

# RF Test Data for Bluetooth LE (Conducted Measurements)

General Description of EUT	
<b>Product Name:</b>	Wireless Remote Controller
<b>Test Model:</b>	4948
<b>Sample ID:</b>	HC-C-202407-0115-01-01
Environmental Conditions	
<b>Temperature:</b>	24.9°C
<b>Relative Humidity:</b>	52.3%
<b>Test Voltage:</b>	DC 3.7V
<b>Test Engineer:</b>	Jolin Lee
Note: For a more detailed features description, please refer to the report TBR-C-202407-0115-2 The report only show the worst case data.	



## Contents

1. Duty Cycle.....	3
2. Maximum Conducted Output Power.....	7
3. -6dB Bandwidth.....	11
4. Occupied Channel Bandwidth.....	15
5. Maximum Power Spectral Density Level.....	19
6. Band Edge.....	23
7. Conducted RF Spurious Emission.....	28
8. Restrict Band.....	35

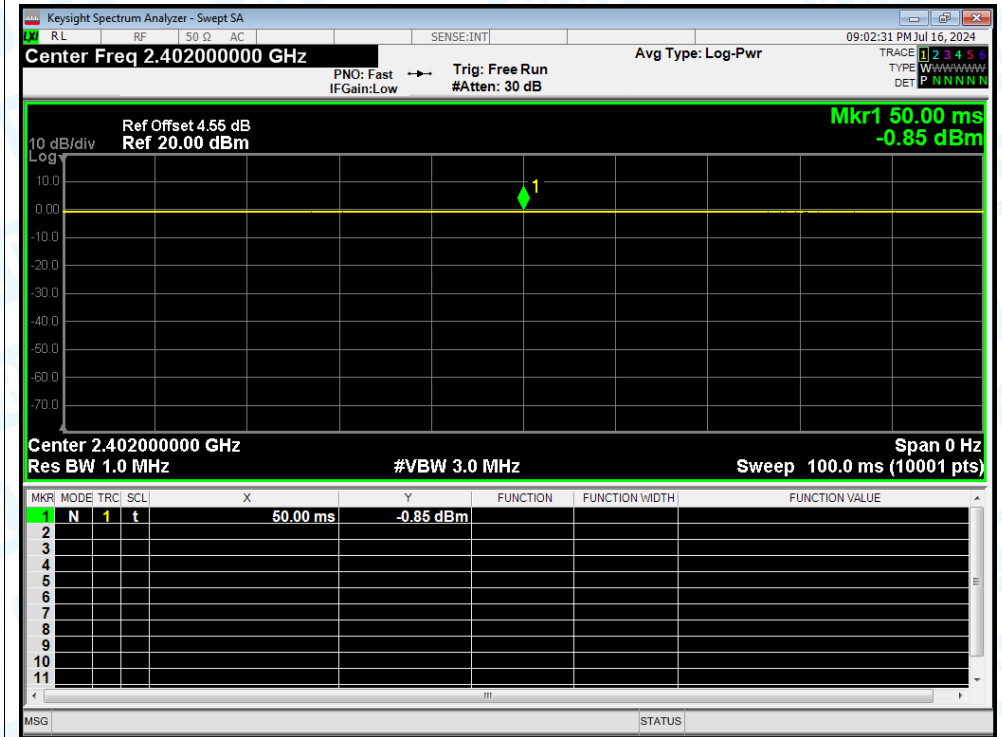


## 1. Duty Cycle

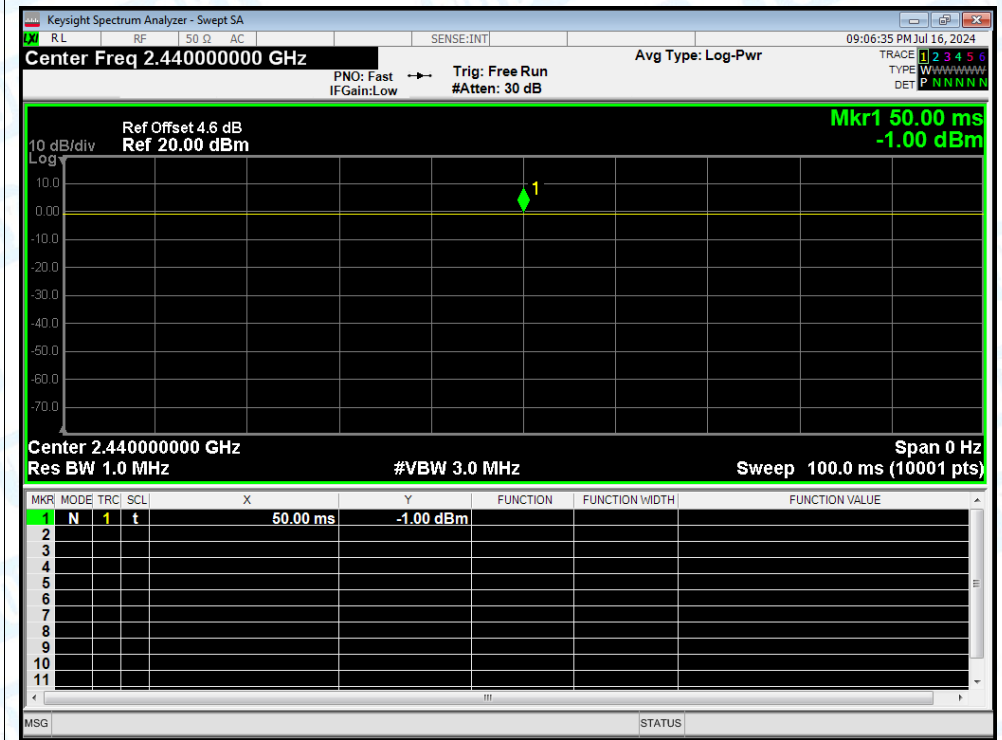
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1Mbps	2402	Ant1	100	0	0
NVNT	BLE 1Mbps	2440	Ant1	100	0	0
NVNT	BLE 1Mbps	2480	Ant1	100	0	0
NVNT	BLE 2Mbps	2402	Ant1	100	0	0
NVNT	BLE 2Mbps	2440	Ant1	100	0	0
NVNT	BLE 2Mbps	2480	Ant1	100	0	0

Test Graphs

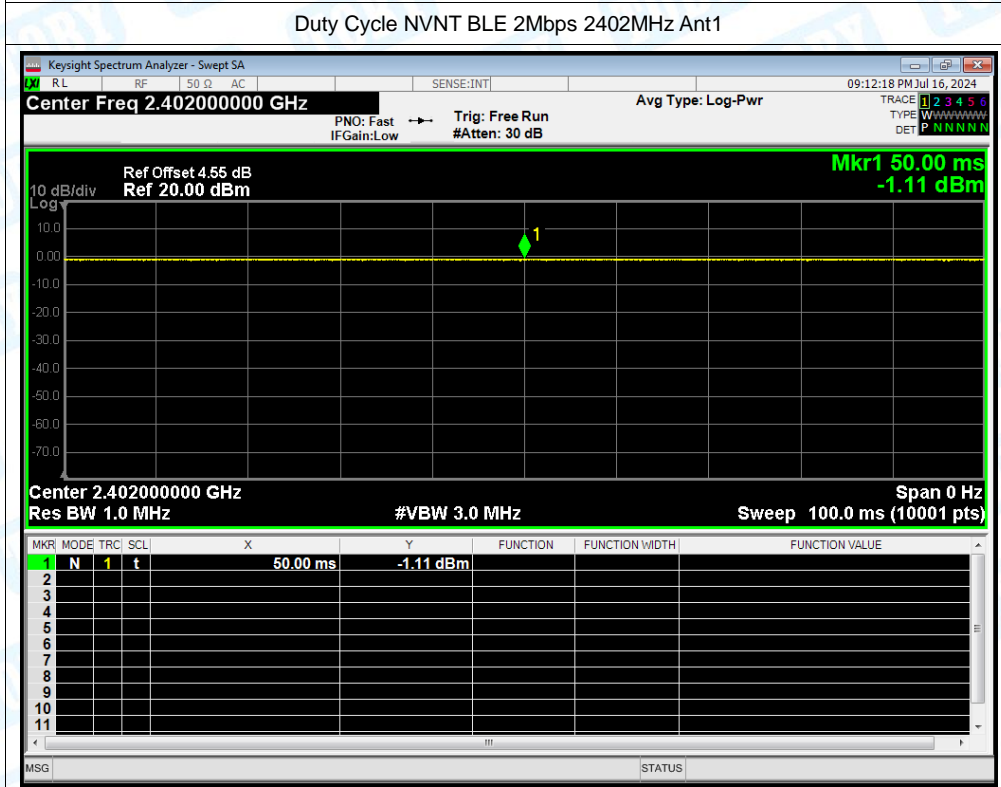
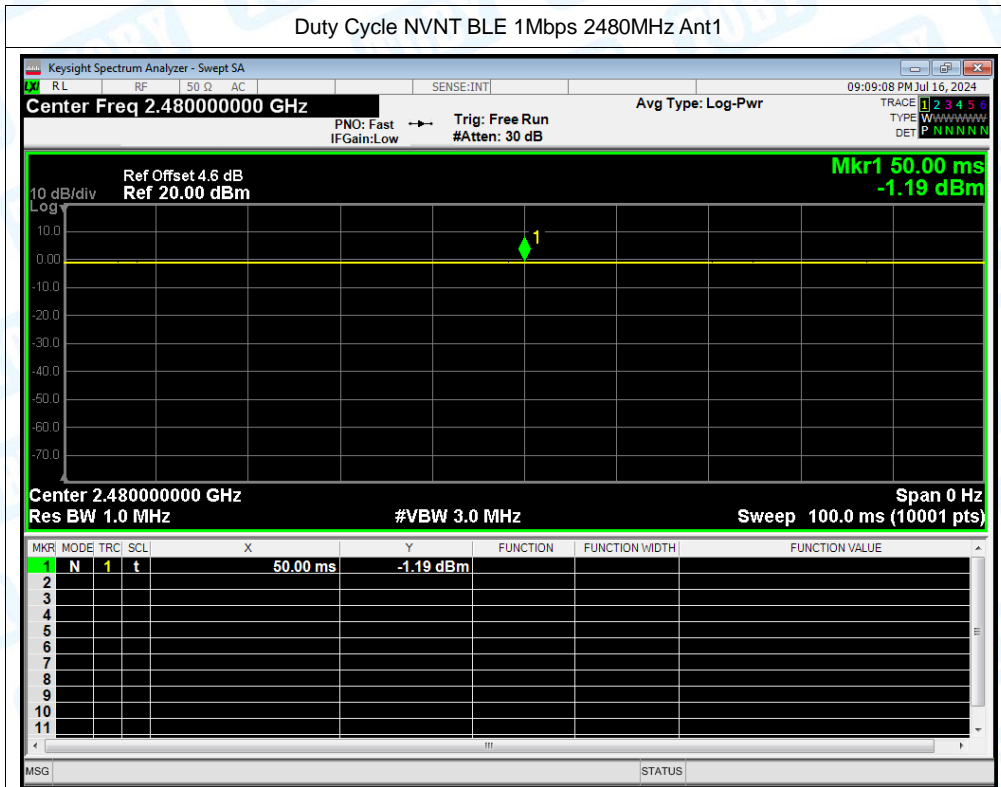
Duty Cycle NVNT BLE 1Mbps 2402MHz Ant1



