Appendix B

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: FitBark GPS

Test Model: 7005

Environmental Conditions

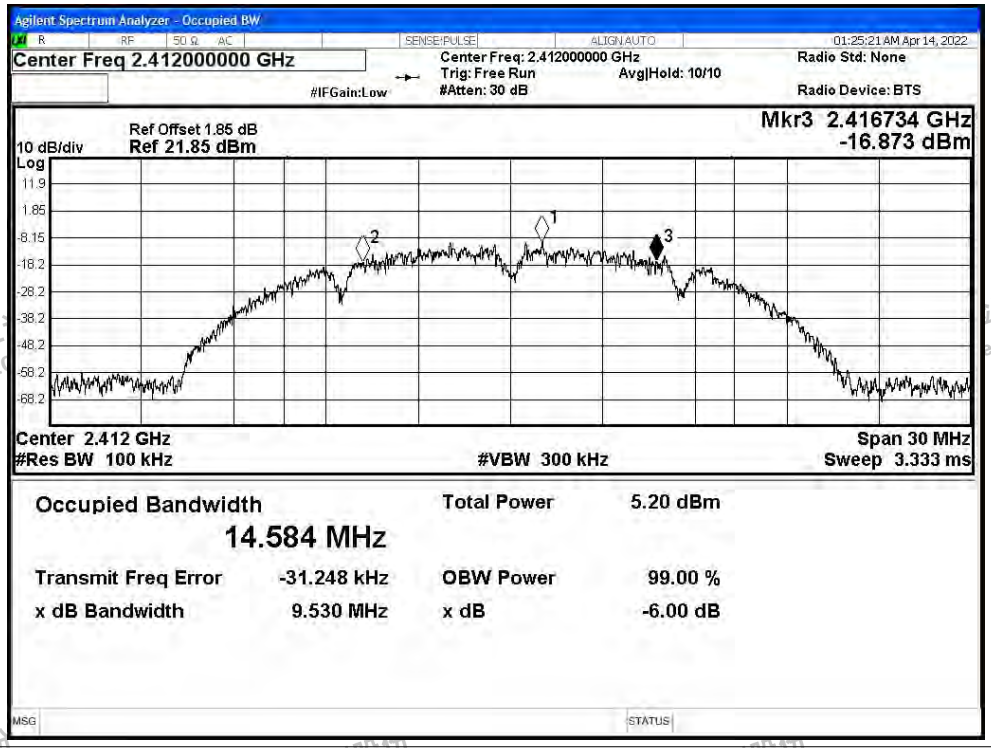
Temperature:	23.5° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Bill Zhu
Supervised by:	Li Huan

B.1 -6dB Bandwidth

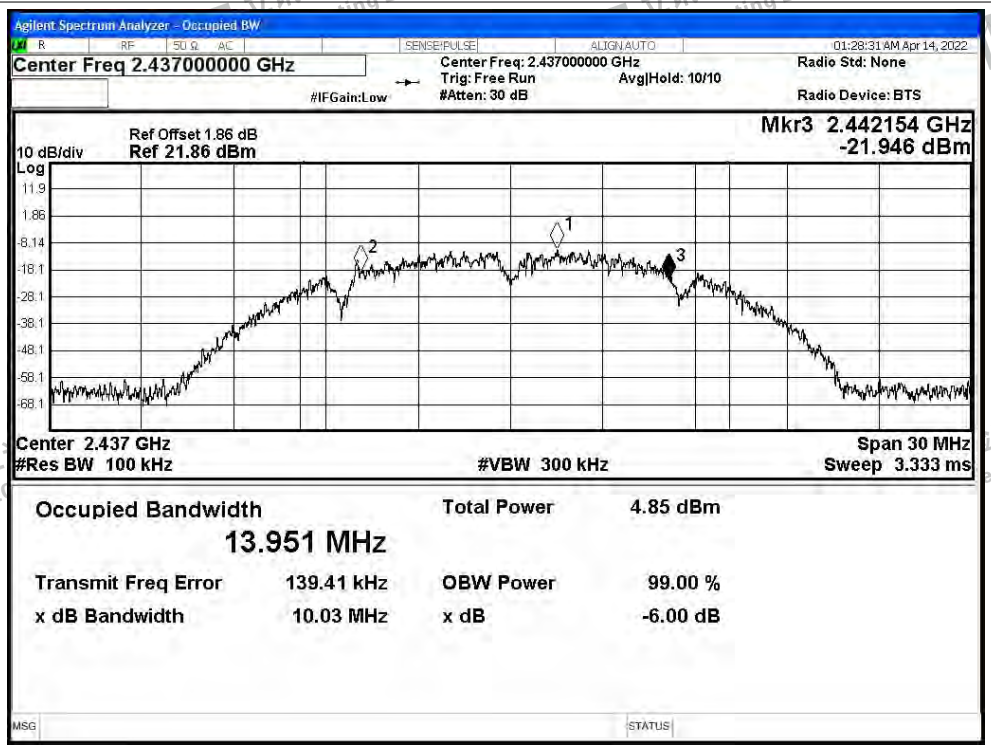
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	9.53	0.5	Pass
NVNT	b	2437	Ant1	10.028	0.5	Pass
NVNT	b	2462	Ant1	9.624	0.5	Pass
NVNT	g	2412	Ant1	16.367	0.5	Pass
NVNT	g	2437	Ant1	16.421	0.5	Pass
NVNT	g	2462	Ant1	15.415	0.5	Pass
NVNT	n20	2412	Ant1	17.591	0.5	Pass
NVNT	n20	2437	Ant1	17.572	0.5	Pass
NVNT	n20	2462	Ant1	17.67	0.5	Pass

Test Graphs

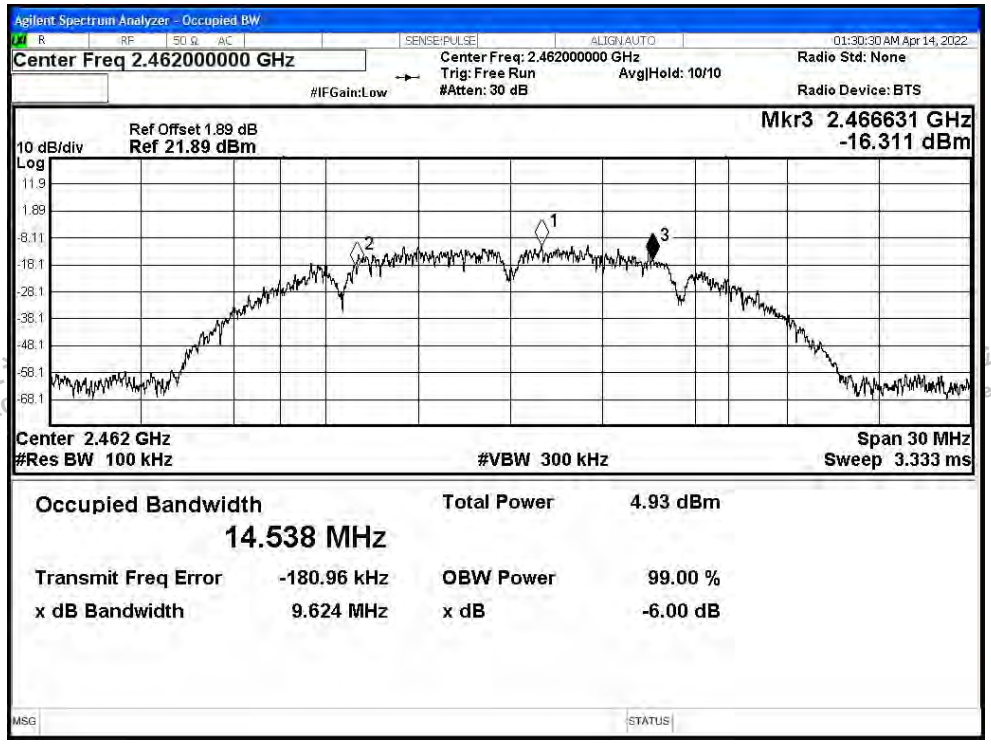
-6dB Bandwidth NVNT b 2412MHz Ant1



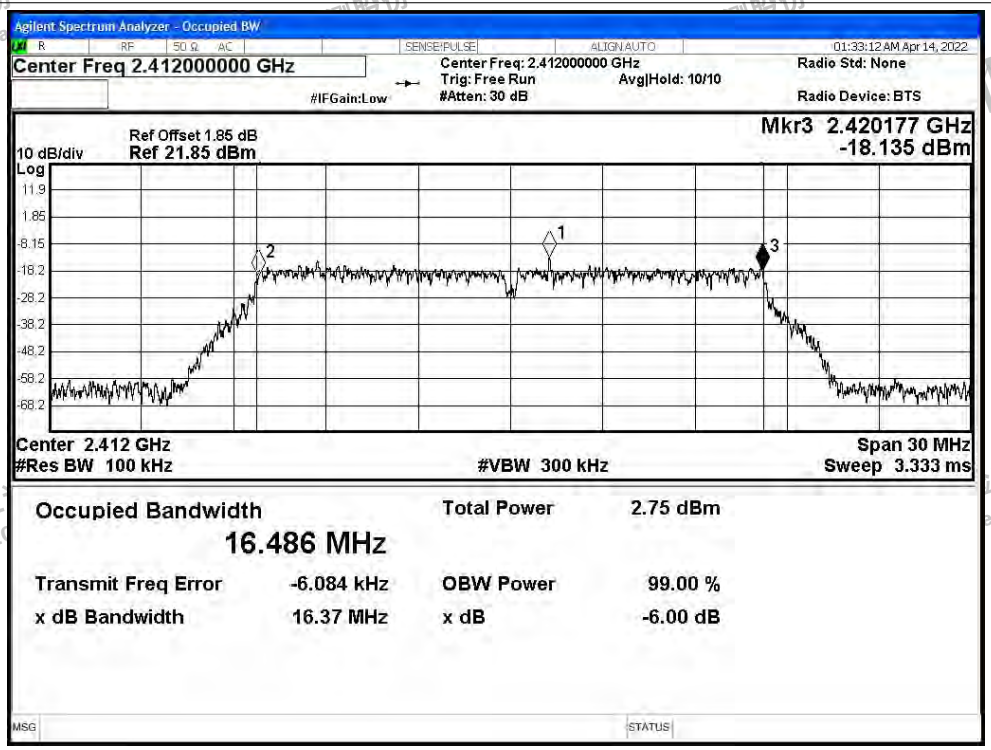
-6dB Bandwidth NVNT b 2437MHz Ant1



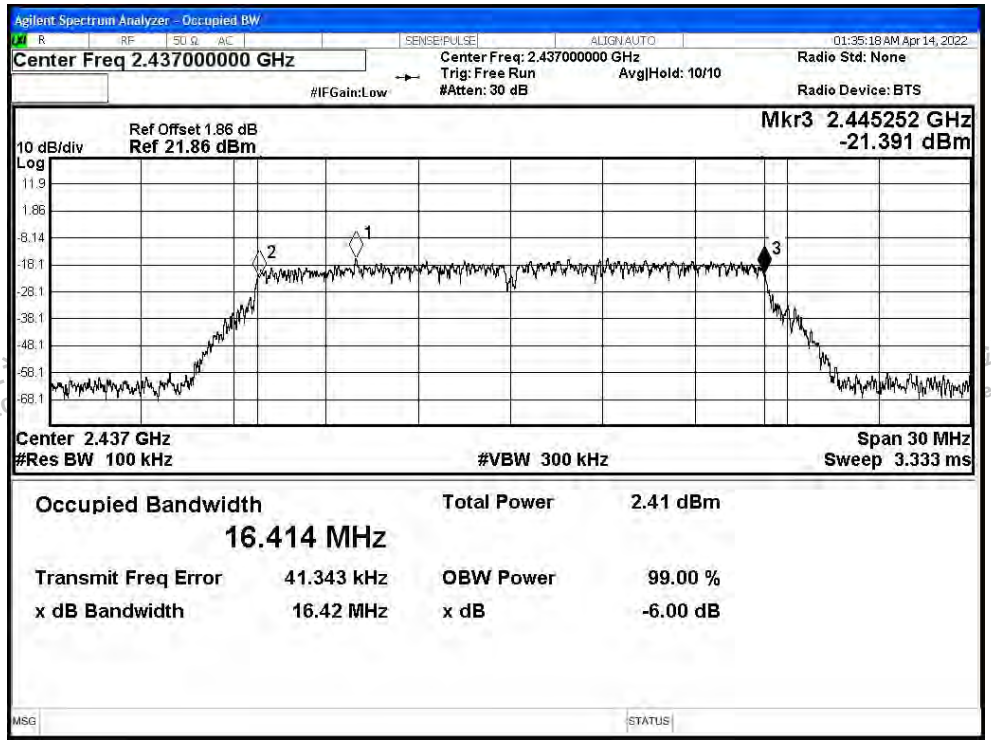
-6dB Bandwidth NVNT b 2462MHz Ant1



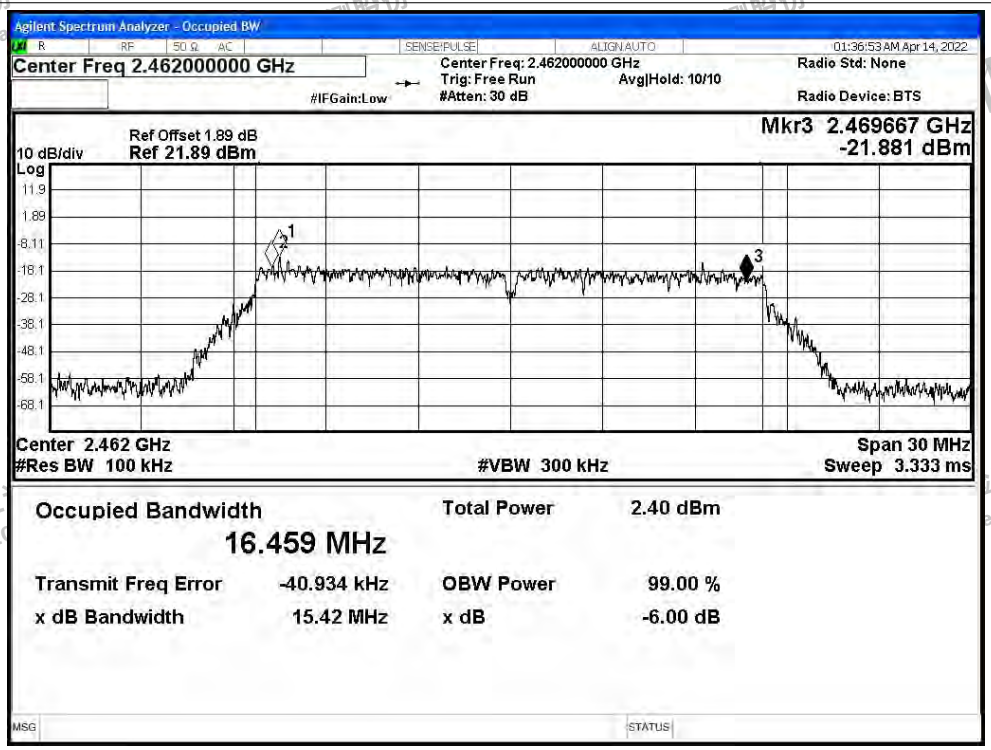
-6dB Bandwidth NVNT g 2412MHz Ant1



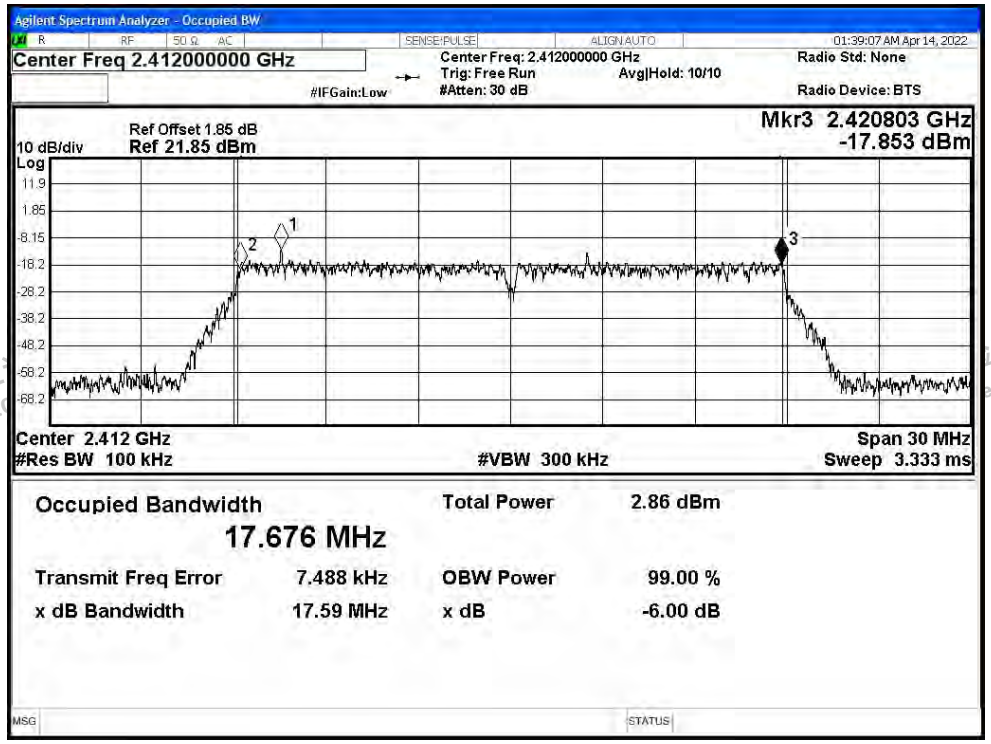
-6dB Bandwidth NVNT g 2437MHz Ant1



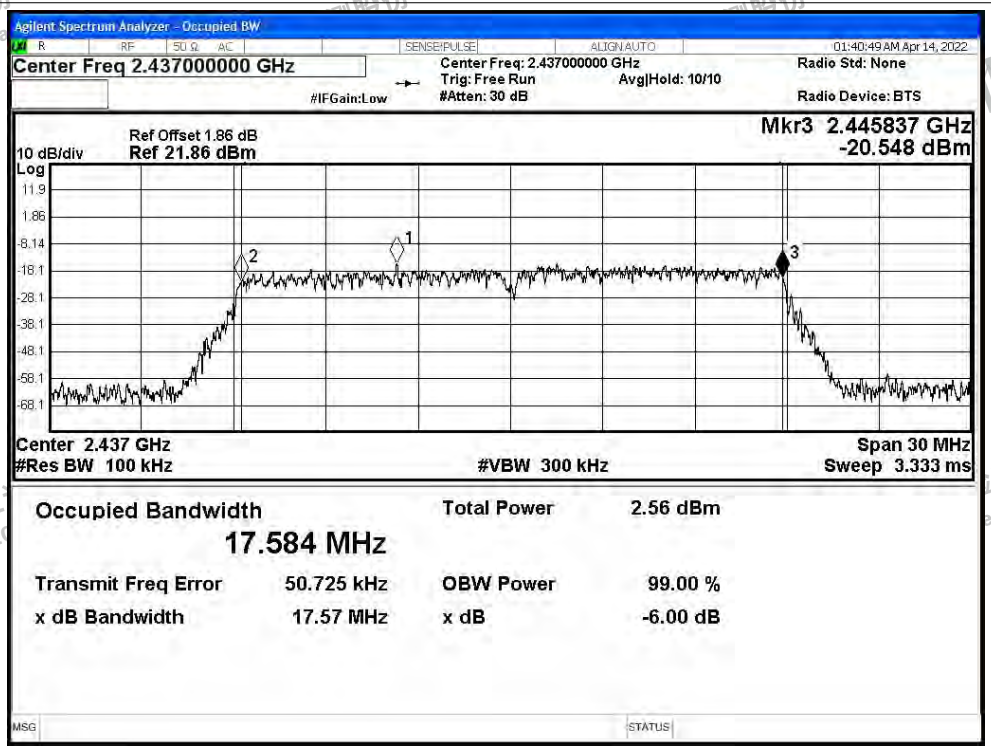
-6dB Bandwidth NVNT g 2462MHz Ant1



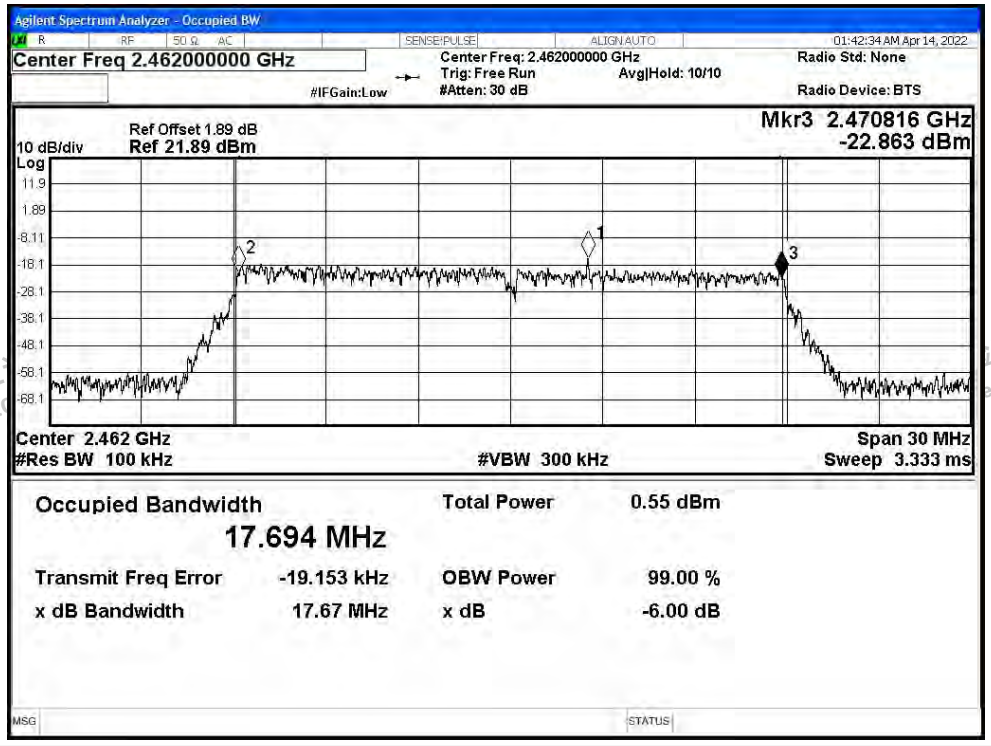
-6dB Bandwidth NVNT n20 2412MHz Ant1



-6dB Bandwidth NVNT n20 2437MHz Ant1



-6dB Bandwidth NVNT n20 2462MHz Ant1

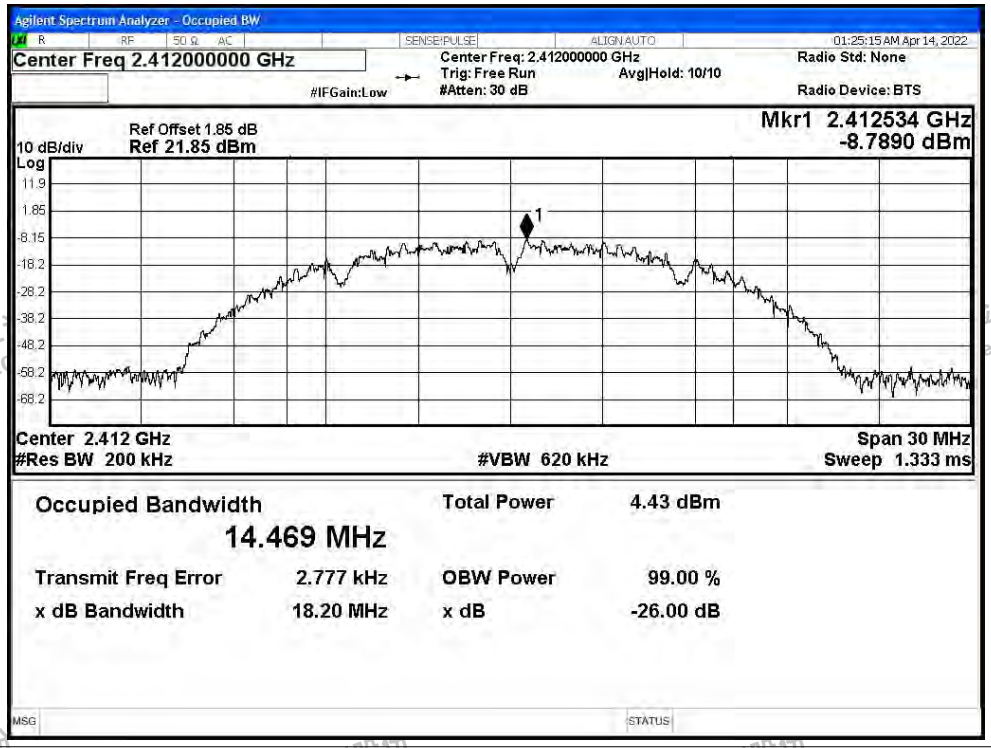


B.2 Occupied Channel Bandwidth

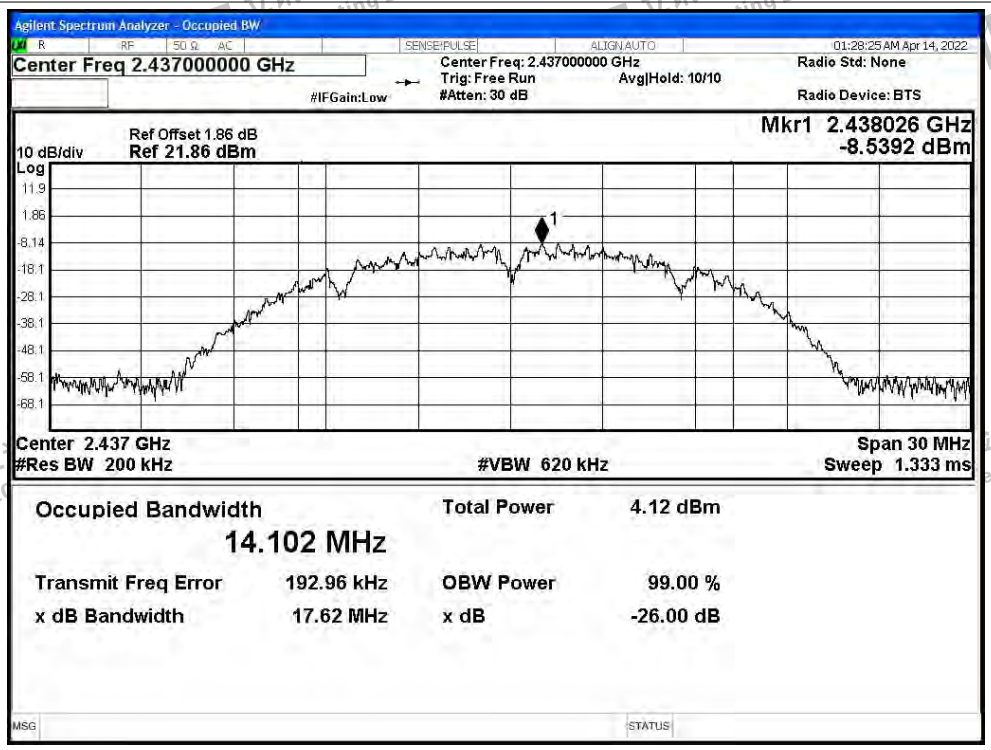
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	b	2412	Ant1	14.469
NVNT	b	2437	Ant1	14.102
NVNT	b	2462	Ant1	14.399
NVNT	g	2412	Ant1	16.56
NVNT	g	2437	Ant1	16.466
NVNT	g	2462	Ant1	16.608
NVNT	n20	2412	Ant1	17.663
NVNT	n20	2437	Ant1	17.58
NVNT	n20	2462	Ant1	17.652

