



## Appendix A

### RF Test Data for BT (Conducted Measurement)

Product Name: TWS Bluetooth Earphones

Test Model: Airdopes 91

#### Environmental Conditions

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





### A.1 -20dB Bandwidth

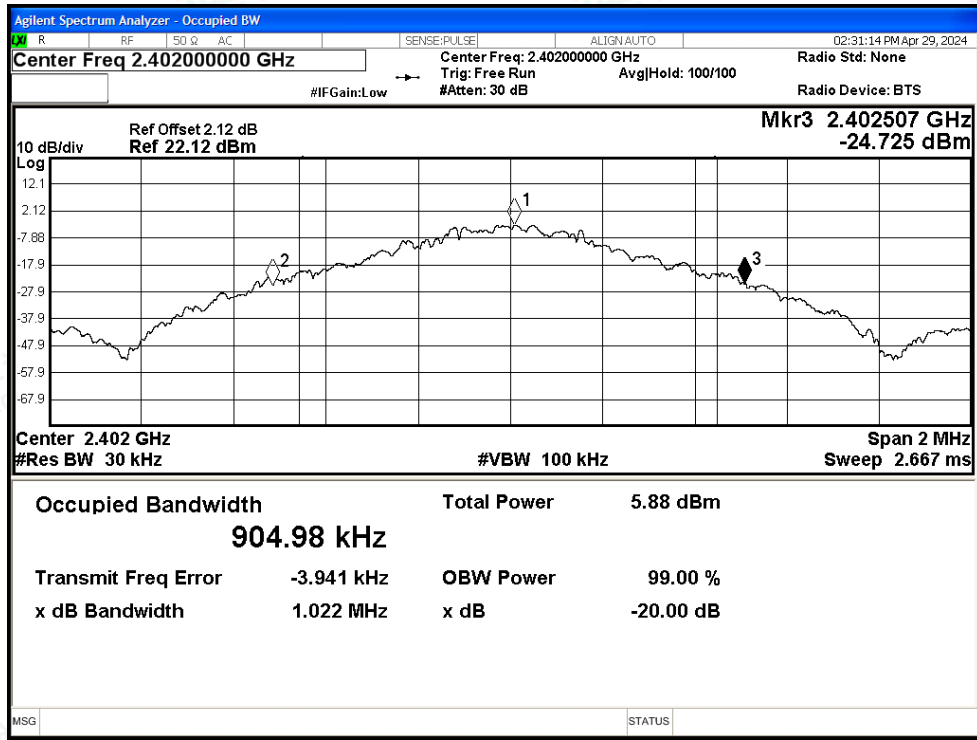
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant	1.022	N/A	Pass
NVNT	1-DH5	2441	Ant	1.018	N/A	Pass
NVNT	1-DH5	2480	Ant	0.958	N/A	Pass
NVNT	2-DH5	2402	Ant	1.31	N/A	Pass
NVNT	2-DH5	2441	Ant	1.309	N/A	Pass
NVNT	2-DH5	2480	Ant	1.308	N/A	Pass
NVNT	3-DH5	2402	Ant	1.296	N/A	Pass
NVNT	3-DH5	2441	Ant	1.279	N/A	Pass
NVNT	3-DH5	2480	Ant	1.296	N/A	Pass



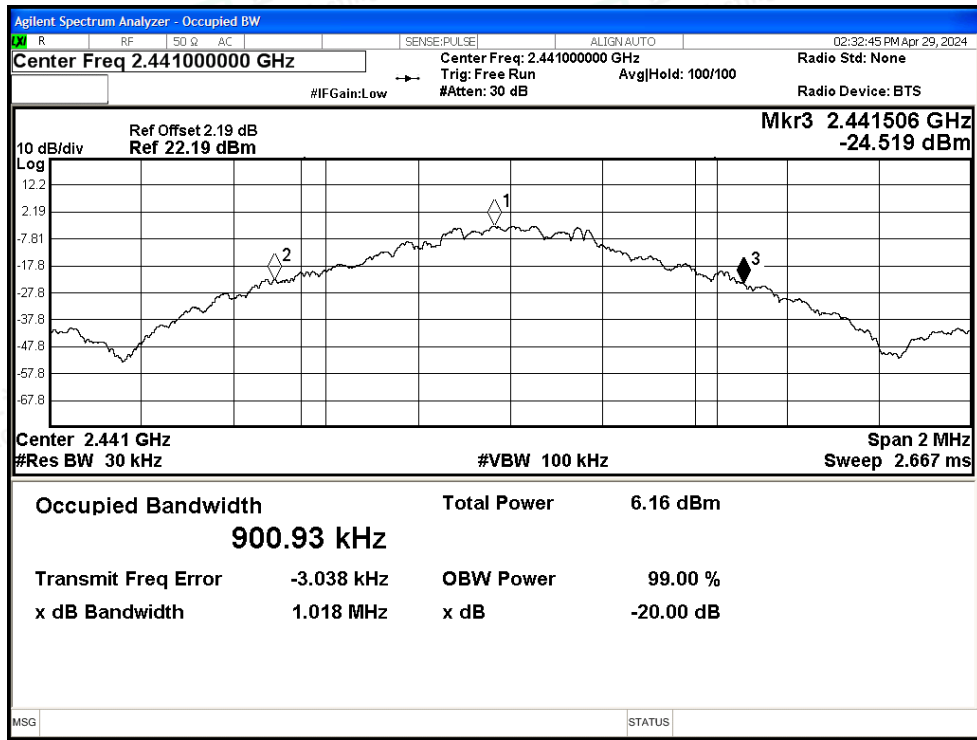


Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant

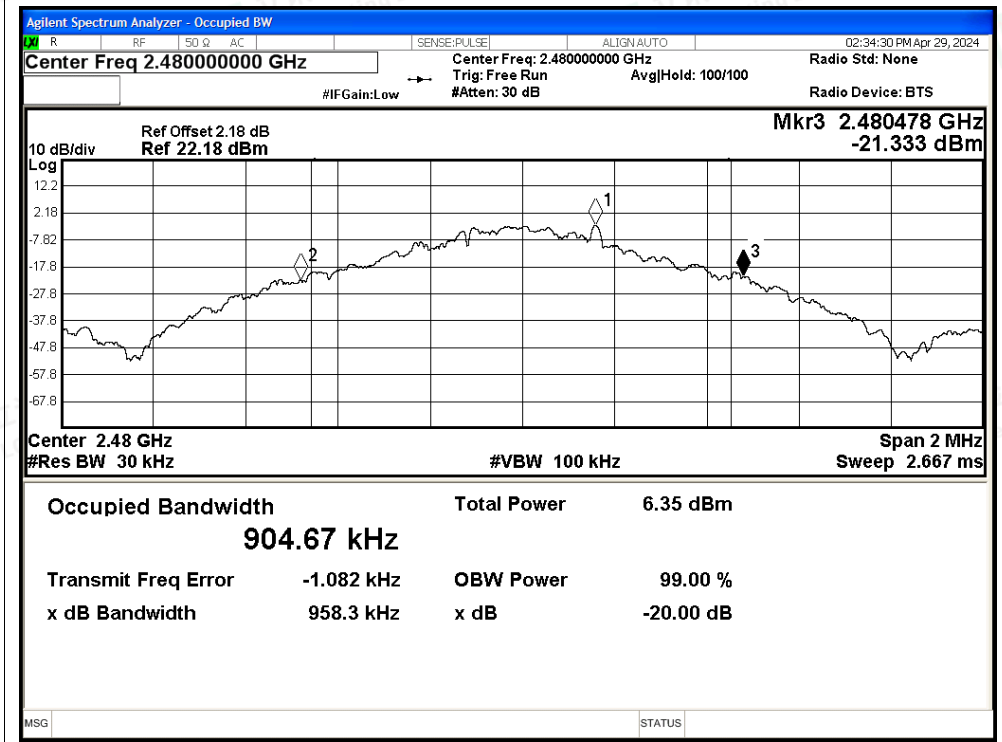


-20dB Bandwidth NVNT 1-DH5 2441MHz Ant

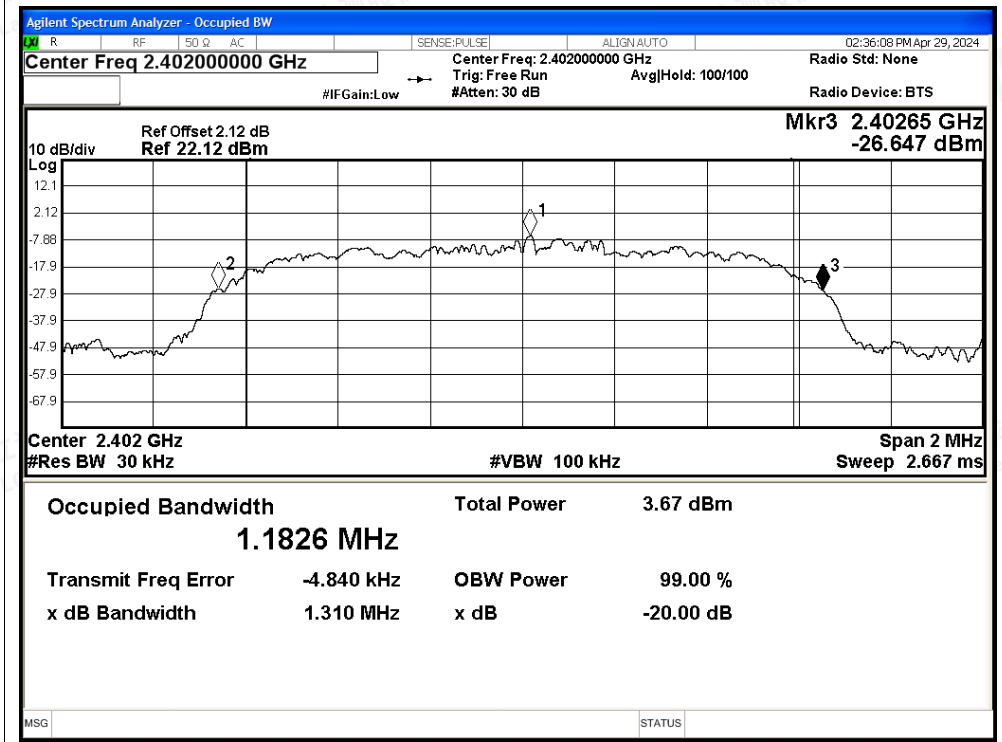




-20dB Bandwidth NVNT 1-DH5 2480MHz Ant

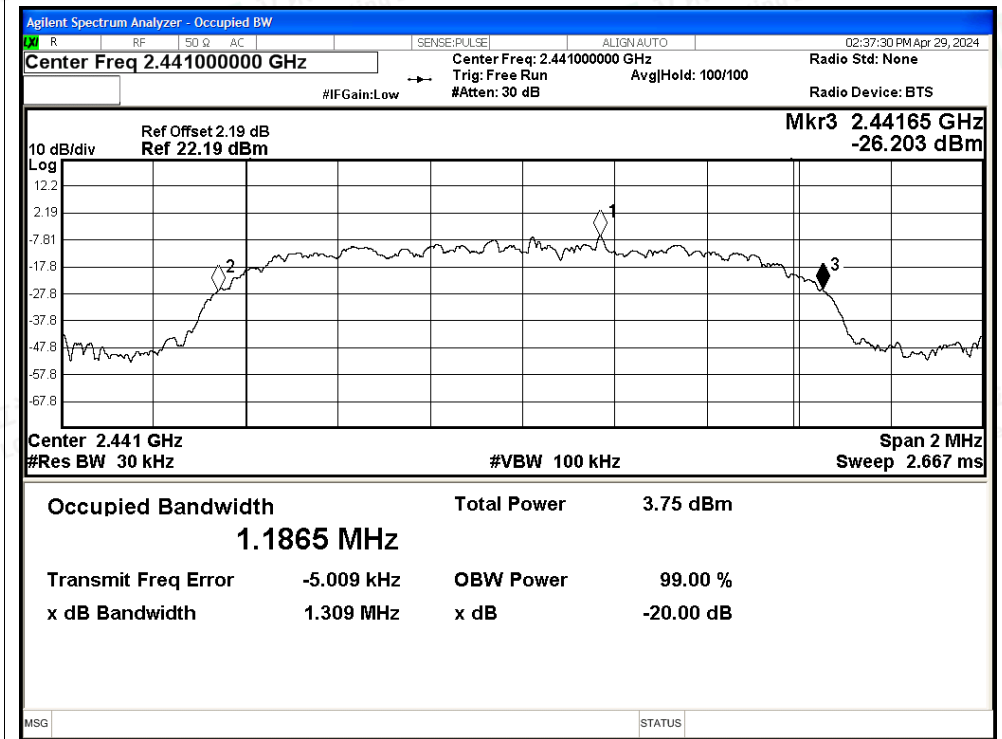


-20dB Bandwidth NVNT 2-DH5 2402MHz Ant

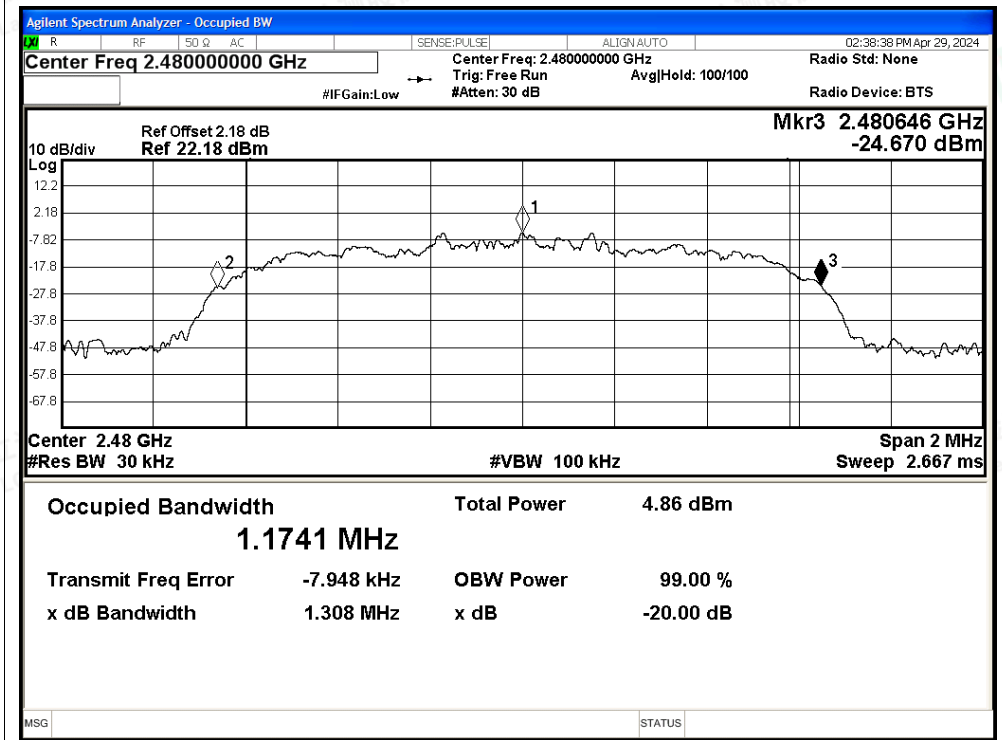




-20dB Bandwidth NVNT 2-DH5 2441MHz Ant

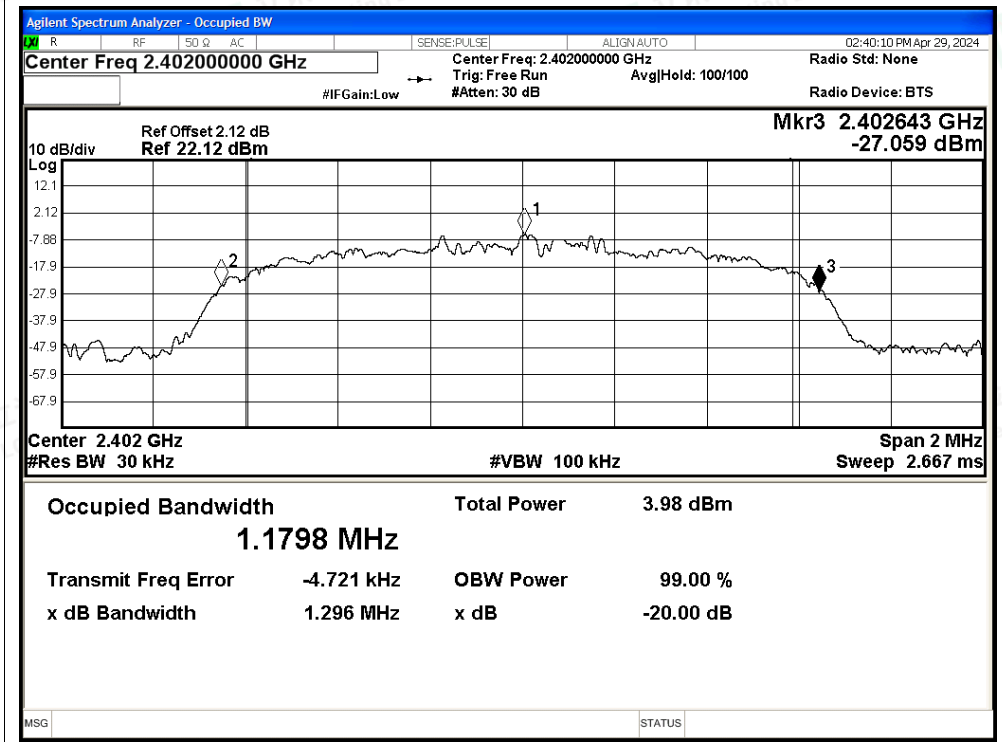


-20dB Bandwidth NVNT 2-DH5 2480MHz Ant

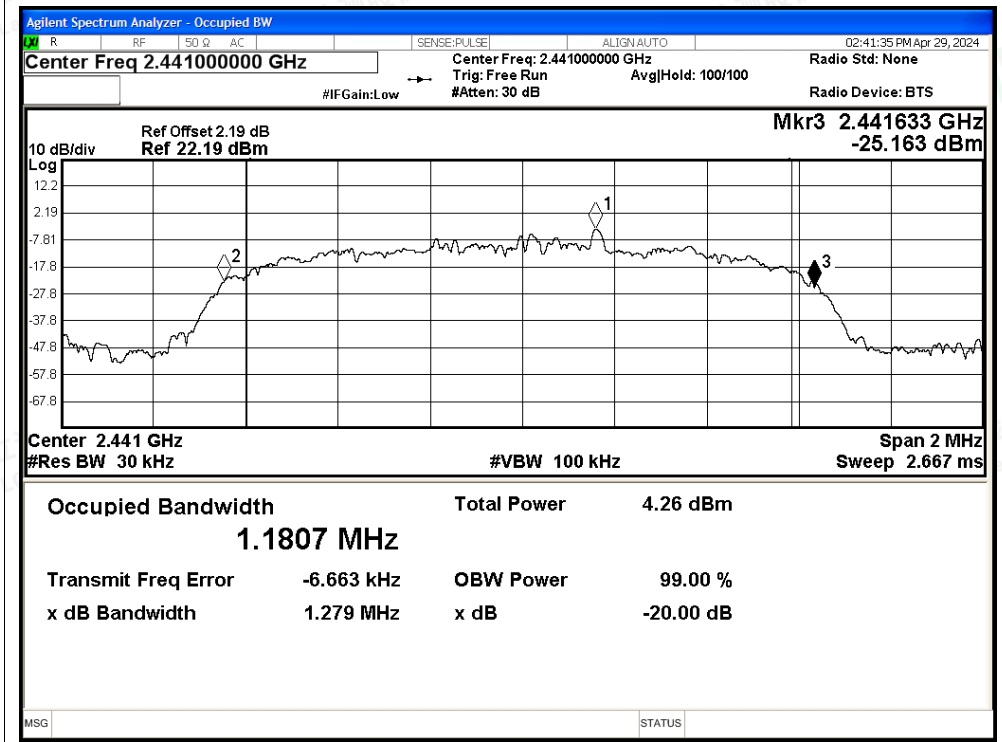


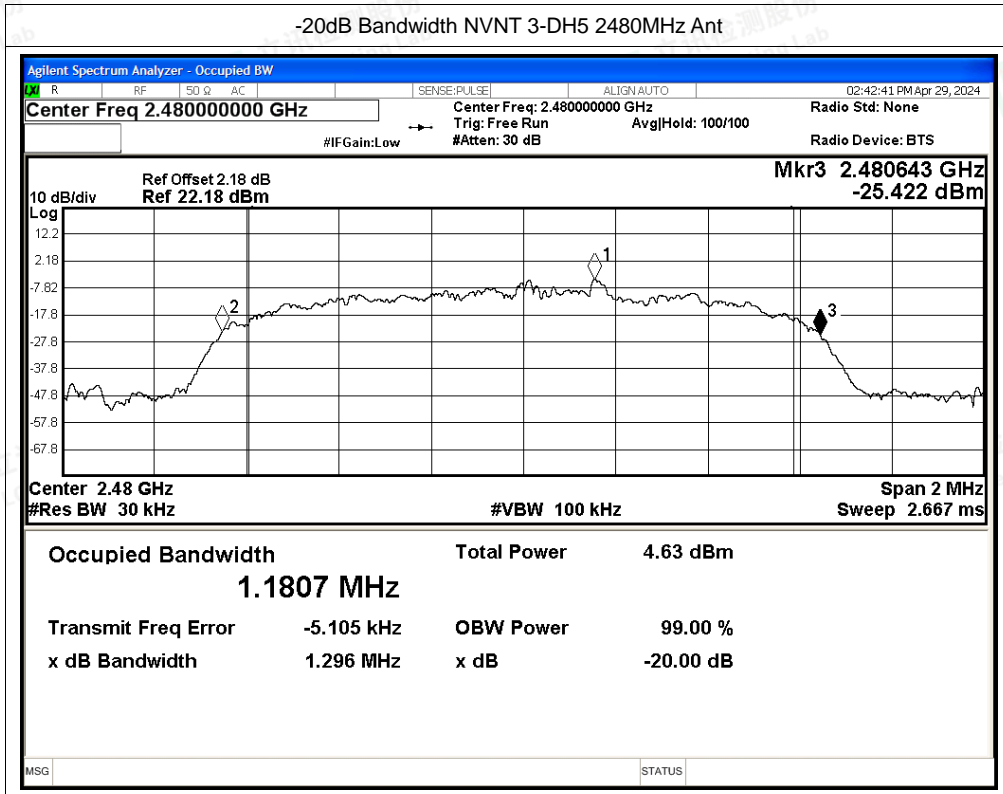


-20dB Bandwidth NVNT 3-DH5 2402MHz Ant



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant







## A.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant	-0.22	21	Pass
NVNT	1-DH5	2441	Ant	-0.08	21	Pass
NVNT	1-DH5	2480	Ant	0.22	21	Pass
NVNT	2-DH5	2402	Ant	-0.73	21	Pass
NVNT	2-DH5	2441	Ant	-0.27	21	Pass
NVNT	2-DH5	2480	Ant	0.01	21	Pass
NVNT	3-DH5	2402	Ant	-0.58	21	Pass
NVNT	3-DH5	2441	Ant	-0.19	21	Pass
NVNT	3-DH5	2480	Ant	0.1	21	Pass

