



# Appendix A

## RF Test Data for BT (Conducted Measurement)

Product Name: True Wireless Earbuds

Test Model: 3304452

### Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Luo
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	0.944	N/A	Pass
NVNT	1-DH5	2441	Ant1	1.028	N/A	Pass
NVNT	1-DH5	2480	Ant1	0.951	N/A	Pass
NVNT	2-DH5	2402	Ant1	1.285	N/A	Pass
NVNT	2-DH5	2441	Ant1	1.33	N/A	Pass
NVNT	2-DH5	2480	Ant1	1.288	N/A	Pass

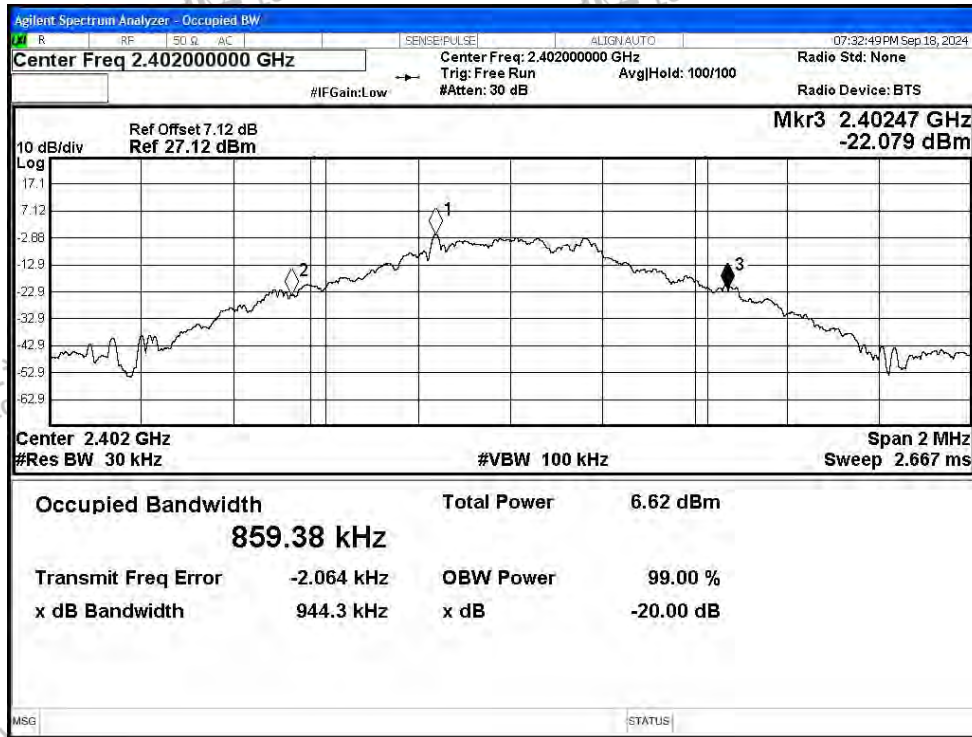


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Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1

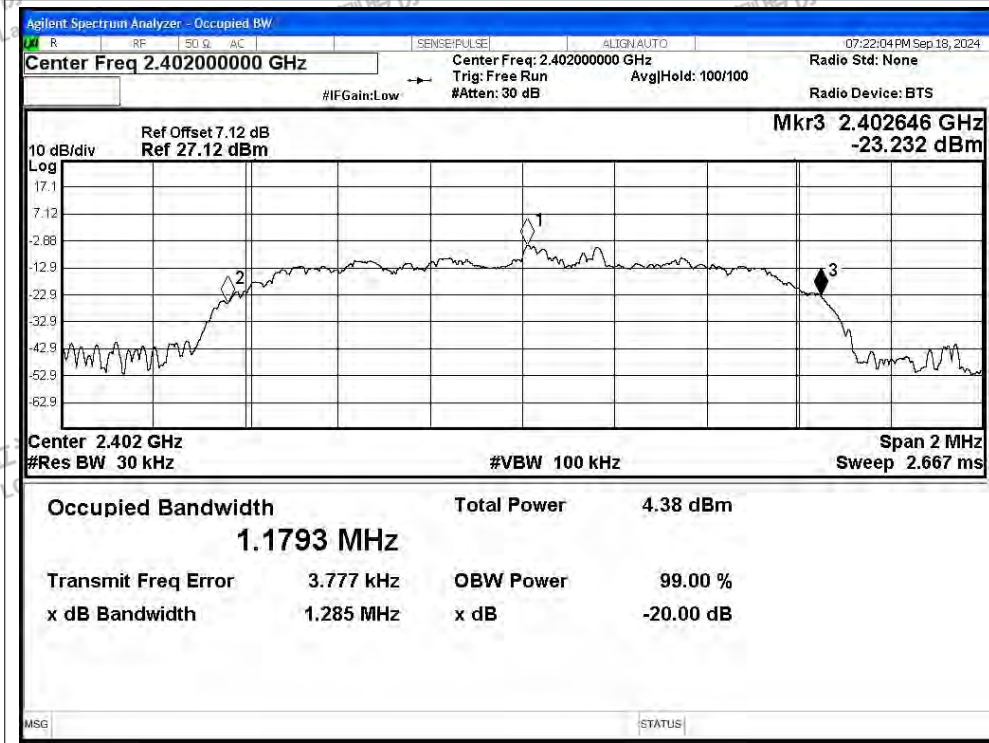




-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



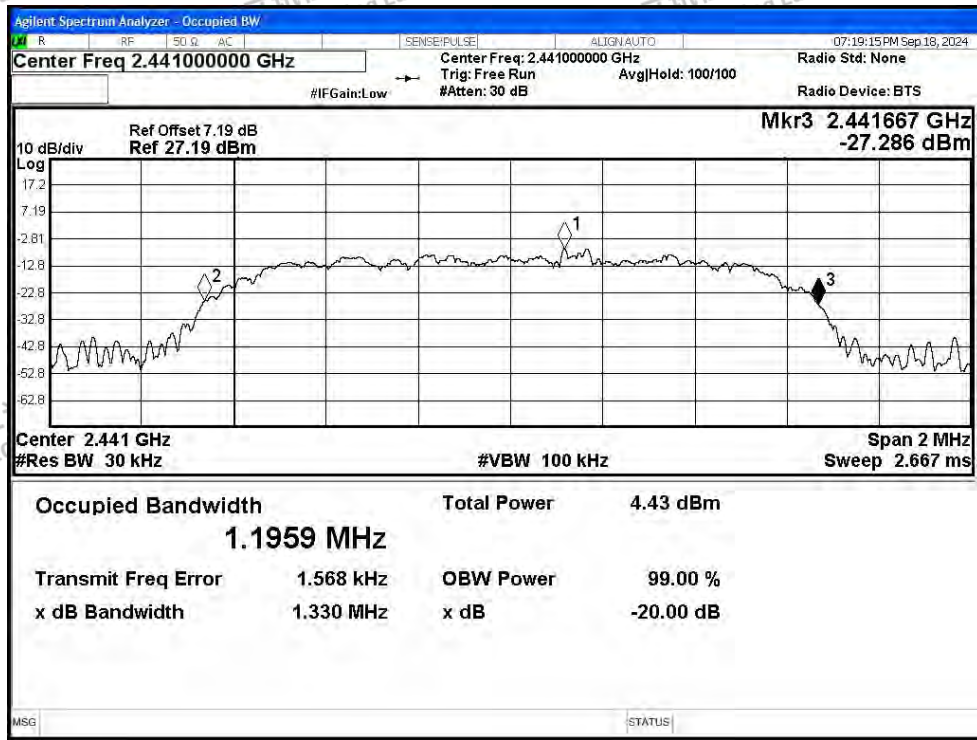
-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1



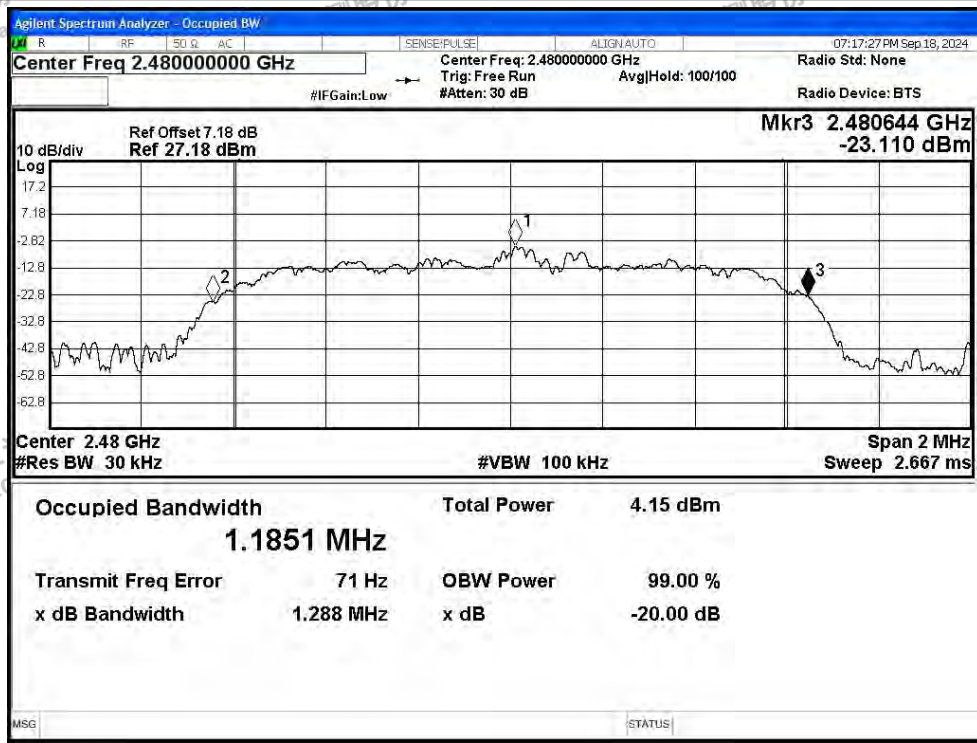




-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1





## A.2 Maximum Peak Conducted Output Power

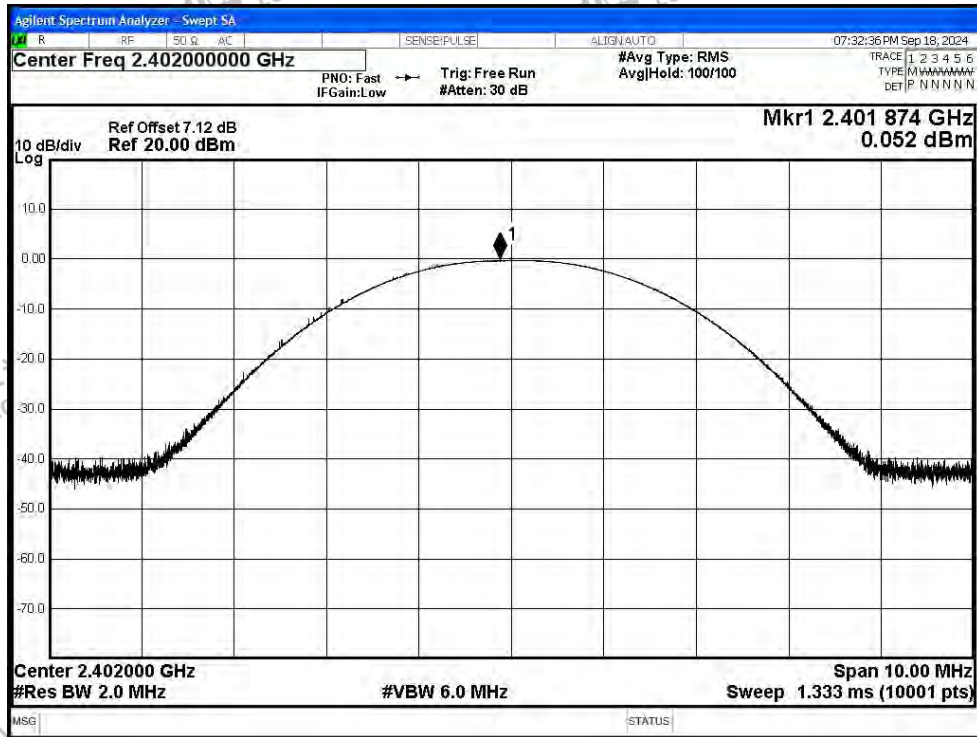
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	0.05	21	Pass
NVNT	1-DH5	2441	Ant1	0.97	21	Pass
NVNT	1-DH5	2480	Ant1	0.1	21	Pass
NVNT	2-DH5	2402	Ant1	-0.17	21	Pass
NVNT	2-DH5	2441	Ant1	0.67	21	Pass
NVNT	2-DH5	2480	Ant1	-0.28	21	Pass