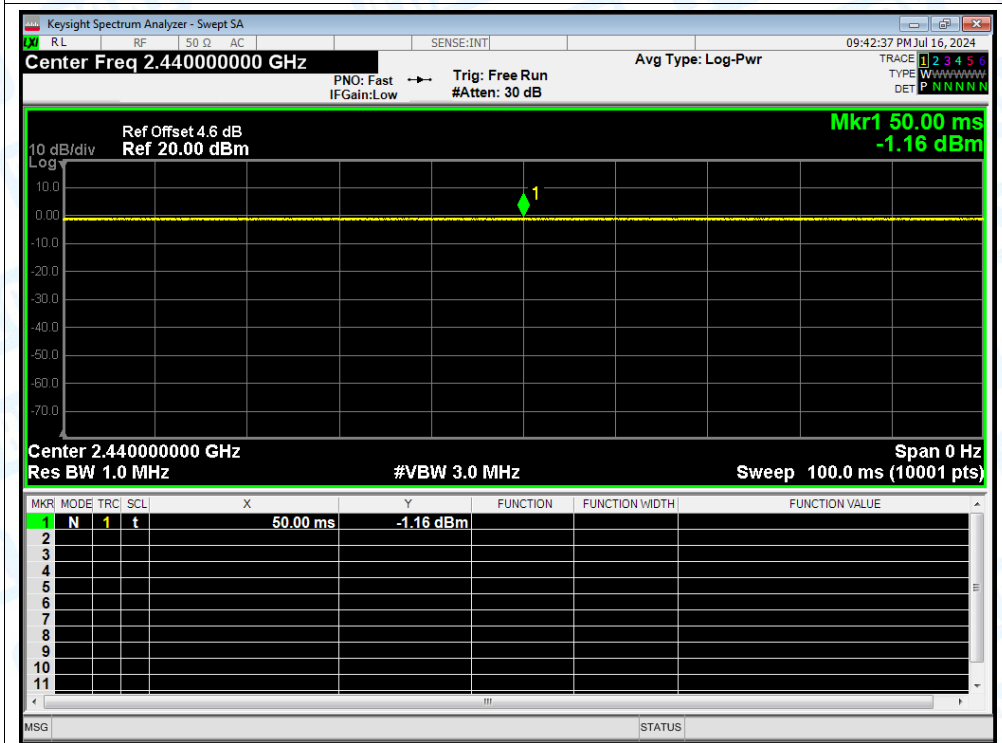
Duty Cycle NVNT BLE 1Mbps 2440MHz Ant1



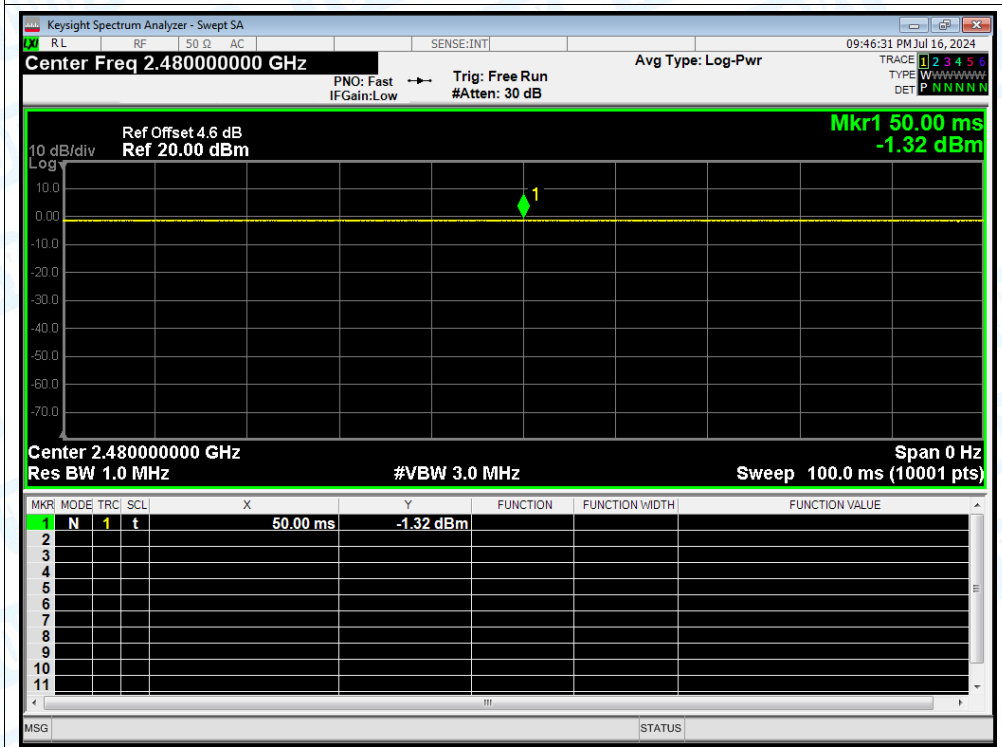




Duty Cycle NVNT BLE 2Mbps 2440MHz Ant1



Duty Cycle NVNT BLE 2Mbps 2480MHz Ant1



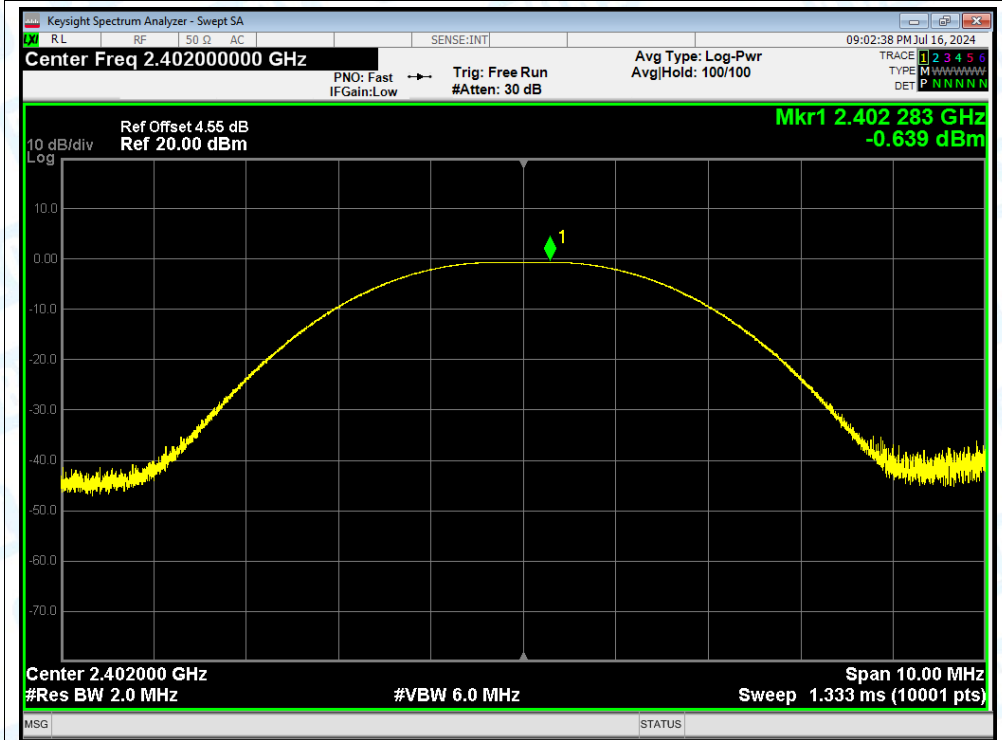


## 2. Maximum Conducted Output Power

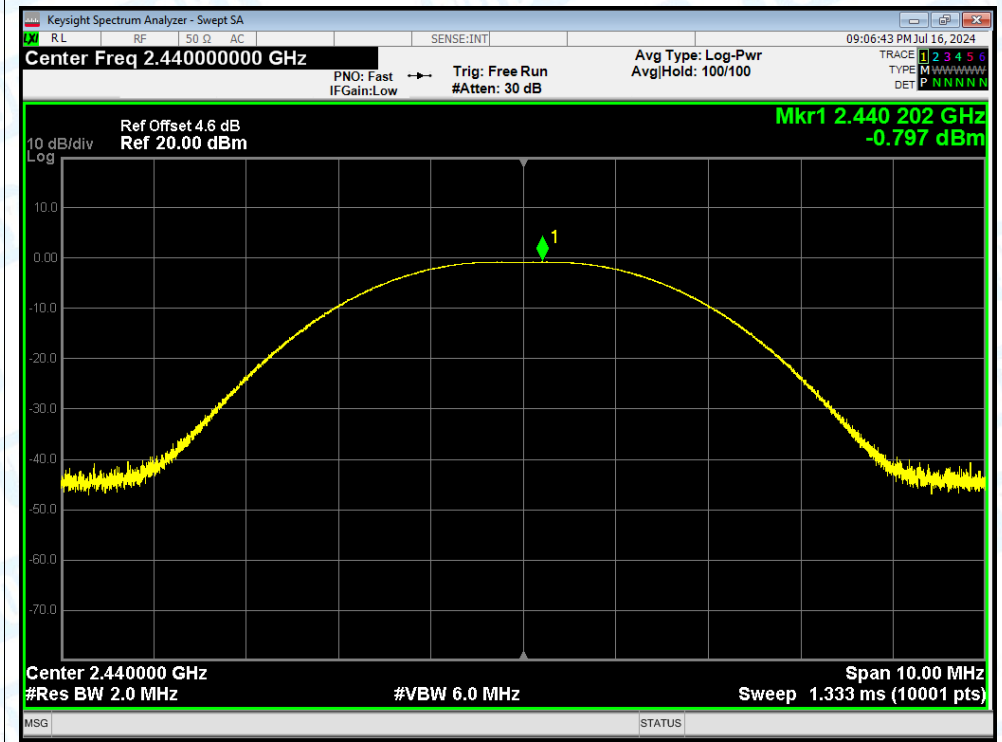
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1Mbps	2402	Ant1	-0.639	30	Pass
NVNT	BLE 1Mbps	2440	Ant1	-0.797	30	Pass
NVNT	BLE 1Mbps	2480	Ant1	-0.989	30	Pass
NVNT	BLE 2Mbps	2402	Ant1	-0.509	30	Pass
NVNT	BLE 2Mbps	2440	Ant1	-0.691	30	Pass
NVNT	BLE 2Mbps	2480	Ant1	-0.866	30	Pass

Test Graphs

Power NVNT BLE 1Mbps 2402MHz Ant1

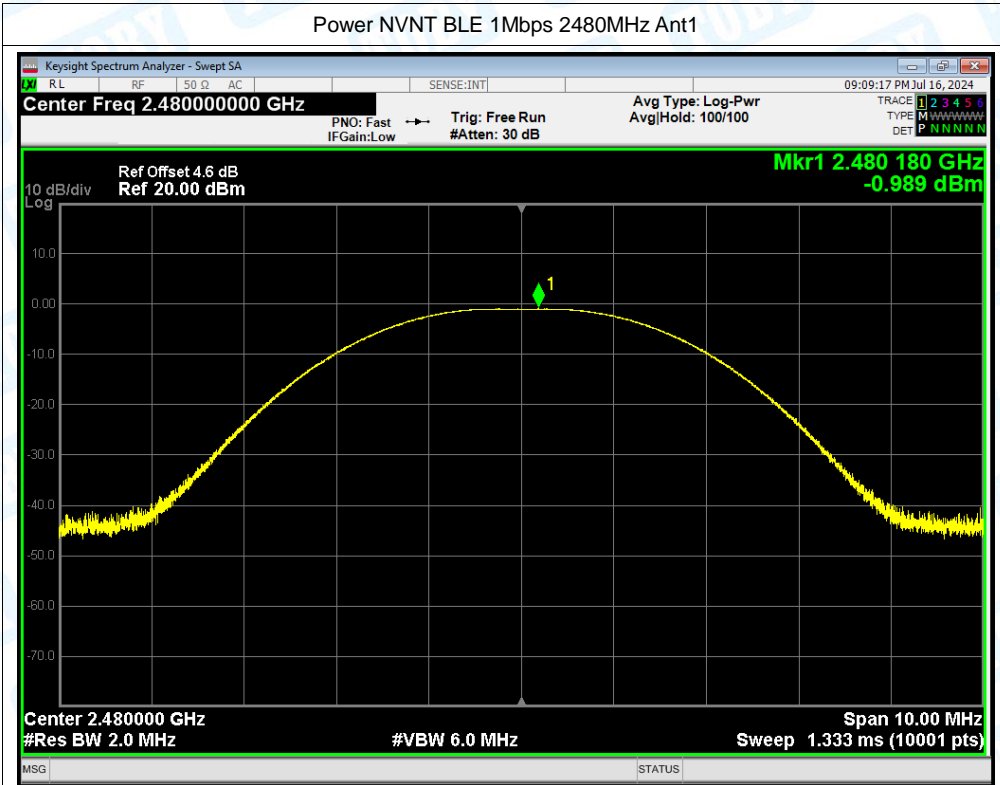


Power NVNT BLE 1Mbps 2440MHz Ant1

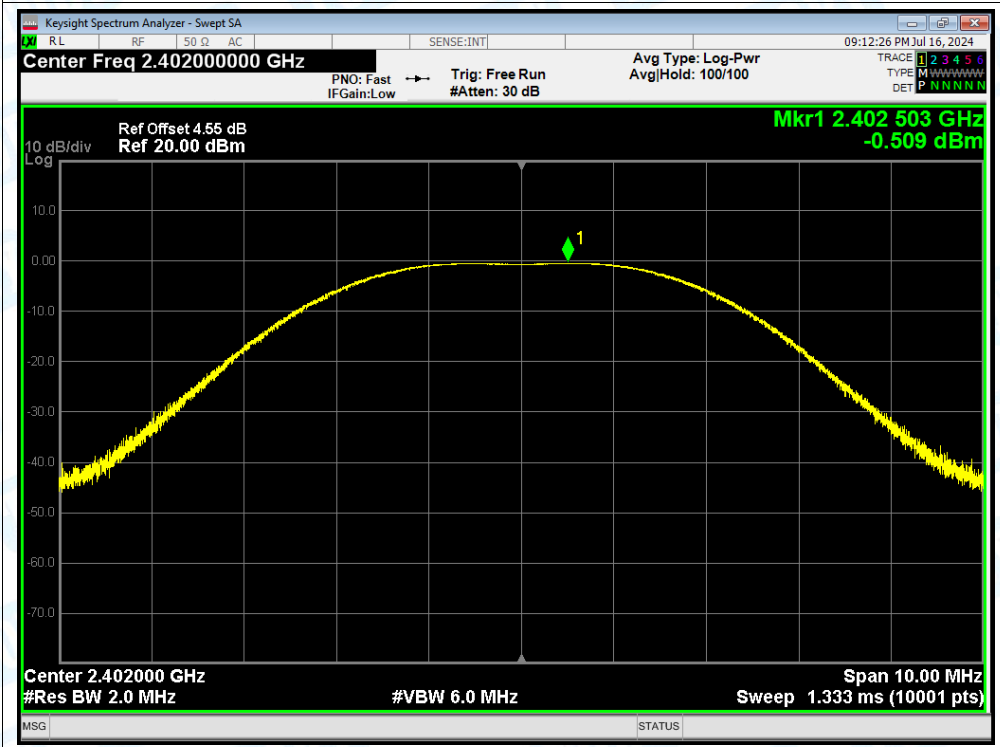


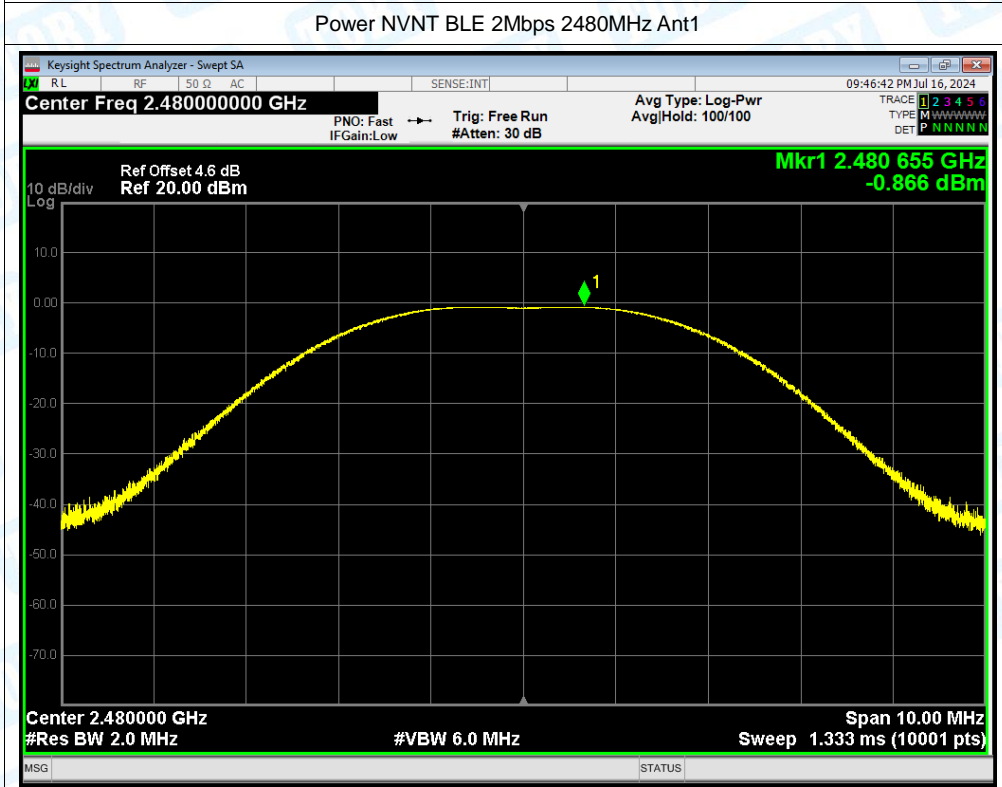
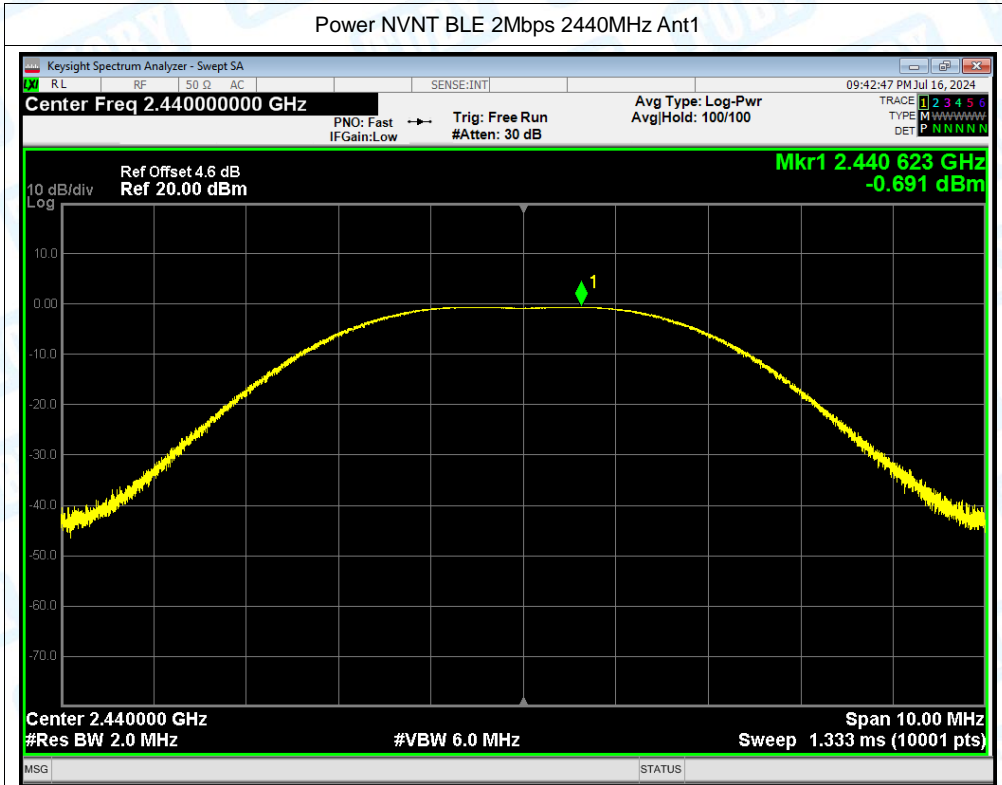


Power NVNT BLE 1Mbps 2480MHz Ant1



Power NVNT BLE 2Mbps 2402MHz Ant1





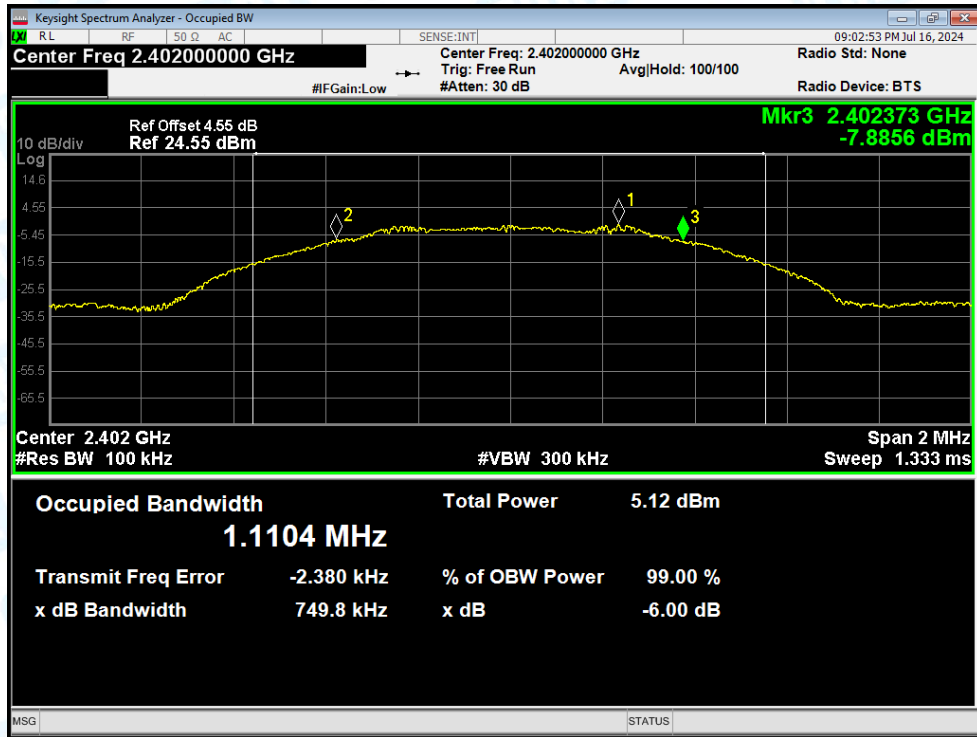


### 3. -6dB Bandwidth

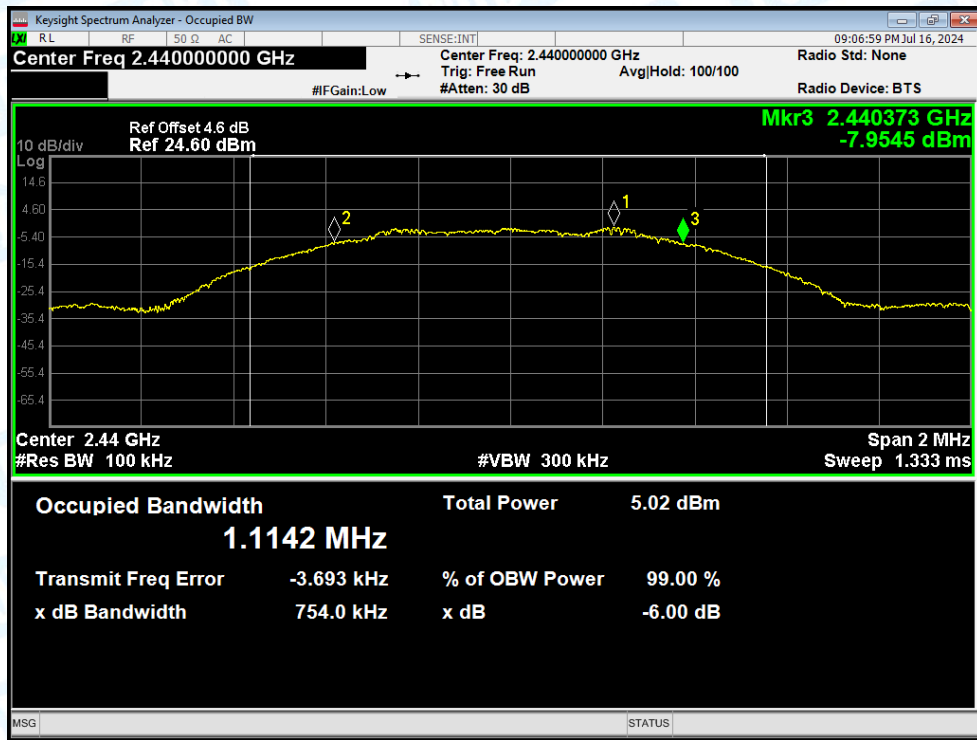
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1Mbps	2402	Ant1	0.75	0.5	Pass
NVNT	BLE 1Mbps	2440	Ant1	0.75	0.5	Pass
NVNT	BLE 1Mbps	2480	Ant1	0.75	0.5	Pass
NVNT	BLE 2Mbps	2402	Ant1	1.38	0.5	Pass
NVNT	BLE 2Mbps	2440	Ant1	1.35	0.5	Pass
NVNT	BLE 2Mbps	2480	Ant1	1.34	0.5	Pass

