



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Amplifier

Test Model: LP-X4

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	52.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan





A.1 -20dB Bandwidth

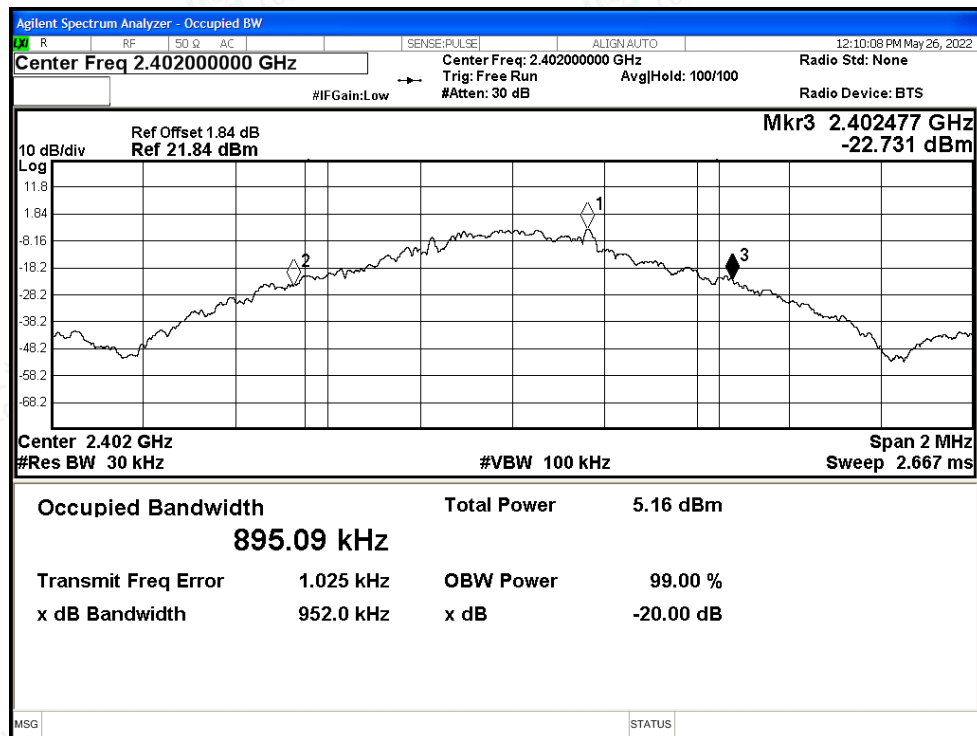
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit (MHz)
NVNT	1-DH5	2402	Ant1	0.952	/
NVNT	1-DH5	2441	Ant1	0.951	/
NVNT	1-DH5	2480	Ant1	0.968	/
NVNT	2-DH5	2402	Ant1	1.303	/
NVNT	2-DH5	2441	Ant1	1.307	/
NVNT	2-DH5	2480	Ant1	1.282	/
NVNT	3-DH5	2402	Ant1	1.302	/
NVNT	3-DH5	2441	Ant1	1.289	/
NVNT	3-DH5	2480	Ant1	1.314	/



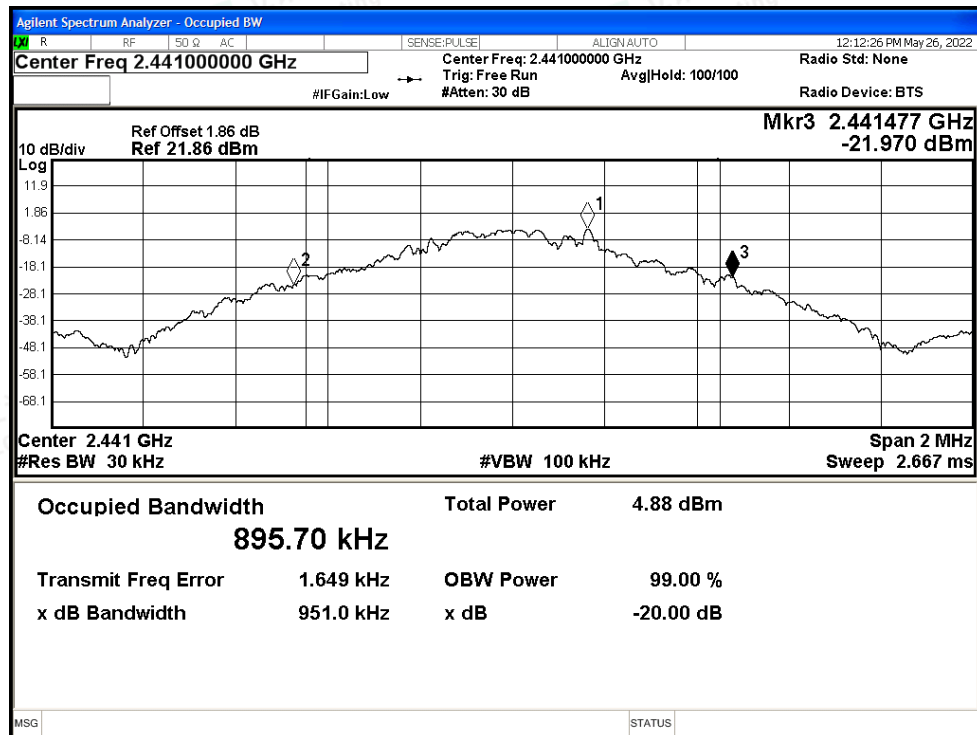


Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1

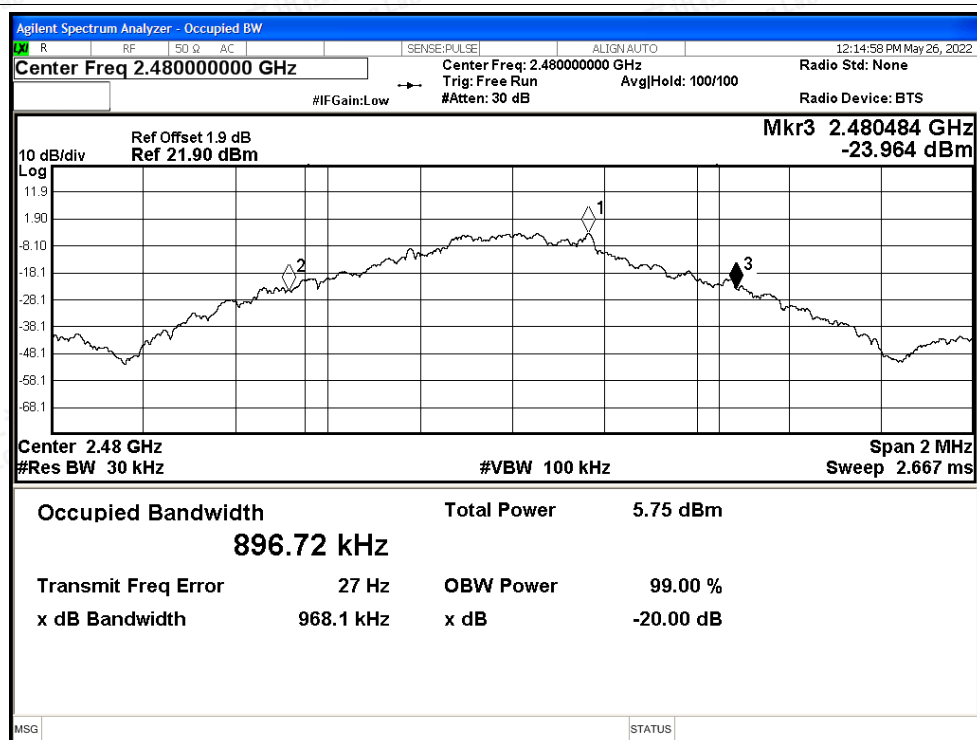


-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1

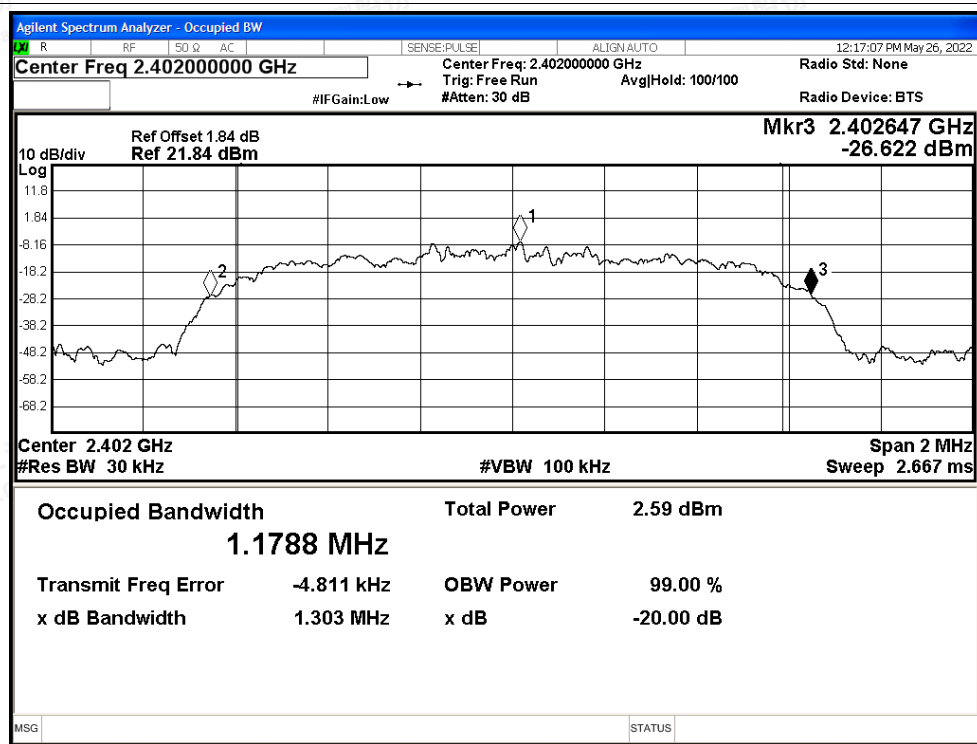




-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1

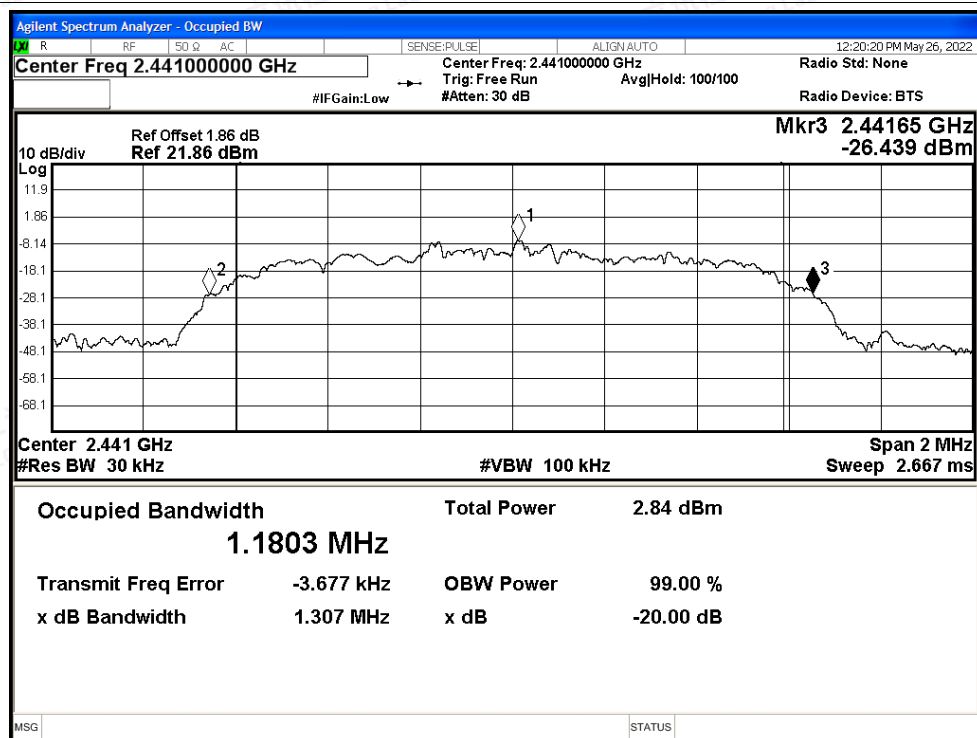


-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1

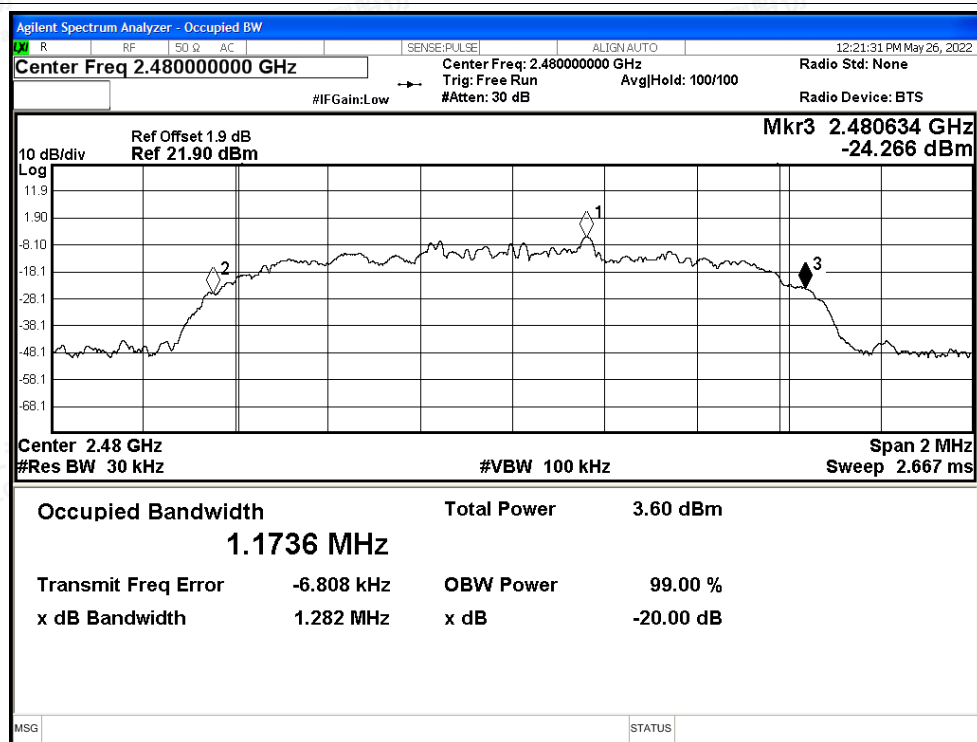




-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1



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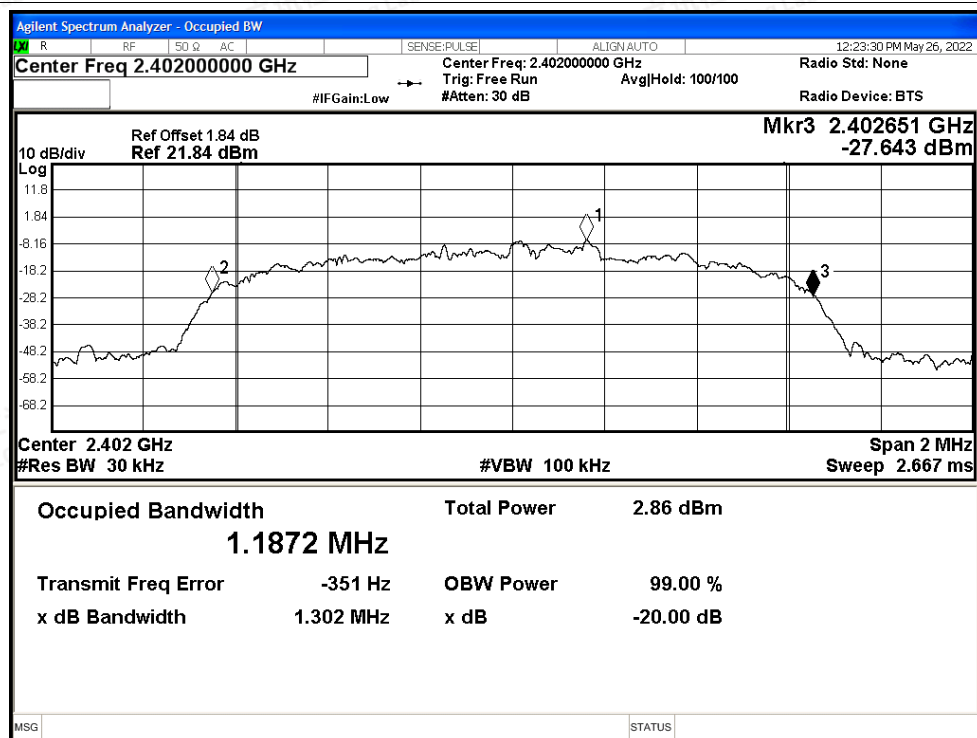
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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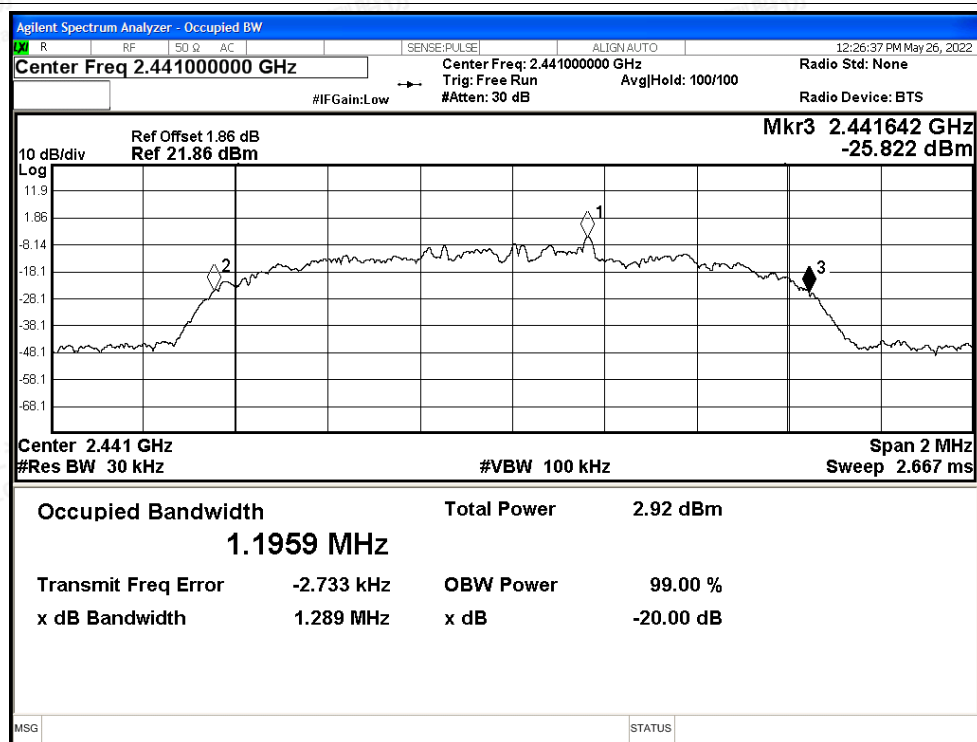
Scan code to check authenticity



-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1



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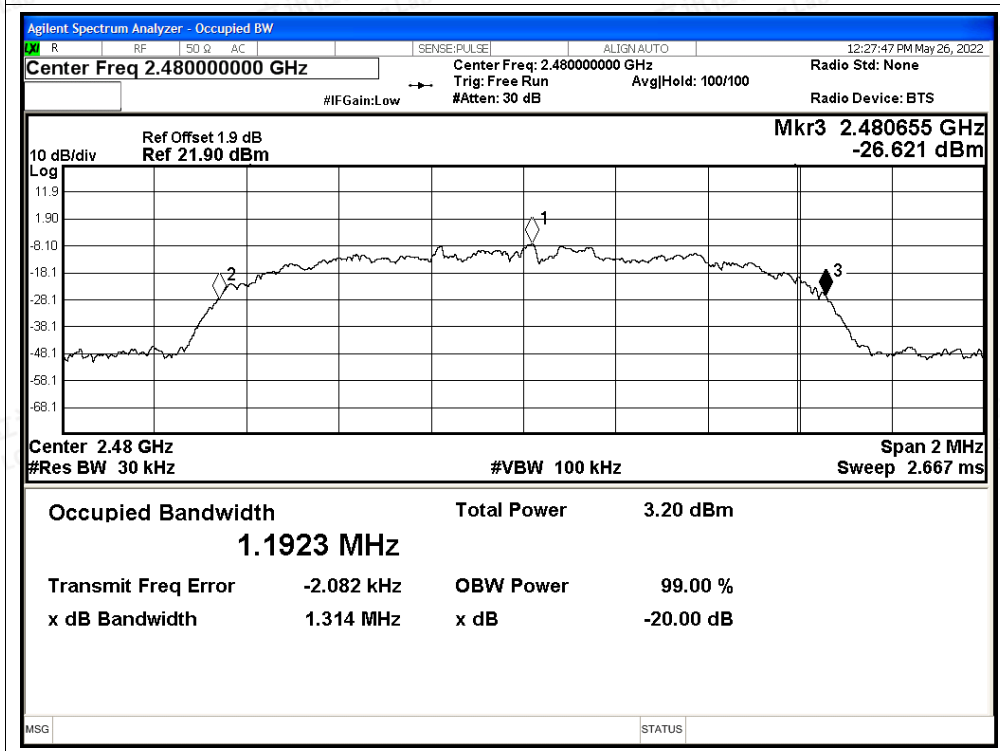
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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

Scan code to check authenticity



-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1





A.2 Maximum Conducted Output Power

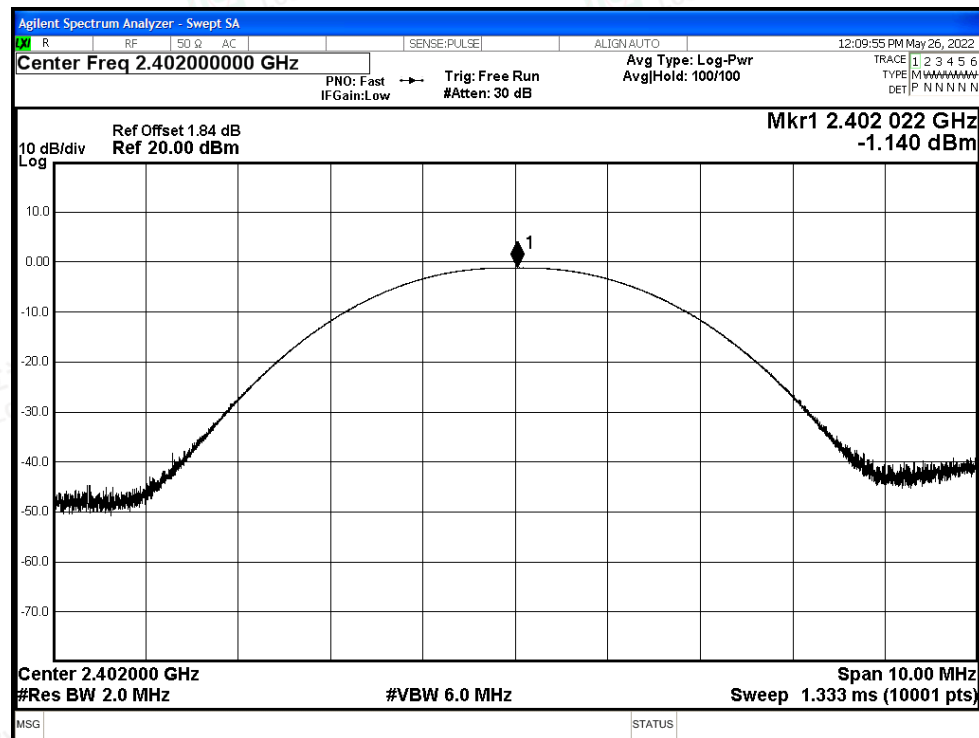
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	-1.14	21	Pass
NVNT	1-DH5	2441	Ant1	-1.53	21	Pass
NVNT	1-DH5	2480	Ant1	-0.67	21	Pass
NVNT	2-DH5	2402	Ant1	-2.15	21	Pass
NVNT	2-DH5	2441	Ant1	-2.24	21	Pass
NVNT	2-DH5	2480	Ant1	-1.52	21	Pass
NVNT	3-DH5	2402	Ant1	-2.05	21	Pass
NVNT	3-DH5	2441	Ant1	-2.14	21	Pass
NVNT	3-DH5	2480	Ant1	-1.29	21	Pass



