



Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: HC7 NB-IoT Sensor

Test Model: HC7

Environmental Conditions

Temperature:	23.5 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Jerry Chu
Supervised by:	Can Kun

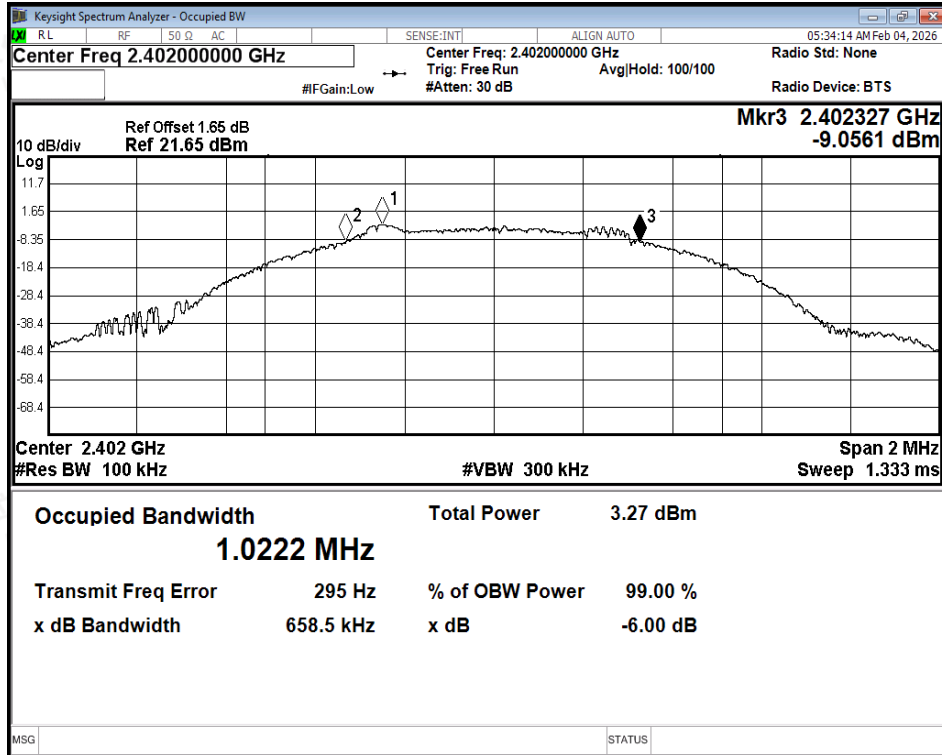




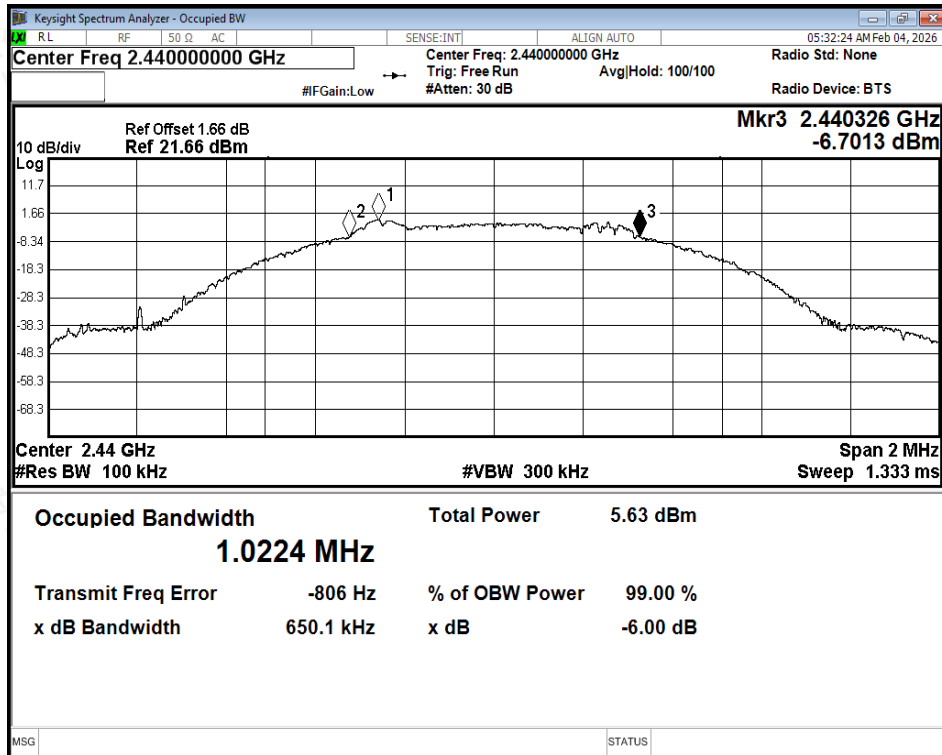
A.1 -6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.6585	0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.6501	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.662	0.5	Pass
NVNT	BLE 2M	2402	Ant1	1.138	0.5	Pass
NVNT	BLE 2M	2440	Ant1	1.169	0.5	Pass
NVNT	BLE 2M	2480	Ant1	1.128	0.5	Pass





-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1

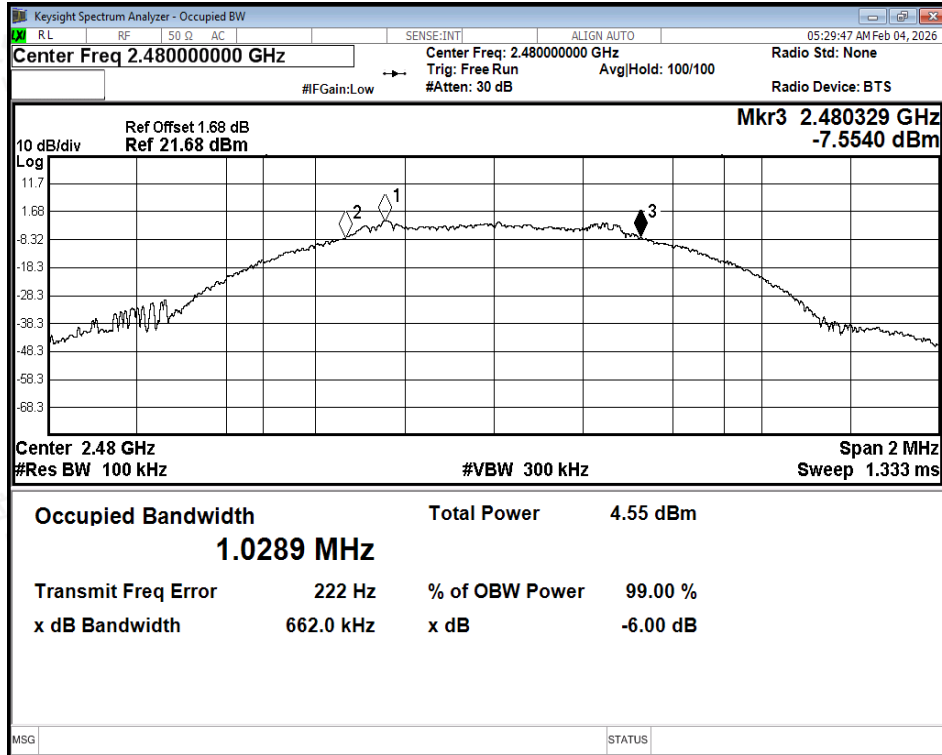


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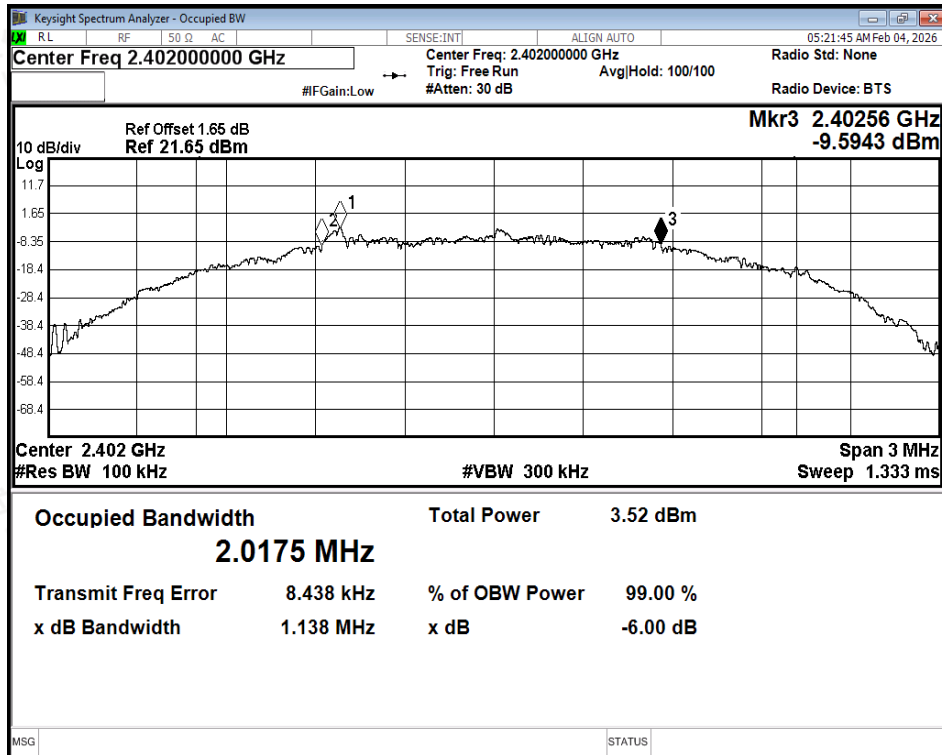
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-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2402MHz Ant1

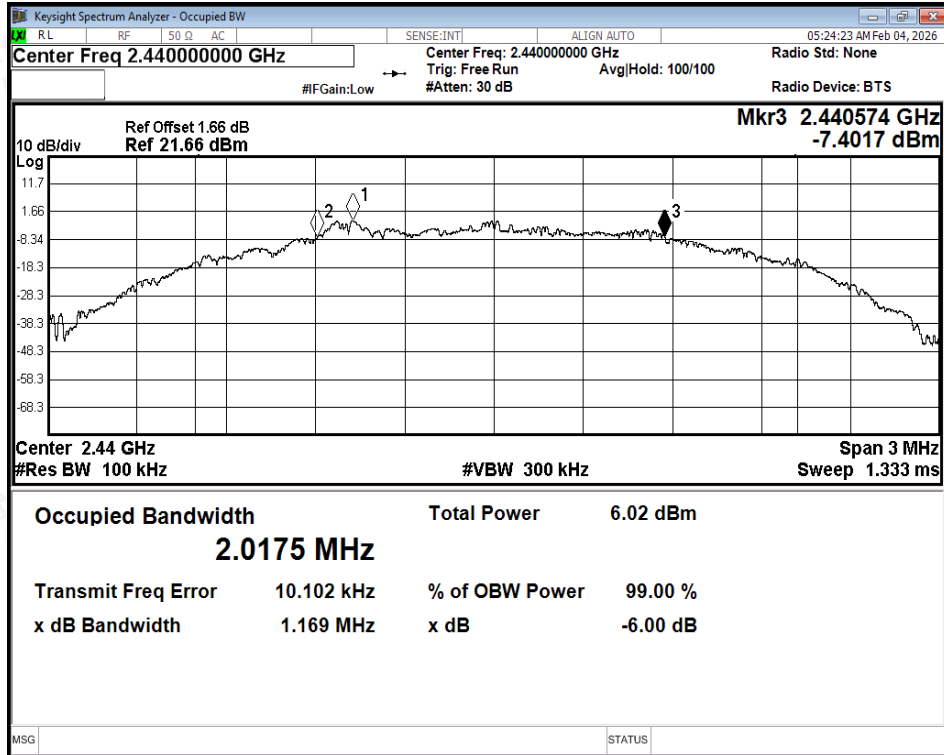


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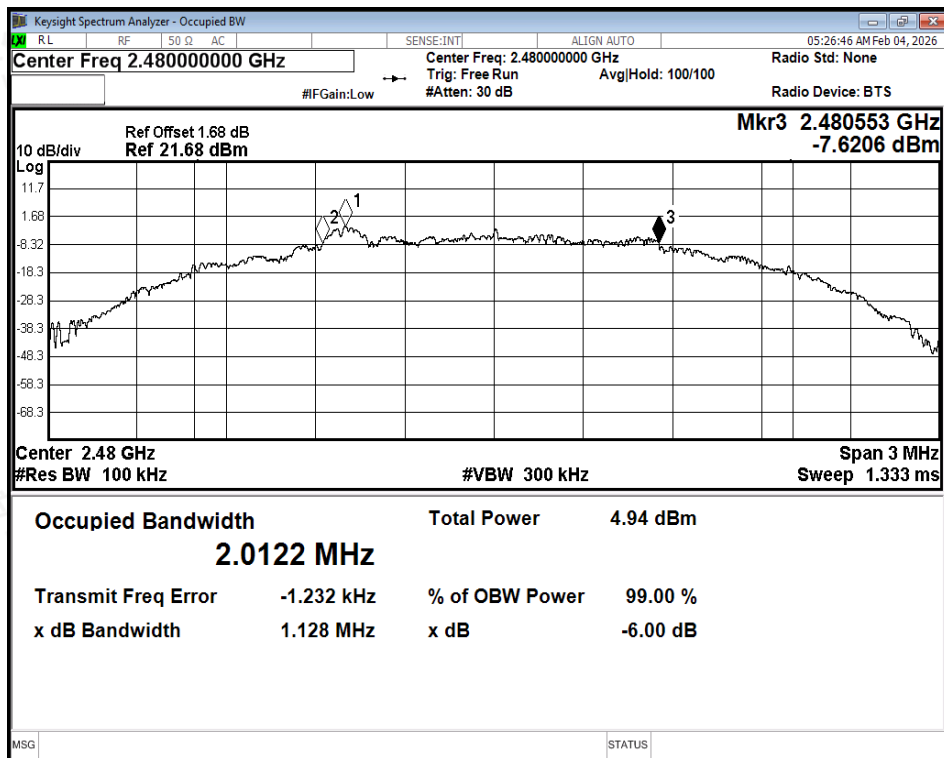
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-6dB Bandwidth NVNT BLE 2M 2440MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2480MHz Ant1



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A.2 Maximum Peak Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit Conducted(dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-2.56	30	Pass
NVNT	BLE 1M	2440	Ant1	-0.14	30	Pass
NVNT	BLE 1M	2480	Ant1	-1.18	30	Pass
NVNT	BLE 2M	2402	Ant1	-2.72	30	Pass
NVNT	BLE 2M	2440	Ant1	-0.39	30	Pass
NVNT	BLE 2M	2480	Ant1	-1.38	30	Pass

