



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: Smart Permanent Outdoor Lights

Test Model: WYWZC4-33TC-30W

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	0.649	≥ 0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.653	≥ 0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.649	≥ 0.5	Pass



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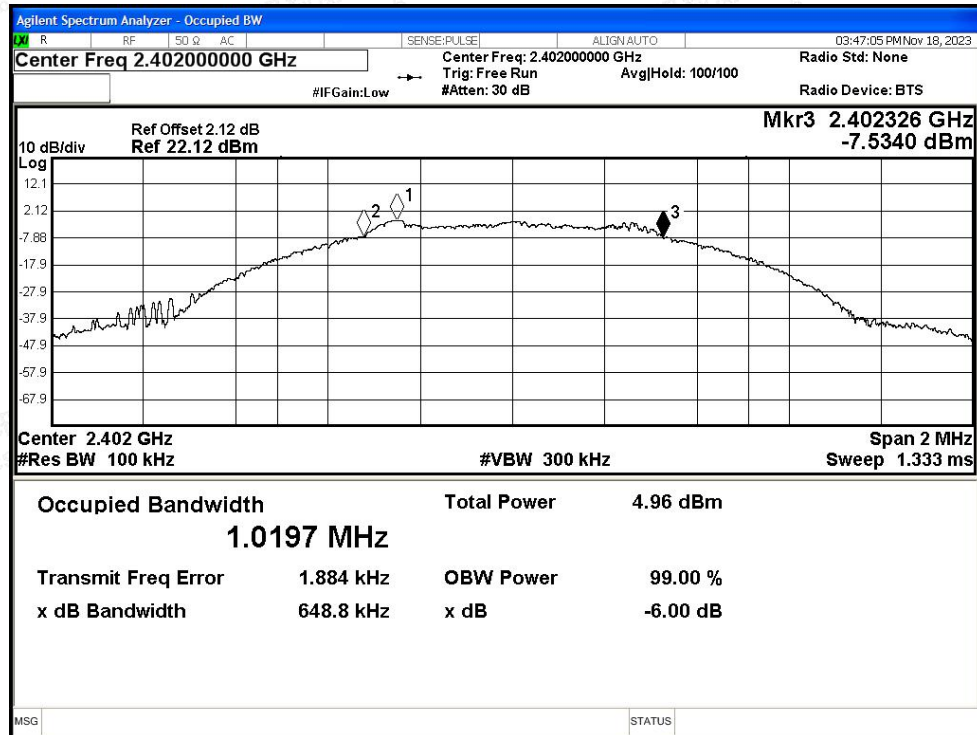
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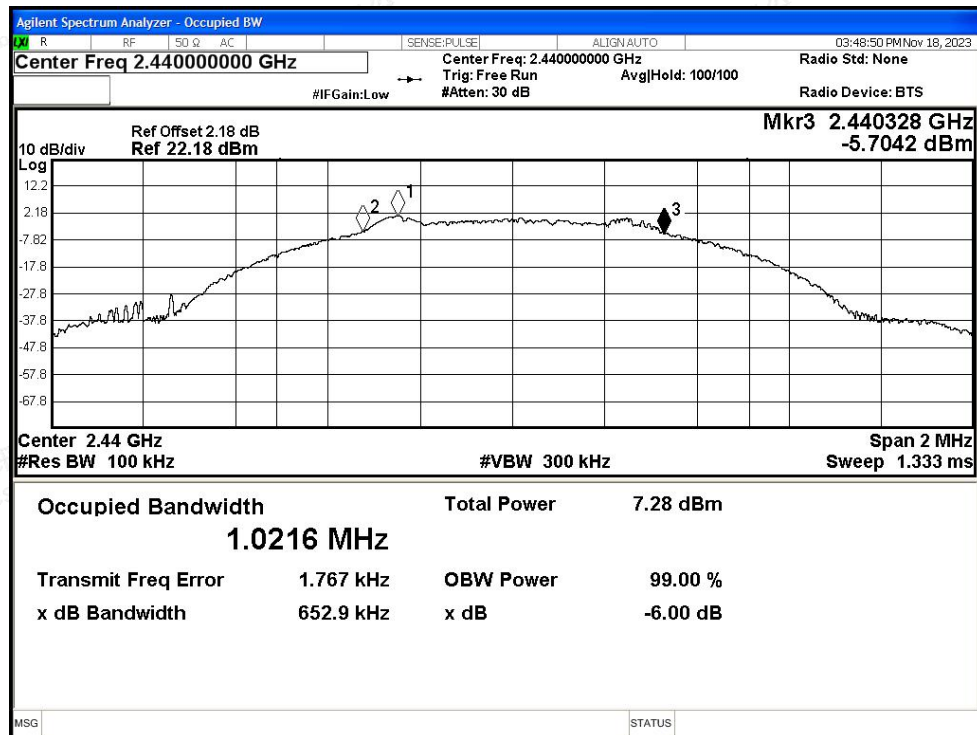


Test Graphs

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1

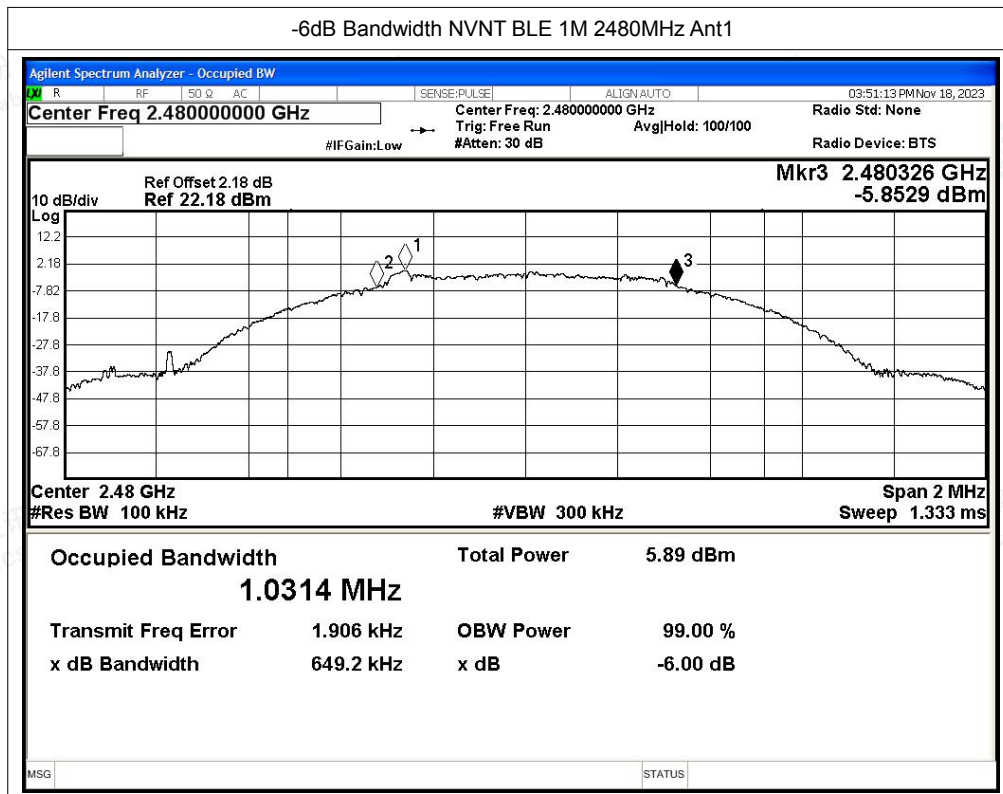


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A.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-0.95	30	Pass
NVNT	BLE 1M	2440	Ant1	1.4	30	Pass
NVNT	BLE 1M	2480	Ant1	0.3	30	Pass



