

Appendix B

RF Test Data for BT LE (Conducted Measurement)

Product Name: Mini Instrument Amplifier

Test Model: BA-10

Environmental Conditions

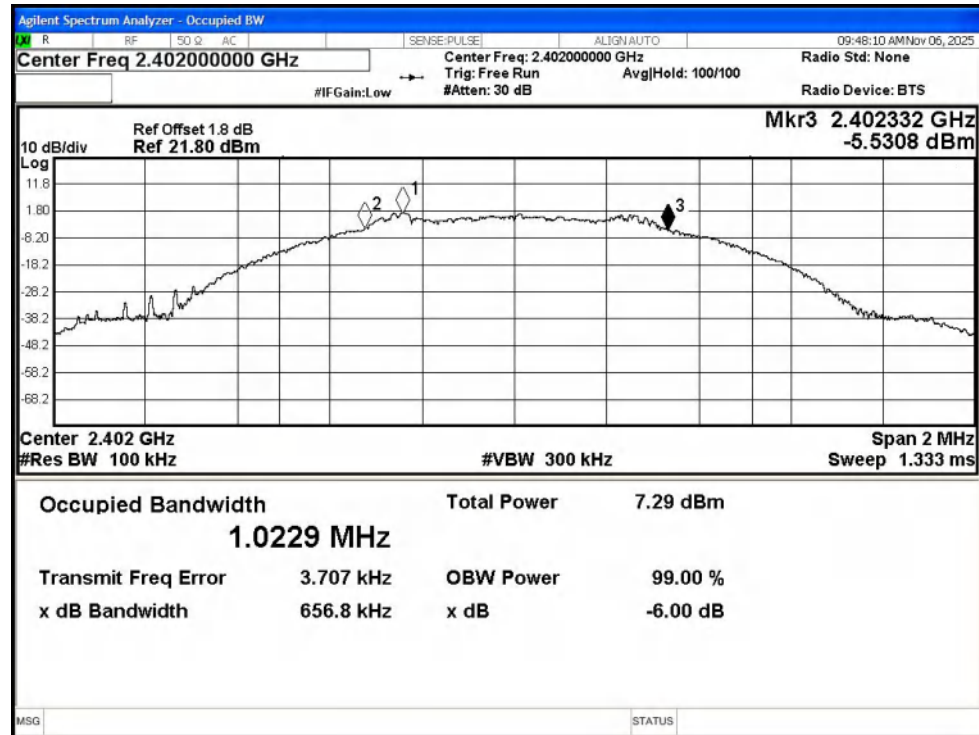
Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Jone Lee
Supervised by:	Fengliu Tang

B.1 -6dB Bandwidth

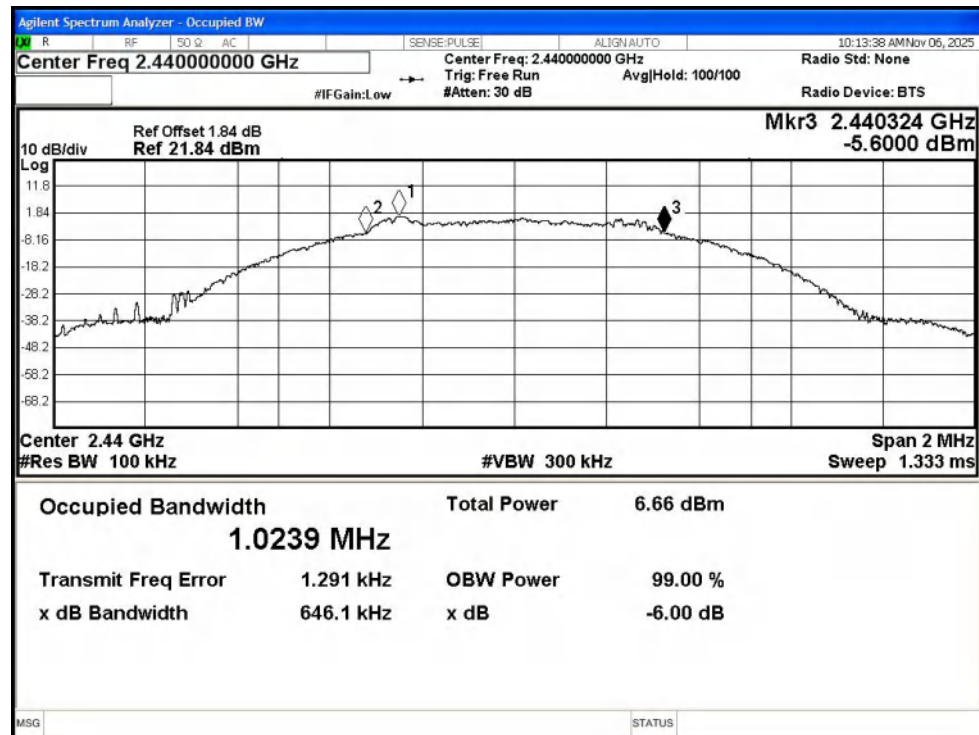
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.657	≥ 0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.646	≥ 0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.662	≥ 0.5	Pass
NVNT	BLE 2M	2402	Ant1	1.159	≥ 0.5	Pass
NVNT	BLE 2M	2440	Ant1	1.156	≥ 0.5	Pass
NVNT	BLE 2M	2480	Ant1	1.171	≥ 0.5	Pass

Test Graphs

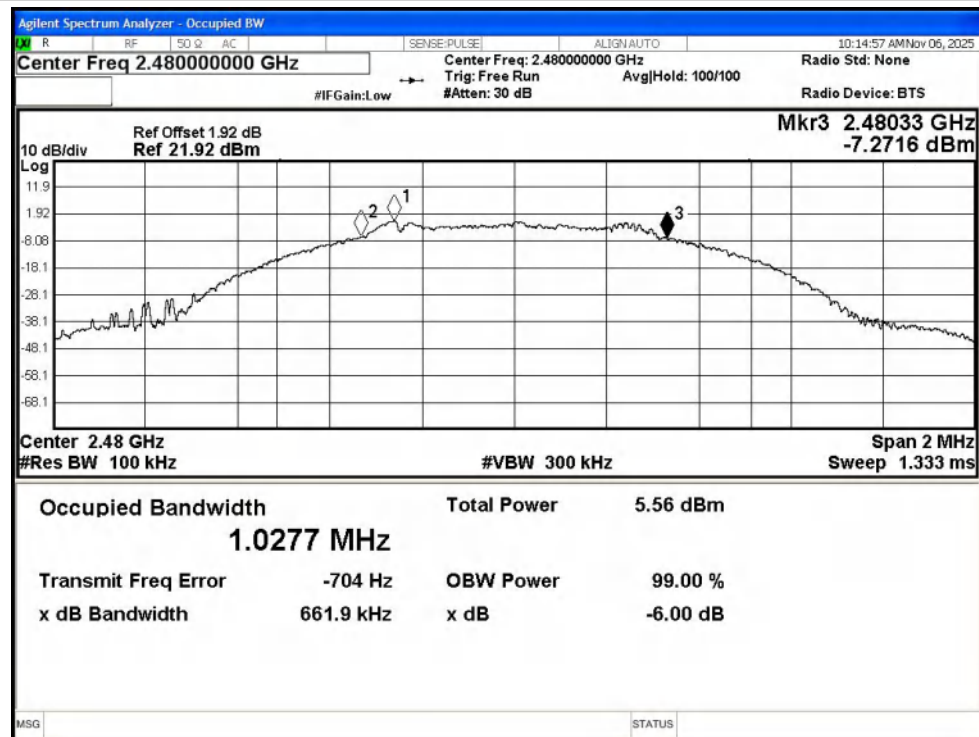
-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



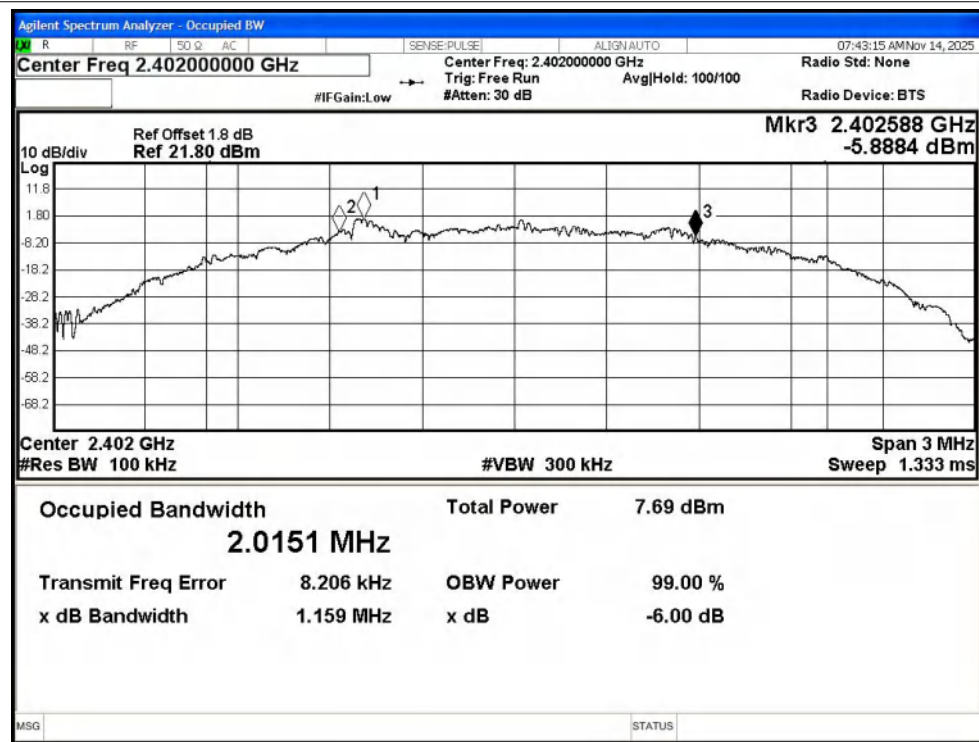
-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1



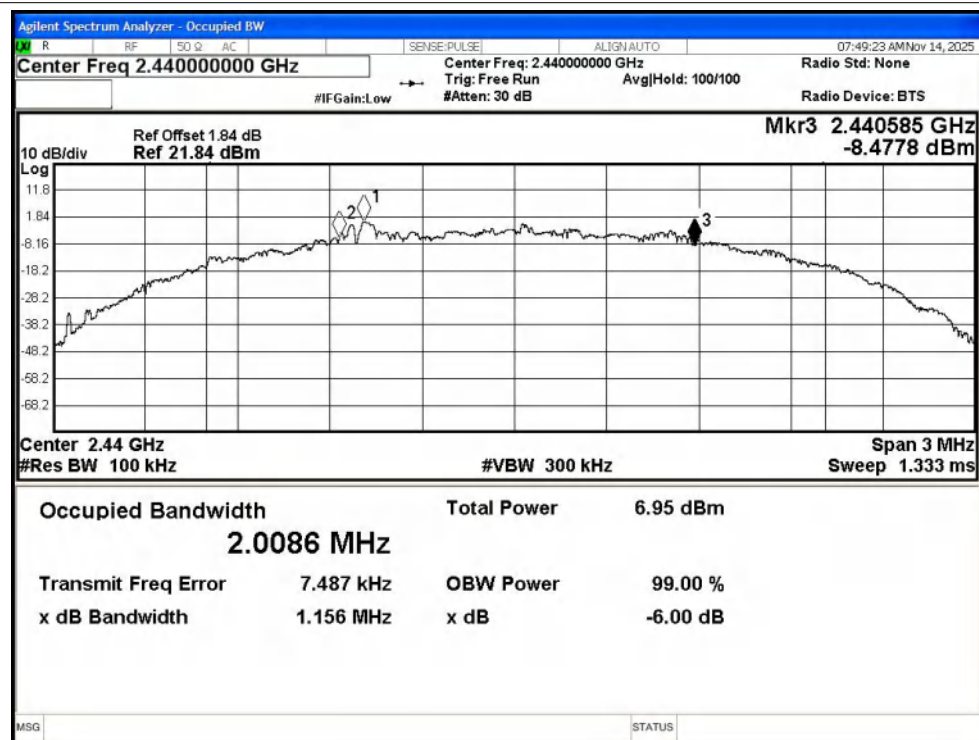
-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1



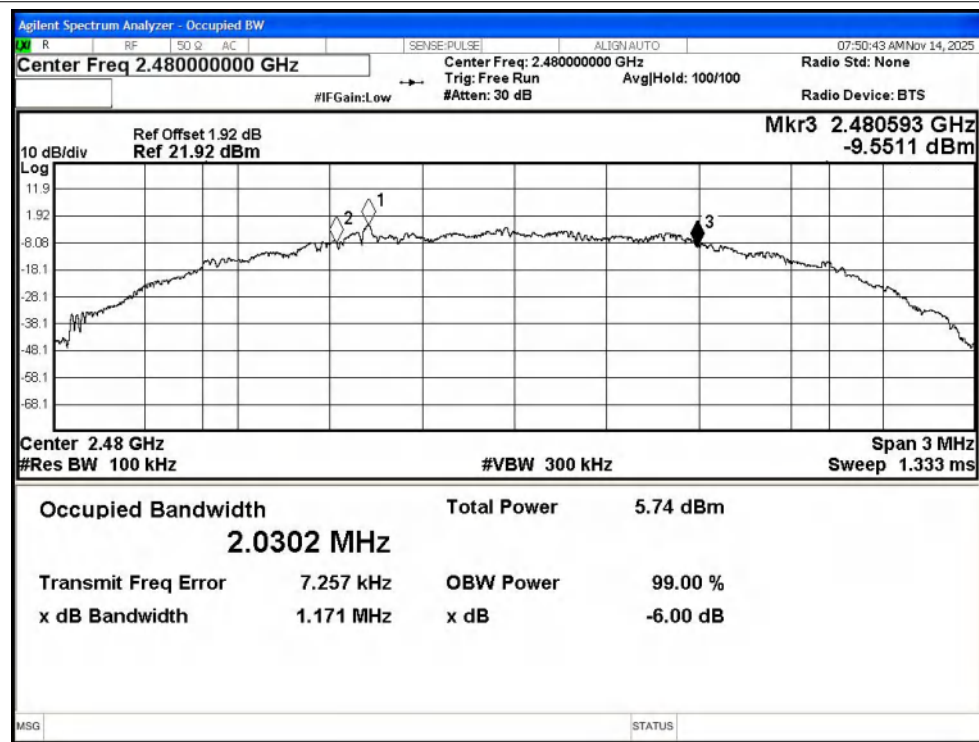
-6dB Bandwidth NVNT BLE 2M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2440MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2480MHz Ant1