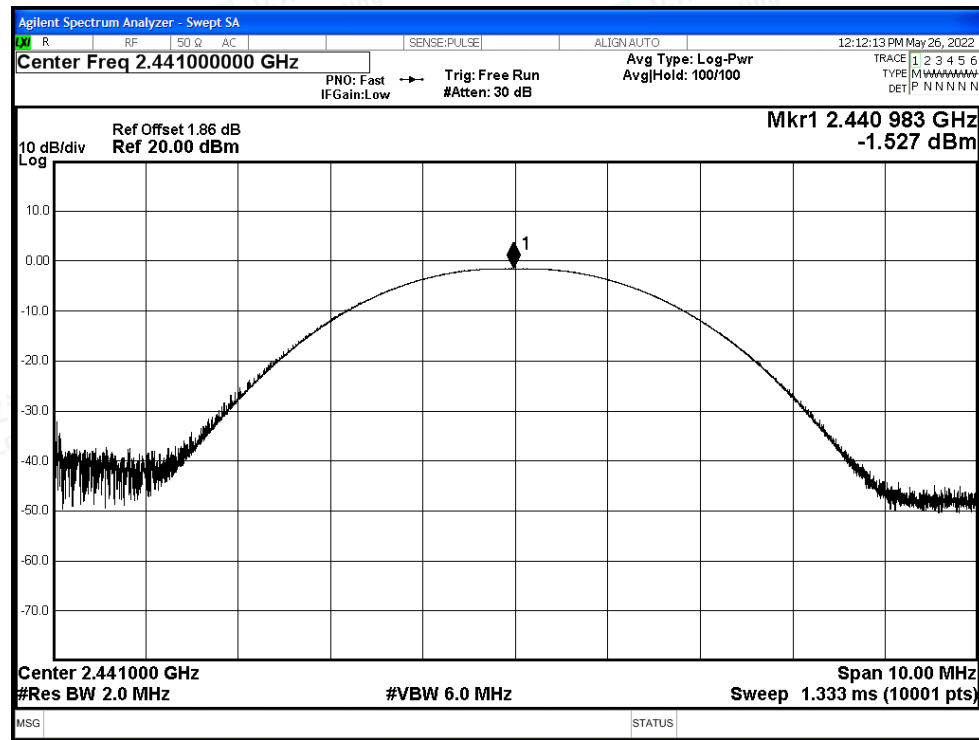


Test Graphs

Power NVNT 1-DH5 2402MHz Ant1

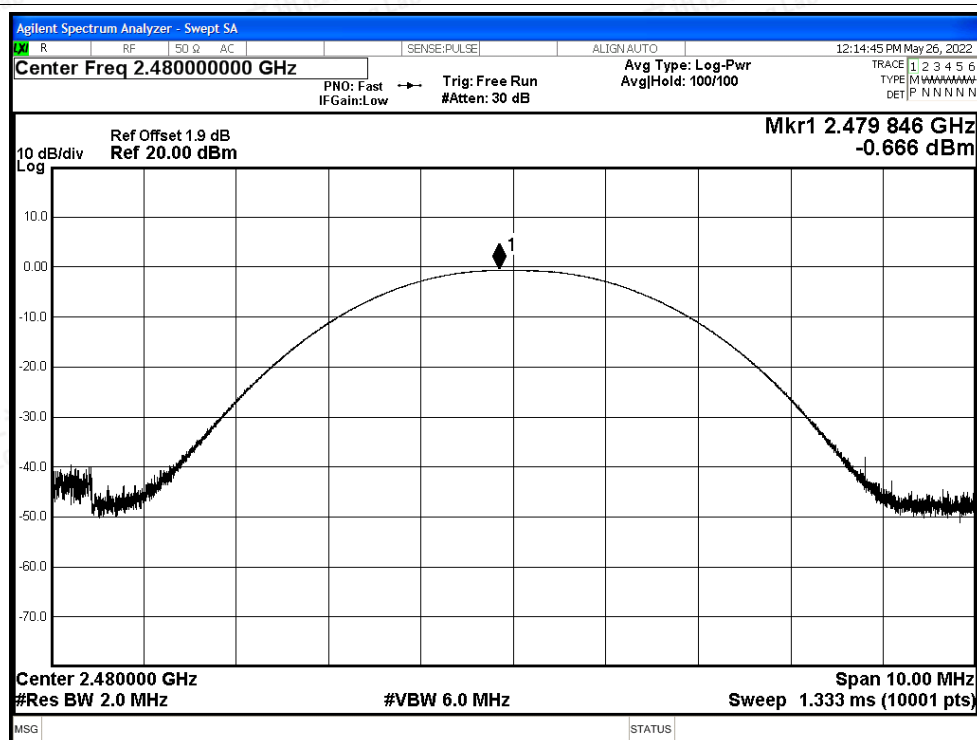


Power NVNT 1-DH5 2441MHz Ant1

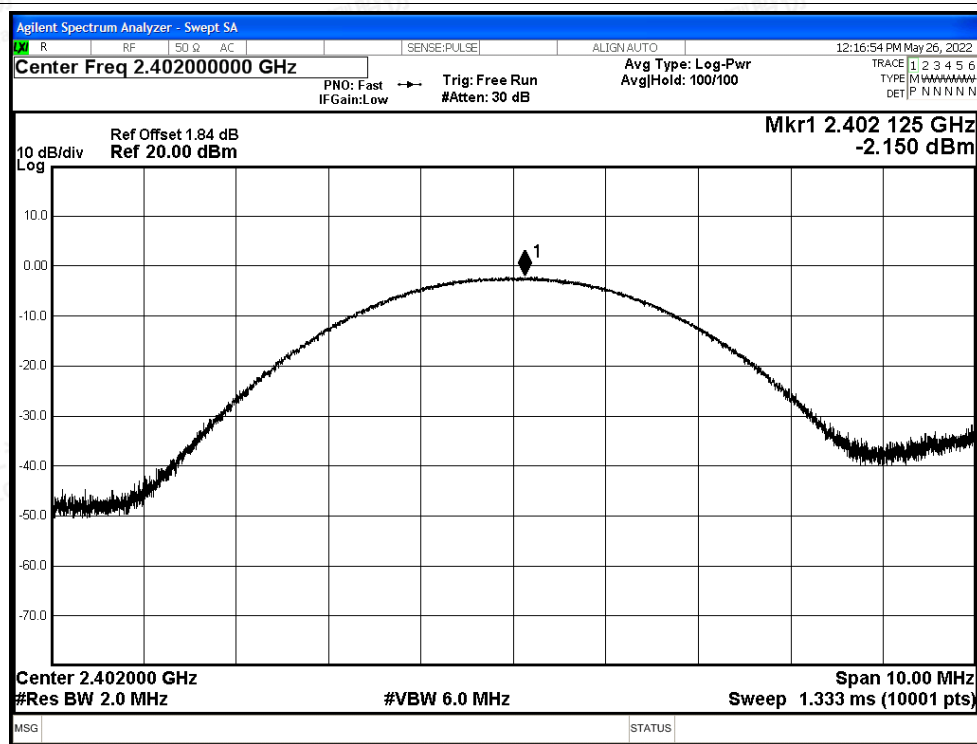




Power NVNT 1-DH5 2480MHz Ant1

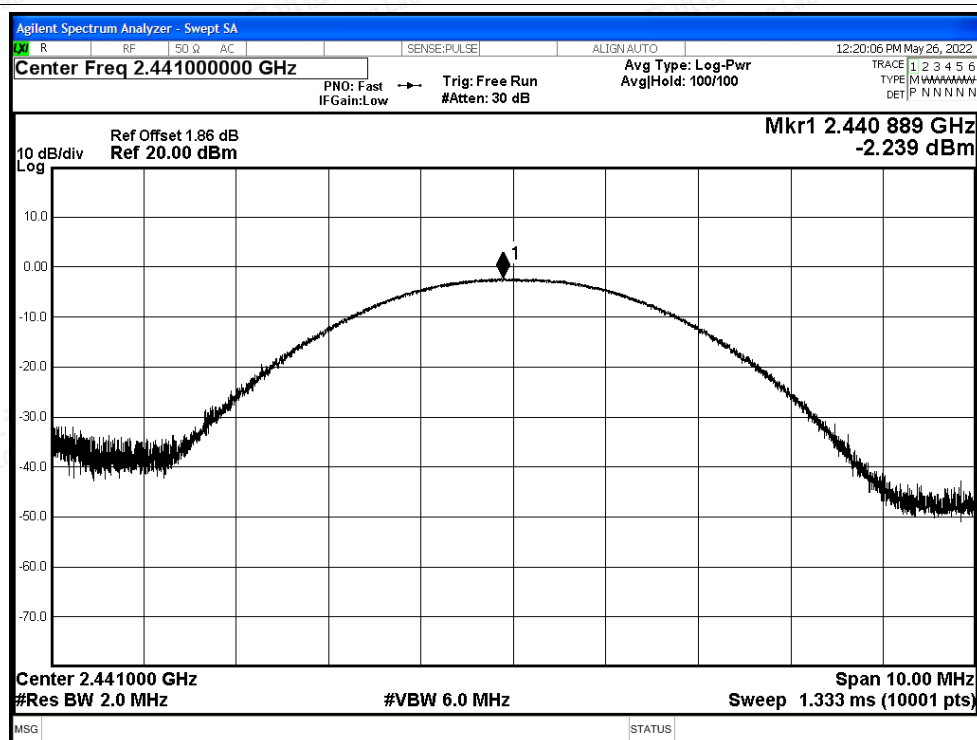


Power NVNT 2-DH5 2402MHz Ant1

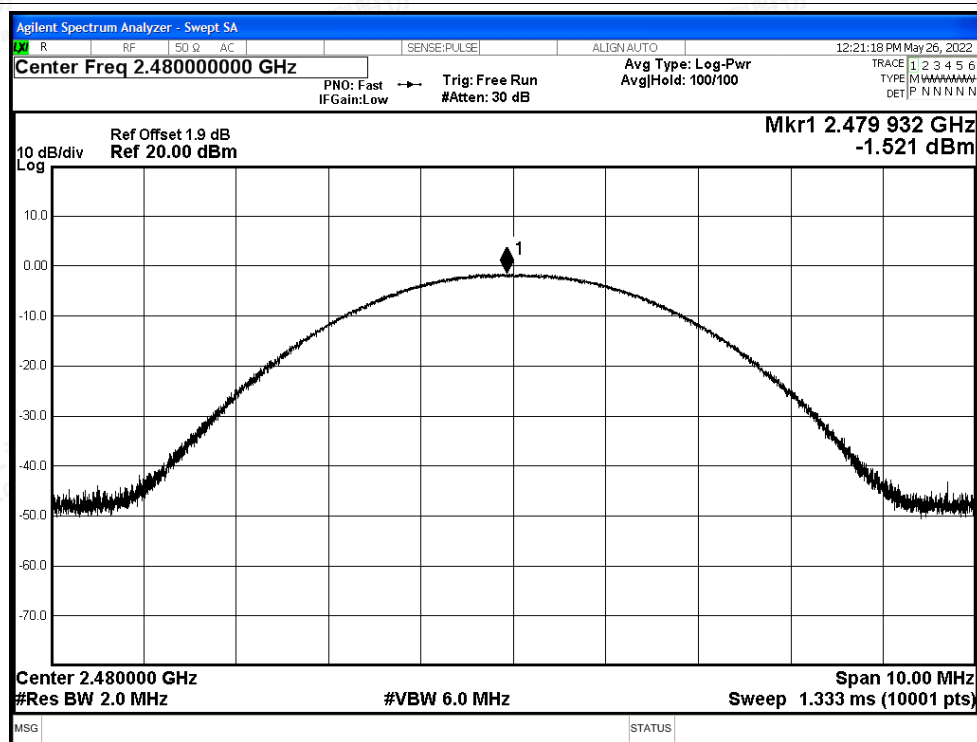




Power NVNT 2-DH5 2441MHz Ant1

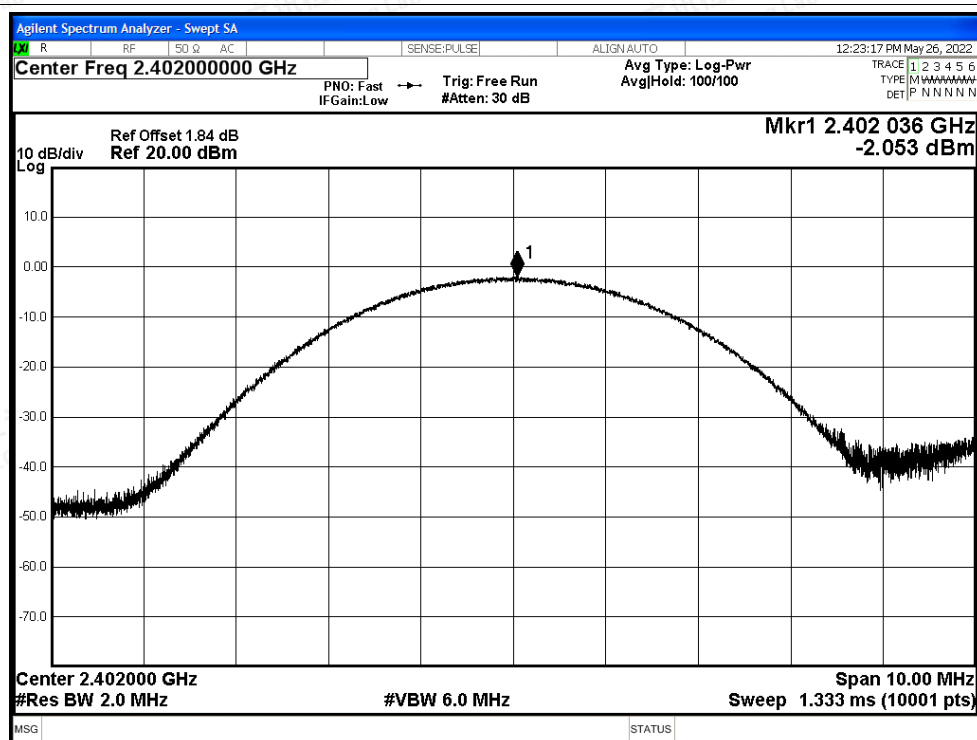


Power NVNT 2-DH5 2480MHz Ant1

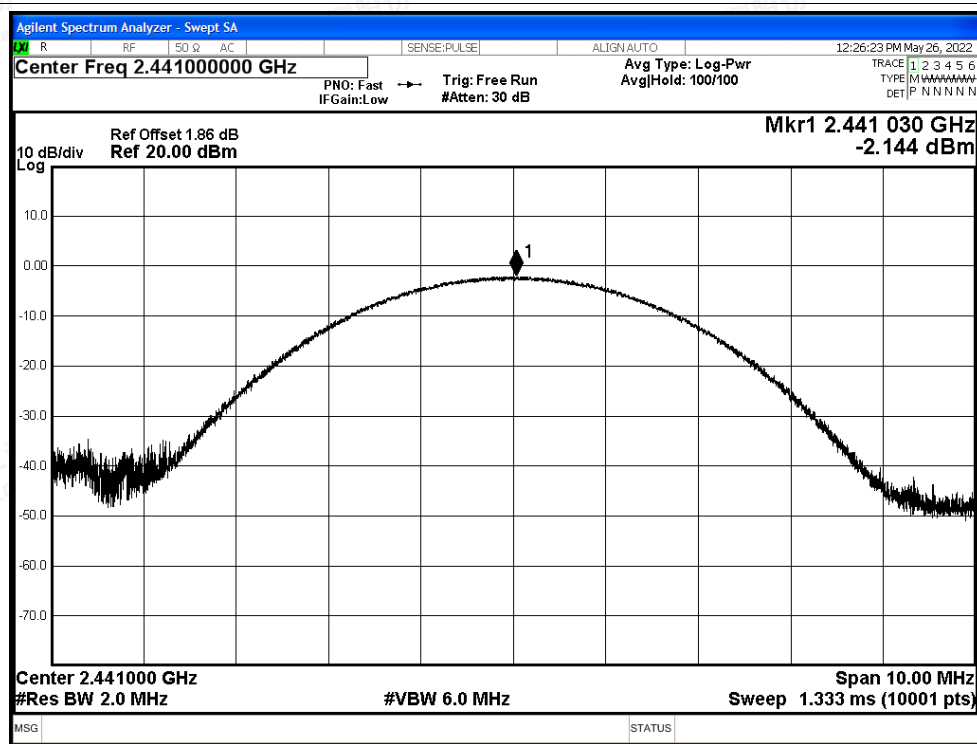


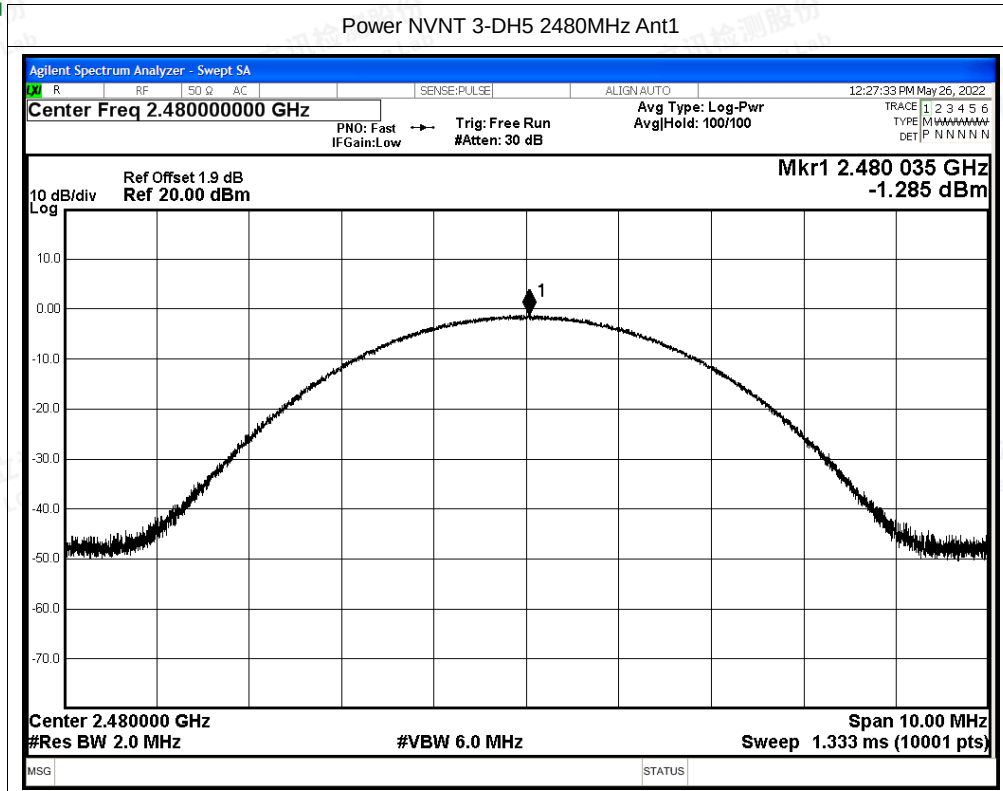


Power NVNT 3-DH5 2402MHz Ant1



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	2402.162	2403.014	0.852	0.635	Pass
NVNT	2-DH5	Ant1	2402.014	2403.02	1.006	0.869	Pass
NVNT	3-DH5	Ant1	2402.158	2403.168	1.01	0.868	Pass

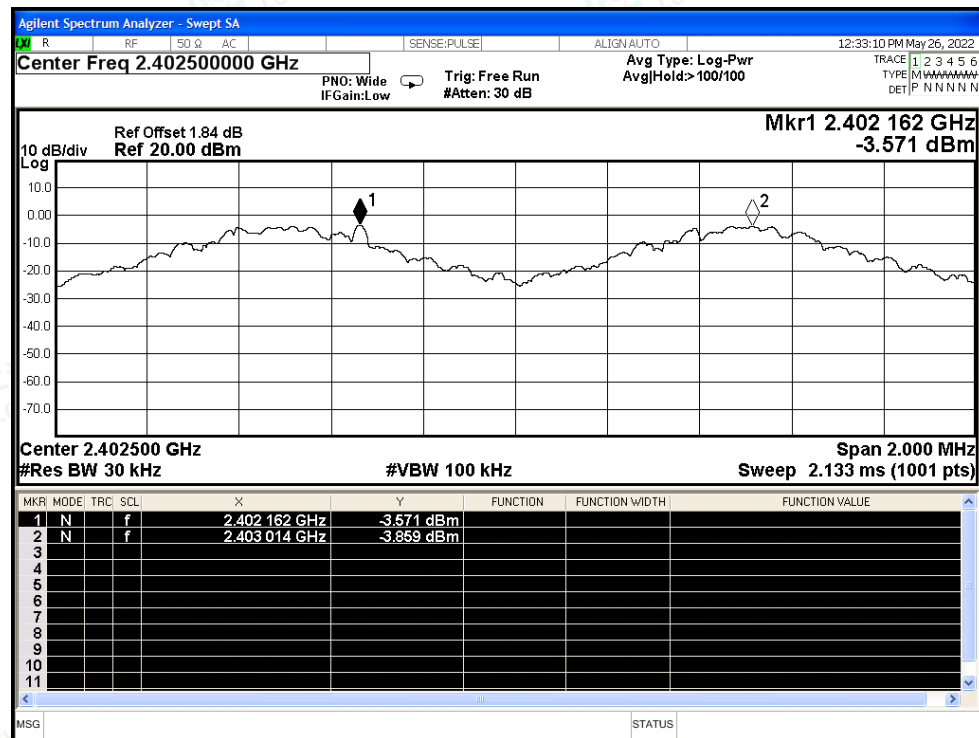


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Scan code to check authenticity

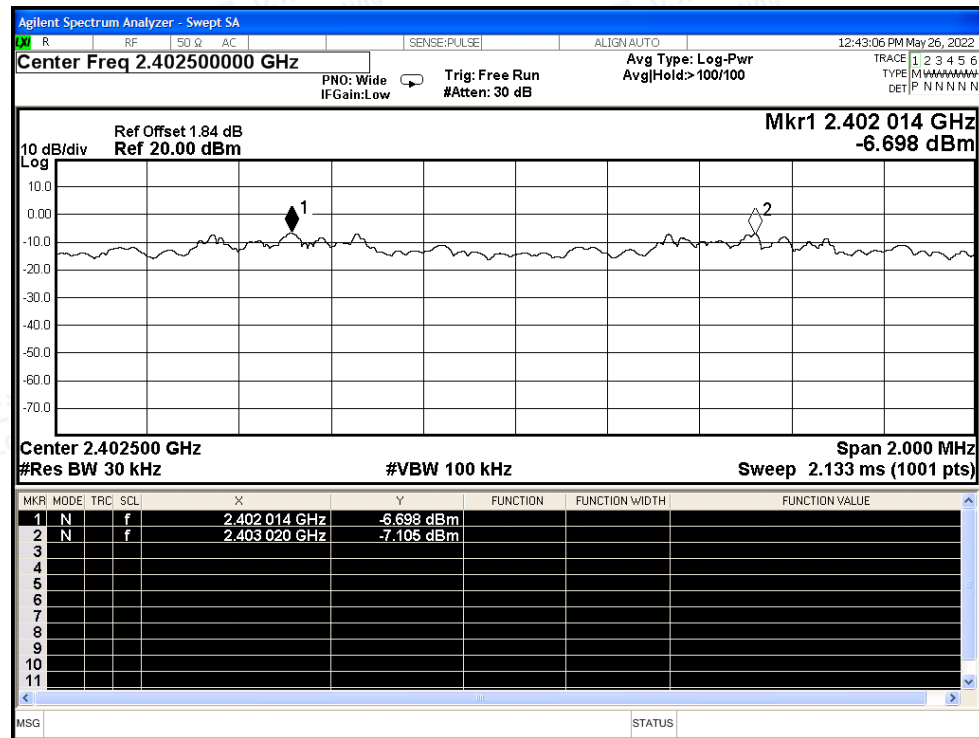


Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1

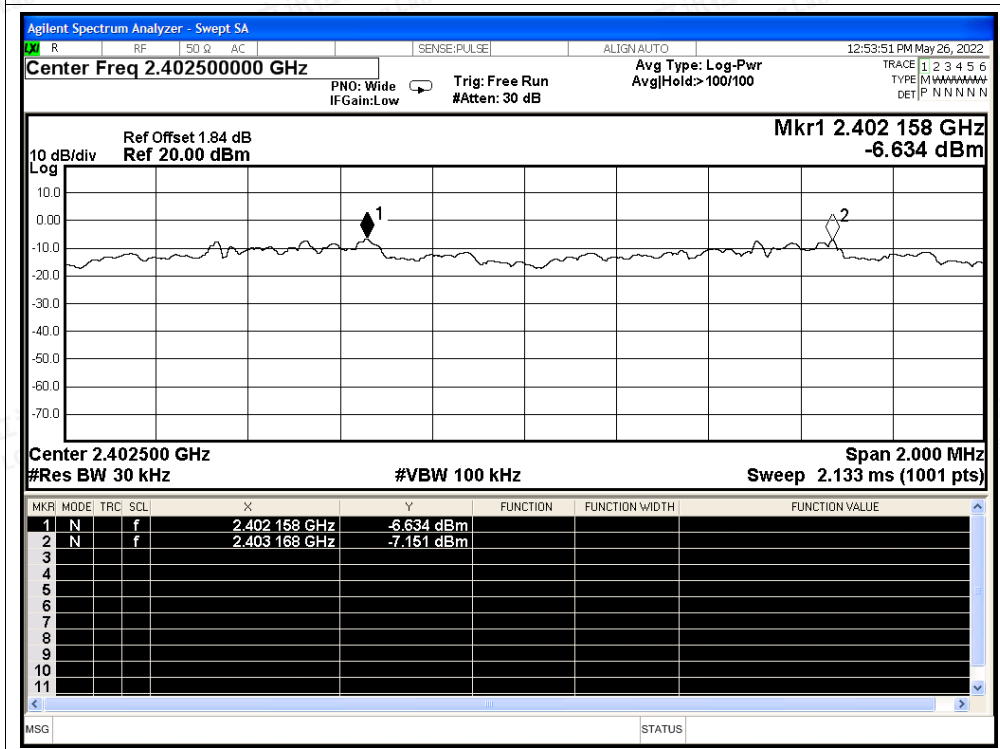


CFS NVNT 2-DH5 2402MHz Ant1





CFS NVNT 3-DH5 2402MHz Ant1





A.4 Dwell Time

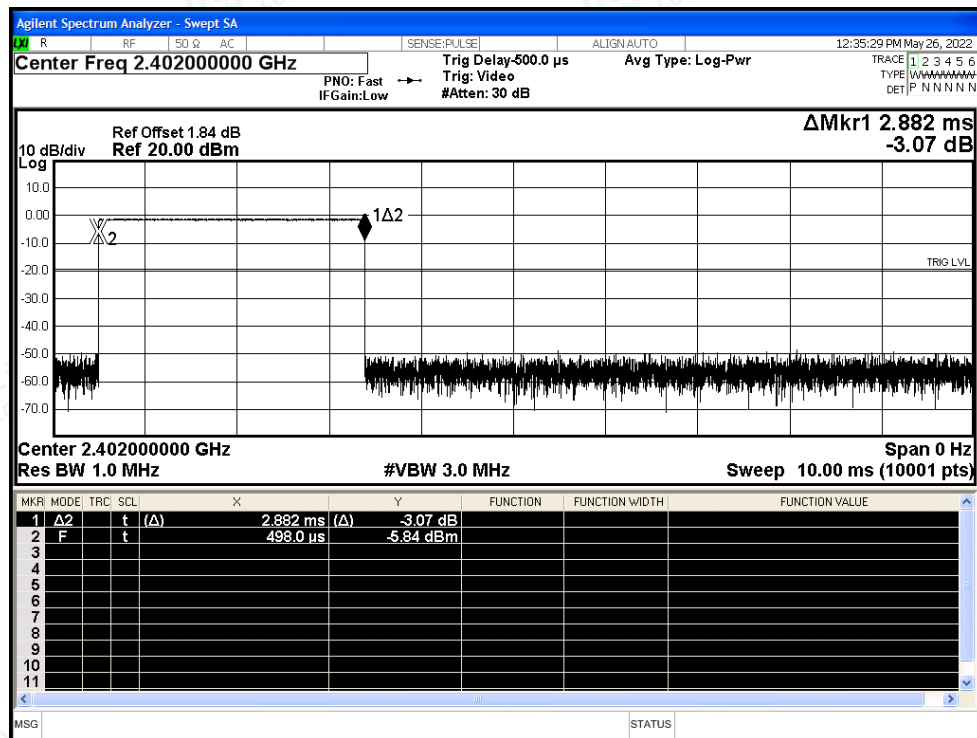
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.882	302.61	105	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.881	316.91	110	31600	400	Pass
NVNT	1-DH5	2480	Ant1	2.881	311.148	108	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.88	351.36	122	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.88	316.8	110	31600	400	Pass
NVNT	2-DH5	2480	Ant1	2.885	323.12	112	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.887	323.344	112	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.887	323.344	112	31600	400	Pass
NVNT	3-DH5	2480	Ant1	2.887	320.457	111	31600	400	Pass