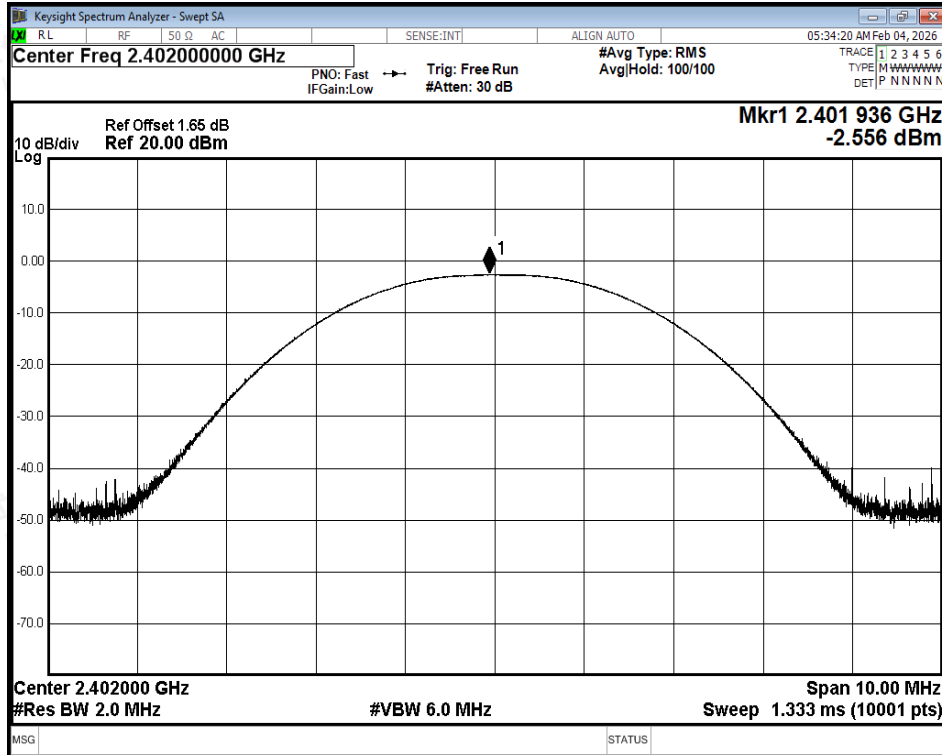


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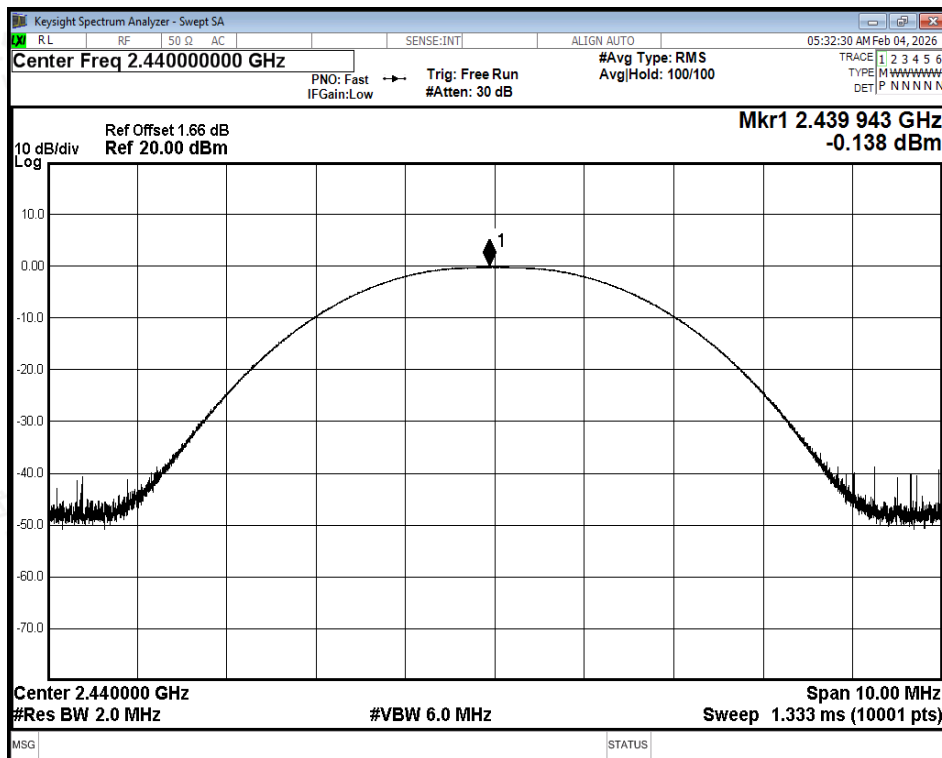
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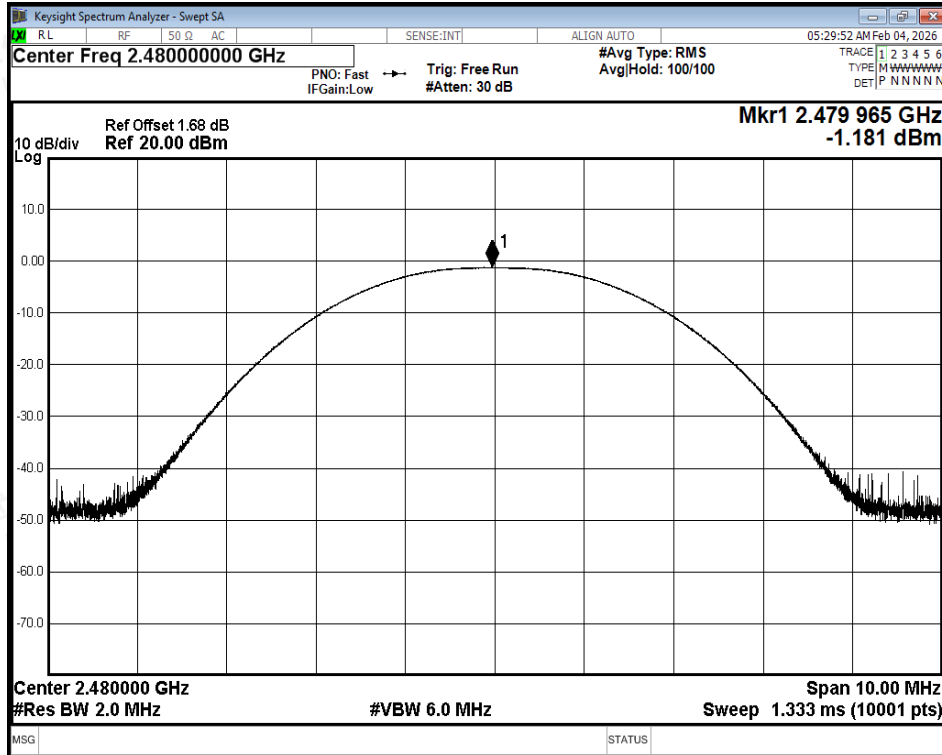


