Appendix A

RF Test Data for BT(Conducted Measurement)

Product Name: In-car entertainment system

Test Model: ZT-A

Environmental Conditions

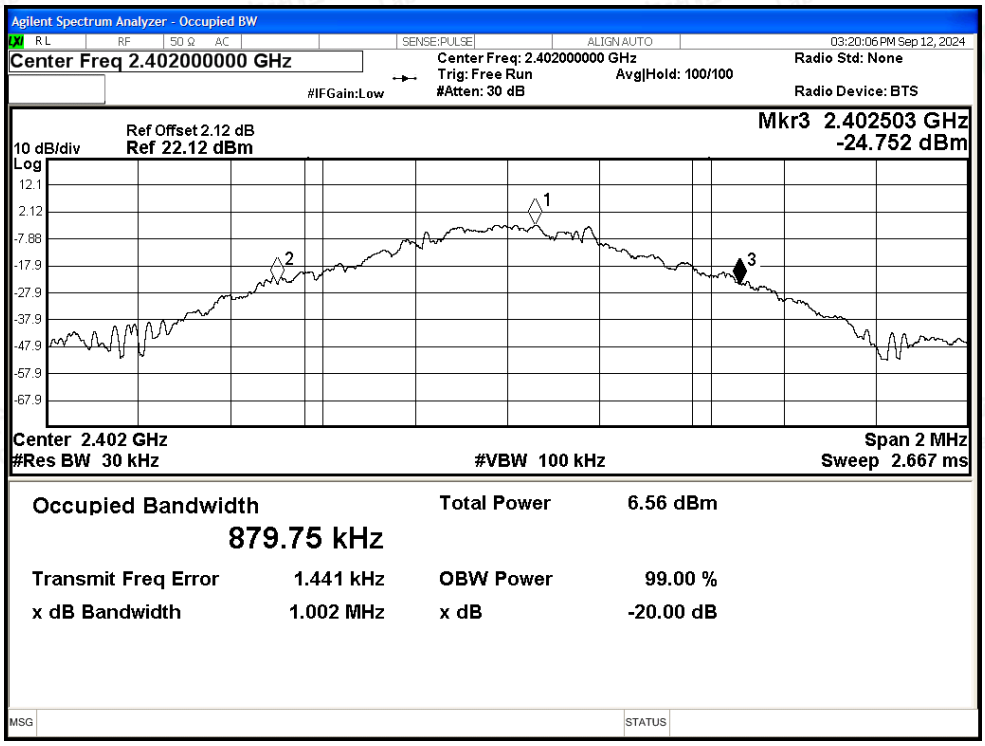
Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Can Kun
Supervised by:	Nick Peng

A.1 -20dB Bandwidth

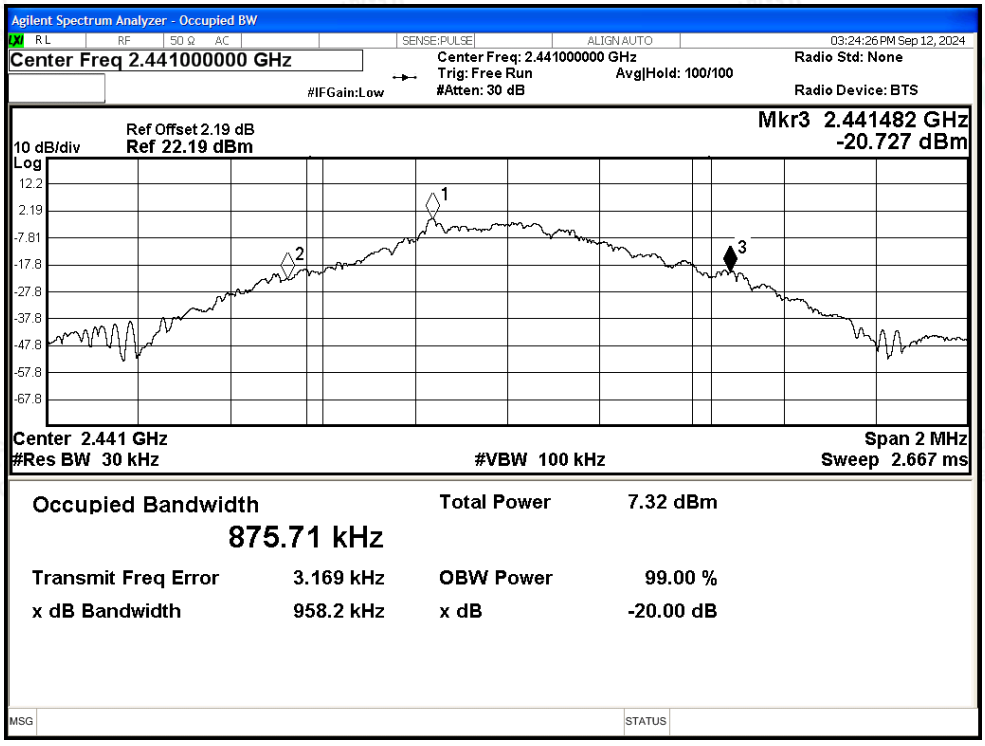
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	1.002	N/A	Pass
NVNT	1-DH5	2441	Ant1	0.958	N/A	Pass
NVNT	1-DH5	2480	Ant1	0.997	N/A	Pass
NVNT	2-DH5	2402	Ant1	1.286	N/A	Pass
NVNT	2-DH5	2441	Ant1	1.286	N/A	Pass
NVNT	2-DH5	2480	Ant1	1.324	N/A	Pass
NVNT	3-DH5	2402	Ant1	1.295	N/A	Pass
NVNT	3-DH5	2441	Ant1	1.295	N/A	Pass
NVNT	3-DH5	2480	Ant1	1.295	N/A	Pass

Test Graphs

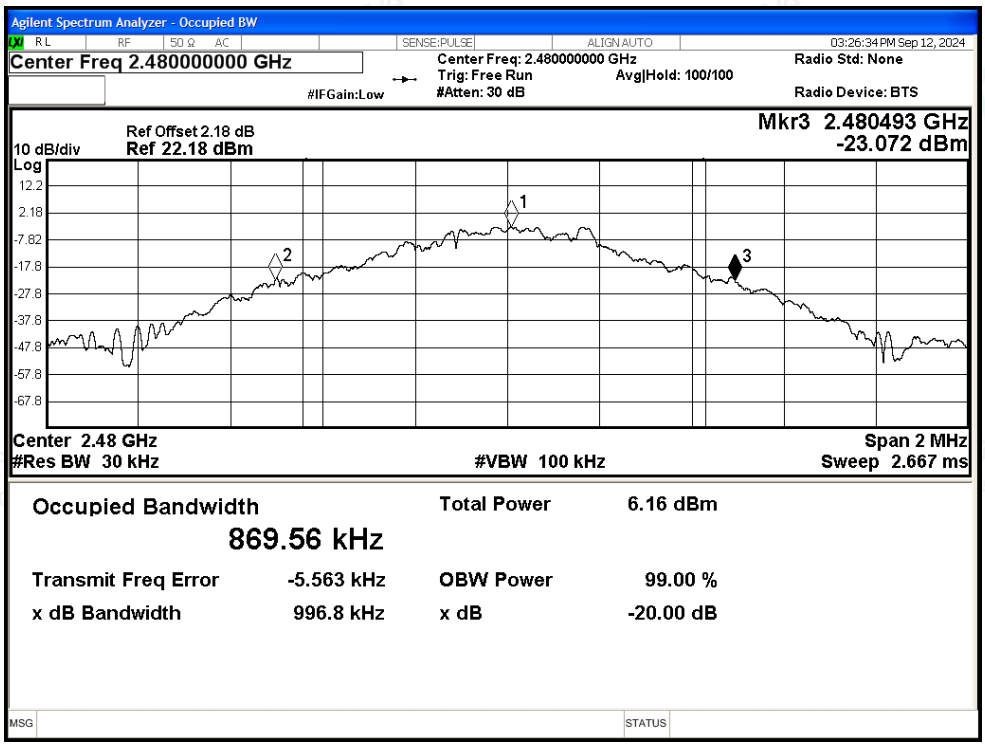
-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1



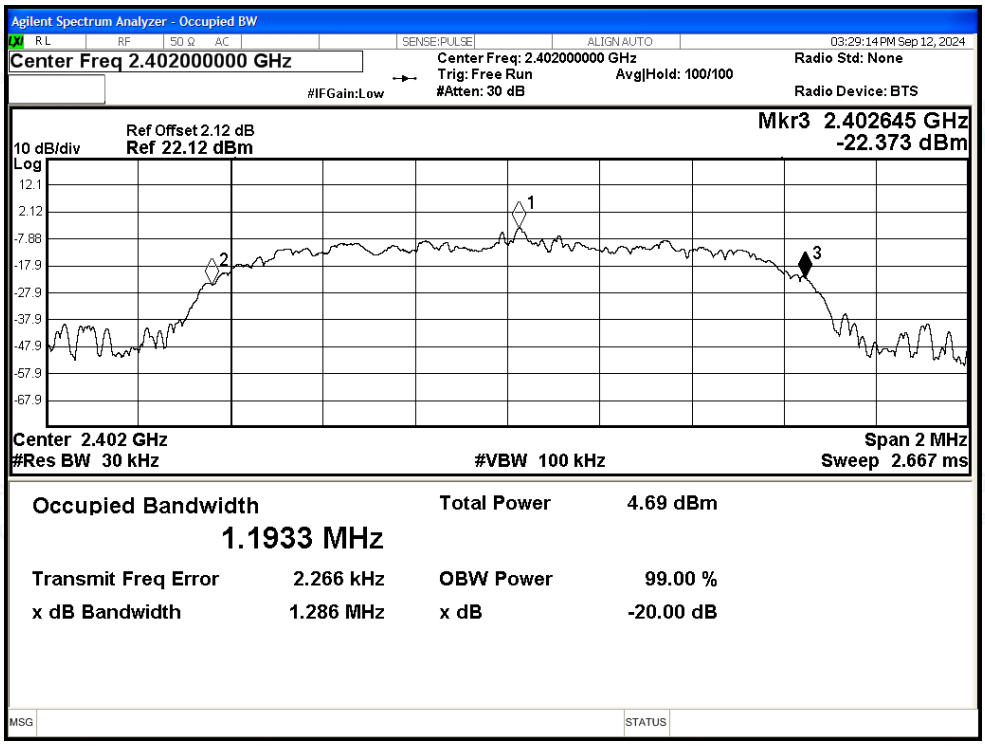
-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1



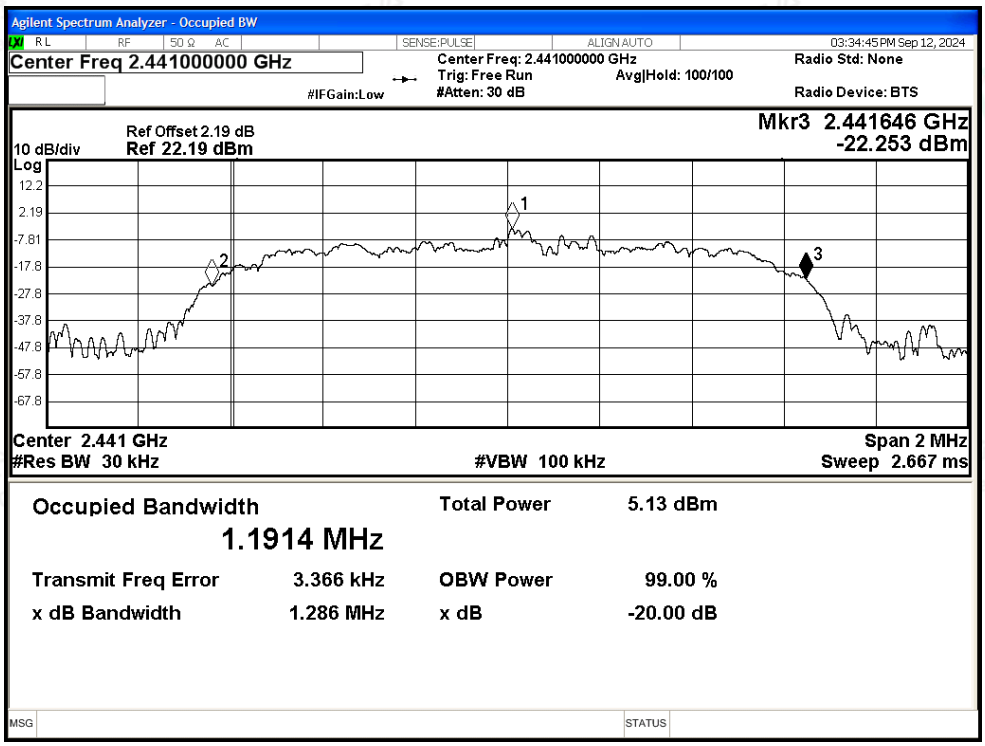
-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



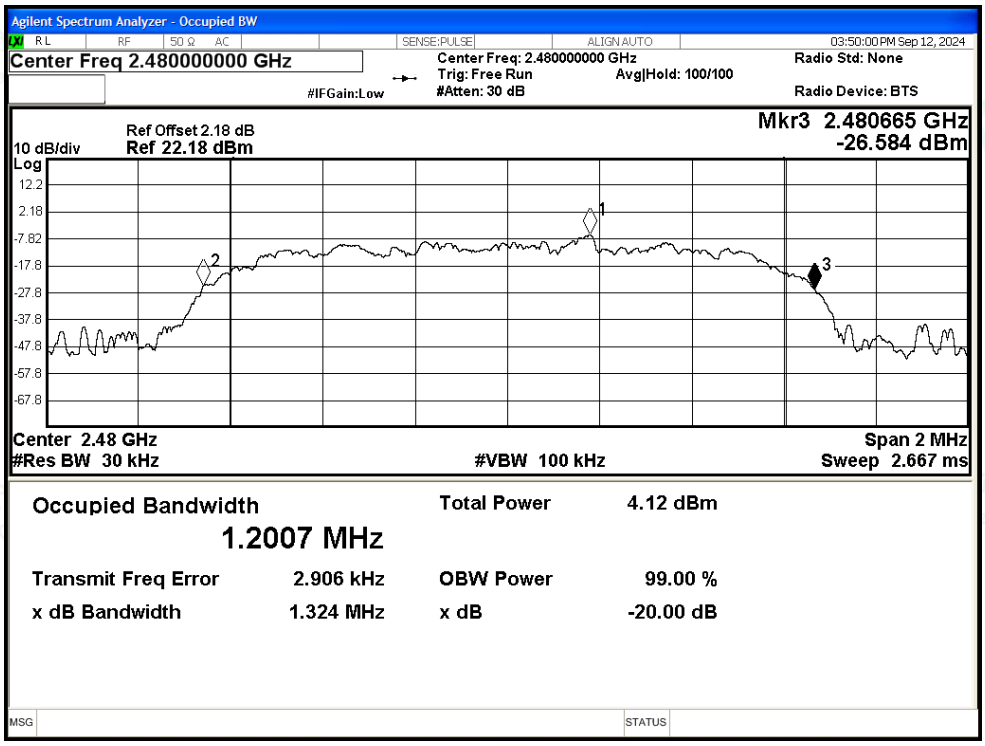
-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1



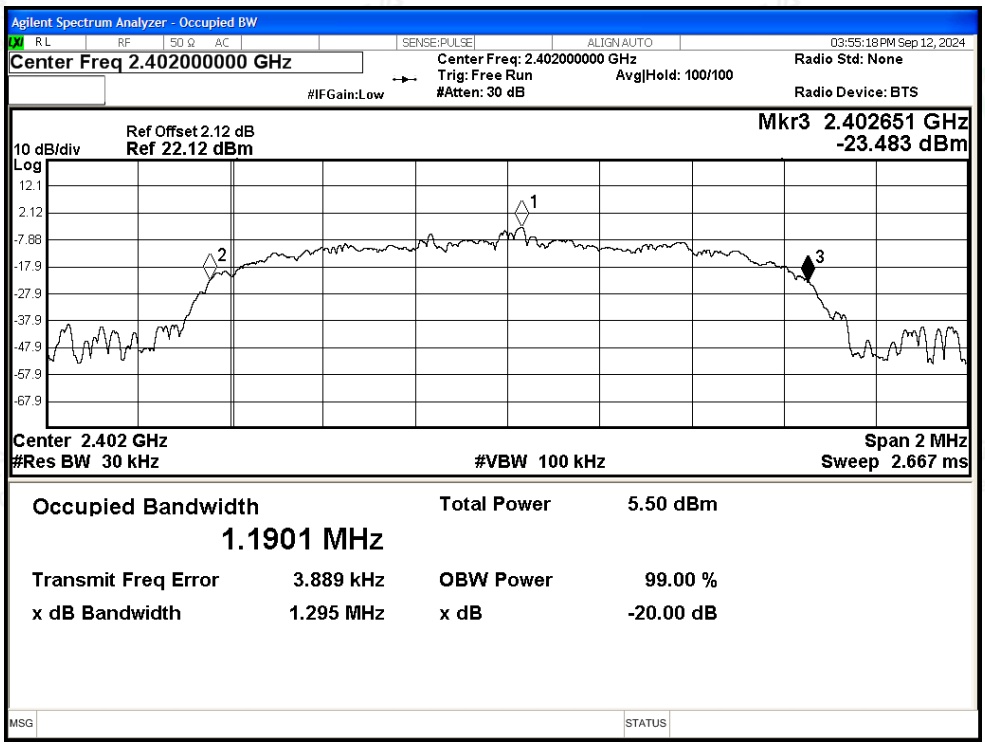
-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



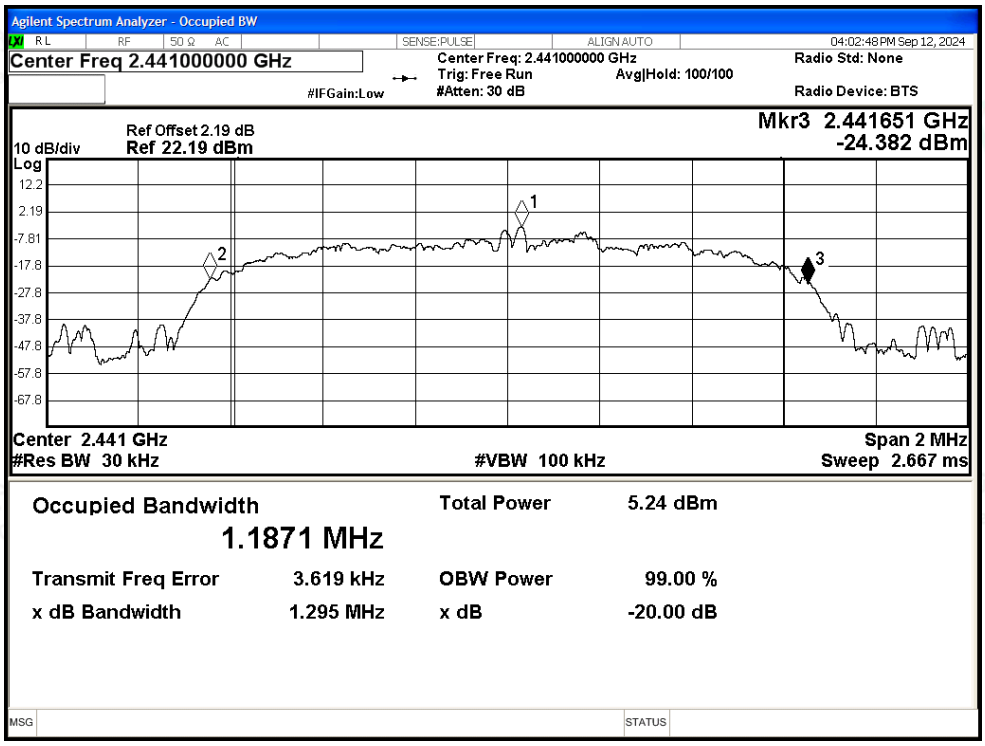
-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1



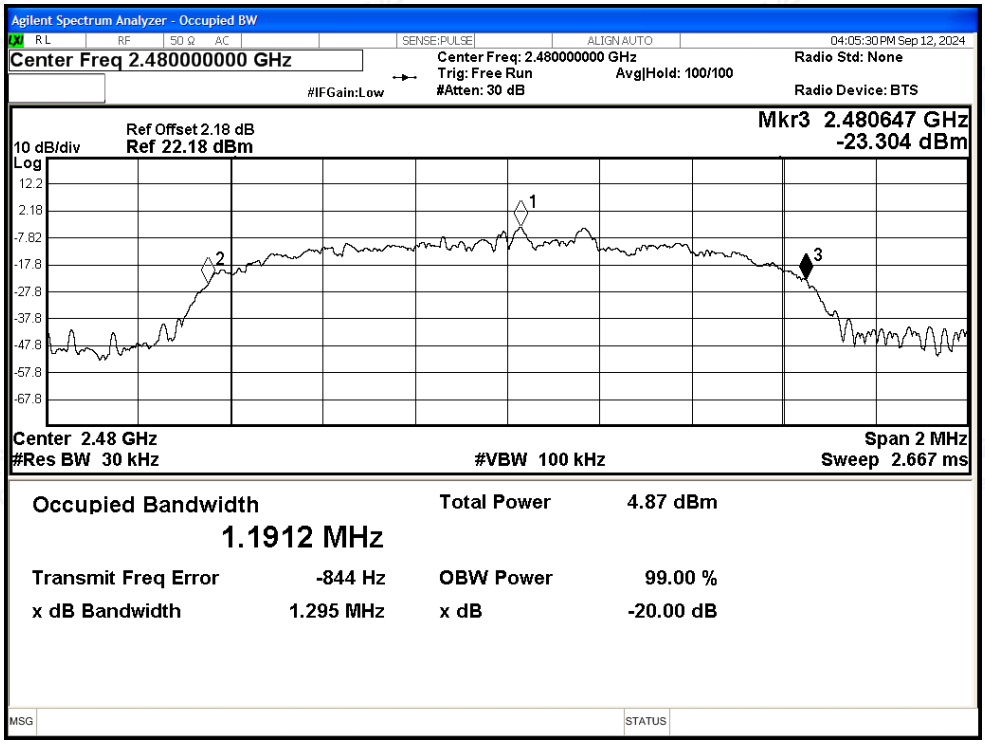
-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1

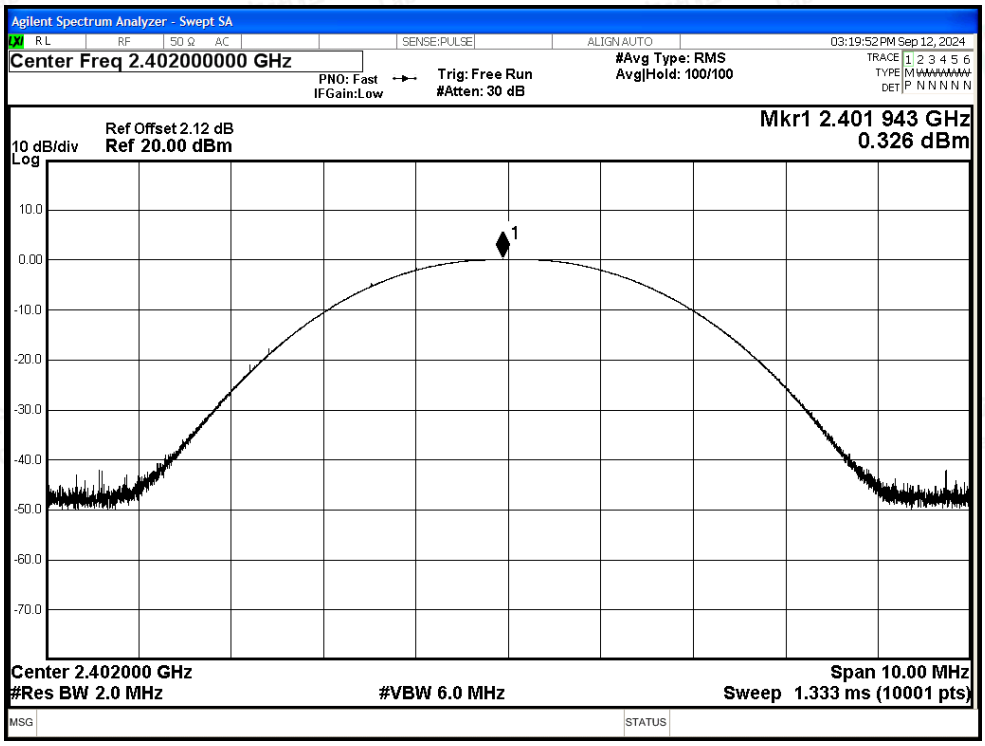


A.2 Maximum Peak Conducted Output Power

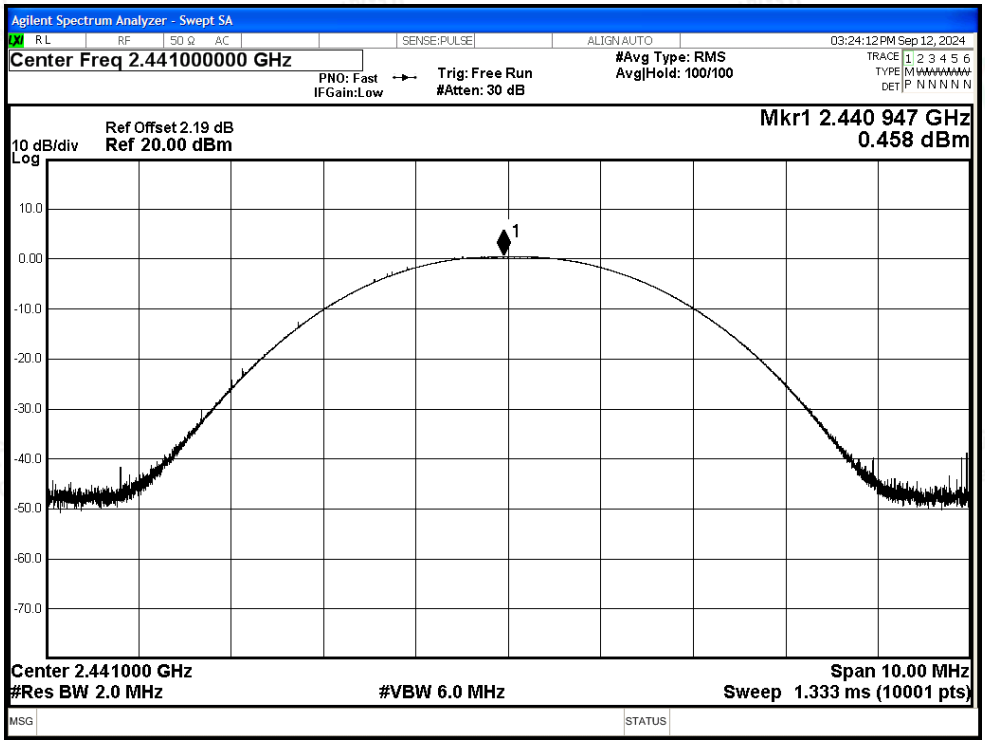
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	0.33	21	Pass
NVNT	1-DH5	2441	Ant1	0.46	21	Pass
NVNT	1-DH5	2480	Ant1	-0.26	21	Pass
NVNT	2-DH5	2402	Ant1	0.53	21	Pass
NVNT	2-DH5	2441	Ant1	0.61	21	Pass
NVNT	2-DH5	2480	Ant1	-0.15	21	Pass
NVNT	3-DH5	2402	Ant1	1.07	21	Pass
NVNT	3-DH5	2441	Ant1	0.87	21	Pass
NVNT	3-DH5	2480	Ant1	0.03	21	Pass

