



## Appendix A

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

Product Name: WIRELESS SPEAKER

Test Model: ZEALOT-S78

#### 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	0.971	N/A	Pass
NVNT	1-DH5	2441	Ant	1.024	N/A	Pass
NVNT	1-DH5	2480	Ant	1.024	N/A	Pass
NVNT	2-DH5	2402	Ant	1.278	N/A	Pass
NVNT	2-DH5	2441	Ant	1.307	N/A	Pass
NVNT	2-DH5	2480	Ant	1.29	N/A	Pass
NVNT	3-DH5	2402	Ant	1.274	N/A	Pass
NVNT	3-DH5	2441	Ant	1.311	N/A	Pass
NVNT	3-DH5	2480	Ant	1.299	N/A	Pass



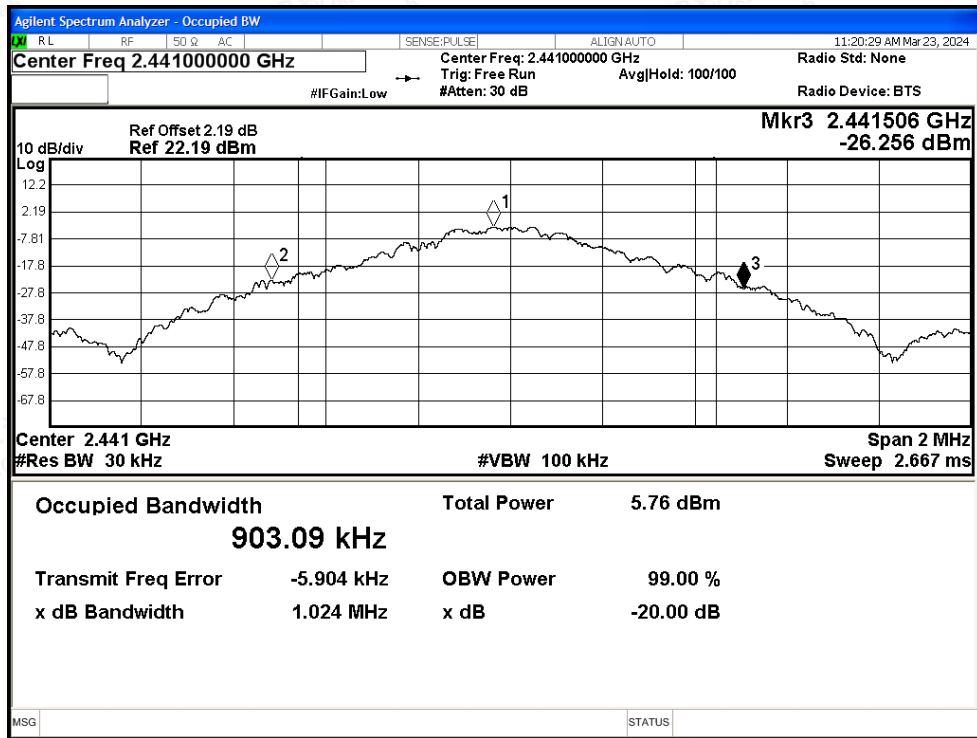


Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant

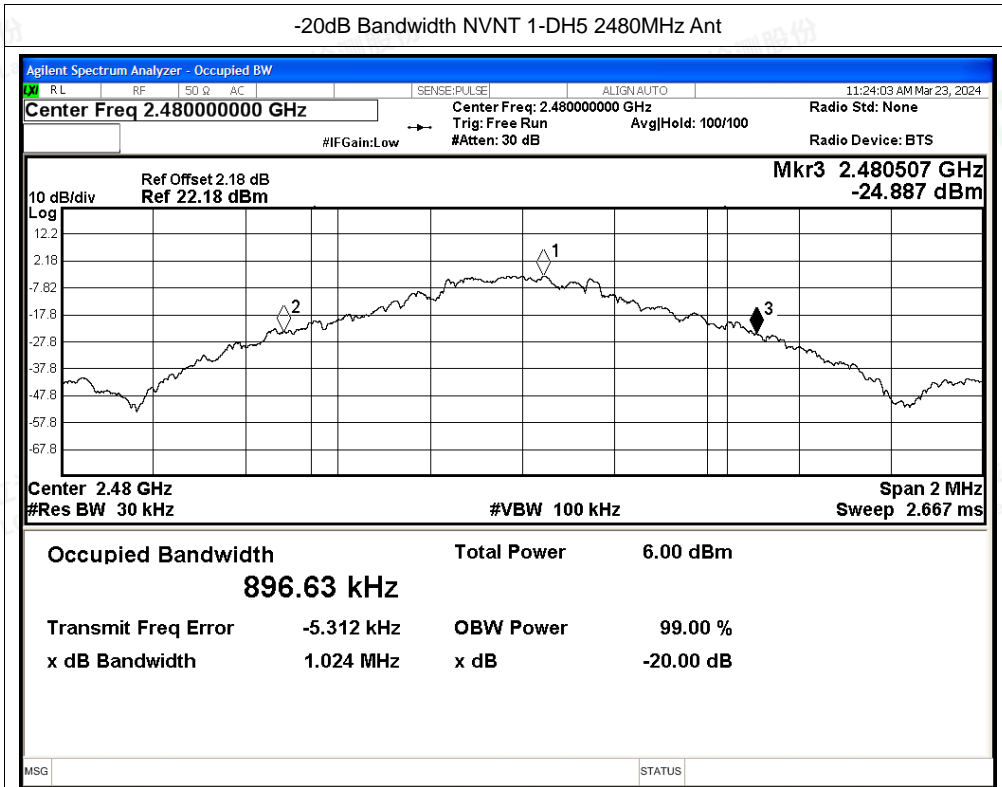


-20dB Bandwidth NVNT 1-DH5 2441MHz Ant

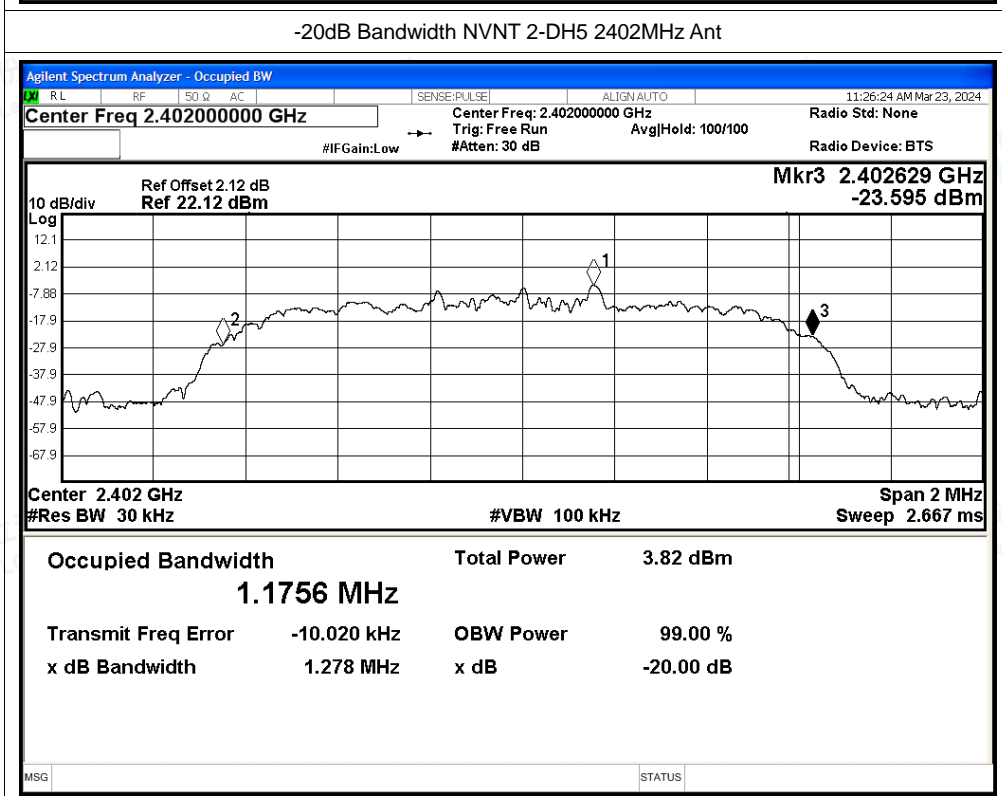




-20dB Bandwidth NVNT 1-DH5 2480MHz Ant

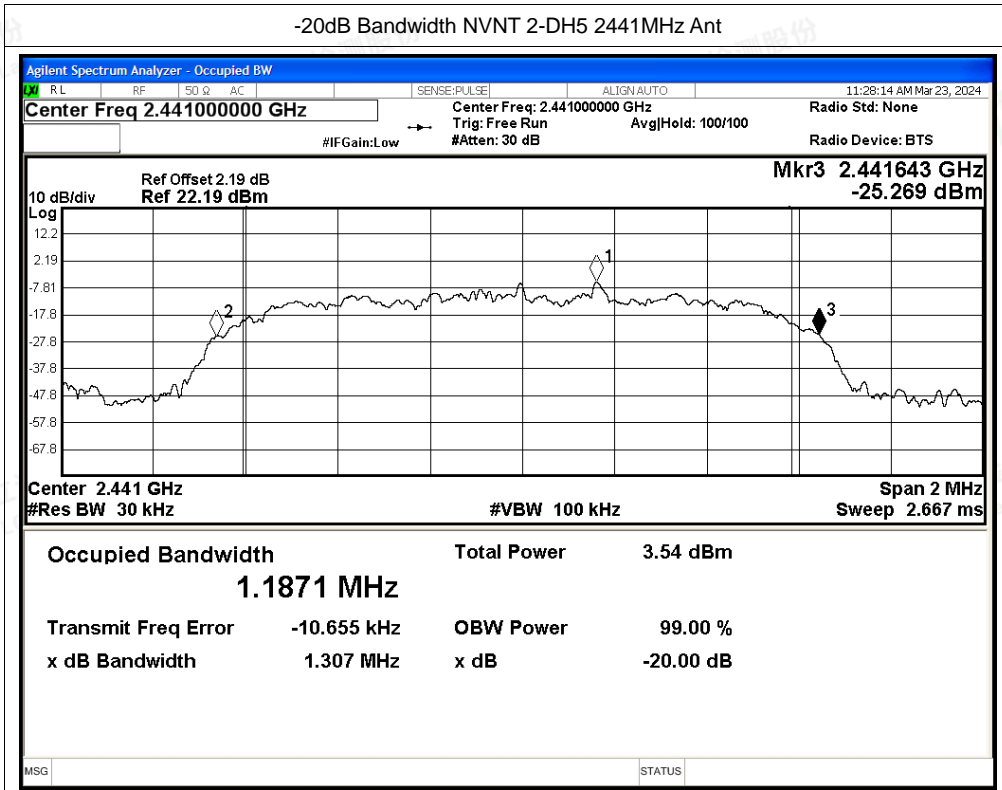


-20dB Bandwidth NVNT 2-DH5 2402MHz Ant

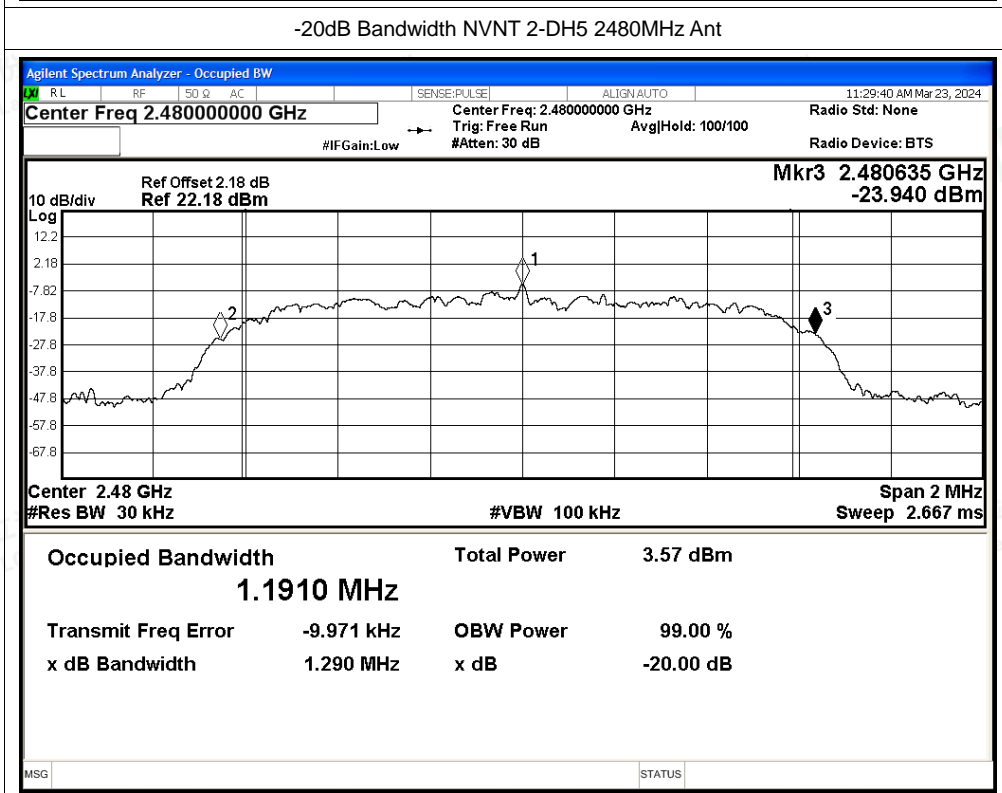




-20dB Bandwidth NVNT 2-DH5 2441MHz Ant

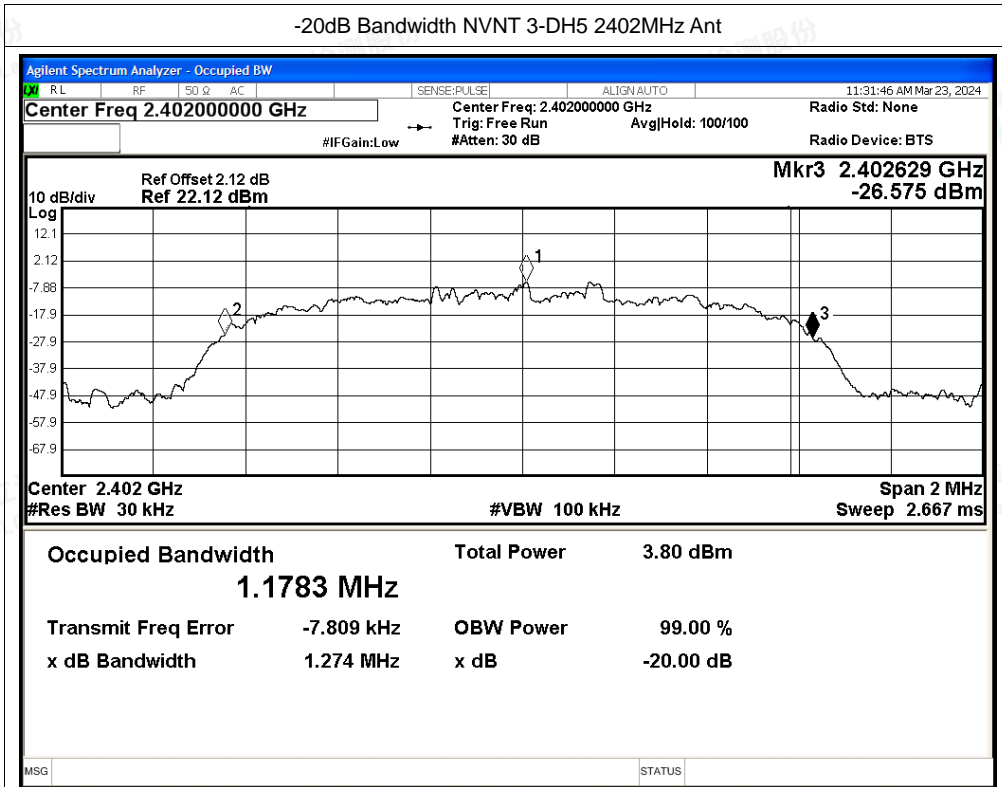


-20dB Bandwidth NVNT 2-DH5 2480MHz Ant

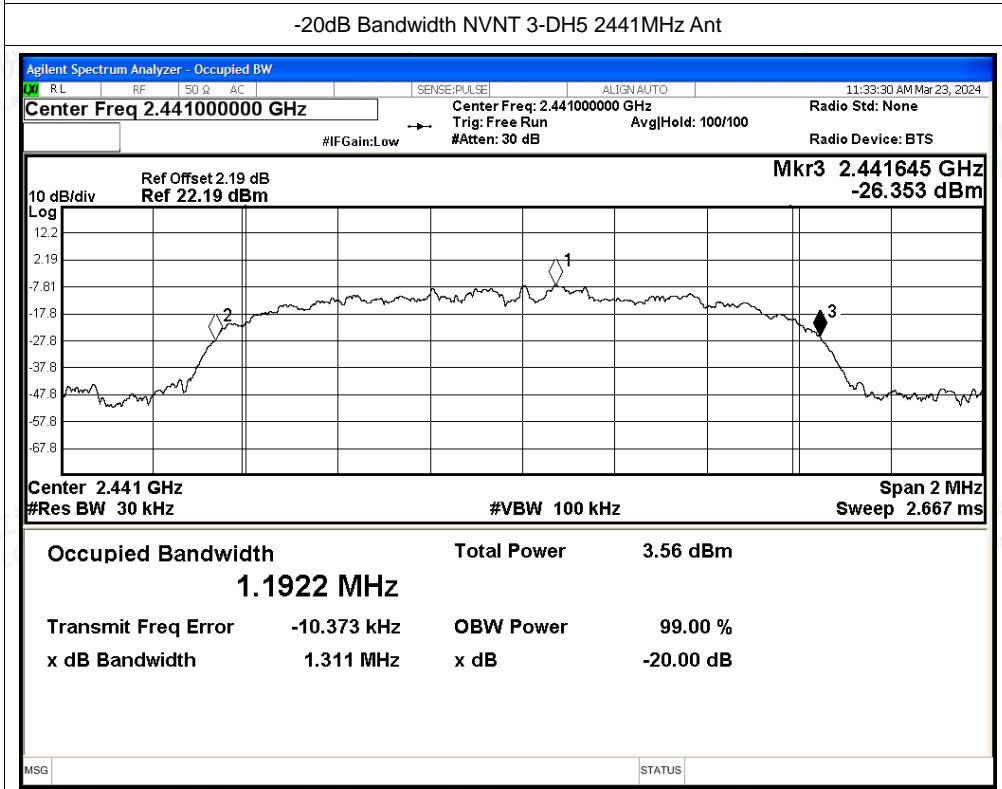


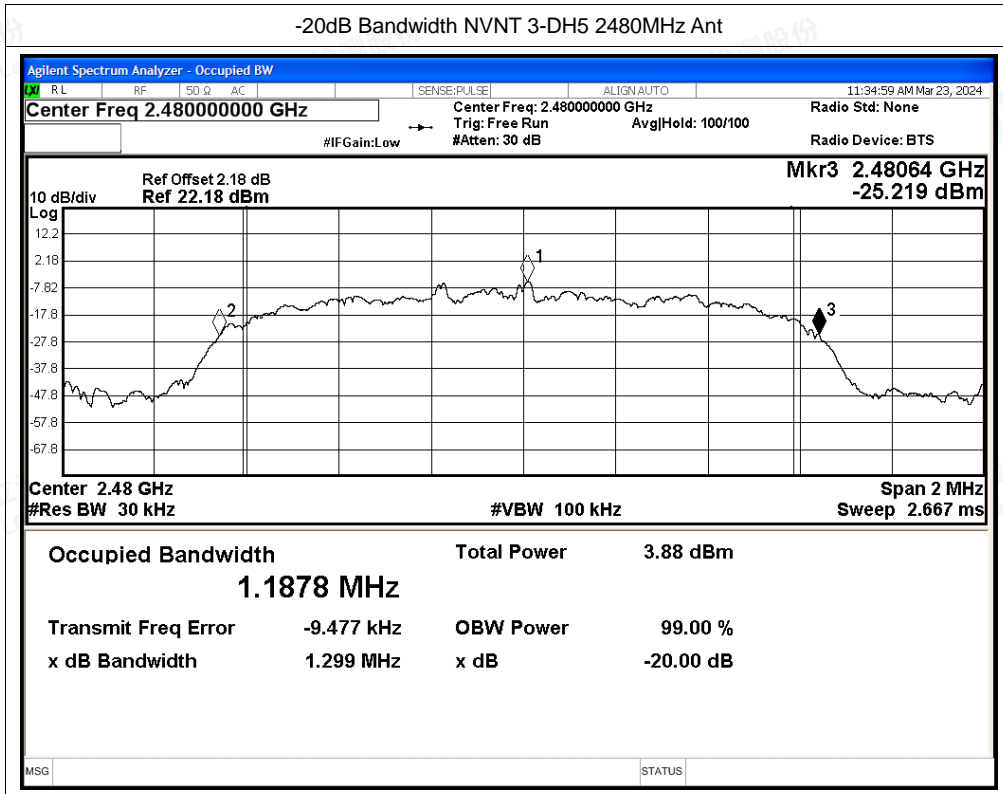


-20dB Bandwidth NVNT 3-DH5 2402MHz Ant



-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	-0.65	21	Pass
NVNT	1-DH5	2441	Ant	-0.41	21	Pass
NVNT	1-DH5	2480	Ant	-0.36	21	Pass
NVNT	2-DH5	2402	Ant	-0.88	21	Pass
NVNT	2-DH5	2441	Ant	-0.61	21	Pass
NVNT	2-DH5	2480	Ant	-0.6	21	Pass
NVNT	3-DH5	2402	Ant	-0.8	21	Pass
NVNT	3-DH5	2441	Ant	-0.54	21	Pass
NVNT	3-DH5	2480	Ant	-0.48	21	Pass

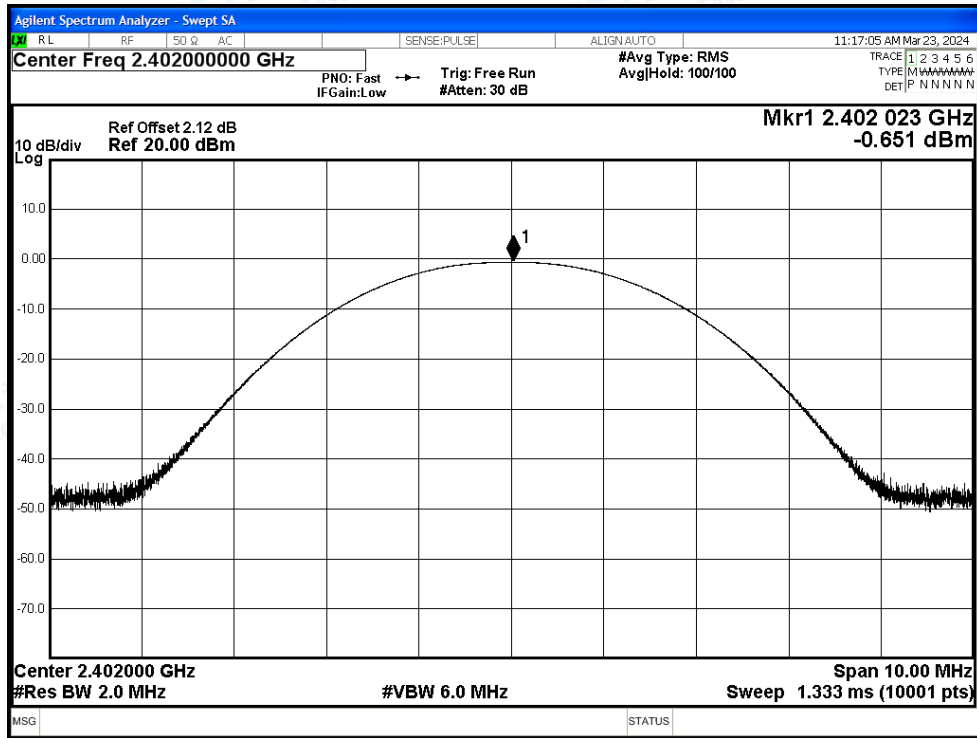




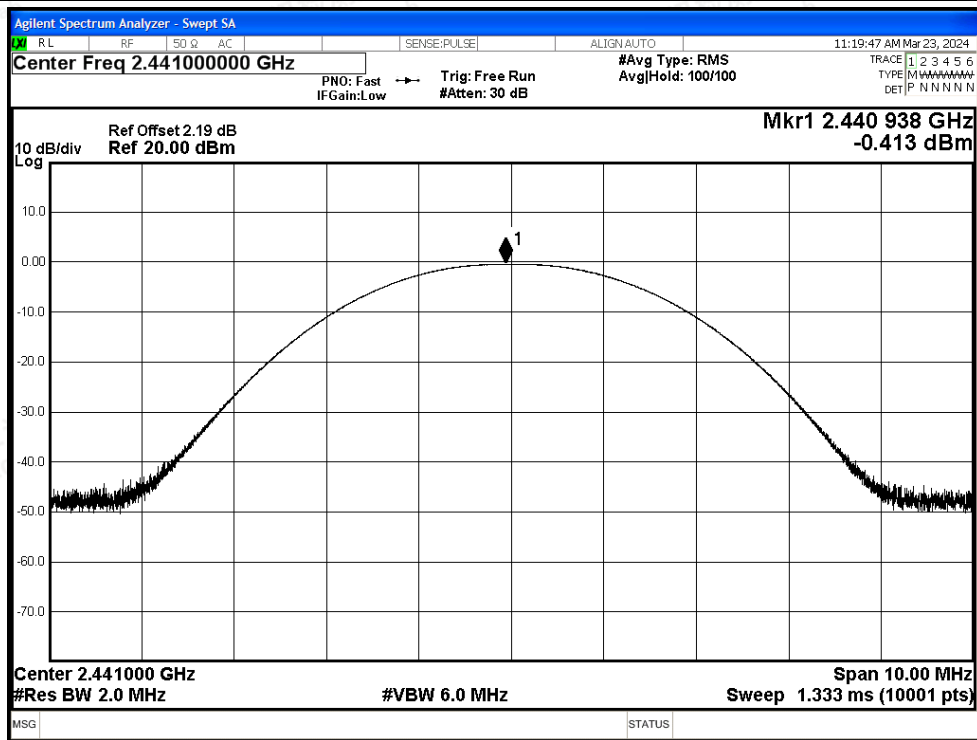


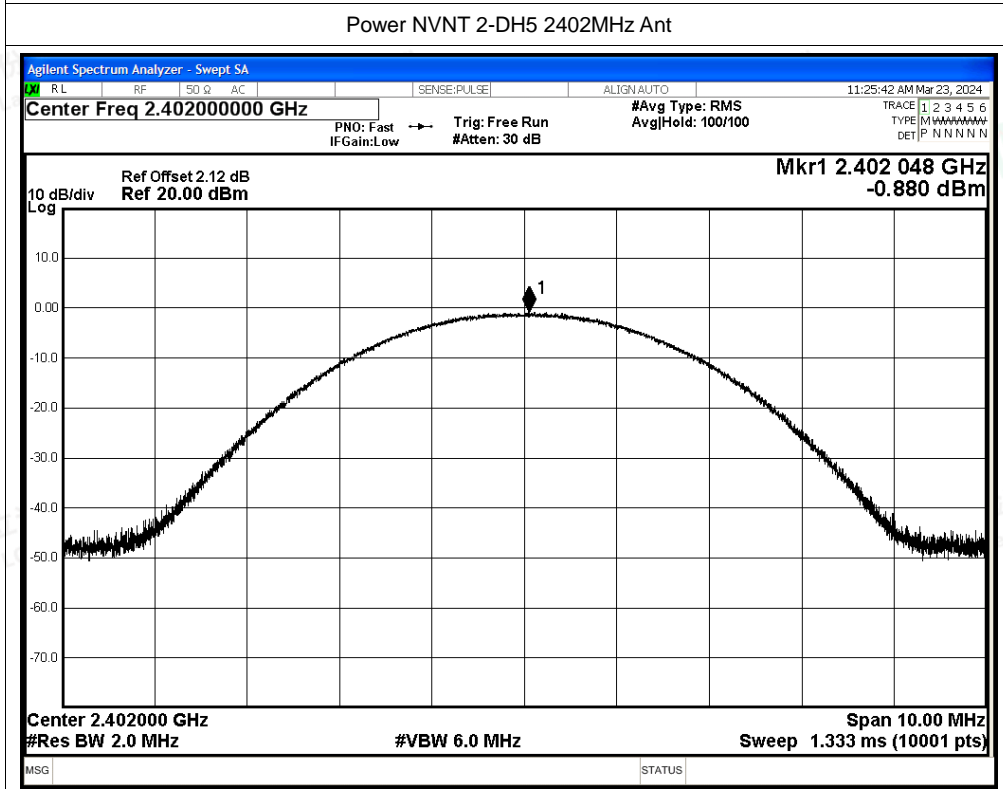
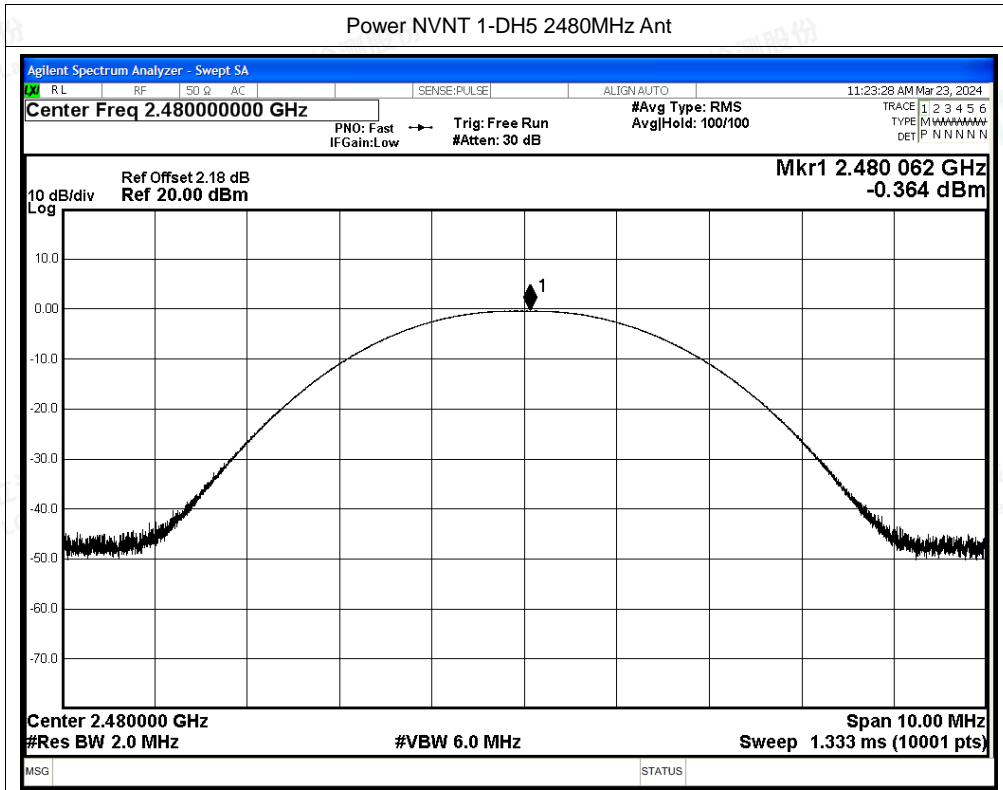
Test Graphs

