



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Communicator

Test Model: Communicator 3-A

Environmental Conditions

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



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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	Ant	0.979	N/A	Pass
NVNT	1-DH5	2441	Ant	1.012	N/A	Pass
NVNT	1-DH5	2480	Ant	1.026	N/A	Pass
NVNT	2-DH5	2402	Ant	1.284	N/A	Pass
NVNT	2-DH5	2441	Ant	1.277	N/A	Pass
NVNT	2-DH5	2480	Ant	1.284	N/A	Pass
NVNT	3-DH5	2402	Ant	1.298	N/A	Pass
NVNT	3-DH5	2441	Ant	1.306	N/A	Pass
NVNT	3-DH5	2480	Ant	1.271	N/A	Pass

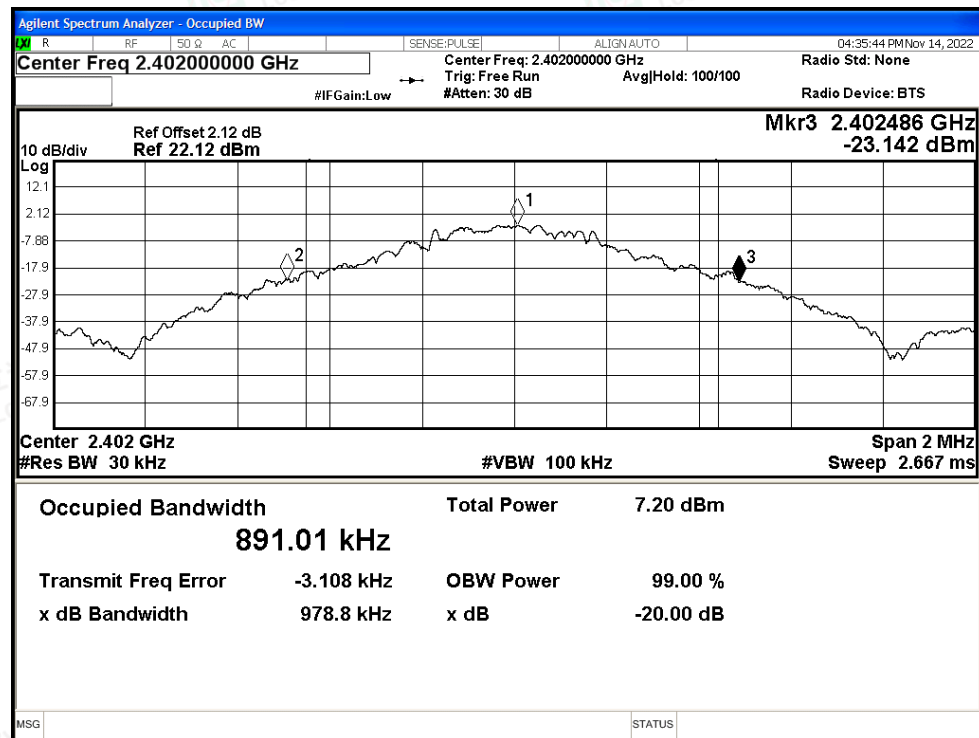


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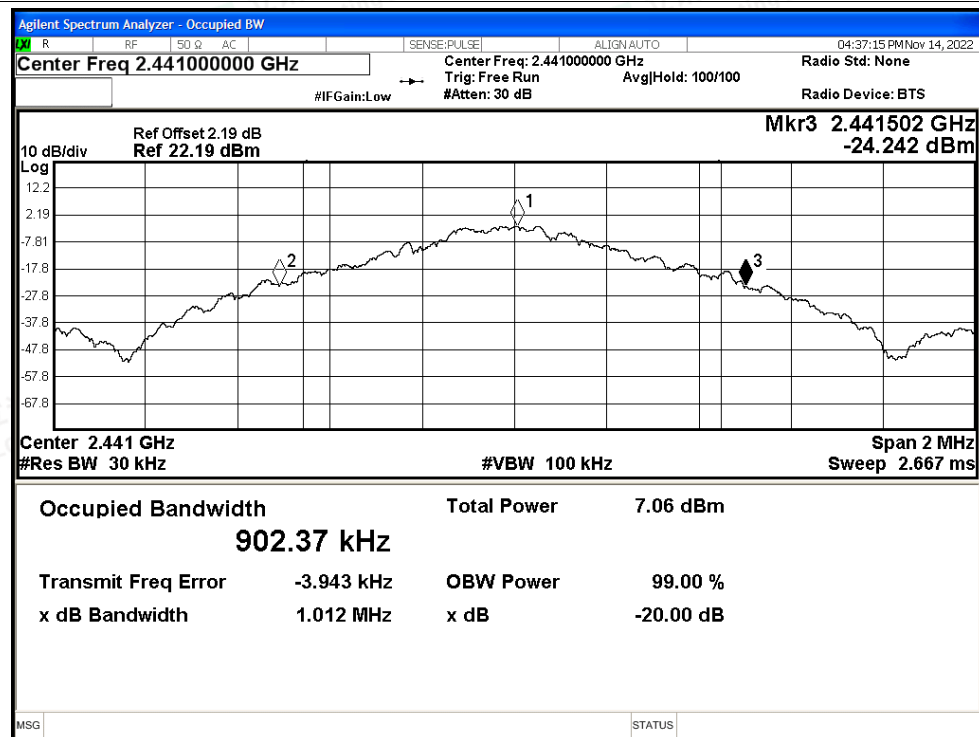


Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant

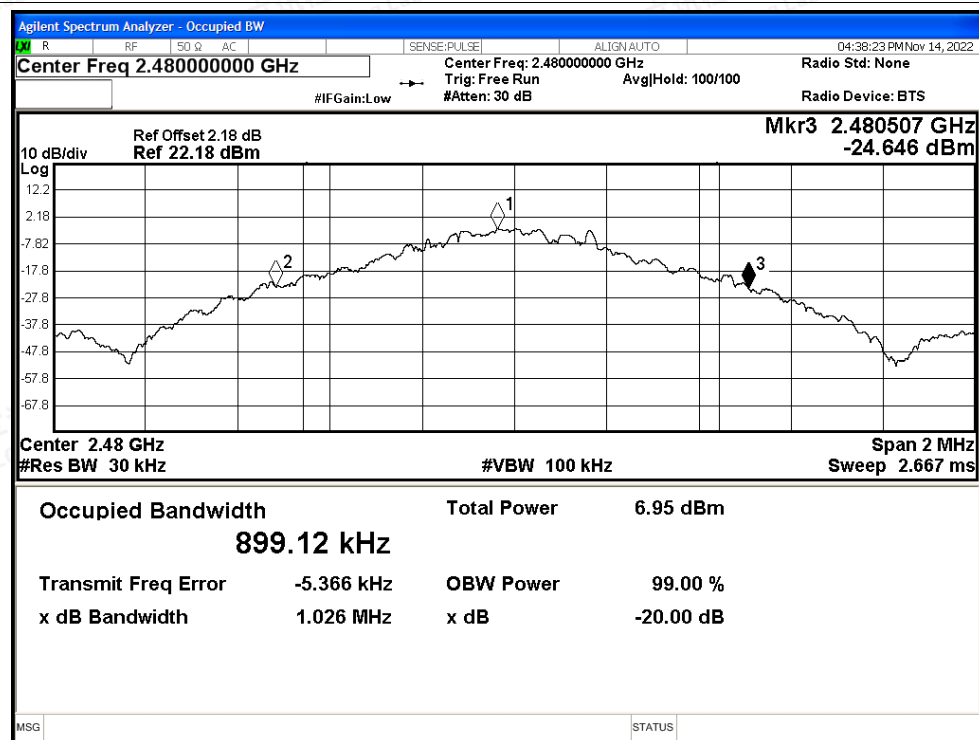


-20dB Bandwidth NVNT 1-DH5 2441MHz Ant

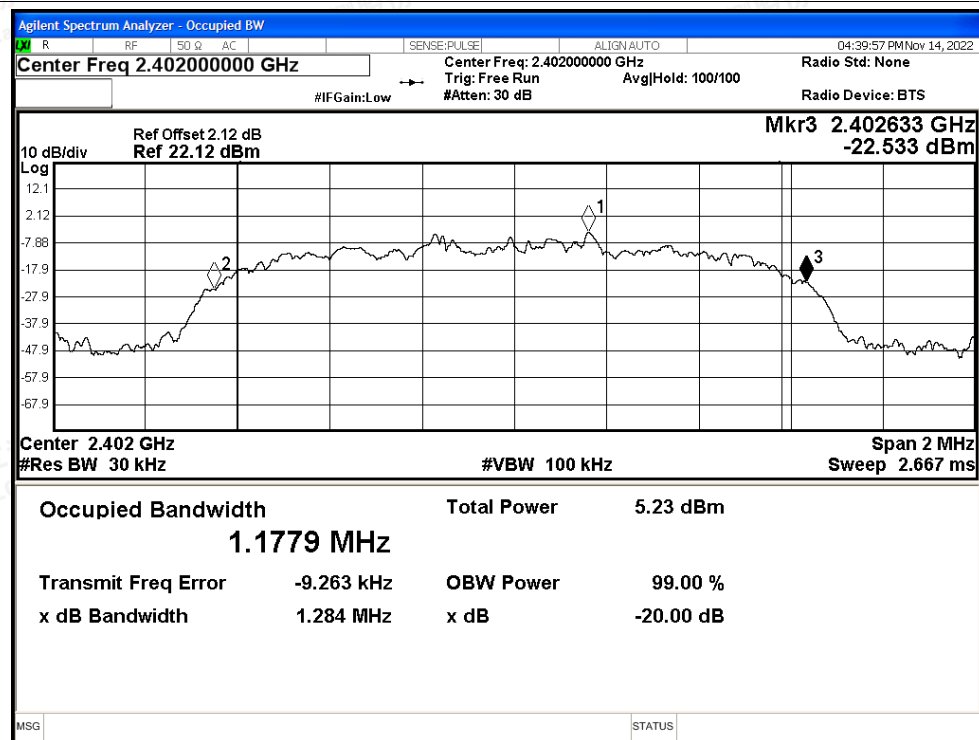




-20dB Bandwidth NVNT 1-DH5 2480MHz Ant

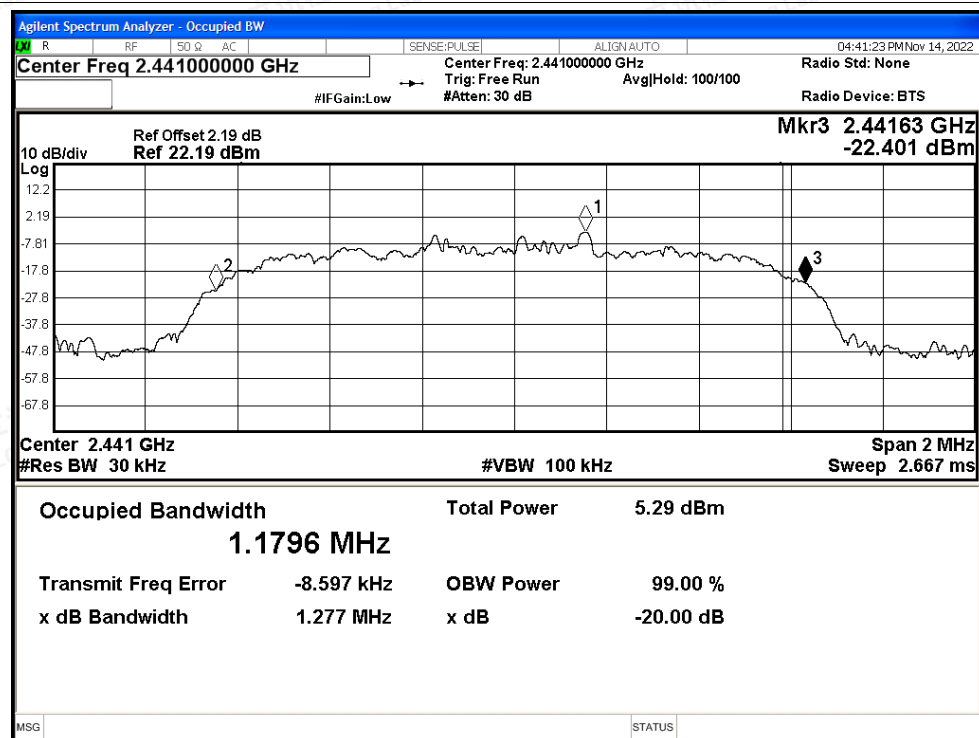


-20dB Bandwidth NVNT 2-DH5 2402MHz Ant

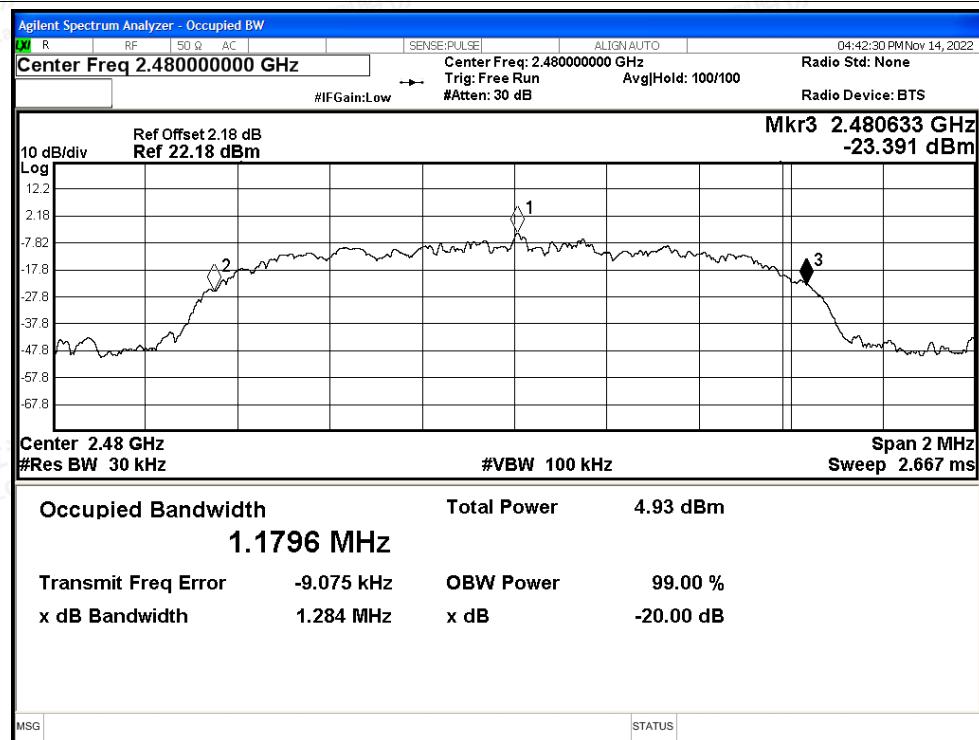




-20dB Bandwidth NVNT 2-DH5 2441MHz Ant

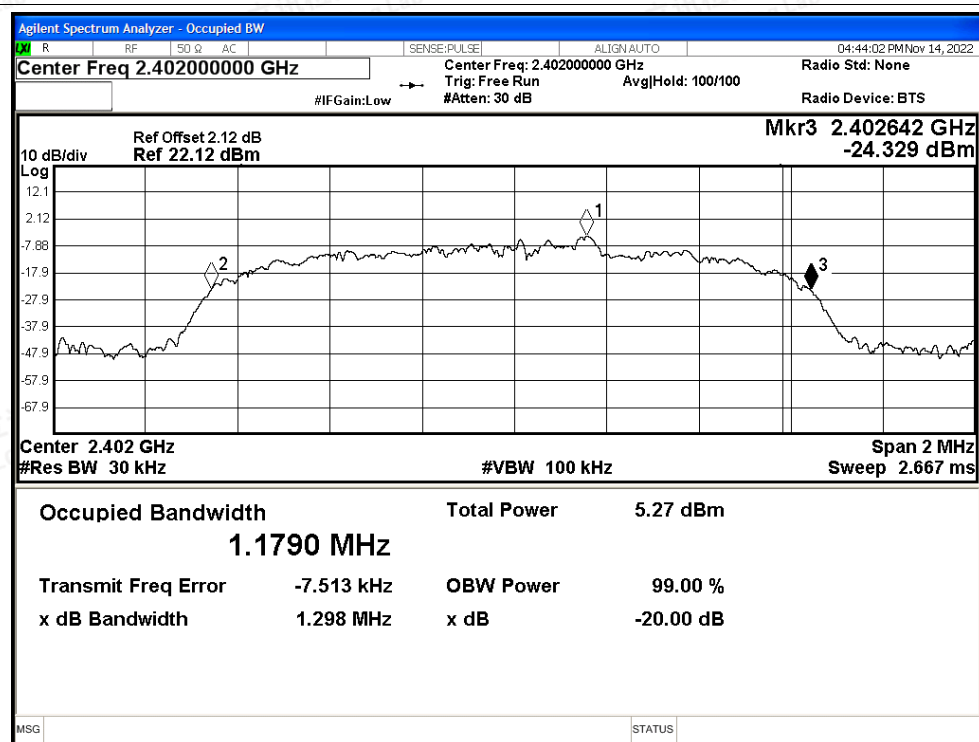


-20dB Bandwidth NVNT 2-DH5 2480MHz Ant

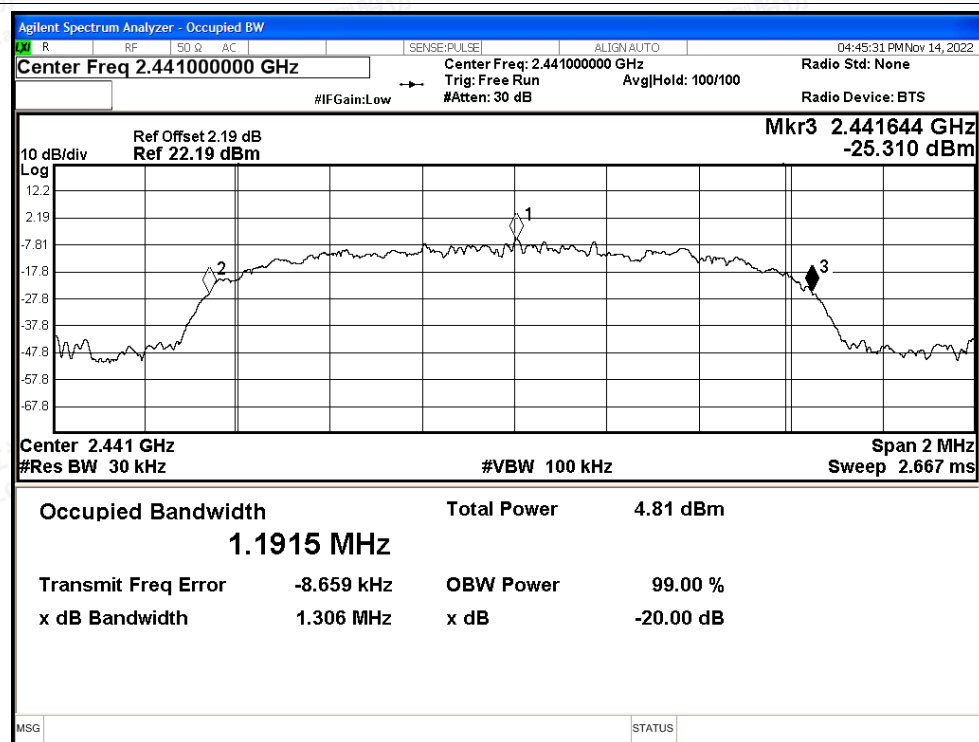




-20dB Bandwidth NVNT 3-DH5 2402MHz Ant



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant

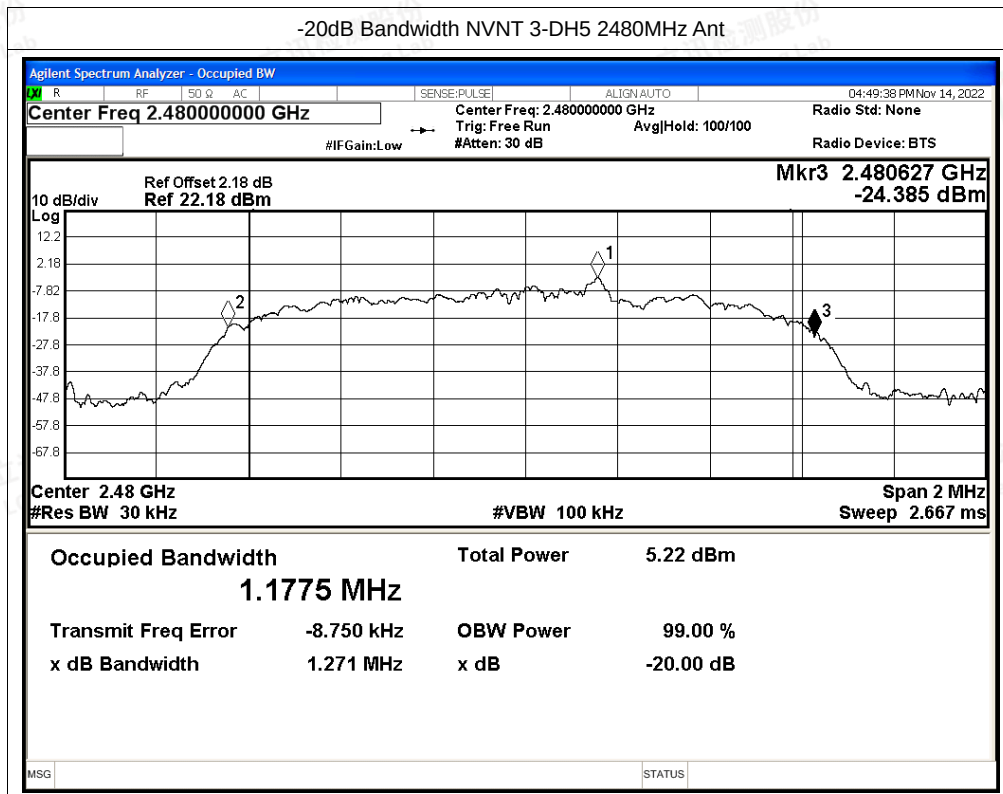


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A.2 Occupied Channel Bandwidth

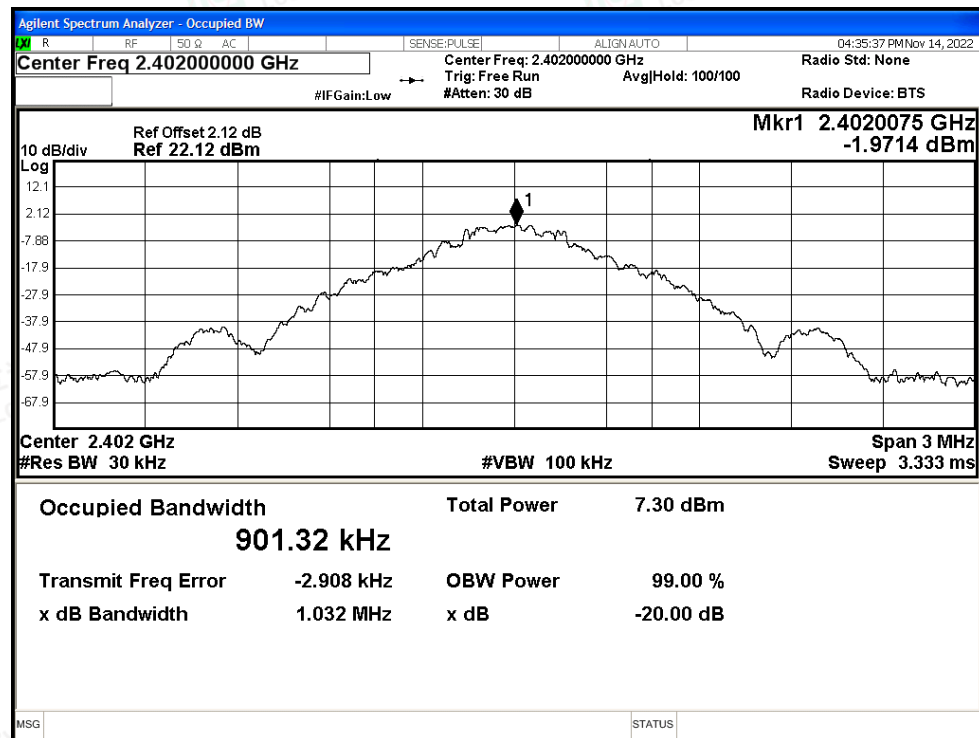
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	1-DH5	2402	Ant	0.901
NVNT	1-DH5	2441	Ant	0.906
NVNT	1-DH5	2480	Ant	0.881
NVNT	2-DH5	2402	Ant	1.184
NVNT	2-DH5	2441	Ant	1.184
NVNT	2-DH5	2480	Ant	1.187
NVNT	3-DH5	2402	Ant	1.19
NVNT	3-DH5	2441	Ant	1.179
NVNT	3-DH5	2480	Ant	1.194