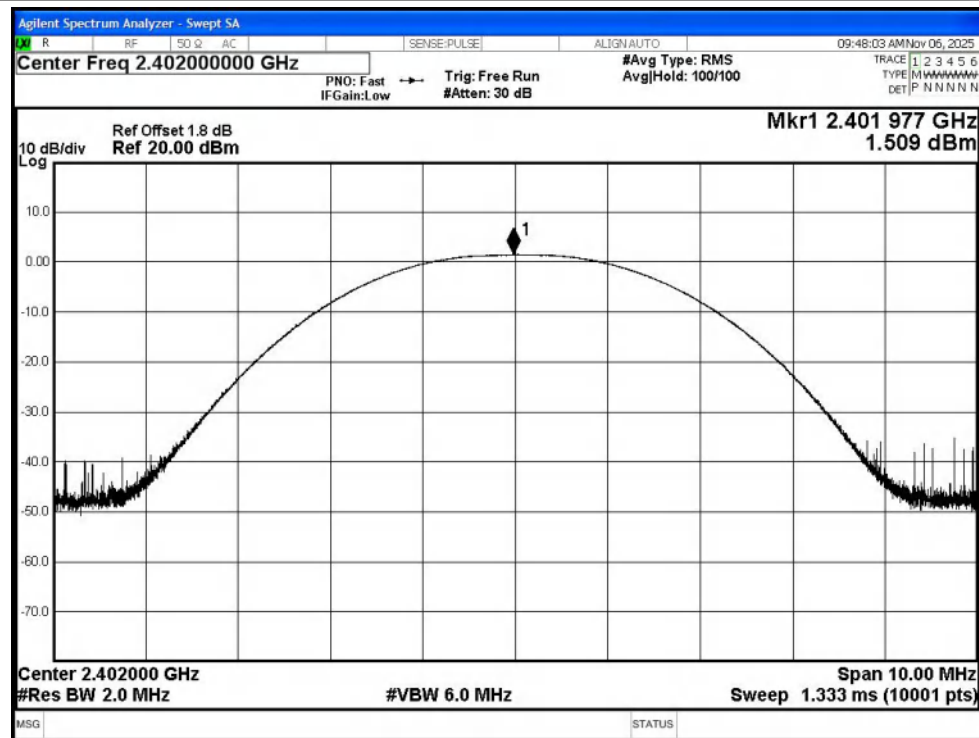


B.2 Maximum Power Conducted Output Power

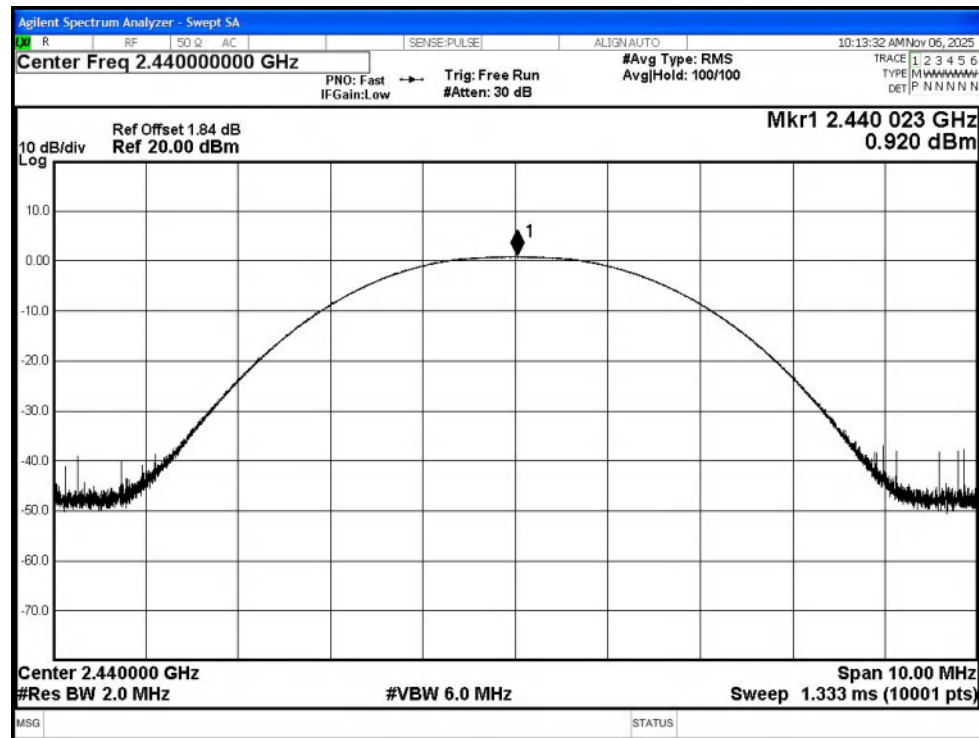
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	1.51	30	Pass
NVNT	BLE 1M	2440	Ant1	0.92	30	Pass
NVNT	BLE 1M	2480	Ant1	-0.16	30	Pass
NVNT	BLE 2M	2402	Ant1	1.35	30	Pass
NVNT	BLE 2M	2440	Ant1	0.65	30	Pass
NVNT	BLE 2M	2480	Ant1	-0.40	30	Pass

