RF Test Data for Bluetooth LE (Conducted Measurements)

General Description of EUT	
Product Name:	SMART LOCK
Test Model:	K1 Plus
Sample ID:	202311-0084-1-2#
Environmental Conditions	
Temperature:	25℃
Relative Humidity:	55%
Test Voltage:	DC 6V
Test Engineer:	Zhou zhen
Note: For a more detailed features description, please refer to the report TBR-C-202311-0084-1 The report only show the worst case data.	

Contents

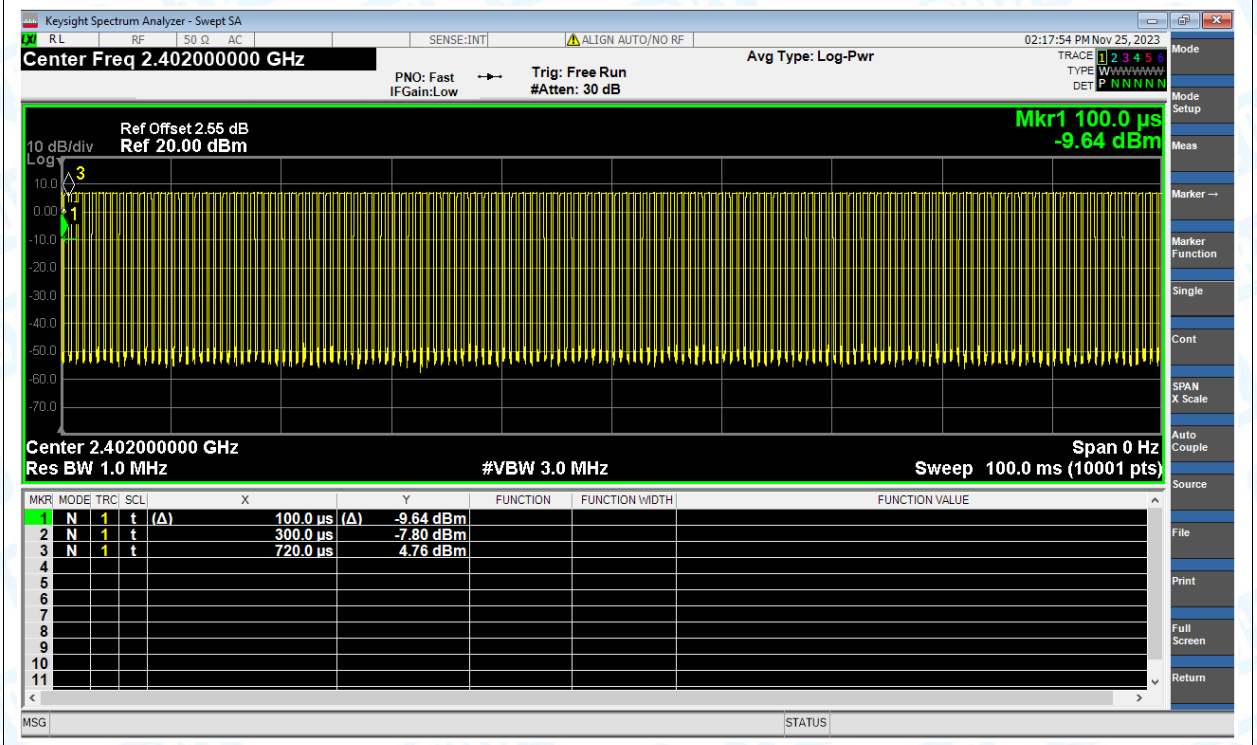
1. Duty Cycle....3
2. Maximum Conducted Output Power....7
3. -6dB Bandwidth....11
4. Occupied Channel Bandwidth....15
5. Maximum Power Spectral Density Level....19
6. Band Edge....23
7. Conducted RF Spurious Emission....28
8. Restrict Band....35

1. Duty Cycle

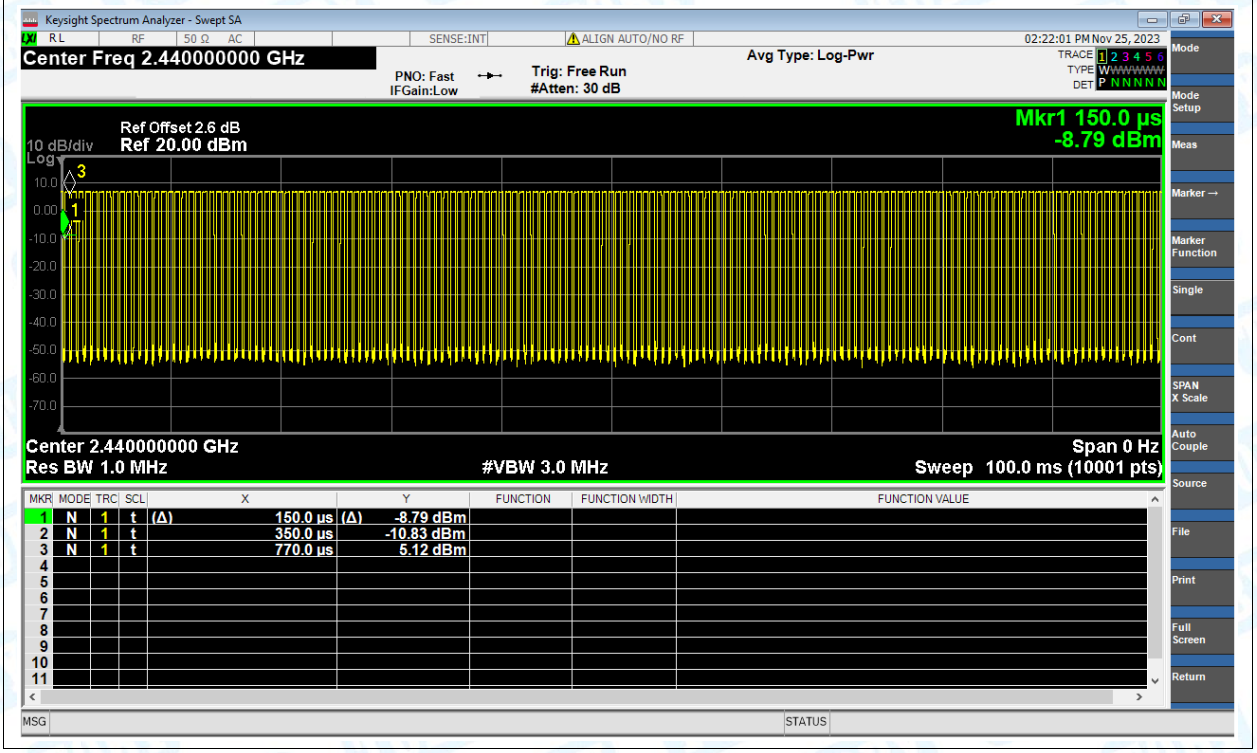
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1Mbps	2402	Ant1	67.74	1.69	2.38
NVNT	BLE 1Mbps	2440	Ant1	67.74	1.69	2.38
NVNT	BLE 1Mbps	2480	Ant1	68.25	1.66	2.33
NVNT	BLE 2Mbps	2402	Ant1	38.1	4.19	4.17
NVNT	BLE 2Mbps	2440	Ant1	38.1	4.19	4.17
NVNT	BLE 2Mbps	2480	Ant1	38.1	4.19	4.17

Test Graphs

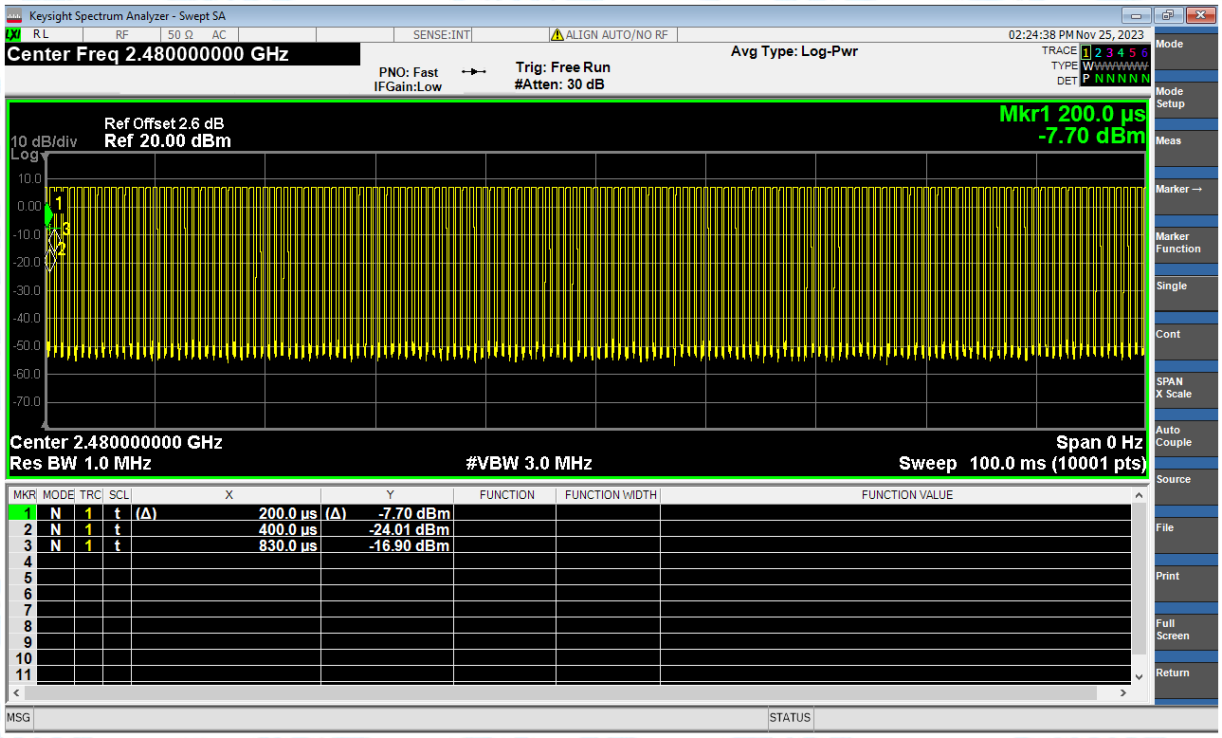
Duty Cycle NVNT BLE 1Mbps 2402MHz Ant1



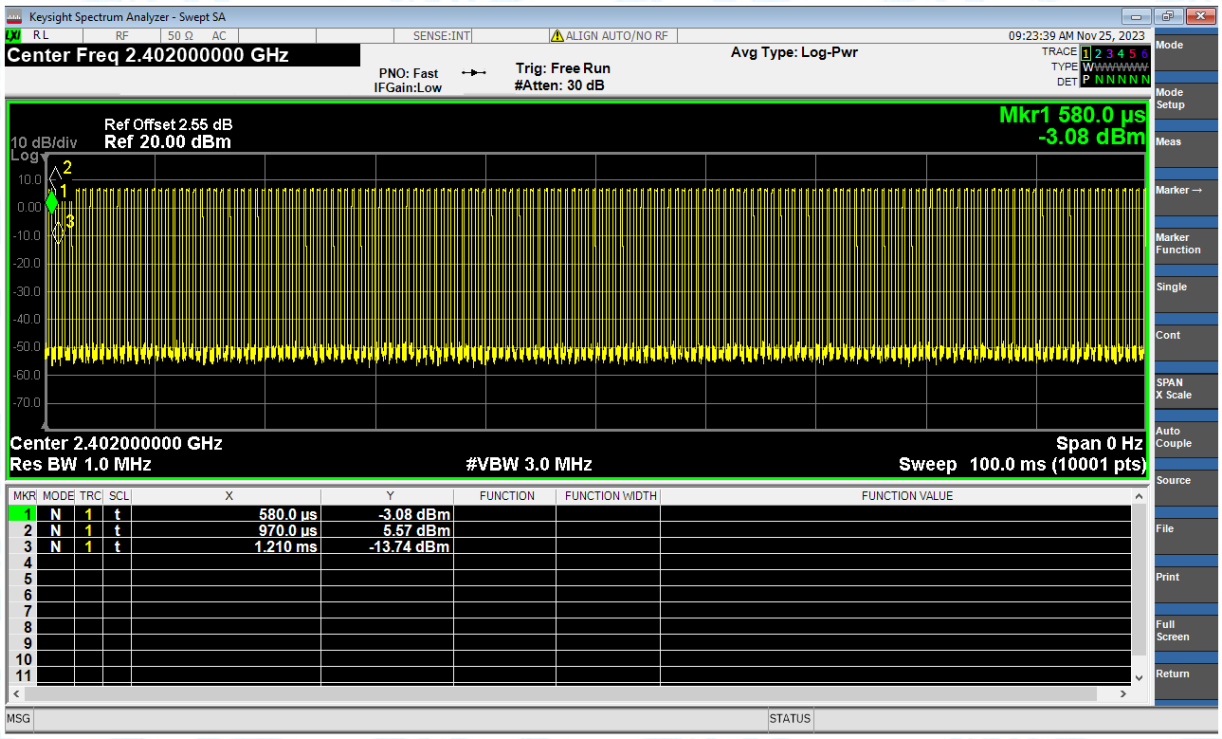
Duty Cycle NVNT BLE 1Mbps 2440MHz Ant1



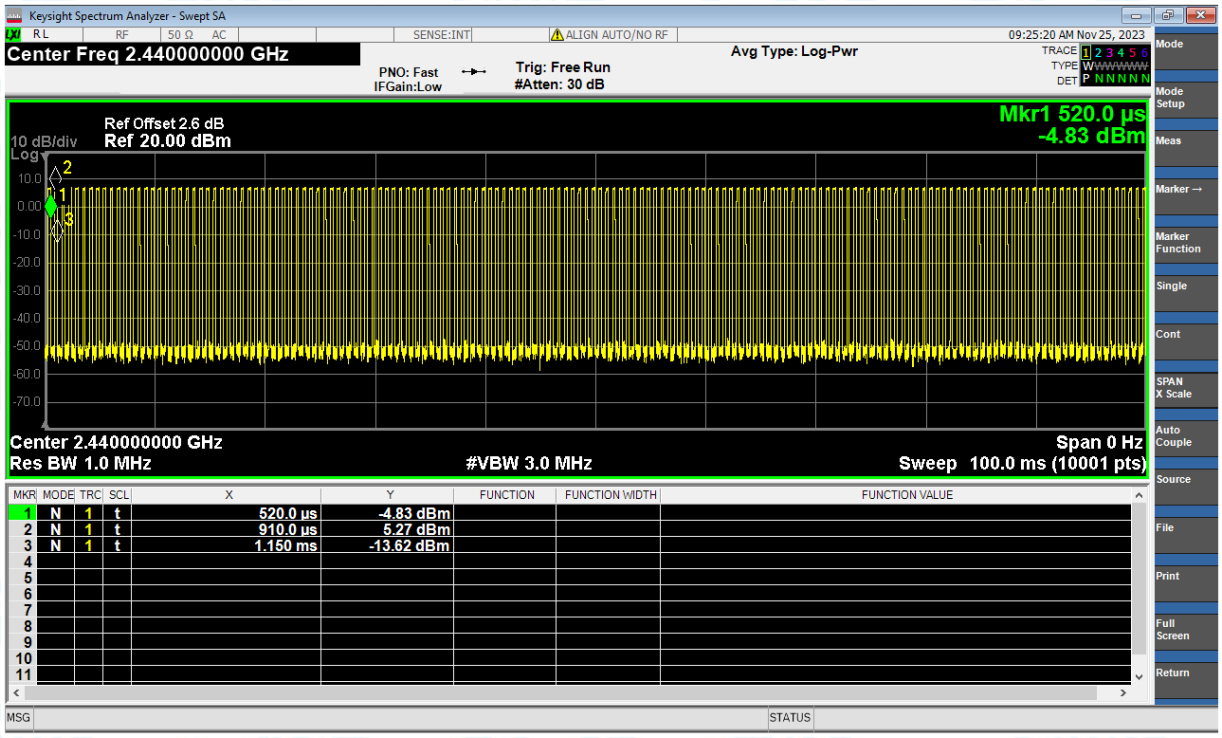
Duty Cycle NVNT BLE 1Mbps 2480MHz Ant1



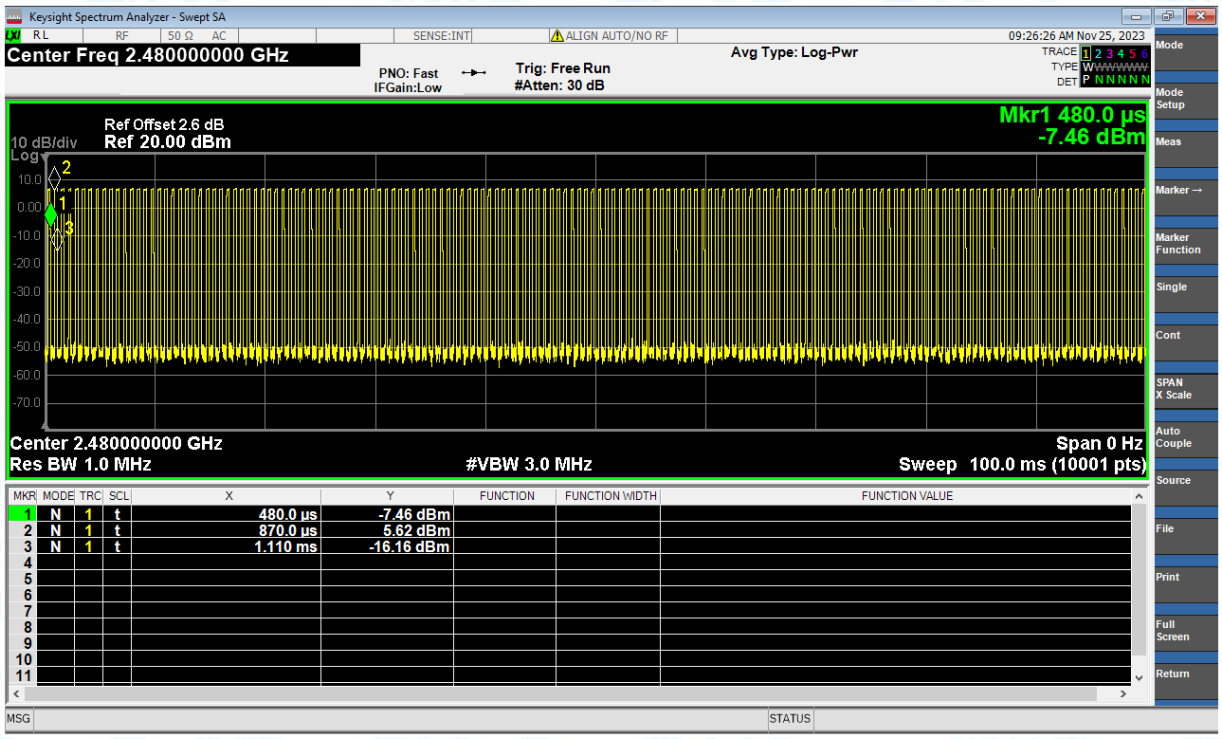
Duty Cycle NVNT BLE 2Mbps 2402MHz Ant1



Duty Cycle NVNT BLE 2Mbps 2440MHz Ant1



Duty Cycle NVNT BLE 2Mbps 2480MHz Ant1

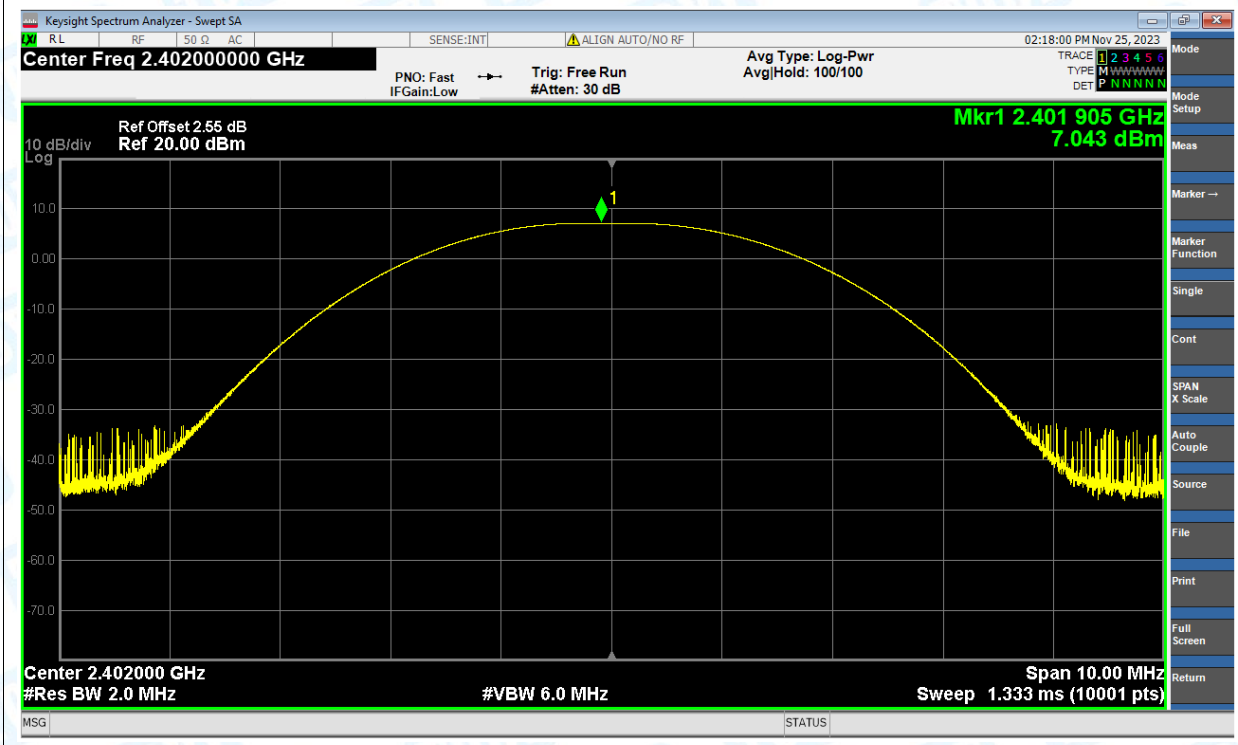


2. Maximum Conducted Output Power

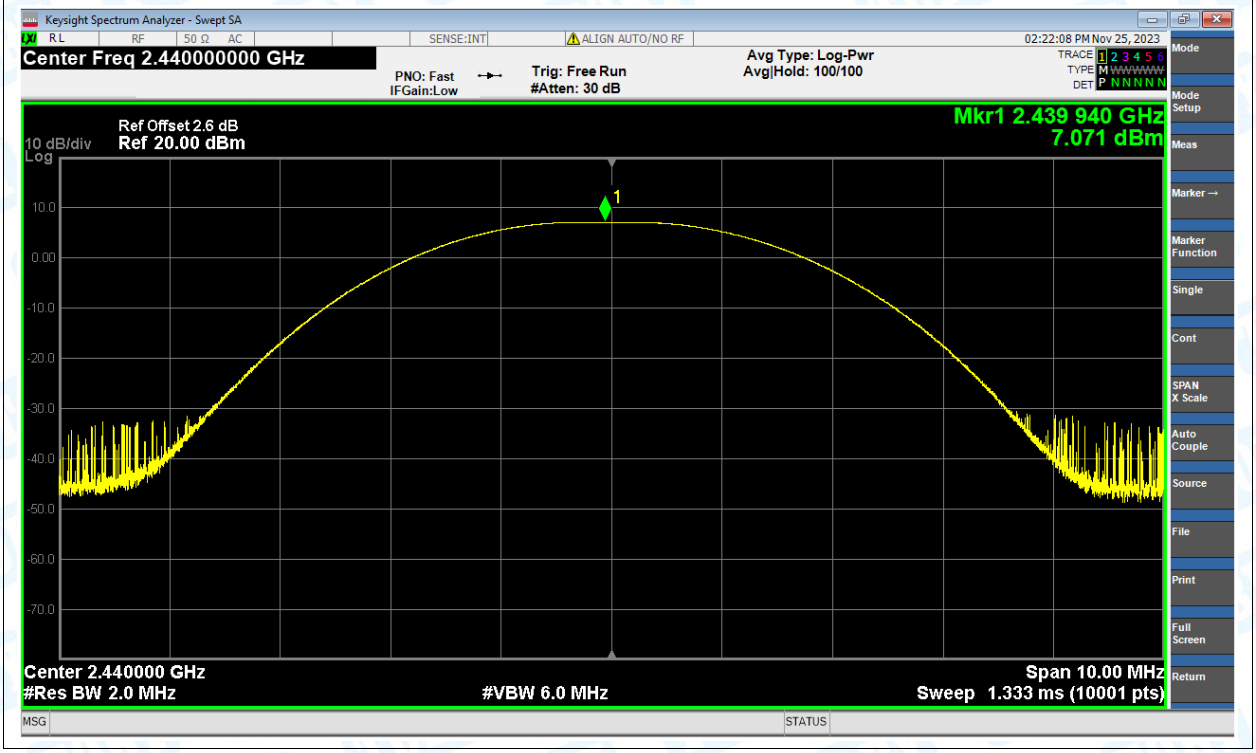
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1Mbps	2402	Ant1	7.043	30	Pass
NVNT	BLE 1Mbps	2440	Ant1	7.071	30	Pass
NVNT	BLE 1Mbps	2480	Ant1	7.174	30	Pass
NVNT	BLE 2Mbps	2402	Ant1	6.113	30	Pass
NVNT	BLE 2Mbps	2440	Ant1	6.322	30	Pass
NVNT	BLE 2Mbps	2480	Ant1	6.429	30	Pass