Test Graphs

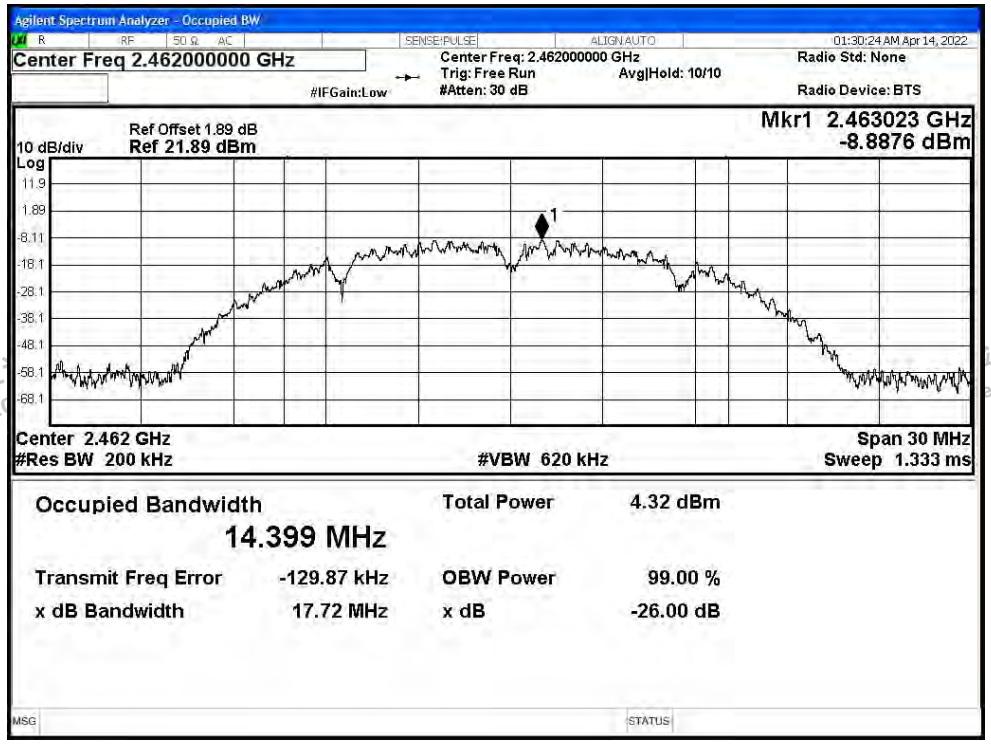
OBW NVNT b 2412MHz Ant1



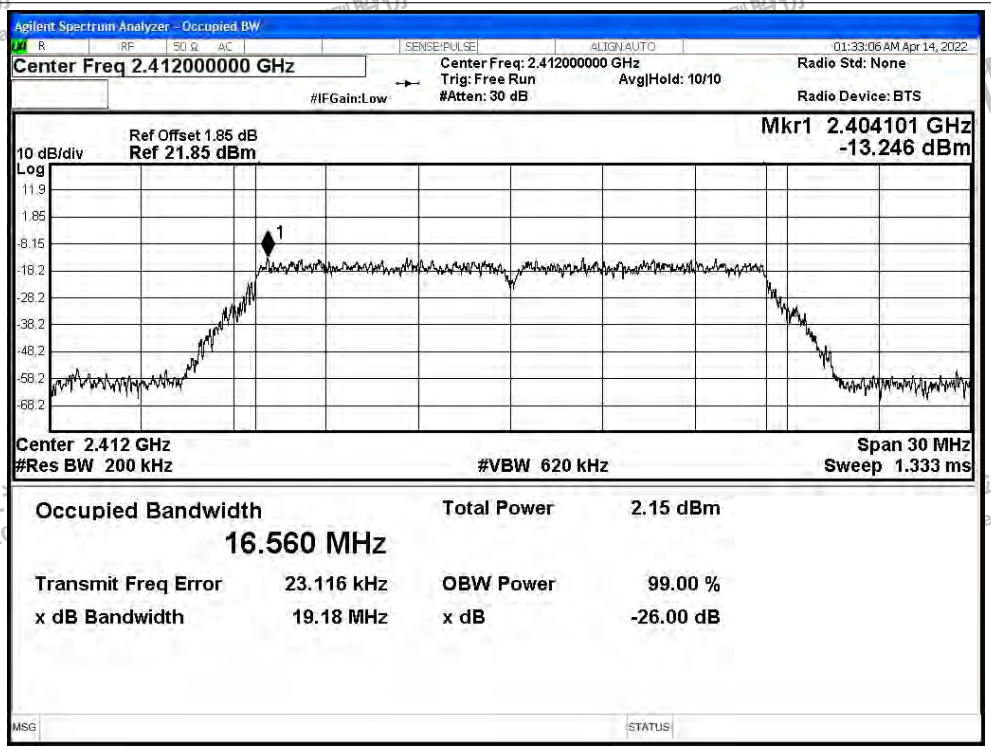
OBW NVNT b 2437MHz Ant1



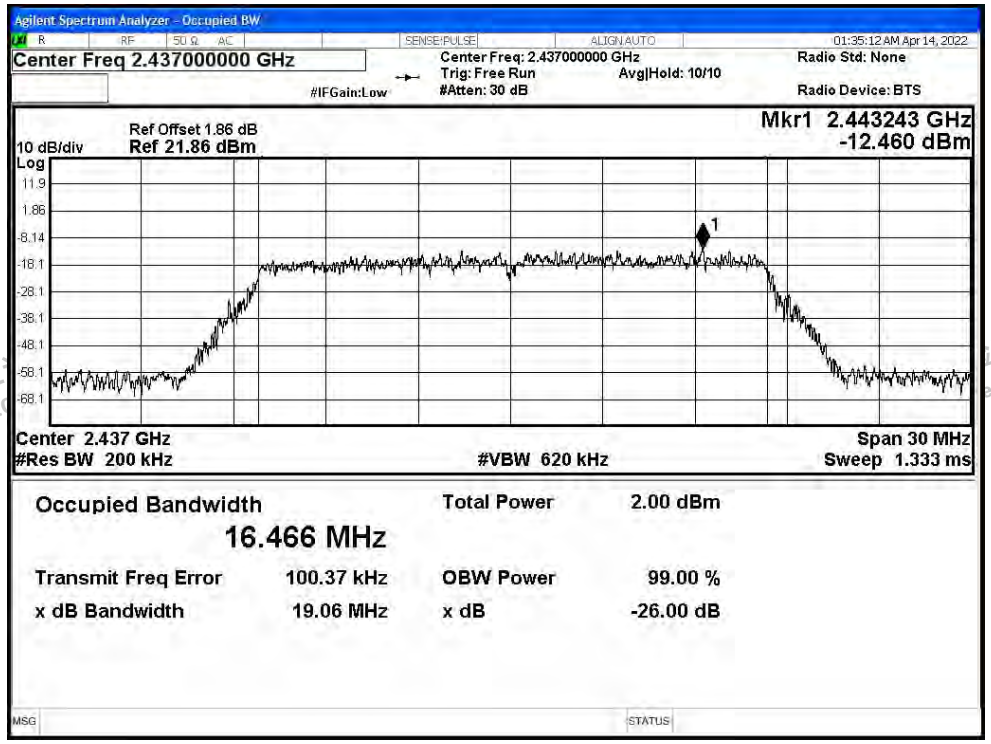
OBW NVNT b 2462MHz Ant1



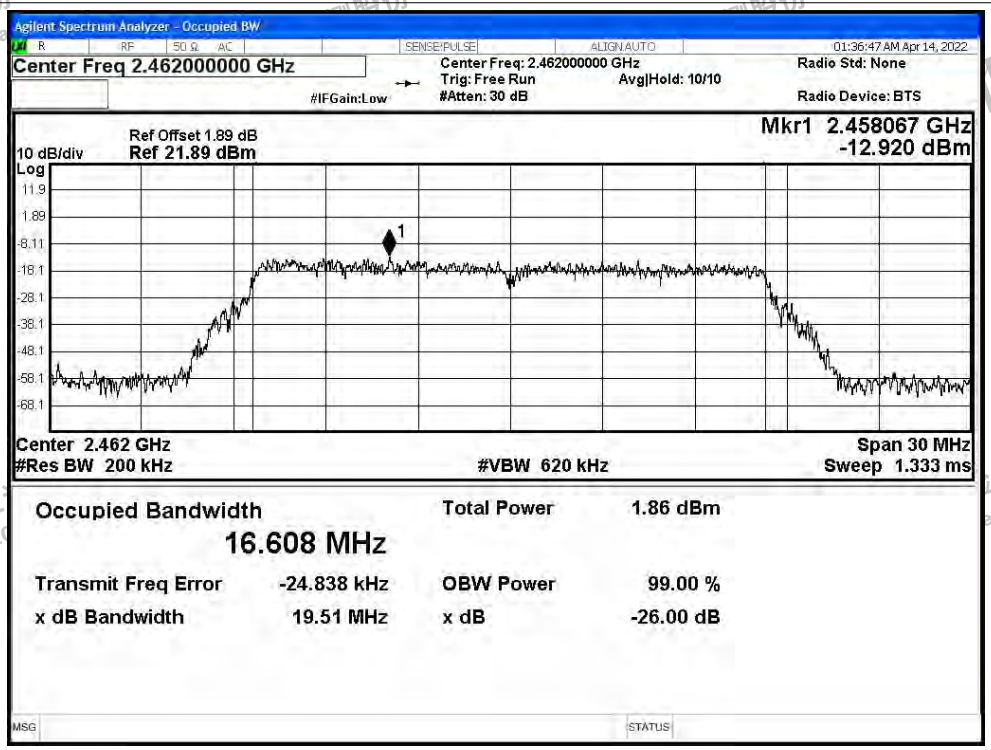
OBW NVNT g 2412MHz Ant1



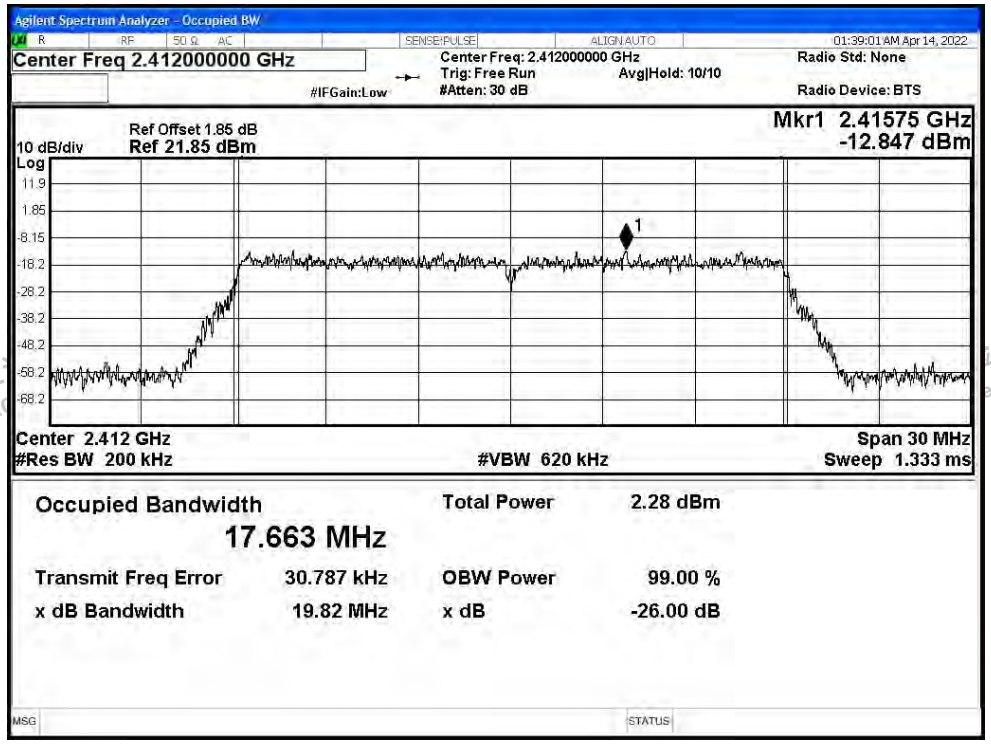
OBW NVNT g 2437MHz Ant1



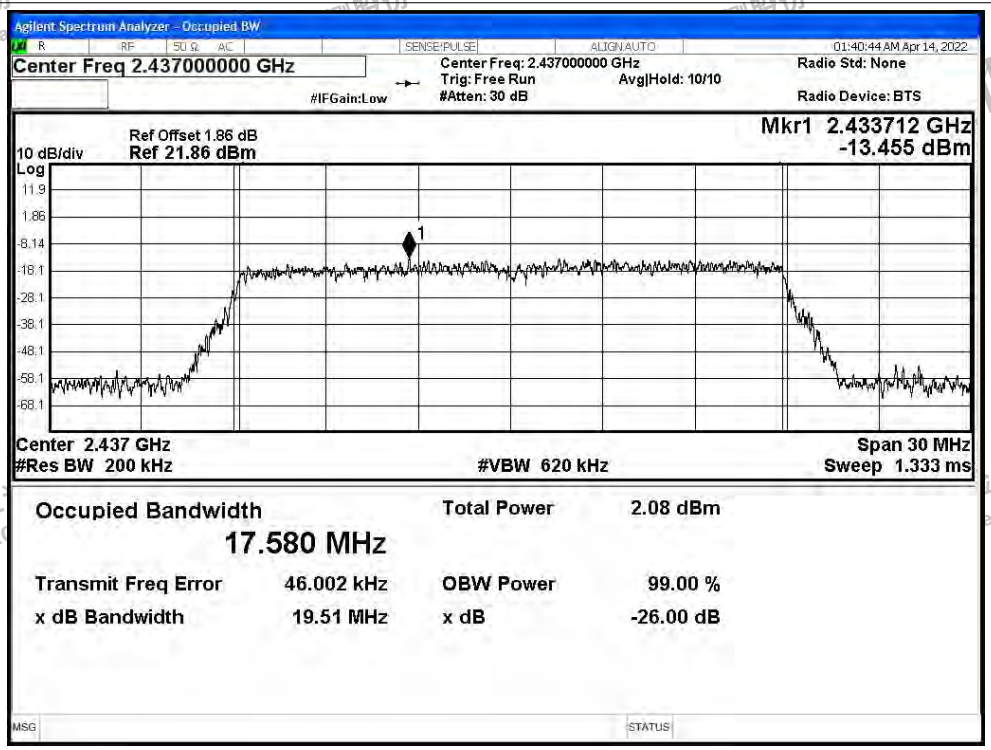
OBW NVNT g 2462MHz Ant1



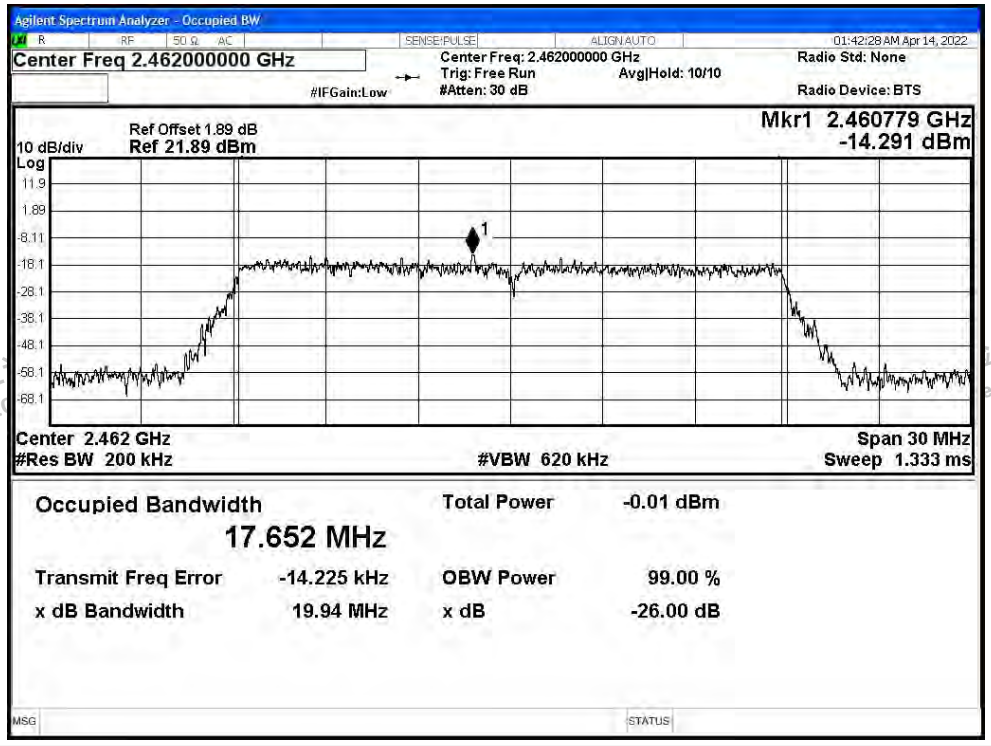
OBW NVNT n20 2412MHz Ant1



OBW NVNT n20 2437MHz Ant1



OBW NVNT n20 2462MHz Ant1



B.3 Maximum Conducted Output Power

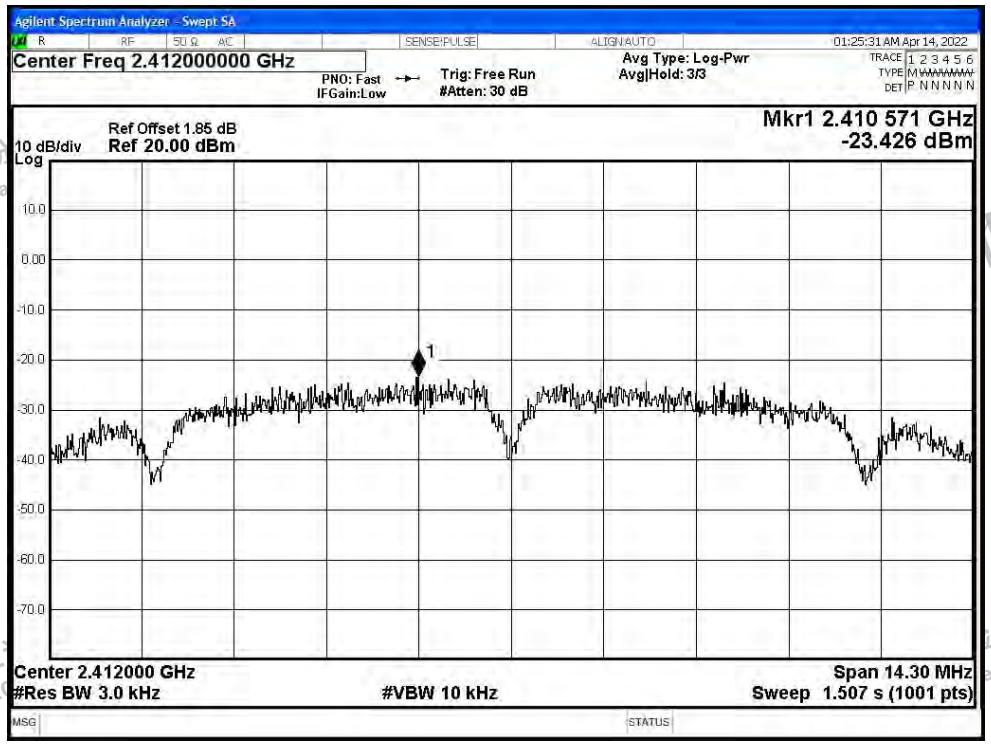
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	1.72	0	1.72	30	Pass
NVNT	b	2437	Ant1	1.37	0	1.37	30	Pass
NVNT	b	2462	Ant1	1.55	0	1.55	30	Pass
NVNT	g	2412	Ant1	1.34	0	1.34	30	Pass
NVNT	g	2437	Ant1	1.26	0	1.26	30	Pass
NVNT	g	2462	Ant1	1.07	0	1.07	30	Pass
NVNT	n20	2412	Ant1	1.37	0	1.37	30	Pass
NVNT	n20	2437	Ant1	1.21	0	1.21	30	Pass
NVNT	n20	2462	Ant1	0.88	0	0.88	30	Pass

