



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: TWS earbuds

Test Model: TWS200

Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Paddi Chen
Supervised by:	Ling Zhu



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A.1 -20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	1.038	0	Pass
NVNT	1-DH5	2441	Ant1	1.011	0	Pass
NVNT	1-DH5	2480	Ant1	0.974	0	Pass
NVNT	2-DH5	2402	Ant1	1.318	0	Pass
NVNT	2-DH5	2441	Ant1	1.279	0	Pass
NVNT	2-DH5	2480	Ant1	1.288	0	Pass

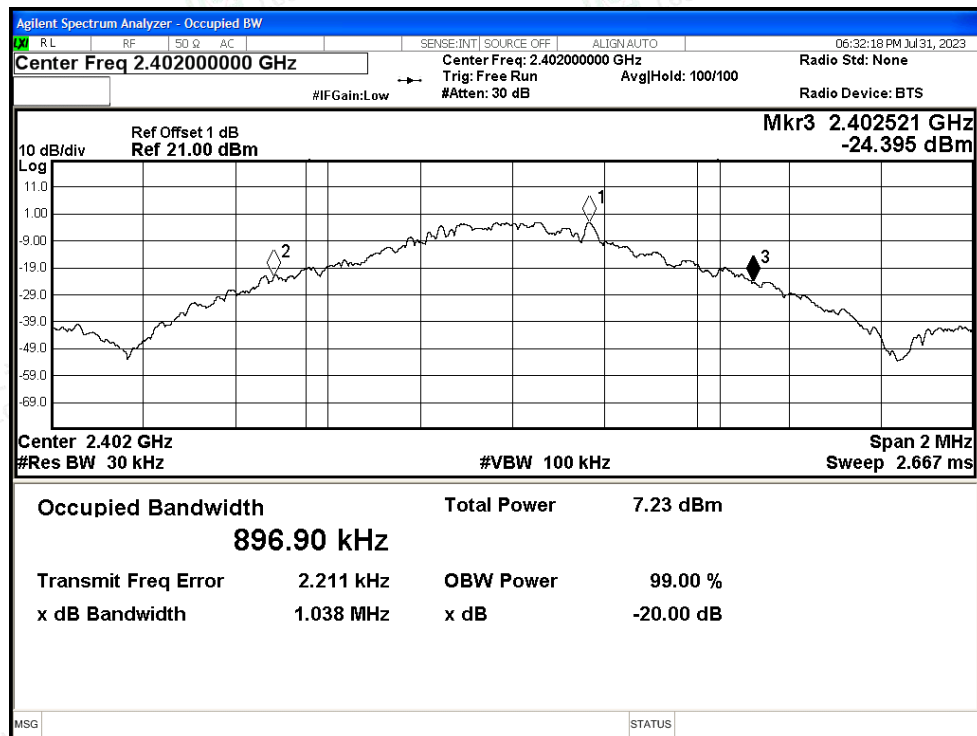


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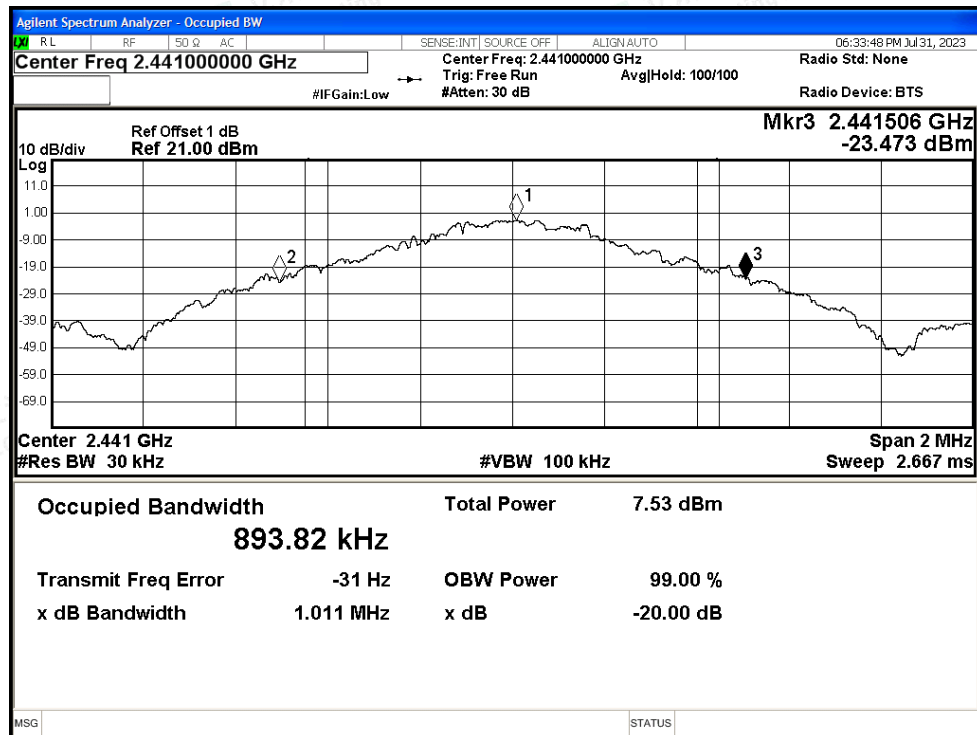


Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1



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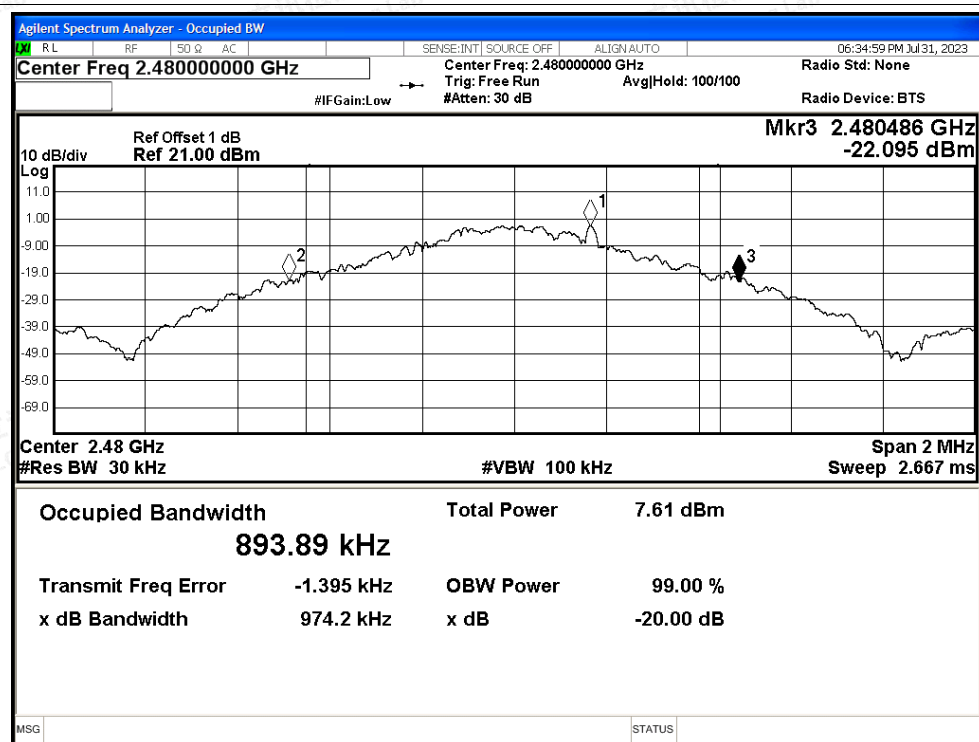
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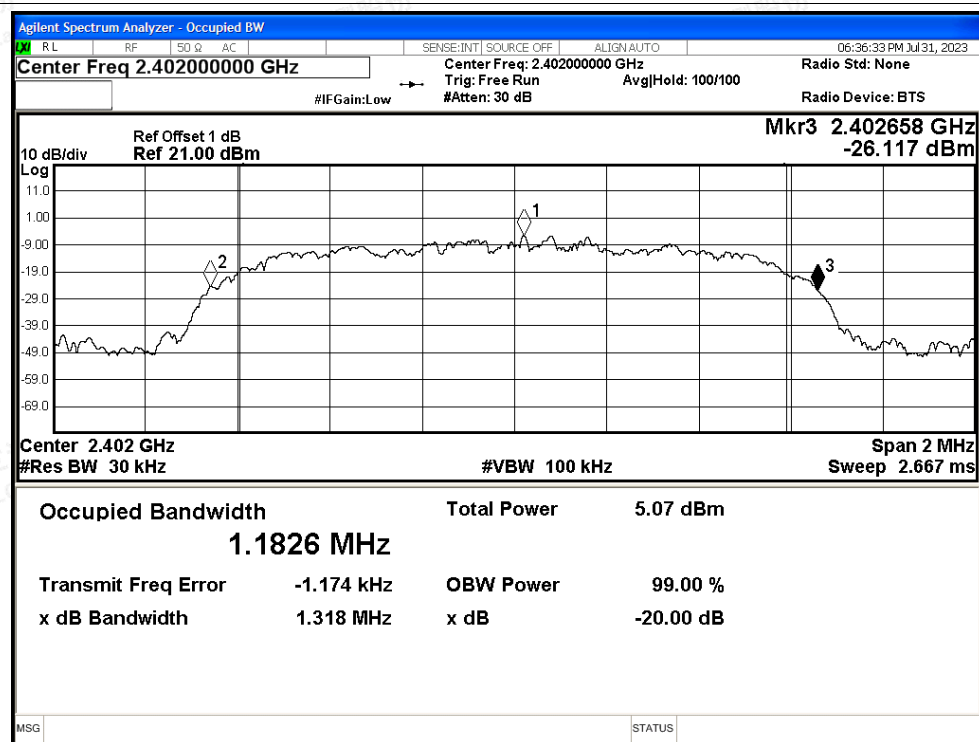
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-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1

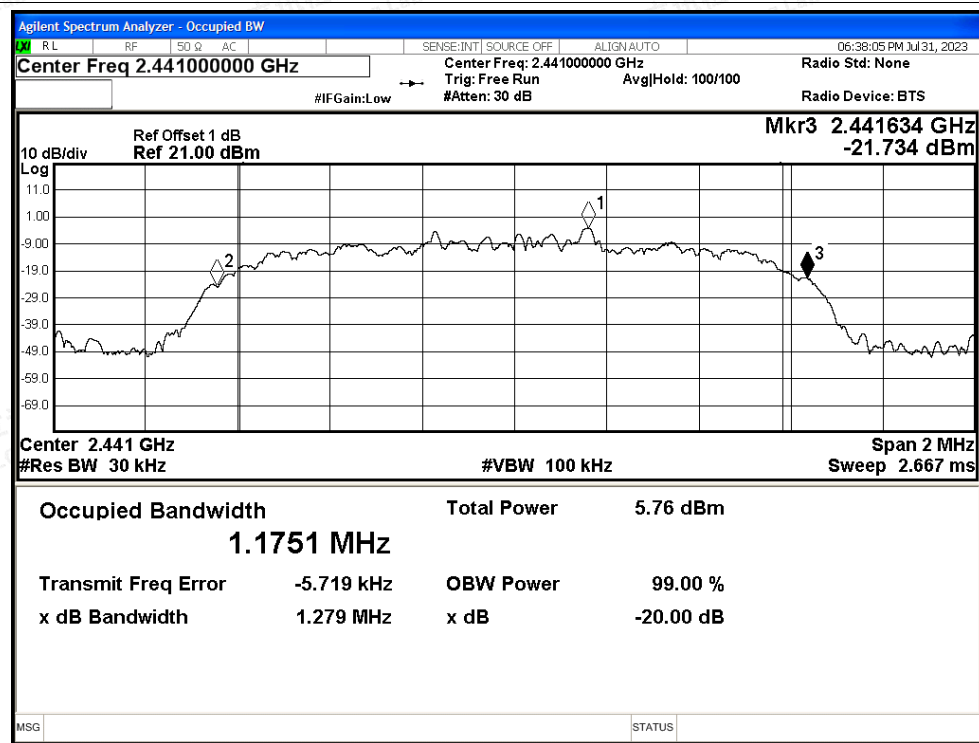


-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1

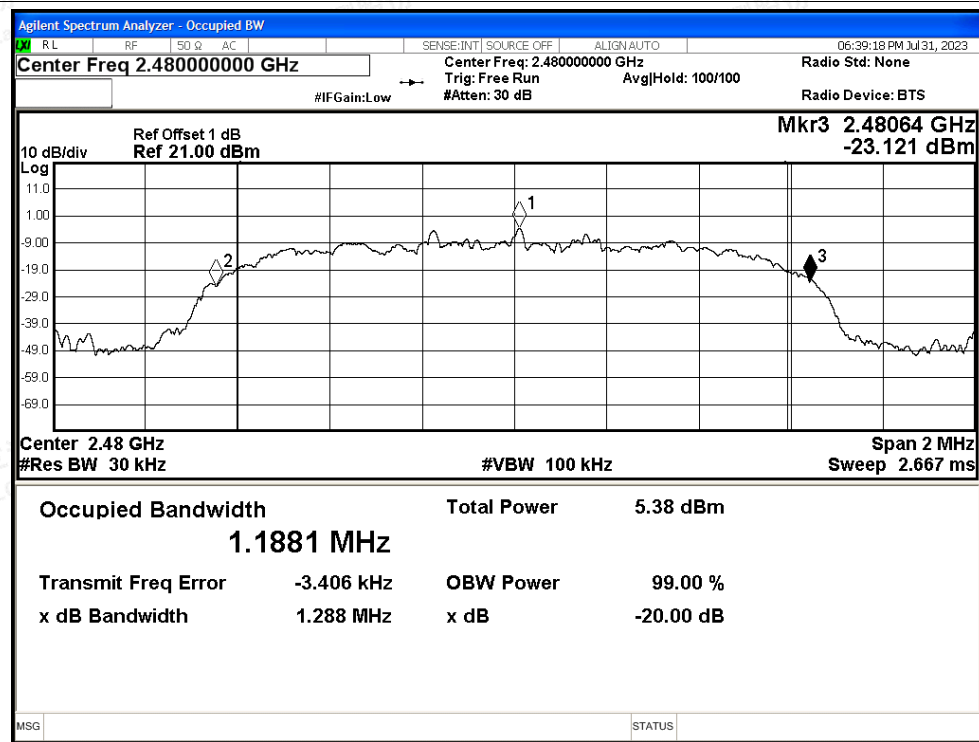




-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1



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A.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	0.93	21	Pass
NVNT	1-DH5	2441	Ant1	1.31	21	Pass
NVNT	1-DH5	2480	Ant1	1.42	21	Pass
NVNT	2-DH5	2402	Ant1	0.64	21	Pass
NVNT	2-DH5	2441	Ant1	1.07	21	Pass
NVNT	2-DH5	2480	Ant1	1.20	21	Pass

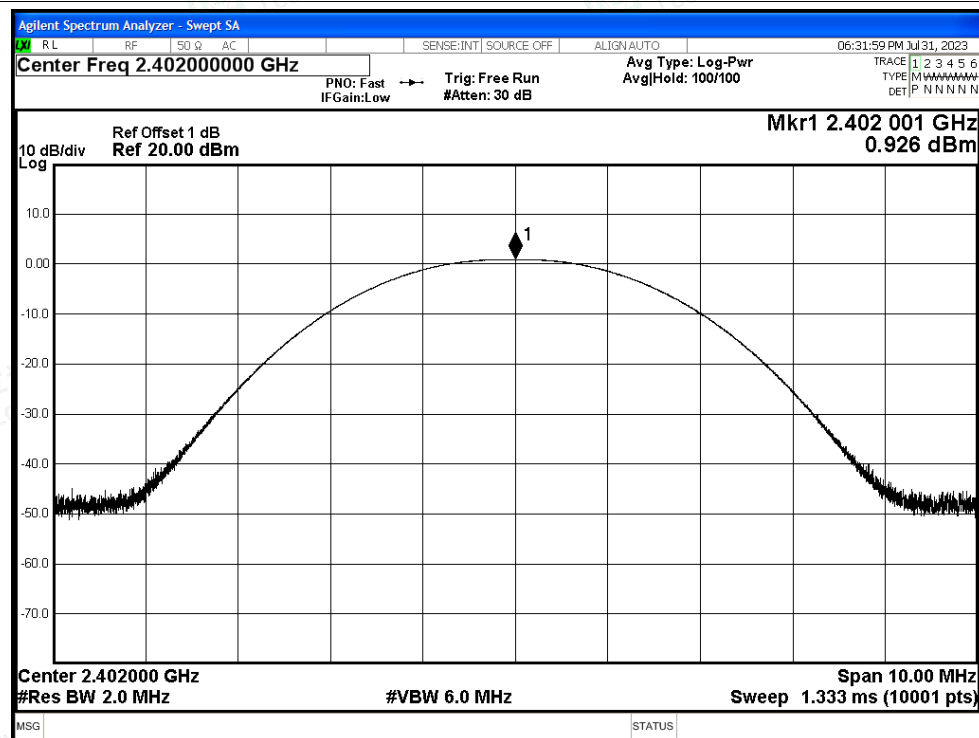


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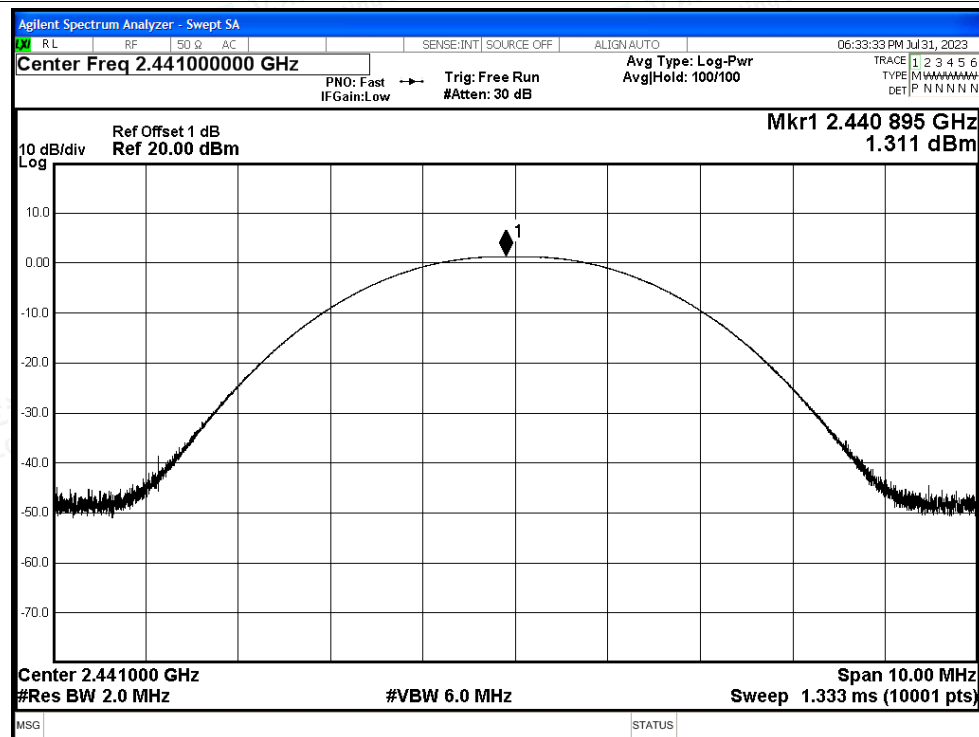