Test Graphs

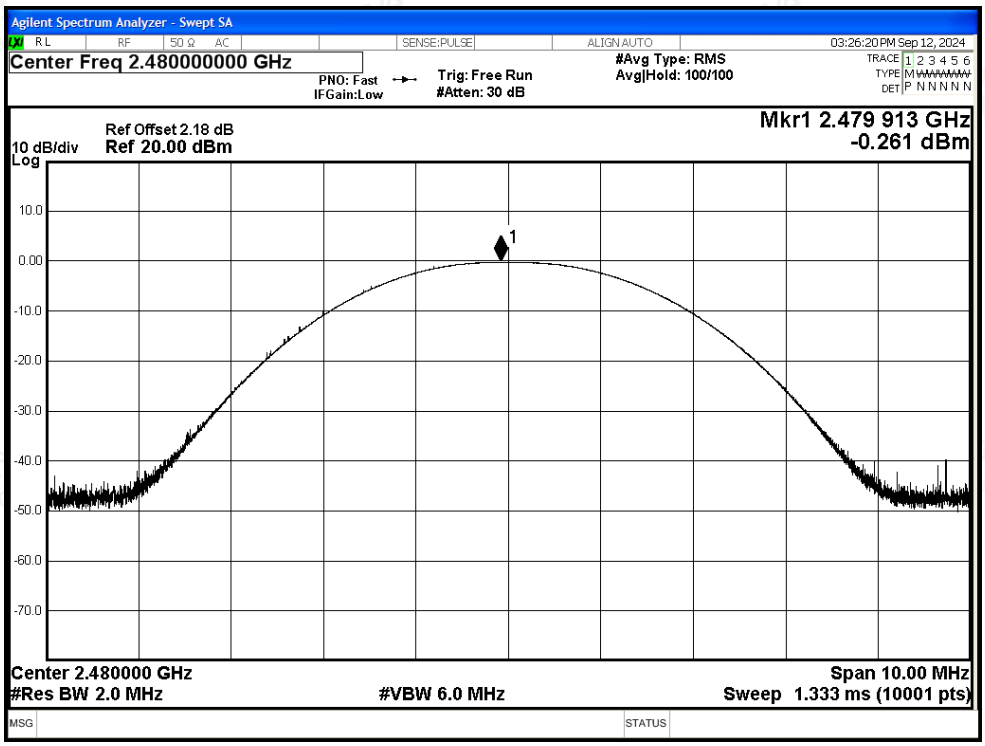
Power NVNT 1-DH5 2402MHz Ant1



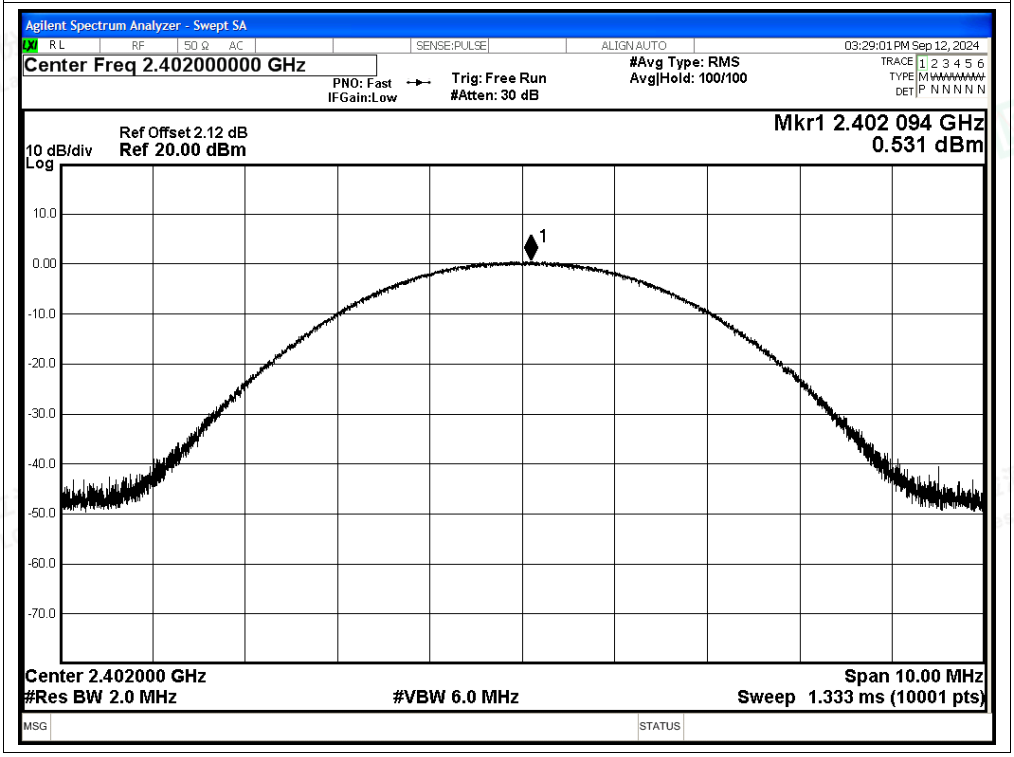
Power NVNT 1-DH5 2441MHz Ant1



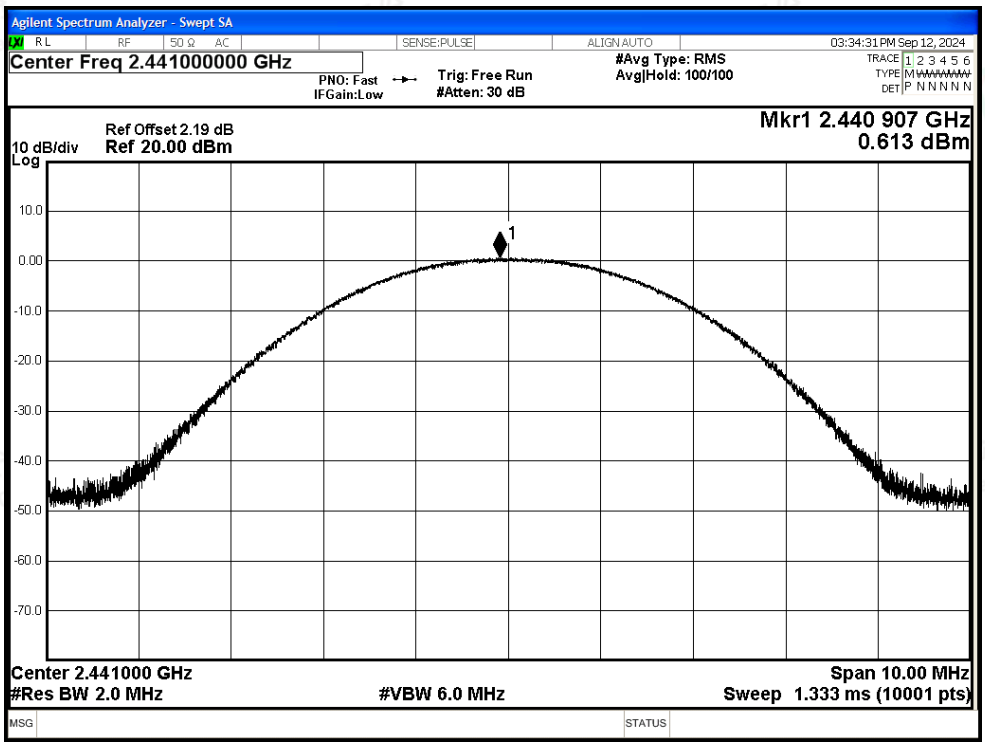
Power NVNT 1-DH5 2480MHz Ant1



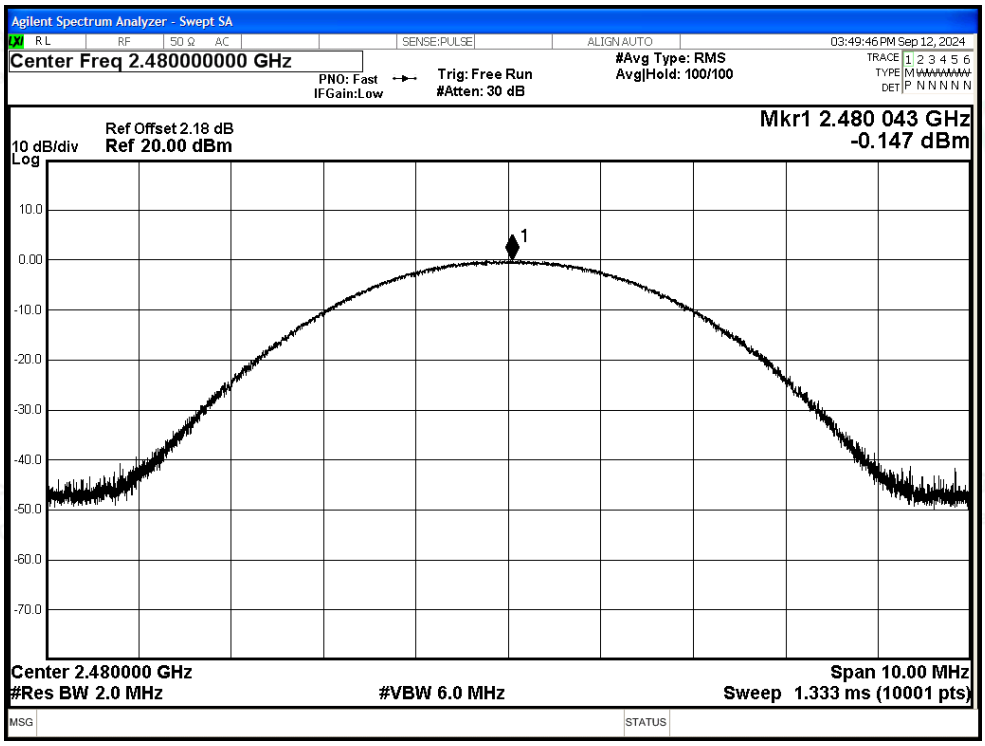
Power NVNT 2-DH5 2402MHz Ant1



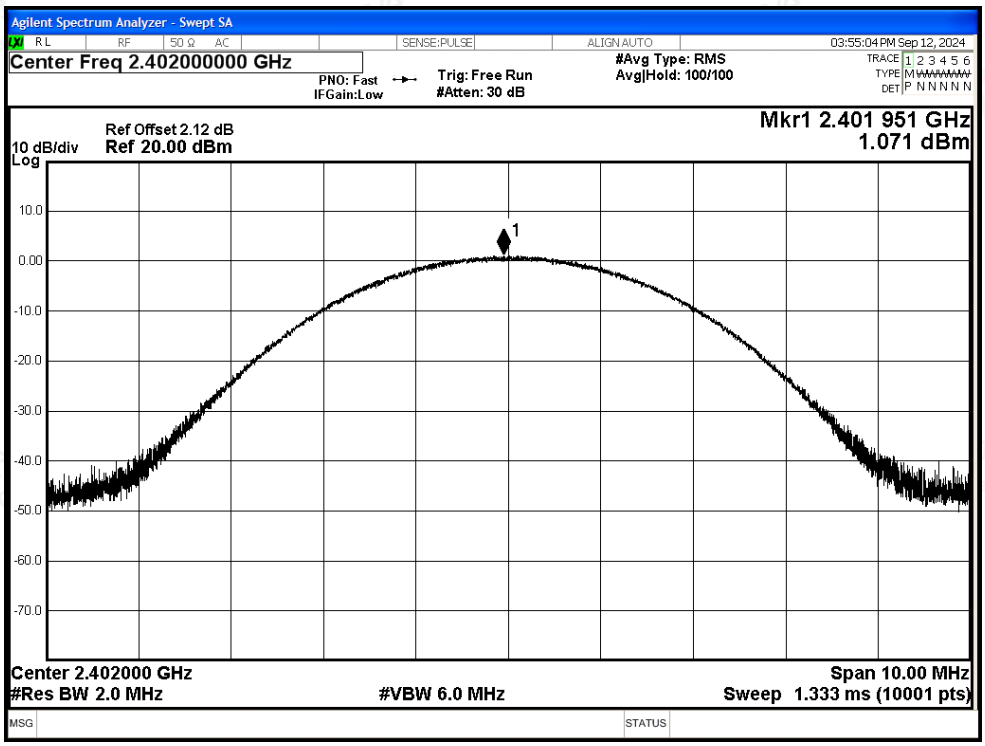
Power NVNT 2-DH5 2441MHz Ant1



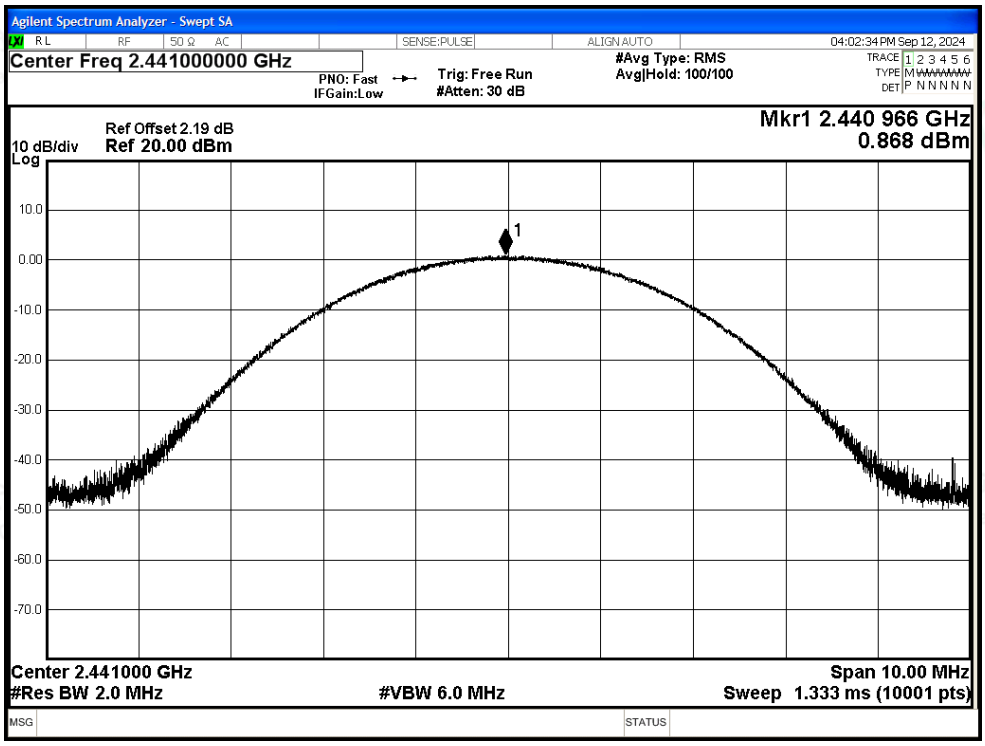
Power NVNT 2-DH5 2480MHz Ant1



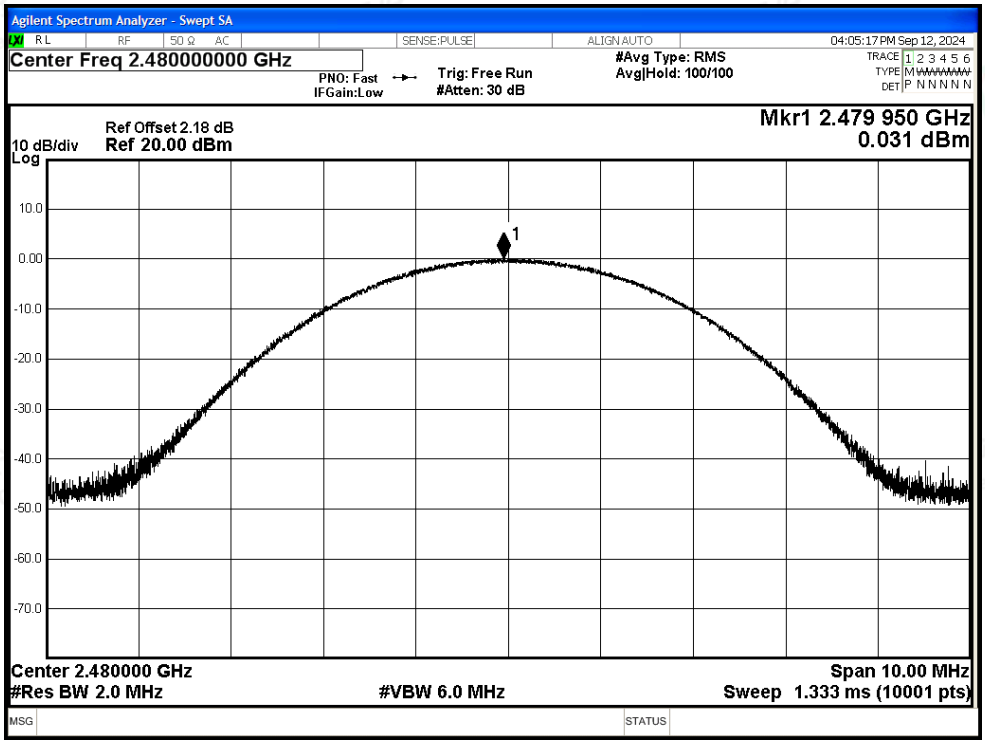
Power NVNT 3-DH5 2402MHz Ant1



Power NVNT 3-DH5 2441MHz Ant1



Power NVNT 3-DH5 2480MHz Ant1

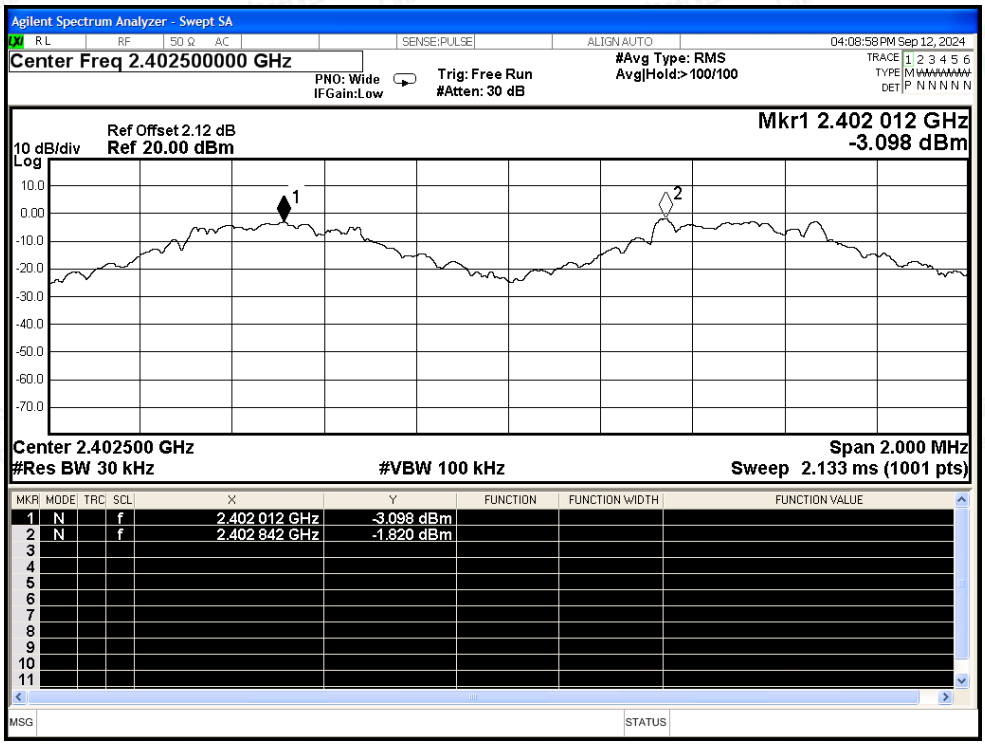


A.3 Carrier Frequencies Separation

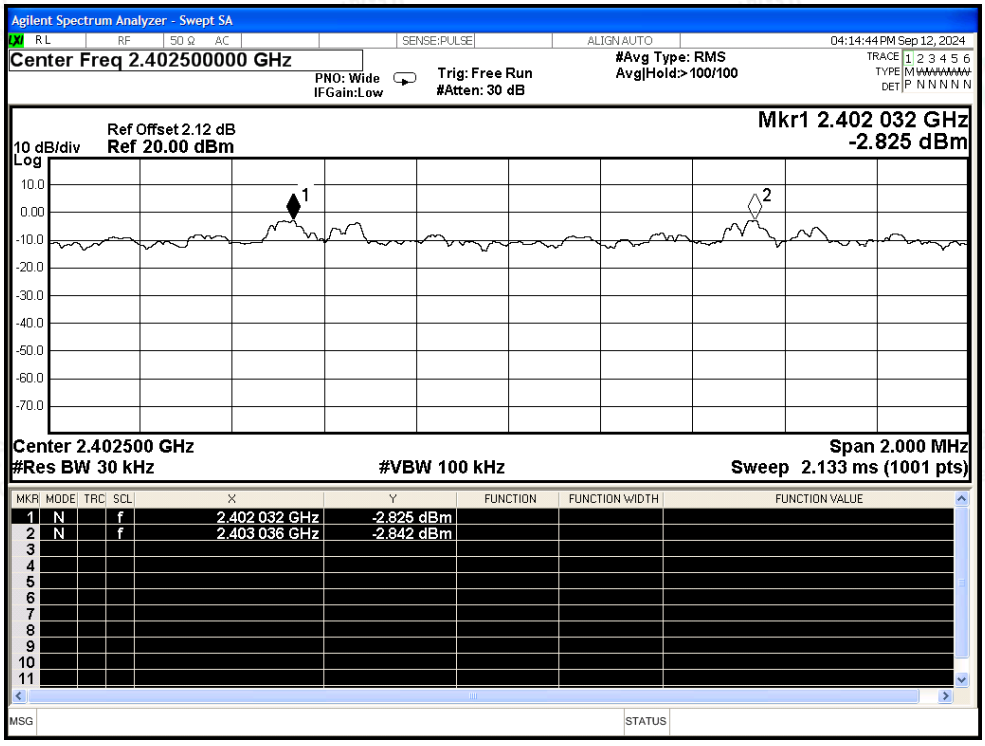
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2402.012	2402.842	0.83	0.668	Pass
NVNT	2-DH5	Ant1	2402.032	2403.036	1.004	0.883	Pass
NVNT	3-DH5	Ant1	2402.01	2403.02	1.01	0.863	Pass

Test Graphs

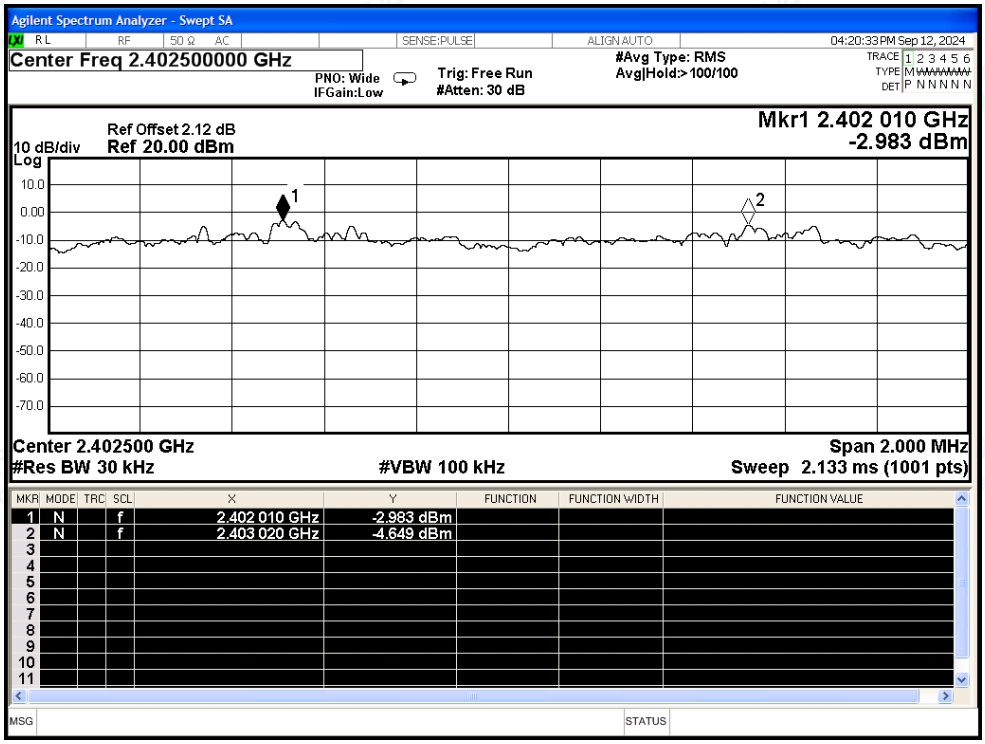
CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 2-DH5 2402MHz Ant1



CFS NVNT 3-DH5 2402MHz Ant1

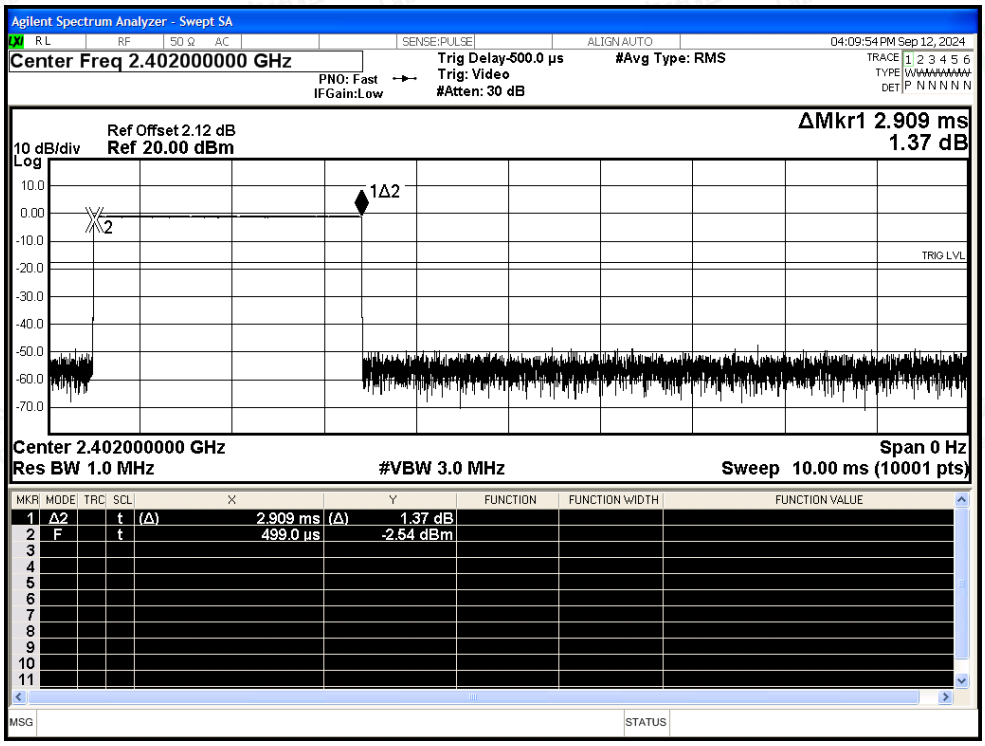


A.4 Dwell Time

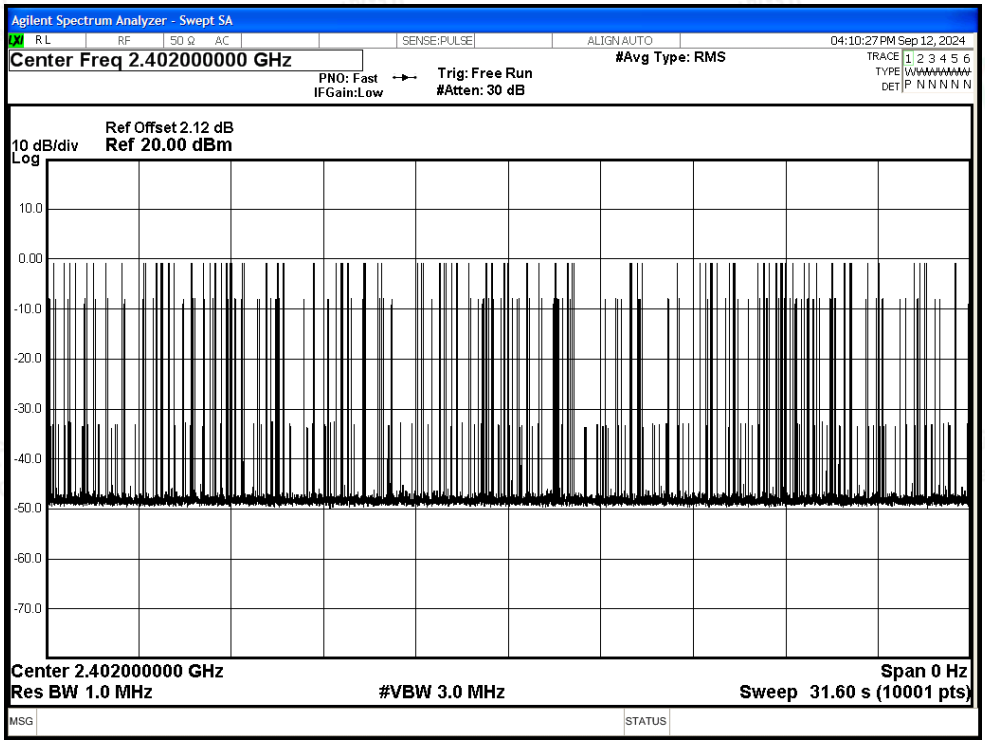
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.909	308.354	106	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.898	353.556	122	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.897	333.155	115	31600	400	Pass

