



Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: Hub

Test Model: Z220

Environmental Conditions

Temperature:	23.5℃
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Nick Peng
Supervised by:	Ling Zhu





A.1 -6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 2M	2402	Ant1	1.118	≥ 0.5	Pass
NVNT	BLE 2M	2440	Ant1	1.155	≥ 0.5	Pass
NVNT	BLE 2M	2480	Ant1	1.148	≥ 0.5	Pass



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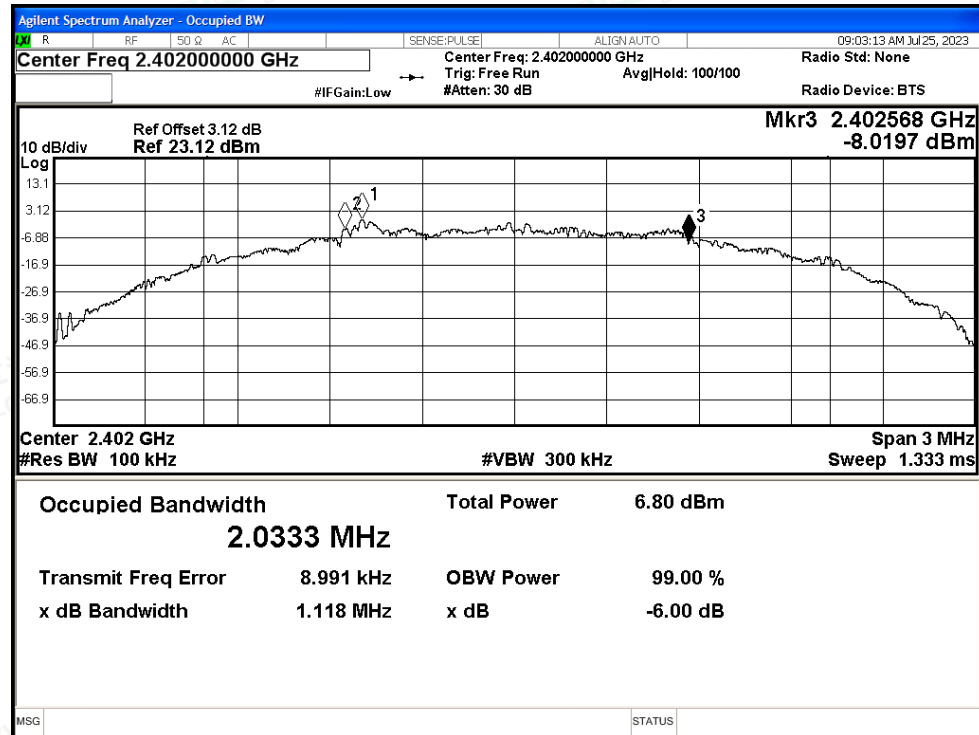
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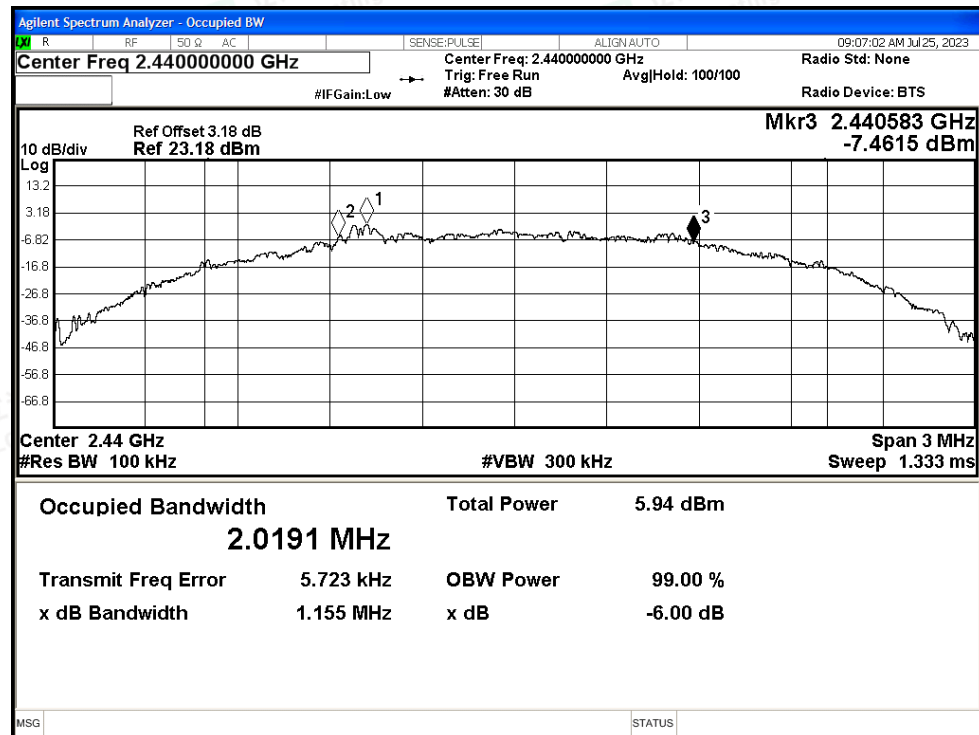


Test Graphs

-6dB Bandwidth NVNT BLE 2M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2440MHz Ant1

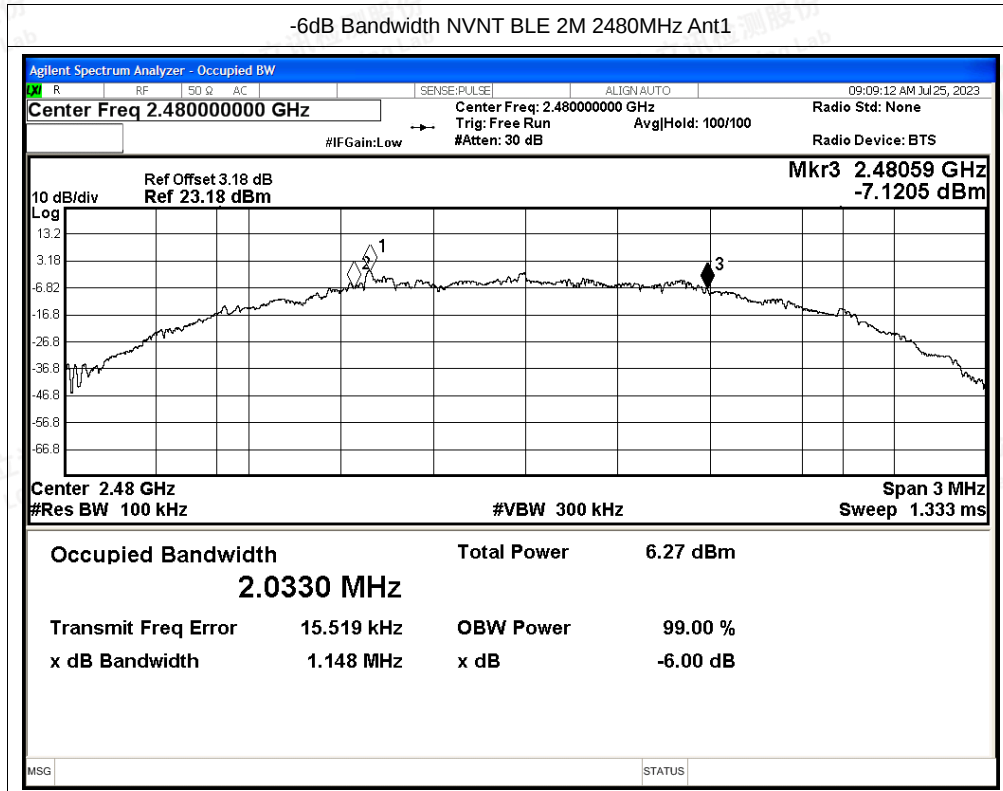


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A.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 2M	2402	Ant1	0.58	30	Pass
NVNT	BLE 2M	2440	Ant1	-0.21	30	Pass
NVNT	BLE 2M	2480	Ant1	0.11	30	Pass