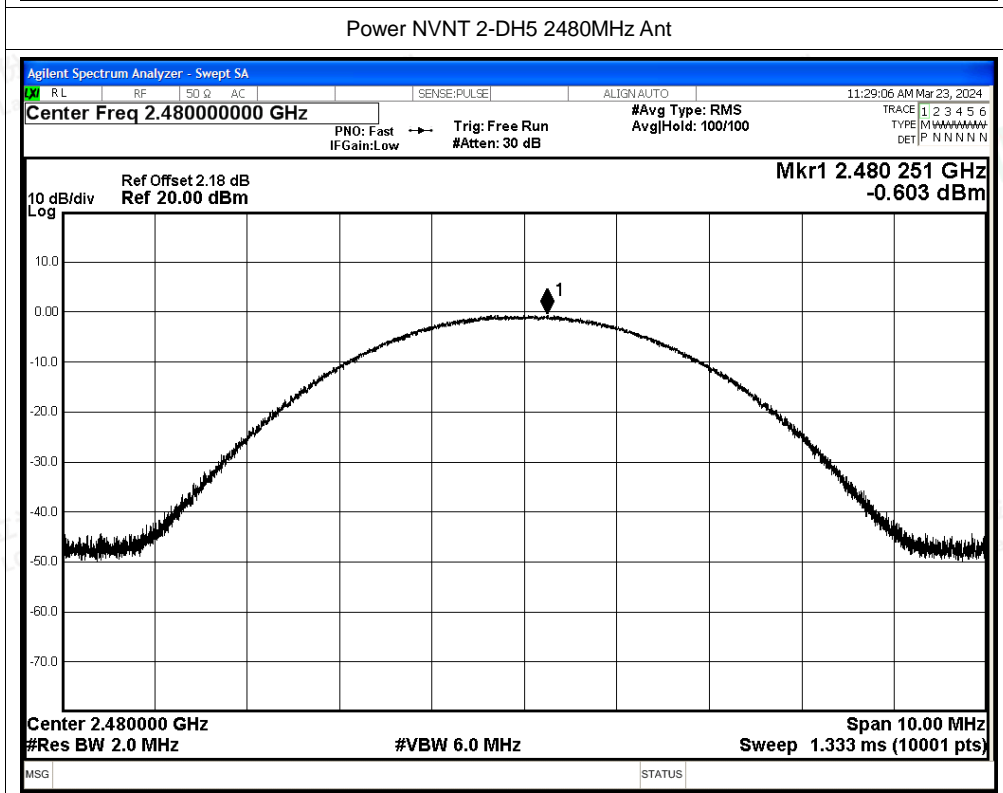
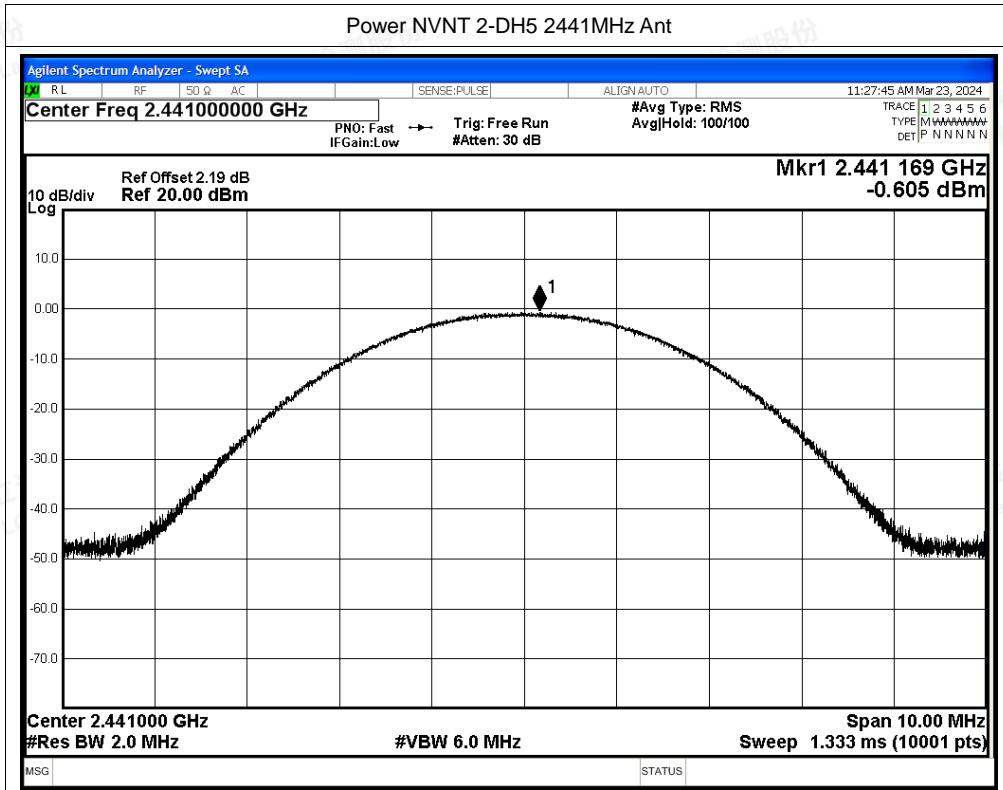
Power NVNT 1-DH5 2402MHz Ant

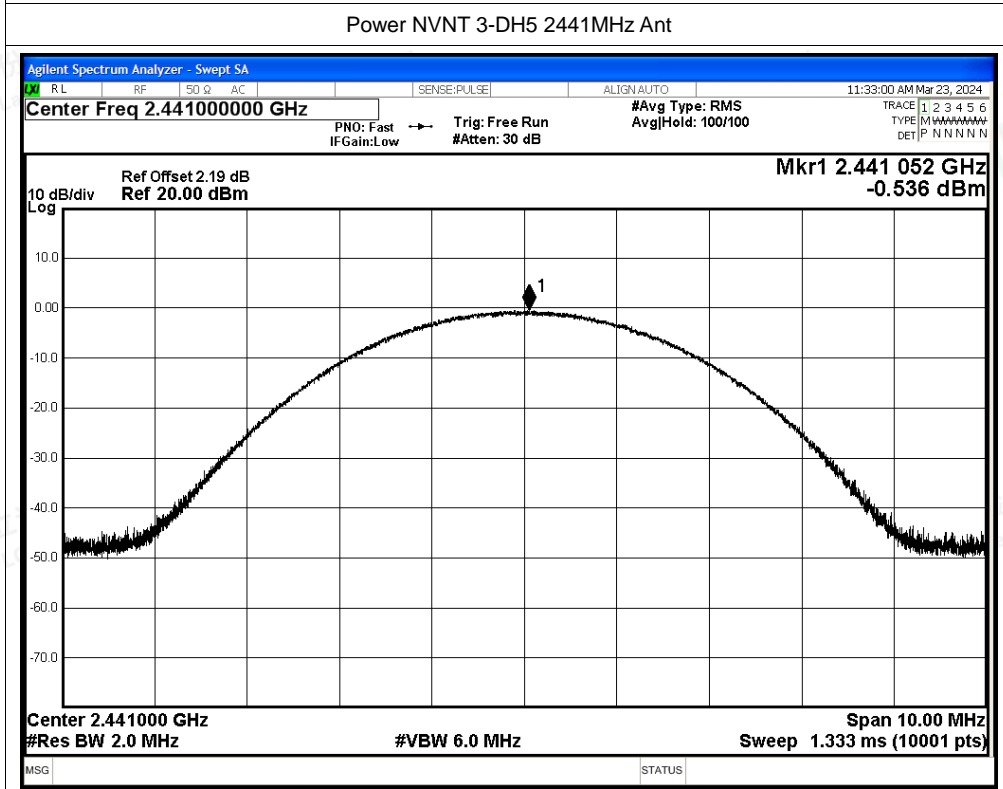
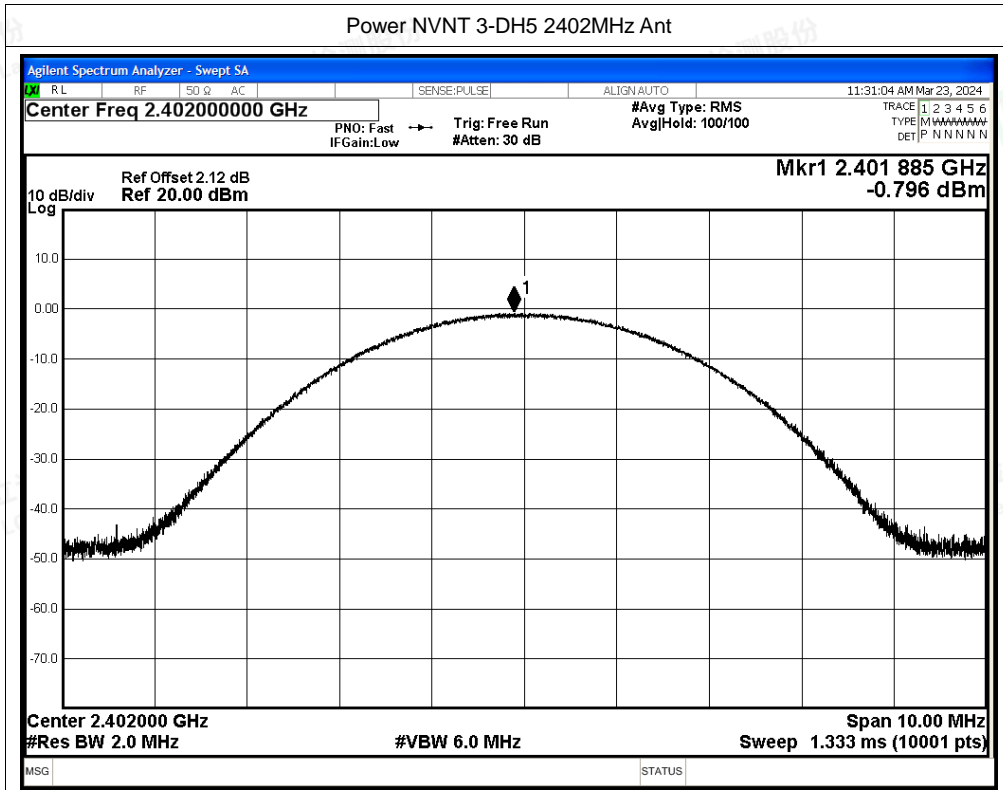


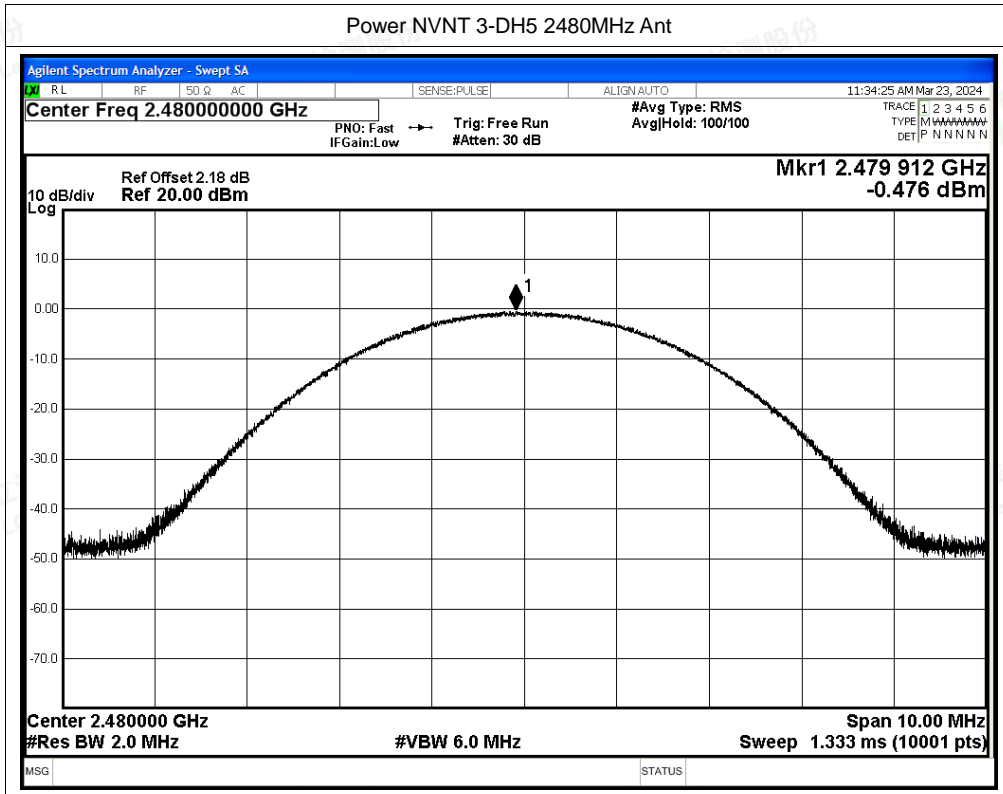
Power NVNT 1-DH5 2441MHz Ant













### A.3 Carrier Frequencies Separation

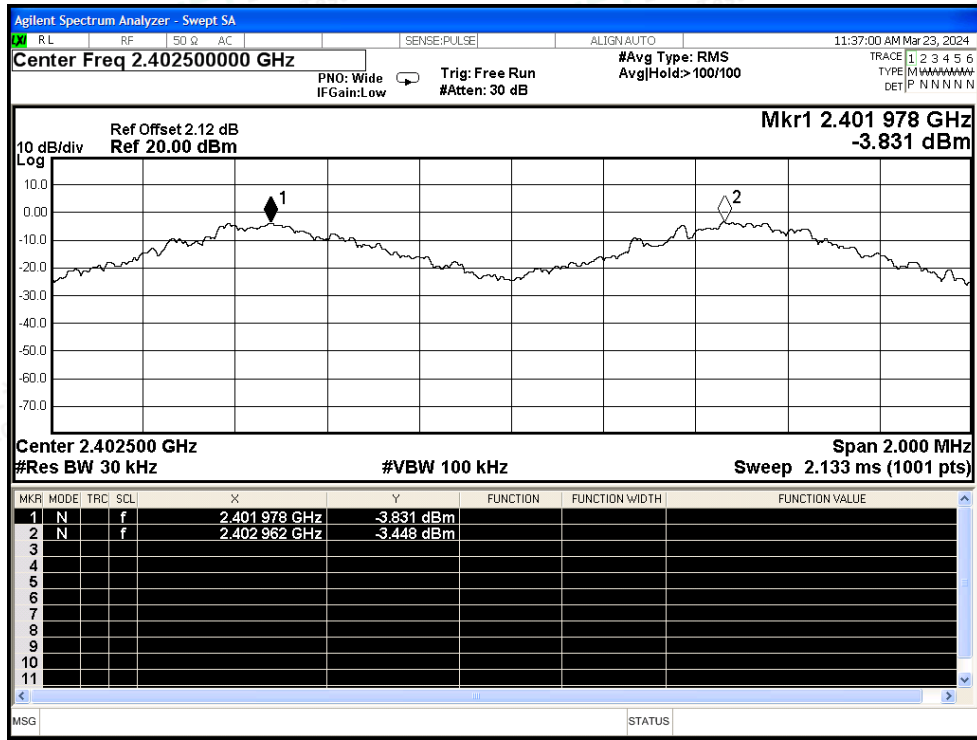
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant	2401.978	2402.962	0.984	0.683	Pass
NVNT	2-DH5	Ant	2402.018	2403.014	0.996	0.871	Pass
NVNT	3-DH5	Ant	2402.144	2403.004	0.86	0.874	Pass



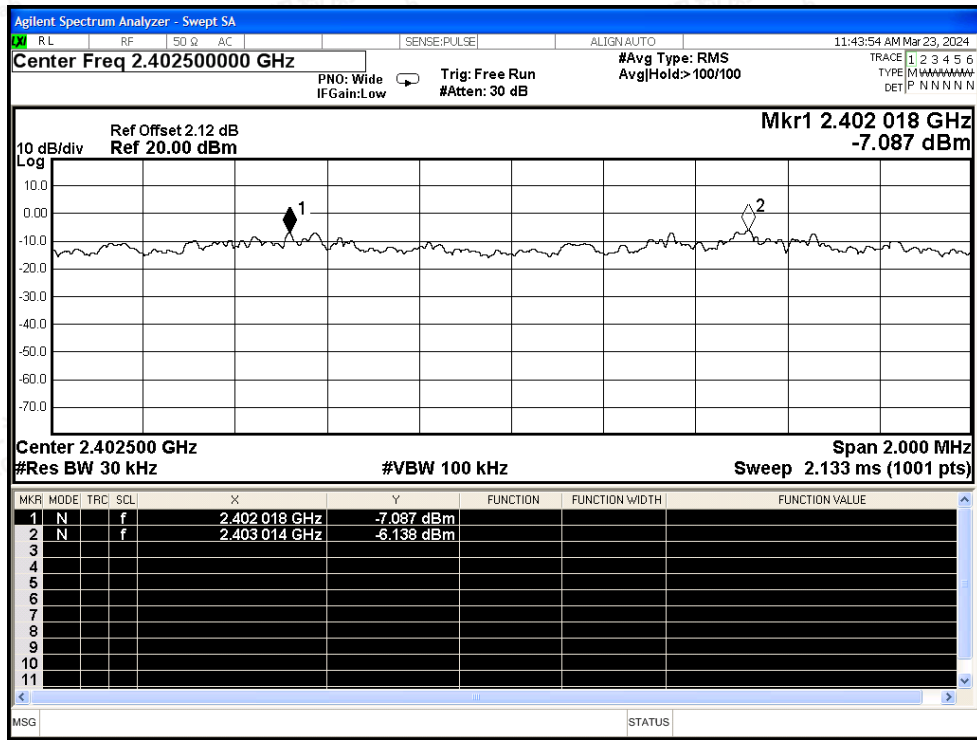


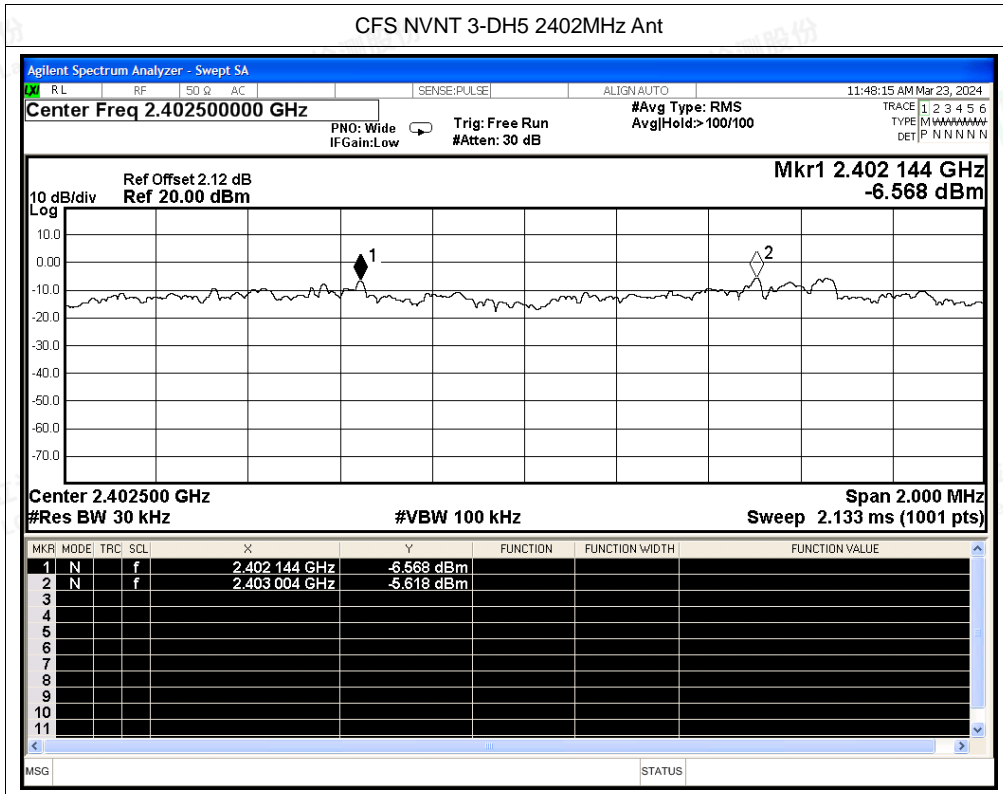
Test Graphs

CFS NVNT 1-DH5 2402MHz Ant



CFS NVNT 2-DH5 2402MHz Ant









### A.4 Dwell Time

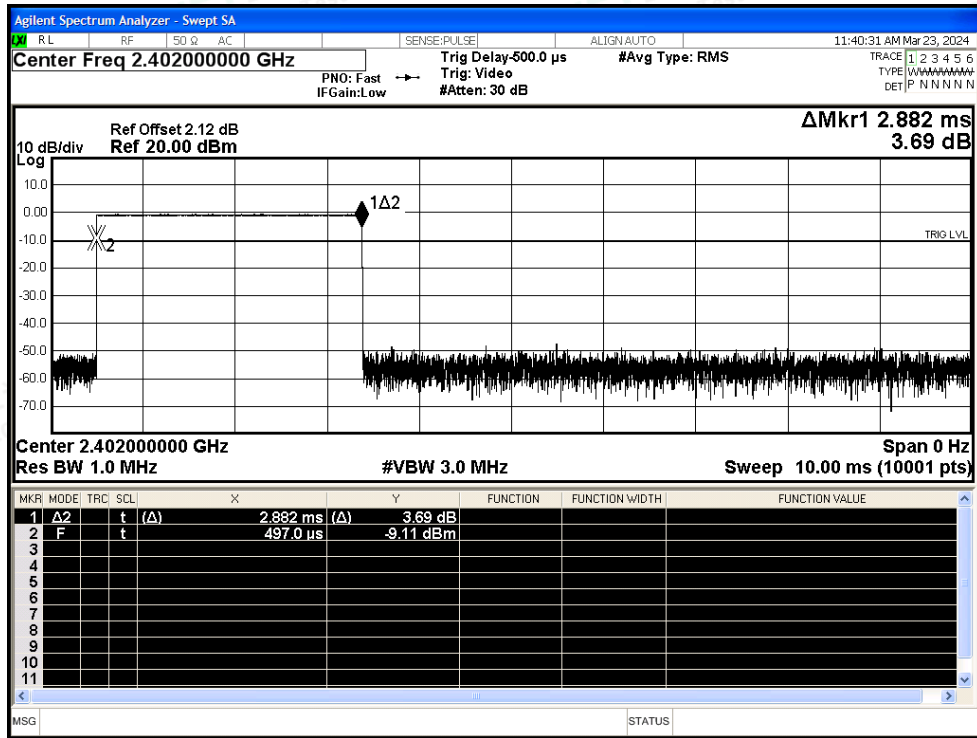
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant	2.882	288.2	100	31600	400	Pass
NVNT	2-DH5	2402	Ant	2.885	294.27	102	31600	400	Pass
NVNT	3-DH5	2402	Ant	2.886	285.714	99	31600	400	Pass



