



# Appendix A

## RF Test Data for BT (Conducted Measurement)

Product Name: Pepper C1 RFID Module

Test Model: v2

### Environmental Conditions

Temperature:	23.1° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Nick Peng
	<i>Nick Peng</i>
Supervised by:	Ling Zhu
	<i>Ling Zhu</i>





### A.1 -20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	0.962	N/A	Pass
NVNT	1-DH5	2441	Ant1	1.024	N/A	Pass
NVNT	1-DH5	2480	Ant1	1.008	N/A	Pass
NVNT	2-DH5	2402	Ant1	1.284	N/A	Pass
NVNT	2-DH5	2441	Ant1	1.313	N/A	Pass
NVNT	2-DH5	2480	Ant1	1.282	N/A	Pass
NVNT	3-DH5	2402	Ant1	1.277	N/A	Pass
NVNT	3-DH5	2441	Ant1	1.315	N/A	Pass
NVNT	3-DH5	2480	Ant1	1.275	N/A	Pass

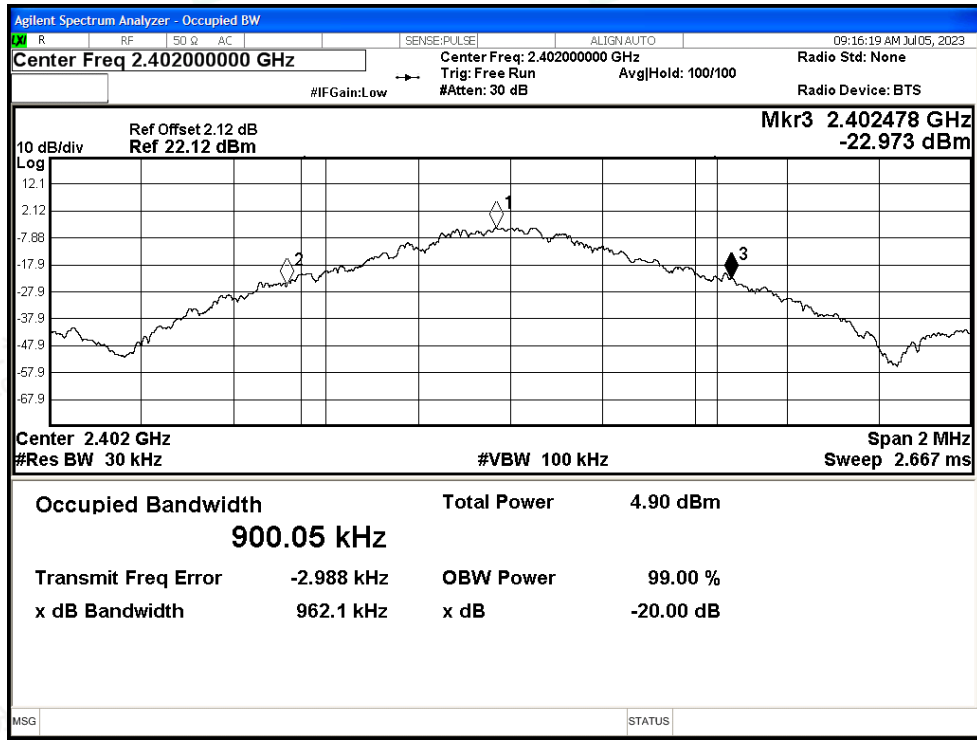


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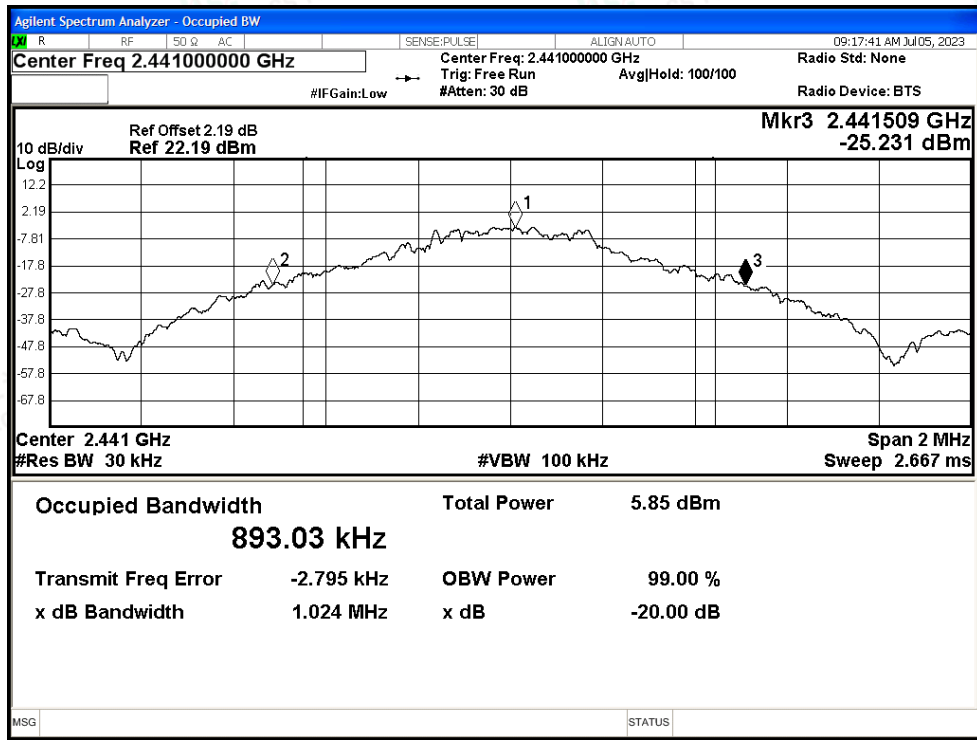


Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1

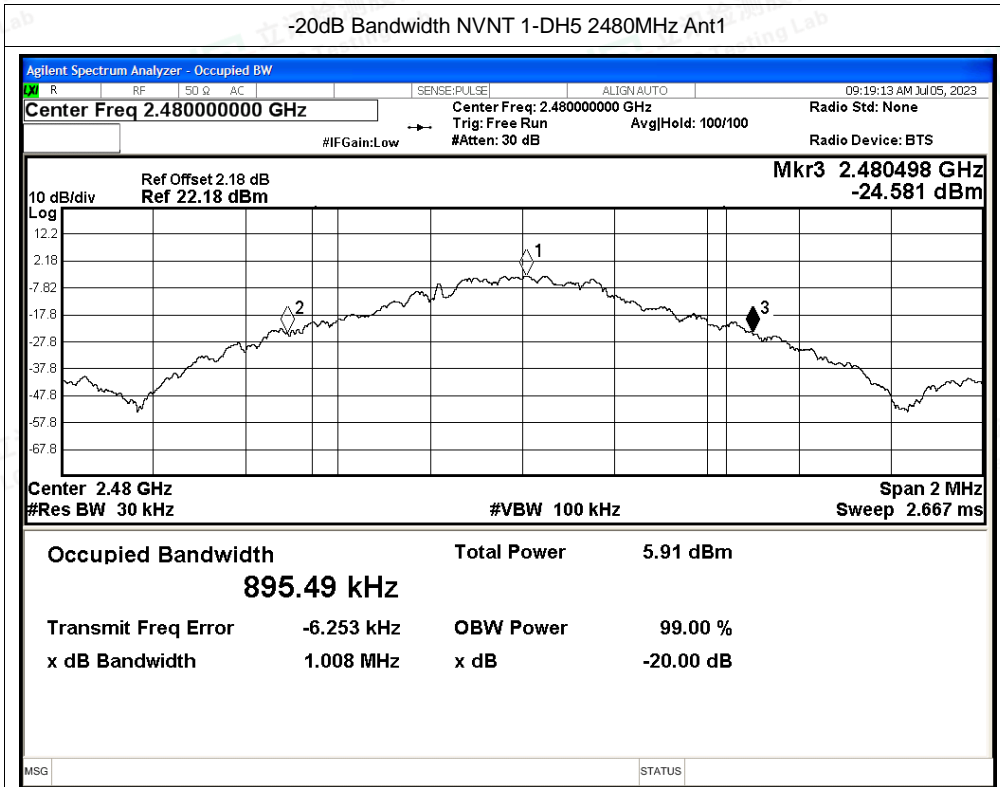


-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1

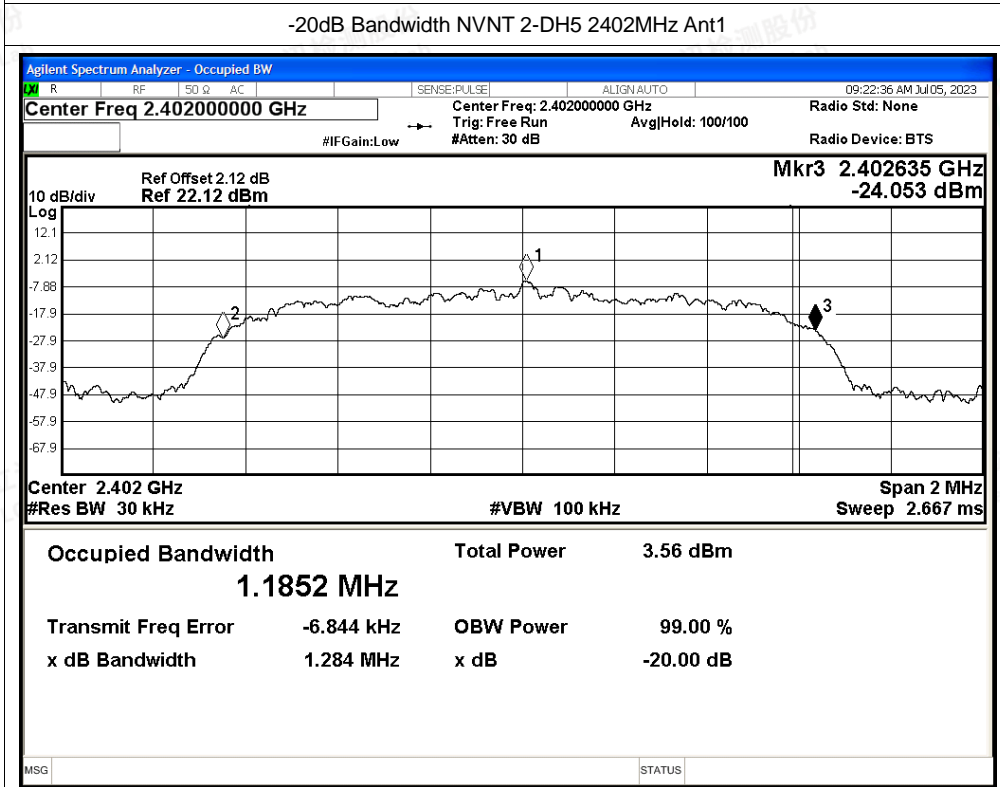




-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1

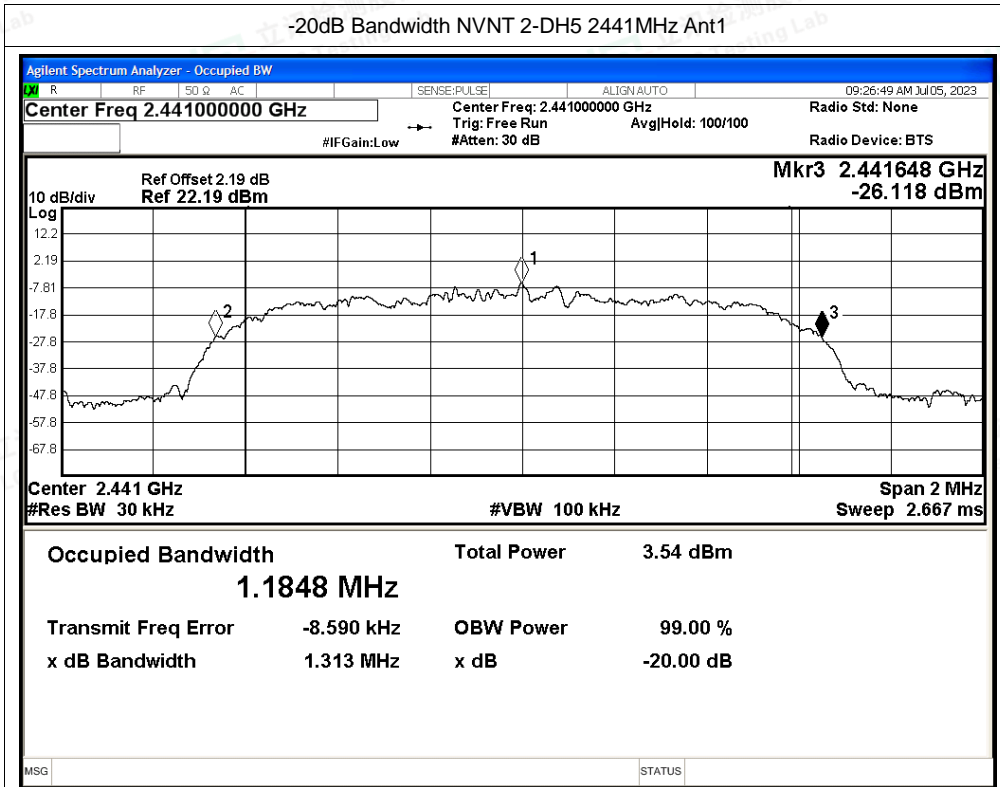


-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1

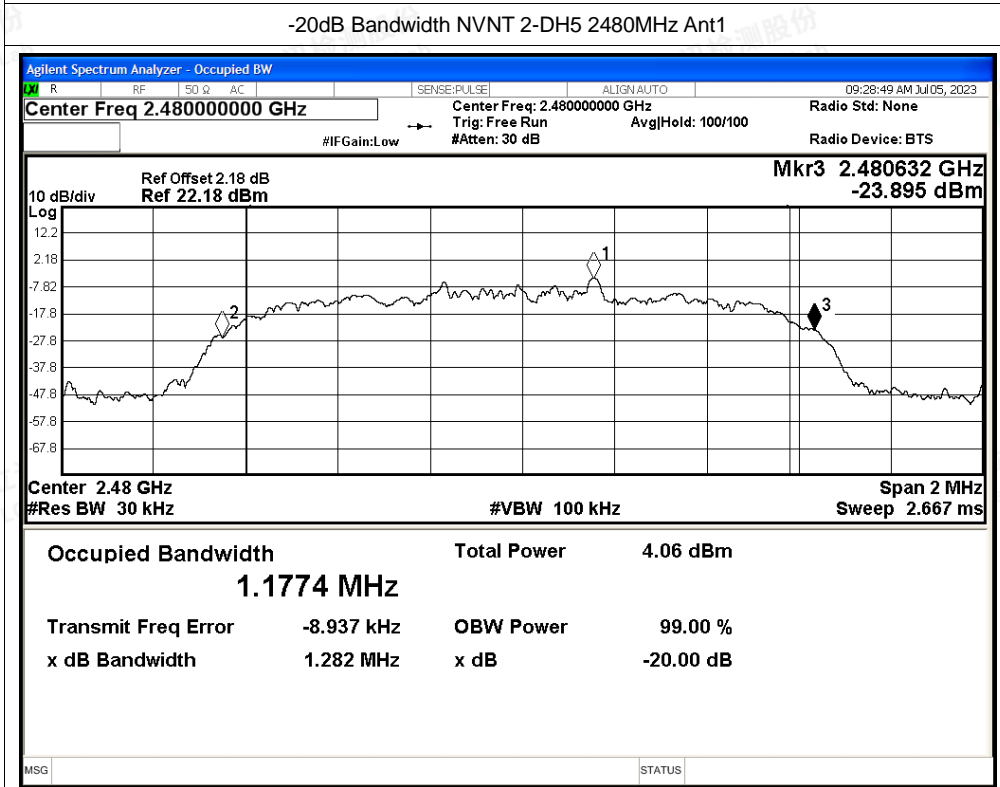




-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1

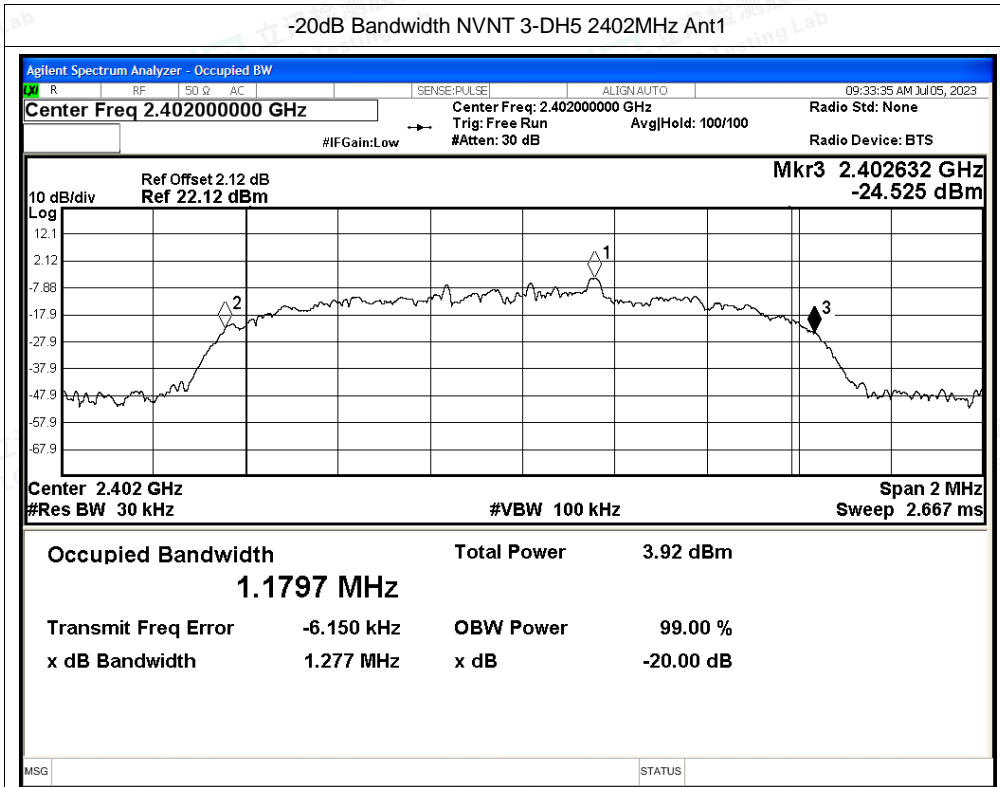


-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1

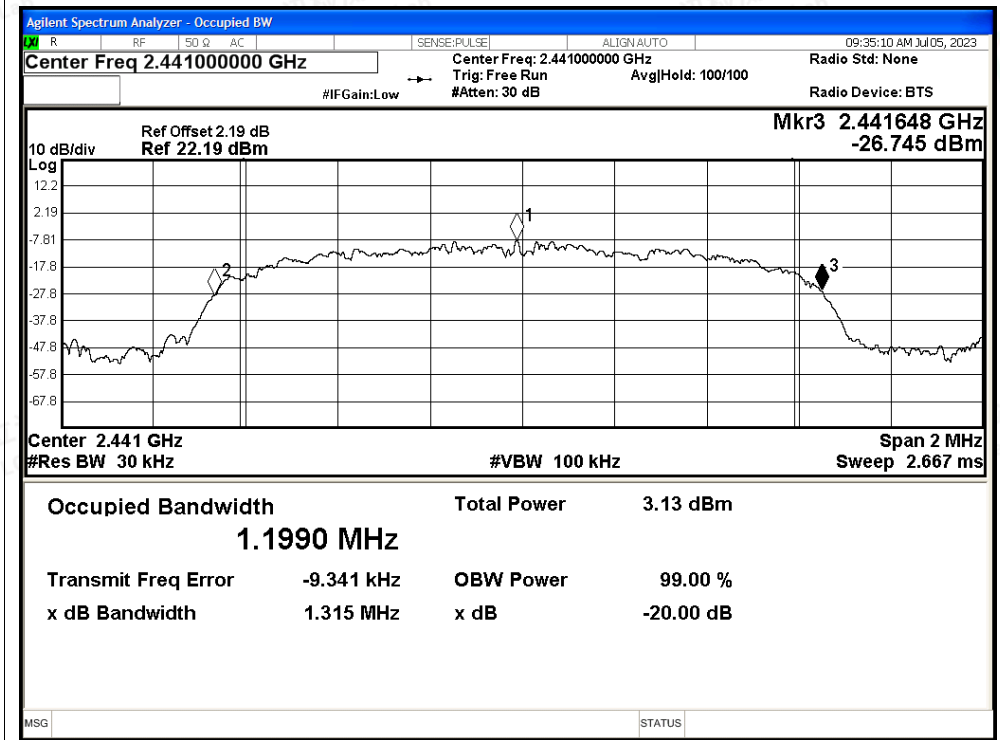




-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1

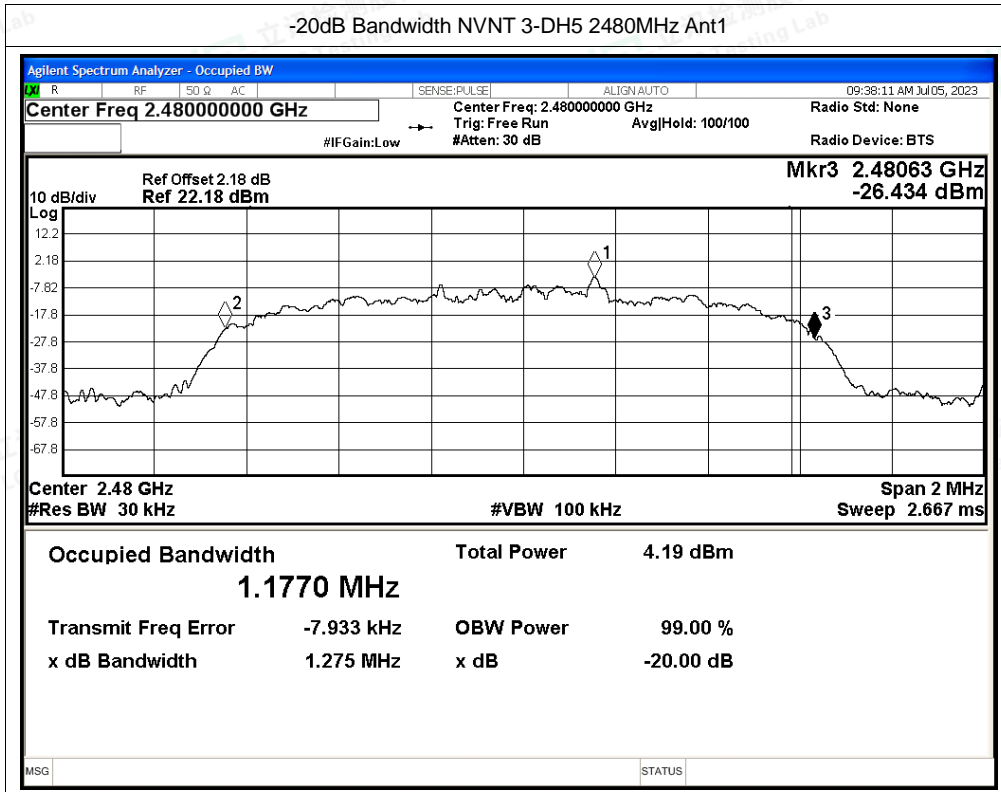


-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1





-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1





## A.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	-1.12	21	Pass
NVNT	1-DH5	2441	Ant1	-0.51	21	Pass
NVNT	1-DH5	2480	Ant1	-0.47	21	Pass
NVNT	2-DH5	2402	Ant1	-0.96	21	Pass
NVNT	2-DH5	2441	Ant1	-0.78	21	Pass
NVNT	2-DH5	2480	Ant1	-0.66	21	Pass
NVNT	3-DH5	2402	Ant1	-0.85	21	Pass
NVNT	3-DH5	2441	Ant1	-0.68	21	Pass
NVNT	3-DH5	2480	Ant1	-0.66	21	Pass