Test Graphs

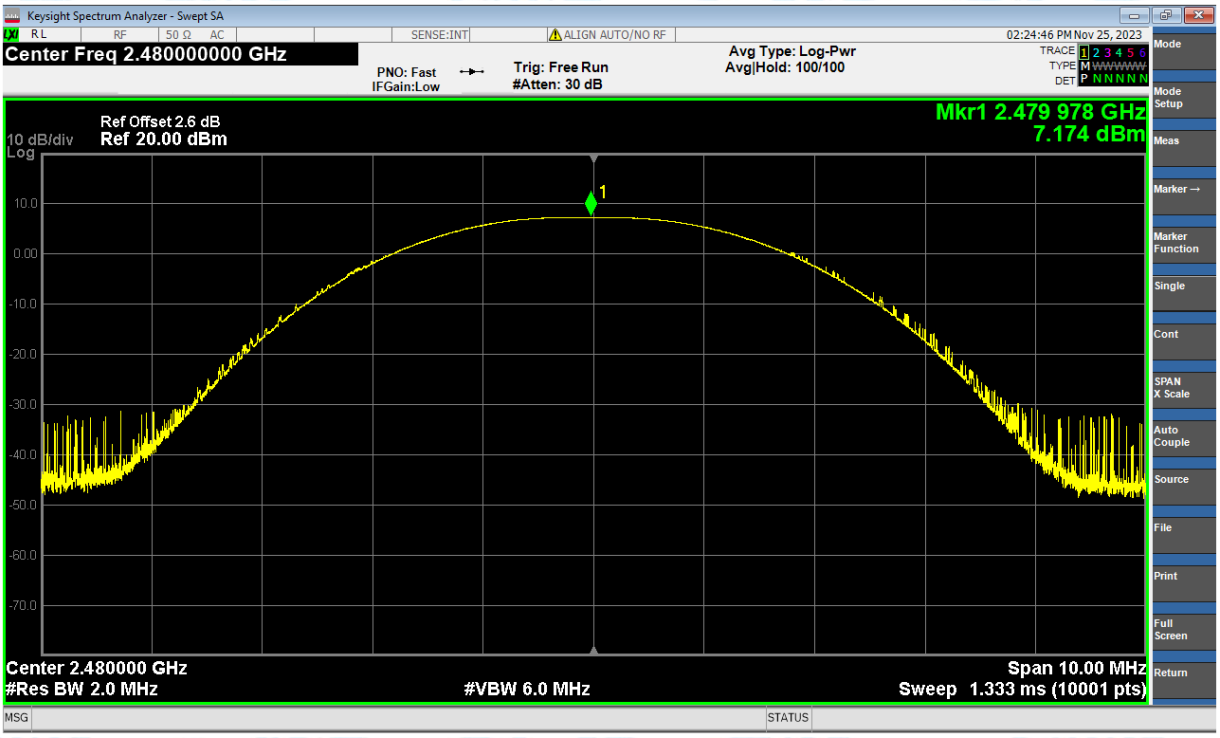
Power NVNT BLE 1Mbps 2402MHz Ant1



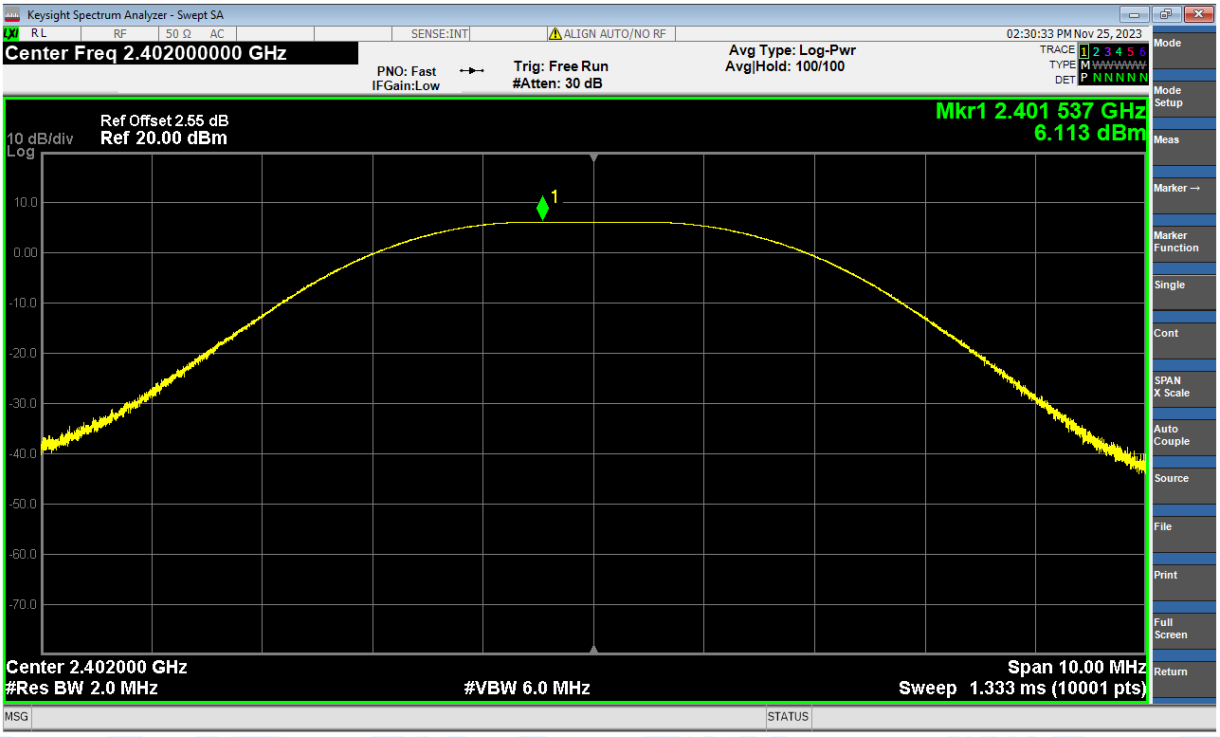
Power NVNT BLE 1Mbps 2440MHz Ant1



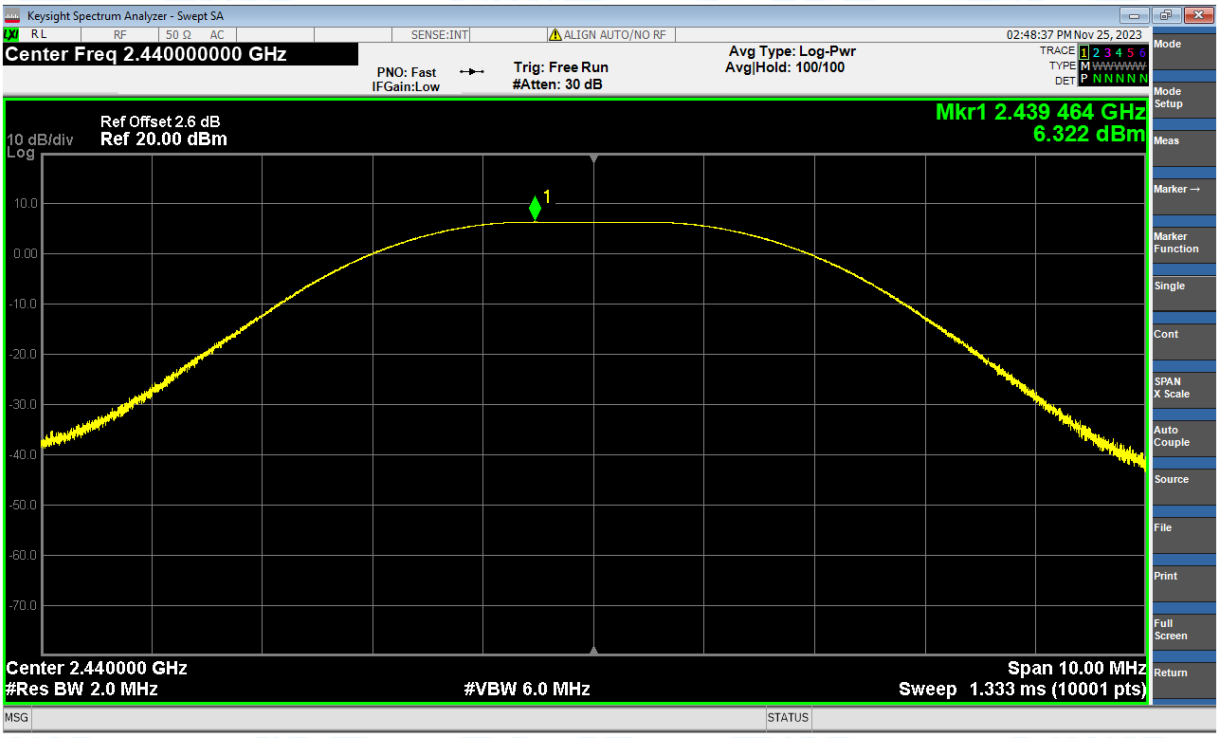
Power NVNT BLE 1Mbps 2480MHz Ant1



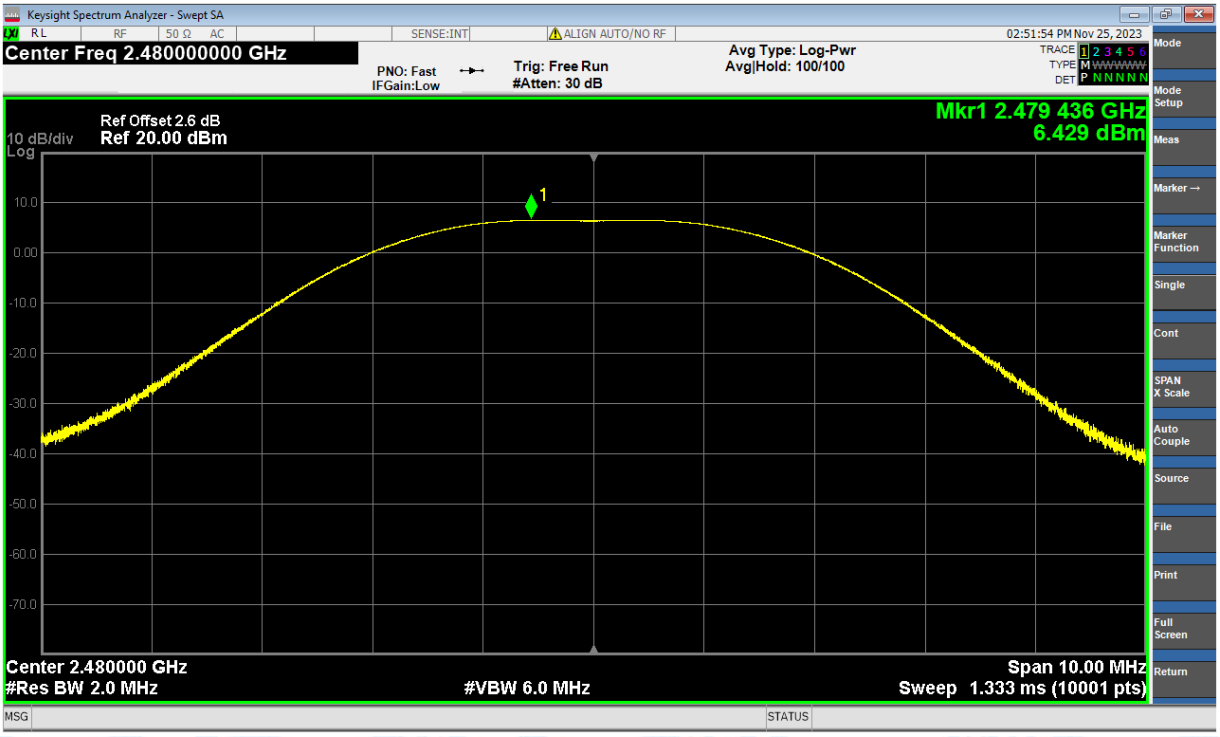
Power NVNT BLE 2Mbps 2402MHz Ant1



Power NVNT BLE 2Mbps 2440MHz Ant1



Power NVNT BLE 2Mbps 2480MHz Ant1

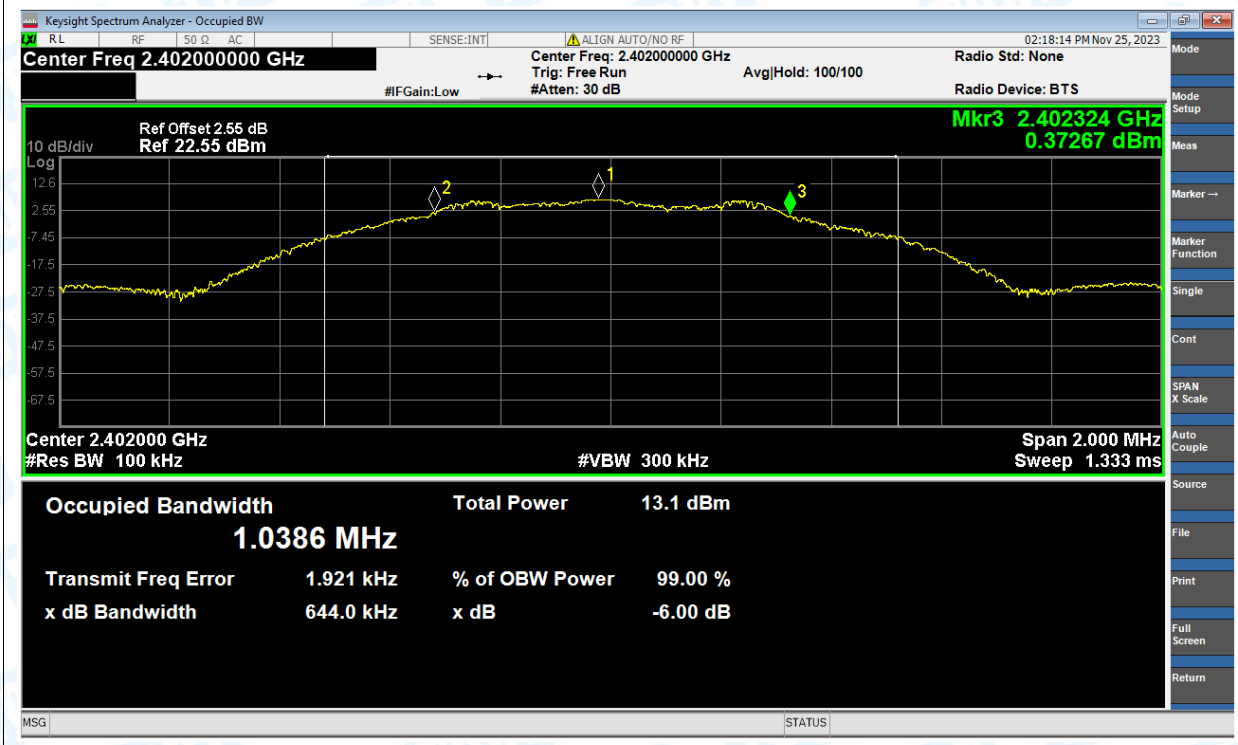


3. -6dB Bandwidth

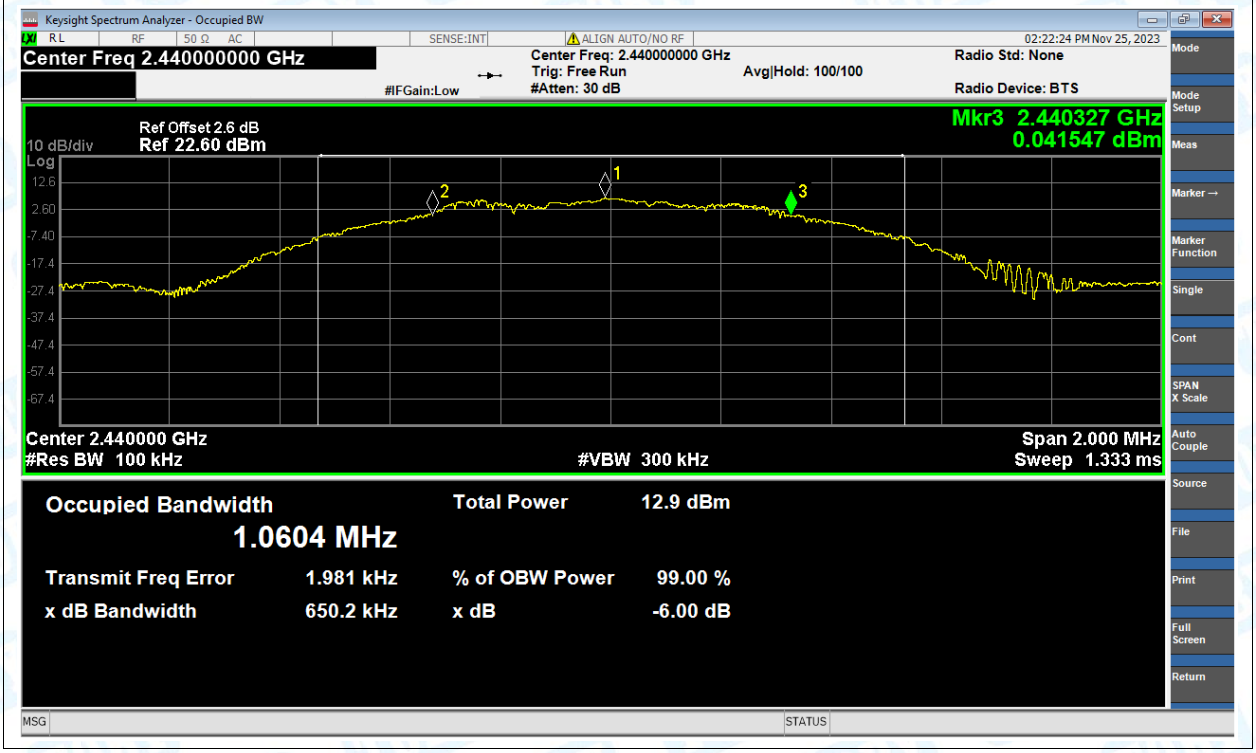
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1Mbps	2402	Ant1	0.64	0.5	Pass
NVNT	BLE 1Mbps	2440	Ant1	0.65	0.5	Pass
NVNT	BLE 1Mbps	2480	Ant1	0.7	0.5	Pass
NVNT	BLE 2Mbps	2402	Ant1	1.55	0.5	Pass
NVNT	BLE 2Mbps	2440	Ant1	1.4	0.5	Pass
NVNT	BLE 2Mbps	2480	Ant1	1.42	0.5	Pass

