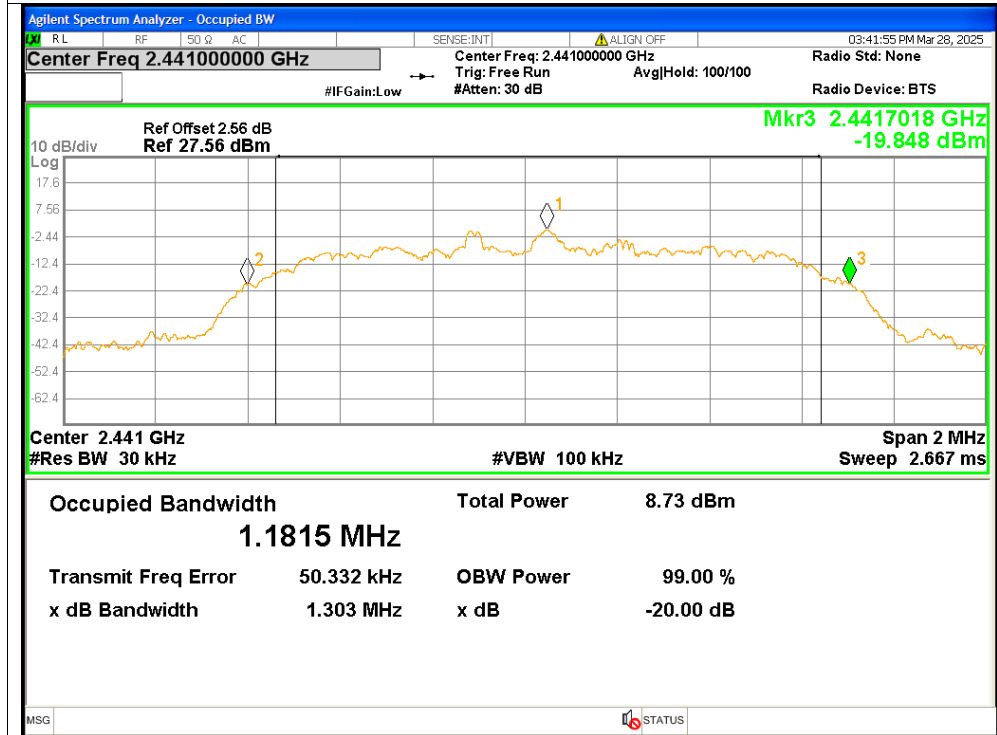
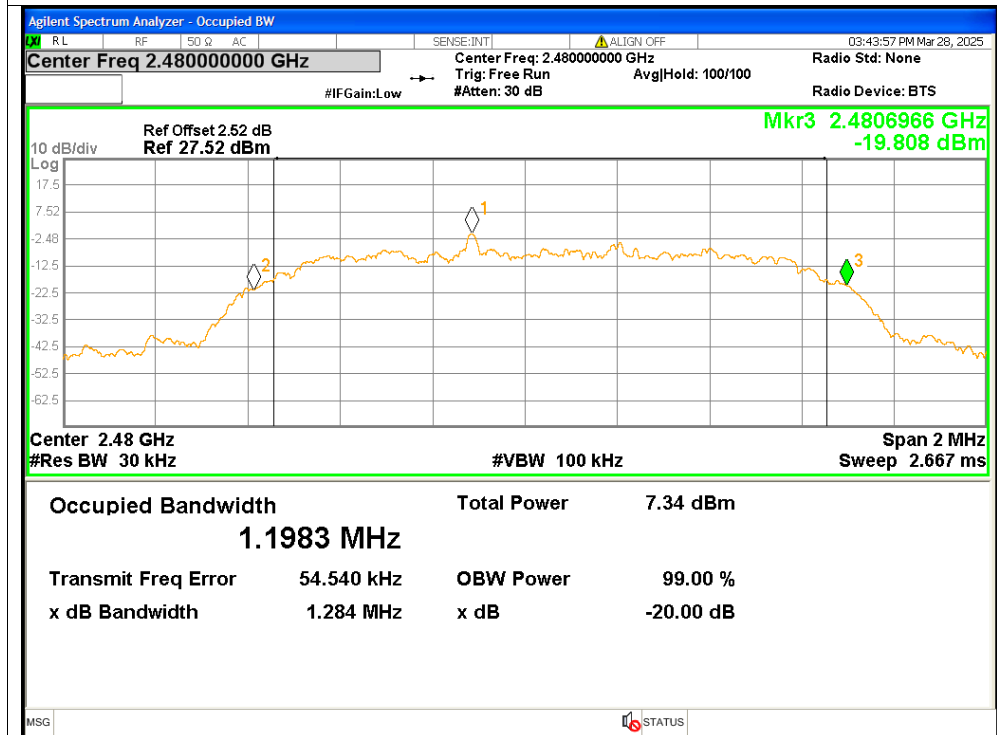


