



Appendix B

RF Test Data for BLE (Conducted Measurement)

Product Name: Kids karaoke machine

Test Model: ats-2020

Environmental Conditions

Temperature:	22.5° C
Relative Humidity:	53.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Ling Zhu
Supervised by:	Li Huan



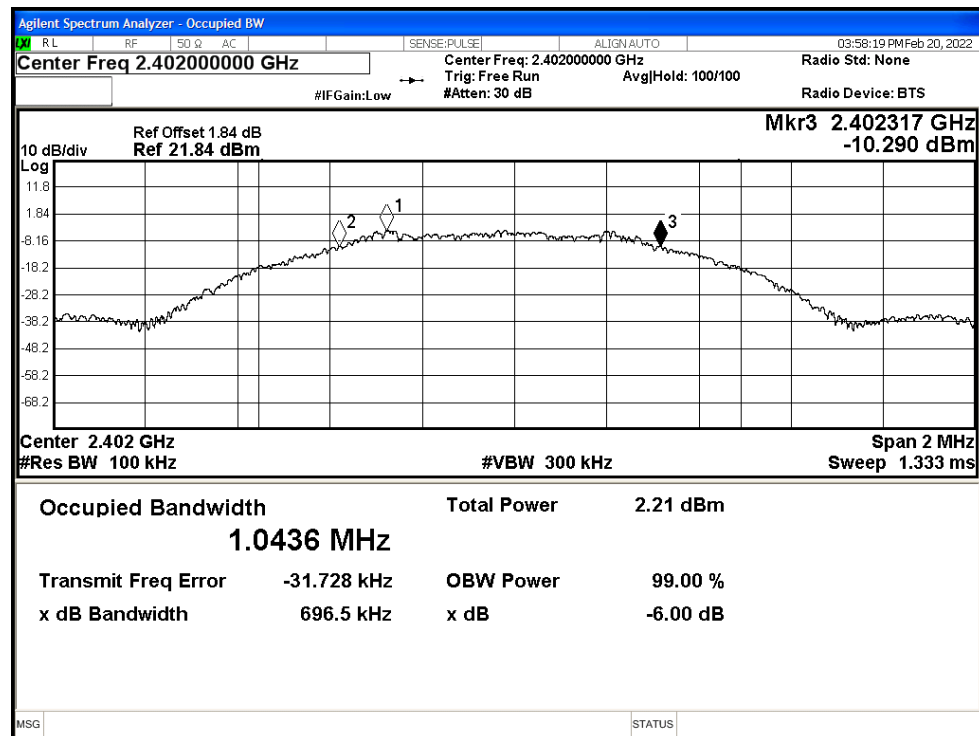
B.1 6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.696	0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.698	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.696	0.5	Pass
NVNT	BLE 2M	2402	Ant1	1.124	0.5	Pass
NVNT	BLE 2M	2440	Ant1	1.132	0.5	Pass
NVNT	BLE 2M	2480	Ant1	1.086	0.5	Pass

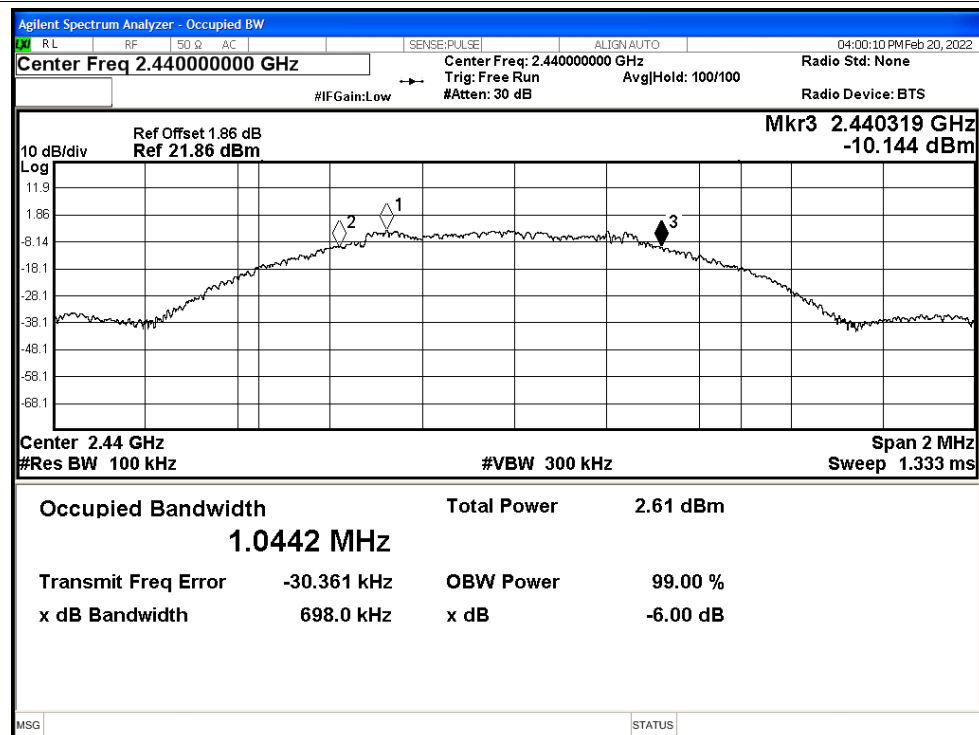


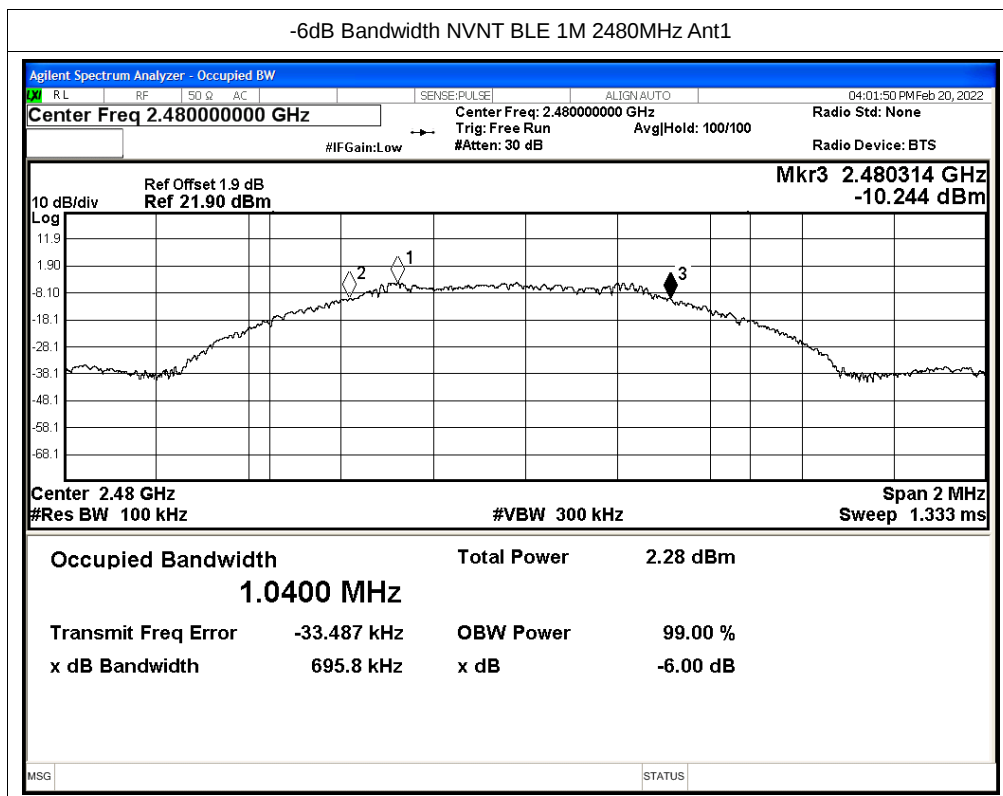
Test Graphs

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



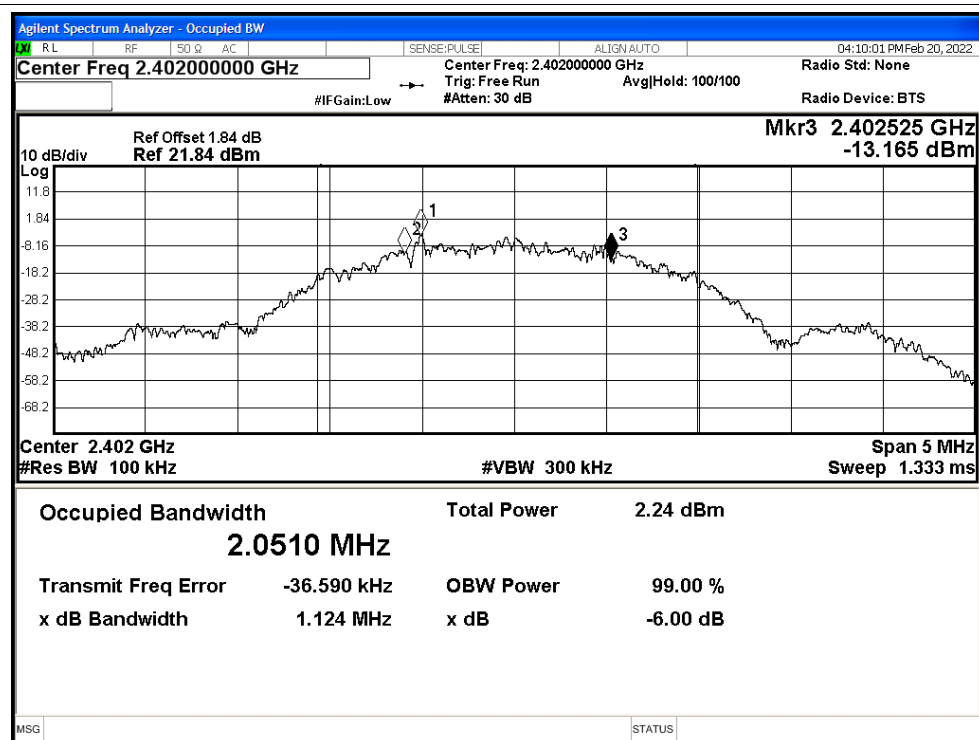
-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1





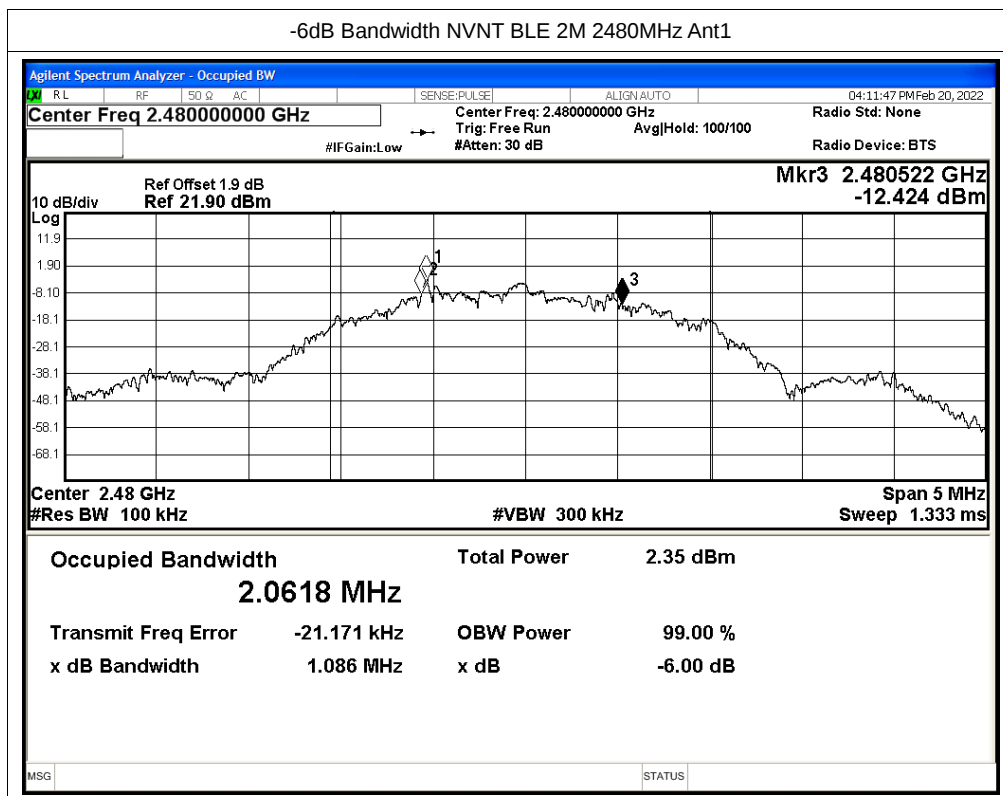


-6dB Bandwidth NVNT BLE 2M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2440MHz Ant1







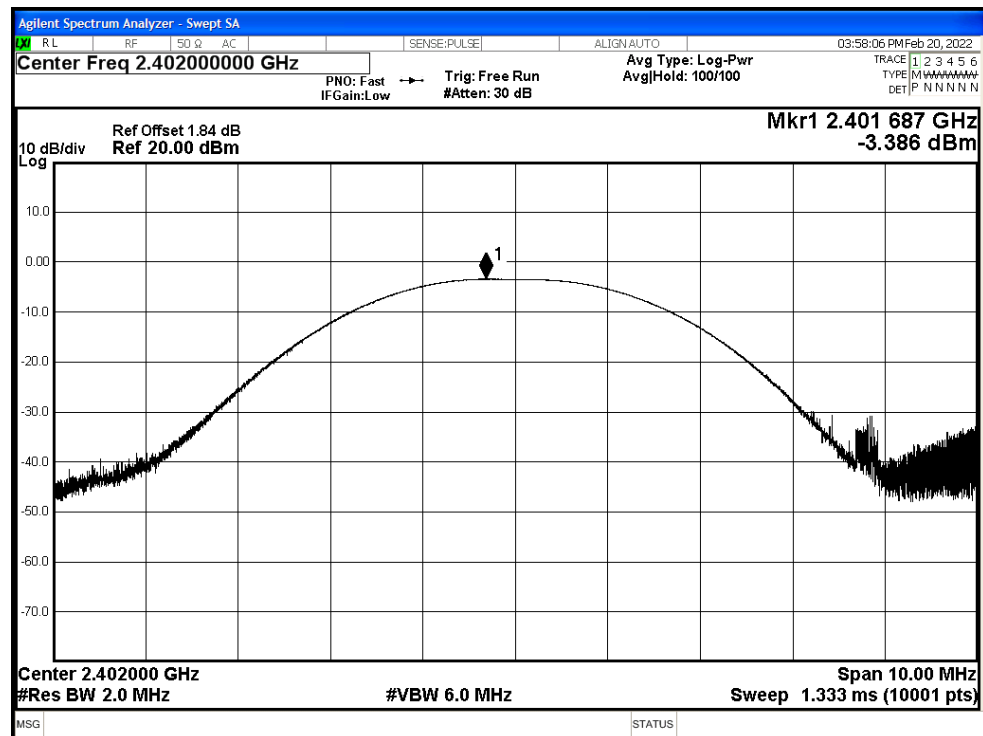
B.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-3.39	0	-3.39	30	Pass
NVNT	BLE 1M	2440	Ant1	-3.01	0	-3.01	30	Pass
NVNT	BLE 1M	2480	Ant1	-3.4	0	-3.4	30	Pass
NVNT	BLE 2M	2402	Ant1	-3.29	0	-3.29	30	Pass
NVNT	BLE 2M	2440	Ant1	-2.85	0	-2.85	30	Pass
NVNT	BLE 2M	2480	Ant1	-3.29	0	-3.29	30	Pass