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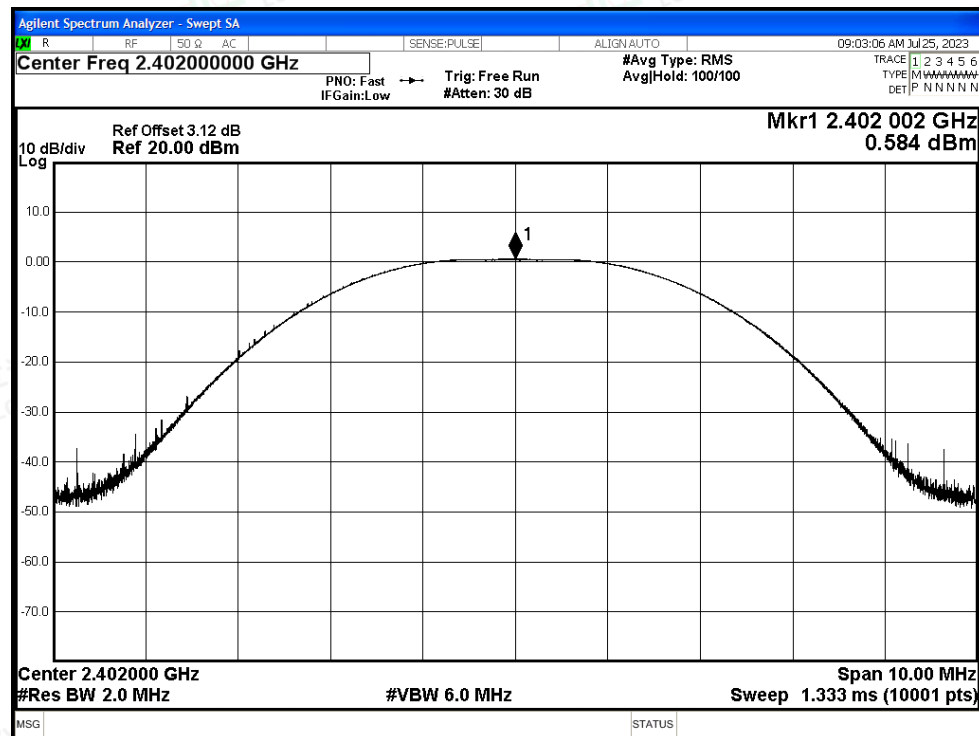
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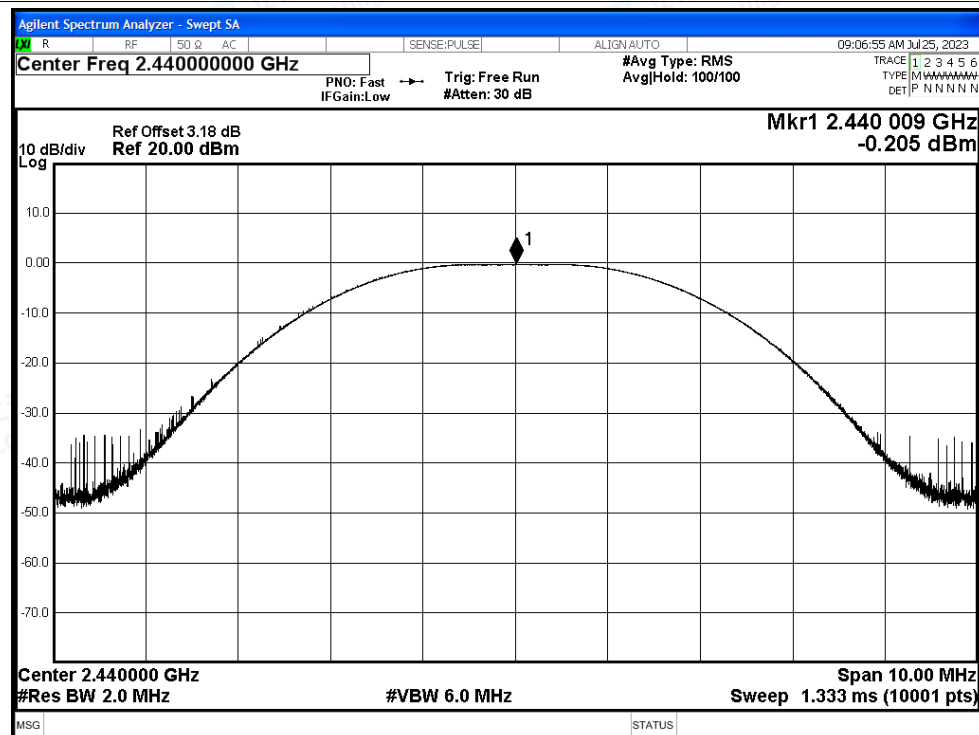


Test Graphs

Power NVNT BLE 2M 2402MHz Ant1



Power NVNT BLE 2M 2440MHz Ant1

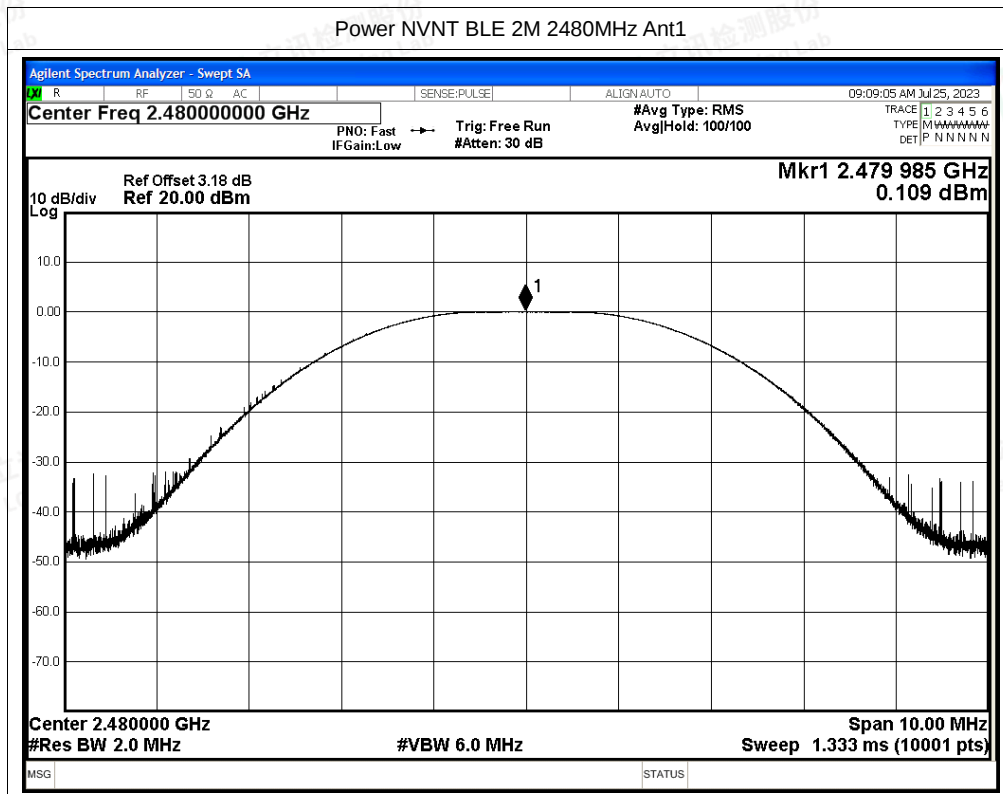


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A.3 Maximum Power Spectral Density Level

