



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: Smart LED Outdoor String Lights

Test Model: DCWZC4-24TC

Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Nick Peng <i>Nick Peng</i>
Supervised by:	Joker Hu <i>Joker.Hu</i>



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A.1 -6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.707	≥ 0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.705	≥ 0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.696	≥ 0.5	Pass



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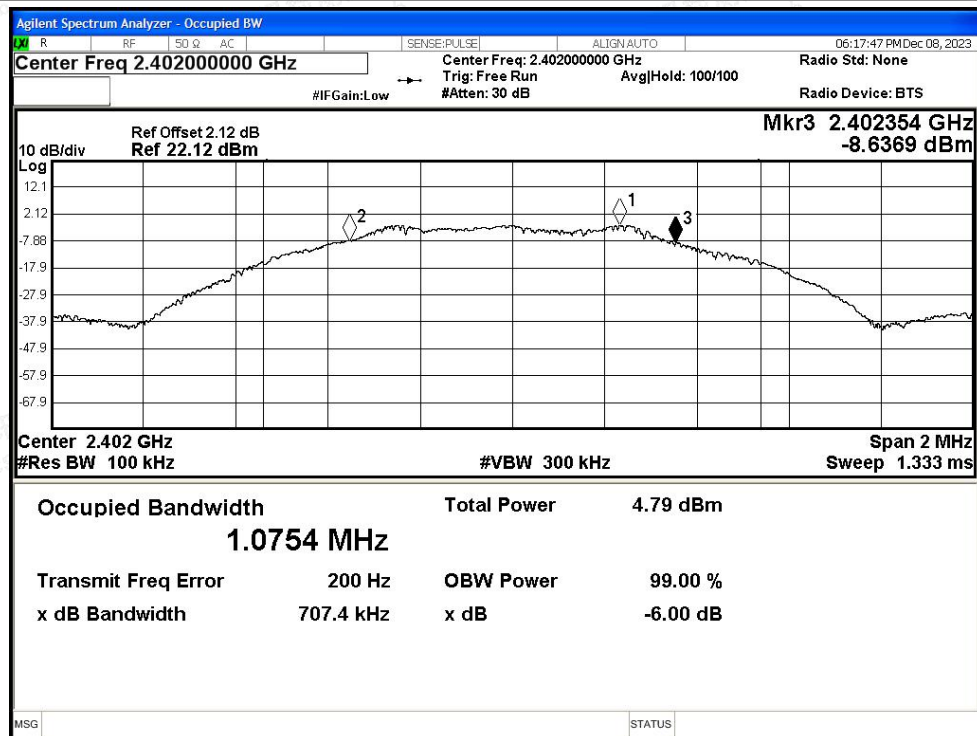
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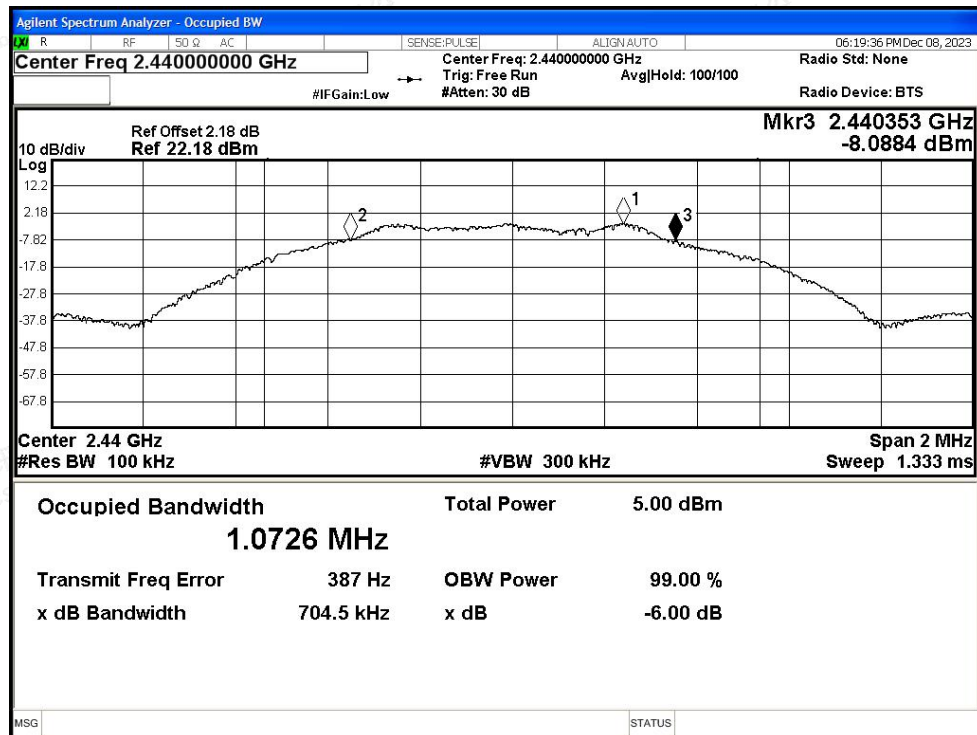


Test Graphs

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1

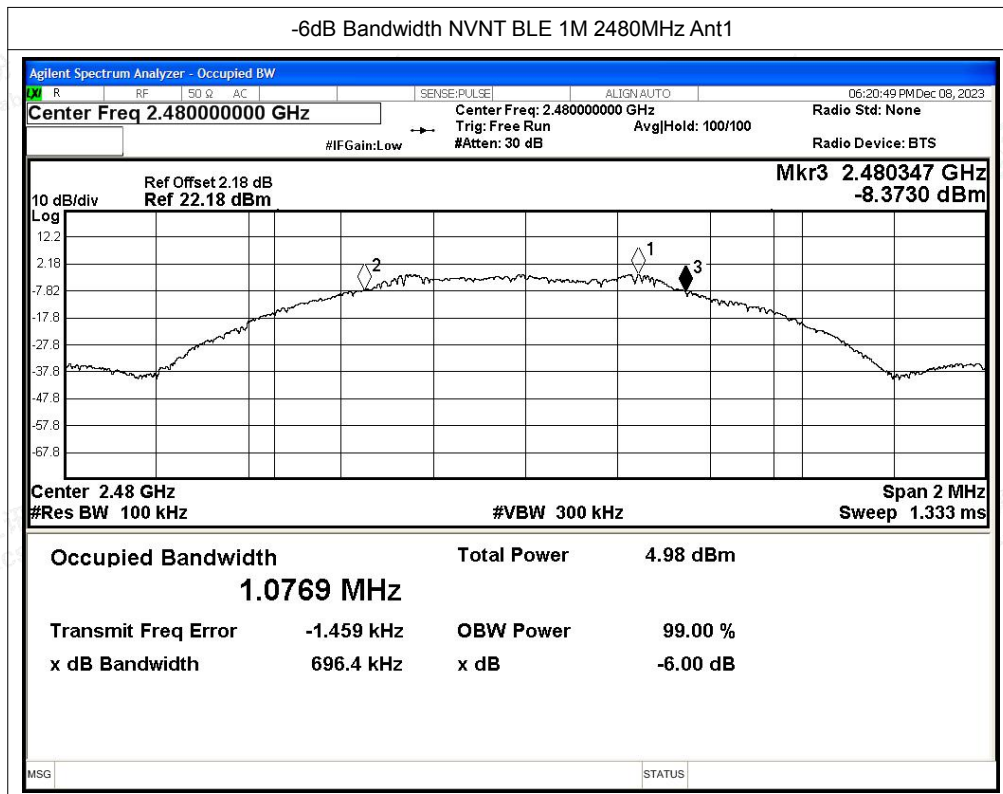


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A.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-0.61	30	Pass
NVNT	BLE 1M	2440	Ant1	-0.77	30	Pass
NVNT	BLE 1M	2480	Ant1	-0.68	30	Pass