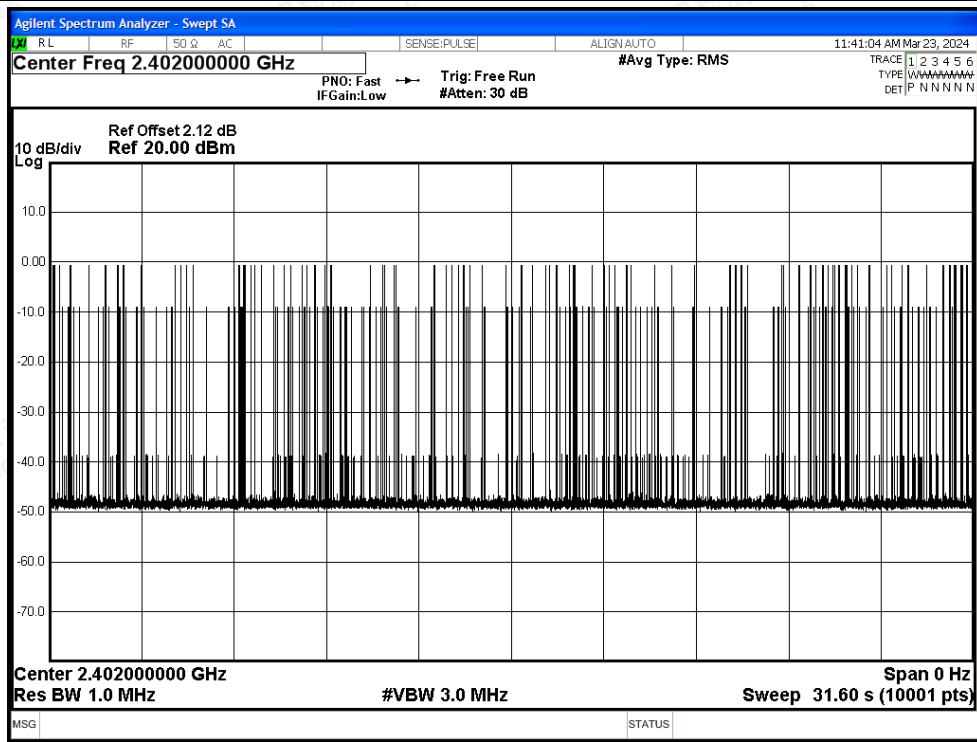


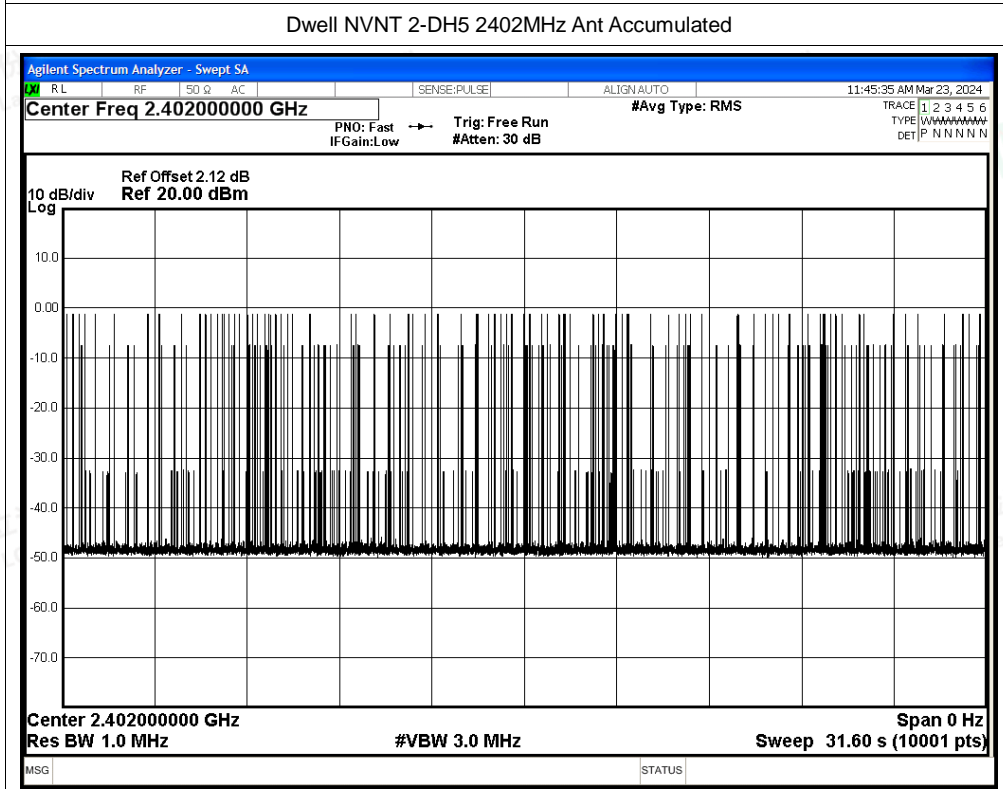
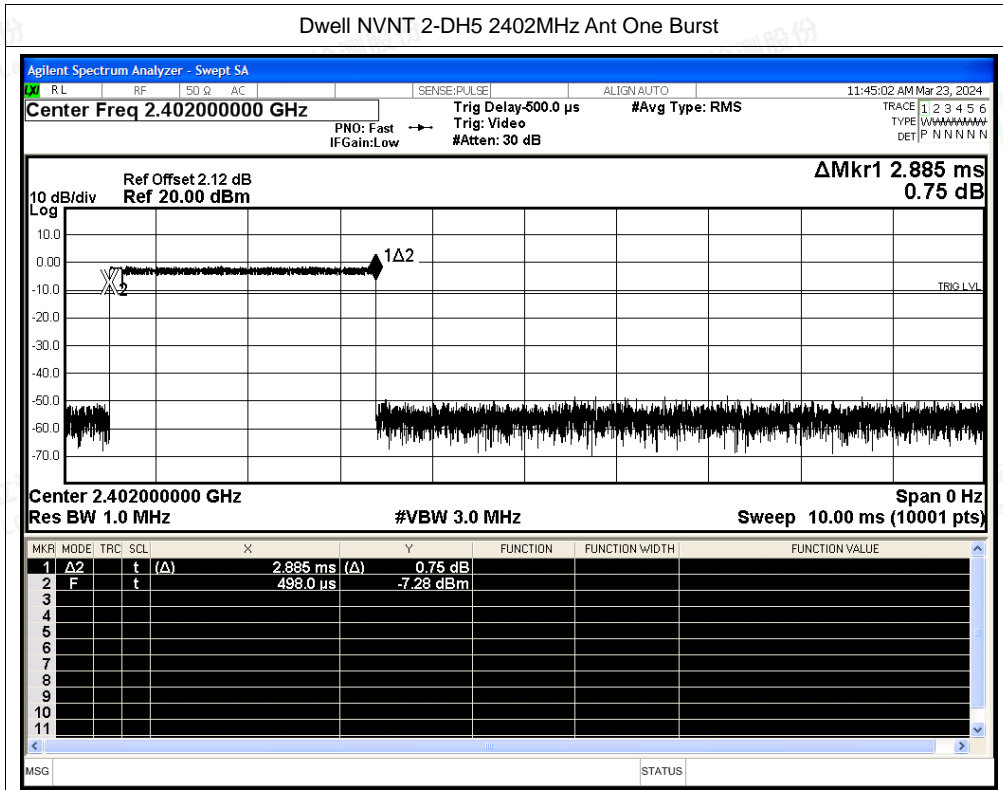
Test Graphs

Dwell NVNT 1-DH5 2402MHz Ant One Burst



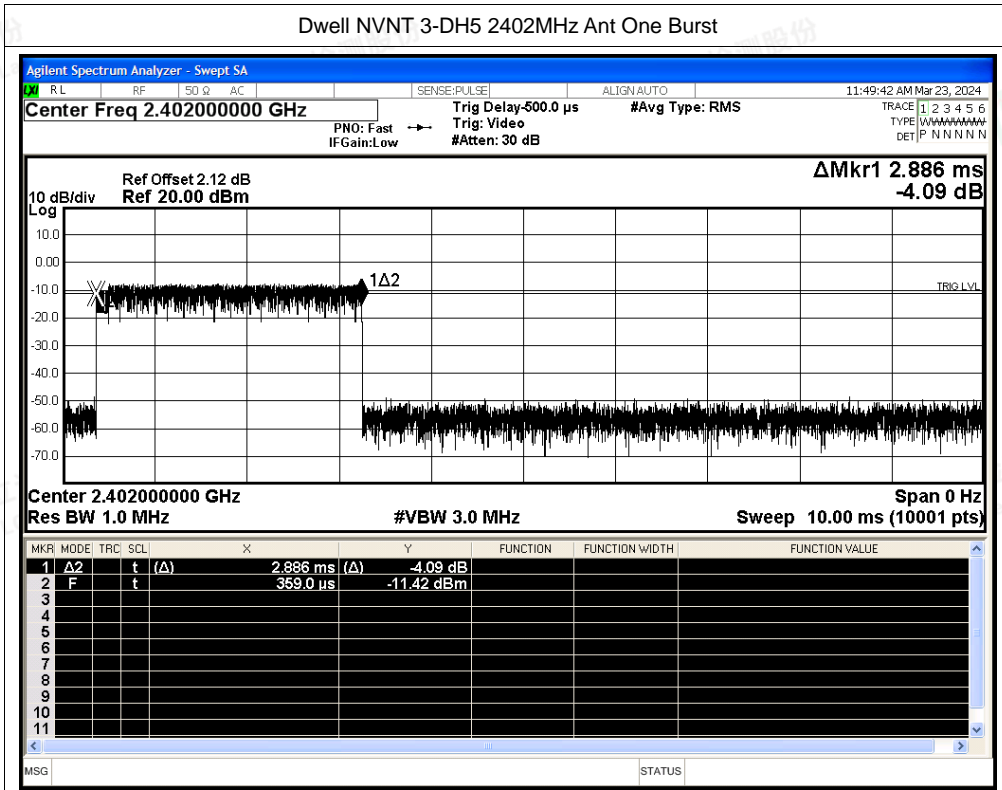
Dwell NVNT 1-DH5 2402MHz Ant Accumulated



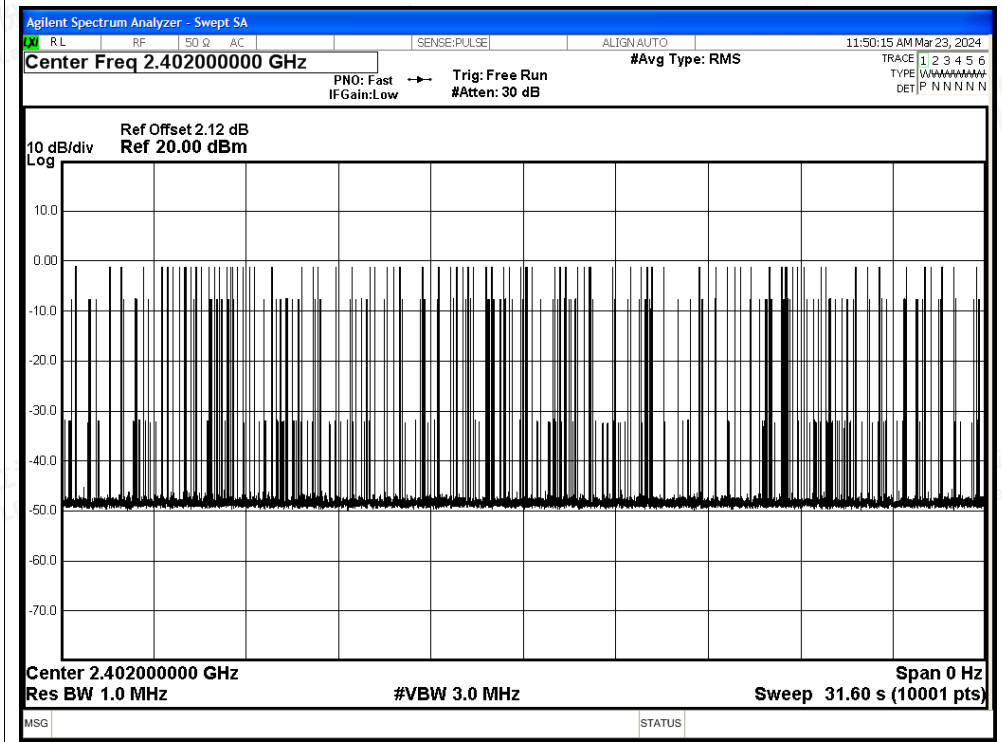




Dwell NVNT 3-DH5 2402MHz Ant One Burst



Dwell NVNT 3-DH5 2402MHz Ant Accumulated





## A.5 Number of Hopping Channel

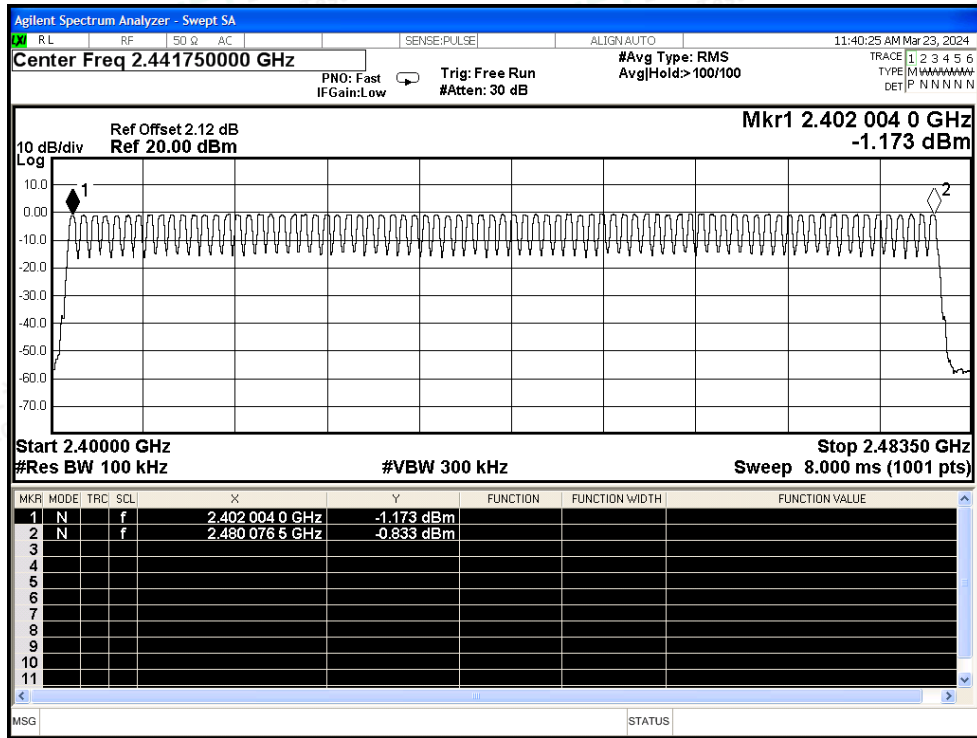
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant	79	15	Pass
NVNT	2-DH5	Ant	79	15	Pass
NVNT	3-DH5	Ant	79	15	Pass



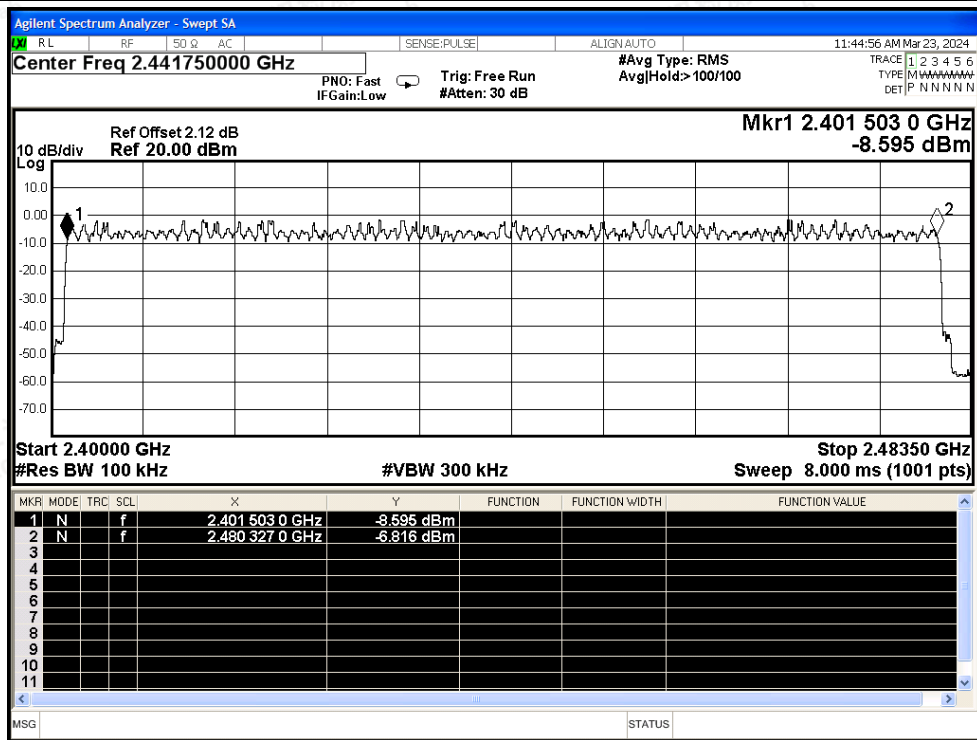


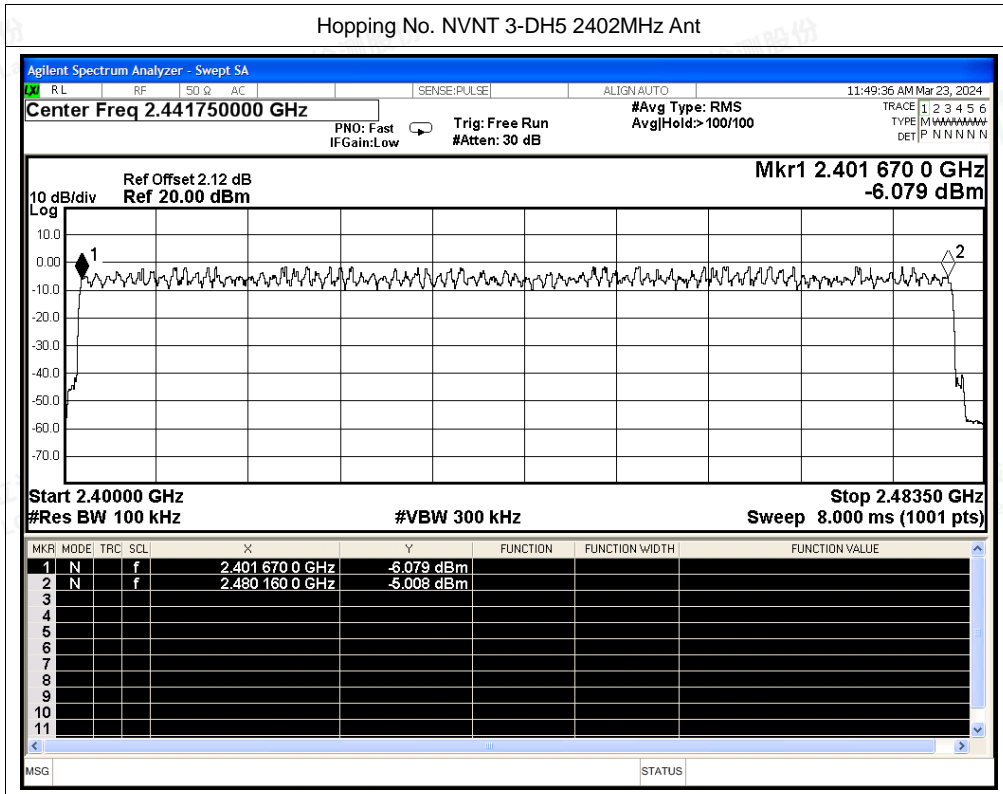
Test Graphs

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	-54.86	-20	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	-56.66	-20	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	-54.24	-20	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	-53.15	-20	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	-51.98	-20	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	-55.12	-20	Pass