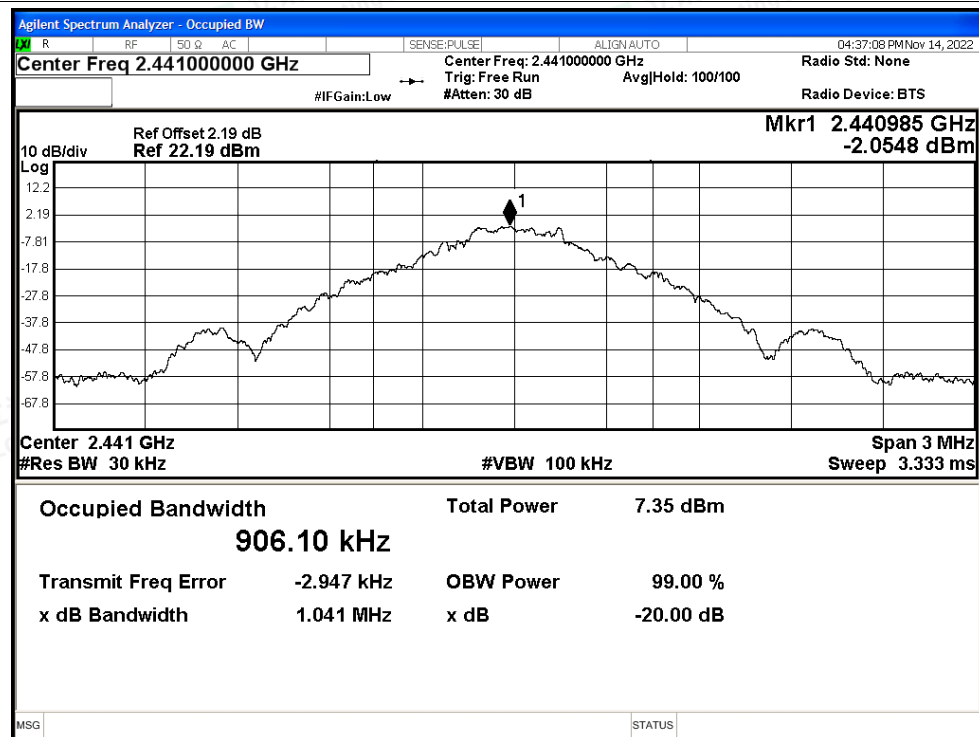


Test Graphs

OBW NVNT 1-DH5 2402MHz Ant

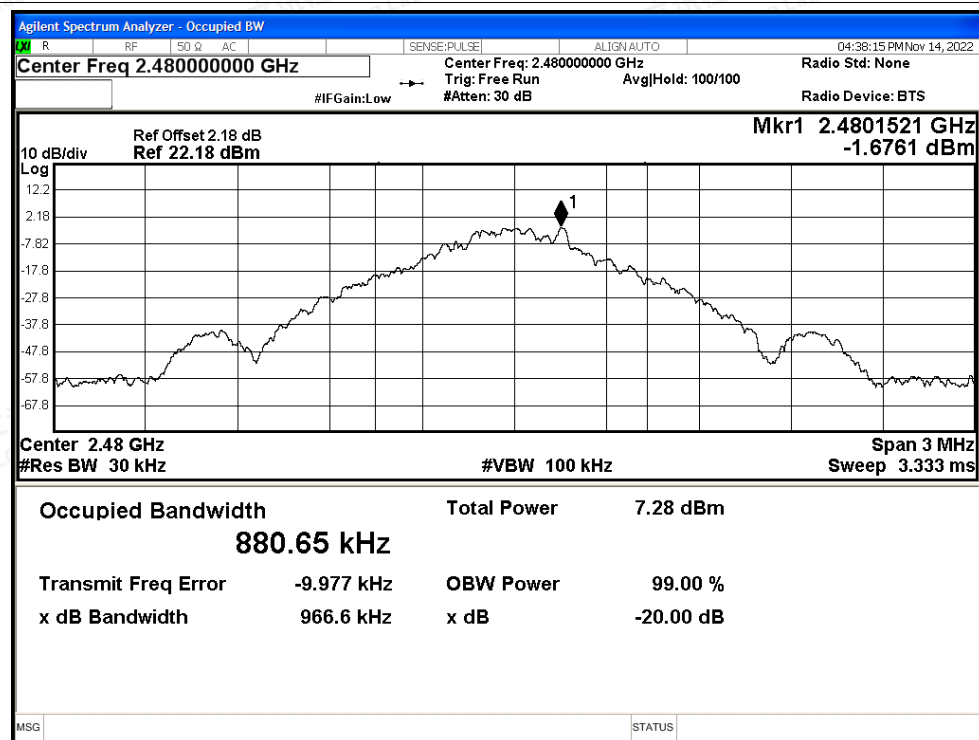


OBW NVNT 1-DH5 2441MHz Ant

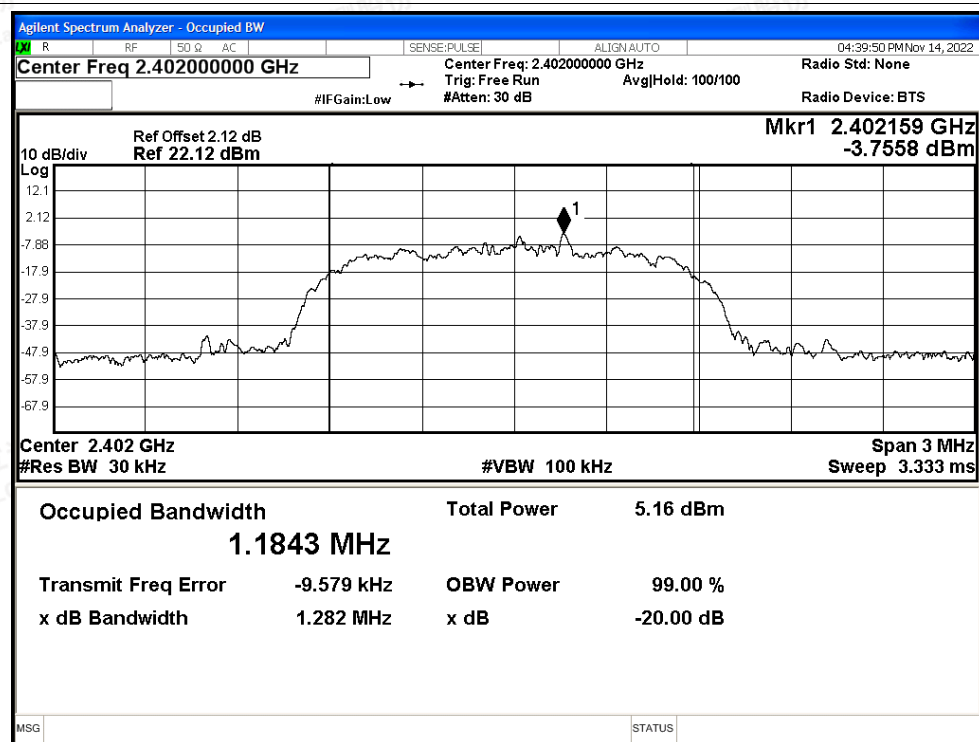




OBW NVNT 1-DH5 2480MHz Ant

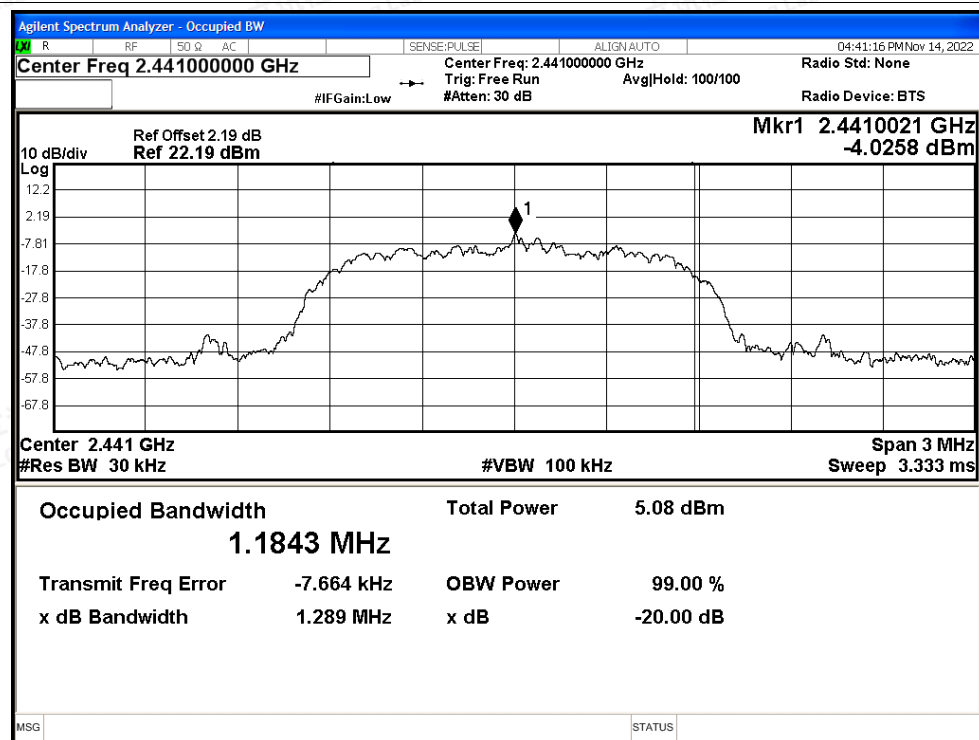


OBW NVNT 2-DH5 2402MHz Ant

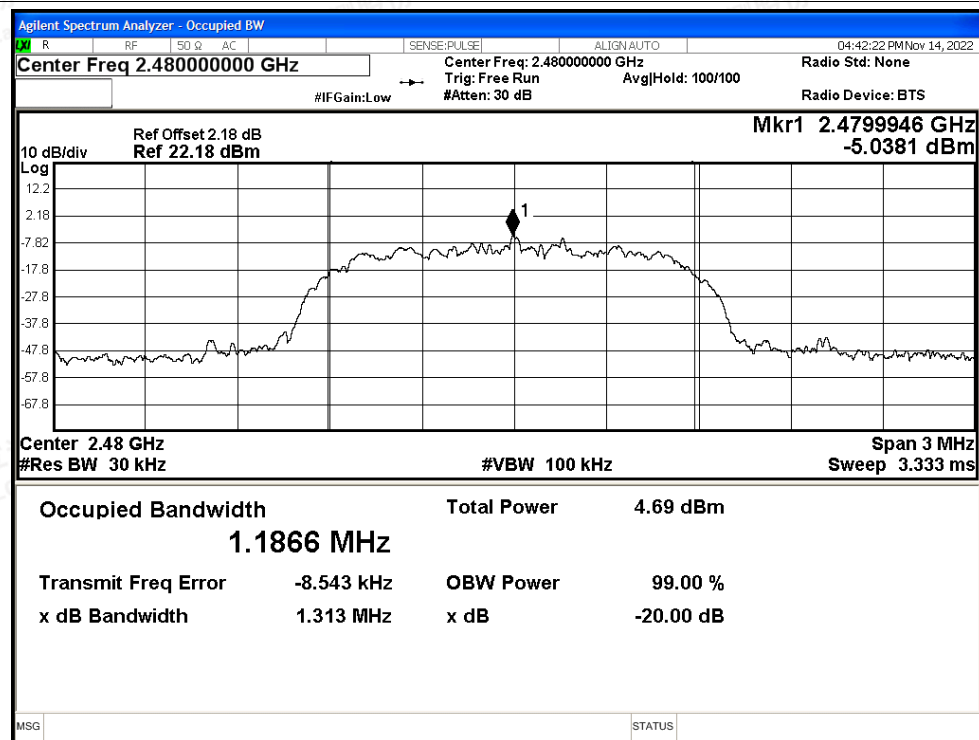




OBW NVNT 2-DH5 2441MHz Ant

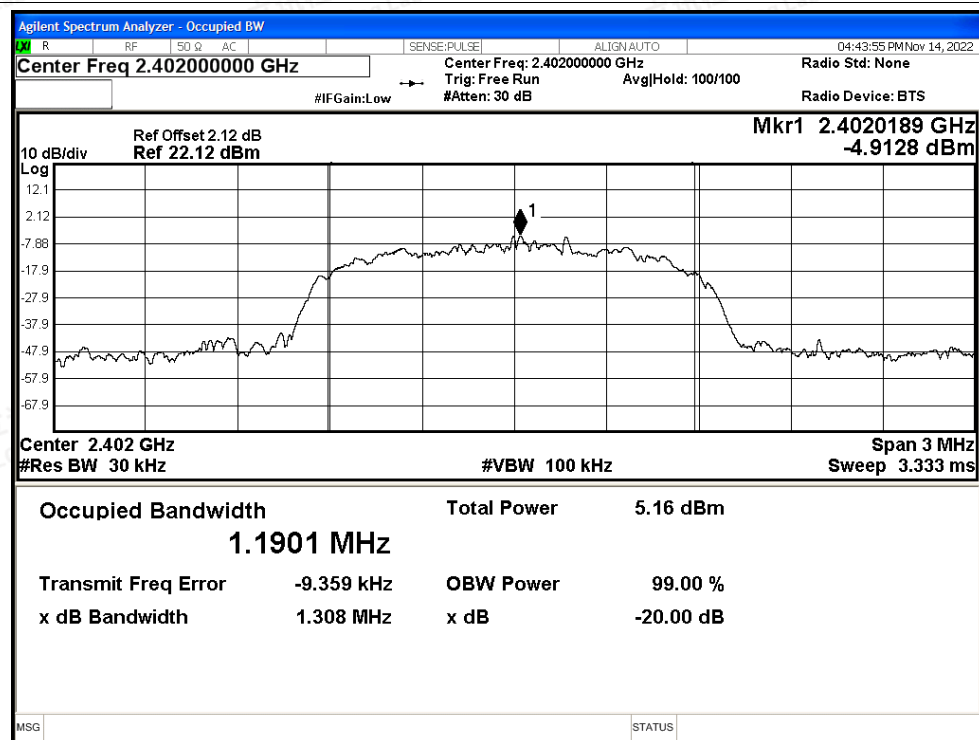


OBW NVNT 2-DH5 2480MHz Ant

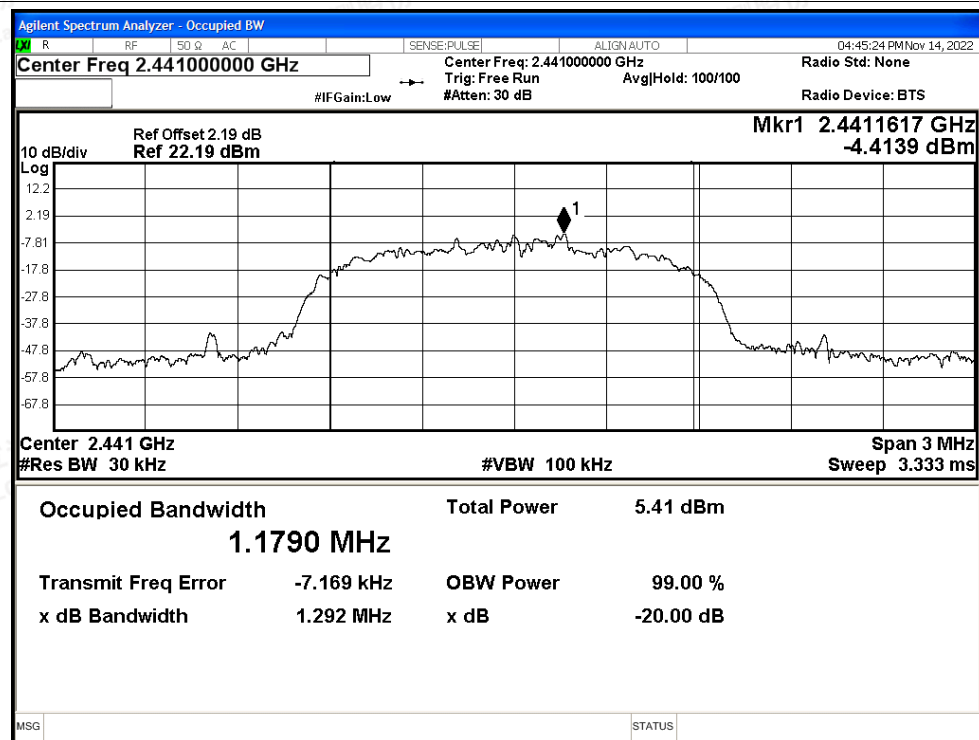


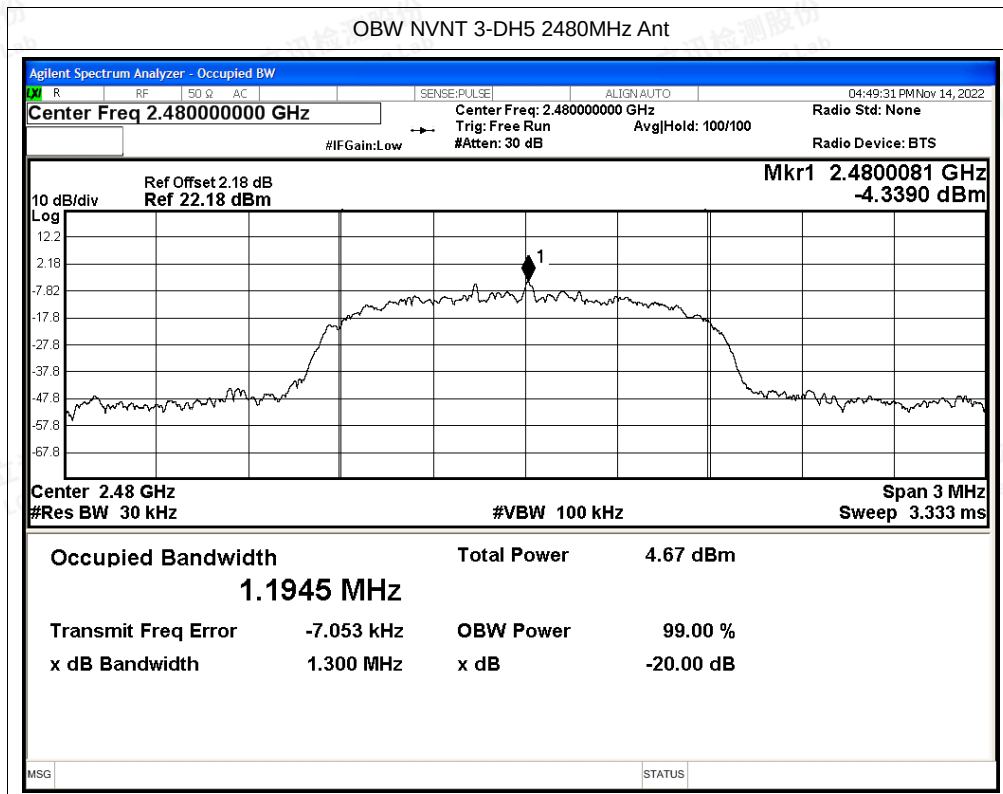


OBW NVNT 3-DH5 2402MHz Ant



OBW NVNT 3-DH5 2441MHz Ant







A.3 Maximum Conducted Output Power

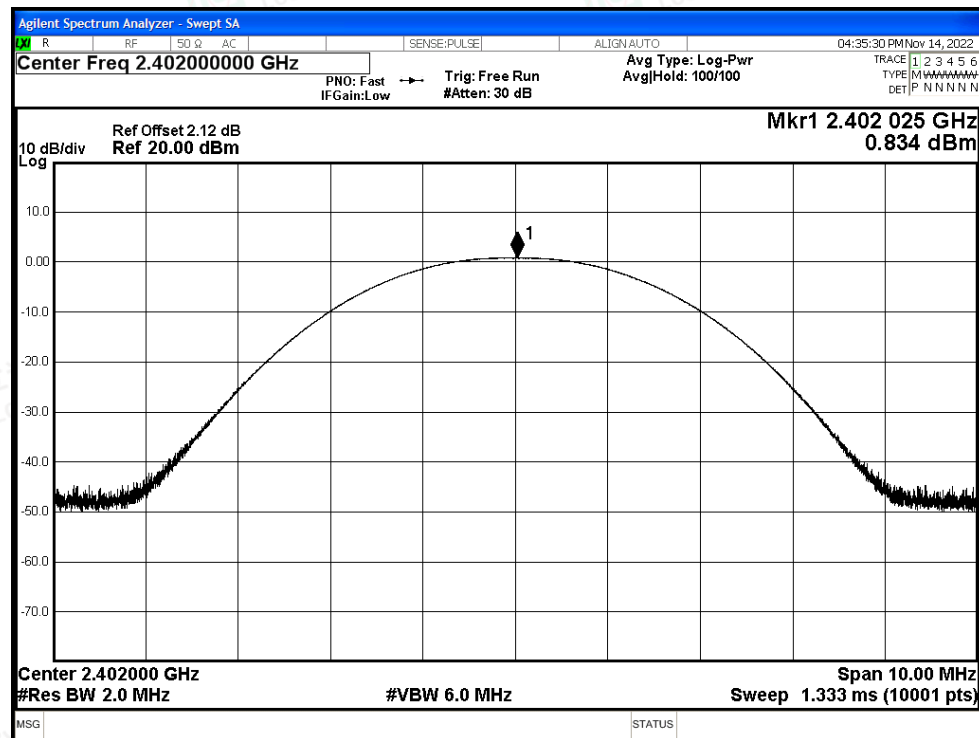
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant	0.83	21	Pass
NVNT	1-DH5	2441	Ant	1.01	21	Pass
NVNT	1-DH5	2480	Ant	0.73	21	Pass
NVNT	2-DH5	2402	Ant	0.6	21	Pass
NVNT	2-DH5	2441	Ant	0.76	21	Pass
NVNT	2-DH5	2480	Ant	0.52	21	Pass
NVNT	3-DH5	2402	Ant	0.62	21	Pass
NVNT	3-DH5	2441	Ant	0.82	21	Pass
NVNT	3-DH5	2480	Ant	0.52	21	Pass



