Appendix B

RF Test Data for BT LE (Conducted Measurement)

Product Name: Flame Speaker

Test Model: AJ220B

Environmental Conditions

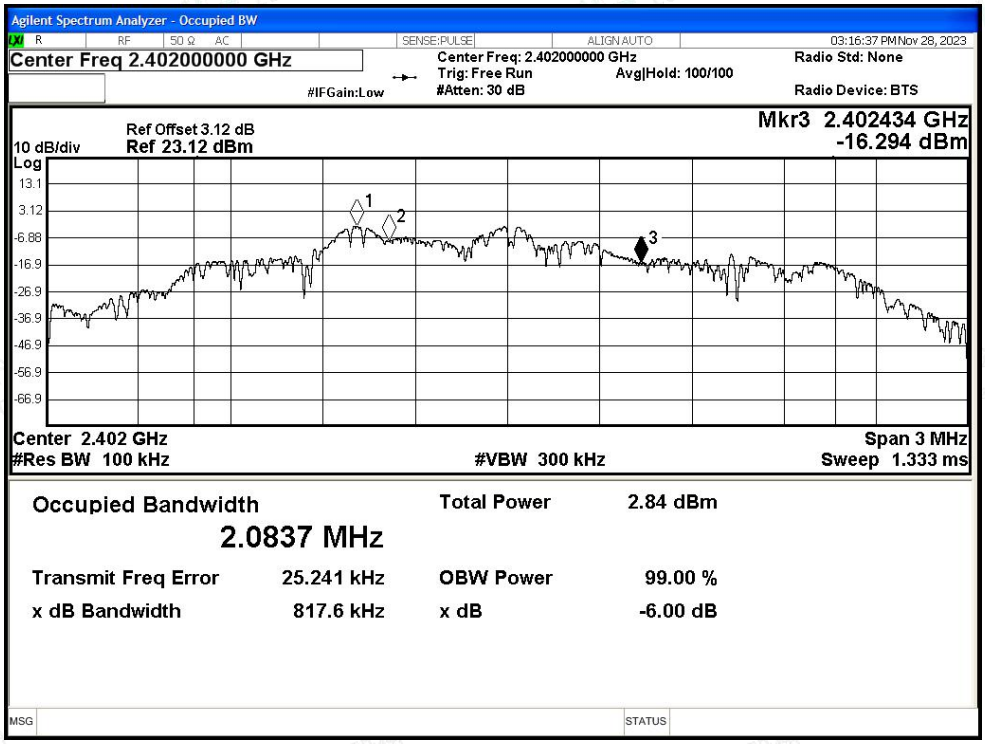
Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Summer Wu
Supervised by:	Nick Peng

B.1 -6dB Bandwidth

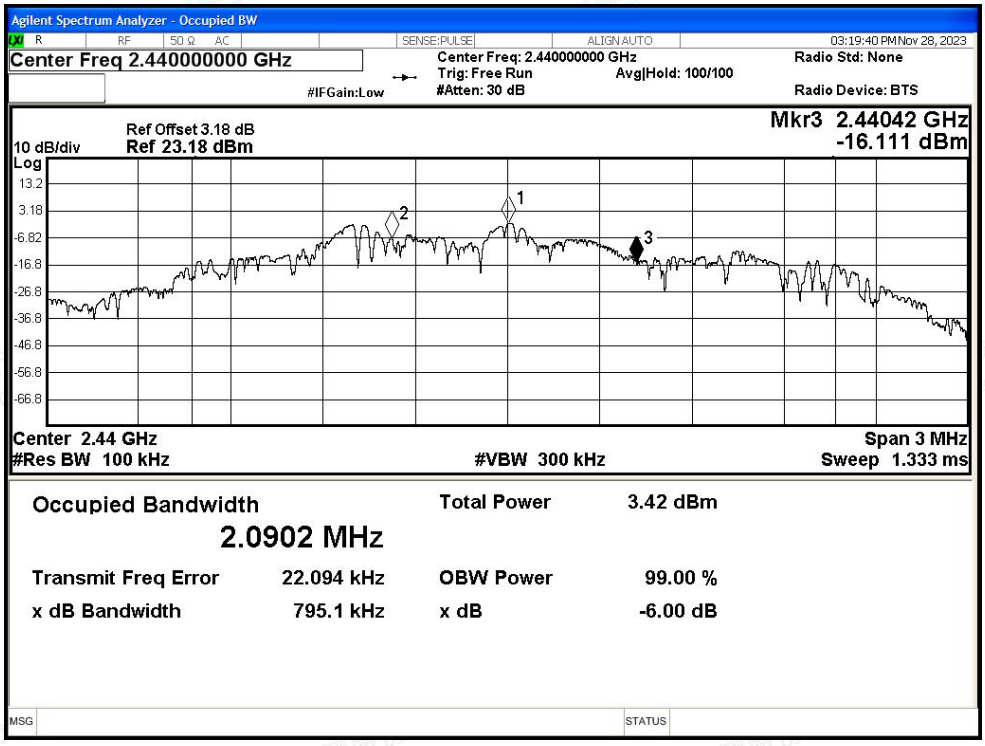
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 2M	2402	Ant1	0.818	>=0.5	Pass
NVNT	BLE 2M	2440	Ant1	0.795	>=0.5	Pass
NVNT	BLE 2M	2480	Ant1	0.819	>=0.5	Pass

Test Graphs

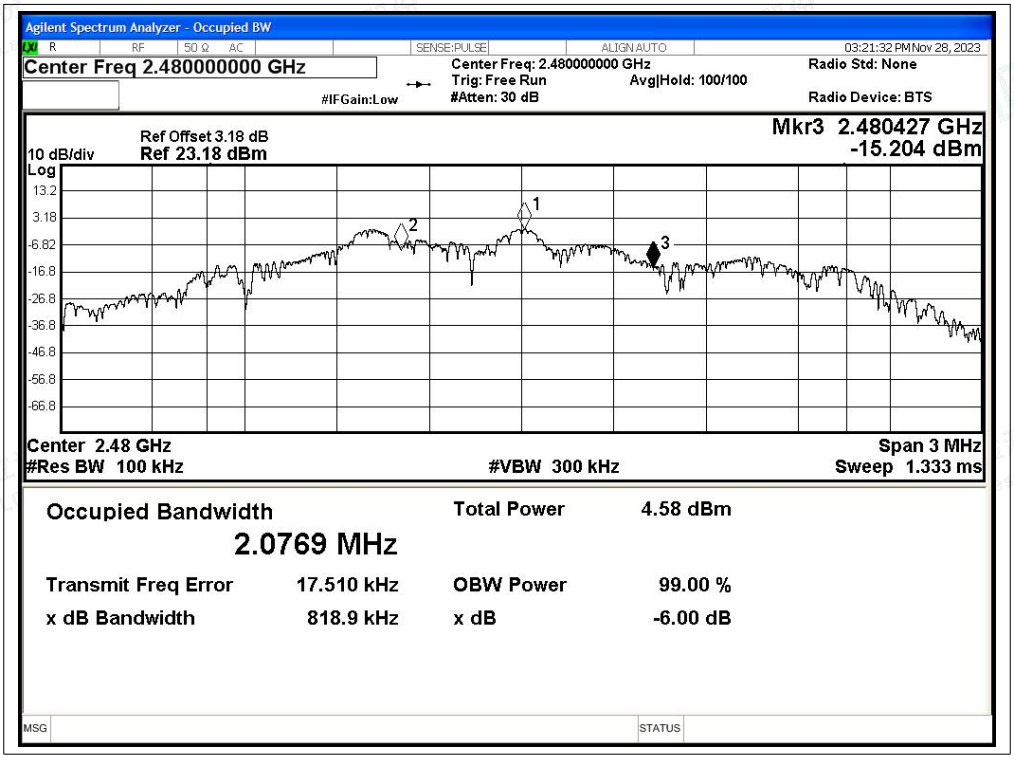
-6dB Bandwidth NVNT BLE 2M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2440MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2480MHz Ant1