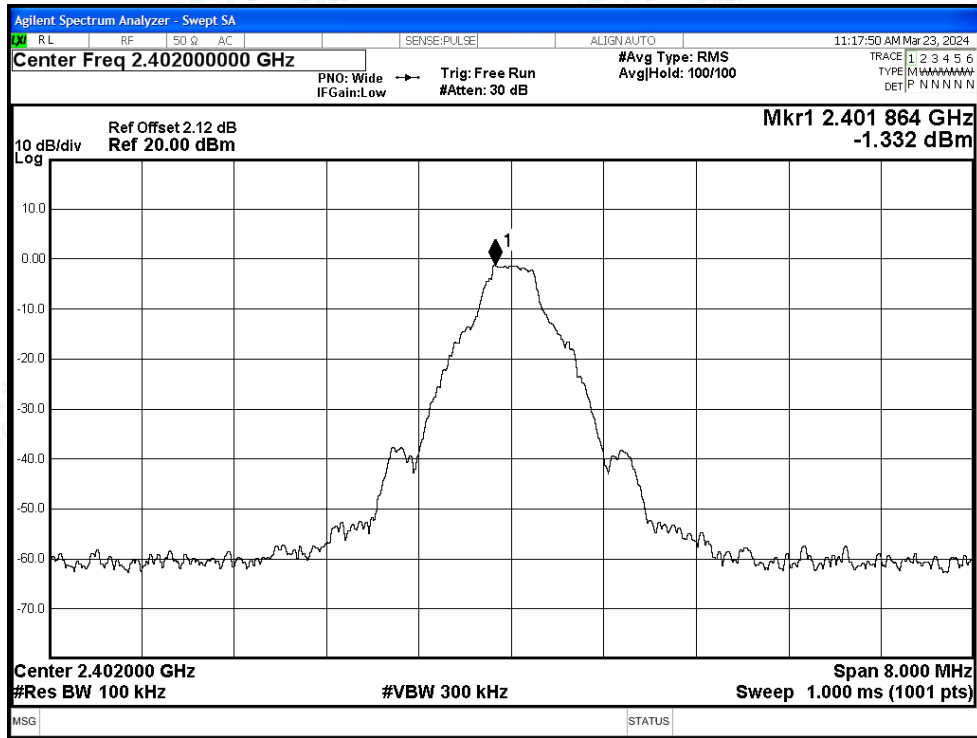




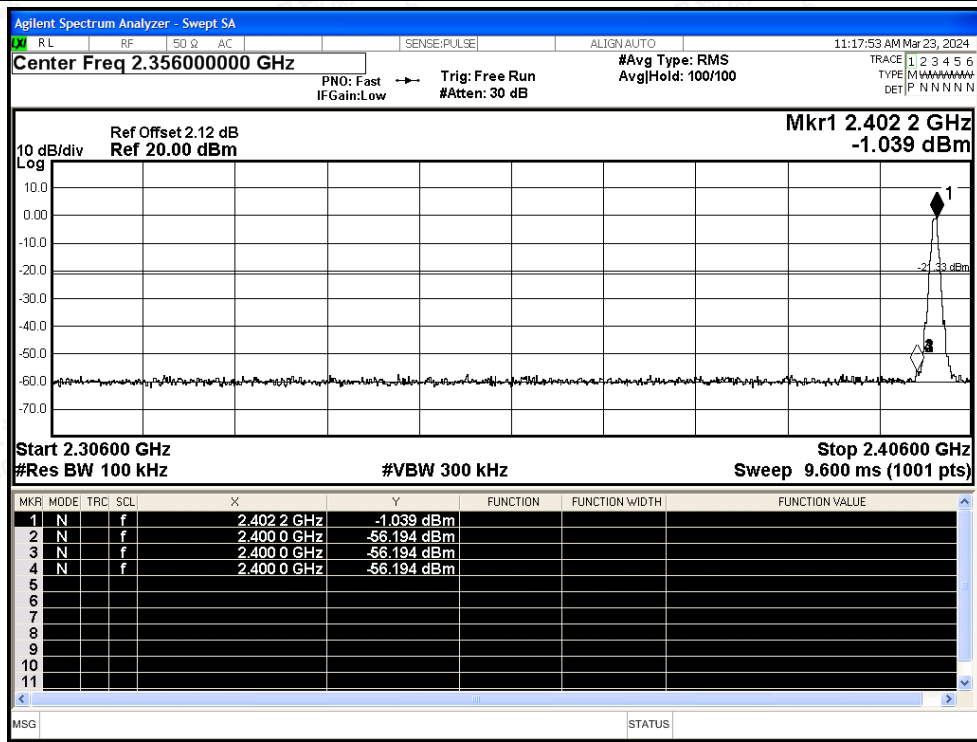


Test Graphs

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

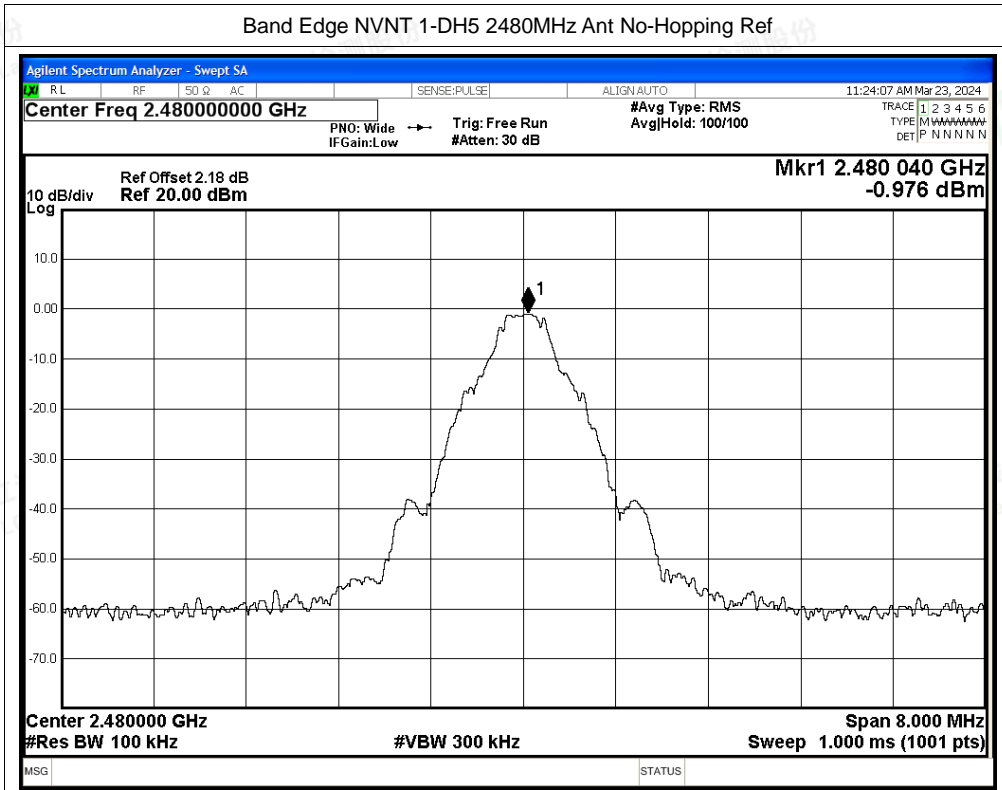


Band Edge NVNT 1-DH5 2402MHz Ant No-Hopping Emission

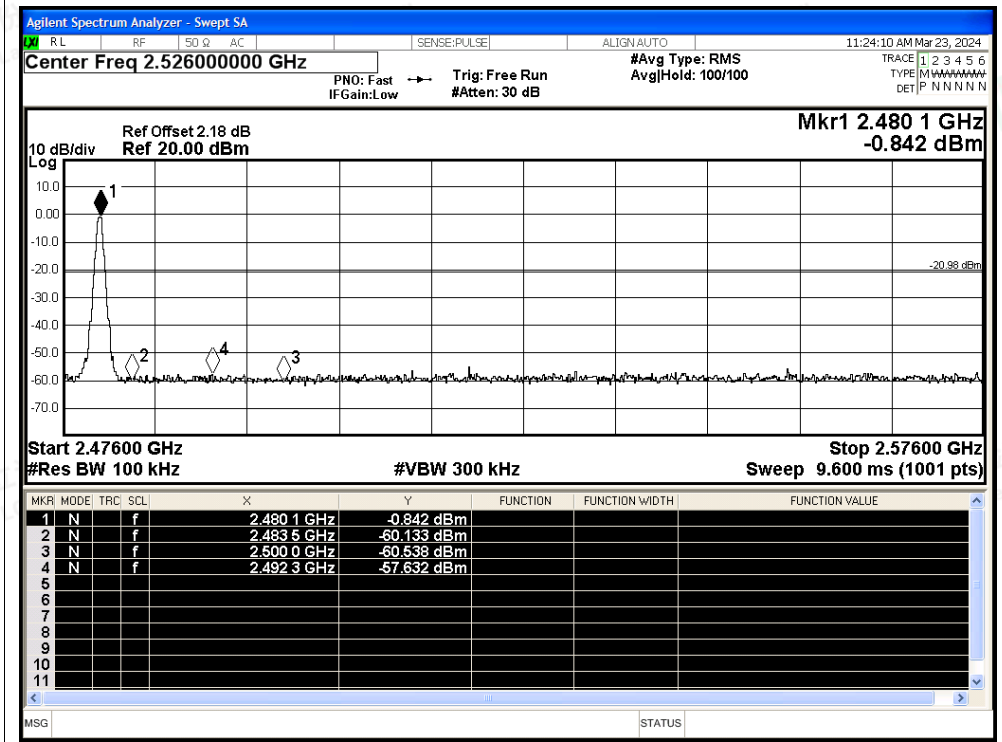




Band Edge NVNT 1-DH5 2480MHz Ant No-Hopping Ref

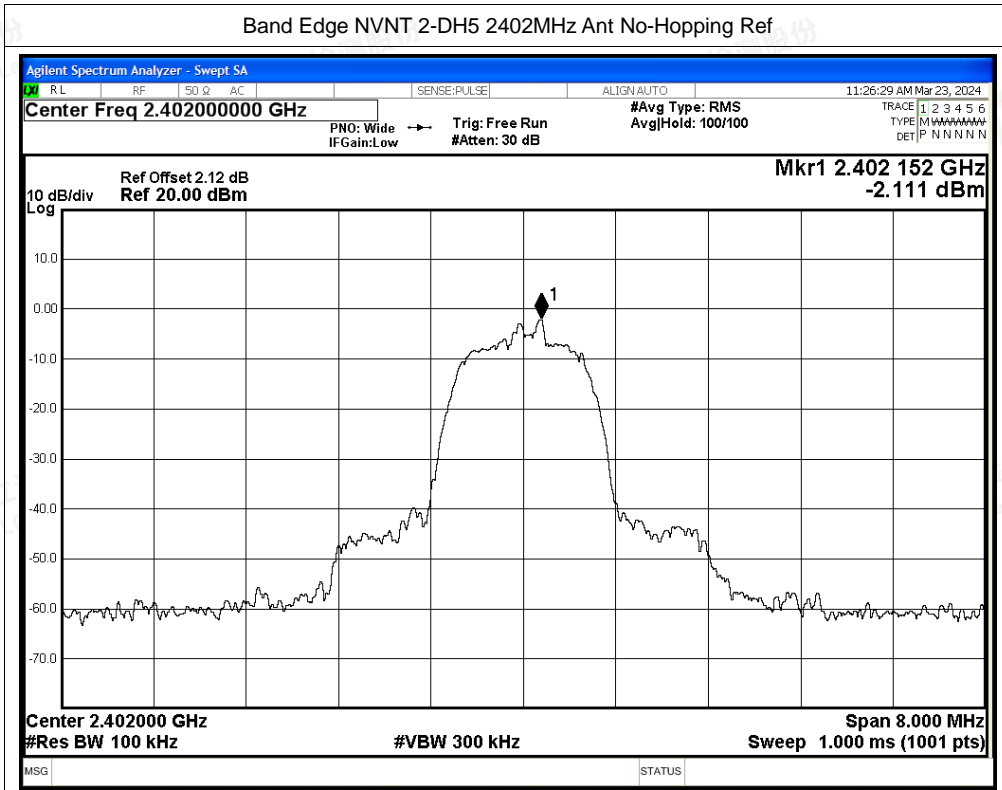


Band Edge NVNT 1-DH5 2480MHz Ant No-Hopping Emission

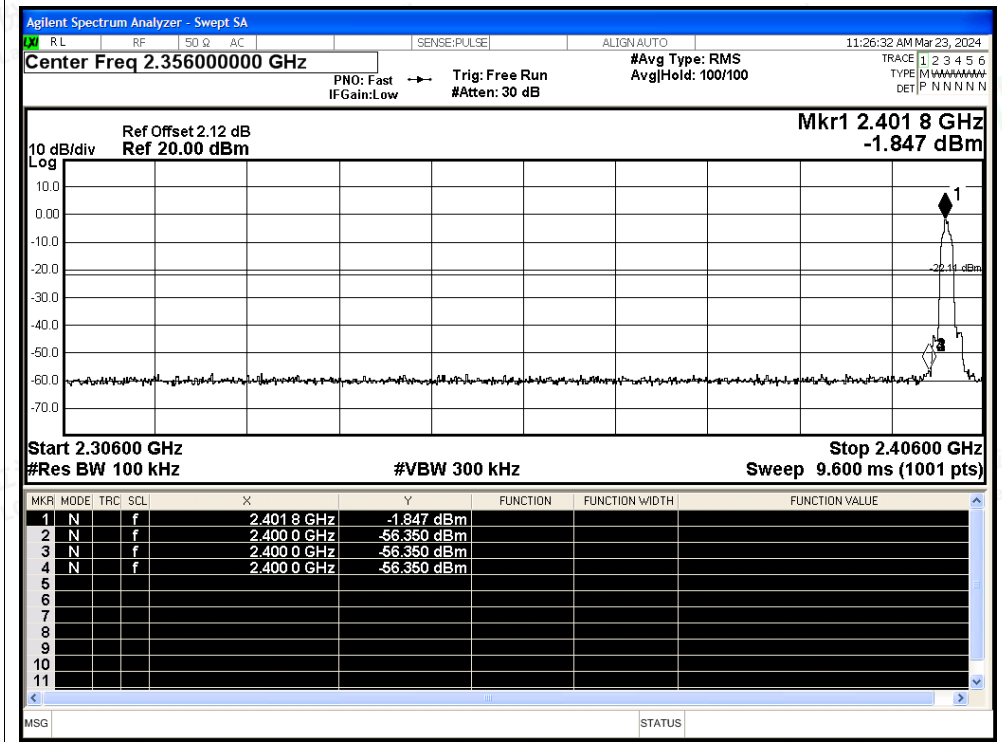




Band Edge NVNT 2-DH5 2402MHz Ant No-Hopping Ref

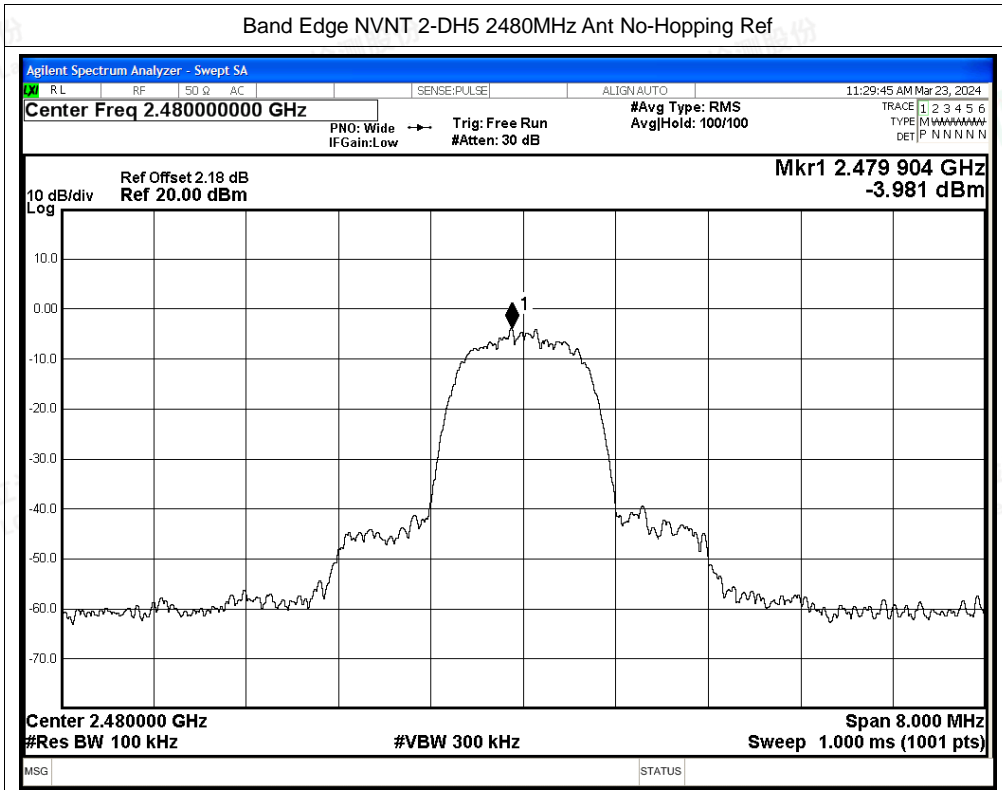


Band Edge NVNT 2-DH5 2402MHz Ant No-Hopping Emission

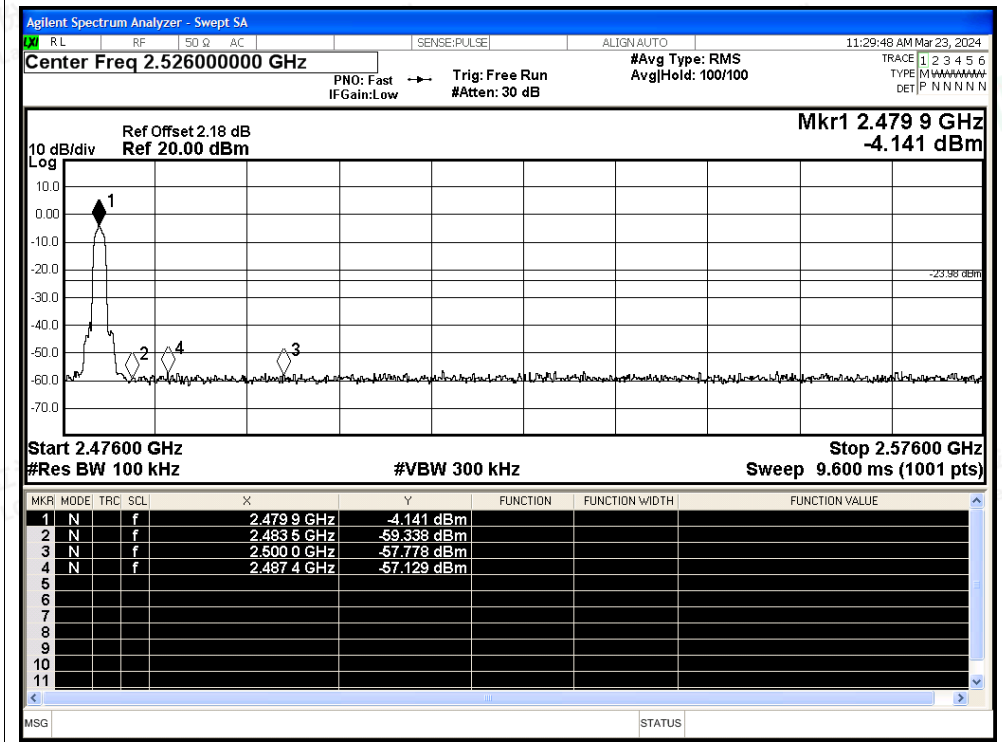




Band Edge NVNT 2-DH5 2480MHz Ant No-Hopping Ref

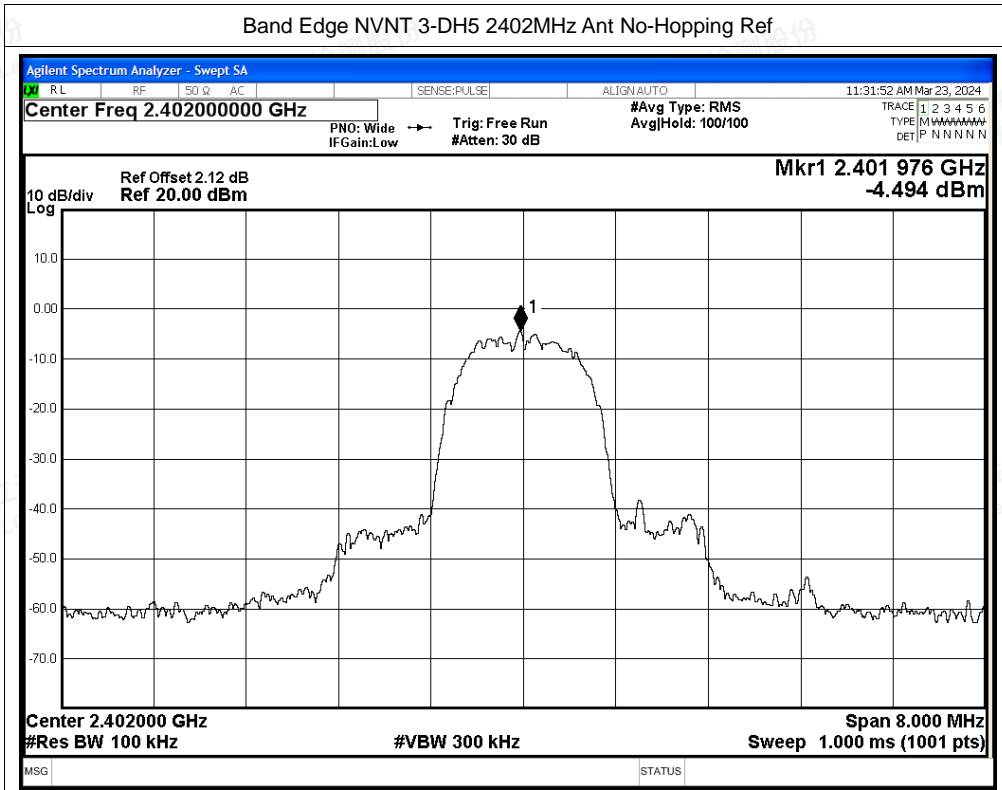


Band Edge NVNT 2-DH5 2480MHz Ant No-Hopping Emission

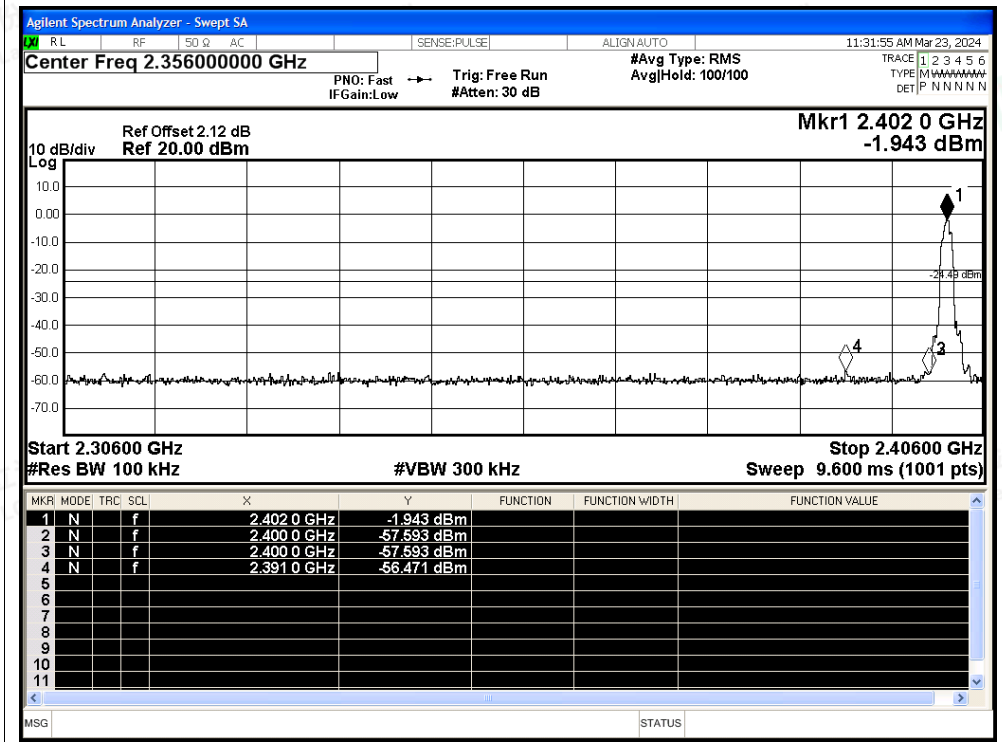




Band Edge NVNT 3-DH5 2402MHz Ant No-Hopping Ref

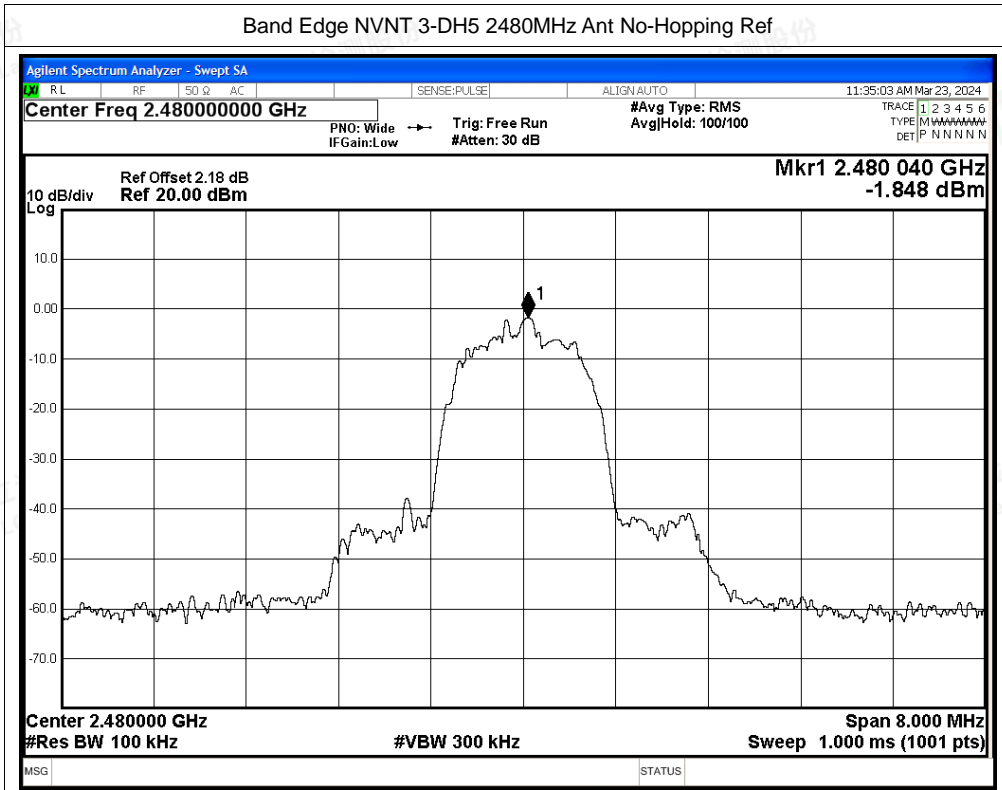


Band Edge NVNT 3-DH5 2402MHz Ant No-Hopping Emission

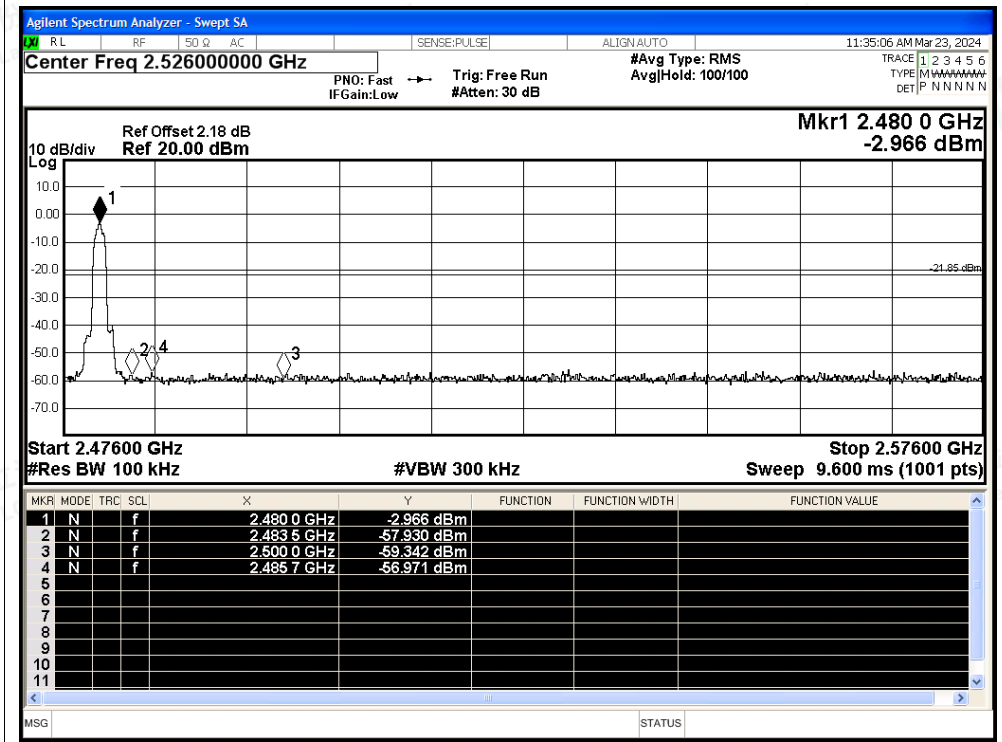




Band Edge NVNT 3-DH5 2480MHz Ant No-Hopping Ref



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





### (Hopping)

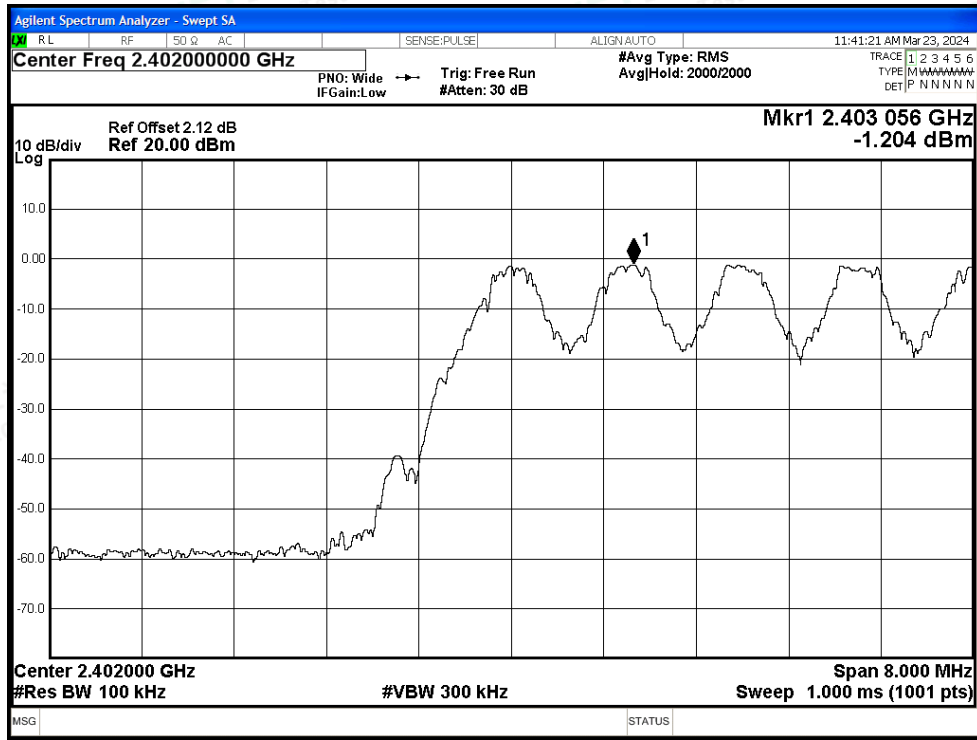
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant	Hopping	-54.73	-20	Pass
NVNT	1-DH5	2480	Ant	Hopping	-55.89	-20	Pass
NVNT	2-DH5	2402	Ant	Hopping	-54.25	-20	Pass
NVNT	2-DH5	2480	Ant	Hopping	-53.9	-20	Pass
NVNT	3-DH5	2402	Ant	Hopping	-54.11	-20	Pass
NVNT	3-DH5	2480	Ant	Hopping	-53.43	-20	Pass



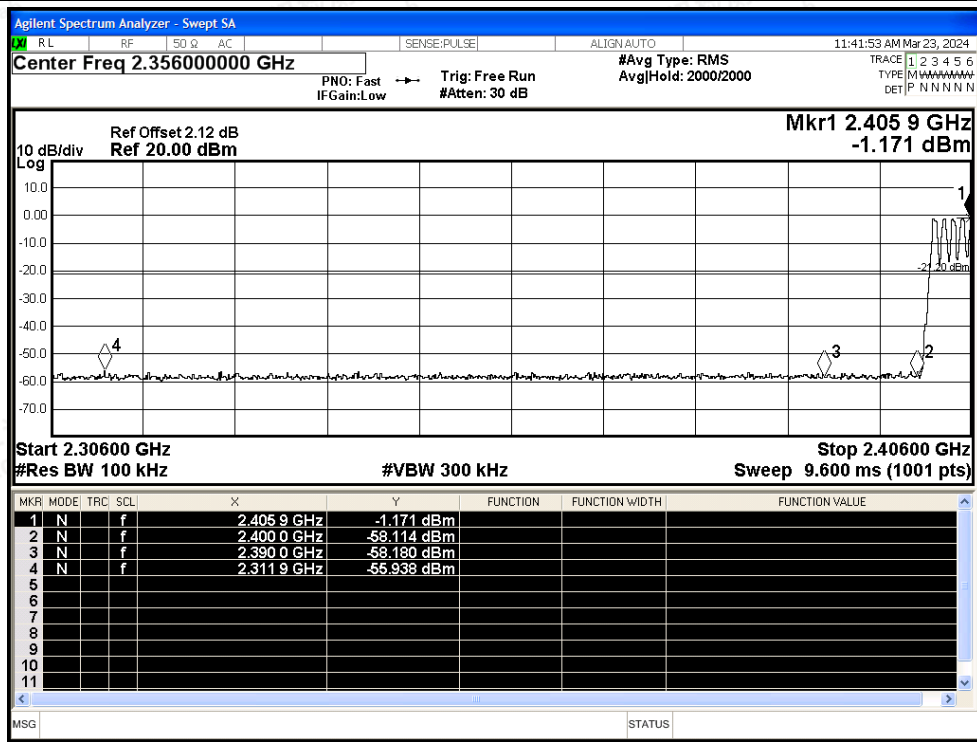


Test Graphs

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



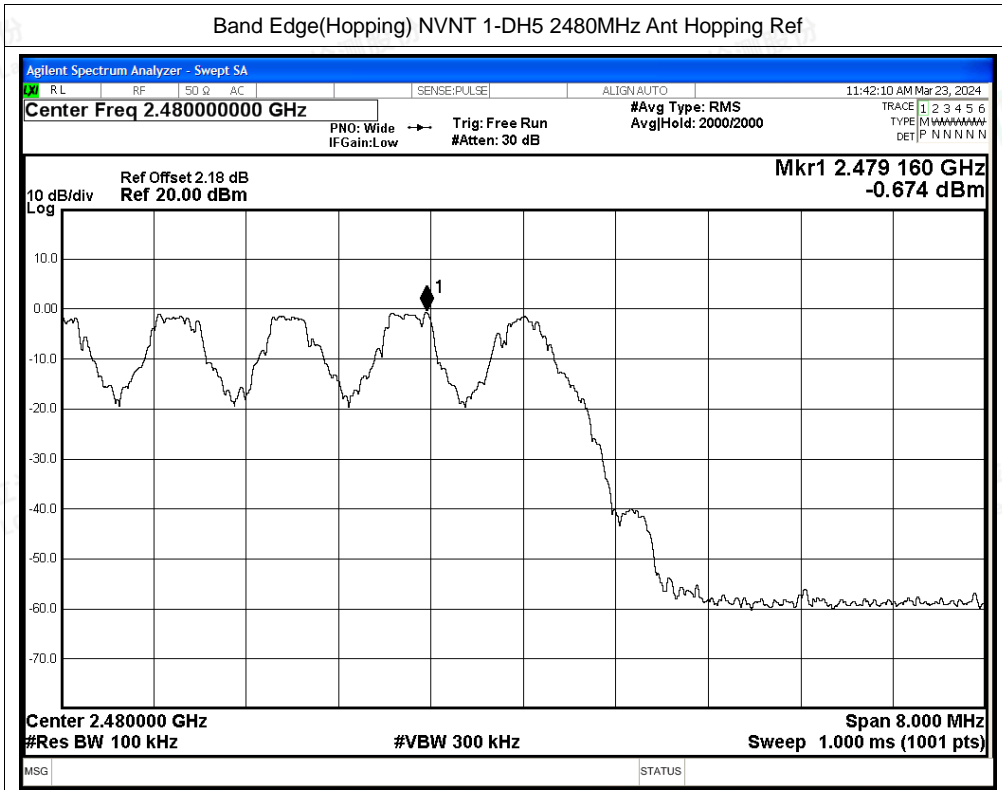
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant Hopping Emission