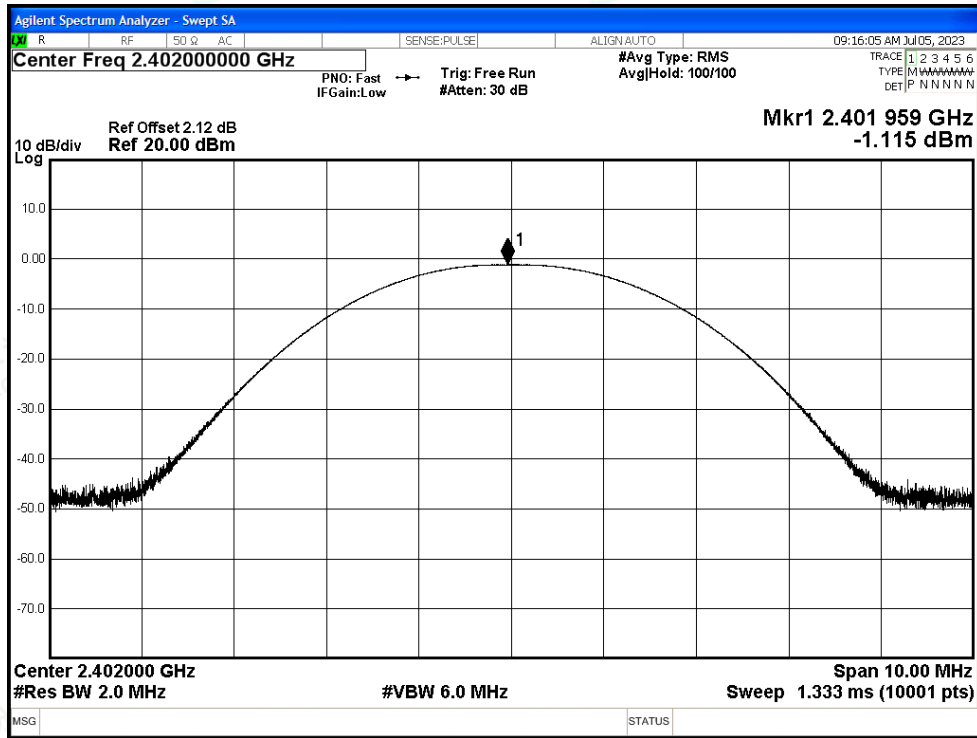
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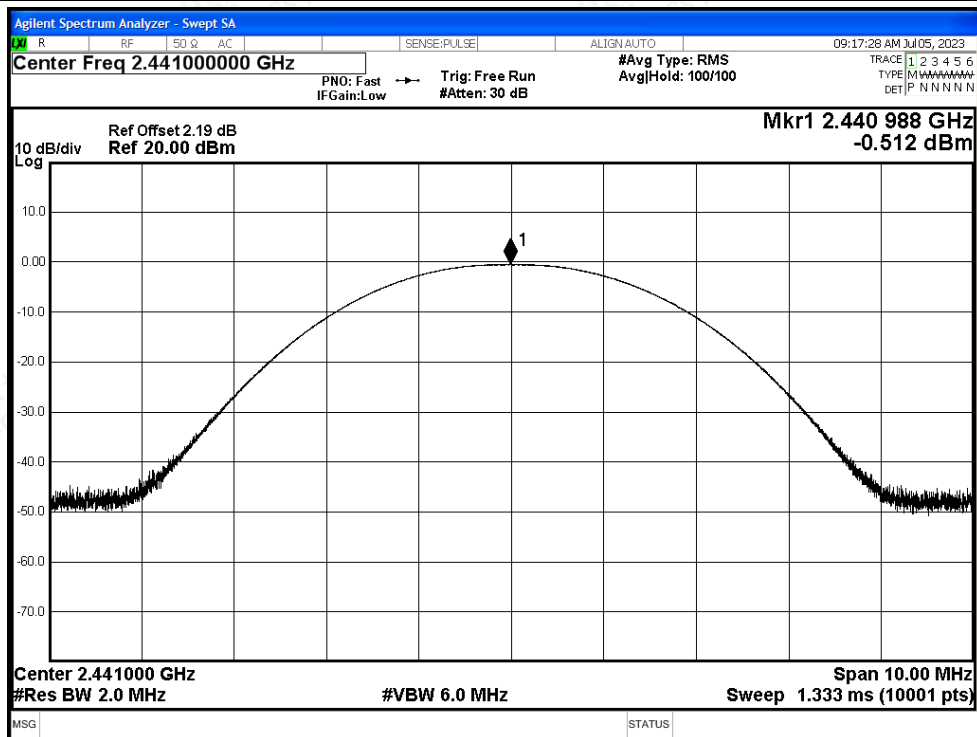


Test Graphs

Power NVNT 1-DH5 2402MHz Ant1

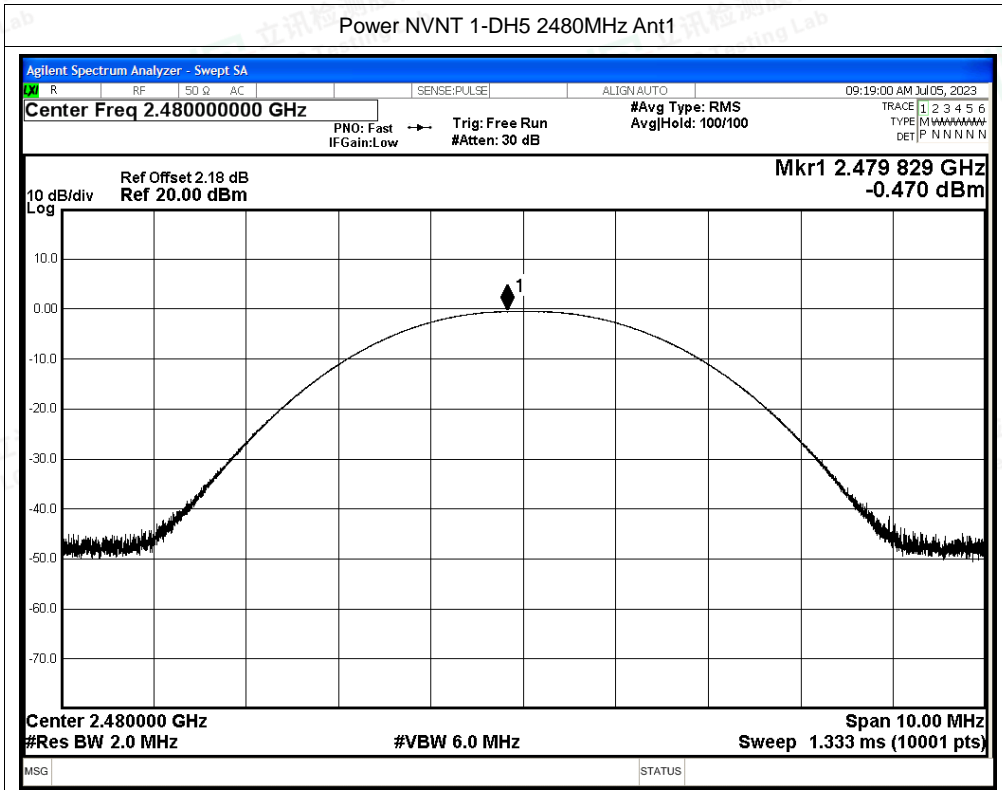


Power NVNT 1-DH5 2441MHz Ant1

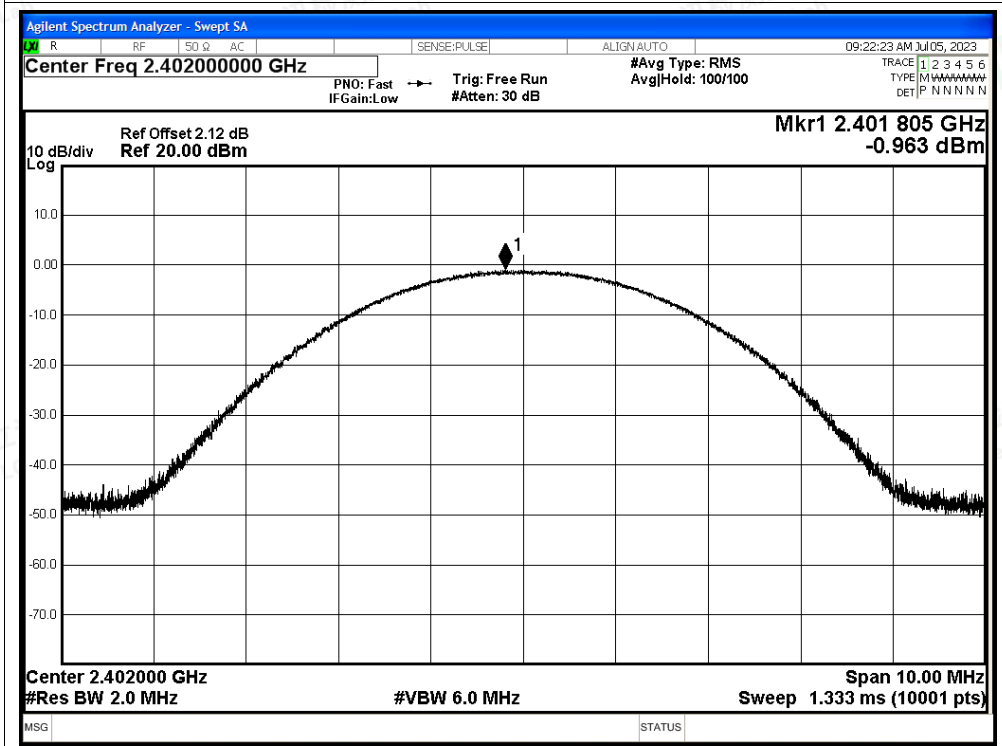




Power NVNT 1-DH5 2480MHz Ant1

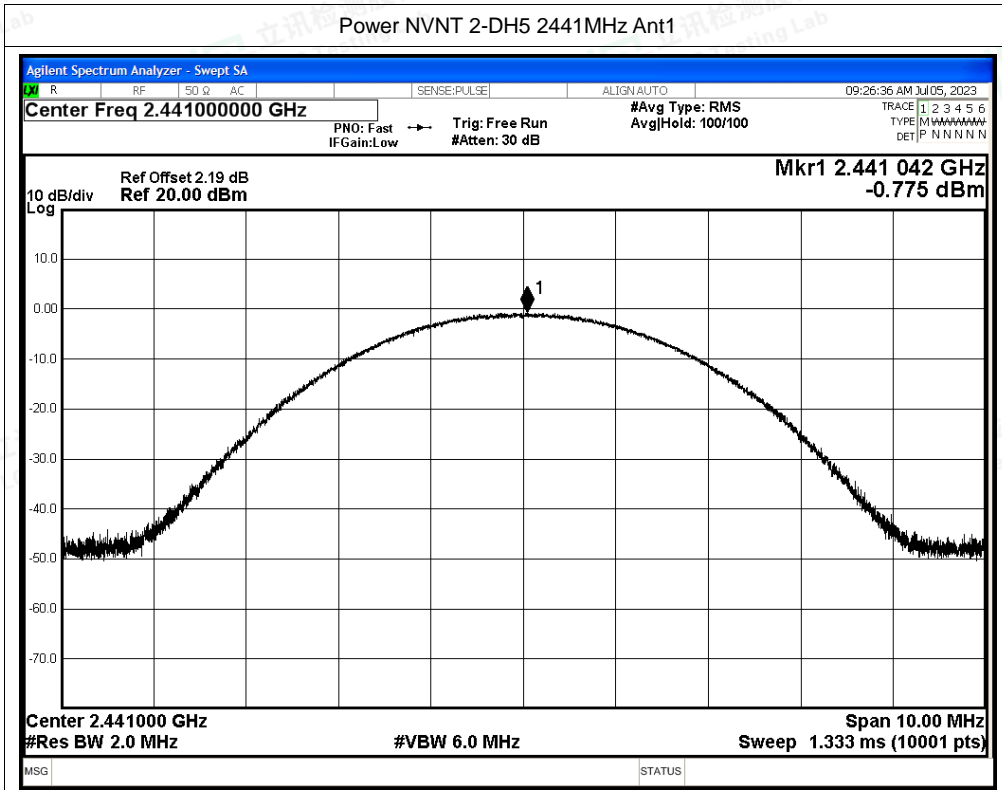


Power NVNT 2-DH5 2402MHz Ant1

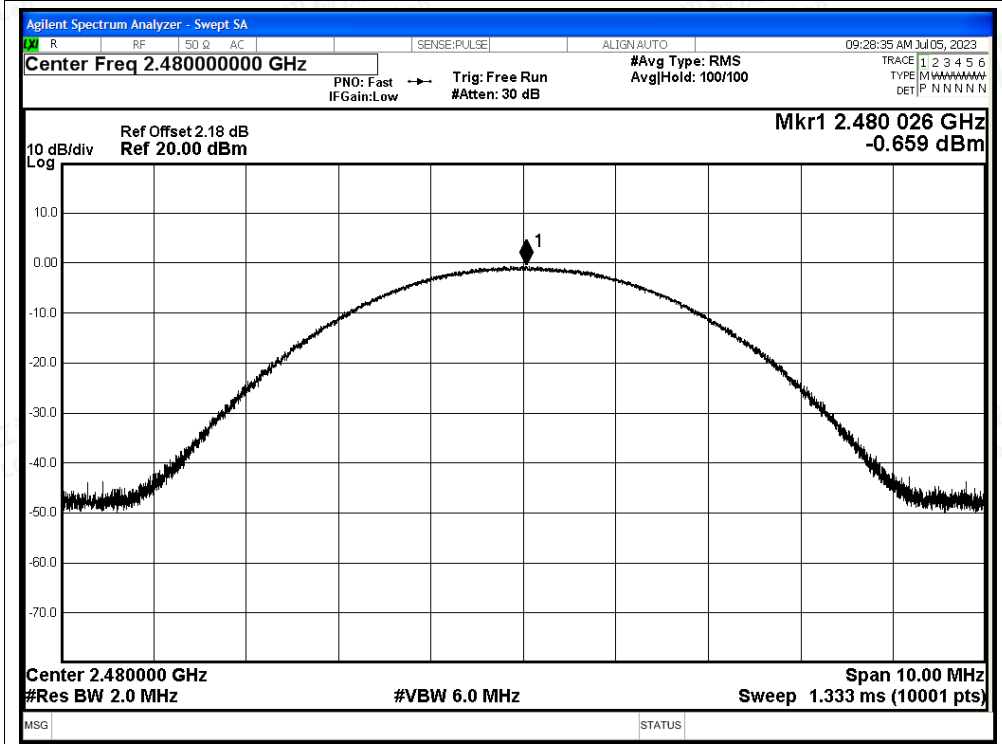




Power NVNT 2-DH5 2441MHz Ant1

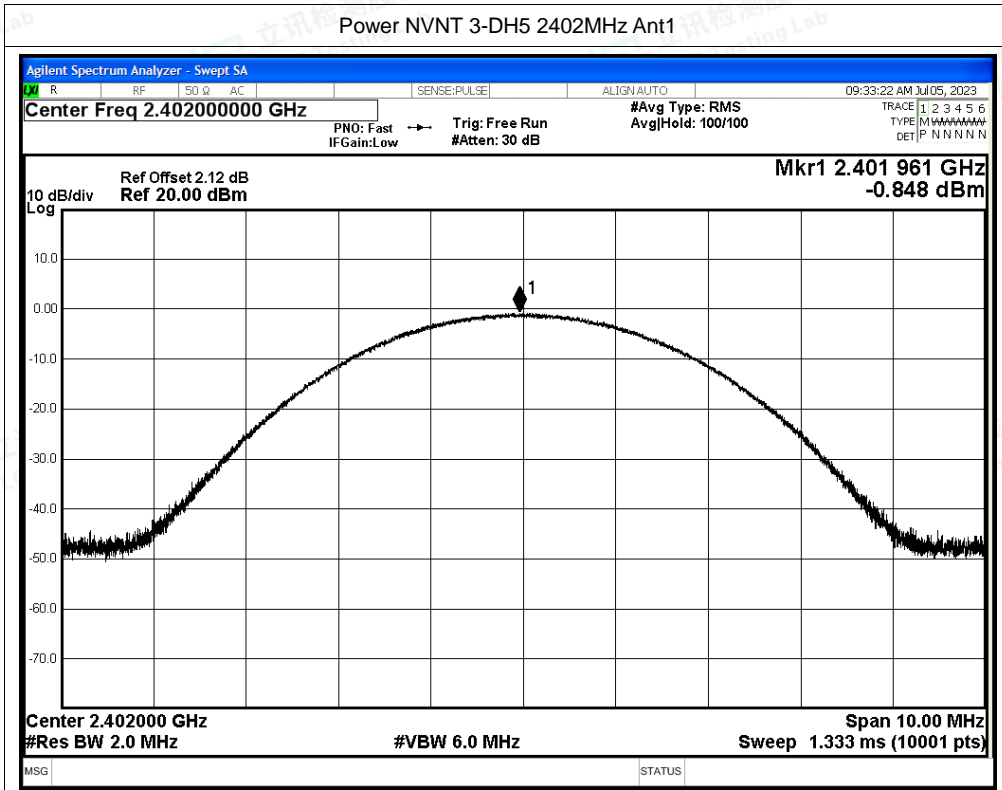


Power NVNT 2-DH5 2480MHz Ant1

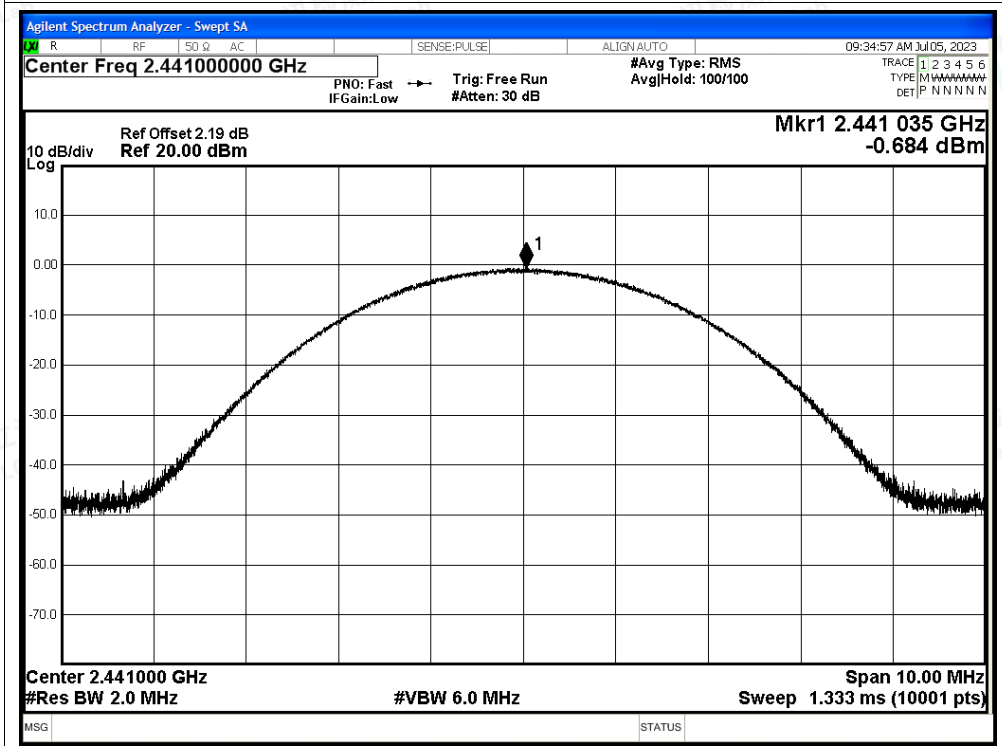


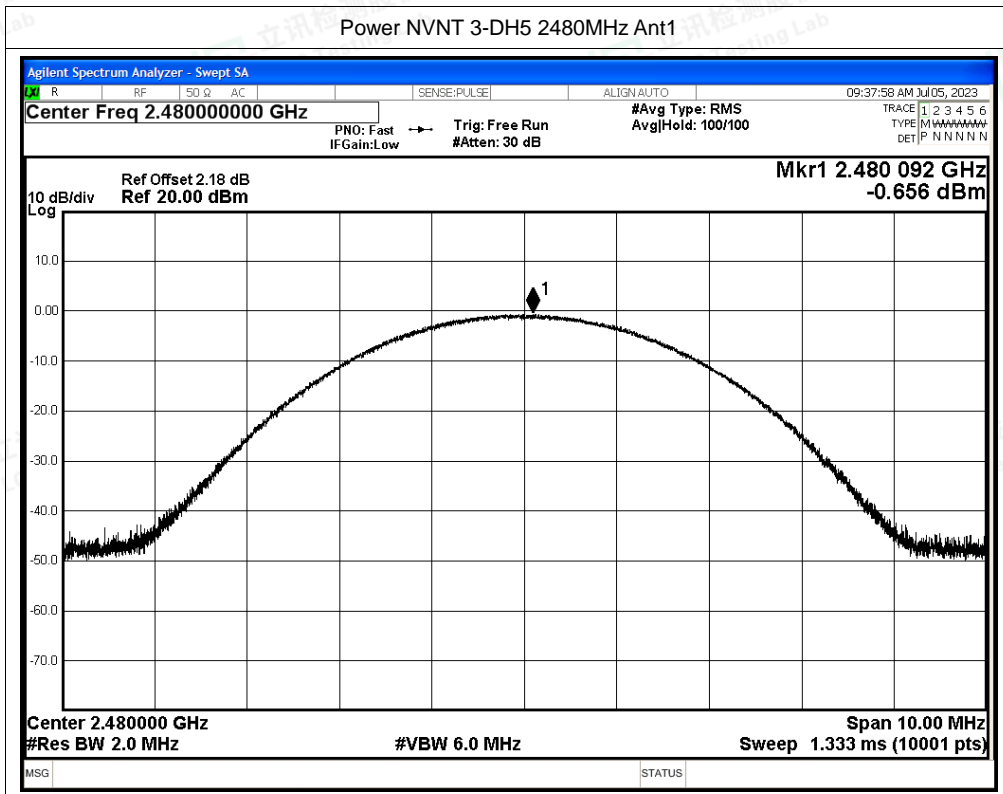


Power NVNT 3-DH5 2402MHz Ant1



Power NVNT 3-DH5 2441MHz Ant1





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### A.3 Carrier Frequencies Separation

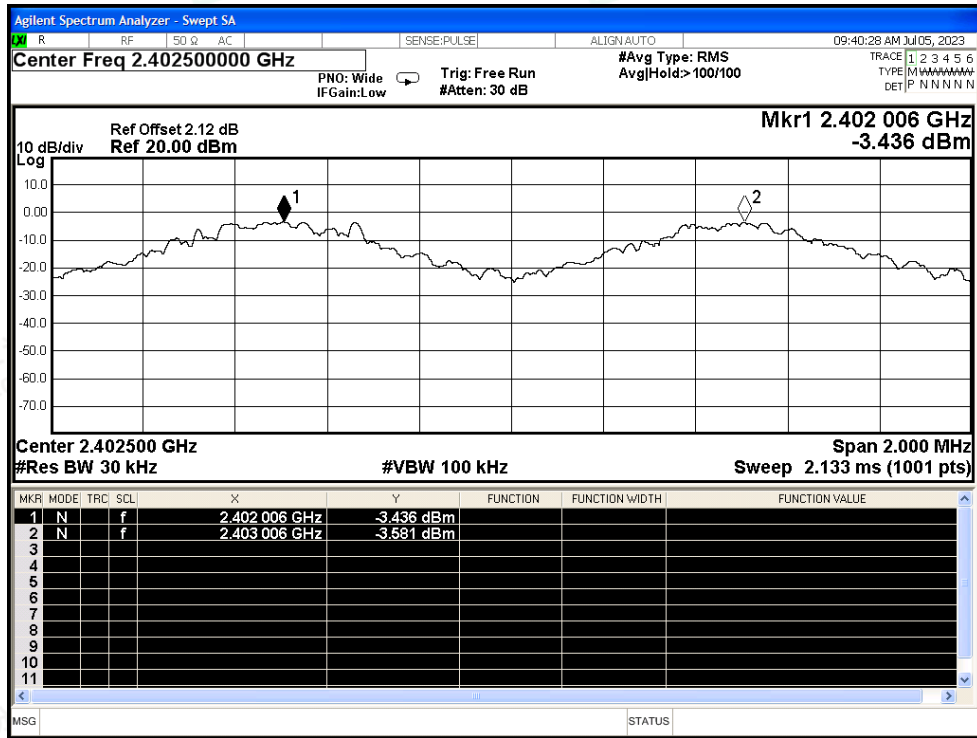
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2402.006	2403.006	1	0.683	Pass
NVNT	2-DH5	Ant1	2402.154	2403.154	1	0.875	Pass
NVNT	3-DH5	Ant1	2401.828	2403.15	1.322	0.877	Pass



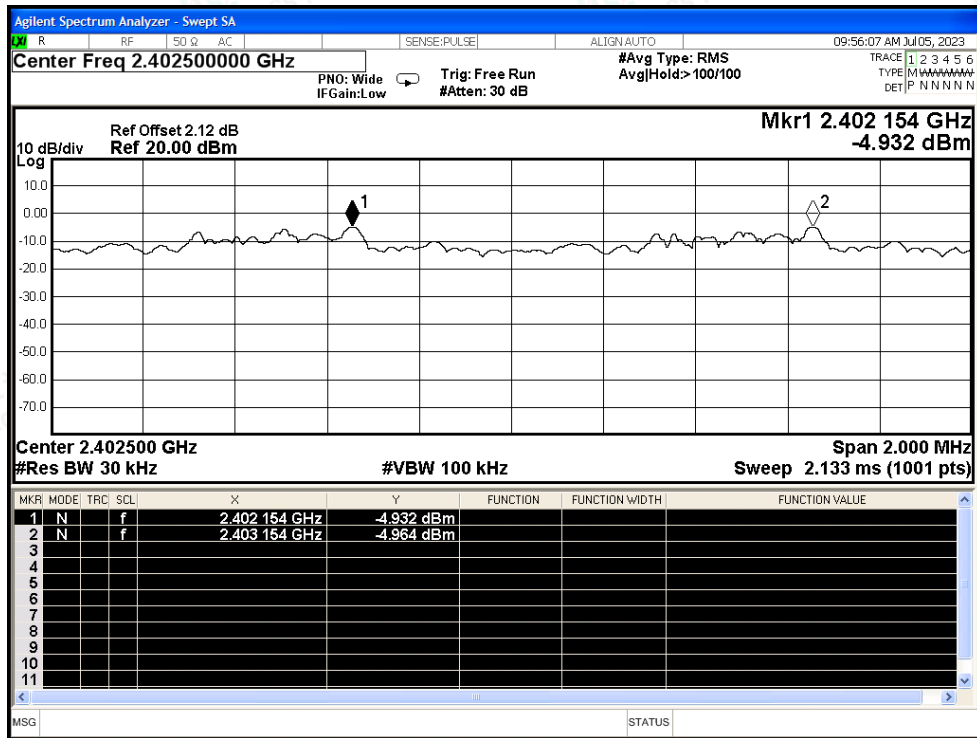


Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1

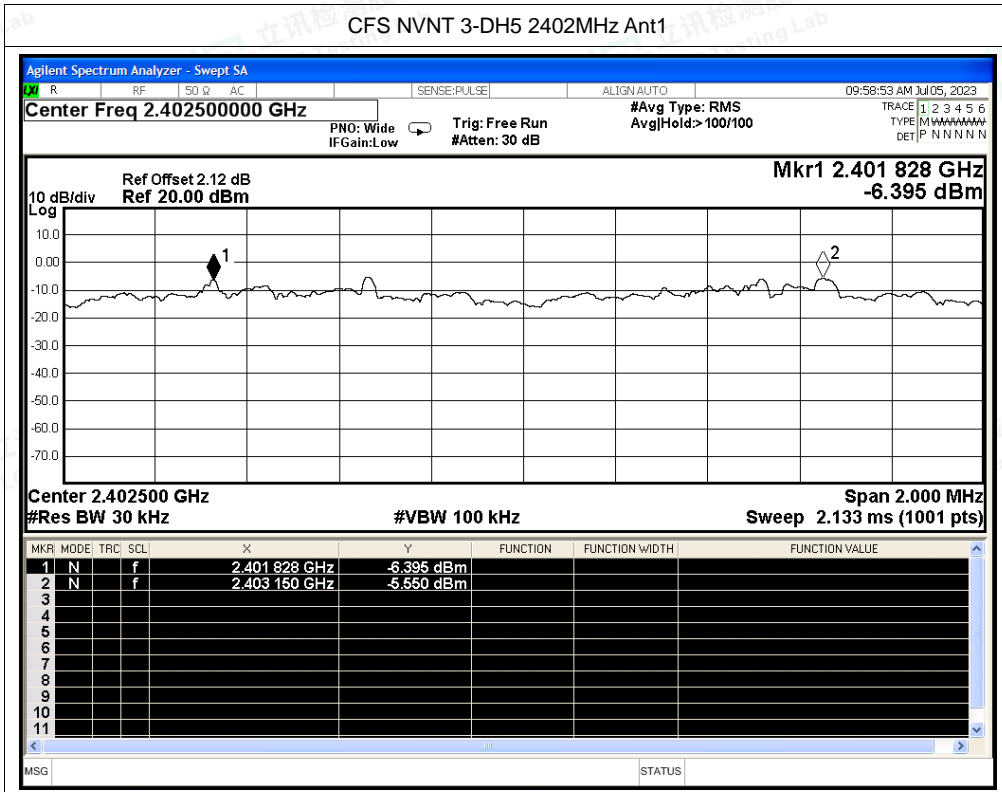


CFS NVNT 2-DH5 2402MHz Ant1





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	2.881	305.386	106	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.885	294.27	102	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.886	291.486	101	31600	400	Pass