Test Graphs

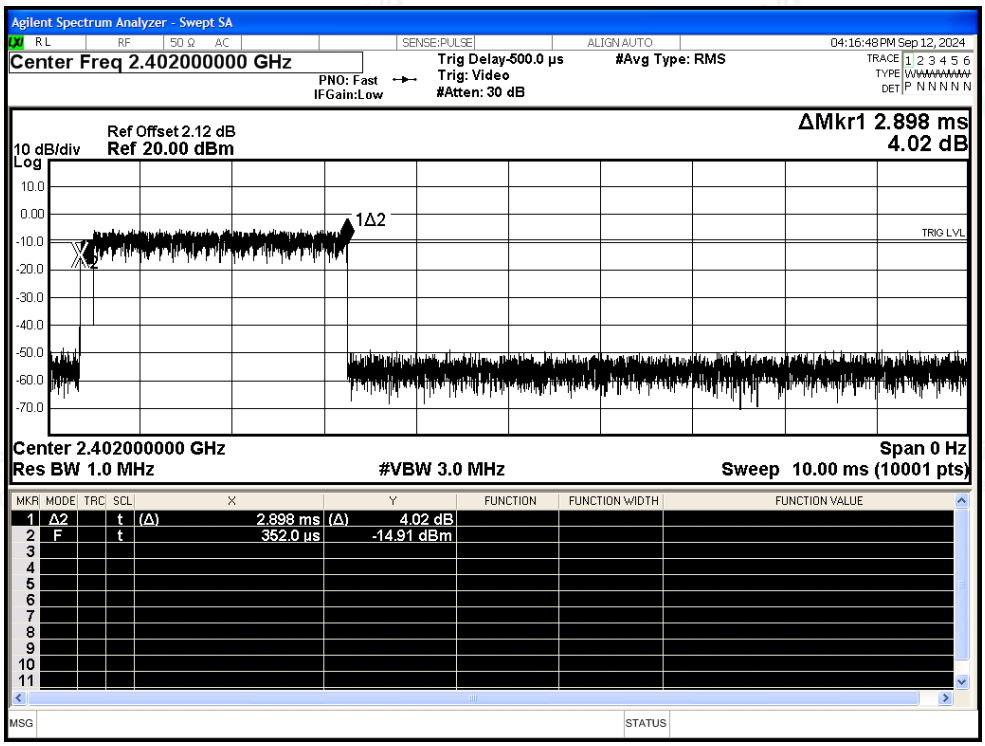
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



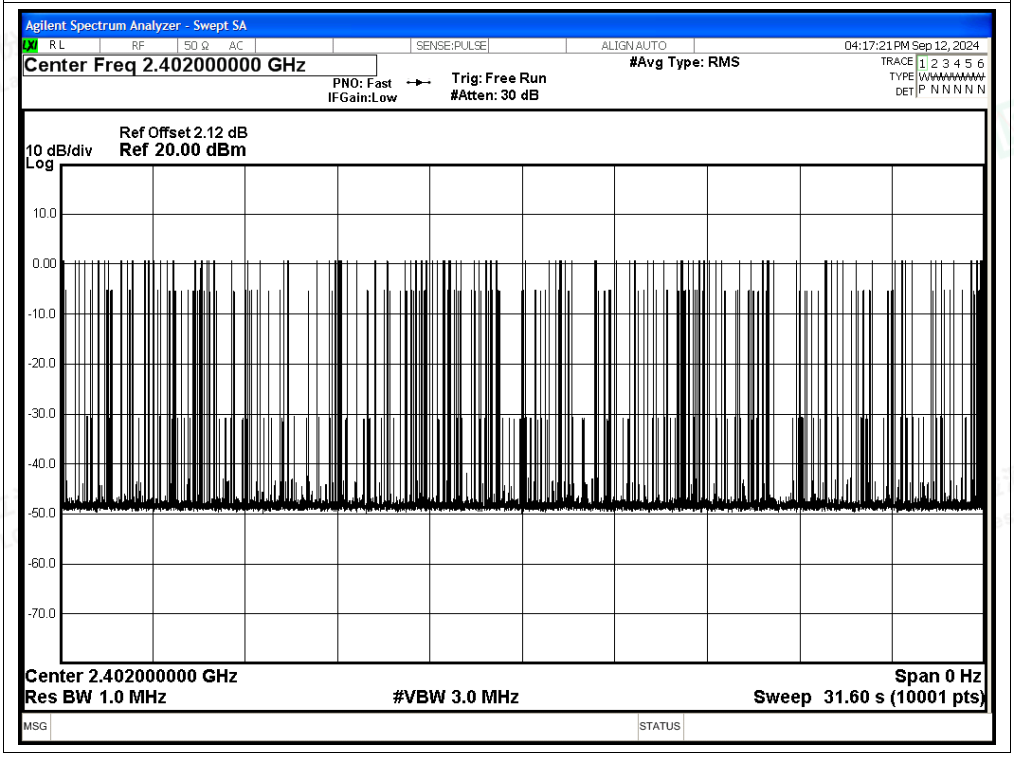
Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



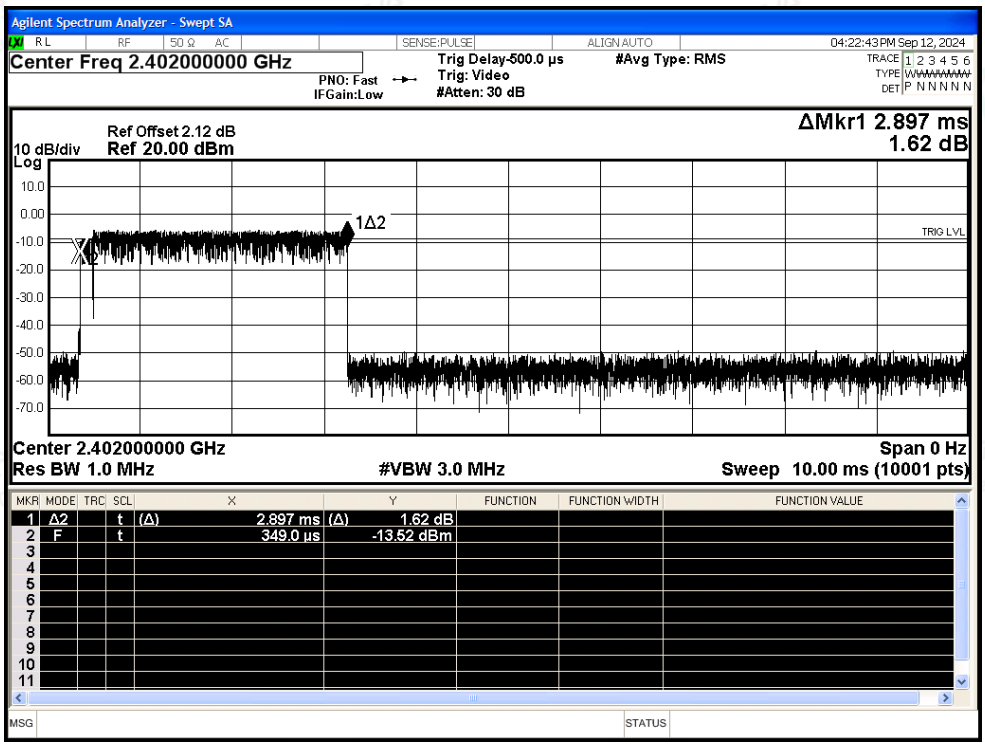
Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



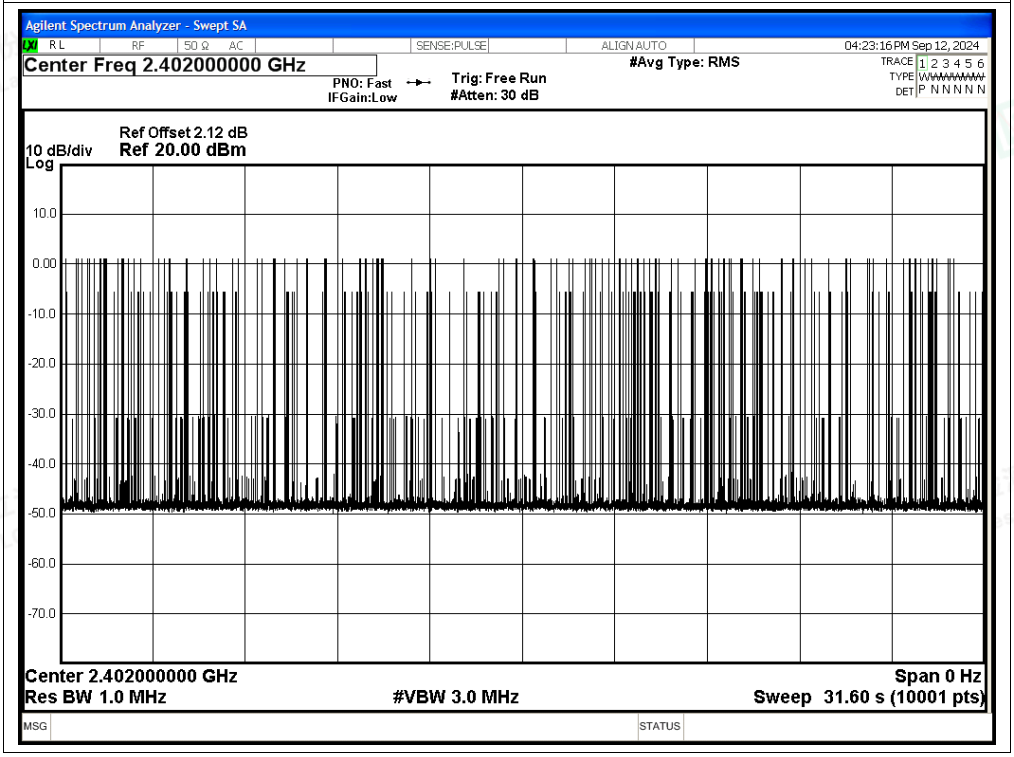
Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated



Dwell NVNT 3-DH5 2402MHz Ant1 One Burst



Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

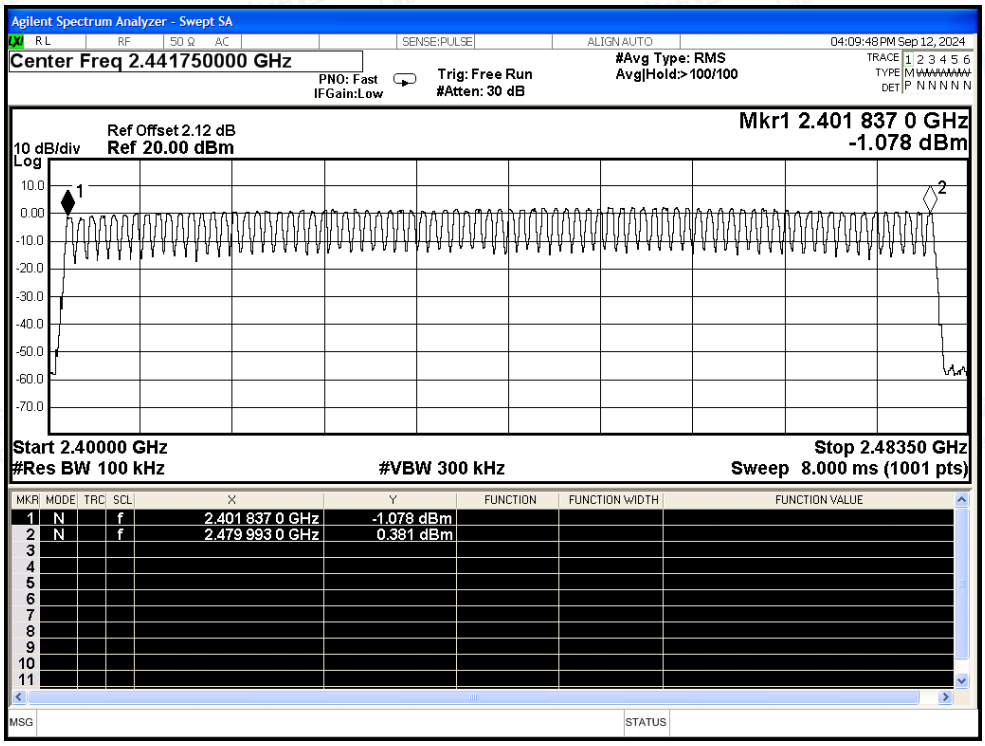


A.5 Number of Hopping Channel

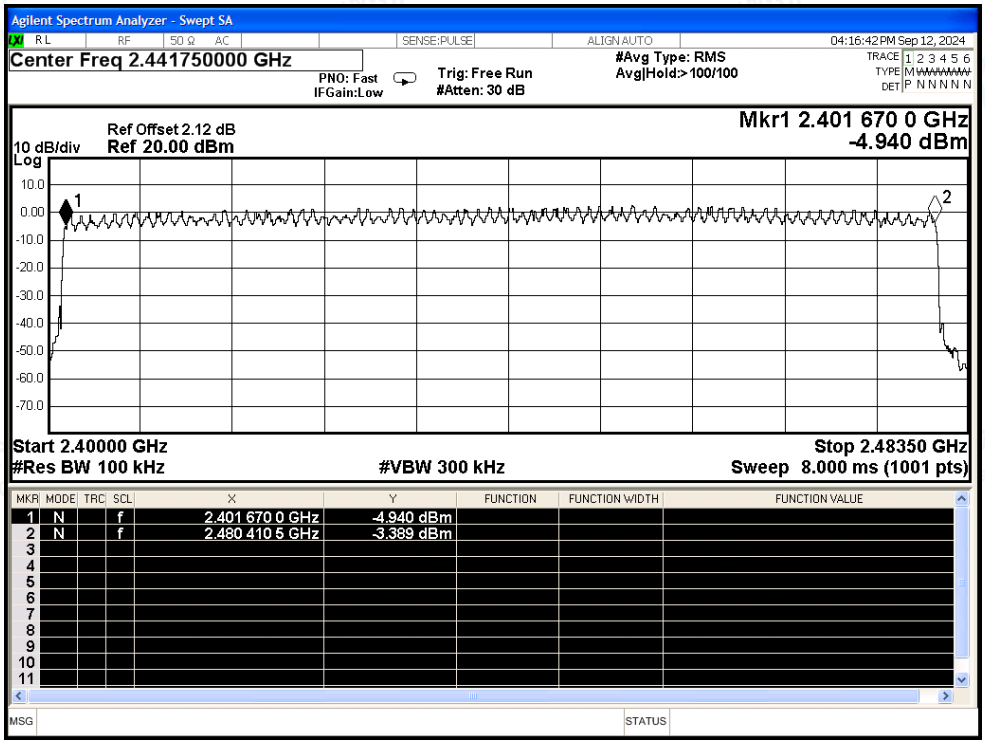
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass

Test Graphs

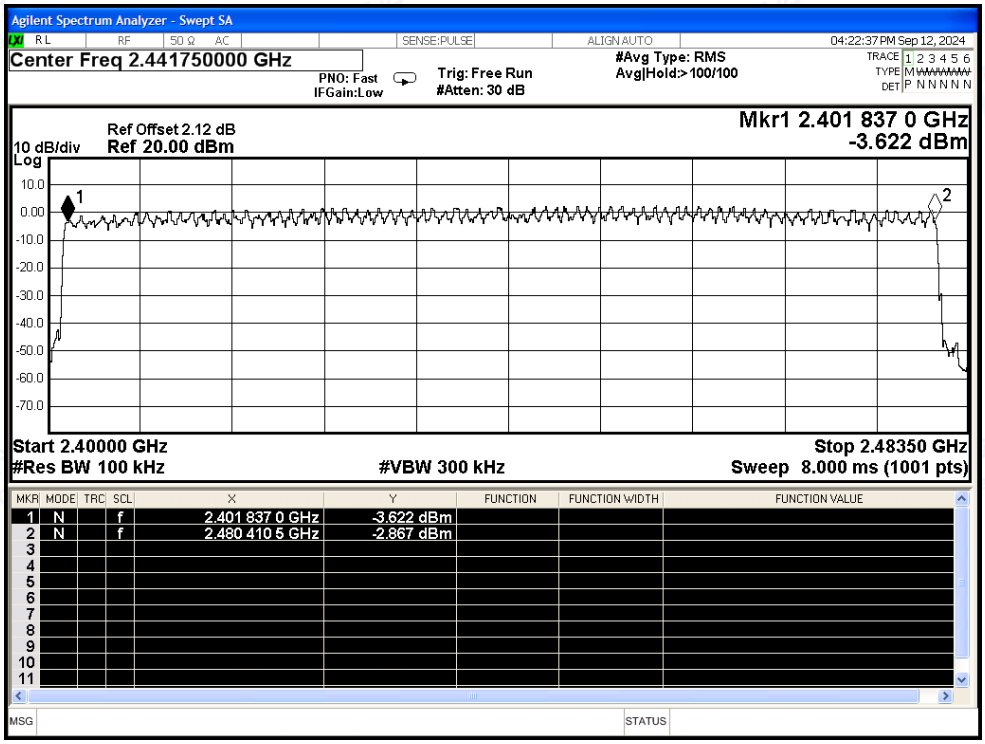
Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-DH5 2402MHz Ant1



Hopping No. NVNT 3-DH5 2402MHz Ant1

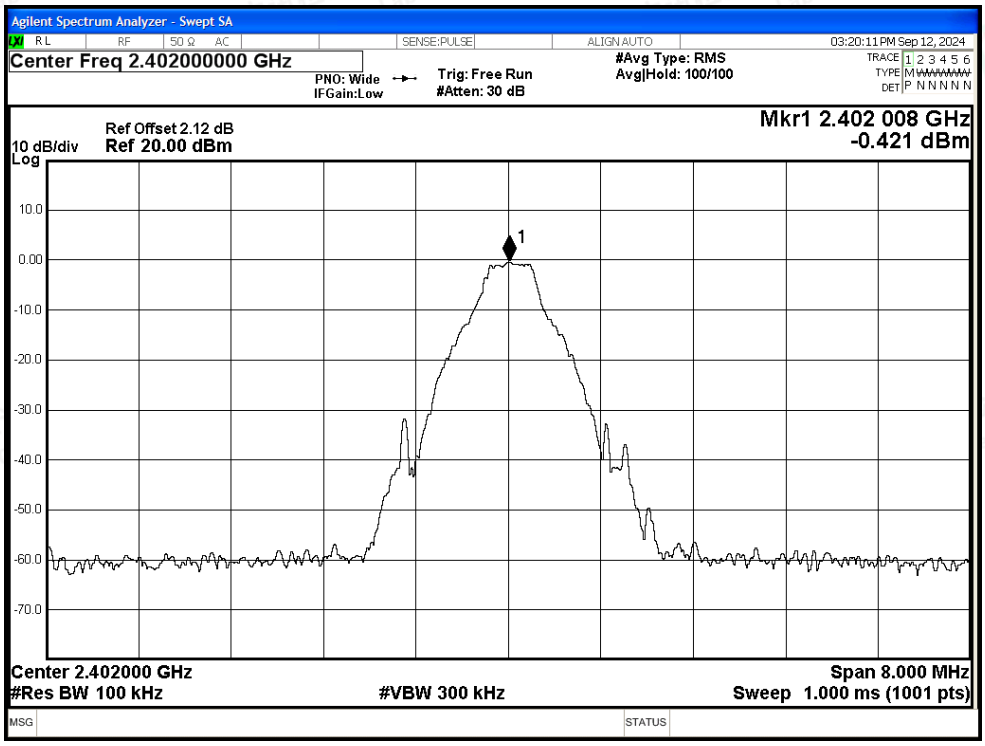


A.6 Band Edge

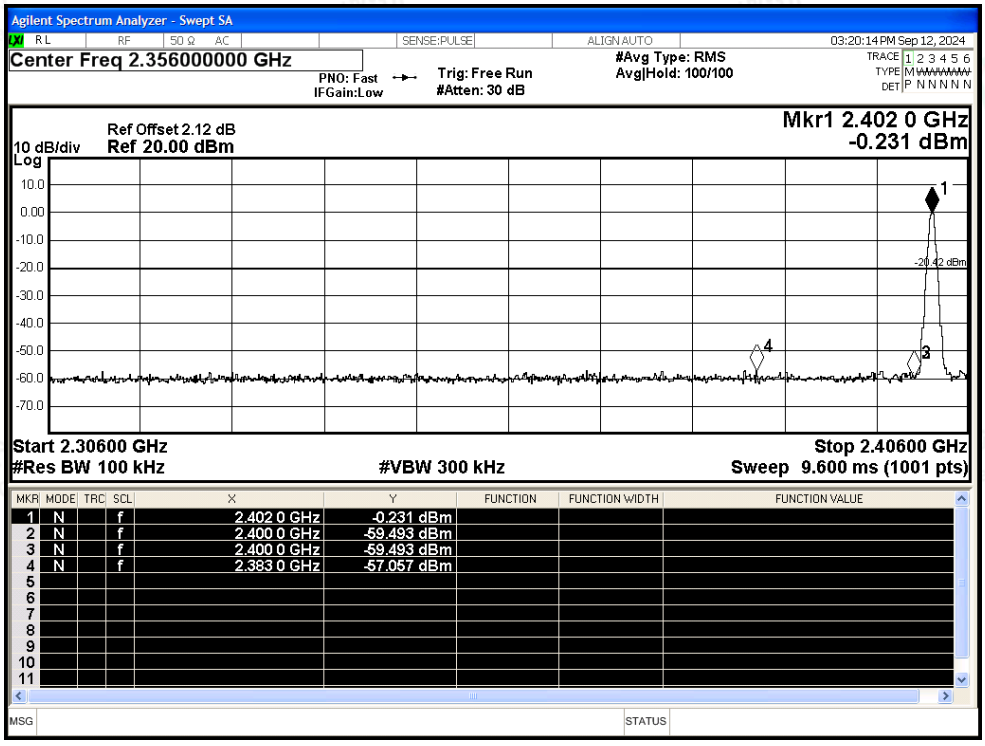
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-56.64	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-57.06	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-52.19	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-53.01	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-52.63	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-52.11	-20	Pass

Test Graphs

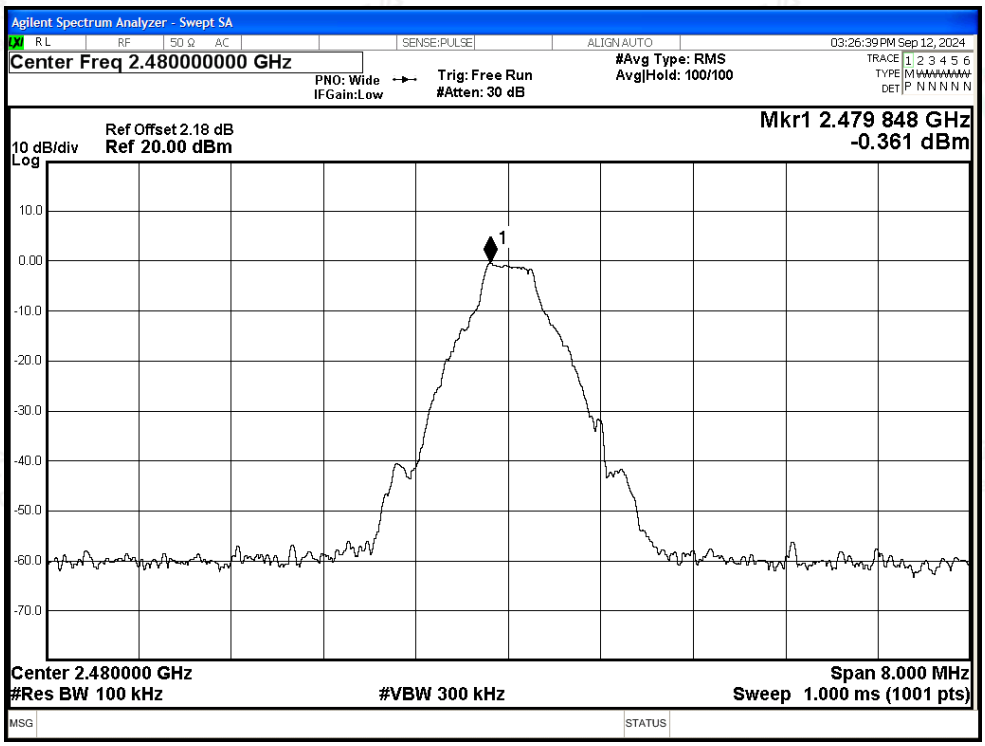
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



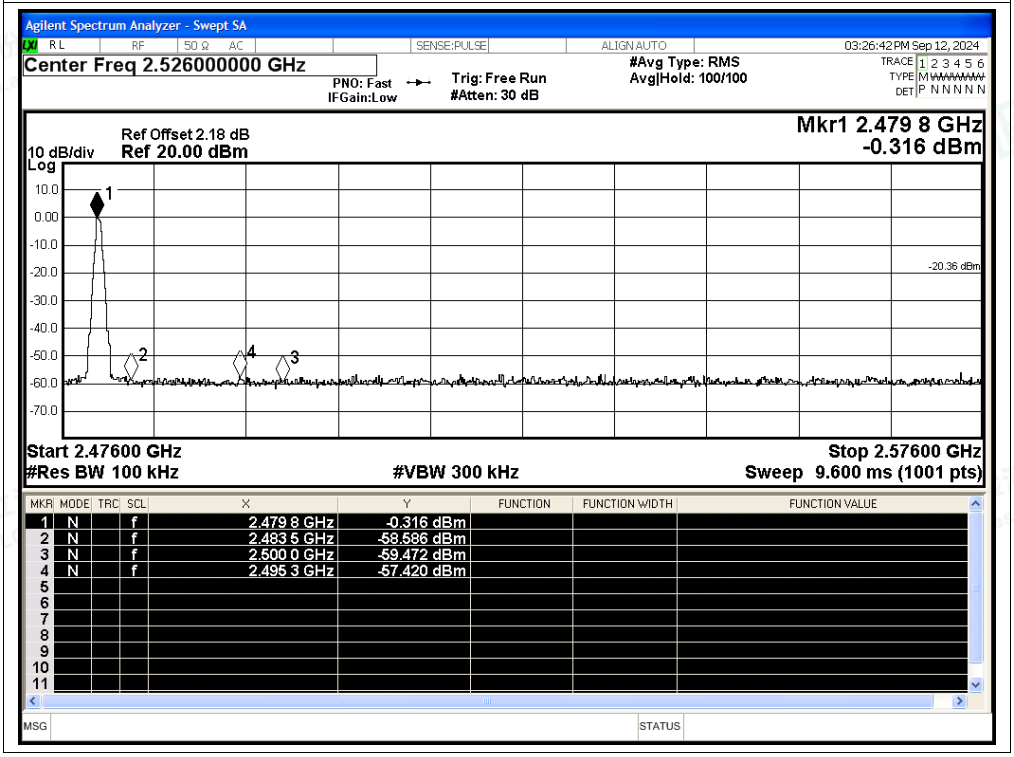
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



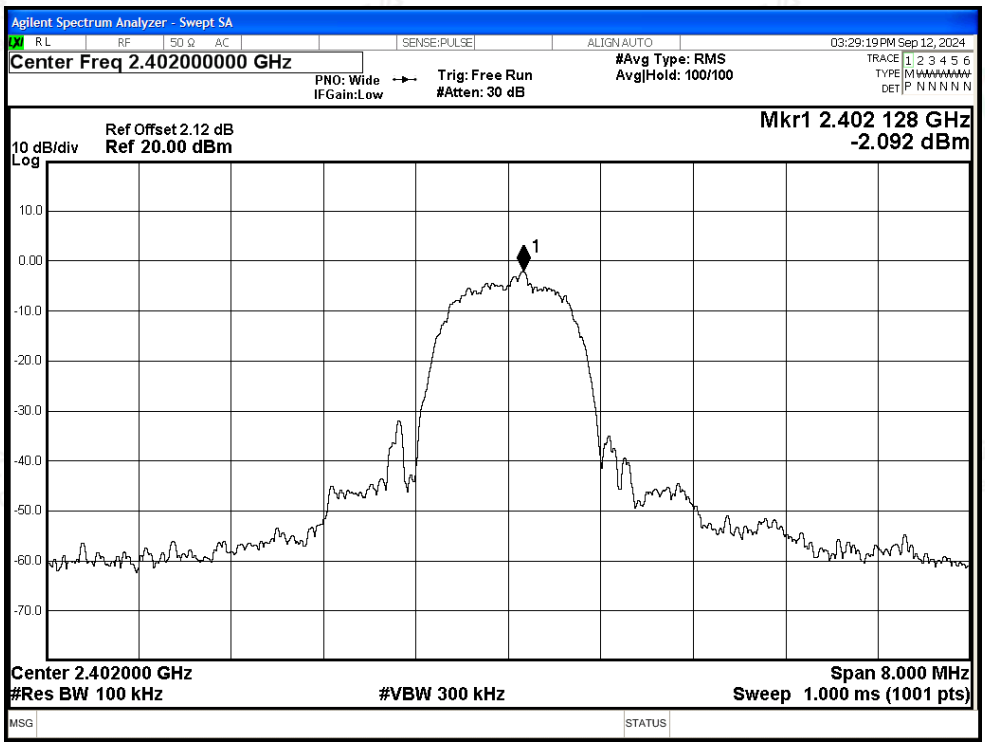
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