Test Graphs

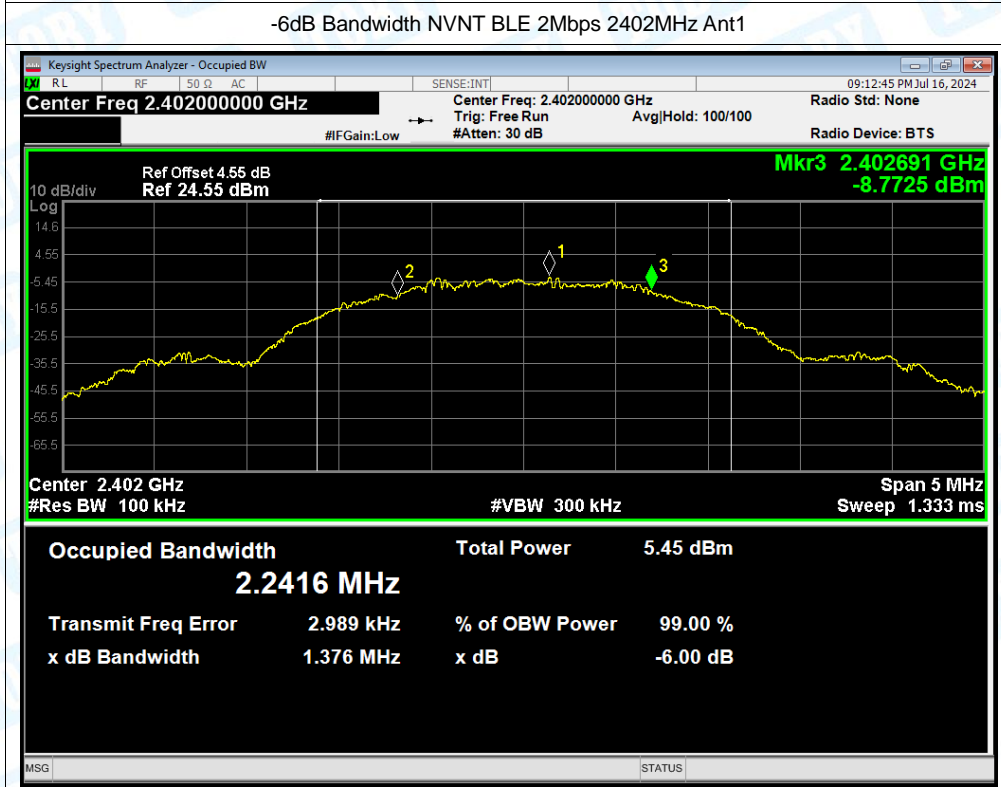
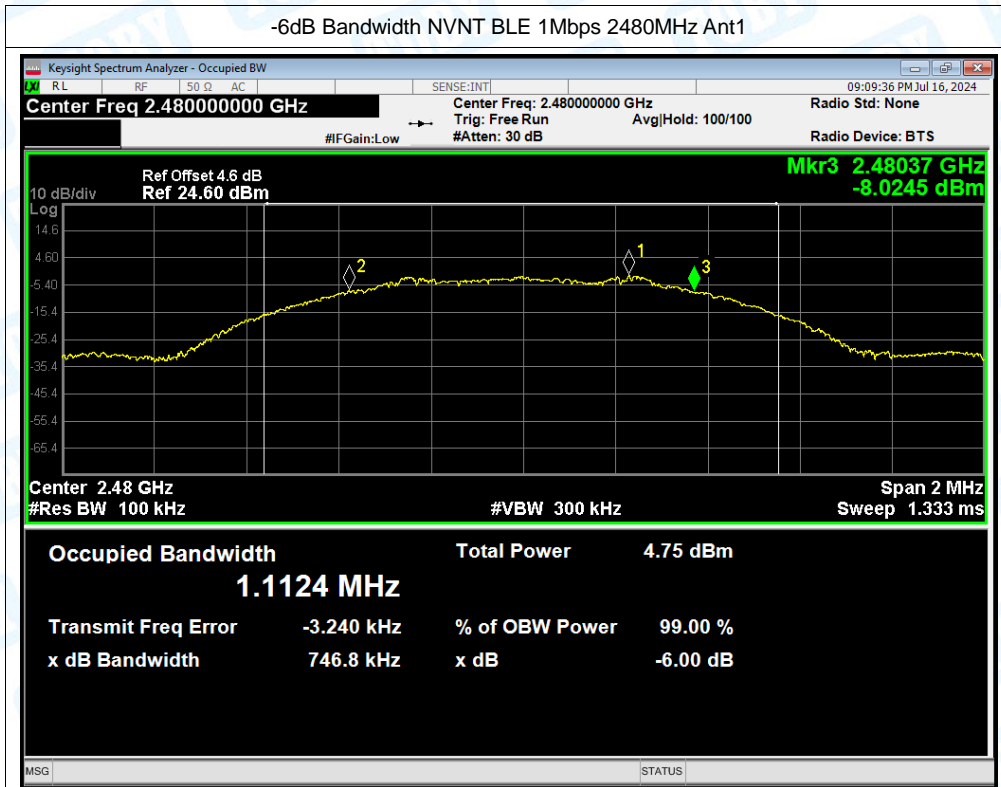
-6dB Bandwidth NVNT BLE 1Mbps 2402MHz Ant1

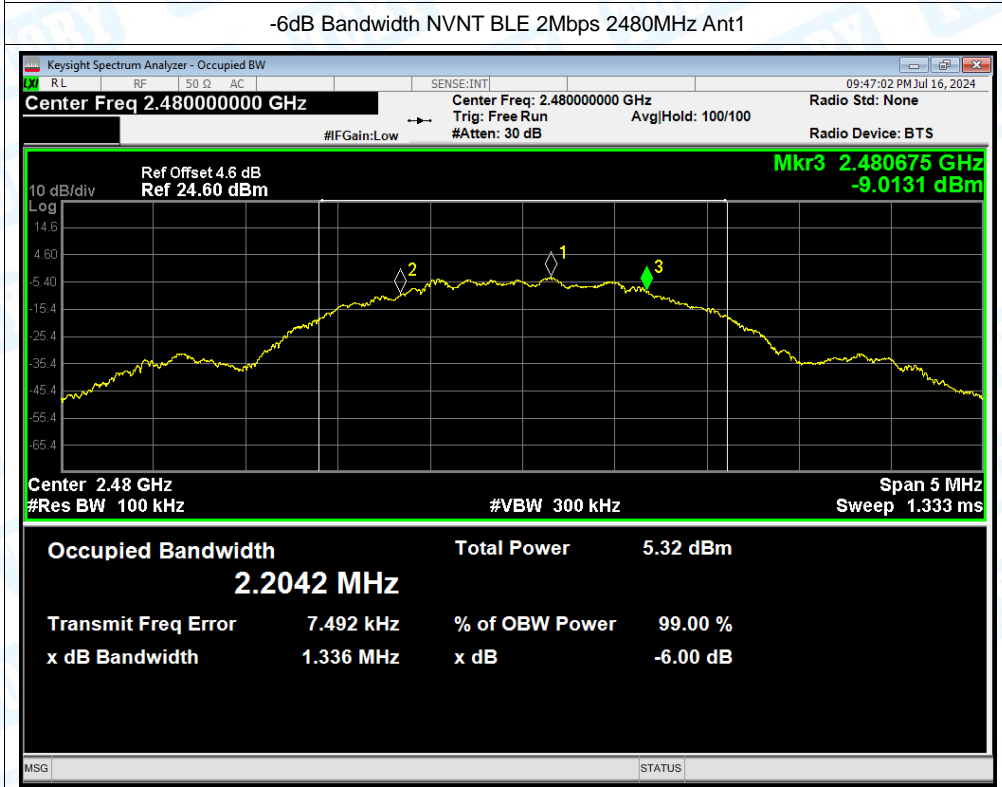
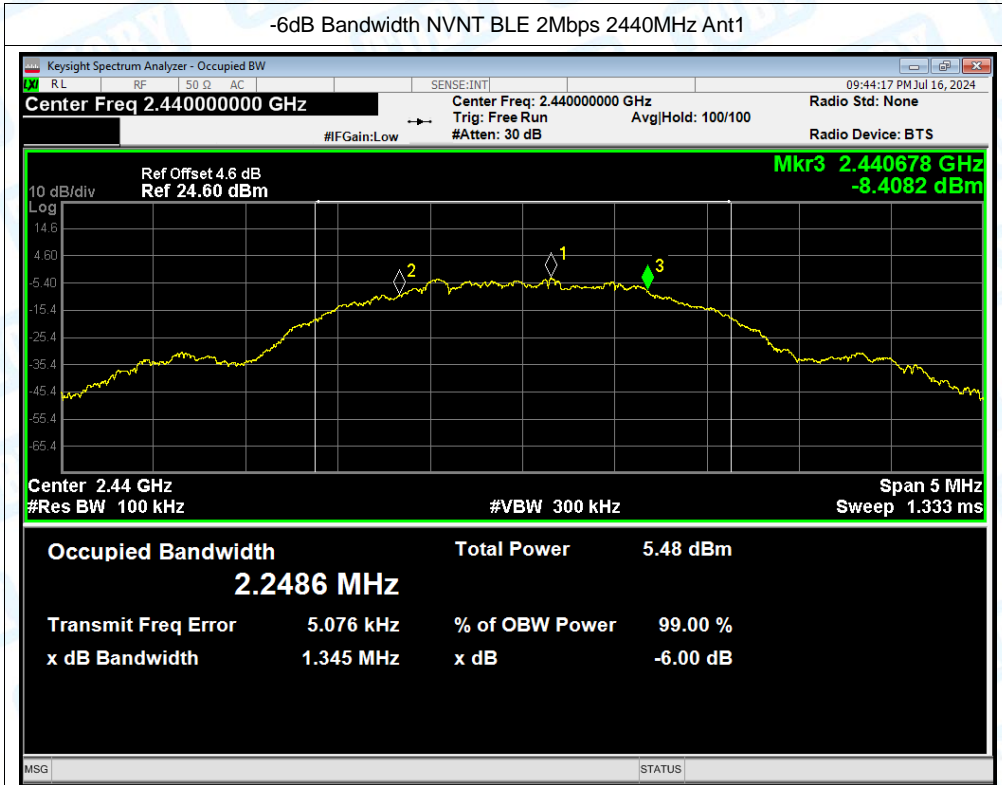


-6dB Bandwidth NVNT BLE 1Mbps 2440MHz Ant1









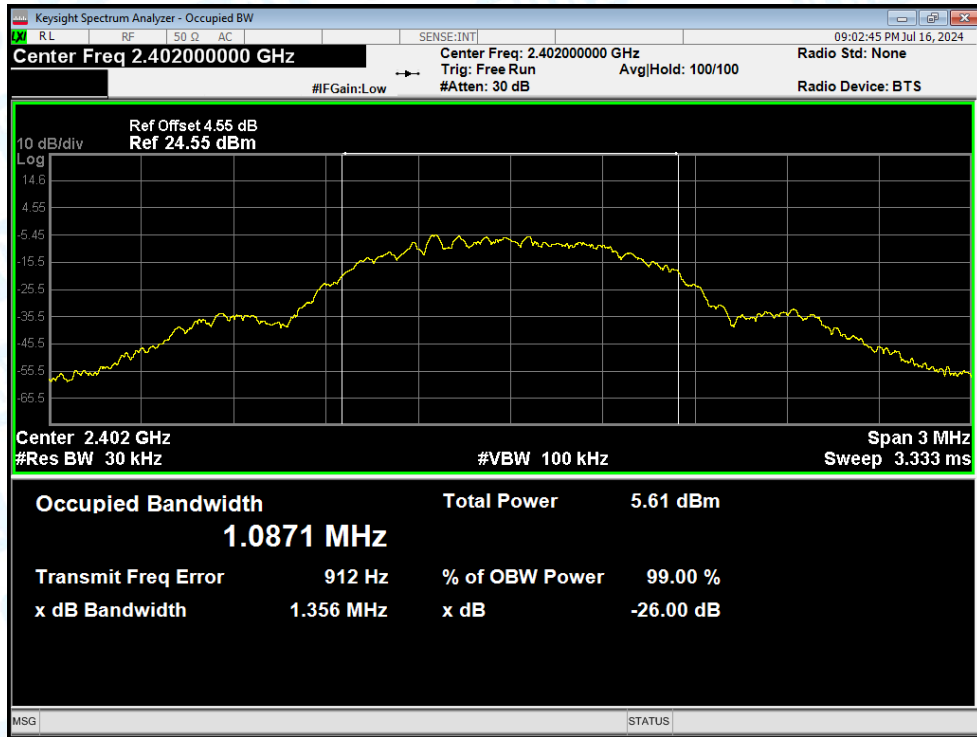


## 4. Occupied Channel Bandwidth

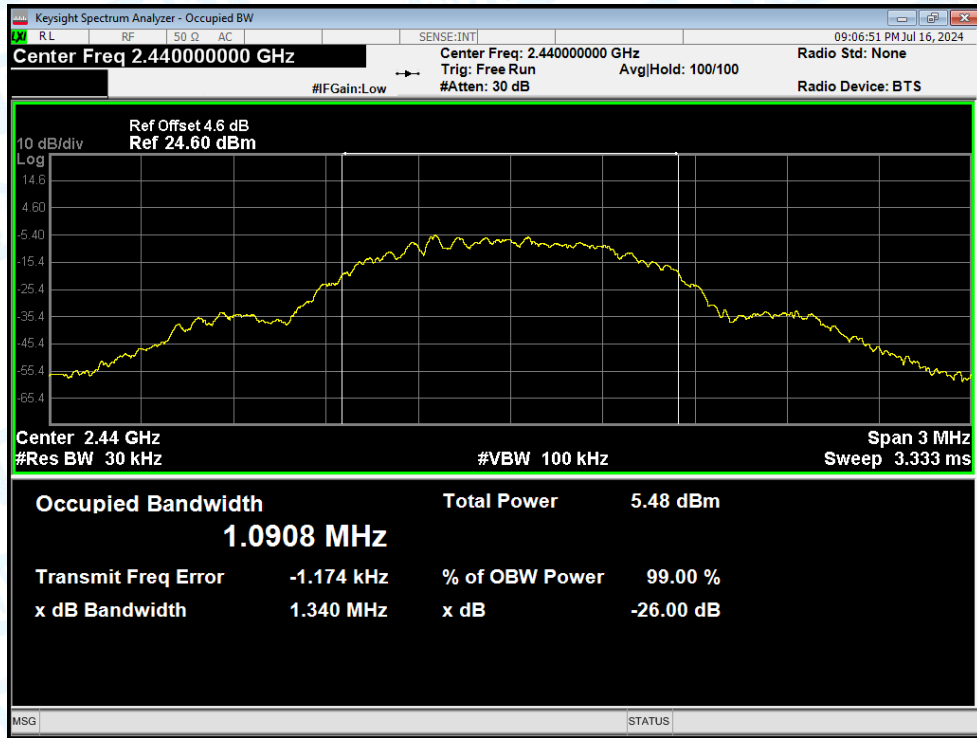
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	BLE 1Mbps	2402	Ant1	1.087
NVNT	BLE 1Mbps	2440	Ant1	1.091
NVNT	BLE 1Mbps	2480	Ant1	1.09
NVNT	BLE 2Mbps	2402	Ant1	2.196
NVNT	BLE 2Mbps	2440	Ant1	2.199
NVNT	BLE 2Mbps	2480	Ant1	2.178

