



Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: Remote Controller

Test Model: WL4BACTRLCN/G2

Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Can Kun
Supervised by:	Nick Peng





A.1 -6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant	0.649	≥ 0.5	Pass
NVNT	BLE 1M	2440	Ant	0.651	≥ 0.5	Pass
NVNT	BLE 1M	2480	Ant	0.661	≥ 0.5	Pass
NVNT	BLE 2M	2402	Ant	1.152	≥ 0.5	Pass
NVNT	BLE 2M	2440	Ant	1.183	≥ 0.5	Pass
NVNT	BLE 2M	2480	Ant	1.165	≥ 0.5	Pass



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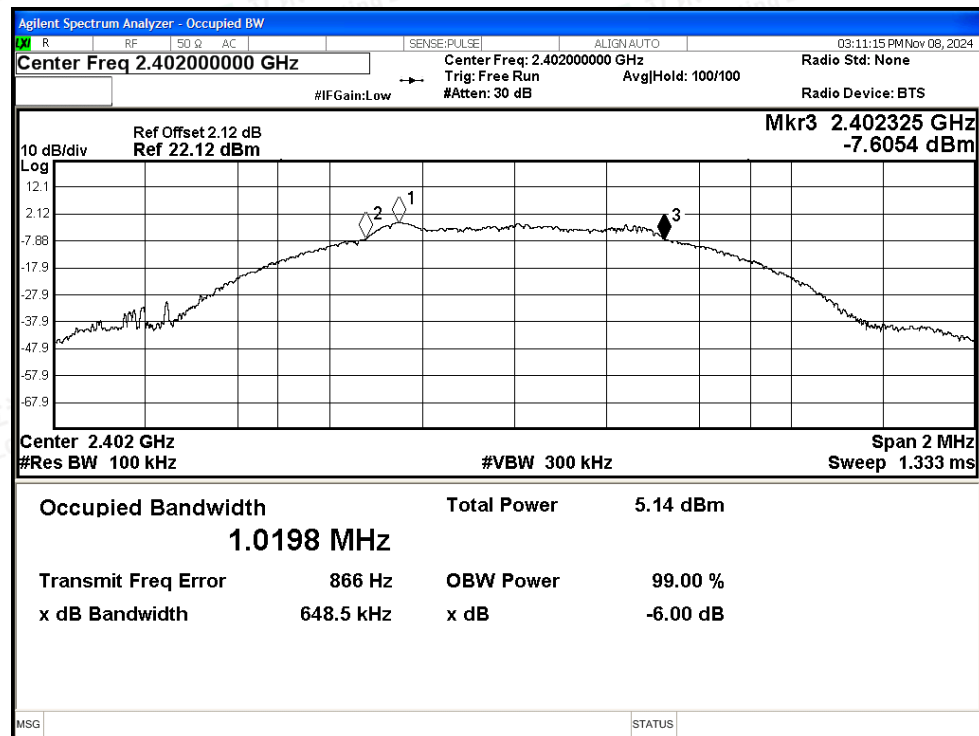
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity

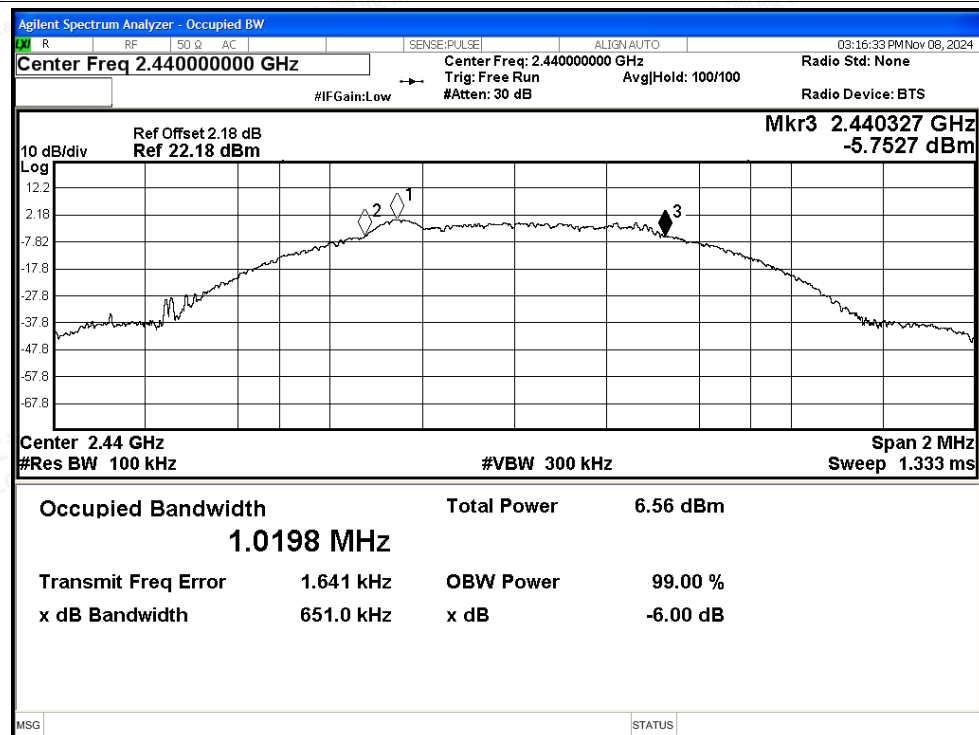


Test Graphs

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant



-6dB Bandwidth NVNT BLE 1M 2440MHz Ant



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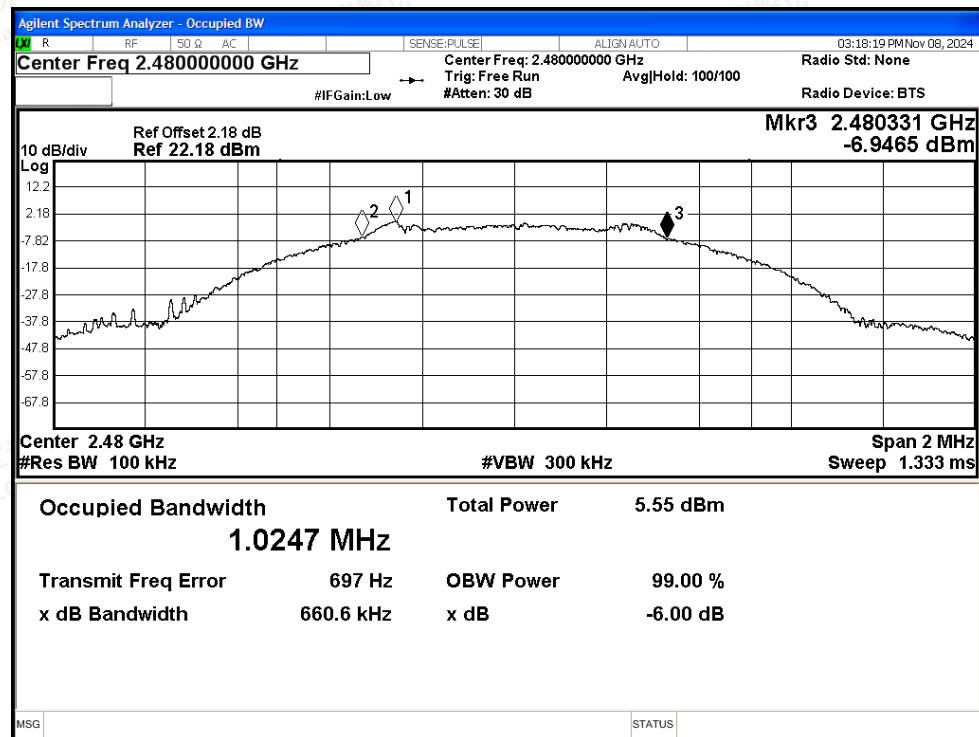
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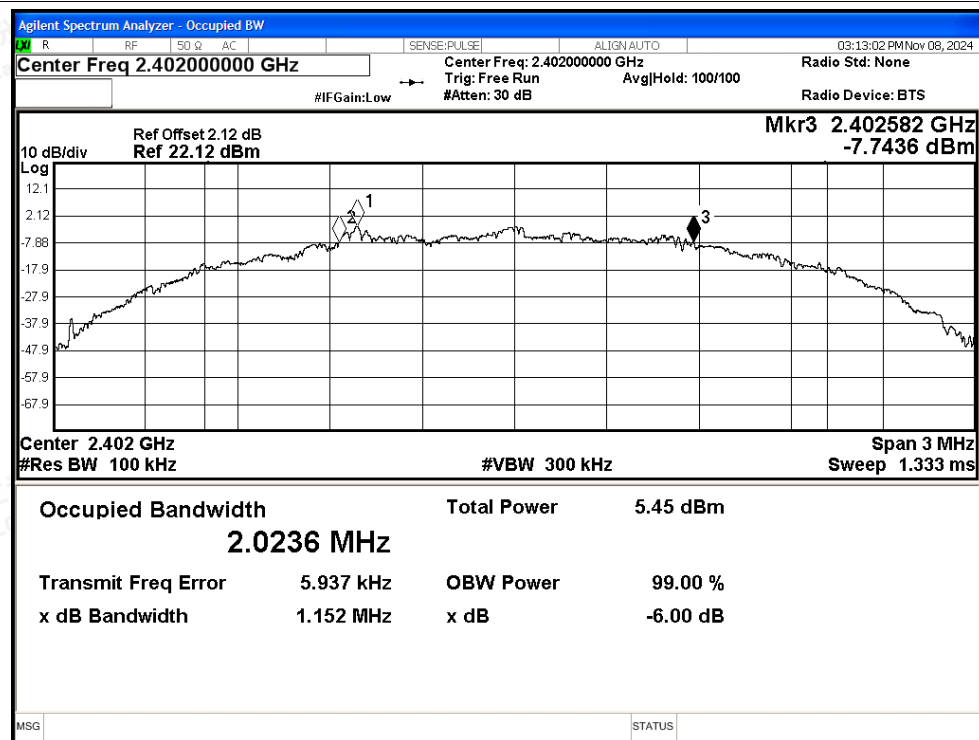
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-6dB Bandwidth NVNT BLE 1M 2480MHz Ant



-6dB Bandwidth NVNT BLE 2M 2402MHz Ant



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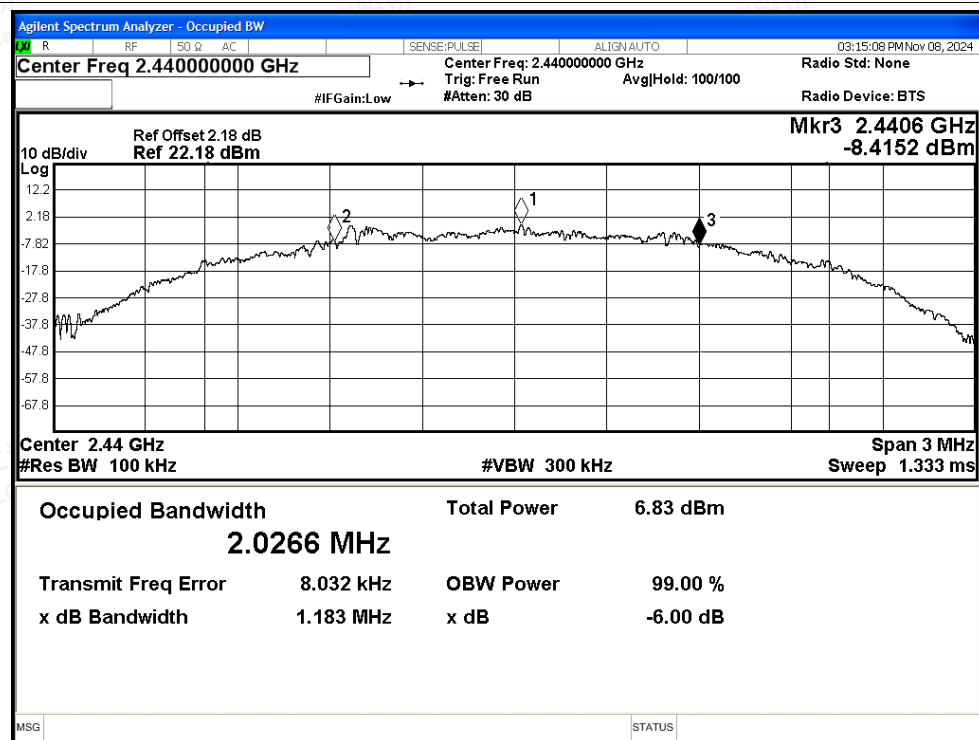
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Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

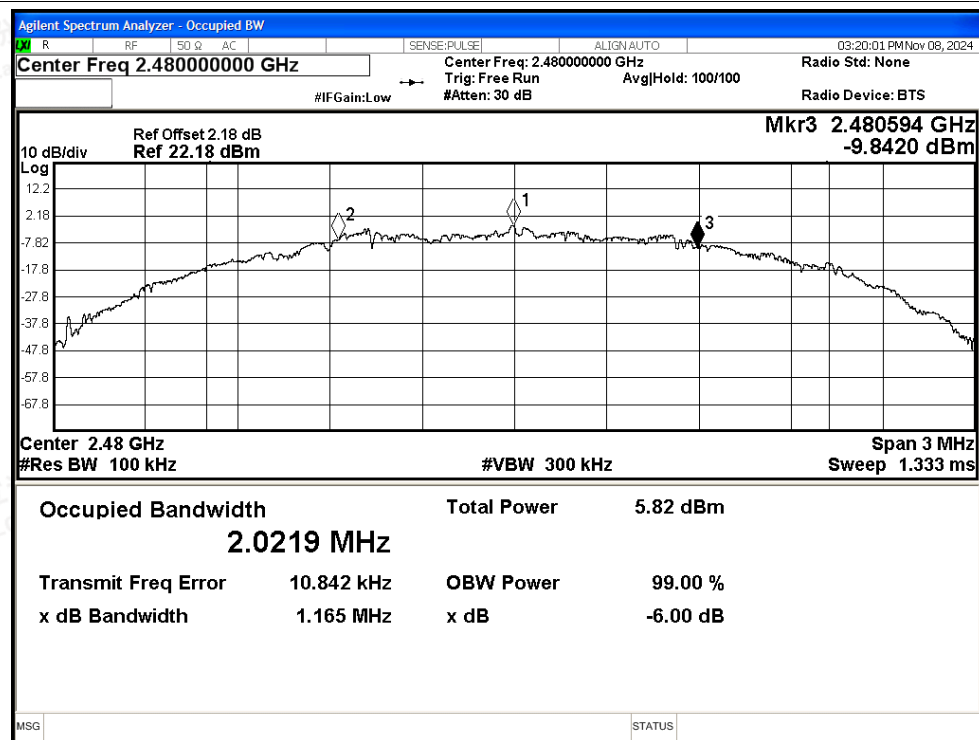
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-6dB Bandwidth NVNT BLE 2M 2440MHz Ant



-6dB Bandwidth NVNT BLE 2M 2480MHz Ant



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A.2 Maximum Peak Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant	-0.77	30	Pass
NVNT	BLE 1M	2440	Ant	0.79	30	Pass
NVNT	BLE 1M	2480	Ant	-0.28	30	Pass
NVNT	BLE 2M	2402	Ant	-0.85	30	Pass
NVNT	BLE 2M	2440	Ant	0.63	30	Pass
NVNT	BLE 2M	2480	Ant	-0.45	30	Pass