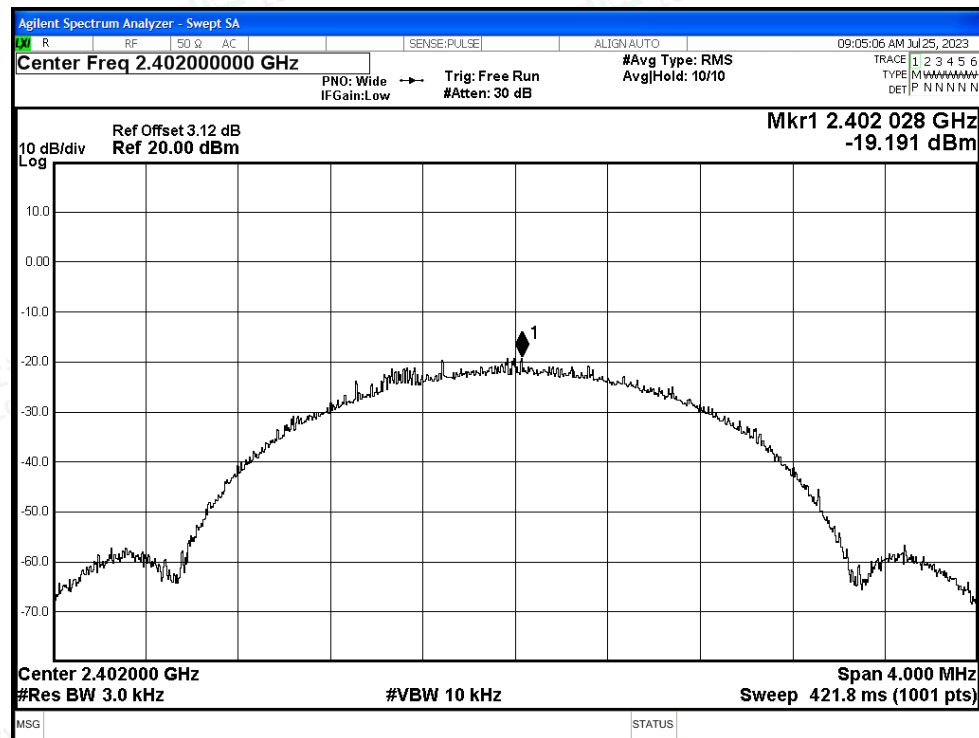
Condition	Mode	Frequency (MHz)	Antenna	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 2M	2402	Ant1	-19.19	8	Pass
NVNT	BLE 2M	2440	Ant1	-20.08	8	Pass
NVNT	BLE 2M	2480	Ant1	-19.69	8	Pass