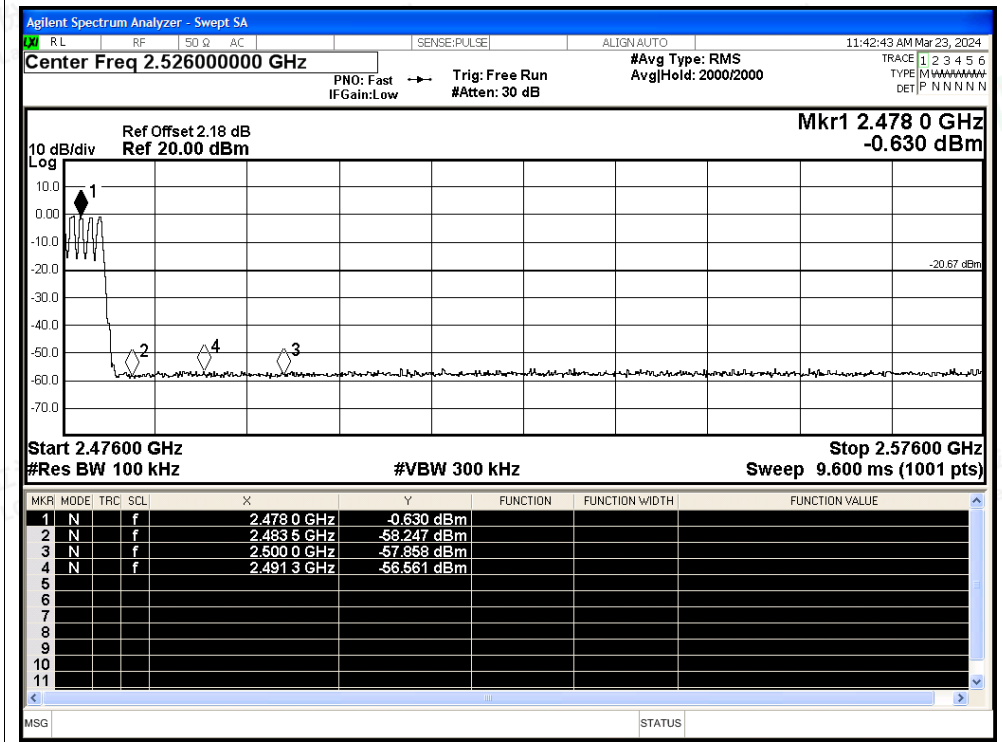




Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant Hopping Ref

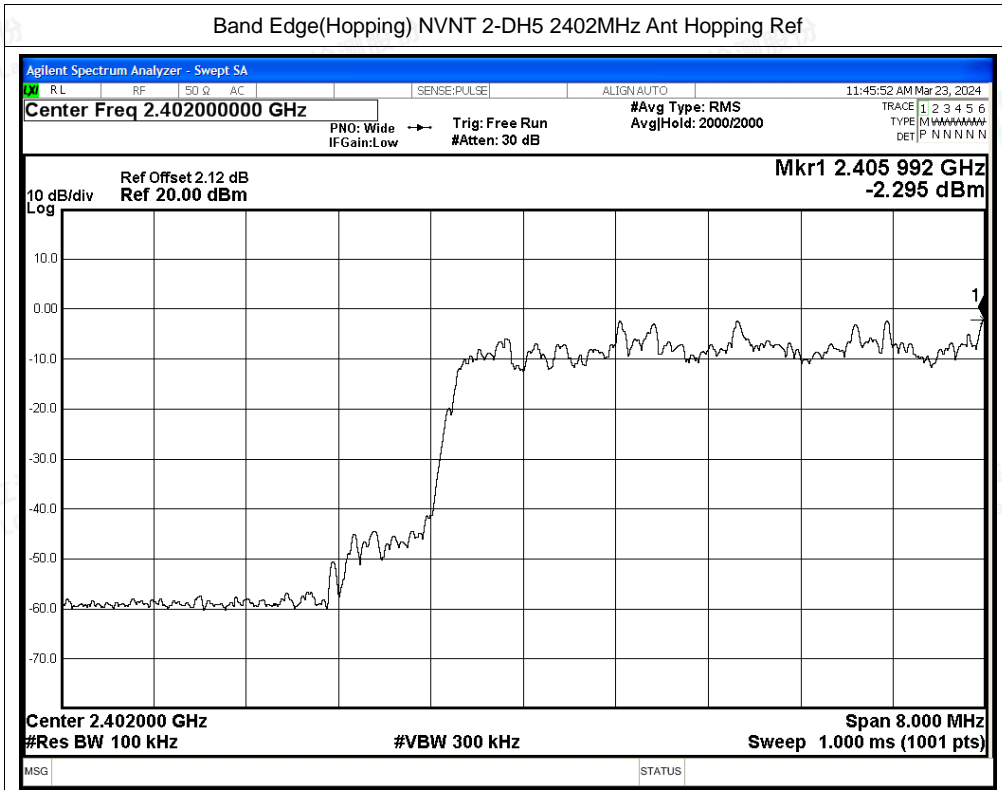


Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant Hopping Emission

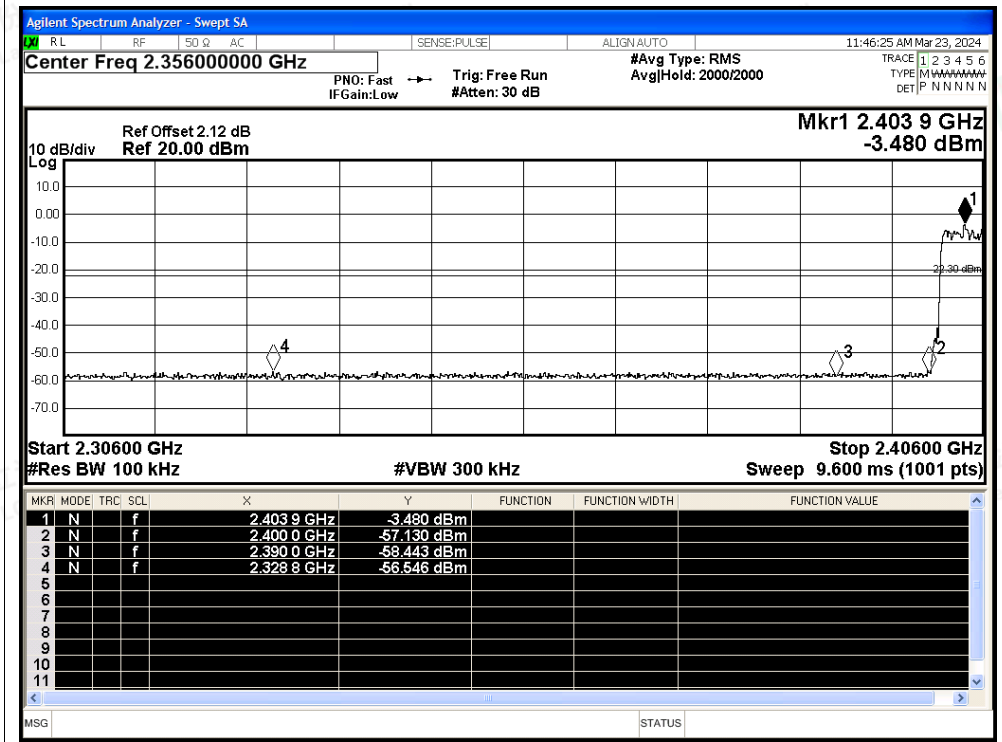




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant Hopping Ref

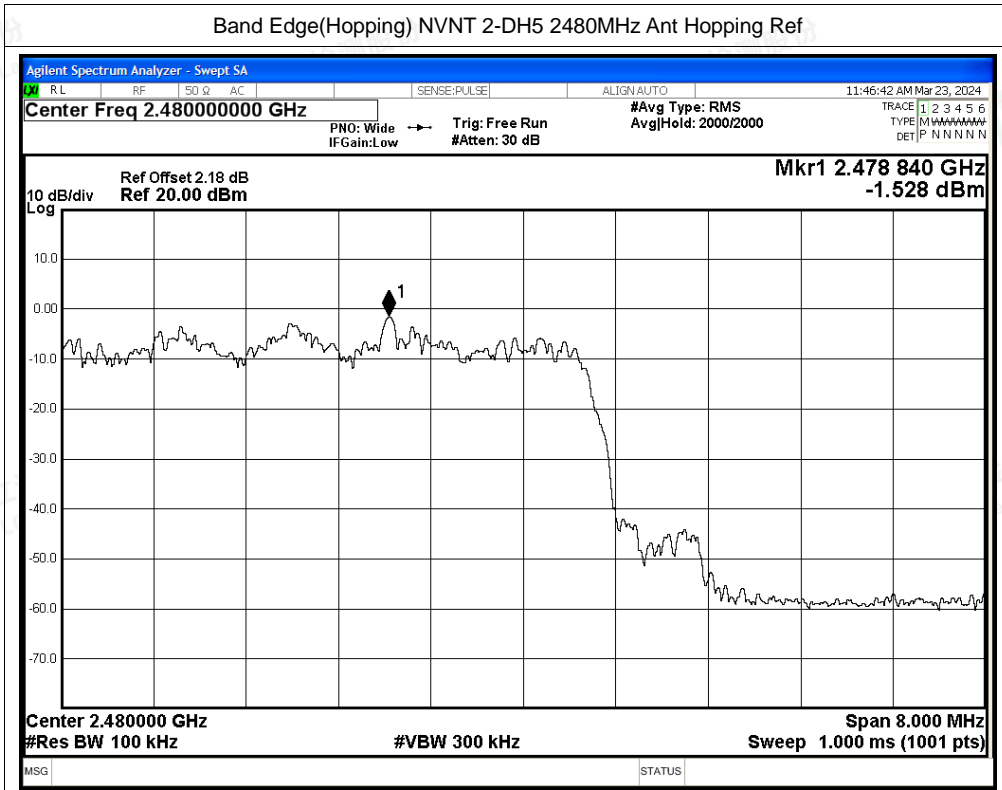


Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant Hopping Emission

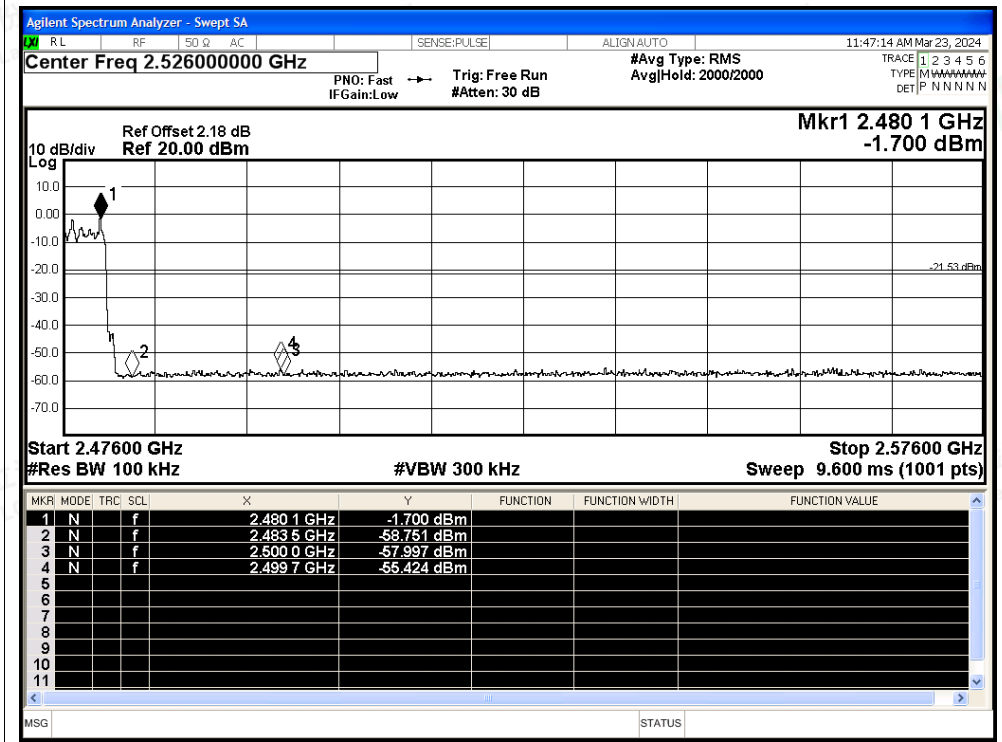




Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant Hopping Ref

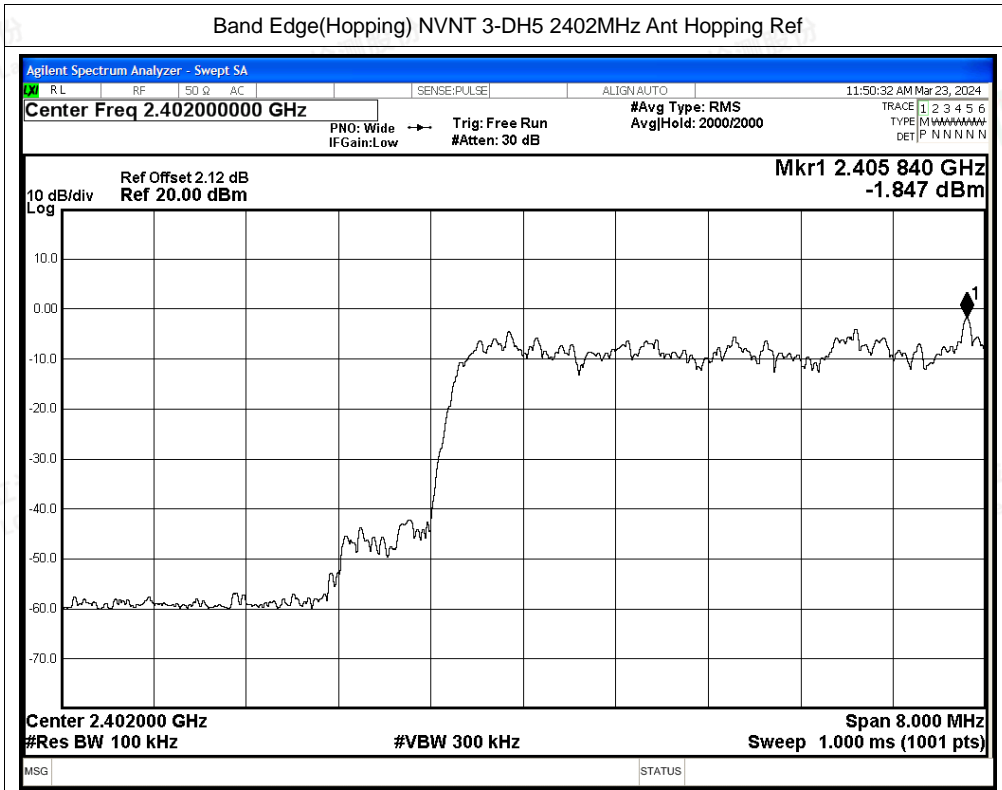


Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant Hopping Emission

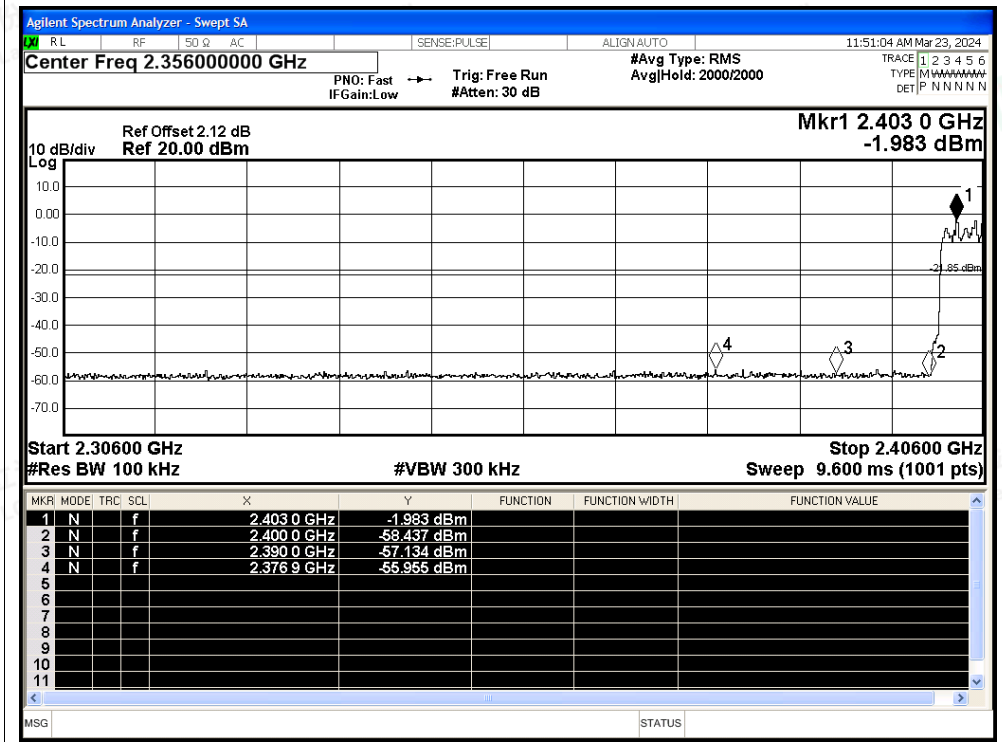




Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant Hopping Ref

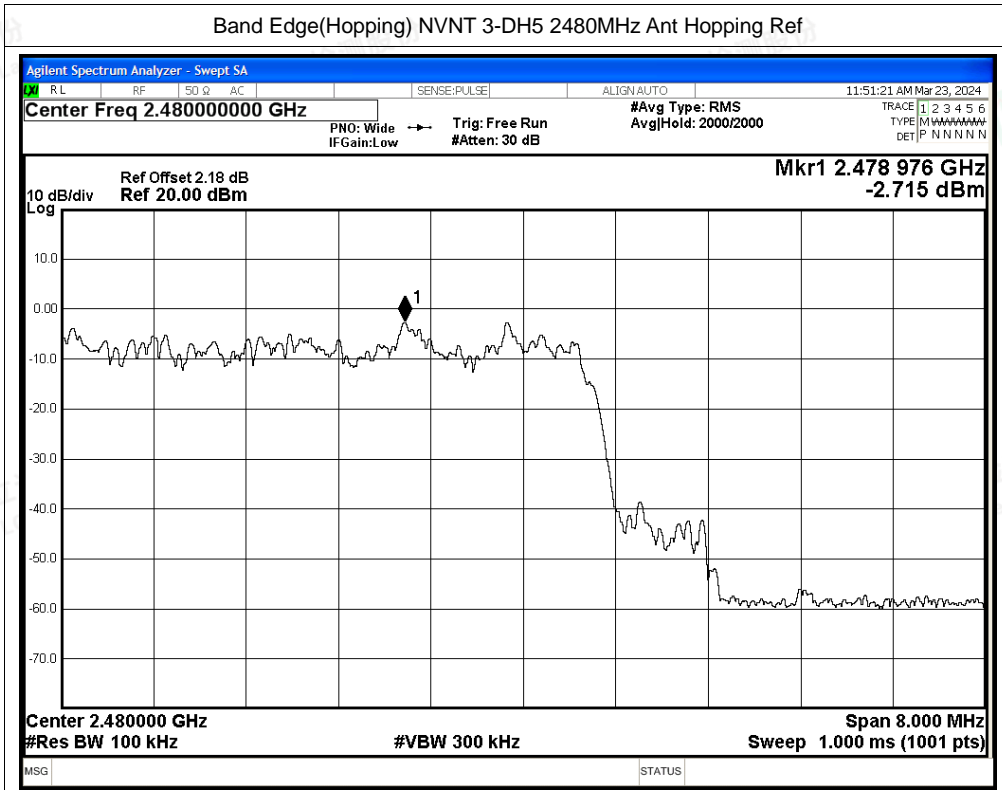


Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant Hopping Emission

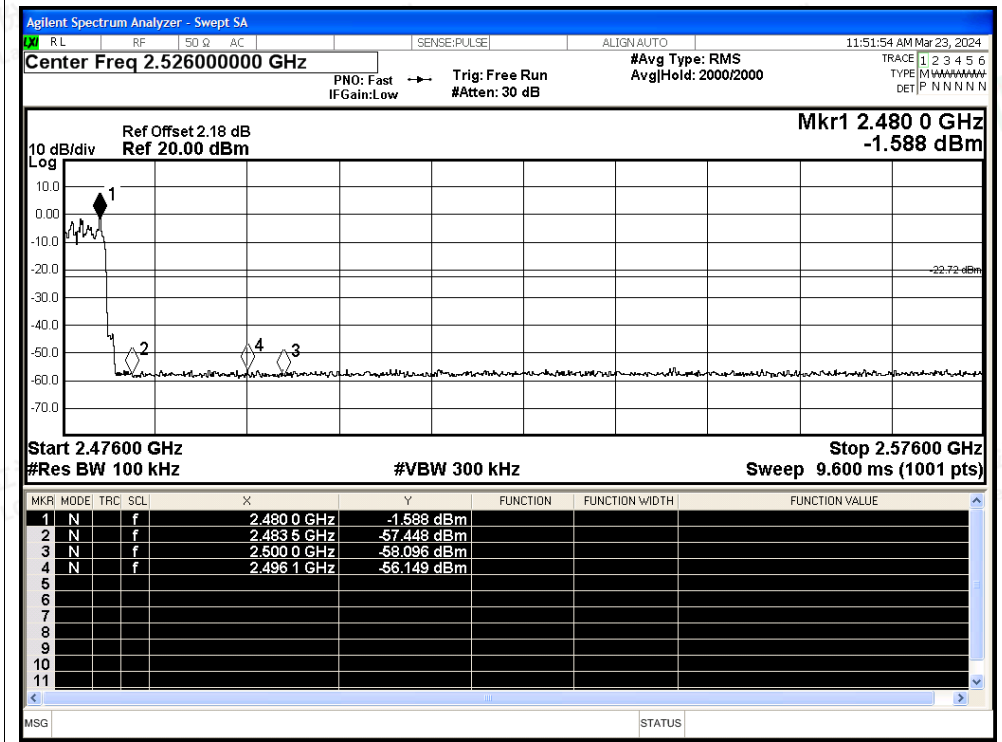




Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant Hopping Ref



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





## A.7 Conducted RF Spurious Emission

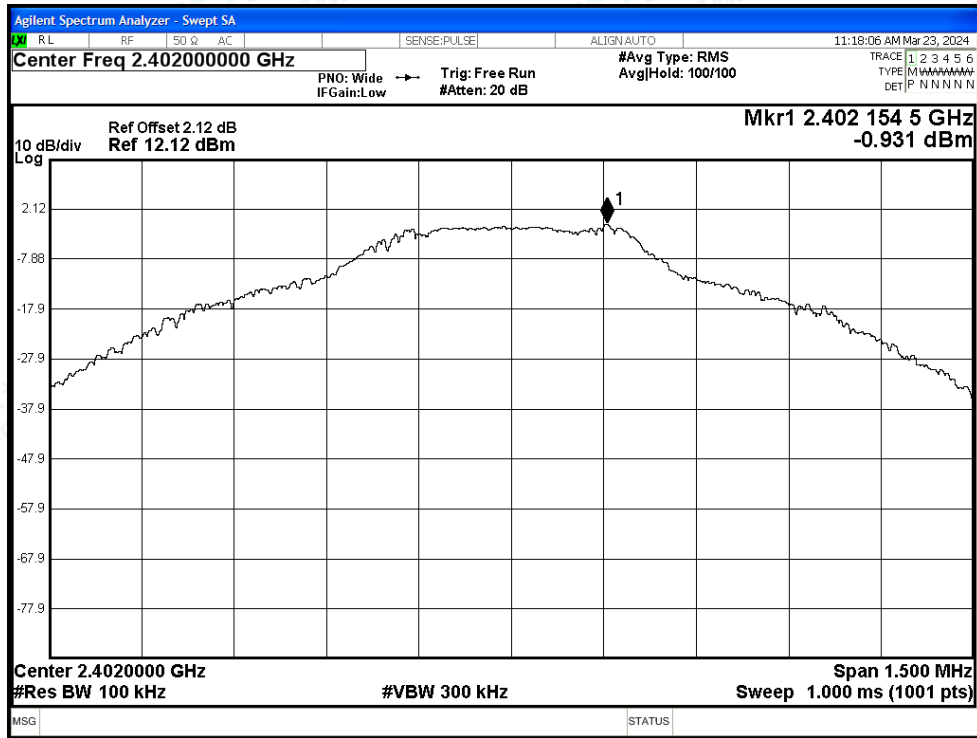
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant	-51.08	-20	Pass
NVNT	1-DH5	2441	Ant	-54.28	-20	Pass
NVNT	1-DH5	2480	Ant	-53.9	-20	Pass
NVNT	2-DH5	2402	Ant	-53.51	-20	Pass
NVNT	2-DH5	2441	Ant	-53.23	-20	Pass
NVNT	2-DH5	2480	Ant	-53.75	-20	Pass
NVNT	3-DH5	2402	Ant	-54.14	-20	Pass
NVNT	3-DH5	2441	Ant	-52.47	-20	Pass
NVNT	3-DH5	2480	Ant	-54.01	-20	Pass



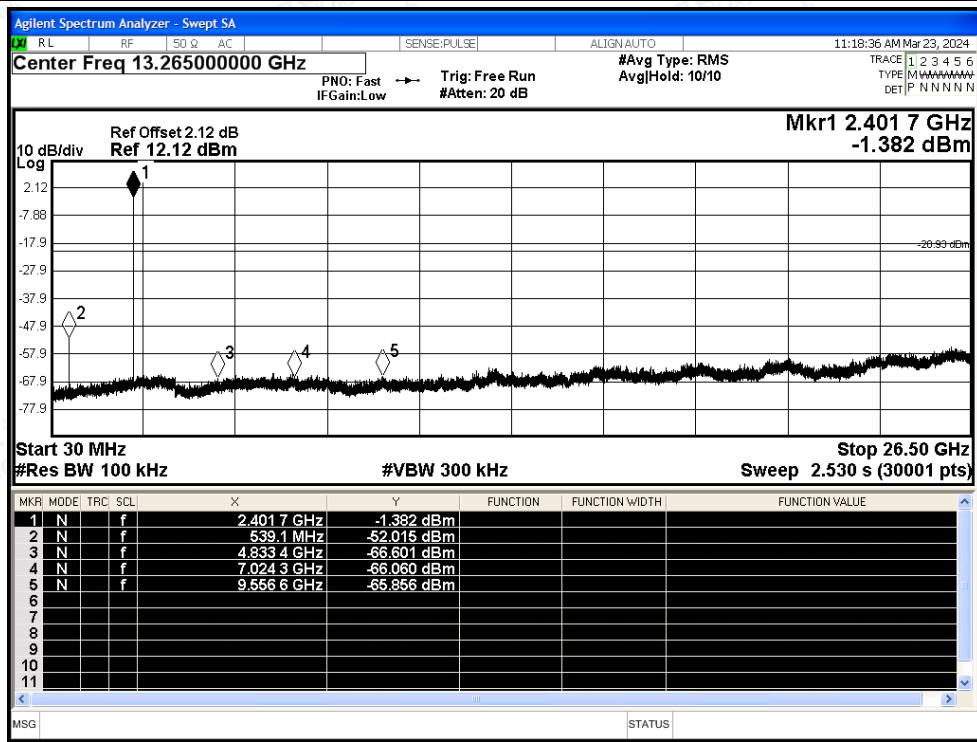


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant Ref

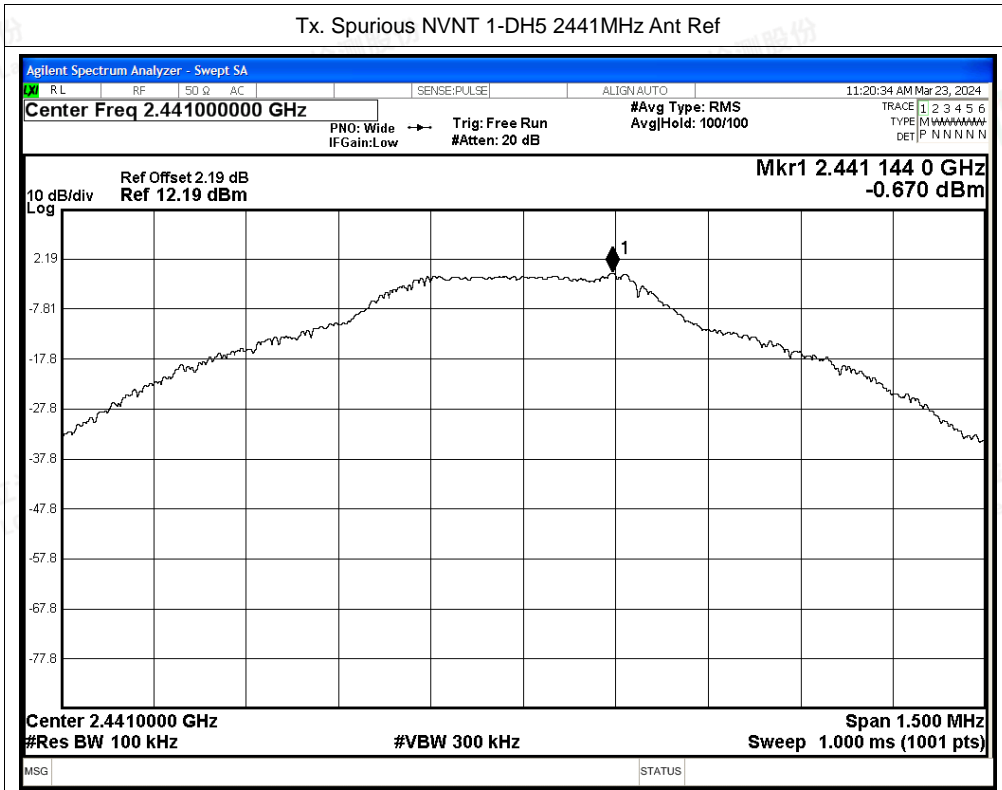


Tx. Spurious NVNT 1-DH5 2402MHz Ant Emission

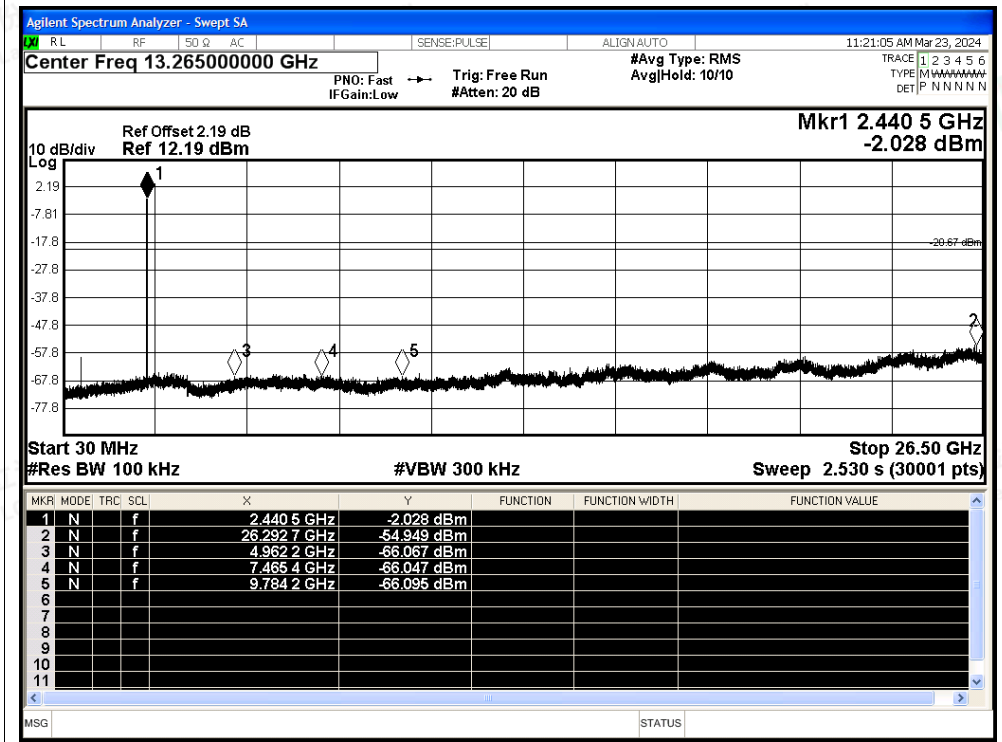




Tx. Spurious NVNT 1-DH5 2441MHz Ant Ref



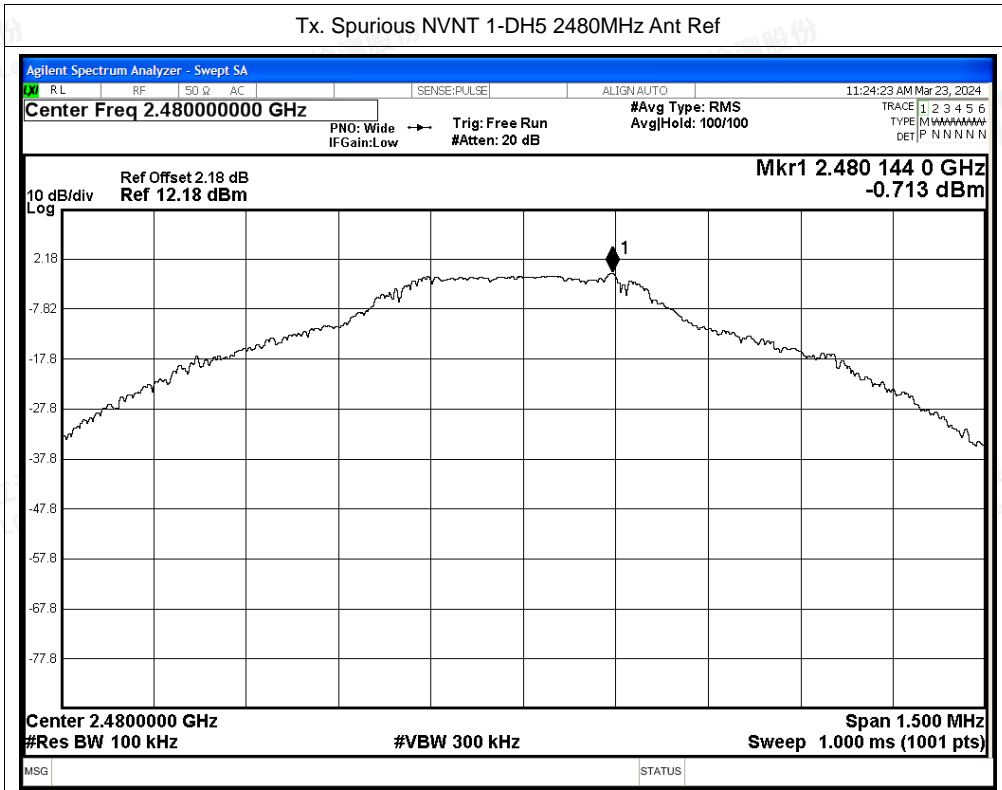
Tx. Spurious NVNT 1-DH5 2441MHz Ant Emission