Test Graphs

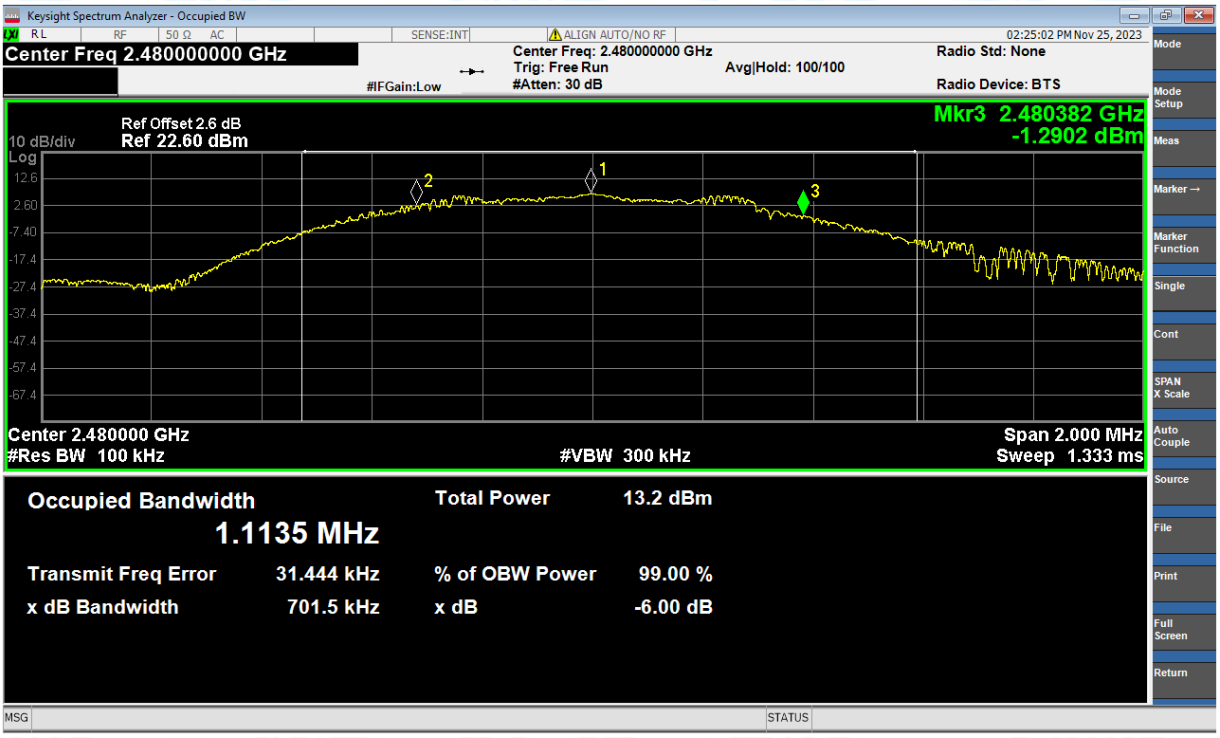
-6dB Bandwidth NVNT BLE 1Mbps 2402MHz Ant1



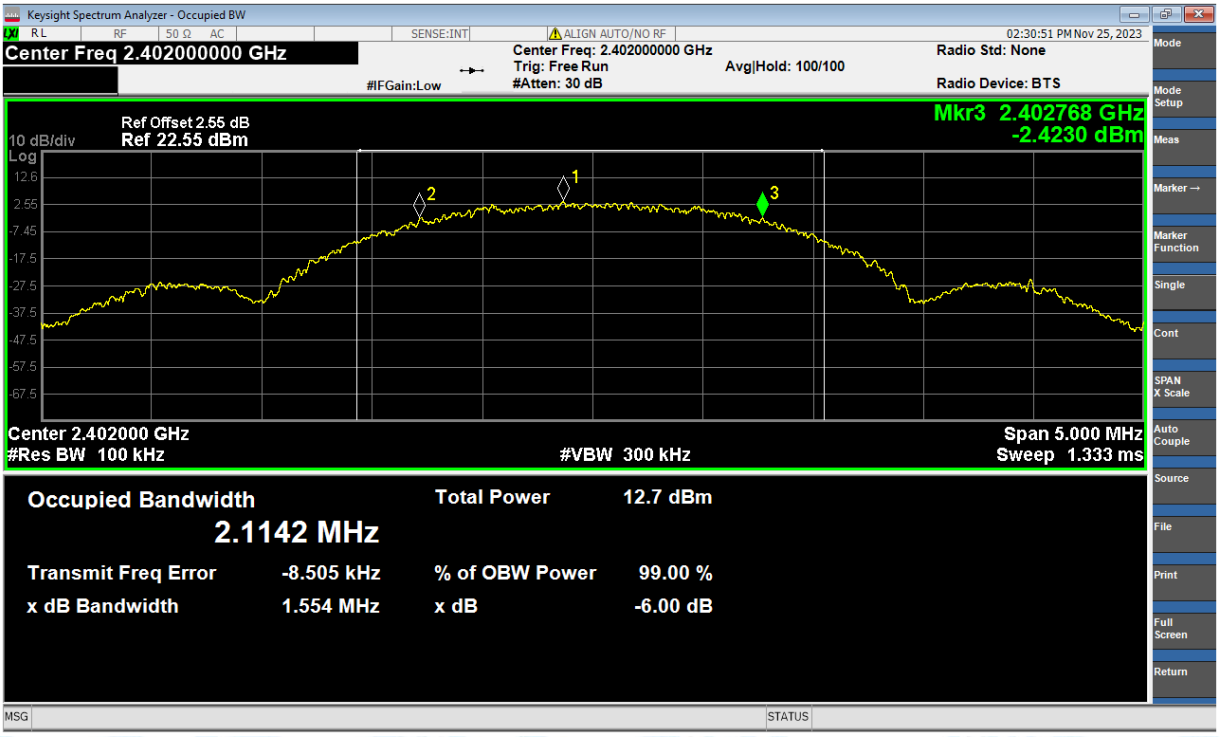
-6dB Bandwidth NVNT BLE 1Mbps 2440MHz Ant1



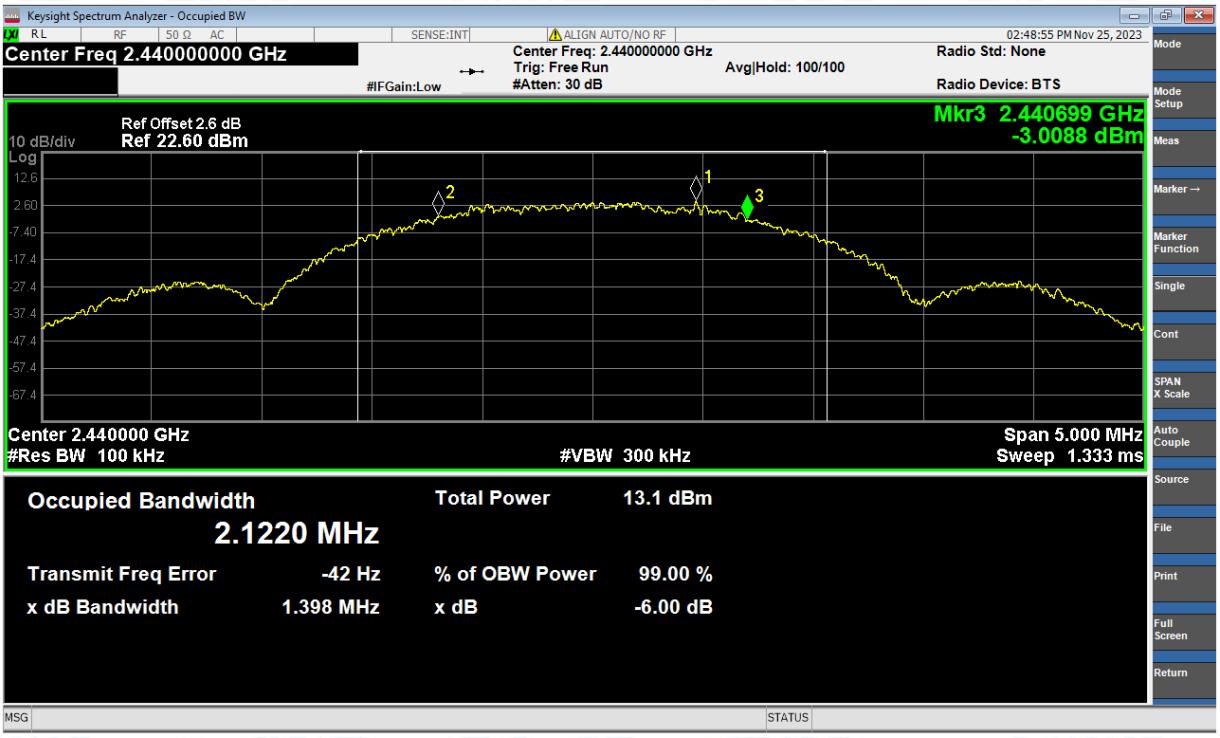
-6dB Bandwidth NVNT BLE 1Mbps 2480MHz Ant1



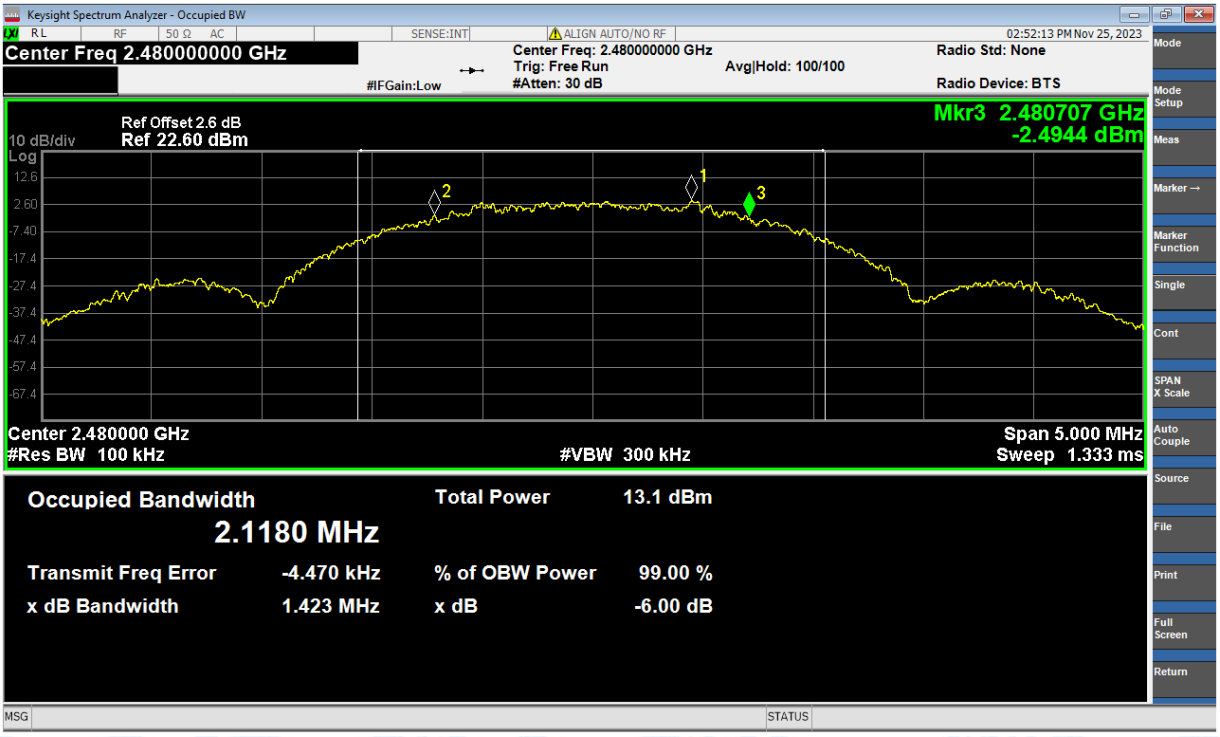
-6dB Bandwidth NVNT BLE 2Mbps 2402MHz Ant1



-6dB Bandwidth NVNT BLE 2Mbps 2440MHz Ant1



-6dB Bandwidth NVNT BLE 2Mbps 2480MHz Ant1

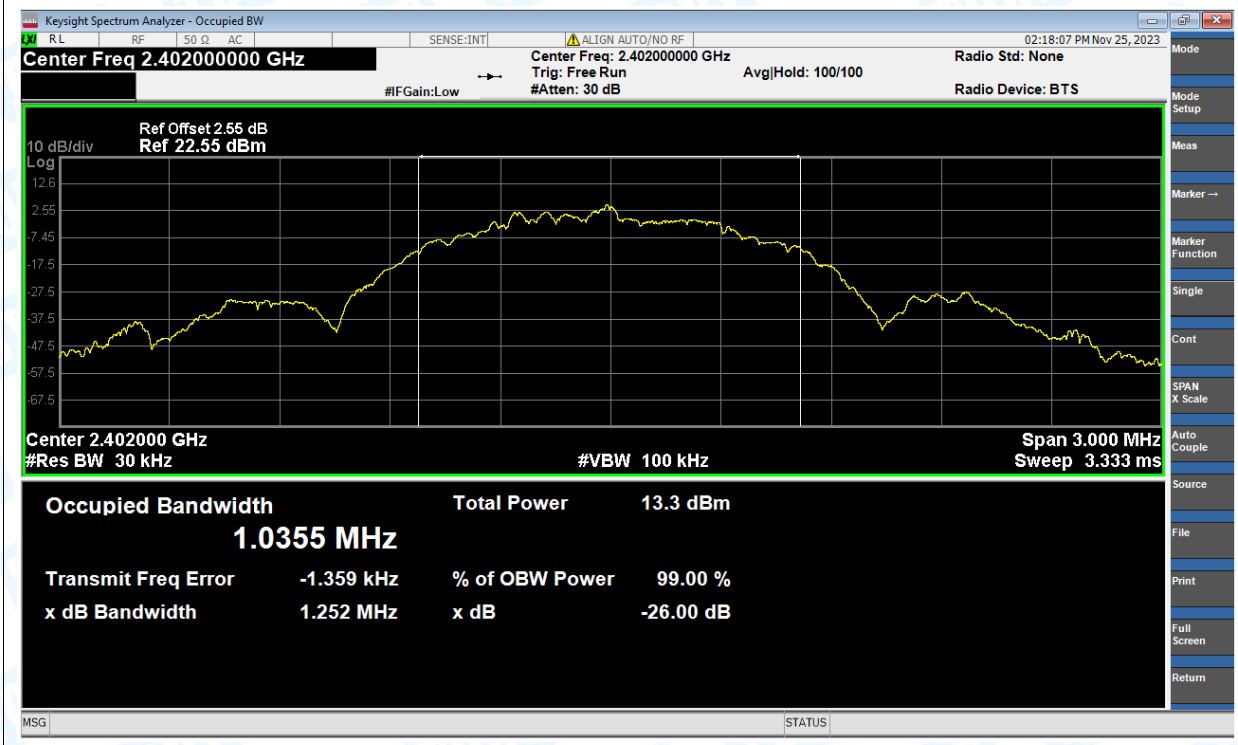


4. Occupied Channel Bandwidth

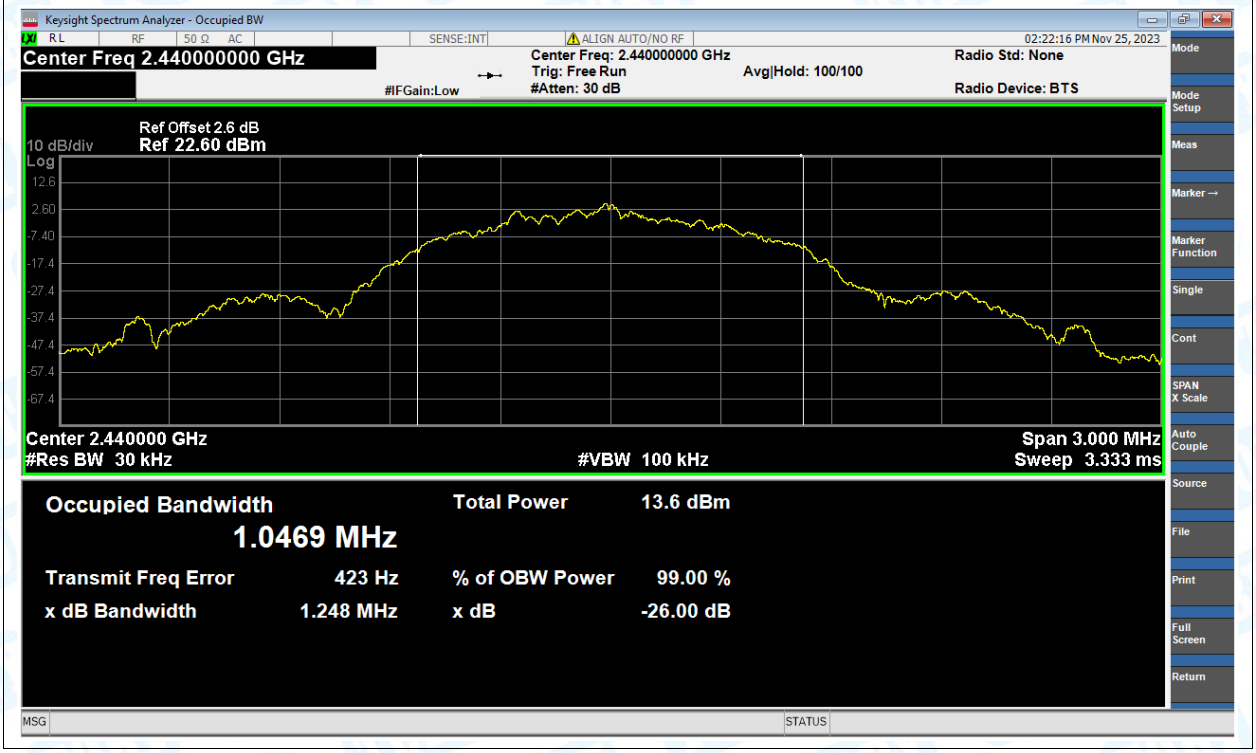
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	BLE 1Mbps	2402	Ant1	1.036
NVNT	BLE 1Mbps	2440	Ant1	1.047
NVNT	BLE 1Mbps	2480	Ant1	1.059
NVNT	BLE 2Mbps	2402	Ant1	2.087
NVNT	BLE 2Mbps	2440	Ant1	2.101
NVNT	BLE 2Mbps	2480	Ant1	2.125

