



Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: WiFi Retrofit Smart Lock

Test Model: WR

Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Taylor Hu
Supervised by:	Ling Zhu



Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity



A.1 -6dB Bandwidth

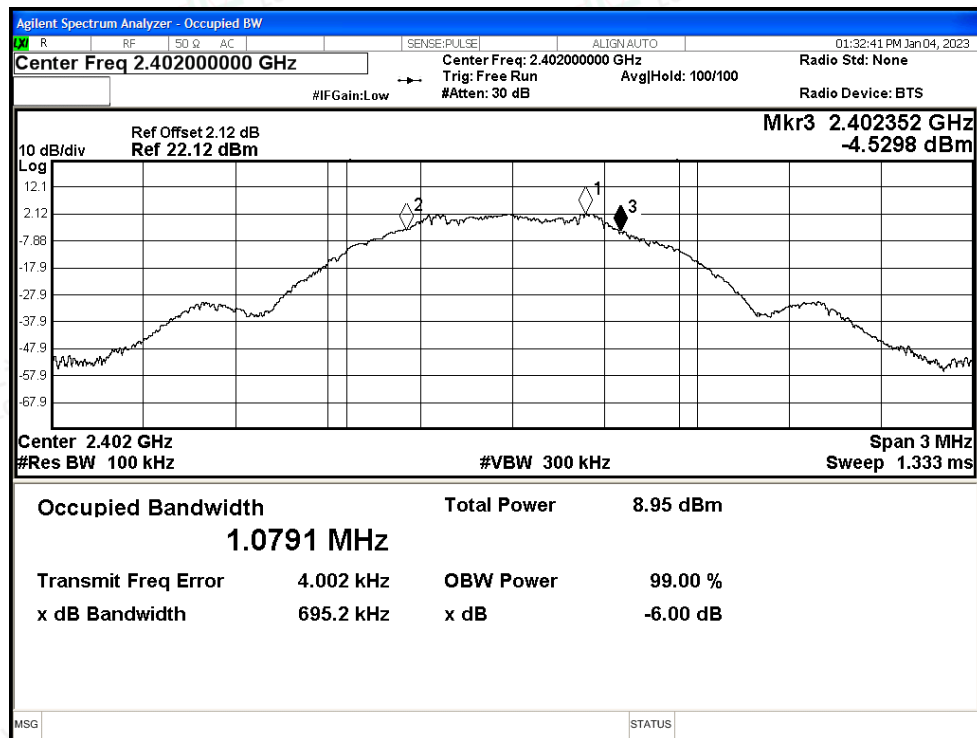
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant	0.695	≥ 0.5	Pass
NVNT	BLE 1M	2440	Ant	0.708	≥ 0.5	Pass
NVNT	BLE 1M	2480	Ant	0.707	≥ 0.5	Pass
NVNT	BLE 2M	2402	Ant	1.244	≥ 0.5	Pass
NVNT	BLE 2M	2440	Ant	1.322	≥ 0.5	Pass
NVNT	BLE 2M	2480	Ant	1.344	≥ 0.5	Pass