B.4 Maximum Power Spectral Density Level

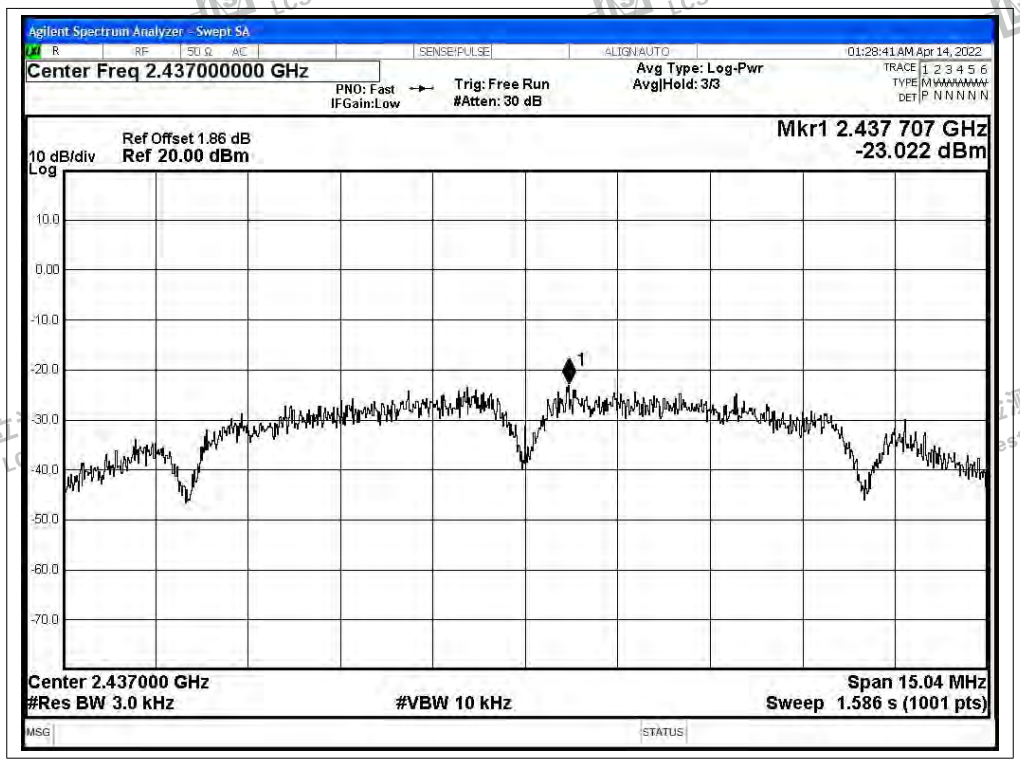
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant1	-23.43	0	-23.43	8	Pass
NVNT	b	2437	Ant1	-23.02	0	-23.02	8	Pass
NVNT	b	2462	Ant1	-20.58	0	-20.58	8	Pass
NVNT	g	2412	Ant1	-26.74	0	-26.74	8	Pass
NVNT	g	2437	Ant1	-26.18	0	-26.18	8	Pass
NVNT	g	2462	Ant1	-25.86	0	-25.86	8	Pass
NVNT	n20	2412	Ant1	-27.31	0	-27.31	8	Pass
NVNT	n20	2437	Ant1	-26.15	0	-26.15	8	Pass
NVNT	n20	2462	Ant1	-28.78	0	-28.78	8	Pass

Test Graphs

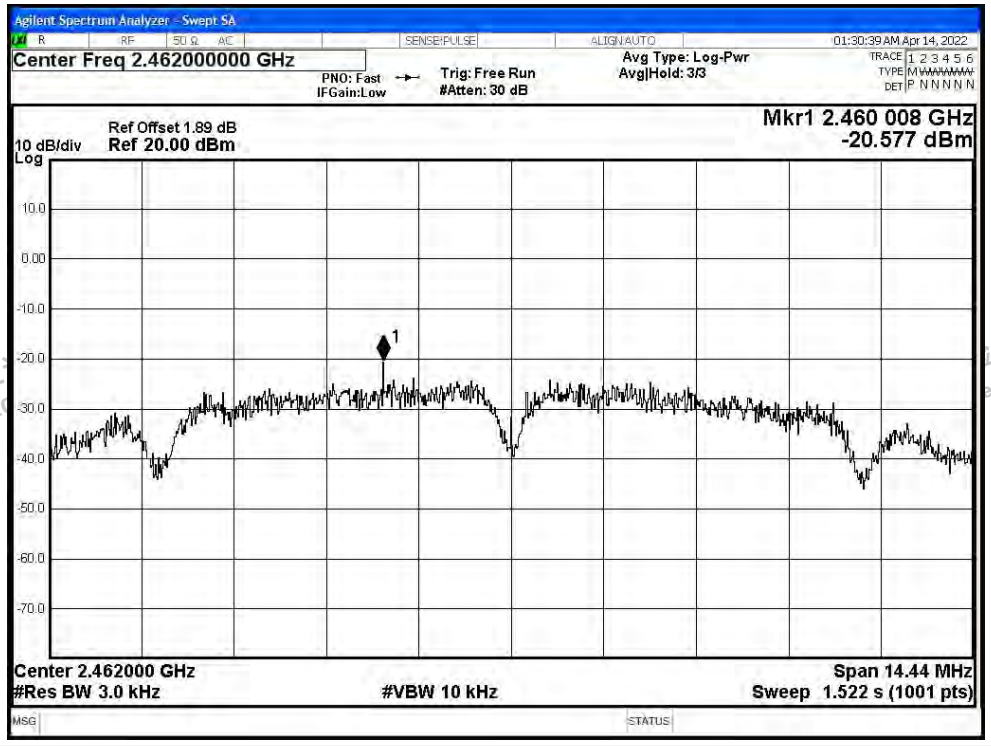
PSD NVNT b 2412MHz Ant1



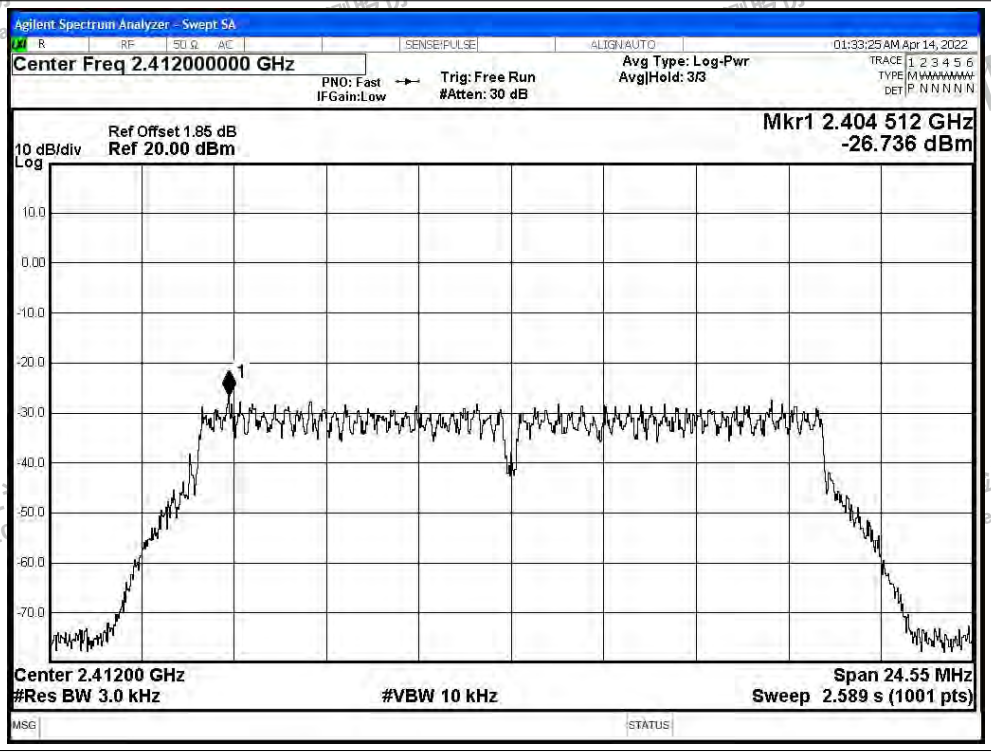
PSD NVNT b 2437MHz Ant1


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.437000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 3/3
01:28:41 AM Apr 14, 2022
Ref Offset 1.86 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.437 707 GHz
-23.022 dBm
Center 2.437000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 15.04 MHz
Sweep 1.586 s (1001 pts)

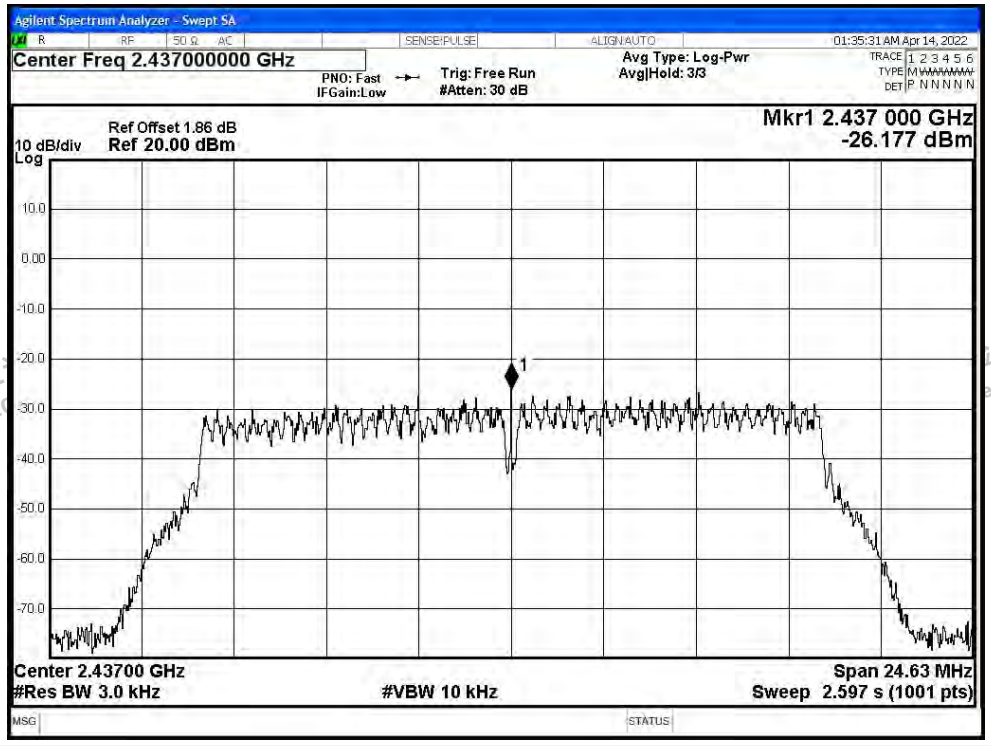
PSD NVNT b 2462MHz Ant1



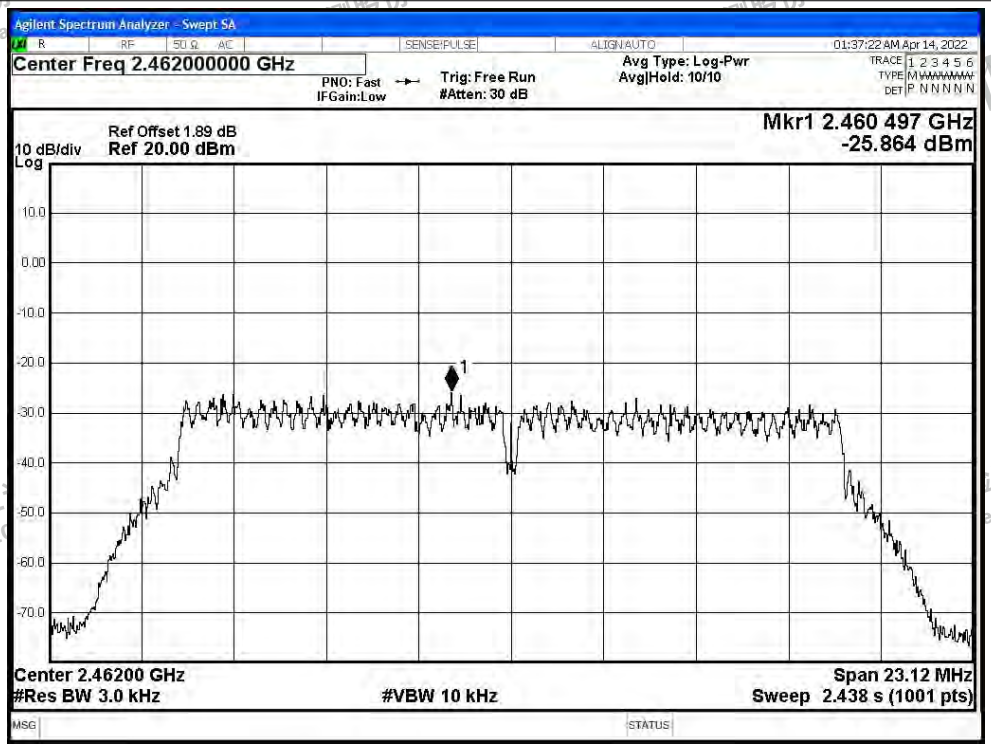
PSD NVNT g 2412MHz Ant1



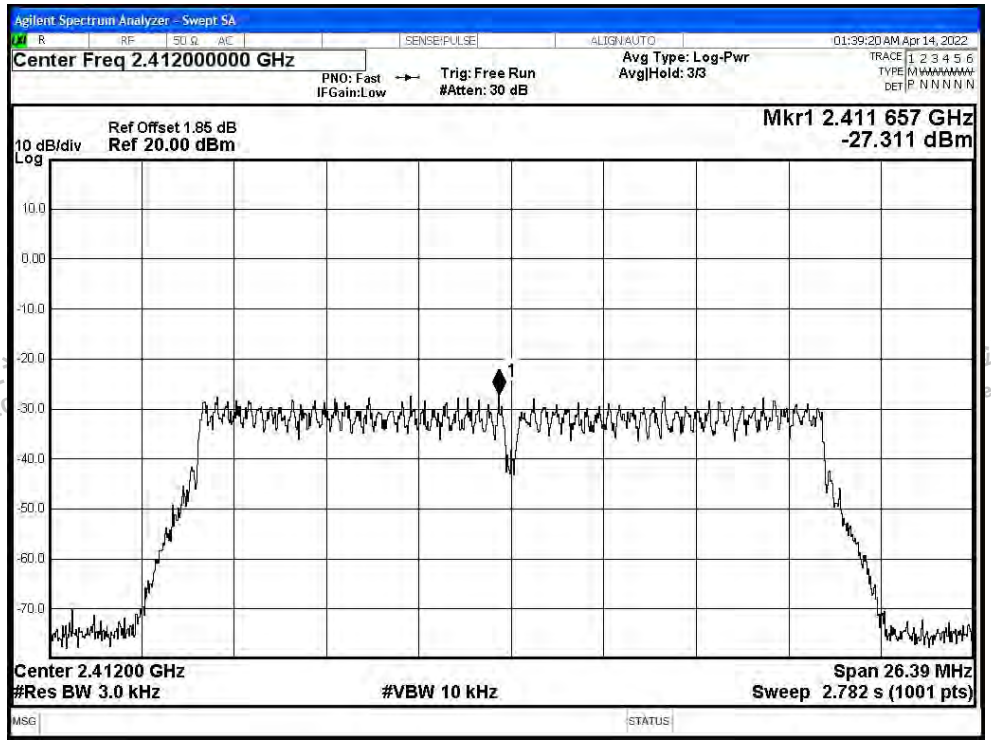
PSD NVNT g 2437MHz Ant1



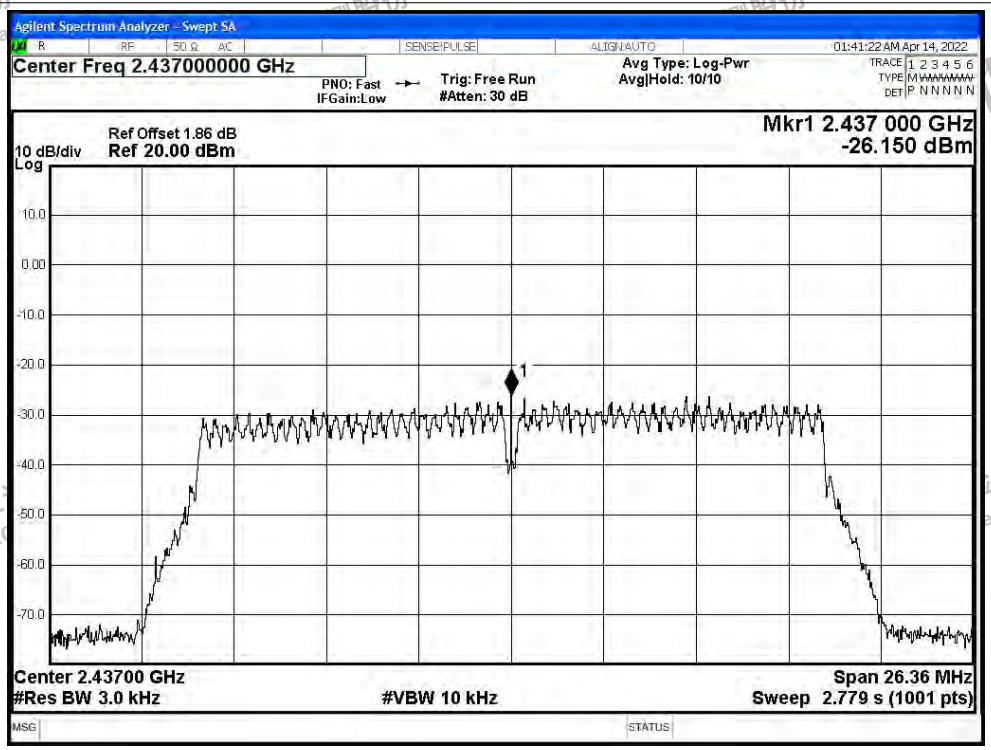
PSD NVNT g 2462MHz Ant1



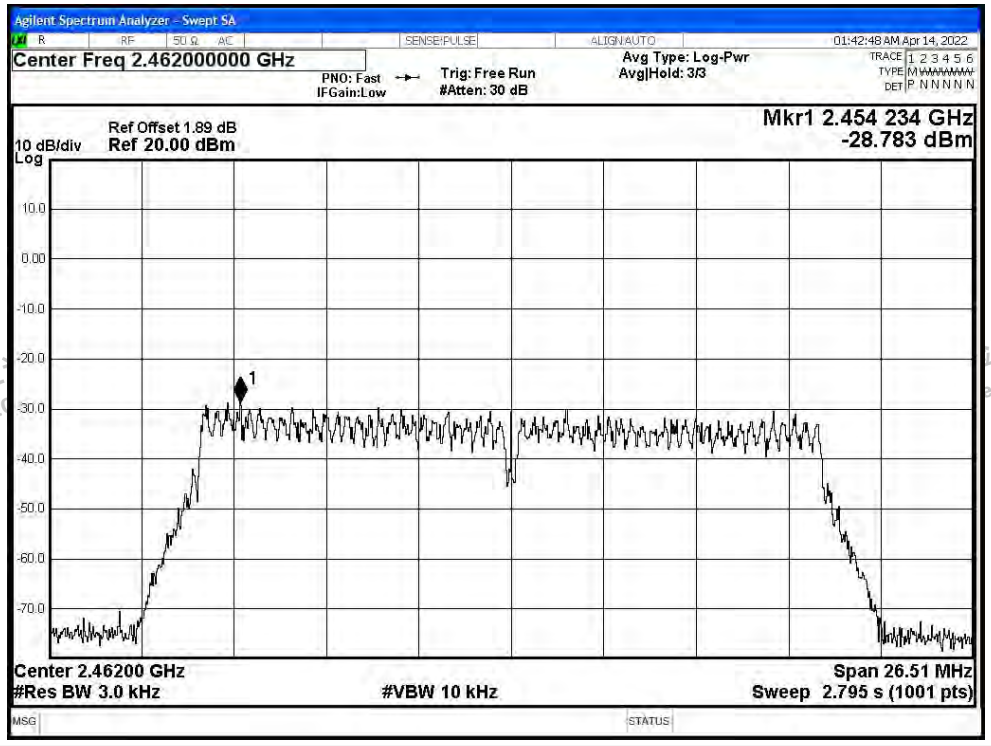
PSD NVNT n20 2412MHz Ant1



PSD NVNT n20 2437MHz Ant1



PSD NVNT n20 2462MHz Ant1

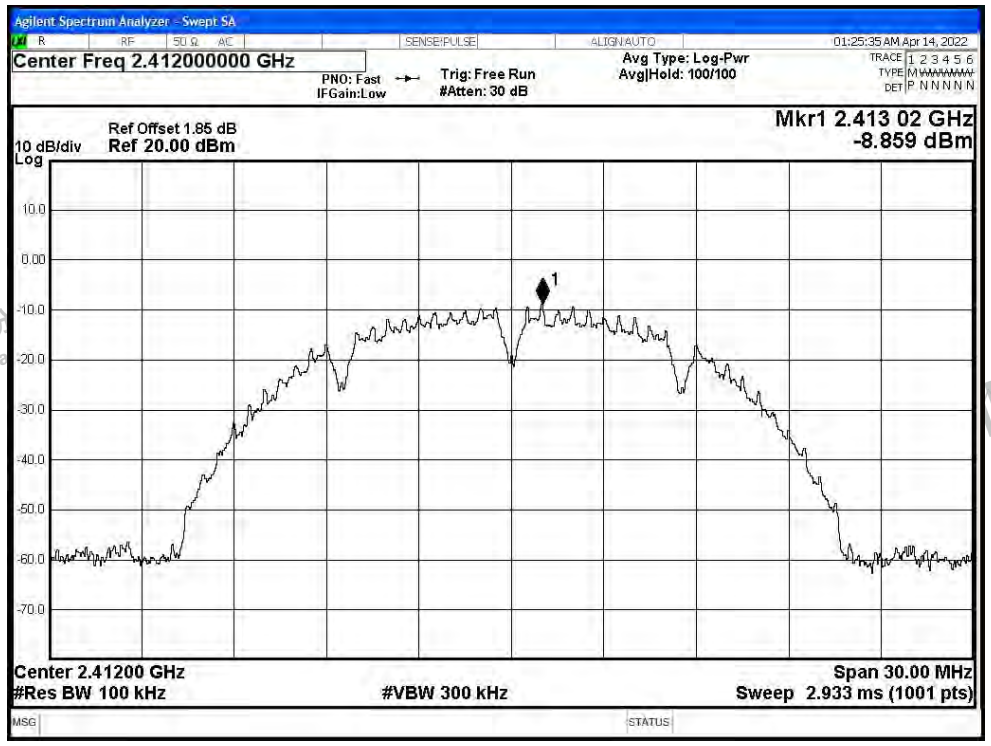


B.5 Band Edge

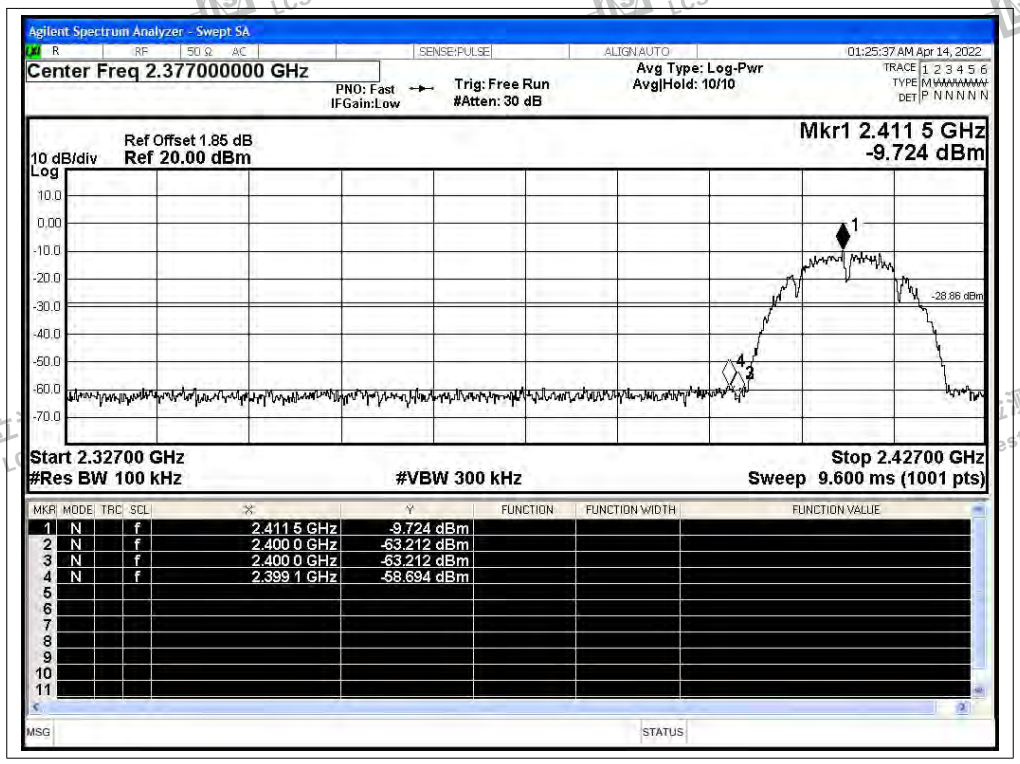
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-49.83	-20	Pass
NVNT	b	2462	Ant1	-49.58	-20	Pass
NVNT	g	2412	Ant1	-43.14	-20	Pass
NVNT	g	2462	Ant1	-44.72	-20	Pass
NVNT	n20	2412	Ant1	-44.95	-20	Pass
NVNT	n20	2462	Ant1	-43.17	-20	Pass