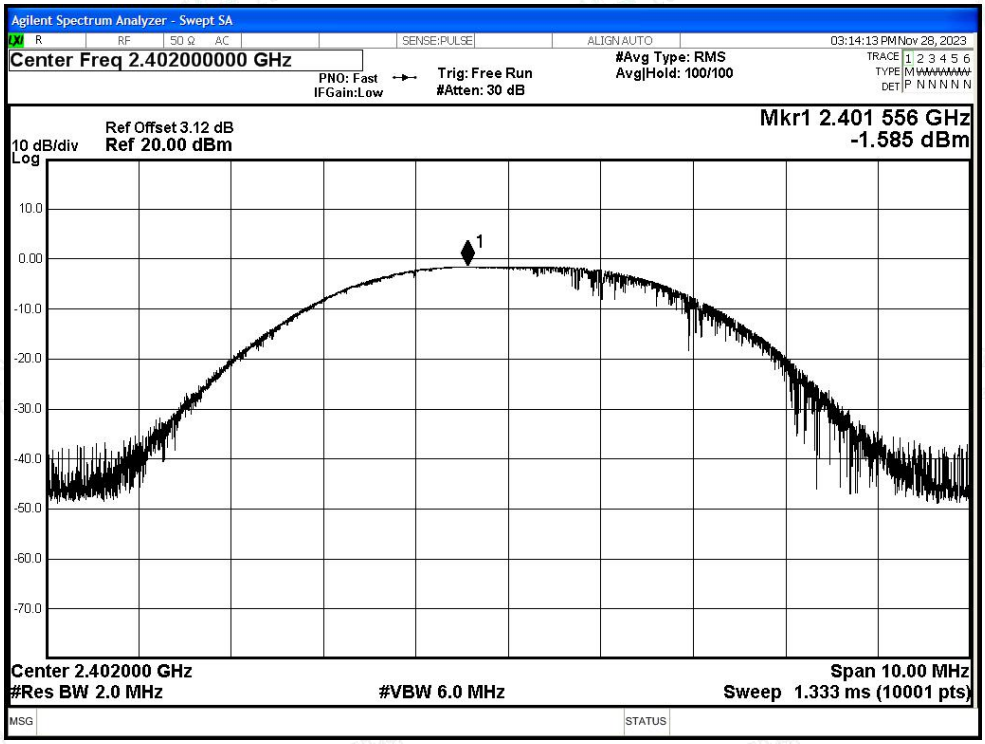

Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold: 100/100
Radio Std: None
Radio Device: BTS
03:21:32 PM Nov 28, 2023
#IFGain:Low
Ref Offset 3.18 dB
10 dB/div
Ref 23.18 dBm
Mkr3 2.480427 GHz
-15.204 dBm
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 1.333 ms
Occupied Bandwidth
2.0769 MHz
Total Power 4.58 dBm
Transmit Freq Error 17.510 kHz
OBW Power 99.00 %
x dB Bandwidth 818.9 kHz
x dB -6.00 dB

B.2 Maximum Peak Conducted Output Power

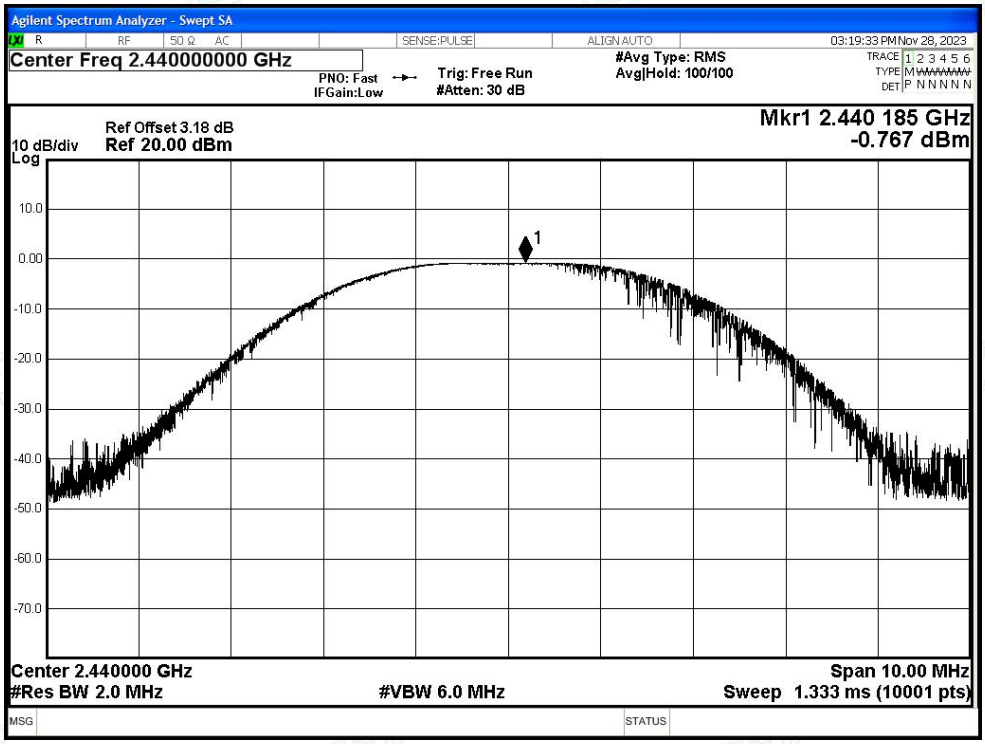
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 2M	2402	Ant1	-1.59	30	Pass
NVNT	BLE 2M	2440	Ant1	-0.77	30	Pass
NVNT	BLE 2M	2480	Ant1	-0.14	30	Pass