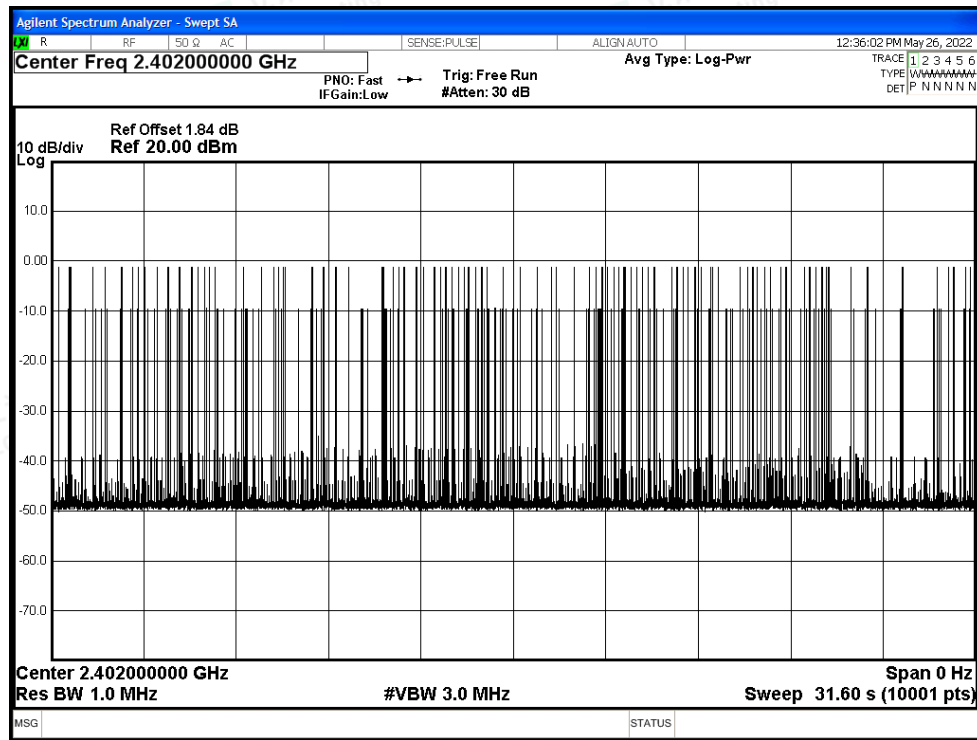


Test Graphs

Dwell NVNT 1-DH5 2402MHz Ant1 One Burst

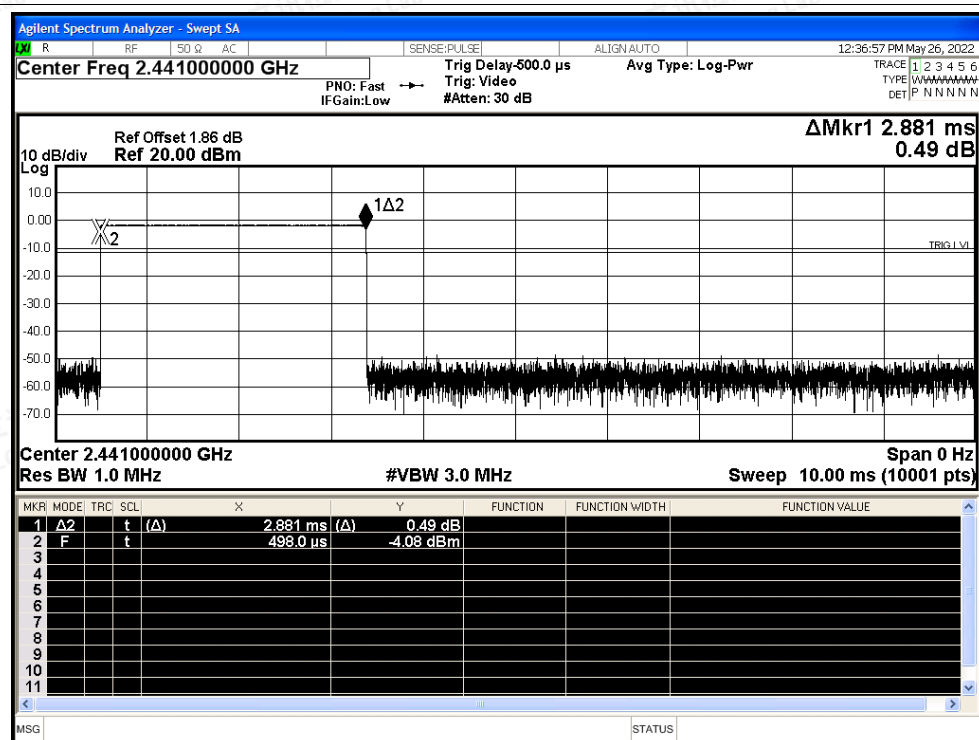


Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated

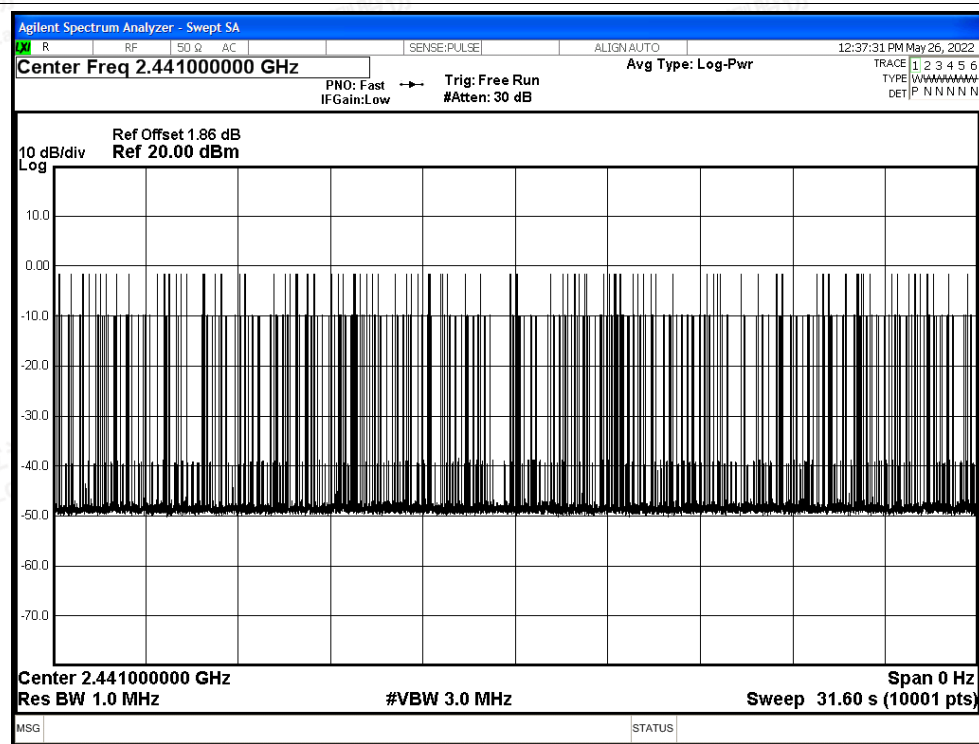




Dwell NVNT 1-DH5 2441MHz Ant1 One Burst

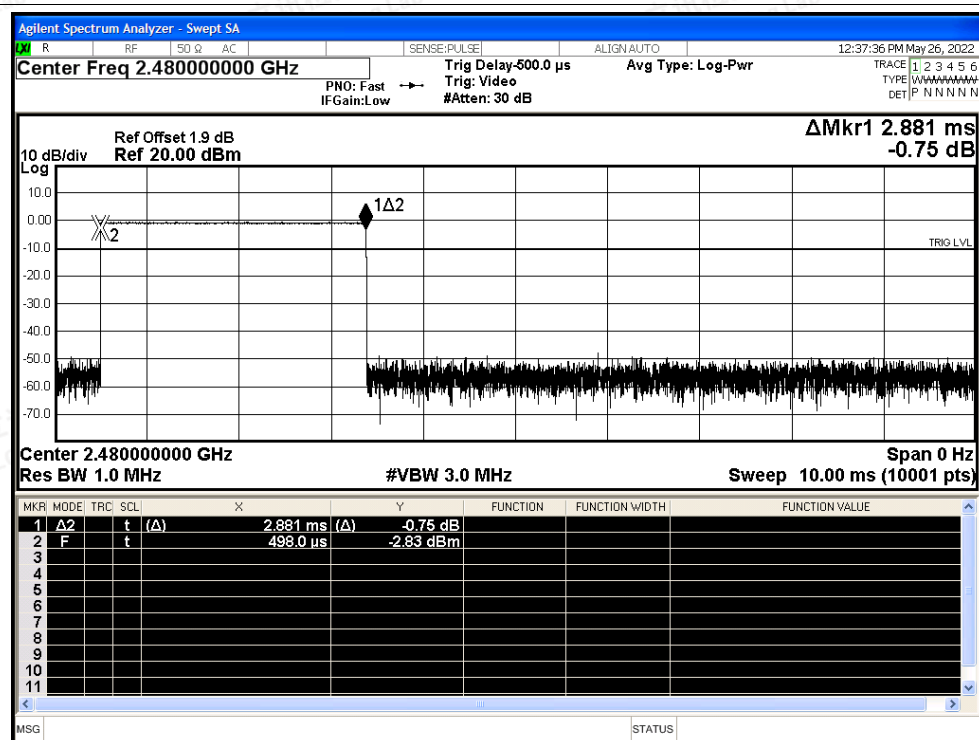


Dwell NVNT 1-DH5 2441MHz Ant1 Accumulated

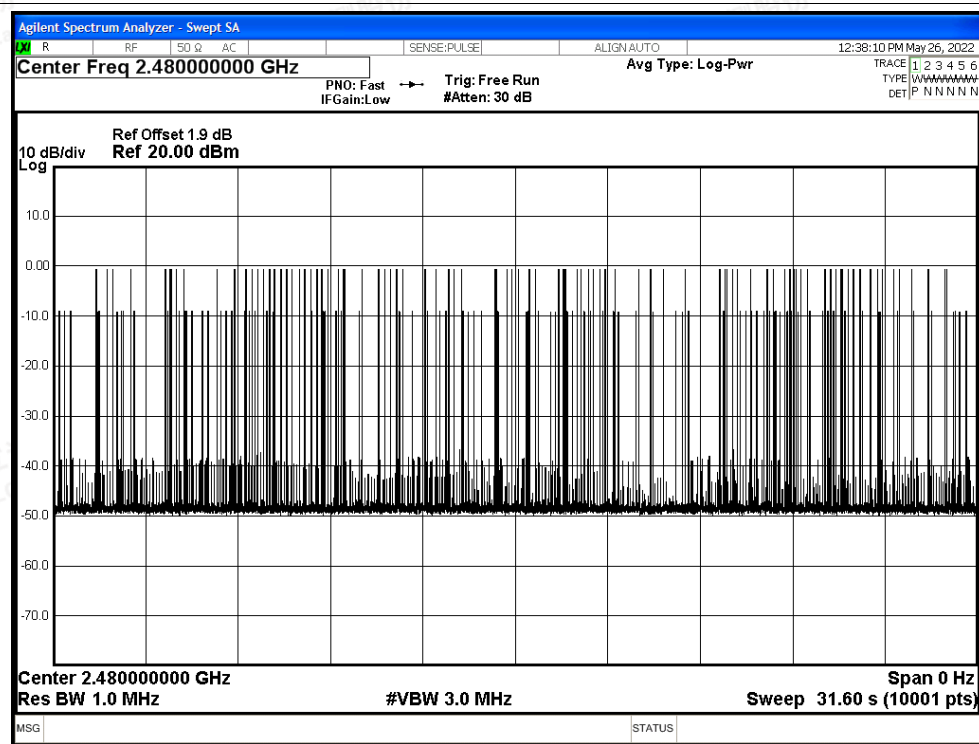




Dwell NVNT 1-DH5 2480MHz Ant1 One Burst

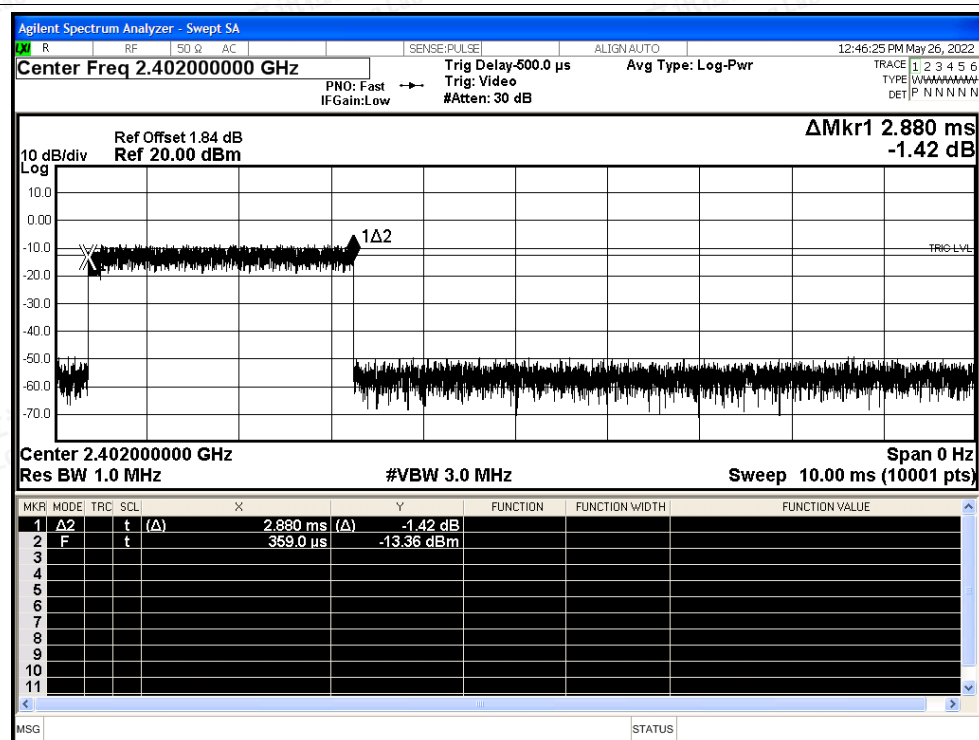


Dwell NVNT 1-DH5 2480MHz Ant1 Accumulated

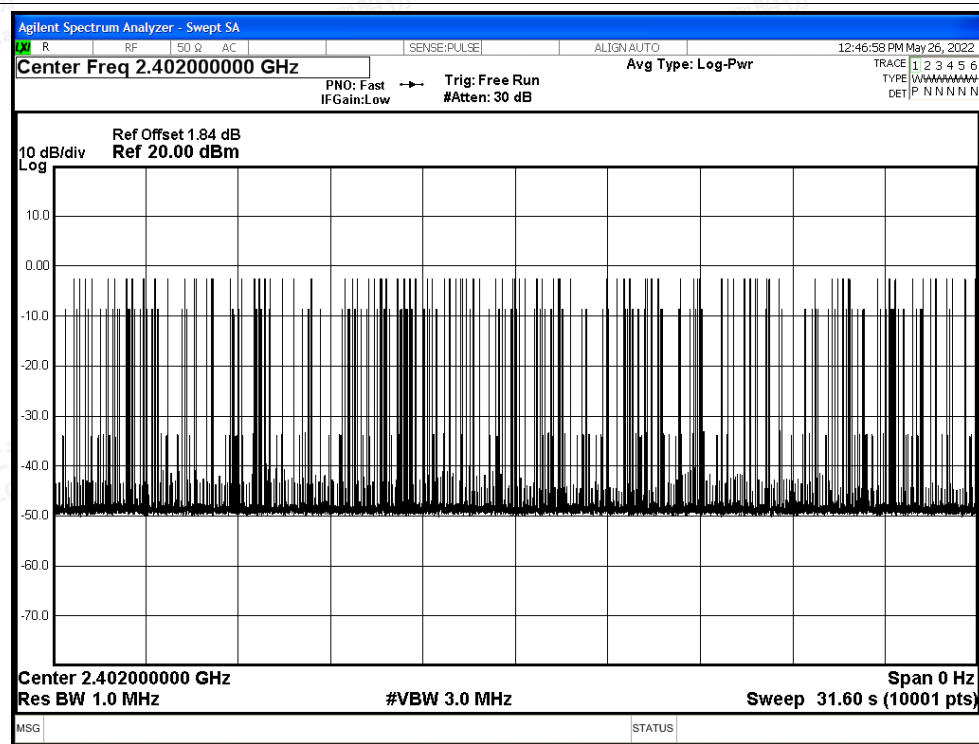




Dwell NVNT 2-DH5 2402MHz Ant1 One Burst

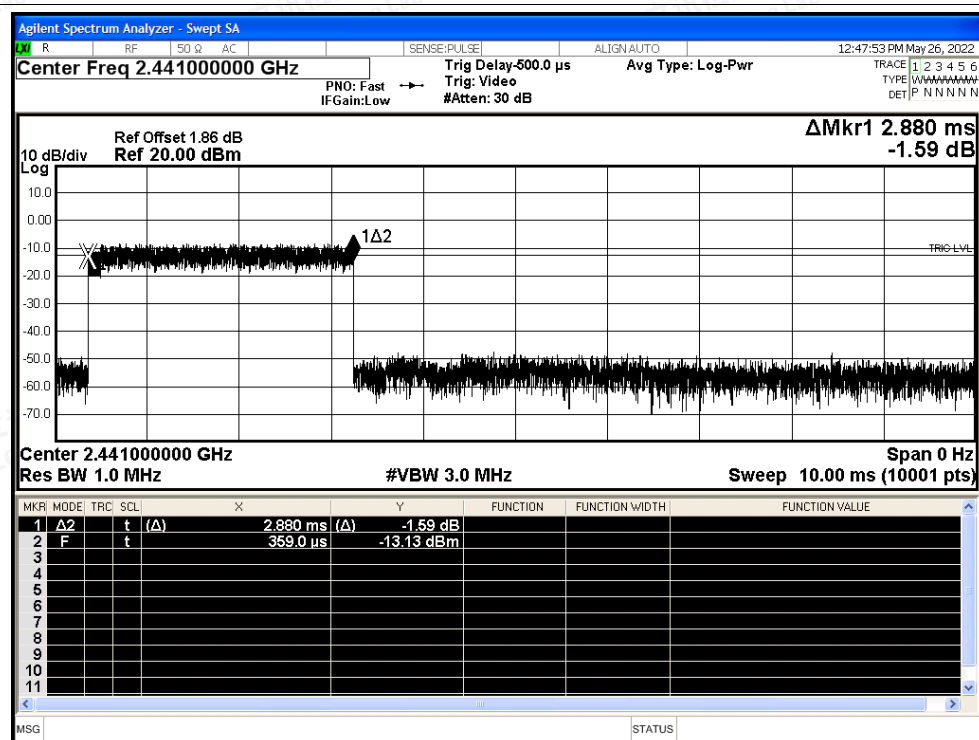


Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated

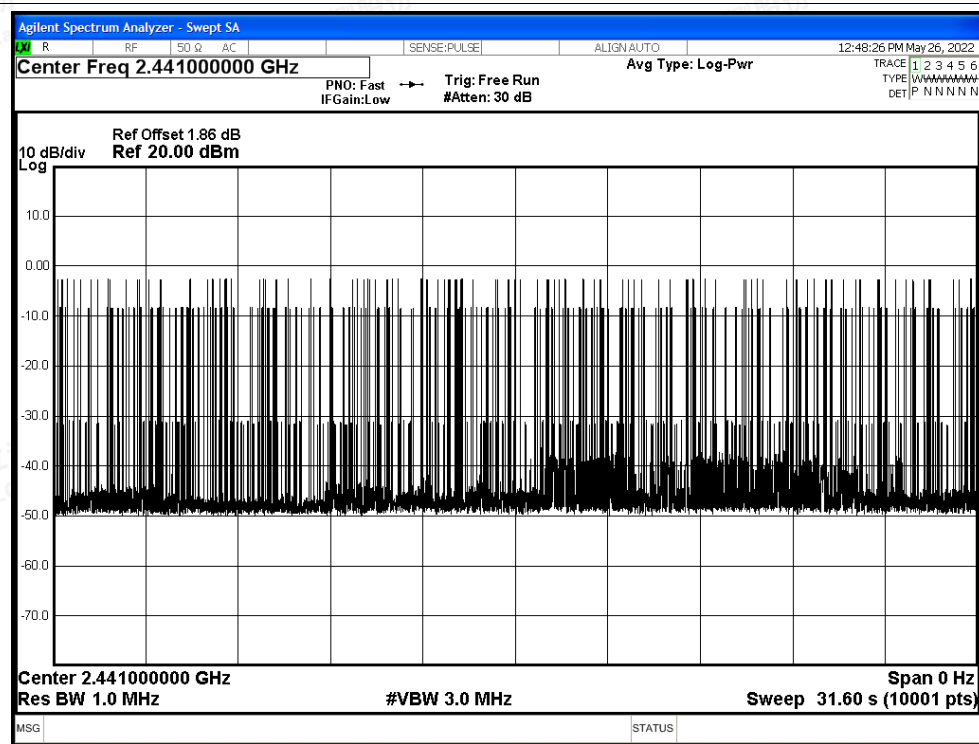




Dwell NVNT 2-DH5 2441MHz Ant1 One Burst

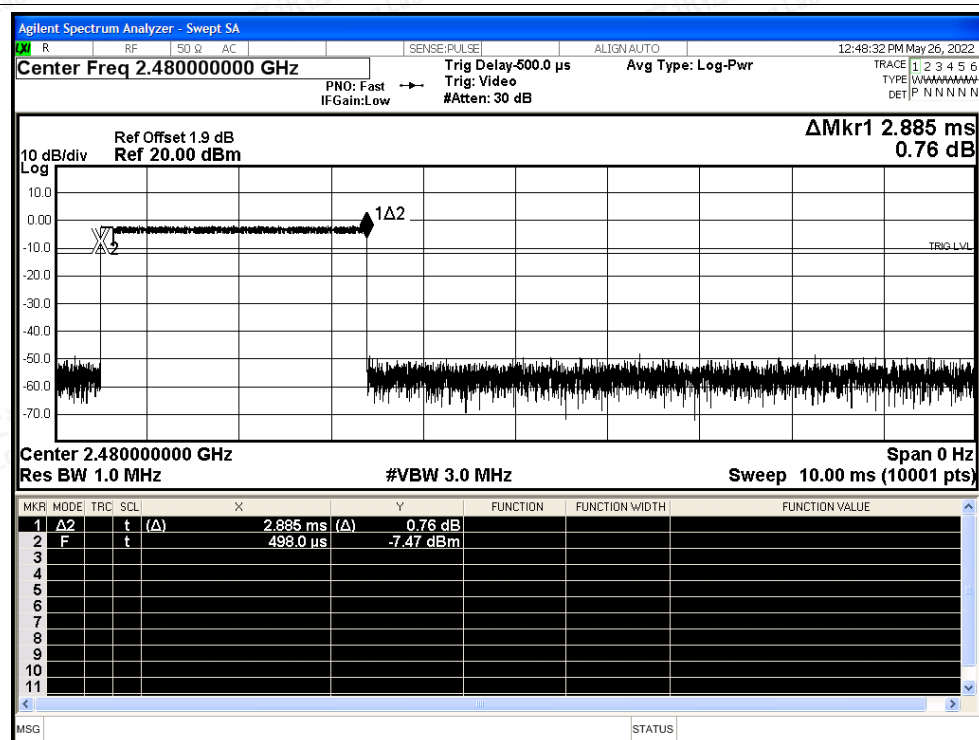


Dwell NVNT 2-DH5 2441MHz Ant1 Accumulated

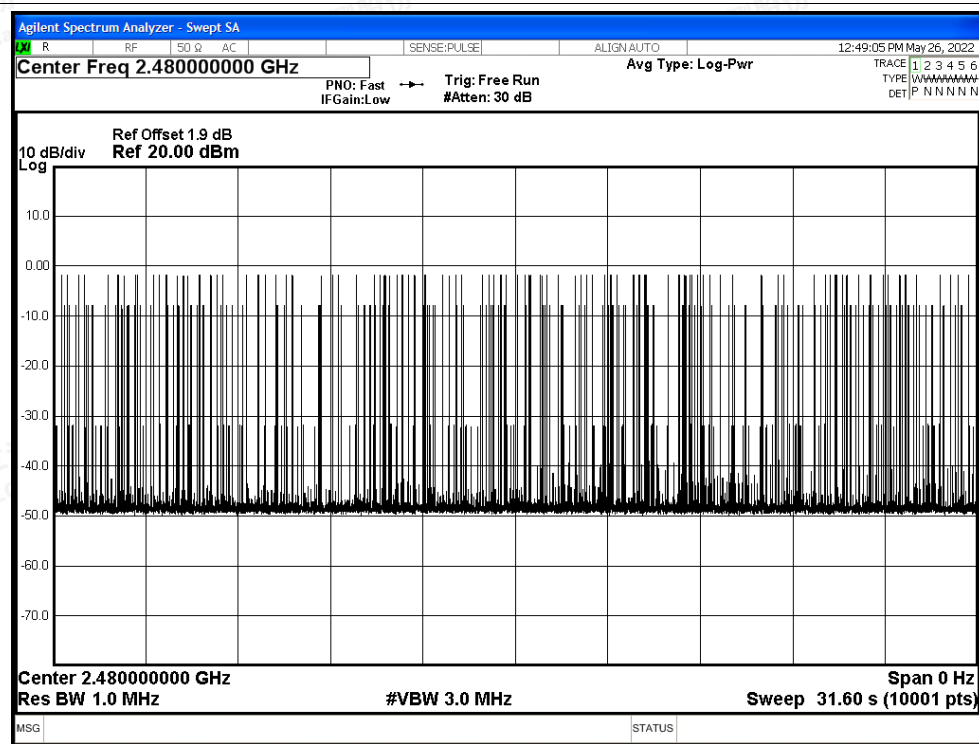




Dwell NVNT 2-DH5 2480MHz Ant1 One Burst

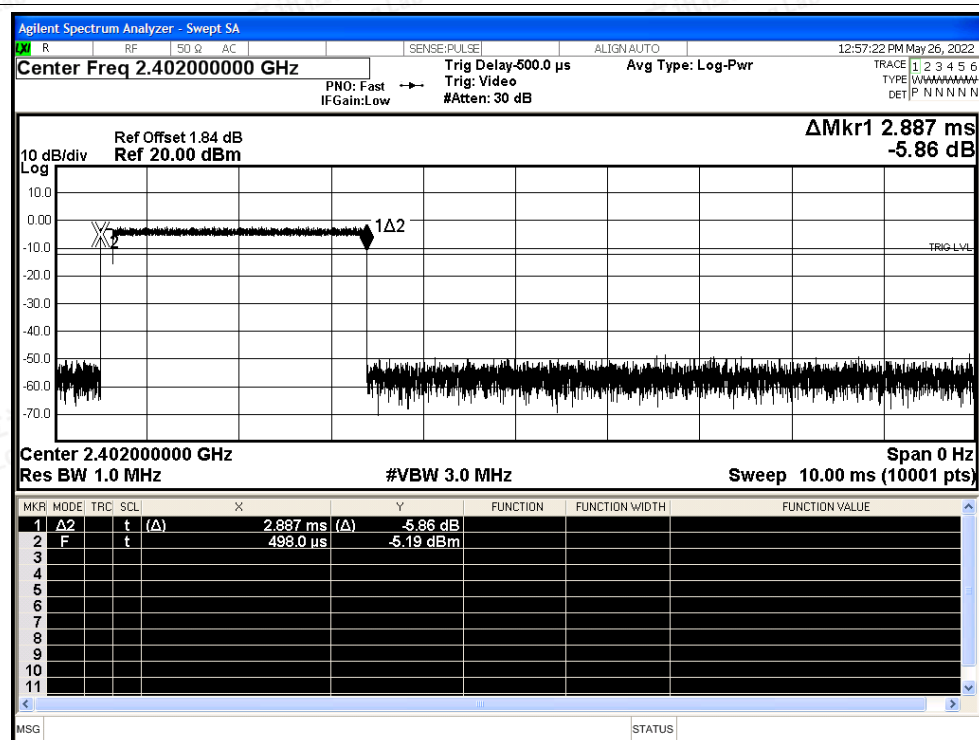


Dwell NVNT 2-DH5 2480MHz Ant1 Accumulated

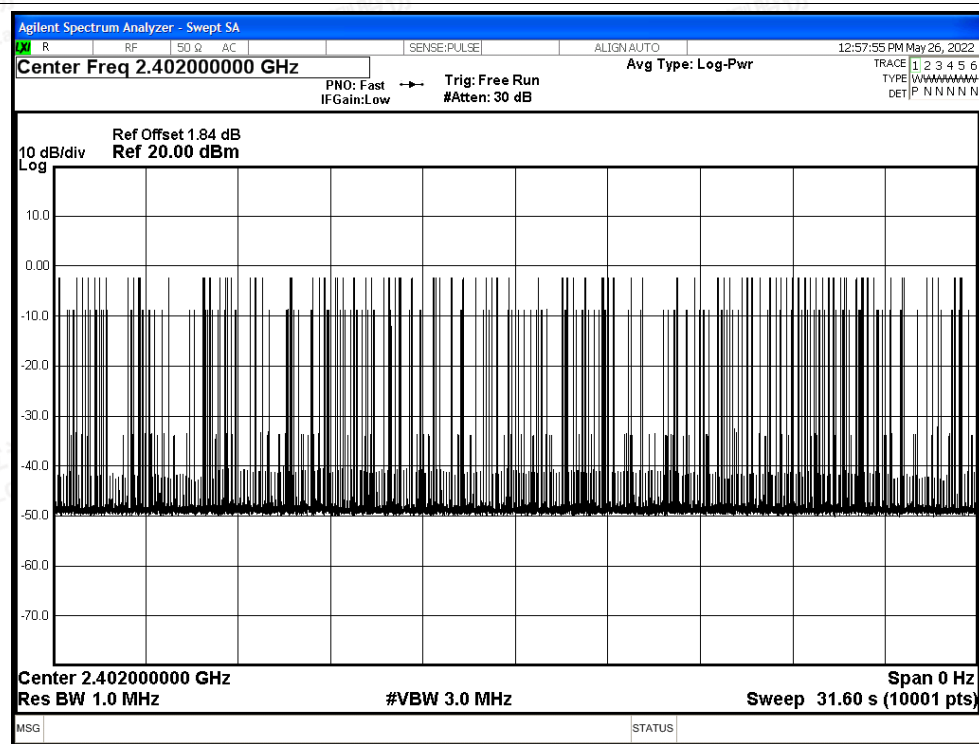




Dwell NVNT 3-DH5 2402MHz Ant1 One Burst

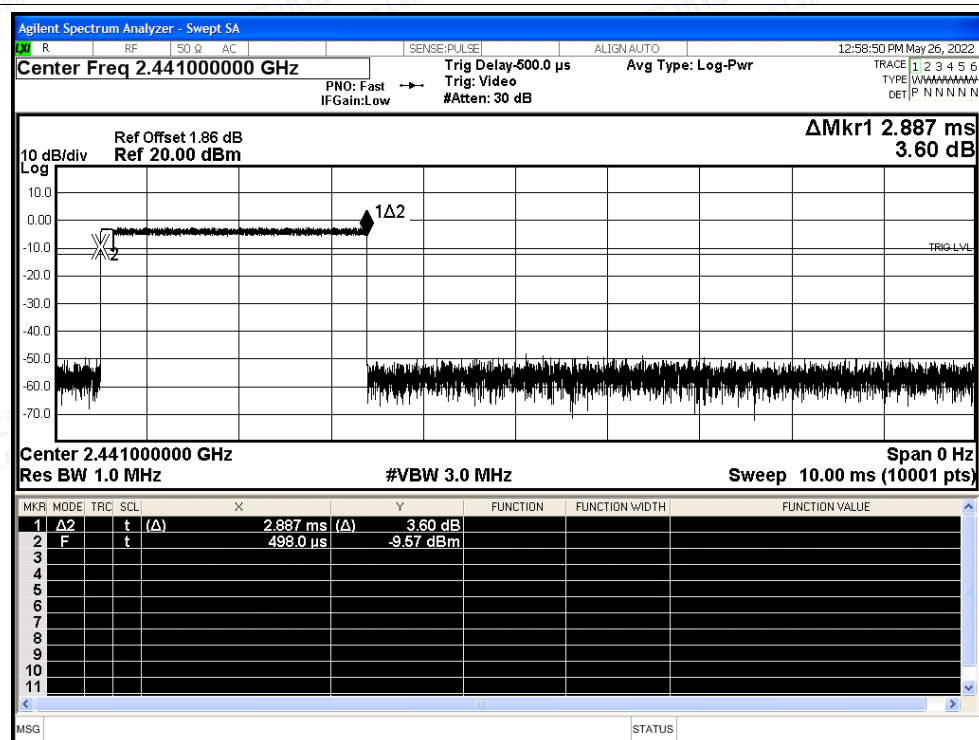


Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

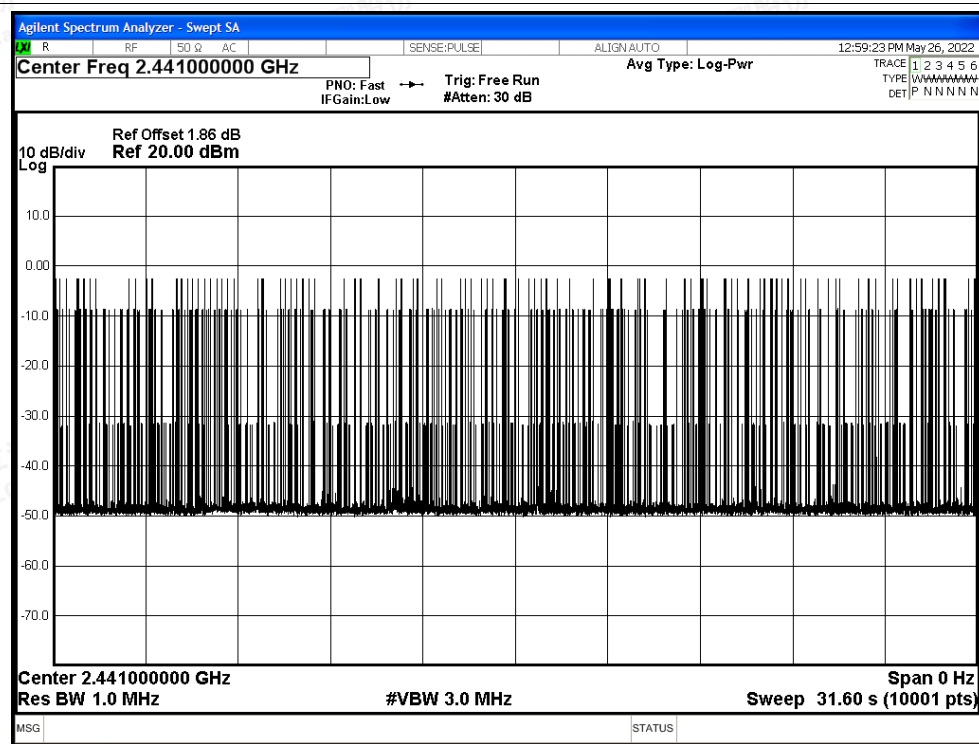




Dwell NVNT 3-DH5 2441MHz Ant1 One Burst

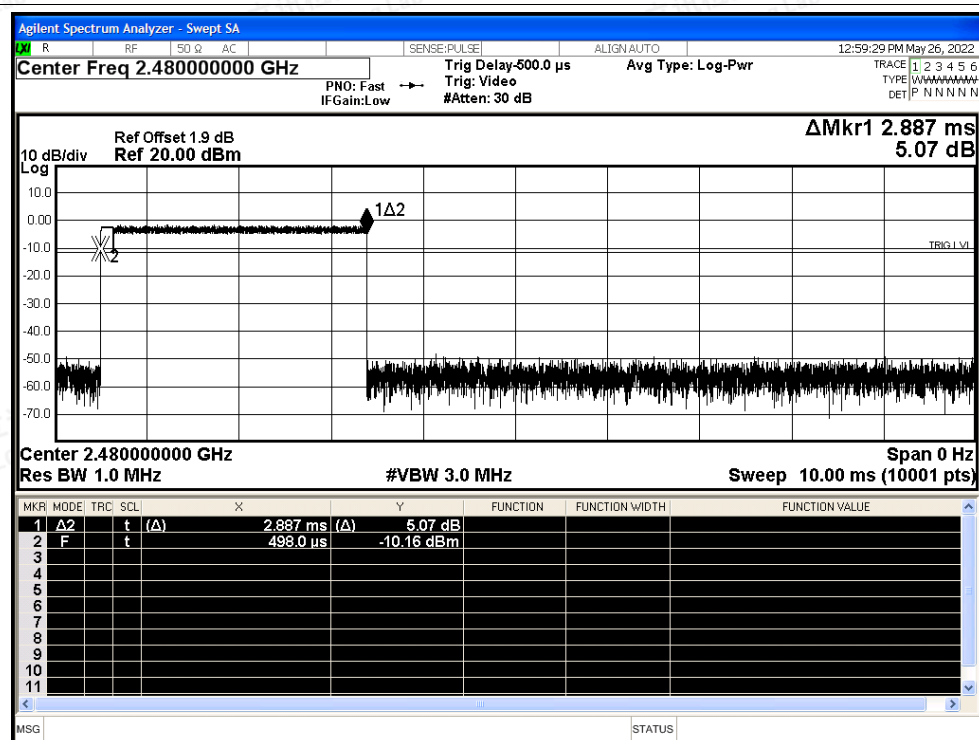


