



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: TWS Bluetooth Headset

Test Model: Z51 Pro

Environmental Conditions

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





A.1 -20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	0.896	0	Pass
NVNT	1-DH5	2441	Ant1	0.938	0	Pass
NVNT	1-DH5	2480	Ant1	0.95	0	Pass
NVNT	2-DH5	2402	Ant1	1.299	0	Pass
NVNT	2-DH5	2441	Ant1	1.268	0	Pass
NVNT	2-DH5	2480	Ant1	1.3	0	Pass
NVNT	3-DH5	2402	Ant1	1.277	0	Pass
NVNT	3-DH5	2441	Ant1	1.245	0	Pass
NVNT	3-DH5	2480	Ant1	1.255	0	Pass

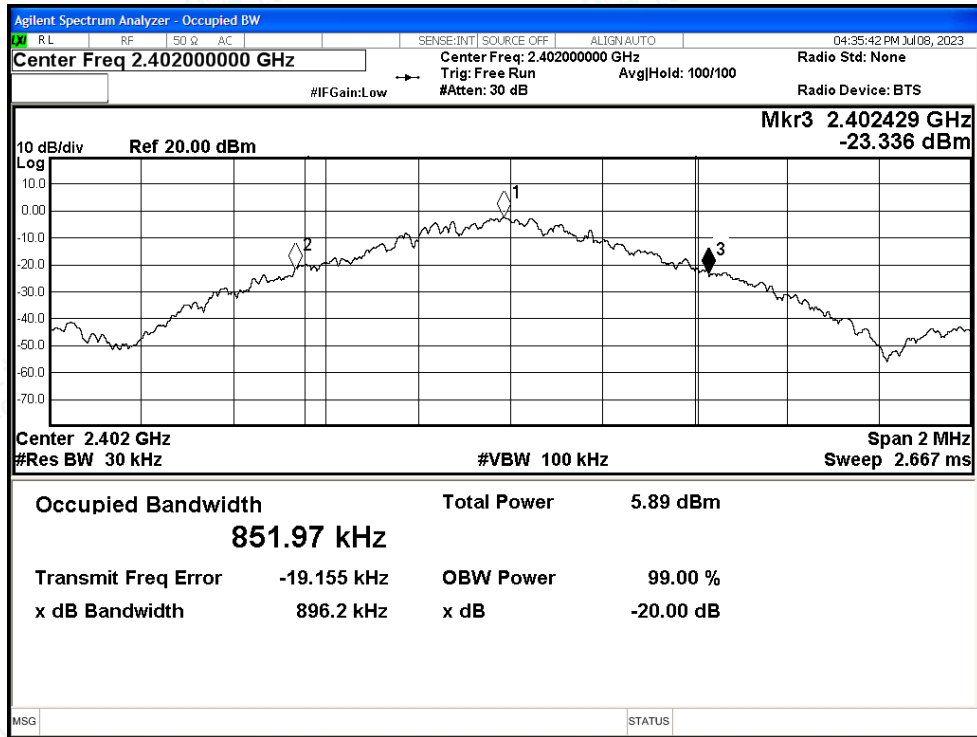


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Scan code to check authenticity

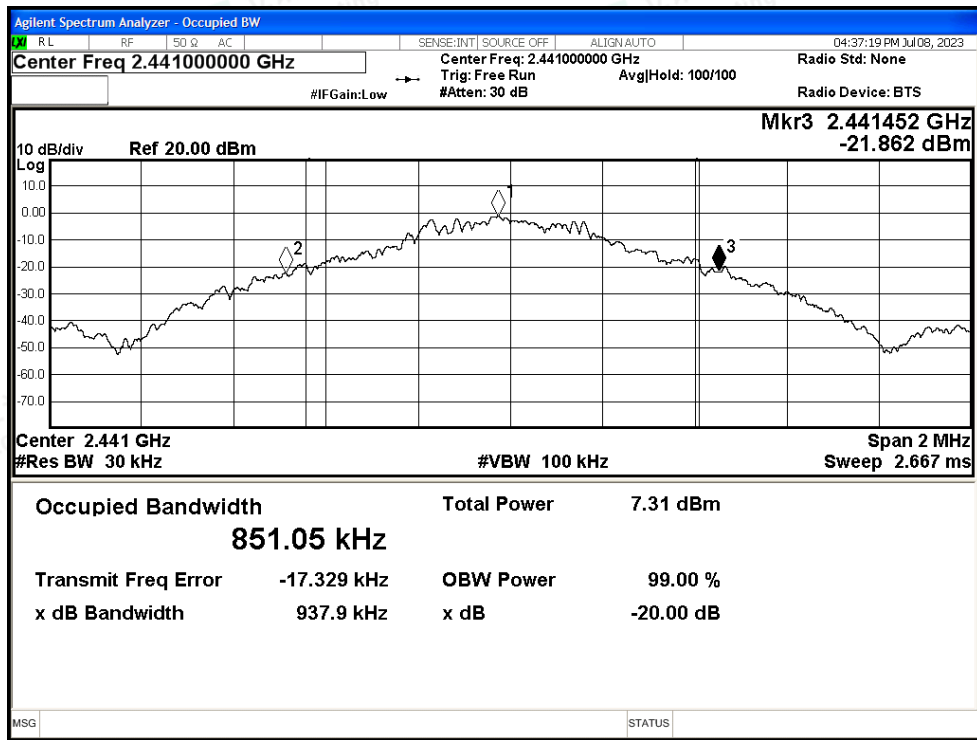


Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1

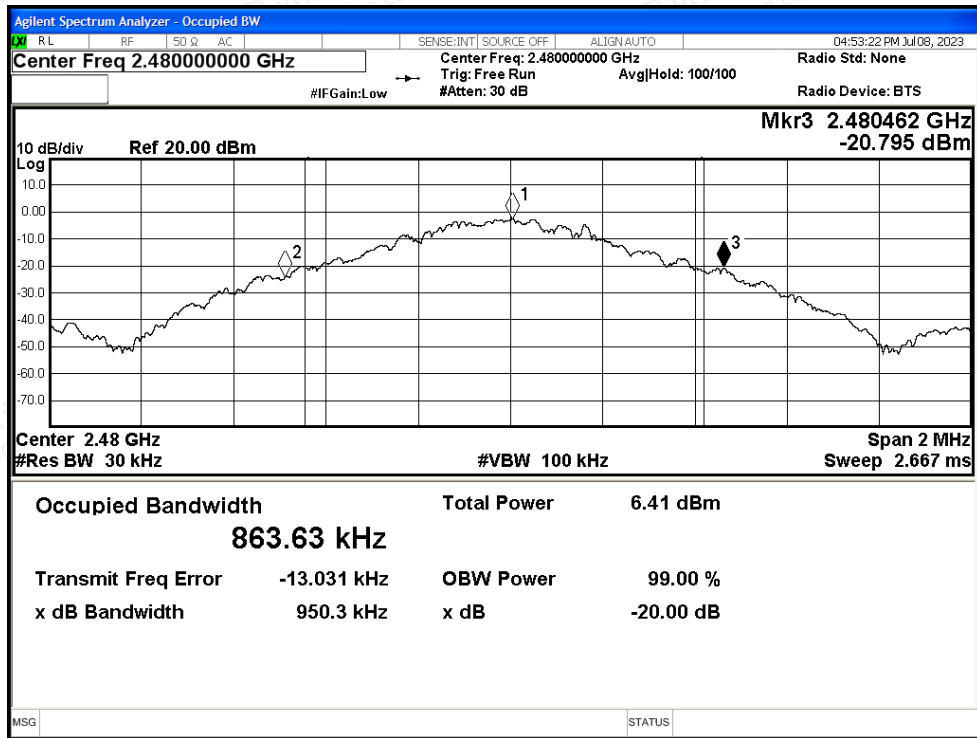


-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1

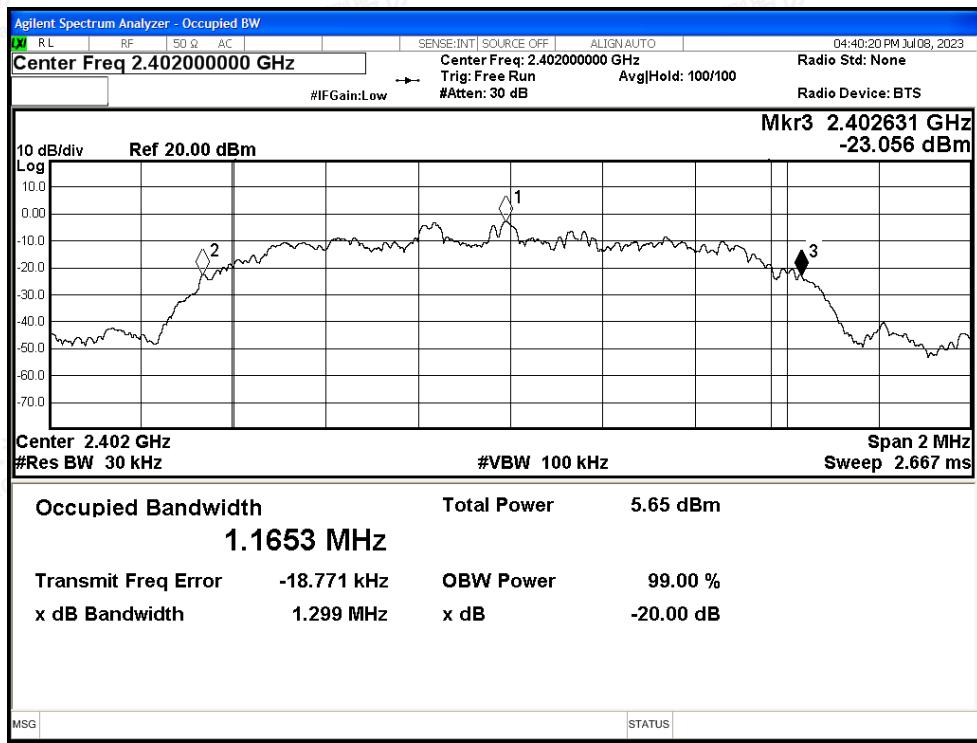




-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1

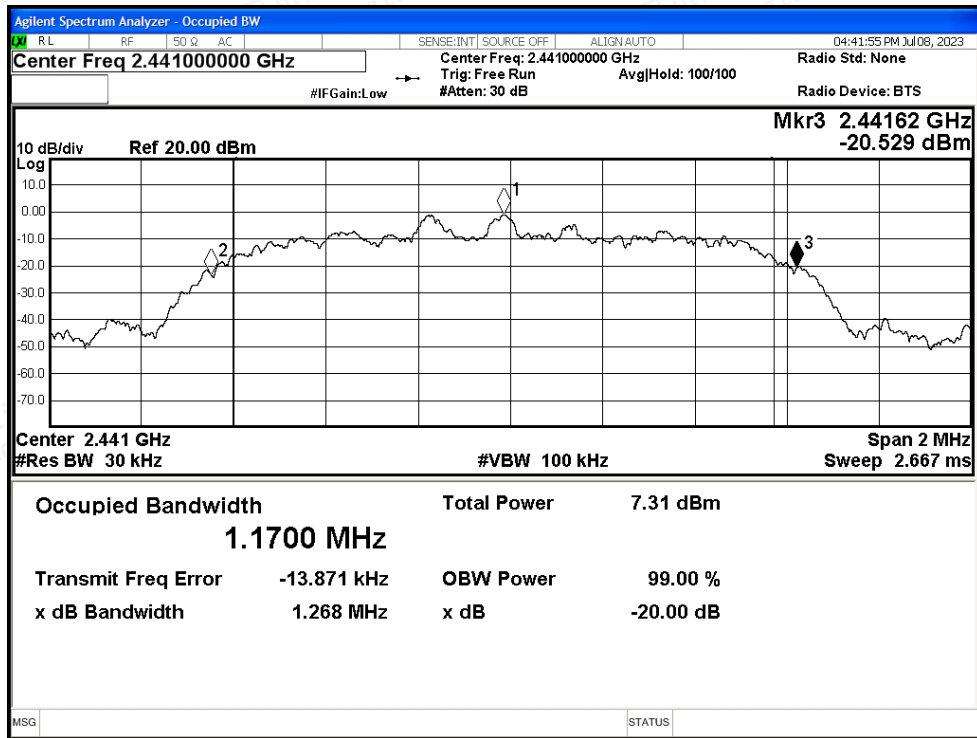


-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1

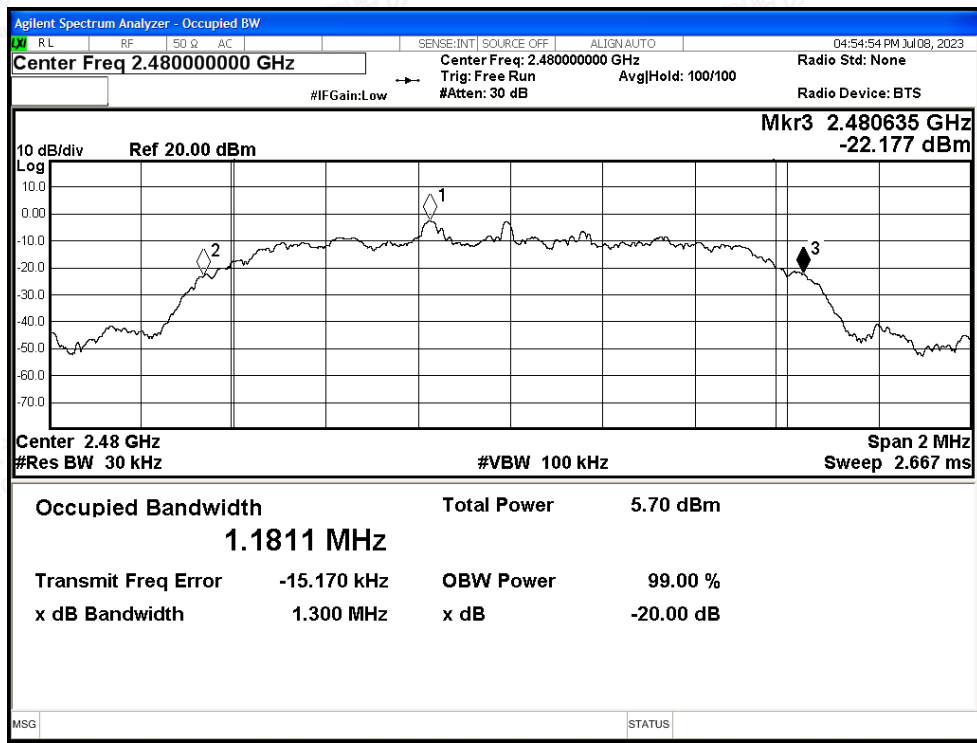




-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1

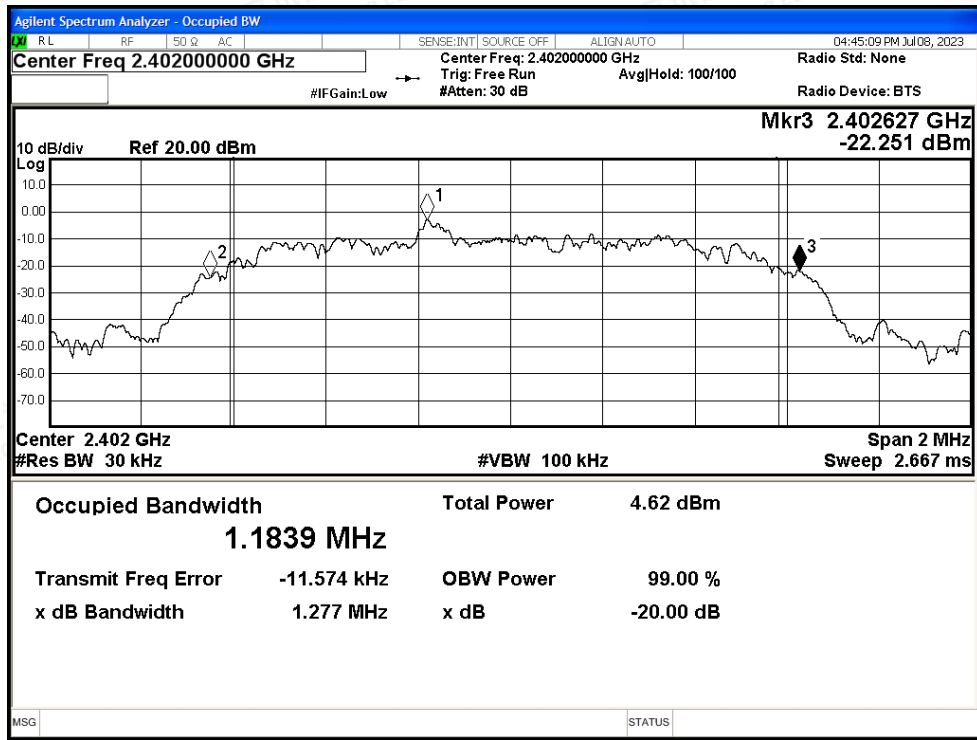


-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1

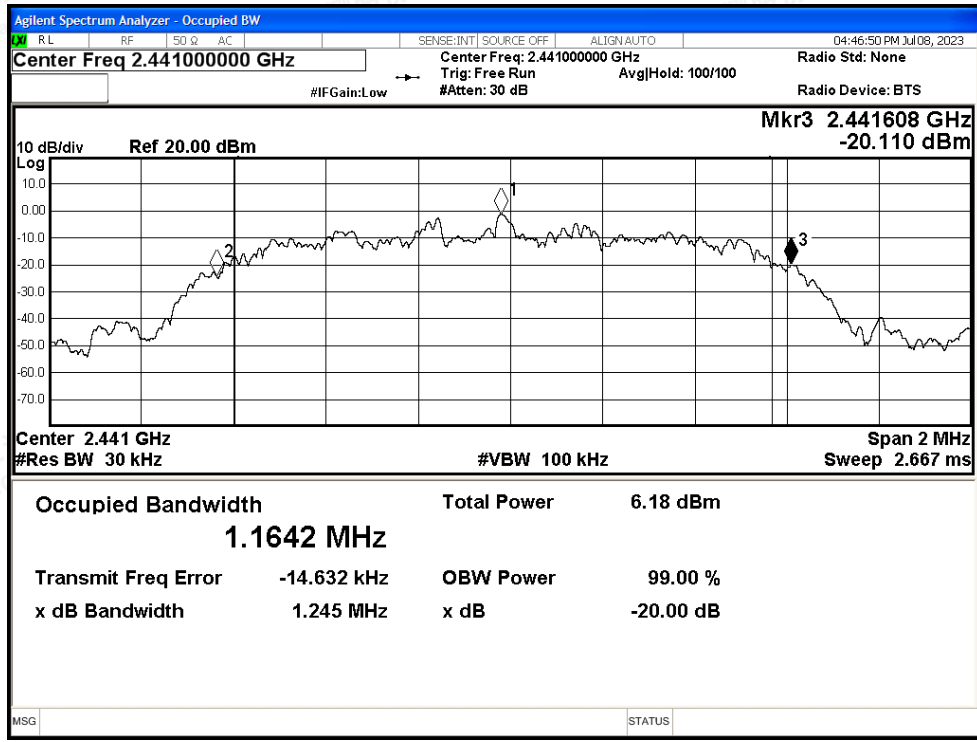




-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1

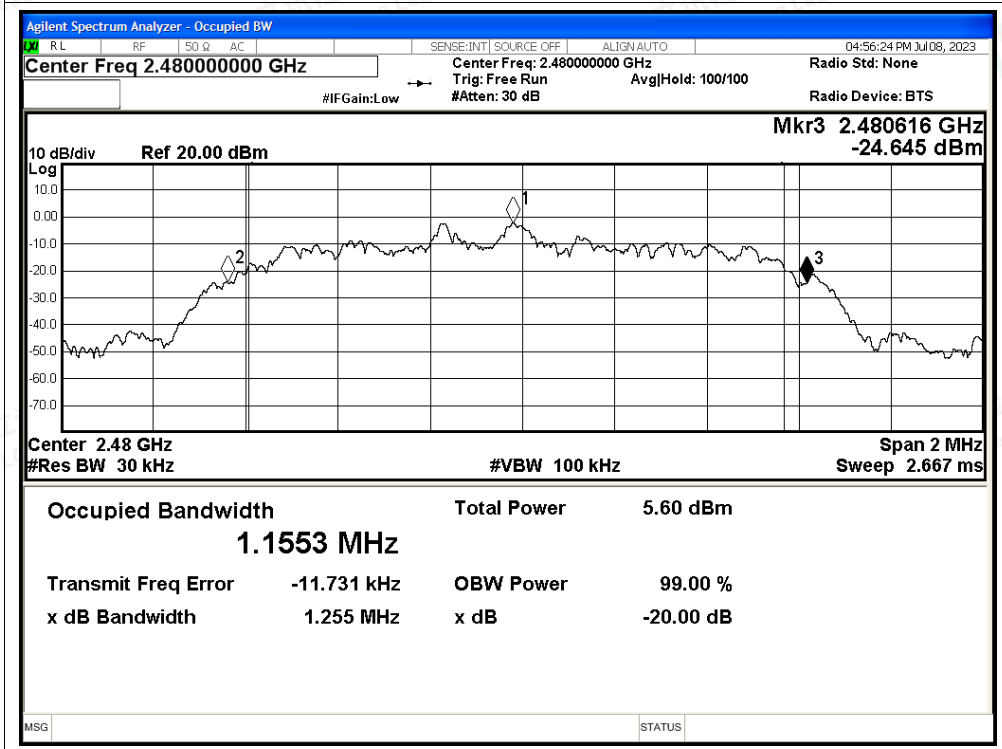


-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1





-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1





A.2 Maximum Conducted Output Power

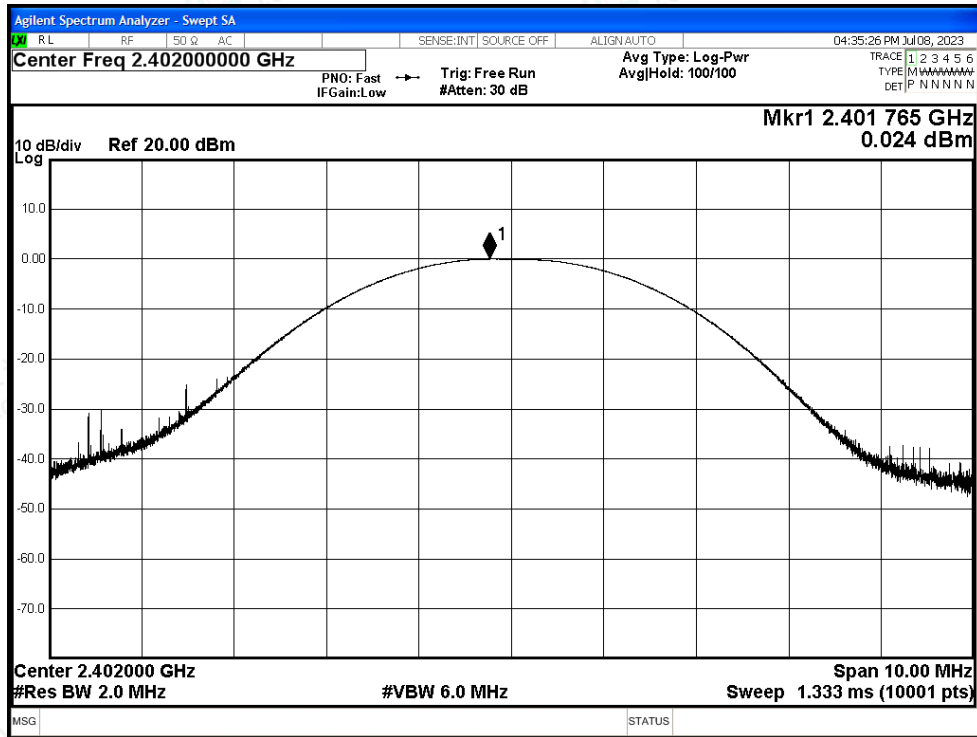
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	0.02	21	Pass
NVNT	1-DH5	2441	Ant1	1.39	21	Pass
NVNT	1-DH5	2480	Ant1	0.05	21	Pass
NVNT	2-DH5	2402	Ant1	0.91	21	Pass
NVNT	2-DH5	2441	Ant1	2.29	21	Pass
NVNT	2-DH5	2480	Ant1	0.90	21	Pass
NVNT	3-DH5	2402	Ant1	0.98	21	Pass
NVNT	3-DH5	2441	Ant1	2.18	21	Pass
NVNT	3-DH5	2480	Ant1	0.94	21	Pass