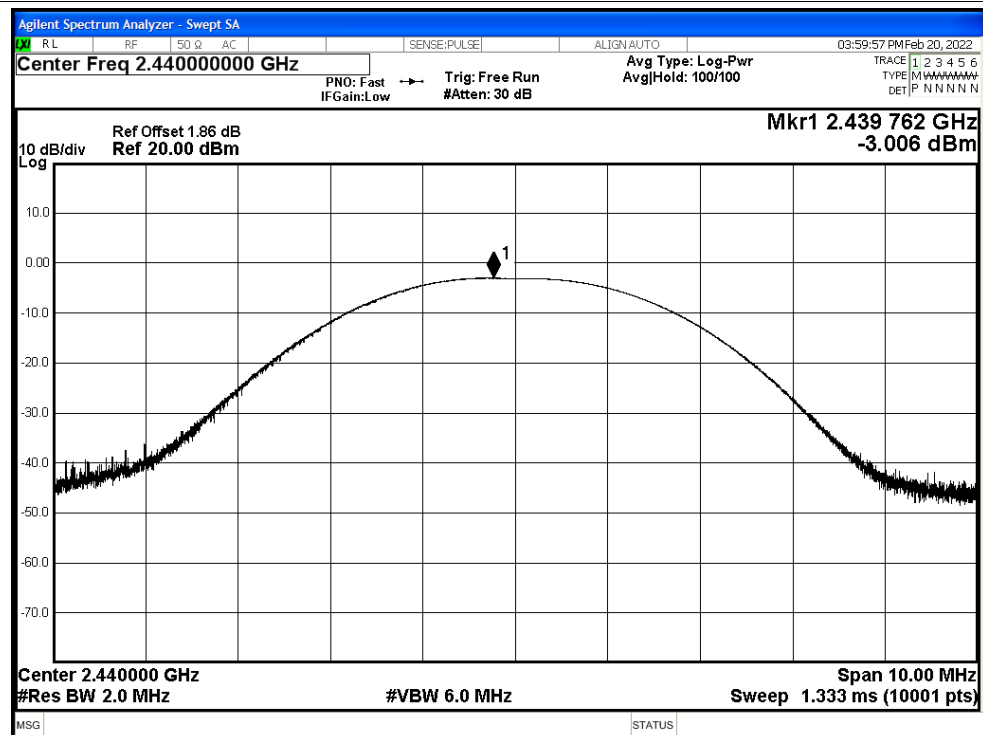


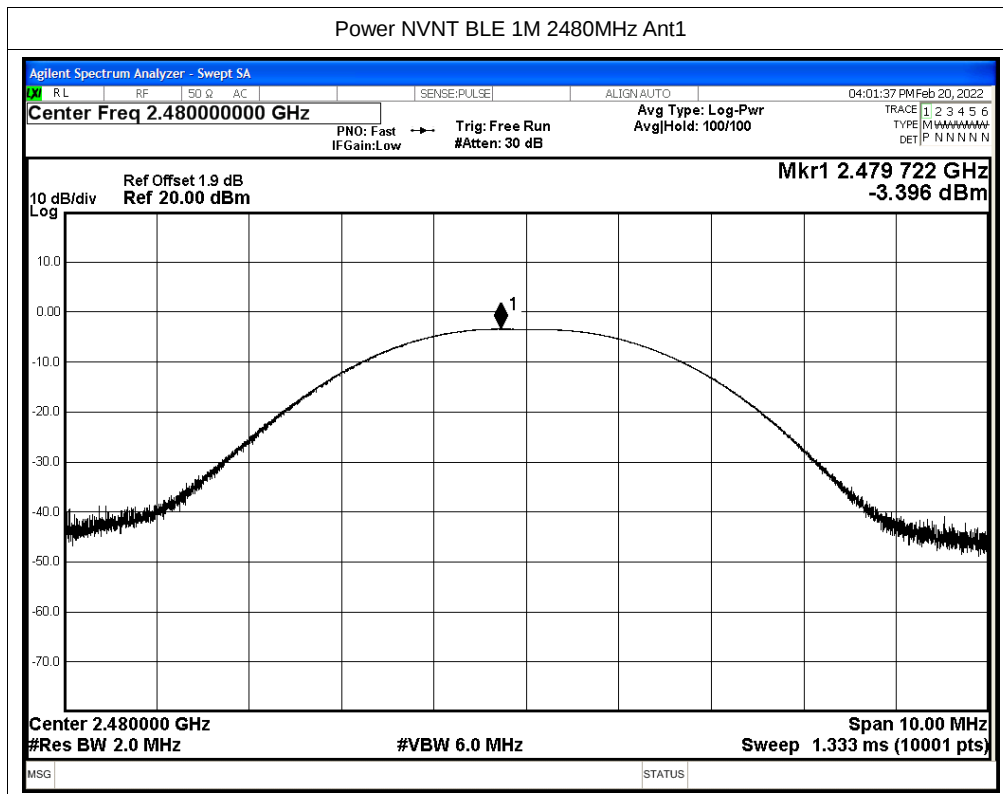
Test Graphs

Power NVNT BLE 1M 2402MHz Ant1



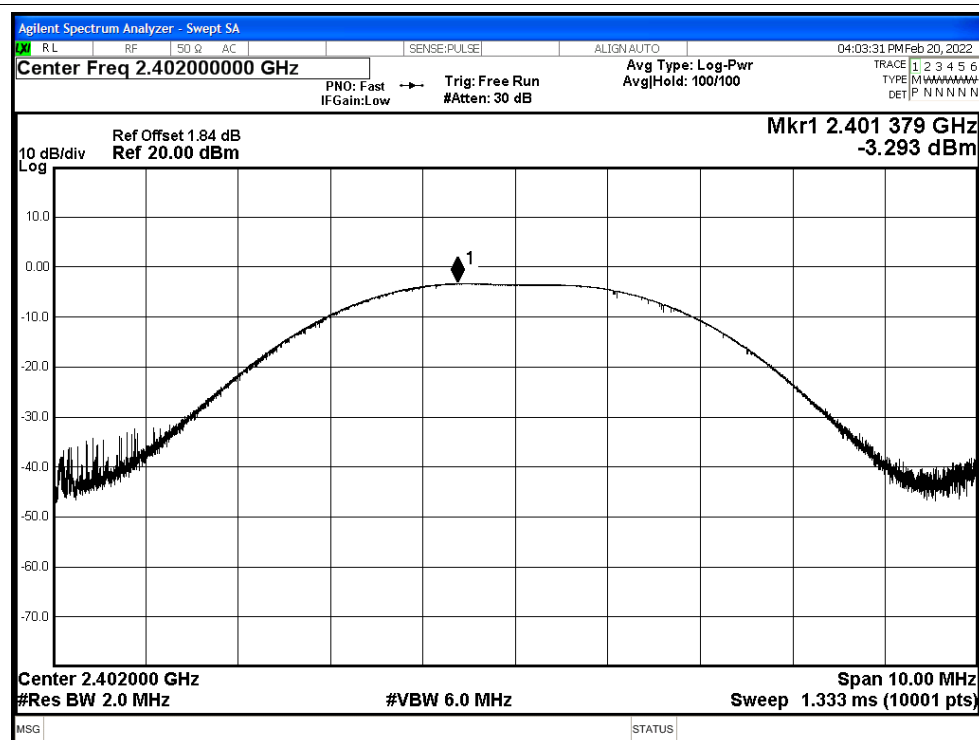
Power NVNT BLE 1M 2440MHz Ant1



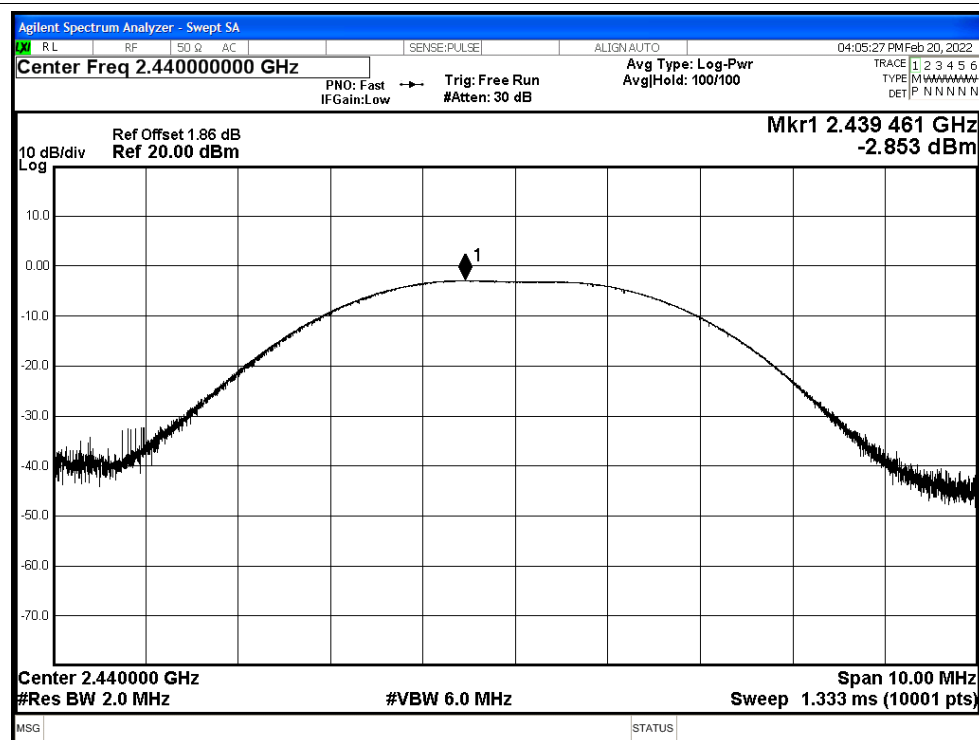


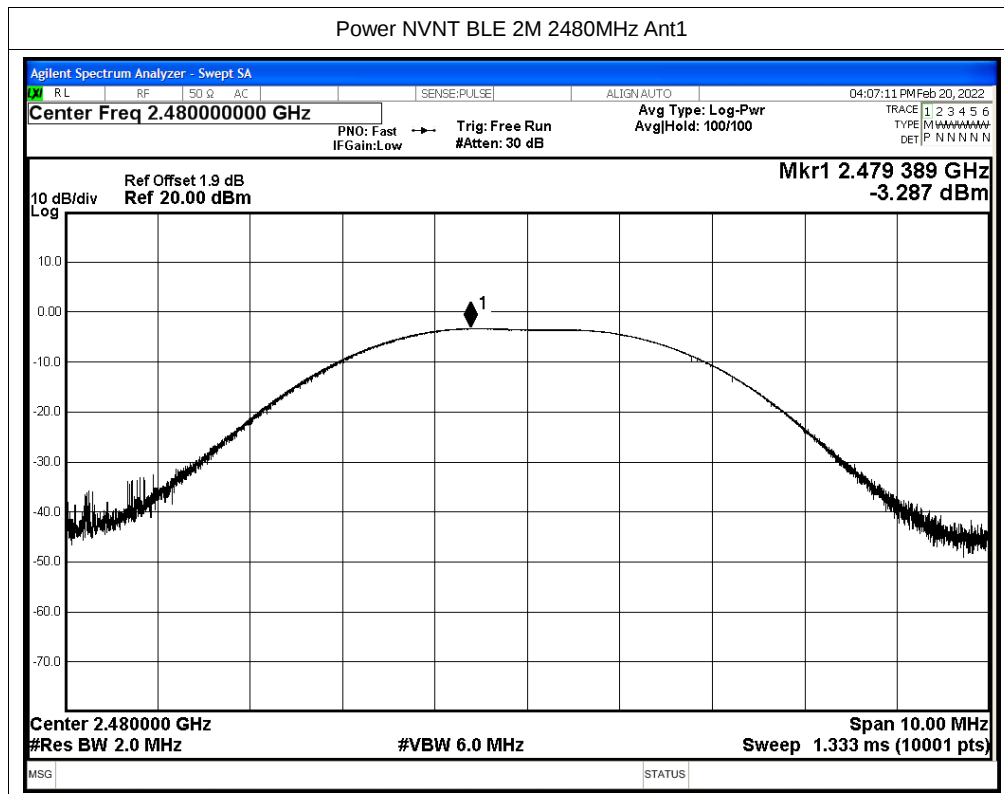


Power NVNT BLE 2M 2402MHz Ant1



Power NVNT BLE 2M 2440MHz Ant1







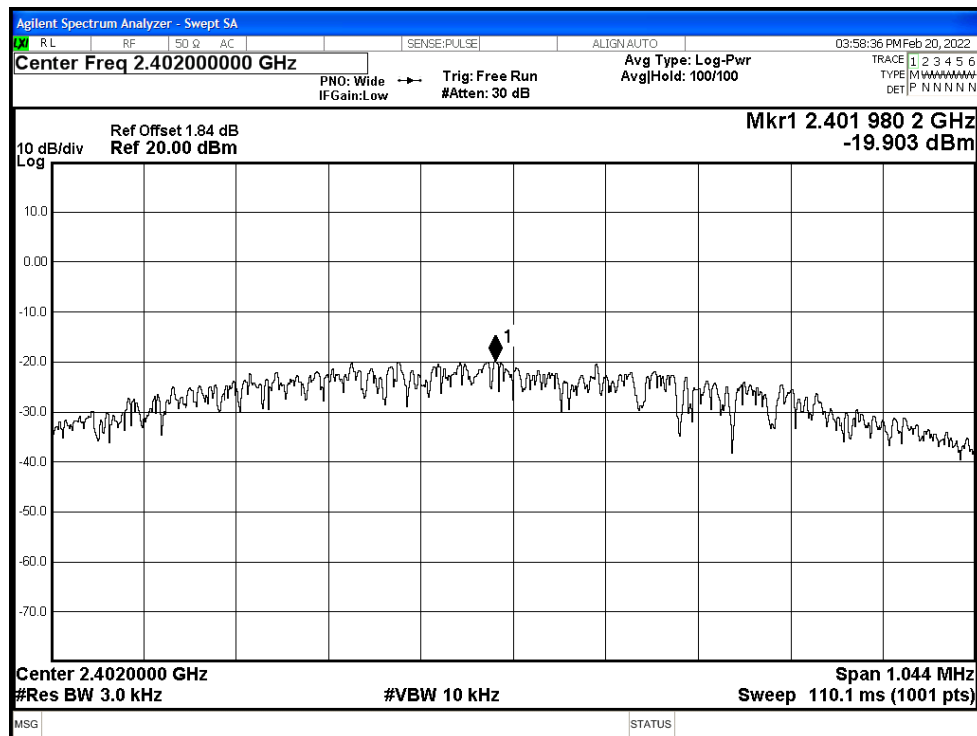
B.3 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	-19.9	0	-19.9	8	Pass
NVNT	BLE 1M	2440	Ant1	-19.37	0	-19.37	8	Pass
NVNT	BLE 1M	2480	Ant1	-19.85	0	-19.85	8	Pass
NVNT	BLE 2M	2402	Ant1	-22.32	0	-22.32	8	Pass
NVNT	BLE 2M	2440	Ant1	-21.87	0	-21.87	8	Pass
NVNT	BLE 2M	2480	Ant1	-22.22	0	-22.22	8	Pass