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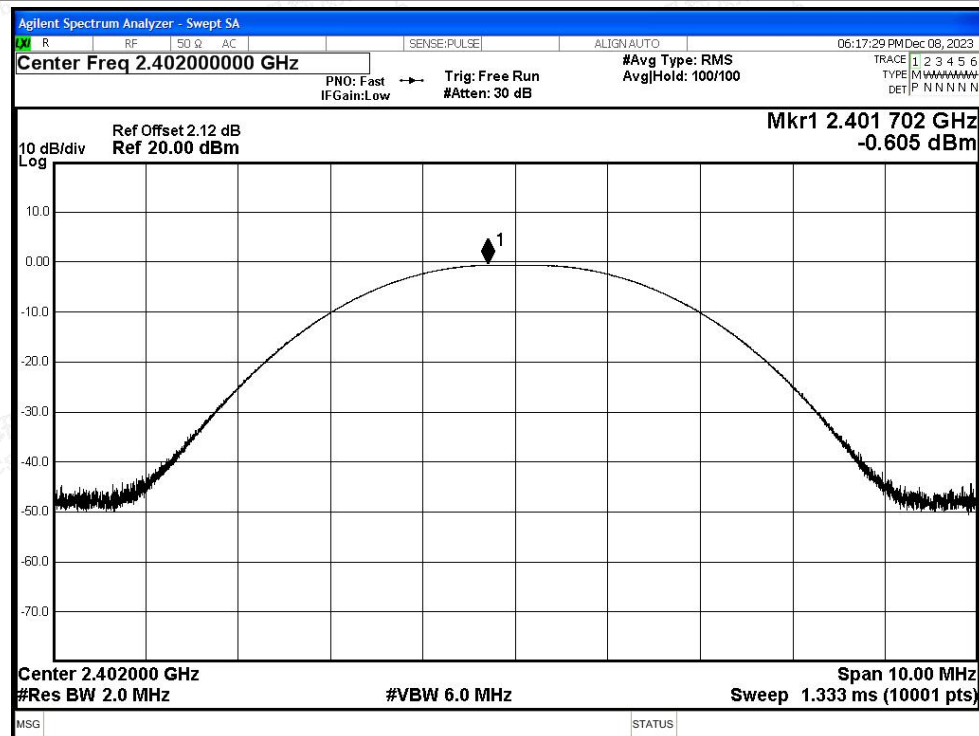
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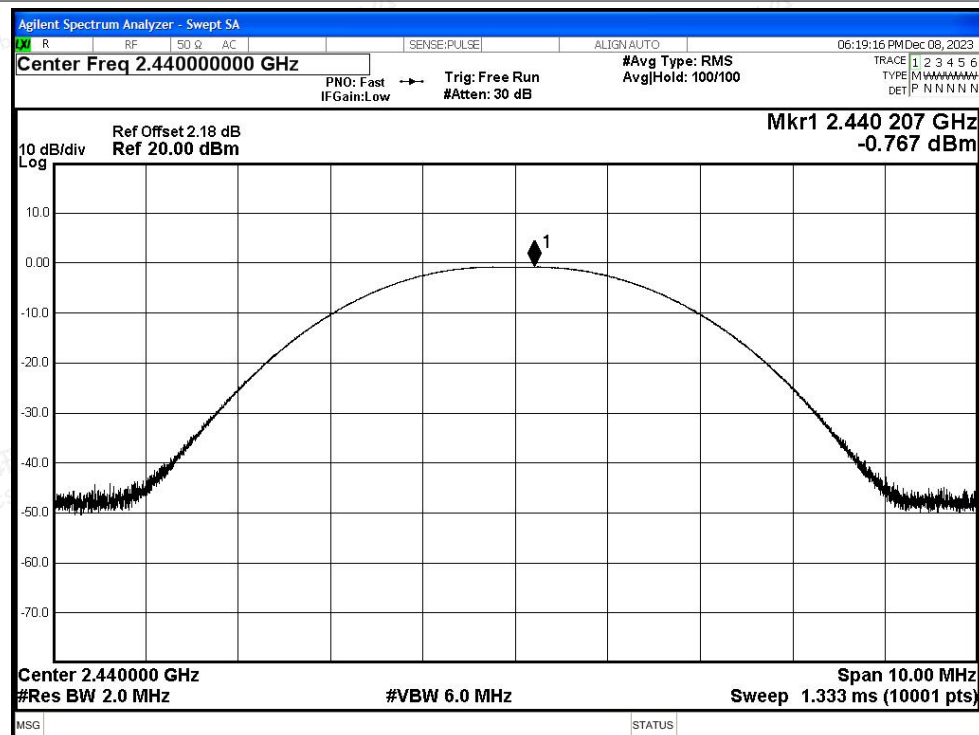


Test Graphs

Power NVNT BLE 1M 2402MHz Ant1



Power NVNT BLE 1M 2440MHz Ant1

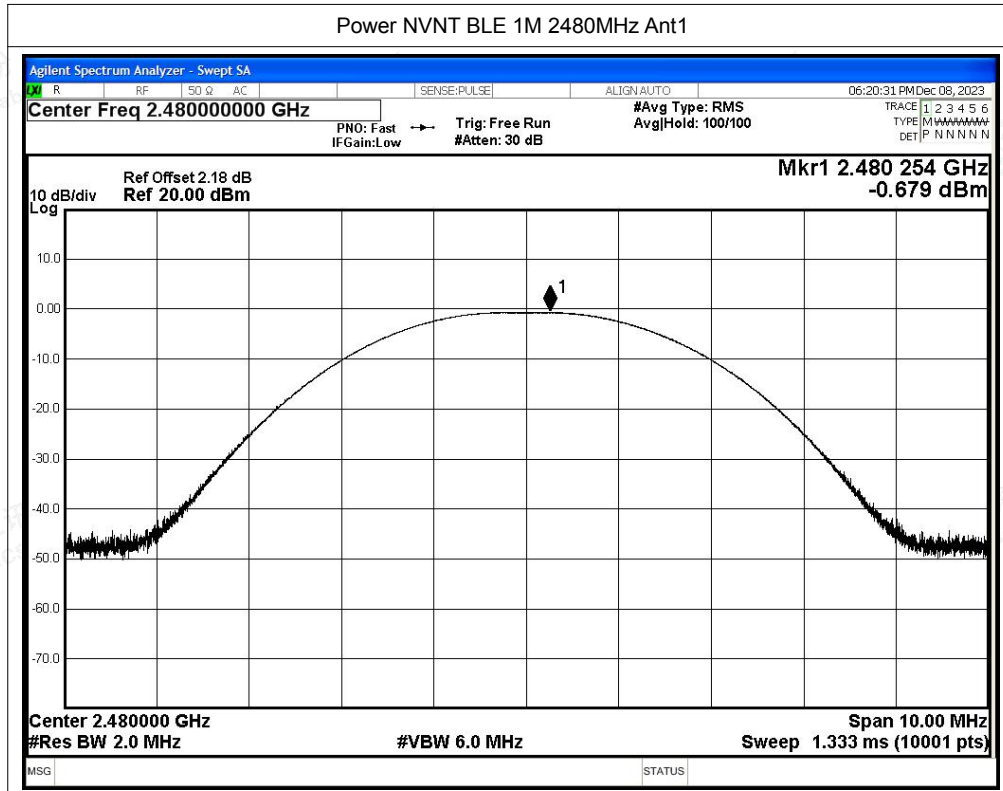


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A.3 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	-17.11	8	Pass
NVNT	BLE 1M	2440	Ant1	-17.17	8	Pass
NVNT	BLE 1M	2480	Ant1	-15.94	8	Pass