Test Graphs

Power NVNT 1-DH5 2402MHz Ant1



Power NVNT 1-DH5 2441MHz Ant1

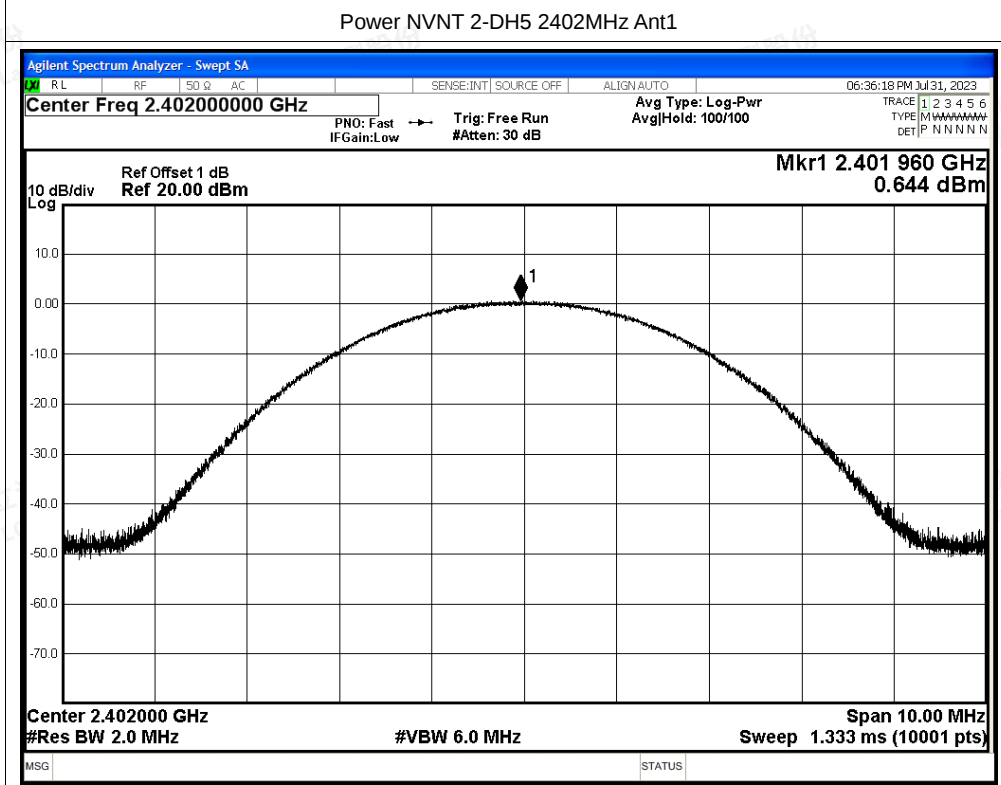
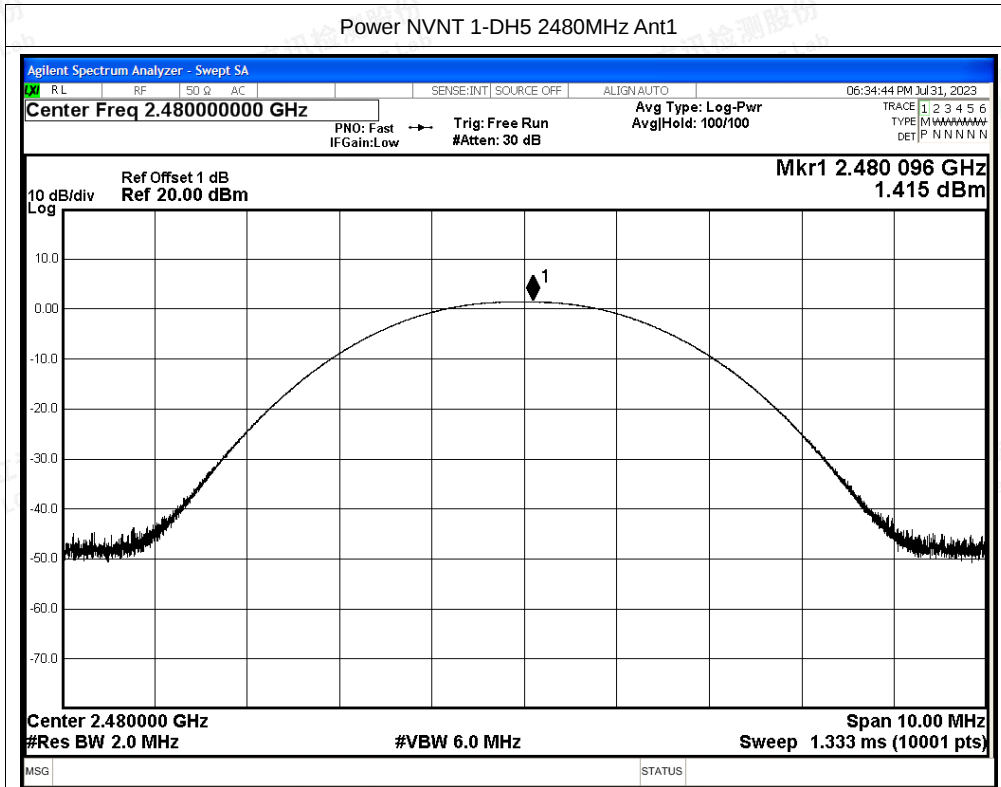


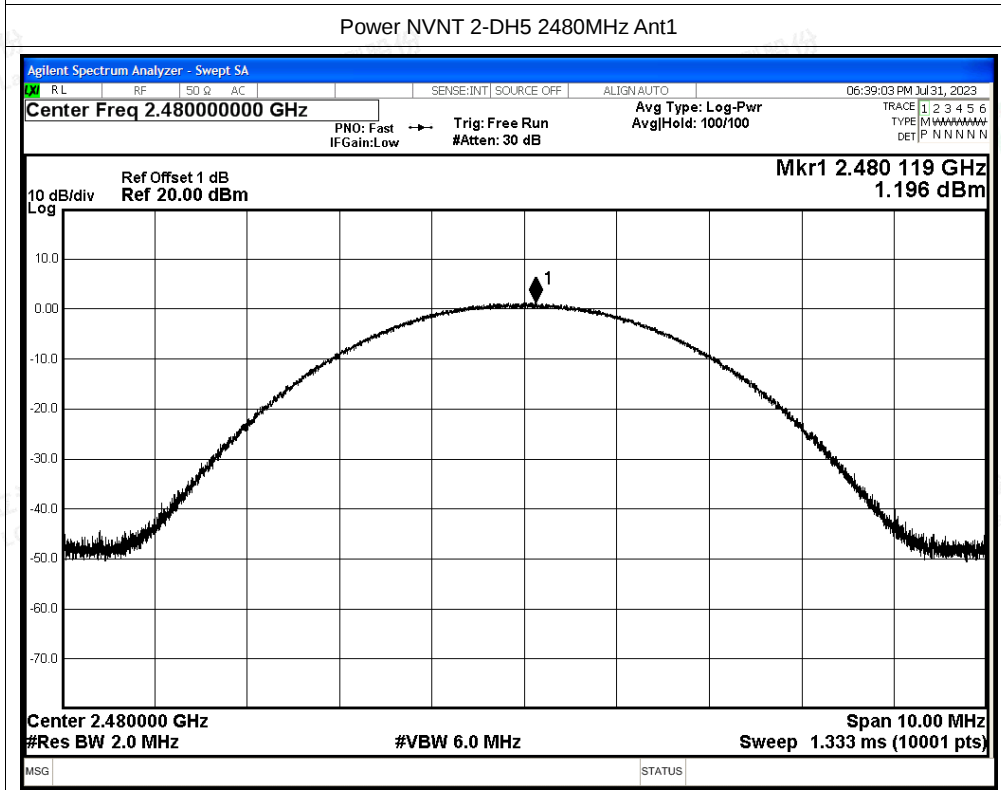
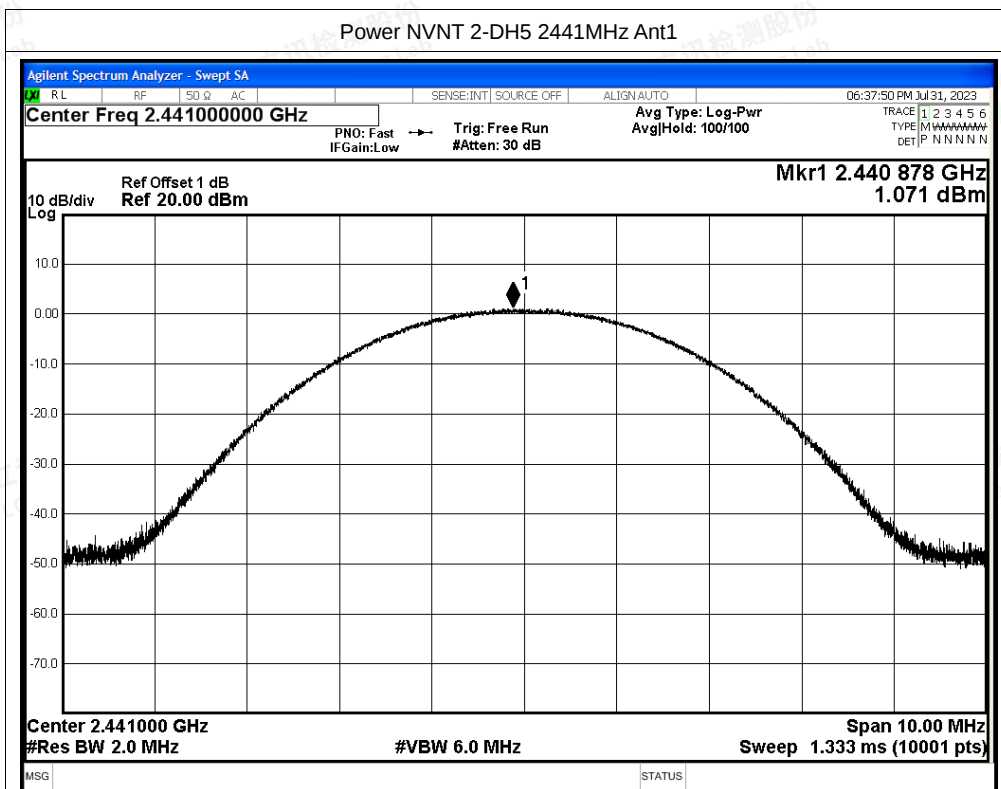
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A.3 Carrier Frequencies Separation

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2402.012	2403.152	1.14	0.692	Pass
NVNT	2-DH5	Ant1	2402.016	2403	0.984	0.879	Pass

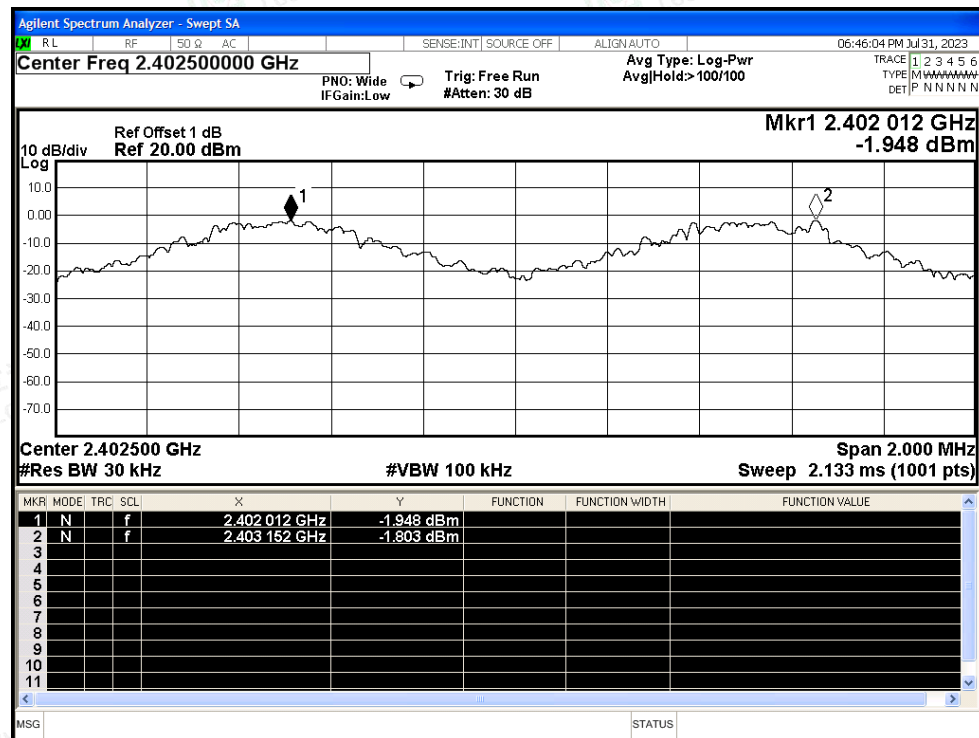


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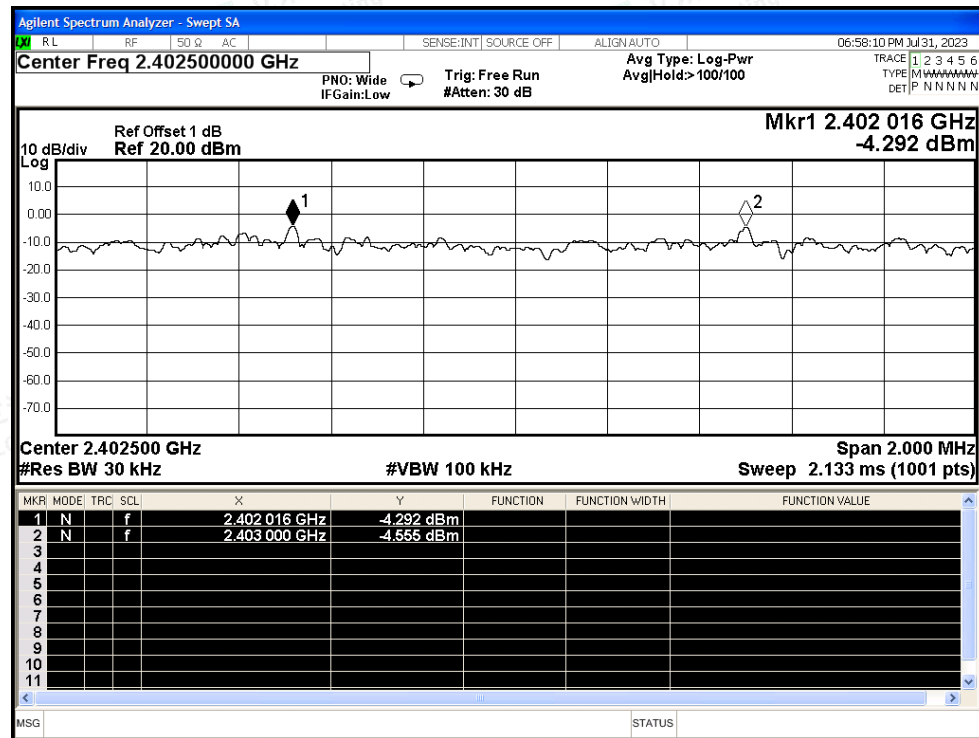


Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 2-DH5 2402MHz Ant1





A.4 Dwell Time

Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.882	273.79	95	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.885	311.58	108	31600	400	Pass

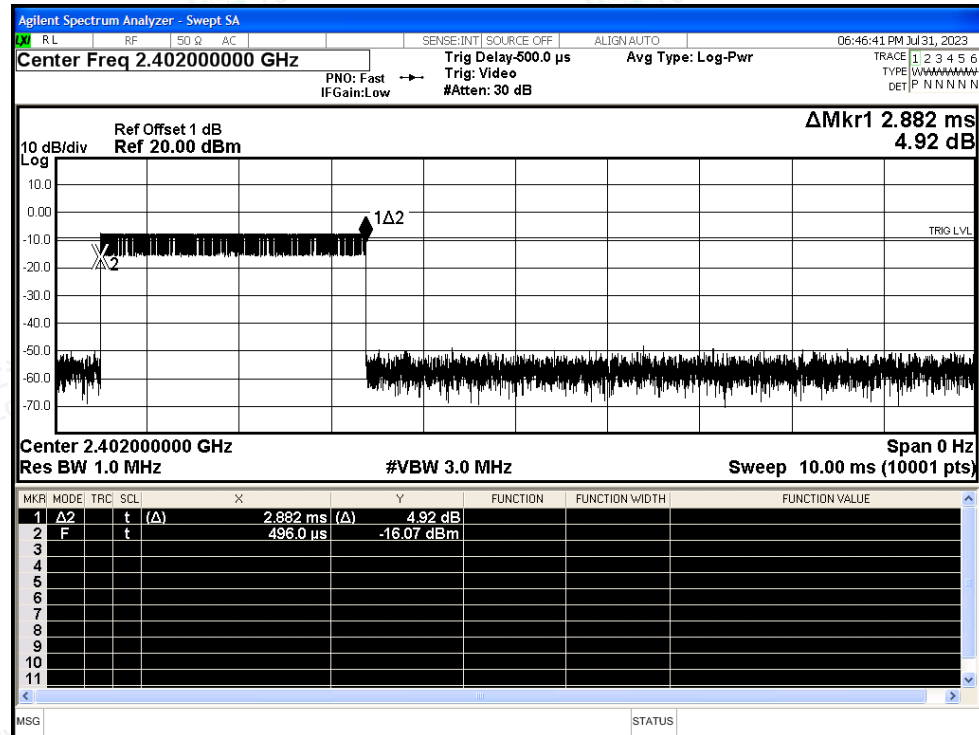


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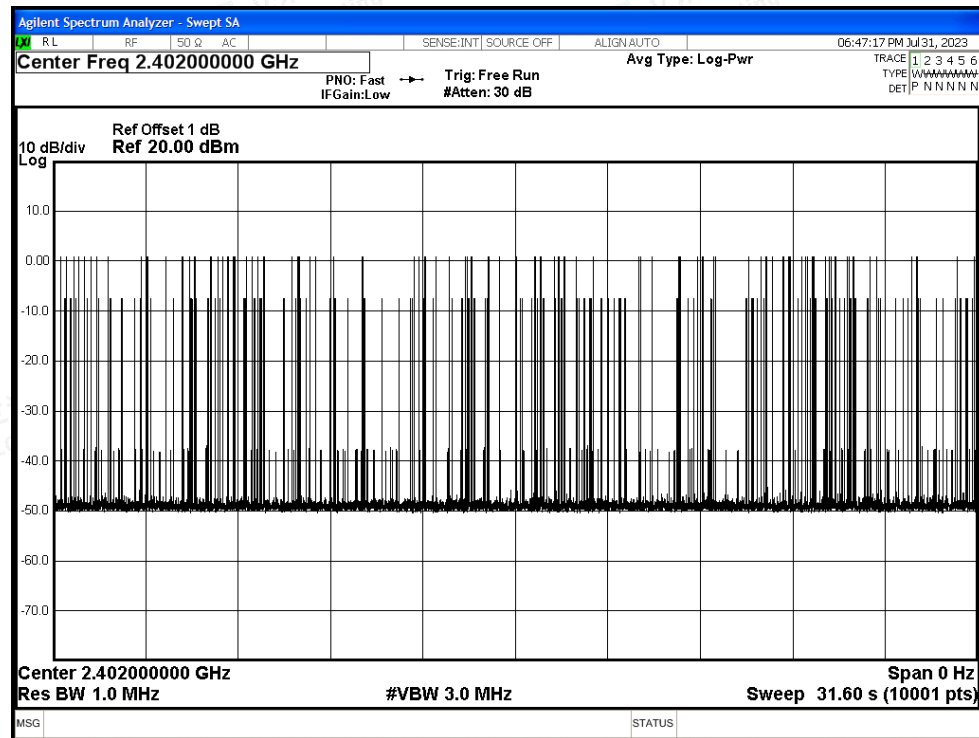


Test Graphs

Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



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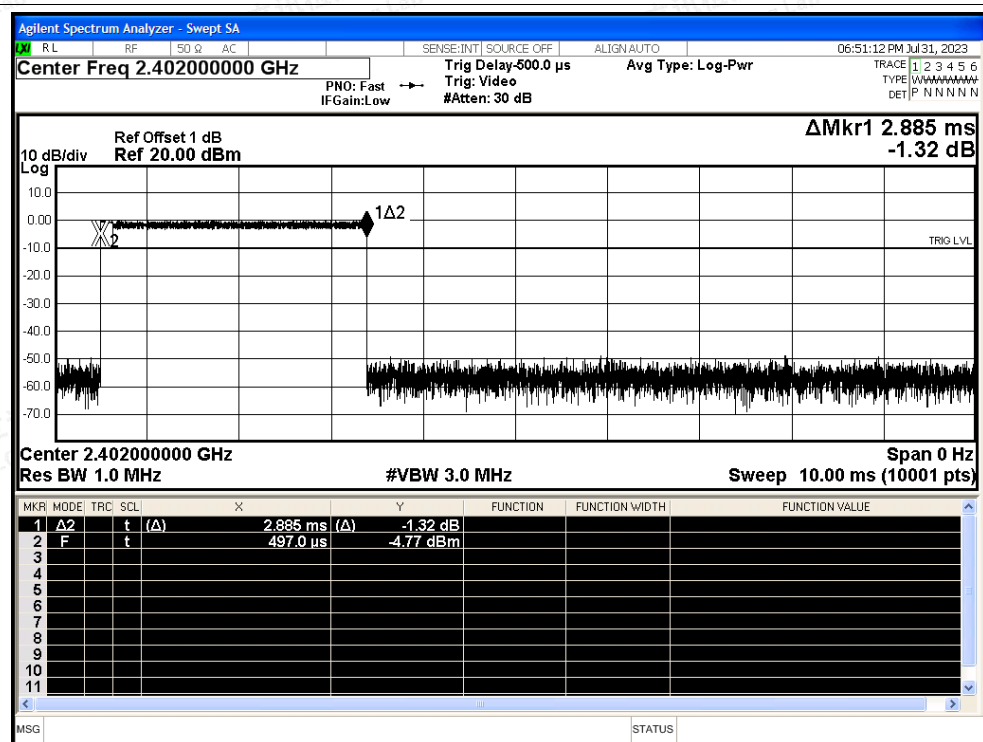
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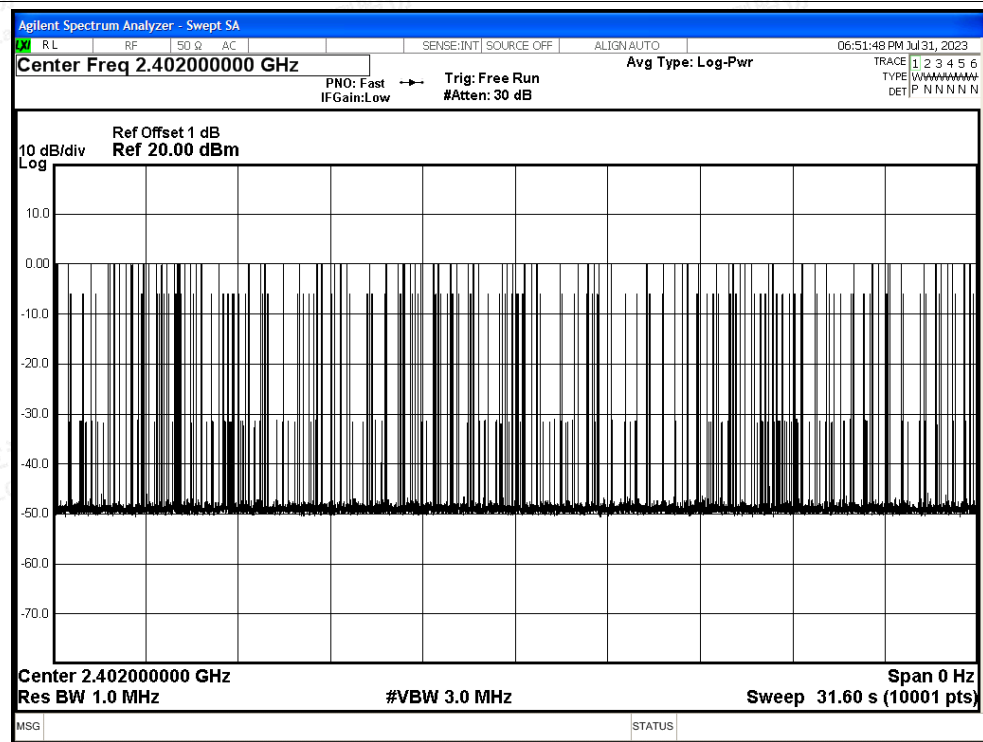
Scan code to check authenticity



Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated





A.5 Number of Hopping Channel

Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass

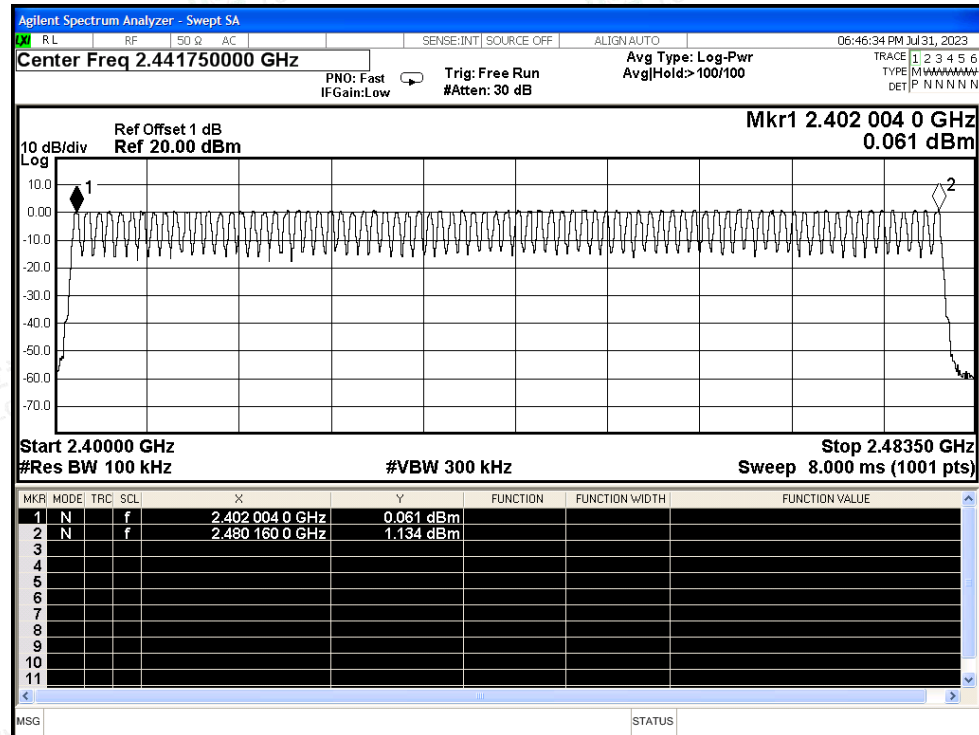


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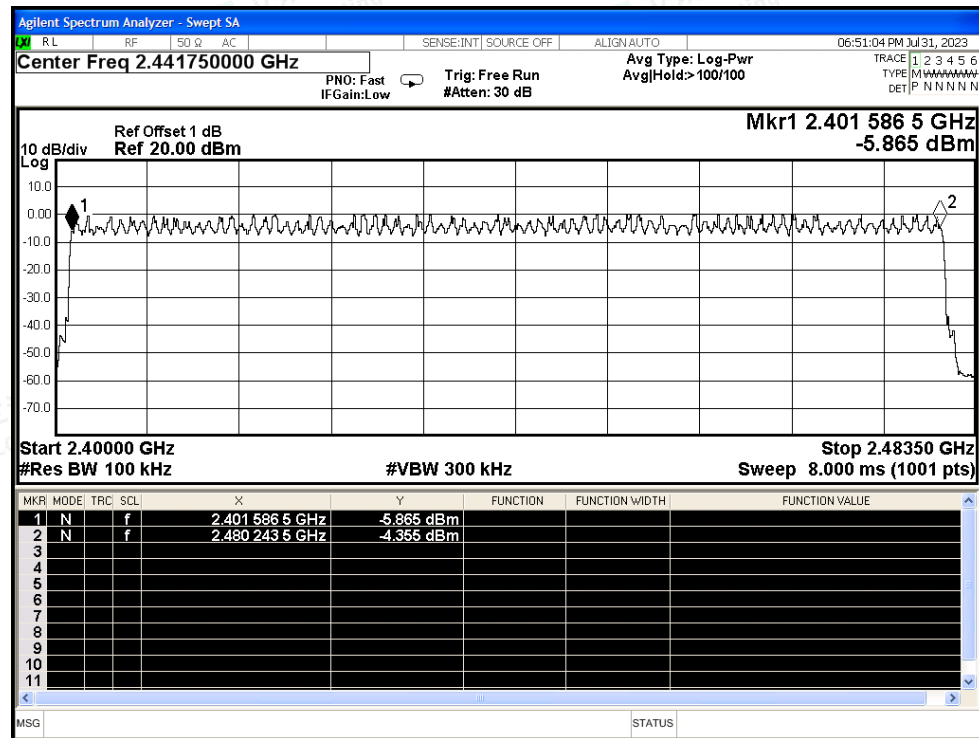


Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-DH5 2402MHz Ant1



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A.6 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-56.14	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-59.37	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-56.02	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-56.91	-20	Pass

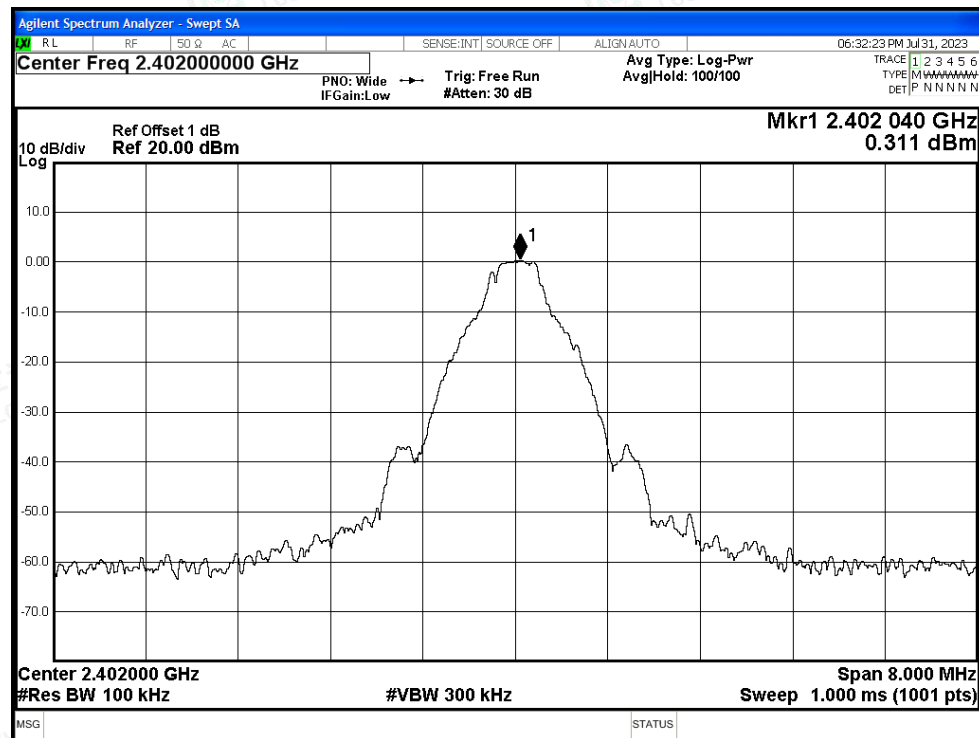


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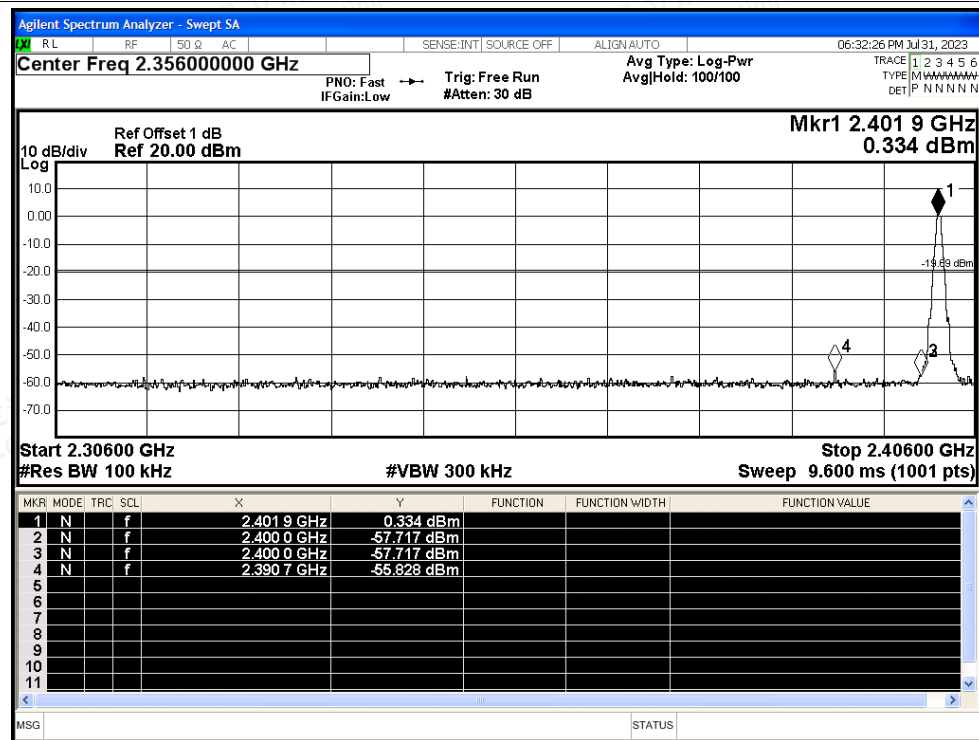


