Appendix B

RF Test Data for BLE (Conducted Measurement)

Product Name: Campfire Audio ORBIT

Test Model: 2AS58-01

Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
	Wander. Wu
Test Engineer:	Wunder Wu
Supervised by:	Lihn
	Li Huan

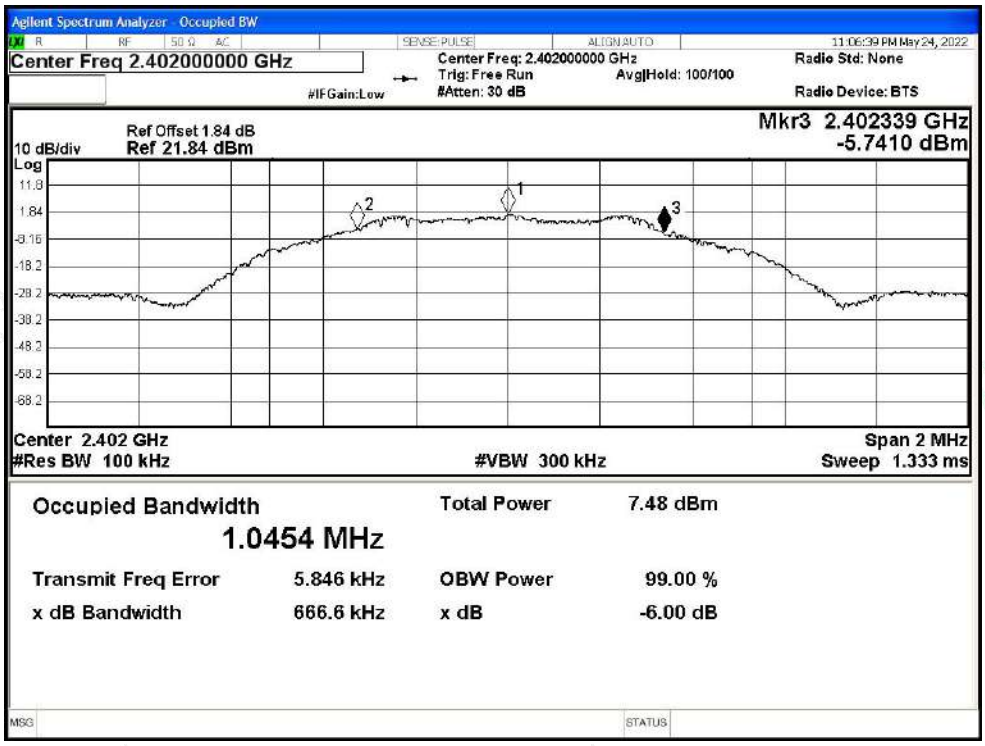
B.1 6dB Bandwidth

Left:

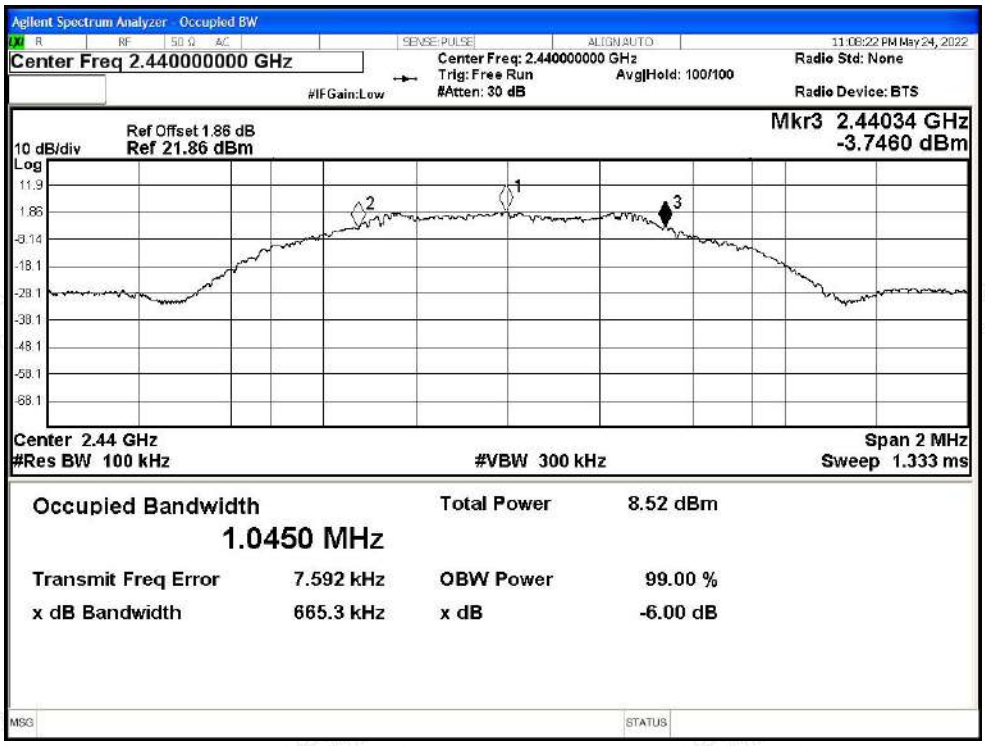
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.667	0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.665	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.668	0.5	Pass

Test Graphs

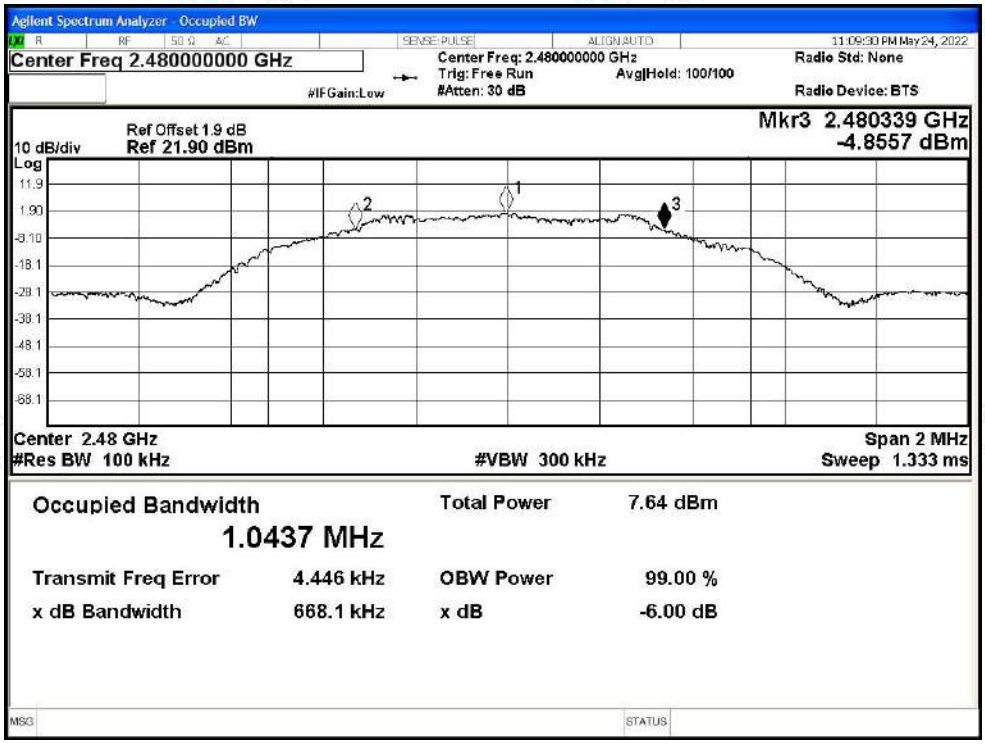
-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1

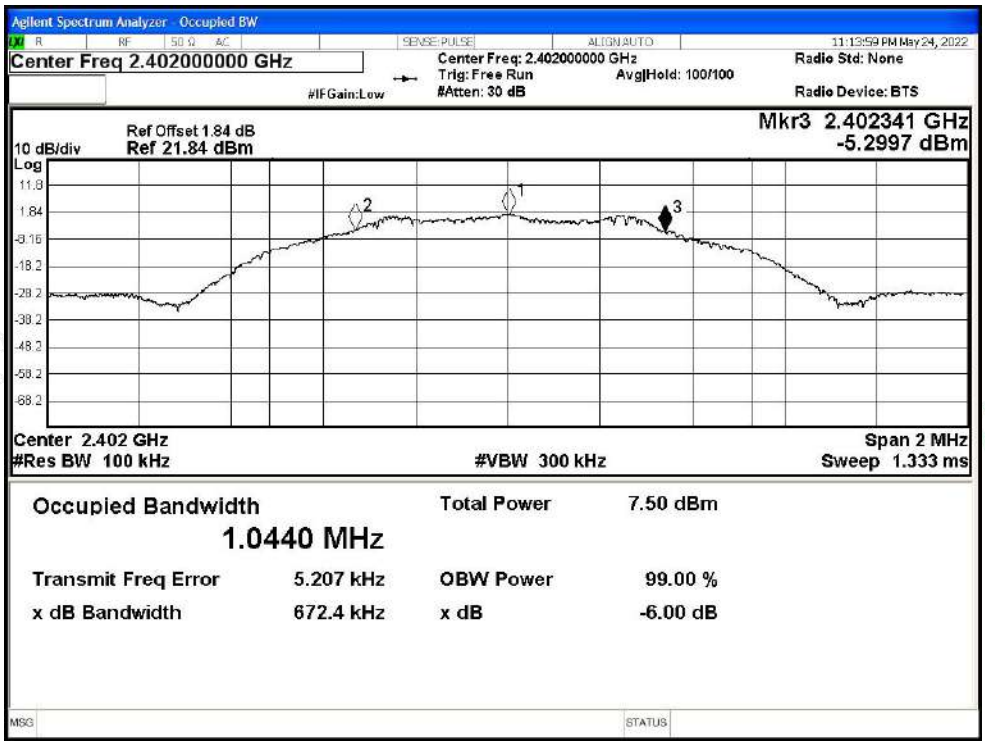


Right:

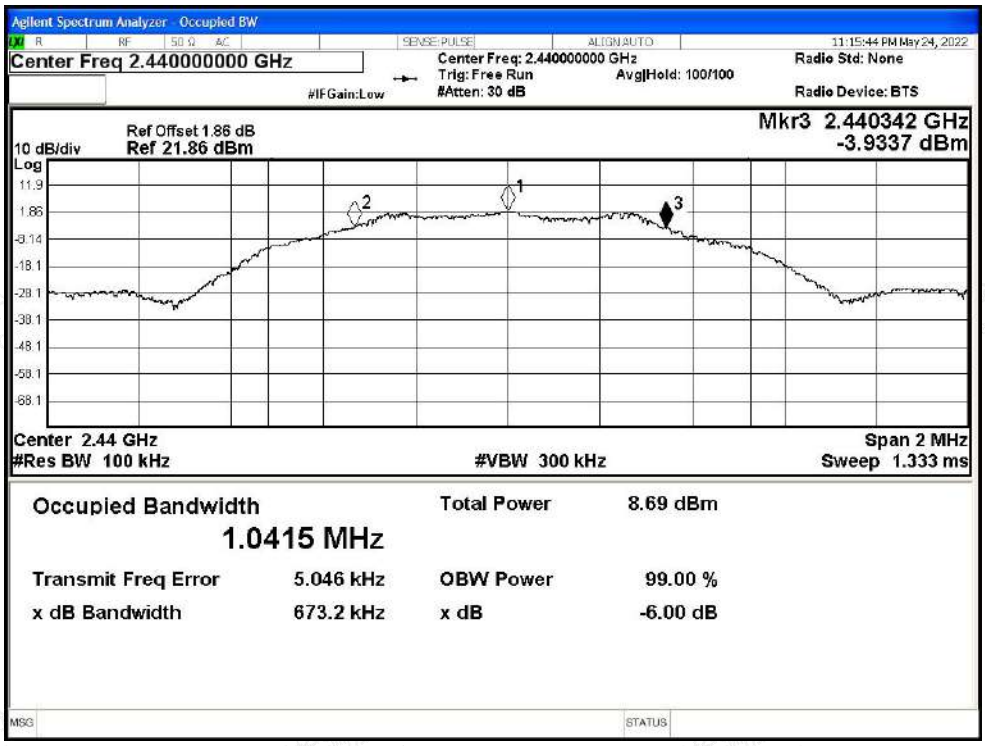
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.672	0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.673	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.668	0.5	Pass

Test Graphs

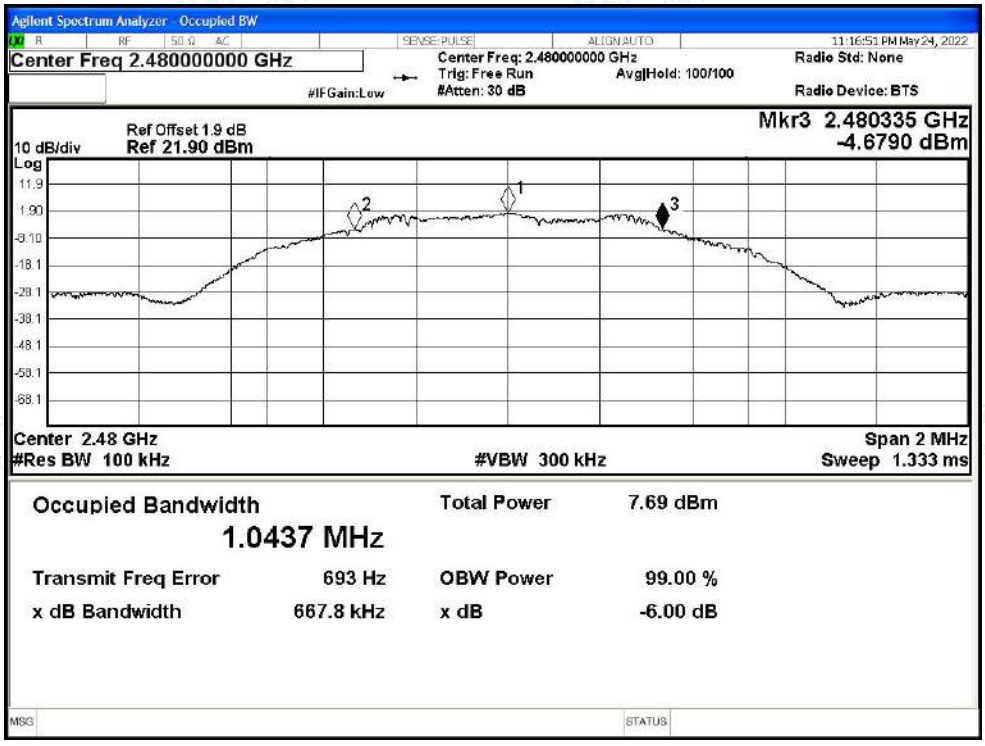
-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1



B.2 Occupied Channel Bandwidth

Left:

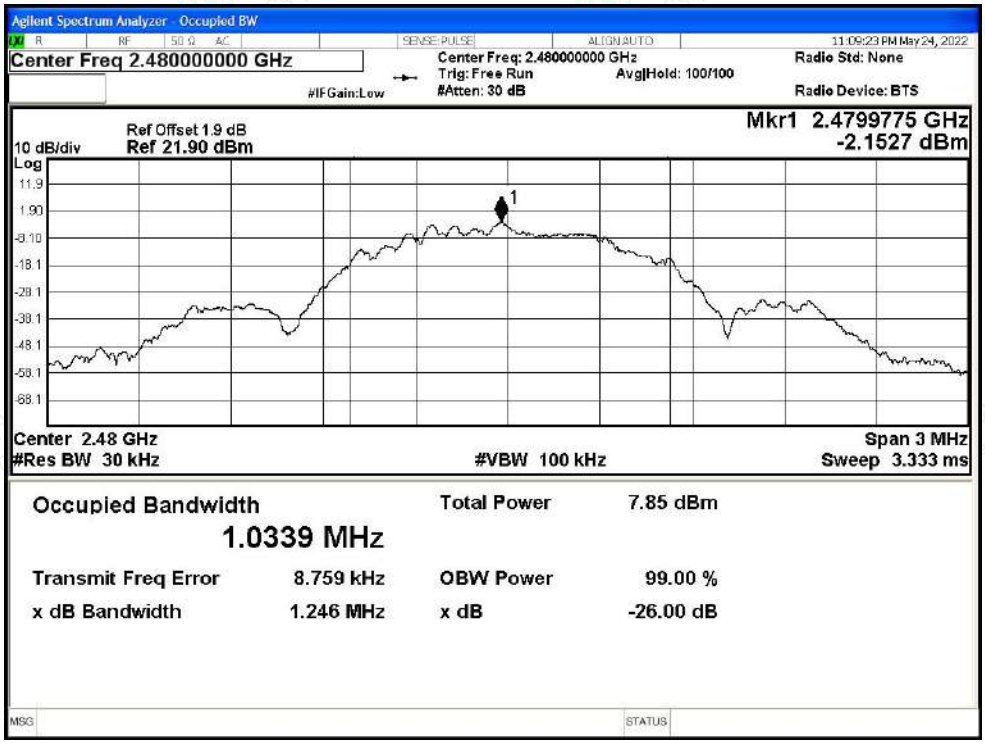
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	BLE 1M	2402	Ant1	1.034
NVNT	BLE 1M	2440	Ant1	1.032
NVNT	BLE 1M	2480	Ant1	1.034