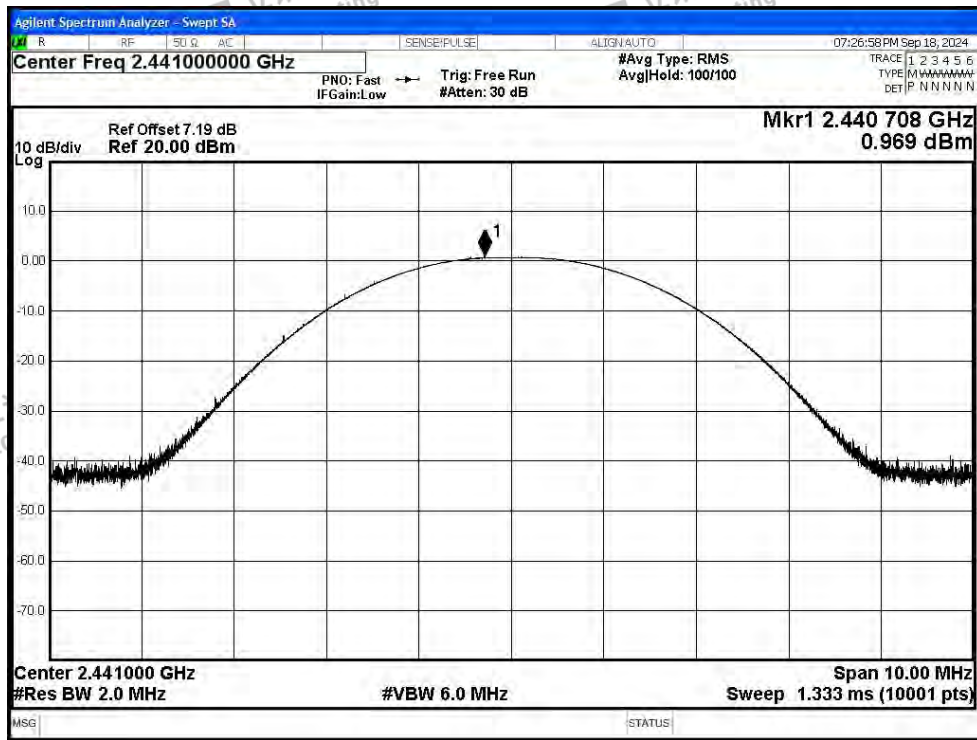


Test Graphs

Power NVNT 1-DH5 2402MHz Ant1

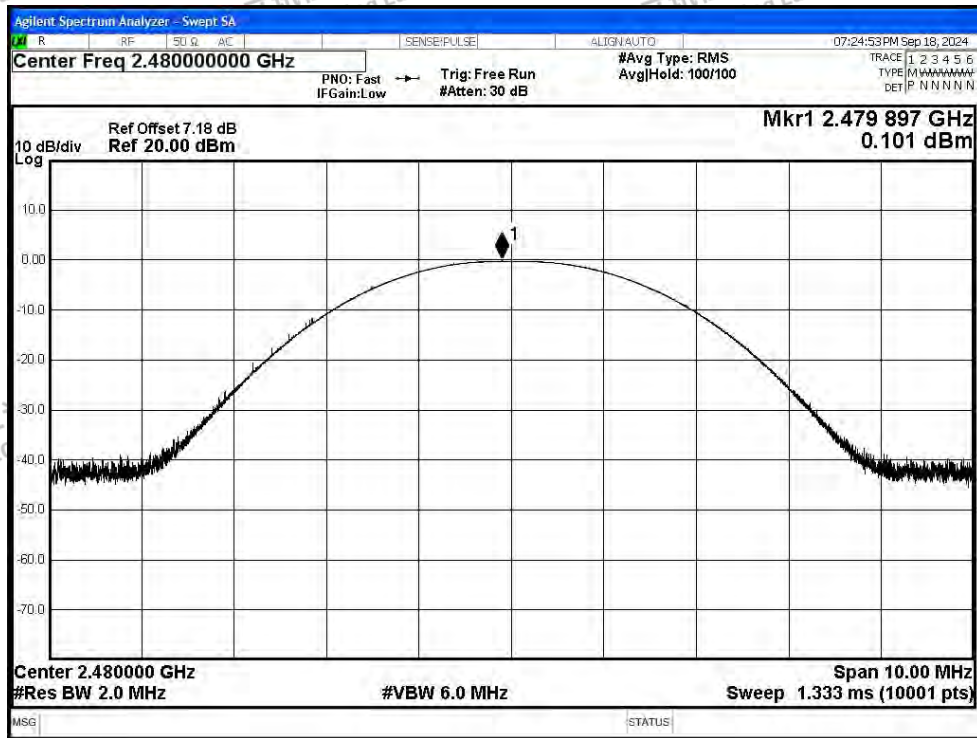


Power NVNT 1-DH5 2441MHz Ant1

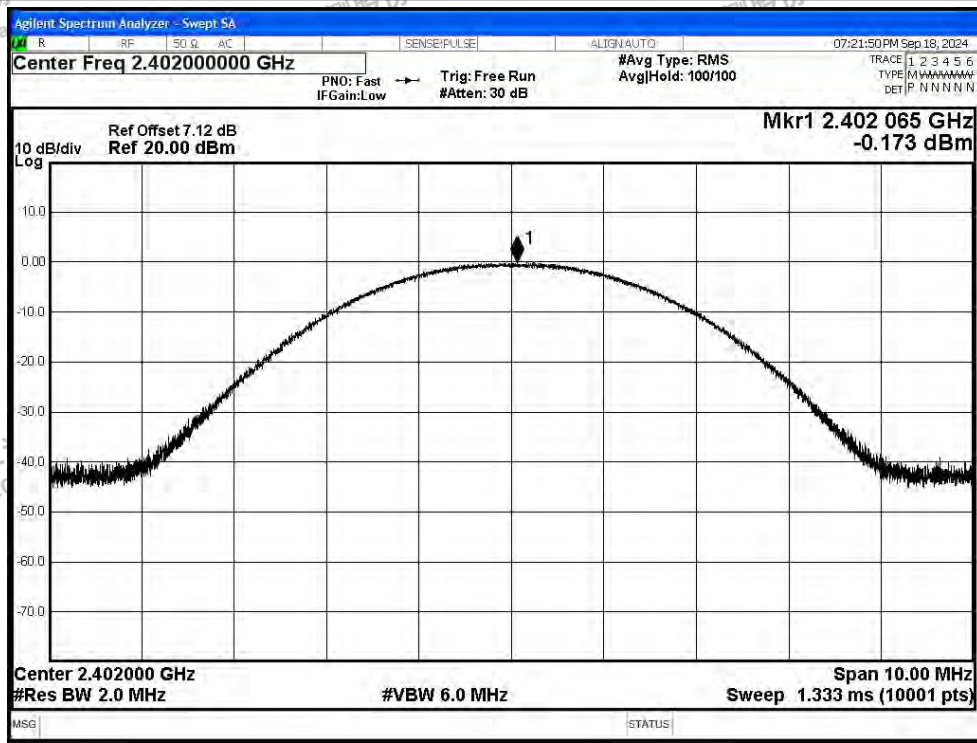




Power NVNT 1-DH5 2480MHz Ant1



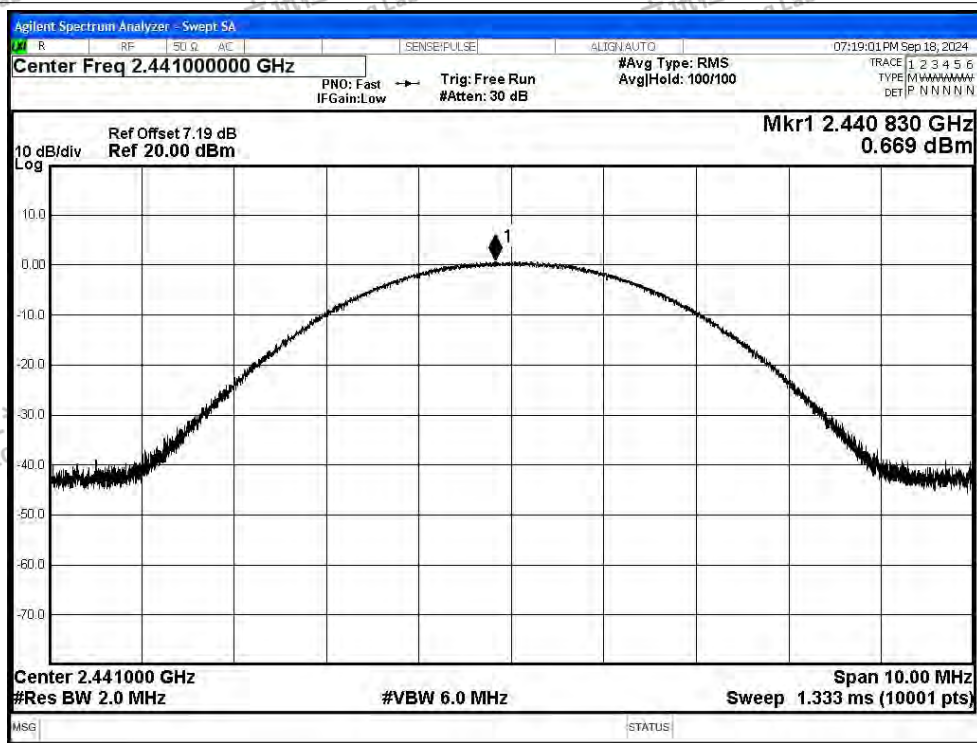
Power NVNT 2-DH5 2402MHz Ant1



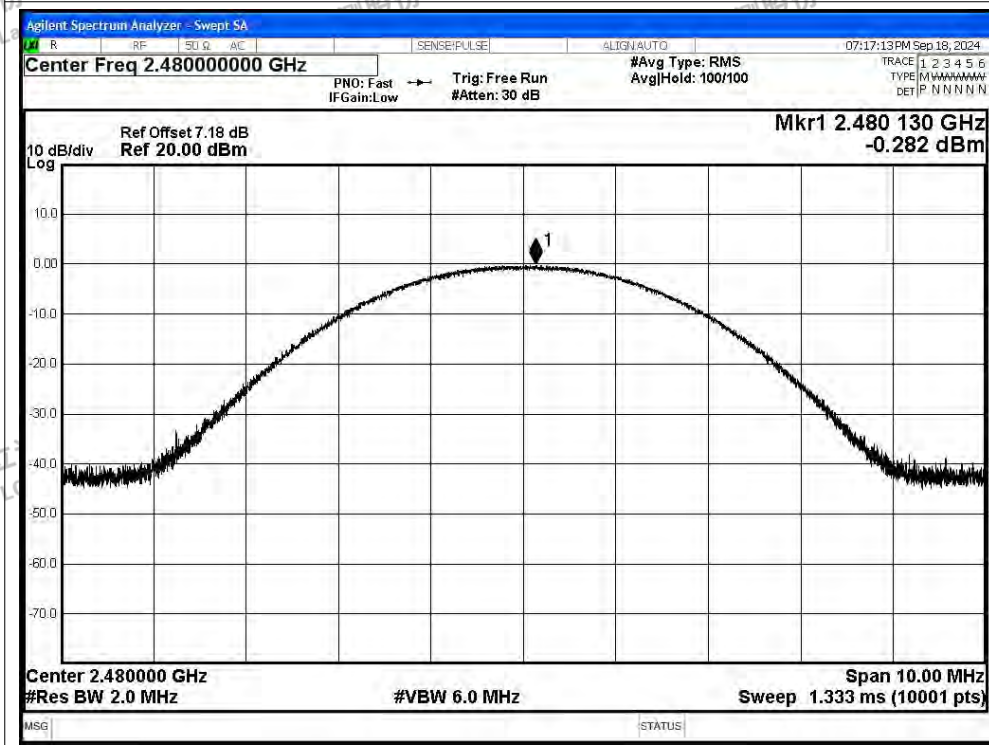




Power NVNT 2-DH5 2441MHz Ant1



Power NVNT 2-DH5 2480MHz Ant1





### A.3 Carrier Frequencies Separation

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2402.036	2402.836	0.8	0.629	Pass
NVNT	2-DH5	Ant1	2402.16	2403.122	0.962	0.857	Pass

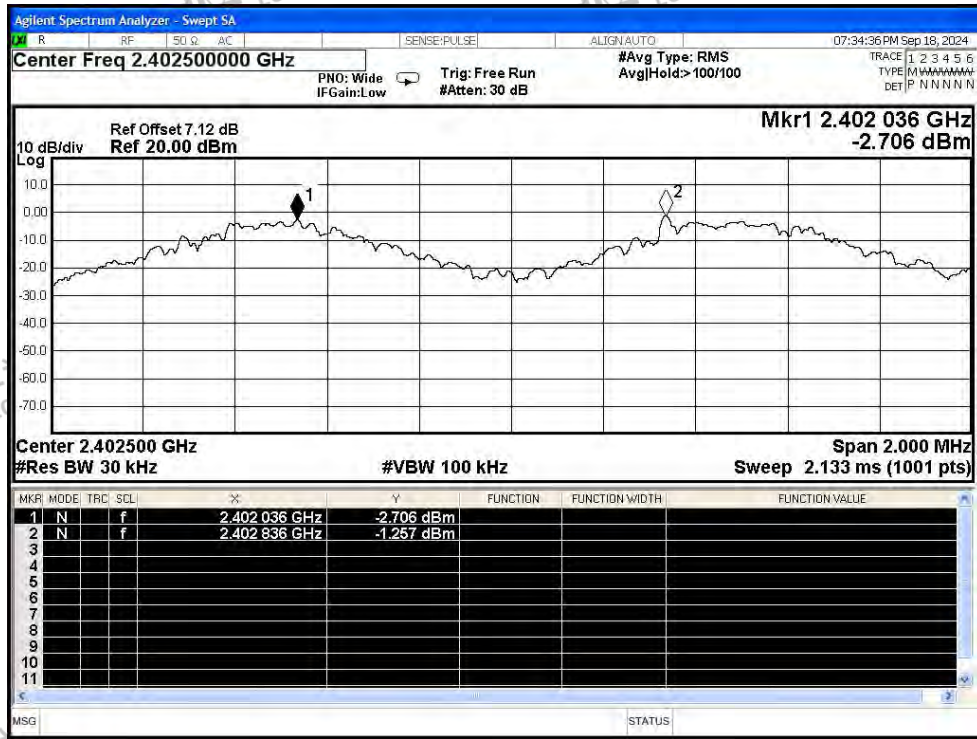


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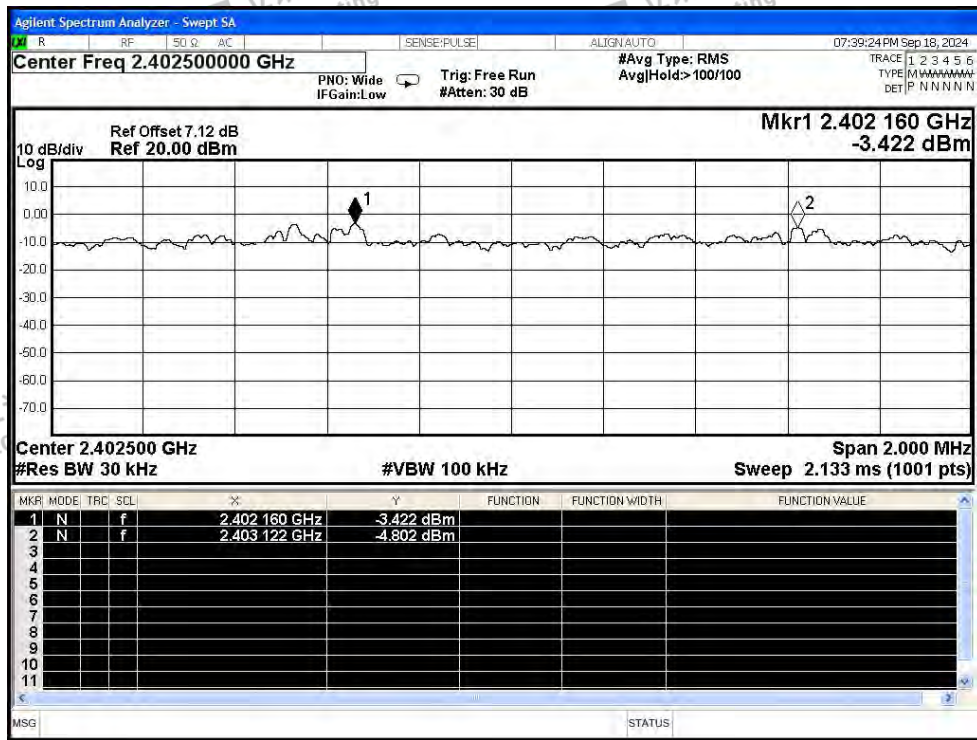


Test Graphs

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	2.909	317.081	109	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.898	350.658	121	31600	400	Pass



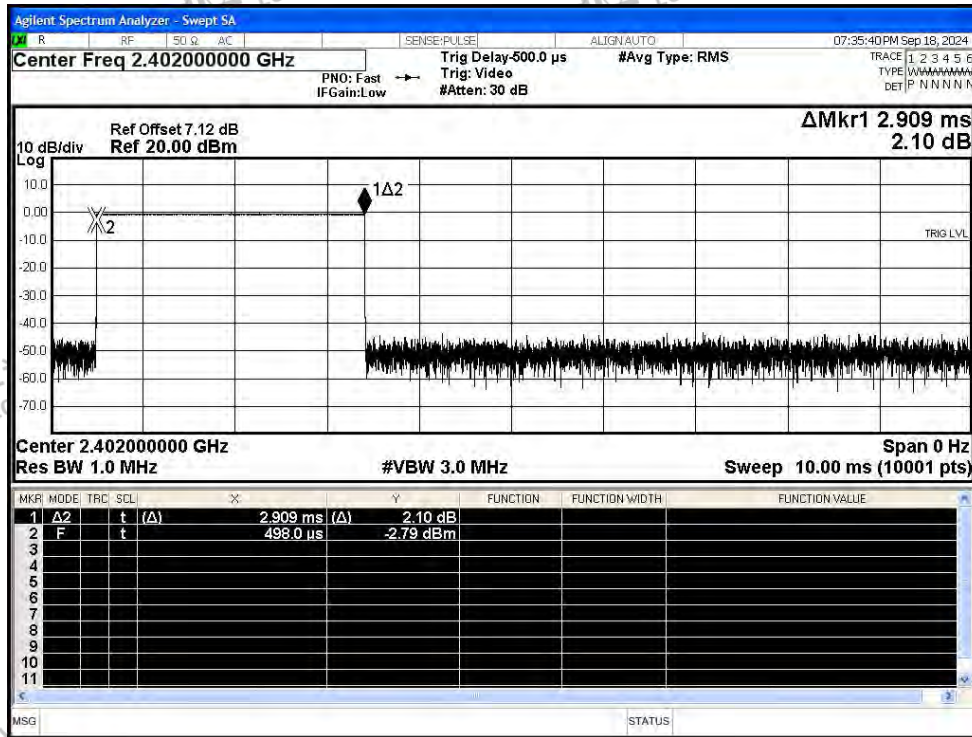
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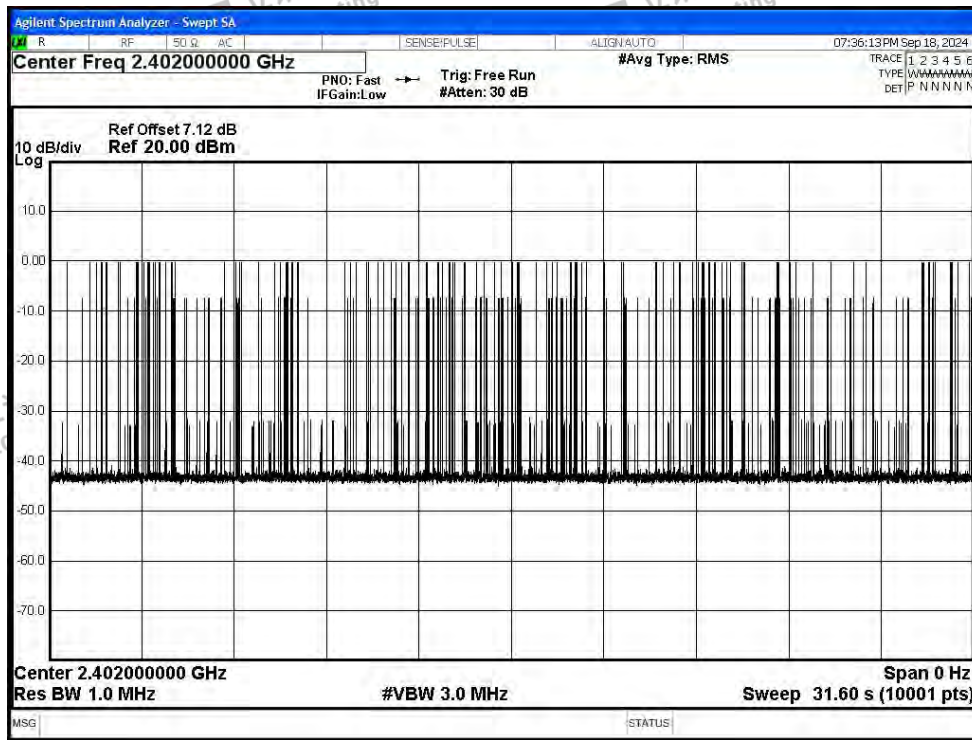