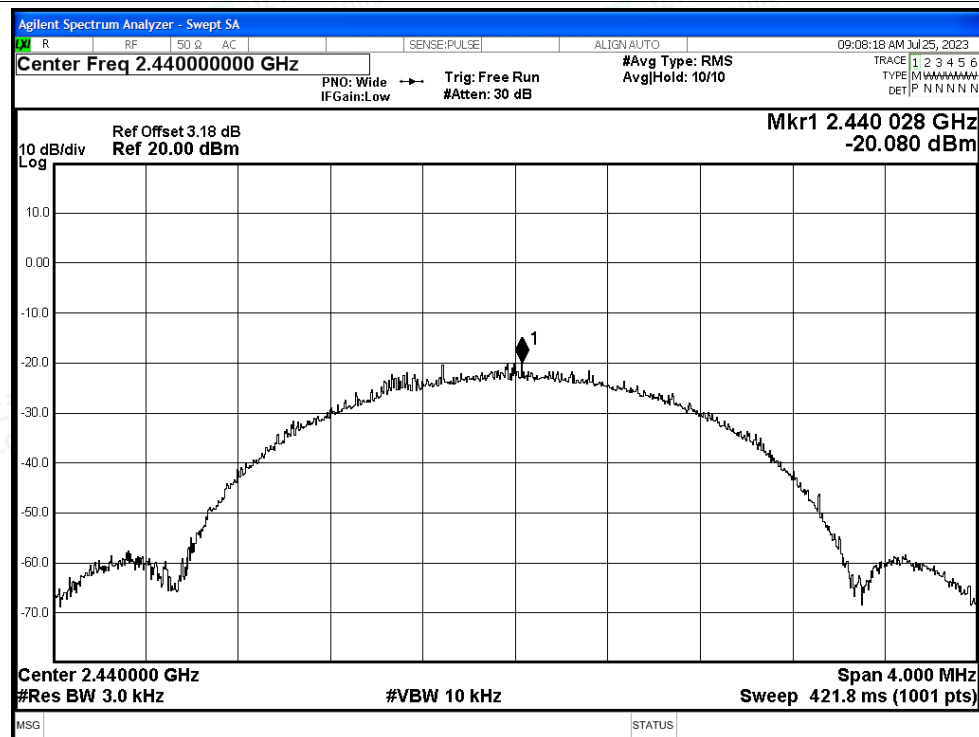


Test Graphs

PSD NVNT BLE 2M 2402MHz Ant1



PSD NVNT BLE 2M 2440MHz Ant1

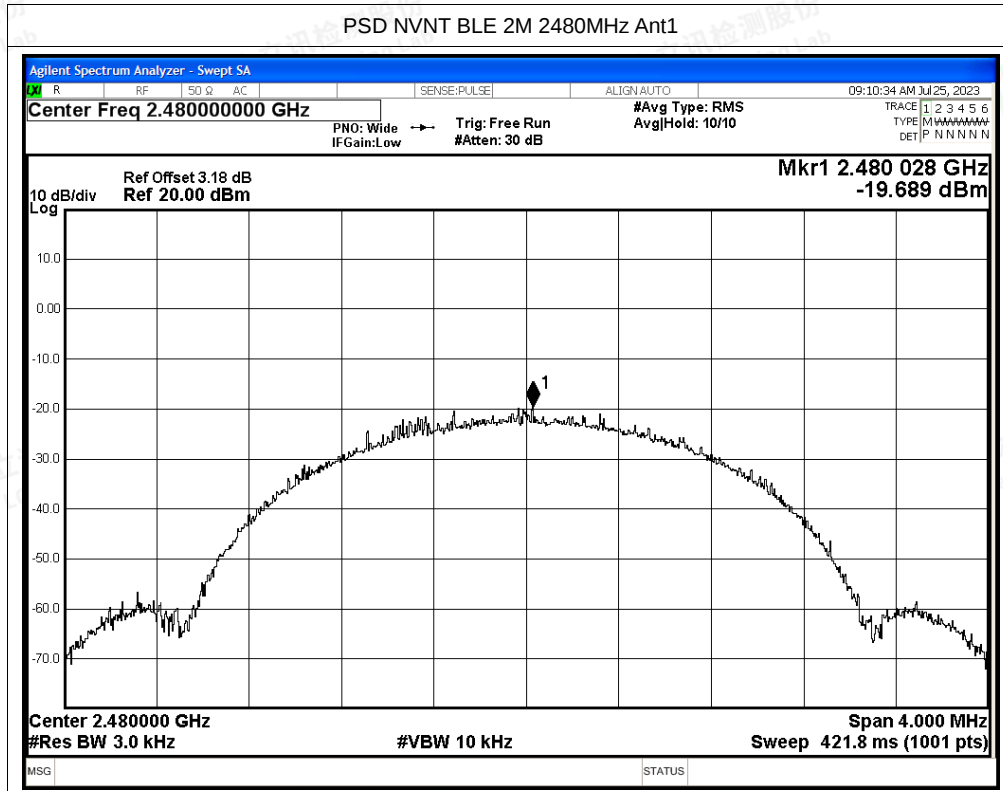


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A.4 Band Edge

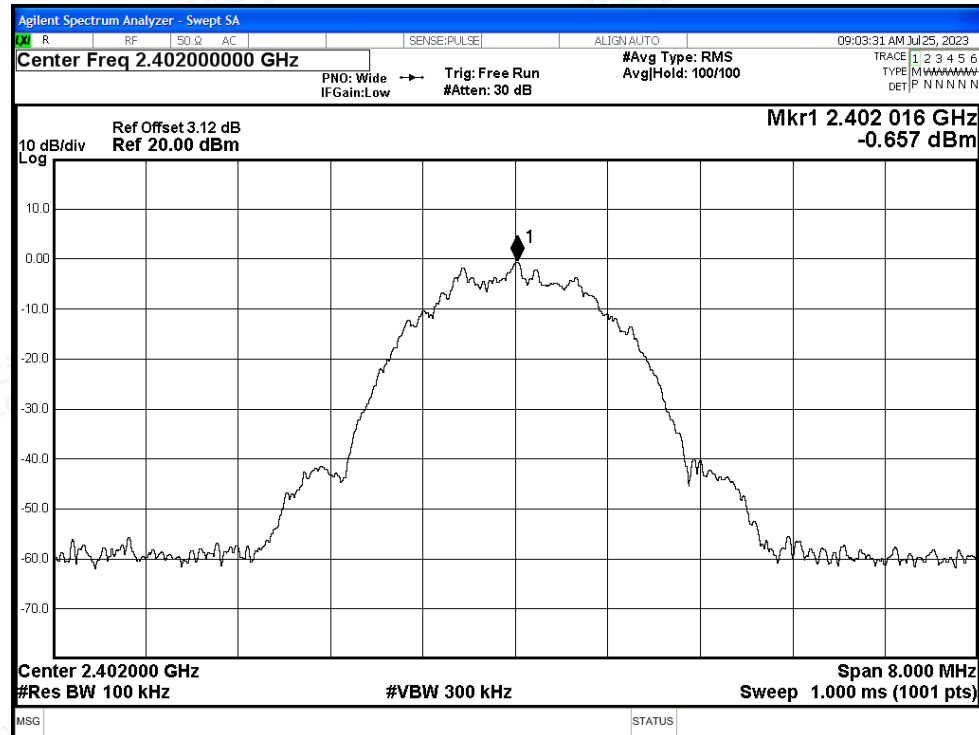
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 2M	2402	Ant1	-46.44	-20	Pass
NVNT	BLE 2M	2480	Ant1	-55.33	-20	Pass



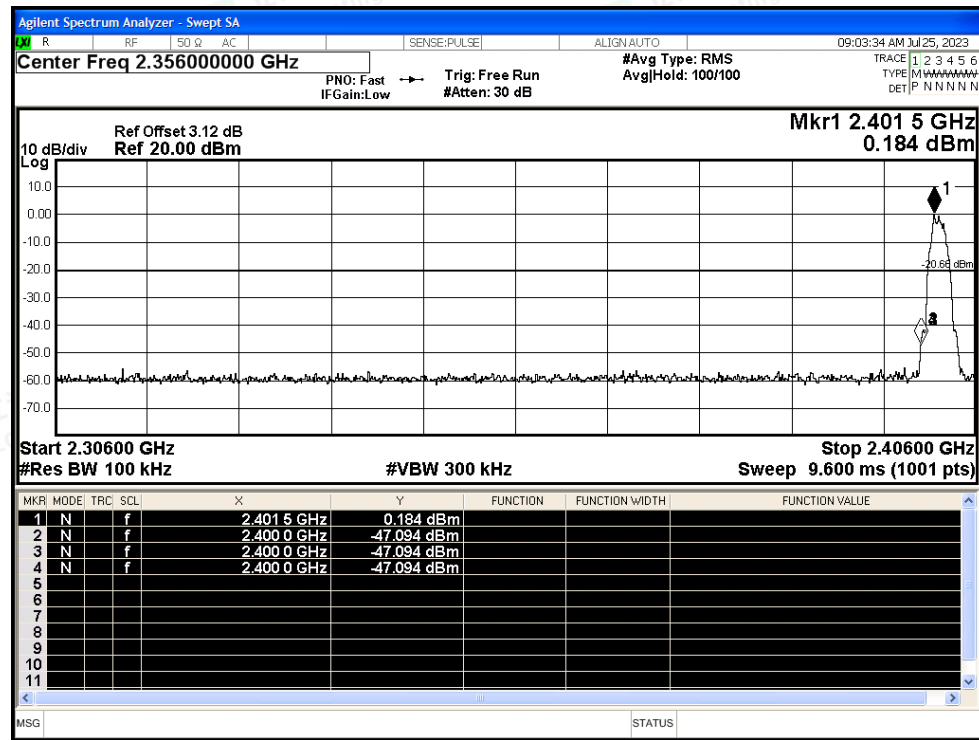


Test Graphs

Band Edge NVNT BLE 2M 2402MHz Ant1 Ref



Band Edge NVNT BLE 2M 2402MHz Ant1 Emission

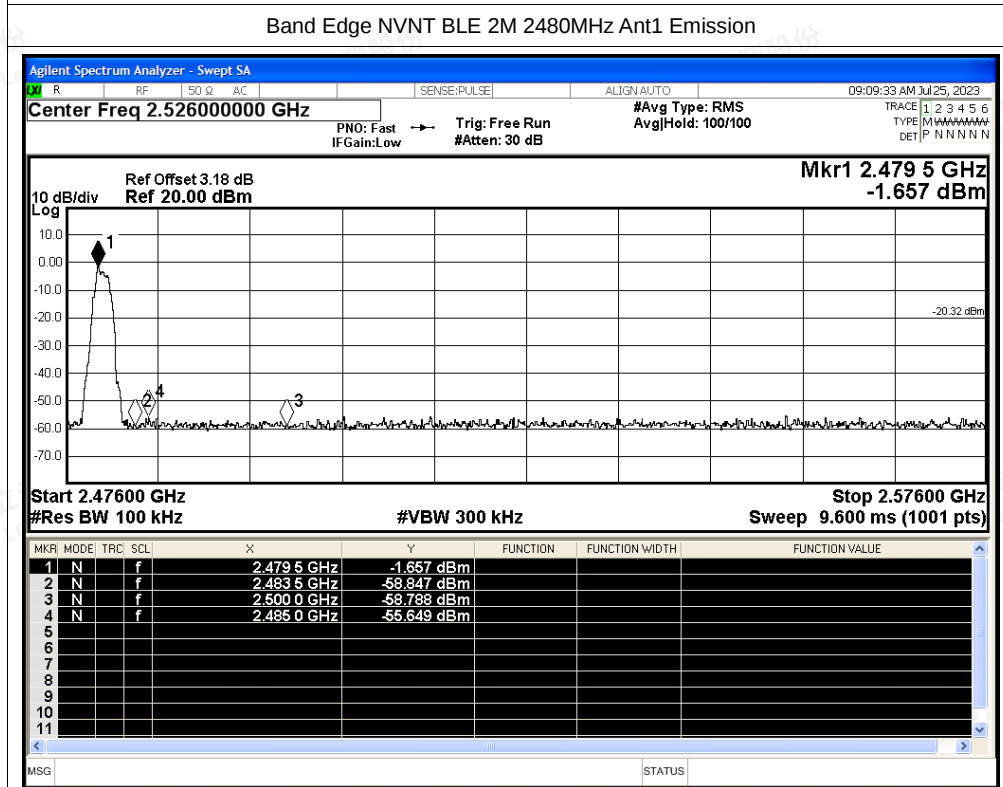
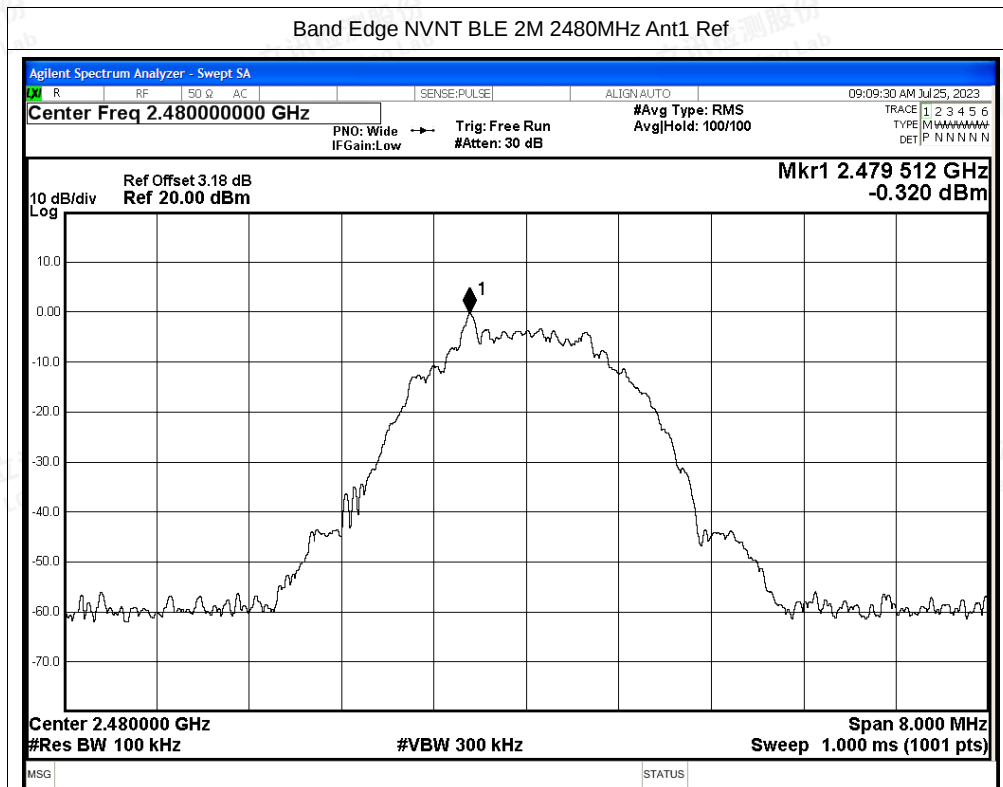


