Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: Protector Film Cutter

Test Model: Kaizen Atlas

Environmental Conditions

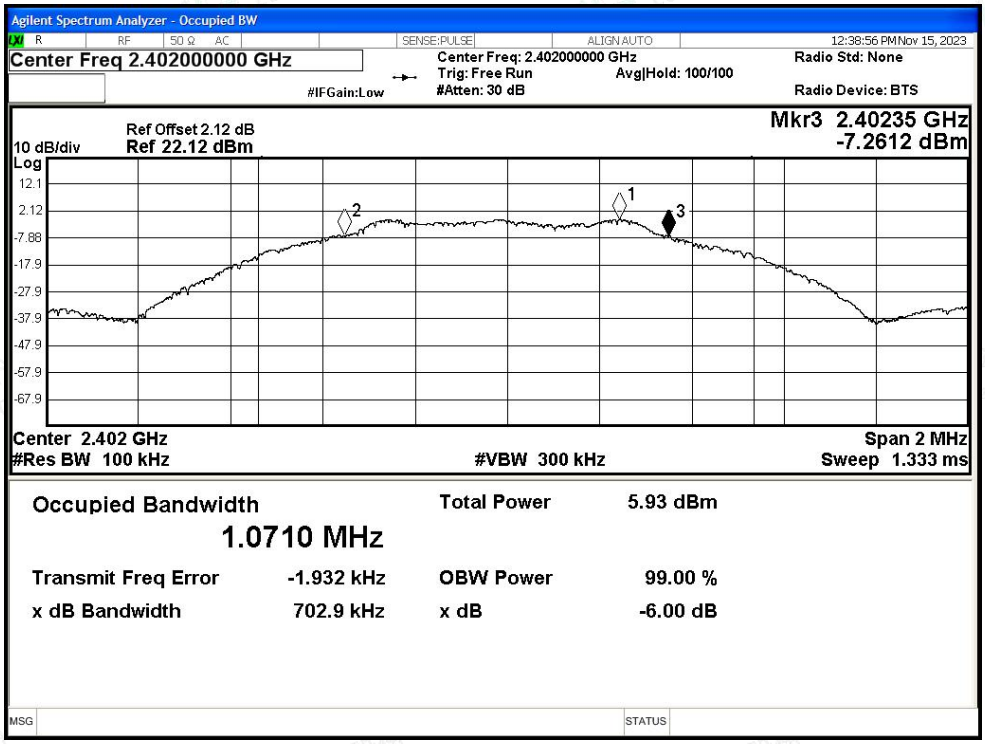
Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Joker Hu
Supervised by:	Nick Peng

A.1 -6dB Bandwidth

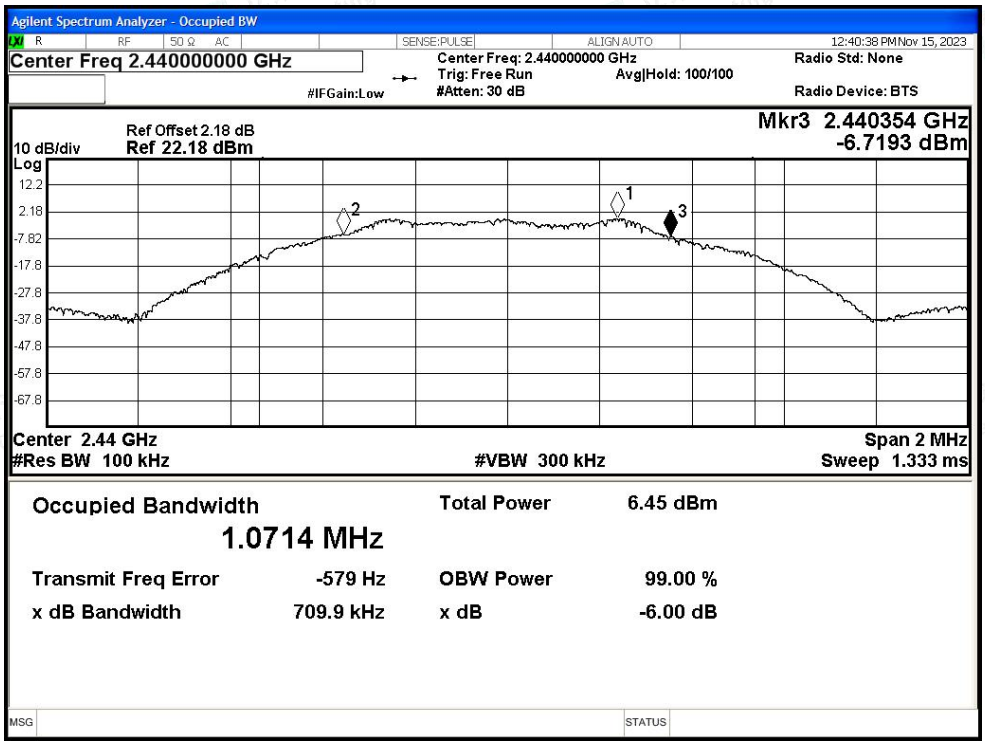
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.703	>=0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.71	>=0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.704	>=0.5	Pass

Test Graphs

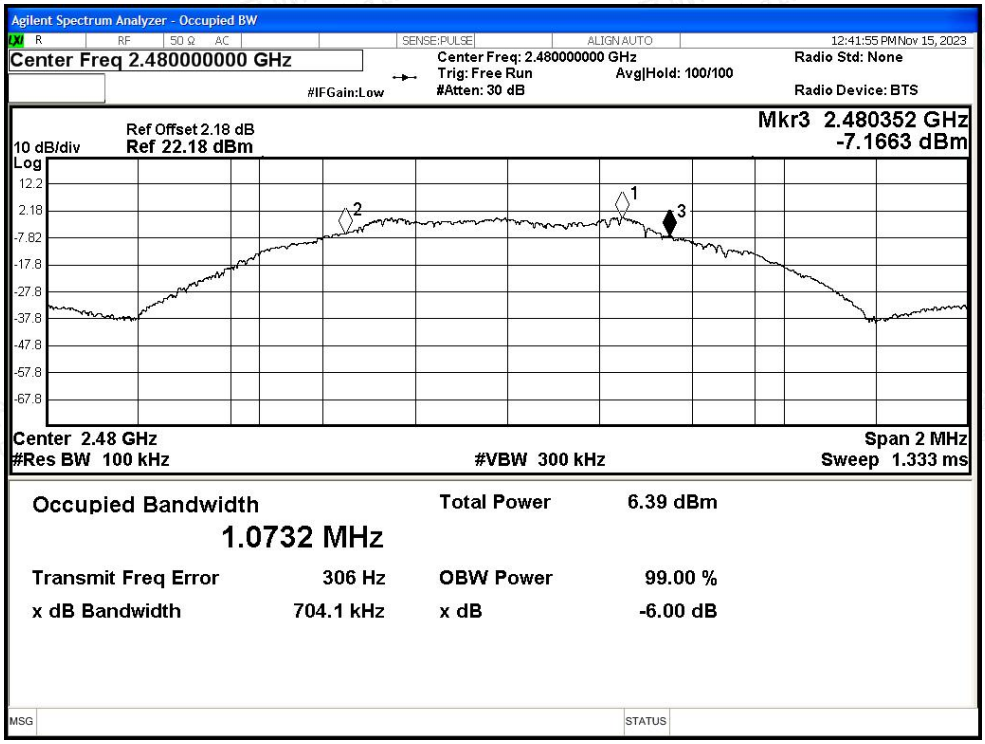
-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1