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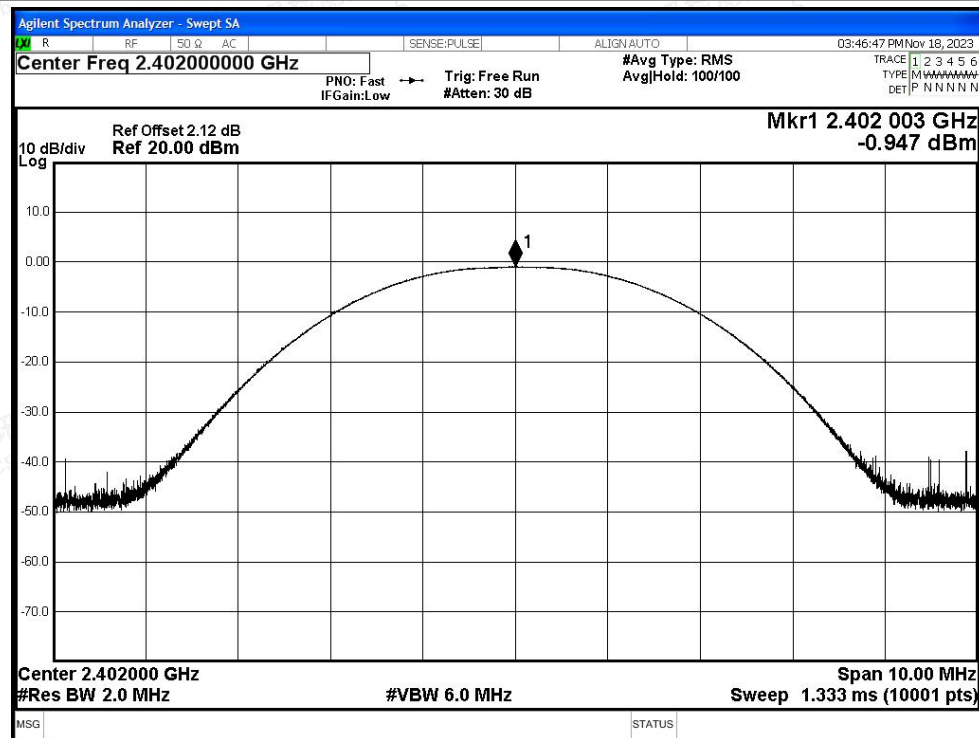
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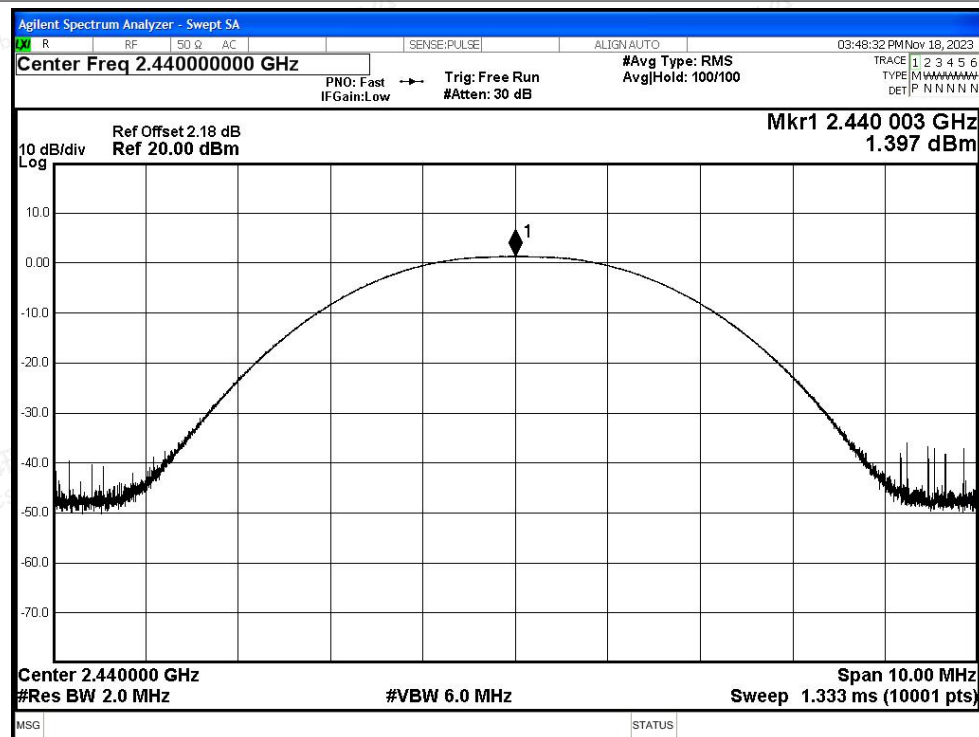


Test Graphs

Power NVNT BLE 1M 2402MHz Ant1



Power NVNT BLE 1M 2440MHz Ant1

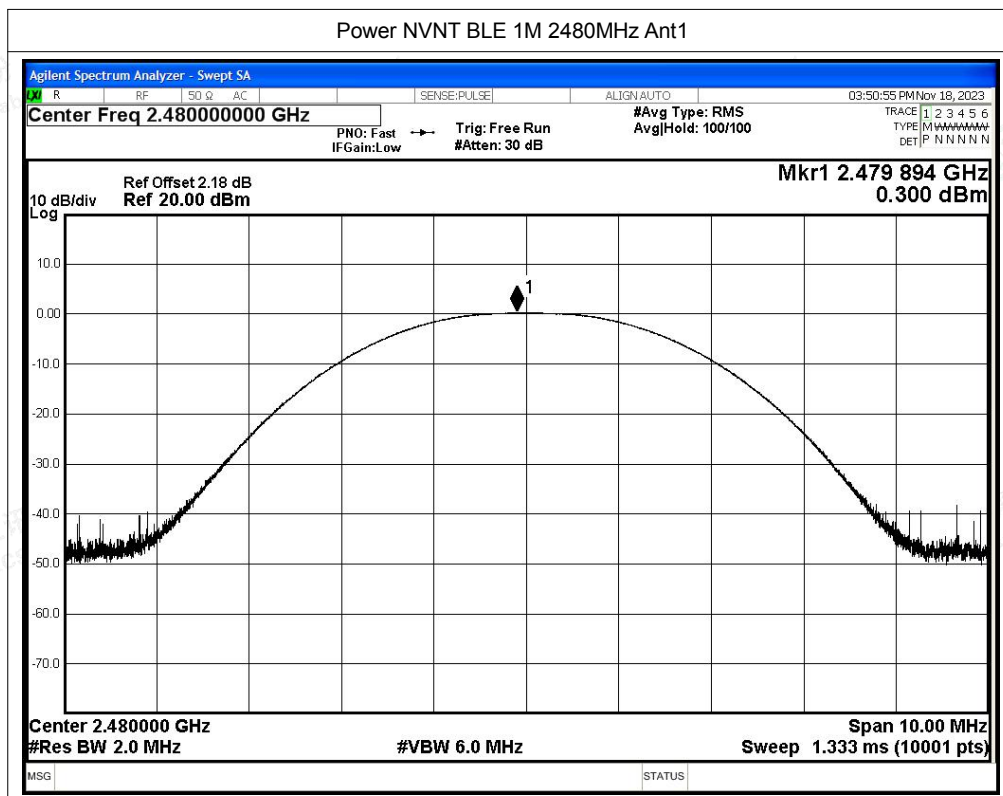


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A.3 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	-17.49	8	Pass
NVNT	BLE 1M	2440	Ant1	-15.45	8	Pass
NVNT	BLE 1M	2480	Ant1	-16.34	8	Pass