Test Graphs

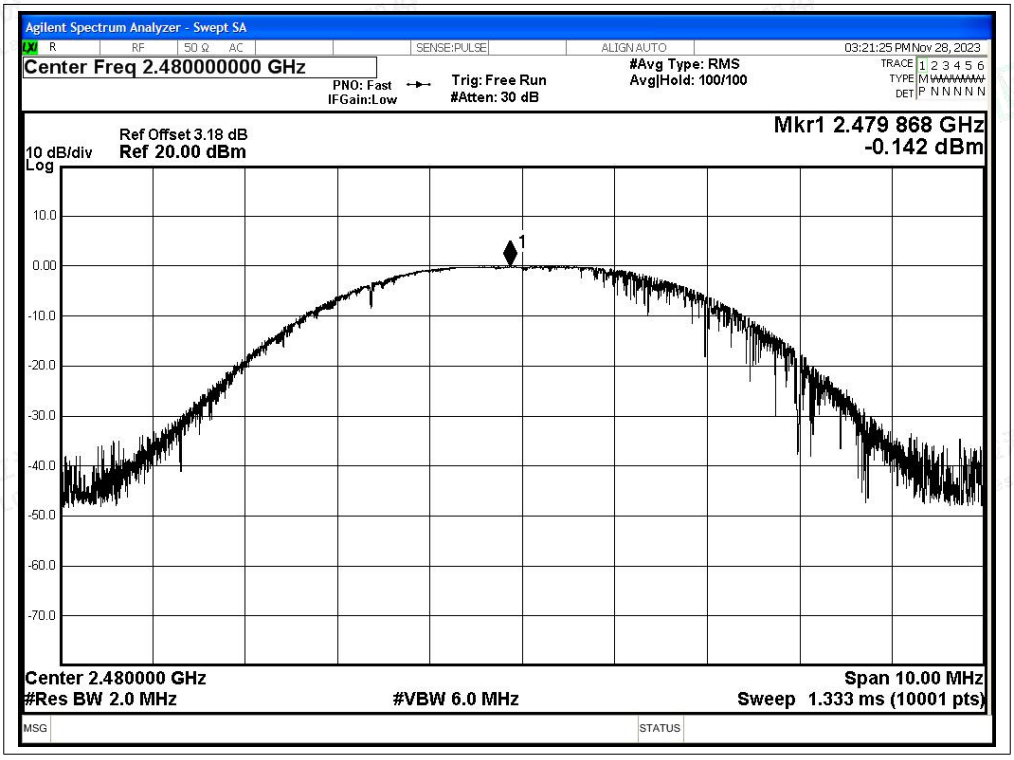
Power NVNT BLE 2M 2402MHz Ant1



Power NVNT BLE 2M 2440MHz Ant1



Power NVNT BLE 2M 2480MHz Ant1

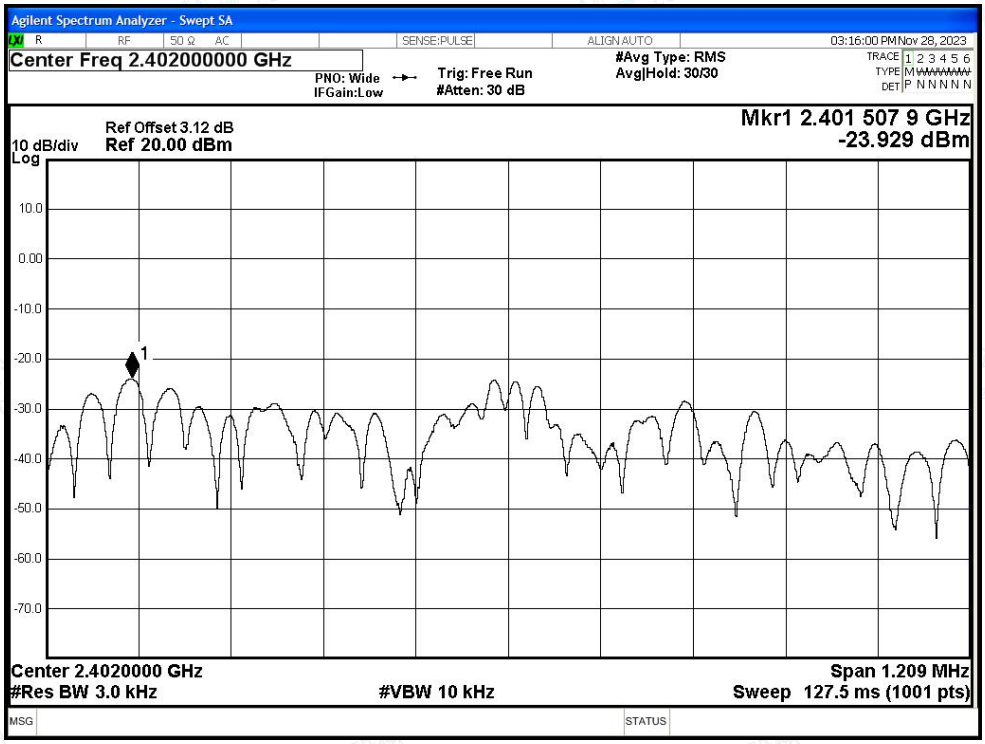

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 100/100
03:21:25 PM Nov 28, 2023
Ref Offset 3.18 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 868 GHz
-0.142 dBm
Center 2.480000 GHz
#Res BW 2.0 MHz
#VBW 6.0 MHz
Span 10.00 MHz
Sweep 1.333 ms (10001 pts)

B.3 Maximum Power Spectral Density Level

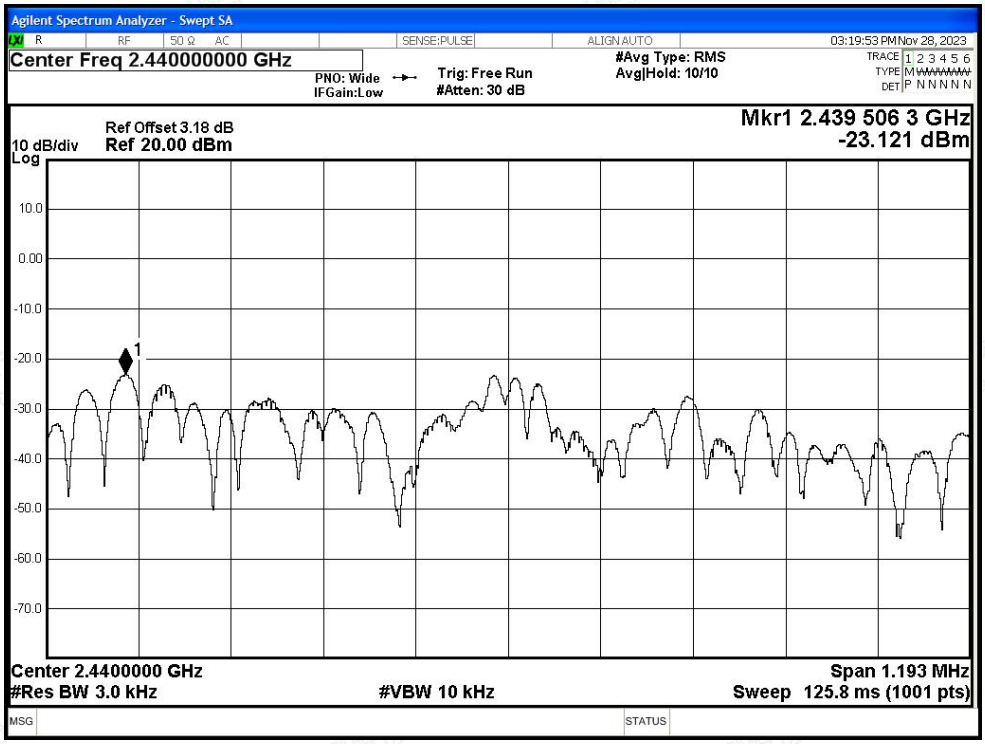
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 2M	2402	Ant1	-23.93	8	Pass
NVNT	BLE 2M	2440	Ant1	-23.12	8	Pass
NVNT	BLE 2M	2480	Ant1	-22.5	8	Pass