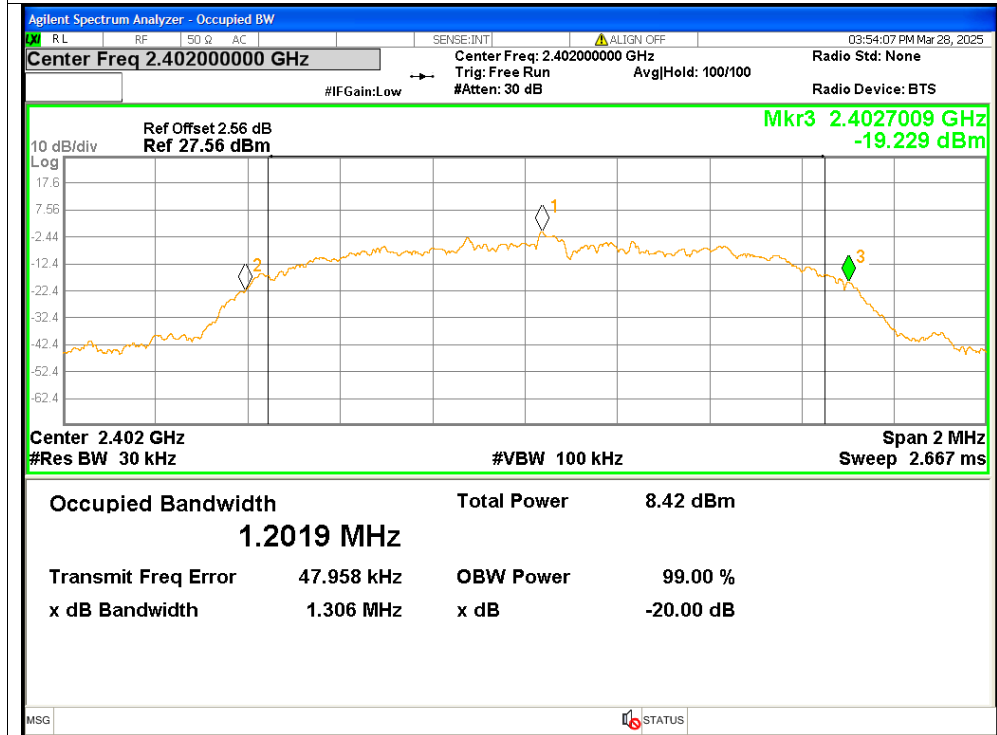
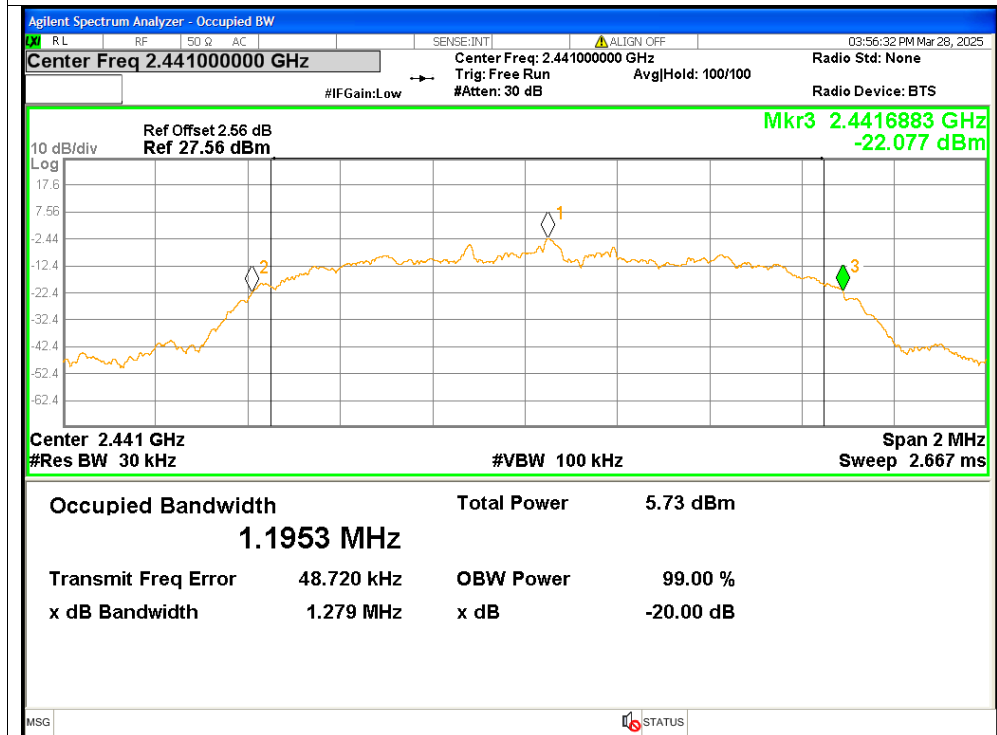
3. -20dB Bandwidth