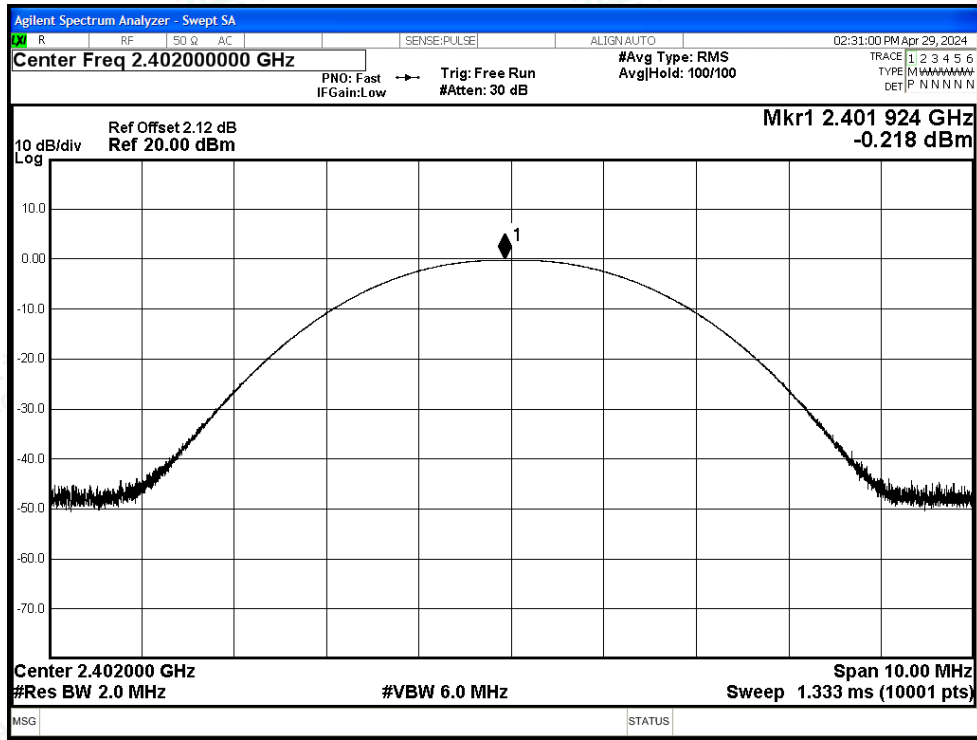




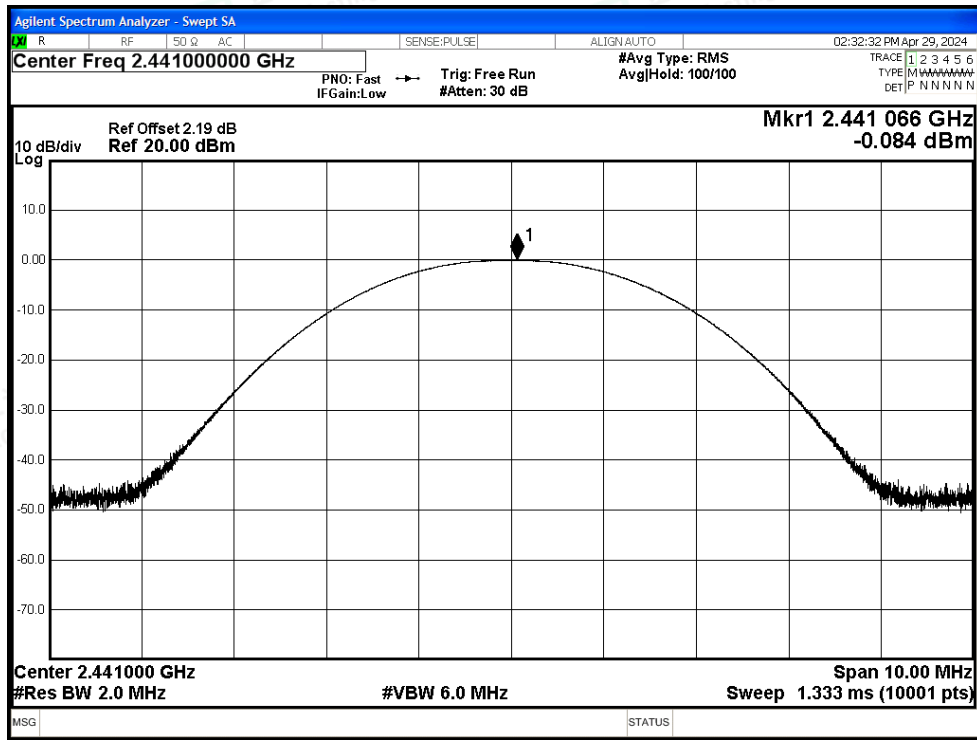


Test Graphs

Power NVNT 1-DH5 2402MHz Ant

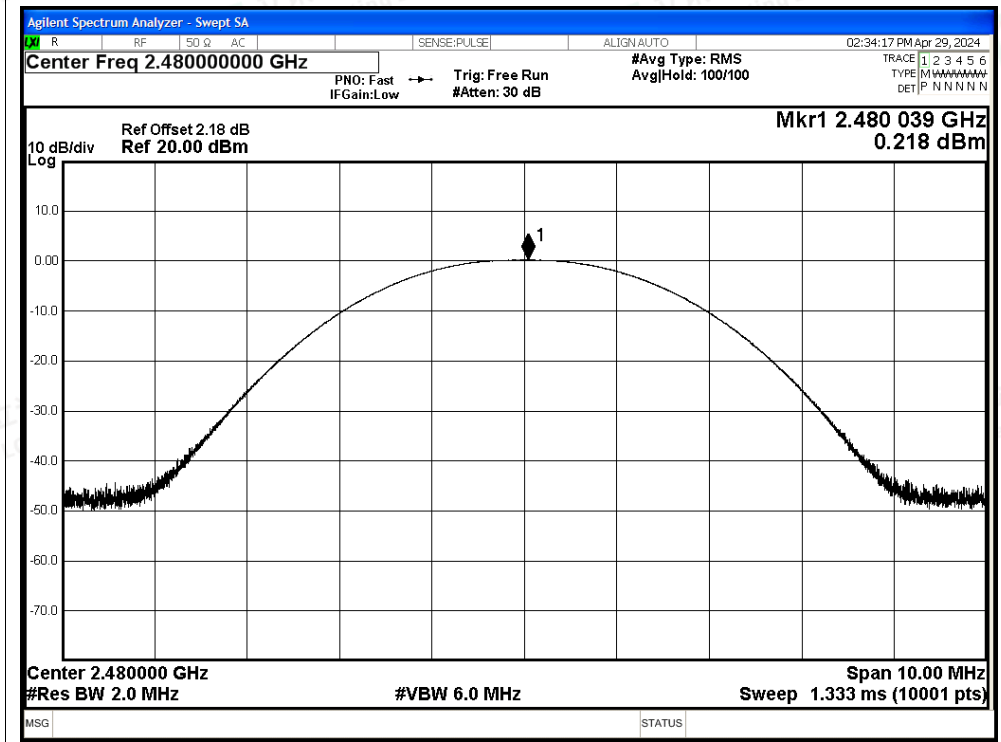


Power NVNT 1-DH5 2441MHz Ant

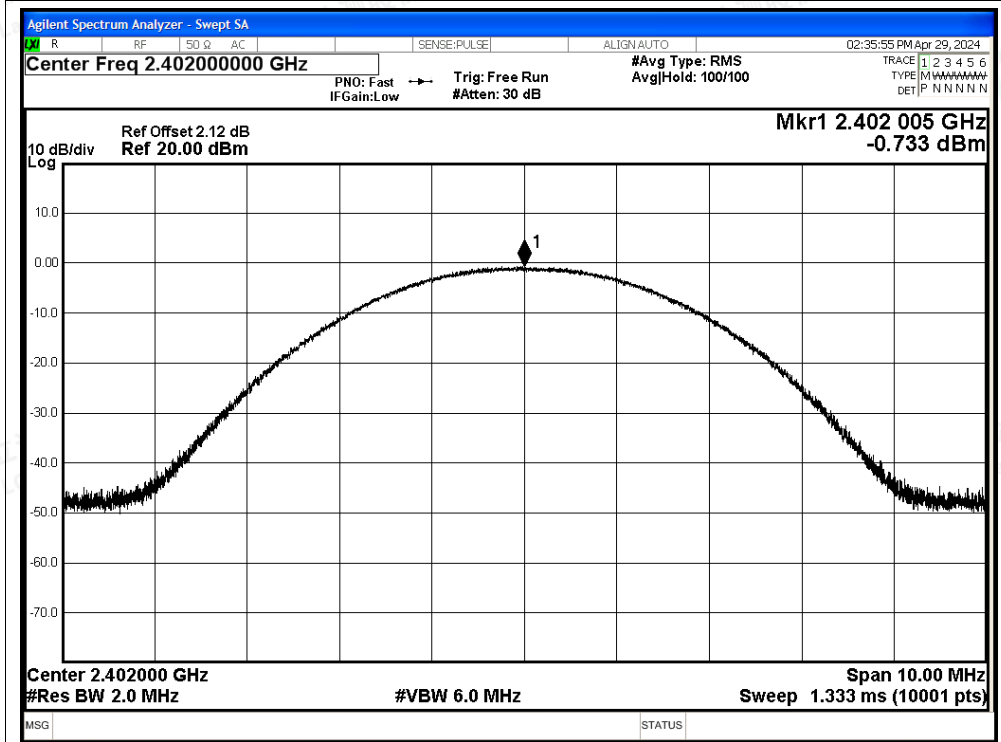




Power NVNT 1-DH5 2480MHz Ant

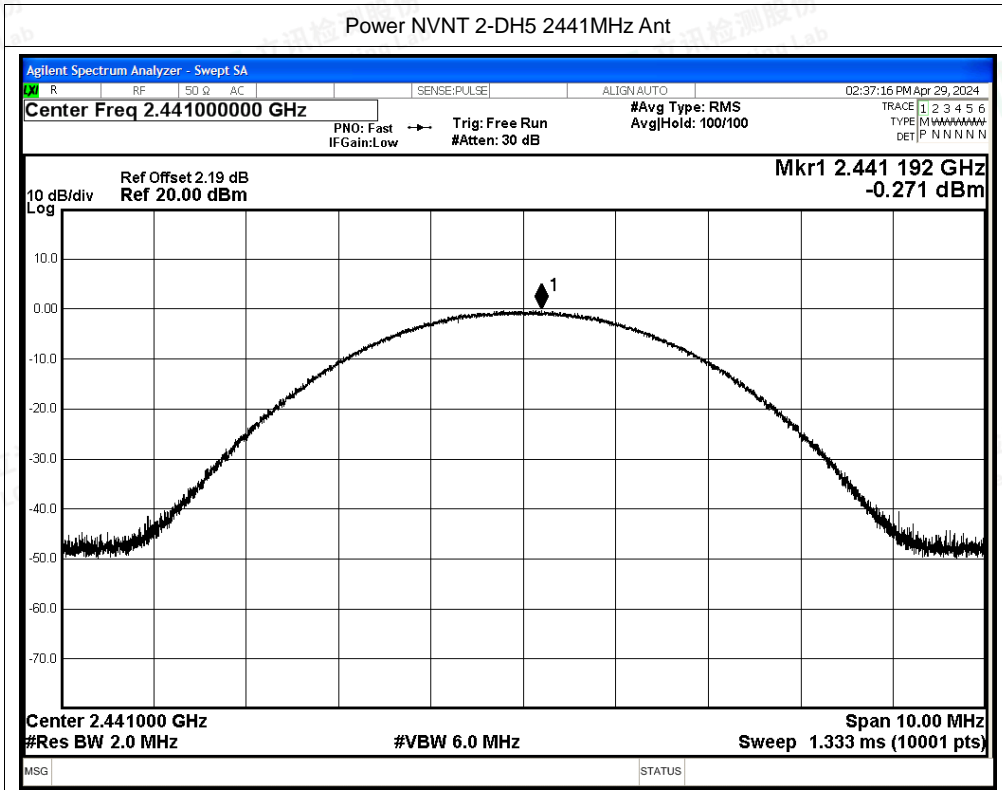


Power NVNT 2-DH5 2402MHz Ant

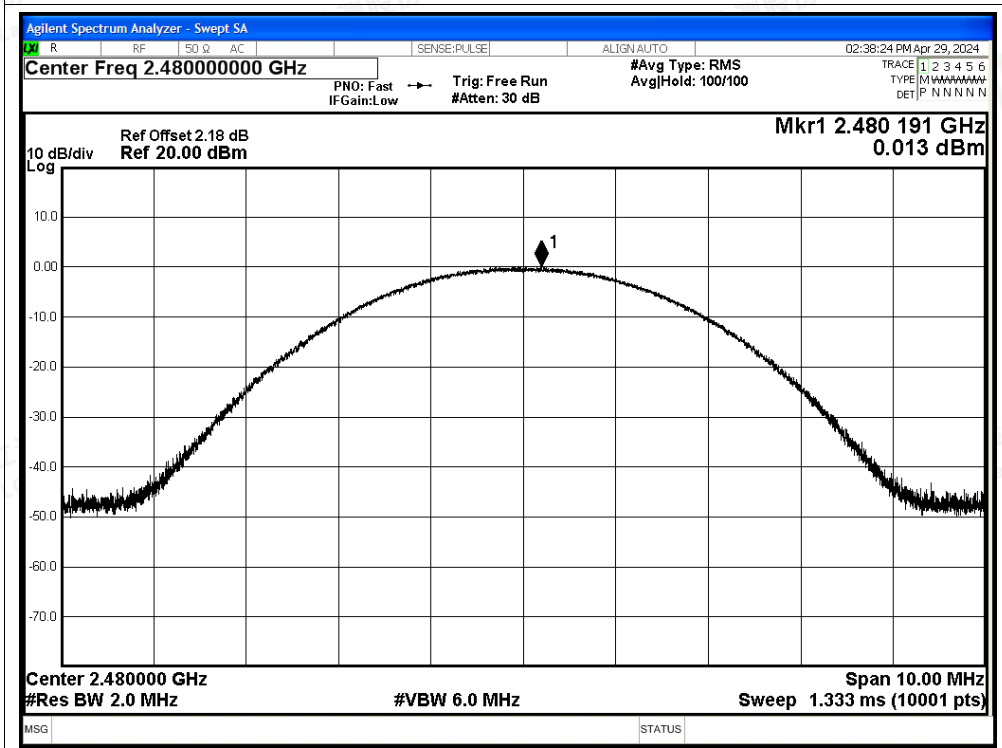




Power NVNT 2-DH5 2441MHz Ant

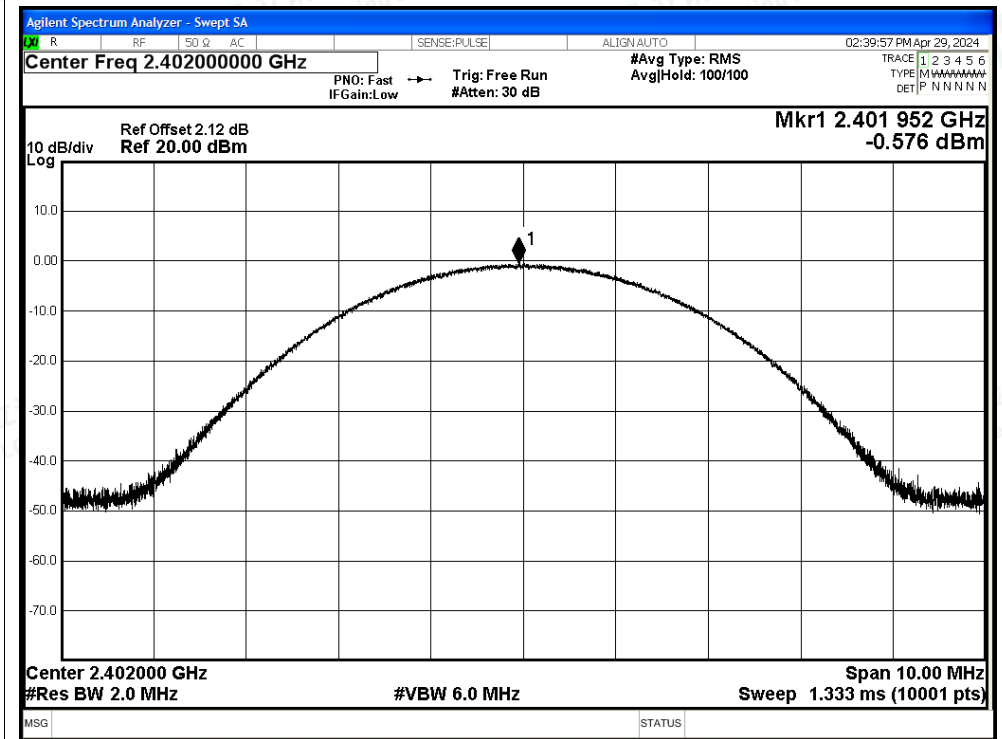


Power NVNT 2-DH5 2480MHz Ant

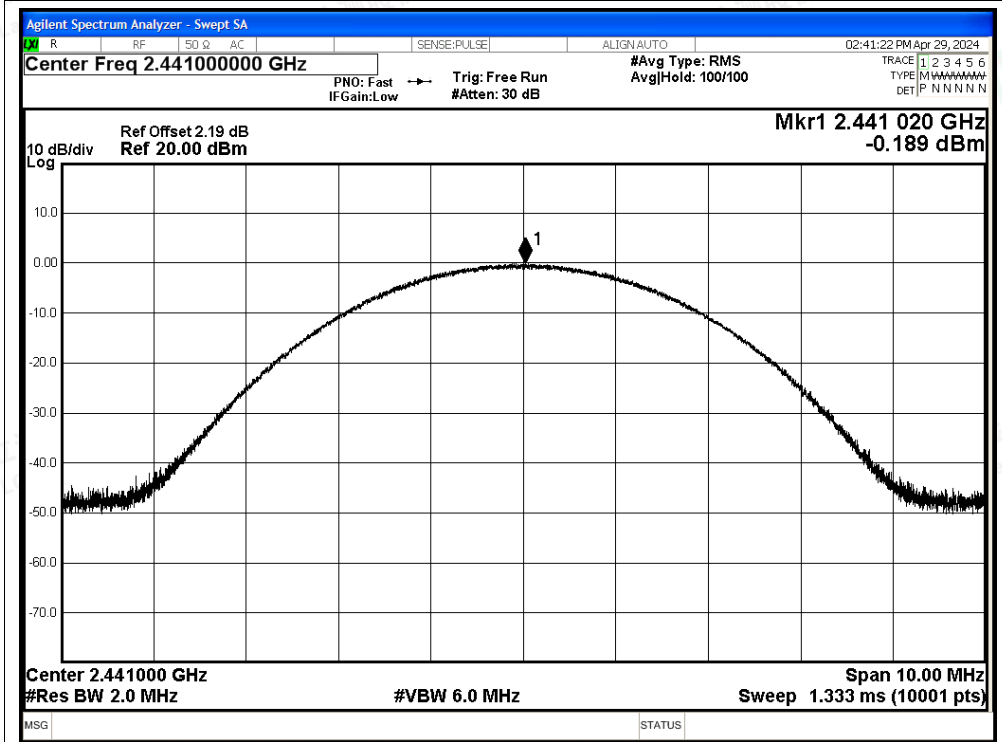


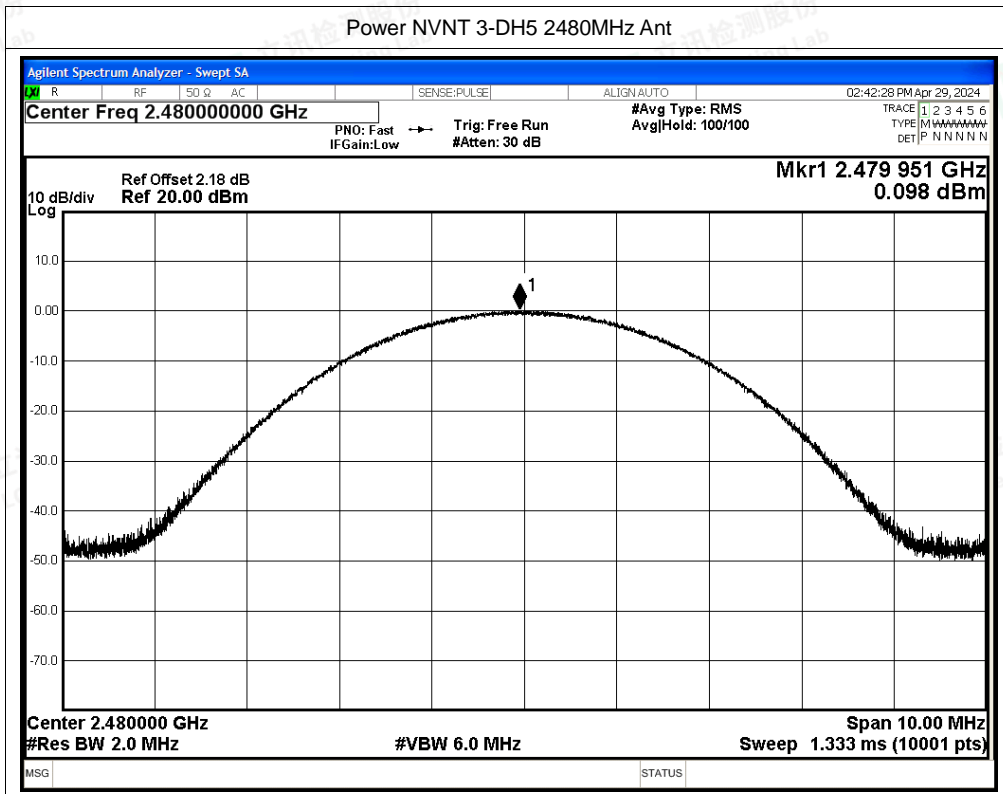


Power NVNT 3-DH5 2402MHz Ant



Power NVNT 3-DH5 2441MHz Ant







### A.3 Carrier Frequencies Separation

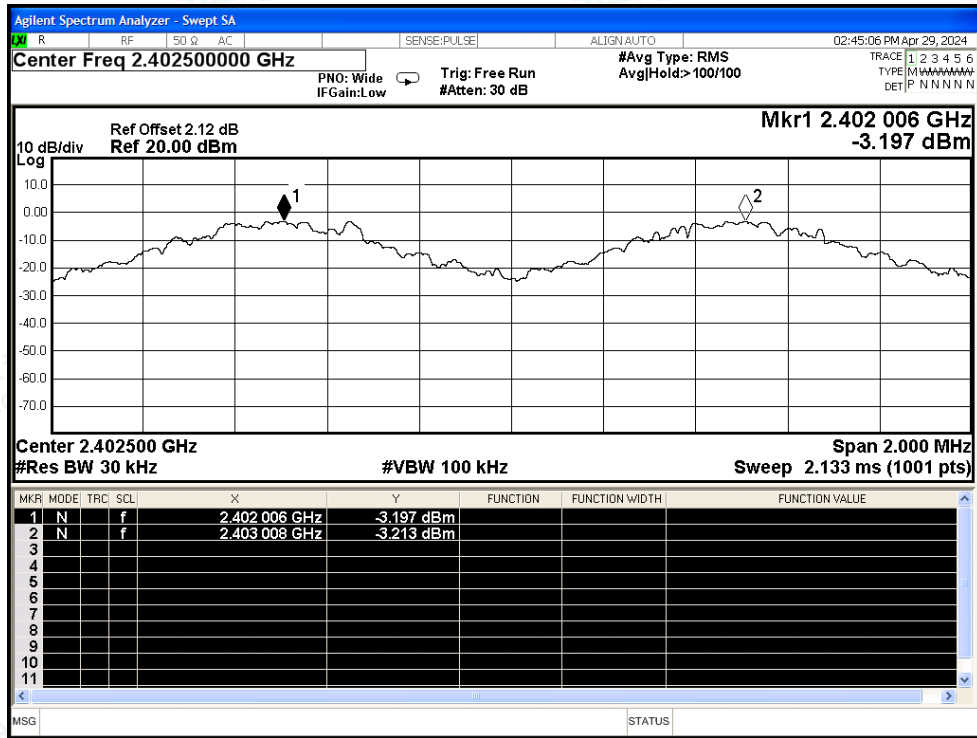
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant	2402.006	2403.008	1.002	0.681	Pass
NVNT	2-DH5	Ant	2402.148	2403.16	1.012	0.873	Pass
NVNT	3-DH5	Ant	2402.004	2403.152	1.148	0.864	Pass



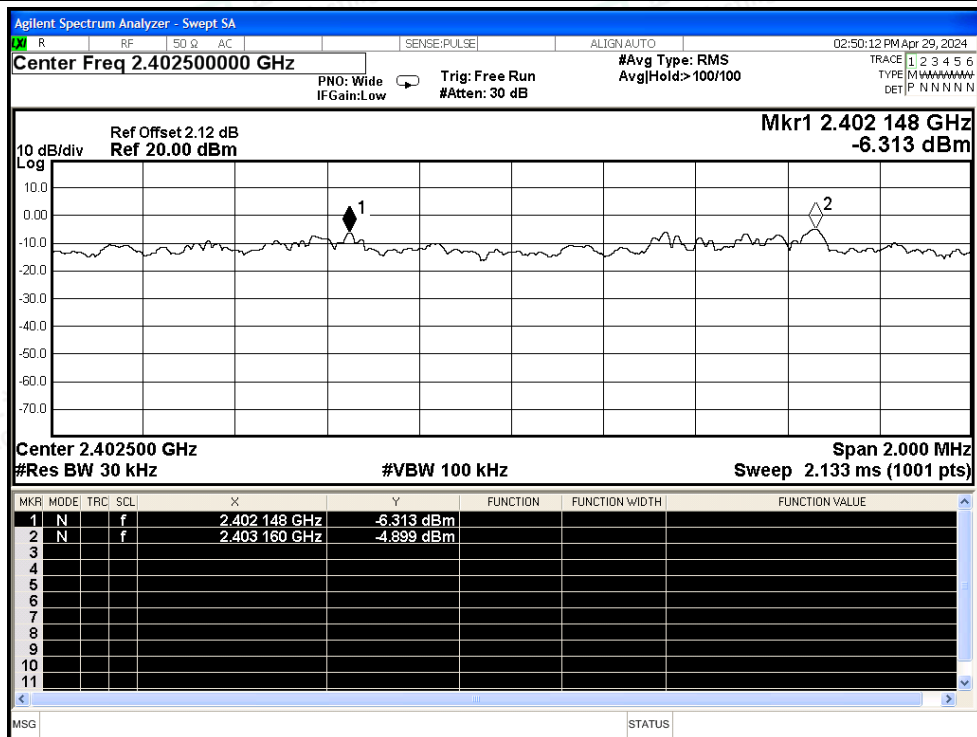


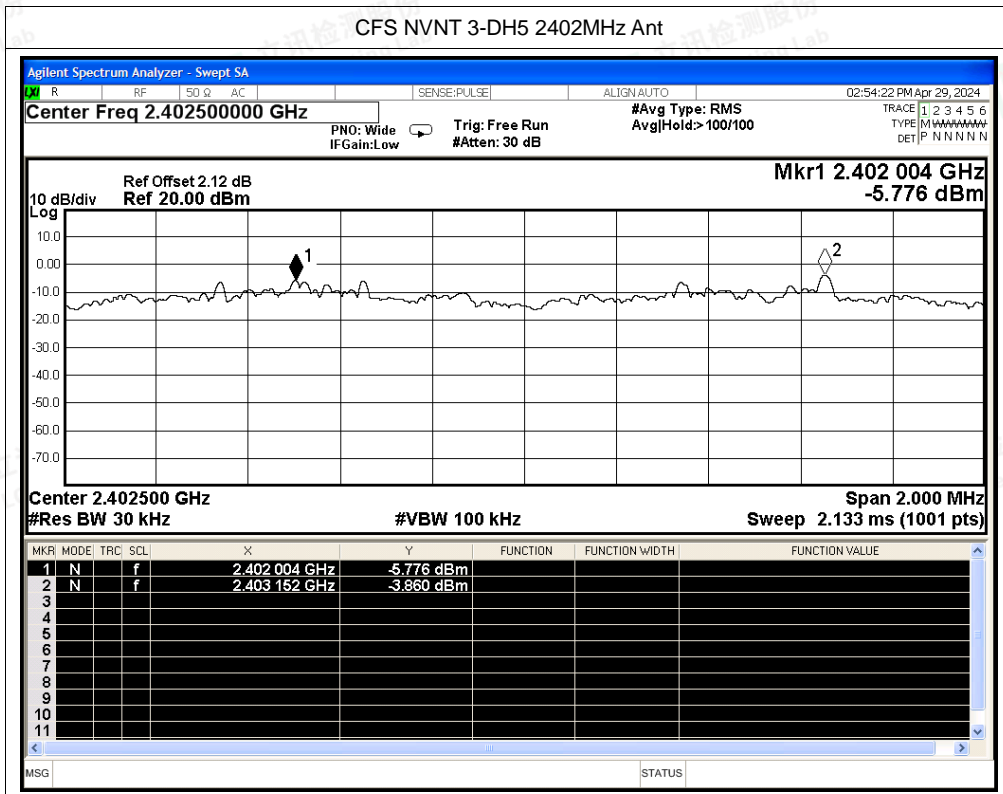
Test Graphs

CFS NVNT 1-DH5 2402MHz Ant



CFS NVNT 2-DH5 2402MHz Ant









## A.4 Dwell Time

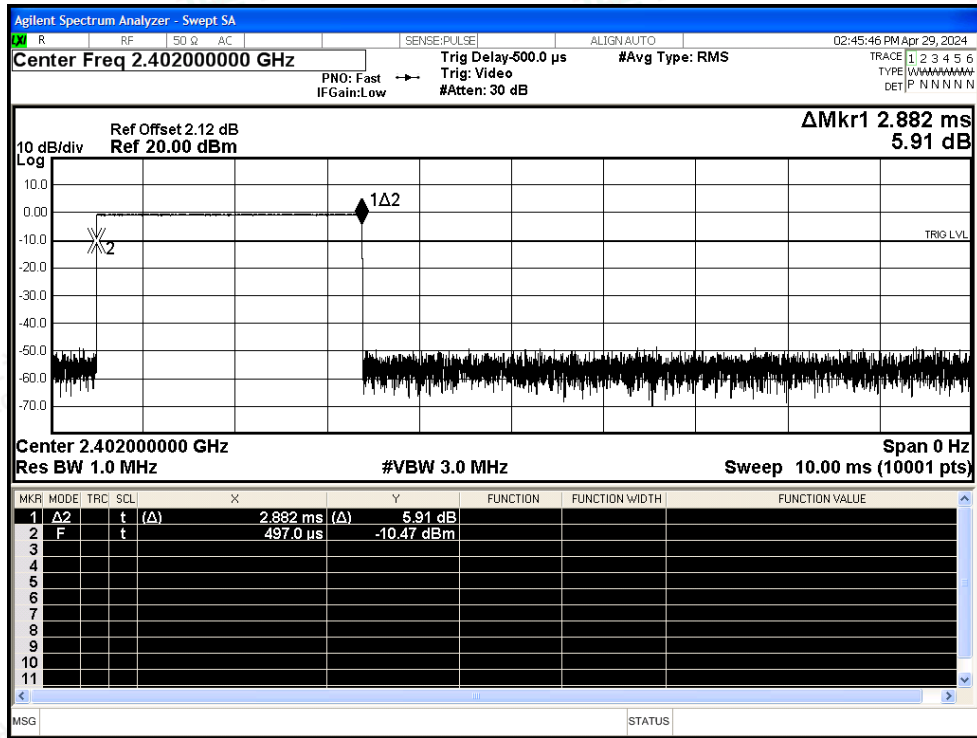
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant	2.882	302.61	105	31600	400	Pass
NVNT	2-DH5	2402	Ant	2.88	319.68	111	31600	400	Pass
NVNT	3-DH5	2402	Ant	2.887	297.361	103	31600	400	Pass