Peak Power NVNT BLE 1M 2402MHz Ant1

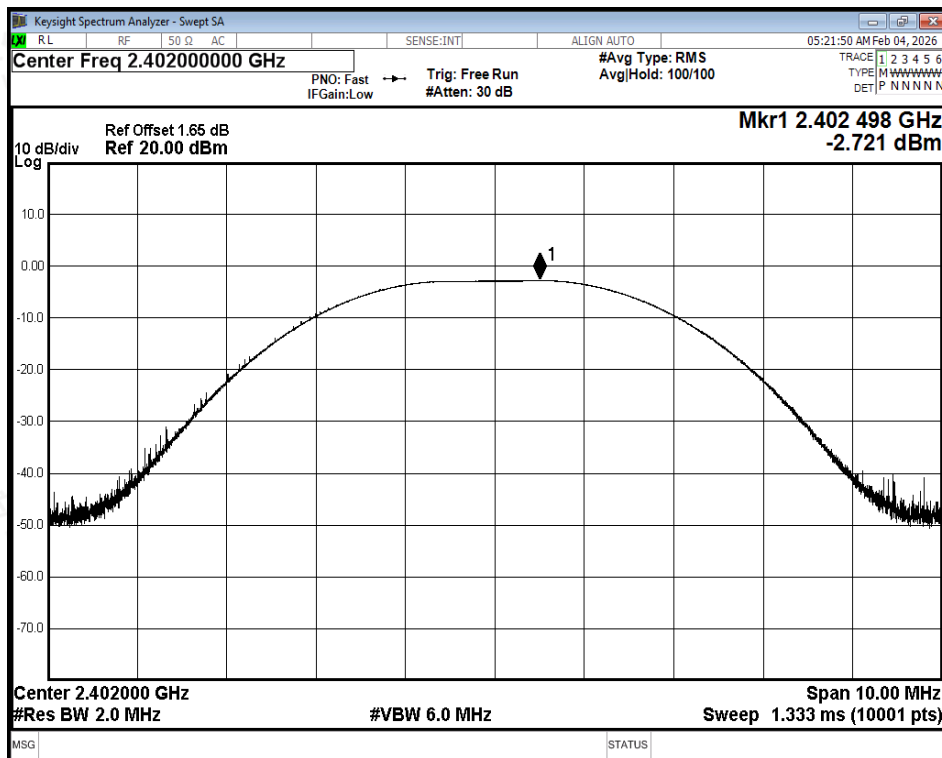


Peak Power NVNT BLE 1M 2440MHz Ant1



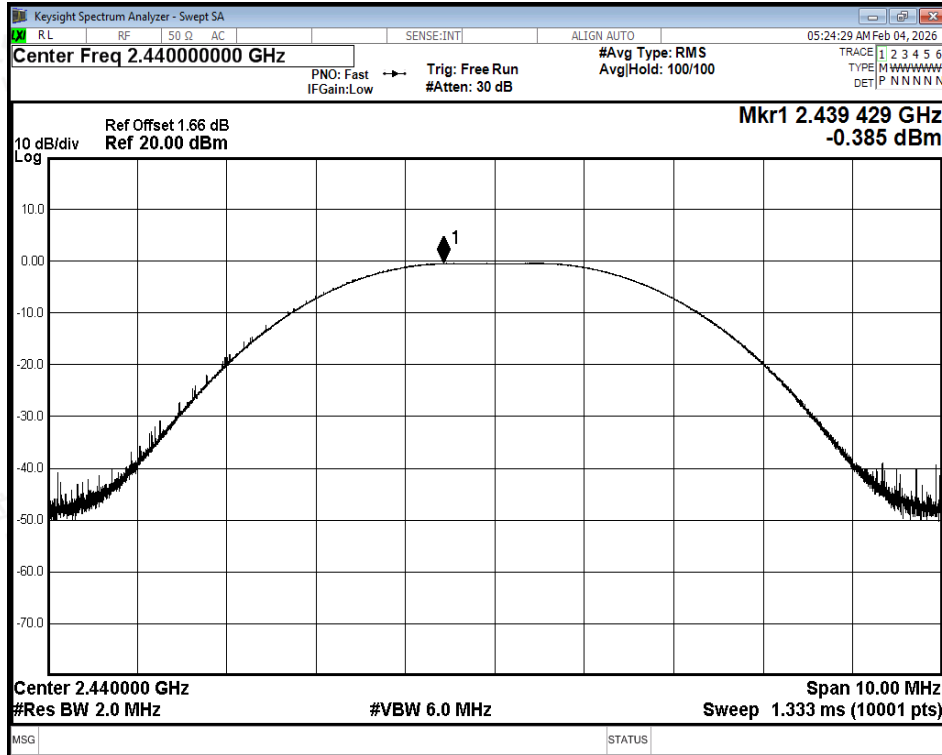


Peak Power NVNT BLE 1M 2480MHz Ant1

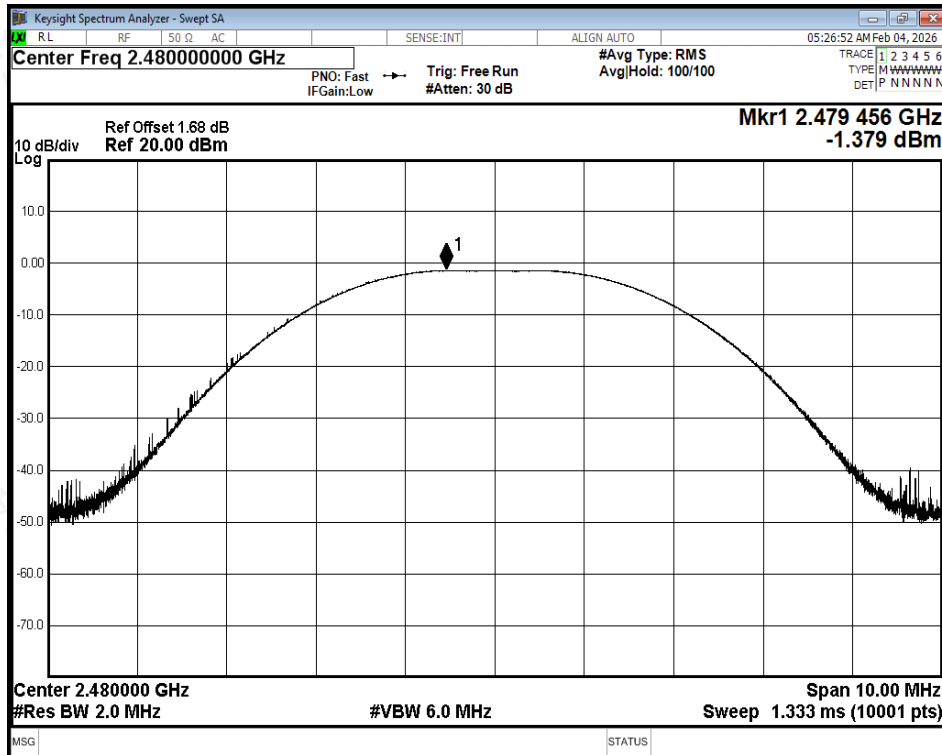


Peak Power NVNT BLE 2M 2402MHz Ant1





Peak Power NVNT BLE 2M 2440MHz Ant1



Peak Power NVNT BLE 2M 2480MHz Ant1

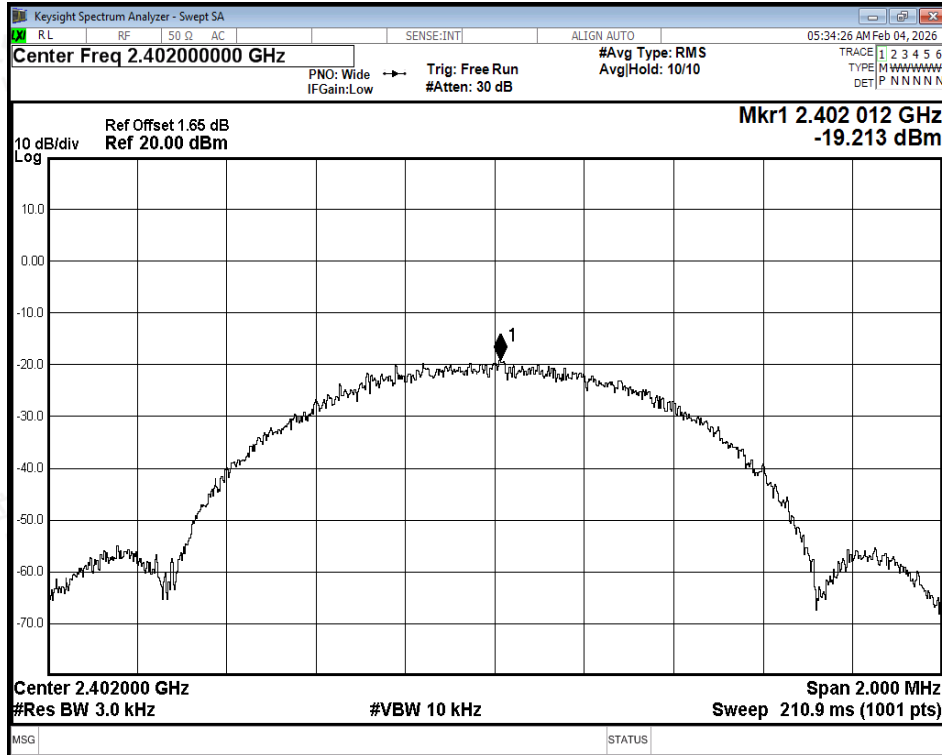




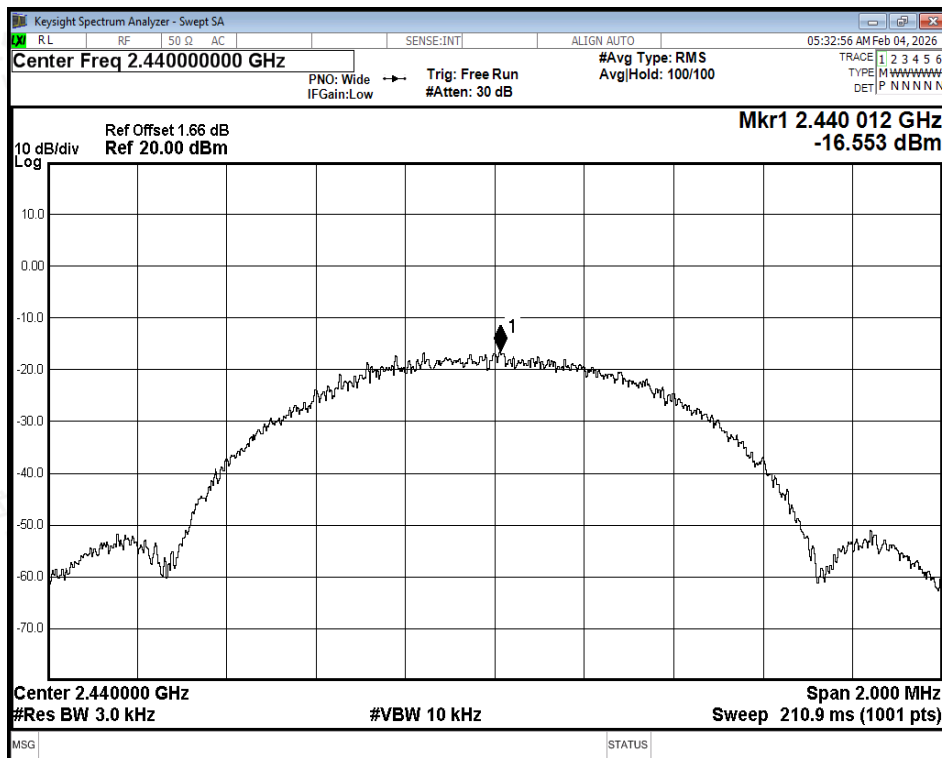
A.3 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	-19.21	8	Pass
NVNT	BLE 1M	2440	Ant1	-16.55	8	Pass
NVNT	BLE 1M	2480	Ant1	-17.73	8	Pass
NVNT	BLE 2M	2402	Ant1	-22.29	8	Pass
NVNT	BLE 2M	2440	Ant1	-19.71	8	Pass
NVNT	BLE 2M	2480	Ant1	-20.81	8	Pass



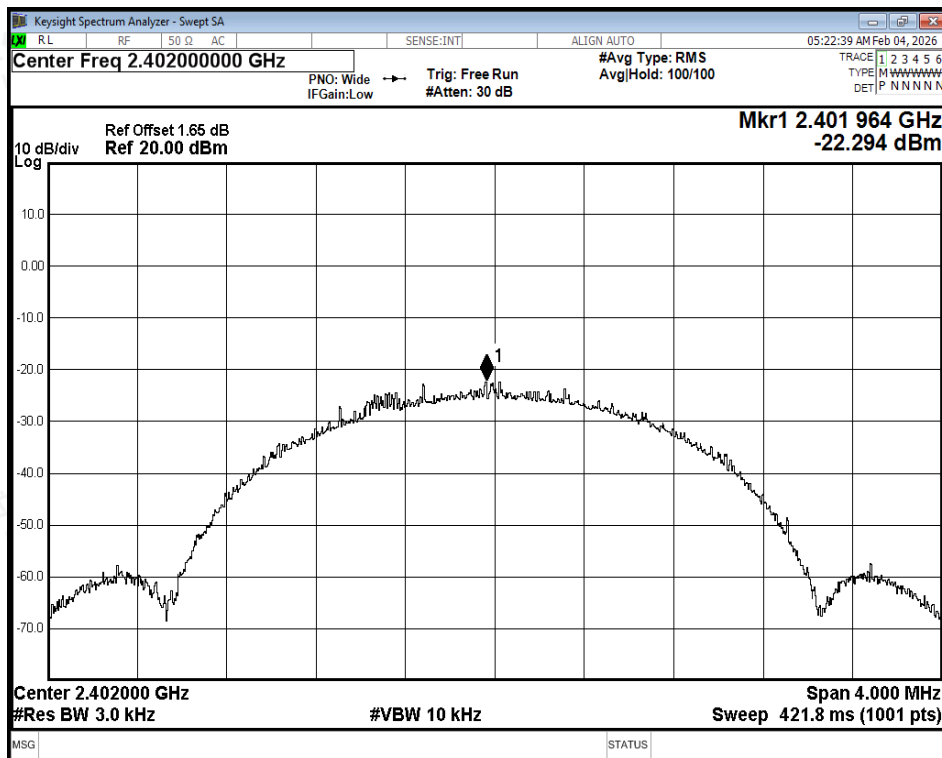
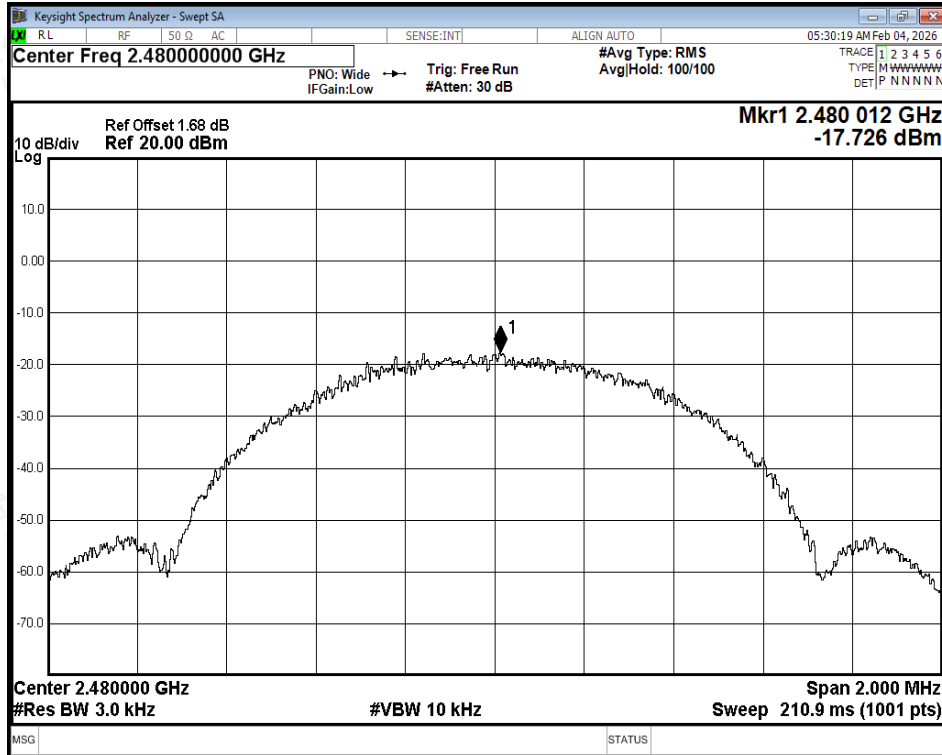


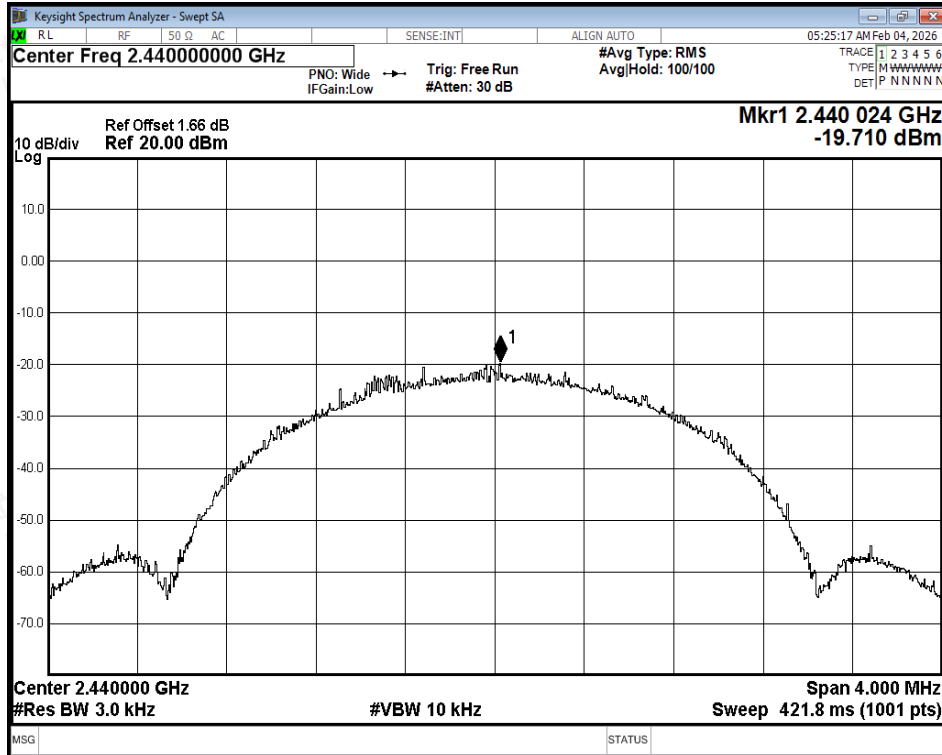
PSD NVNT BLE 1M 2402MHz Ant1



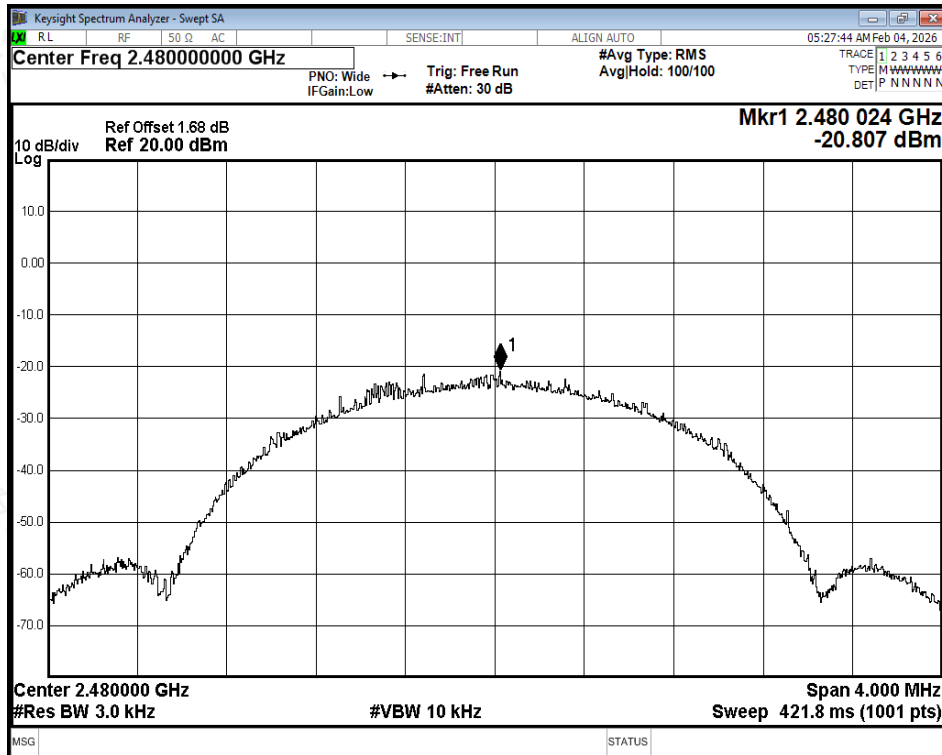
PSD NVNT BLE 1M 2440MHz Ant1







PSD NVNT BLE 2M 2440MHz Ant1



PSD NVNT BLE 2M 2480MHz Ant1

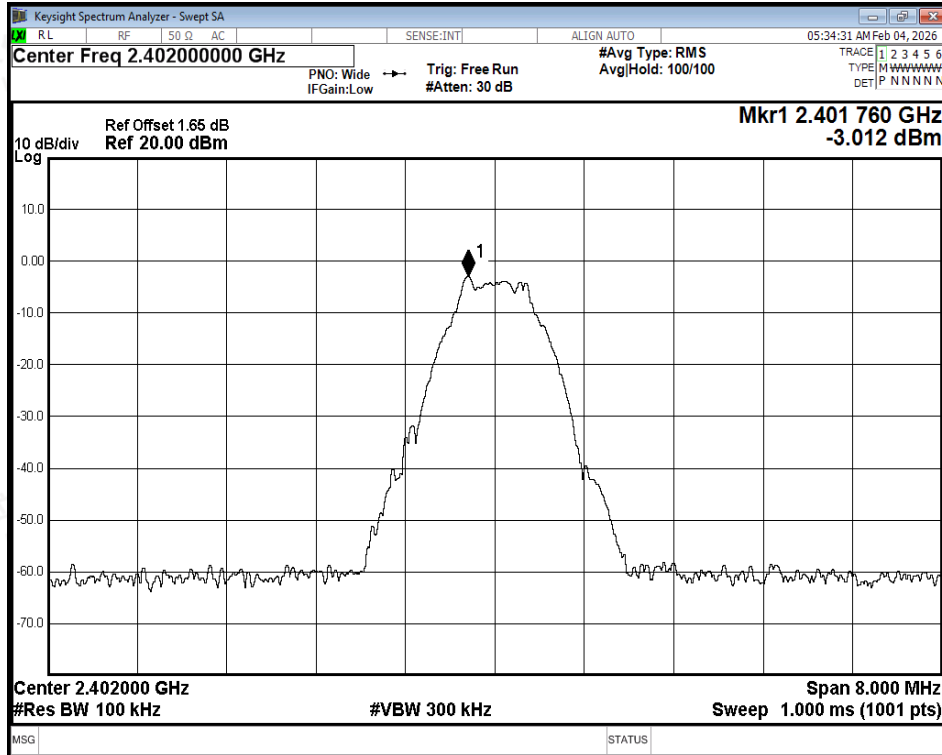




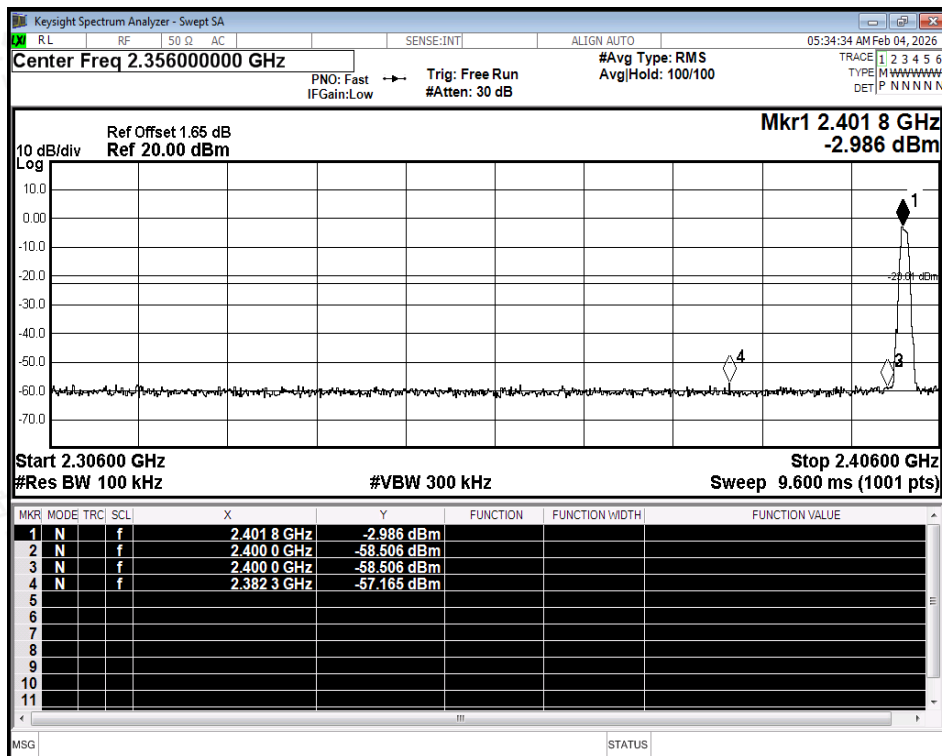
A.4 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-54.15	-20	Pass
NVNT	BLE 1M	2480	Ant1	-56.1	-20	Pass
NVNT	BLE 2M	2402	Ant1	-44.44	-20	Pass
NVNT	BLE 2M	2480	Ant1	-55.2	-20	Pass