Dwell NVNT 3-DH5 2441MHz Ant1 Accumulated

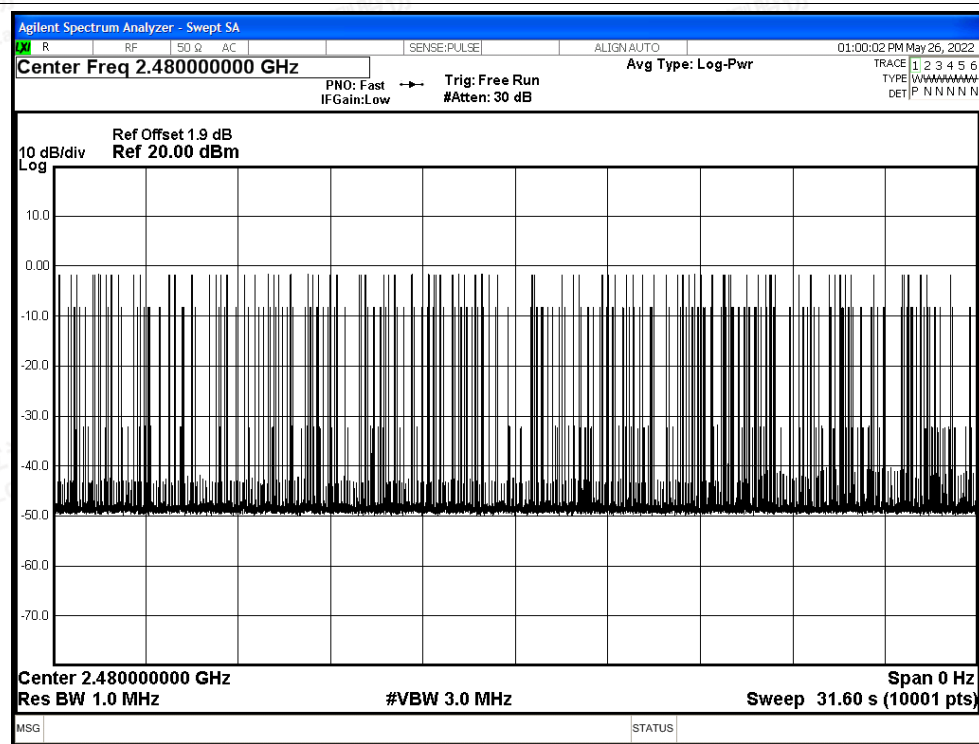




Dwell NVNT 3-DH5 2480MHz Ant1 One Burst



Dwell NVNT 3-DH5 2480MHz Ant1 Accumulated





A.5 Number of Hopping Channel

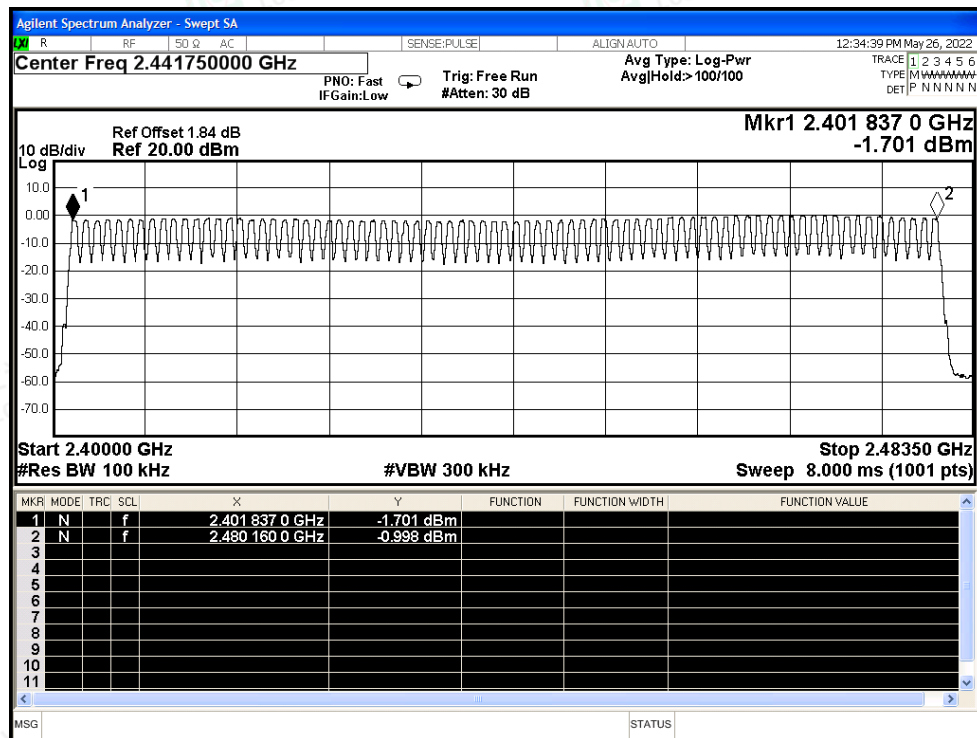
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass



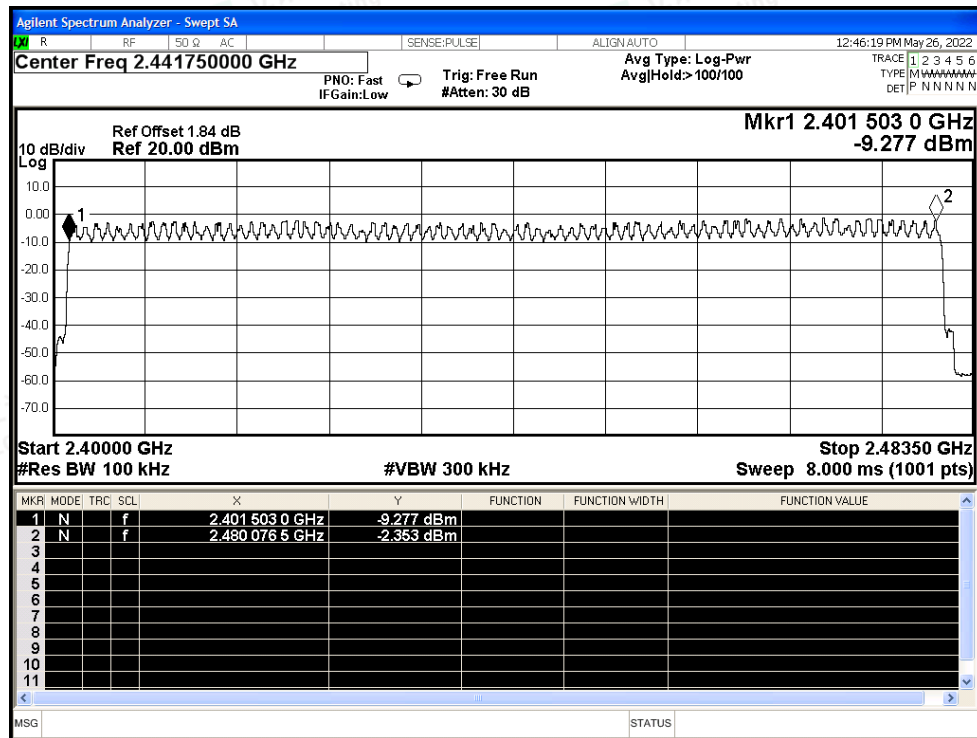


Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant1

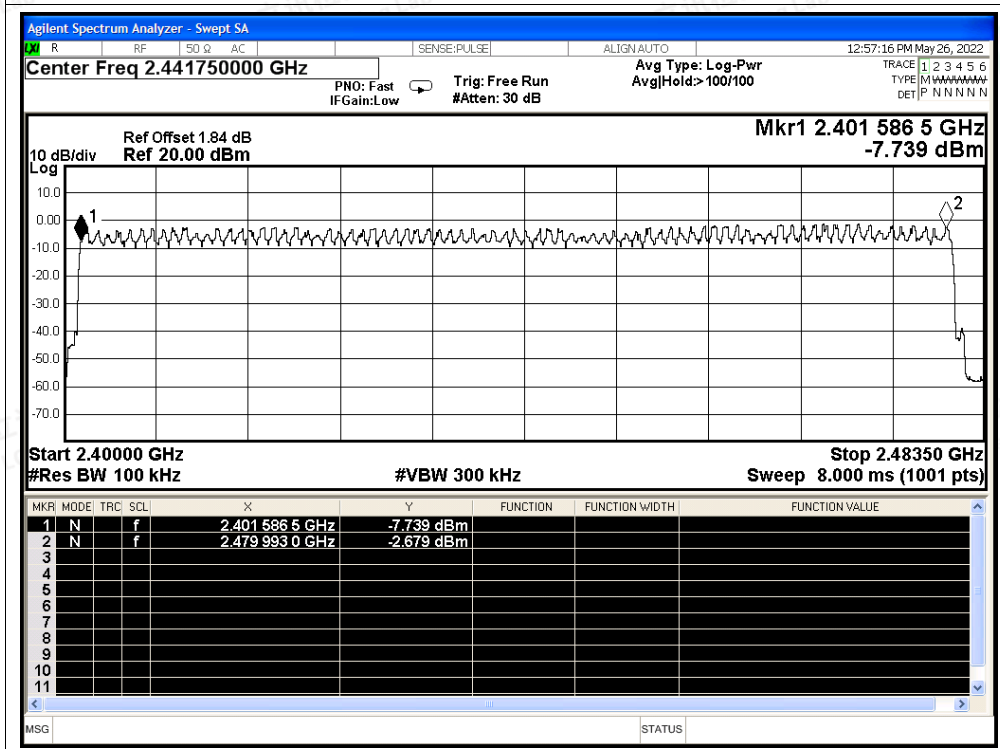


Hopping No. NVNT 2-DH5 2402MHz Ant1





Hopping No. NVNT 3-DH5 2402MHz Ant1





A.6 Band Edge

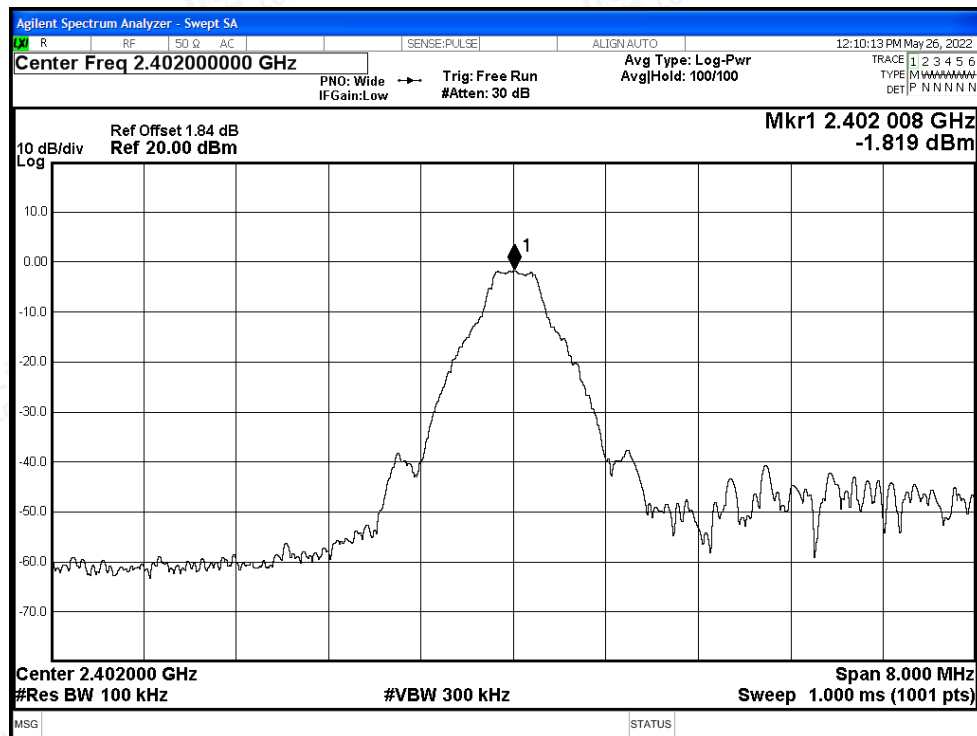
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-55.36	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-54.57	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-52.93	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-55.21	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-54.09	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-51.49	-20	Pass



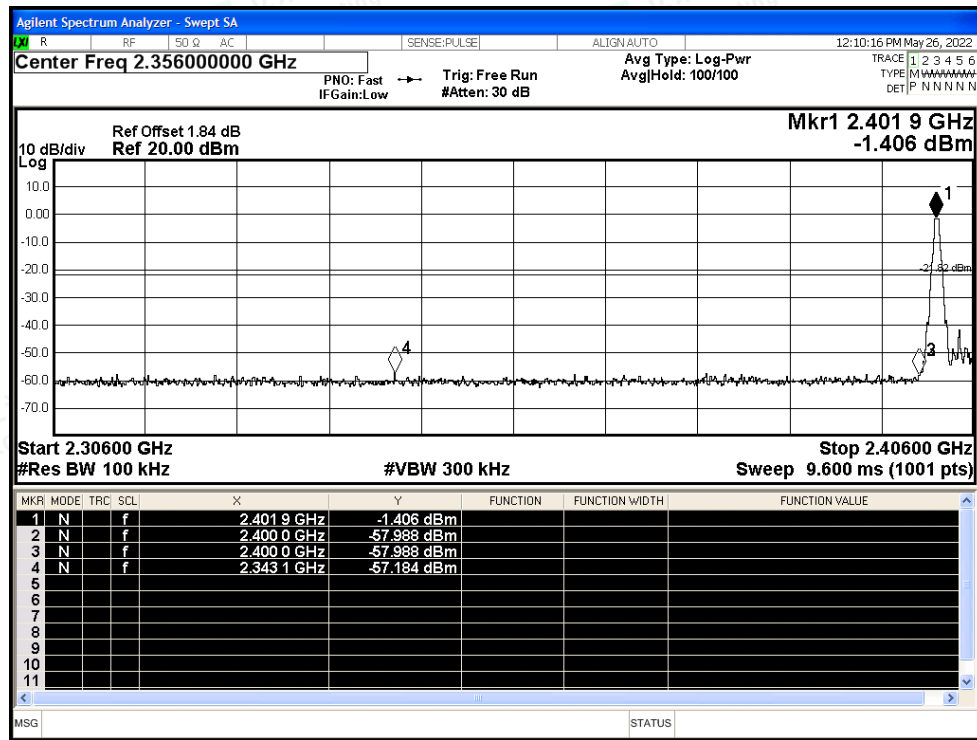


Test Graphs

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



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



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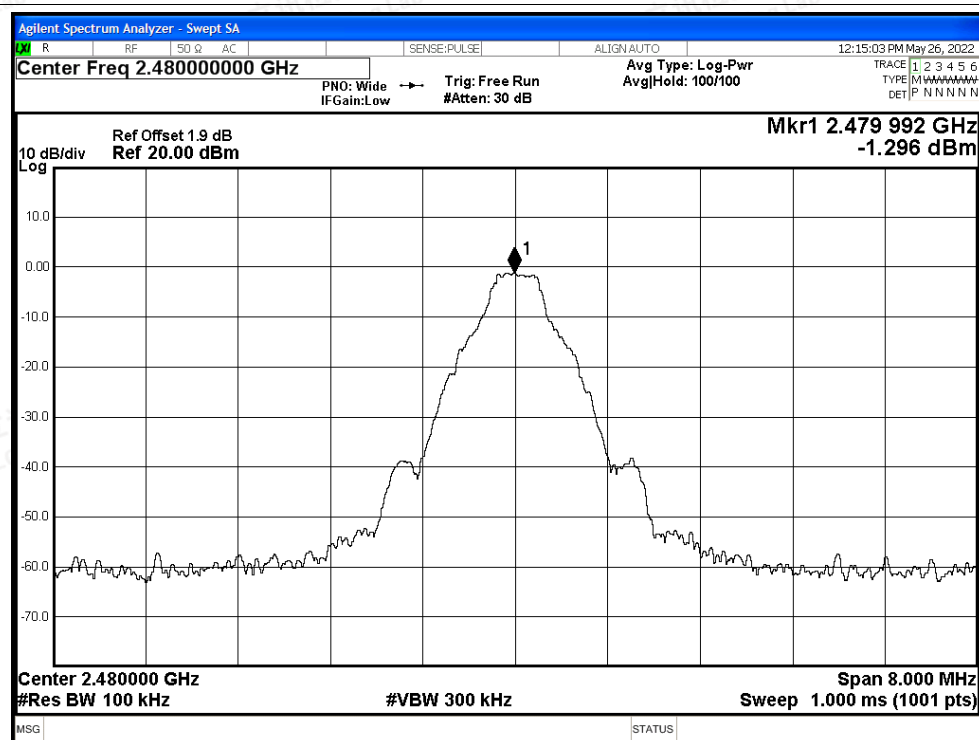
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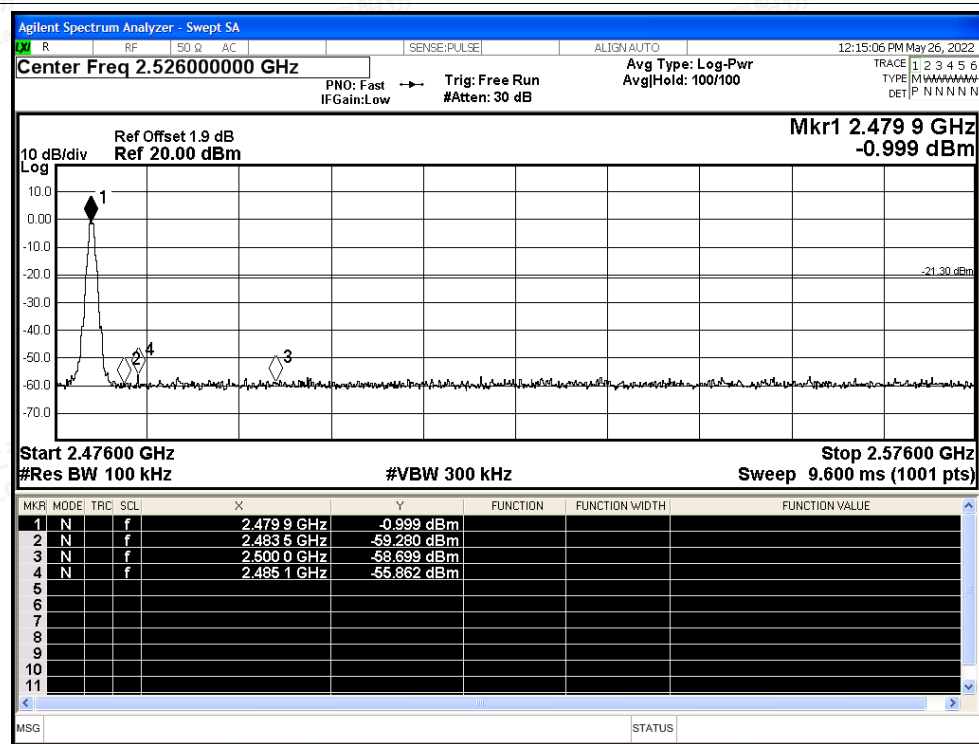
Scan code to check authenticity