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A.5 Conducted RF Spurious Emission

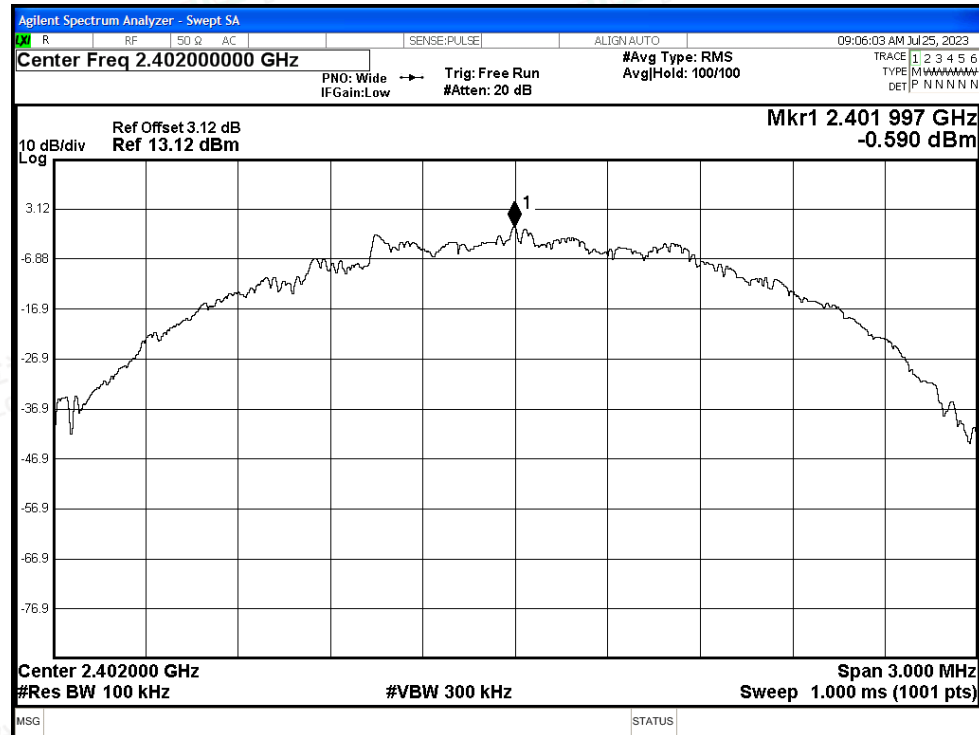
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 2M	2402	Ant1	-53.57	-20	Pass
NVNT	BLE 2M	2440	Ant1	-48.86	-20	Pass
NVNT	BLE 2M	2480	Ant1	-52.09	-20	Pass



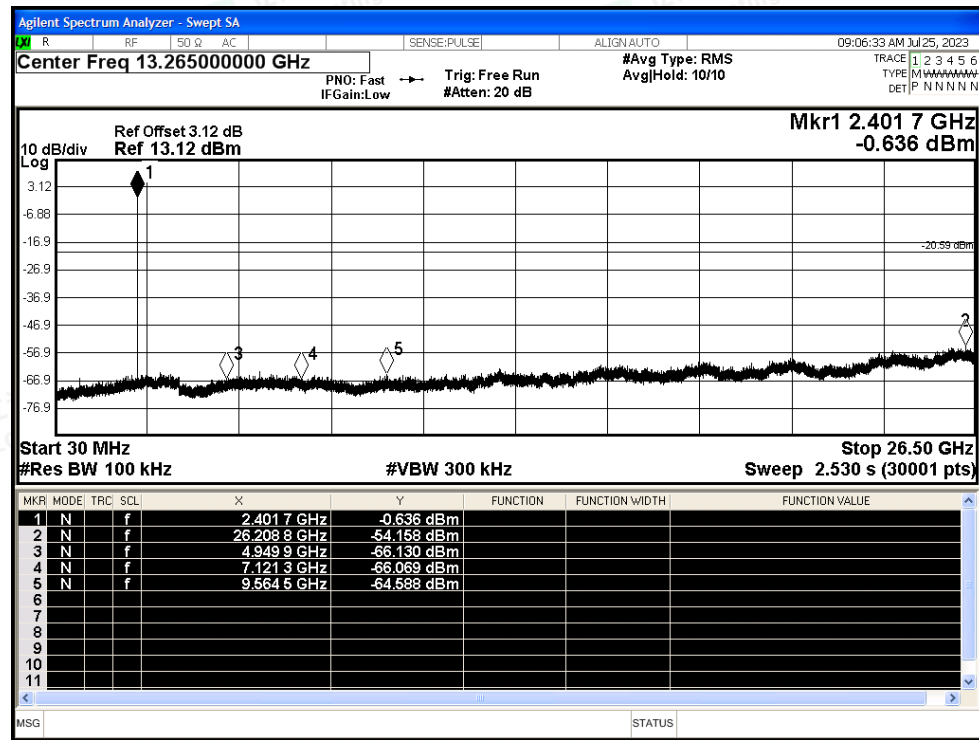


Test Graphs

Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Ref



Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Emission



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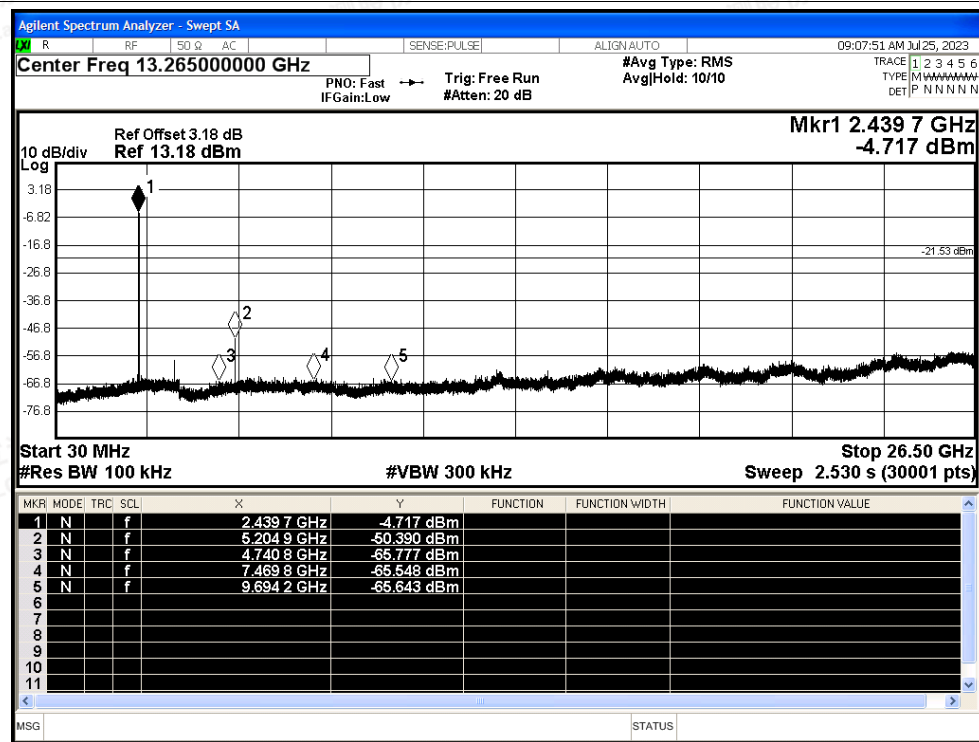
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Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Ref



Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Emission



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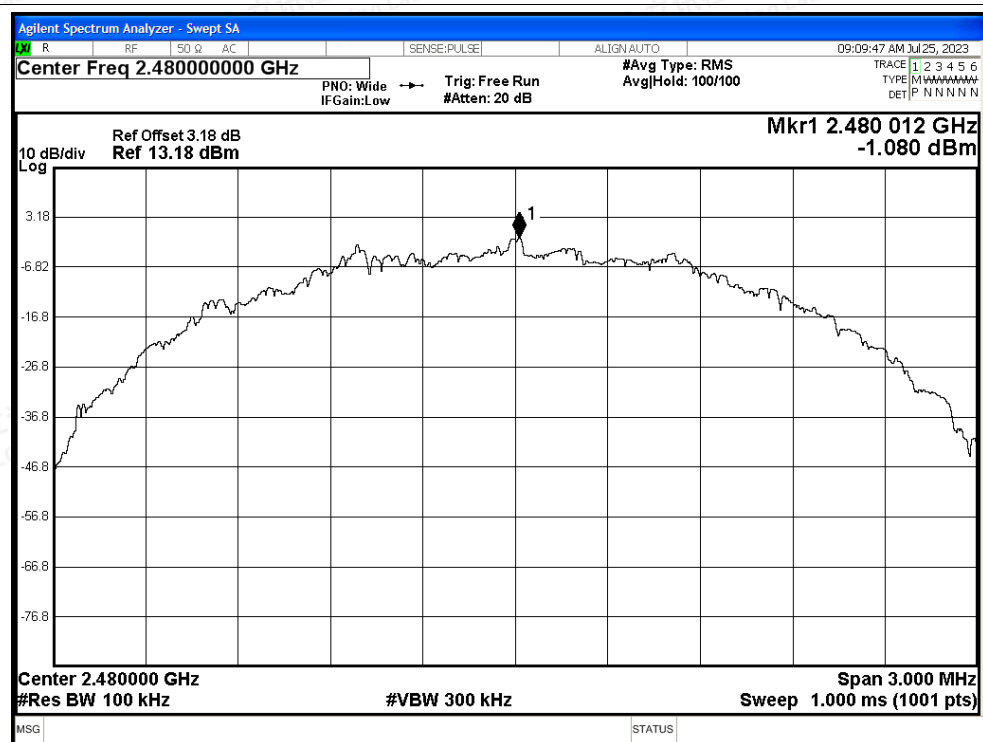
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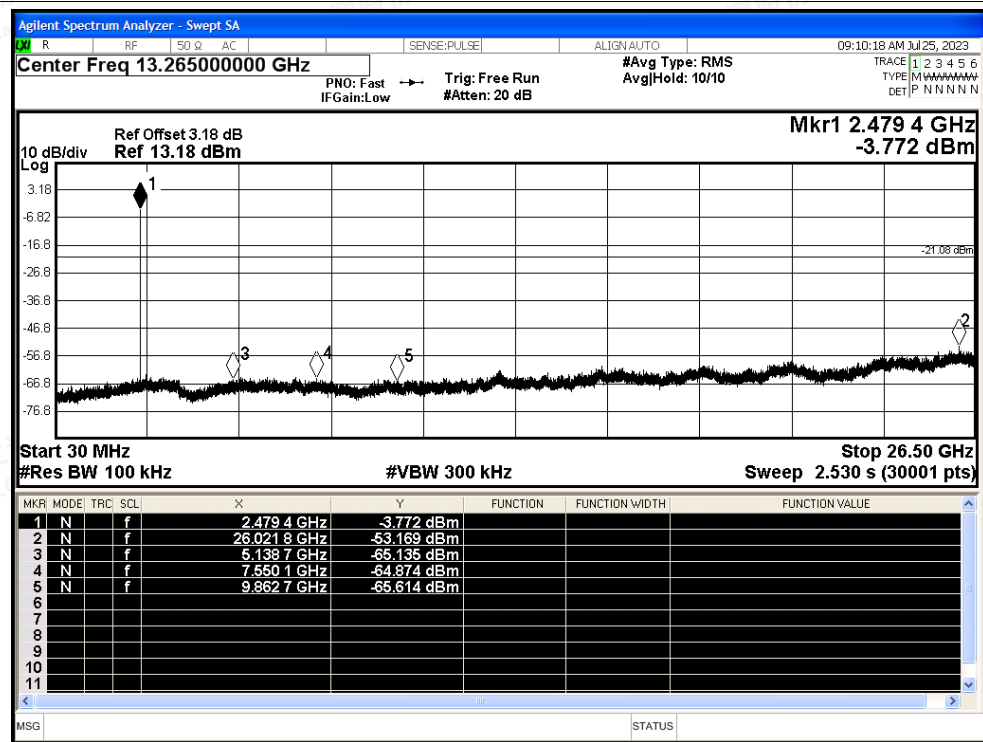
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Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Emission



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A.6 Duty Cycle

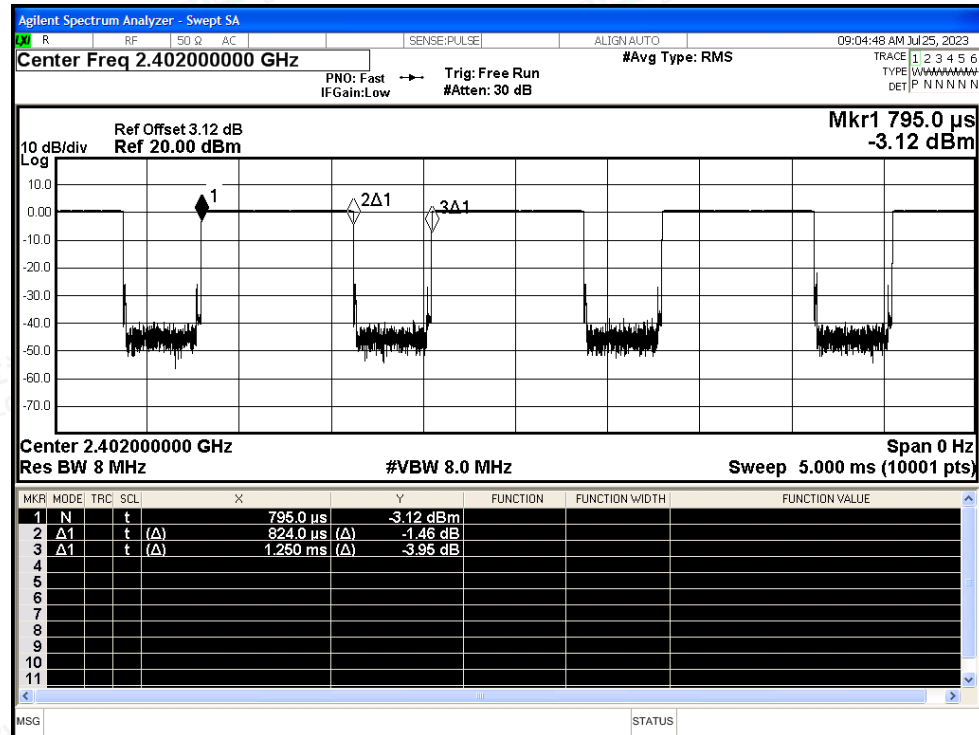
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 2M	2402	Ant1	65.92	1.81	1.21
NVNT	BLE 2M	2440	Ant1	98.1	0	1.21
NVNT	BLE 2M	2480	Ant1	65.96	1.81	1.21