Test Graphs

Dwell-NVNT 1-DH5 2402MHz Ant1 One Burst

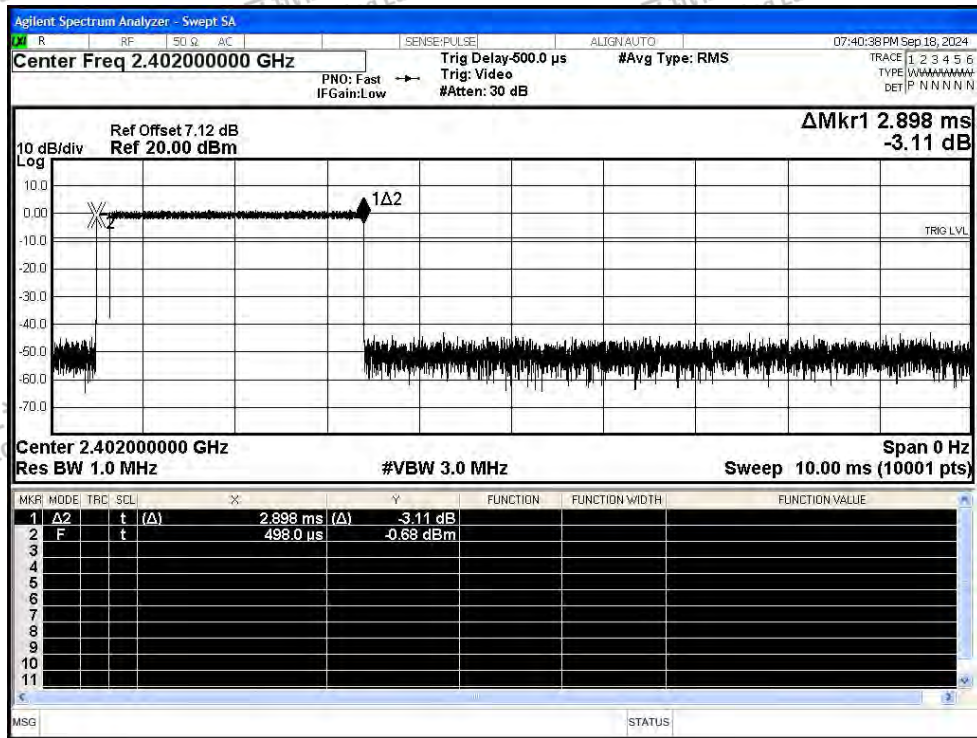


Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated

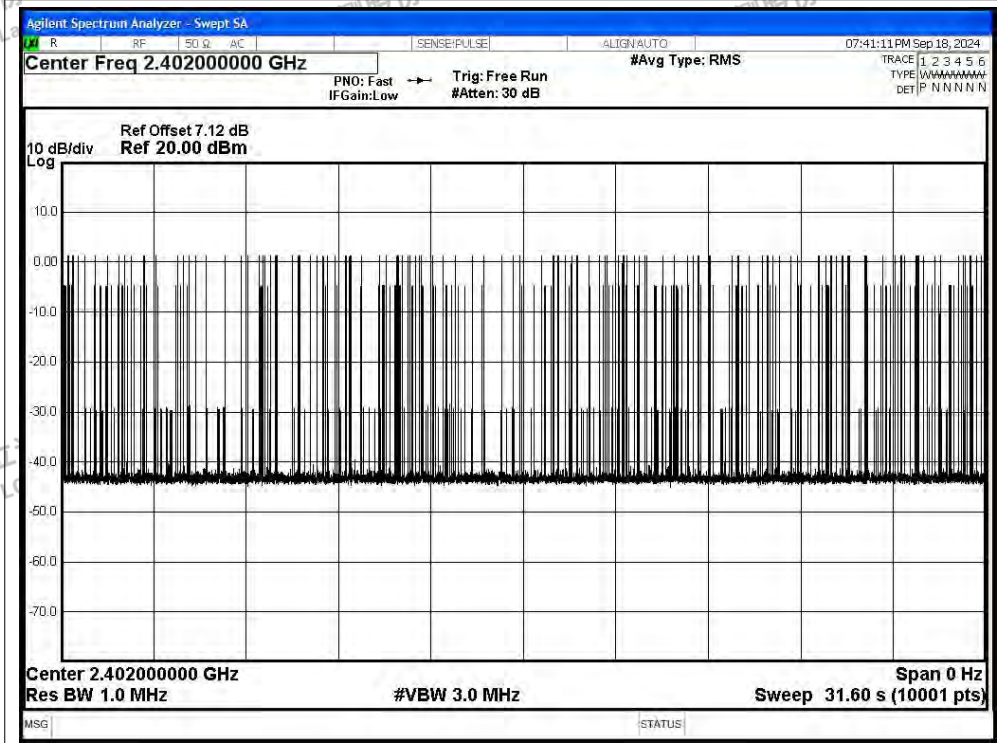




Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated





## 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

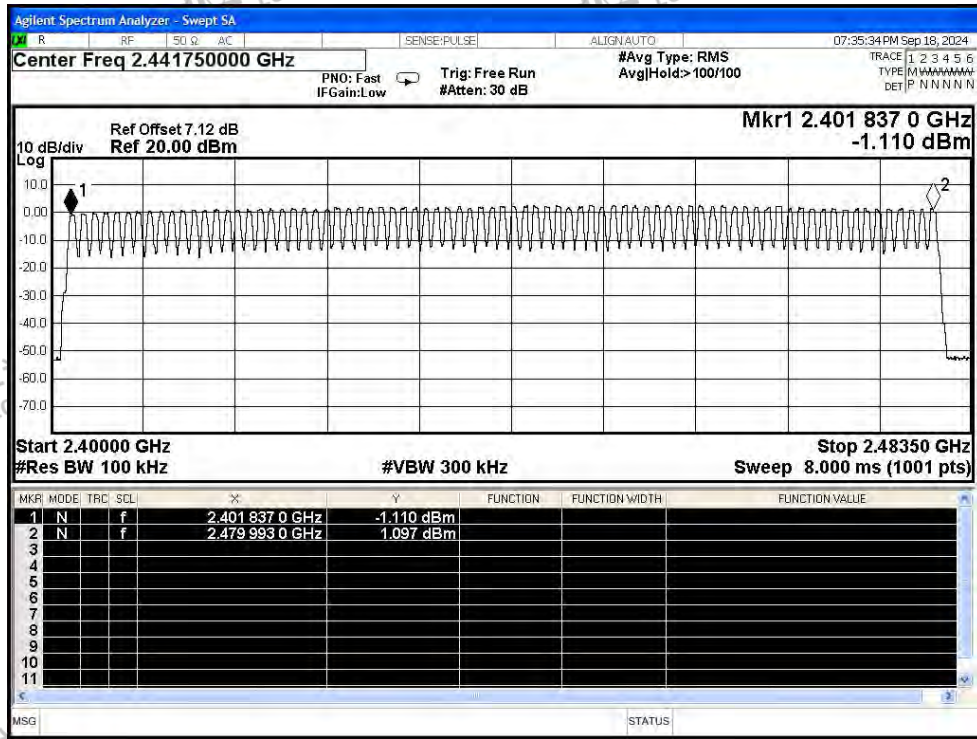




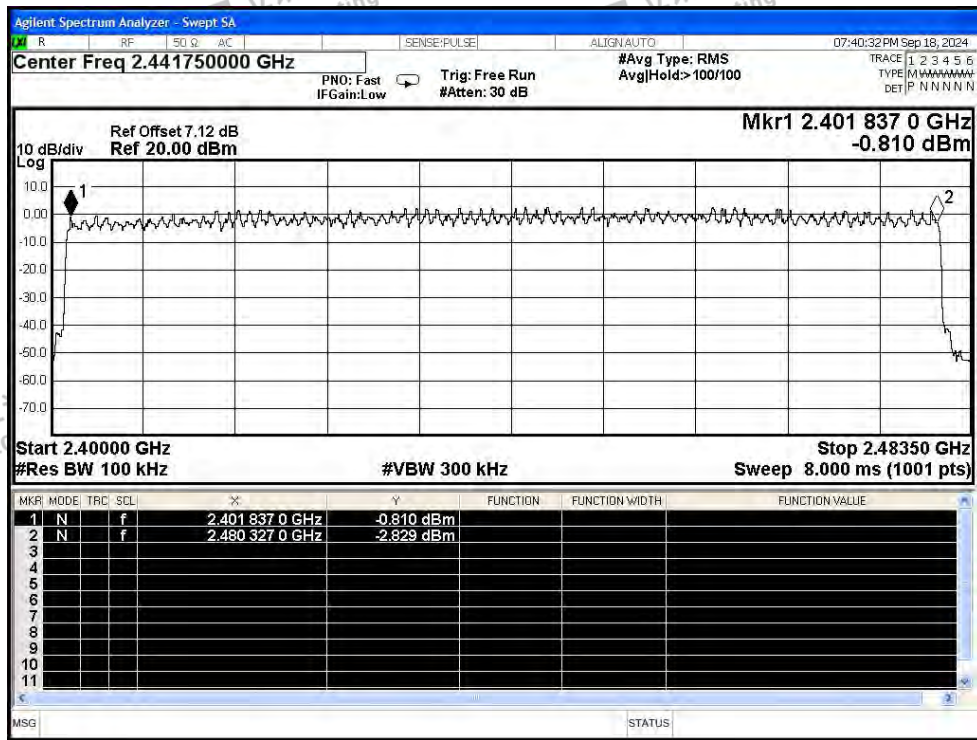


Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-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	-52.02	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-50.2	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-48.38	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-47.13	-20	Pass

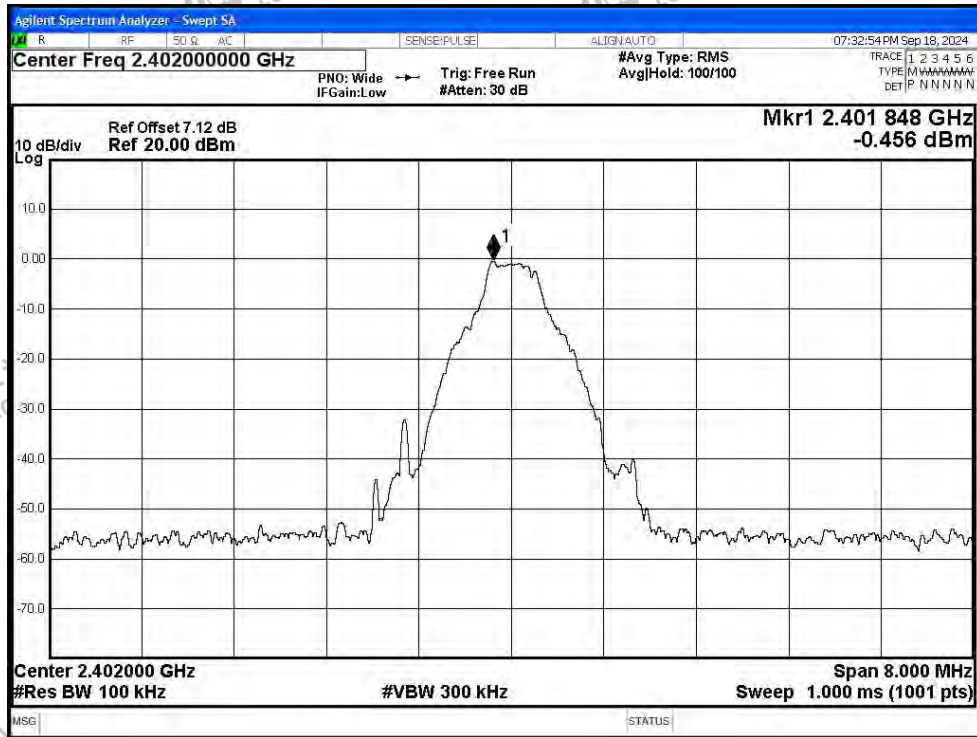


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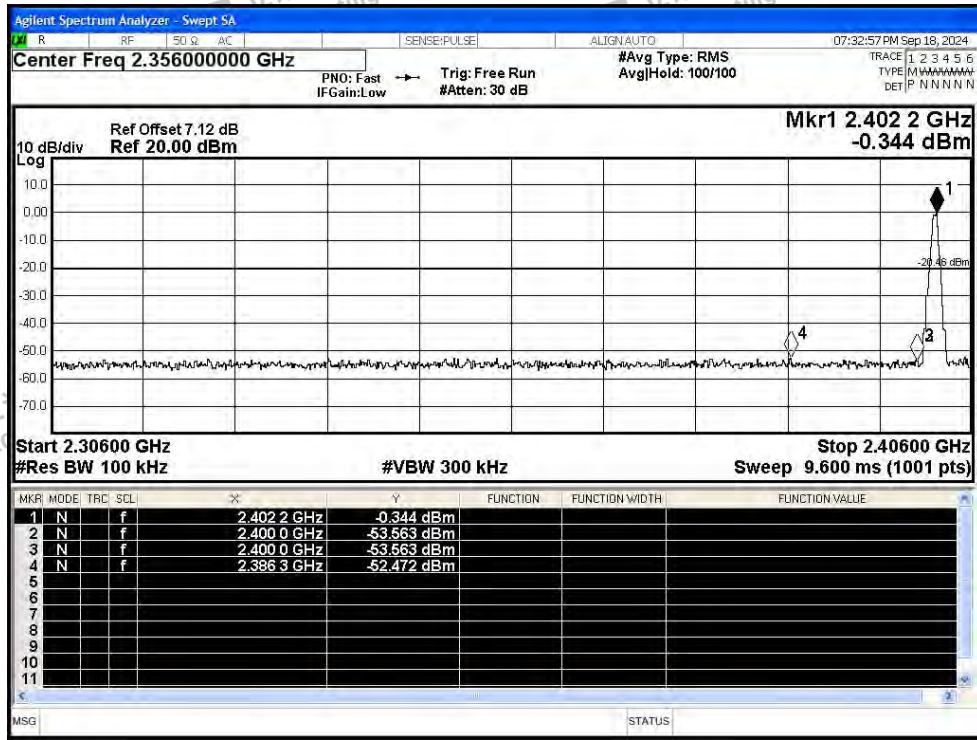