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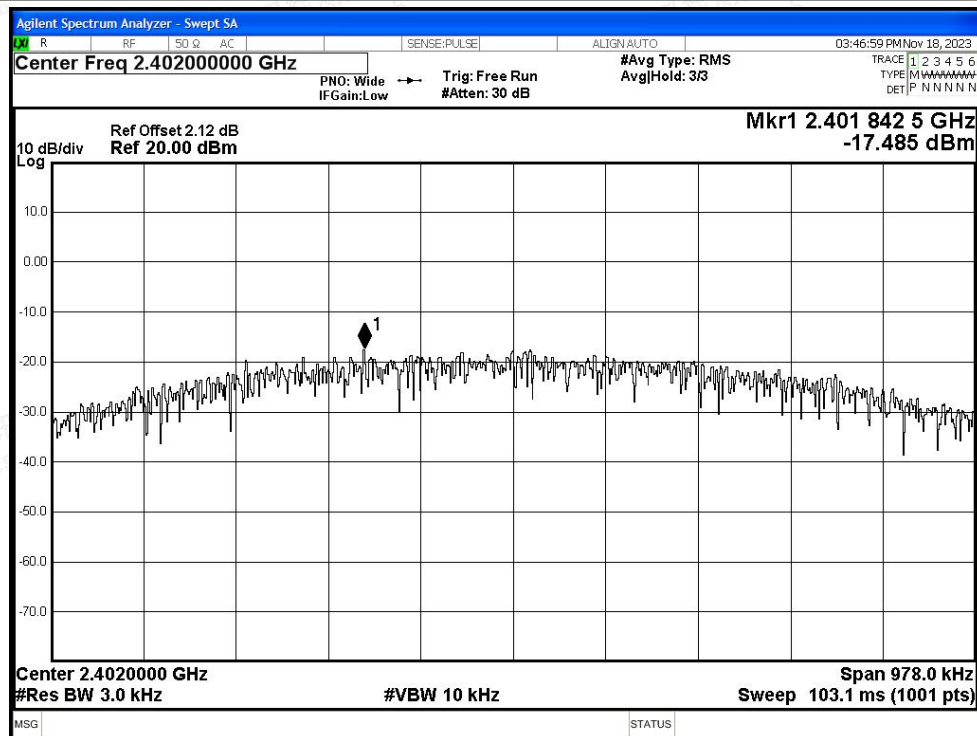
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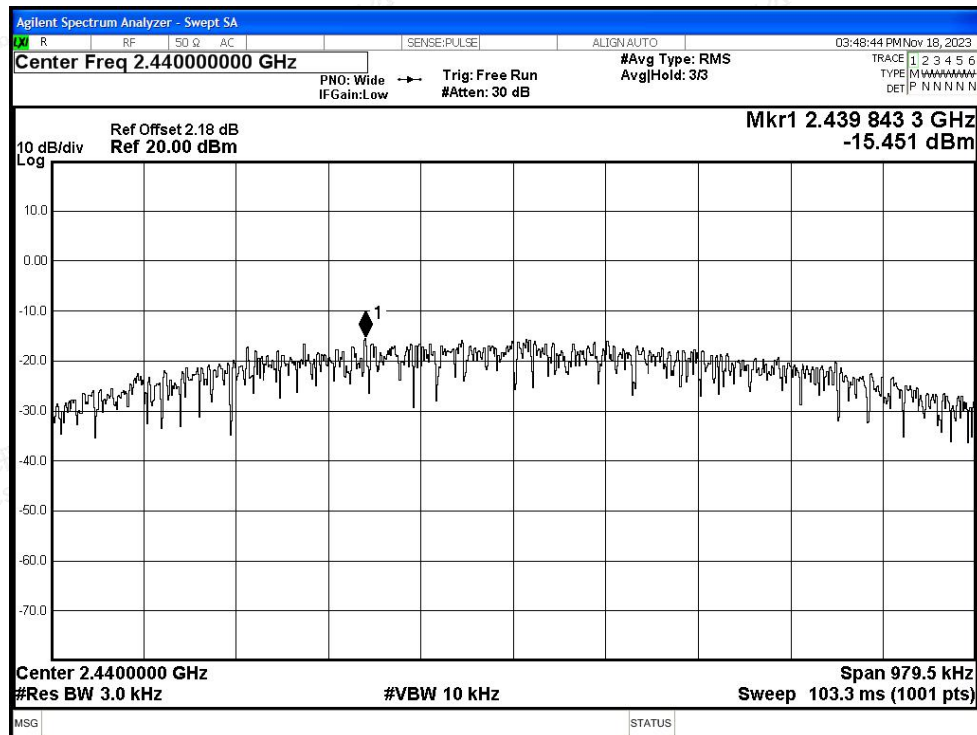


Test Graphs

PSD NVNT BLE 1M 2402MHz Ant1



PSD NVNT BLE 1M 2440MHz Ant1

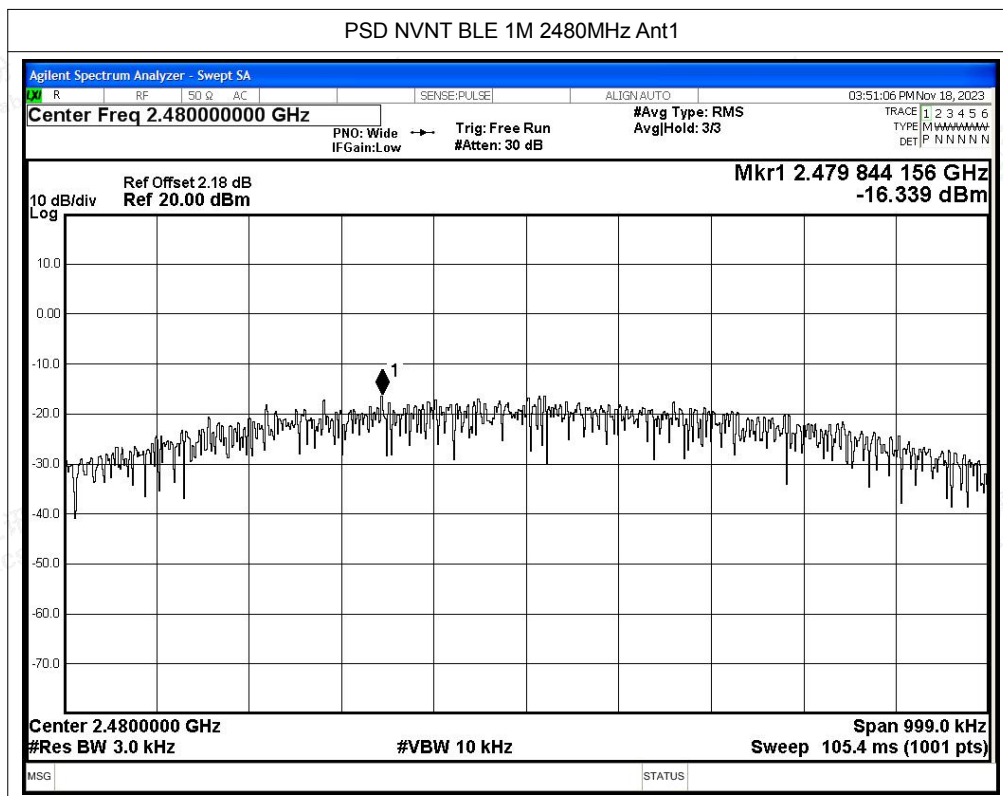


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A.4 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-54.61	-20	Pass
NVNT	BLE 1M	2480	Ant1	-56.42	-20	Pass