Band Edge NVNT BLE 1M 2402MHz Ant1 Ref



Band Edge NVNT BLE 1M 2402MHz Ant1 Emission

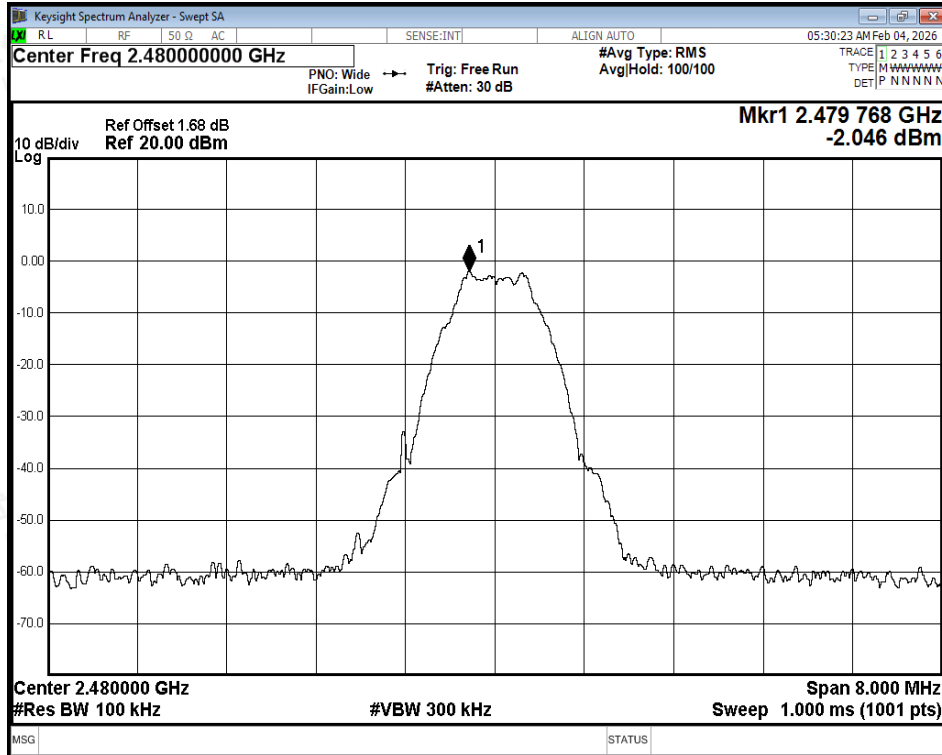


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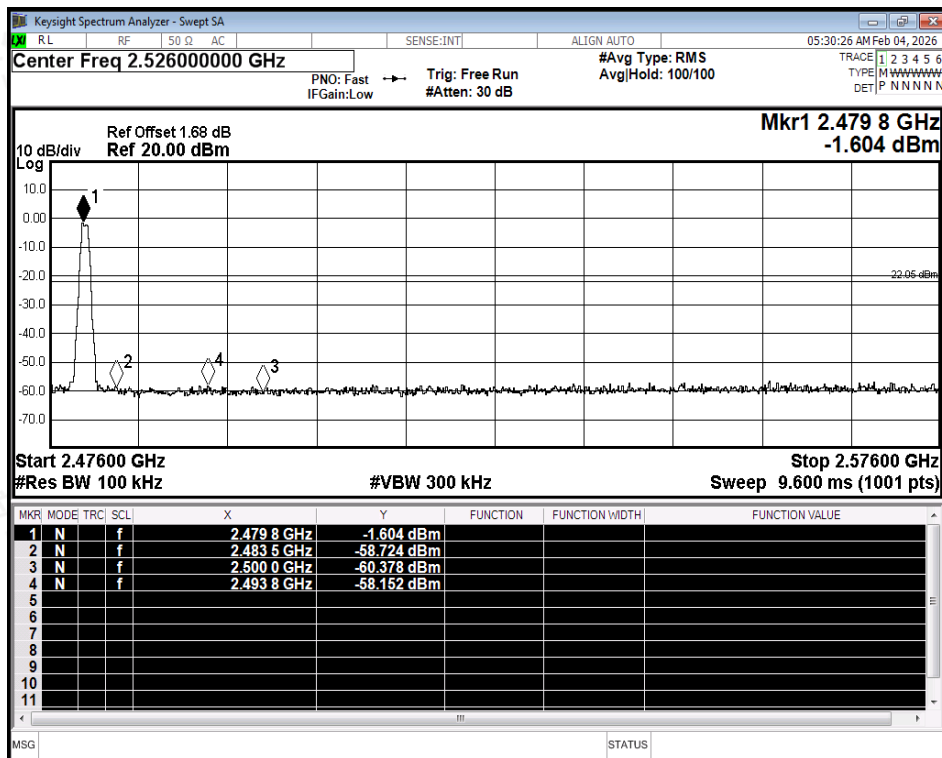
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Band Edge NVNT BLE 1M 2480MHz Ant1 Ref



Band Edge NVNT BLE 1M 2480MHz Ant1 Emission

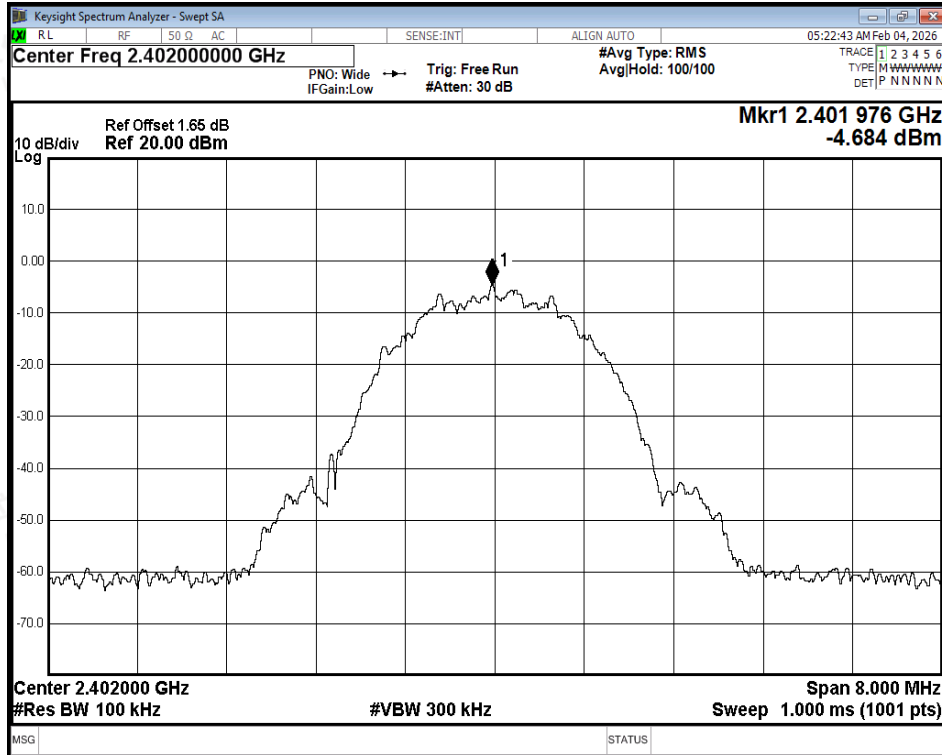


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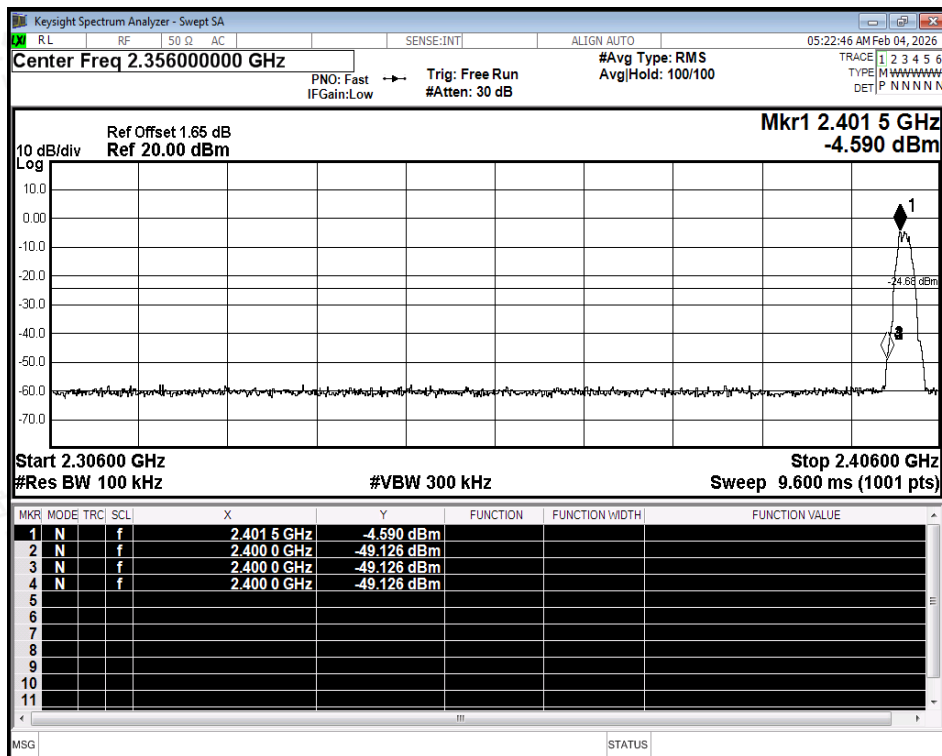
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Band Edge NVNT BLE 2M 2402MHz Ant1 Ref



Band Edge NVNT BLE 2M 2402MHz Ant1 Emission

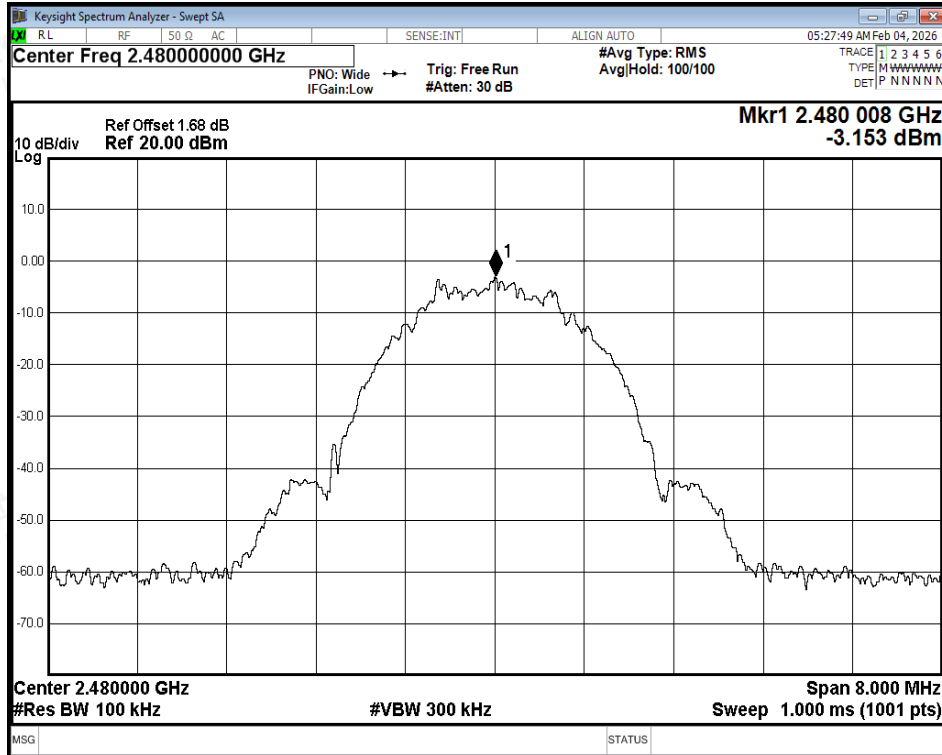


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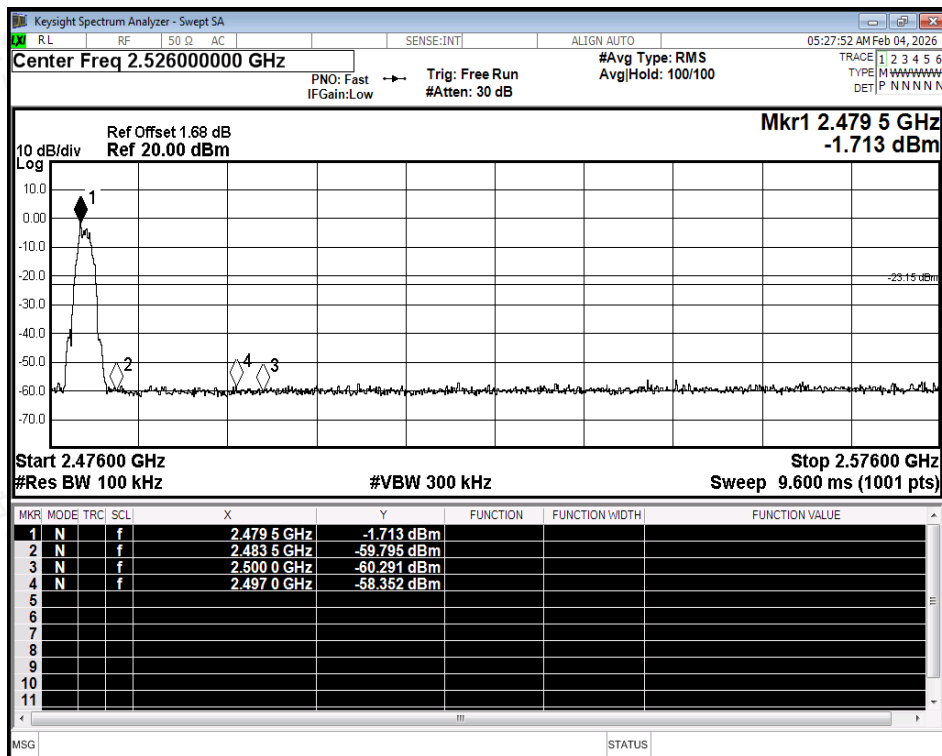
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Band Edge NVNT BLE 2M 2480MHz Ant1 Ref