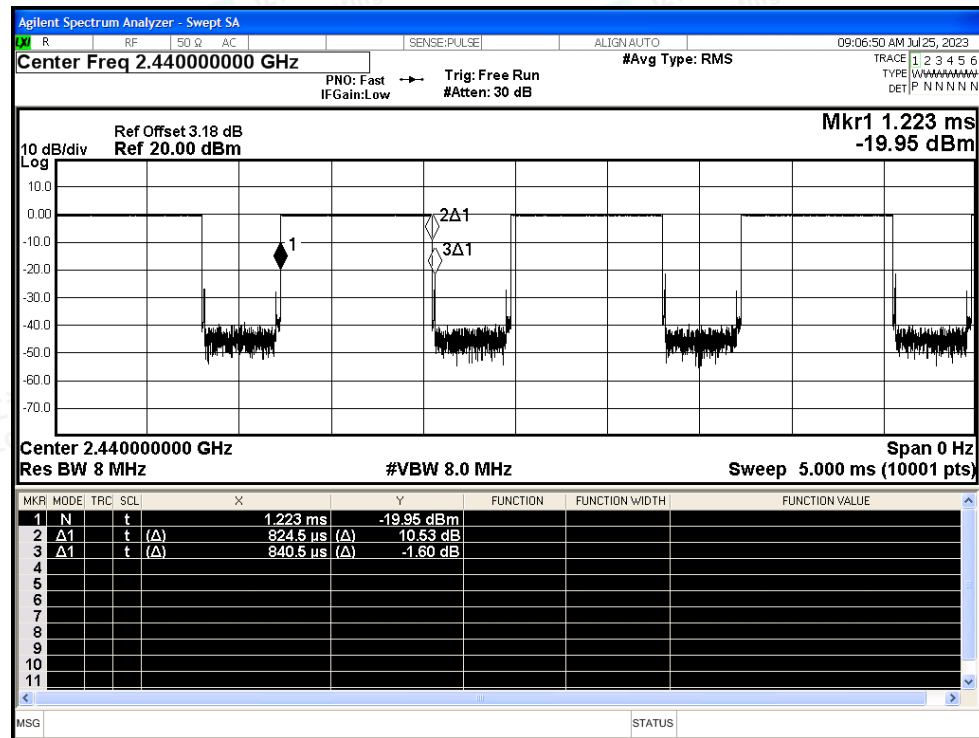


Test Graphs

Duty Cycle NVNT BLE 2M 2402MHz Ant1



Duty Cycle NVNT BLE 2M 2440MHz Ant1

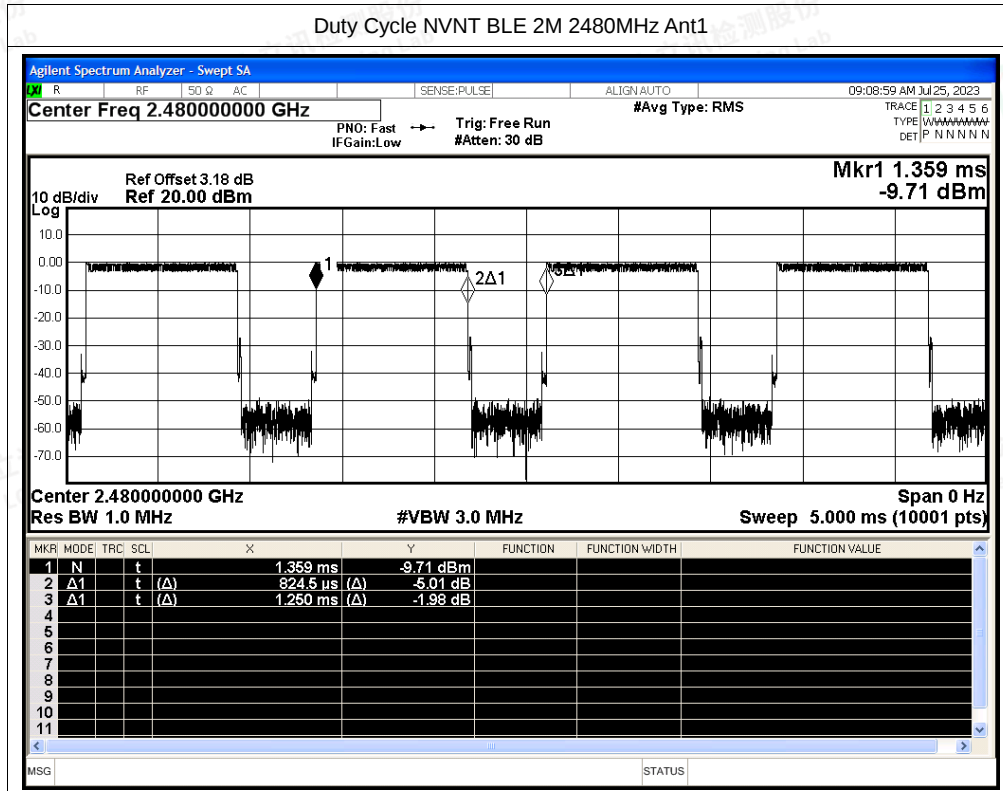


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A.7 Restrict Band

Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	BLE 2M	2402	Ant1	2310	-50.26	2	47	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2310	-56.73	2	40.53	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2370.384	-46.63	2	50.63	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2375.856	-56.13	2	41.13	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2390	-48.38	2	48.88	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2390	-56.38	2	40.88	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-39.34	2	57.92	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-52.4	2	44.86	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2483.968	-38.46	2	58.8	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2483.512	-52.4	2	44.86	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2500	-50.83	2	46.43	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2500	-56.01	2	41.25	Average	54	Pass



