



## Appendix A

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

Product Name: Bluetooth Speaker

Test Model: K-590S

#### Environmental Conditions

Temperature:	23.8°C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Jerry Chu
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	0.996	N/A	Pass
NVNT	1-DH5	2441	Ant1	1.011	N/A	Pass
NVNT	1-DH5	2480	Ant1	0.949	N/A	Pass
NVNT	2-DH5	2402	Ant1	1.282	N/A	Pass
NVNT	2-DH5	2441	Ant1	1.288	N/A	Pass
NVNT	2-DH5	2480	Ant1	1.284	N/A	Pass
NVNT	3-DH5	2402	Ant1	1.282	N/A	Pass
NVNT	3-DH5	2441	Ant1	1.297	N/A	Pass
NVNT	3-DH5	2480	Ant1	1.301	N/A	Pass



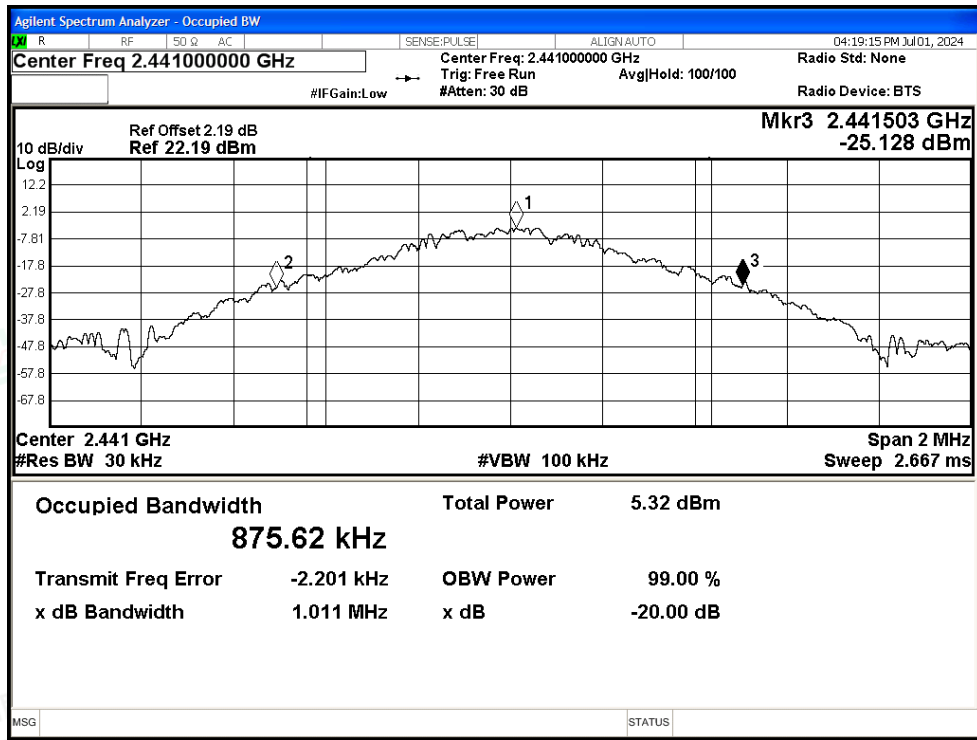


Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1

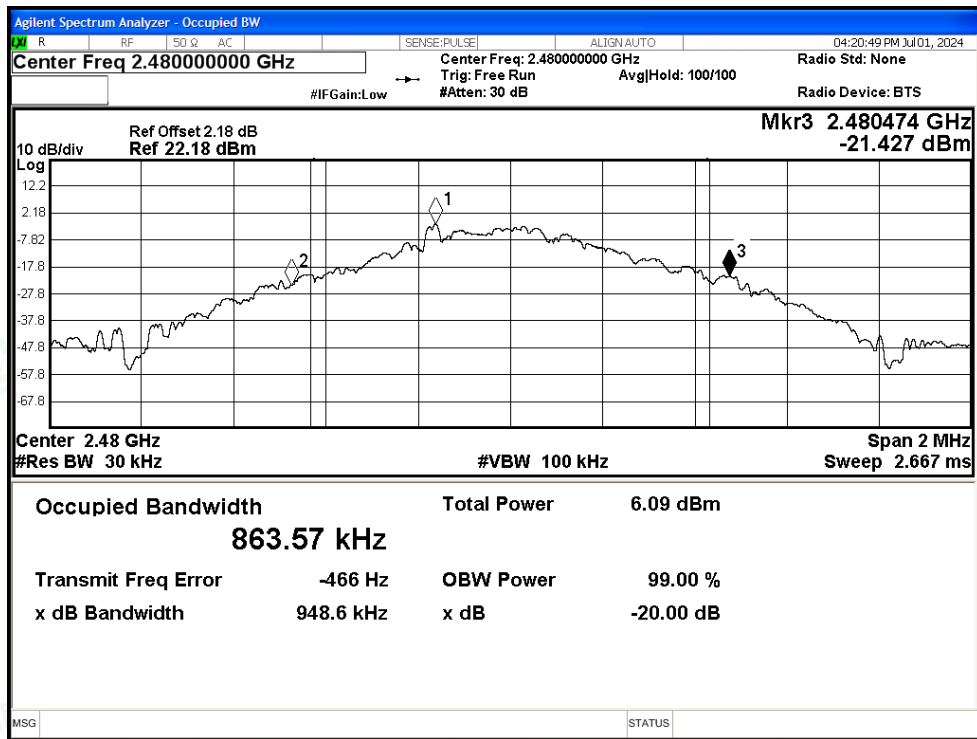


-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1

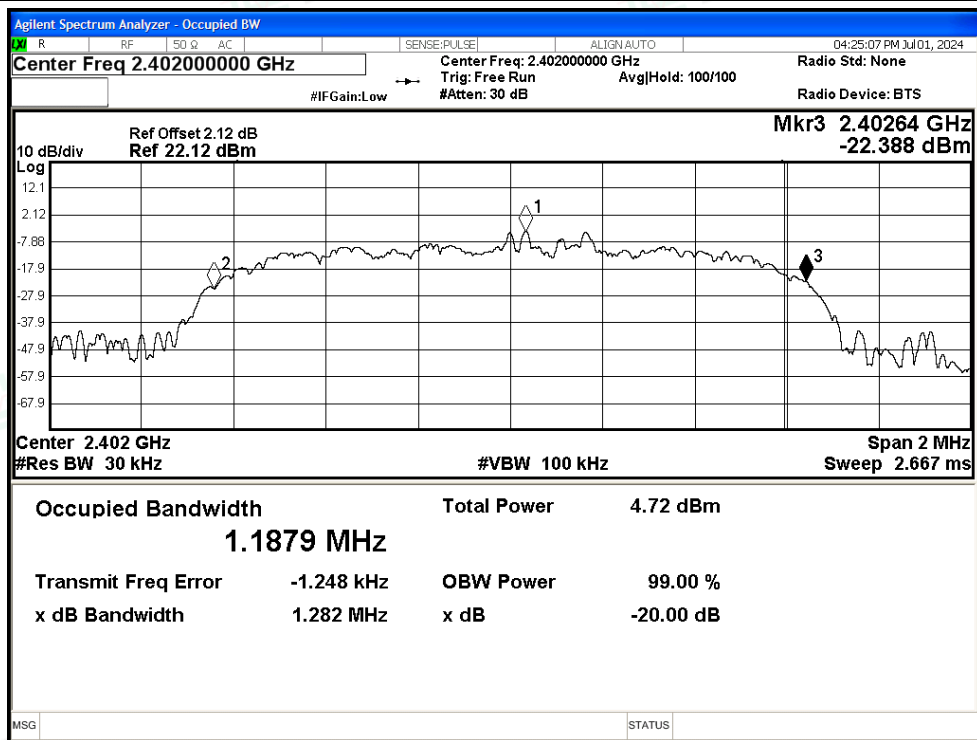




-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1

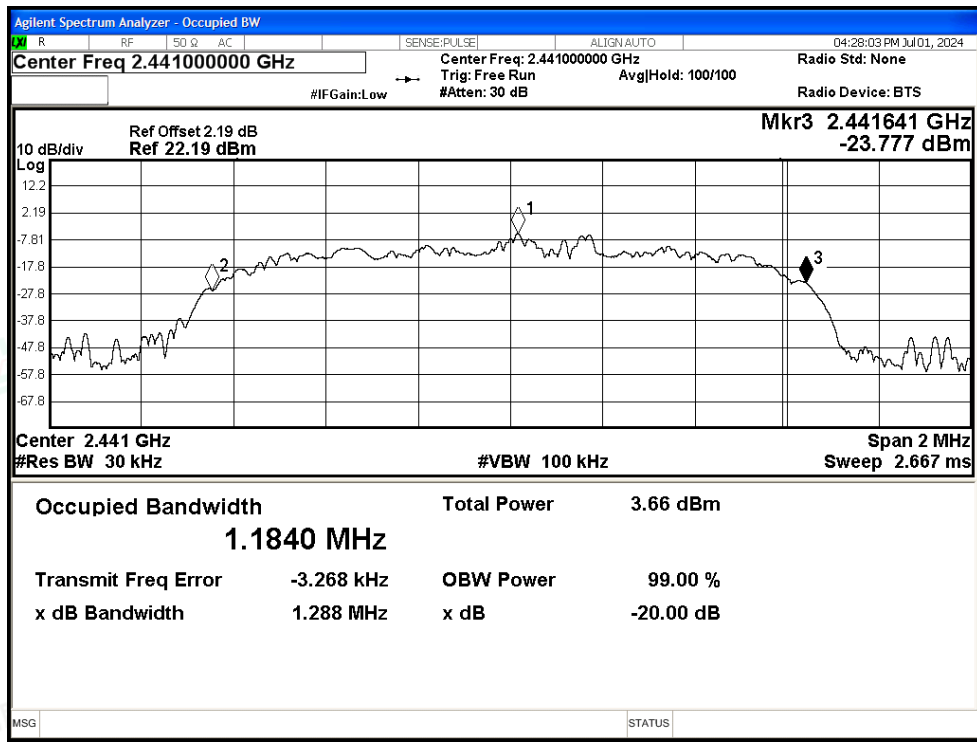


-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1

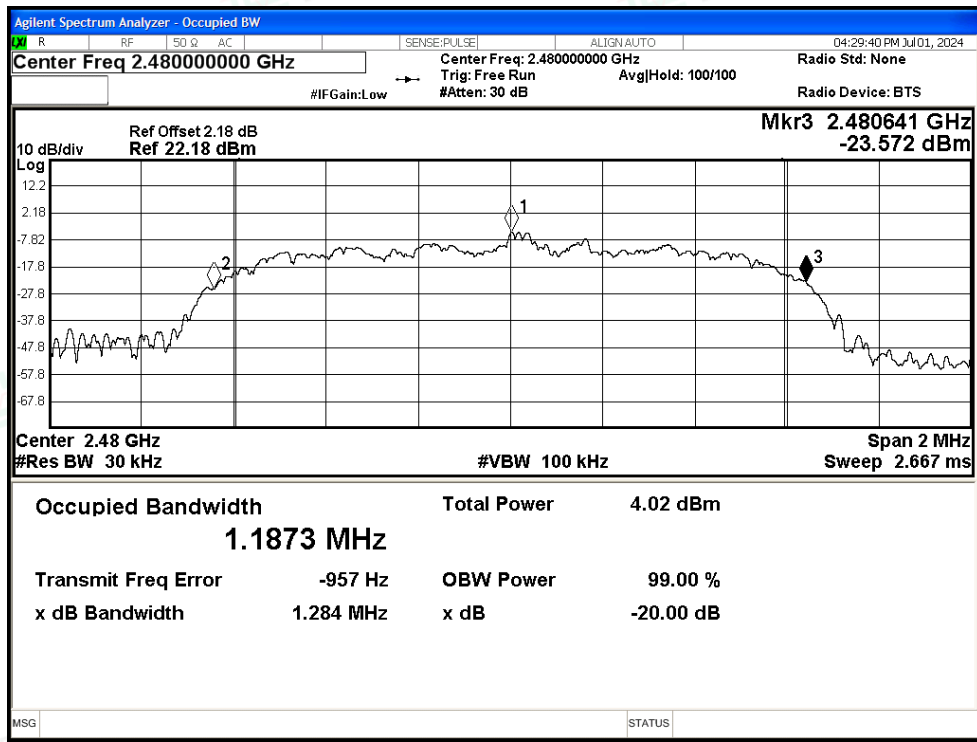




-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1

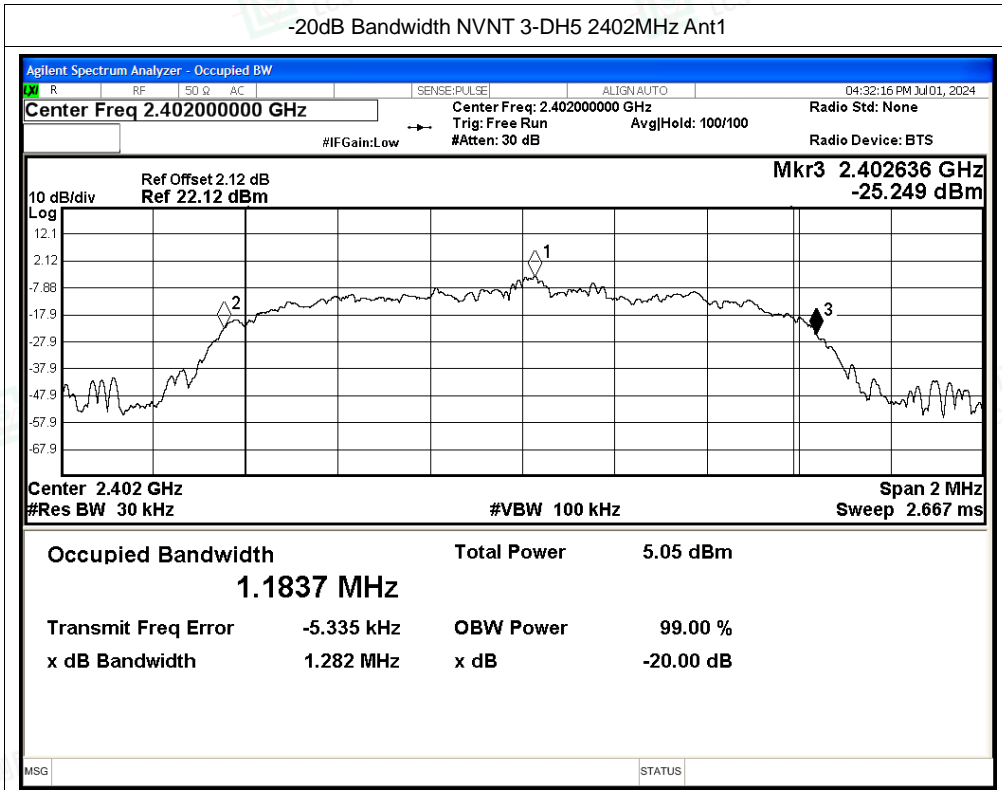


-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1

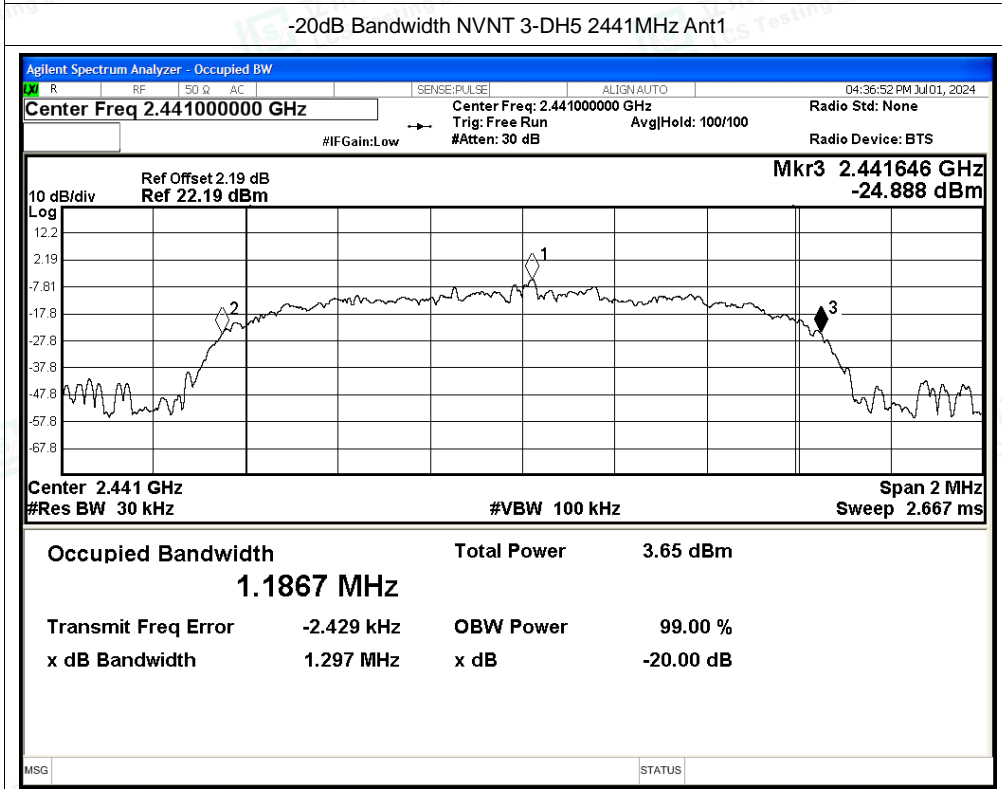




-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1

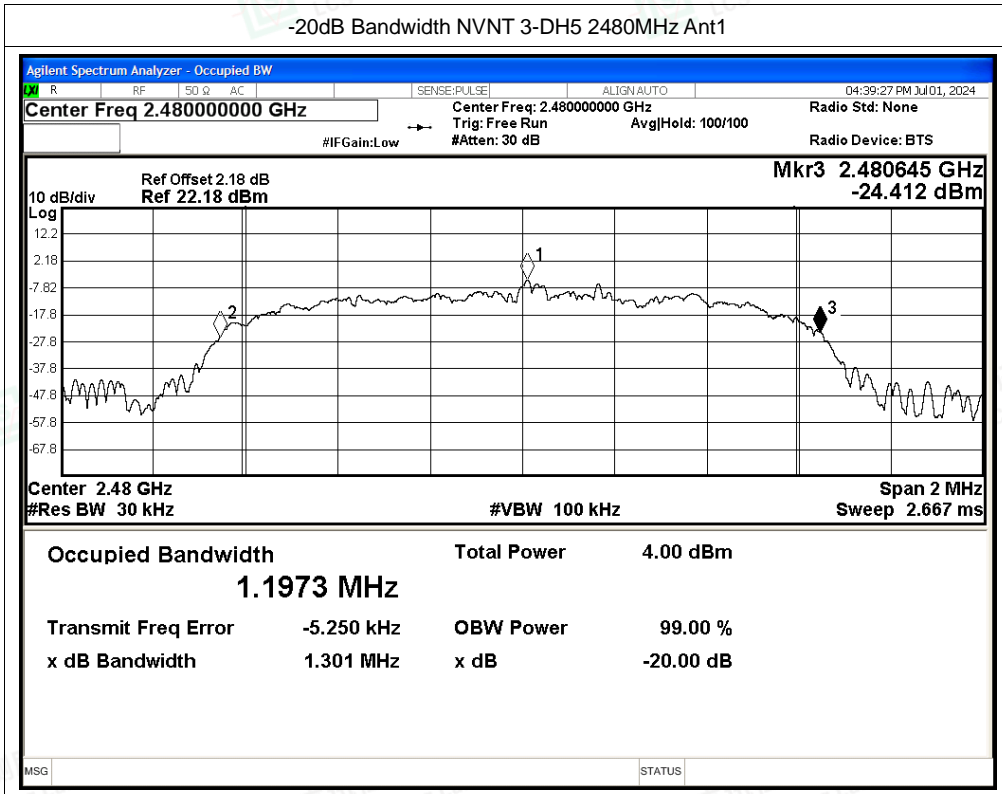


-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1





-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1





## A.2 Maximum Peak Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	0.28	21	Pass
NVNT	1-DH5	2441	Ant1	-0.85	21	Pass
NVNT	1-DH5	2480	Ant1	-0.44	21	Pass
NVNT	2-DH5	2402	Ant1	0.44	21	Pass
NVNT	2-DH5	2441	Ant1	-0.59	21	Pass
NVNT	2-DH5	2480	Ant1	-0.19	21	Pass
NVNT	3-DH5	2402	Ant1	0.52	21	Pass
NVNT	3-DH5	2441	Ant1	-0.49	21	Pass
NVNT	3-DH5	2480	Ant1	-0.05	21	Pass