Test Graphs

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

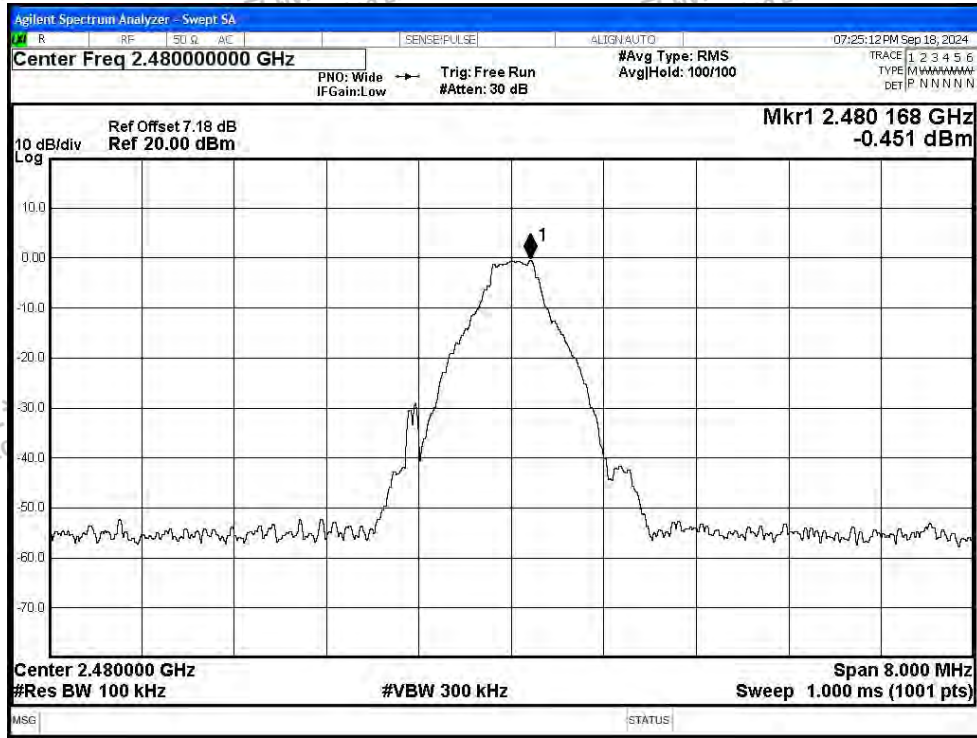


Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission

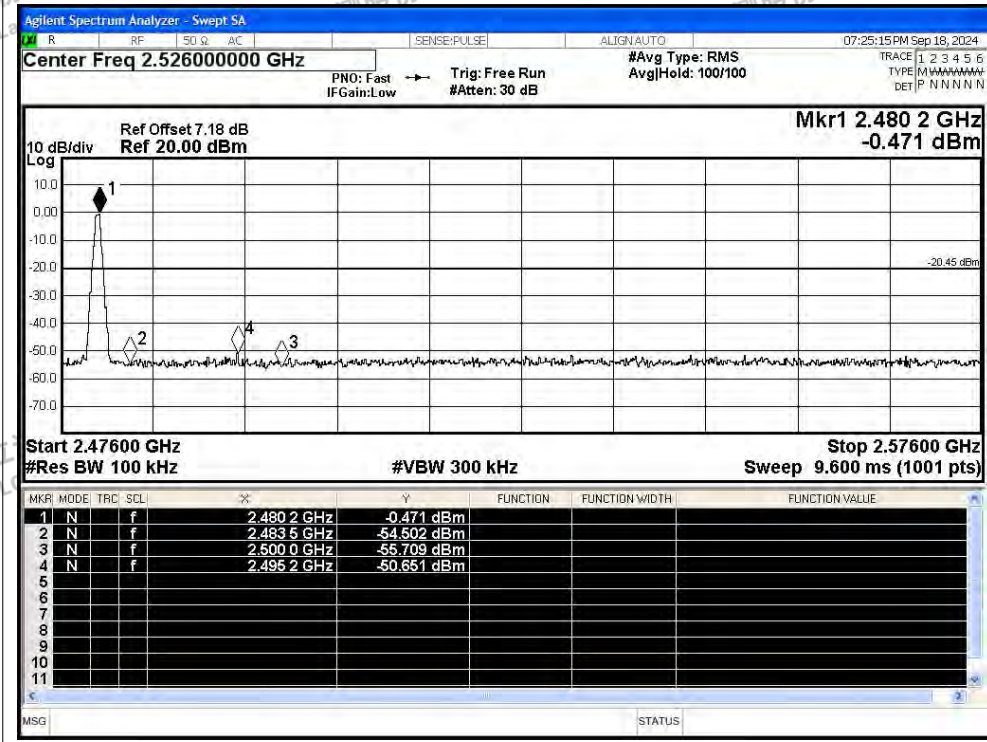




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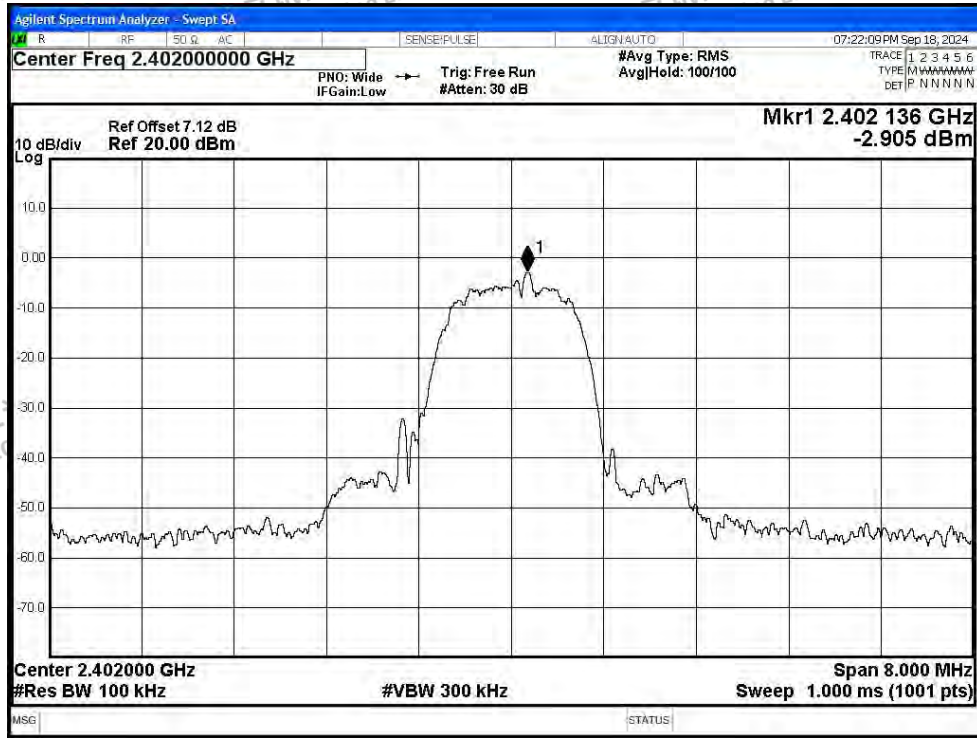
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



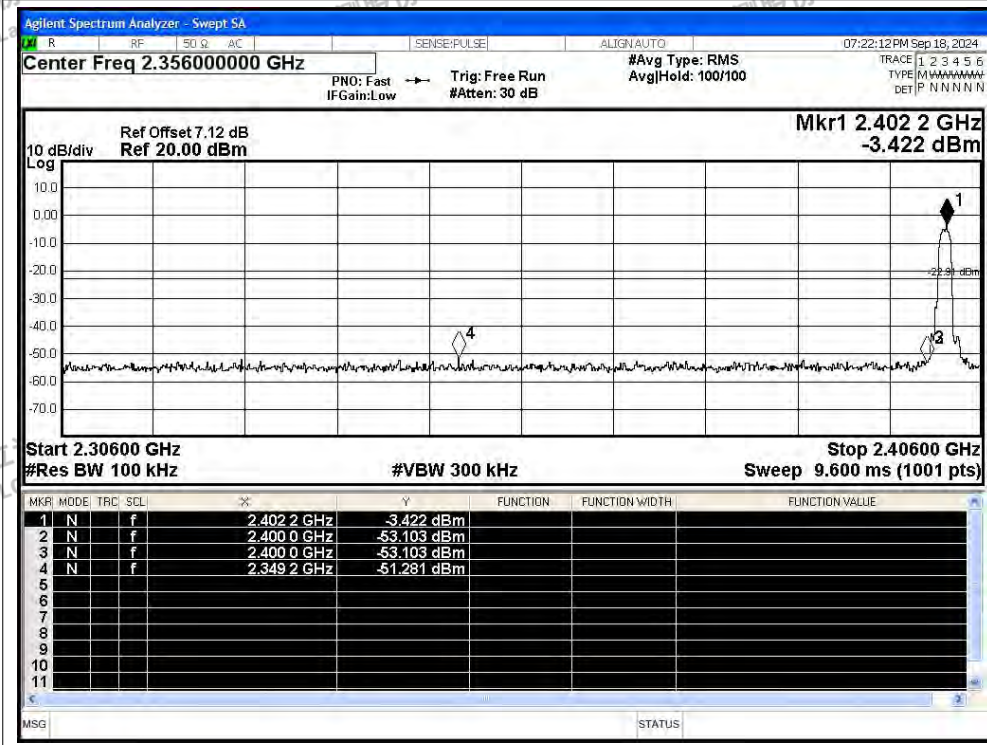




Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



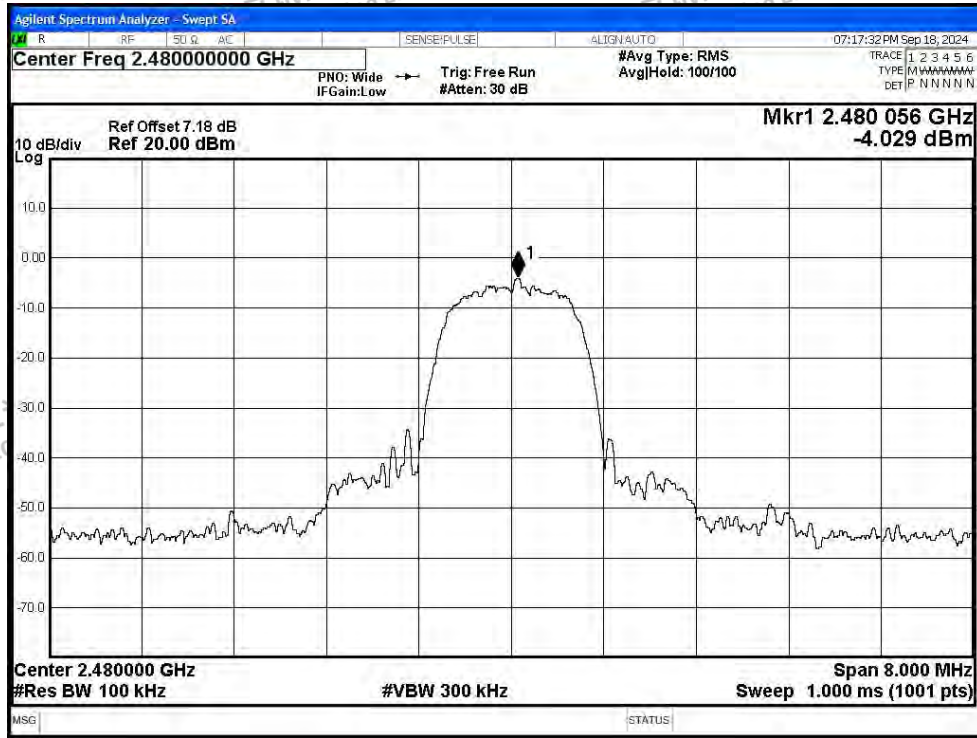
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



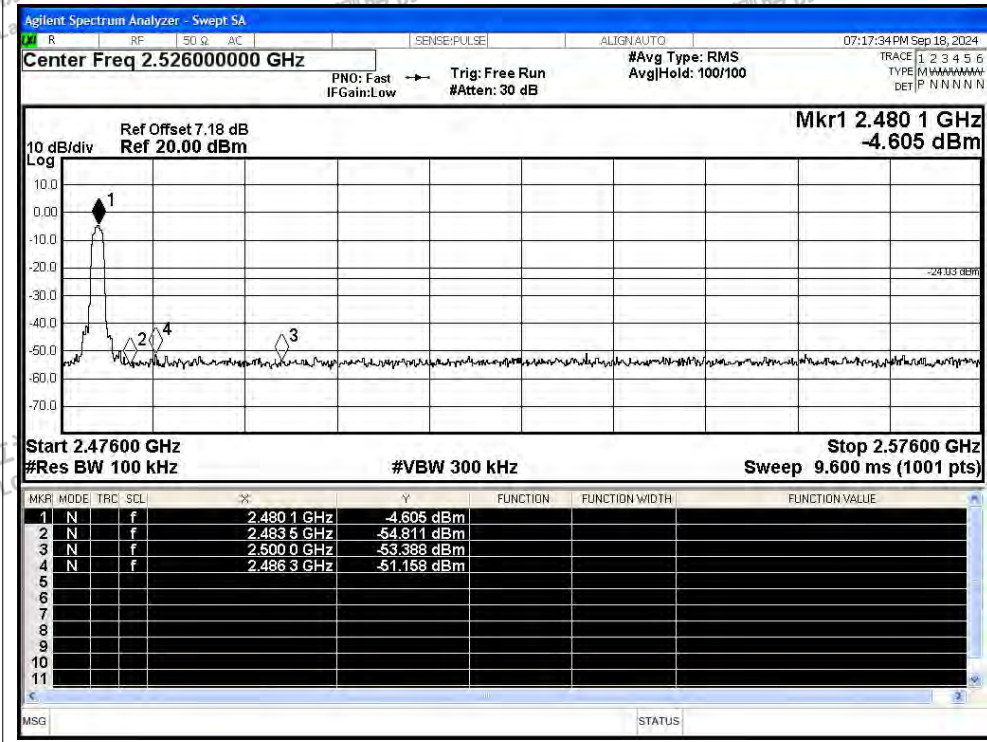




Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



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





### (Hopping)

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-51.47	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-52.02	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-51.47	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-51.98	-20	Pass



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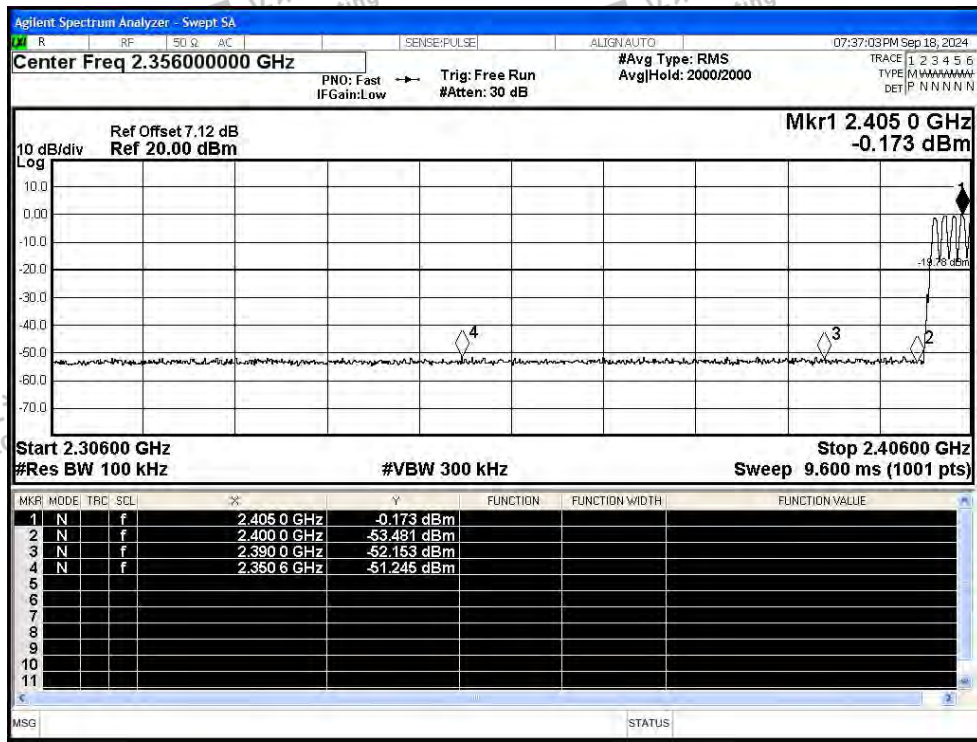