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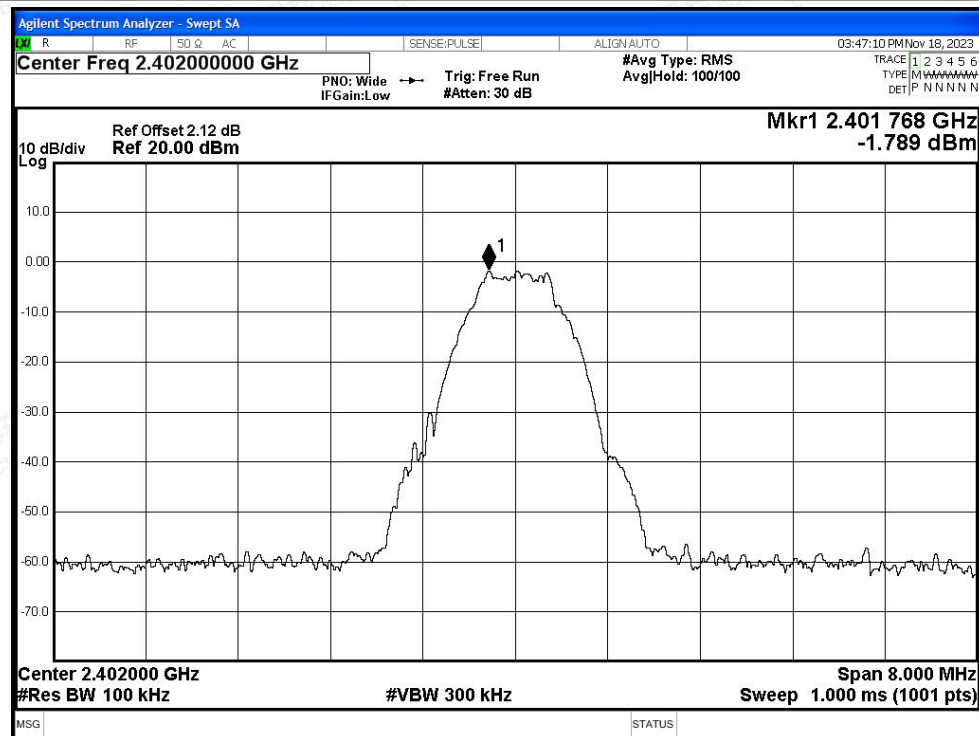
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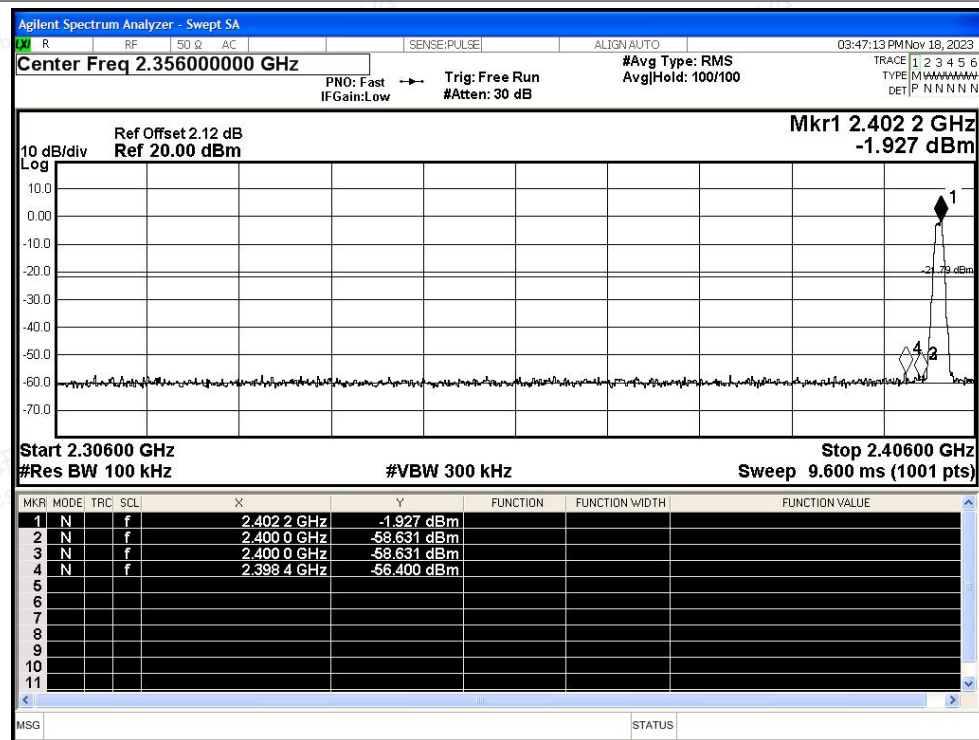


Test Graphs

Band Edge NVNT BLE 1M 2402MHz Ant1 Ref



Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



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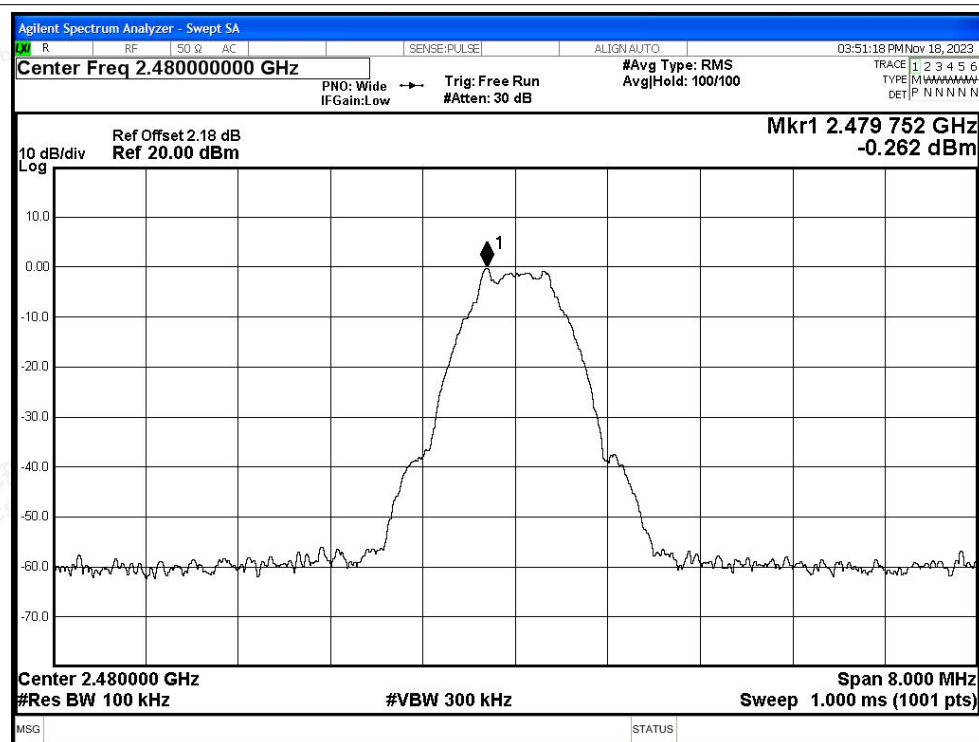
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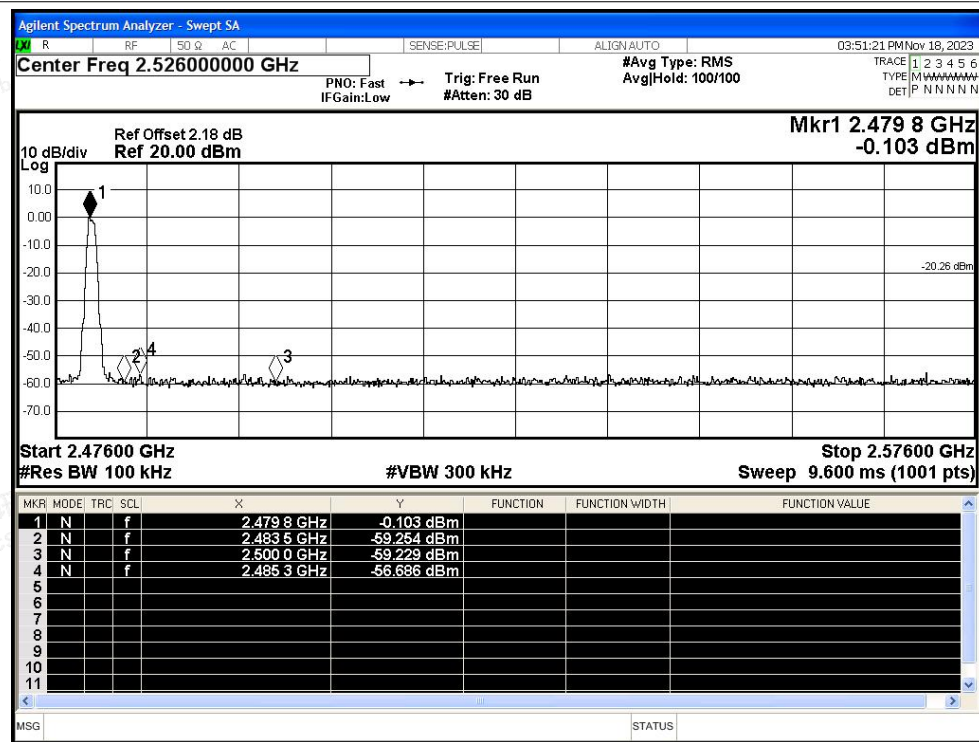
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Band Edge NVNT BLE 1M 2480MHz Ant1 Ref