Band Edge NVNT BLE 2M 2480MHz Ant1 Emission



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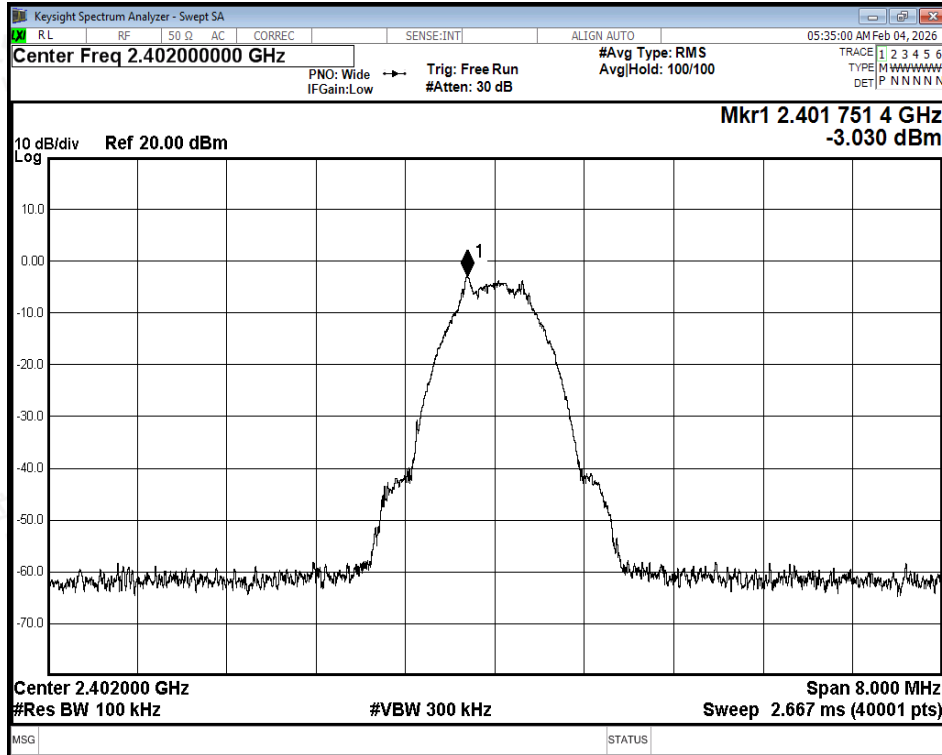
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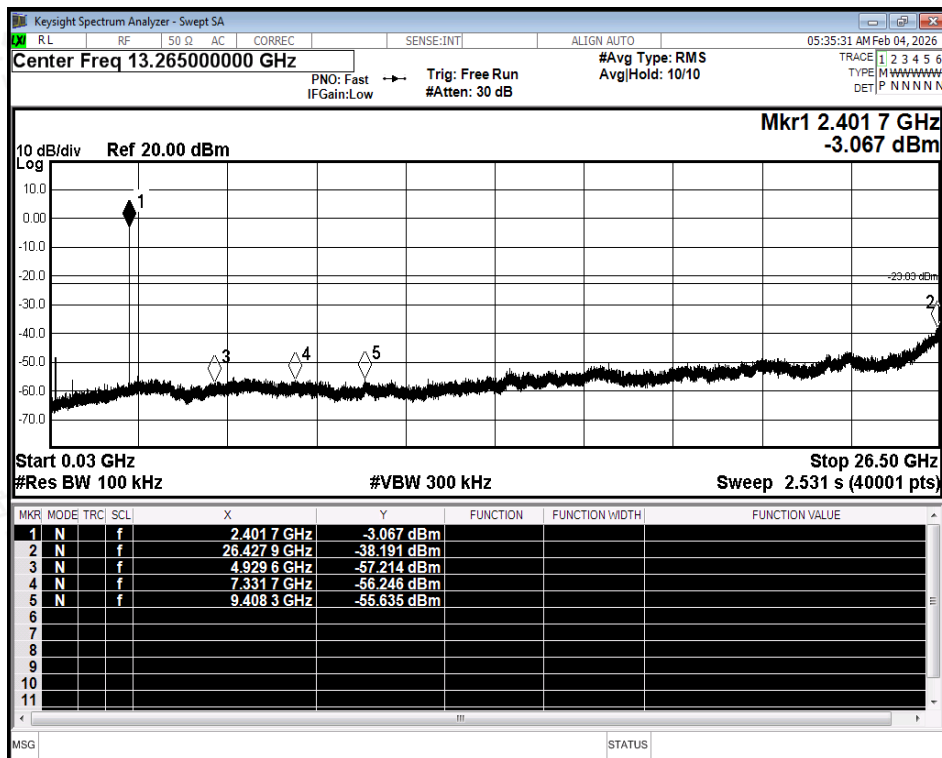
A.5 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-35.16	-20	Pass
NVNT	BLE 1M	2440	Ant1	-38.2	-20	Pass
NVNT	BLE 1M	2480	Ant1	-36.88	-20	Pass
NVNT	BLE 2M	2402	Ant1	-38.41	-20	Pass
NVNT	BLE 2M	2440	Ant1	-41.32	-20	Pass
NVNT	BLE 2M	2480	Ant1	-39.28	-20	Pass



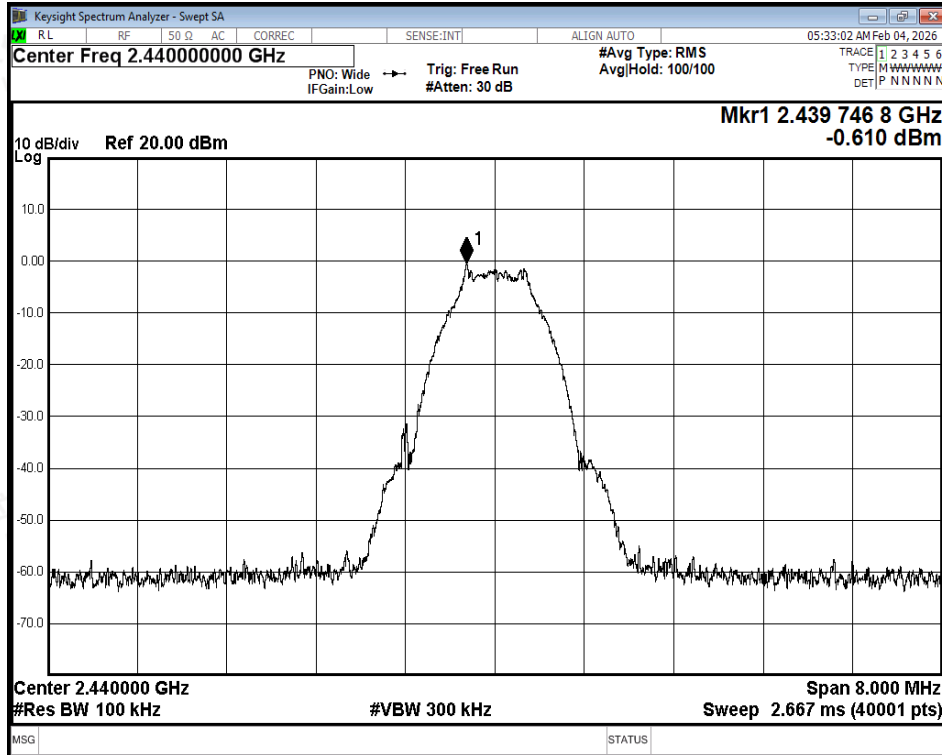


Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref

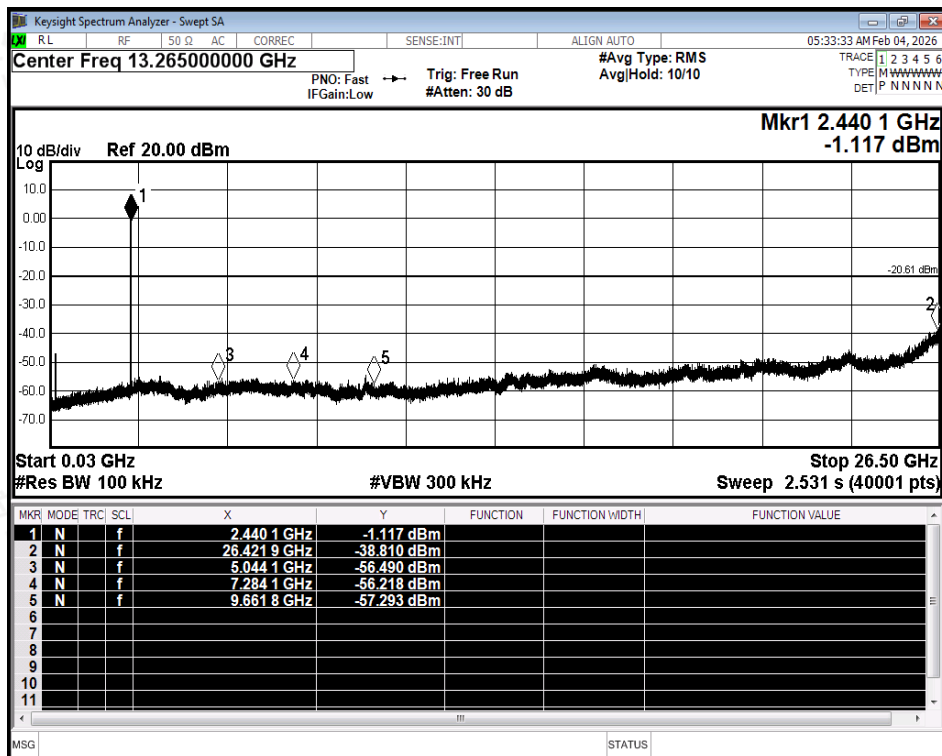


Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission





Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission

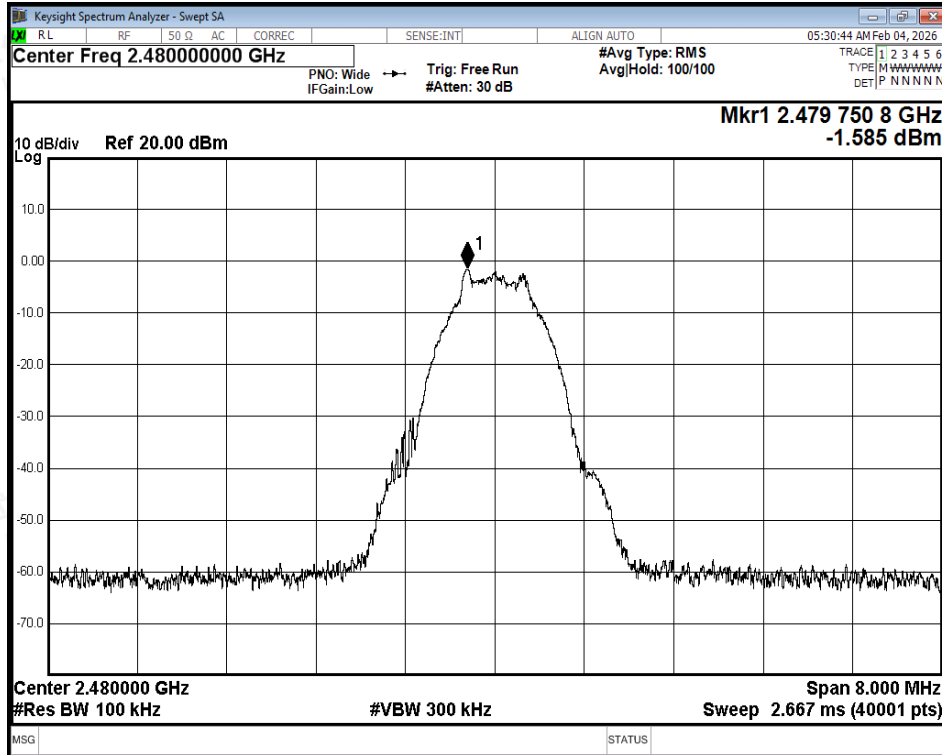


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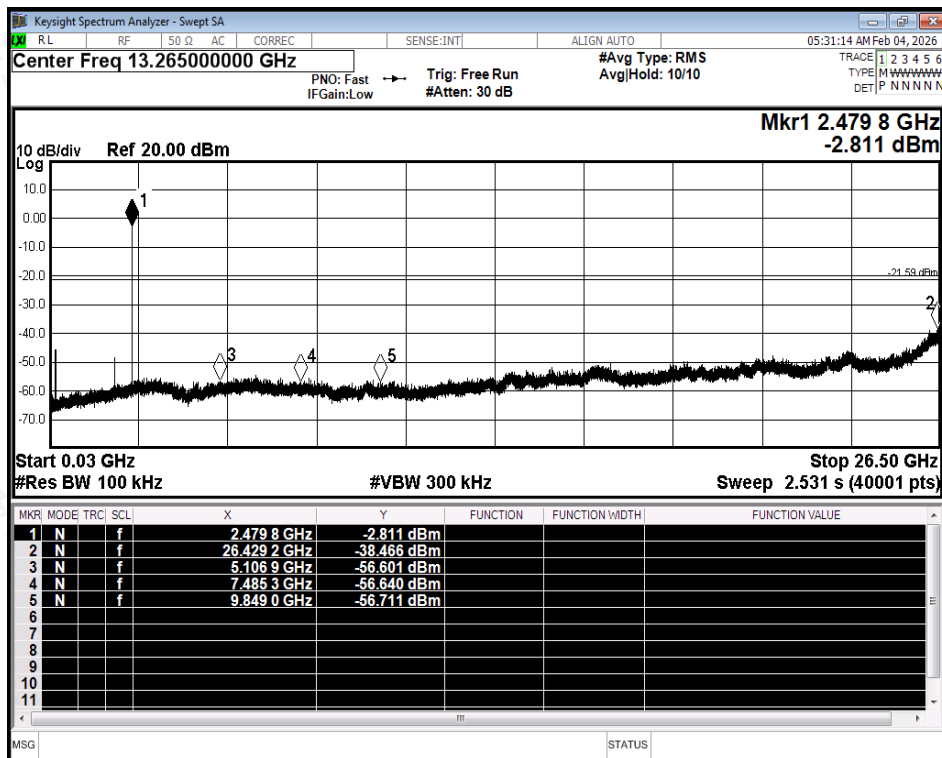
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Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission