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

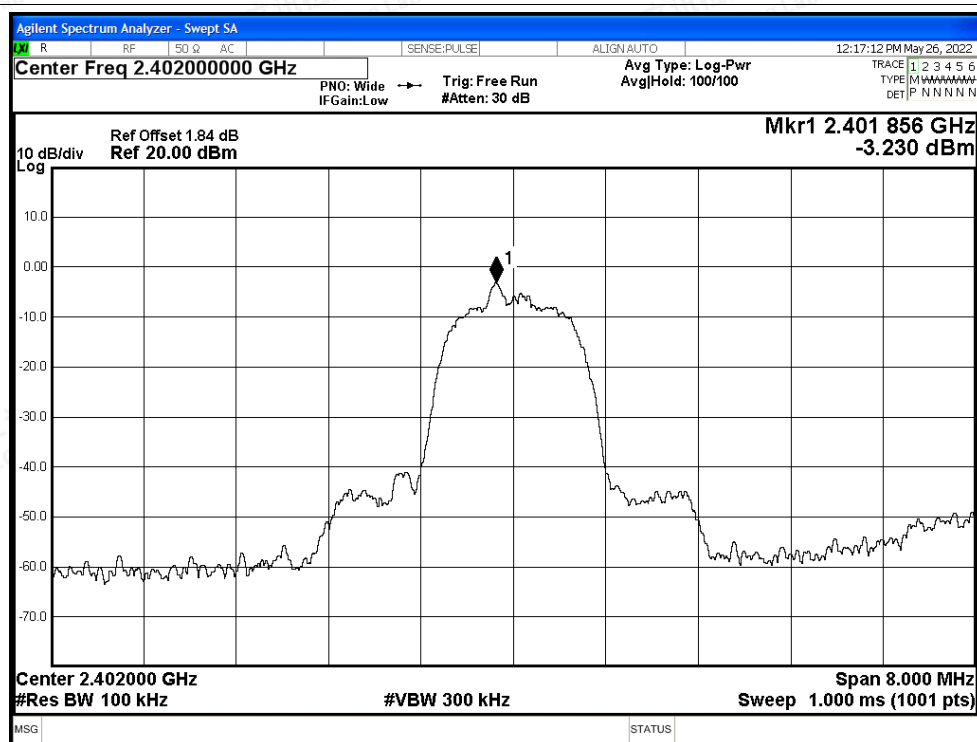


Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission

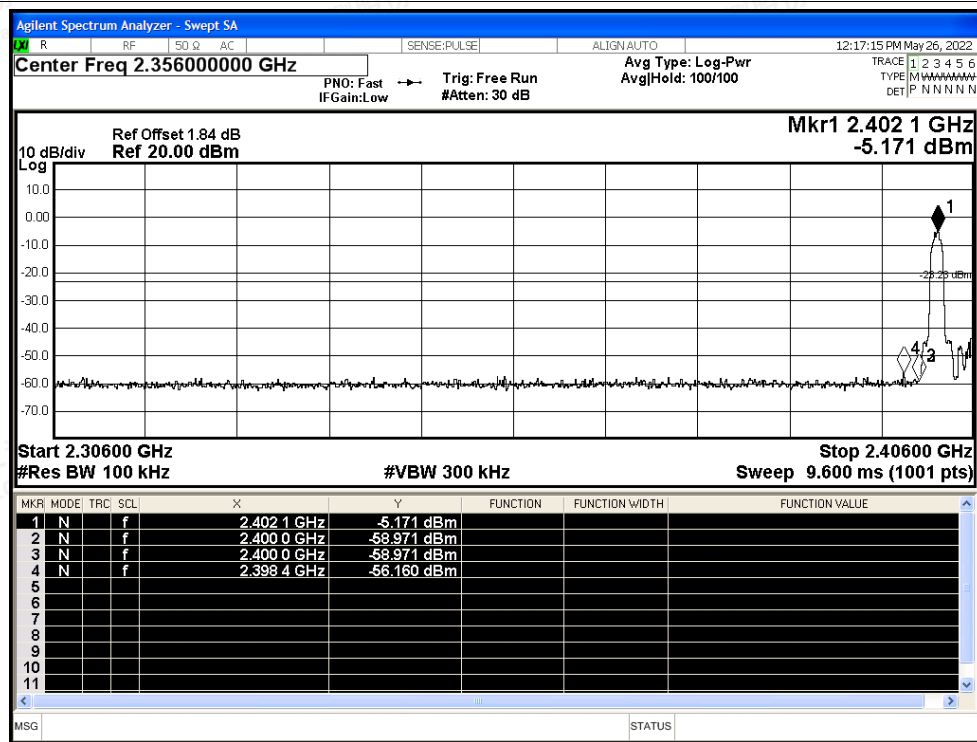




Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref

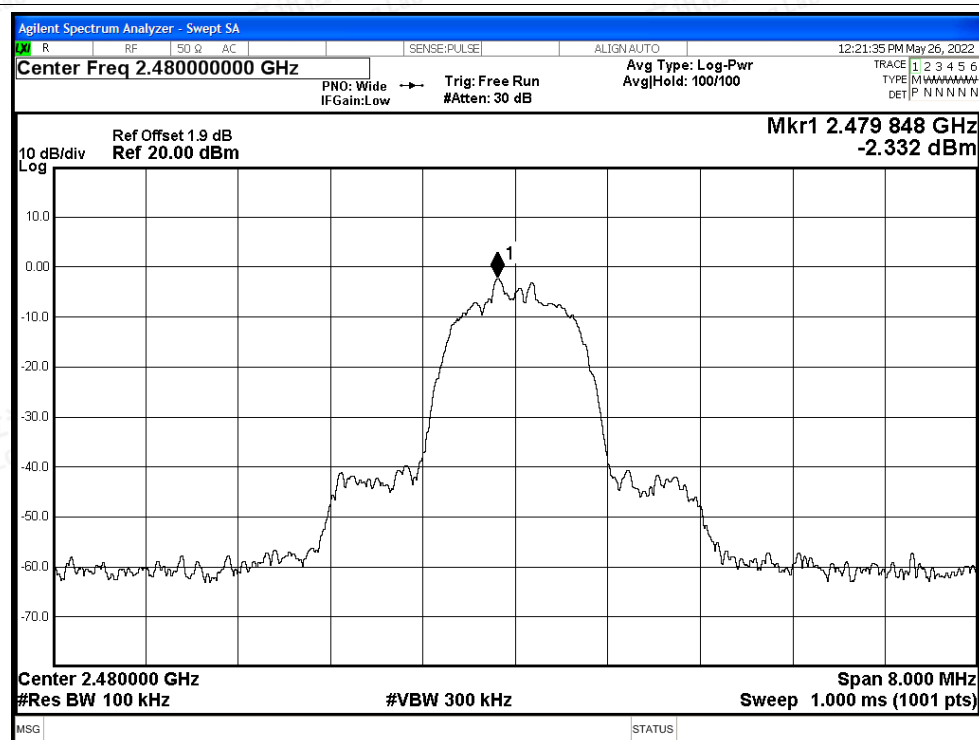


Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission

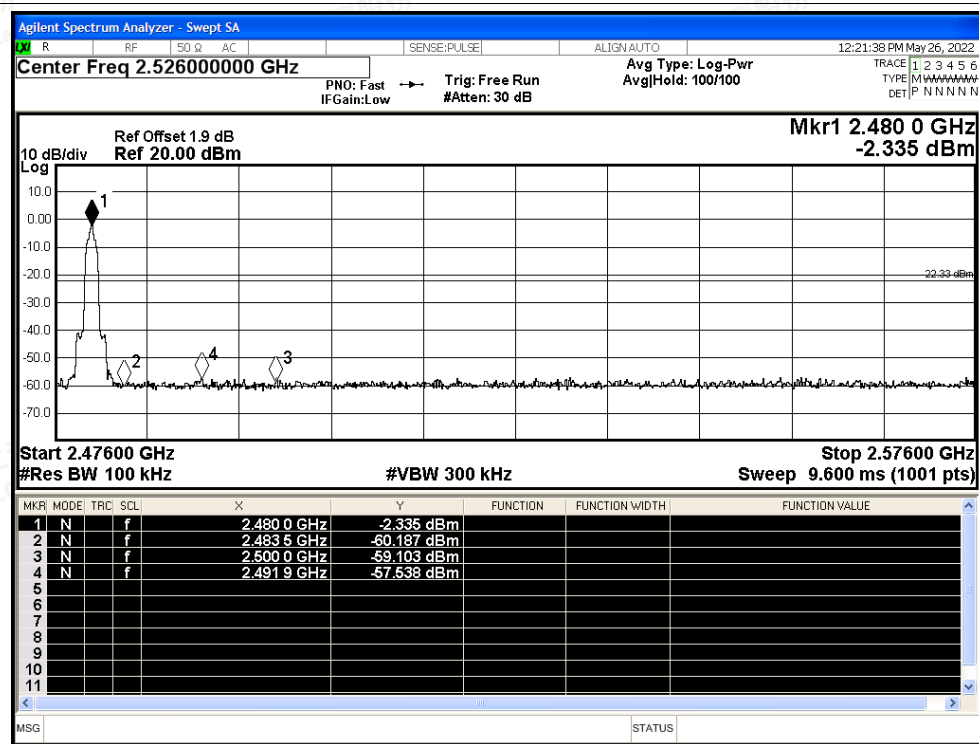




Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



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

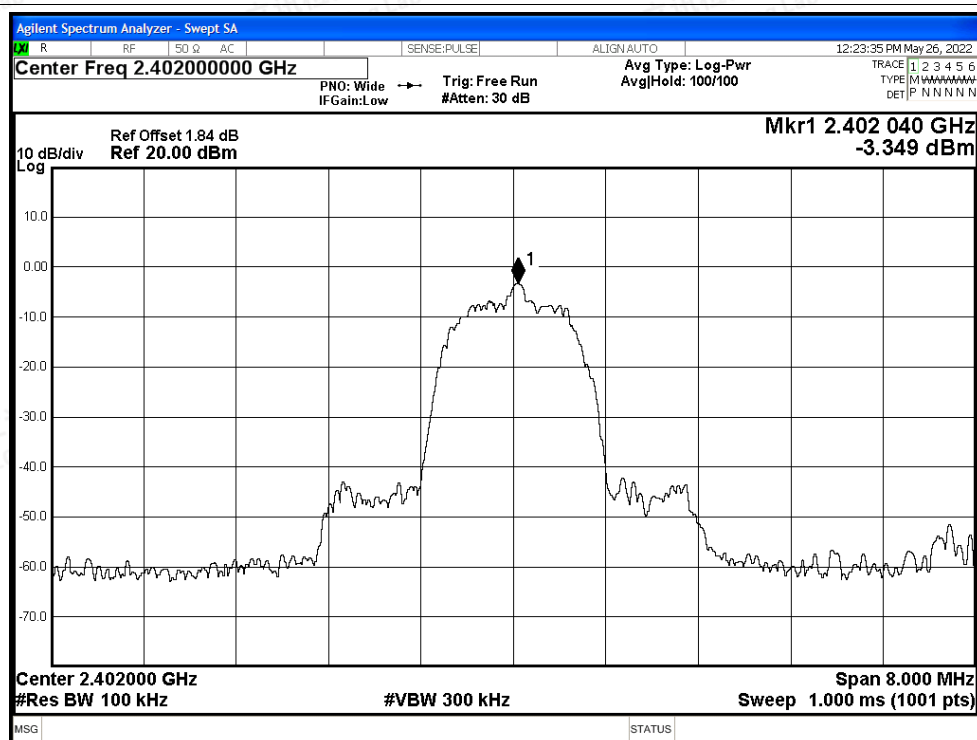


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.480 0 GHz	-2.335 dBm			
2	N		f	2.483 5 GHz	-60.187 dBm			
3	N		f	2.500 0 GHz	-69.103 dBm			
4	N		f	2.491 9 GHz	-67.538 dBm			
5								
6								
7								
8								
9								
10								
11								

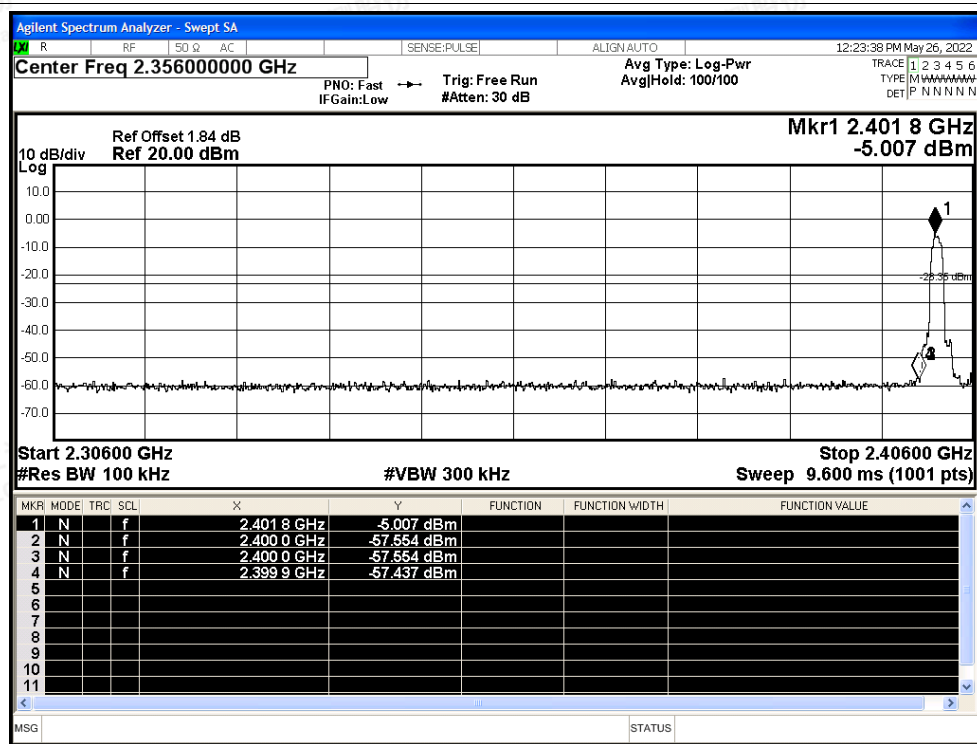




Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref

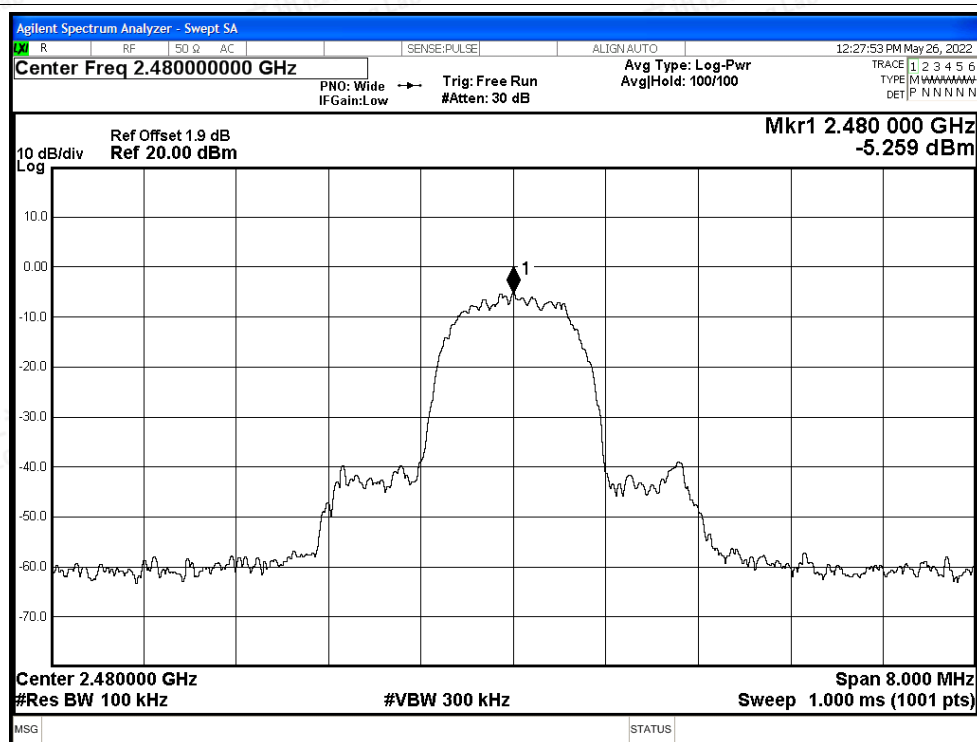


Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission

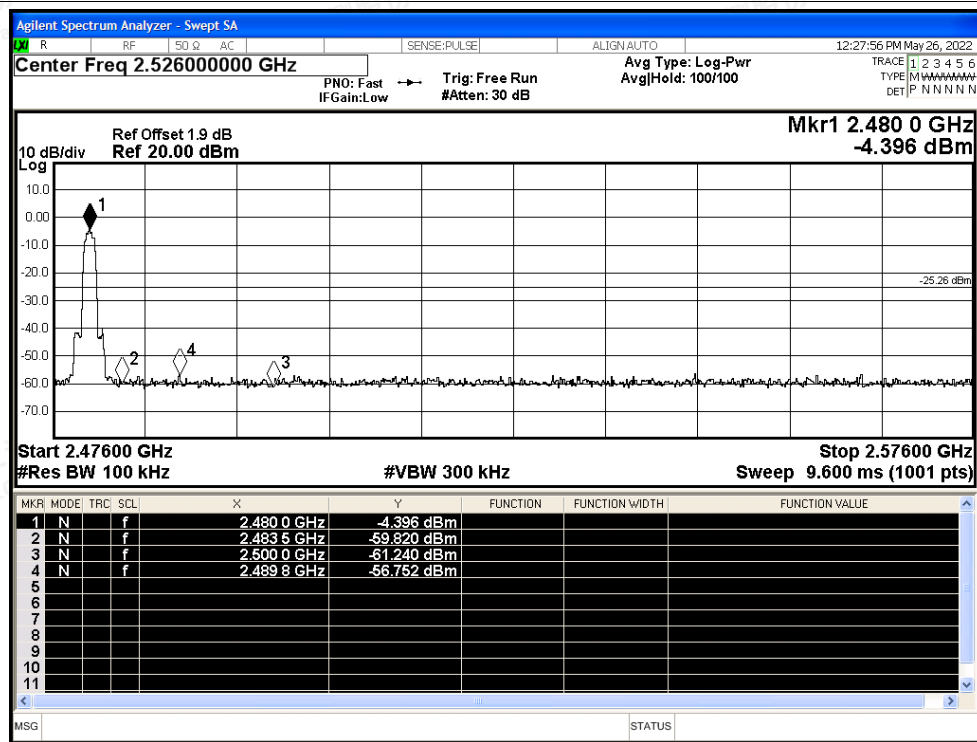




Band Edge NVNT 3-DH5 2480MHz Ant1 No-Hopping Ref



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	-54.91	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-54.64	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-51.1	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-55.15	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-53.74	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-53.53	-20	Pass

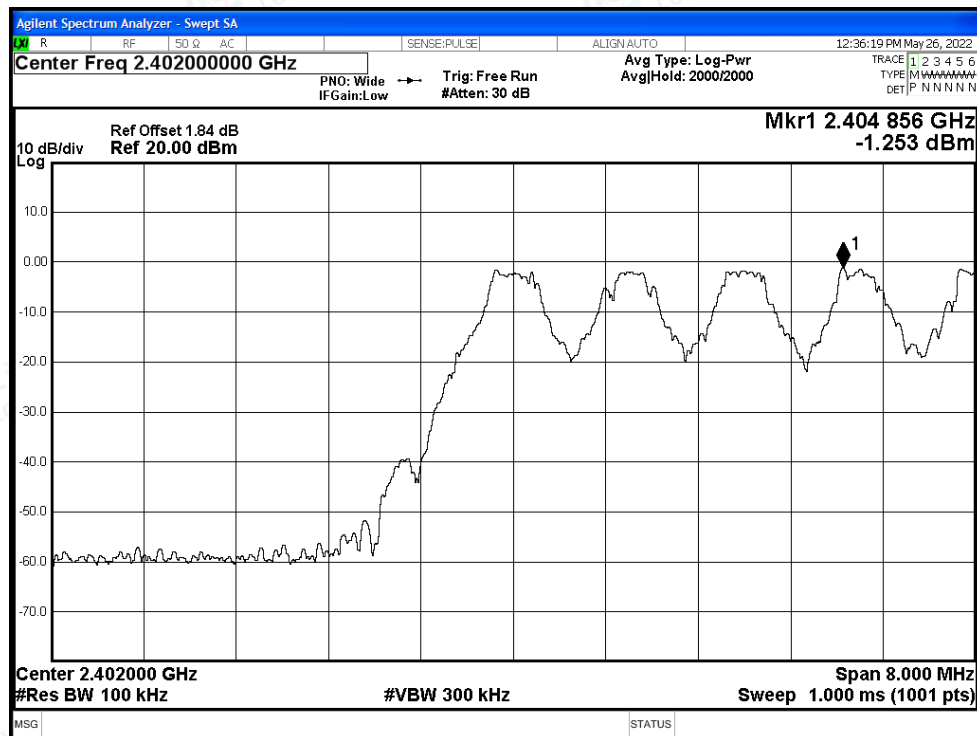


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Scan code to check authenticity