Test Graphs

OBW NVNT BLE 1Mbps 2402MHz Ant1

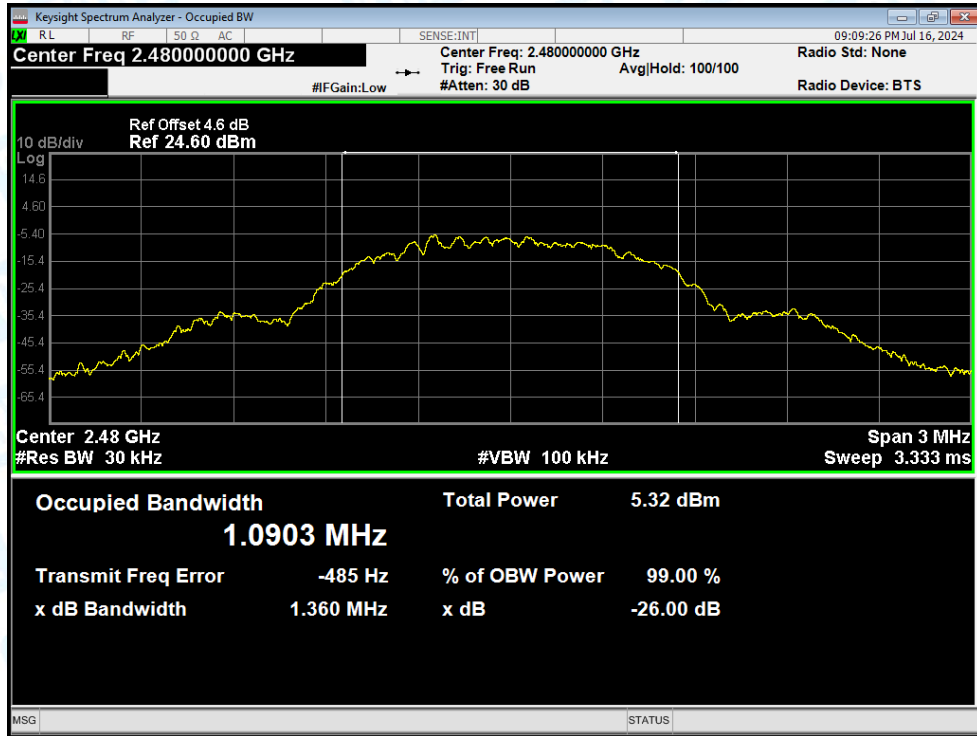


OBW NVNT BLE 1Mbps 2440MHz Ant1

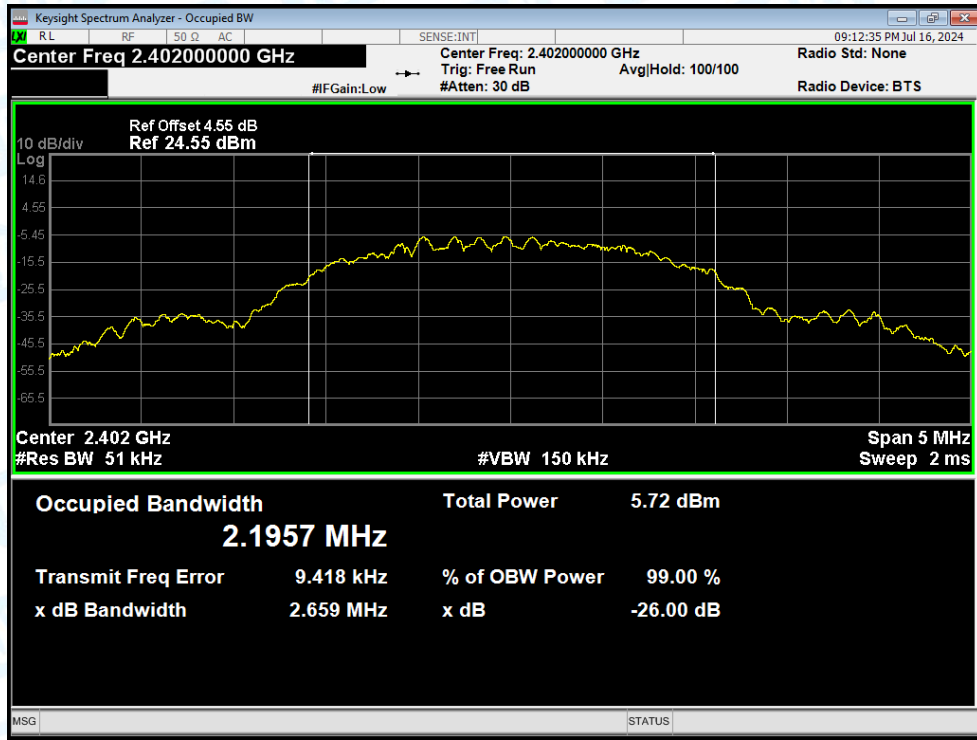




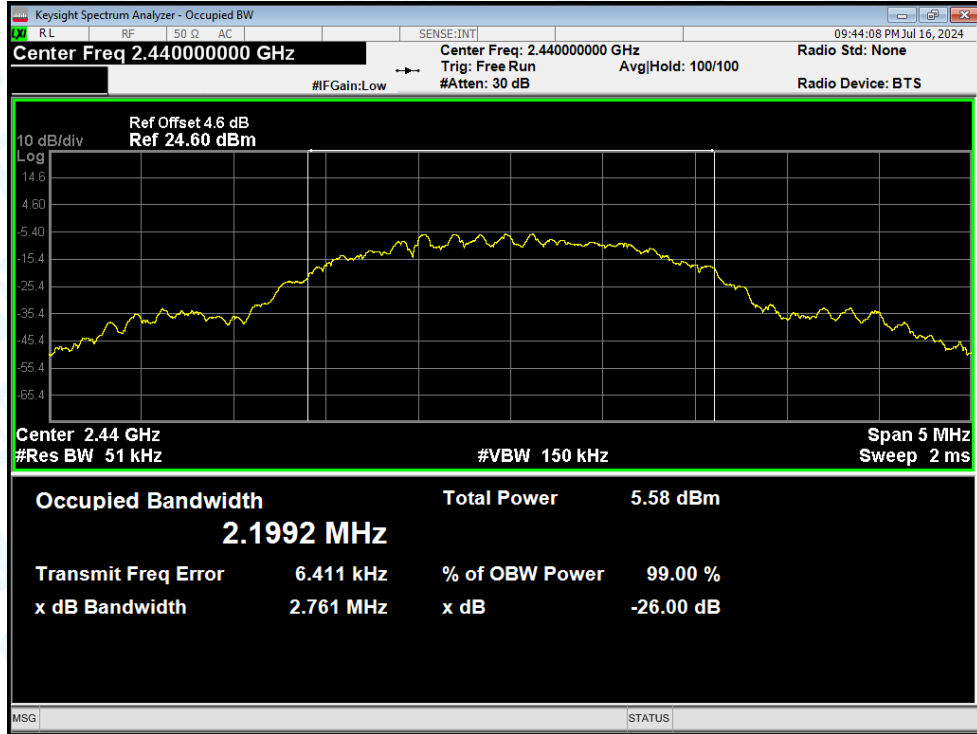
OBW NVNT BLE 1Mbps 2480MHz Ant1



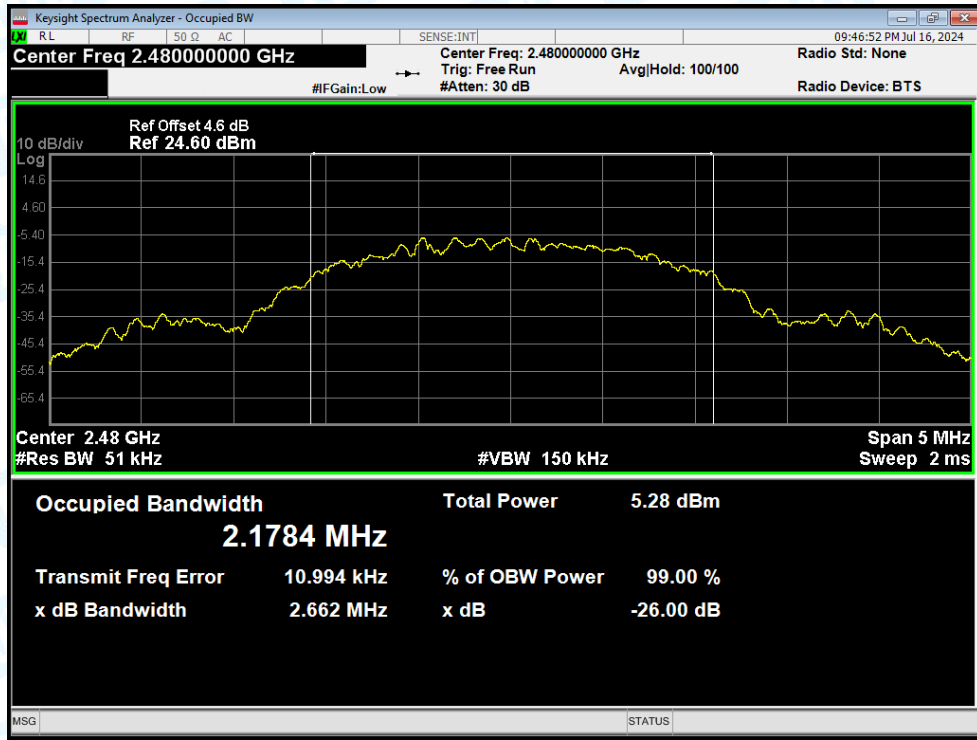
OBW NVNT BLE 2Mbps 2402MHz Ant1



OBW NVNT BLE 2Mbps 2440MHz Ant1



OBW NVNT BLE 2Mbps 2480MHz Ant1



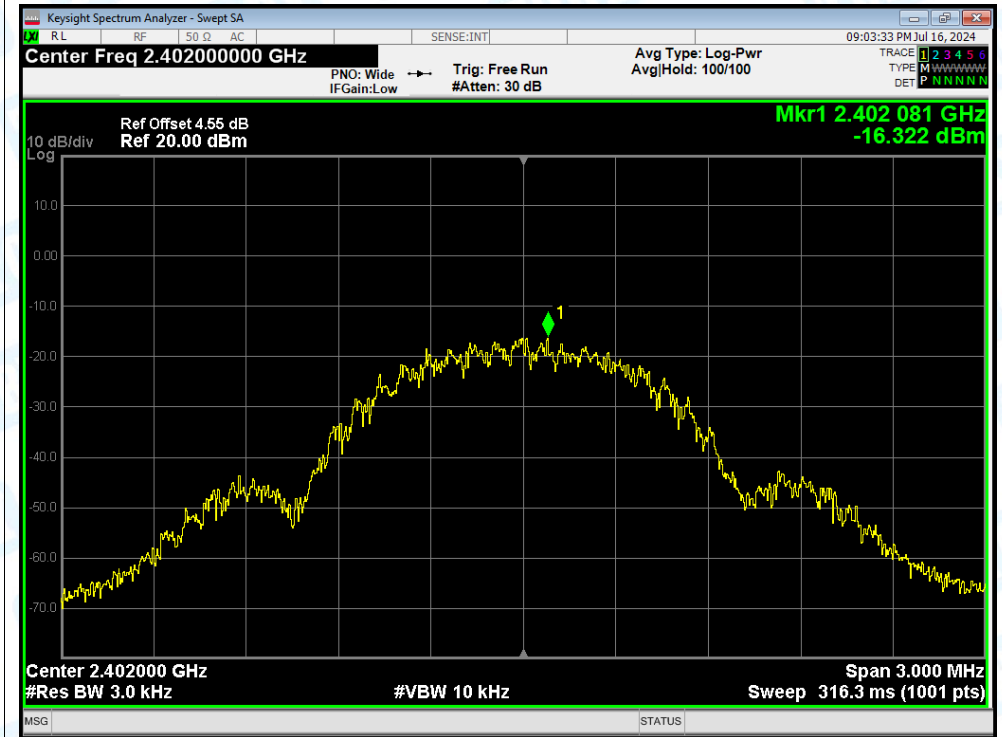


## 5. Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/3KHz)	Limit (dBm/3KHz)	Verdict
NVNT	BLE 1Mbps	2402	Ant1	-16.322	8	Pass
NVNT	BLE 1Mbps	2440	Ant1	-16.5	8	Pass
NVNT	BLE 1Mbps	2480	Ant1	-16.639	8	Pass
NVNT	BLE 2Mbps	2402	Ant1	-18.29	8	Pass
NVNT	BLE 2Mbps	2440	Ant1	-18.367	8	Pass
NVNT	BLE 2Mbps	2480	Ant1	-18.456	8	Pass

Test Graphs

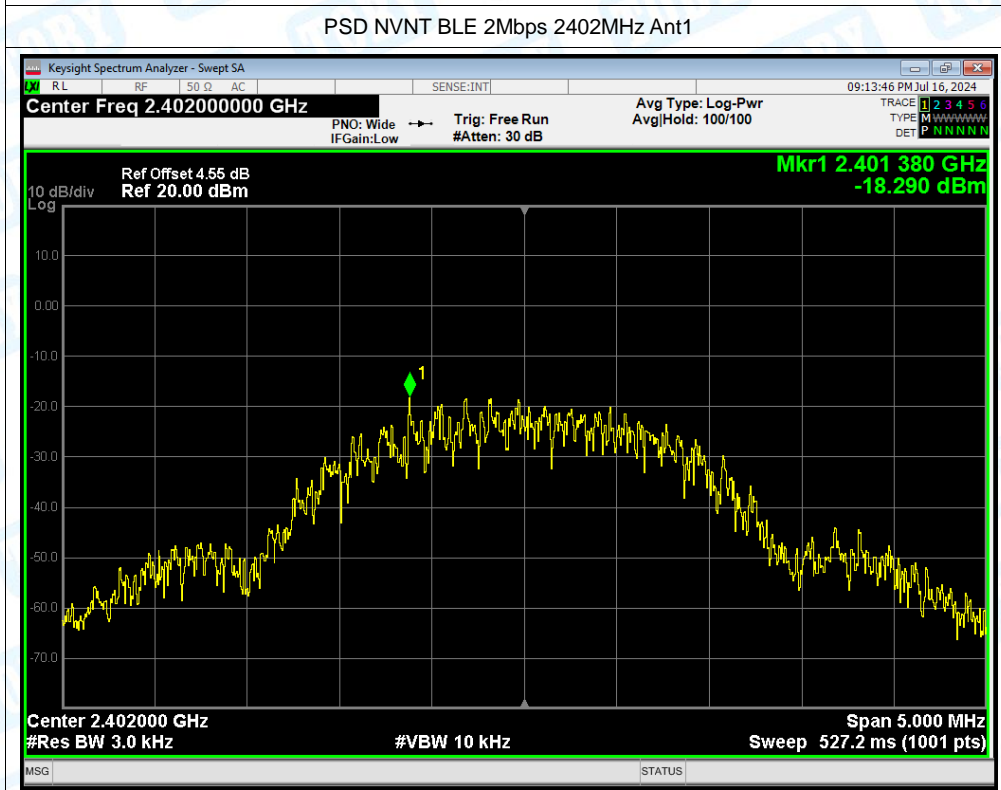
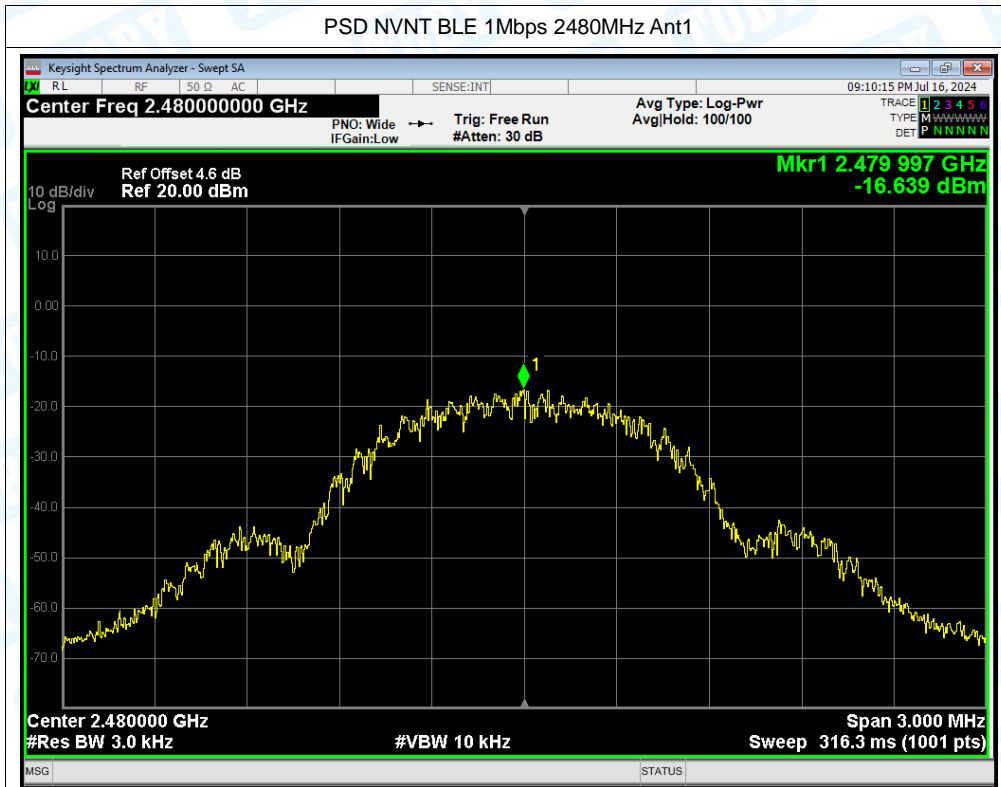
PSD NVNT BLE 1Mbps 2402MHz Ant1

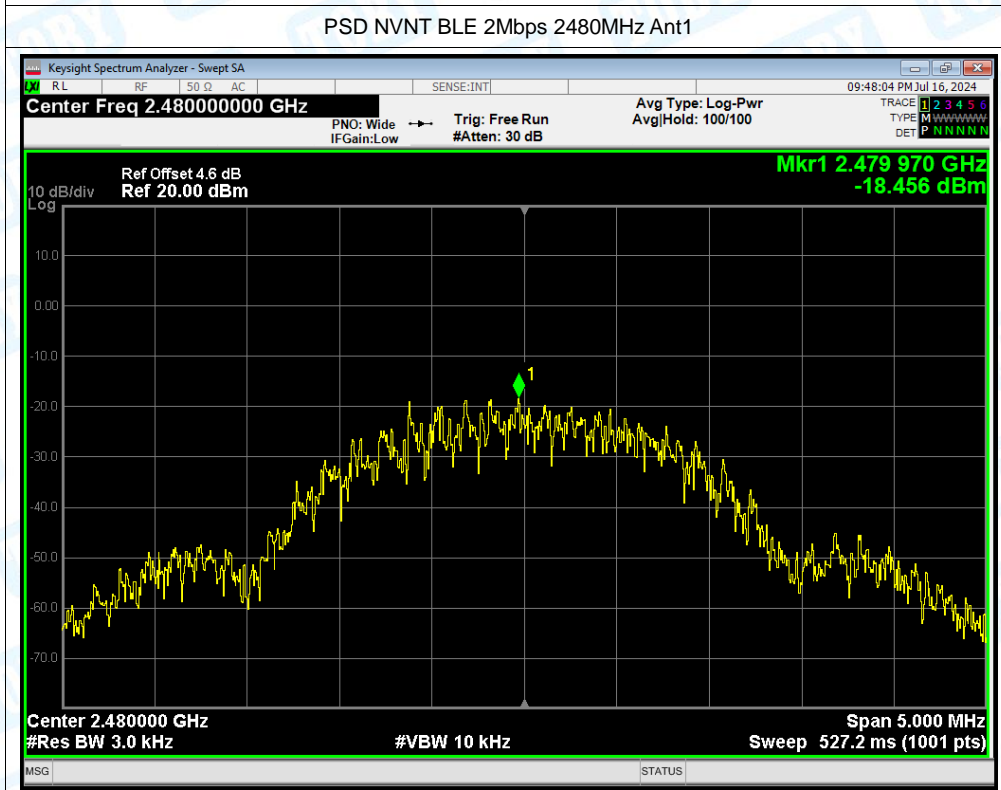
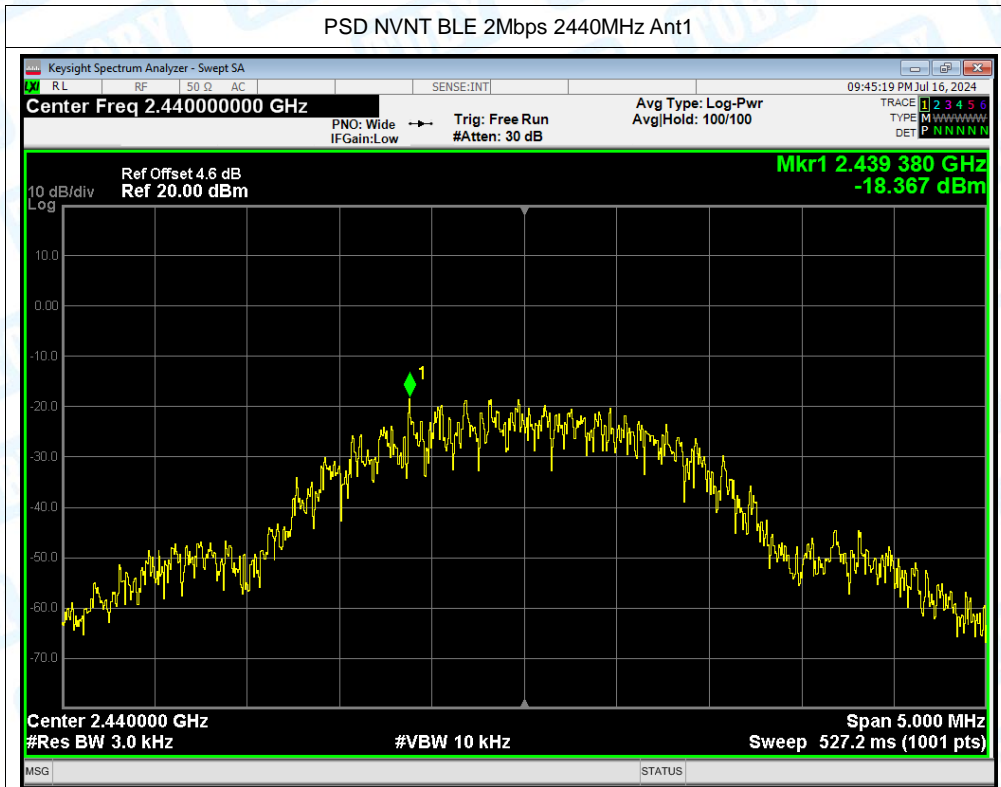