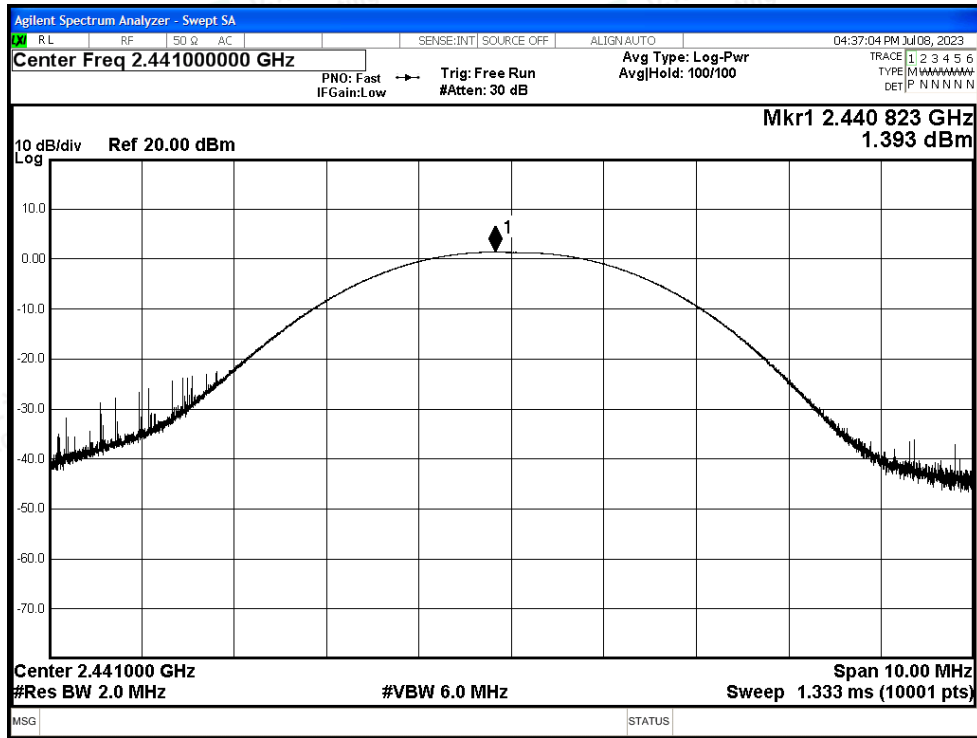


Test Graphs

Power NVNT 1-DH5 2402MHz Ant1

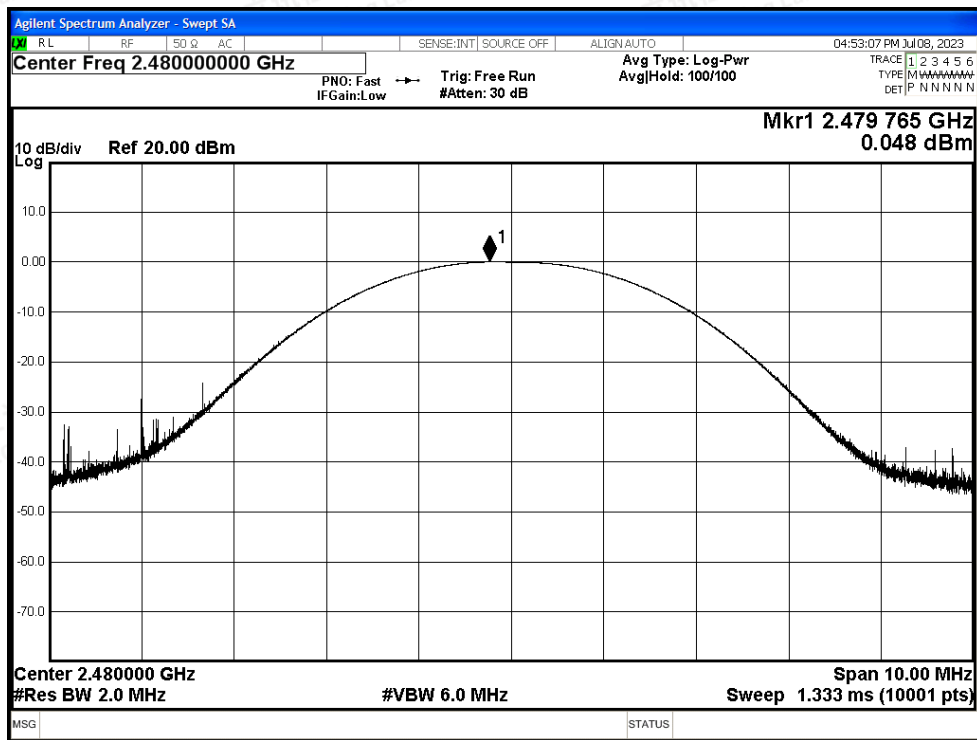


Power NVNT 1-DH5 2441MHz Ant1

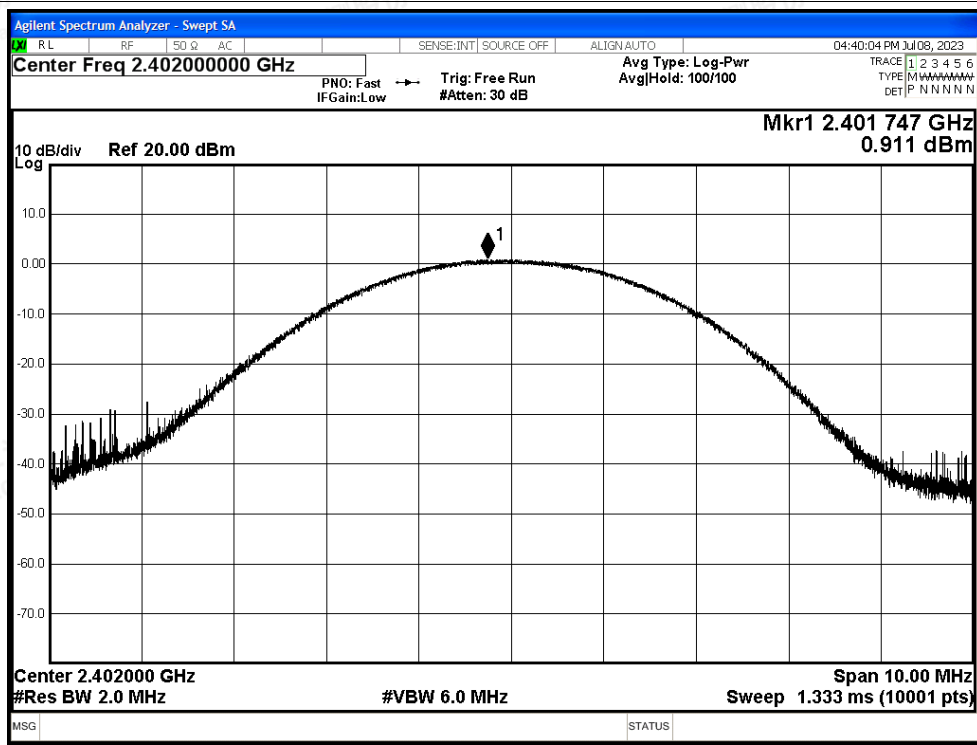




Power NVNT 1-DH5 2480MHz Ant1

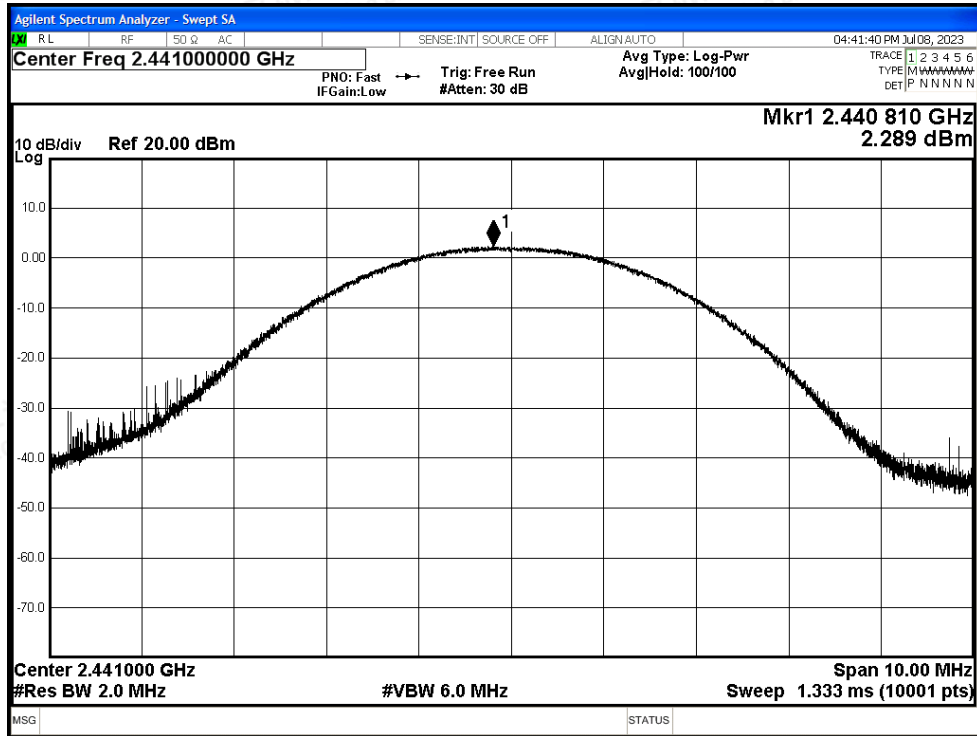


Power NVNT 2-DH5 2402MHz Ant1

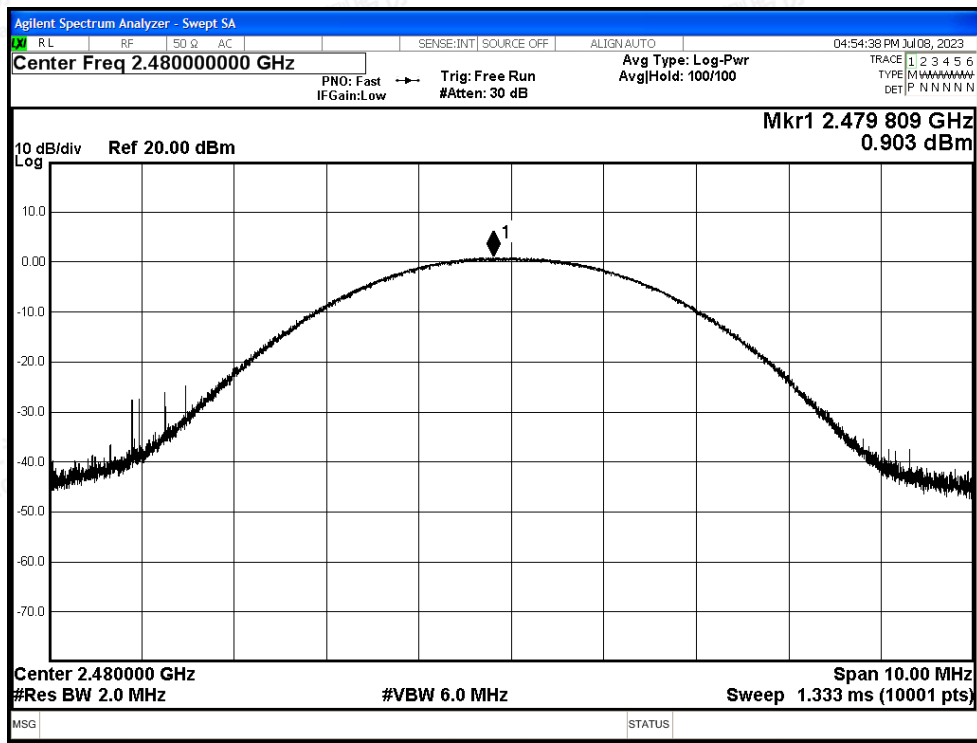




Power NVNT 2-DH5 2441MHz Ant1

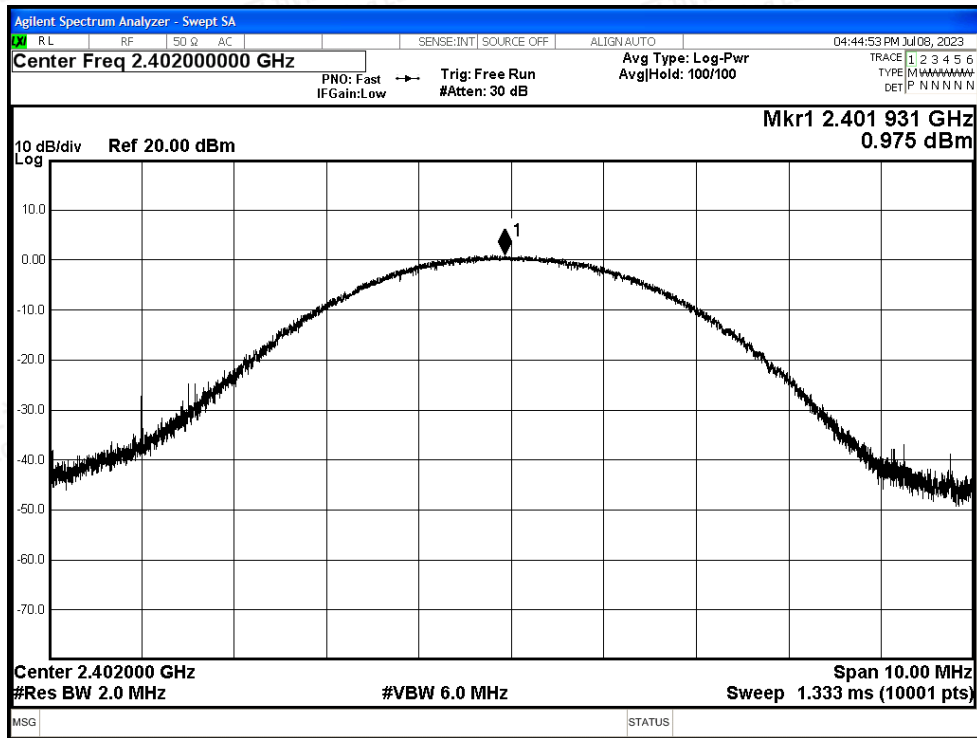


Power NVNT 2-DH5 2480MHz Ant1

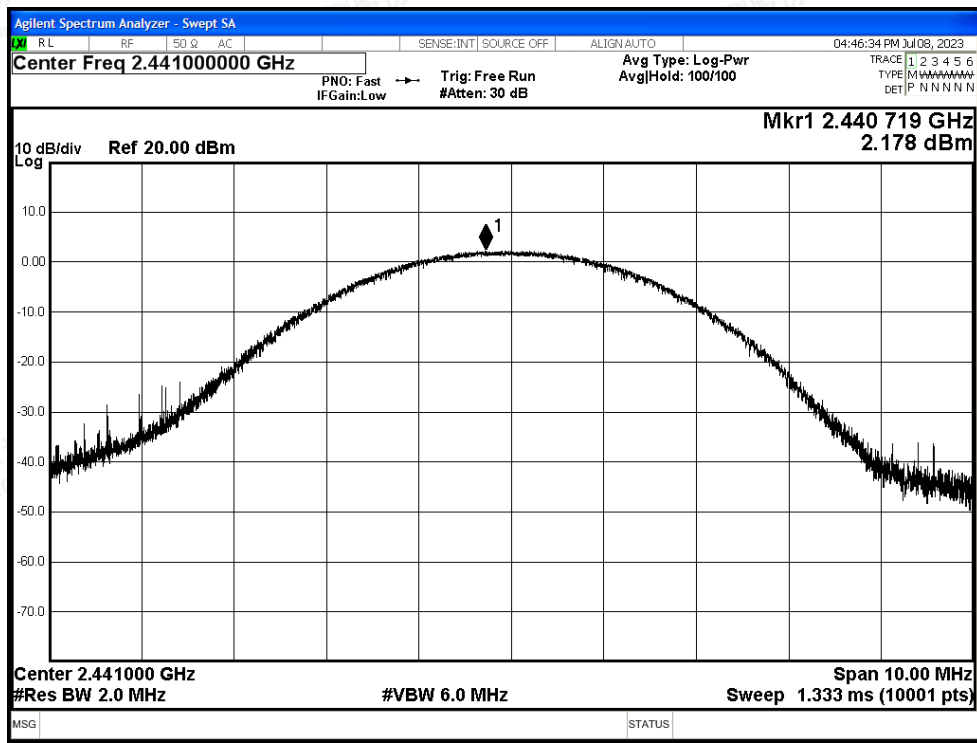




Power NVNT 3-DH5 2402MHz Ant1

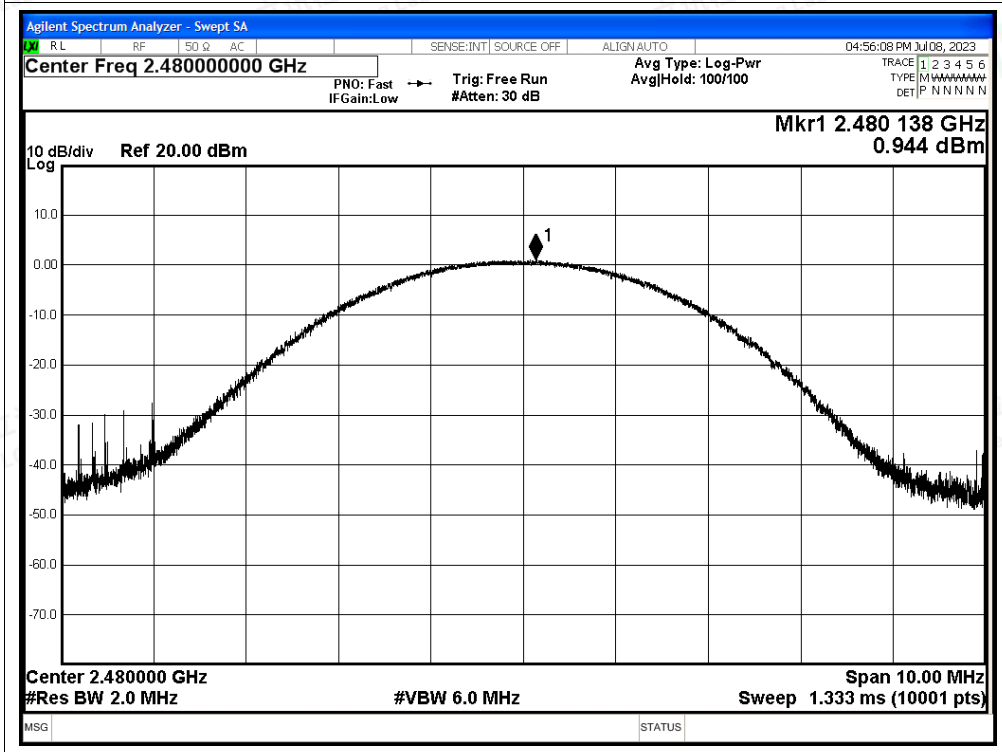


Power NVNT 3-DH5 2441MHz Ant1





Power NVNT 3-DH5 2480MHz Ant1





A.3 Carrier Frequencies Separation

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2401.99	2403.002	1.012	0.633	Pass
NVNT	2-DH5	Ant1	2401.986	2402.982	0.996	0.867	Pass
NVNT	3-DH5	Ant1	2401.82	2402.814	0.994	0.851	Pass

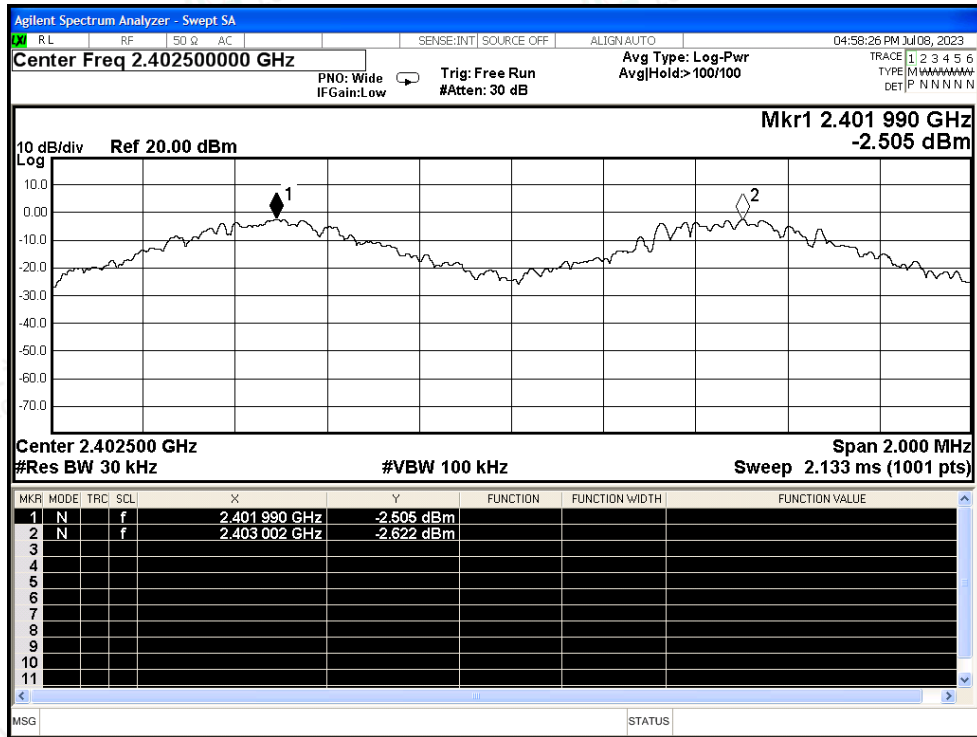


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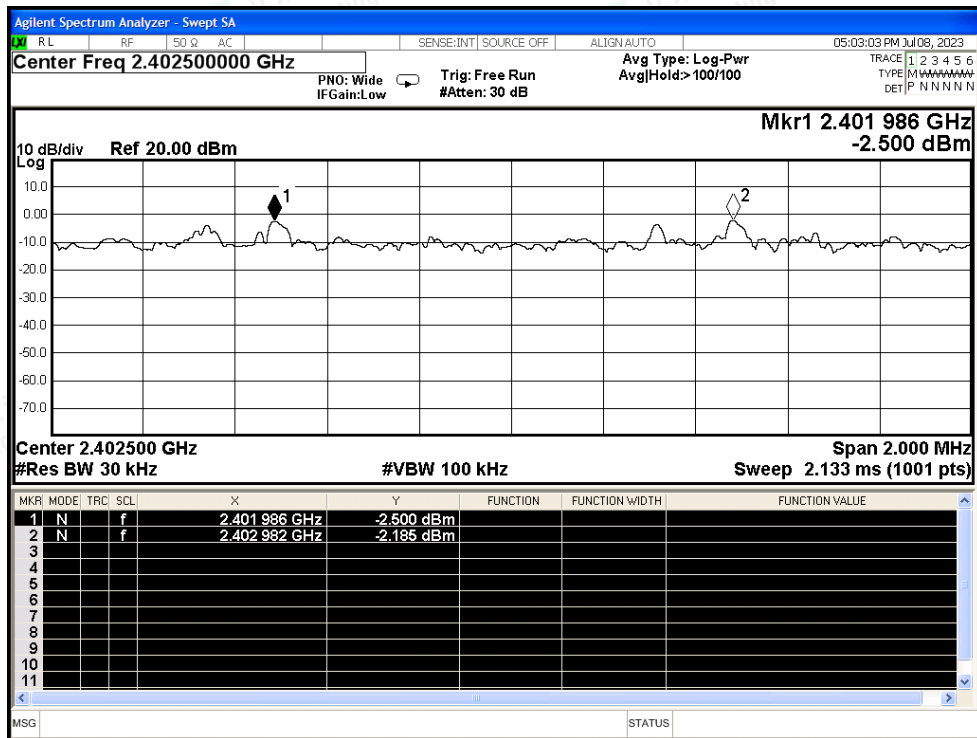


Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1

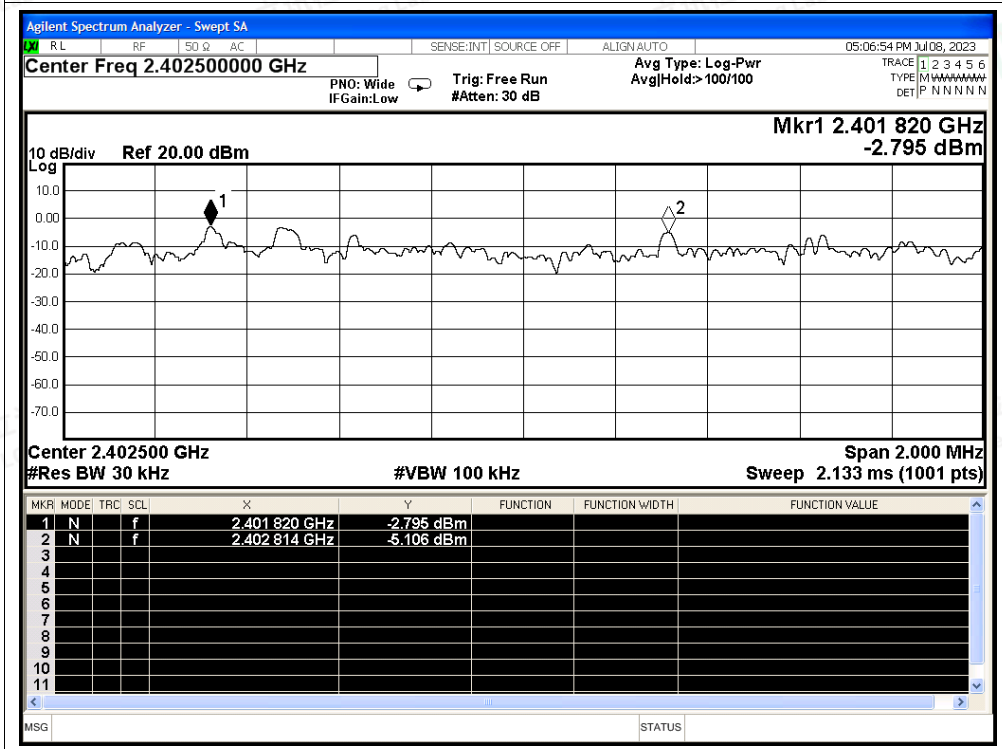


CFS NVNT 2-DH5 2402MHz Ant1





CFS NVNT 3-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	322.784	112	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.885	300.04	104	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.887	311.796	108	31600	400	Pass

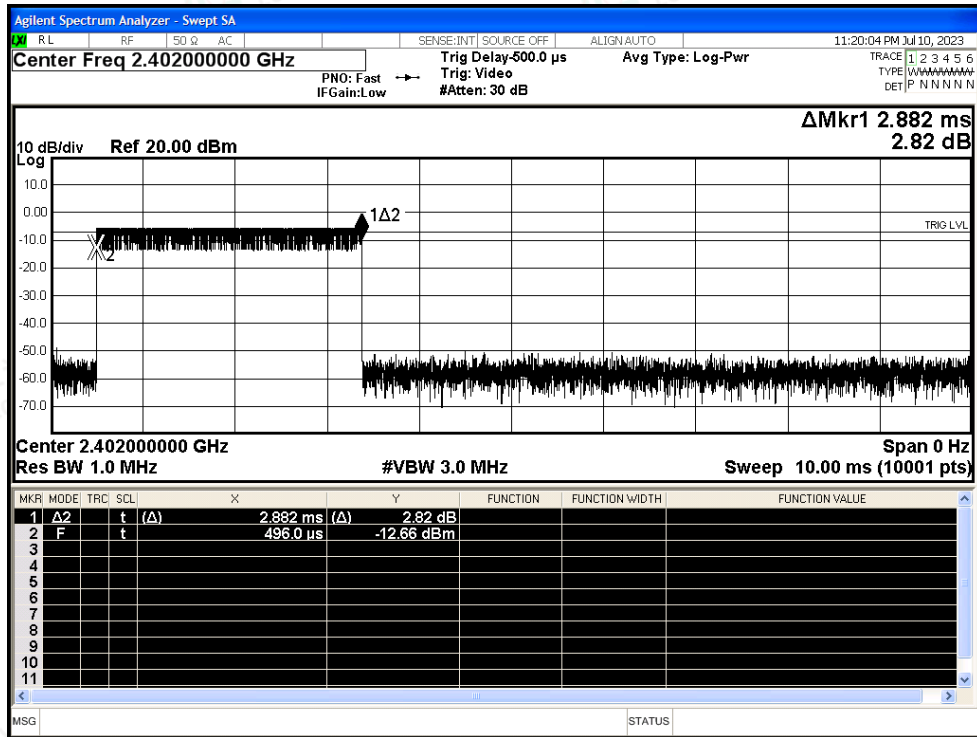


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Scan code to check authenticity

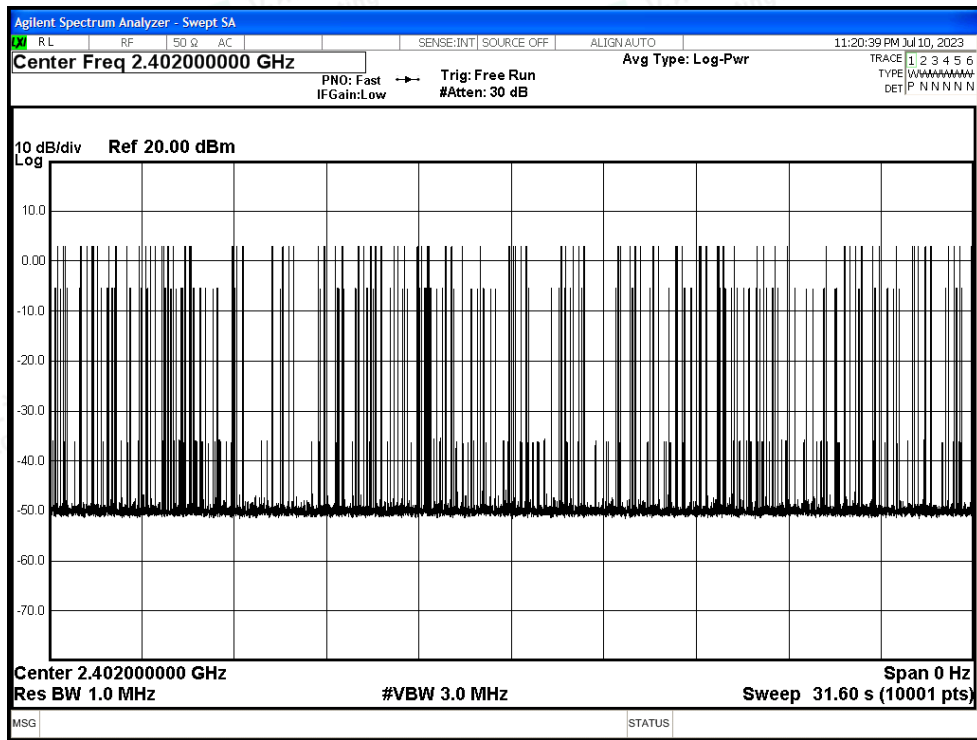


Test Graphs

Dwell NVNT 1-DH5 2402MHz Ant1 One Burst

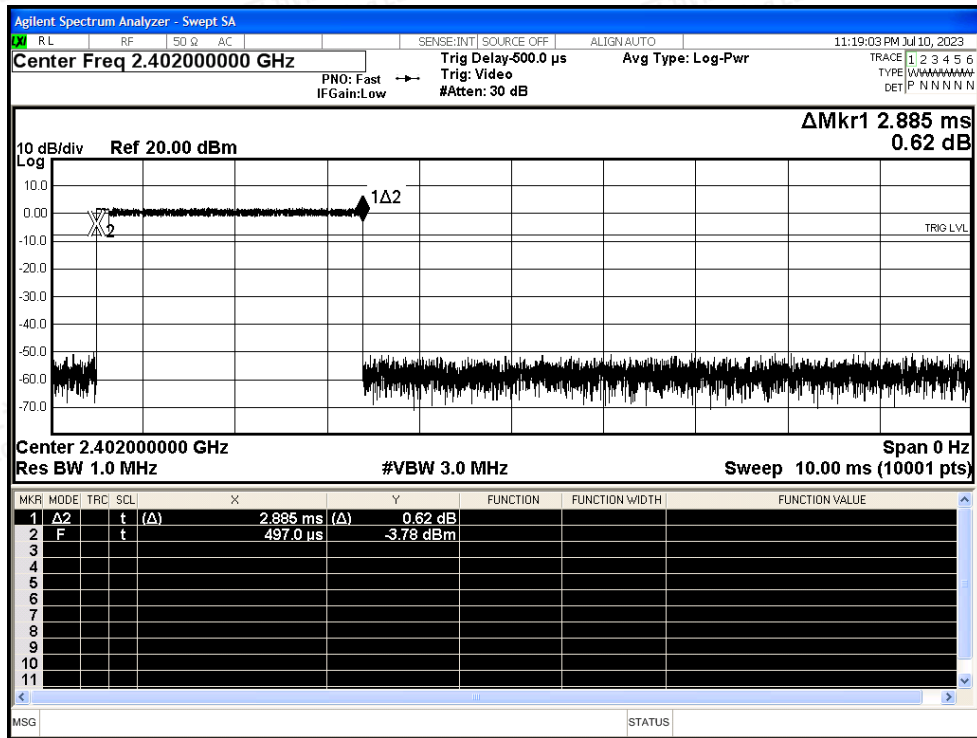


Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated

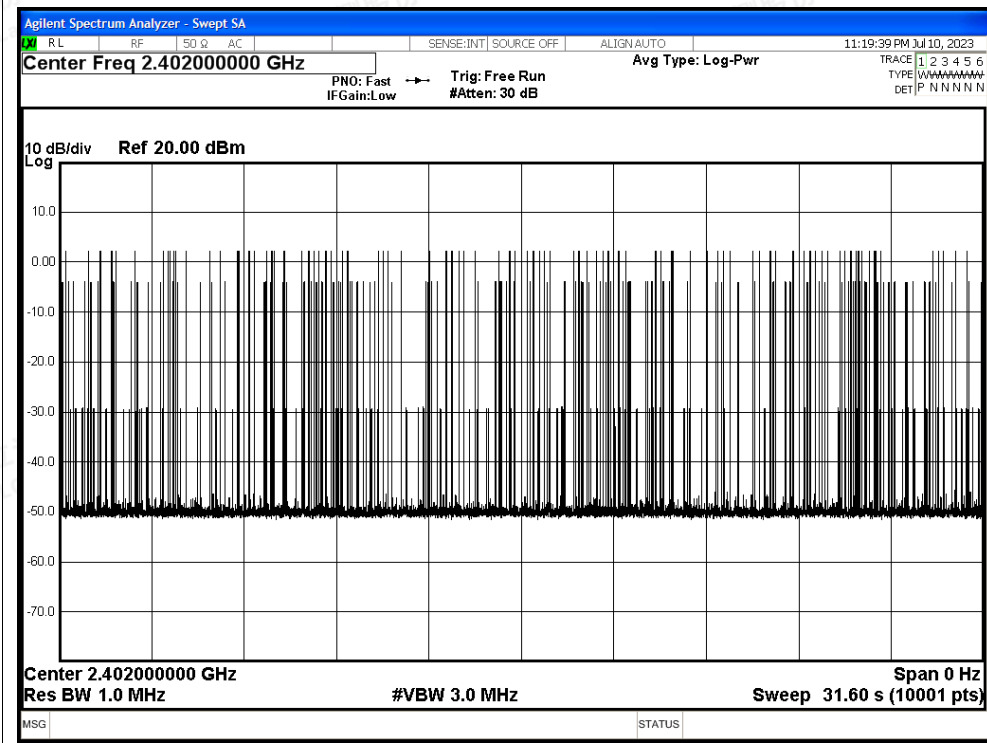




Dwell NVNT 2-DH5 2402MHz Ant1 One Burst

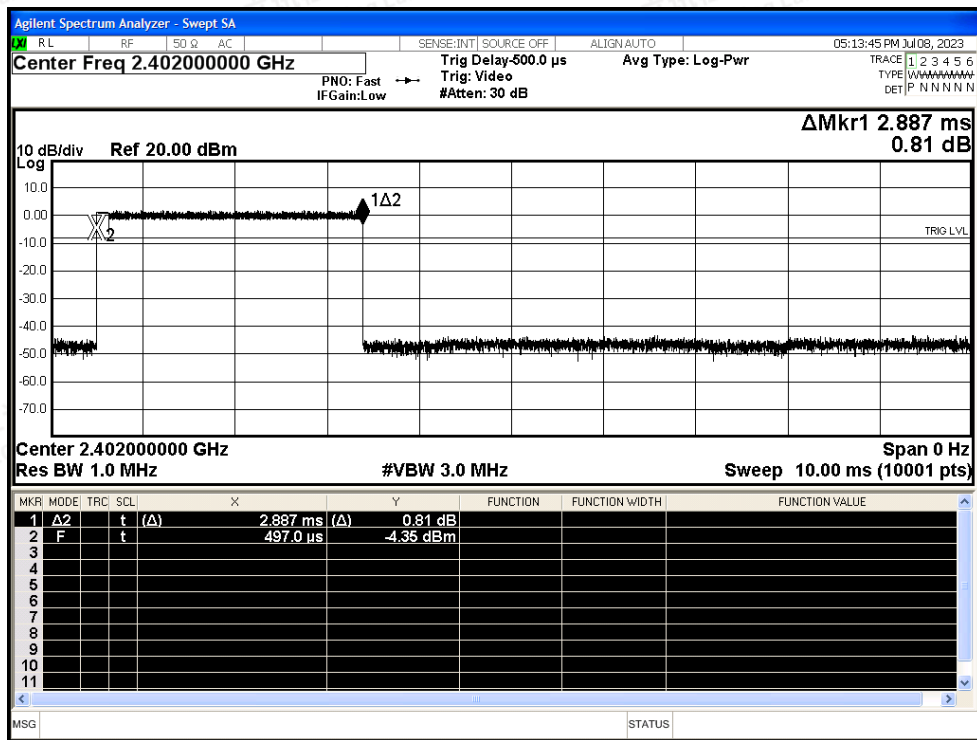


Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated

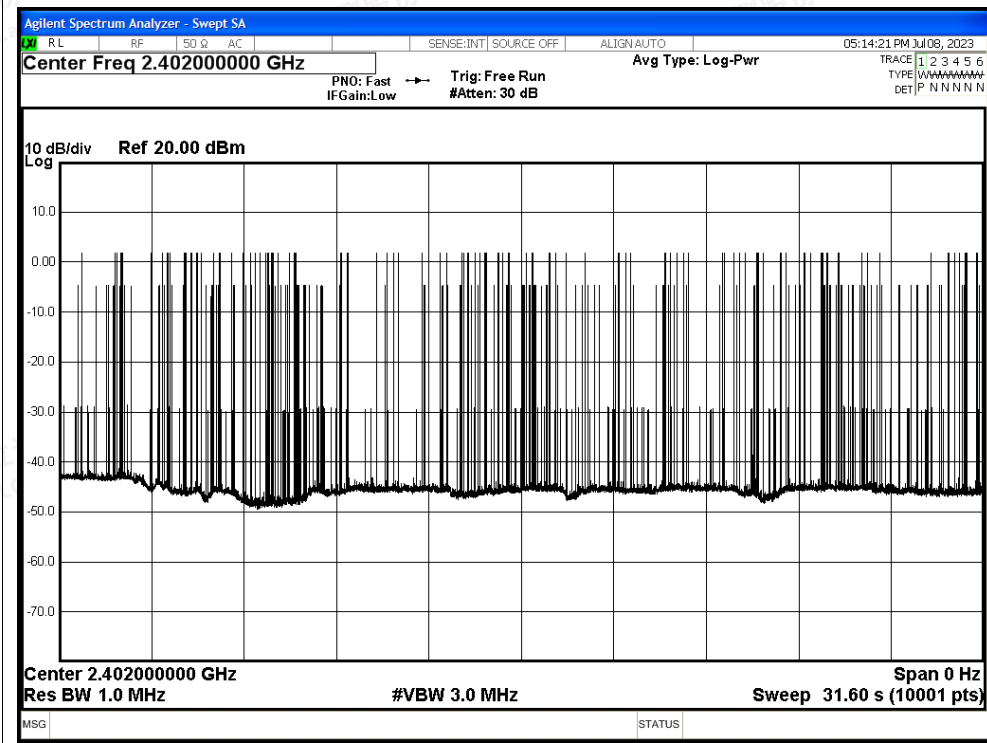




Dwell NVNT 3-DH5 2402MHz Ant1 One Burst



Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated





A.5 Number of Hopping Channel

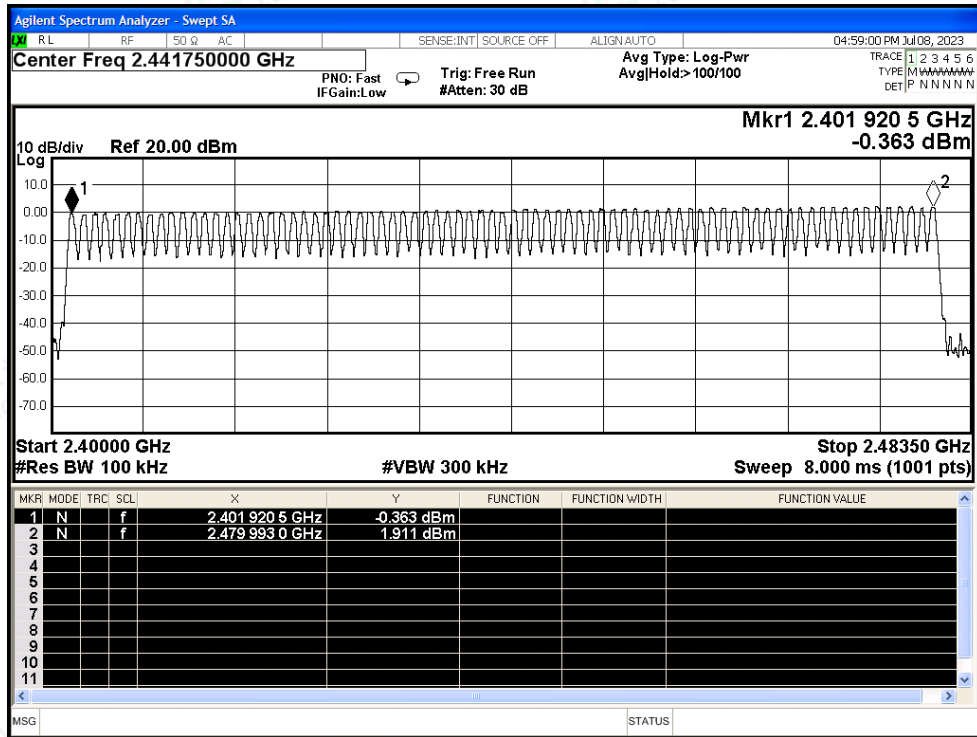
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass



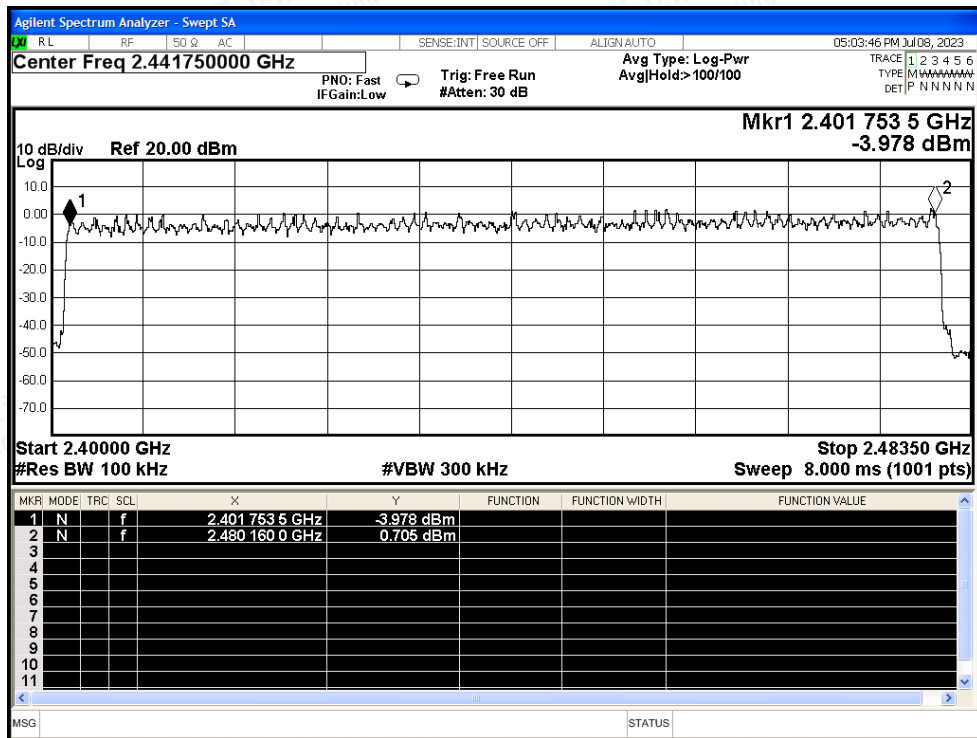


Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant1

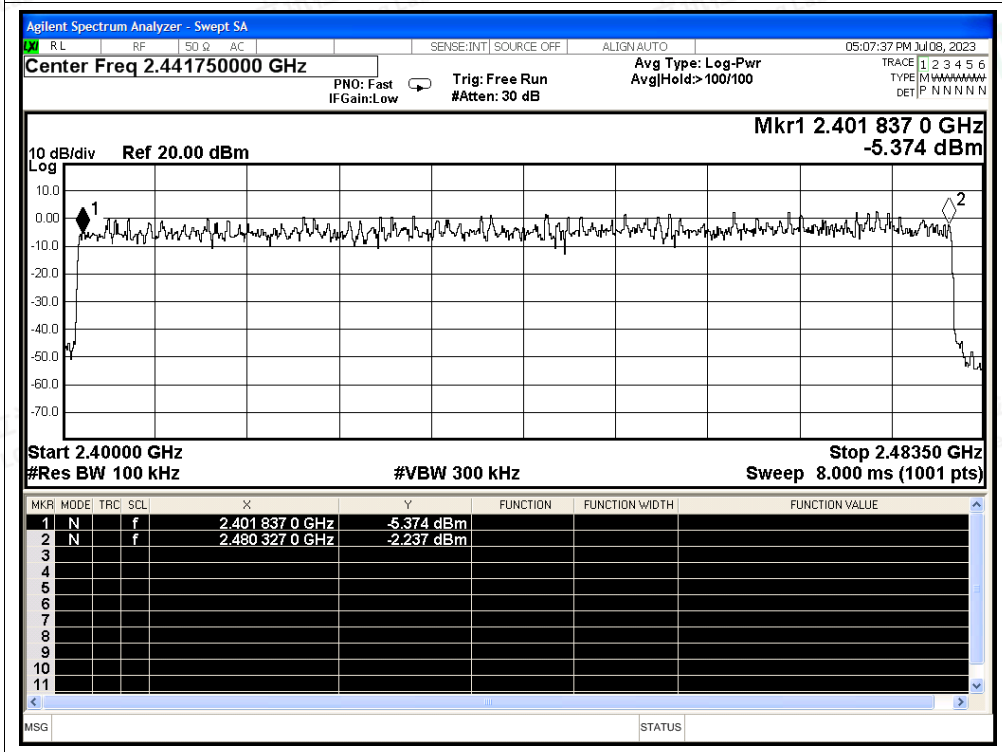


Hopping No. NVNT 2-DH5 2402MHz Ant1





Hopping No. NVNT 3-DH5 2402MHz Ant1





A.6 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-37.16	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-46.98	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-37.53	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-50.36	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-36.89	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-48.68	-20	Pass