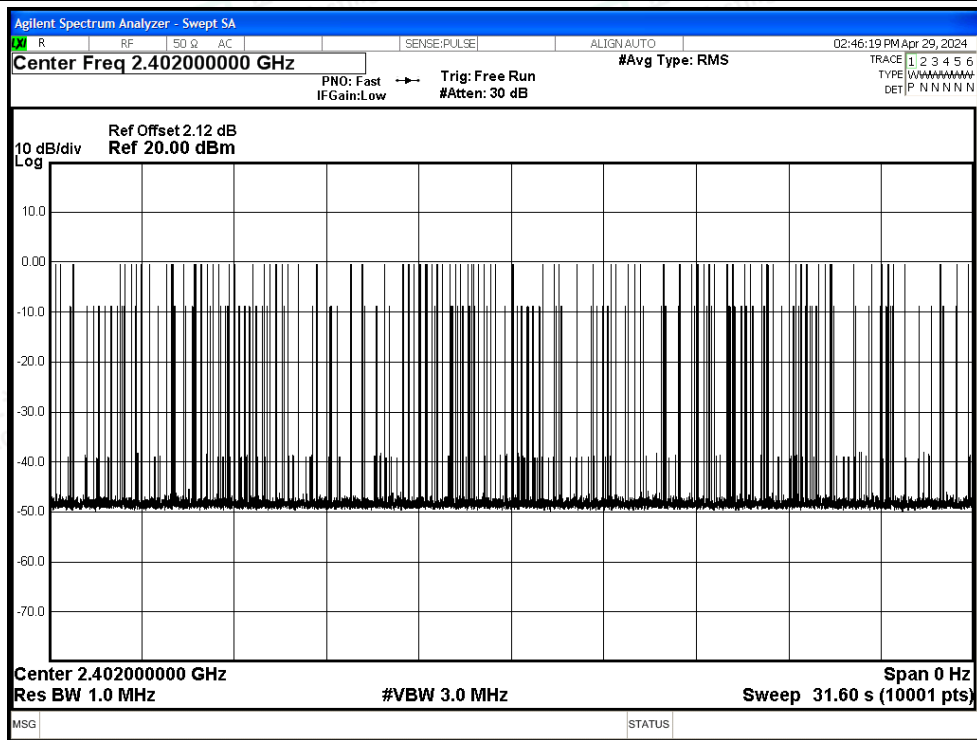


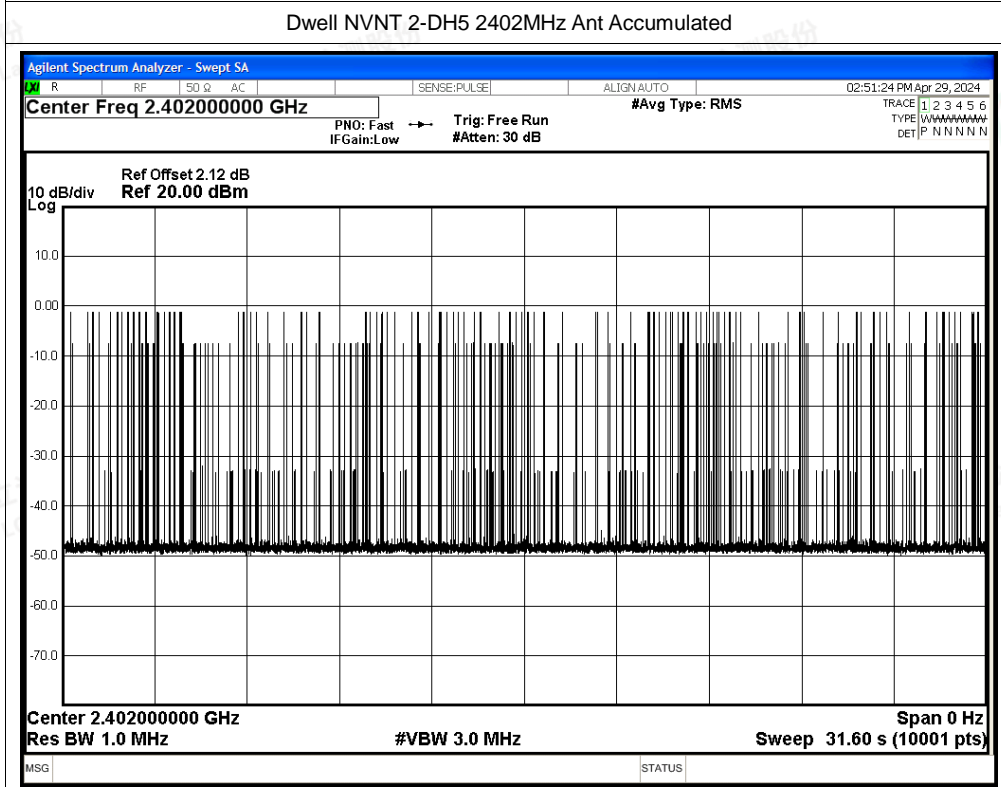
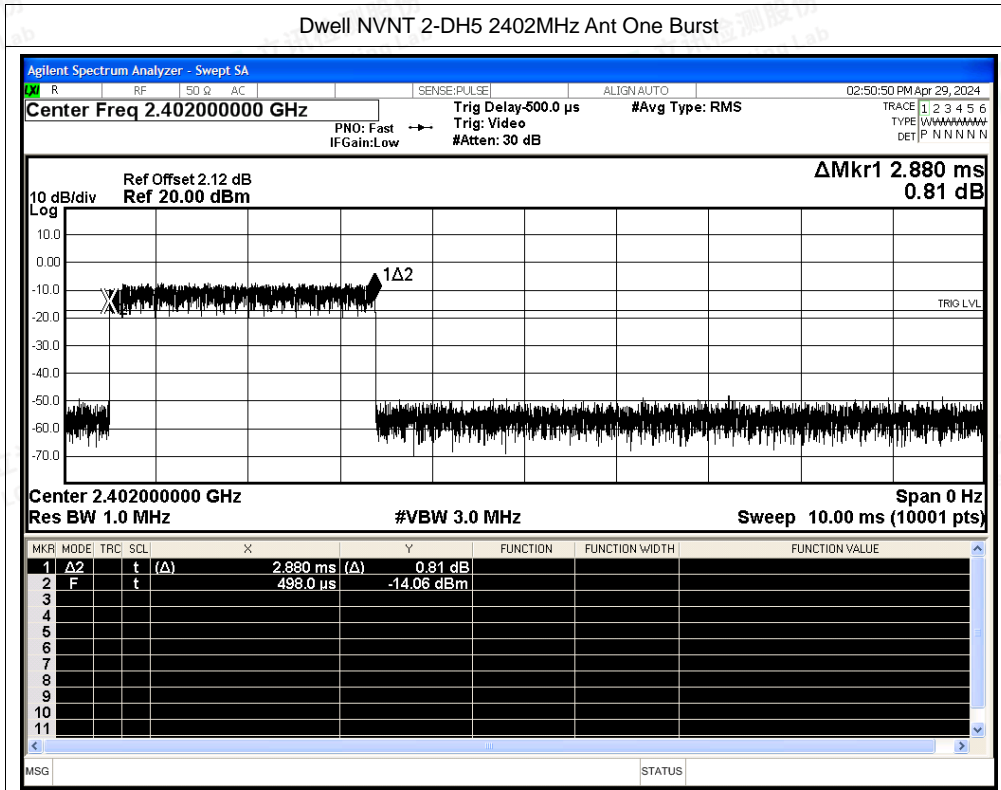
Test Graphs

Dwell NVNT 1-DH5 2402MHz Ant One Burst



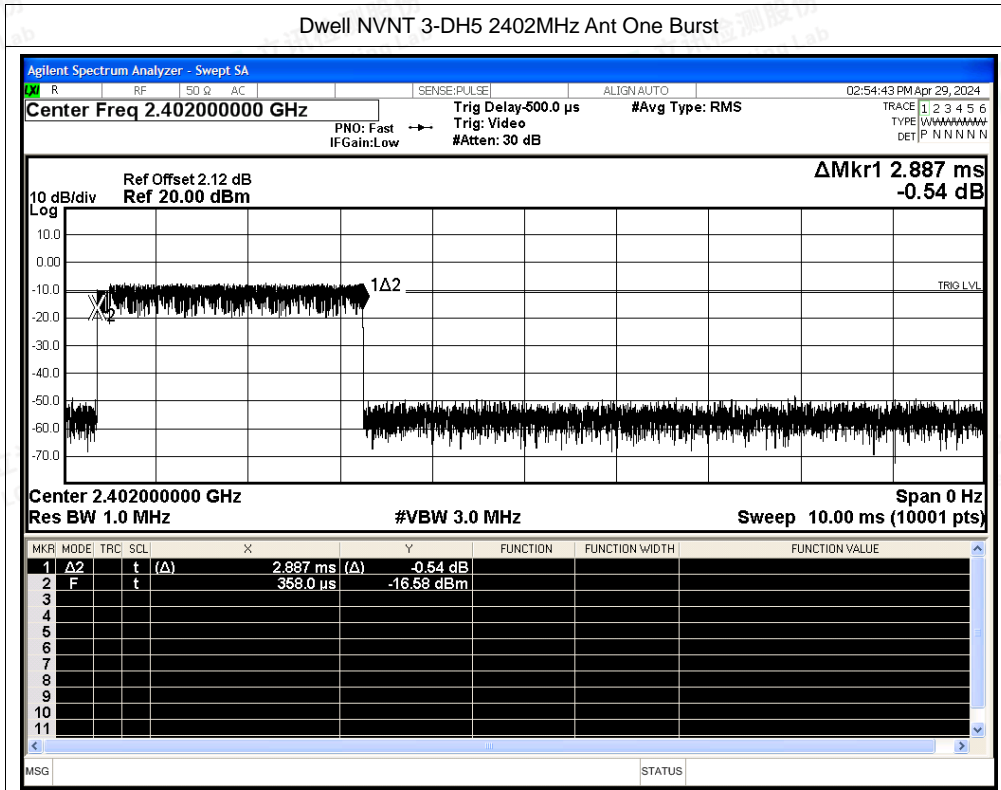
Dwell NVNT 1-DH5 2402MHz Ant Accumulated



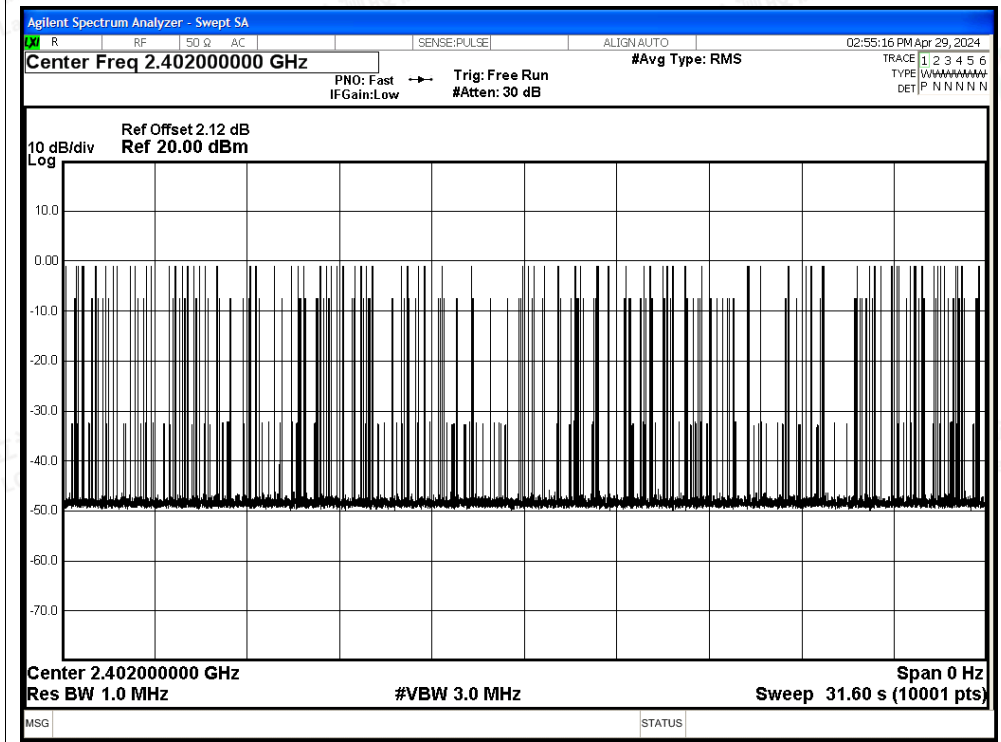




Dwell NVNT 3-DH5 2402MHz Ant One Burst



Dwell NVNT 3-DH5 2402MHz Ant Accumulated





## A.5 Number of Hopping Channel

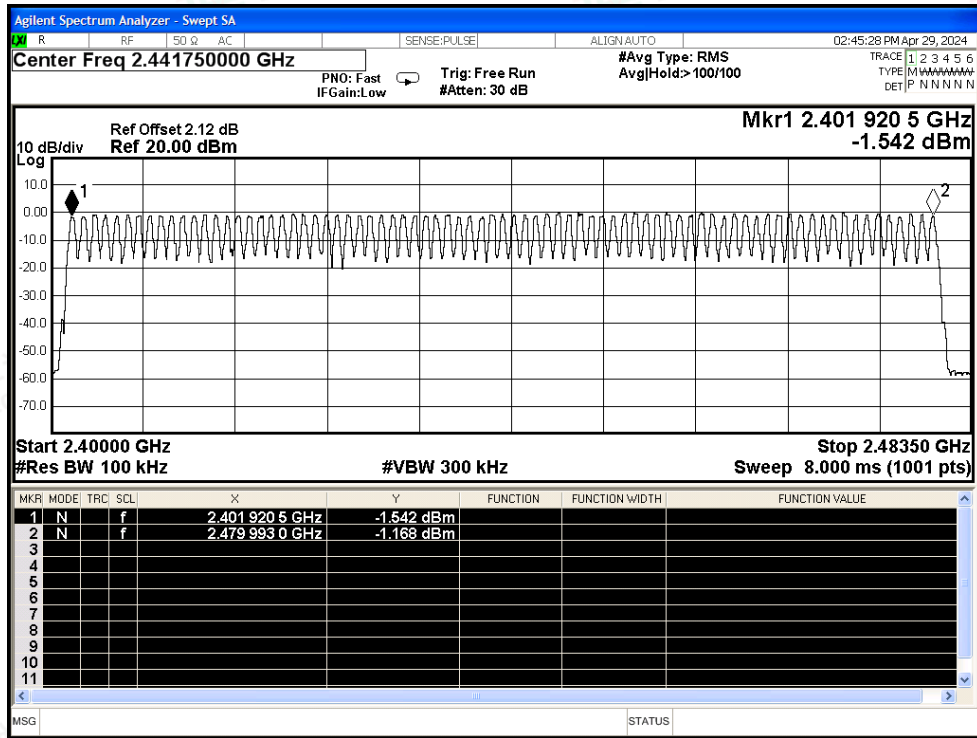
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant	79	15	Pass
NVNT	2-DH5	Ant	79	15	Pass
NVNT	3-DH5	Ant	79	15	Pass



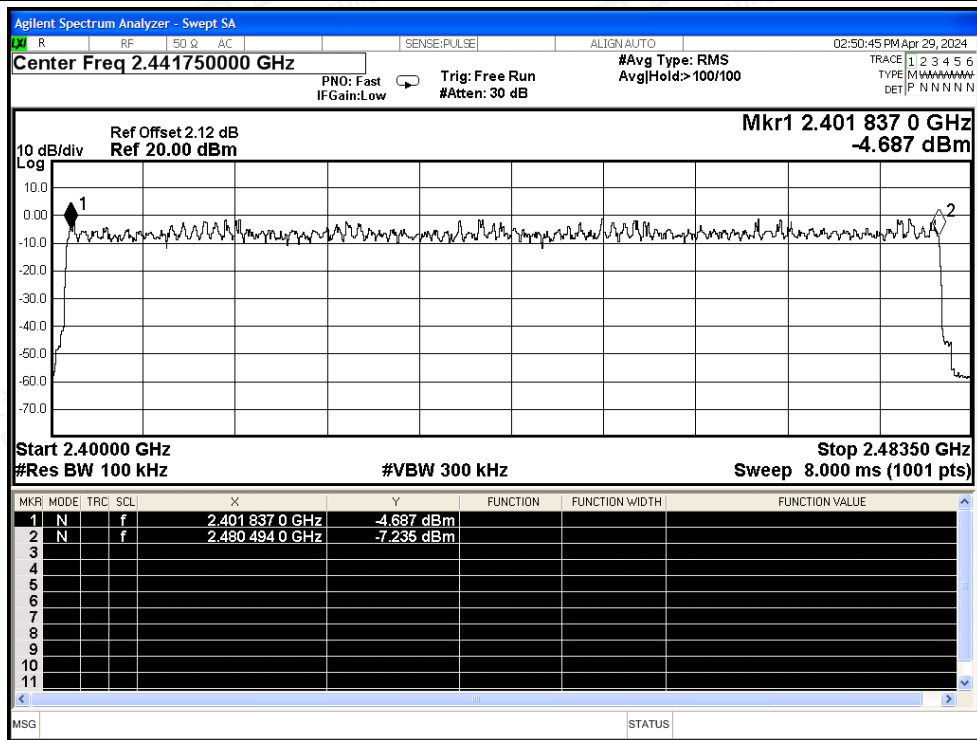


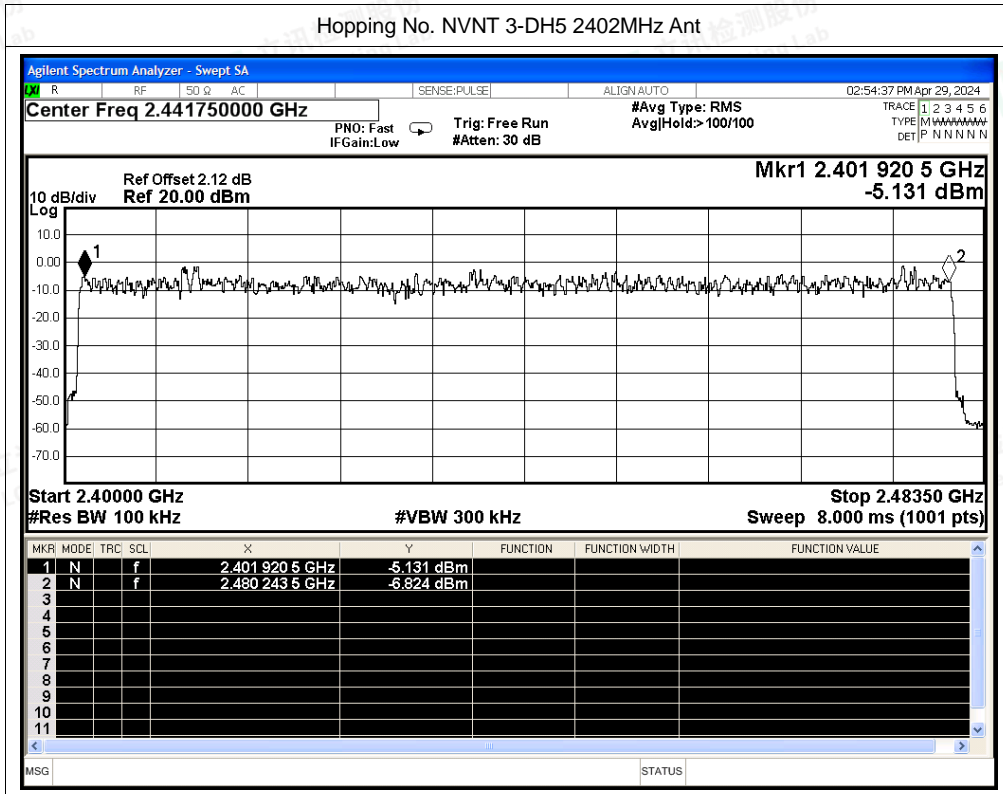
Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant



Hopping No. NVNT 2-DH5 2402MHz Ant







## A.6 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant	No-Hopping	-54.1	-20	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	-55.48	-20	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	-53.7	-20	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	-53.23	-20	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	-54.37	-20	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	-55.09	-20	Pass