Test Graphs

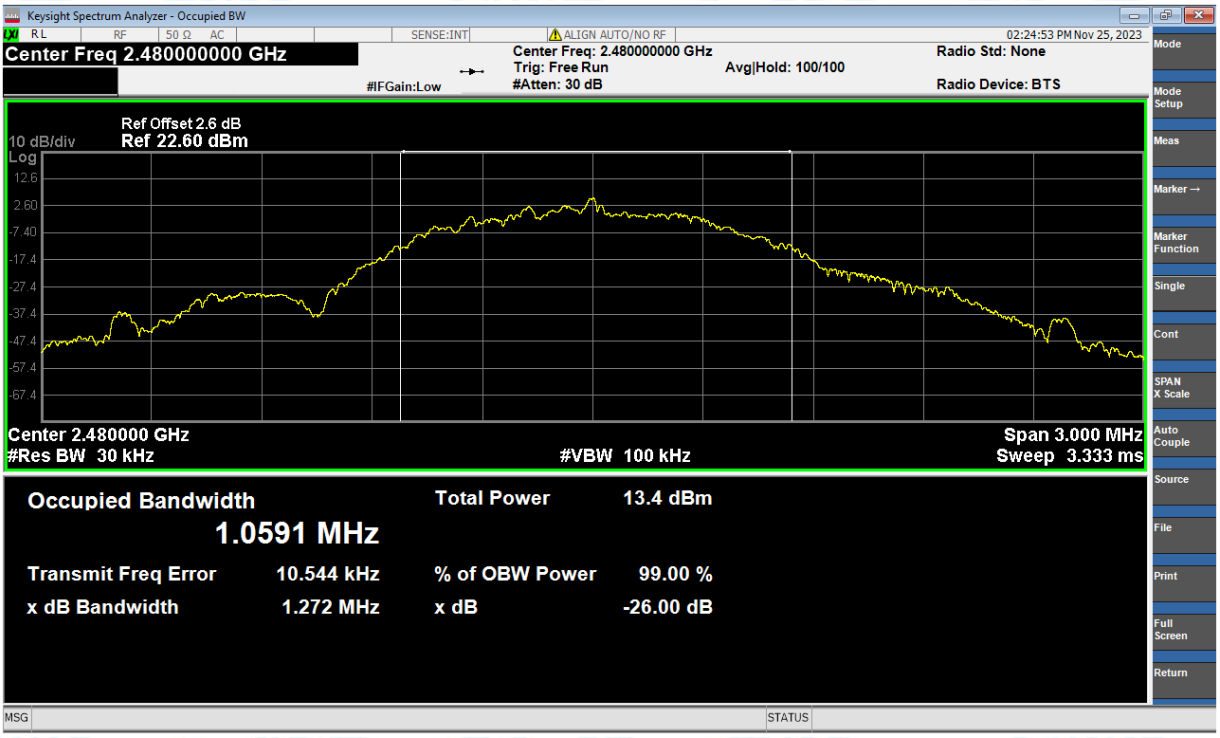
OBW NVNT BLE 1Mbps 2402MHz Ant1



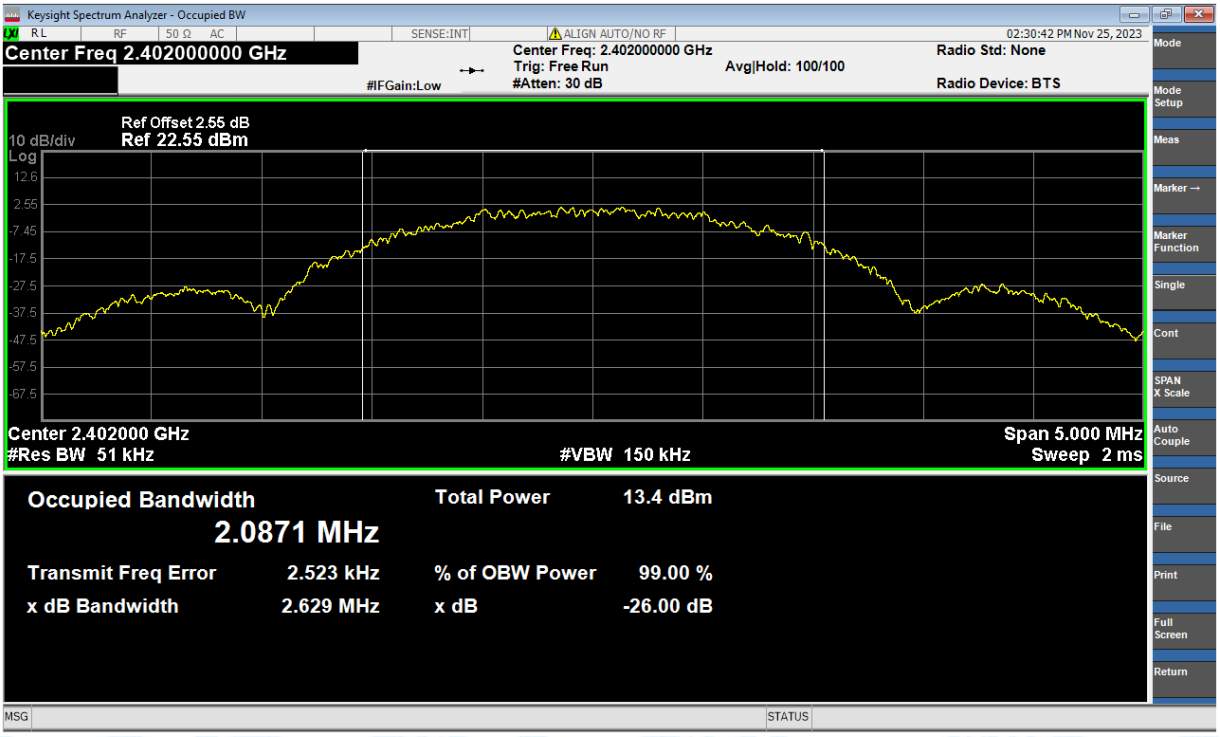
OBW NVNT BLE 1Mbps 2440MHz Ant1



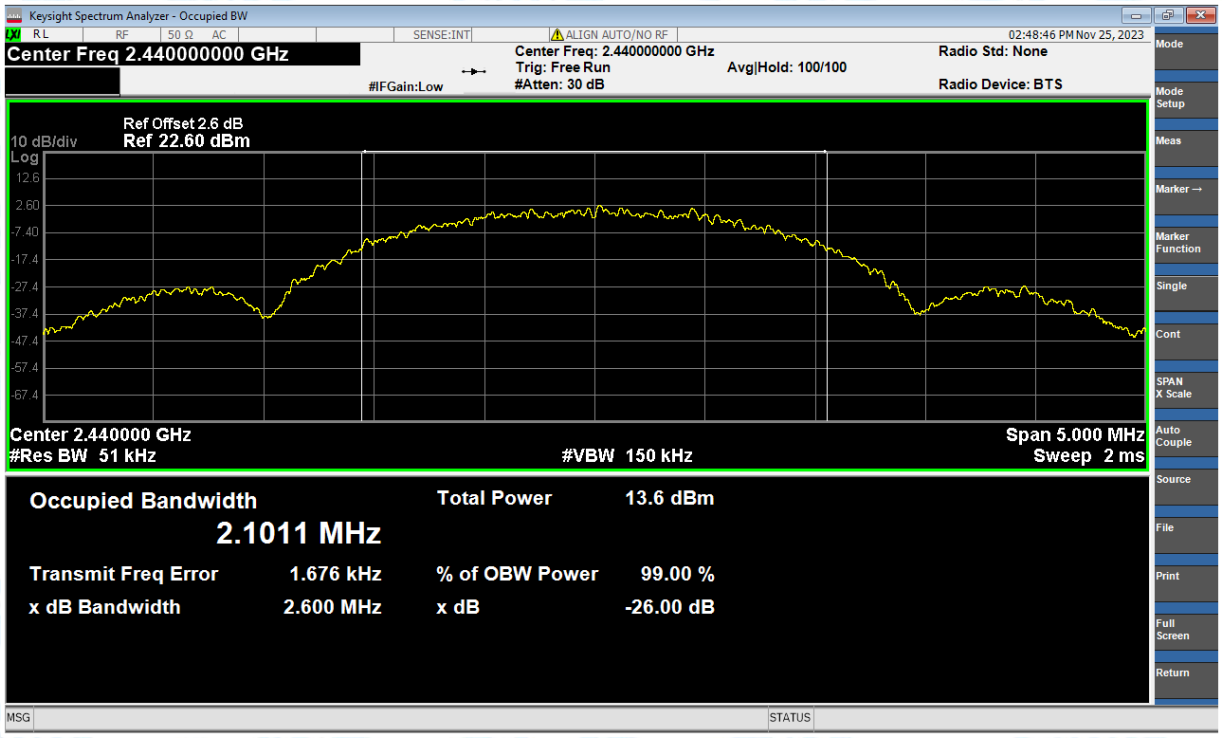
OBW NVNT BLE 1Mbps 2480MHz Ant1



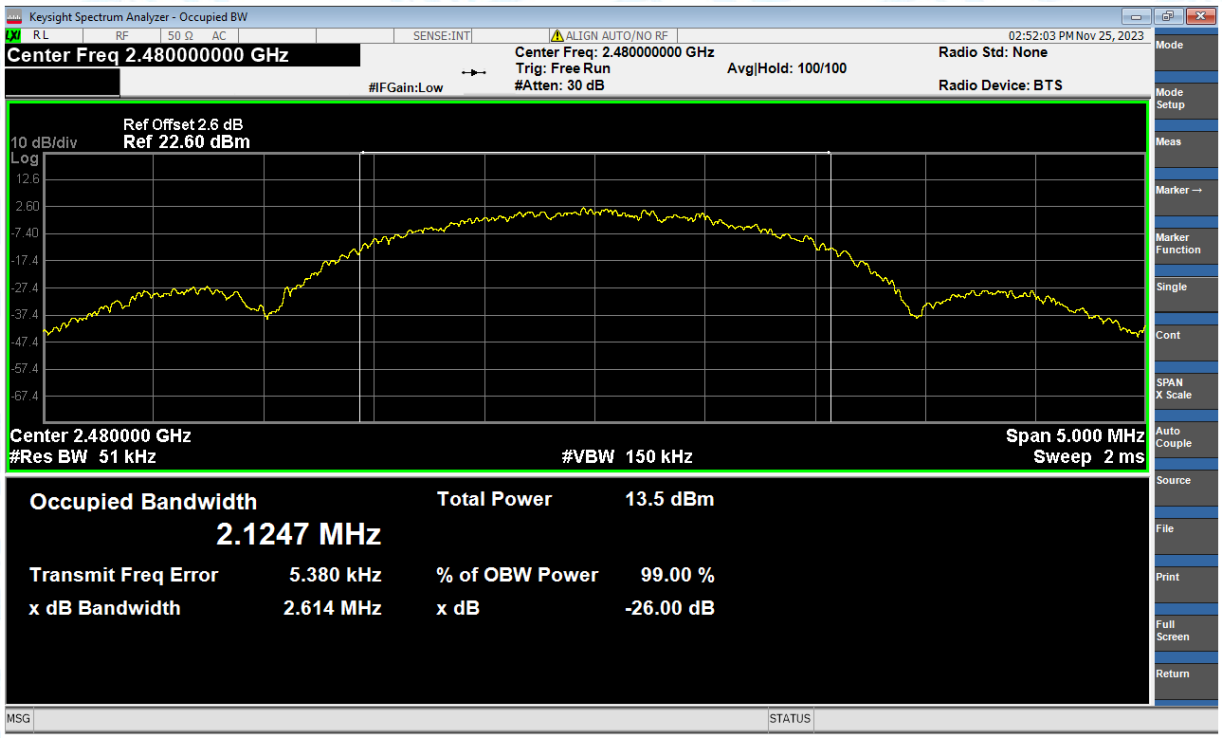
OBW NVNT BLE 2Mbps 2402MHz Ant1



OBW NVNT BLE 2Mbps 2440MHz Ant1



OBW NVNT BLE 2Mbps 2480MHz Ant1

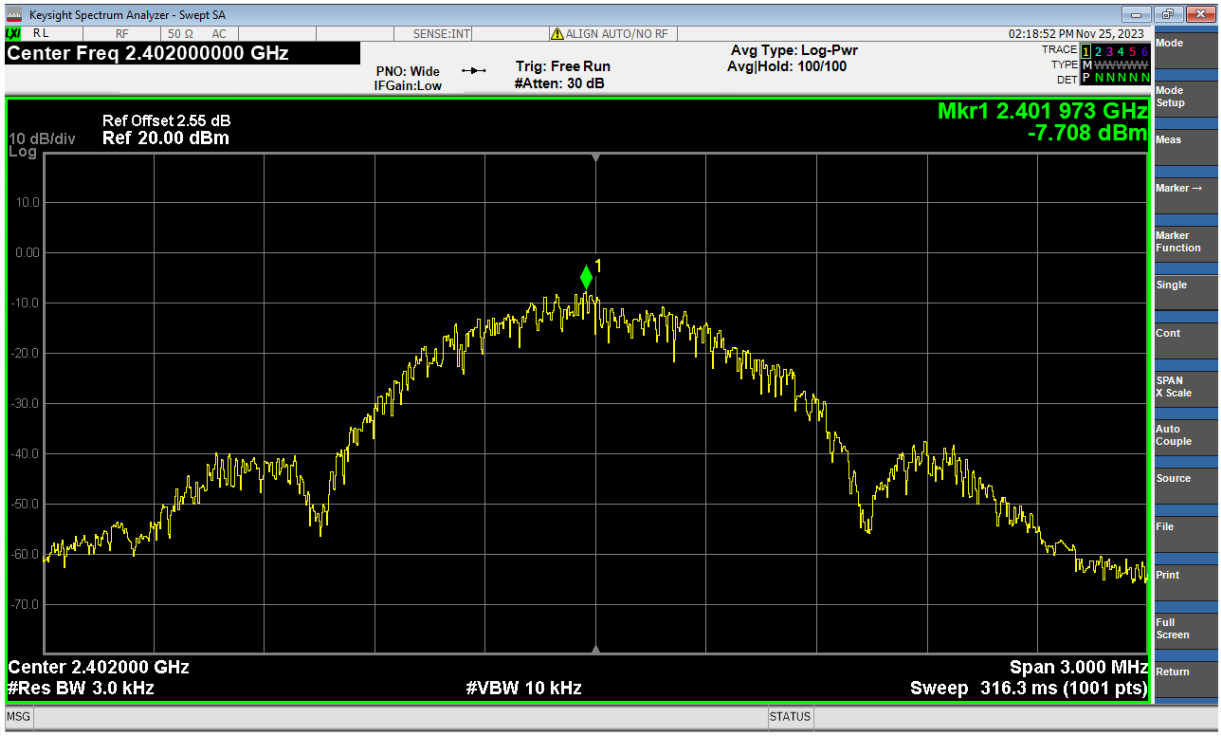


5. Maximum Power Spectral Density Level

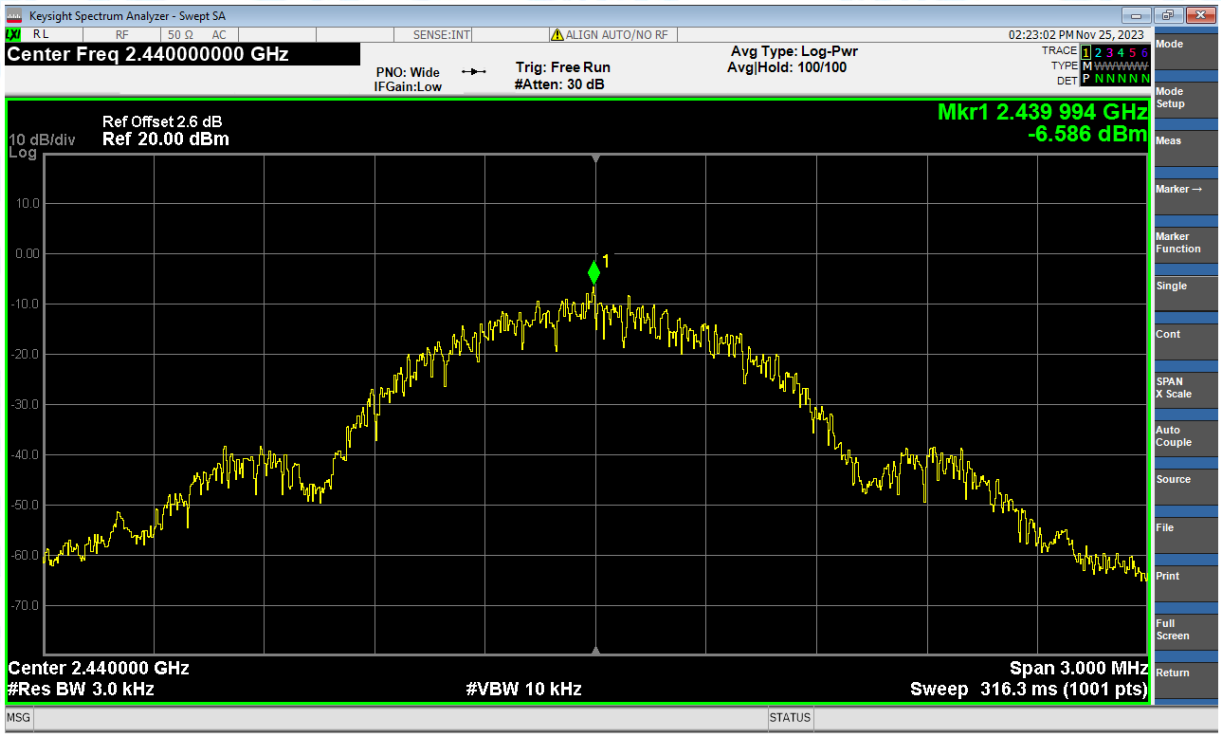
Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1Mbps	2402	Ant1	-7.708	8	Pass
NVNT	BLE 1Mbps	2440	Ant1	-6.586	8	Pass
NVNT	BLE 1Mbps	2480	Ant1	-9.045	8	Pass
NVNT	BLE 2Mbps	2402	Ant1	-8.801	8	Pass
NVNT	BLE 2Mbps	2440	Ant1	-8.598	8	Pass
NVNT	BLE 2Mbps	2480	Ant1	-8.503	8	Pass