Test Graphs

Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission

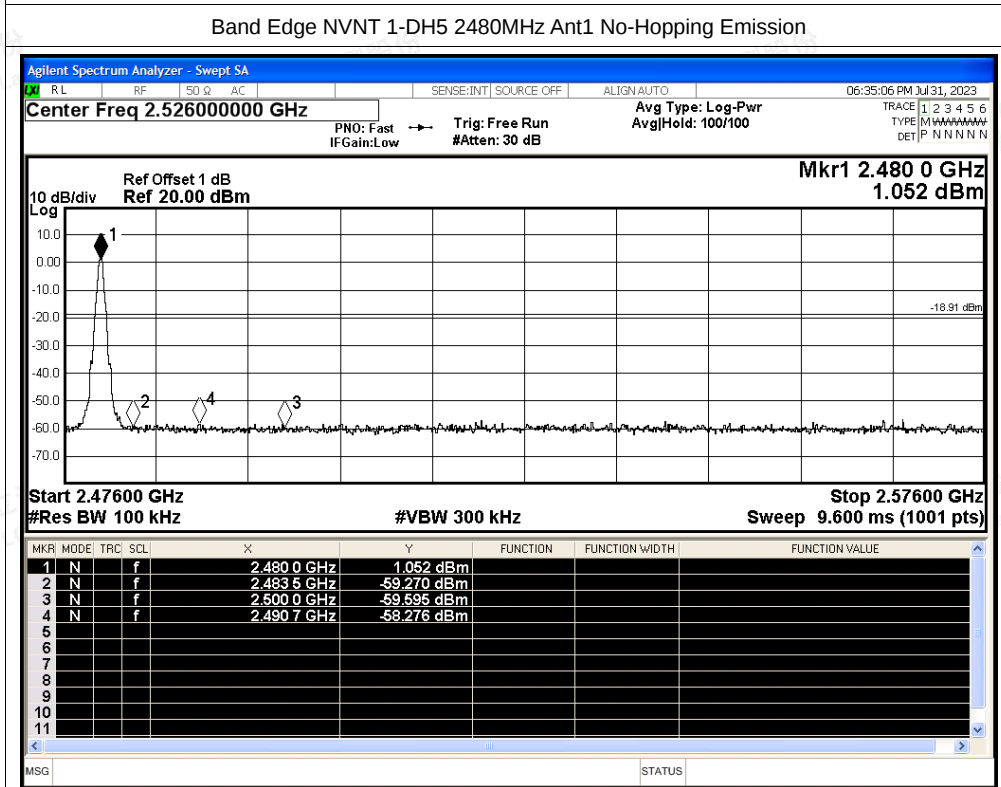
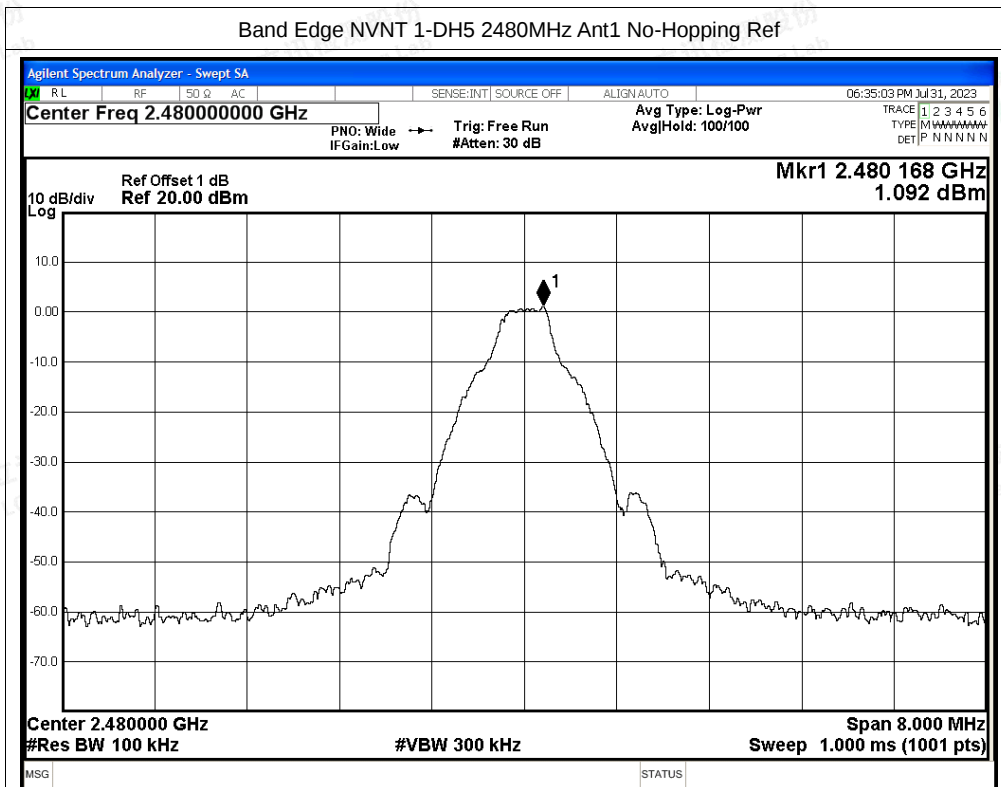


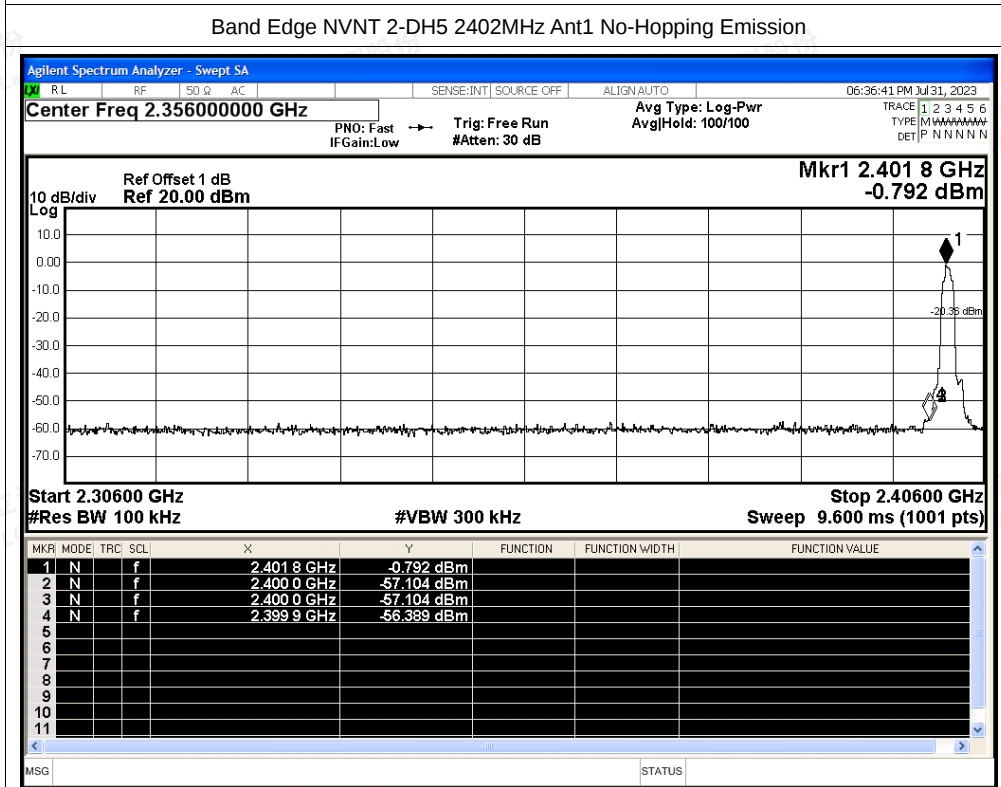
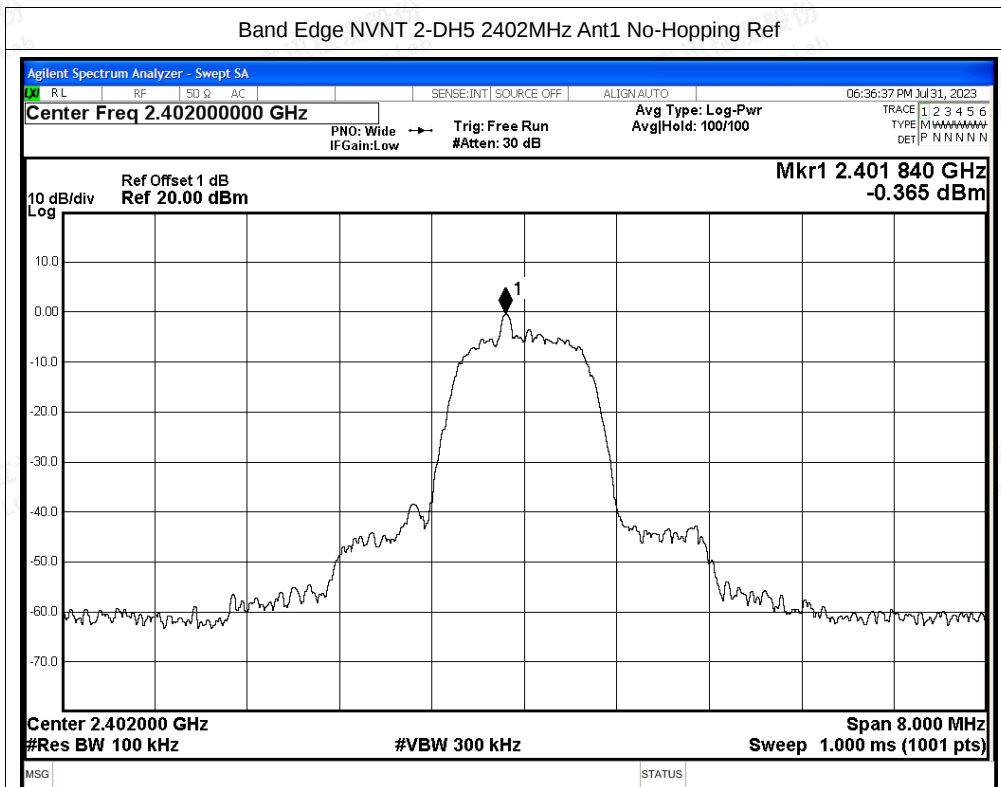
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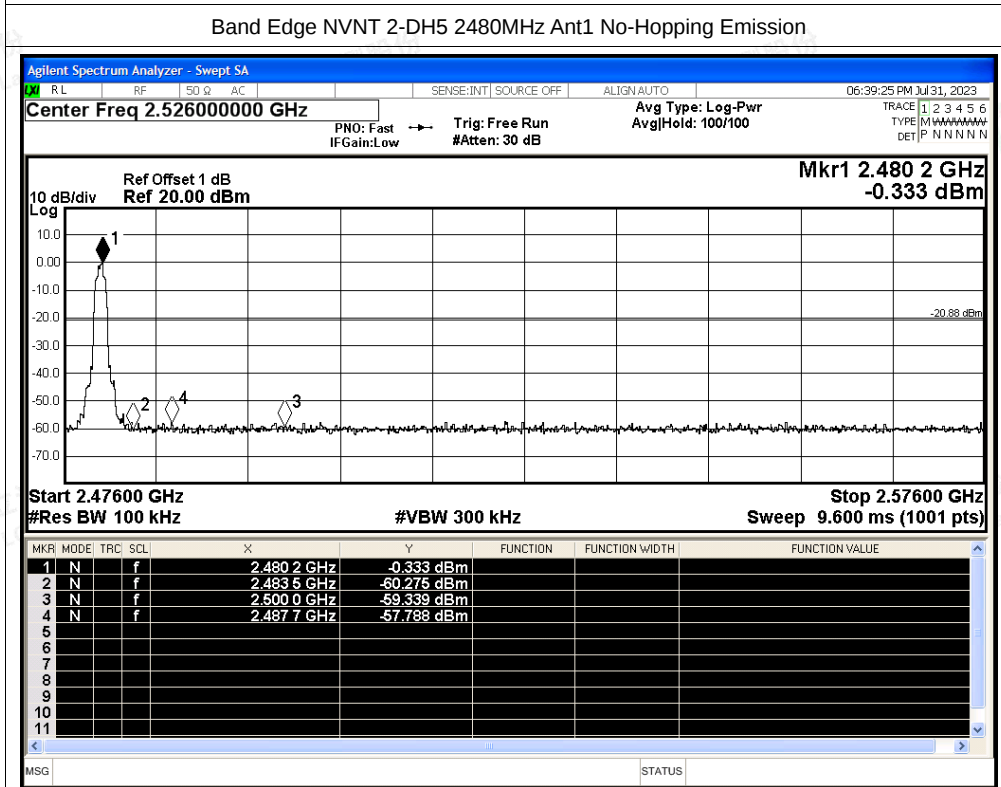
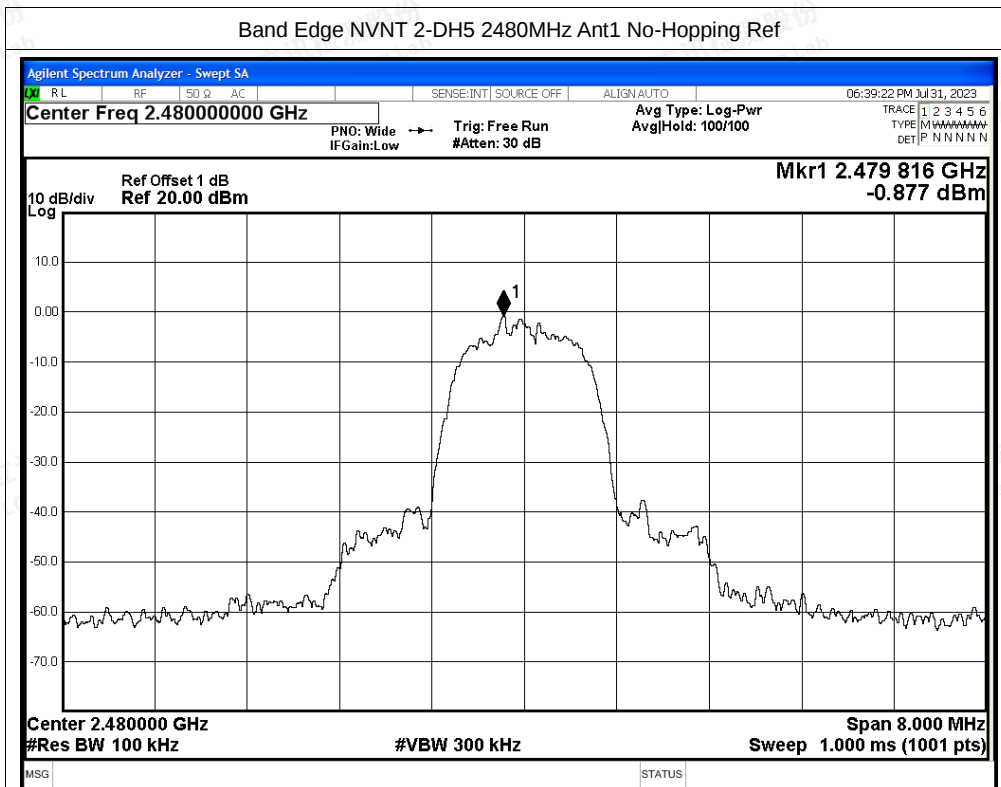
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**(Hopping)**