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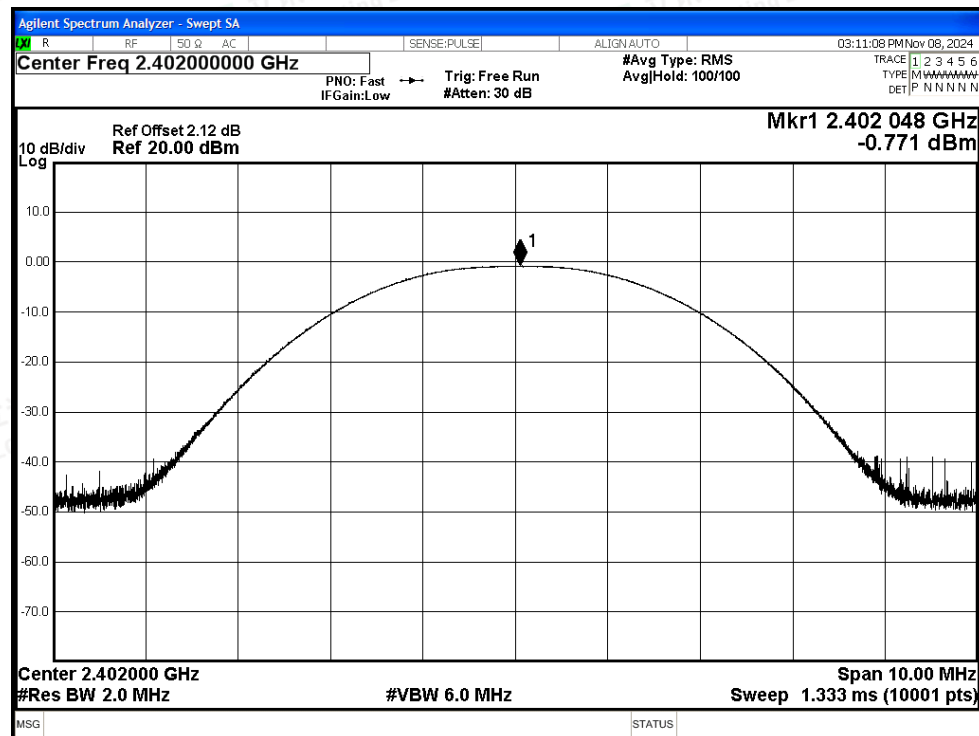
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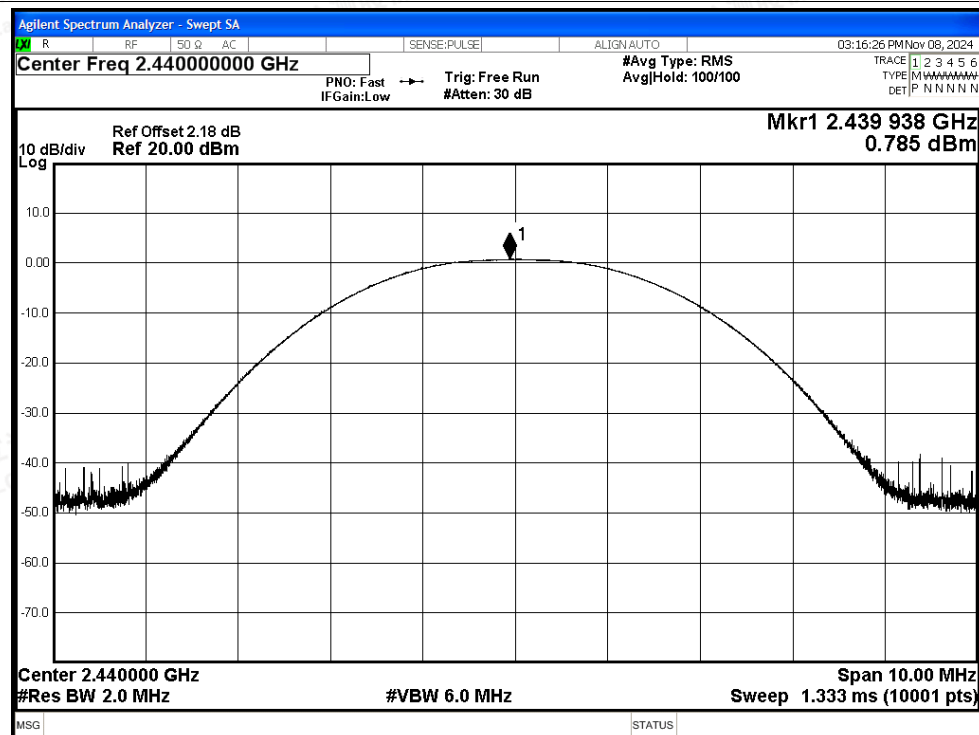


Test Graphs

Power NVNT BLE 1M 2402MHz Ant



Power NVNT BLE 1M 2440MHz Ant

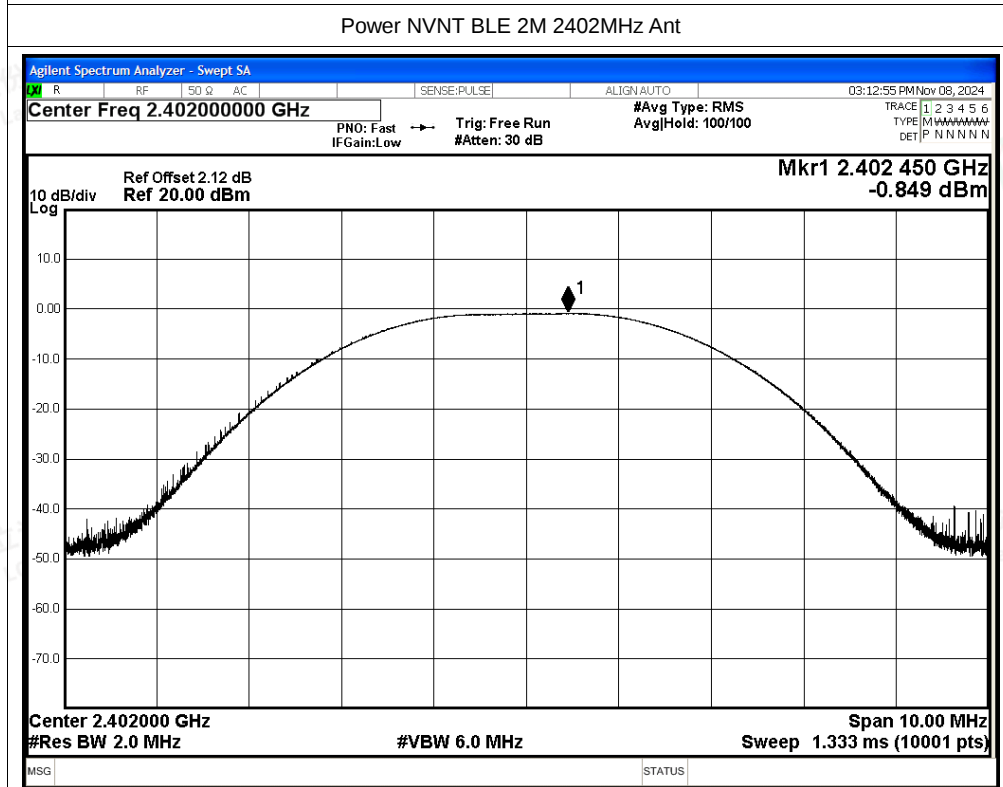
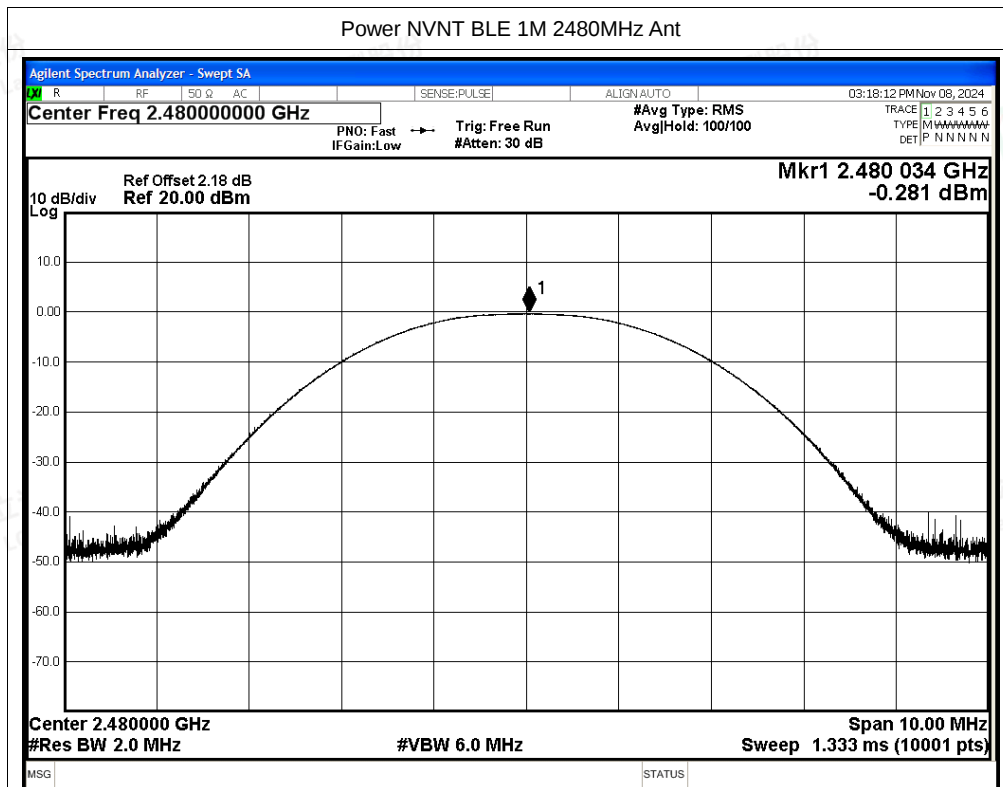


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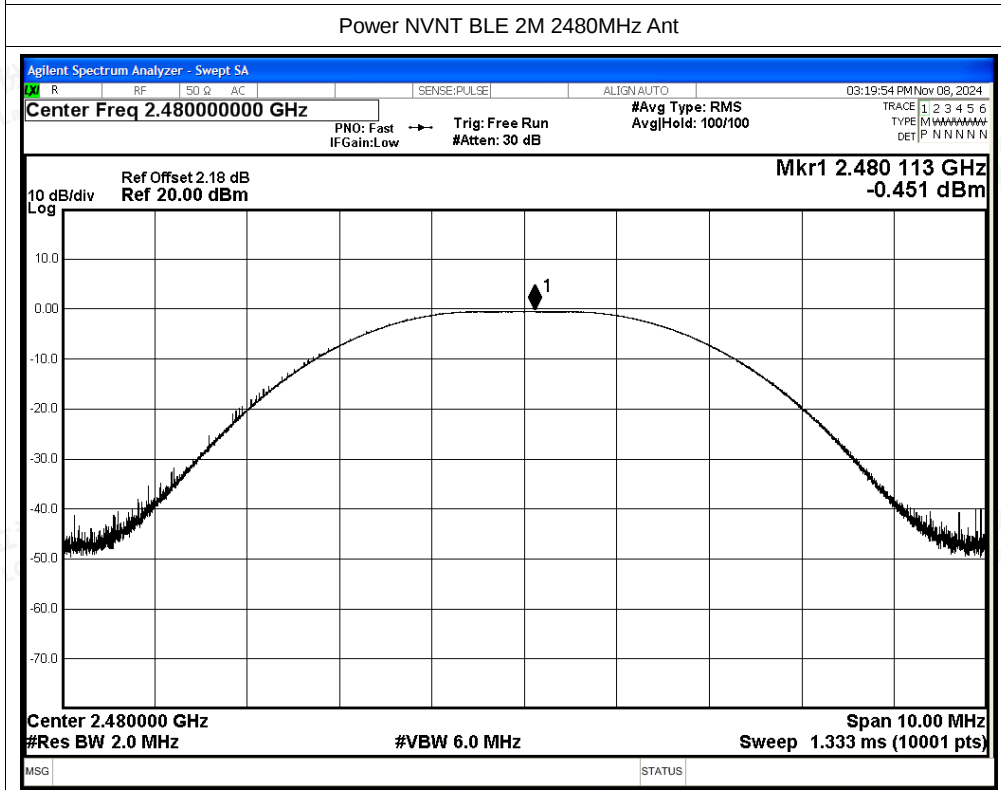
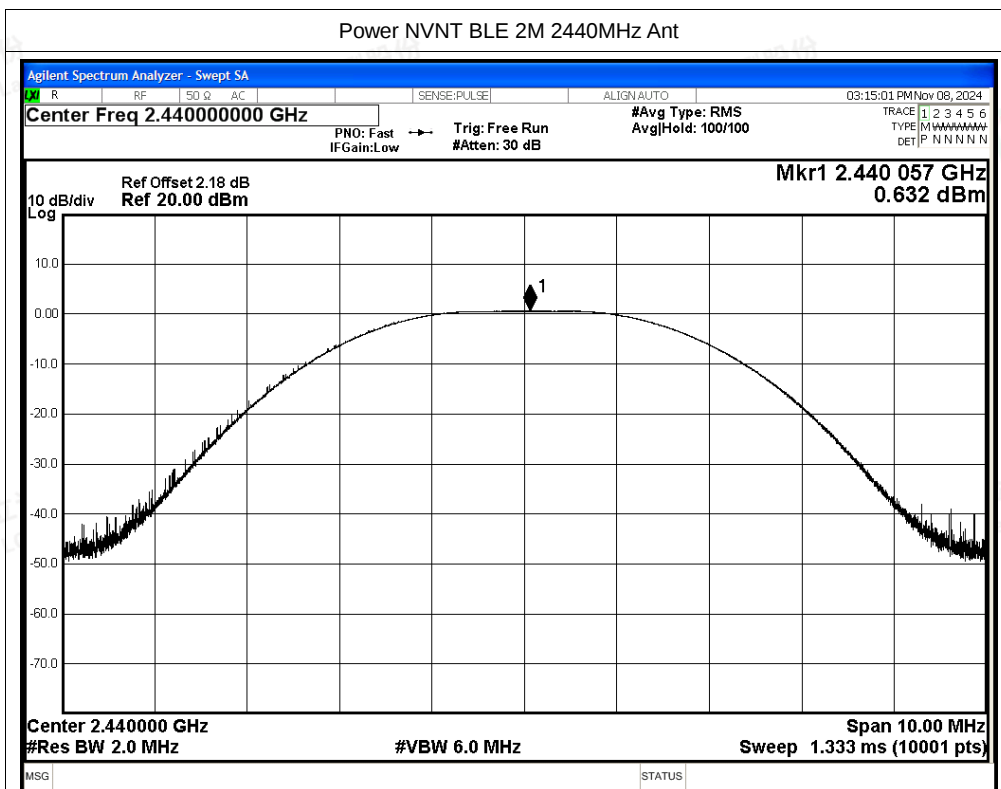


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A.3 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant	-17.26	8	Pass
NVNT	BLE 1M	2440	Ant	-15.68	8	Pass
NVNT	BLE 1M	2480	Ant	-16.9	8	Pass
NVNT	BLE 2M	2402	Ant	-20.54	8	Pass
NVNT	BLE 2M	2440	Ant	-19.24	8	Pass
NVNT	BLE 2M	2480	Ant	-20.12	8	Pass