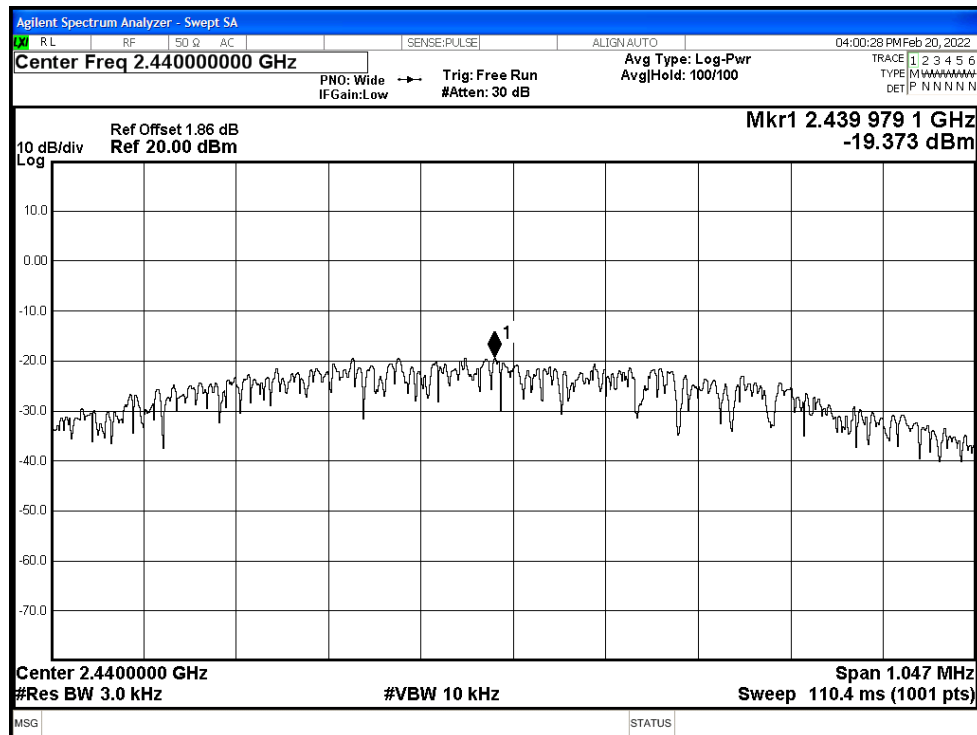


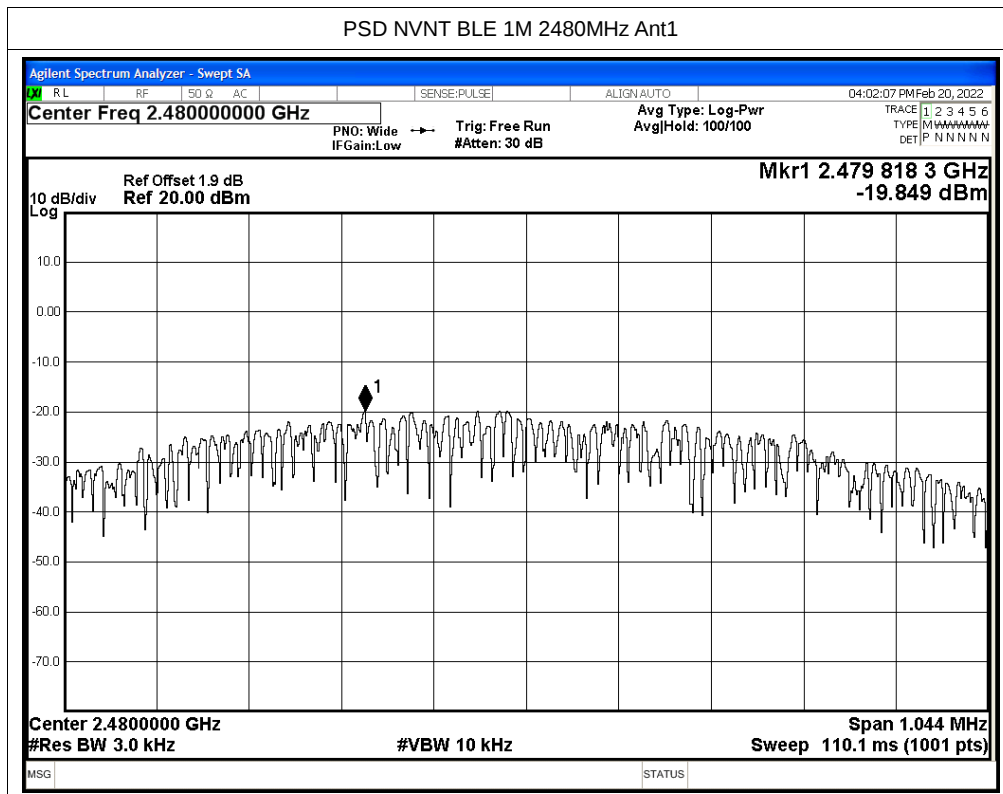
Test Graphs

PSD NVNT BLE 1M 2402MHz Ant1



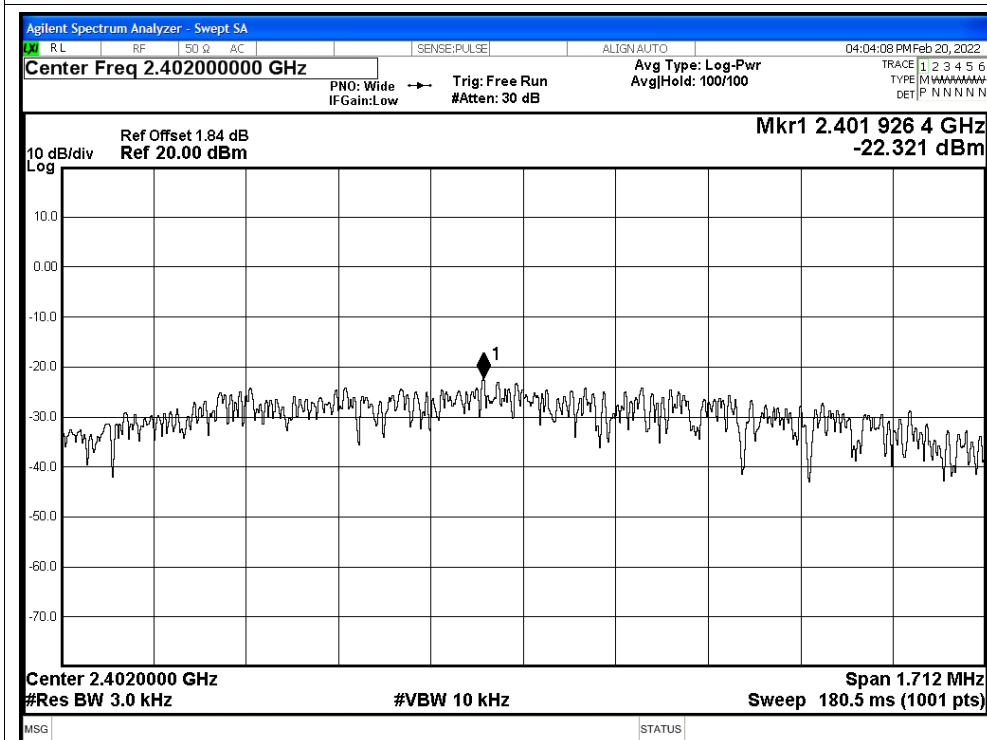
PSD NVNT BLE 1M 2440MHz Ant1



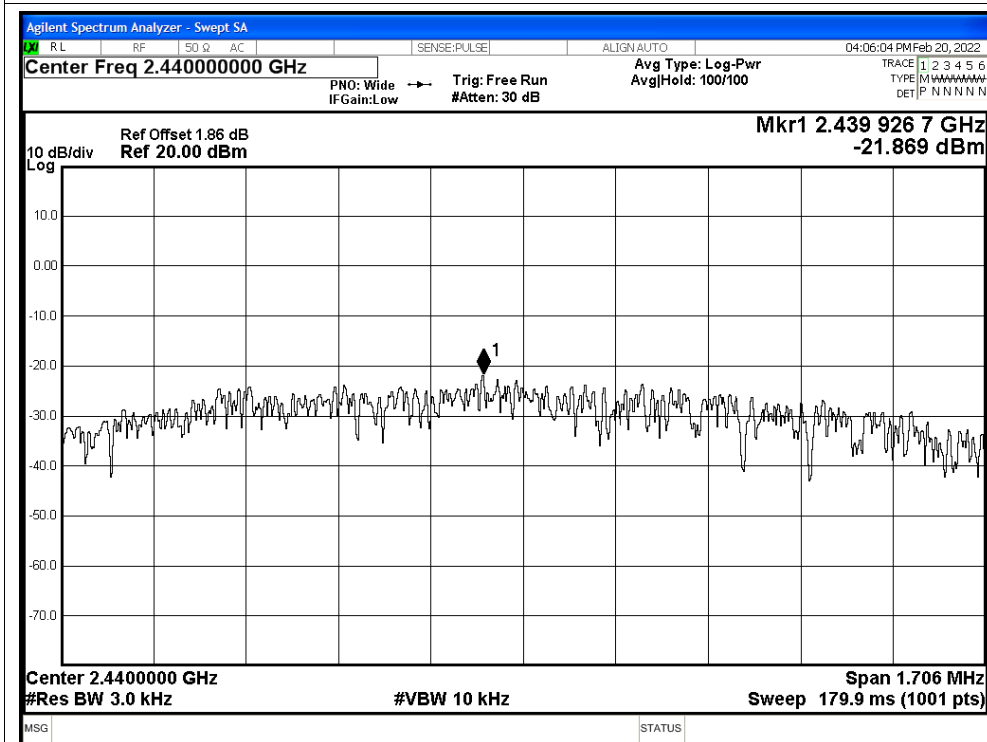


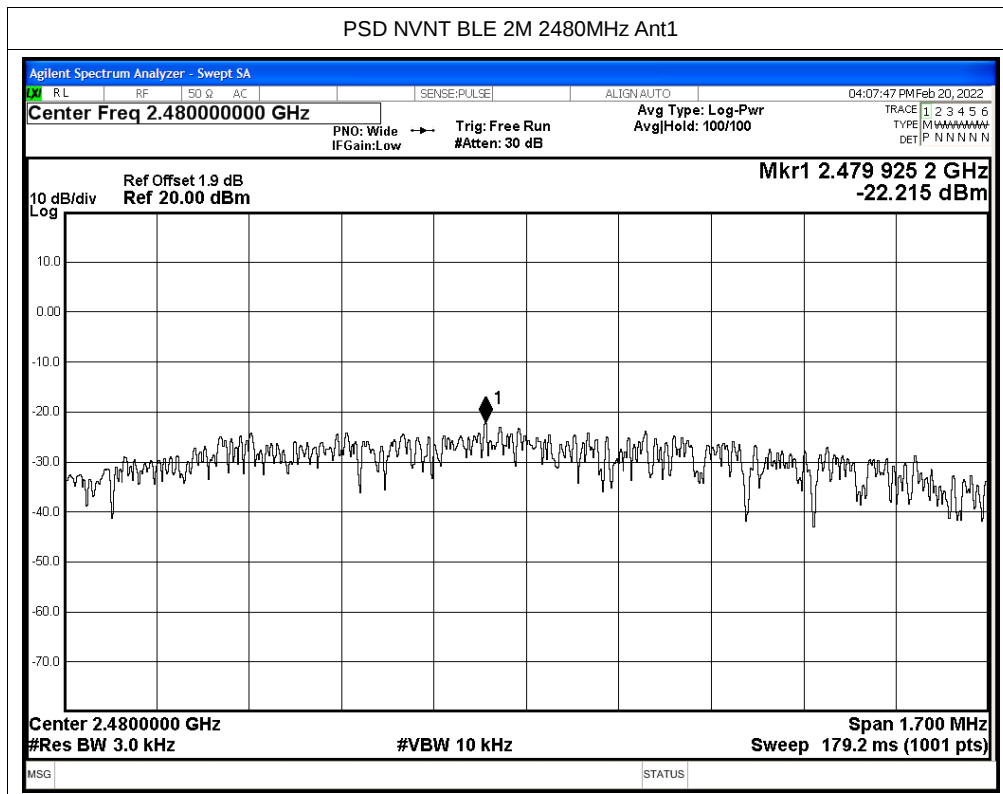


PSD NVNT BLE 2M 2402MHz Ant1



PSD NVNT BLE 2M 2440MHz Ant1







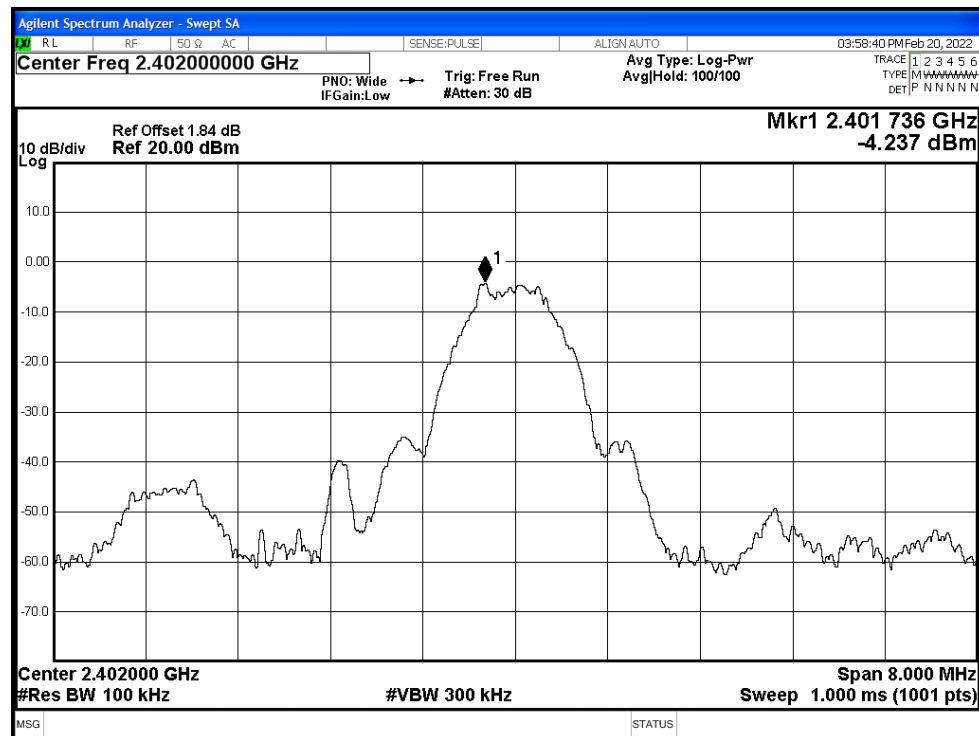
B.4 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-39.63	-20	Pass
NVNT	BLE 1M	2480	Ant1	-45.23	-20	Pass
NVNT	BLE 2M	2402	Ant1	-33.33	-20	Pass
NVNT	BLE 2M	2480	Ant1	-49.79	-20	Pass