Test Graphs

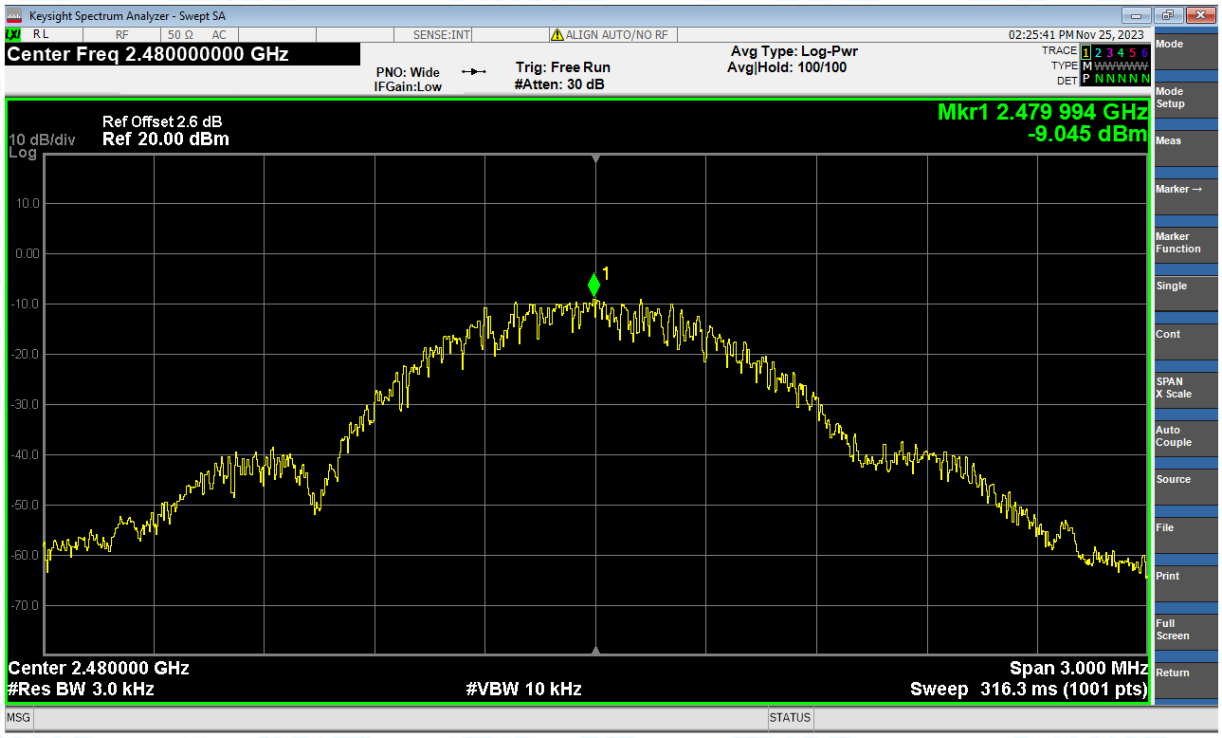
PSD NVNT BLE 1Mbps 2402MHz Ant1



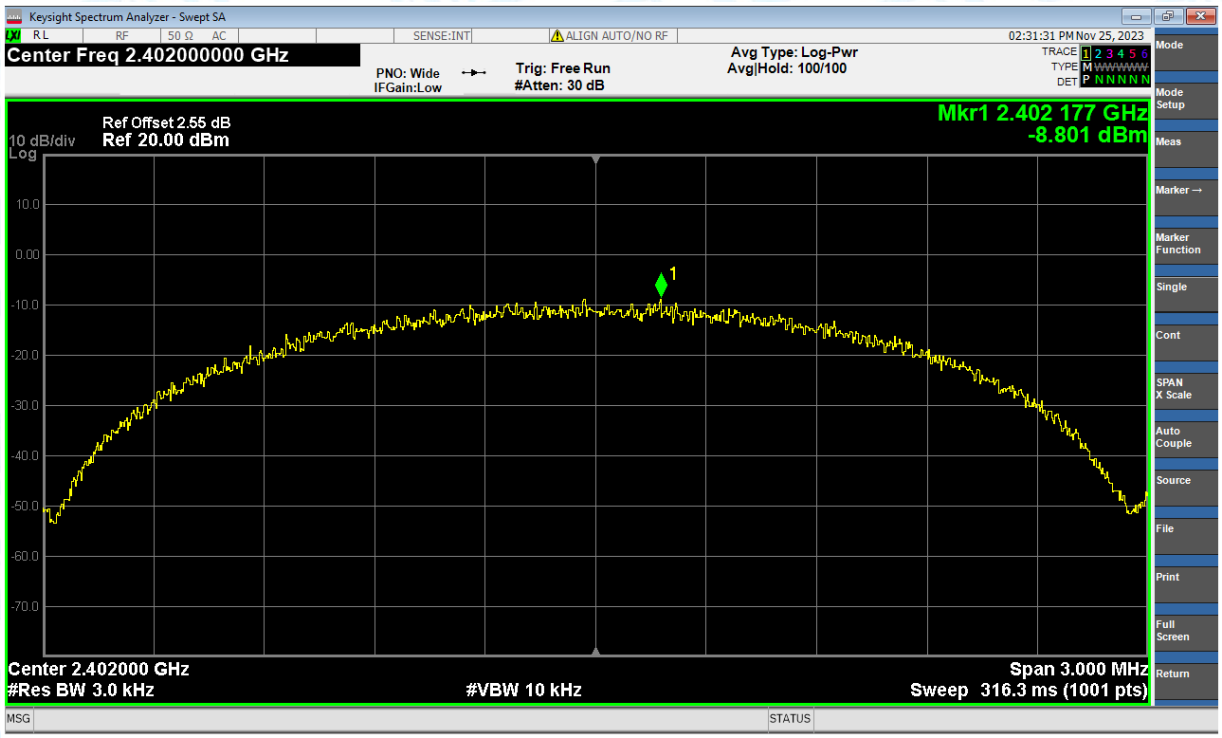
PSD NVNT BLE 1Mbps 2440MHz Ant1



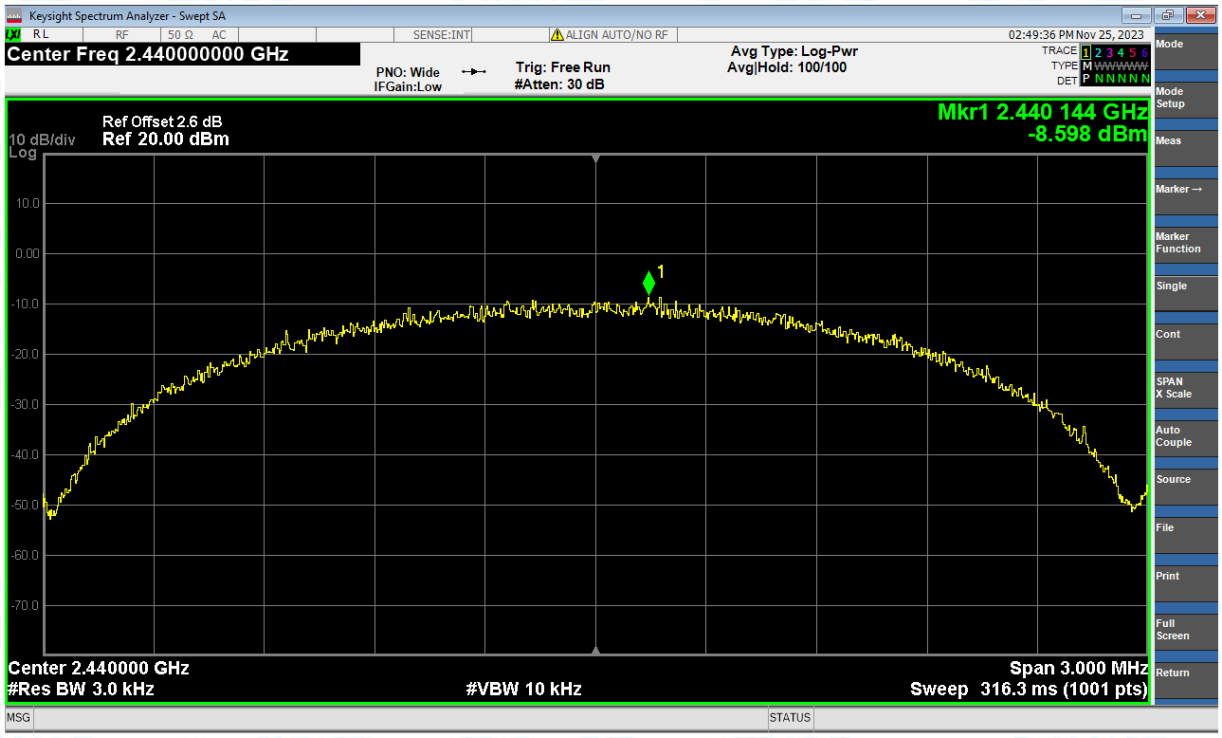
PSD NVNT BLE 1Mbps 2480MHz Ant1



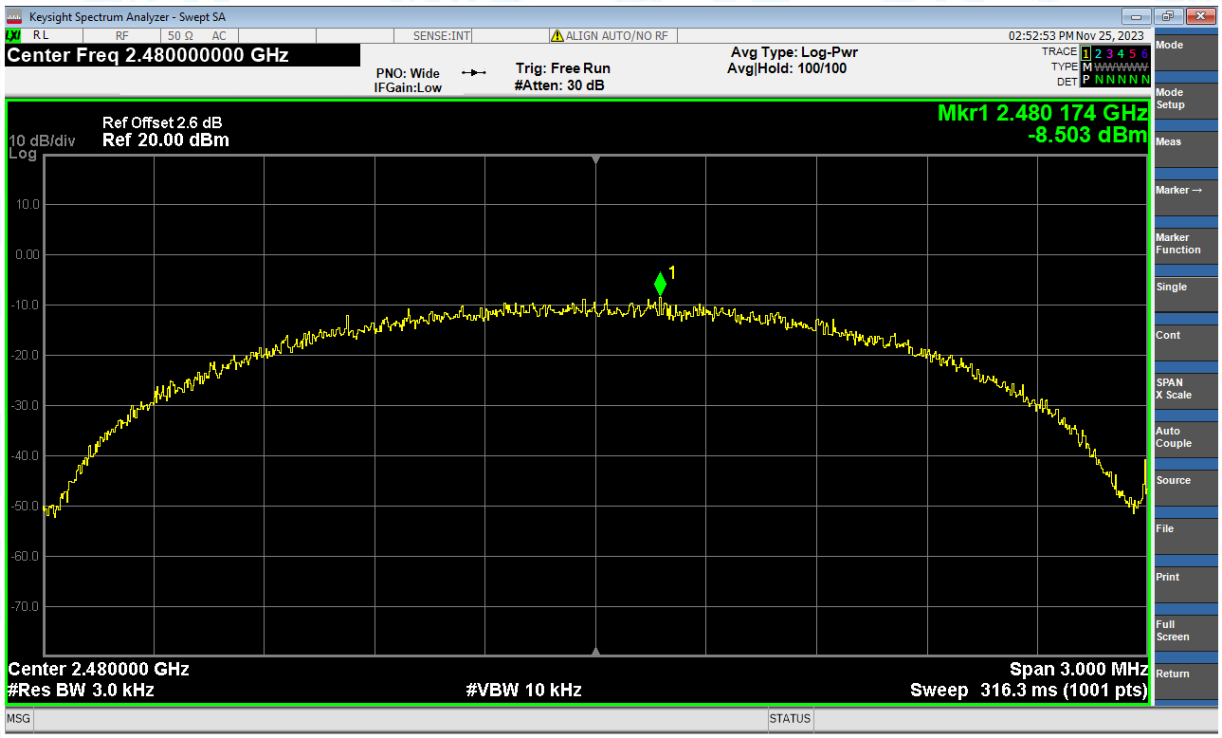
PSD NVNT BLE 2Mbps 2402MHz Ant1



PSD NVNT BLE 2Mbps 2440MHz Ant1



PSD NVNT BLE 2Mbps 2480MHz Ant1

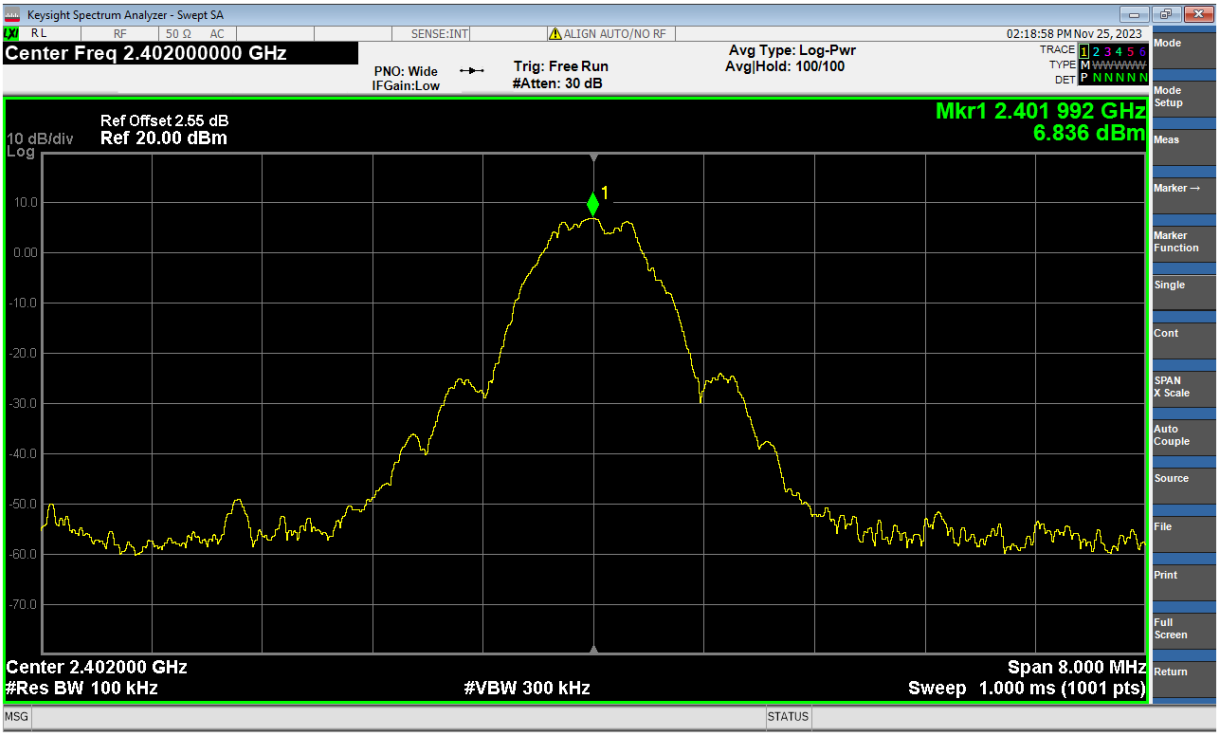


6. Band Edge

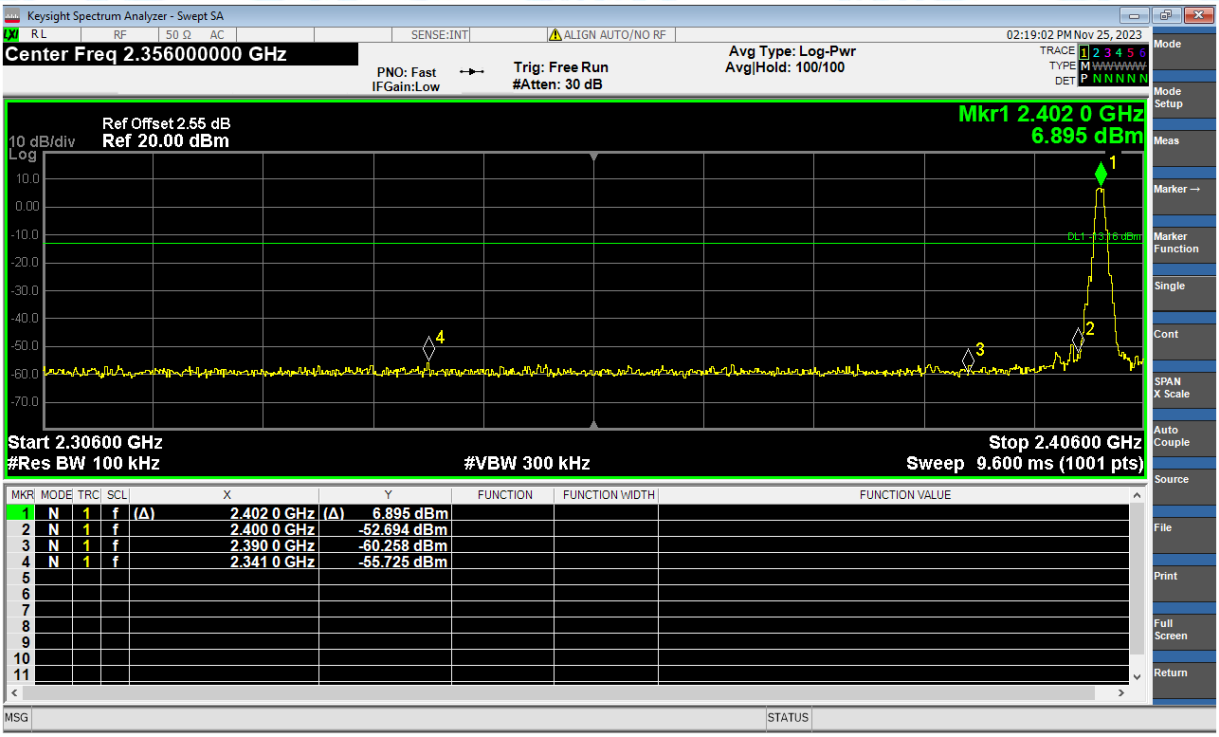
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1Mbps	2402	Ant1	-62.57	-20	Pass
NVNT	BLE 1Mbps	2480	Ant1	-58.59	-20	Pass
NVNT	BLE 2Mbps	2402	Ant1	-59.79	-20	Pass
NVNT	BLE 2Mbps	2480	Ant1	-51.56	-20	Pass

Test Graphs

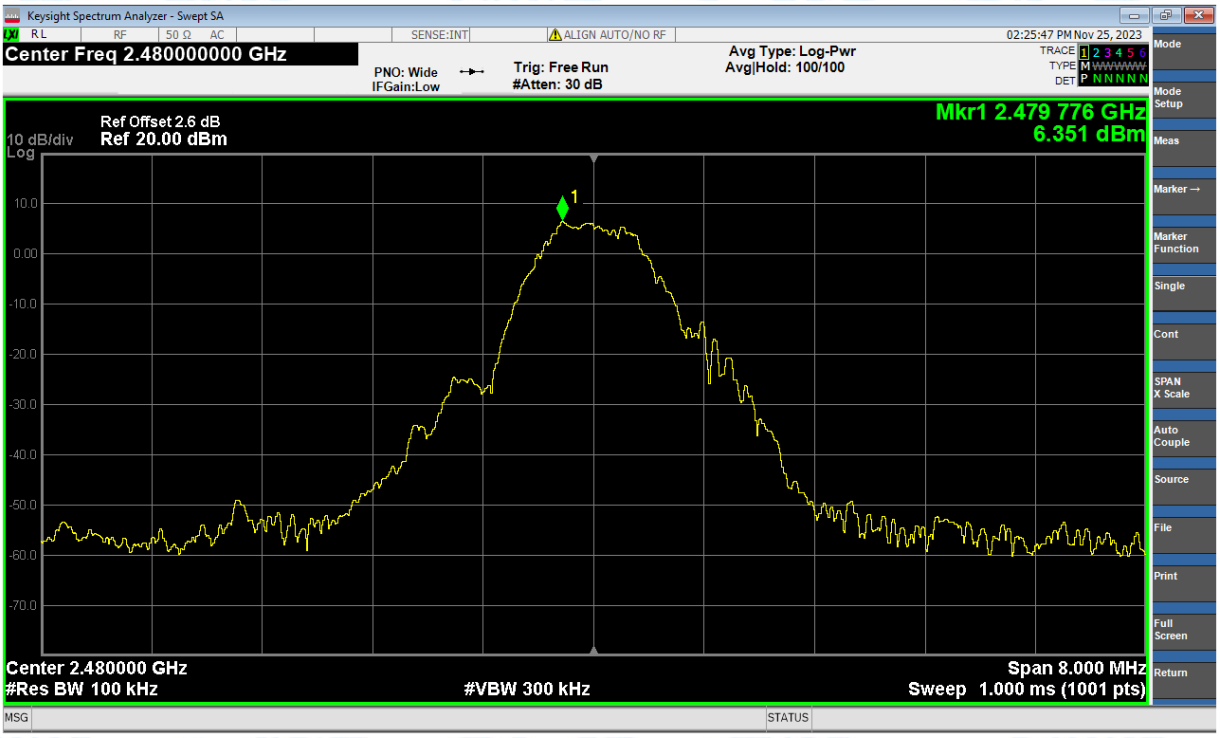
Band Edge NVNT BLE 1Mbps 2402MHz Ant1 Ref



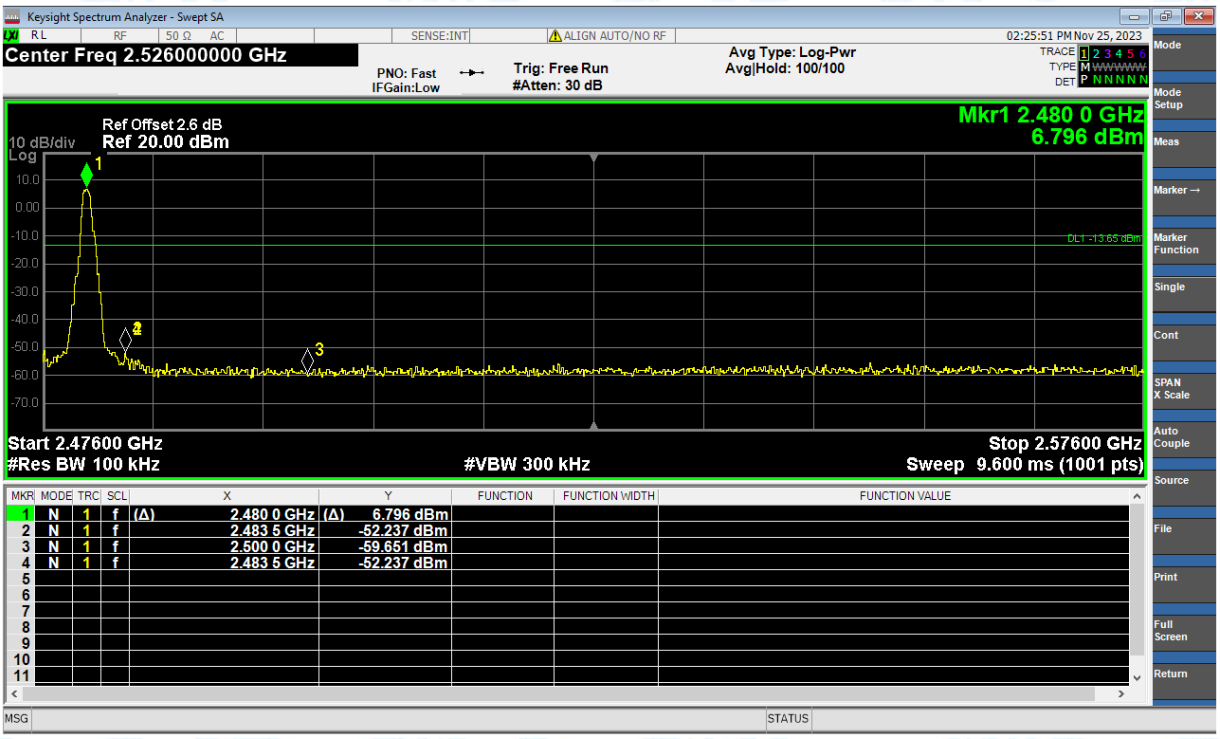
Band Edge NVNT BLE 1Mbps 2402MHz Ant1 Emission



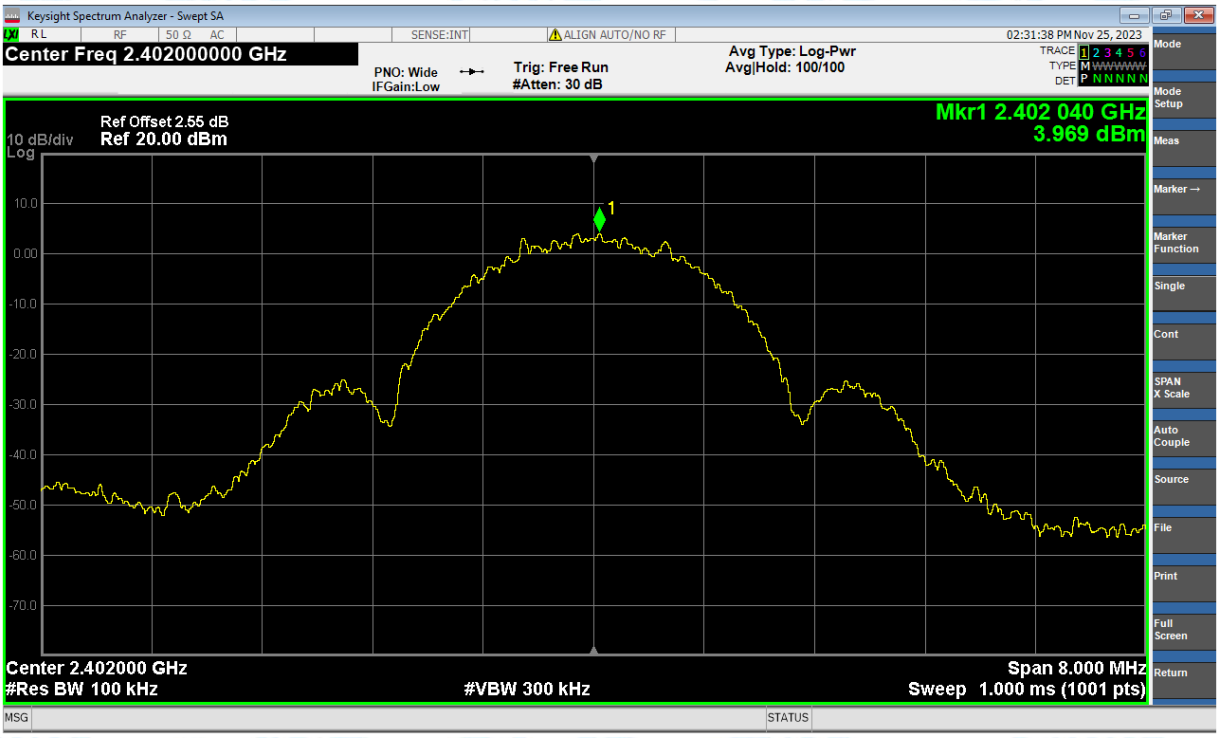
Band Edge NVNT BLE 1Mbps 2480MHz Ant1 Ref



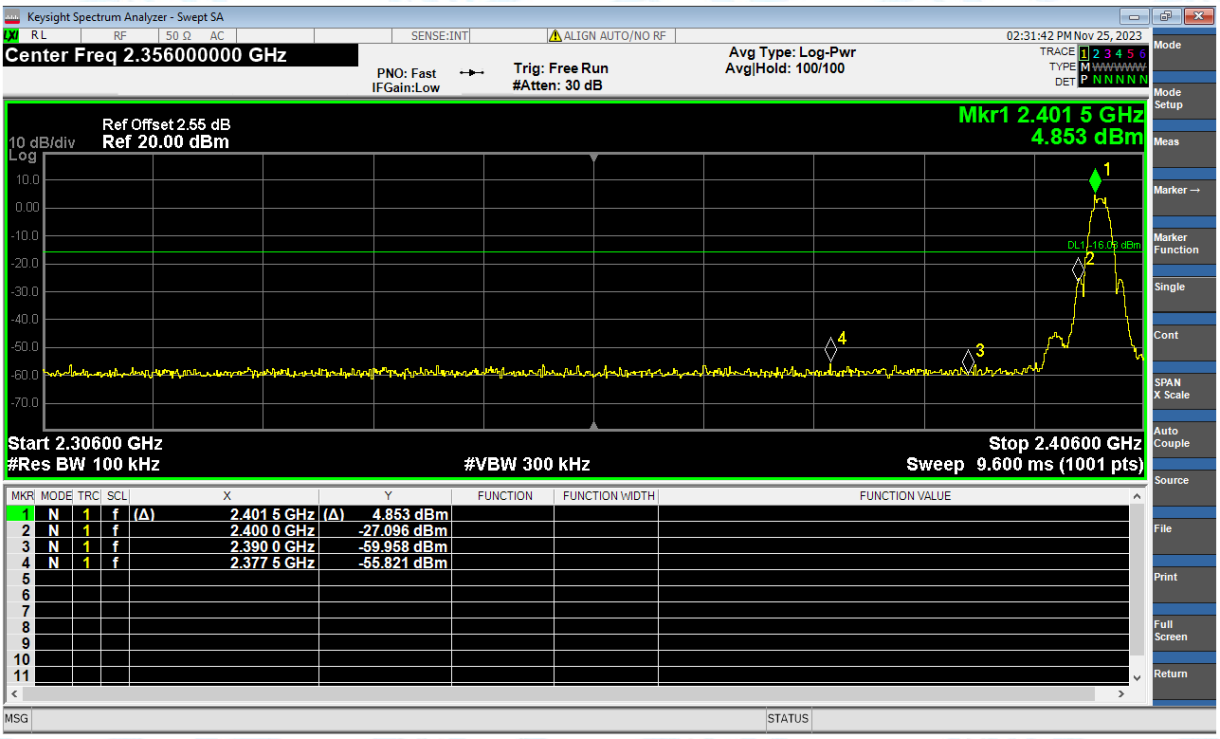
Band Edge NVNT BLE 1Mbps 2480MHz Ant1 Emission



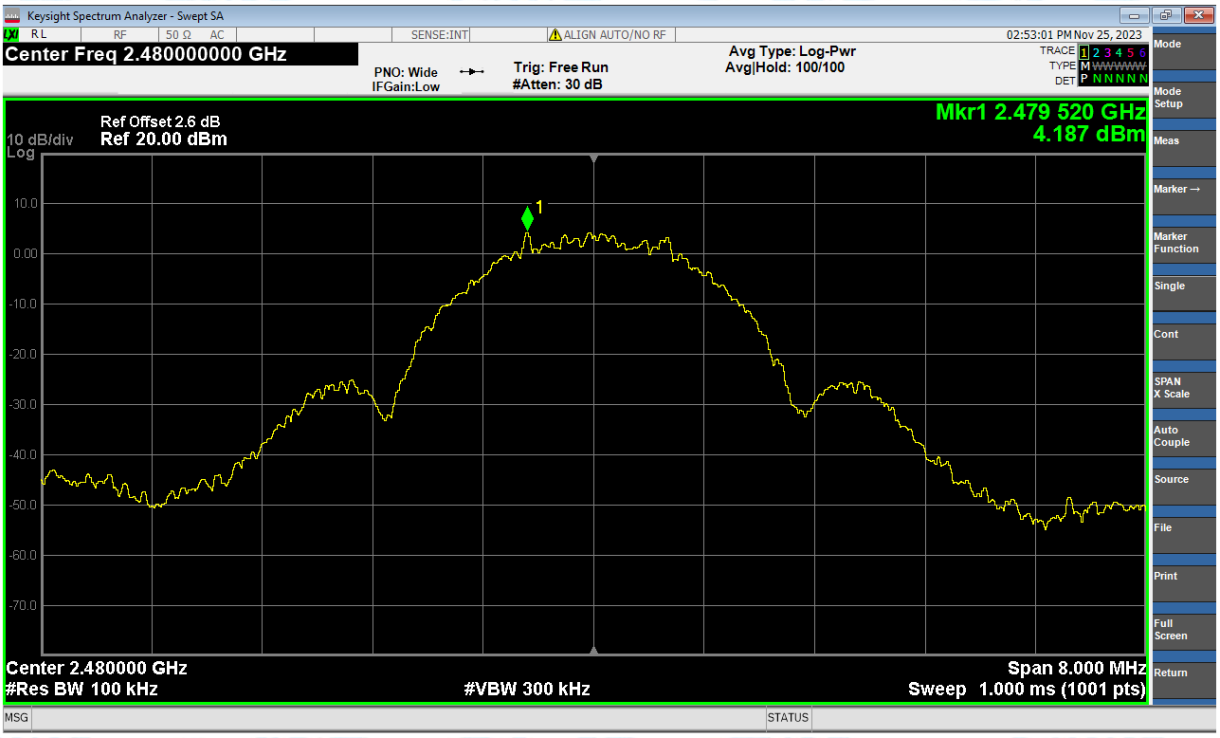
Band Edge NVNT BLE 2Mbps 2402MHz Ant1 Ref