Test Graphs

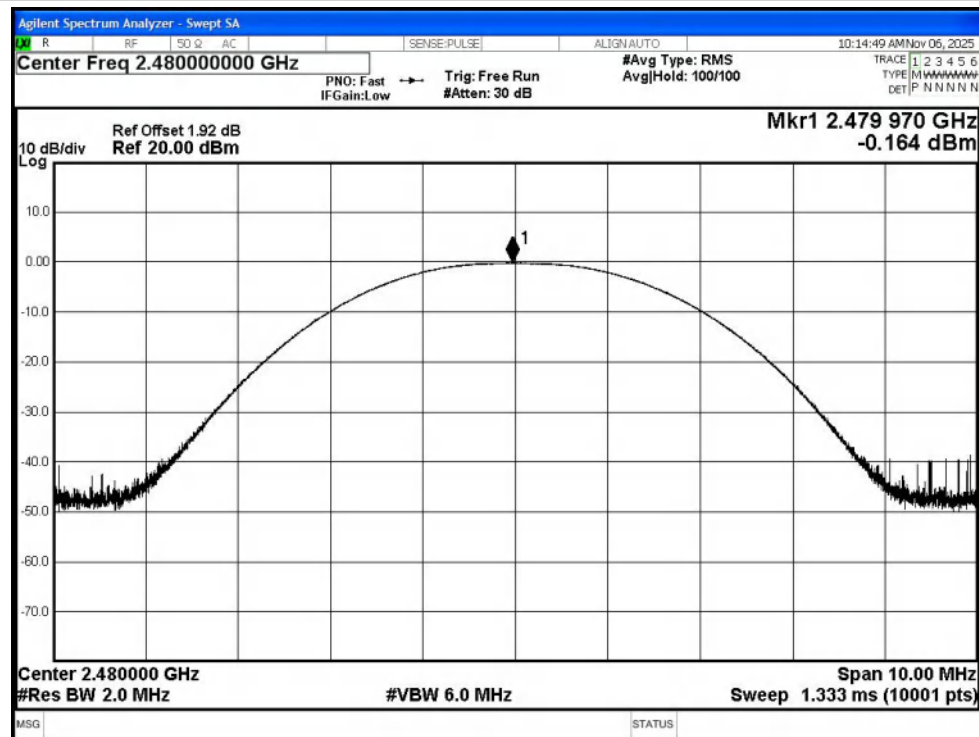
Power NVNT BLE 1M 2402MHz Ant1



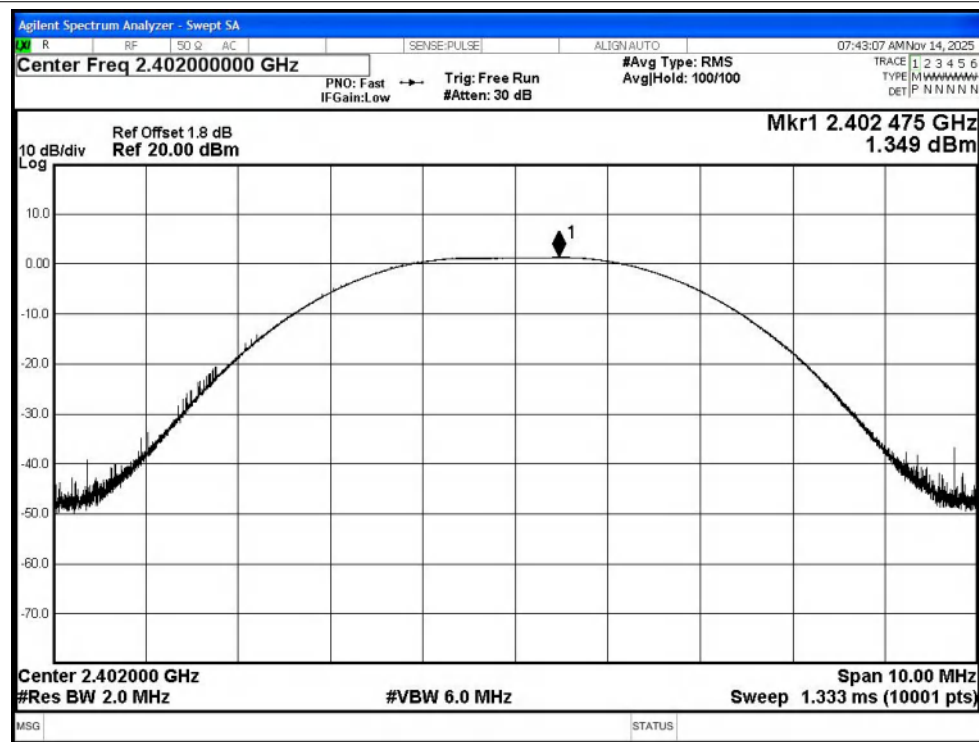
Power NVNT BLE 1M 2440MHz Ant1



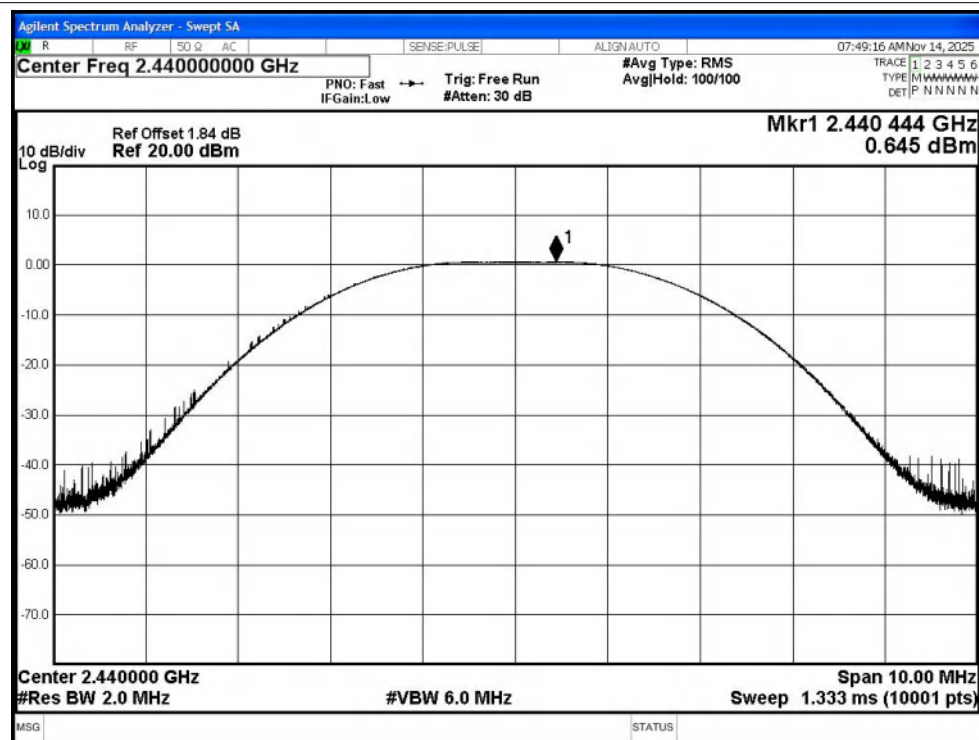
Power NVNT BLE 1M 2480MHz Ant1



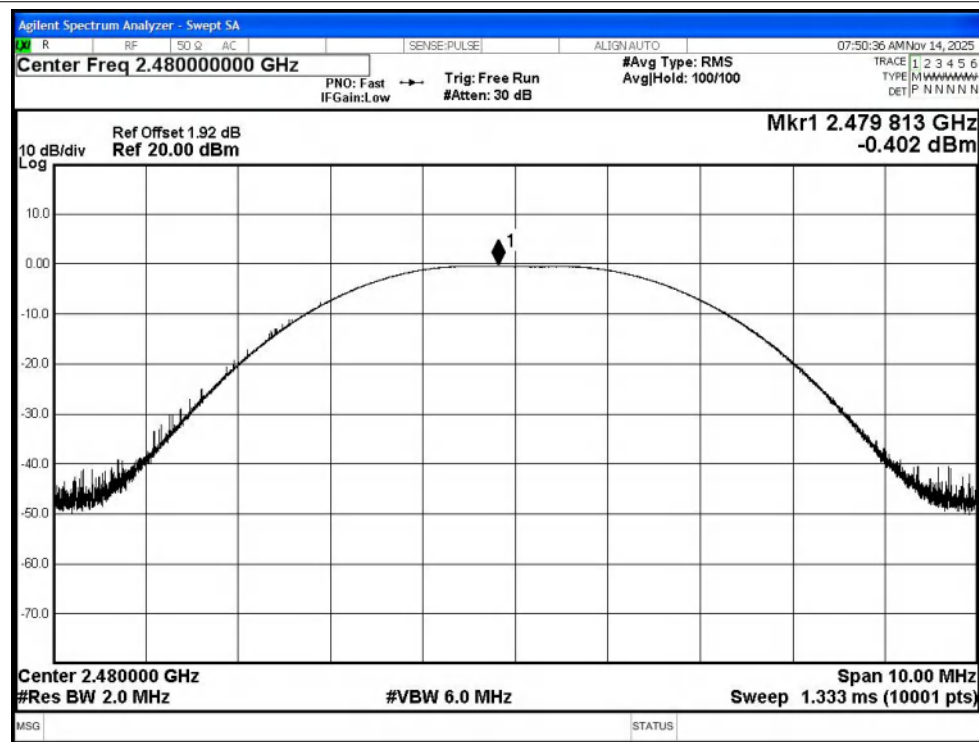
Power NVNT BLE 2M 2402MHz Ant1



Power NVNT BLE 2M 2440MHz Ant1



Power NVNT BLE 2M 2480MHz Ant1

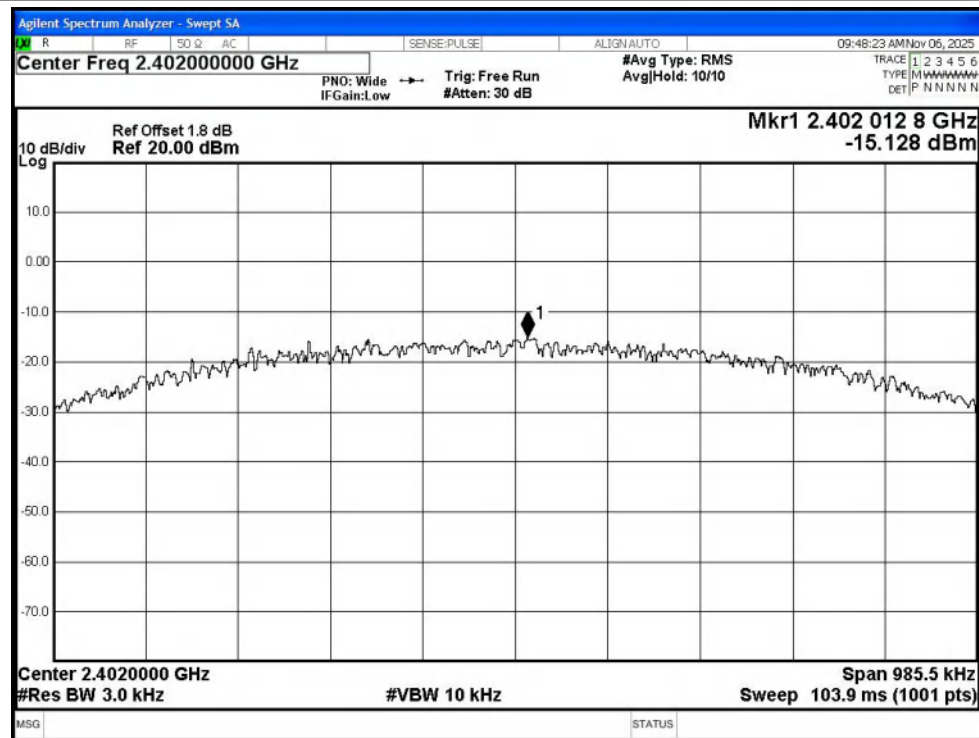


B.3 Maximum Power Spectral Density Level

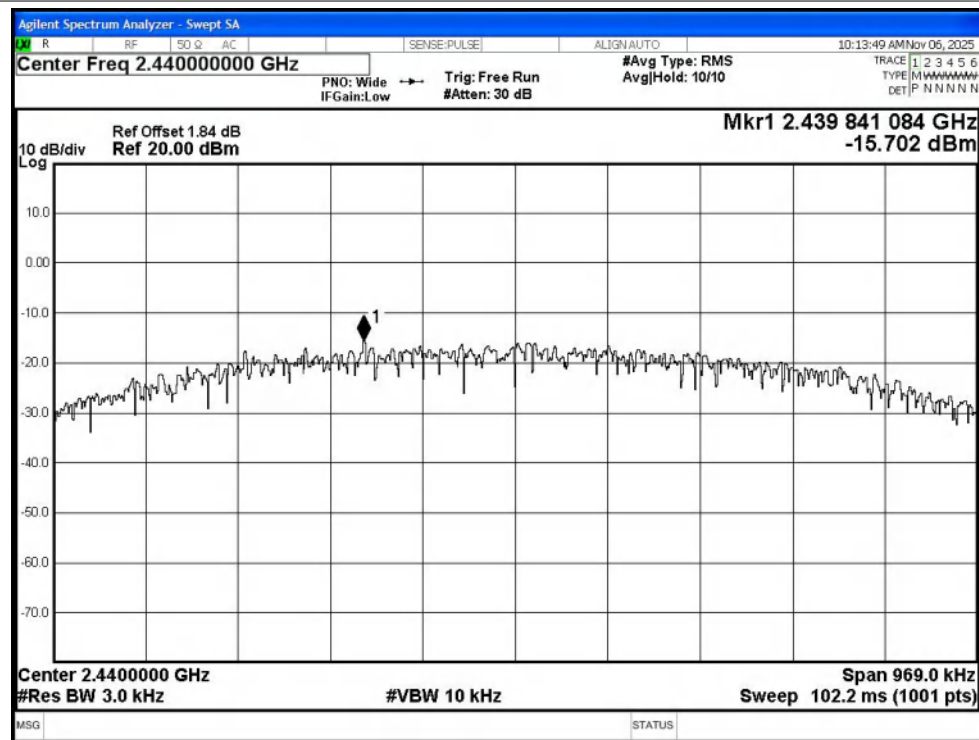
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	-15.13	8	Pass
NVNT	BLE 1M	2440	Ant1	-15.7	8	Pass
NVNT	BLE 1M	2480	Ant1	-16.86	8	Pass
NVNT	BLE 2M	2402	Ant1	-18.61	8	Pass
NVNT	BLE 2M	2440	Ant1	-18.84	8	Pass
NVNT	BLE 2M	2480	Ant1	-20.04	8	Pass