Test Graphs

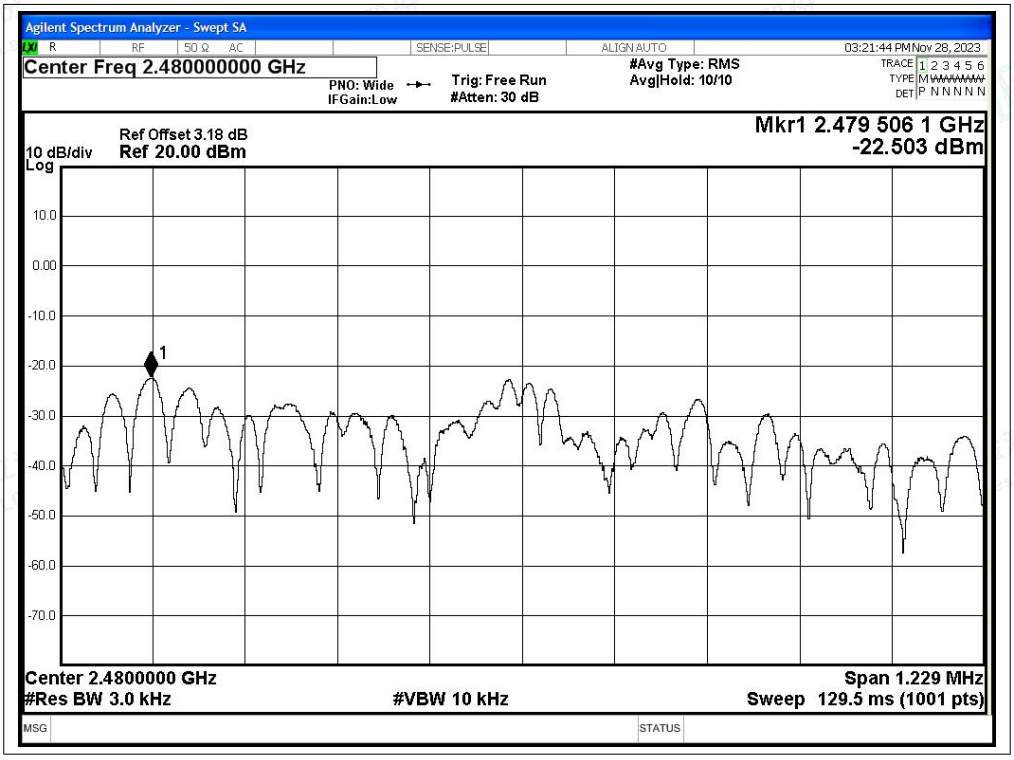
PSD NVNT BLE 2M 2402MHz Ant1



PSD NVNT BLE 2M 2440MHz Ant1



PSD NVNT BLE 2M 2480MHz Ant1

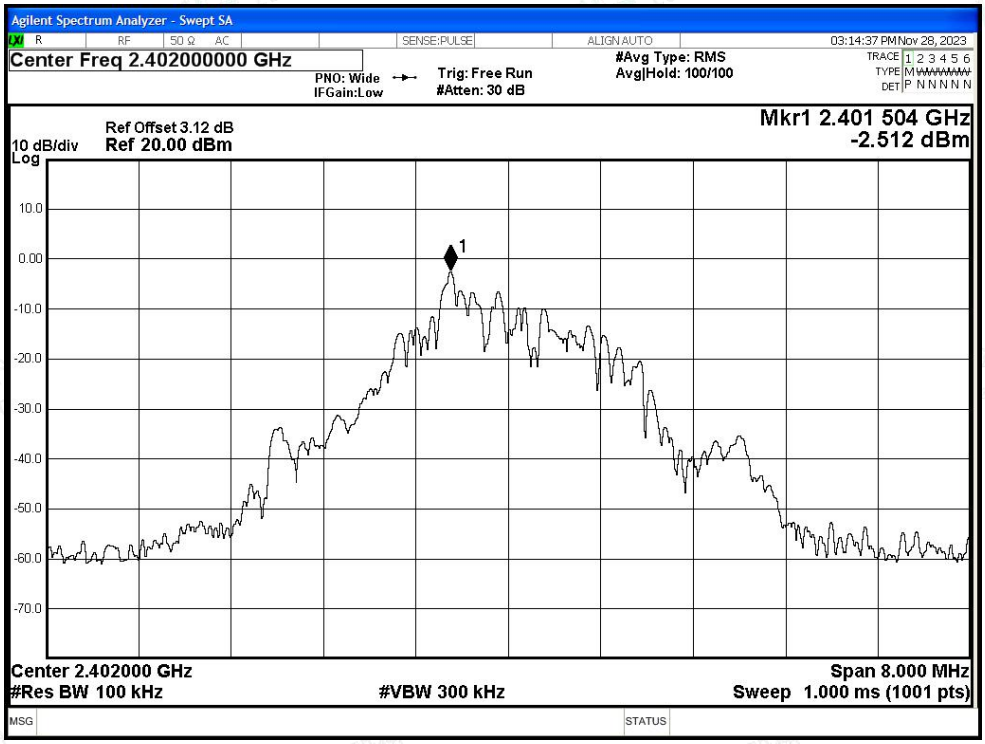

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
03:21:44 PM Nov 28, 2023
Ref Offset 3.18 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 506 1 GHz
-22.503 dBm
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.229 MHz
Sweep 129.5 ms (1001 pts)

B.4 Band Edge

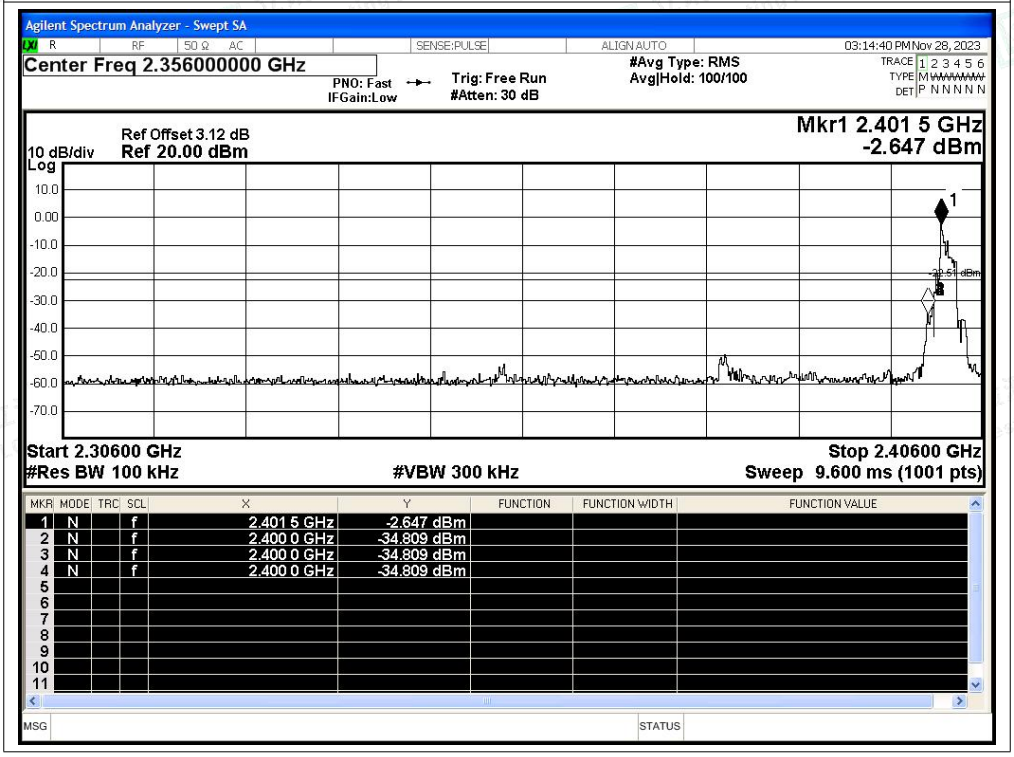
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 2M	2402	Ant1	-32.3	-20	Pass
NVNT	BLE 2M	2480	Ant1	-49.17	-20	Pass