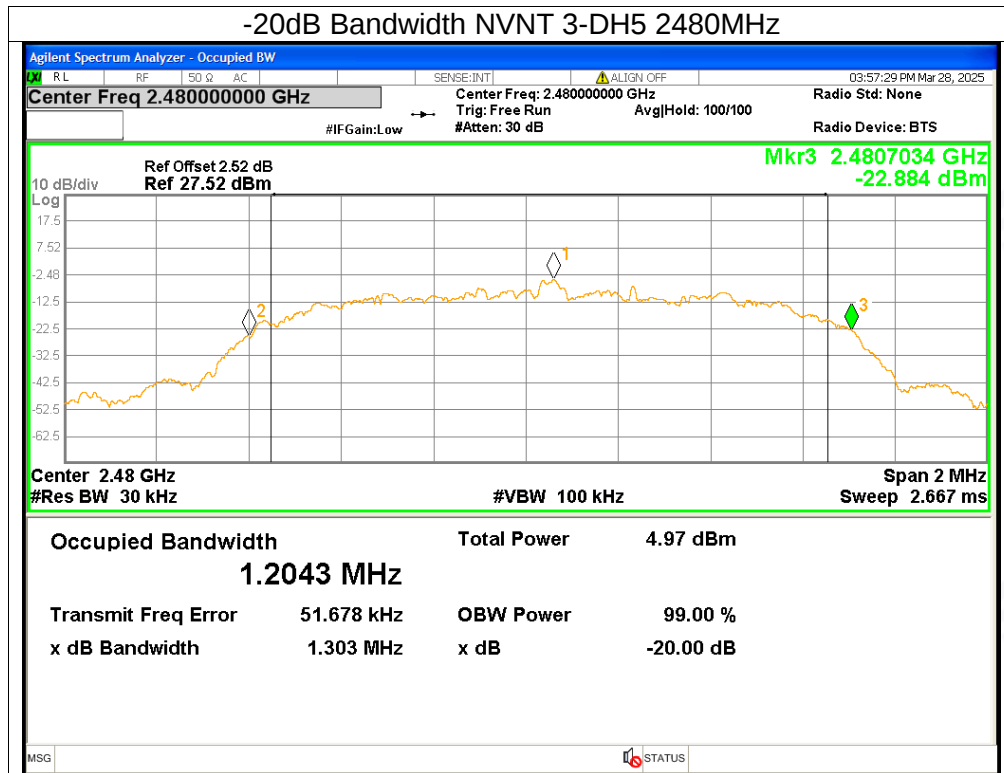
Condition	Mode	Frequency (MHz)	-20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	0.9496	Pass
NVNT	1-DH5	2441	0.998	Pass
NVNT	1-DH5	2480	0.9594	Pass
NVNT	2-DH5	2402	1.3178	Pass
NVNT	2-DH5	2441	1.3029	Pass
NVNT	2-DH5	2480	1.2841	Pass
NVNT	3-DH5	2402	1.3058	Pass
NVNT	3-DH5	2441	1.2792	Pass
NVNT	3-DH5	2480	1.3035	Pass



**-20dB Bandwidth NVNT 1-DH5 2480MHz****-20dB Bandwidth NVNT 2-DH5 2402MHz**

**-20dB Bandwidth NVNT 2-DH5 2441MHz****-20dB Bandwidth NVNT 2-DH5 2480MHz**

**-20dB Bandwidth NVNT 3-DH5 2402MHz****-20dB Bandwidth NVNT 3-DH5 2441MHz**





5. Carrier Frequencies Separation

Condition	Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	2402.066	2402.948	0.882	≥ 0.633	Pass
NVNT	1-DH5	2441.034	2442.048	1.014	≥ 0.665	Pass
NVNT	1-DH5	2479.02	2480.026	1.006	≥ 0.64	Pass
NVNT	2-DH5	2401.898	2403.39	1.492	≥ 0.879	Pass
NVNT	2-DH5	2440.876	2442.052	1.176	≥ 0.869	Pass
NVNT	2-DH5	2479.04	2480.052	1.012	≥ 0.856	Pass
NVNT	3-DH5	2401.882	2403.158	1.276	≥ 0.871	Pass
NVNT	3-DH5	2440.966	2442.208	1.242	≥ 0.853	Pass
NVNT	3-DH5	2479.05	2480.038	0.988	≥ 0.869	Pass