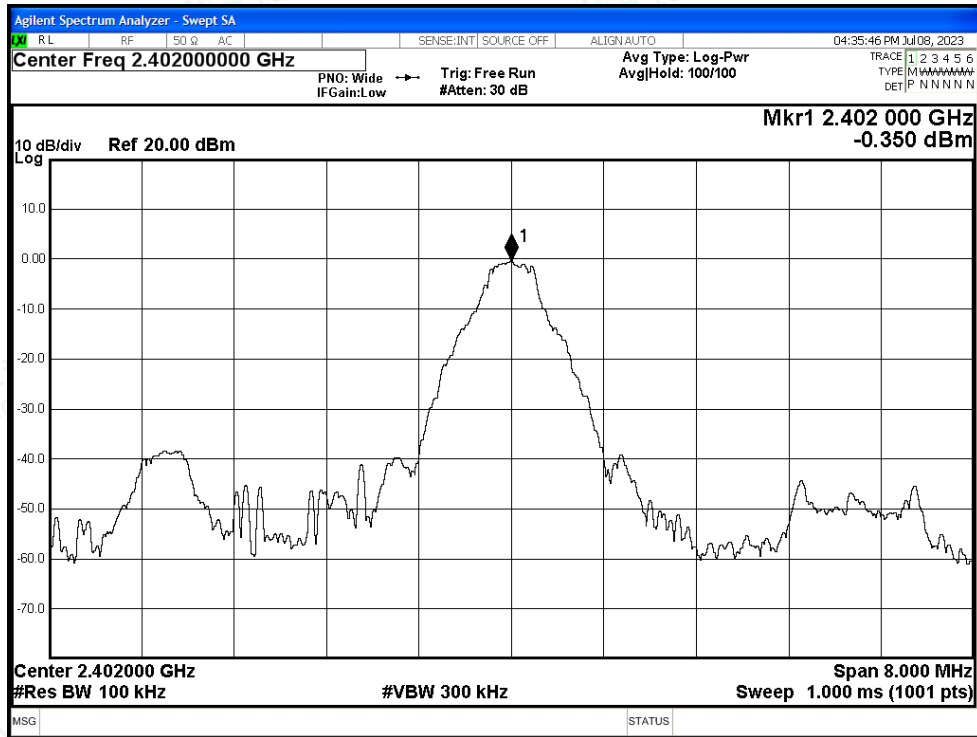


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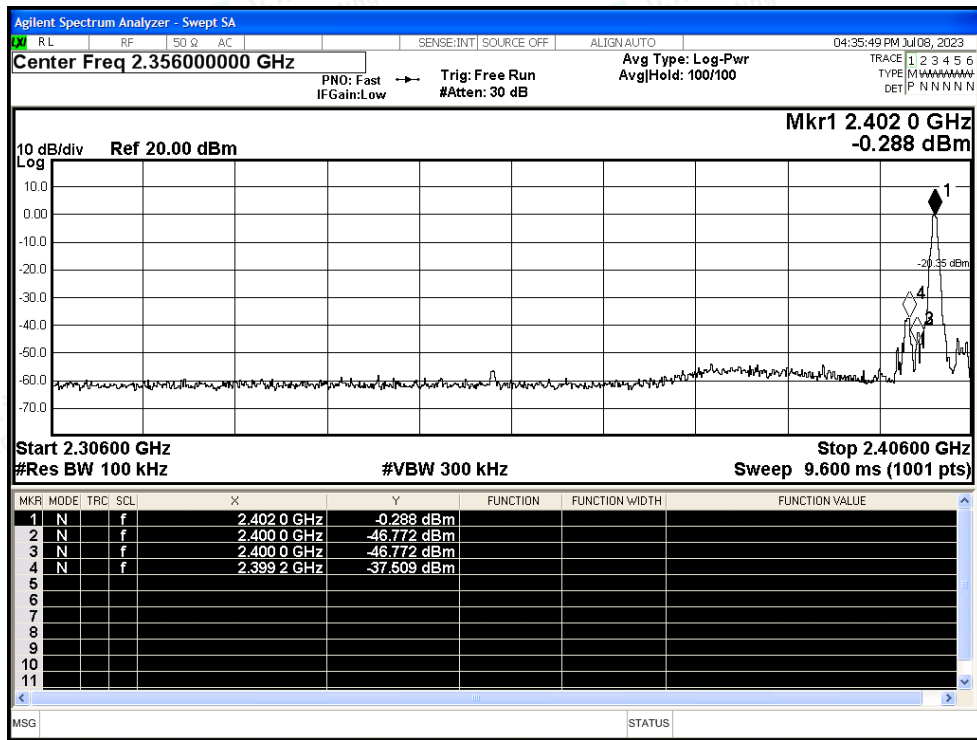


Test Graphs

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

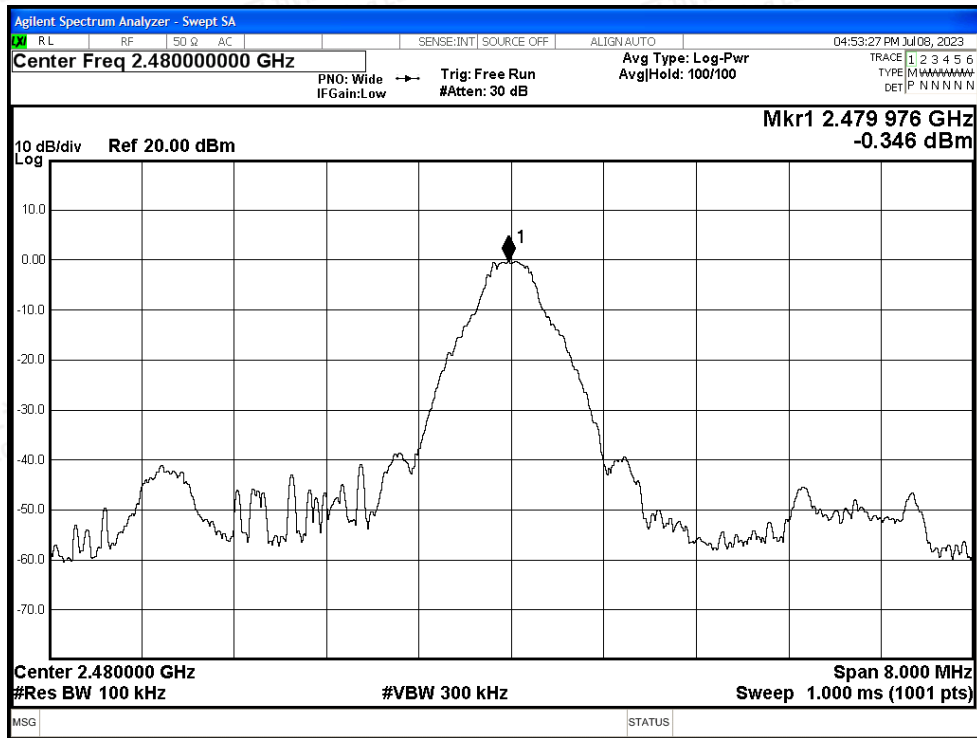


Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission

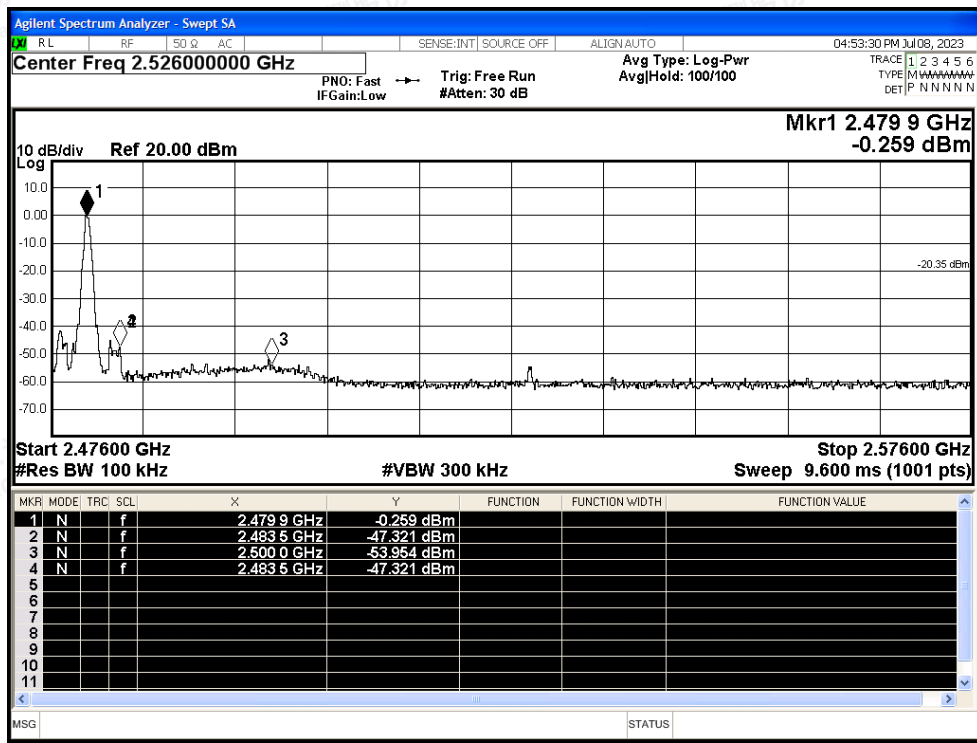




Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref

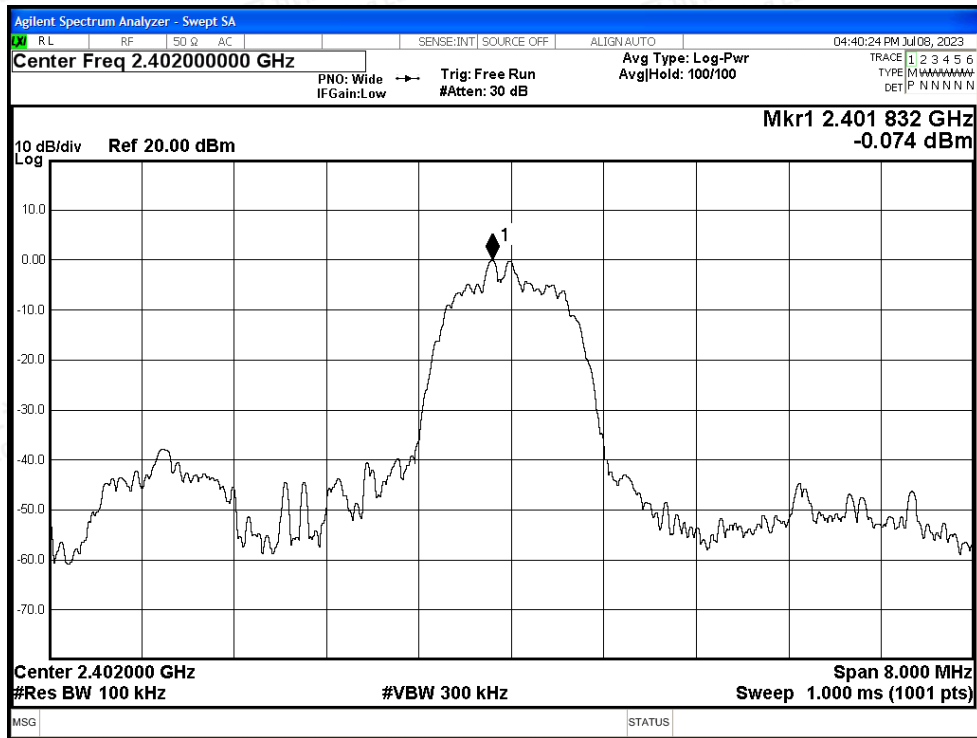


Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission

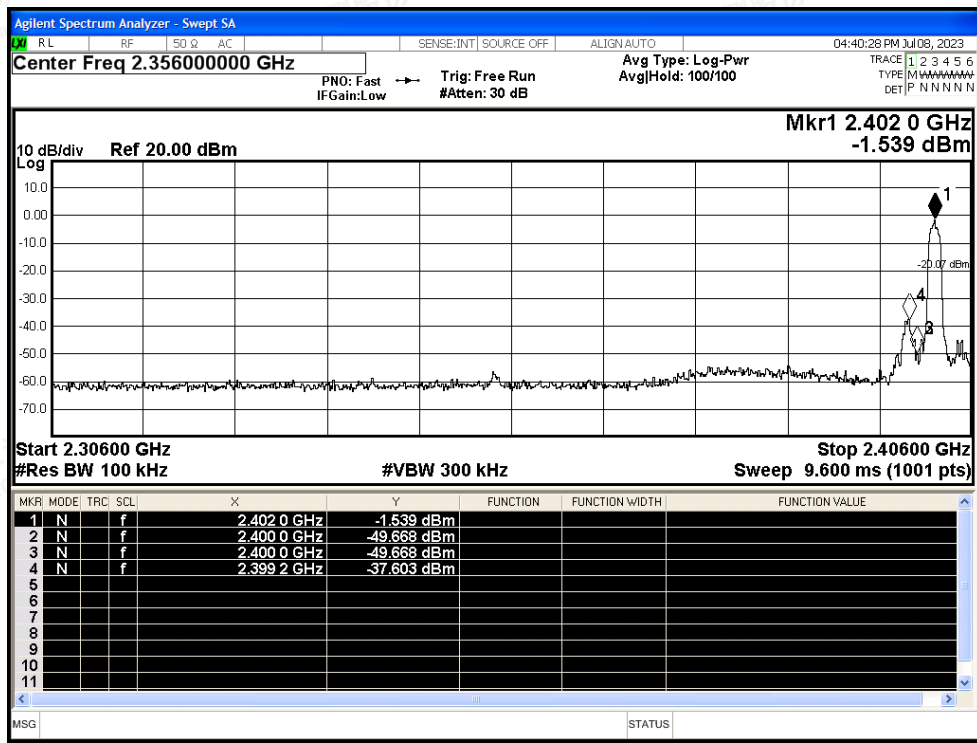




Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref

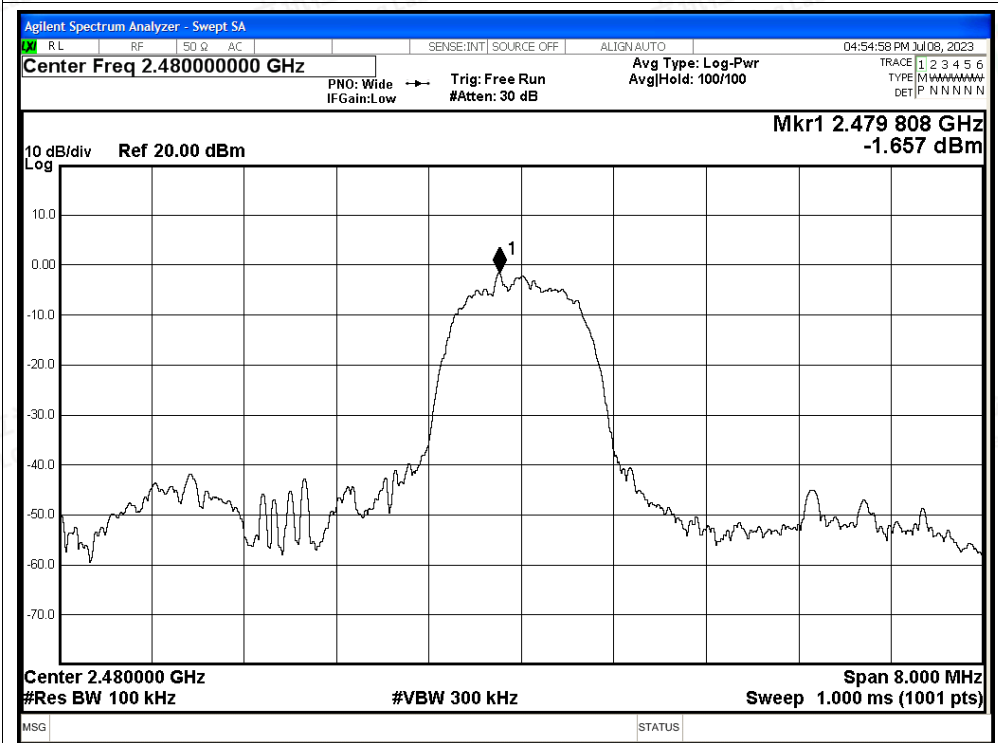


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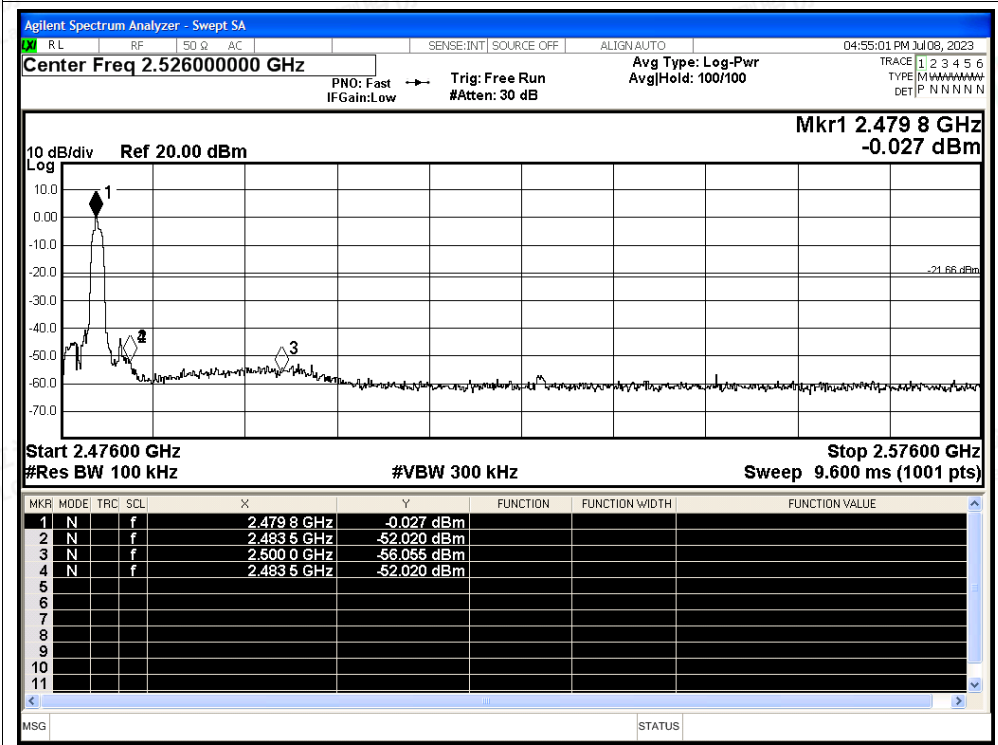




Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref

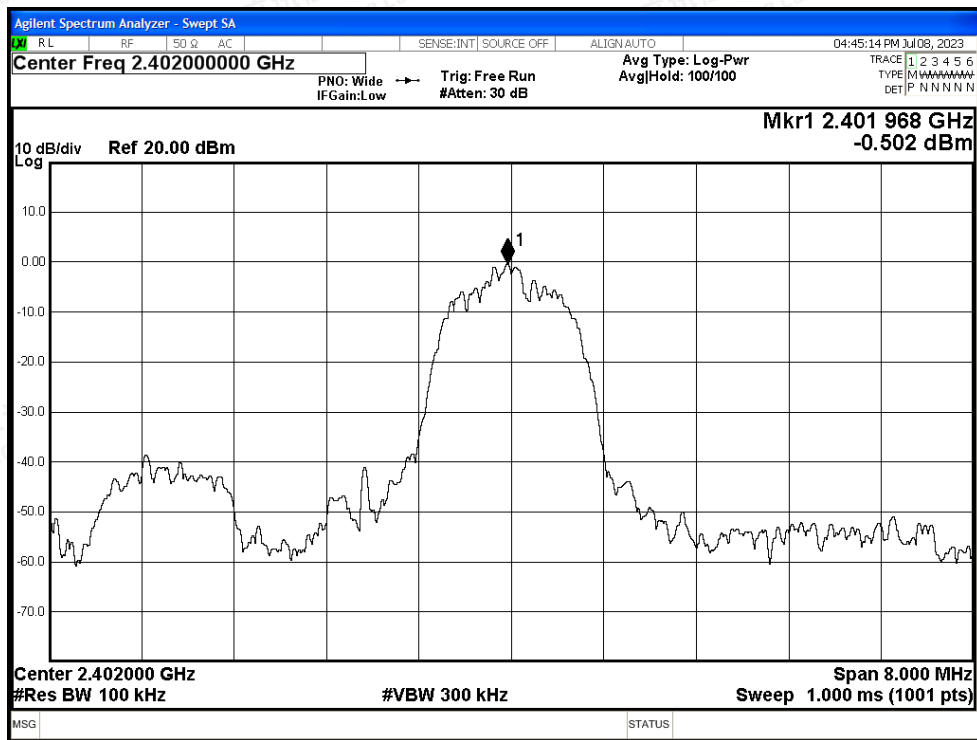


Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission

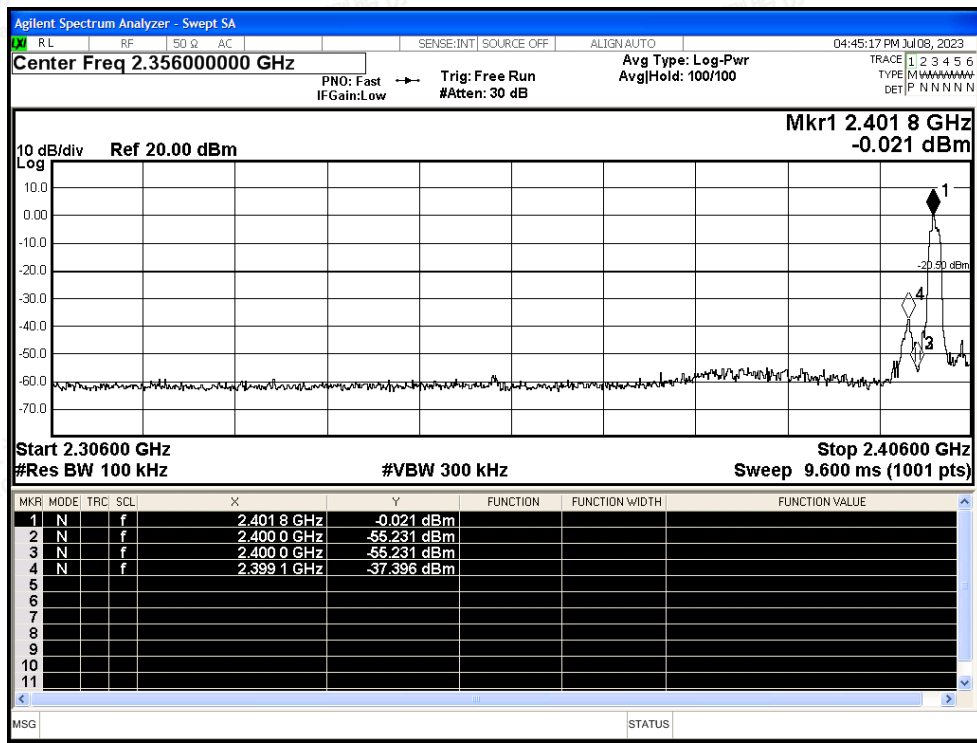




Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref

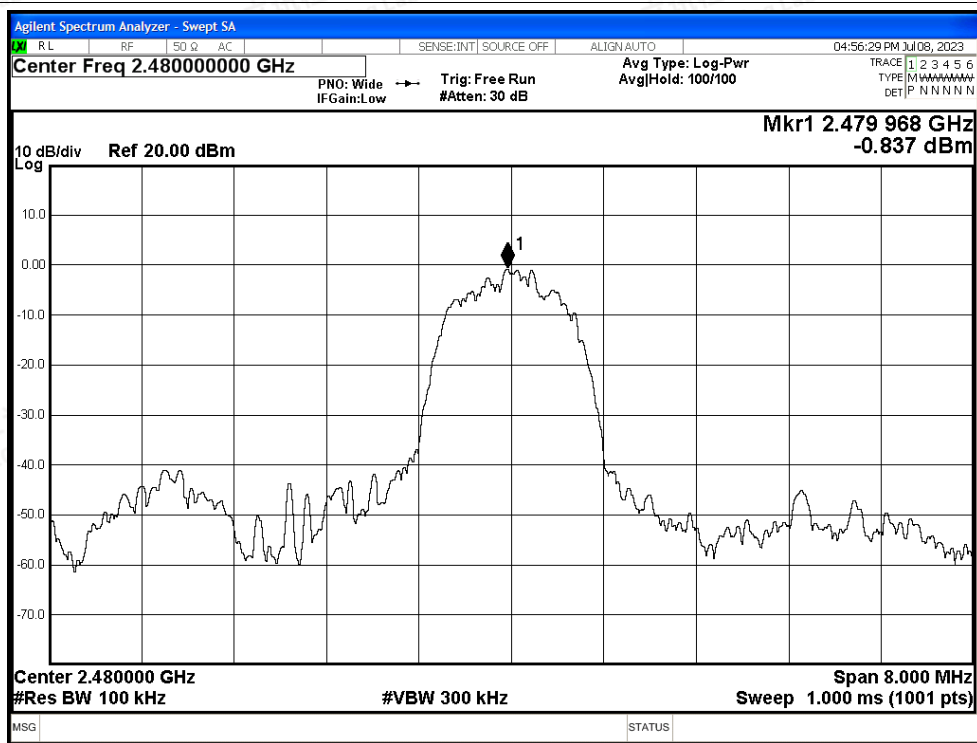


Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission

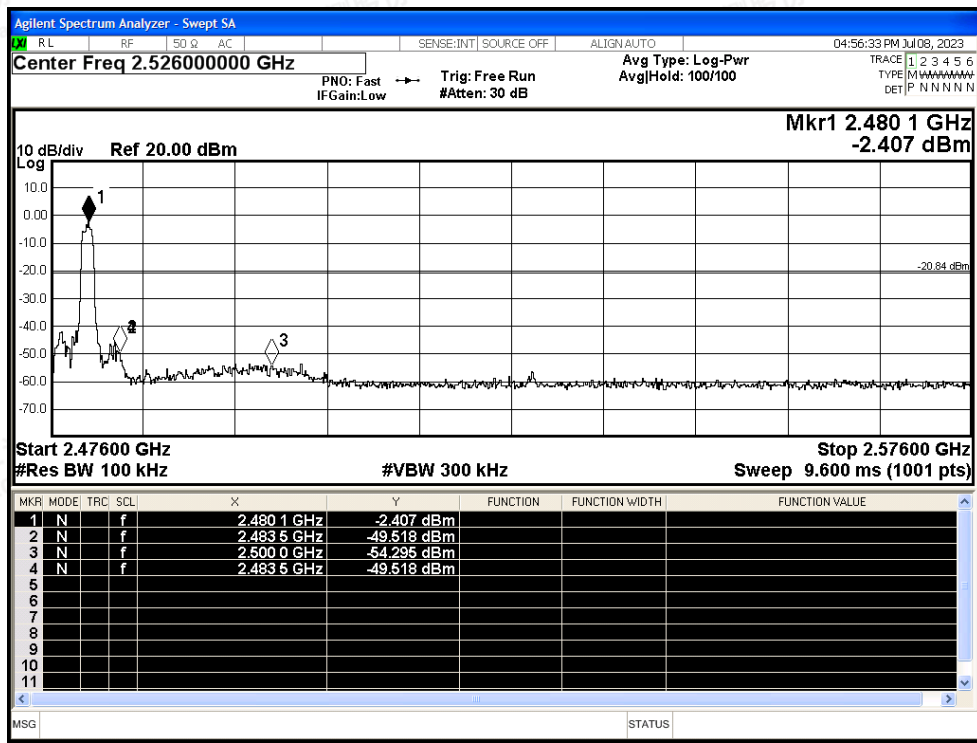




Band Edge NVNT 3-DH5 2480MHz Ant1 No-Hopping Ref



Band Edge NVNT 3-DH5 2480MHz Ant1 No-Hopping Emission





(Hopping)