Test Graphs

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



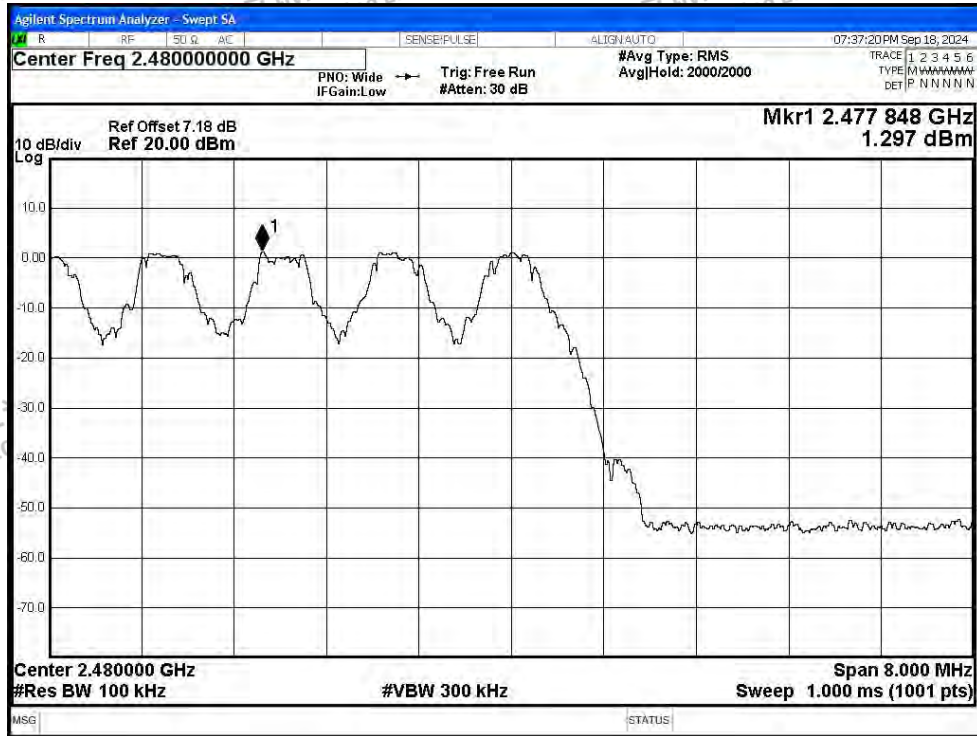
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



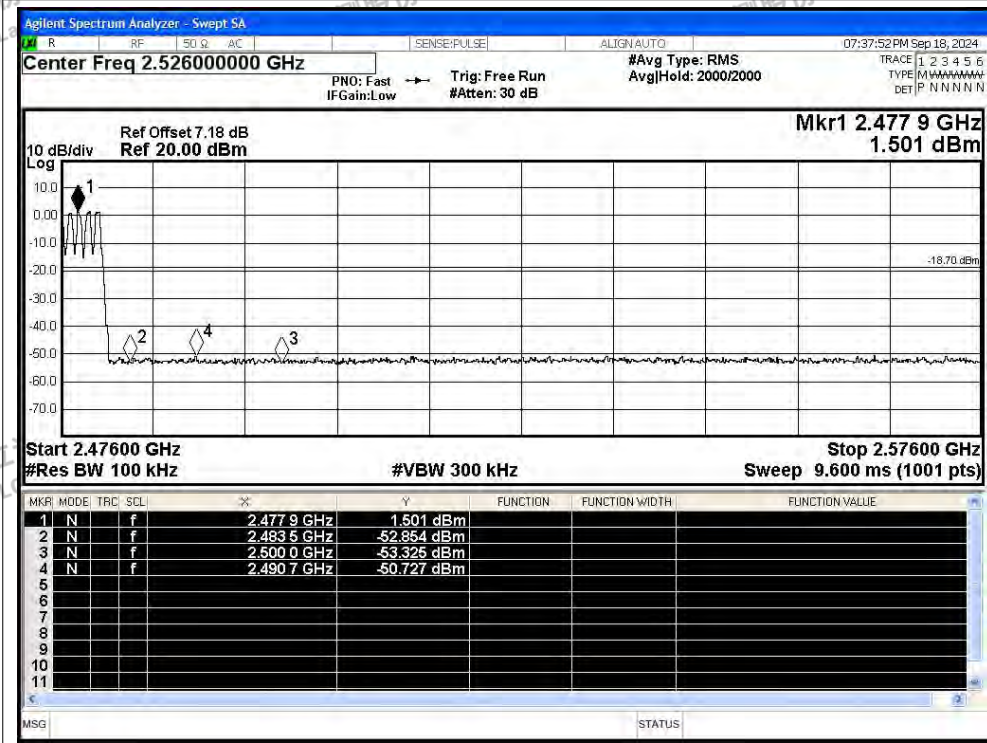




Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



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



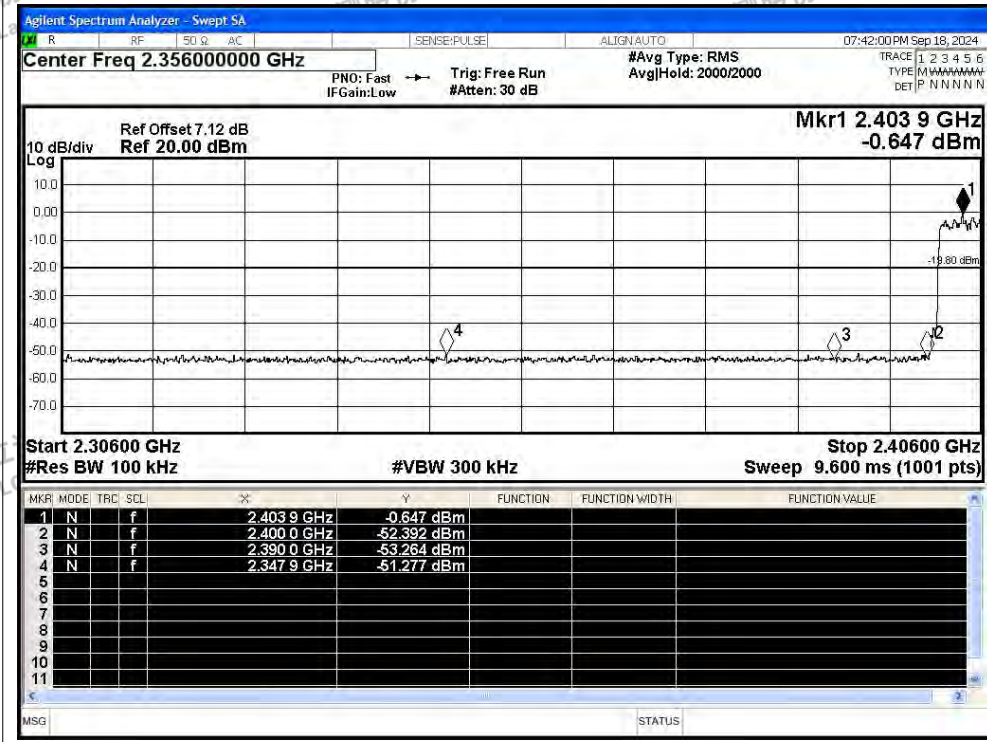




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



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

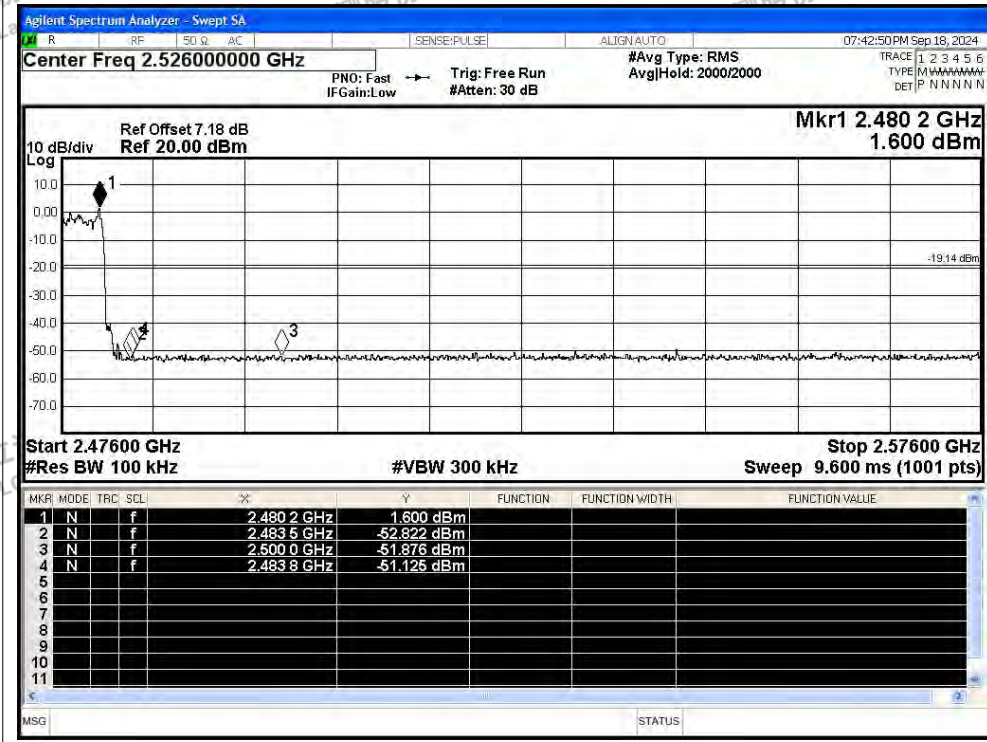




Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



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





### A.7 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-50.25	-20	Pass
NVNT	1-DH5	2441	Ant1	-50.89	-20	Pass
NVNT	1-DH5	2480	Ant1	-49.2	-20	Pass
NVNT	2-DH5	2402	Ant1	-47.93	-20	Pass
NVNT	2-DH5	2441	Ant1	-48.89	-20	Pass
NVNT	2-DH5	2480	Ant1	-47.73	-20	Pass



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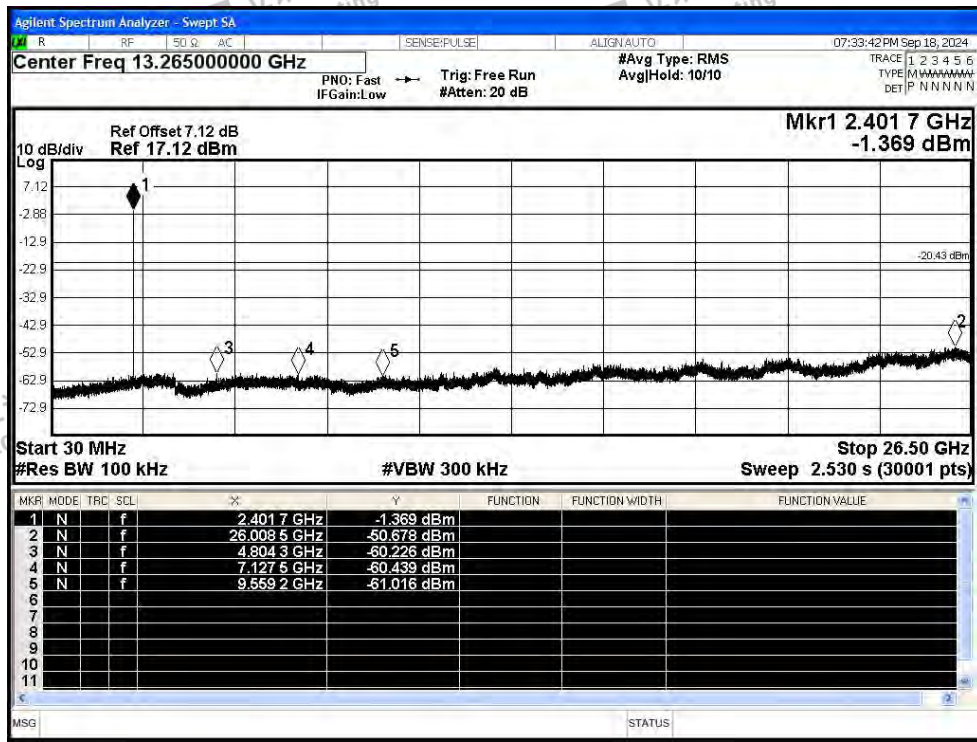