Test Graphs

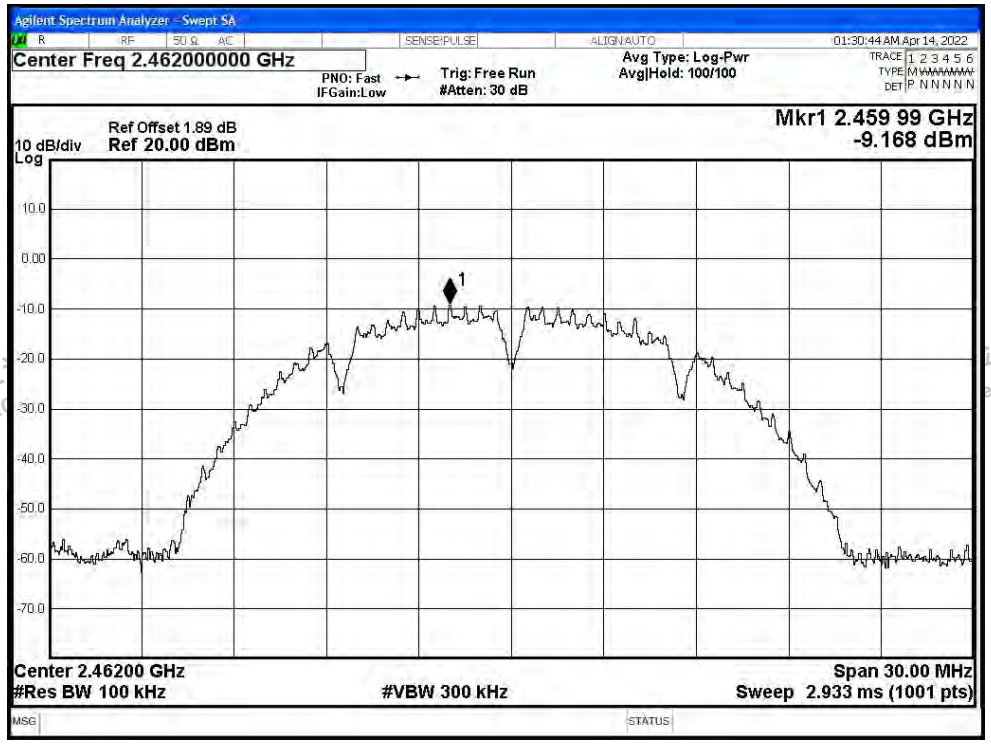
Band Edge NVNT b 2412MHz Ant1 Ref



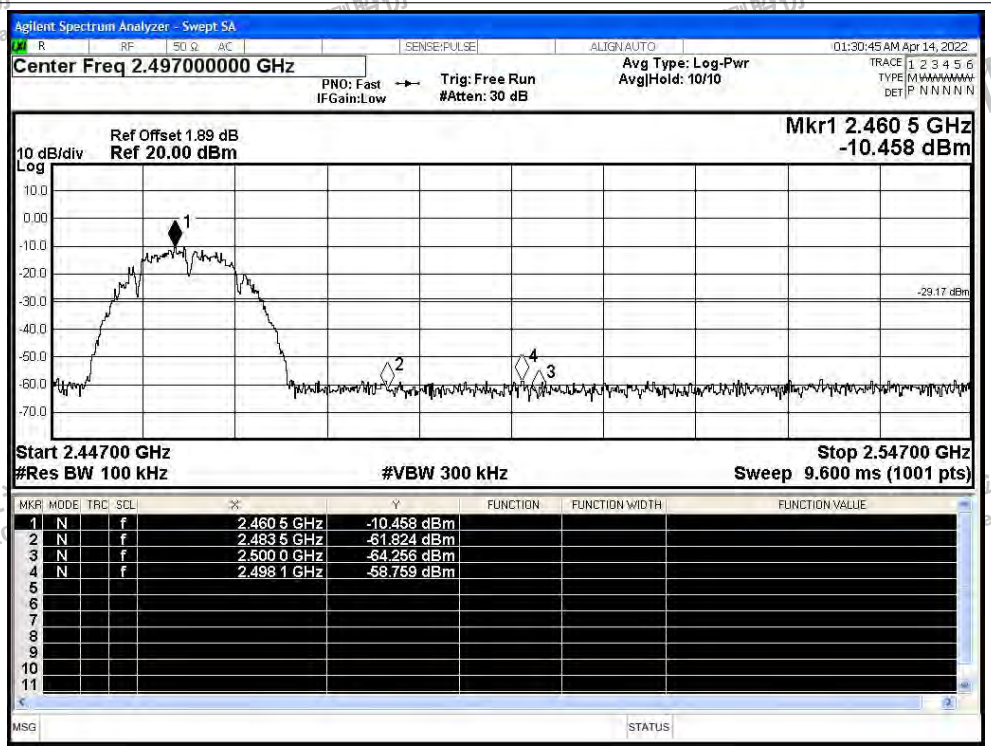
Band Edge NVNT b 2412MHz Ant1 Emission


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.377000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
01:25:37 AM Apr 14, 2022
Ref Offset 1.85 dB
10 dB/div Ref 20.00 dBm
Log
Mkr1 2.411 5 GHz
-9.724 dBm
-28.86 dBm
Start 2.32700 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.42700 GHz
Sweep 9.600 ms (1001 pts)
1 N f 2.411 5 GHz -9.724 dBm
2 N f 2.400 0 GHz -63.212 dBm
3 N f 2.400 0 GHz -63.212 dBm
4 N f 2.399 1 GHz -58.694 dBm

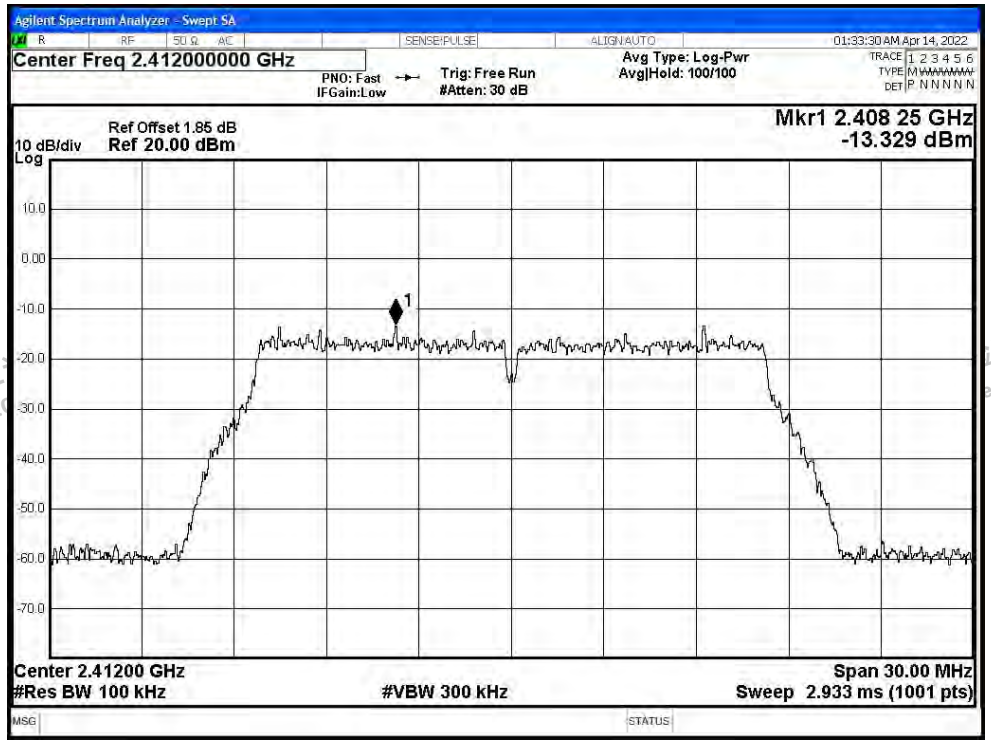
Band Edge NVNT b 2462MHz Ant1 Ref



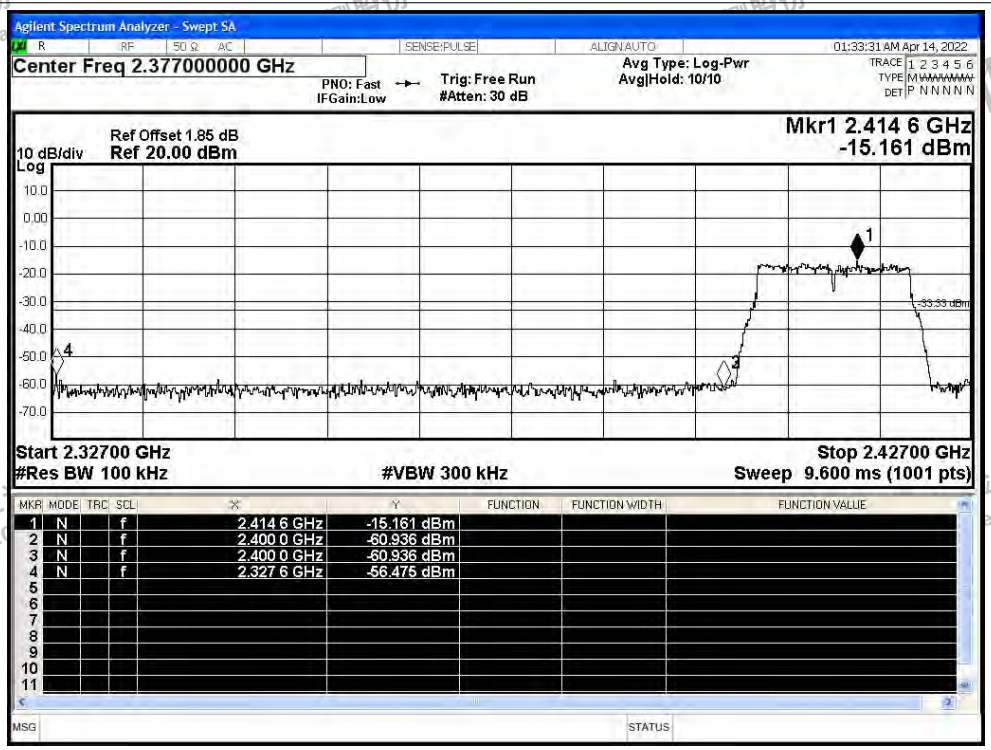
Band Edge NVNT b 2462MHz Ant1 Emission



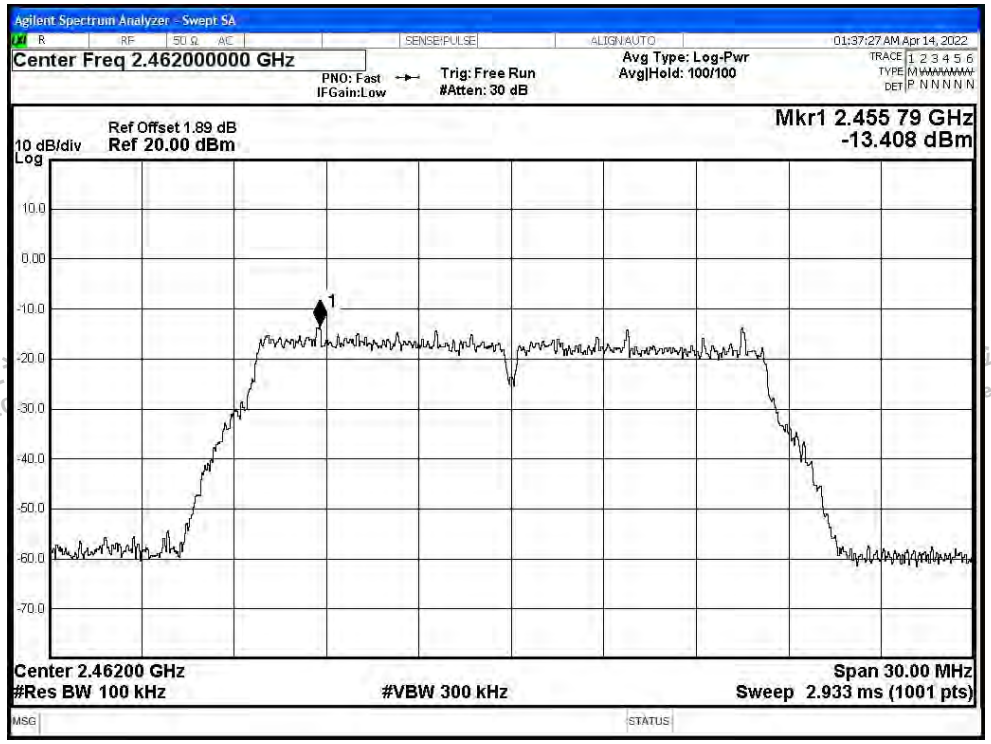
Band Edge NVNT g 2412MHz Ant1 Ref



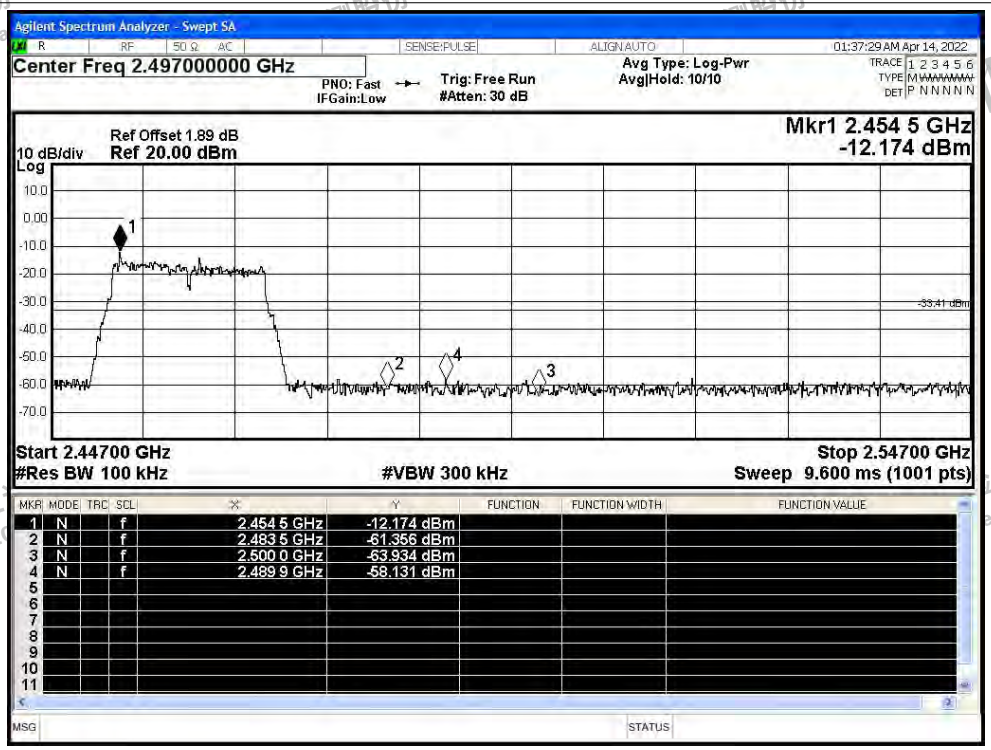
Band Edge NVNT g 2412MHz Ant1 Emission



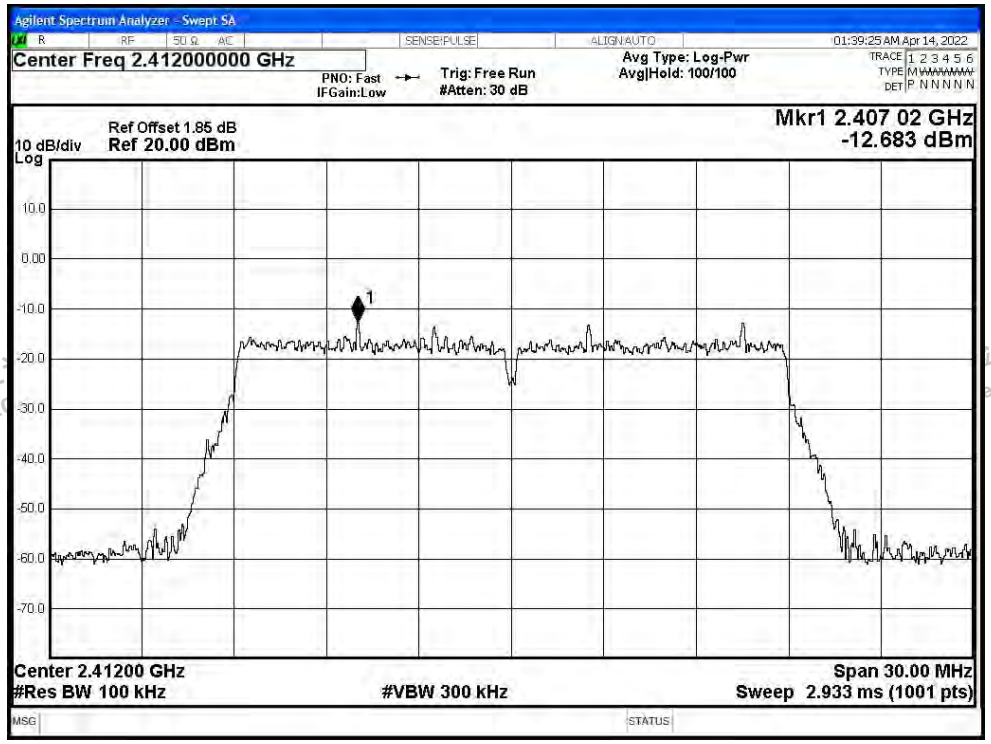
Band Edge NVNT g 2462MHz Ant1 Ref



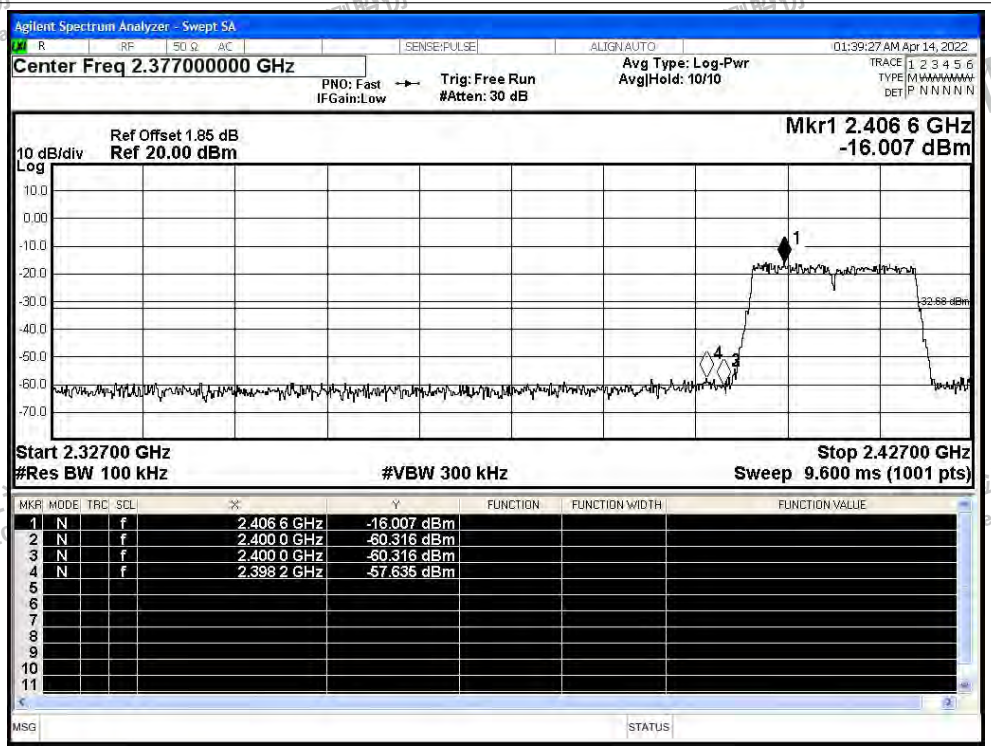
Band Edge NVNT g 2462MHz Ant1 Emission



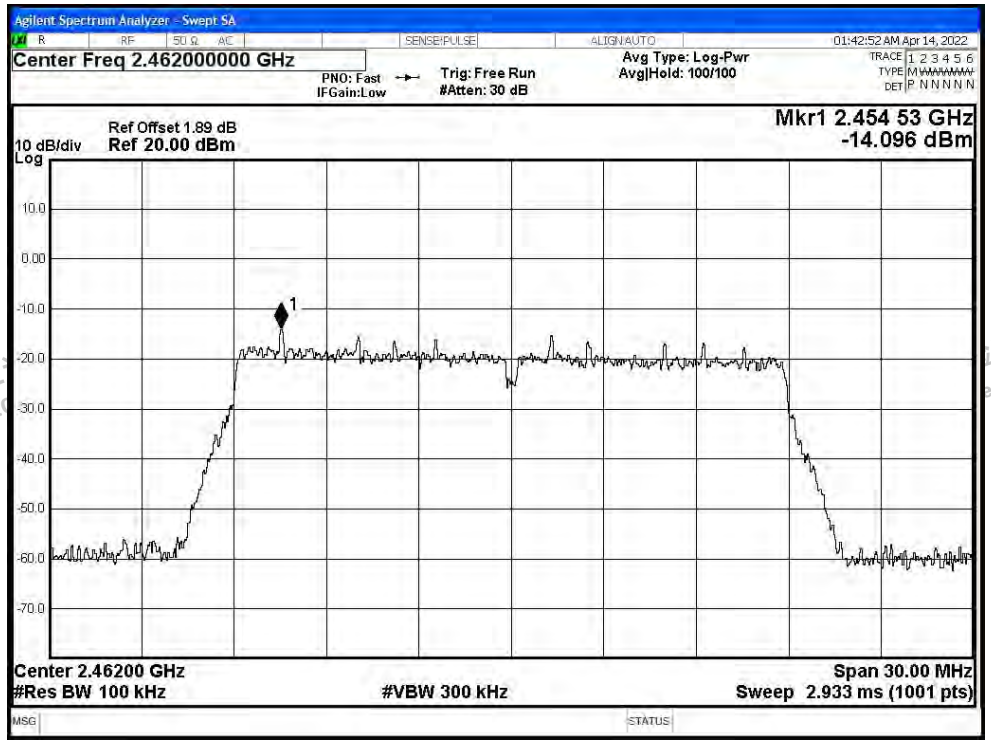
Band Edge NVNT n20 2412MHz Ant1 Ref



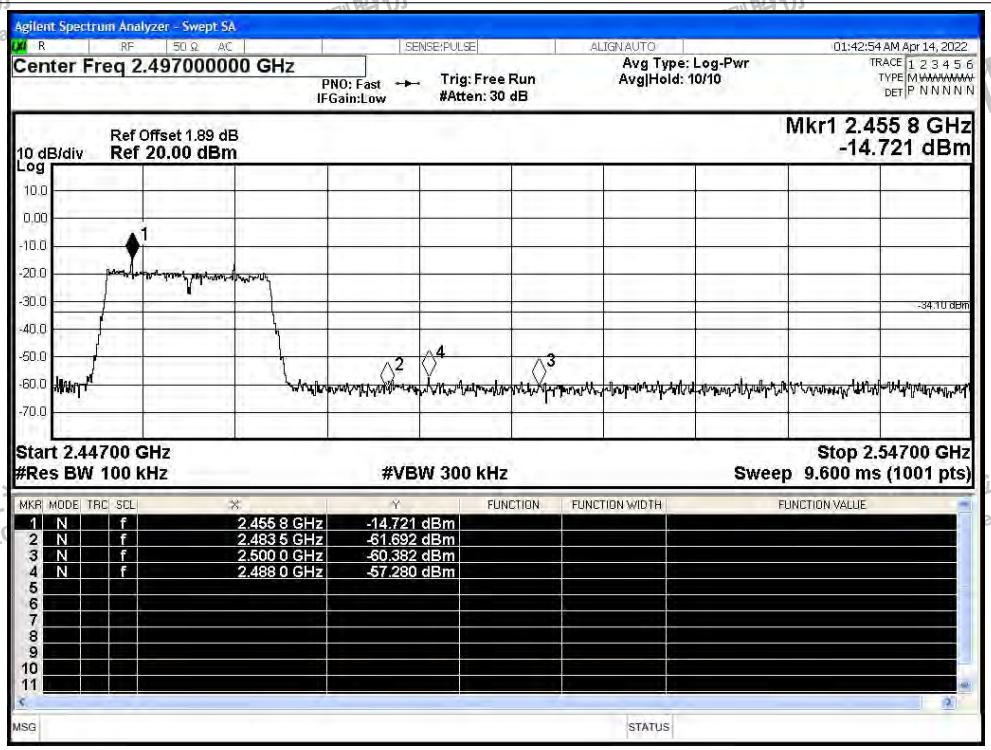
Band Edge NVNT n20 2412MHz Ant1 Emission