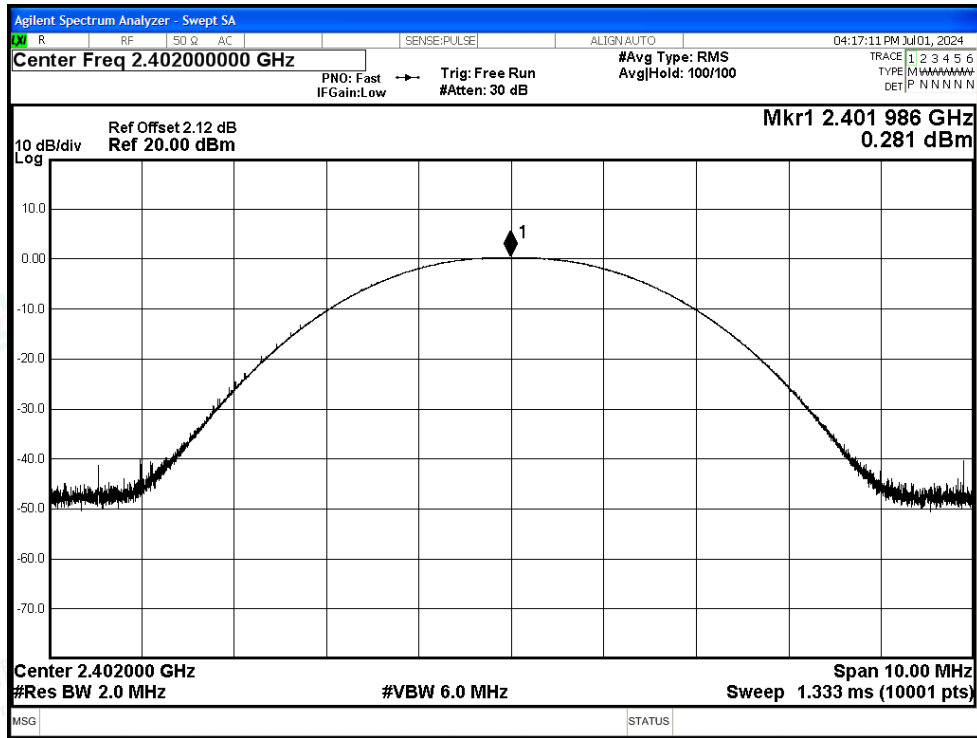




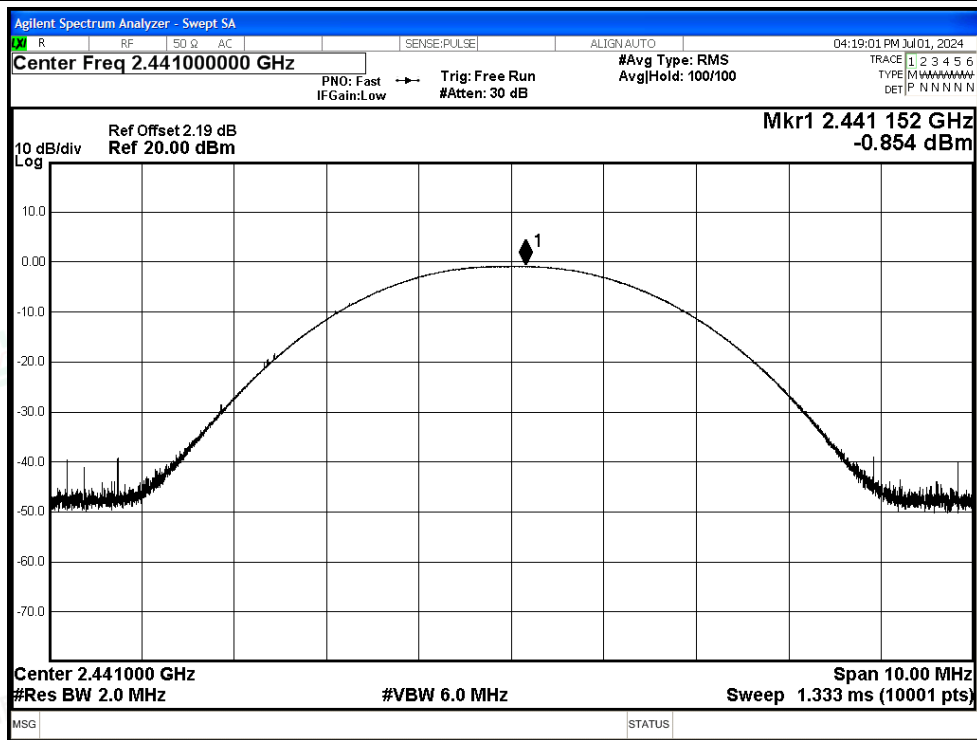


Test Graphs

Power NVNT 1-DH5 2402MHz Ant1

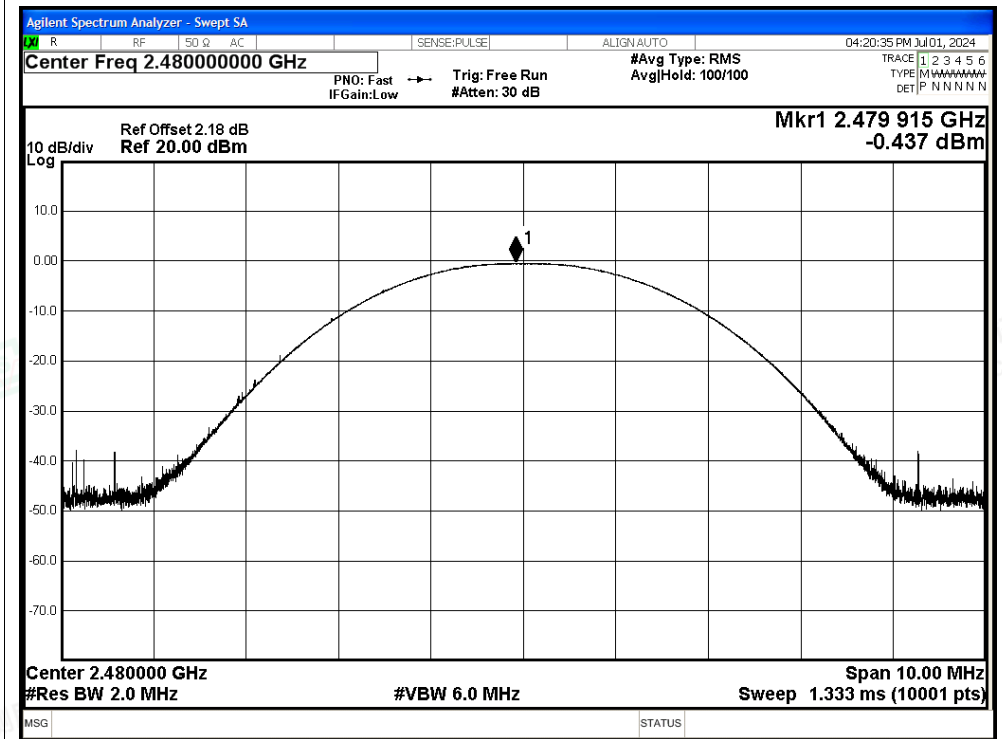


Power NVNT 1-DH5 2441MHz Ant1

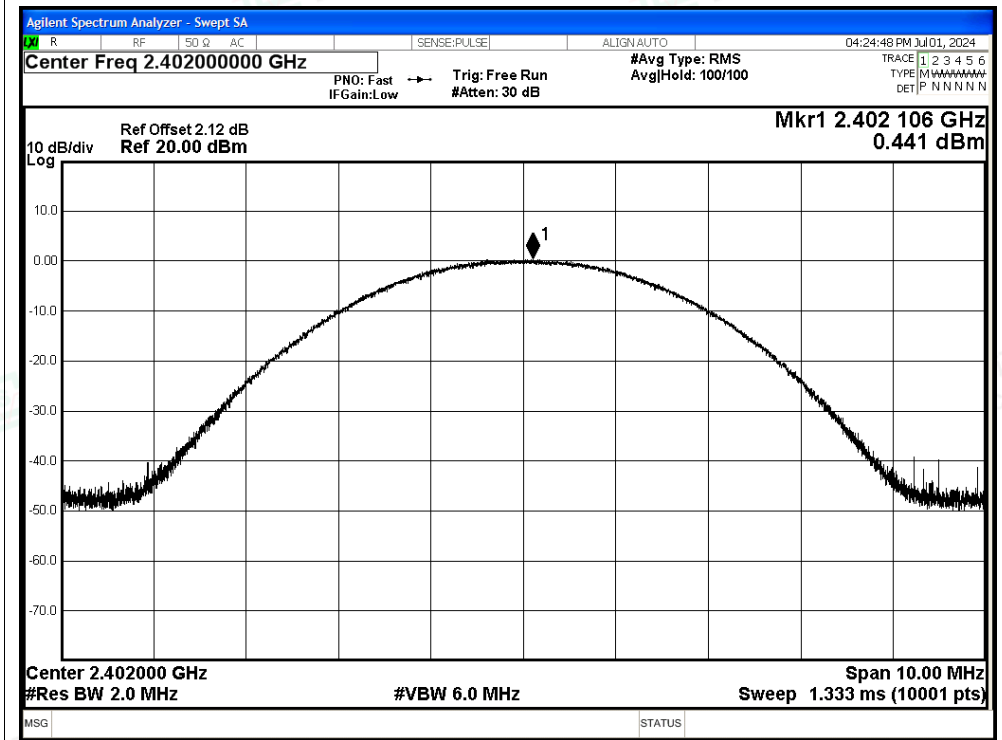




Power NVNT 1-DH5 2480MHz Ant1

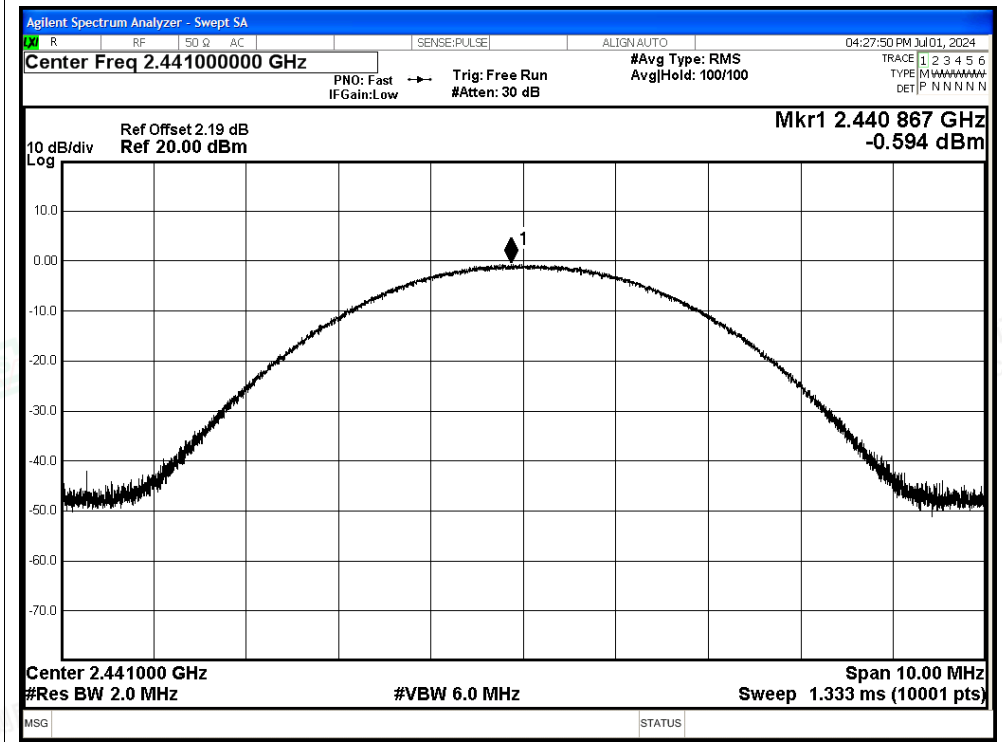


Power NVNT 2-DH5 2402MHz Ant1

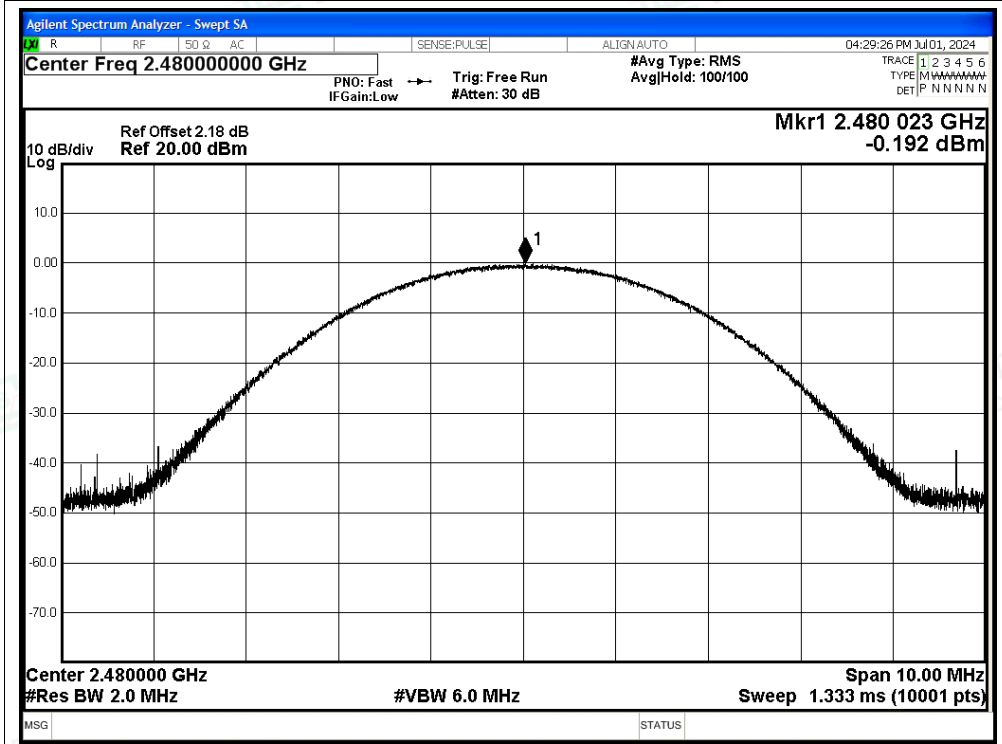




Power NVNT 2-DH5 2441MHz Ant1

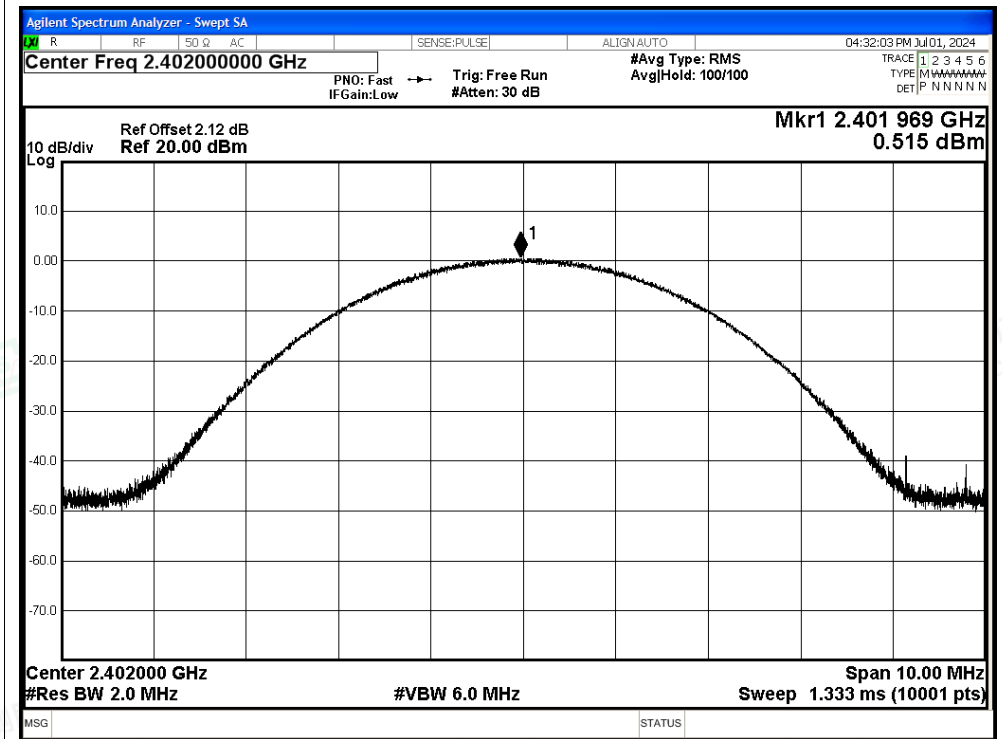


Power NVNT 2-DH5 2480MHz Ant1

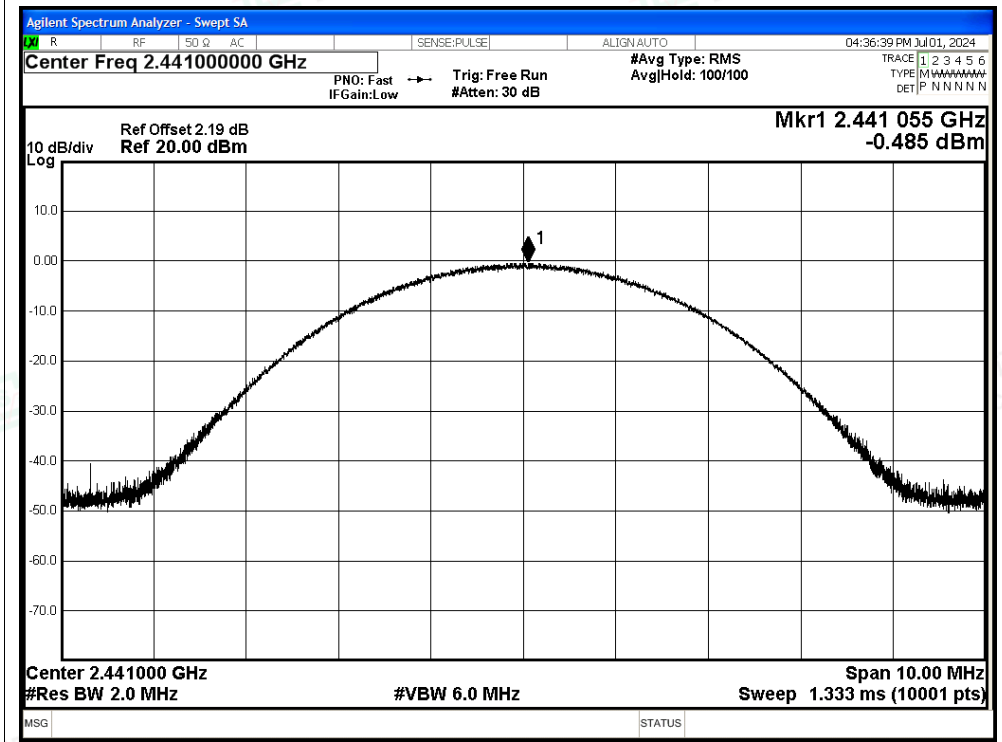


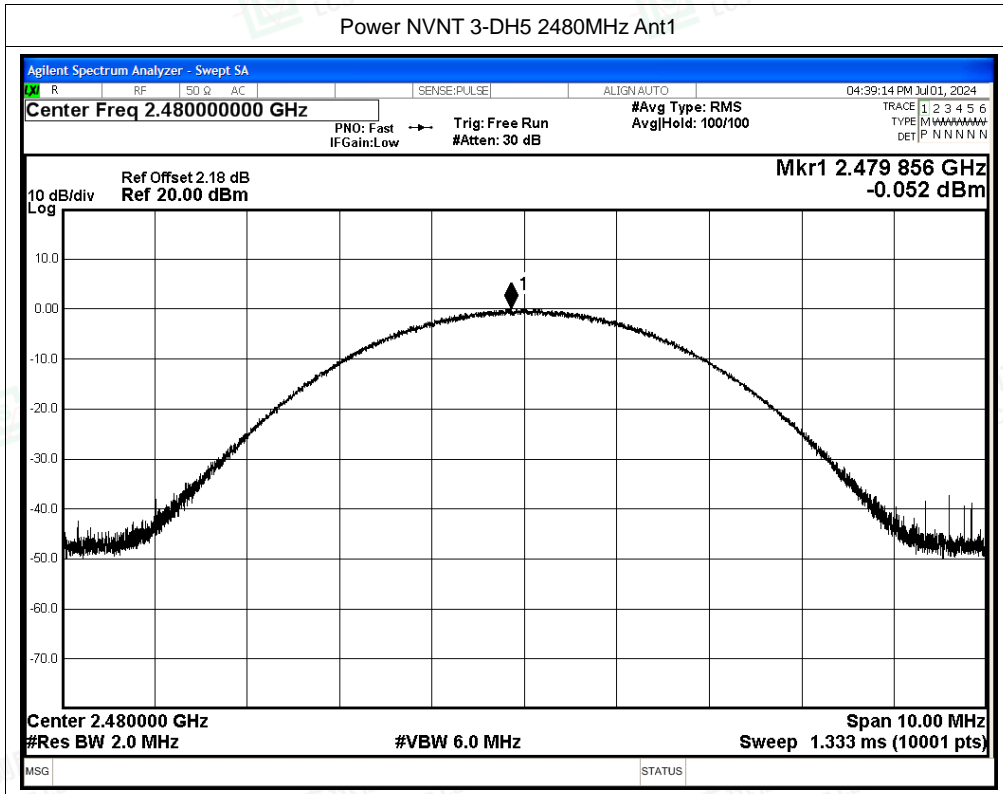


Power NVNT 3-DH5 2402MHz Ant1



Power NVNT 3-DH5 2441MHz Ant1







### A.3 Carrier Frequencies Separation

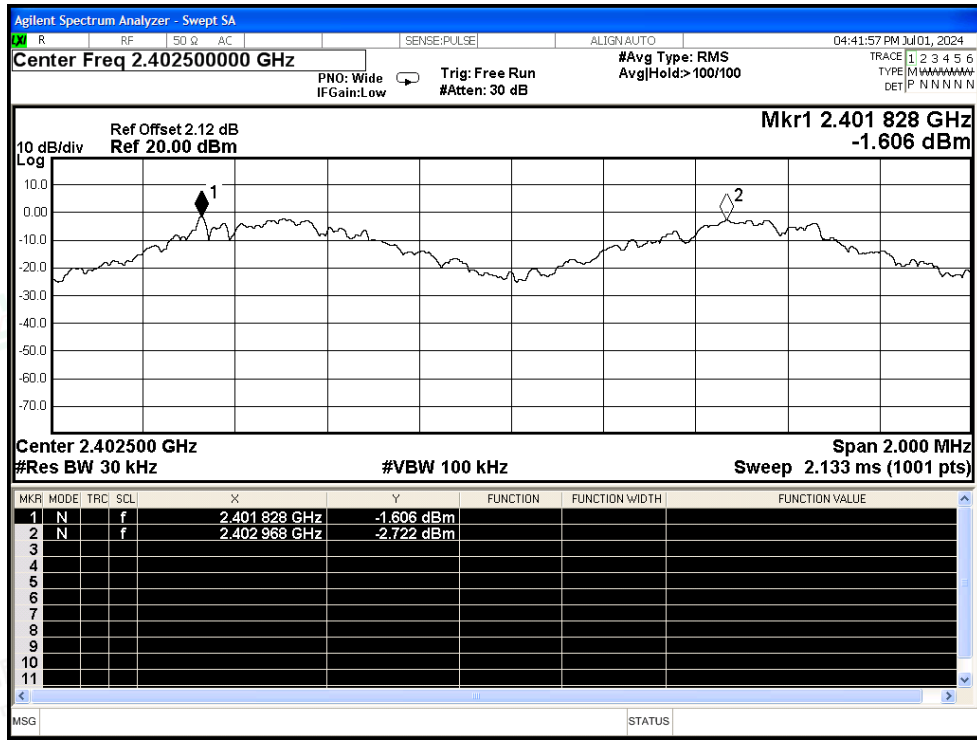
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2401.828	2402.968	1.14	0.674	Pass
NVNT	2-DH5	Ant1	2402.028	2403.002	0.974	0.859	Pass
NVNT	3-DH5	Ant1	2401.84	2403.158	1.318	0.867	Pass



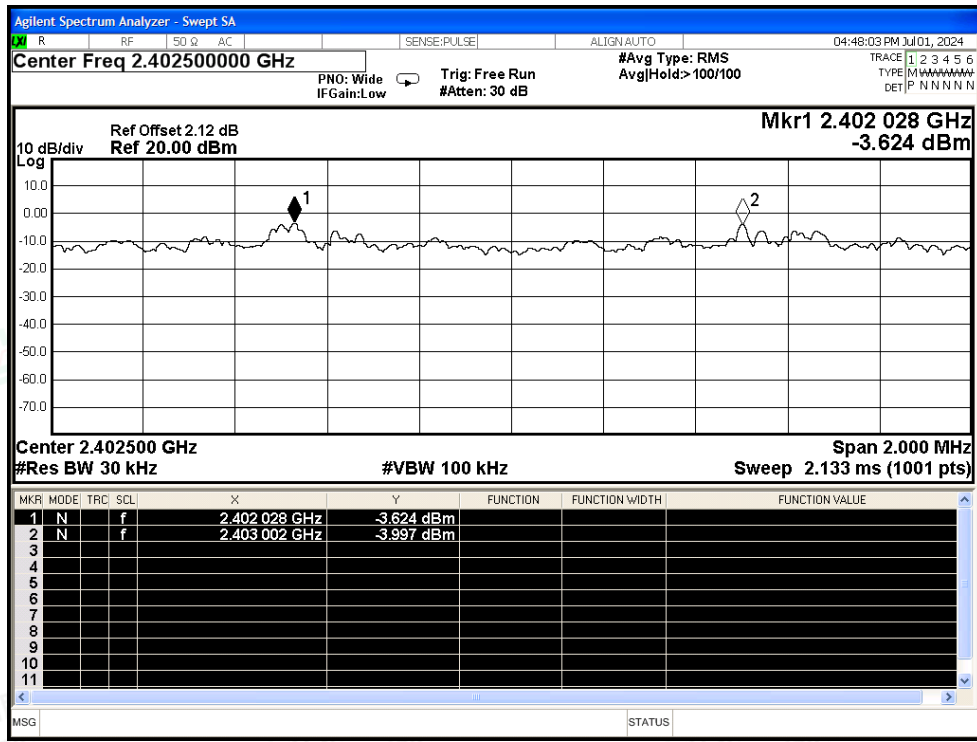


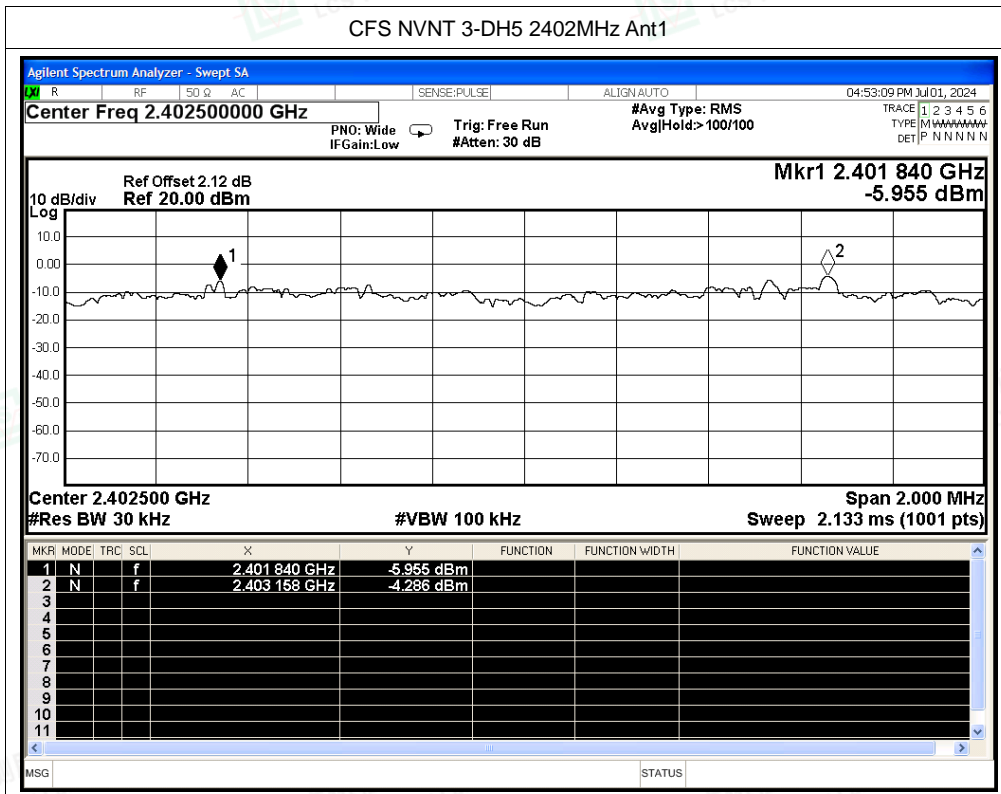
Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 2-DH5 2402MHz Ant1









### A.4 Dwell Time

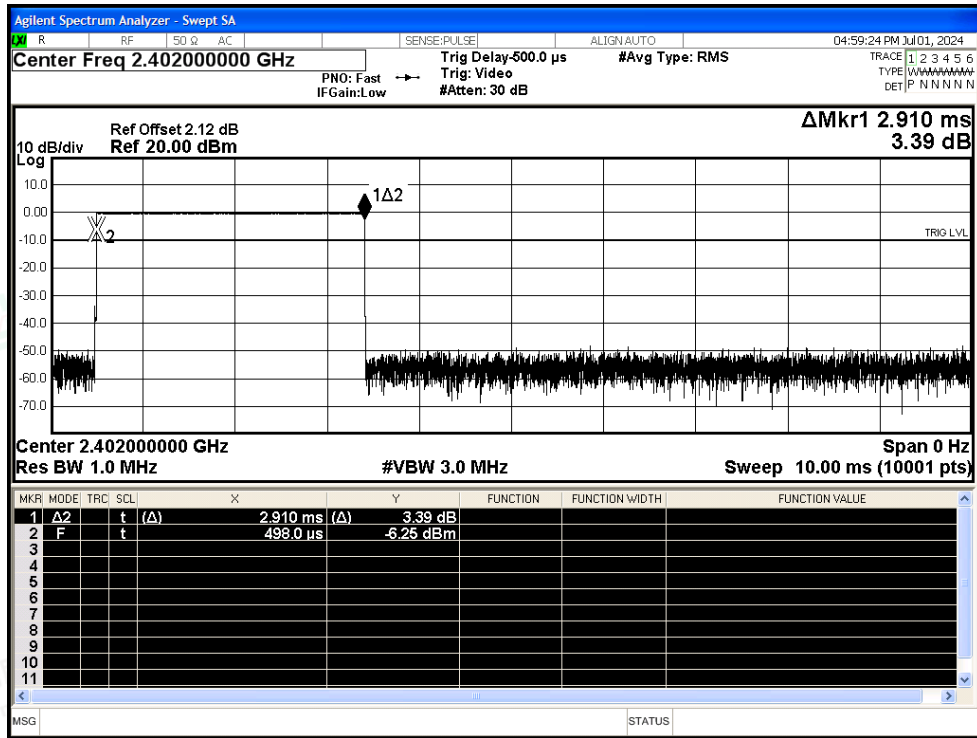
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.91	285.18	98	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.898	292.698	101	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.898	312.984	108	31600	400	Pass



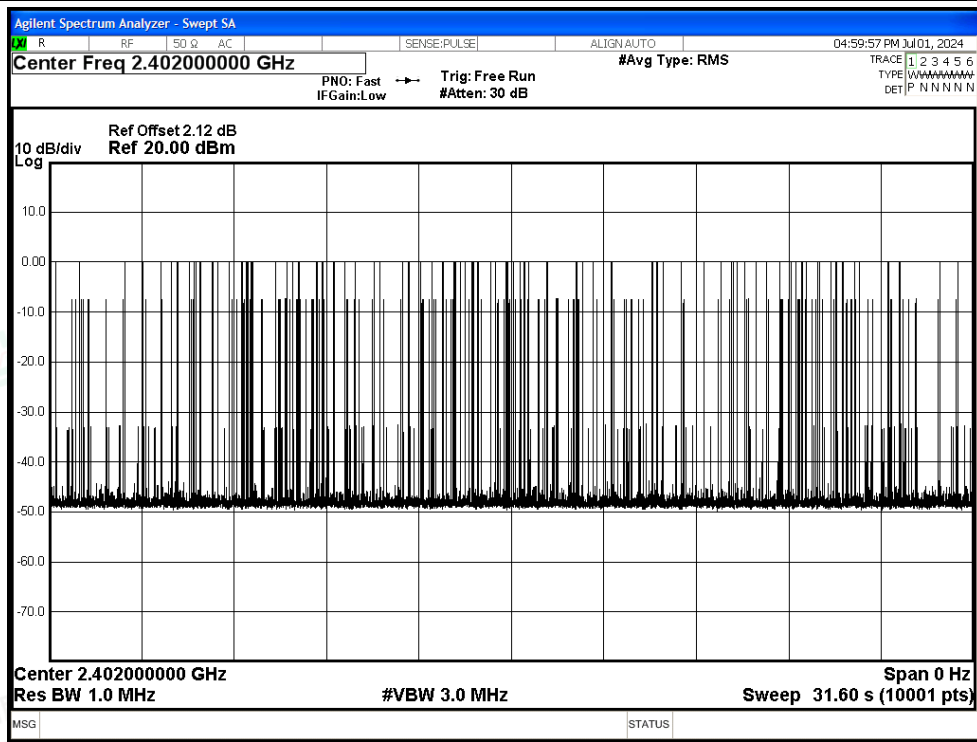


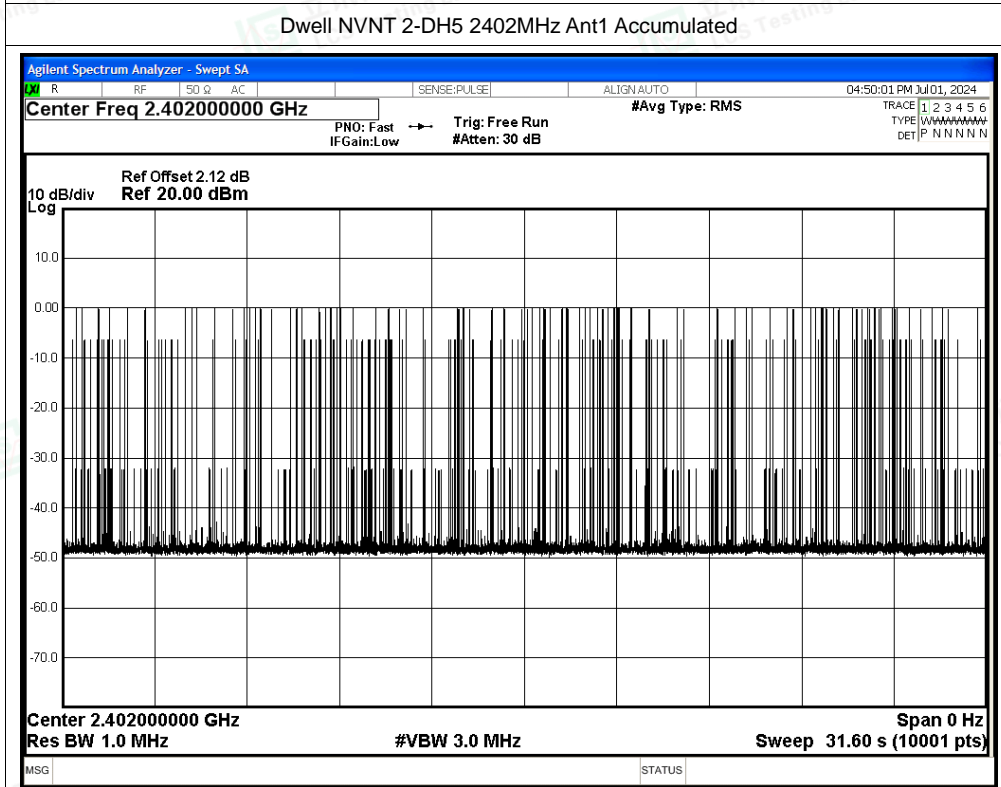
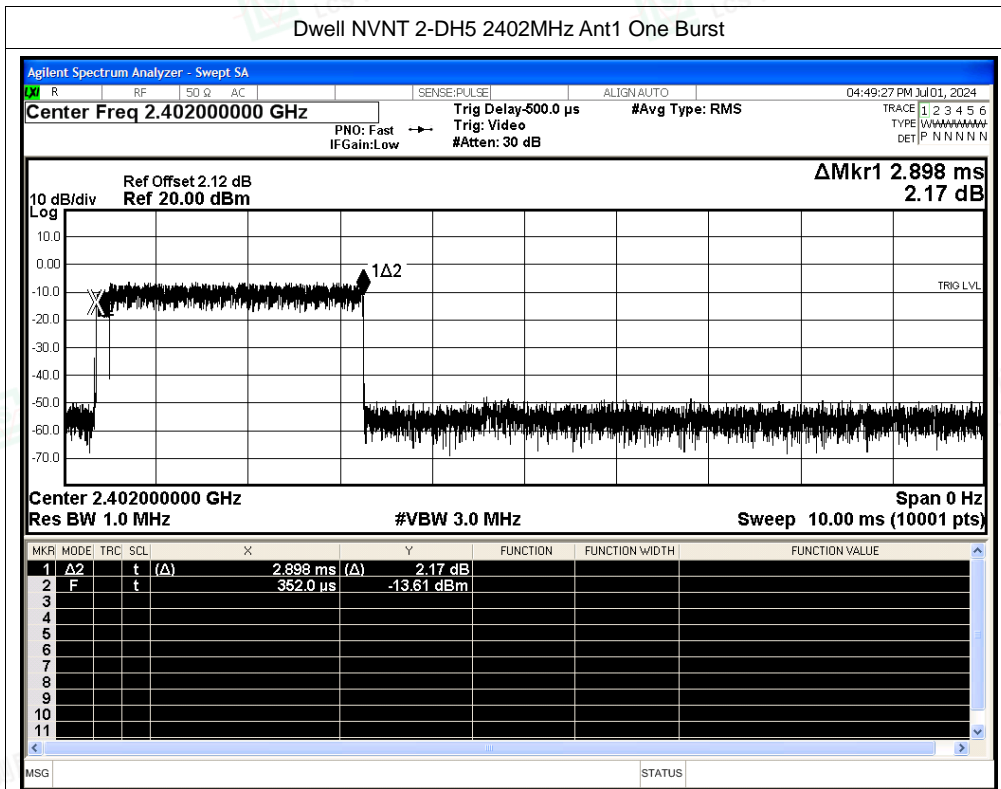
Test Graphs