Test Graphs

Band Edge NVNT BLE 2M 2402MHz Ant1 Ref

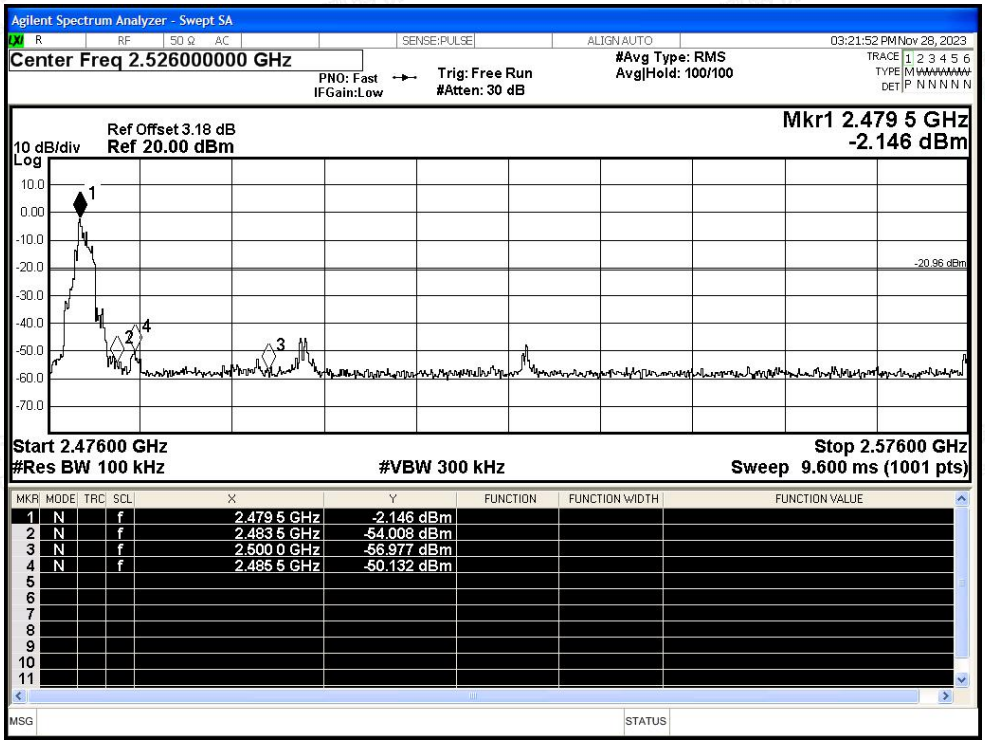


Band Edge NVNT BLE 2M 2402MHz Ant1 Emission



Band Edge NVNT BLE 2M 2480MHz Ant1 Ref

Band Edge NVNT BLE 2M 2480MHz Ant1 Emission

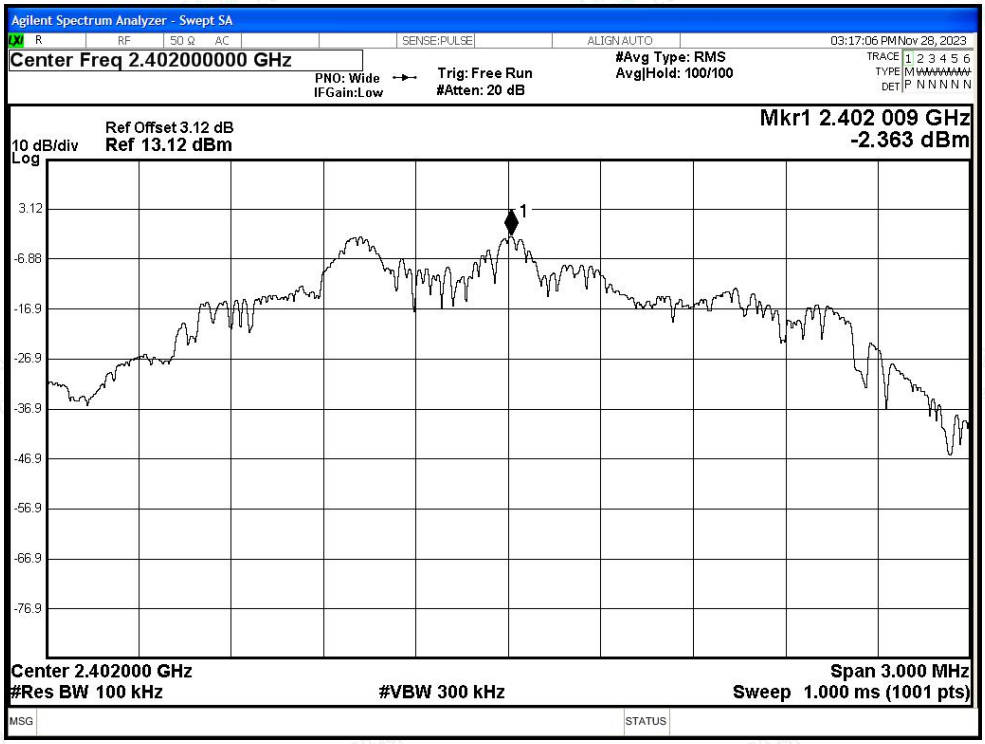


B.5 Conducted RF Spurious Emission

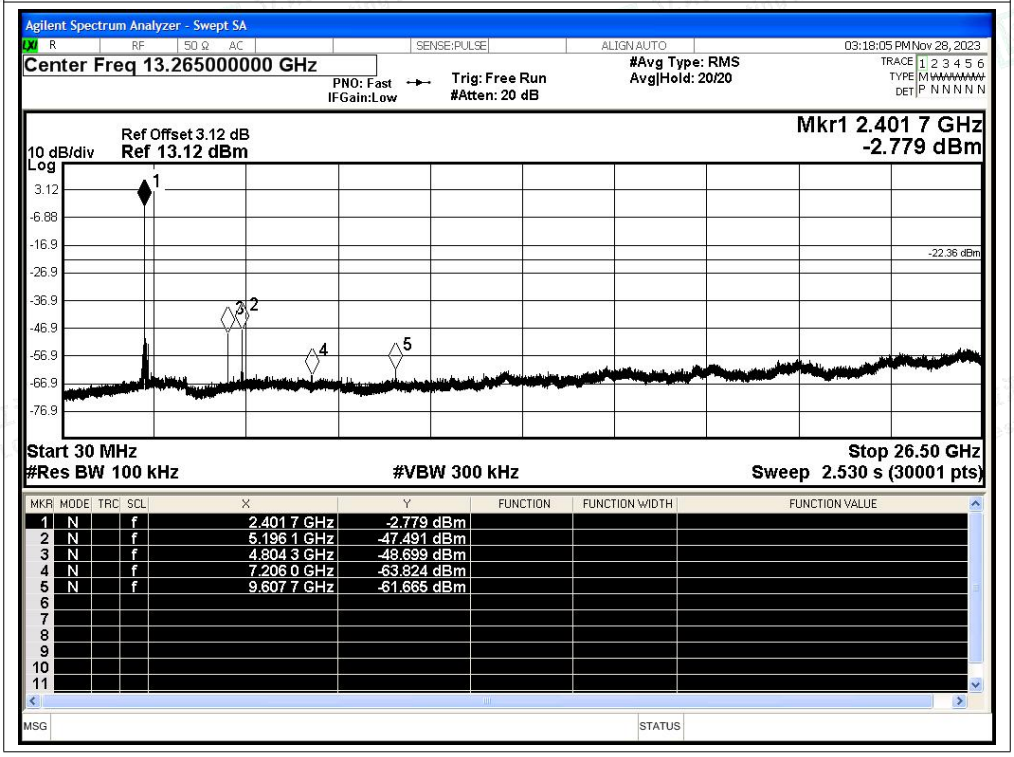
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 2M	2402	Ant1	-45.13	-20	Pass
NVNT	BLE 2M	2440	Ant1	-47.72	-20	Pass
NVNT	BLE 2M	2480	Ant1	-45.3	-20	Pass

Test Graphs

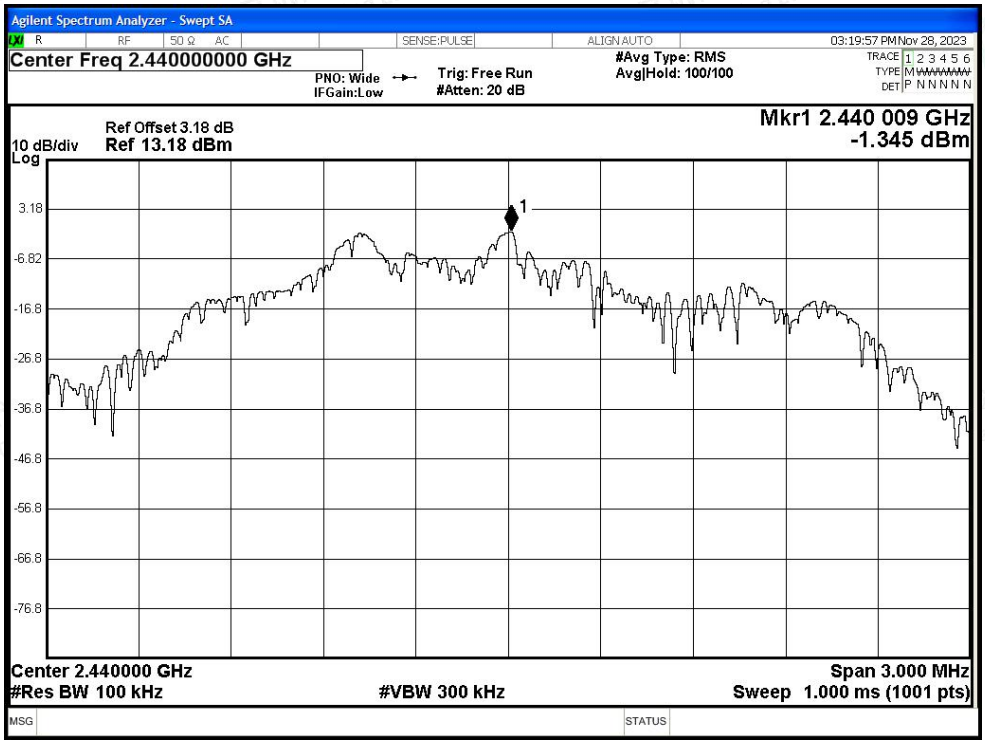
Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Ref