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	-54.39	-20	Pass
NVNT	BLE 1M	2440	Ant1	-56.66	-20	Pass
NVNT	BLE 1M	2480	Ant1	-55.66	-20	Pass



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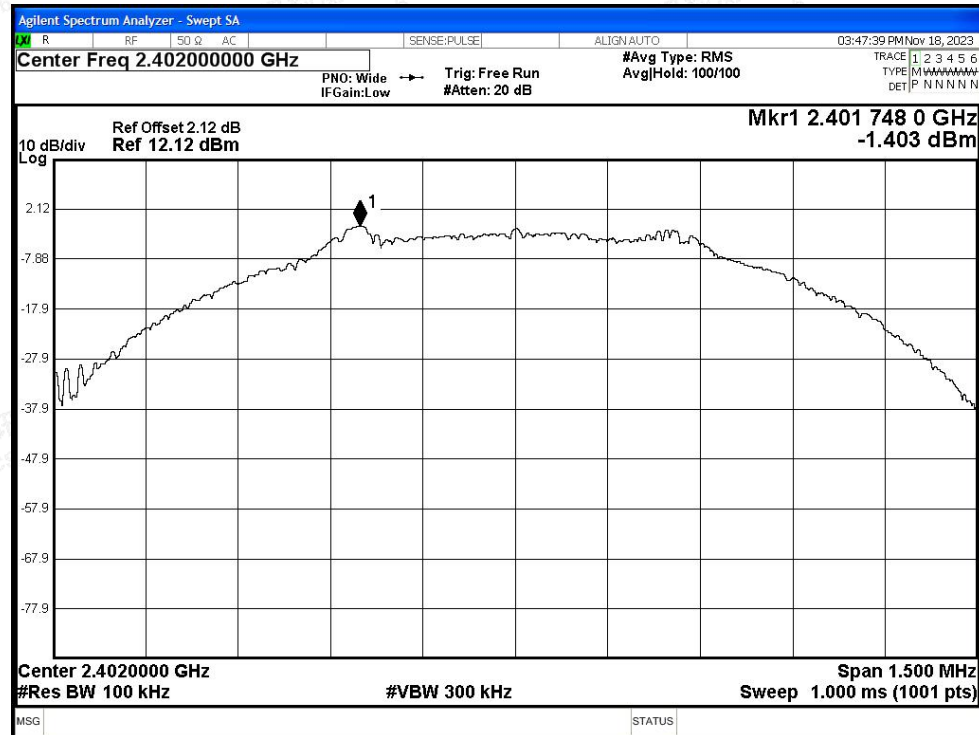
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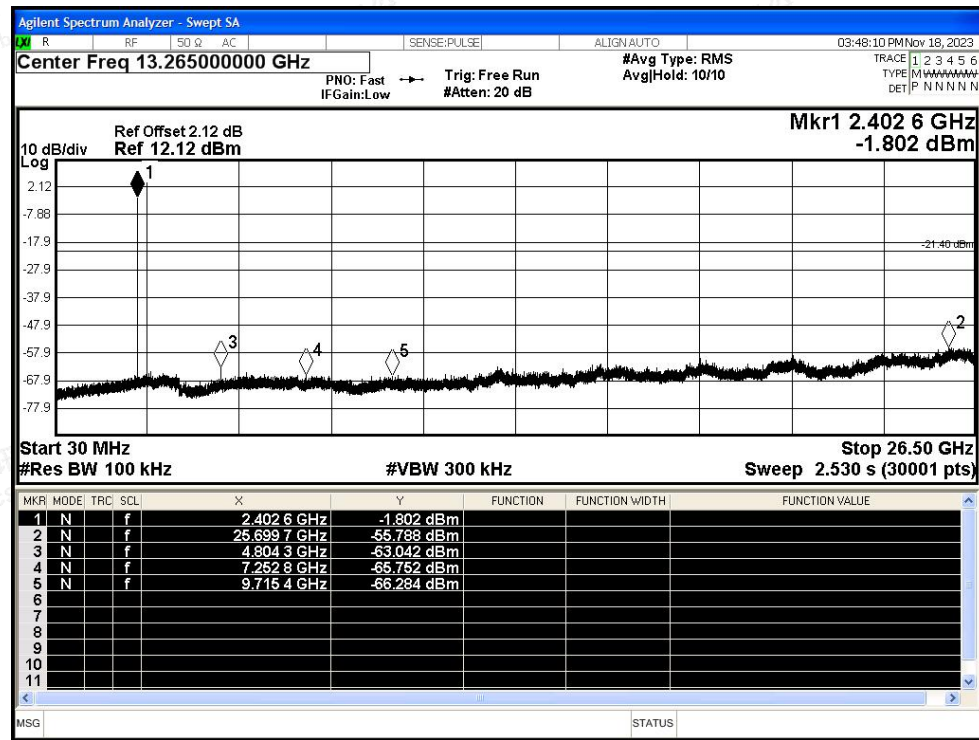


Test Graphs

Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



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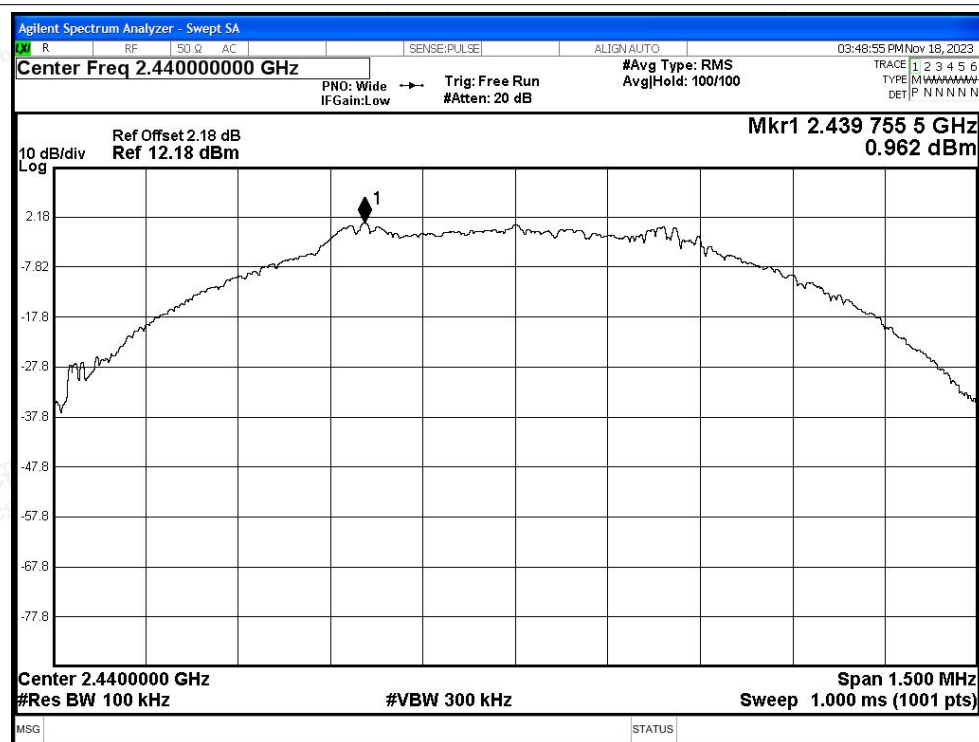
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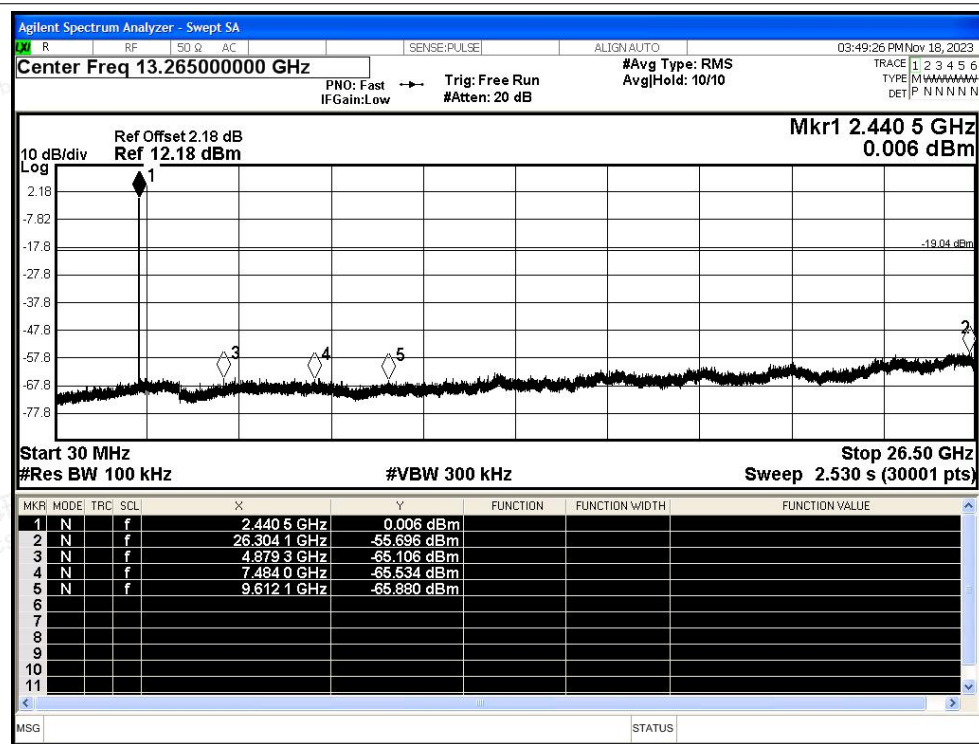
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Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission



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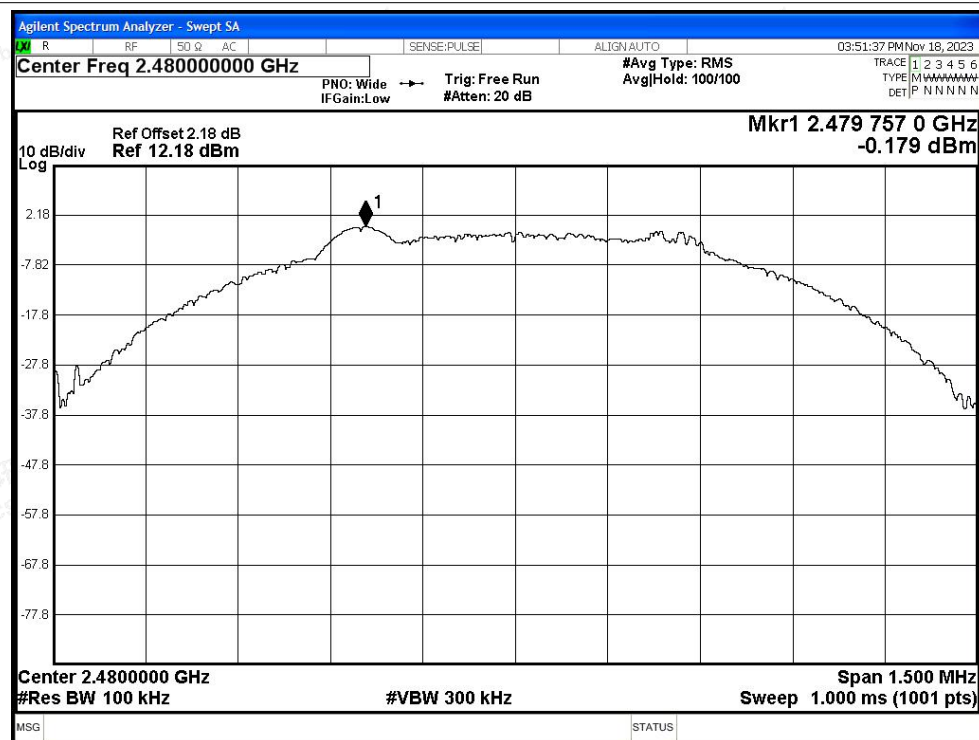
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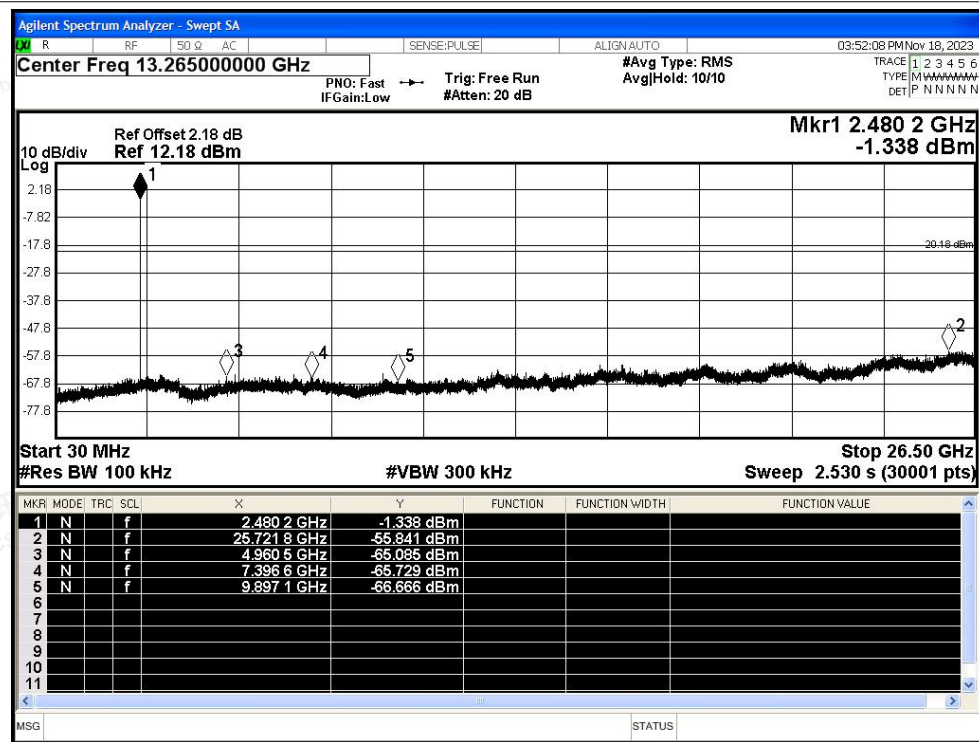
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Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref



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	87.39	0.59	0.61
NVNT	BLE 1M	2440	Ant1	87.39	0.59	0.61
NVNT	BLE 1M	2480	Ant1	87.39	0.59	0.61