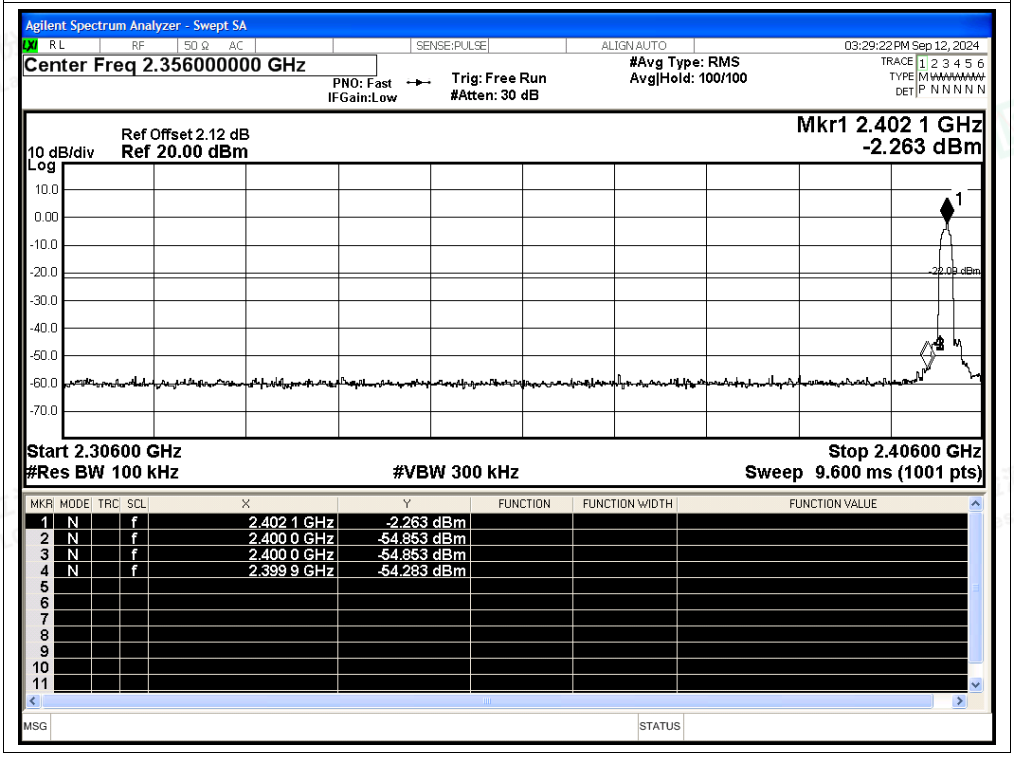
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



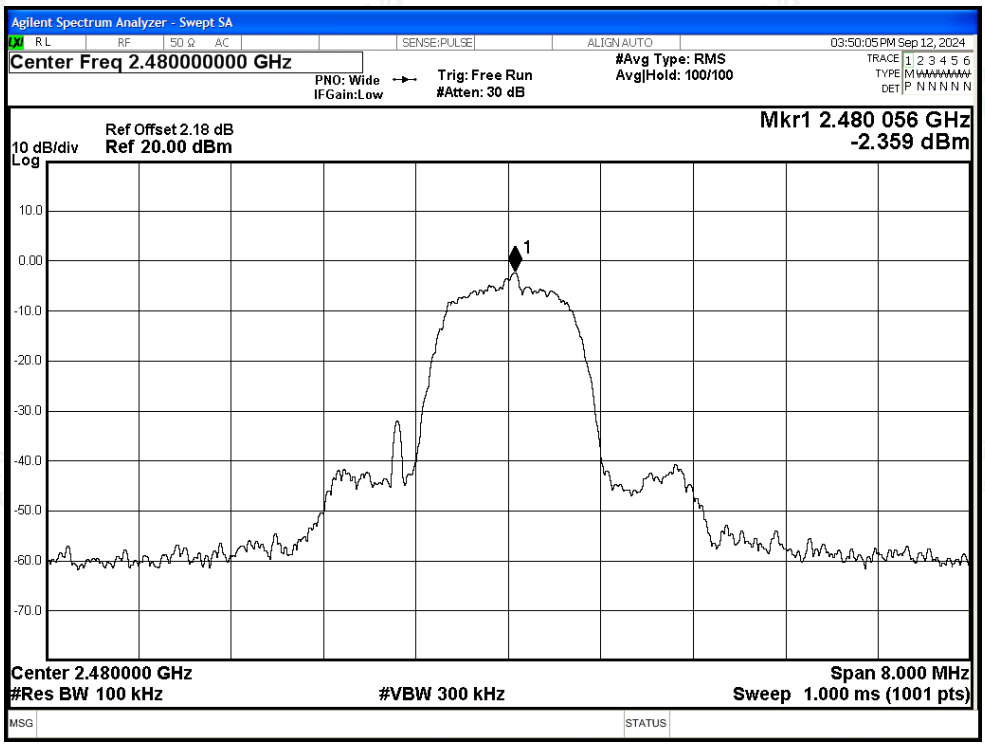
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



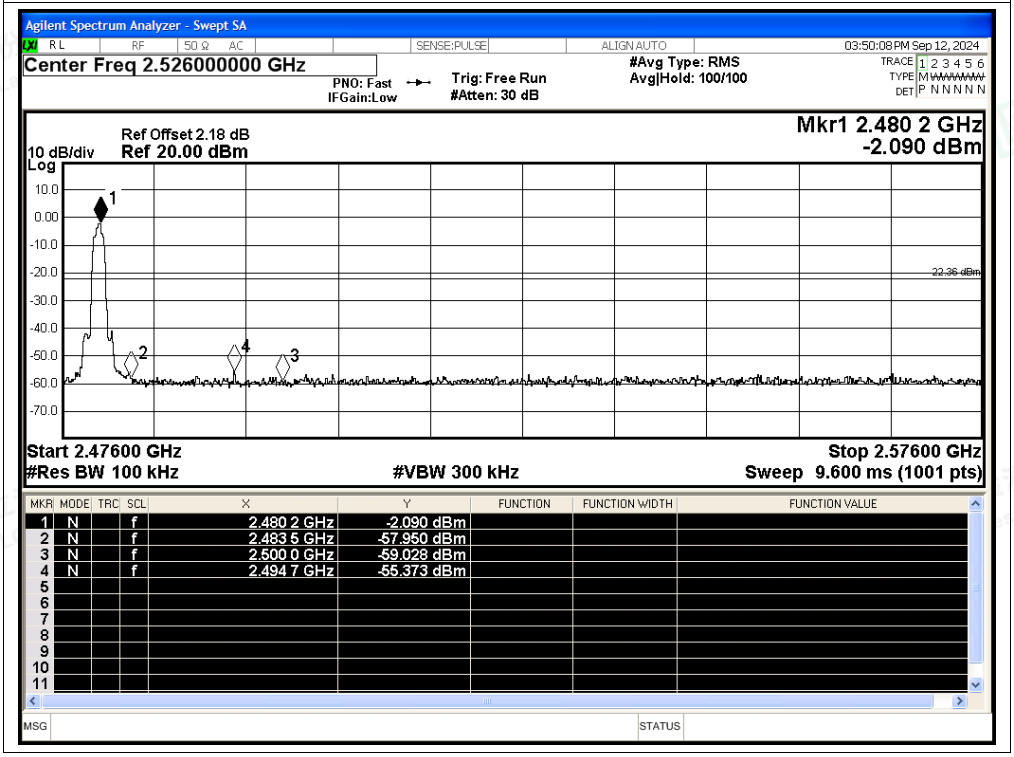
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



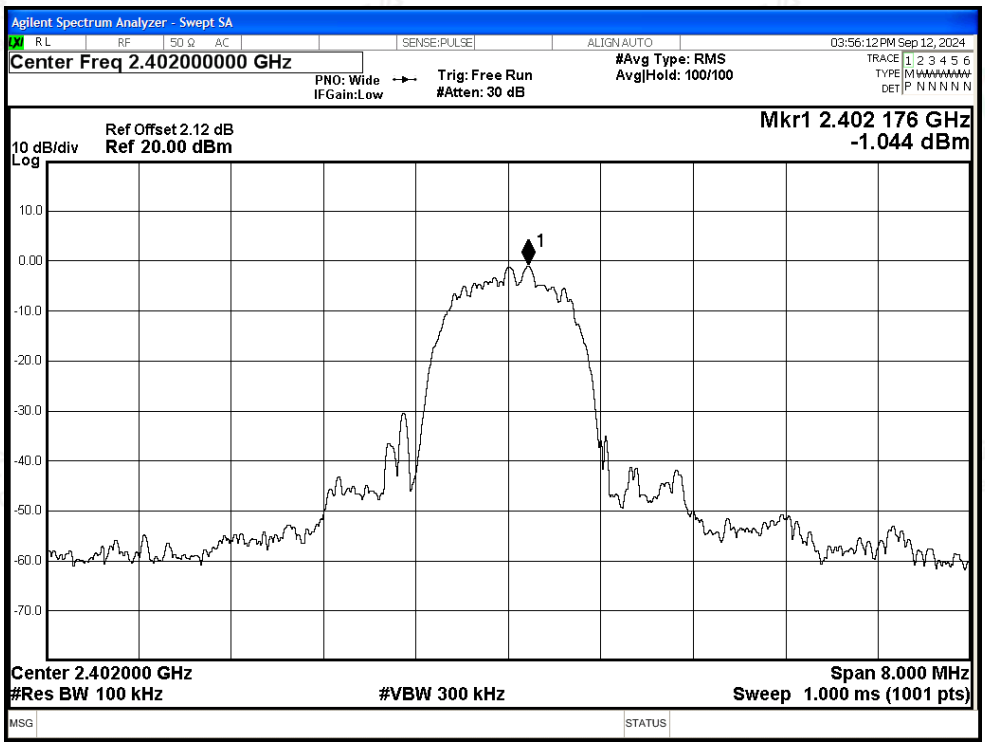
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



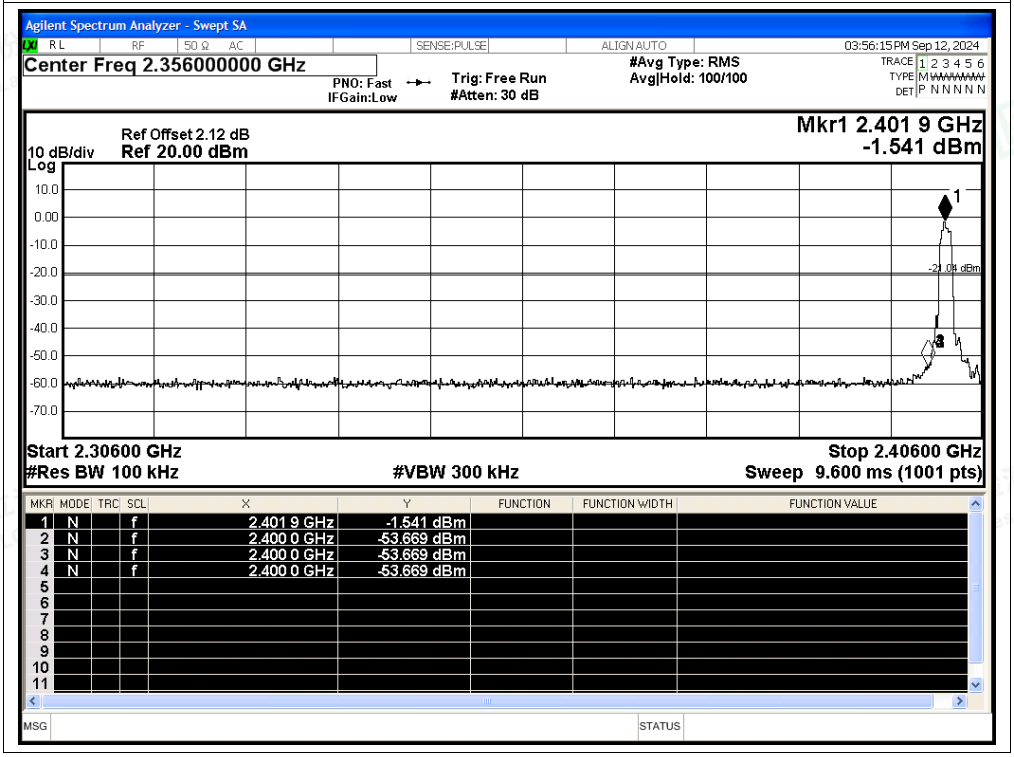
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission



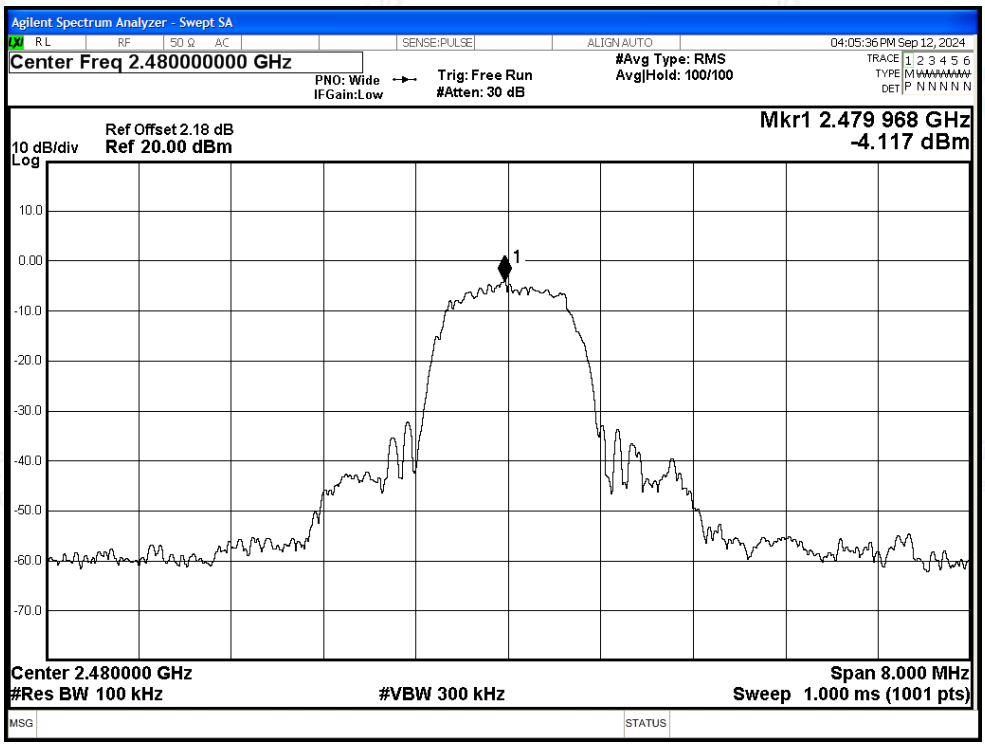
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref



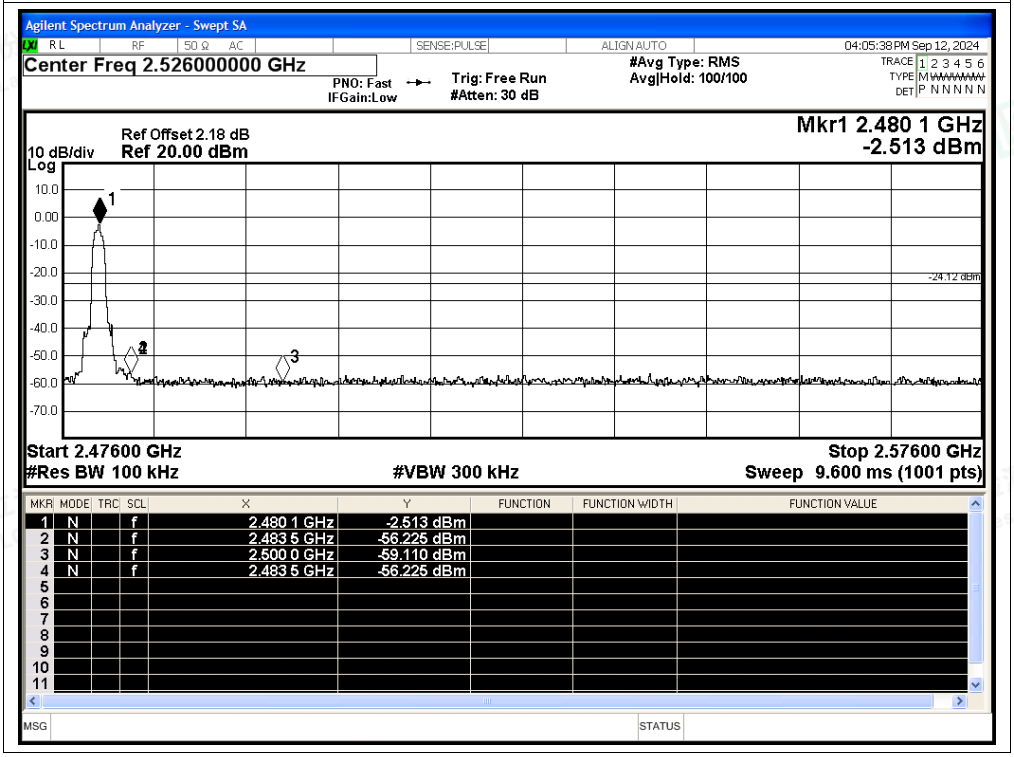
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission



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



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

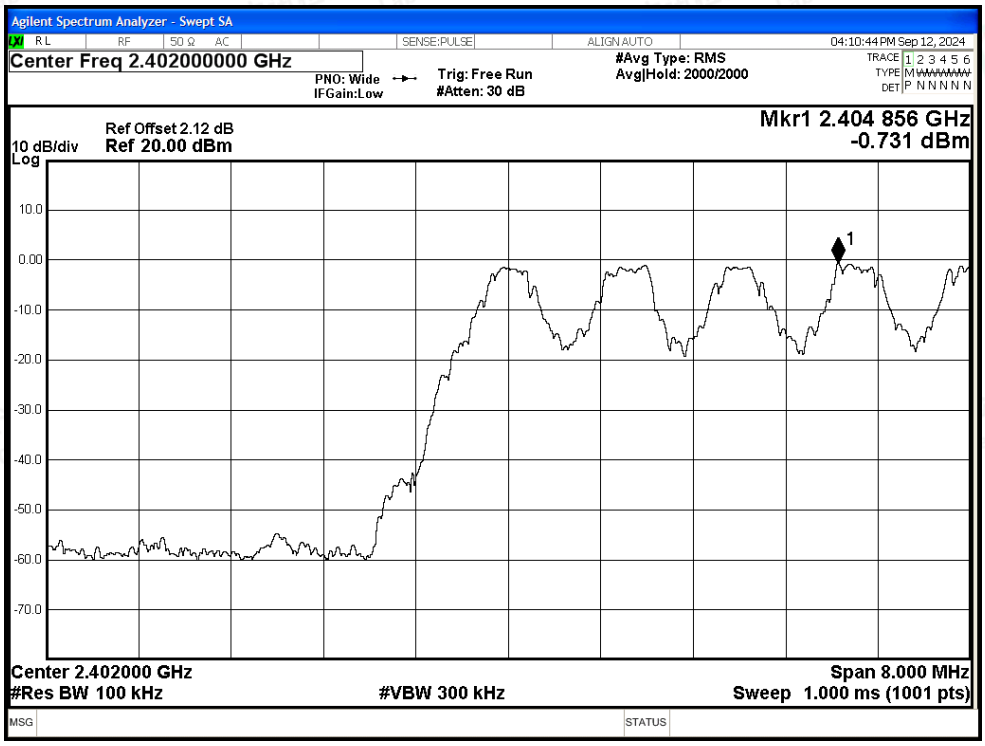


(Hopping)

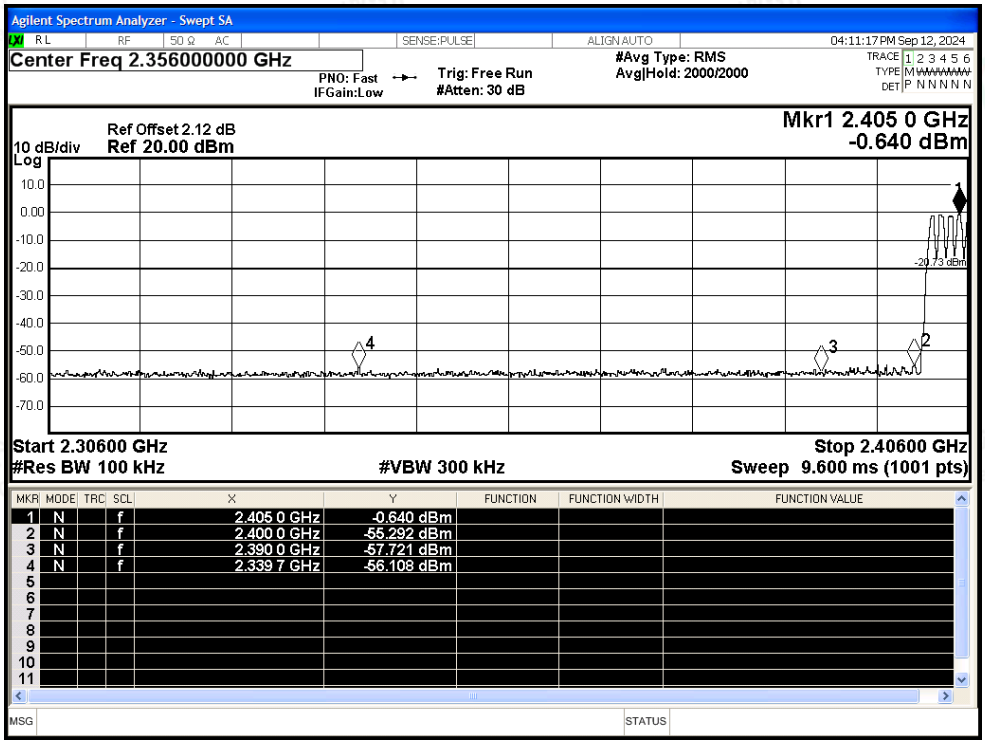
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-55.38	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-54.6	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-54.75	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-56.33	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-53.2	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-55.75	-20	Pass

Test Graphs

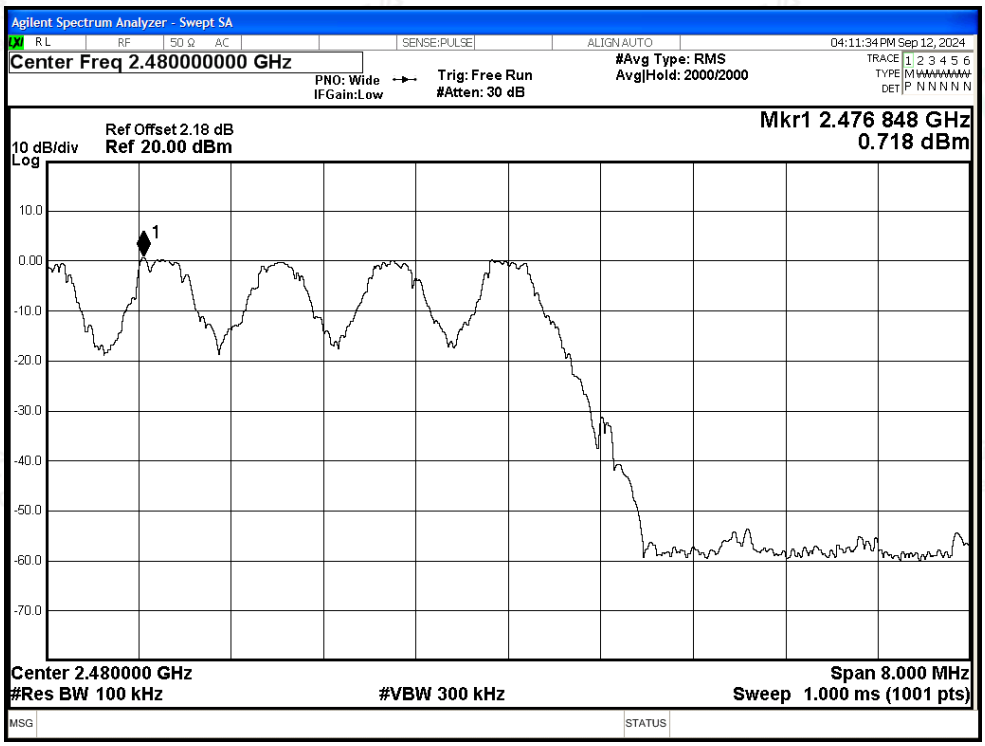
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



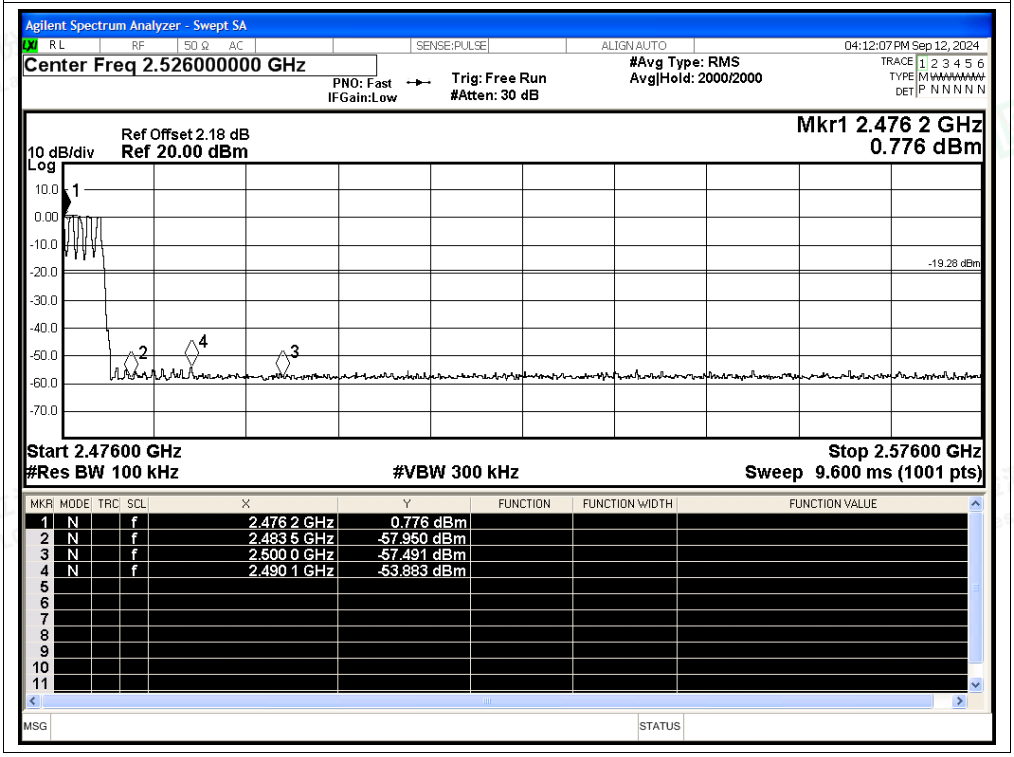
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



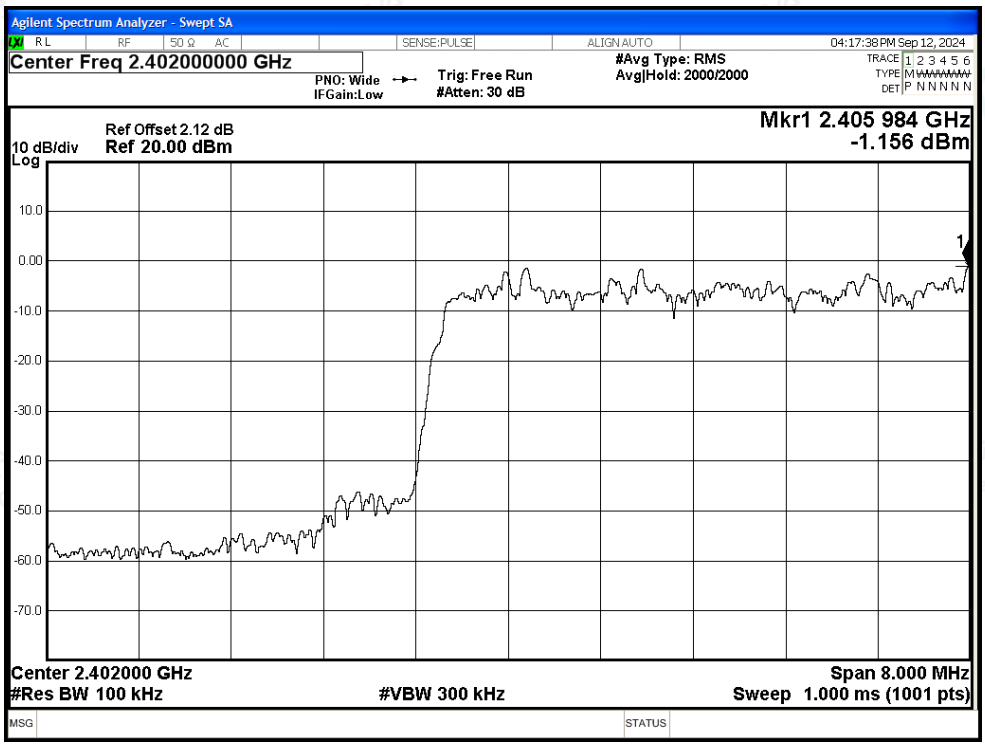
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