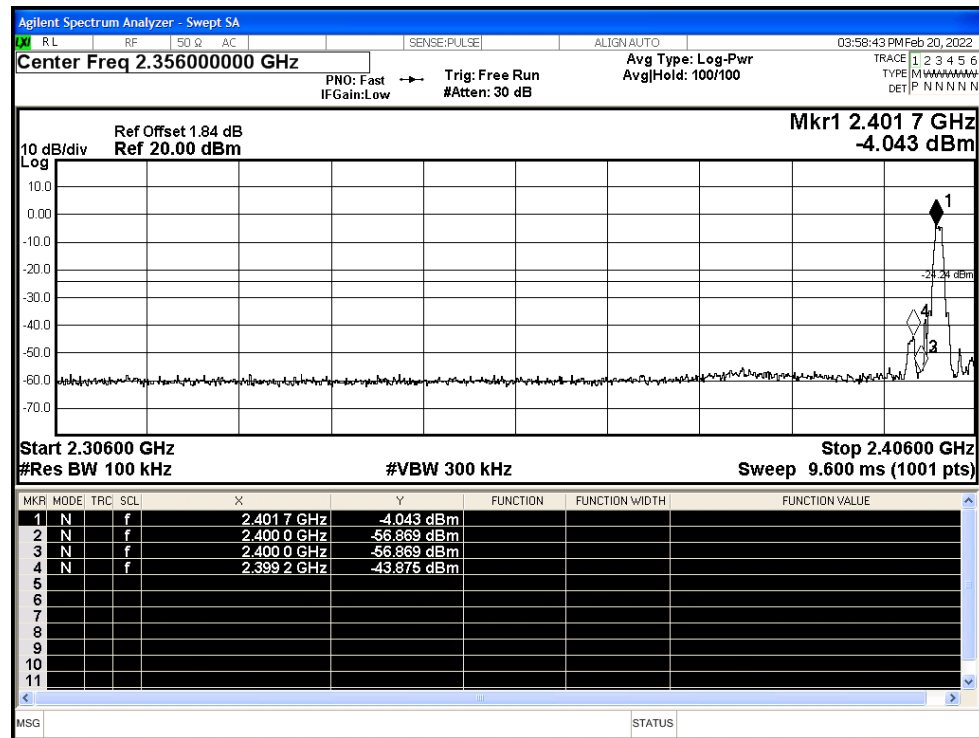


Test Graphs

Band Edge NVNT BLE 1M 2402MHz Ant1 Ref

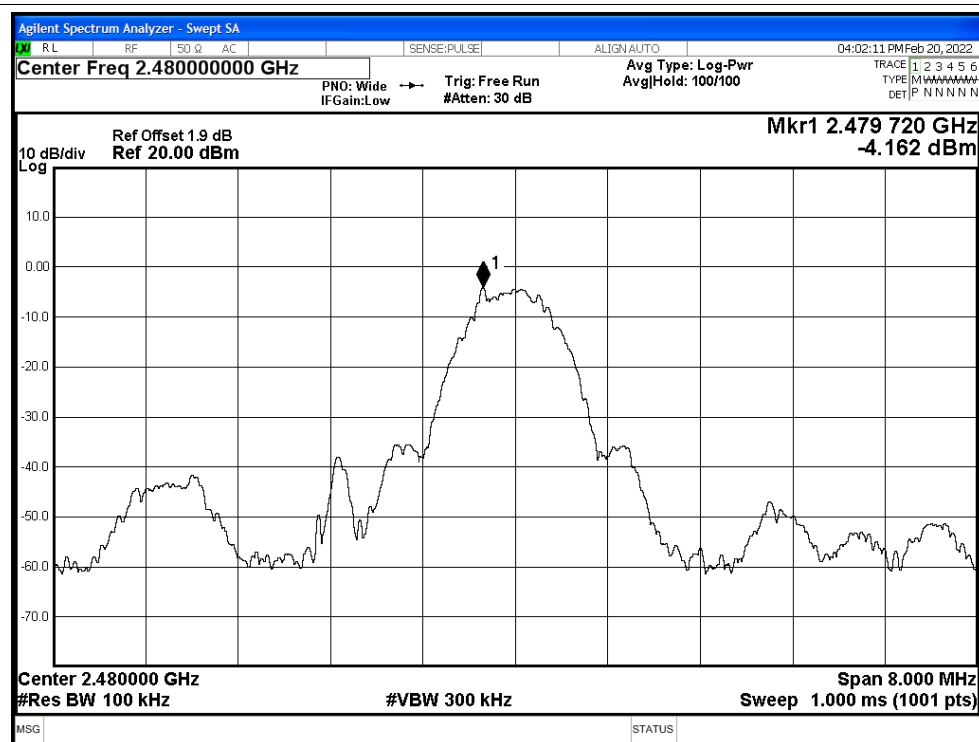


Band Edge NVNT BLE 1M 2402MHz Ant1 Emission

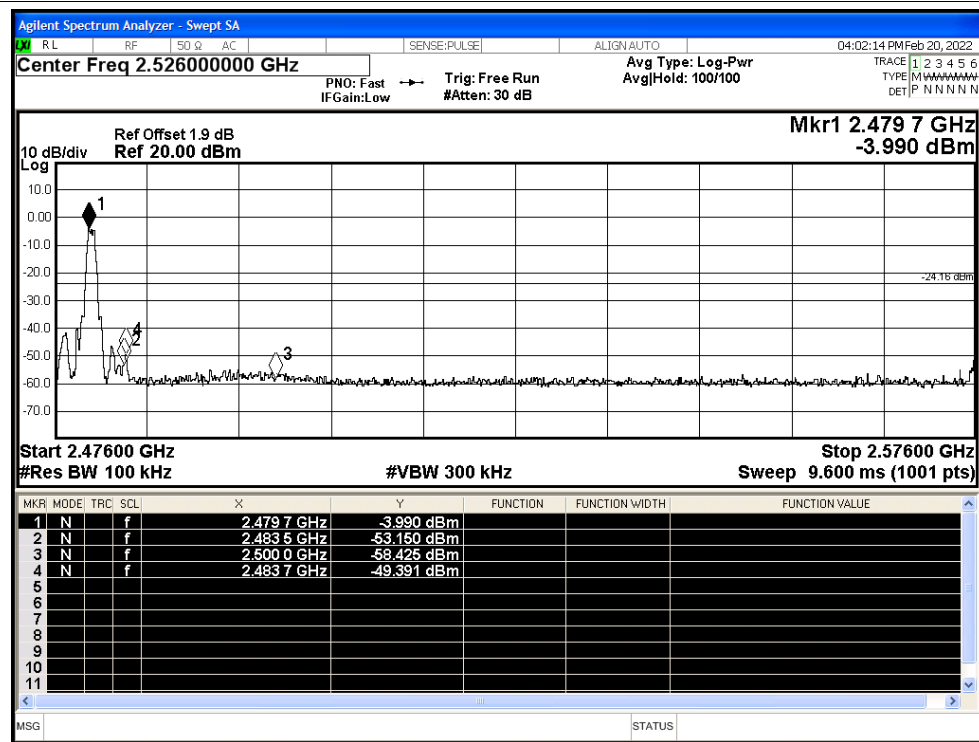




Band Edge NVNT BLE 1M 2480MHz Ant1 Ref

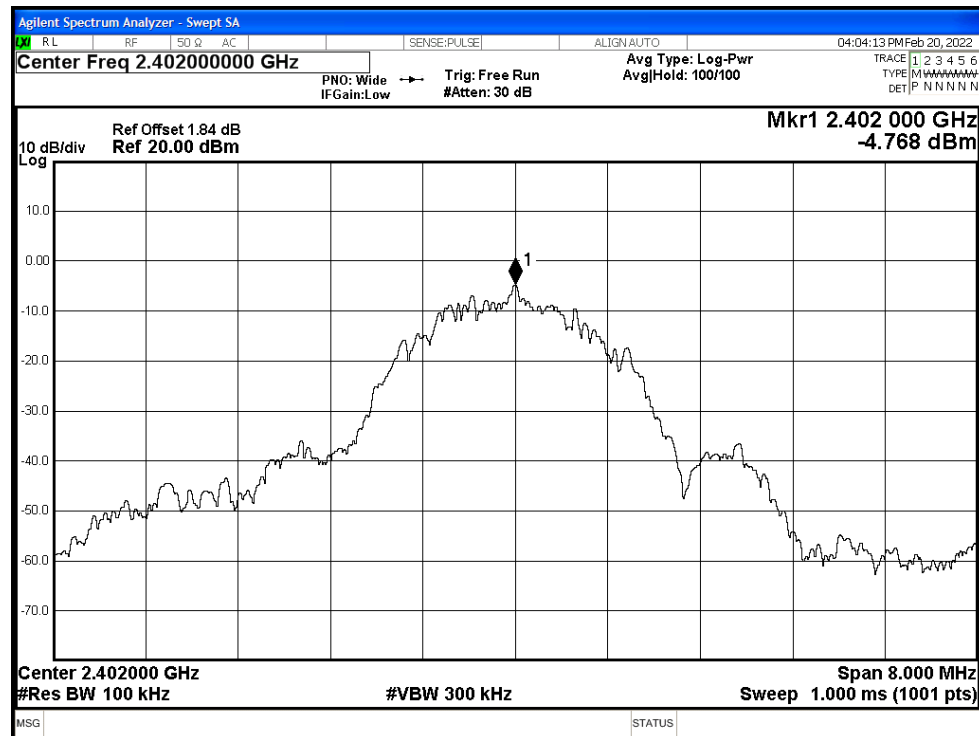


Band Edge NVNT BLE 1M 2480MHz Ant1 Emission

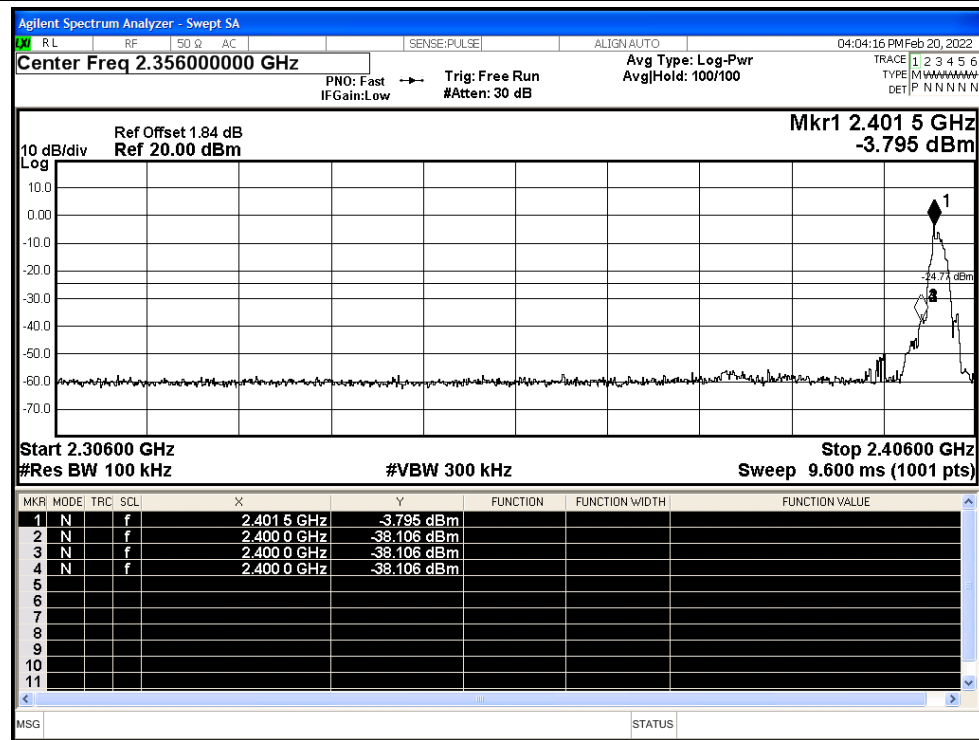




Band Edge NVNT BLE 2M 2402MHz Ant1 Ref



Band Edge NVNT BLE 2M 2402MHz Ant1 Emission

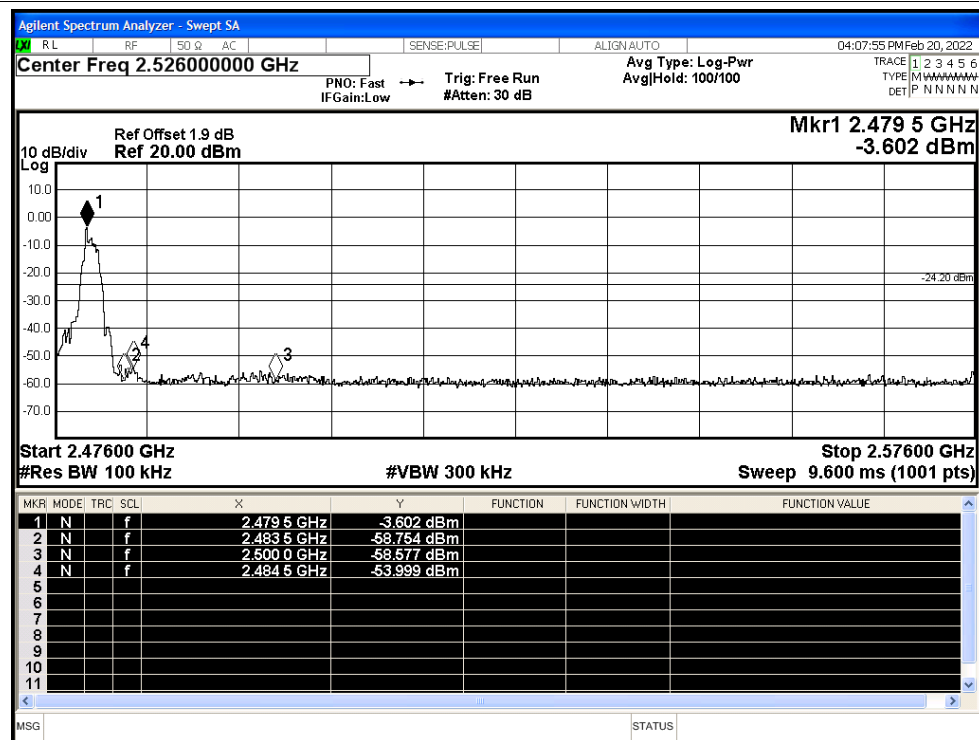




Band Edge NVNT BLE 2M 2480MHz Ant1 Ref



Band Edge NVNT BLE 2M 2480MHz Ant1 Emission





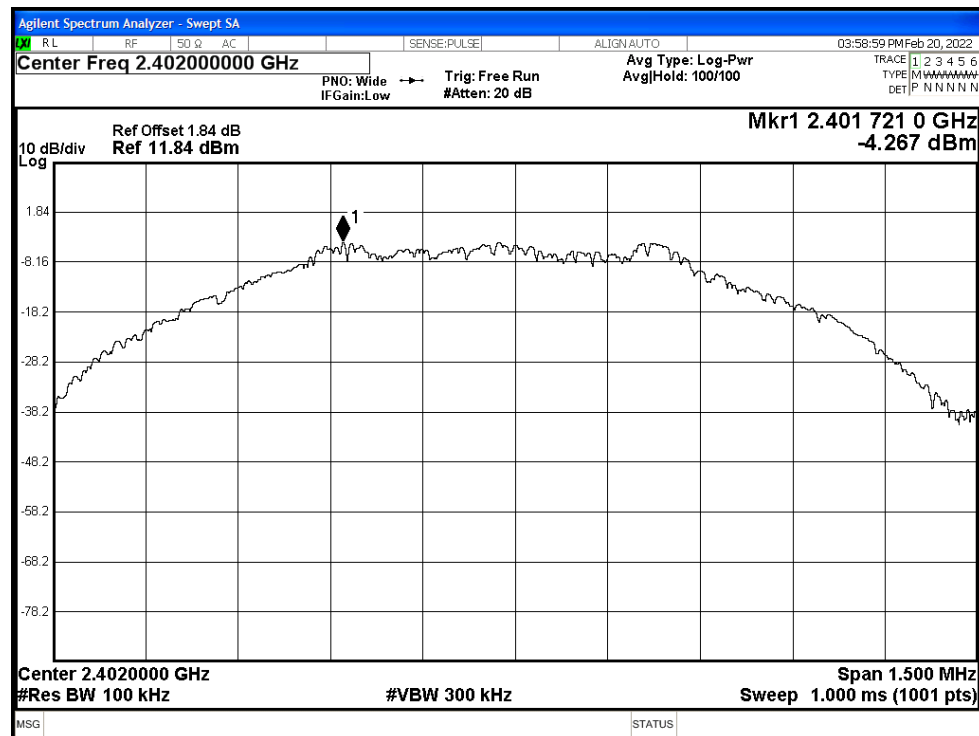
B.5 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-30.27	-20	Pass
NVNT	BLE 1M	2440	Ant1	-30.8	-20	Pass
NVNT	BLE 1M	2480	Ant1	-30.37	-20	Pass
NVNT	BLE 2M	2402	Ant1	-30.38	-20	Pass
NVNT	BLE 2M	2440	Ant1	-30.96	-20	Pass
NVNT	BLE 2M	2480	Ant1	-31.16	-20	Pass