Band Edge NVNT n20 2462MHz Ant1 Ref



Band Edge NVNT n20 2462MHz Ant1 Emission

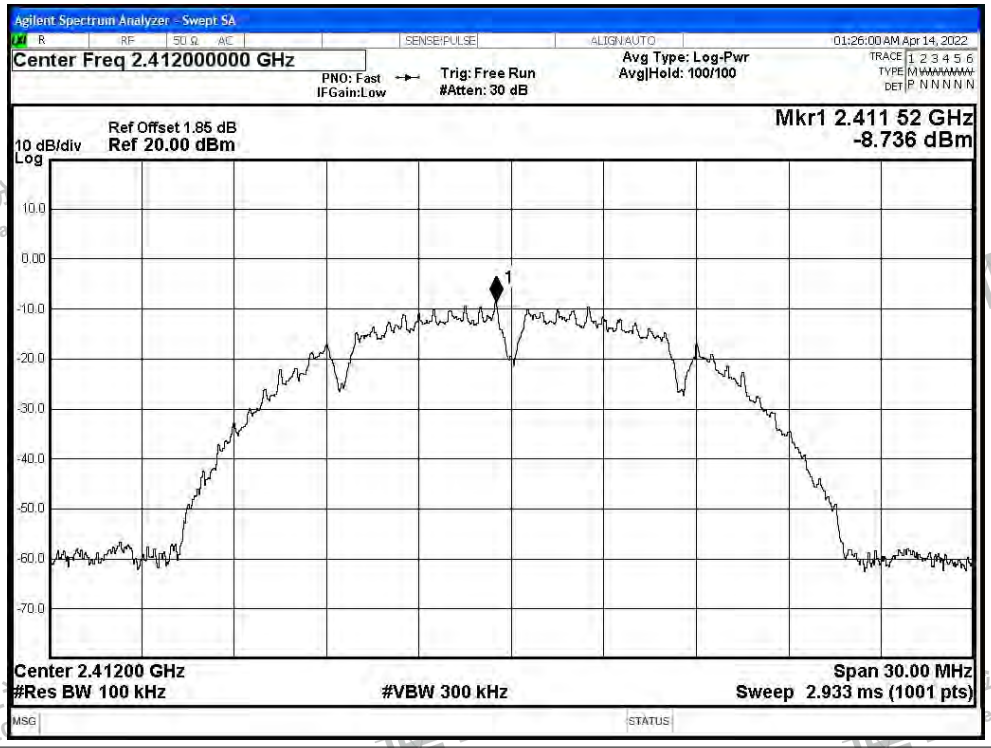


B.6 Conducted RF Spurious Emission

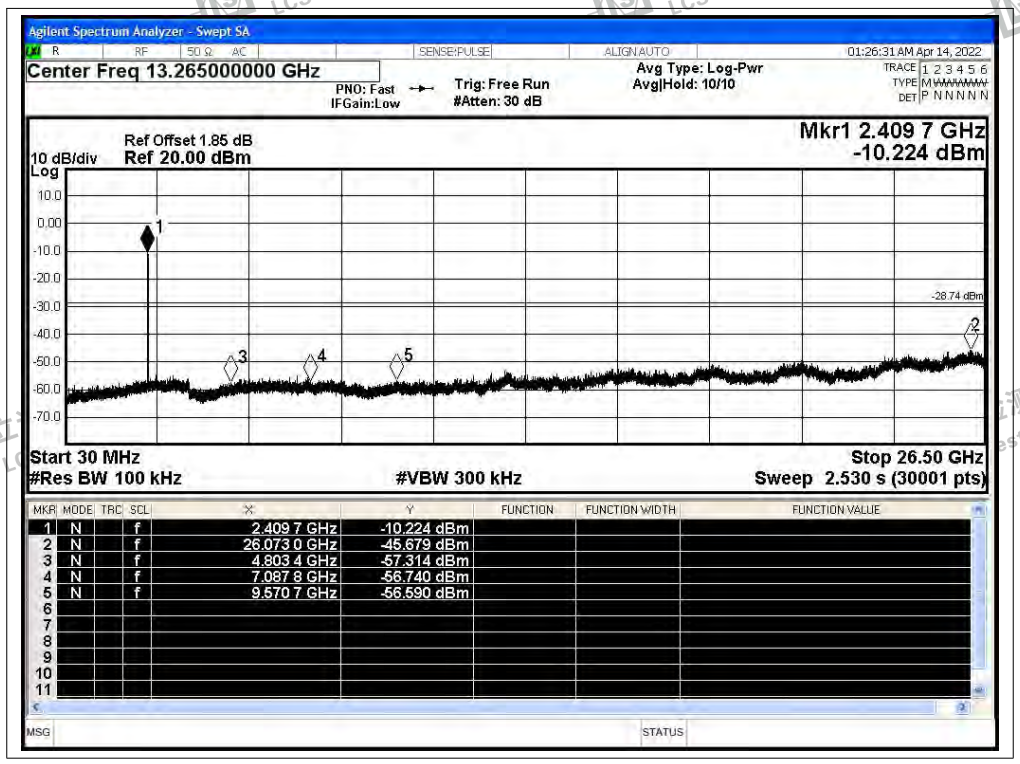
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-36.93	-20	Pass
NVNT	b	2437	Ant1	-37.65	-20	Pass
NVNT	b	2462	Ant1	-36.78	-20	Pass
NVNT	g	2412	Ant1	-32.84	-20	Pass
NVNT	g	2437	Ant1	-33.04	-20	Pass
NVNT	g	2462	Ant1	-33.56	-20	Pass
NVNT	n20	2412	Ant1	-33.22	-20	Pass
NVNT	n20	2437	Ant1	-34.85	-20	Pass
NVNT	n20	2462	Ant1	-31.86	-20	Pass

Test Graphs

Tx. Spurious NVNT b 2412MHz Ant1 Ref

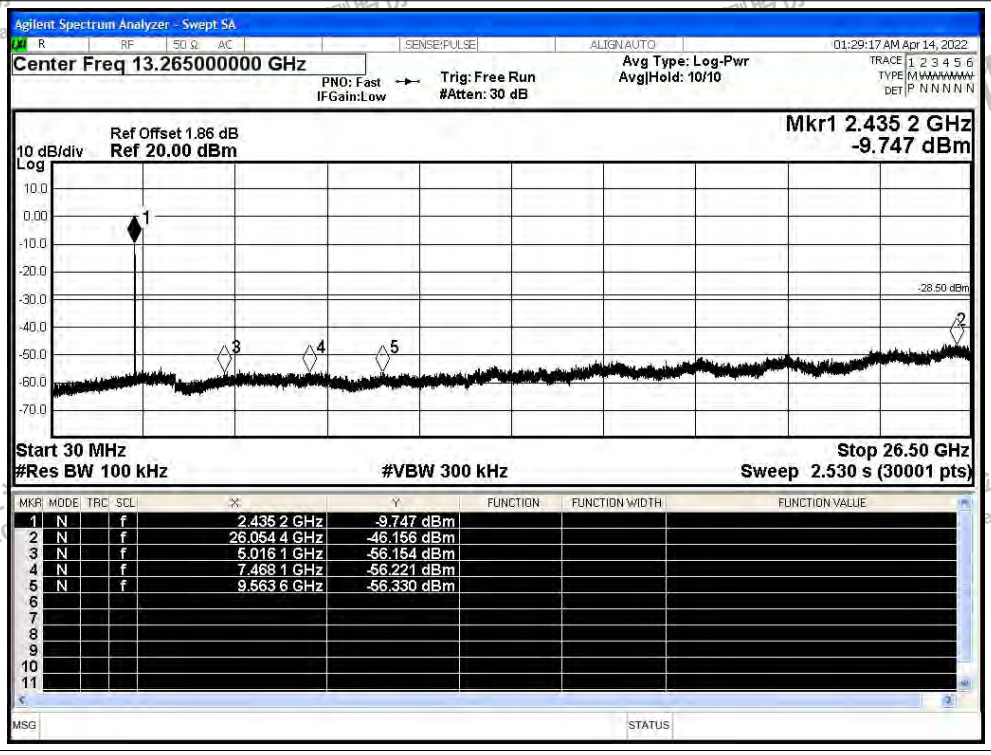


Tx. Spurious NVNT b 2412MHz Ant1 Emission

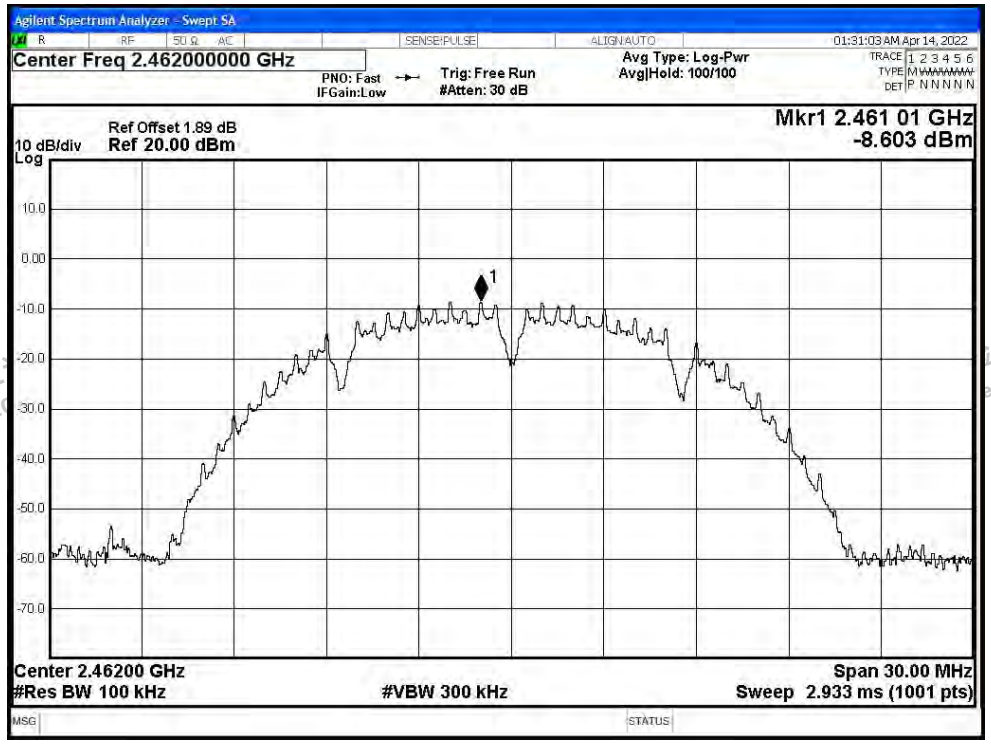

Agilent Spectrum Analyzer - Swept SA
Center Freq 13.265000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
01:26:31 AM Apr 14, 2022
Ref Offset 1.85 dB
10 dB/div Ref 20.00 dBm
Log
Mkr1 2.409 7 GHz
-10.224 dBm
-28.74 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.530 s (30001 pts)
1 N f 2.409 7 GHz -10.224 dBm
2 N f 26.073 0 GHz -45.679 dBm
3 N f 4.803 4 GHz -57.314 dBm
4 N f 7.087 8 GHz -56.740 dBm
5 N f 9.570 7 GHz -56.590 dBm

Tx. Spurious NVNT b 2437MHz Ant1 Ref

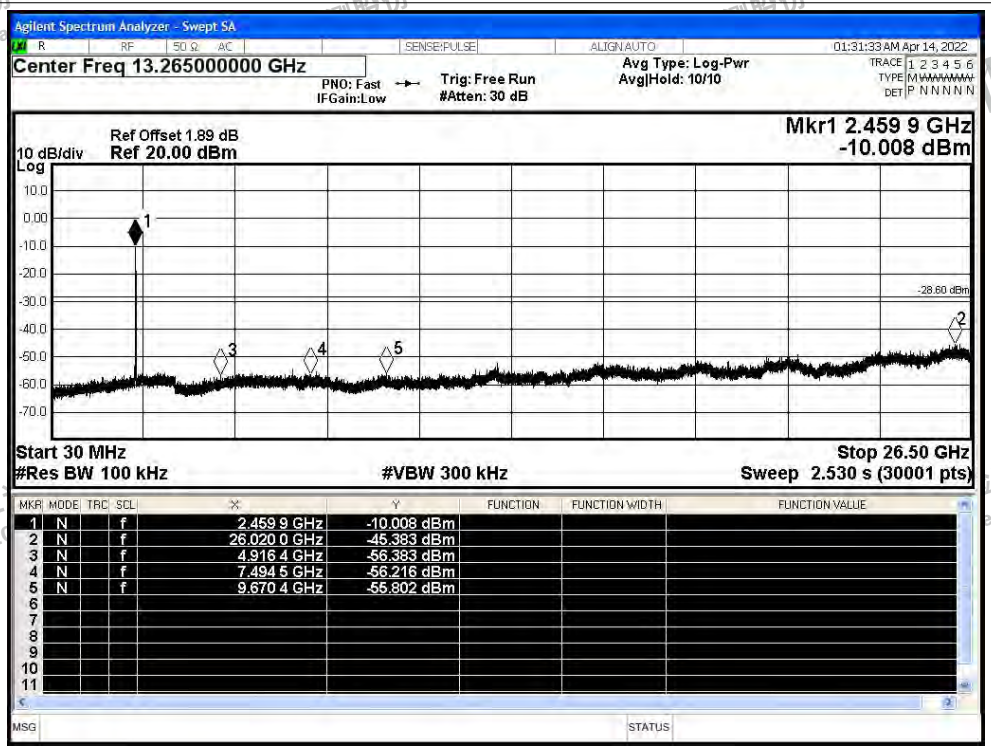
Tx. Spurious NVNT b 2437MHz Ant1 Emission



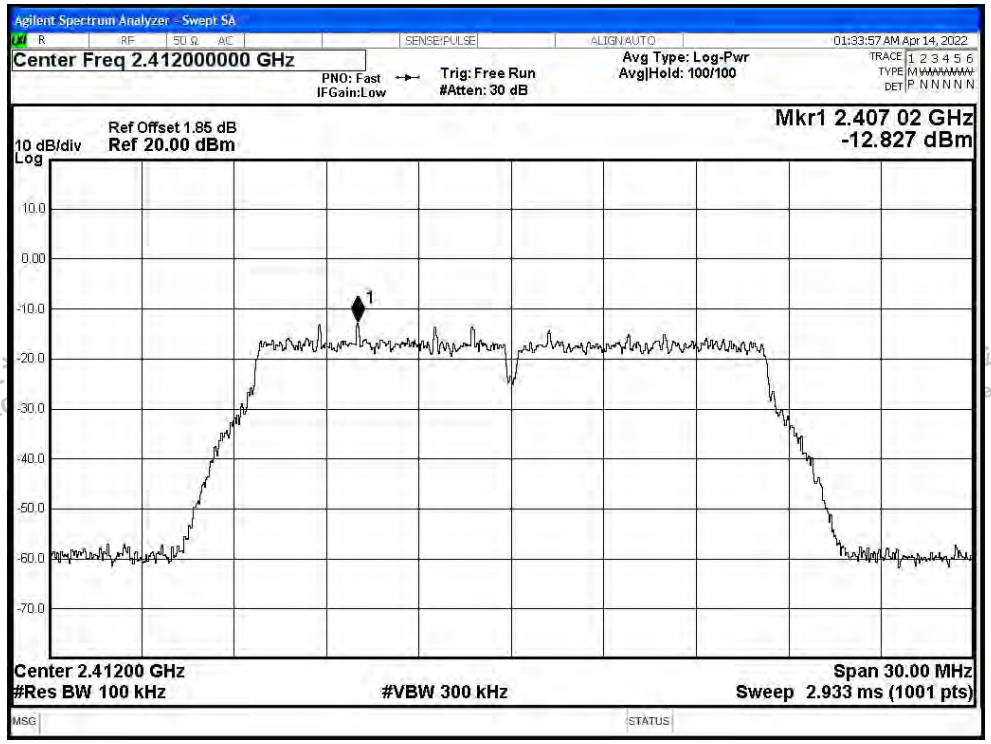
Tx. Spurious NVNT b 2462MHz Ant1 Ref



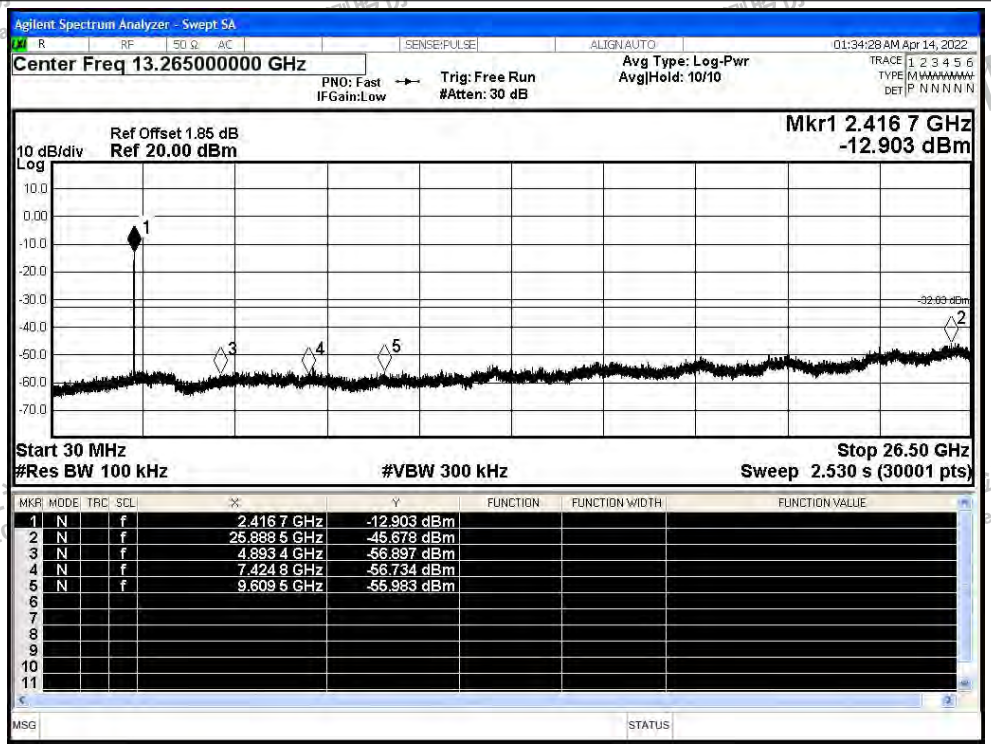
Tx. Spurious NVNT b 2462MHz Ant1 Emission



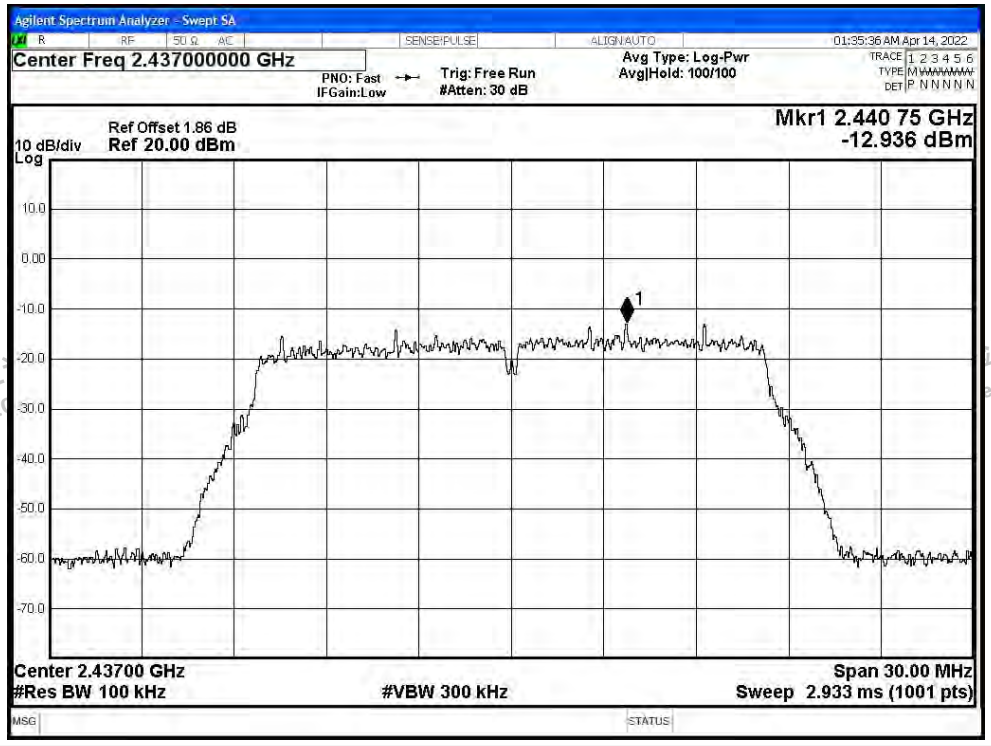
Tx. Spurious NVNT g 2412MHz Ant1 Ref



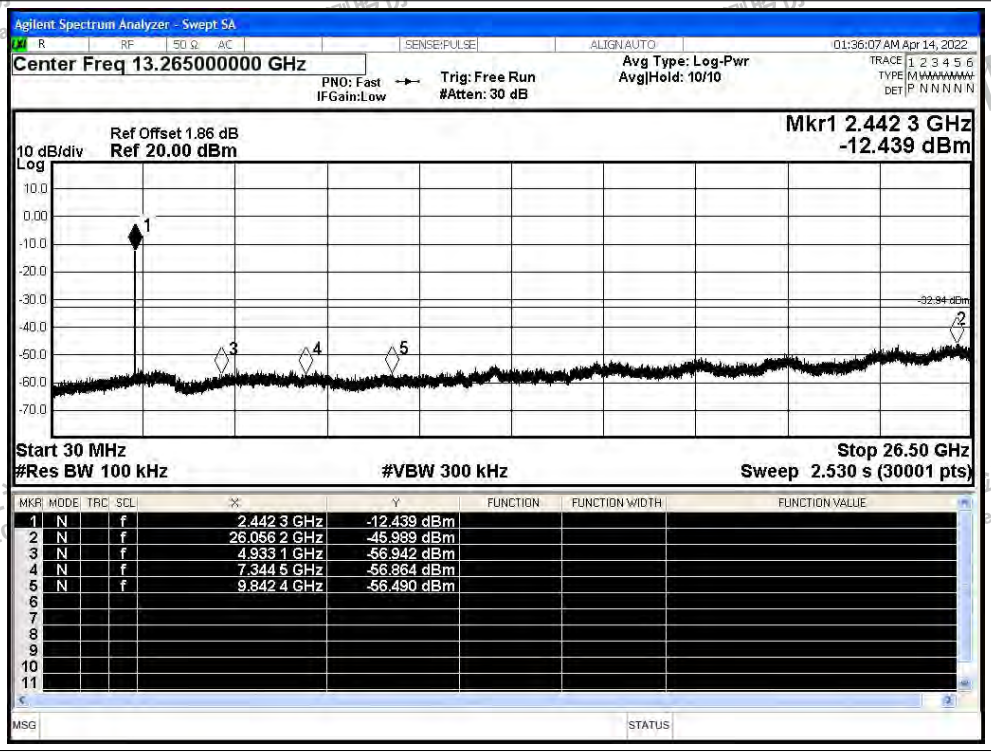
Tx. Spurious NVNT g 2412MHz Ant1 Emission



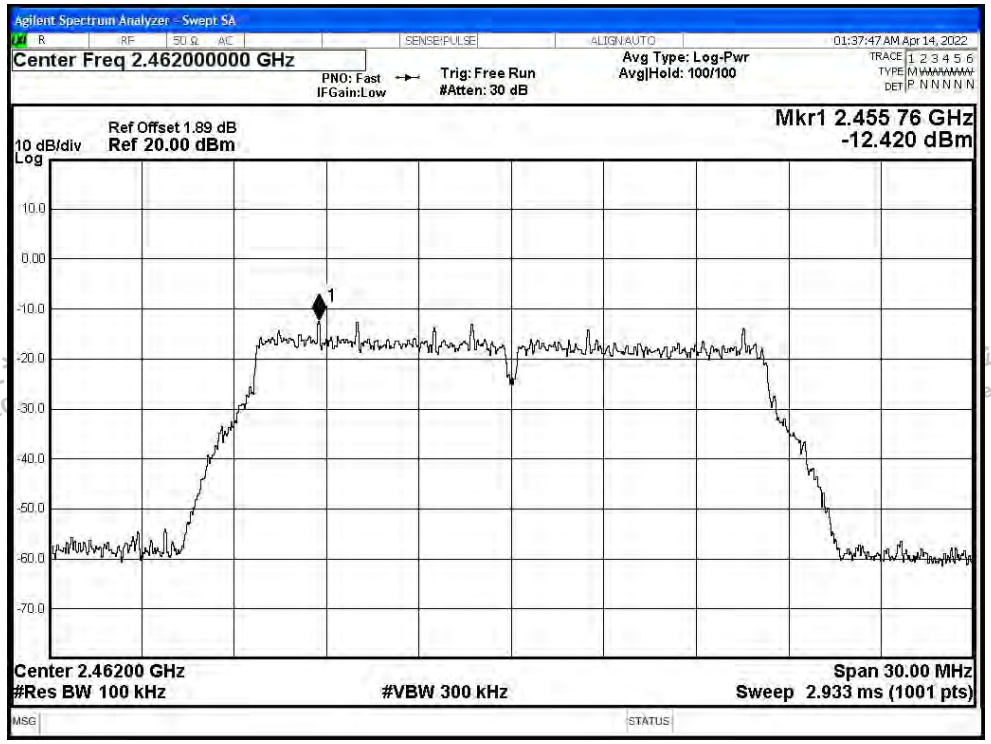
Tx. Spurious NVNT g 2437MHz Ant1 Ref



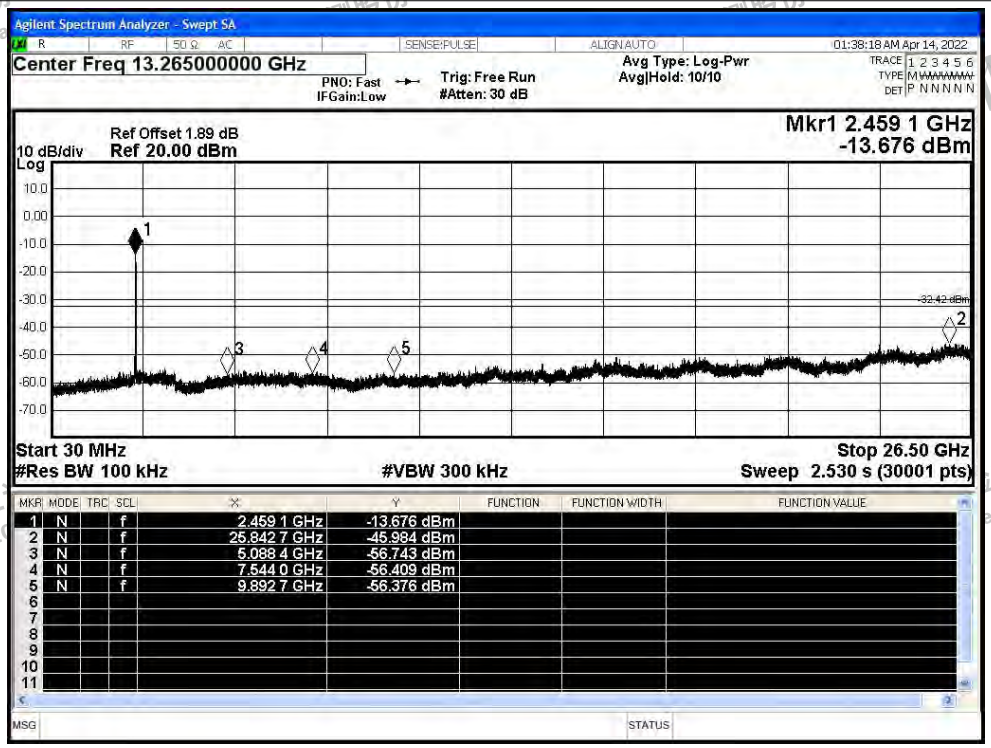
Tx. Spurious NVNT g 2437MHz Ant1 Emission



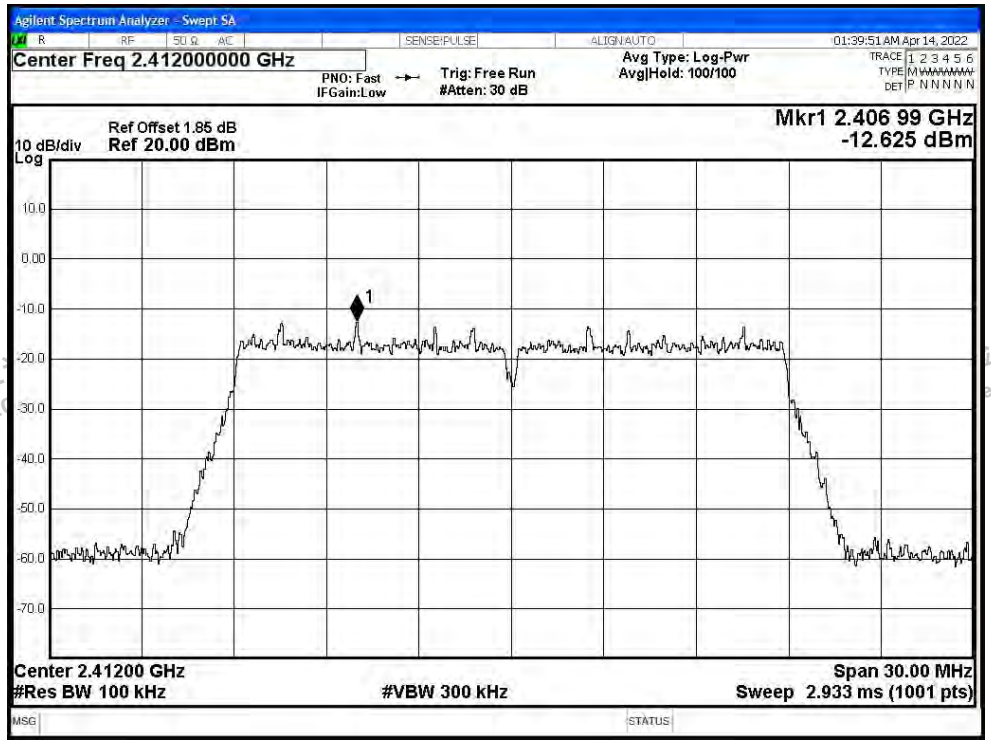
Tx. Spurious NVNT g 2462MHz Ant1 Ref



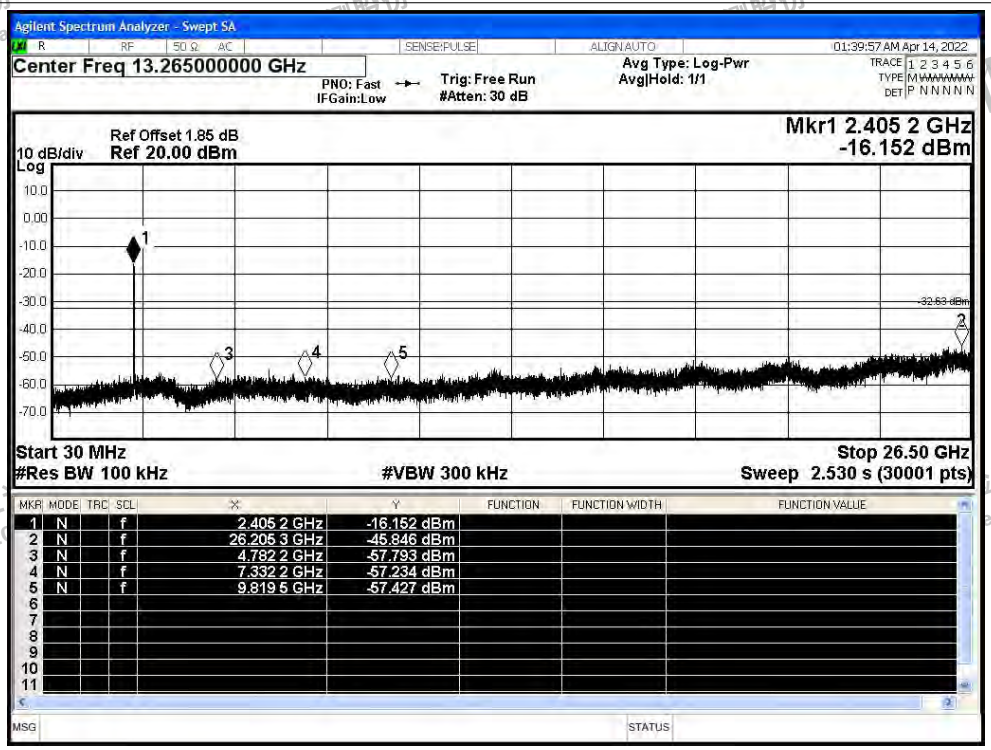
Tx. Spurious NVNT g 2462MHz Ant1 Emission



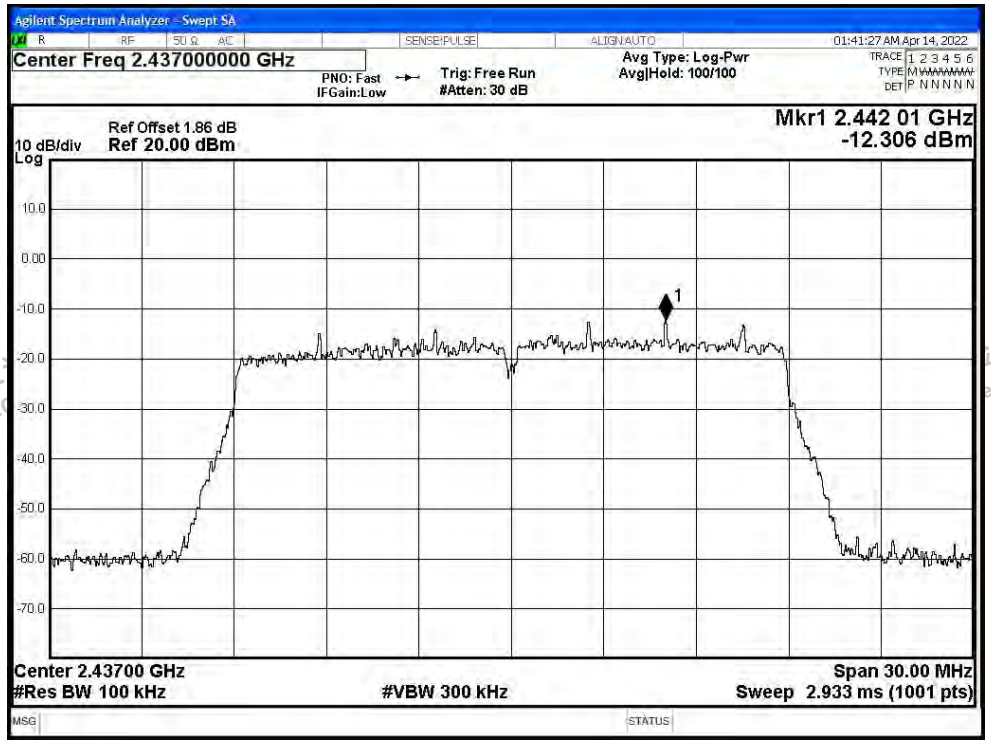
Tx. Spurious NVNT n20 2412MHz Ant1 Ref



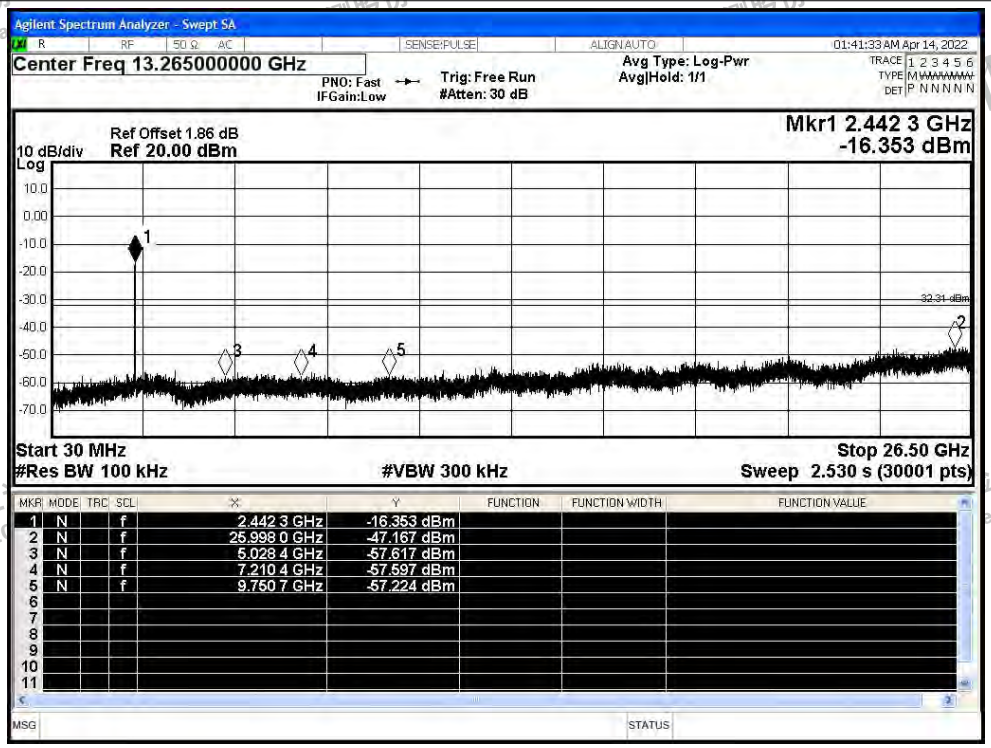
Tx. Spurious NVNT n20 2412MHz Ant1 Emission



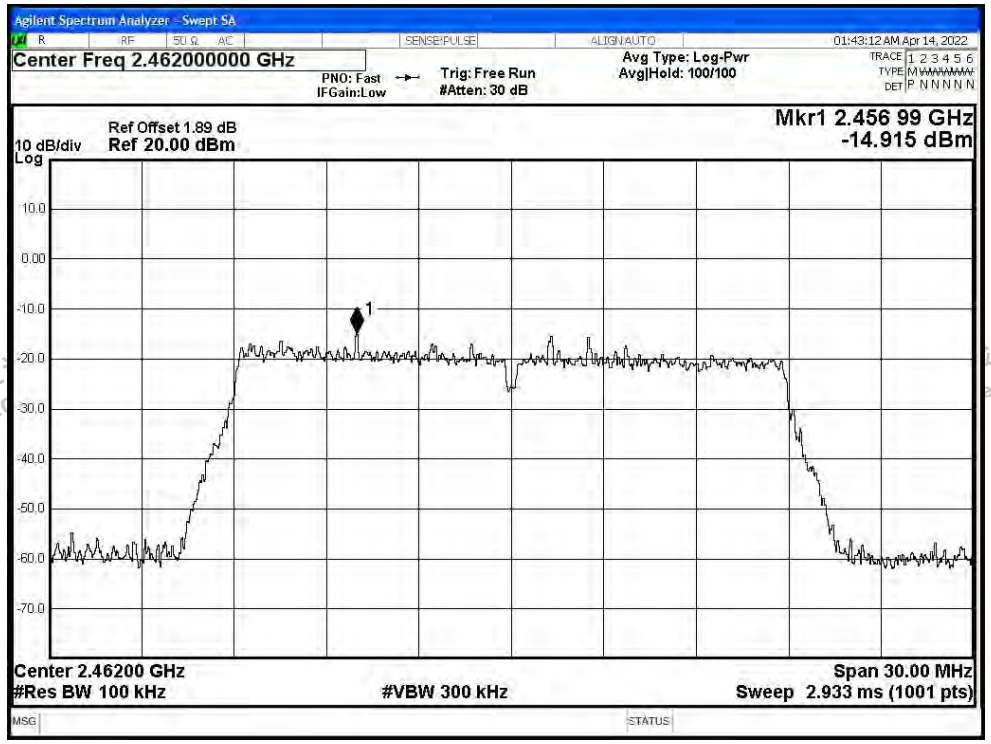
Tx. Spurious NVNT n20 2437MHz Ant1 Ref



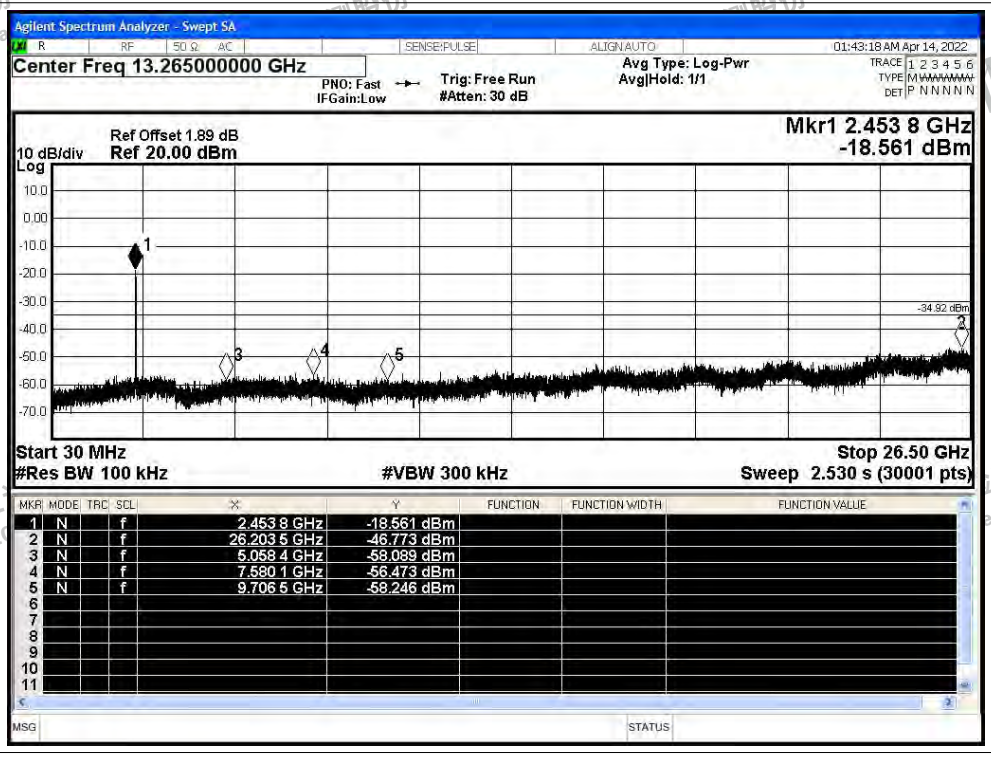
Tx. Spurious NVNT n20 2437MHz Ant1 Emission



Tx. Spurious NVNT n20 2462MHz Ant1 Ref



Tx. Spurious NVNT n20 2462MHz Ant1 Emission

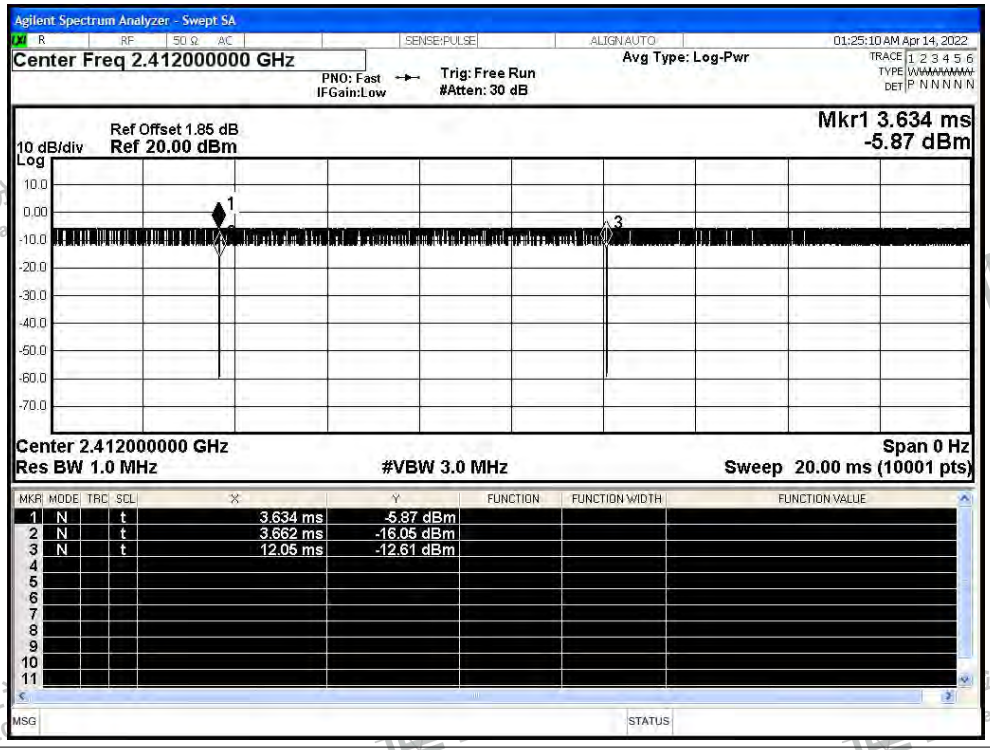


B.7 Duty Cycle

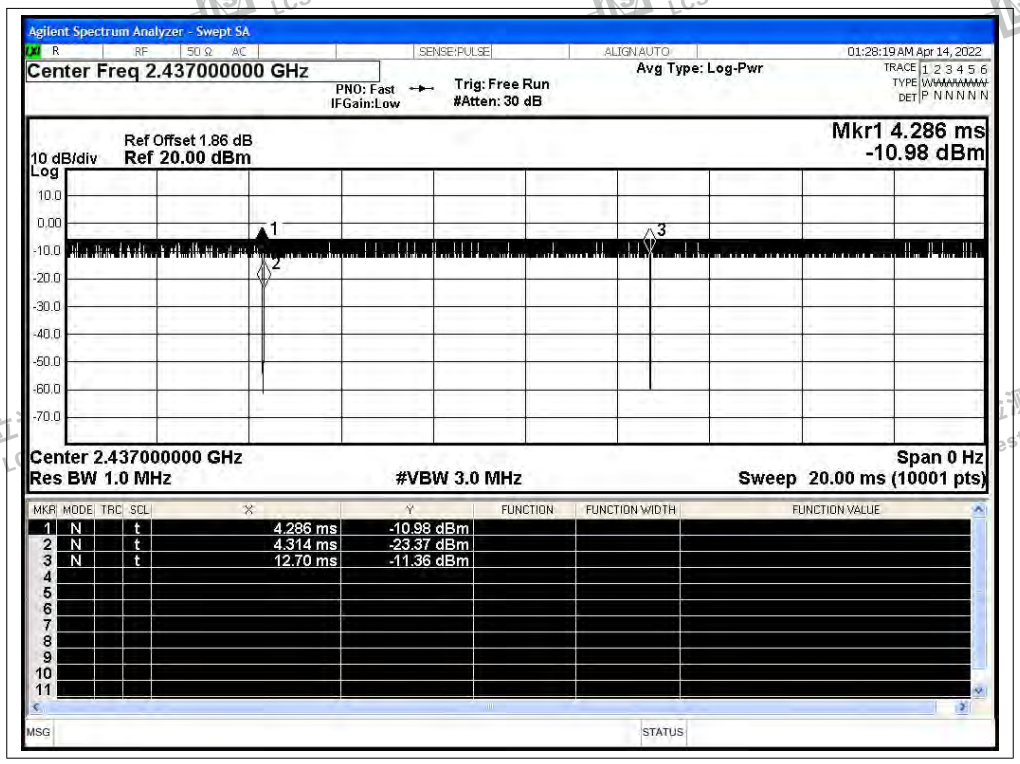
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant1	99.67	0	0.12
NVNT	b	2437	Ant1	99.67	0	0.12
NVNT	b	2462	Ant1	99.67	0	0.12
NVNT	g	2412	Ant1	97.62	0.1	0.72
NVNT	g	2437	Ant1	97.62	0.1	0.72
NVNT	g	2462	Ant1	97.48	0.11	0.72
NVNT	n20	2412	Ant1	97.45	0.11	0.77
NVNT	n20	2437	Ant1	97.31	0.12	0.77
NVNT	n20	2462	Ant1	97.16	0.13	0.77

Test Graphs

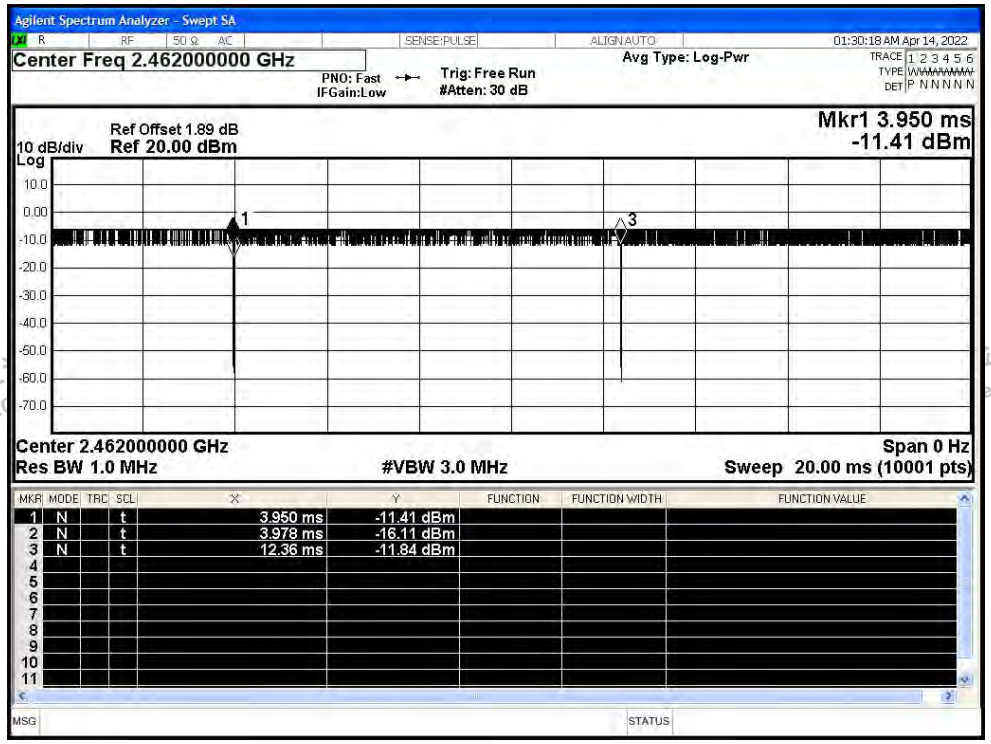
Duty Cycle NVNT b 2412MHz Ant1



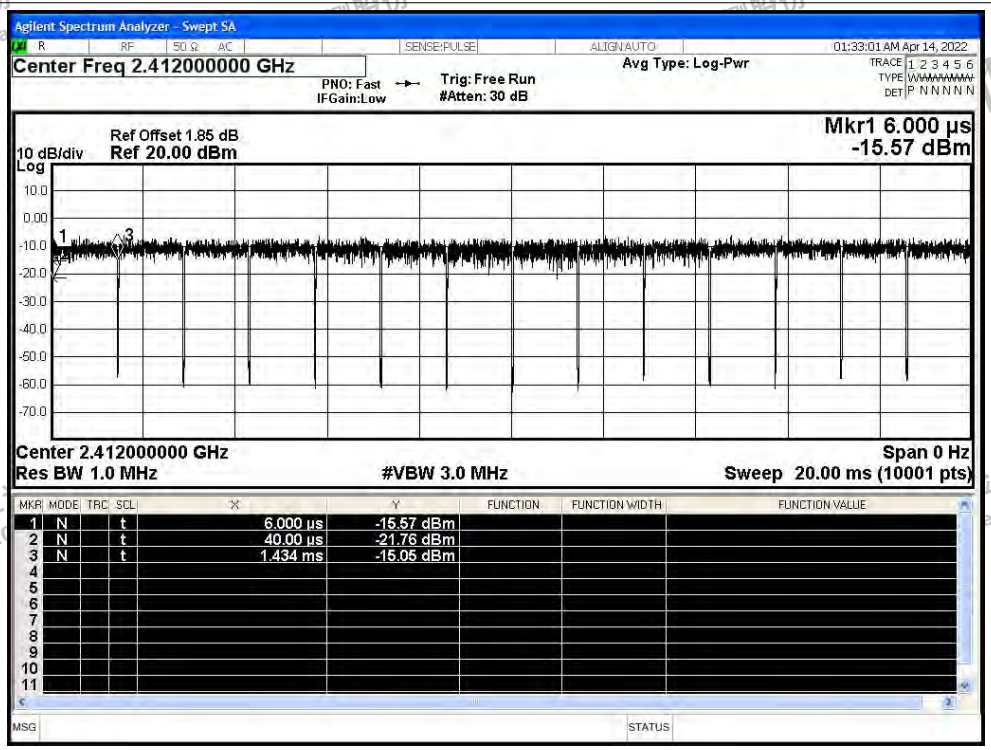
Duty Cycle NVNT b 2437MHz Ant1


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.437000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
01:28:19 AM Apr 14, 2022
Ref Offset 1.86 dB
10 dB/div Ref 20.00 dBm
Log
Mkr1 4.286 ms
-10.98 dBm
Center 2.437000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 20.00 ms (10001 pts)
1 N t 4.286 ms -10.98 dBm
2 N t 4.314 ms -23.37 dBm
3 N t 12.70 ms -11.36 dBm

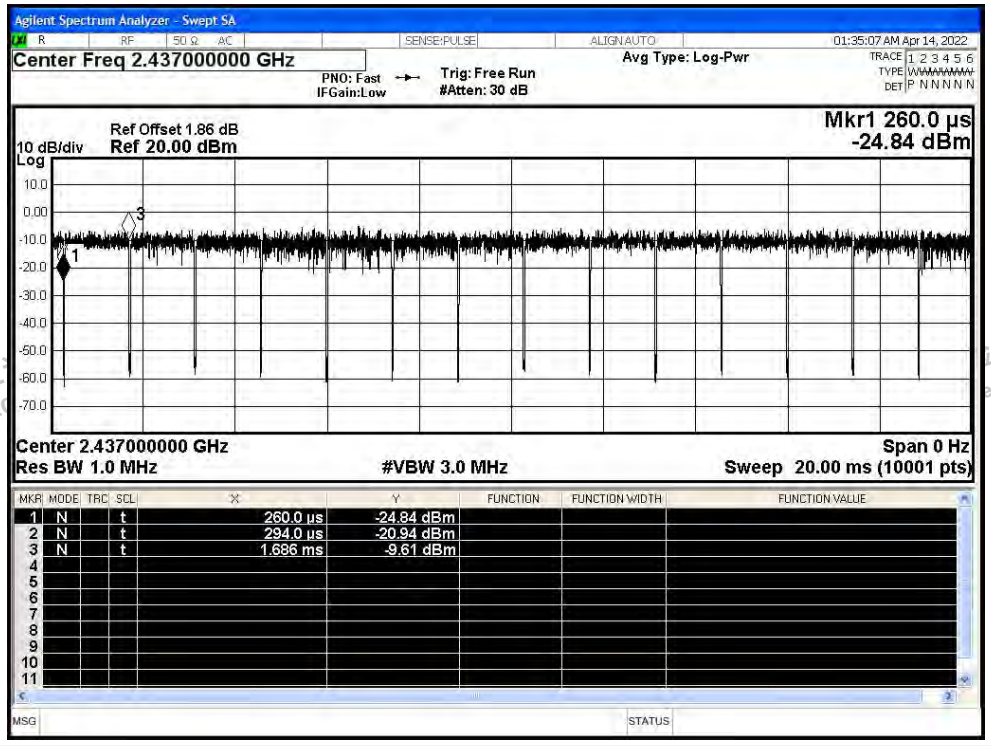
Duty Cycle NVNT b 2462MHz Ant1



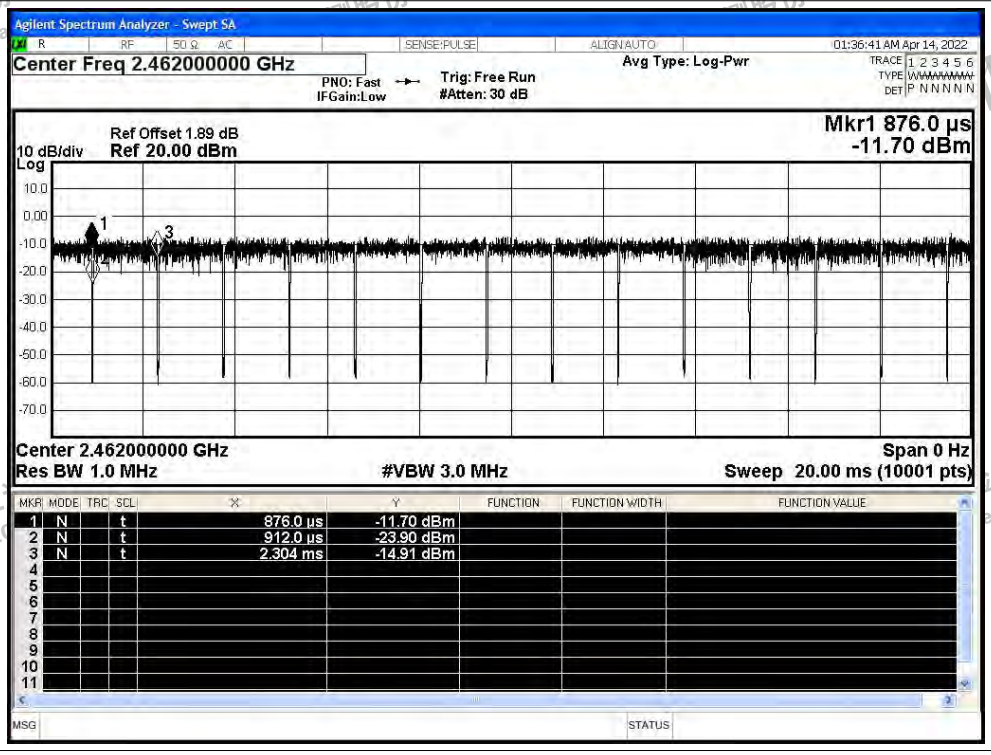
Duty Cycle NVNT g 2412MHz Ant1



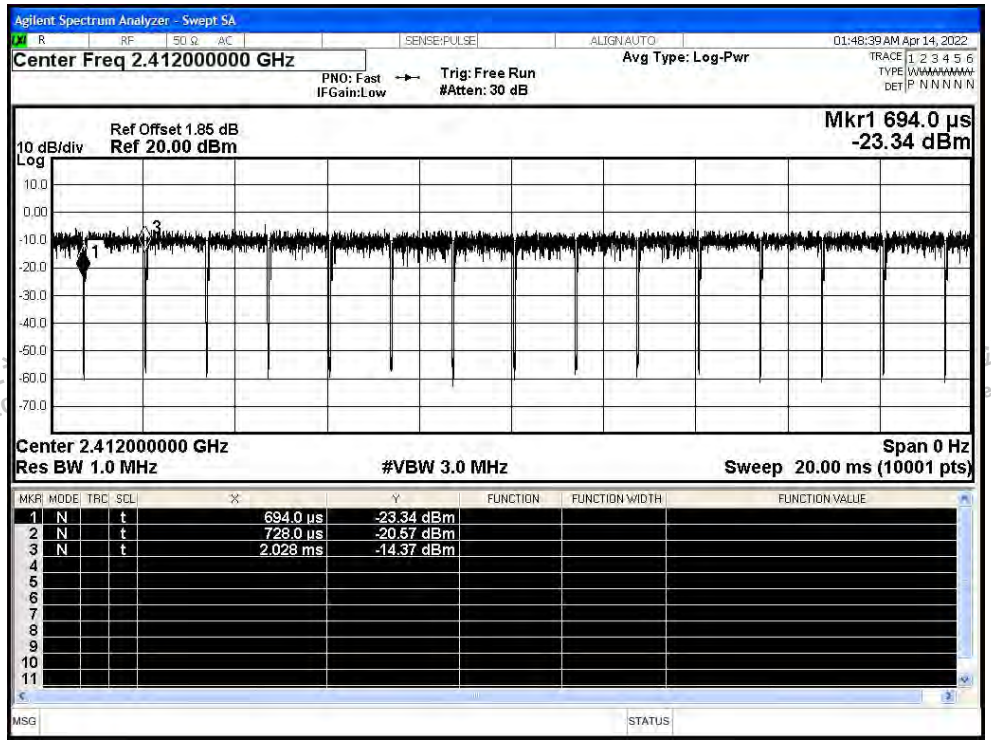
Duty Cycle NVNT g 2437MHz Ant1



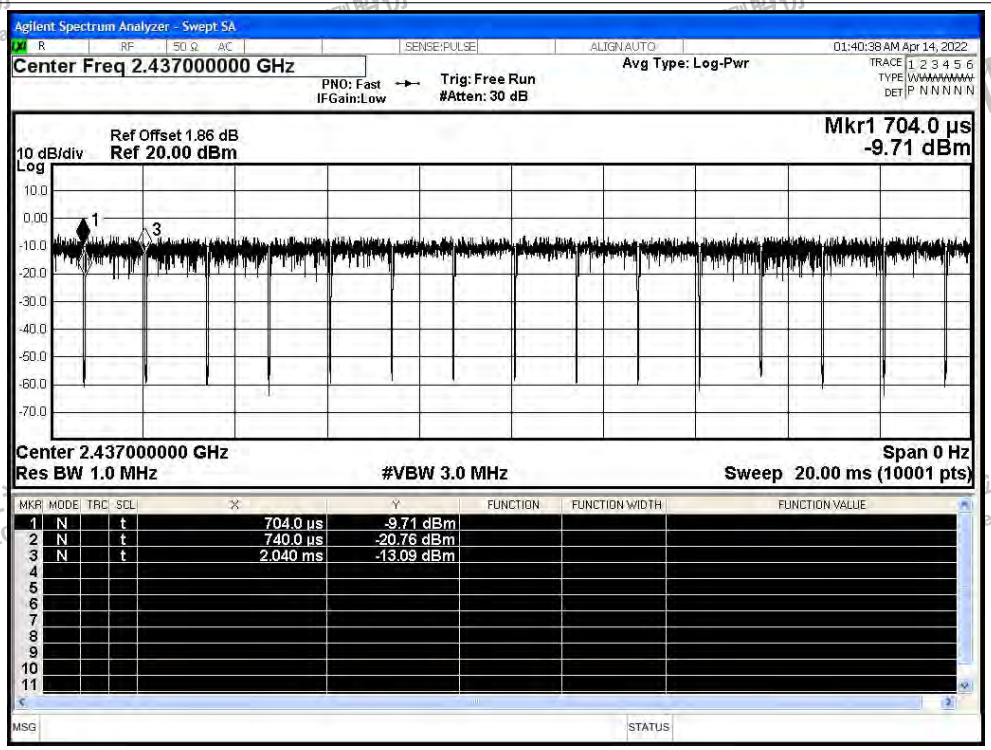
Duty Cycle NVNT g 2462MHz Ant1



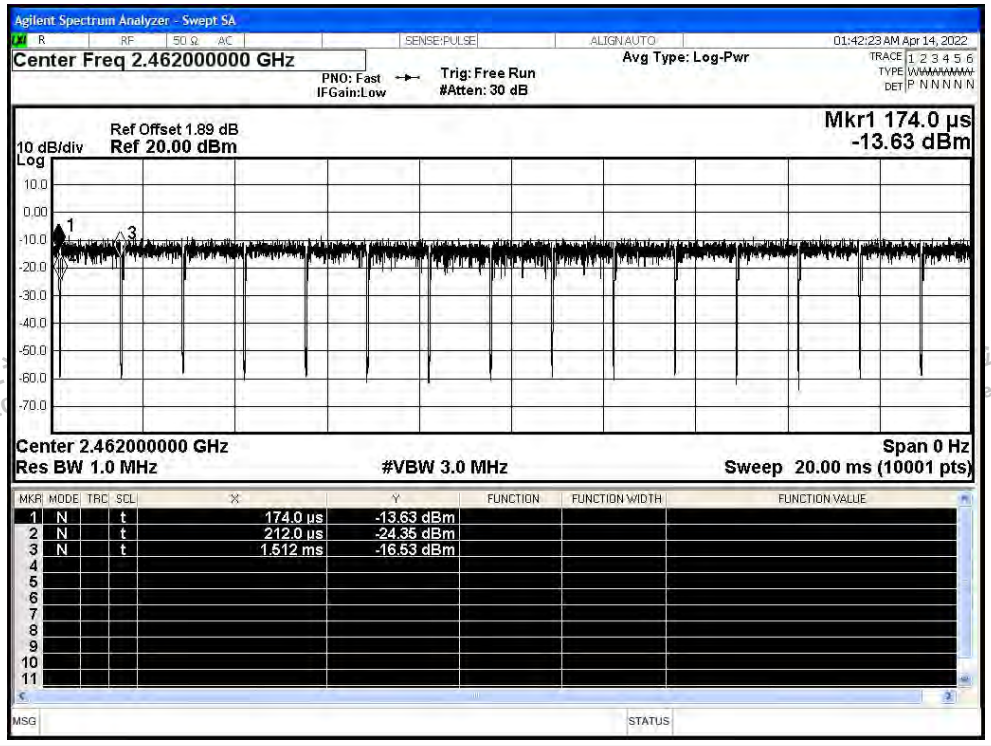
Duty Cycle NVNT n20 2412MHz Ant1



Duty Cycle NVNT n20 2437MHz Ant1



Duty Cycle NVNT n20 2462MHz Ant1

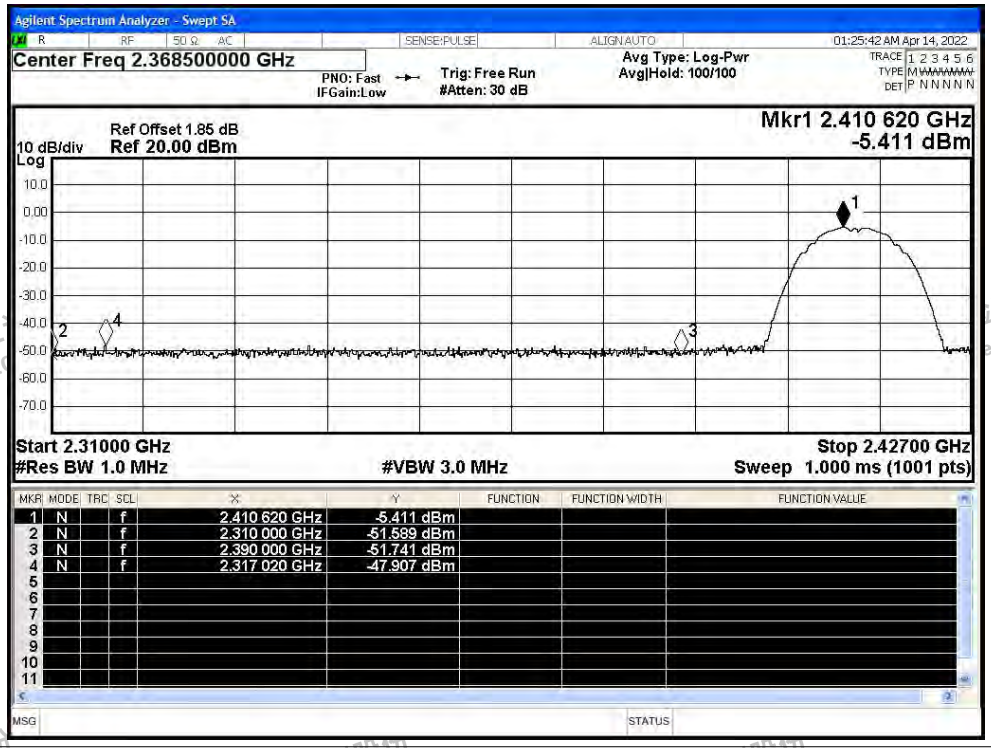


B.8 Restrict Band

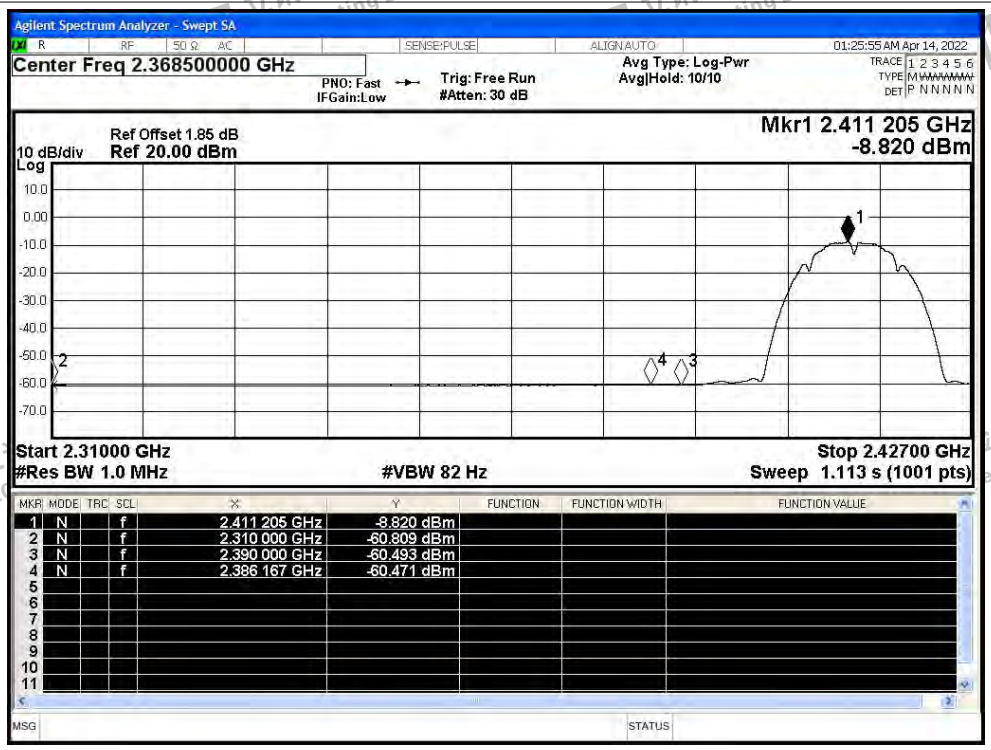
Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	b	2412	Ant1	2310	-51.58	2	45.68	Peak	74	Pass
NVNT	b	2412	Ant1	2310	-60.8	2	36.46	Average	54	Pass
NVNT	b	2412	Ant1	2317.02	-47.9	2	49.36	Peak	74	Pass
NVNT	b	2412	Ant1	2386.167	-60.47	2	36.79	Average	54	Pass
NVNT	b	2412	Ant1	2390	-51.74	2	45.52	Peak	74	Pass
NVNT	b	2412	Ant1	2390	-60.49	2	36.77	Average	54	Pass
NVNT	b	2462	Ant1	2483.5	-49.62	2	47.64	Peak	74	Pass
NVNT	b	2462	Ant1	2483.5	-60.09	2	37.17	Average	54	Pass
NVNT	b	2462	Ant1	2487.545	-47.49	2	49.77	Peak	74	Pass
NVNT	b	2462	Ant1	2488.022	-59.81	2	37.45	Average	54	Pass
NVNT	b	2462	Ant1	2500	-50.09	2	47.17	Peak	74	Pass
NVNT	b	2462	Ant1	2500	-60.18	2	37.08	Average	54	Pass
NVNT	g	2412	Ant1	2310	-51.34	2	45.92	Peak	74	Pass
NVNT	g	2412	Ant1	2310	-60.46	2	36.8	Average	54	Pass
NVNT	g	2412	Ant1	2312.223	-46.37	2	50.89	Peak	74	Pass
NVNT	g	2412	Ant1	2389.092	-59.79	2	37.47	Average	54	Pass
NVNT	g	2412	Ant1	2390	-50.21	2	47.05	Peak	74	Pass
NVNT	g	2412	Ant1	2390	-59.85	2	37.41	Average	54	Pass
NVNT	g	2462	Ant1	2483.5	-49.78	2	47.48	Peak	74	Pass
NVNT	g	2462	Ant1	2483.5	-59.03	2	38.23	Average	54	Pass
NVNT	g	2462	Ant1	2485.266	-47.13	2	50.13	Peak	74	Pass
NVNT	g	2462	Ant1	2487.916	-58.16	2	39.1	Average	54	Pass
NVNT	g	2462	Ant1	2500	-48.39	2	48.87	Peak	74	Pass
NVNT	g	2462	Ant1	2500	-59.57	2	37.69	Average	54	Pass
NVNT	n20	2412	Ant1	2310	-50.38	2	46.88	Peak	74	Pass
NVNT	n20	2412	Ant1	2310	-60.41	2	36.85	Average	54	Pass
NVNT	n20	2412	Ant1	2381.955	-47.17	2	50.09	Peak	74	Pass
NVNT	n20	2412	Ant1	2389.911	-59.79	2	37.47	Average	54	Pass
NVNT	n20	2412	Ant1	2390	-50.31	2	46.95	Peak	74	Pass
NVNT	n20	2412	Ant1	2390	-59.81	2	37.45	Average	54	Pass
NVNT	n20	2462	Ant1	2483.5	-49.63	2	47.63	Peak	74	Pass
NVNT	n20	2462	Ant1	2483.5	-59.16	2	38.1	Average	54	Pass
NVNT	n20	2462	Ant1	2489.612	-47.52	2	49.74	Peak	74	Pass
NVNT	n20	2462	Ant1	2488.075	-58.73	2	38.53	Average	54	Pass
NVNT	n20	2462	Ant1	2500	-50.97	2	46.29	Peak	74	Pass
NVNT	n20	2462	Ant1	2500	-59.74	2	37.52	Average	54	Pass