Test Graphs

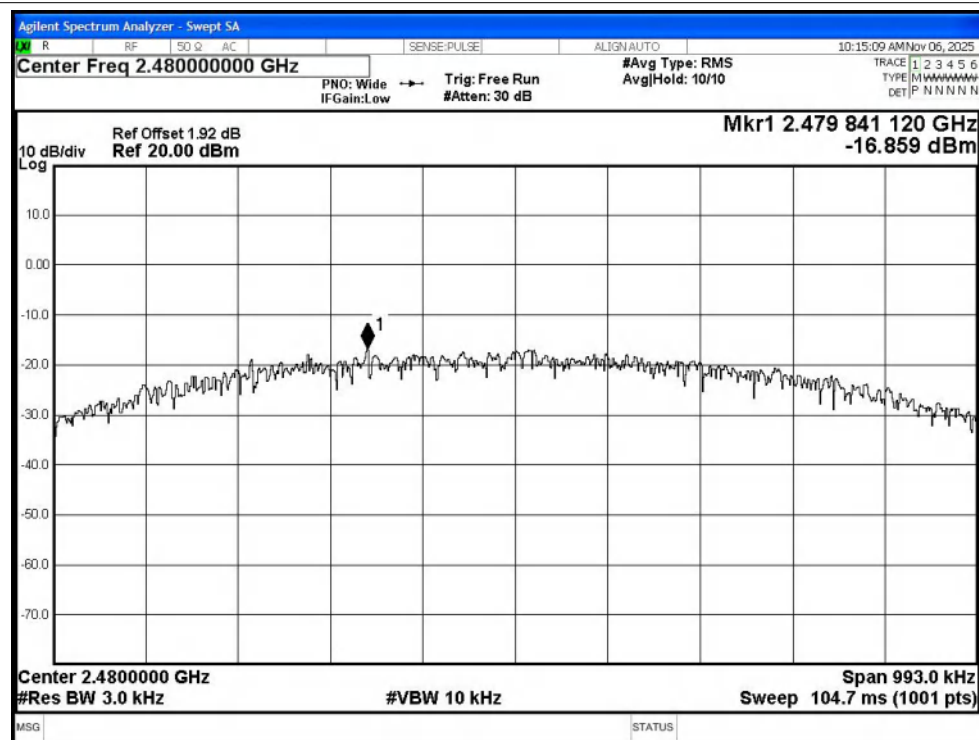
PSD NVNT BLE 1M 2402MHz Ant1



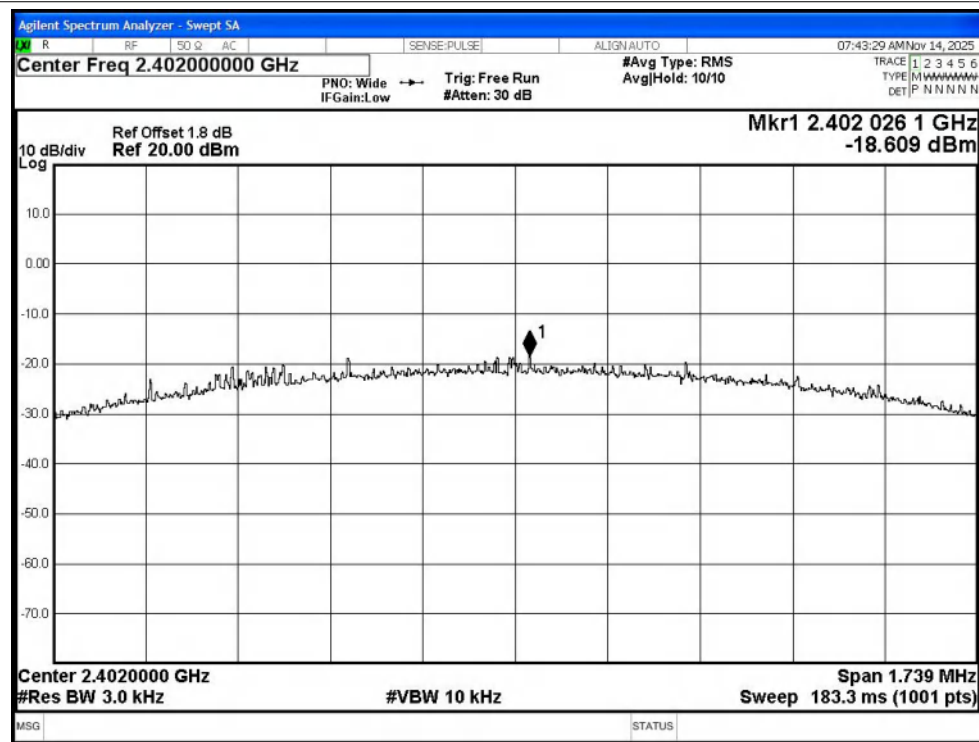
PSD NVNT BLE 1M 2440MHz Ant1



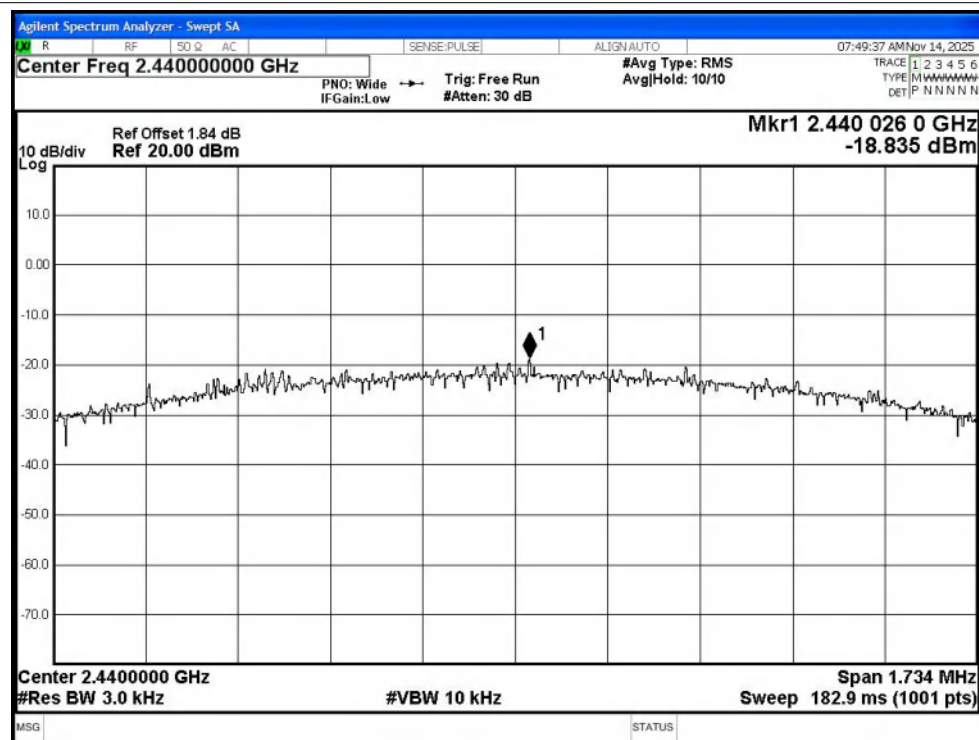
PSD NVNT BLE 1M 2480MHz Ant1



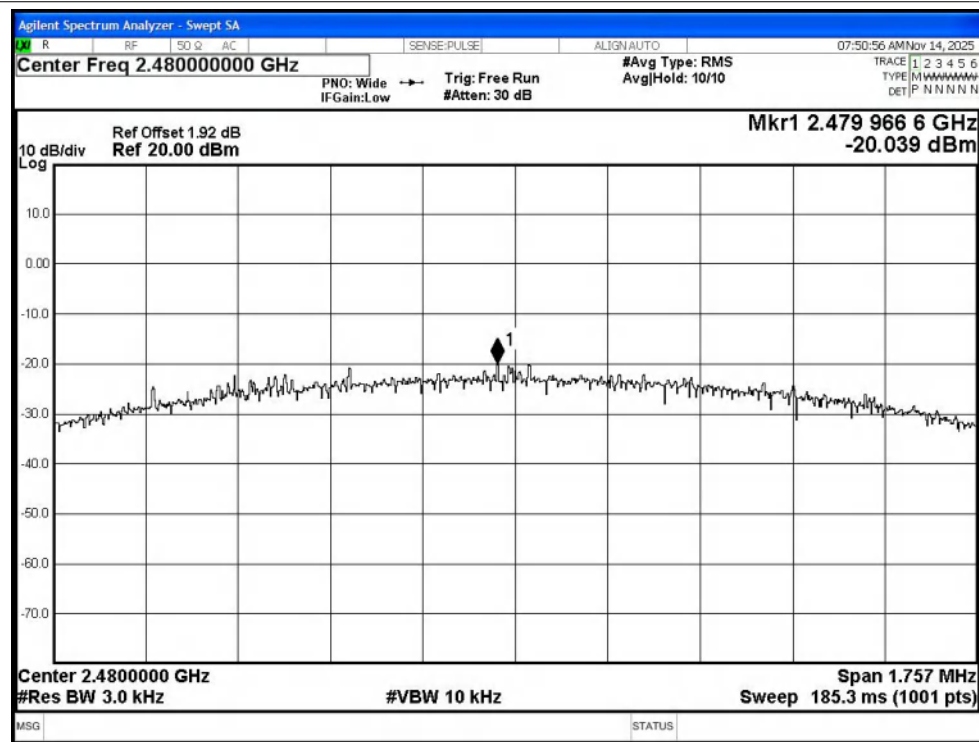
PSD NVNT BLE 2M 2402MHz Ant1



PSD NVNT BLE 2M 2440MHz Ant1



PSD NVNT BLE 2M 2480MHz Ant1

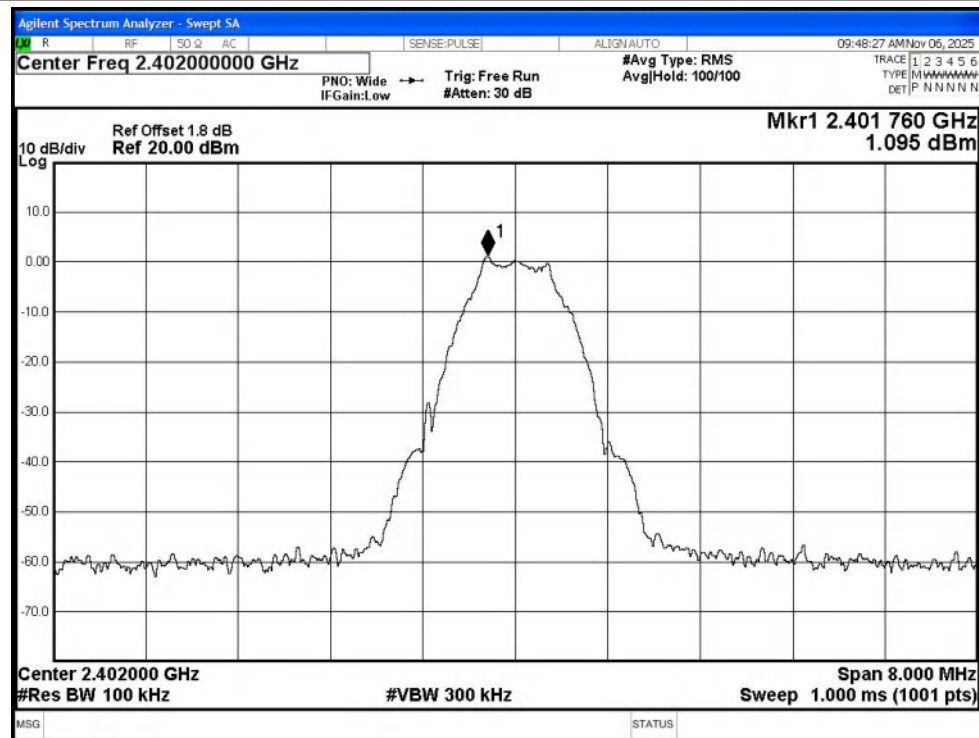


B.4 Band Edge

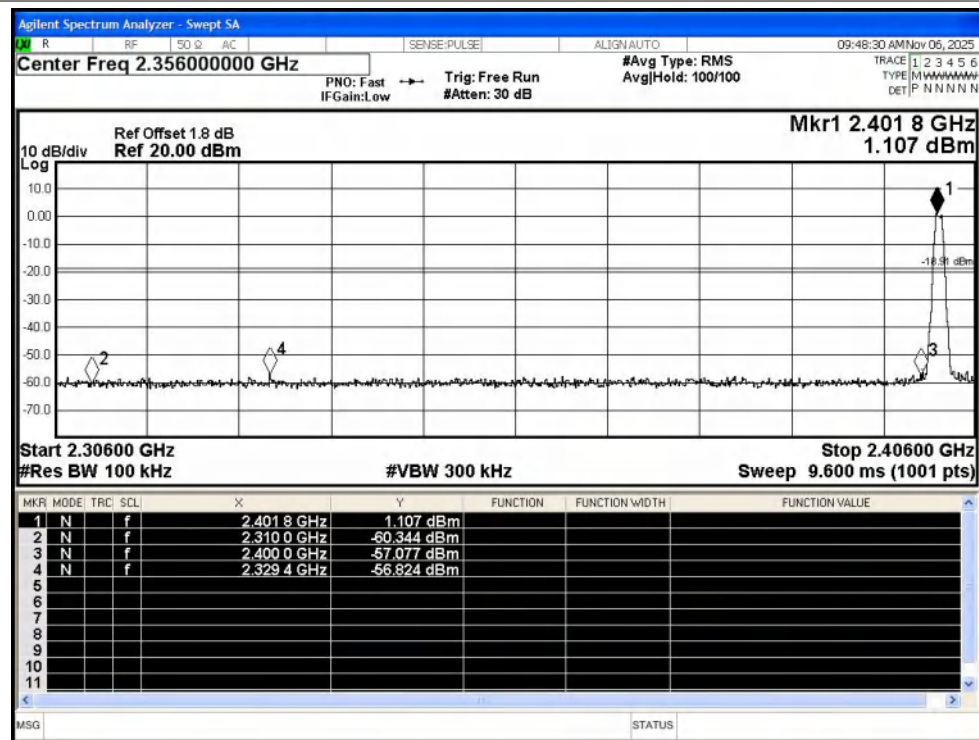
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-57.92	-20	Pass
NVNT	BLE 1M	2480	Ant1	-57.24	-20	Pass
NVNT	BLE 2M	2402	Ant1	-42.91	-20	Pass
NVNT	BLE 2M	2480	Ant1	-55.34	-20	Pass

Test Graphs

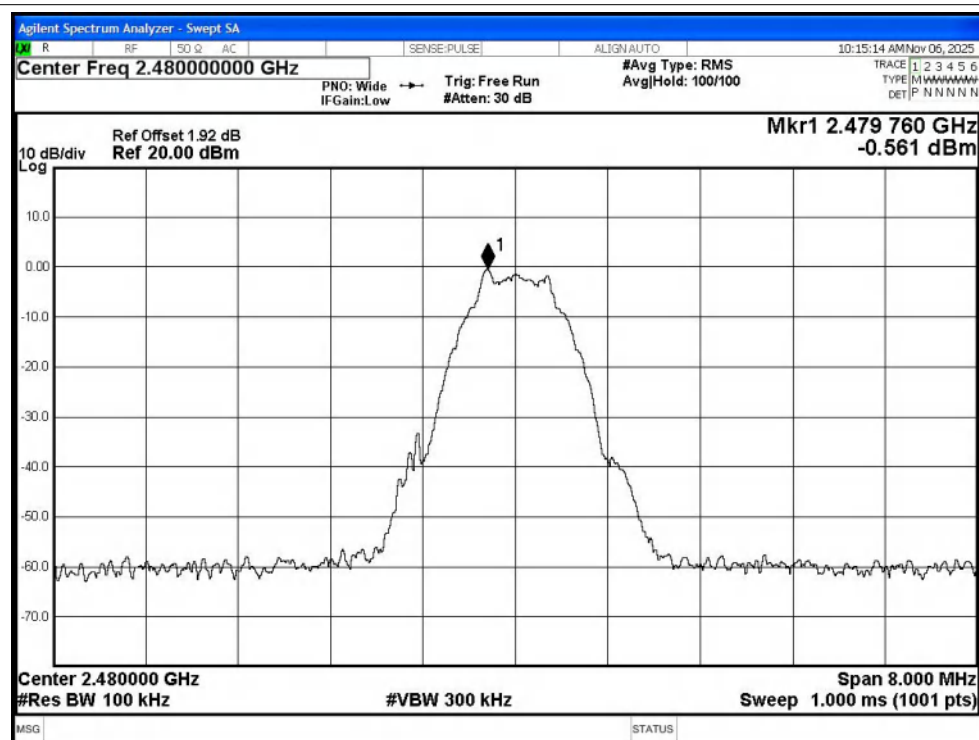
Band Edge NVNT BLE 1M 2402MHz Ant1 Ref



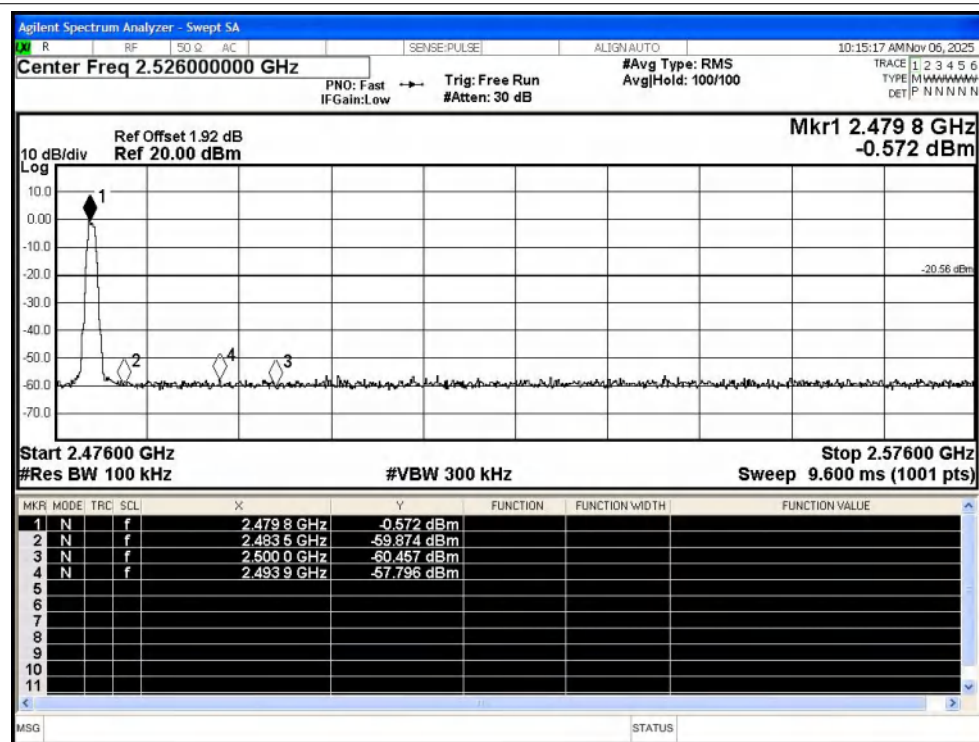
Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



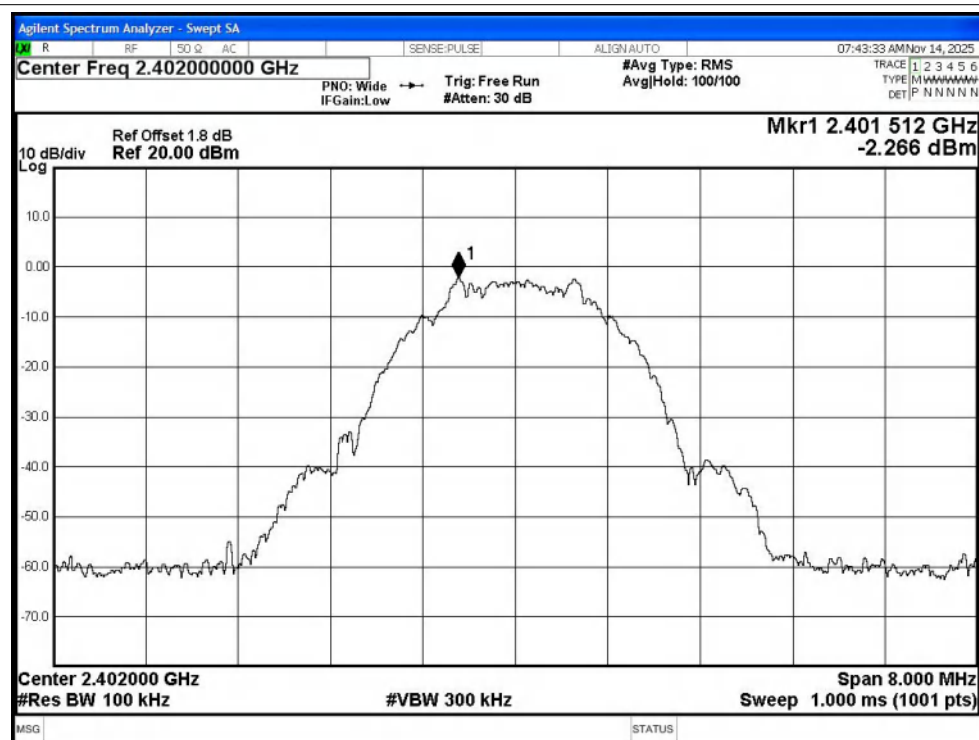
Band Edge NVNT BLE 1M 2480MHz Ant1 Ref



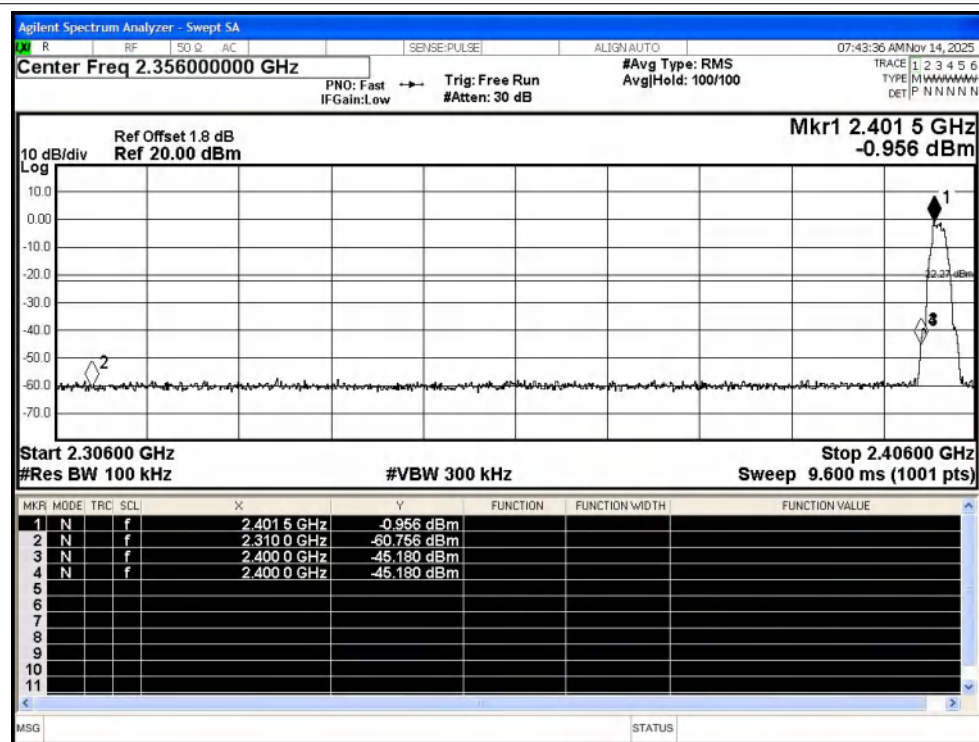
Band Edge NVNT BLE 1M 2480MHz Ant1 Emission