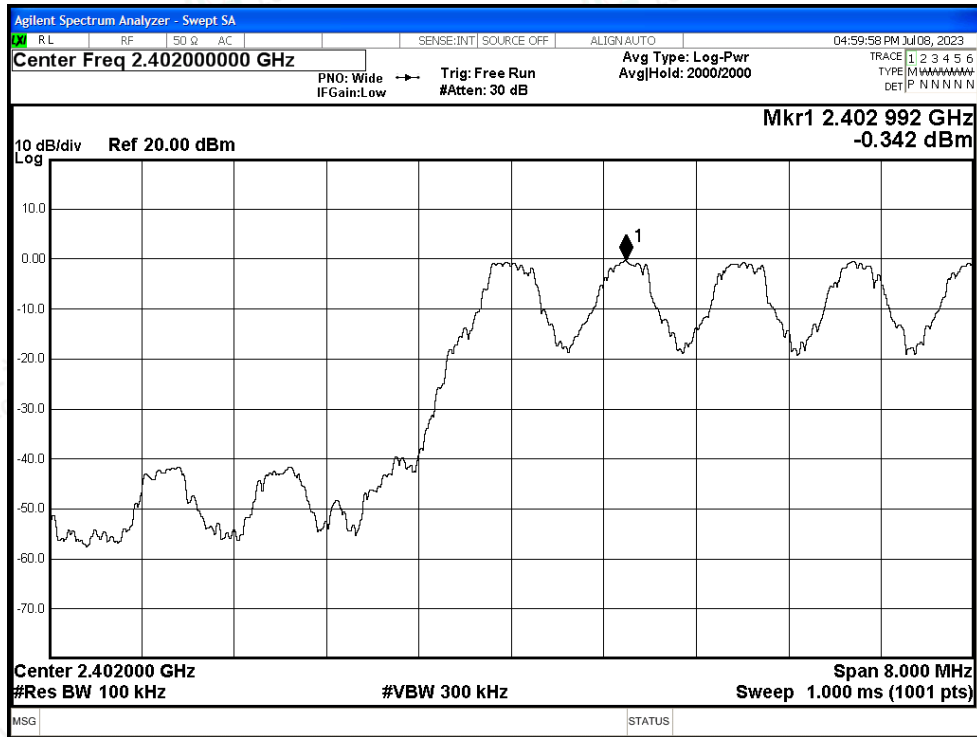
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-52.76	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-50.5	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-52.66	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-52.24	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-53.4	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-47.68	-20	Pass