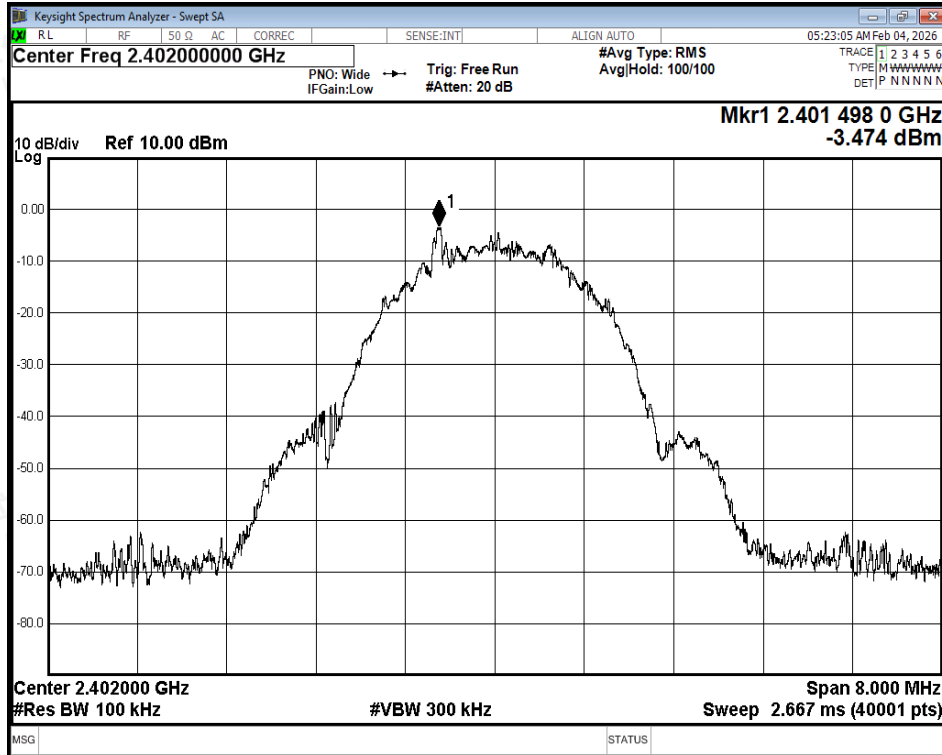


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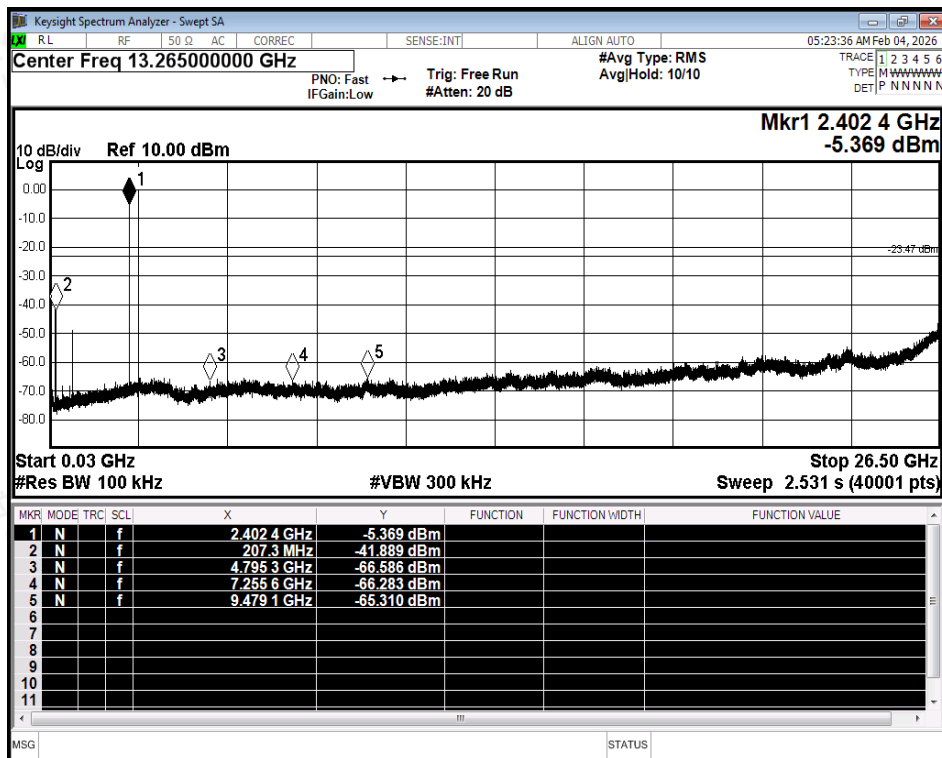
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Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Ref



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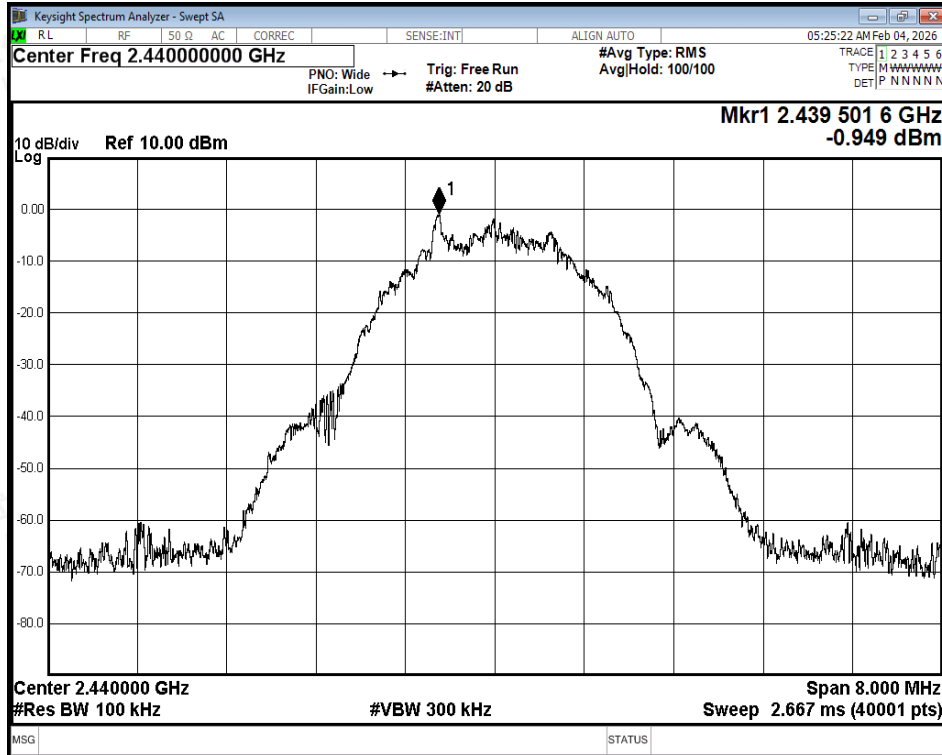


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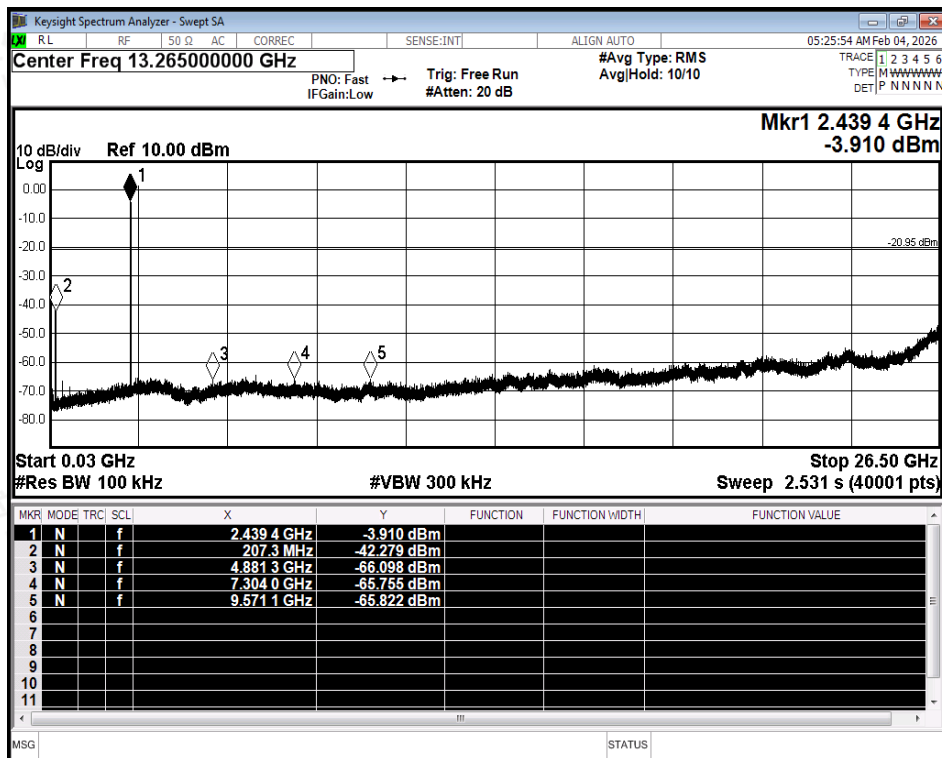
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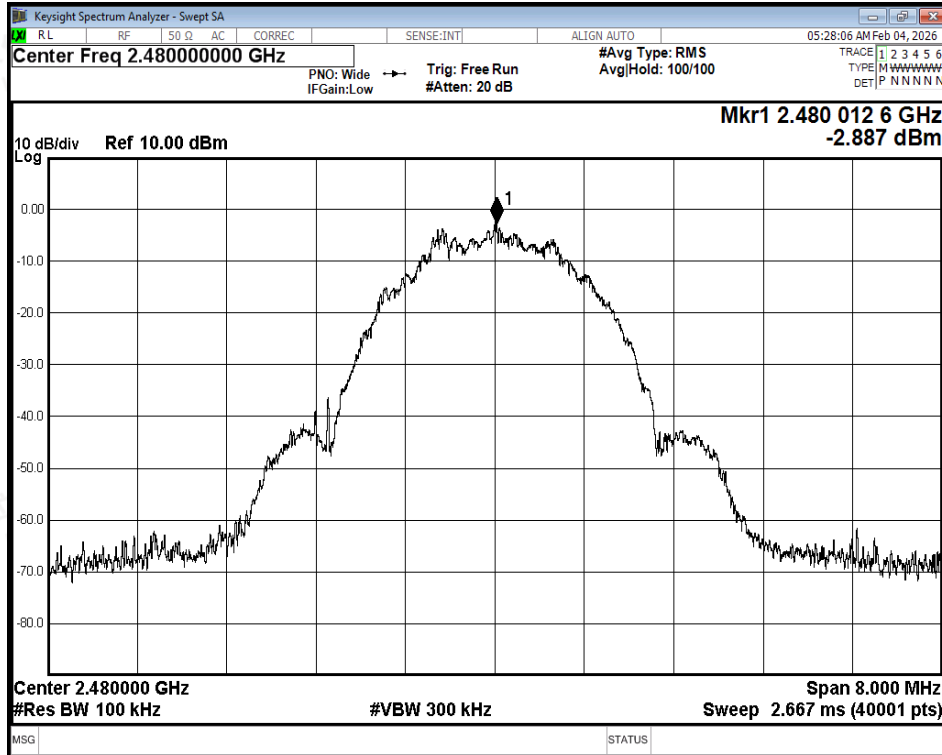


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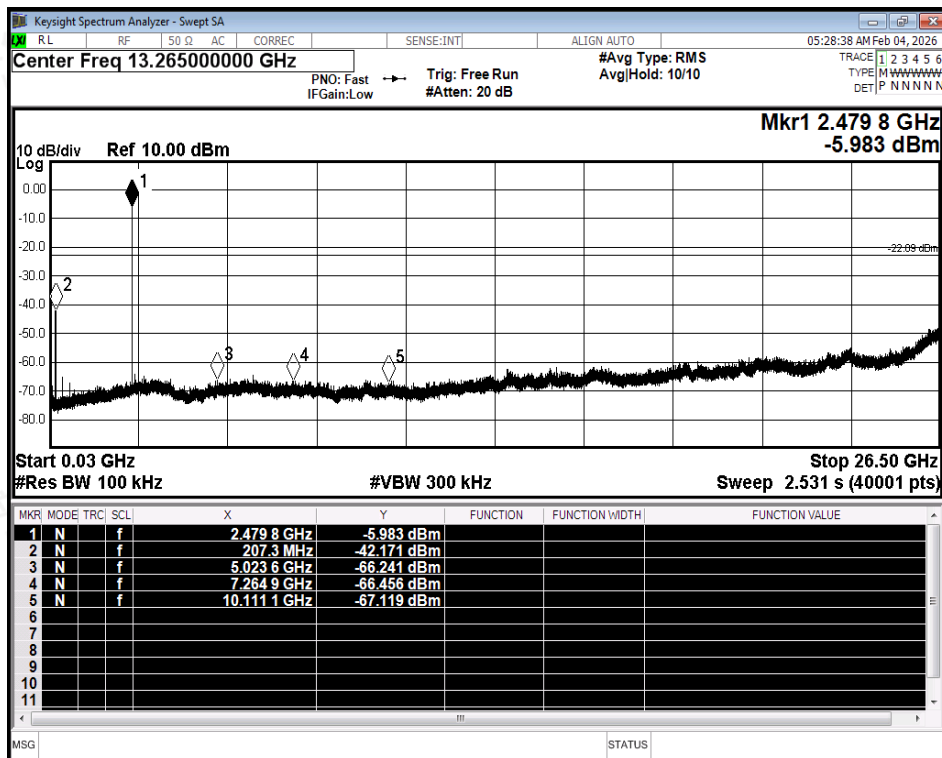
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Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Emission



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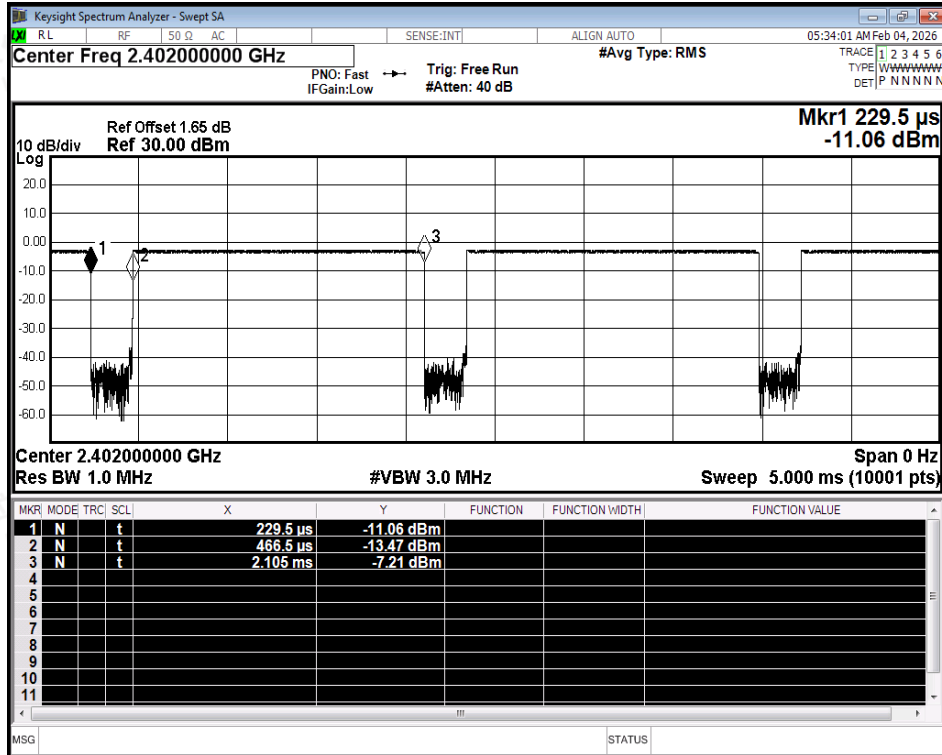
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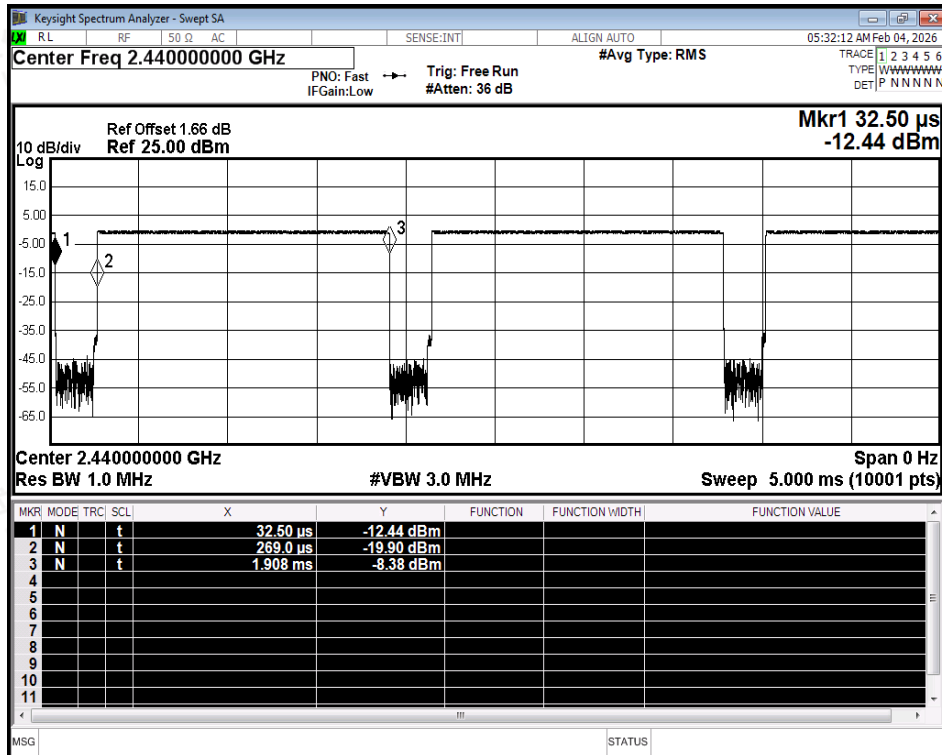
A.6 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant1	87.36	0.59	0.61
NVNT	BLE 1M	2440	Ant1	87.39	0.59	0.61
NVNT	BLE 1M	2480	Ant1	87.36	0.59	0.61
NVNT	BLE 2M	2402	Ant1	65.96	1.81	1.21
NVNT	BLE 2M	2440	Ant1	65.96	1.81	1.21
NVNT	BLE 2M	2480	Ant1	65.96	1.81	1.21