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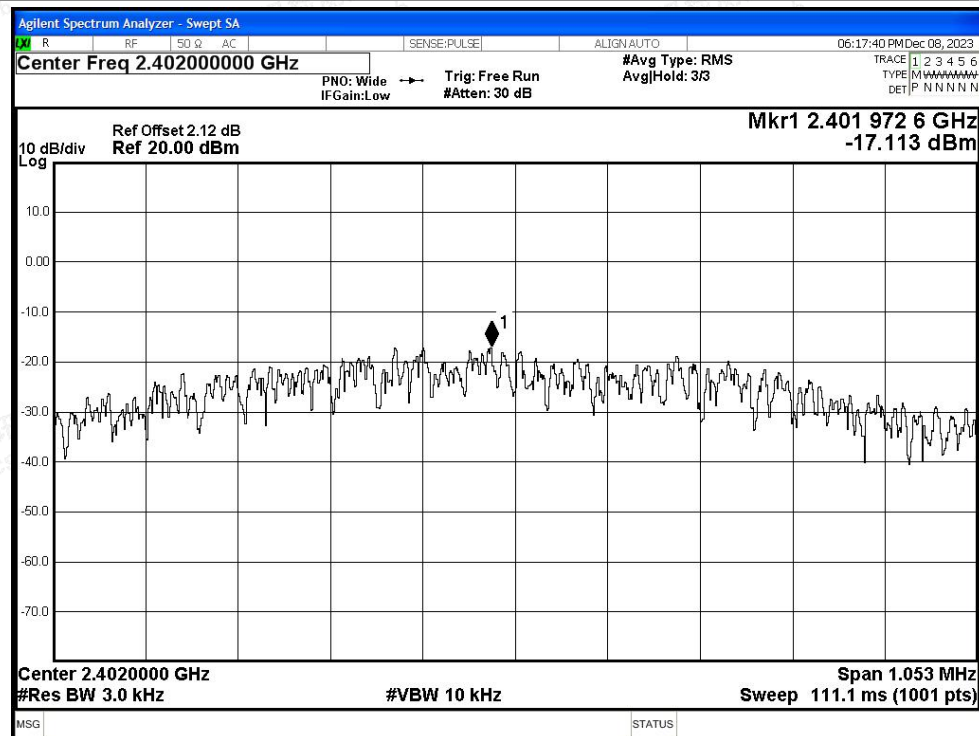
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

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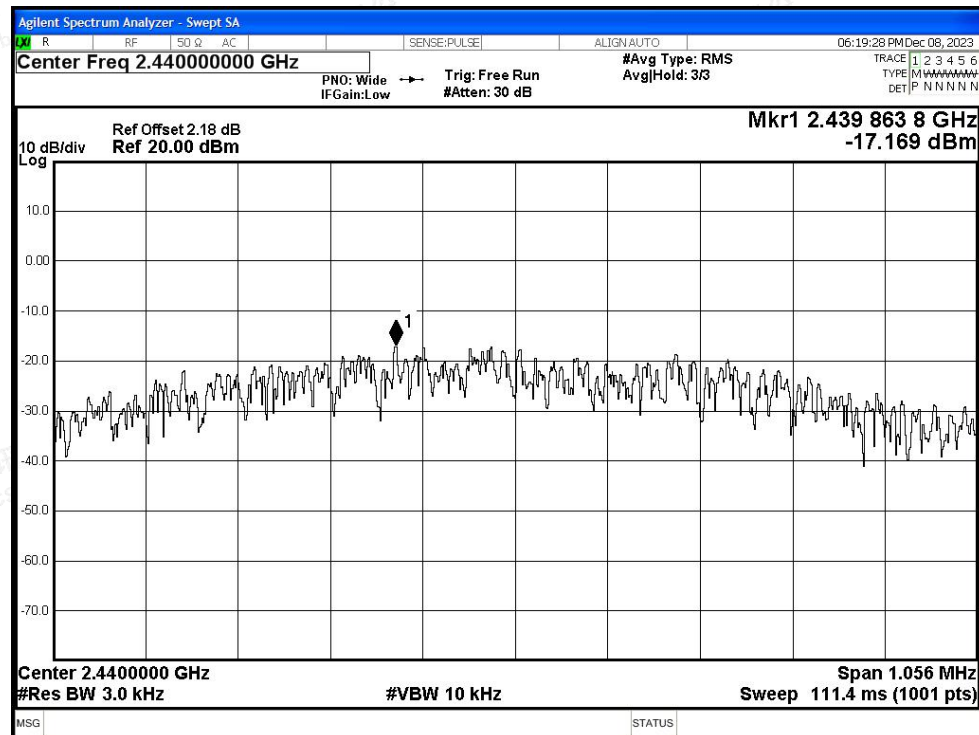


Test Graphs

PSD NVNT BLE 1M 2402MHz Ant1



PSD NVNT BLE 1M 2440MHz Ant1

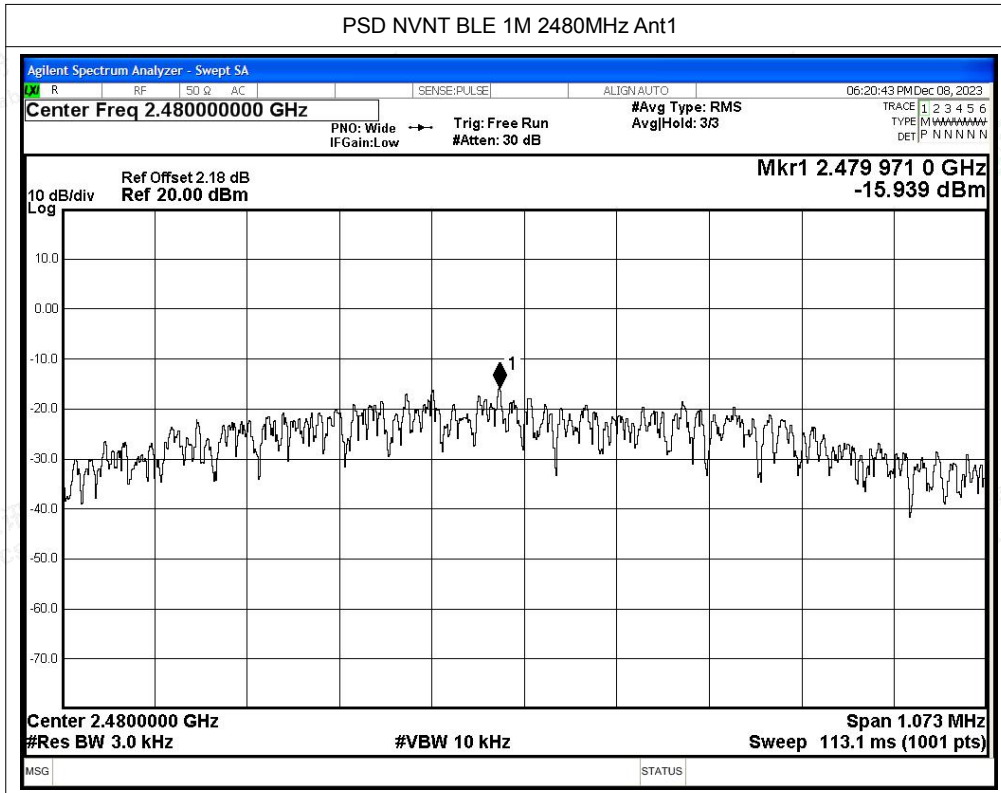


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A.4 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-54.69	-20	Pass
NVNT	BLE 1M	2480	Ant1	-54.91	-20	Pass