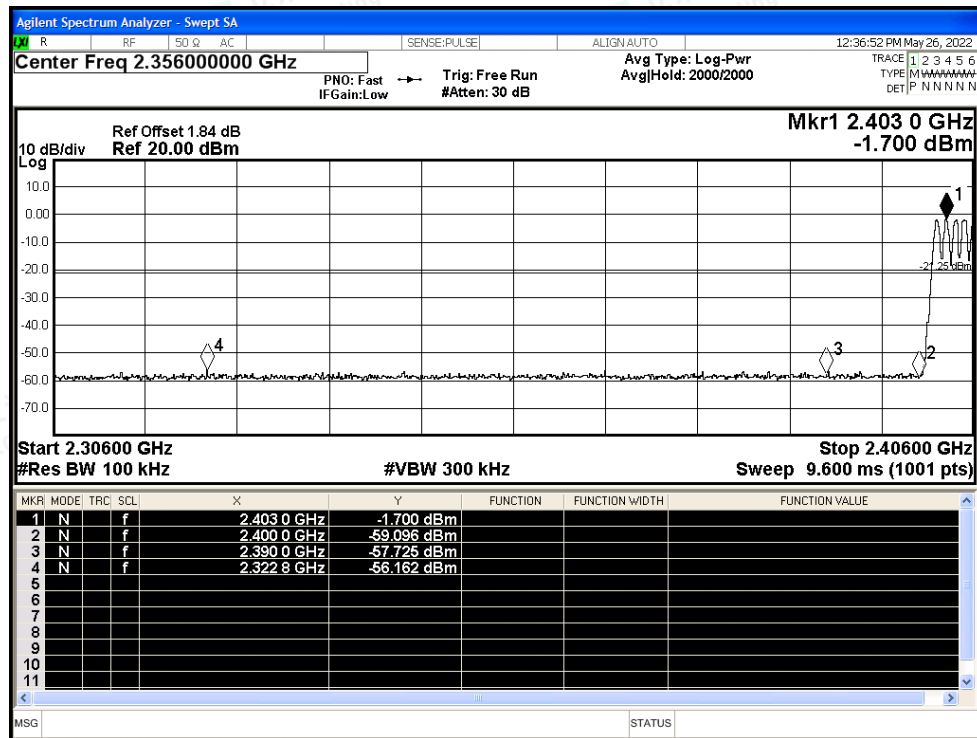


Test Graphs

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

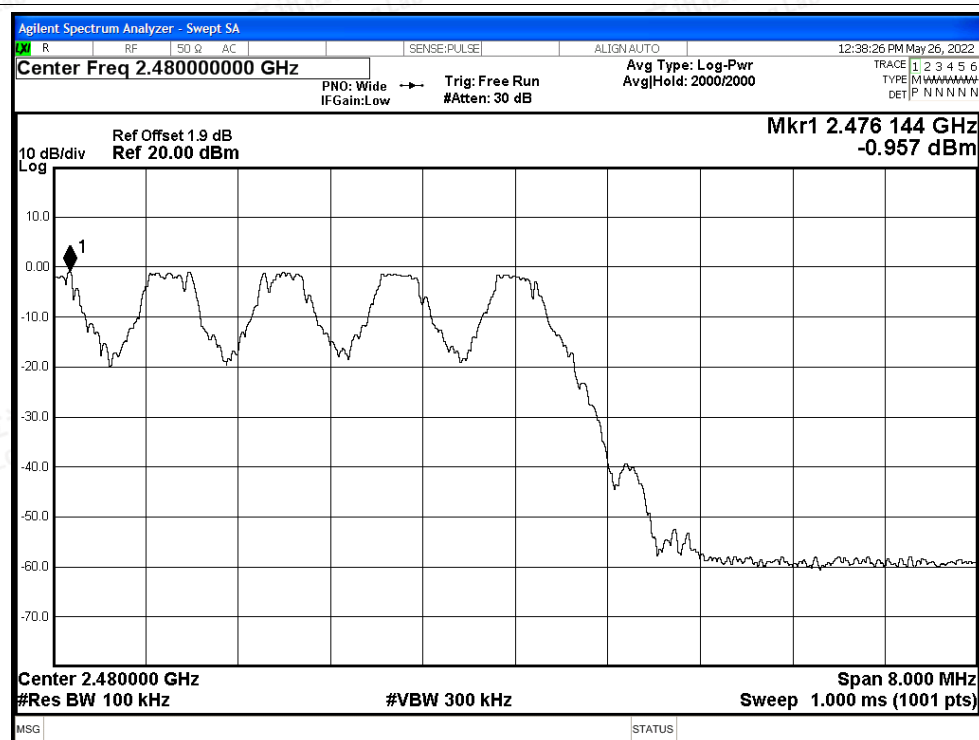


Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission

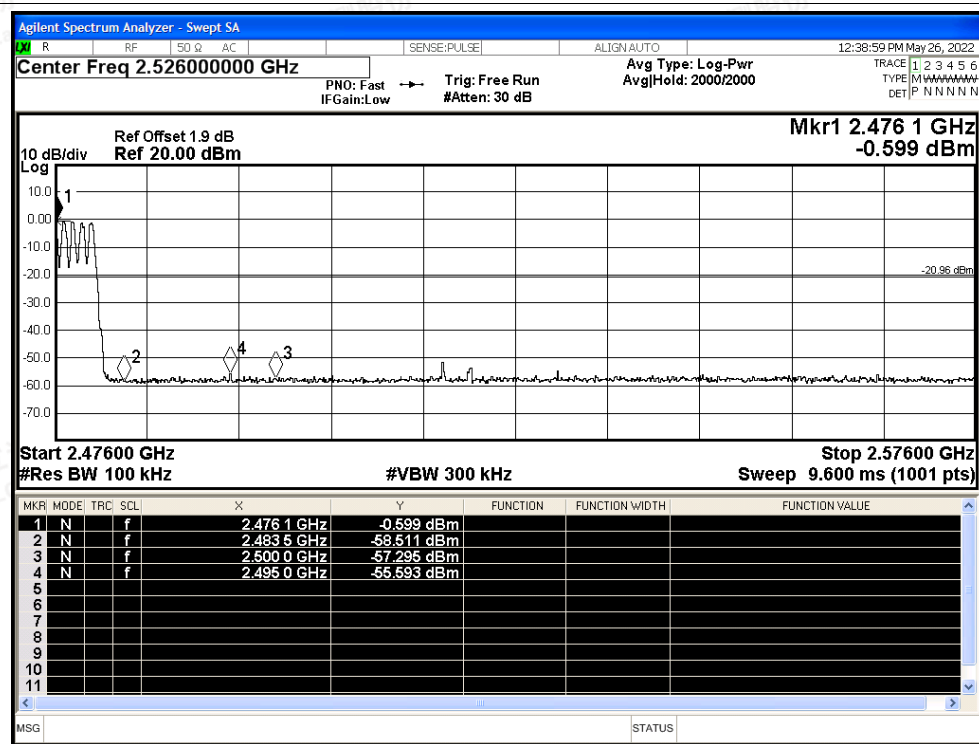




Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



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

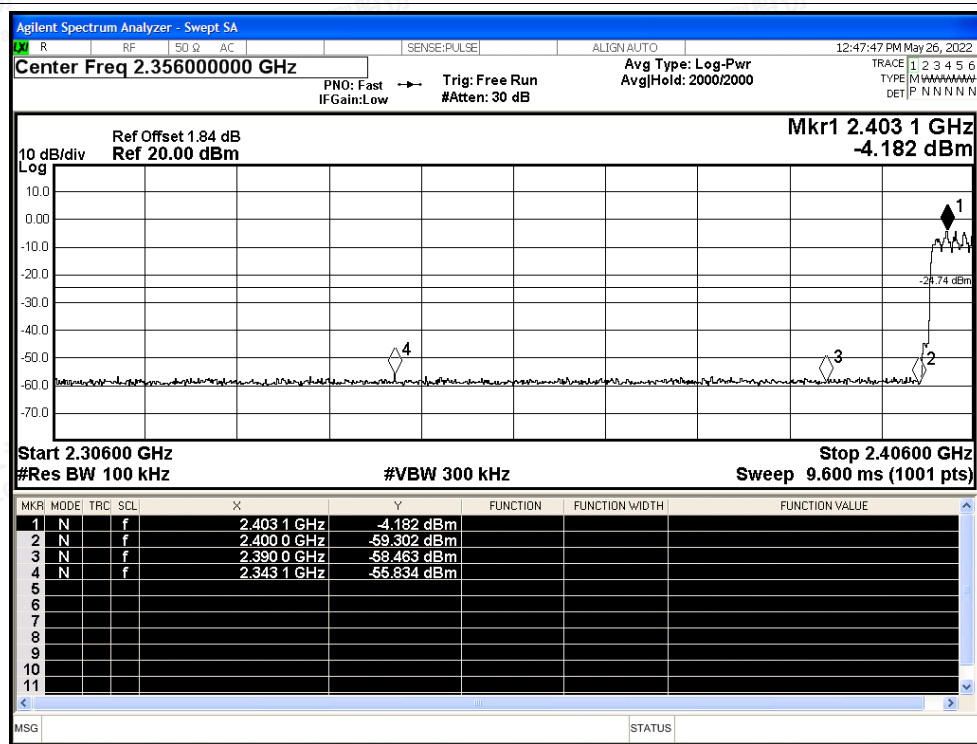




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref

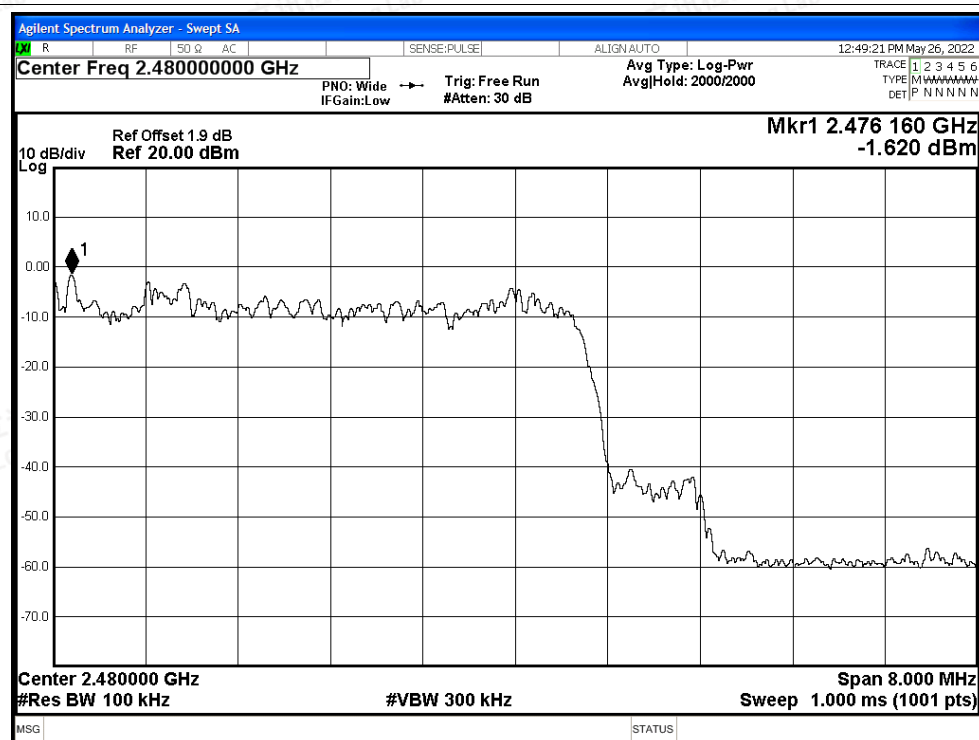


Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission

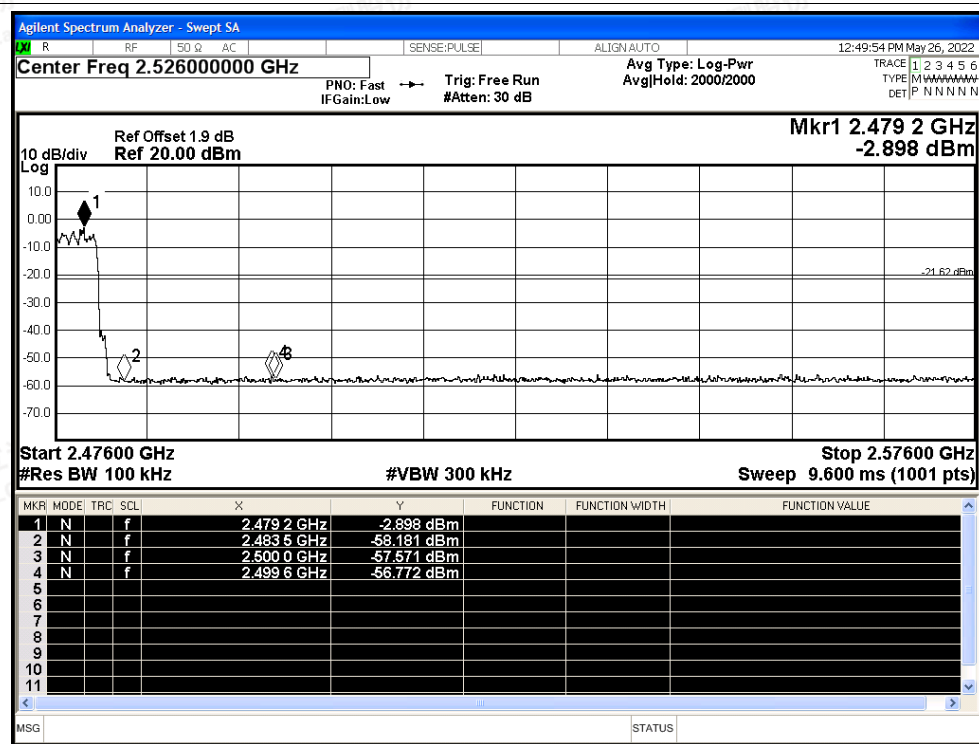




Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref

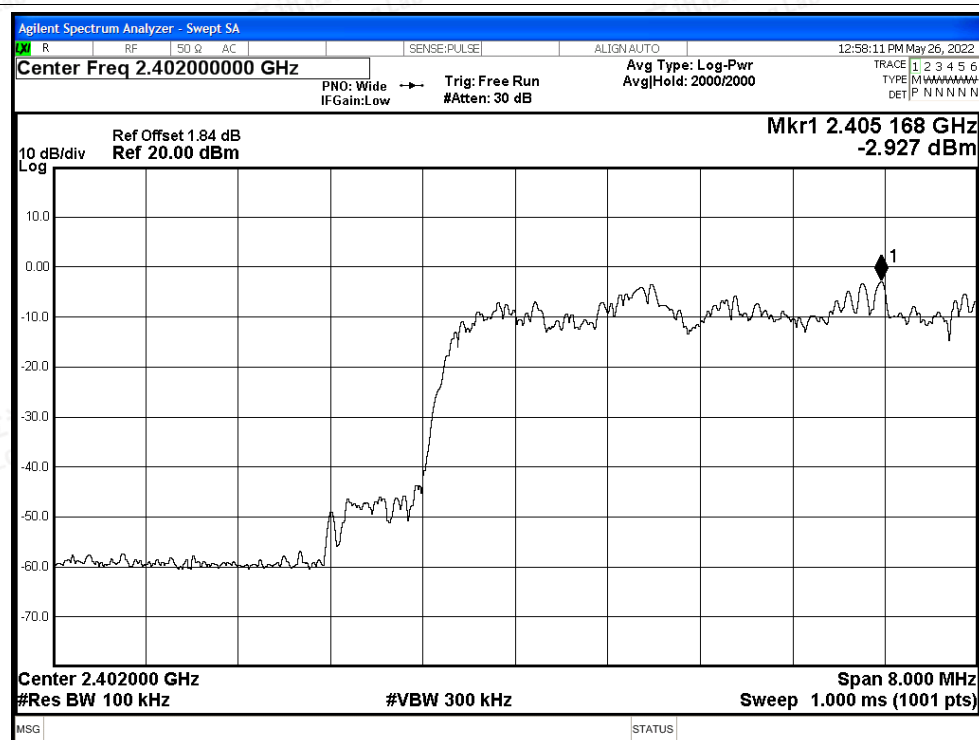


Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission

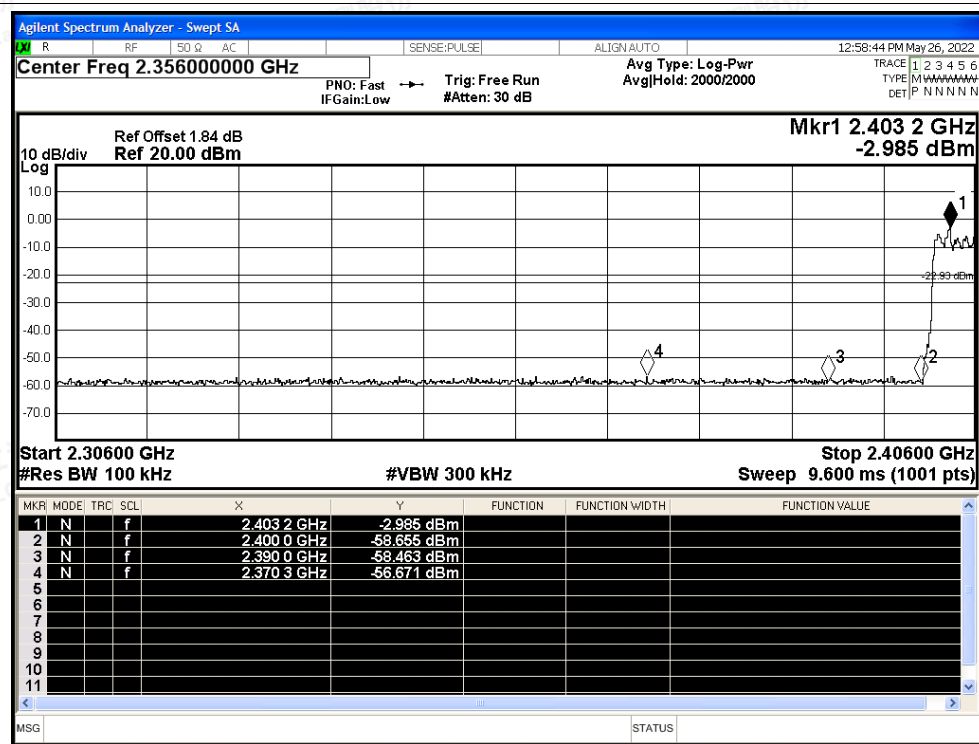




Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref

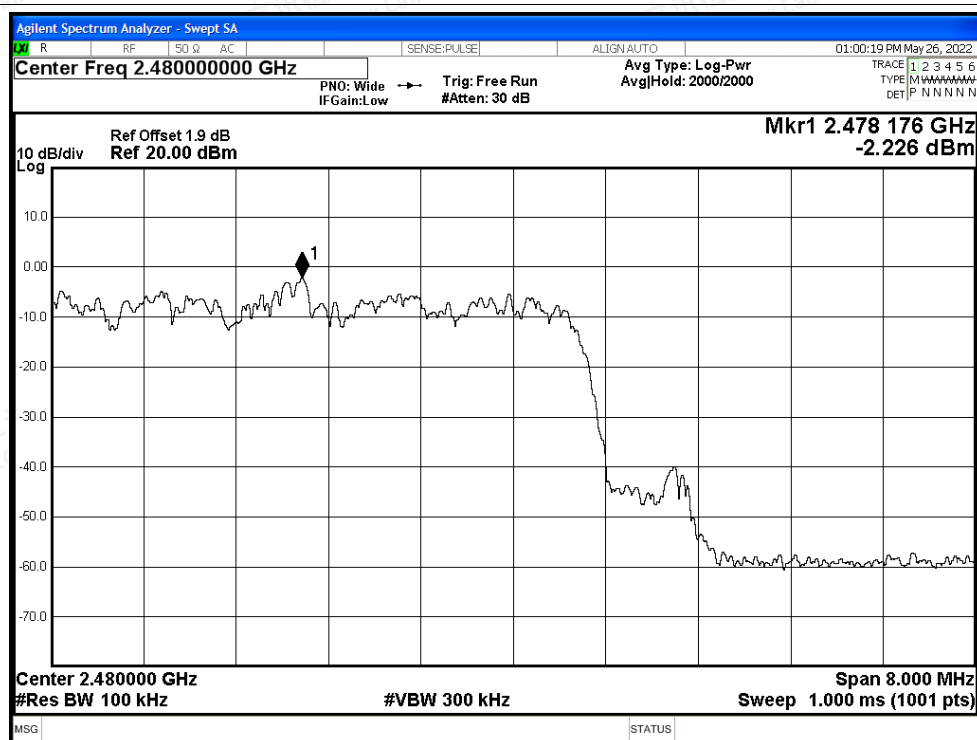


Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission

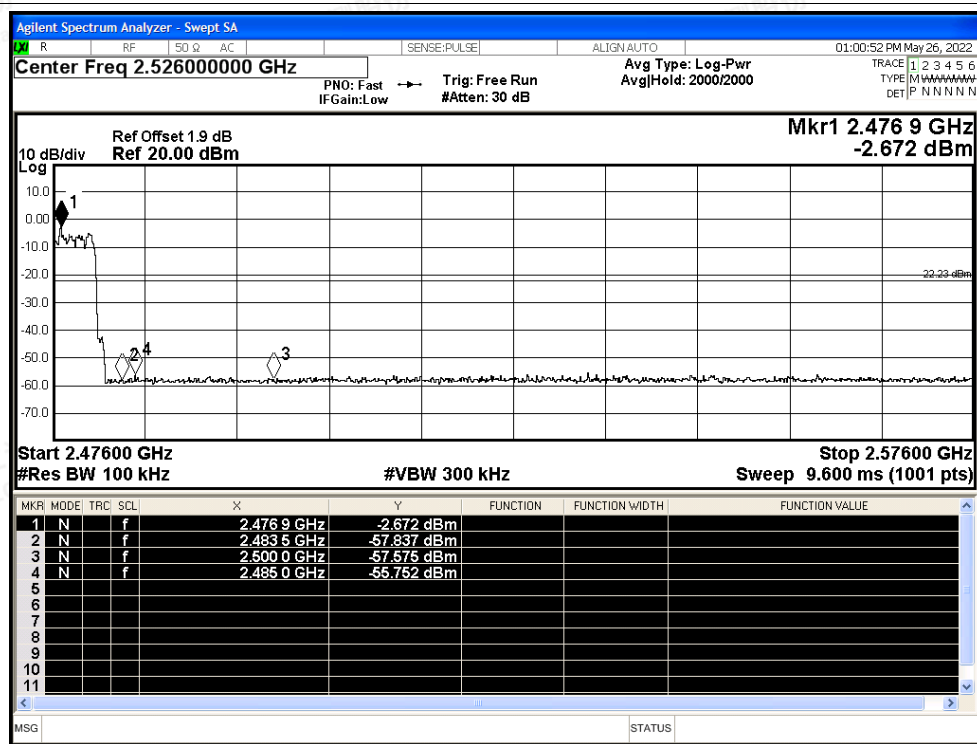




Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Ref



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	-45.43	-20	Pass
NVNT	1-DH5	2441	Ant1	-35.88	-20	Pass
NVNT	1-DH5	2480	Ant1	-39.58	-20	Pass
NVNT	2-DH5	2402	Ant1	-36.66	-20	Pass
NVNT	2-DH5	2441	Ant1	-37.59	-20	Pass
NVNT	2-DH5	2480	Ant1	-49.55	-20	Pass
NVNT	3-DH5	2402	Ant1	-46.52	-20	Pass
NVNT	3-DH5	2441	Ant1	-50.33	-20	Pass
NVNT	3-DH5	2480	Ant1	-51.51	-20	Pass

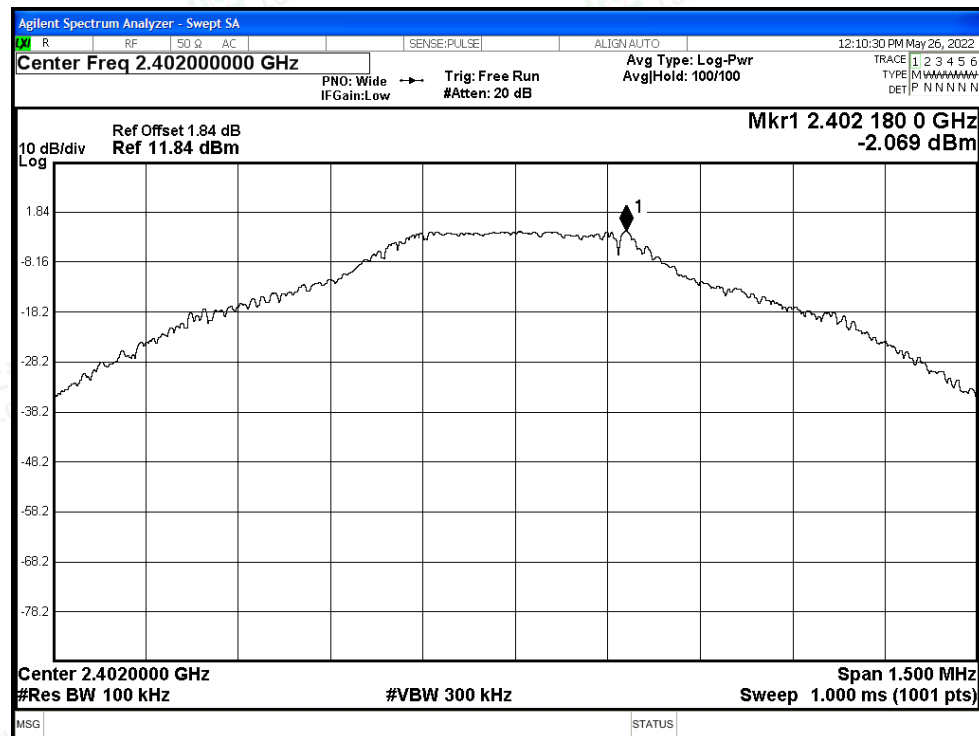


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Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

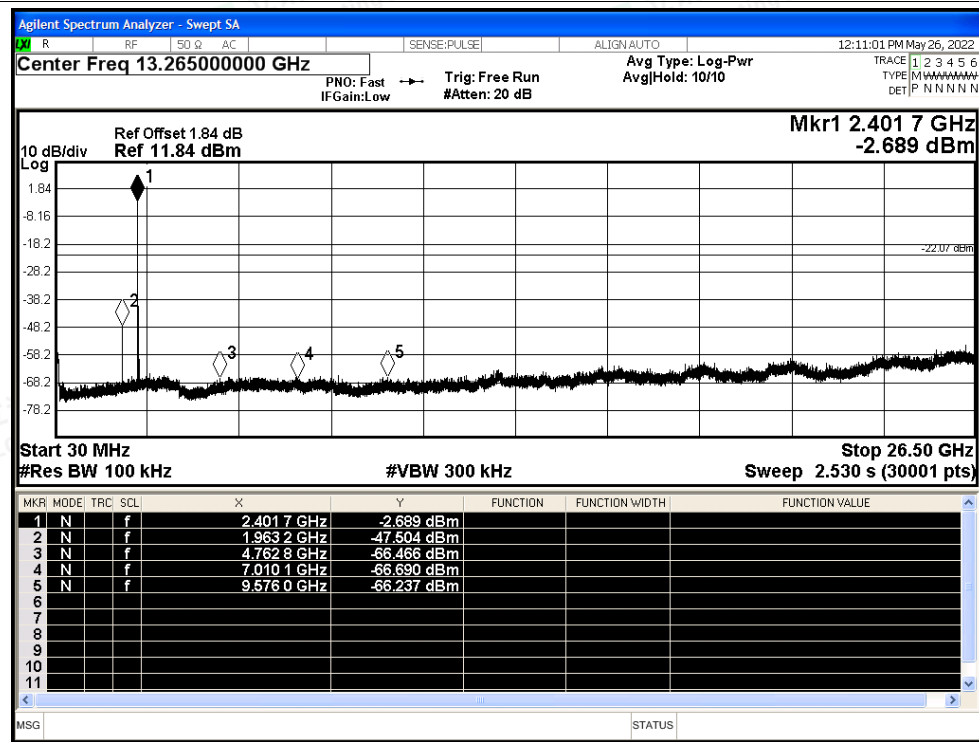


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref

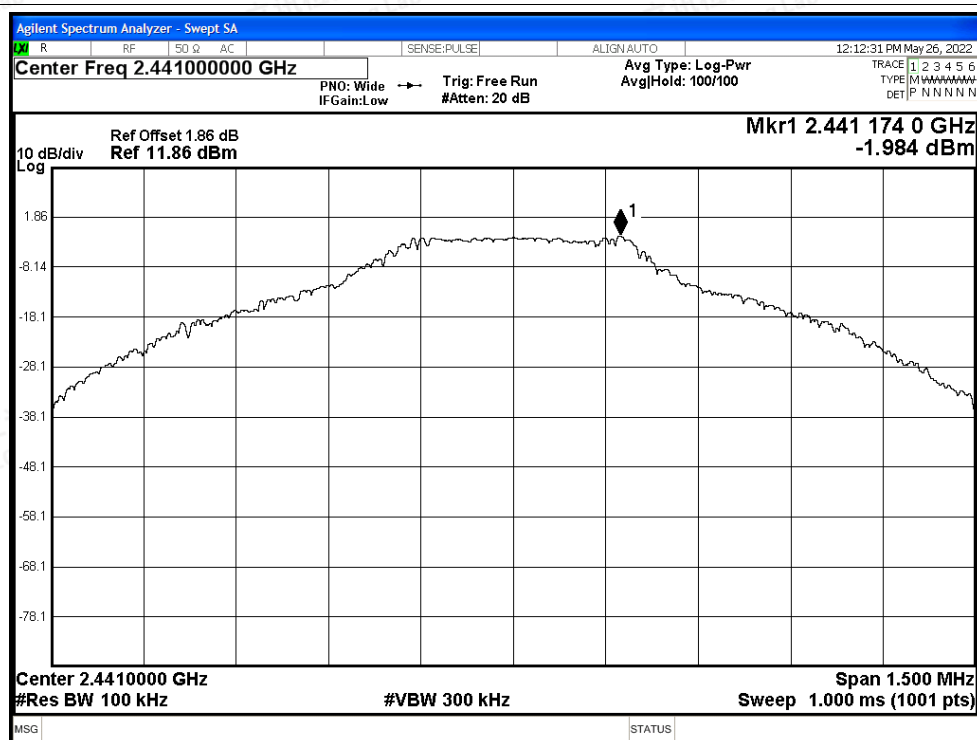


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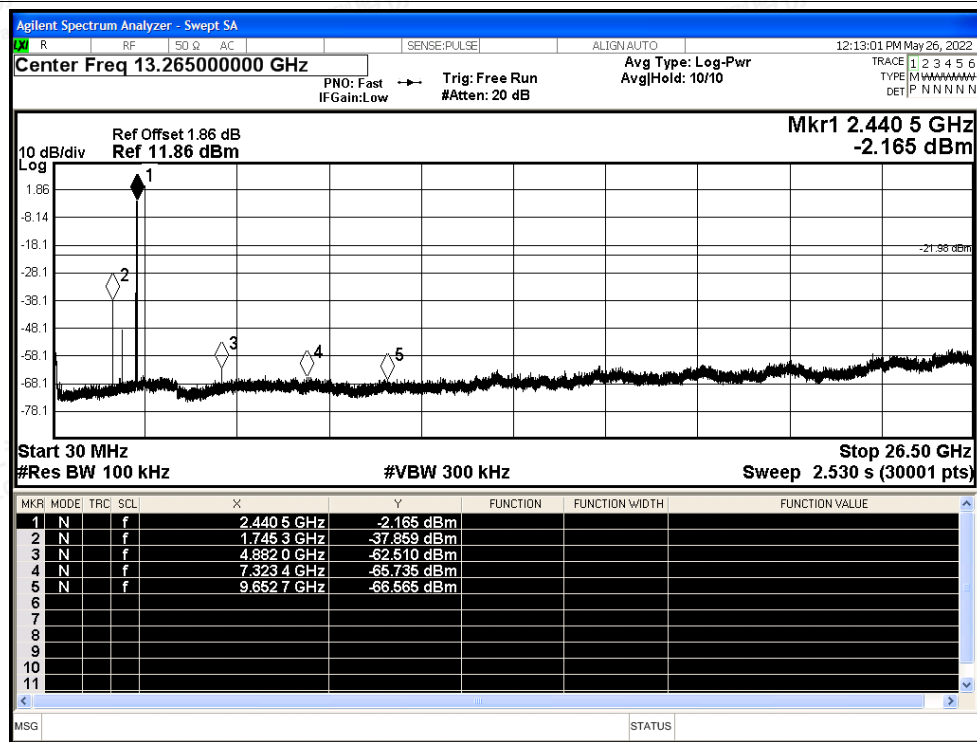




Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref

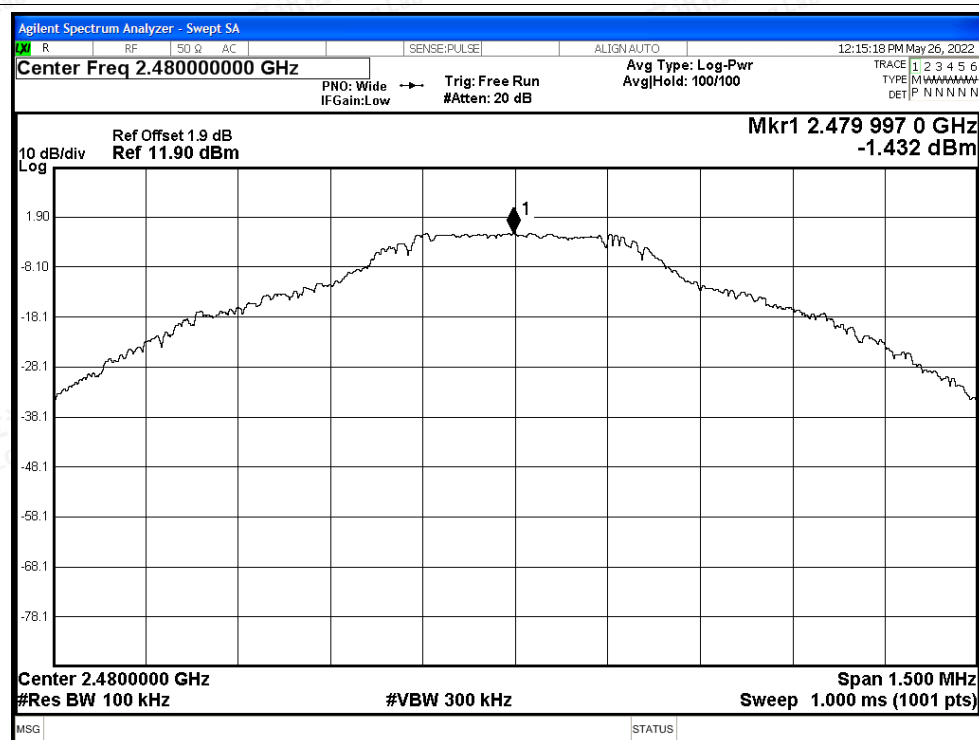


Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission

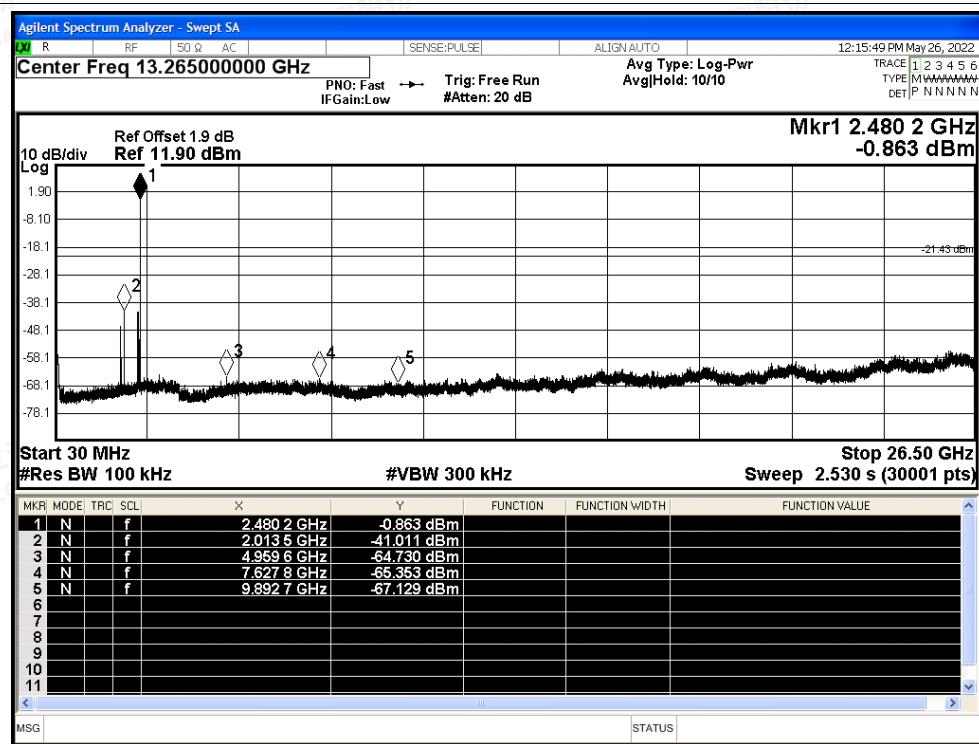




Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref

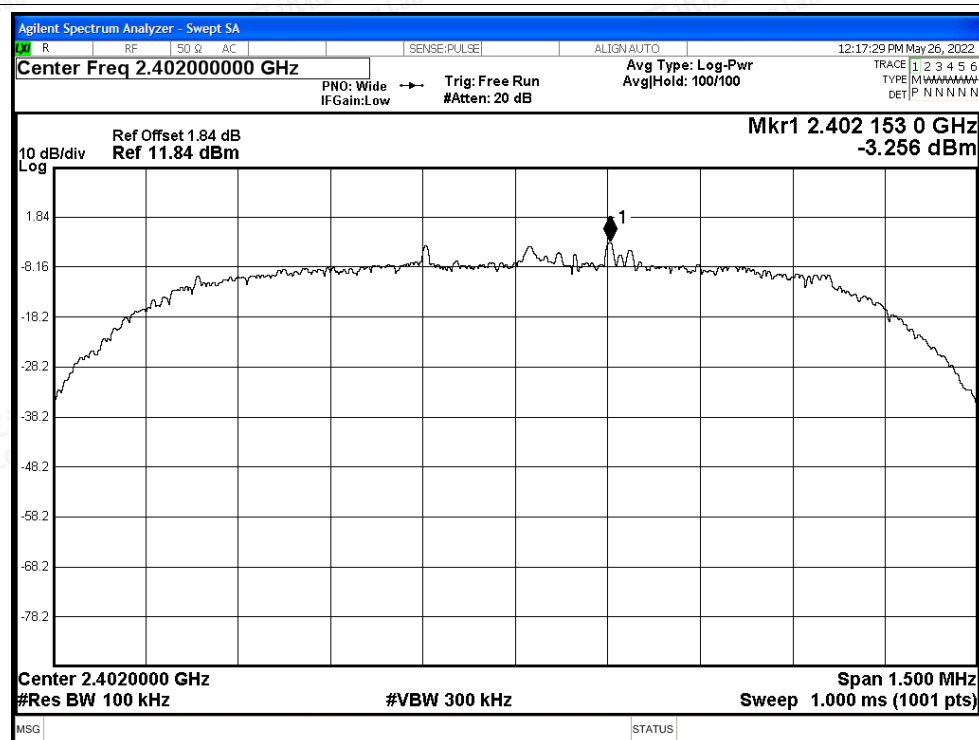


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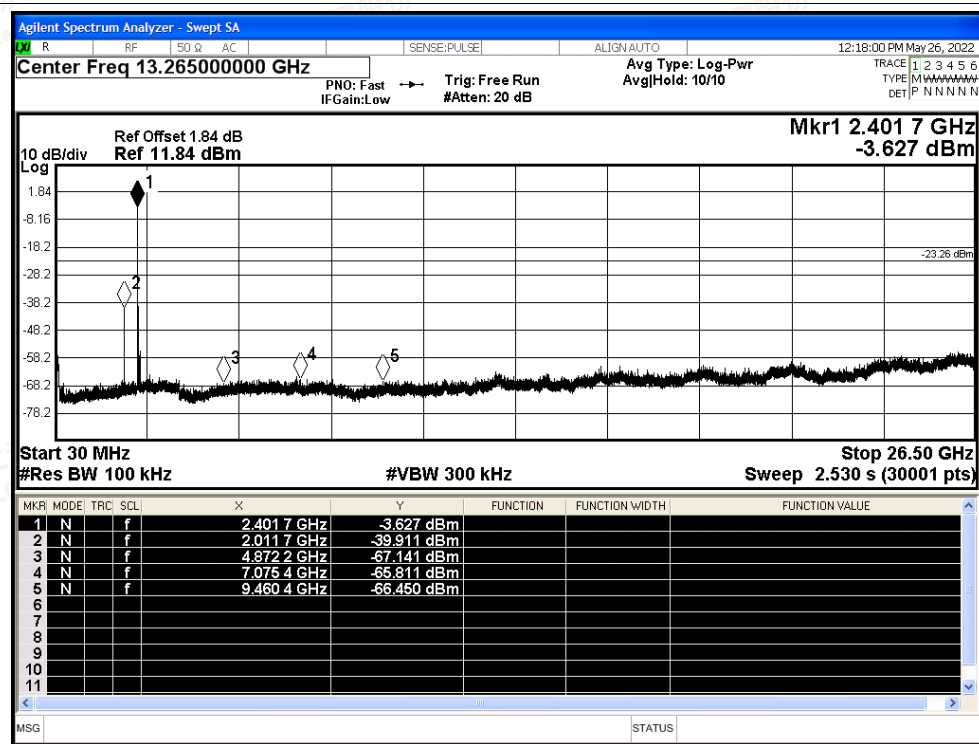