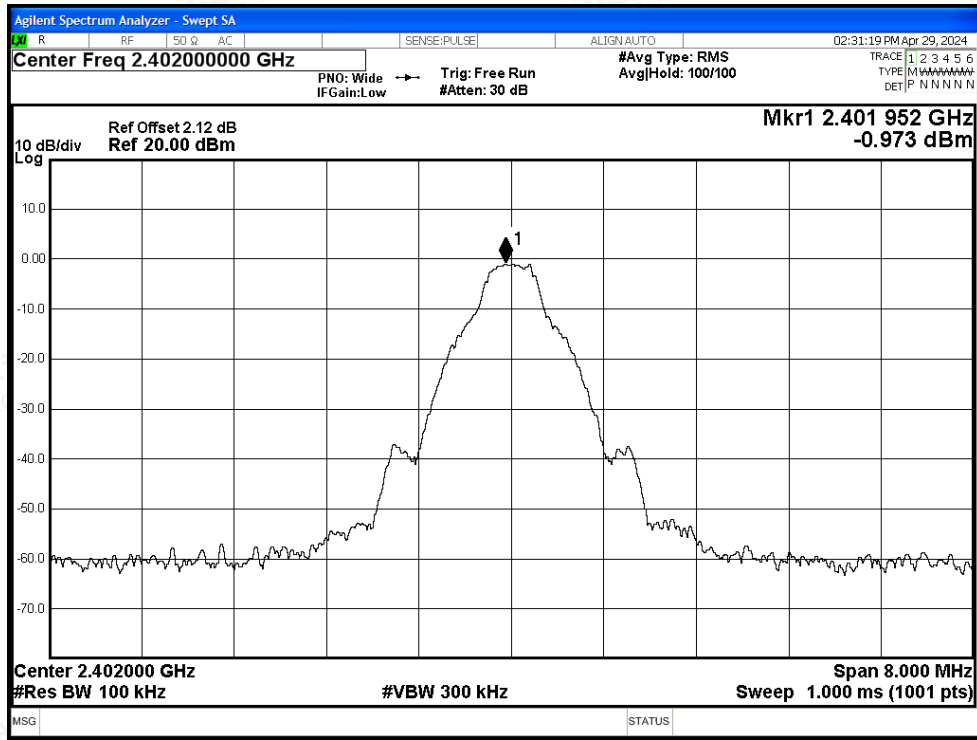




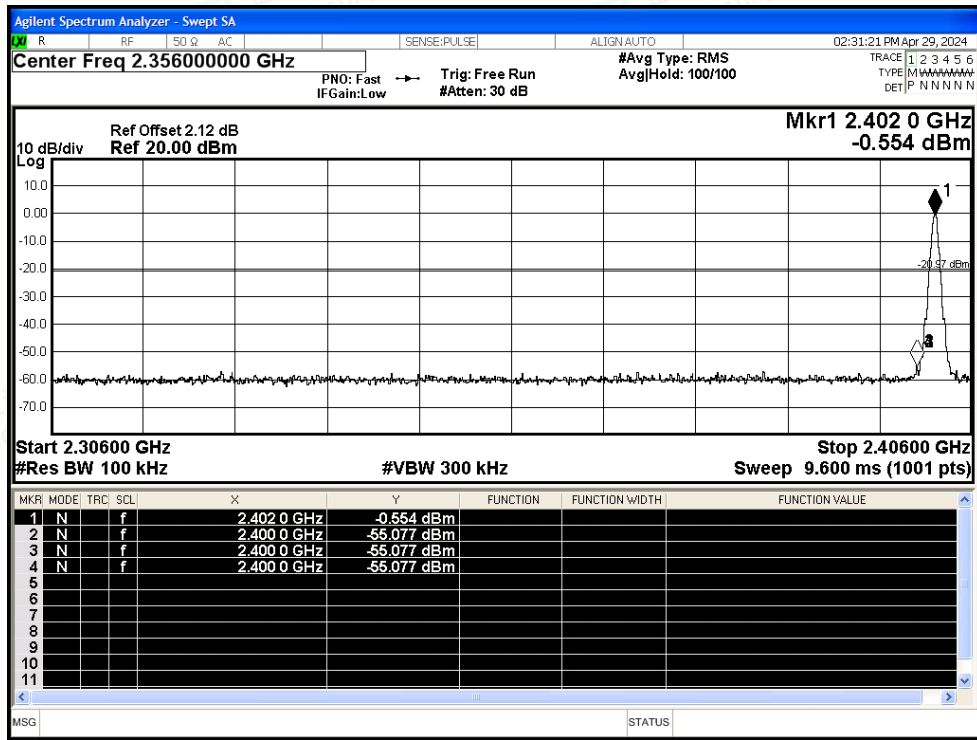


Test Graphs

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

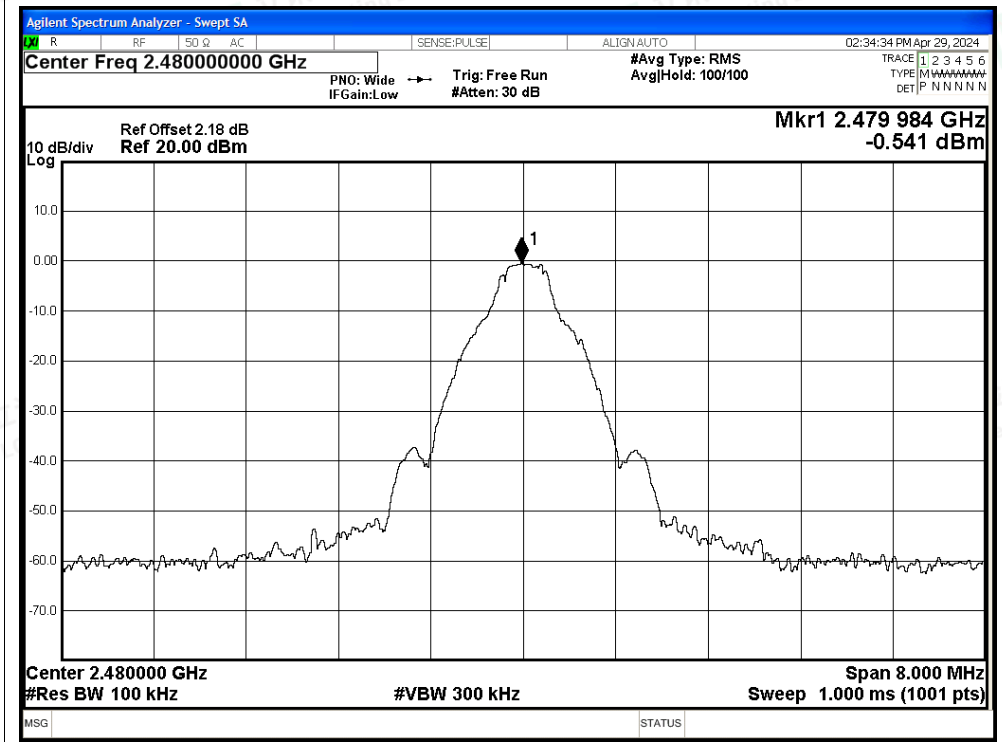


Band Edge NVNT 1-DH5 2402MHz Ant No-Hopping Emission

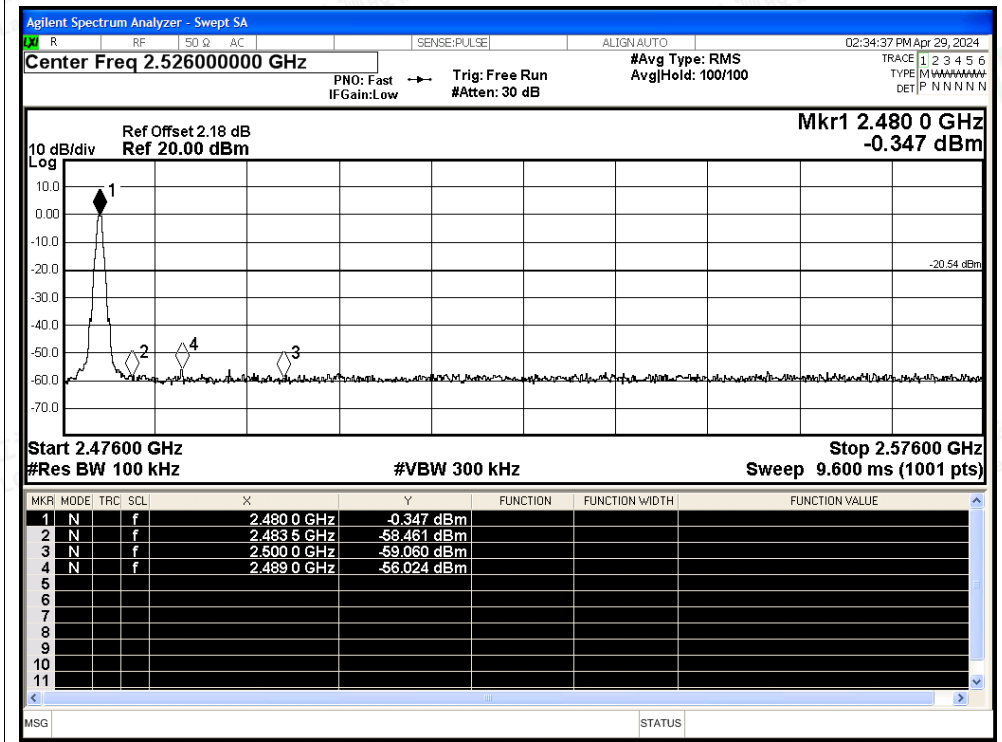




Band Edge NVNT 1-DH5 2480MHz Ant No-Hopping Ref

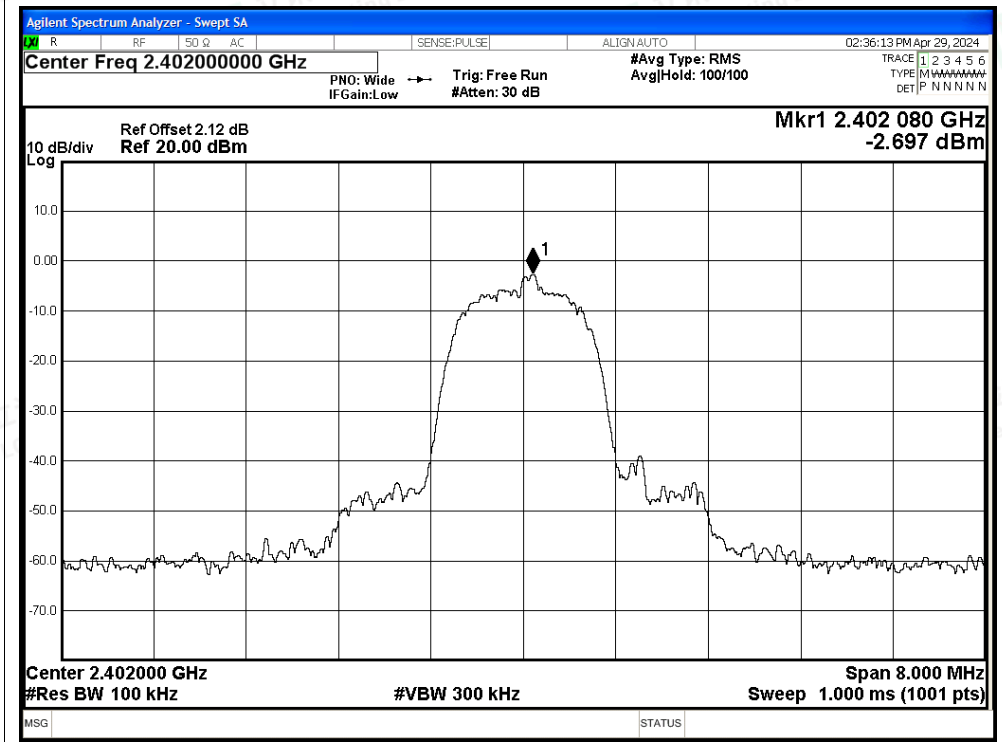


Band Edge NVNT 1-DH5 2480MHz Ant No-Hopping Emission

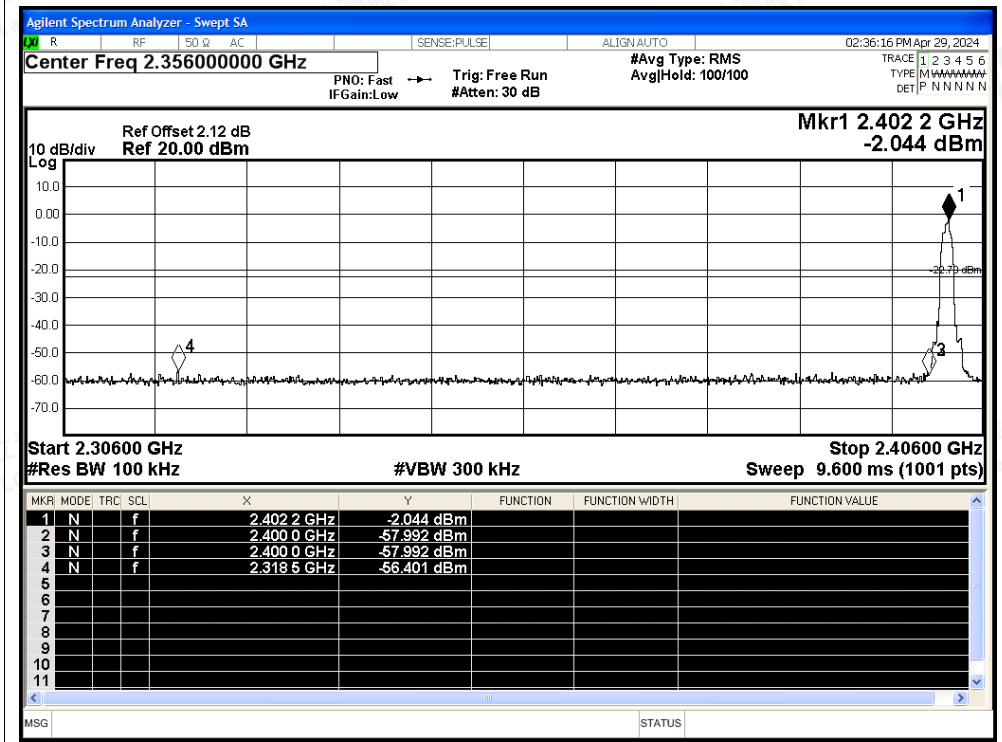




Band Edge NVNT 2-DH5 2402MHz Ant No-Hopping Ref

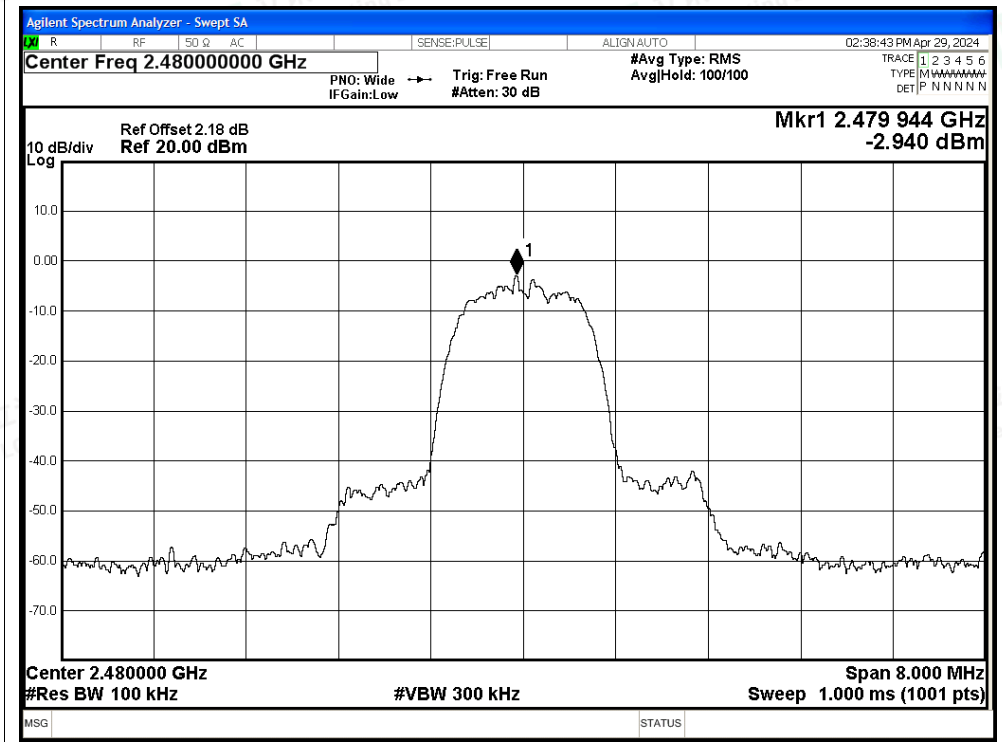


Band Edge NVNT 2-DH5 2402MHz Ant No-Hopping Emission

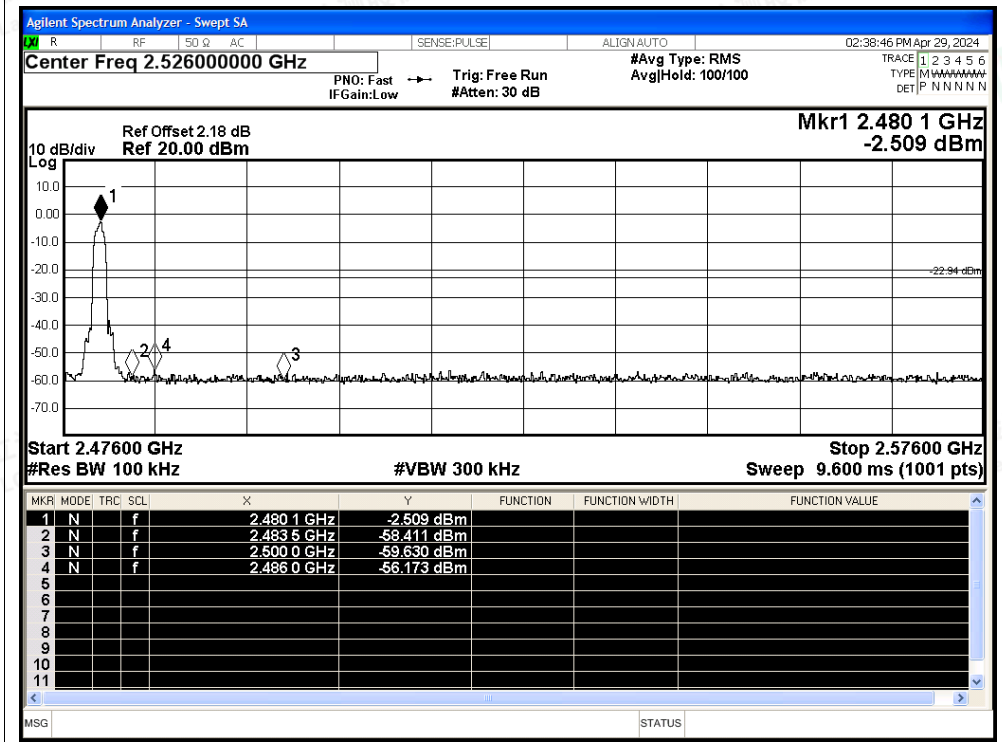




Band Edge NVNT 2-DH5 2480MHz Ant No-Hopping Ref

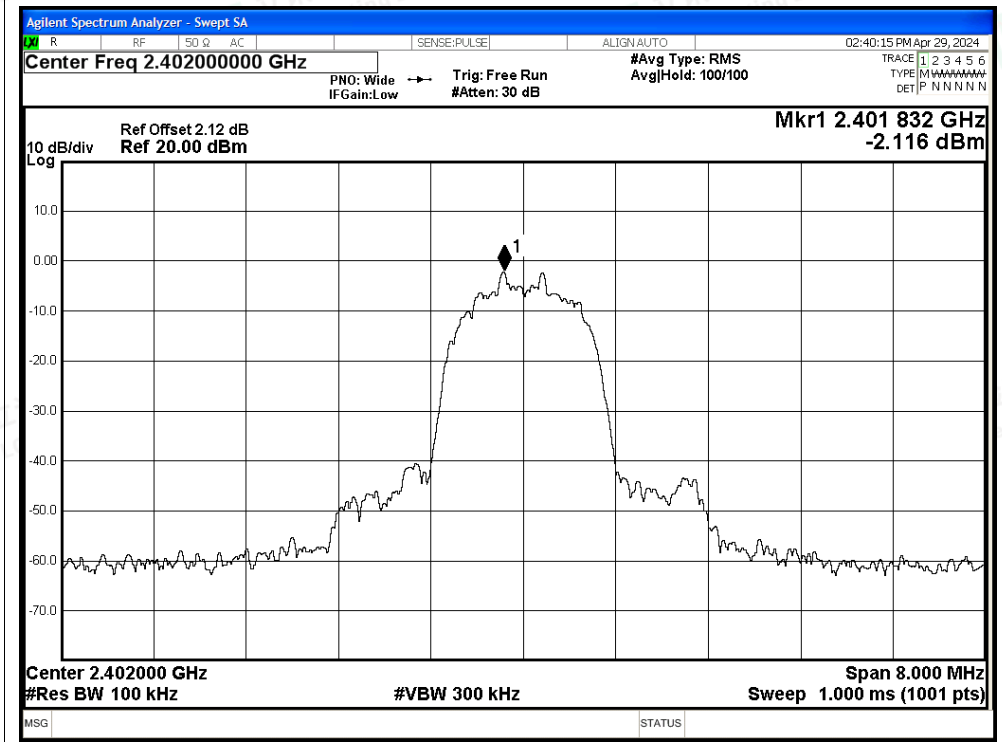


Band Edge NVNT 2-DH5 2480MHz Ant No-Hopping Emission

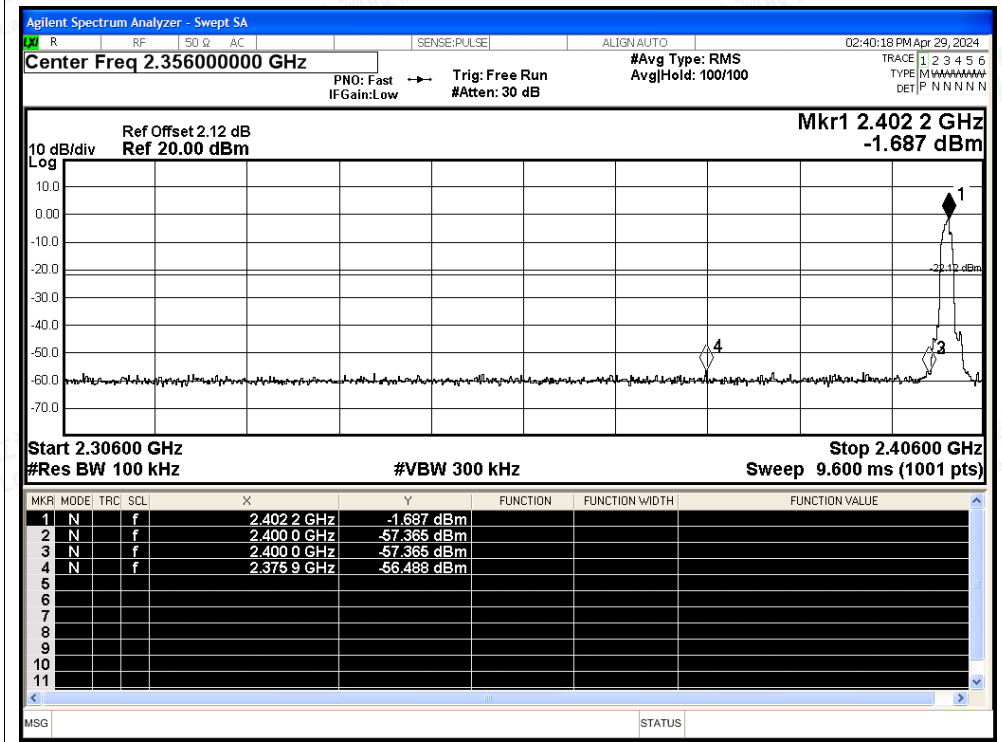




Band Edge NVNT 3-DH5 2402MHz Ant No-Hopping Ref

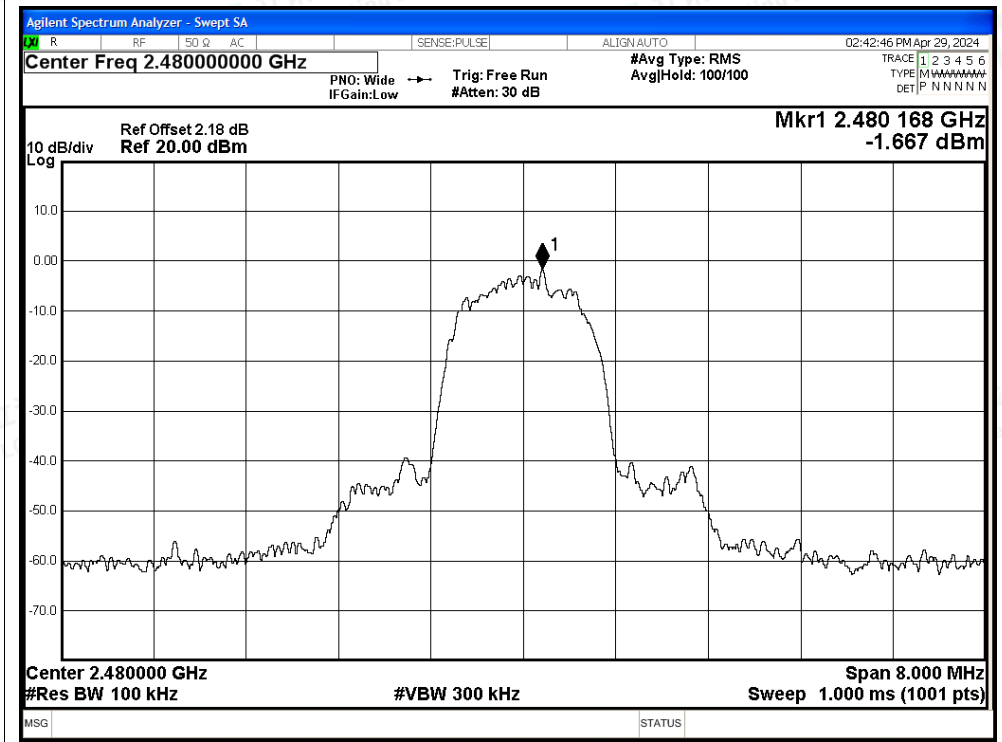


Band Edge NVNT 3-DH5 2402MHz Ant No-Hopping Emission

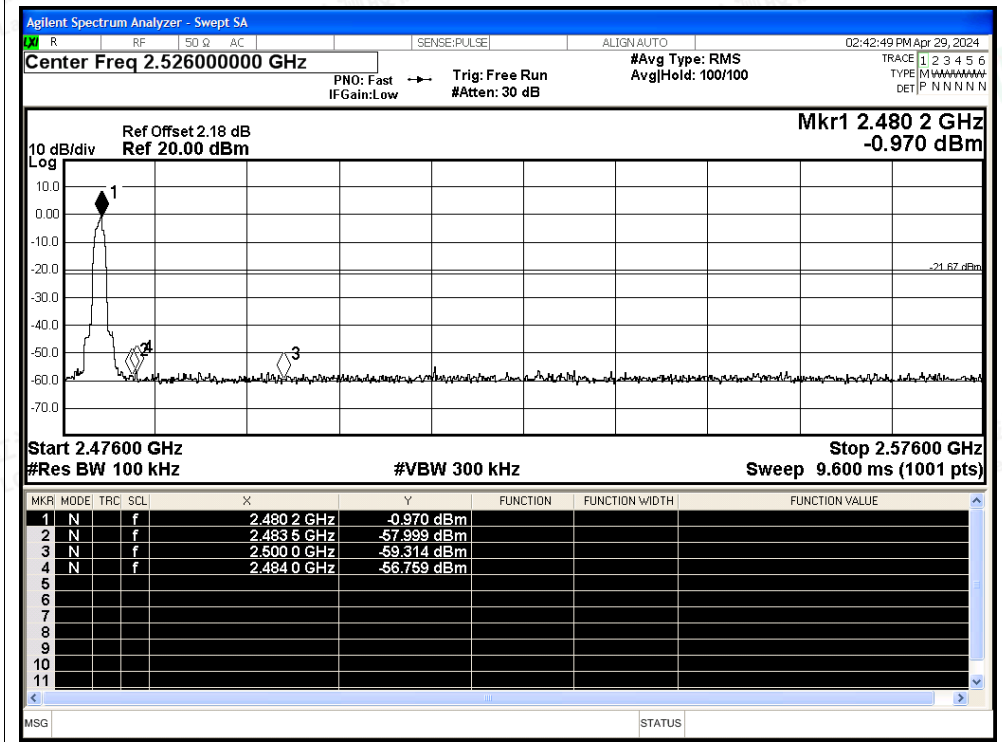




Band Edge NVNT 3-DH5 2480MHz Ant No-Hopping Ref



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





### (Hopping)

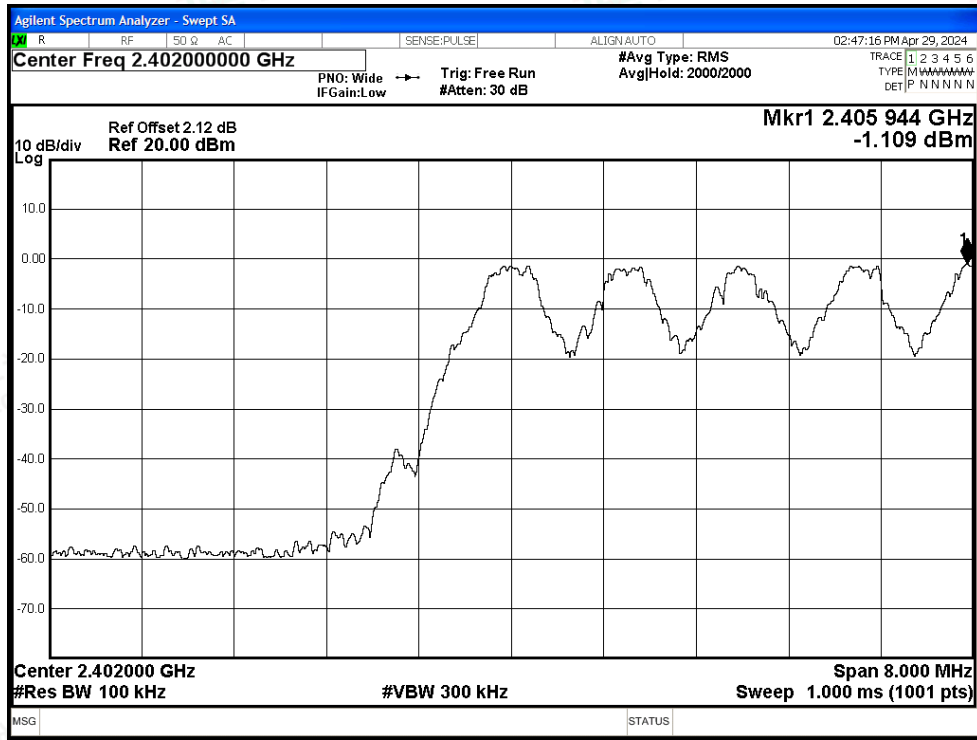
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant	Hopping	-55.31	-20	Pass
NVNT	1-DH5	2480	Ant	Hopping	-55.31	-20	Pass
NVNT	2-DH5	2402	Ant	Hopping	-54.28	-20	Pass
NVNT	2-DH5	2480	Ant	Hopping	-54.73	-20	Pass
NVNT	3-DH5	2402	Ant	Hopping	-52.21	-20	Pass
NVNT	3-DH5	2480	Ant	Hopping	-54.28	-20	Pass



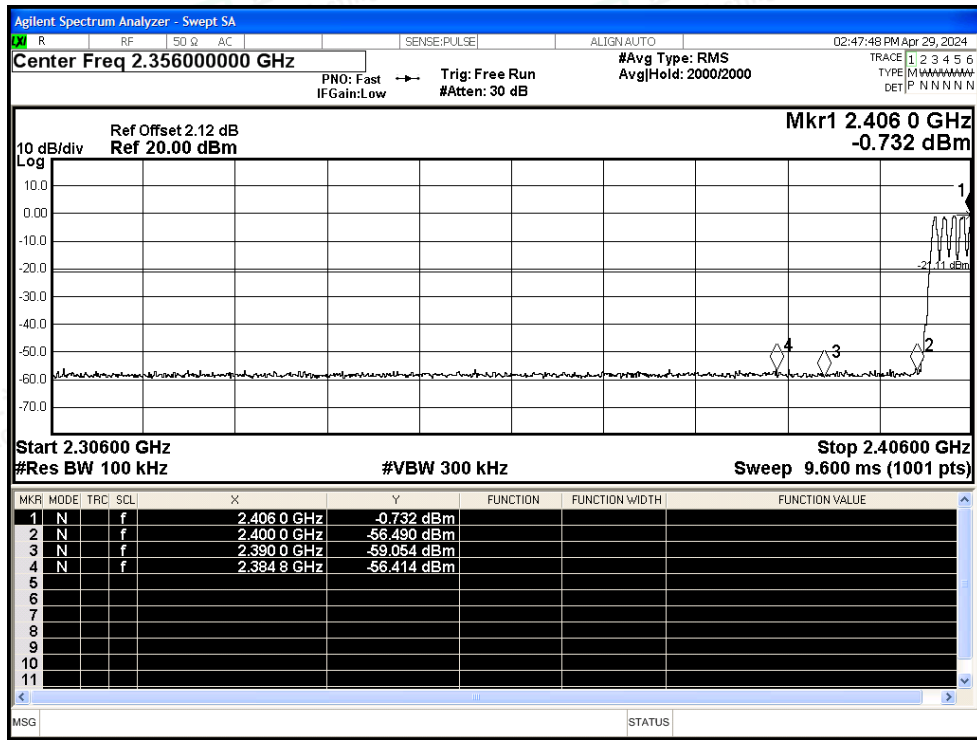


Test Graphs

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



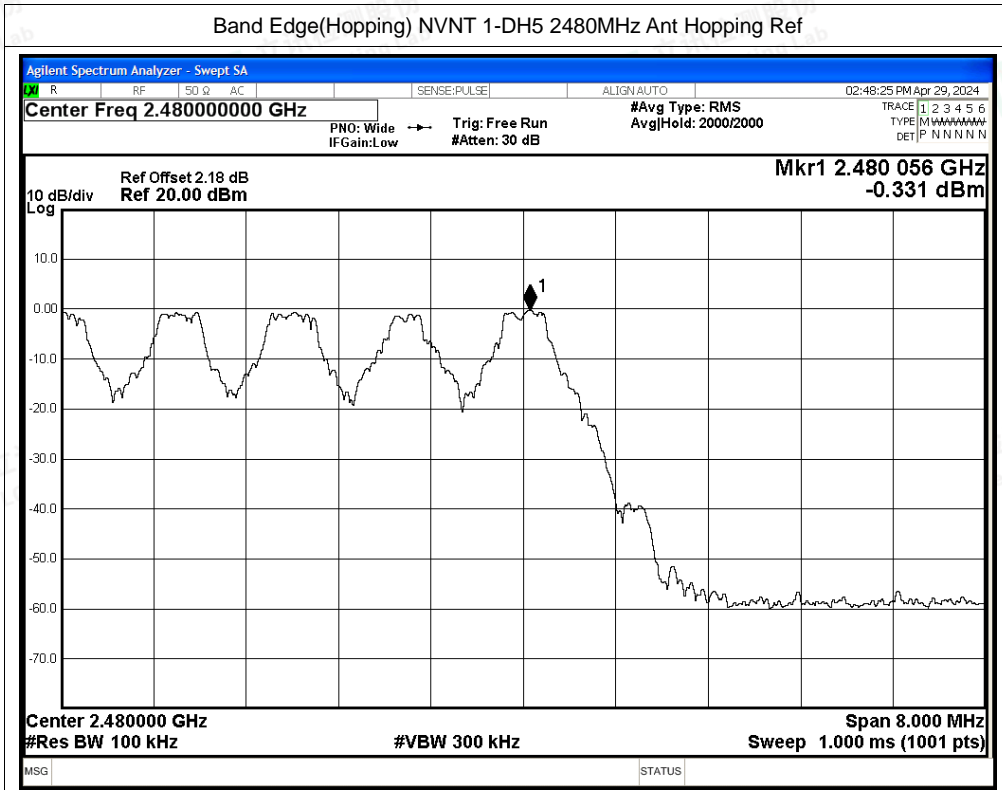
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant Hopping Emission