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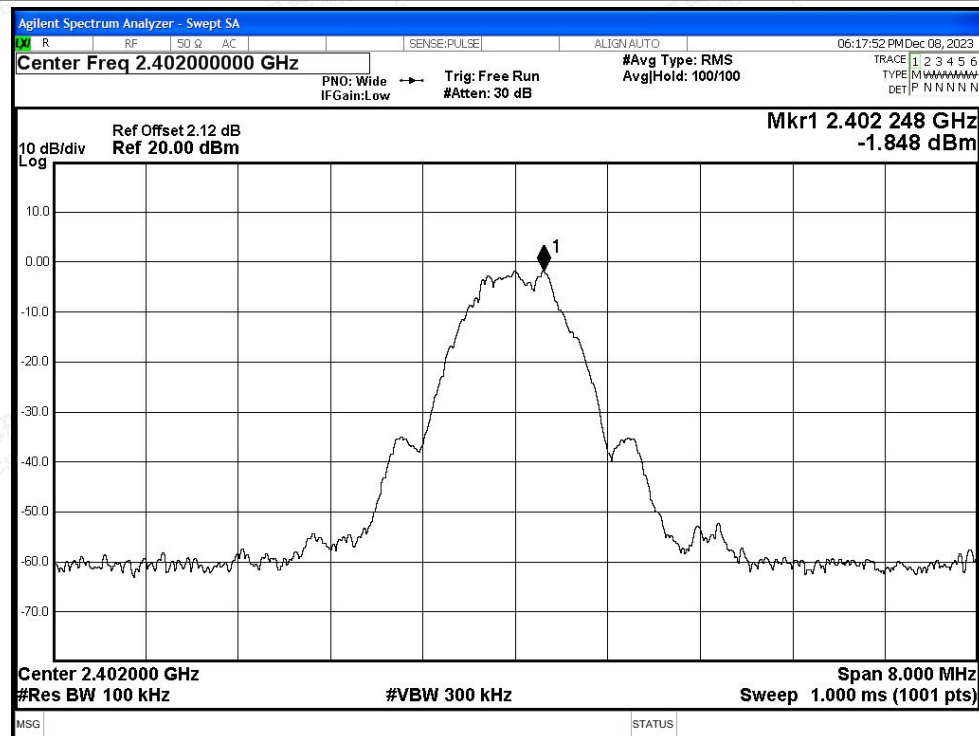
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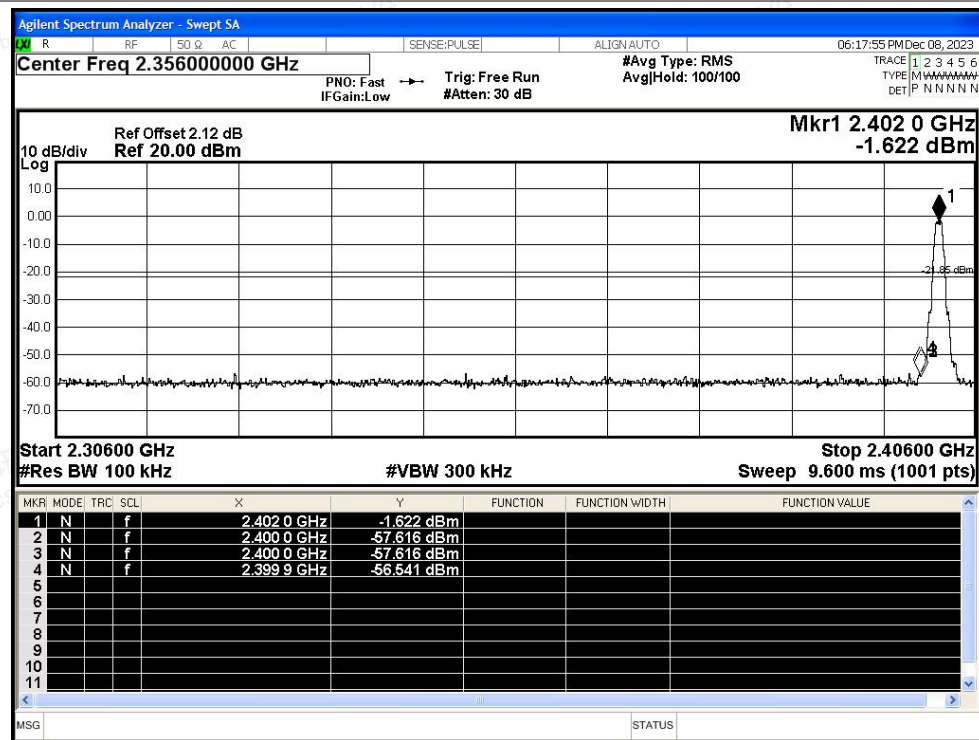


Test Graphs

Band Edge NVNT BLE 1M 2402MHz Ant1 Ref



Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



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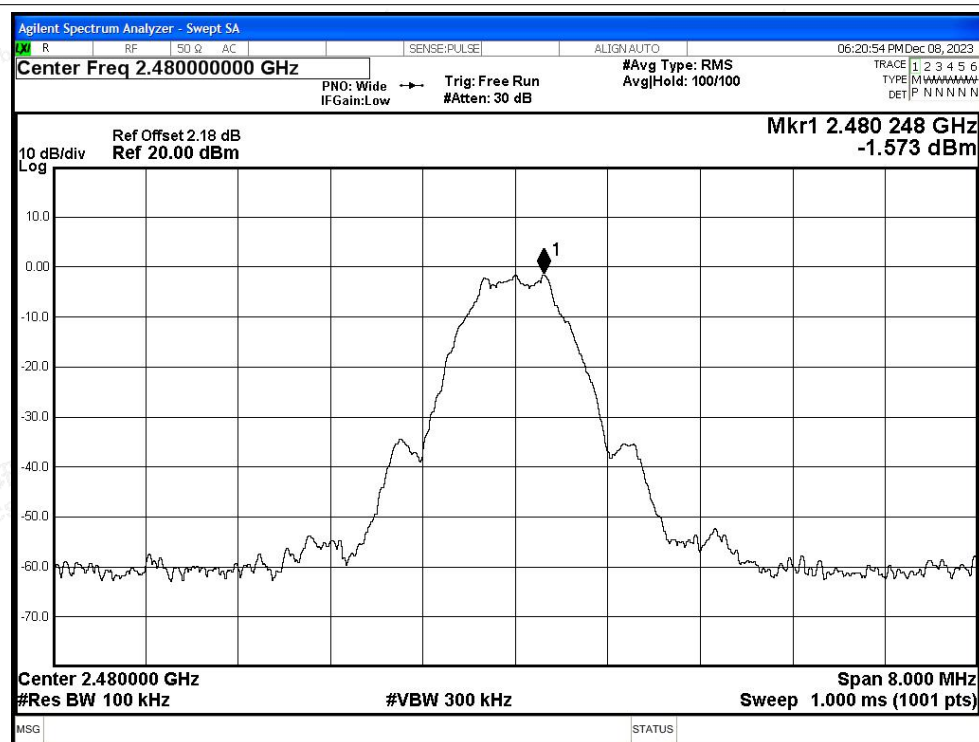
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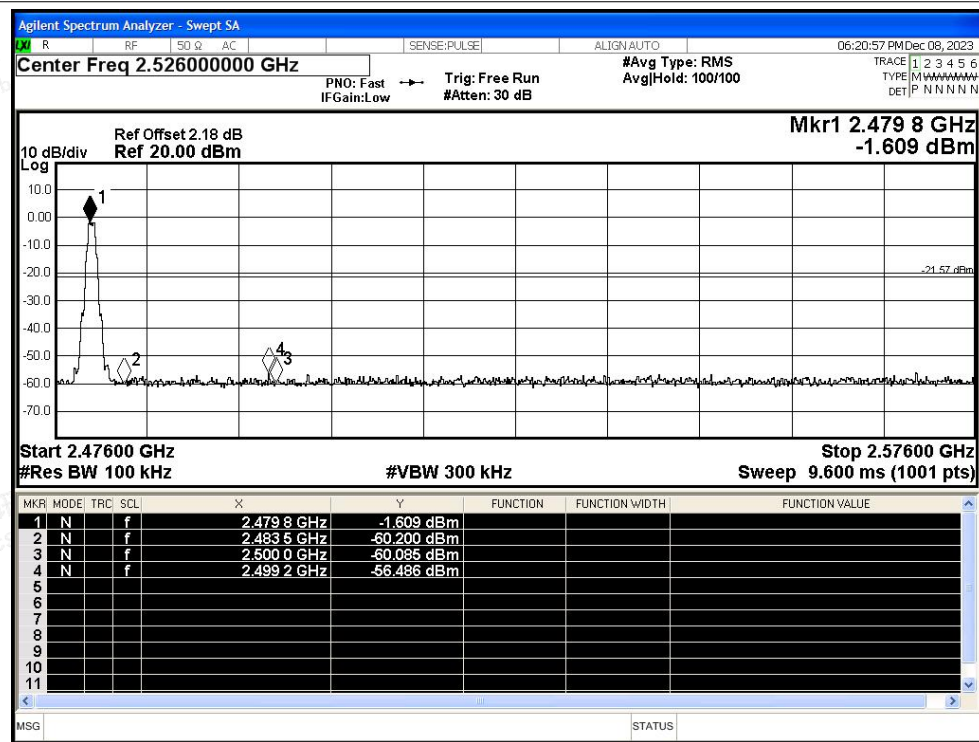
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Band Edge NVNT BLE 1M 2480MHz Ant1 Ref