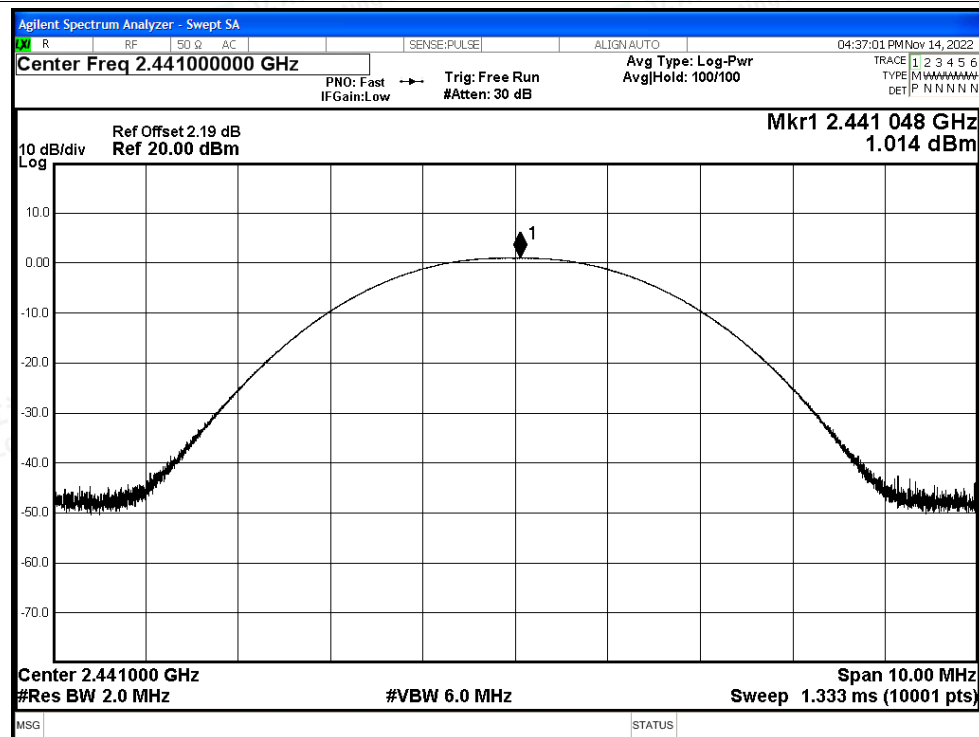


Test Graphs

Power NVNT 1-DH5 2402MHz Ant

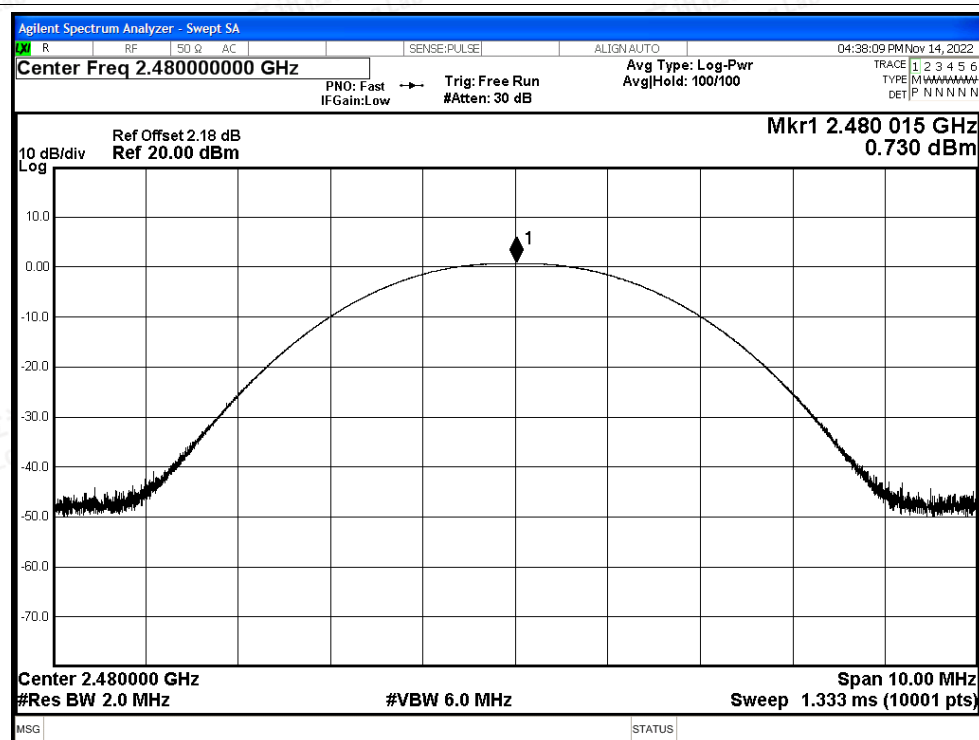


Power NVNT 1-DH5 2441MHz Ant

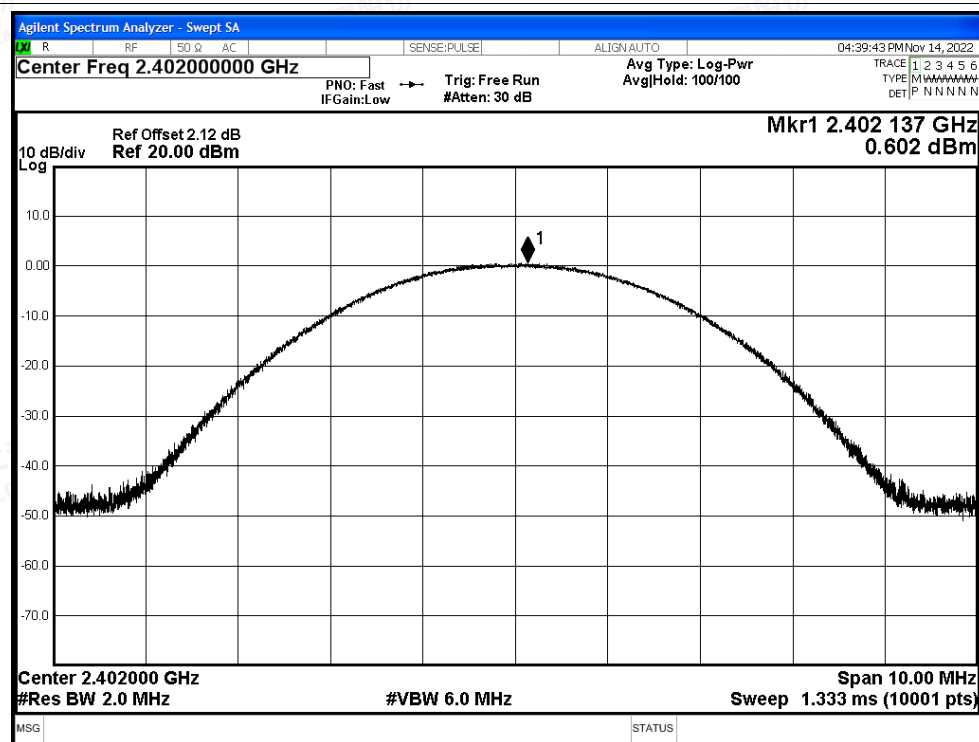




Power NVNT 1-DH5 2480MHz Ant

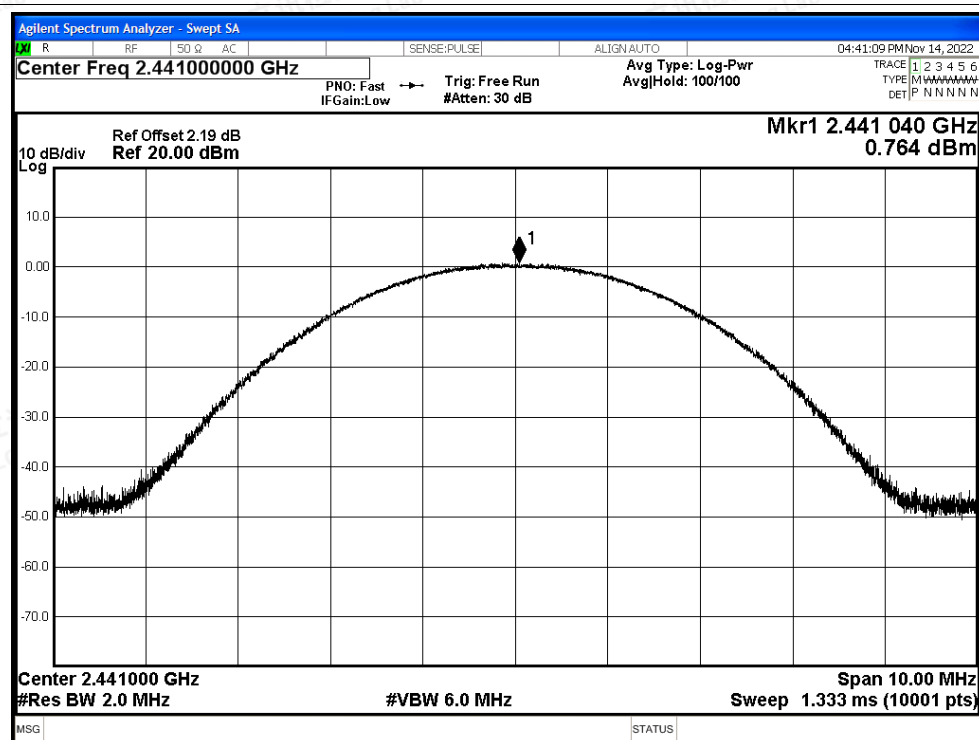


Power NVNT 2-DH5 2402MHz Ant

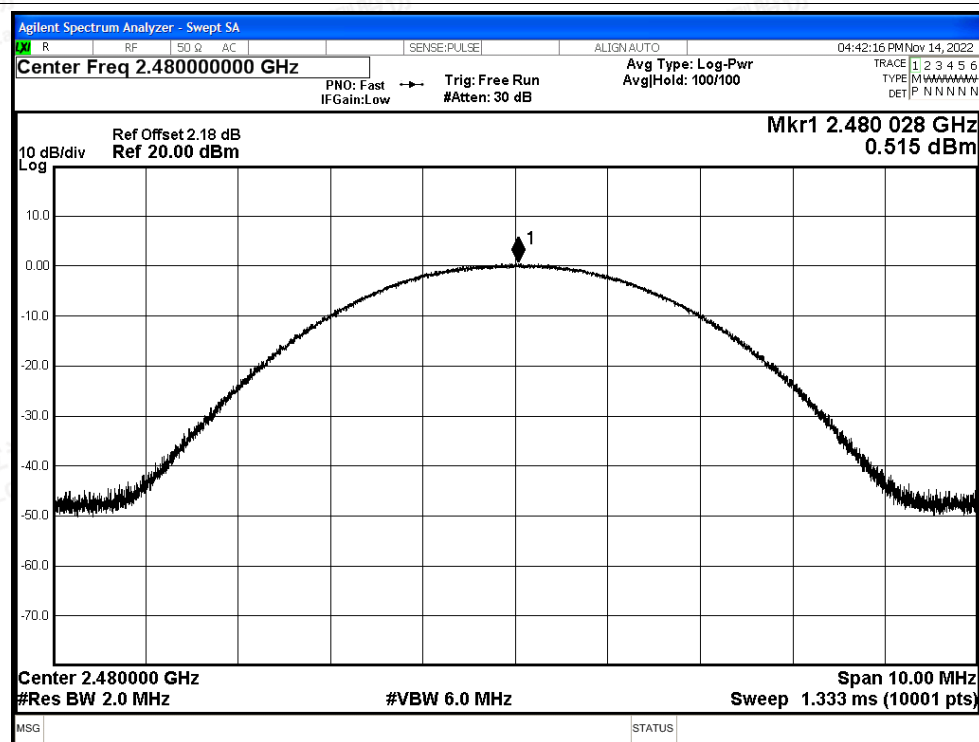




Power NVNT 2-DH5 2441MHz Ant

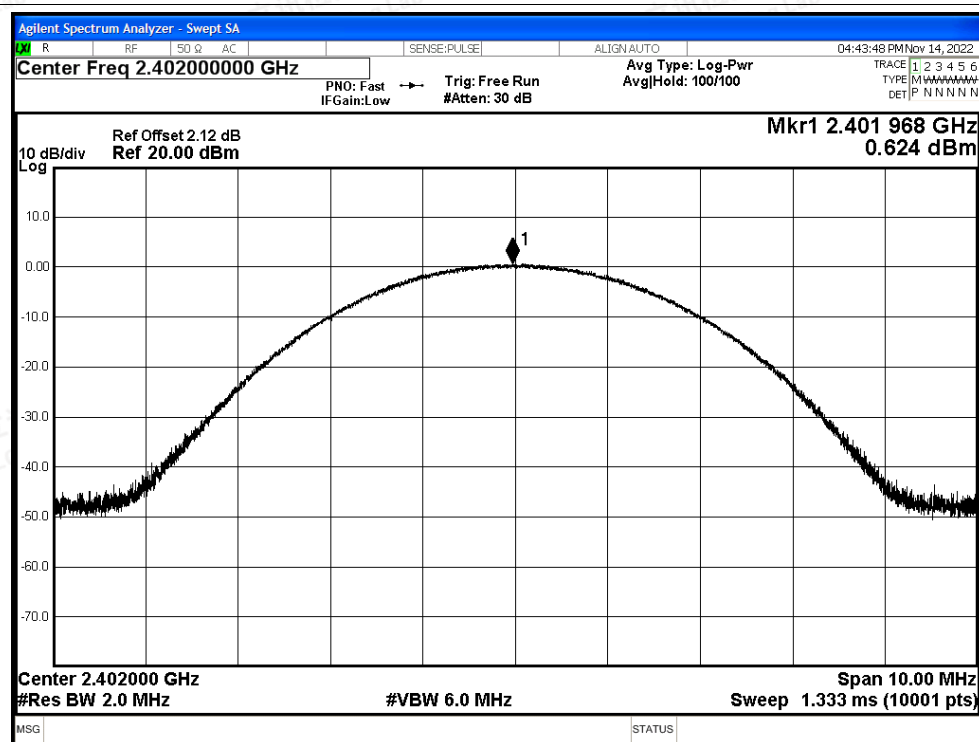


Power NVNT 2-DH5 2480MHz Ant

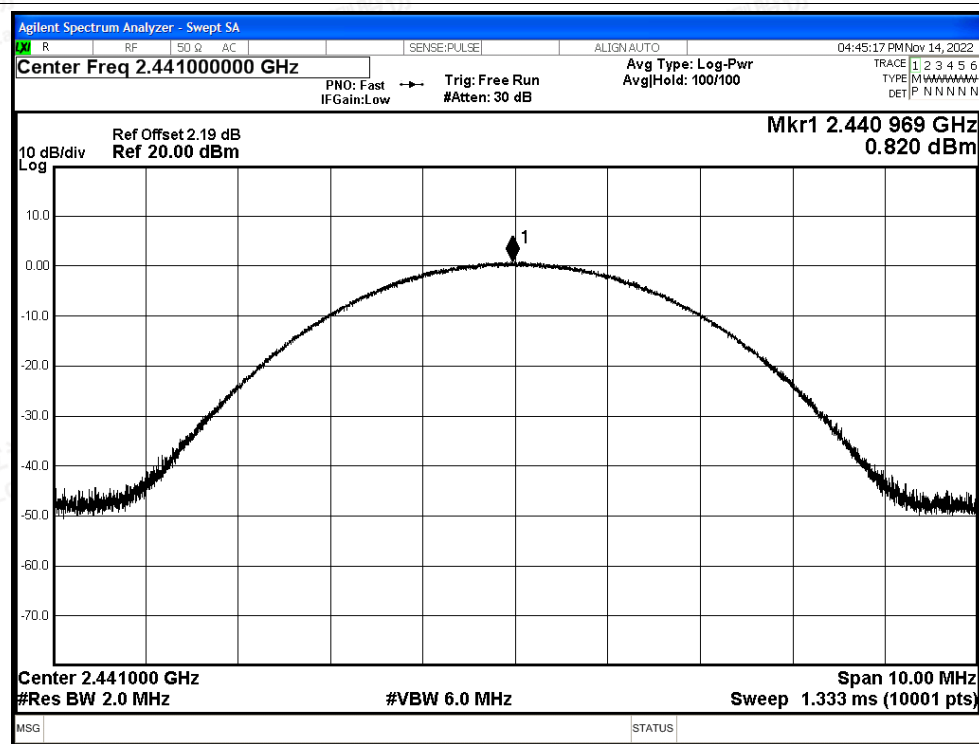


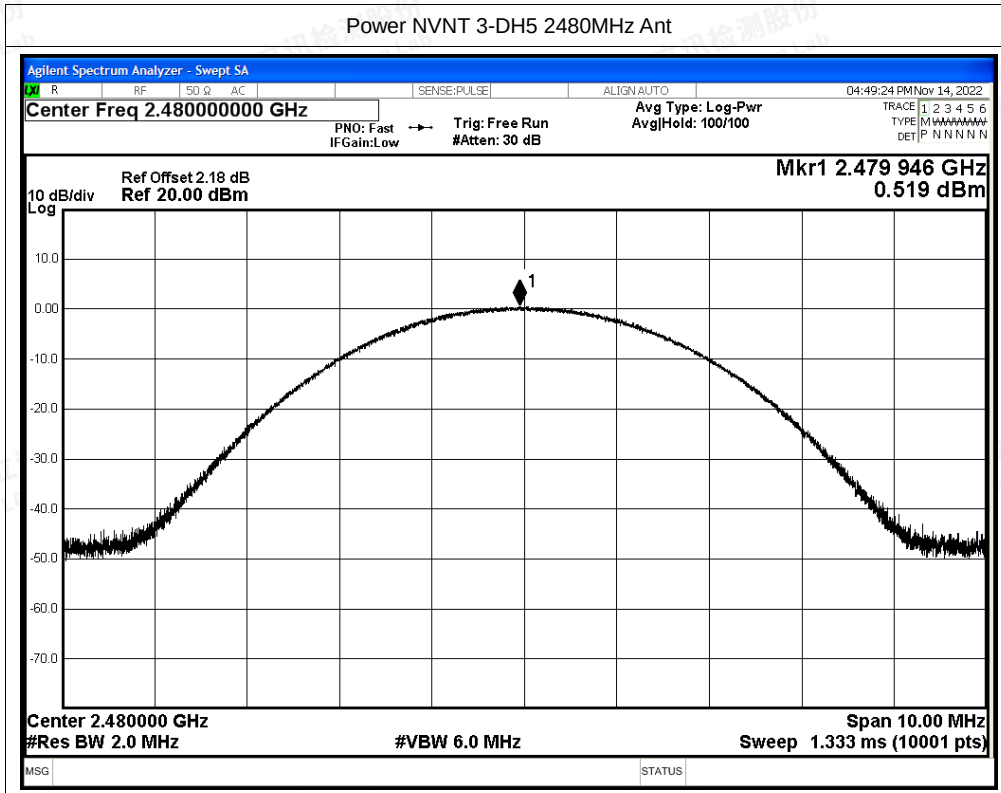


Power NVNT 3-DH5 2402MHz Ant



Power NVNT 3-DH5 2441MHz Ant







A.4 Carrier Frequencies Separation

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant	2402.008	2402.966	0.958	0.684	Pass
NVNT	2-DH5	Ant	2402	2403.154	1.154	0.856	Pass
NVNT	3-DH5	Ant	2402.006	2403.012	1.006	0.871	Pass

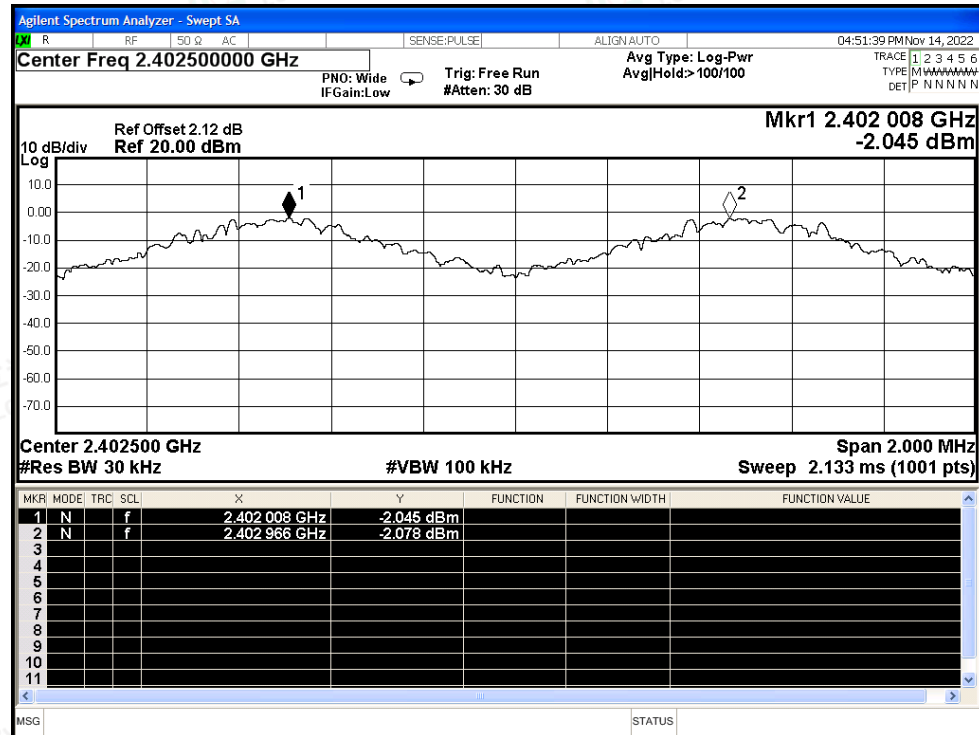


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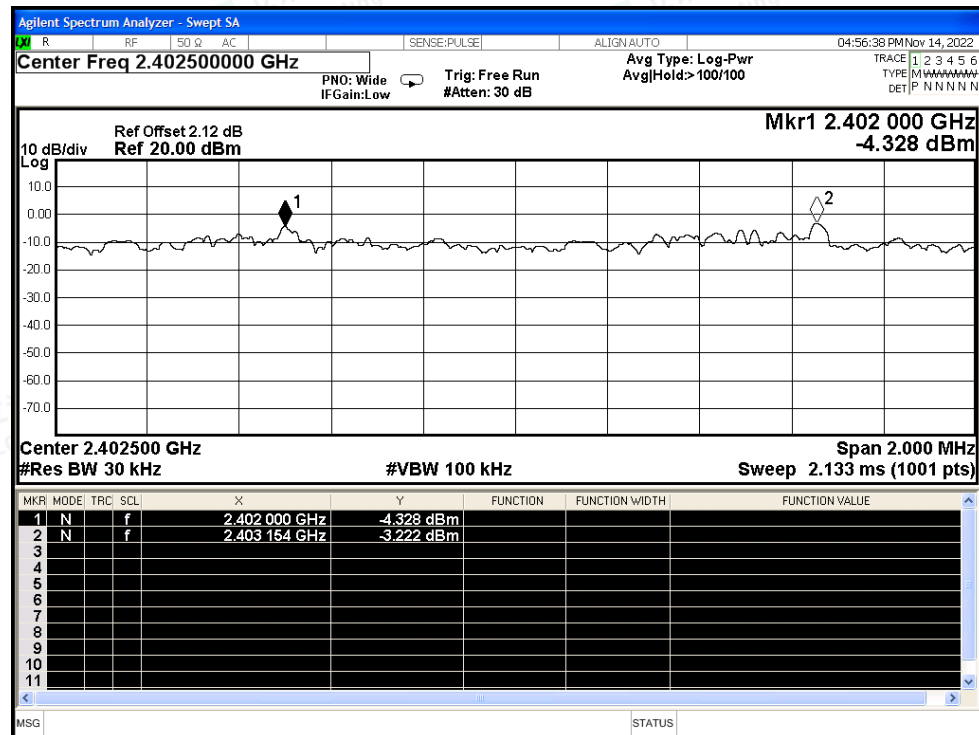


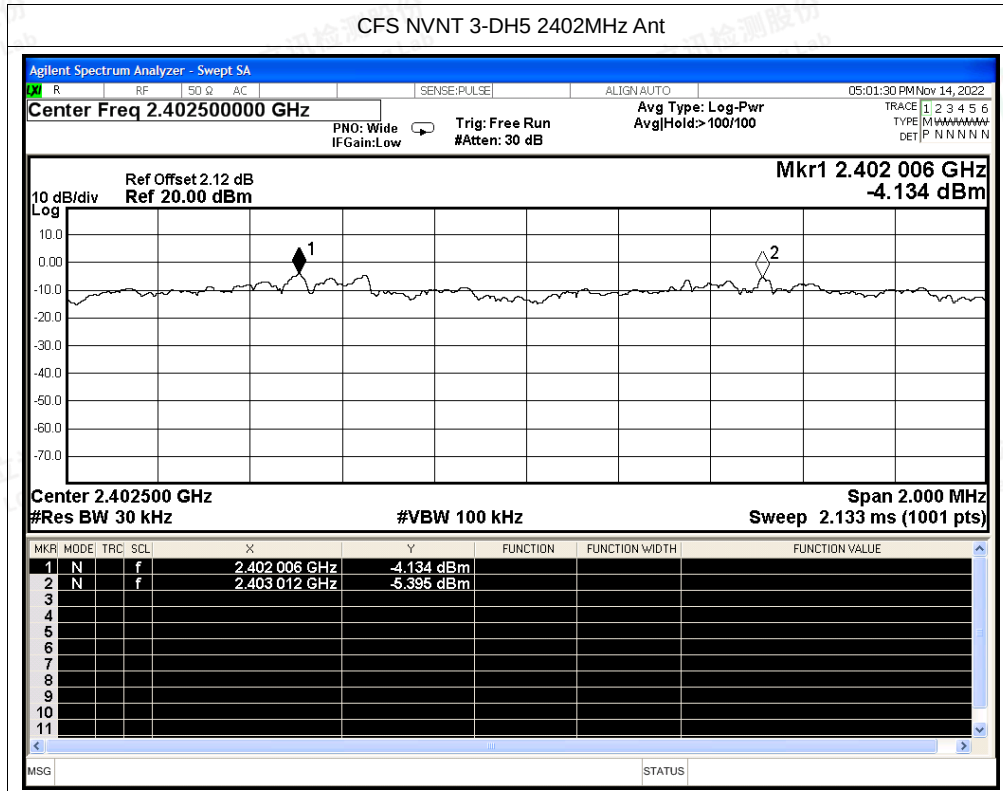
Test Graphs

CFS NVNT 1-DH5 2402MHz Ant



CFS NVNT 2-DH5 2402MHz Ant







A.5 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	Ant	2.882	305.492	106	31600	400	Pass
NVNT	2-DH5	2402	Ant	2.881	305.386	106	31600	400	Pass
NVNT	3-DH5	2402	Ant	2.886	297.258	103	31600	400	Pass

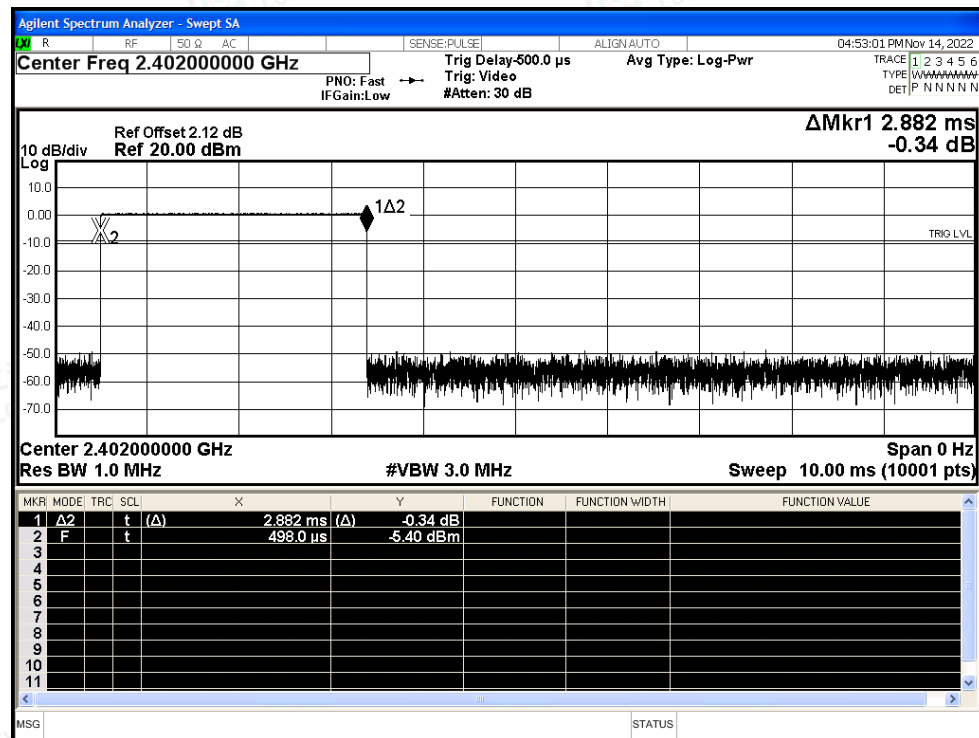


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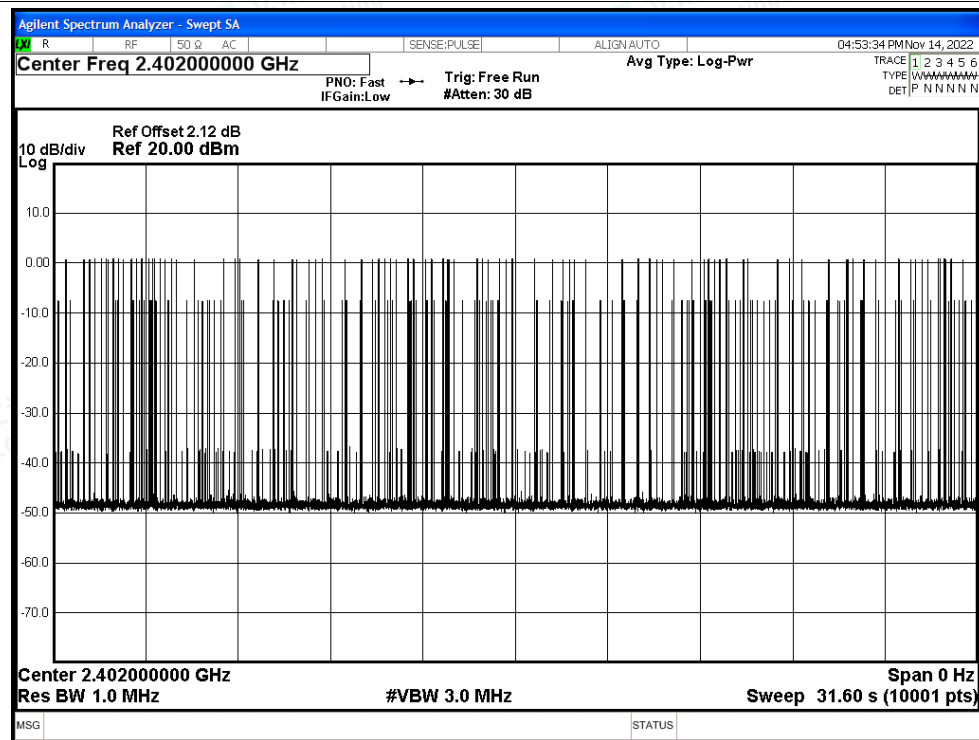