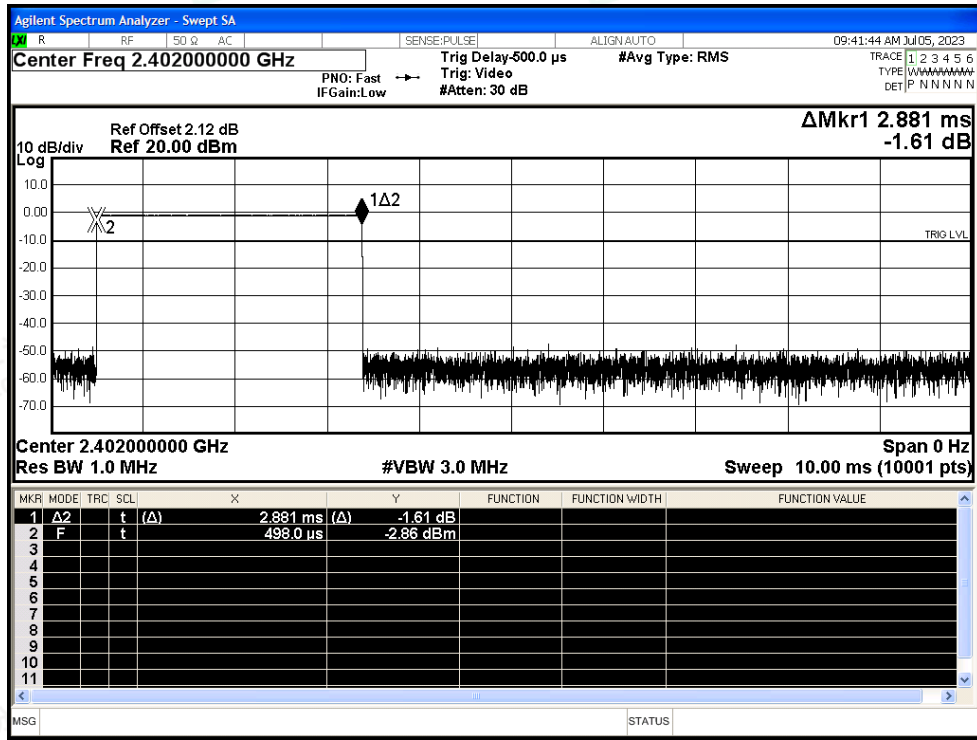


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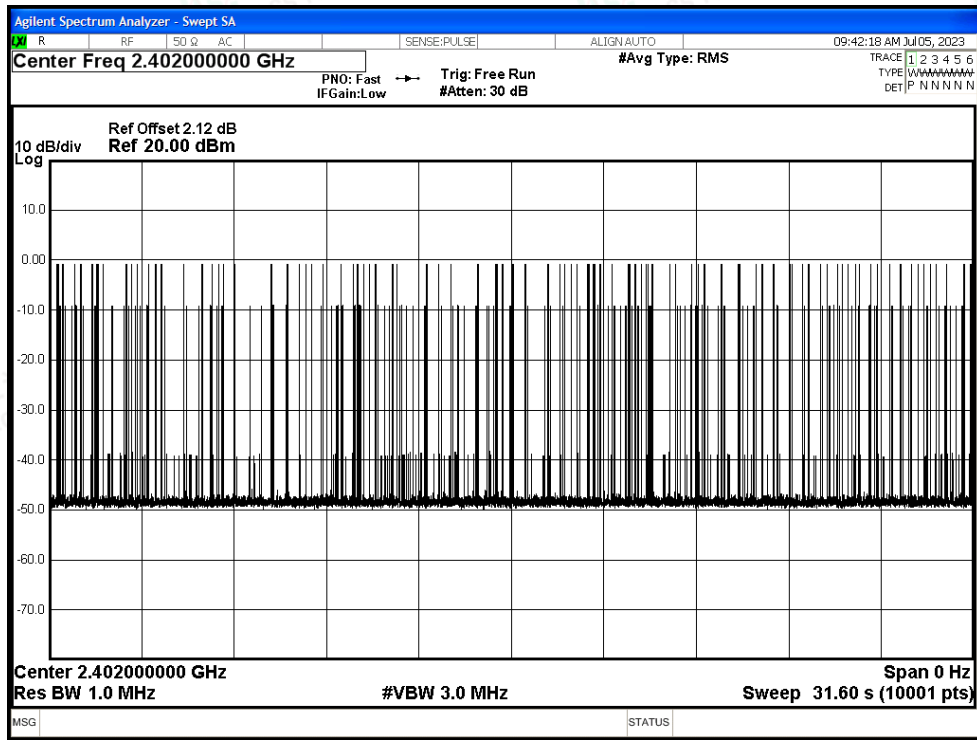


Test Graphs

Dwell NVNT 1-DH5 2402MHz Ant1 One Burst

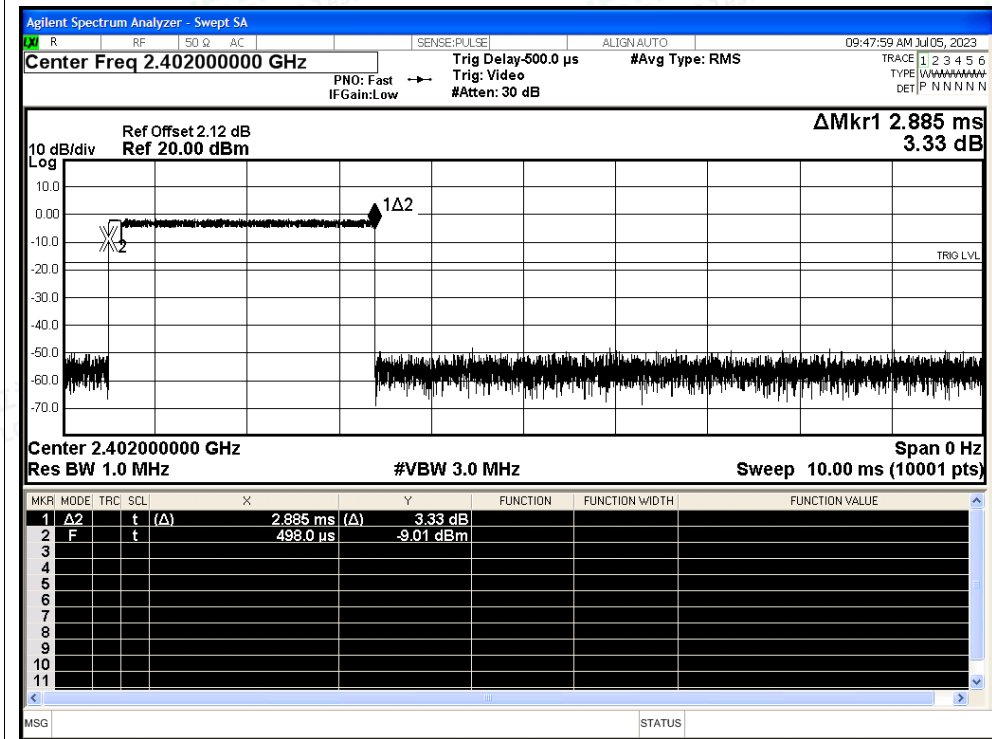


Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated

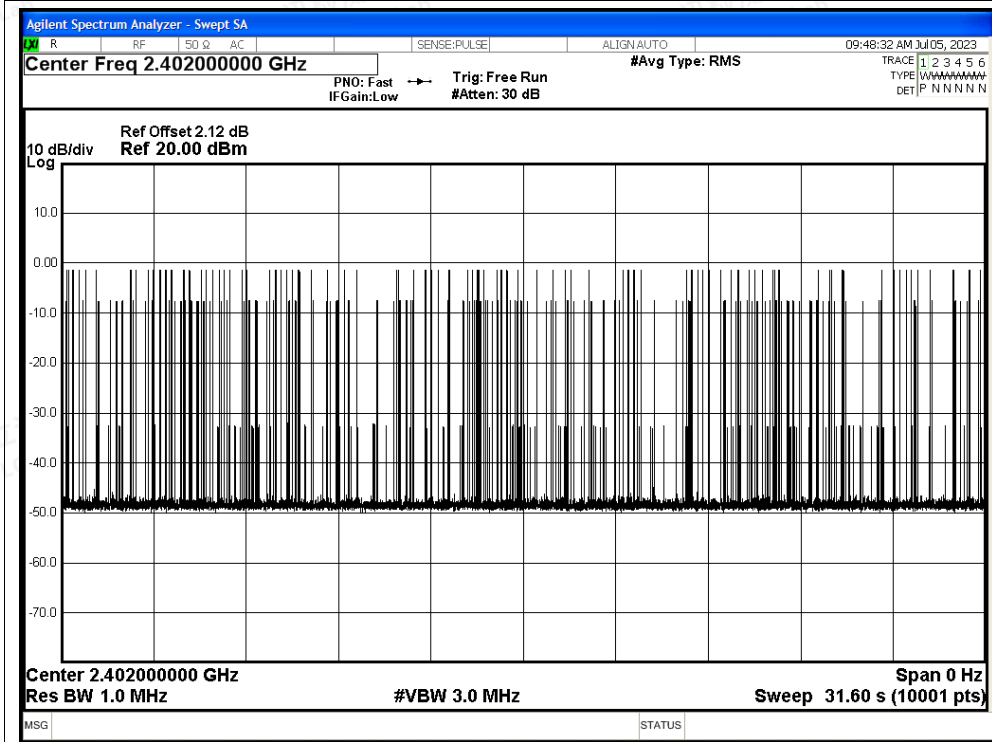




Dwell NVNT 2-DH5 2402MHz Ant1 One Burst

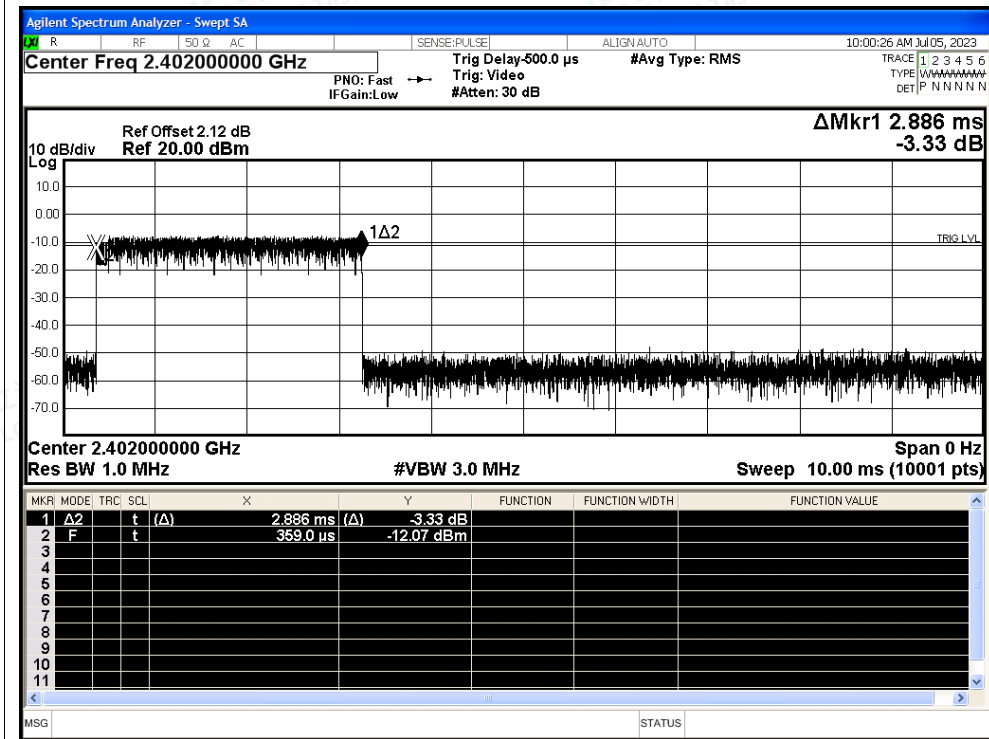


Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated

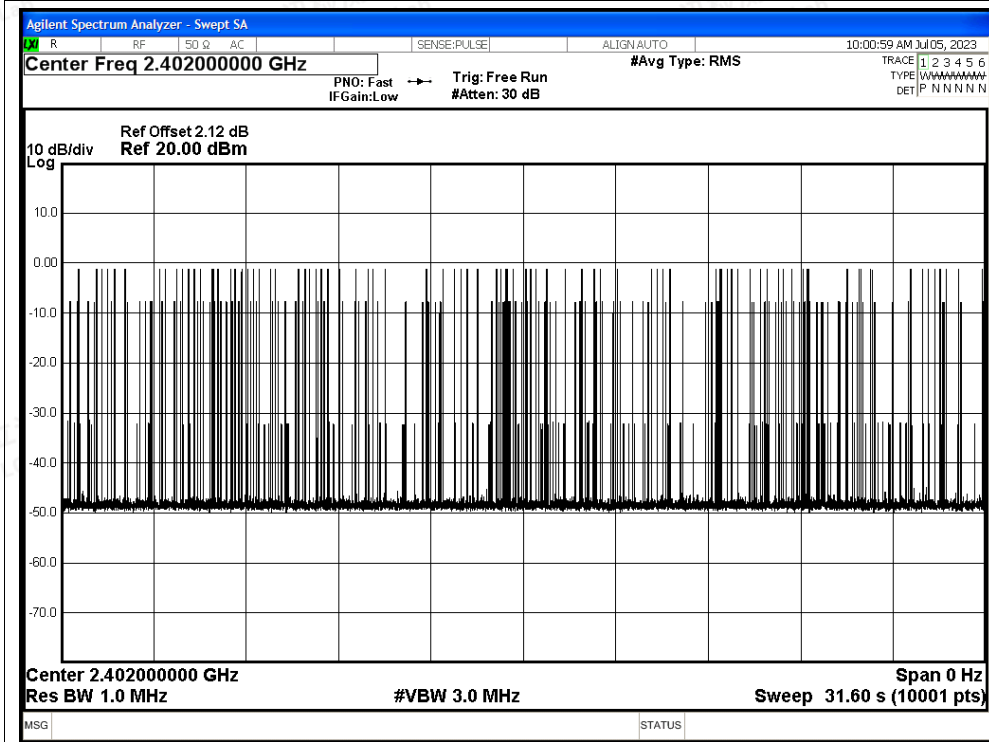




Dwell NVNT 3-DH5 2402MHz Ant1 One Burst



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

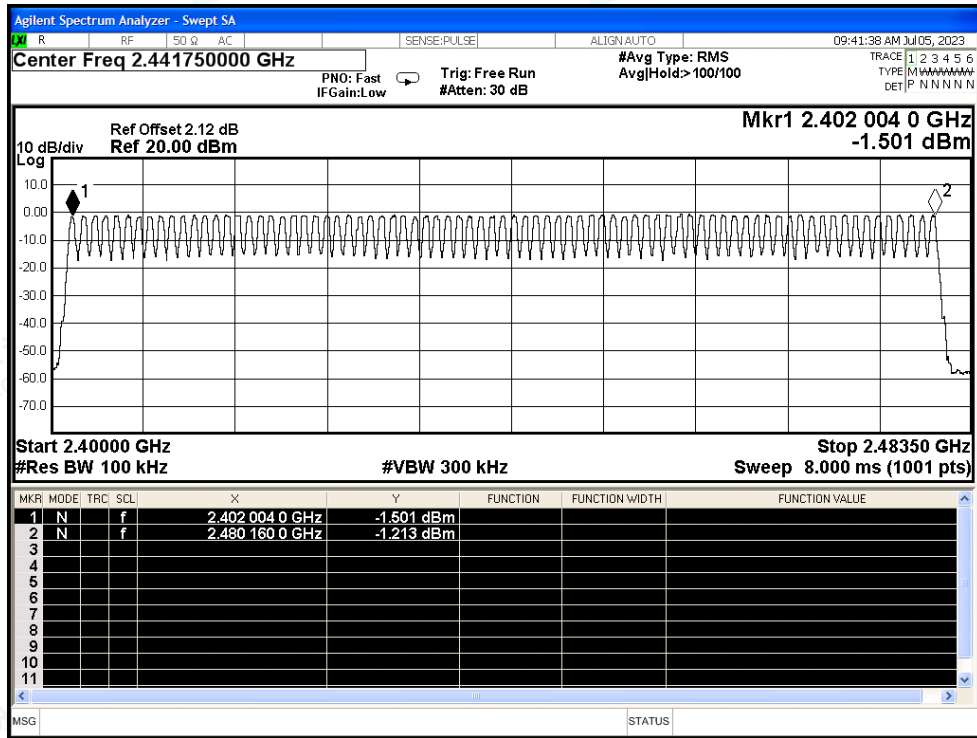


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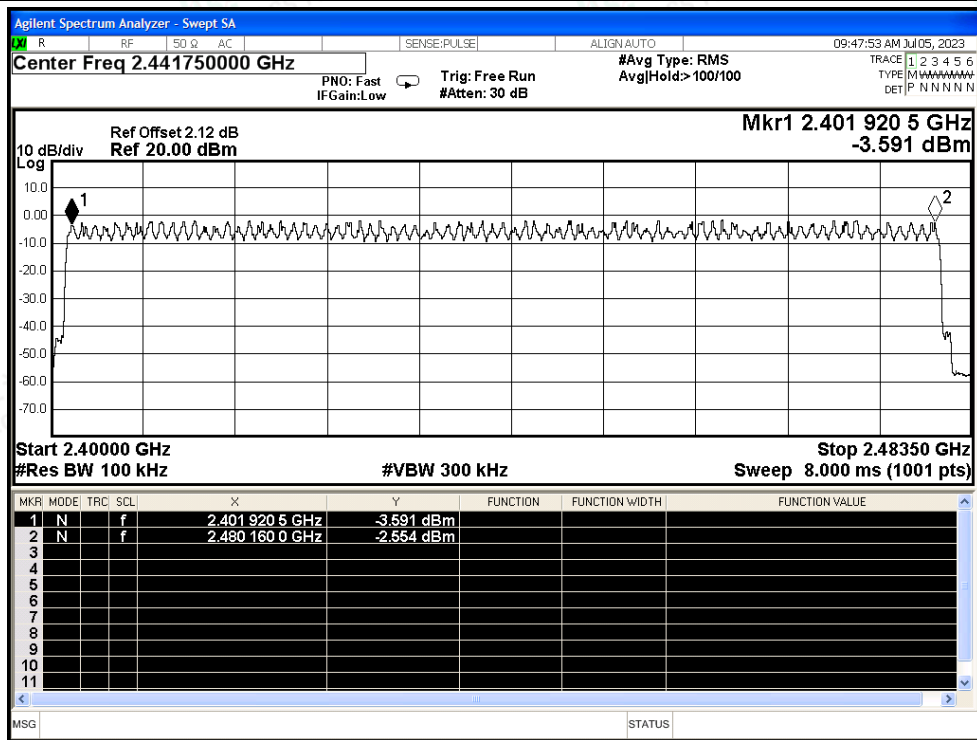


Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant1

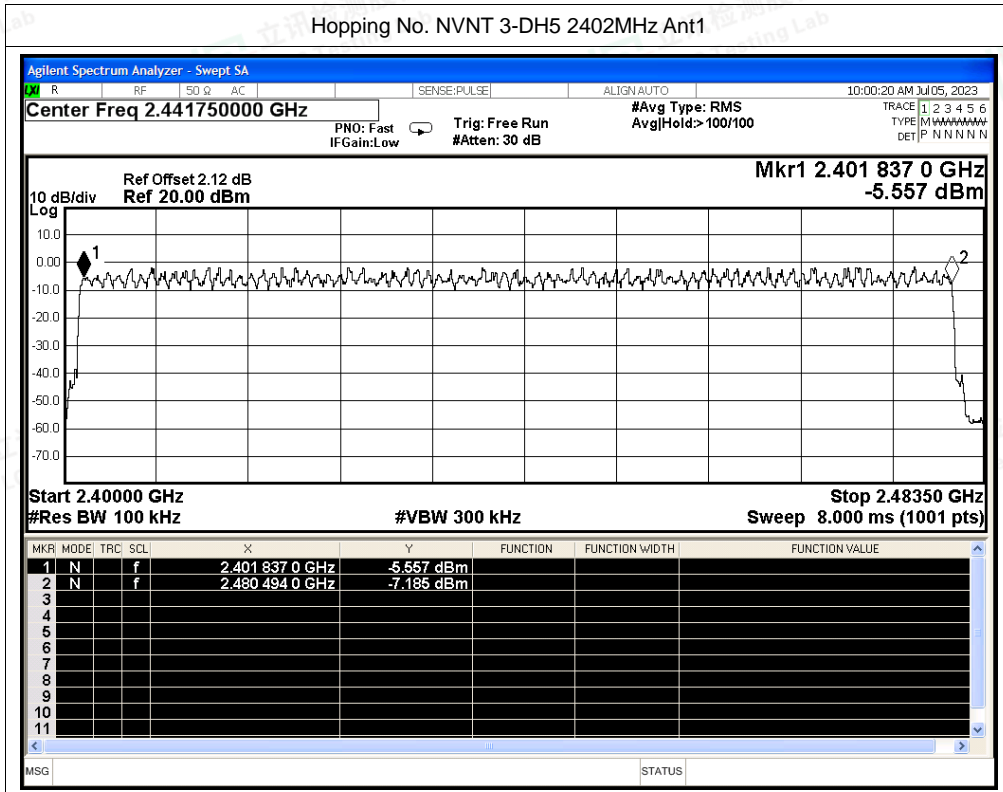


Hopping No. NVNT 2-DH5 2402MHz Ant1





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	-53.89	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-55.3	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-50.32	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-54.52	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-53.72	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-52.91	-20	Pass