Test Graphs

OBW NVNT BLE 1M 2402MHz Ant1

OBW NVNT BLE 1M 2440MHz Ant1

OBW NVNT BLE 1M 2480MHz Ant1

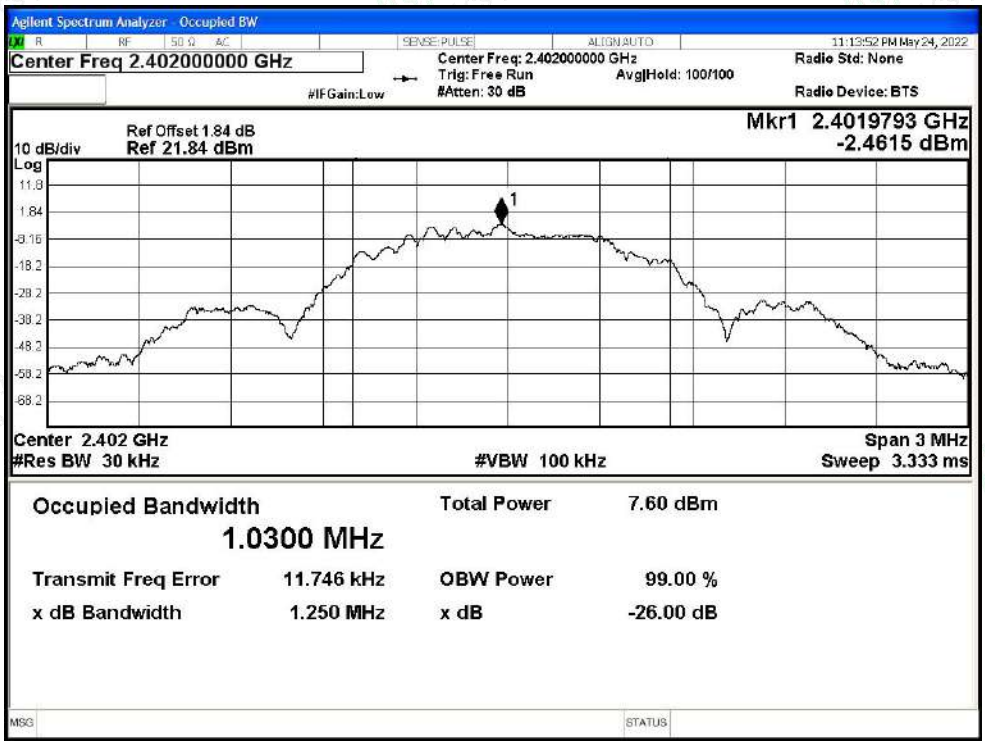


Right:

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	BLE 1M	2402	Ant1	1.03
NVNT	BLE 1M	2440	Ant1	1.033
NVNT	BLE 1M	2480	Ant1	1.029

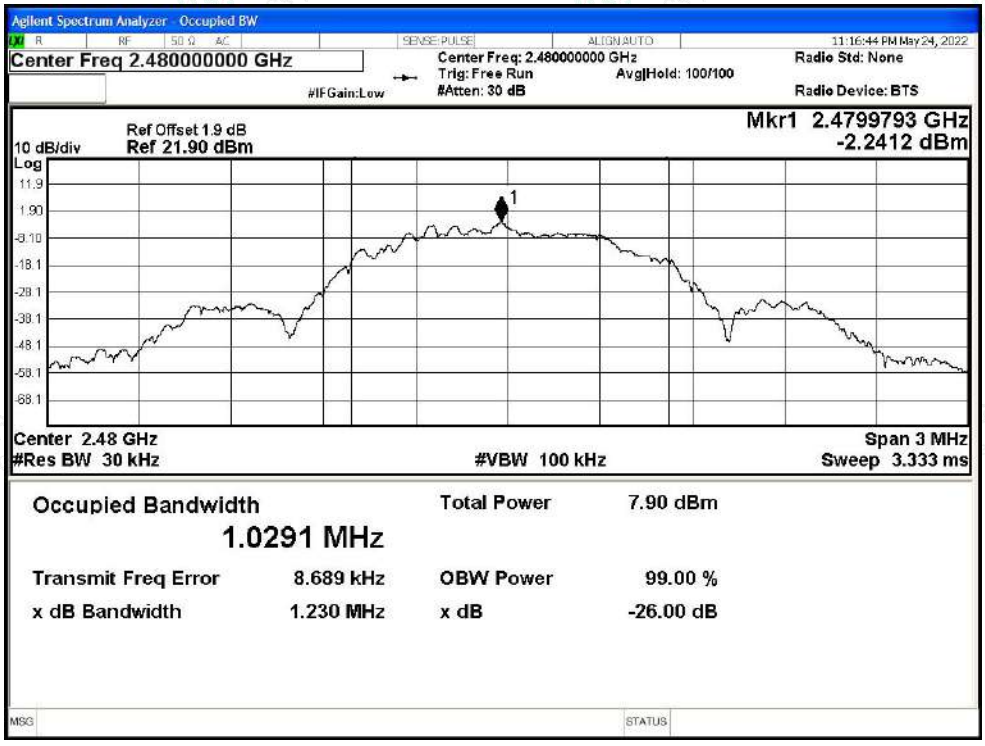
Test Graphs

OBW NVNT BLE 1M 2402MHz Ant1



OBW NVNT BLE 1M 2440MHz Ant1

OBW NVNT BLE 1M 2480MHz Ant1



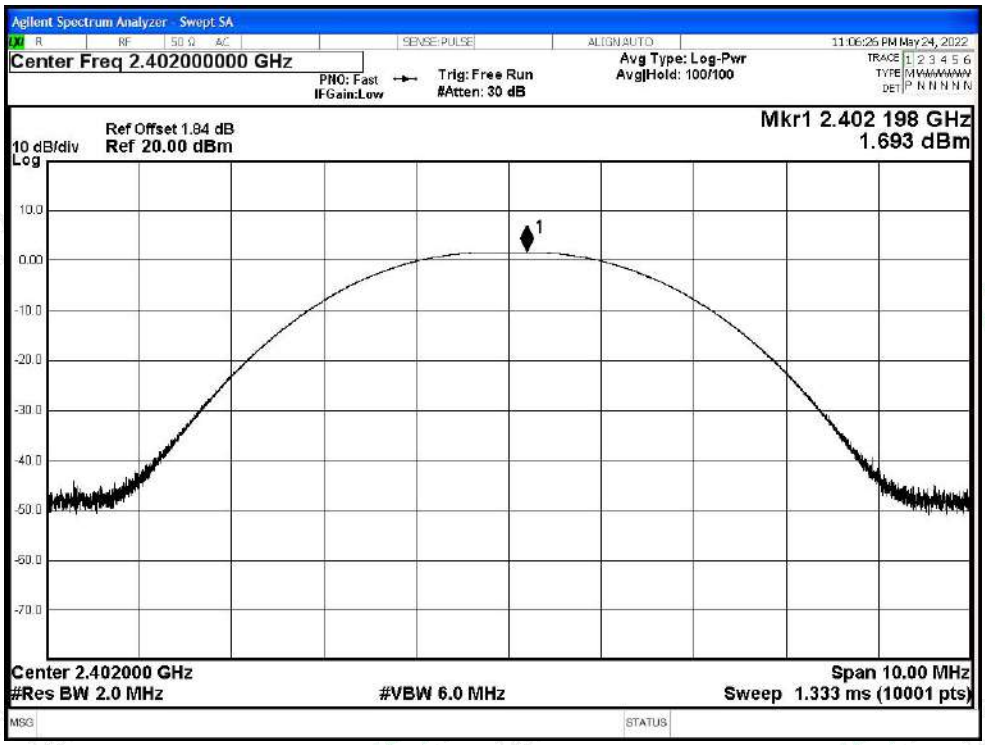
B.3 Maximum Conducted Output Power

Left:

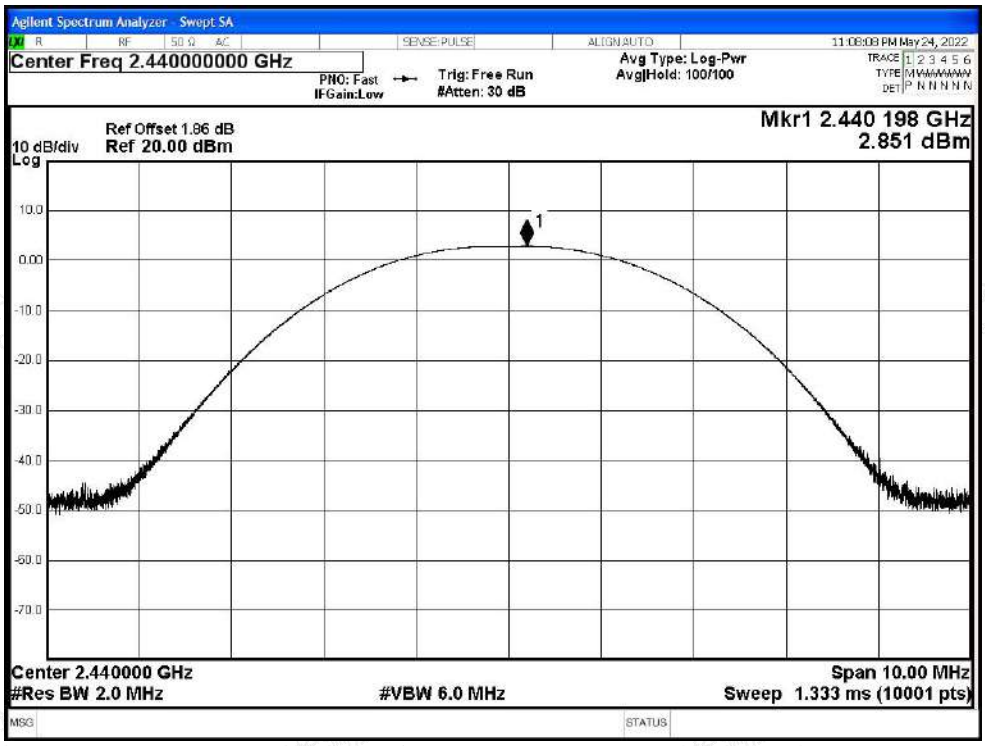
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	1.69	30	Pass
NVNT	BLE 1M	2440	Ant1	2.85	30	Pass
NVNT	BLE 1M	2480	Ant1	1.93	30	Pass

Test Graphs

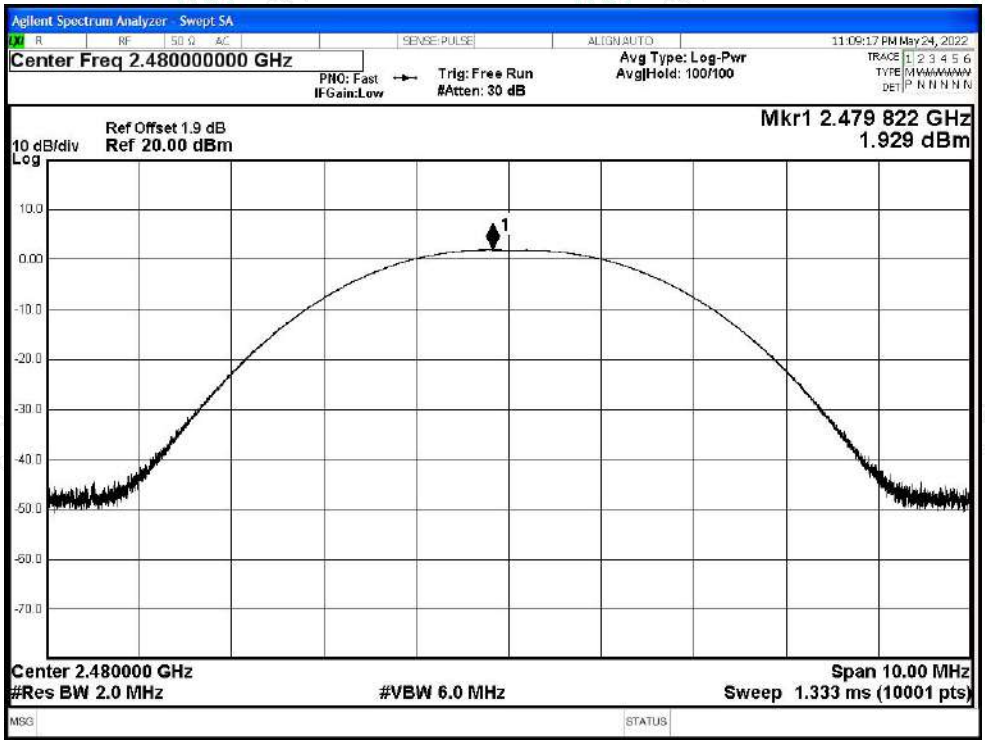
Power NVNT BLE 1M 2402MHz Ant1



Power NVNT BLE 1M 2440MHz Ant1



Power NVNT BLE 1M 2480MHz Ant1

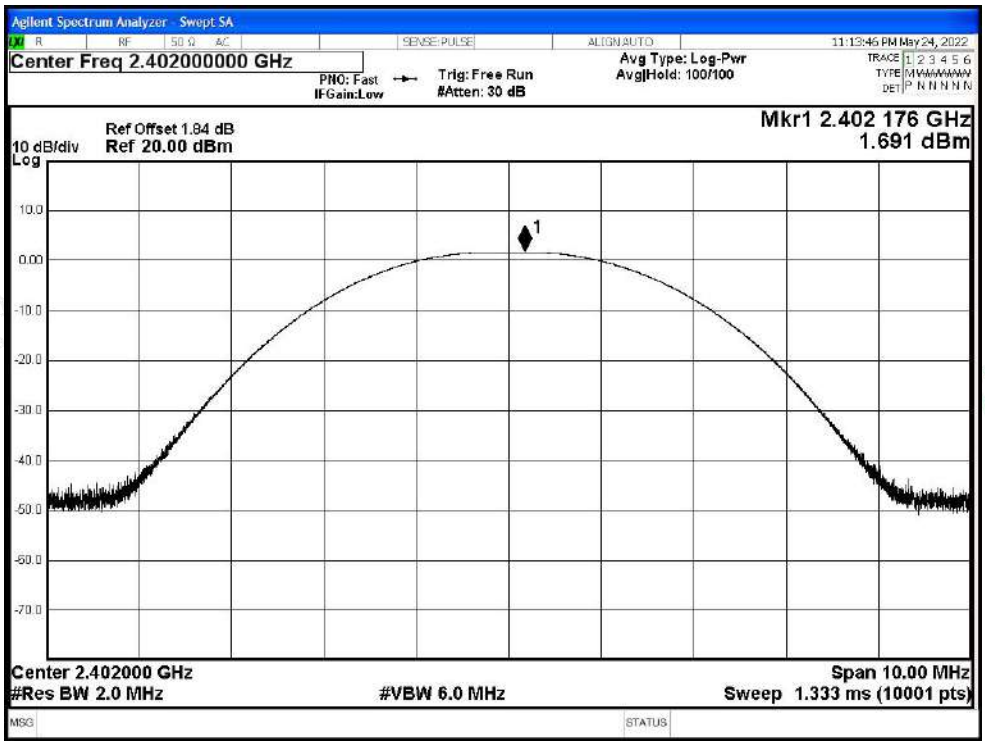


Right:

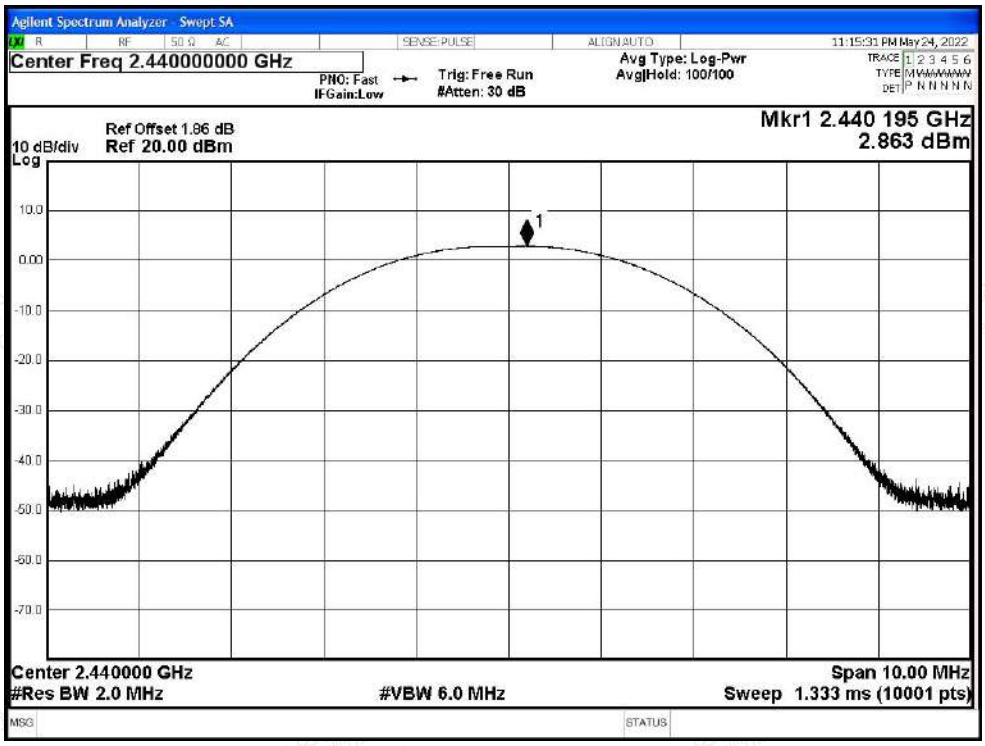
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	1.69	30	Pass
NVNT	BLE 1M	2440	Ant1	2.86	30	Pass
NVNT	BLE 1M	2480	Ant1	1.93	30	Pass