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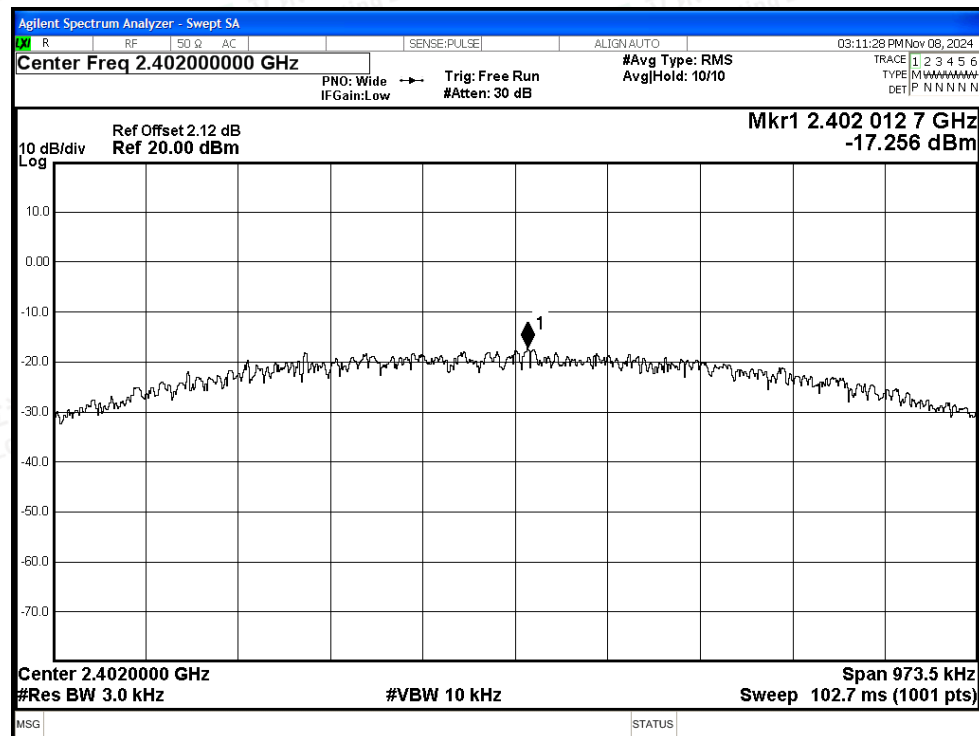
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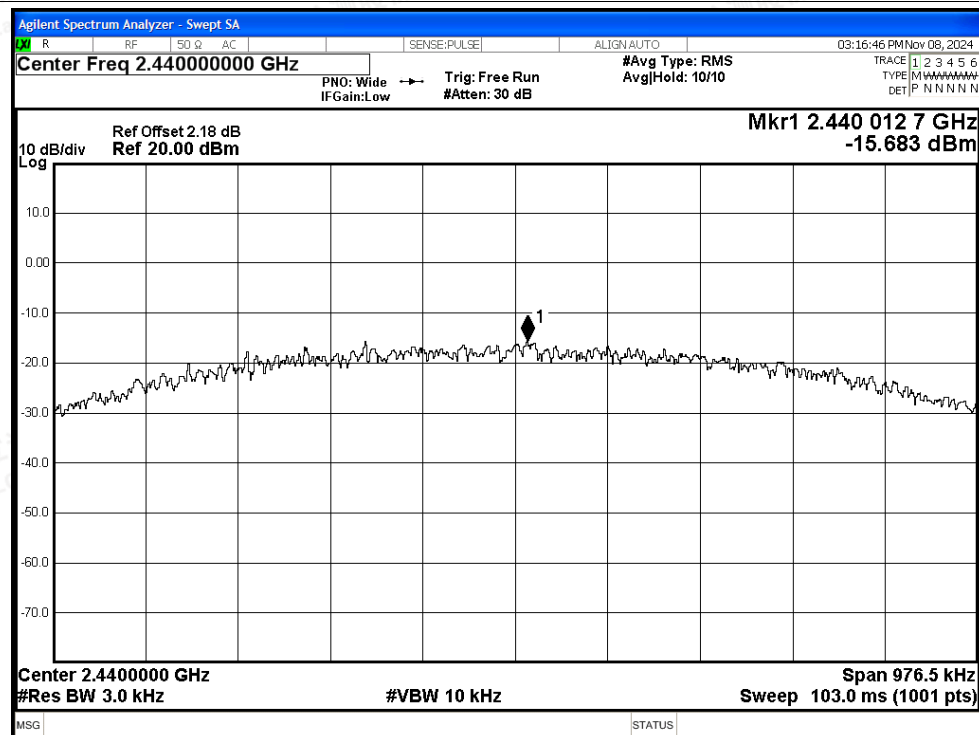


Test Graphs

PSD NVNT BLE 1M 2402MHz Ant



PSD NVNT BLE 1M 2440MHz Ant



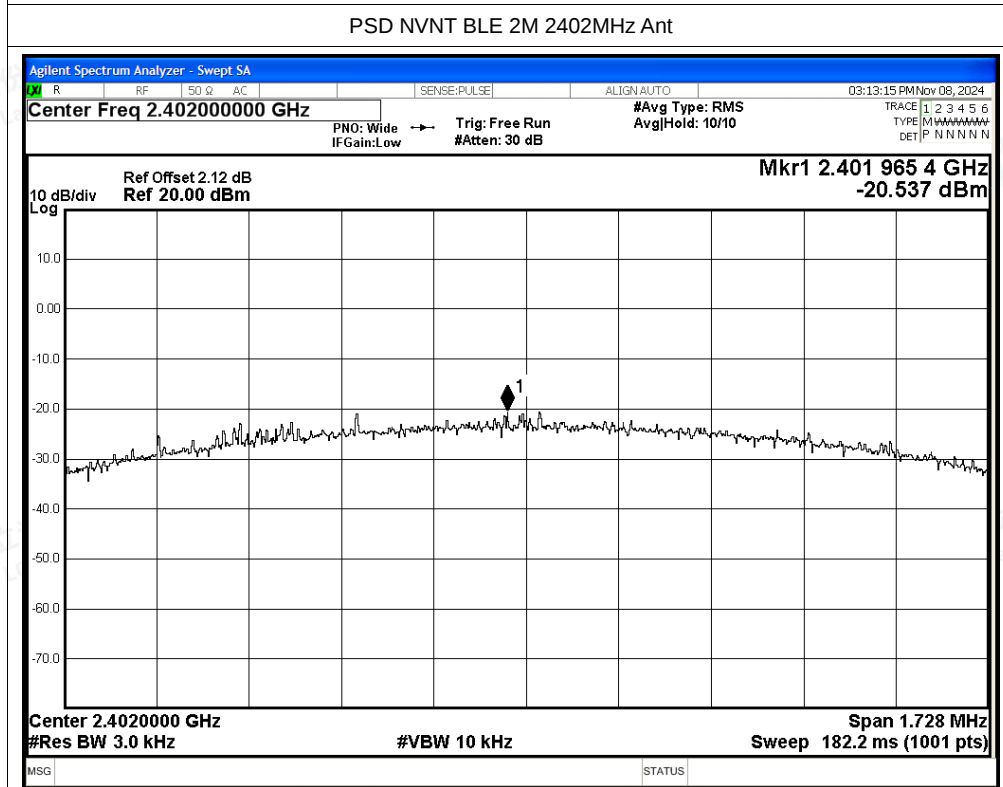
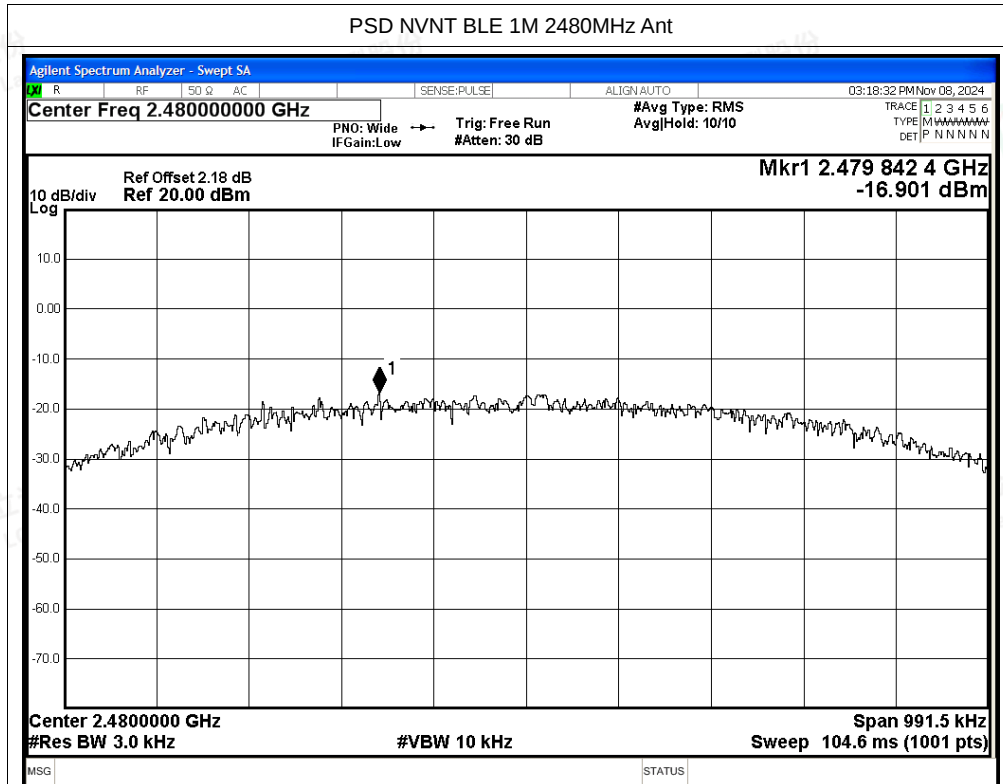
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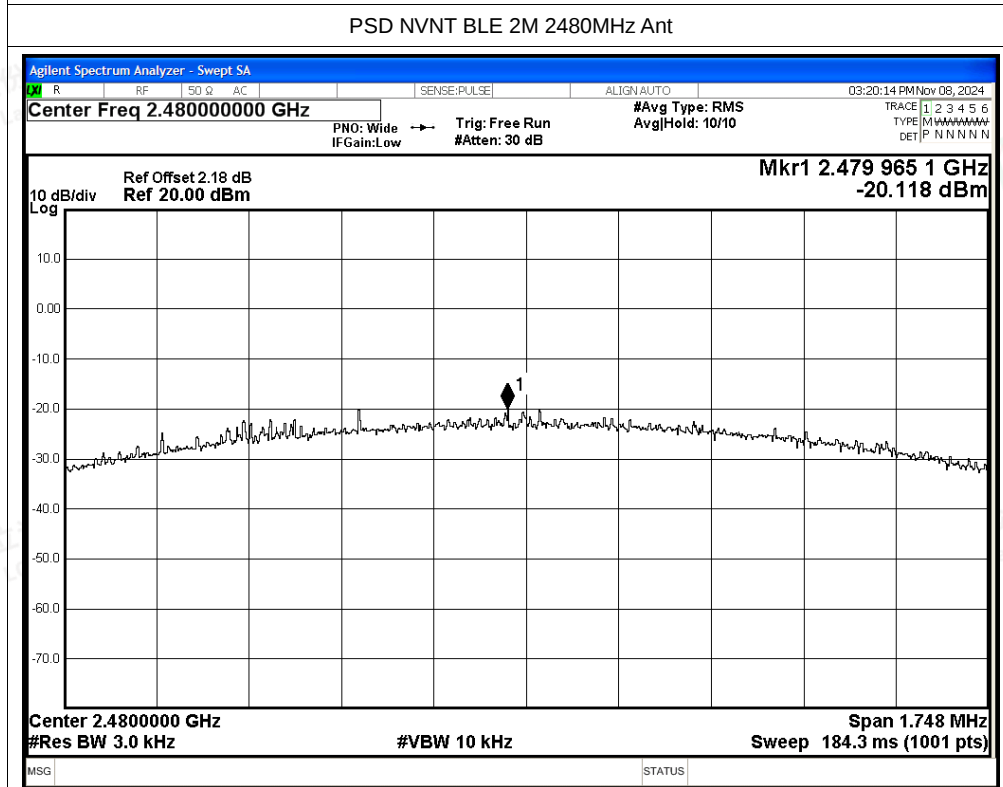
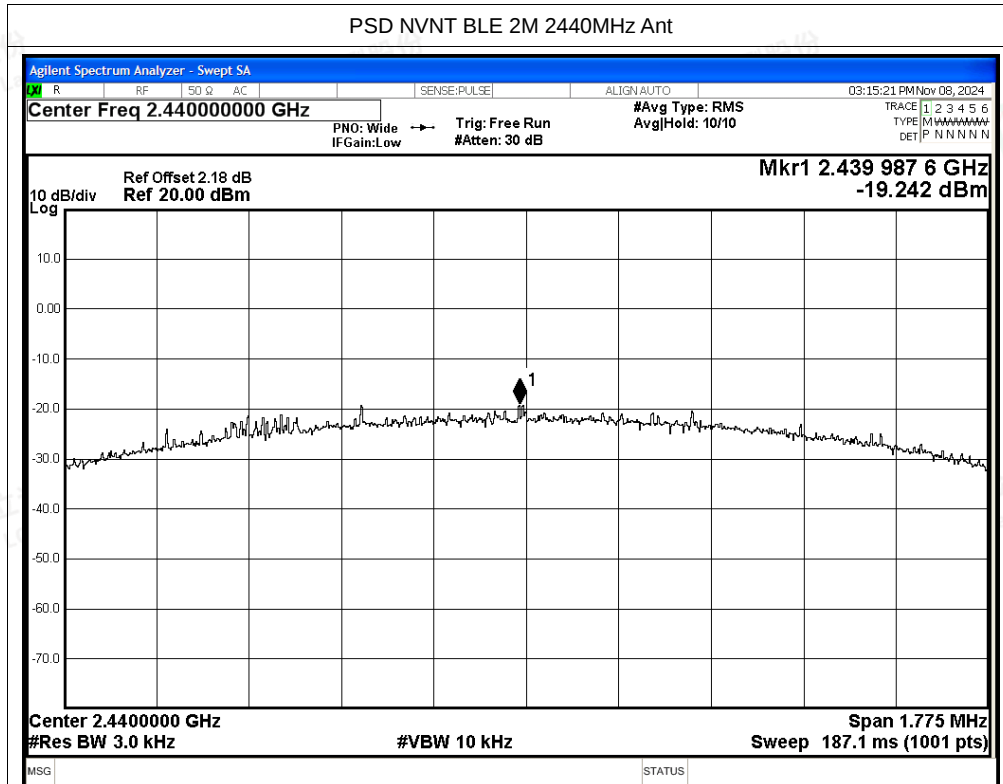


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A.4 Band Edge

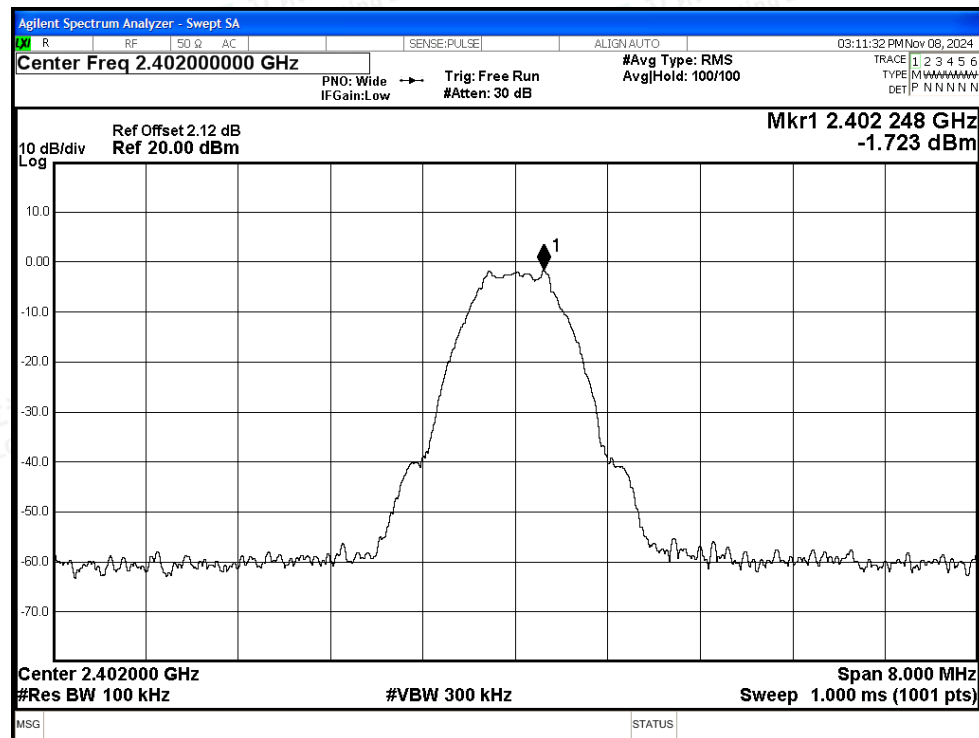
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant	-54.35	-20	Pass
NVNT	BLE 1M	2480	Ant	-54.47	-20	Pass
NVNT	BLE 2M	2402	Ant	-45.22	-20	Pass
NVNT	BLE 2M	2480	Ant	-53.48	-20	Pass



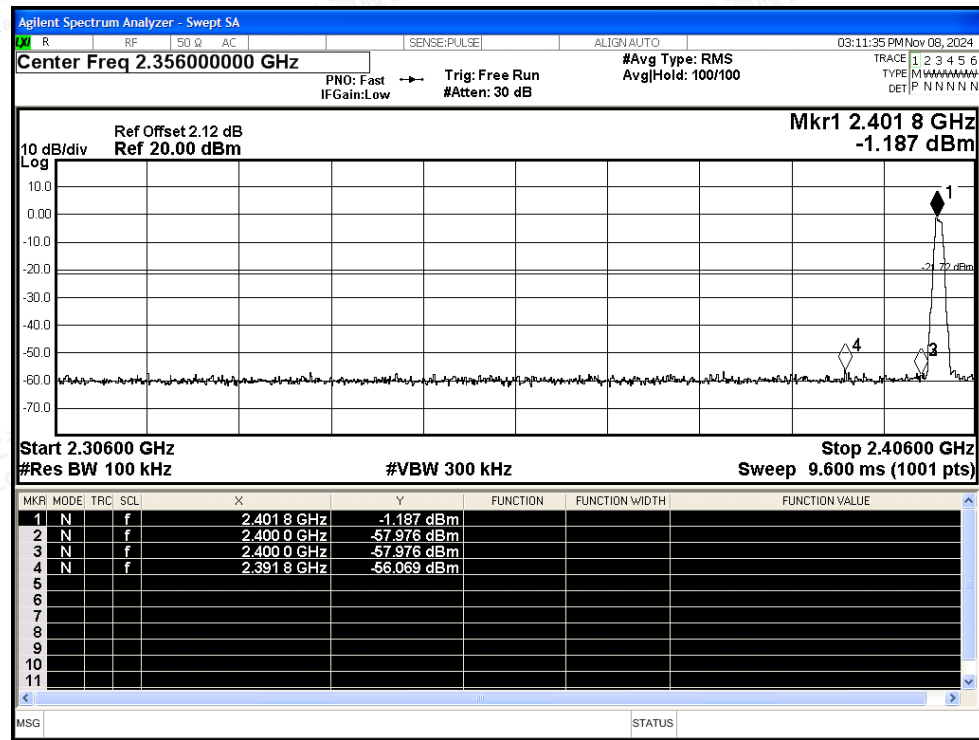


Test Graphs

Band Edge NVNT BLE 1M 2402MHz Ant Ref



Band Edge NVNT BLE 1M 2402MHz Ant Emission



Shenzhen LCS Compliance Testing Laboratory Ltd.