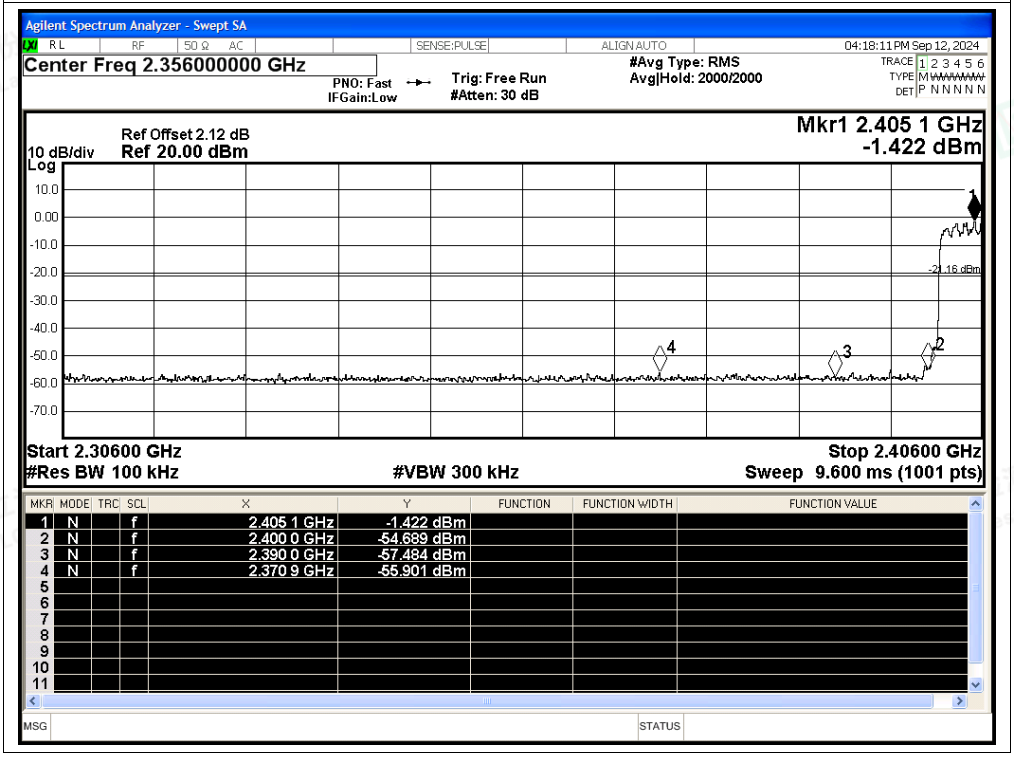
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission



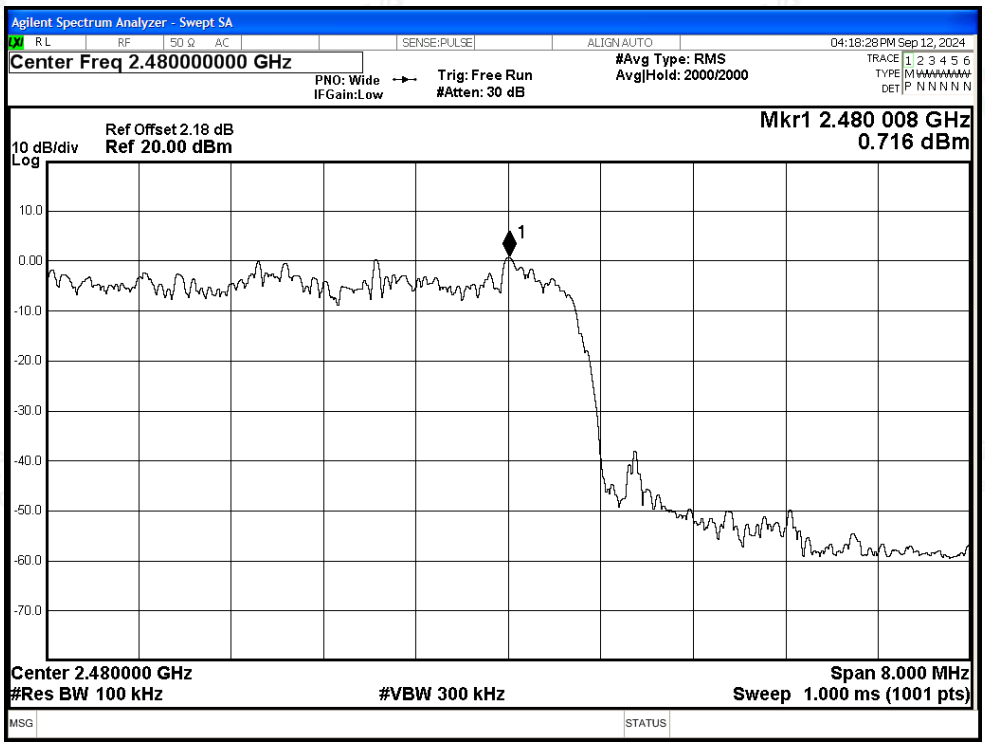
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



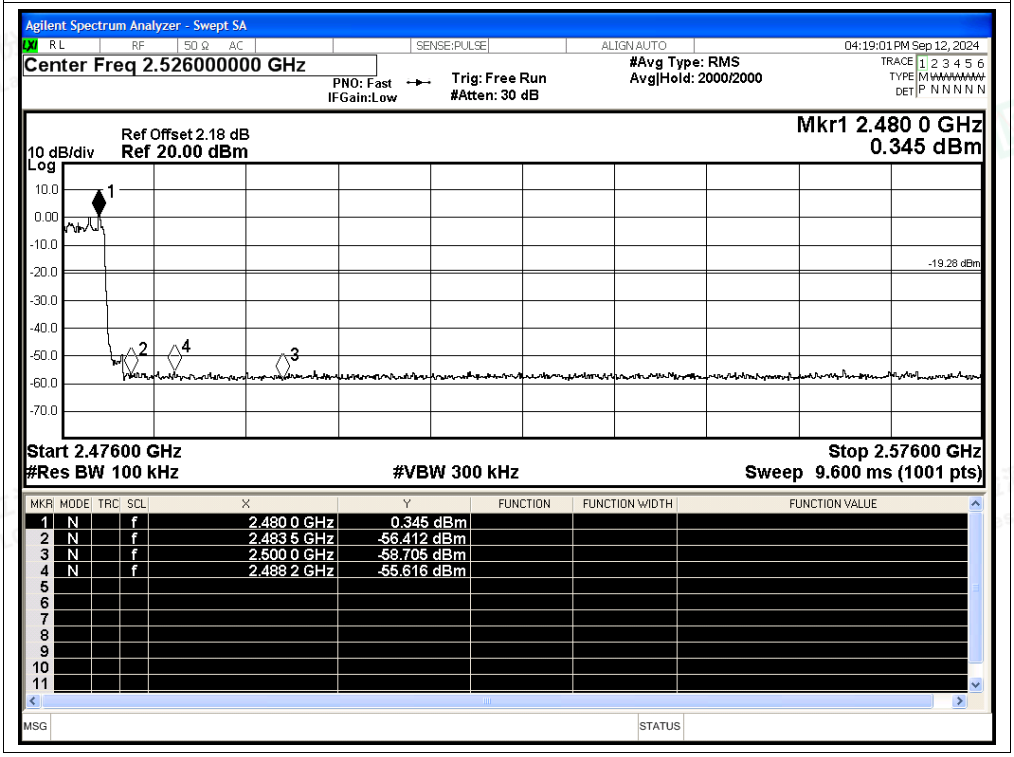
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



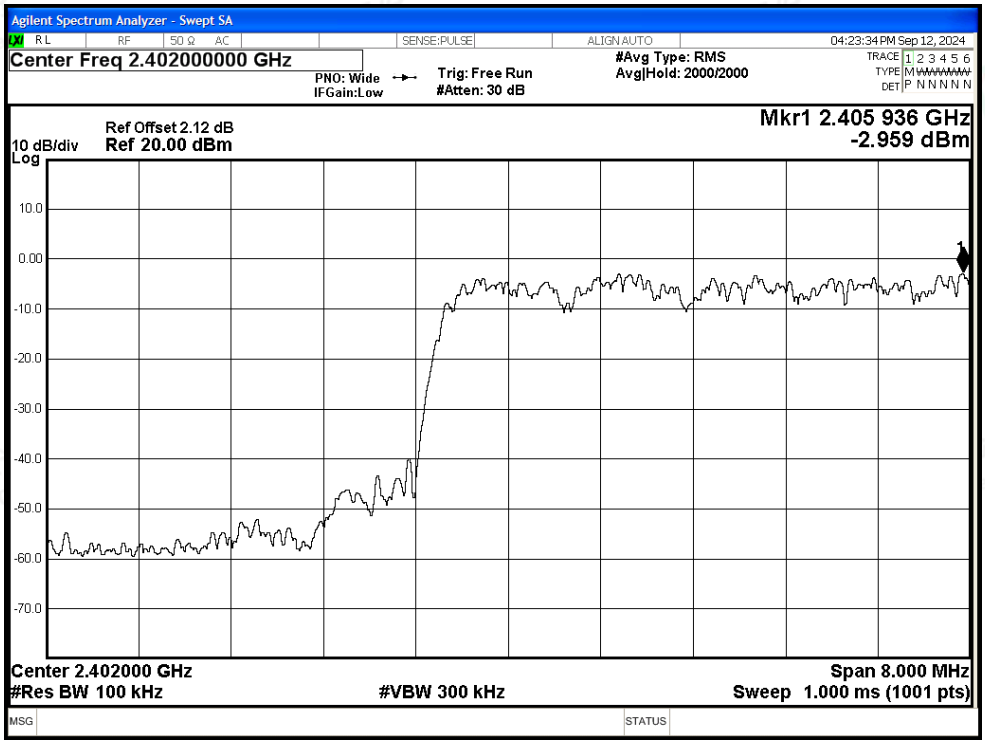
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



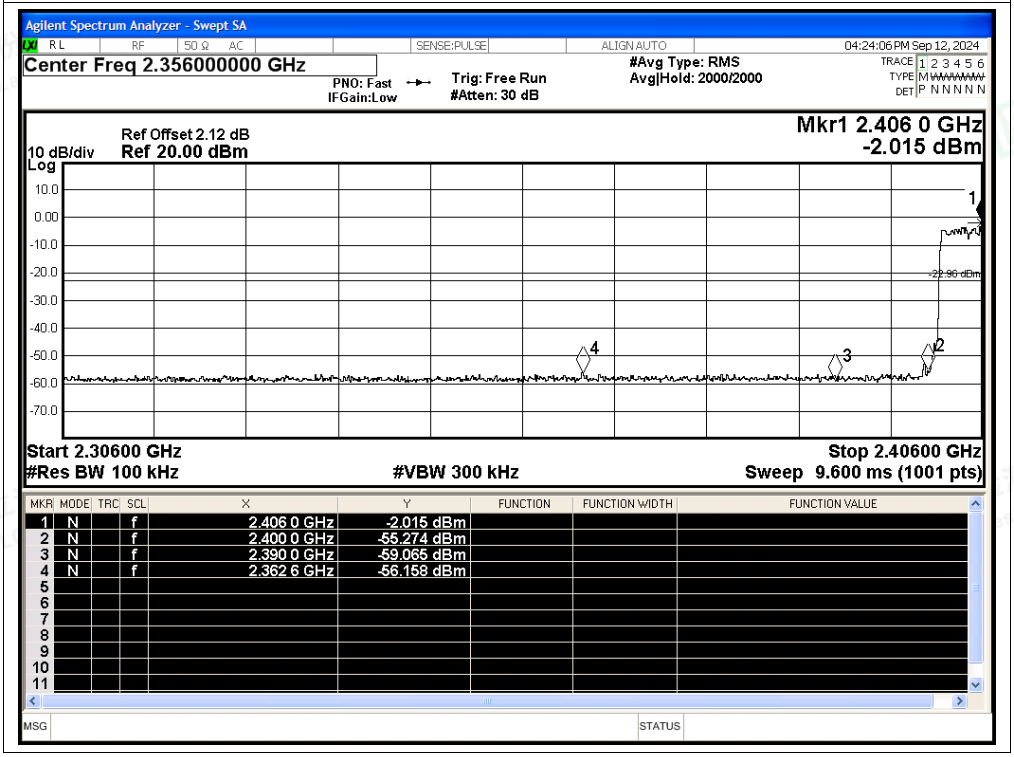
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission



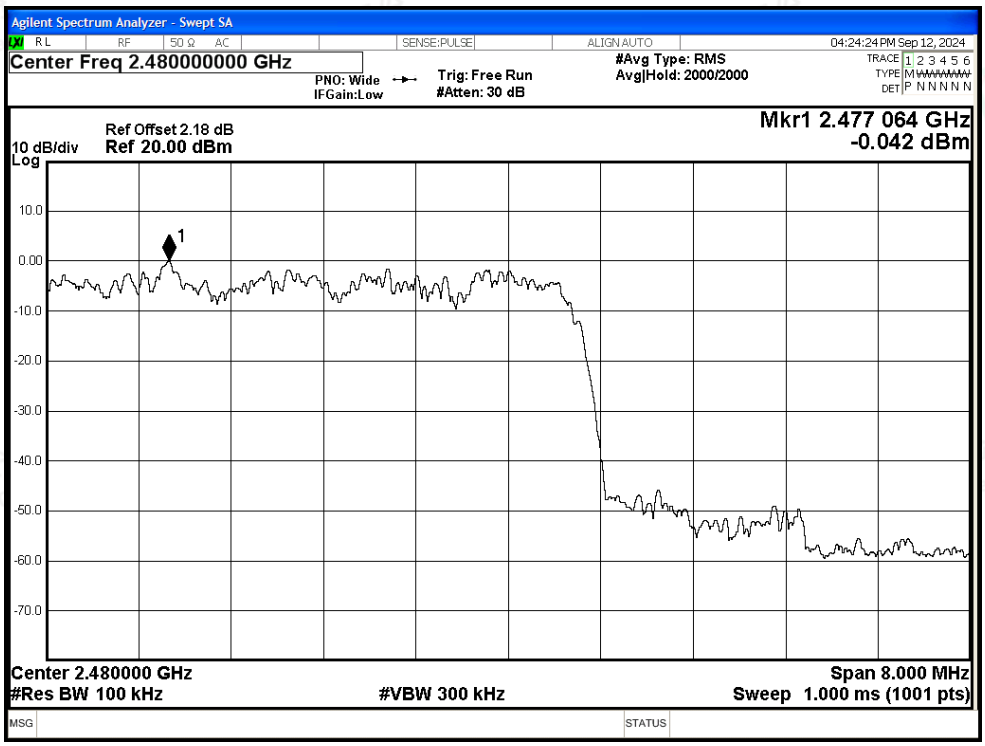
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



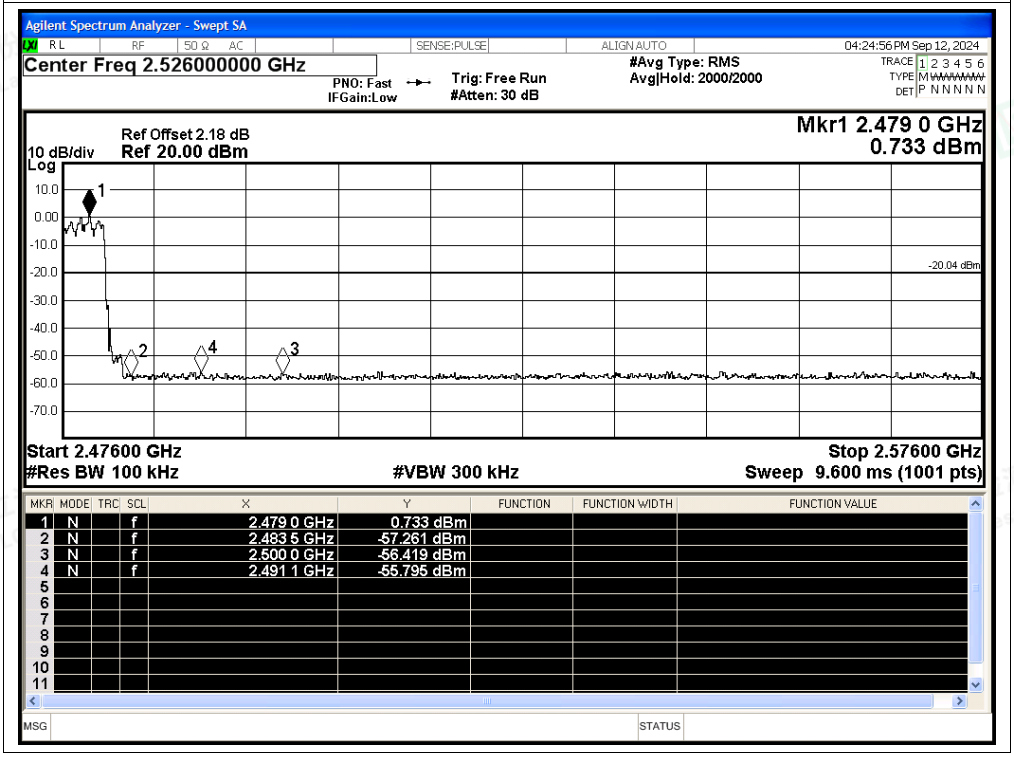
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Ref



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Emission

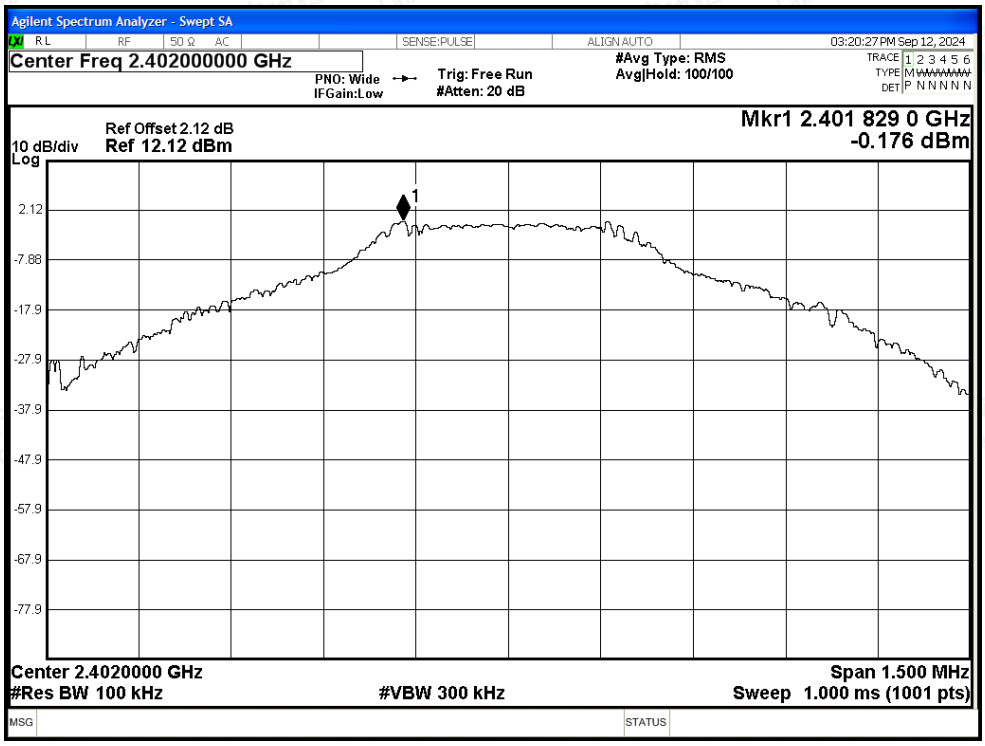


A.7 Conducted RF Spurious Emission

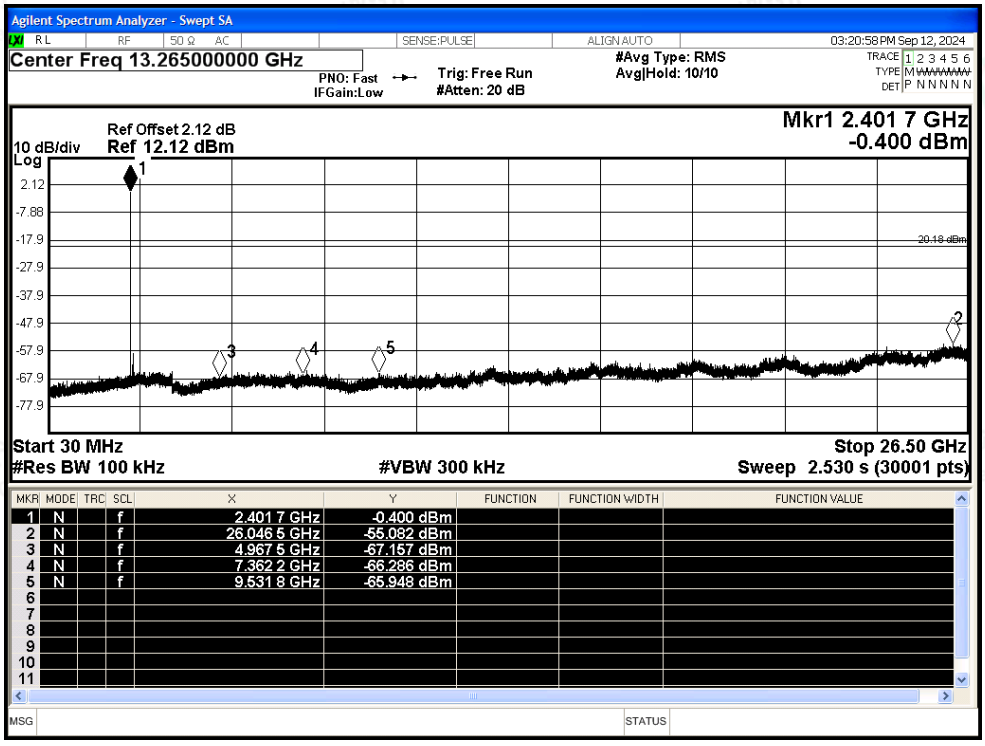
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-54.91	-20	Pass
NVNT	1-DH5	2441	Ant1	-54.81	-20	Pass
NVNT	1-DH5	2480	Ant1	-55.28	-20	Pass
NVNT	2-DH5	2402	Ant1	-54.39	-20	Pass
NVNT	2-DH5	2441	Ant1	-53.23	-20	Pass
NVNT	2-DH5	2480	Ant1	-53.03	-20	Pass
NVNT	3-DH5	2402	Ant1	-54.68	-20	Pass
NVNT	3-DH5	2441	Ant1	-53.72	-20	Pass
NVNT	3-DH5	2480	Ant1	-53.58	-20	Pass

Test Graphs

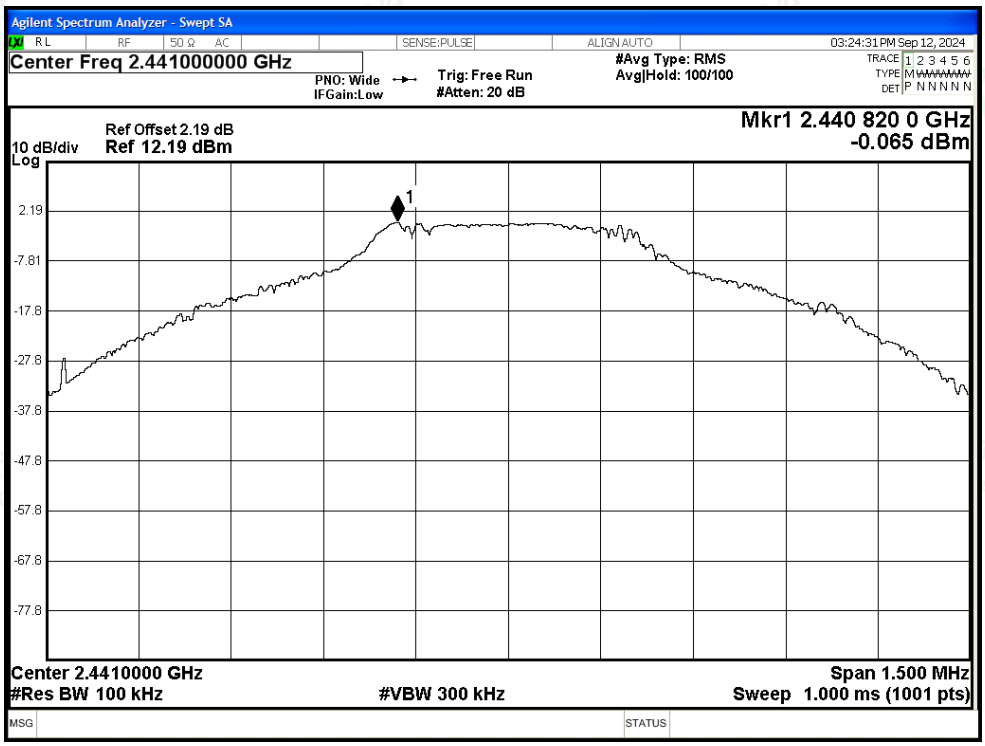
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



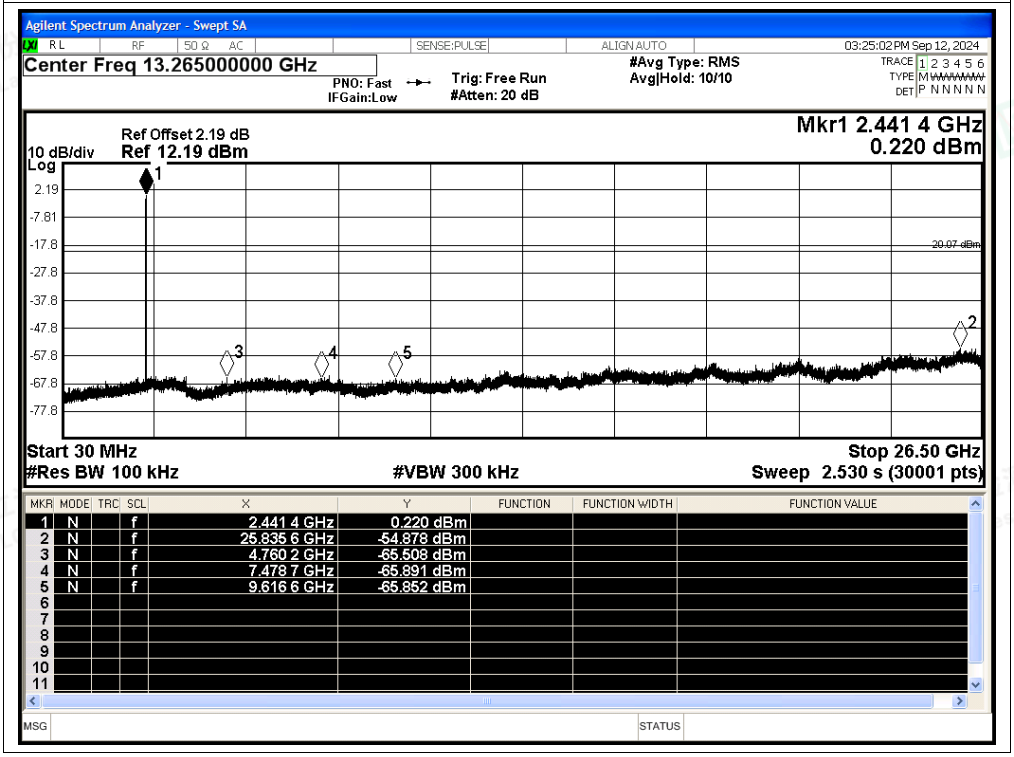
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