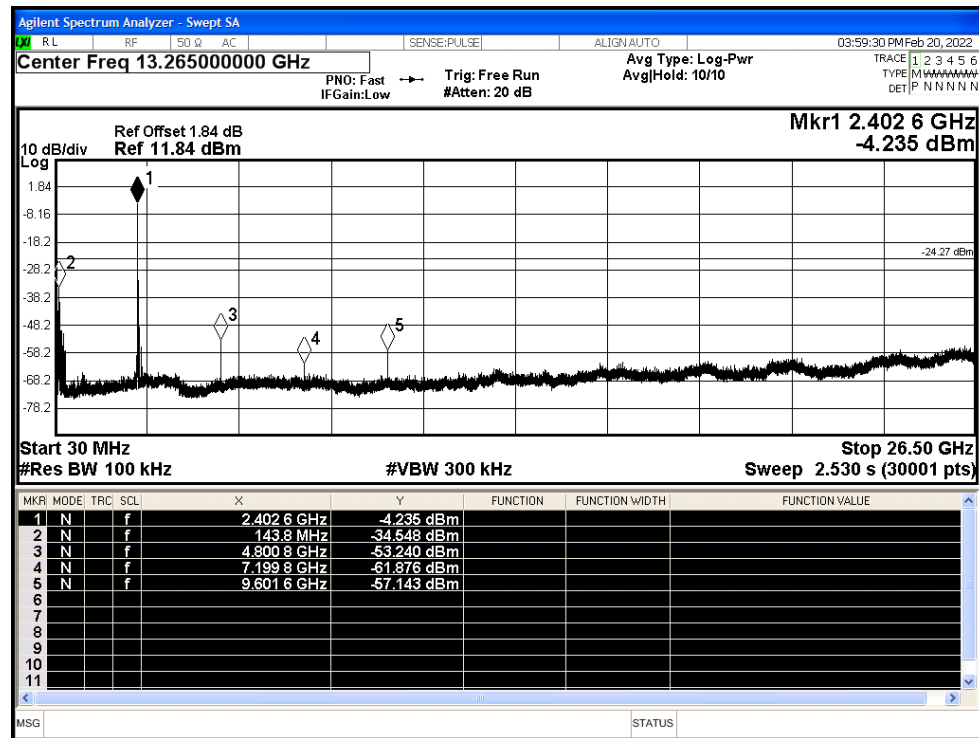


Test Graphs

Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref

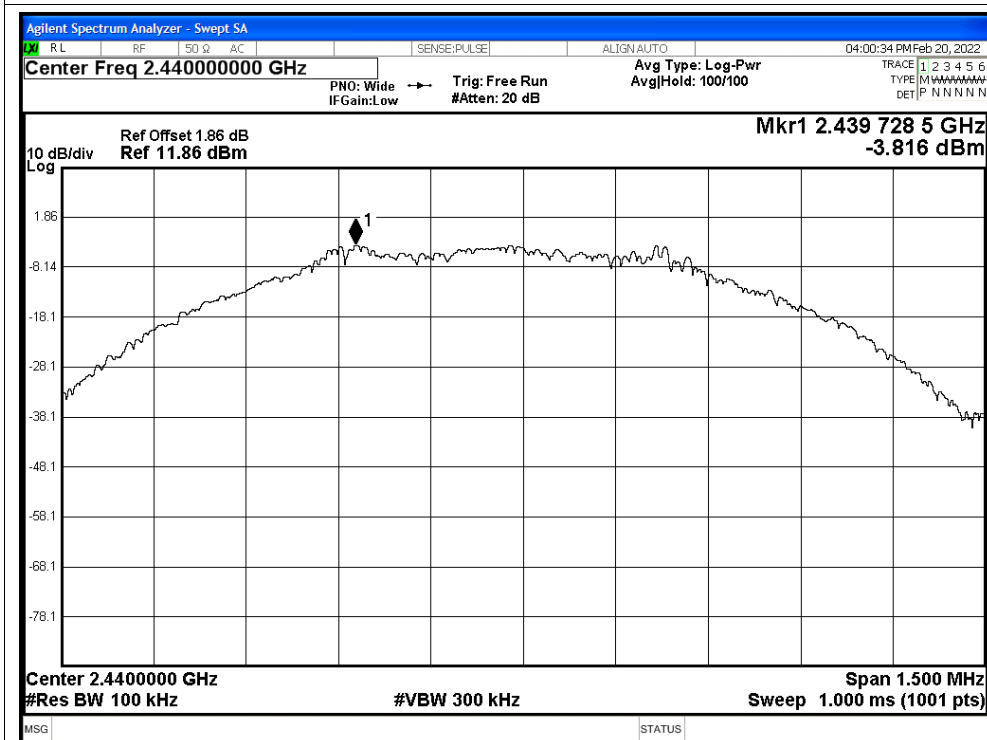


Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission

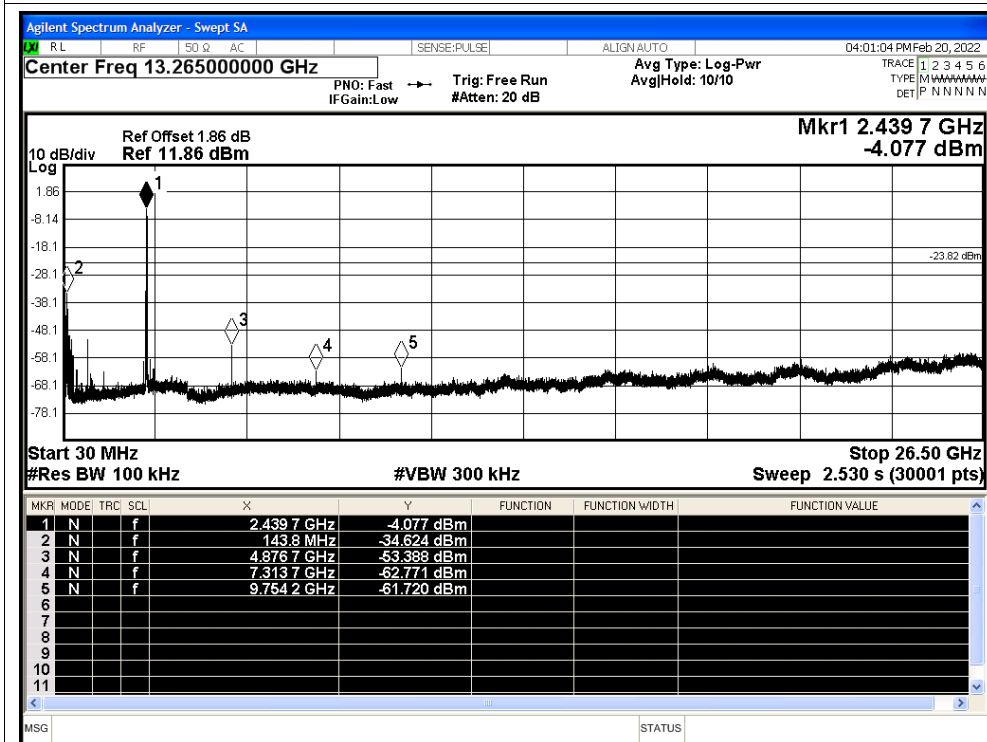




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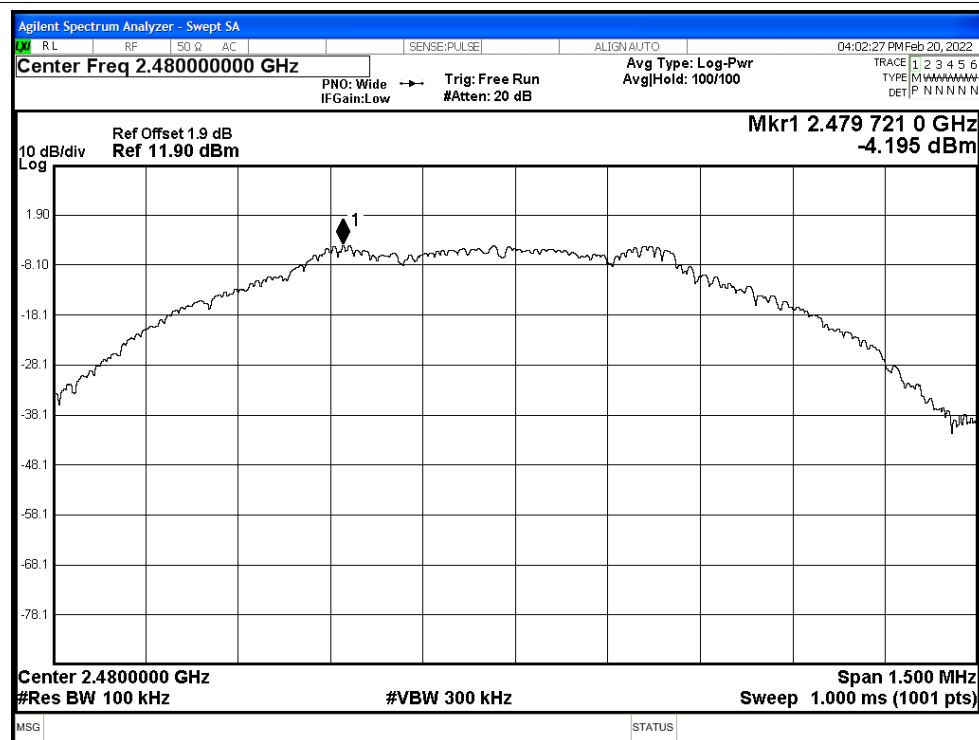


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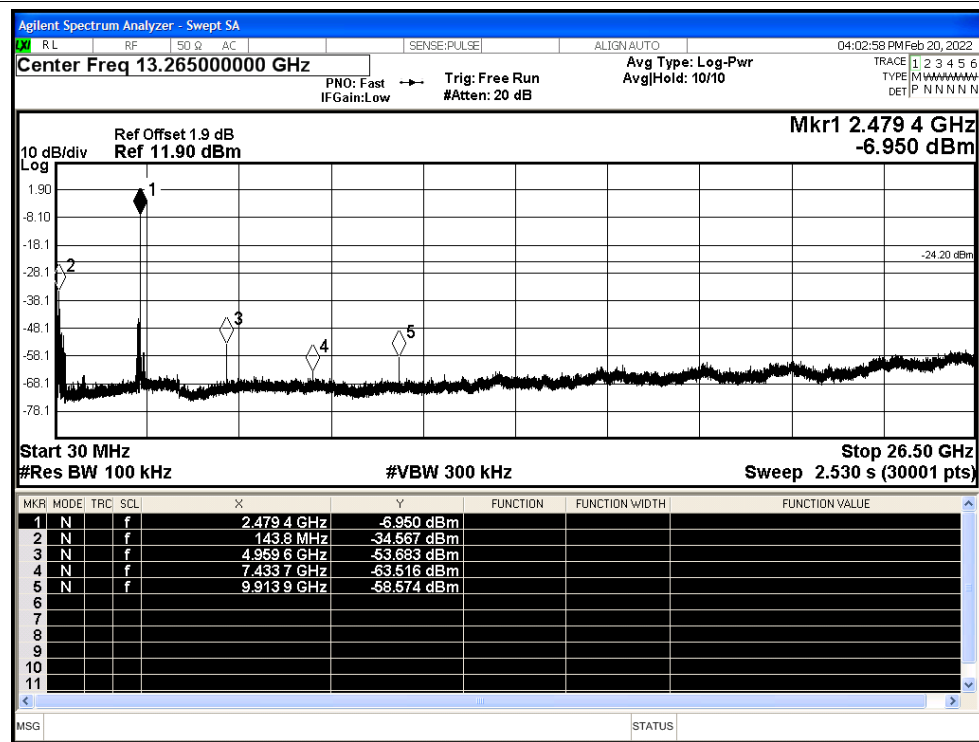




Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref

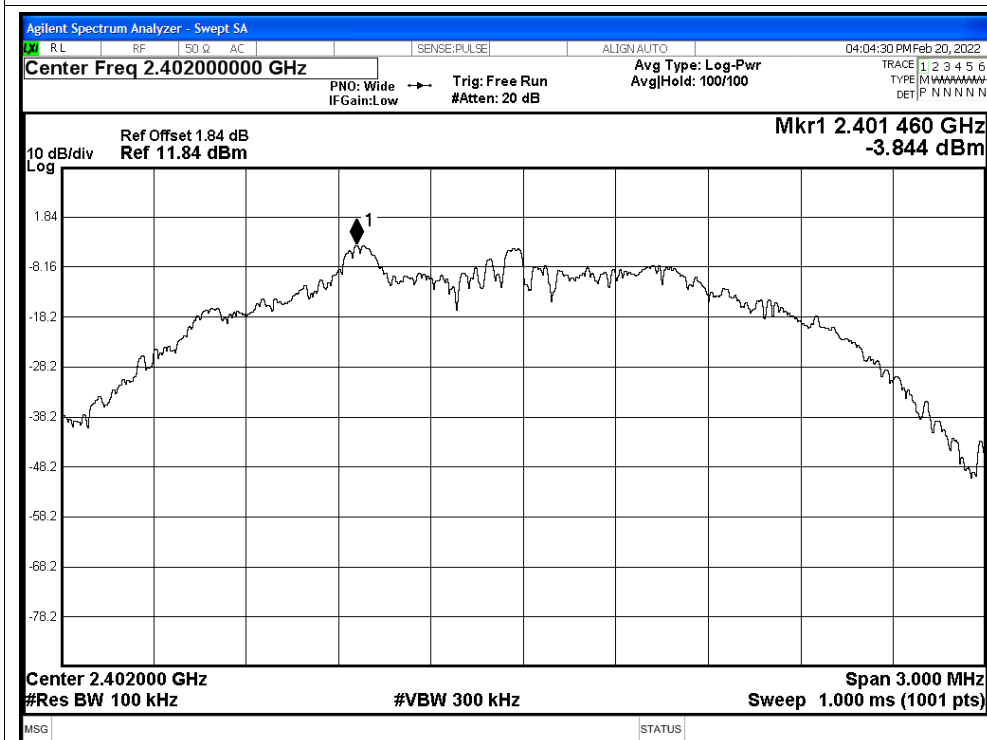


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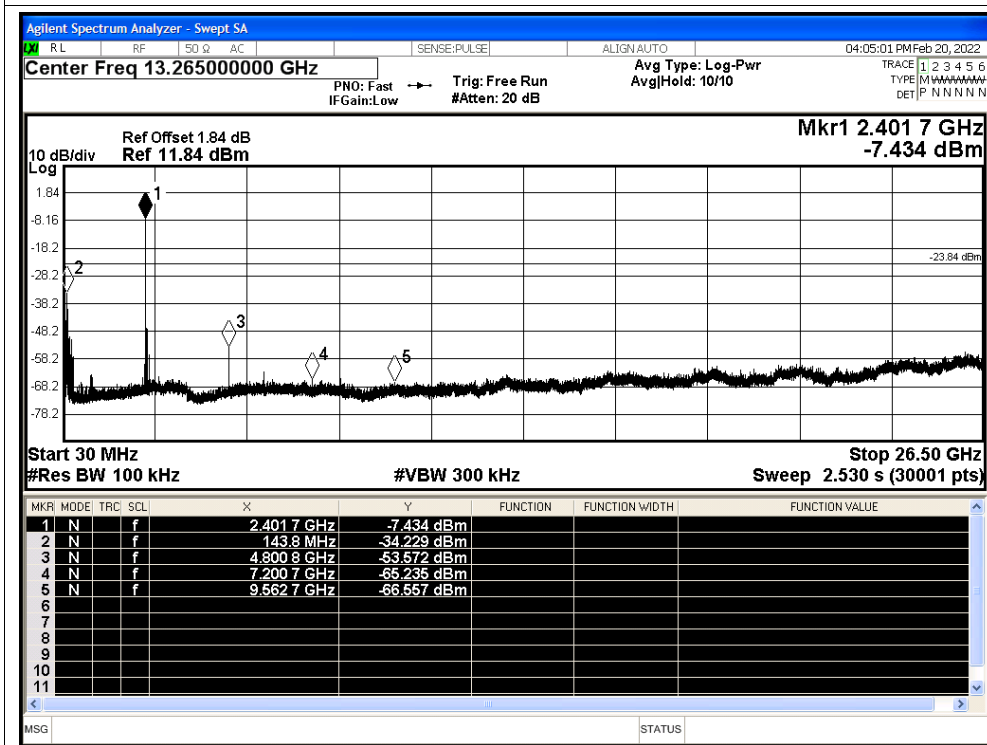




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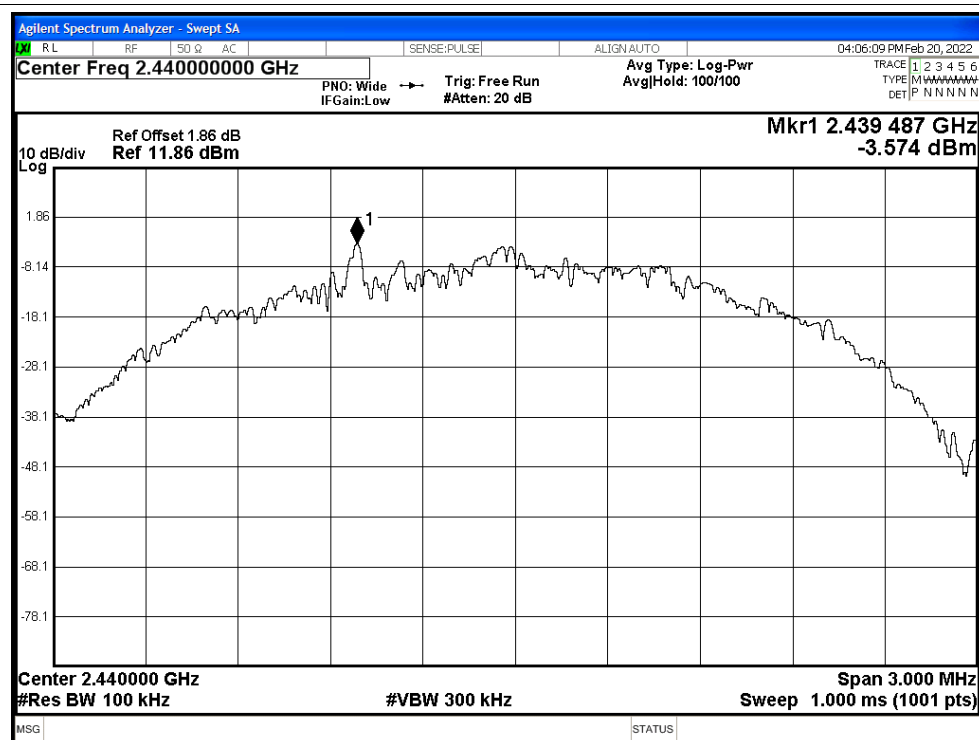


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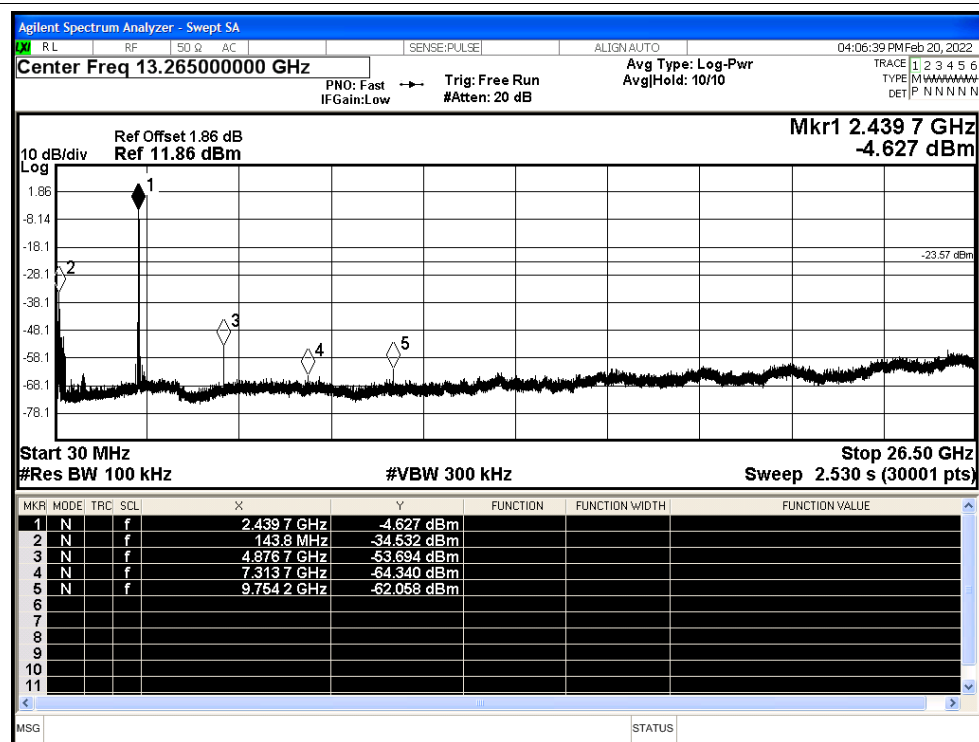




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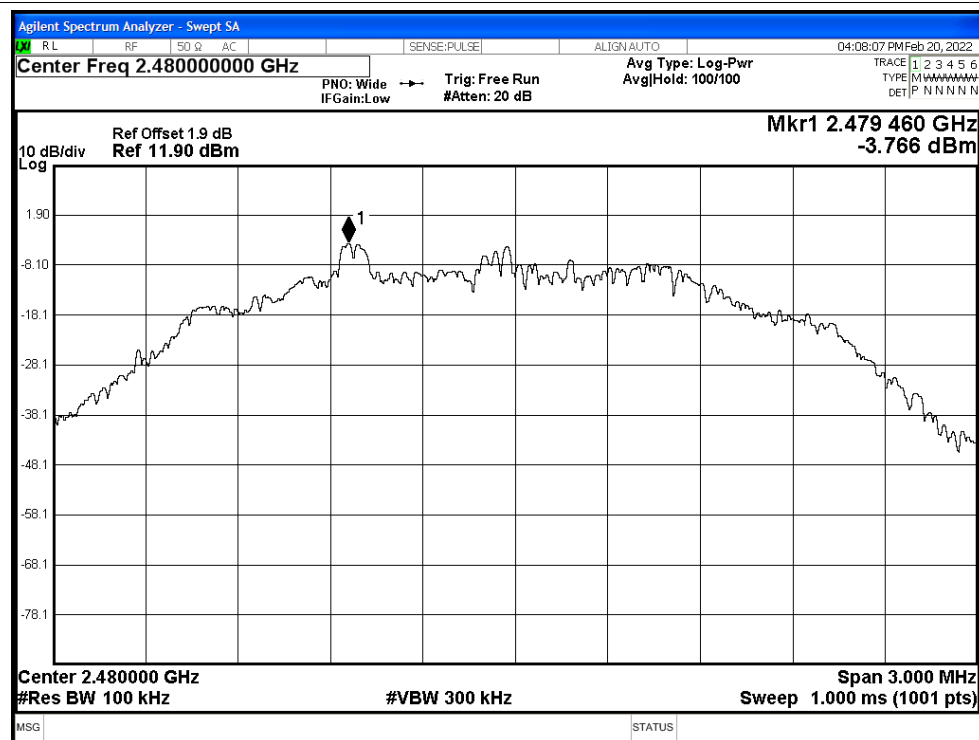


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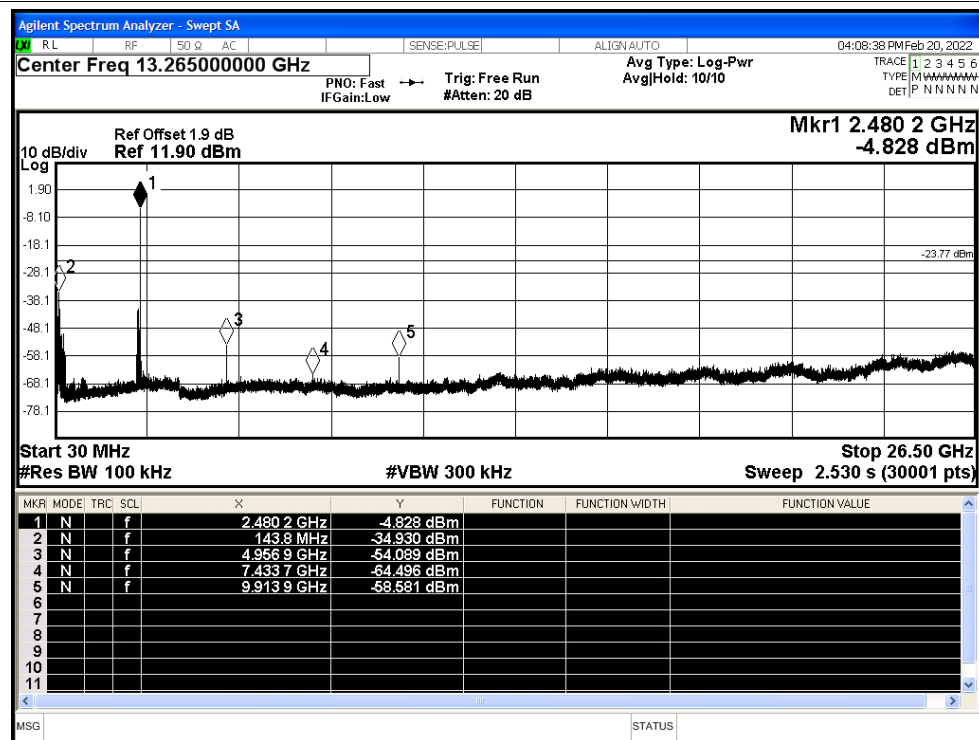




Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Emission





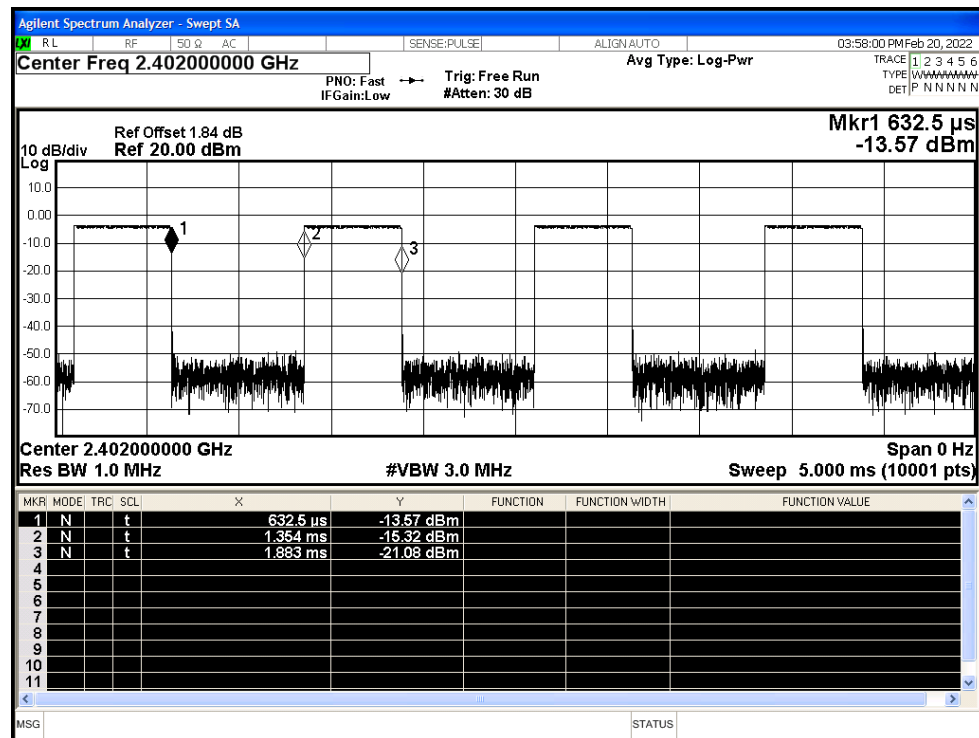
B.6 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant1	42.3	3.74	1.89
NVNT	BLE 1M	2440	Ant1	42.3	3.74	1.89
NVNT	BLE 1M	2480	Ant1	42.32	3.73	1.89
NVNT	BLE 2M	2402	Ant1	22.12	6.55	3.62
NVNT	BLE 2M	2440	Ant1	22.15	6.55	3.61
NVNT	BLE 2M	2480	Ant1	22.16	6.54	3.61