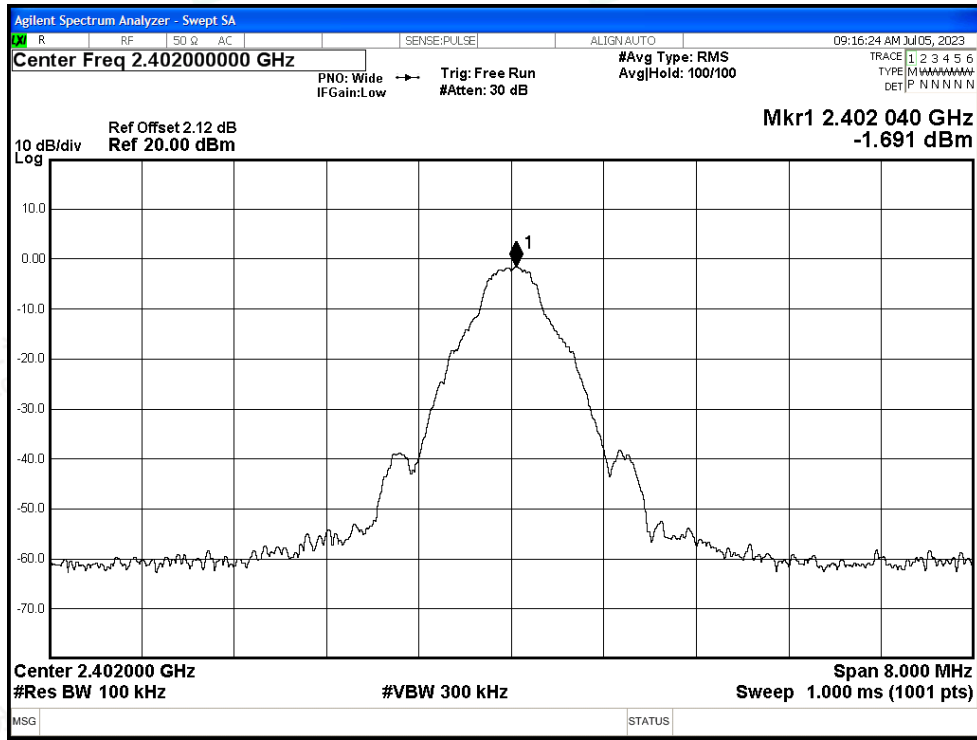
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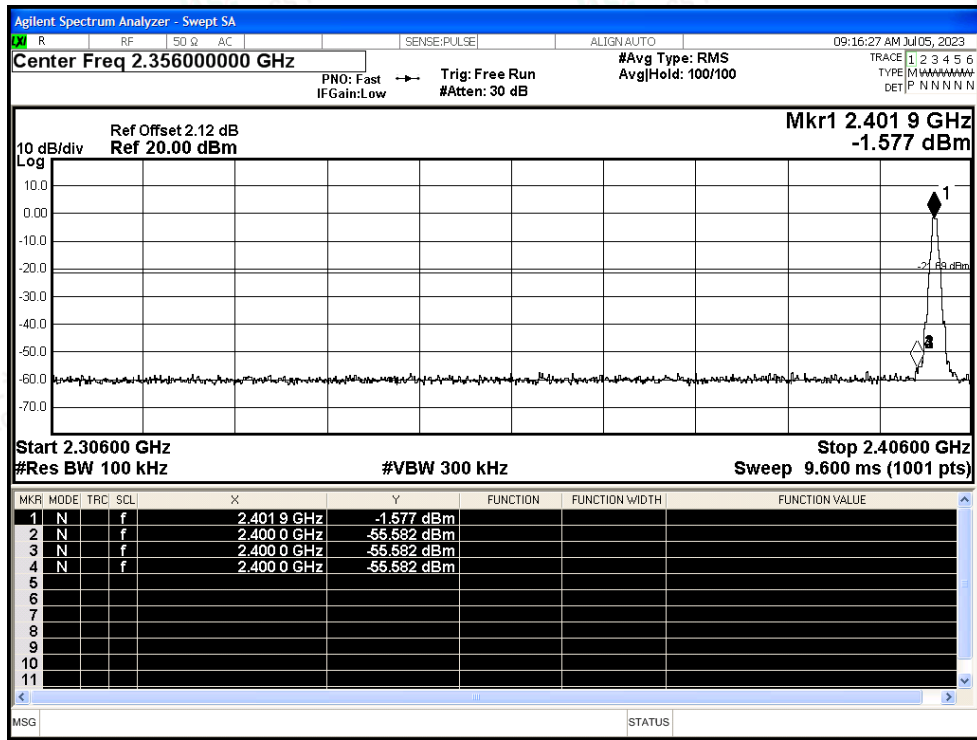


Test Graphs

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

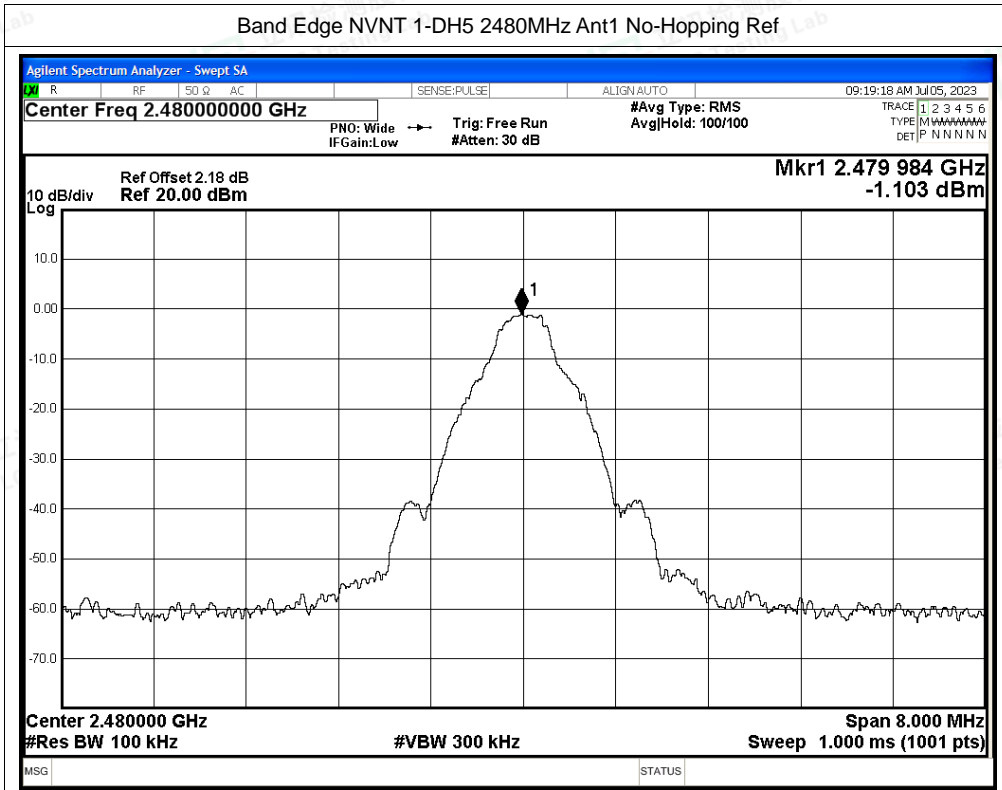


Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission

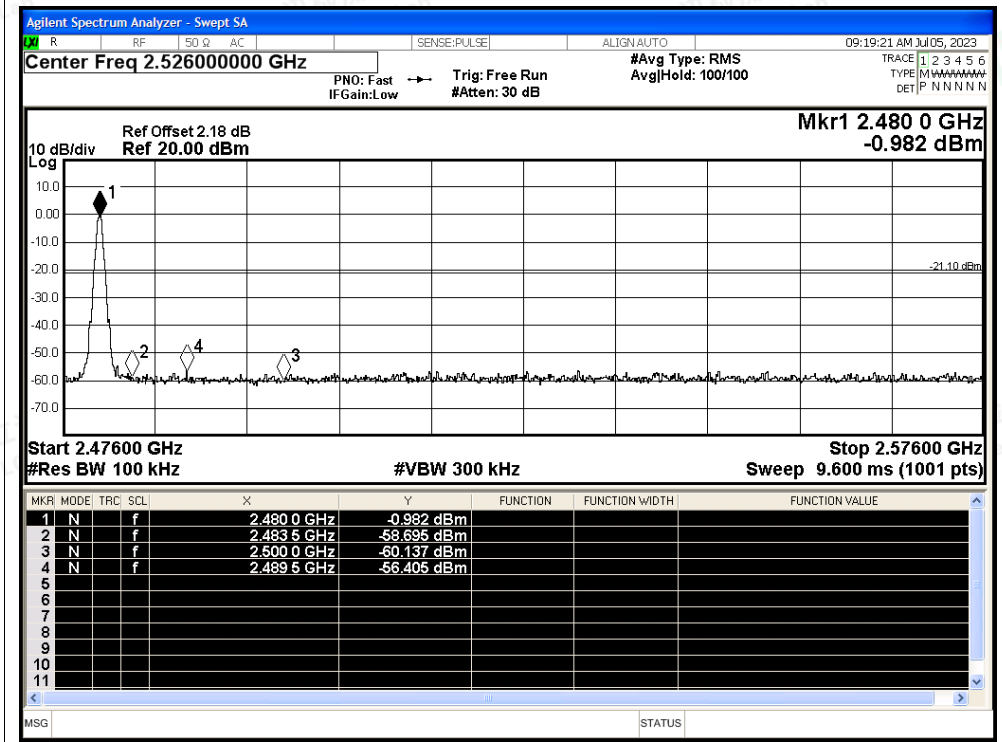




Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref

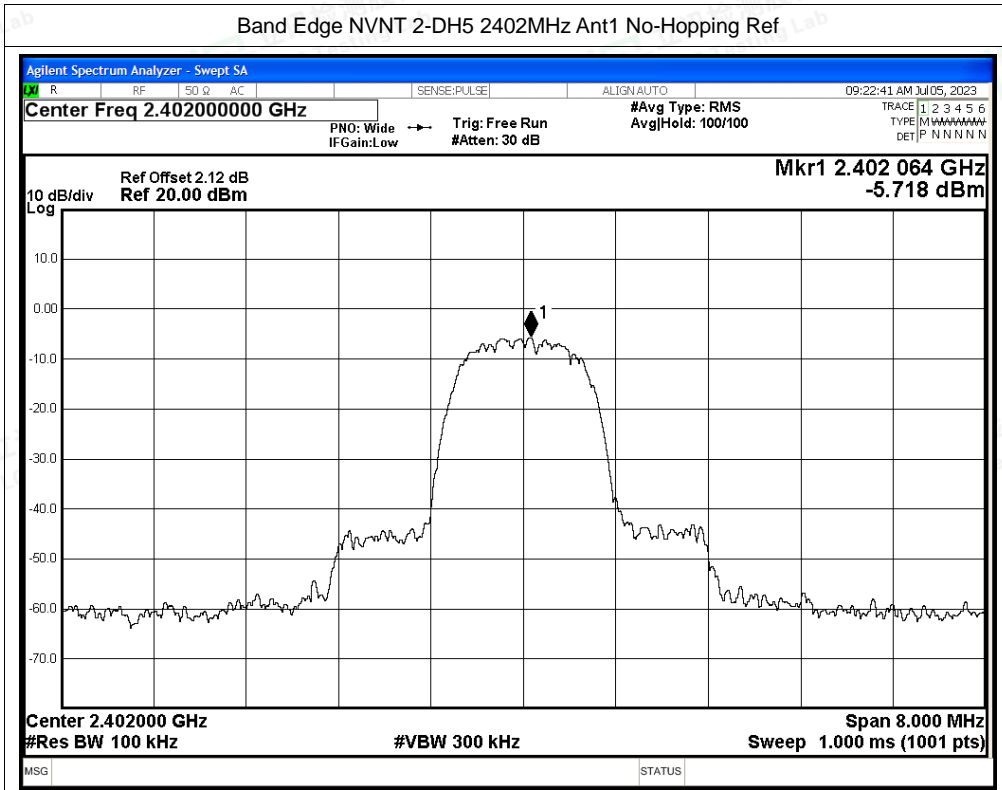


Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission

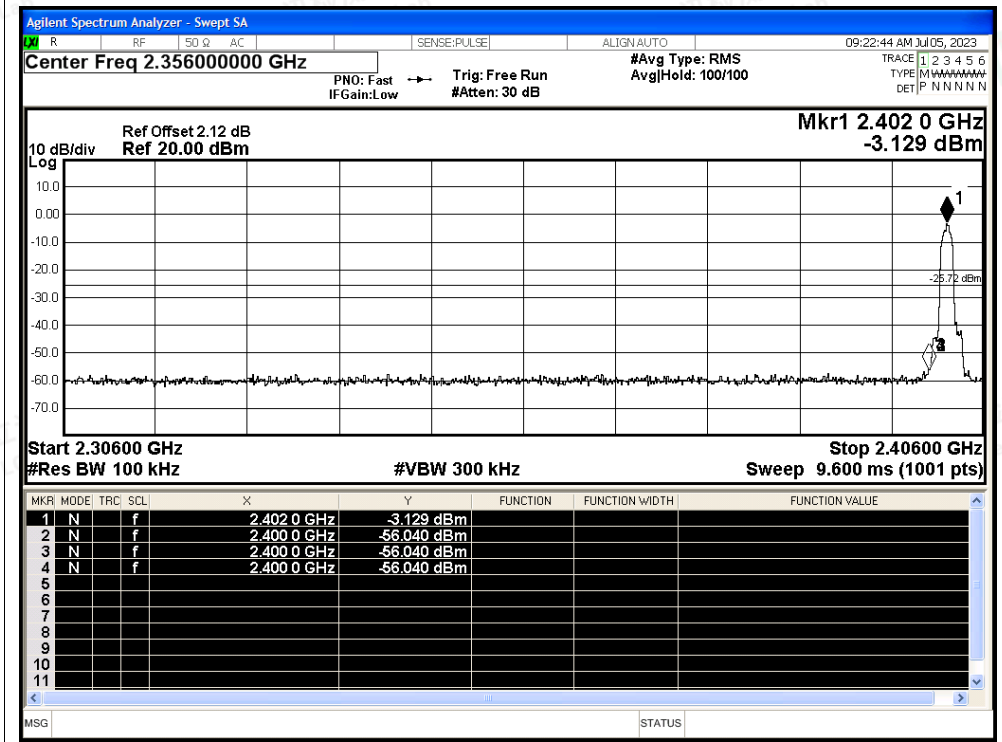




Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref

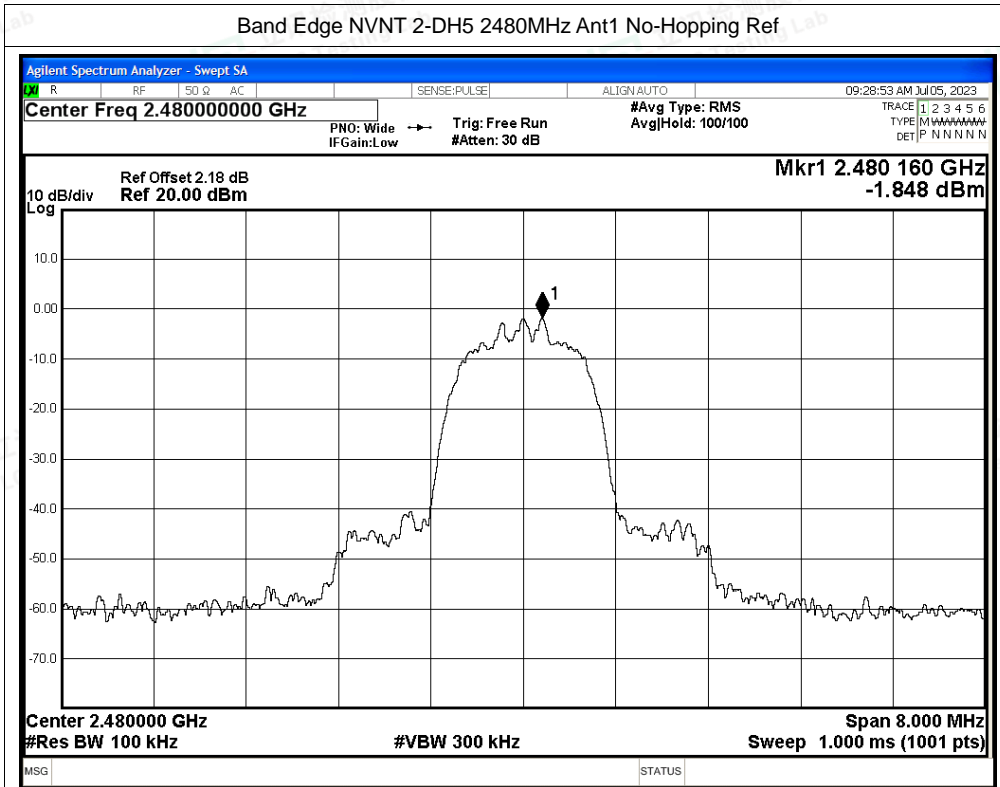


Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission

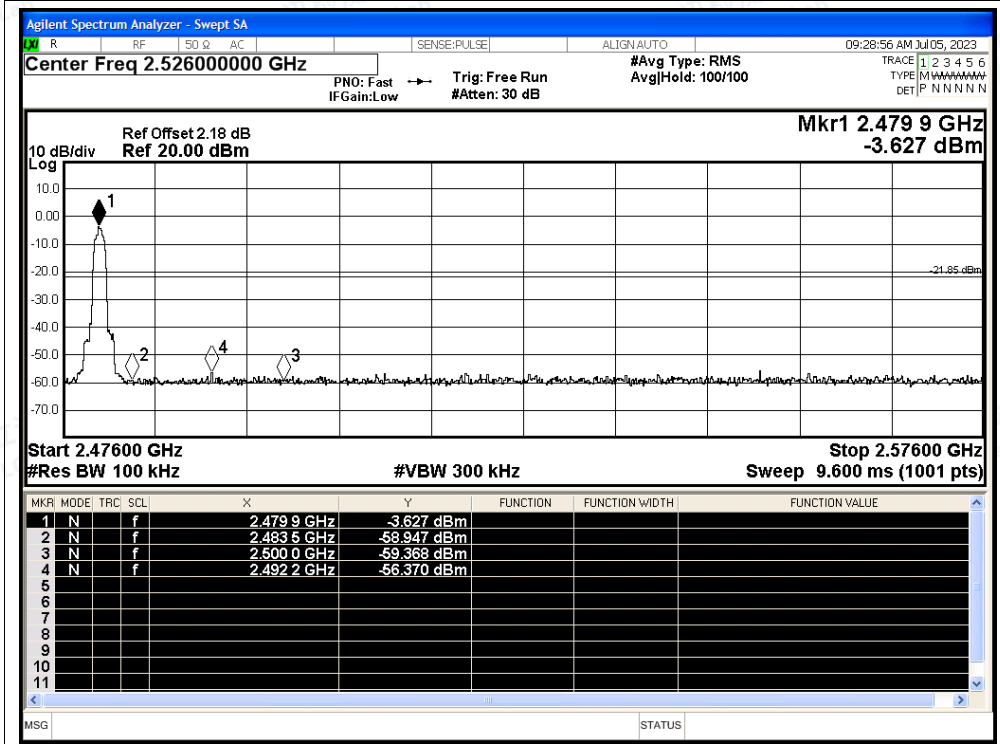




Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref

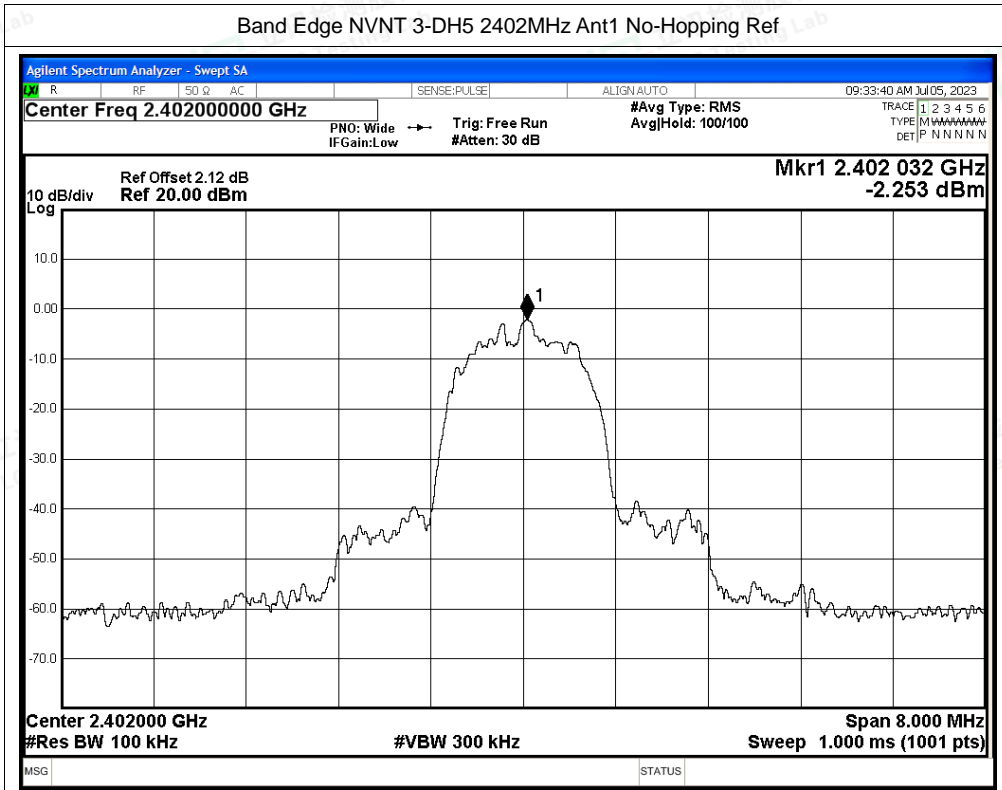


Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission

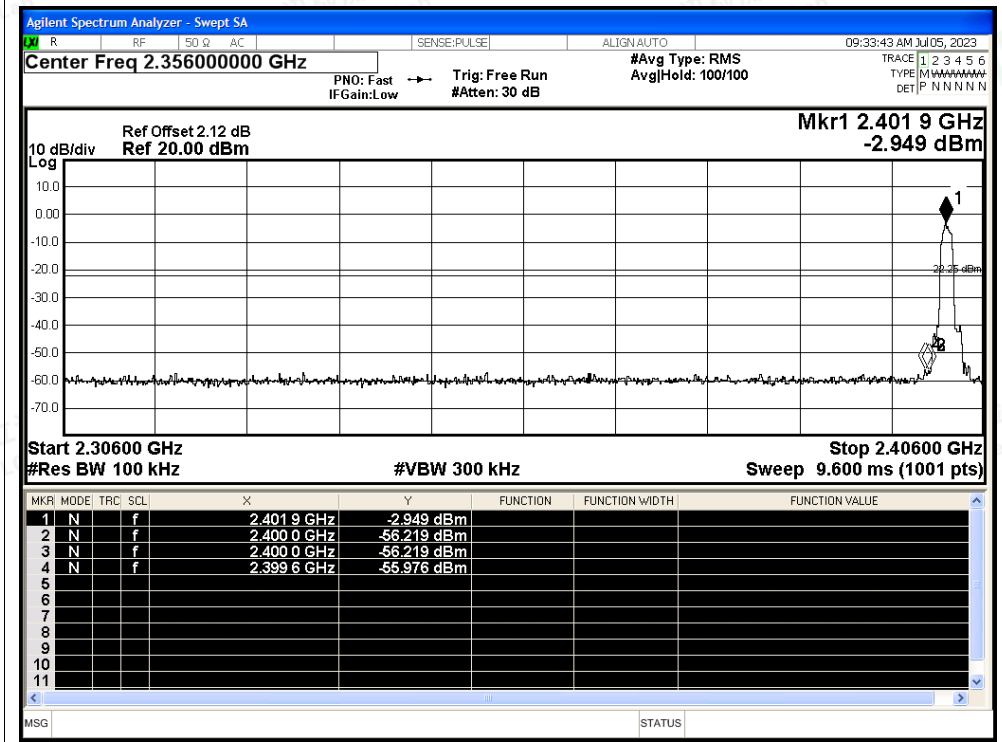




Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref

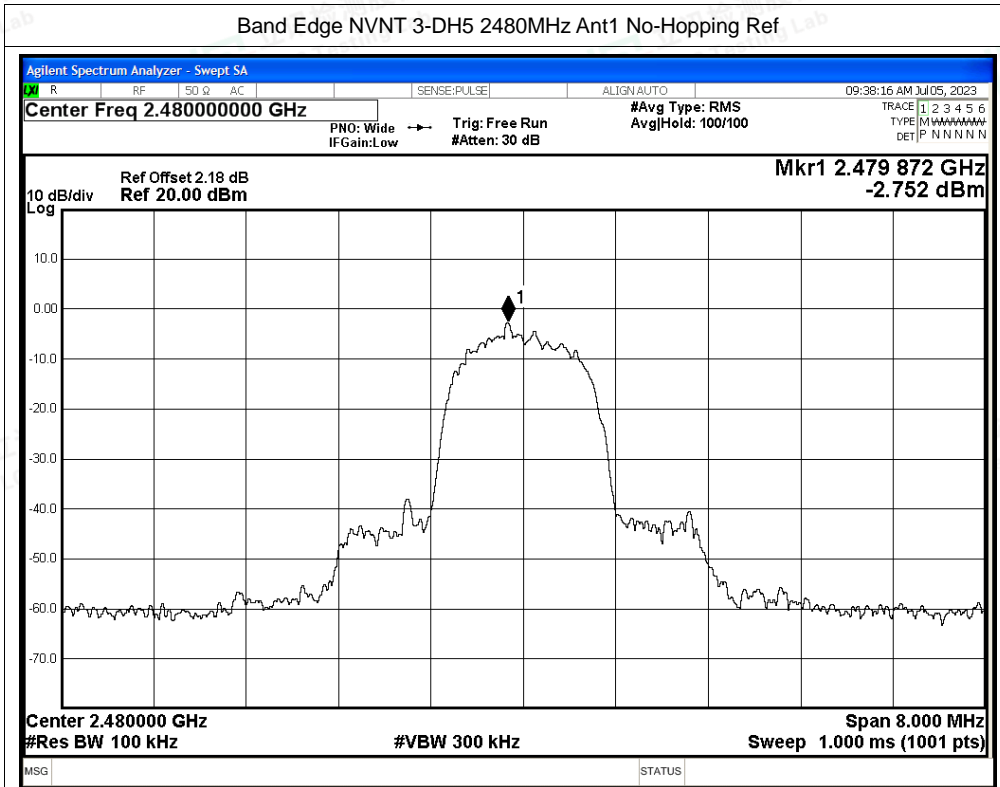


Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission

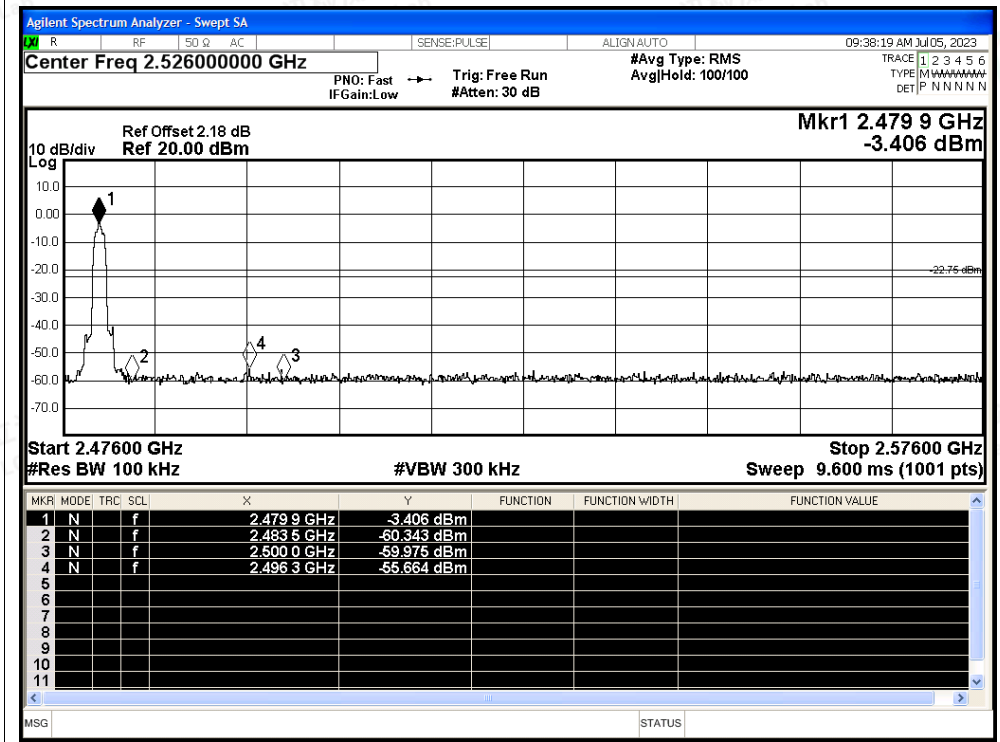




Band Edge NVNT 3-DH5 2480MHz Ant1 No-Hopping Ref



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	-54.44	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-55.18	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-51.79	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-54.29	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-52.91	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-54.09	-20	Pass