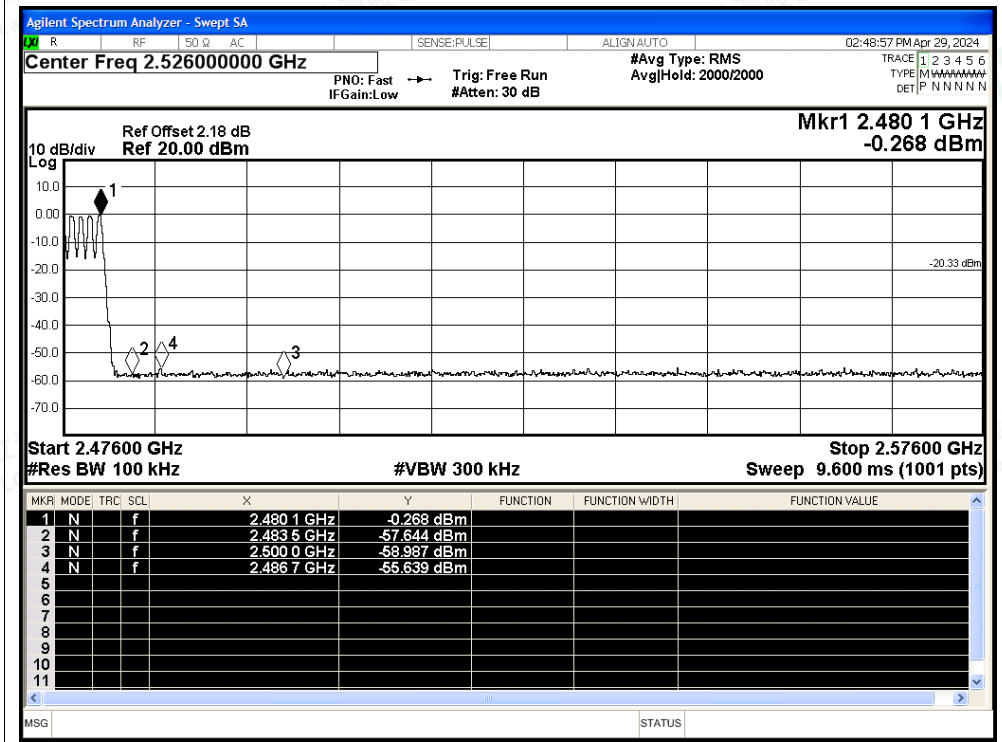




Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant Hopping Ref

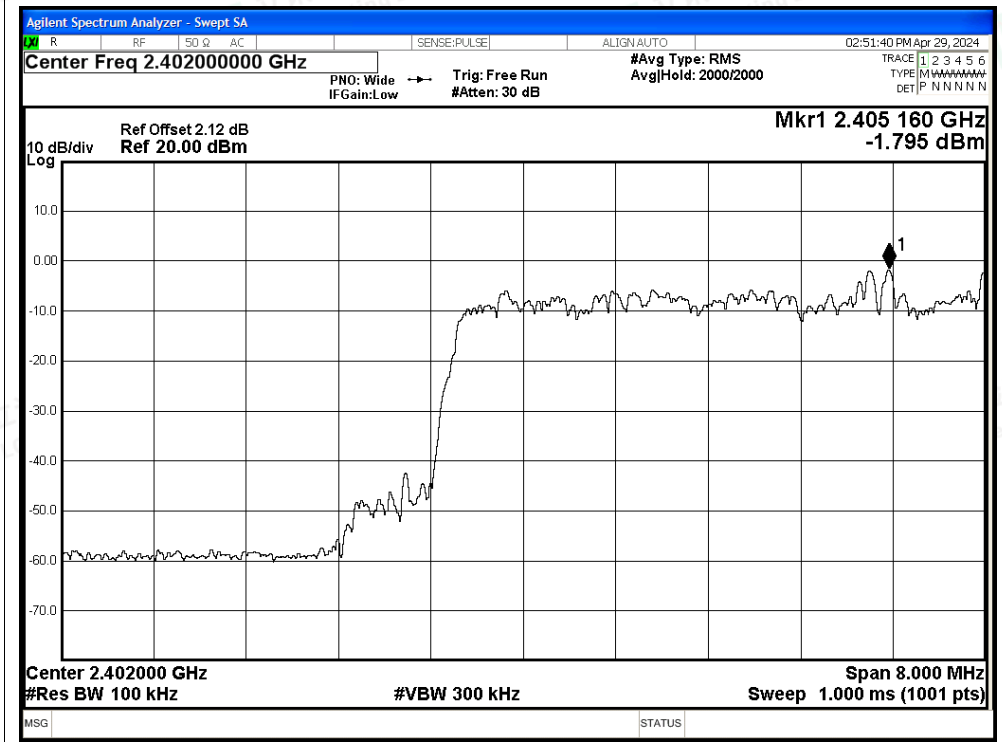


Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant Hopping Emission

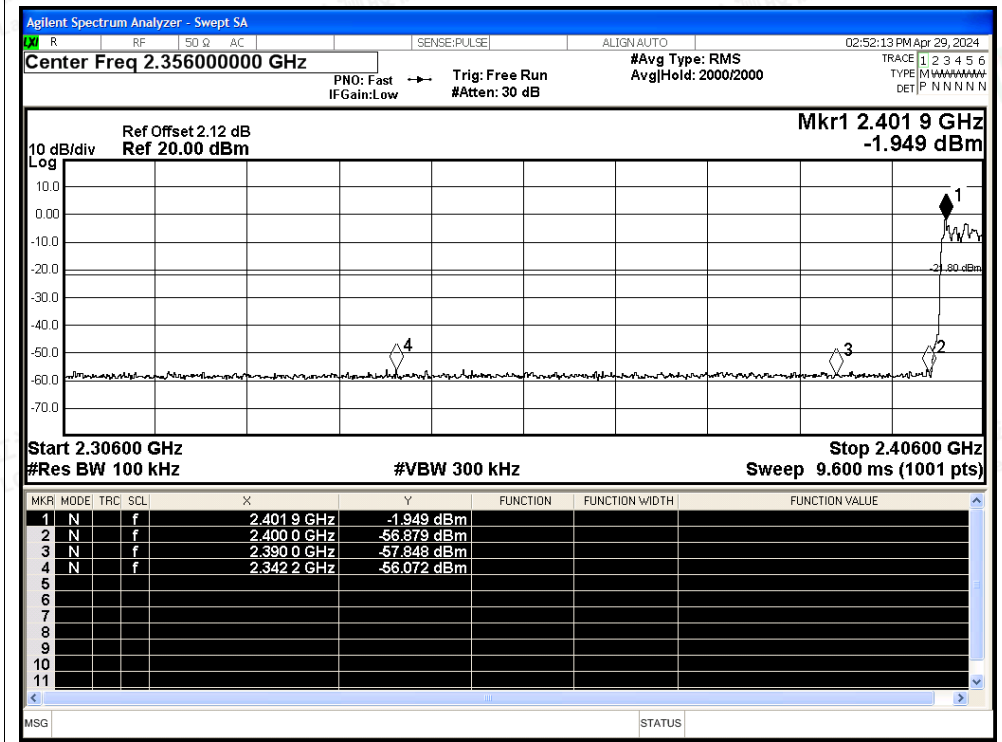




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant Hopping Ref

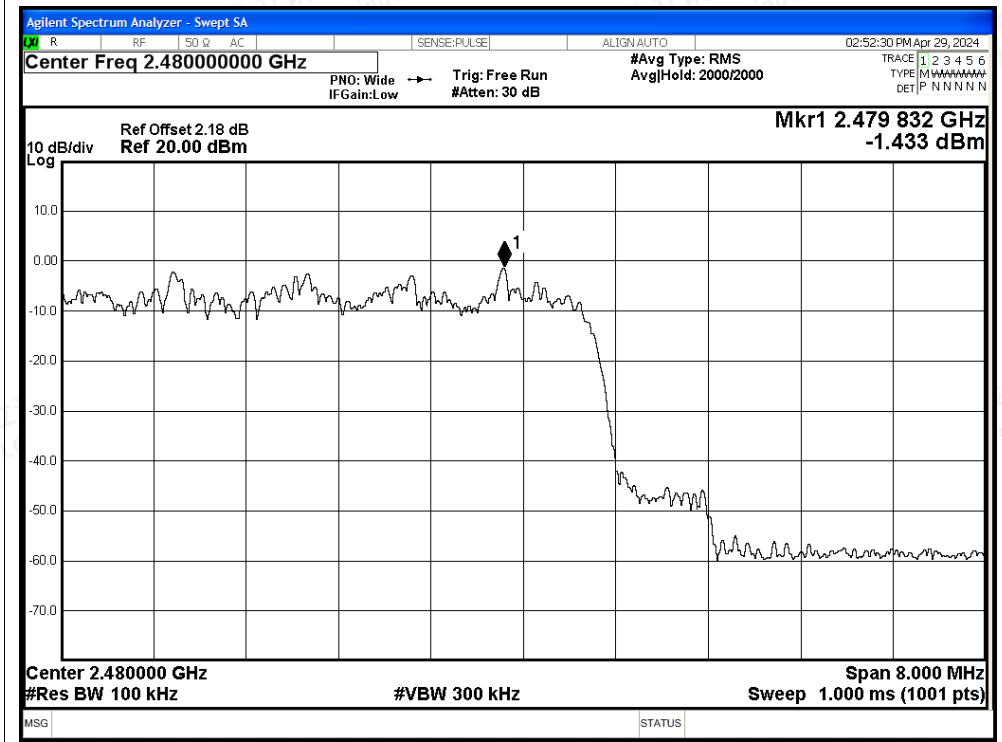


Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant Hopping Emission

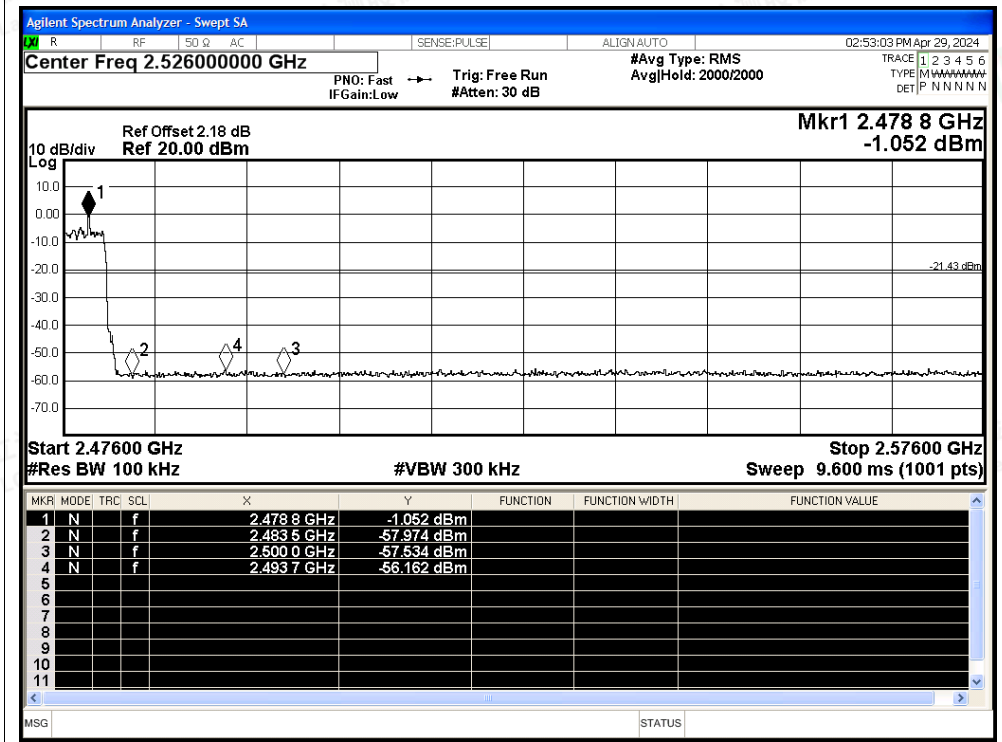




Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant Hopping Ref

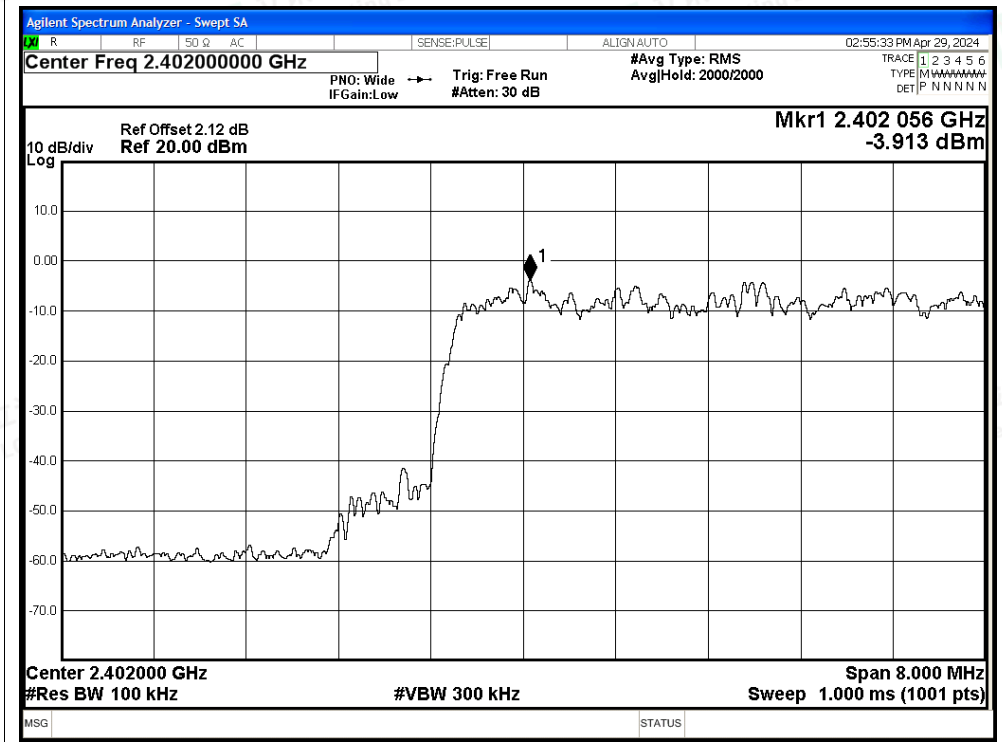


Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant Hopping Emission

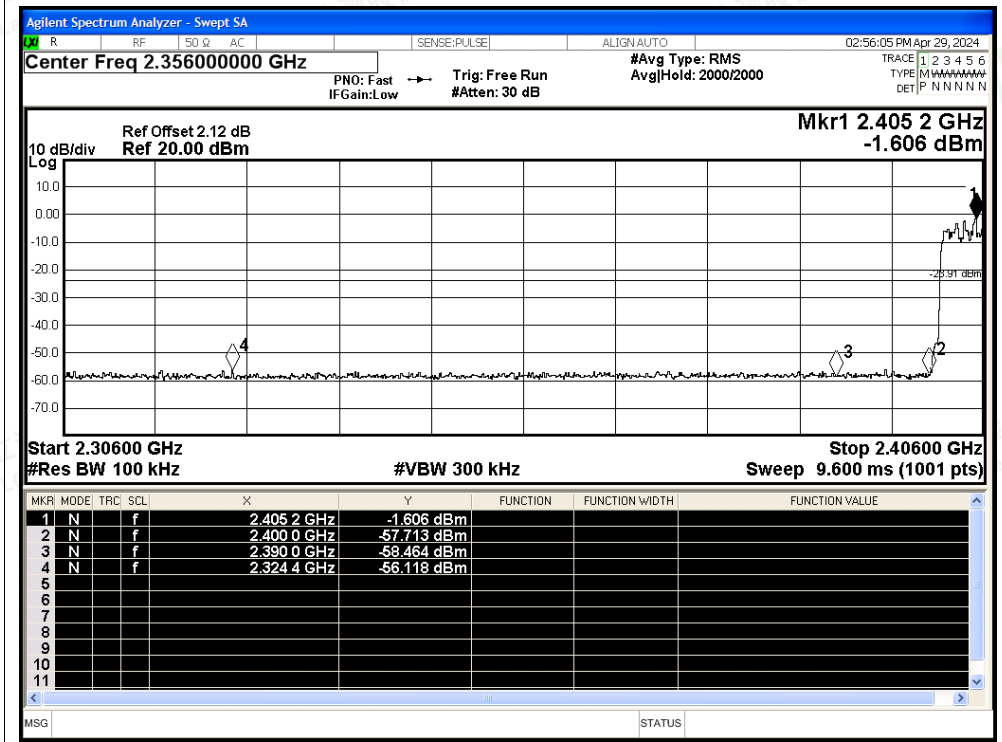




Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant Hopping Ref

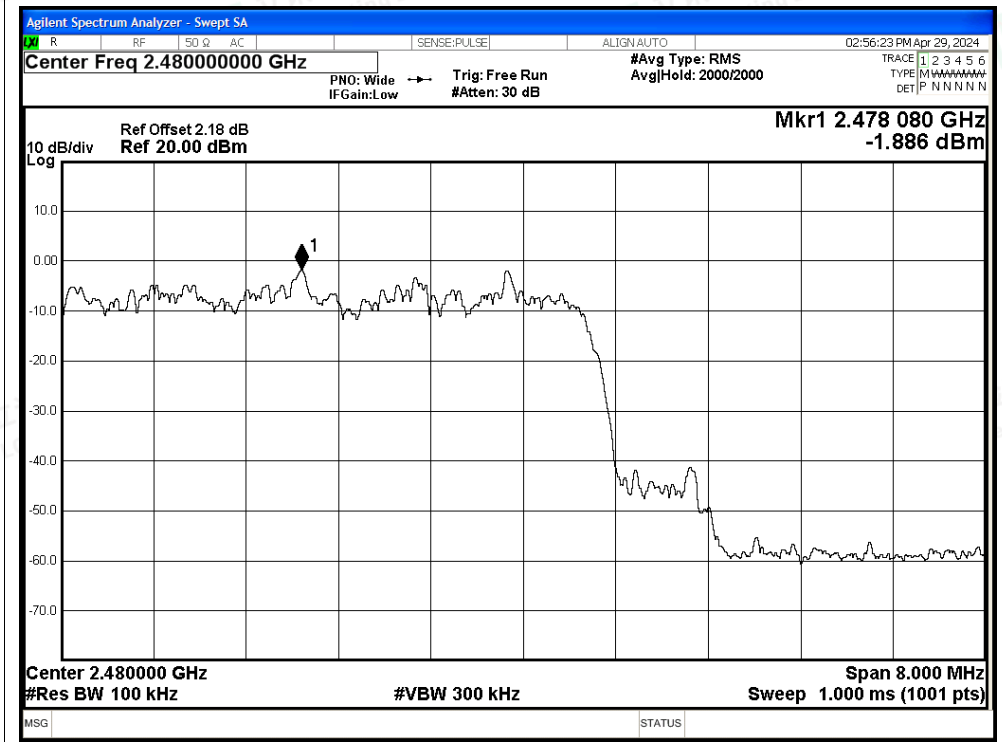


Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant Hopping Emission

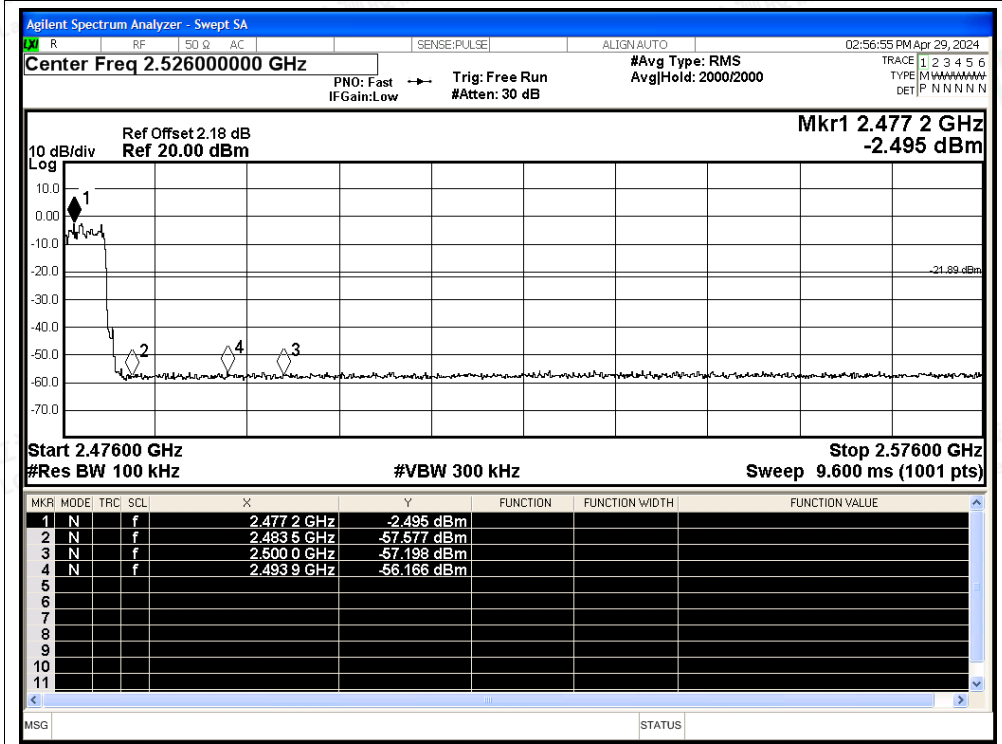




Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant Hopping Ref



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





## A.7 Conducted RF Spurious Emission

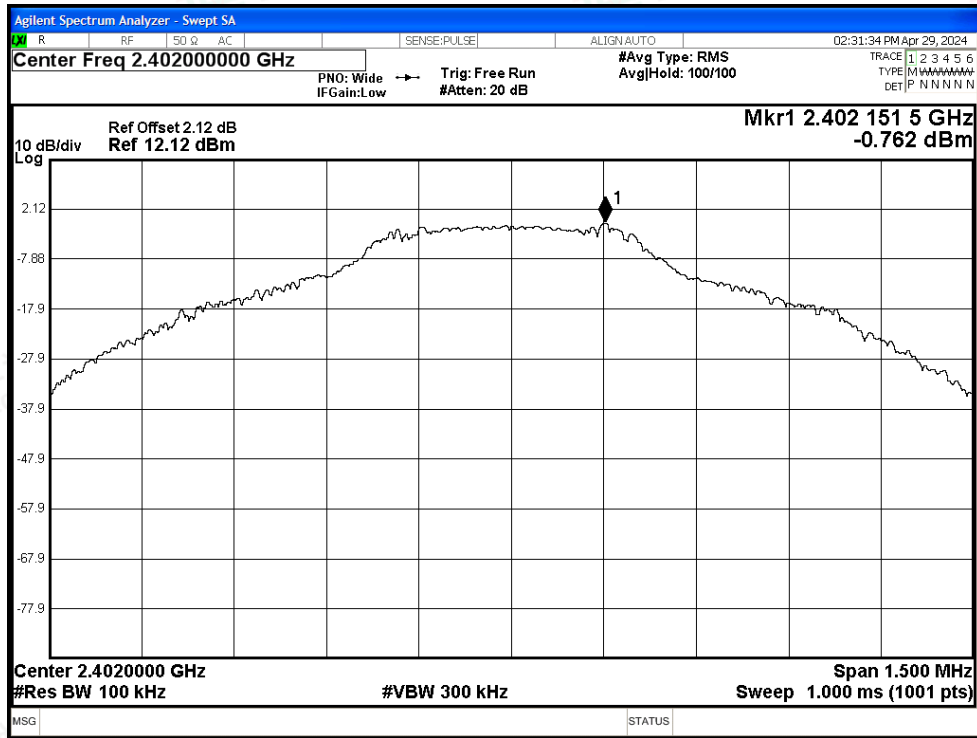
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant	-54.3	-20	Pass
NVNT	1-DH5	2441	Ant	-54.88	-20	Pass
NVNT	1-DH5	2480	Ant	-53.59	-20	Pass
NVNT	2-DH5	2402	Ant	-53.14	-20	Pass
NVNT	2-DH5	2441	Ant	-51.64	-20	Pass
NVNT	2-DH5	2480	Ant	-53.92	-20	Pass
NVNT	3-DH5	2402	Ant	-53.5	-20	Pass
NVNT	3-DH5	2441	Ant	-53.47	-20	Pass
NVNT	3-DH5	2480	Ant	-54.23	-20	Pass



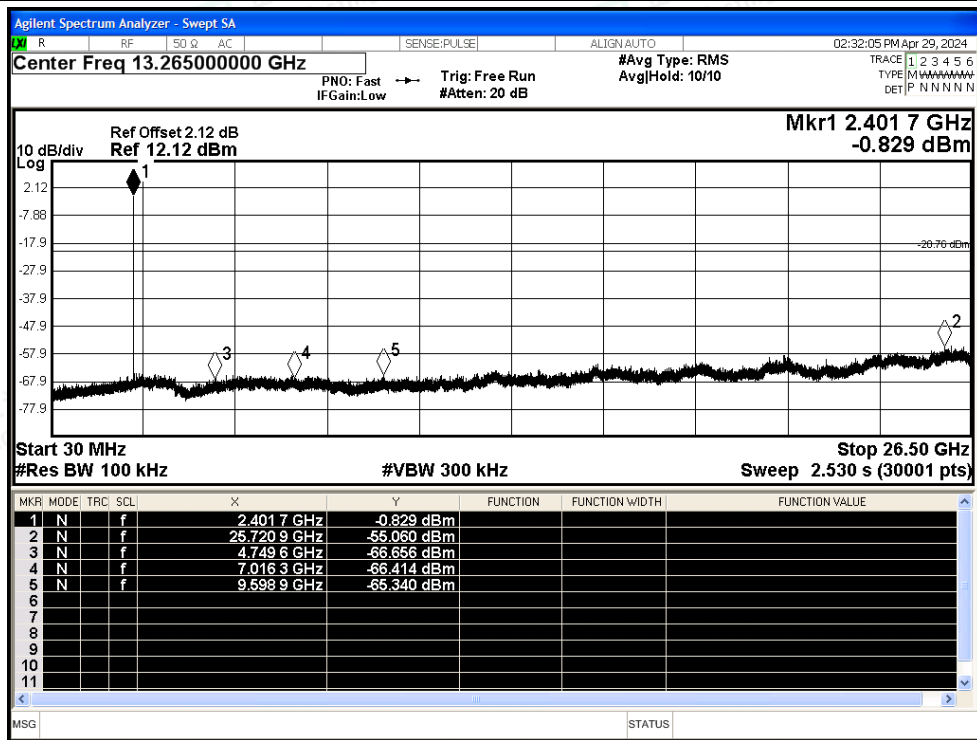


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant Ref

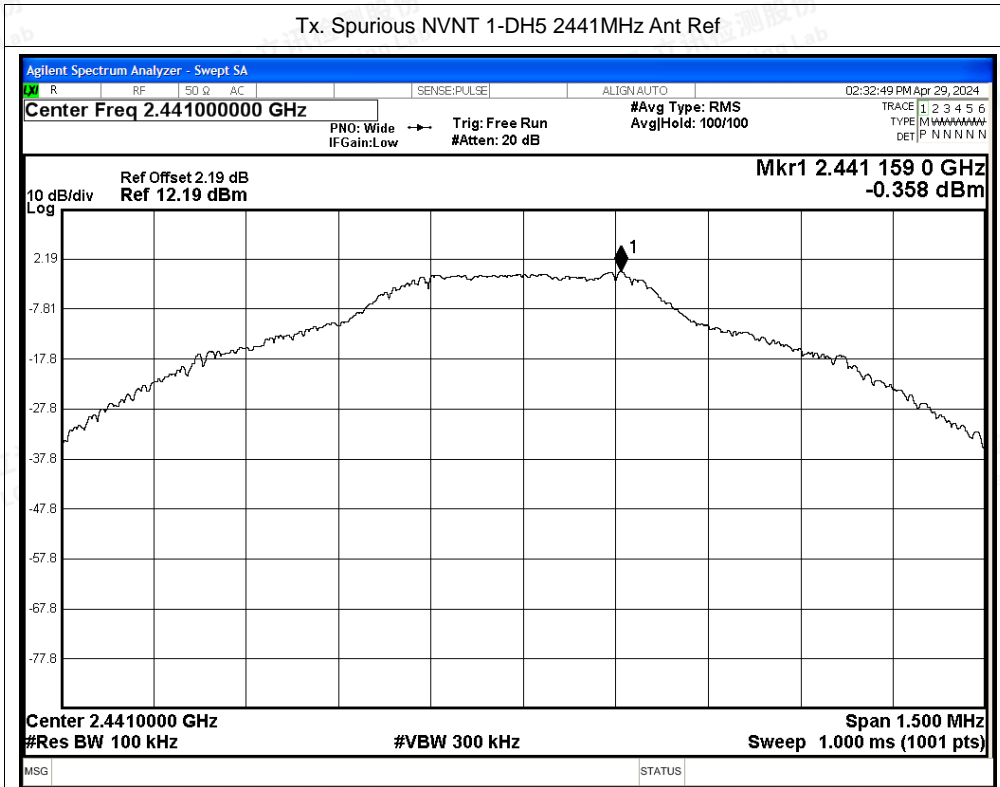


Tx. Spurious NVNT 1-DH5 2402MHz Ant Emission

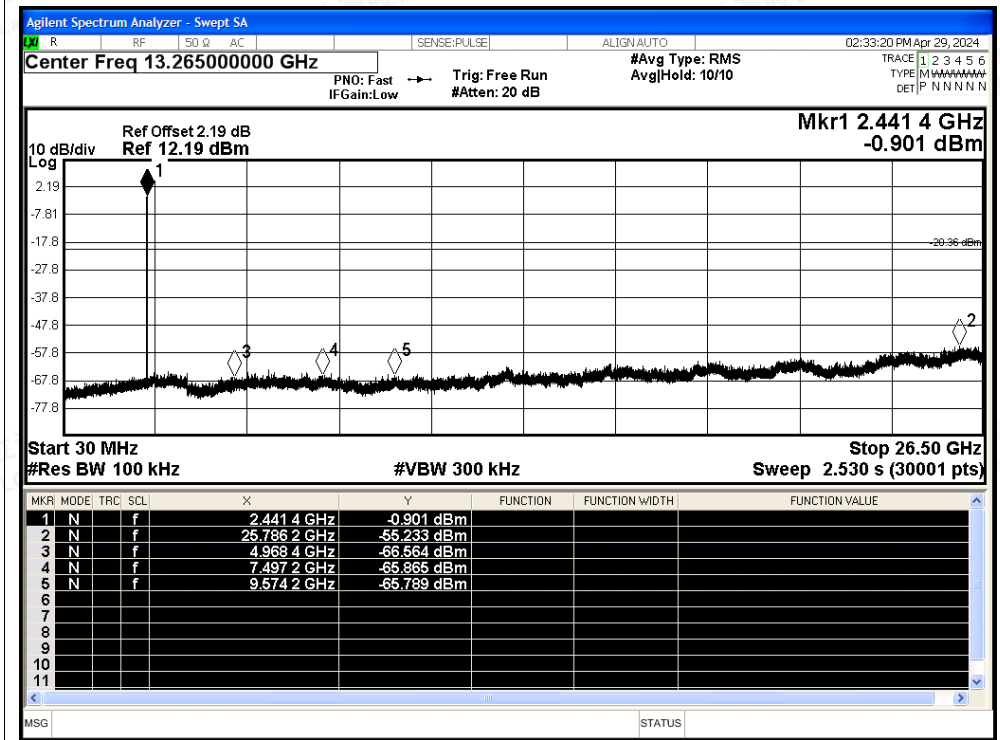




Tx. Spurious NVNT 1-DH5 2441MHz Ant Ref



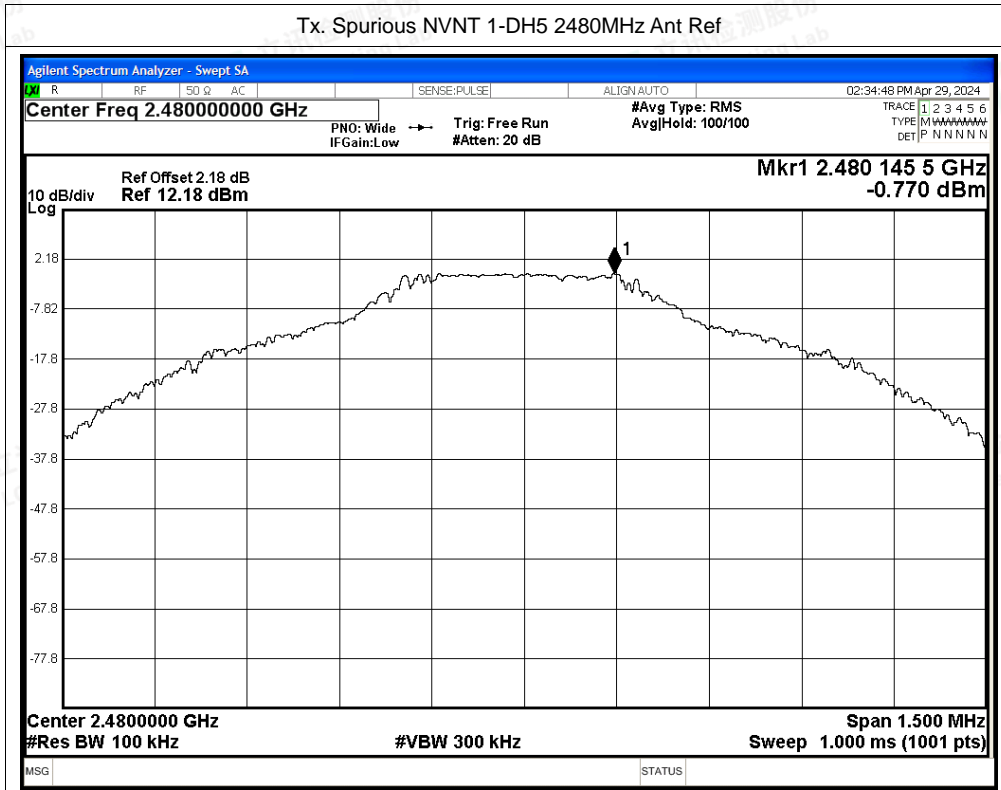
Tx. Spurious NVNT 1-DH5 2441MHz Ant Emission