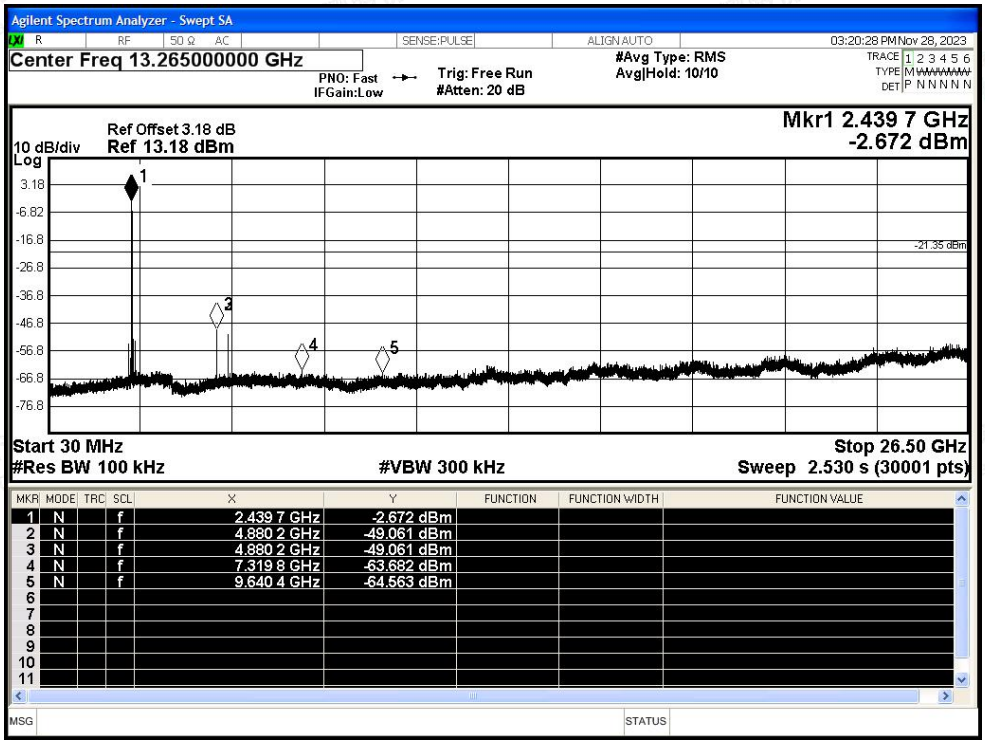
Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Emission



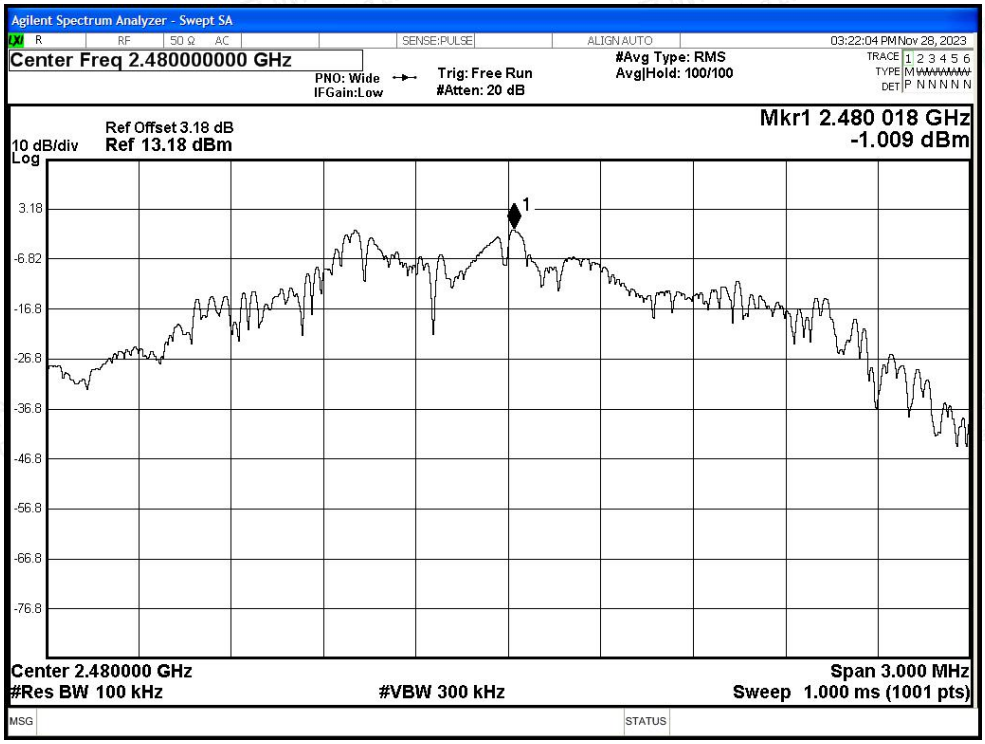
Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Ref



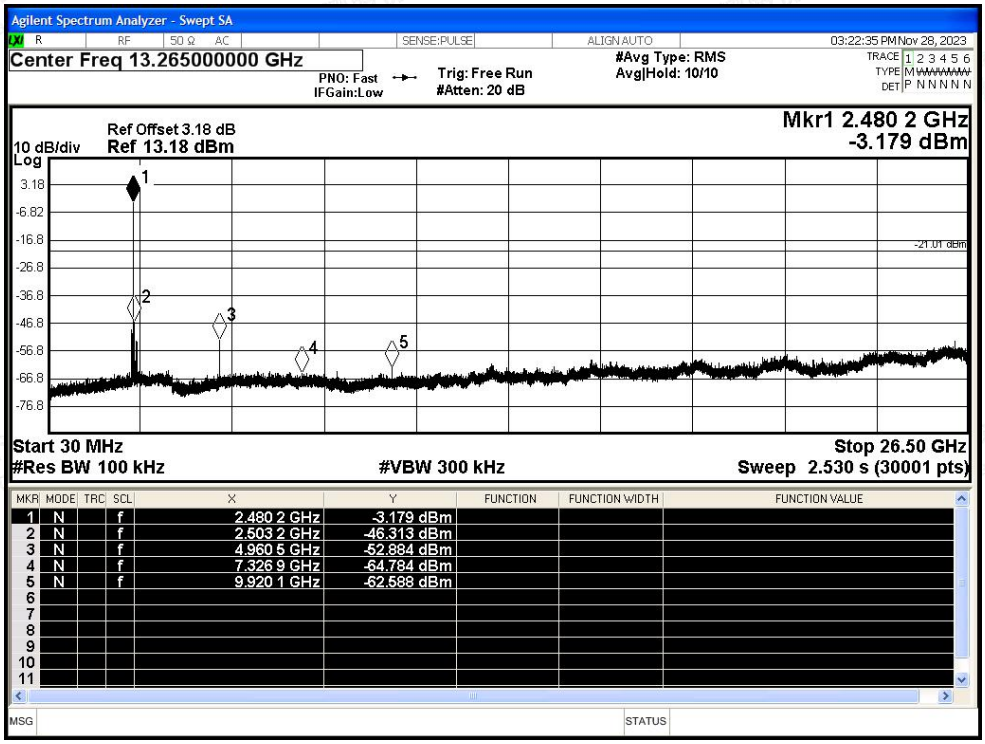
Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Emission



Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Emission

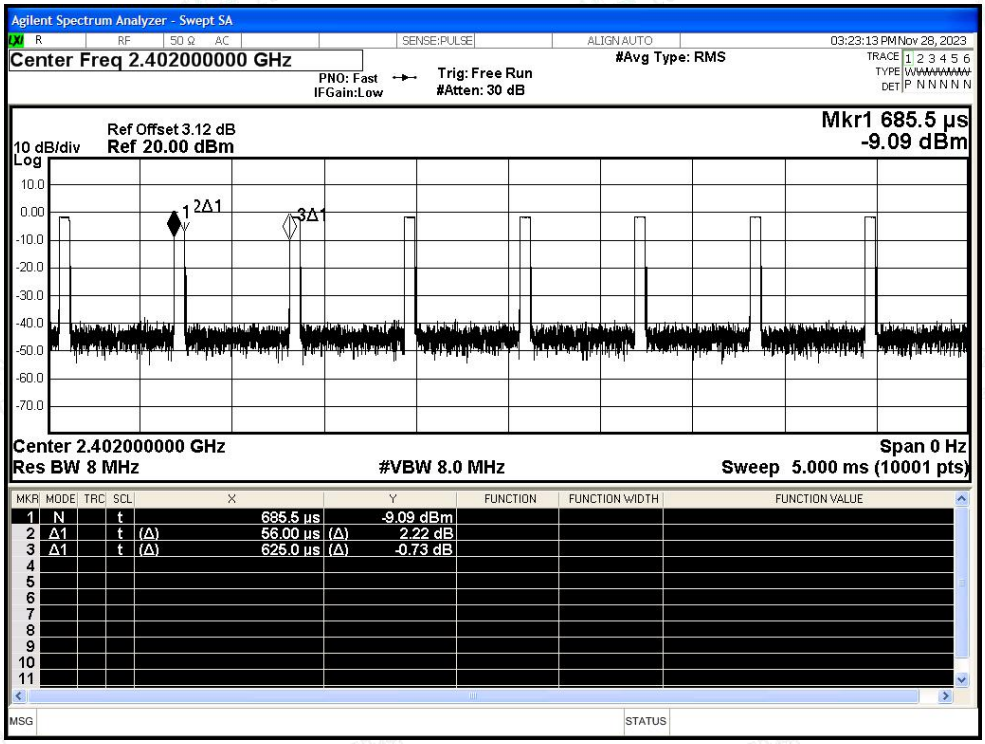


B.6 Duty Cycle

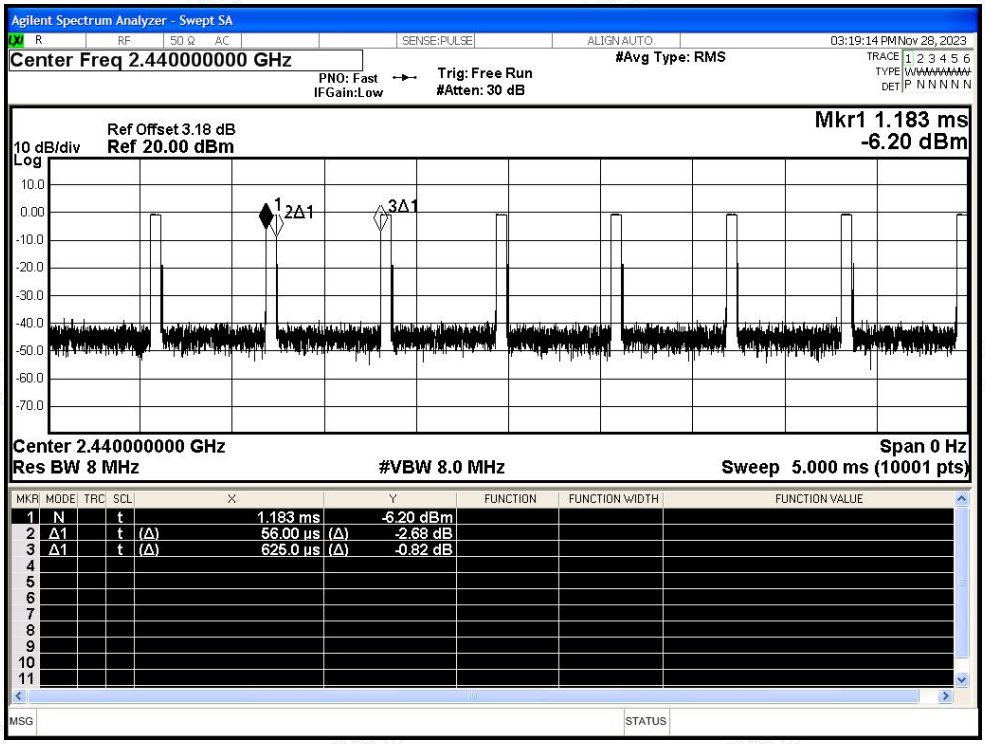
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 2M	2402	Ant1	8.96	10.48	17.86
NVNT	BLE 2M	2440	Ant1	8.96	10.48	17.86
NVNT	BLE 2M	2480	Ant1	9.12	10.4	17.54

Test Graphs

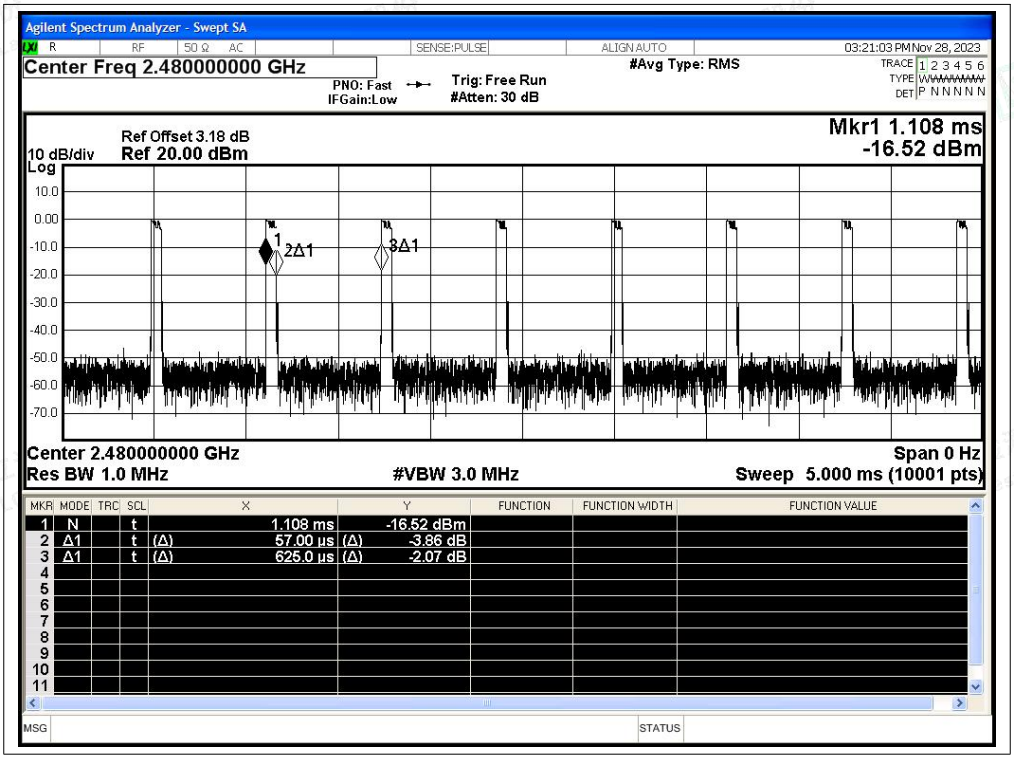
Duty Cycle NVNT BLE 2M 2402MHz Ant1



Duty Cycle NVNT BLE 2M 2440MHz Ant1



Duty Cycle NVNT BLE 2M 2480MHz Ant1

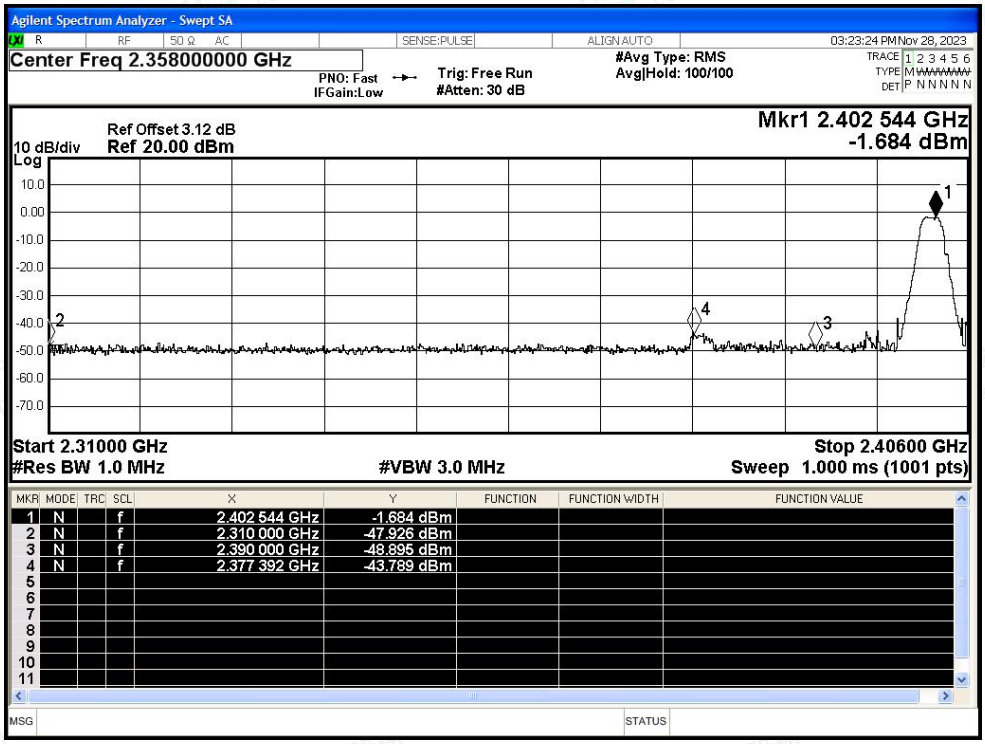

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
03:21:03 PM Nov 28, 2023
Ref Offset 3.18 dB
10 dB/div Ref 20.00 dBm
Log
Mkr1 1.108 ms
-16.52 dBm
Center 2.480000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 5.000 ms (10001 pts)
1 N t 1.108 ms -16.52 dBm
2 Δ1 t (Δ) 57.00 µs (Δ) -3.86 dB
3 Δ1 t (Δ) 625.0 µs (Δ) -2.07 dB