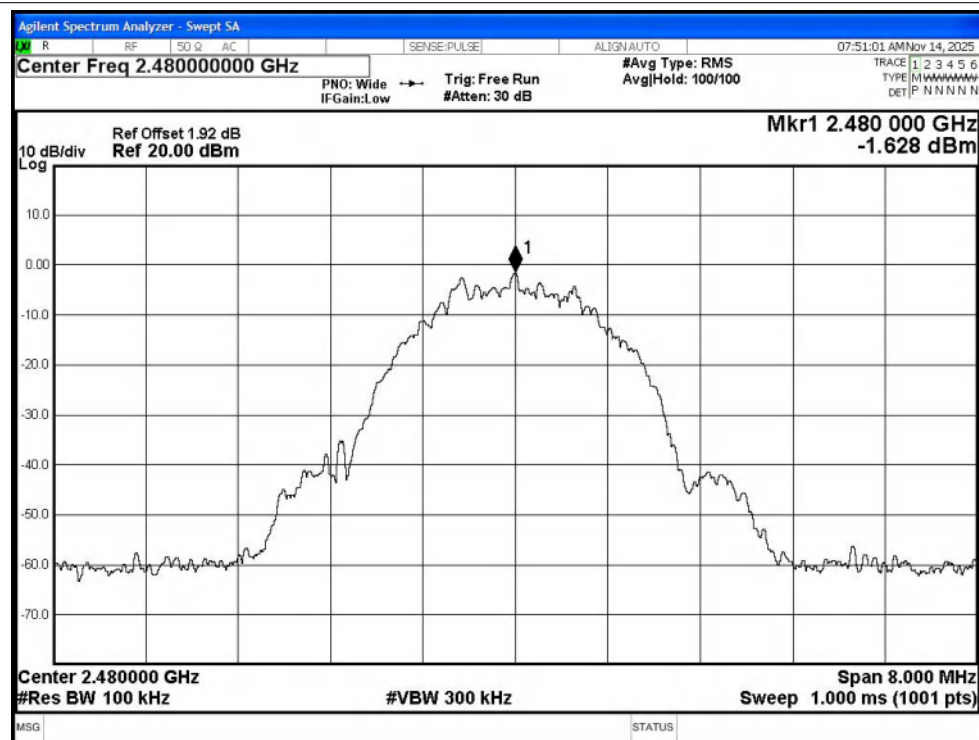
Band Edge NVNT BLE 2M 2402MHz Ant1 Ref



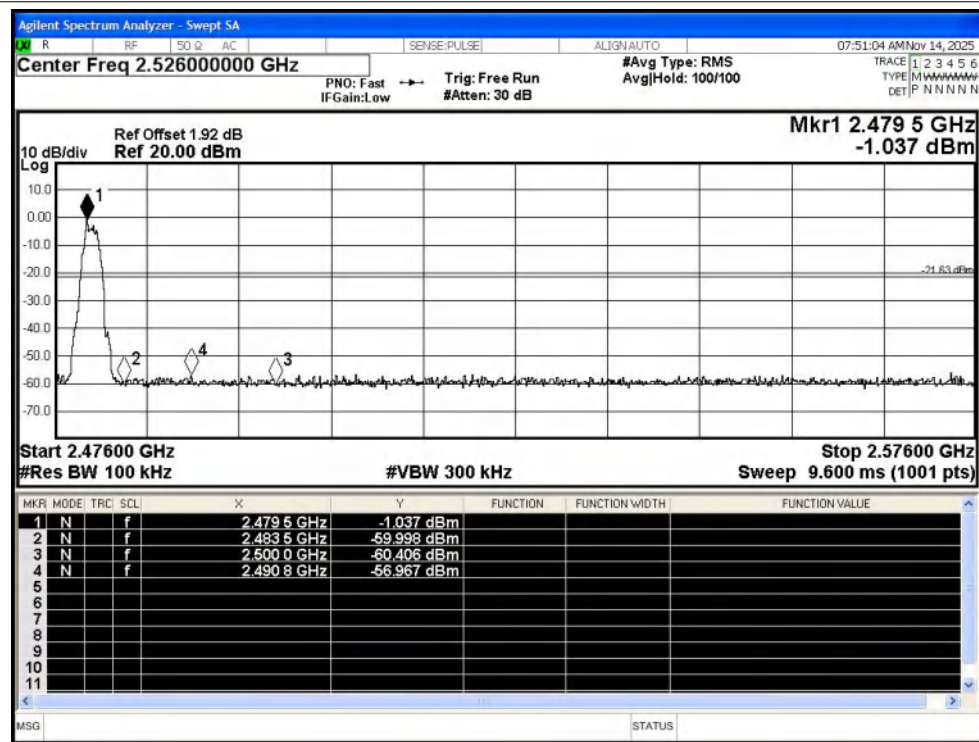
Band Edge NVNT BLE 2M 2402MHz Ant1 Emission



Band Edge NVNT BLE 2M 2480MHz Ant1 Ref



Band Edge NVNT BLE 2M 2480MHz Ant1 Emission

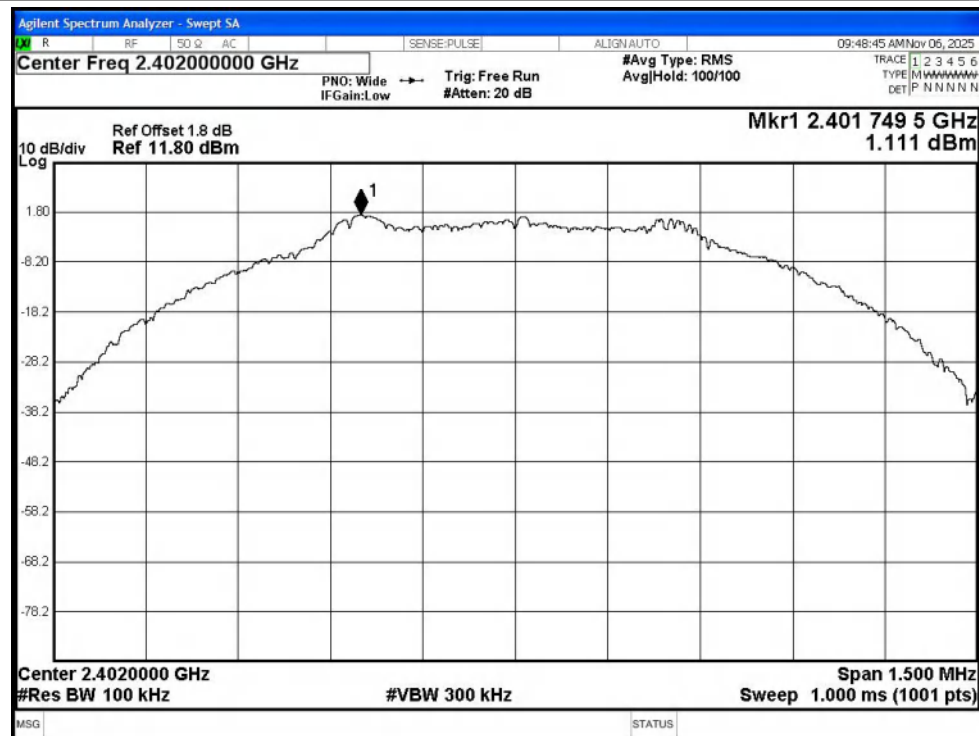


B.5 Conducted RF Spurious Emission

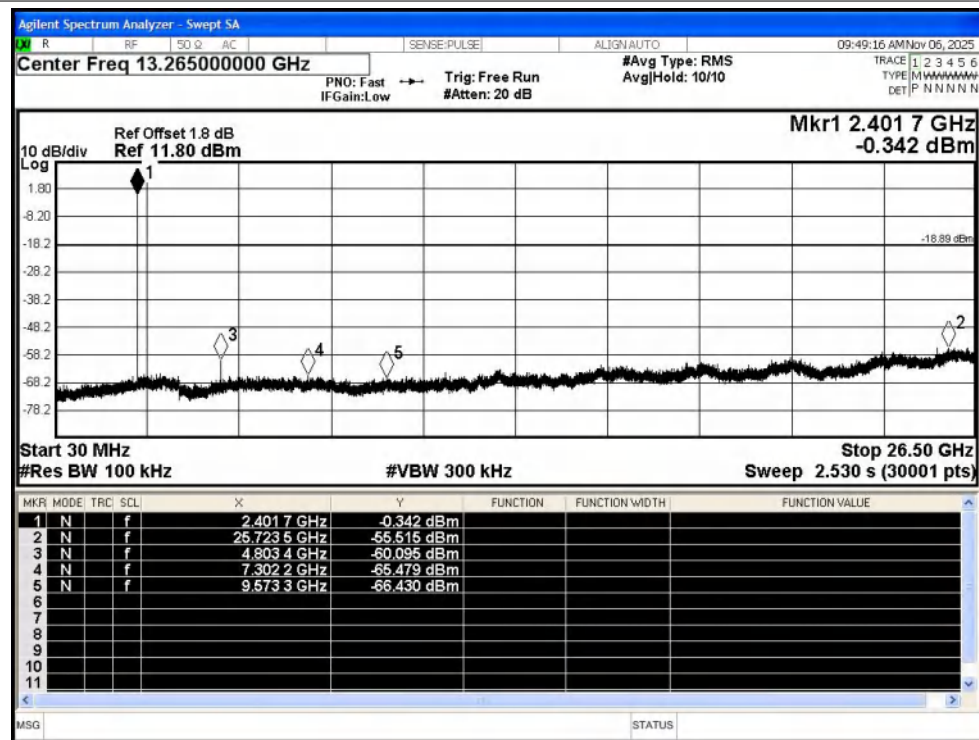
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-56.63	-20	Pass
NVNT	BLE 1M	2440	Ant1	-56.25	-20	Pass
NVNT	BLE 1M	2480	Ant1	-54.19	-20	Pass
NVNT	BLE 2M	2402	Ant1	-52.31	-20	Pass
NVNT	BLE 2M	2440	Ant1	-53.18	-20	Pass
NVNT	BLE 2M	2480	Ant1	-51.74	-20	Pass

Test Graphs

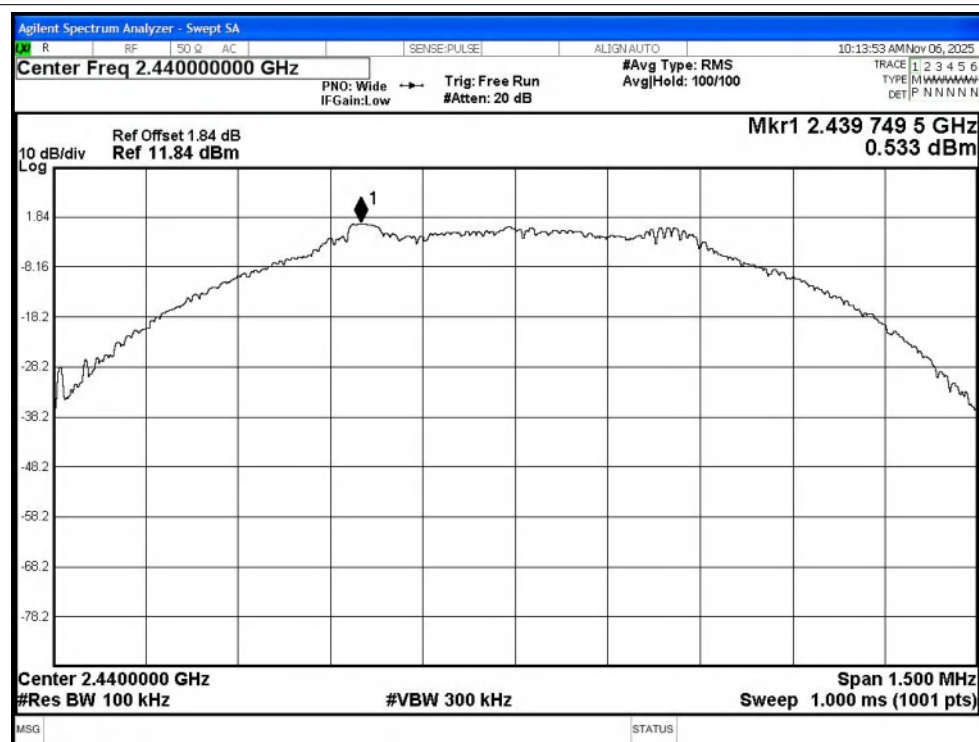
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref



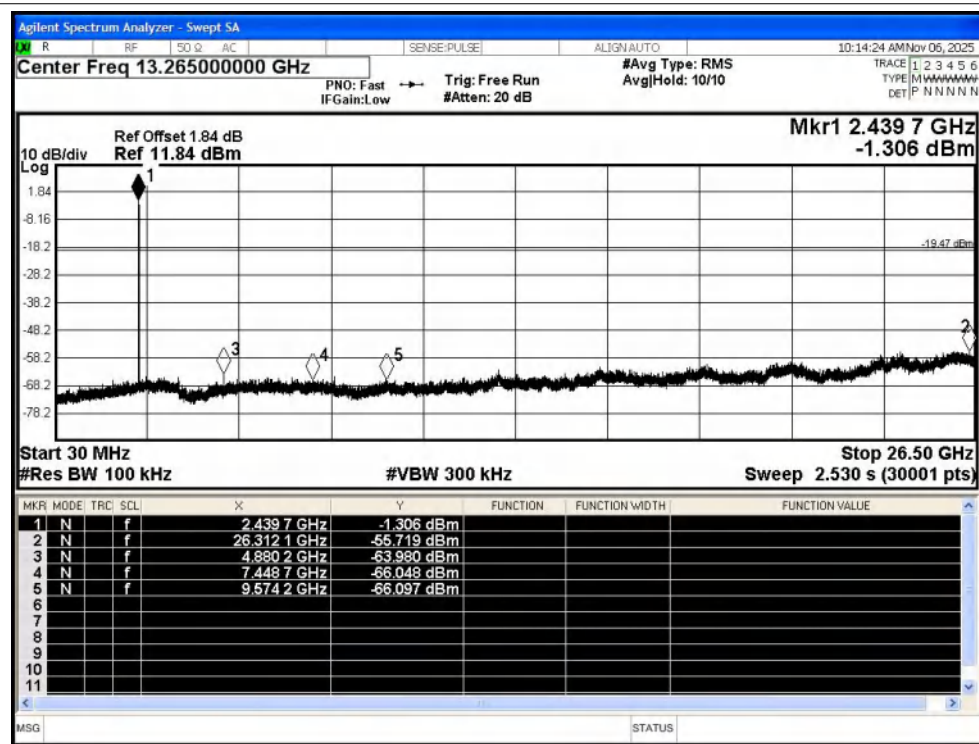
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



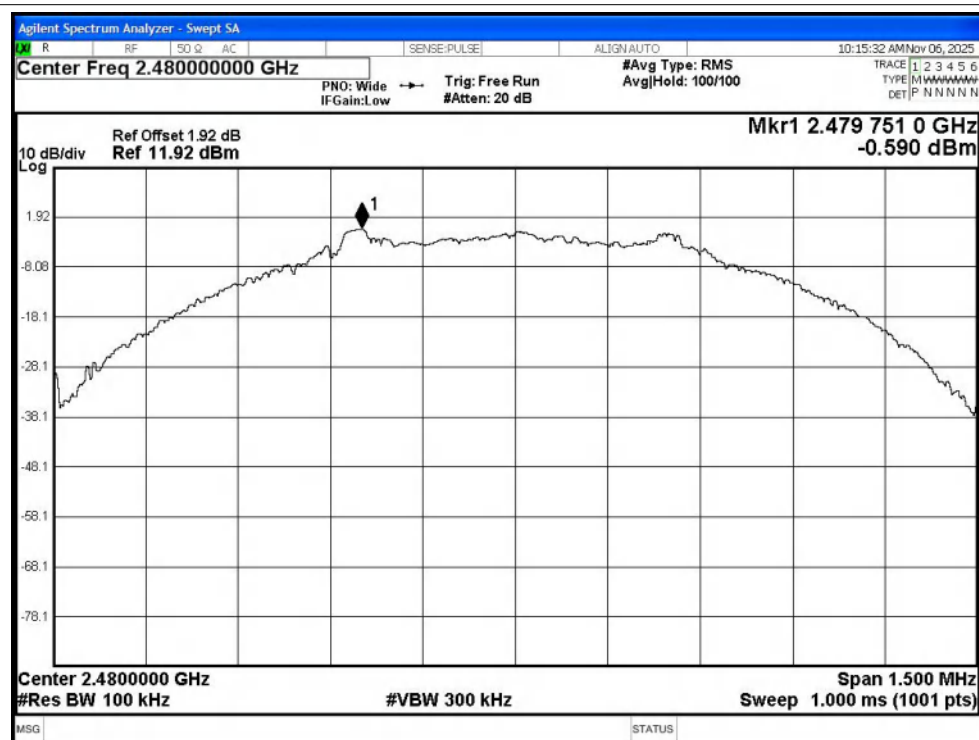
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref



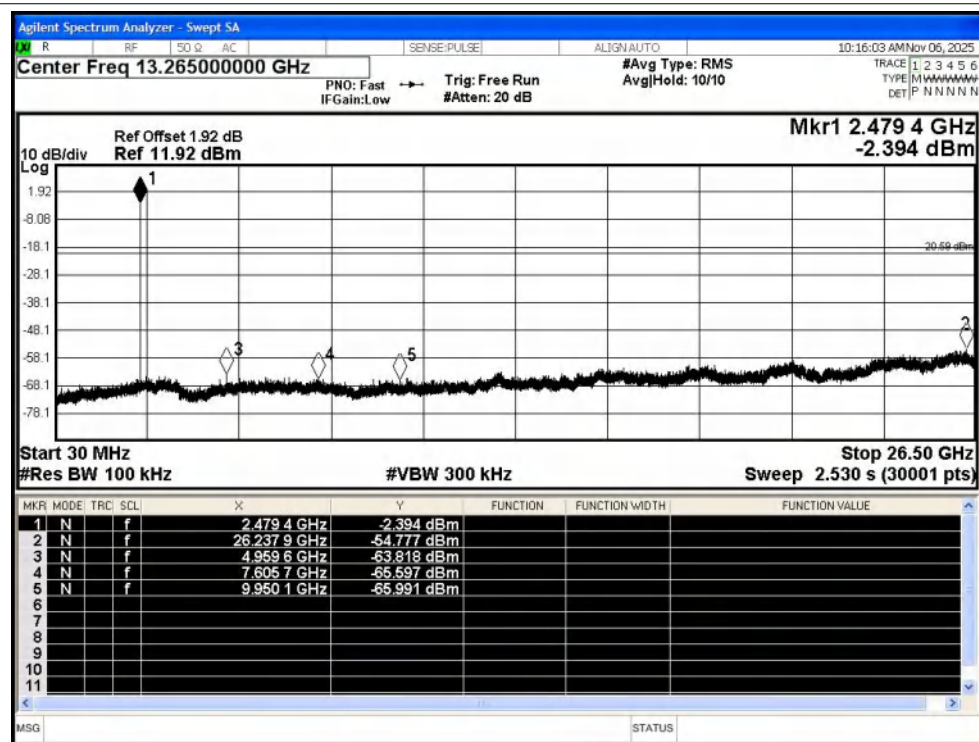
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission



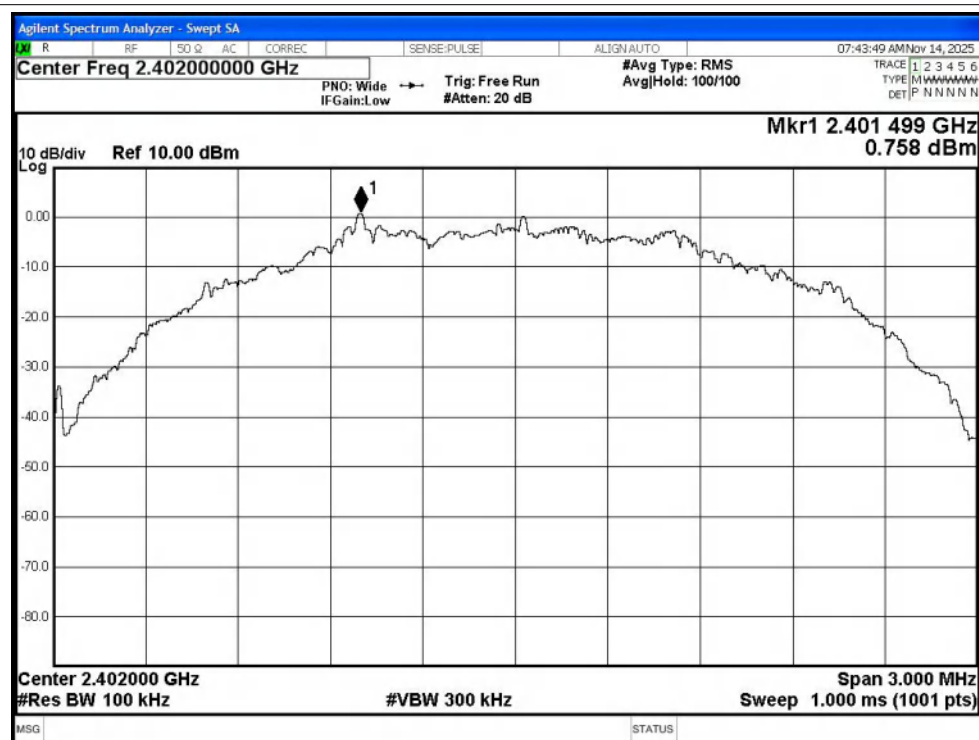
Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref



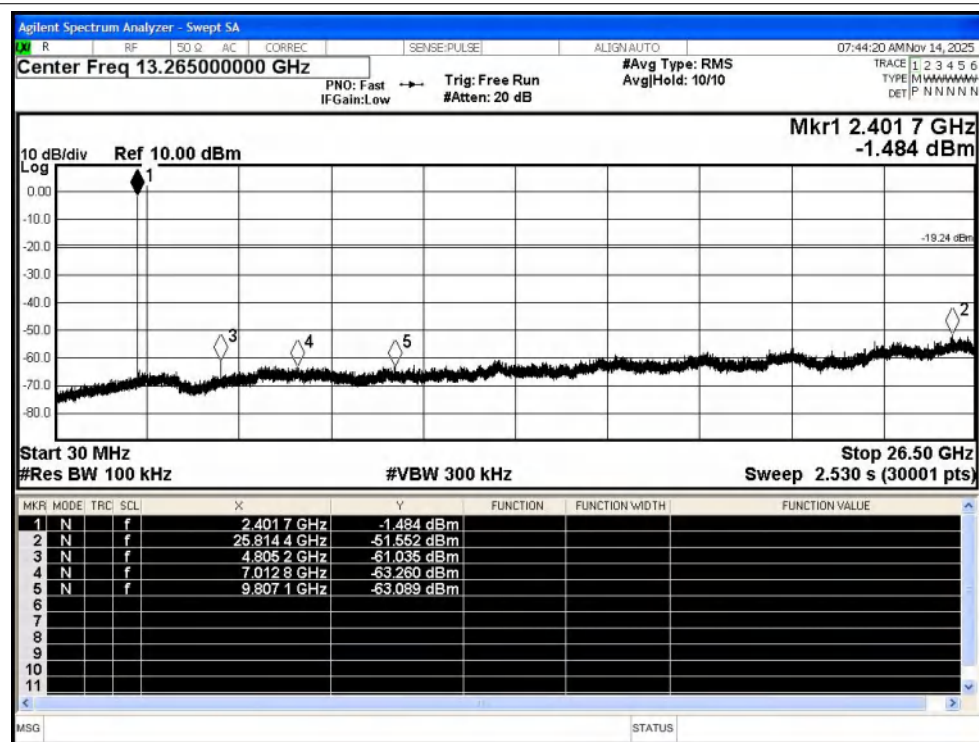
Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission



Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Ref



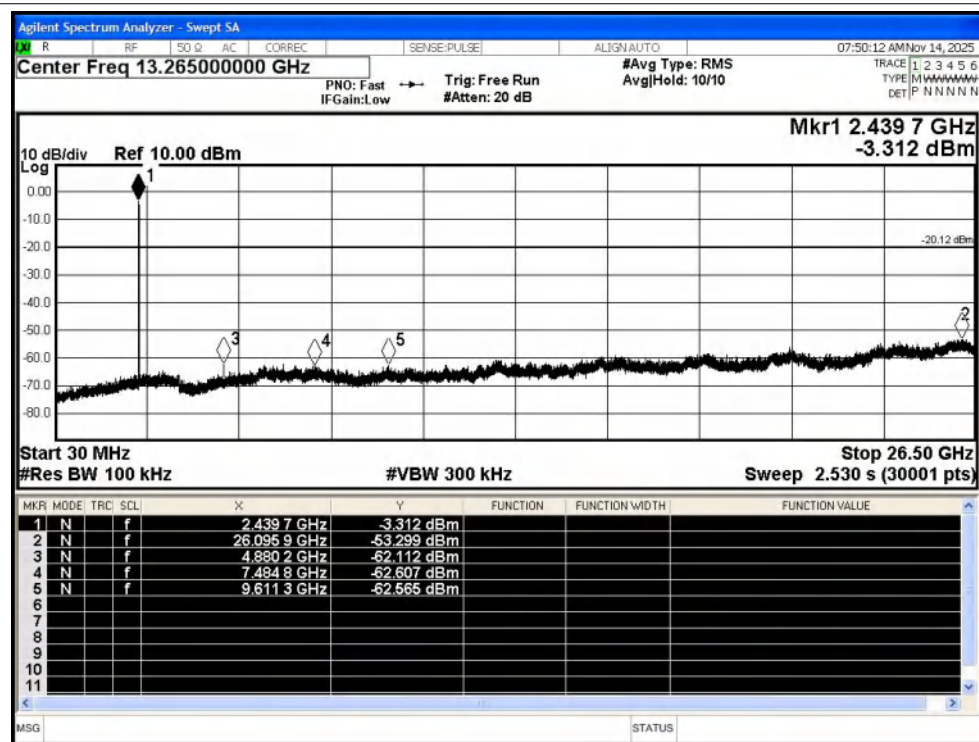
Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Emission



Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Ref



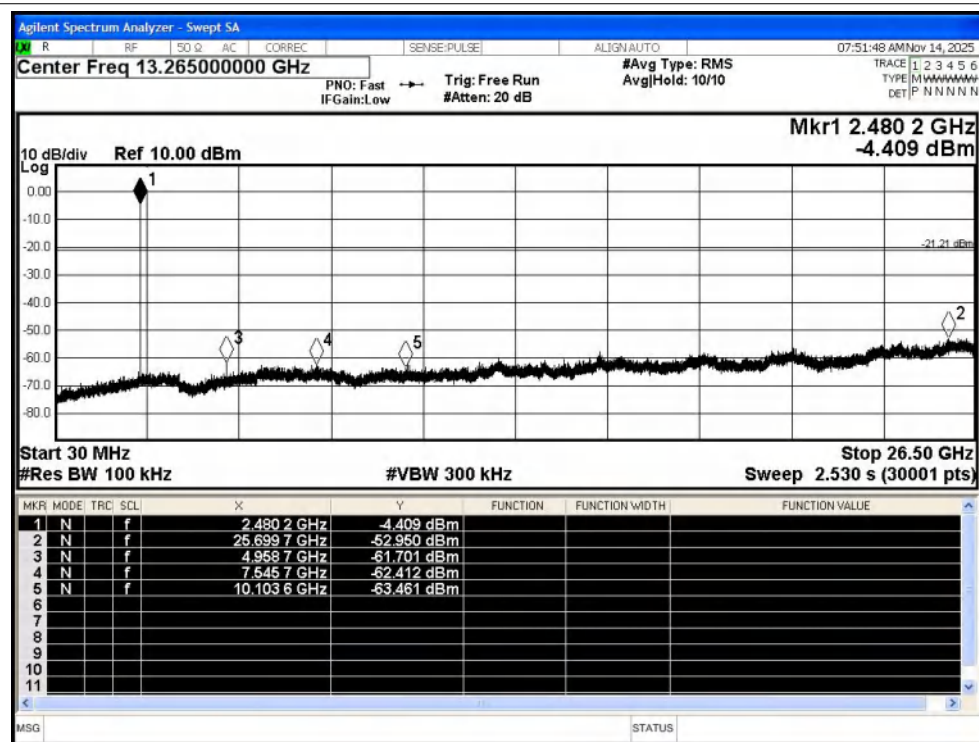
Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Emission



Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Emission

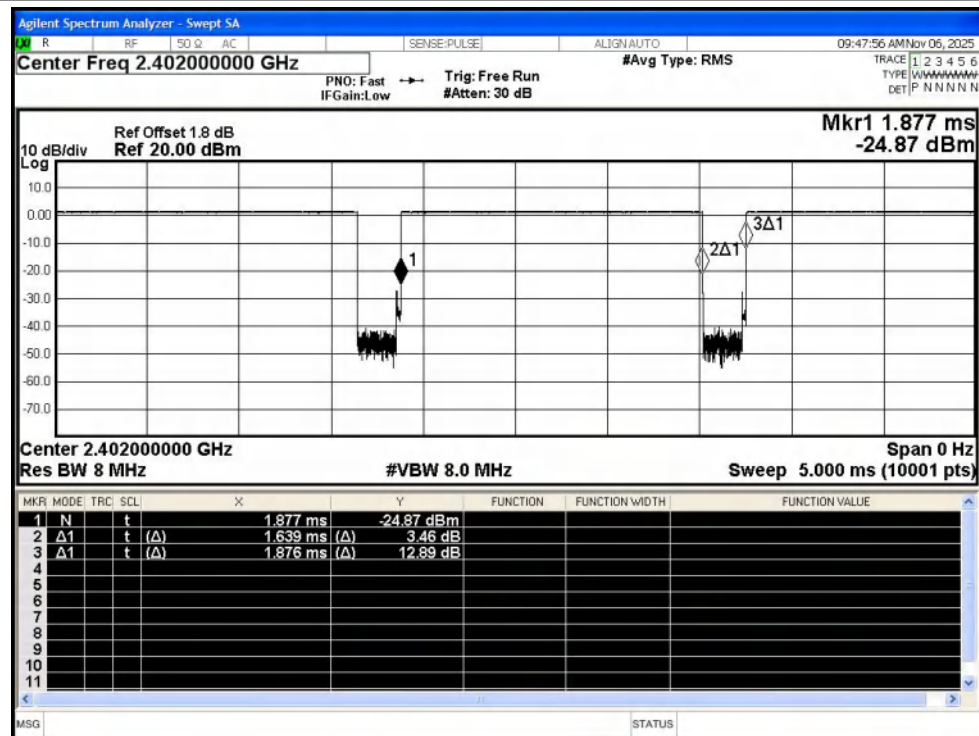


B.6 Duty Cycle

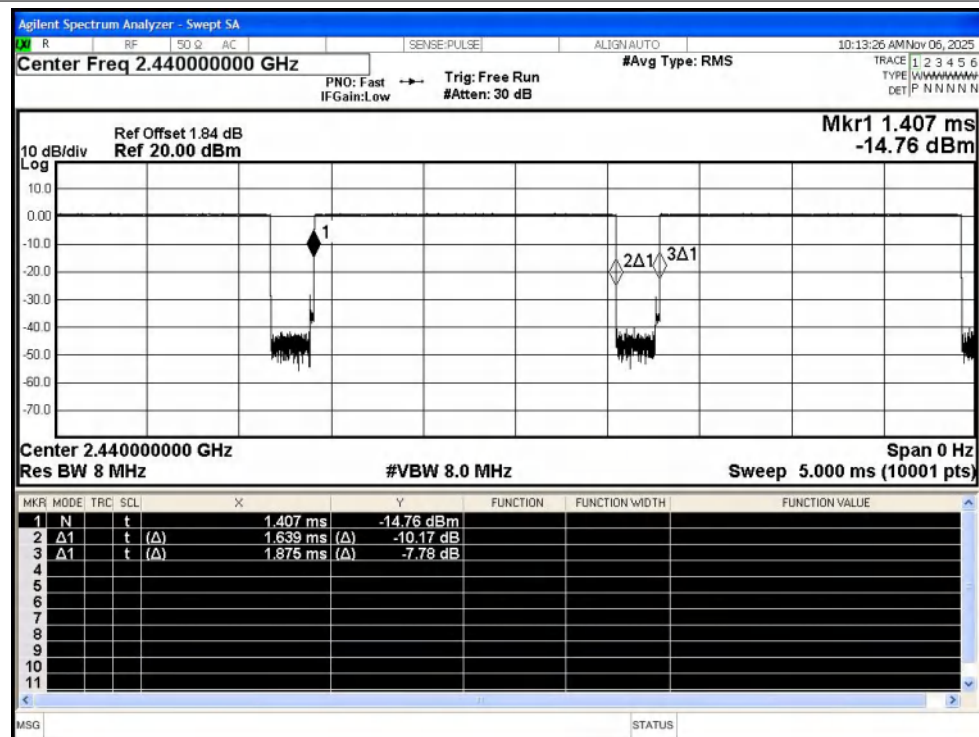
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant1	87.39	0.59	0.61
NVNT	BLE 1M	2440	Ant1	87.41	0.58	0.61
NVNT	BLE 1M	2480	Ant1	87.41	0.58	0.61
NVNT	BLE 2M	2402	Ant1	65.92	1.81	1.21
NVNT	BLE 2M	2440	Ant1	65.96	1.81	1.21
NVNT	BLE 2M	2480	Ant1	65.93	1.81	1.21