Test Graphs

Dwell NVNT 1-DH5 2402MHz Ant One Burst

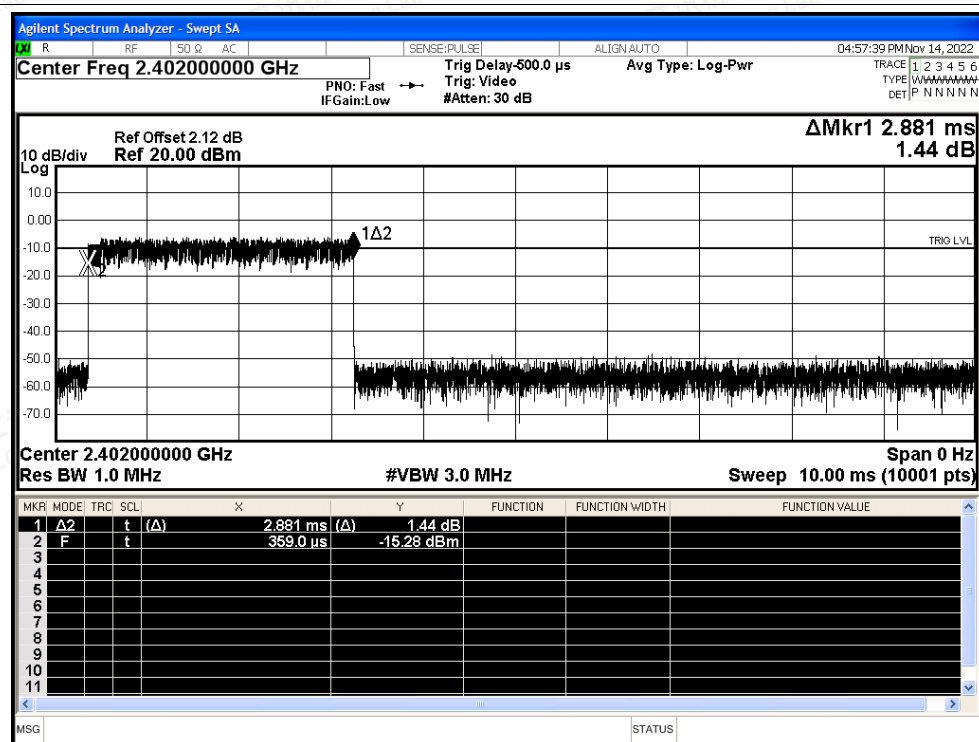


Dwell NVNT 1-DH5 2402MHz Ant Accumulated

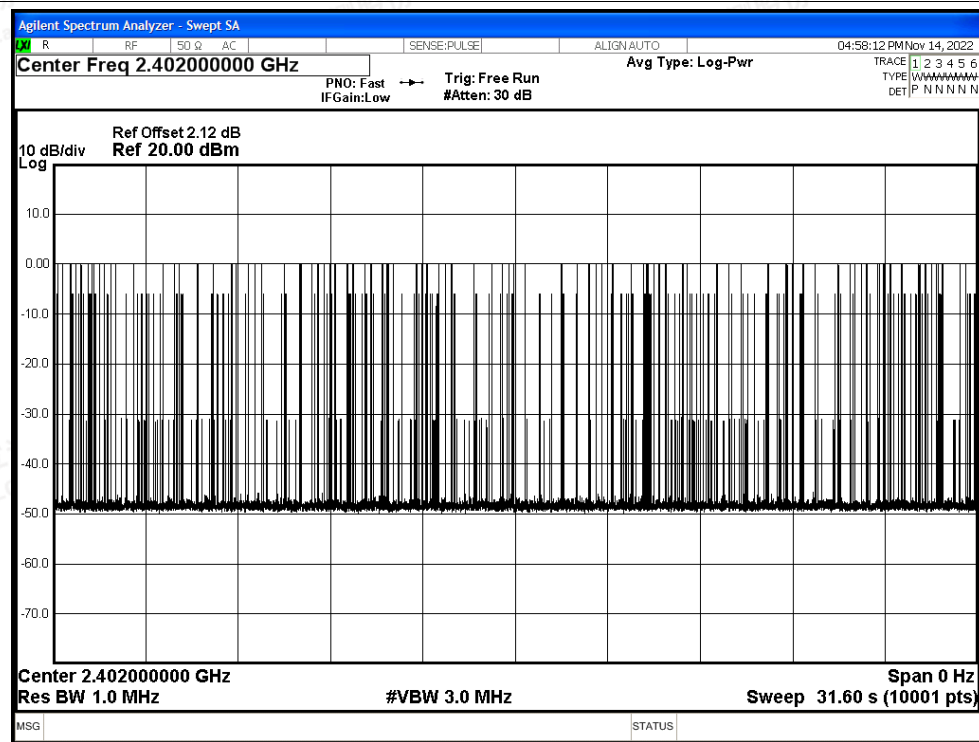




Dwell NVNT 2-DH5 2402MHz Ant One Burst

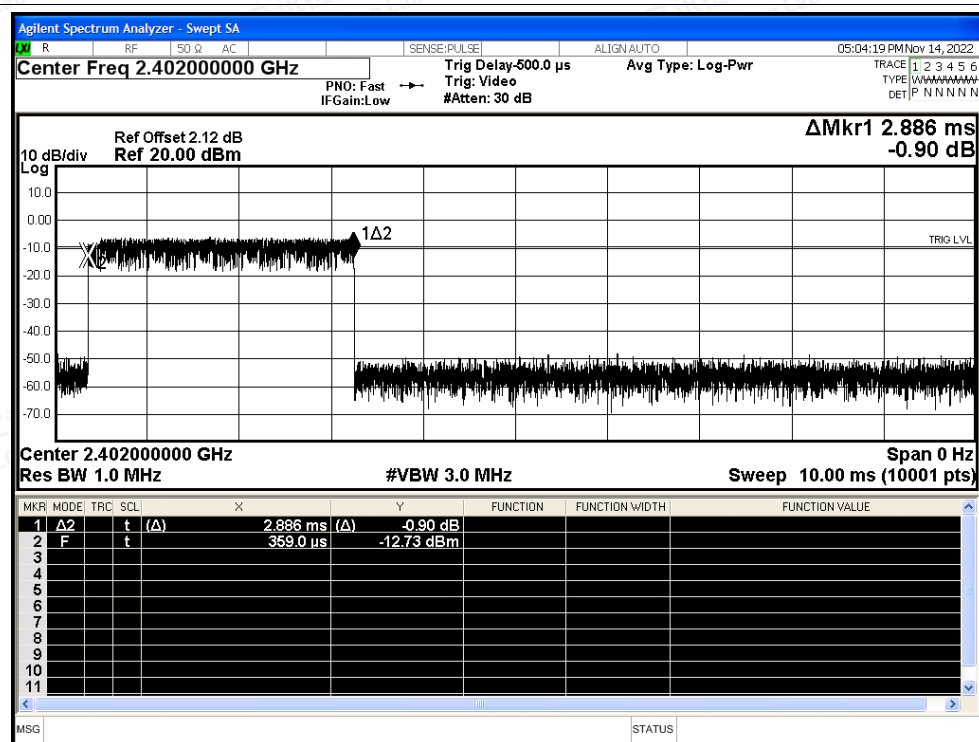


Dwell NVNT 2-DH5 2402MHz Ant Accumulated

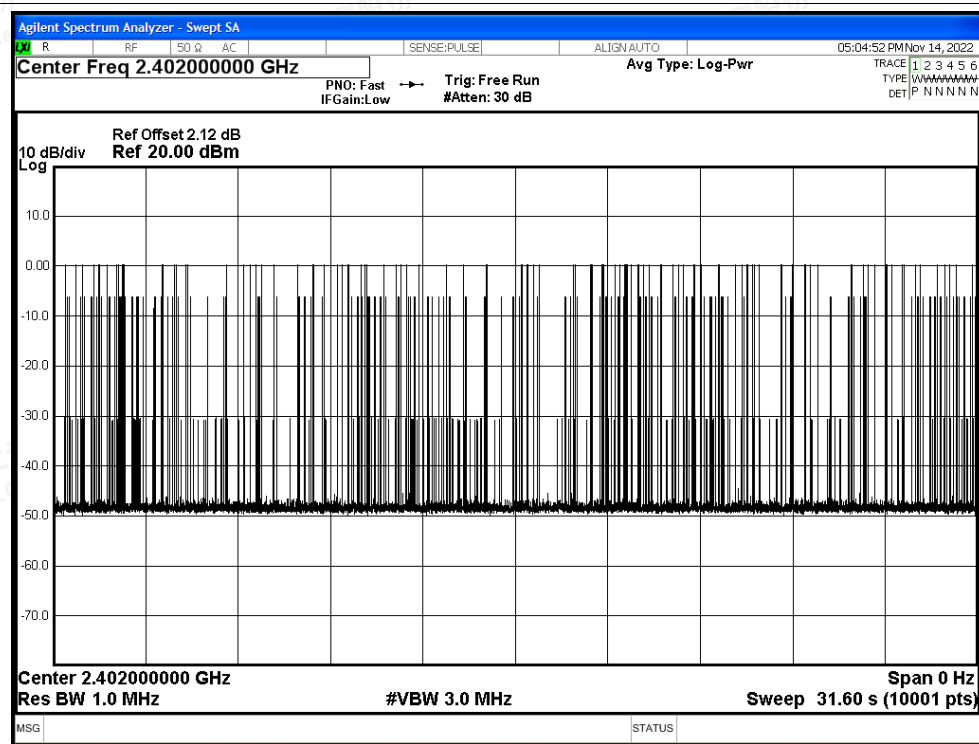




Dwell NVNT 3-DH5 2402MHz Ant One Burst



Dwell NVNT 3-DH5 2402MHz Ant Accumulated





A.6 Number of Hopping Channel

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

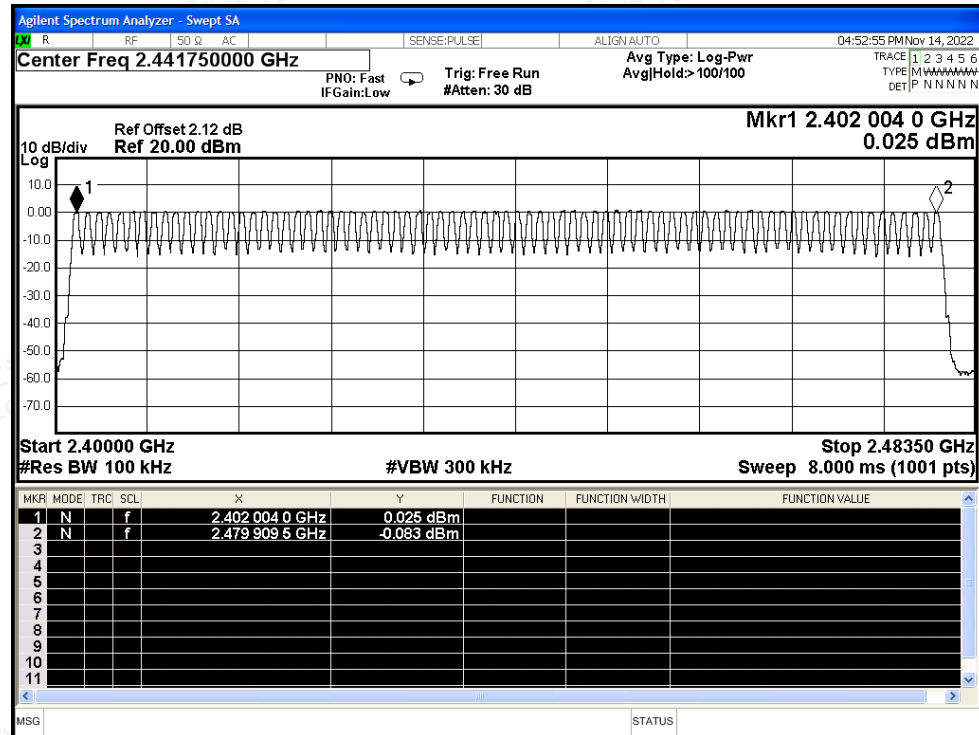


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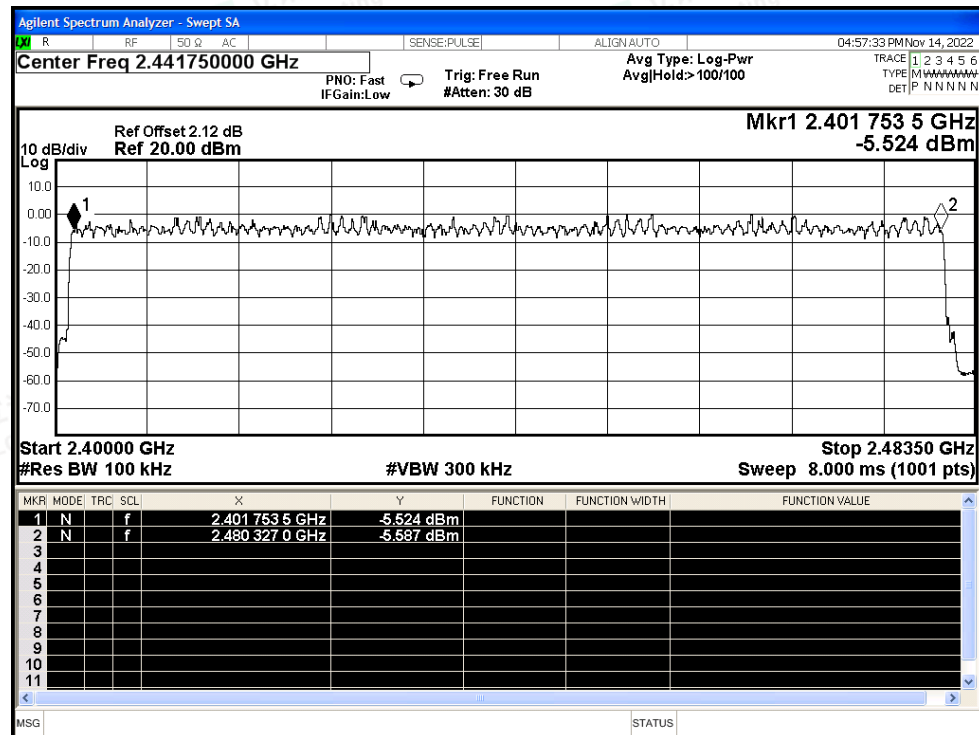


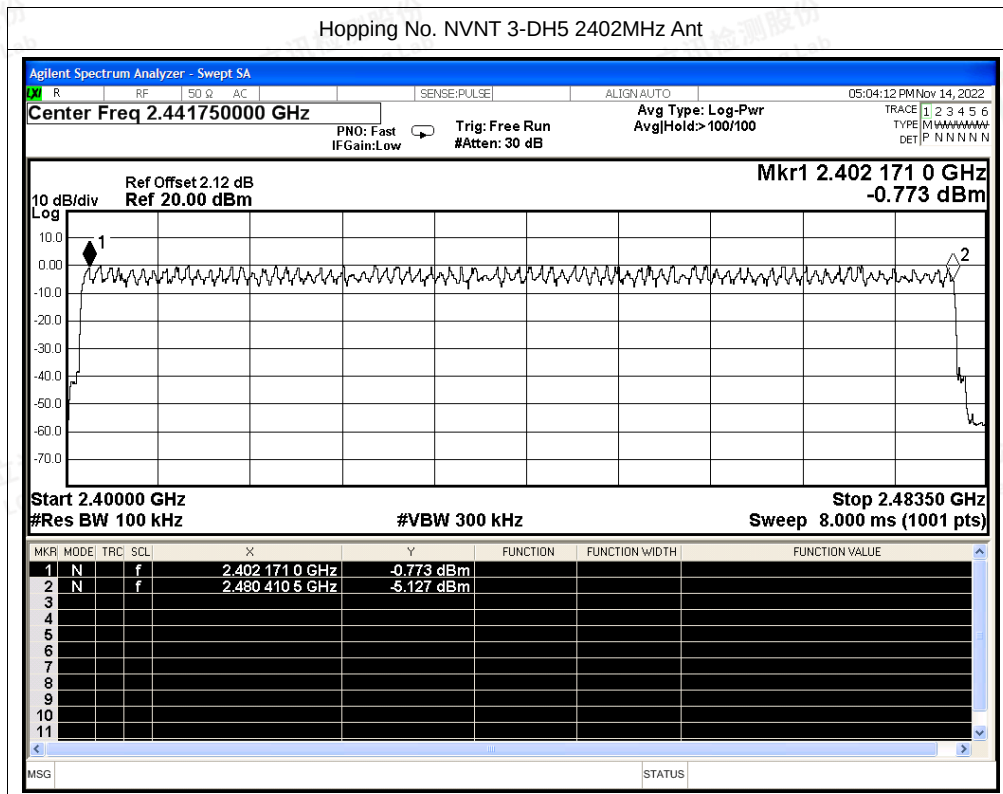
Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant



Hopping No. NVNT 2-DH5 2402MHz Ant







A.7 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant	No-Hopping	-56.25	-20	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	-57.29	-20	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	-50.47	-20	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	-55.1	-20	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	-52.92	-20	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	-56.28	-20	Pass

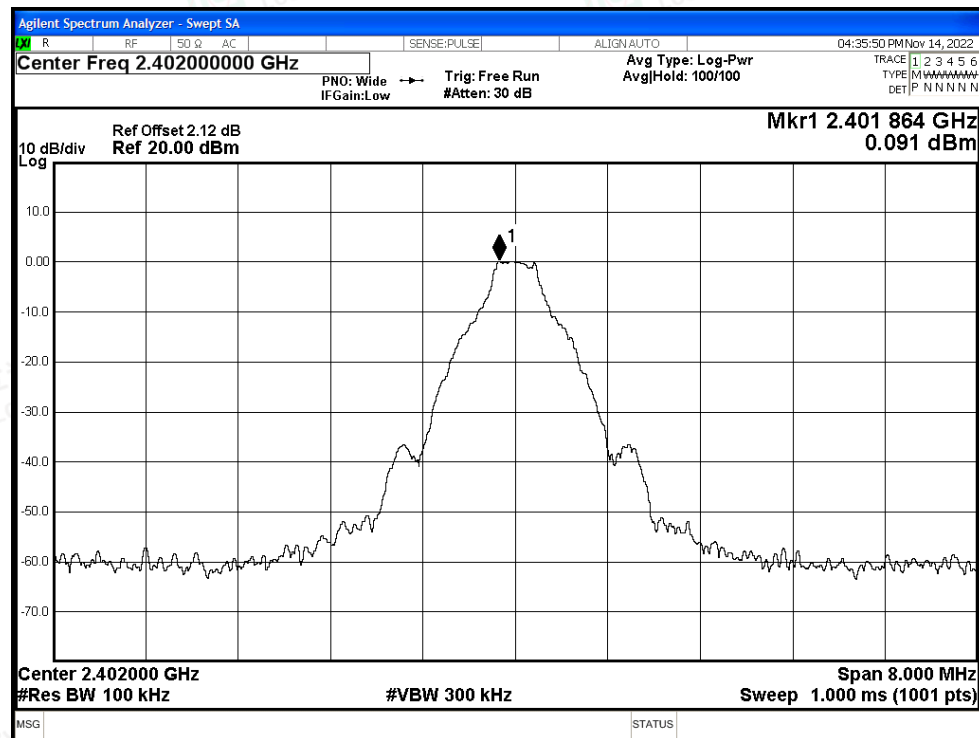


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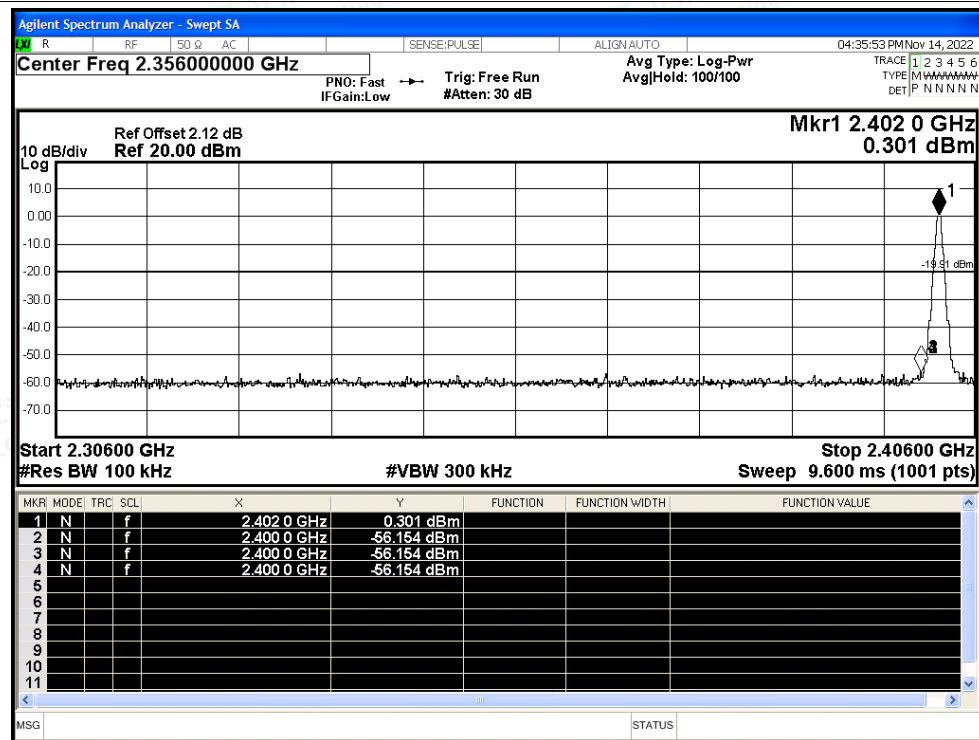