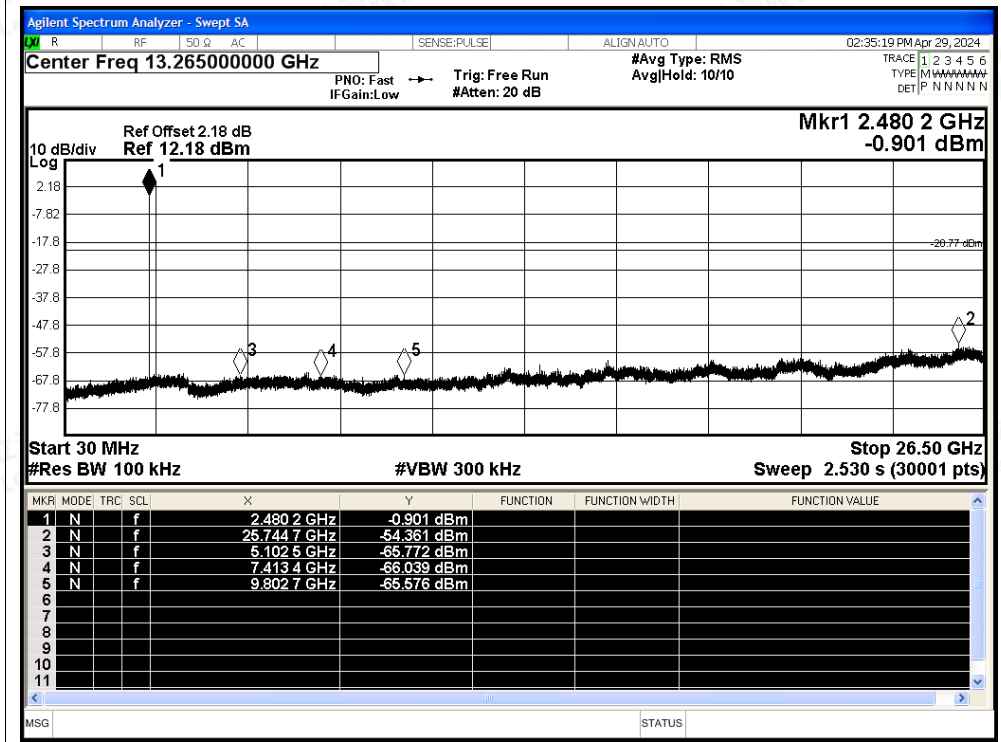




Tx. Spurious NVNT 1-DH5 2480MHz Ant Ref

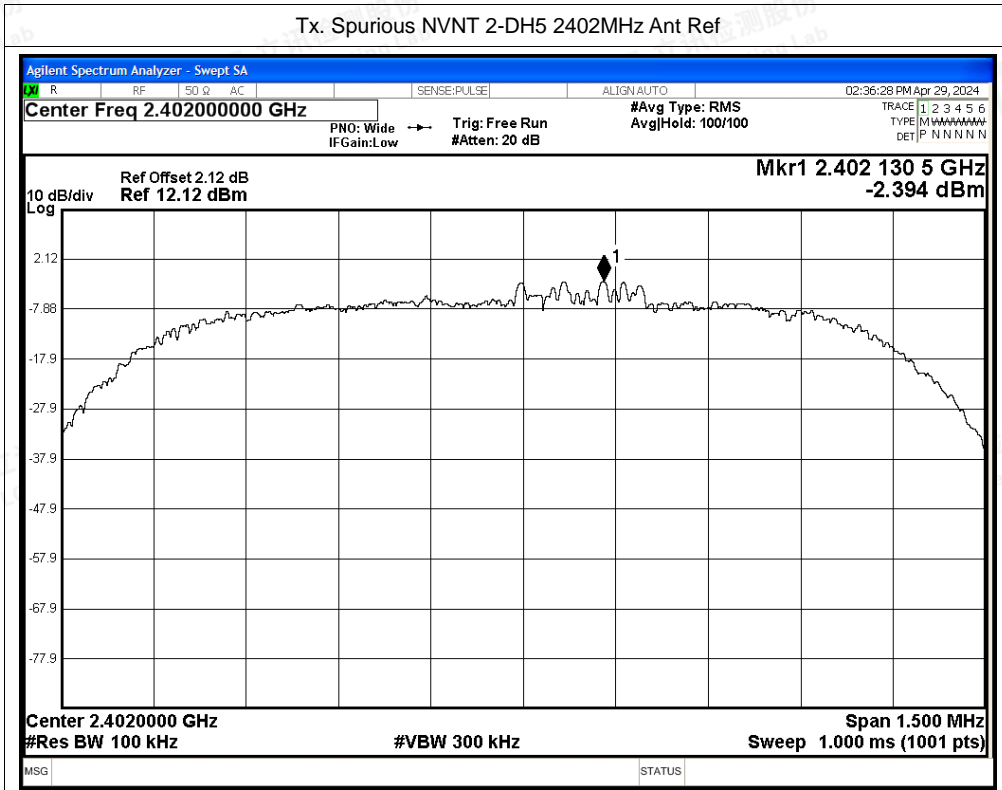


Tx. Spurious NVNT 1-DH5 2480MHz Ant Emission

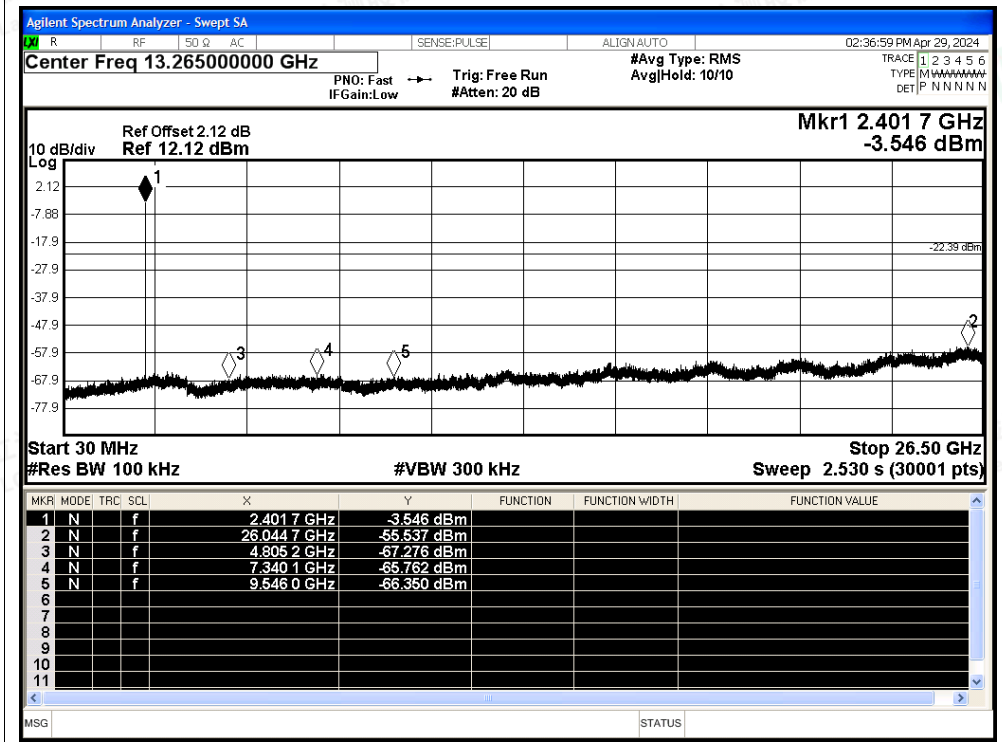




Tx. Spurious NVNT 2-DH5 2402MHz Ant Ref

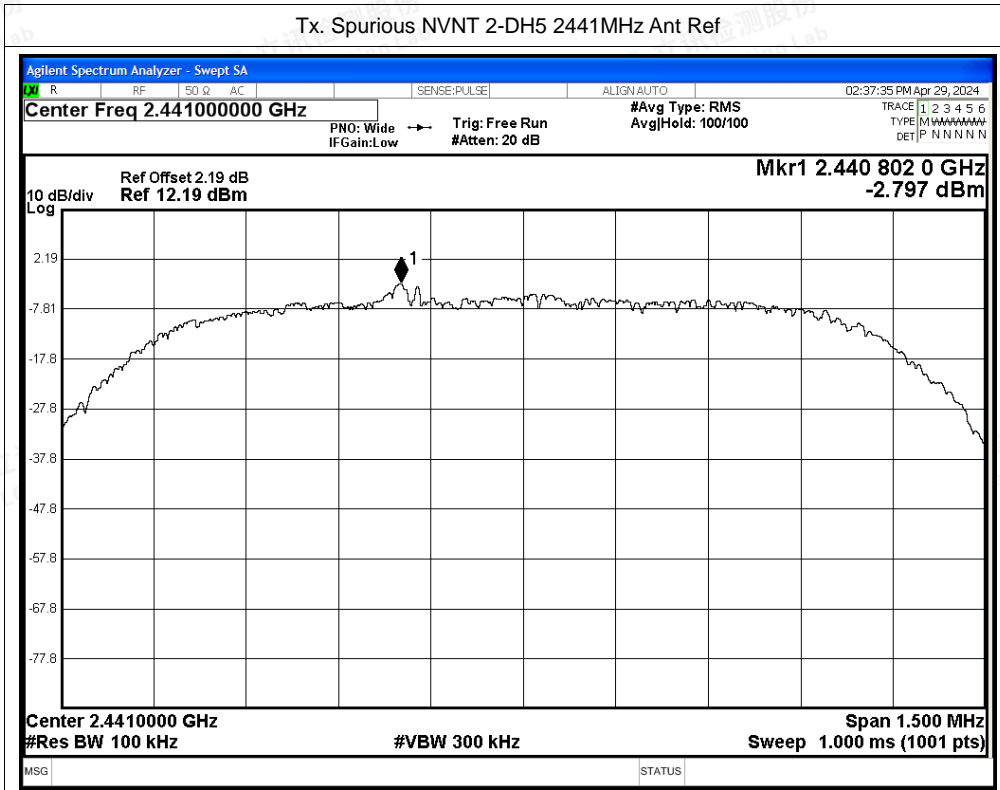


Tx. Spurious NVNT 2-DH5 2402MHz Ant Emission

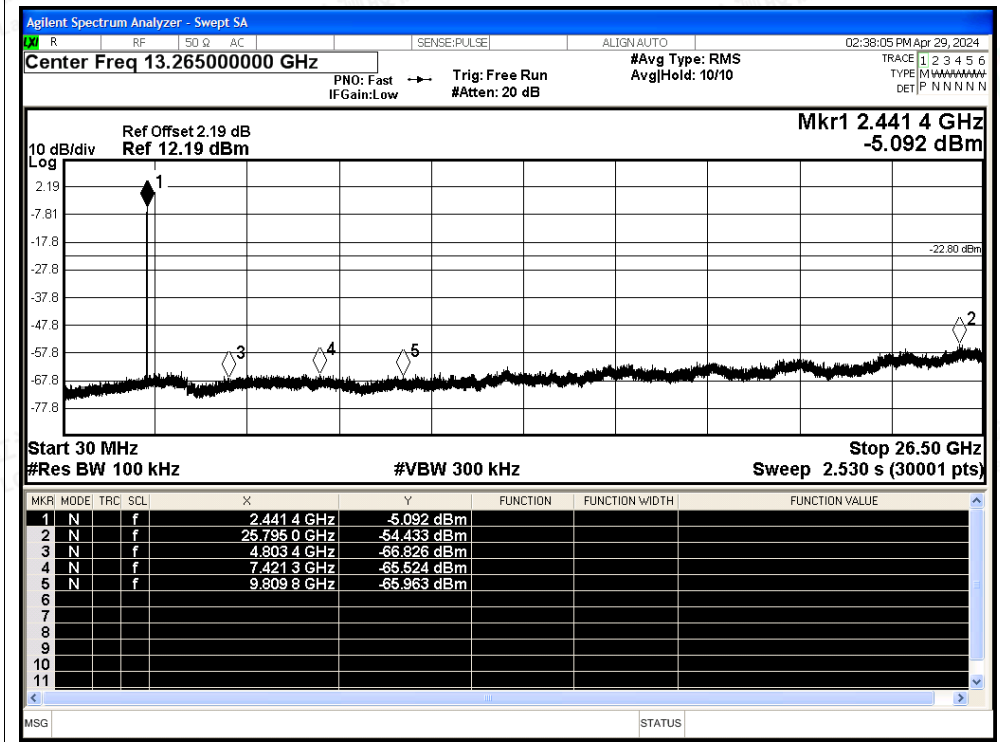




Tx. Spurious NVNT 2-DH5 2441MHz Ant Ref

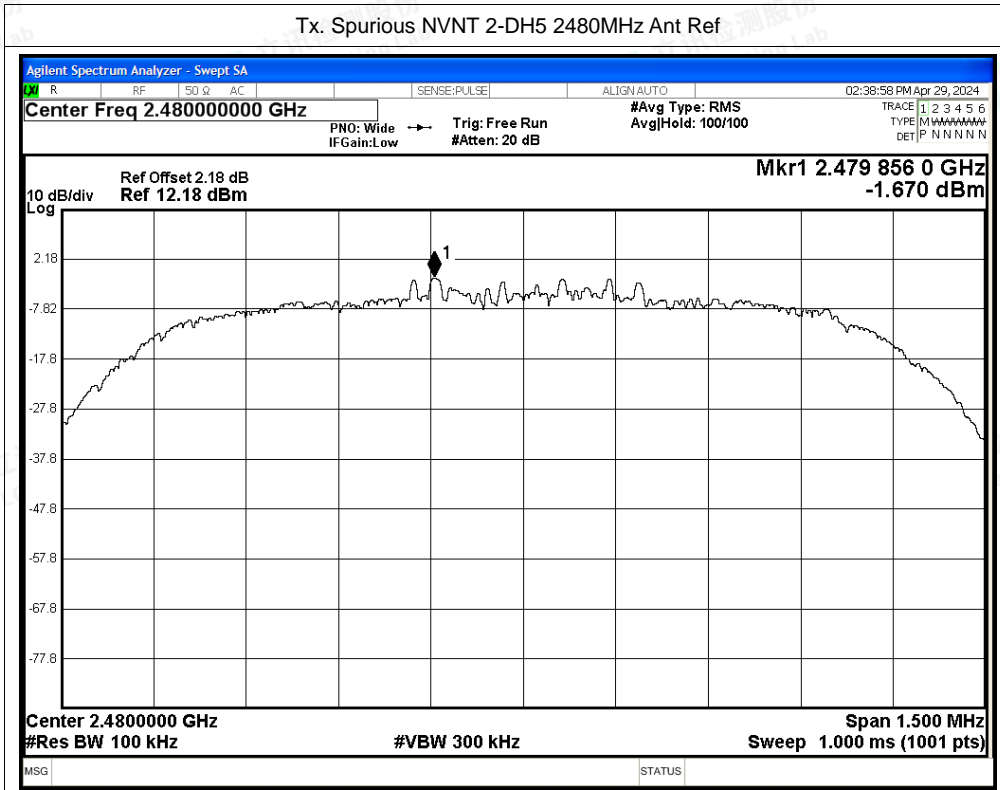


Tx. Spurious NVNT 2-DH5 2441MHz Ant Emission

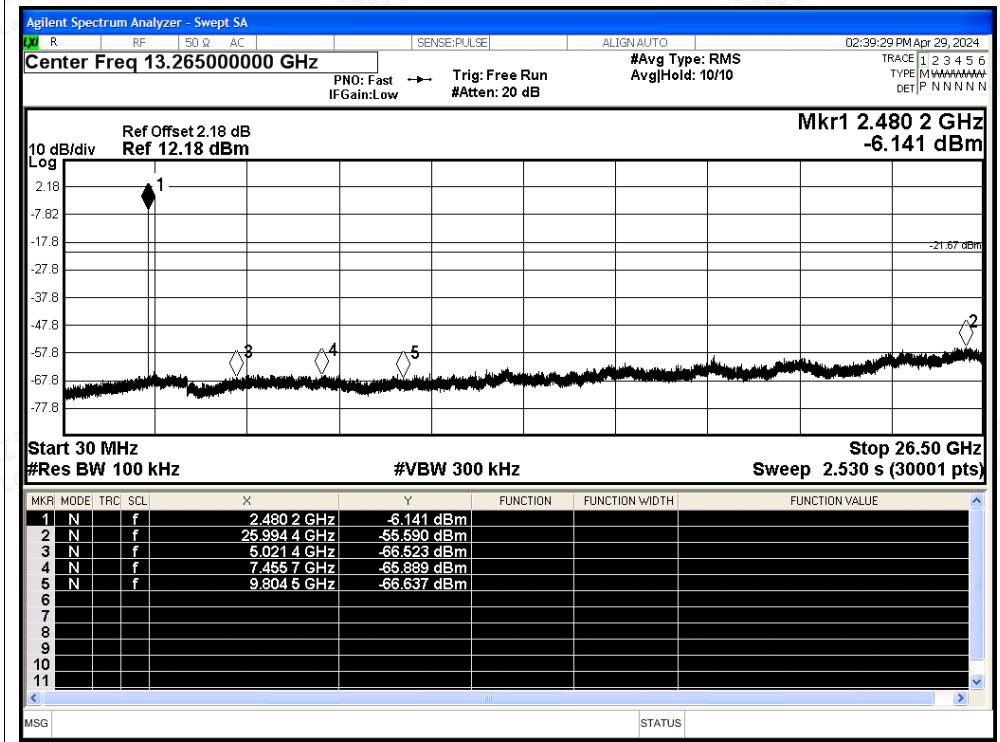




Tx. Spurious NVNT 2-DH5 2480MHz Ant Ref

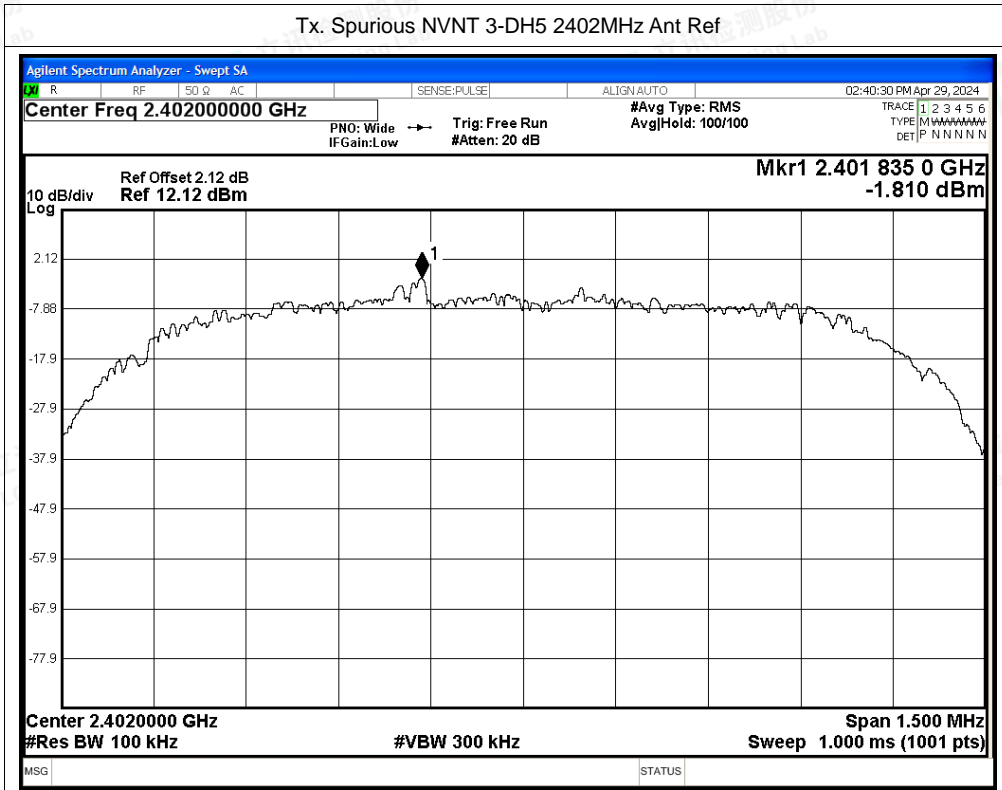


Tx. Spurious NVNT 2-DH5 2480MHz Ant Emission

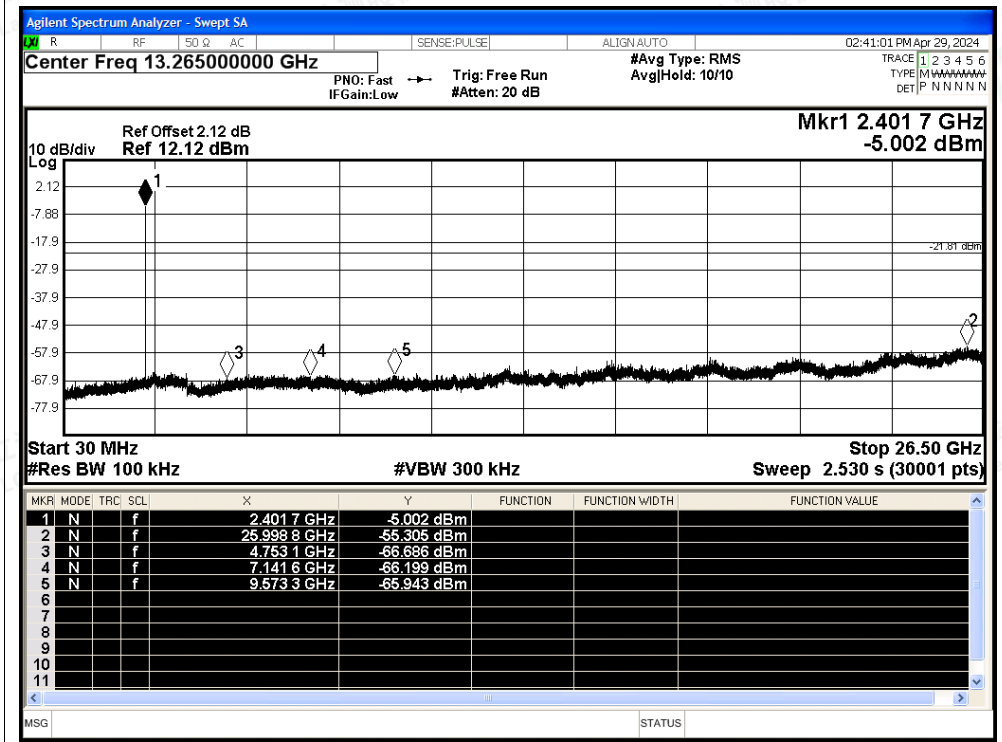




Tx. Spurious NVNT 3-DH5 2402MHz Ant Ref

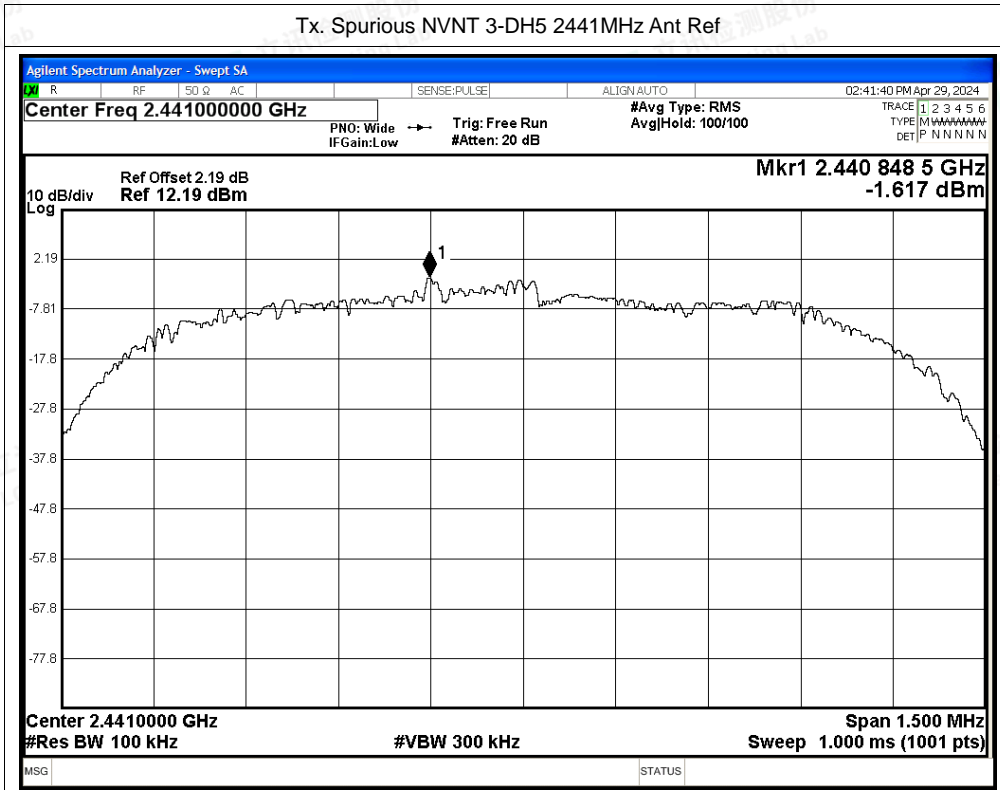


Tx. Spurious NVNT 3-DH5 2402MHz Ant Emission

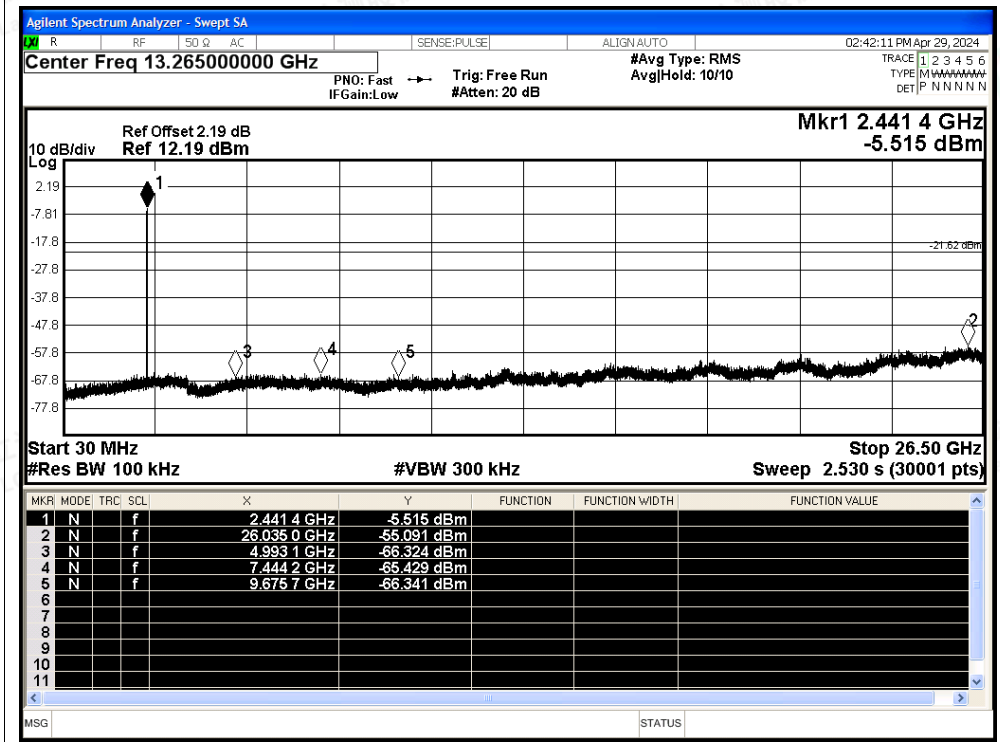




Tx. Spurious NVNT 3-DH5 2441MHz Ant Ref

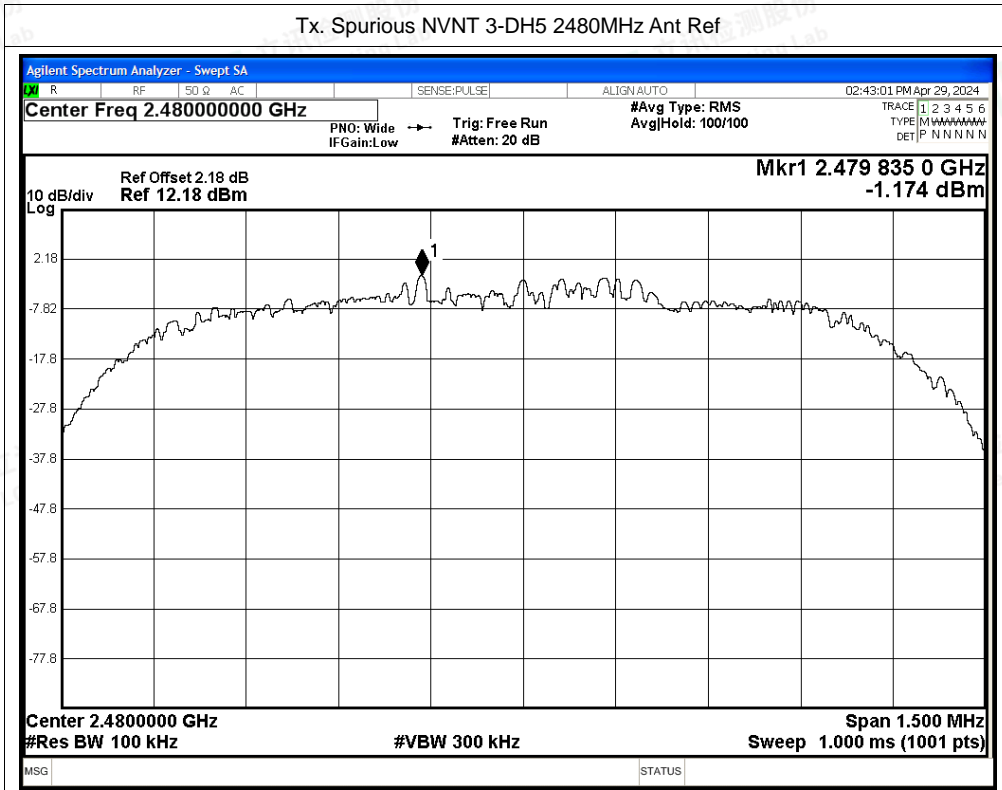


Tx. Spurious NVNT 3-DH5 2441MHz Ant Emission