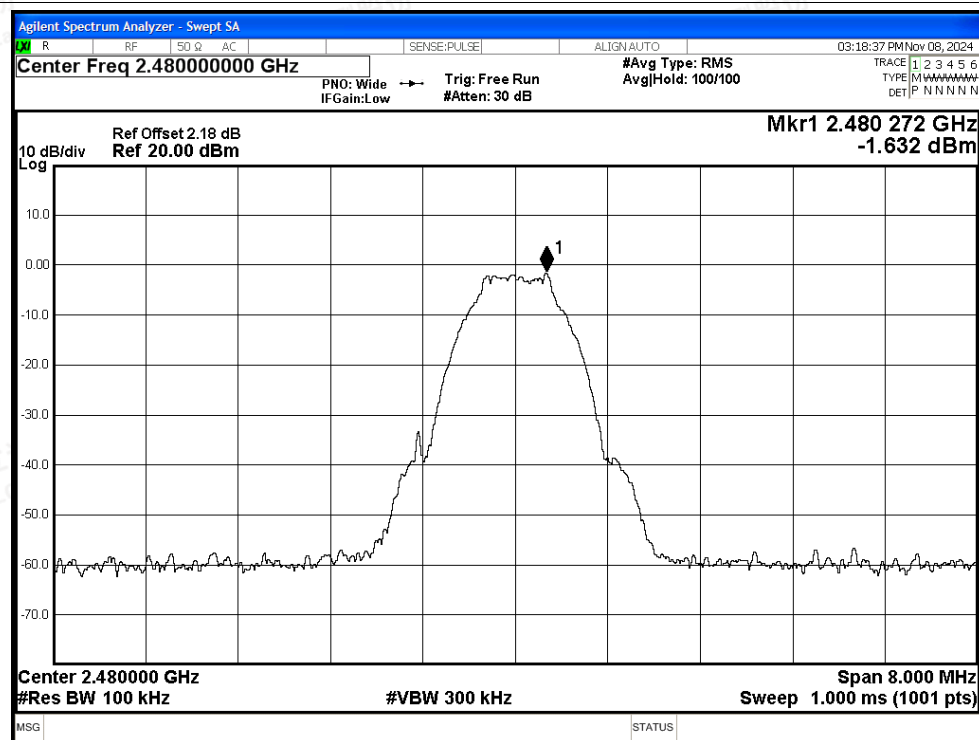
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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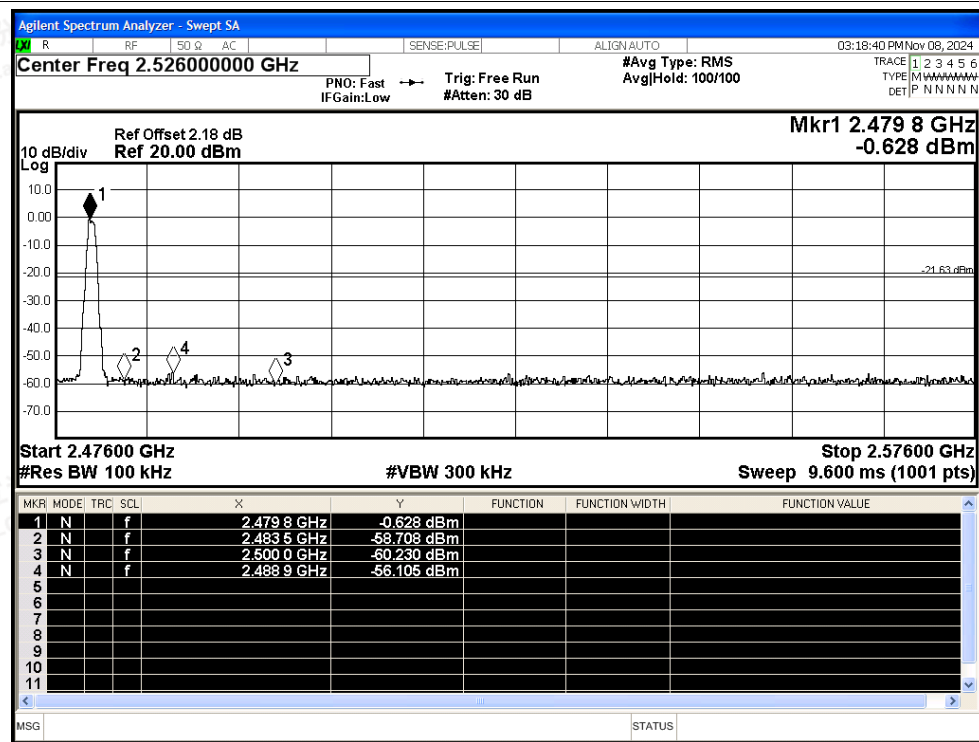
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Band Edge NVNT BLE 1M 2480MHz Ant Ref



Band Edge NVNT BLE 1M 2480MHz Ant Emission



Shenzhen LCS Compliance Testing Laboratory Ltd.

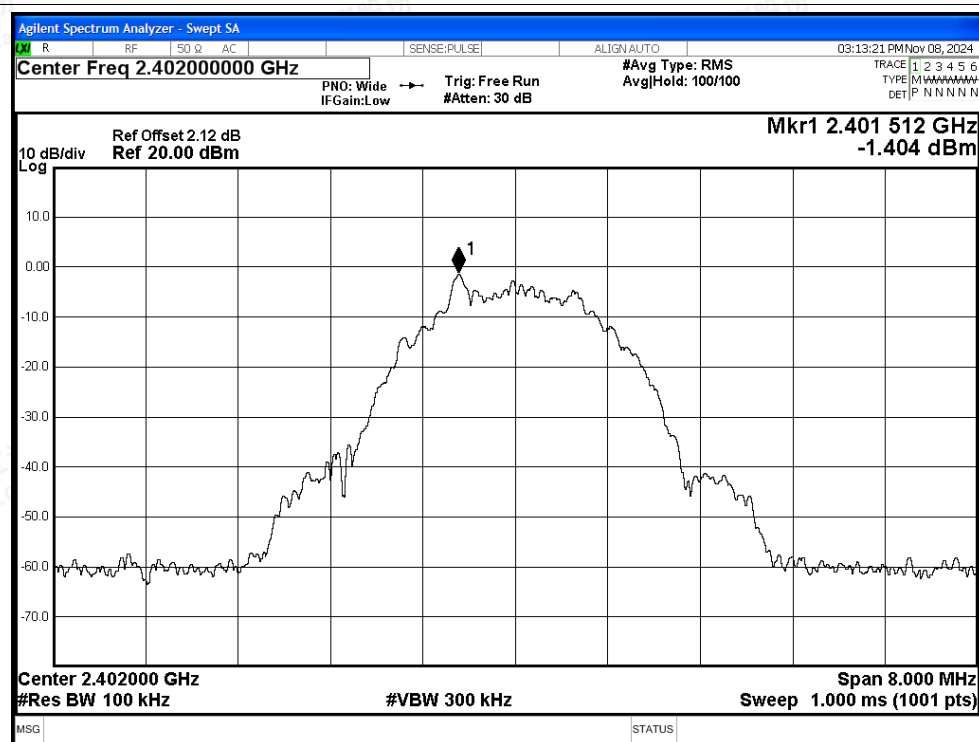
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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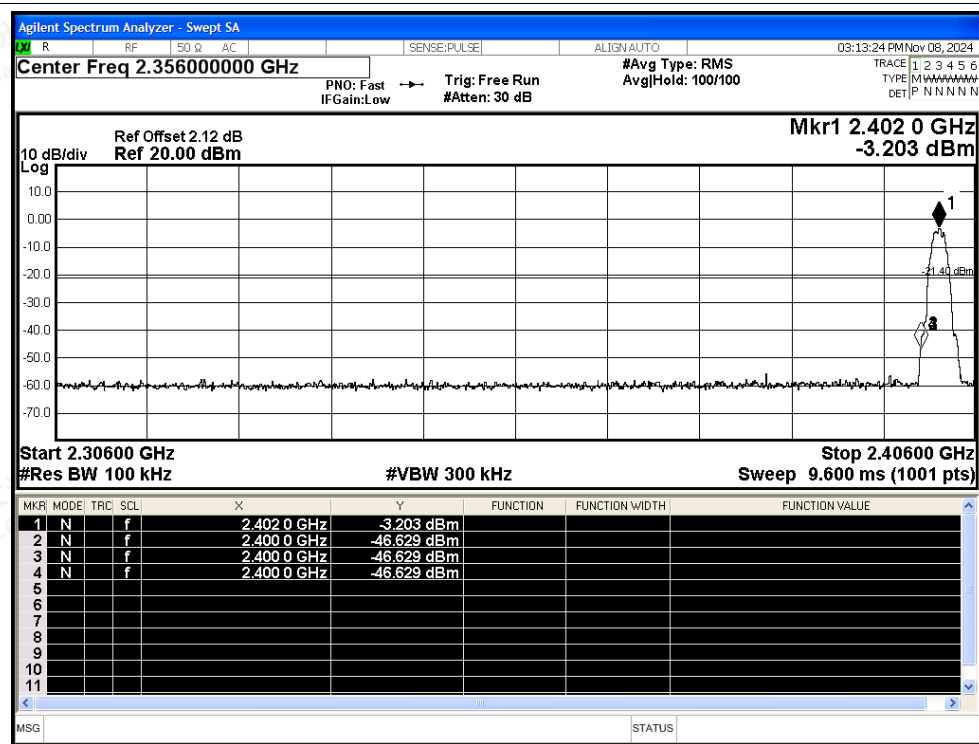
Scan code to check authenticity



Band Edge NVNT BLE 2M 2402MHz Ant Ref



Band Edge NVNT BLE 2M 2402MHz Ant Emission



Shenzhen LCS Compliance Testing Laboratory Ltd.

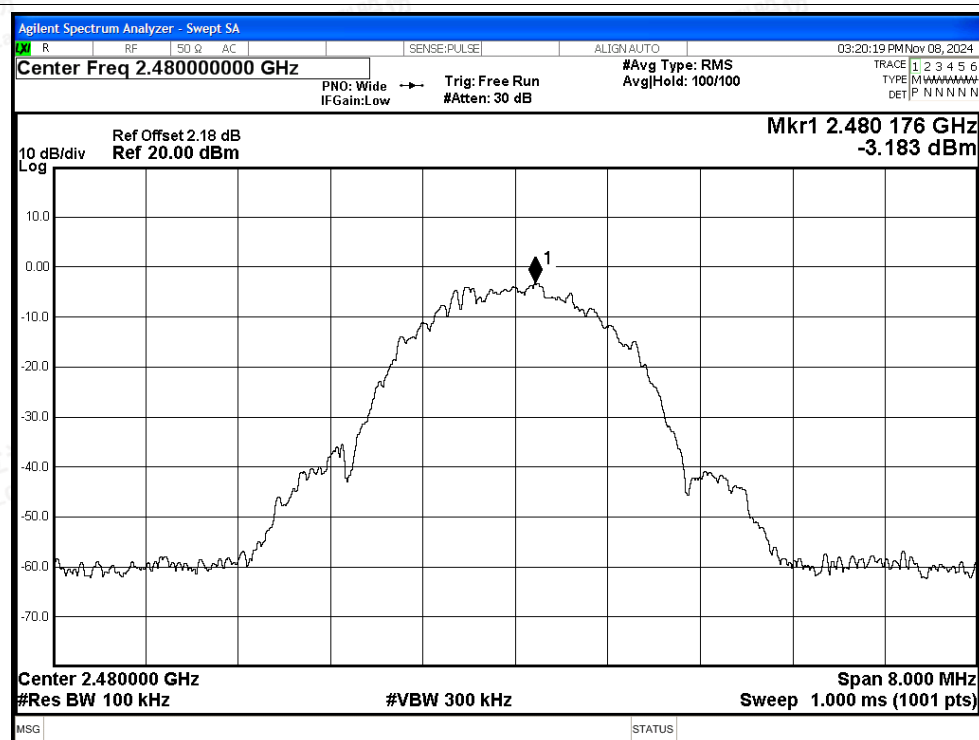
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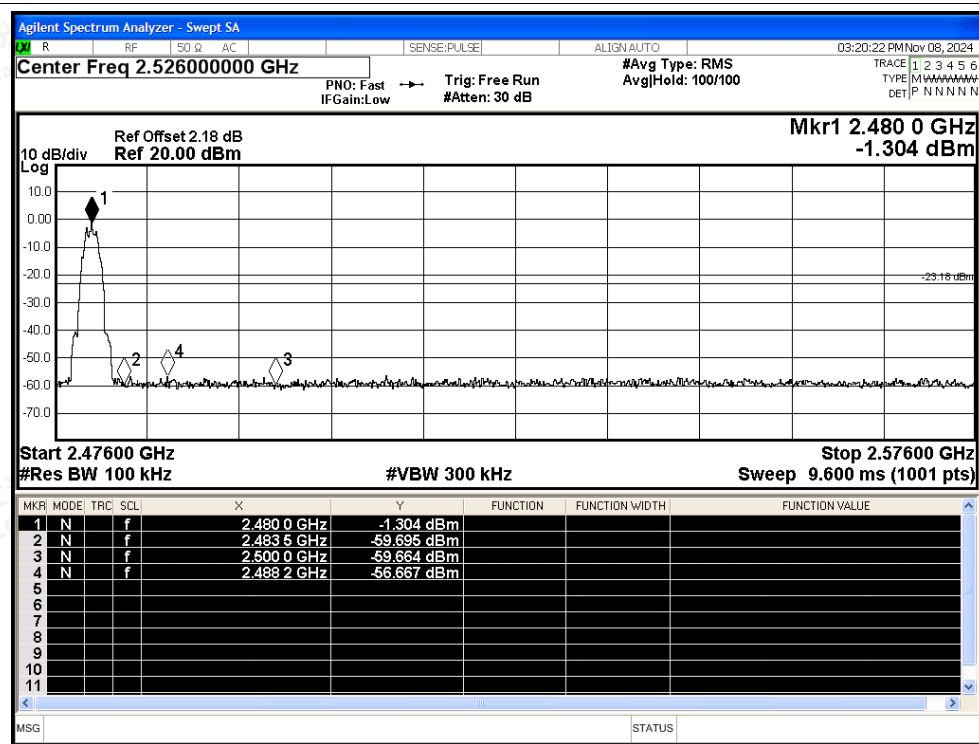
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Band Edge NVNT BLE 2M 2480MHz Ant Ref