Test Graphs

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

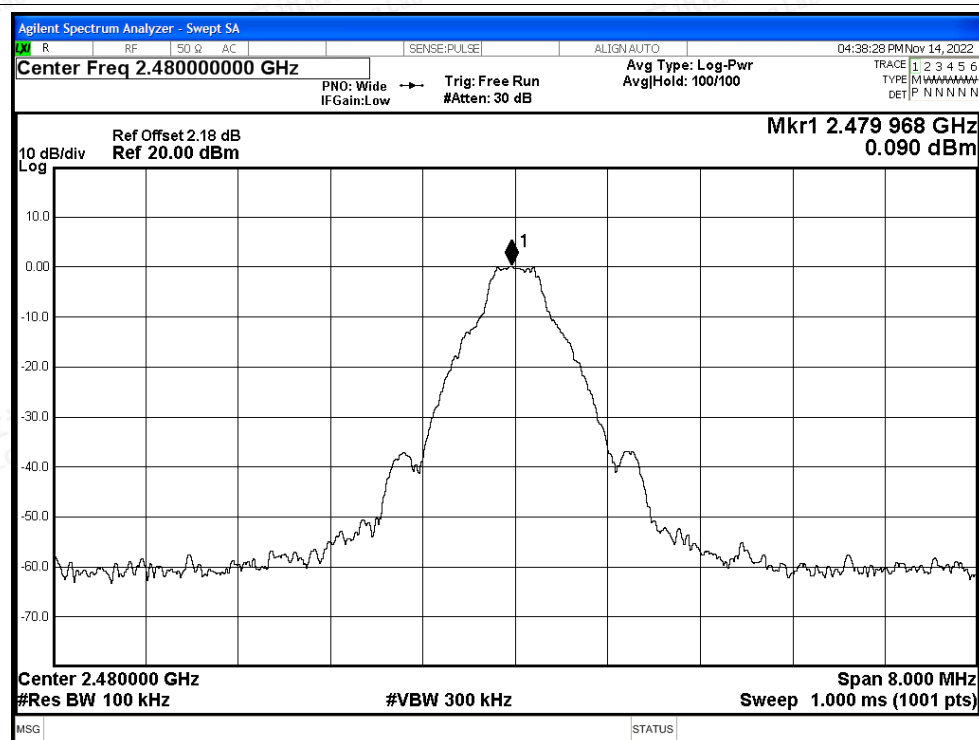


Band Edge NVNT 1-DH5 2402MHz Ant No-Hopping Emission

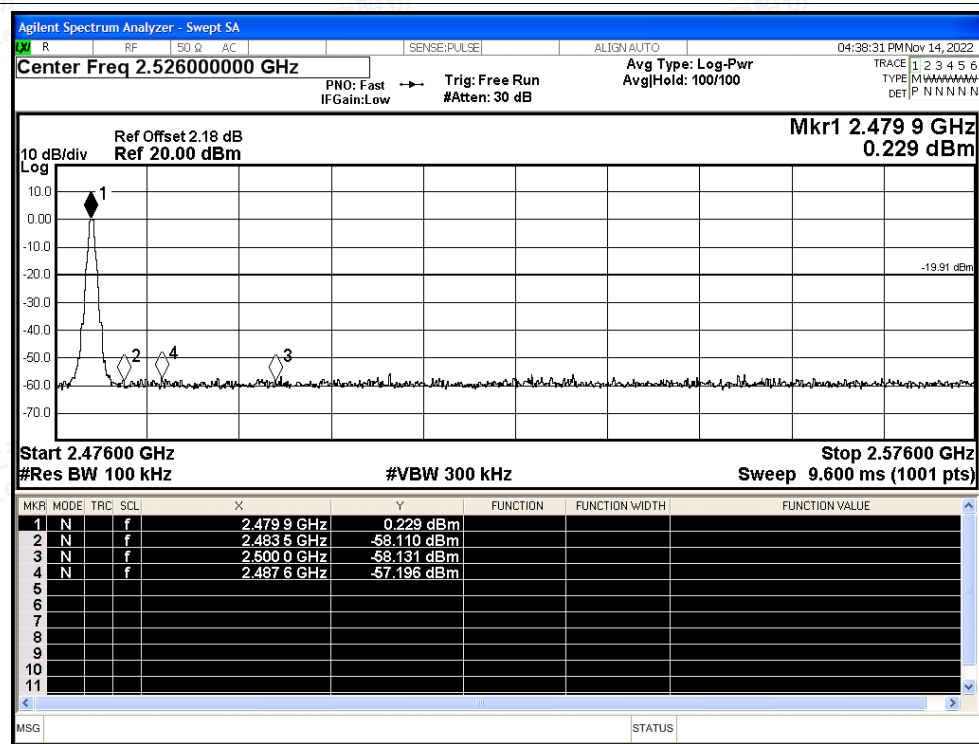




Band Edge NVNT 1-DH5 2480MHz Ant No-Hopping Ref

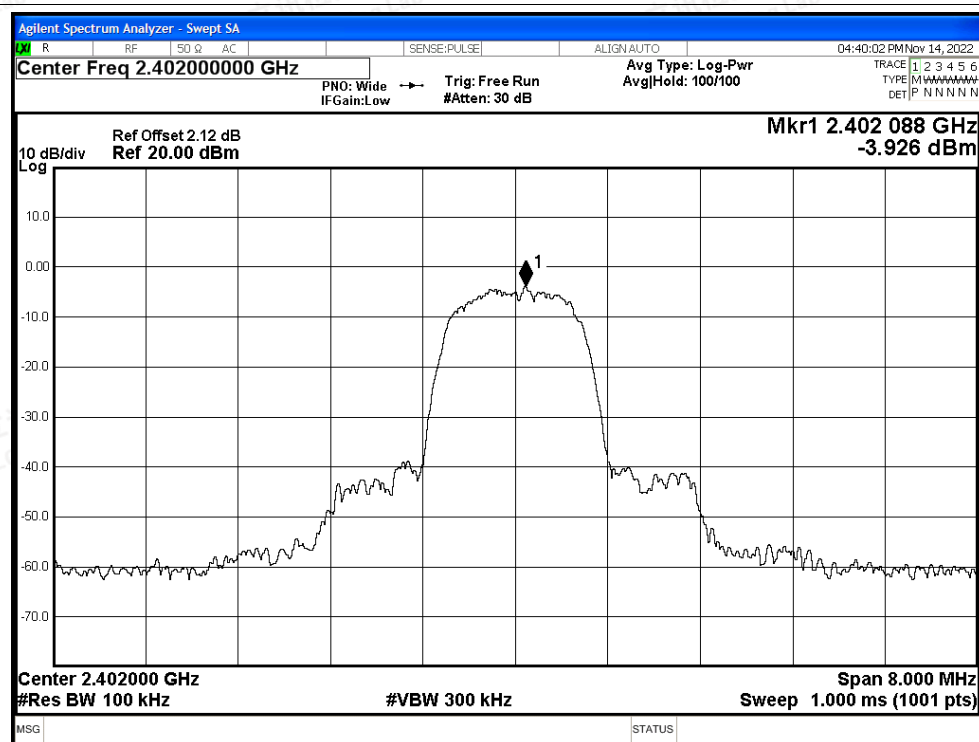


Band Edge NVNT 1-DH5 2480MHz Ant No-Hopping Emission

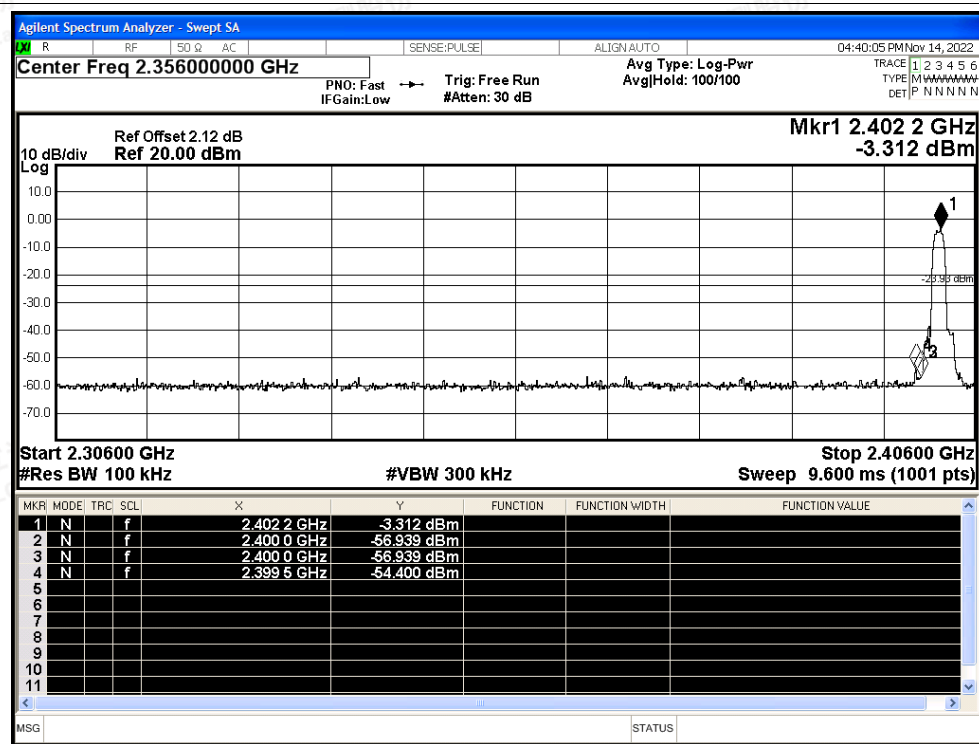




Band Edge NVNT 2-DH5 2402MHz Ant No-Hopping Ref

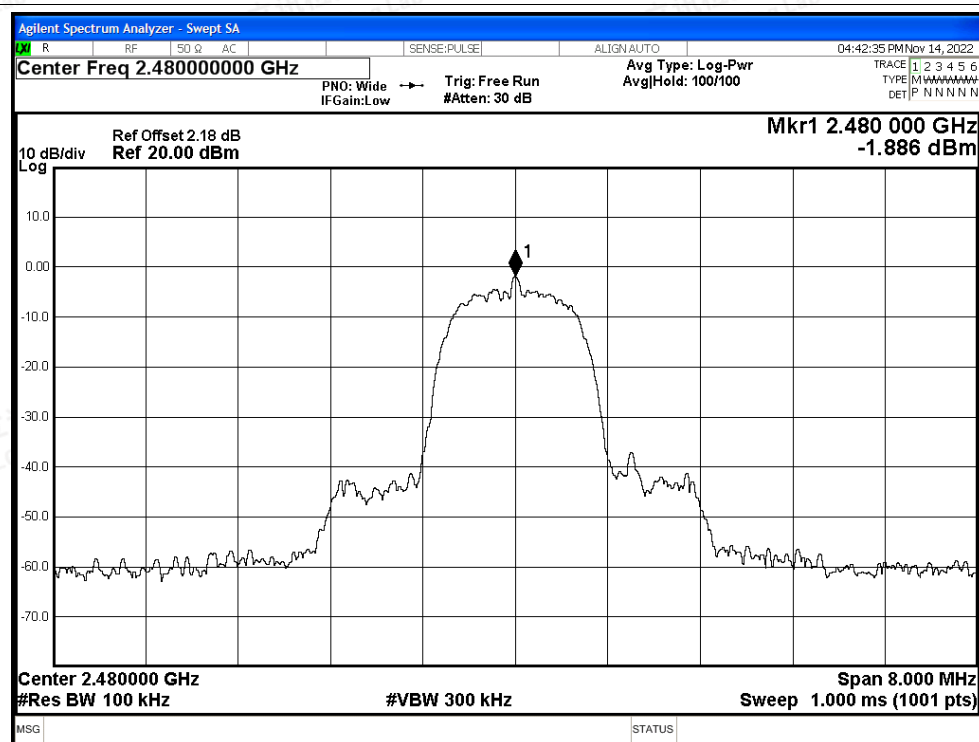


Band Edge NVNT 2-DH5 2402MHz Ant No-Hopping Emission

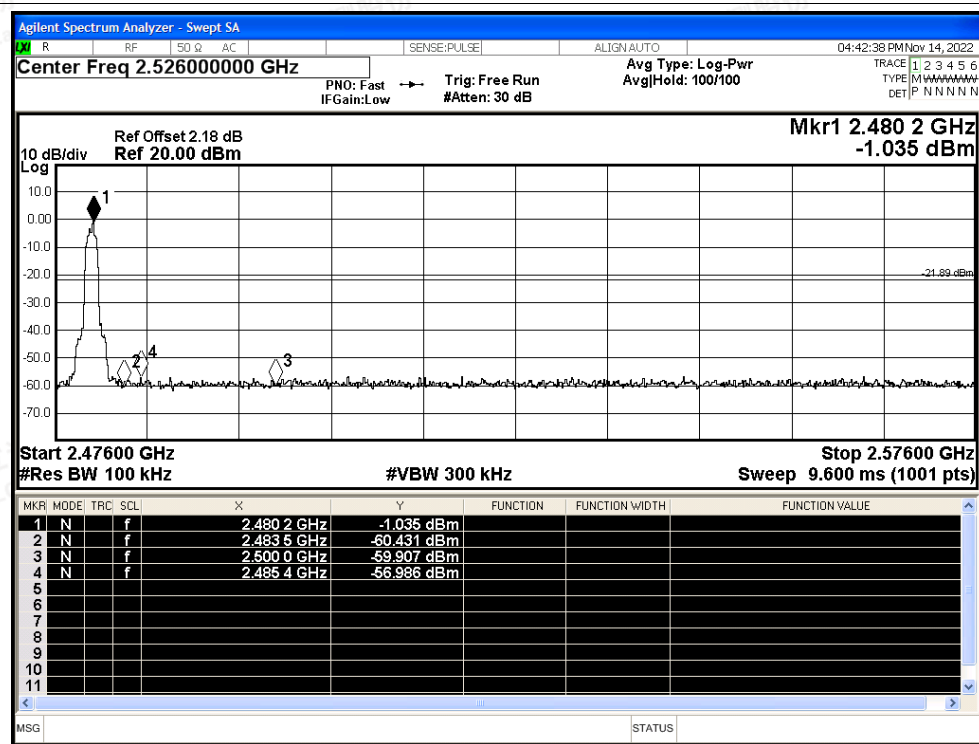




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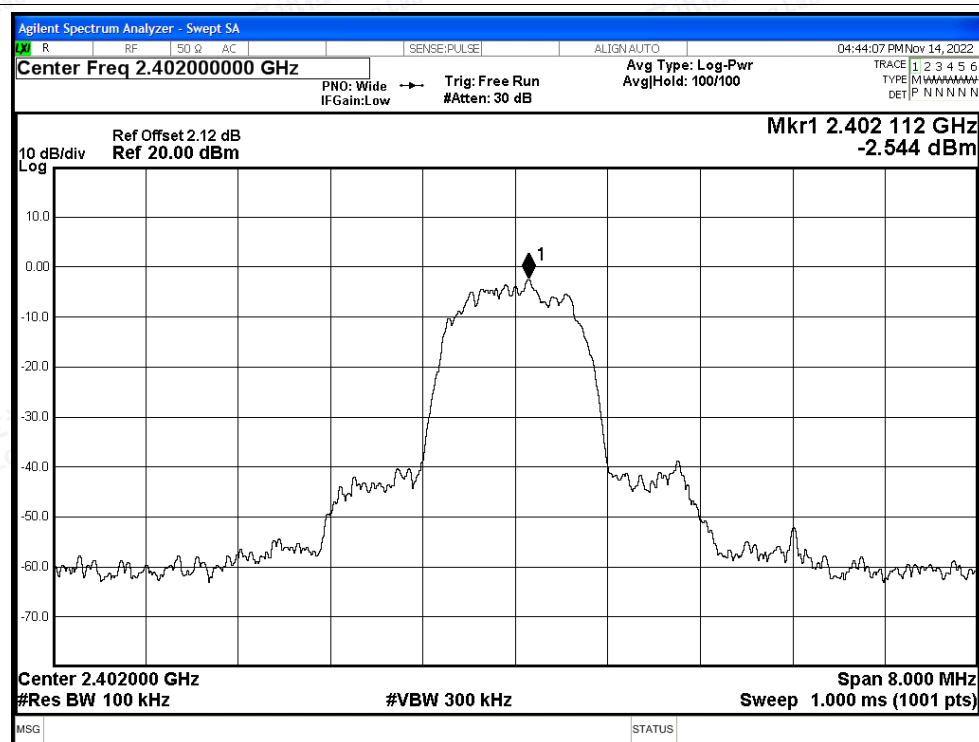


Band Edge NVNT 2-DH5 2480MHz Ant No-Hopping Emission

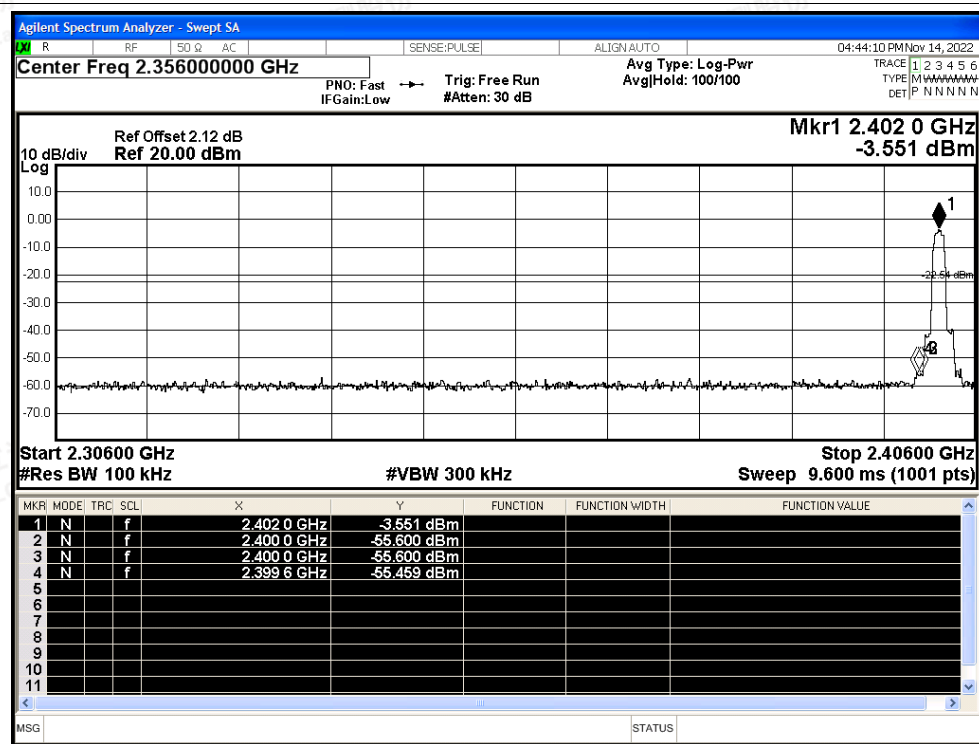




Band Edge NVNT 3-DH5 2402MHz Ant No-Hopping Ref



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



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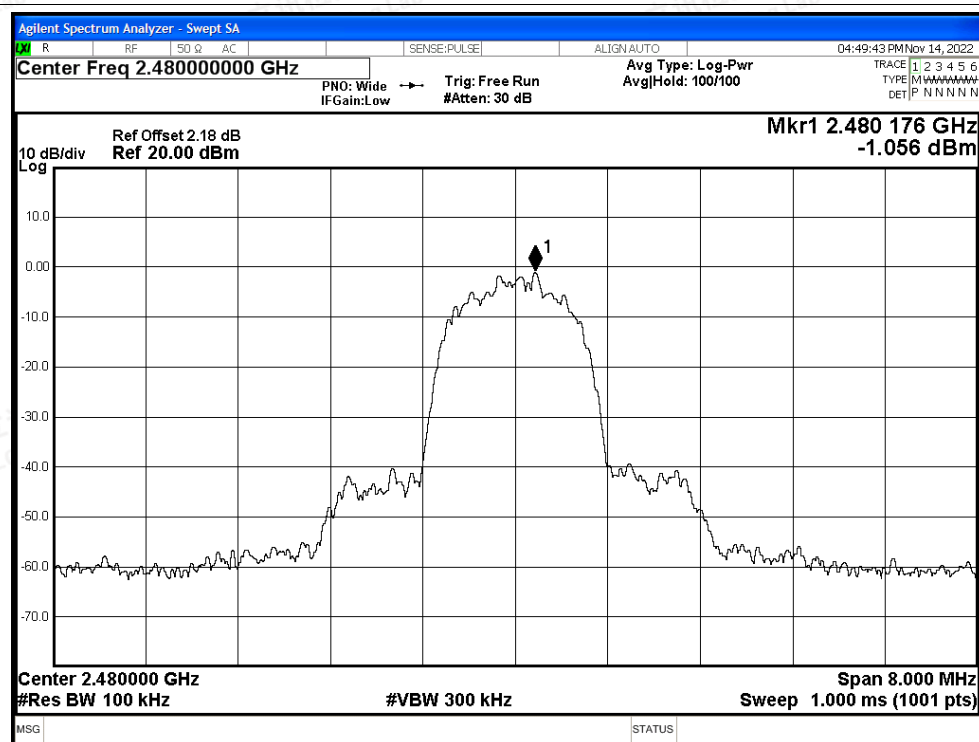
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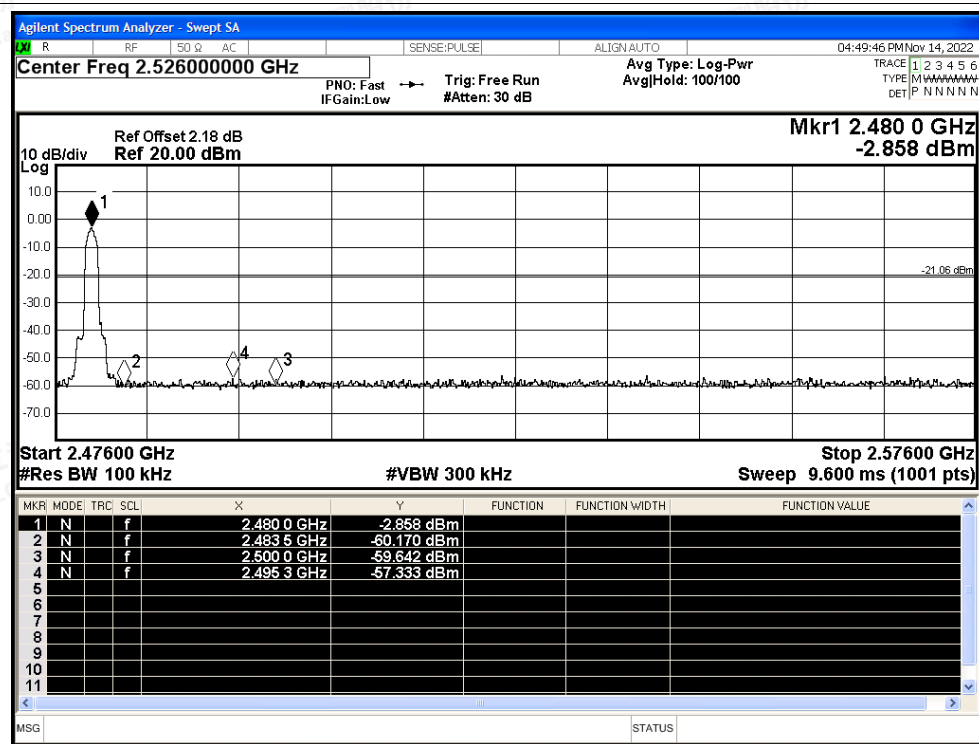
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Band Edge NVNT 3-DH5 2480MHz Ant No-Hopping Ref



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





(Hopping)

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant	Hopping	-56.36	-20	Pass
NVNT	1-DH5	2480	Ant	Hopping	-56.54	-20	Pass
NVNT	2-DH5	2402	Ant	Hopping	-56.09	-20	Pass
NVNT	2-DH5	2480	Ant	Hopping	-55.35	-20	Pass
NVNT	3-DH5	2402	Ant	Hopping	-55.52	-20	Pass
NVNT	3-DH5	2480	Ant	Hopping	-55.24	-20	Pass

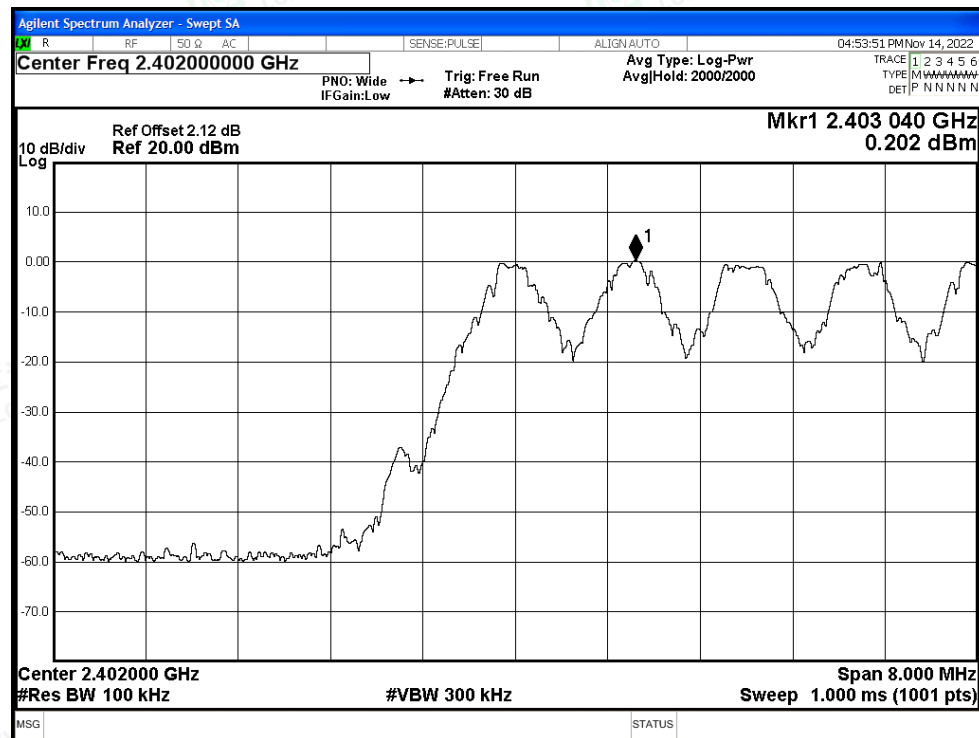


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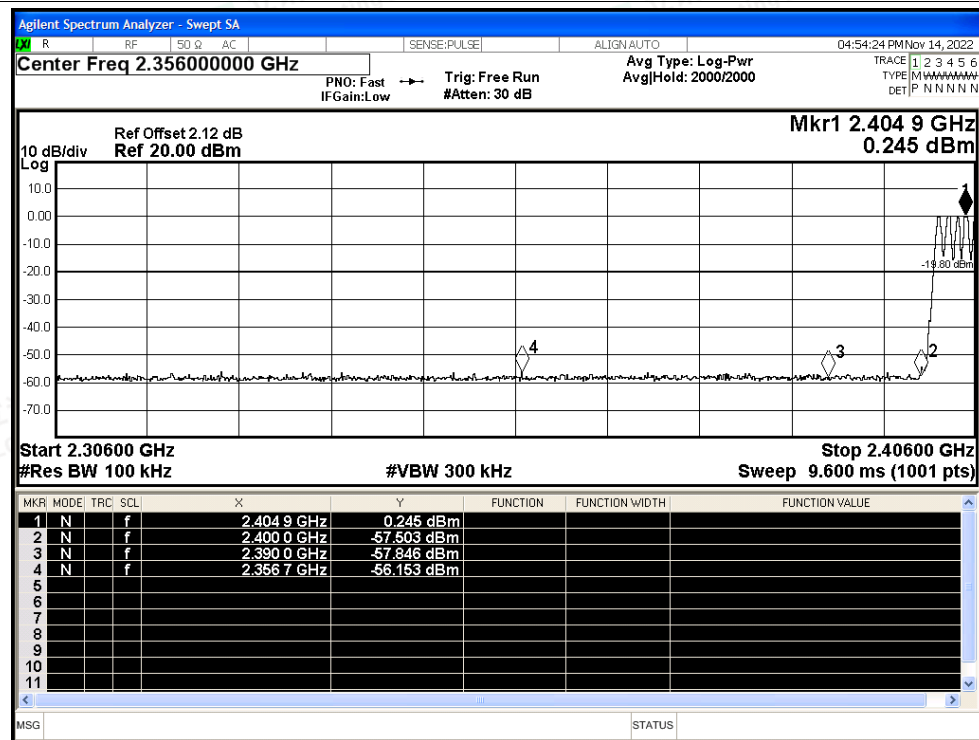


Test Graphs

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



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



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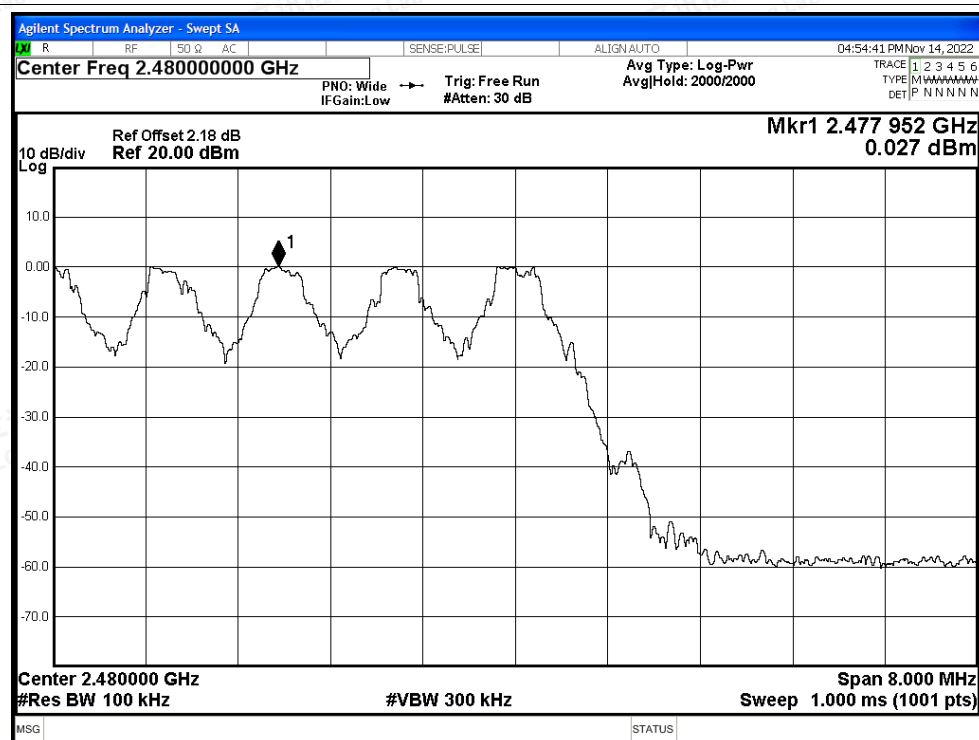
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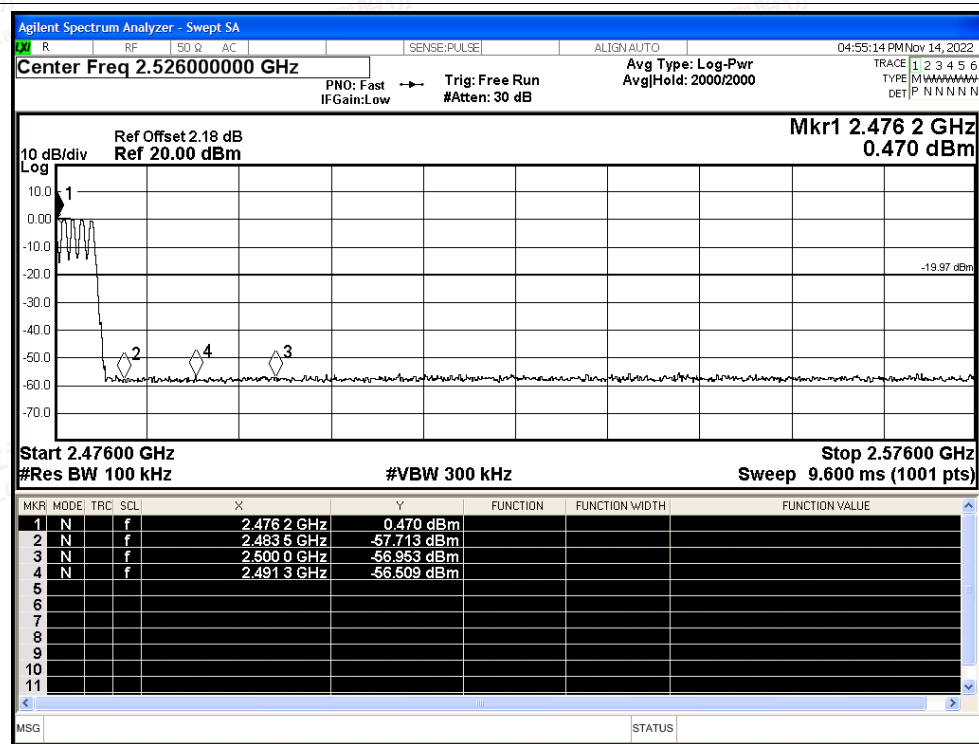
Scan code to check authenticity