PSD NVNT BLE 1Mbps 2440MHz Ant1









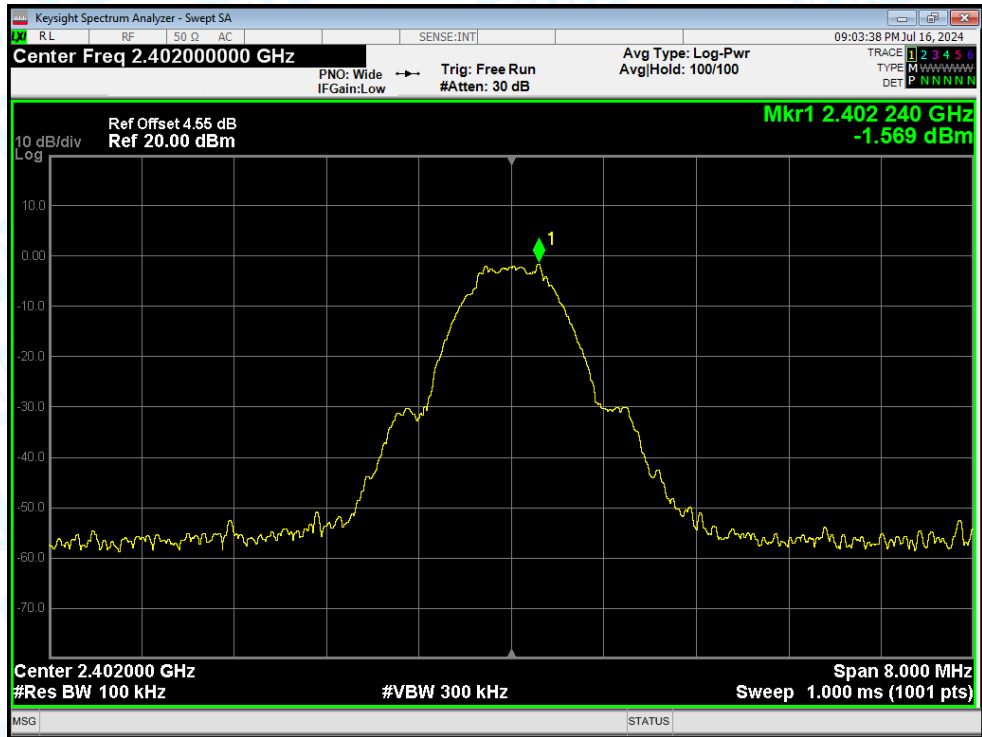


## 6. Band Edge

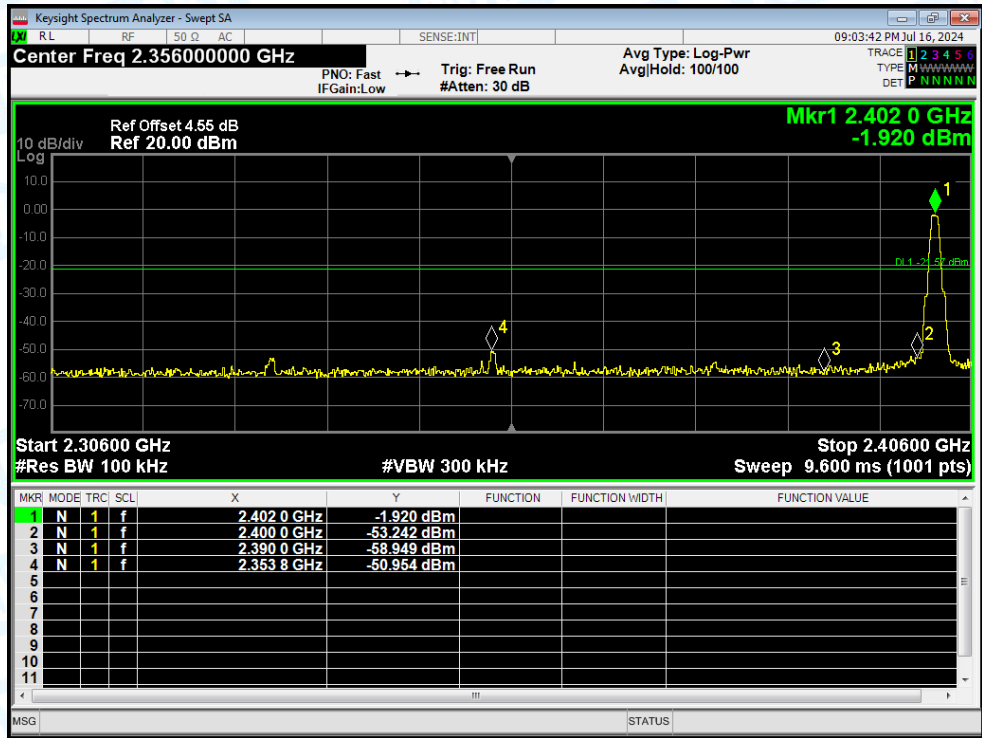
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1Mbps	2402	Ant1	-49.38	-20	Pass
NVNT	BLE 1Mbps	2480	Ant1	-51.82	-20	Pass
NVNT	BLE 2Mbps	2402	Ant1	-48.91	-20	Pass
NVNT	BLE 2Mbps	2480	Ant1	-50.12	-20	Pass

Test Graphs

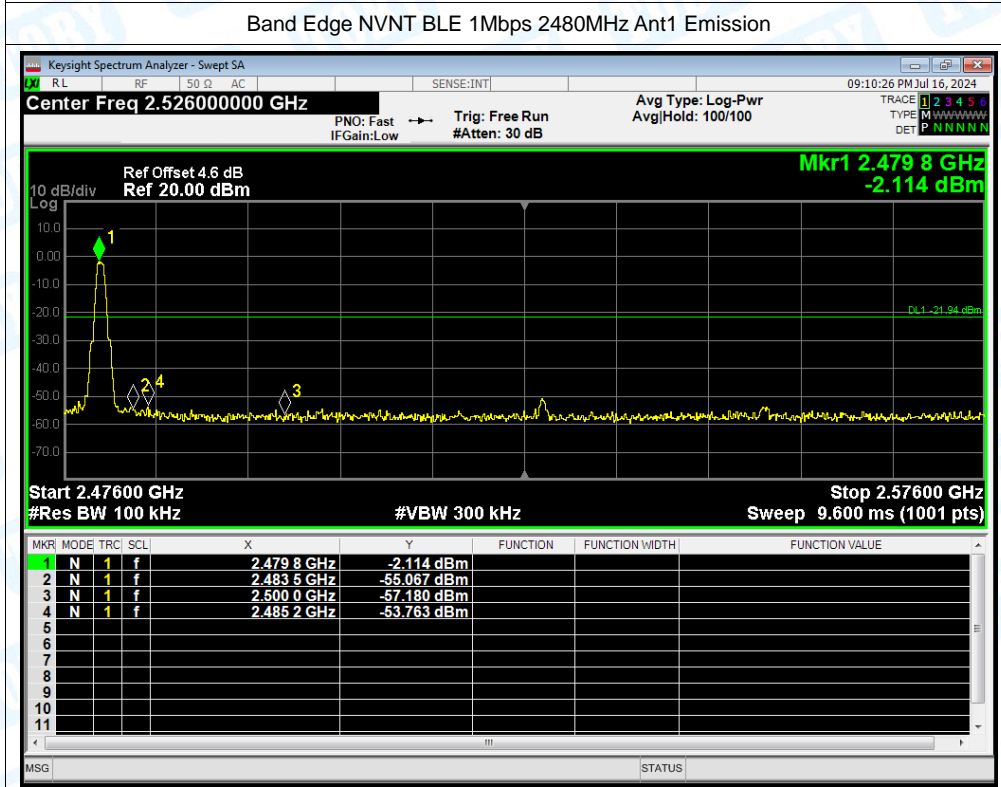
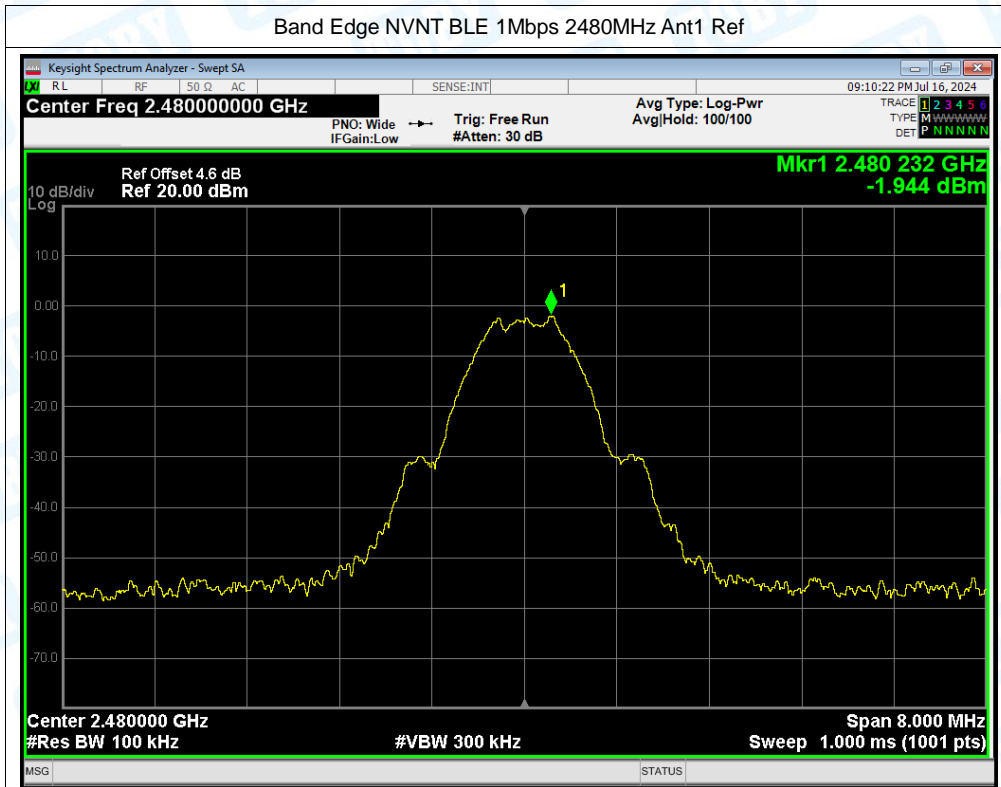
Band Edge NVNT BLE 1Mbps 2402MHz Ant1 Ref



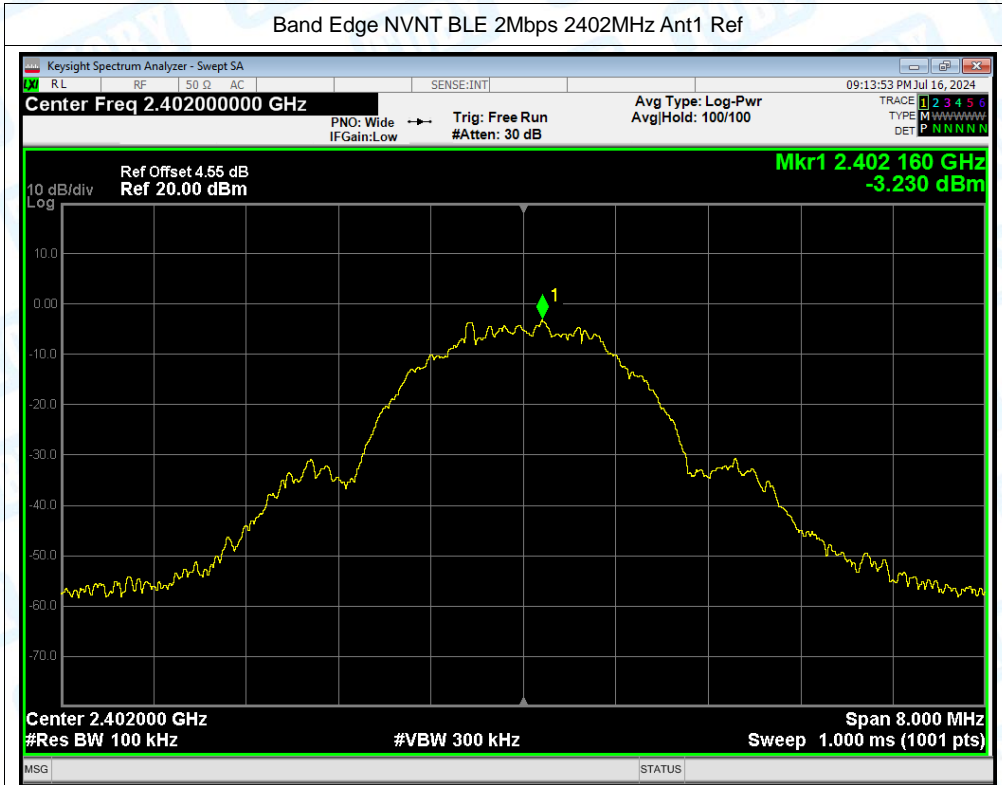
Band Edge NVNT BLE 1Mbps 2402MHz Ant1 Emission