B.7 Restrict Band

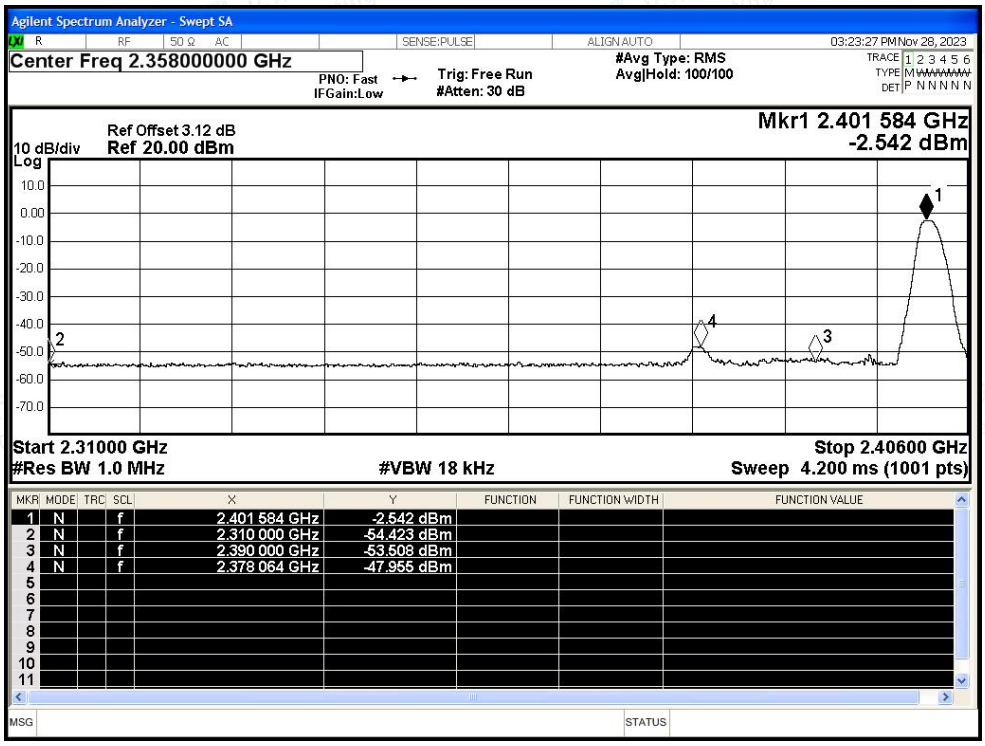
Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	BLE 2M	2402	Ant1	2310	-47.93	2	49.33	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2310	-54.42	2	42.84	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2377.392	-43.79	2	53.47	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2378.064	-47.96	2	49.3	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2390	-48.9	2	48.36	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2390	-53.51	2	43.75	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-46.18	2	51.08	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-48.92	2	48.34	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2485.432	-36.46	2	60.8	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2485.216	-45.04	2	52.22	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2500	-48.83	2	48.43	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2500	-52.81	2	44.45	Average	54	Pass

Test Graphs

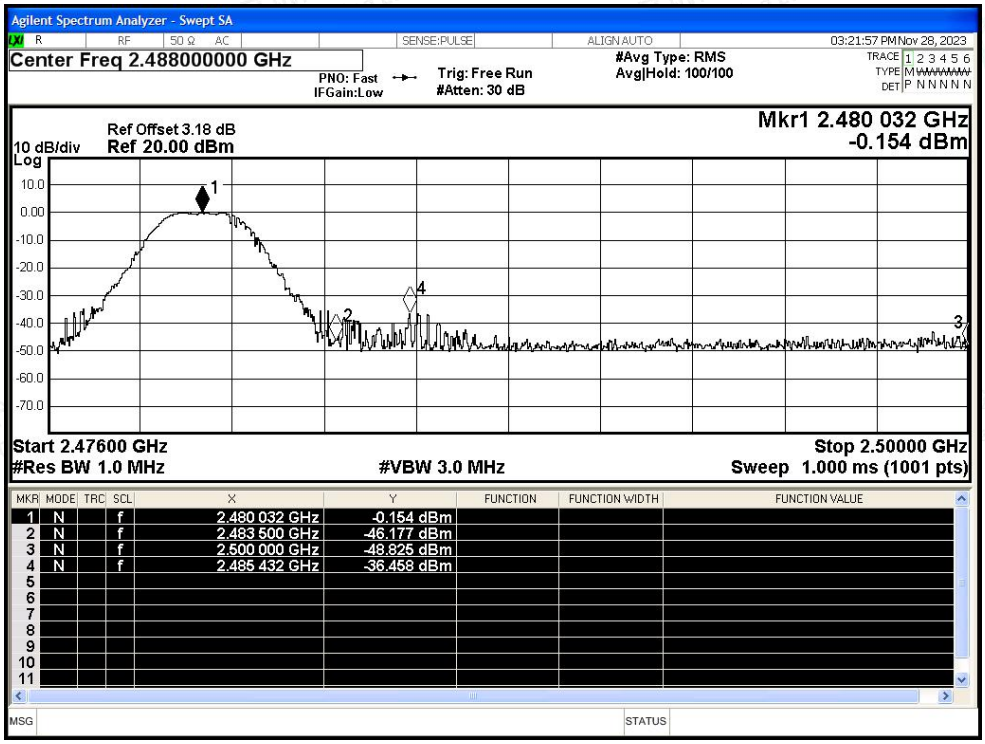
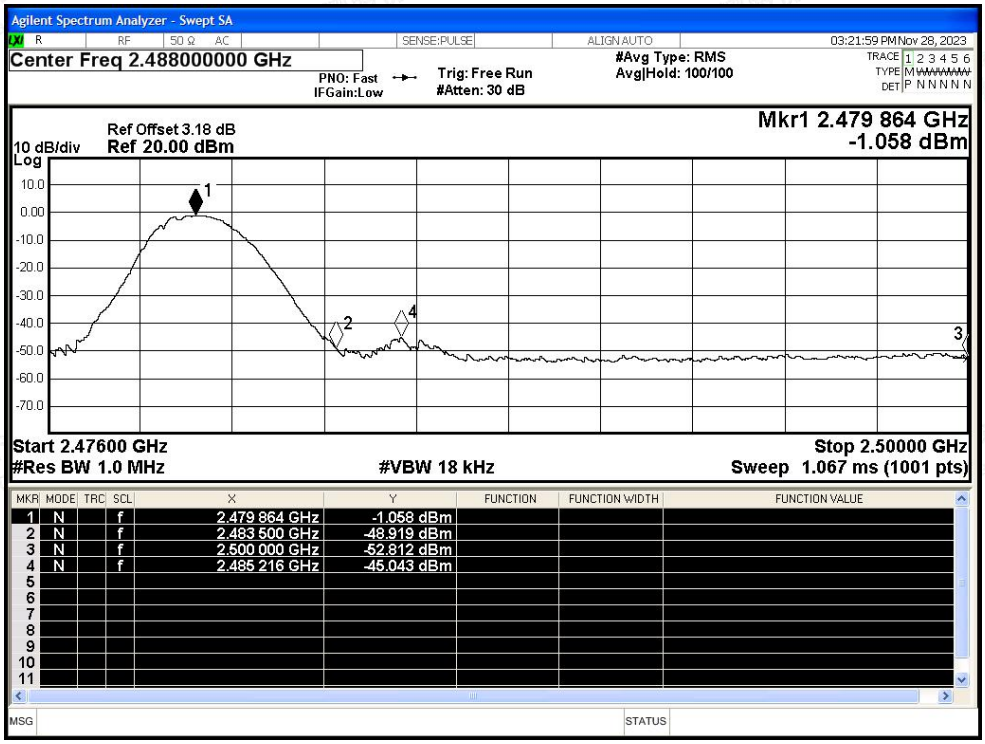
Restrict Band NVNT BLE 2M 2402MHz Ant1 Peak



Restrict Band NVNT BLE 2M 2402MHz Ant1 Average



Restrict Band NVNT BLE 2M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 2M 2480MHz Ant1 Average