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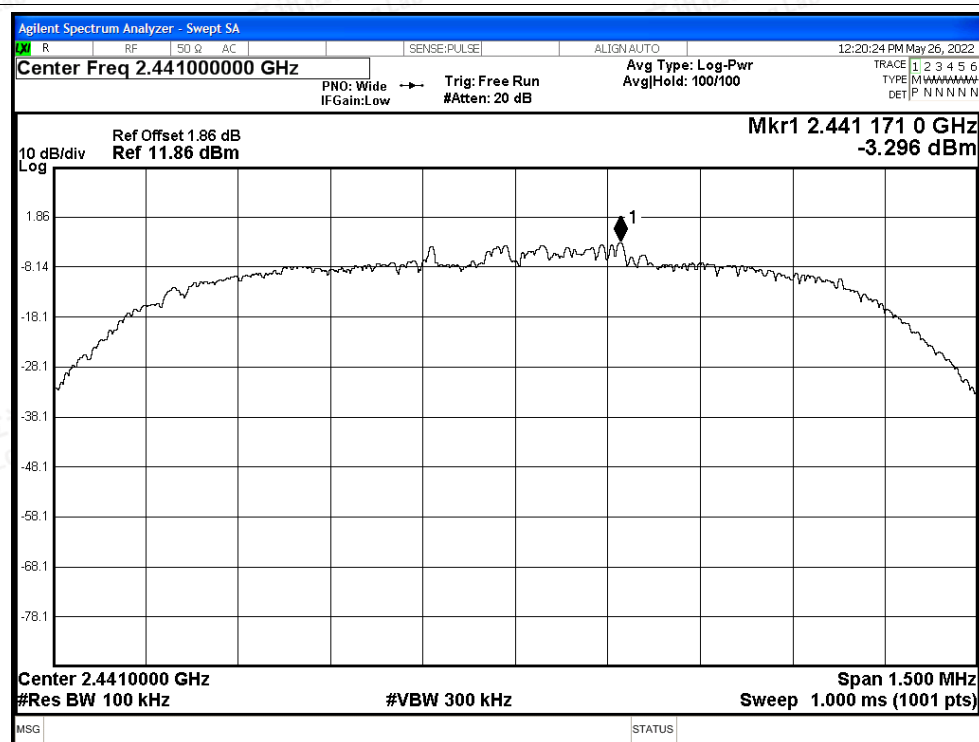


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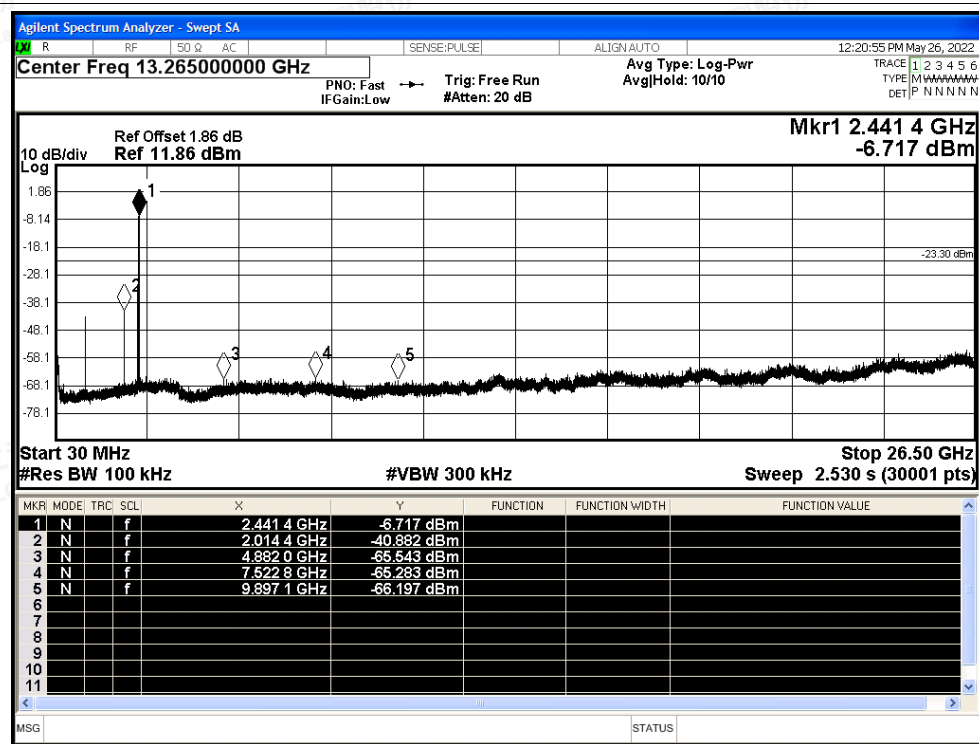




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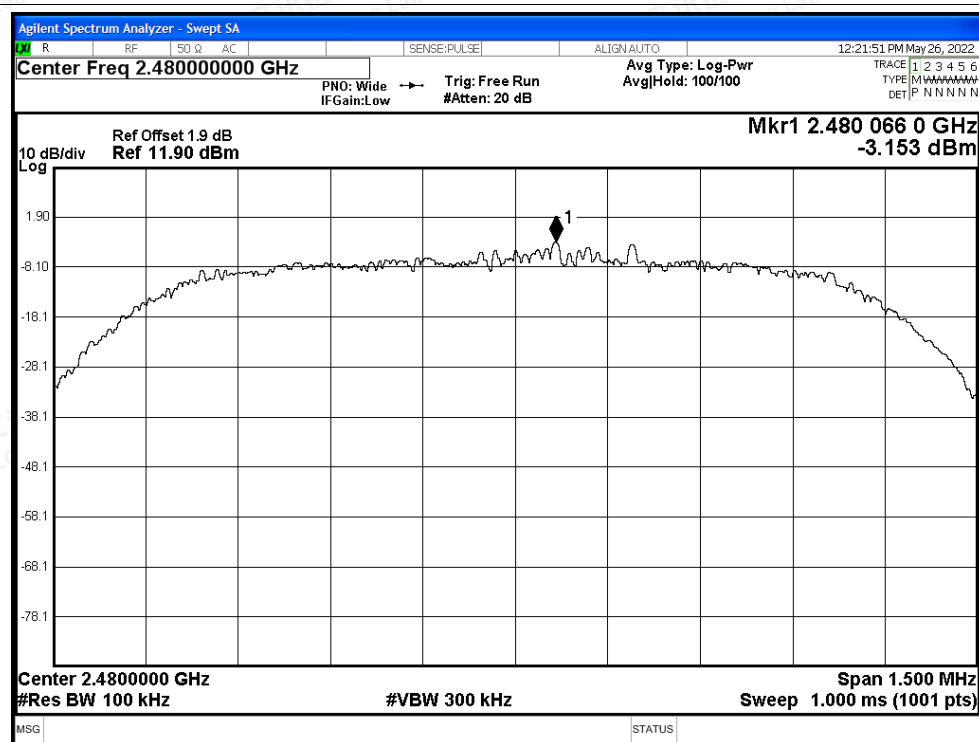


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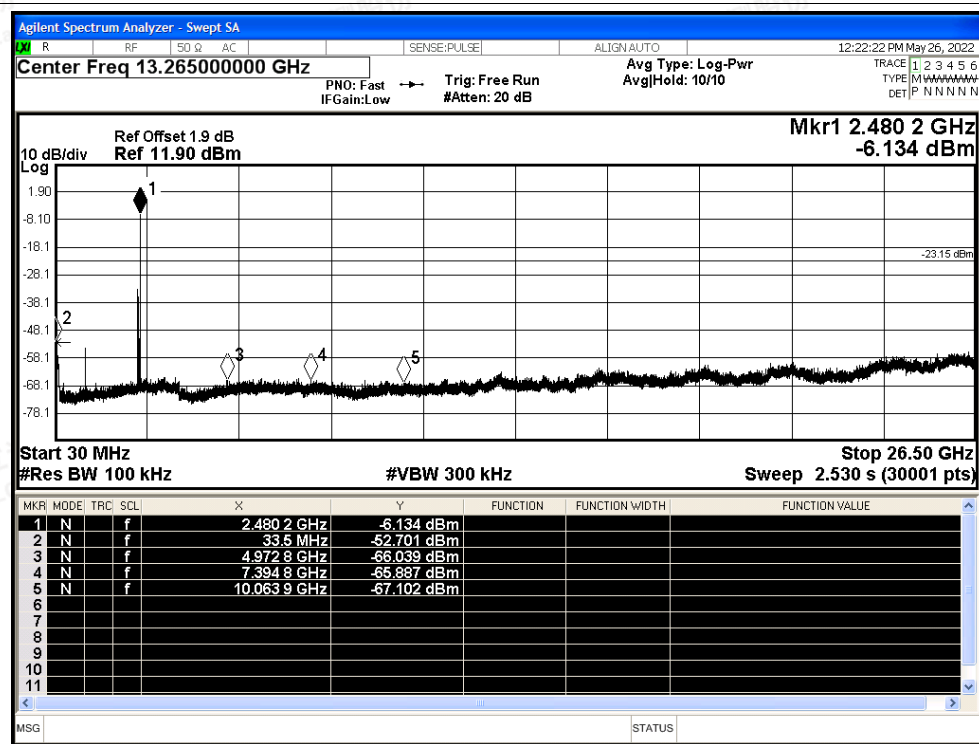




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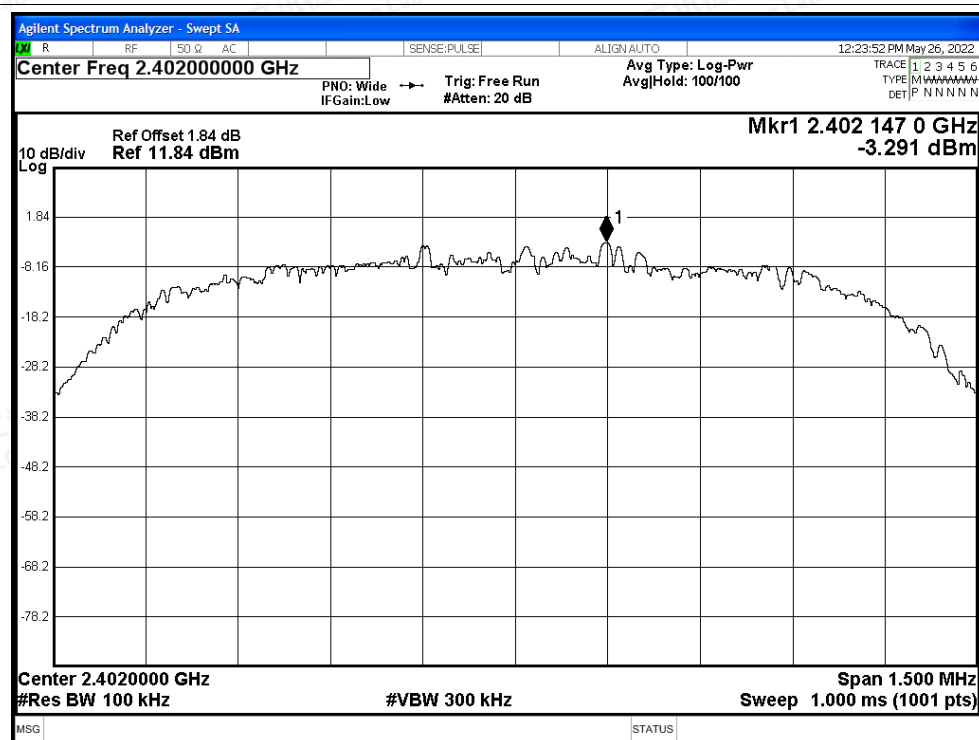


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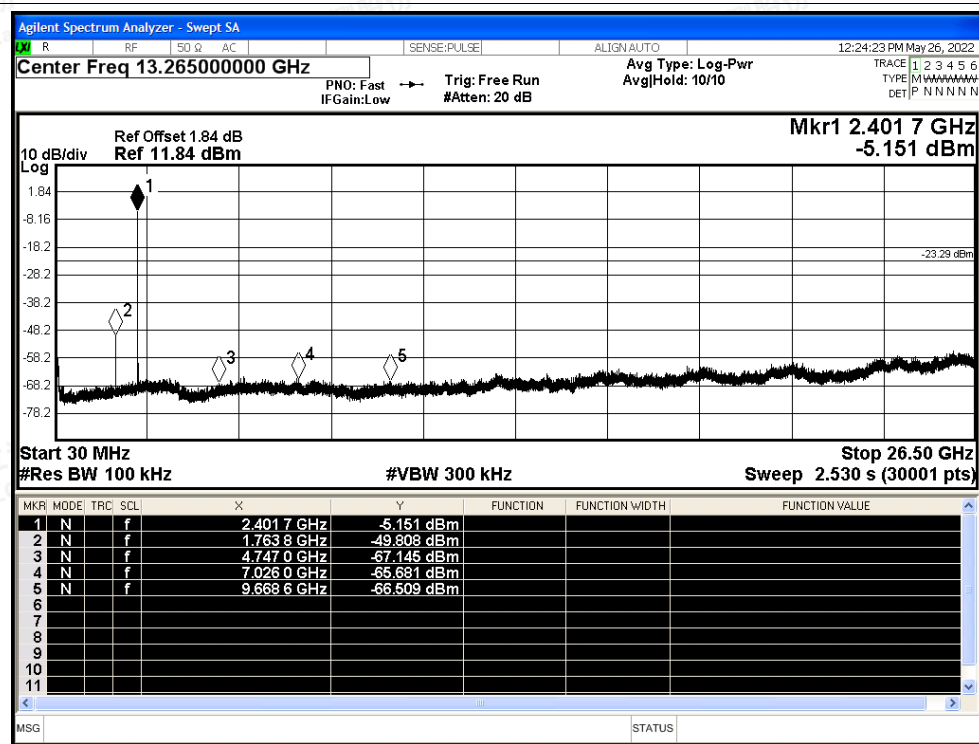




Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref

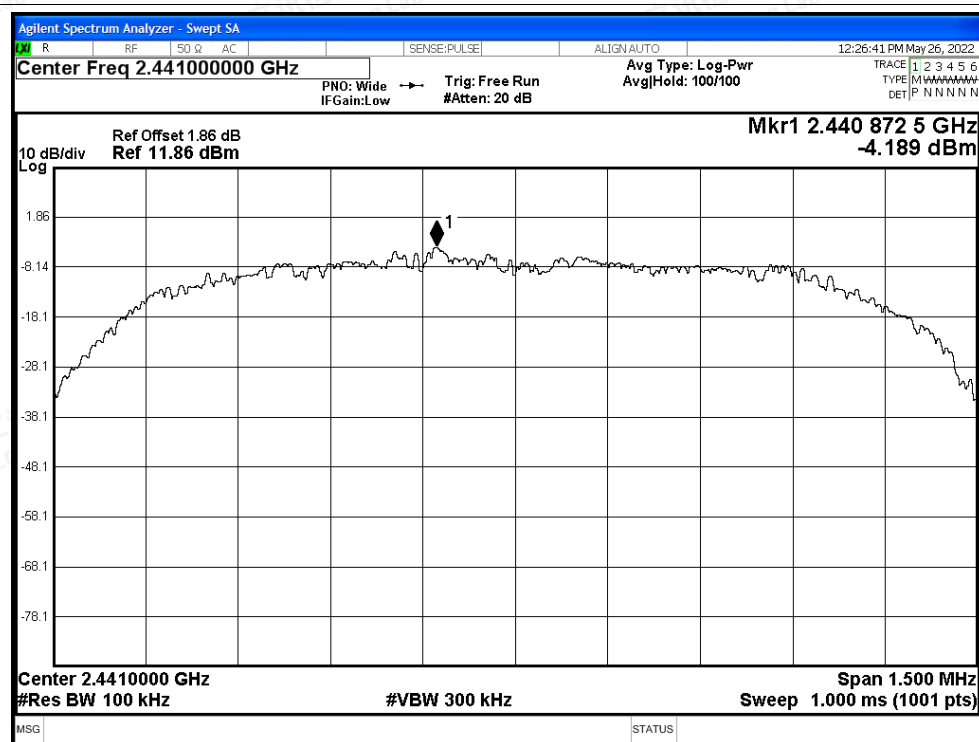


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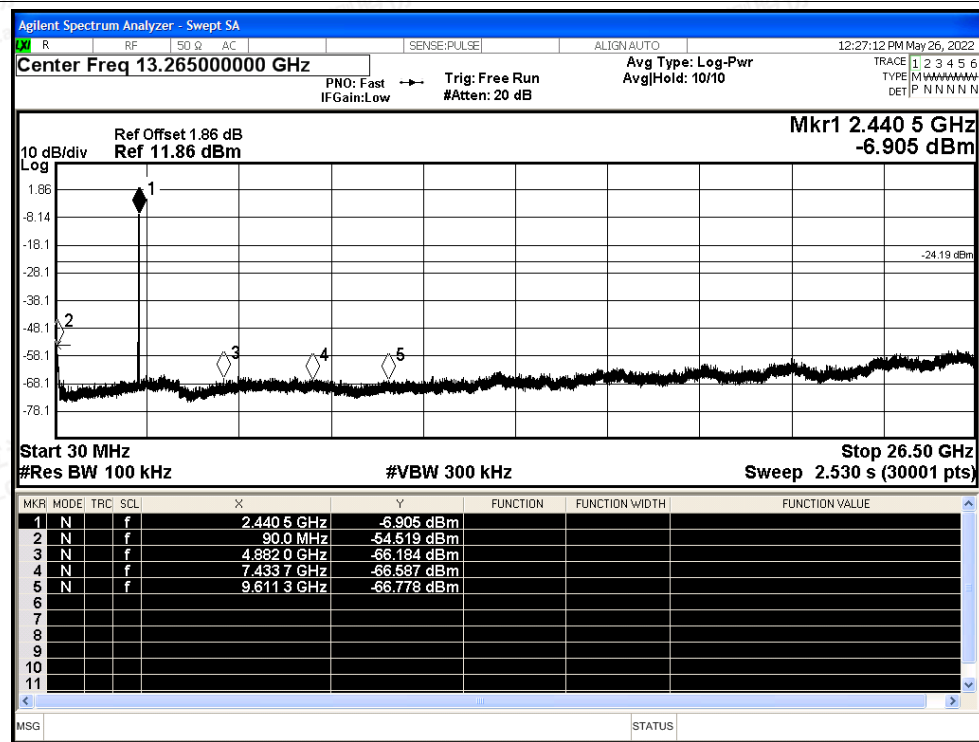




Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref

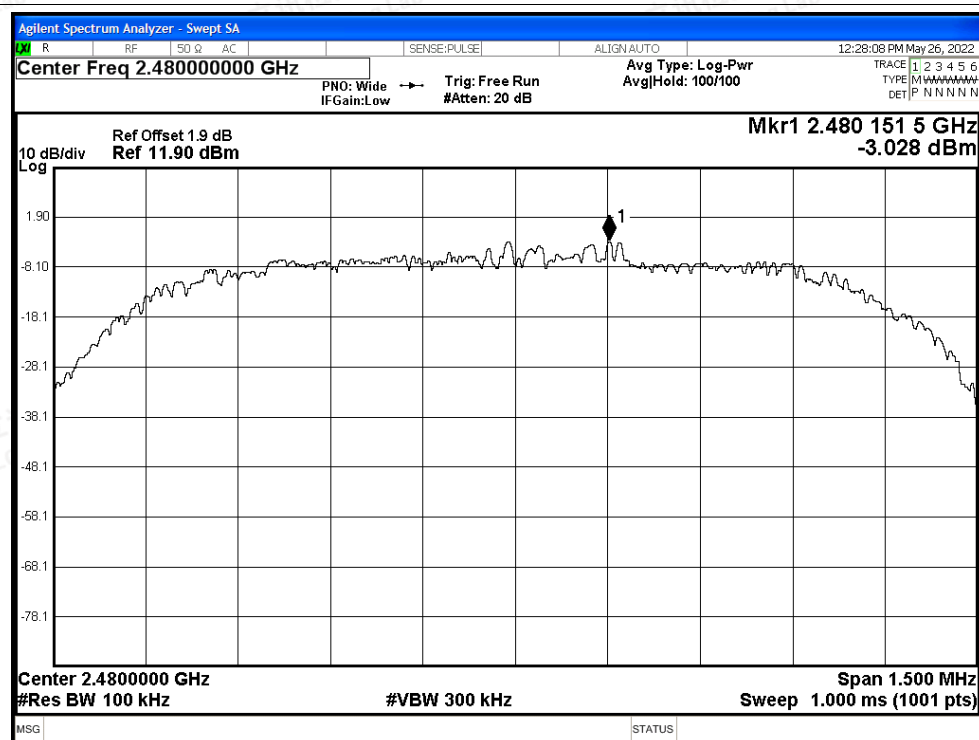


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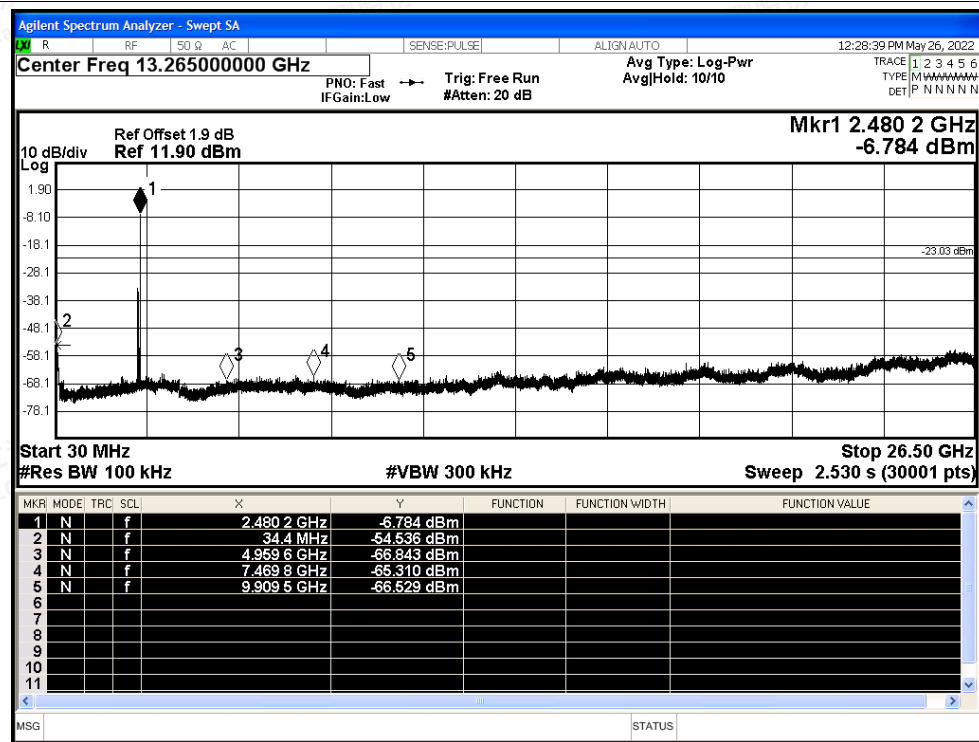




Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission





A.8 Restrict Band

Condition	Mode	Frequency (MHz)	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	No-Hopping	2310	-51.05	2	46.21	Peak	74	Pass
NVNT	1-DH5	2402	No-Hopping	2310	-60.77	2	36.49	Average	54	Pass
NVNT	1-DH5	2402	No-Hopping	2373.936	-47.99	2	49.27	Peak	74	Pass
NVNT	1-DH5	2402	No-Hopping	2363.28	-60.18	2	37.08	Average	54	Pass
NVNT	1-DH5	2402	No-Hopping	2390	-50.38	2	46.88	Peak	74	Pass
NVNT	1-DH5	2402	No-Hopping	2390	-60.33	2	36.93	Average	54	Pass
NVNT	1-DH5	2480	No-Hopping	2483.5	-51.07	2	46.19	Peak	74	Pass
NVNT	1-DH5	2480	No-Hopping	2483.5	-59.79	2	37.47	Average	54	Pass
NVNT	1-DH5	2480	No-Hopping	2495.416	-46.59	2	50.67	Peak	74	Pass
NVNT	1-DH5	2480	No-Hopping	2483.536	-59.79	2	37.47	Average	54	Pass
NVNT	1-DH5	2480	No-Hopping	2500	-49.87	2	47.39	Peak	74	Pass
NVNT	1-DH5	2480	No-Hopping	2500	-60.17	2	37.09	Average	54	Pass
NVNT	2-DH5	2402	No-Hopping	2310	-50.56	2	46.7	Peak	74	Pass
NVNT	2-DH5	2402	No-Hopping	2310	-60.79	2	36.47	Average	54	Pass
NVNT	2-DH5	2402	No-Hopping	2381.904	-47.32	2	49.94	Peak	74	Pass
NVNT	2-DH5	2402	No-Hopping	2380.944	-60.22	2	37.04	Average	54	Pass
NVNT	2-DH5	2402	No-Hopping	2390	-52.07	2	45.19	Peak	74	Pass
NVNT	2-DH5	2402	No-Hopping	2390	-60.45	2	36.81	Average	54	Pass
NVNT	2-DH5	2480	No-Hopping	2483.5	-50.49	2	46.77	Peak	74	Pass
NVNT	2-DH5	2480	No-Hopping	2483.5	-60.01	2	37.25	Average	54	Pass
NVNT	2-DH5	2480	No-Hopping	2486.632	-46.91	2	50.35	Peak	74	Pass
NVNT	2-DH5	2480	No-Hopping	2486.032	-59.87	2	37.39	Average	54	Pass
NVNT	2-DH5	2480	No-Hopping	2500	-49.7	2	47.56	Peak	74	Pass
NVNT	2-DH5	2480	No-Hopping	2500	-60.1	2	37.16	Average	54	Pass
NVNT	3-DH5	2402	No-Hopping	2310	-50.87	2	46.39	Peak	74	Pass
NVNT	3-DH5	2402	No-Hopping	2310	-60.65	2	36.61	Average	54	Pass
NVNT	3-DH5	2402	No-Hopping	2330.64	-47.85	2	49.41	Peak	74	Pass
NVNT	3-DH5	2402	No-Hopping	2388.24	-60.23	2	37.03	Average	54	Pass
NVNT	3-DH5	2402	No-Hopping	2390	-50.25	2	47.01	Peak	74	Pass
NVNT	3-DH5	2402	No-Hopping	2390	-60.28	2	36.98	Average	54	Pass
NVNT	3-DH5	2480	No-Hopping	2483.5	-49.84	2	47.42	Peak	74	Pass
NVNT	3-DH5	2480	No-Hopping	2483.5	-59.83	2	37.43	Average	54	Pass
NVNT	3-DH5	2480	No-Hopping	2484.88	-47.6	2	49.66	Peak	74	Pass
NVNT	3-DH5	2480	No-Hopping	2483.536	-59.76	2	37.5	Average	54	Pass
NVNT	3-DH5	2480	No-Hopping	2500	-50.4	2	46.86	Peak	74	Pass
NVNT	3-DH5	2480	No-Hopping	2500	-60.05	2	37.21	Average	54	Pass



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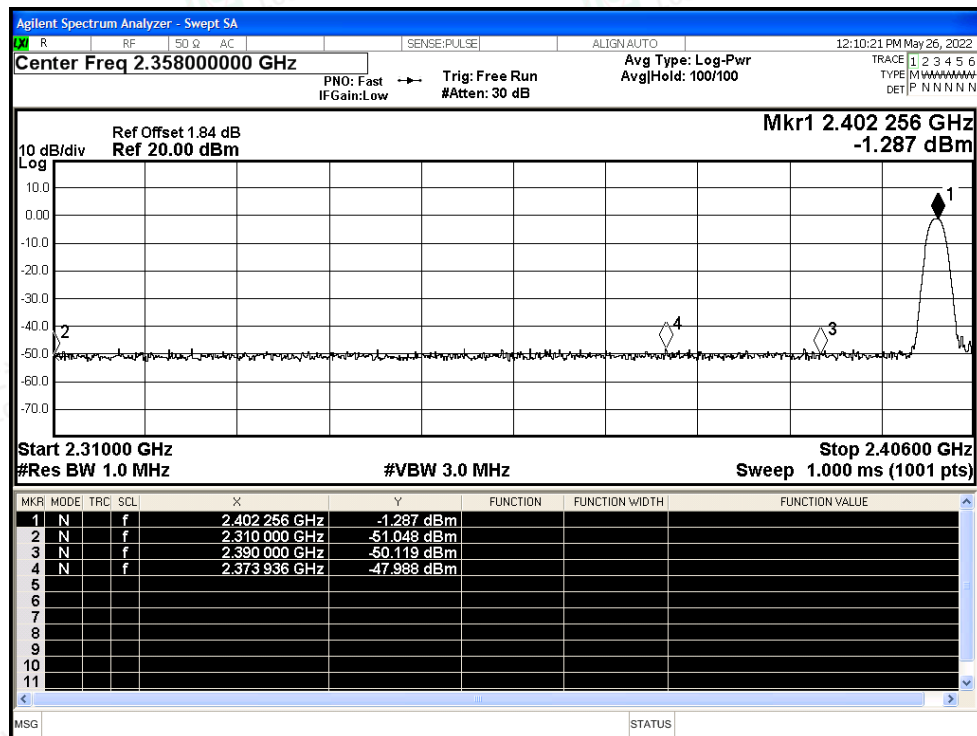
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity

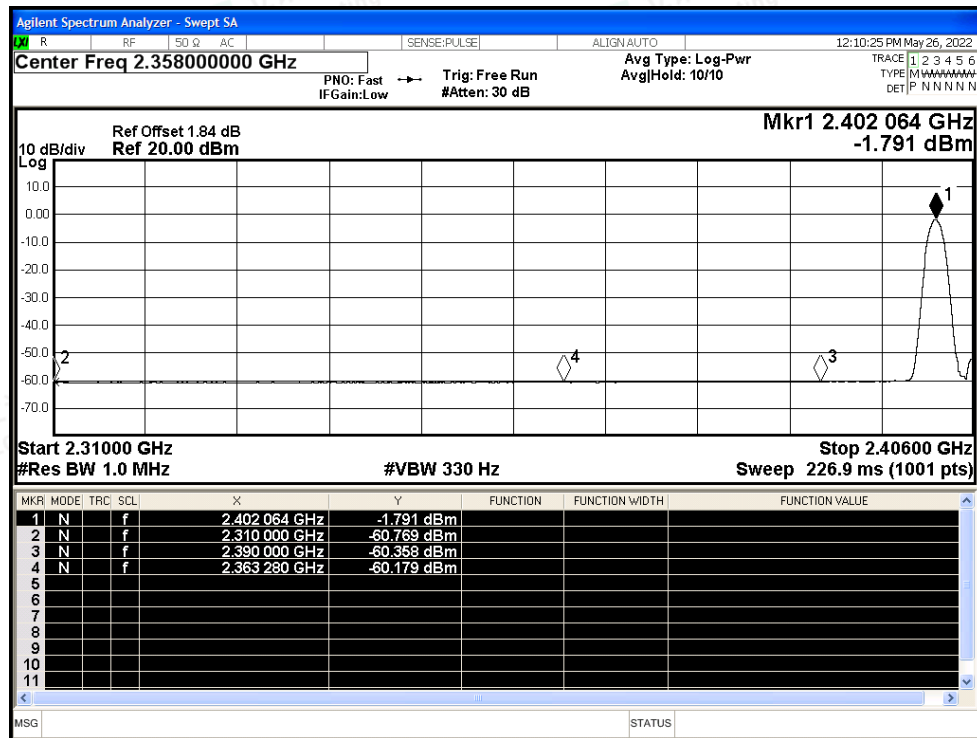


Test Graphs

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

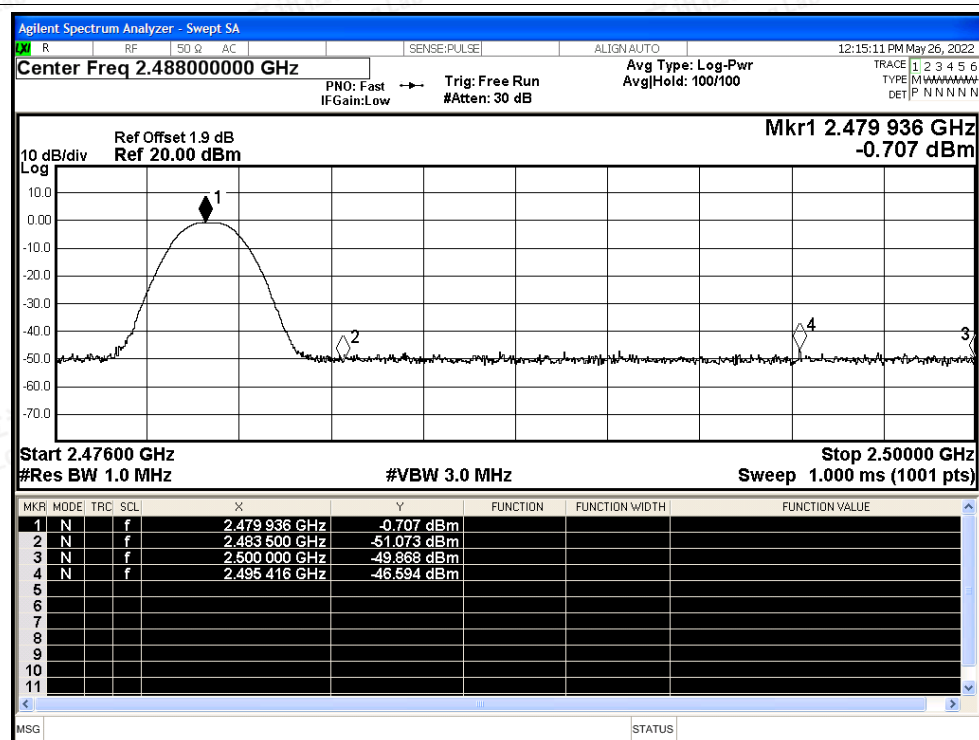


Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average

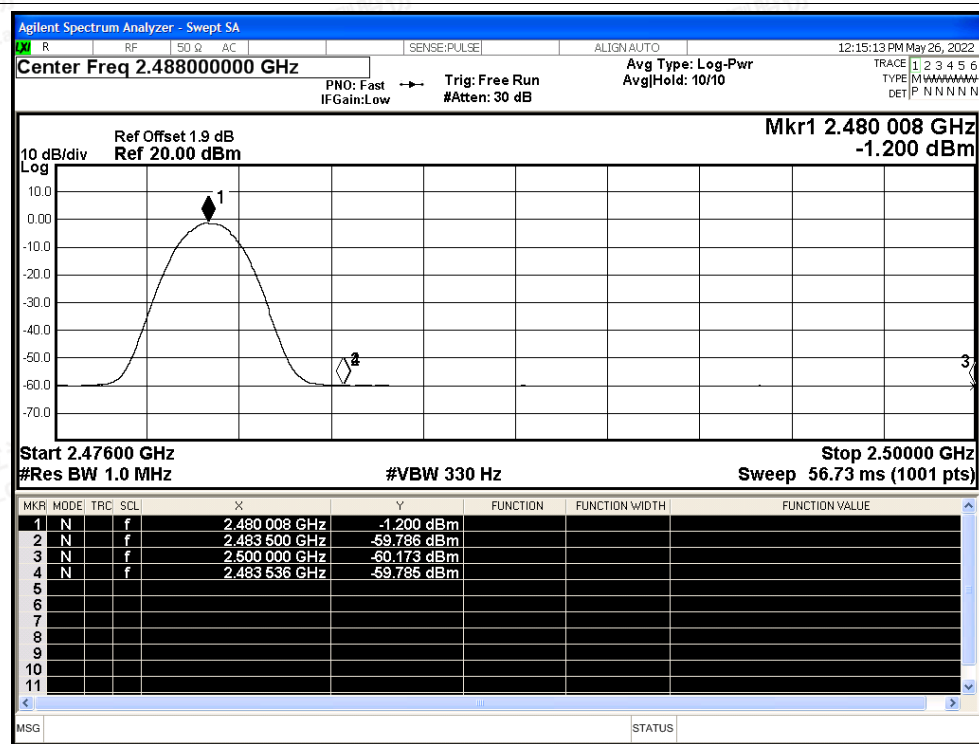




Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak

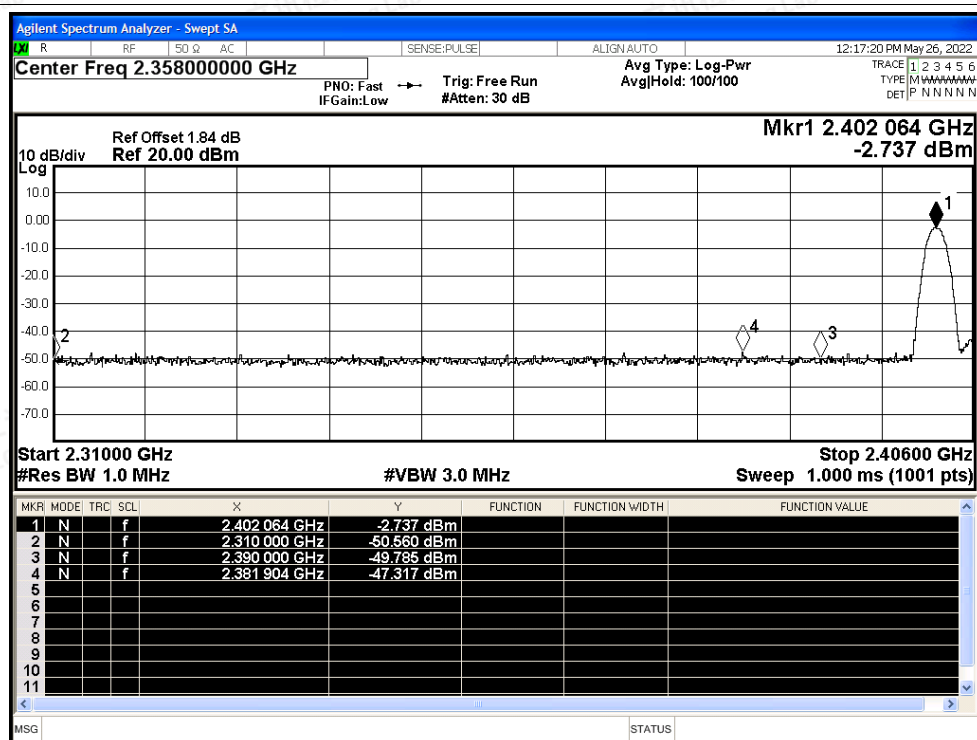


Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average

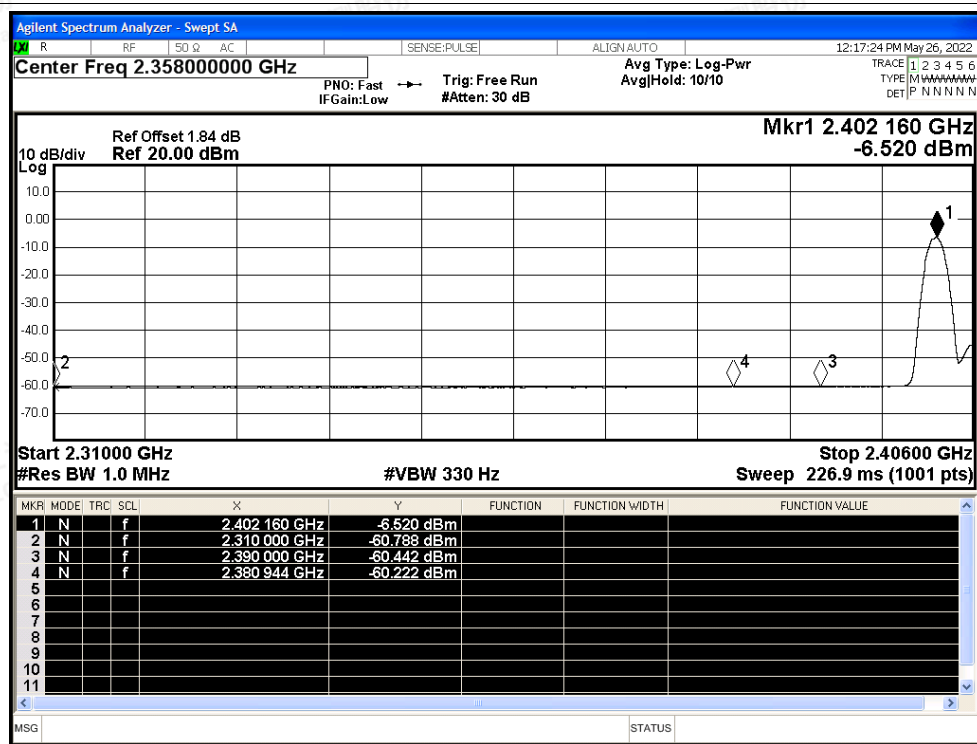




Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak

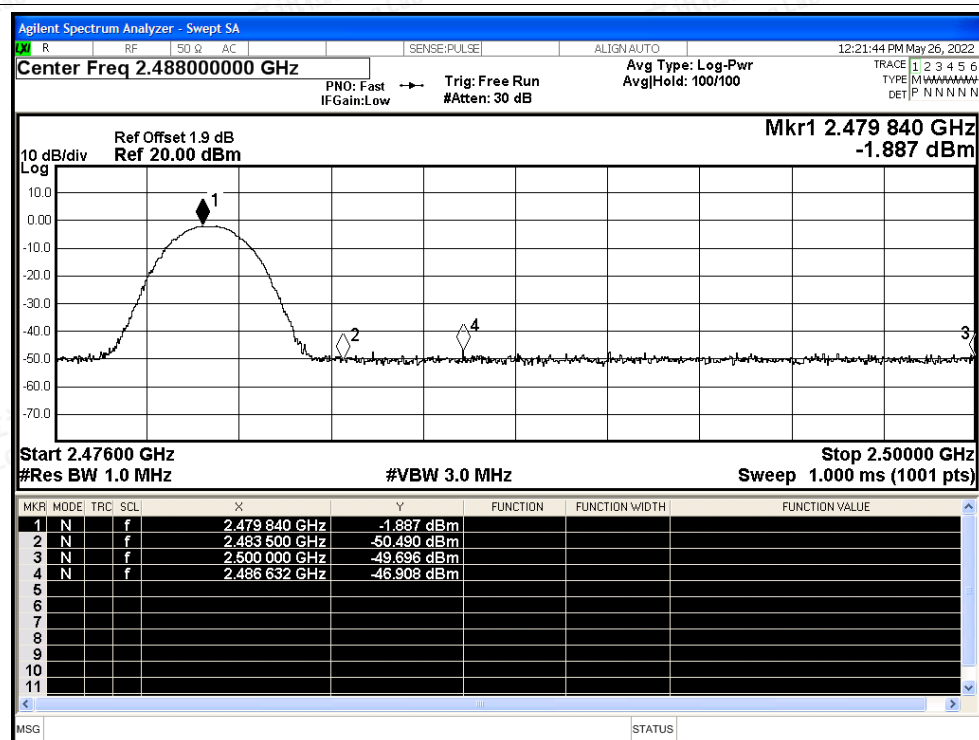


Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average

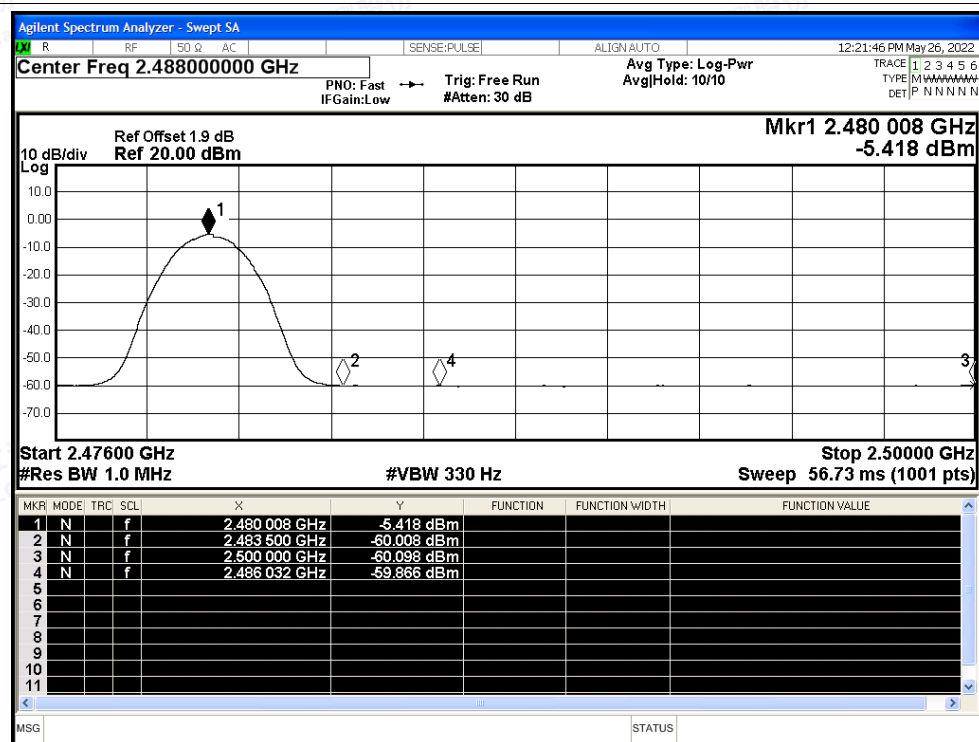




Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak

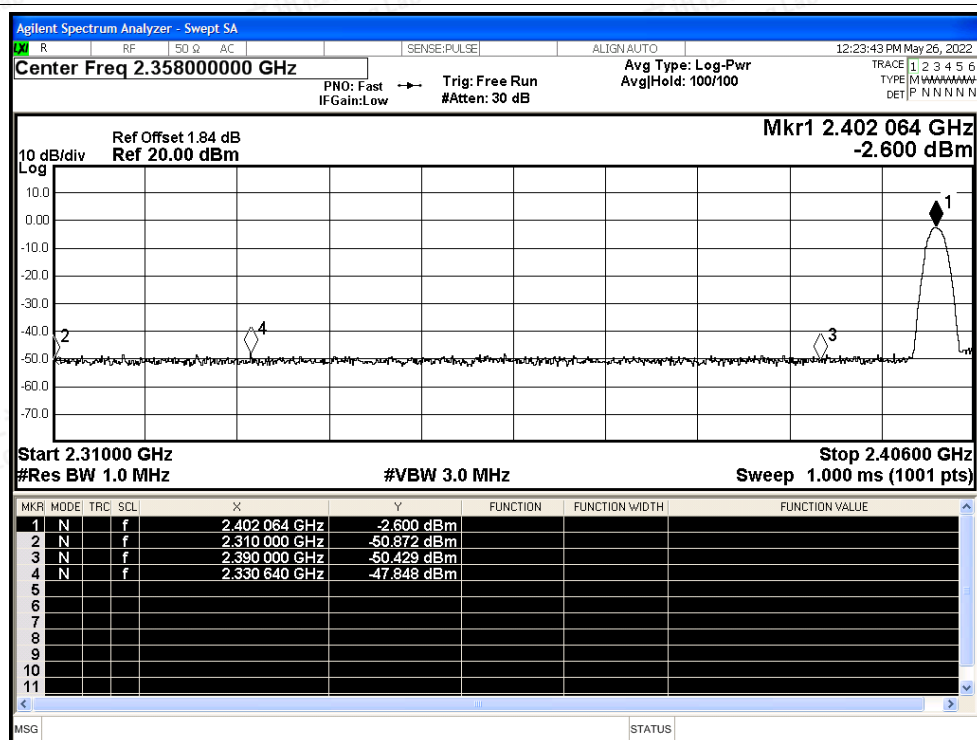


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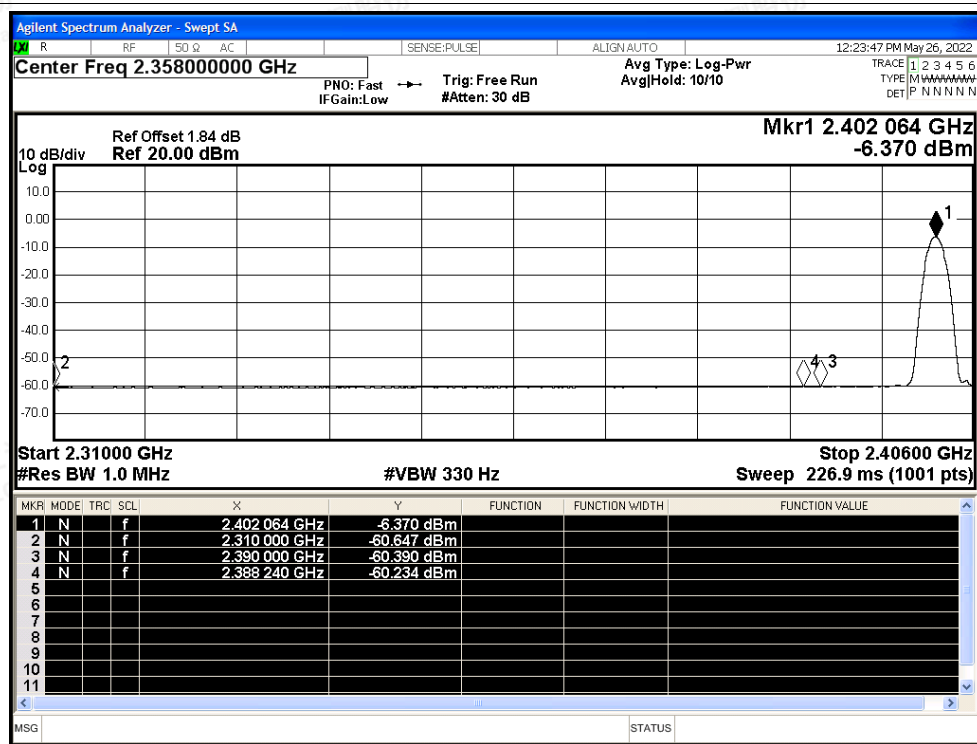




Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak

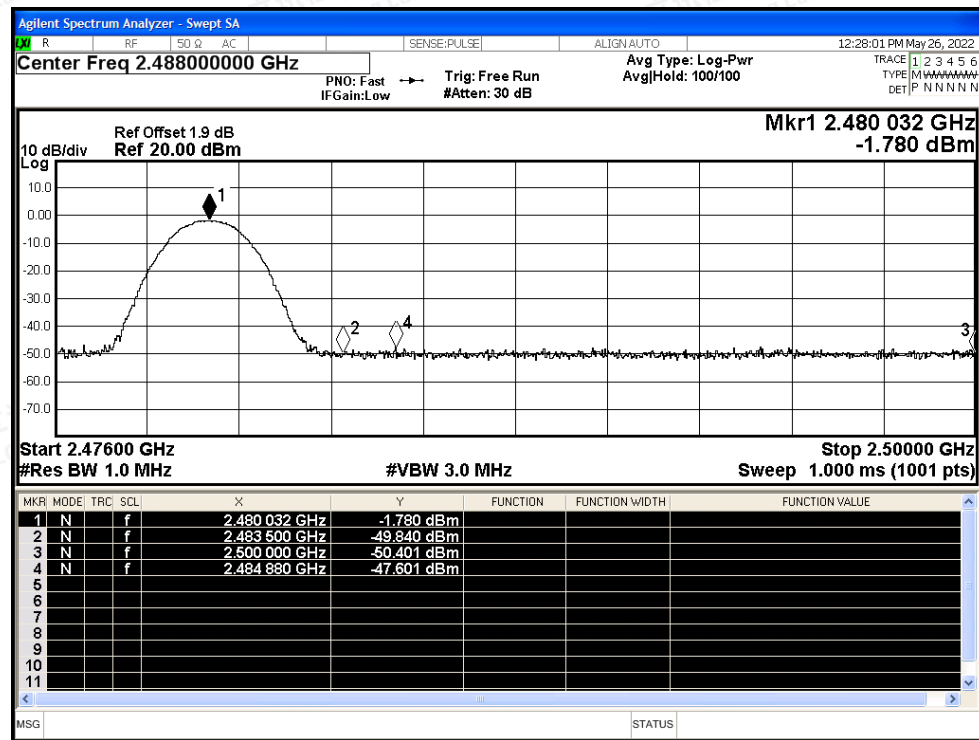


Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Average





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



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