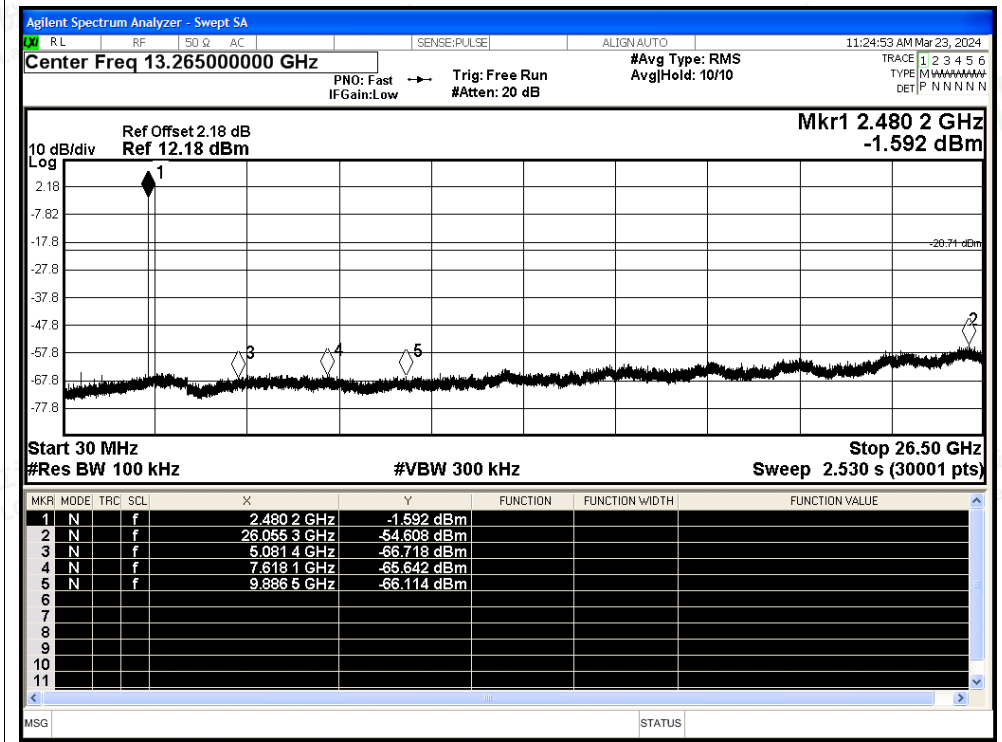




Tx. Spurious NVNT 1-DH5 2480MHz Ant Ref

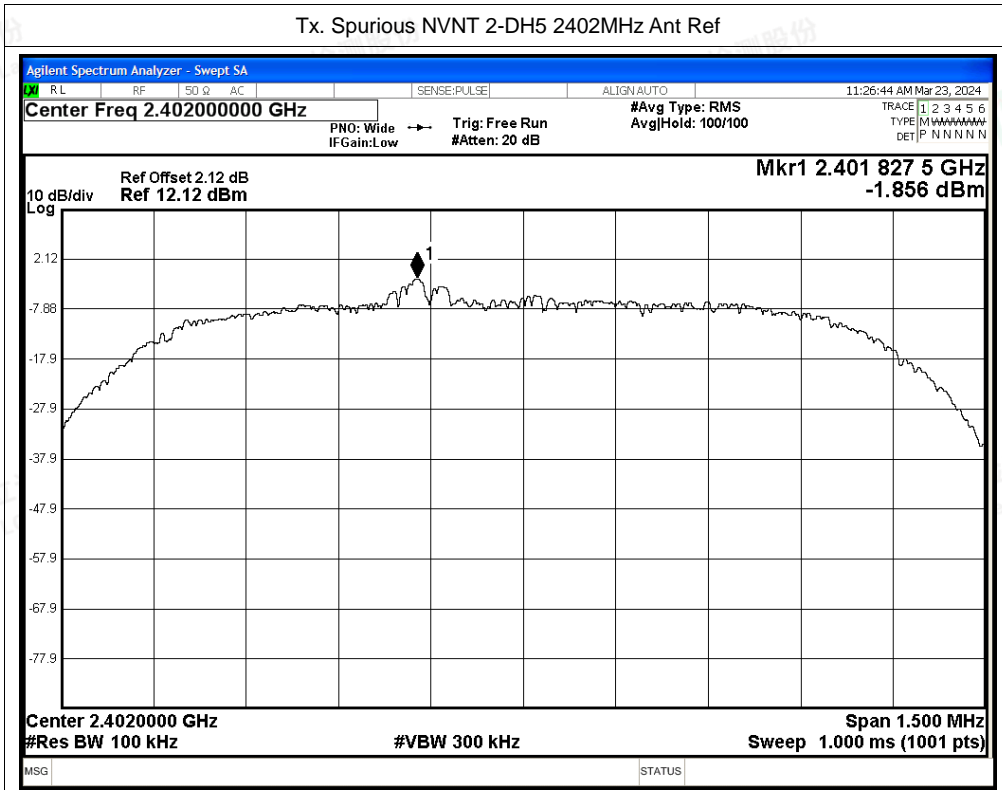


Tx. Spurious NVNT 1-DH5 2480MHz Ant Emission

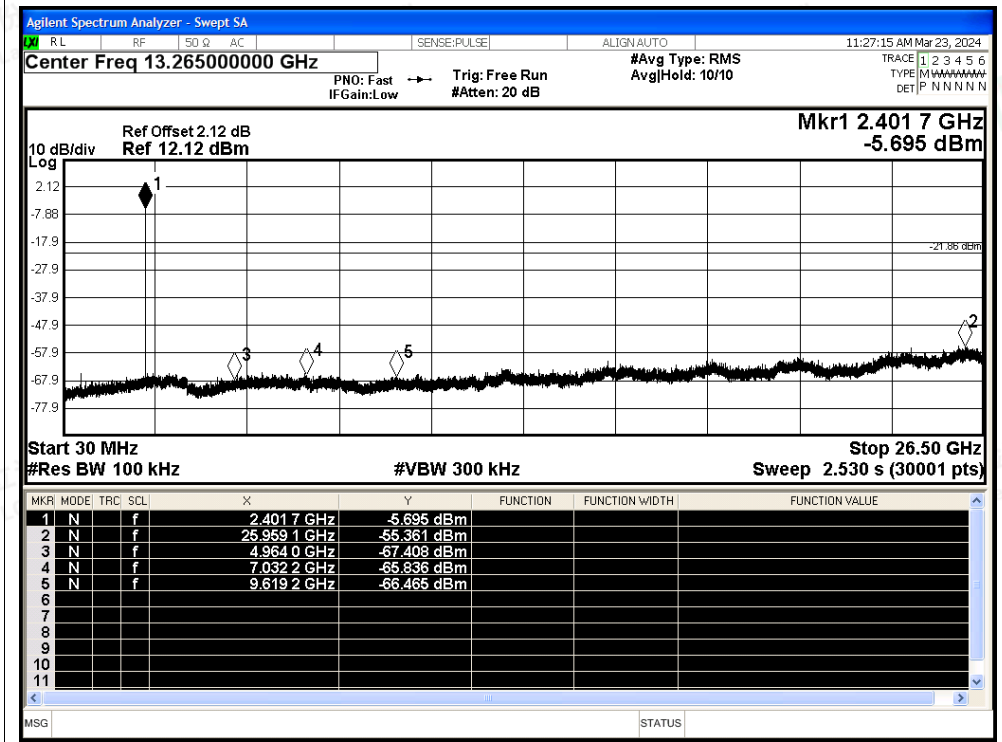




Tx. Spurious NVNT 2-DH5 2402MHz Ant Ref

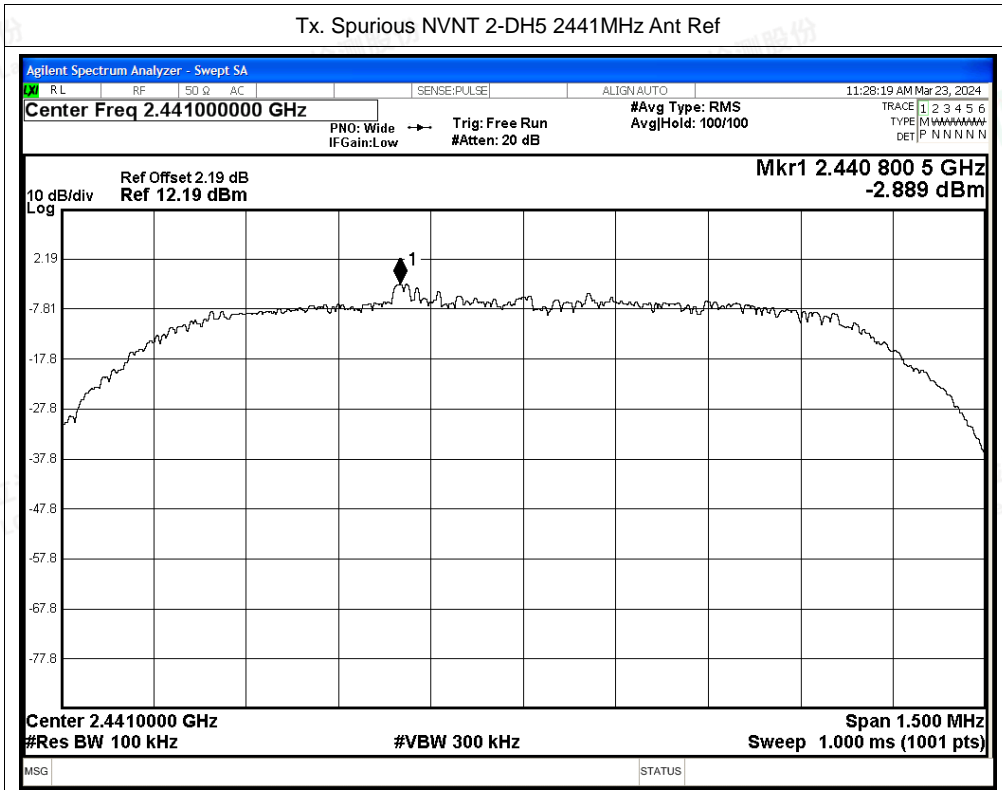


Tx. Spurious NVNT 2-DH5 2402MHz Ant Emission

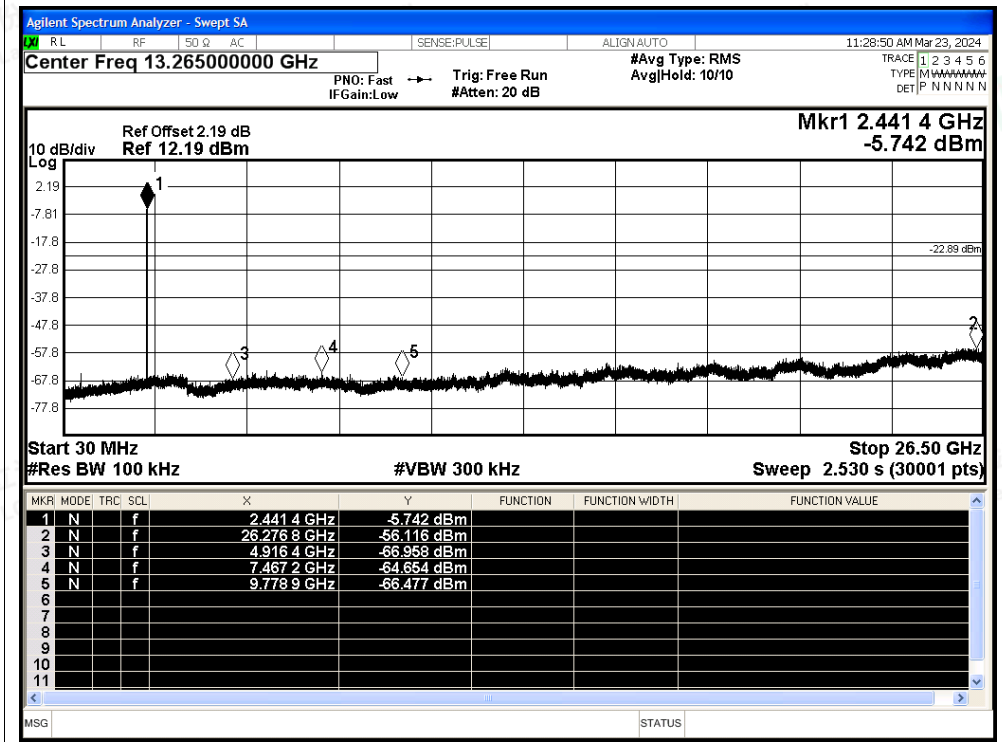




Tx. Spurious NVNT 2-DH5 2441MHz Ant Ref

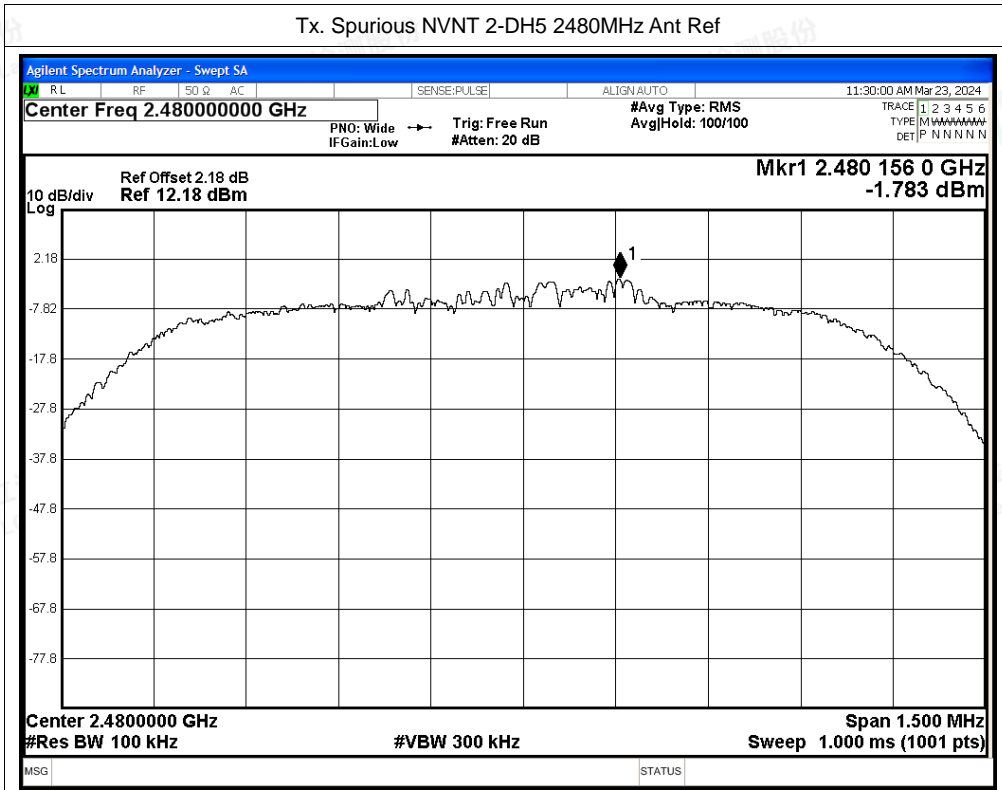


Tx. Spurious NVNT 2-DH5 2441MHz Ant Emission

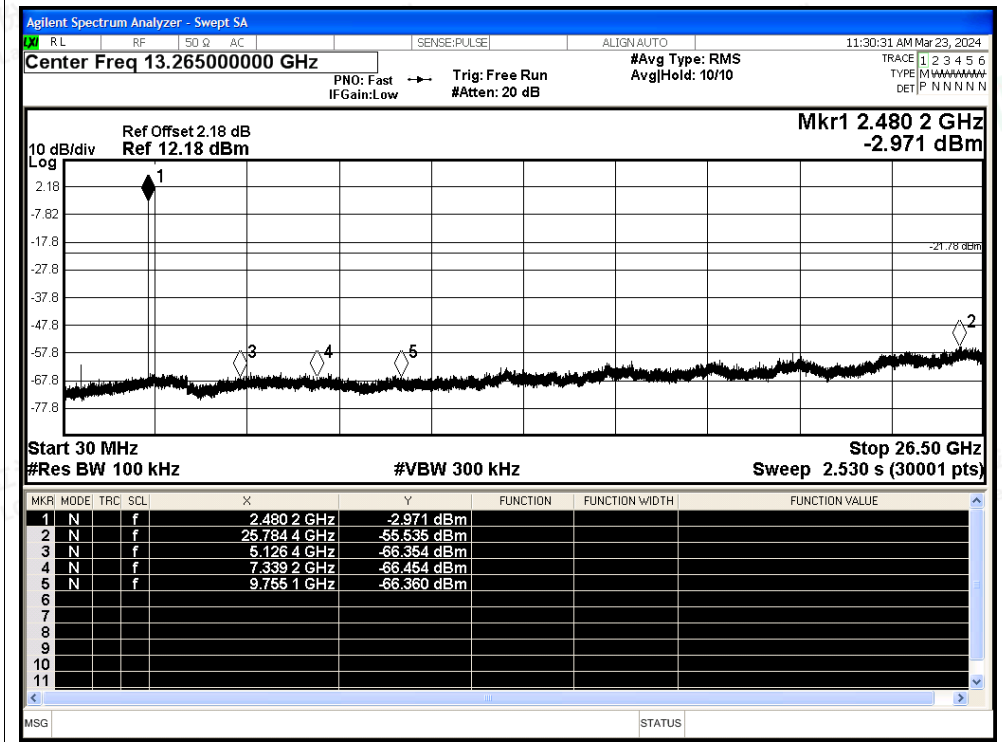




Tx. Spurious NVNT 2-DH5 2480MHz Ant Ref

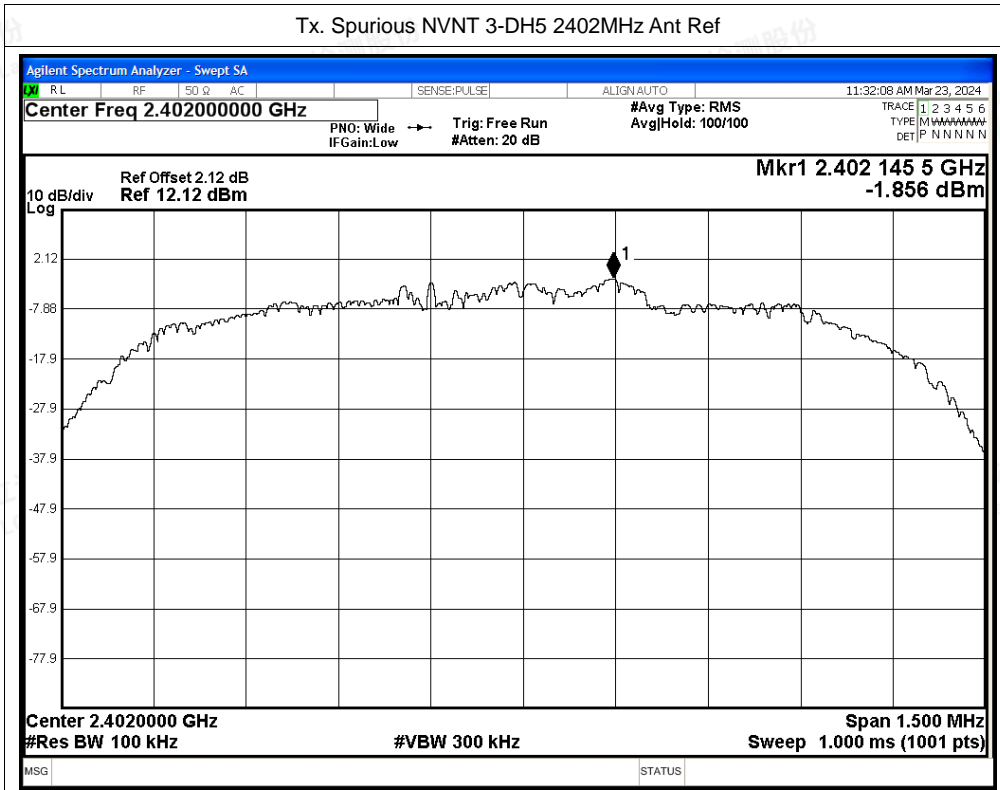


Tx. Spurious NVNT 2-DH5 2480MHz Ant Emission

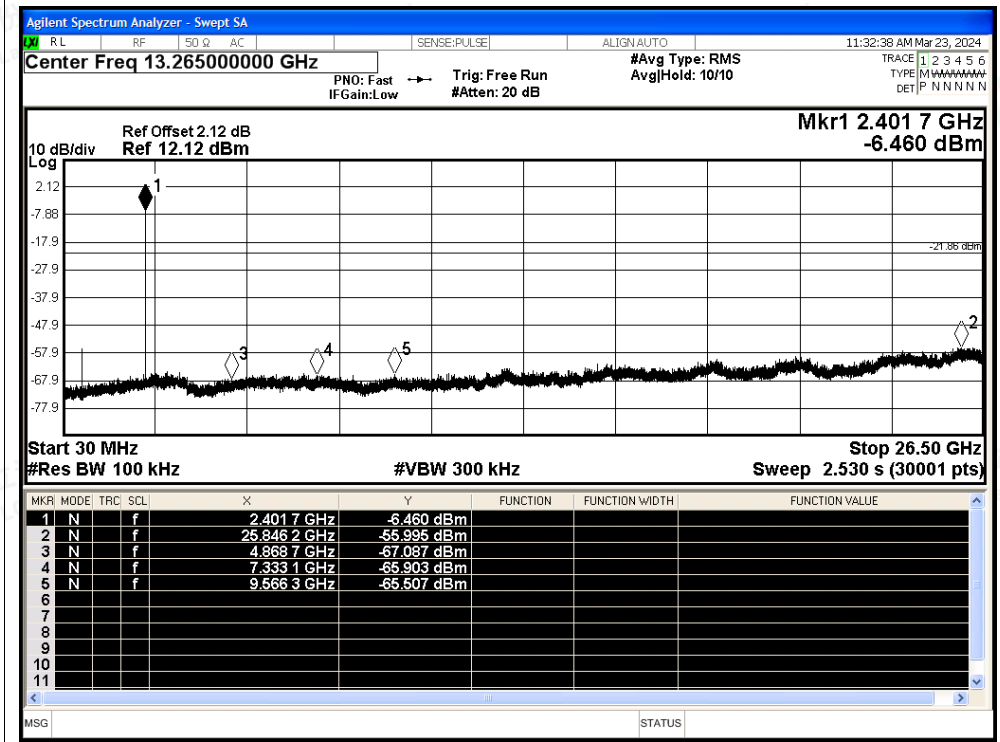




Tx. Spurious NVNT 3-DH5 2402MHz Ant Ref

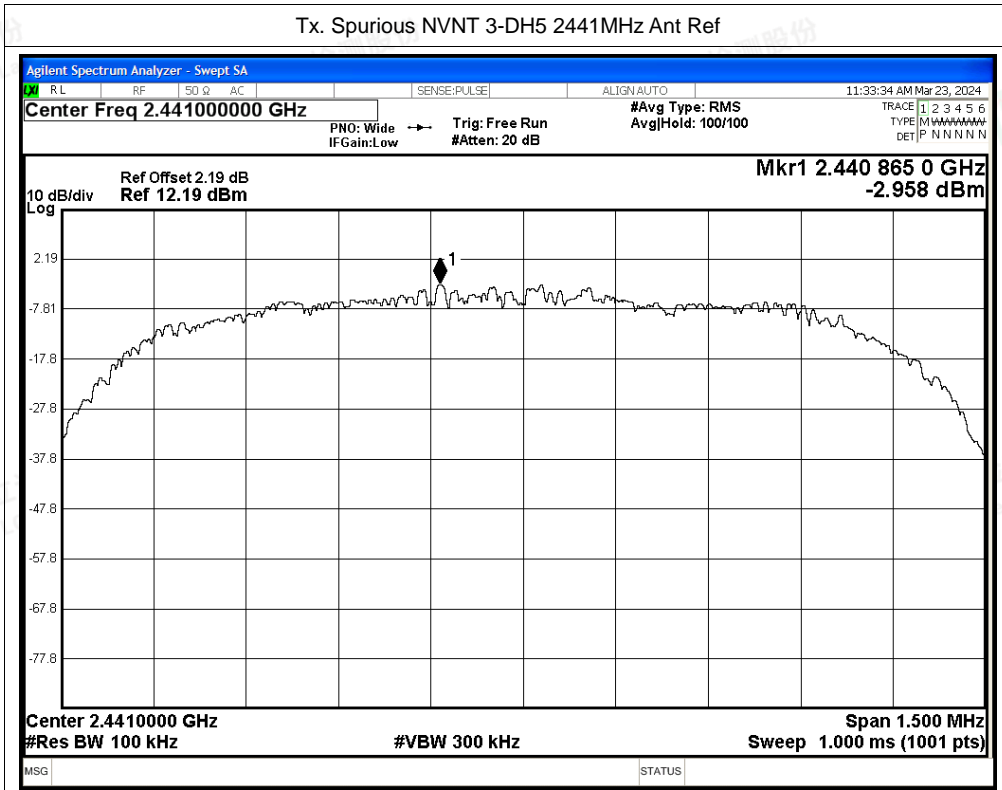


Tx. Spurious NVNT 3-DH5 2402MHz Ant Emission