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

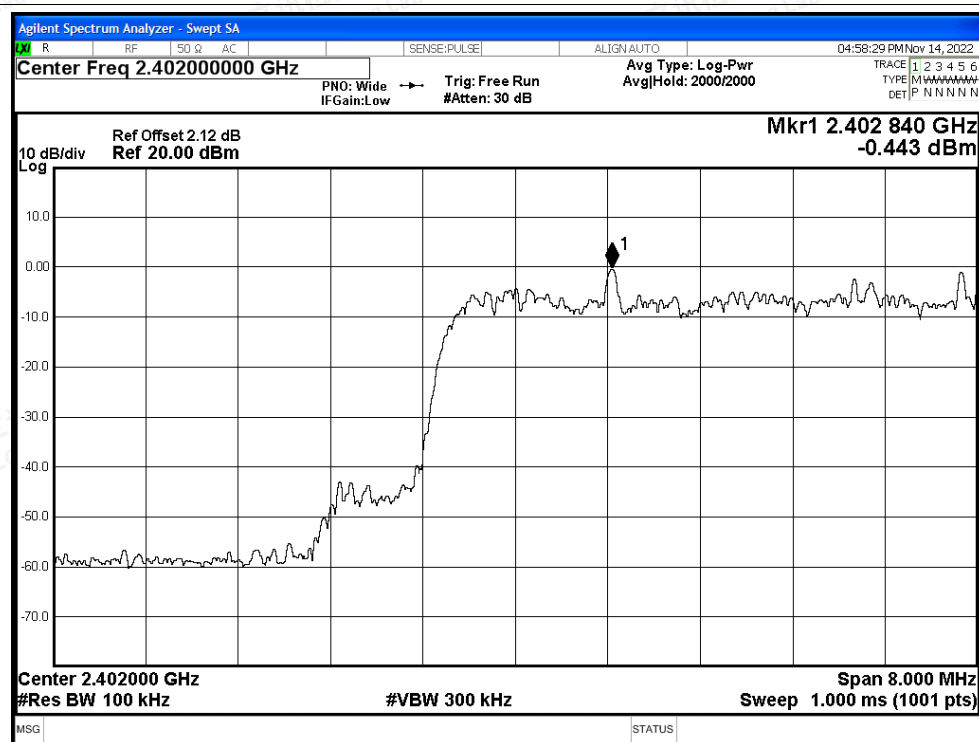


Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant Hopping Emission

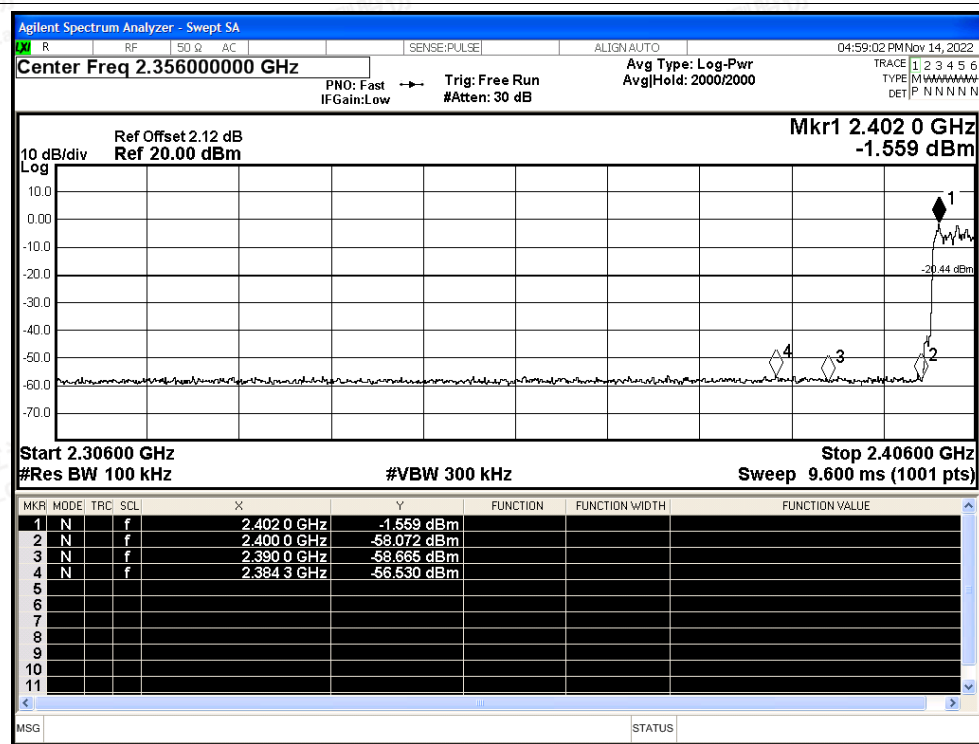




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant Hopping Ref

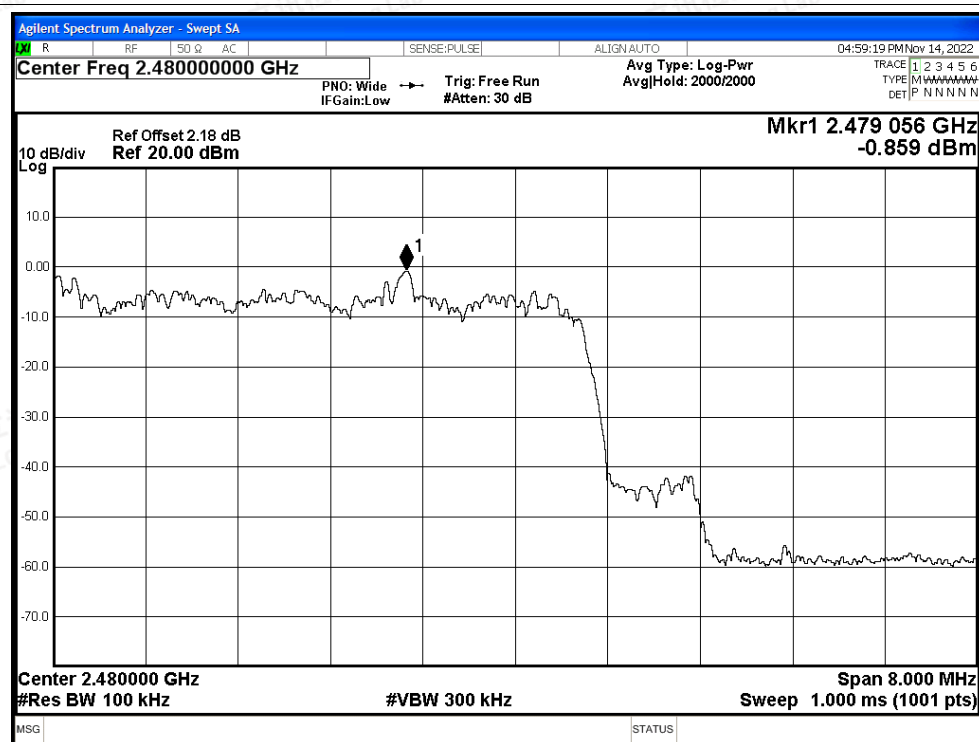


Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant Hopping Emission

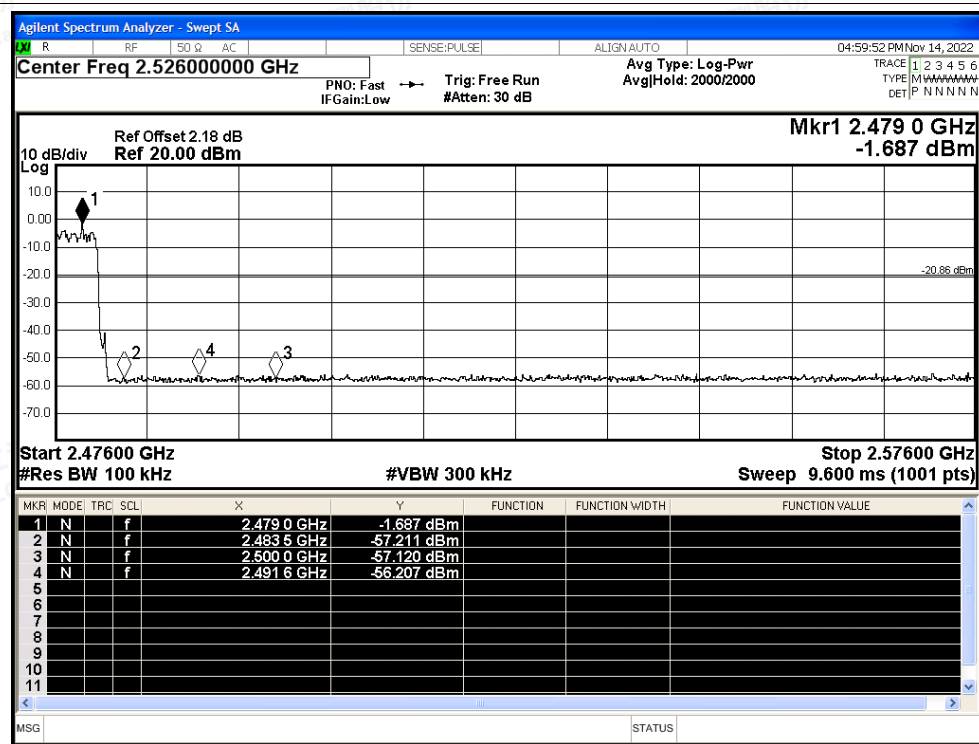




Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant Hopping Ref



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

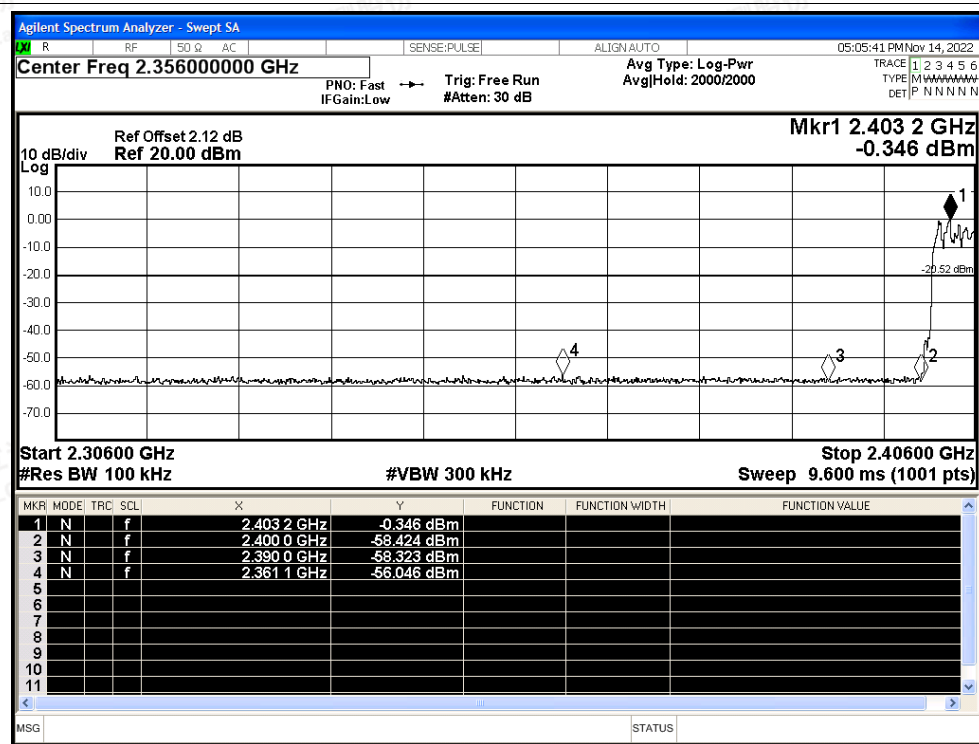




Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant Hopping Ref

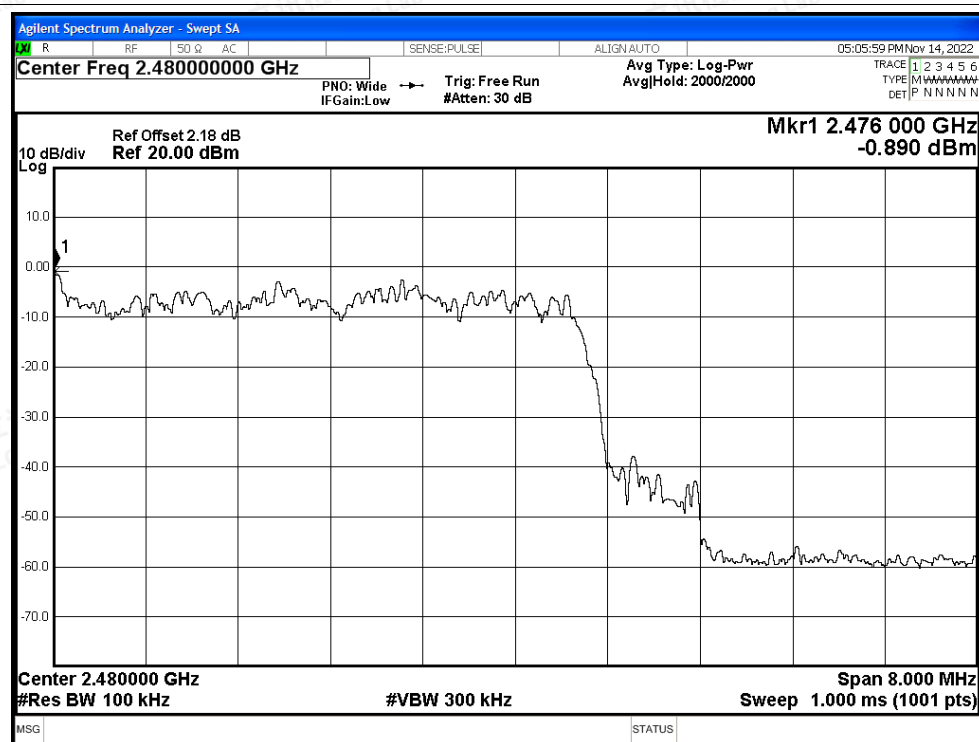


Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant Hopping Emission

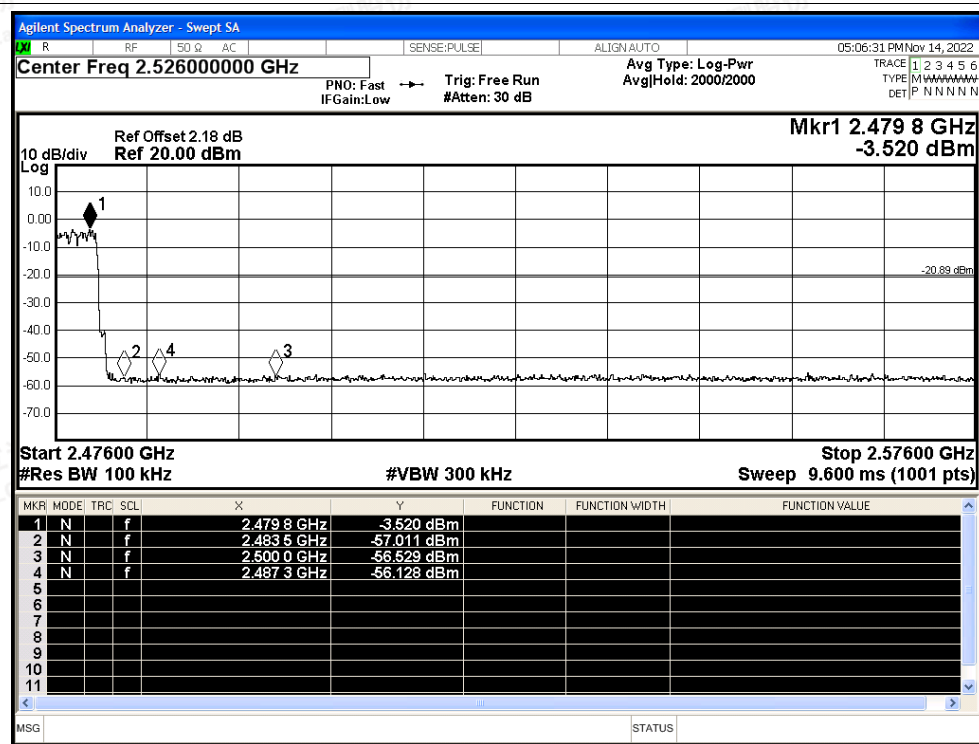




Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant Hopping Ref



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant Hopping Emission





A.8 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant	-56.01	-20	Pass
NVNT	1-DH5	2441	Ant	-56.13	-20	Pass
NVNT	1-DH5	2480	Ant	-56.16	-20	Pass
NVNT	2-DH5	2402	Ant	-54.21	-20	Pass
NVNT	2-DH5	2441	Ant	-55.19	-20	Pass
NVNT	2-DH5	2480	Ant	-54.22	-20	Pass
NVNT	3-DH5	2402	Ant	-48.96	-20	Pass
NVNT	3-DH5	2441	Ant	-55.24	-20	Pass
NVNT	3-DH5	2480	Ant	-53.33	-20	Pass