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-57.12	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-57.99	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-54.88	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-56.9	-20	Pass

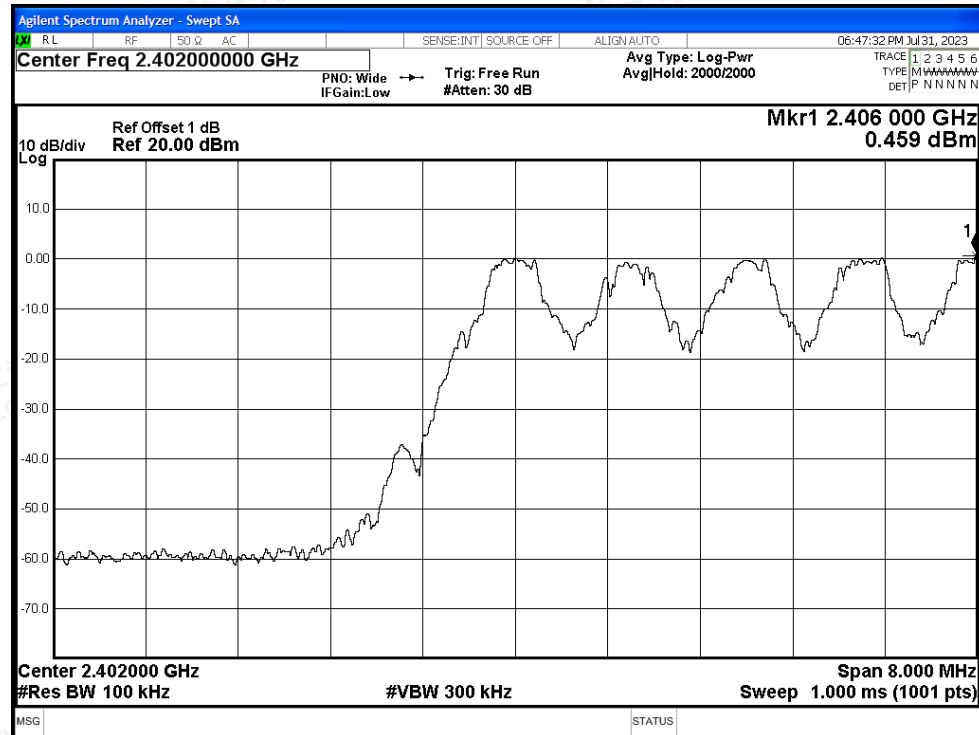


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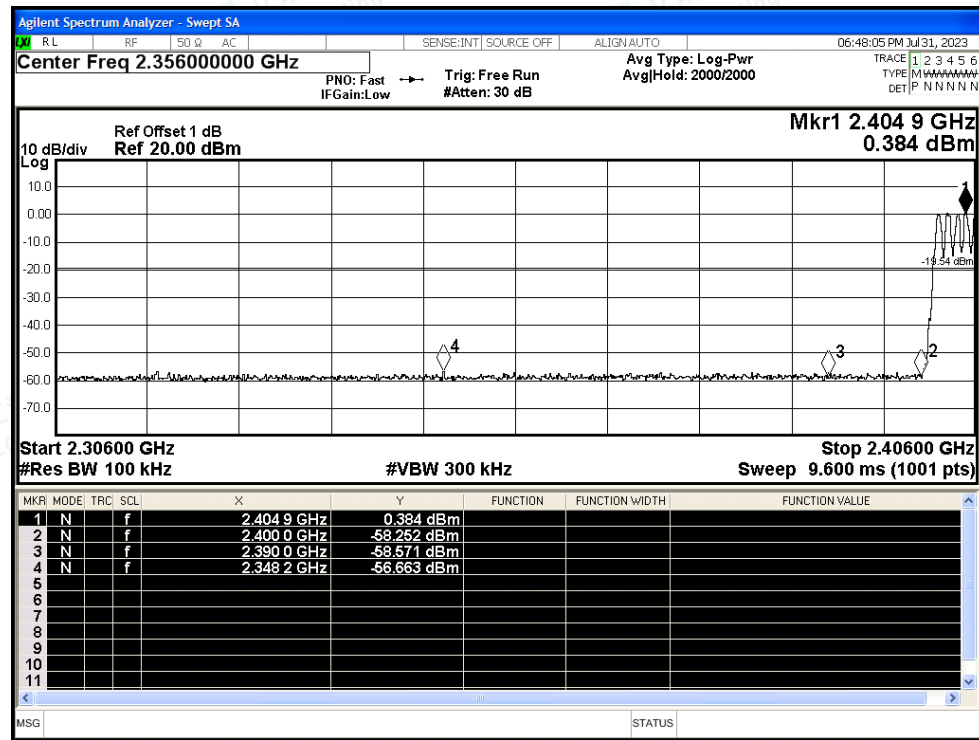


Test Graphs

Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission

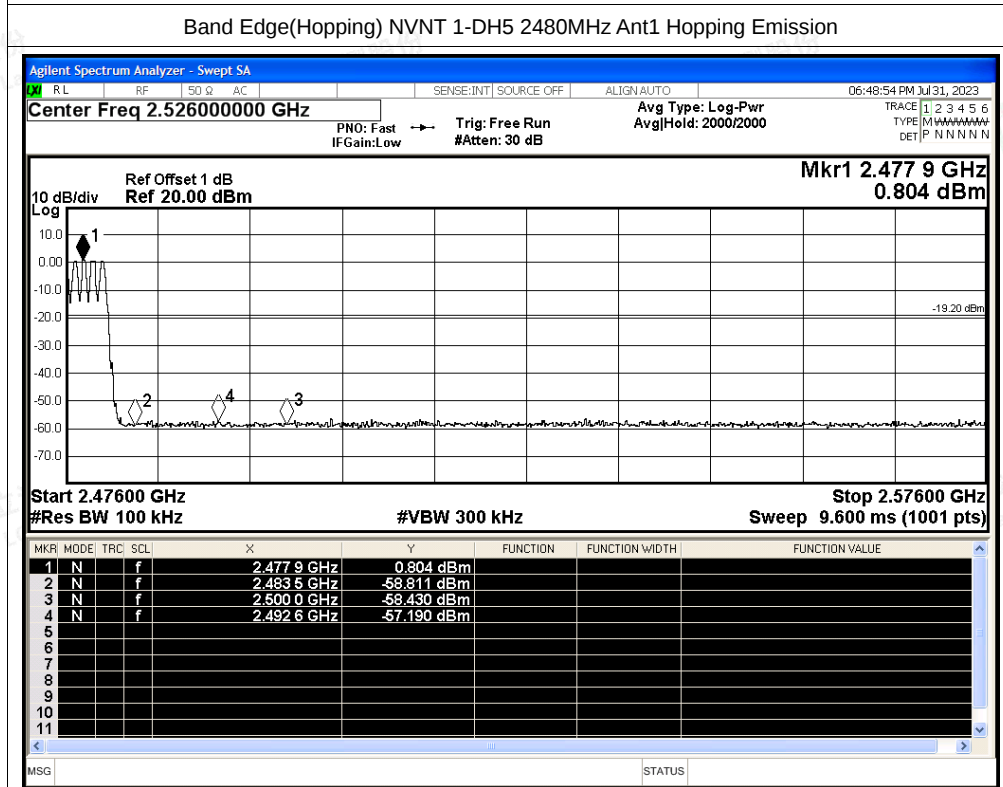
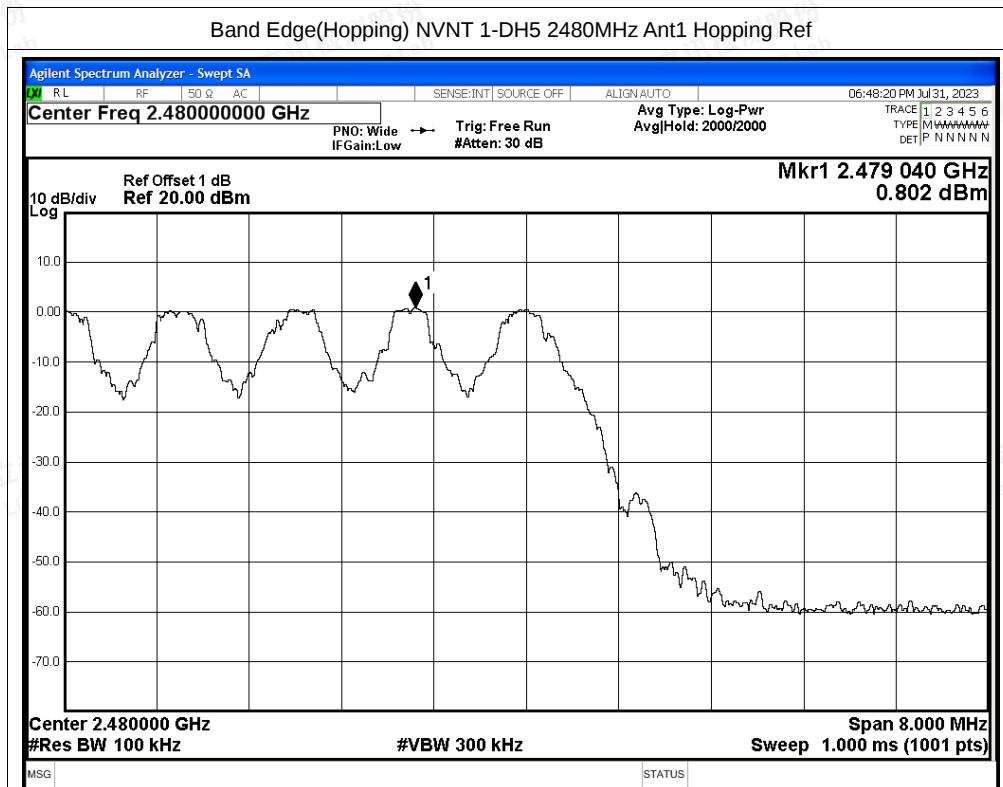


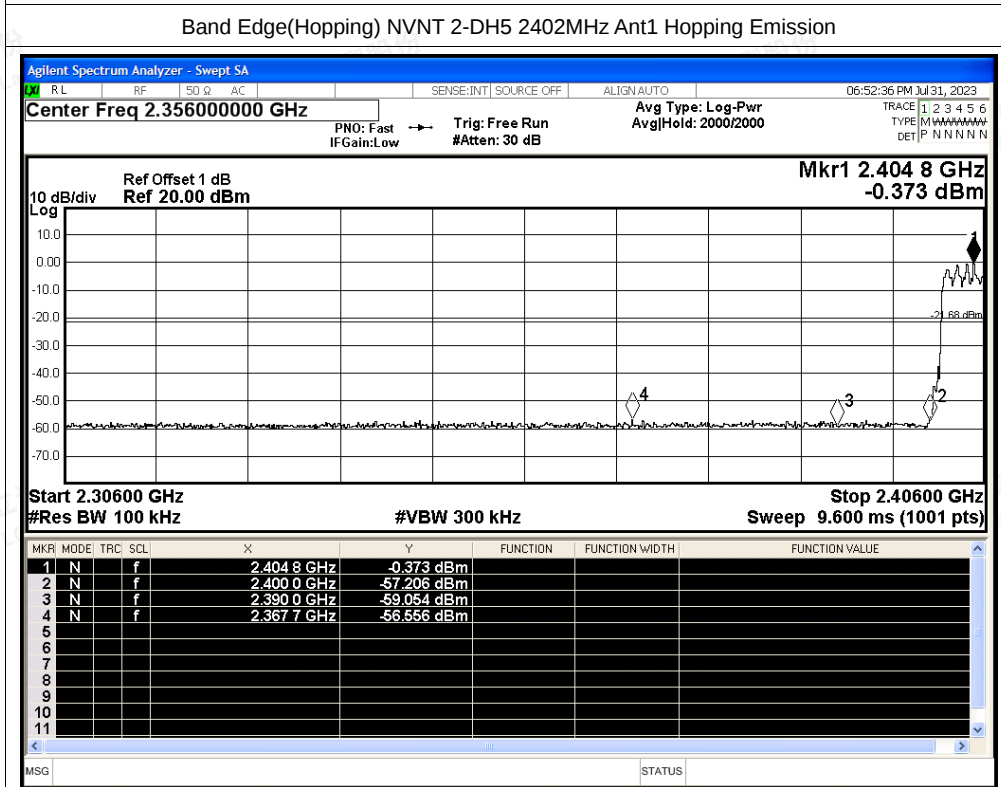
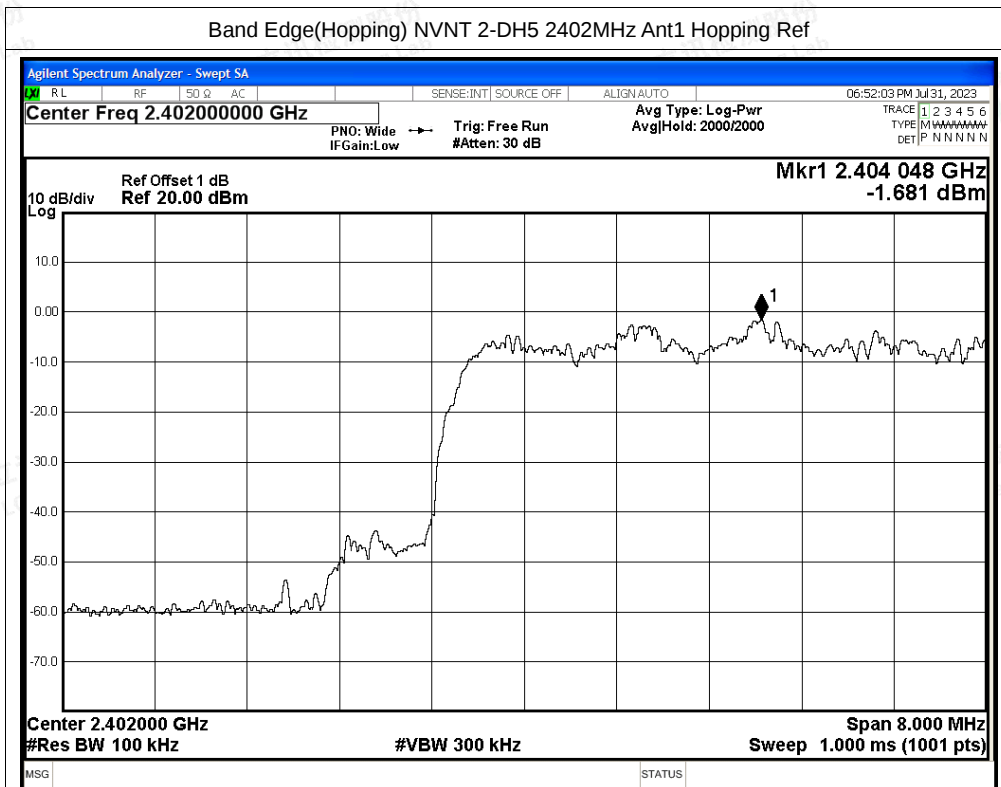
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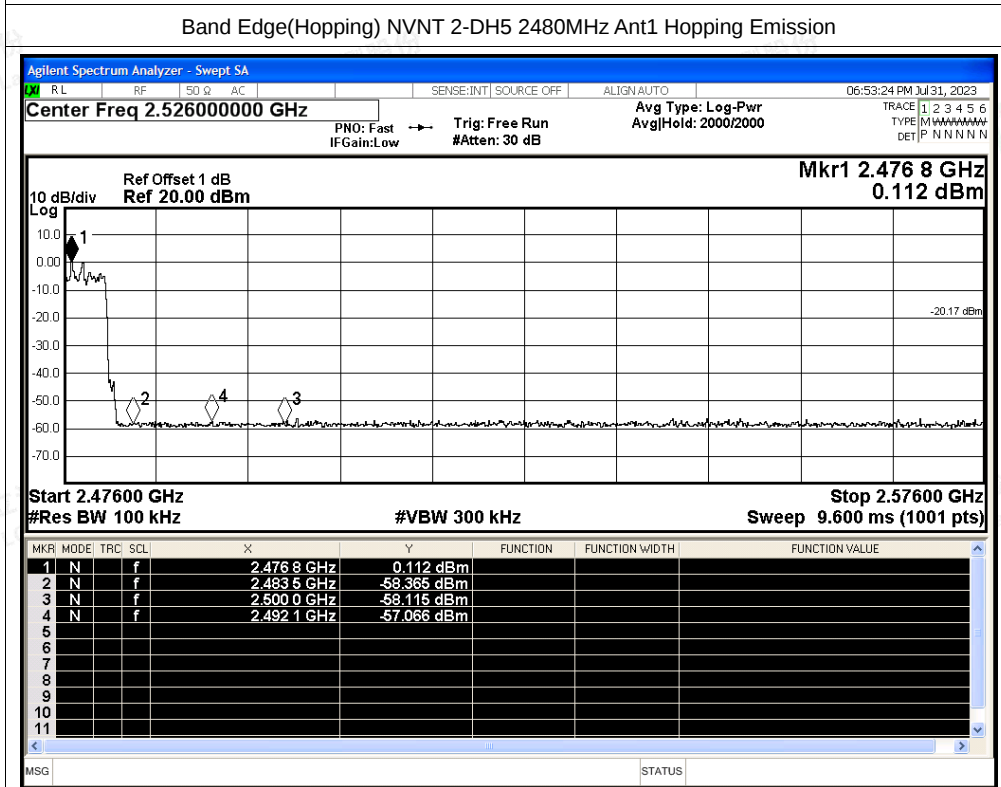
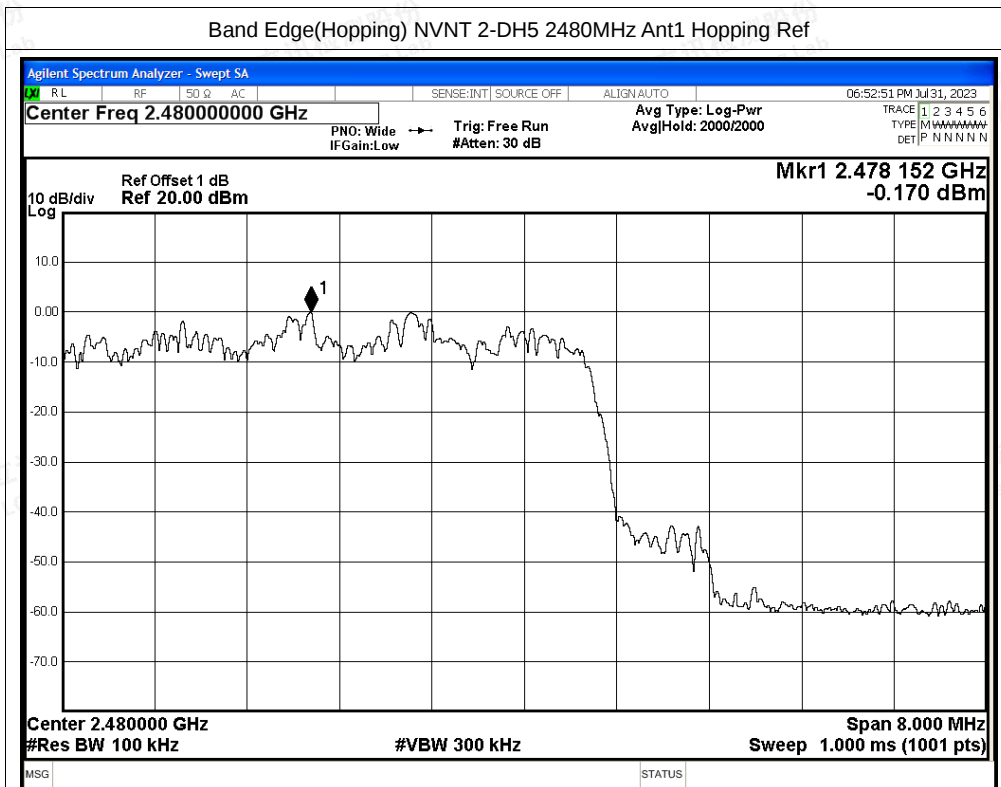