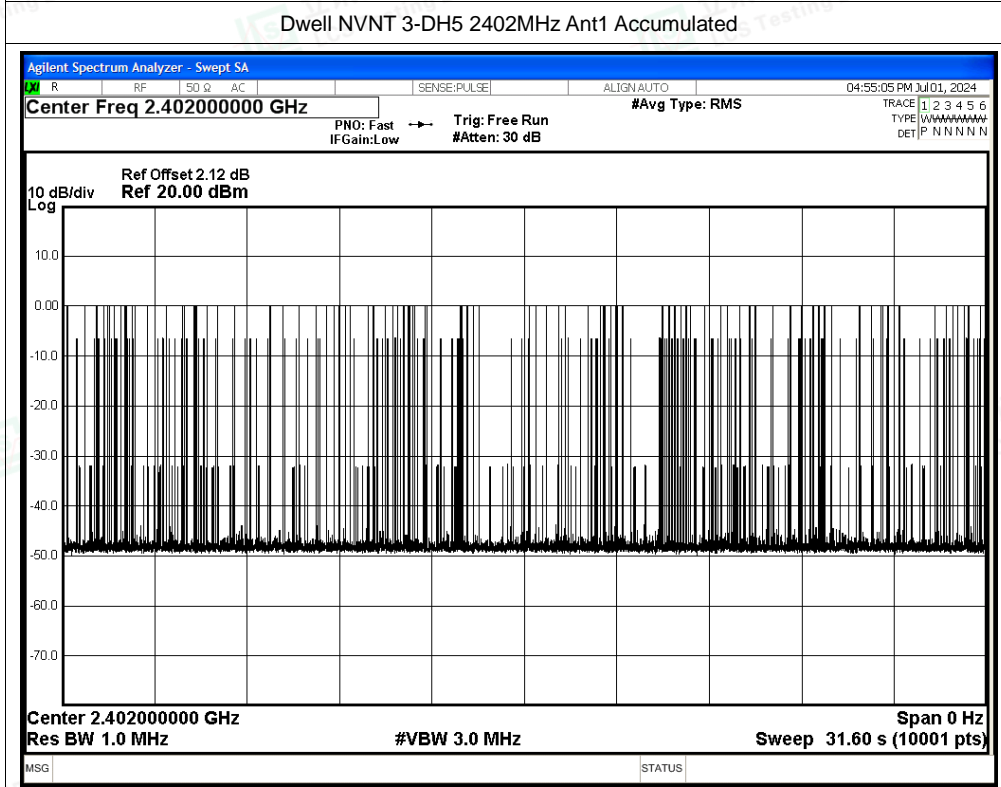
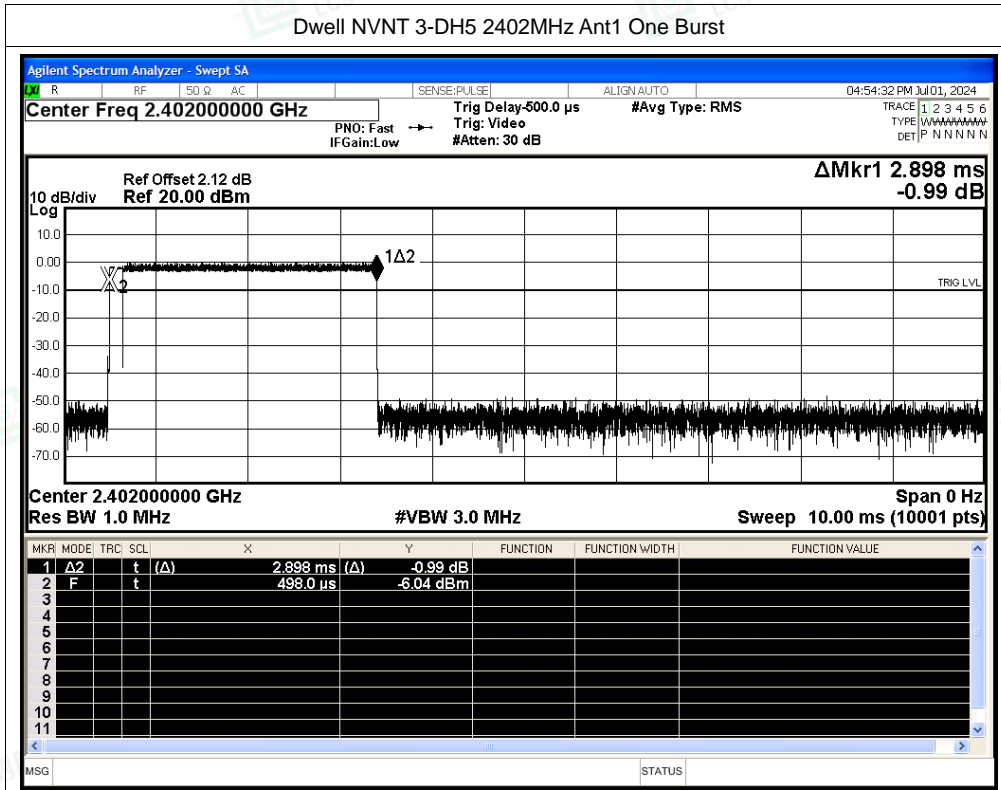
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated









## A.5 Number of Hopping Channel

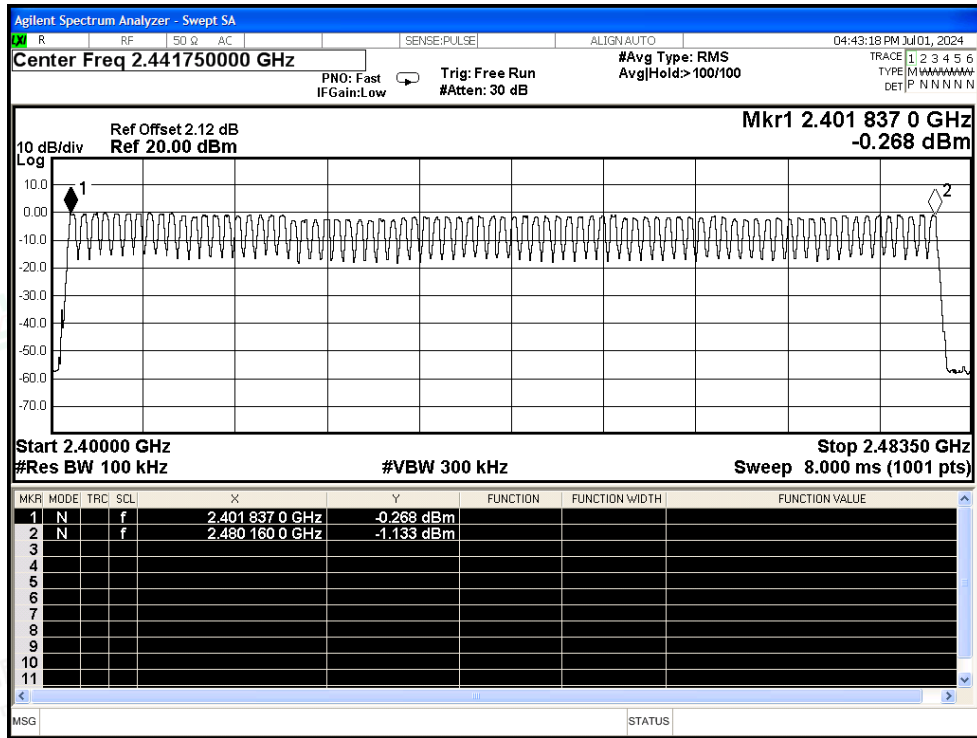
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass



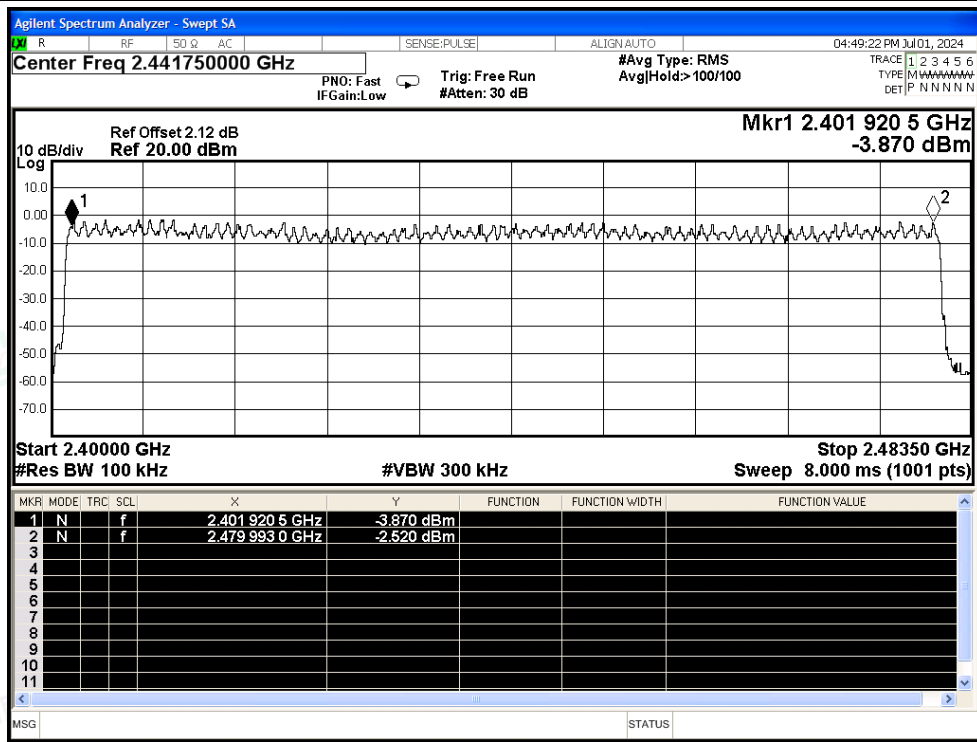


Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant1

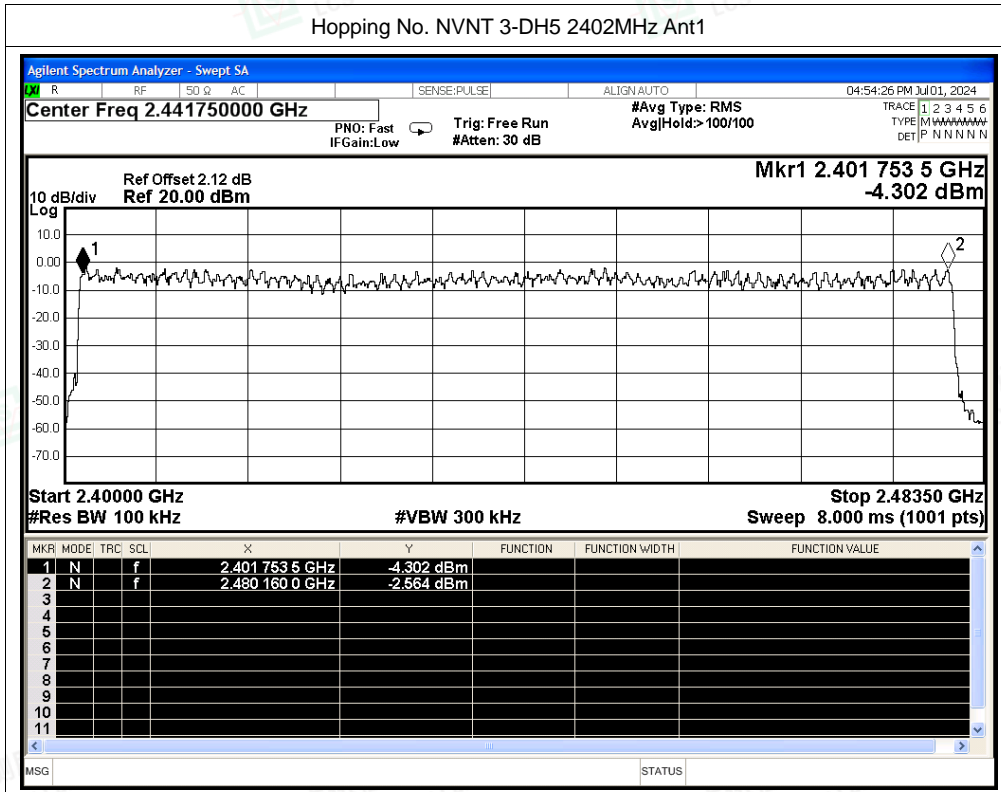


Hopping No. NVNT 2-DH5 2402MHz Ant1





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	-55.92	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-56.35	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-54.89	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-53.97	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-55.21	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-54.16	-20	Pass