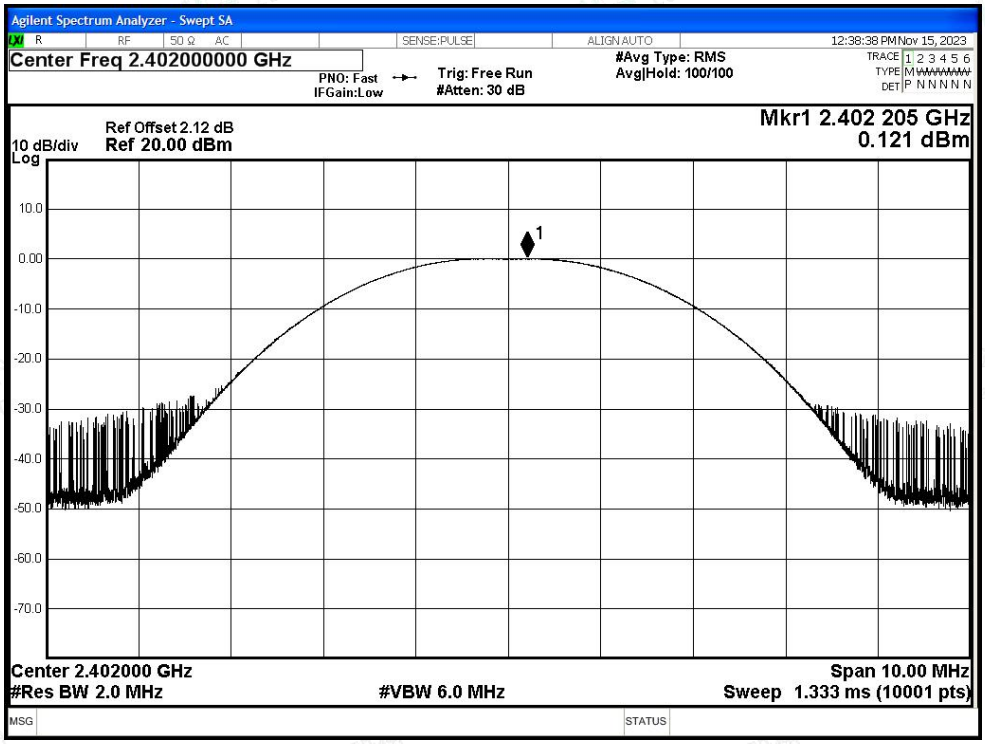


A.2 Maximum Conducted Output Power

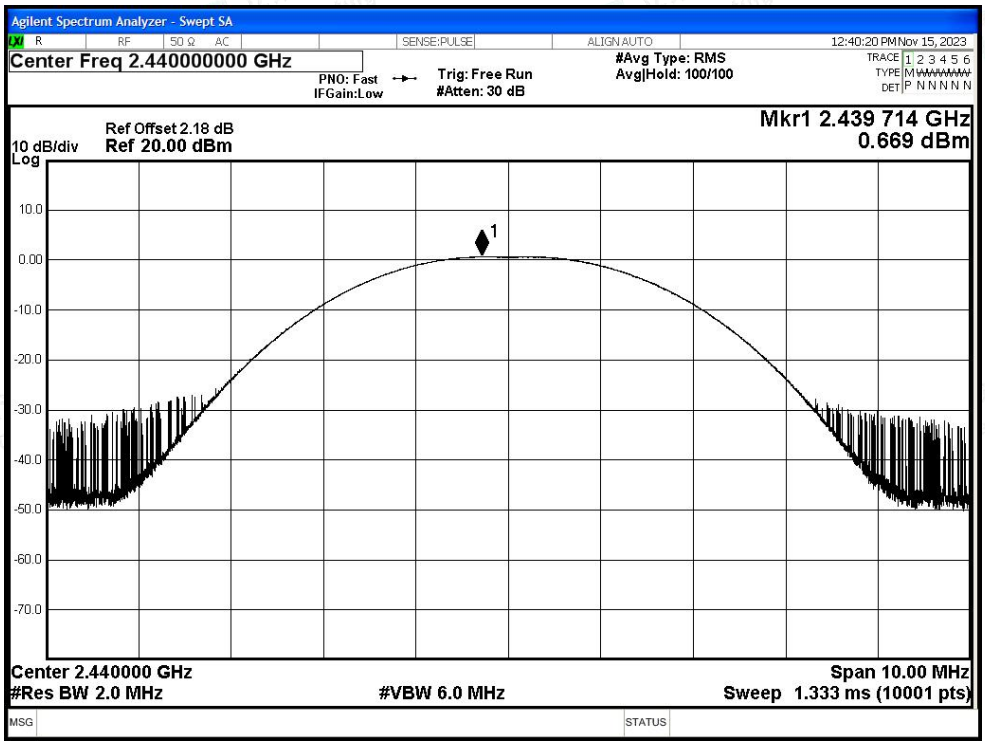
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	0.12	30	Pass
NVNT	BLE 1M	2440	Ant1	0.67	30	Pass
NVNT	BLE 1M	2480	Ant1	0.68	30	Pass