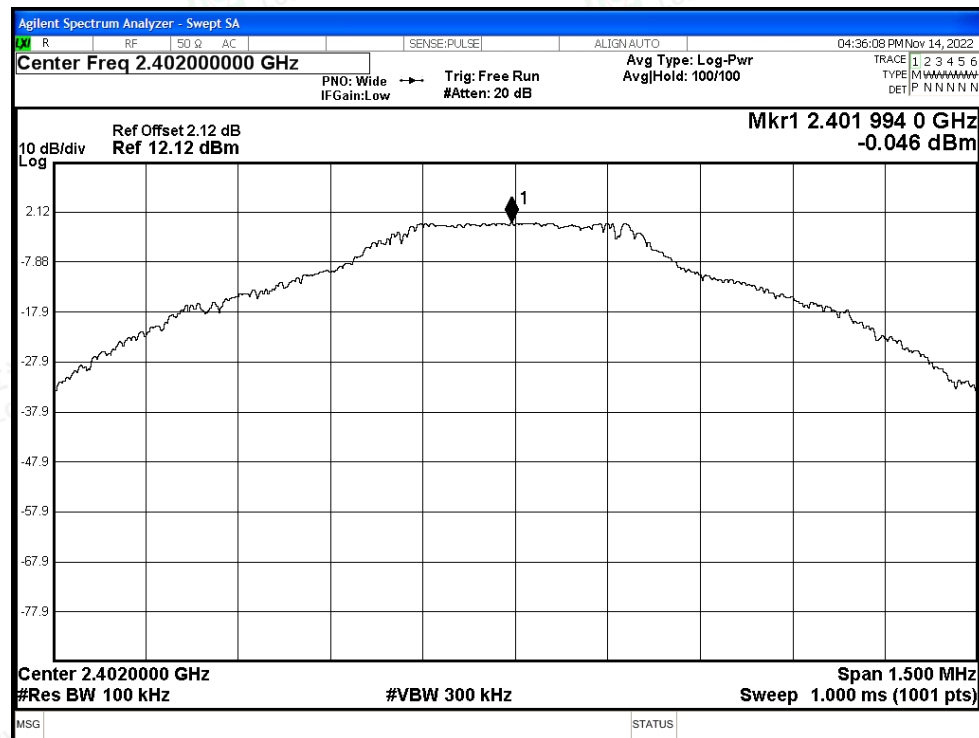


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

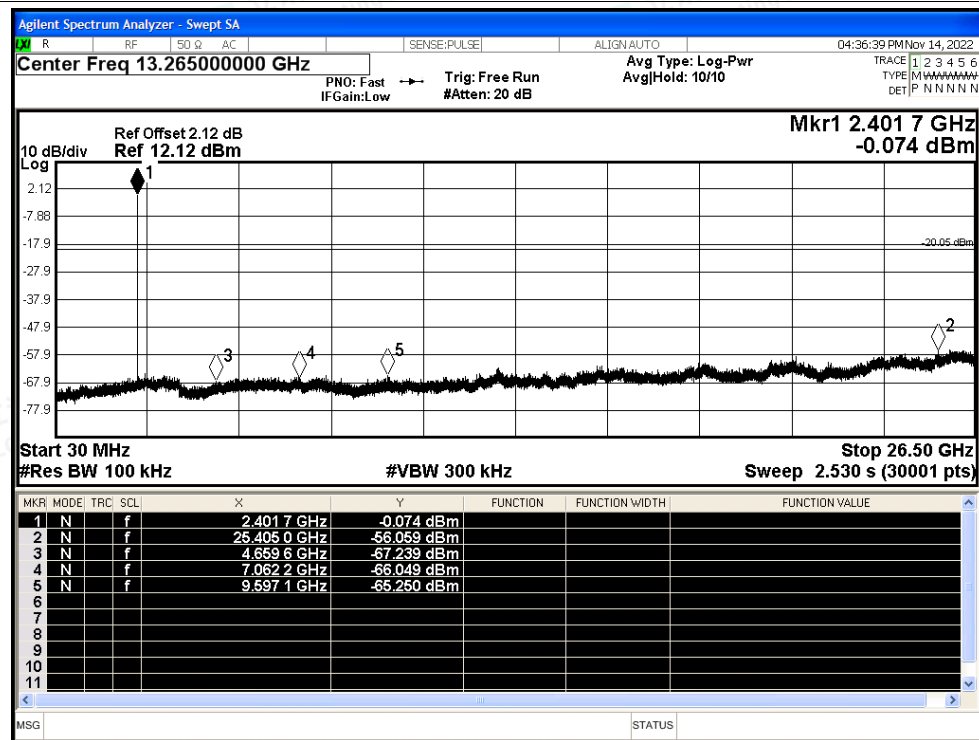


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant Ref

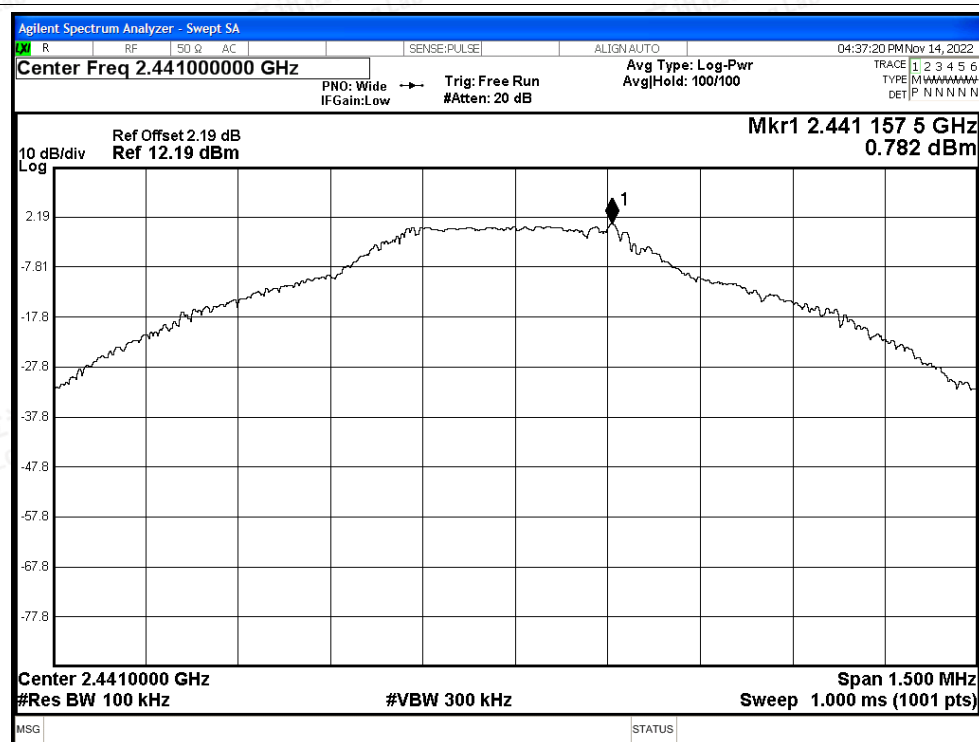


Tx. Spurious NVNT 1-DH5 2402MHz Ant Emission

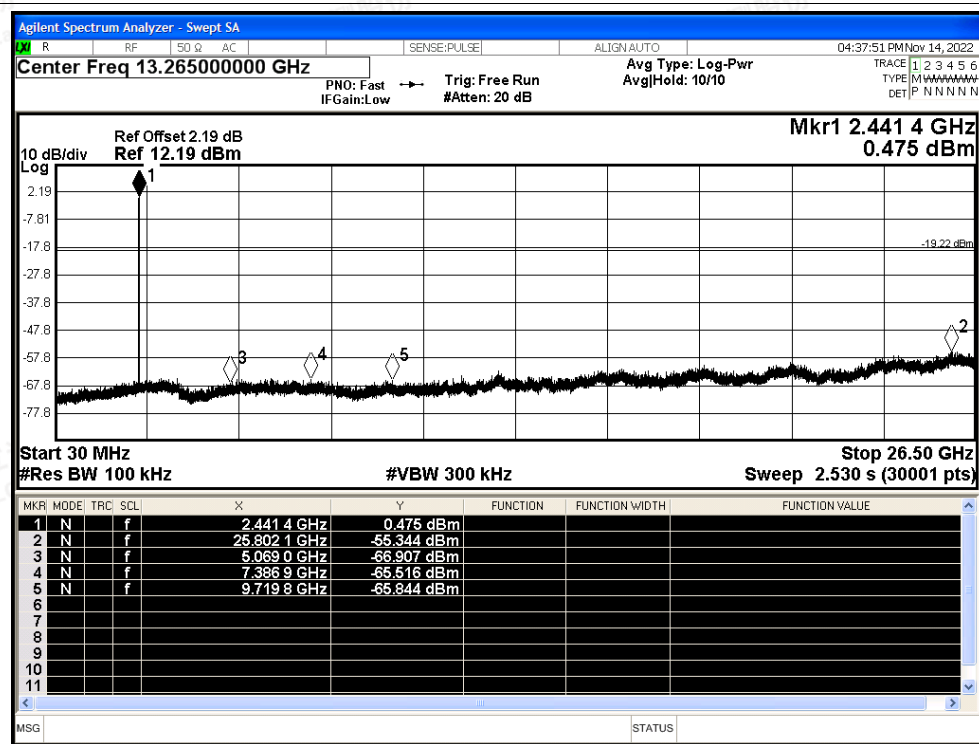




Tx. Spurious NVNT 1-DH5 2441MHz Ant Ref



Tx. Spurious NVNT 1-DH5 2441MHz Ant Emission

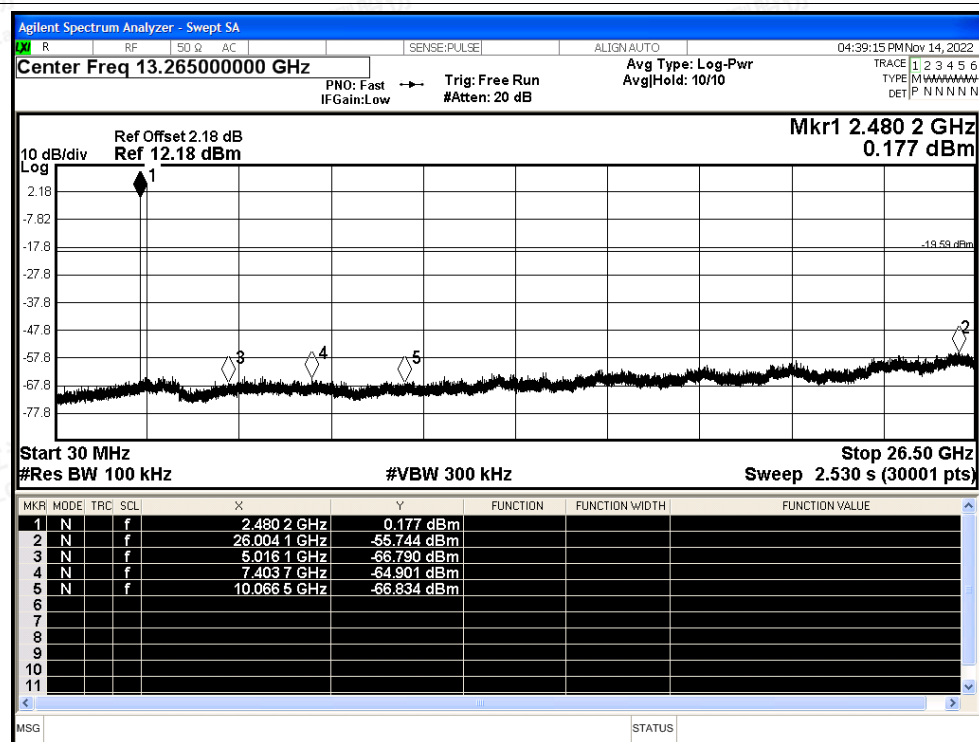




Tx. Spurious NVNT 1-DH5 2480MHz Ant Ref

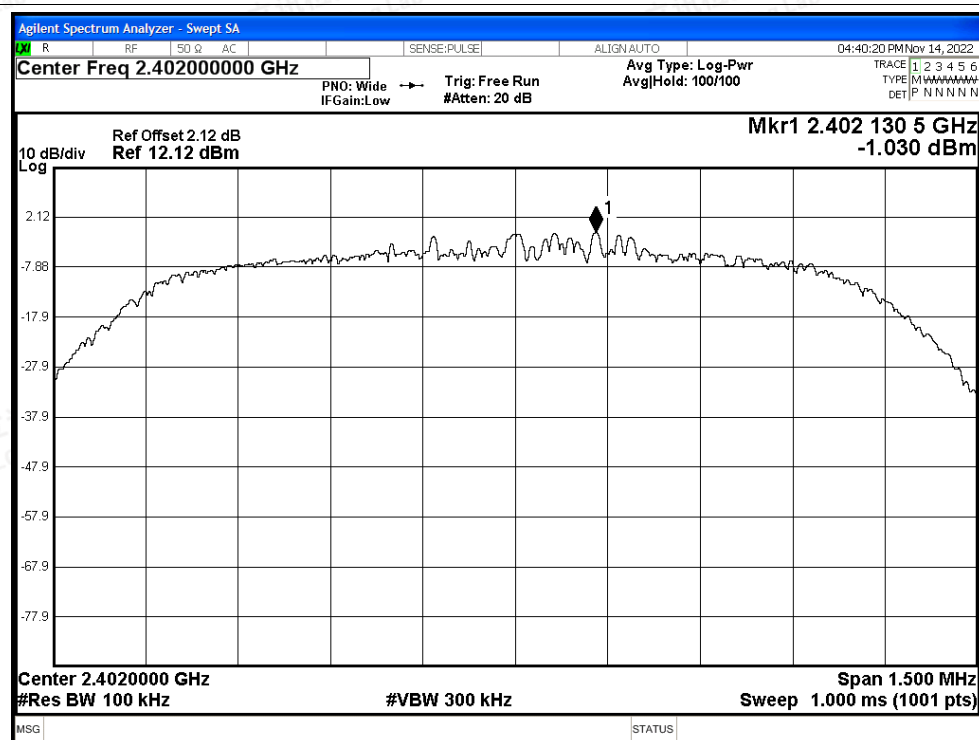


Tx. Spurious NVNT 1-DH5 2480MHz Ant Emission

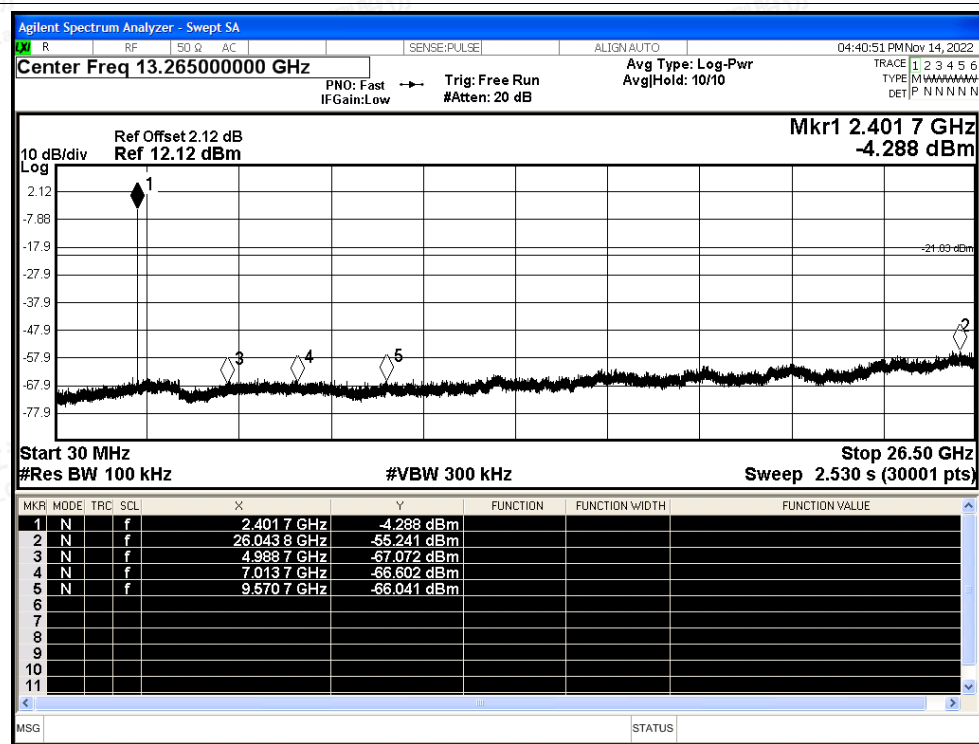




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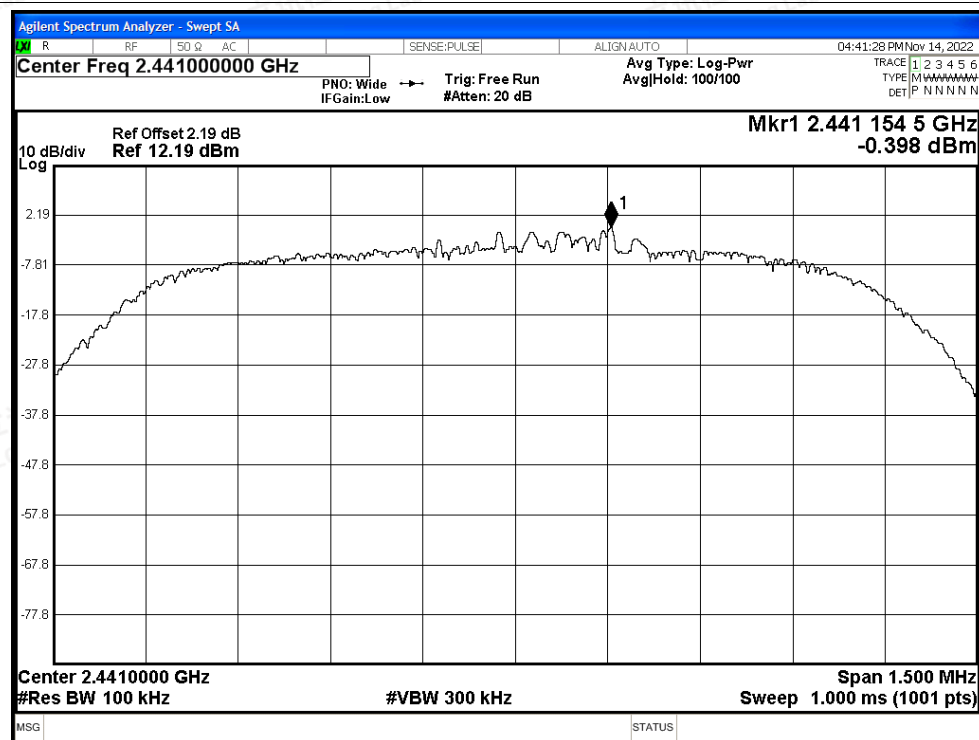


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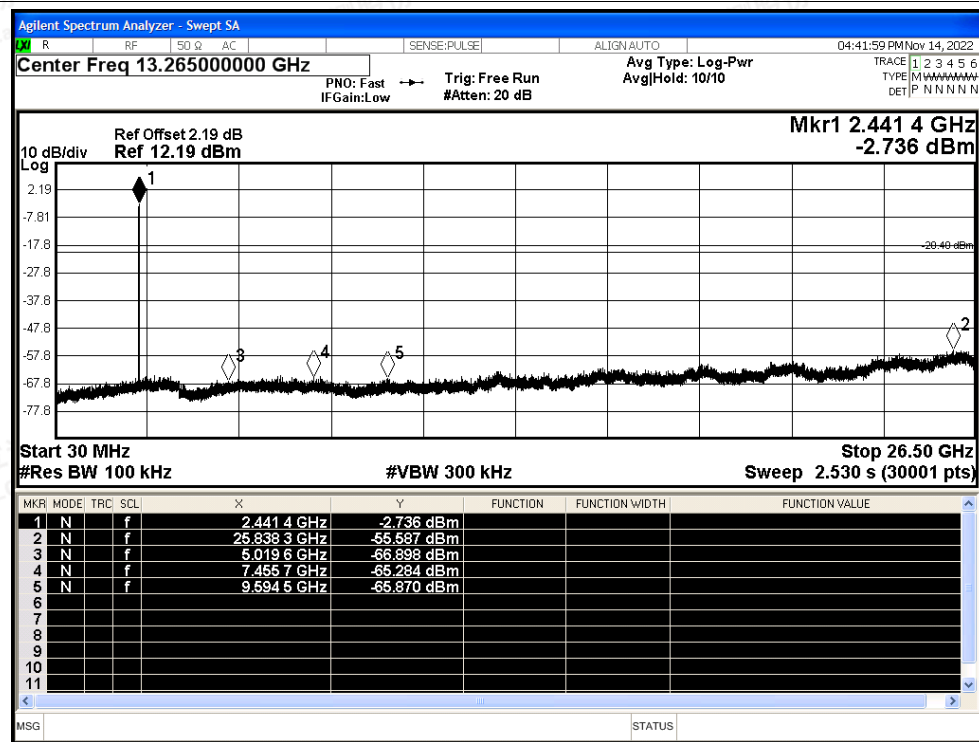




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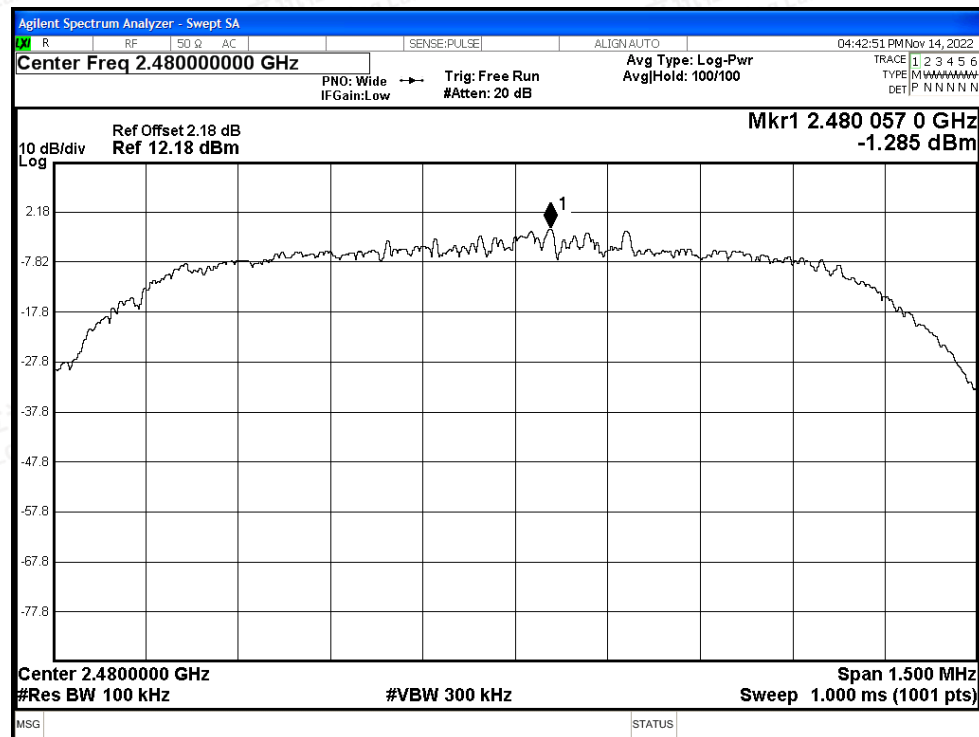


Tx. Spurious NVNT 2-DH5 2441MHz Ant Emission

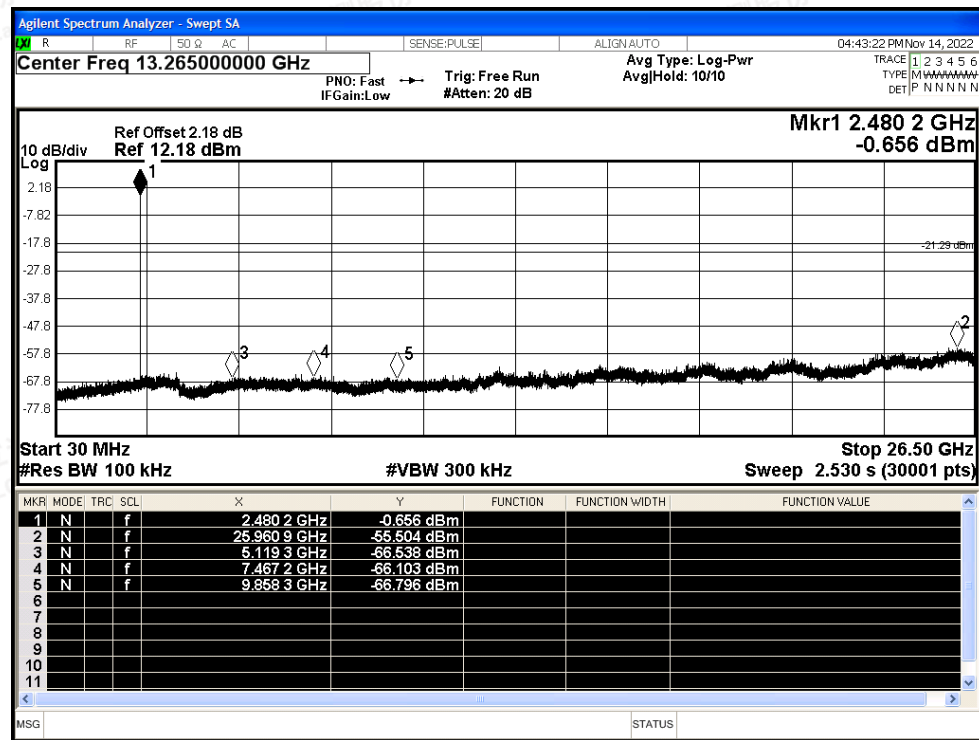




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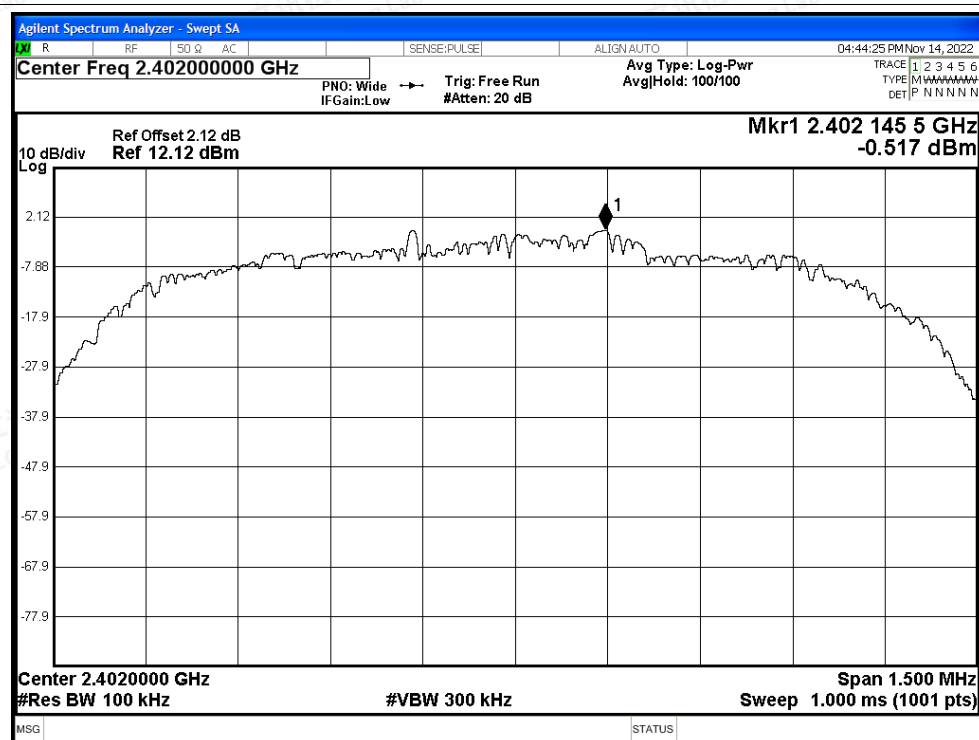


Tx. Spurious NVNT 2-DH5 2480MHz Ant Emission

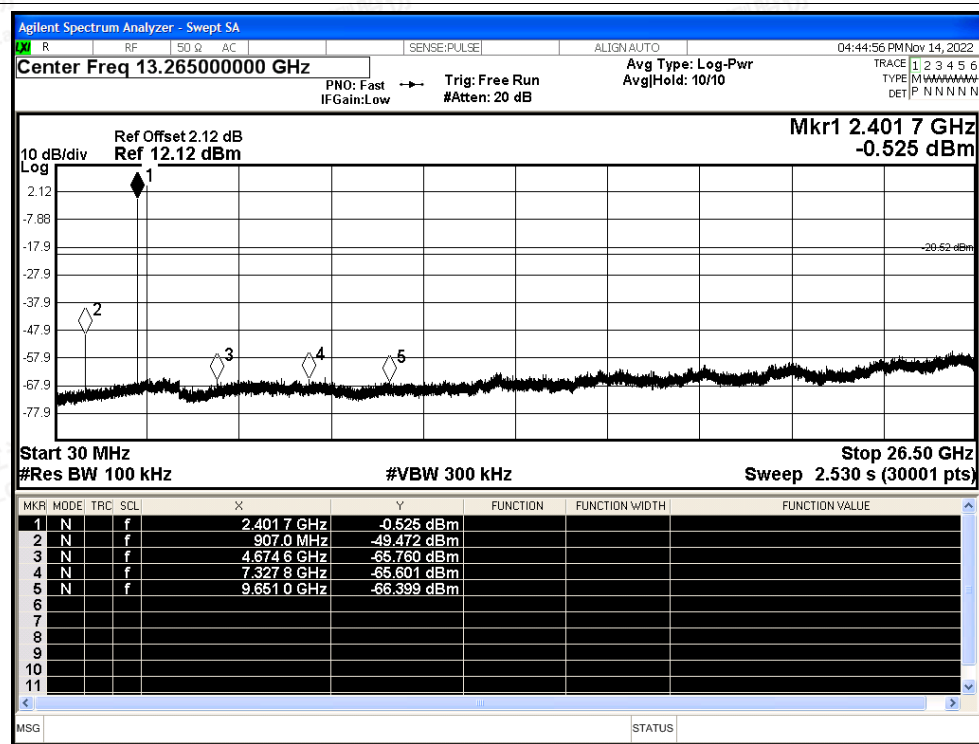




Tx. Spurious NVNT 3-DH5 2402MHz Ant Ref

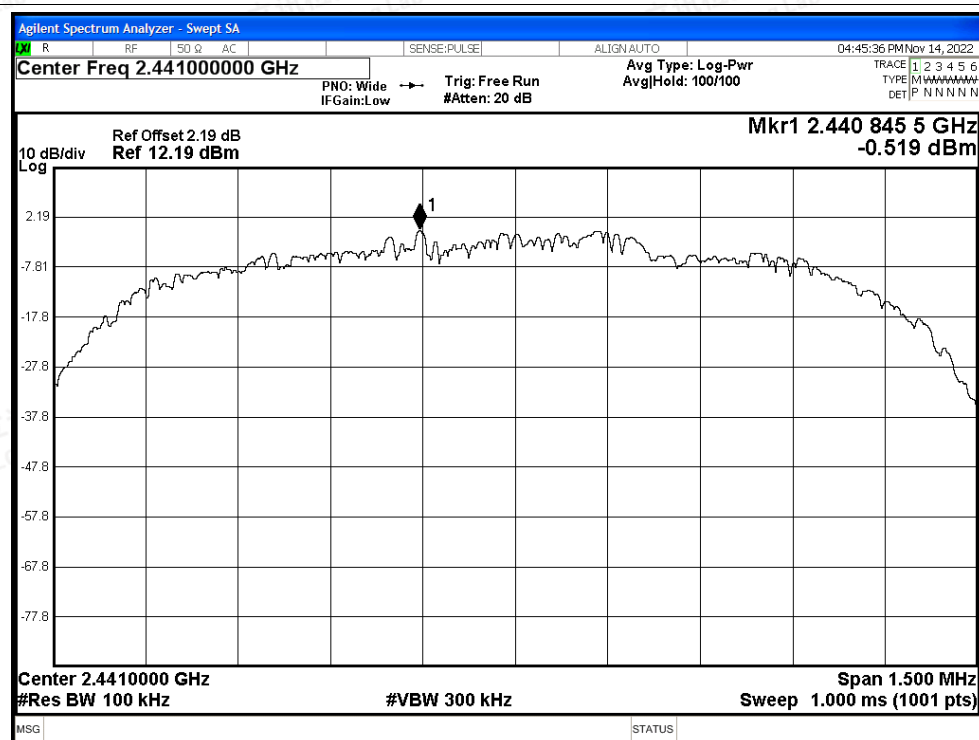


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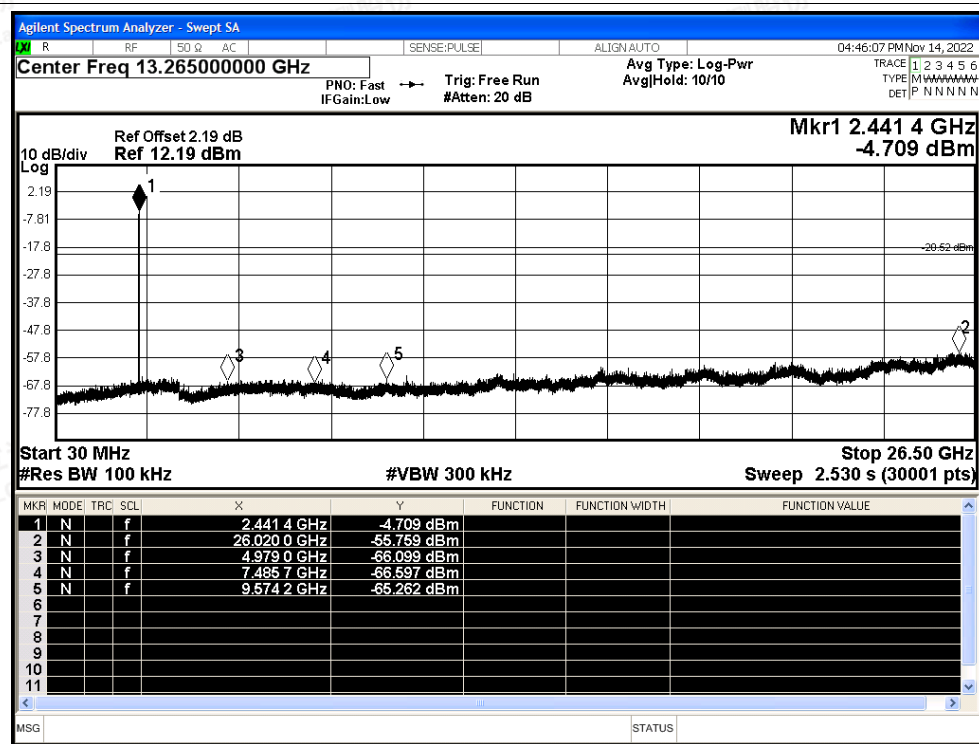




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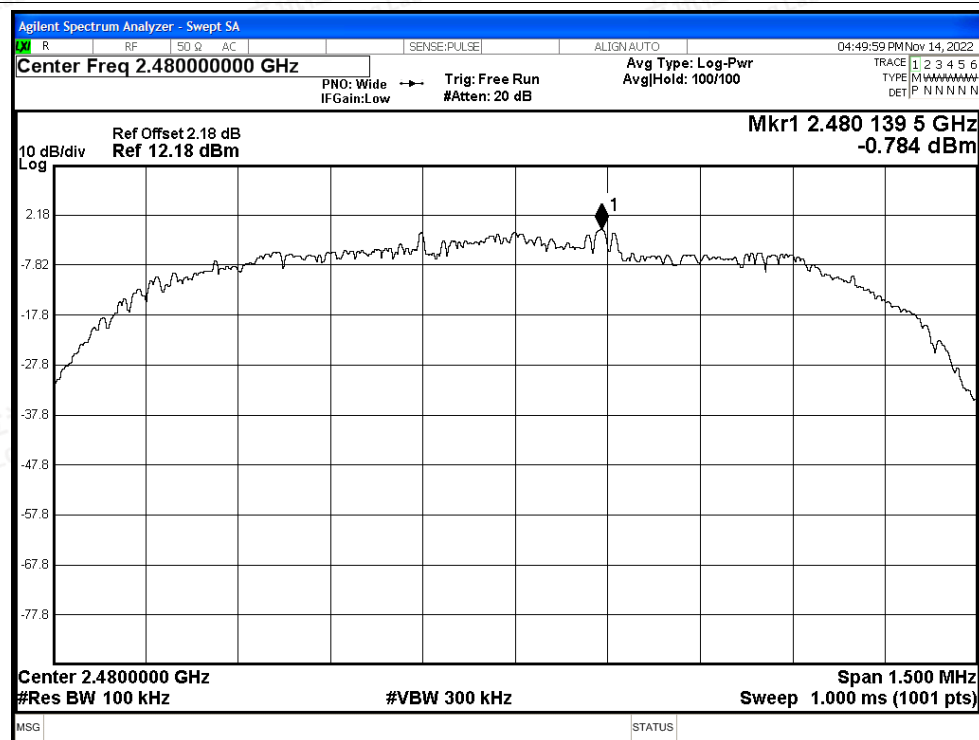


Tx. Spurious NVNT 3-DH5 2441MHz Ant Emission

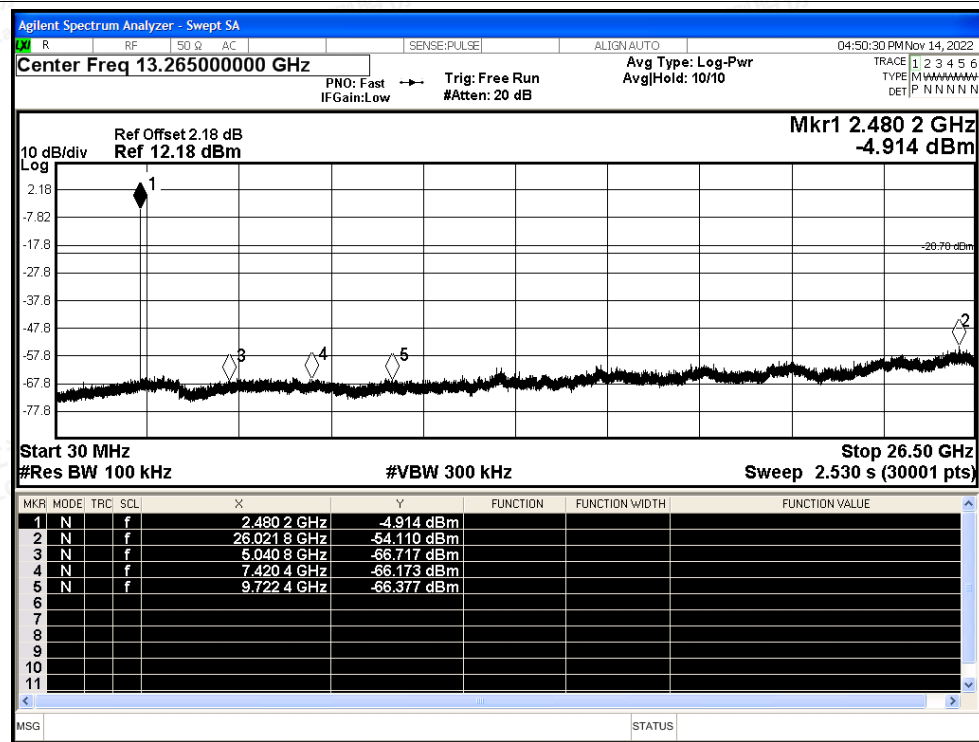




Tx. Spurious NVNT 3-DH5 2480MHz Ant Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant Emission