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



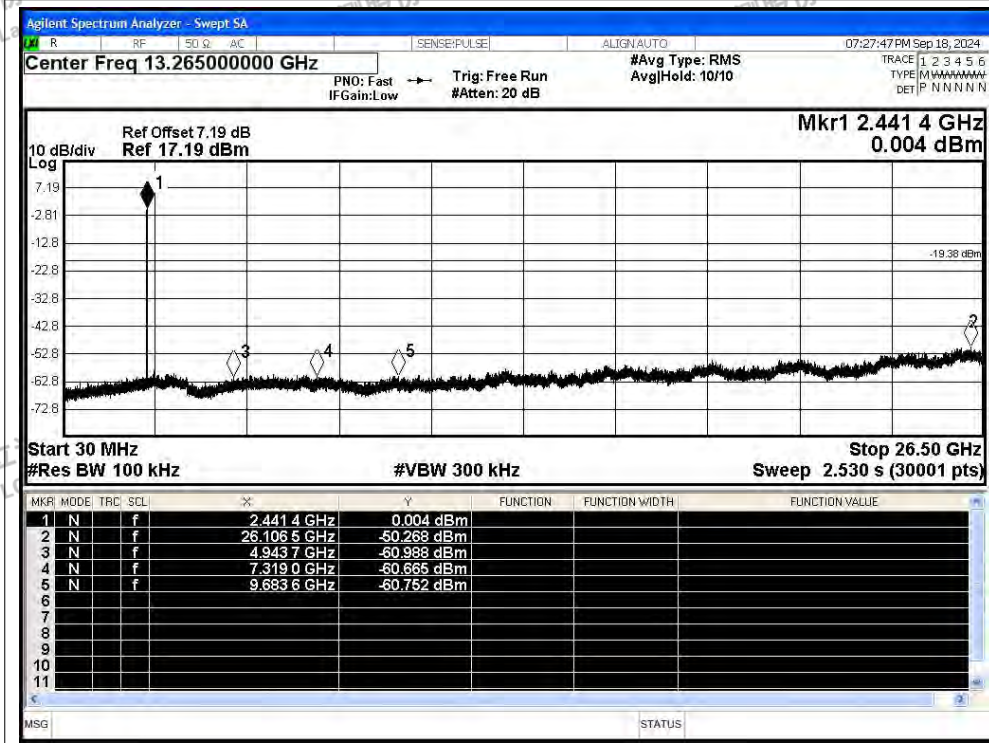




Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref

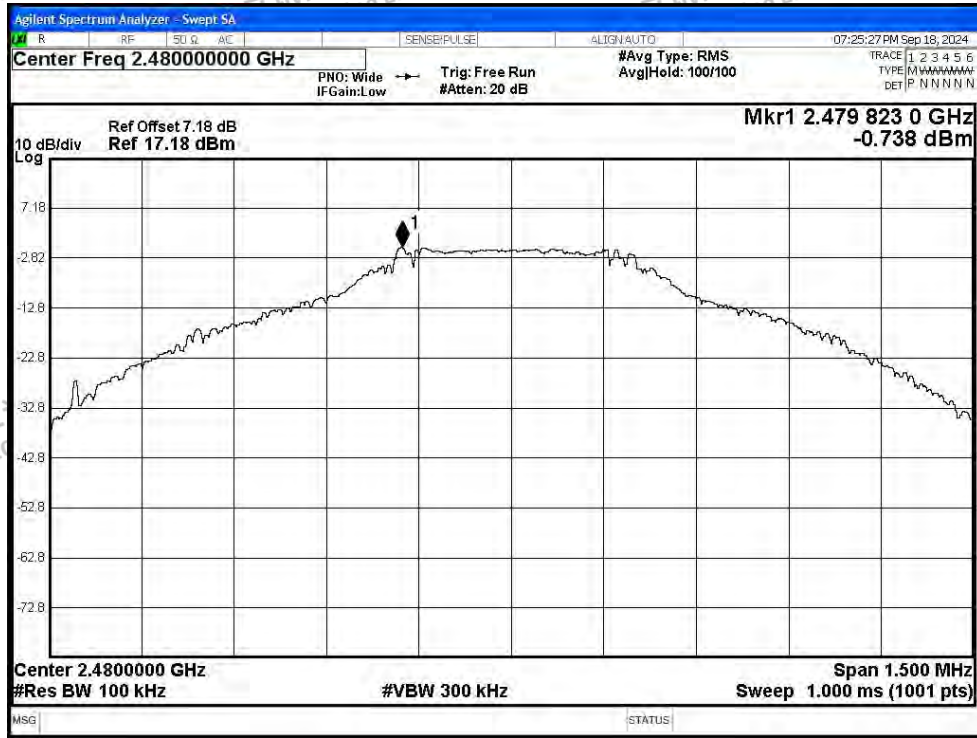


Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission

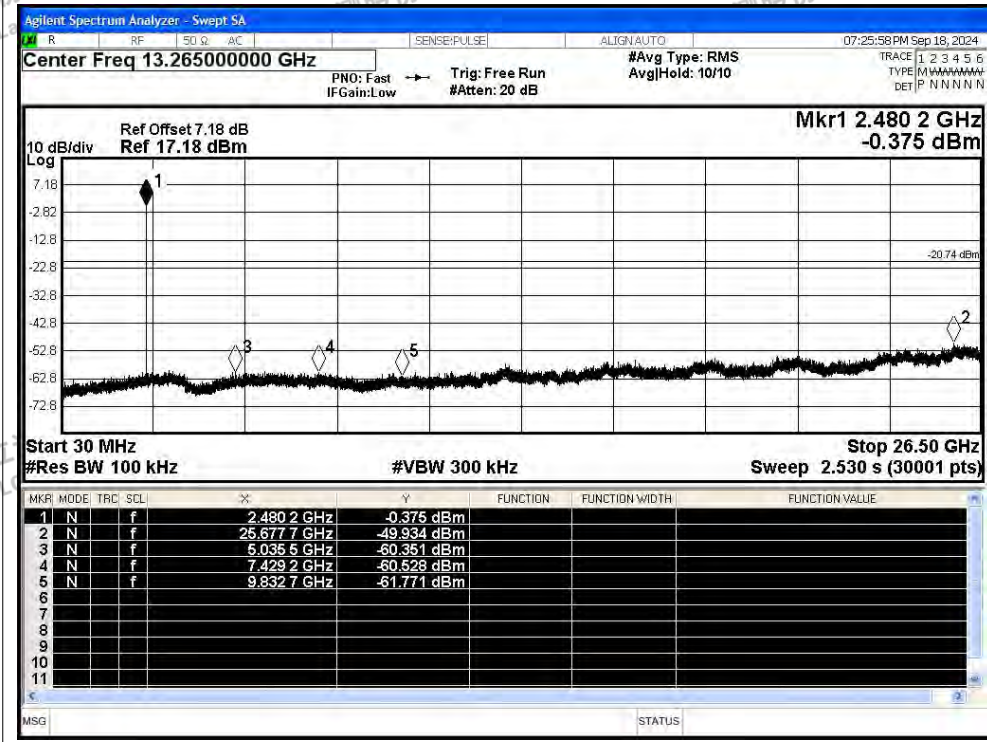




Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref

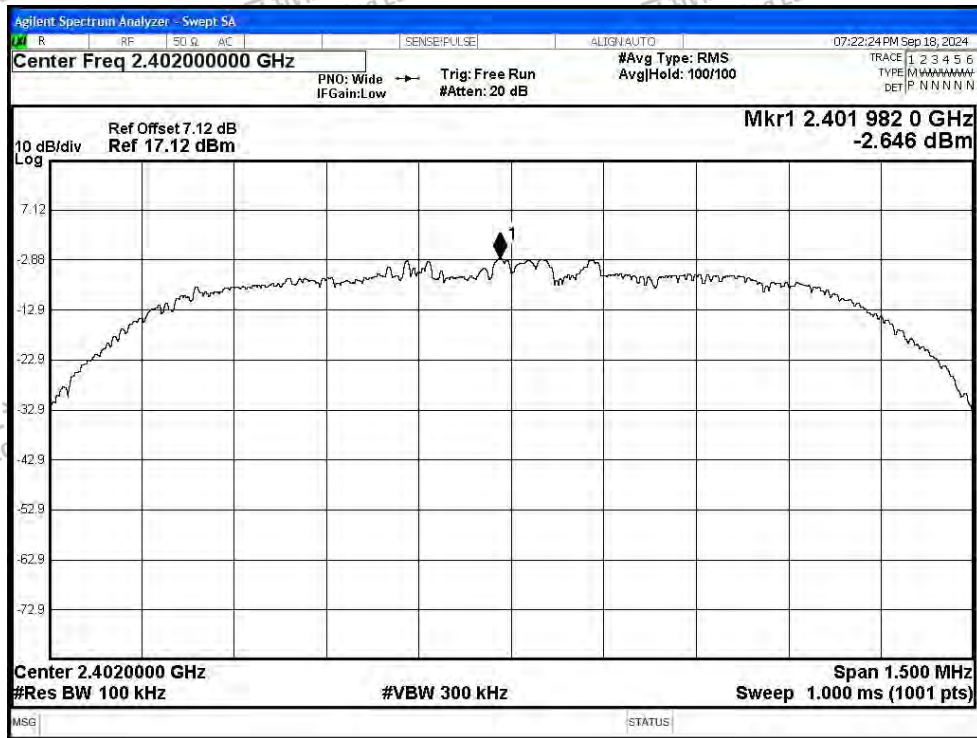


Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission

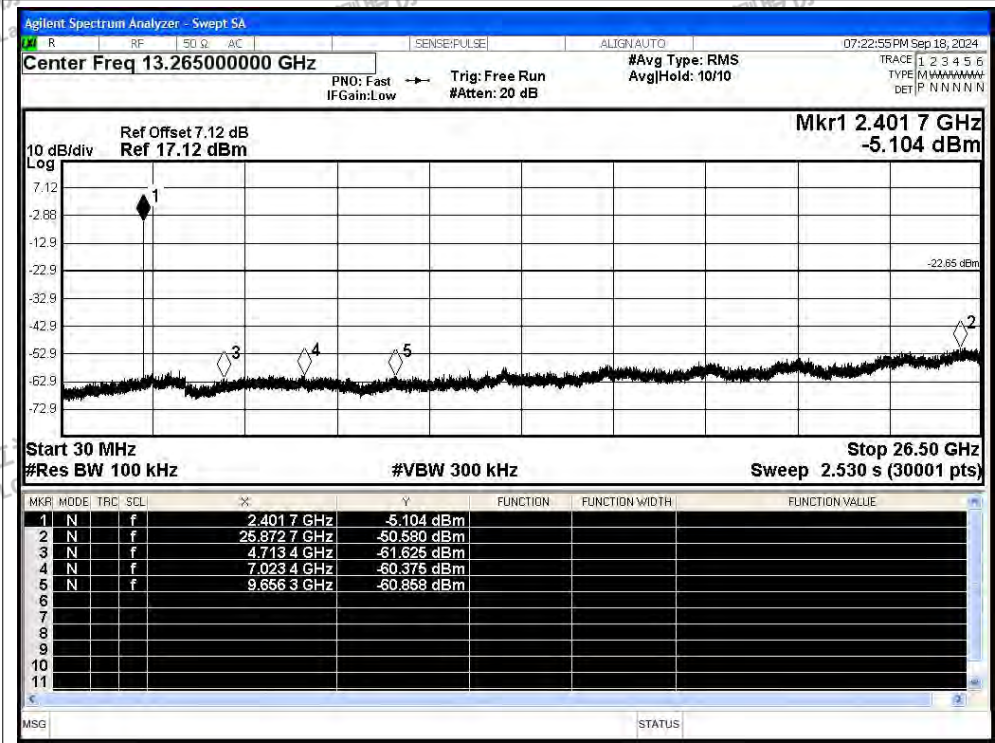




Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref



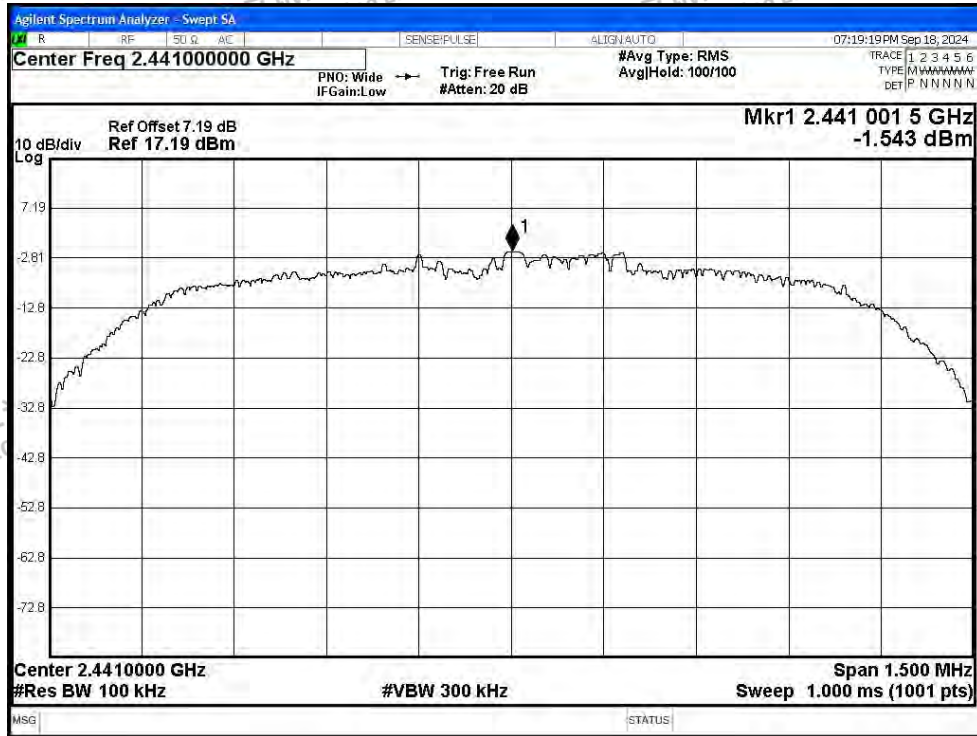
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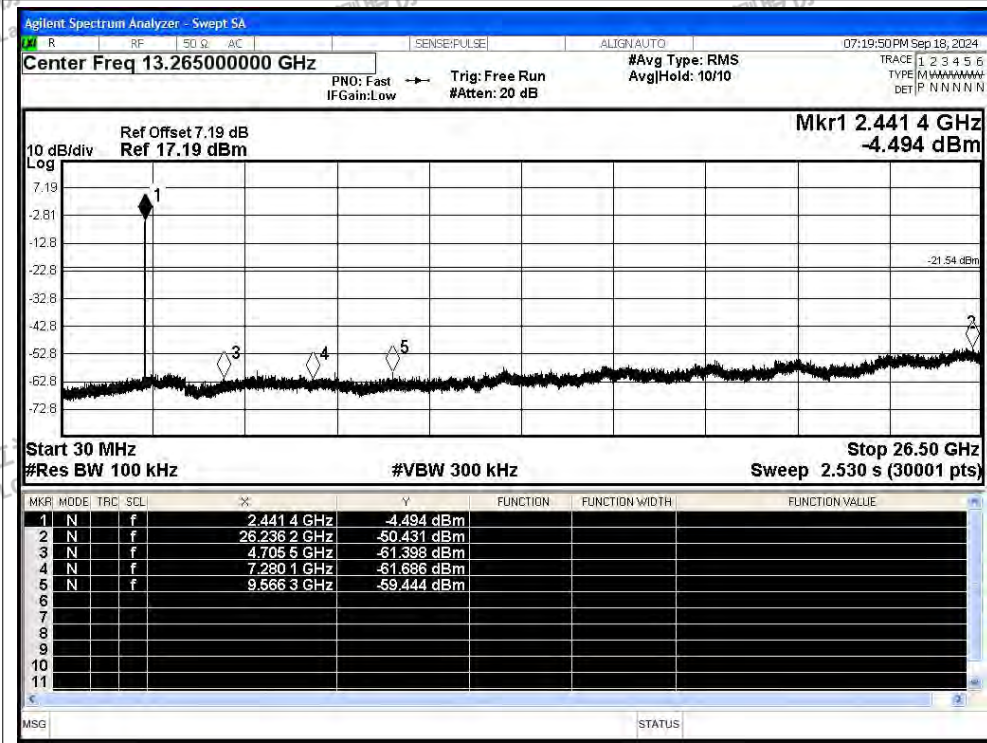




Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



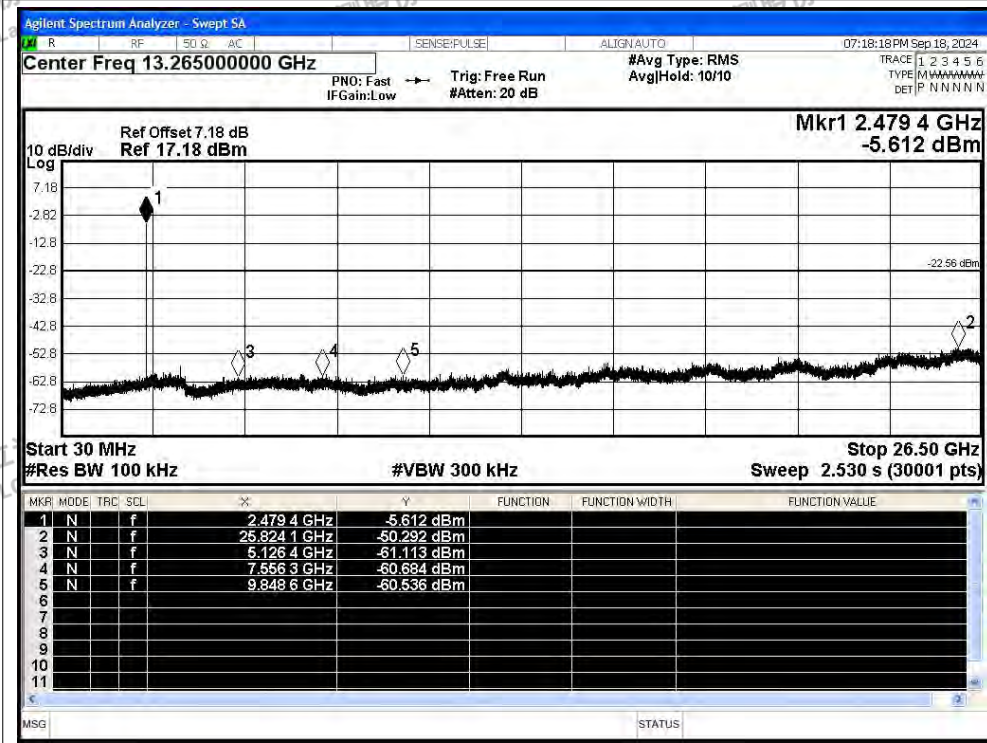




Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission





## 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	77.63	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	77.28	1.12	0.35