Test Graphs

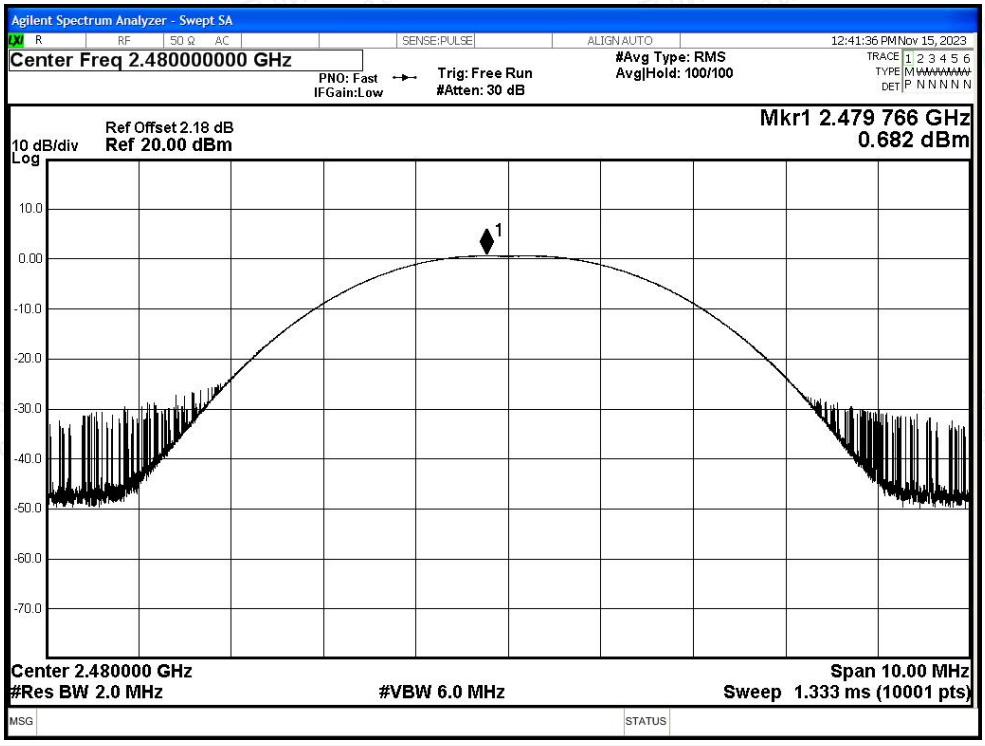
Power NVNT BLE 1M 2402MHz Ant1



Power NVNT BLE 1M 2440MHz Ant1



Power NVNT BLE 1M 2480MHz Ant1

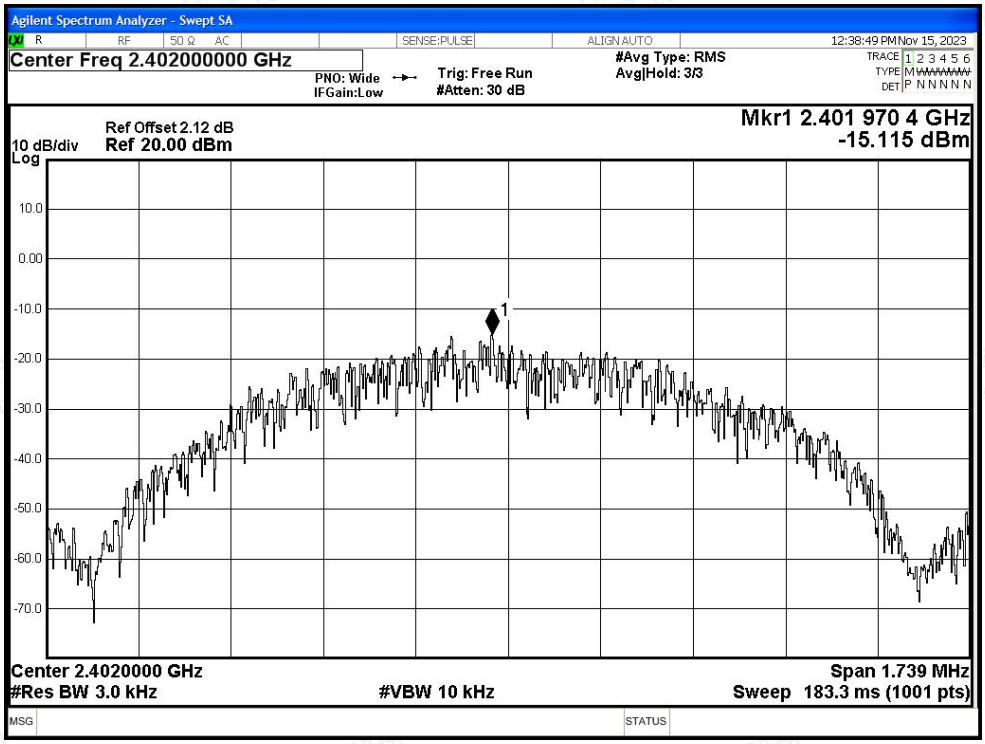


A.3 Maximum Power Spectral Density Level

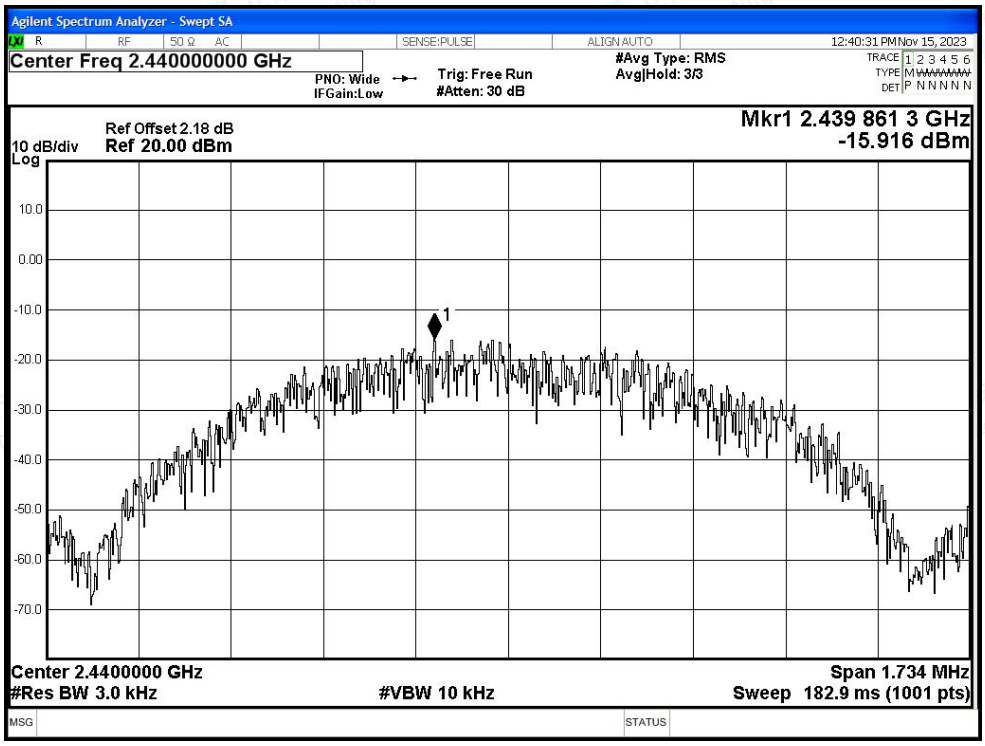
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	-15.12	8	Pass
NVNT	BLE 1M	2440	Ant1	-15.92	8	Pass
NVNT	BLE 1M	2480	Ant1	-15.13	8	Pass