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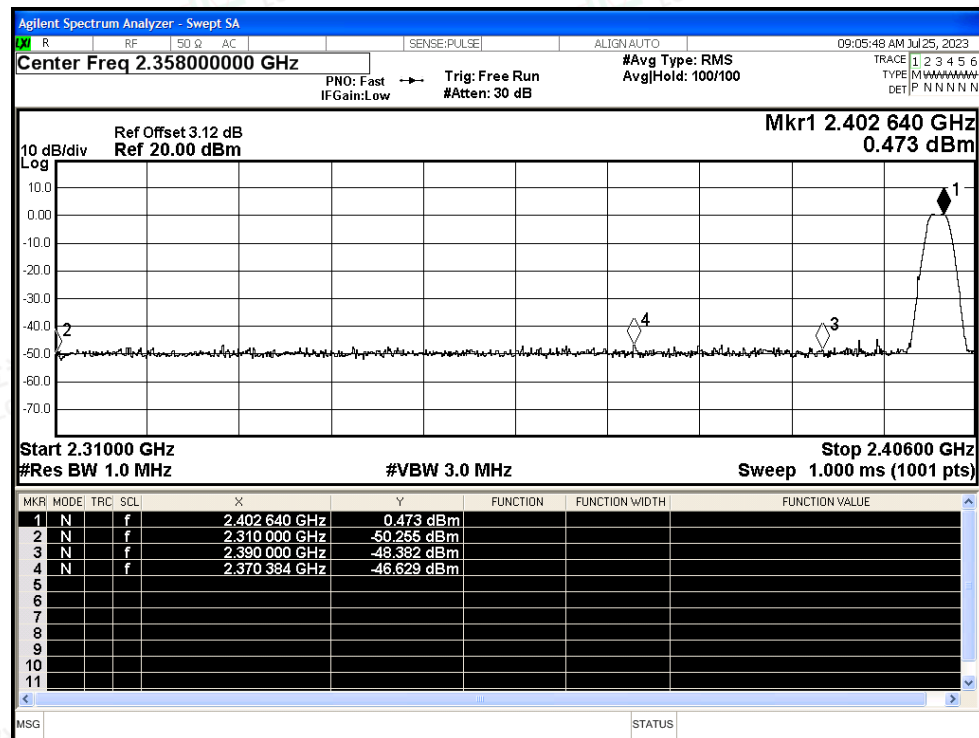
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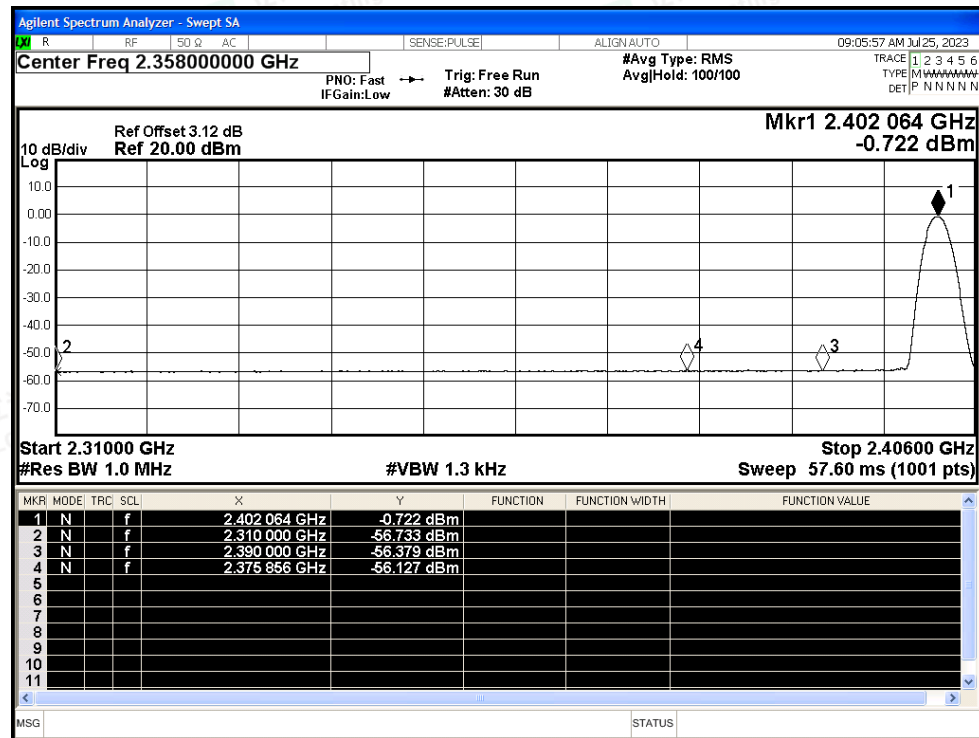


Test Graphs

Restrict Band NVNT BLE 2M 2402MHz Ant1 Peak



Restrict Band NVNT BLE 2M 2402MHz Ant1 Average



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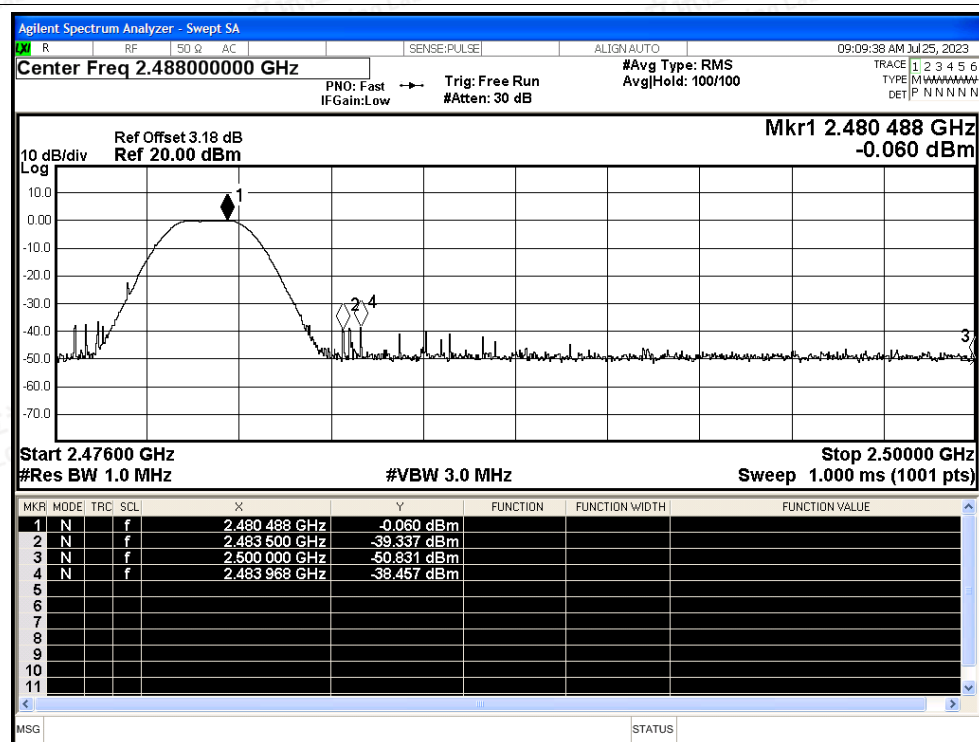
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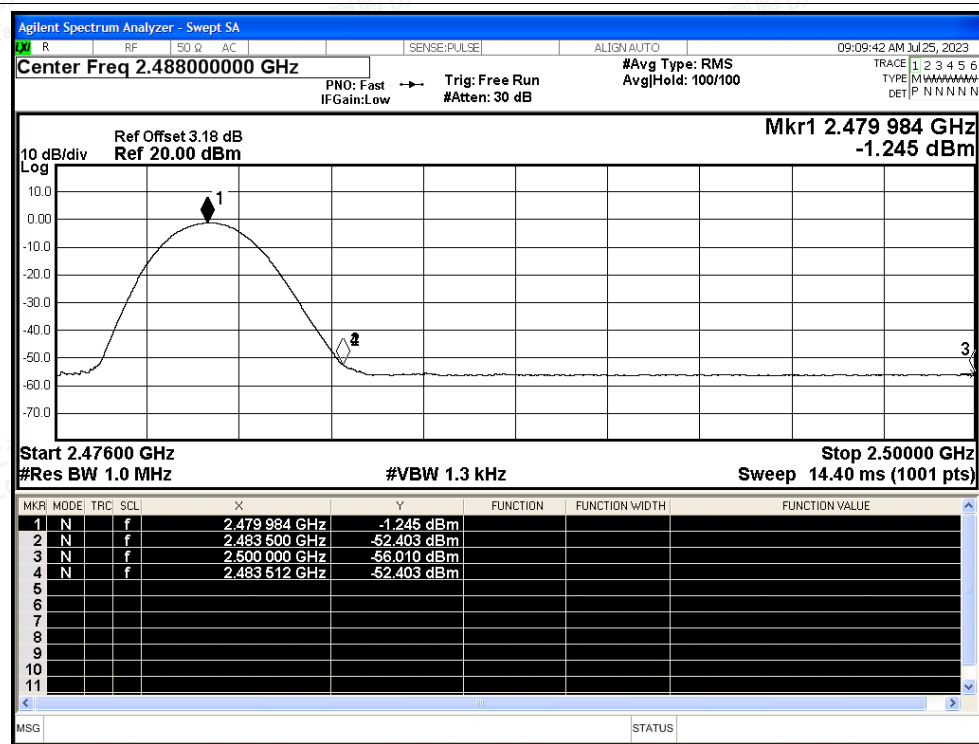
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Restrict Band NVNT BLE 2M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 2M 2480MHz Ant1 Average



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