A.9 Restrict Band

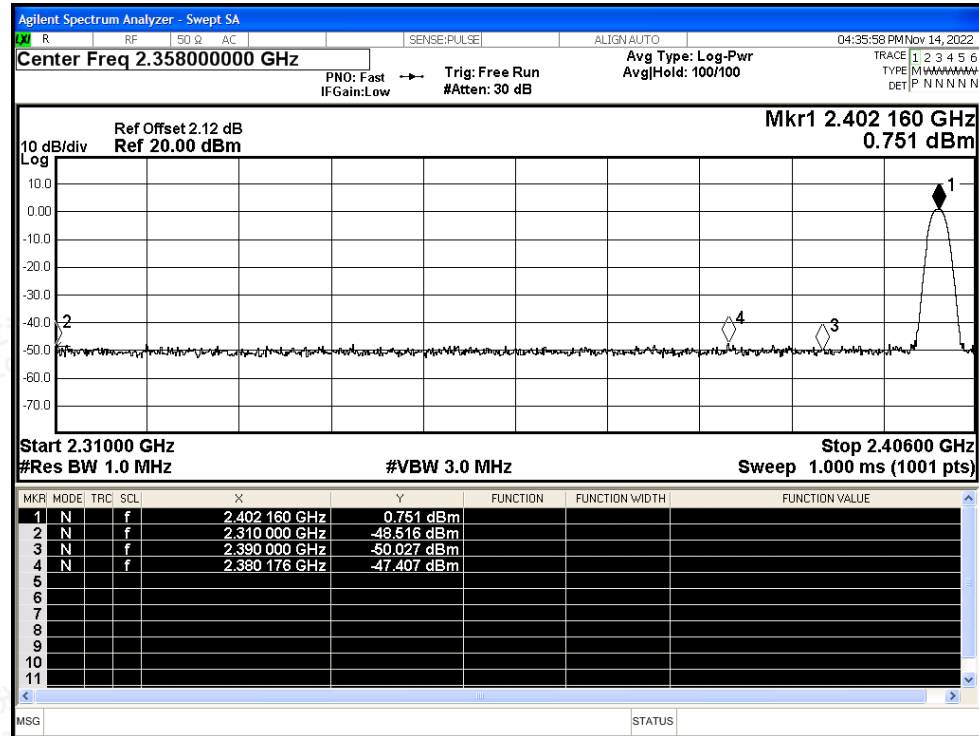
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant	No-Hopping	2310	-48.52	3.2	49.91	Peak	74	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2310	-60.45	3.2	37.98	Average	54	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2380.176	-47.41	3.2	51.02	Peak	74	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2387.376	-59.98	3.2	38.45	Average	54	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2390	-50.03	3.2	48.40	Peak	74	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2390	-60.13	3.2	38.30	Average	54	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2483.5	-48.34	3.2	50.09	Peak	74	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2483.5	-59.75	3.2	38.68	Average	54	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2494.528	-46.8	3.2	51.63	Peak	74	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2483.728	-59.52	3.2	38.91	Average	54	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2500	-48.88	3.2	49.55	Peak	74	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2500	-59.68	3.2	38.75	Average	54	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2310	-50.28	3.2	48.15	Peak	74	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2310	-60.48	3.2	37.95	Average	54	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2329.104	-47.49	3.2	50.94	Peak	74	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2365.968	-59.87	3.2	38.56	Average	54	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2390	-49.88	3.2	48.55	Peak	74	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2390	-60.22	3.2	38.21	Average	54	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2483.5	-49.54	3.2	48.89	Peak	74	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2483.5	-59.68	3.2	38.75	Average	54	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2485.024	-47.15	3.2	51.28	Peak	74	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2484.088	-59.53	3.2	38.90	Average	54	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2500	-50.18	3.2	48.25	Peak	74	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2500	-59.87	3.2	38.56	Average	54	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2310	-50.19	3.2	48.24	Peak	74	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2310	-60.37	3.2	38.06	Average	54	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2357.232	-47.44	3.2	50.99	Peak	74	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2388.432	-60.02	3.2	38.41	Average	54	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2390	-51.8	3.2	46.63	Peak	74	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2390	-60.16	3.2	38.27	Average	54	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2483.5	-49.88	3.2	48.55	Peak	74	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2483.5	-59.63	3.2	38.80	Average	54	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2498.92	-46.66	3.2	51.77	Peak	74	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2483.56	-59.6	3.2	38.83	Average	54	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2500	-48.21	3.2	50.22	Peak	74	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2500	-59.79	3.2	38.64	Average	54	Pass



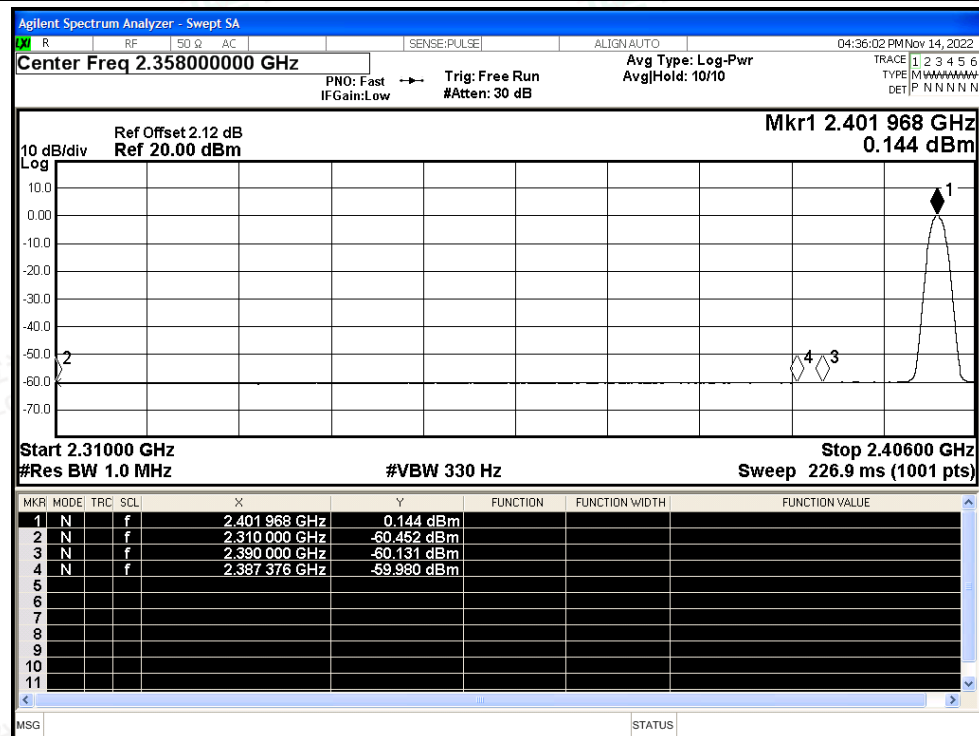


Test Graphs

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

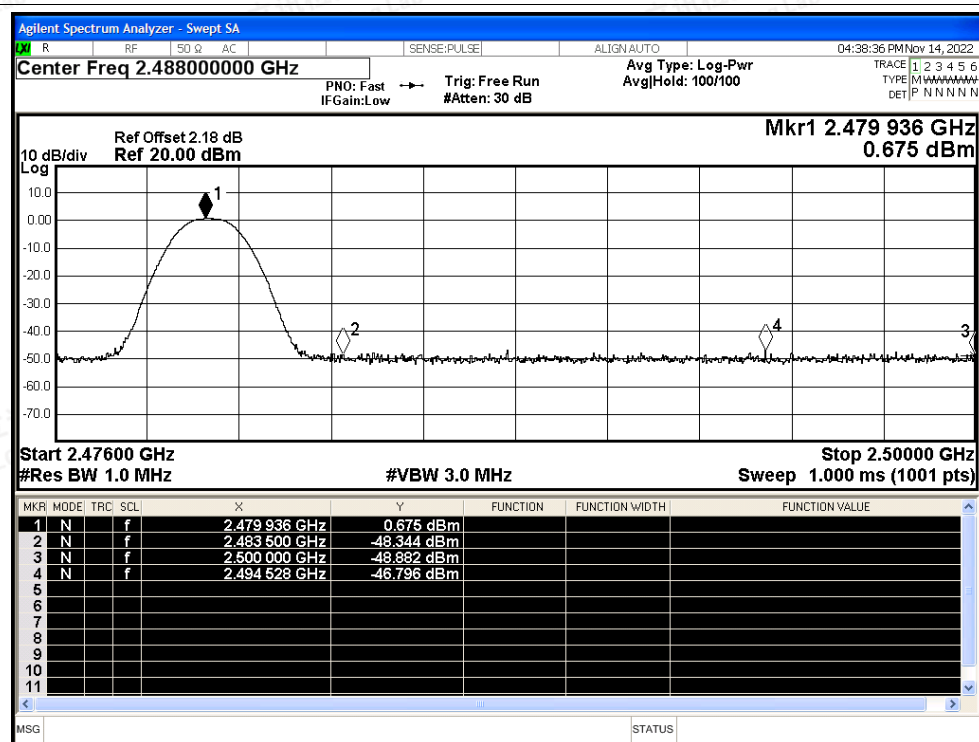


Restrict Band NVNT 1-DH5 2402MHz Ant No-Hopping Average

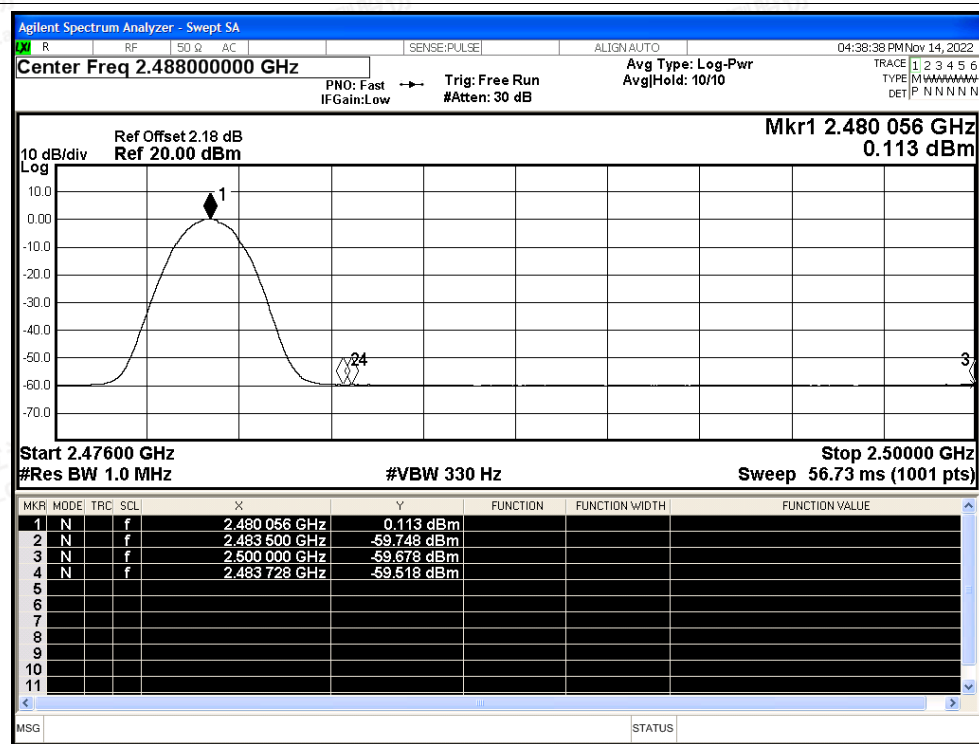




Restrict Band NVNT 1-DH5 2480MHz Ant No-Hopping Peak

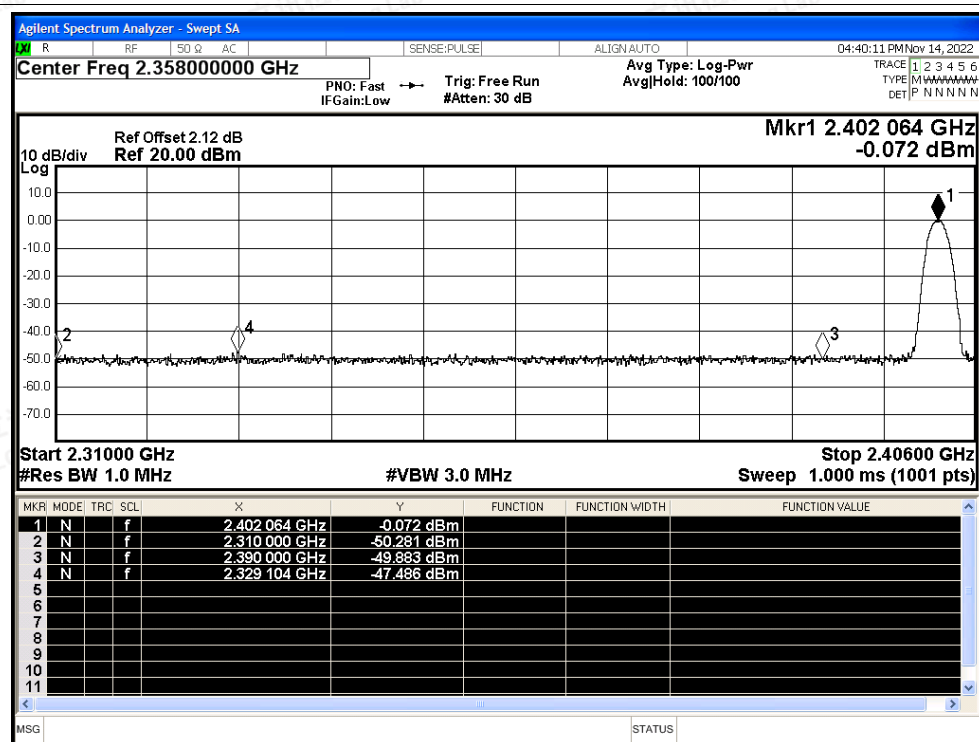


Restrict Band NVNT 1-DH5 2480MHz Ant No-Hopping Average

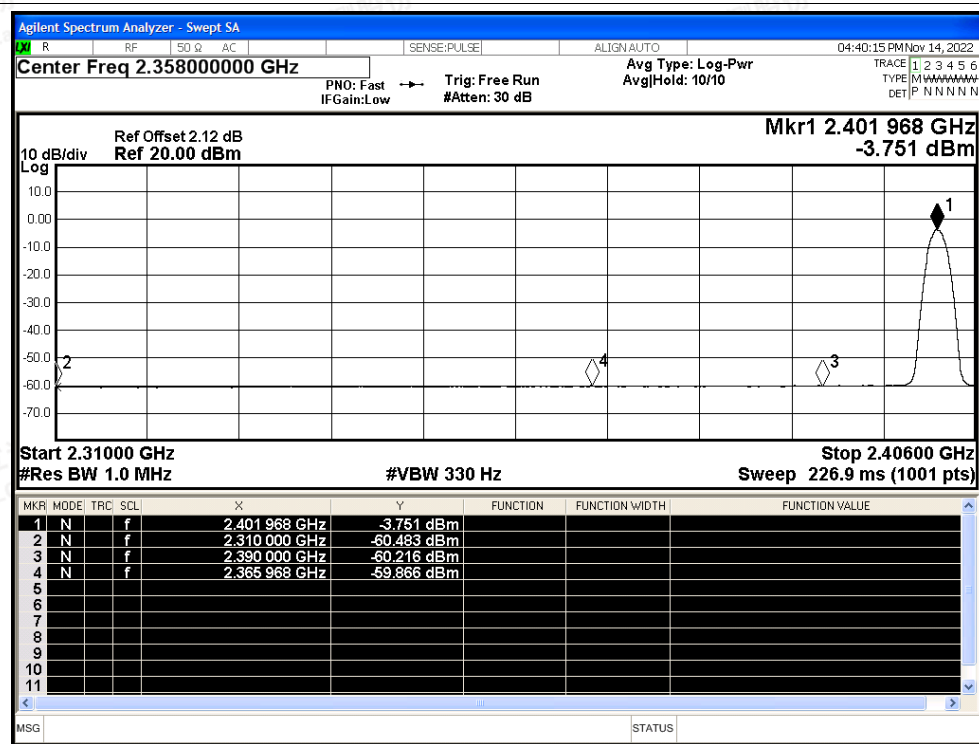




Restrict Band NVNT 2-DH5 2402MHz Ant No-Hopping Peak

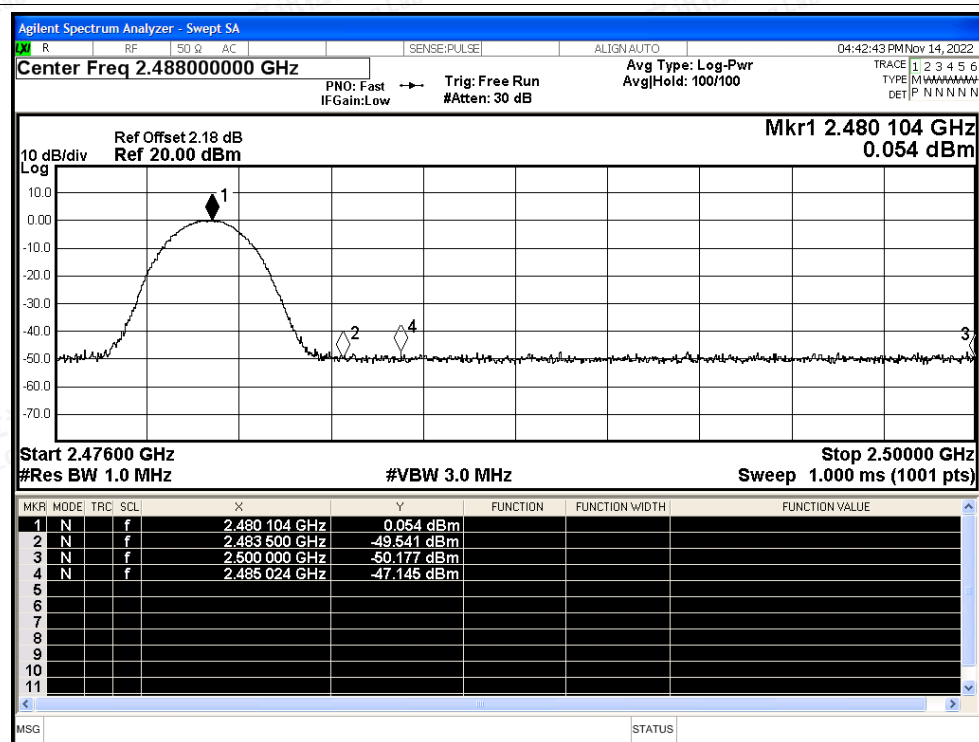


Restrict Band NVNT 2-DH5 2402MHz Ant No-Hopping Average

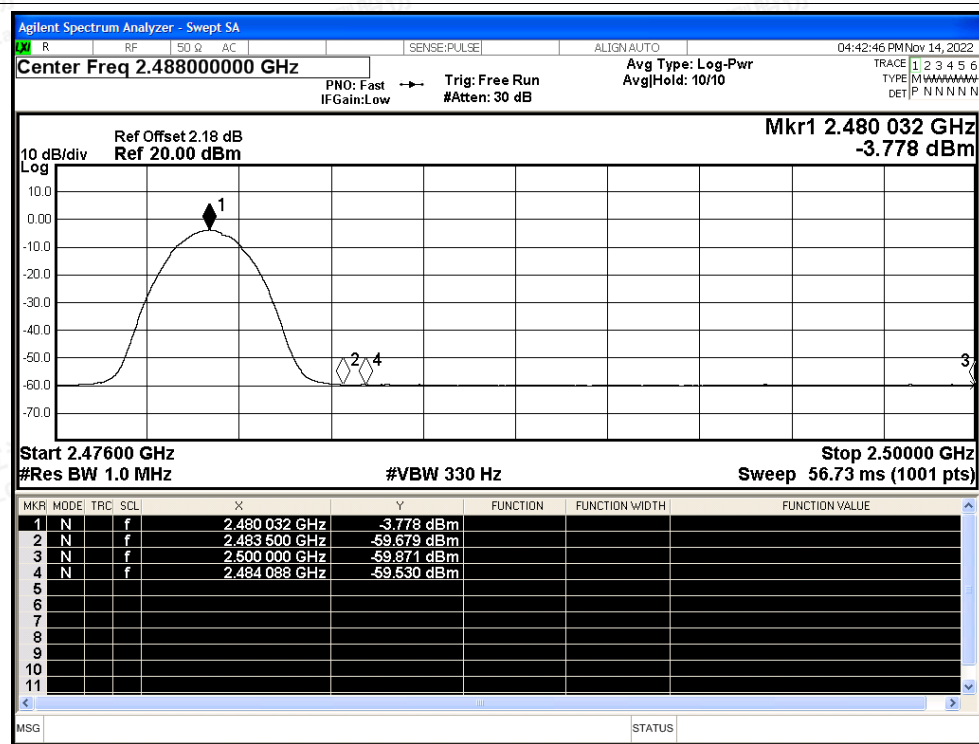




Restrict Band NVNT 2-DH5 2480MHz Ant No-Hopping Peak

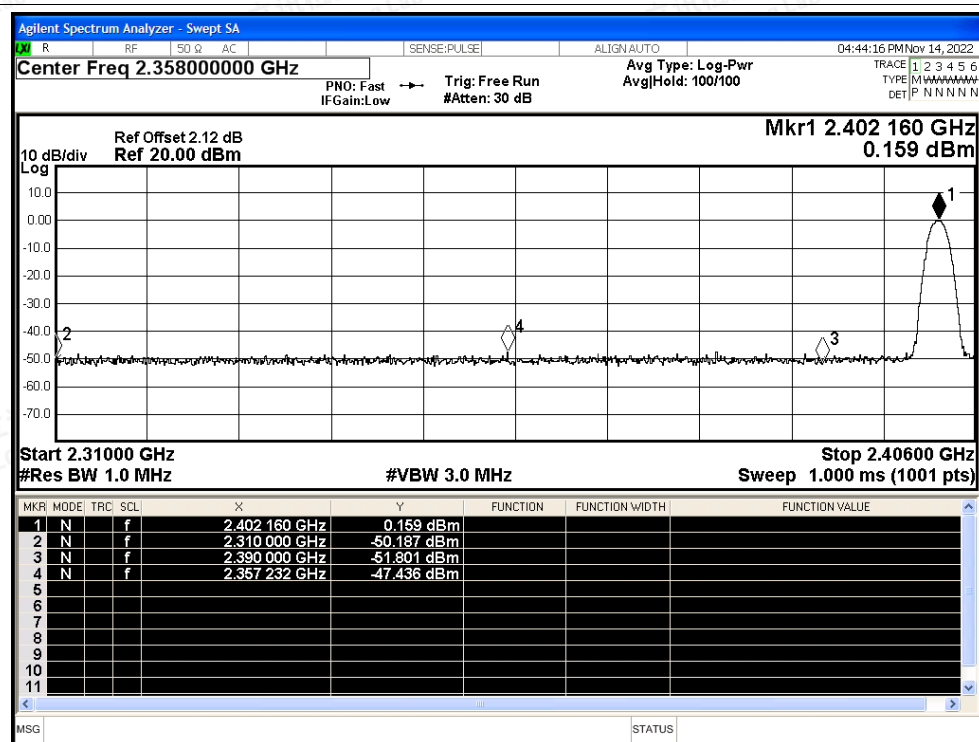


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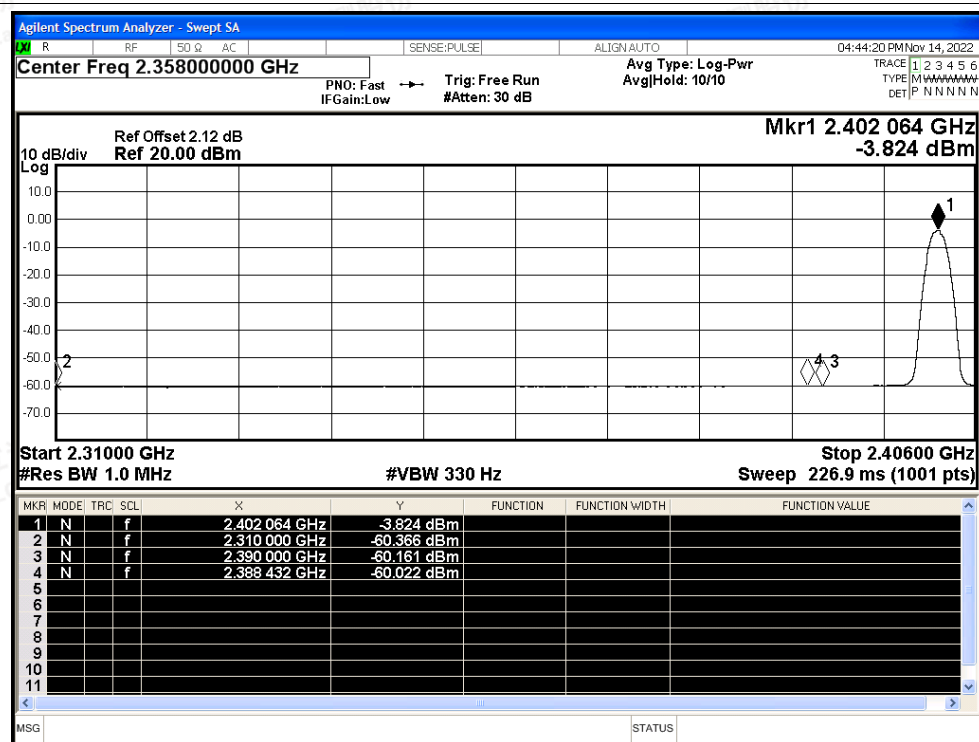




Restrict Band NVNT 3-DH5 2402MHz Ant No-Hopping Peak

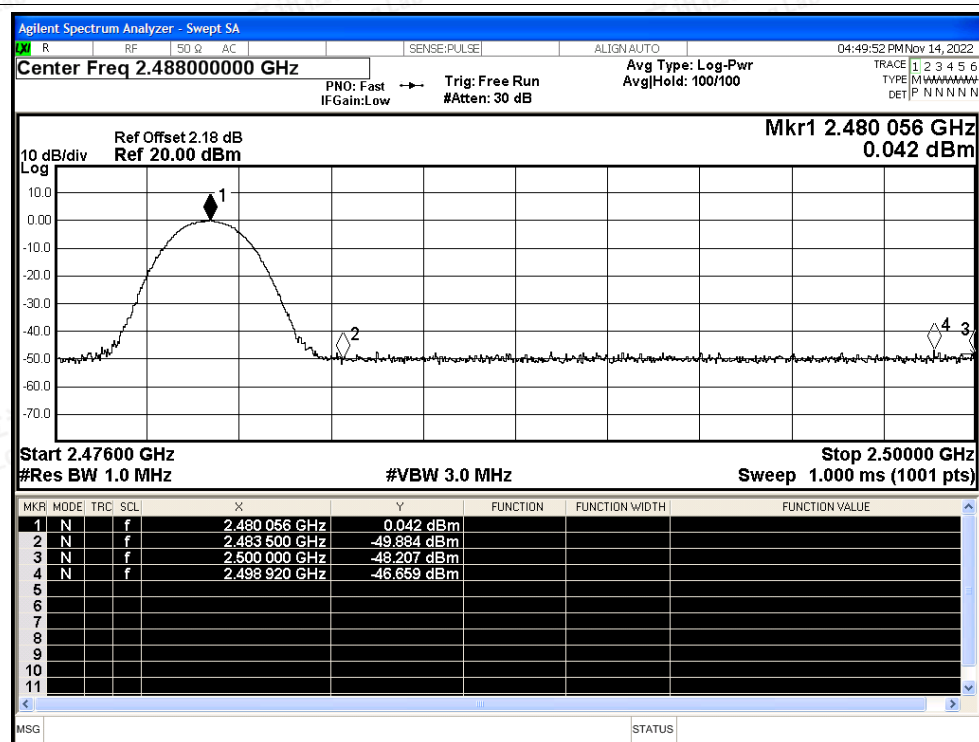


Restrict Band NVNT 3-DH5 2402MHz Ant No-Hopping Average





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



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