Test Graphs

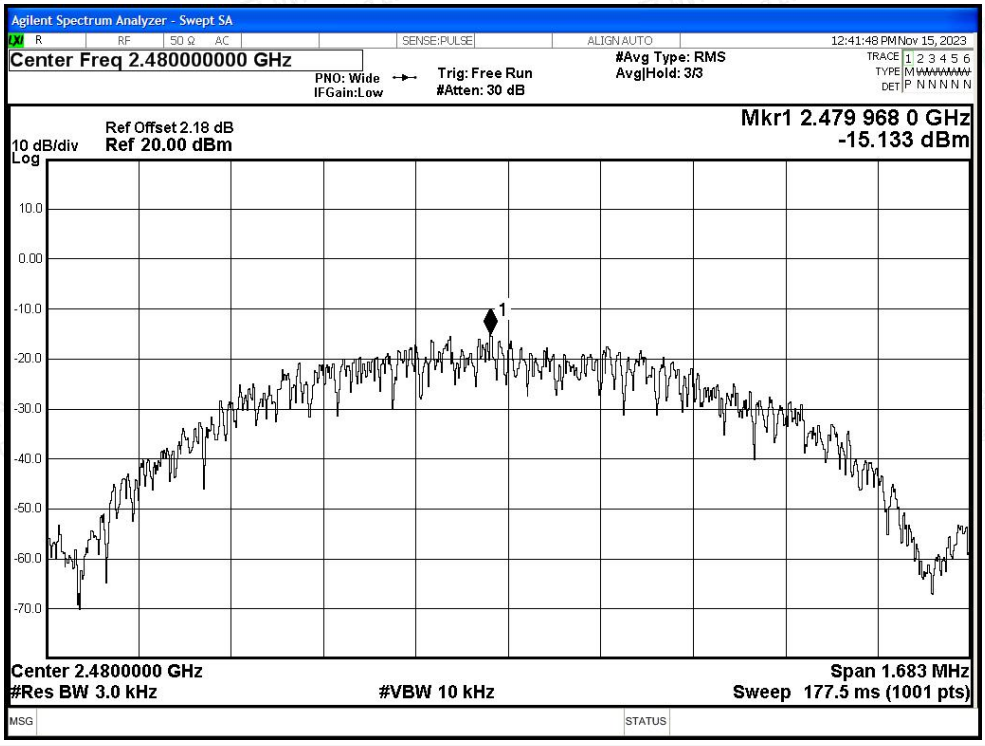
PSD NVNT BLE 1M 2402MHz Ant1



PSD NVNT BLE 1M 2440MHz Ant1



PSD NVNT BLE 1M 2480MHz Ant1

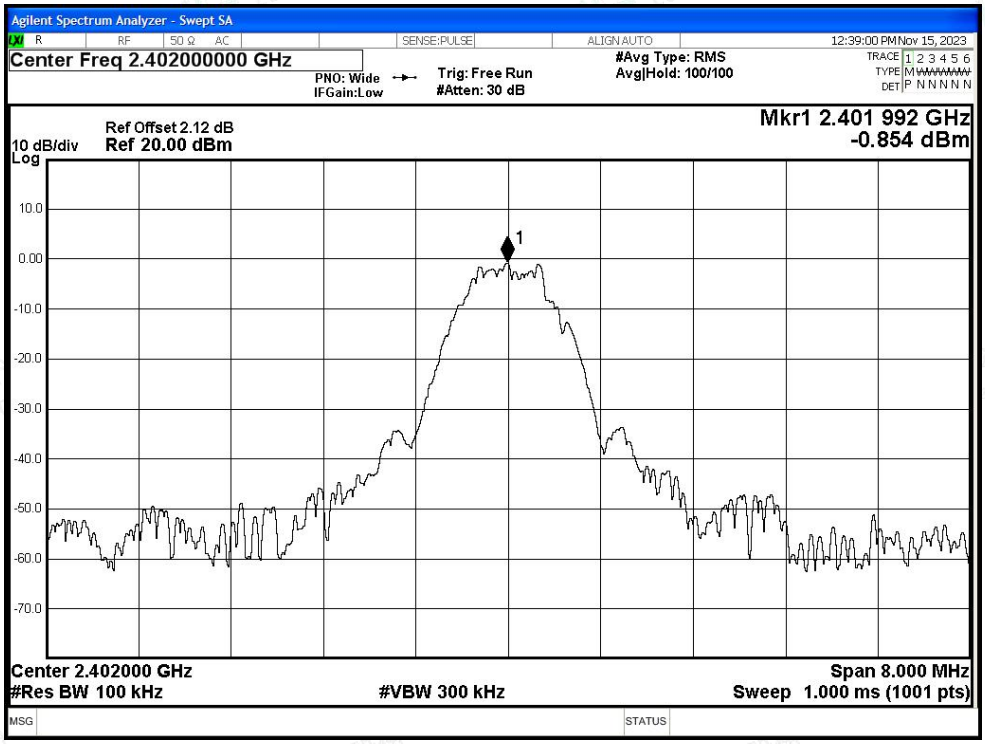


A.4 Band Edge

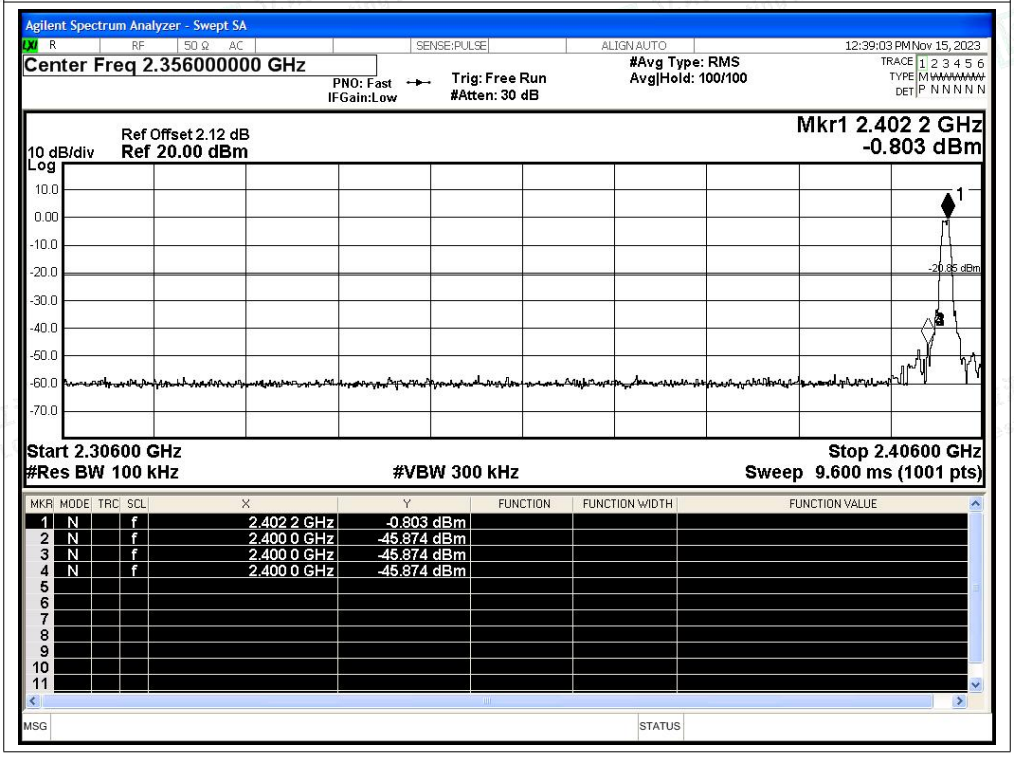
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-45.02	-20	Pass
NVNT	BLE 1M	2480	Ant1	-50.01	-20	Pass