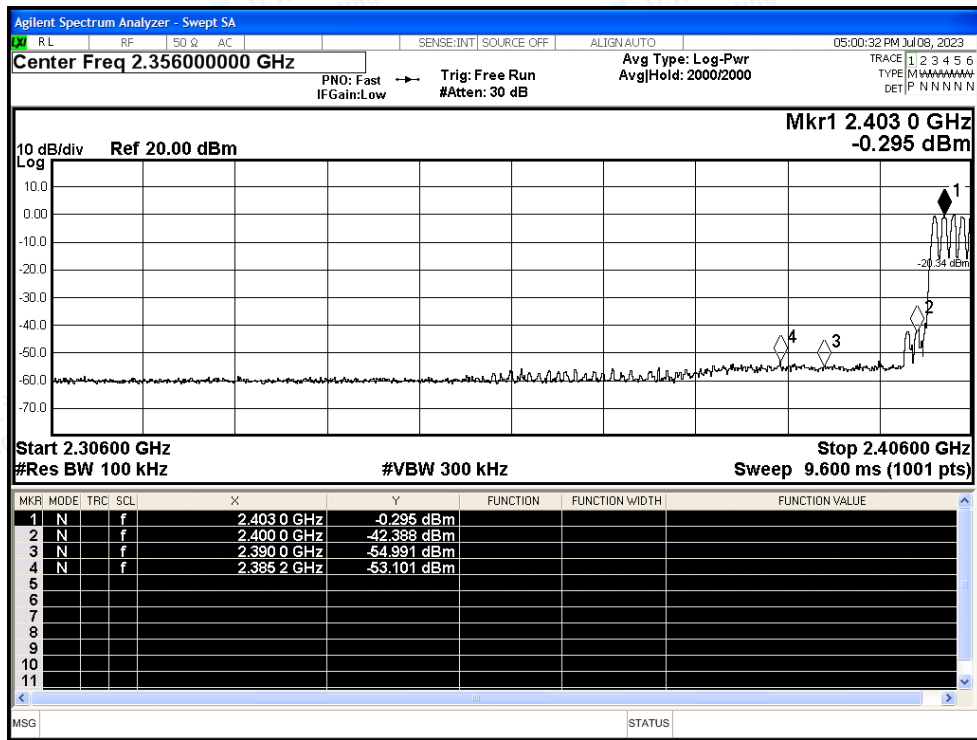


Test Graphs

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

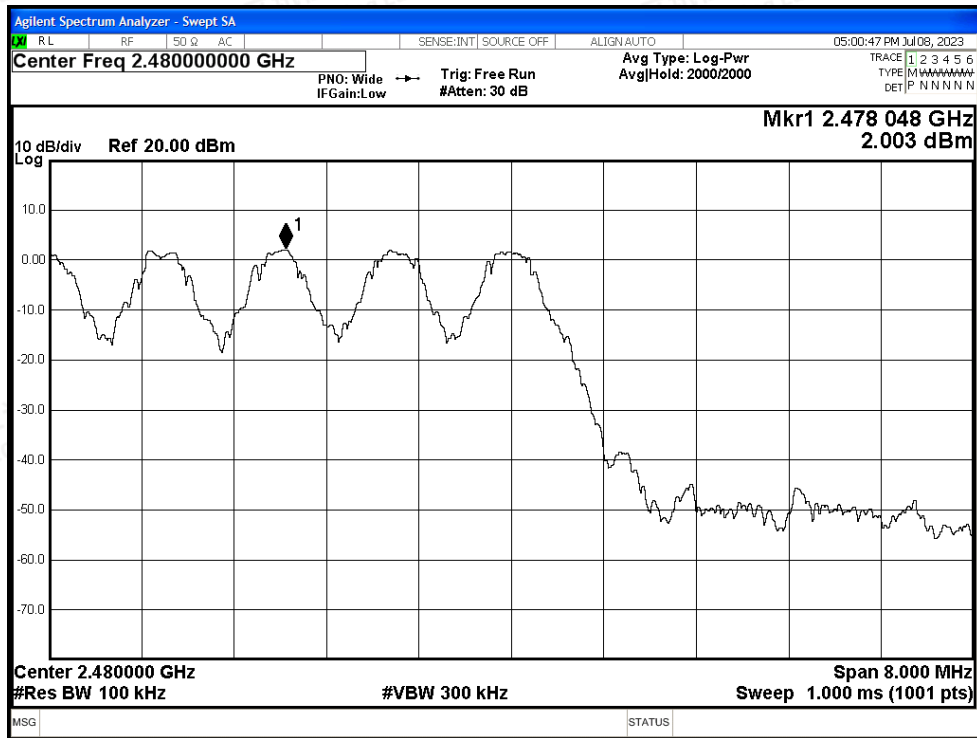


Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission

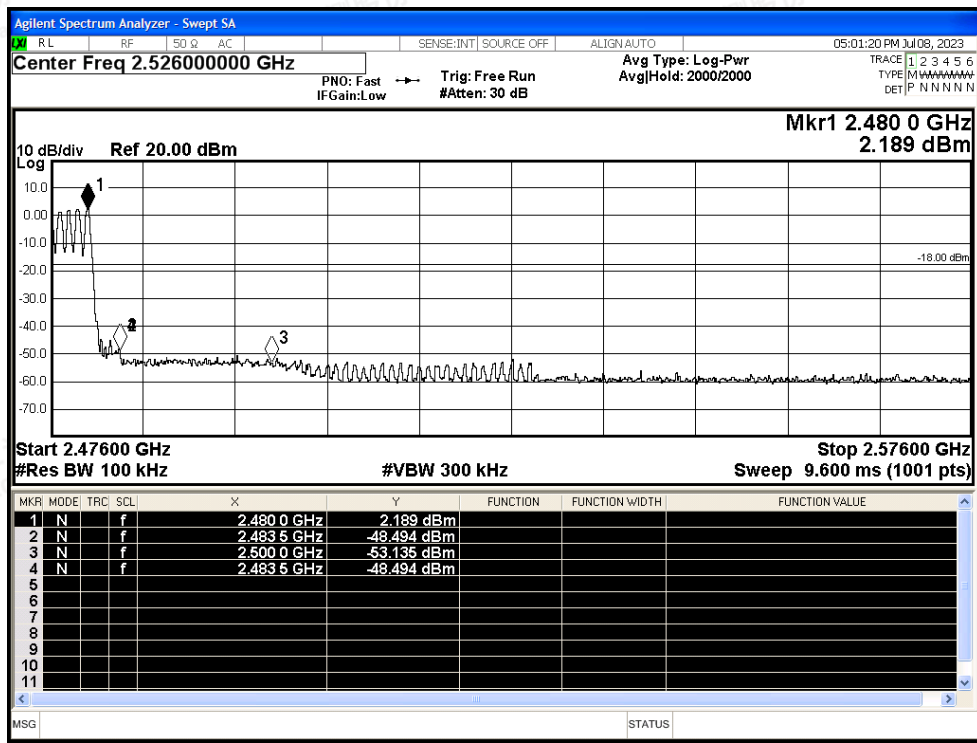




Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref

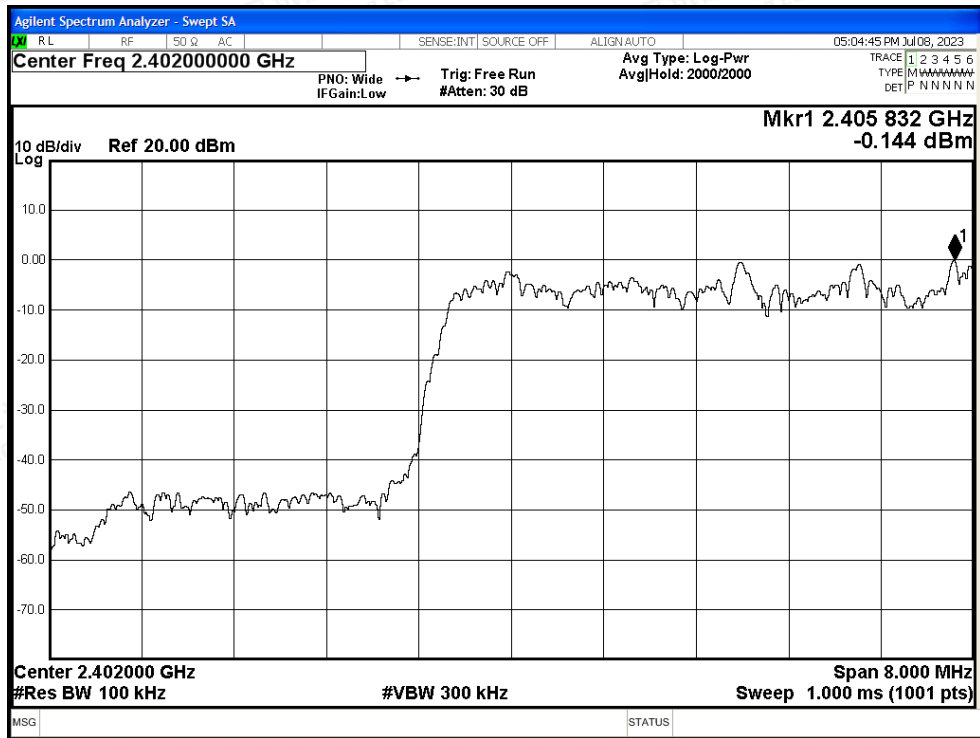


Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission

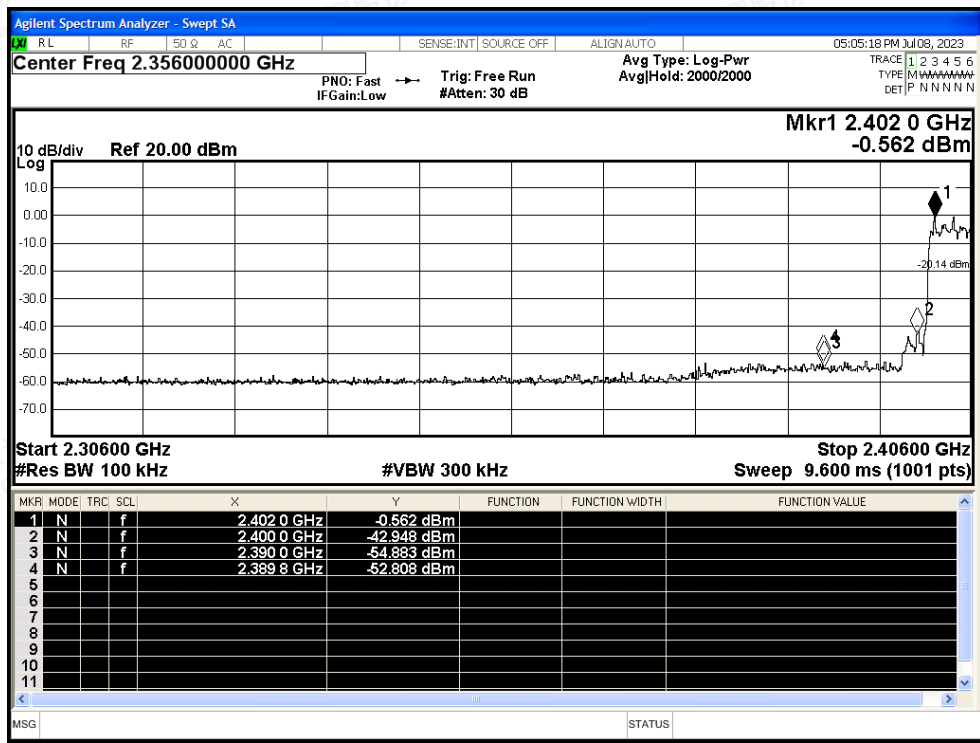




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref

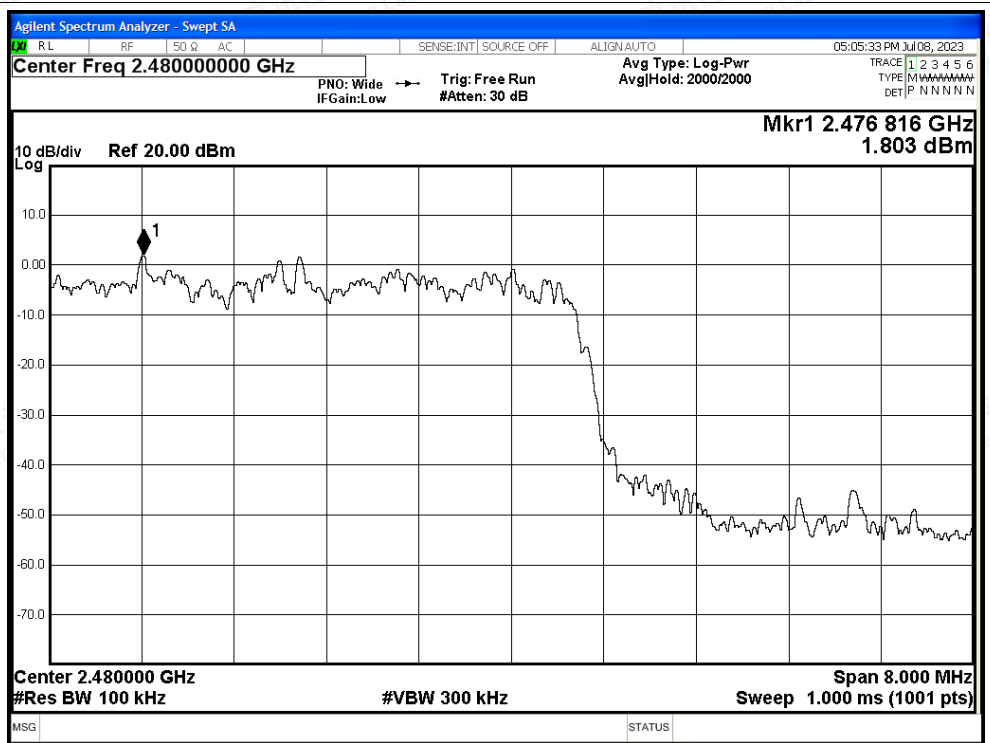


Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission

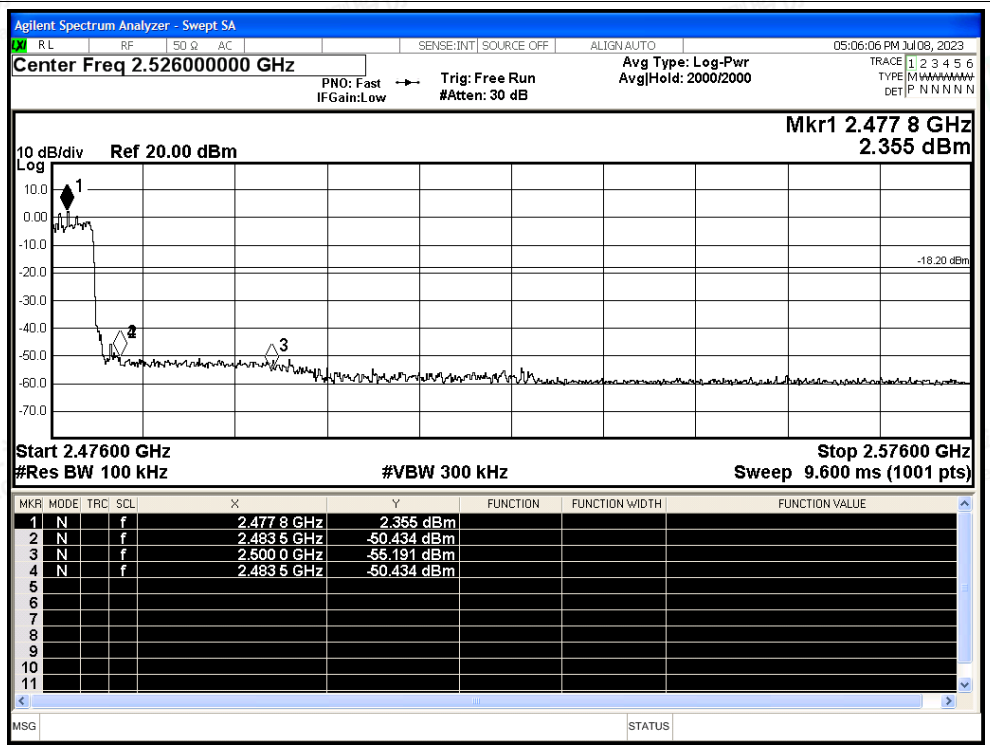




Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref

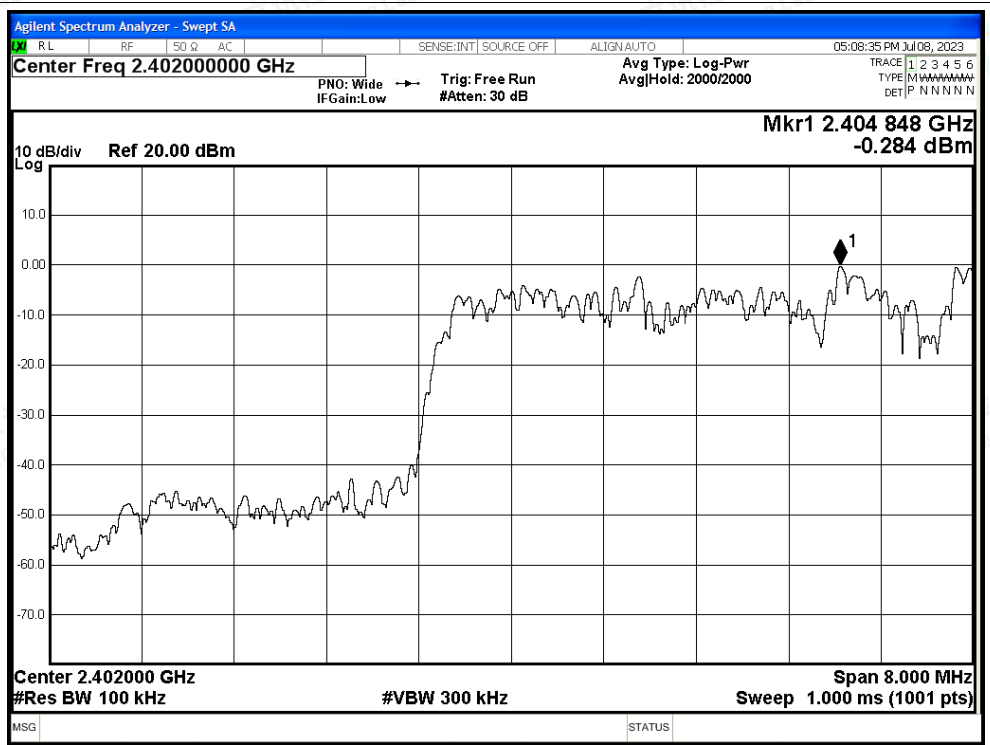


Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission

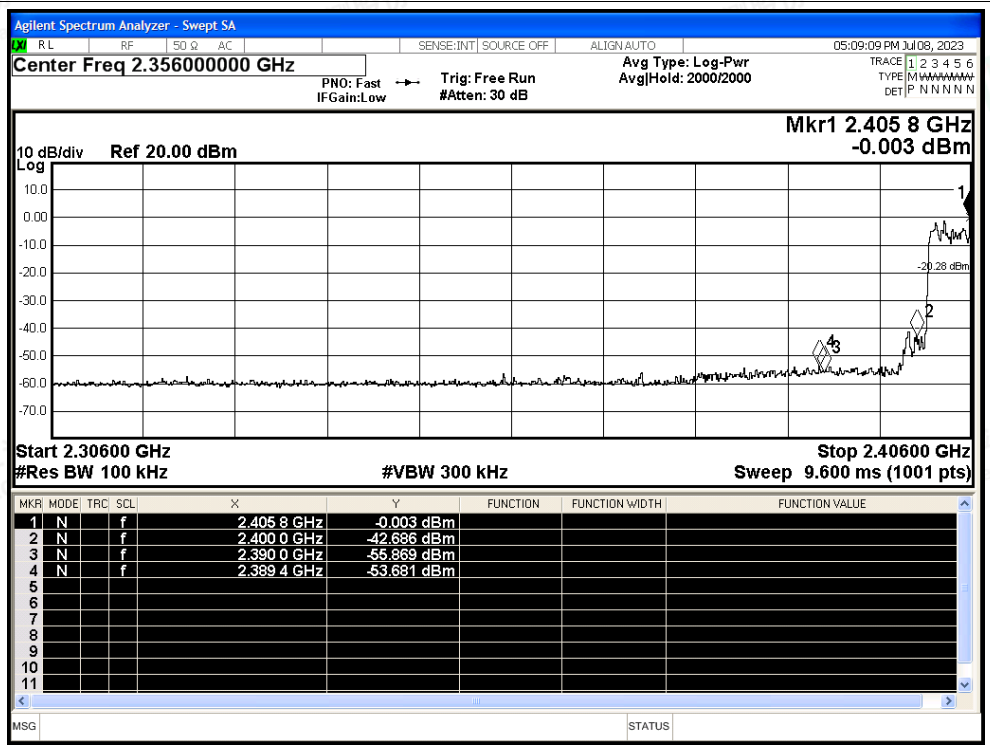


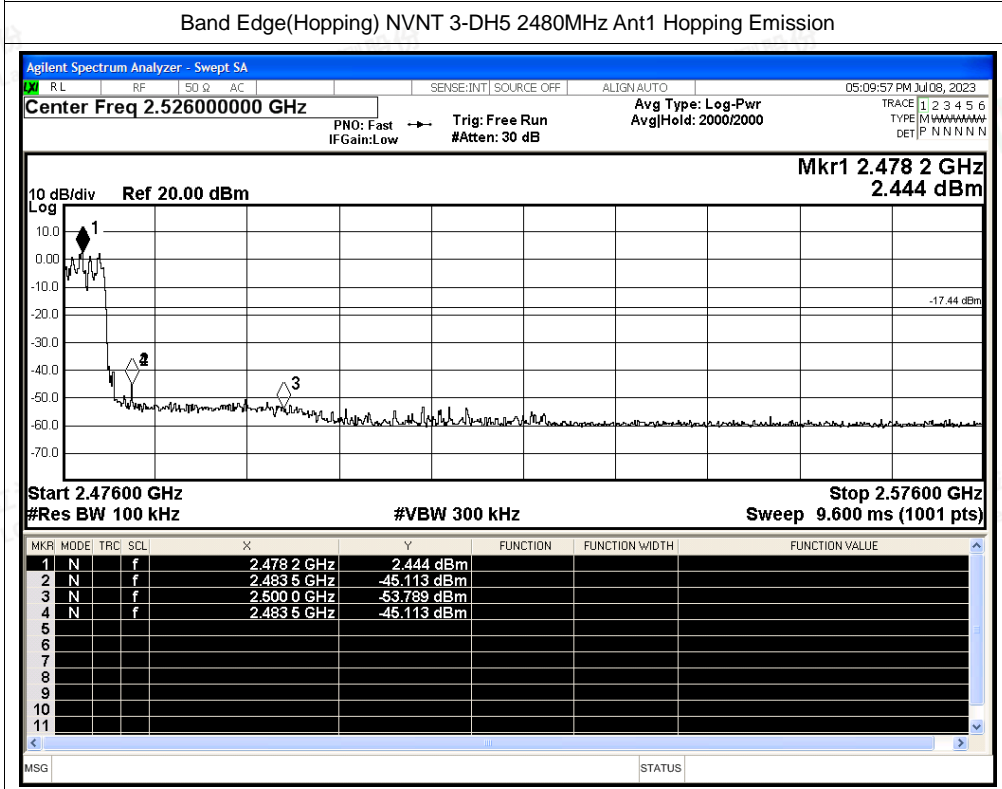
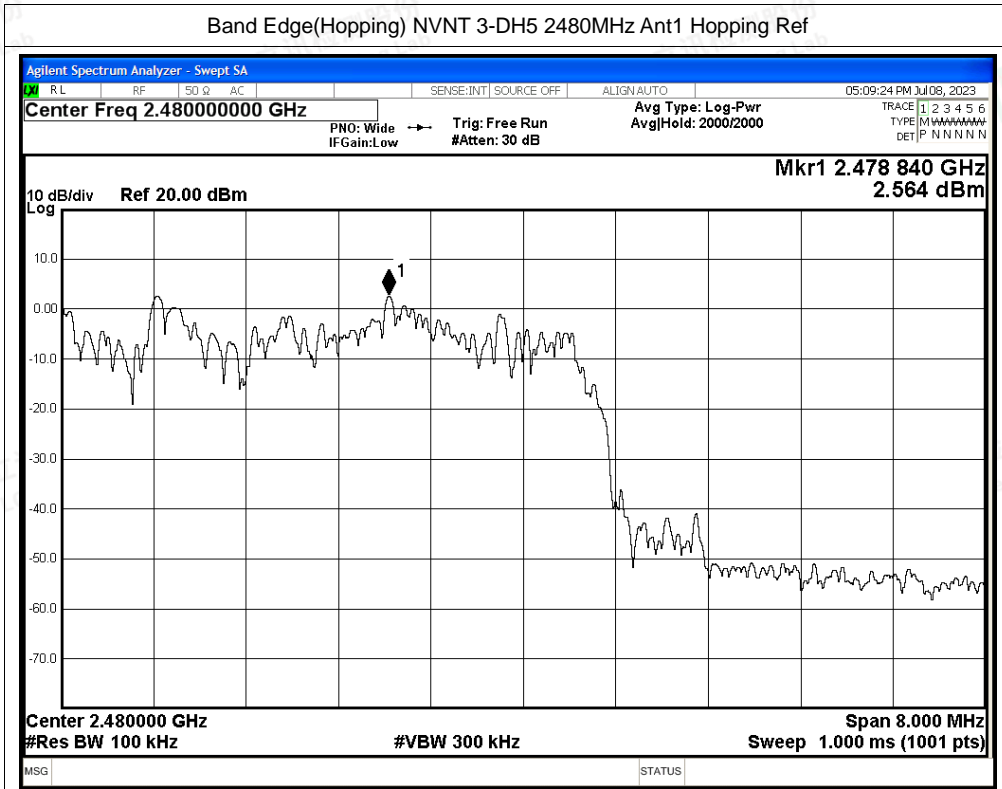


Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission







A.7 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-42.65	-20	Pass
NVNT	1-DH5	2441	Ant1	-43.82	-20	Pass
NVNT	1-DH5	2480	Ant1	-42.18	-20	Pass
NVNT	2-DH5	2402	Ant1	-42.82	-20	Pass
NVNT	2-DH5	2441	Ant1	-43.64	-20	Pass
NVNT	2-DH5	2480	Ant1	-42.53	-20	Pass
NVNT	3-DH5	2402	Ant1	-42.85	-20	Pass
NVNT	3-DH5	2441	Ant1	-43.63	-20	Pass
NVNT	3-DH5	2480	Ant1	-43.01	-20	Pass

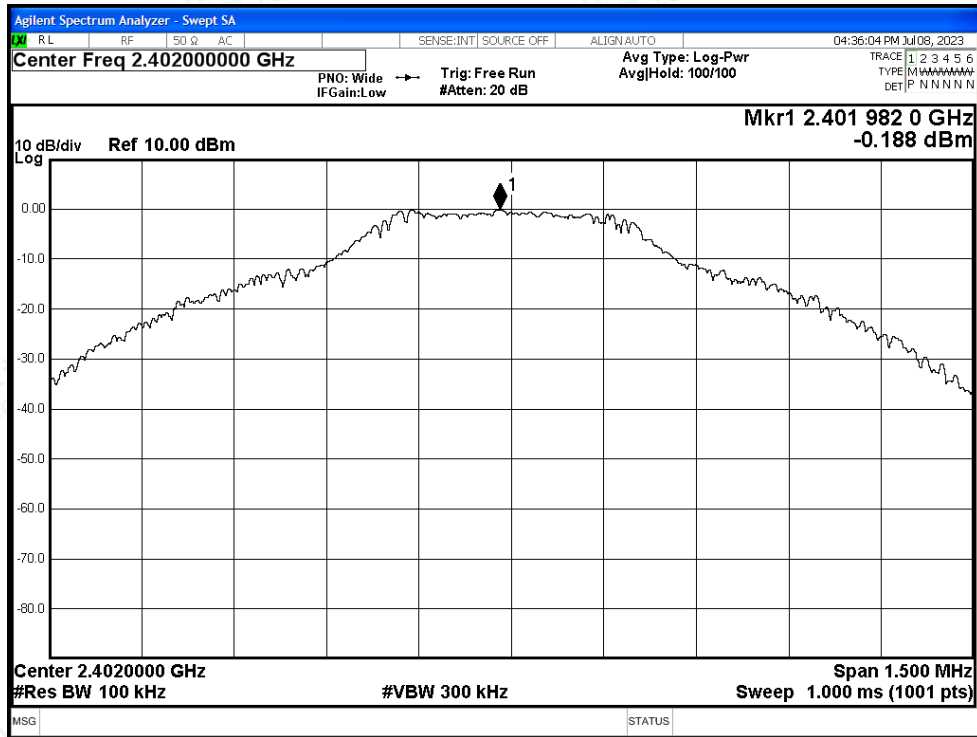


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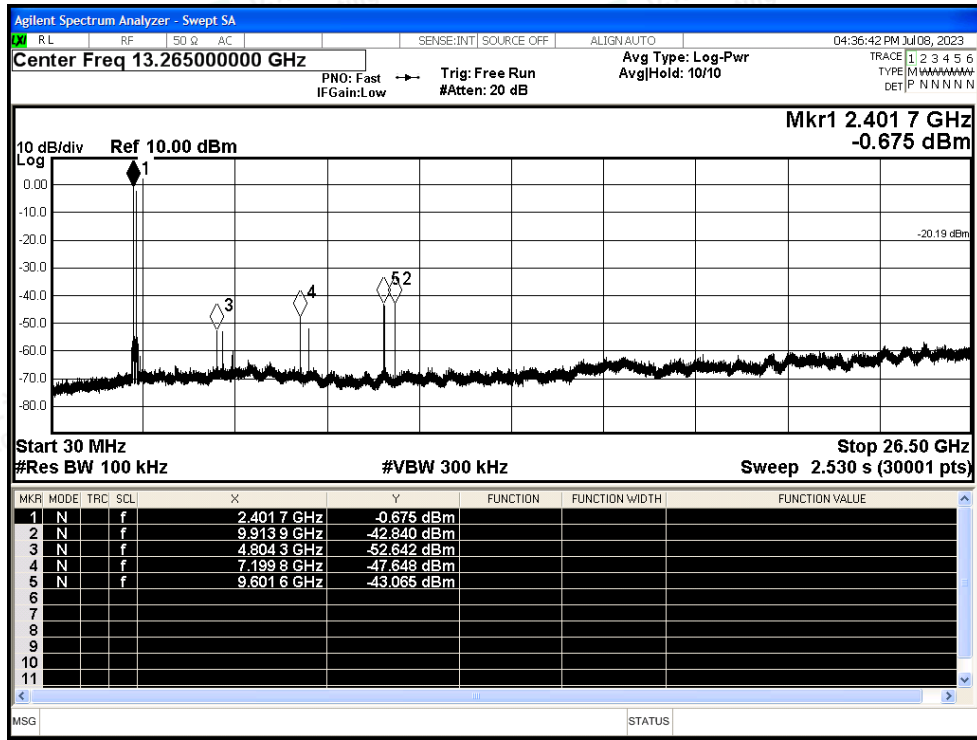


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref

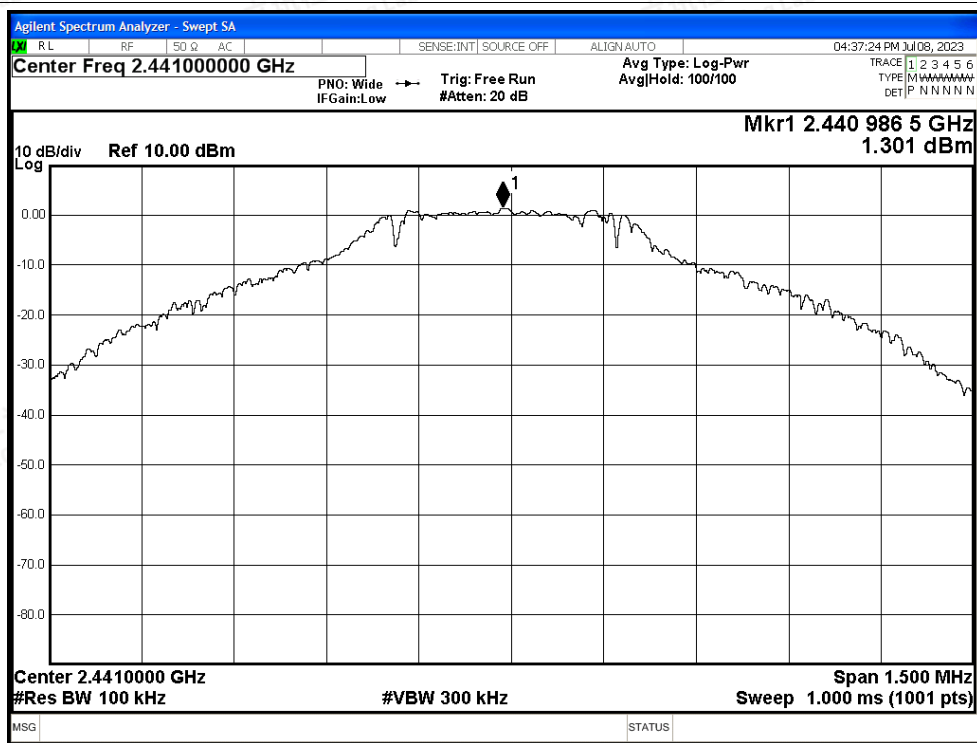


Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission

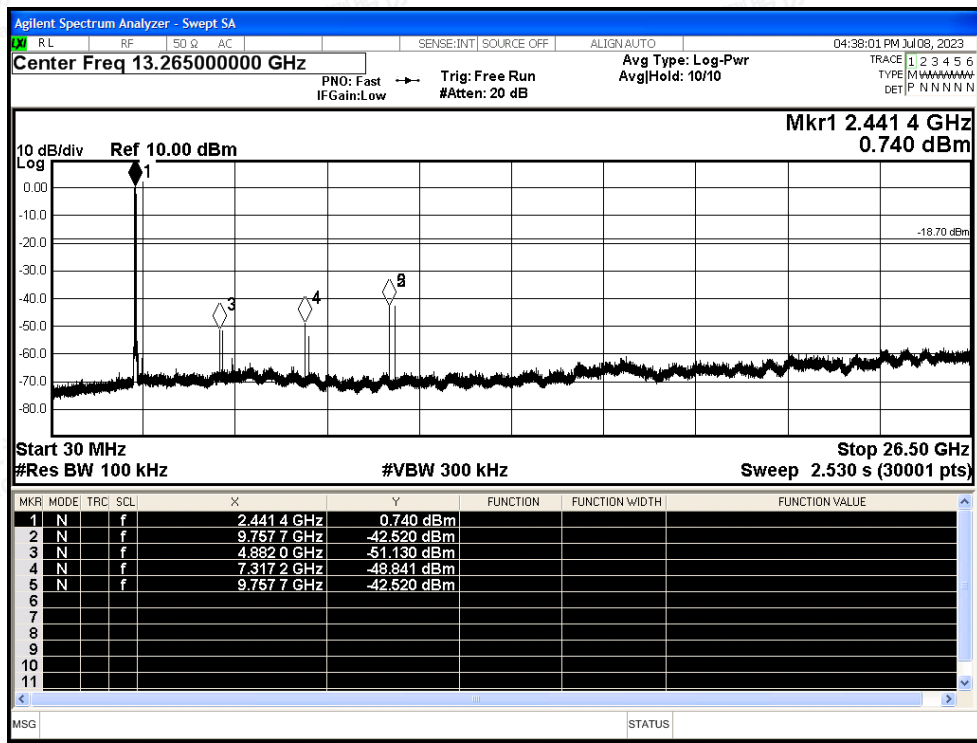




Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref

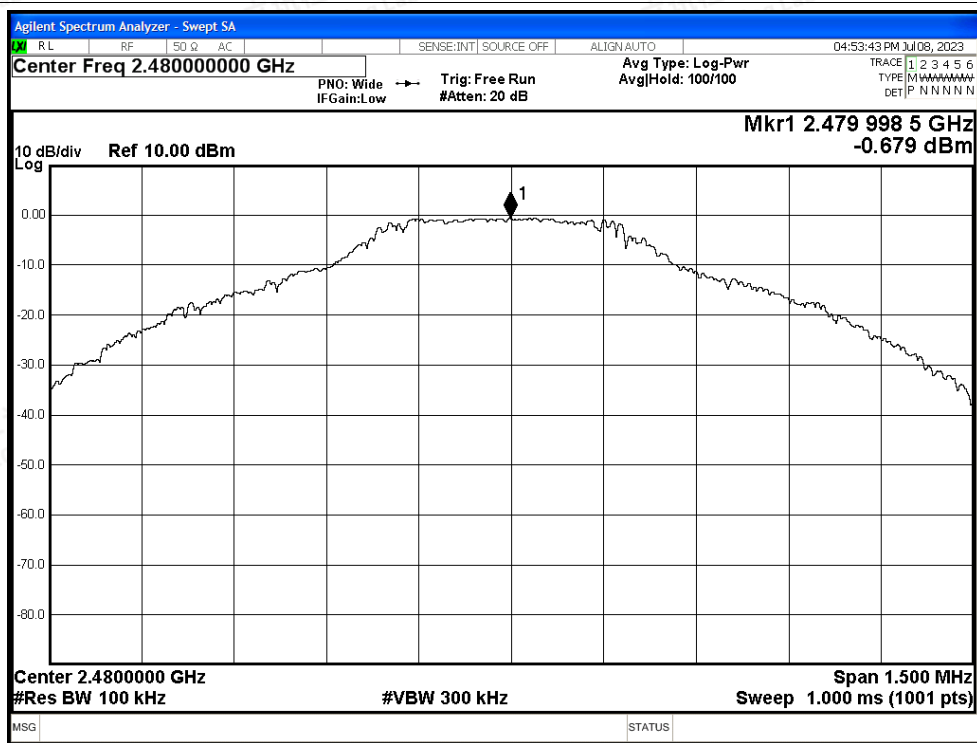


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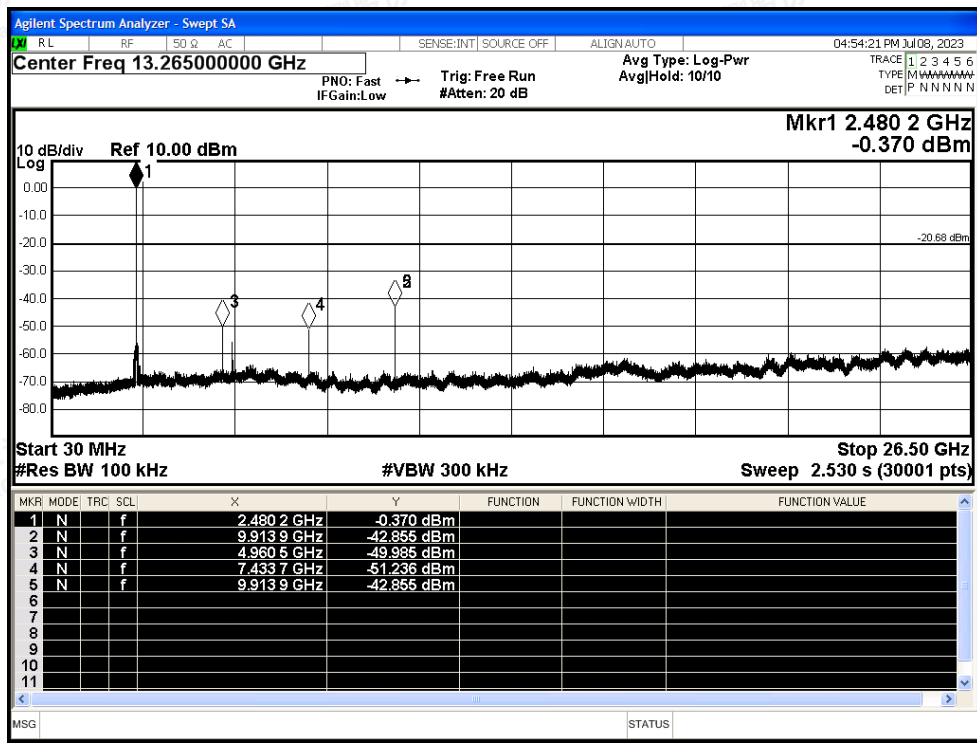




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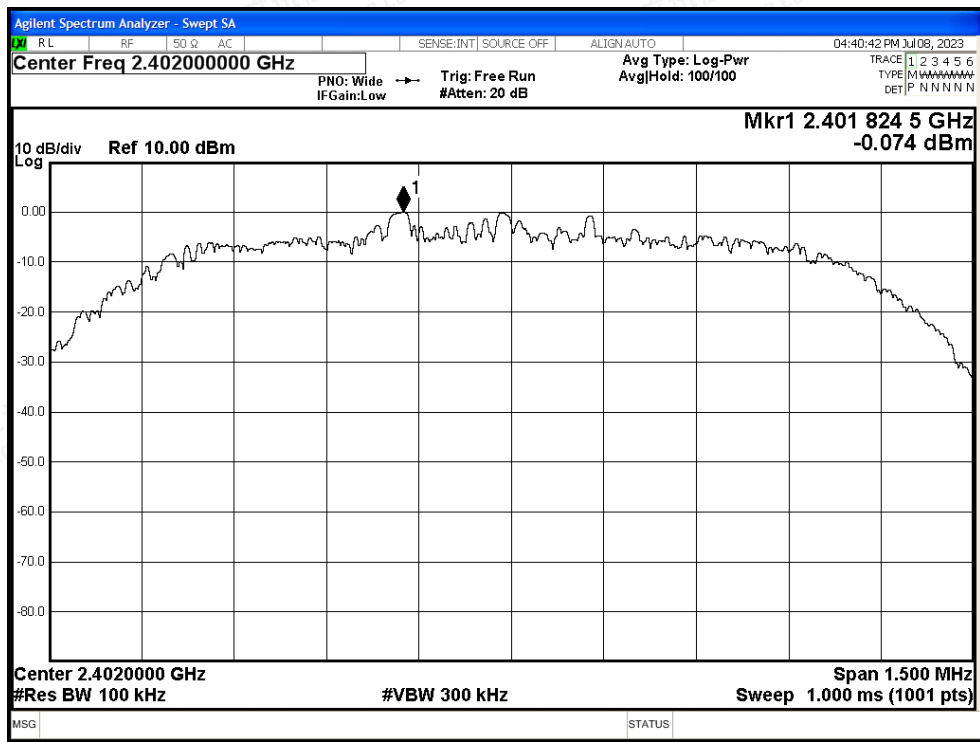


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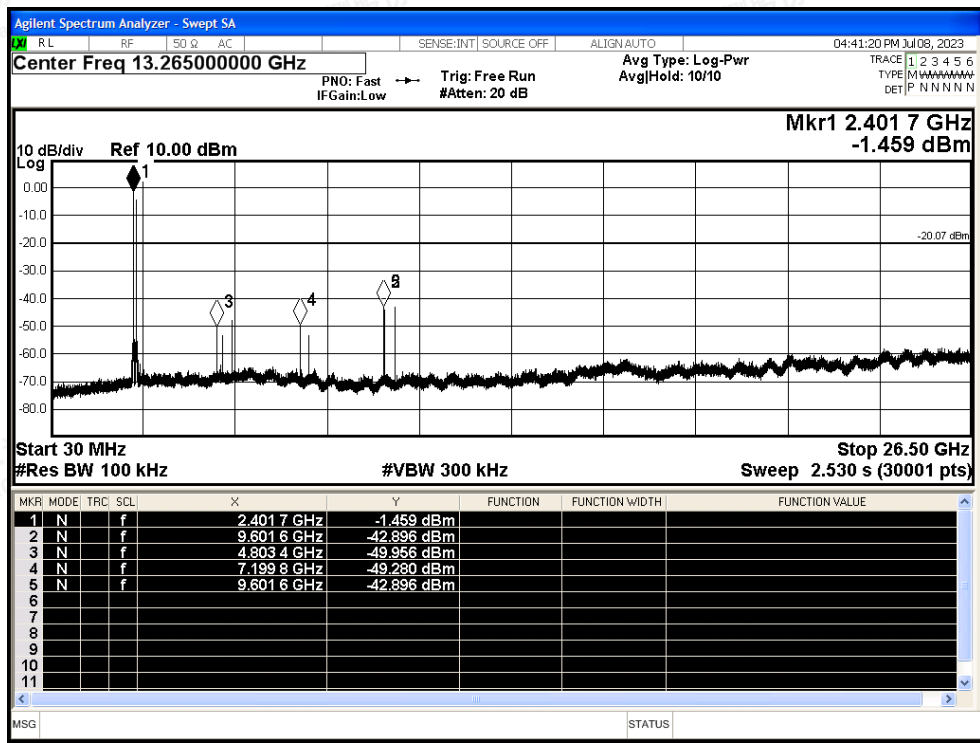