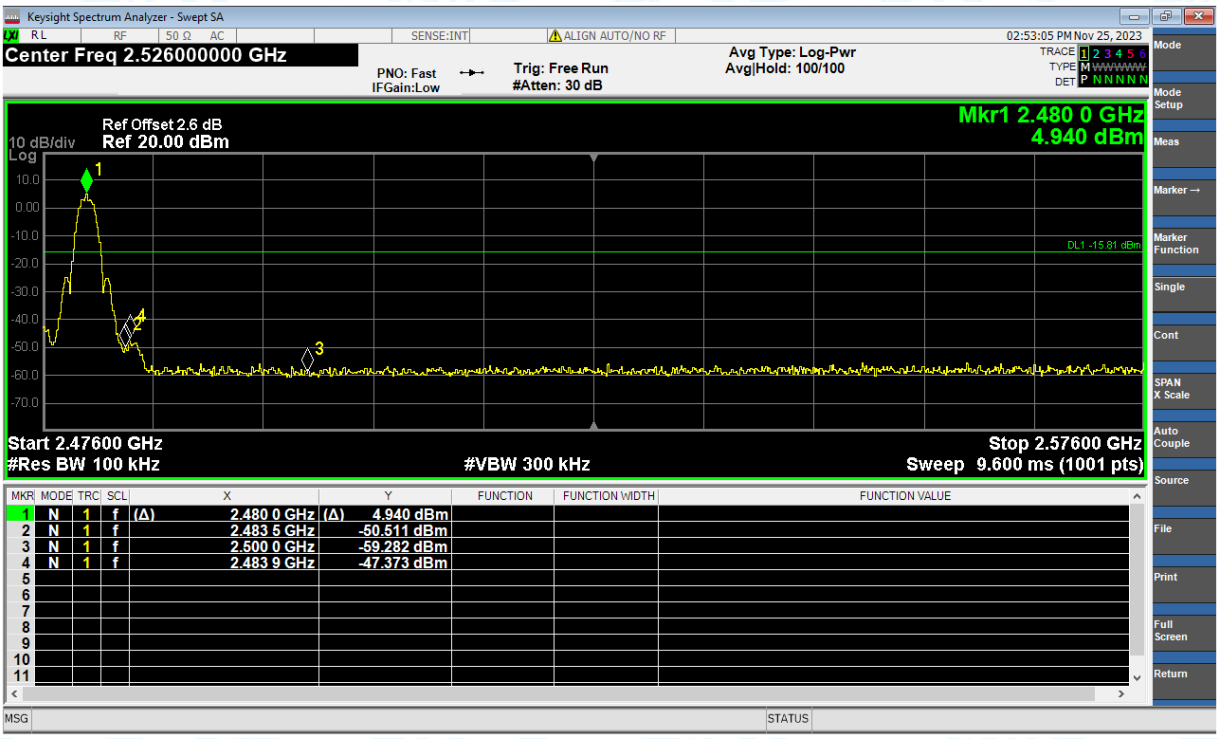
Band Edge NVNT BLE 2Mbps 2402MHz Ant1 Emission



Band Edge NVNT BLE 2Mbps 2480MHz Ant1 Ref



Band Edge NVNT BLE 2Mbps 2480MHz Ant1 Emission

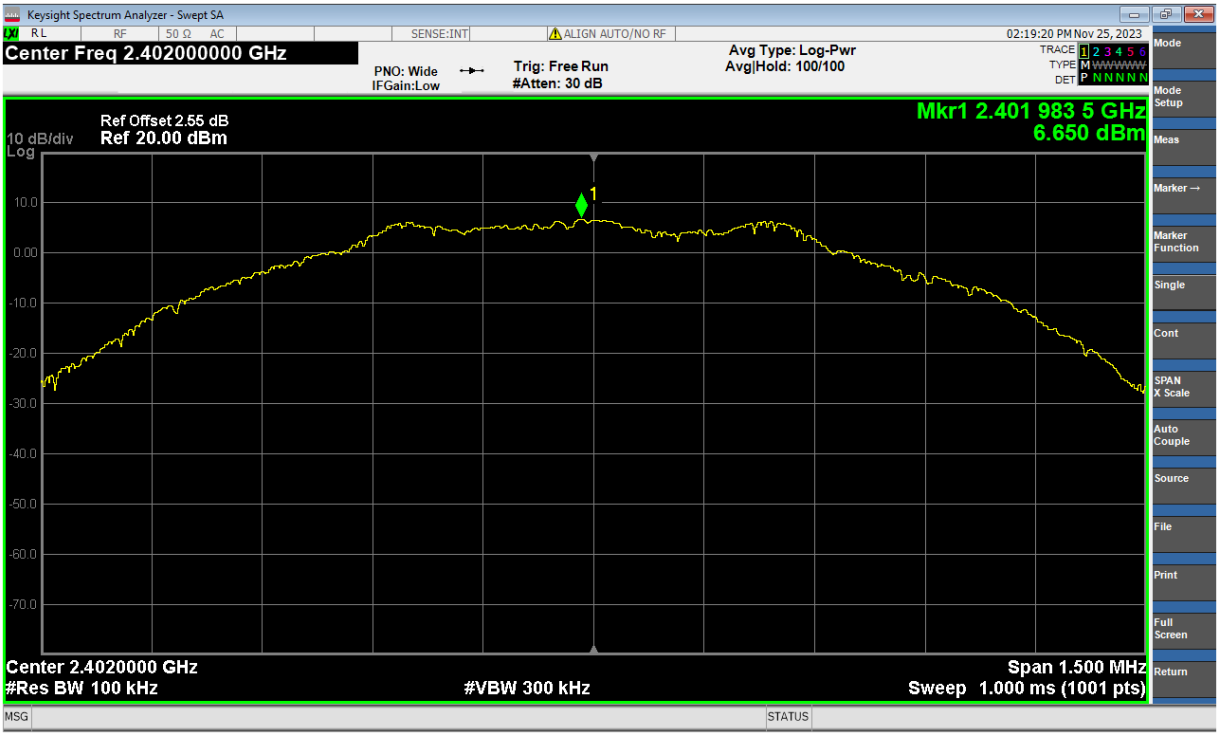


7. Conducted RF Spurious Emission

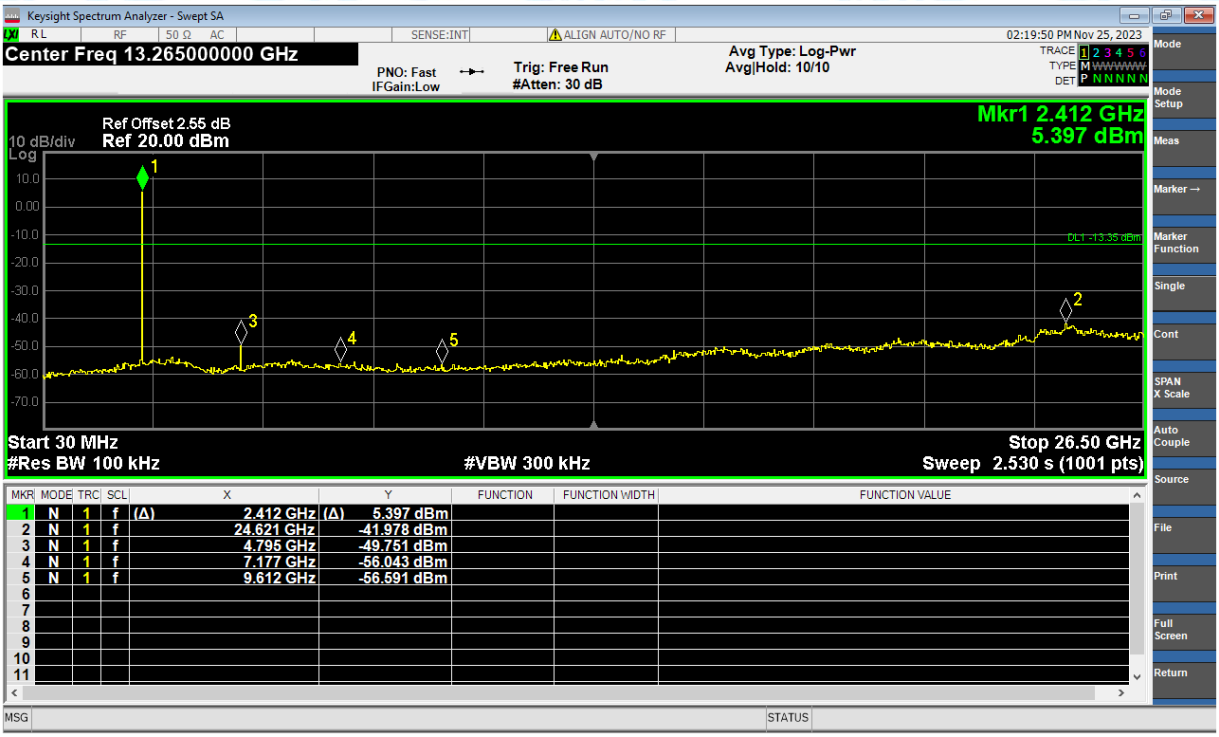
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1Mbps	2402	Ant1	-48.63	-20	Pass
NVNT	BLE 1Mbps	2440	Ant1	-48.92	-20	Pass
NVNT	BLE 1Mbps	2480	Ant1	-48.91	-20	Pass
NVNT	BLE 2Mbps	2402	Ant1	-46.34	-20	Pass
NVNT	BLE 2Mbps	2440	Ant1	-46.01	-20	Pass
NVNT	BLE 2Mbps	2480	Ant1	-46.03	-20	Pass

Test Graphs

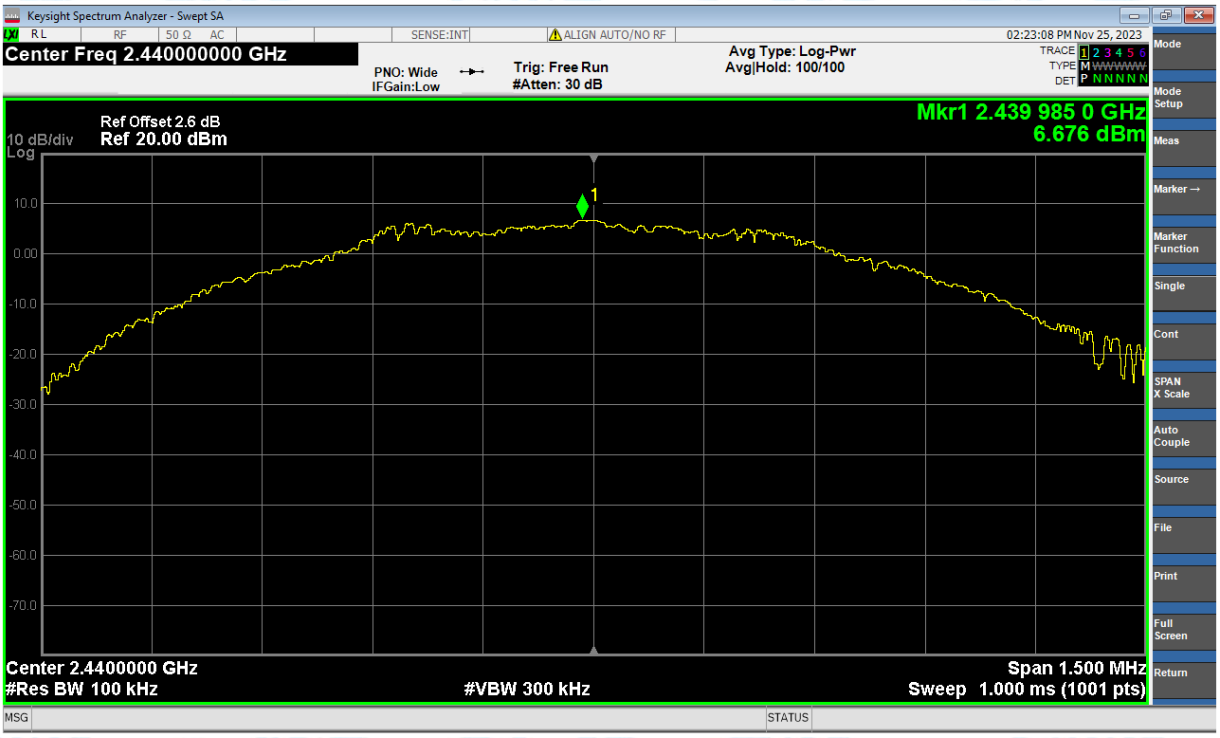
Tx. Spurious NVNT BLE 1Mbps 2402MHz Ant1 Ref



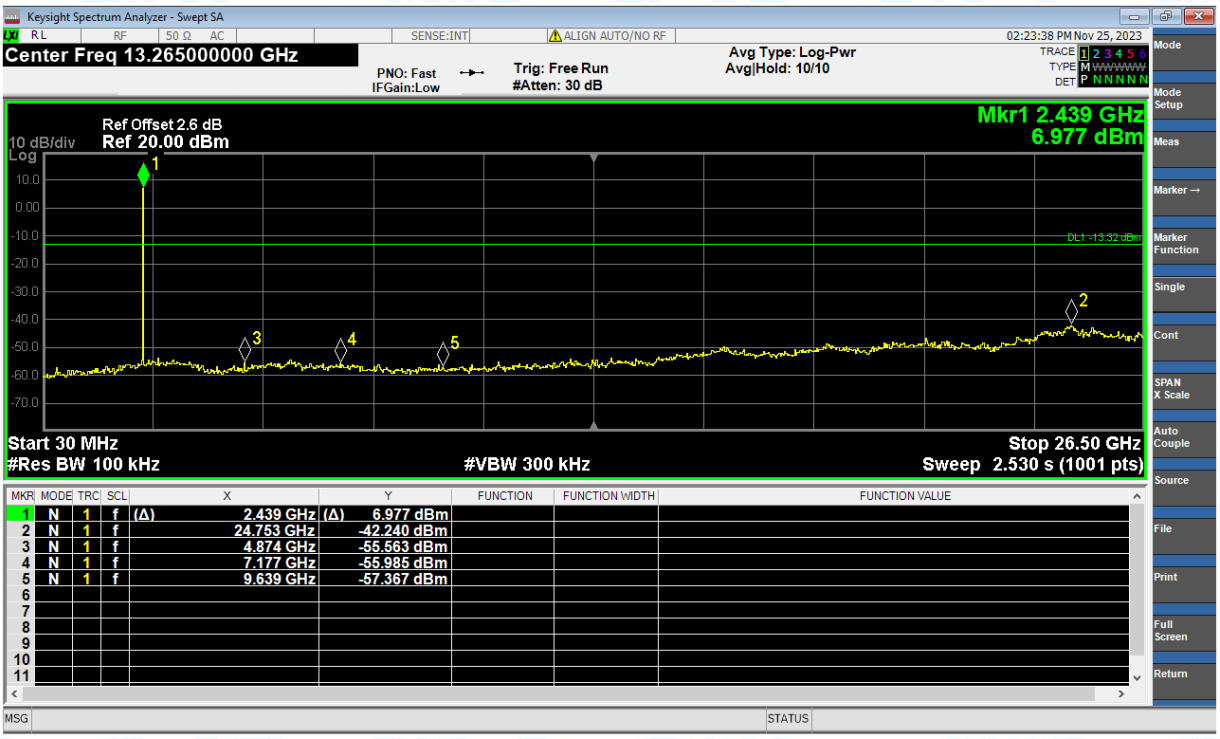
Tx. Spurious NVNT BLE 1Mbps 2402MHz Ant1 Emission



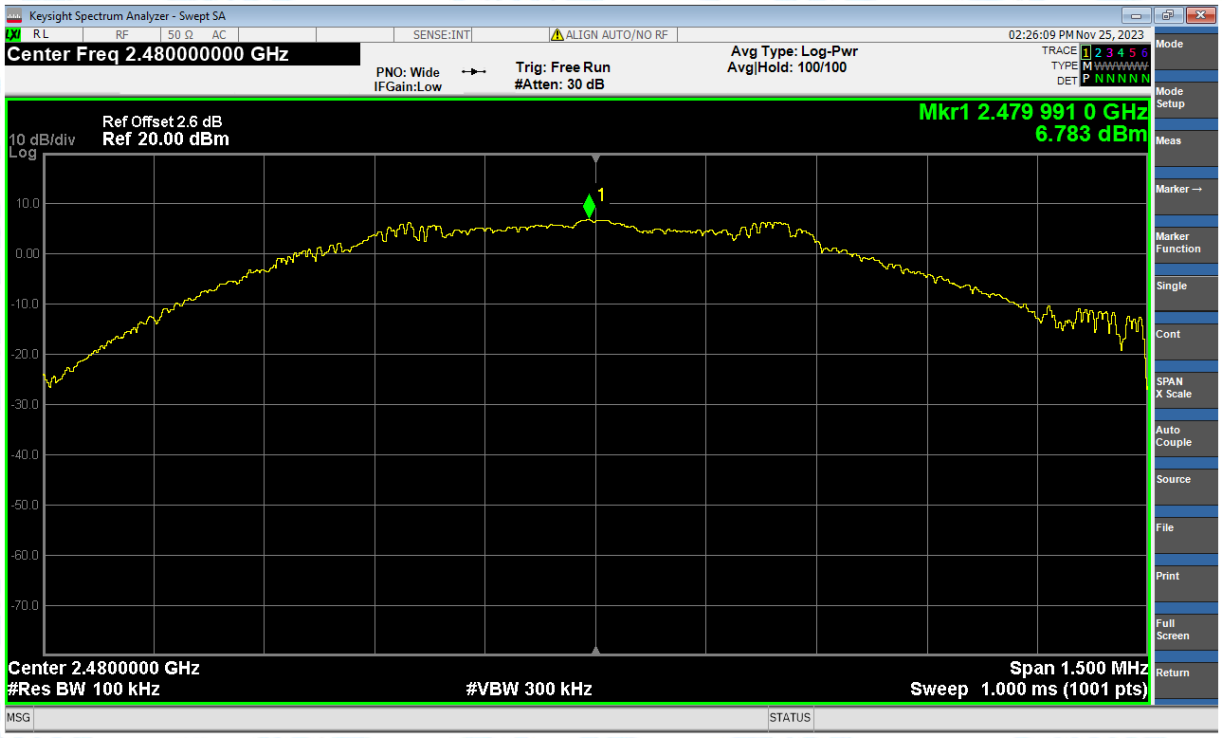
Tx. Spurious NVNT BLE 1Mbps 2440MHz Ant1 Ref



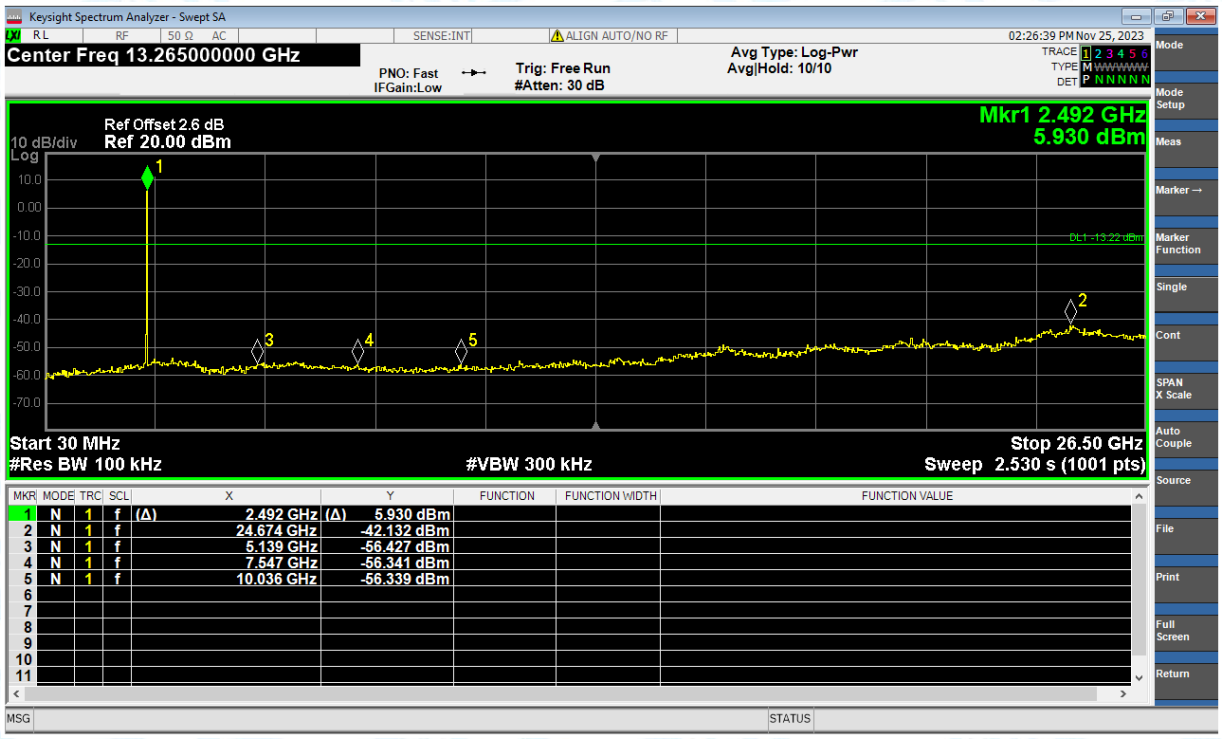
Tx. Spurious NVNT BLE 1Mbps 2440MHz Ant1 Emission