Test Graphs

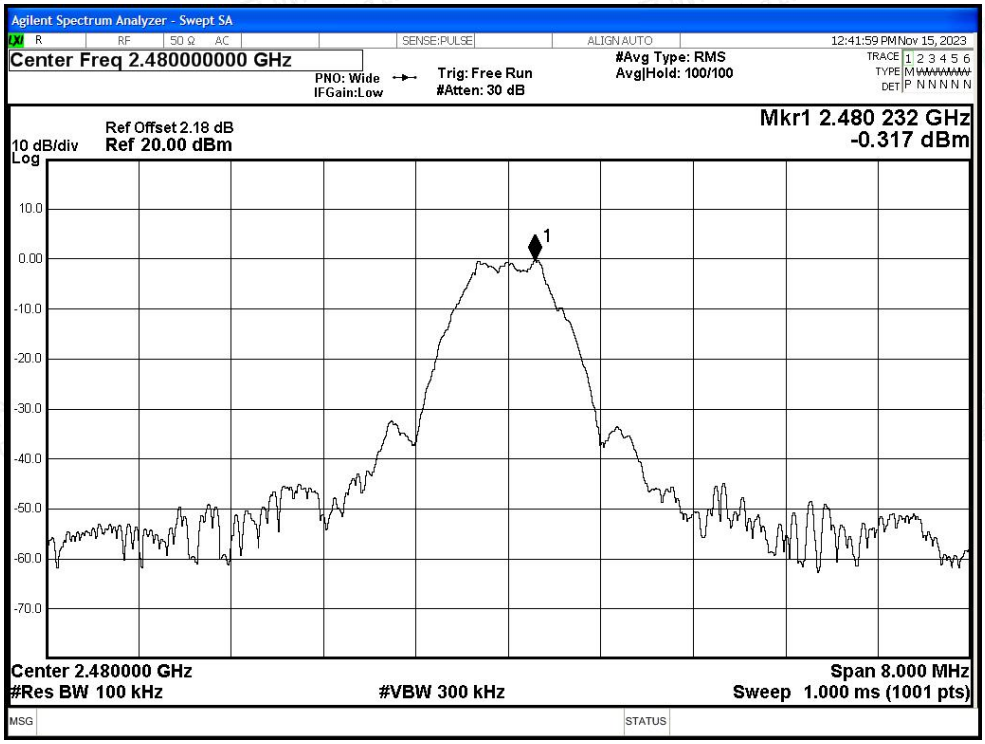
Band Edge NVNT BLE 1M 2402MHz Ant1 Ref



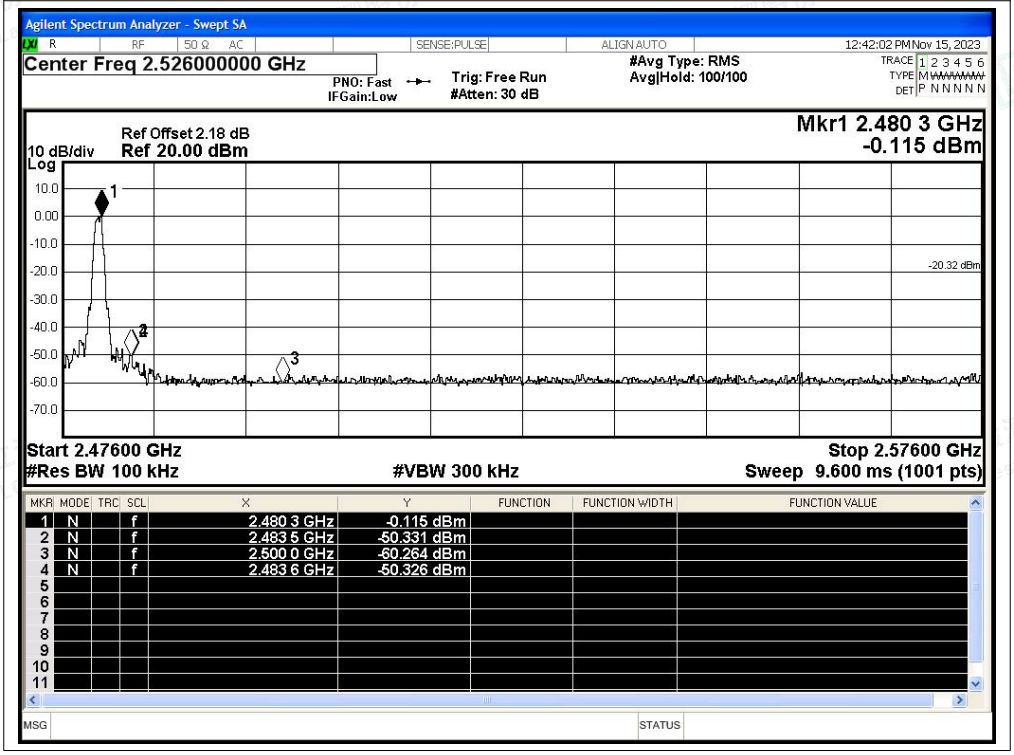
Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



Band Edge NVNT BLE 1M 2480MHz Ant1 Ref



Band Edge NVNT BLE 1M 2480MHz Ant1 Emission

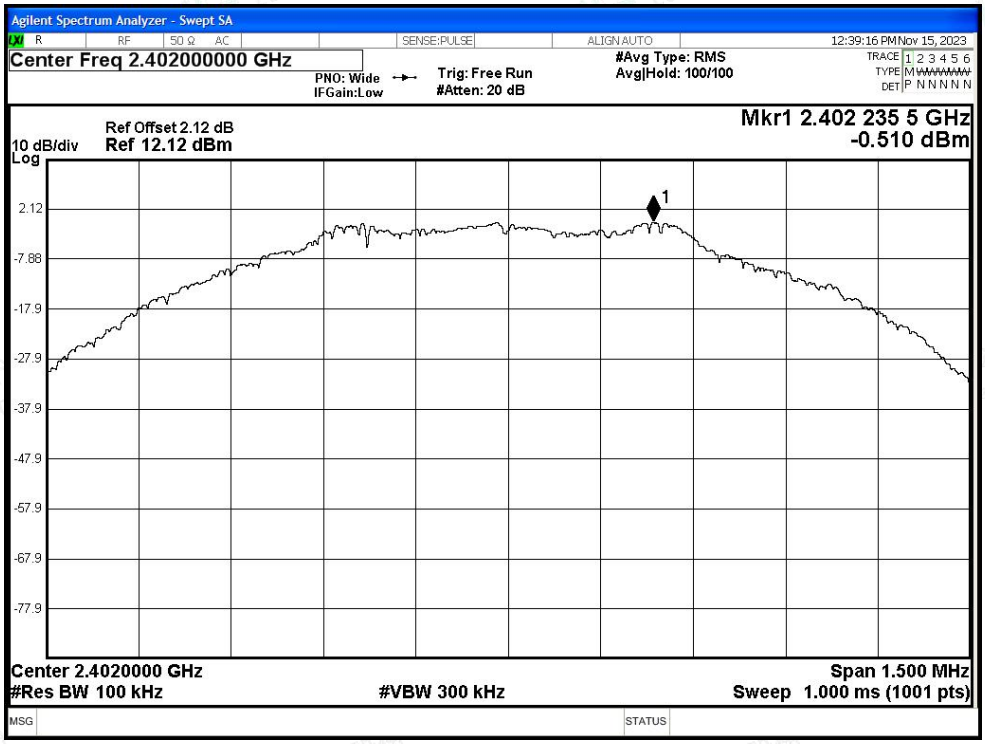


A.5 Conducted RF Spurious Emission

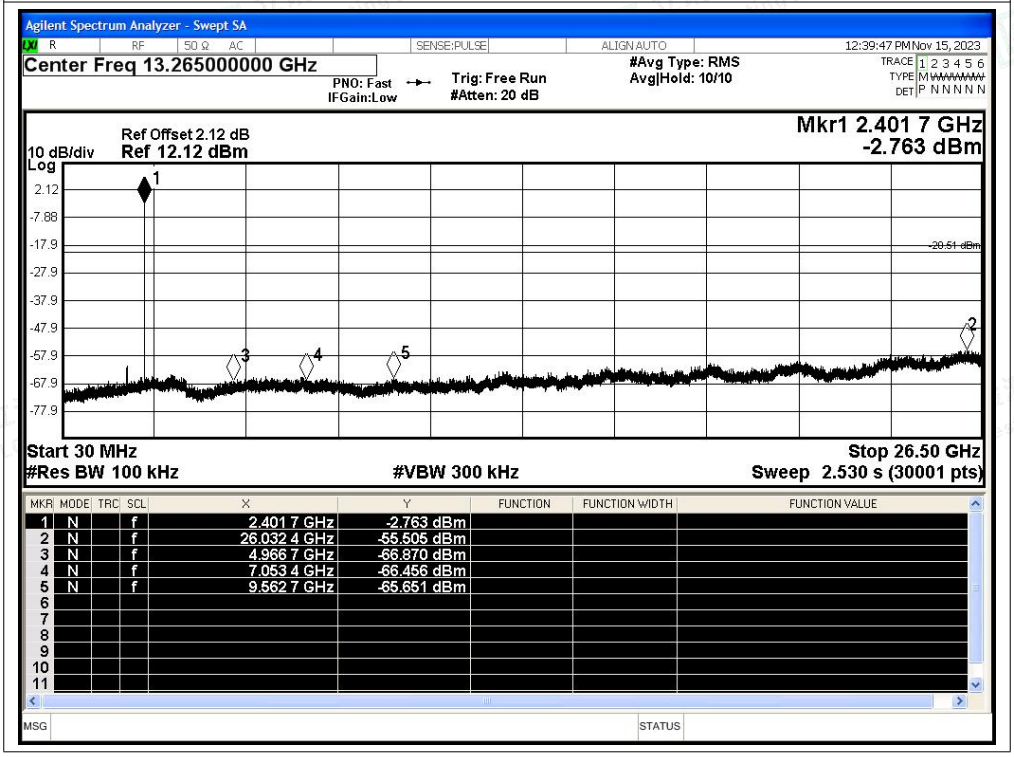
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-55	-20	Pass
NVNT	BLE 1M	2440	Ant1	-54.72	-20	Pass
NVNT	BLE 1M	2480	Ant1	-54.45	-20	Pass