Band Edge NVNT BLE 1M 2480MHz Ant1 Emission



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A.5 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-53.05	-20	Pass
NVNT	BLE 1M	2440	Ant1	-42.05	-20	Pass
NVNT	BLE 1M	2480	Ant1	-53.4	-20	Pass



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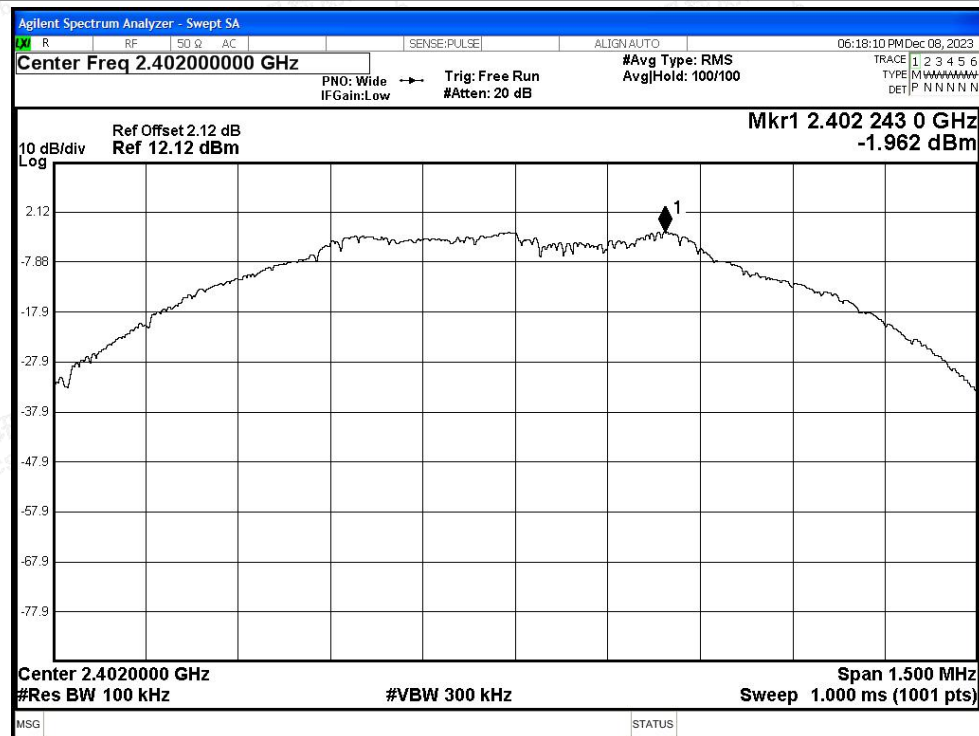
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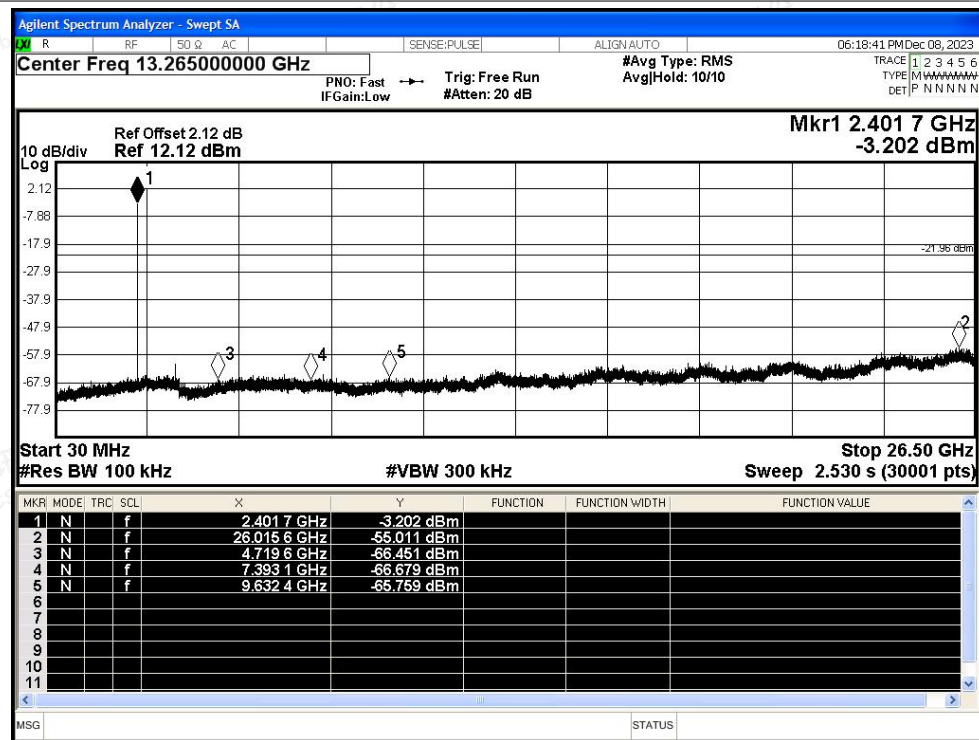


Test Graphs

Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



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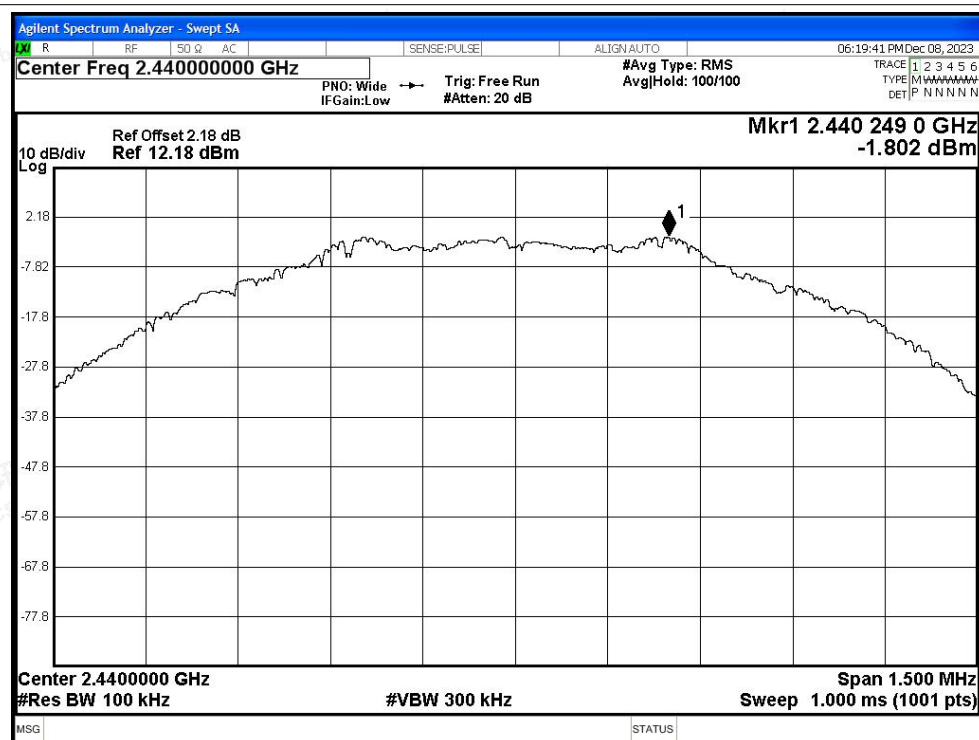
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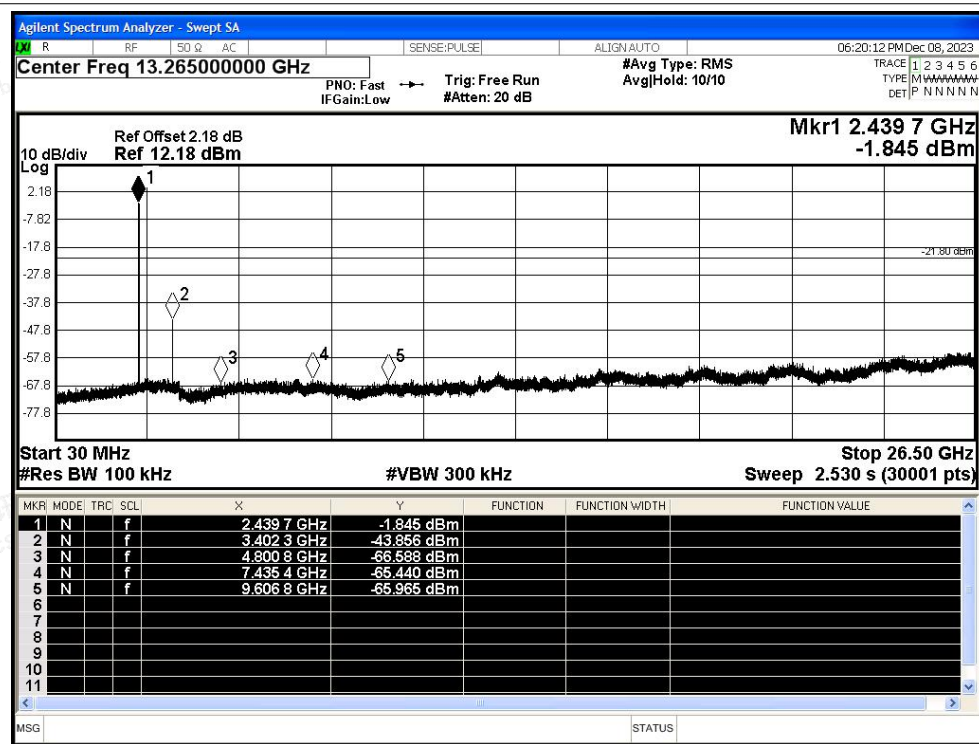
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Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission



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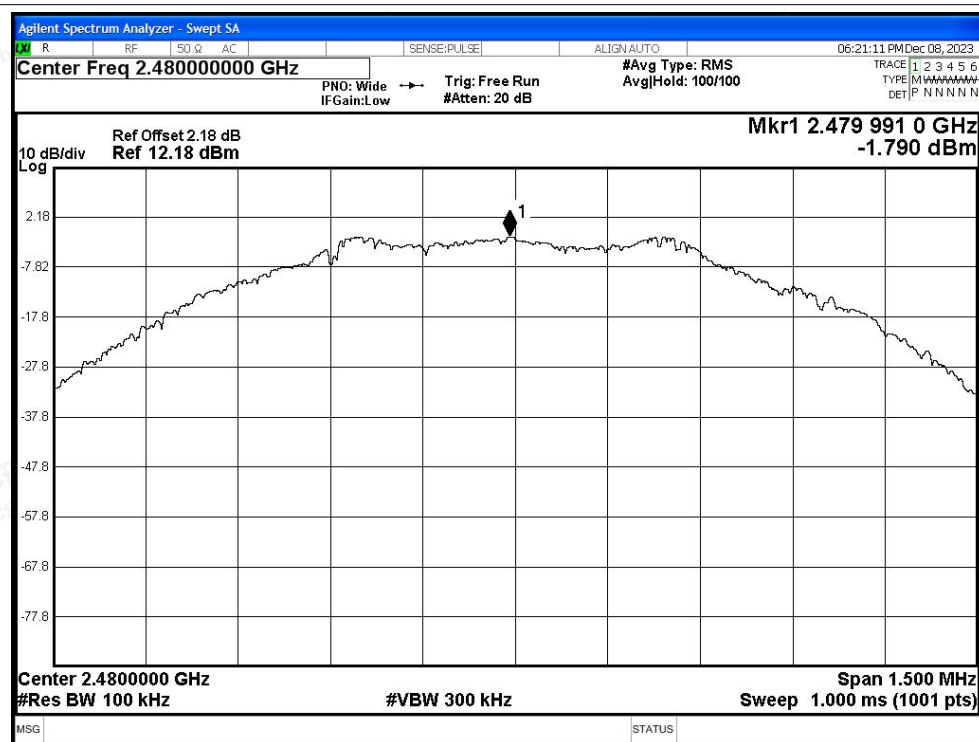
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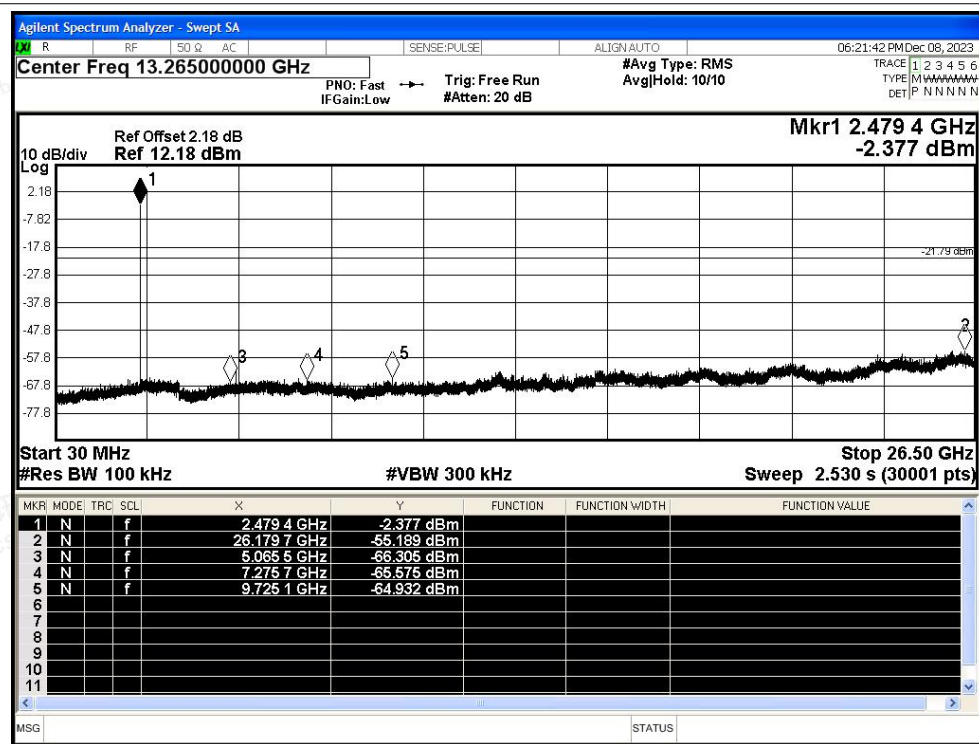
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Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission



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A.6 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant1	61.44	2.12	2.6
NVNT	BLE 1M	2440	Ant1	61.44	2.12	2.6
NVNT	BLE 1M	2480	Ant1	61.36	2.12	2.61