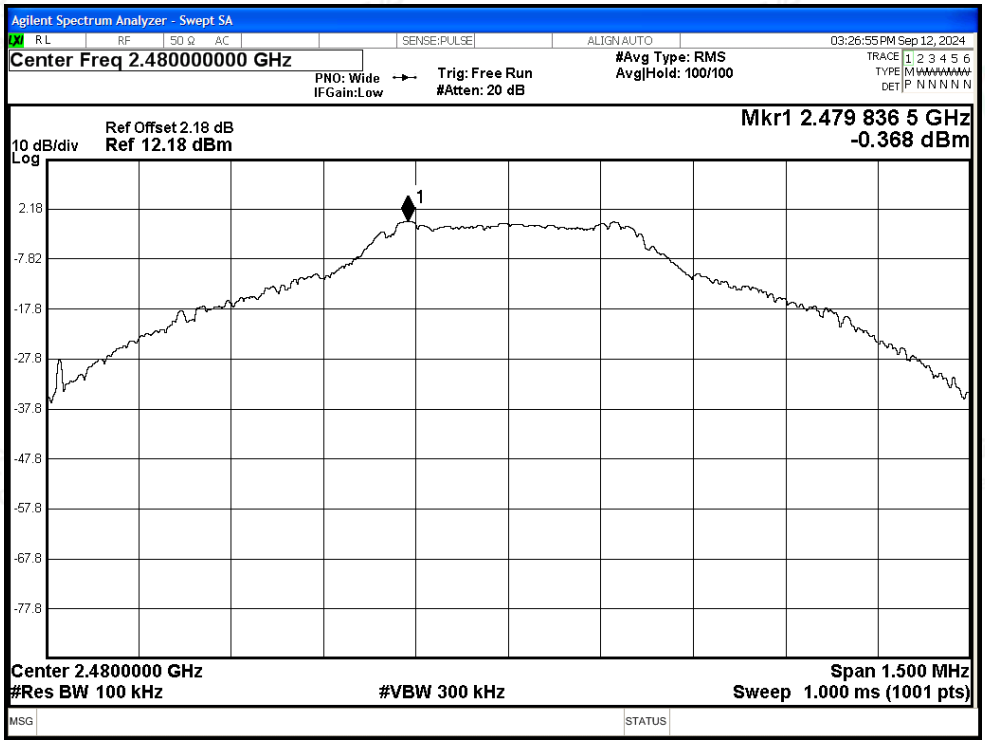
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



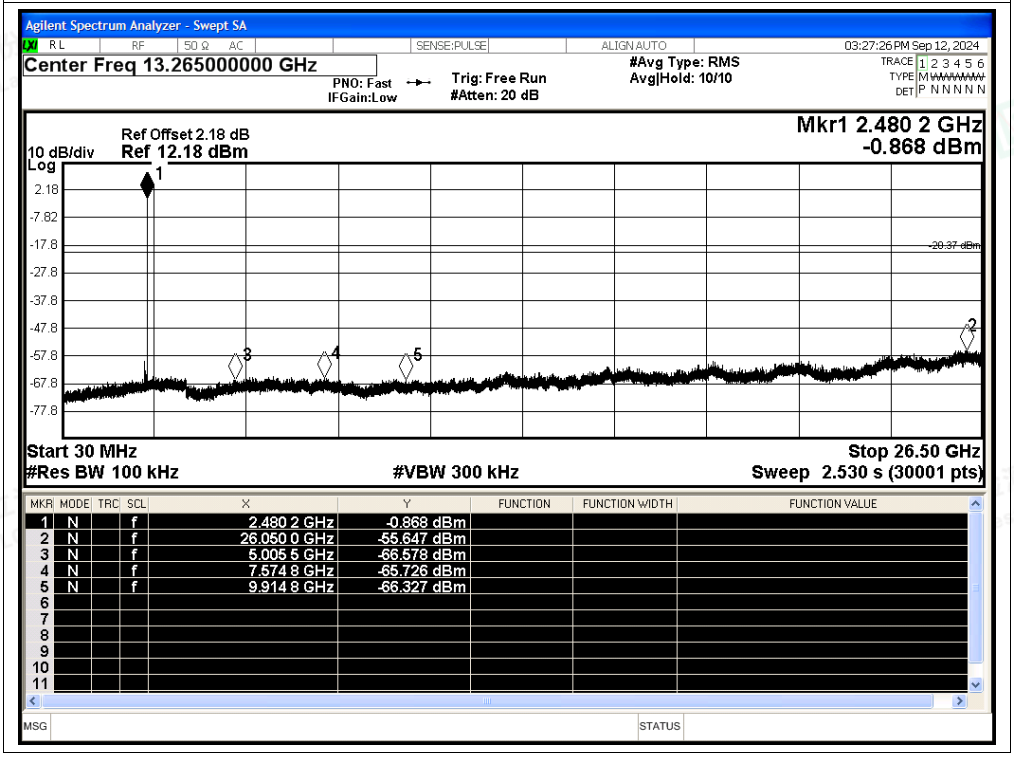
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission



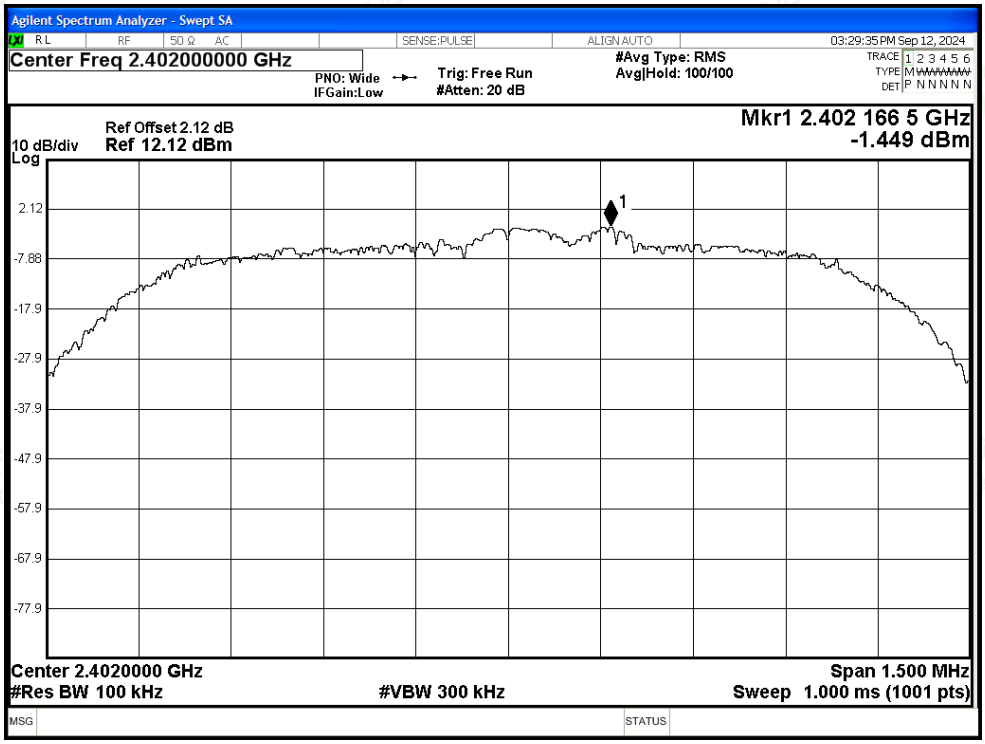
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref



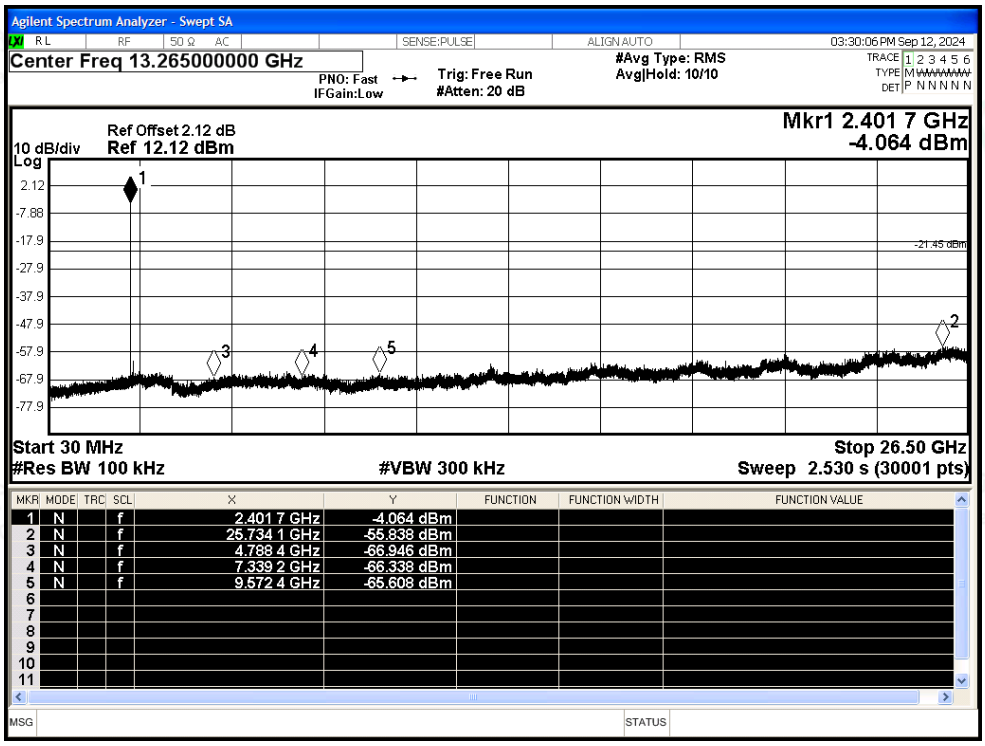
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission



Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref

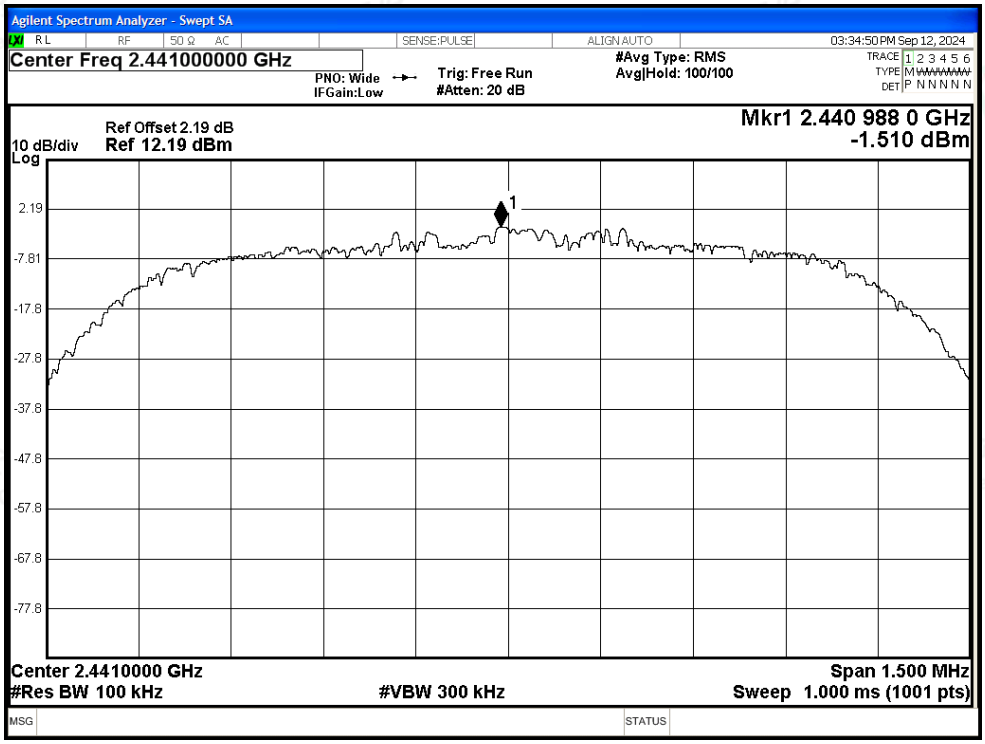


Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission

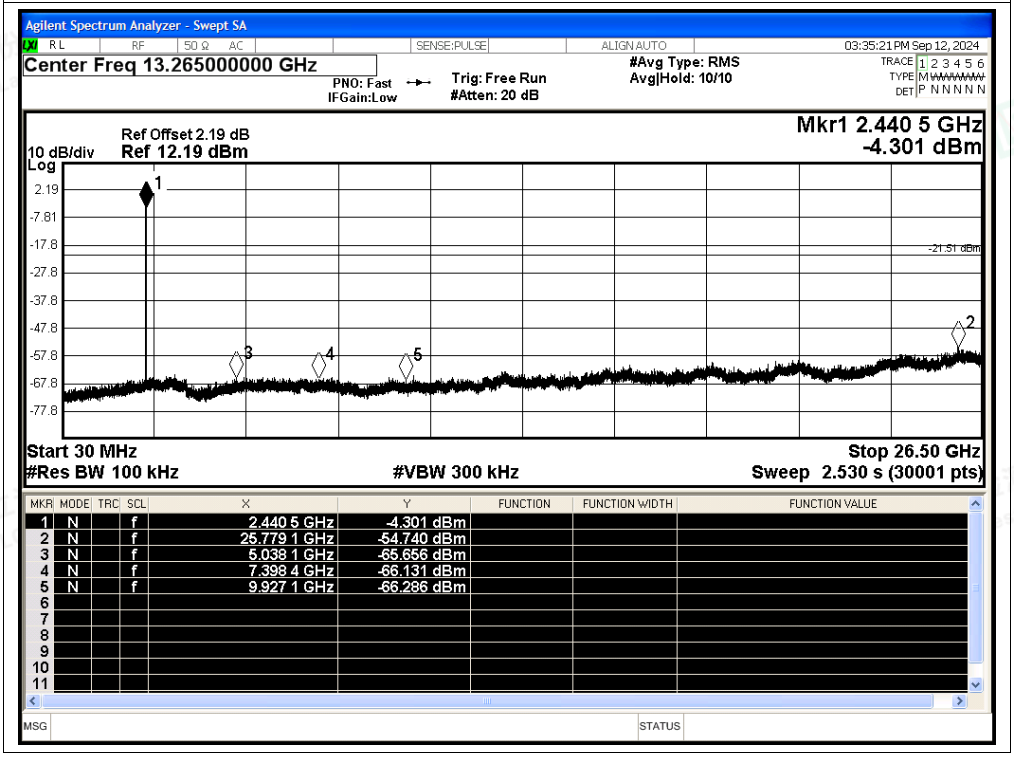


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.401 7 GHz	-4.064 dBm			
2	N		f	25.734 1 GHz	-55.838 dBm			
3	N		f	4.788 4 GHz	-66.946 dBm			
4	N		f	7.339 2 GHz	-66.338 dBm			
5	N		f	9.572 4 GHz	-65.608 dBm			
6								
7								
8								
9								
10								
11								

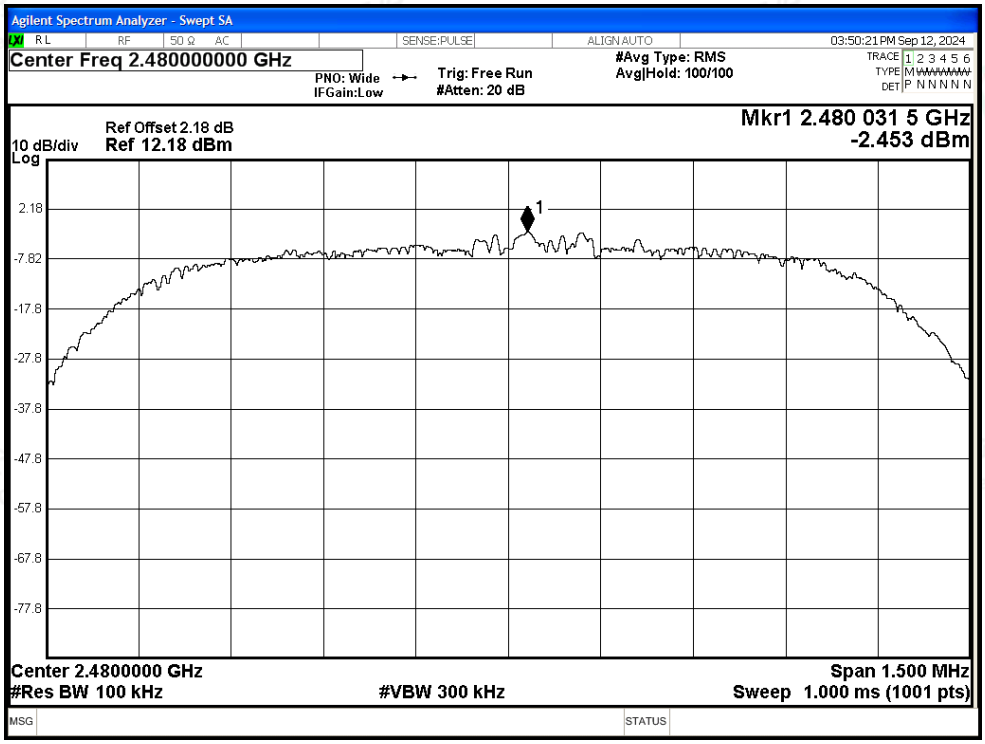
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



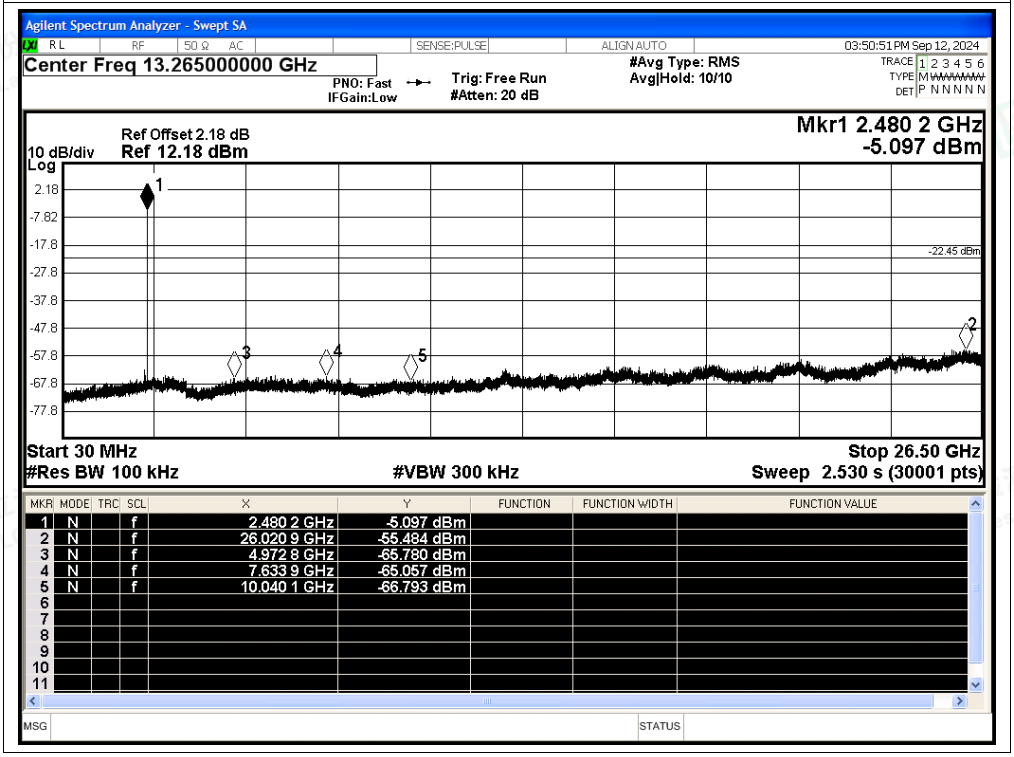
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



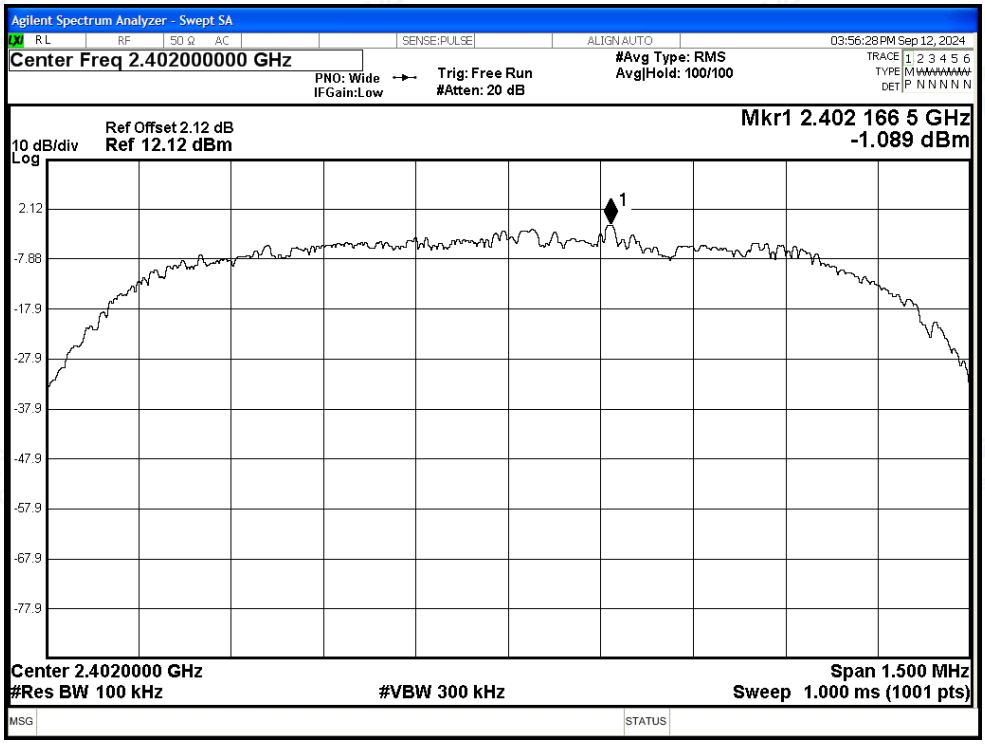
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



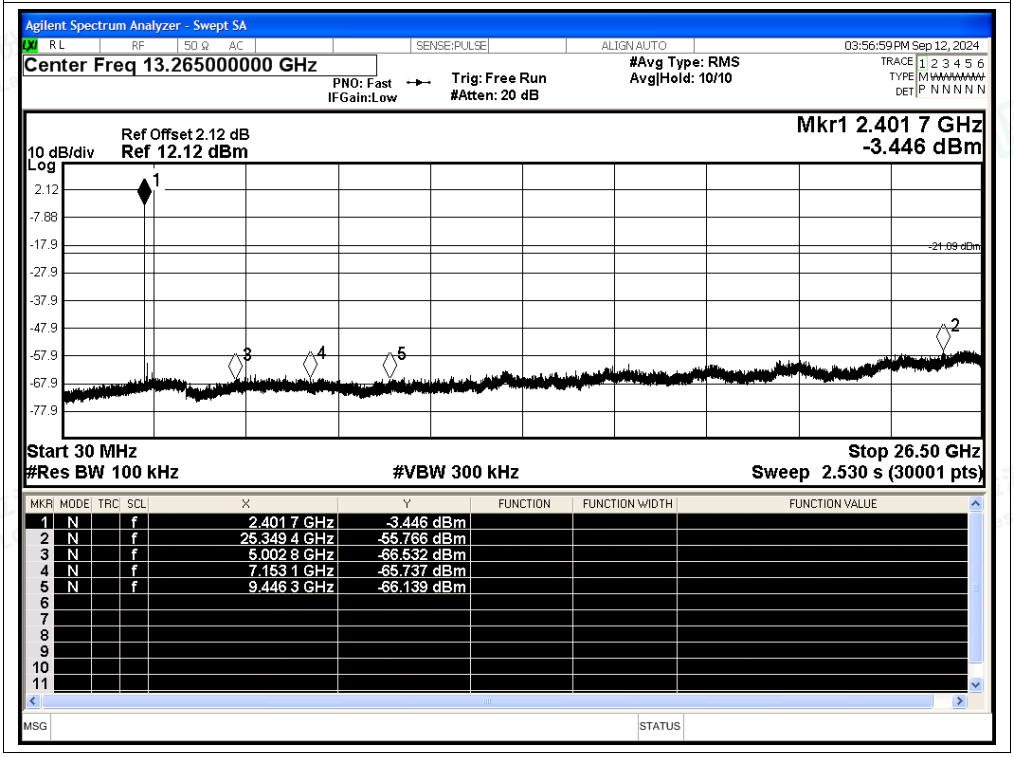
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission



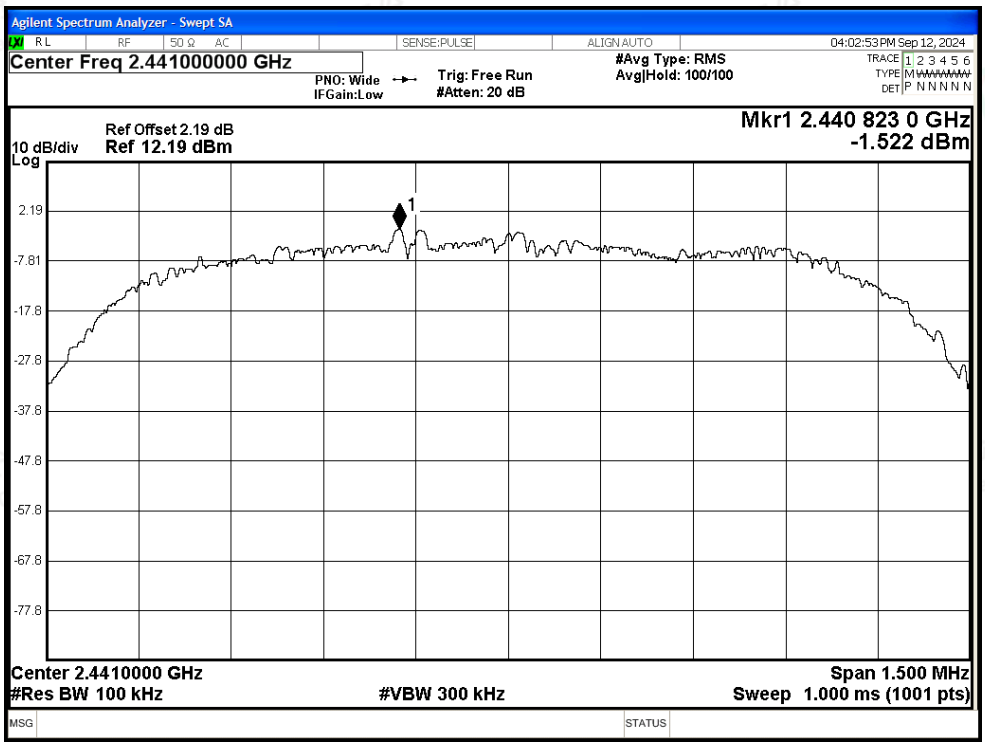
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref



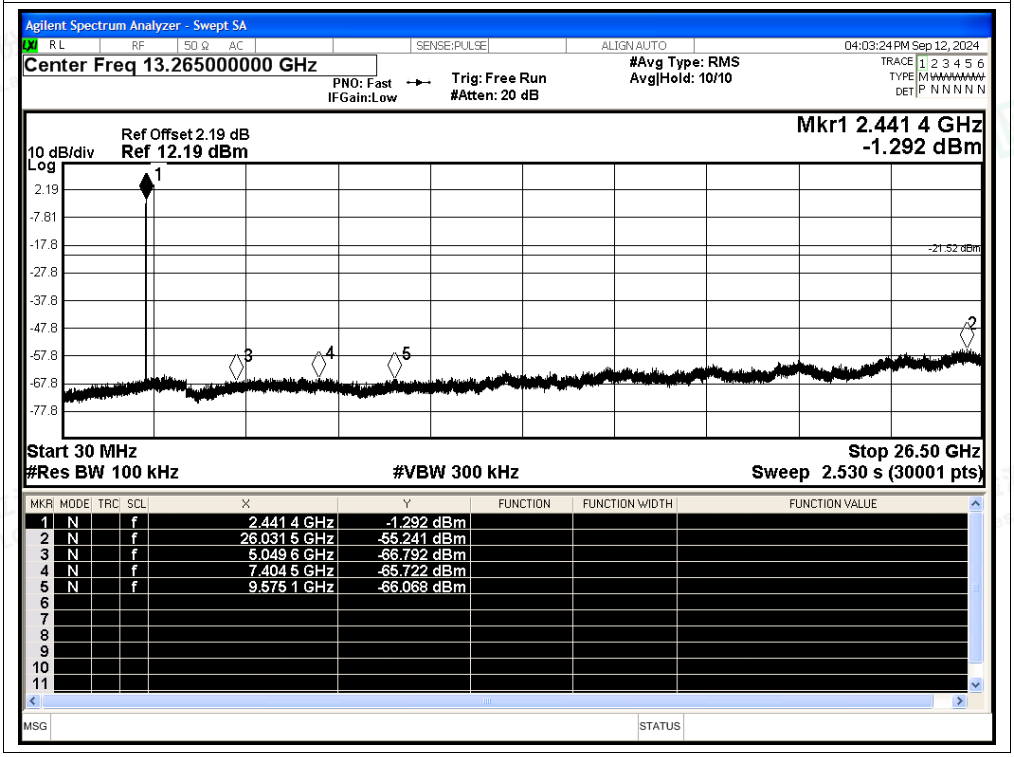
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission



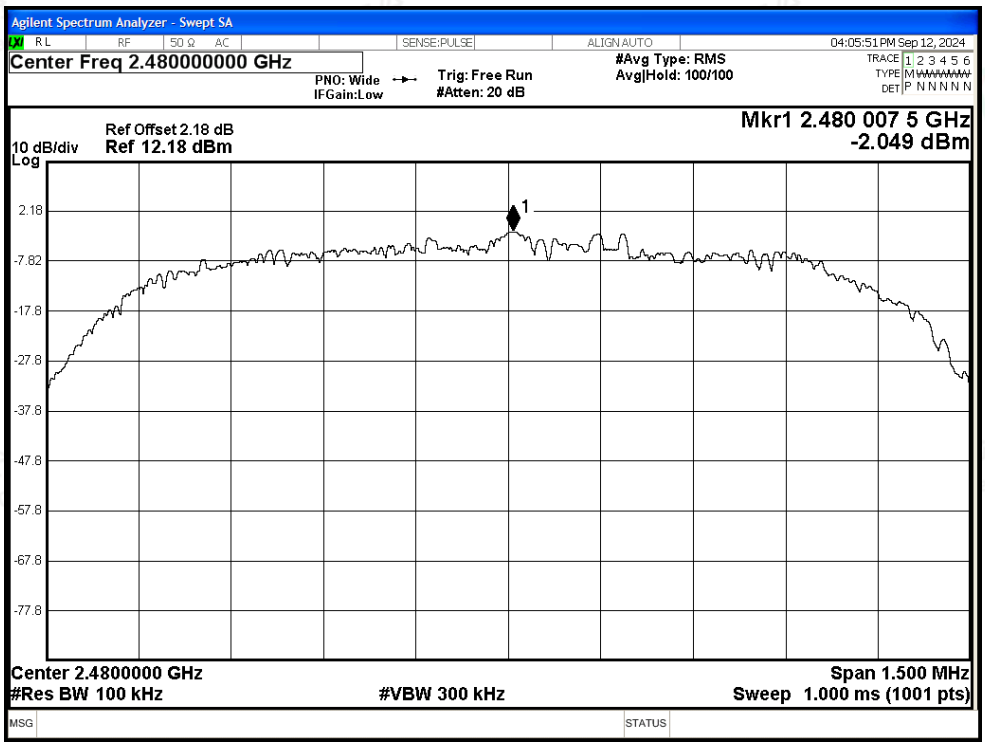
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref



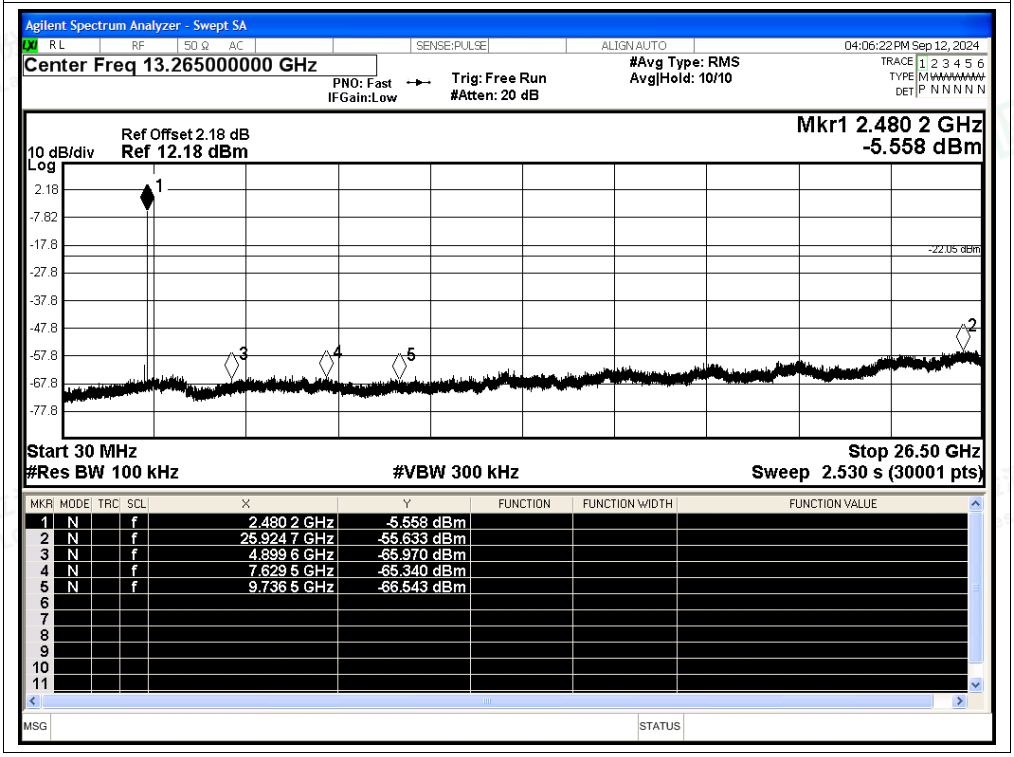
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission

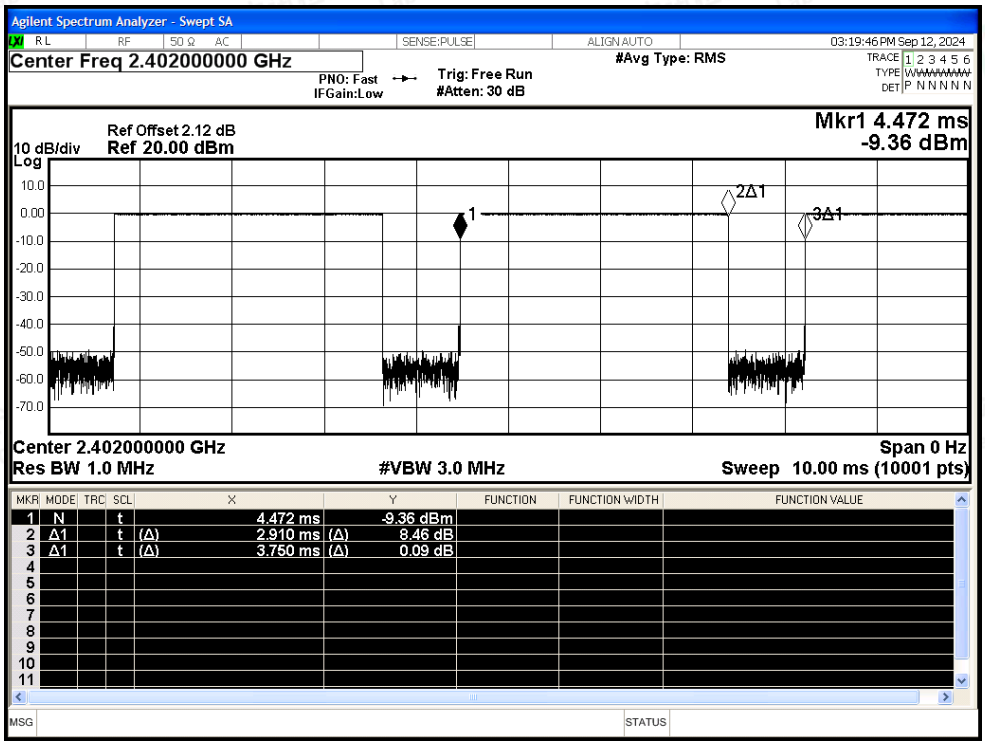


A.8 Duty Cycle

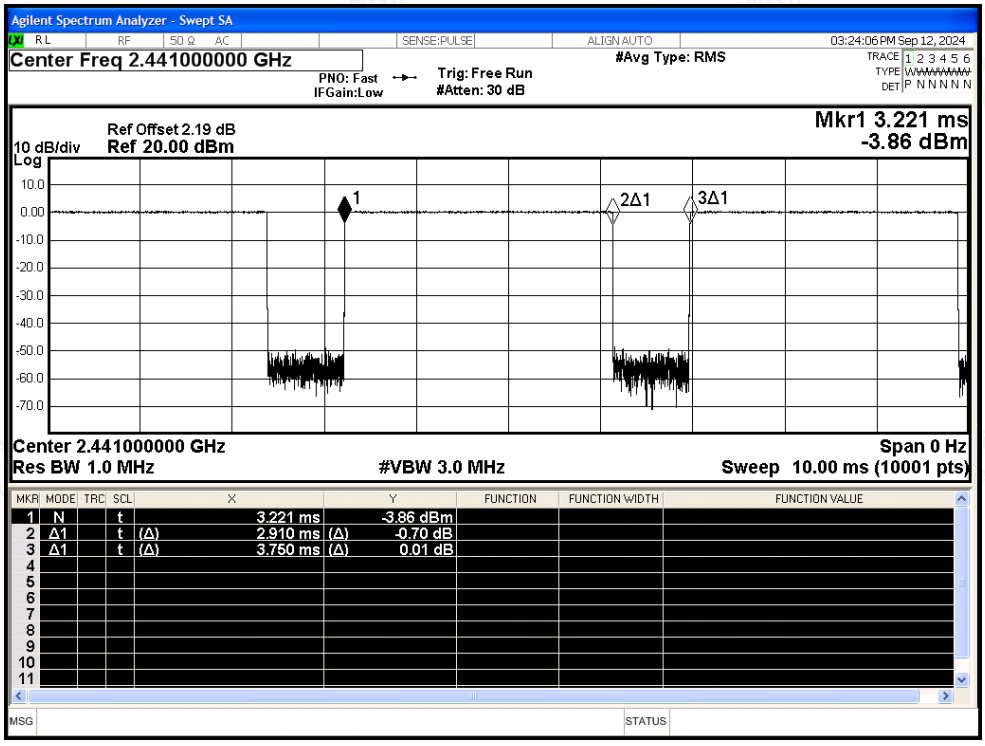
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH5	2402	Ant1	77.6	1.1	0.34
NVNT	1-DH5	2441	Ant1	77.6	1.1	0.34
NVNT	1-DH5	2480	Ant1	77.6	1.1	0.34
NVNT	2-DH5	2402	Ant1	77.33	1.12	0.34
NVNT	2-DH5	2441	Ant1	77.33	1.12	0.34
NVNT	2-DH5	2480	Ant1	77.33	1.12	0.34
NVNT	3-DH5	2402	Ant1	77.28	1.12	0.35
NVNT	3-DH5	2441	Ant1	77.23	1.12	0.35
NVNT	3-DH5	2480	Ant1	77.28	1.12	0.35