Test Graphs

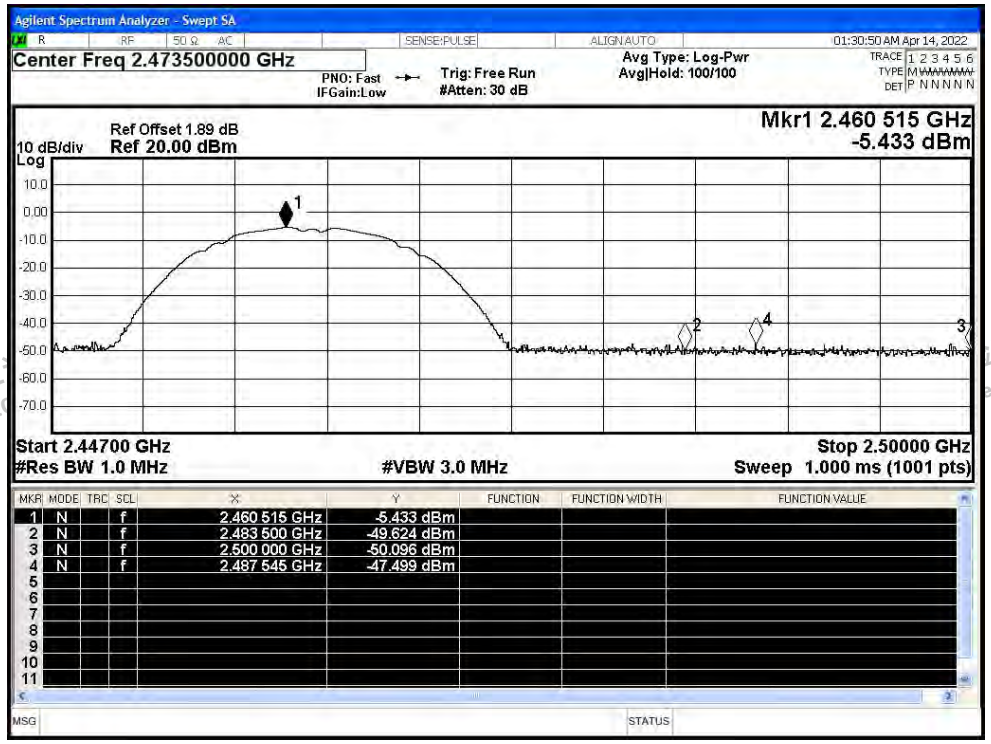
Restrict Band NVNT b 2412MHz Ant1 Peak



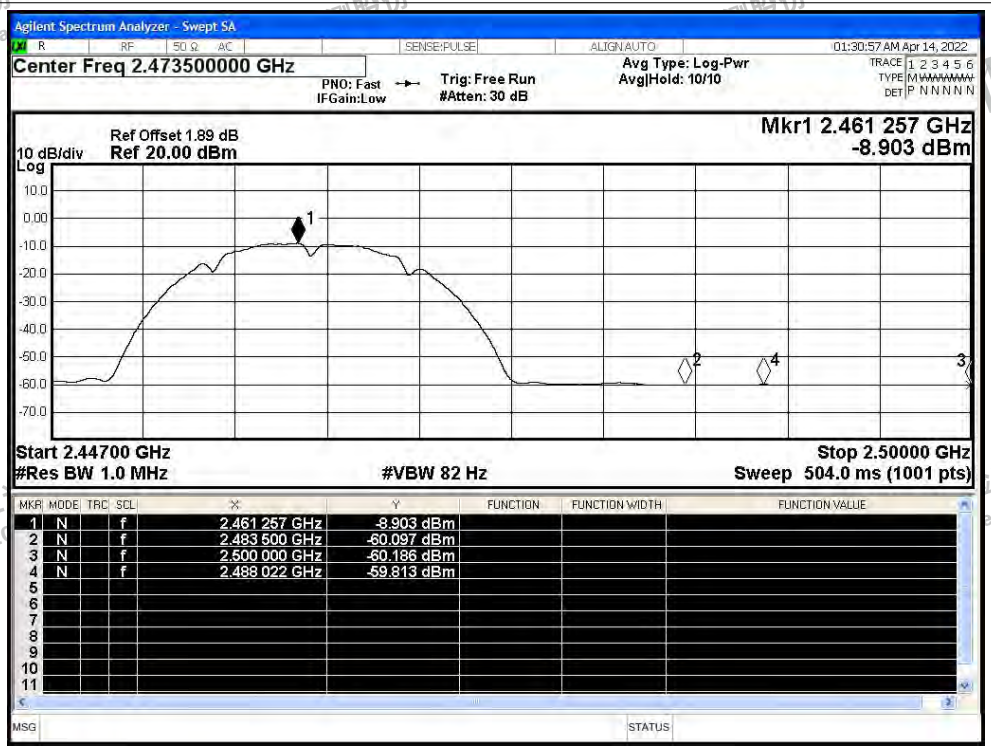
Restrict Band NVNT b 2412MHz Ant1 Average



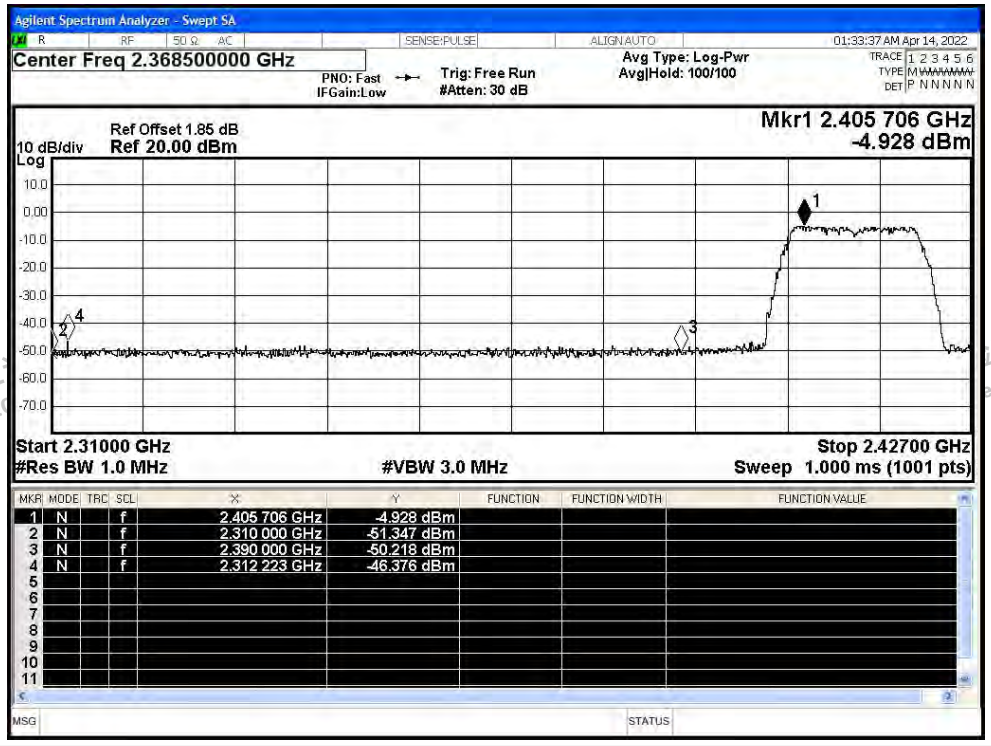
Restrict Band NVNT b 2462MHz Ant1 Peak



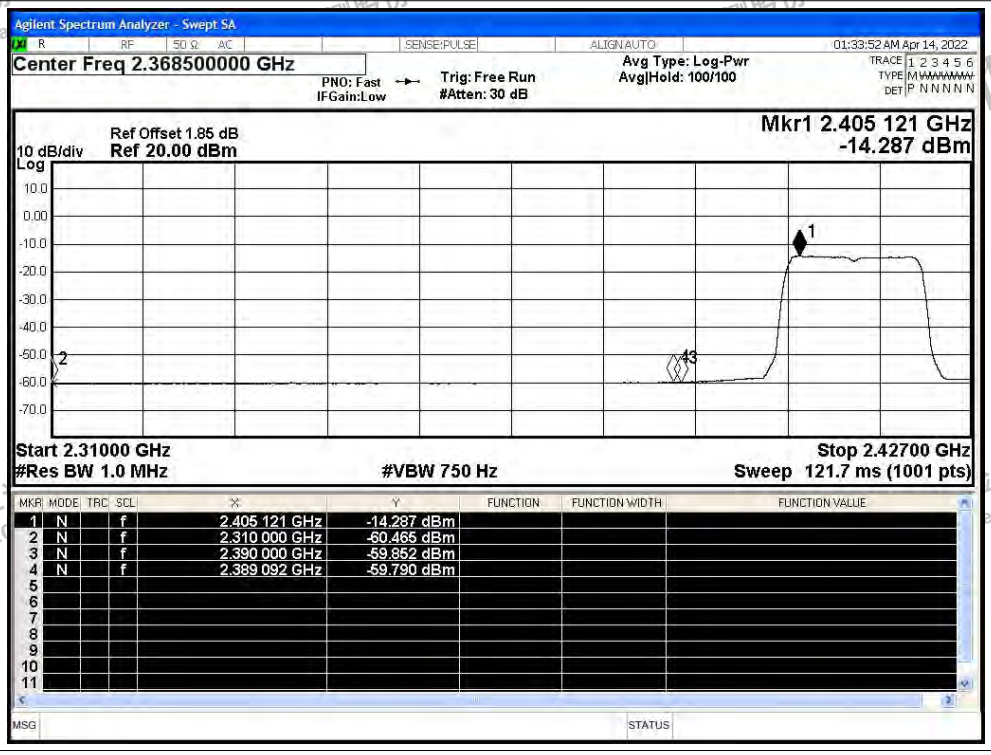
Restrict Band NVNT b 2462MHz Ant1 Average



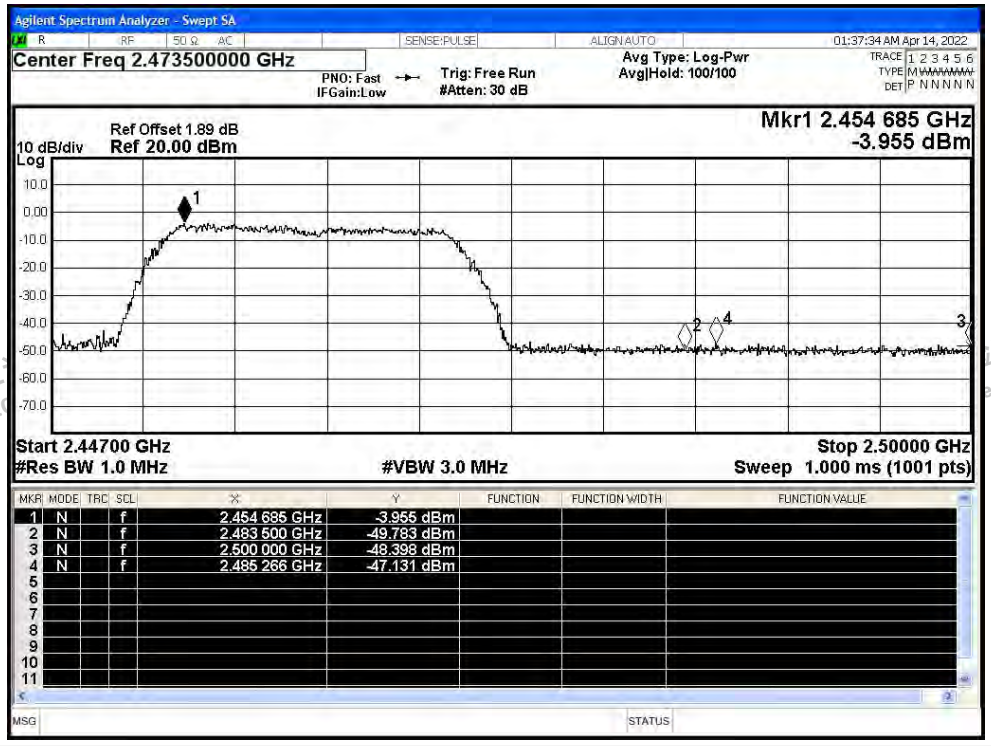
Restrict Band NVNT g 2412MHz Ant1 Peak



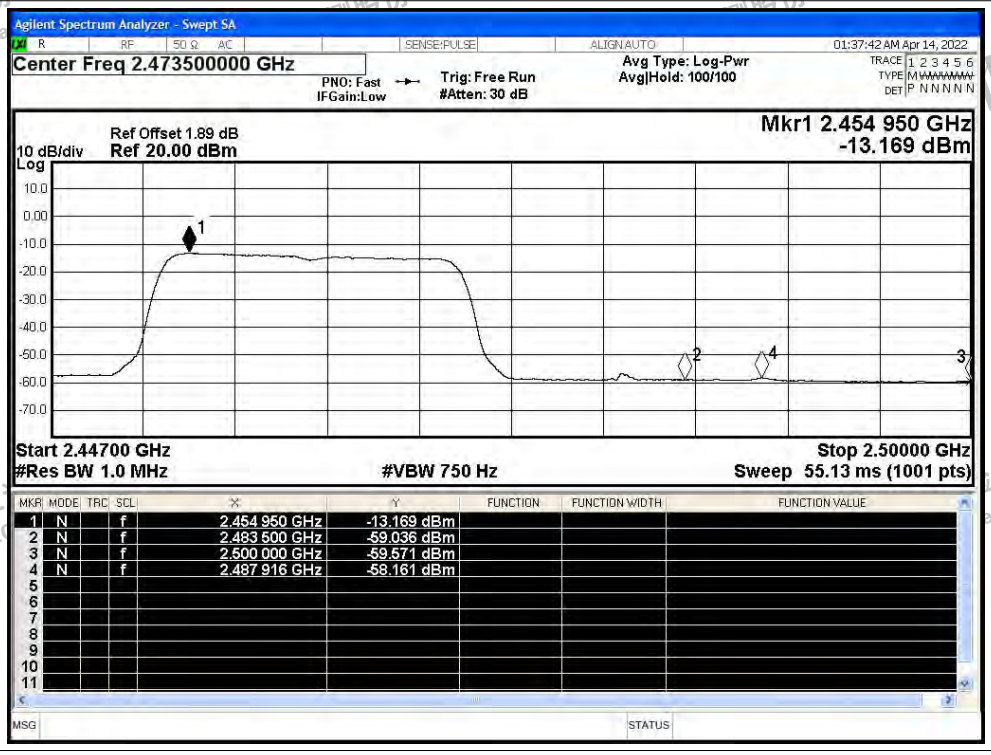
Restrict Band NVNT g 2412MHz Ant1 Average



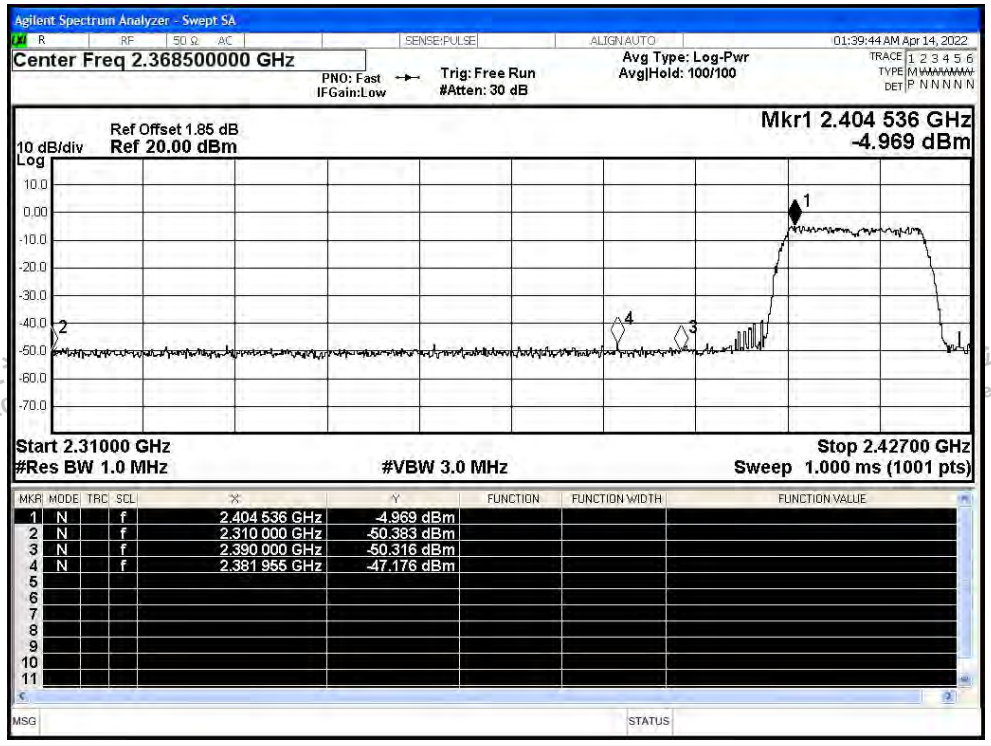
Restrict Band NVNT g 2462MHz Ant1 Peak



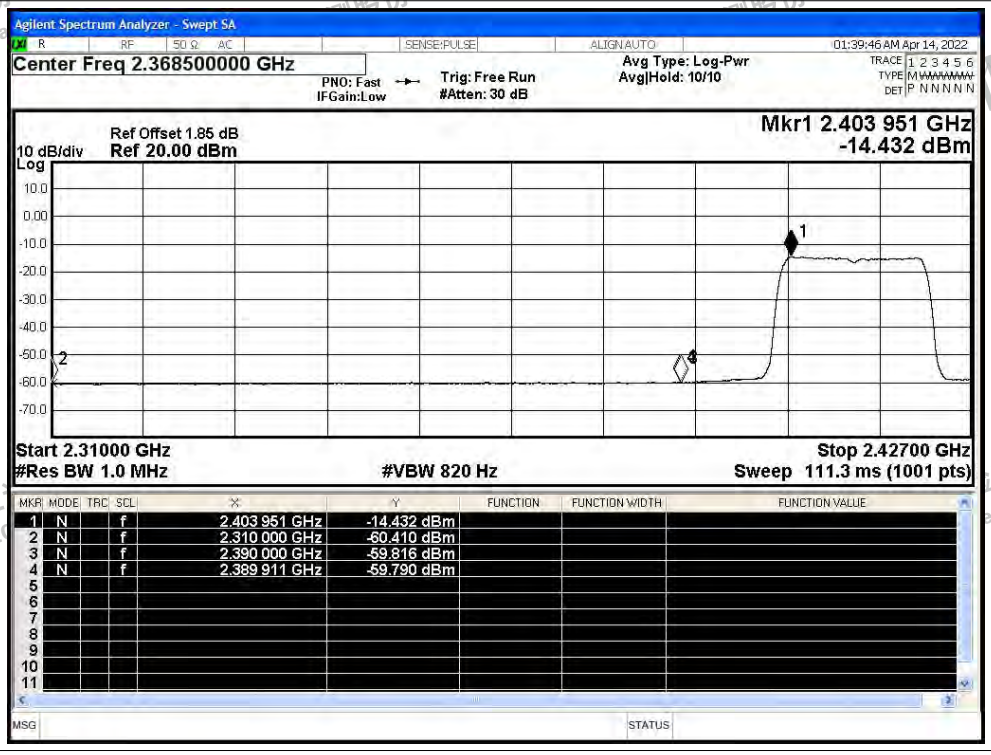
Restrict Band NVNT g 2462MHz Ant1 Average



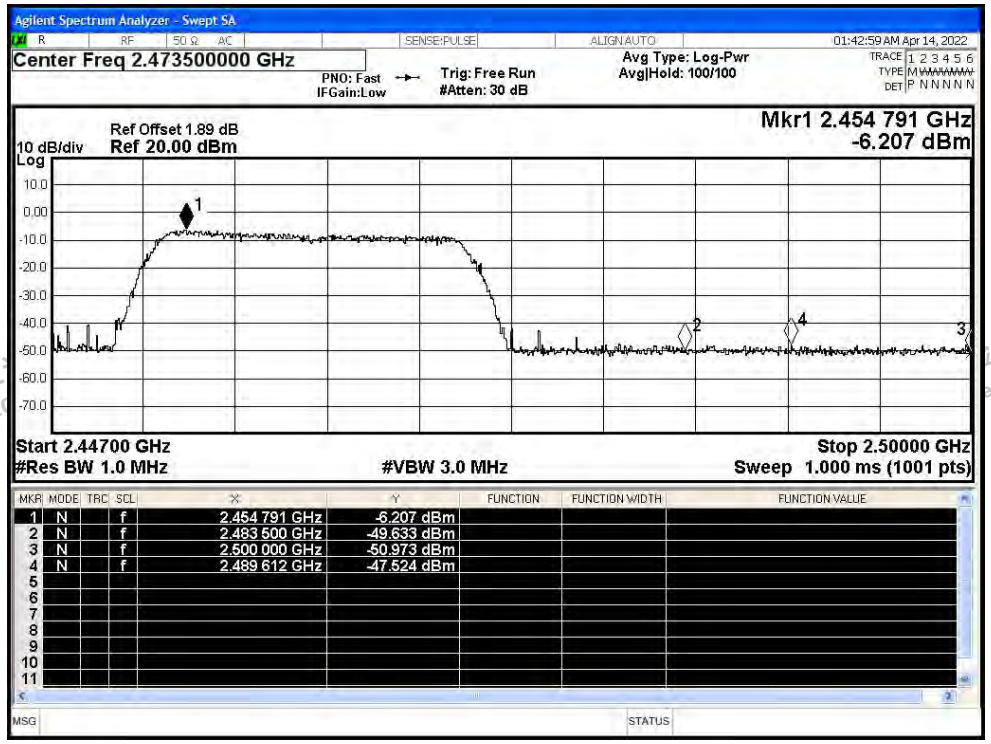
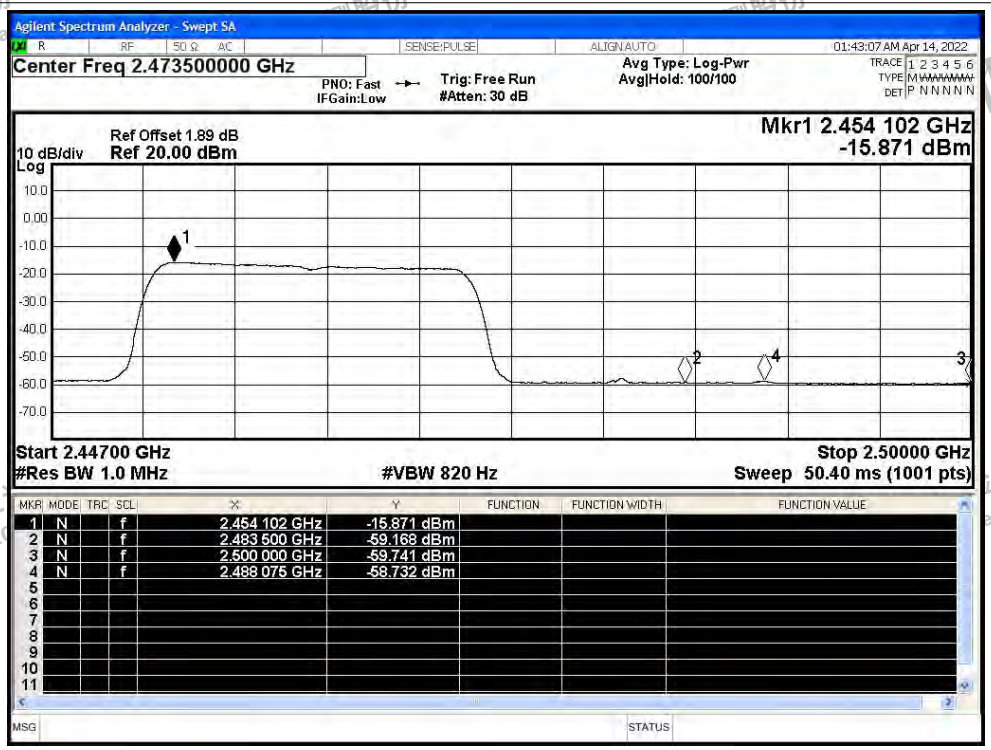
Restrict Band NVNT n20 2412MHz Ant1 Peak



Restrict Band NVNT n20 2412MHz Ant1 Average



Restrict Band NVNT n20 2462MHz Ant1 Peak



Restrict Band NVNT n20 2462MHz Ant1 Average