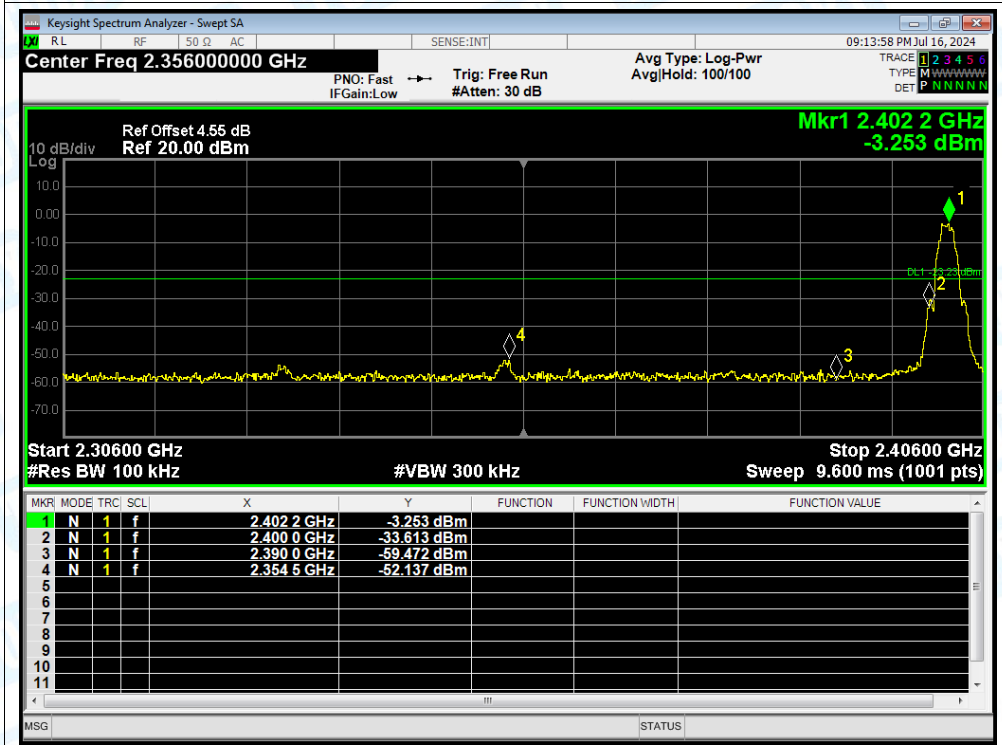




Band Edge NVNT BLE 2Mbps 2402MHz Ant1 Ref

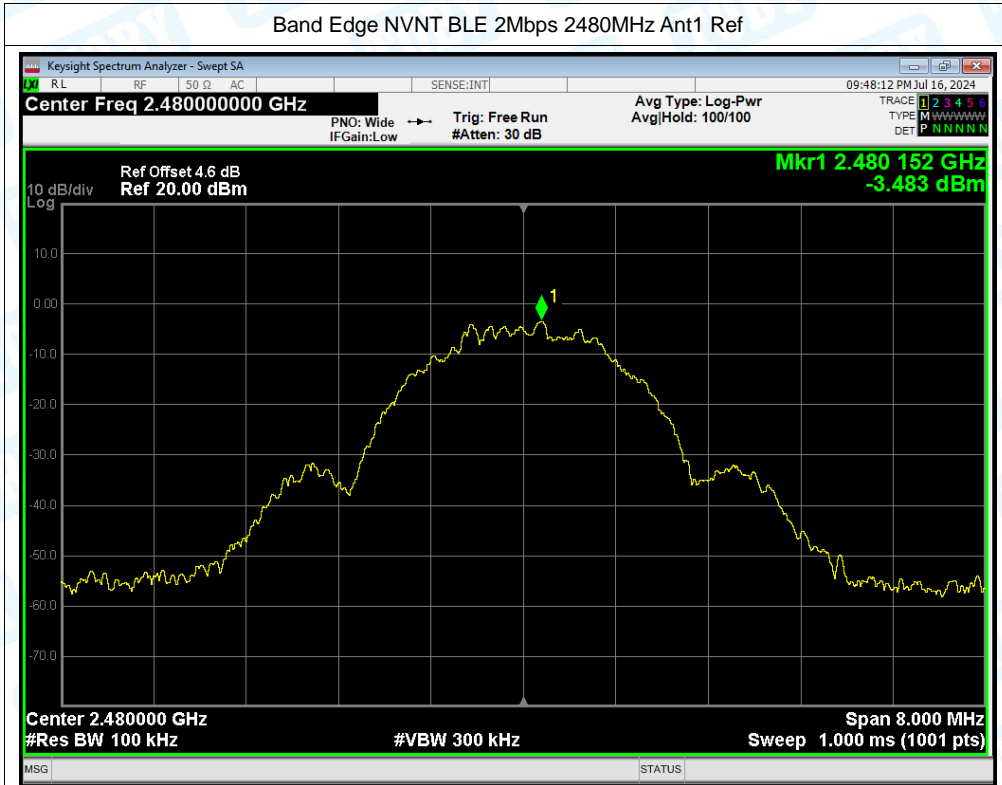


Band Edge NVNT BLE 2Mbps 2402MHz Ant1 Emission

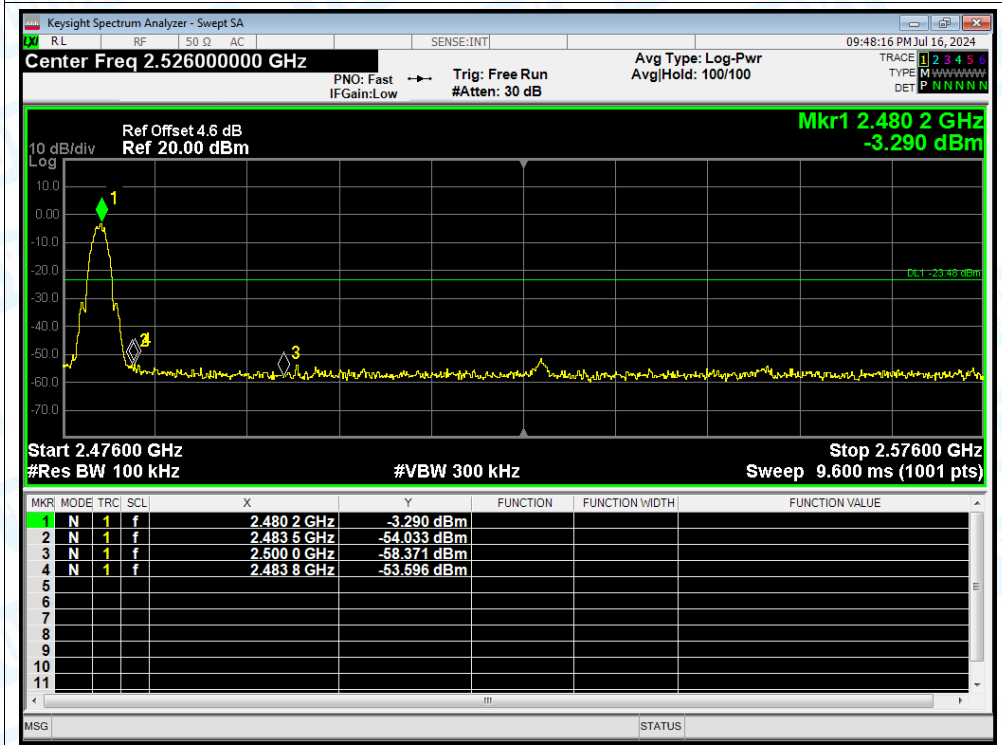




Band Edge NVNT BLE 2Mbps 2480MHz Ant1 Ref



Band Edge NVNT BLE 2Mbps 2480MHz Ant1 Emission



## 7. Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1Mbps	2402	Ant1	-36.51	-20	Pass
NVNT	BLE 1Mbps	2440	Ant1	-36.47	-20	Pass
NVNT	BLE 1Mbps	2480	Ant1	-37.23	-20	Pass
NVNT	BLE 2Mbps	2402	Ant1	-38.77	-20	Pass
NVNT	BLE 2Mbps	2440	Ant1	-36.55	-20	Pass
NVNT	BLE 2Mbps	2480	Ant1	-37.26	-20	Pass

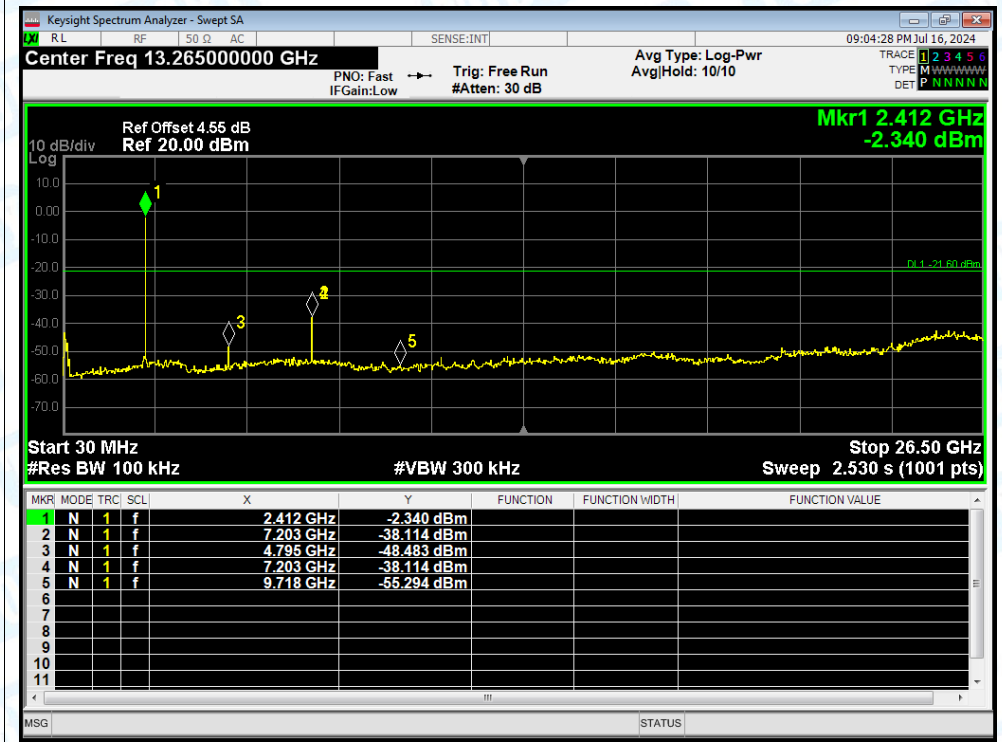


Test Graphs

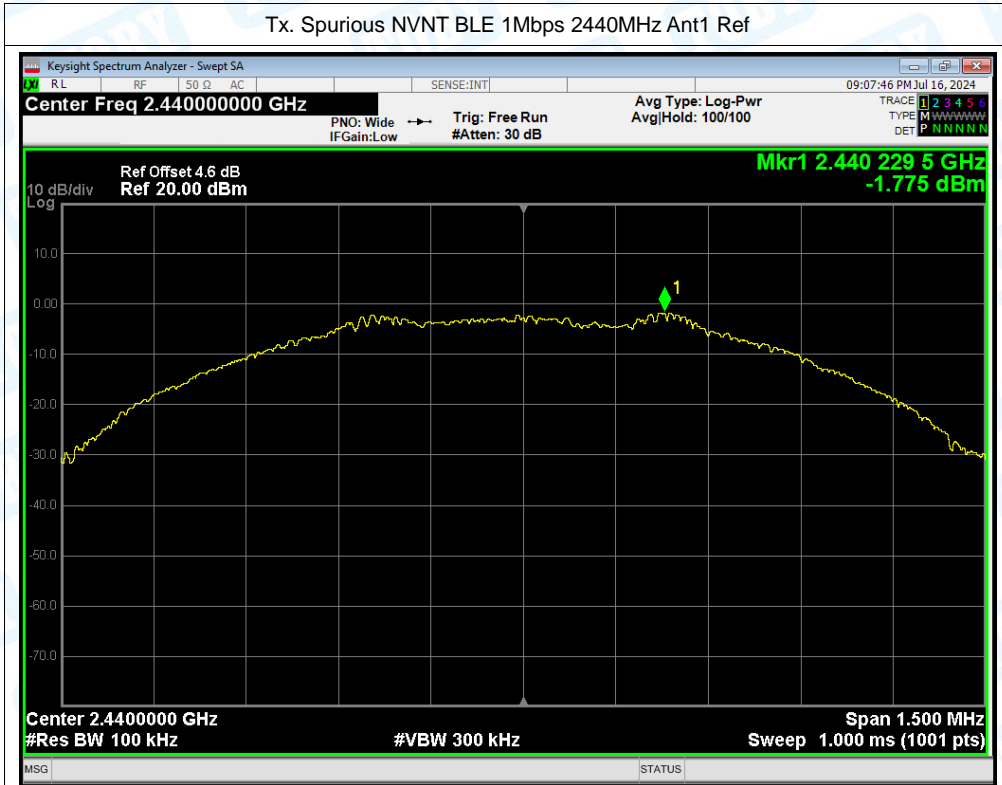
Tx. Spurious NVNT BLE 1Mbps 2402MHz Ant1 Ref



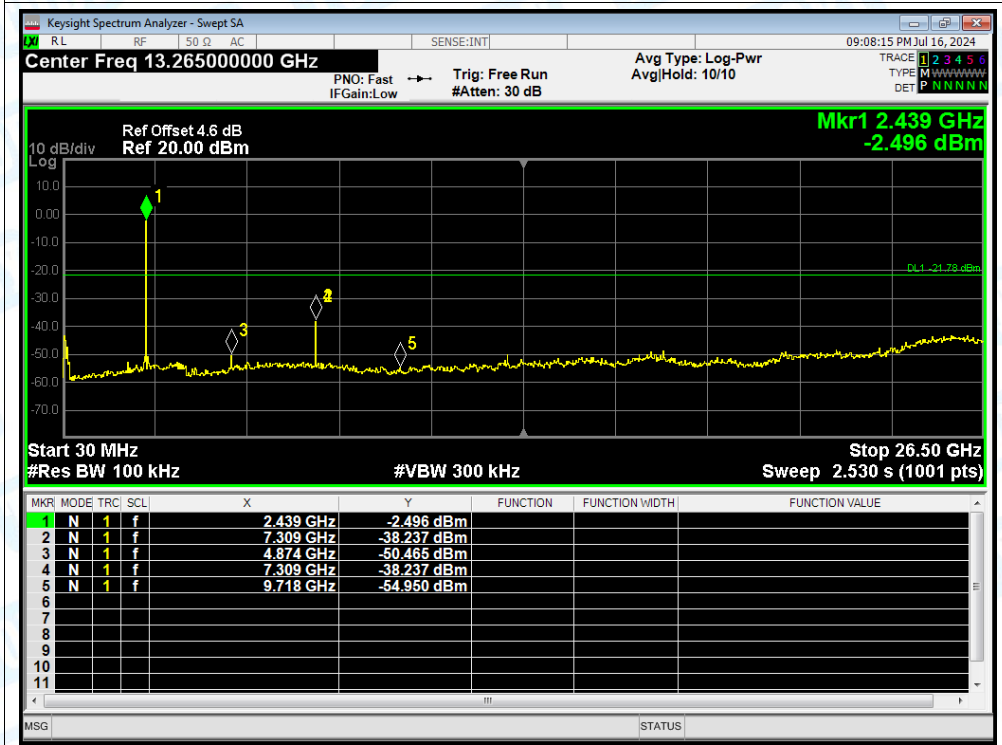
Tx. Spurious NVNT BLE 1Mbps 2402MHz Ant1 Emission



Tx. Spurious NVNT BLE 1Mbps 2440MHz Ant1 Ref

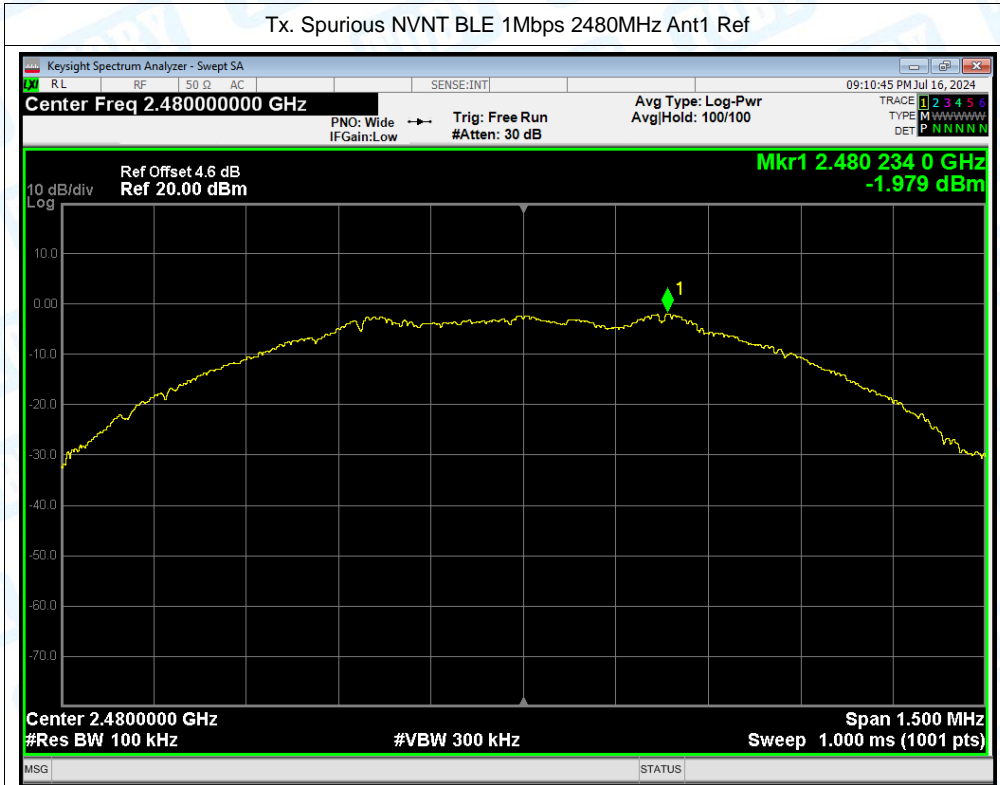


Tx. Spurious NVNT BLE 1Mbps 2440MHz Ant1 Emission

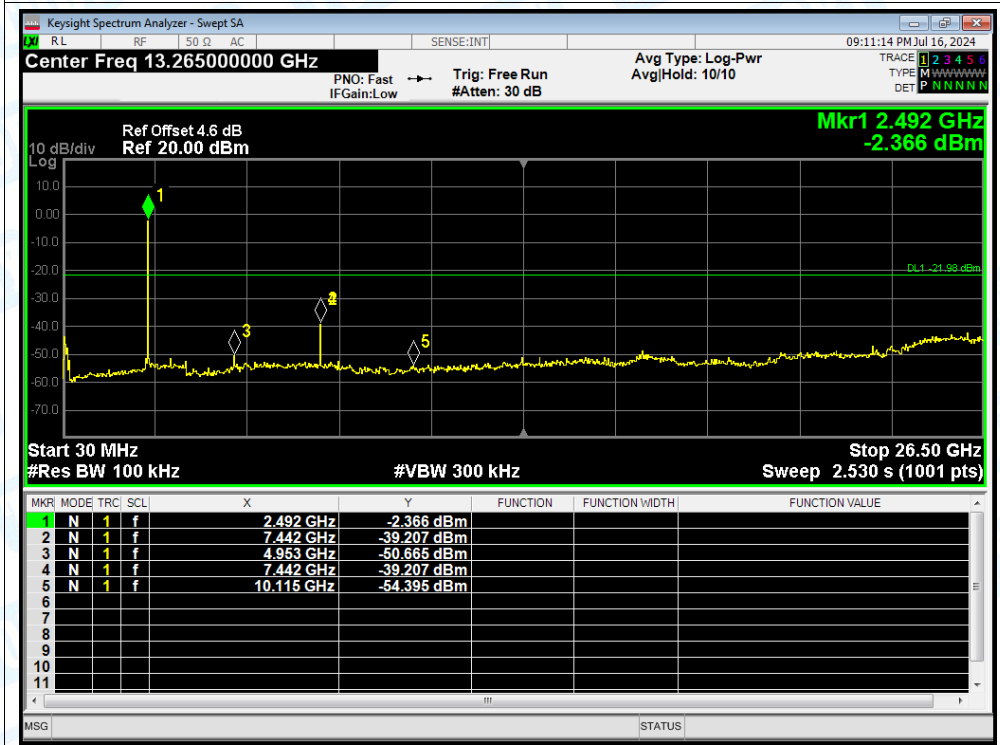




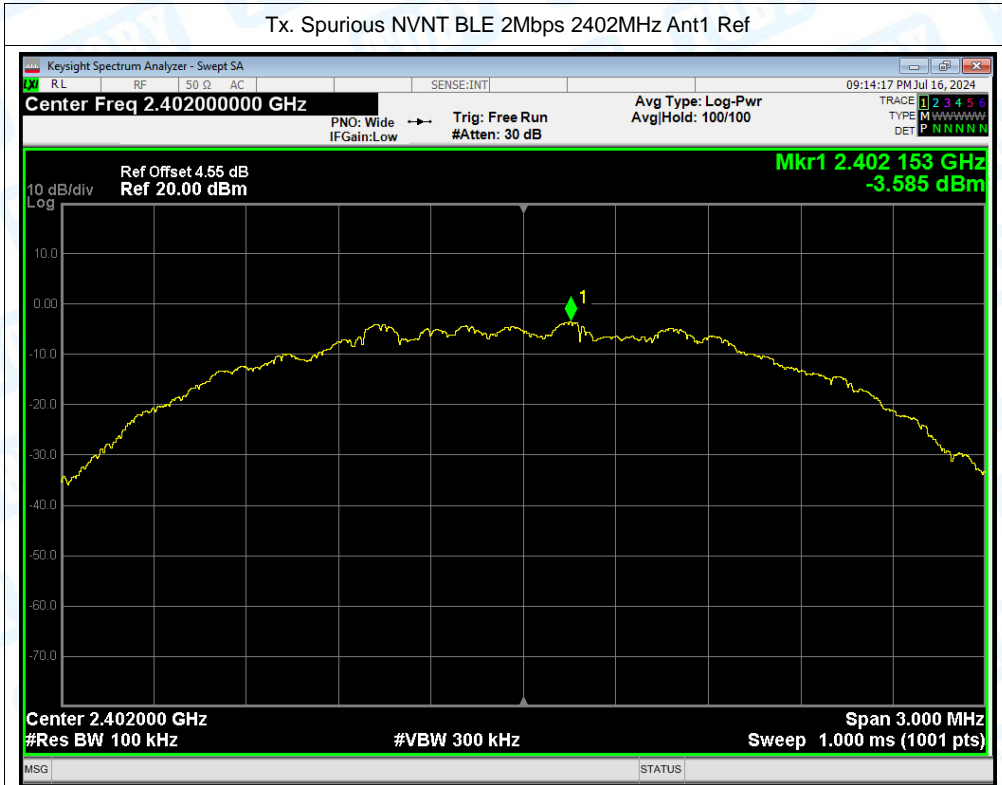
Tx. Spurious NVNT BLE 1Mbps 2480MHz Ant1 Ref