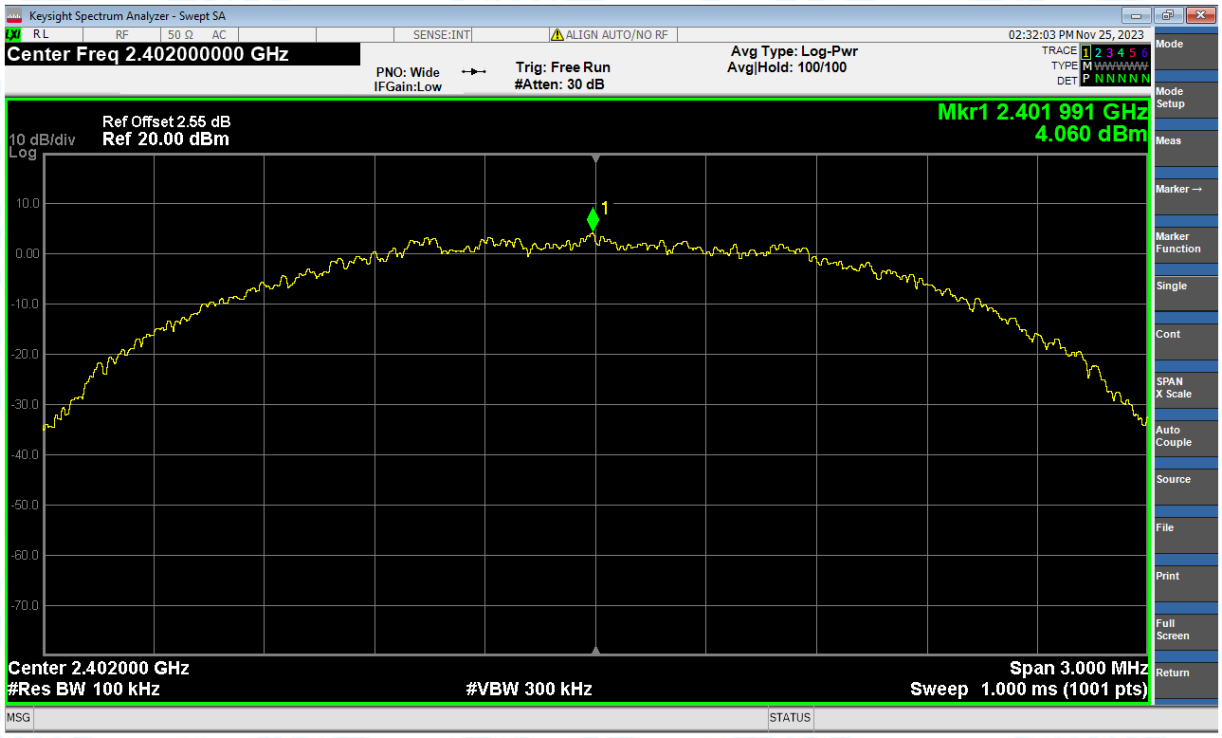
Tx. Spurious NVNT BLE 1Mbps 2480MHz Ant1 Ref



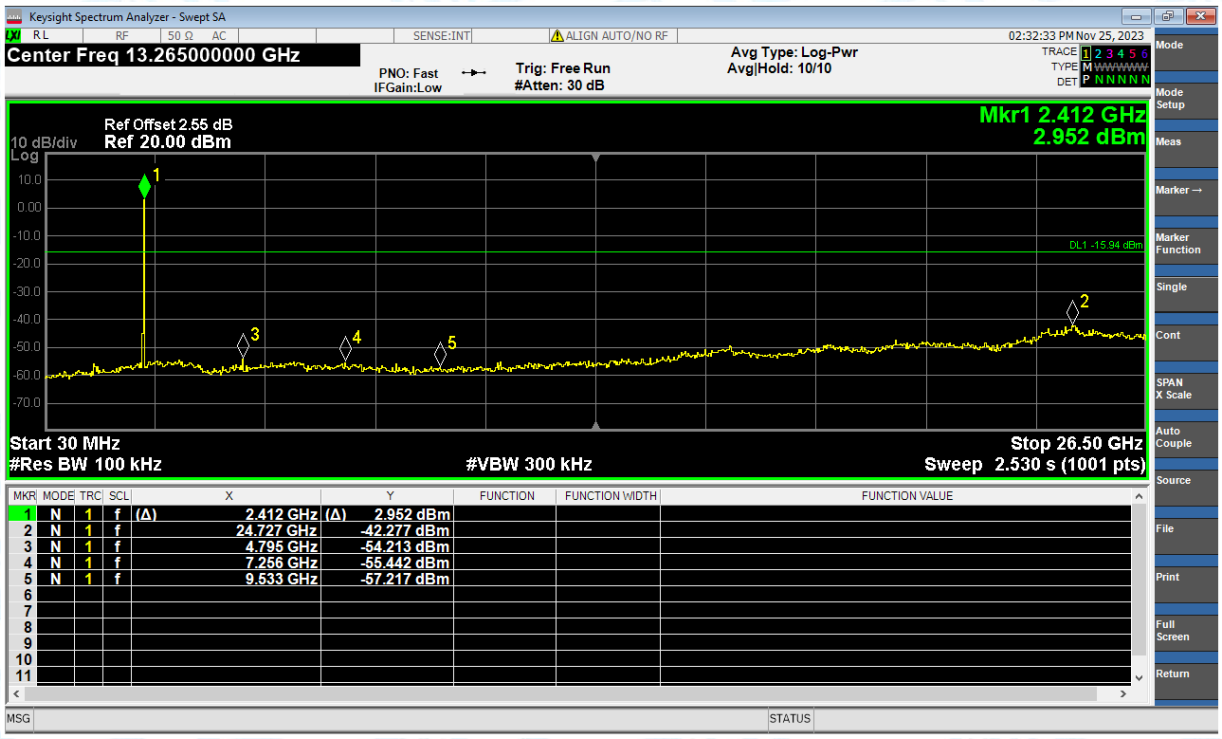
Tx. Spurious NVNT BLE 1Mbps 2480MHz Ant1 Emission



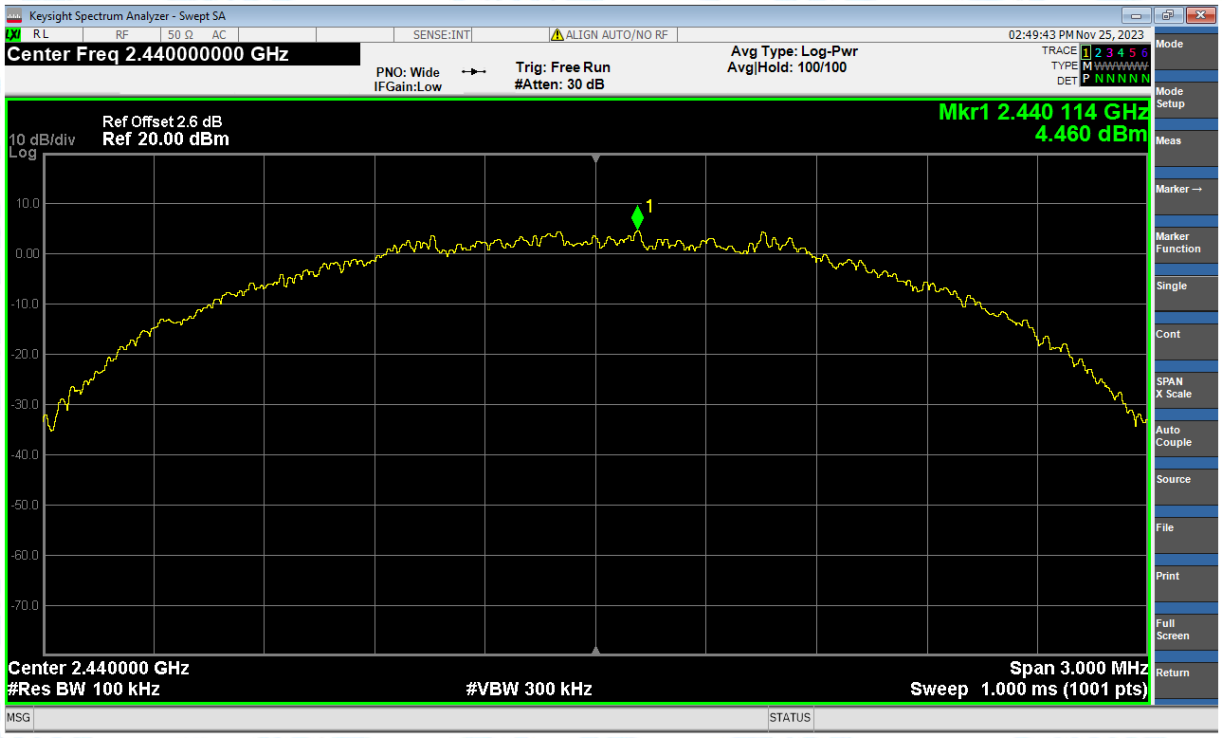
Tx. Spurious NVNT BLE 2Mbps 2402MHz Ant1 Ref



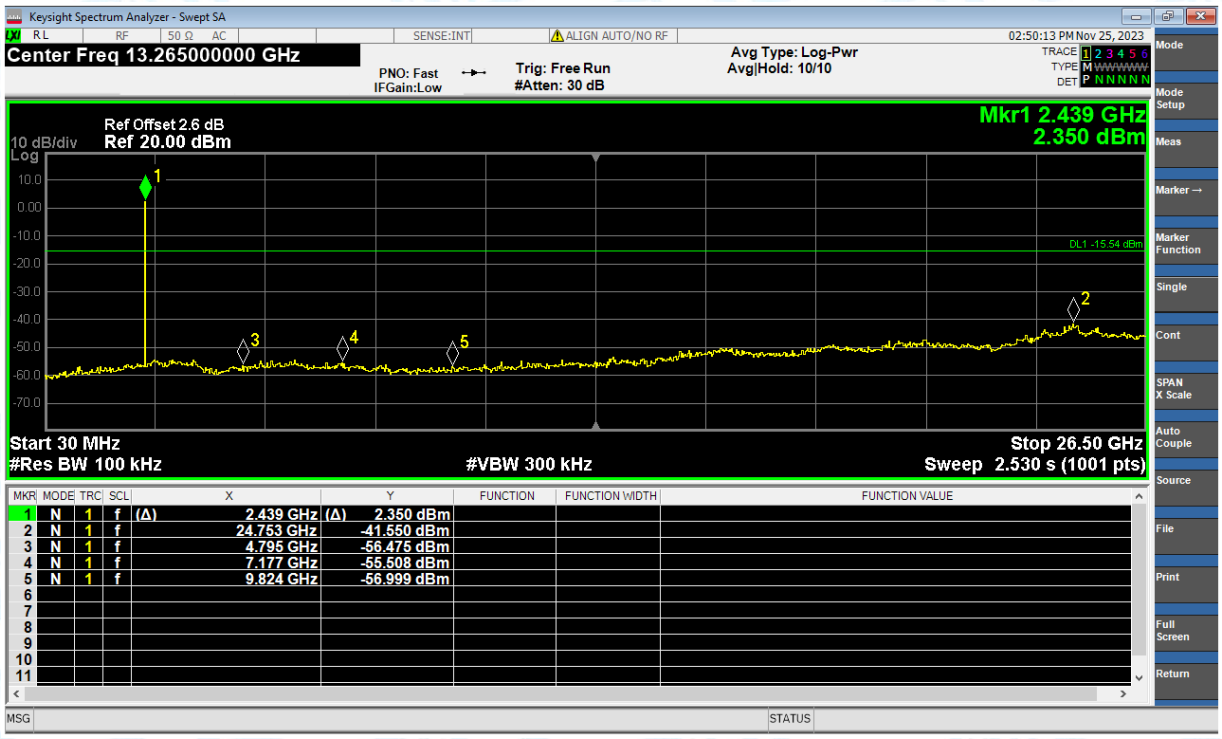
Tx. Spurious NVNT BLE 2Mbps 2402MHz Ant1 Emission



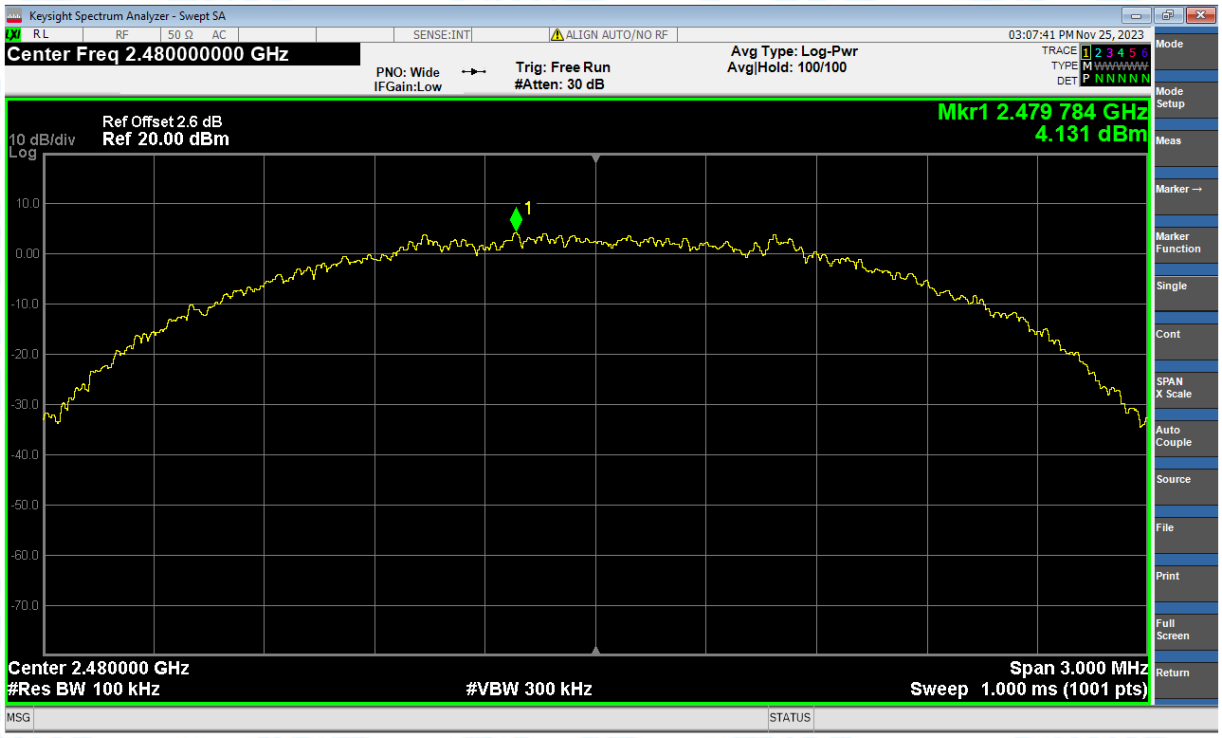
Tx. Spurious NVNT BLE 2Mbps 2440MHz Ant1 Ref



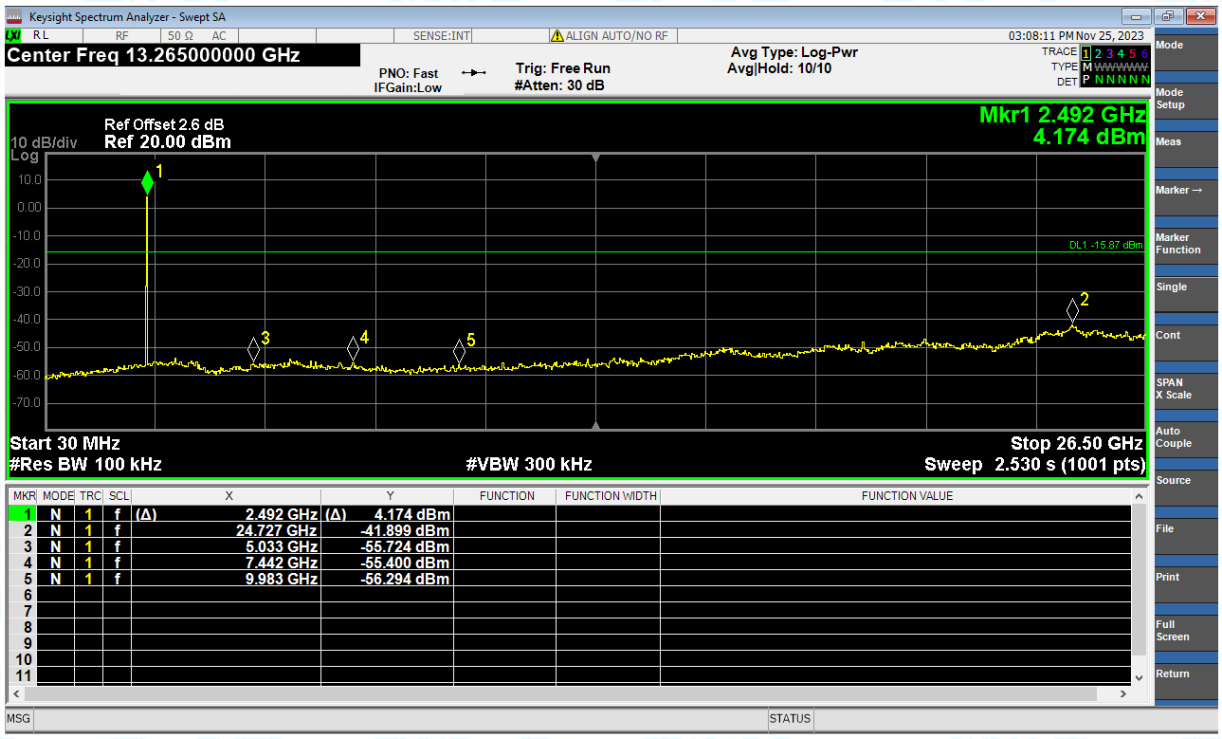
Tx. Spurious NVNT BLE 2Mbps 2440MHz Ant1 Emission



Tx. Spurious NVNT BLE 2Mbps 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 2Mbps 2480MHz Ant1 Emission