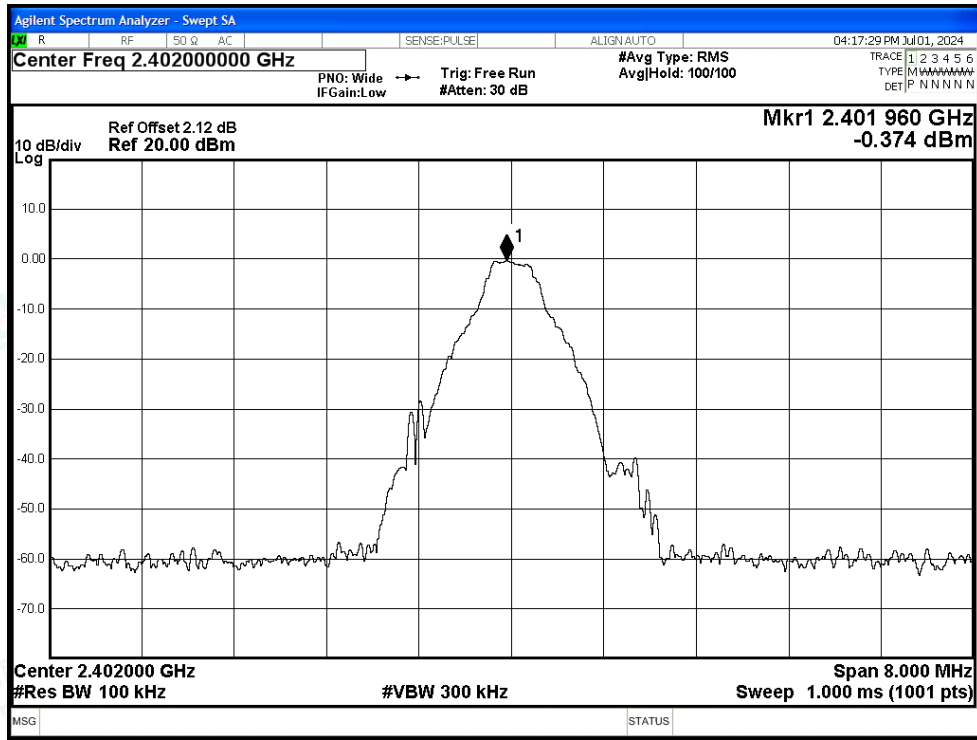




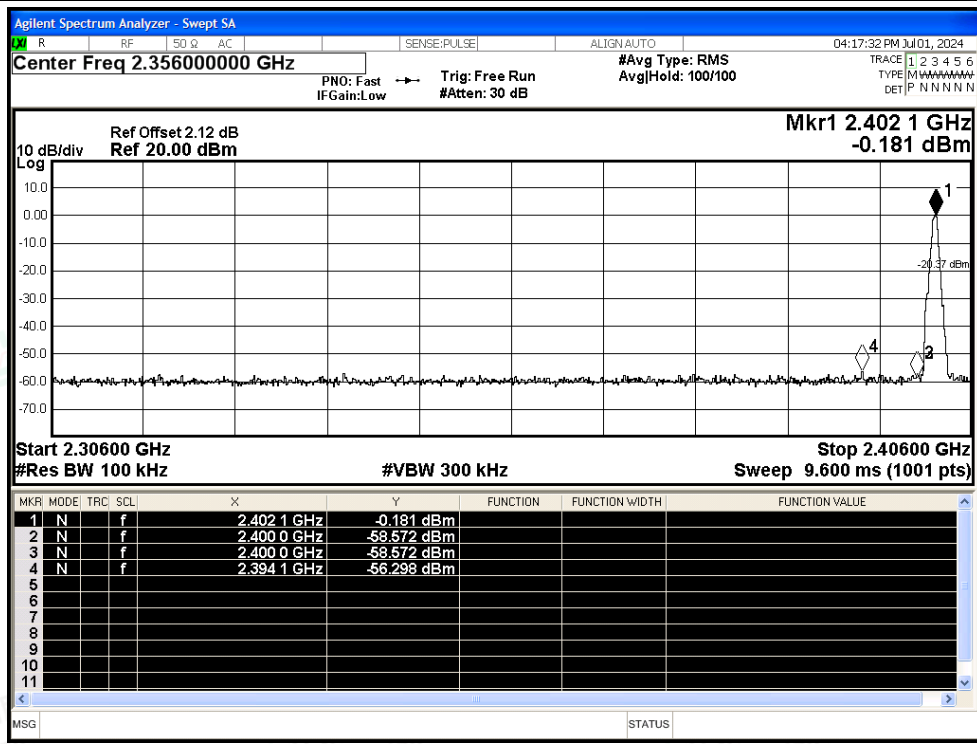


Test Graphs

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

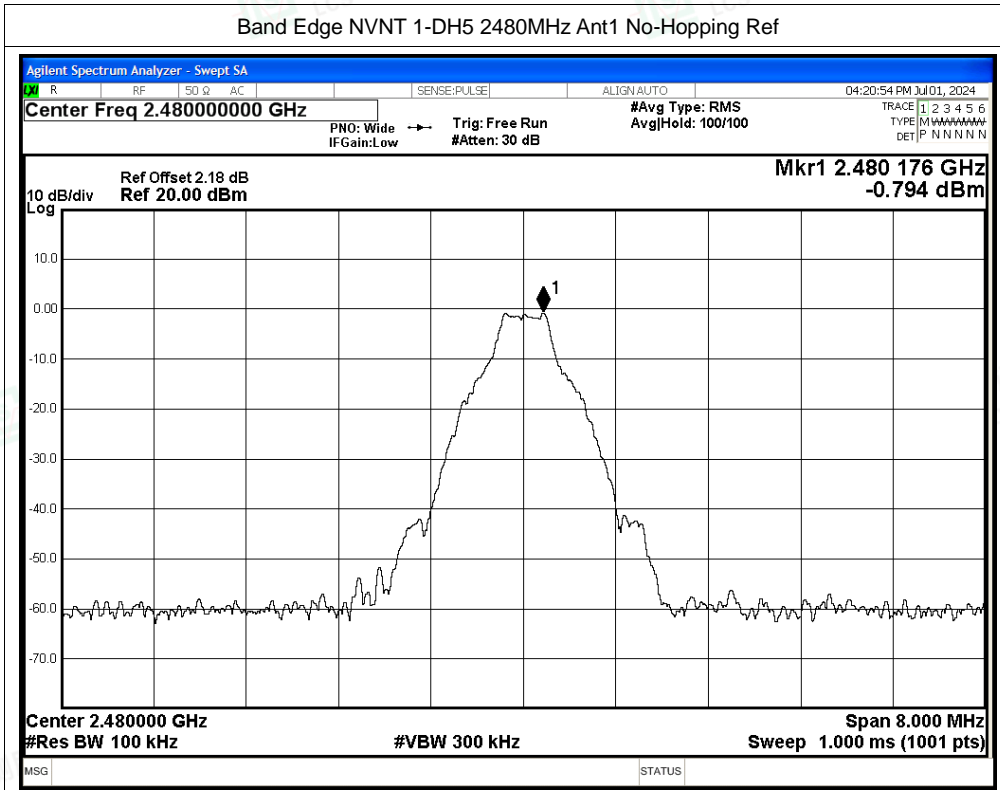


Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission

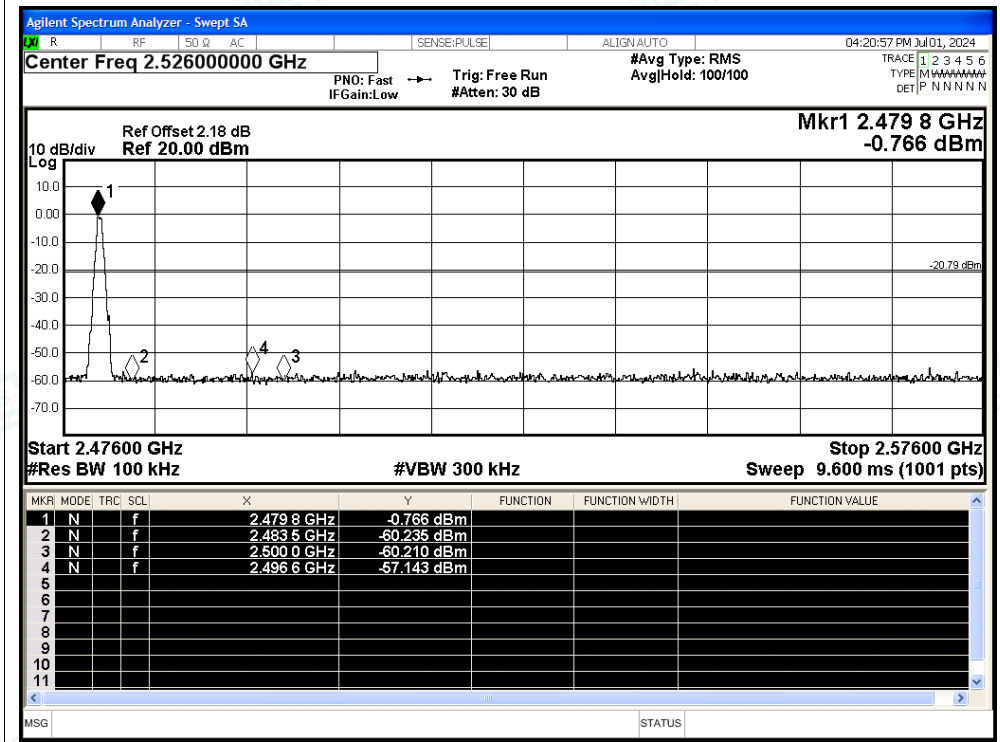




Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref

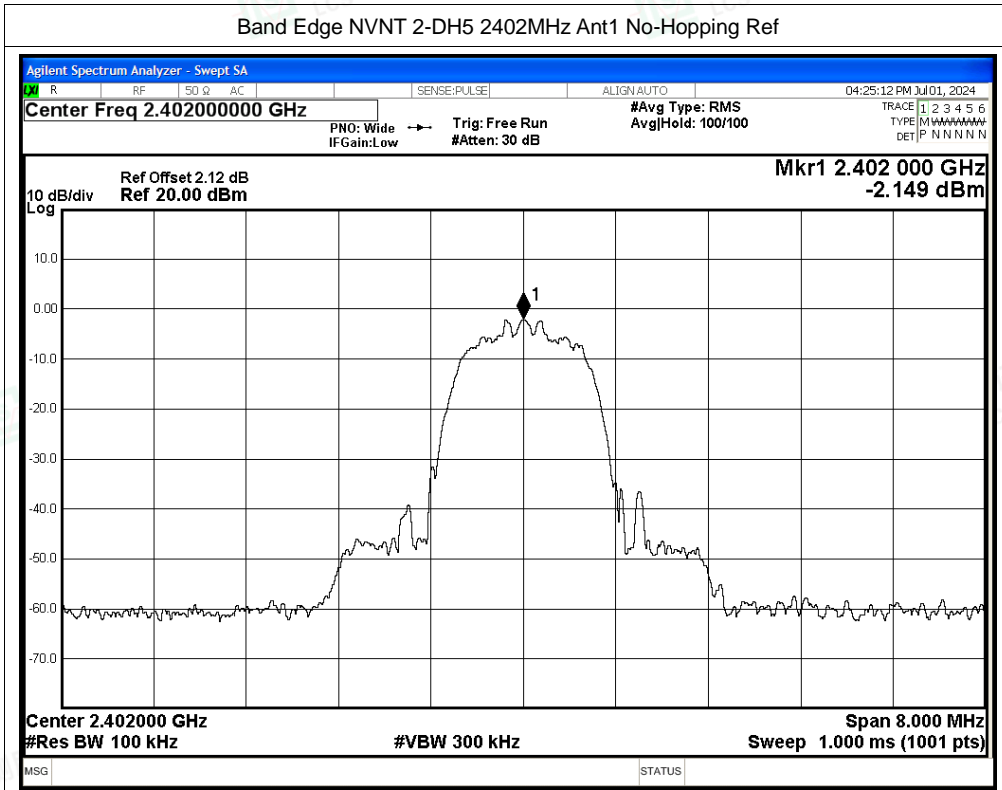


Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission

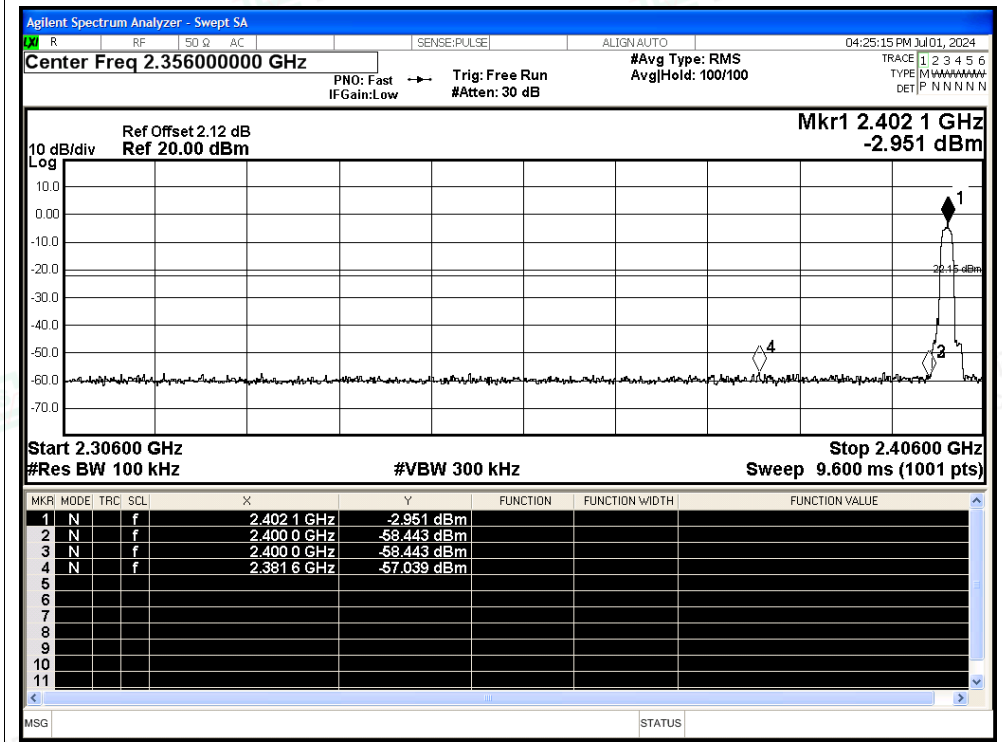




Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref

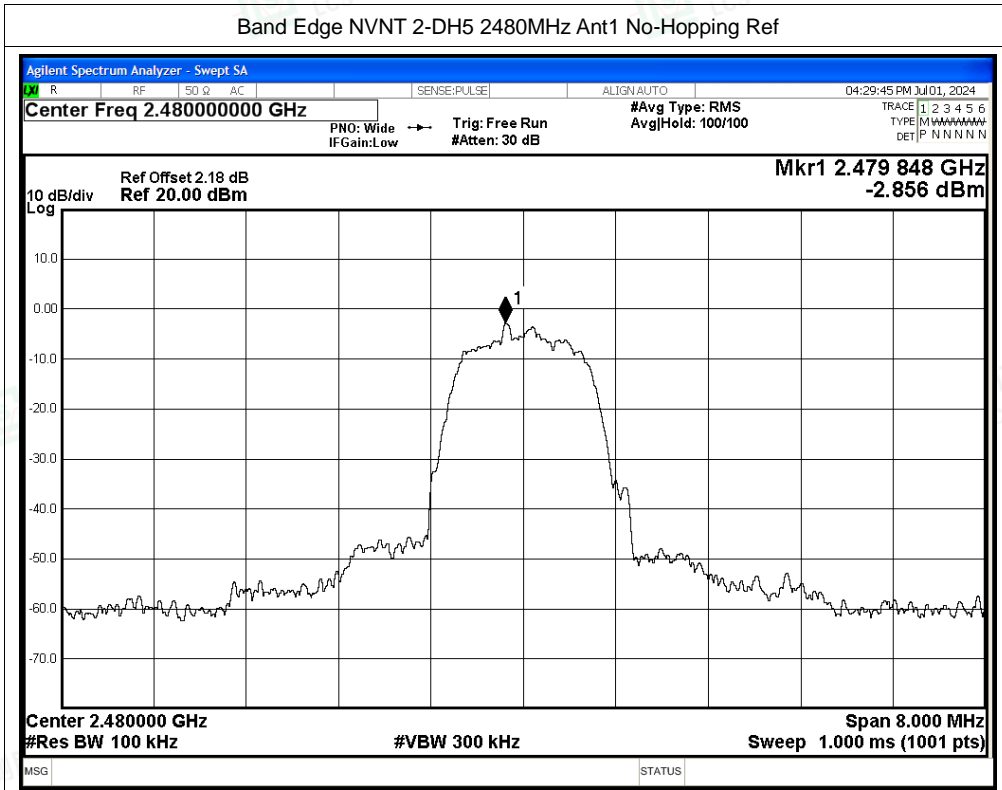


Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission

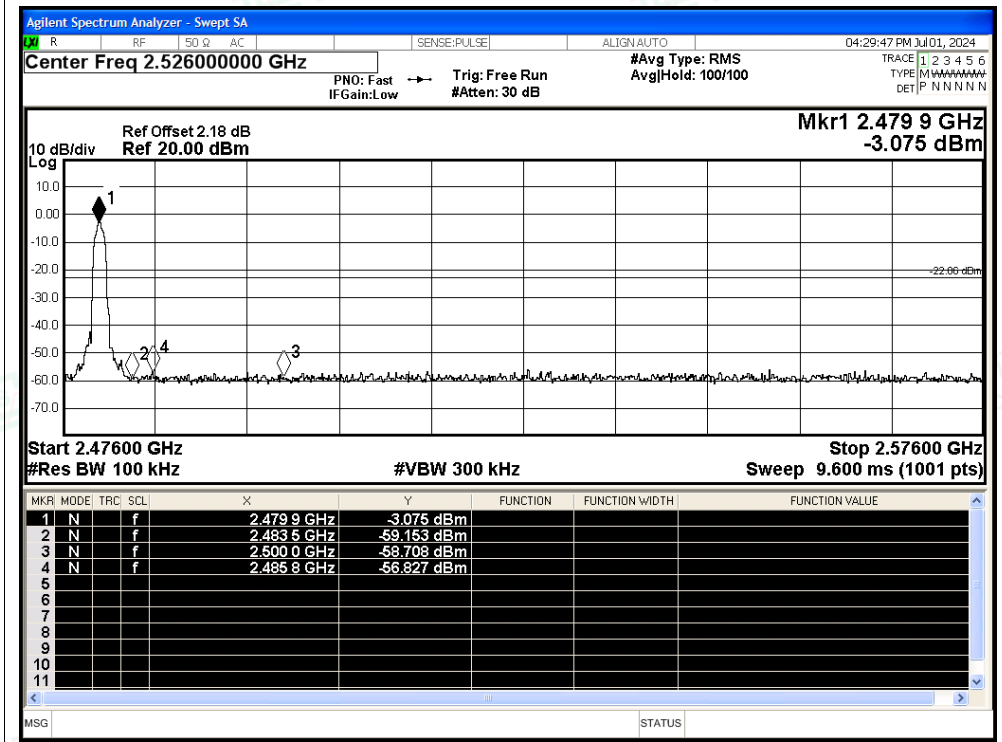




Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref

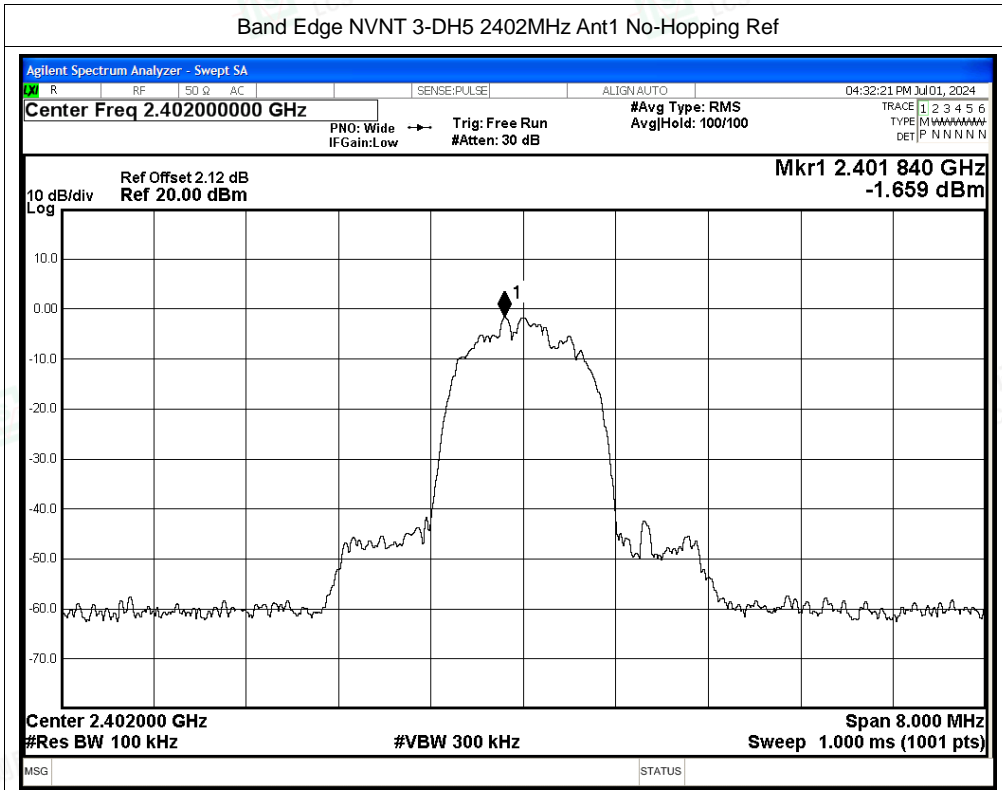


Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission

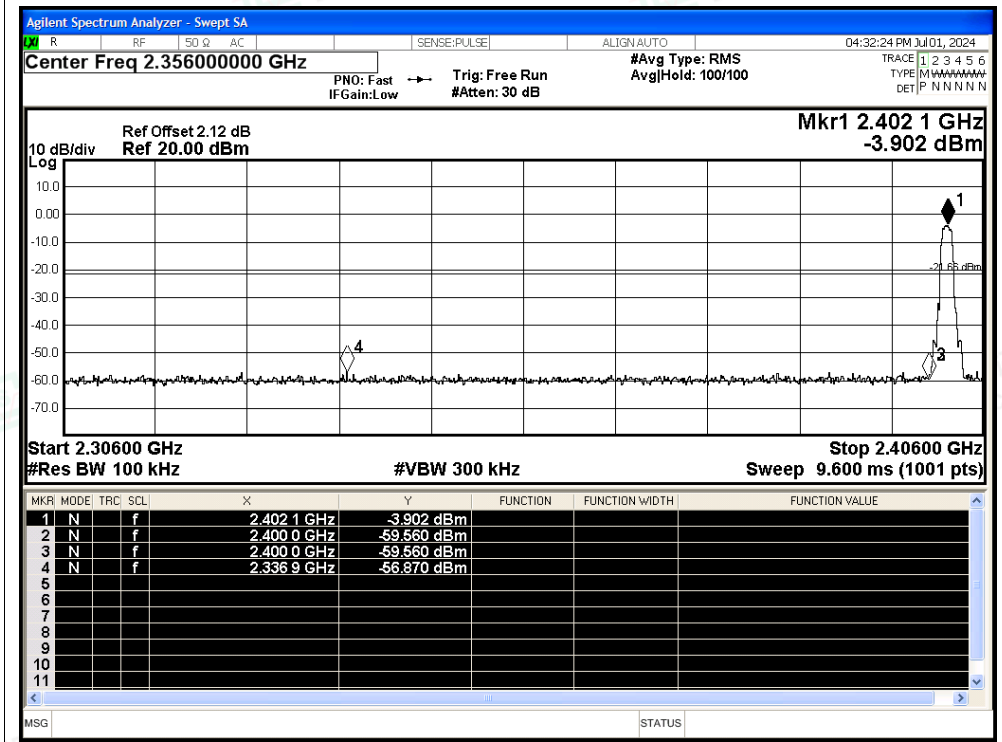




Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref

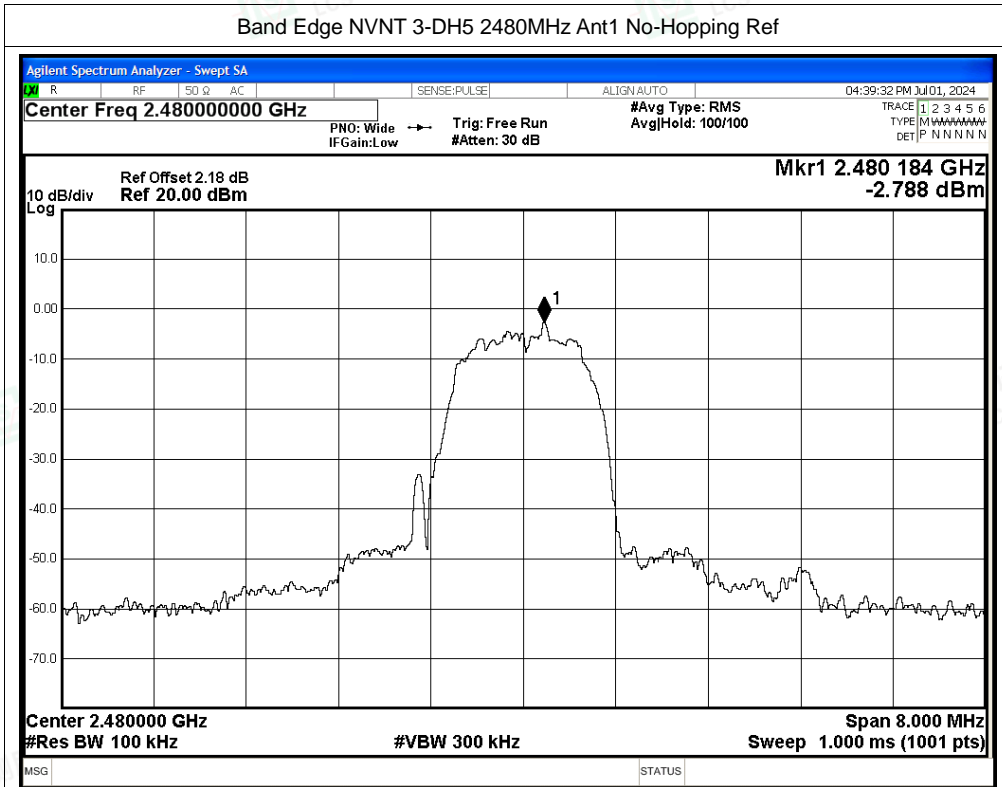


Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission

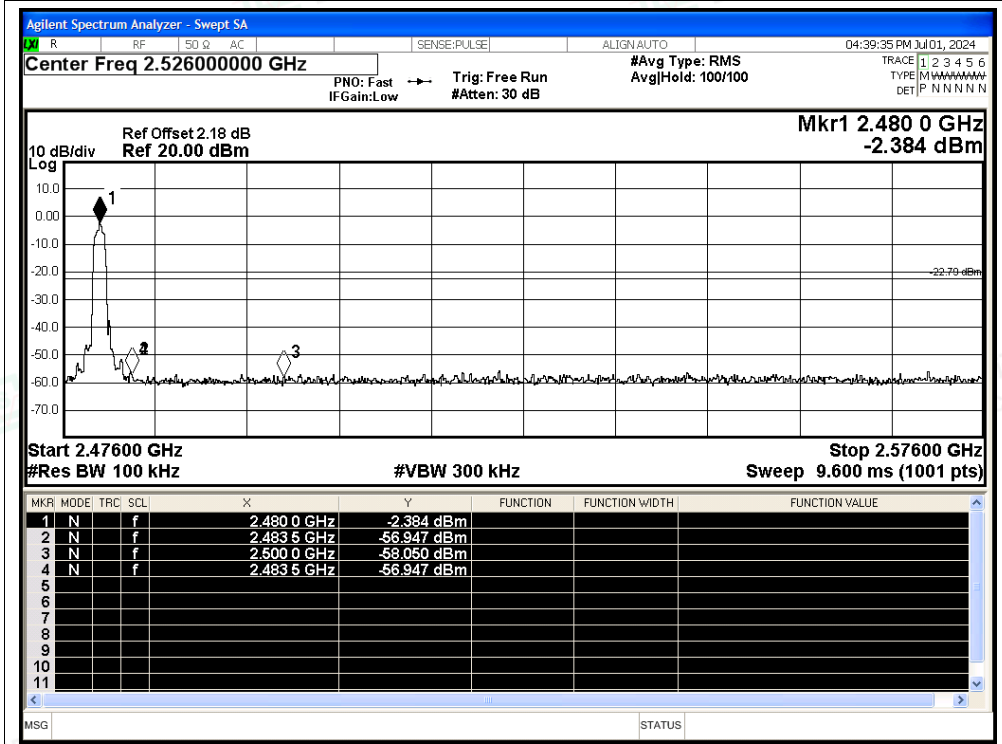




Band Edge NVNT 3-DH5 2480MHz Ant1 No-Hopping Ref



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





### (Hopping)

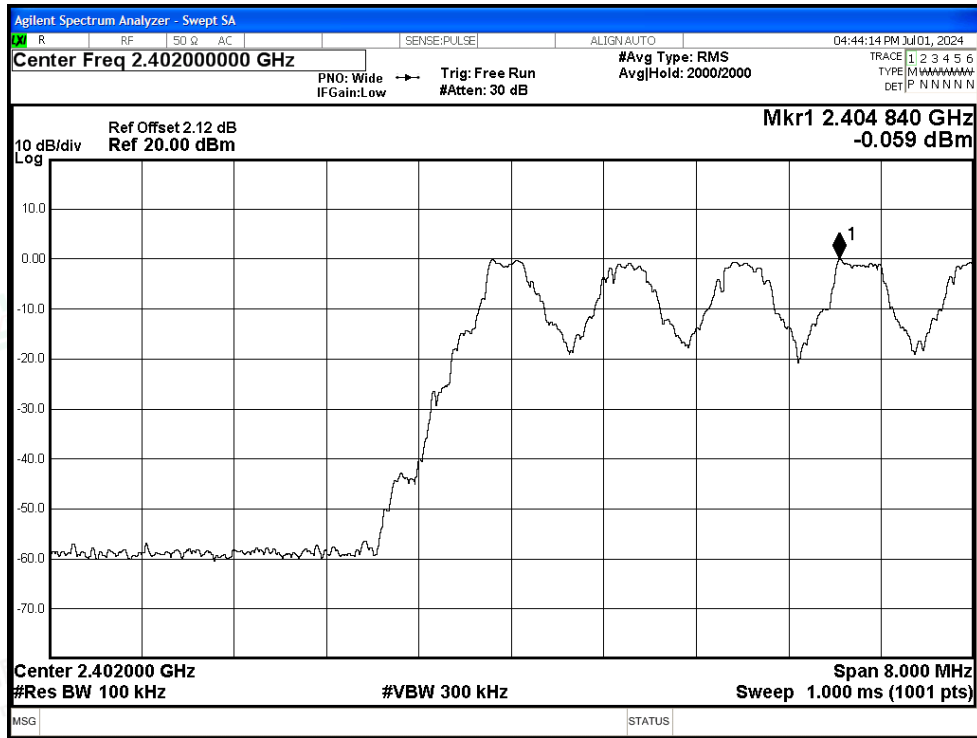
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-55.93	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-55.02	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-53.78	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-52.16	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-53.25	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-53.35	-20	Pass



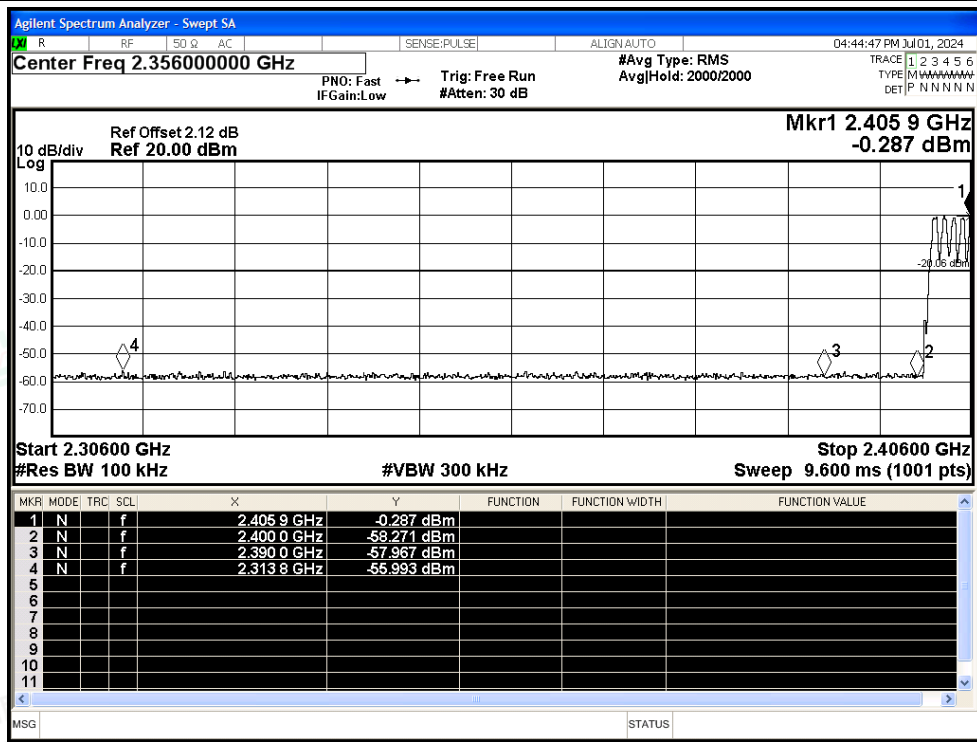


Test Graphs

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



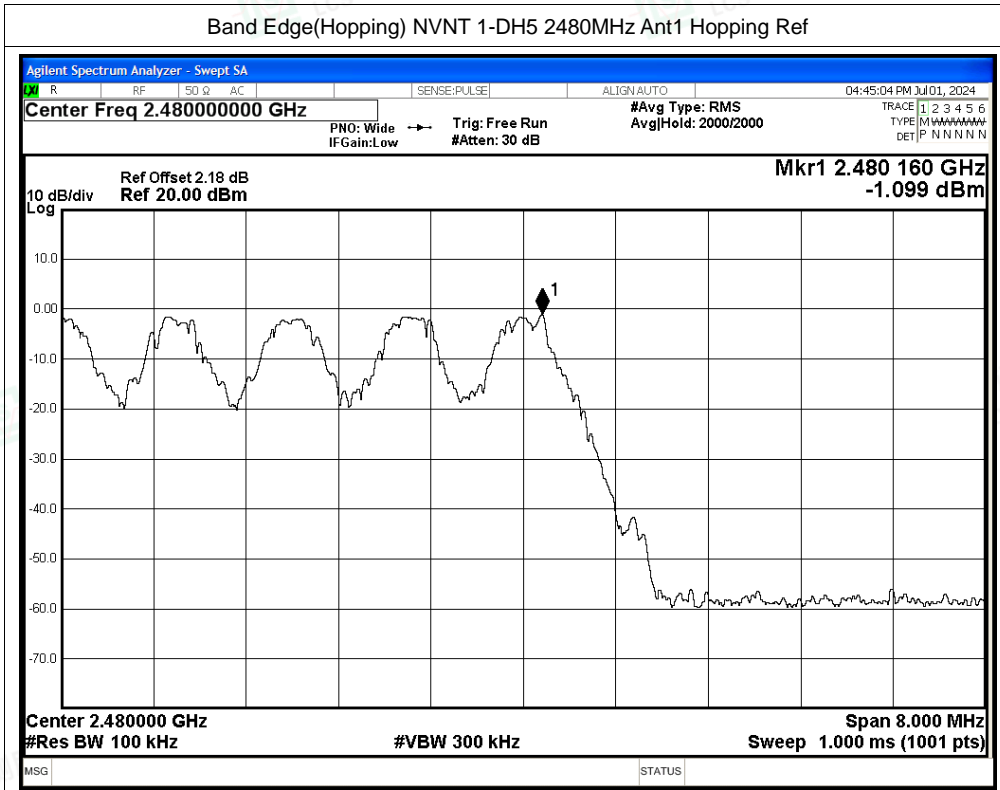
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



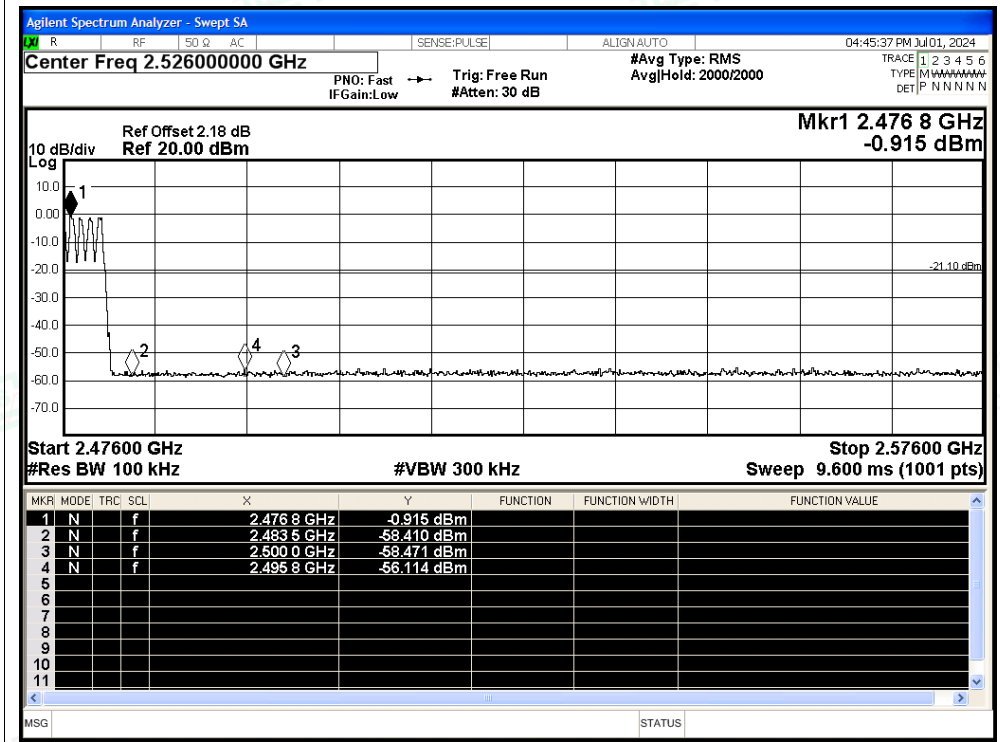




Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref

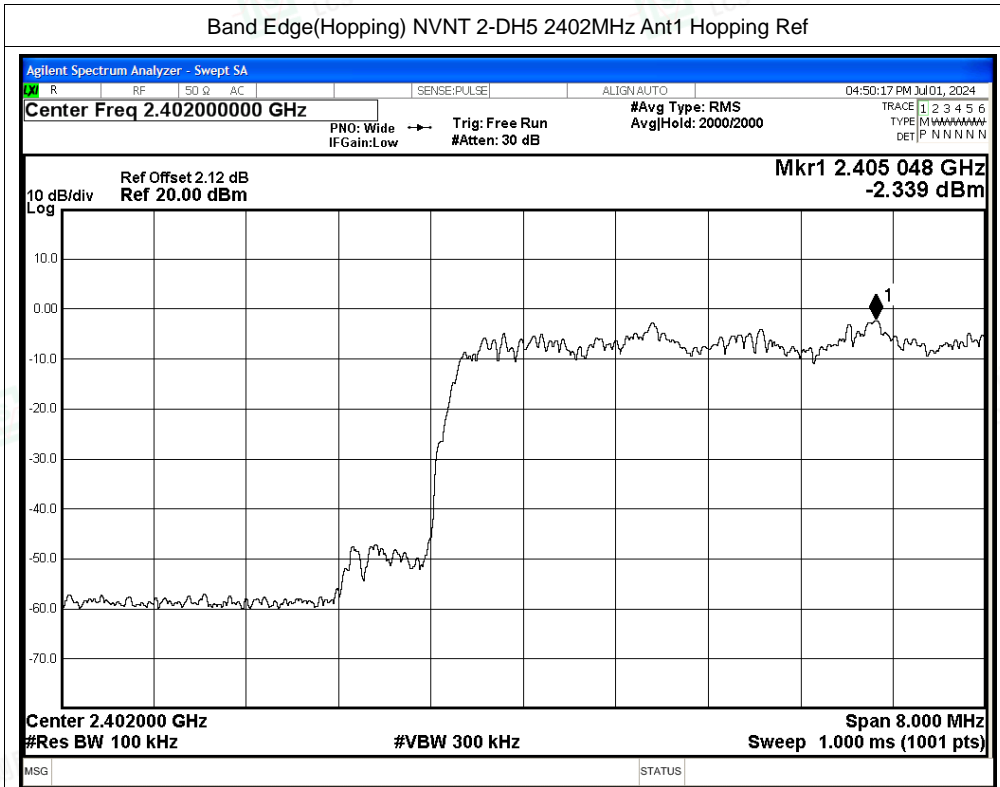


Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission

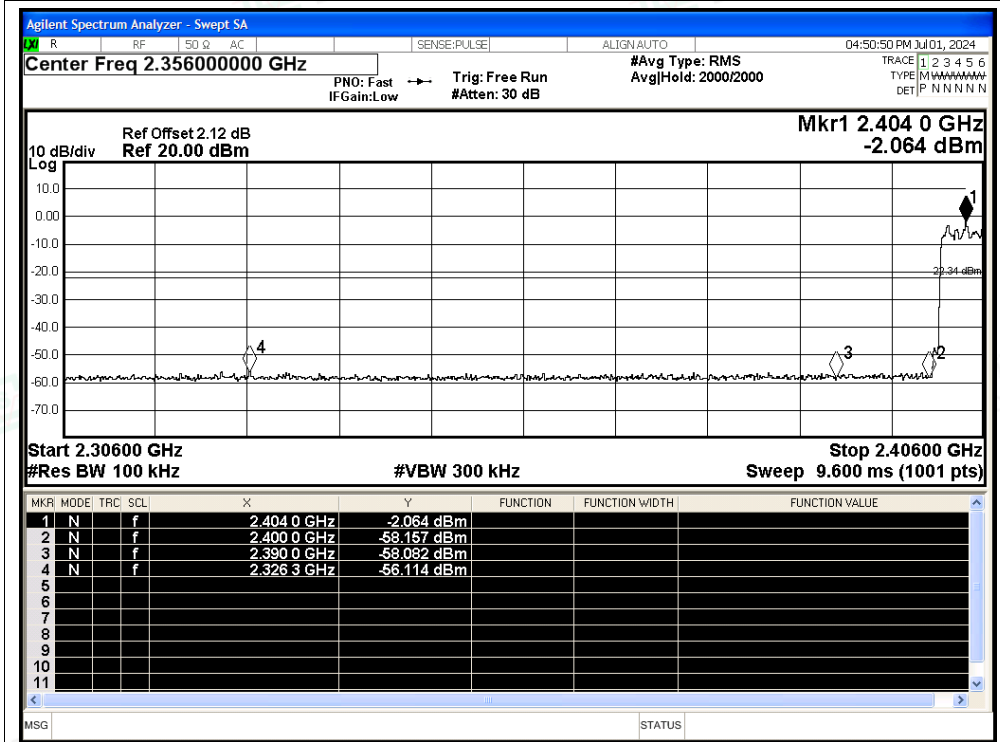




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref

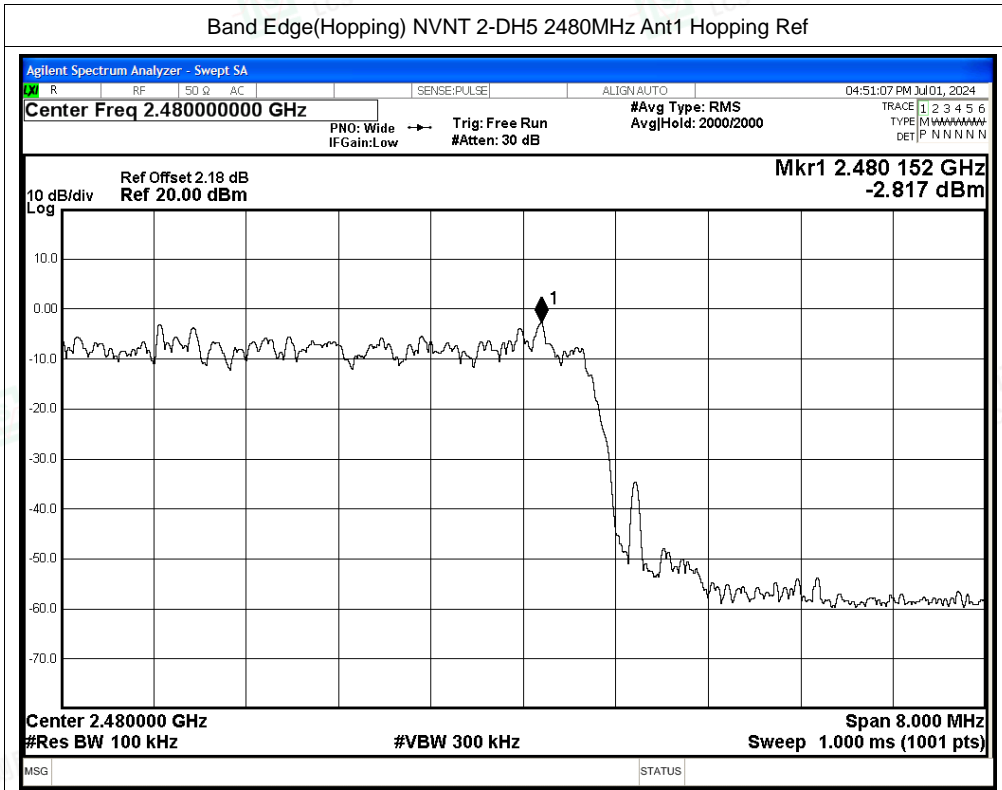


Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission

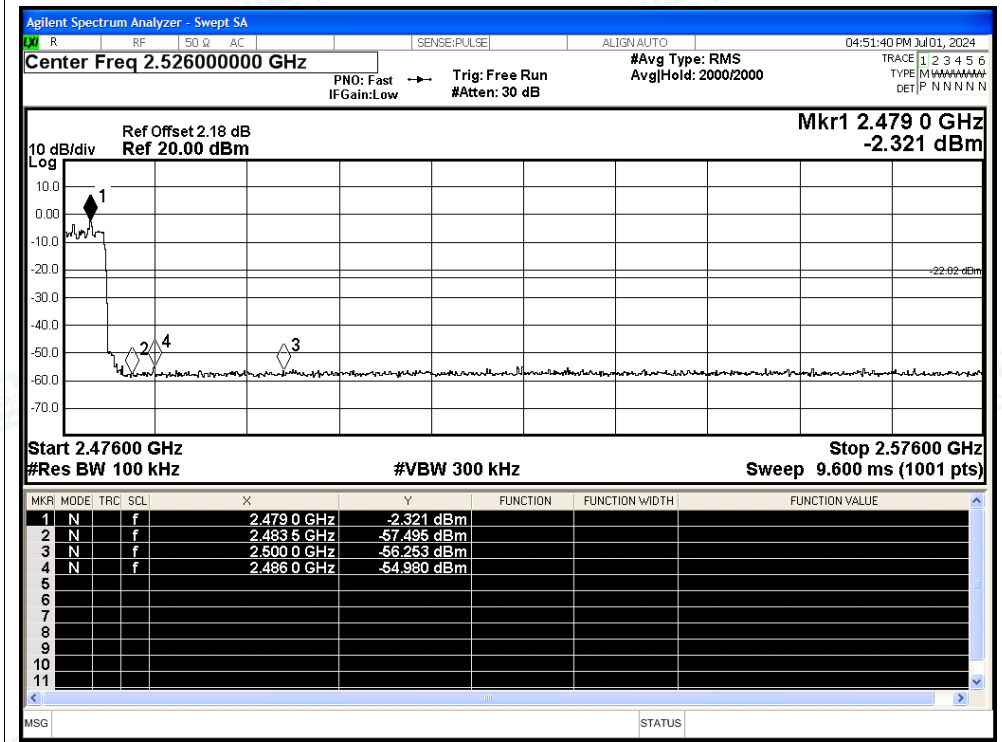




Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref

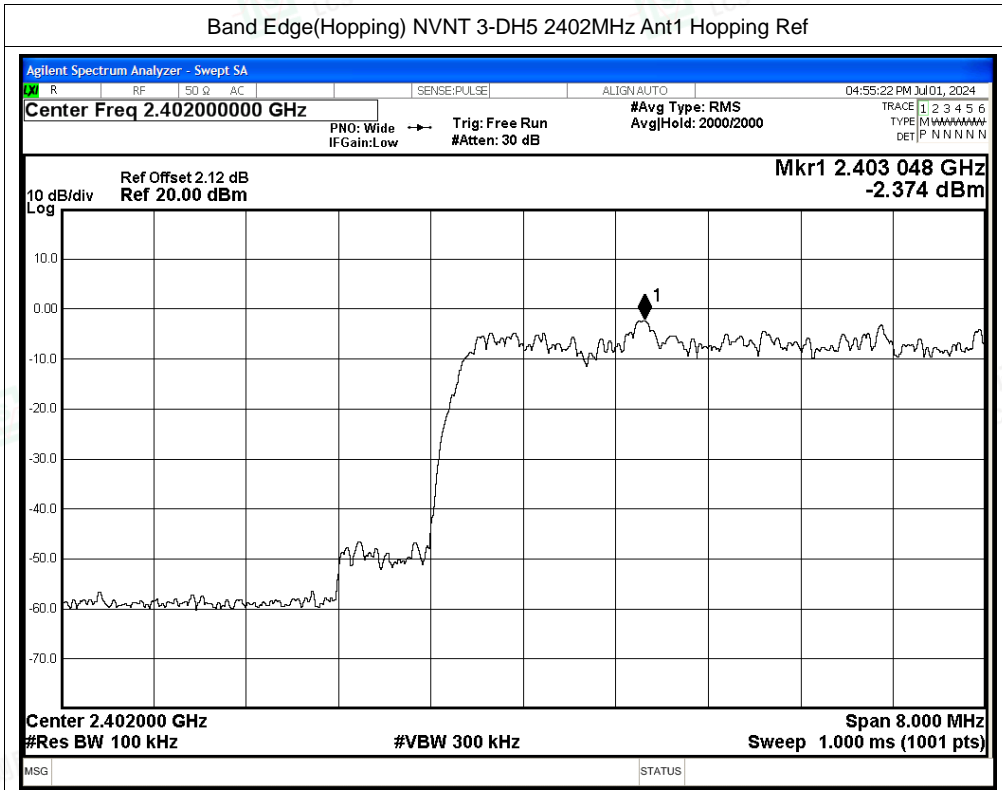


Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission

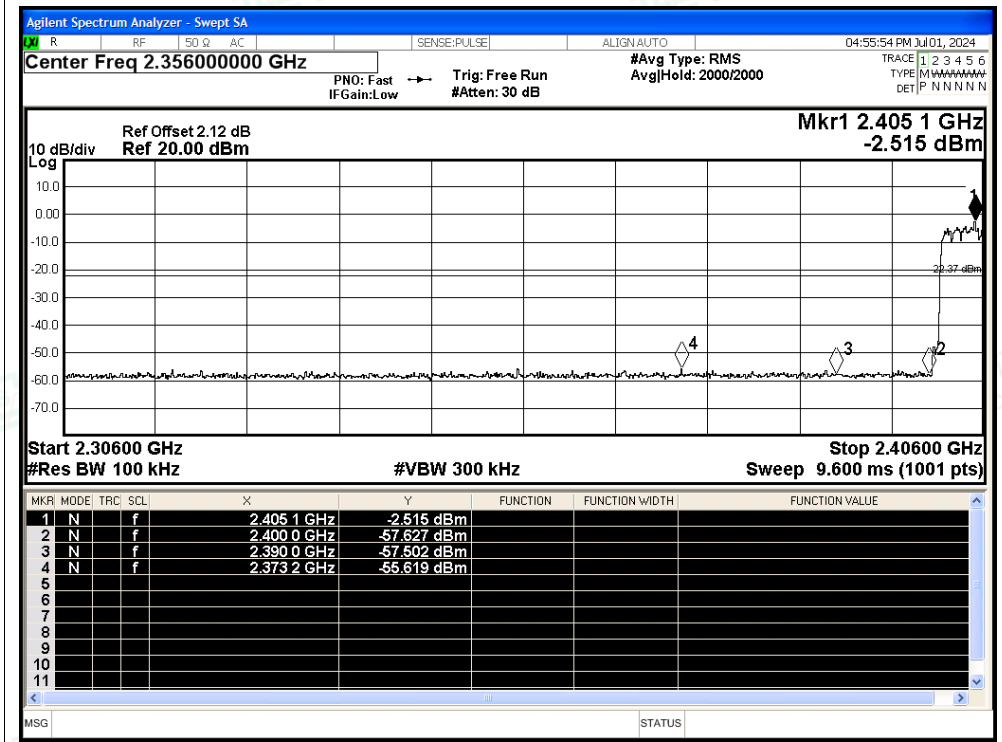




Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref

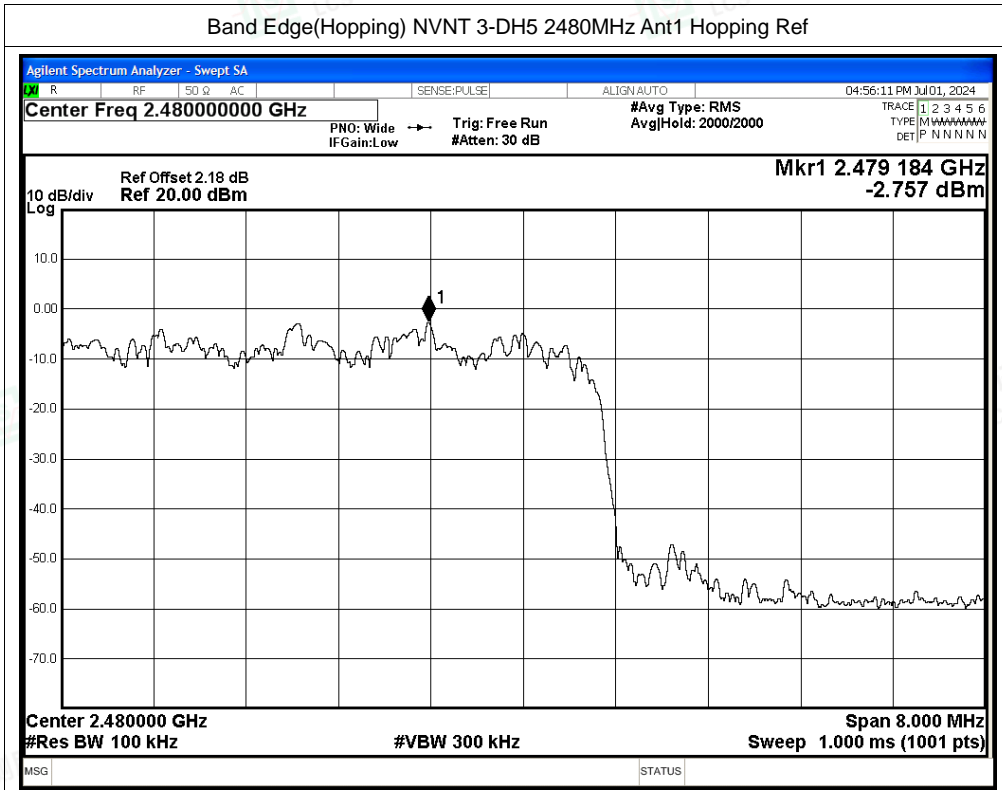


Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission

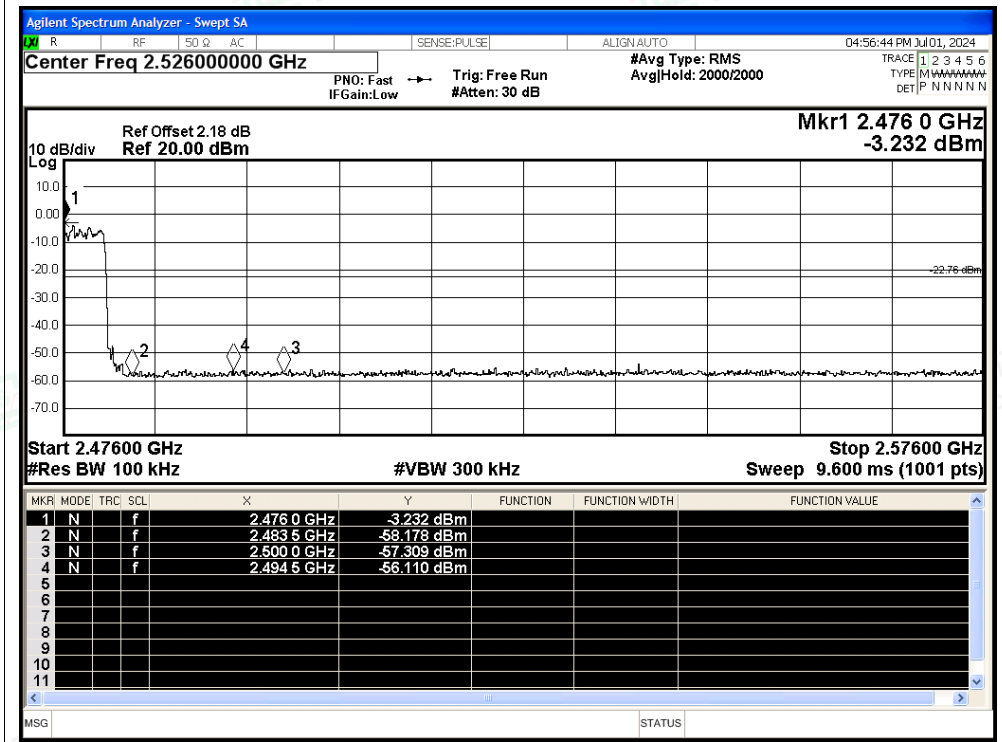




Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Ref



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





## A.7 Conducted RF Spurious Emission

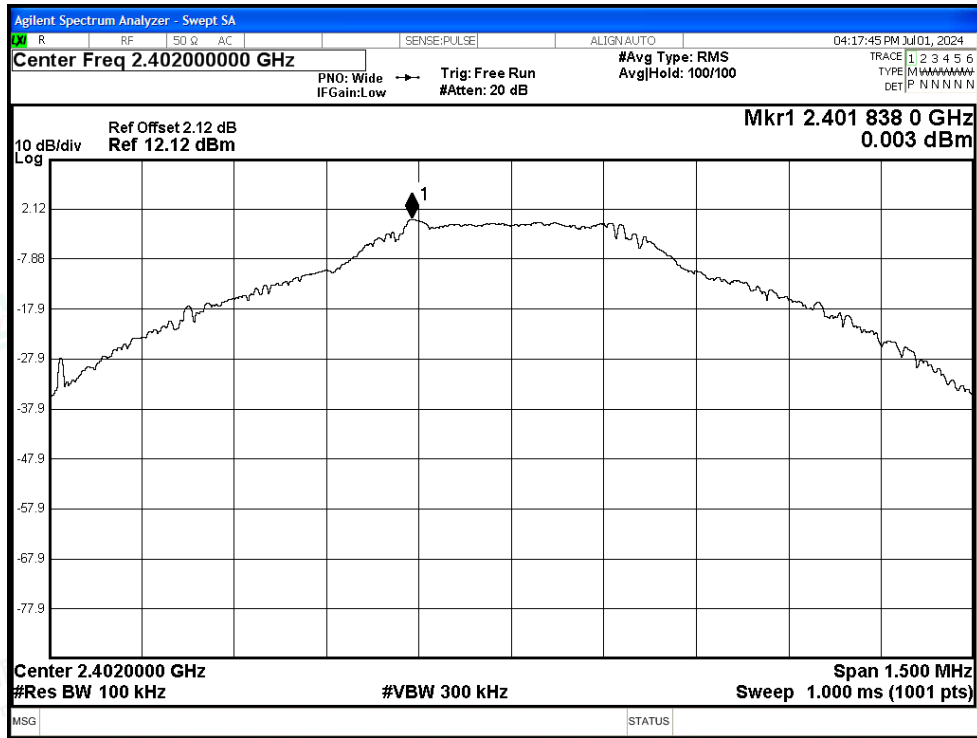
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-55.25	-20	Pass
NVNT	1-DH5	2441	Ant1	-54.26	-20	Pass
NVNT	1-DH5	2480	Ant1	-54.15	-20	Pass
NVNT	2-DH5	2402	Ant1	-53.98	-20	Pass
NVNT	2-DH5	2441	Ant1	-51.68	-20	Pass
NVNT	2-DH5	2480	Ant1	-52.66	-20	Pass
NVNT	3-DH5	2402	Ant1	-53.26	-20	Pass
NVNT	3-DH5	2441	Ant1	-52.63	-20	Pass
NVNT	3-DH5	2480	Ant1	-52.7	-20	Pass



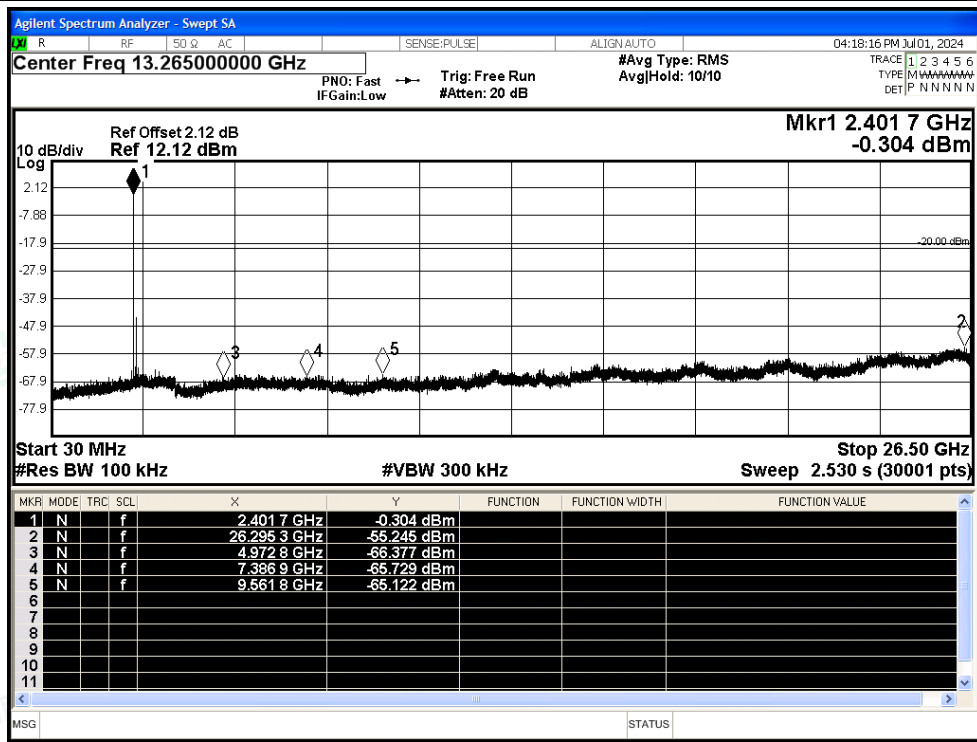


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref

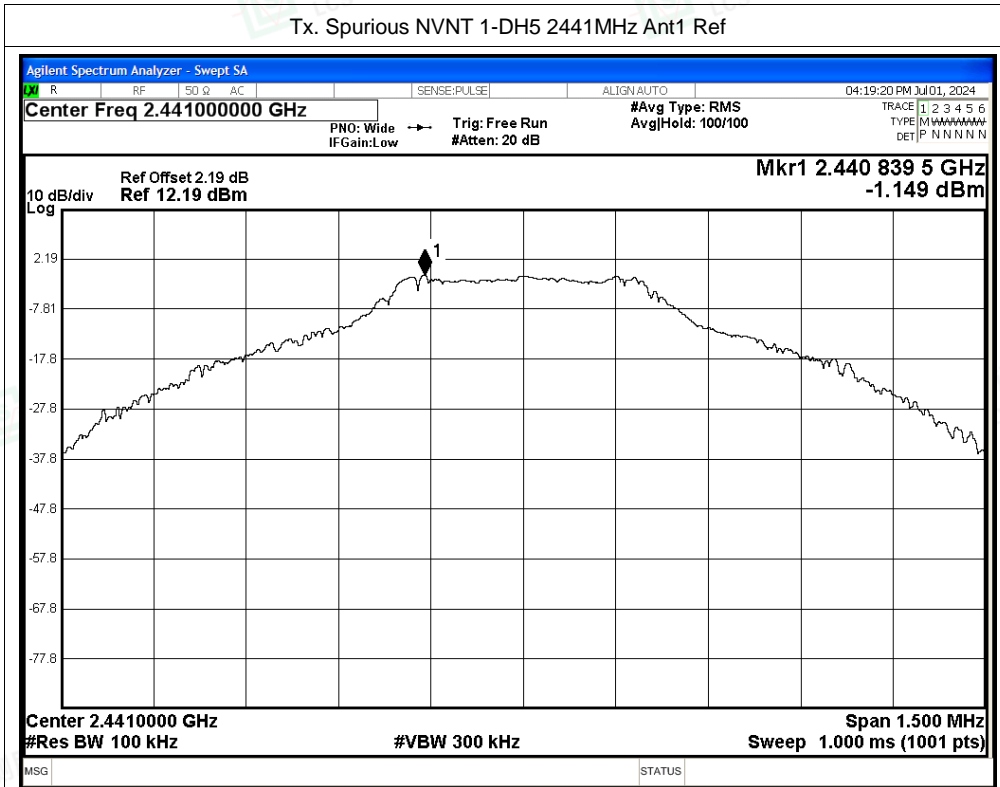


Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission

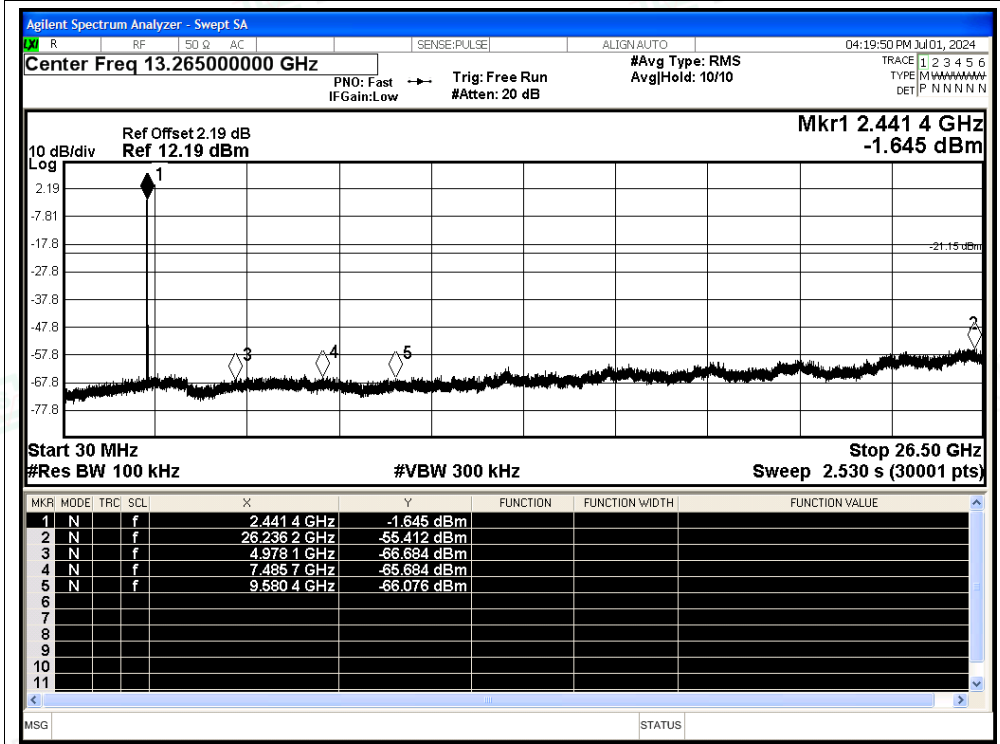




Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



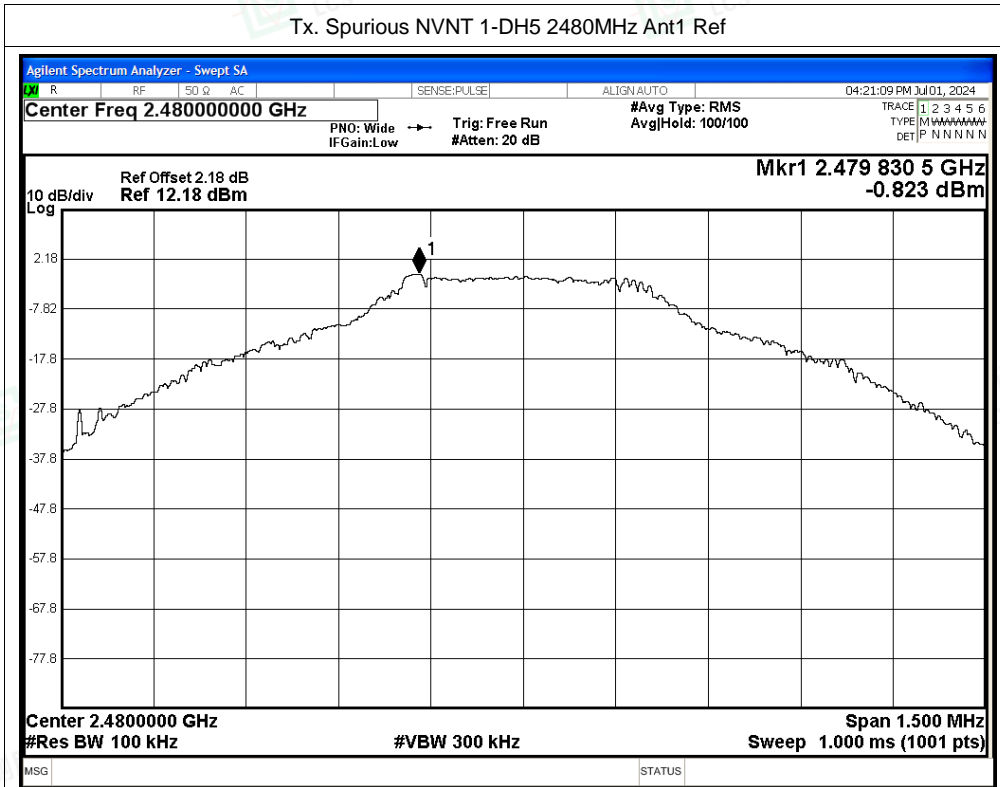
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission



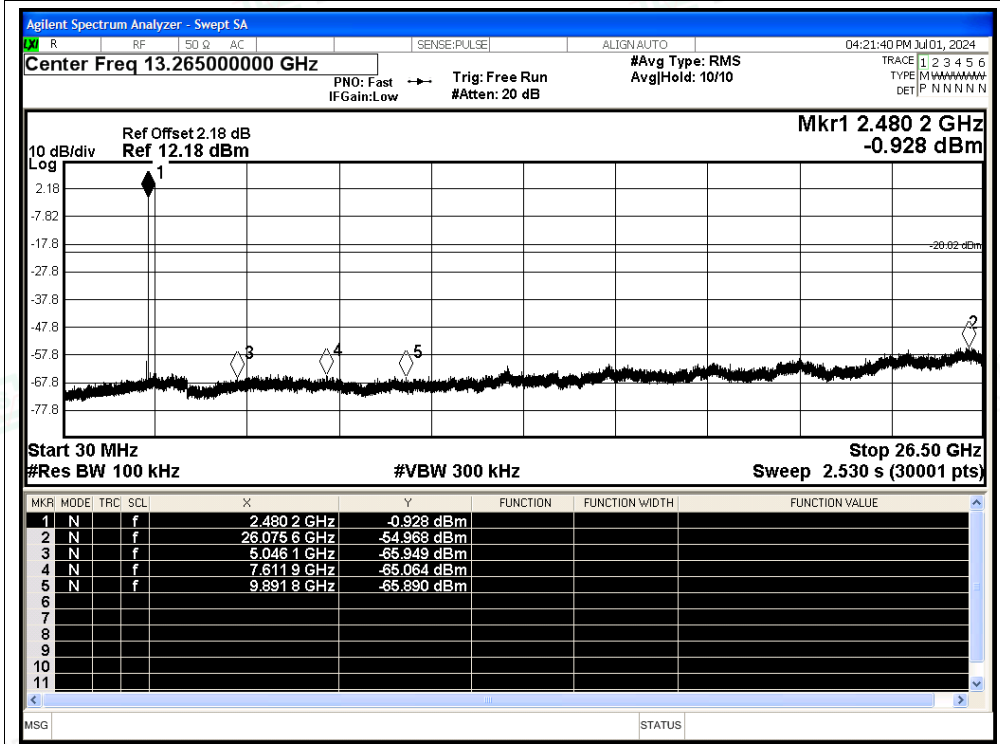




Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref

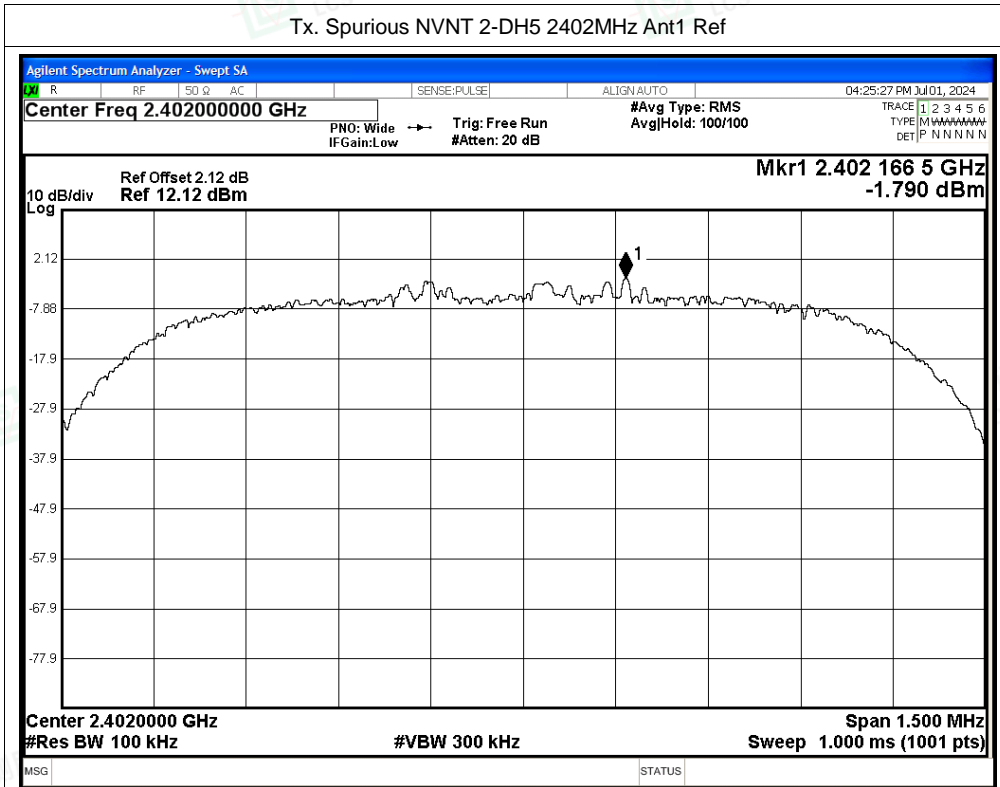


Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission

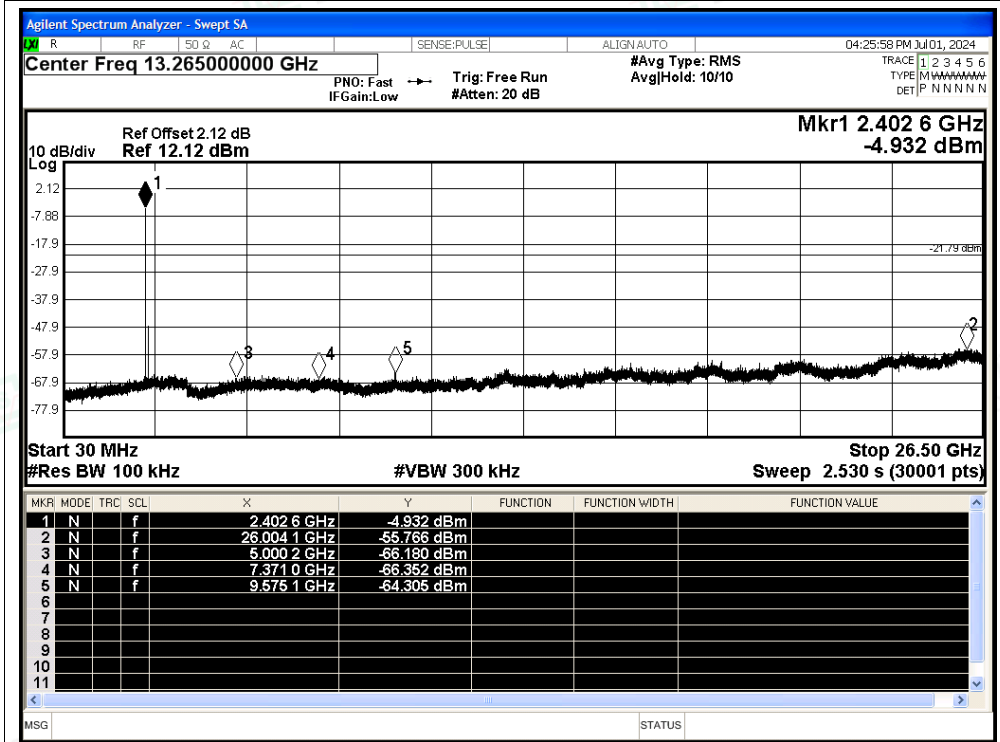




Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref

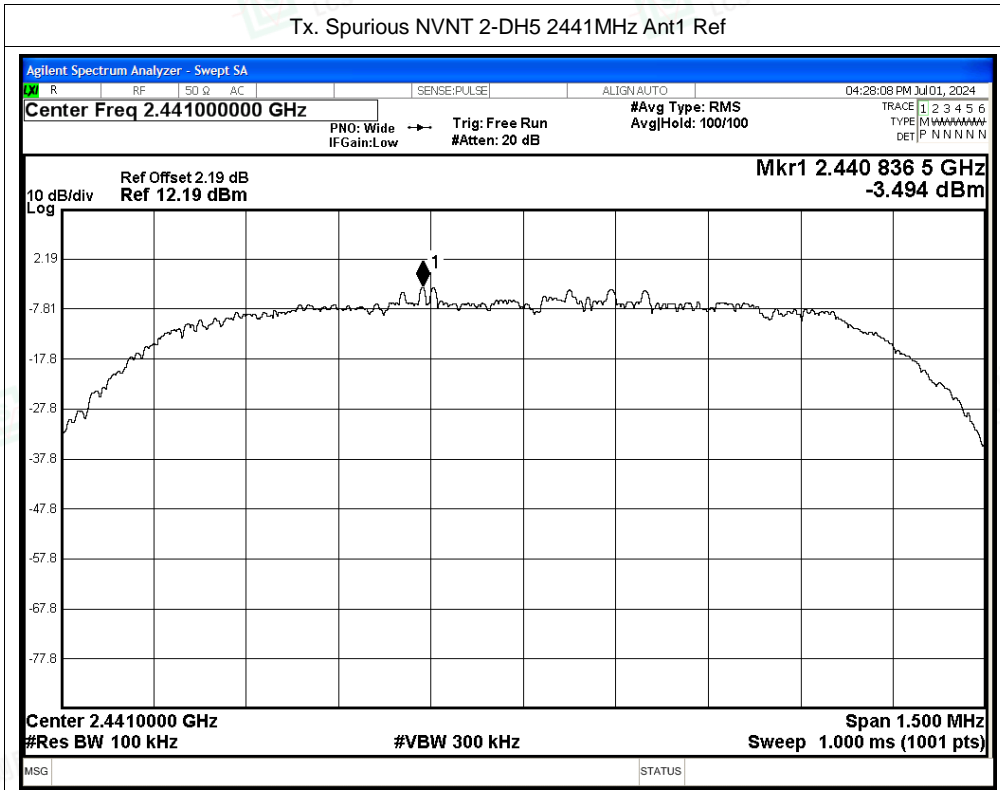


Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission

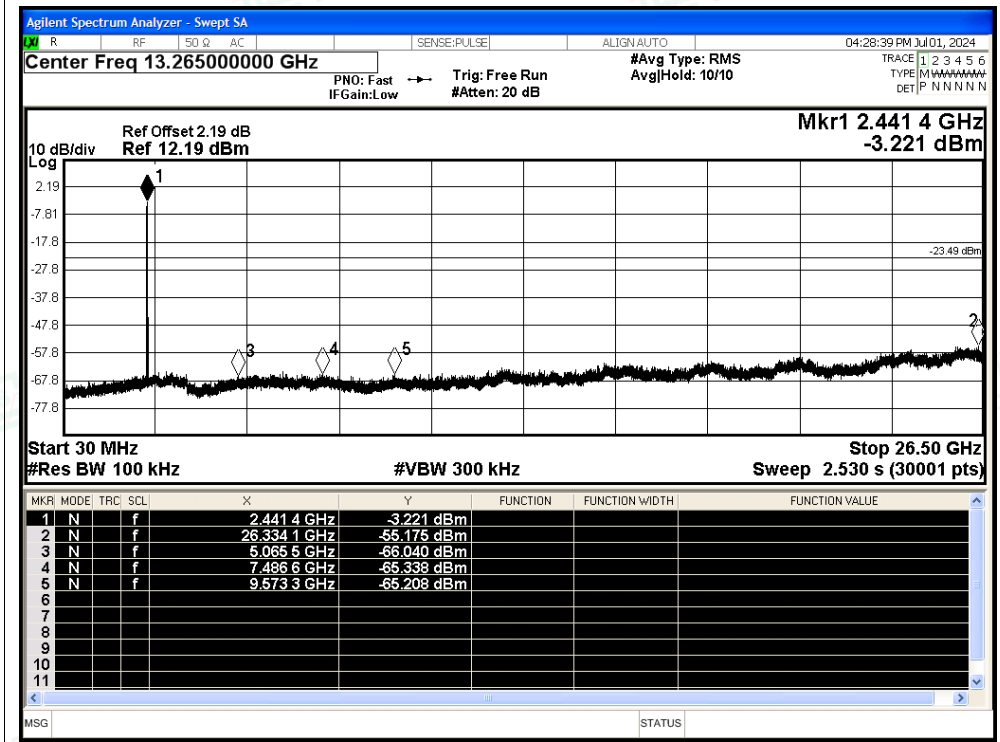




Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref

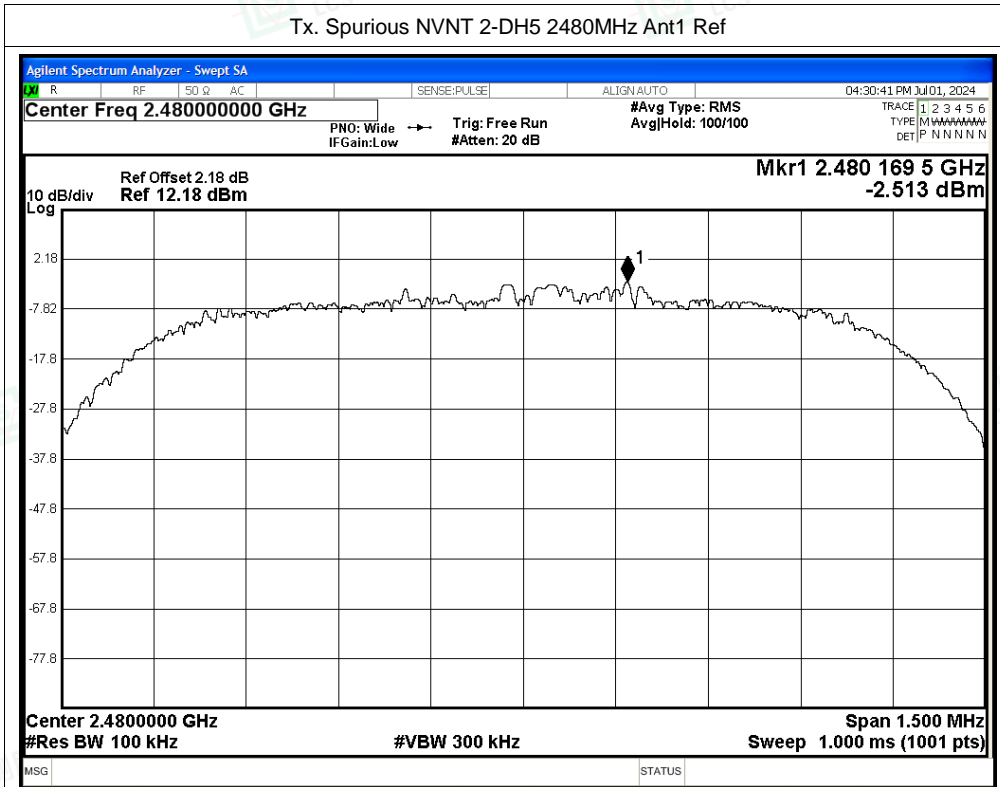


Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission

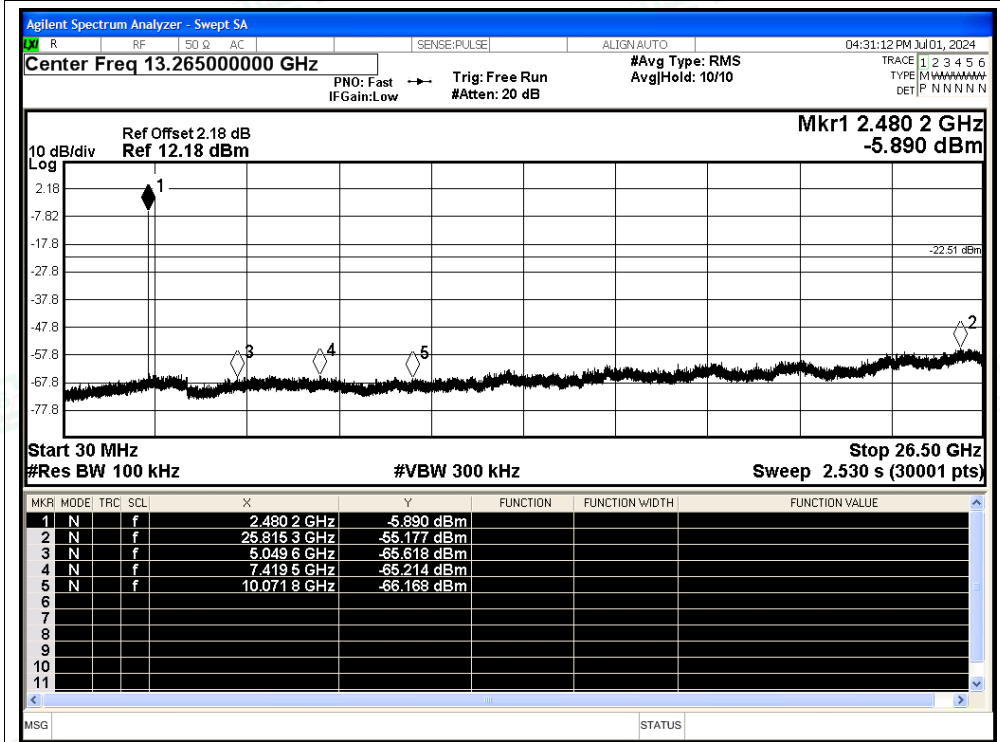




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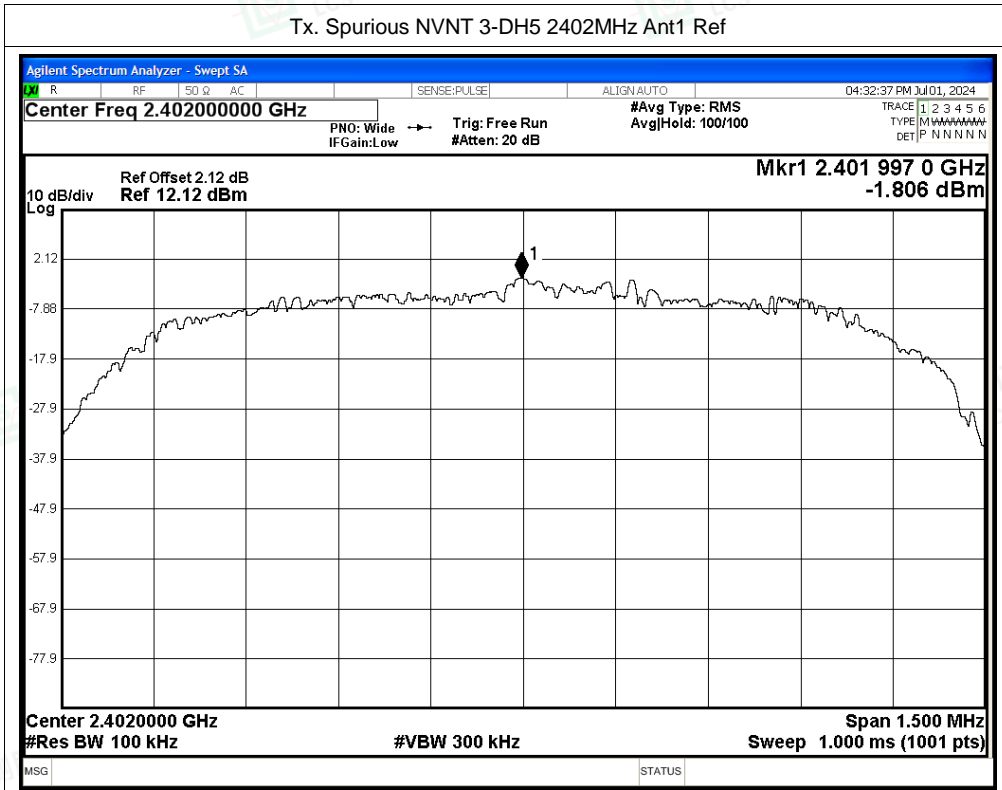


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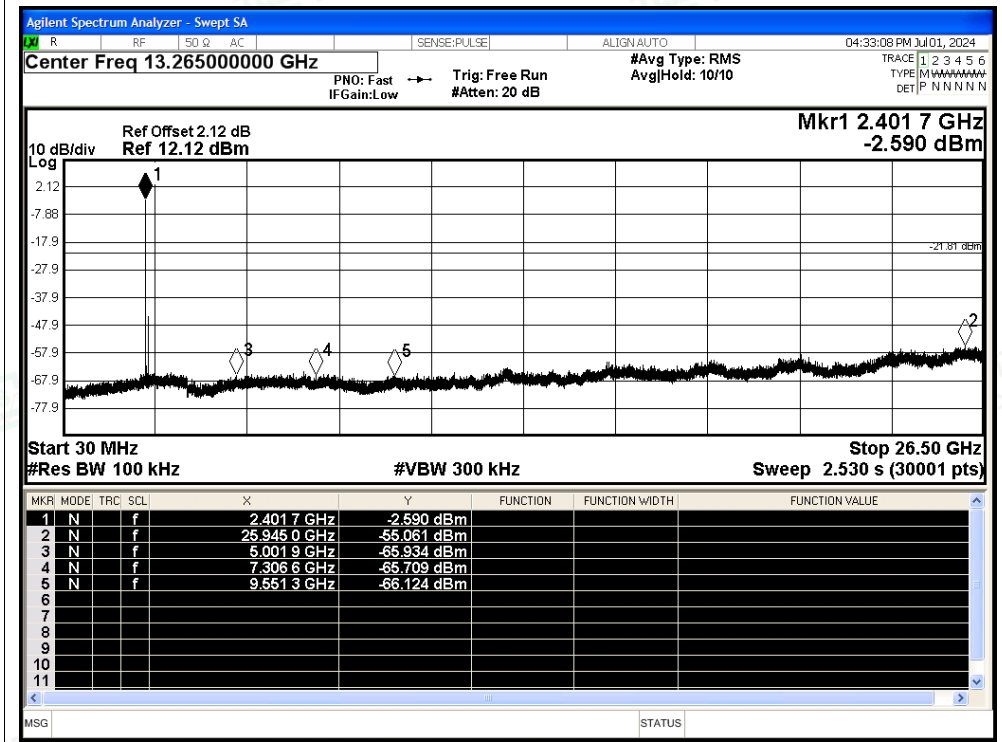




Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref

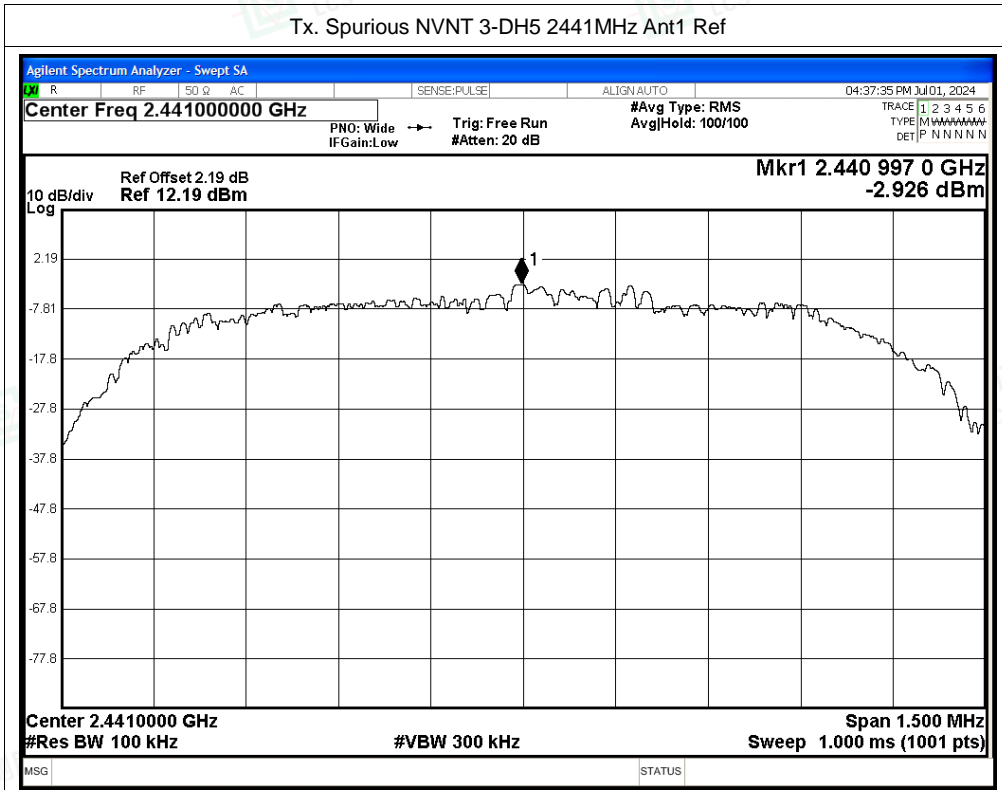


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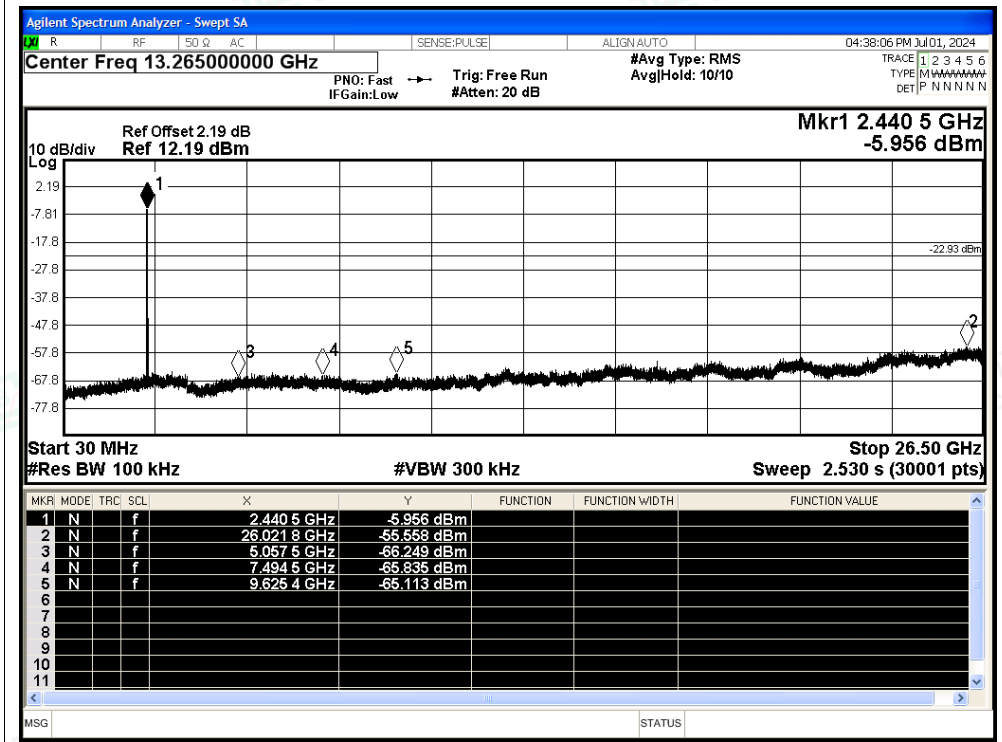




Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref

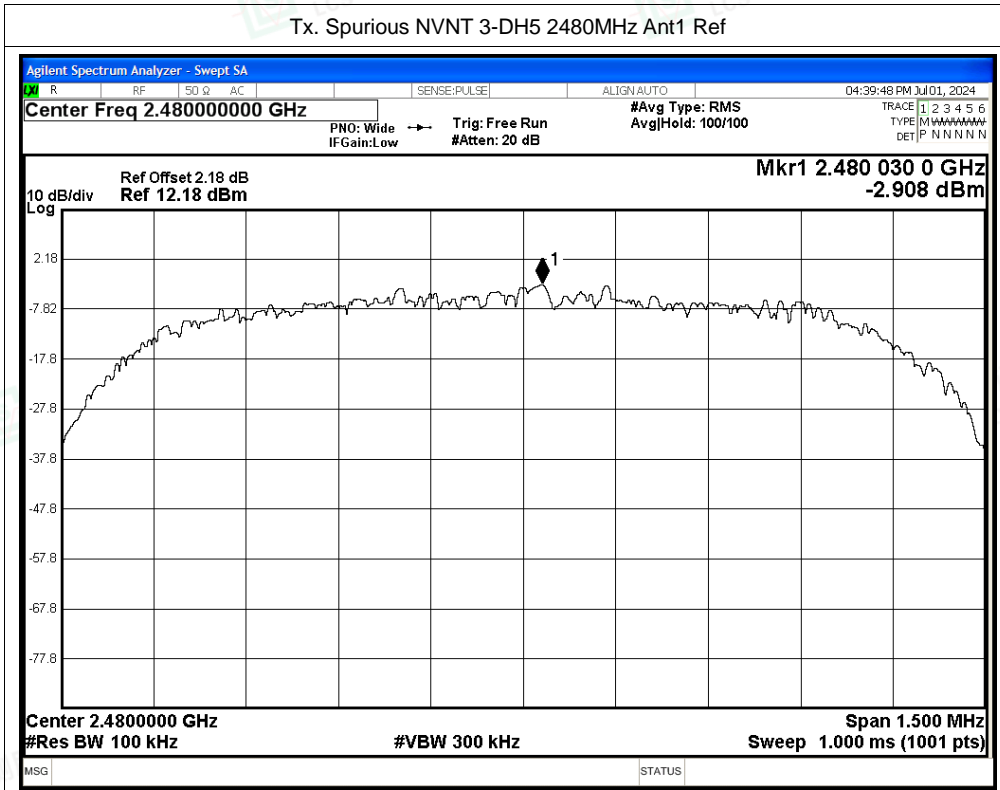


Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission

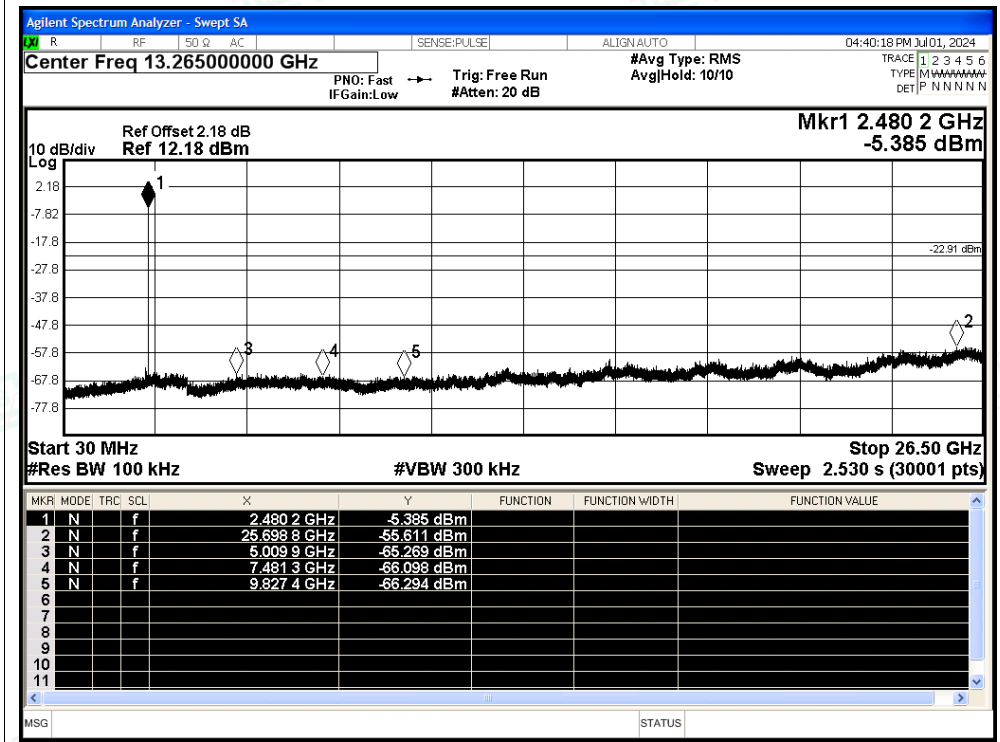




Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



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	77.63	1.1	0.34
NVNT	1-DH5	2441	Ant1	77.63	1.1	0.34
NVNT	1-DH5	2480	Ant1	77.6	1.1	0.34
NVNT	2-DH5	2402	Ant1	77.28	1.12	0.35
NVNT	2-DH5	2441	Ant1	77.28	1.12	0.35
NVNT	2-DH5	2480	Ant1	77.28	1.12	0.35
NVNT	3-DH5	2402	Ant1	77.28	1.12	0.35
NVNT	3-DH5	2441	Ant1	76.37	1.17	0.36
NVNT	3-DH5	2480	Ant1	77.28	1.12	0.35



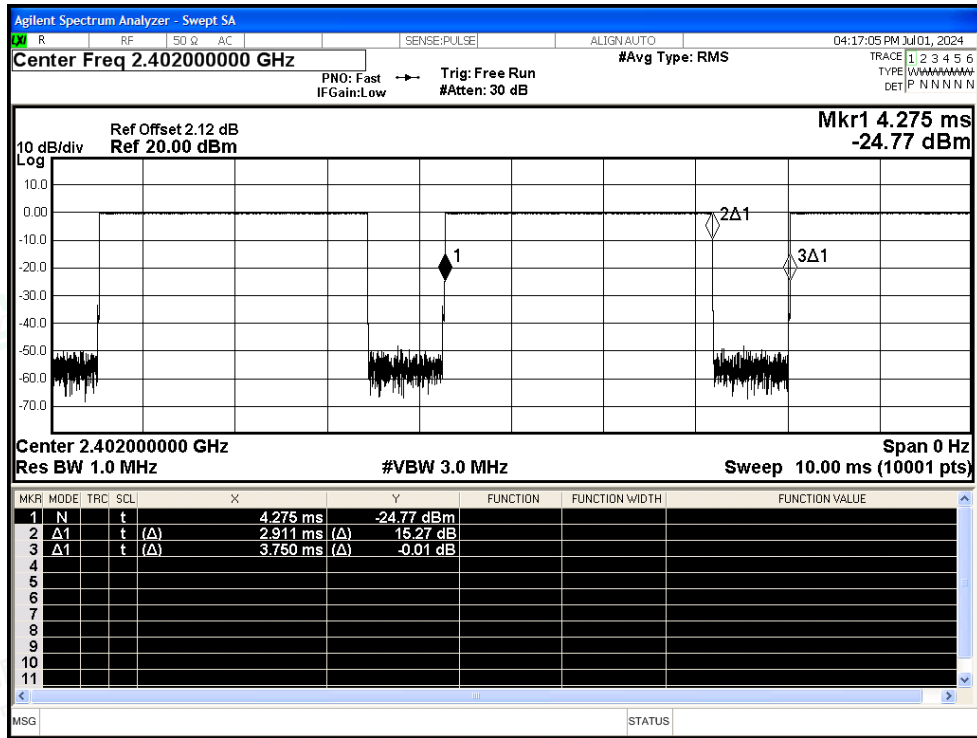
Shenzhen LCS Compliance Testing Laboratory Ltd.  
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Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com  
Scan code to check authenticity



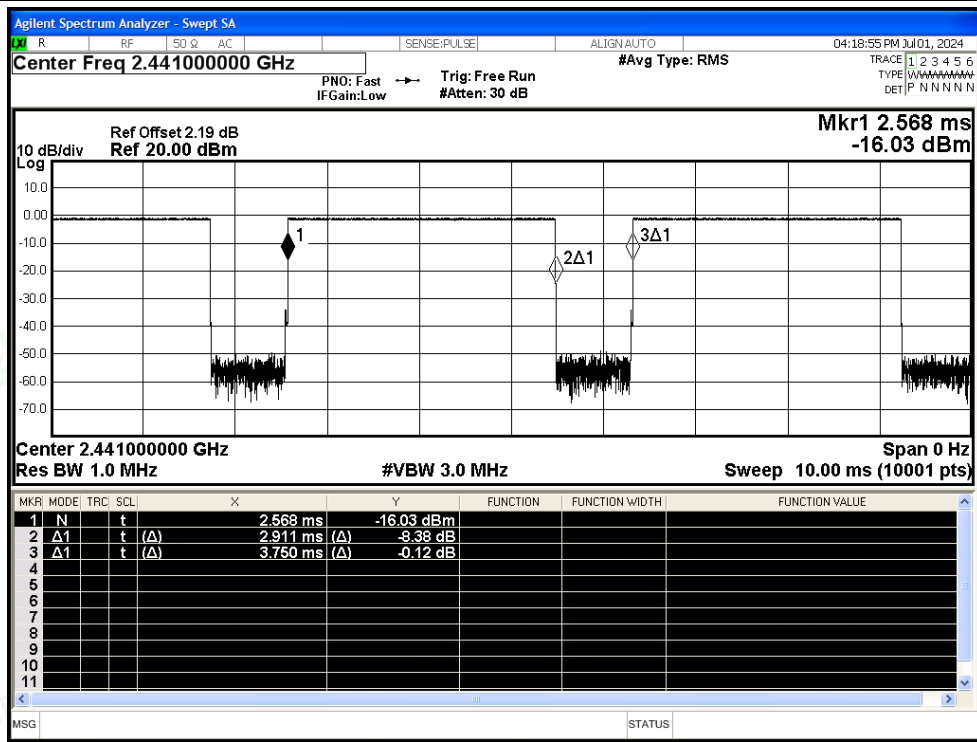


Test Graphs

Duty Cycle NVNT 1-DH5 2402MHz Ant1

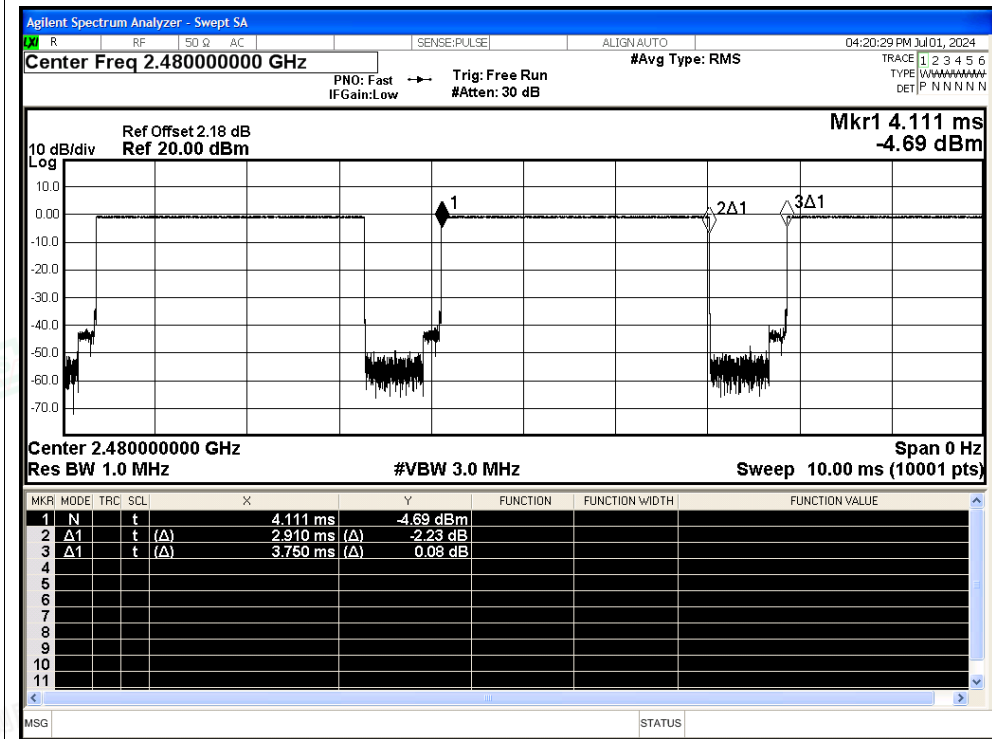


Duty Cycle NVNT 1-DH5 2441MHz Ant1

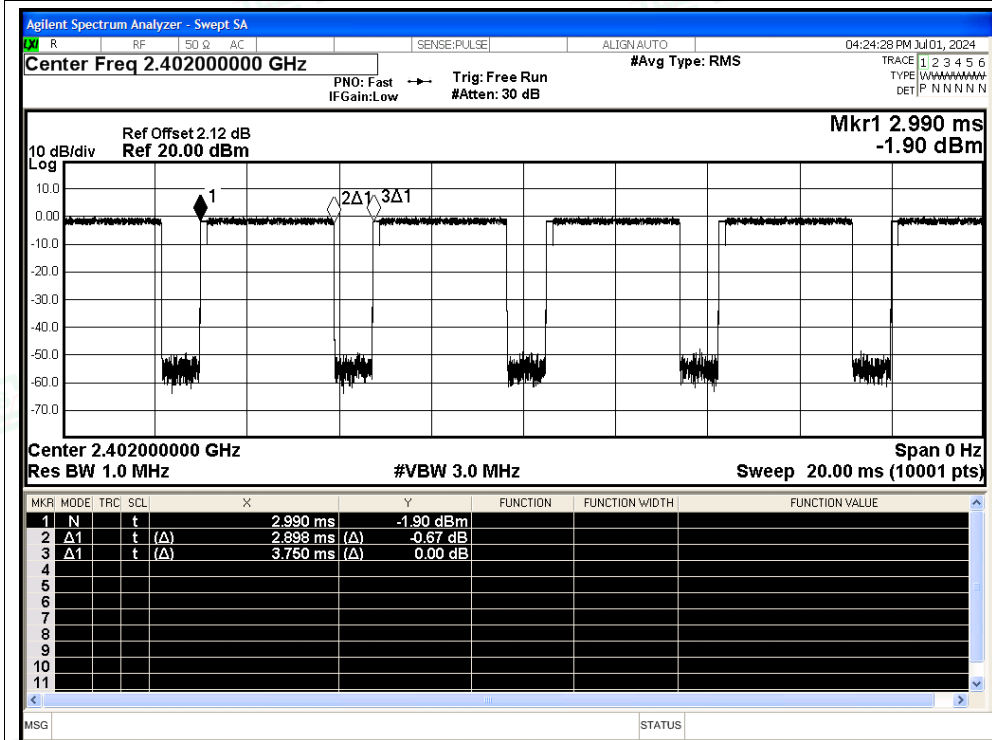




Duty Cycle NVNT 1-DH5 2480MHz Ant1

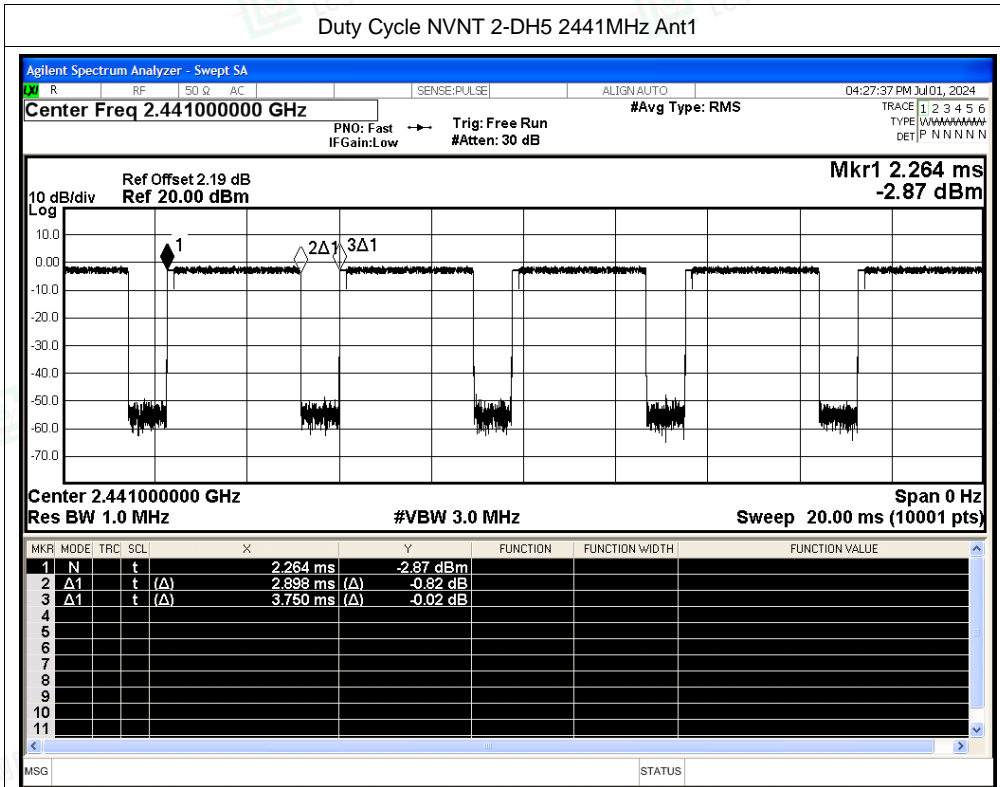


Duty Cycle NVNT 2-DH5 2402MHz Ant1

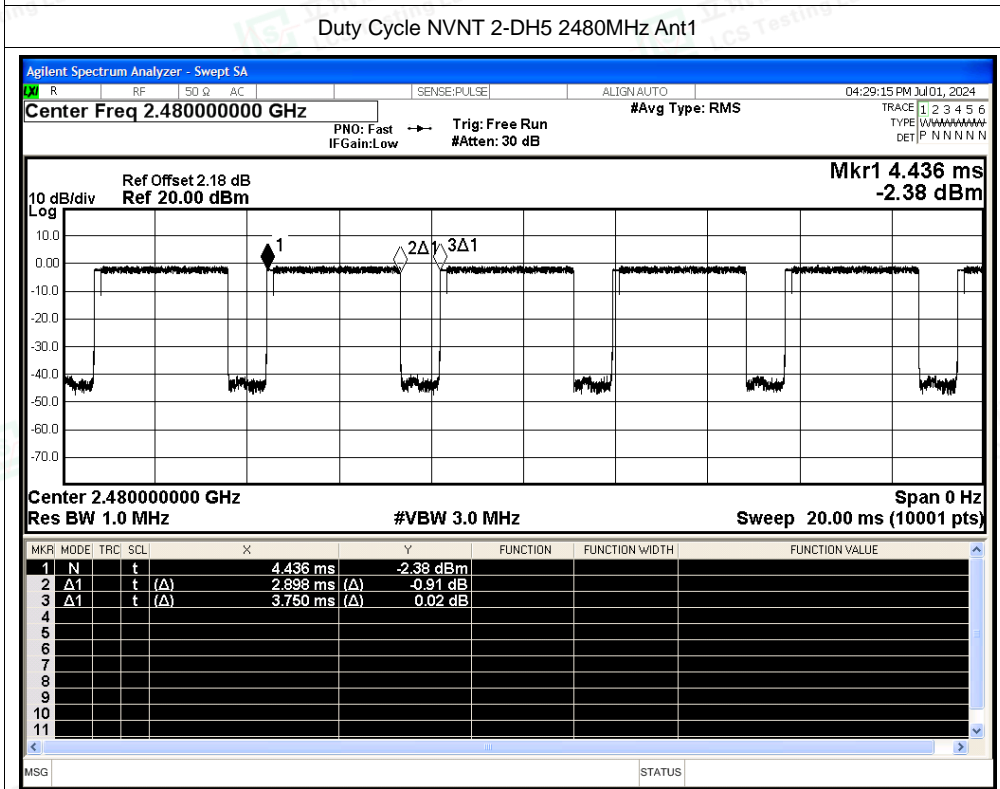




Duty Cycle NVNT 2-DH5 2441MHz Ant1

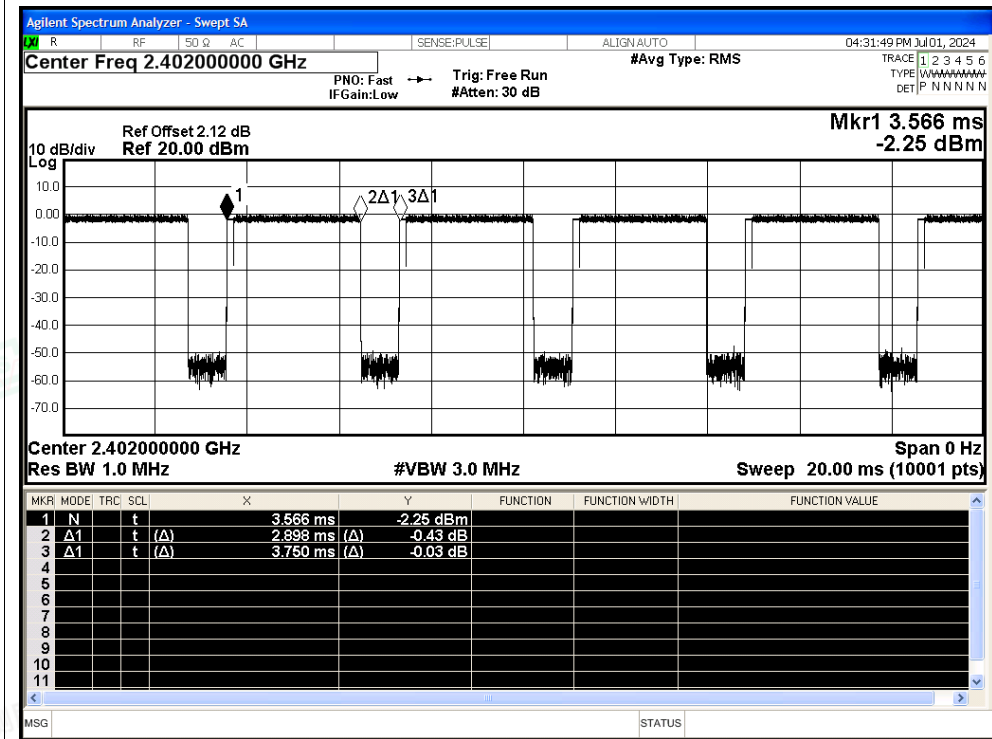


Duty Cycle NVNT 2-DH5 2480MHz Ant1

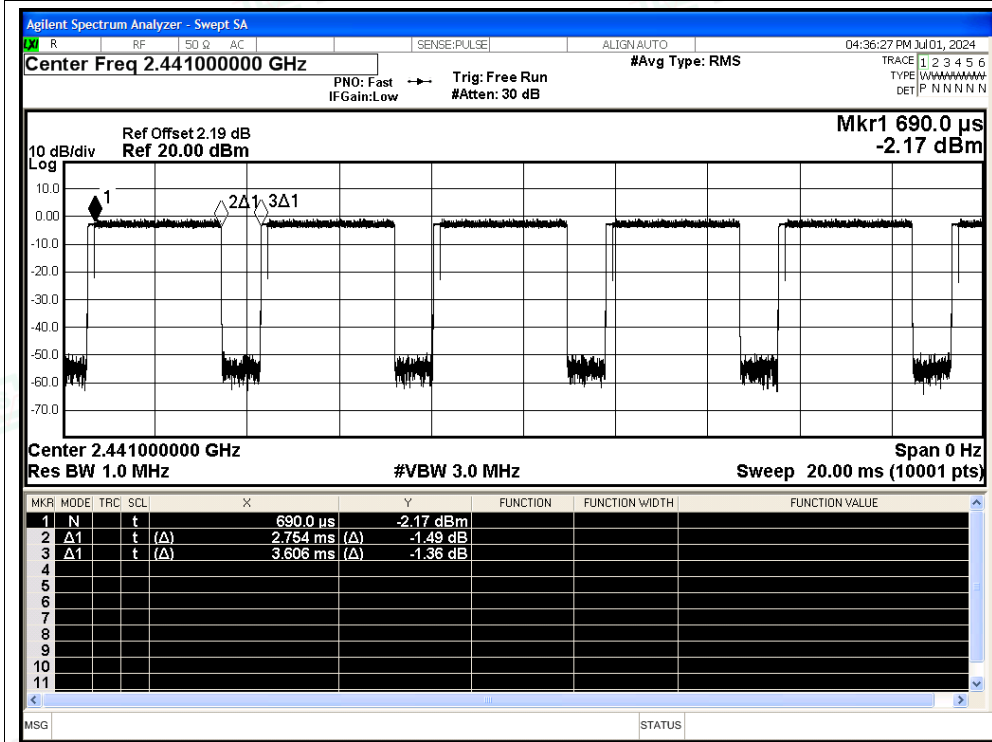




Duty Cycle NVNT 3-DH5 2402MHz Ant1

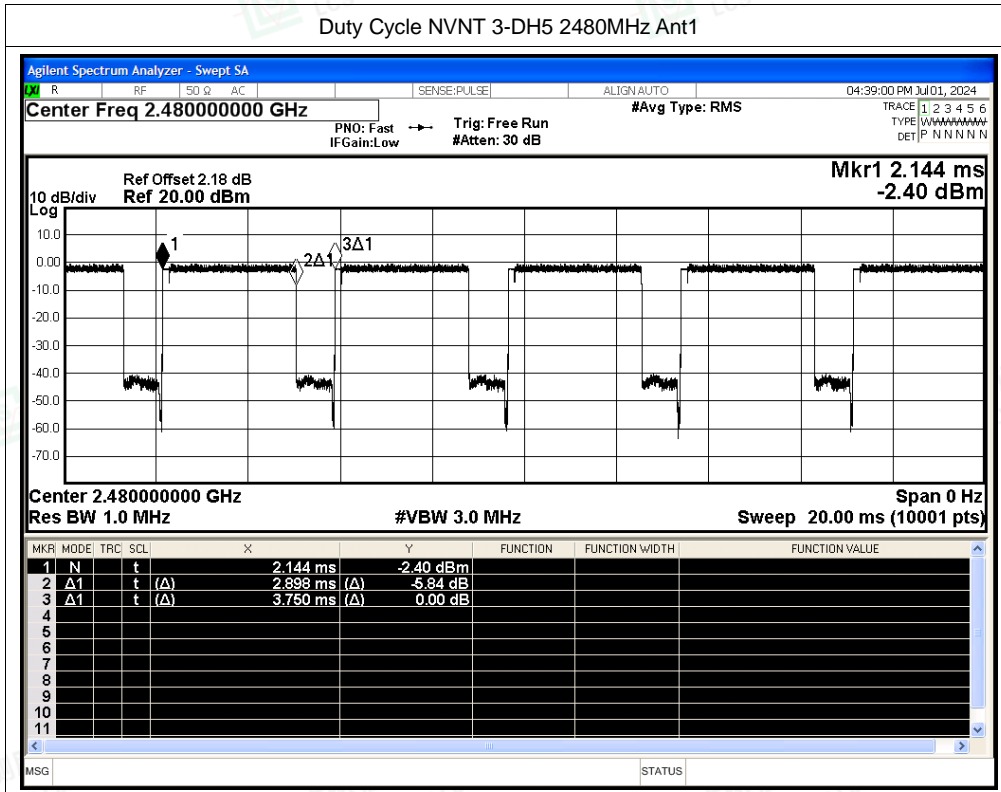


Duty Cycle NVNT 3-DH5 2441MHz Ant1





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	-50.5	2	-	46.76	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-58.89	2	1.1	39.47	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2356.656	-47.28	2	-	49.98	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2381.04	-57.3	2	1.1	41.06	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-51.9	2	-	45.36	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-58.06	2	1.1	40.30	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-50.08	2	-	47.18	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-58.22	2	1.1	40.14	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2484.04	-45.86	2	-	51.40	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2493.208	-56.98	2	1.1	41.38	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-49.09	2	-	48.17	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-57.3	2	1.1	41.06	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-51.16	2	-	46.10	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-58.28	2	1.12	40.10	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2380.56	-47.19	2	-	50.07	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2372.208	-57.18	2	1.12	41.20	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-49.61	2	-	47.65	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-58.14	2	1.12	40.24	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-49.06	2	-	48.20	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-57.58	2	1.12	40.80	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2484.928	-45.29	2	-	51.97	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.536	-56.78	2	1.12	41.60	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-51.31	2	-	45.95	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-57.65	2	1.12	40.73	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-51.17	2	-	46.09	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-58.42	2	1.12	39.96	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2352.336	-47.11	2	-	50.15	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2378.448	-57.3	2	1.12	41.08	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-50.62	2	-	46.64	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-58.1	2	1.12	40.28	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-50.04	2	-	47.22	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-57.61	2	1.12	40.77	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2499.184	-46.97	2	-	50.29	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2487.688	-57.06	2	1.12	41.32	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-49.14	2	-	48.12	Peak	74	Pass