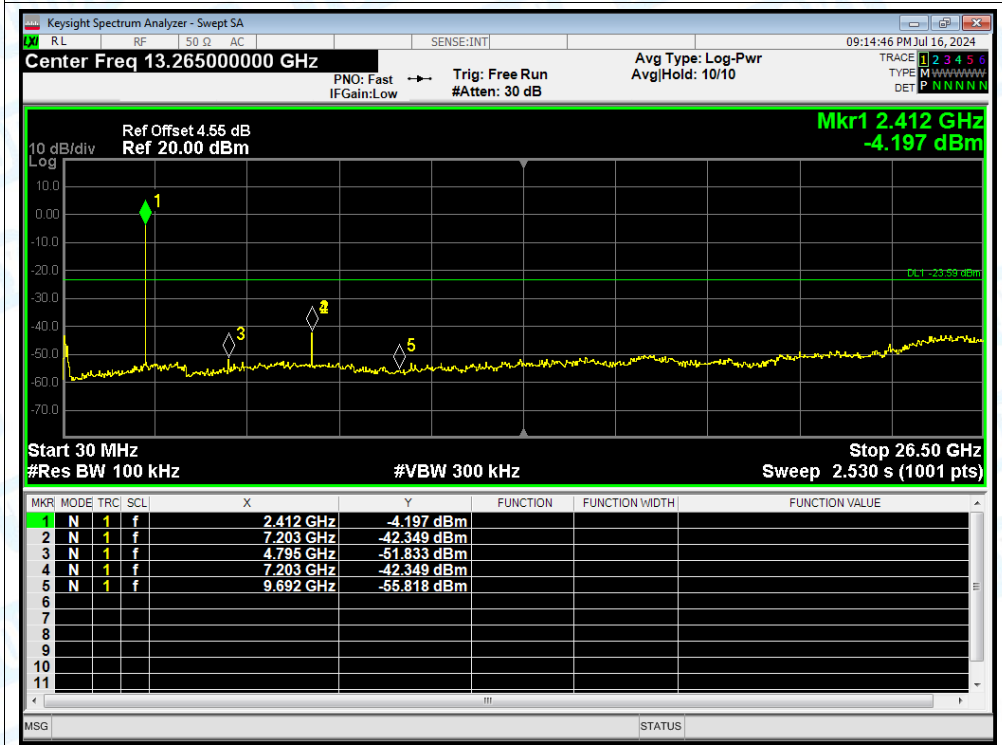
Tx. Spurious NVNT BLE 1Mbps 2480MHz Ant1 Emission



Tx. Spurious NVNT BLE 2Mbps 2402MHz Ant1 Ref

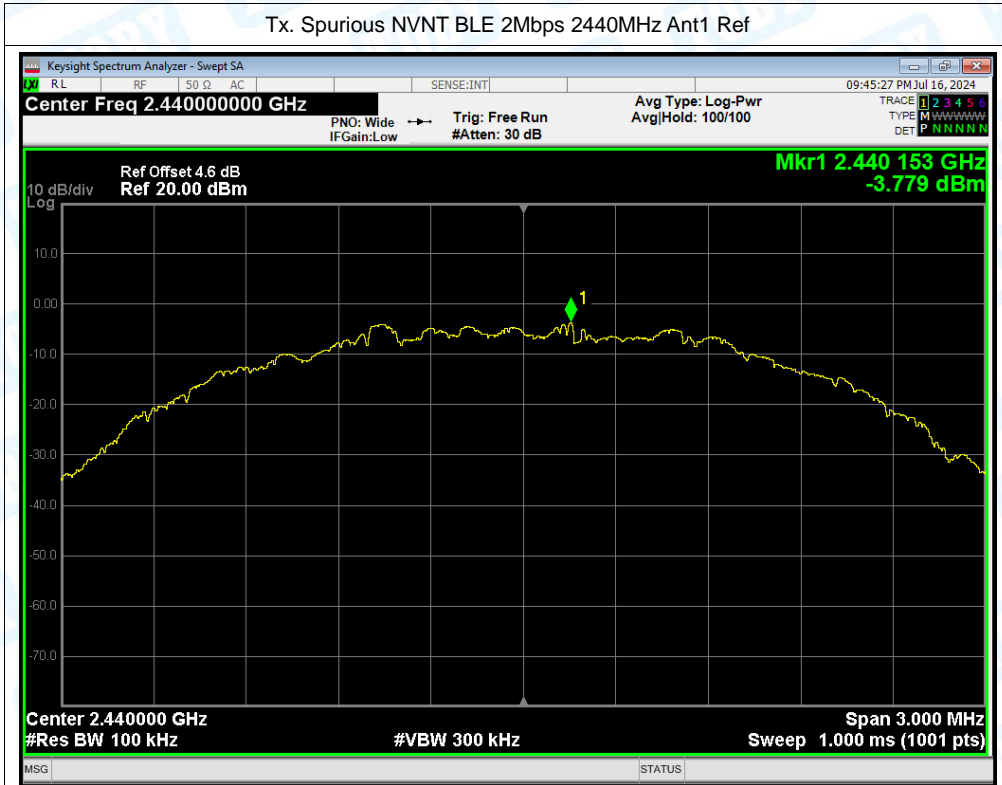


Tx. Spurious NVNT BLE 2Mbps 2402MHz Ant1 Emission

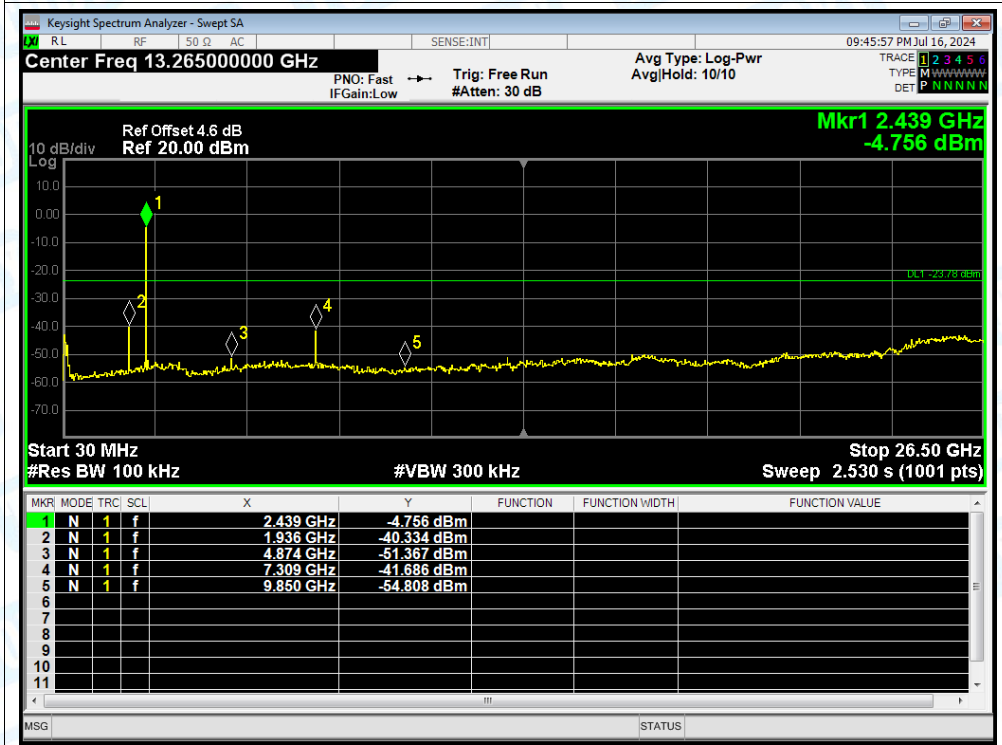




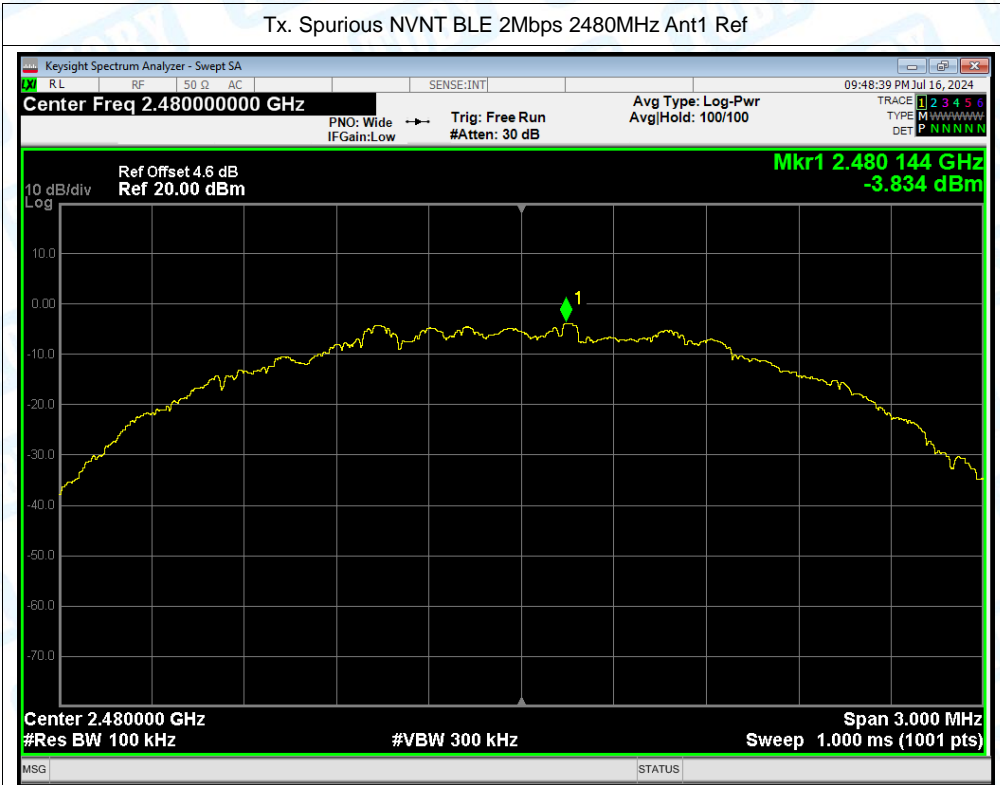
Tx. Spurious NVNT BLE 2Mbps 2440MHz Ant1 Ref



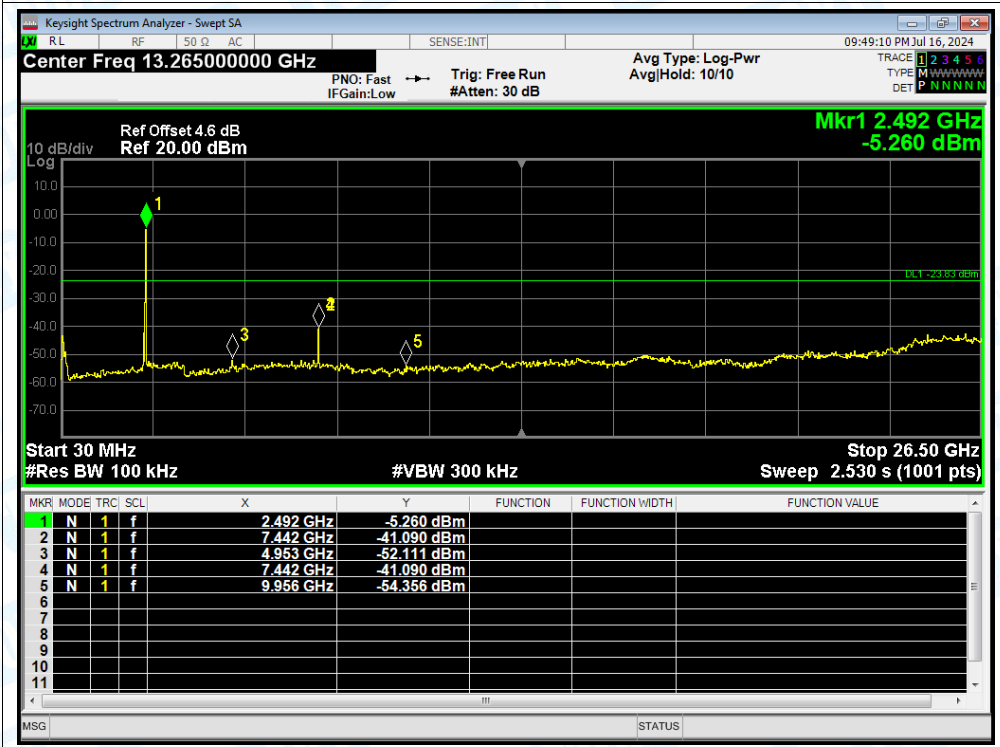
Tx. Spurious NVNT BLE 2Mbps 2440MHz Ant1 Emission



Tx. Spurious NVNT BLE 2Mbps 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 2Mbps 2480MHz Ant1 Emission