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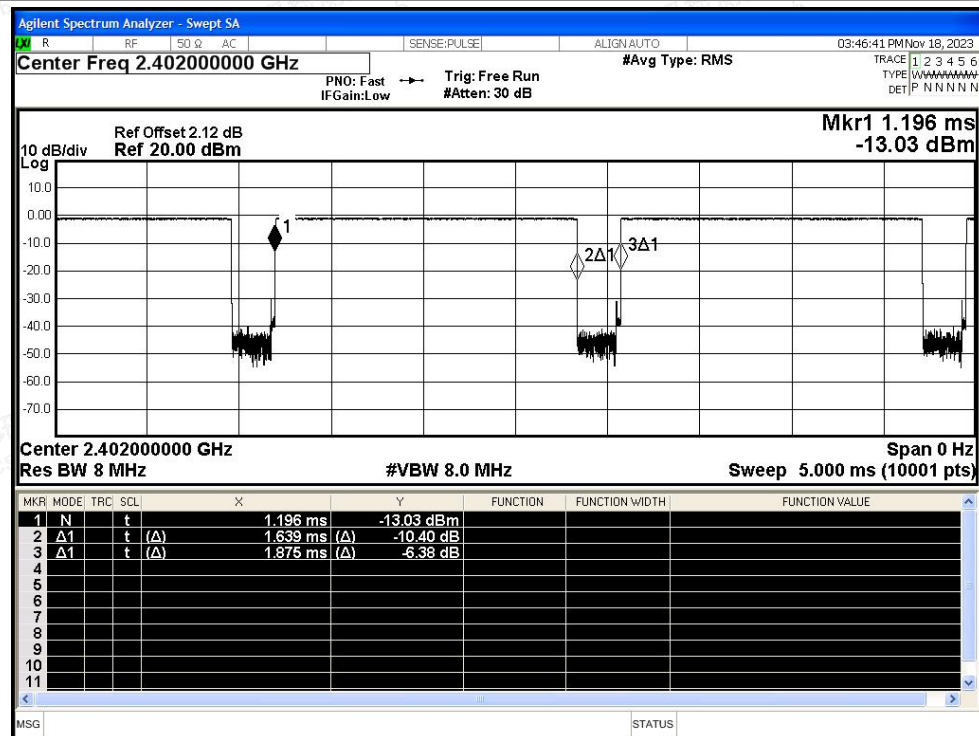
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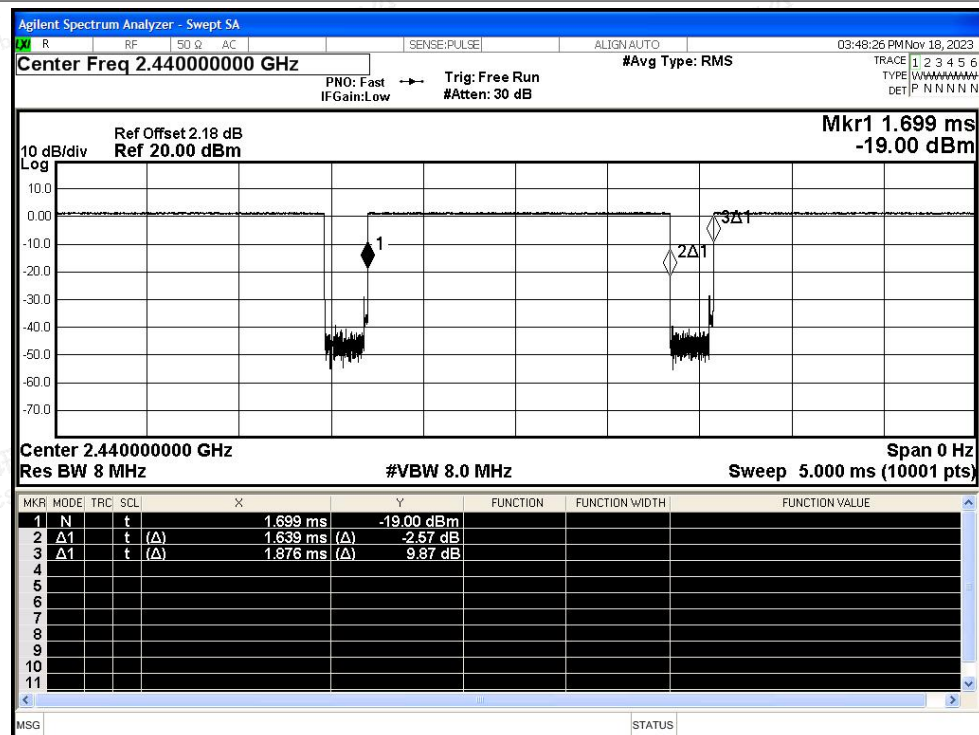


Test Graphs

Duty Cycle NVNT BLE 1M 2402MHz Ant1



Duty Cycle NVNT BLE 1M 2440MHz Ant1

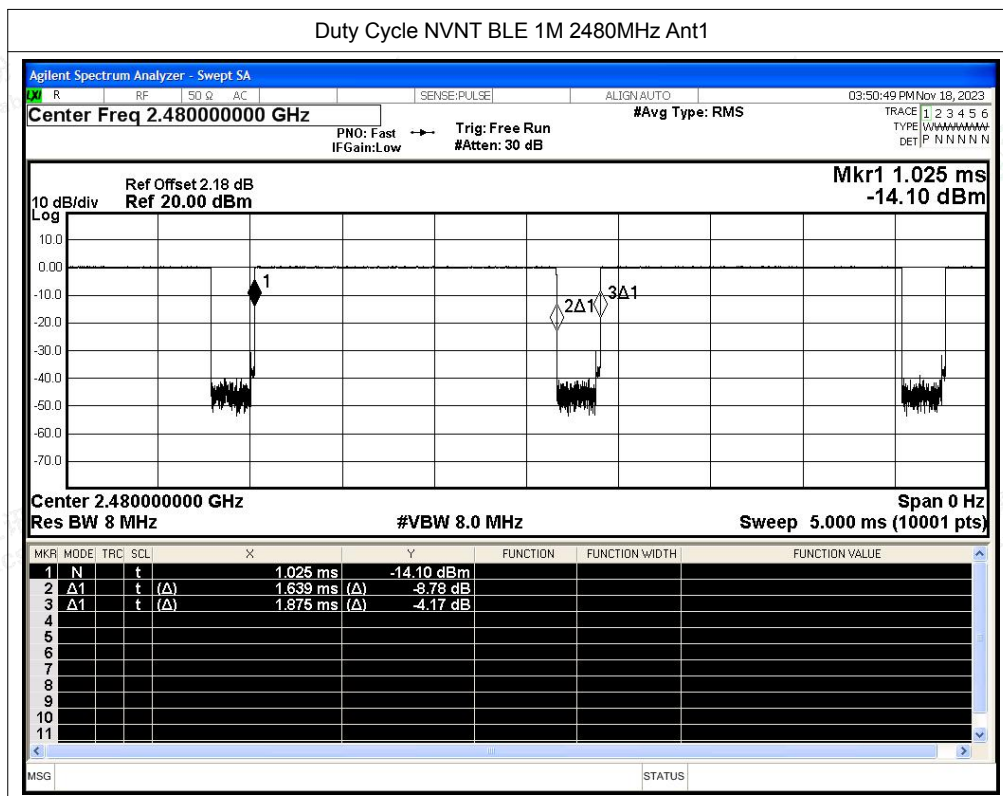


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A.7 Restrict Band

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	-50.34	2.21	47.13	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2310	-57.78	2.21	39.69	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2379.888	-47.52	2.21	49.95	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2389.968	-57.27	2.21	40.20	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2390	-51.22	2.21	46.25	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2390	-57.27	2.21	40.20	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-49.77	2.21	47.70	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-55.05	2.21	42.42	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.728	-43.07	2.21	54.40	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.512	-55.05	2.21	42.42	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2500	-49.62	2.21	47.85	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2500	-57.18	2.21	40.29	Average	54	Pass