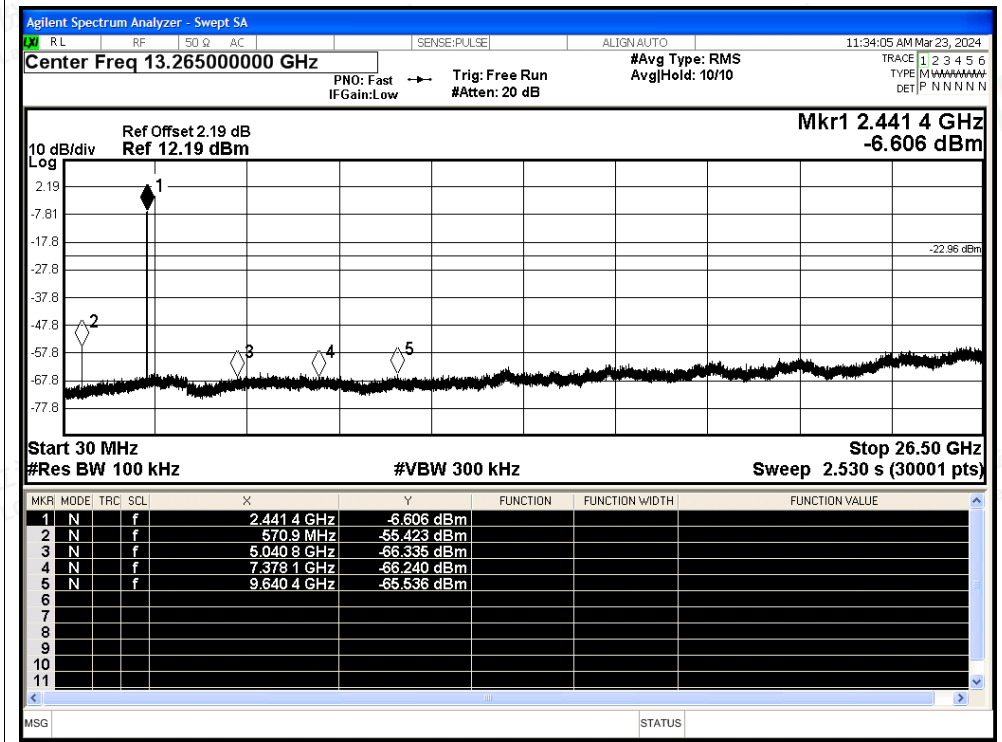




Tx. Spurious NVNT 3-DH5 2441MHz Ant Ref

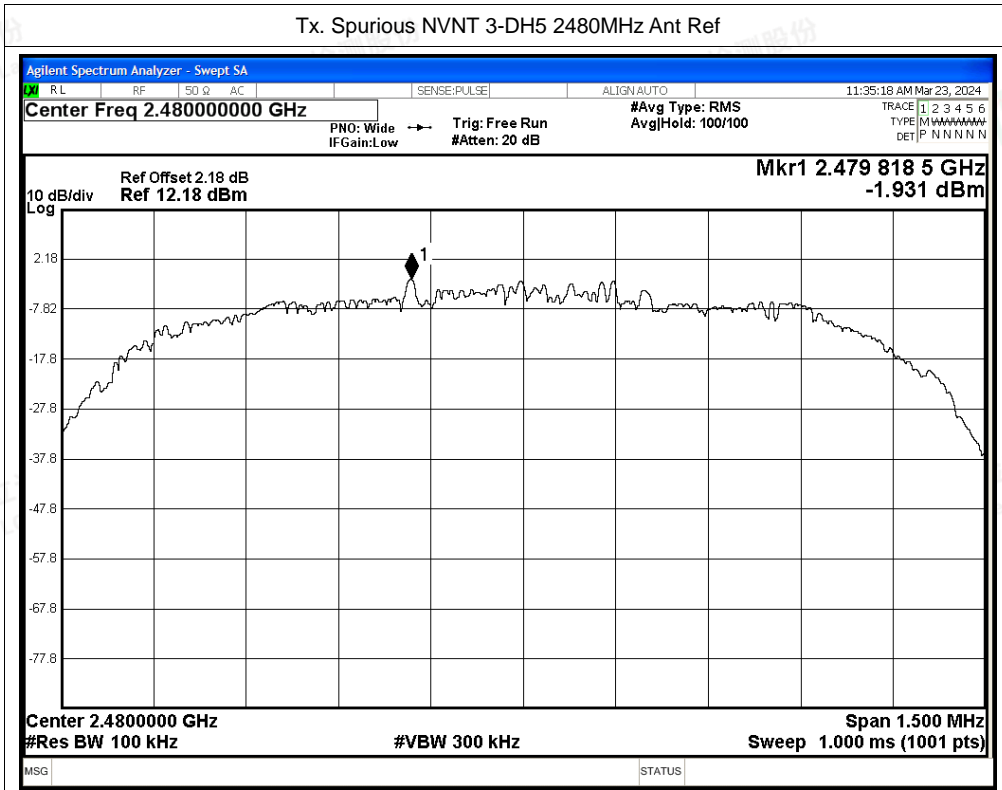


Tx. Spurious NVNT 3-DH5 2441MHz Ant Emission

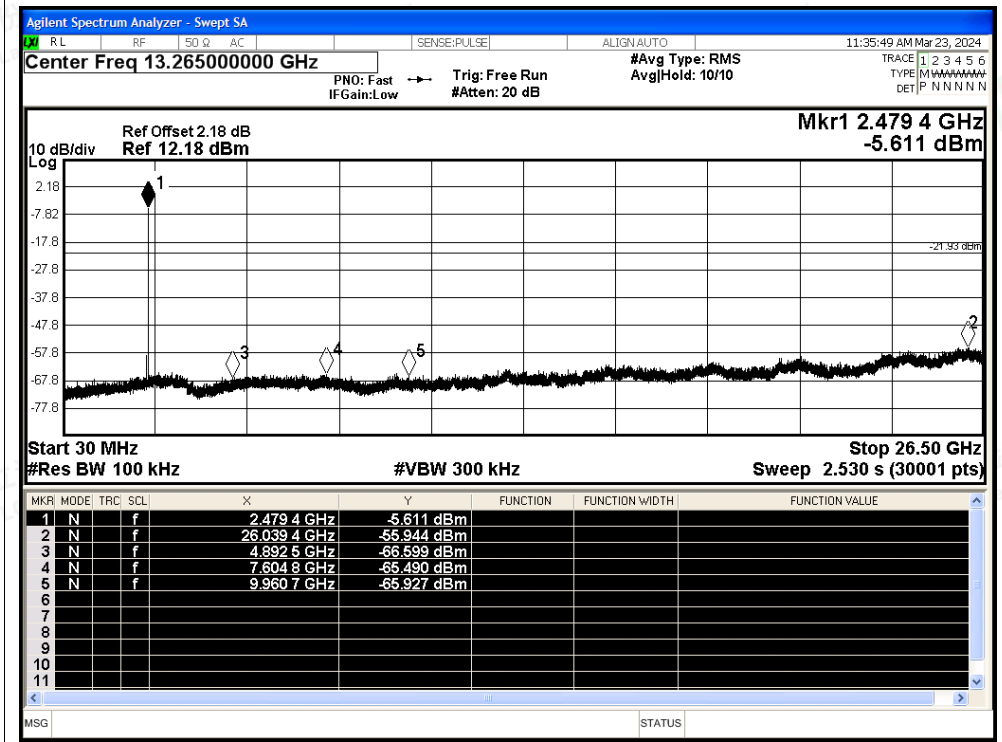




Tx. Spurious NVNT 3-DH5 2480MHz Ant Ref



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	76.96	1.14	0.35
NVNT	2-DH5	2480	Ant	76.96	1.14	0.35
NVNT	3-DH5	2402	Ant	77.04	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

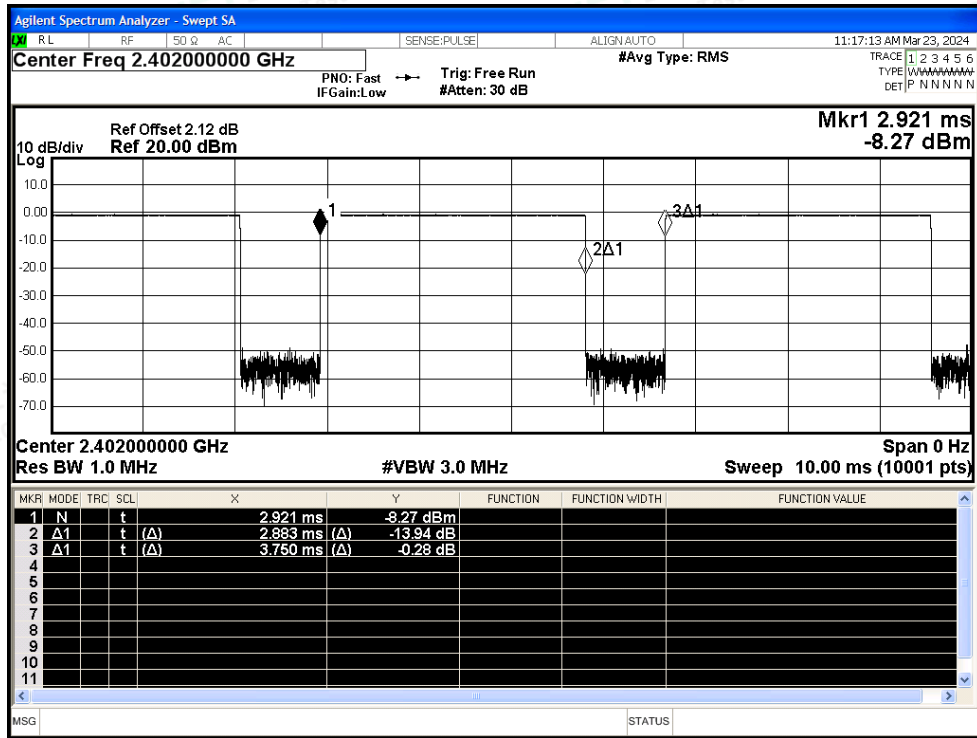




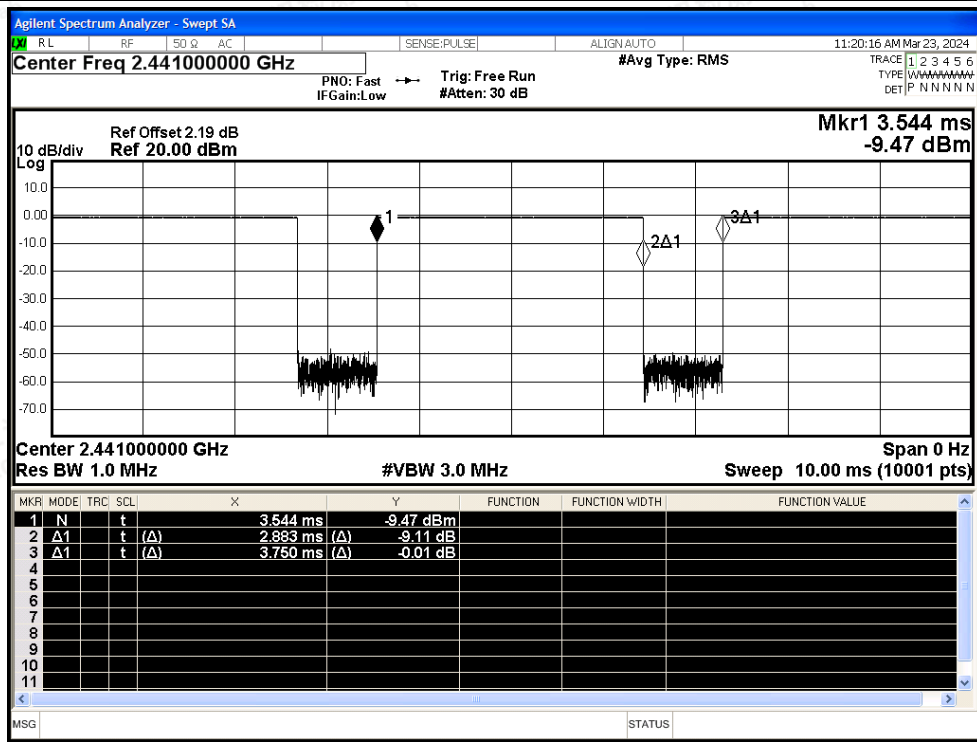


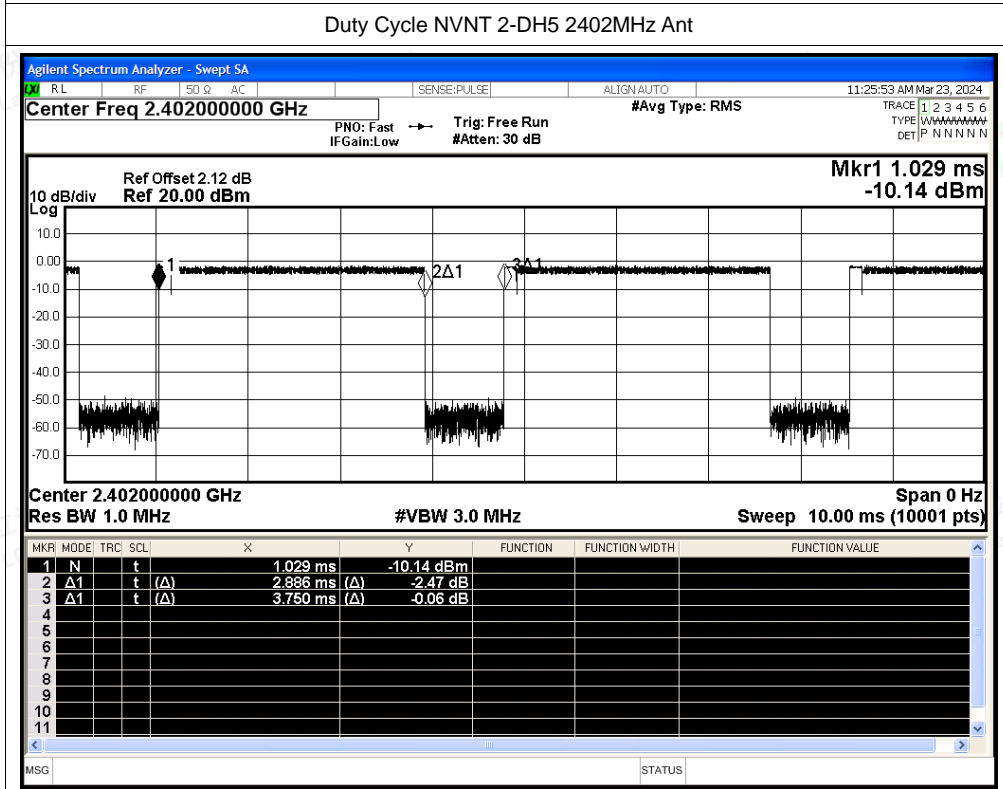
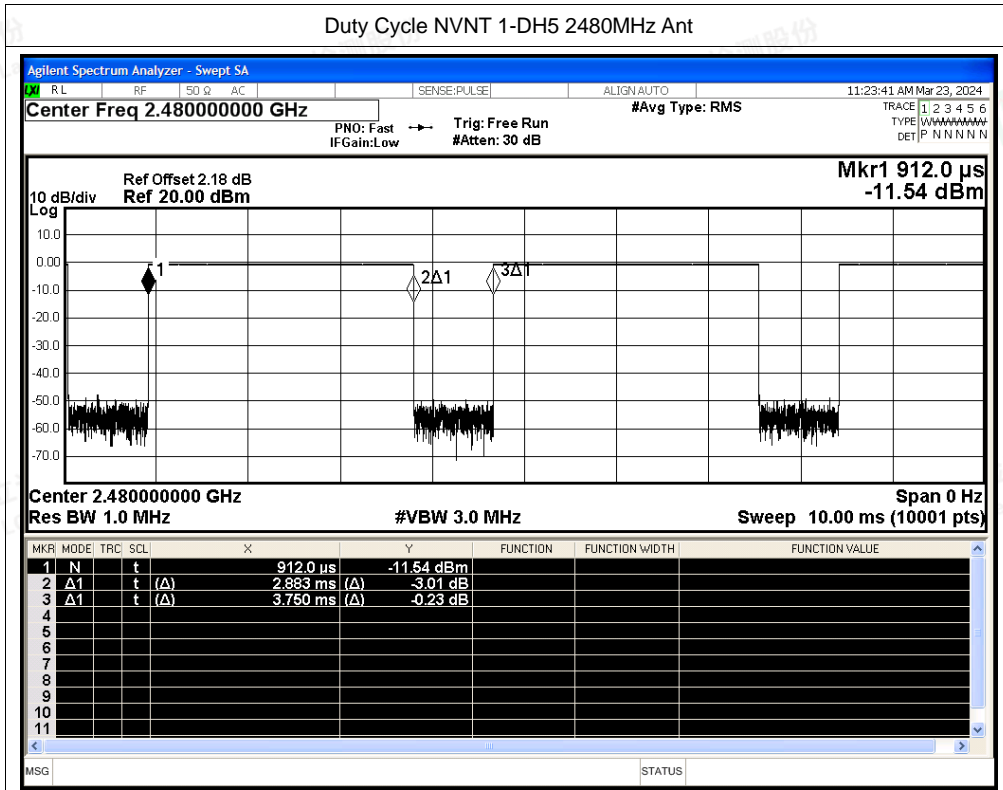
Test Graphs

Duty Cycle NVNT 1-DH5 2402MHz Ant



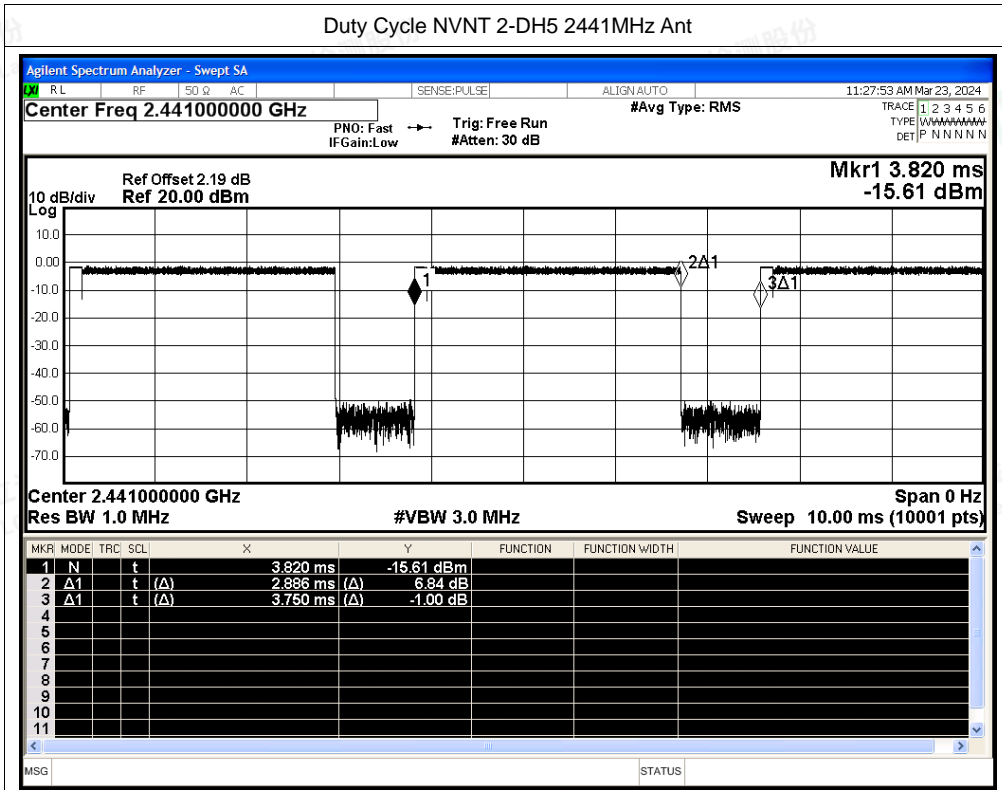
Duty Cycle NVNT 1-DH5 2441MHz Ant



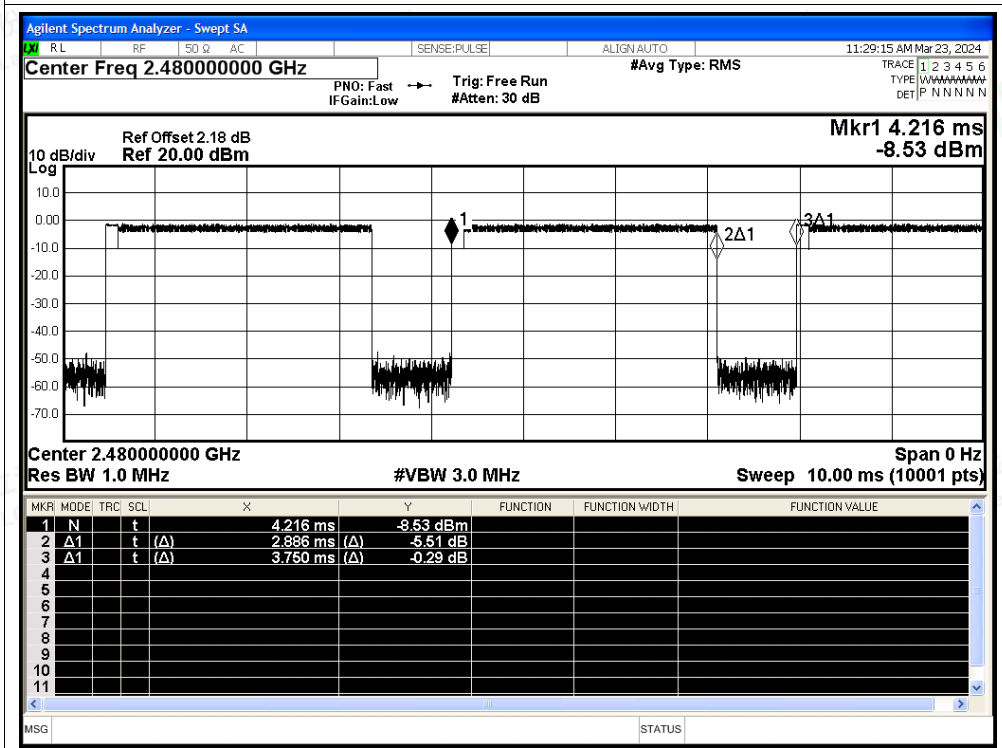


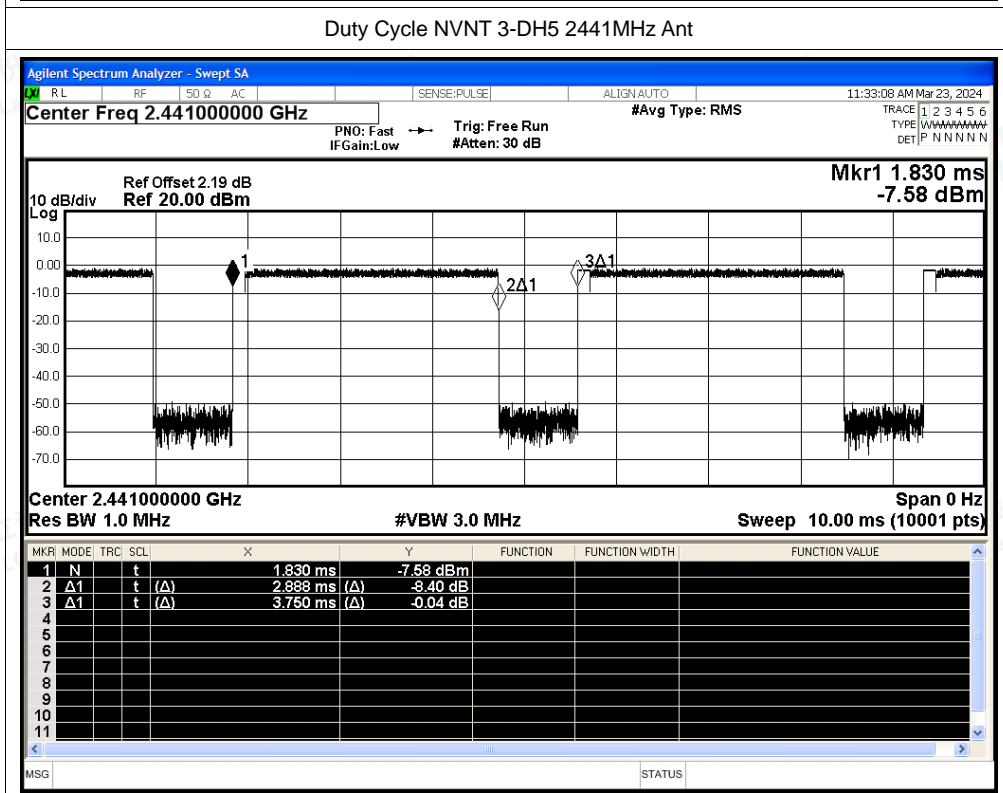
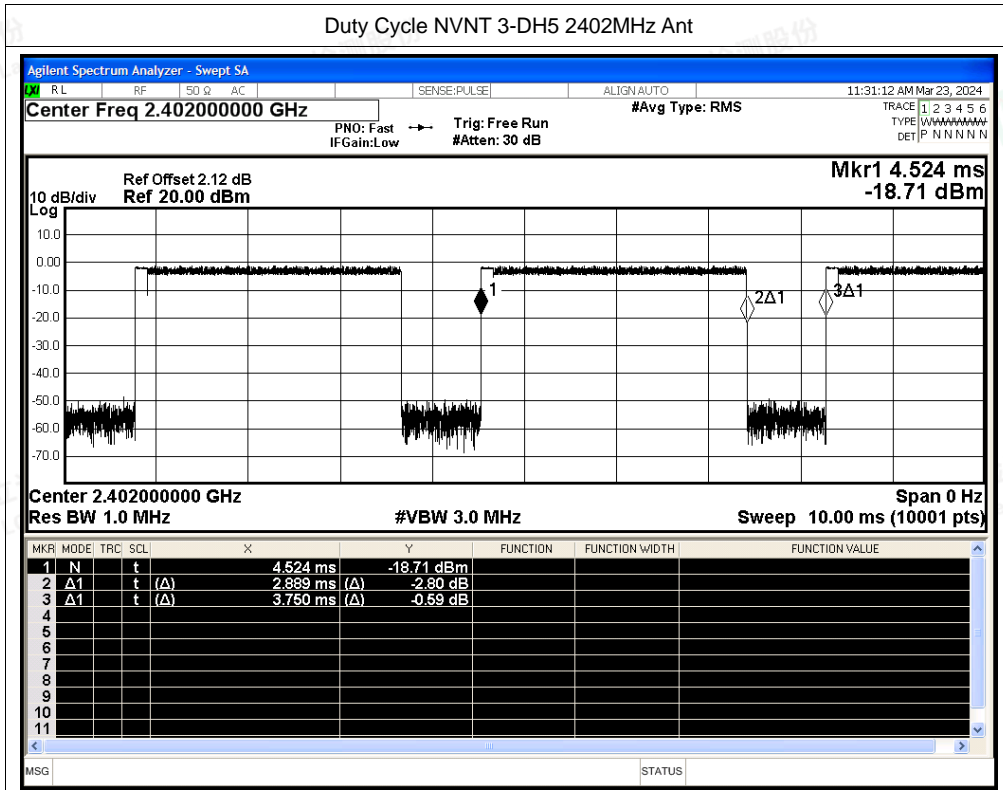