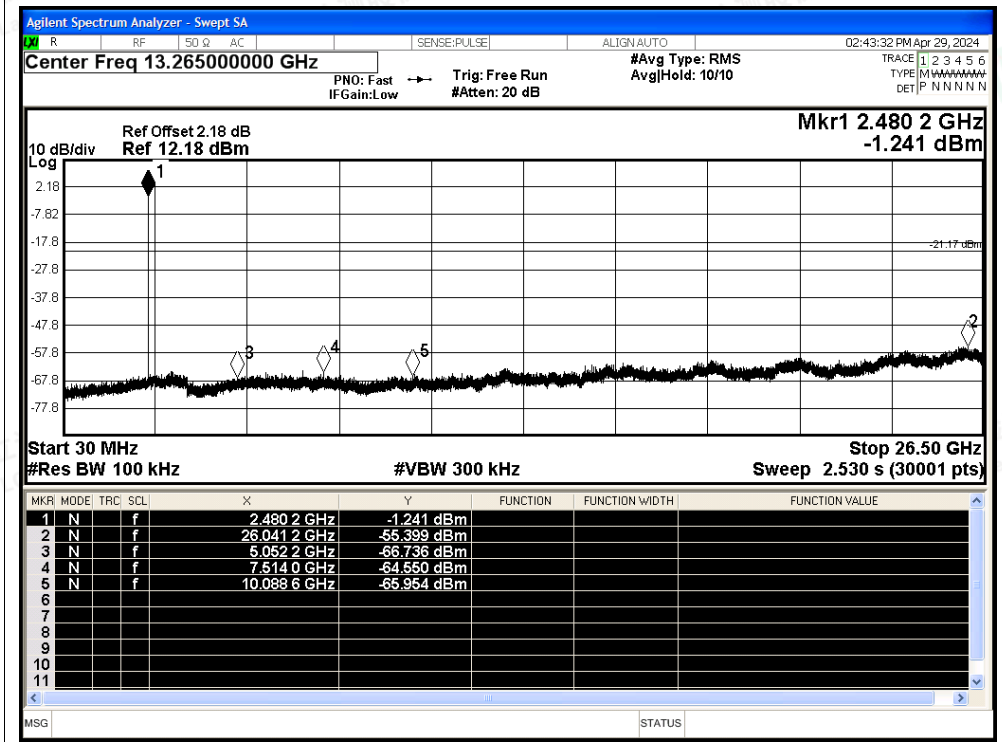




Tx. Spurious NVNT 3-DH5 2480MHz Ant Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant Emission





## A.8 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH5	2402	Ant	76.88	1.14	0.35
NVNT	1-DH5	2441	Ant	76.88	1.14	0.35
NVNT	1-DH5	2480	Ant	76.88	1.14	0.35
NVNT	2-DH5	2402	Ant	76.96	1.14	0.35
NVNT	2-DH5	2441	Ant	76.99	1.14	0.35
NVNT	2-DH5	2480	Ant	76.96	1.14	0.35
NVNT	3-DH5	2402	Ant	77.01	1.13	0.35
NVNT	3-DH5	2441	Ant	77.01	1.13	0.35
NVNT	3-DH5	2480	Ant	77.01	1.13	0.35

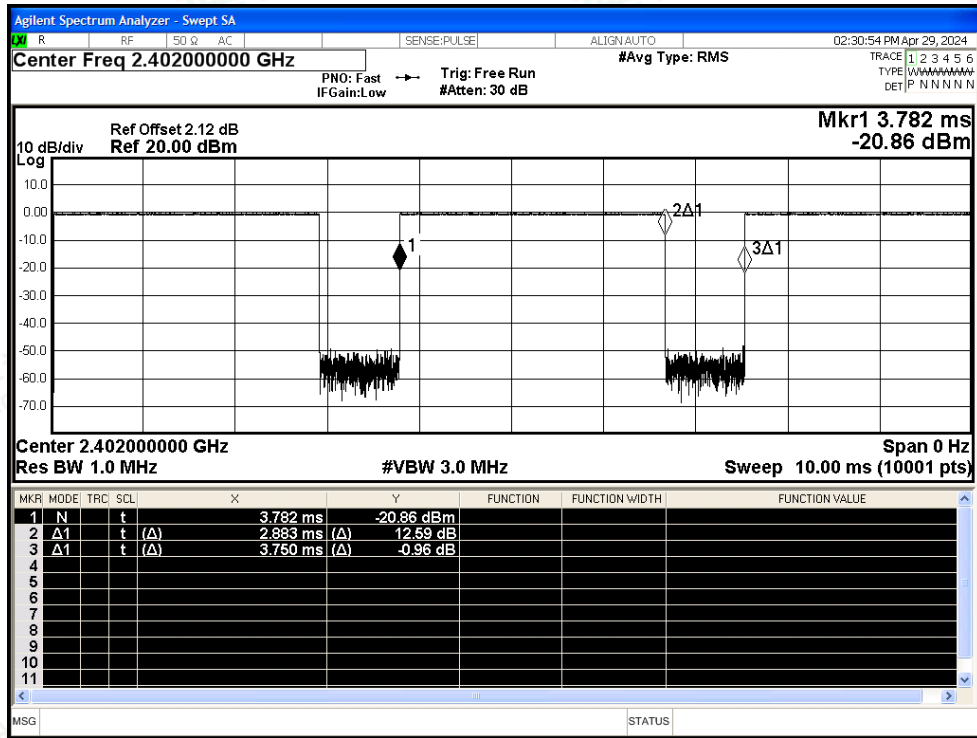




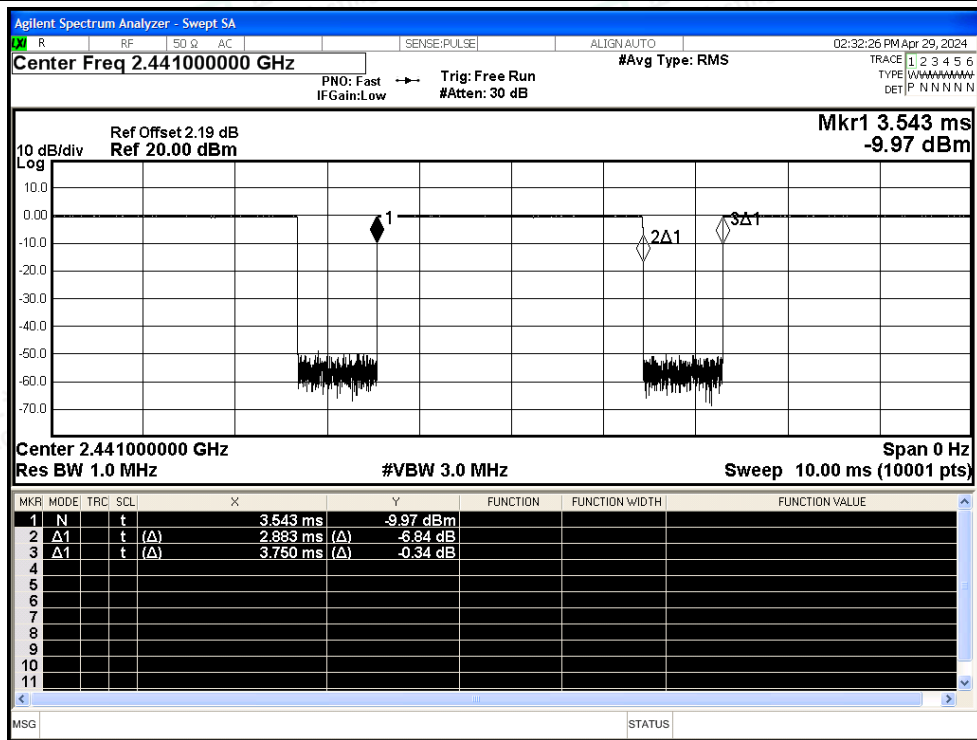


Test Graphs

Duty Cycle NVNT 1-DH5 2402MHz Ant

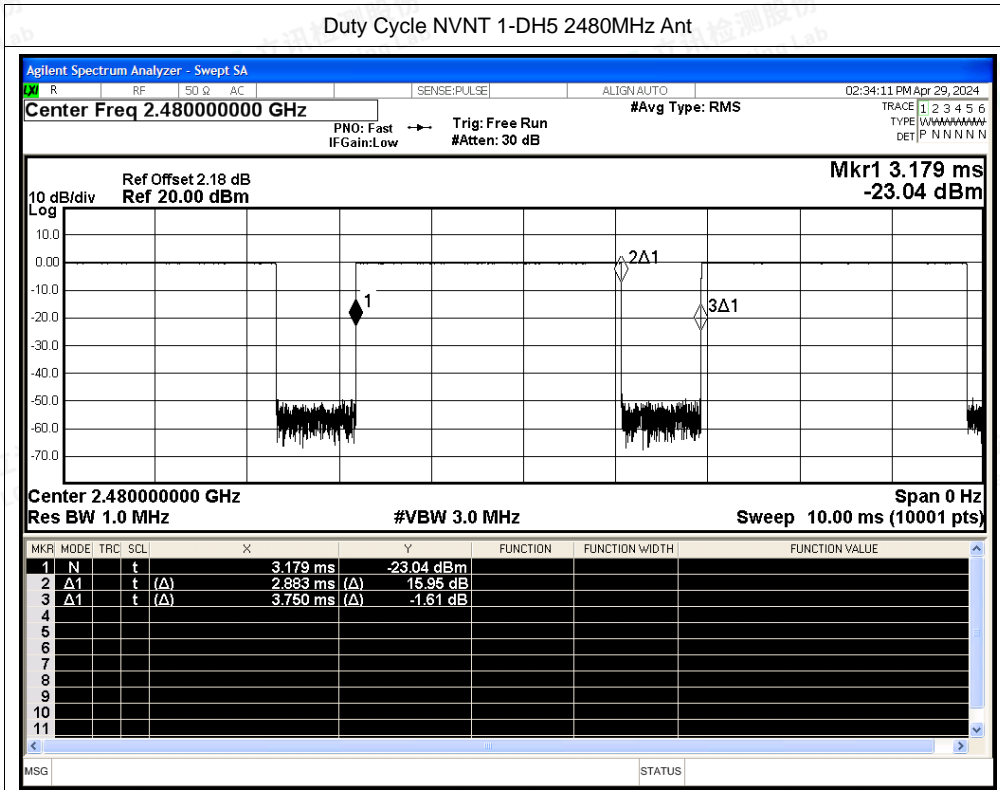


Duty Cycle NVNT 1-DH5 2441MHz Ant

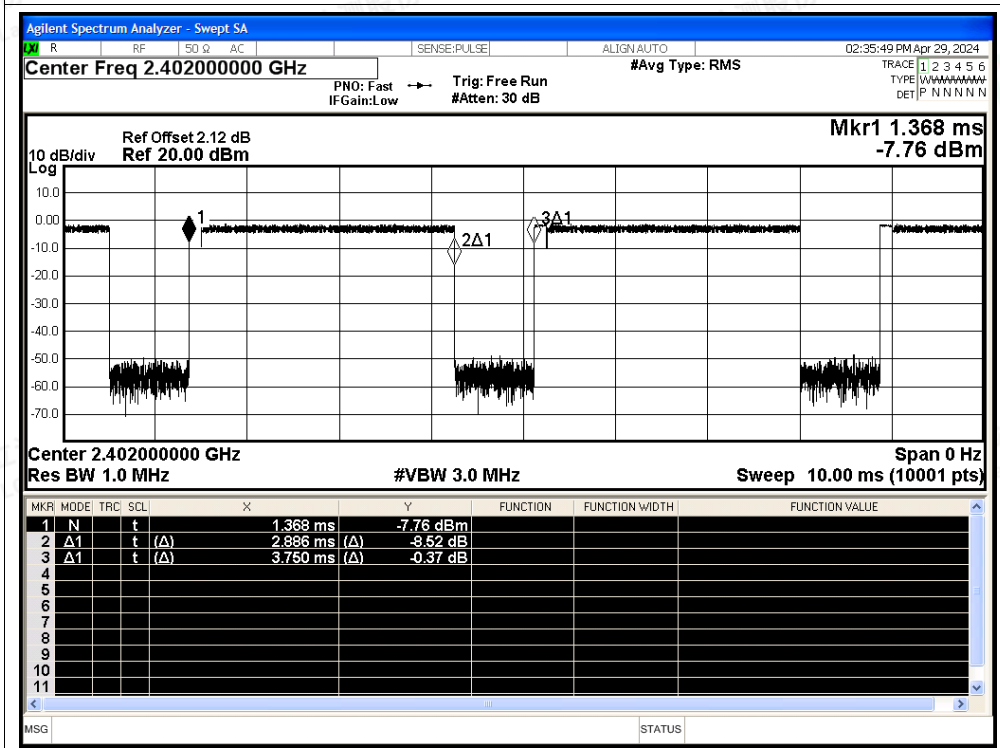




Duty Cycle NVNT 1-DH5 2480MHz Ant

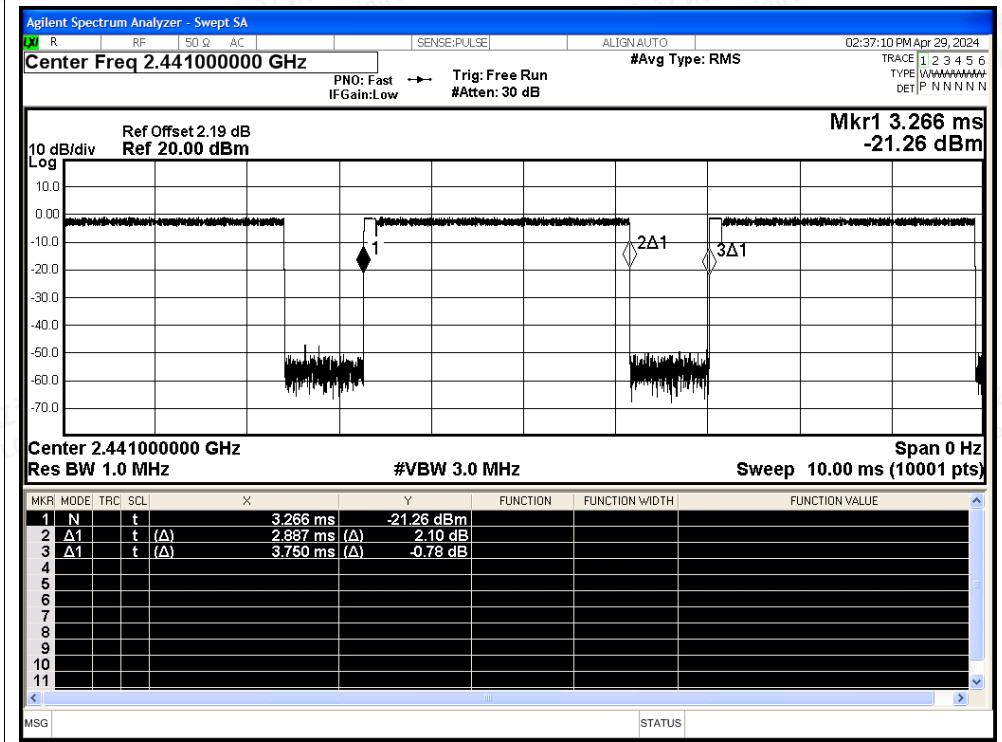


Duty Cycle NVNT 2-DH5 2402MHz Ant

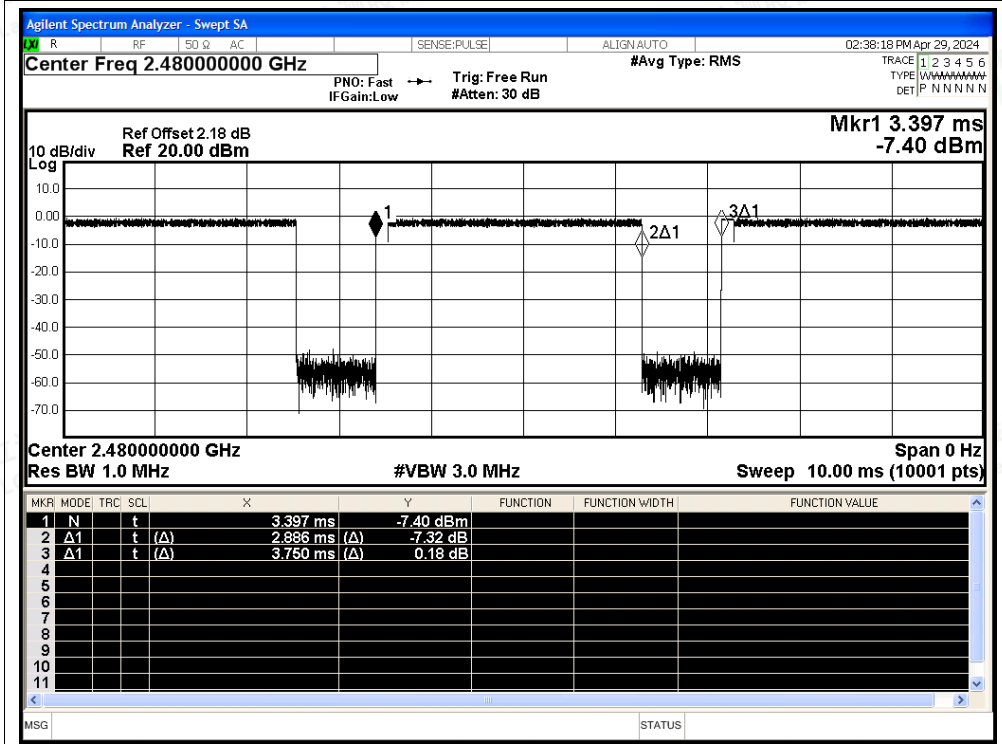


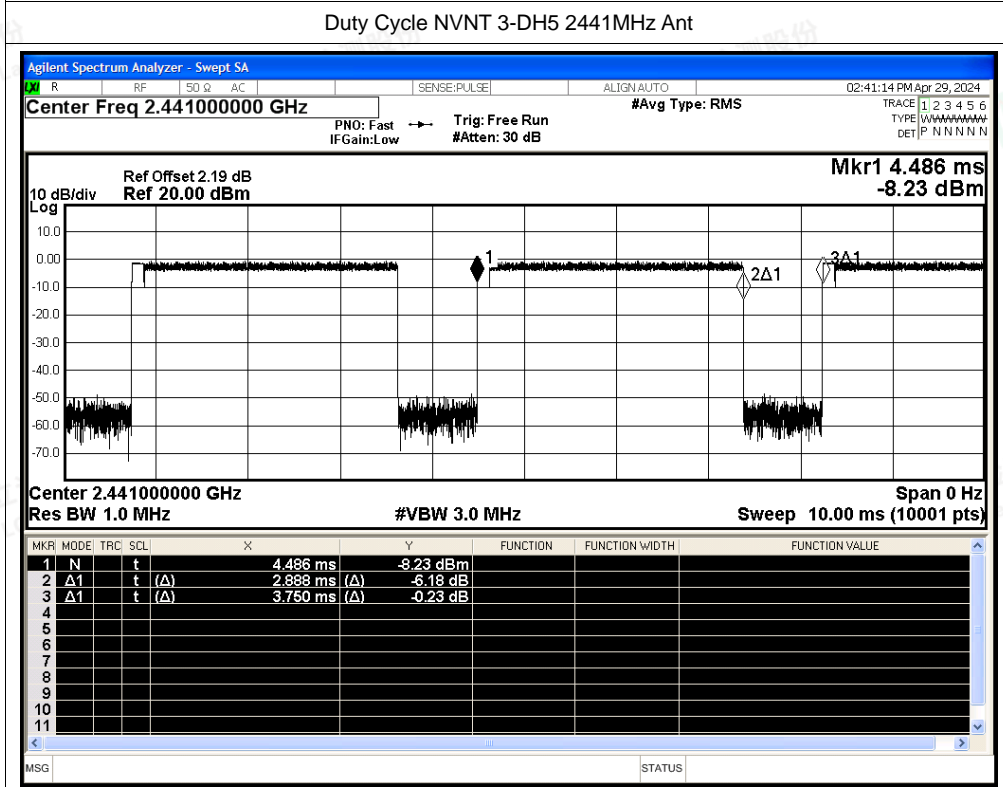
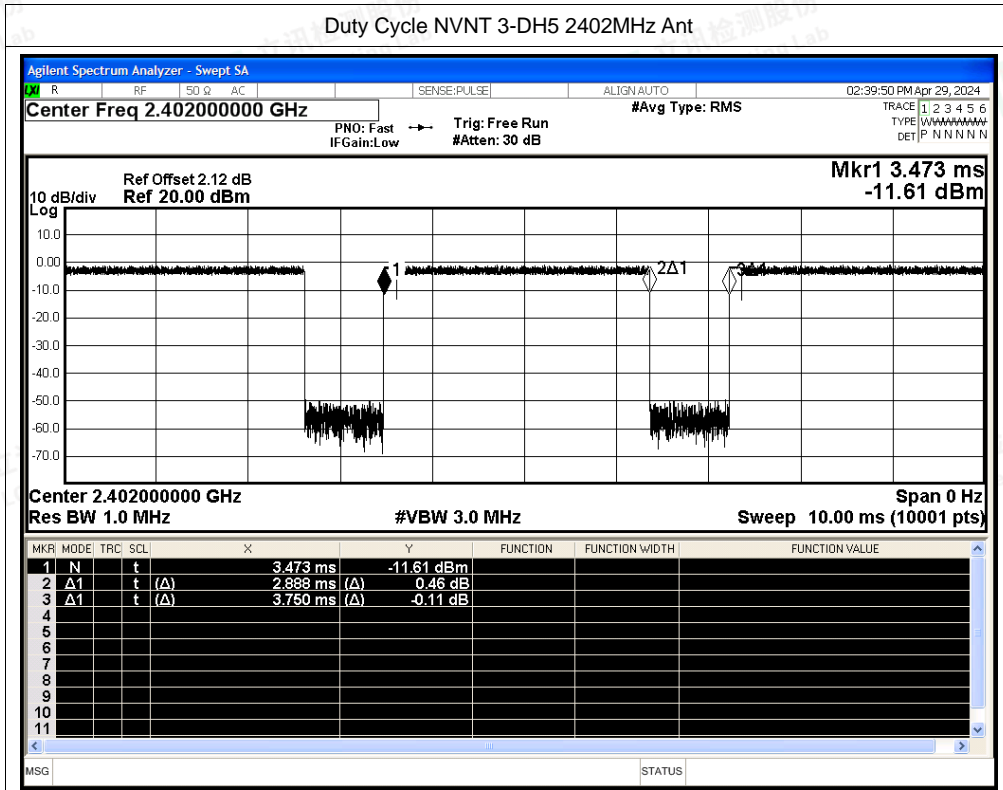