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A.7 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-56.57	-20	Pass
NVNT	1-DH5	2441	Ant1	-56.51	-20	Pass
NVNT	1-DH5	2480	Ant1	-57.32	-20	Pass
NVNT	2-DH5	2402	Ant1	-55.31	-20	Pass
NVNT	2-DH5	2441	Ant1	-56.1	-20	Pass
NVNT	2-DH5	2480	Ant1	-56.03	-20	Pass

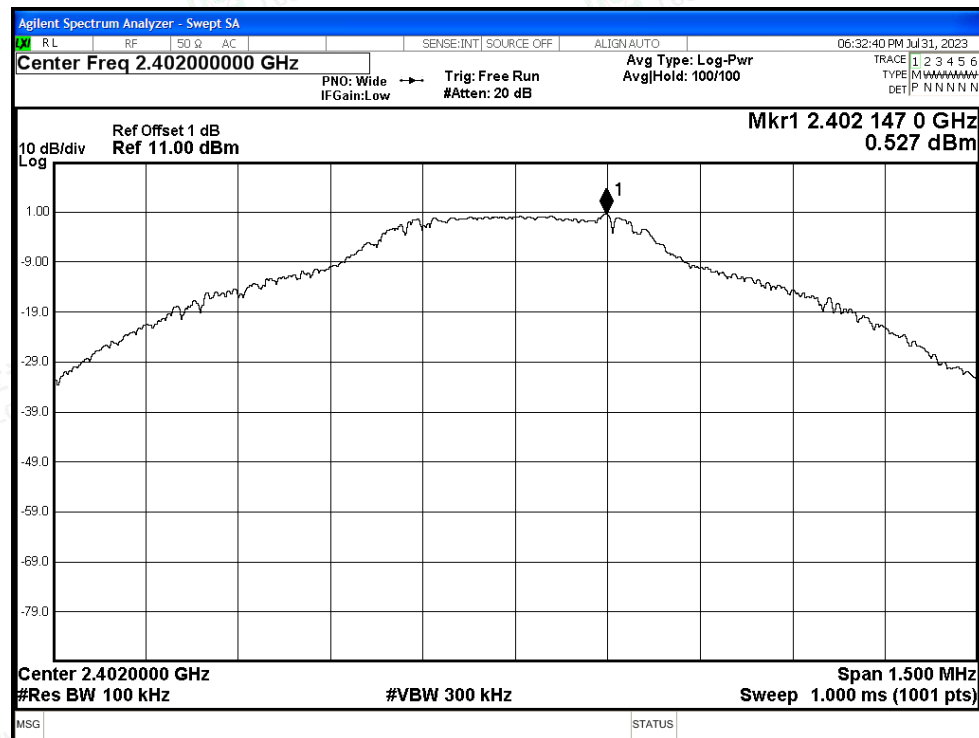


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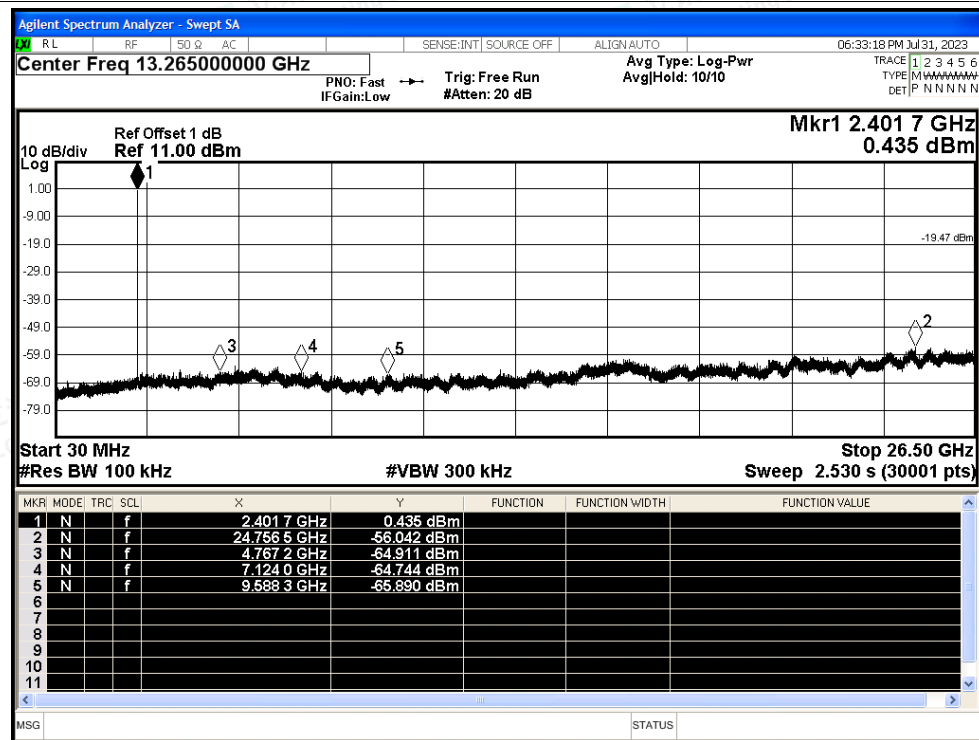


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



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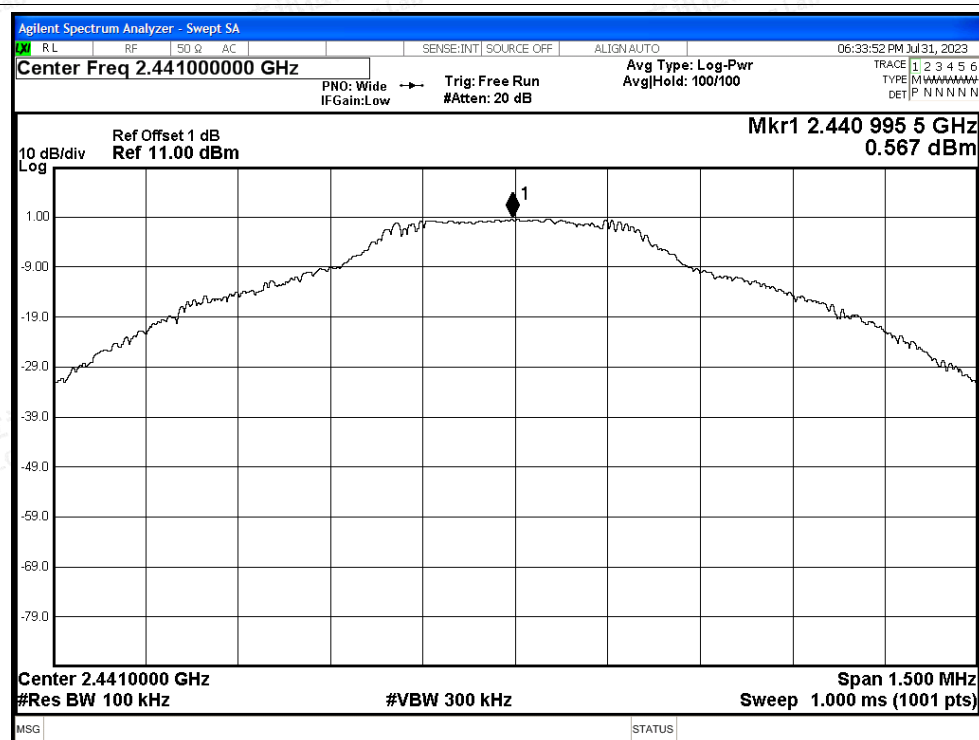
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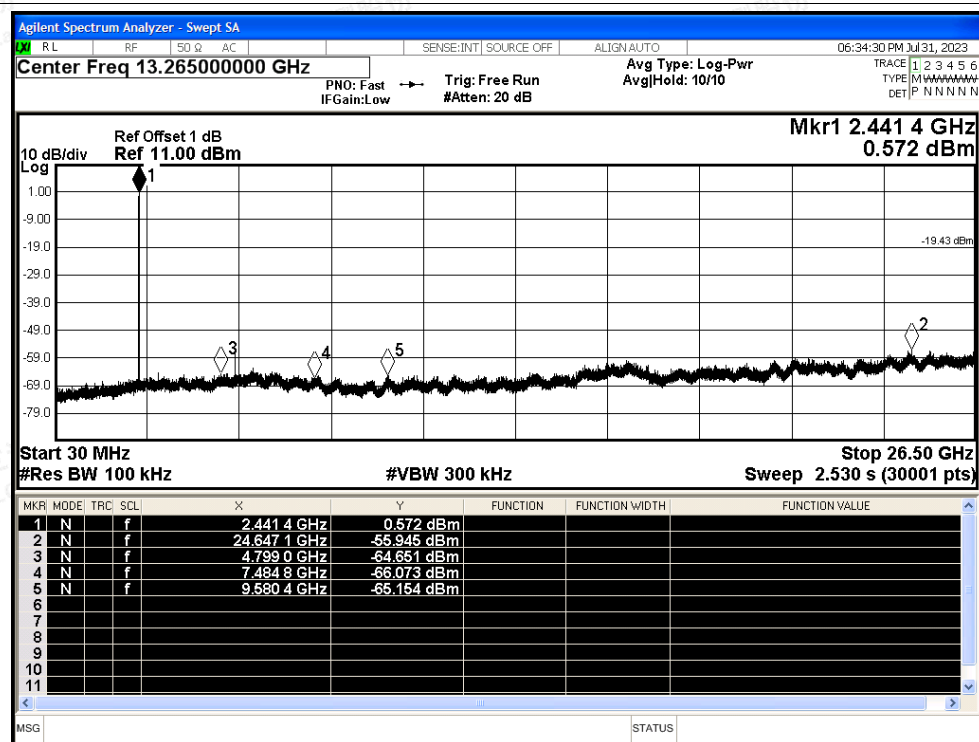
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Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission



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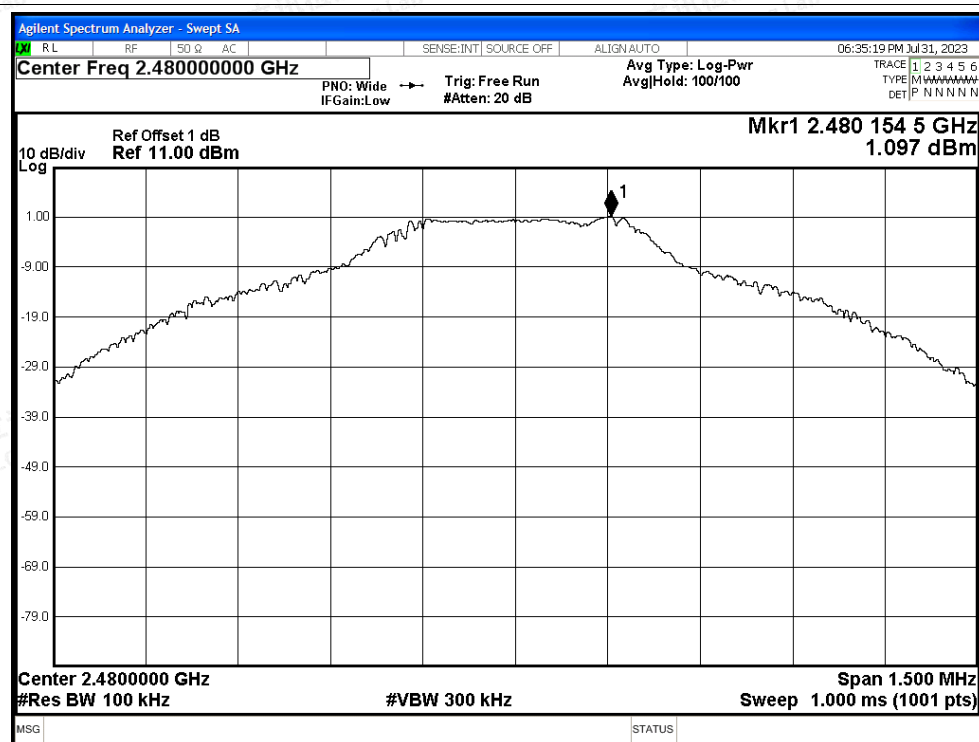
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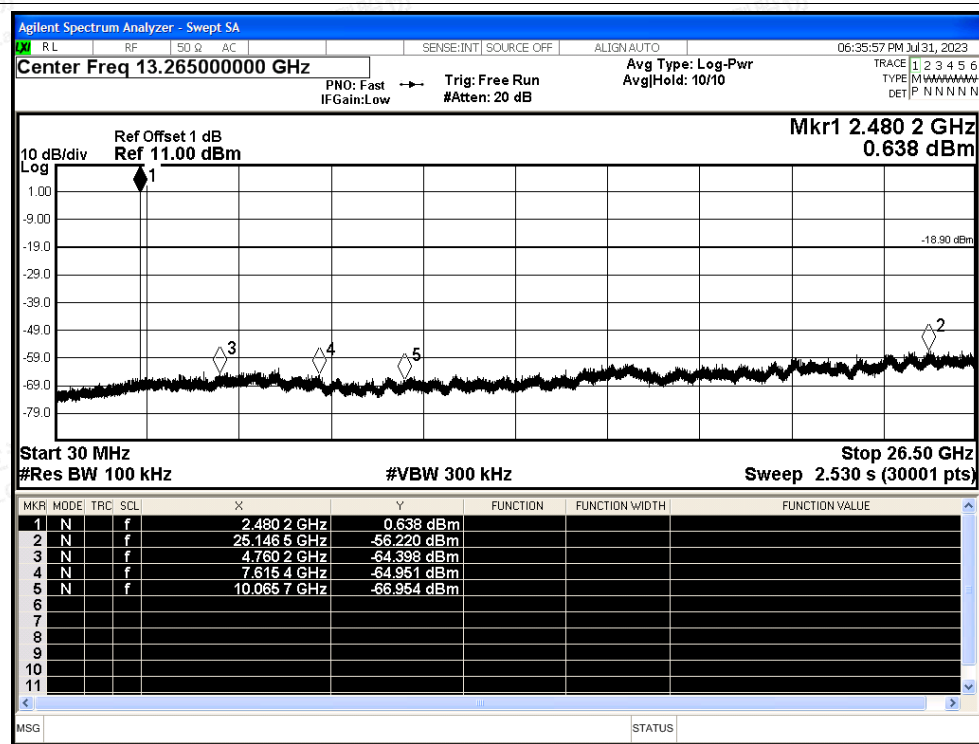
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Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref

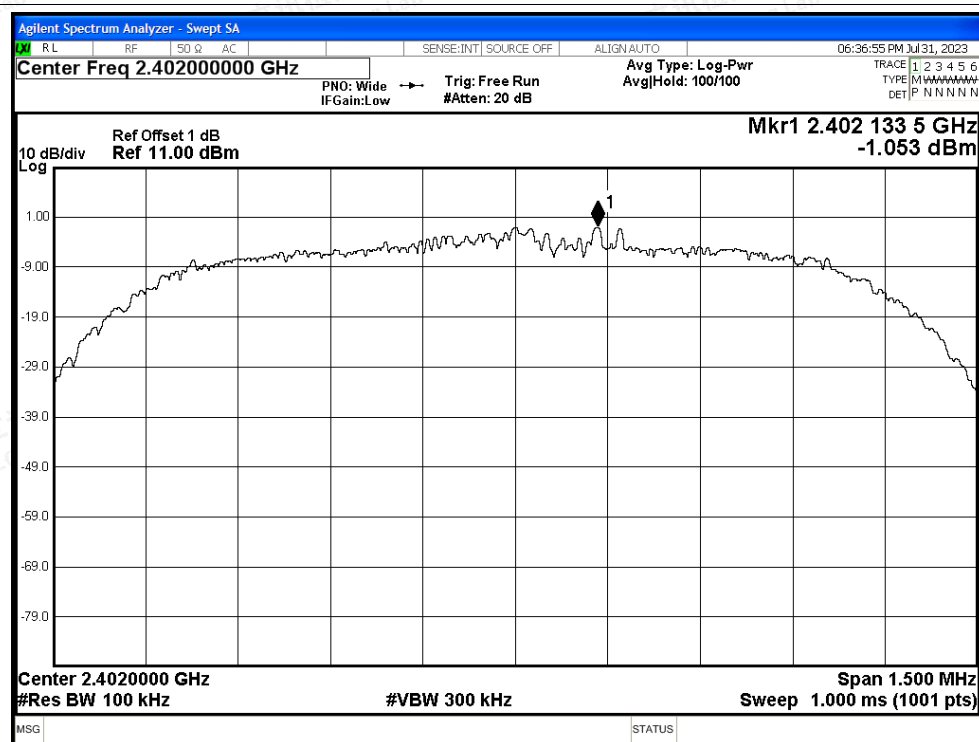


Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission

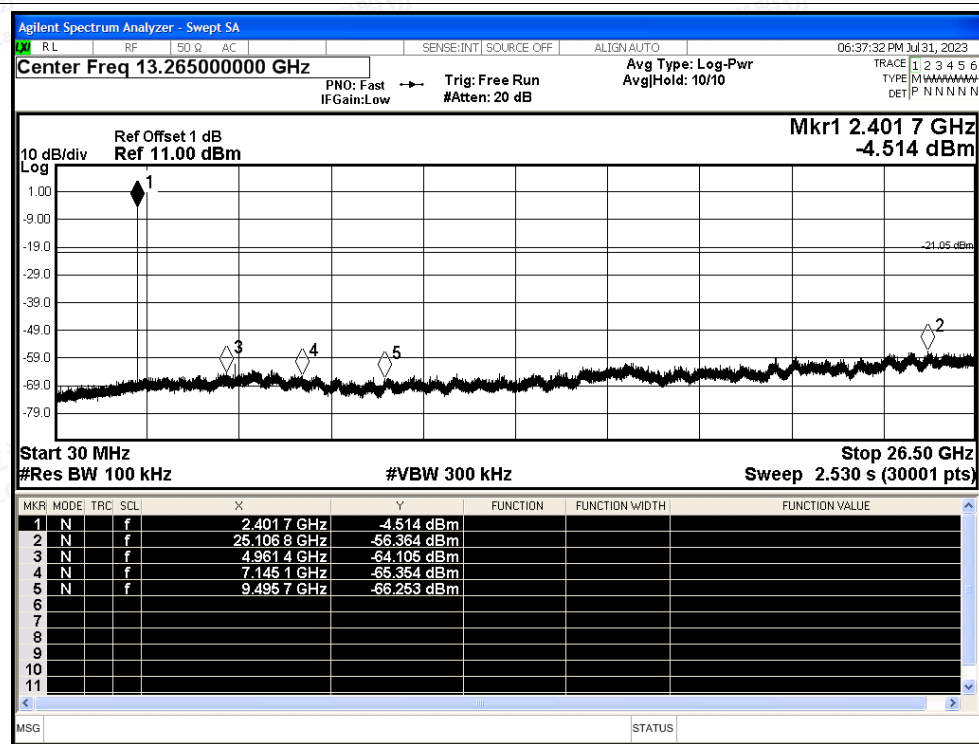




Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref

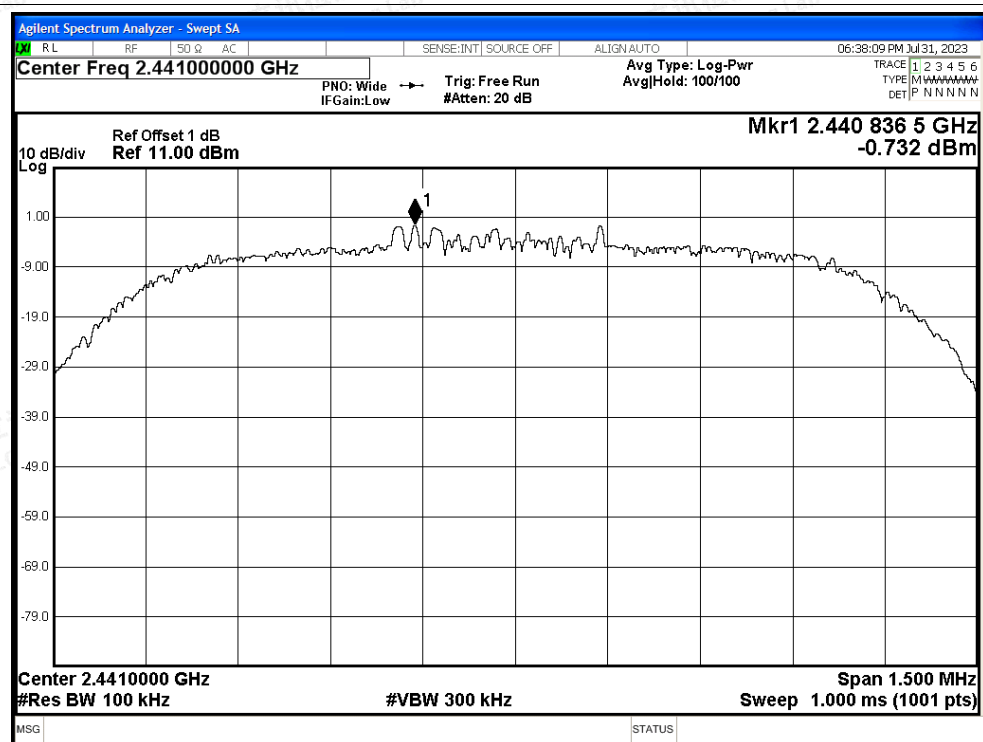


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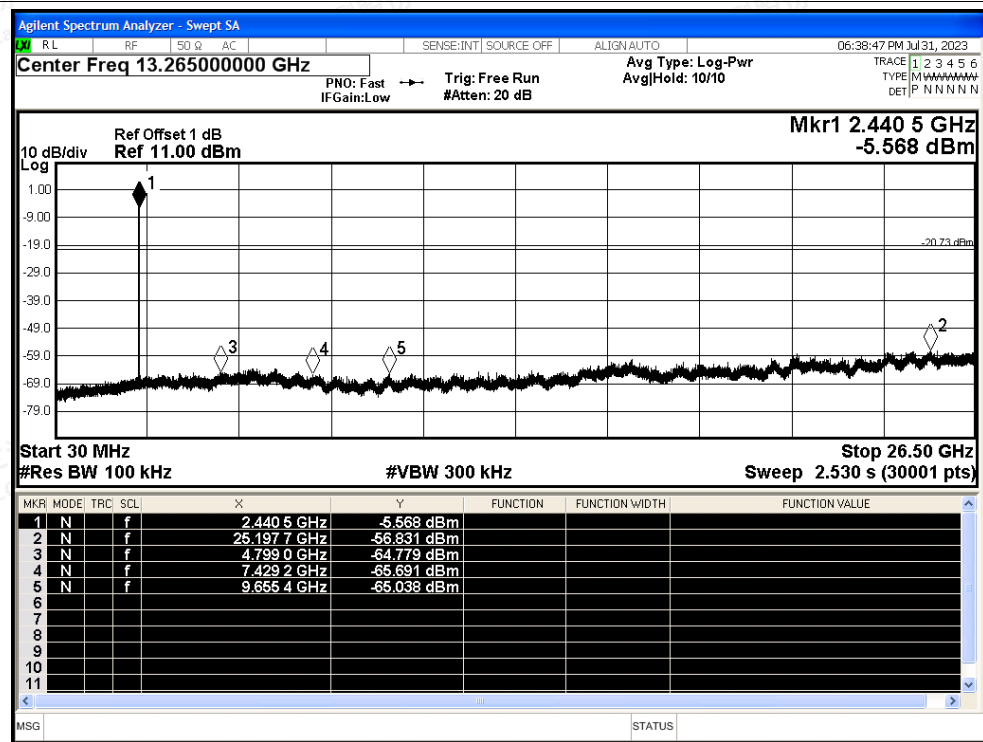




Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



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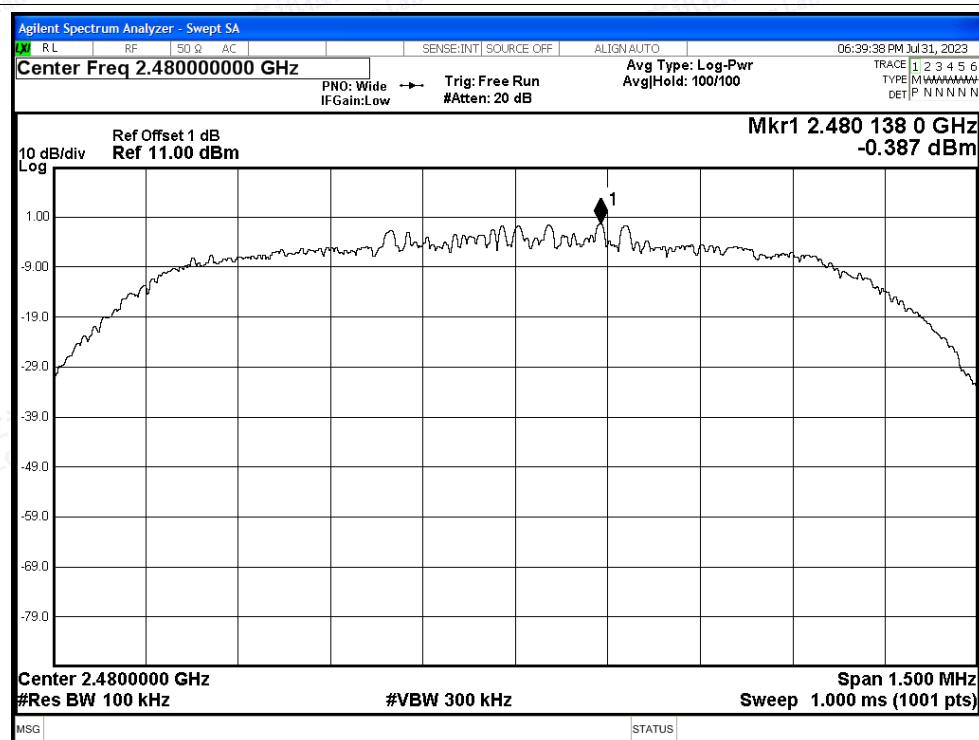
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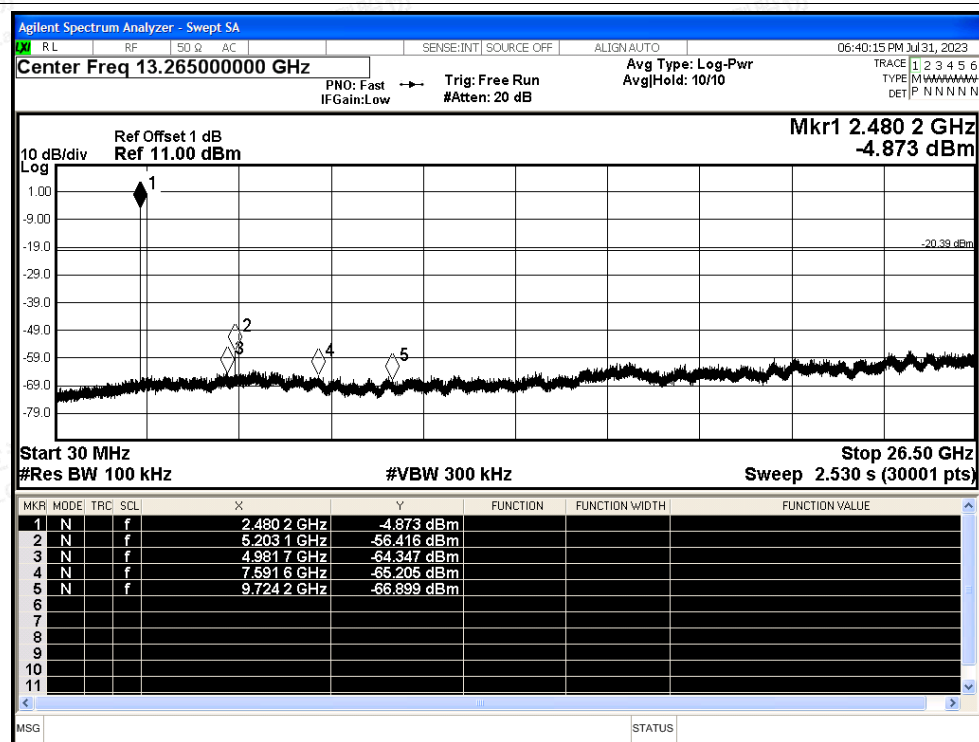
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Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission





A.8 Restrict Band

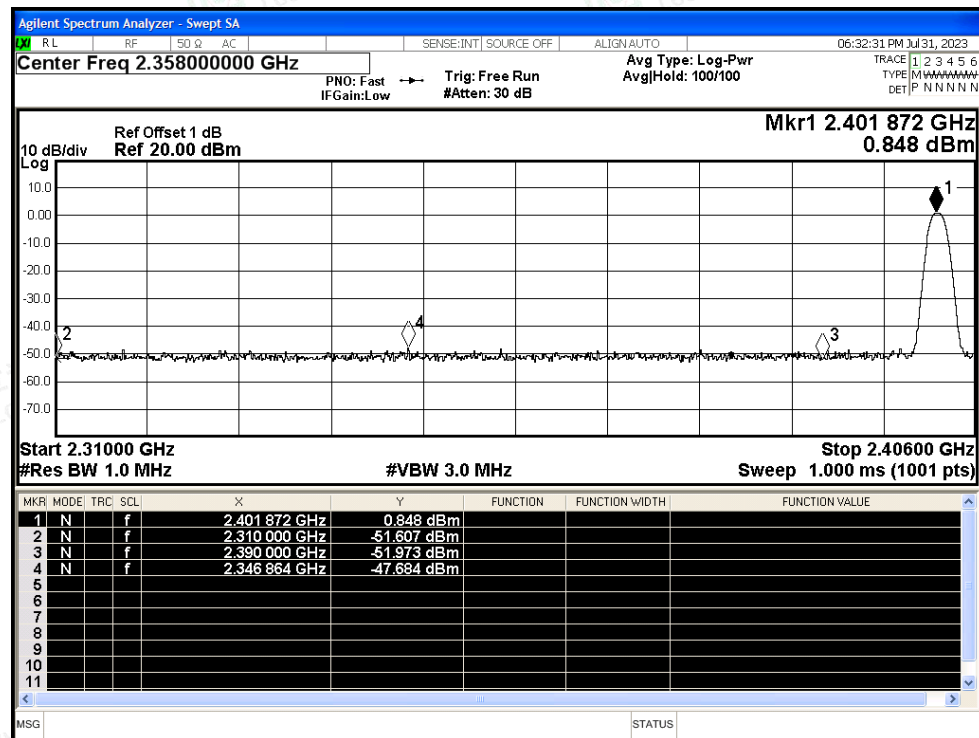
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-51.61	2	45.65	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-61.04	2	36.22	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2346.864	-47.68	2	49.58	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2369.136	-60.52	2	36.74	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-51.97	2	45.29	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-60.69	2	36.57	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-50.18	2	47.08	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-60.05	2	37.21	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2496.544	-48.05	2	49.21	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.848	-59.99	2	37.27	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-52.54	2	44.72	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-60.43	2	36.83	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-50.61	2	46.65	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-61.05	2	36.21	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2332.08	-47.77	2	49.49	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2384.976	-60.47	2	36.79	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-50.91	2	46.35	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-60.56	2	36.7	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-50	2	47.26	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-60.14	2	37.12	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2485.168	-47.75	2	49.51	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.872	-60.11	2	37.15	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-49.41	2	47.85	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-60.69	2	36.57	Average	54	Pass