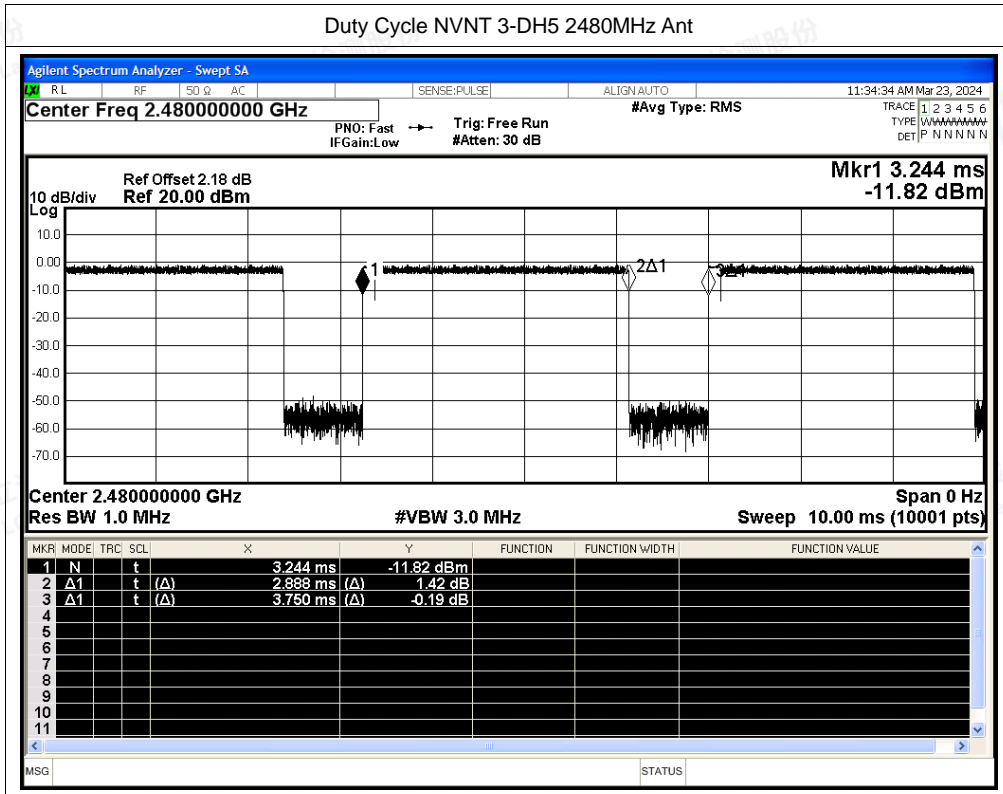
Duty Cycle NVNT 2-DH5 2441MHz Ant



Duty Cycle NVNT 2-DH5 2480MHz Ant









### A.9 Restrict Band

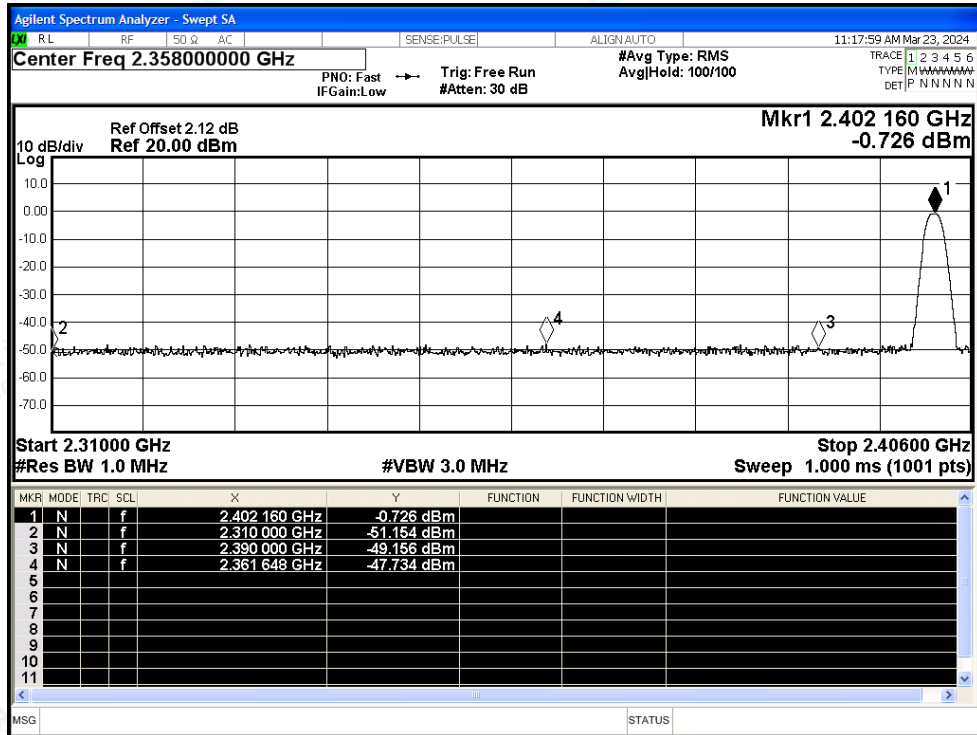
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant	No-Hopping	2310	-51.15	2	-	46.11	Peak	74	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2310	-58.64	2	1.14	39.76	Average	54	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2361.648	-47.73	2	-	49.53	Peak	74	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2387.184	-57.48	2	1.14	40.92	Average	54	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2390	-49.16	2	-	48.1	Peak	74	Pass
NVNT	1-DH5	2402	Ant	No-Hopping	2390	-58.72	2	1.14	39.68	Average	54	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2483.5	-48.38	2	-	48.88	Peak	74	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2483.5	-57.72	2	1.14	40.68	Average	54	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2486.824	-46.27	2	-	50.99	Peak	74	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2486.56	-56.96	2	1.14	41.44	Average	54	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2500	-49.01	2	-	48.25	Peak	74	Pass
NVNT	1-DH5	2480	Ant	No-Hopping	2500	-57.83	2	1.14	40.57	Average	54	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2310	-52.27	2	-	44.99	Peak	74	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2310	-58.83	2	1.14	39.57	Average	54	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2382.672	-48	2	-	49.26	Peak	74	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2372.304	-57.69	2	1.14	40.71	Average	54	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2390	-51.37	2	-	45.89	Peak	74	Pass
NVNT	2-DH5	2402	Ant	No-Hopping	2390	-58.32	2	1.14	40.08	Average	54	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2483.5	-48.97	2	-	48.29	Peak	74	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2483.5	-58.04	2	1.14	40.36	Average	54	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2484.592	-46.88	2	-	50.38	Peak	74	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2497.744	-57.28	2	1.14	41.12	Average	54	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2500	-51.06	2	-	46.2	Peak	74	Pass
NVNT	2-DH5	2480	Ant	No-Hopping	2500	-57.6	2	1.14	40.8	Average	54	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2310	-49.93	2	-	47.33	Peak	74	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2310	-58.31	2	1.13	40.08	Average	54	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2344.656	-47.54	2	-	49.72	Peak	74	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2380.272	-57.77	2	1.13	40.62	Average	54	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2390	-49.66	2	-	47.6	Peak	74	Pass
NVNT	3-DH5	2402	Ant	No-Hopping	2390	-58.16	2	1.13	40.23	Average	54	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2483.5	-50.05	2	-	47.21	Peak	74	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2483.5	-58.03	2	1.13	40.36	Average	54	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2487.88	-46.66	2	-	50.6	Peak	74	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2495.392	-57.15	2	1.13	41.24	Average	54	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2500	-49.73	2	-	47.53	Peak	74	Pass
NVNT	3-DH5	2480	Ant	No-Hopping	2500	-57.98	2	1.13	40.41	Average	54	Pass



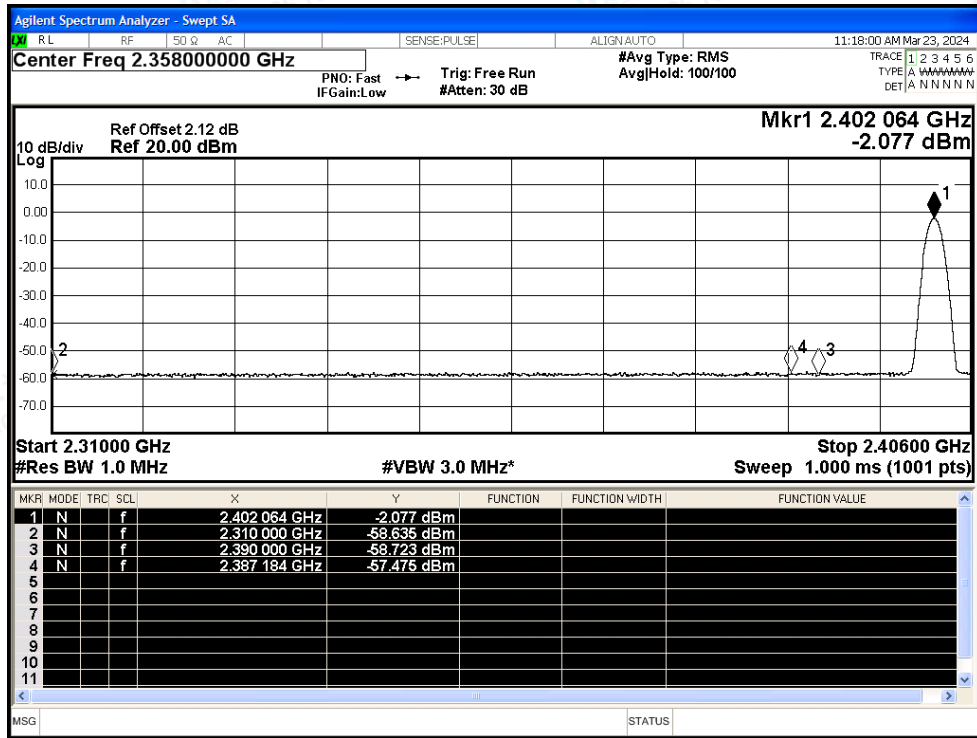


Test Graphs

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



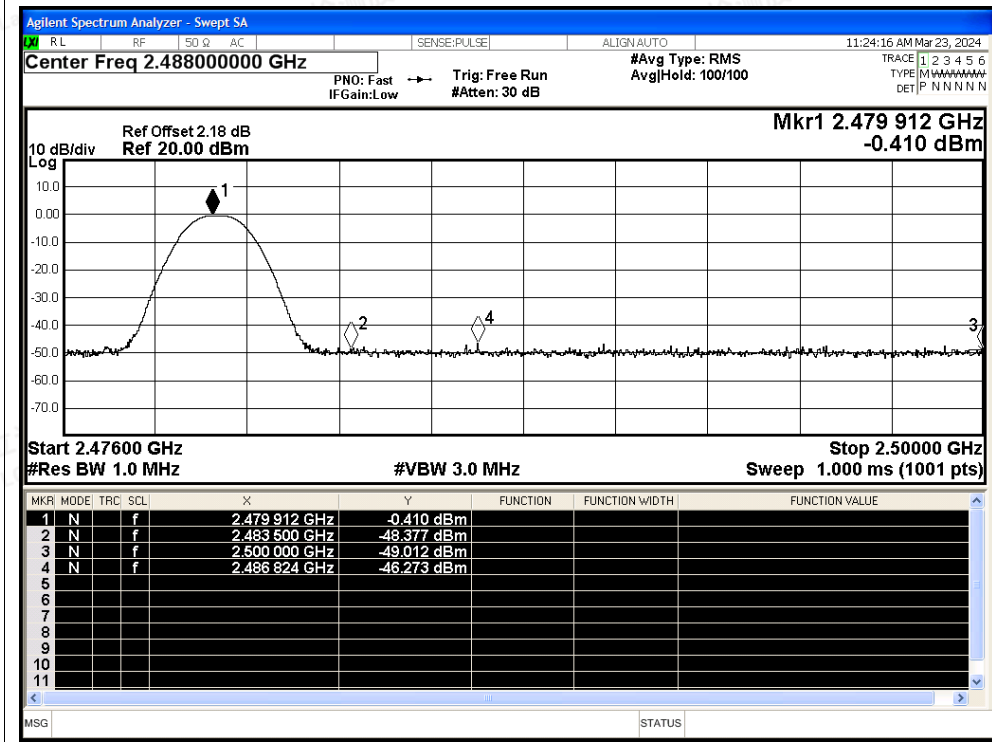
Restrict Band NVNT 1-DH5 2402MHz Ant No-Hopping Average



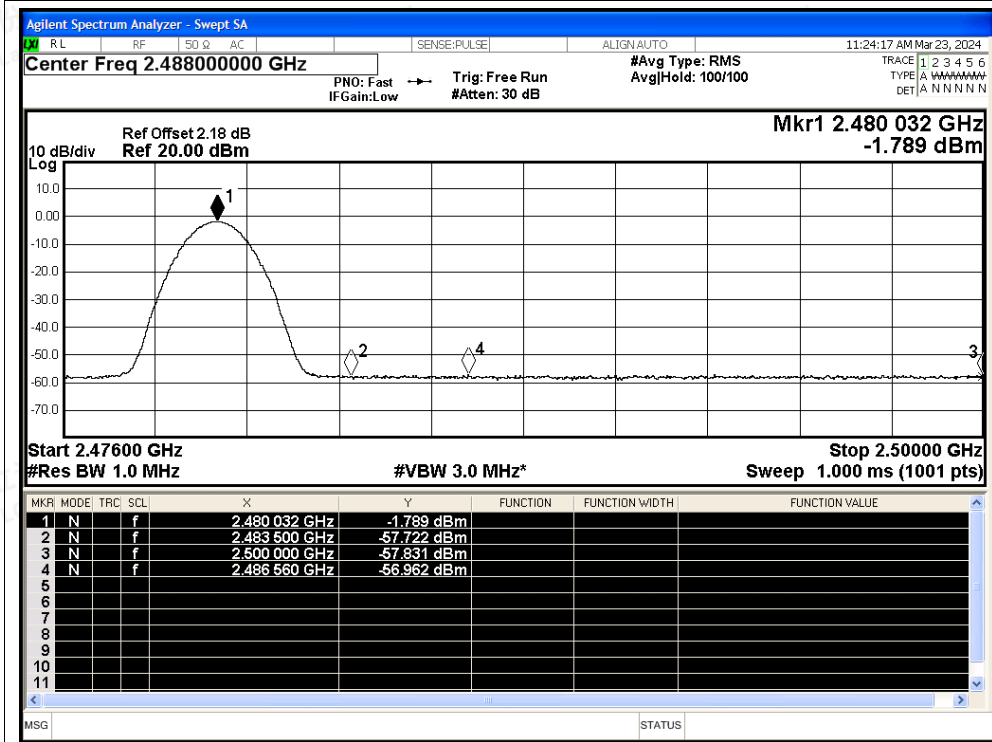




Restrict Band NVNT 1-DH5 2480MHz Ant No-Hopping Peak



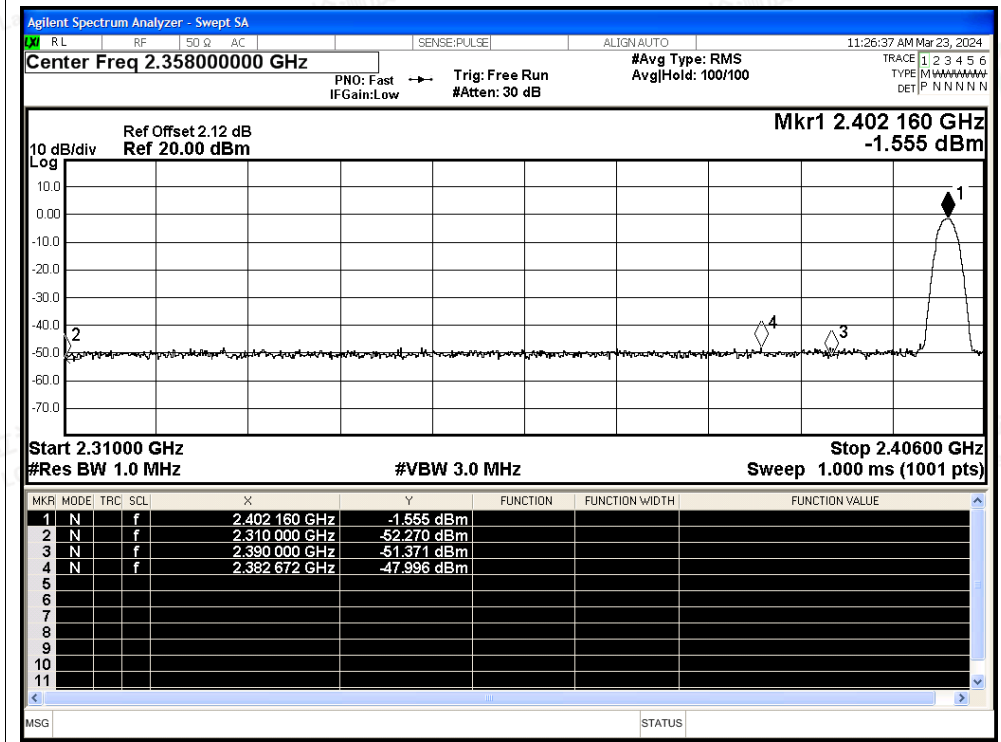
Restrict Band NVNT 1-DH5 2480MHz Ant No-Hopping Average



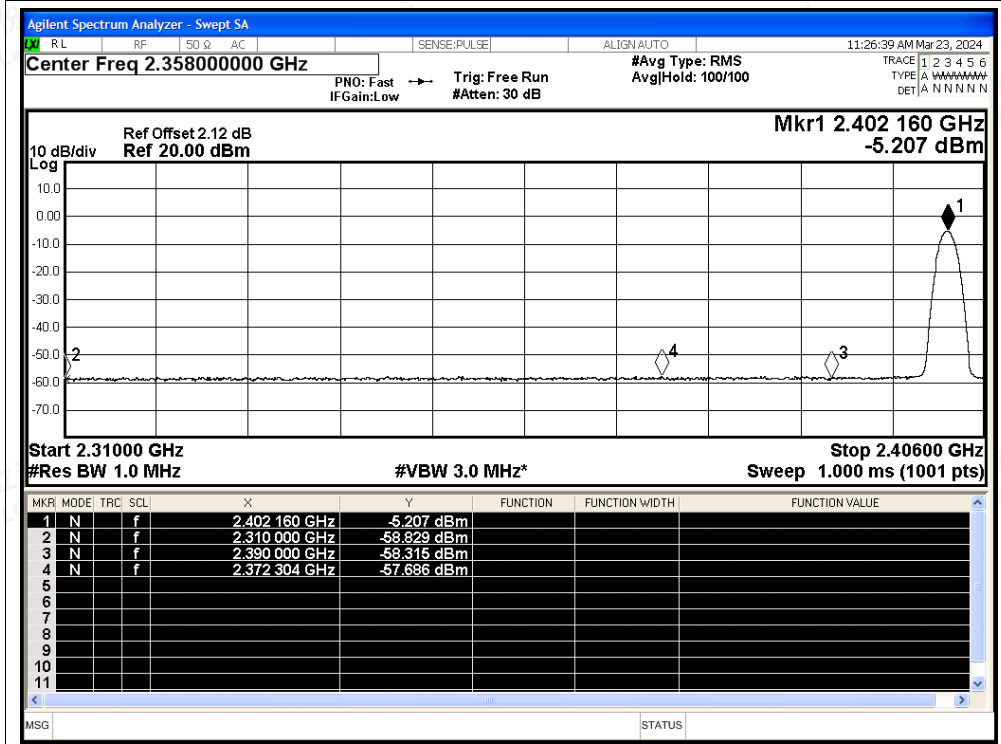




Restrict Band NVNT 2-DH5 2402MHz Ant No-Hopping Peak

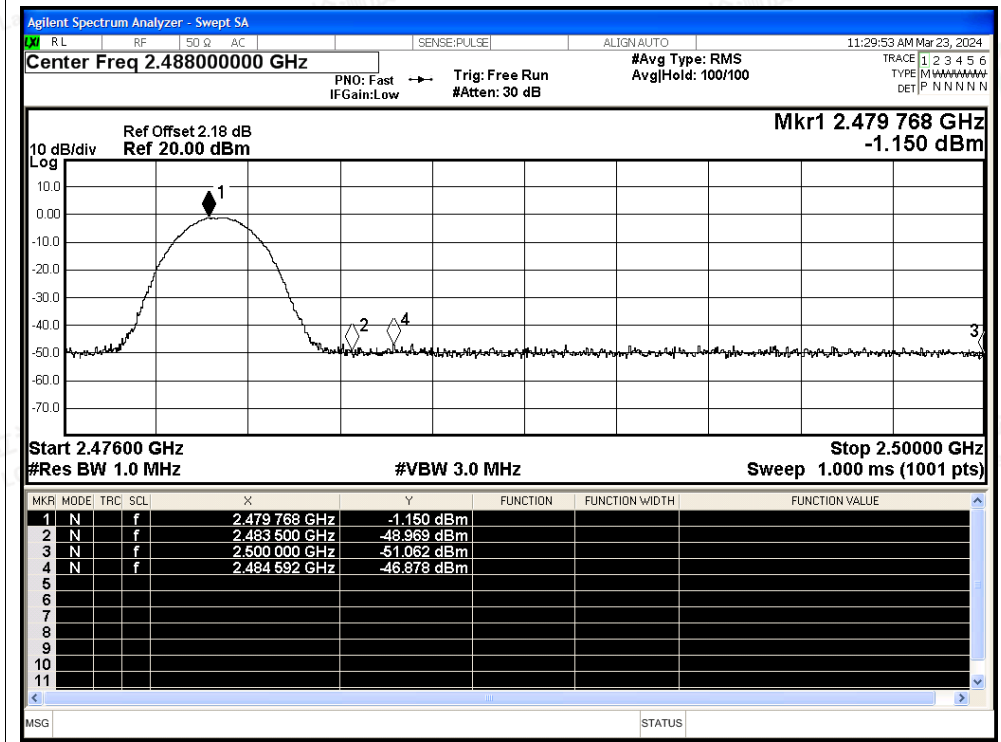


Restrict Band NVNT 2-DH5 2402MHz Ant No-Hopping Average

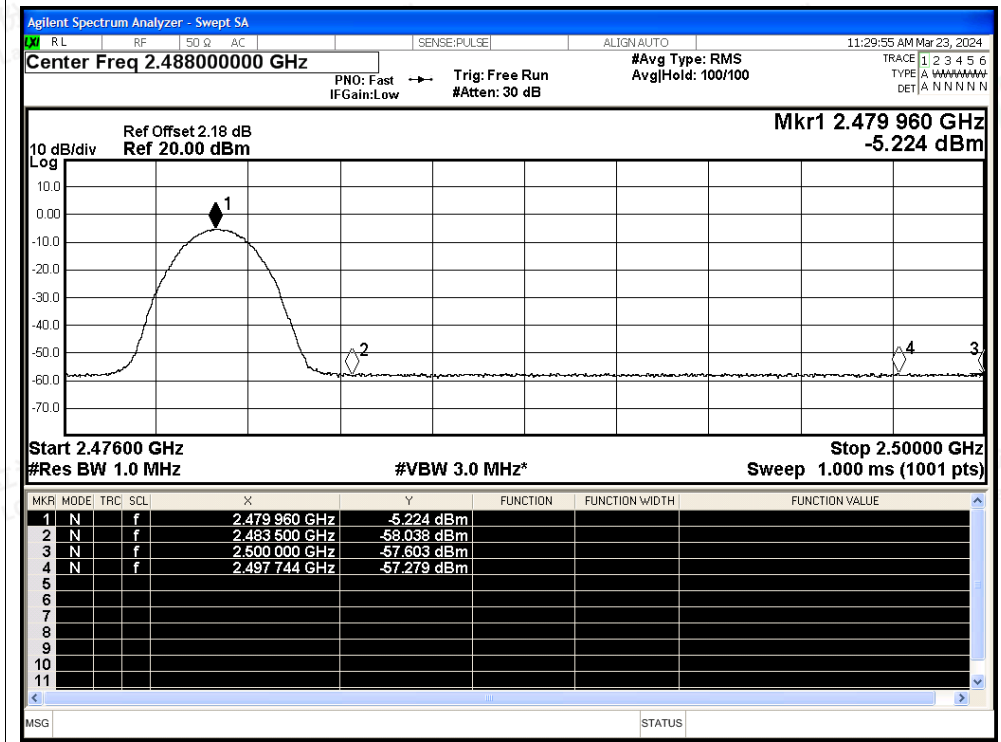




Restrict Band NVNT 2-DH5 2480MHz Ant No-Hopping Peak

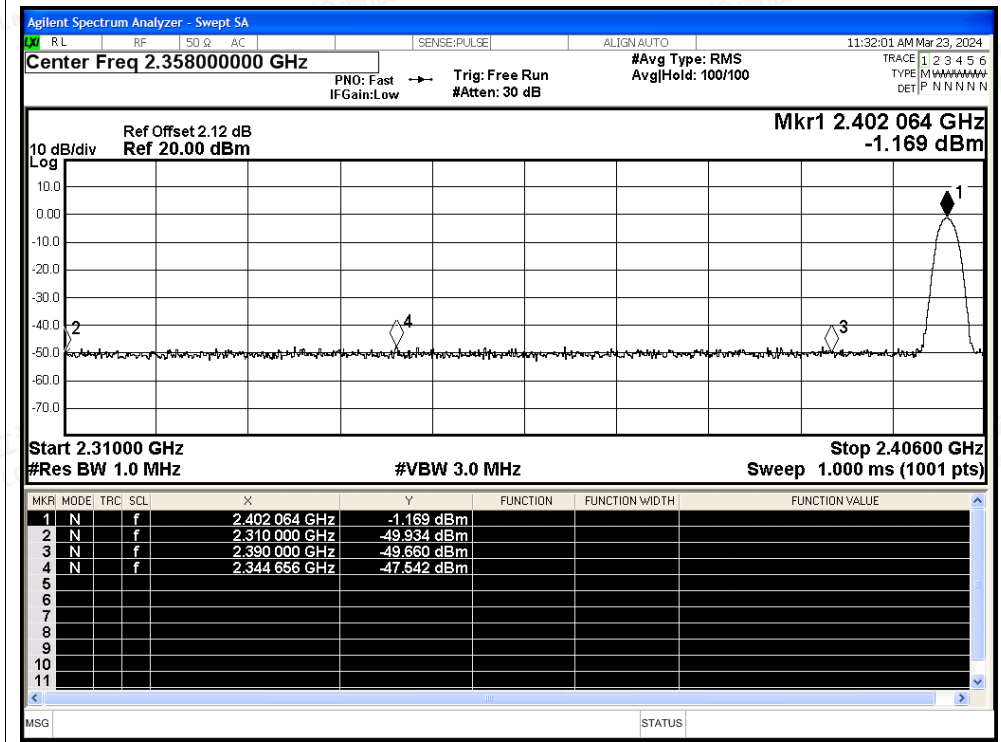


Restrict Band NVNT 2-DH5 2480MHz Ant No-Hopping Average

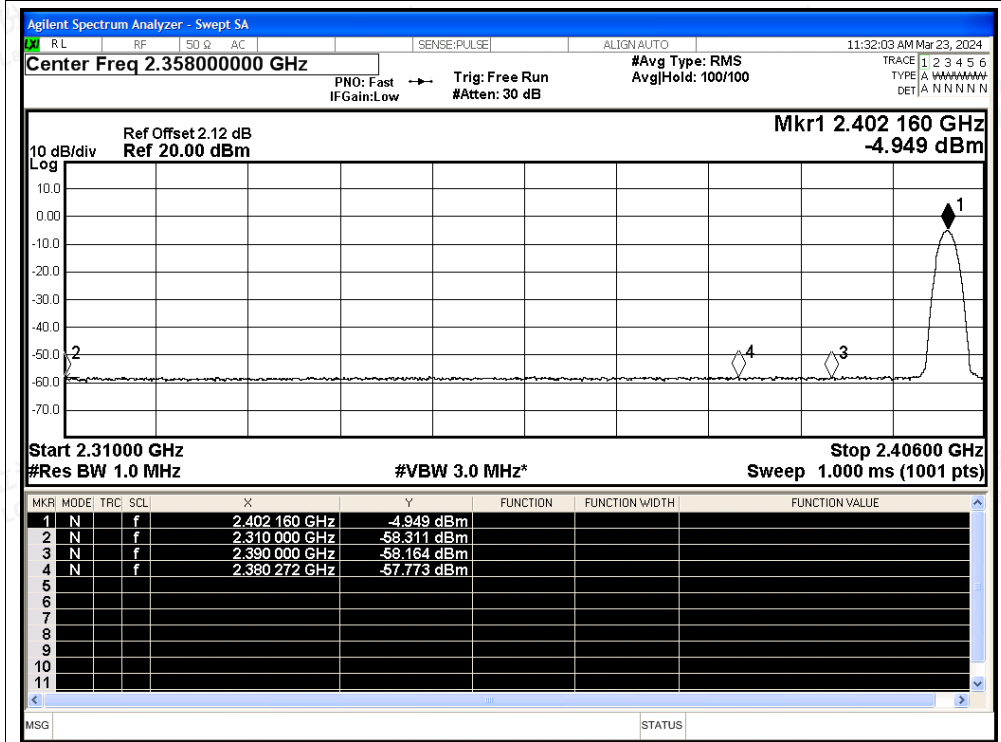




Restrict Band NVNT 3-DH5 2402MHz Ant No-Hopping Peak

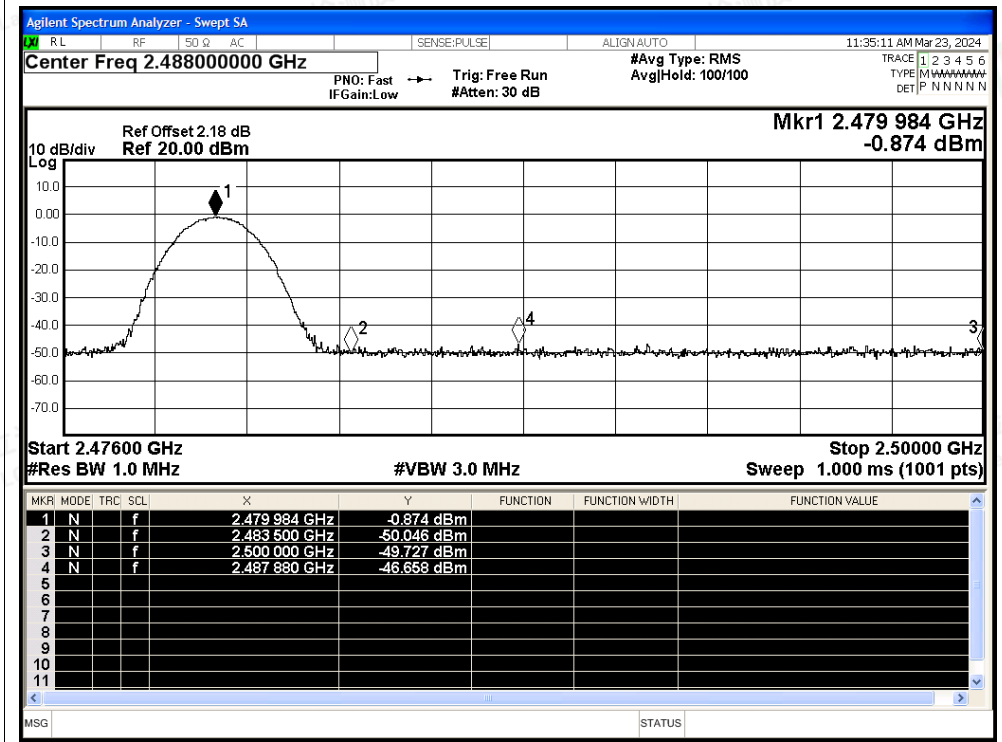


Restrict Band NVNT 3-DH5 2402MHz Ant No-Hopping Average





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



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