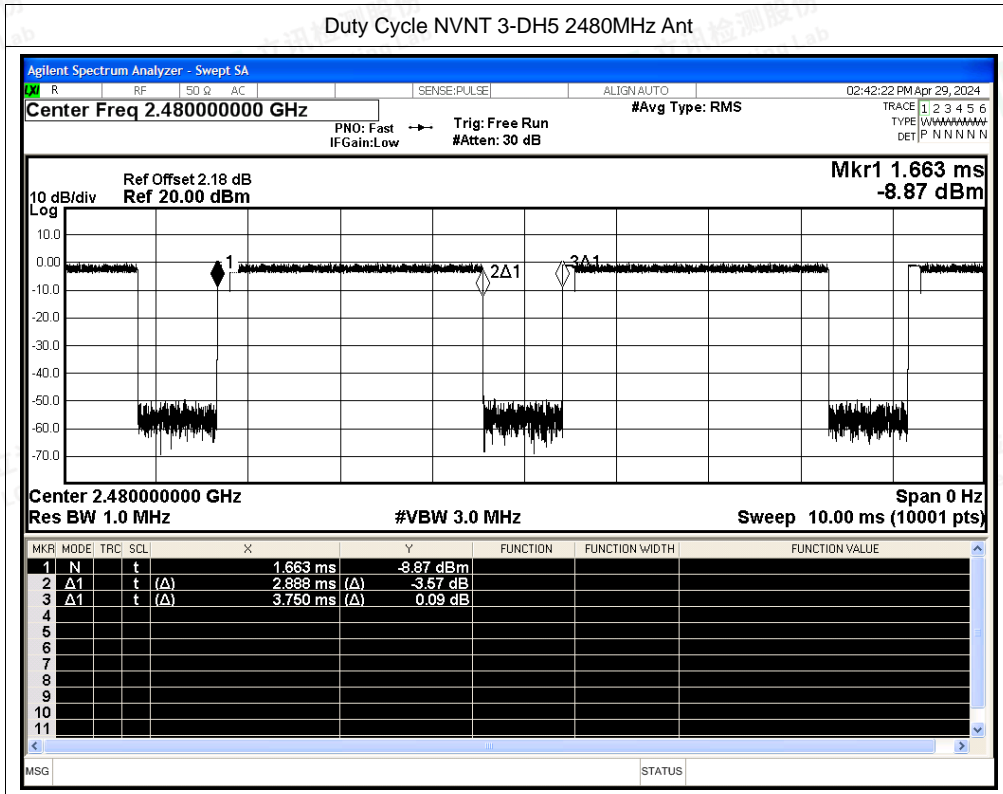
Duty Cycle NVNT 2-DH5 2441MHz Ant



Duty Cycle NVNT 2-DH5 2480MHz Ant









## A.9 Restrict Band

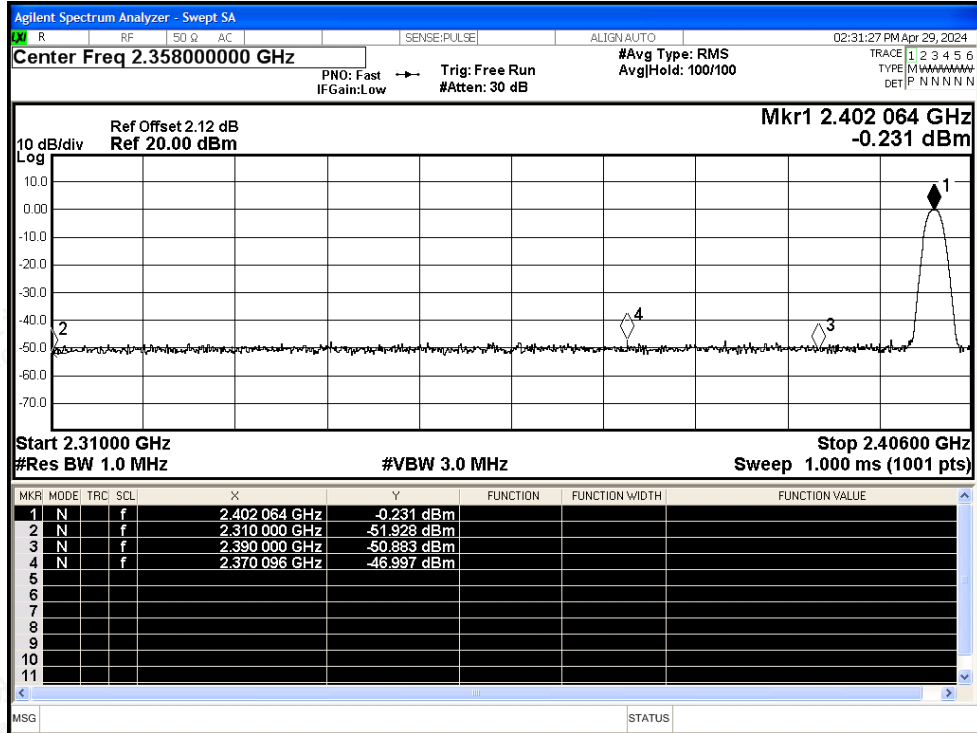
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant	No-Hopping	2310	-51.93	2	-	45.33	Peak	74	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2310	-58.87	2	1.14	39.53	Average	54	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2370.096	-47	2	-	50.26	Peak	74	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2366.352	-57.66	2	1.14	40.74	Average	54	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2390	-50.88	2	-	46.38	Peak	74	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2390	-58.51	2	1.14	39.89	Average	54	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2483.5	-49.22	2	-	48.04	Peak	74	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2483.5	-57.96	2	1.14	40.44	Average	54	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2489.296	-47.13	2	-	50.13	Peak	74	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2483.536	-57.17	2	1.14	41.23	Average	54	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2500	-50.91	2	-	46.35	Peak	74	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2500	-58.17	2	1.14	40.23	Average	54	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2310	-49.89	2	-	47.37	Peak	74	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2310	-58.33	2	1.14	40.07	Average	54	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2379.12	-47.44	2	-	49.82	Peak	74	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2372.304	-57.83	2	1.14	40.57	Average	54	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2390	-50.29	2	-	46.97	Peak	74	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2390	-58.36	2	1.14	40.04	Average	54	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2483.5	-49.22	2	-	48.04	Peak	74	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2483.5	-58.06	2	1.14	40.34	Average	54	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2492.656	-46.7	2	-	50.56	Peak	74	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2491.456	-57.22	2	1.14	41.18	Average	54	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2500	-50.92	2	-	46.34	Peak	74	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2500	-57.62	2	1.14	40.78	Average	54	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2310	-51.49	2	-	45.77	Peak	74	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2310	-58.63	2	1.13	39.76	Average	54	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2337.744	-47.42	2	-	49.84	Peak	74	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2366.256	-57.79	2	1.13	40.6	Average	54	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2390	-50.8	2	-	46.46	Peak	74	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2390	-58.27	2	1.13	40.12	Average	54	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2483.5	-49.44	2	-	47.82	Peak	74	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2483.5	-57.56	2	1.13	40.83	Average	54	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2485.96	-46.3	2	-	50.96	Peak	74	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2496.832	-57.18	2	1.13	41.21	Average	54	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2500	-51.47	2	-	45.79	Peak	74	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2500	-58.2	2	1.13	40.19	Average	54	Pass



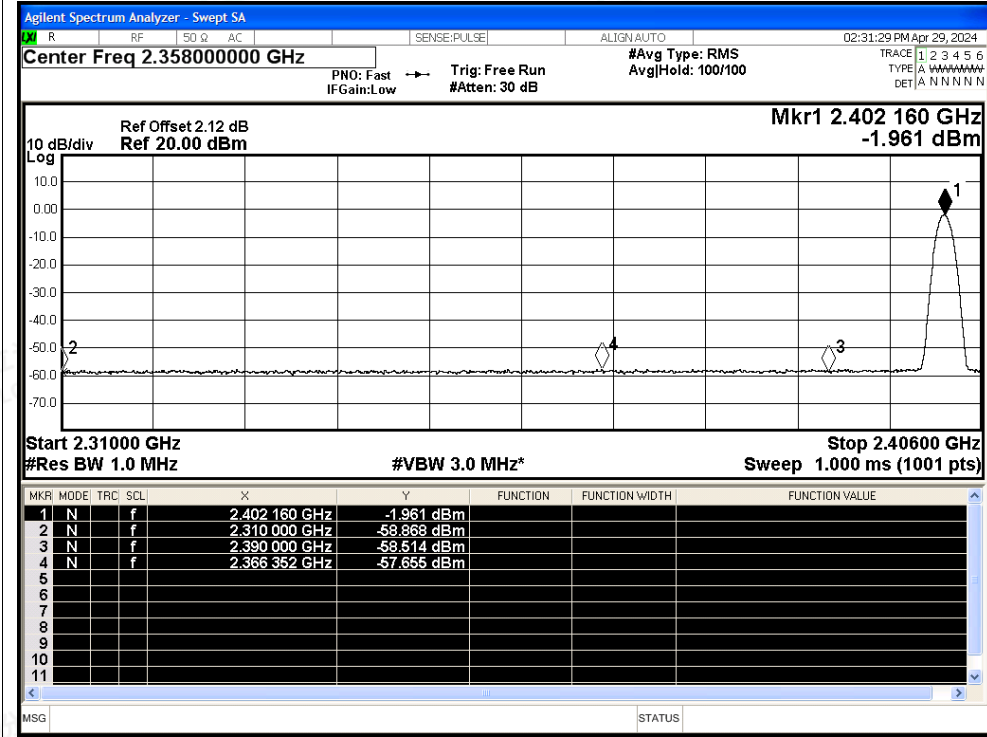


Test Graphs

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

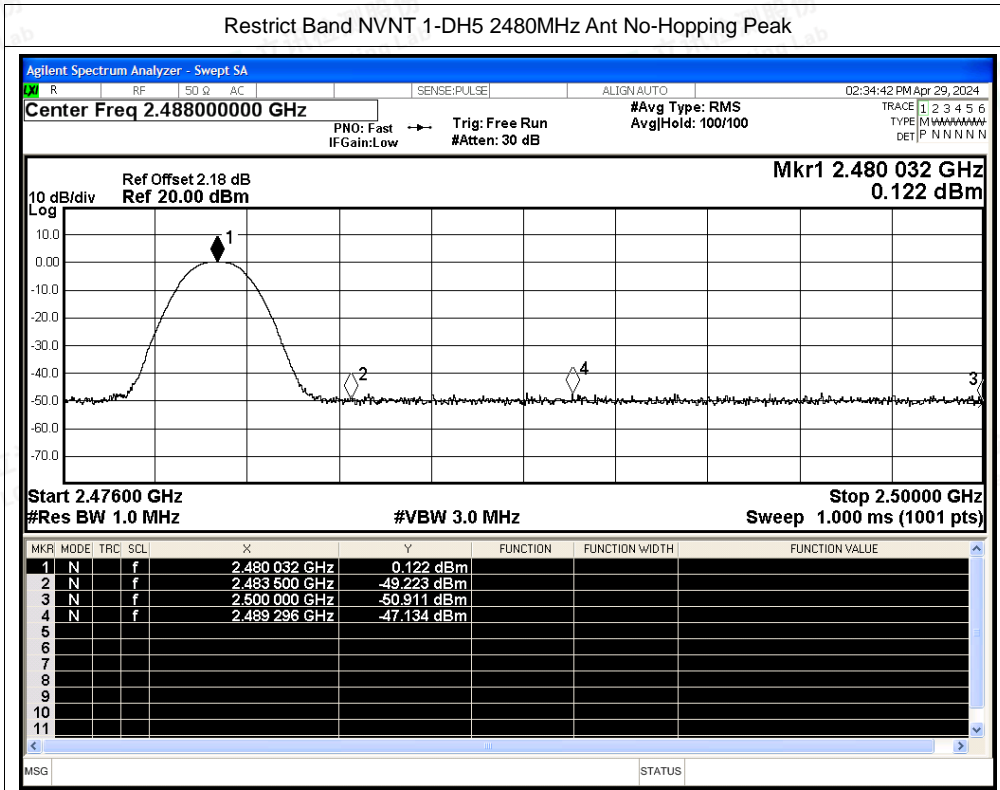


Restrict Band NVNT 1-DH5 2402MHz Ant No-Hopping Average

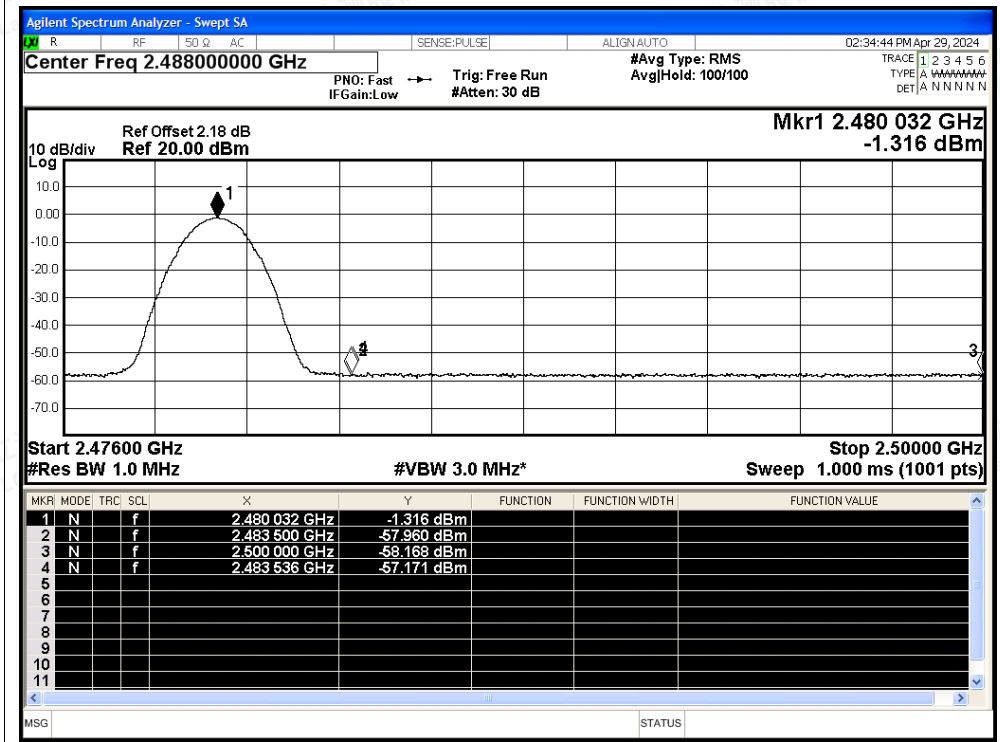




Restrict Band NVNT 1-DH5 2480MHz Ant No-Hopping Peak



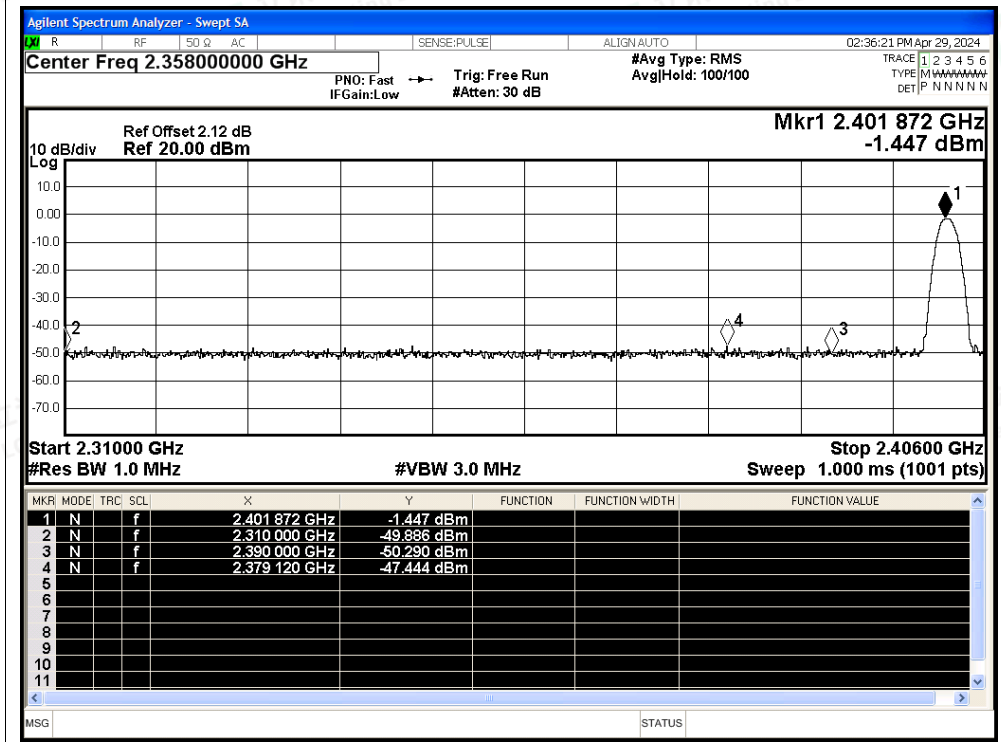
Restrict Band NVNT 1-DH5 2480MHz Ant No-Hopping Average



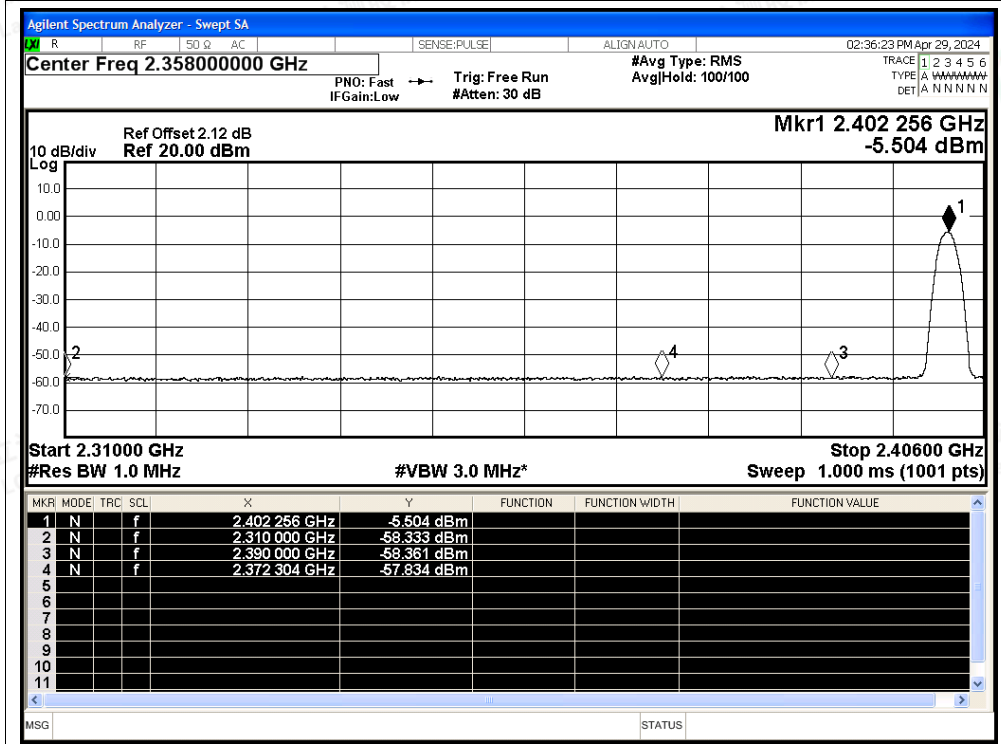




Restrict Band NVNT 2-DH5 2402MHz Ant No-Hopping Peak

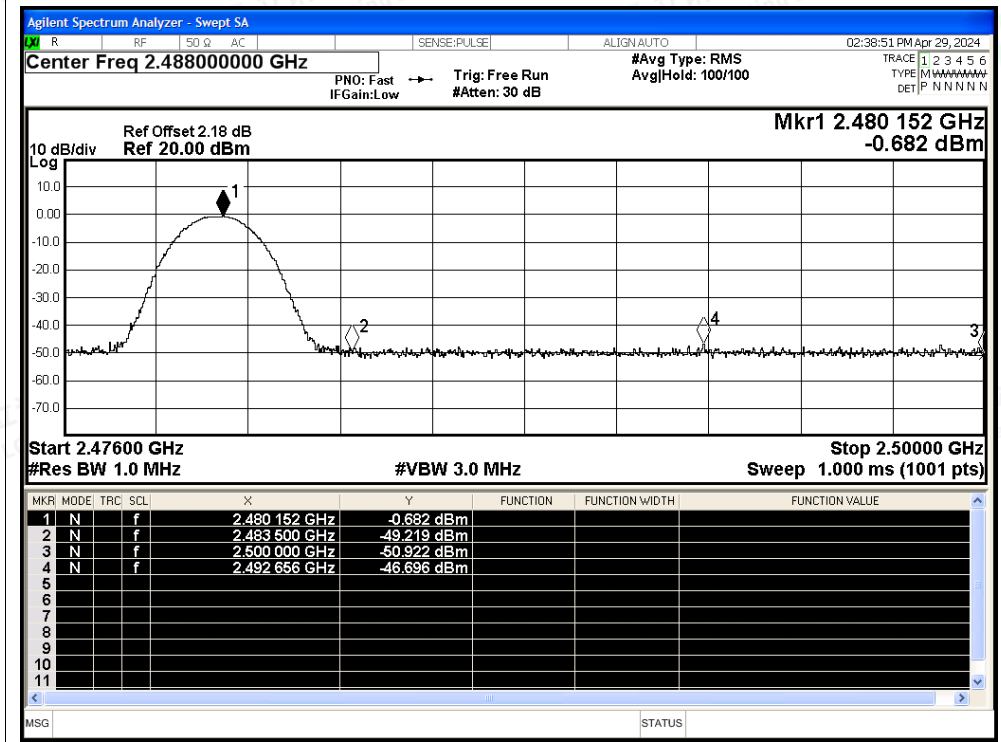


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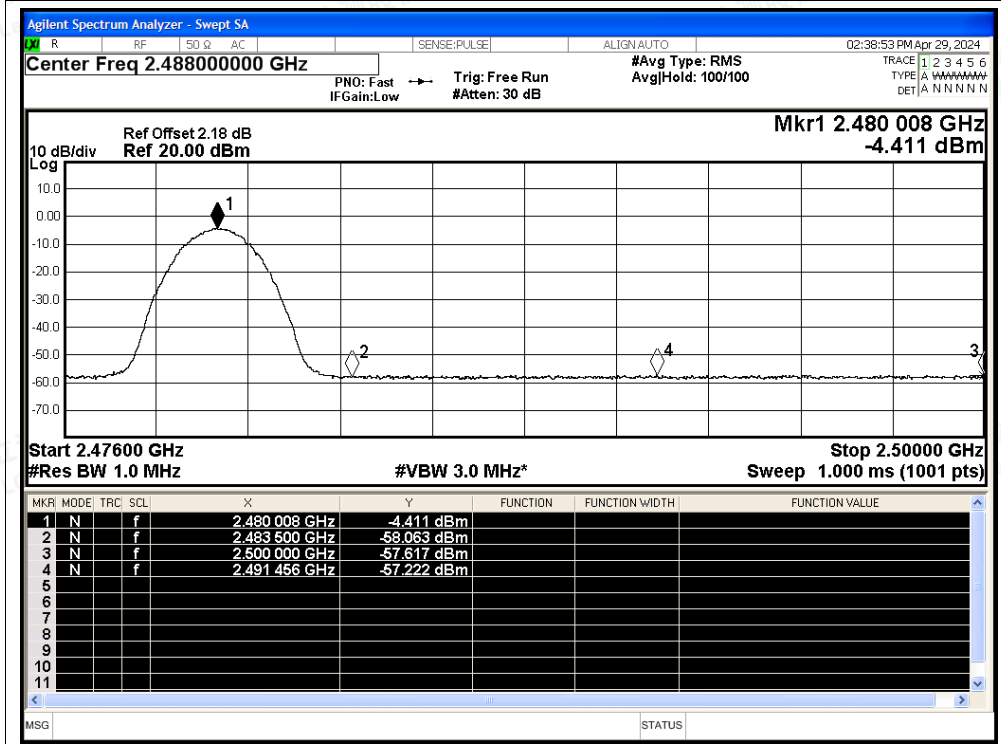




Restrict Band NVNT 2-DH5 2480MHz Ant No-Hopping Peak

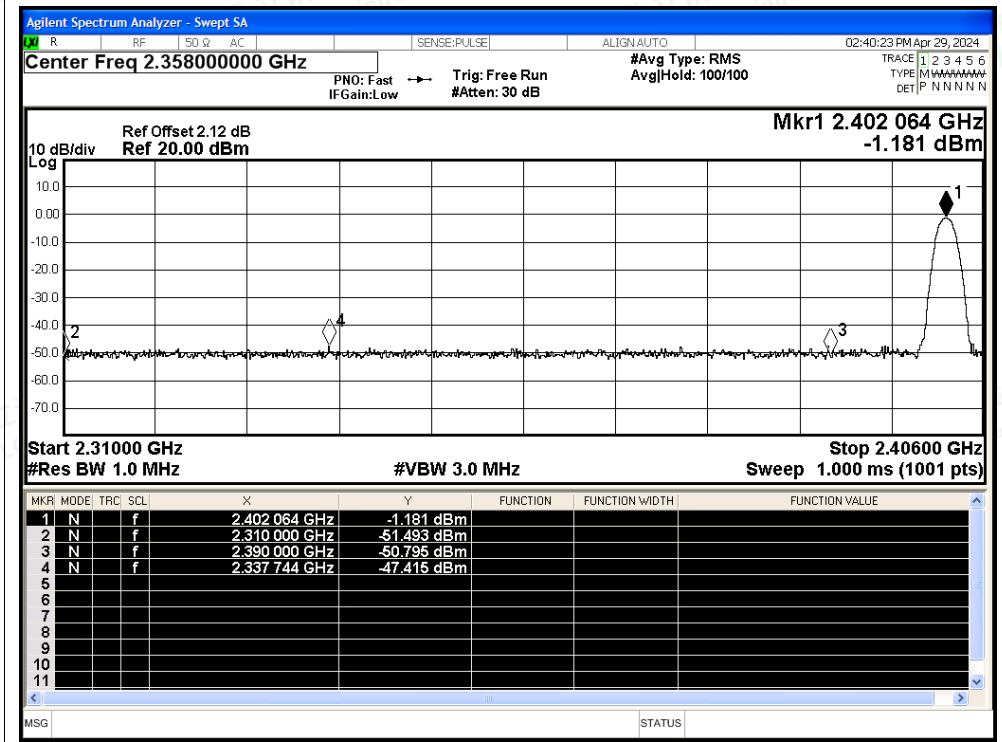


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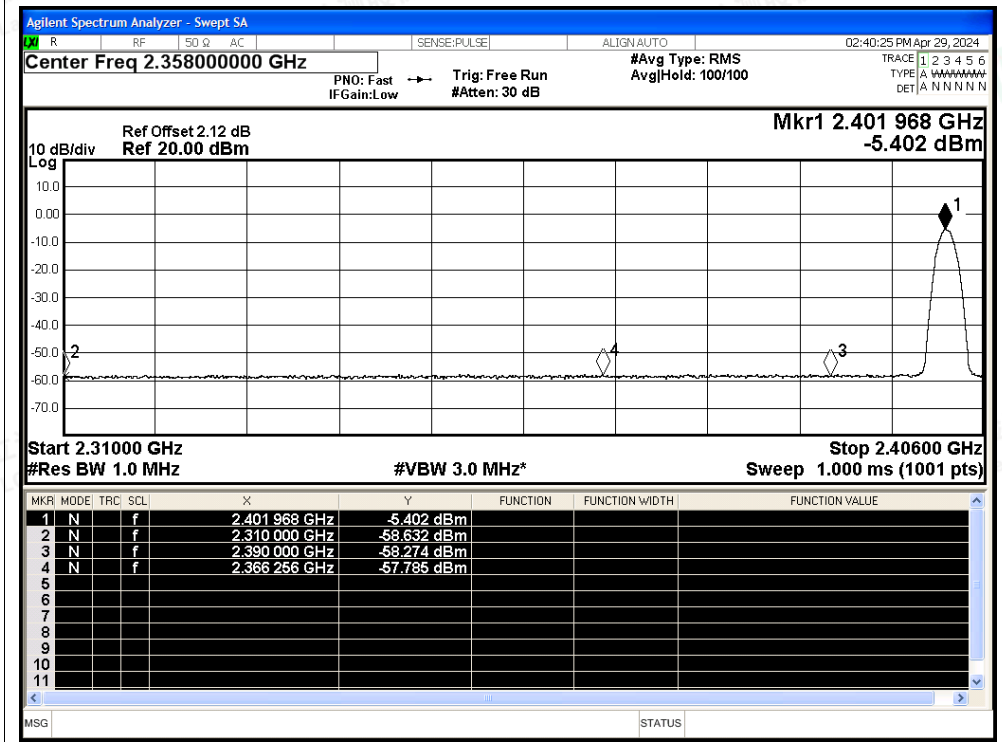




Restrict Band NVNT 3-DH5 2402MHz Ant No-Hopping Peak

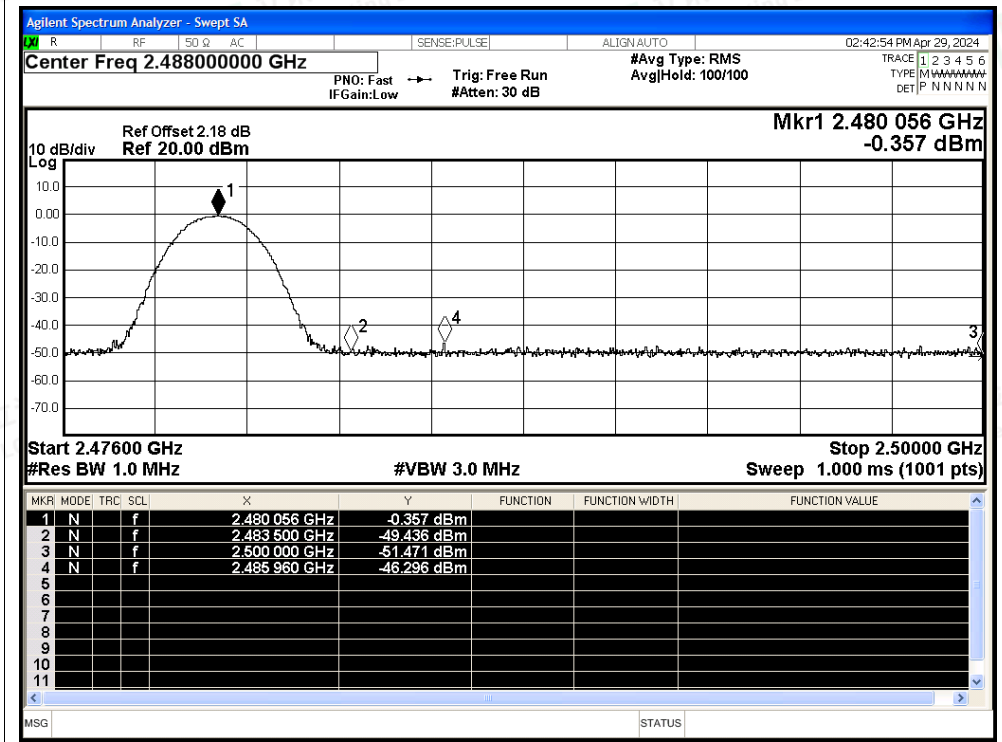


Restrict Band NVNT 3-DH5 2402MHz Ant No-Hopping Average





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



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