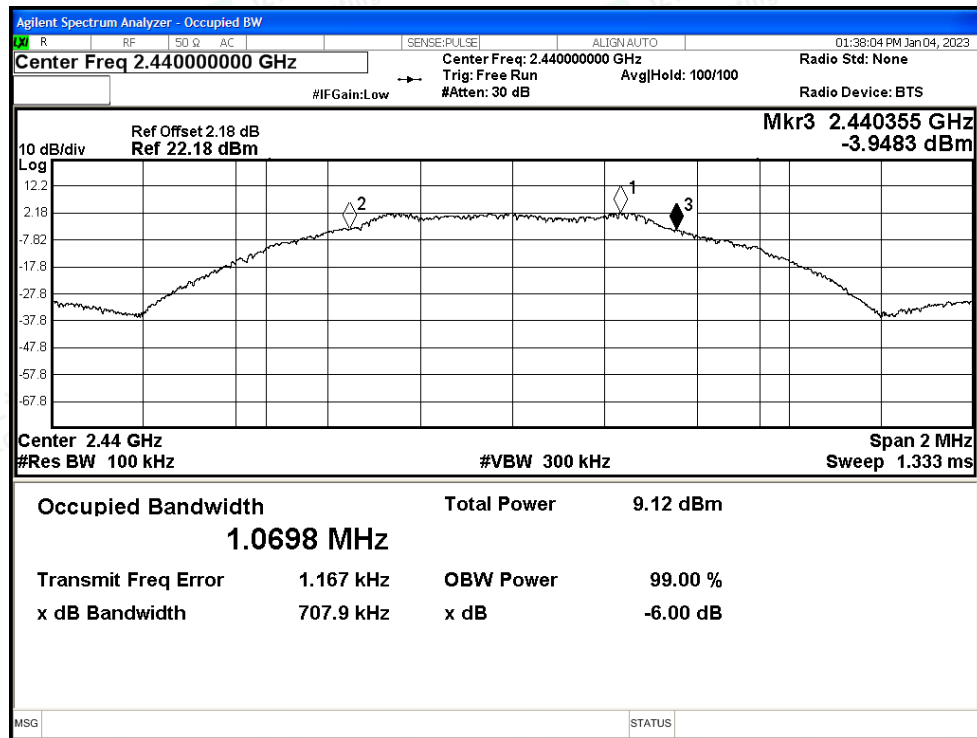


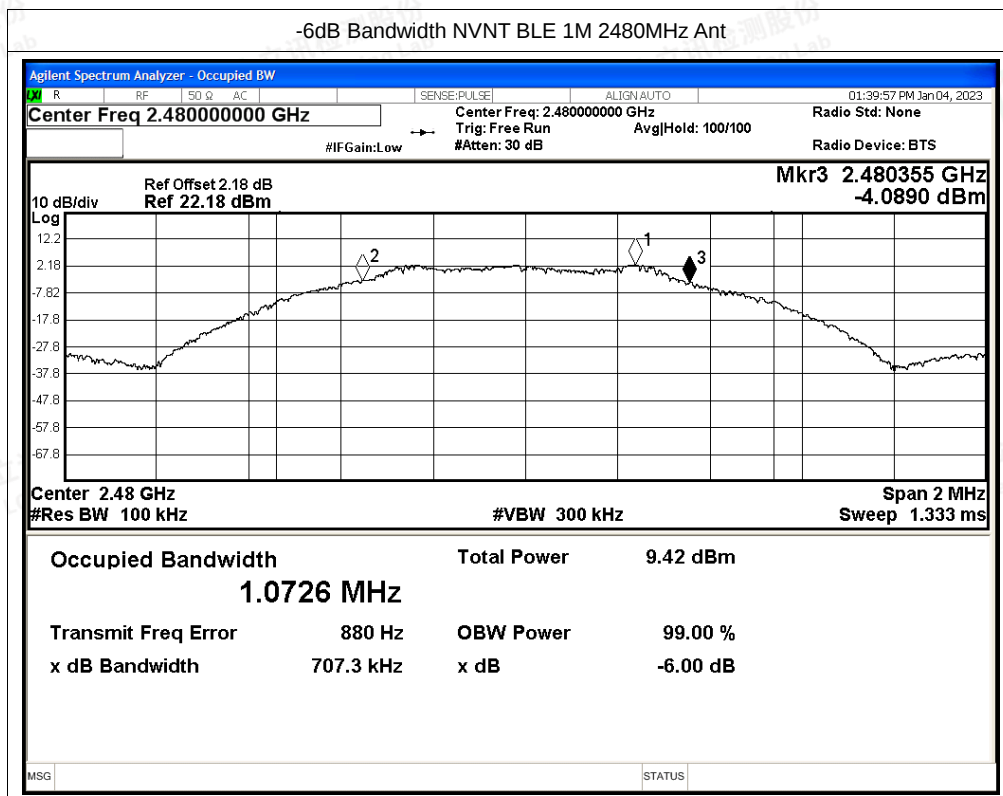
Test Graphs

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant



-6dB Bandwidth NVNT BLE 1M 2440MHz Ant

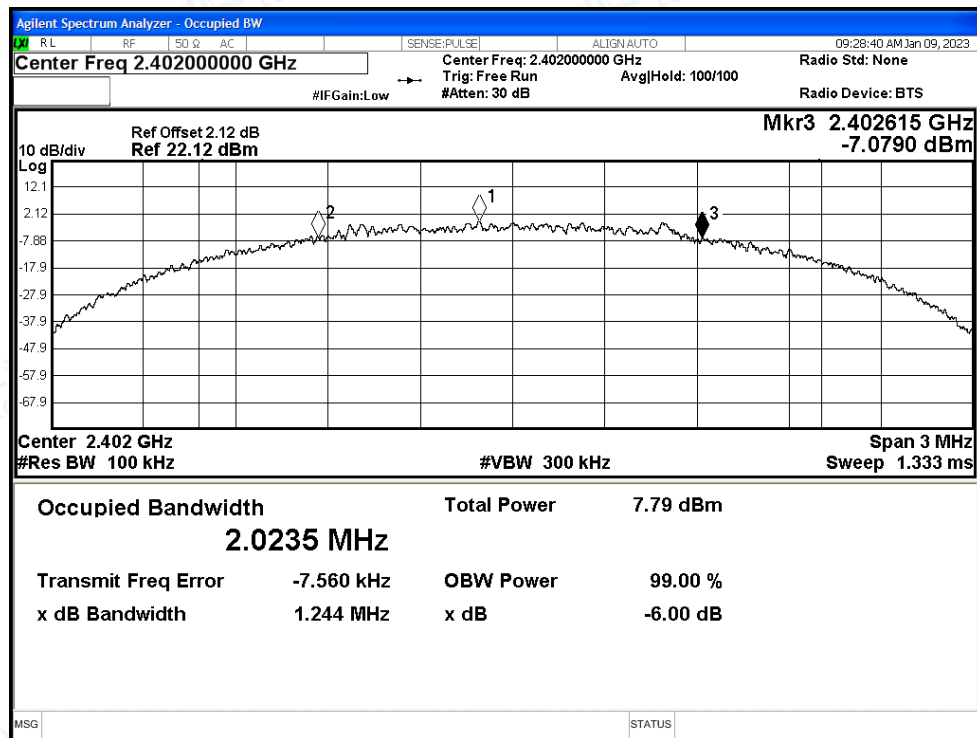




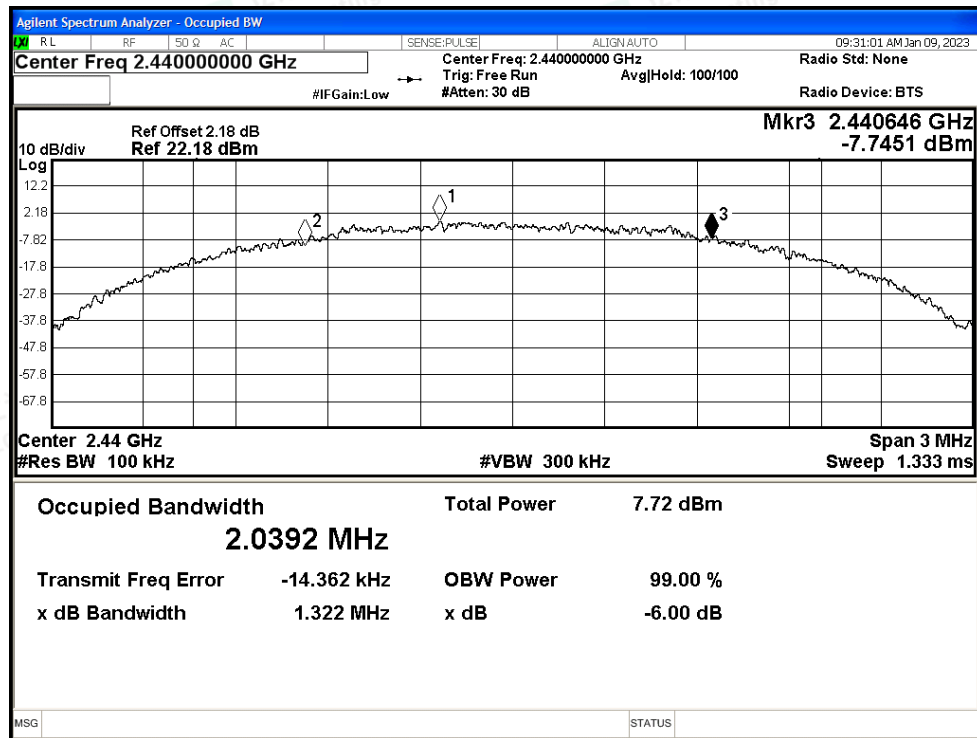


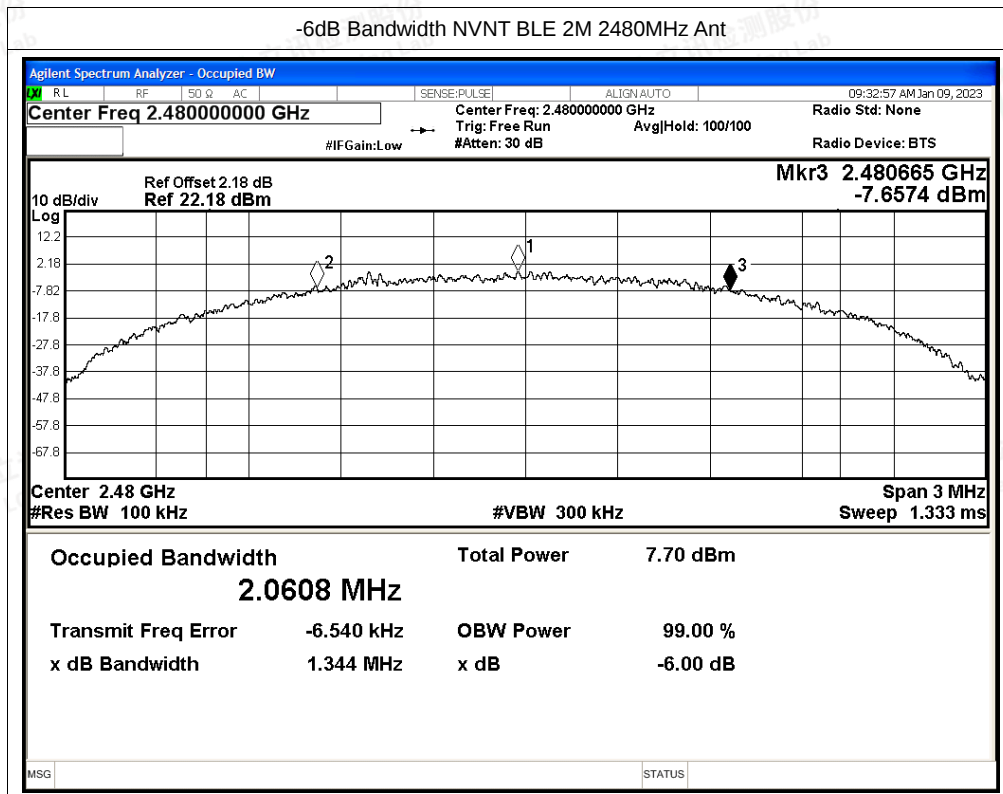
Test Graphs