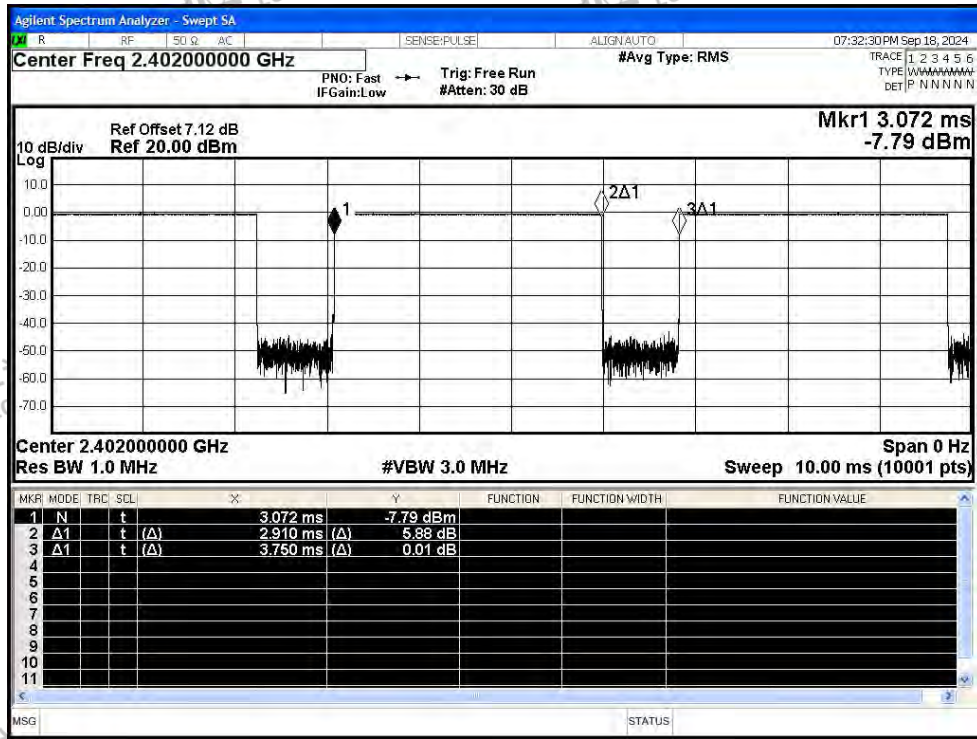


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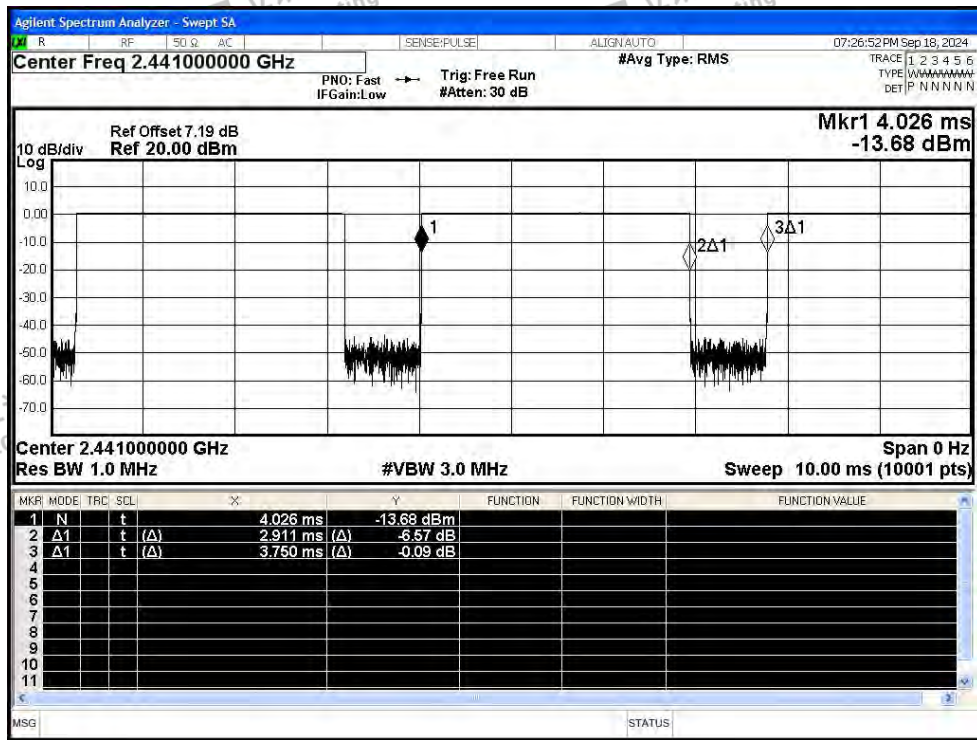


Test Graphs

Duty Cycle NVNT 1-DH5 2402MHz Ant1



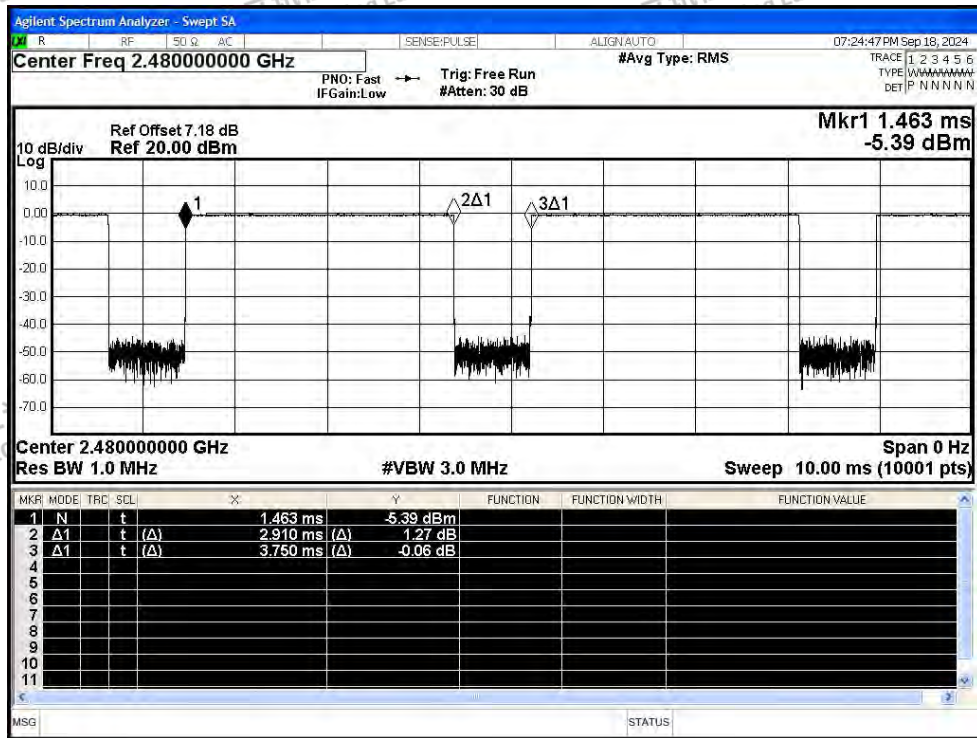
Duty Cycle NVNT 1-DH5 2441MHz Ant1



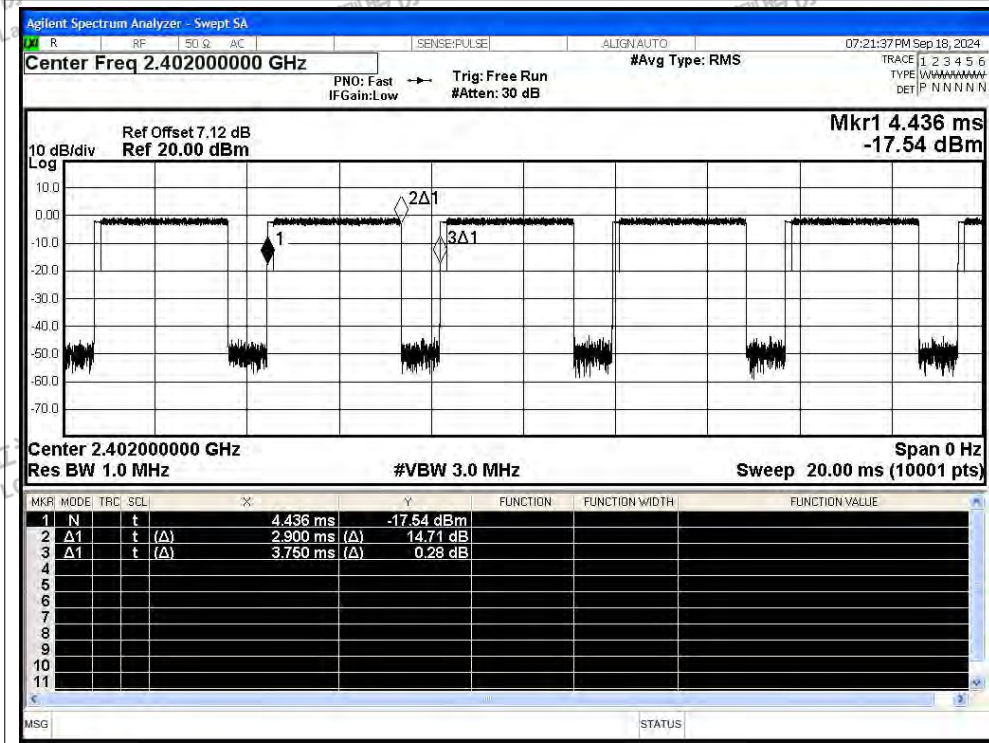




Duty Cycle NVNT 1-DH5 2480MHz Ant1



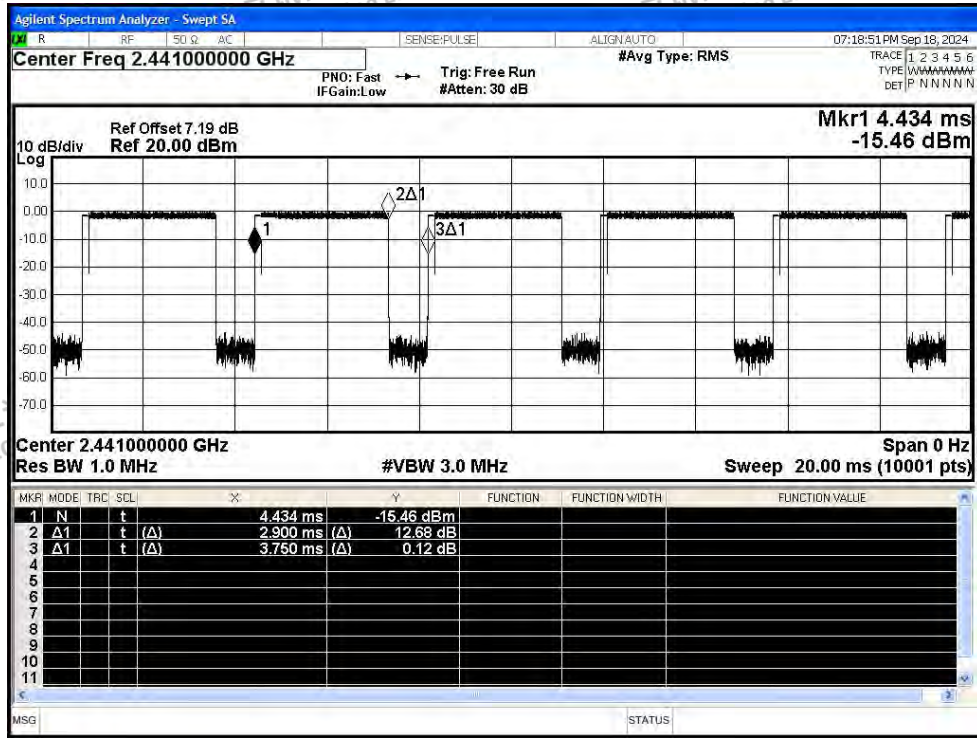
Duty Cycle NVNT 2-DH5 2402MHz Ant1



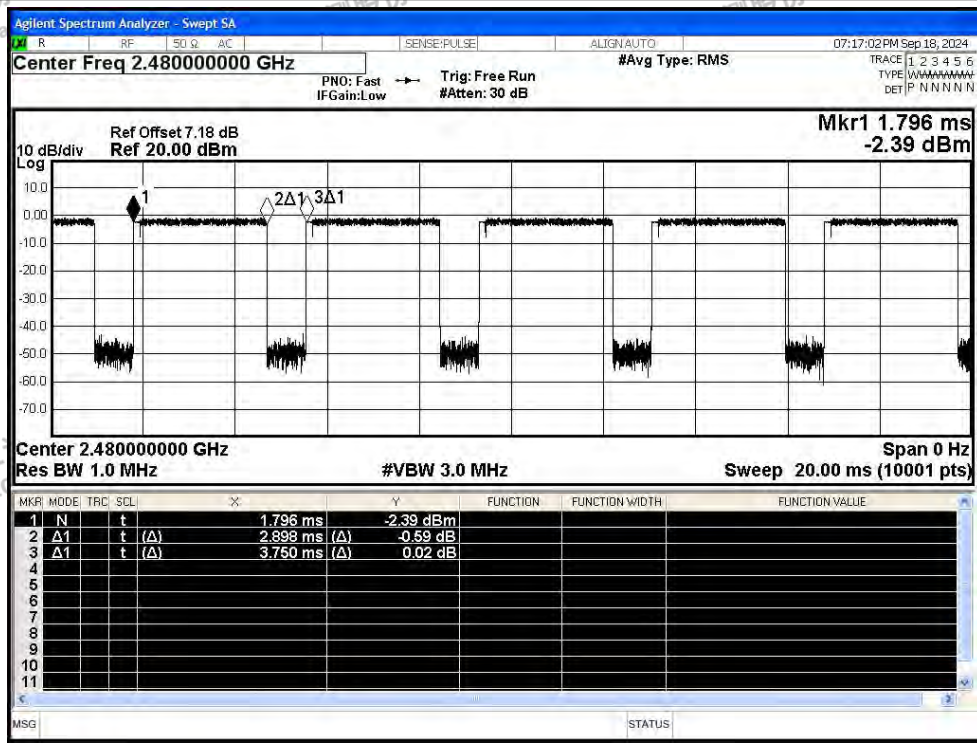




Duty Cycle NVNT 2-DH5 2441MHz Ant1



Duty Cycle NVNT 2-DH5 2480MHz Ant1





### 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	-44.24	2.0	-	53.02	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-54.14	2.0	1.1	44.22	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2377.584	-42.41	2.0	-	54.85	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2386.416	-52.68	2.0	1.1	45.68	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-45.37	2.0	-	51.89	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-53.68	2.0	1.1	44.68	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-45.03	2.0	-	52.23	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-52.94	2.0	1.1	45.42	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2499.448	-41.86	2.0	-	55.40	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2496.52	-52.01	2.0	1.1	46.35	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-43.99	2.0	-	53.27	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-53.23	2.0	1.1	45.13	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-45.78	2.0	-	51.48	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-53.25	2.0	1.12	45.13	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2384.4	-42.62	2.0	-	54.64	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2389.776	-52.59	2.0	1.12	45.79	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-45.61	2.0	-	51.65	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-53.52	2.0	1.12	44.86	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-46.04	2.0	-	51.22	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-52.89	2.0	1.12	45.49	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.992	-41.78	2.0	-	55.48	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2496.16	-52.12	2.0	1.12	46.26	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-45.4	2.0	-	51.86	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-53.33	2.0	1.12	45.05	Average	54	Pass