Test Graphs

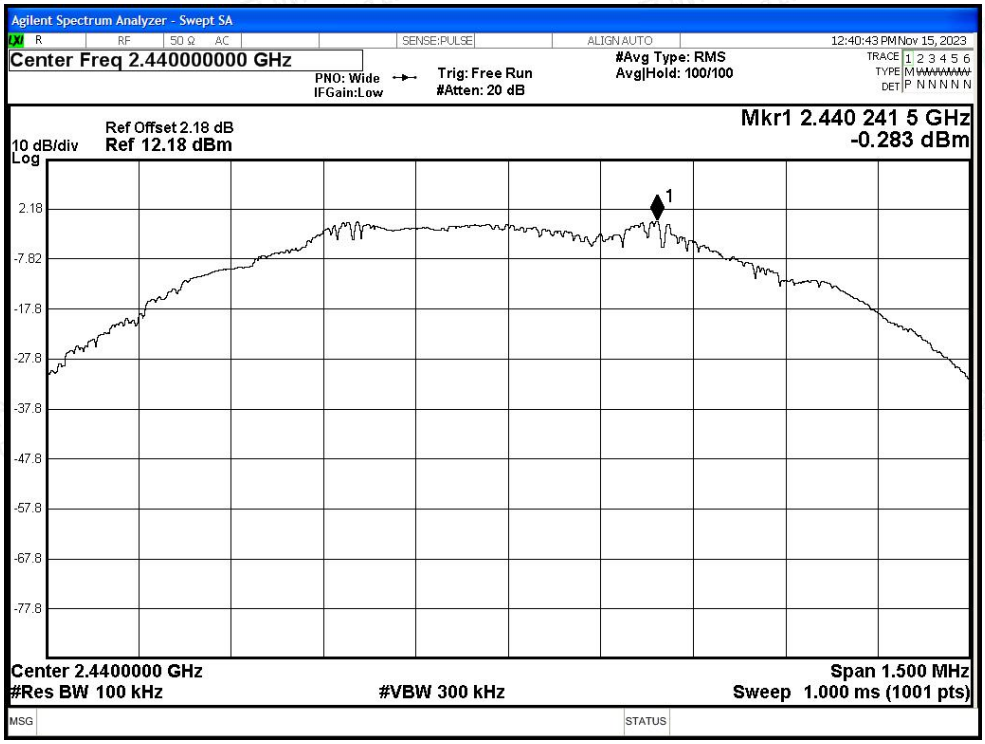
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref



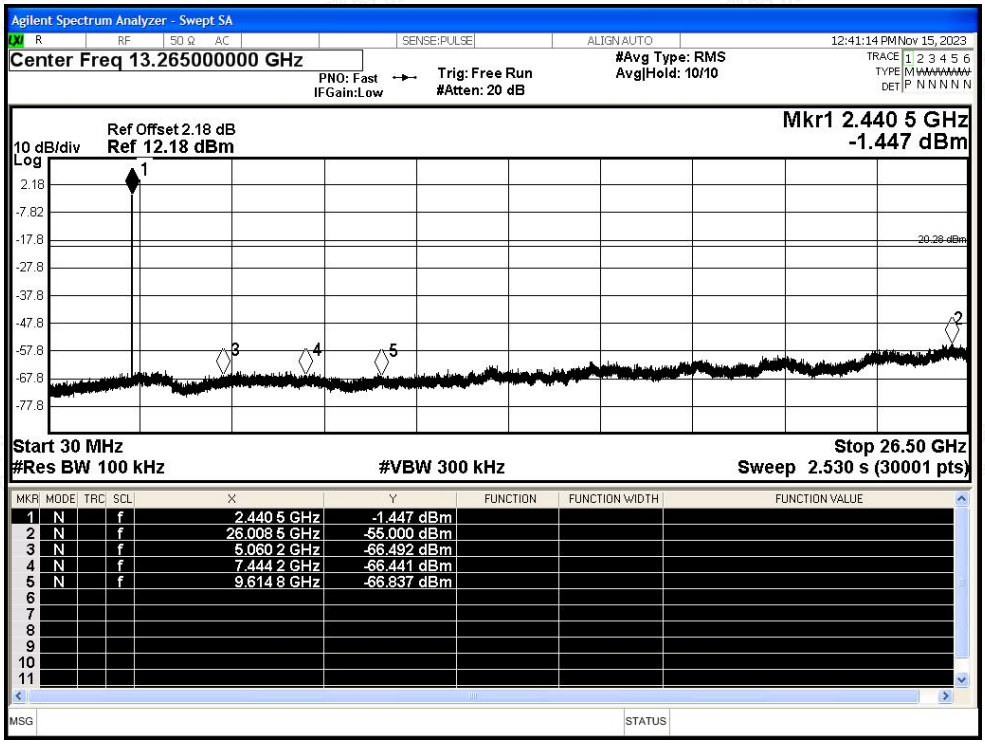
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



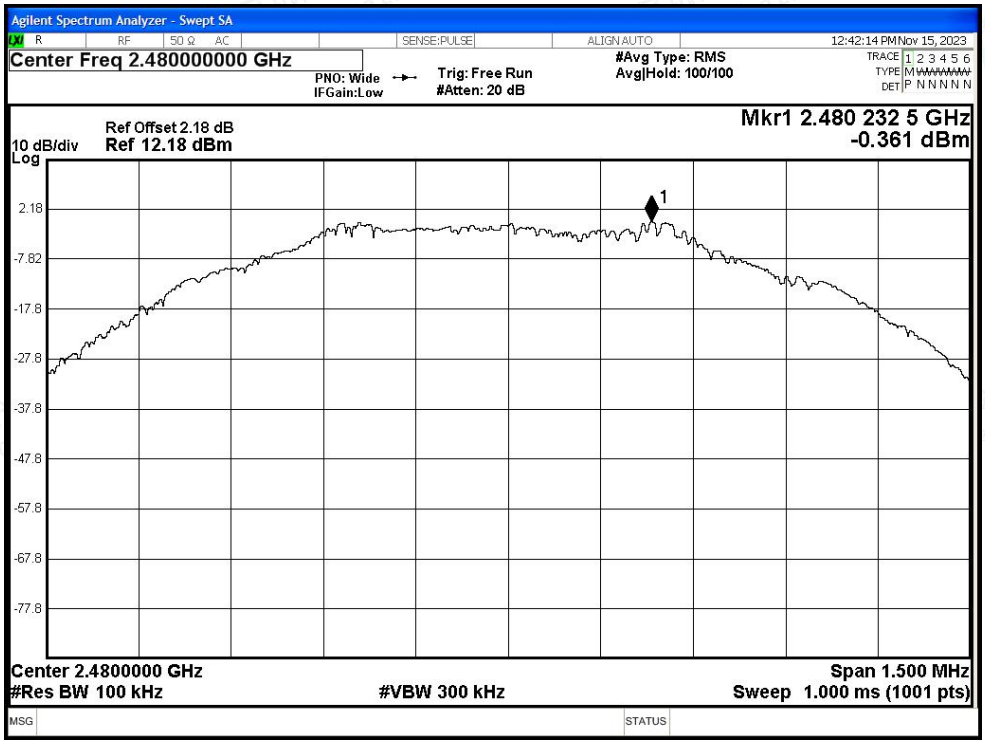
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref



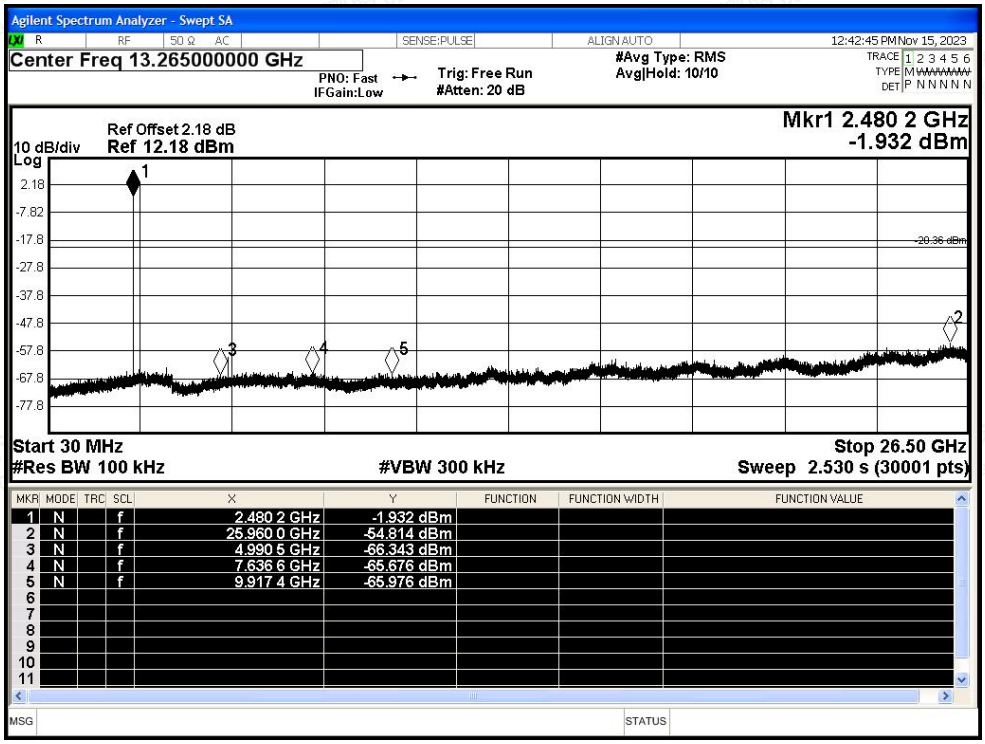
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission