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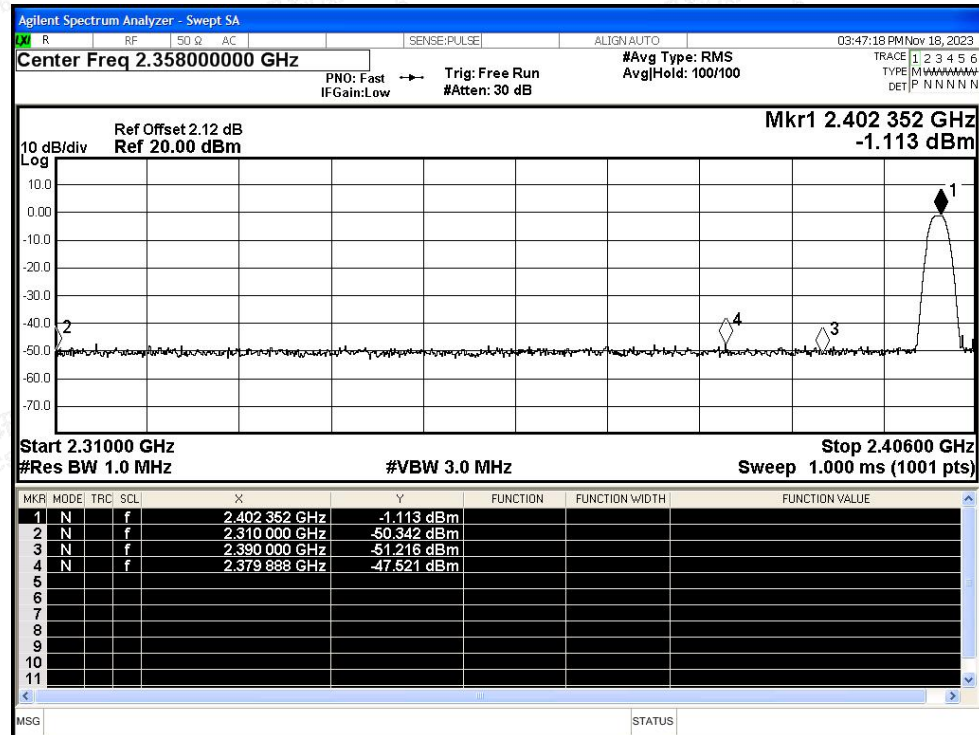
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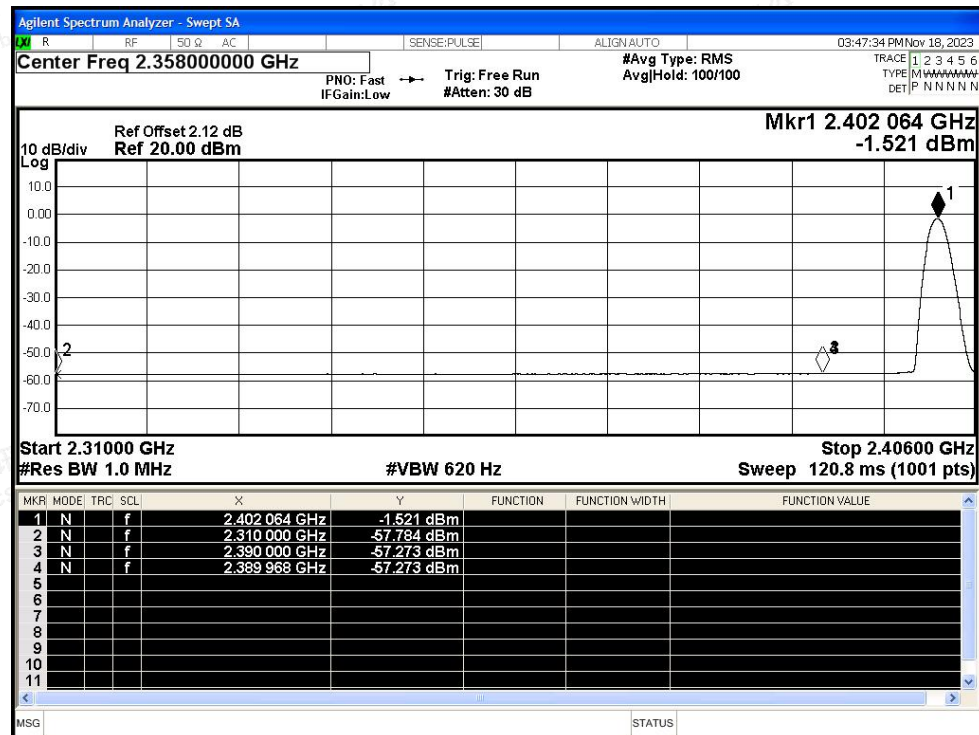


Test Graphs

Restrict Band NVNT BLE 1M 2402MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2402MHz Ant1 Average



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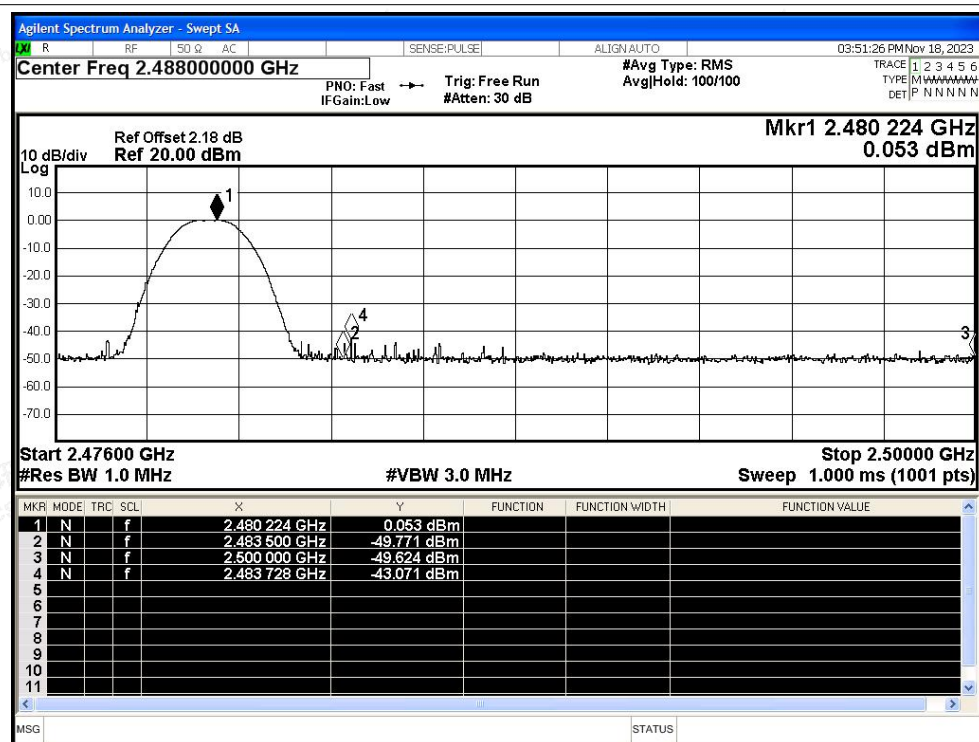
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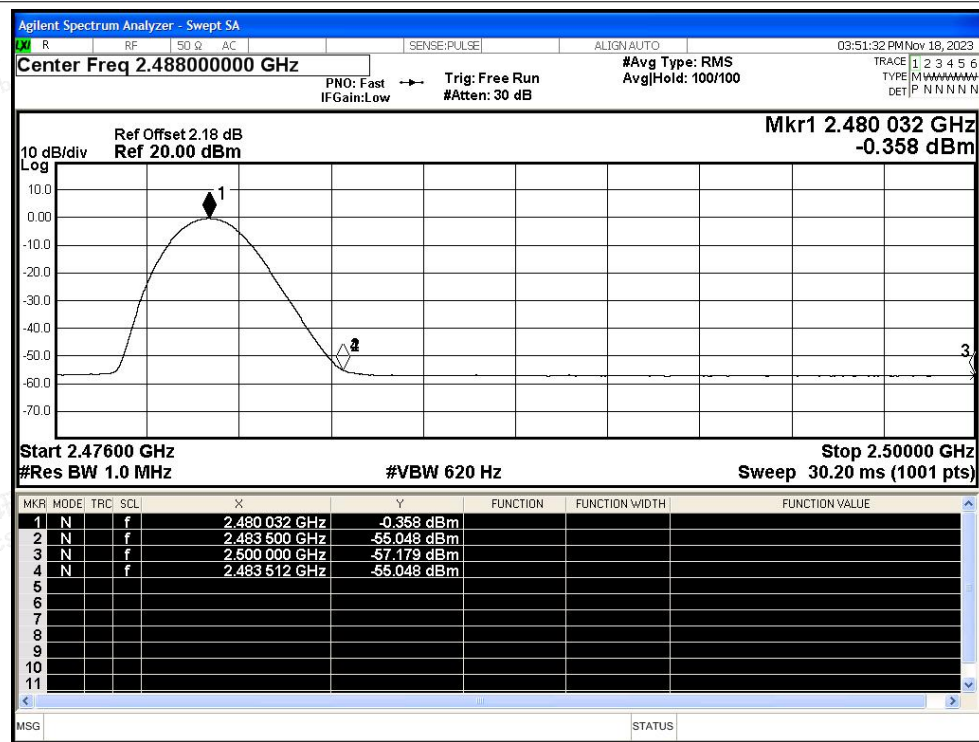
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Restrict Band NVNT BLE 1M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2480MHz Ant1 Average



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