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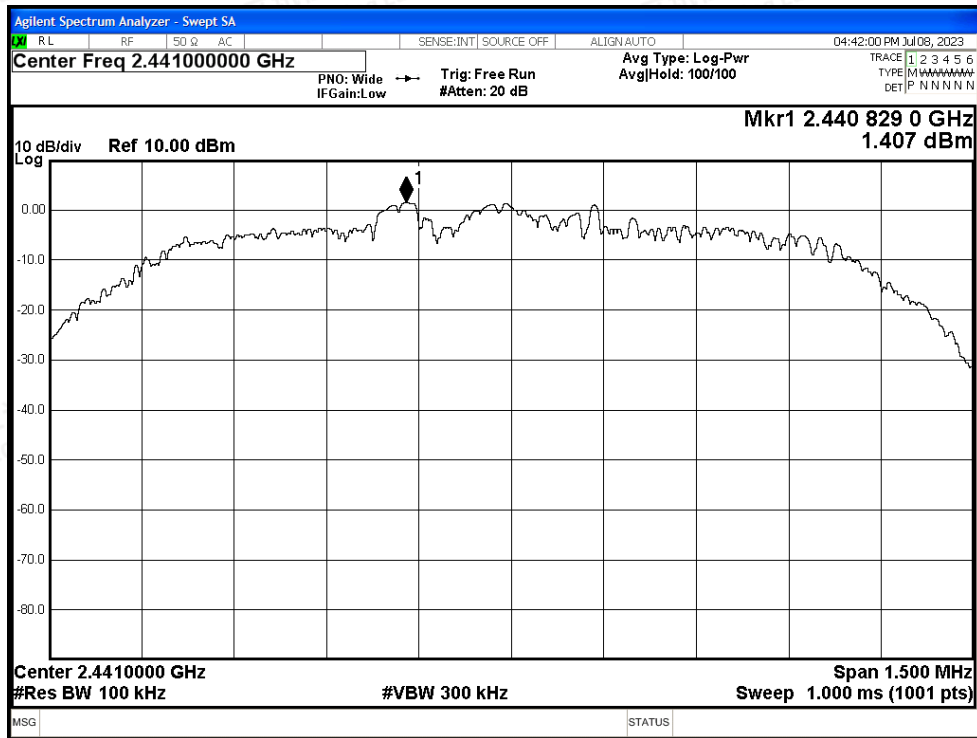


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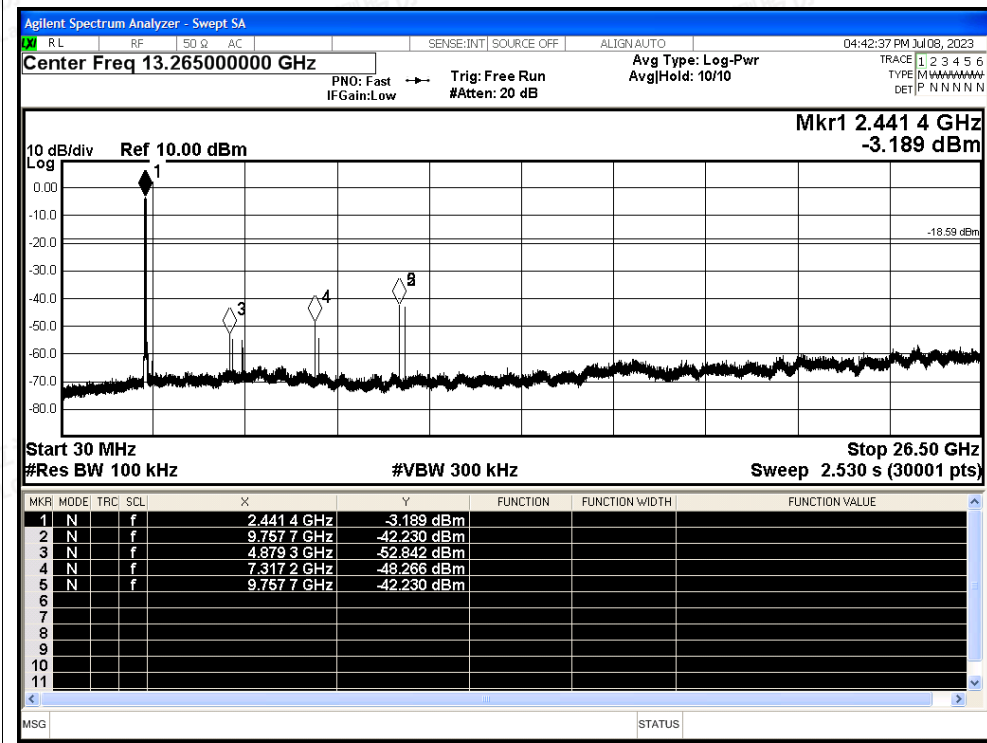




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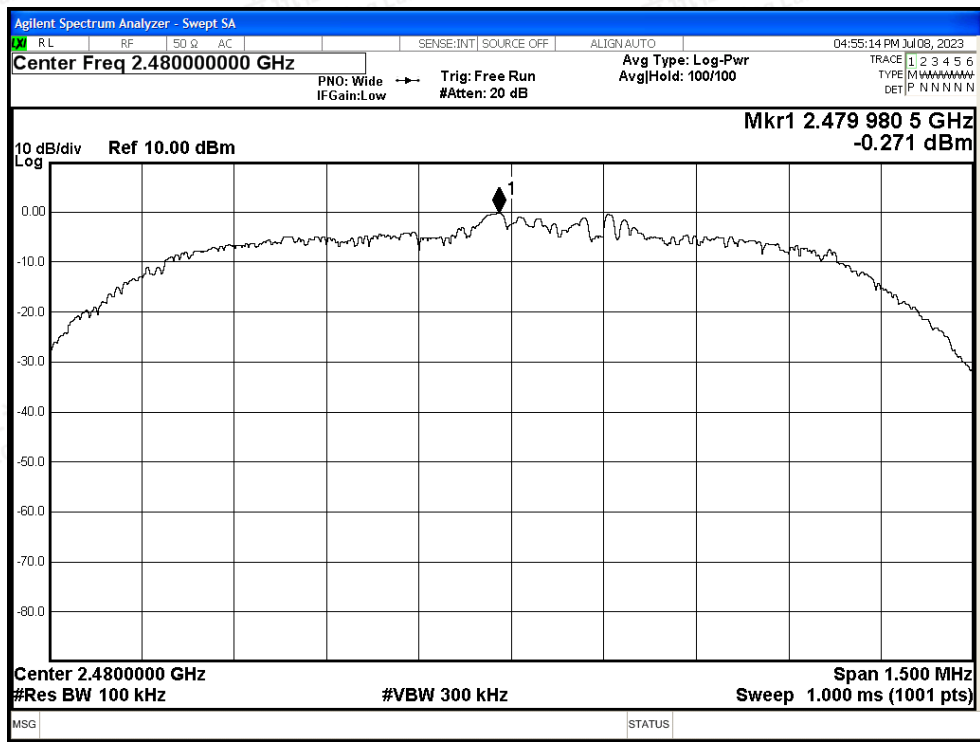


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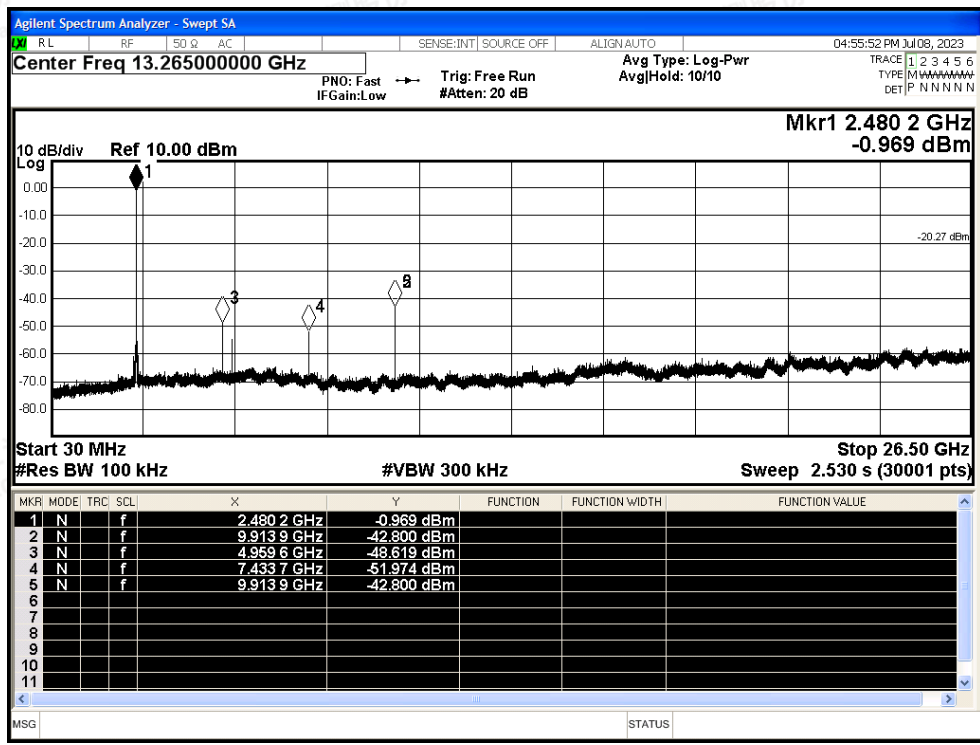




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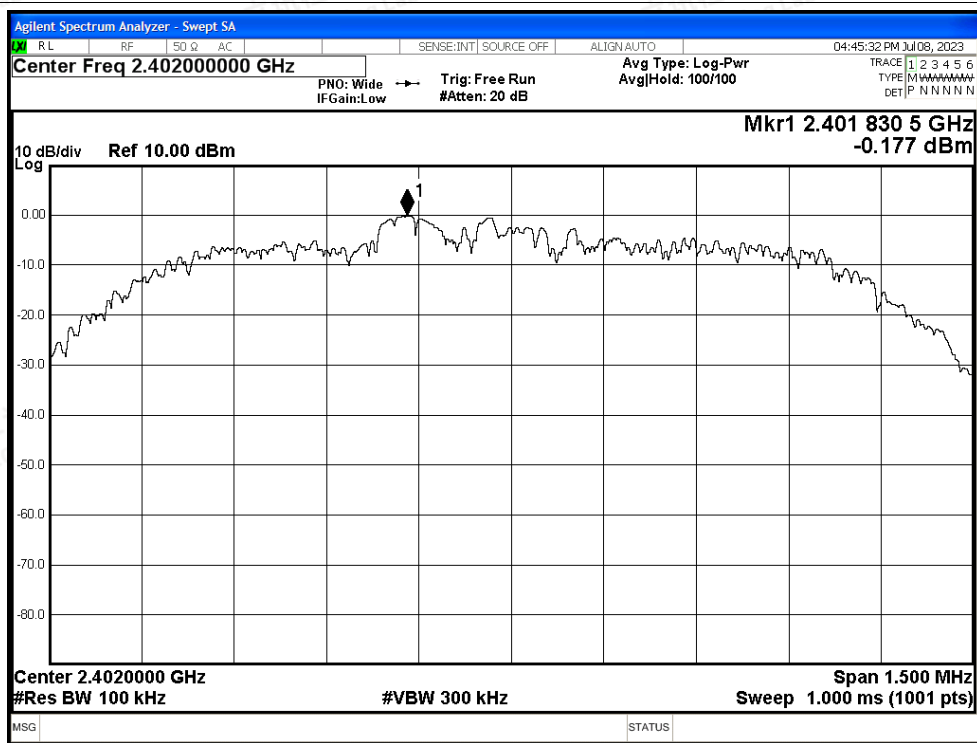


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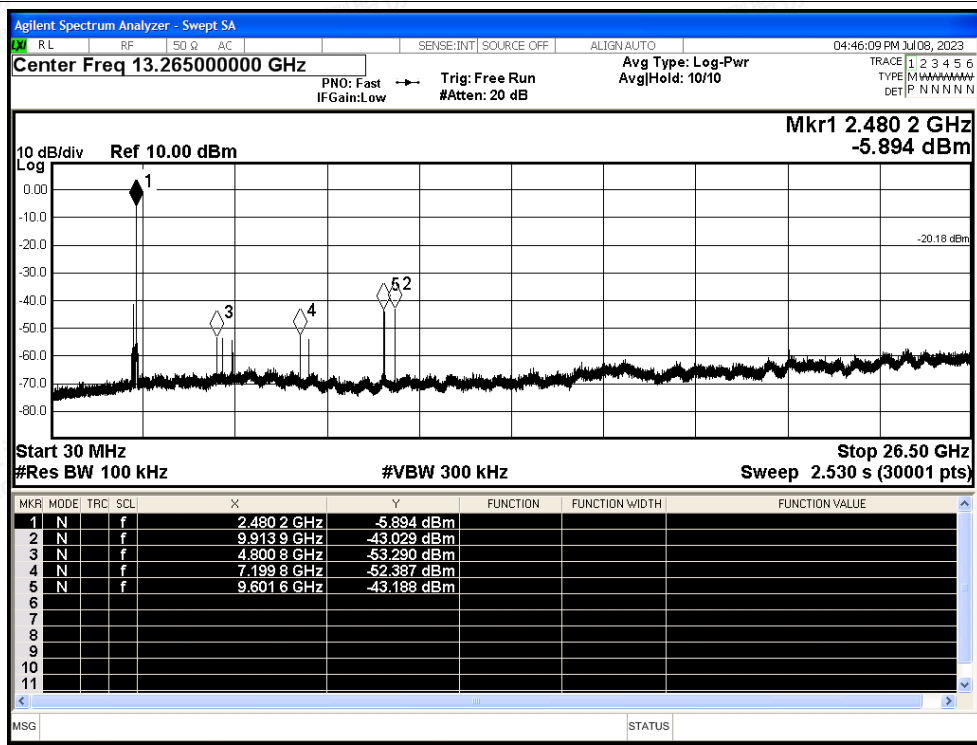




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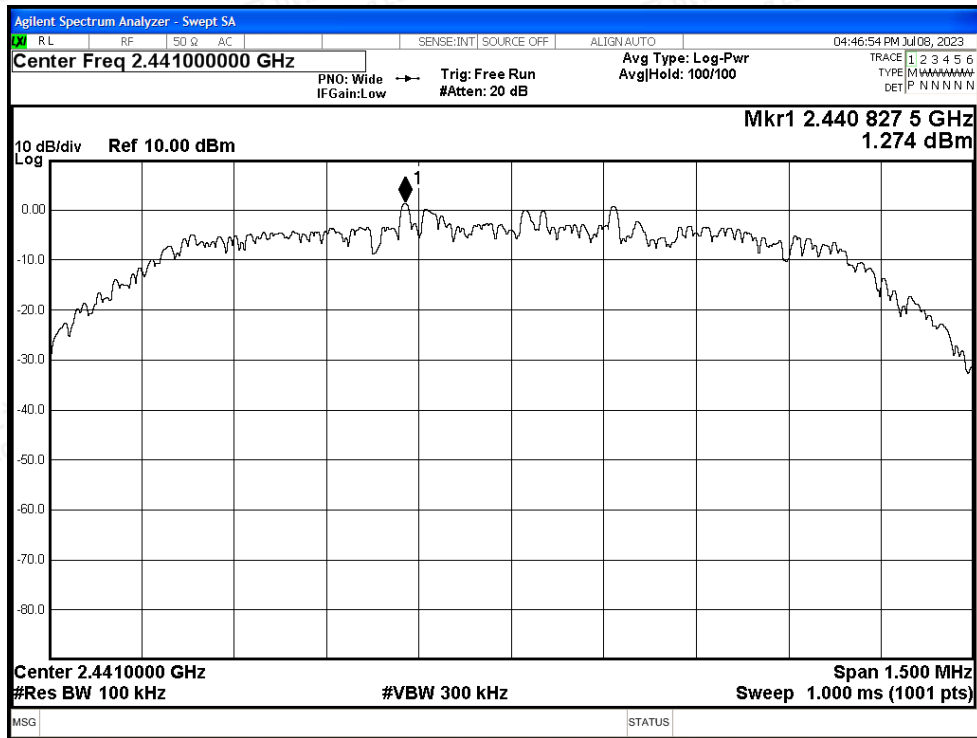


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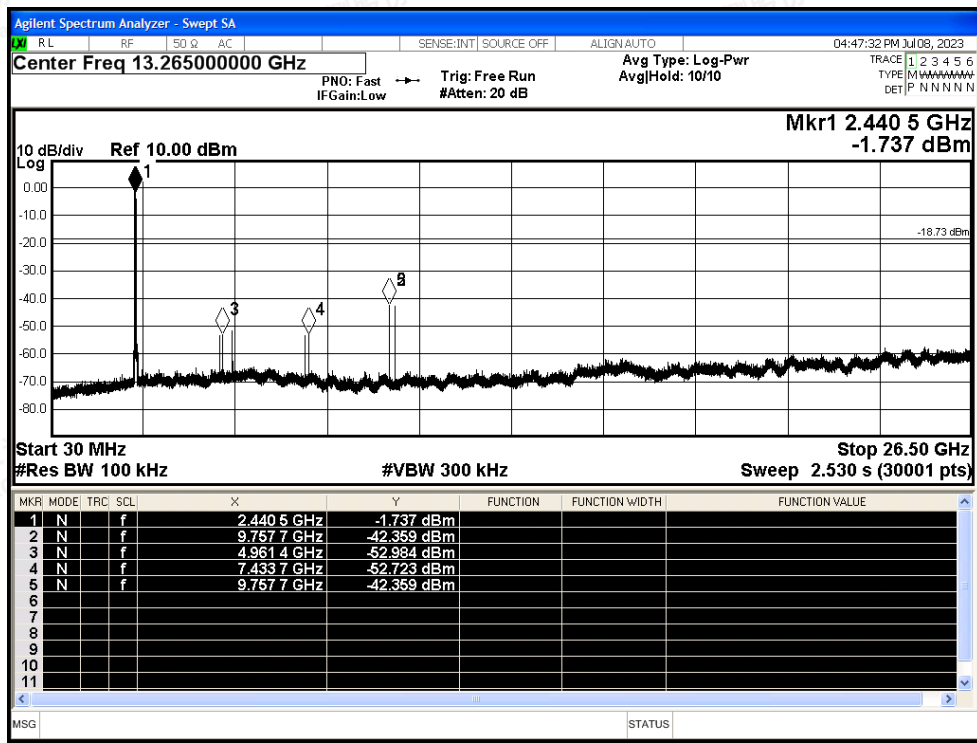




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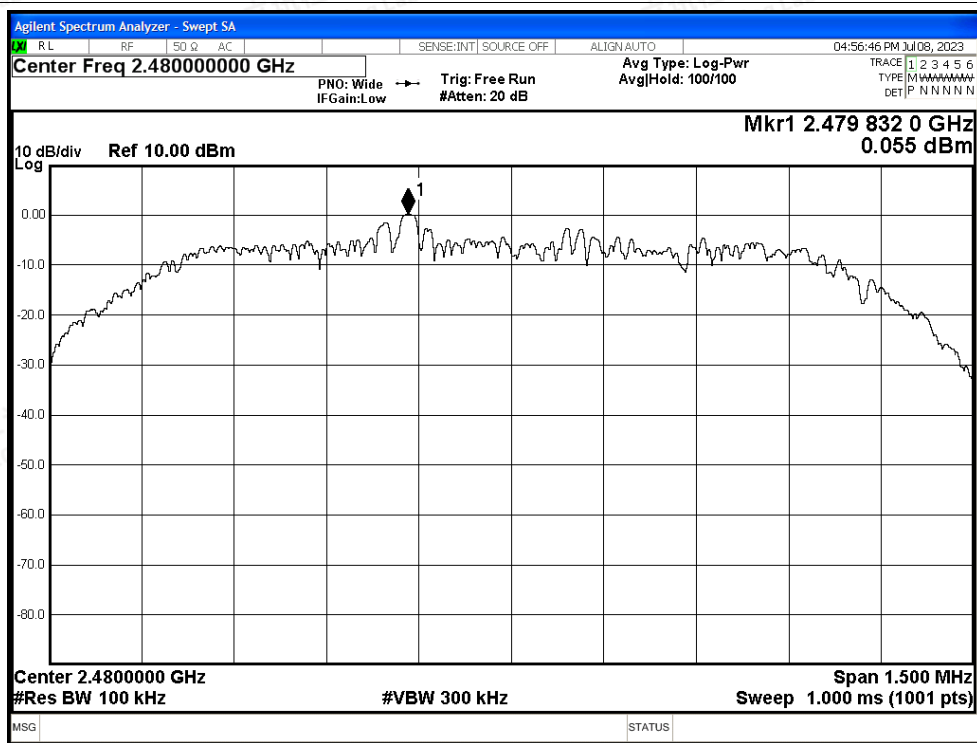


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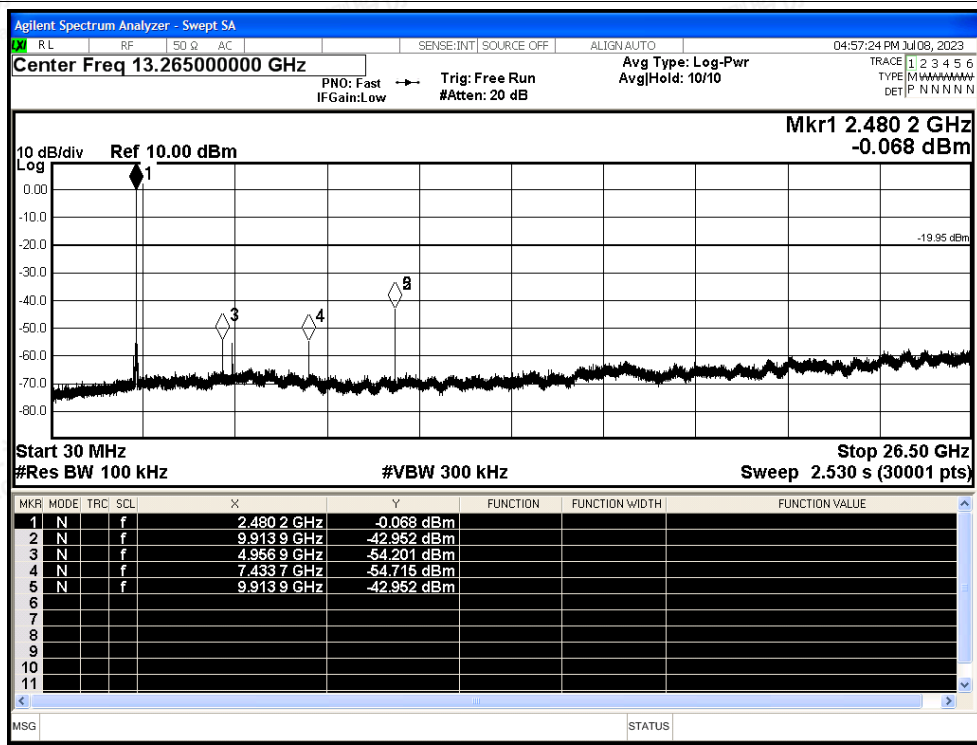




Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-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	-51.84	2	45.42	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-62.04	2	35.22	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2379.984	-44.48	2	52.78	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2380.08	-56.43	2	40.83	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-47.87	2	49.39	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-57.89	2	39.37	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-42.45	2	54.81	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-49.84	2	47.42	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2485.024	-41.79	2	55.47	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.512	-49.84	2	47.42	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-45.63	2	51.63	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-55.38	2	41.88	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-51.6	2	45.66	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-62.04	2	35.22	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2386.896	-45.65	2	51.61	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2380.368	-56.58	2	40.68	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-48.22	2	49.04	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-58.03	2	39.23	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-43.27	2	53.99	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-52.78	2	44.48	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2484.688	-42.14	2	55.12	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.512	-52.78	2	44.48	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-46.72	2	50.54	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-55.5	2	41.76	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-51.28	2	45.98	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-62.24	2	35.02	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2381.52	-44.49	2	52.77	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2380.752	-56.64	2	40.62	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-50.17	2	47.09	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-61.22	2	36.04	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-44.09	2	53.17	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-54.07	2	43.19	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.776	-41.5	2	55.76	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.512	-54.07	2	43.19	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-46.09	2	51.17	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-57.15	2	40.11	Average	54	Pass