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NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-58.29	2	1.12	40.09	Average	54	Pass
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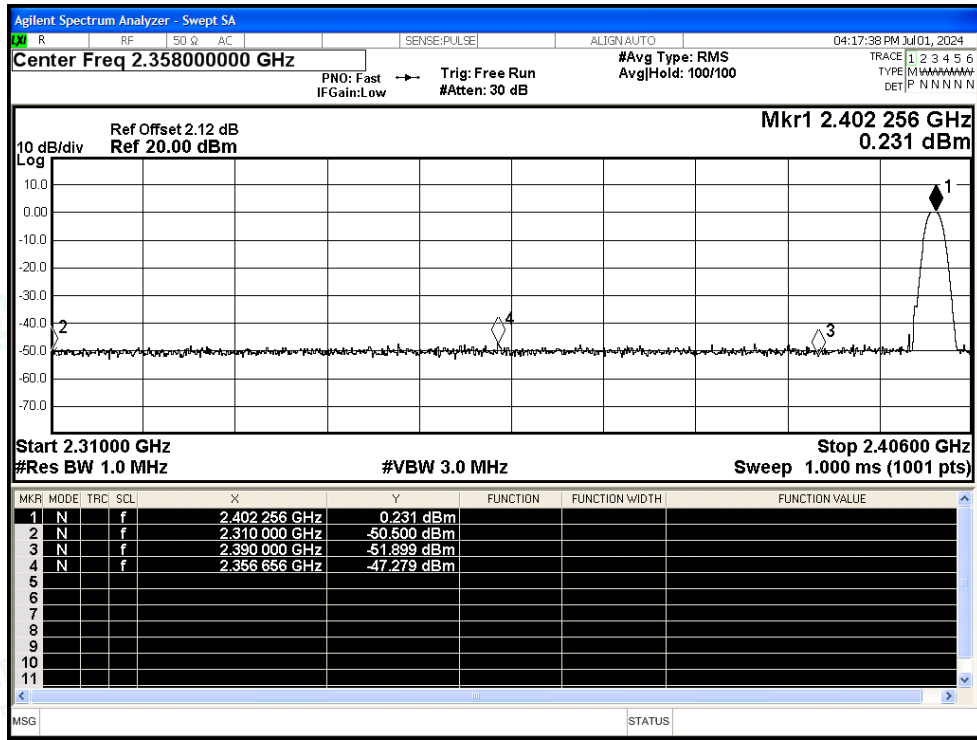


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 Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com  
 Scan code to check authenticity

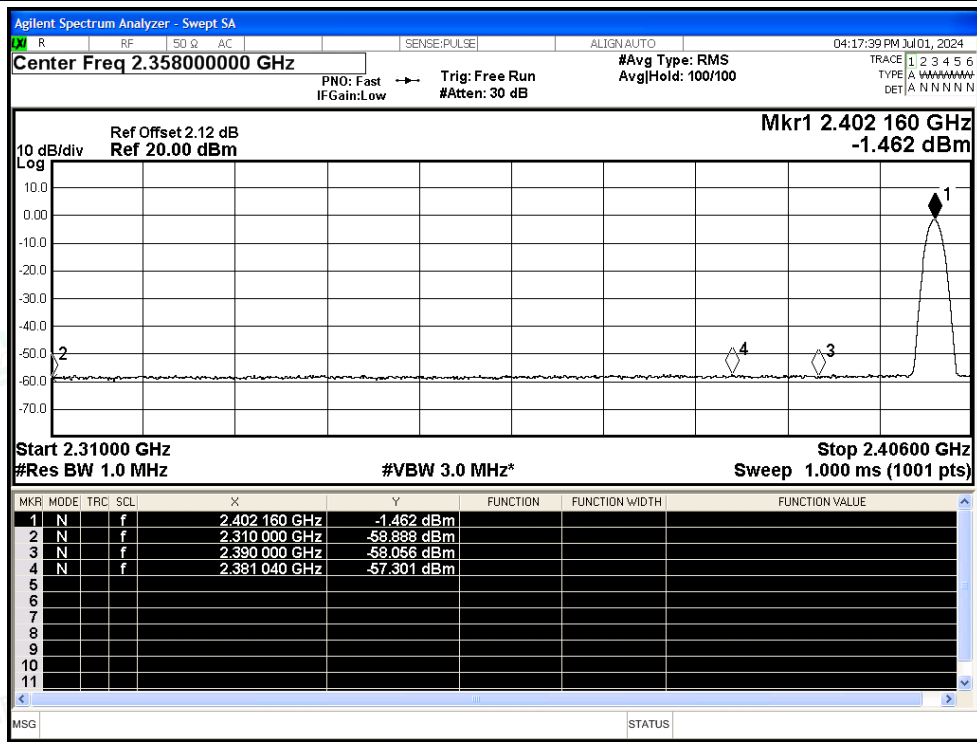


Test Graphs

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



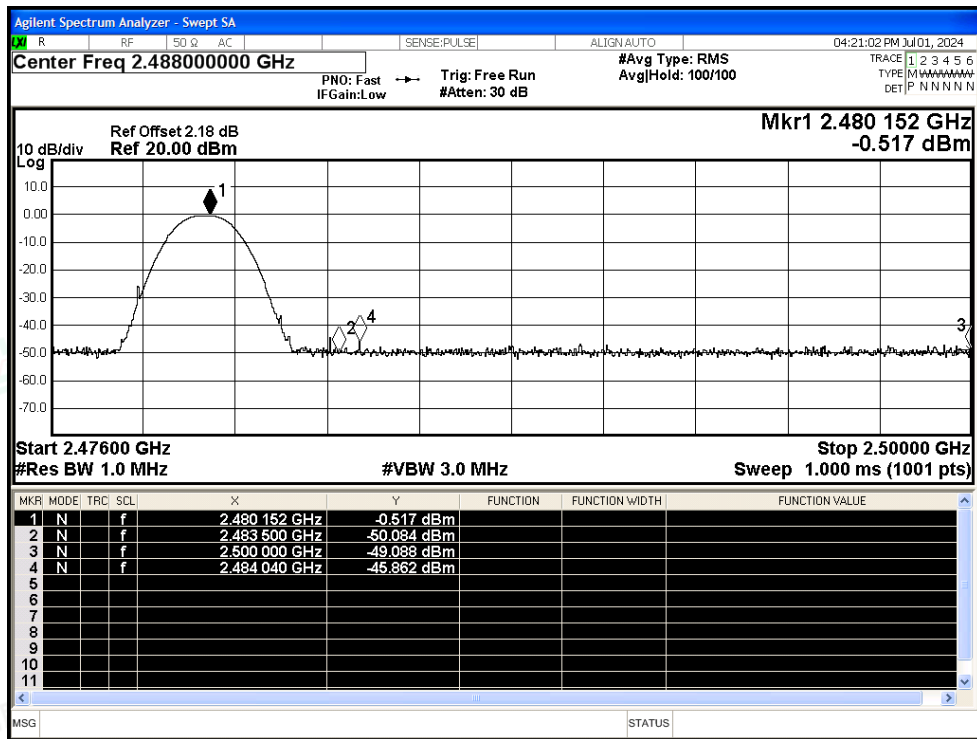
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



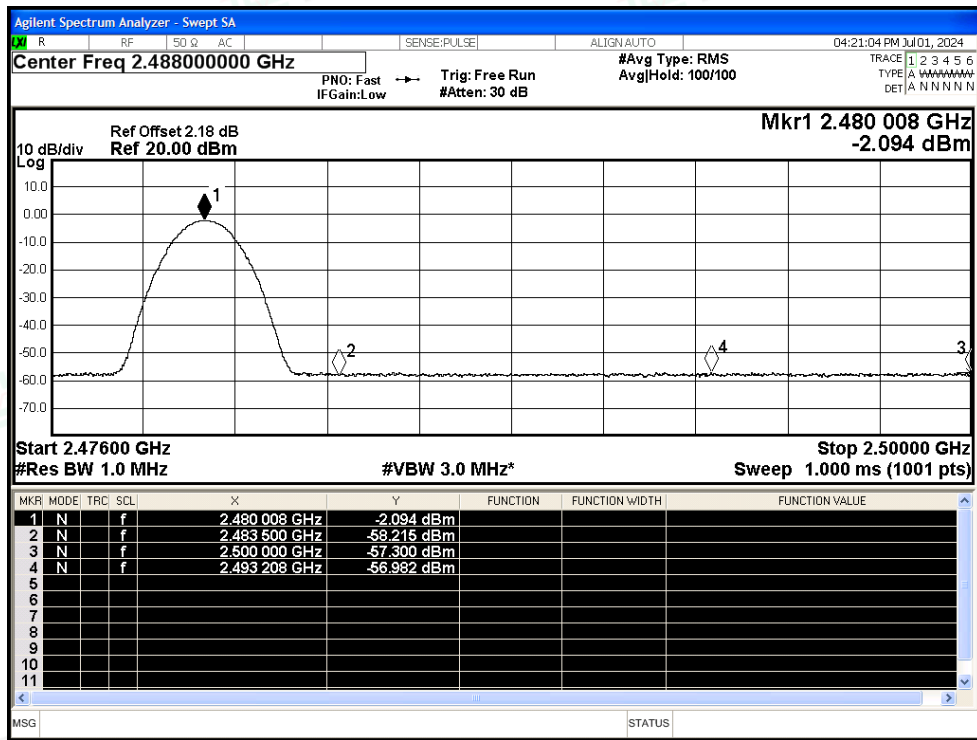




Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak

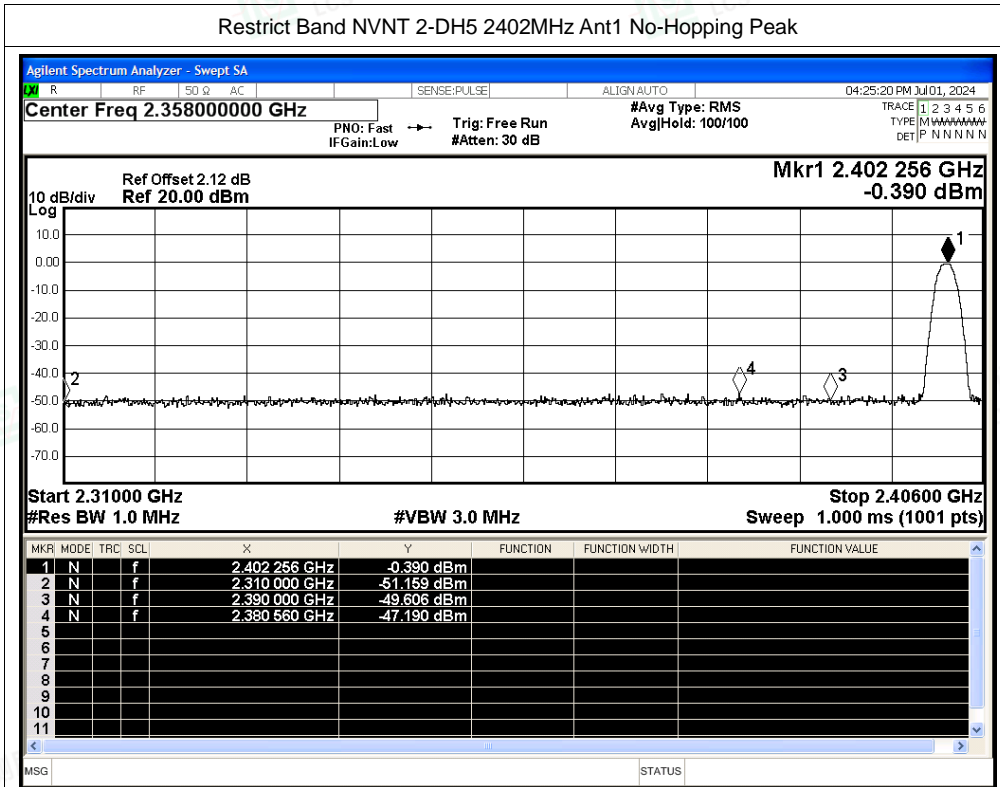


Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average

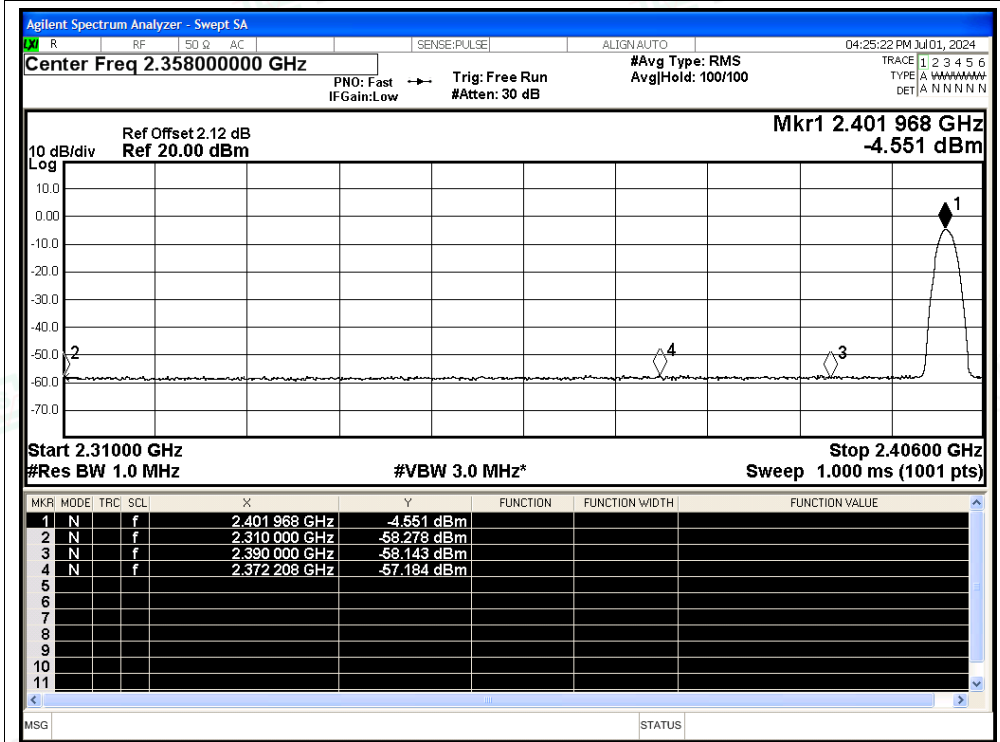




Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak

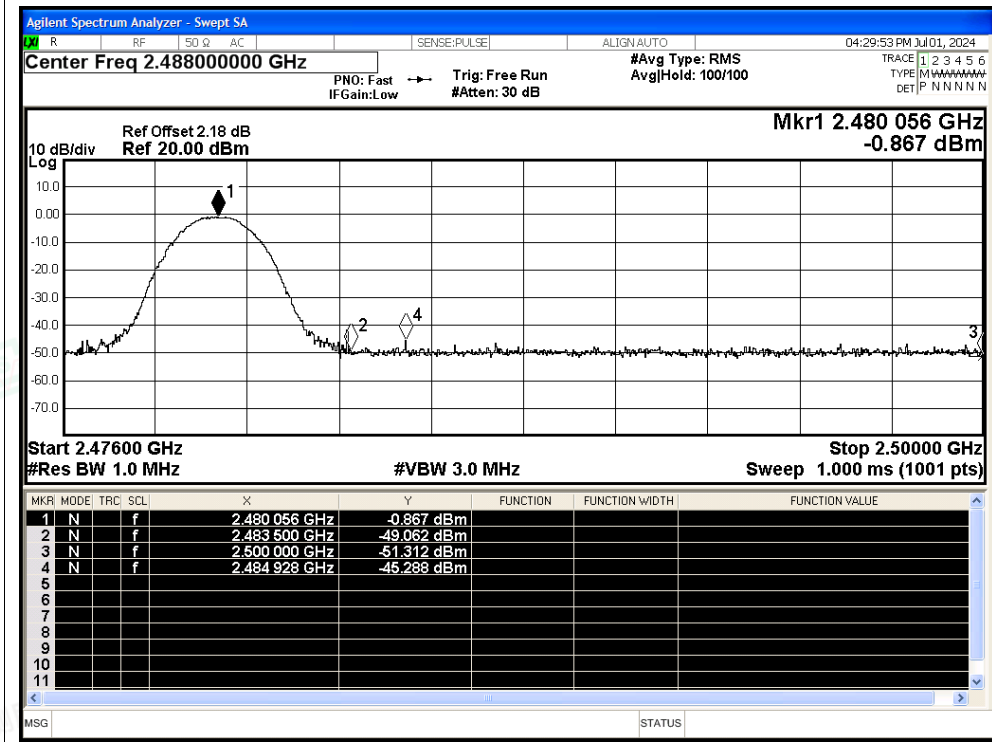


Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average

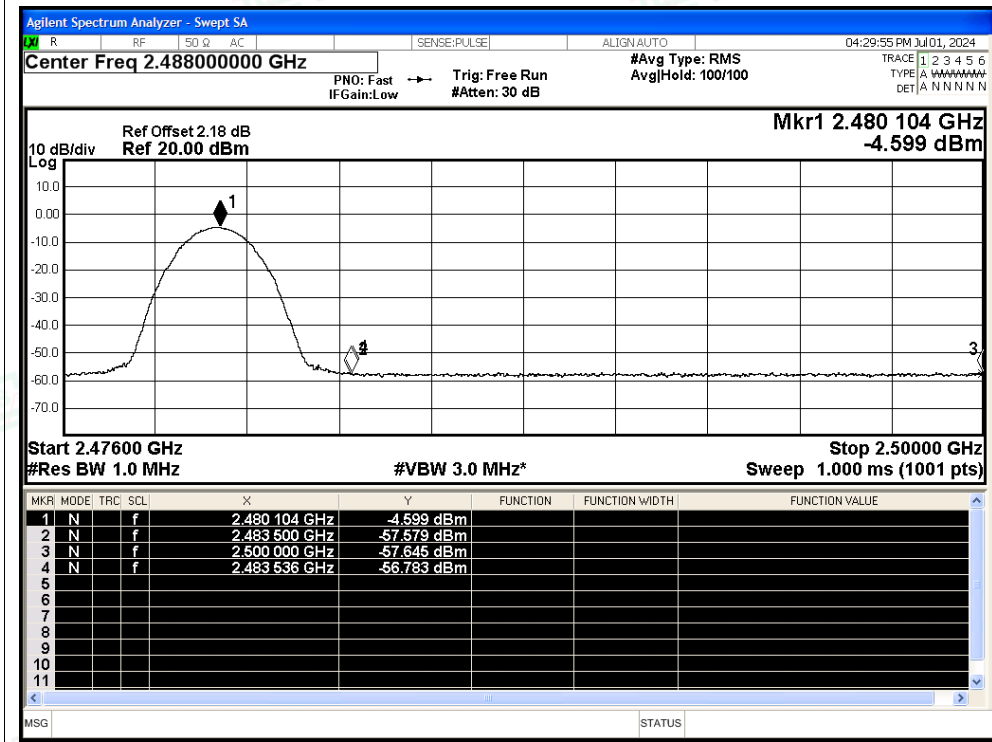




Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak

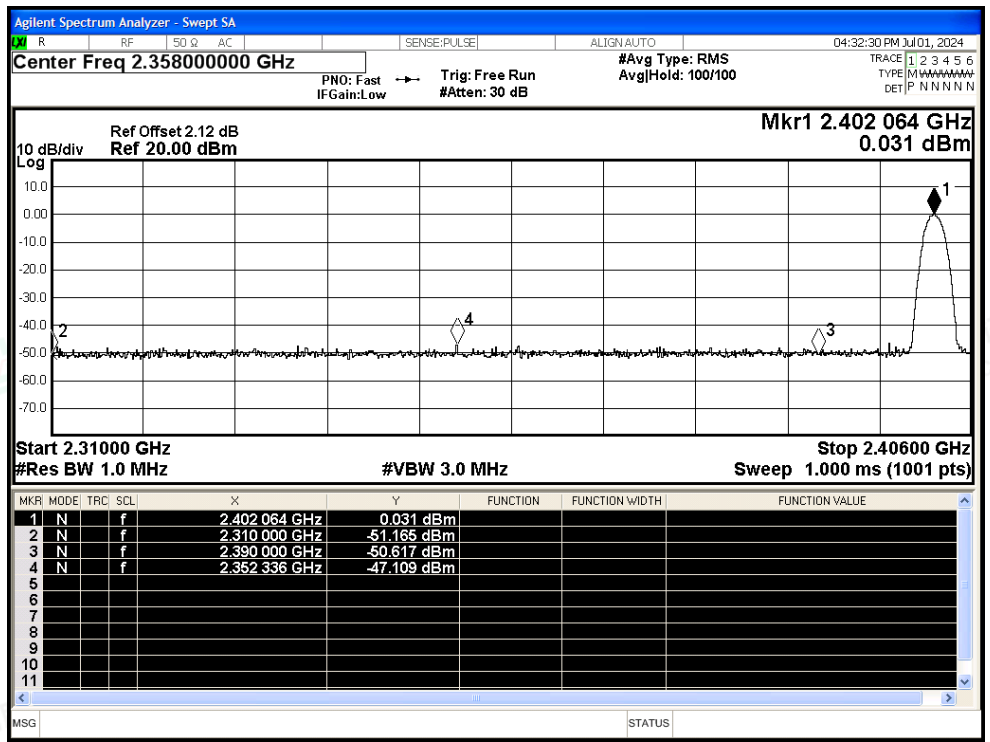


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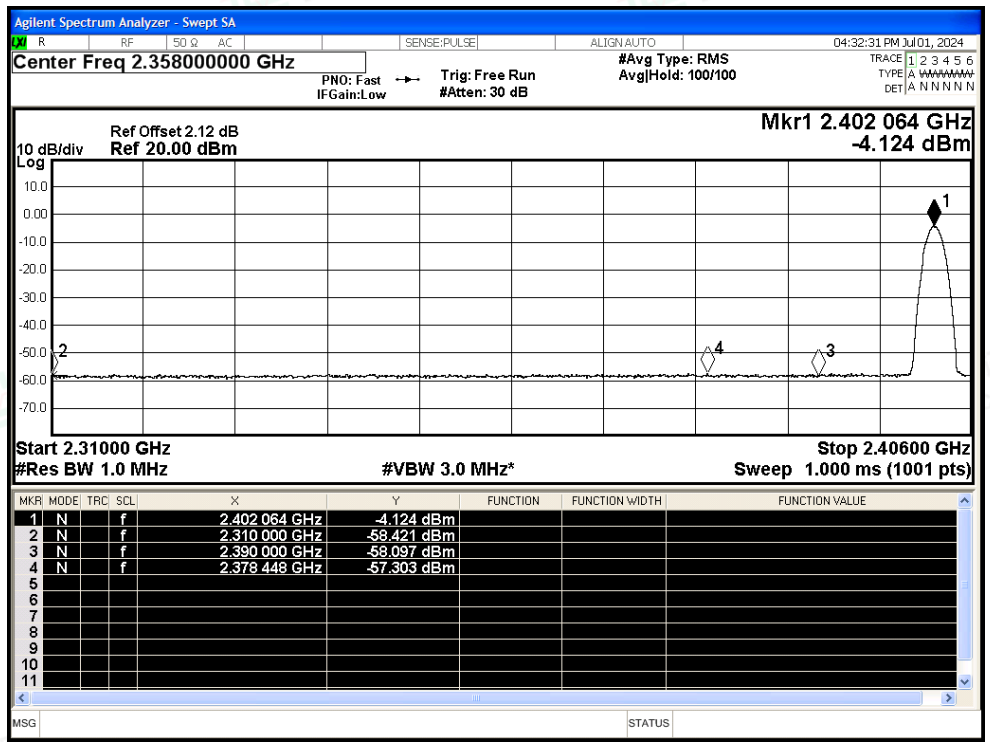




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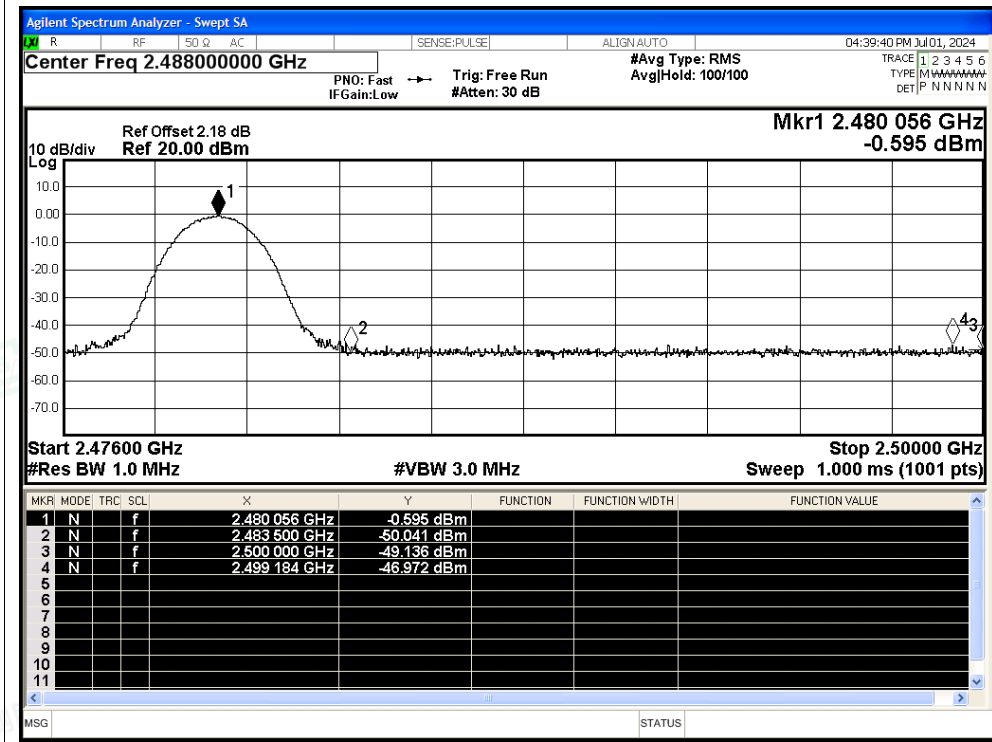


Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Average





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



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