Duty Cycle NVNT BLE 1M 2402MHz Ant1



Duty Cycle NVNT BLE 1M 2440MHz Ant1

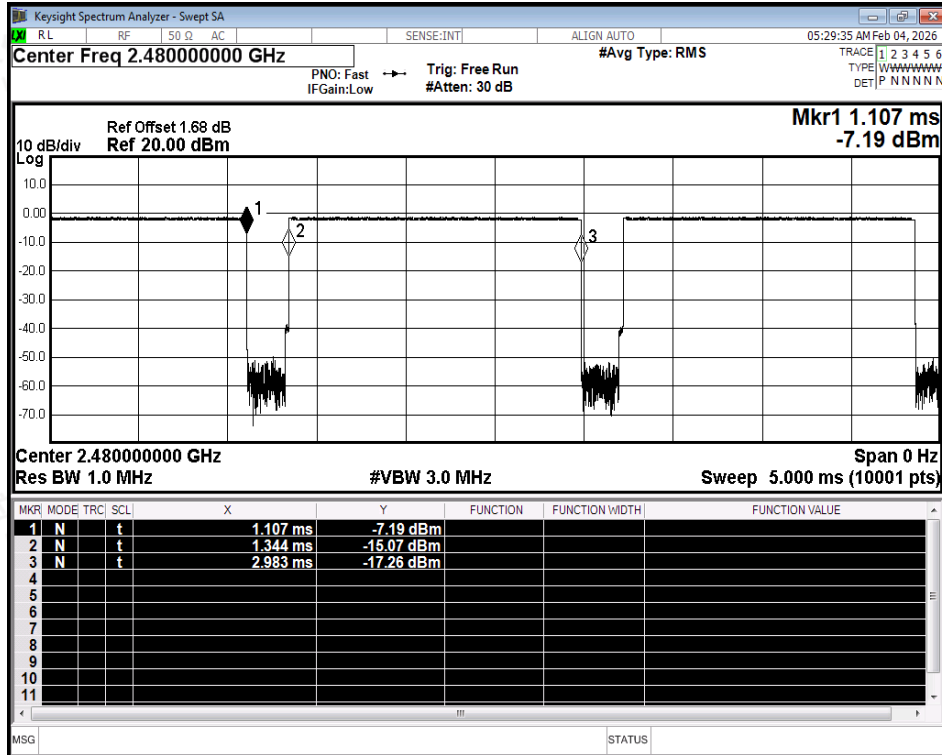


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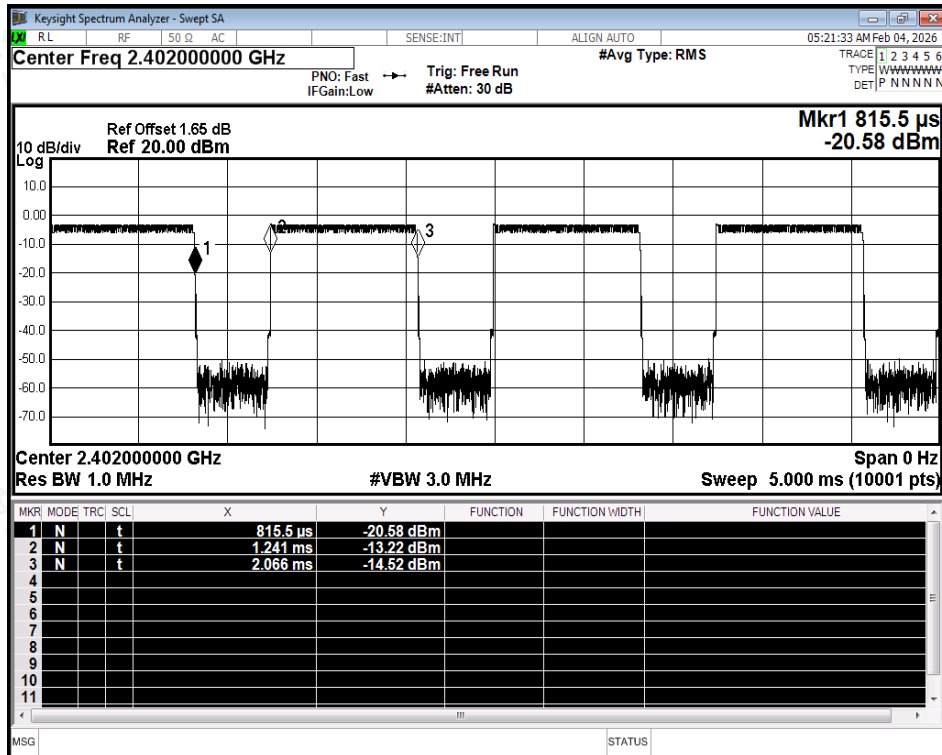
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Duty Cycle NVNT BLE 1M 2480MHz Ant1



Duty Cycle NVNT BLE 2M 2402MHz Ant1

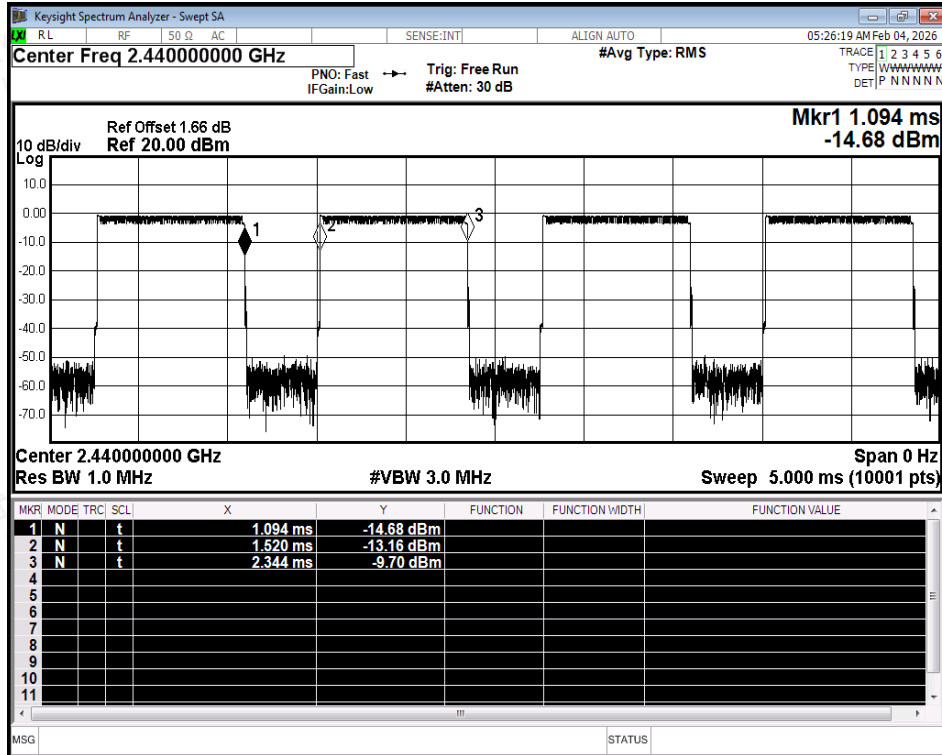


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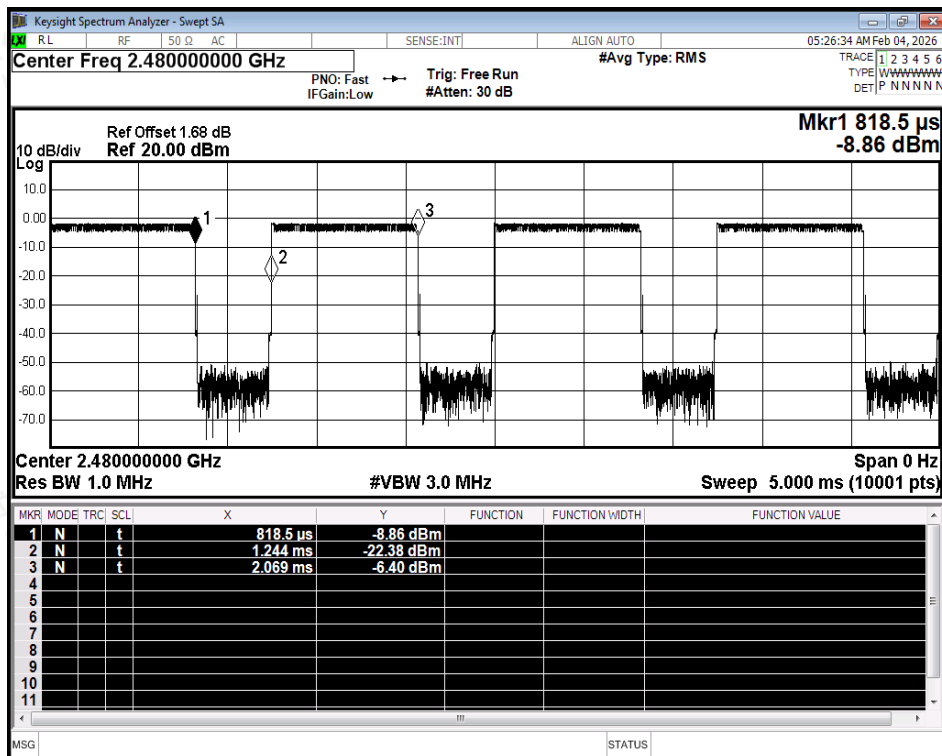
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Duty Cycle NVNT BLE 2M 2440MHz Ant1



Duty Cycle NVNT BLE 2M 2480MHz Ant1



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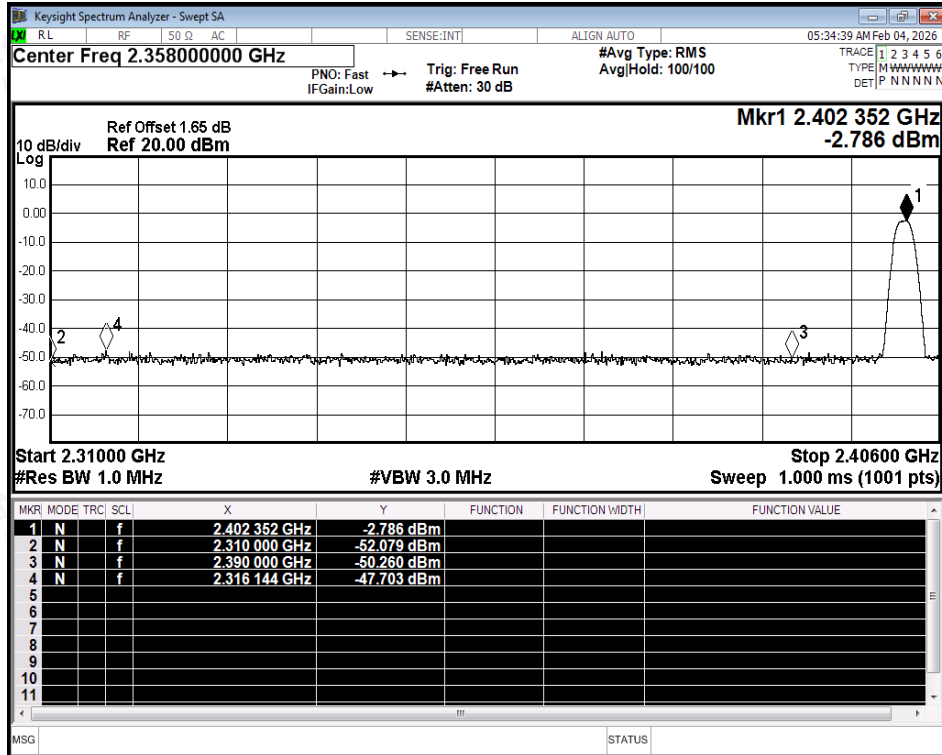
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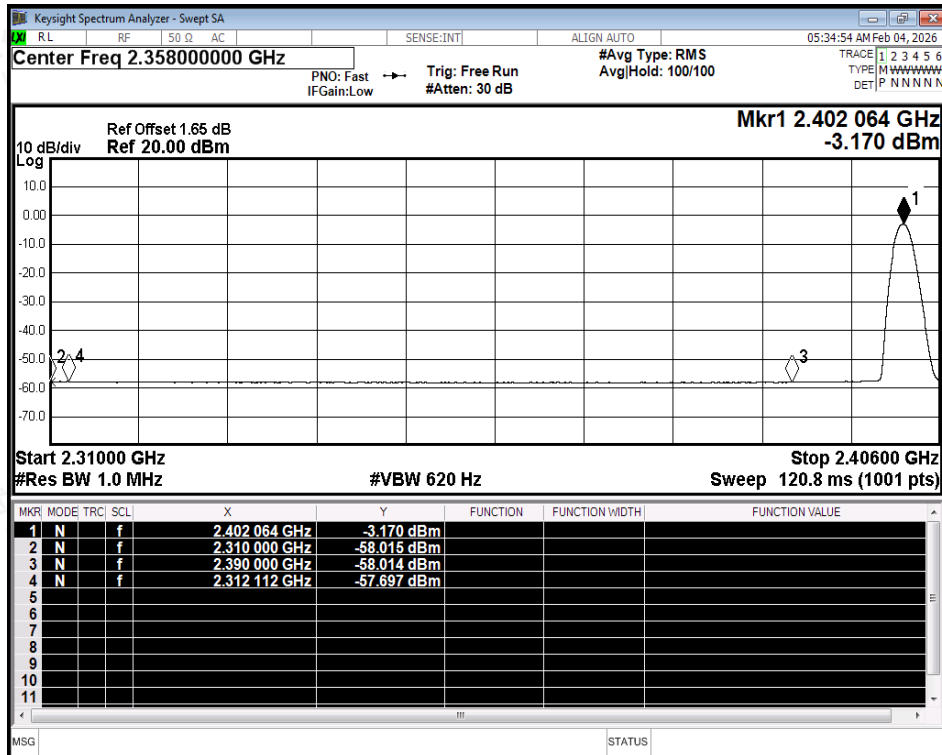
A.7 Restrict Band

Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	BLE 1M	2402	Ant1	2310	-52.07	2.15	45.34	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2310	-58.01	2.15	39.40	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2316.144	-47.7	2.15	49.71	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2312.112	-57.69	2.15	39.72	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2390	-51.44	2.15	45.97	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2390	-58.1	2.15	39.31	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-51.19	2.15	46.22	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-56.08	2.15	41.33	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.872	-45.12	2.15	52.29	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.512	-56.08	2.15	41.33	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2500	-49.99	2.15	47.42	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2500	-57.98	2.15	39.43	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2310	-51.61	2.15	45.80	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2310	-57.85	2.15	39.56	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2356.944	-48.29	2.15	49.12	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2316.528	-57.47	2.15	39.94	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2390	-51.05	2.15	46.36	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2390	-58.01	2.15	39.40	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-51.23	2.15	46.18	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-53.61	2.15	43.80	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2485.528	-45.99	2.15	51.42	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2483.512	-53.61	2.15	43.80	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2500	-50.8	2.15	46.61	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2500	-57.56	2.15	39.85	Average	54	Pass





Restrict Band NVNT BLE 1M 2402MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2402MHz Ant1 Average

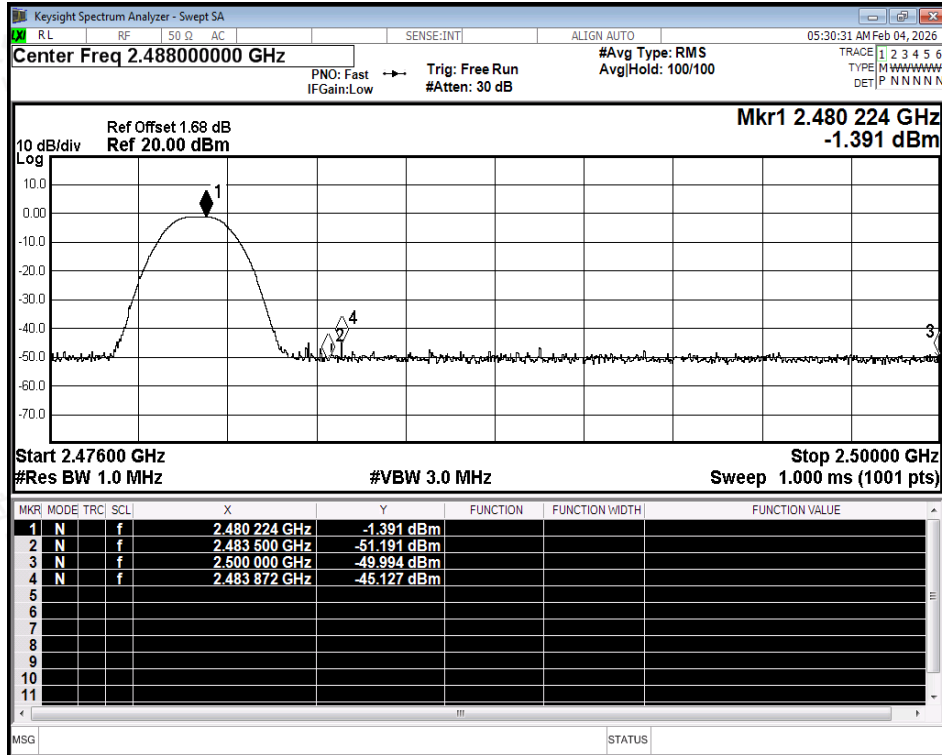


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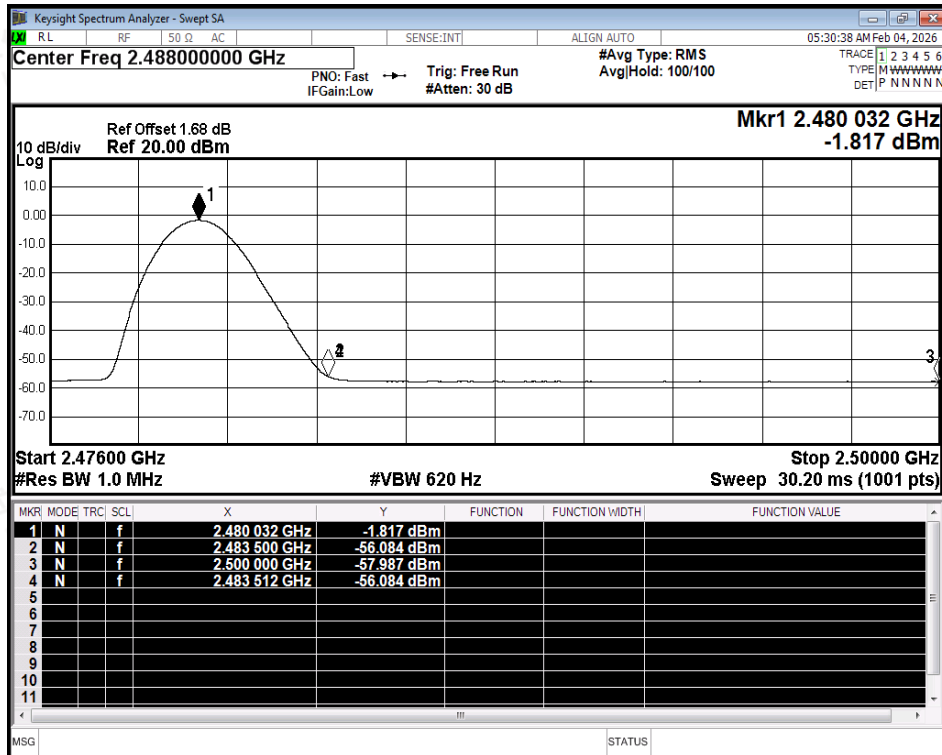
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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

Scan code to check authenticity



Restrict Band NVNT BLE 1M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2480MHz Ant1 Average

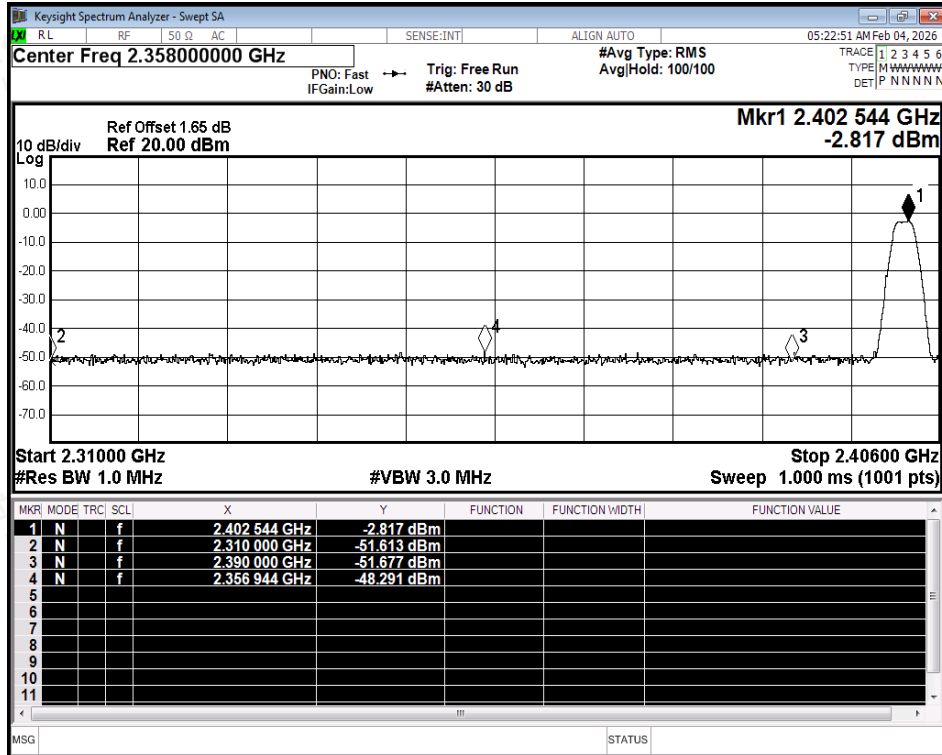


Shenzhen LCS Compliance Testing Laboratory Ltd.

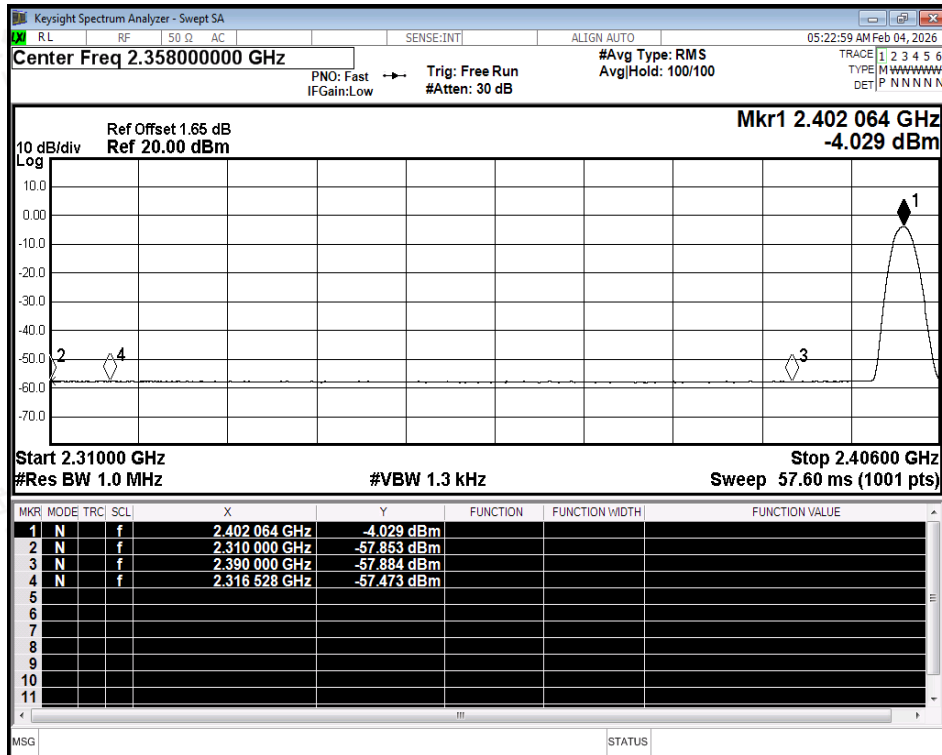
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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Restrict Band NVNT BLE 2M 2402MHz Ant1 Peak



Restrict Band NVNT BLE 2M 2402MHz Ant1 Average

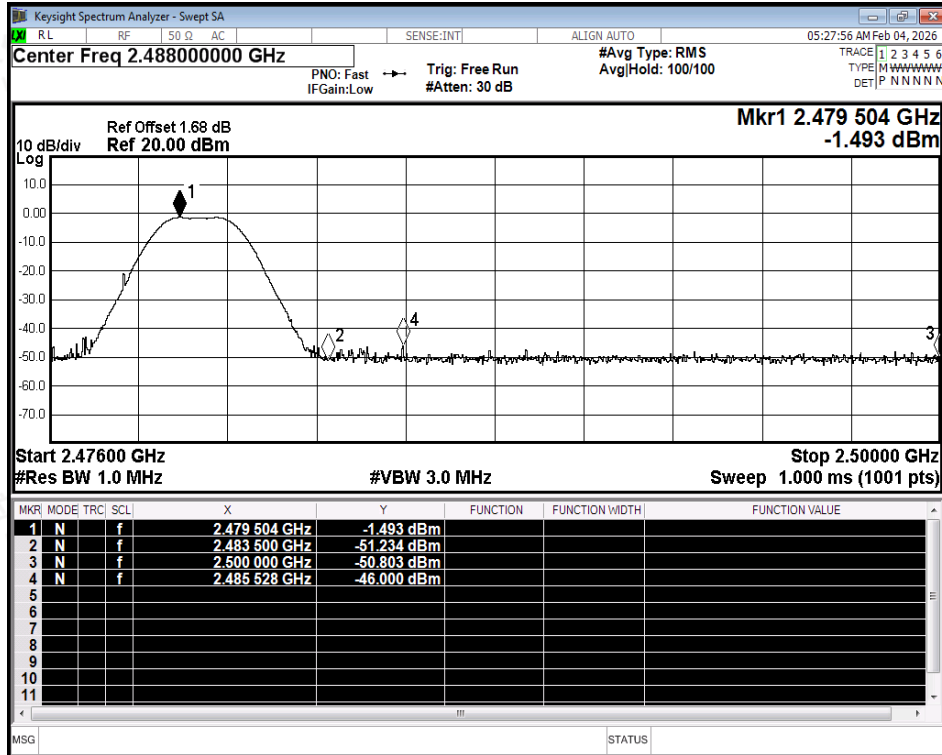


Shenzhen LCS Compliance Testing Laboratory Ltd.

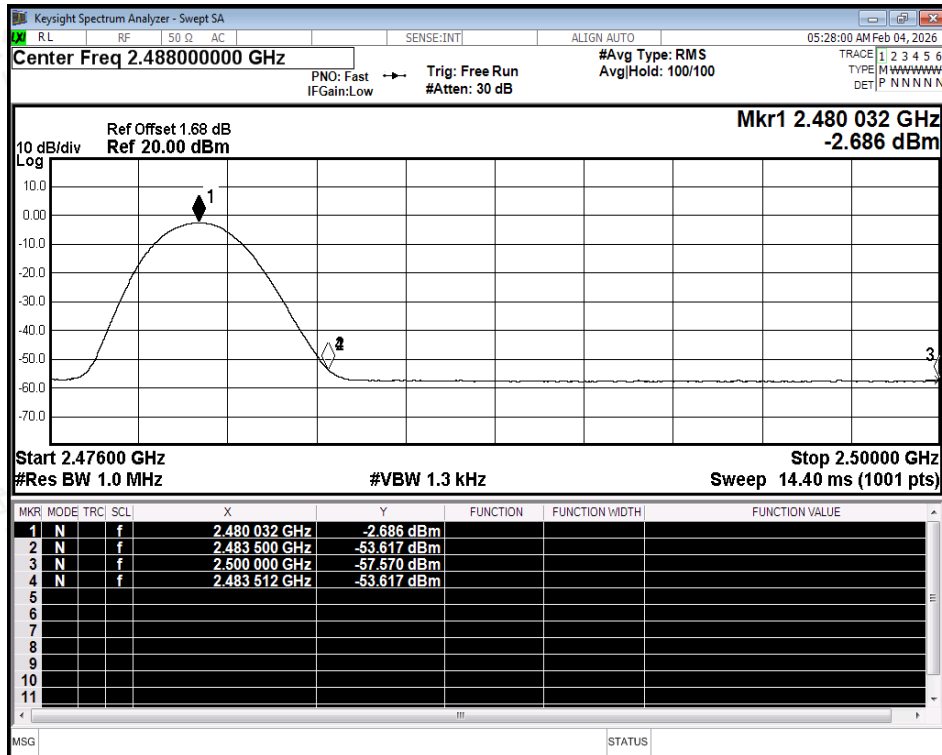
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Restrict Band NVNT BLE 2M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 2M 2480MHz Ant1 Average



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