Band Edge NVNT BLE 2M 2480MHz Ant Emission



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A.5 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant	-53.31	-20	Pass
NVNT	BLE 1M	2440	Ant	-55.56	-20	Pass
NVNT	BLE 1M	2480	Ant	-54.83	-20	Pass
NVNT	BLE 2M	2402	Ant	-53.71	-20	Pass
NVNT	BLE 2M	2440	Ant	-54.81	-20	Pass
NVNT	BLE 2M	2480	Ant	-53.66	-20	Pass



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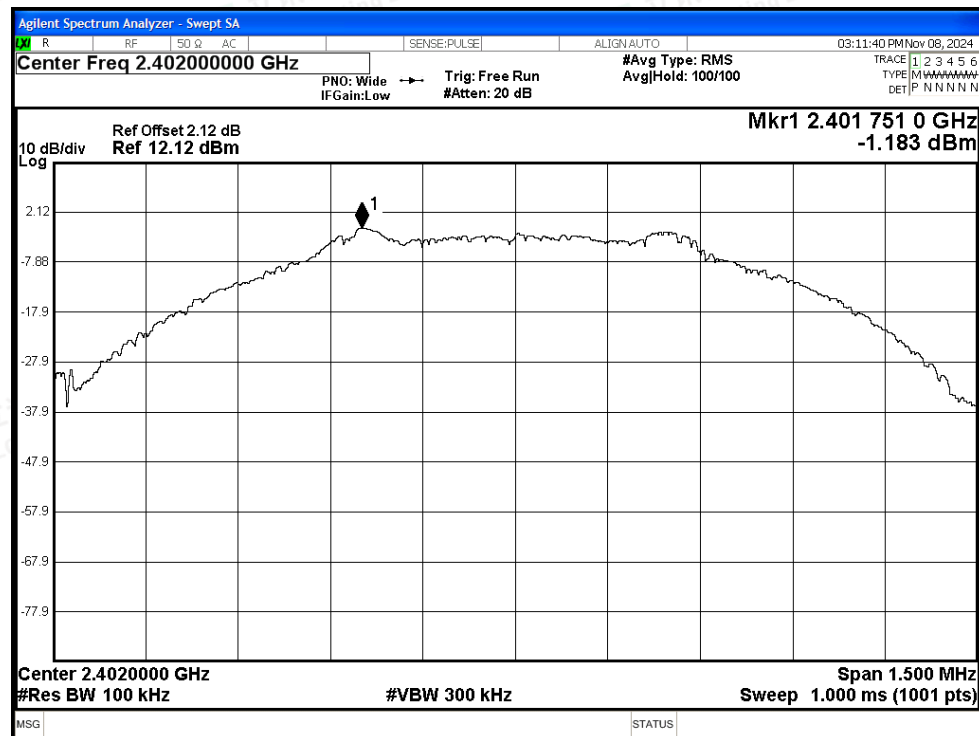
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

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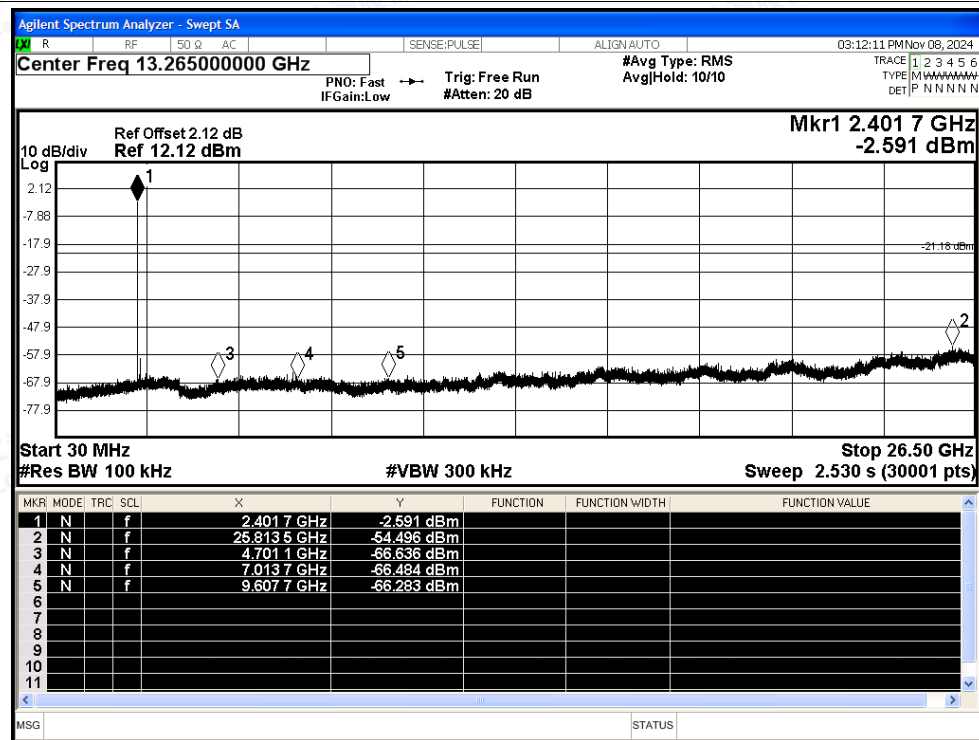


Test Graphs

Tx. Spurious NVNT BLE 1M 2402MHz Ant Ref



Tx. Spurious NVNT BLE 1M 2402MHz Ant Emission



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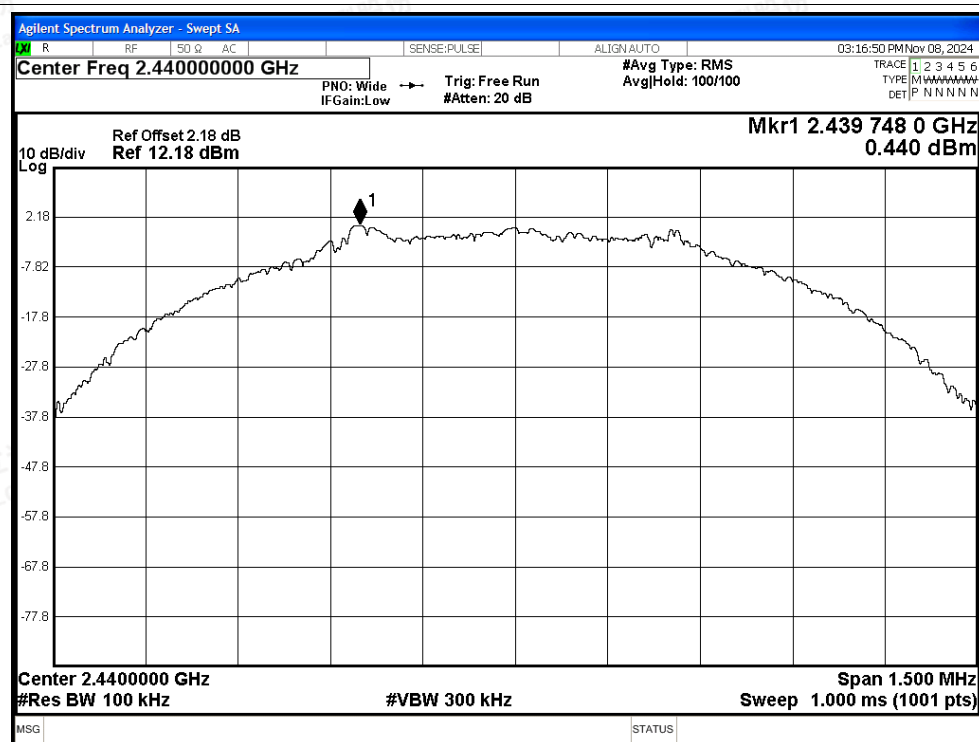
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Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

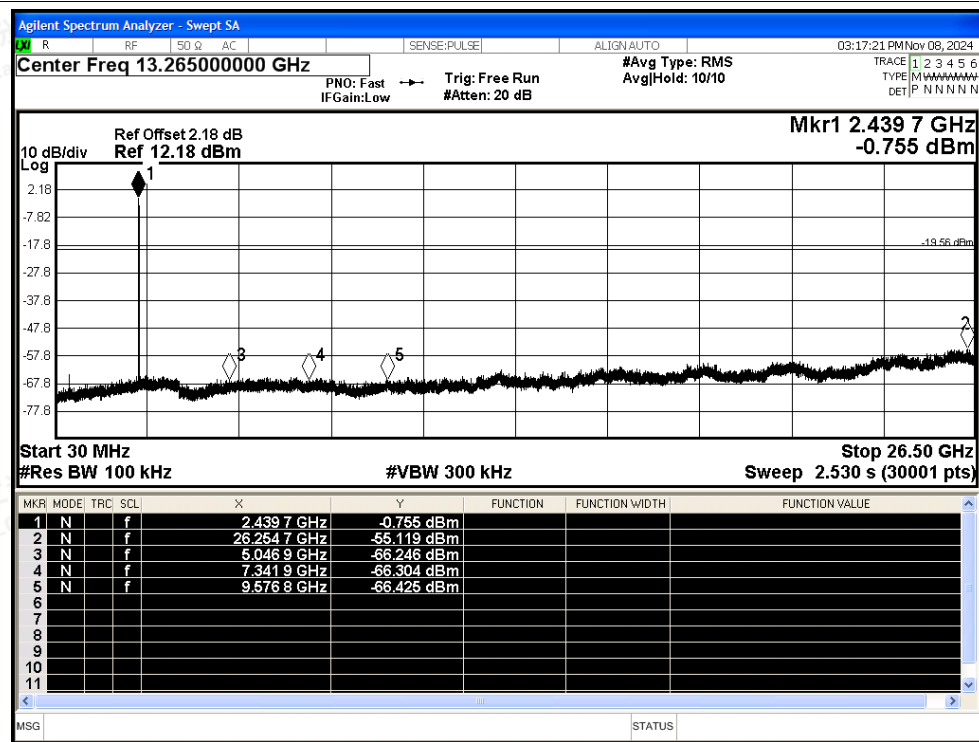
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Tx. Spurious NVNT BLE 1M 2440MHz Ant Ref



Tx. Spurious NVNT BLE 1M 2440MHz Ant Emission



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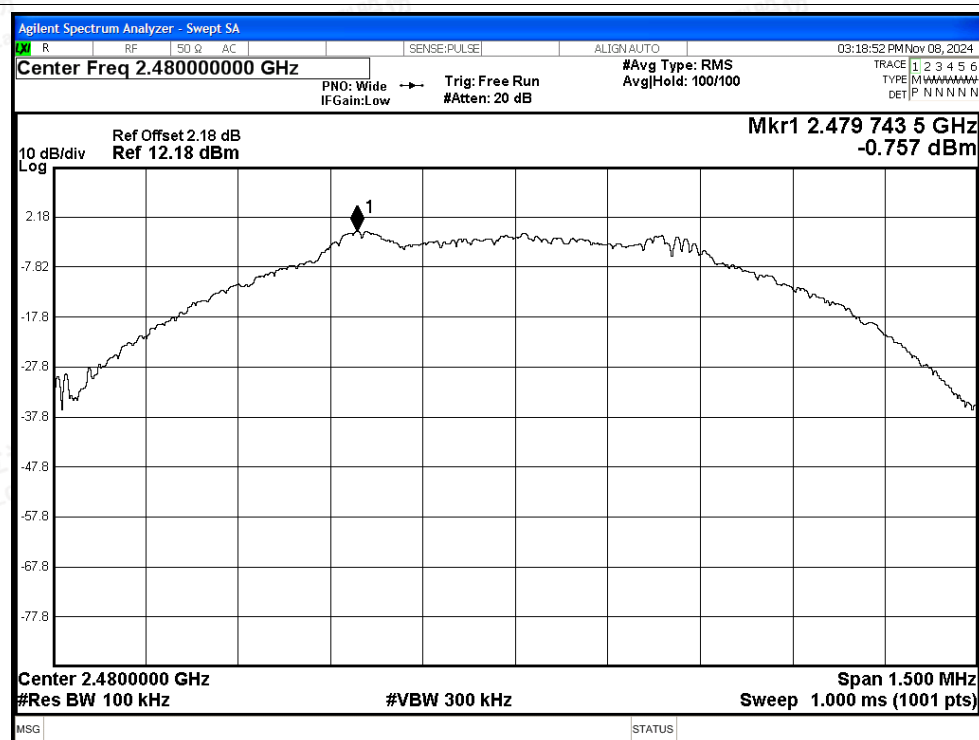
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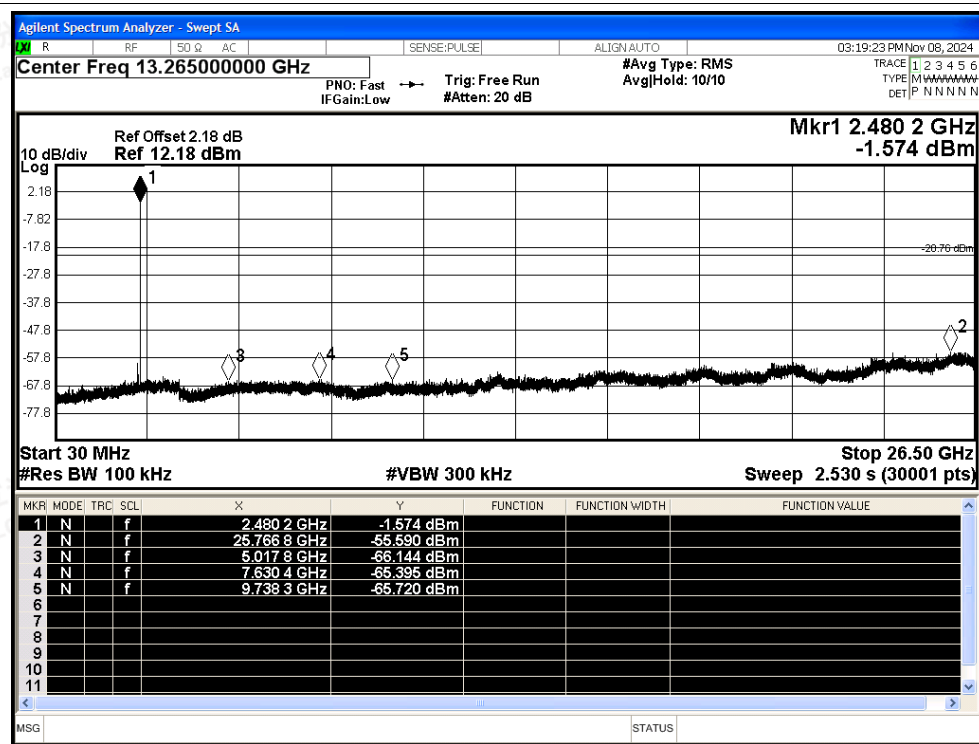
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Tx. Spurious NVNT BLE 1M 2480MHz Ant Ref