Test Graphs

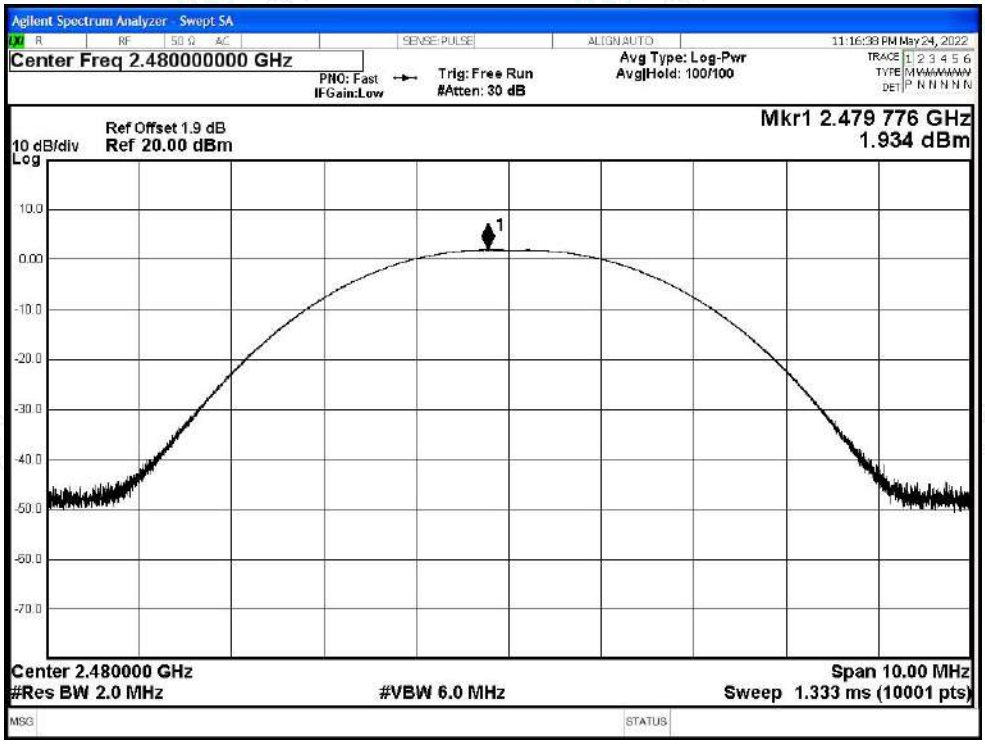
Power NVNT BLE 1M 2402MHz Ant1



Power NVNT BLE 1M 2440MHz Ant1



Power NVNT BLE 1M 2480MHz Ant1



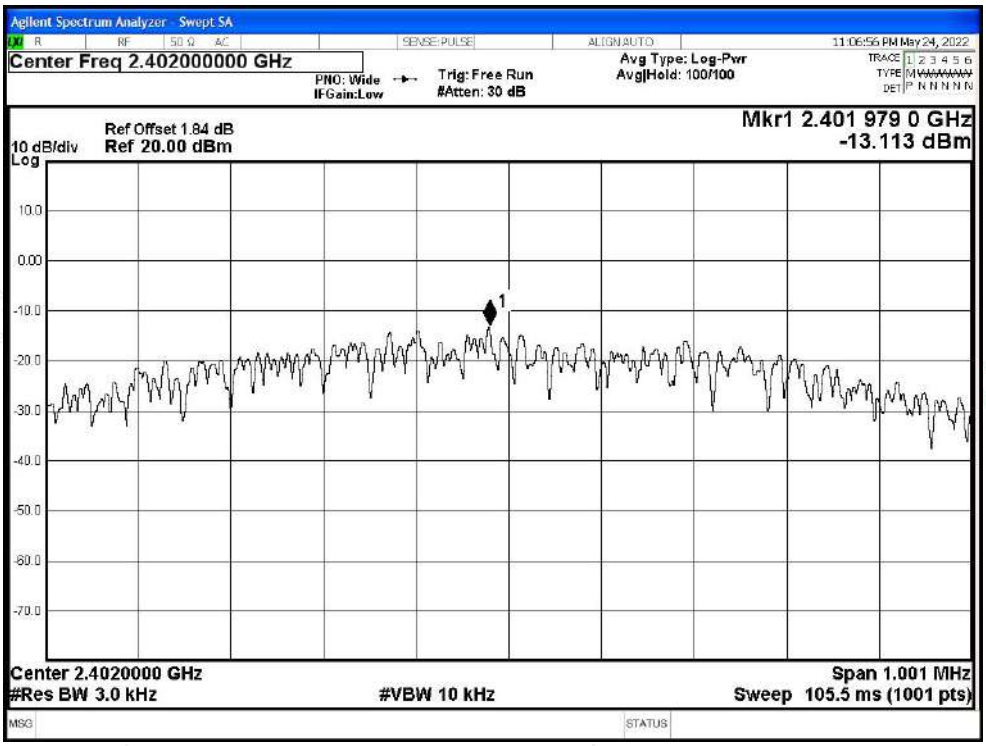
B.4 Maximum Power Spectral Density

Left:

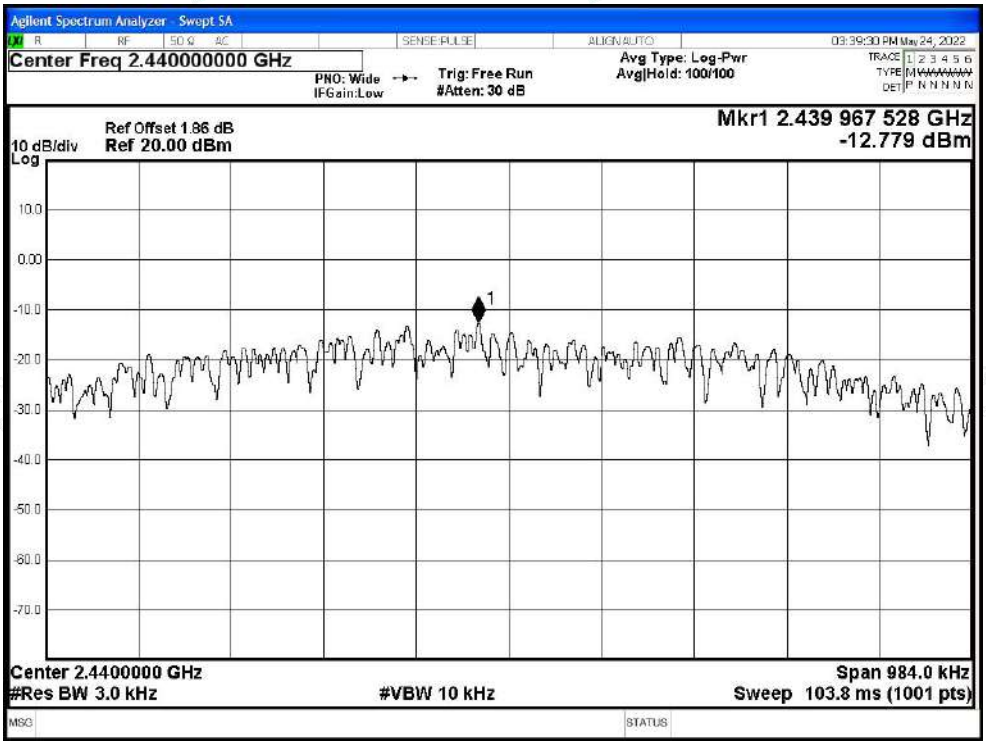
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	-13.11	0	-13.11	8	Pass
NVNT	BLE 1M	2440	Ant1	-12.78	0	-12.78	8	Pass
NVNT	BLE 1M	2480	Ant1	-12.88	0	-12.88	8	Pass

Test Graphs

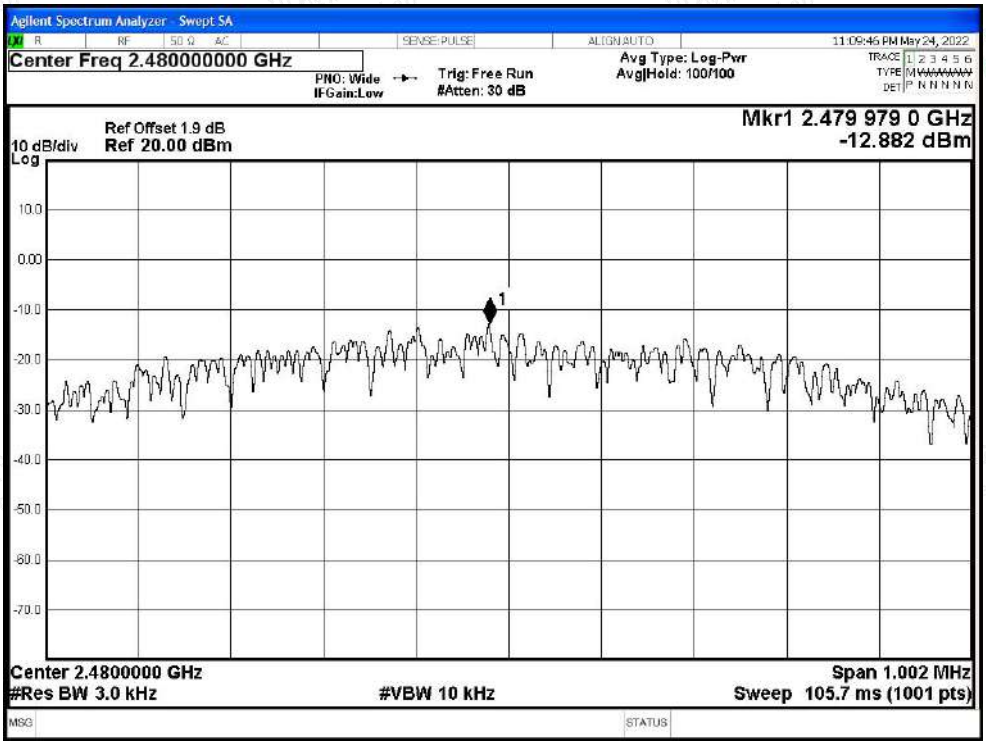
PSD NVNT BLE 1M 2402MHz Ant1



PSD NVNT BLE 1M 2440MHz Ant1



PSD NVNT BLE 1M 2480MHz Ant1

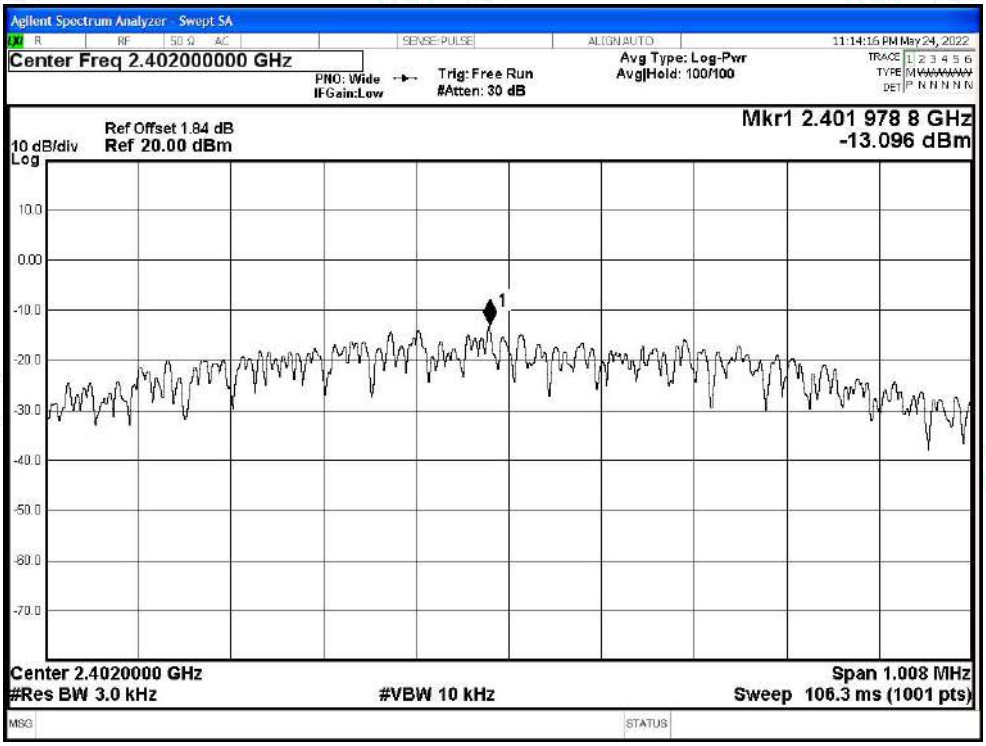


Right:

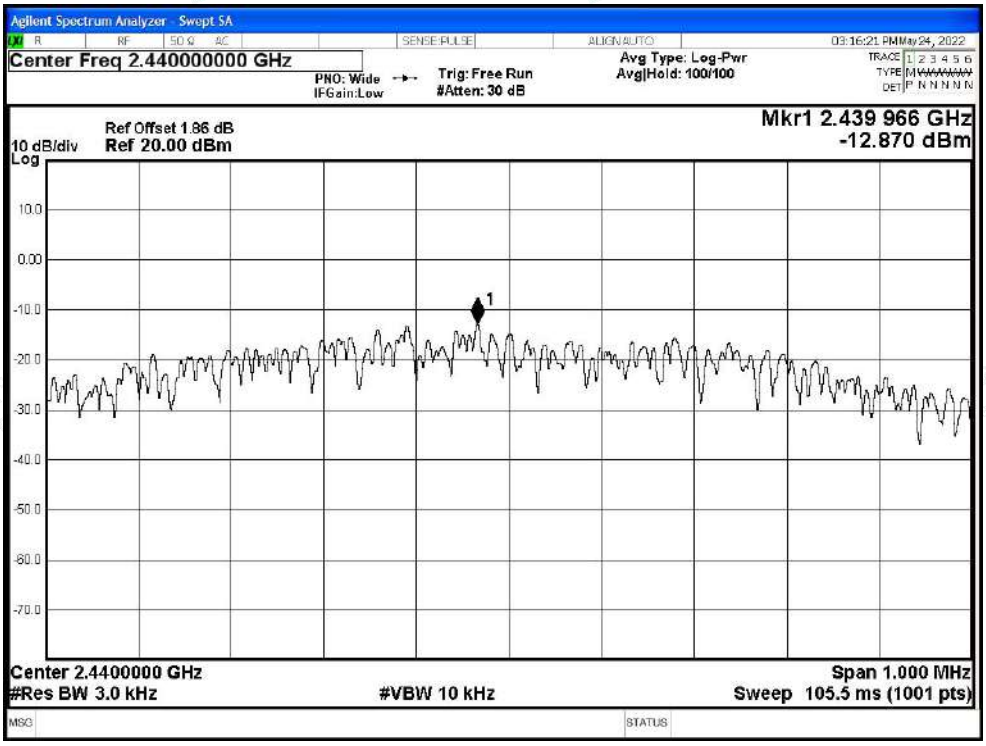
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	-13.1	0	-13.1	8	Pass
NVNT	BLE 1M	2440	Ant1	-12.87	0	-12.87	8	Pass
NVNT	BLE 1M	2480	Ant1	-12.85	0	-12.85	8	Pass