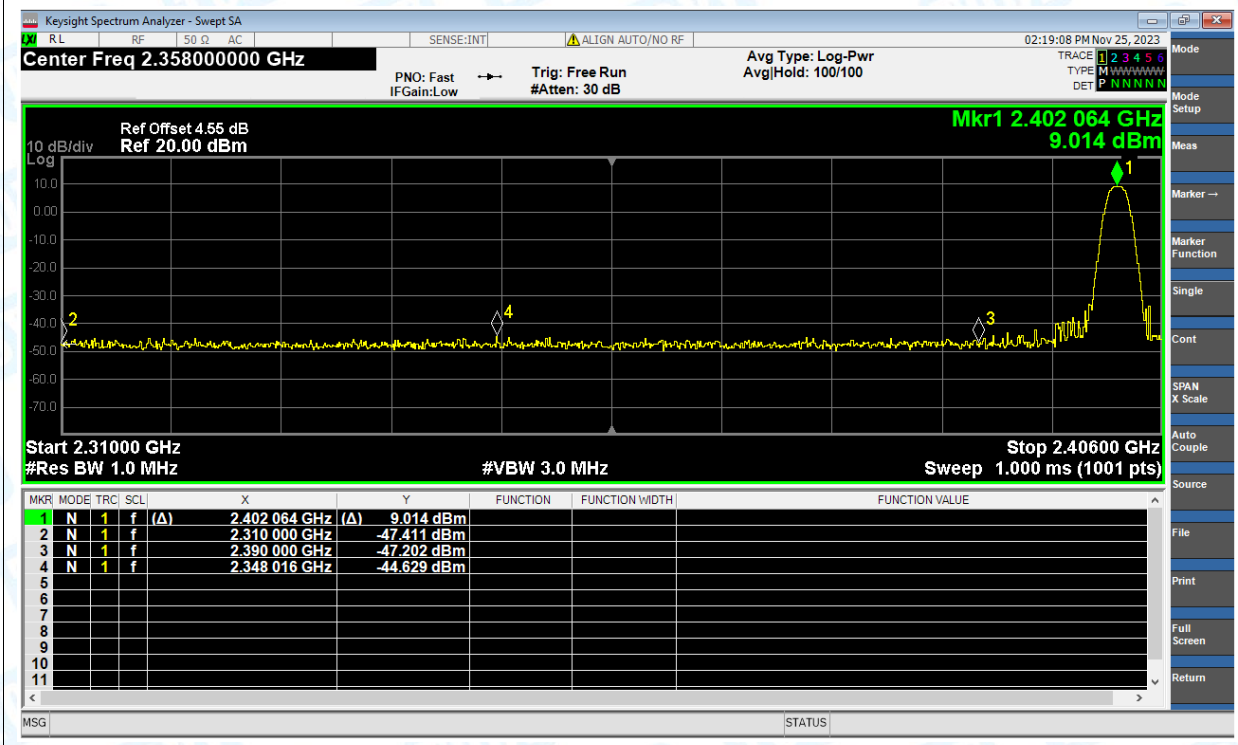


8. Restrict Band

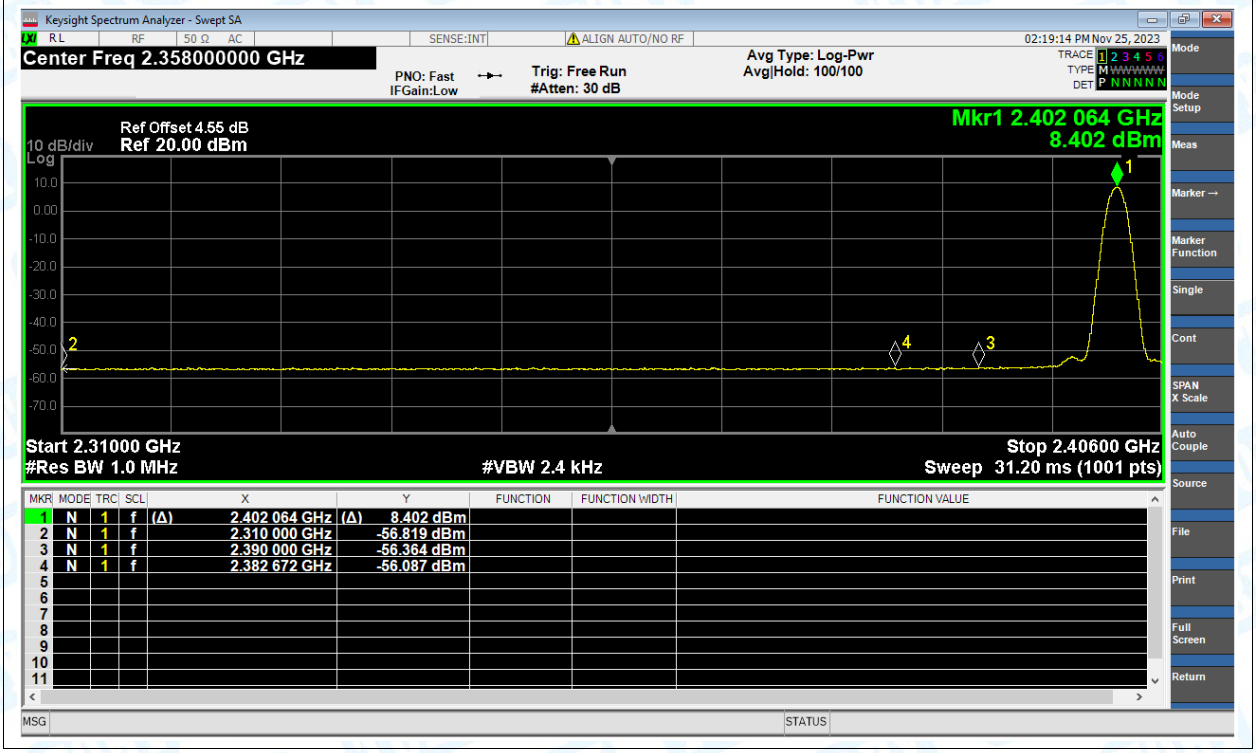
Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	BLE 1Mbps	2402	Ant1	2310	-47.41	2	49.85	Peak	74	Pass
NVNT	BLE 1Mbps	2402	Ant1	2310	-56.82	2	40.44	Average	54	Pass
NVNT	BLE 1Mbps	2402	Ant1	2348.016	-44.63	2	52.63	Peak	74	Pass
NVNT	BLE 1Mbps	2402	Ant1	2382.672	-56.09	2	41.17	Average	54	Pass
NVNT	BLE 1Mbps	2402	Ant1	2390	-48.22	2	49.04	Peak	74	Pass
NVNT	BLE 1Mbps	2402	Ant1	2390	-56.25	2	41.01	Average	54	Pass
NVNT	BLE 1Mbps	2480	Ant1	2483.5	-46.21	2	51.05	Peak	74	Pass
NVNT	BLE 1Mbps	2480	Ant1	2483.5	-54.87	2	42.39	Average	54	Pass
NVNT	BLE 1Mbps	2480	Ant1	2483.68	-34.87	2	62.39	Peak	74	Pass
NVNT	BLE 1Mbps	2480	Ant1	2483.728	-54.67	2	42.59	Average	54	Pass
NVNT	BLE 1Mbps	2480	Ant1	2500	-49.16	2	48.1	Peak	74	Pass
NVNT	BLE 1Mbps	2480	Ant1	2500	-56.49	2	40.77	Average	54	Pass
NVNT	BLE 2Mbps	2402	Ant1	2310	-47.99	2	49.27	Peak	74	Pass
NVNT	BLE 2Mbps	2402	Ant1	2310	-56.49	2	40.77	Average	54	Pass
NVNT	BLE 2Mbps	2402	Ant1	2321.808	-44.92	2	52.34	Peak	74	Pass
NVNT	BLE 2Mbps	2402	Ant1	2357.04	-55.81	2	41.45	Average	54	Pass
NVNT	BLE 2Mbps	2402	Ant1	2390	-47.54	2	49.72	Peak	74	Pass
NVNT	BLE 2Mbps	2402	Ant1	2390	-56.32	2	40.94	Average	54	Pass
NVNT	BLE 2Mbps	2480	Ant1	2483.5	-44.59	2	52.67	Peak	74	Pass
NVNT	BLE 2Mbps	2480	Ant1	2483.5	-49.63	2	47.63	Average	54	Pass
NVNT	BLE 2Mbps	2480	Ant1	2484.784	-36.77	2	60.49	Peak	74	Pass
NVNT	BLE 2Mbps	2480	Ant1	2483.512	-49.63	2	47.63	Average	54	Pass
NVNT	BLE 2Mbps	2480	Ant1	2500	-51.58	2	45.68	Peak	74	Pass
NVNT	BLE 2Mbps	2480	Ant1	2500	-56.43	2	40.83	Average	54	Pass

Test Graphs

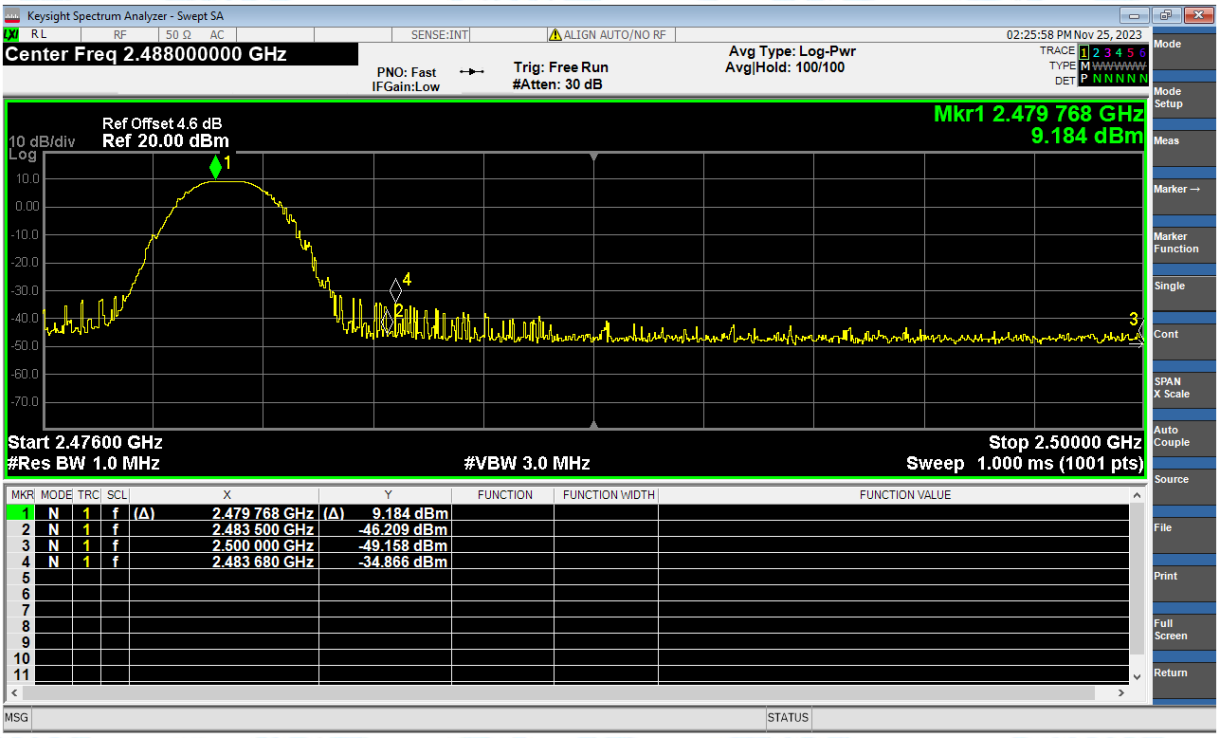
Restrict Band NVNT BLE 1Mbps 2402MHz Ant1 Peak



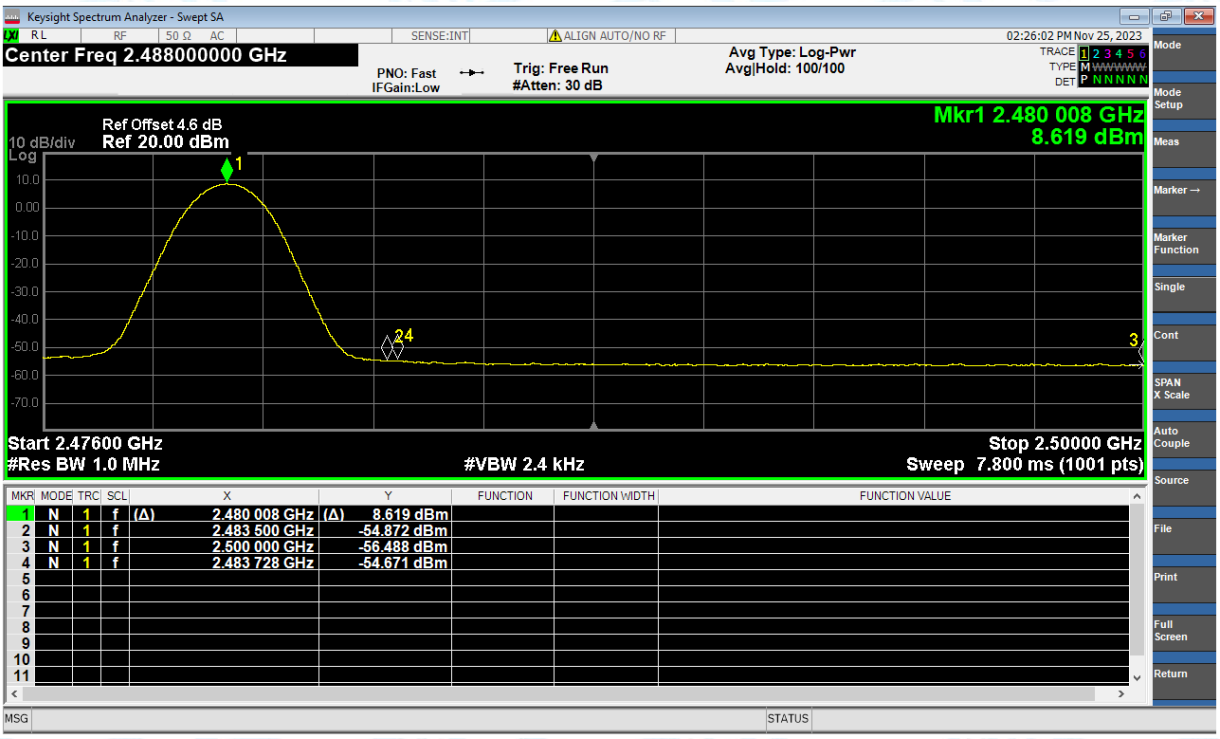
Restrict Band NVNT BLE 1Mbps 2402MHz Ant1 Average



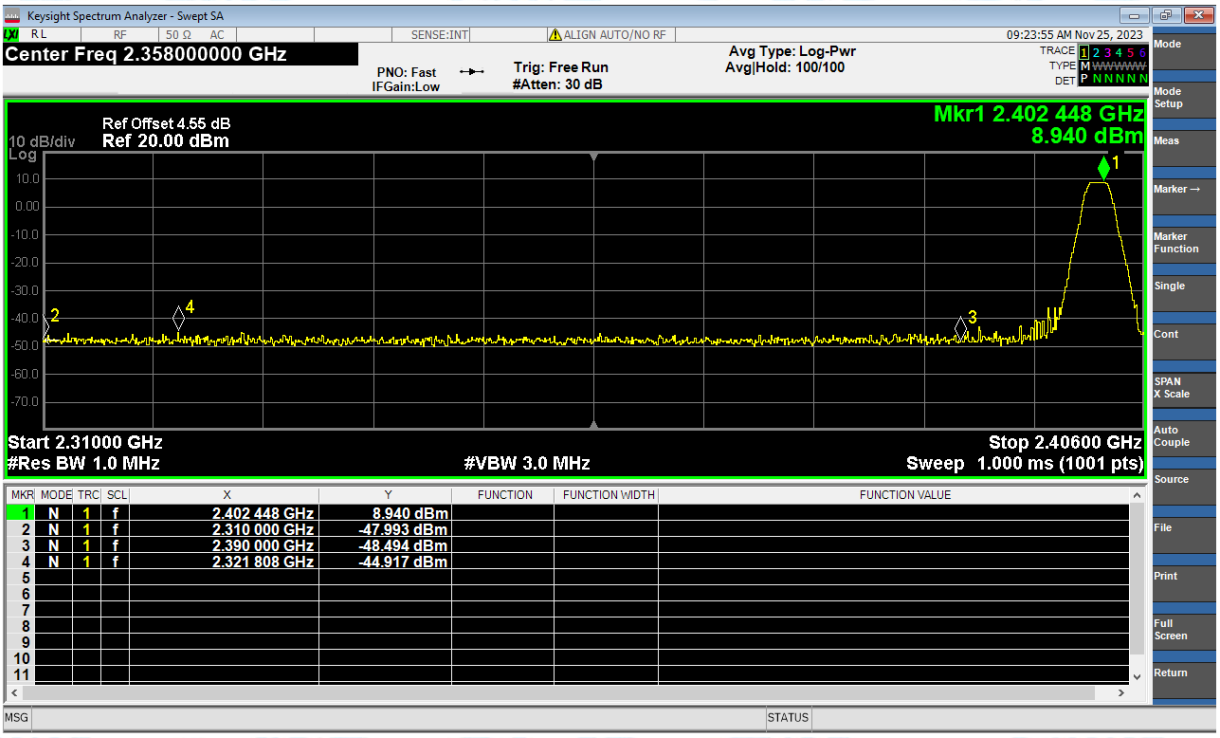
Restrict Band NVNT BLE 1Mbps 2480MHz Ant1 Peak



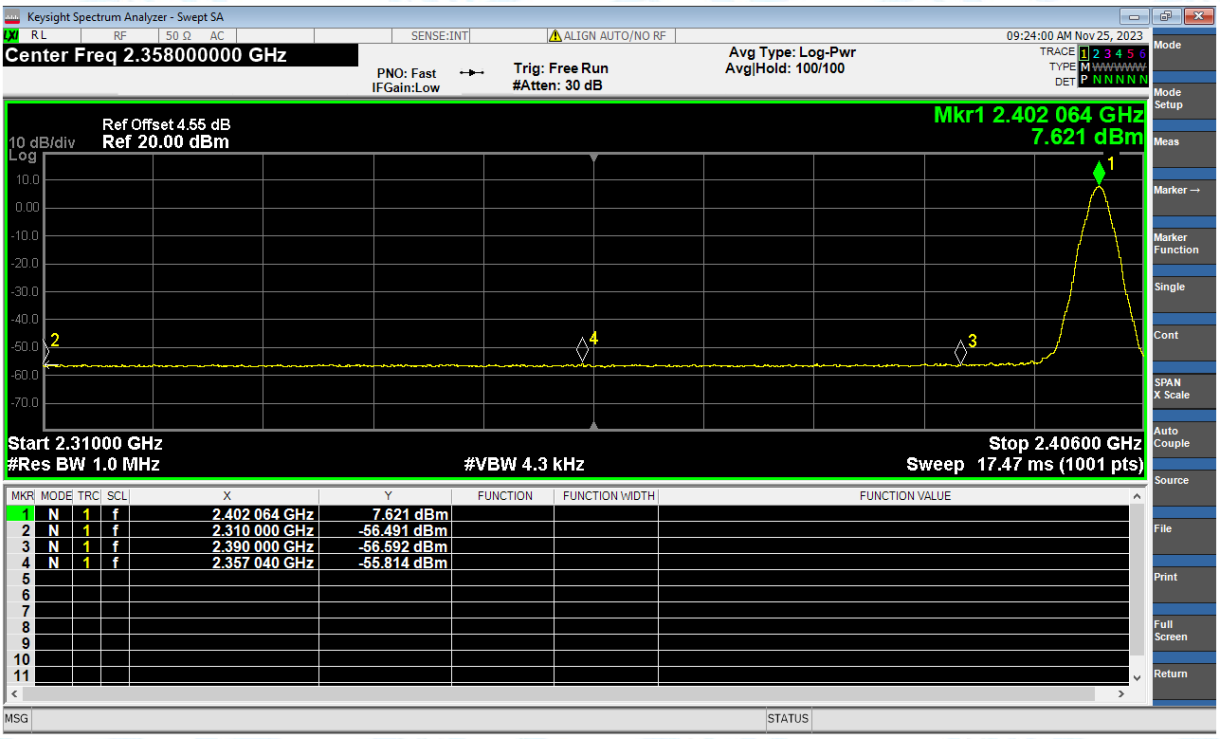
Restrict Band NVNT BLE 1Mbps 2480MHz Ant1 Average



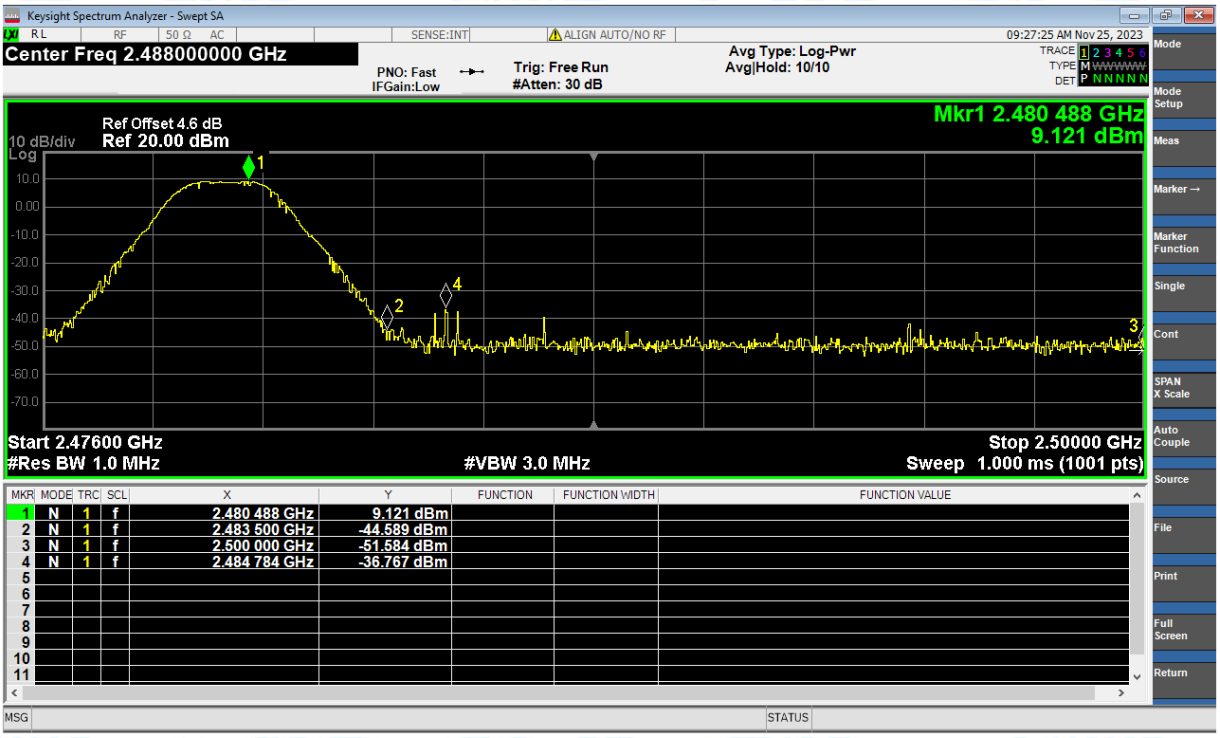
Restrict Band NVNT BLE 2Mbps 2402MHz Ant1 Peak



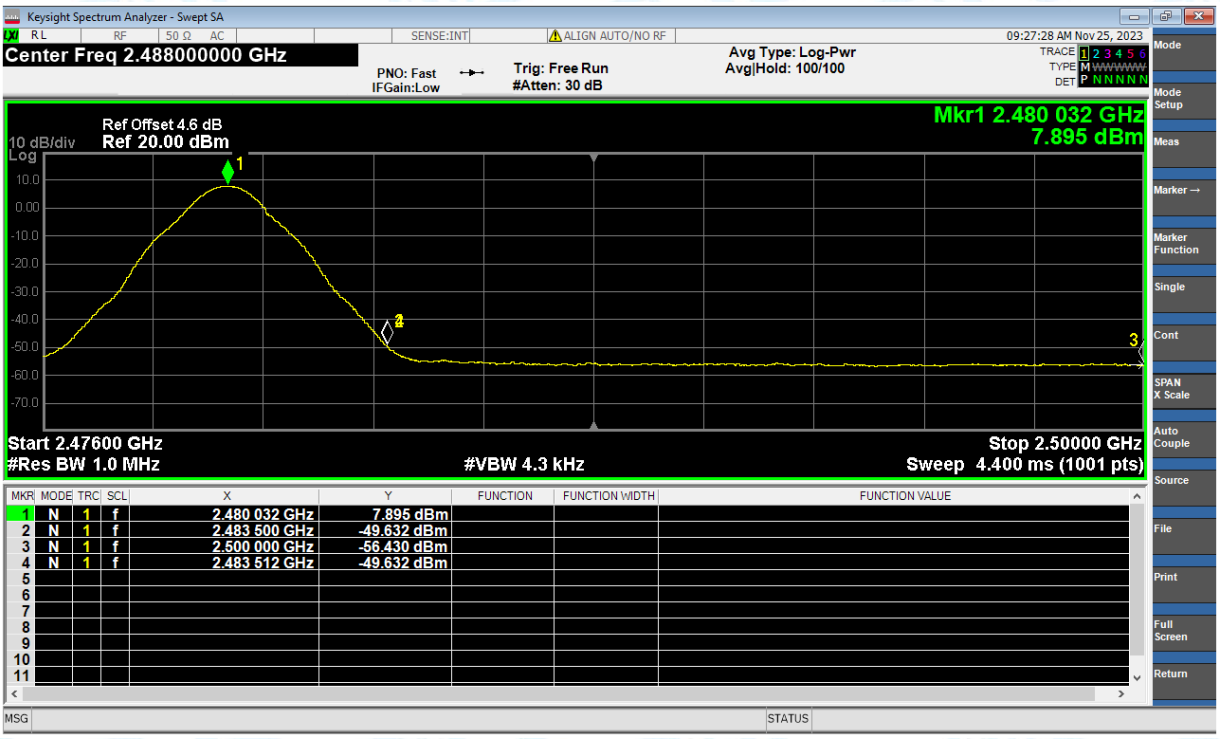
Restrict Band NVNT BLE 2Mbps 2402MHz Ant1 Average



Restrict Band NVNT BLE 2Mbps 2480MHz Ant1 Peak



Restrict Band NVNT BLE 2Mbps 2480MHz Ant1 Average



-----END OF THE REPORT-----