Tx. Spurious NVNT BLE 1M 2480MHz Ant Emission



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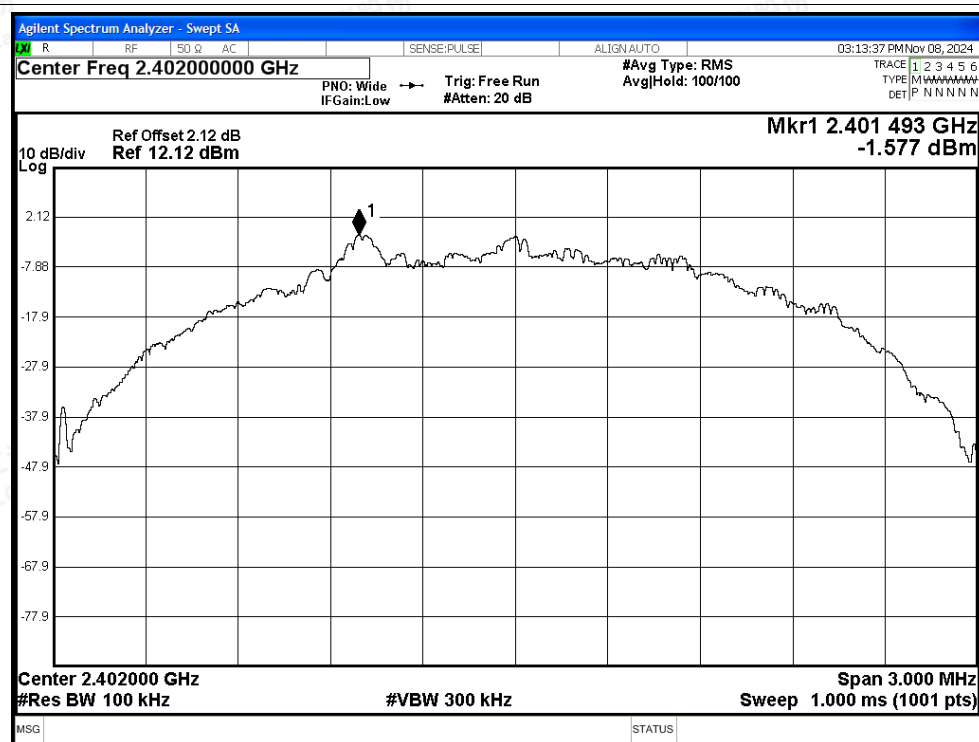
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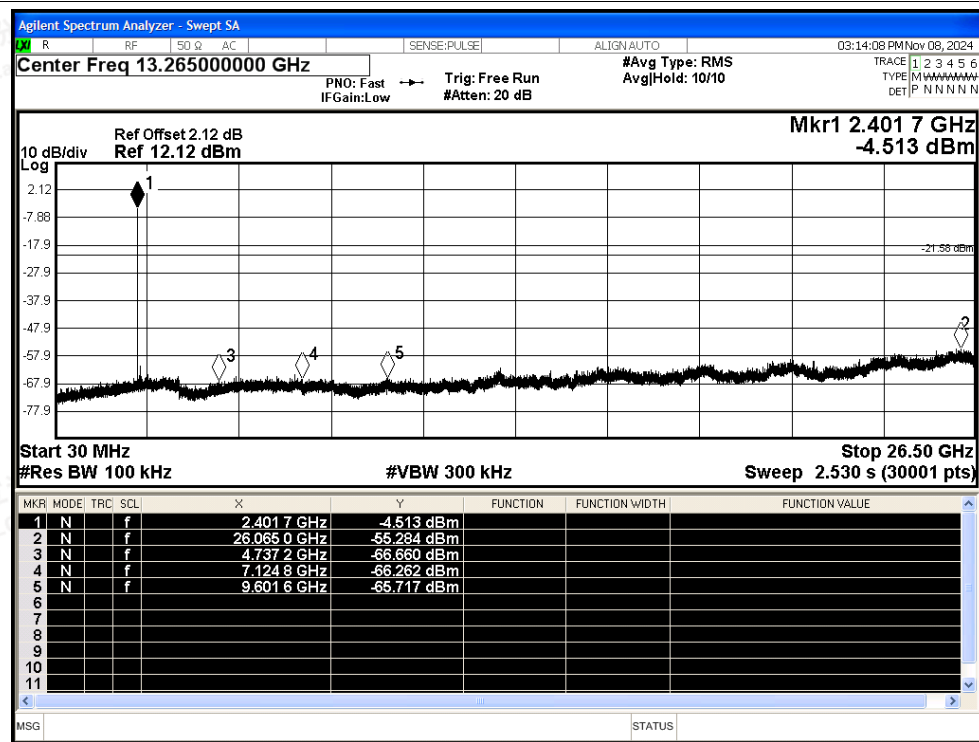
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Tx. Spurious NVNT BLE 2M 2402MHz Ant Ref



Tx. Spurious NVNT BLE 2M 2402MHz Ant Emission



MR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.401 7 GHz	-4.513 dBm			
2	N		f	26.065 0 GHz	-55.284 dBm			
3	N		f	4.737 2 GHz	-66.660 dBm			
4	N		f	7.124 8 GHz	-66.262 dBm			
5	N		f	9.601 6 GHz	-65.717 dBm			
6								
7								
8								
9								
10								
11								



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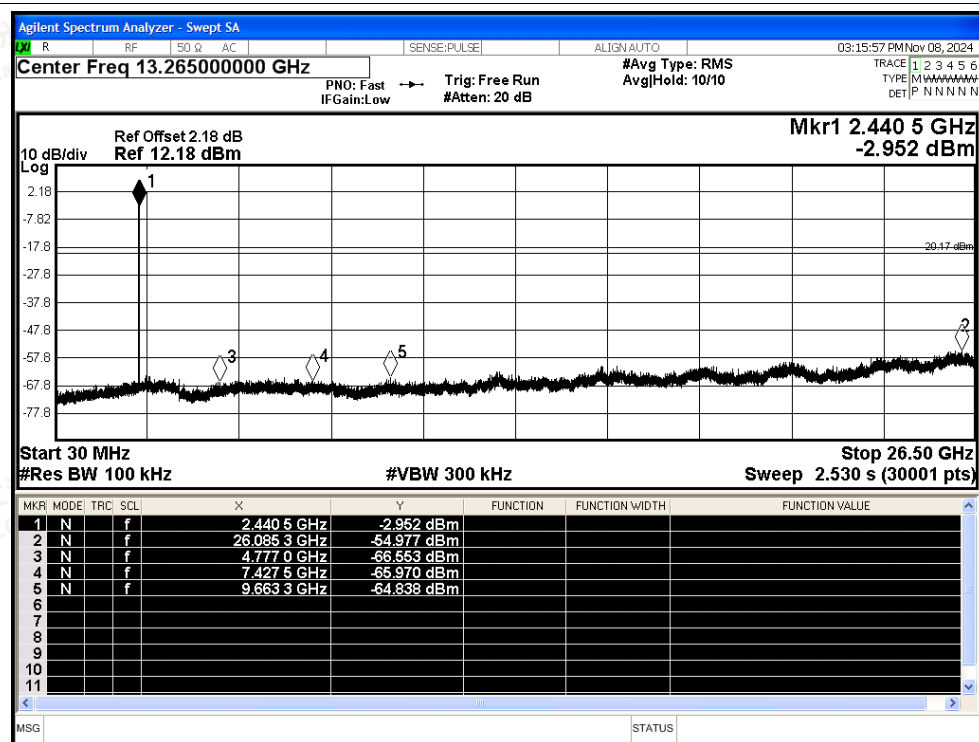
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Tx. Spurious NVNT BLE 2M 2440MHz Ant Ref



Tx. Spurious NVNT BLE 2M 2440MHz Ant Emission



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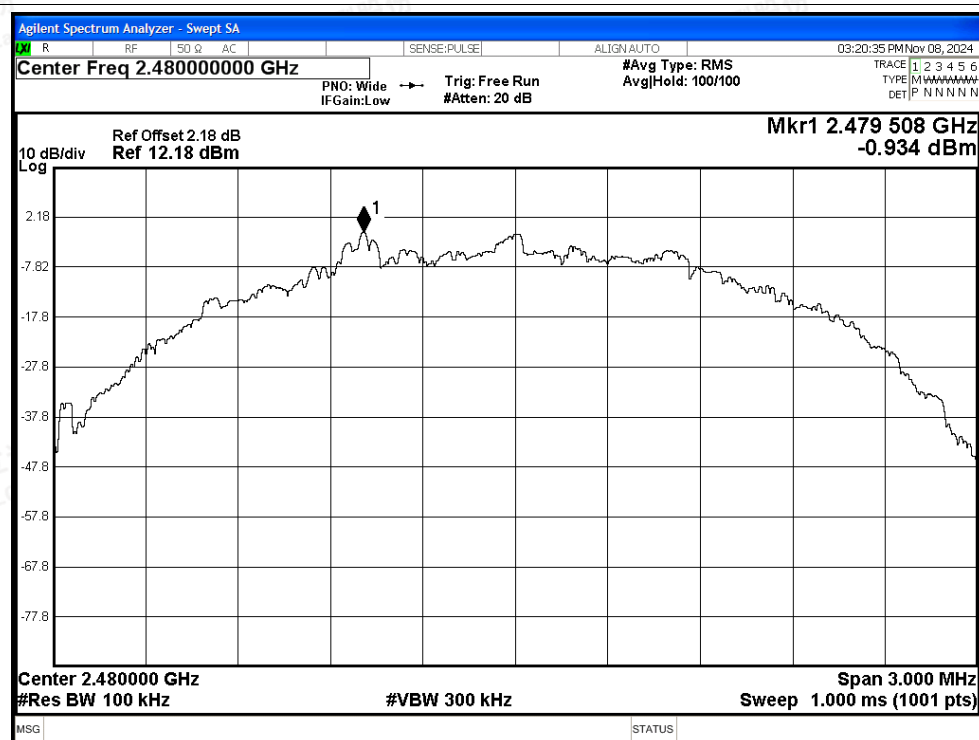
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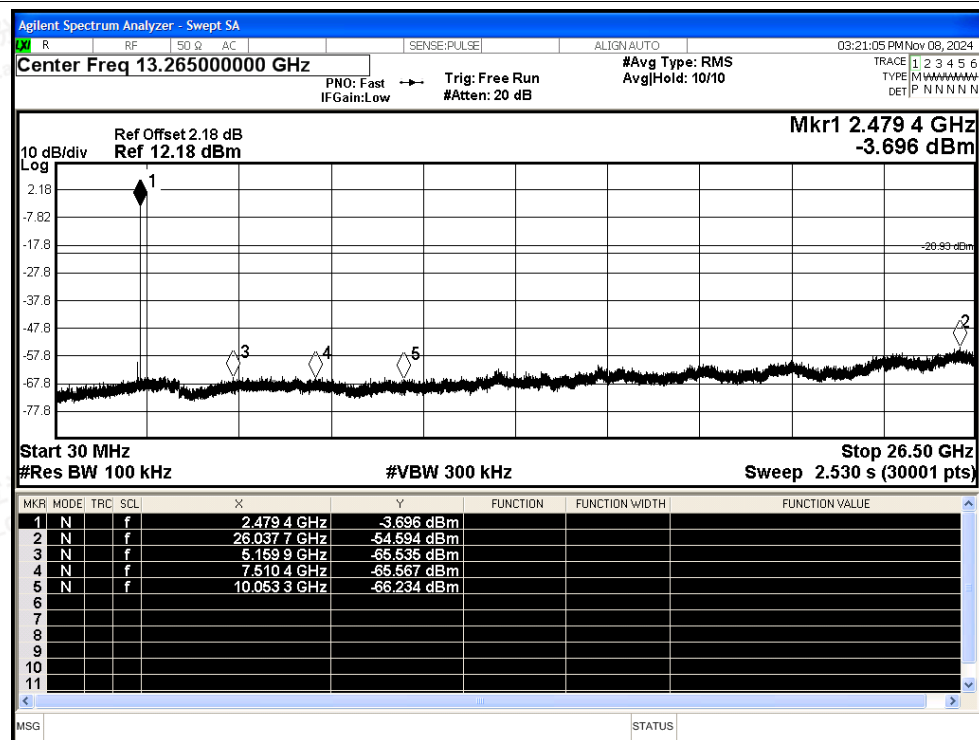
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Tx. Spurious NVNT BLE 2M 2480MHz Ant Ref



Tx. Spurious NVNT BLE 2M 2480MHz Ant Emission



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A.6 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant	87.39	0.59	0.61
NVNT	BLE 1M	2440	Ant	87.41	0.58	0.61
NVNT	BLE 1M	2480	Ant	87.39	0.59	0.61
NVNT	BLE 2M	2402	Ant	65.92	1.81	1.21
NVNT	BLE 2M	2440	Ant	65.92	1.81	1.21
NVNT	BLE 2M	2480	Ant	65.92	1.81	1.21



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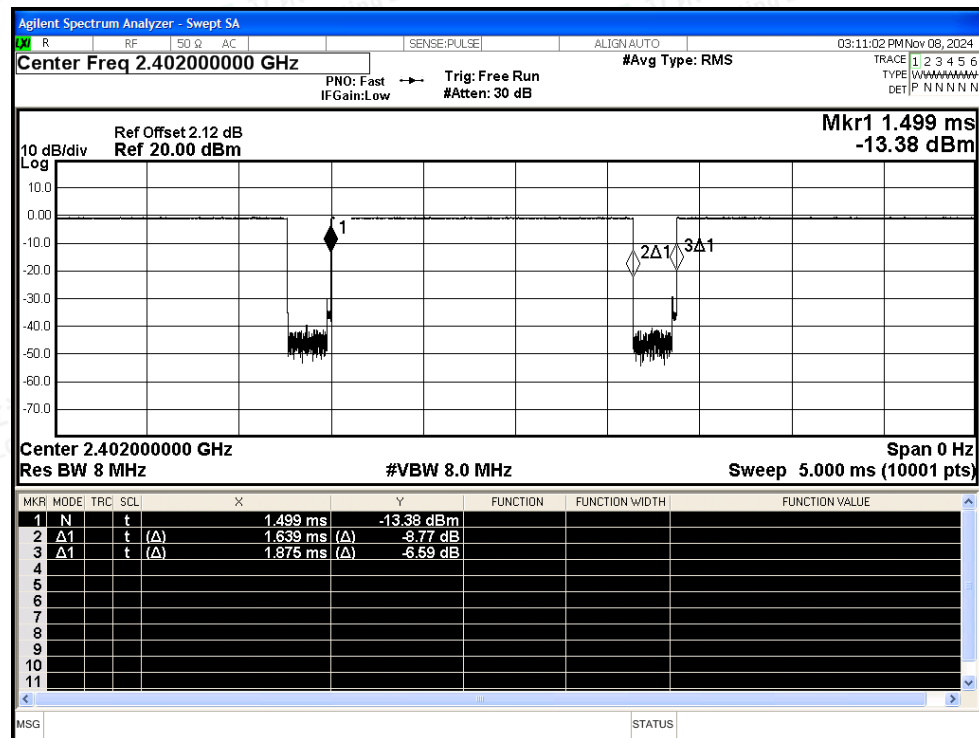
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity