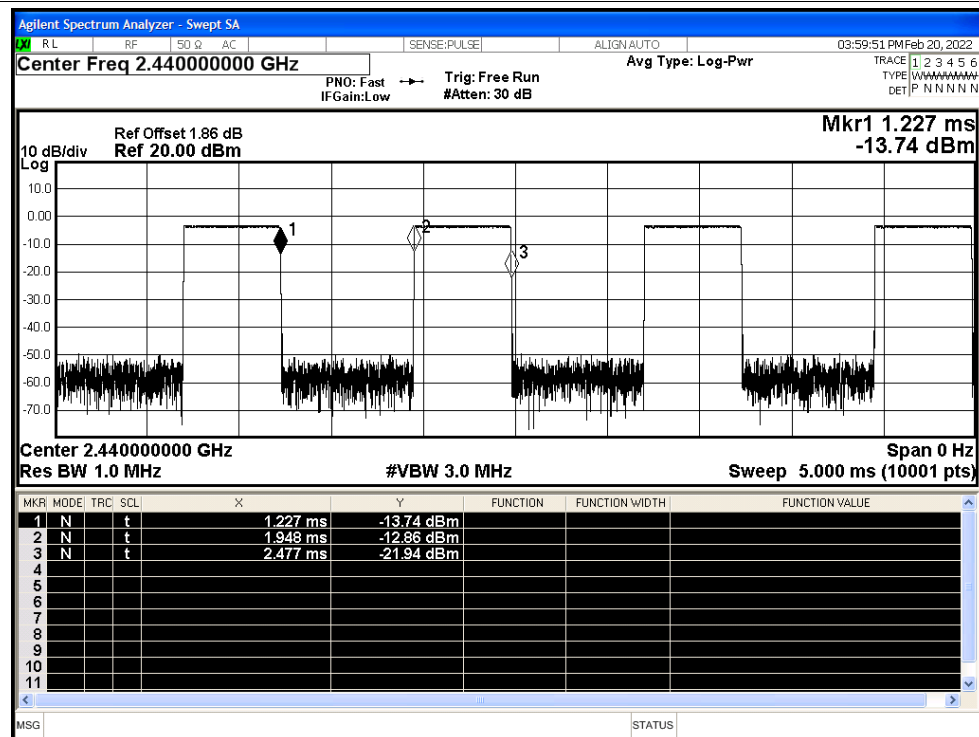


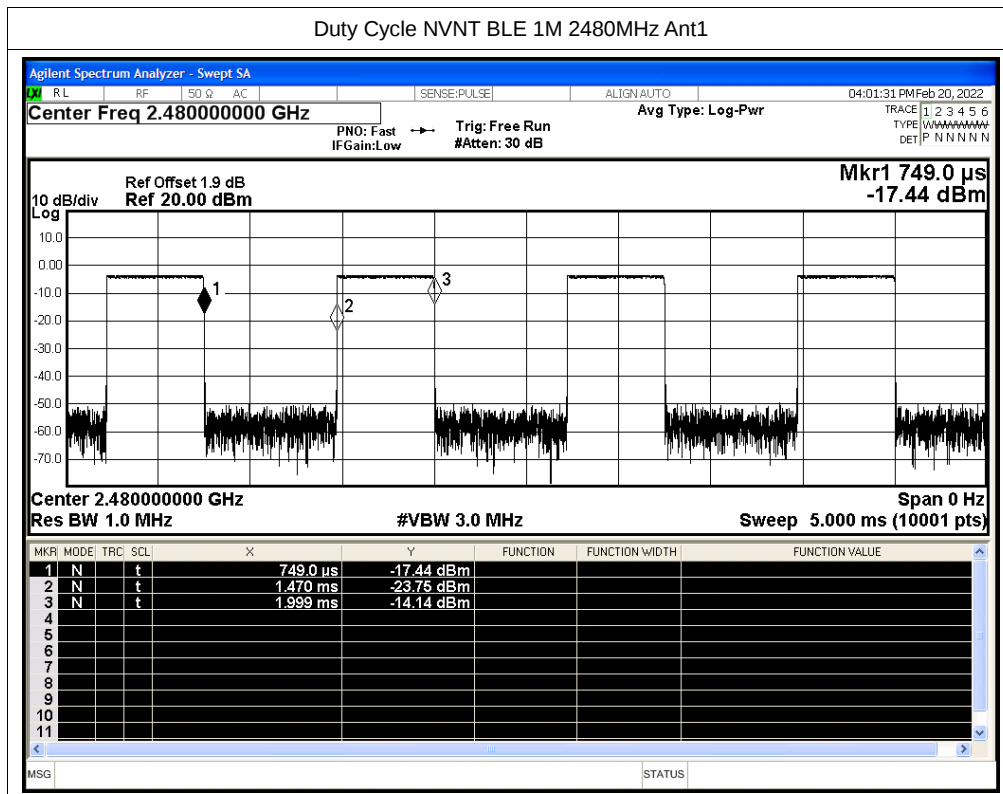
Test Graphs

Duty Cycle NVNT BLE 1M 2402MHz Ant1



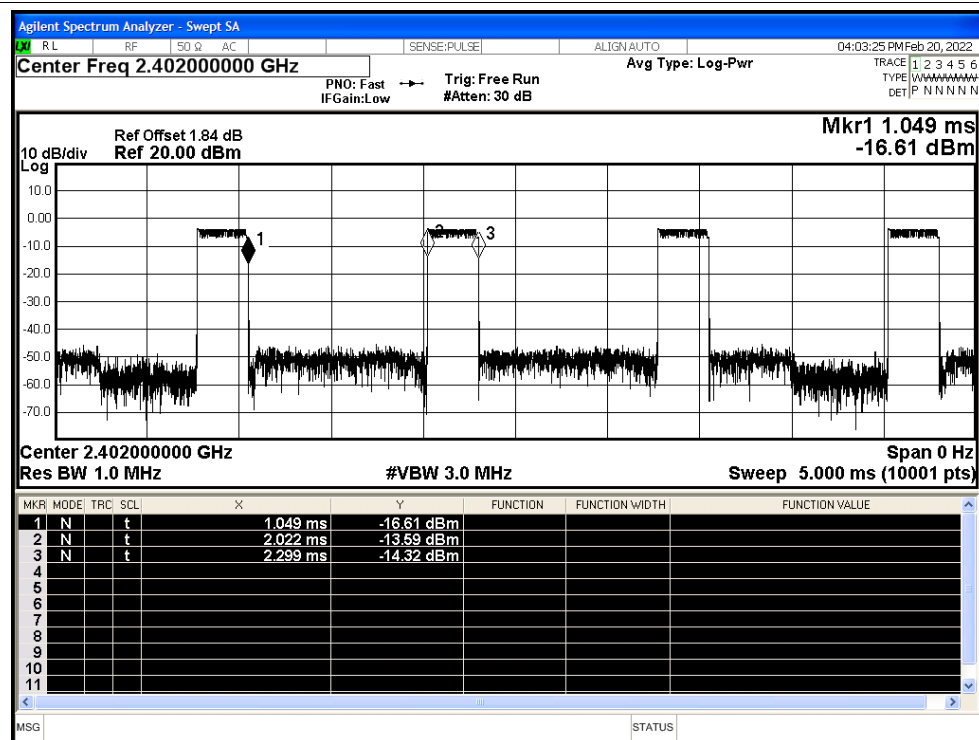
Duty Cycle NVNT BLE 1M 2440MHz Ant1



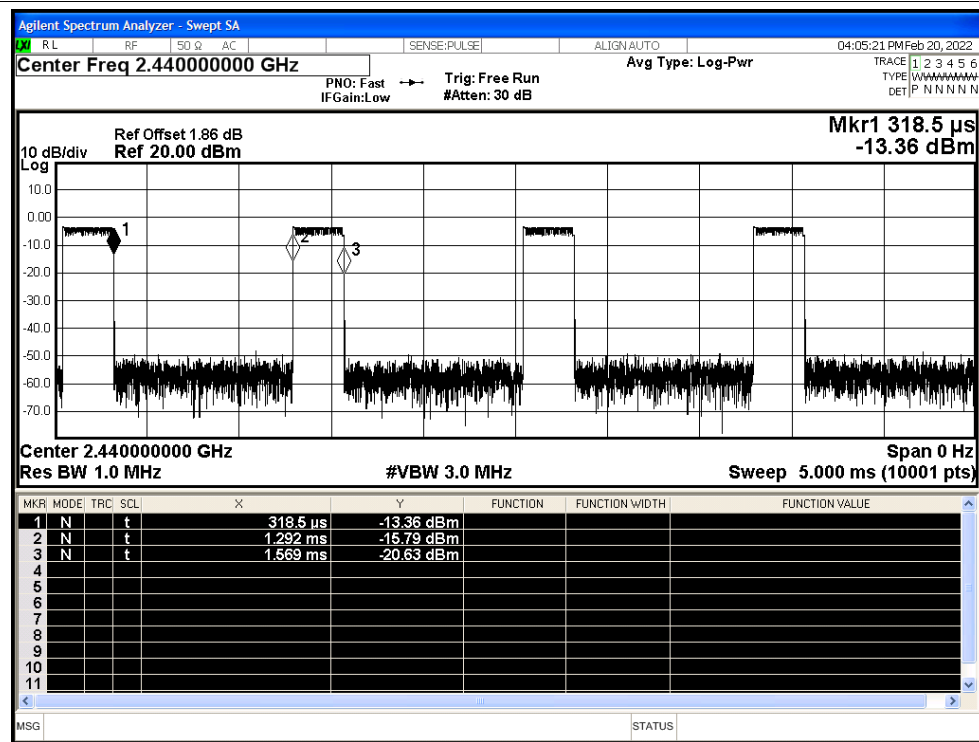


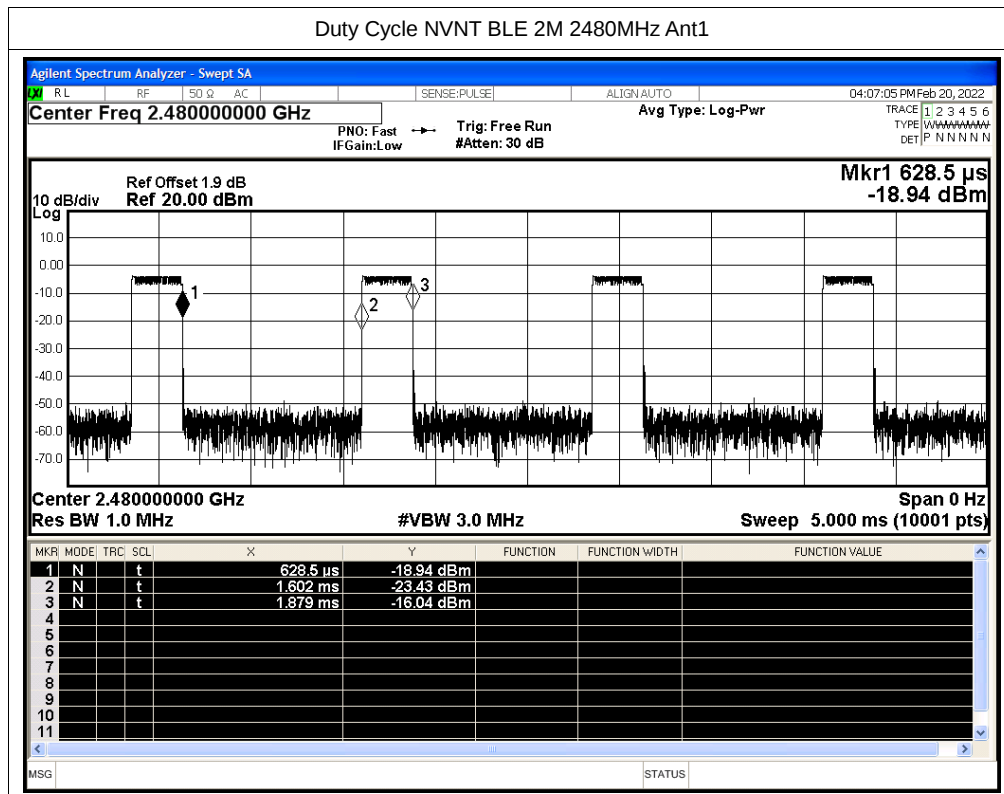


Duty Cycle NVNT BLE 2M 2402MHz Ant1



Duty Cycle NVNT BLE 2M 2440MHz Ant1







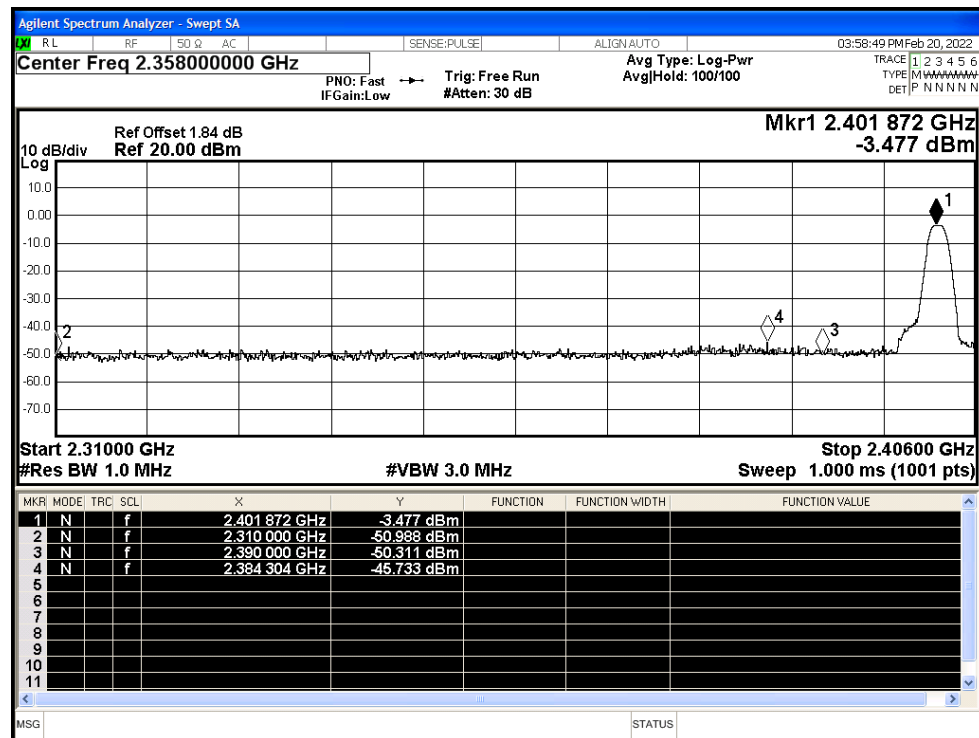
B.7 Restrict Band

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	-50.98	2	46.28	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2310	-59.86	2	37.4	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2384.304	-45.73	2	51.53	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2381.04	-56.65	2	40.61	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2390	-48.94	2	48.32	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2390	-57.58	2	39.68	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-44.15	2	53.11	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-52.6	2	44.66	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.584	-42.76	2	54.5	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.536	-52.52	2	44.74	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2500	-45.93	2	51.33	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2500	-56.32	2	40.94	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2310	-51.2	2	46.06	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2310	-59.66	2	37.6	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2382.288	-45.84	2	51.42	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2379.696	-56.07	2	41.19	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2390	-49.72	2	47.54	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2390	-57.97	2	39.29	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-46.73	2	50.53	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-55.12	2	42.14	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2496.376	-44.87	2	52.39	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2484.136	-54.61	2	42.65	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2500	-50.11	2	47.15	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2500	-56.25	2	41.01	Average	54	Pass