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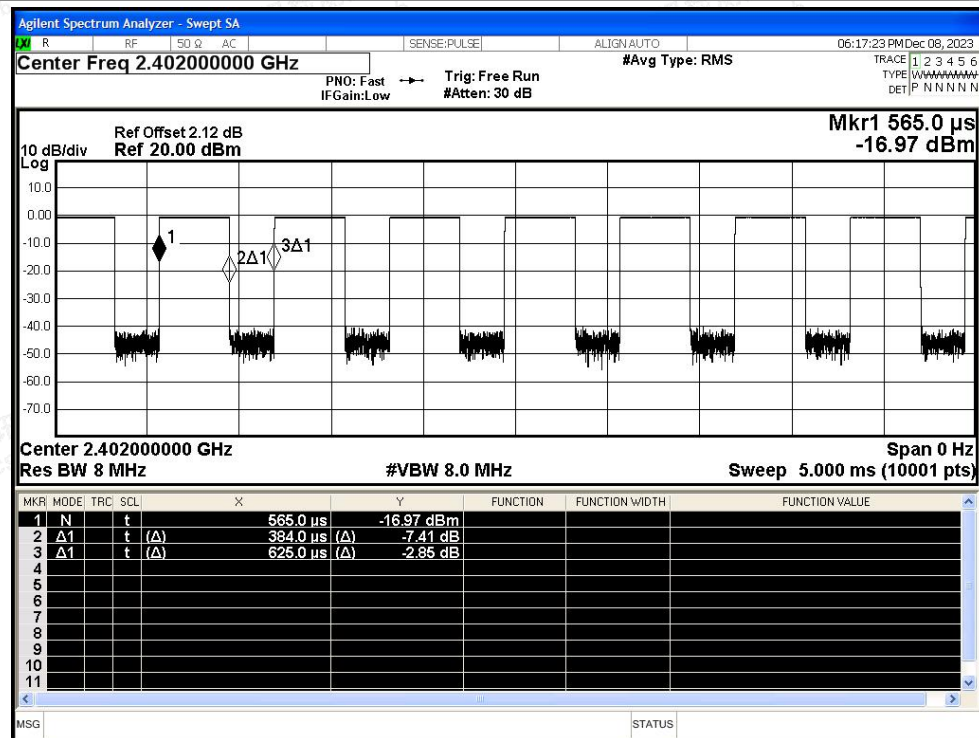
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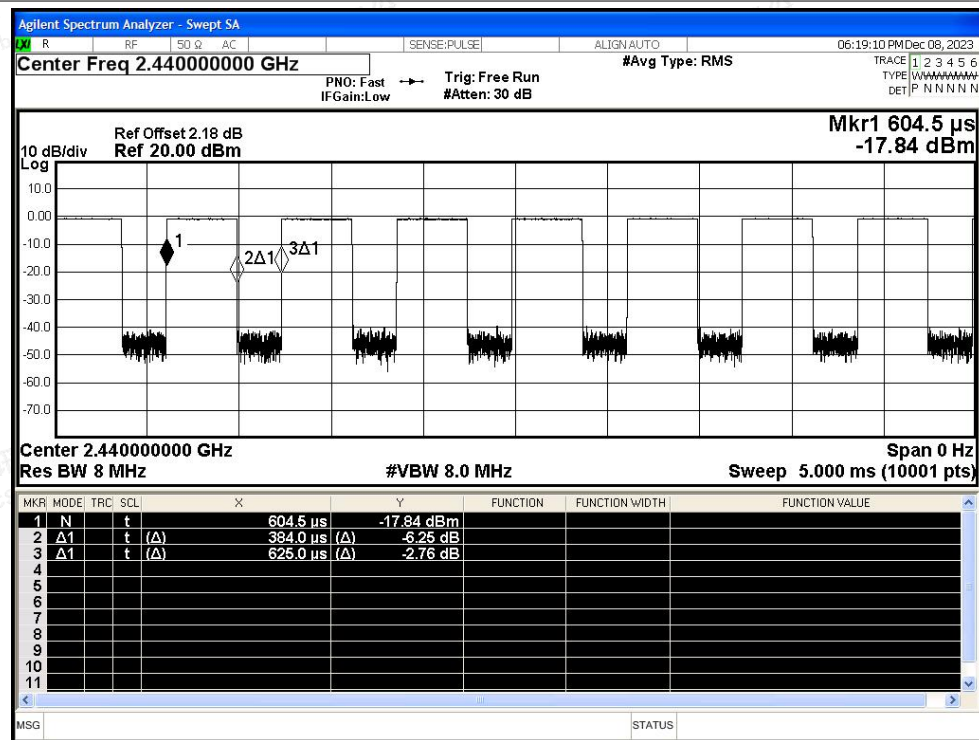


Test Graphs

Duty Cycle NVNT BLE 1M 2402MHz Ant1



Duty Cycle NVNT BLE 1M 2440MHz Ant1

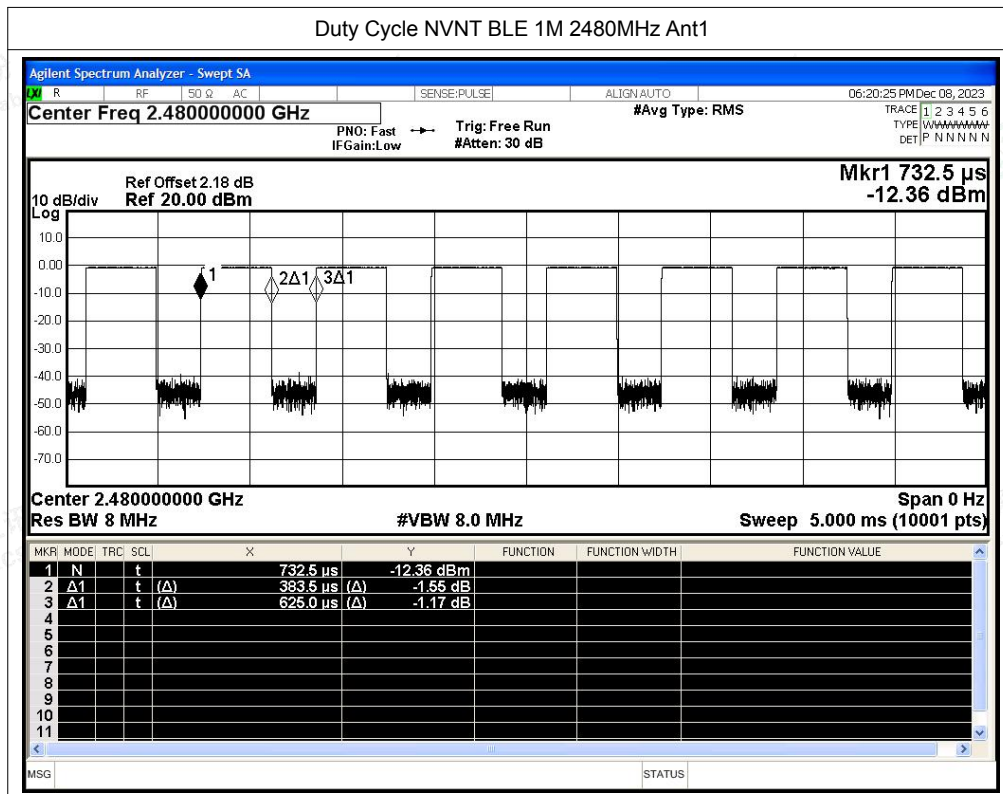


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A.7 Restrict Band

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	-51.09	2.21	46.38	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2310	-57.28	2.21	40.19	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2389.584	-46.62	2.21	50.85	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2386.224	-56.52	2.21	40.95	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2390	-50.81	2.21	46.66	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2390	-56.87	2.21	40.60	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-51.53	2.21	45.94	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-54.94	2.21	42.53	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2496.448	-46.48	2.21	50.99	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.512	-54.94	2.21	42.53	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2500	-49.69	2.21	47.78	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2500	-56.58	2.21	40.89	Average	54	Pass