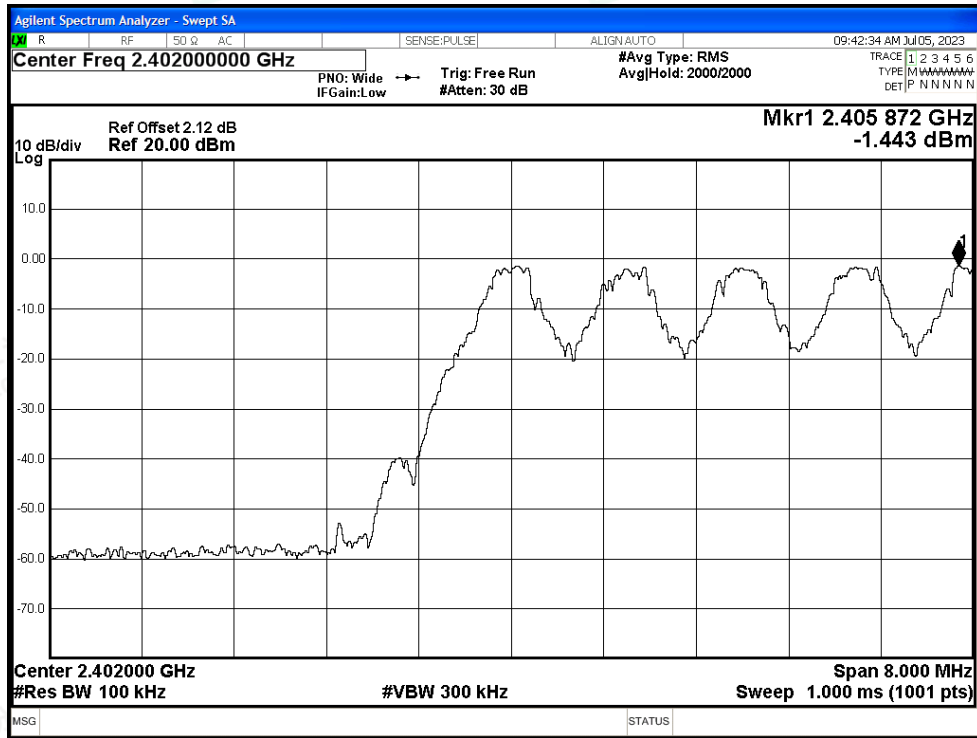


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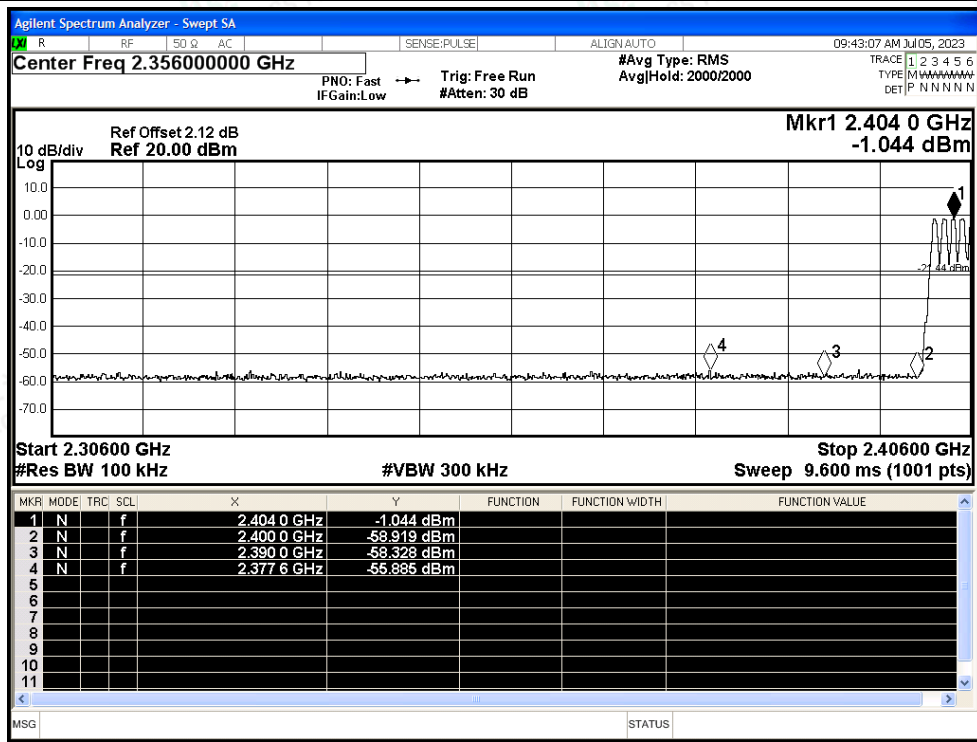


Test Graphs

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



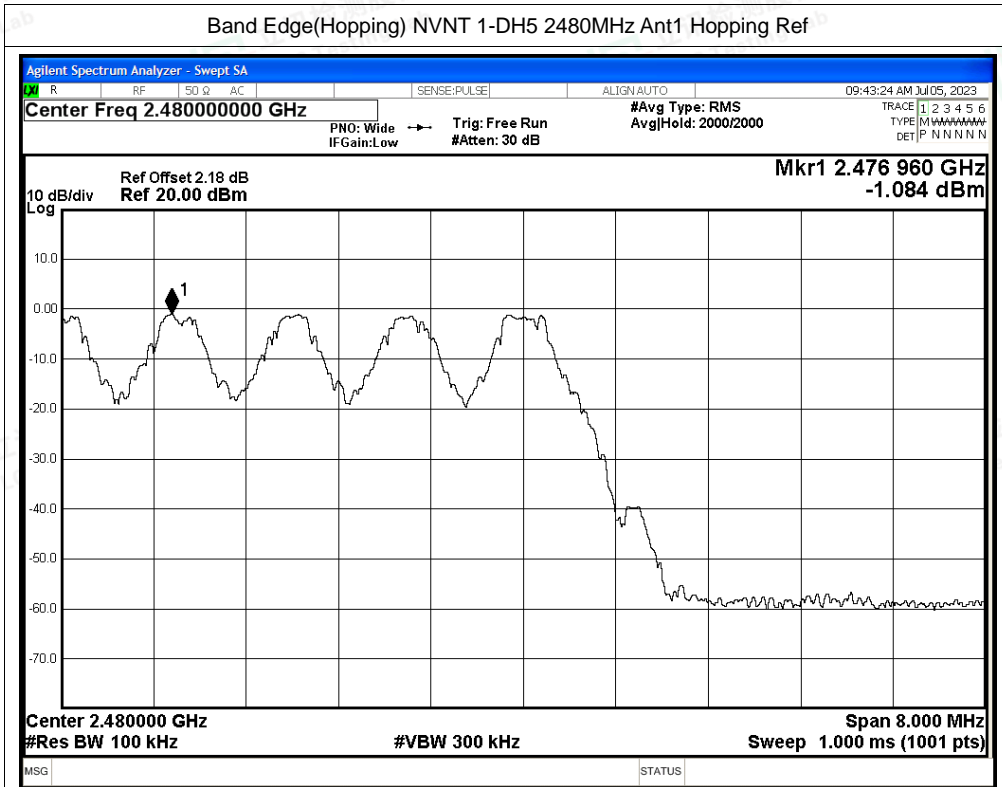
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



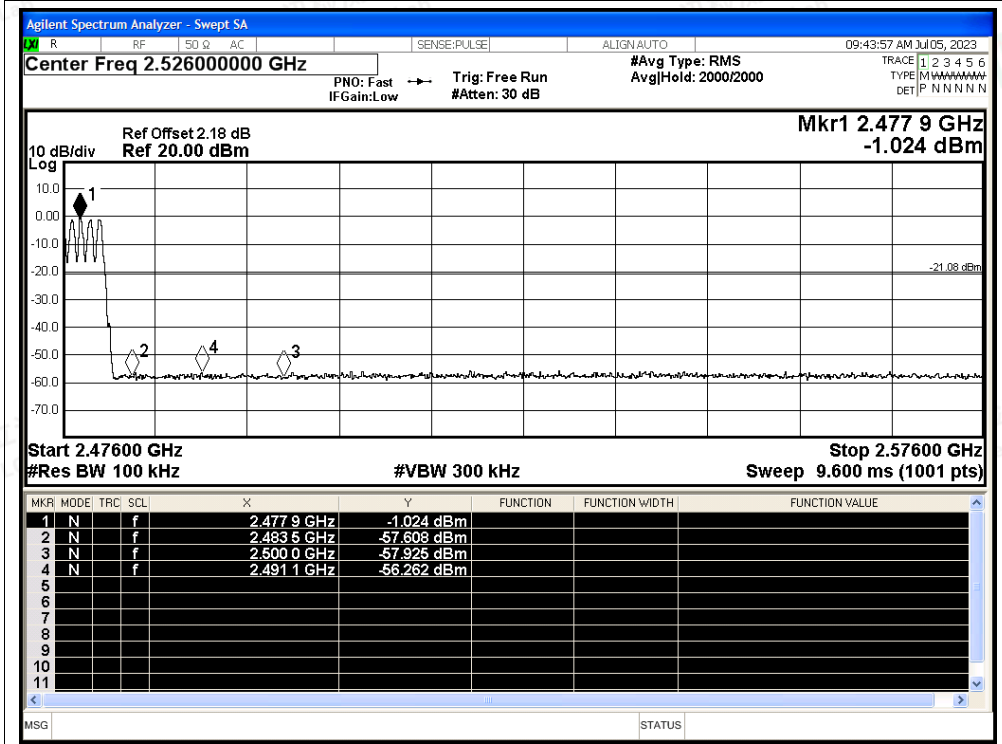


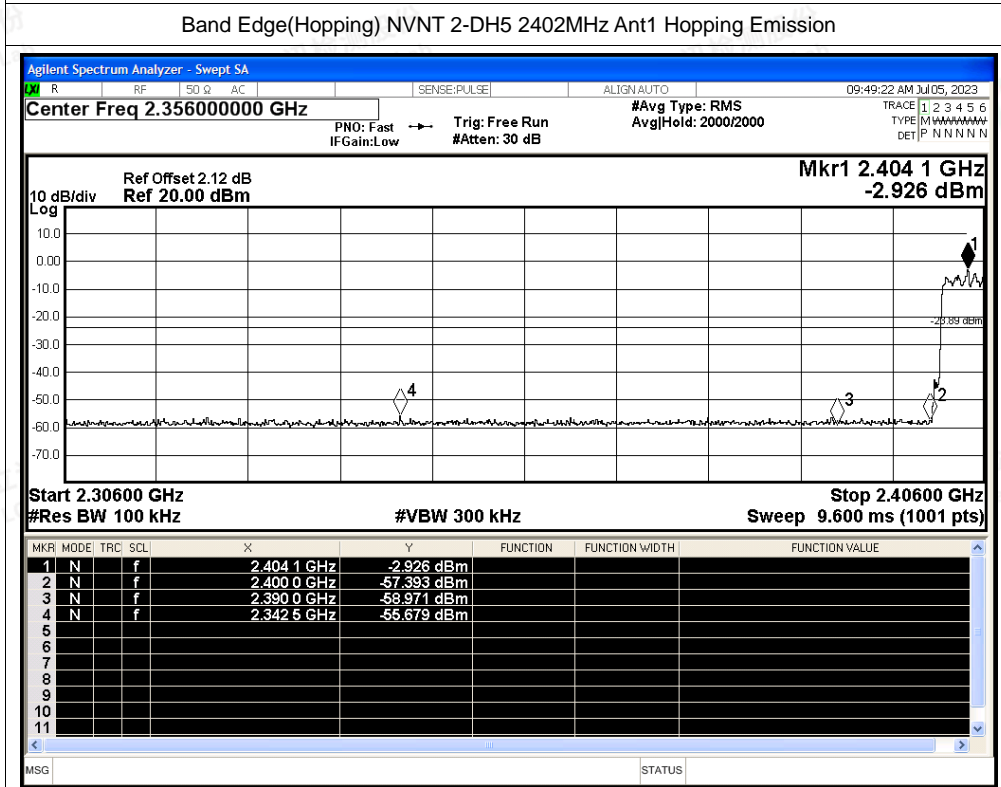
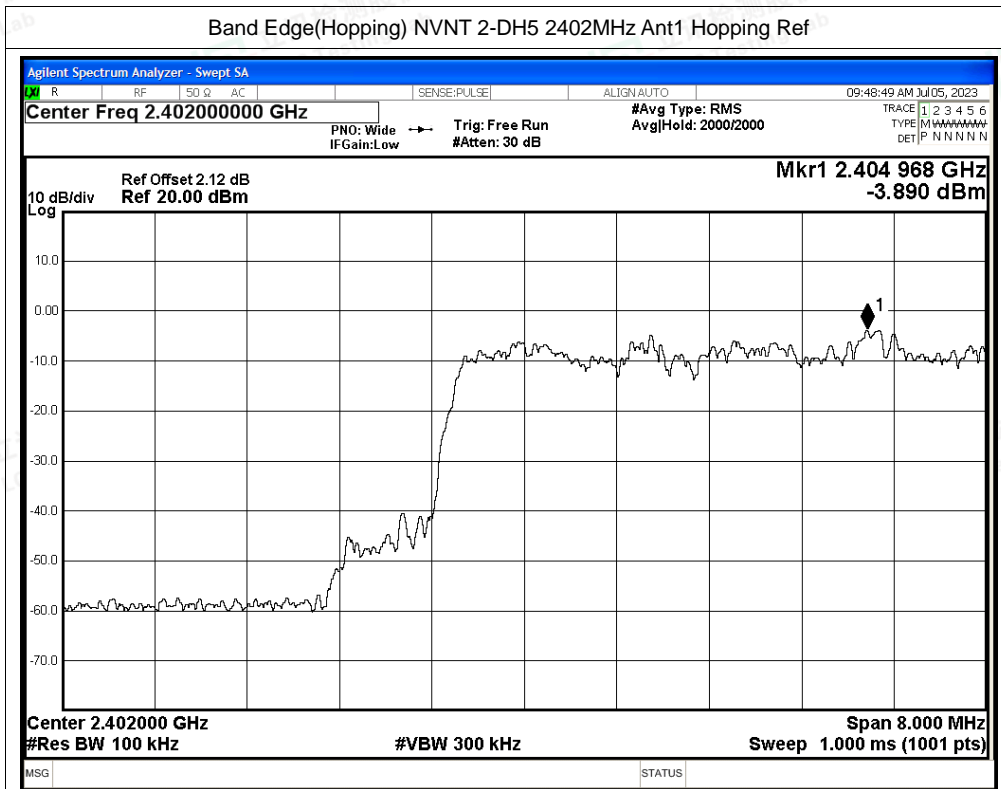


Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



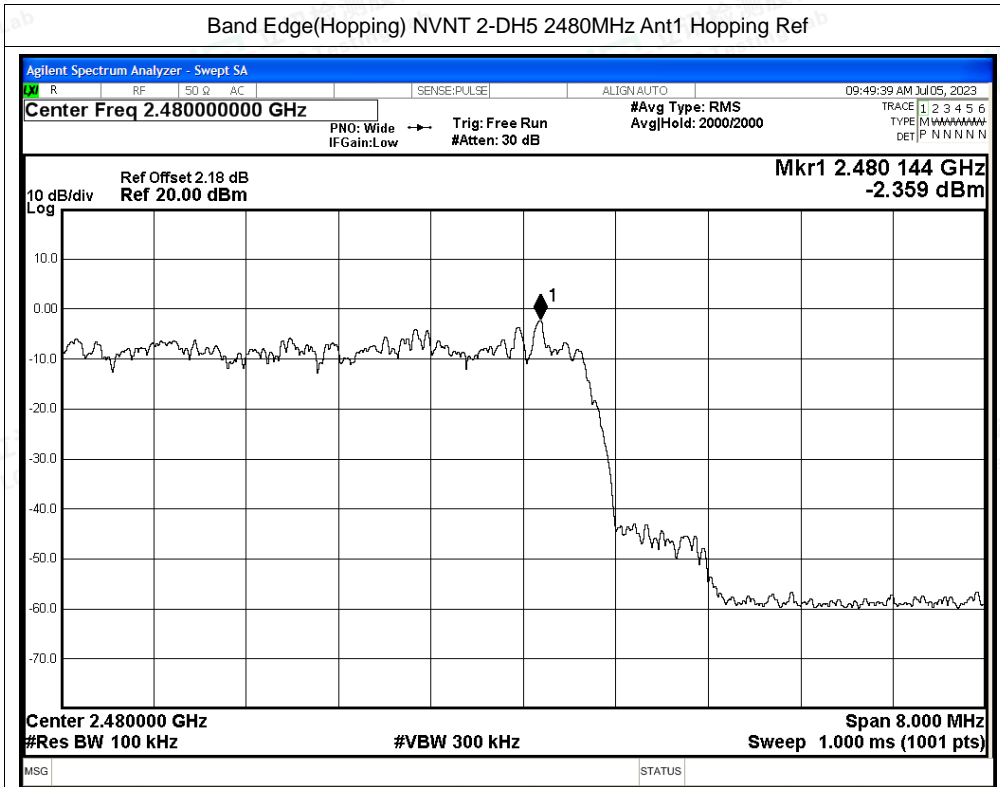
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission



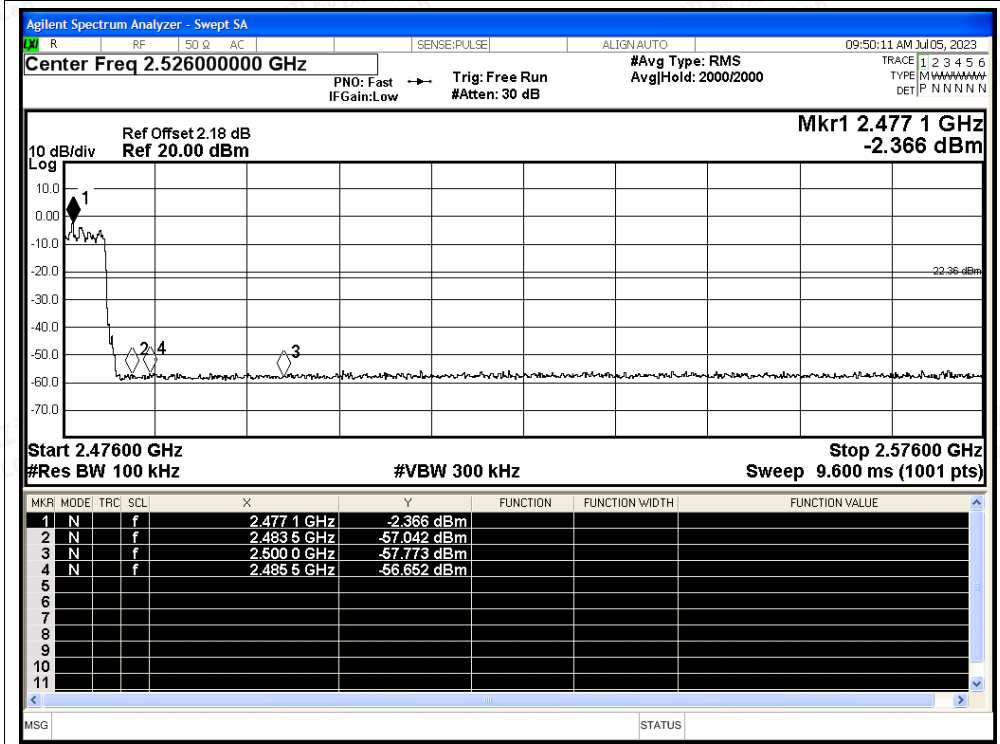


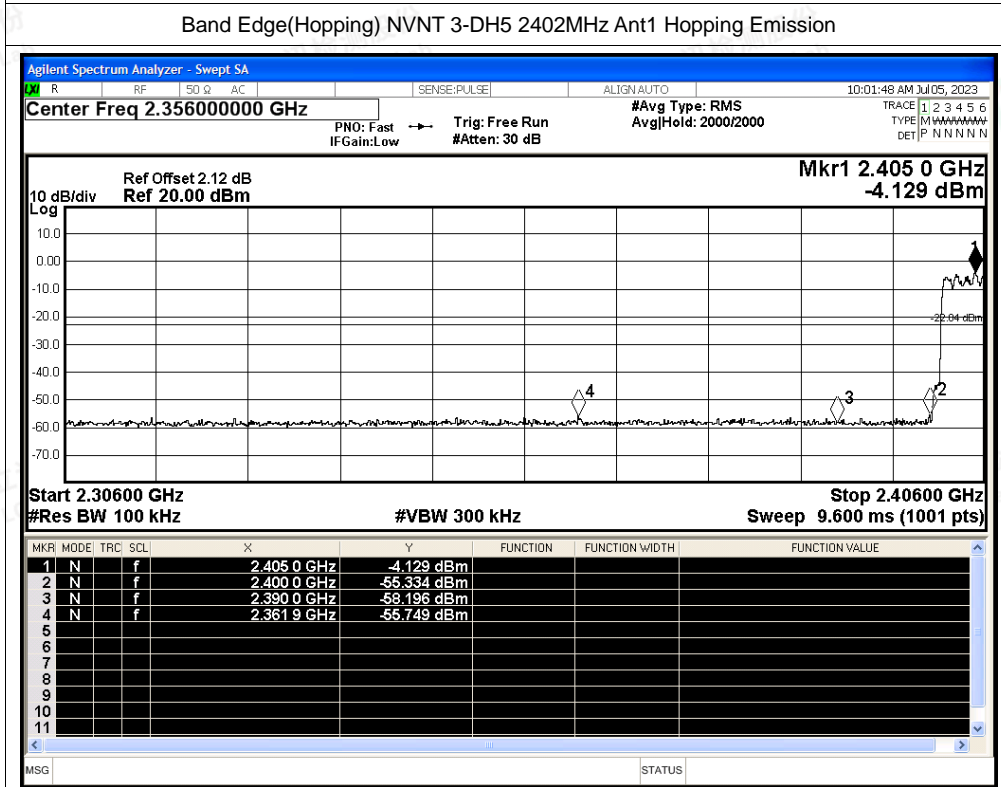
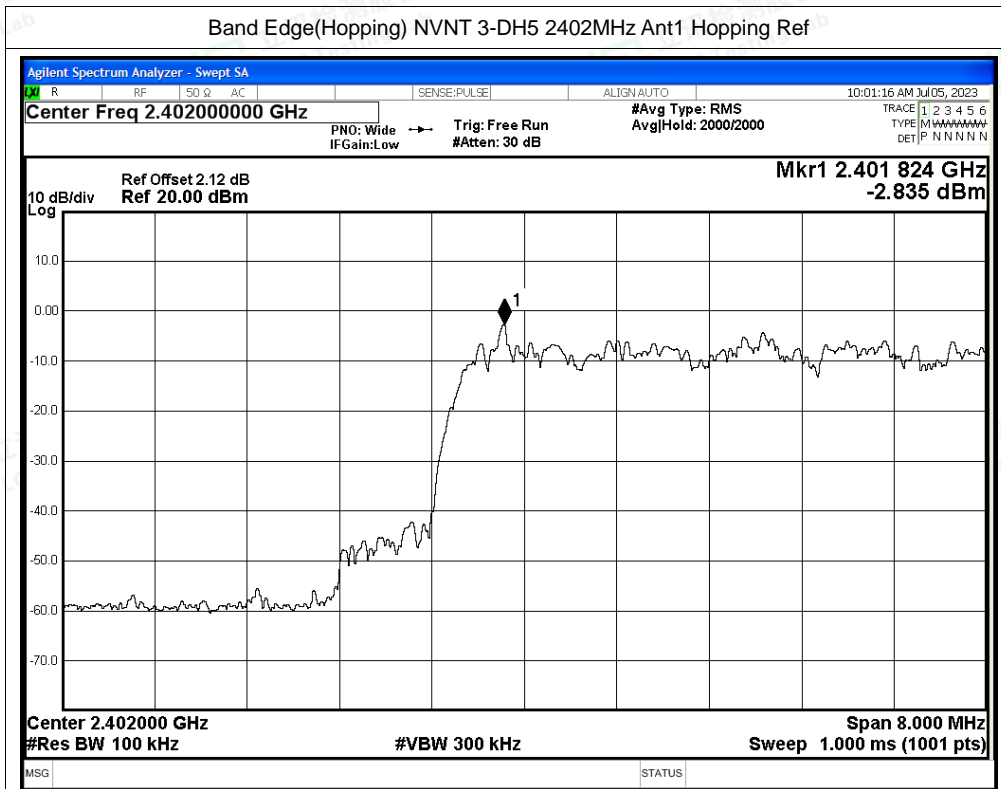


Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



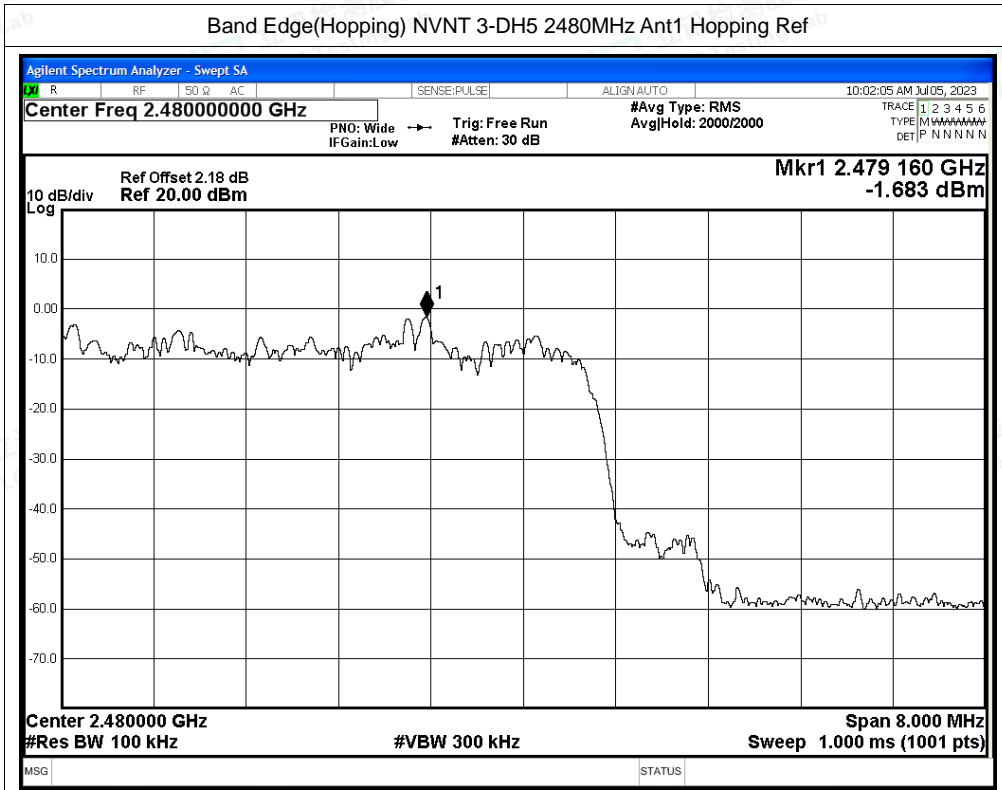
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission



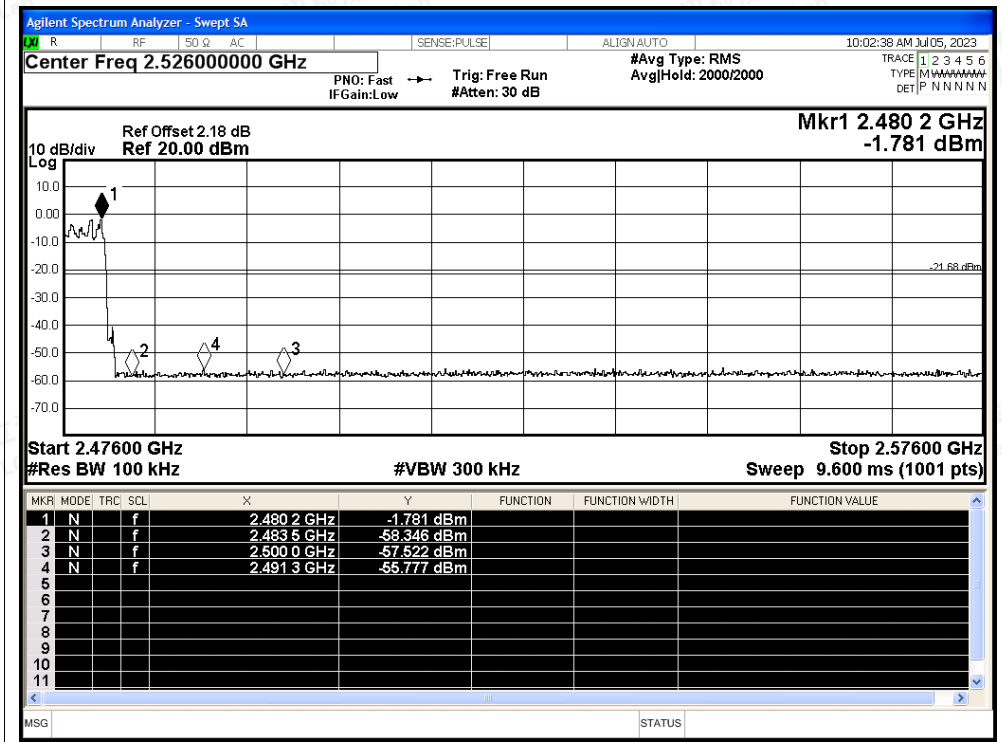




Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Ref



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	-54.54	-20	Pass
NVNT	1-DH5	2441	Ant1	-54	-20	Pass
NVNT	1-DH5	2480	Ant1	-54.2	-20	Pass
NVNT	2-DH5	2402	Ant1	-53.17	-20	Pass
NVNT	2-DH5	2441	Ant1	-53.04	-20	Pass
NVNT	2-DH5	2480	Ant1	-54.02	-20	Pass
NVNT	3-DH5	2402	Ant1	-53.67	-20	Pass
NVNT	3-DH5	2441	Ant1	-53.65	-20	Pass
NVNT	3-DH5	2480	Ant1	-53.47	-20	Pass

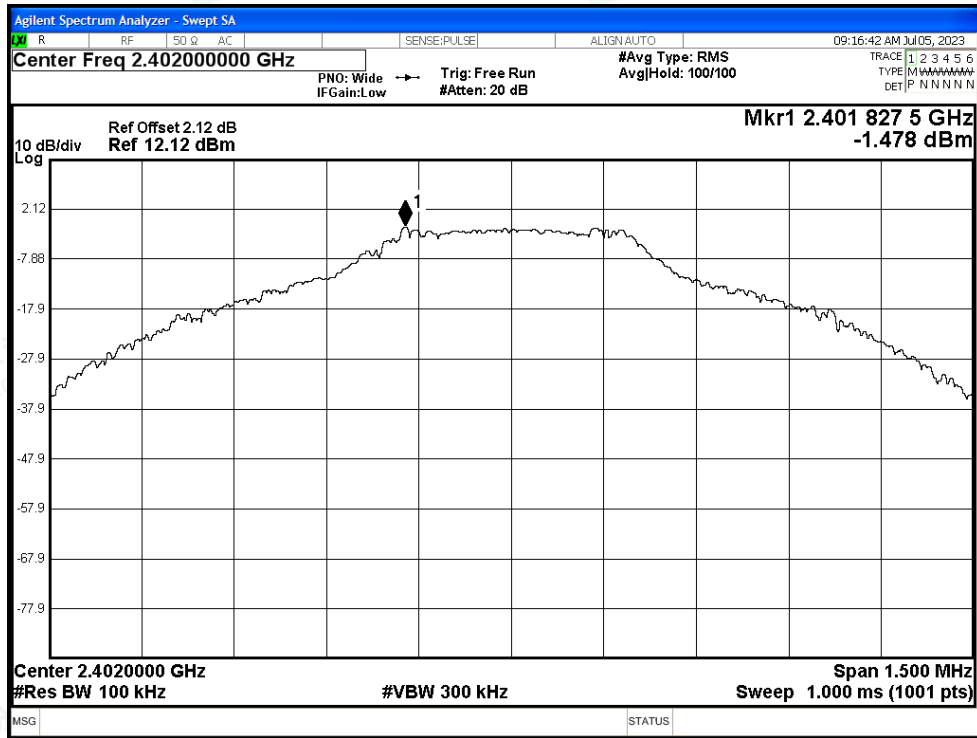


Shenzhen LCS Compliance Testing Laboratory Ltd.  
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China  
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com  
Scan code to check authenticity

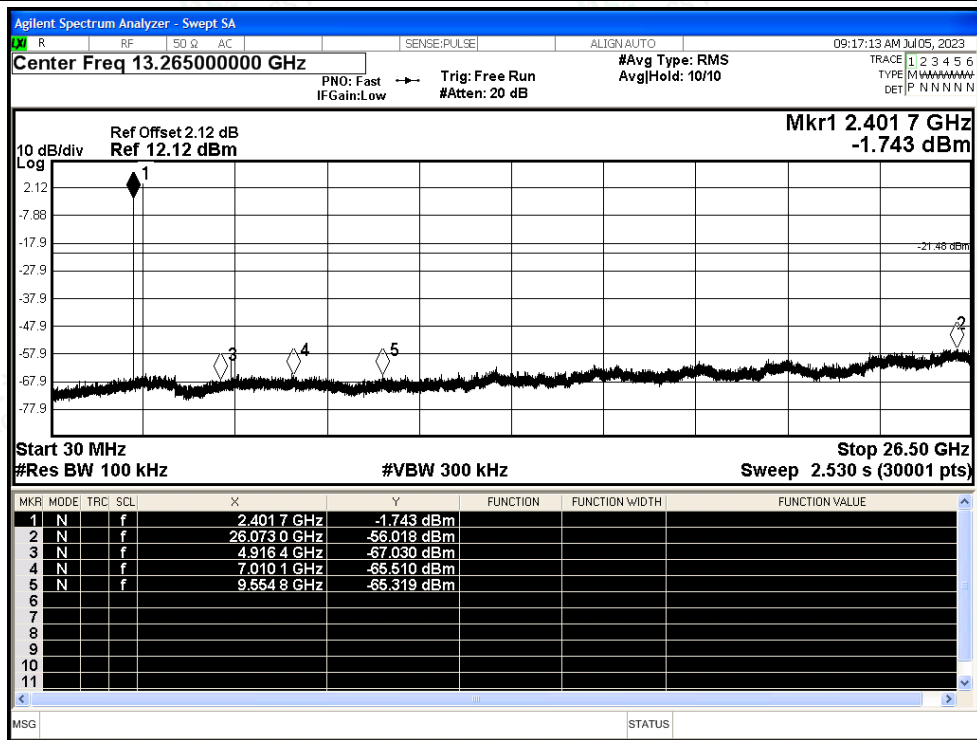


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref

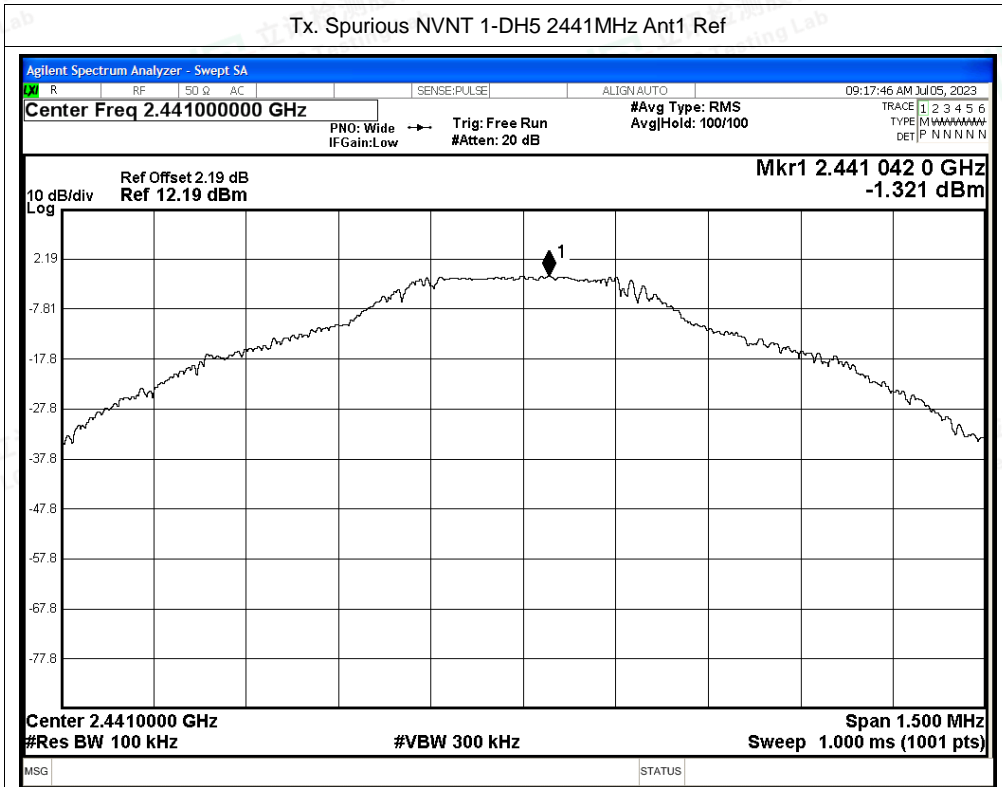


Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission

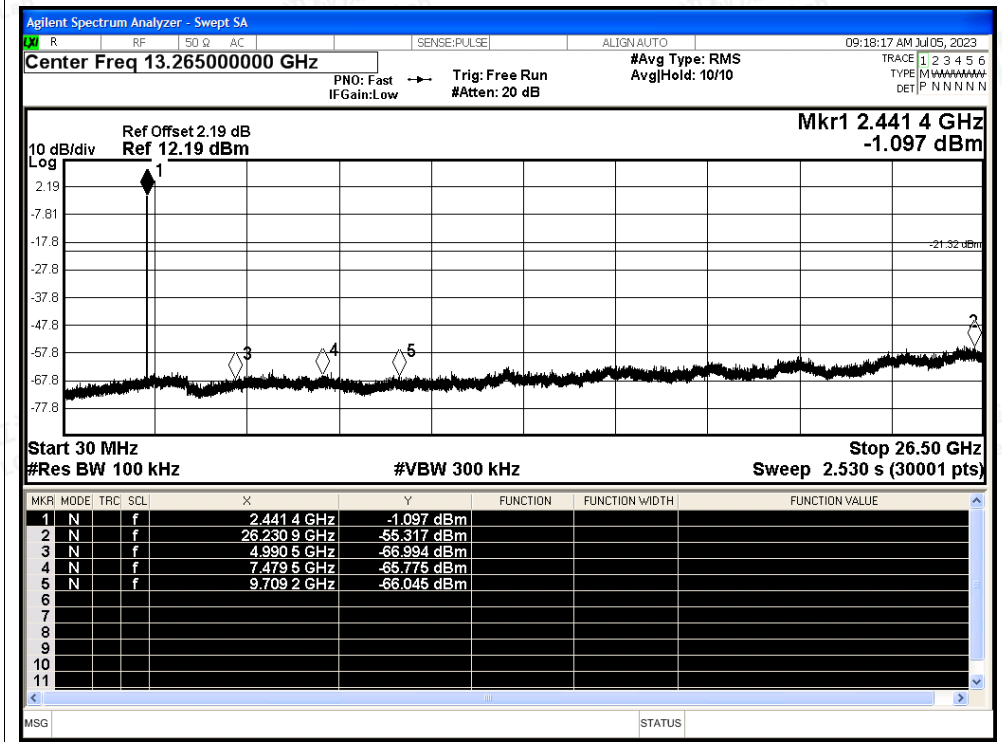




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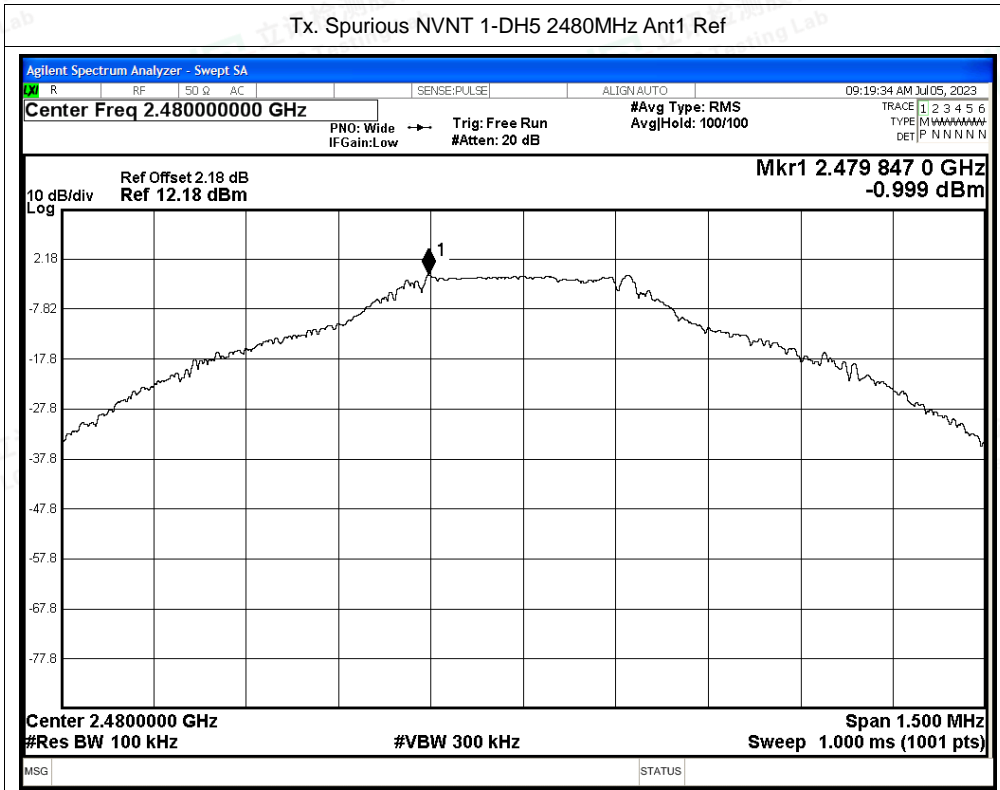
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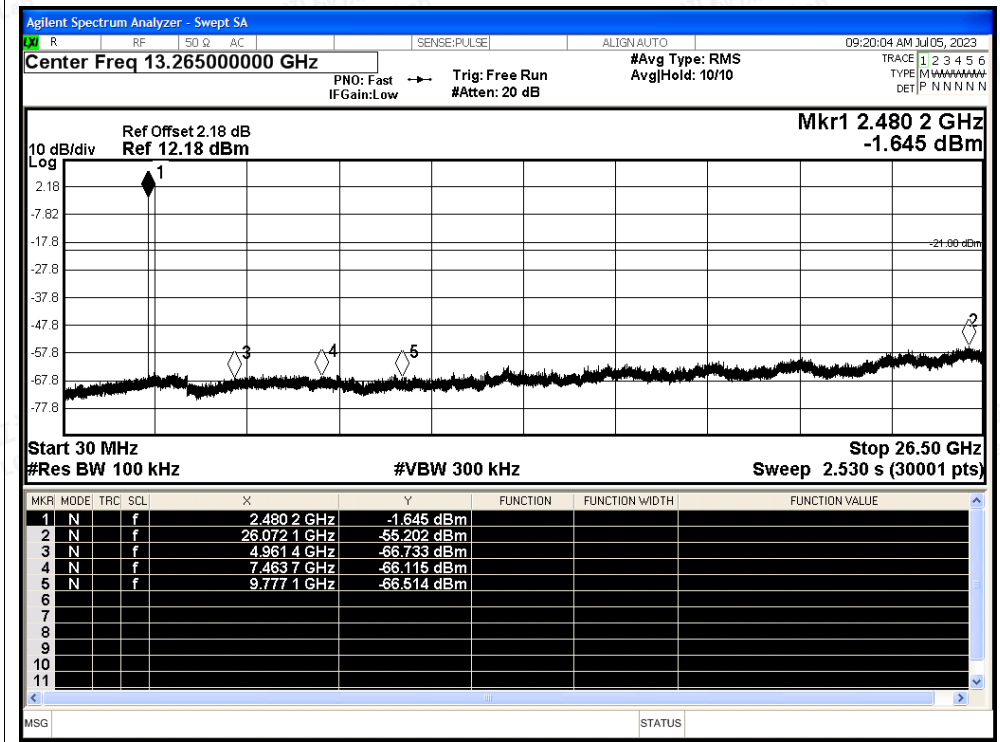




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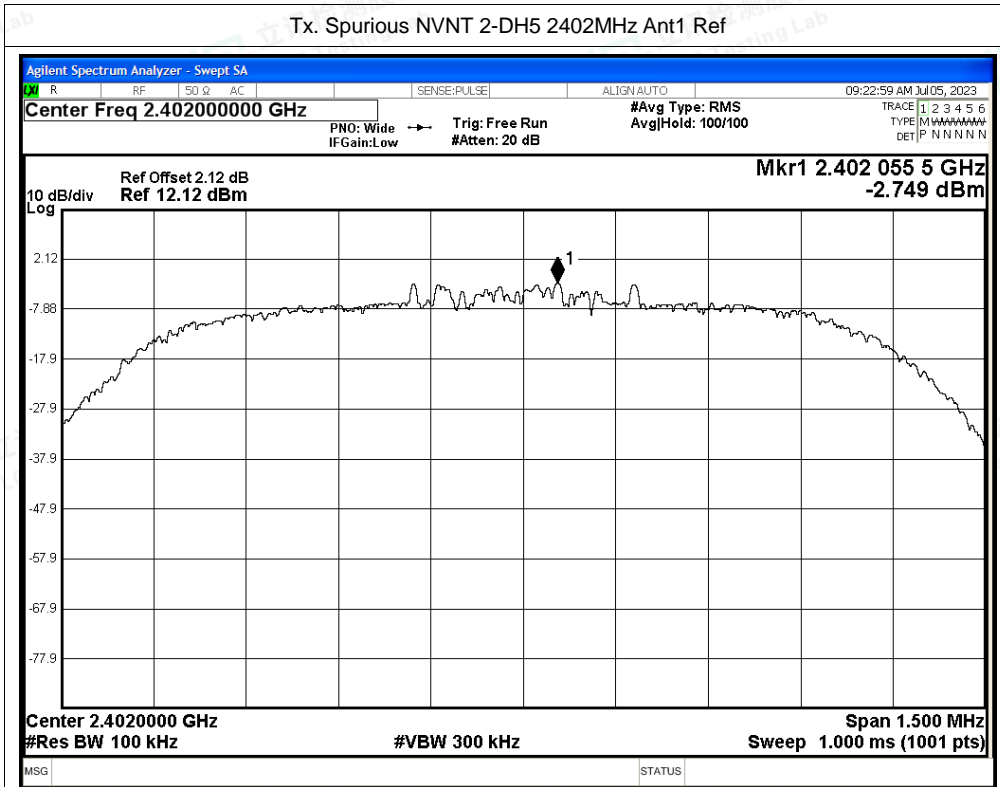


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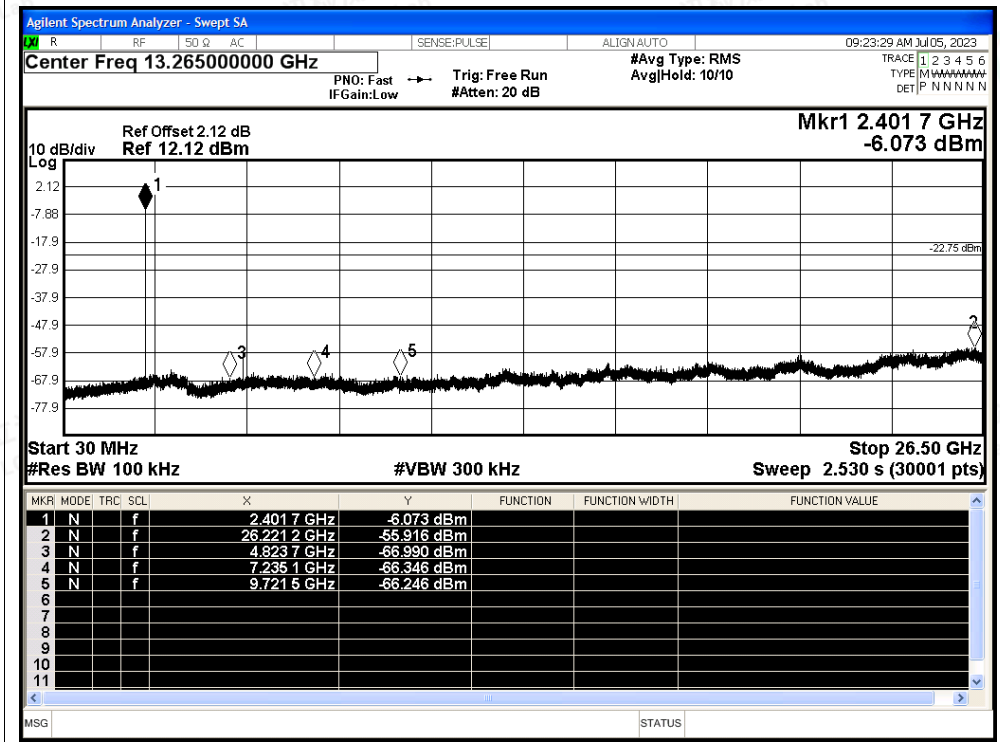