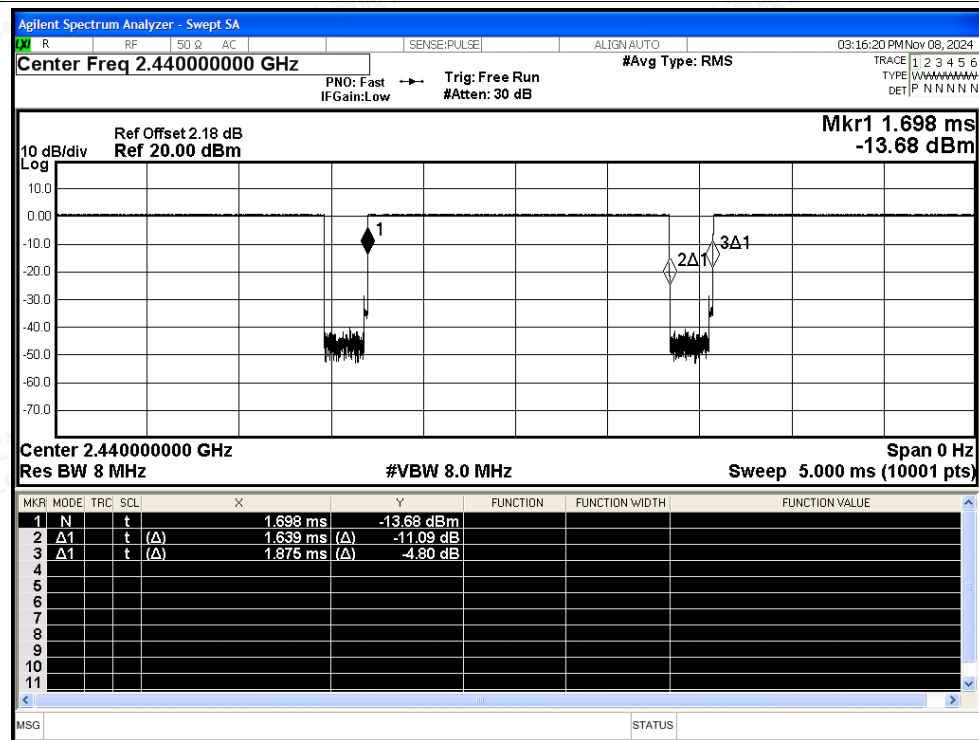


Test Graphs

Duty Cycle NVNT BLE 1M 2402MHz Ant



Duty Cycle NVNT BLE 1M 2440MHz Ant



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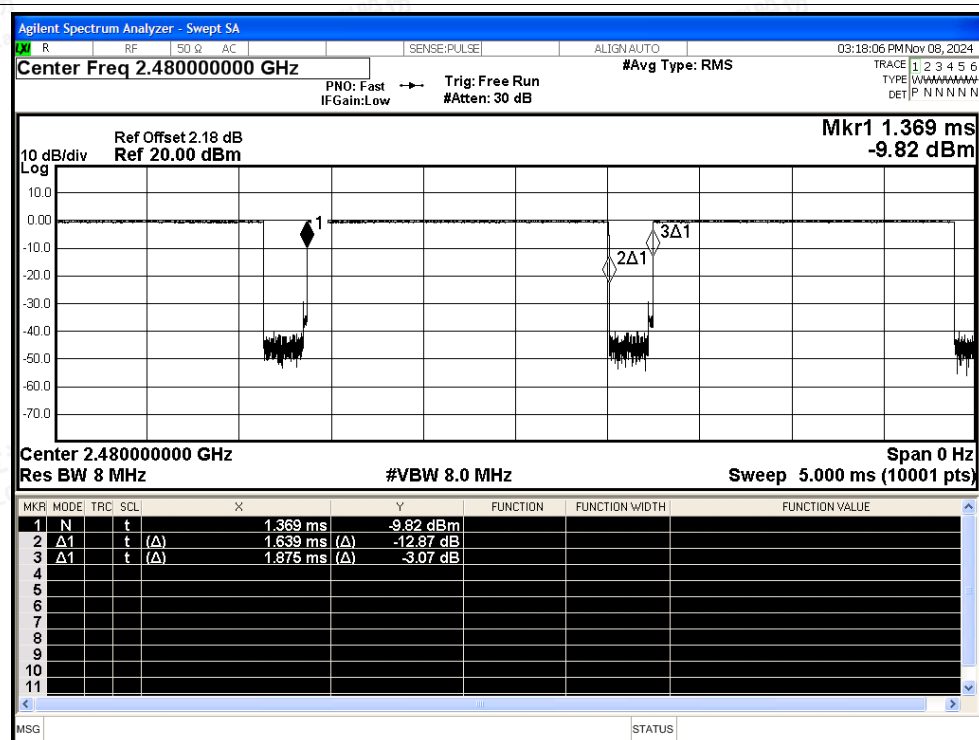
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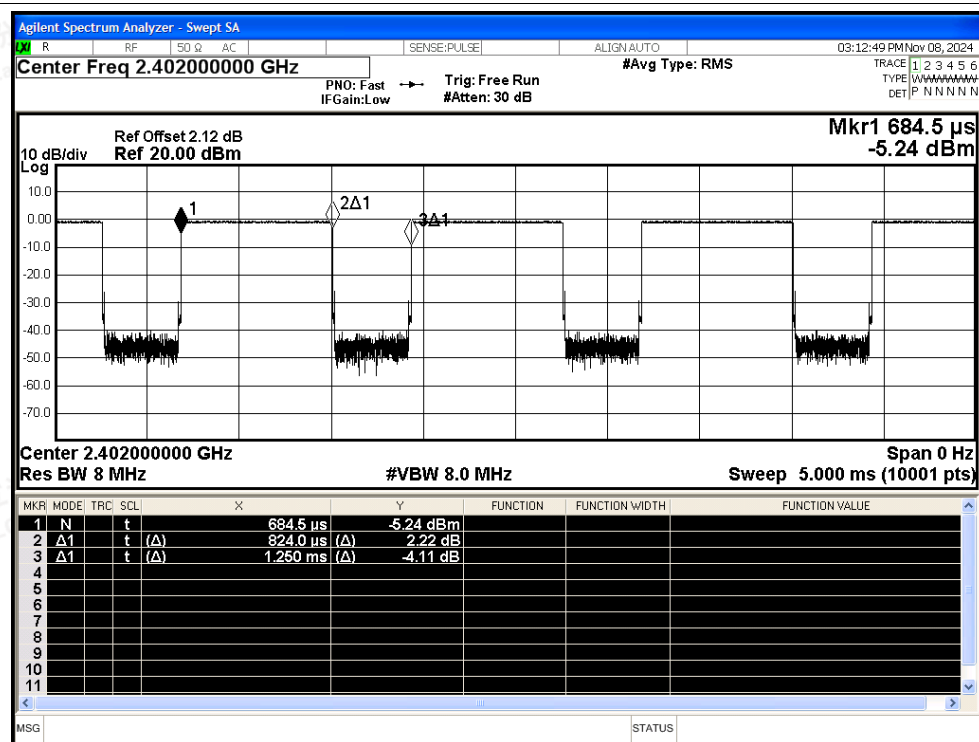
Scan code to check authenticity



Duty Cycle NVNT BLE 1M 2480MHz Ant



Duty Cycle NVNT BLE 2M 2402MHz Ant



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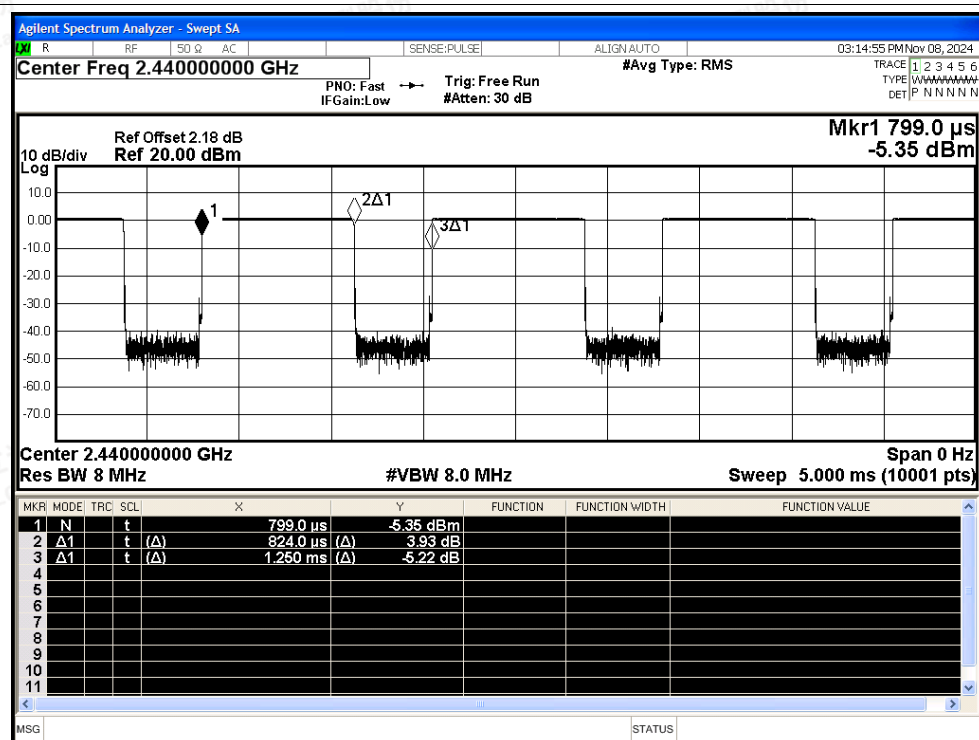
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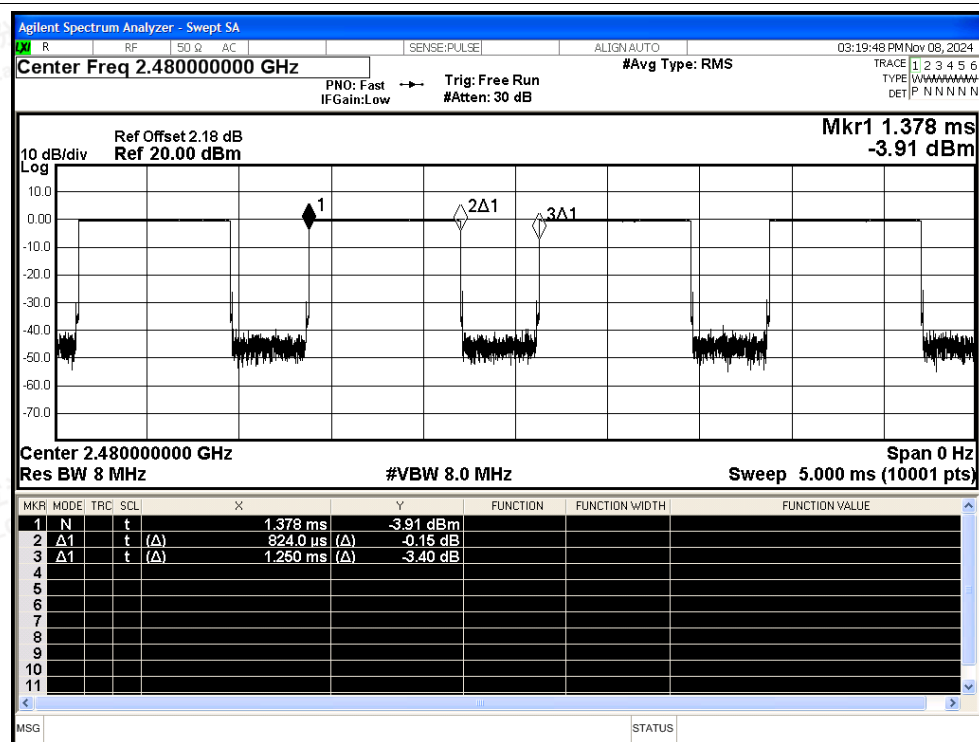
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Duty Cycle NVNT BLE 2M 2440MHz Ant



Duty Cycle NVNT BLE 2M 2480MHz Ant



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A.7 Restrict Band

Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	BLE 1M	2402	Ant	2310	-50.7	2	-	46.56	Peak	74	Pass
NVNT	BLE 1M	2402	Ant	2310	-58.82	2	0.59	39.03	Average	54	Pass
NVNT	BLE 1M	2402	Ant	2328.144	-47.45	2	-	49.81	Peak	74	Pass
NVNT	BLE 1M	2402	Ant	2383.44	-57.51	2	0.59	40.34	Average	54	Pass
NVNT	BLE 1M	2402	Ant	2390	-51.1	2	-	46.16	Peak	74	Pass
NVNT	BLE 1M	2402	Ant	2390	-58.04	2	0.59	39.81	Average	54	Pass
NVNT	BLE 1M	2480	Ant	2483.5	-48.6	2	-	48.66	Peak	74	Pass
NVNT	BLE 1M	2480	Ant	2483.5	-57.8	2	0.59	40.05	Average	54	Pass
NVNT	BLE 1M	2480	Ant	2484.28	-44.73	2	-	52.53	Peak	74	Pass
NVNT	BLE 1M	2480	Ant	2492.104	-57.07	2	0.59	40.78	Average	54	Pass
NVNT	BLE 1M	2480	Ant	2500	-50.18	2	-	47.08	Peak	74	Pass
NVNT	BLE 1M	2480	Ant	2500	-57.85	2	0.59	40	Average	54	Pass
NVNT	BLE 2M	2402	Ant	2310	-50.01	2	-	47.25	Peak	74	Pass
NVNT	BLE 2M	2402	Ant	2310	-58.51	2	1.81	40.56	Average	54	Pass
NVNT	BLE 2M	2402	Ant	2382.096	-47.4	2	-	49.86	Peak	74	Pass
NVNT	BLE 2M	2402	Ant	2362.896	-57.57	2	1.81	41.5	Average	54	Pass
NVNT	BLE 2M	2402	Ant	2390	-50.37	2	-	46.89	Peak	74	Pass
NVNT	BLE 2M	2402	Ant	2390	-57.8	2	1.81	41.27	Average	54	Pass
NVNT	BLE 2M	2480	Ant	2483.5	-49.35	2	-	47.91	Peak	74	Pass
NVNT	BLE 2M	2480	Ant	2483.5	-58.14	2	1.81	40.93	Average	54	Pass
NVNT	BLE 2M	2480	Ant	2483.56	-45.65	2	-	51.61	Peak	74	Pass
NVNT	BLE 2M	2480	Ant	2486.344	-56.91	2	1.81	42.16	Average	54	Pass
NVNT	BLE 2M	2480	Ant	2500	-49.73	2	-	47.53	Peak	74	Pass
NVNT	BLE 2M	2480	Ant	2500	-57.67	2	1.81	41.4	Average	54	Pass



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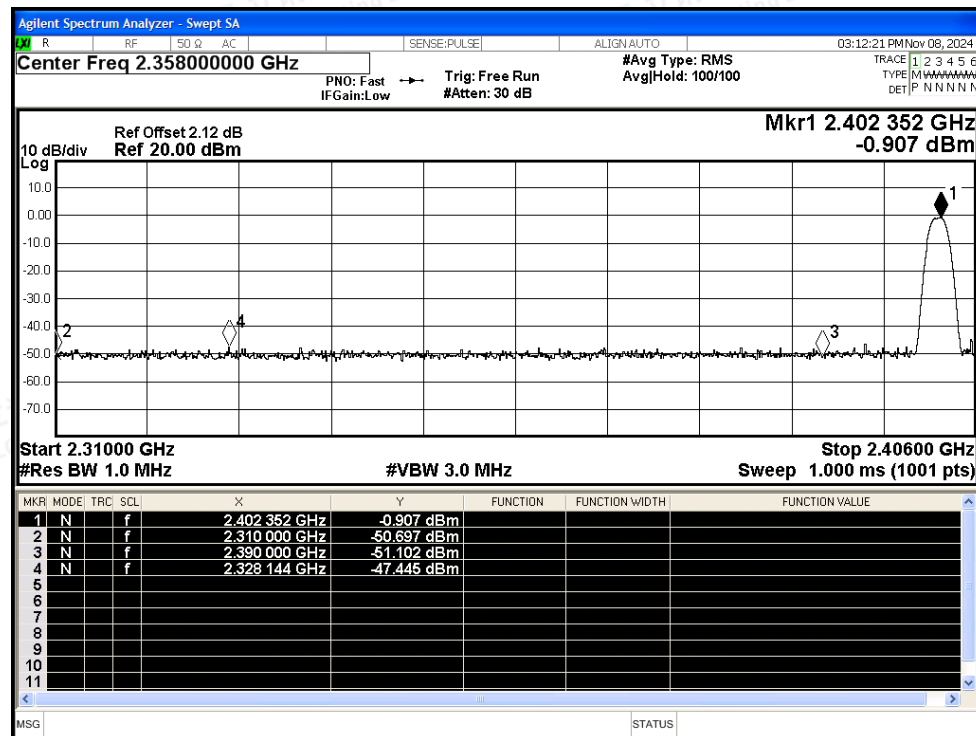
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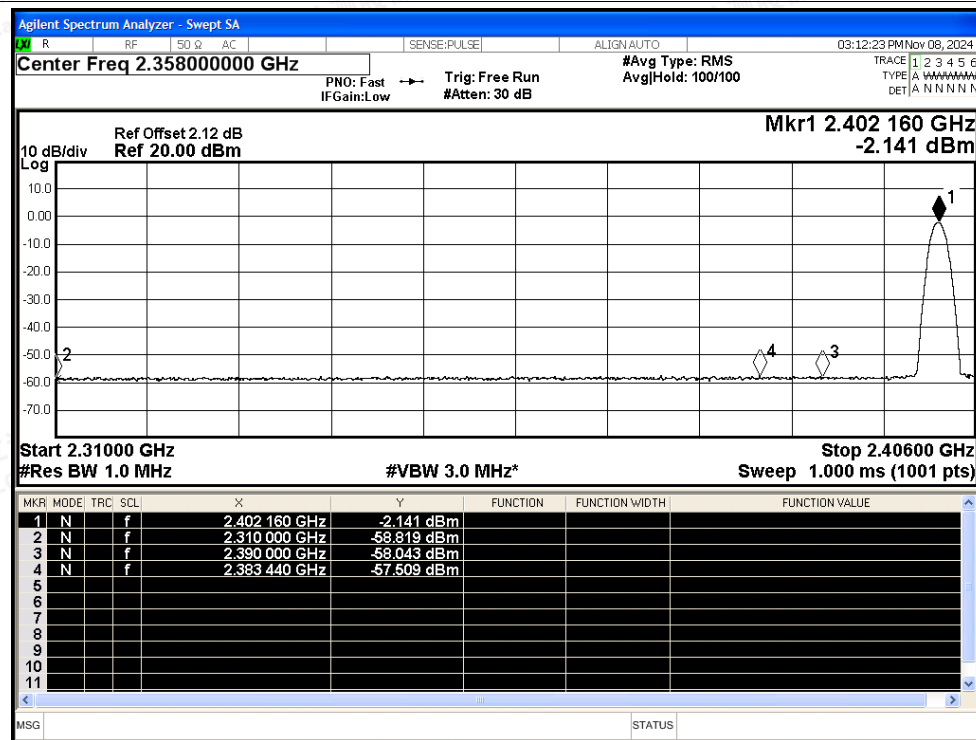