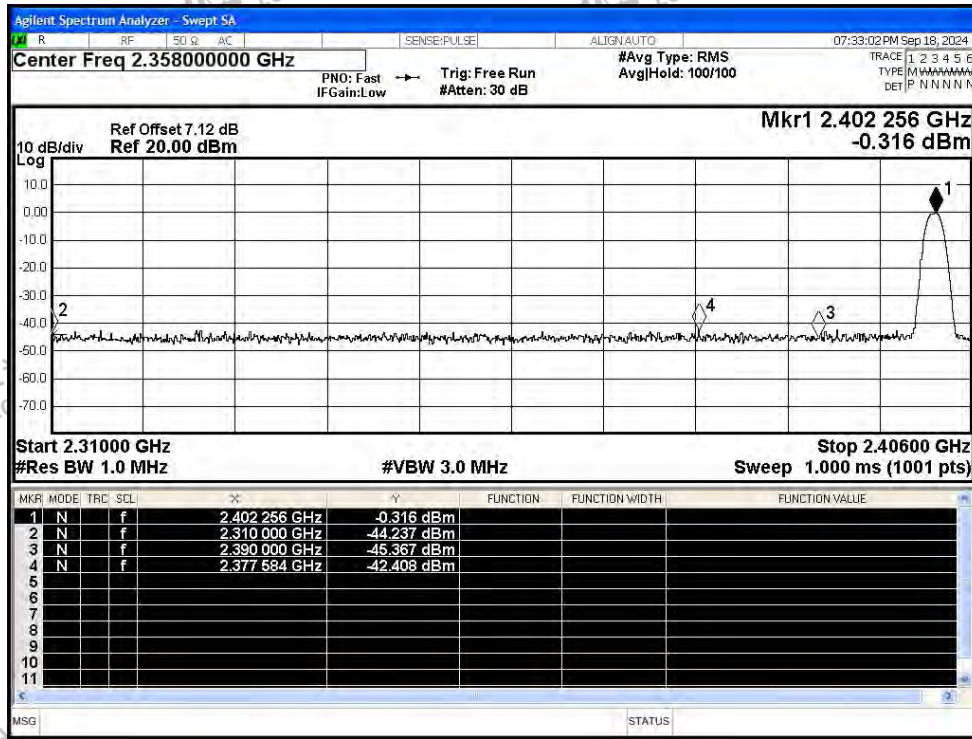


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 Scan code to check authenticity

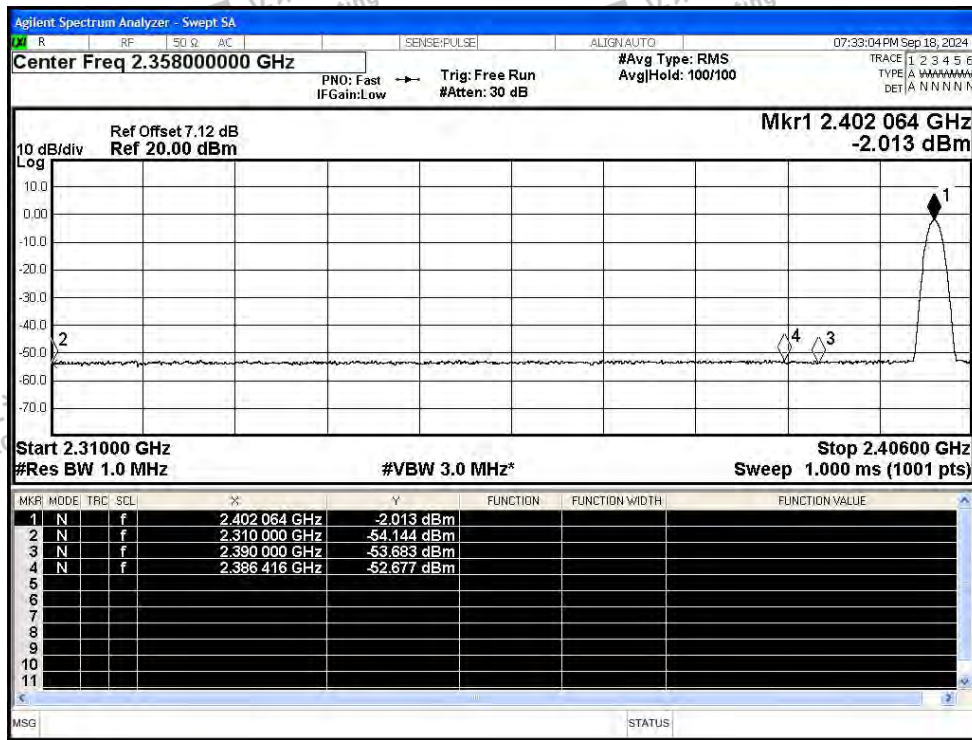


Test Graphs

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



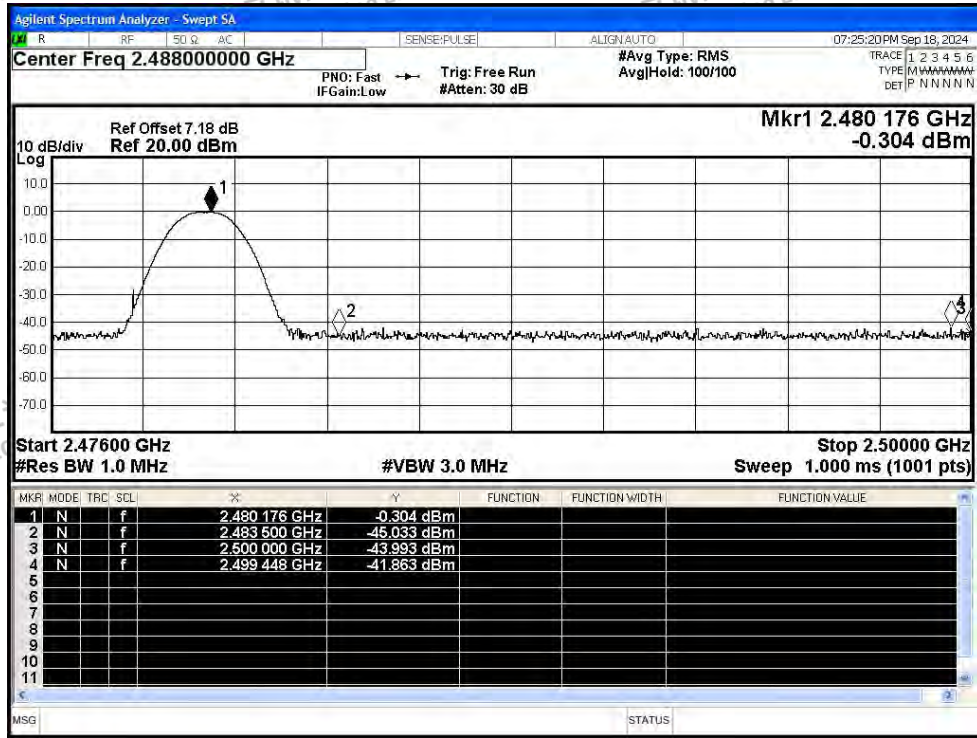
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



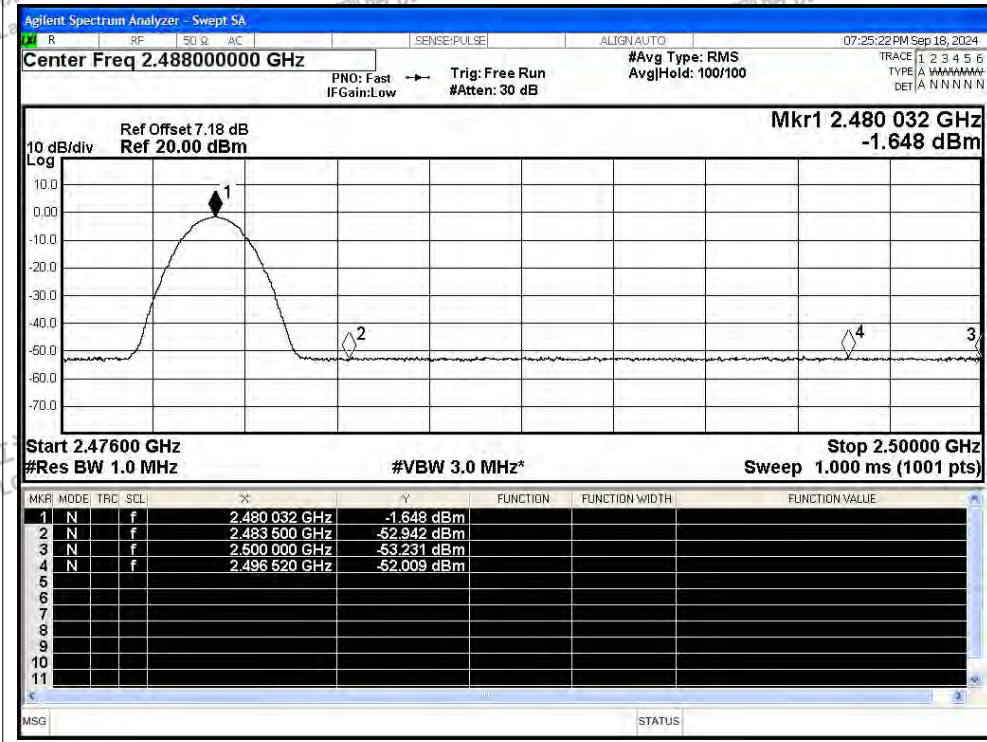




Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



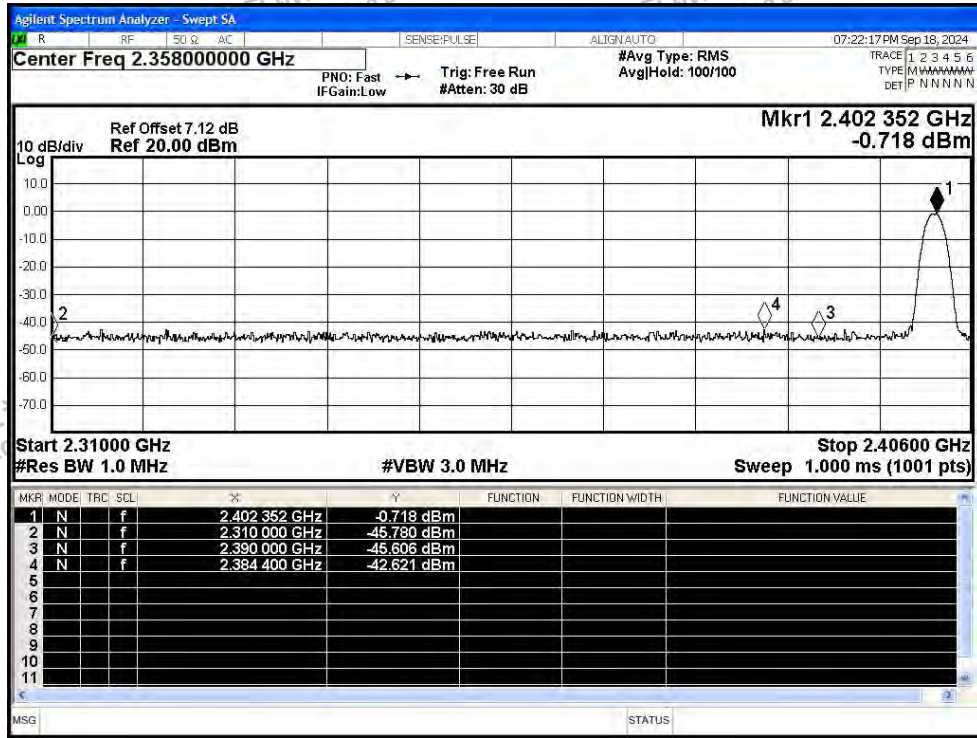
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



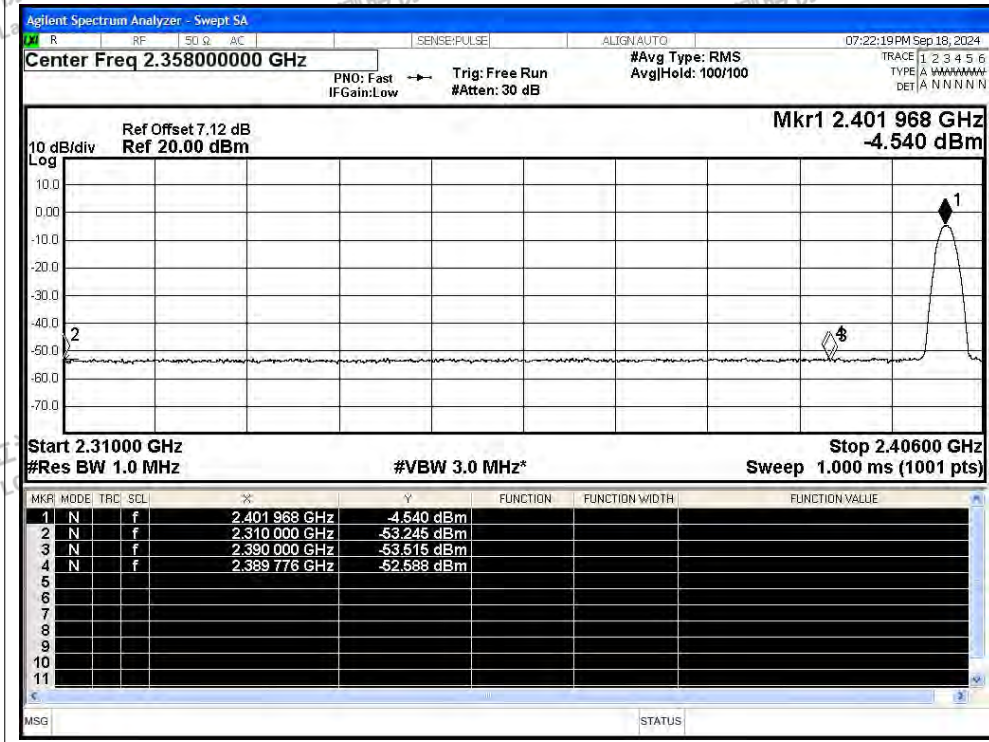




Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak

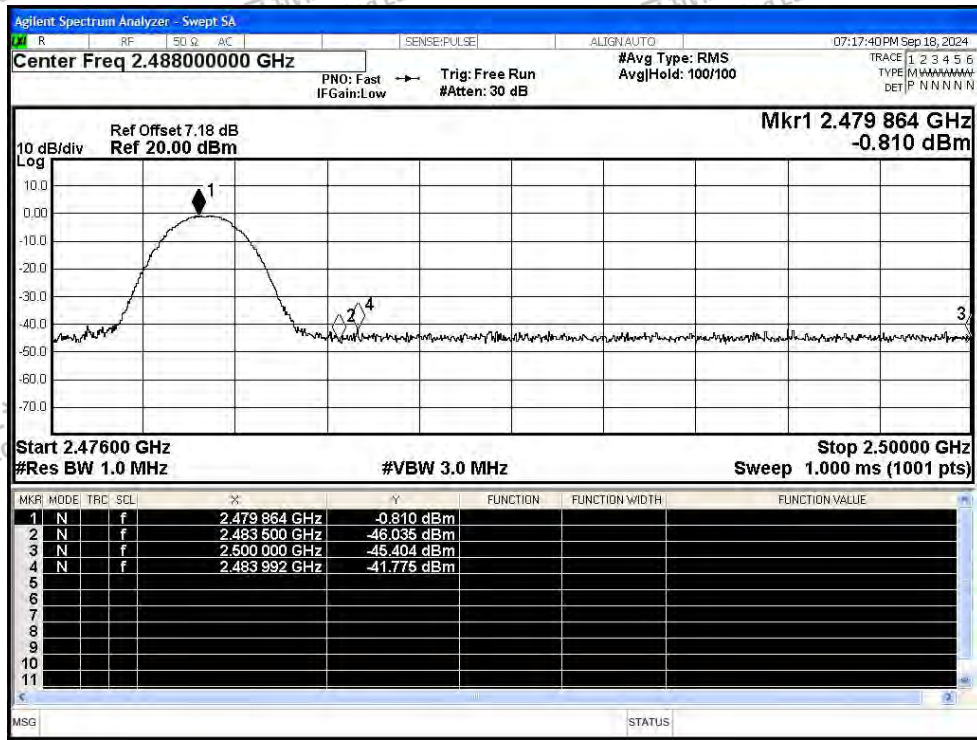


Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average





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



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