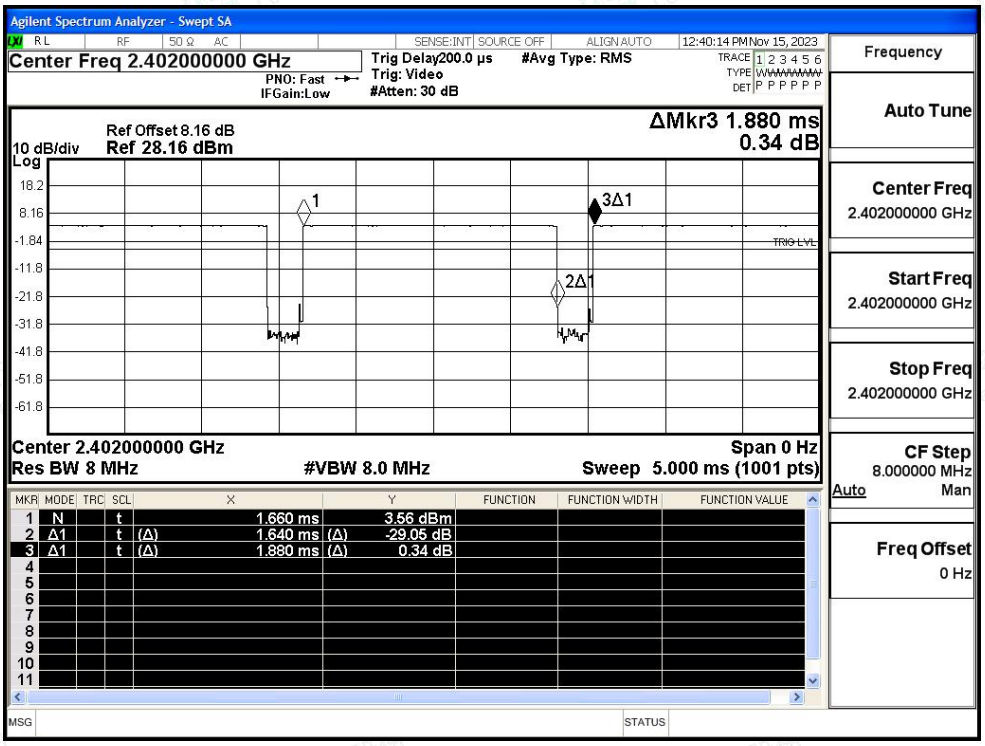


A.6 Duty Cycle

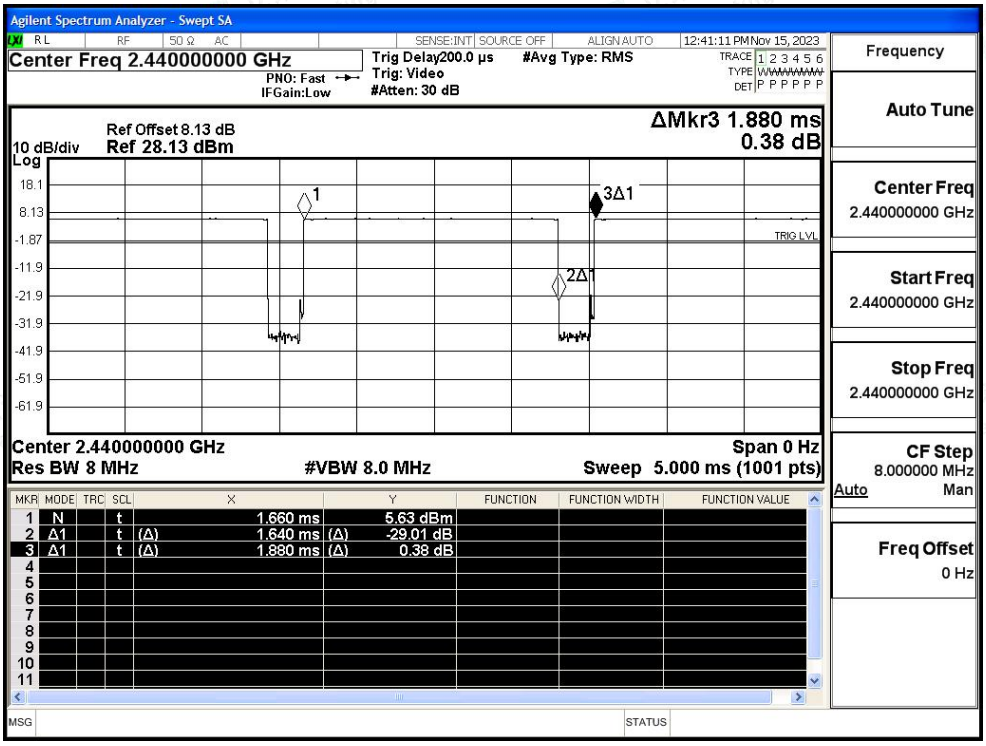
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T
BLE_1M	Ant1	2402	1.64	1.88	0.8723	87.23	0.59	0.61
		2440	1.64	1.88	0.8723	87.23	0.59	0.61
		2480	1.64	1.88	0.8723	87.23	0.59	0.61