Test Graphs

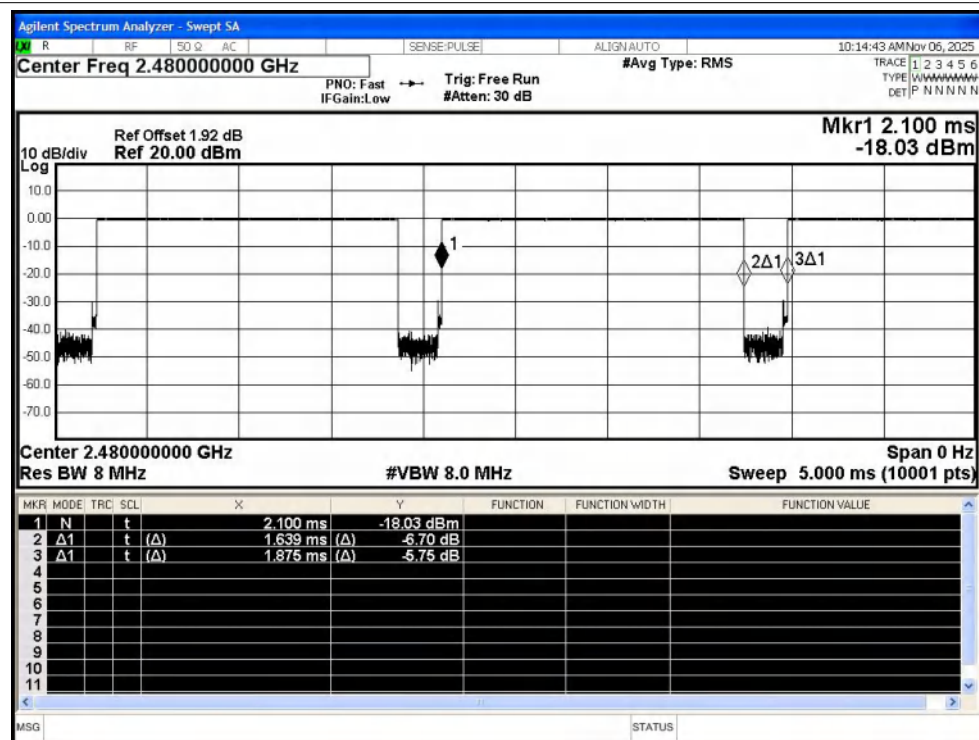
Duty Cycle NVNT BLE 1M 2402MHz Ant1



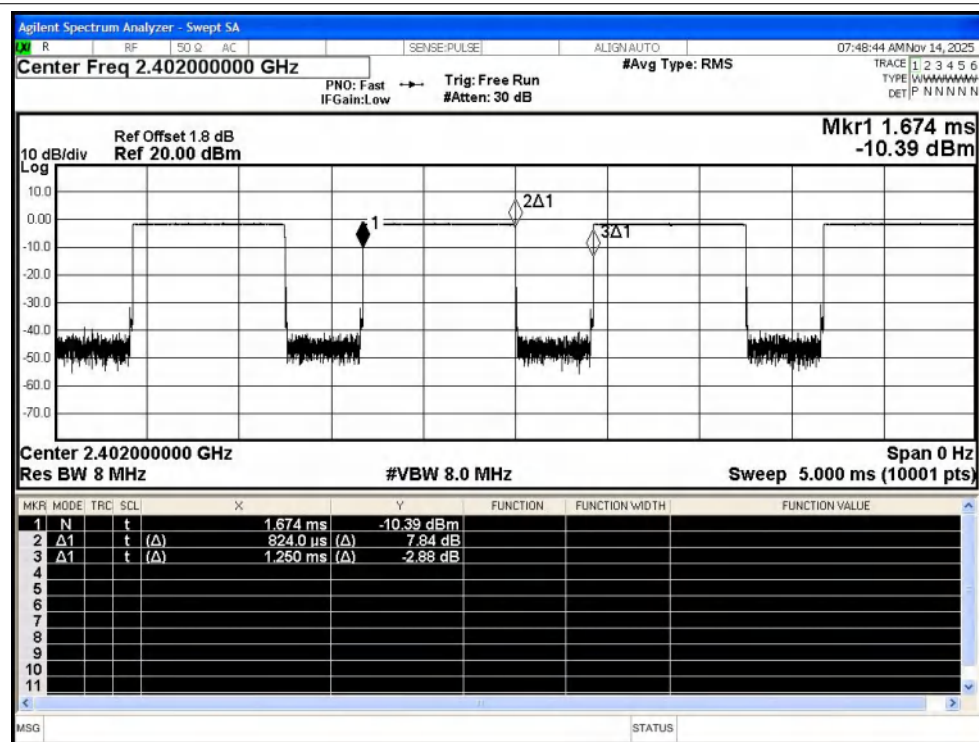
Duty Cycle NVNT BLE 1M 2440MHz Ant1



Duty Cycle NVNT BLE 1M 2480MHz Ant1



Duty Cycle NVNT BLE 2M 2402MHz Ant1

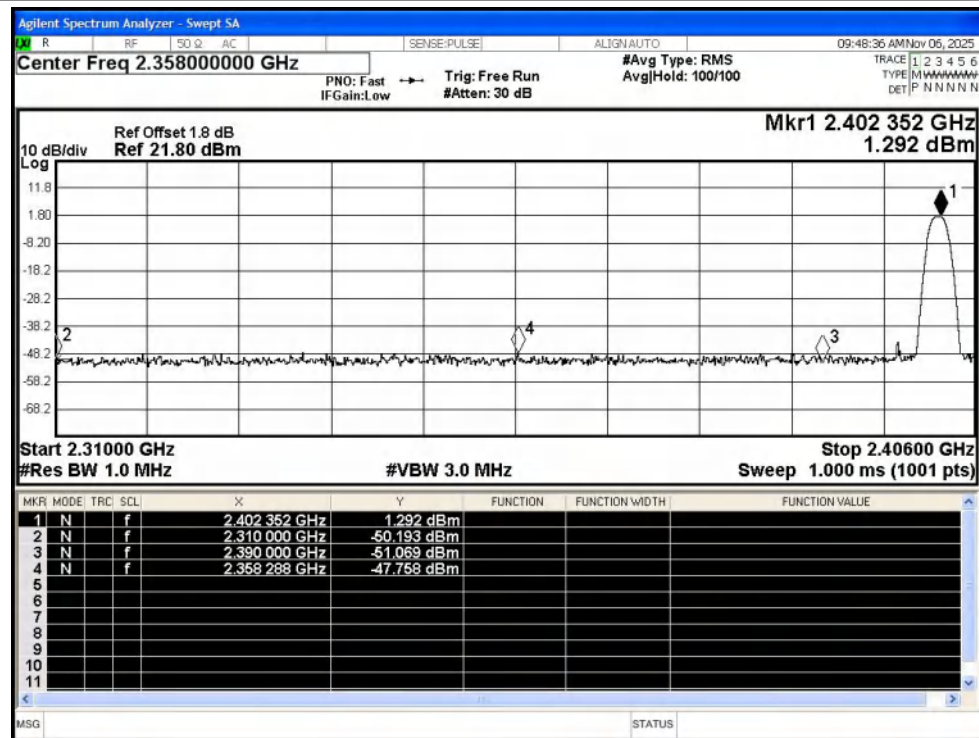


B.7 Restrict Band

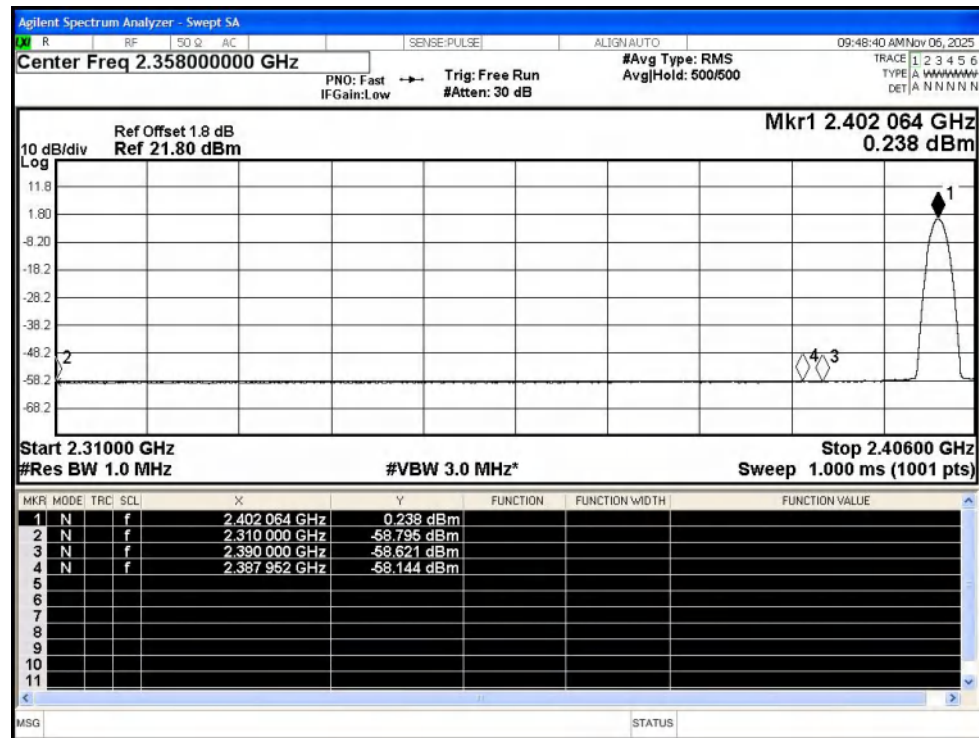
Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	BLE 1M	2402	Ant1	2310	-50.19	2	-	47.07	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2310	-58.8	2	0.59	39.05	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2358.288	-47.76	2	-	49.5	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2387.952	-58.14	2	0.59	39.71	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2390	-51.07	2	-	46.19	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2390	-58.62	2	0.59	39.23	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-50.57	2	-	46.69	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-57.78	2	0.58	40.06	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2487.088	-43.92	2	-	53.34	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2484.136	-57.45	2	0.58	40.39	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2500	-49.25	2	-	48.01	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2500	-58.27	2	0.58	39.57	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2310	-48.96	2	-	48.3	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2310	-59.3	2	0	37.96	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2379.216	-47.05	2	-	50.21	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2372.688	-57.83	2	0	39.43	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2390	-50.39	2	-	46.87	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2390	-58.46	2	0	38.8	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-49.75	2	-	47.51	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-57.81	2	1.81	41.26	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2486.056	-45.46	2	-	51.8	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2484.16	-57.2	2	1.81	41.87	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2500	-50.9	2	-	46.36	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2500	-58.86	2	1.81	40.21	Average	54	Pass

Test Graphs

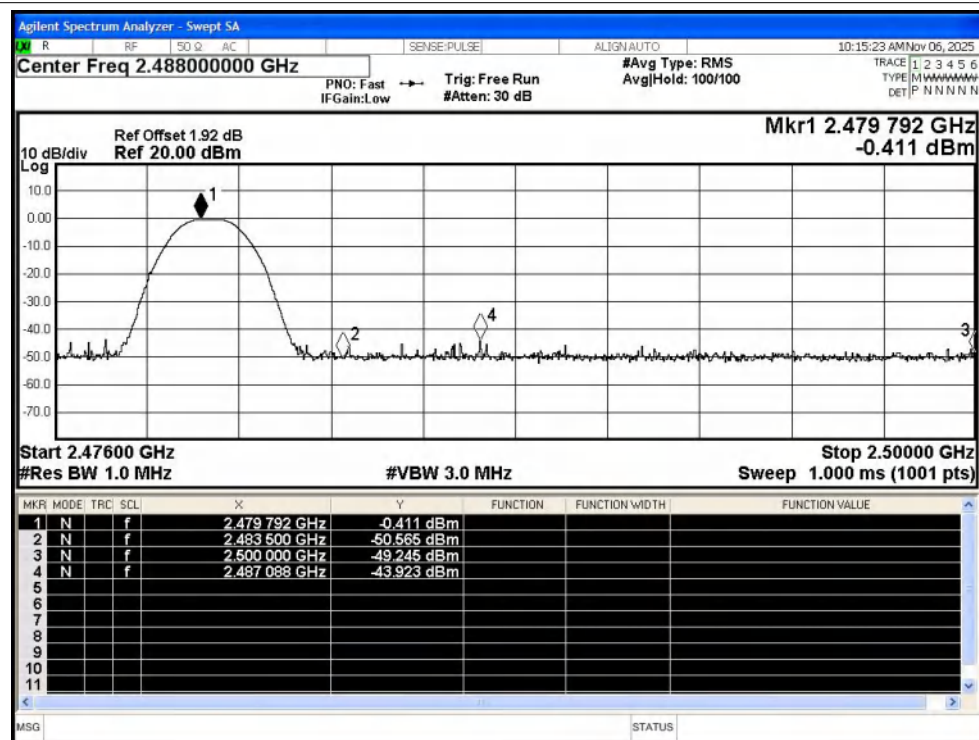
Restrict Band NVNT BLE 1M 2402MHz Ant1 Peak



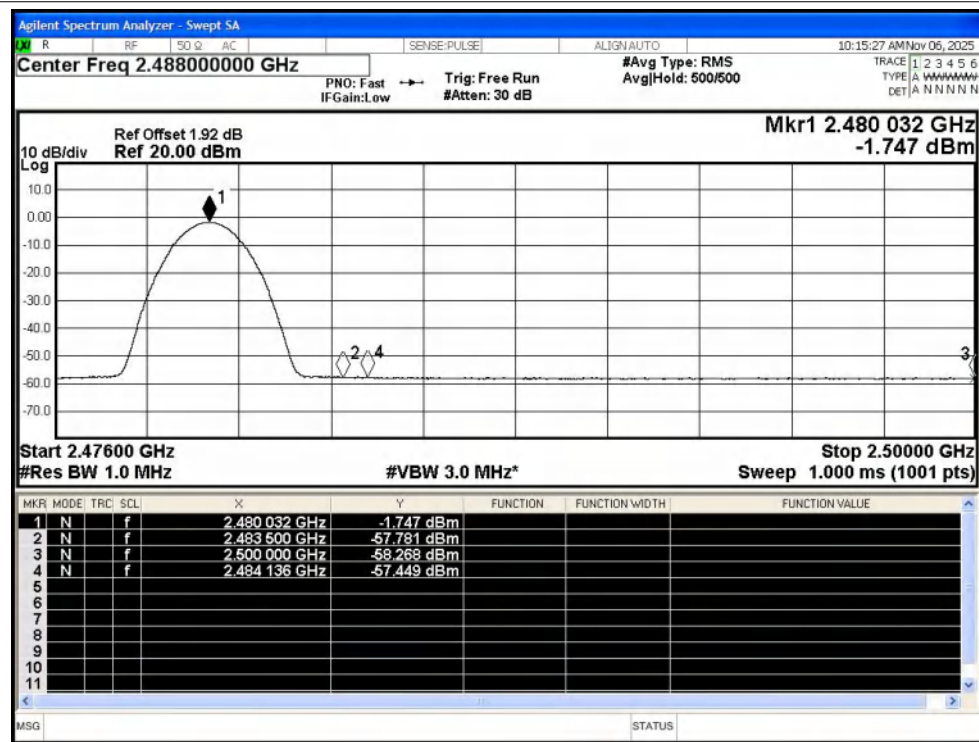
Restrict Band NVNT BLE 1M 2402MHz Ant1 Average



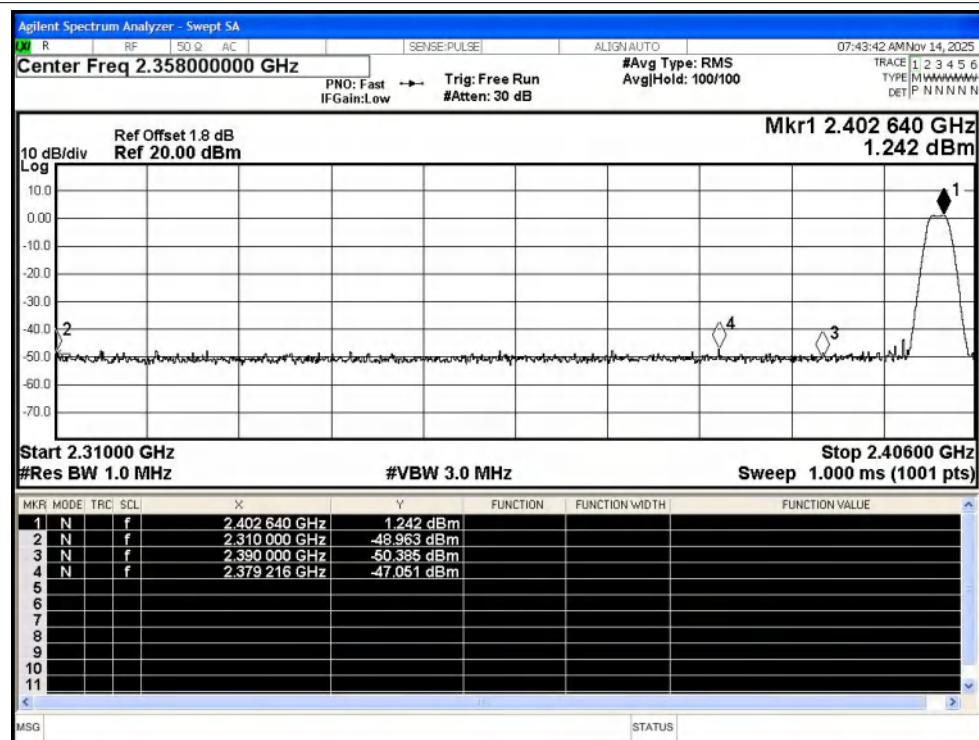
Restrict Band NVNT BLE 1M 2480MHz Ant1 Peak



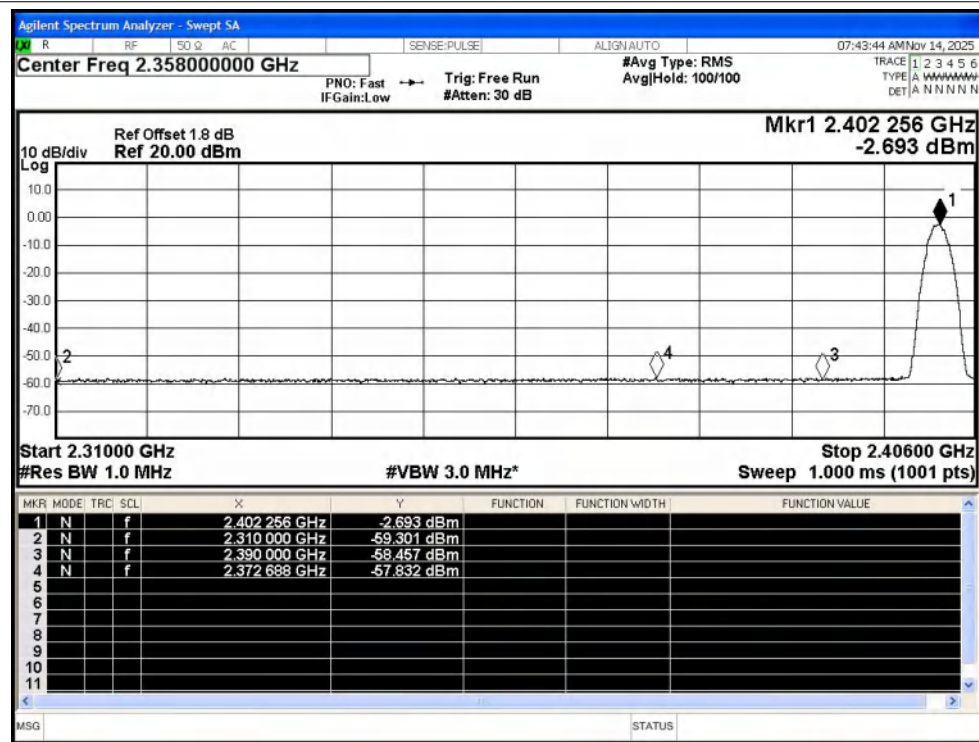
Restrict Band NVNT BLE 1M 2480MHz Ant1 Average



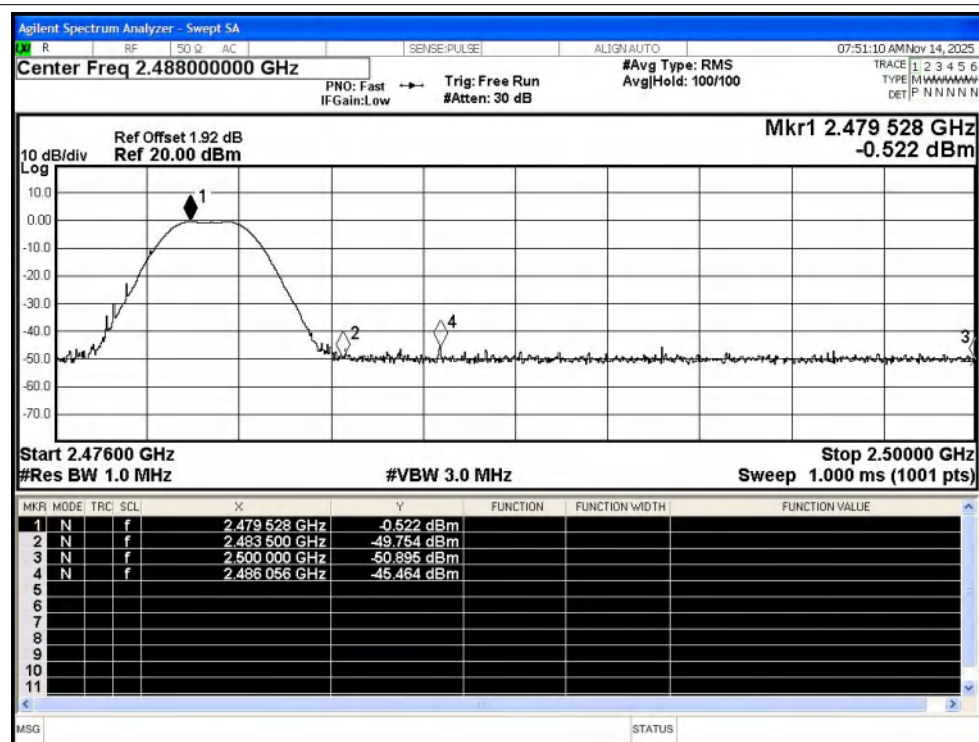
Restrict Band NVNT BLE 2M 2402MHz Ant1 Peak



Restrict Band NVNT BLE 2M 2402MHz Ant1 Average



Restrict Band NVNT BLE 2M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 2M 2480MHz Ant1 Average