Test Graphs

Restrict Band NVNT BLE 1M 2402MHz Ant Peak



Restrict Band NVNT BLE 1M 2402MHz Ant Average



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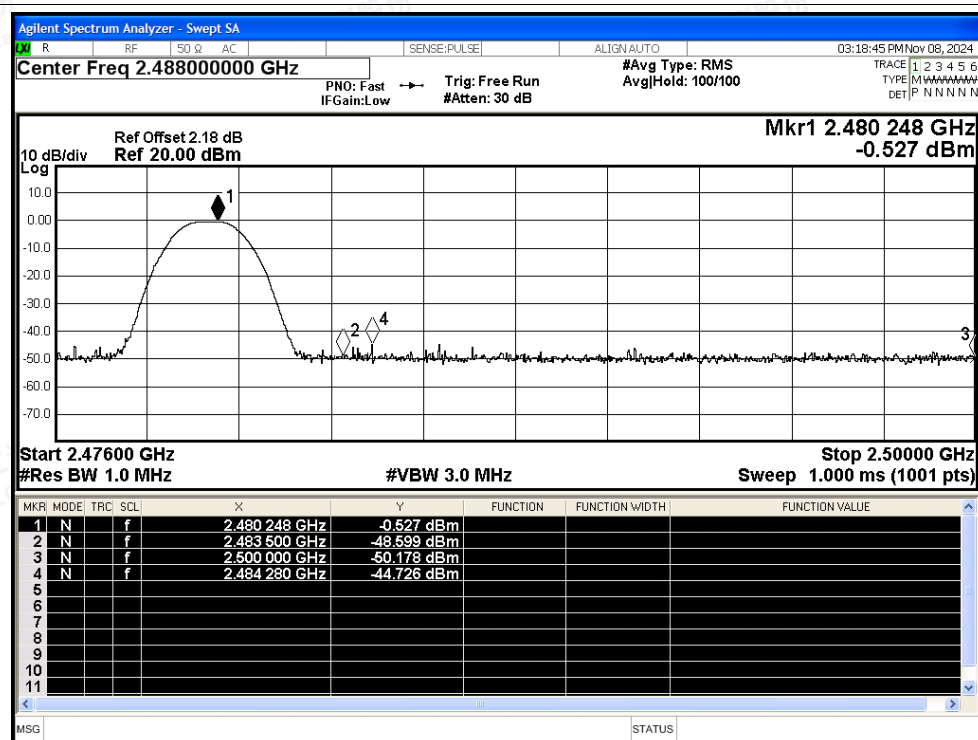
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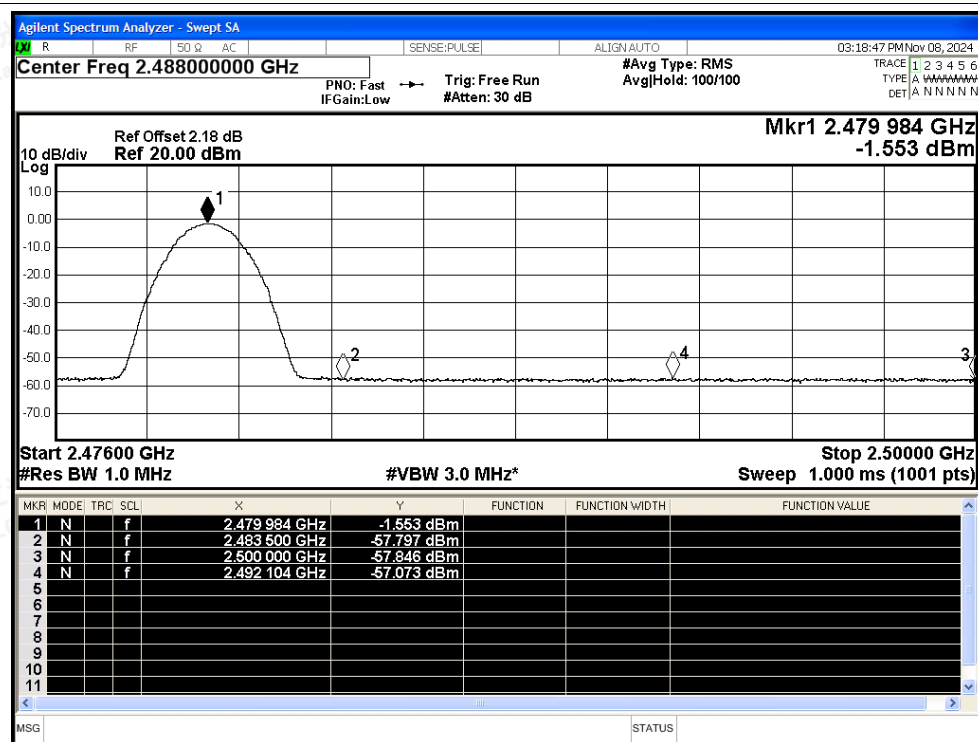
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Restrict Band NVNT BLE 1M 2480MHz Ant Peak



Restrict Band NVNT BLE 1M 2480MHz Ant Average



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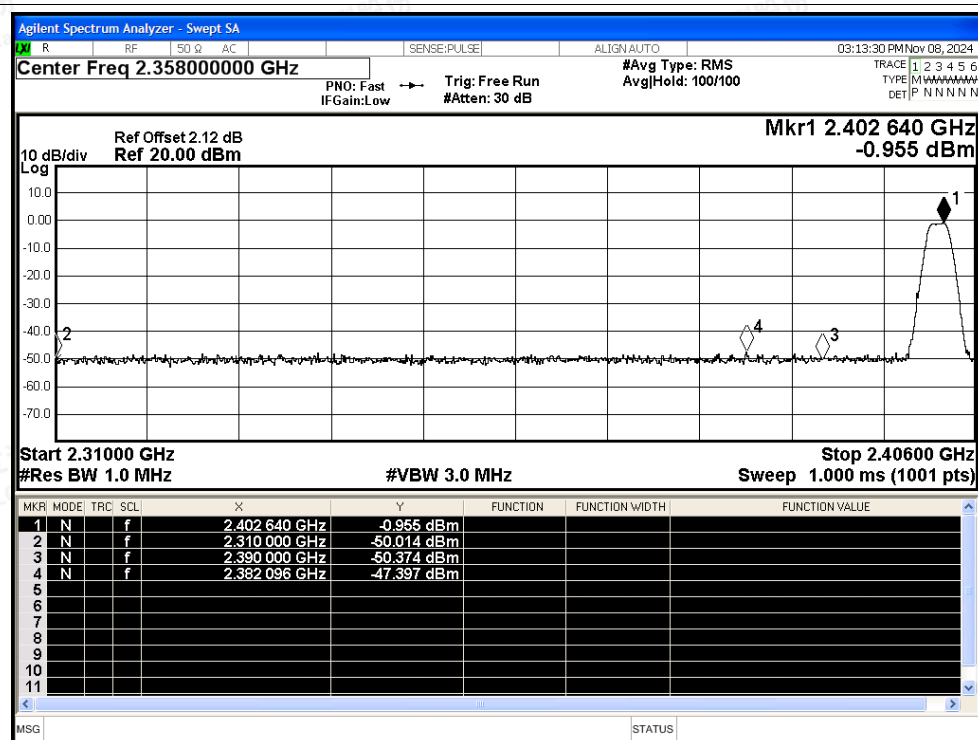
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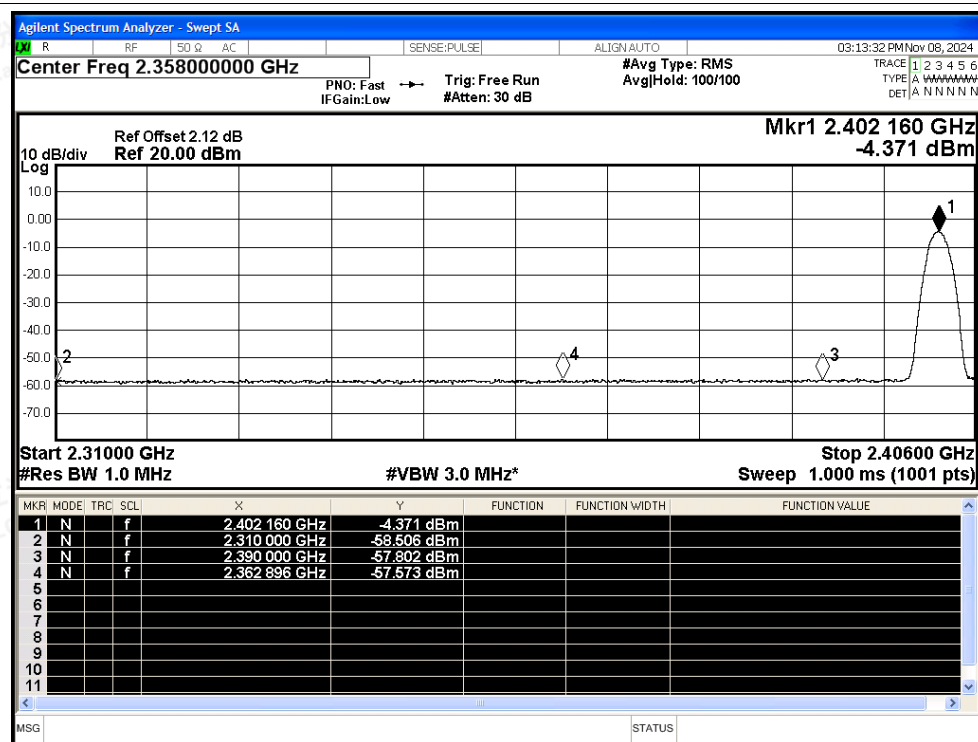
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Restrict Band NVNT BLE 2M 2402MHz Ant Peak



Restrict Band NVNT BLE 2M 2402MHz Ant Average



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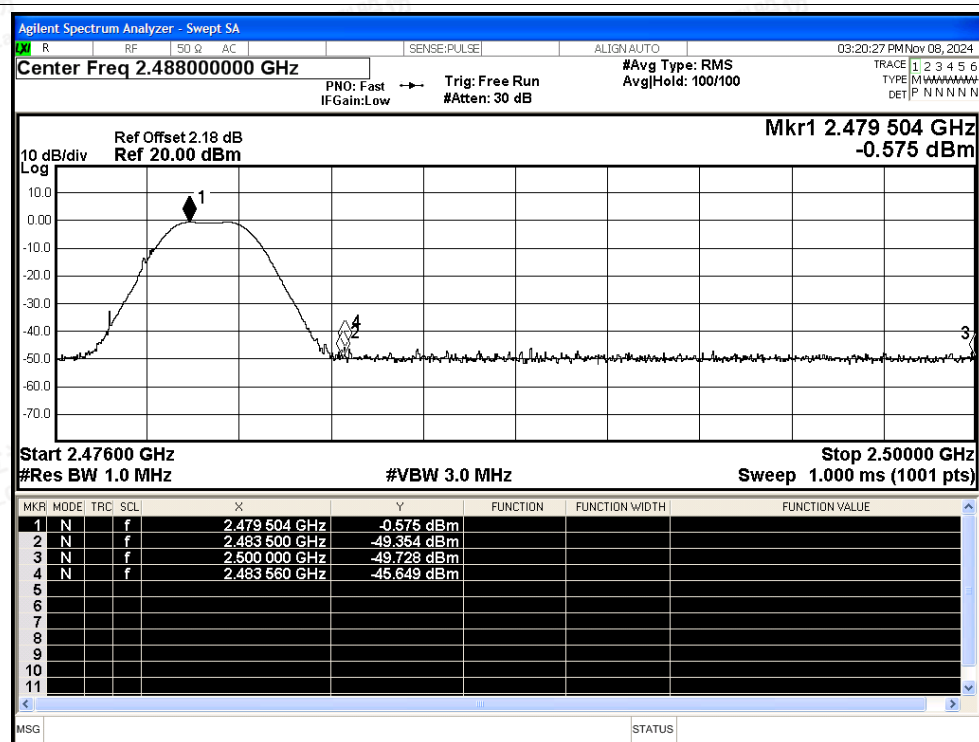
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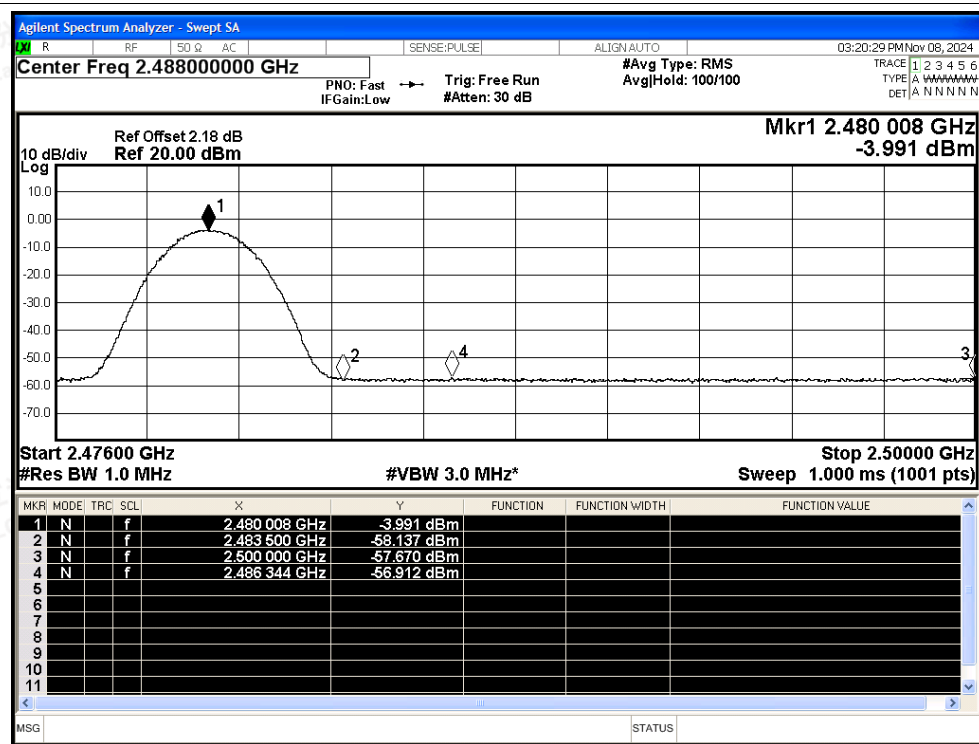
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Restrict Band NVNT BLE 2M 2480MHz Ant Peak



Restrict Band NVNT BLE 2M 2480MHz Ant Average



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