Test Graphs

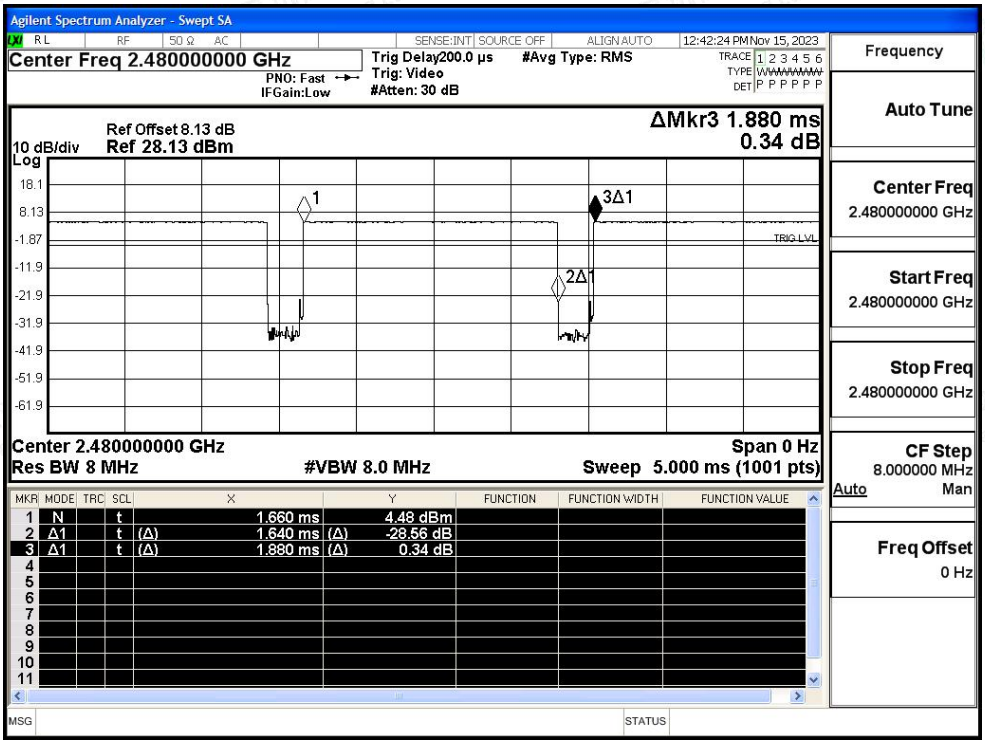
Duty Cycle NVNT BLE 1M 2402MHz Ant1



Duty Cycle NVNT BLE 1M 2440MHz Ant1



Duty Cycle NVNT BLE 1M 2480MHz Ant1



A.7 Restrict Band

Test Result

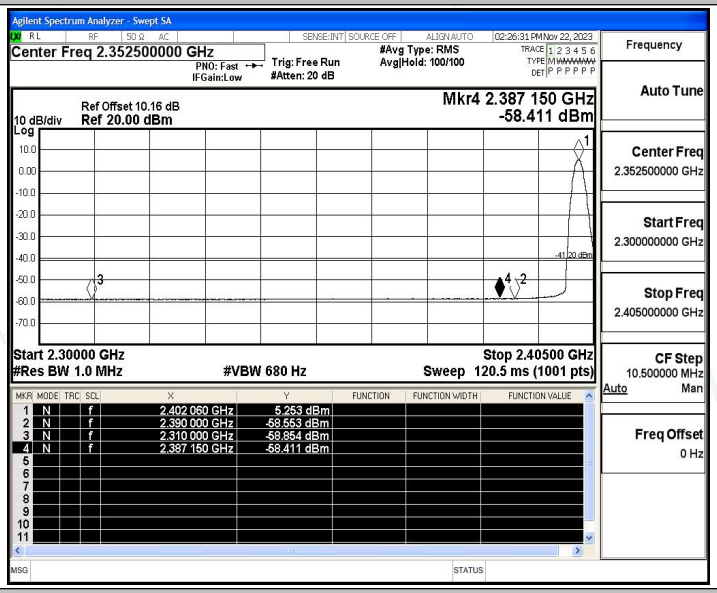
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-58.85	≤-41.20	36.35	≤54	PASS
				AV	2387.150	-58.41	≤-41.20	36.79	≤54	PASS
				AV	2390.000	-58.55	≤-41.20	36.65	≤54	PASS
				Peak	2310.000	-51.89	≤-21.20	43.31	≤74	PASS
				Peak	2383.580	-49.2	≤-21.20	46.00	≤74	PASS
				Peak	2390.000	-51.95	≤-21.20	43.25	≤74	PASS
		High	2480	AV	2483.500	-49.95	≤-41.20	45.25	≤54	PASS
				AV	2483.520	-49.95	≤-41.20	45.25	≤54	PASS
				AV	2500.000	-58.51	≤-41.20	36.69	≤54	PASS
				Peak	2483.500	-48.37	≤-21.20	46.83	≤74	PASS
				Peak	2485.440	-39.19	≤-21.20	56.01	≤74	PASS
				Peak	2500.000	-51.08	≤-21.20	44.12	≤74	PASS

Note：

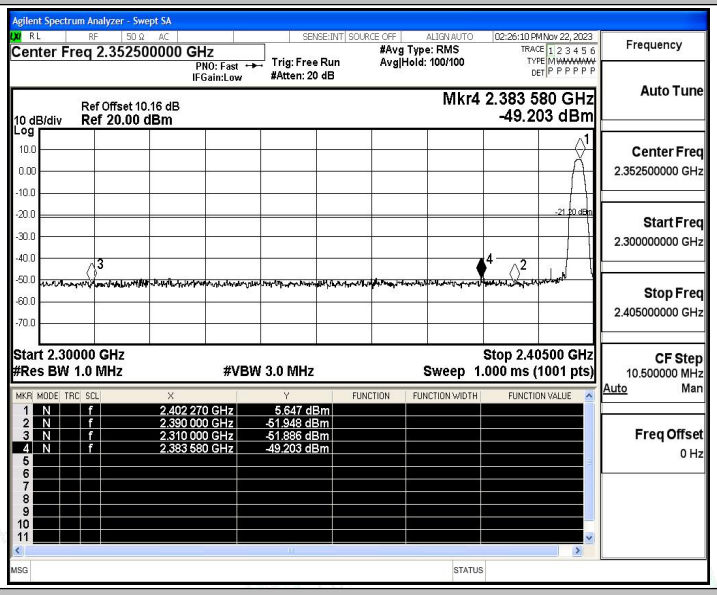
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

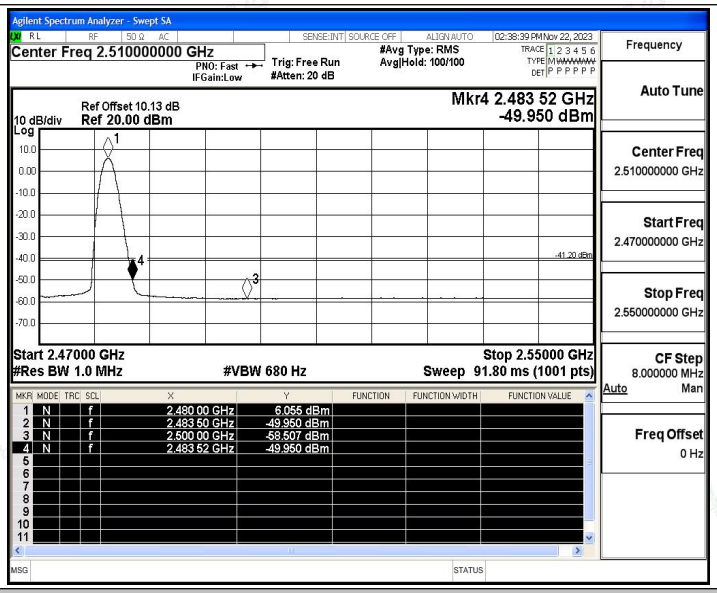
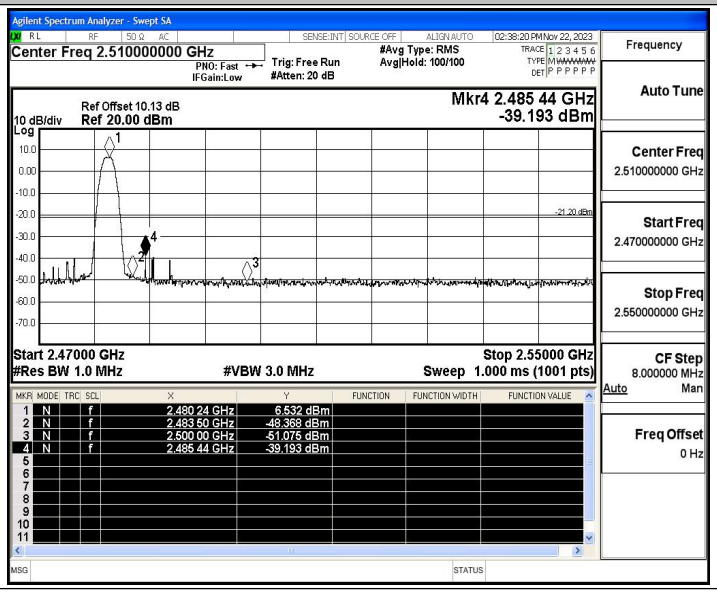
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak