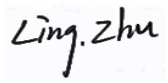
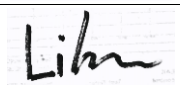
Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: Smart Watch

Test Model: TS30

Environmental Conditions

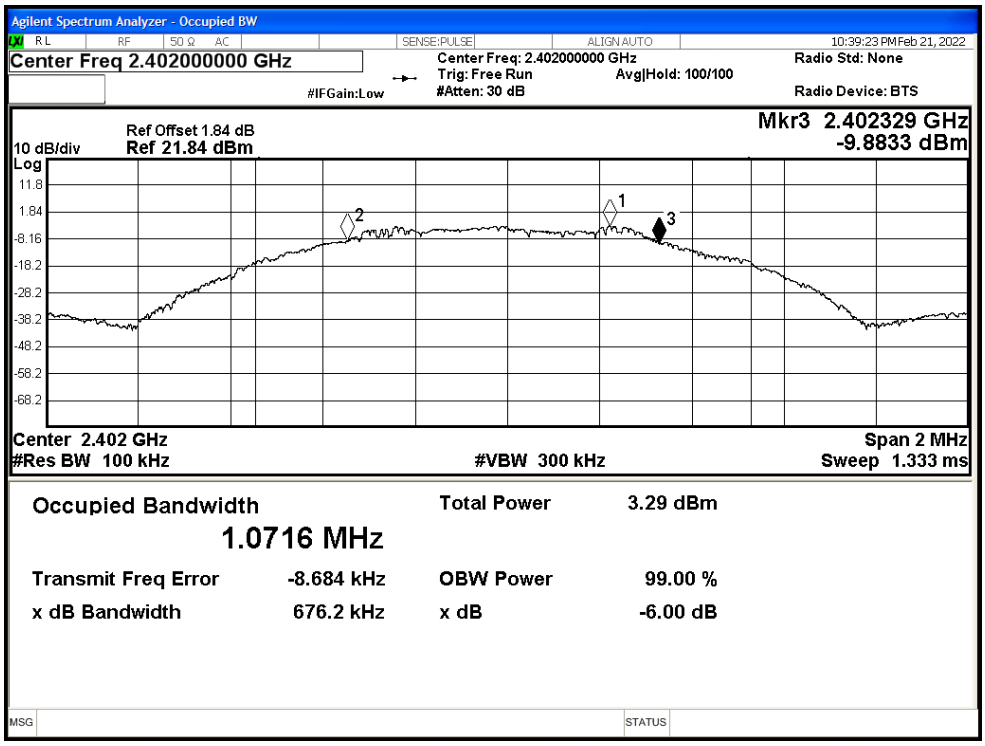
Temperature:	21.1 ° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	
Supervised by:	

A.1 6dB Bandwidth

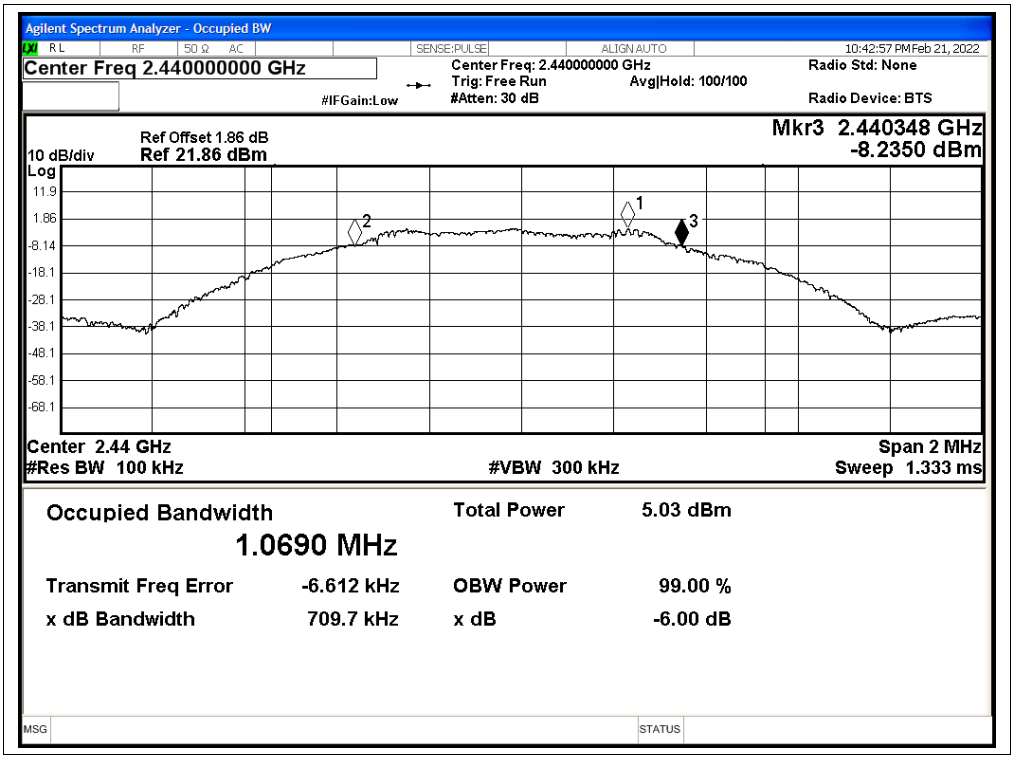
Condition	Mode	Frequency (MHz)	Antenna	6 dB Bandwidth (MHz)	Limit 6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.676	0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.71	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.697	0.5	Pass

Test Graphs

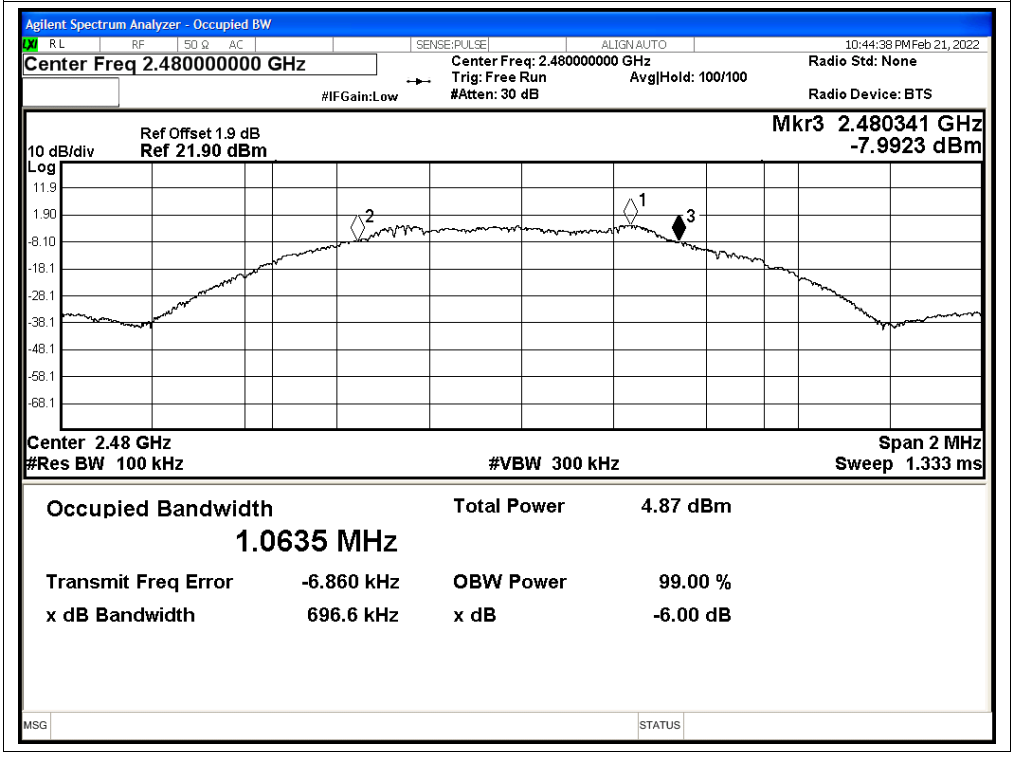
6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



6dB Bandwidth NVNT BLE 1M 2440MHz Ant1



6dB Bandwidth NVNT BLE 1M 2480MHz Ant1

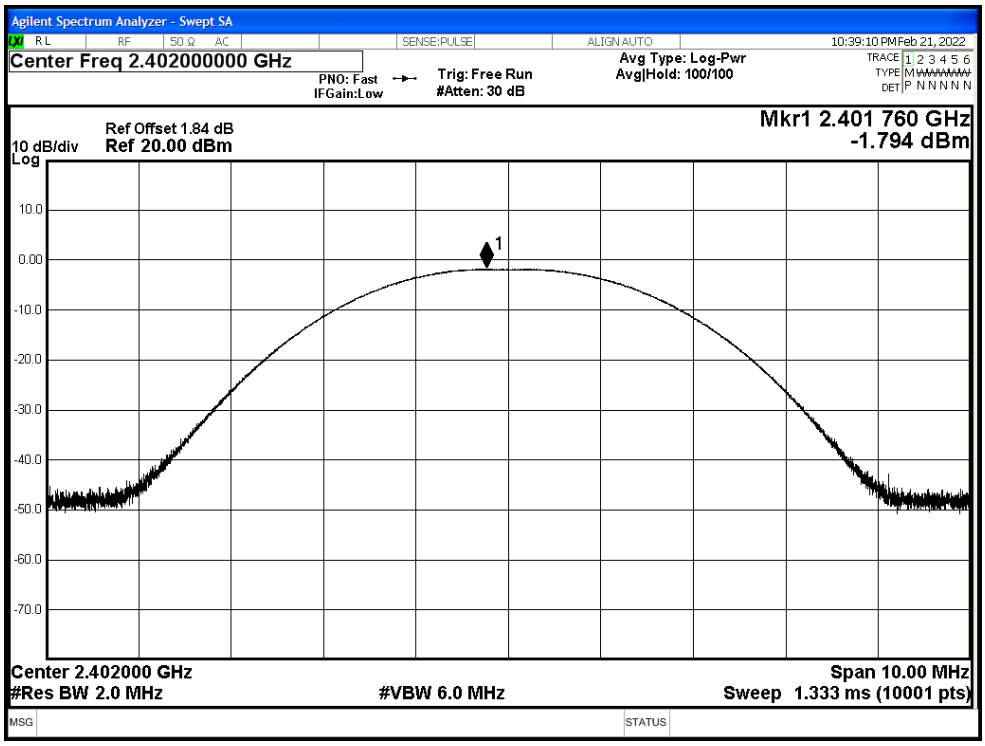


A.2 Maximum Conducted Output Power

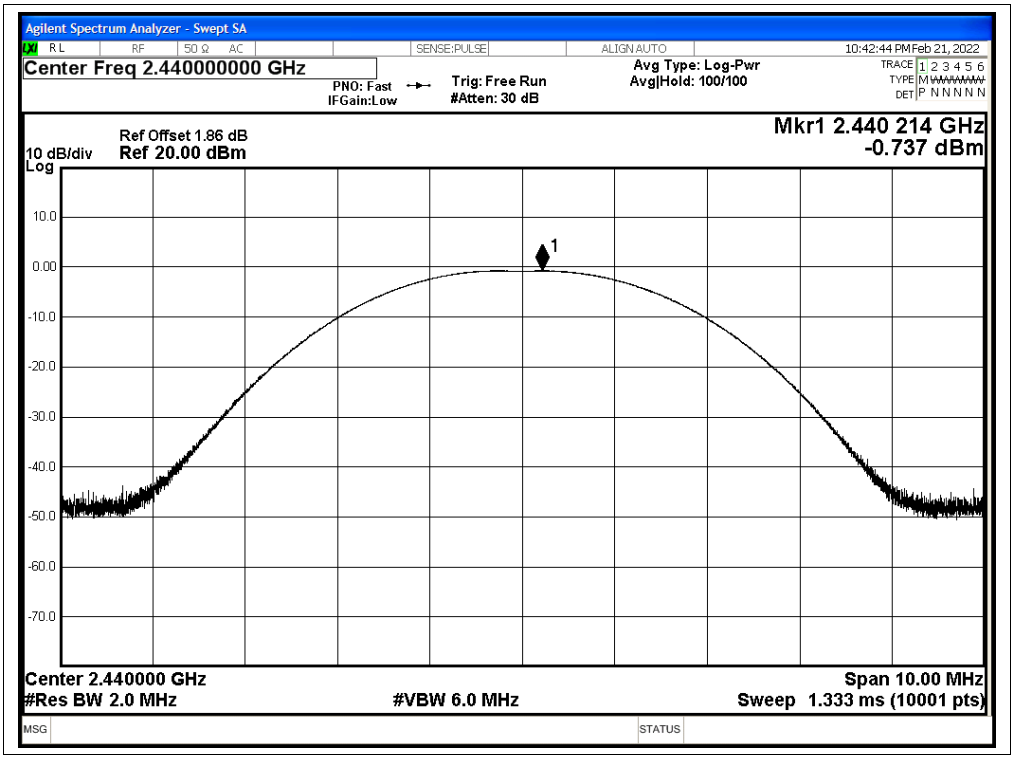
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-1.79	30	Pass
NVNT	BLE 1M	2440	Ant1	-0.74	30	Pass
NVNT	BLE 1M	2480	Ant1	-0.88	30	Pass

Test Graphs

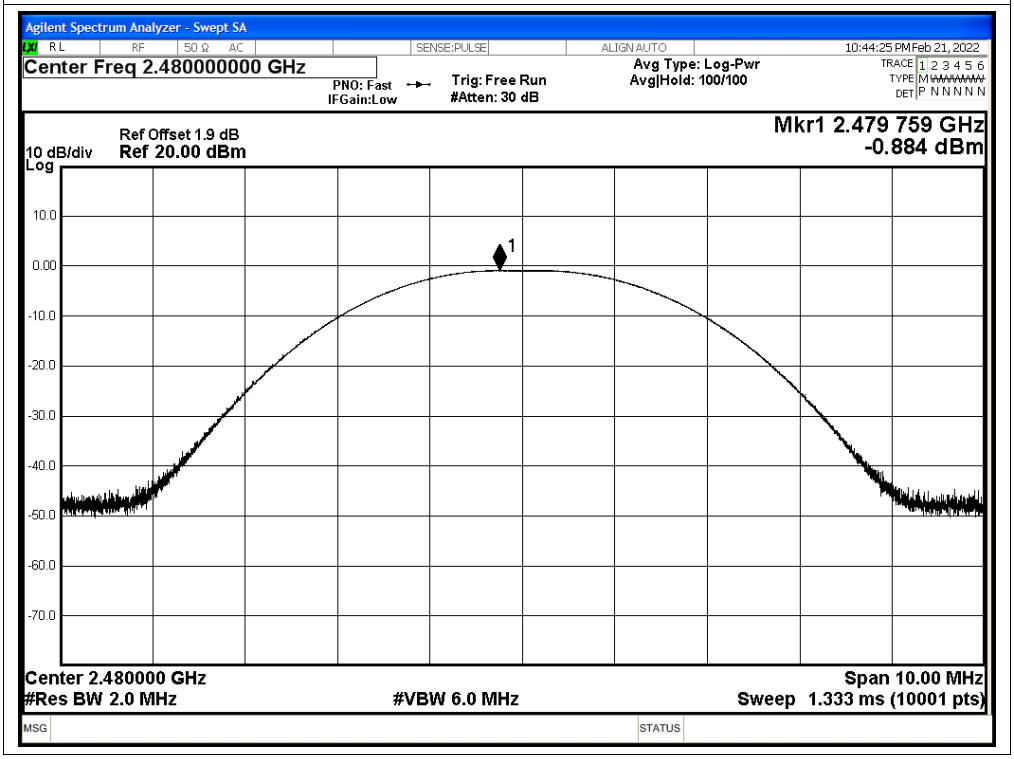
Power NVNT BLE 1M 2402MHz Ant1



Power NVNT BLE 1M 2440MHz Ant1



Power NVNT BLE 1M 2480MHz Ant1

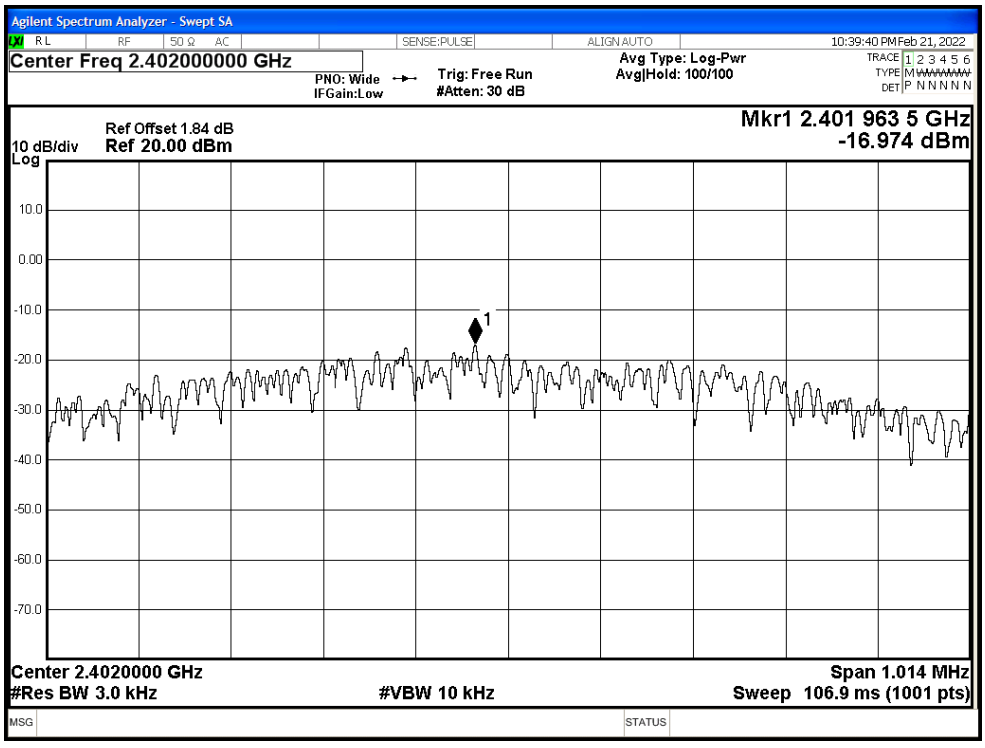


A.3 Maximum Power Spectral Density

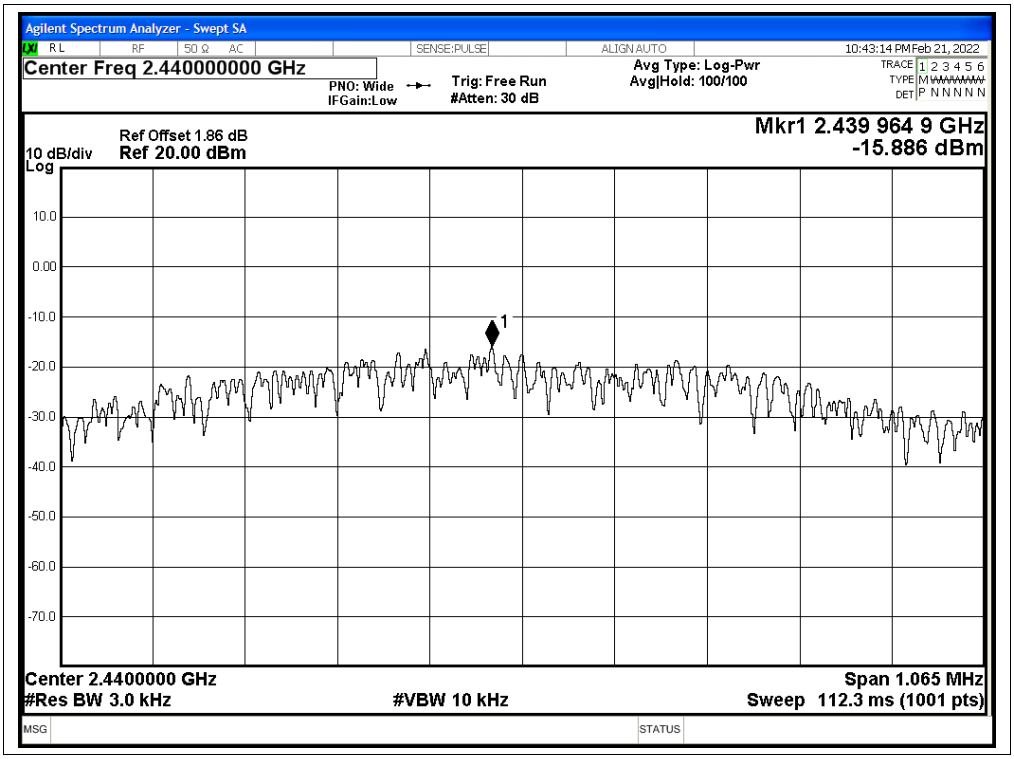
Condition	Mode	Frequency (MHz)	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	-16.97	0	-16.97	8	Pass
NVNT	BLE 1M	2440	-15.89	0	-15.89	8	Pass
NVNT	BLE 1M	2480	-15.96	0	-15.96	8	Pass

Test Graphs

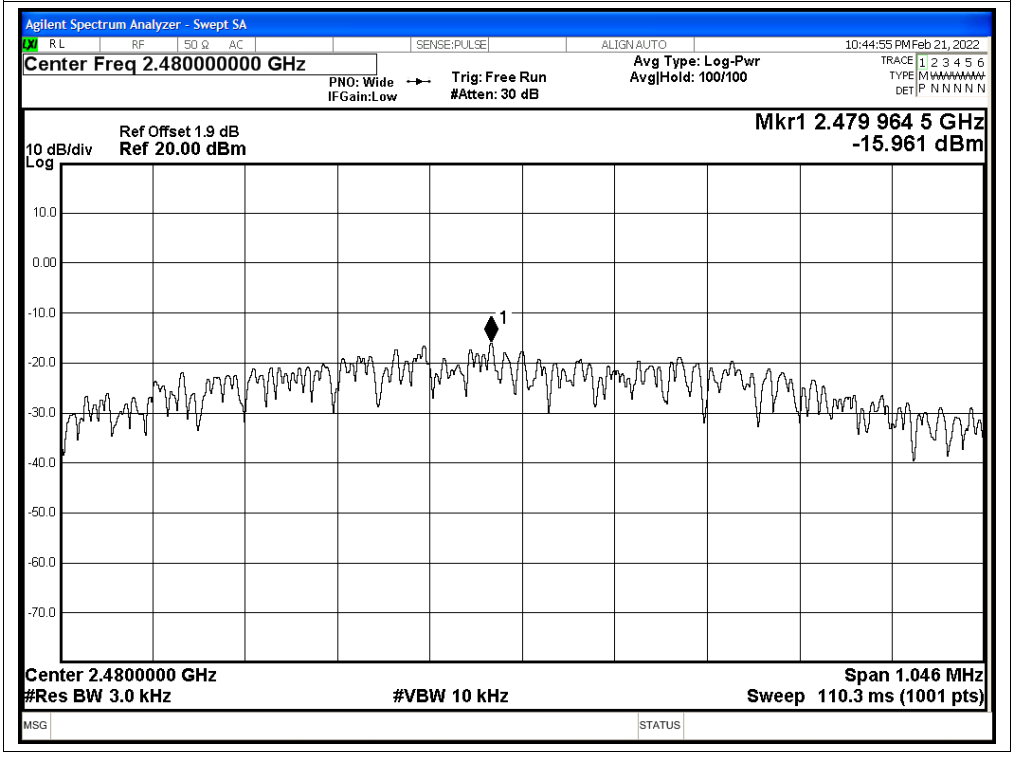
PSD NVNT BLE 1M 2402MHz Ant1



PSD NVNT BLE 1M 2440MHz Ant1



PSD NVNT BLE 1M 2480MHz Ant1

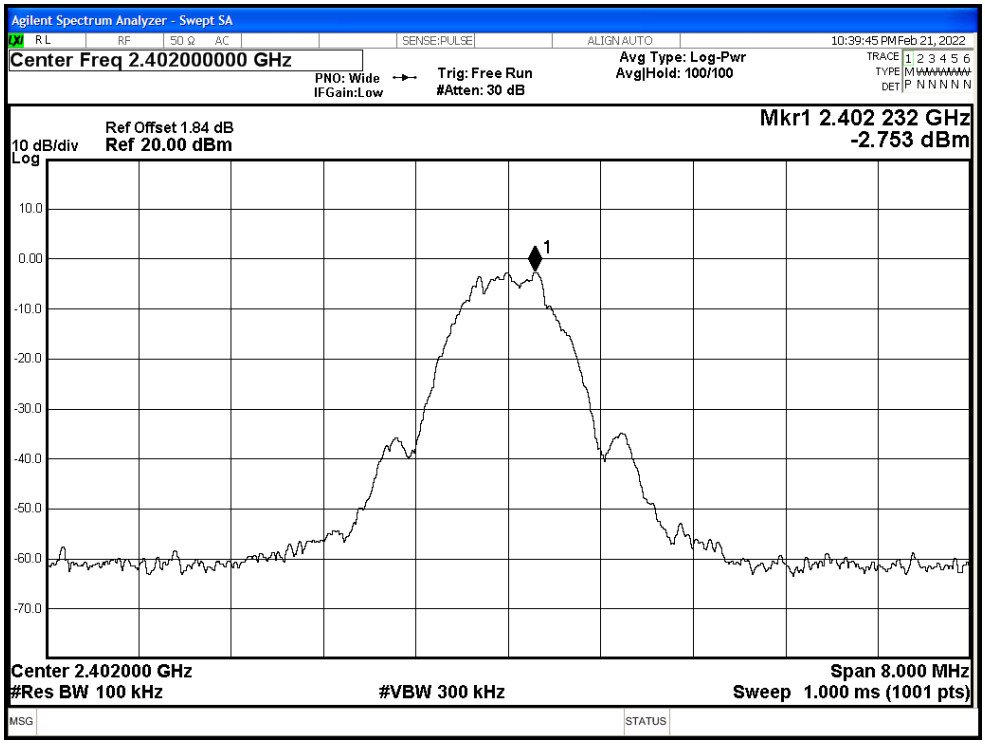


A.4 Band edge measurements

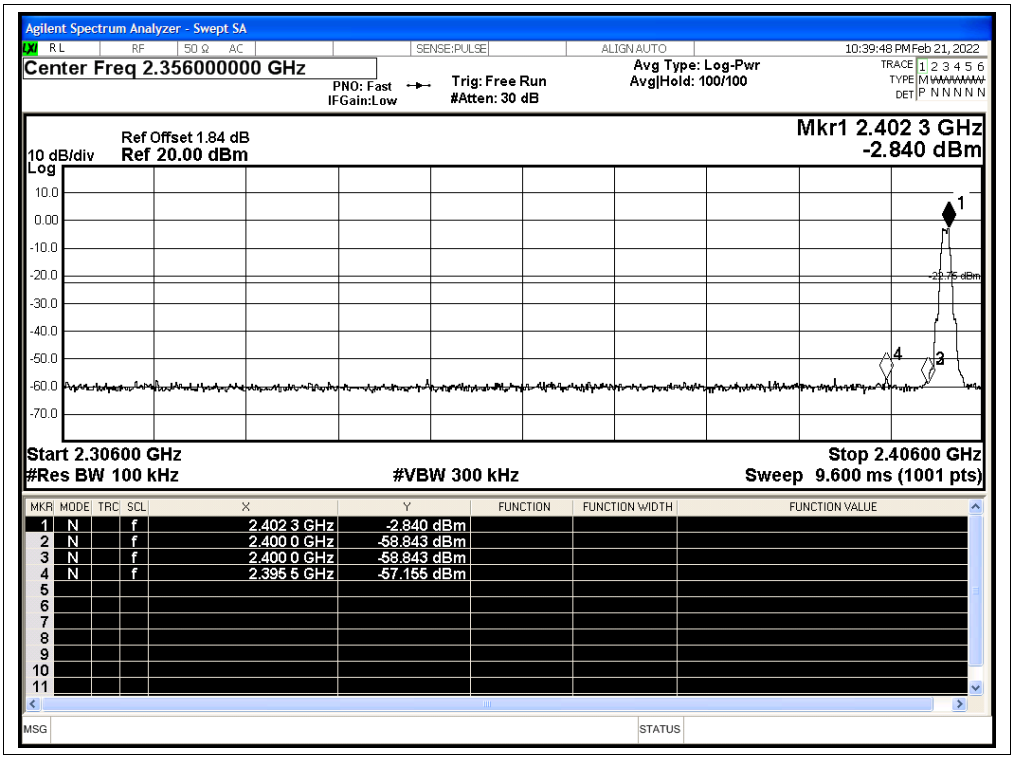
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-54.4	-20	Pass
NVNT	BLE 1M	2480	Ant1	-54.95	-20	Pass

Test Graphs

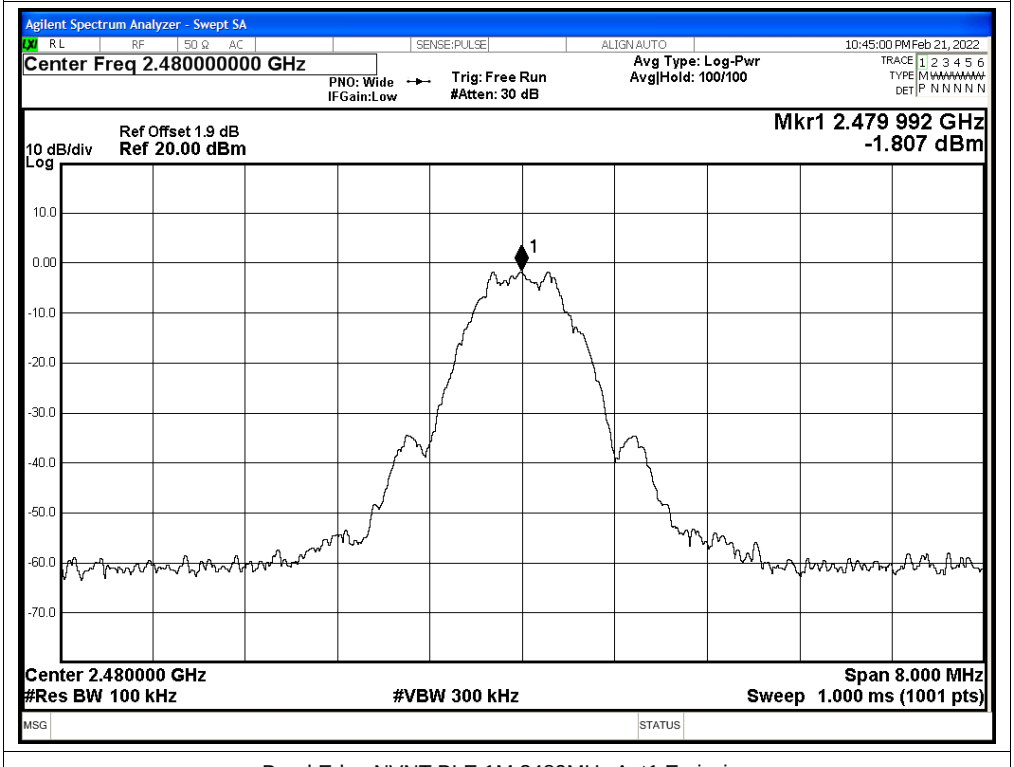
Band Edge NVNT BLE 1M 2402MHz Ant1 Ref



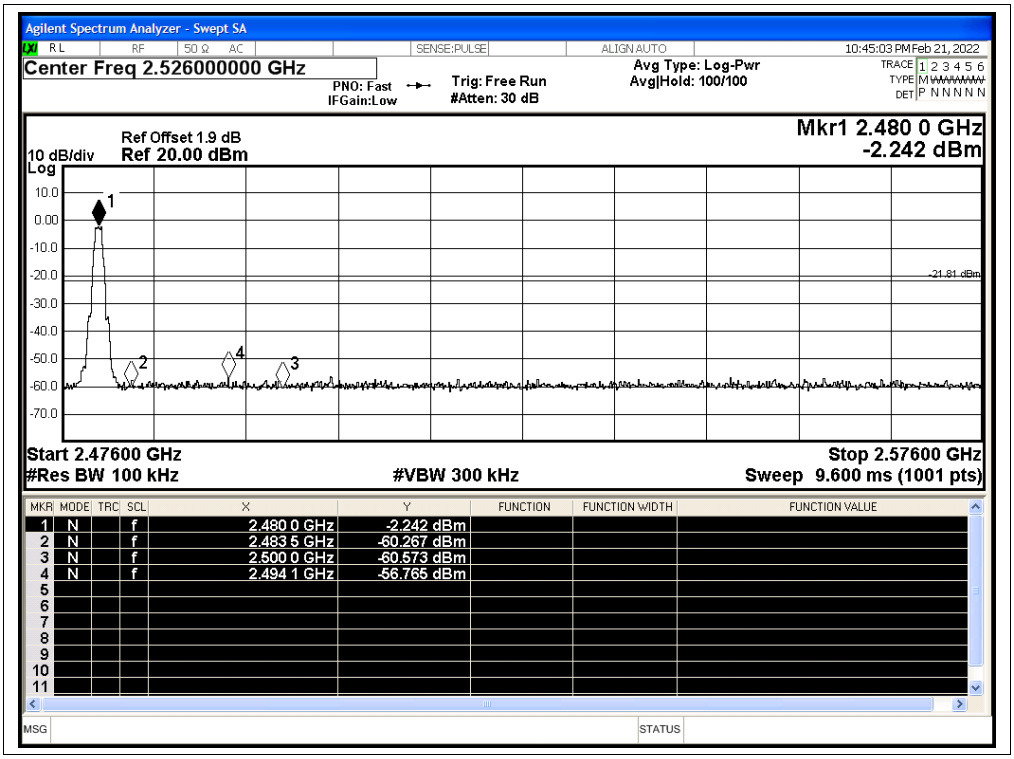
Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



Band Edge NVNT BLE 1M 2480MHz Ant1 Ref



Band Edge NVNT BLE 1M 2480MHz Ant1 Emission

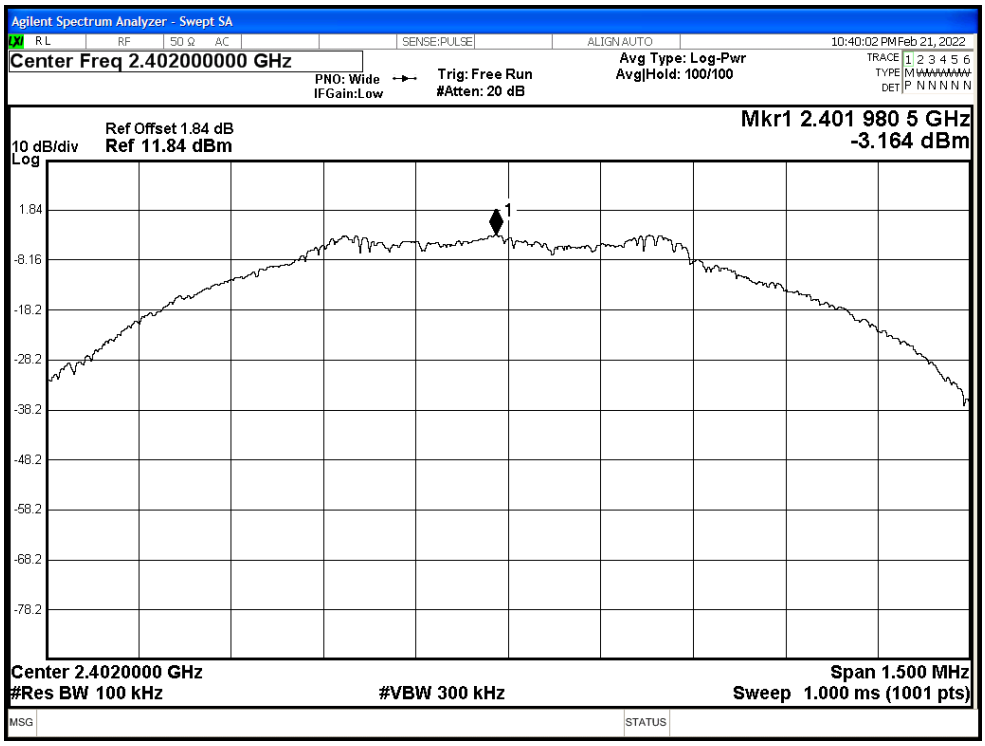

Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
10:45:03 PM Feb 21, 2022
Center Freq 2.526000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.480 0 GHz
-2.242 dBm
Ref Offset 1.9 dB
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-21.81 dBm
Start 2.47600 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.57600 GHz
Sweep 9.600 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N f 2.480 0 GHz -2.242 dBm
2 N f 2.483 5 GHz -60.267 dBm
3 N f 2.500 0 GHz -60.573 dBm
4 N f 2.494 1 GHz -56.765 dBm
5
6
7
8
9
10
11
MSG
STATUS

A.5 Conducted Spurious Emission

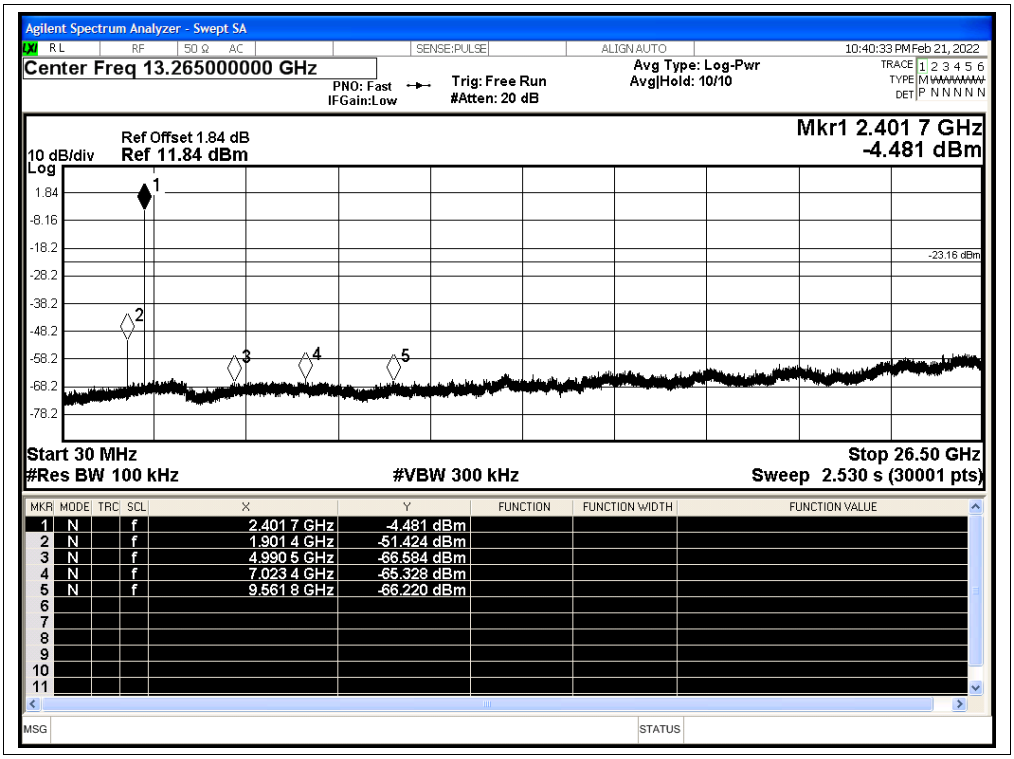
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-48.26	-20	Pass
NVNT	BLE 1M	2440	Ant1	-51.91	-20	Pass
NVNT	BLE 1M	2480	Ant1	-54.08	-20	Pass

Test Graphs

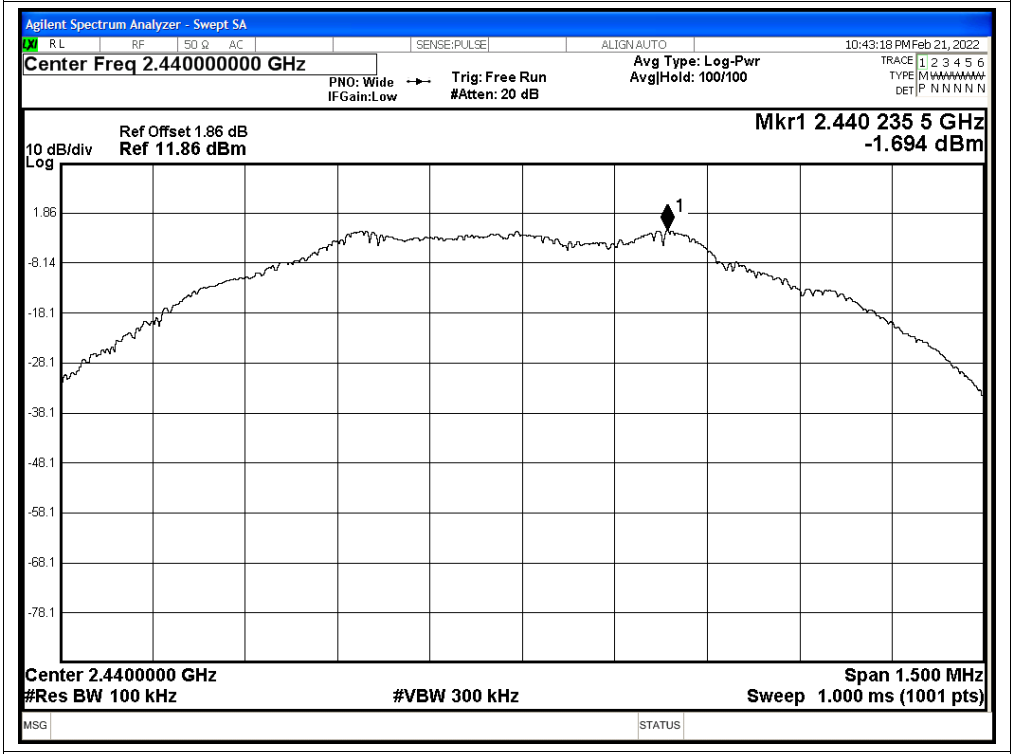
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref



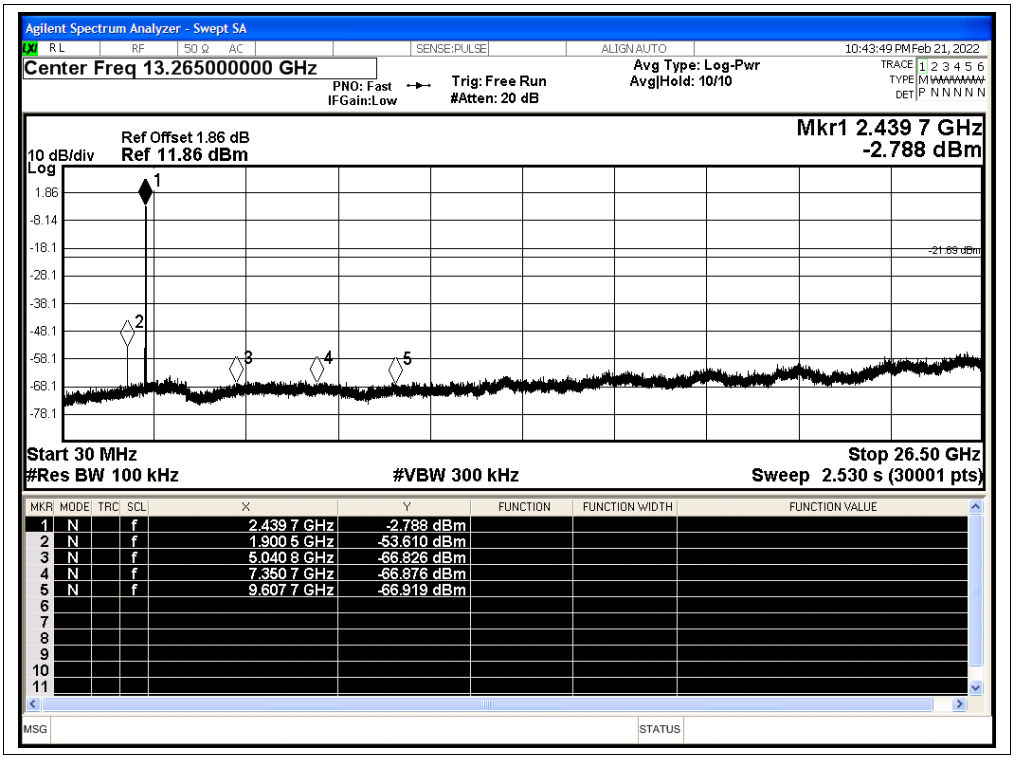
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



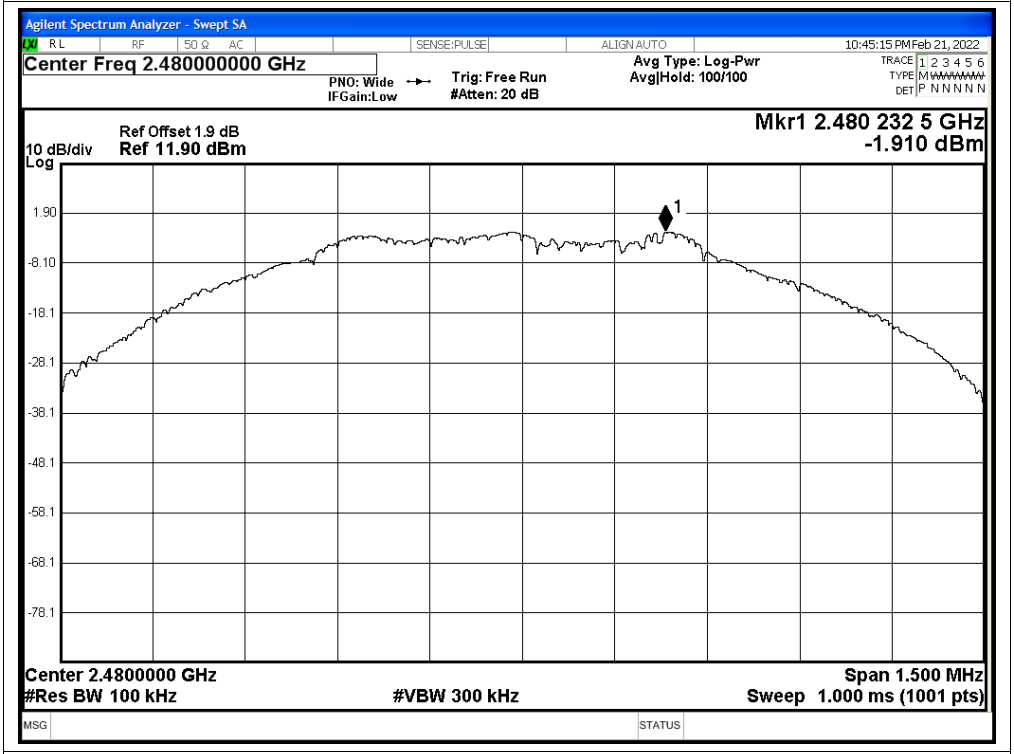
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref



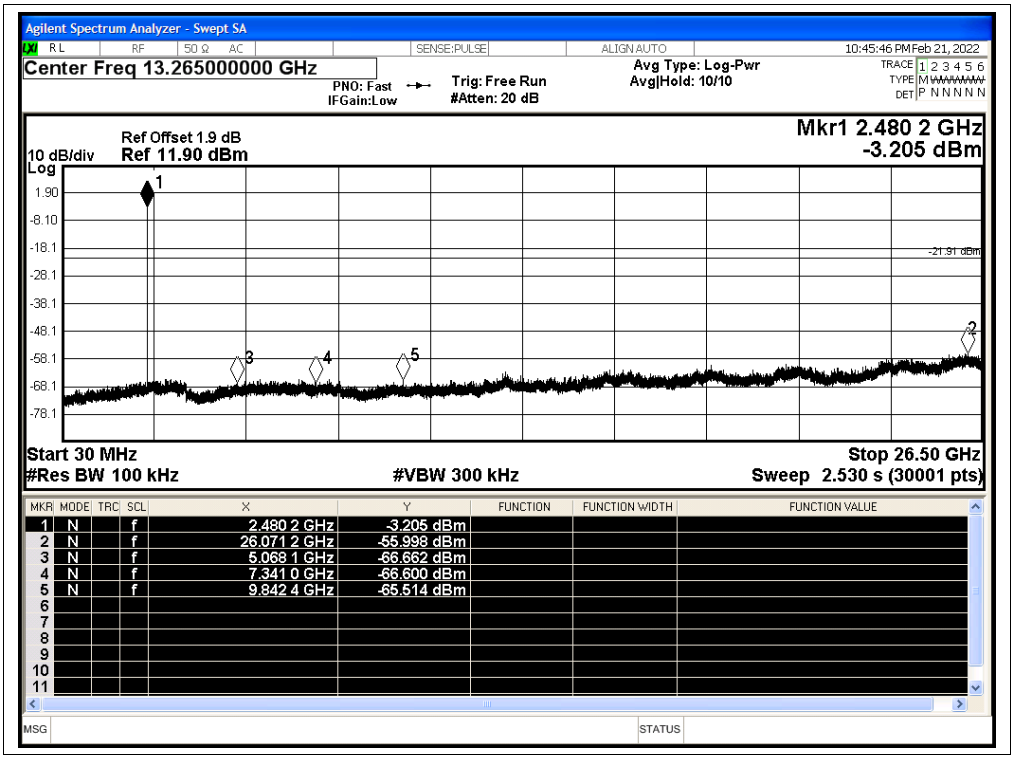
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission

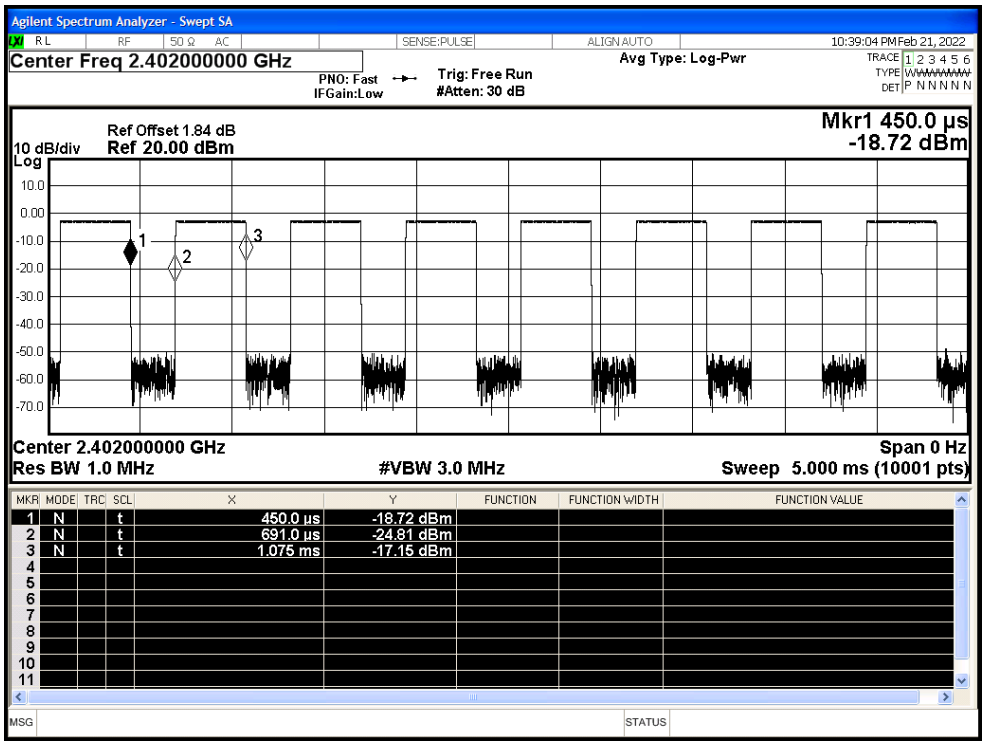

Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
10:45:46 PM Feb 21, 2022
Center Freq 13.265000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.480 2 GHz
-3.205 dBm
Ref Offset 1.9 dB
10 dB/div
Log
Ref 11.90 dBm
1.90
-8.10
-18.1
-28.1
-38.1
-48.1
-58.1
-68.1
-78.1
-21.91 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.530 s (30001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N f 2.480 2 GHz -3.205 dBm
2 N f 26.071 2 GHz -55.998 dBm
3 N f 5.068 1 GHz -66.662 dBm
4 N f 7.341 0 GHz -66.600 dBm
5 N f 9.842 4 GHz -65.514 dBm
6
7
8
9
10
11
MSG
STATUS

A.6 Duty Cycle

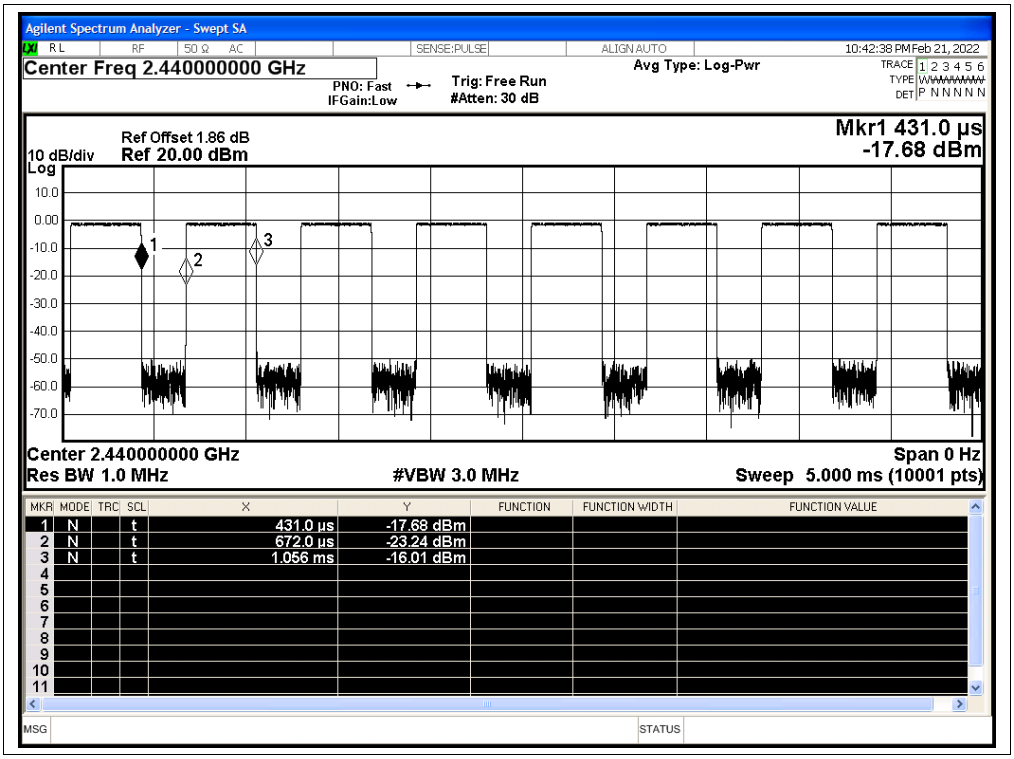
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant1	61.44	2.12	2.6
NVNT	BLE 1M	2440	Ant1	61.44	2.12	2.6
NVNT	BLE 1M	2480	Ant1	61.44	2.12	2.6

Test Graphs

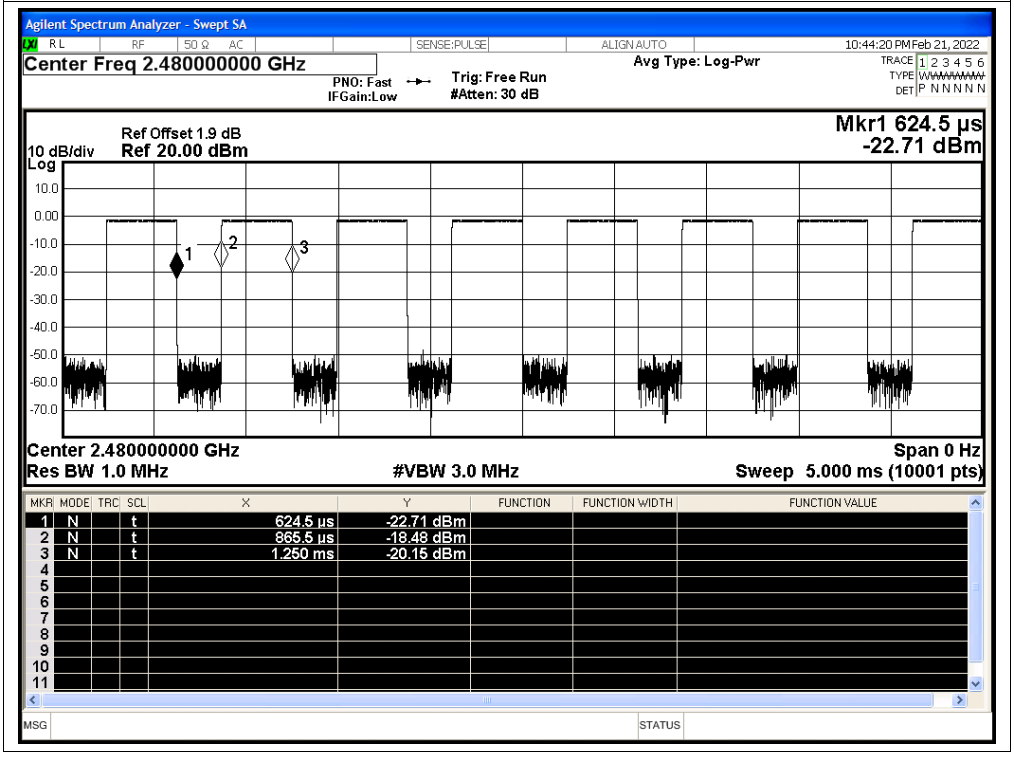
Duty Cycle NVNT BLE 1M 2402MHz Ant1



Duty Cycle NVNT BLE 1M 2440MHz Ant1



Duty Cycle NVNT BLE 1M 2480MHz Ant1

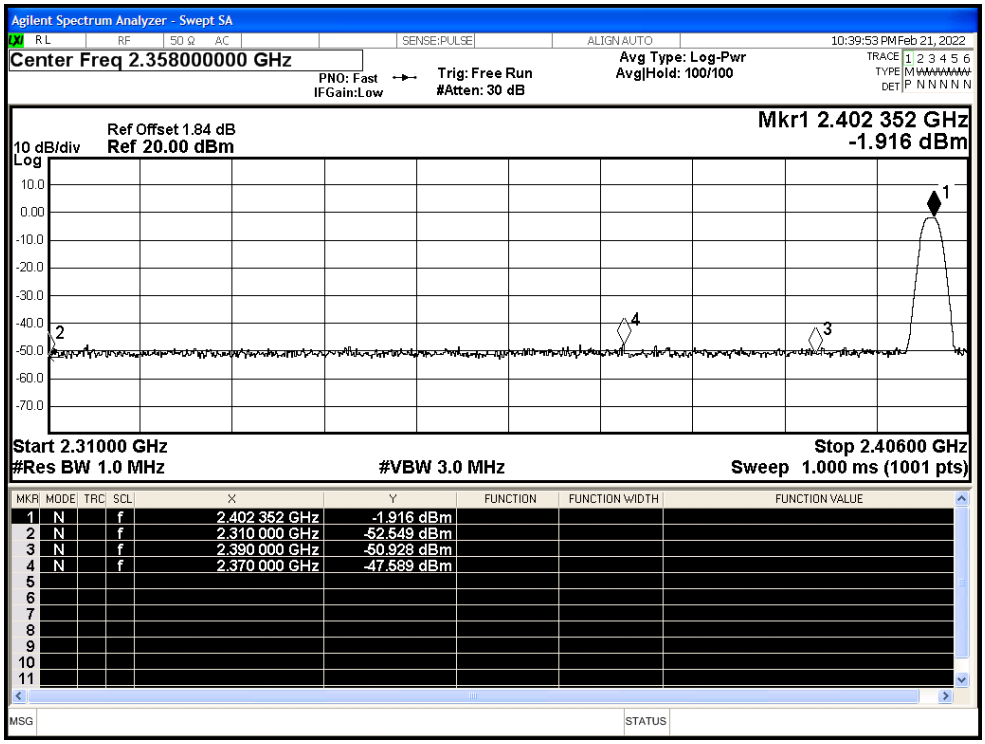


A.7 Emissions in Restricted Bands

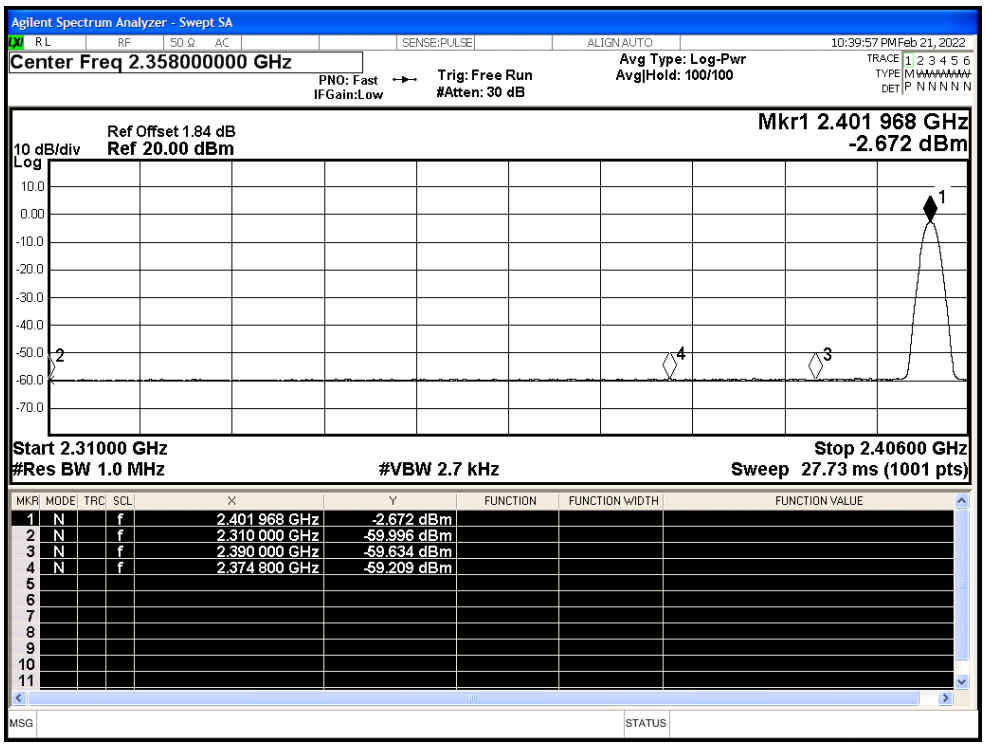
Condition	Mode	Frequency (MHz)	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	BLE 1M	2402	2310	-52.54	2	44.72	Peak	74	Pass
NVNT	BLE 1M	2402	2310	-59.99	2	37.27	Average	54	Pass
NVNT	BLE 1M	2402	2370	-47.58	2	49.68	Peak	74	Pass
NVNT	BLE 1M	2402	2374.8	-59.2	2	38.06	Average	54	Pass
NVNT	BLE 1M	2402	2390	-50.29	2	46.97	Peak	74	Pass
NVNT	BLE 1M	2402	2390	-59.7	2	37.56	Average	54	Pass
NVNT	BLE 1M	2480	2483.5	-50.49	2	46.77	Peak	74	Pass
NVNT	BLE 1M	2480	2483.5	-59.38	2	37.88	Average	54	Pass
NVNT	BLE 1M	2480	2499.136	-47.71	2	49.55	Peak	74	Pass
NVNT	BLE 1M	2480	2495.656	-58.76	2	38.5	Average	54	Pass
NVNT	BLE 1M	2480	2500	-50.23	2	47.03	Peak	74	Pass
NVNT	BLE 1M	2480	2500	-59.2	2	38.06	Average	54	Pass

Test Graphs

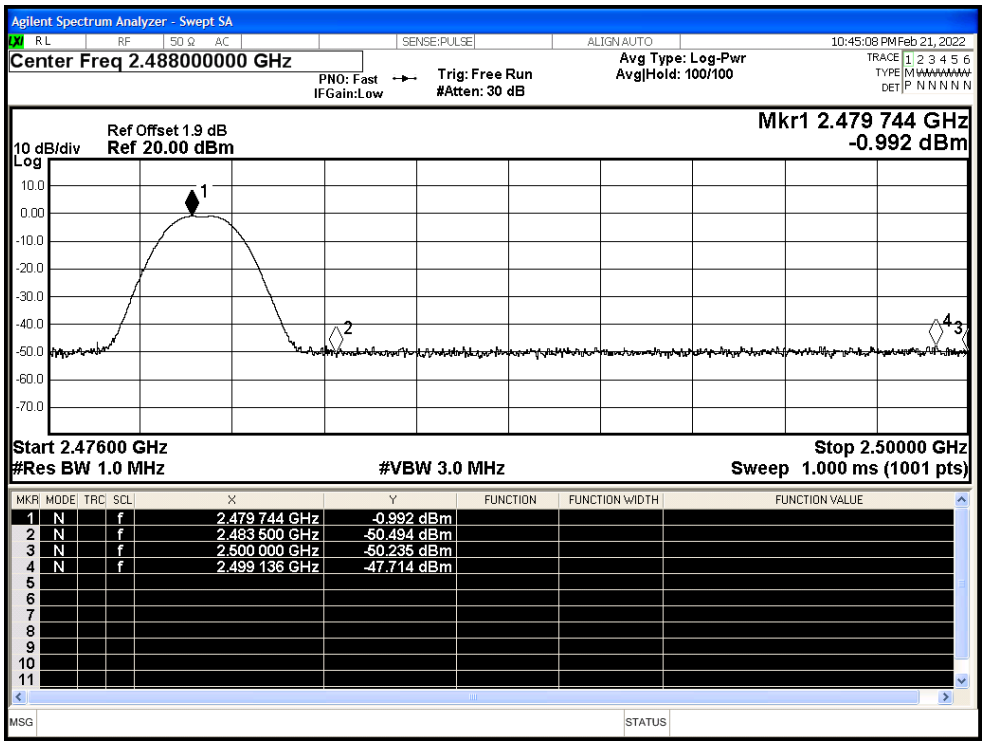
Restrict Band NVNT BLE 1M 2402MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2402MHz Ant1 Average



Restrict Band NVNT BLE 1M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2480MHz Ant1 Average