-6dB Bandwidth NVNT BLE 2M 2402MHz Ant



-6dB Bandwidth NVNT BLE 2M 2440MHz Ant







A.2 Occupied Channel Bandwidth

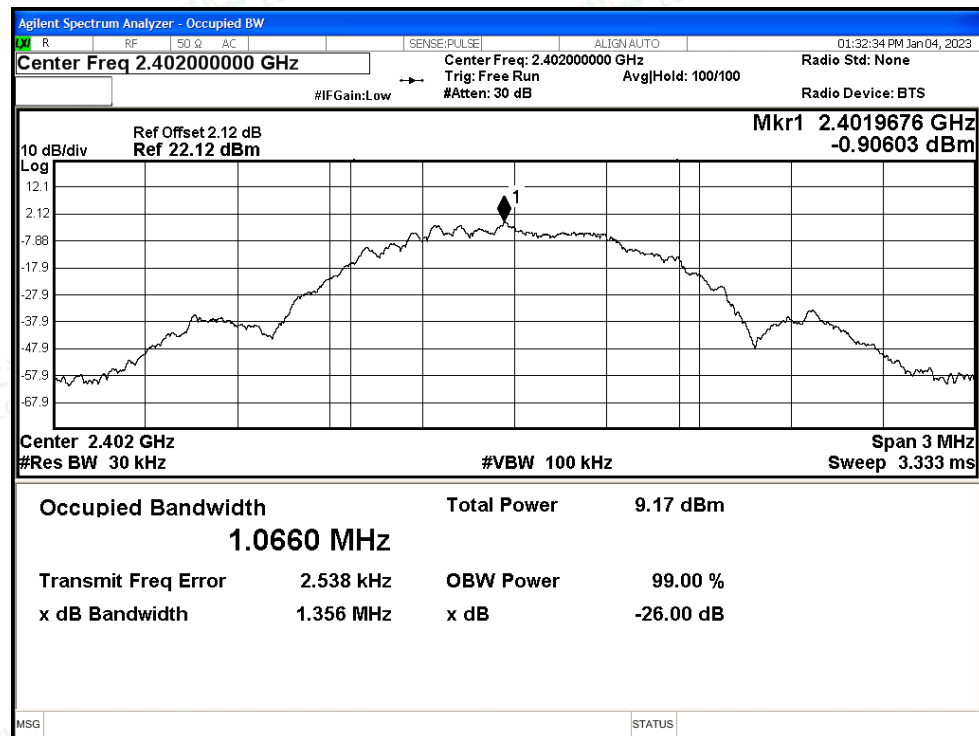
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	BLE 1M	2402	Ant	1.066
NVNT	BLE 1M	2440	Ant	1.063
NVNT	BLE 1M	2480	Ant	1.066
NVNT	BLE 2M	2402	Ant	2.036
NVNT	BLE 2M	2440	Ant	2.051
NVNT	BLE 2M	2480	Ant	2.066



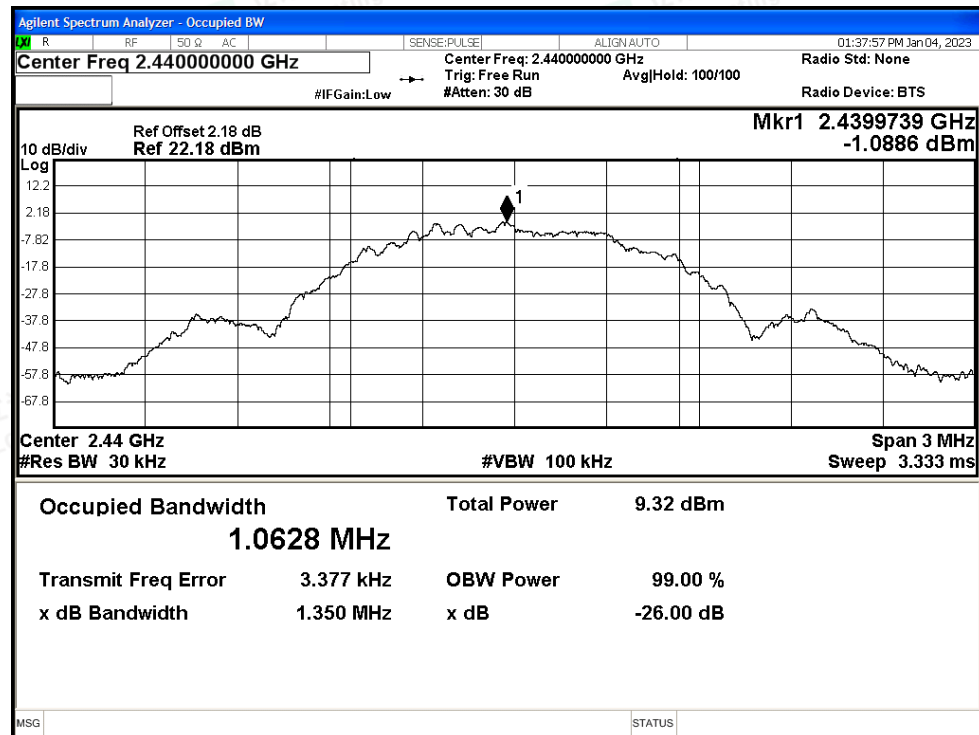


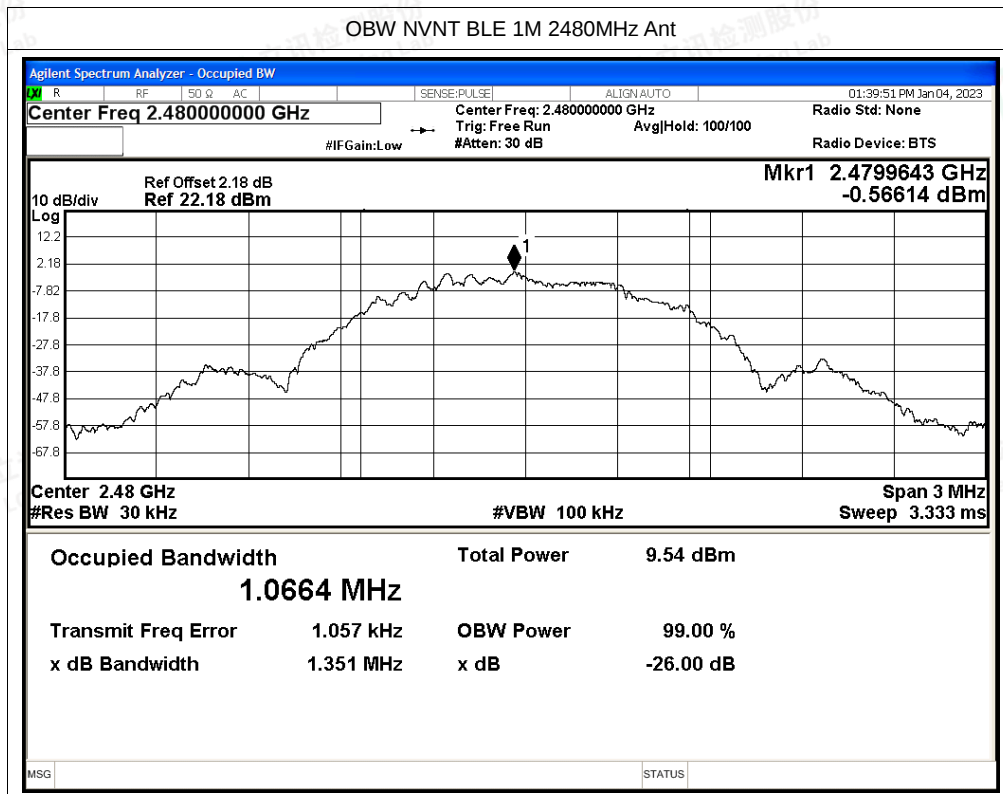
Test Graphs

OBW NVNT BLE 1M 2402MHz Ant



OBW NVNT BLE 1M 2440MHz Ant

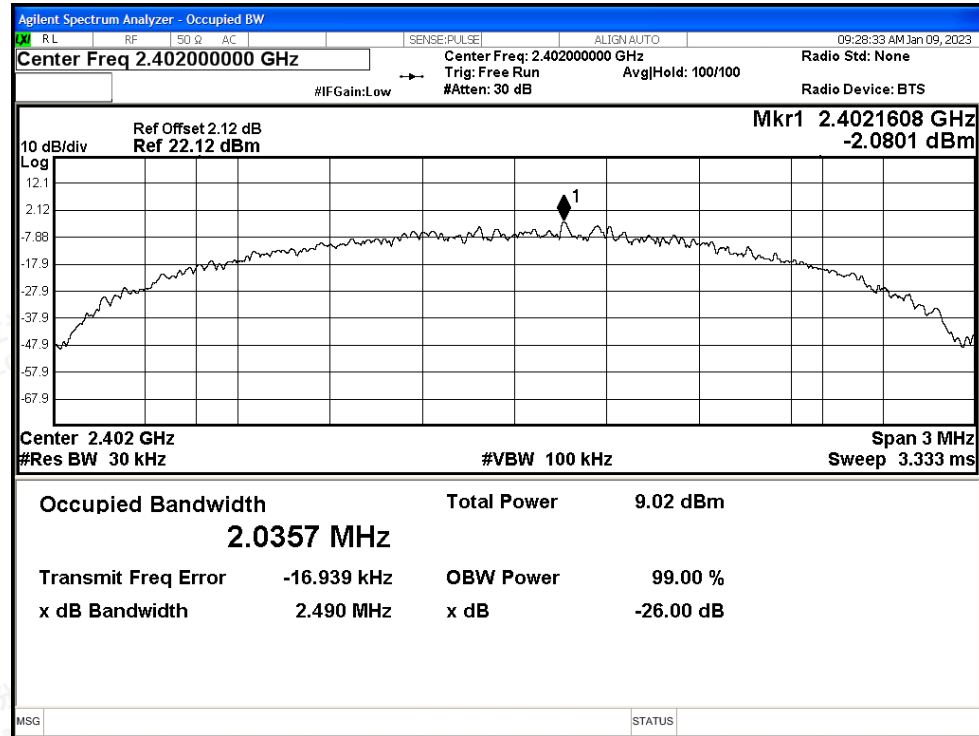




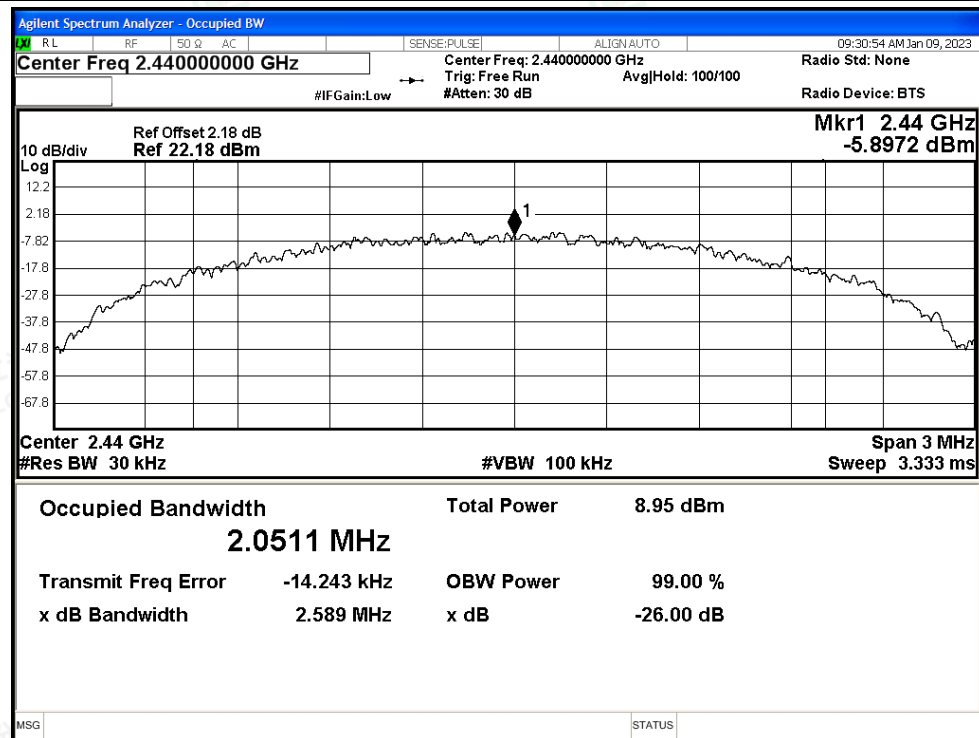


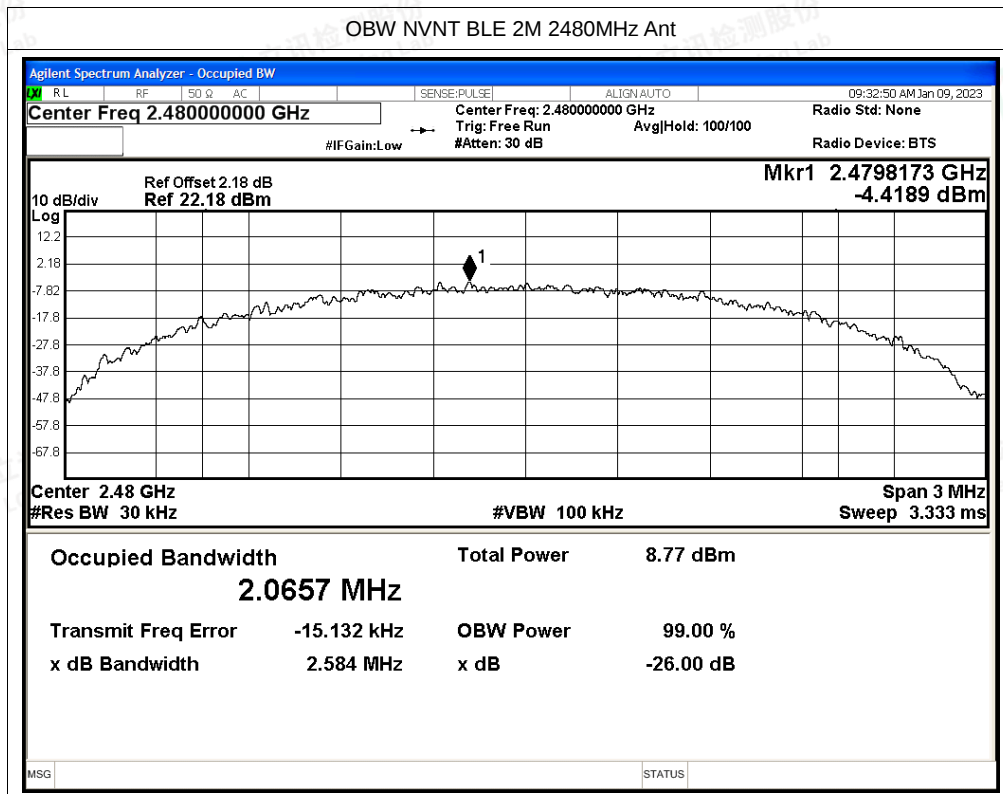
Test Graphs

OBW NVNT BLE 2M 2402MHz Ant



OBW NVNT BLE 2M 2440MHz Ant







A.3 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant	3.26	30	Pass
NVNT	BLE 1M	2440	Ant	3.40	30	Pass
NVNT	BLE 1M	2480	Ant	3.67	30	Pass
NVNT	BLE 2M	2402	Ant	0.97	30	Pass
NVNT	BLE 2M	2440	Ant	1.07	30	Pass
NVNT	BLE 2M	2480	Ant	1.20	30	Pass