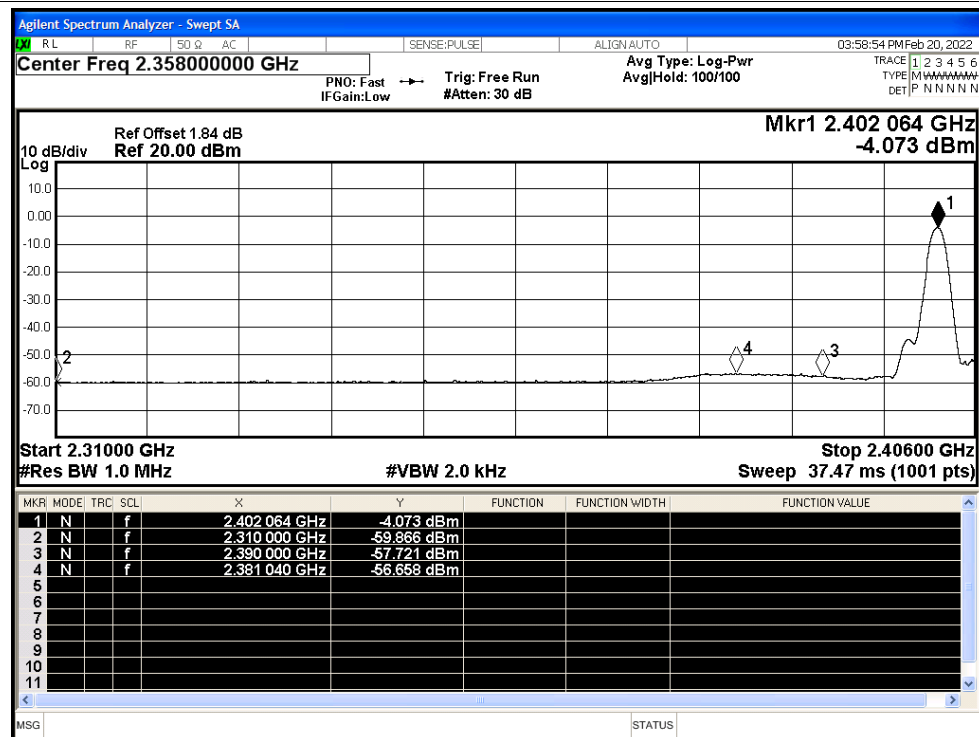


Test Graphs

Restrict Band NVNT BLE 1M 2402MHz Ant1 Peak

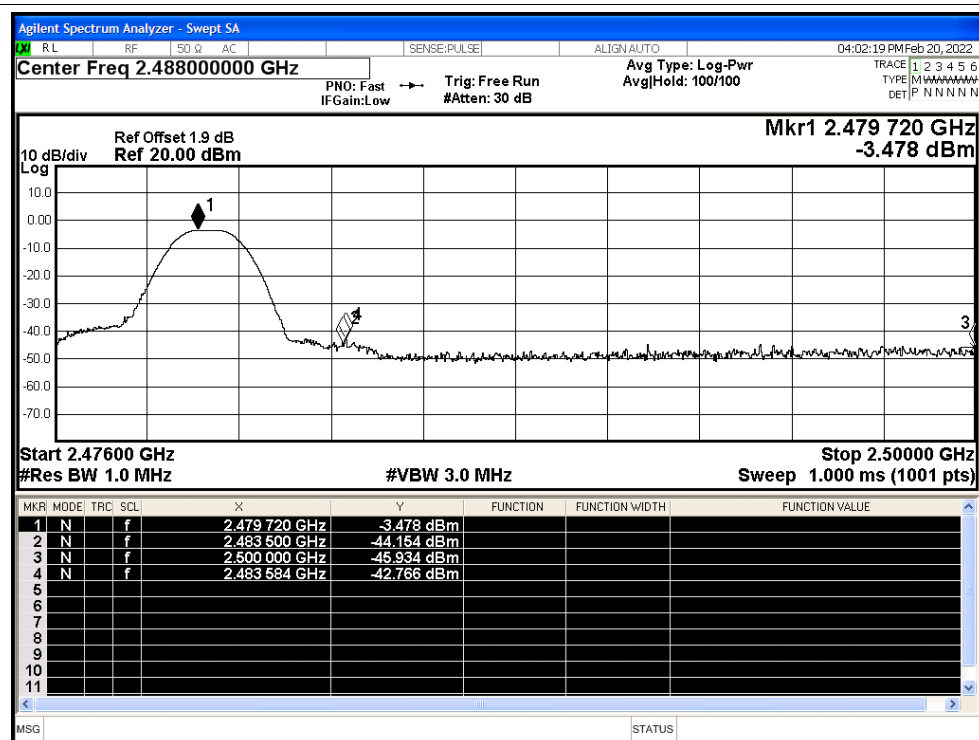


Restrict Band NVNT BLE 1M 2402MHz Ant1 Average

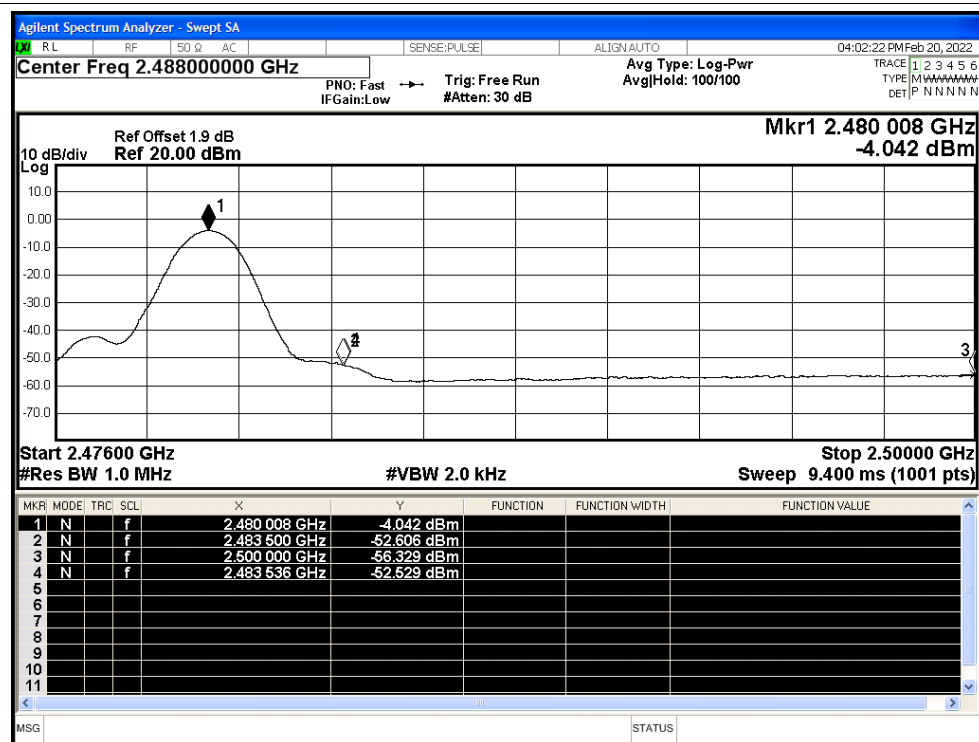




Restrict Band NVNT BLE 1M 2480MHz Ant1 Peak

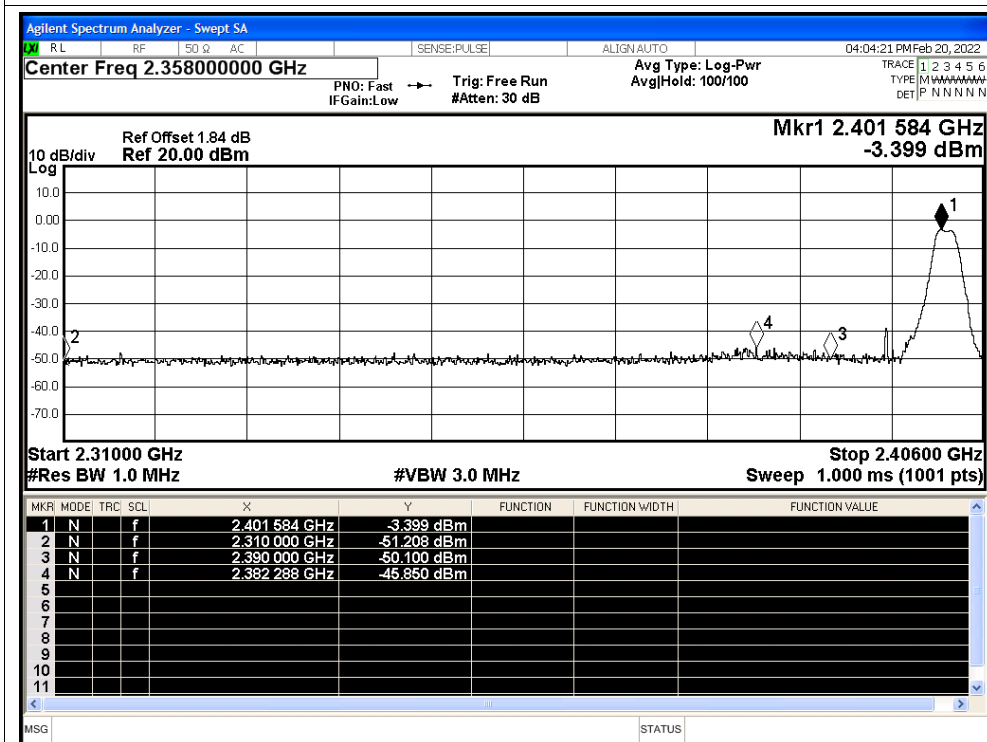


Restrict Band NVNT BLE 1M 2480MHz Ant1 Average

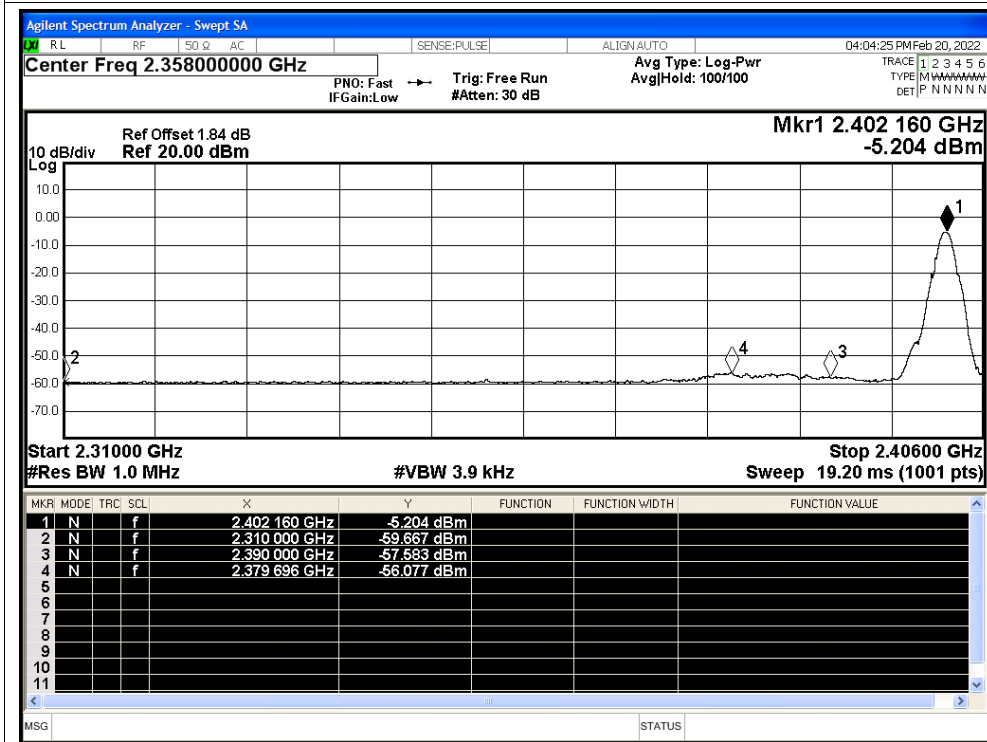




Restrict Band NVNT BLE 2M 2402MHz Ant1 Peak

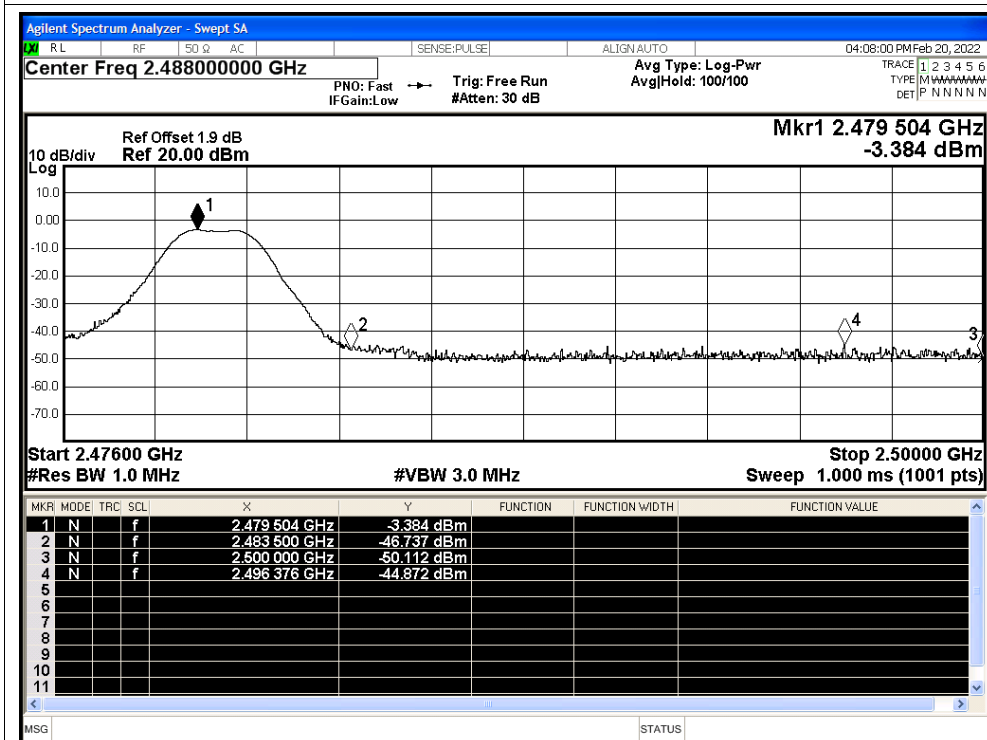


Restrict Band NVNT BLE 2M 2402MHz Ant1 Average





Restrict Band NVNT BLE 2M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 2M 2480MHz Ant1 Average