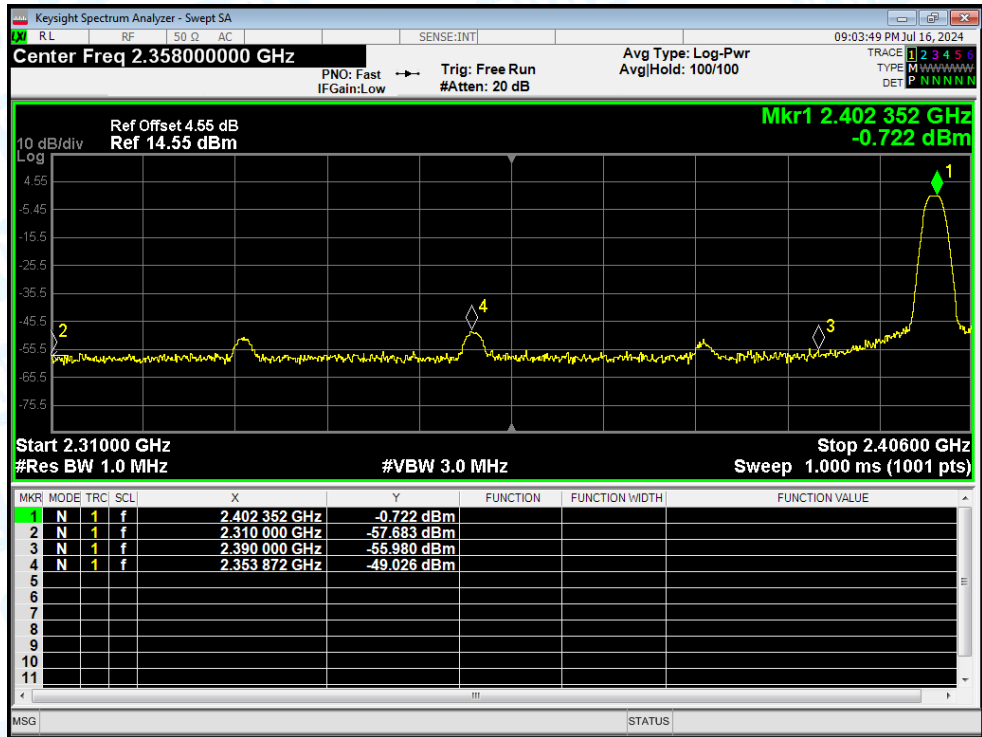


## 8. Restrict Band

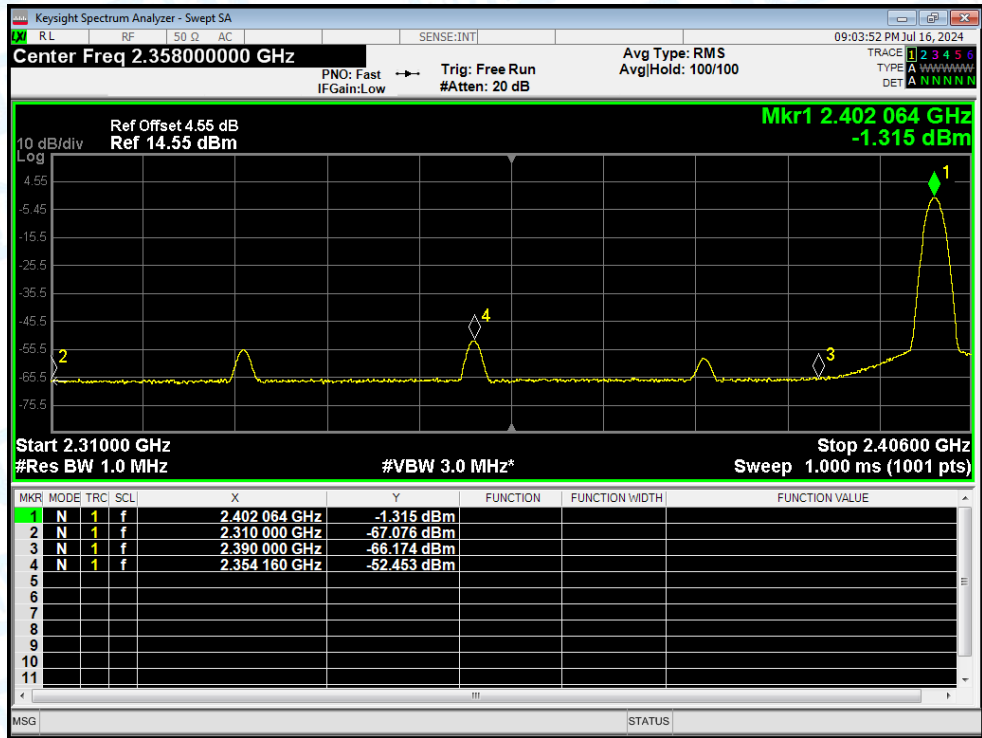
Condition	Mode	Frequency (MHz)	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	BLE 1Mbps	2402	2310	-57.68	2	-	39.58	Peak	74	Pass
NVNT	BLE 1Mbps	2402	2310	-67.08	2	0	30.18	Average	54	Pass
NVNT	BLE 1Mbps	2402	2353.872	-49.03	2	-	48.23	Peak	74	Pass
NVNT	BLE 1Mbps	2402	2354.16	-52.45	2	0	44.81	Average	54	Pass
NVNT	BLE 1Mbps	2402	2390	-55.98	2	-	41.28	Peak	74	Pass
NVNT	BLE 1Mbps	2402	2390	-66.17	2	0	31.09	Average	54	Pass
NVNT	BLE 1Mbps	2480	2483.5	-48.01	2	-	49.25	Peak	74	Pass
NVNT	BLE 1Mbps	2480	2483.5	-57.18	2	0	40.08	Average	54	Pass
NVNT	BLE 1Mbps	2480	2483.512	-48.01	2	-	49.25	Peak	74	Pass
NVNT	BLE 1Mbps	2480	2483.656	-57	2	0	40.26	Average	54	Pass
NVNT	BLE 1Mbps	2480	2500	-57.4	2	-	39.86	Peak	74	Pass
NVNT	BLE 1Mbps	2480	2500	-66.31	2	0	30.95	Average	54	Pass
NVNT	BLE 2Mbps	2402	2310	-58.6	2	-	38.66	Peak	74	Pass
NVNT	BLE 2Mbps	2402	2310	-66.63	2	0	30.63	Average	54	Pass
NVNT	BLE 2Mbps	2402	2354.448	-49.29	2	-	47.97	Peak	74	Pass
NVNT	BLE 2Mbps	2402	2354.256	-53.4	2	0	43.86	Average	54	Pass
NVNT	BLE 2Mbps	2402	2390	-57.29	2	-	39.97	Peak	74	Pass
NVNT	BLE 2Mbps	2402	2390	-65.63	2	0	31.63	Average	54	Pass
NVNT	BLE 2Mbps	2480	2483.5	-46.07	2	-	51.19	Peak	74	Pass
NVNT	BLE 2Mbps	2480	2483.5	-54.75	2	0	42.51	Average	54	Pass
NVNT	BLE 2Mbps	2480	2483.512	-46.07	2	-	51.19	Peak	74	Pass
NVNT	BLE 2Mbps	2480	2483.512	-54.75	2	0	42.51	Average	54	Pass
NVNT	BLE 2Mbps	2480	2500	-57.41	2	-	39.85	Peak	74	Pass
NVNT	BLE 2Mbps	2480	2500	-65.75	2	0	31.51	Average	54	Pass

Test Graphs

Restrict Band NVNT BLE 1Mbps 2402MHz Ant1 Peak

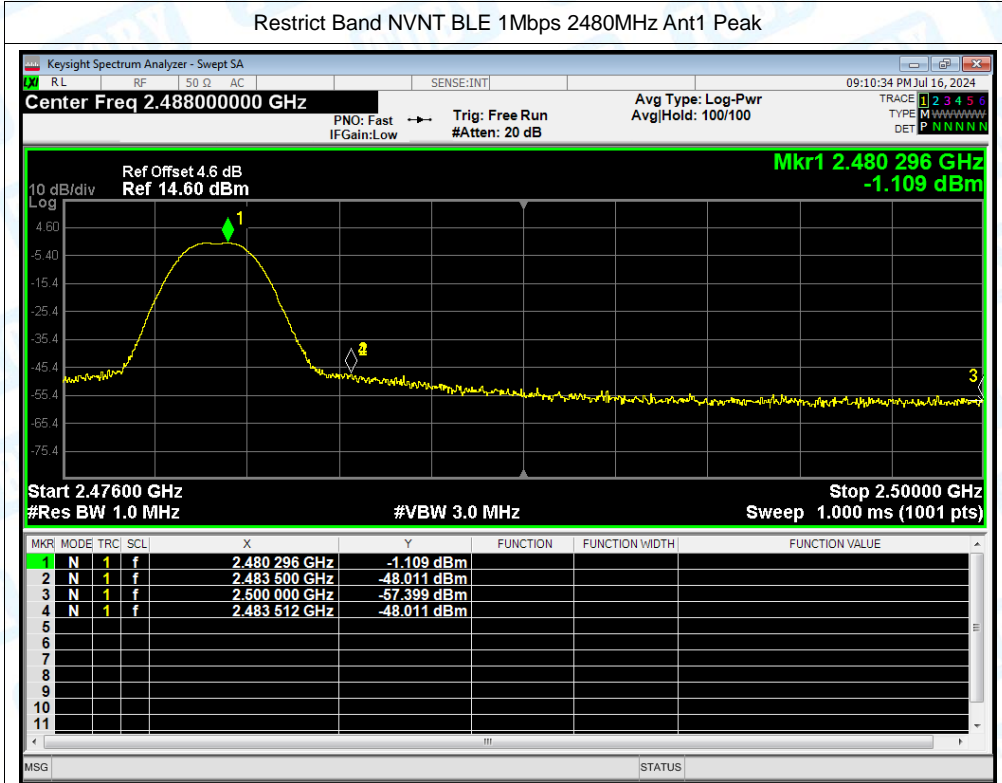


Restrict Band NVNT BLE 1Mbps 2402MHz Ant1 Average

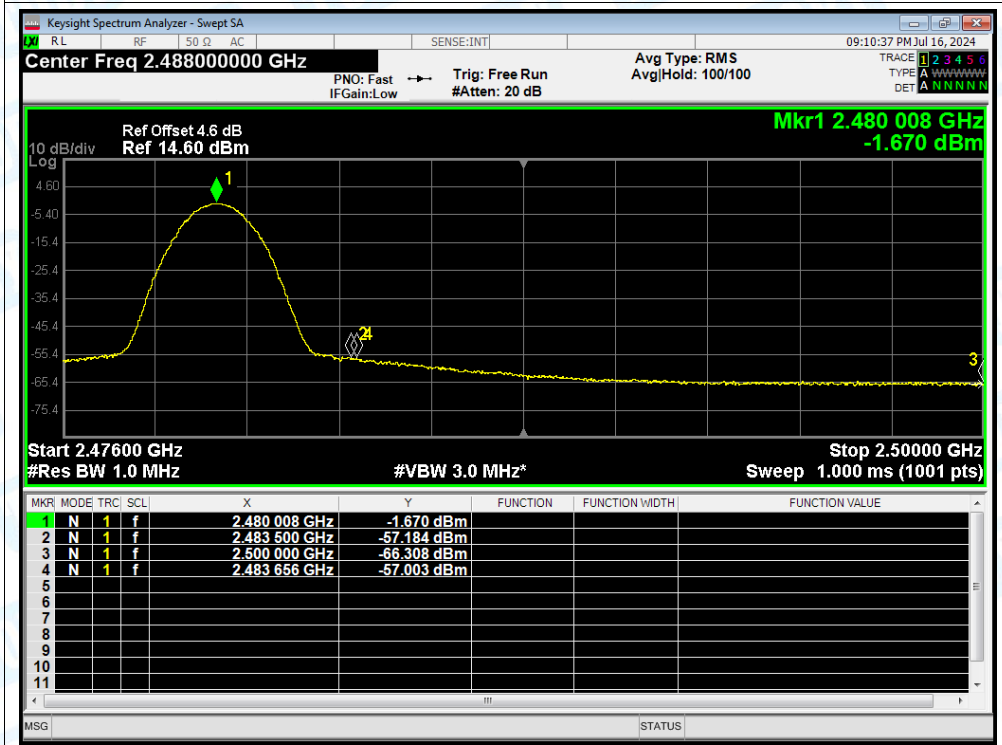




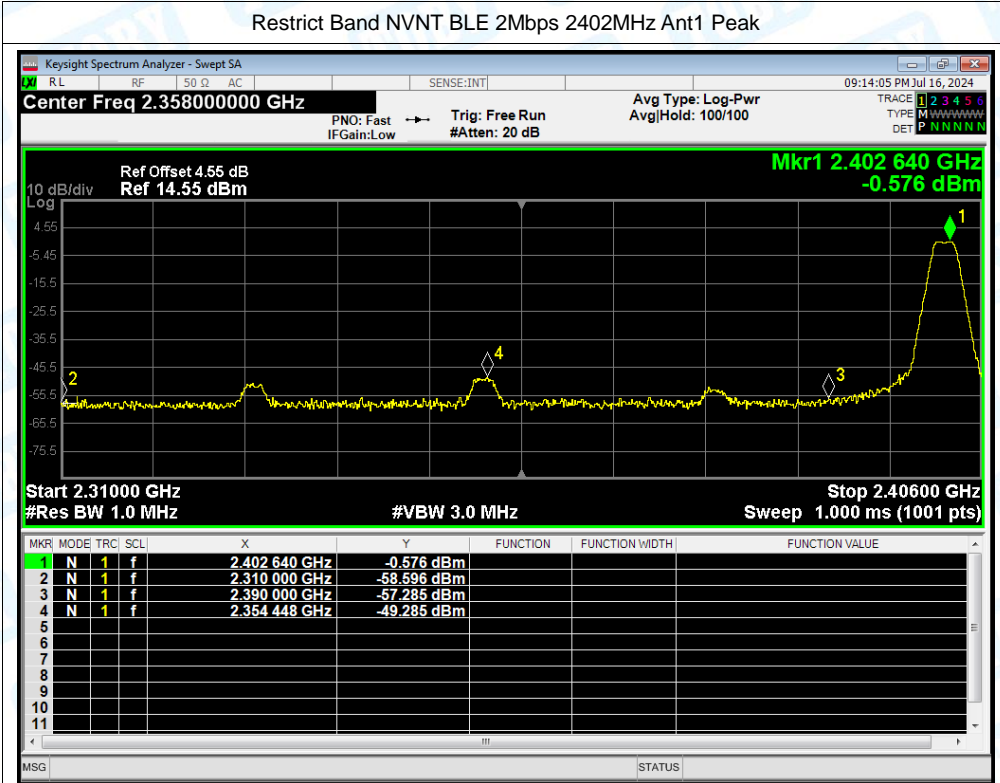
Restrict Band NVNT BLE 1Mbps 2480MHz Ant1 Peak



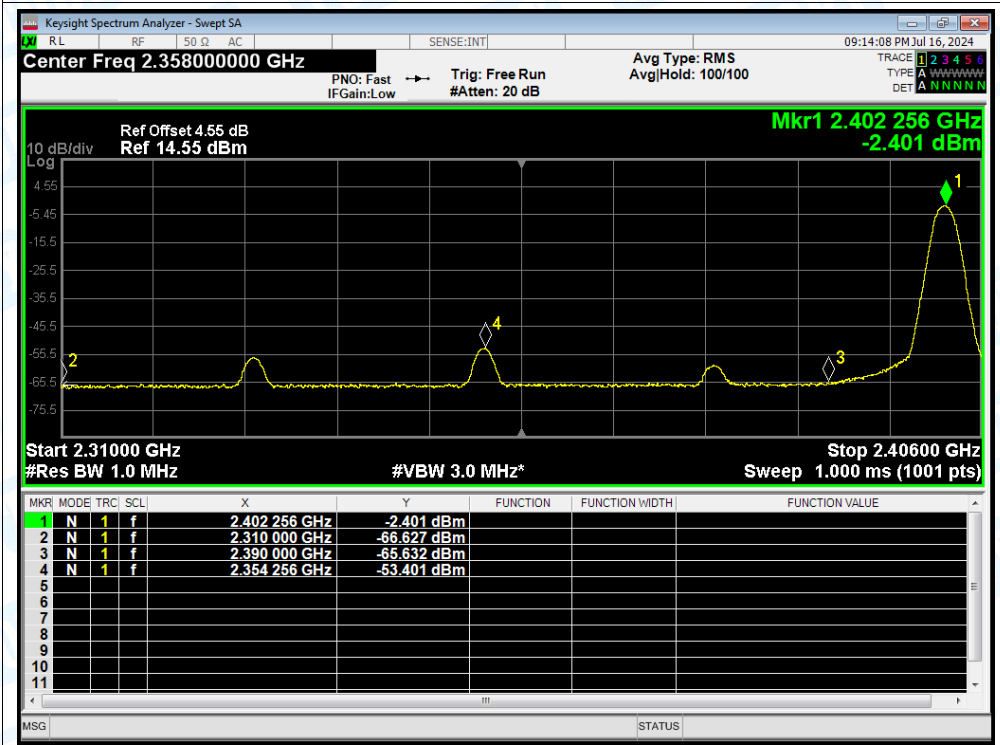
Restrict Band NVNT BLE 1Mbps 2480MHz Ant1 Average



Restrict Band NVNT BLE 2Mbps 2402MHz Ant1 Peak

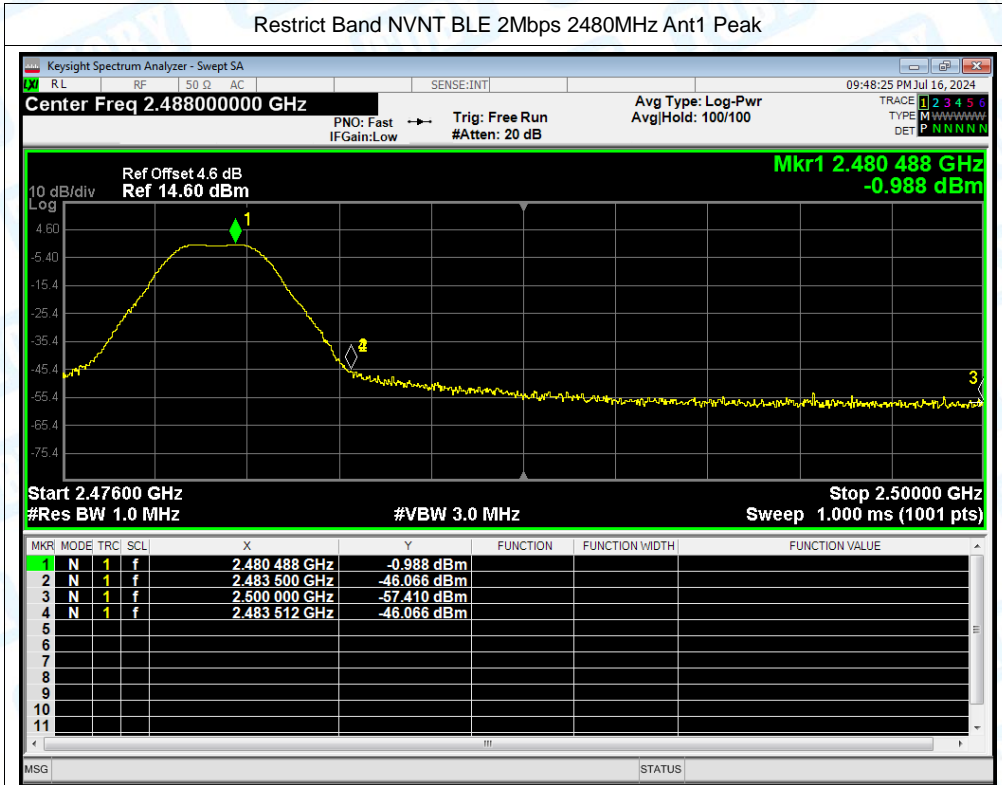


Restrict Band NVNT BLE 2Mbps 2402MHz Ant1 Average

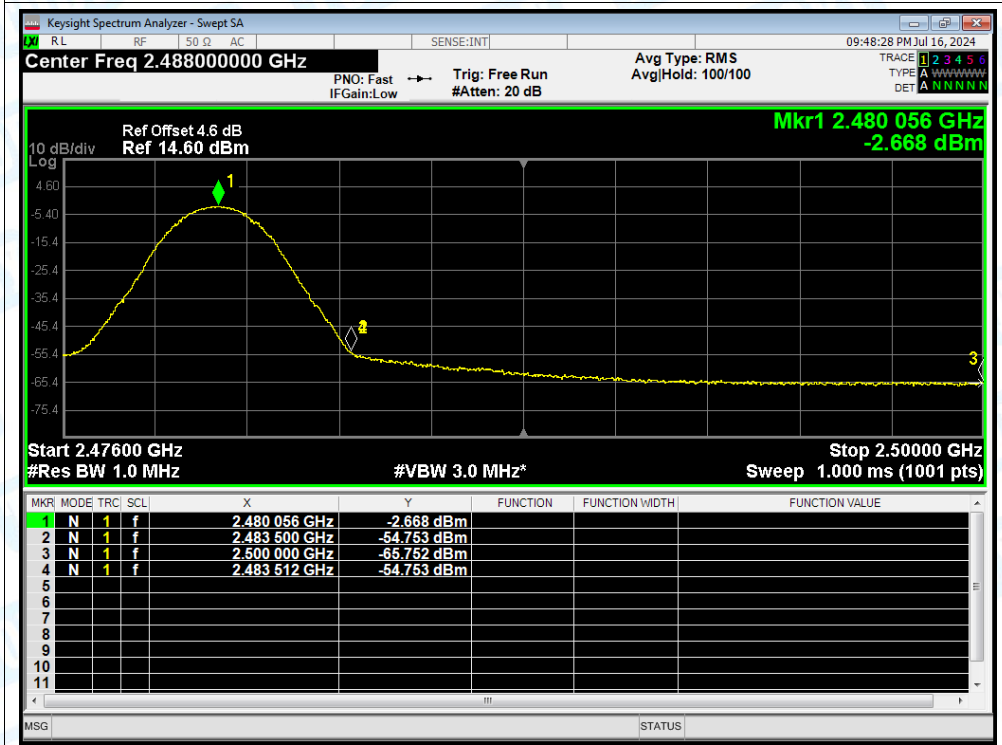




Restrict Band NVNT BLE 2Mbps 2480MHz Ant1 Peak



Restrict Band NVNT BLE 2Mbps 2480MHz Ant1 Average



----END OF REPORT----