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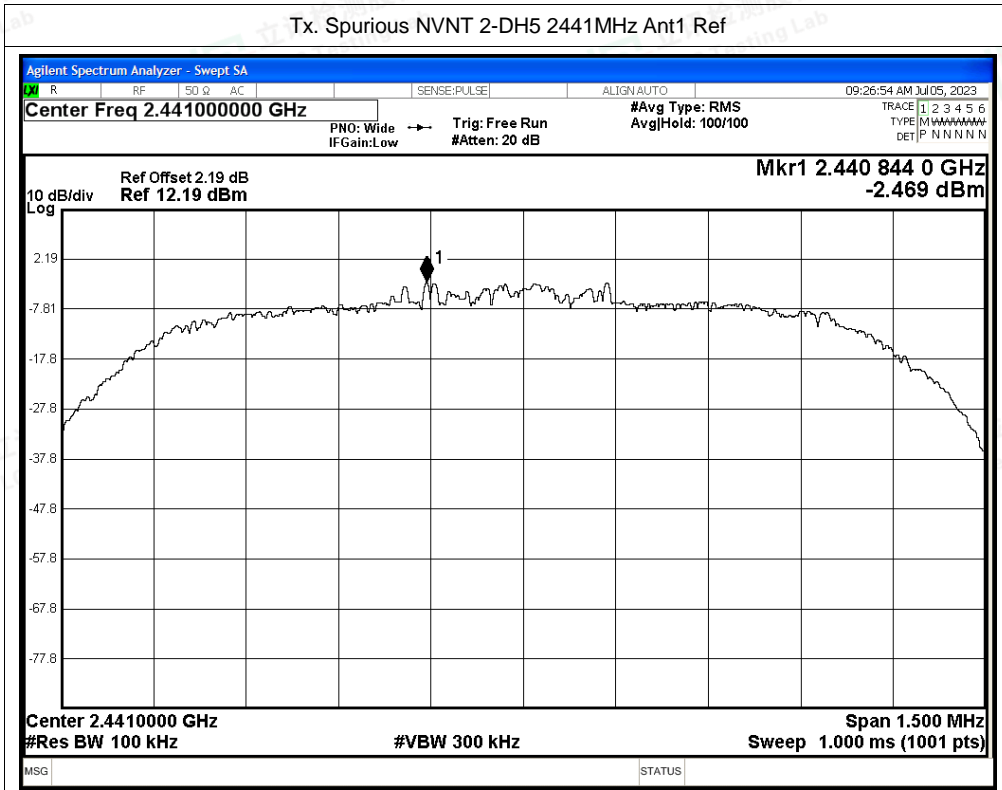


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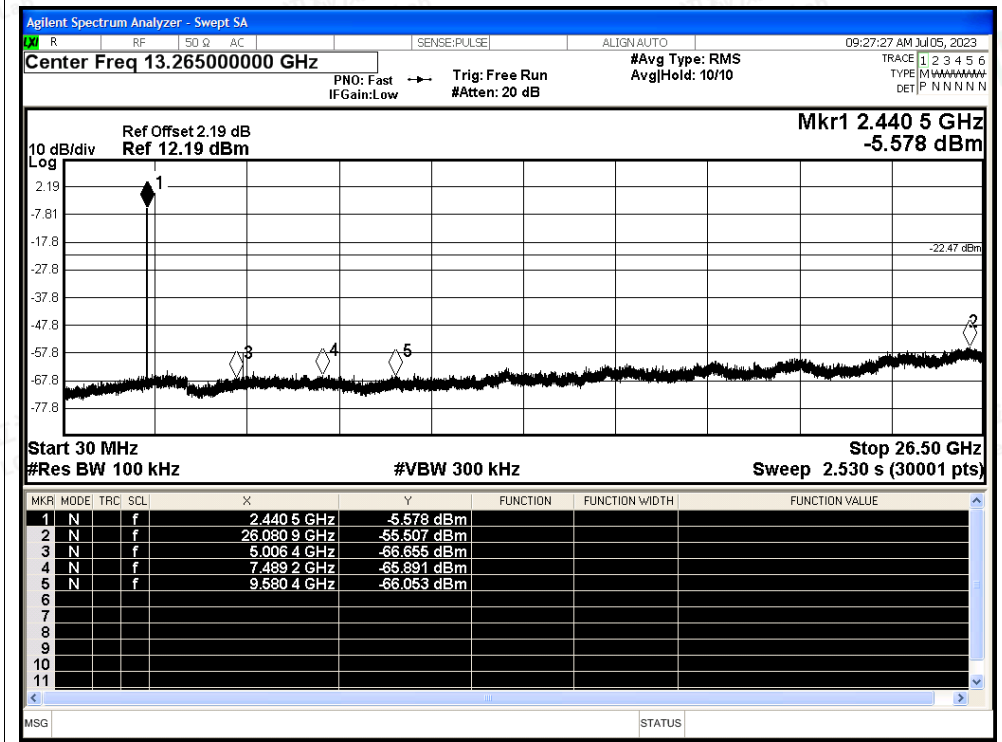




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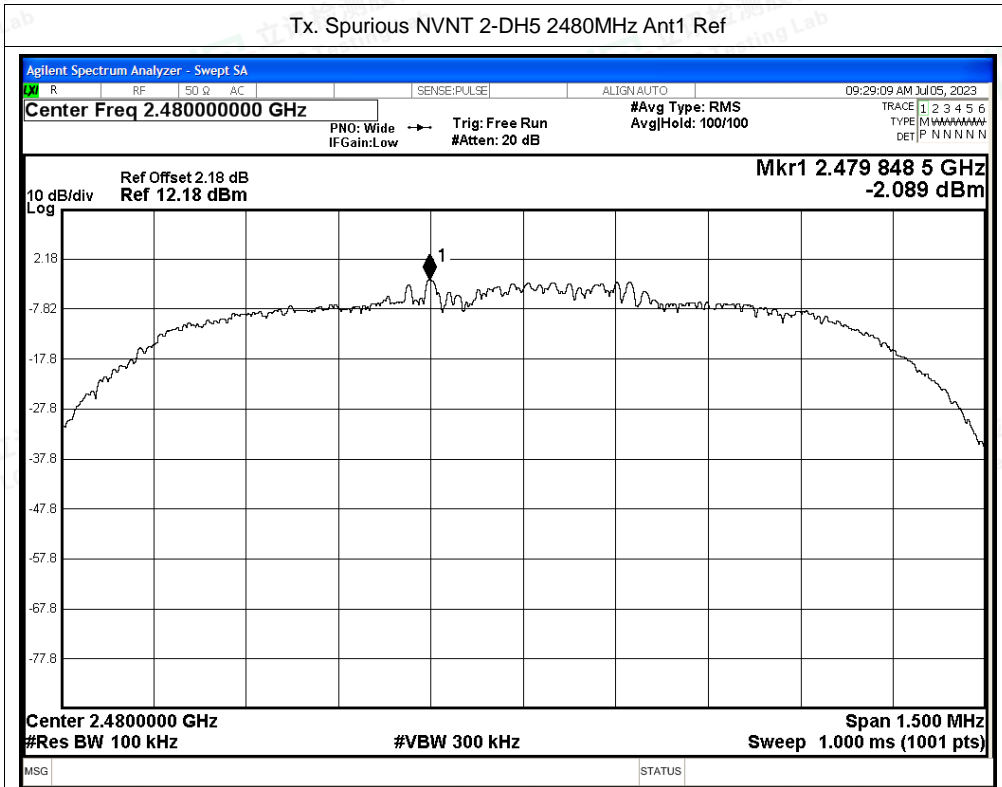


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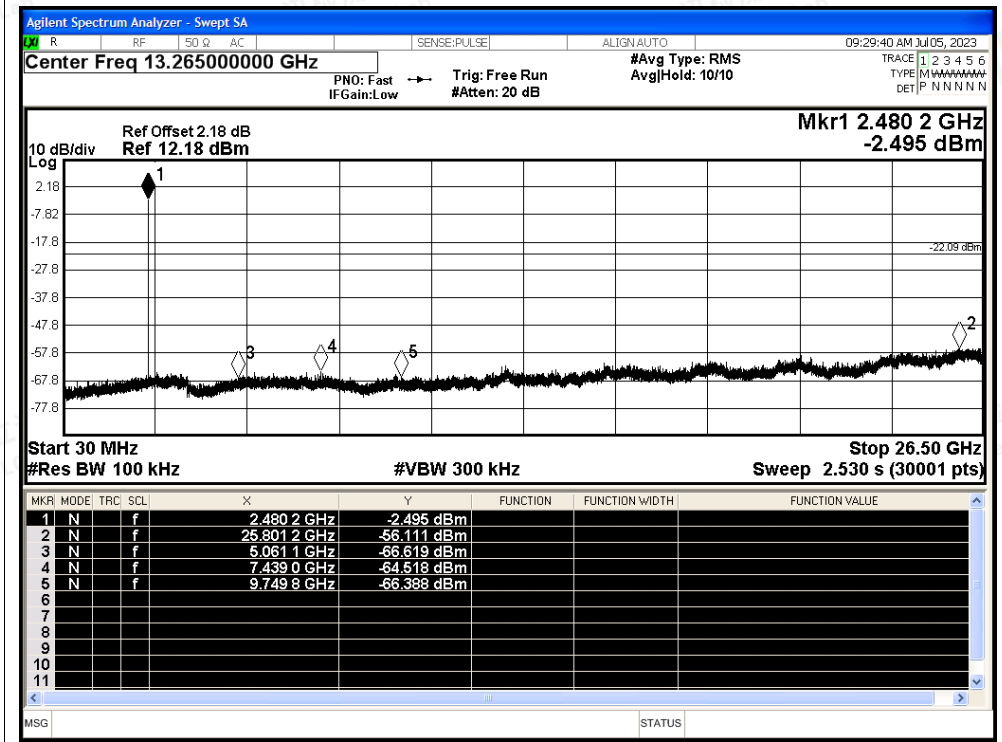




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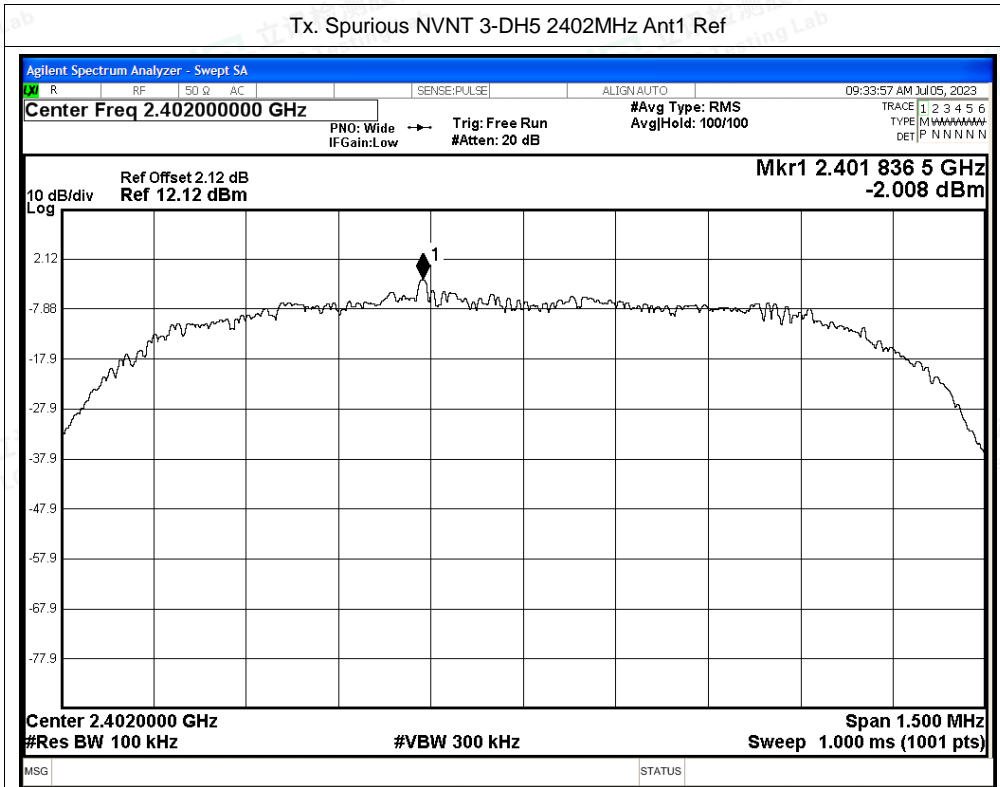


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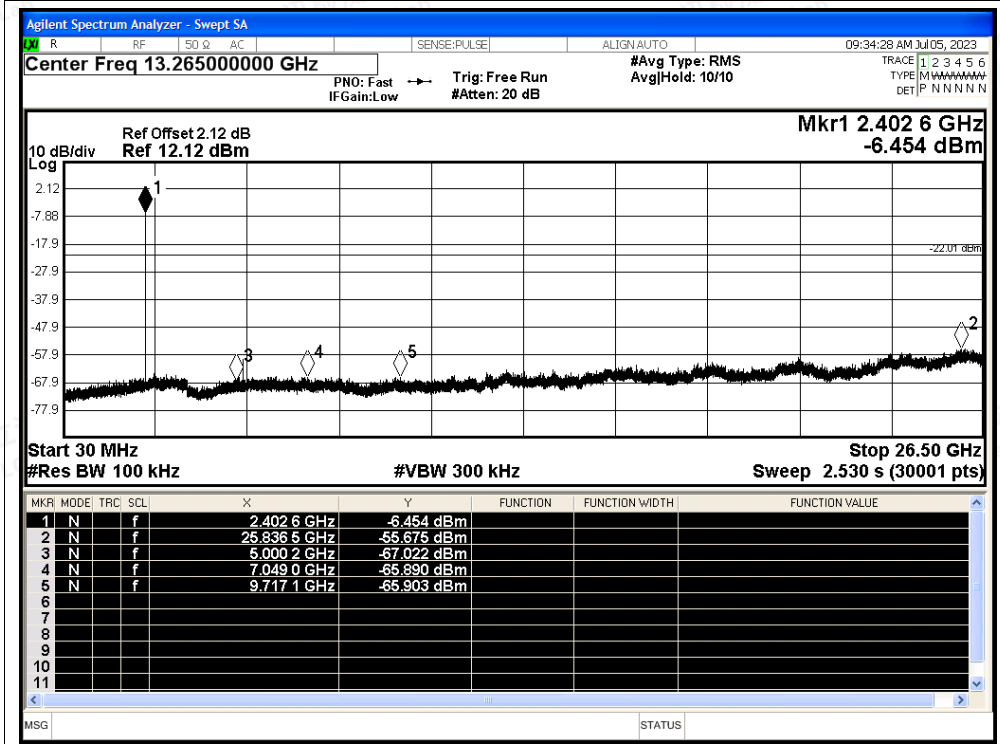




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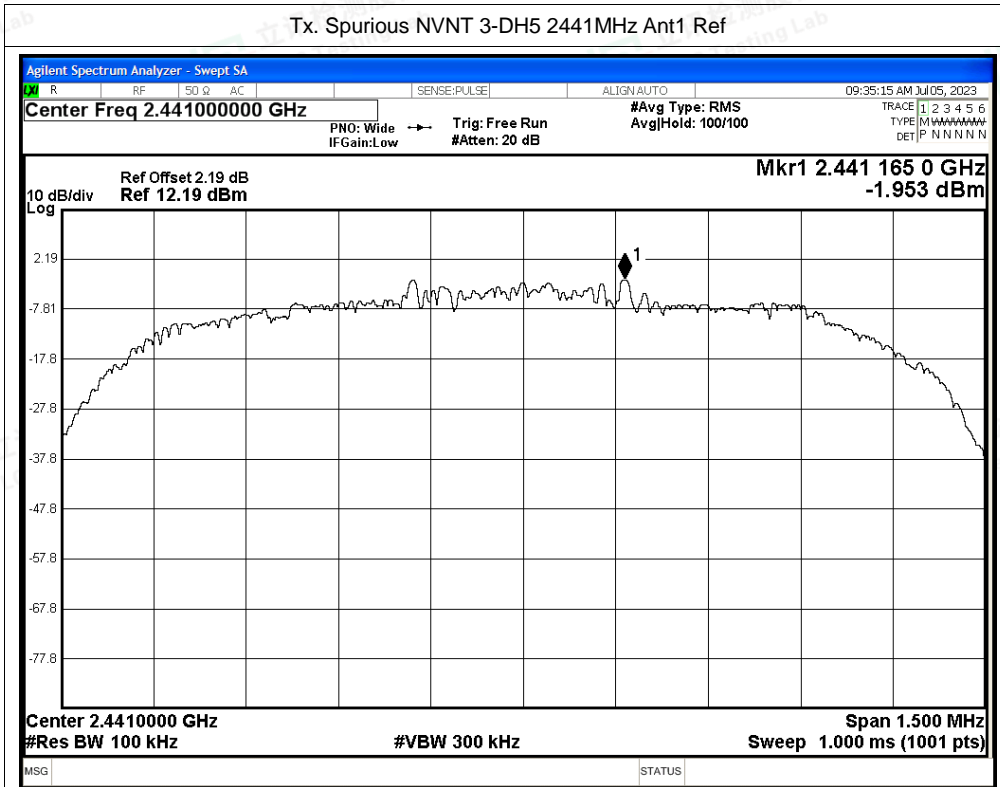


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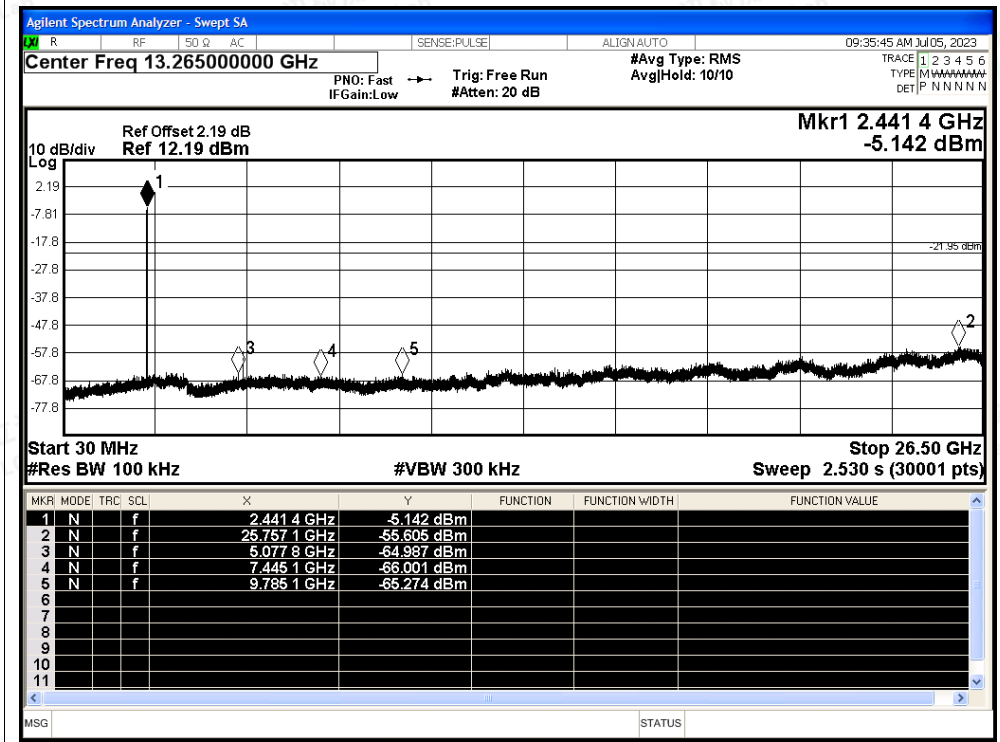




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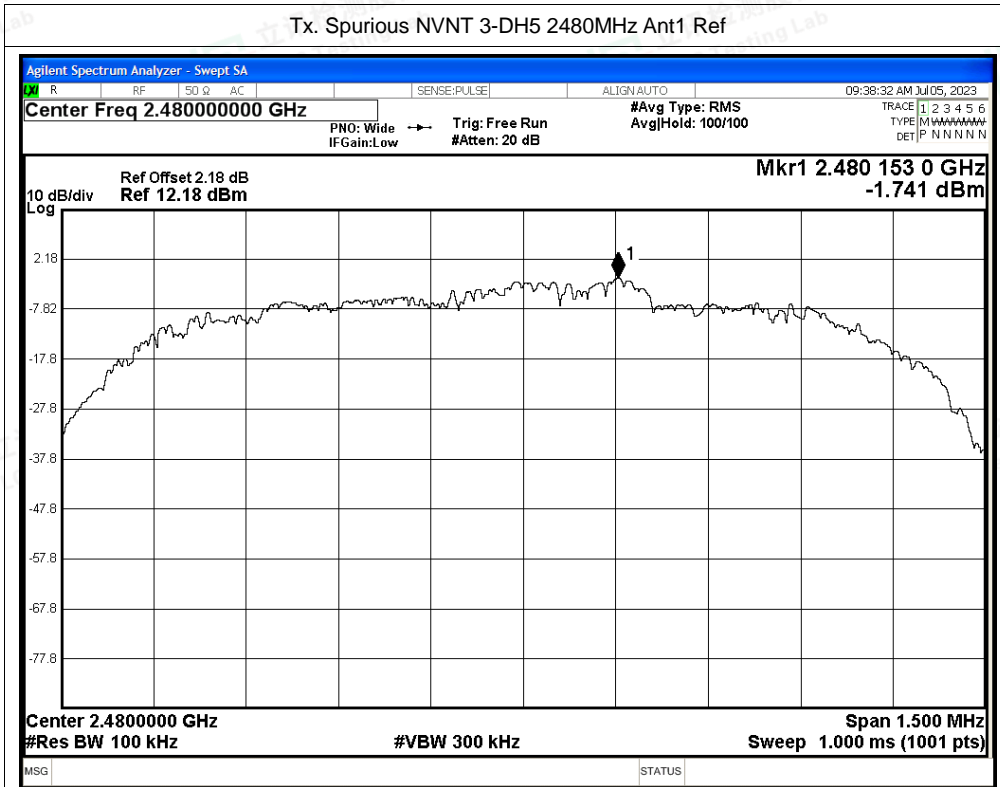


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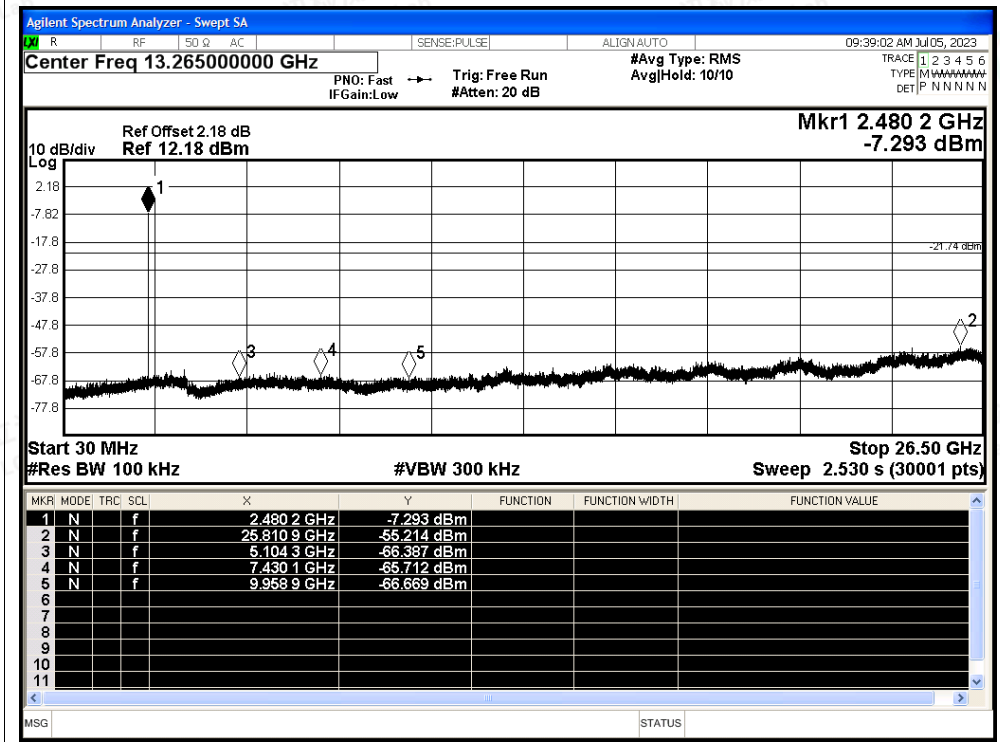




Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission







## A.8 Restrict Band

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-50.37	3.04	47.90	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-58.01	3.04	40.26	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2318.352	-47.31	3.04	50.96	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2386.224	-57.53	3.04	40.74	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-49.56	3.04	48.71	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-57.7	3.04	40.57	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-49.52	3.04	48.75	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-56	3.04	42.27	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2498.68	-47.03	3.04	51.24	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.512	-56	3.04	42.27	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-50.41	3.04	47.86	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-57.41	3.04	40.86	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-49.88	3.04	48.39	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-58.05	3.04	40.22	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2381.904	-47.62	3.04	50.65	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2373.072	-57.45	3.04	40.82	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-50.55	3.04	47.72	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-57.46	3.04	40.81	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-50.44	3.04	47.83	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-55.92	3.04	42.35	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2486.2	-46.31	3.04	51.96	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.512	-55.92	3.04	42.35	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-50.47	3.04	47.80	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-57.26	3.04	41.01	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-51.23	3.04	47.04	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-57.94	3.04	40.33	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2329.968	-47.95	3.04	50.32	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2389.008	-57.45	3.04	40.82	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-49.74	3.04	48.53	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-57.68	3.04	40.59	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-50.93	3.04	47.34	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-55.94	3.04	42.33	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2493.808	-46.78	3.04	51.49	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.512	-55.94	3.04	42.33	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-48.47	3.04	49.80	Peak	74	Pass







NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-57.28	3.04	40.99	Average	54	Pass
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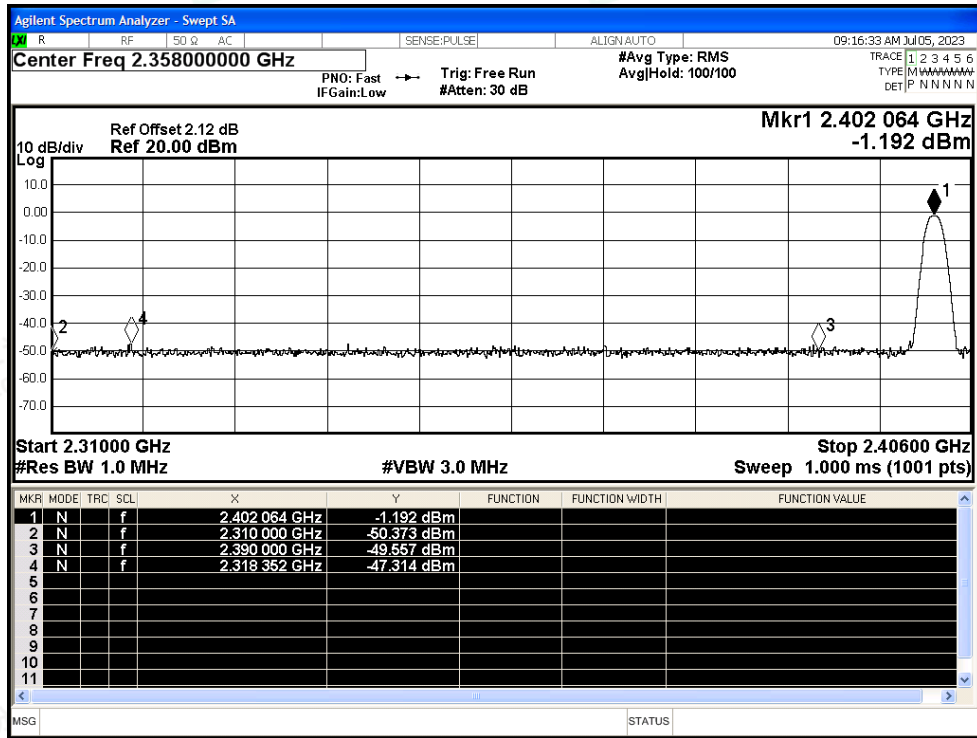


Shenzhen LCS Compliance Testing Laboratory Ltd.  
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China  
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com  
Scan code to check authenticity

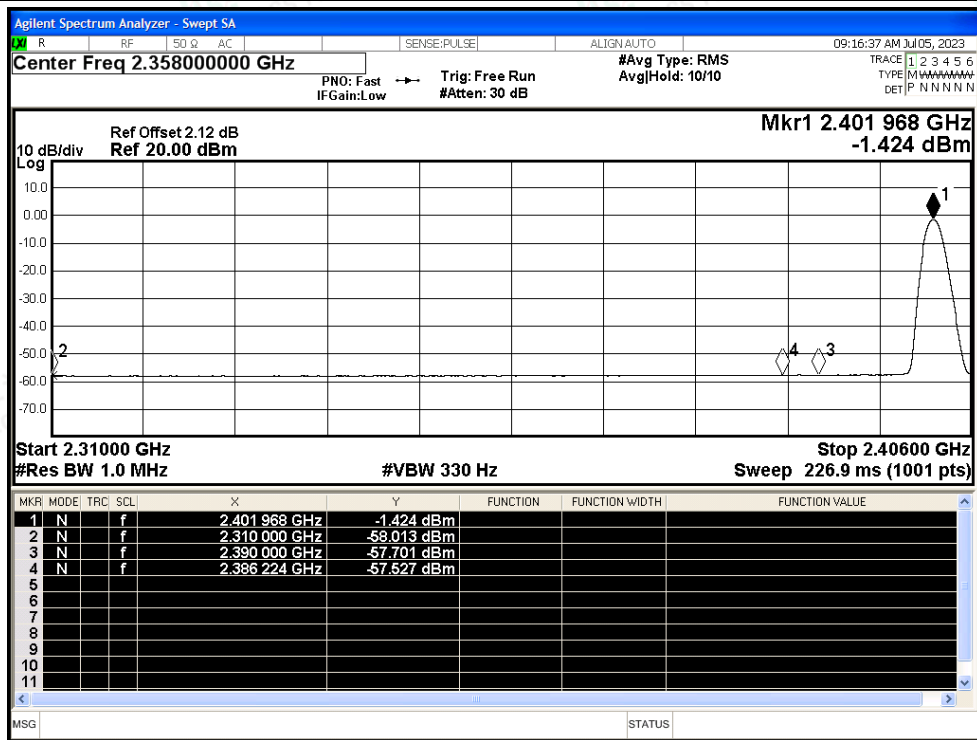


Test Graphs

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

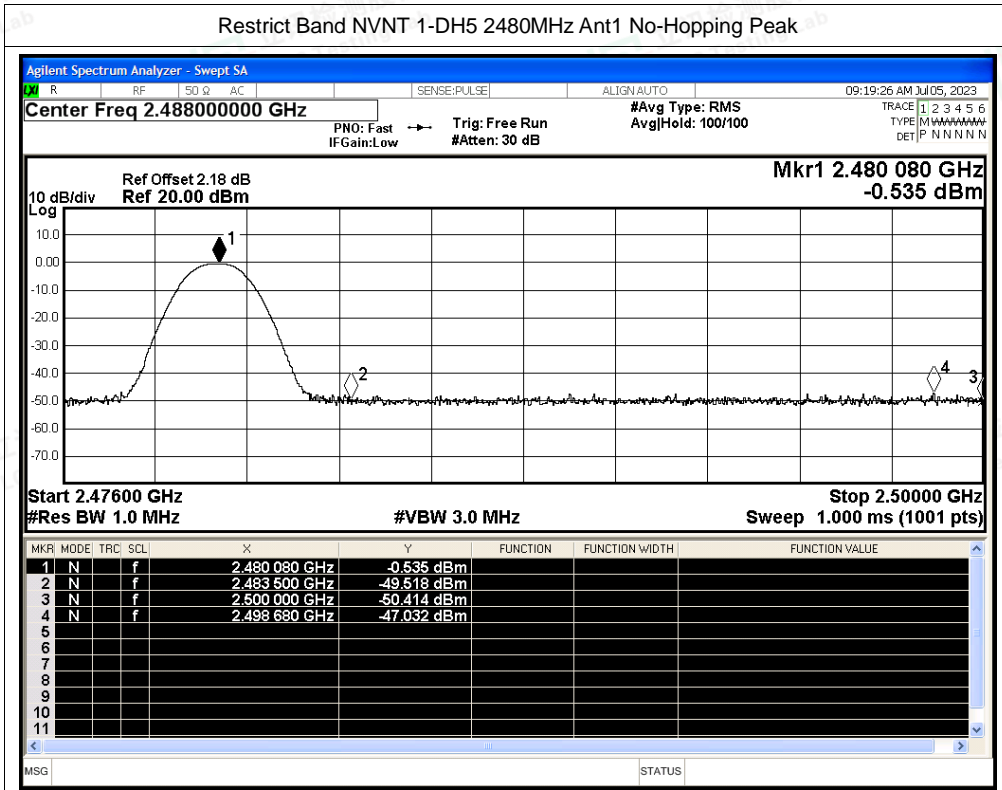


Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average

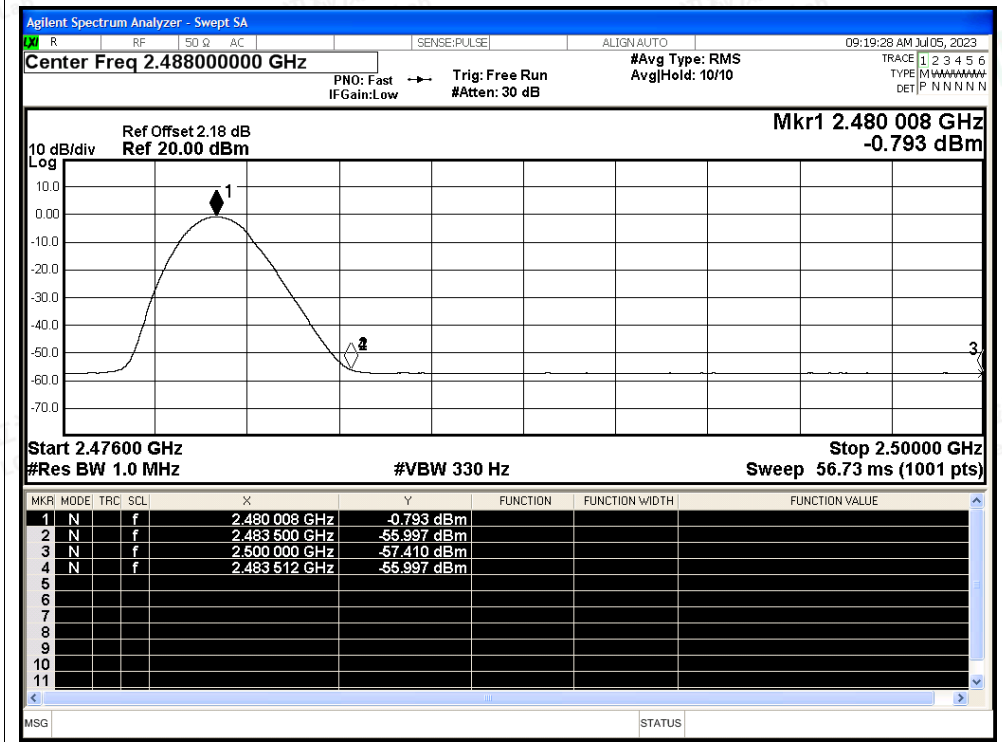




Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak

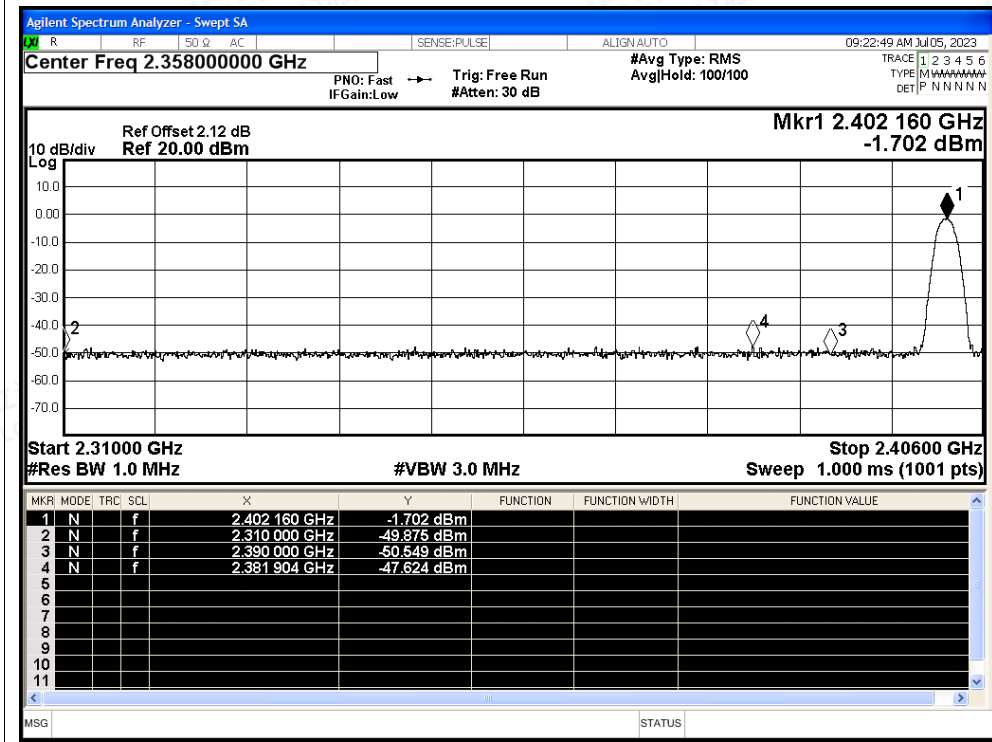


Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average

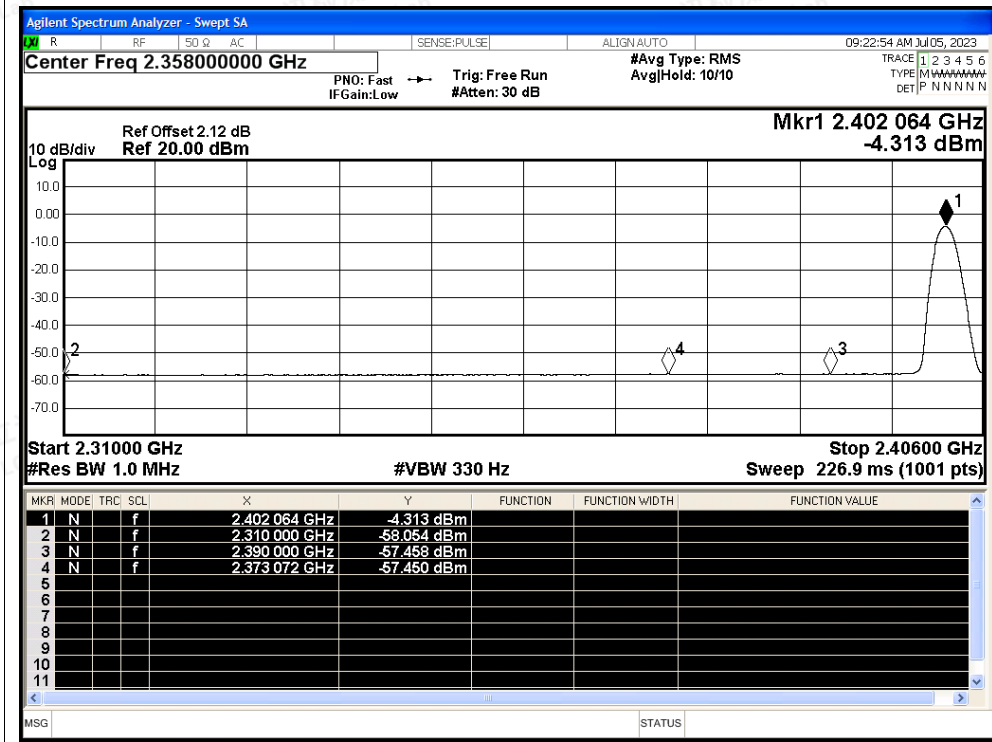




Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak

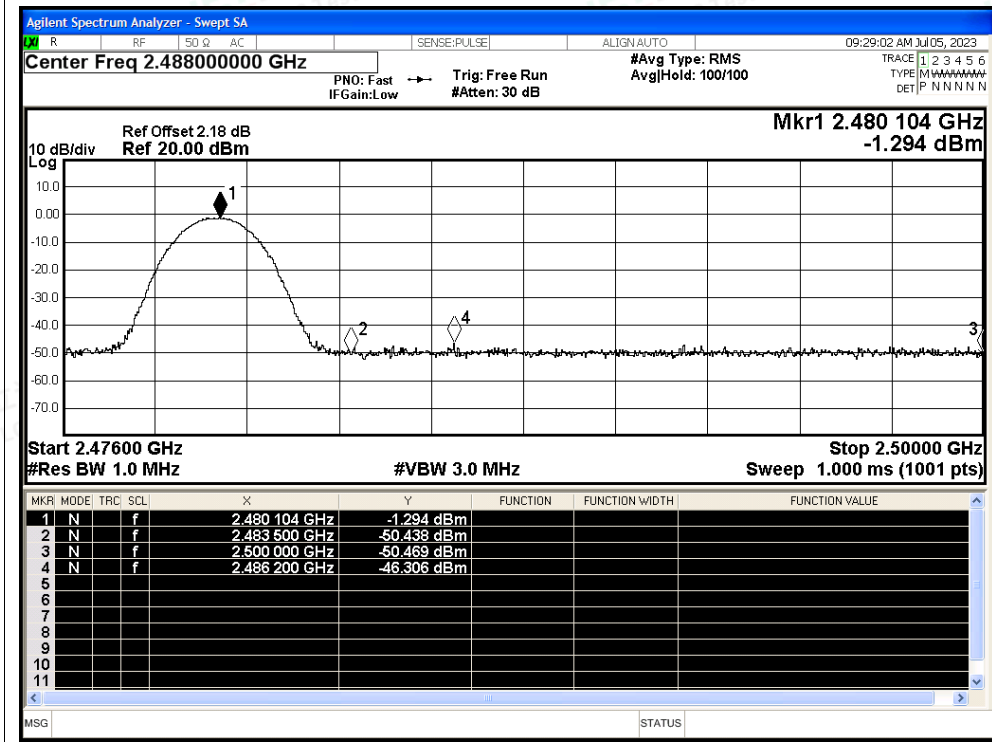


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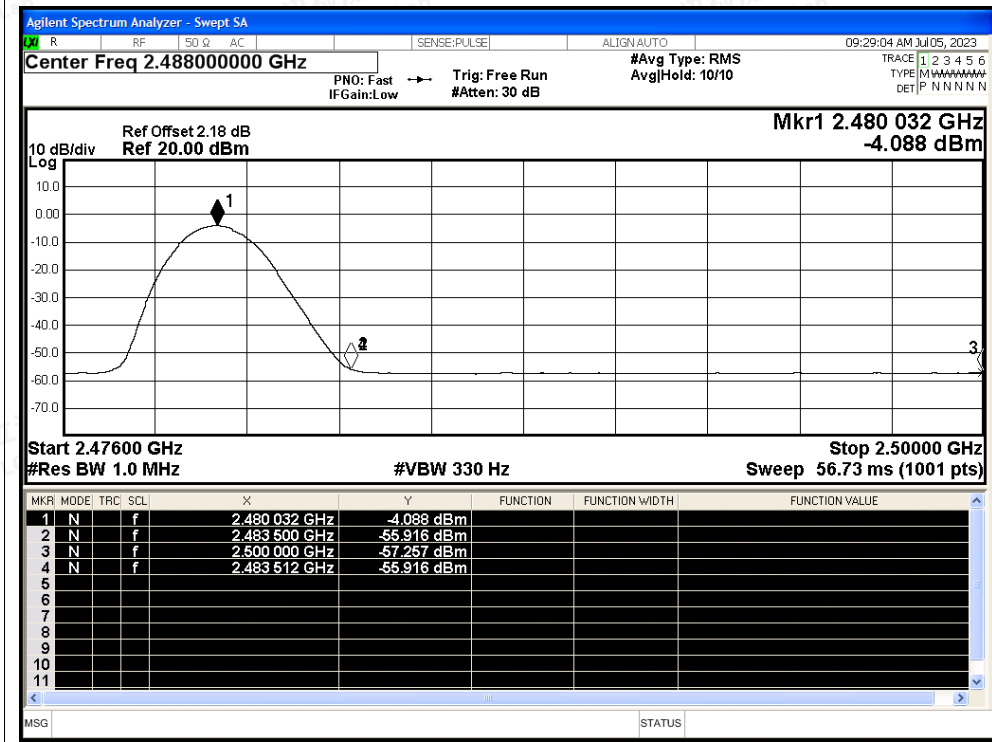




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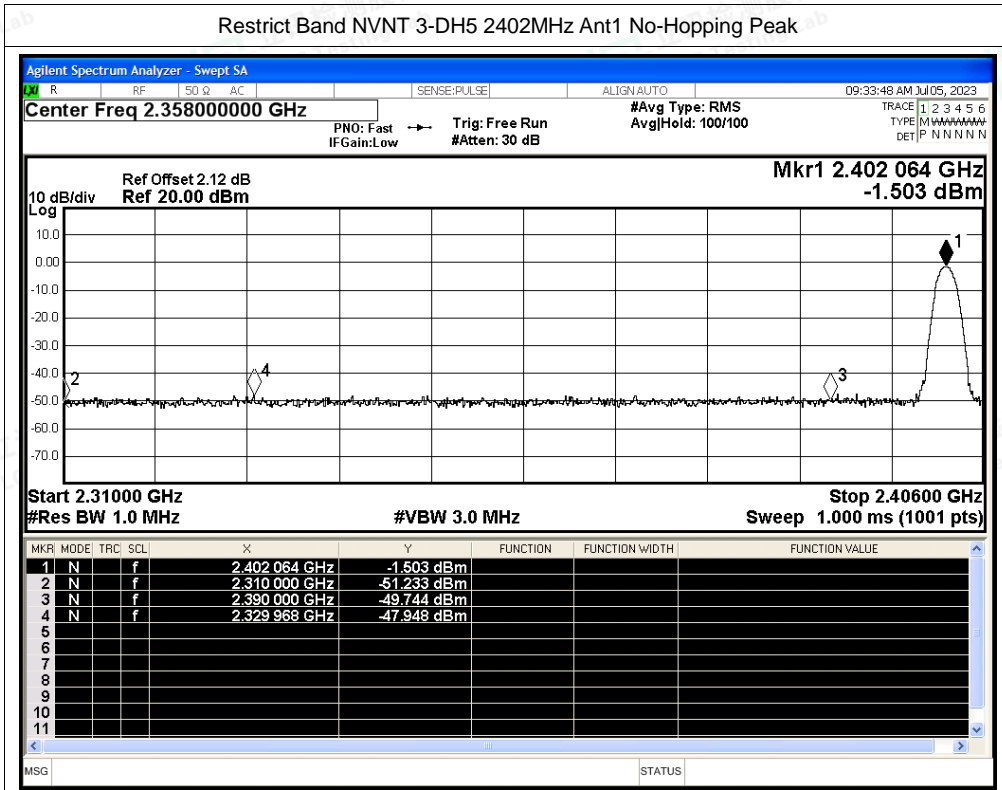


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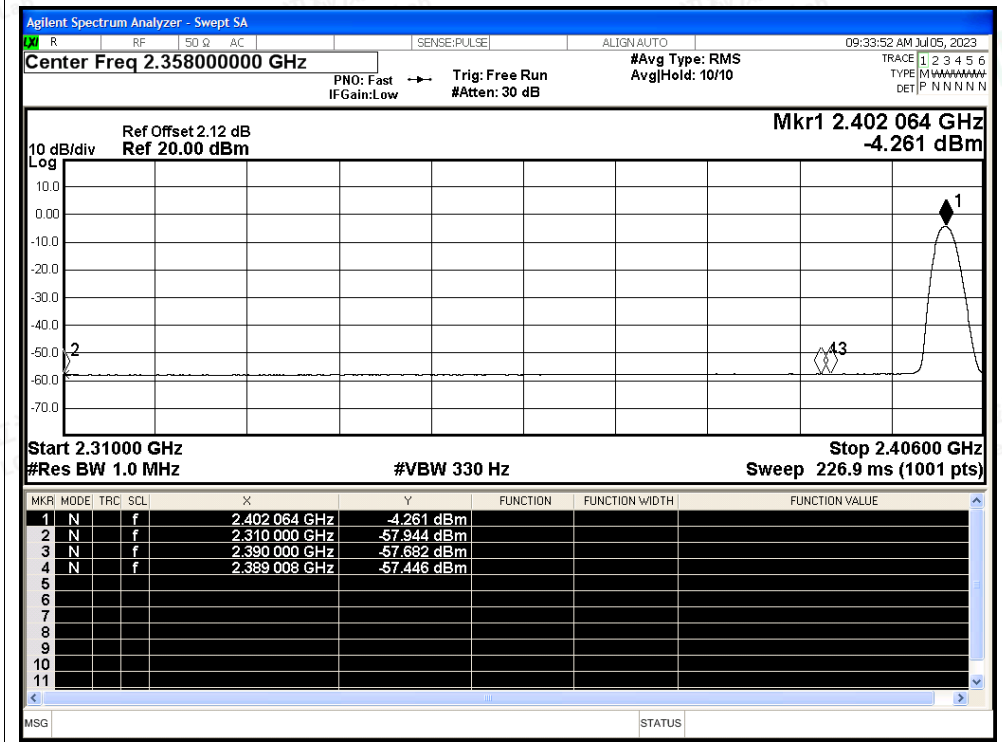




Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak

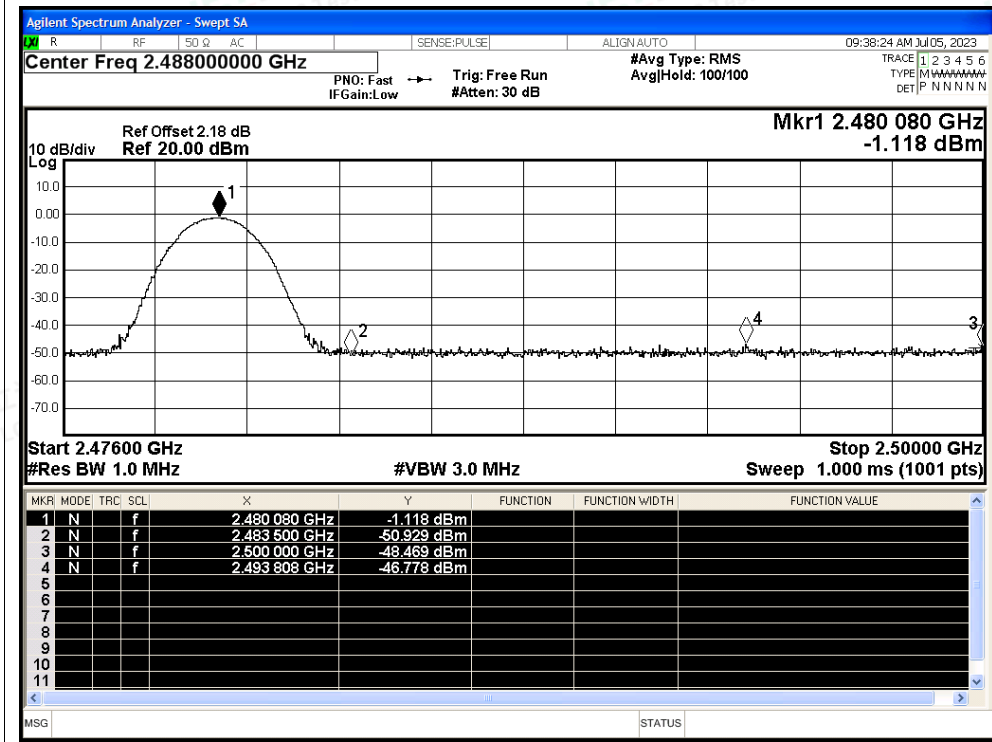


Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Average





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



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