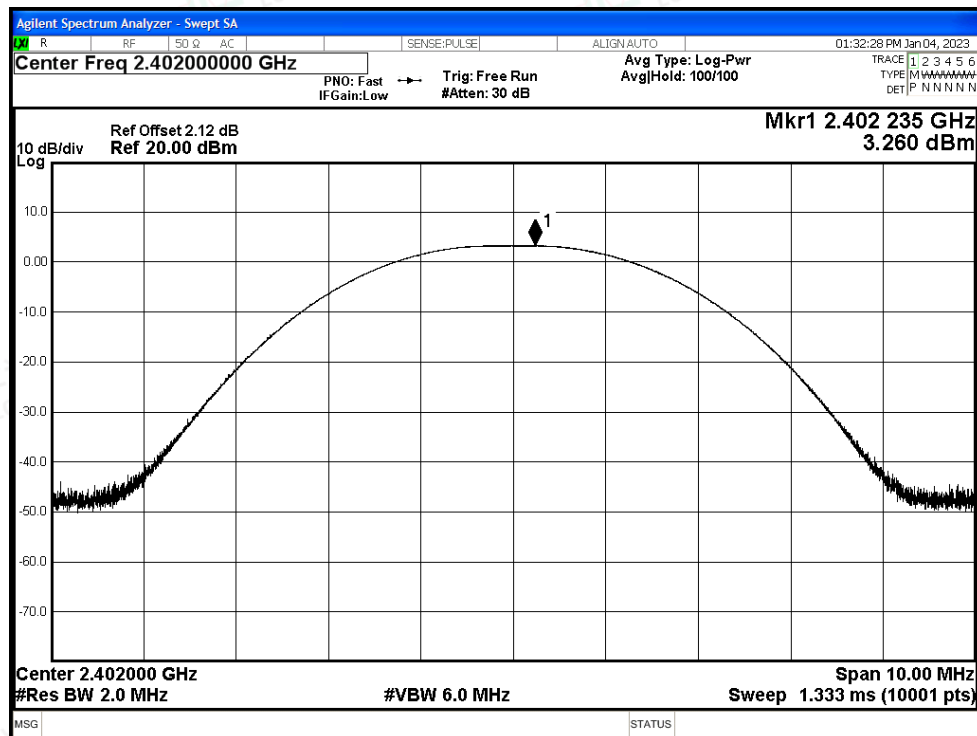


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

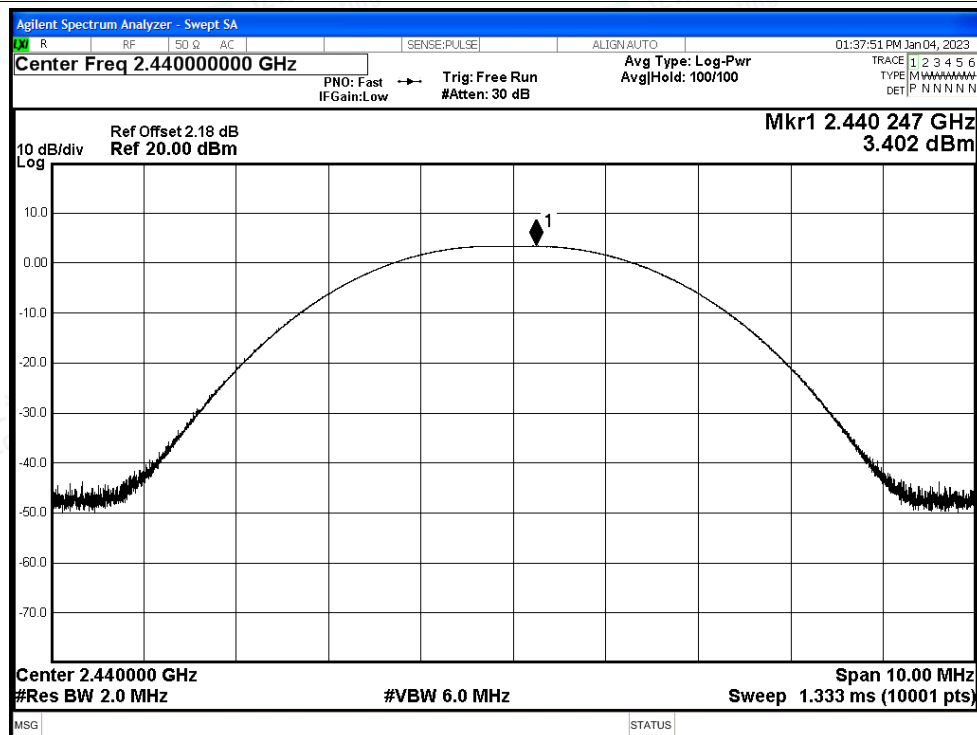


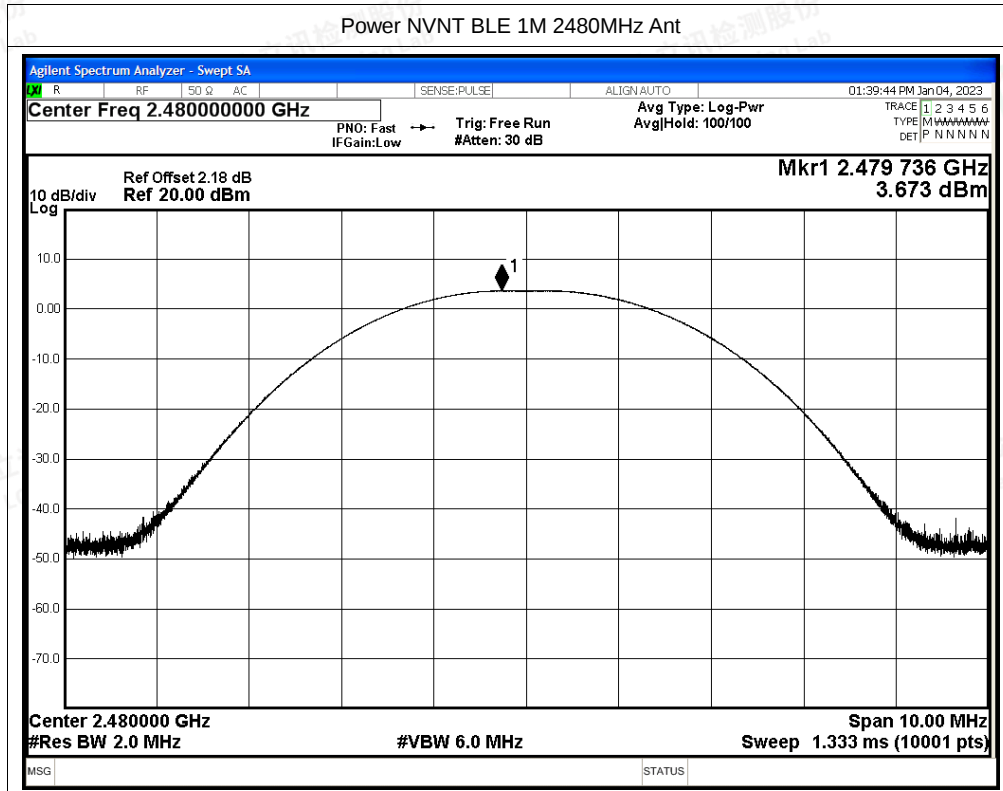
Test Graphs

Power NVNT BLE 1M 2402MHz Ant



Power NVNT BLE 1M 2440MHz Ant



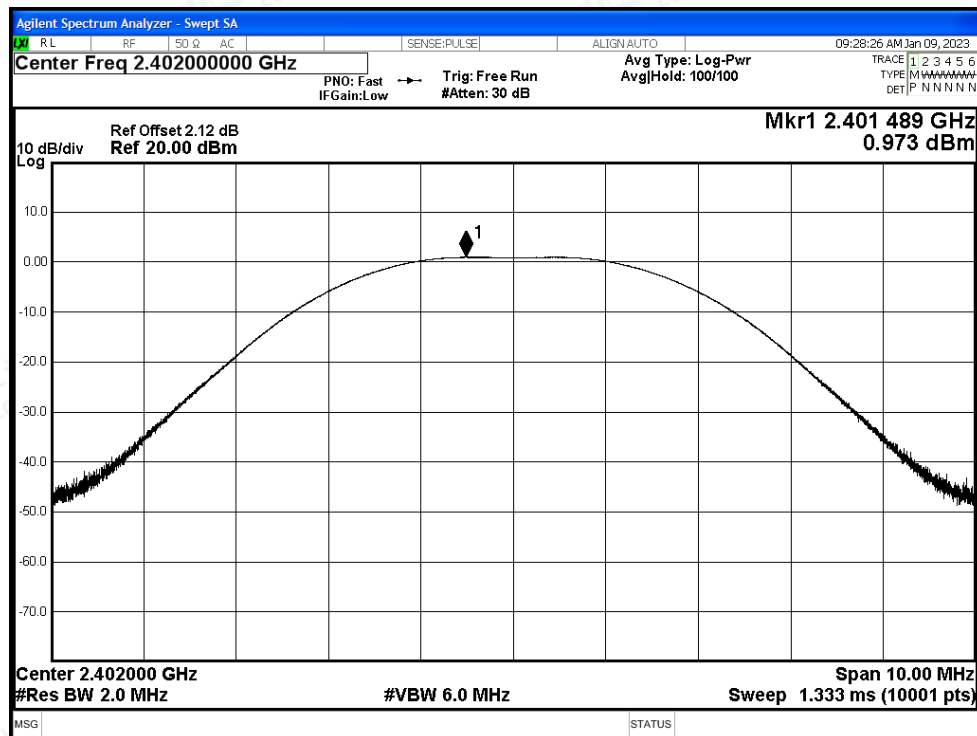


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

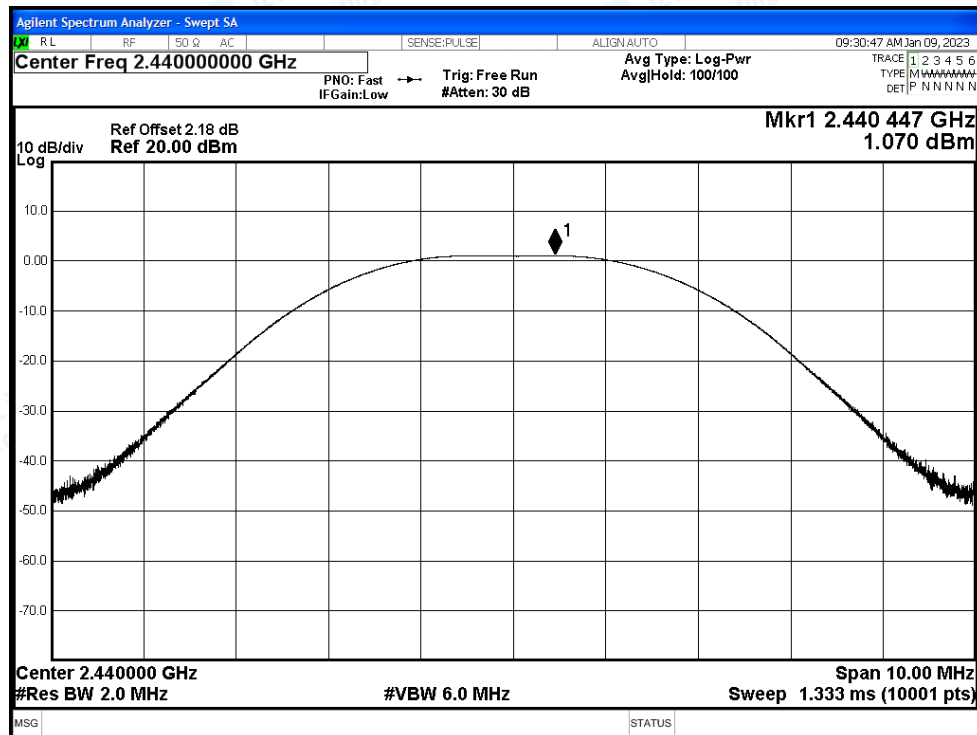


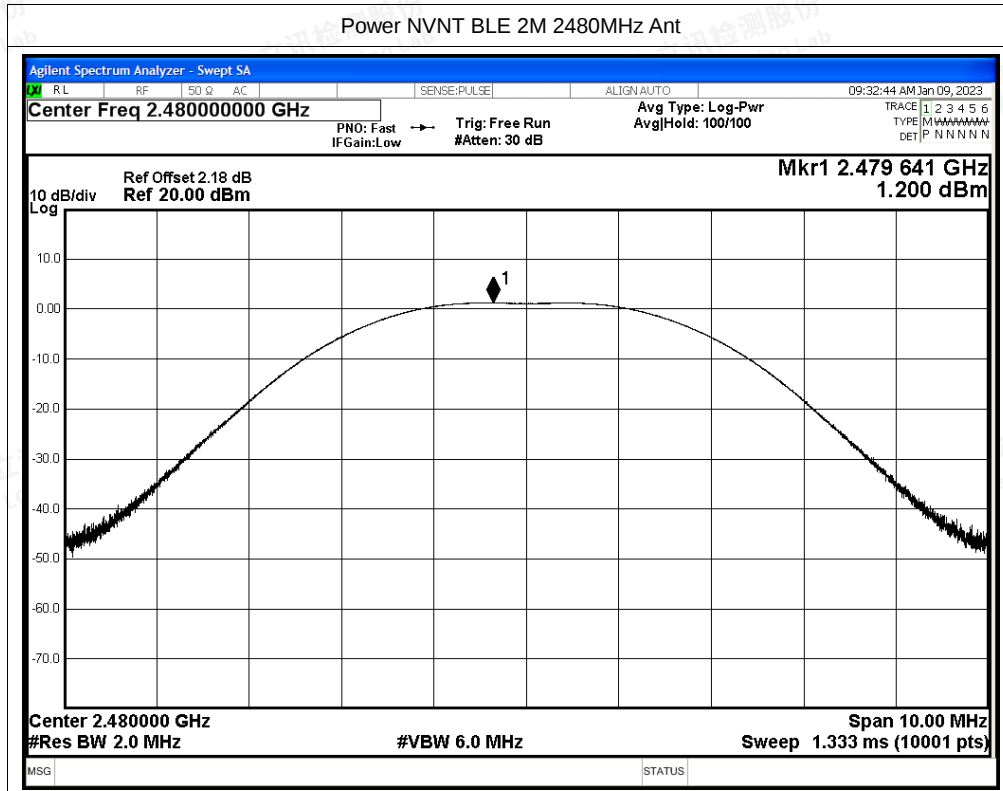
Test Graphs

Power NVNT BLE 2M 2402MHz Ant



Power NVNT BLE 2M 2440MHz Ant







A.4 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant	-12.6	8	Pass
NVNT	BLE 1M	2440	Ant	-12.02	8	Pass
NVNT	BLE 1M	2480	Ant	-11.9	8	Pass
NVNT	BLE 2M	2402	Ant	-13.17	8	Pass
NVNT	BLE 2M	2440	Ant	-13.74	8	Pass
NVNT	BLE 2M	2480	Ant	-12.7	8	Pass