Test Graphs

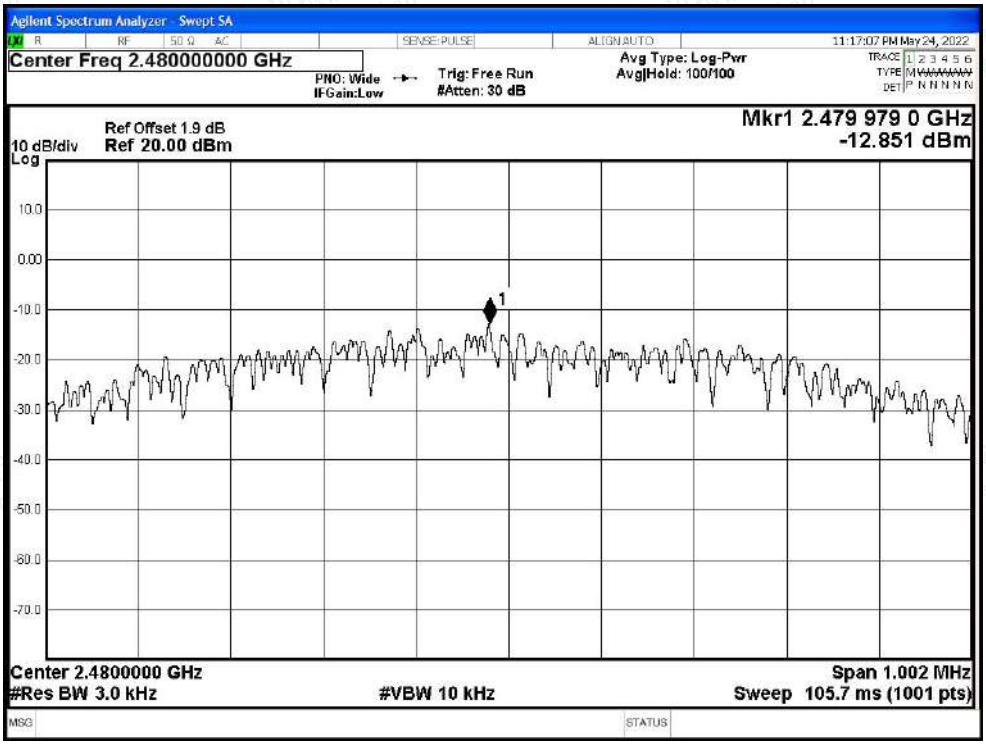
PSD NVNT BLE 1M 2402MHz Ant1



PSD NVNT BLE 1M 2440MHz Ant1



PSD NVNT BLE 1M 2480MHz Ant1



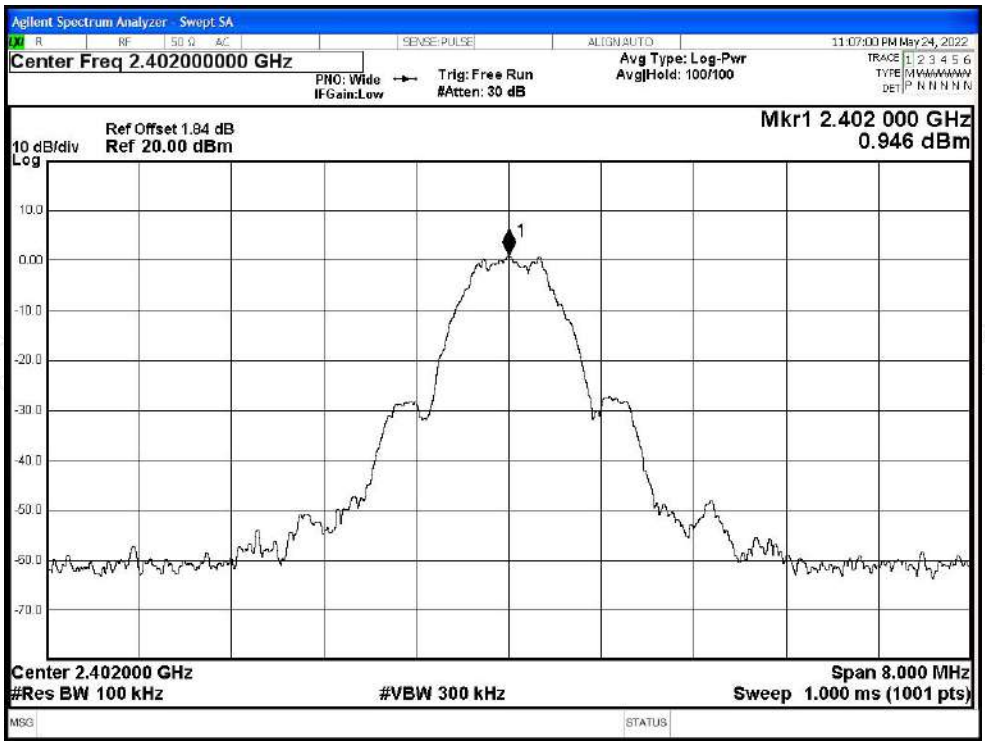
B.5 Band Edge

Left:

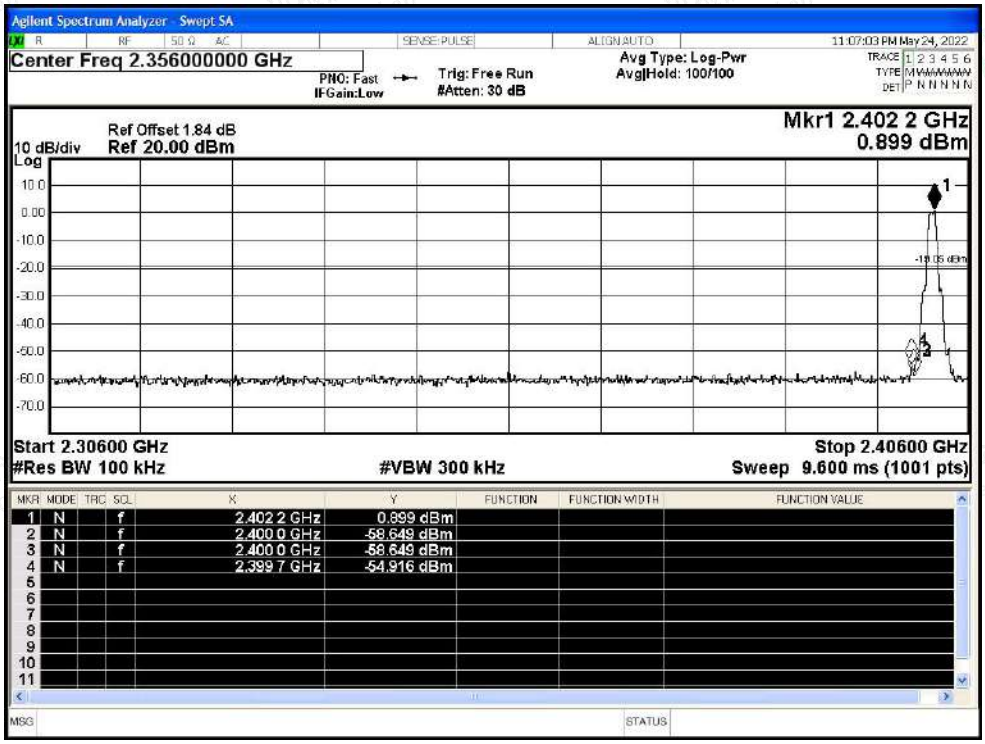
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-55.86	-20	Pass
NVNT	BLE 1M	2480	Ant1	-58.58	-20	Pass

Test Graphs

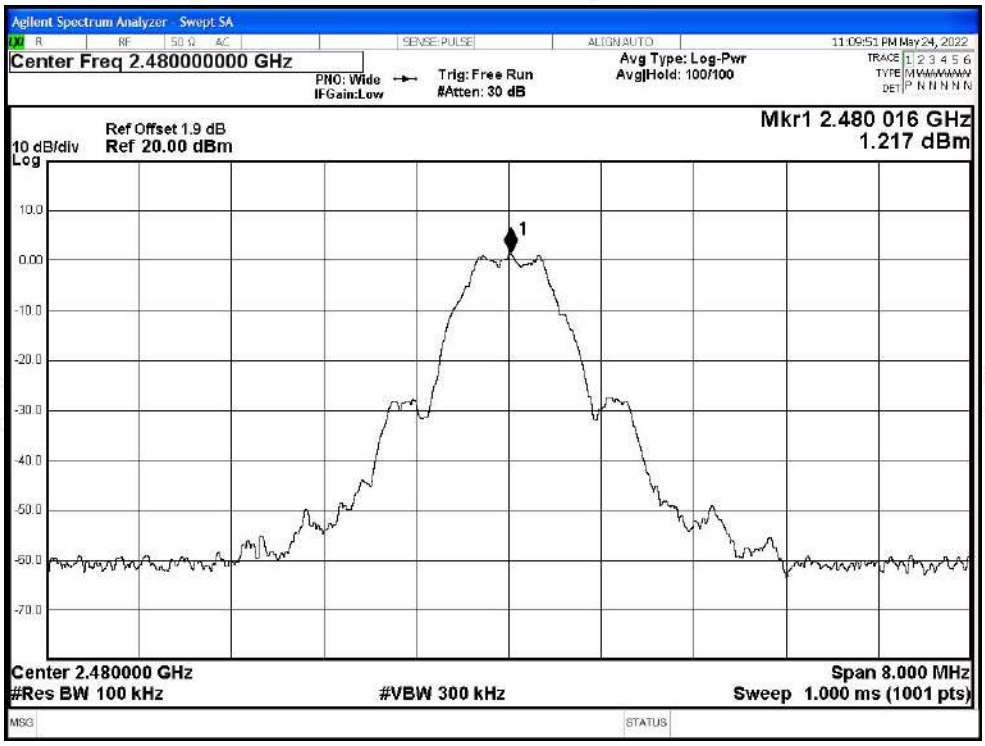
Band Edge NVNT BLE 1M 2402MHz Ant1 Ref



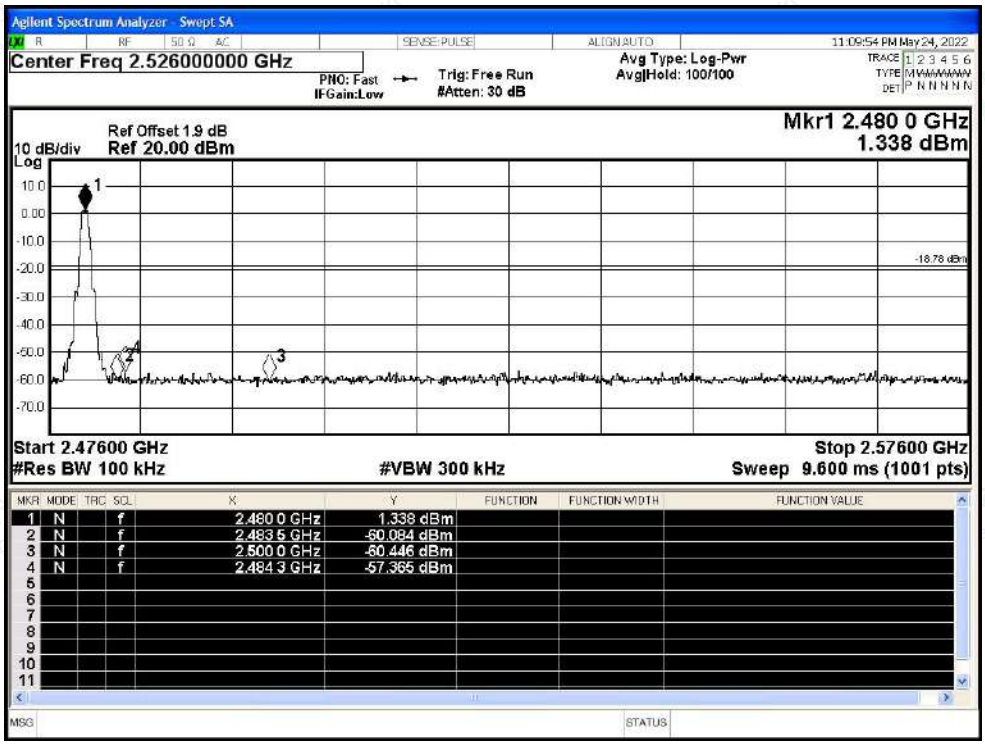
Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



Band Edge NVNT BLE 1M 2480MHz Ant1 Ref



Band Edge NVNT BLE 1M 2480MHz Ant1 Emission

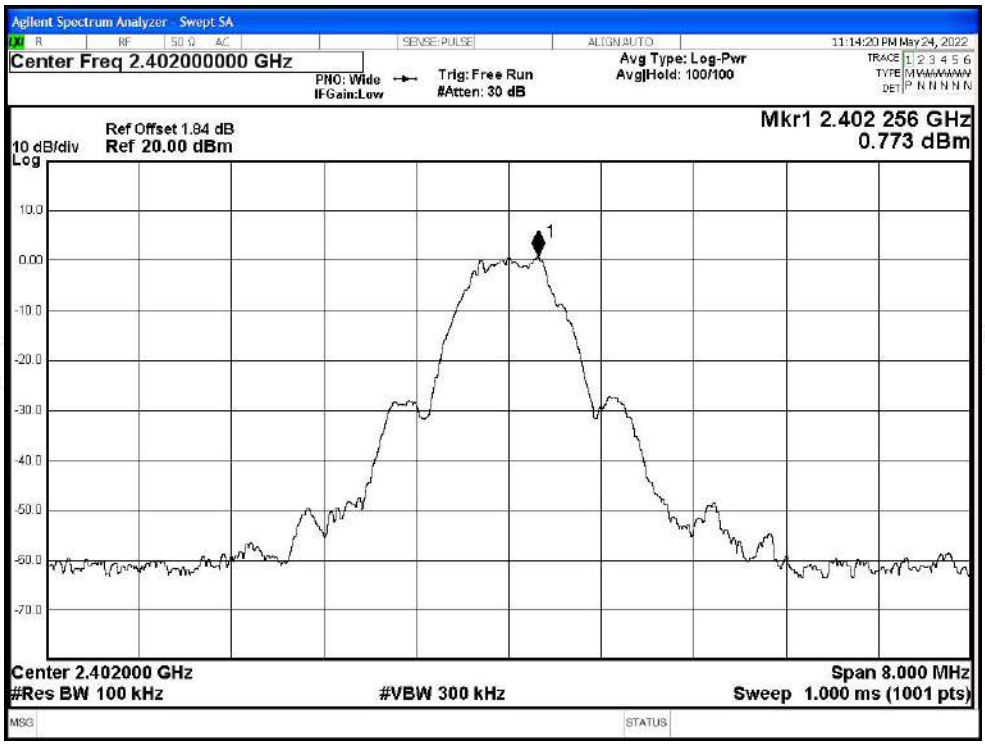


Right:

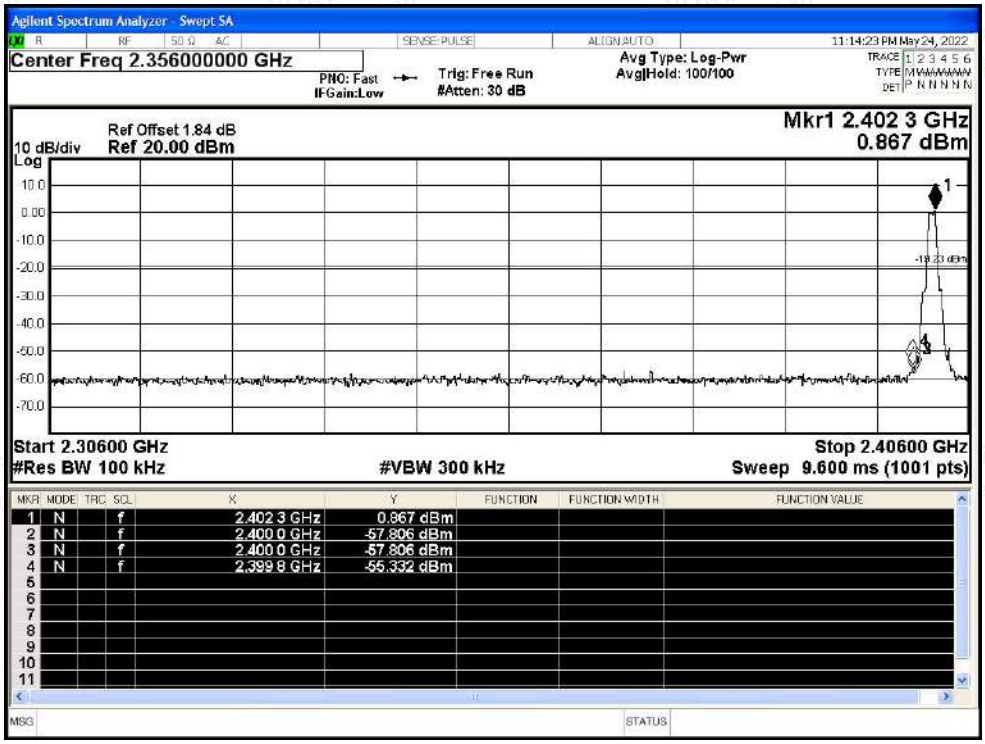
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-56.11	-20	Pass
NVNT	BLE 1M	2480	Ant1	-58.12	-20	Pass