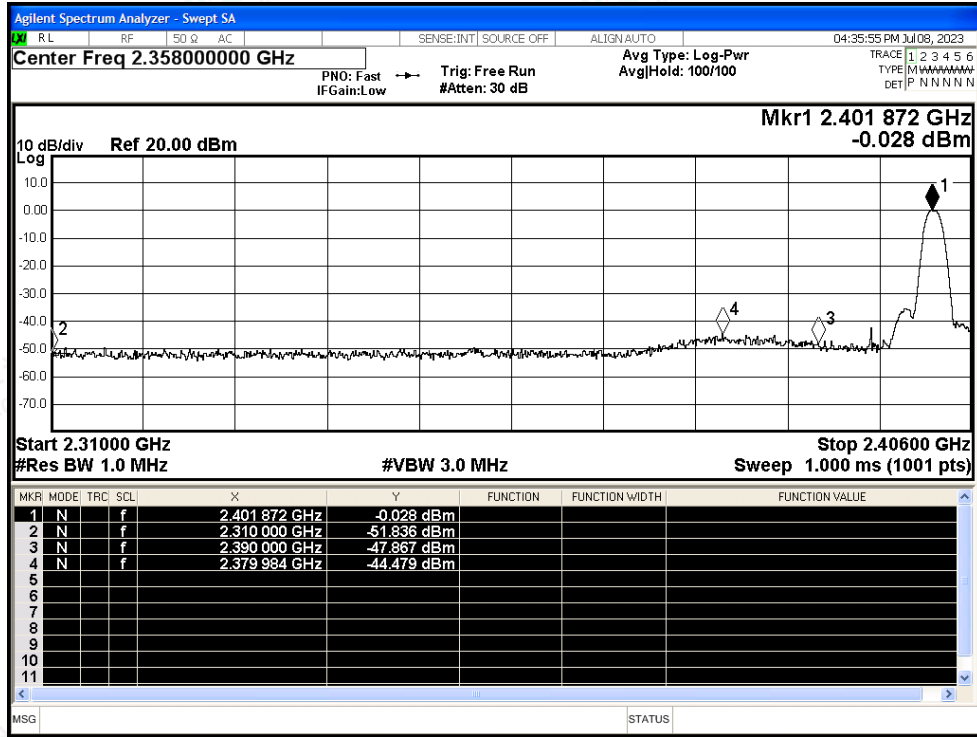


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 Scan code to check authenticity

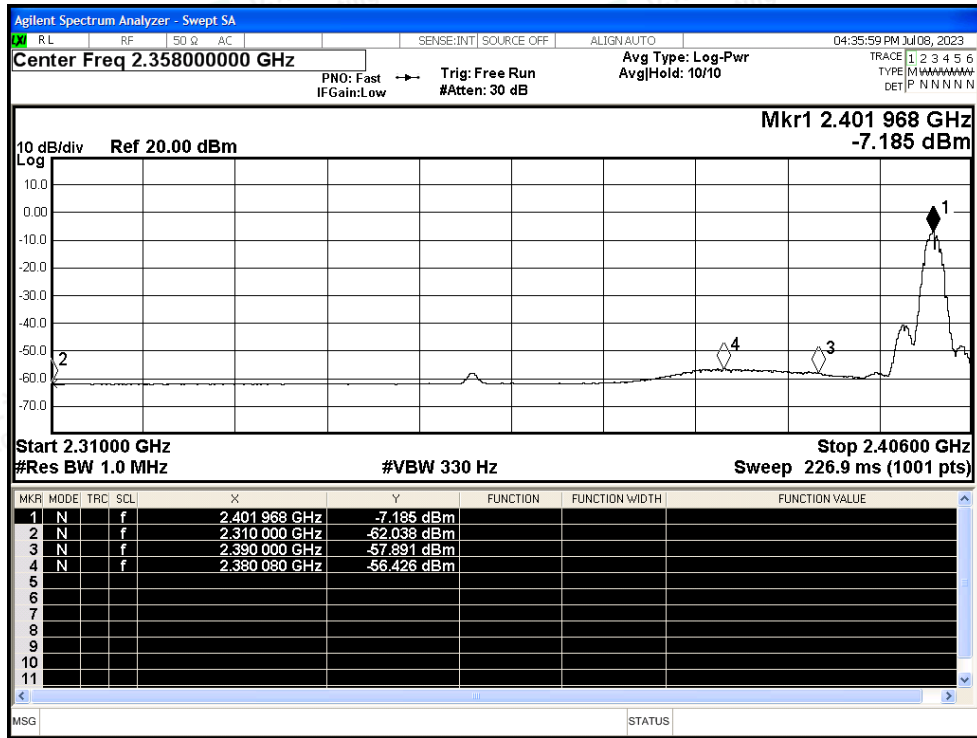


Test Graphs

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

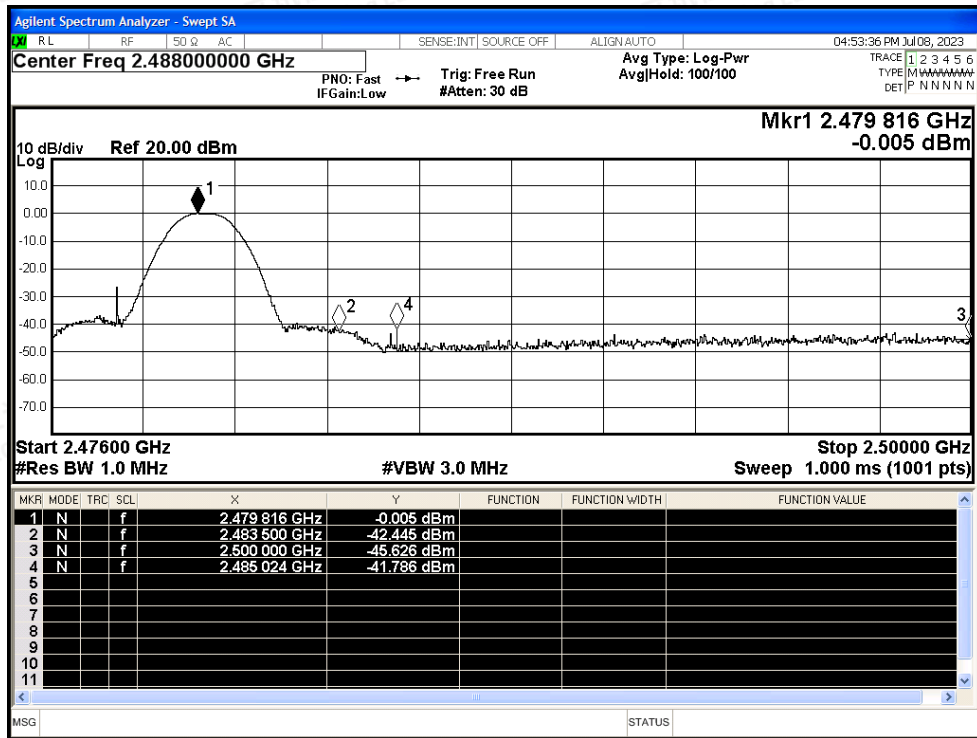


Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average

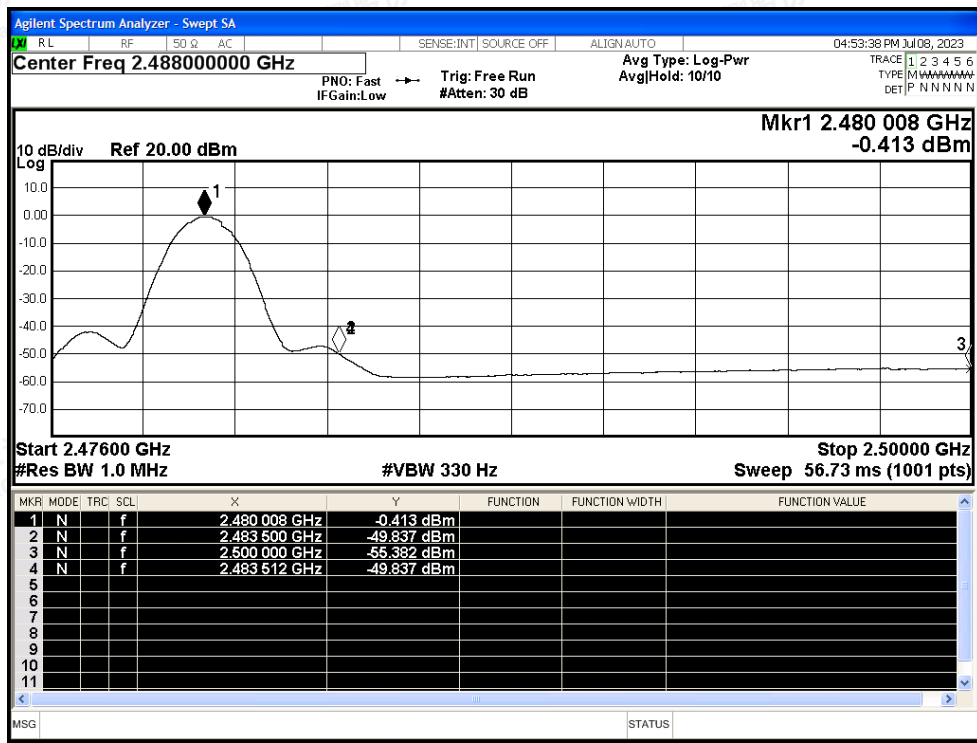




Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak

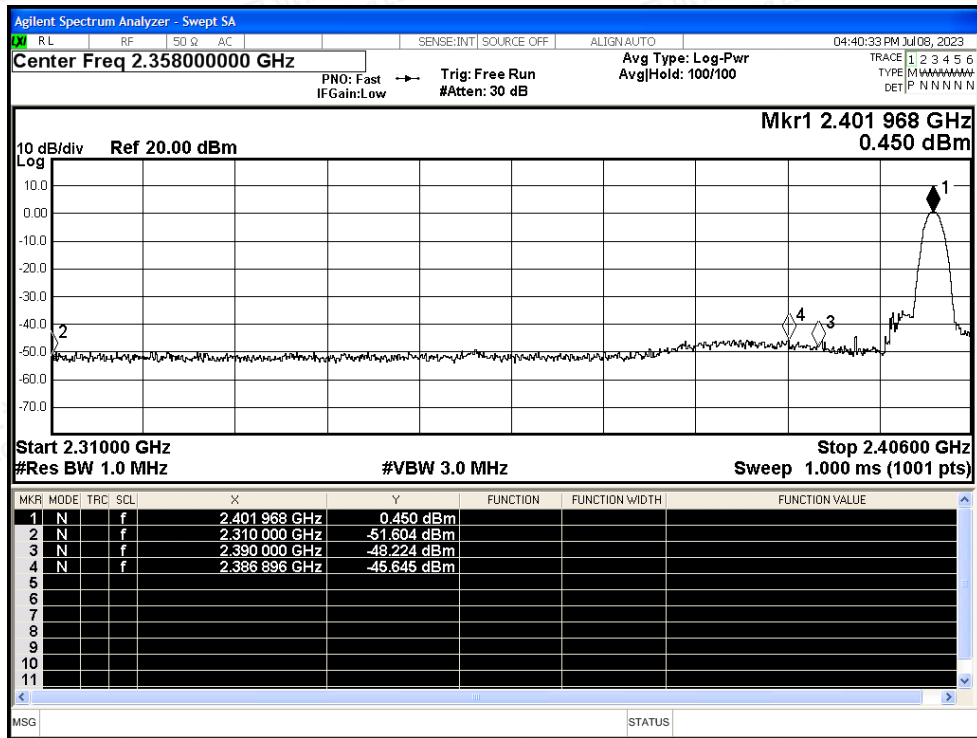


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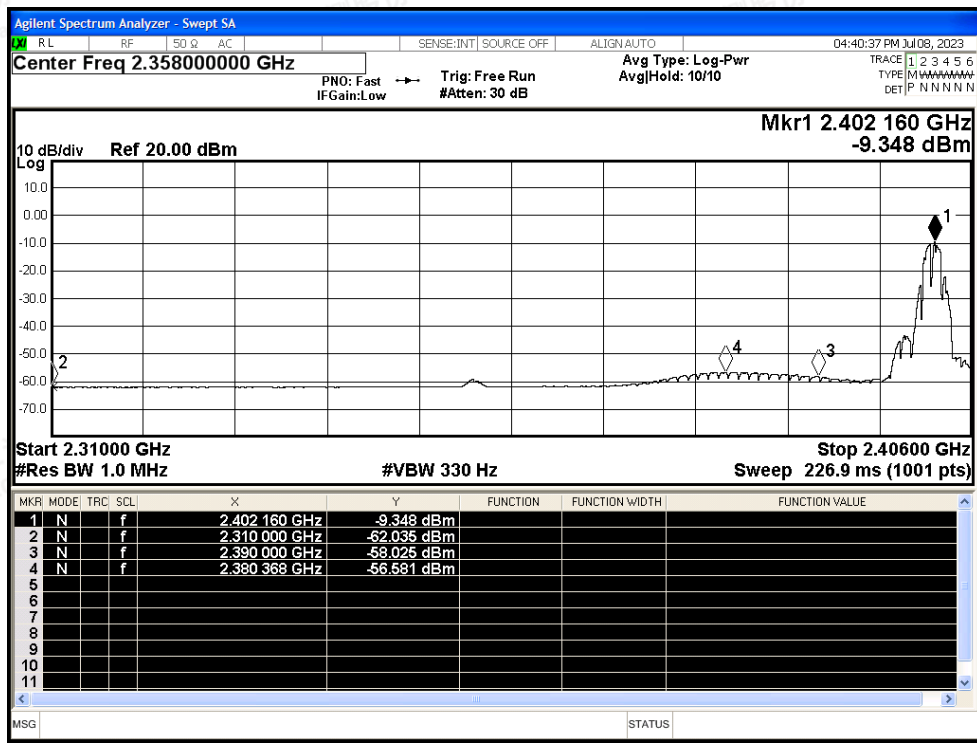




Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak

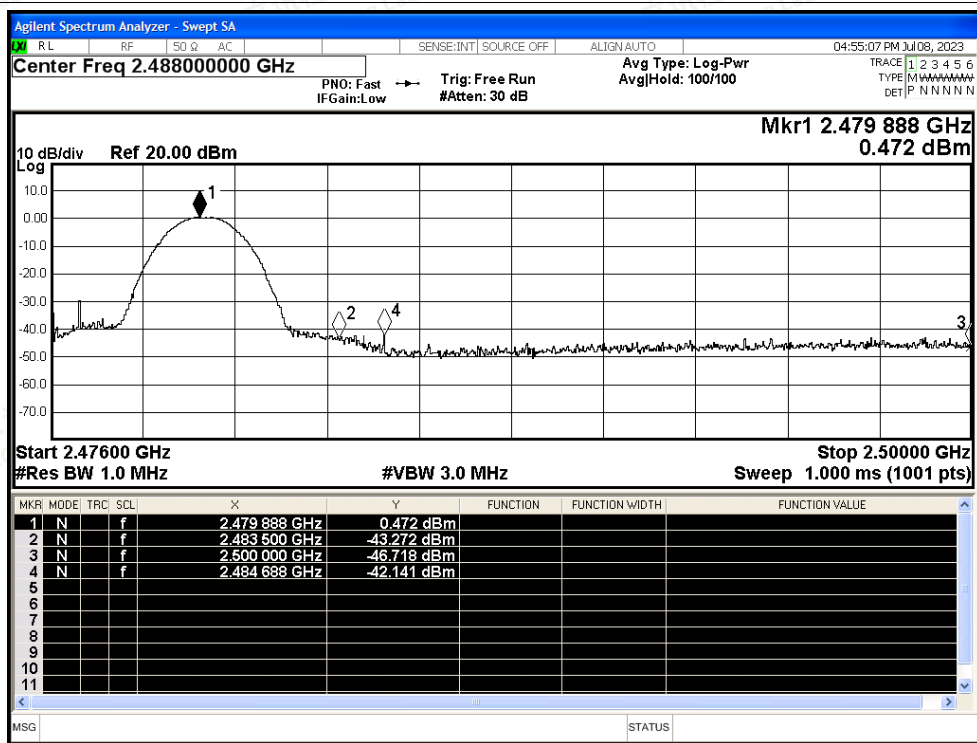


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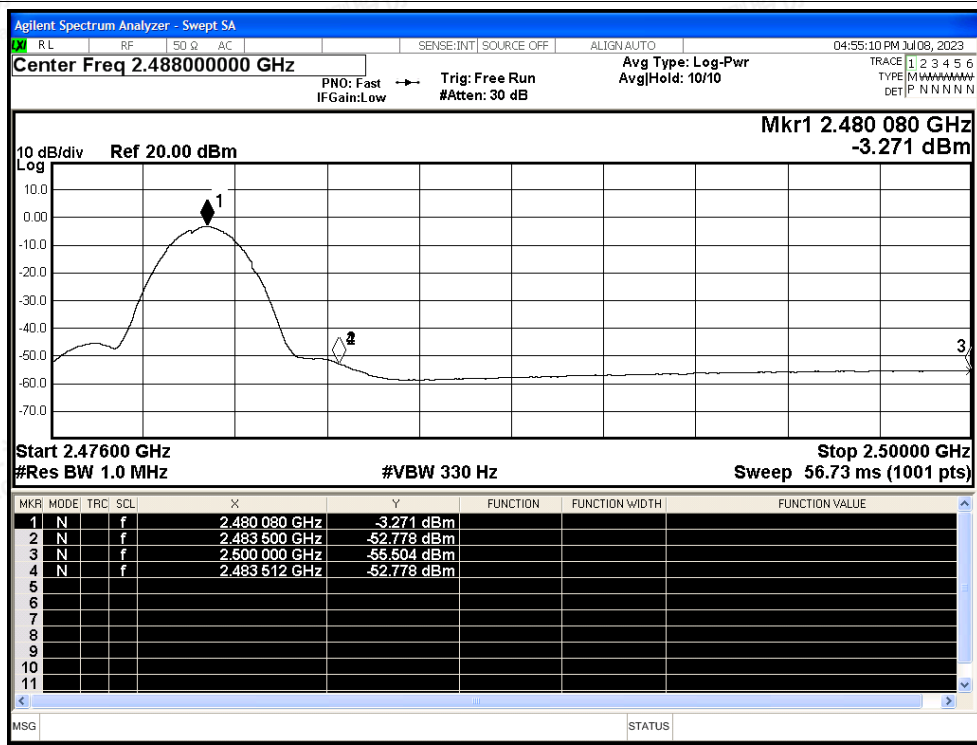




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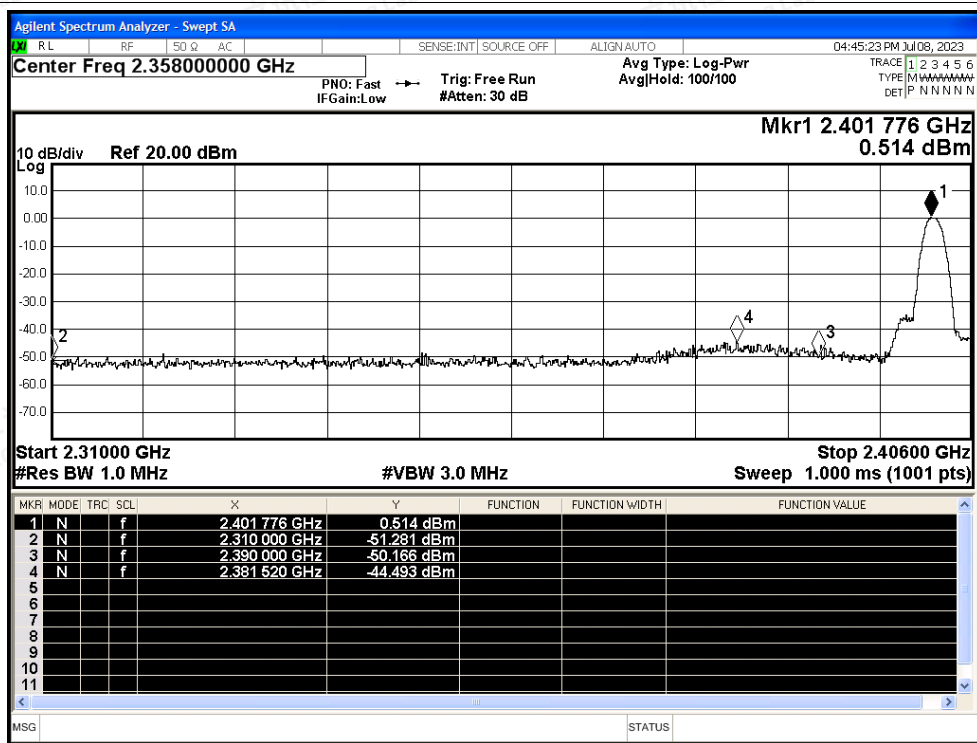


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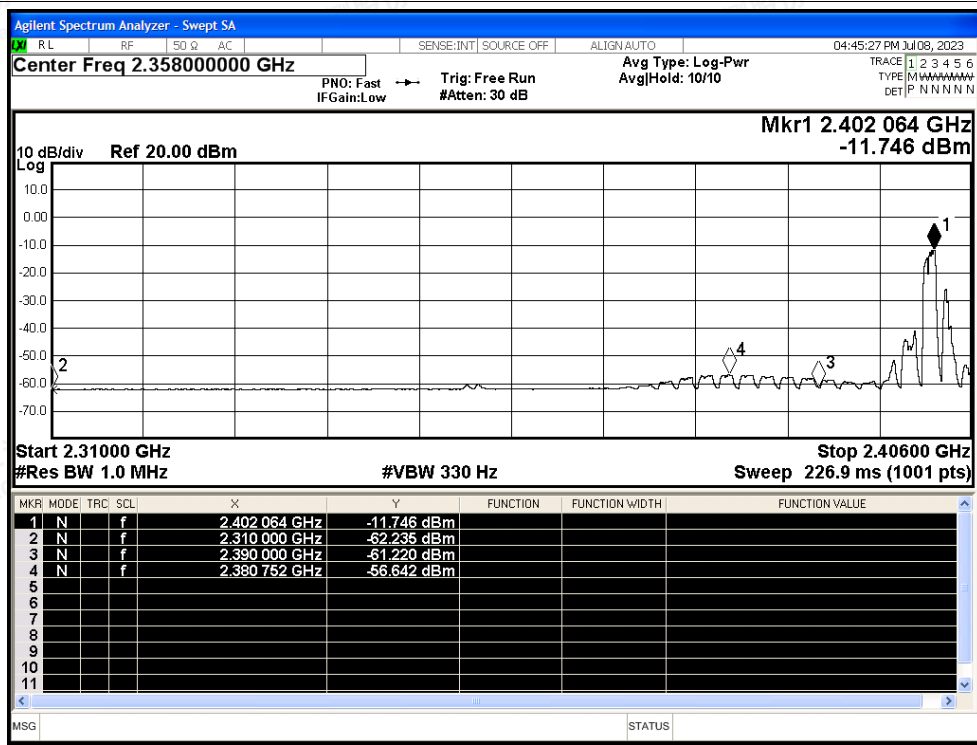




Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak

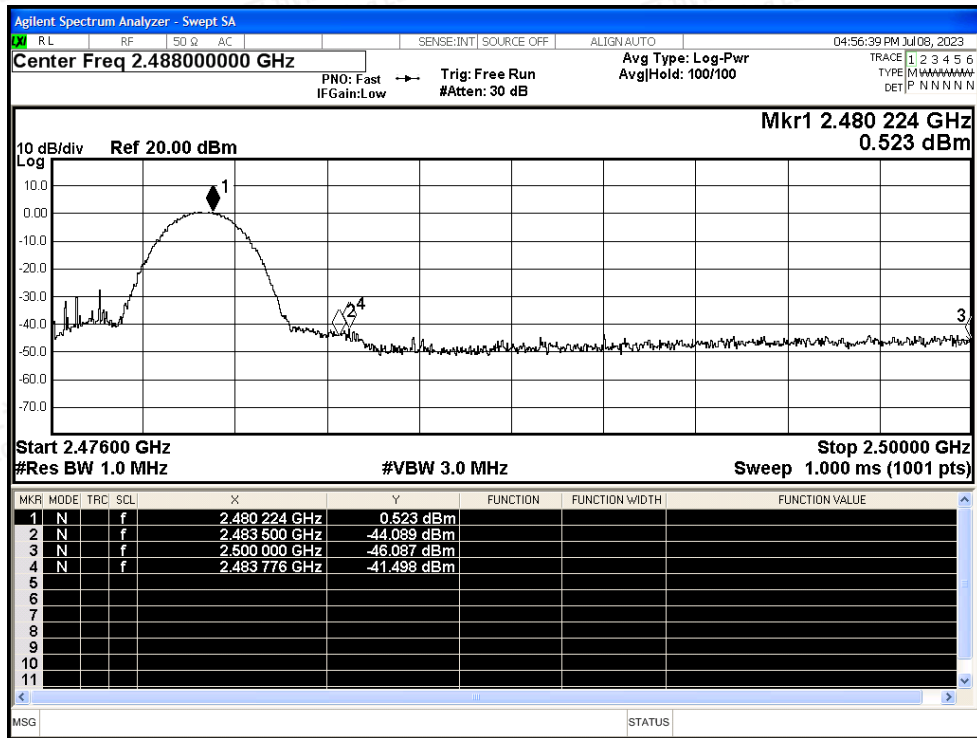


Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Average





Restrict Band NVNT 3-DH5 2480MHz Ant1 No-Hopping Peak



Restrict Band NVNT 3-DH5 2480MHz Ant1 No-Hopping Average