Test Graphs

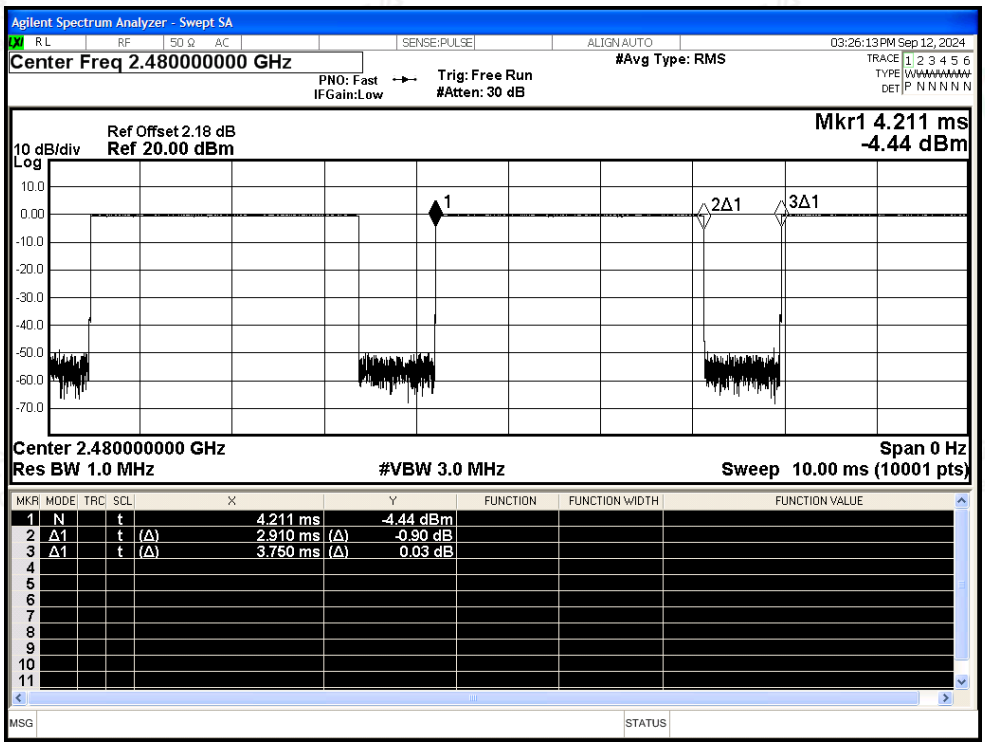
Duty Cycle NVNT 1-DH5 2402MHz Ant1



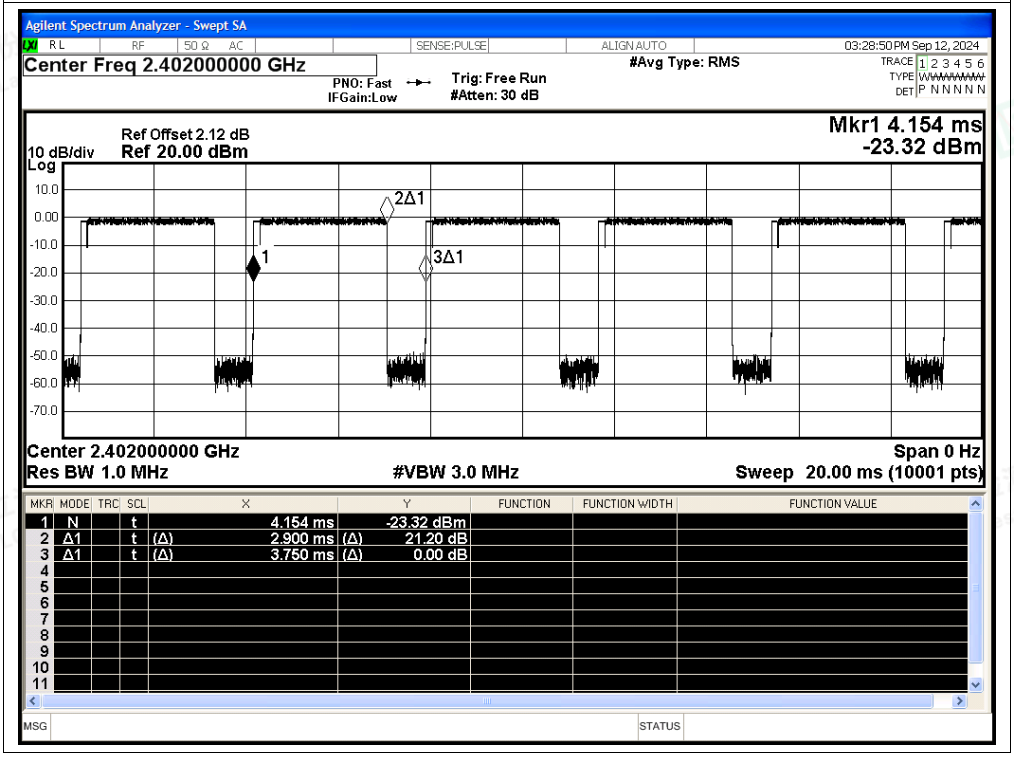
Duty Cycle NVNT 1-DH5 2441MHz Ant1



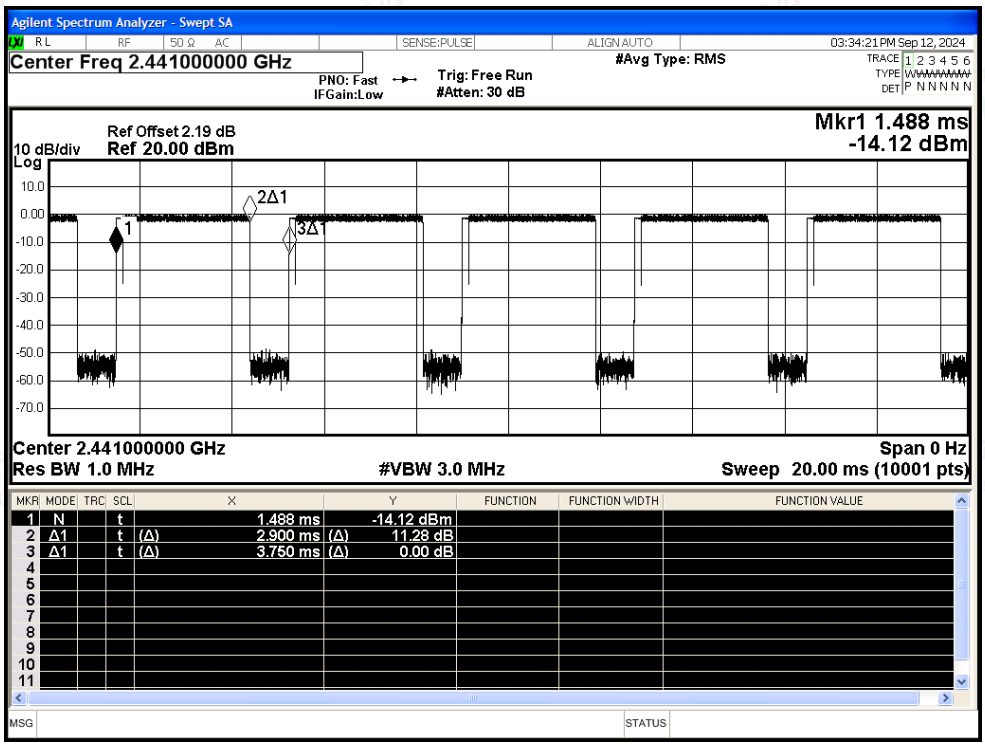
Duty Cycle NVNT 1-DH5 2480MHz Ant1



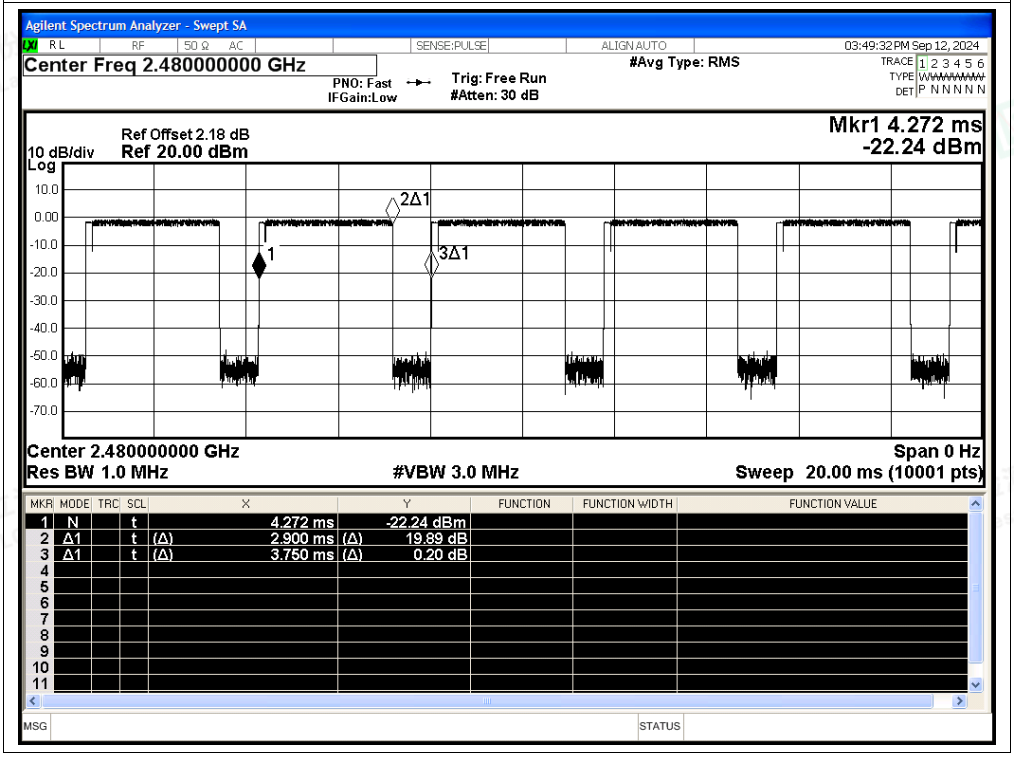
Duty Cycle NVNT 2-DH5 2402MHz Ant1



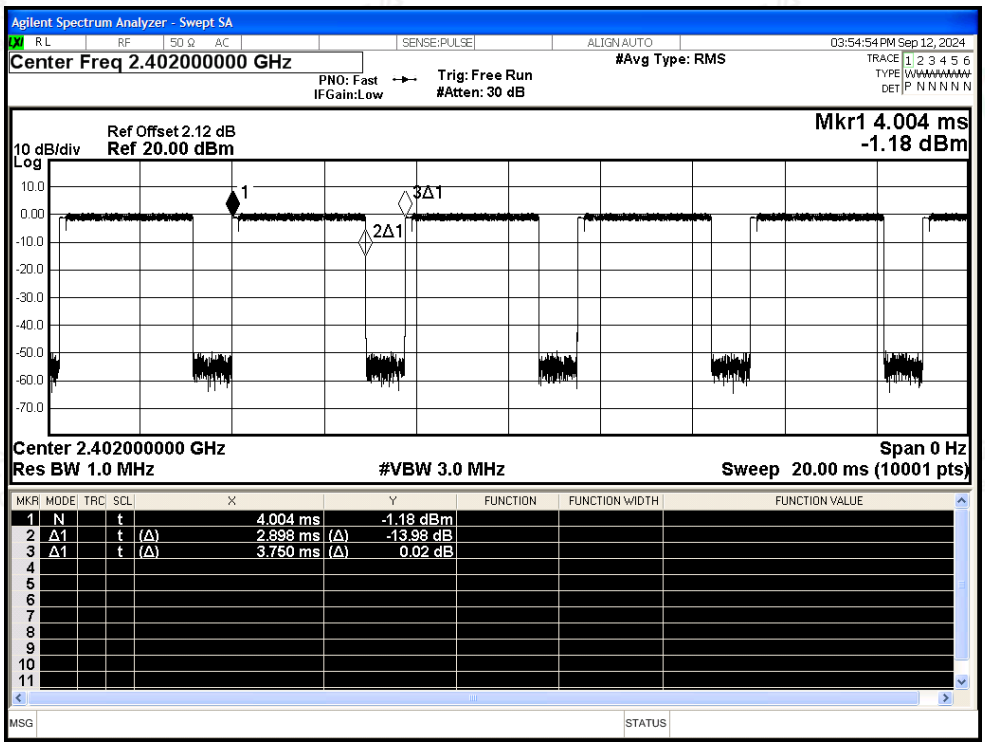
Duty Cycle NVNT 2-DH5 2441MHz Ant1



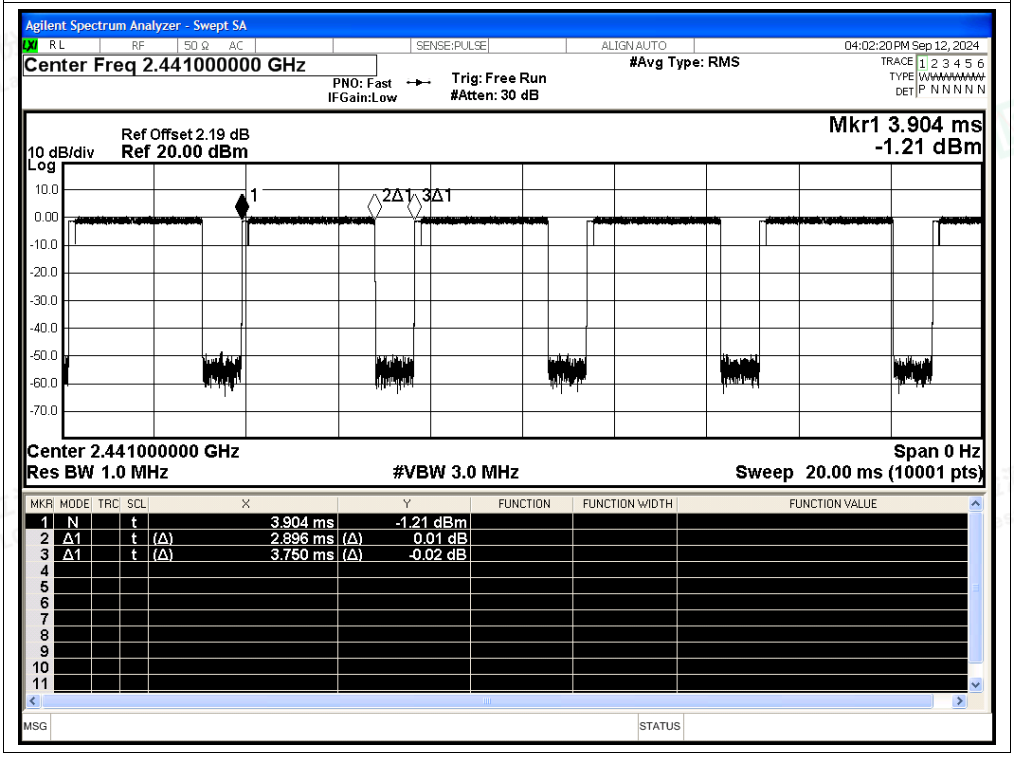
Duty Cycle NVNT 2-DH5 2480MHz Ant1



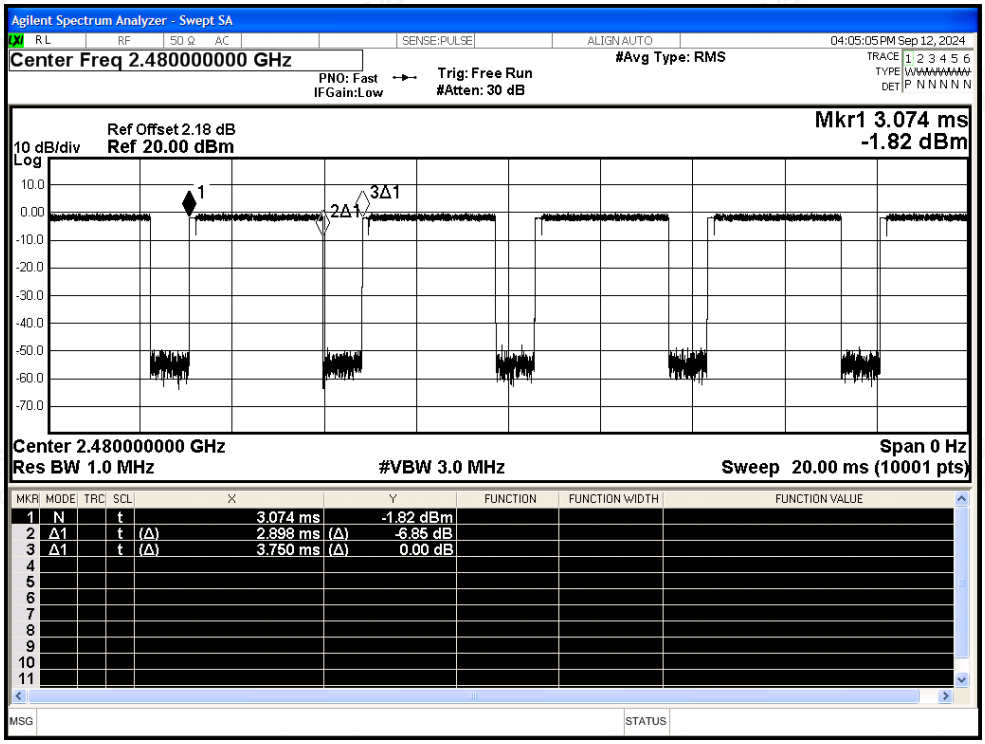
Duty Cycle NVNT 3-DH5 2402MHz Ant1



Duty Cycle NVNT 3-DH5 2441MHz Ant1



Duty Cycle NVNT 3-DH5 2480MHz Ant1

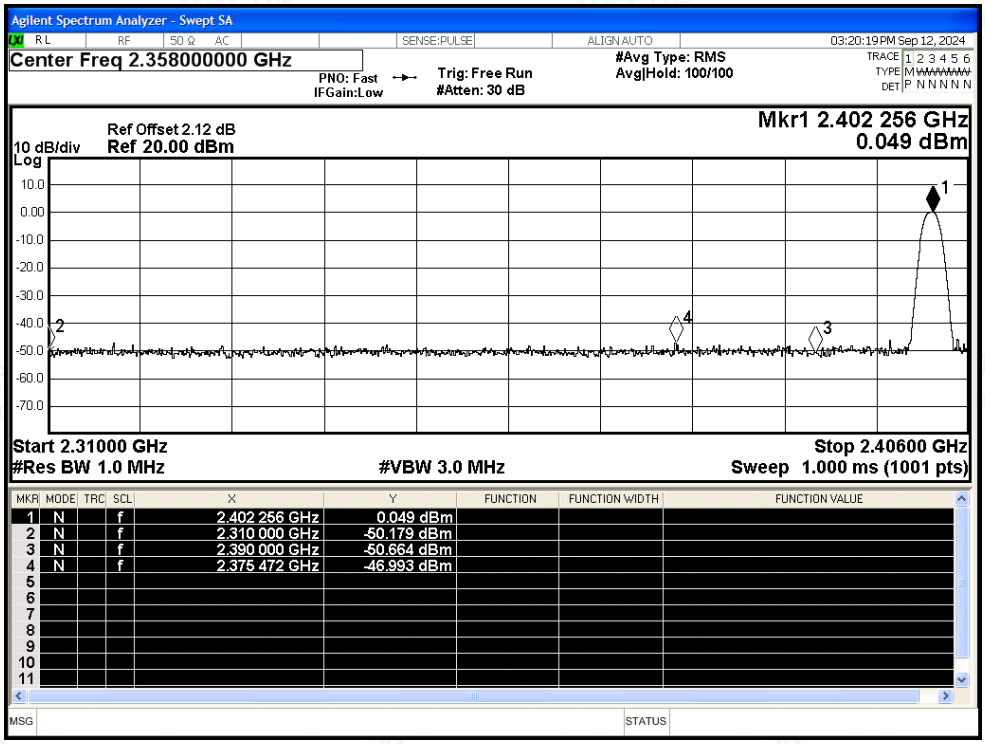


A.9 Restrict Band

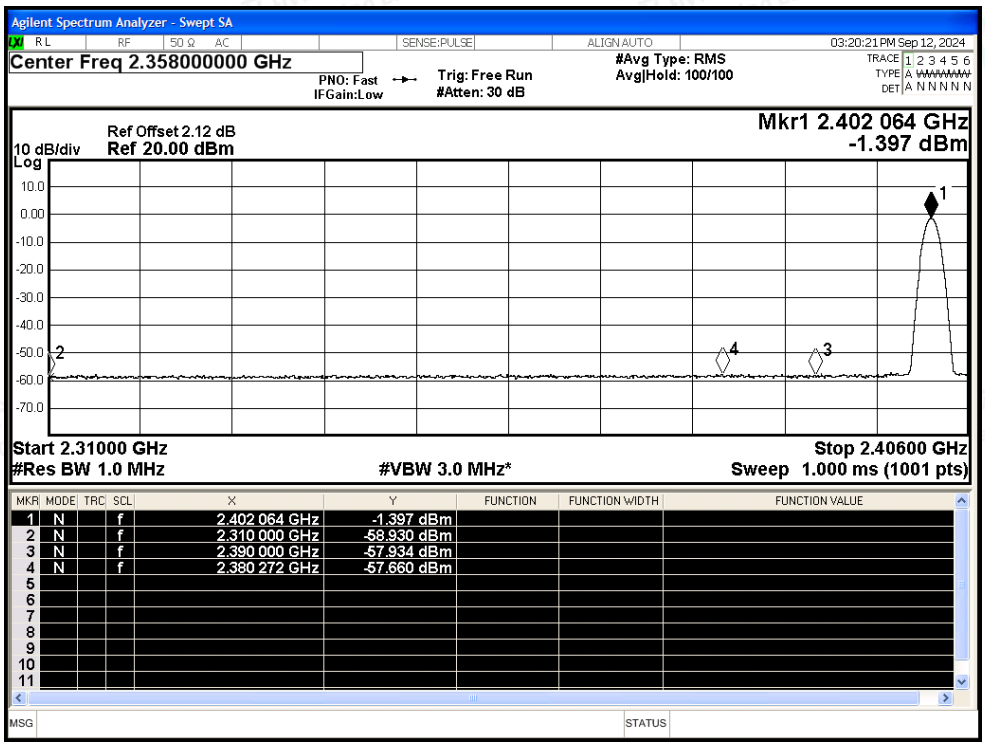
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-50.18	2	-	47.08	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-58.93	2	1.1	39.43	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2375.472	-46.99	2	-	50.27	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2380.272	-57.66	2	1.1	40.7	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-50.66	2	-	46.6	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-57.93	2	1.1	40.43	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-49.7	2	-	47.56	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-57.64	2	1.1	40.72	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2496.04	-46.7	2	-	50.56	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2496.424	-57.07	2	1.1	41.29	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-50.62	2	-	46.64	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-57.85	2	1.1	40.51	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-50.54	2	-	46.72	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-58.32	2	1.12	40.06	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2359.248	-47.8	2	-	49.46	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2371.632	-57.67	2	1.12	40.71	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-49.42	2	-	47.84	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-57.73	2	1.12	40.65	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-46.93	2	-	50.33	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-57.16	2	1.12	41.22	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2488.192	-46.9	2	-	50.36	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.632	-56.54	2	1.12	41.84	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-50.28	2	-	46.98	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-57.94	2	1.12	40.44	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-51.44	2	-	45.82	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-58.52	2	1.12	39.86	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2324.016	-47.74	2	-	49.52	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2337.264	-57.72	2	1.12	40.66	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-49.16	2	-	48.1	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-58.53	2	1.12	39.85	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-45.73	2	-	51.53	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-56.73	2	1.12	41.65	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.512	-45.73	2	-	51.53	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.824	-56.37	2	1.12	42.01	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-50.07	2	-	47.19	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-57.86	2	1.12	40.52	Average	54	Pass

Test Graphs

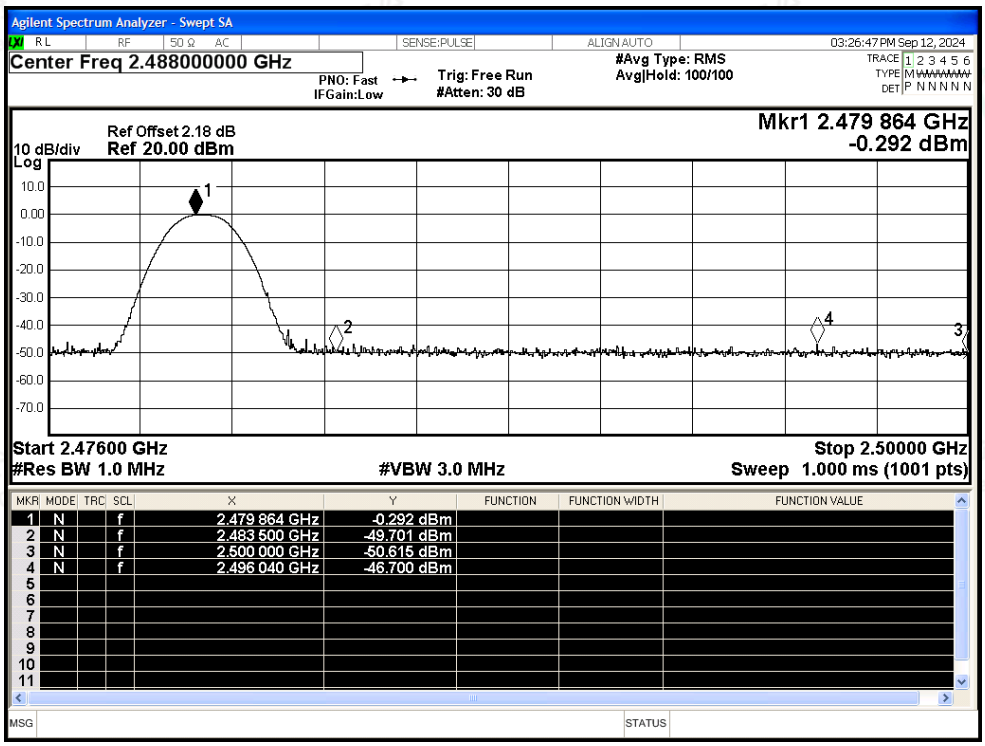
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



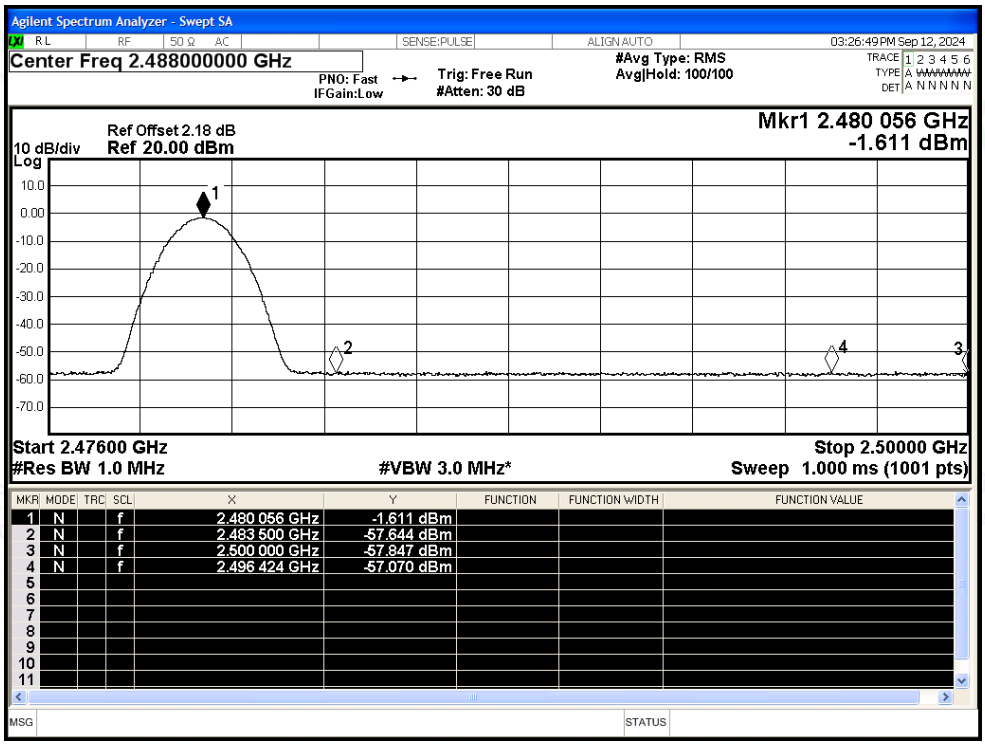
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



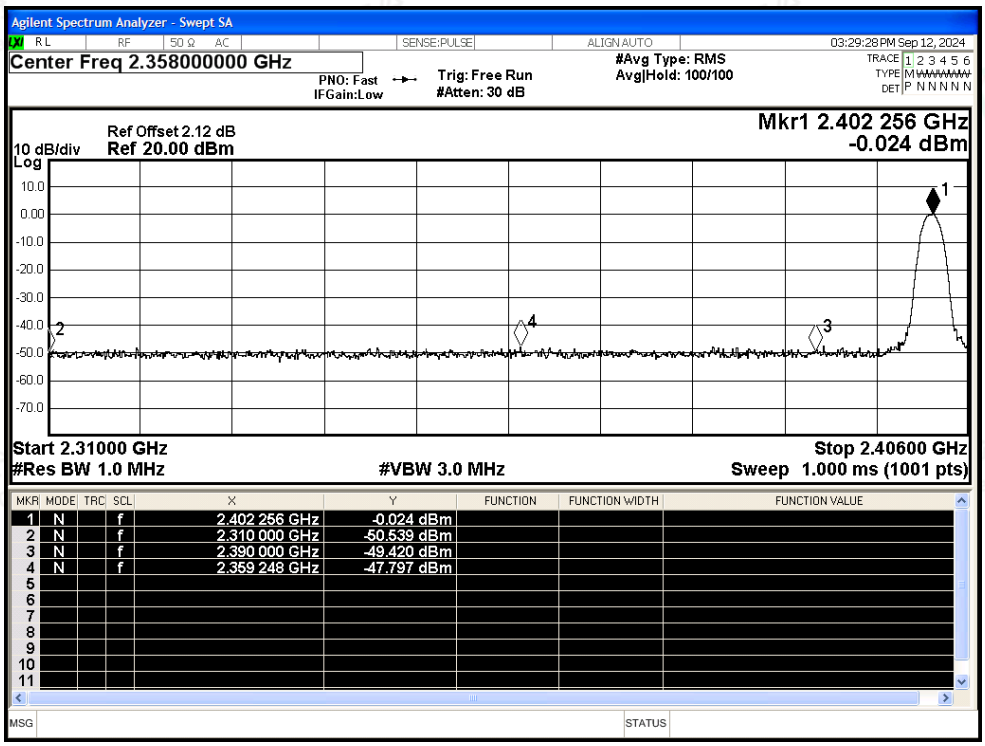
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



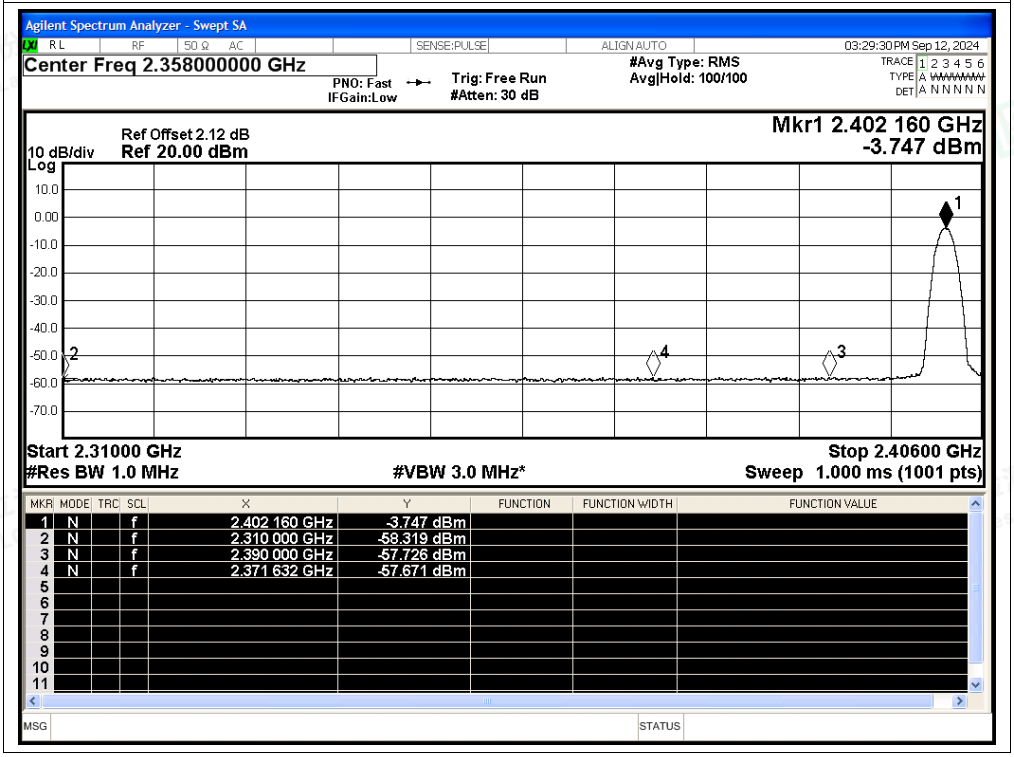
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



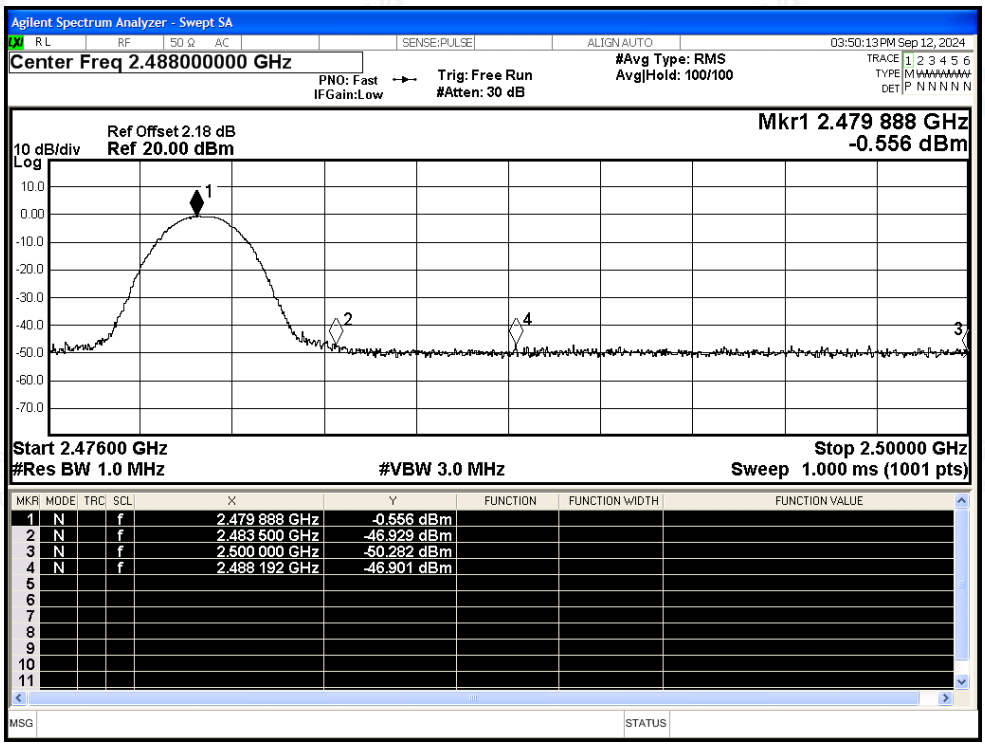
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak



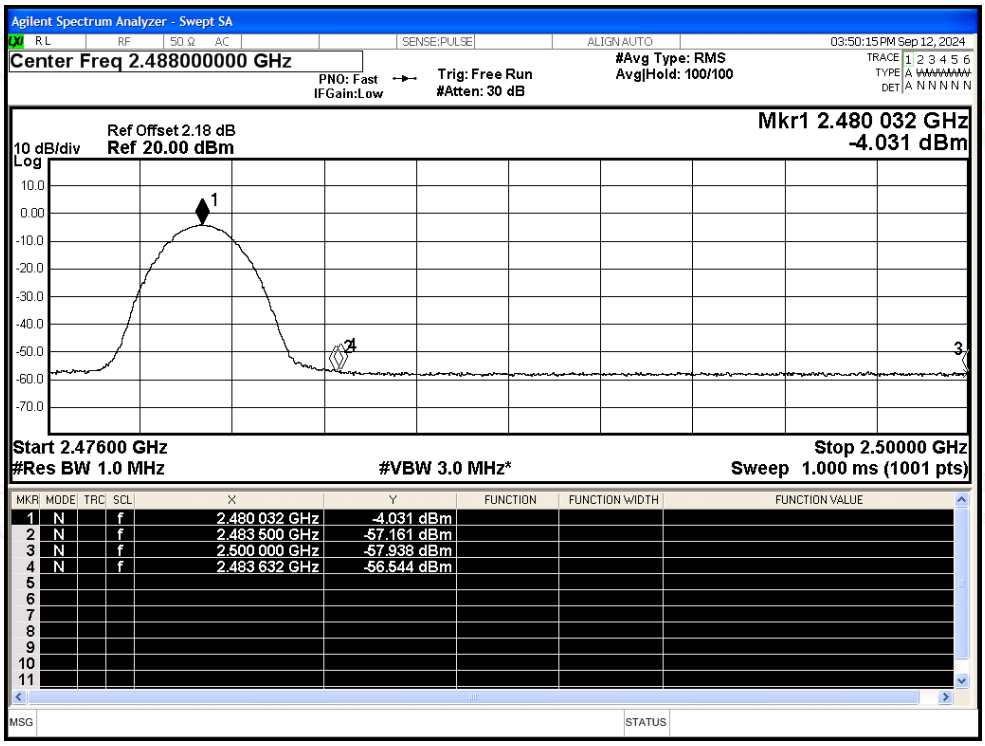
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average



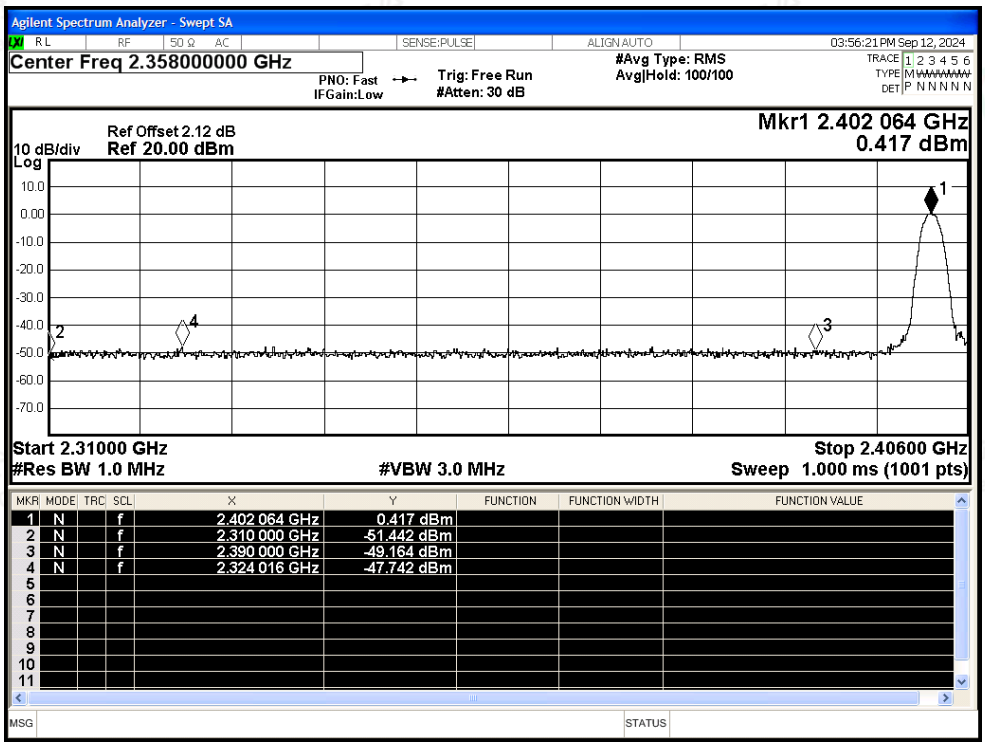
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak



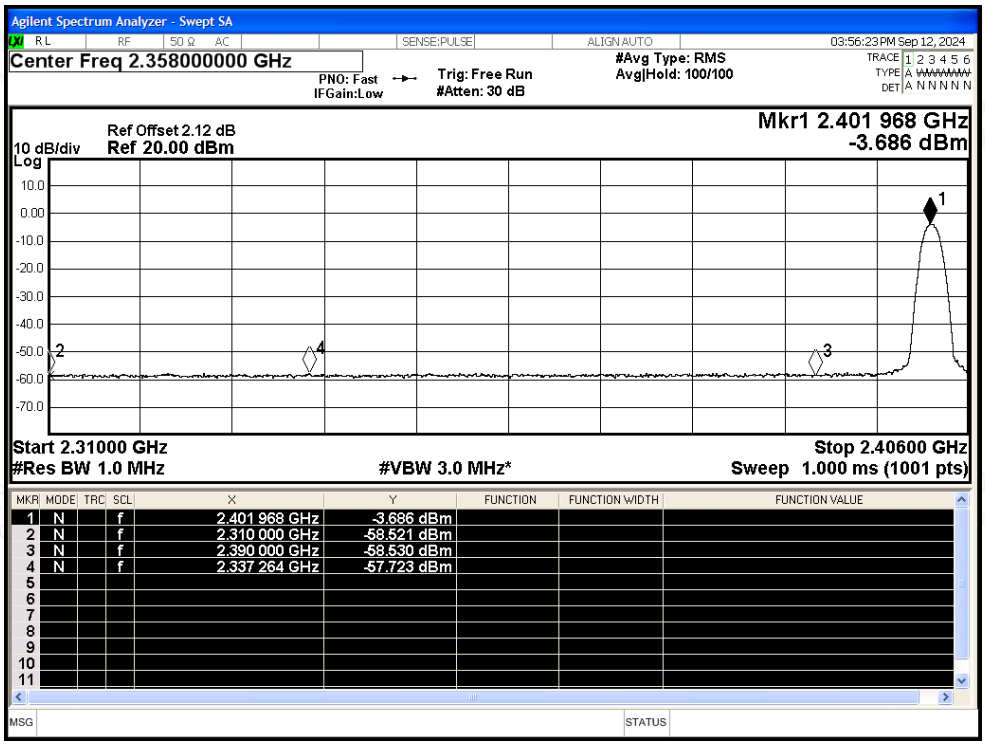
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average



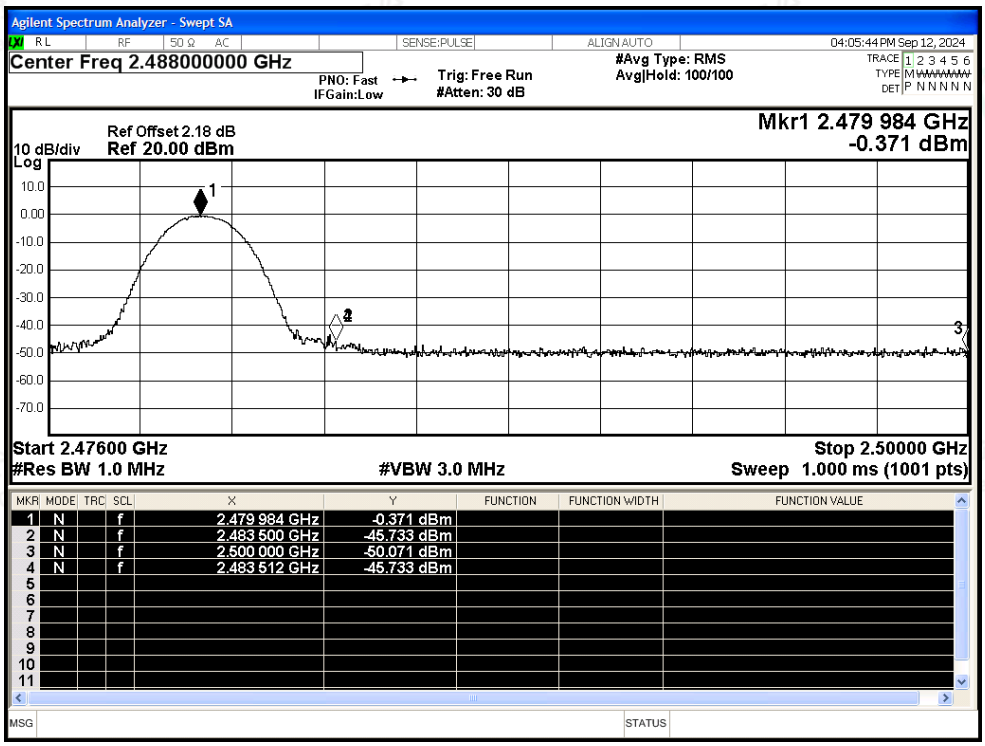
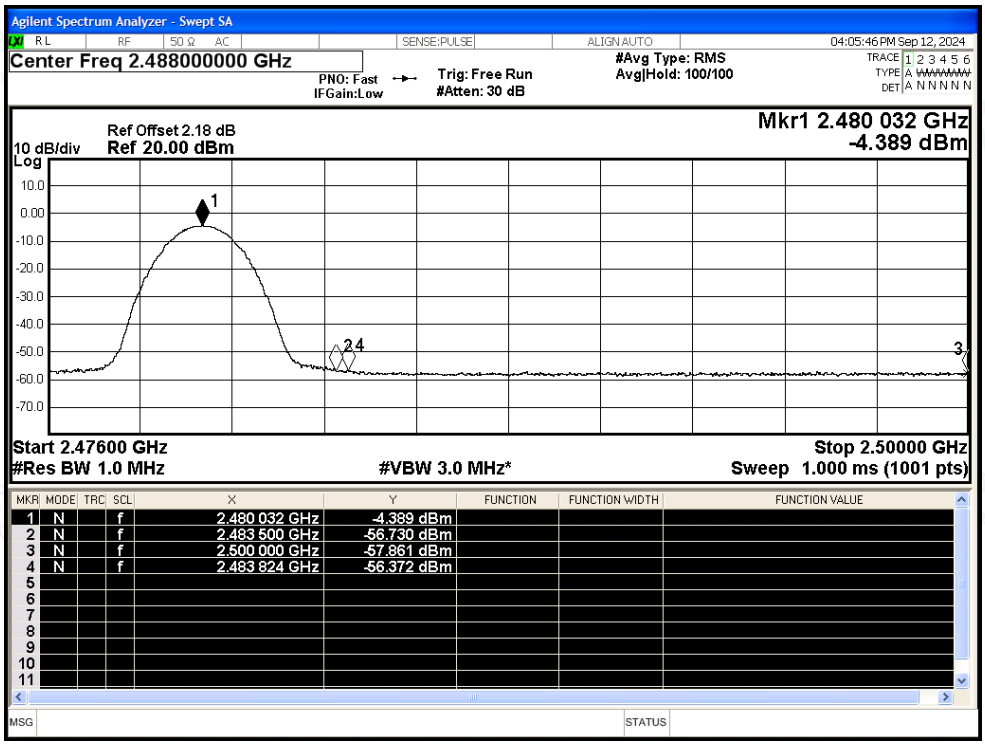
Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak



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