Test Graphs

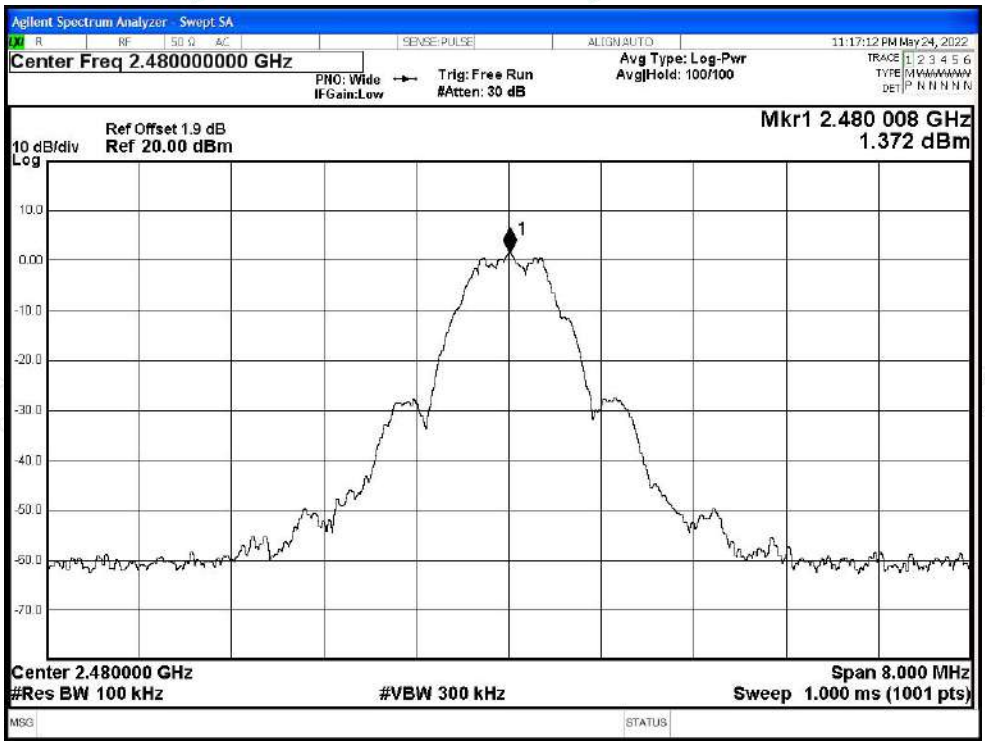
Band Edge NVNT BLE 1M 2402MHz Ant1 Ref



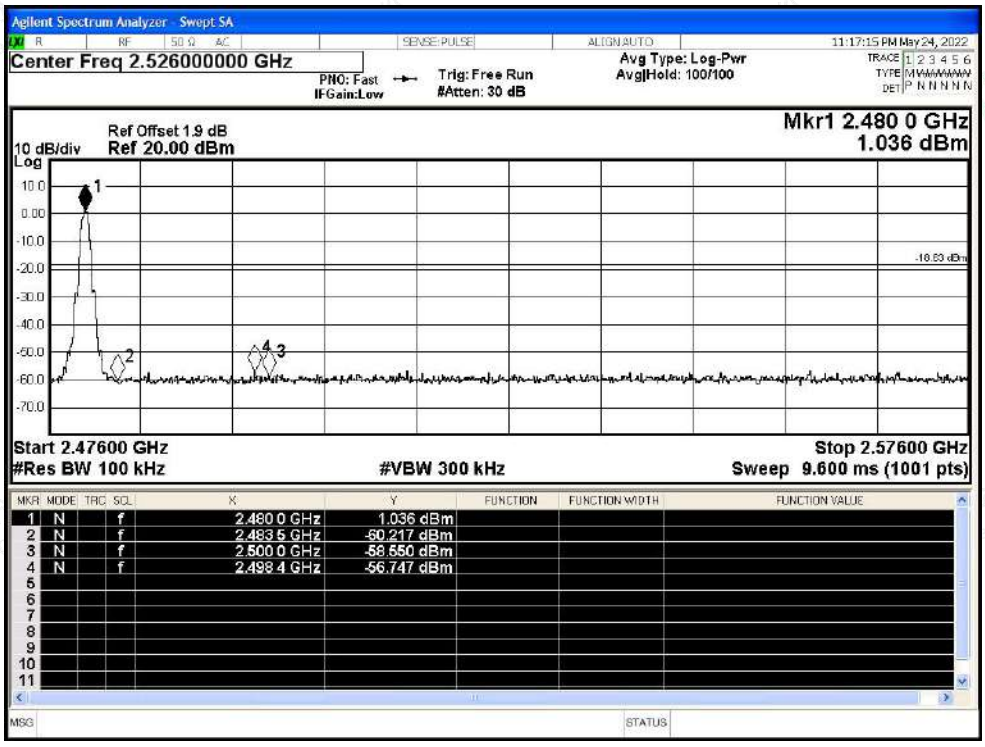
Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



Band Edge NVNT BLE 1M 2480MHz Ant1 Ref



Band Edge NVNT BLE 1M 2480MHz Ant1 Emission



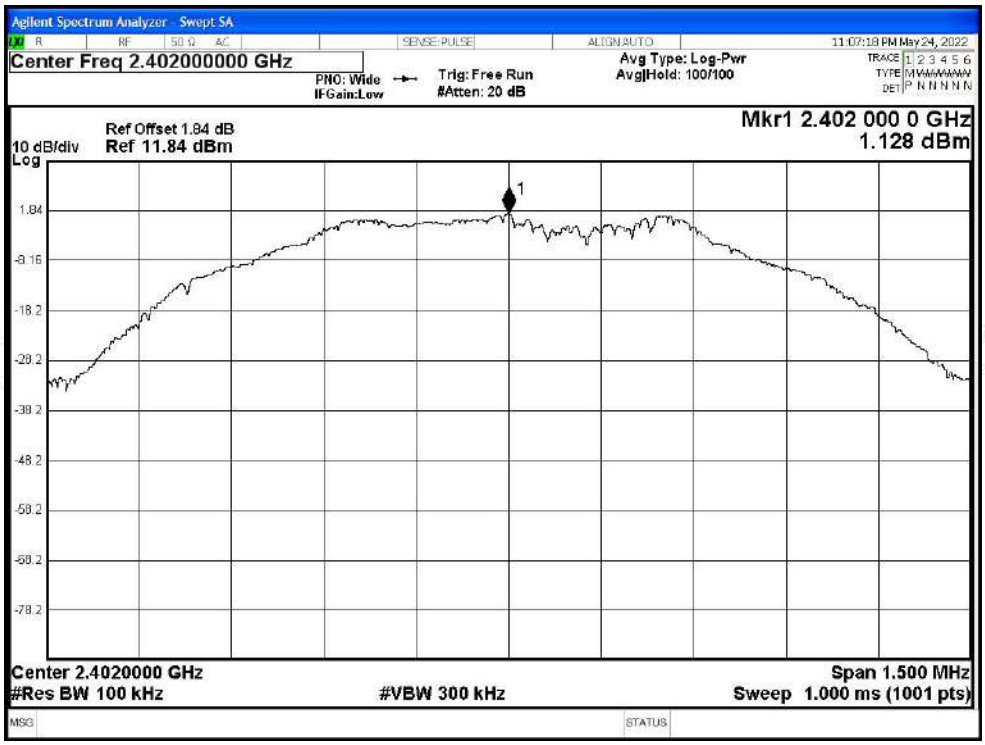
B.6 Conducted RF Spurious Emission

Left:

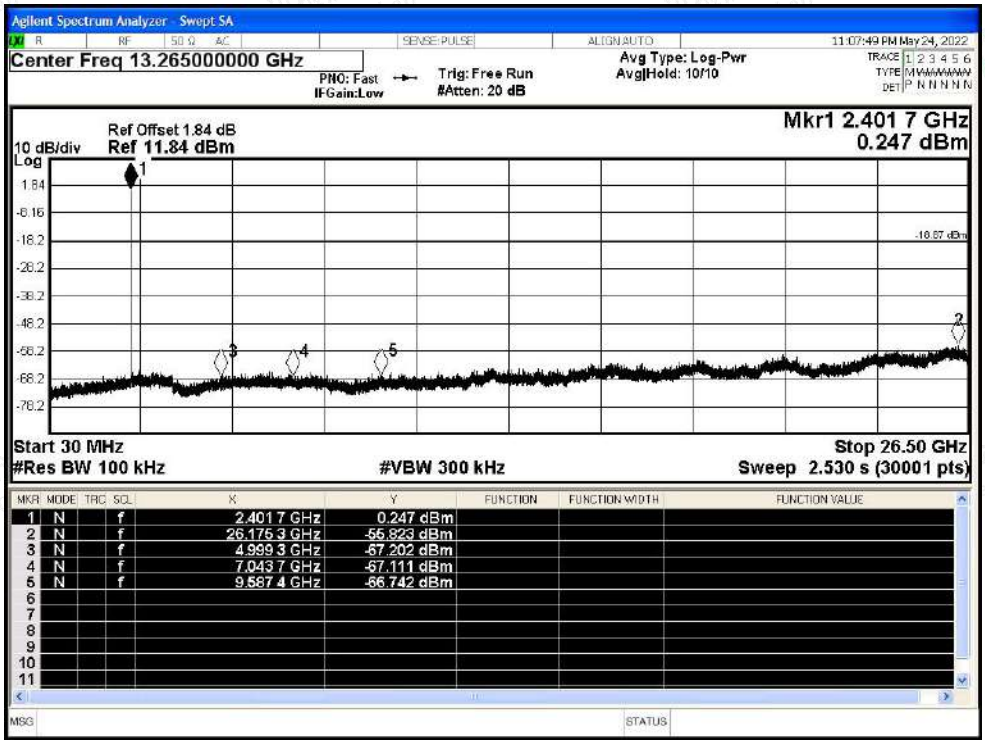
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-56.95	-20	Pass
NVNT	BLE 1M	2440	Ant1	-58.17	-20	Pass
NVNT	BLE 1M	2480	Ant1	-57.21	-20	Pass

Test Graphs

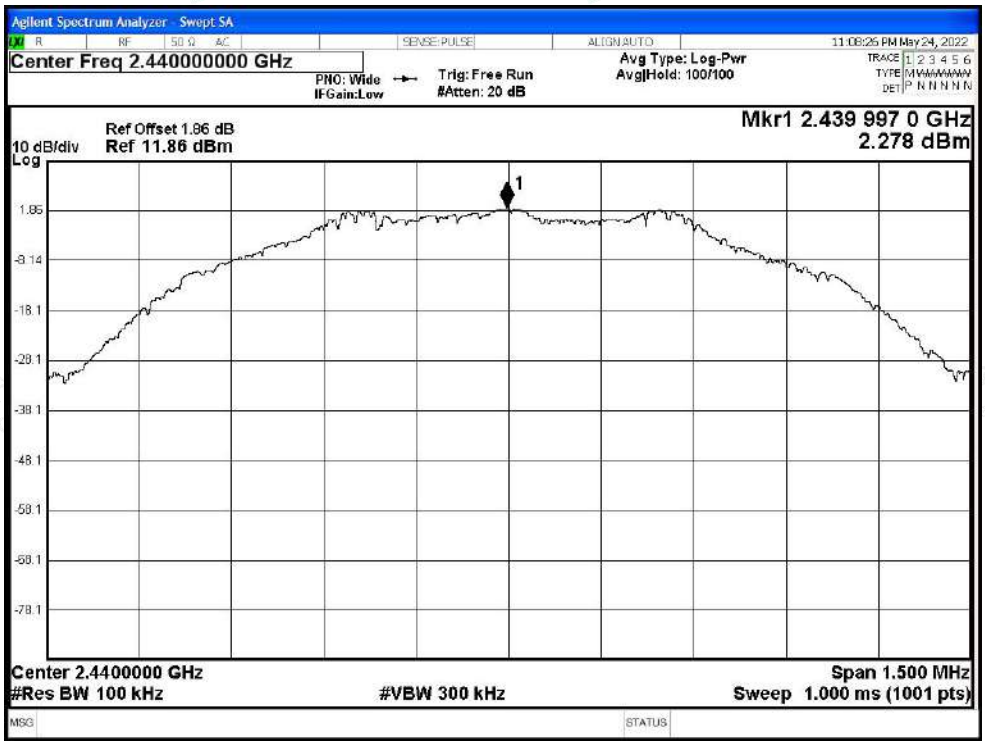
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref



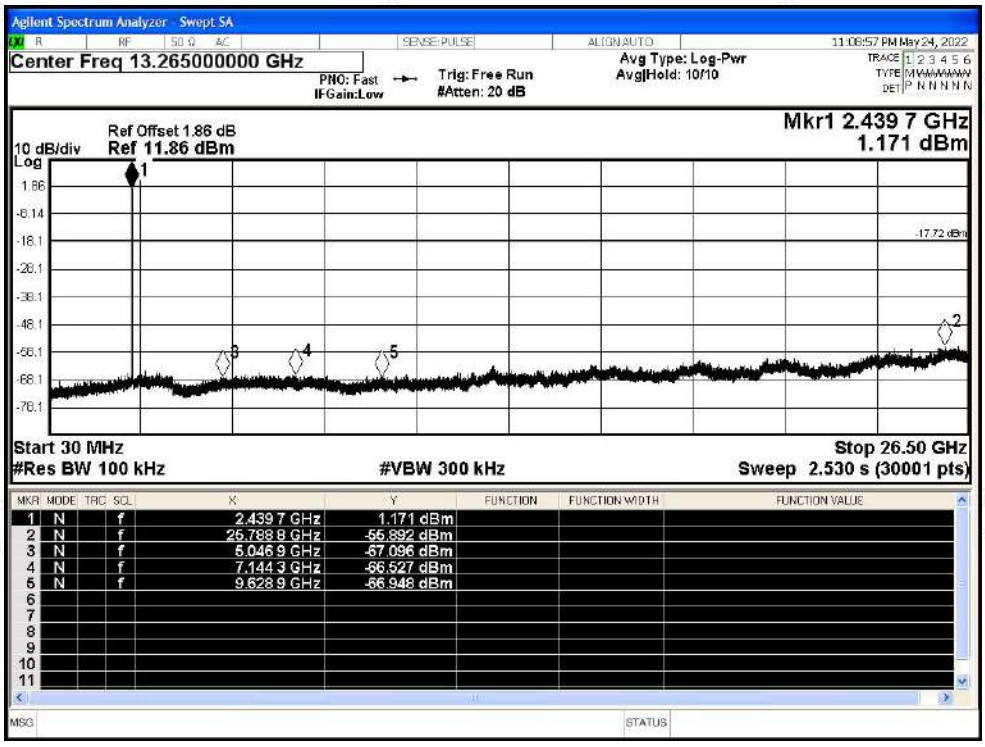
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



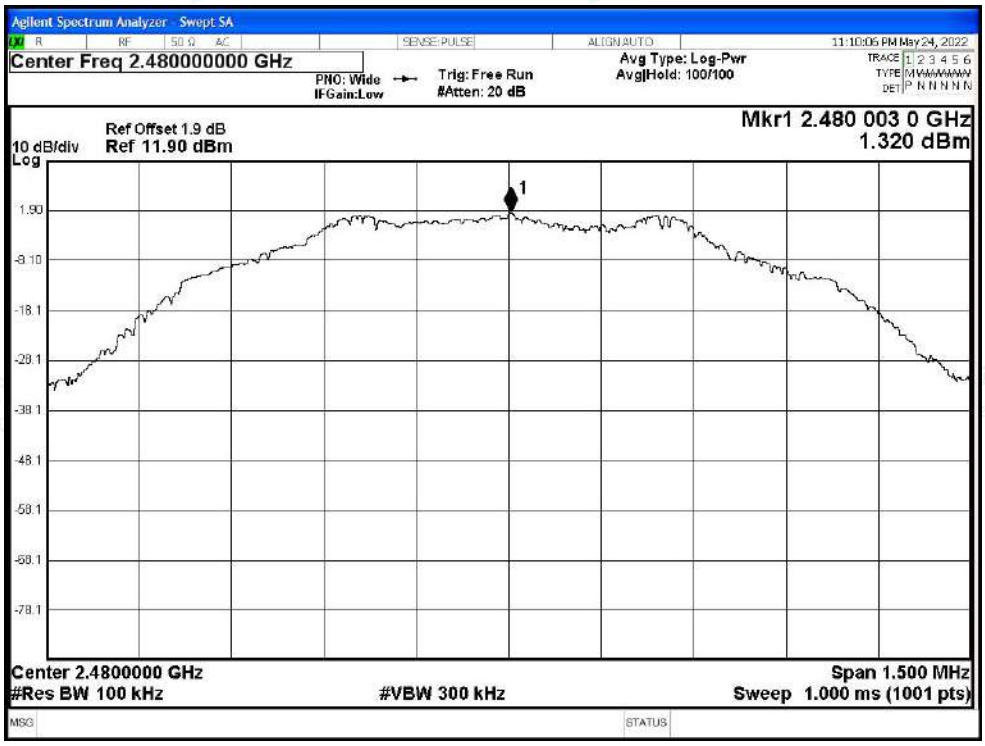
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref



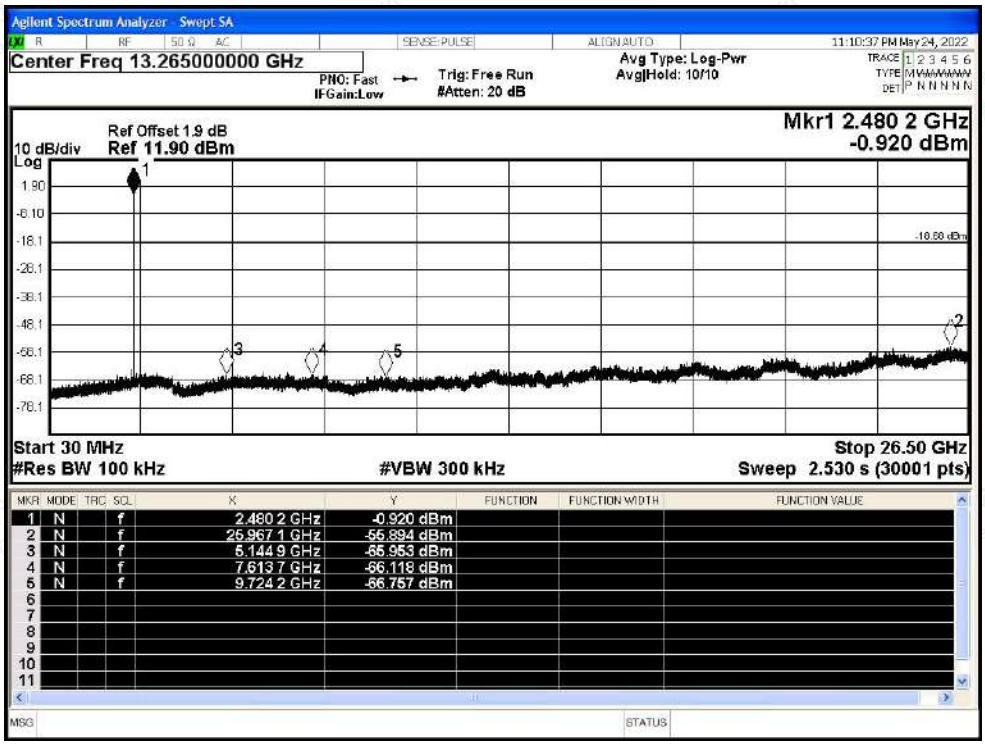
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission

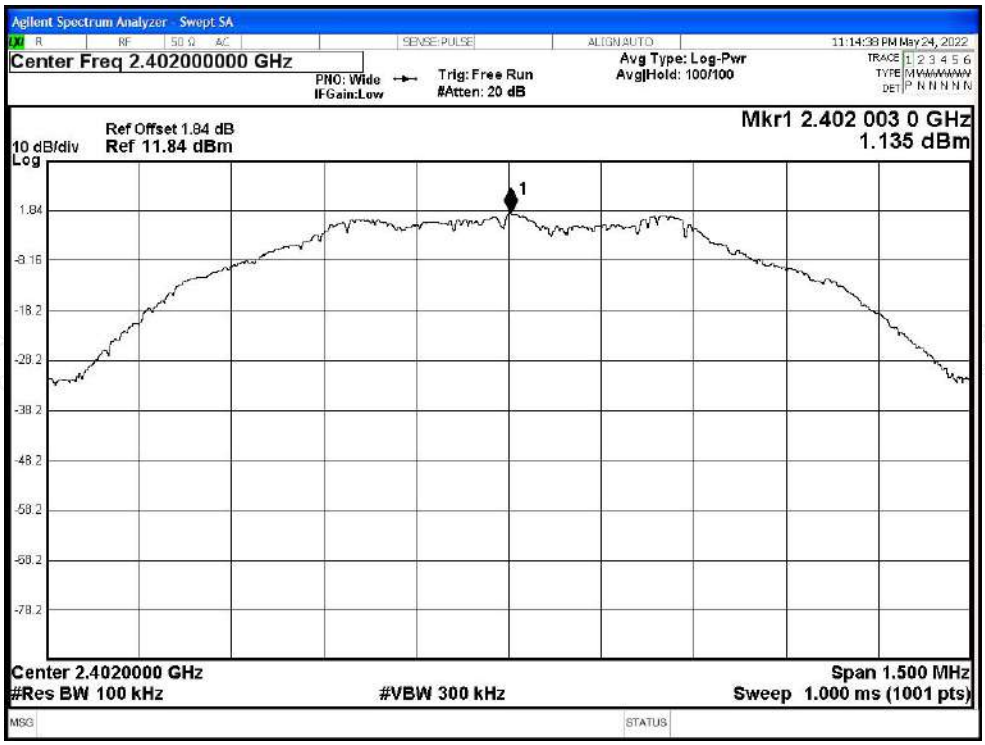


Right:

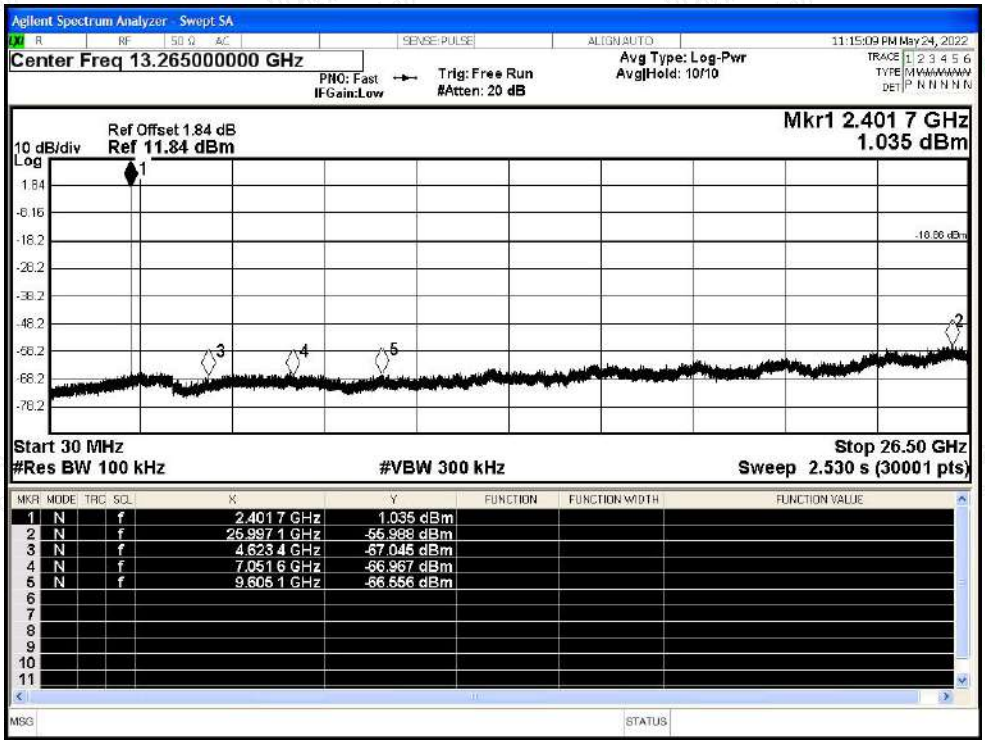
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-57.12	-20	Pass
NVNT	BLE 1M	2440	Ant1	-58.38	-20	Pass
NVNT	BLE 1M	2480	Ant1	-57.01	-20	Pass

Test Graphs

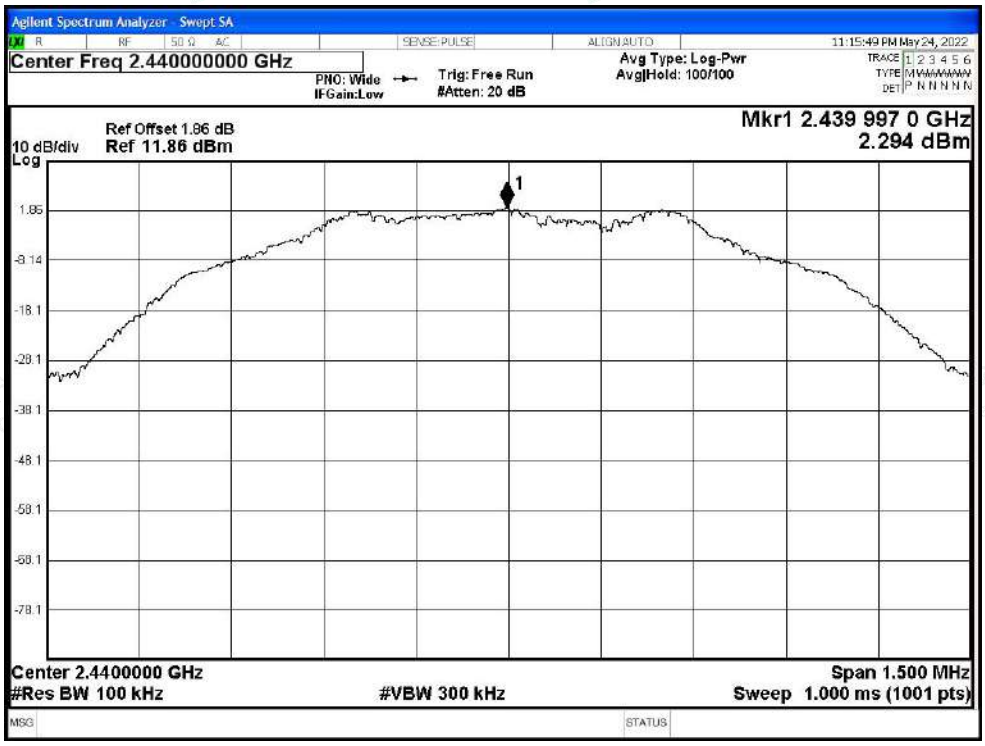
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref



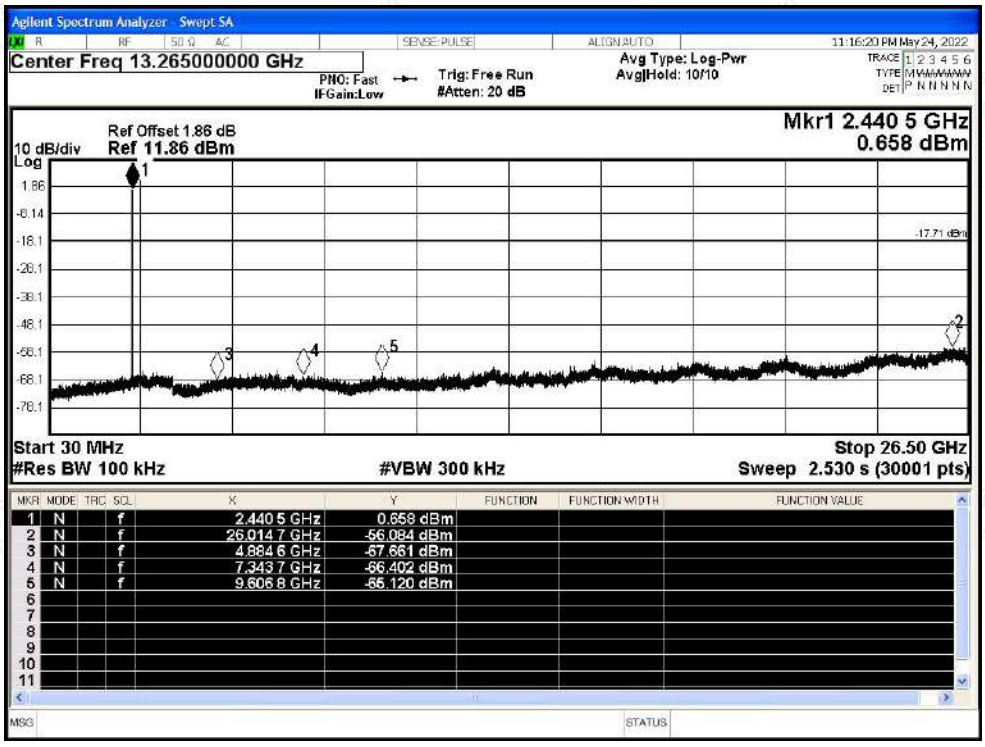
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



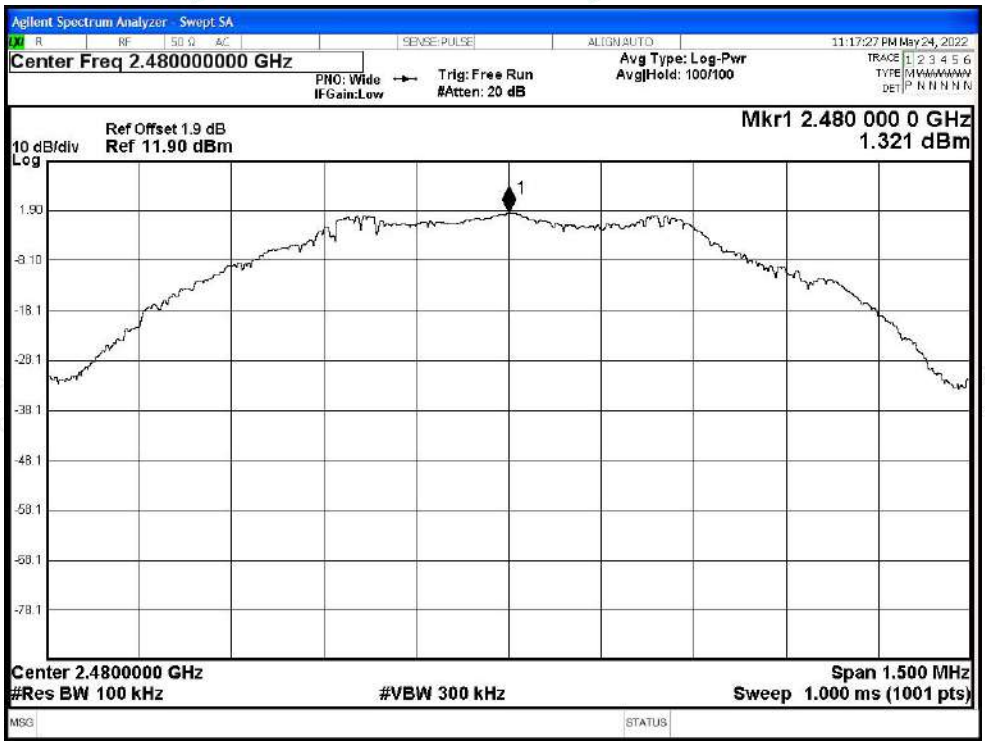
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref



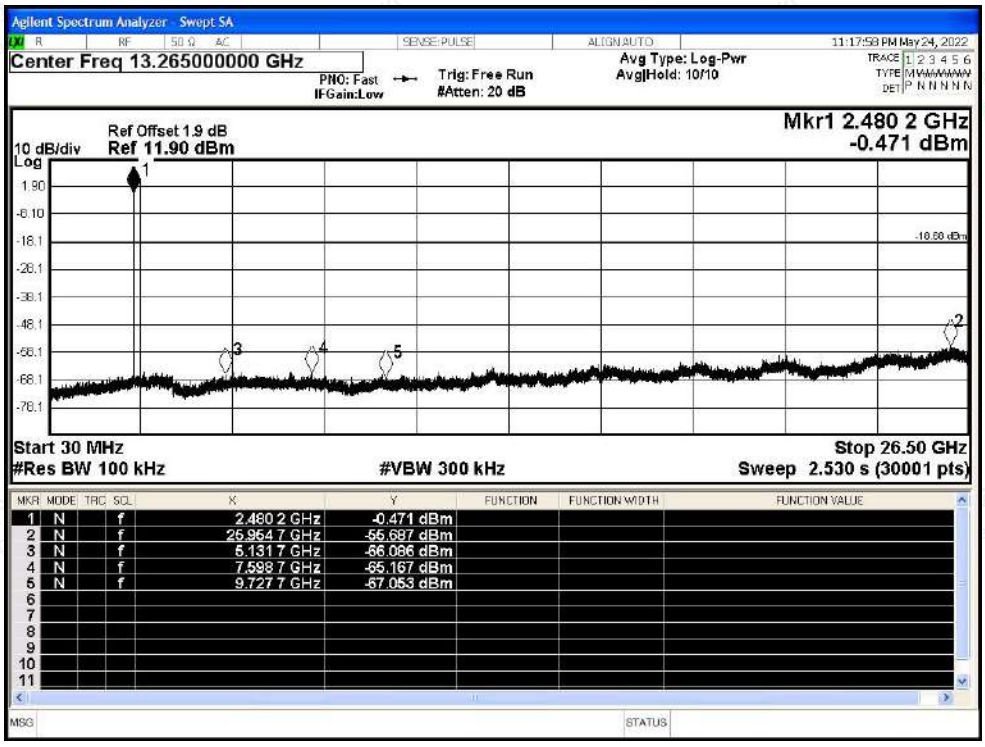
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission



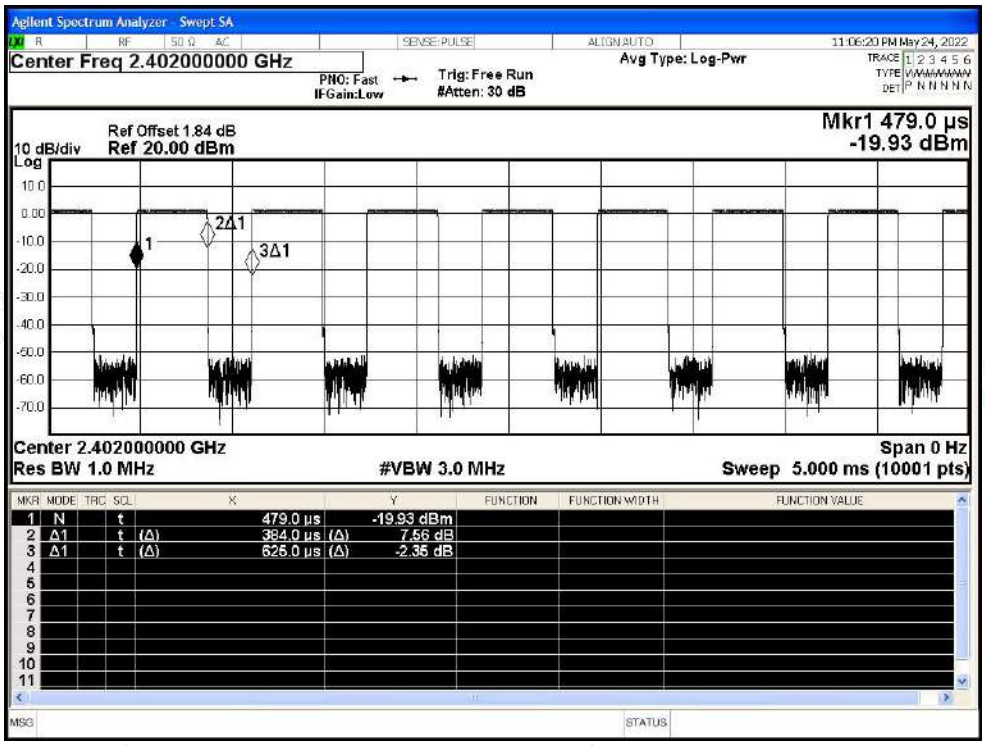
B.7 Duty Cycle

Left:

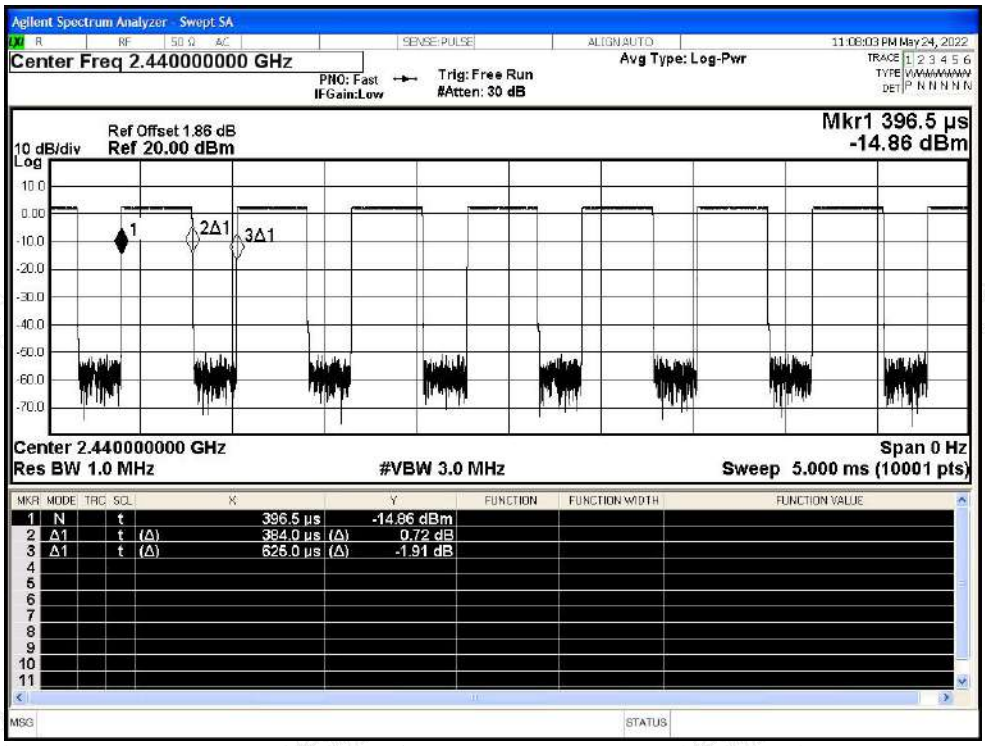
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant1	61.44	2.12	2.6
NVNT	BLE 1M	2440	Ant1	61.44	2.12	2.6
NVNT	BLE 1M	2480	Ant1	61.44	2.12	2.6

Test Graphs

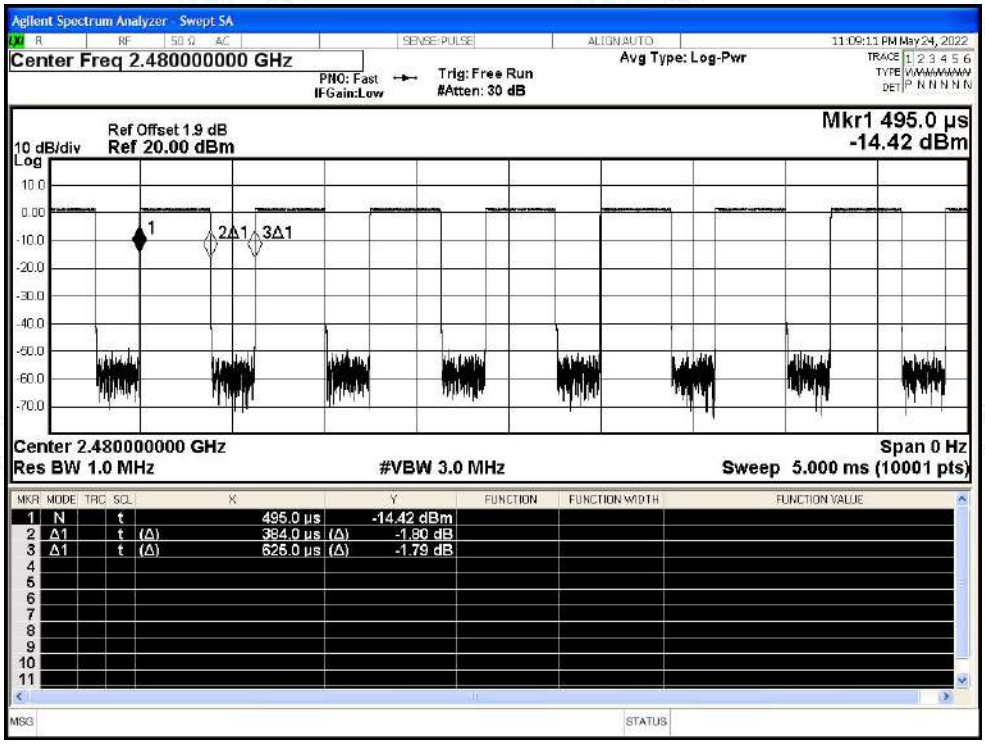
Duty Cycle NVNT BLE 1M 2402MHz Ant1



Duty Cycle NVNT BLE 1M 2440MHz Ant1



Duty Cycle NVNT BLE 1M 2480MHz Ant1

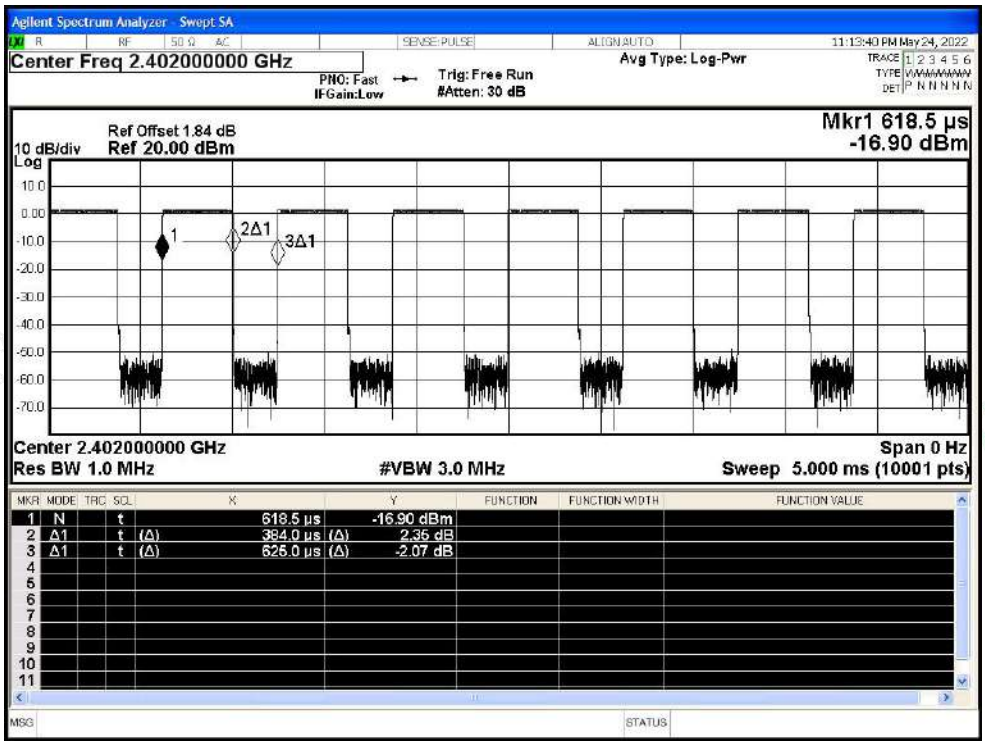


Right:

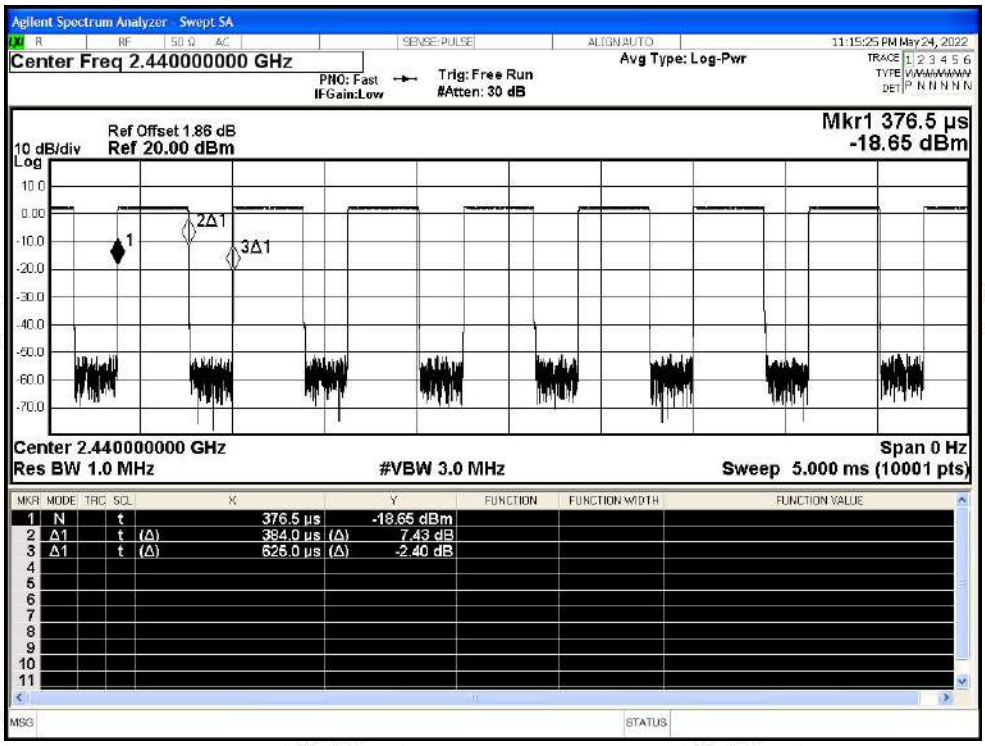
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant1	61.44	2.12	2.6
NVNT	BLE 1M	2440	Ant1	61.44	2.12	2.6
NVNT	BLE 1M	2480	Ant1	61.44	2.12	2.6

Test Graphs

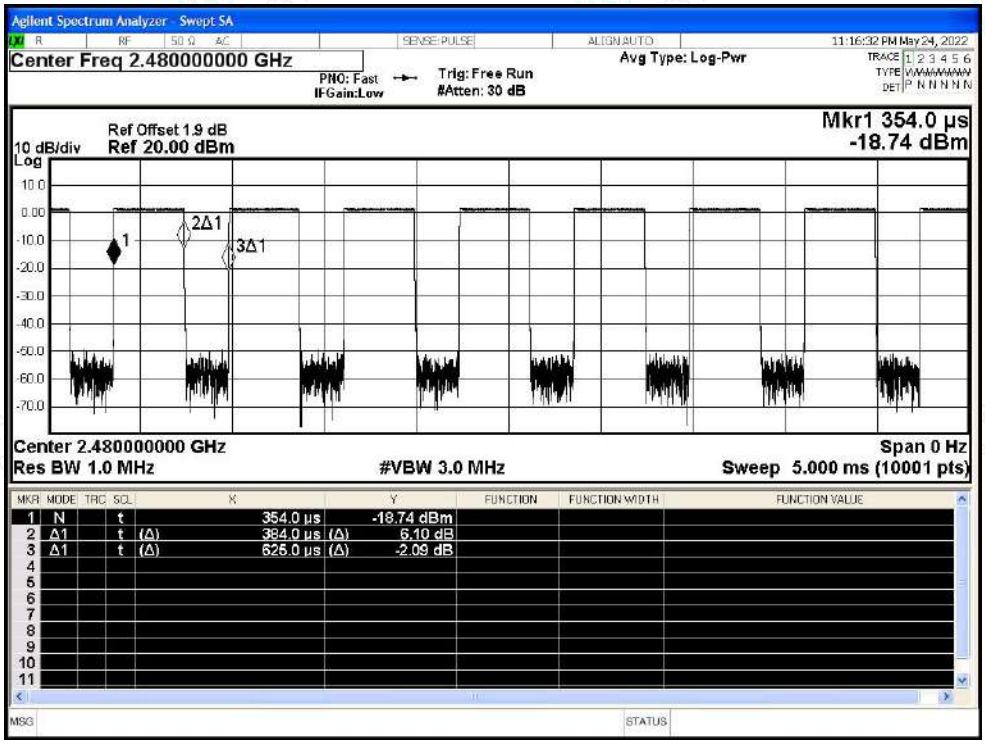
Duty Cycle NVNT BLE 1M 2402MHz Ant1



Duty Cycle NVNT BLE 1M 2440MHz Ant1



Duty Cycle NVNT BLE 1M 2480MHz Ant1



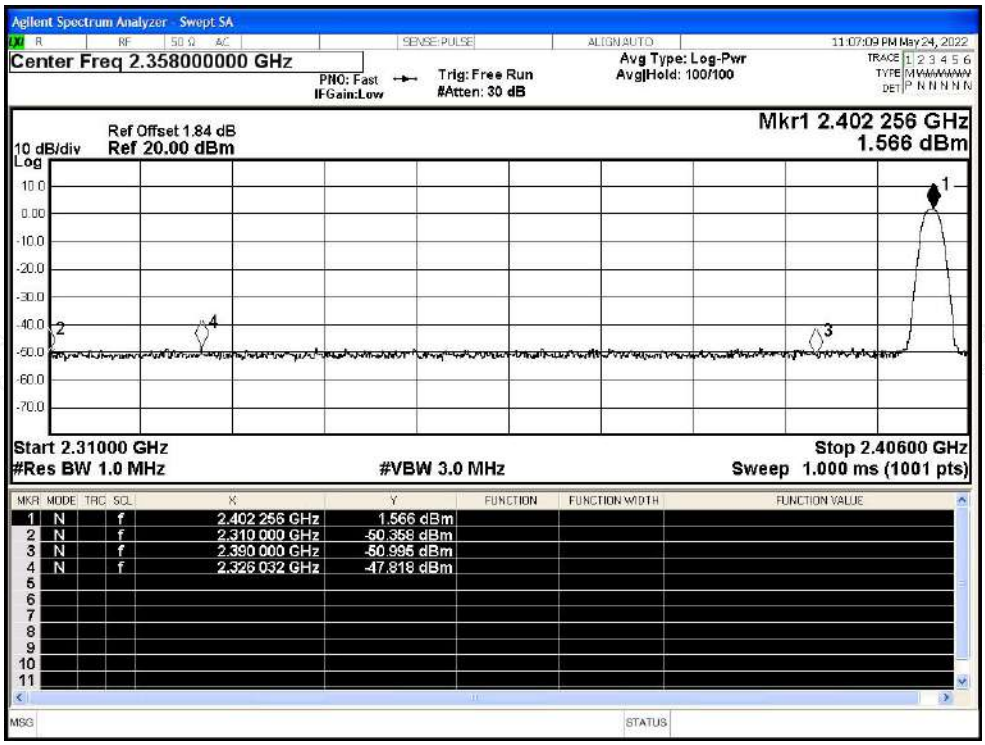
B.8 Restrict Band

Left:

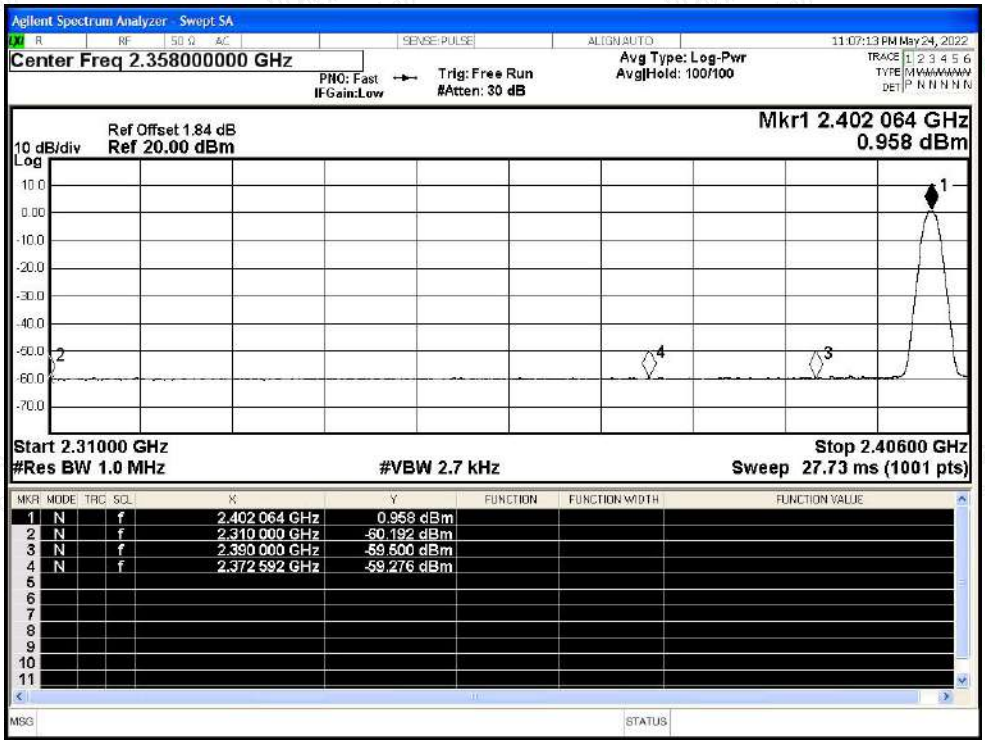
Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	BLE 1M	2402	Ant1	2310	-50.36	2	46.9	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2310	-60.19	2	37.07	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2326.032	-47.82	2	49.44	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2372.592	-59.28	2	37.98	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2390	-51.2	2	46.06	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2390	-59.5	2	37.76	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-50.63	2	46.63	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-58.93	2	38.33	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2499.976	-47.54	2	49.72	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.584	-58.75	2	38.51	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2500	-50.07	2	47.19	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2500	-59.53	2	37.73	Average	54	Pass

Test Graphs

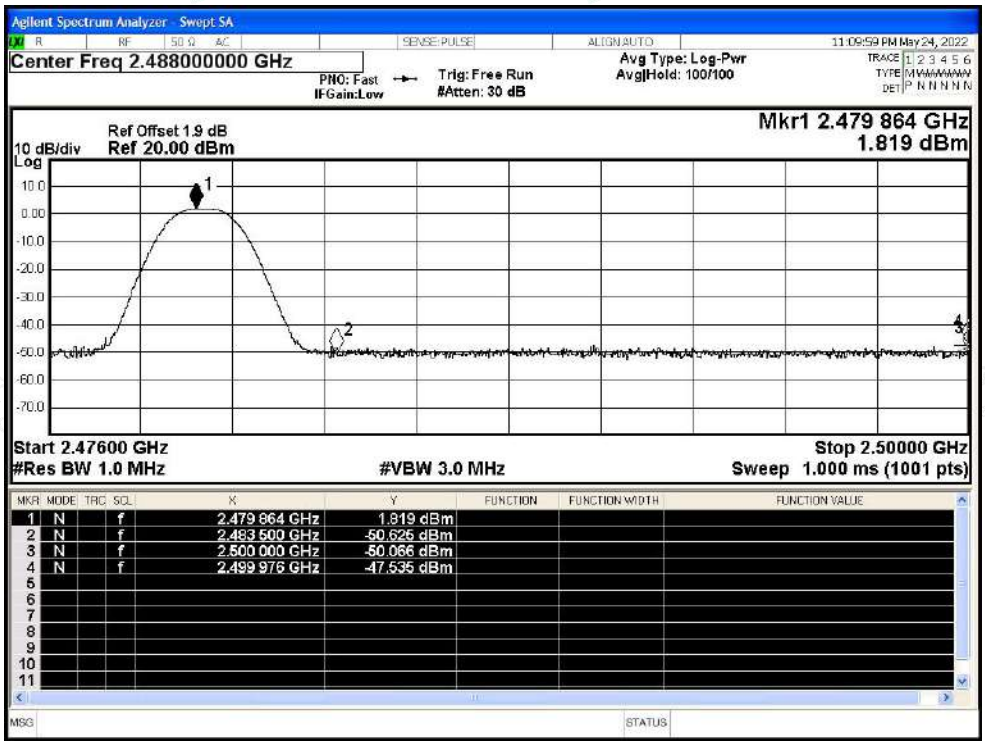
Restrict Band NVNT BLE 1M 2402MHz Ant1 Peak



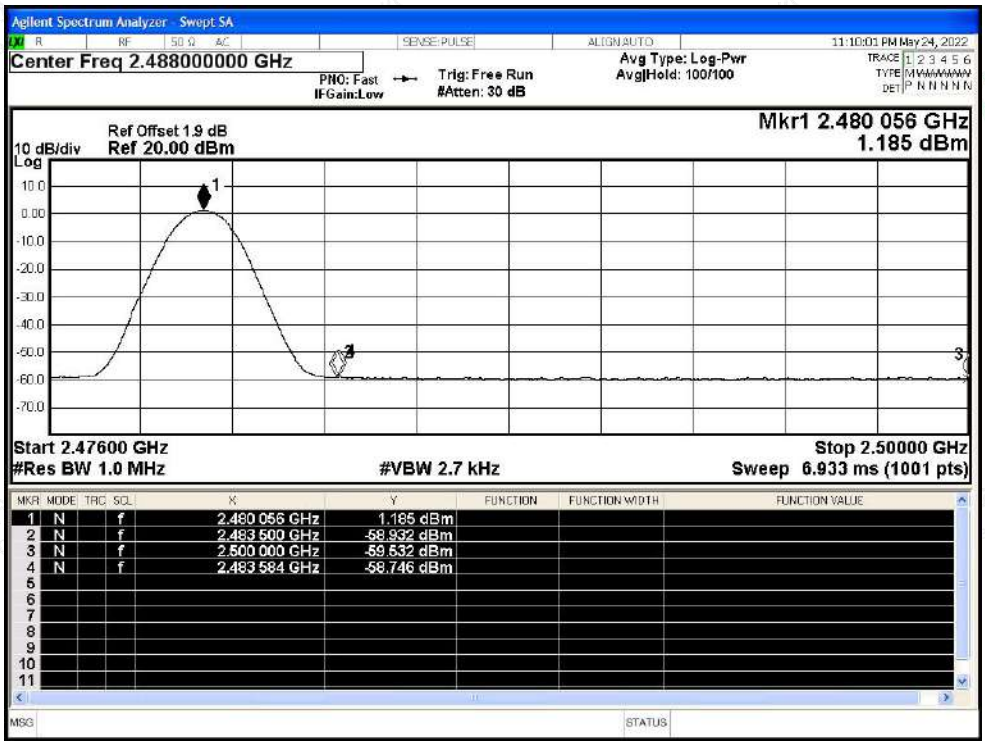
Restrict Band NVNT BLE 1M 2402MHz Ant1 Average



Restrict Band NVNT BLE 1M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2480MHz Ant1 Average

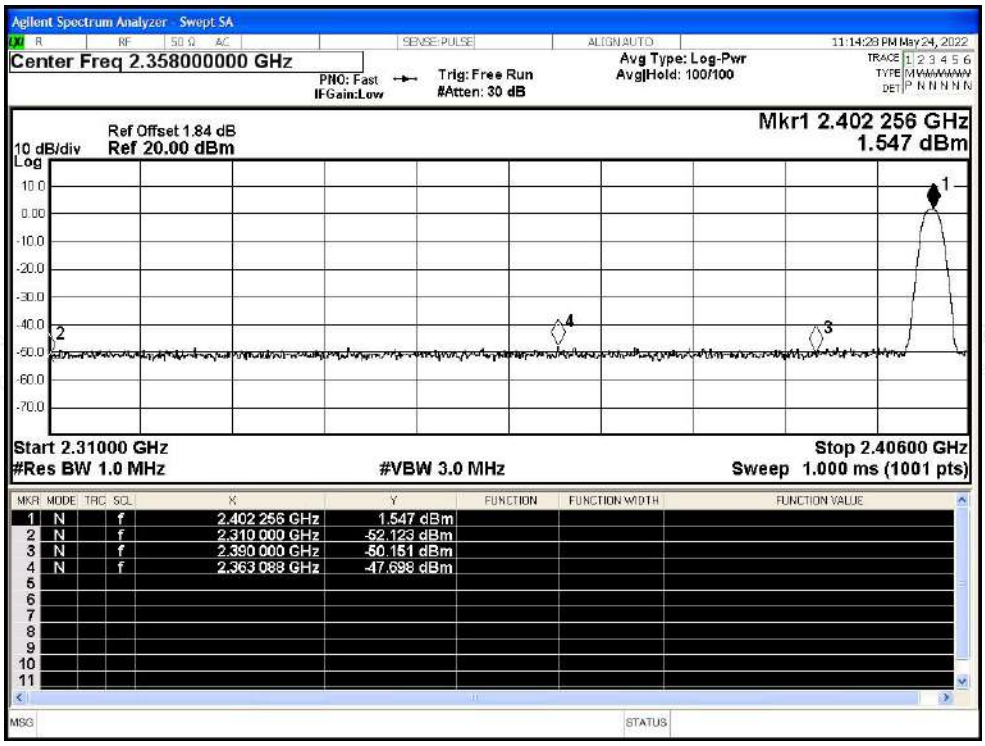


Right:

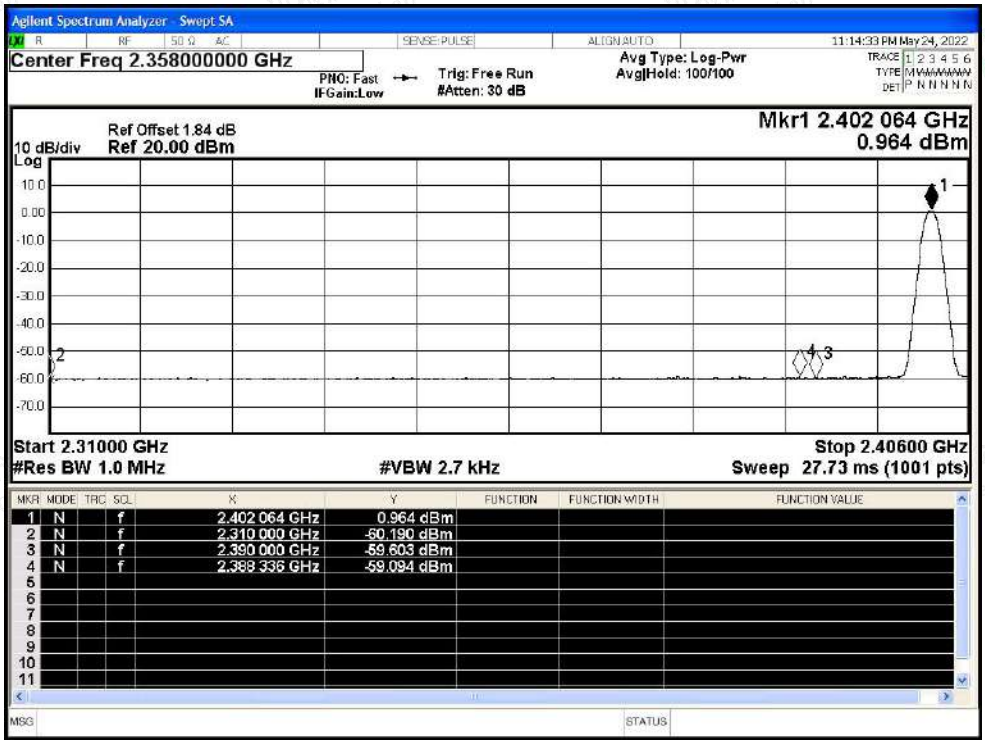
Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	BLE 1M	2402	Ant1	2310	-52.12	2	45.14	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2310	-60.19	2	37.07	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2363.088	-47.7	2	49.56	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2388.336	-59.09	2	38.17	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2390	-51.52	2	45.74	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2390	-59.76	2	37.5	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-50.14	2	47.12	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-59.26	2	38	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2485.36	-47.43	2	49.83	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2485.192	-58.65	2	38.61	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2500	-50.72	2	46.54	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2500	-59.77	2	37.49	Average	54	Pass

Test Graphs

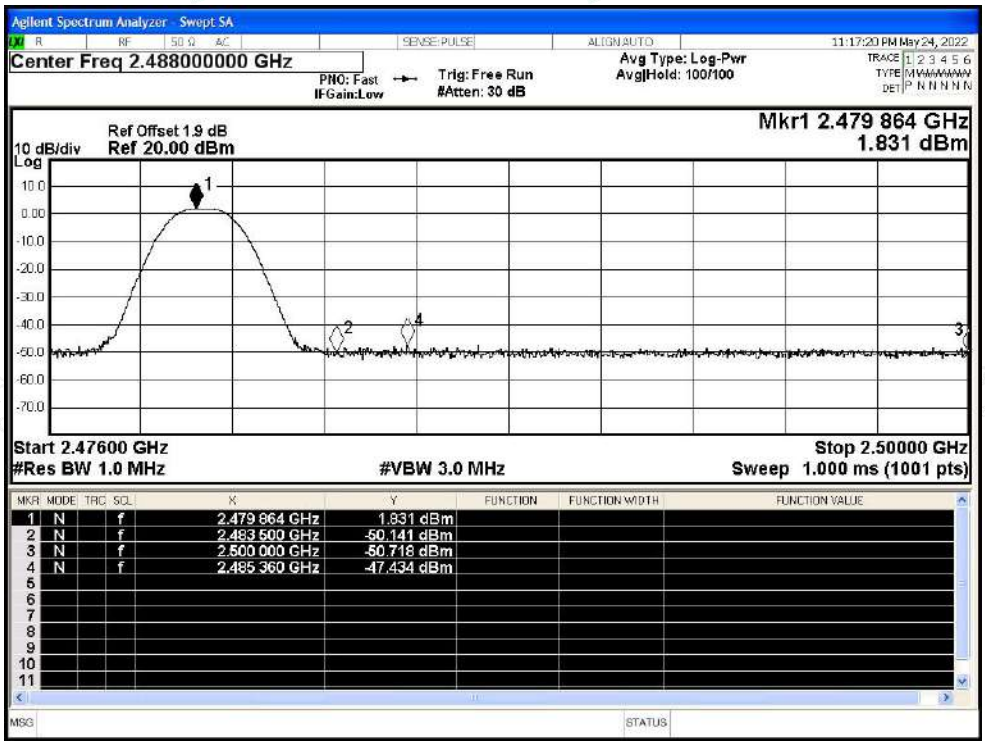
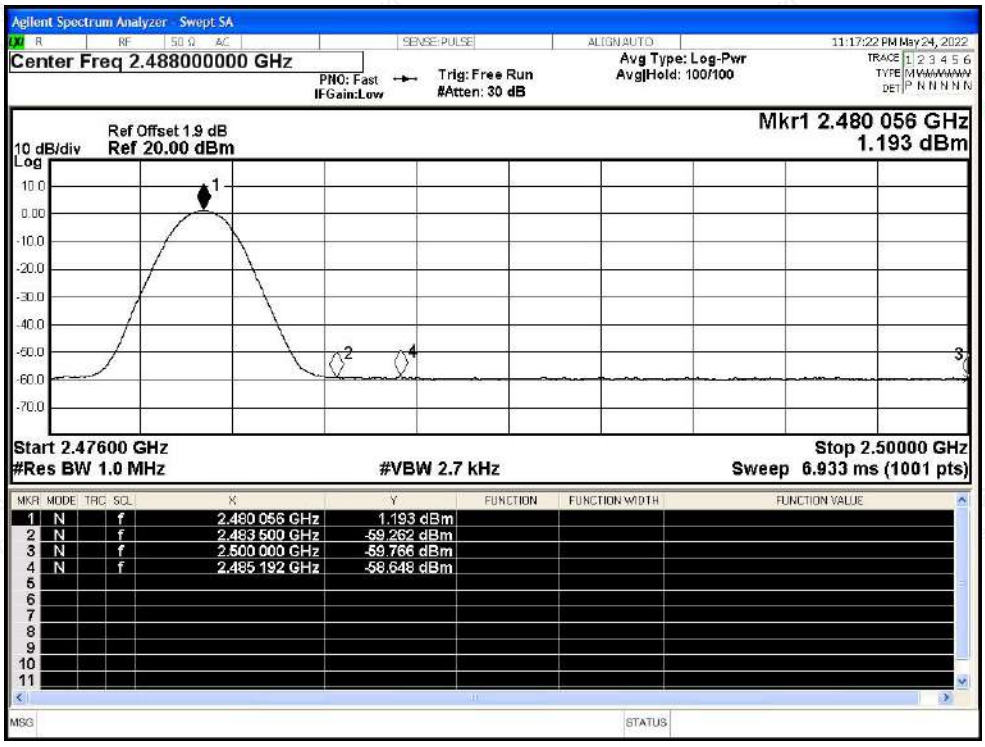
Restrict Band NVNT BLE 1M 2402MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2402MHz Ant1 Average



Restrict Band NVNT BLE 1M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2480MHz Ant1 Average