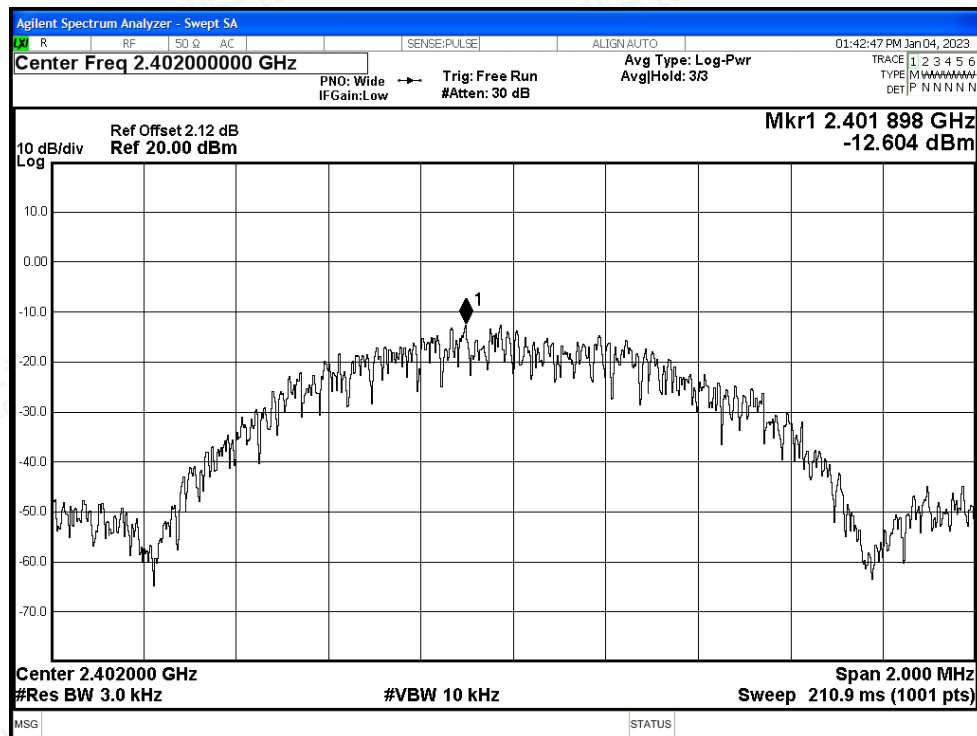


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

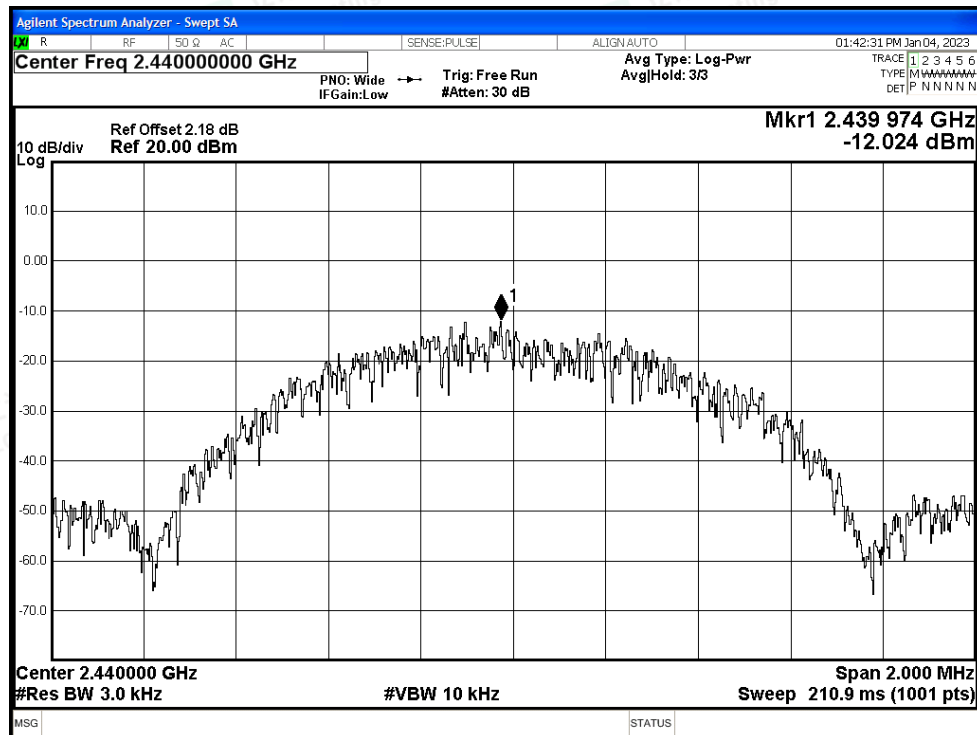


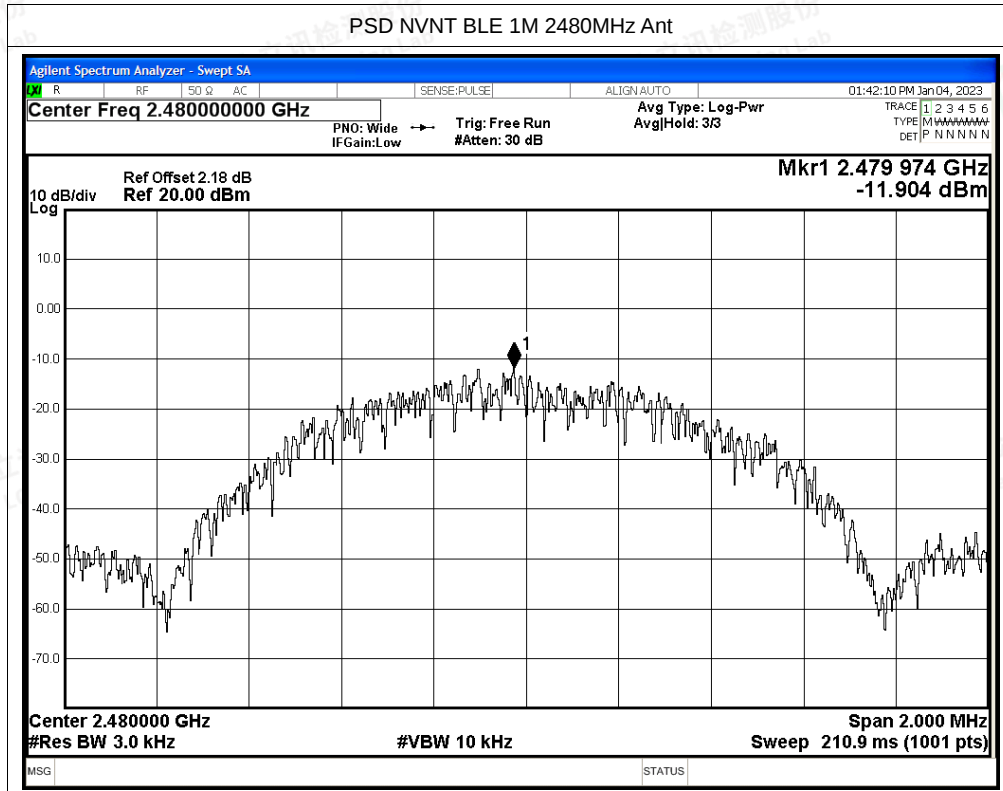
Test Graphs

PSD NVNT BLE 1M 2402MHz Ant



PSD NVNT BLE 1M 2440MHz Ant



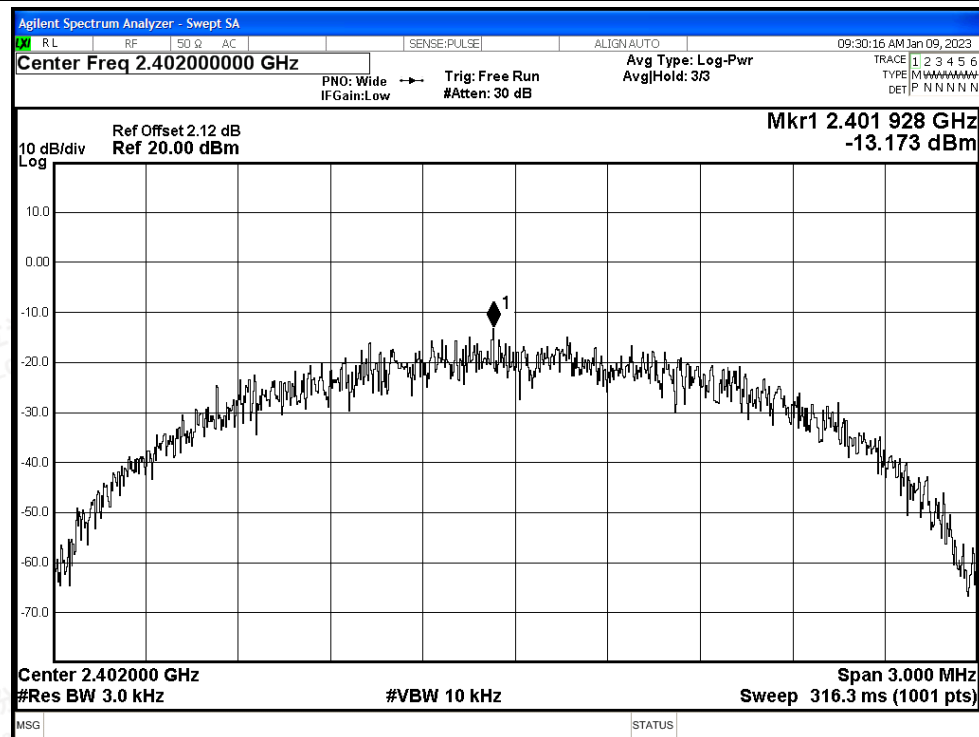