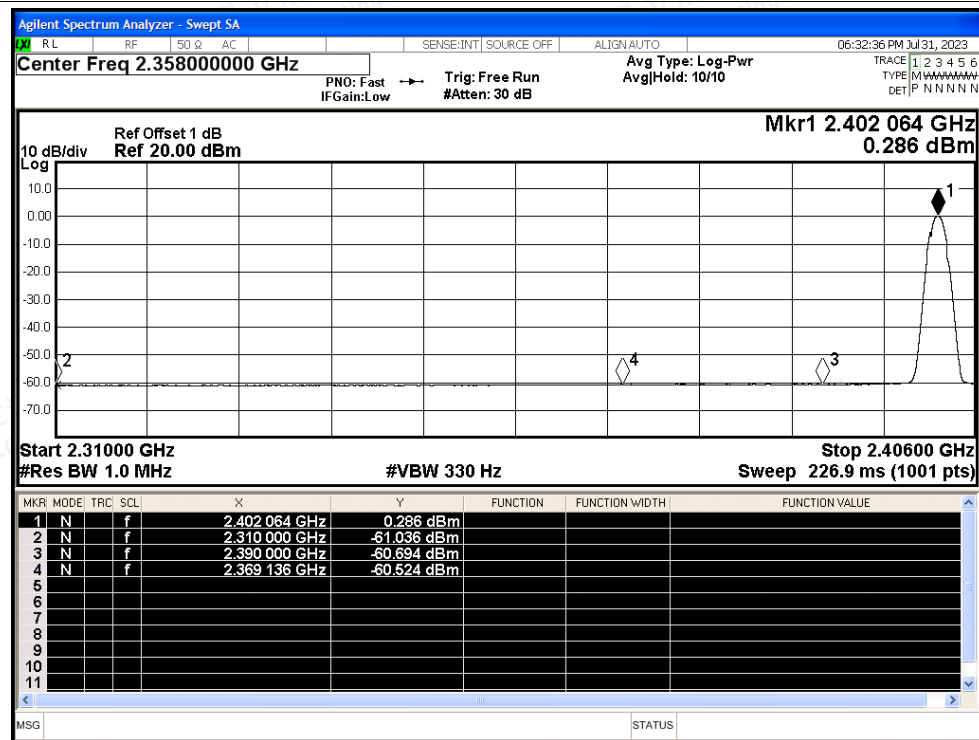


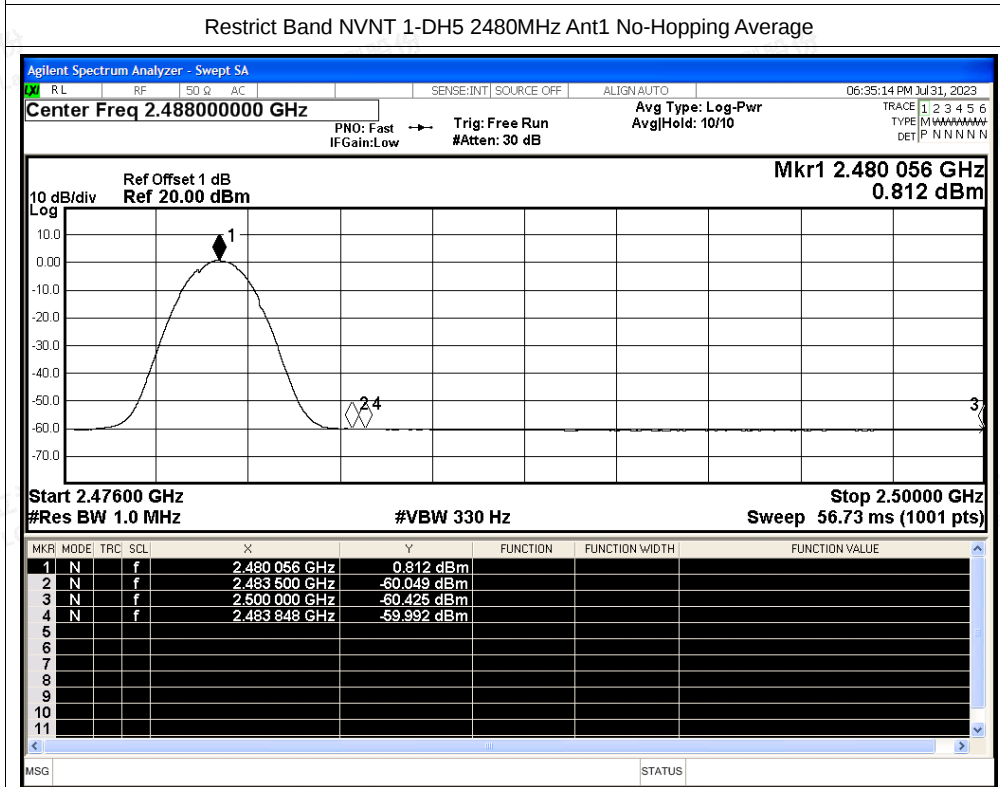
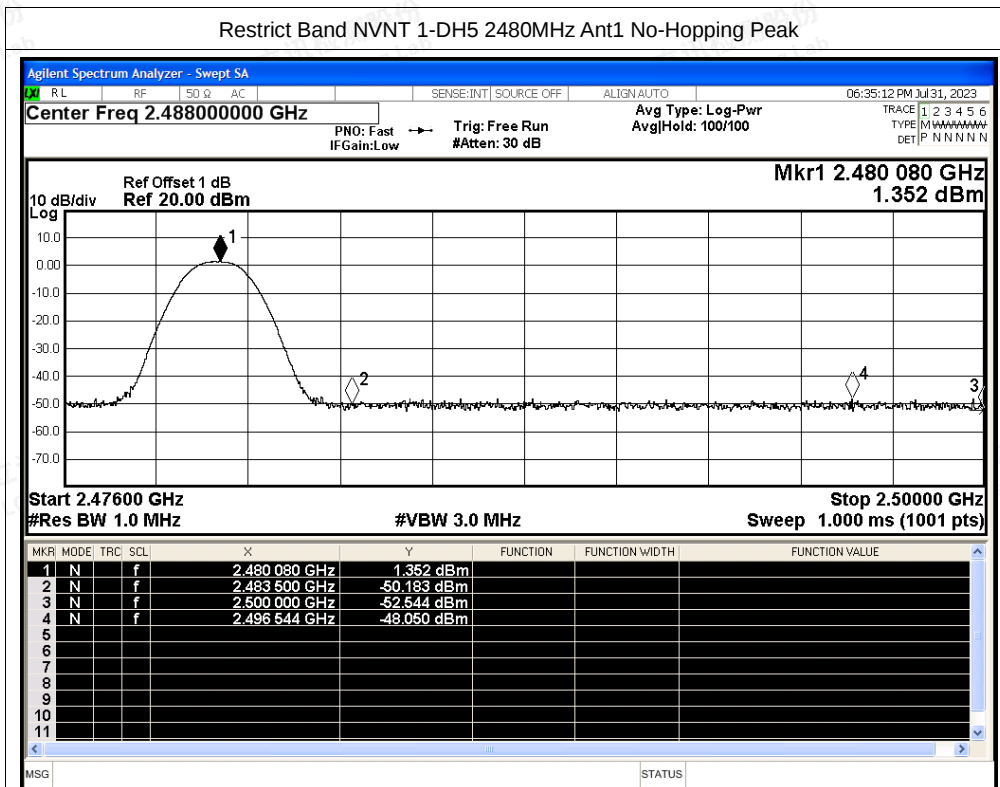
Test Graphs

Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



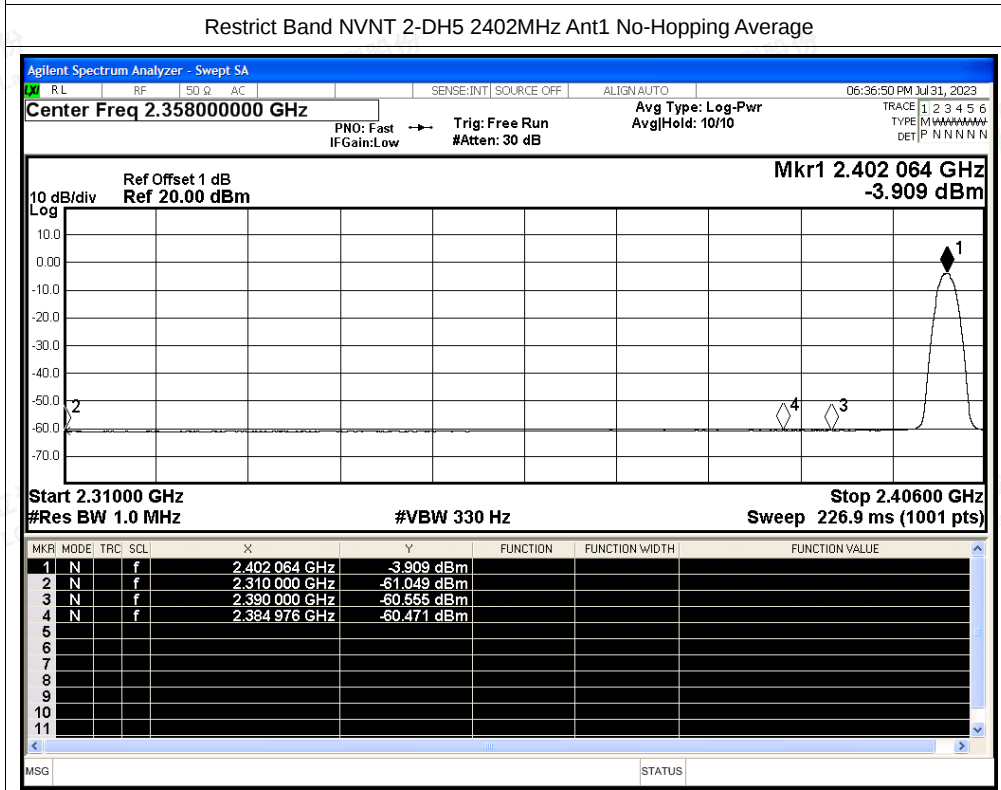
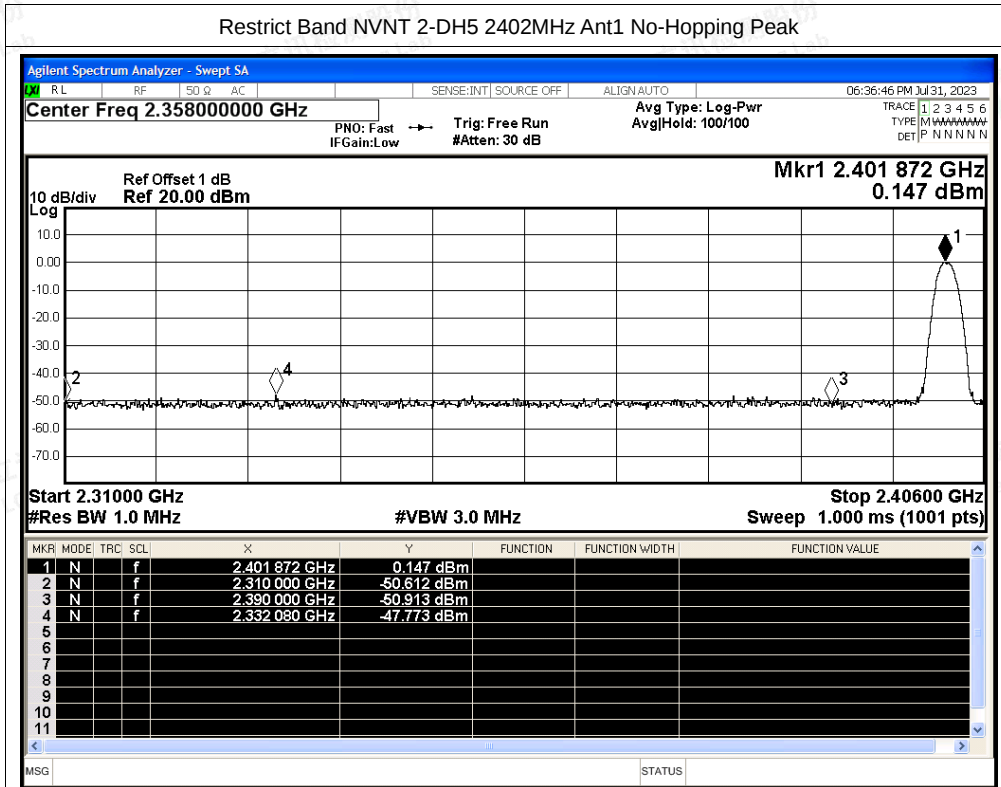


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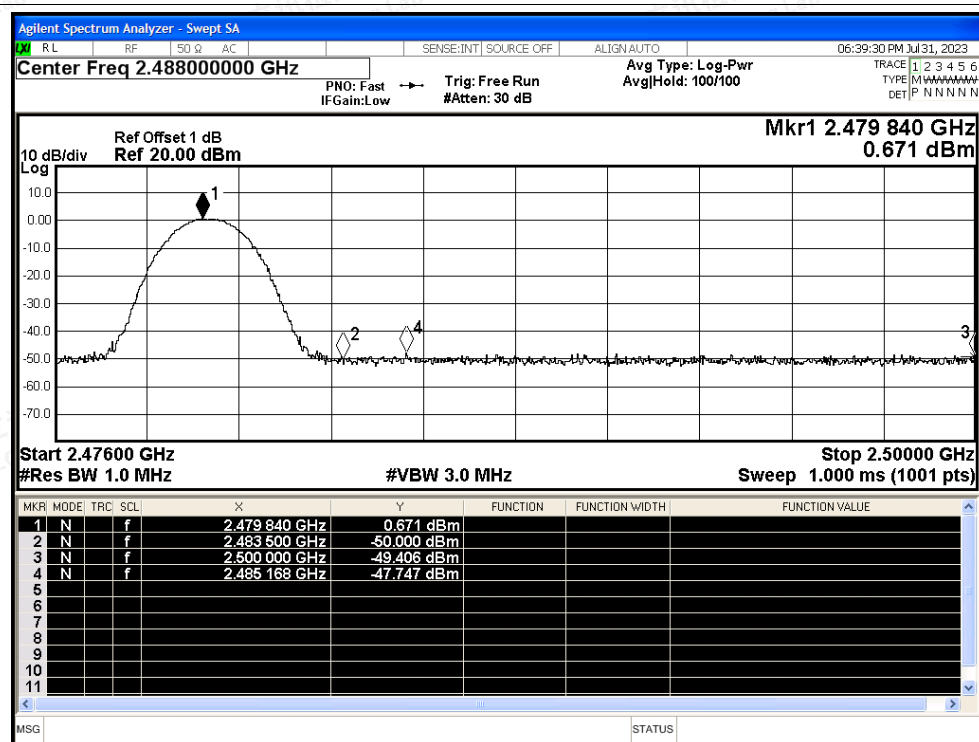
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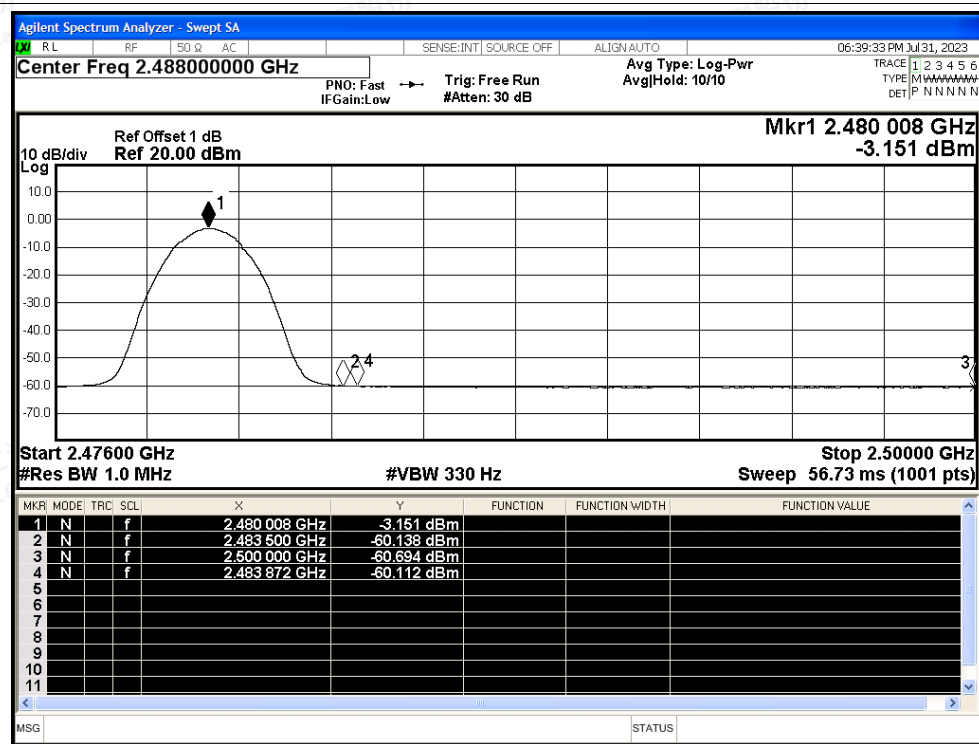




Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak



Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average



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