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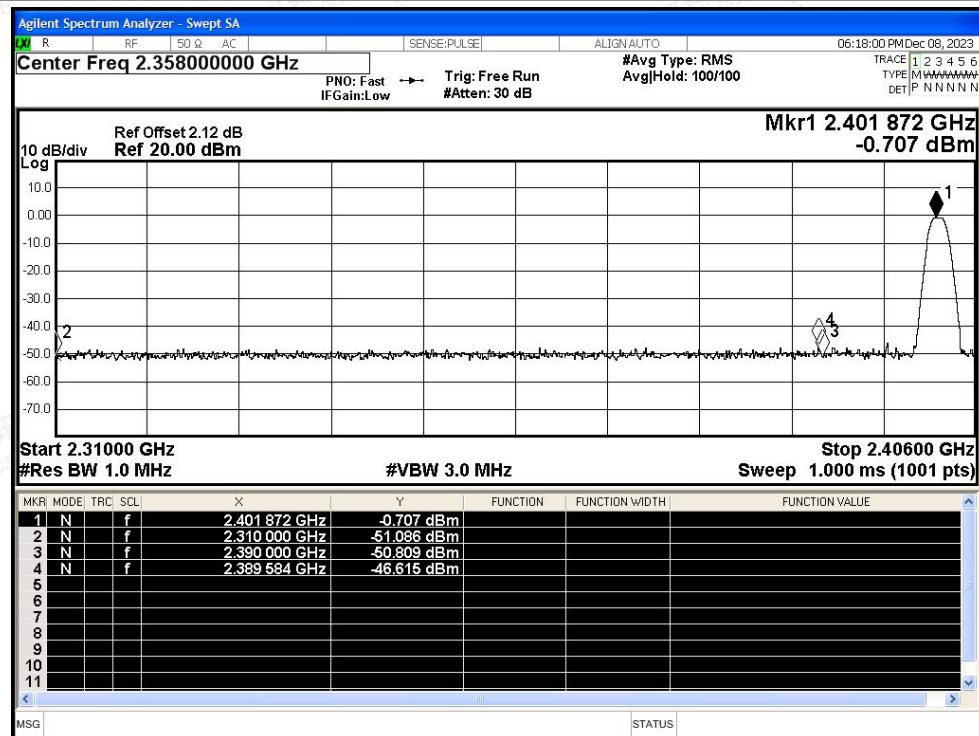
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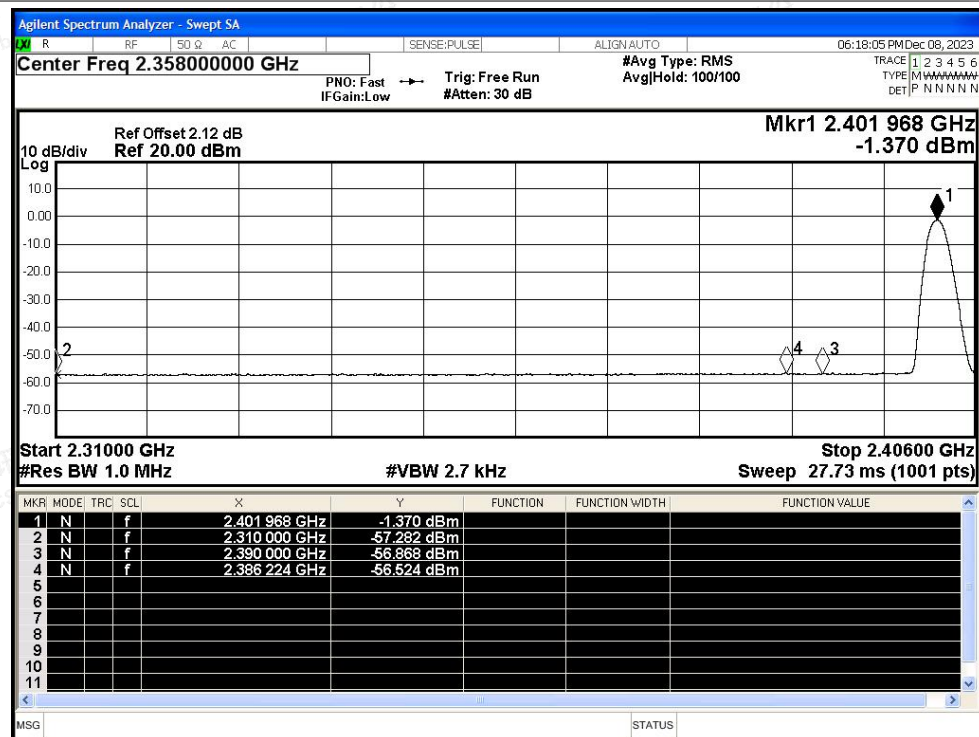


Test Graphs

Restrict Band NVNT BLE 1M 2402MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2402MHz Ant1 Average



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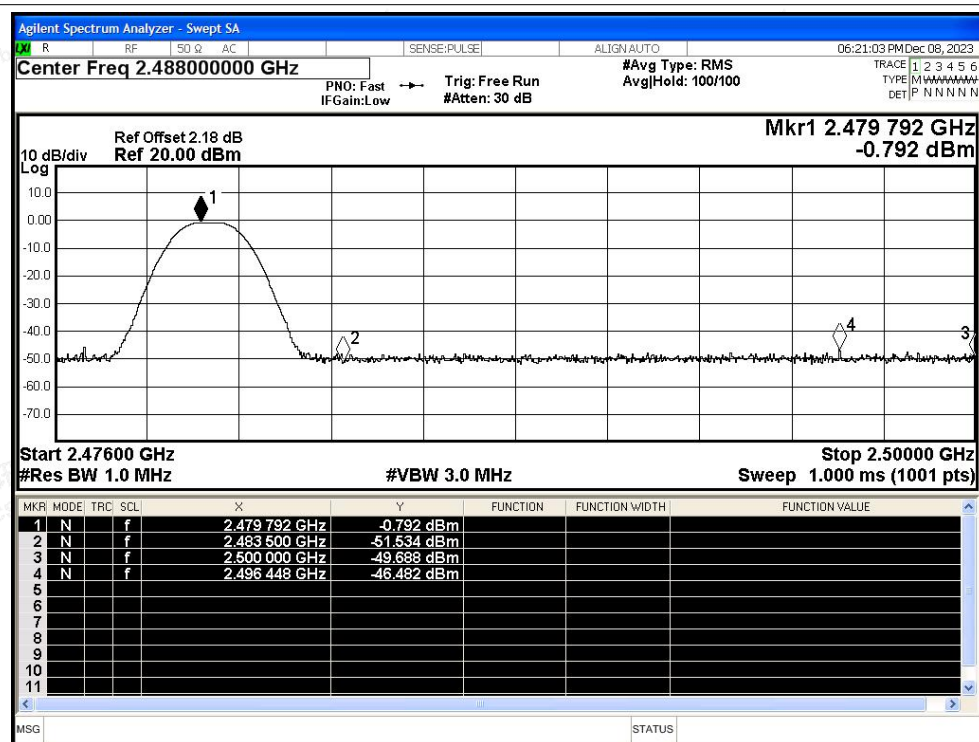
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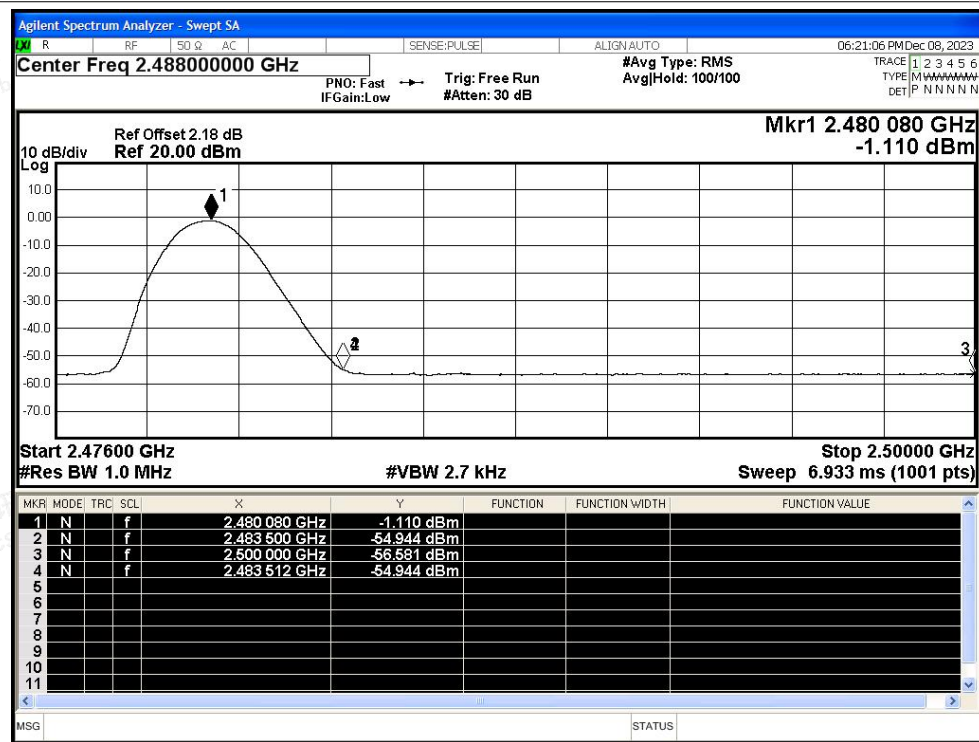
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Restrict Band NVNT BLE 1M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2480MHz Ant1 Average



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