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

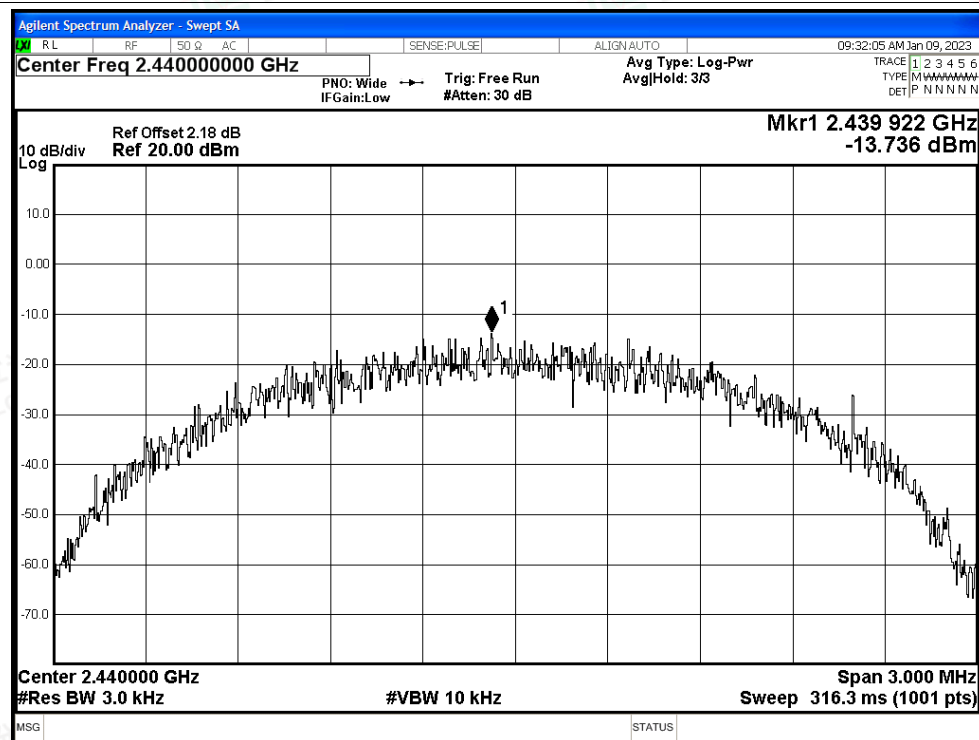


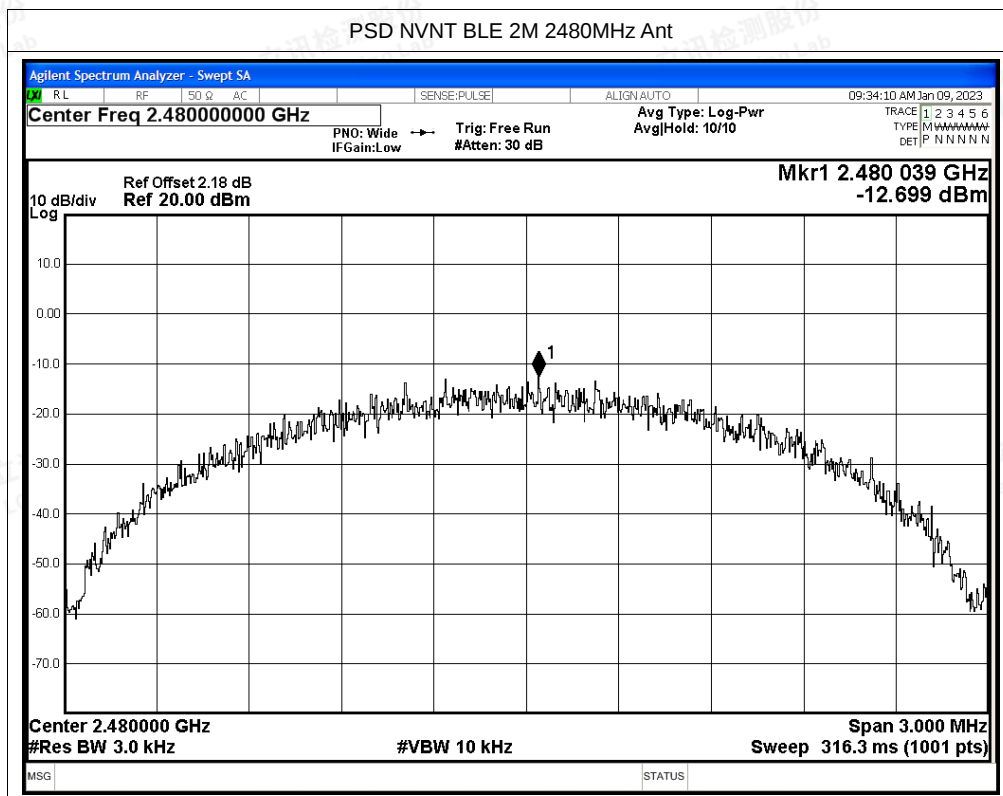
Test Graphs

PSD NVNT BLE 2M 2402MHz Ant



PSD NVNT BLE 2M 2440MHz Ant







A.5 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant	-59.27	-20	Pass
NVNT	BLE 1M	2480	Ant	-59.72	-20	Pass
NVNT	BLE 2M	2402	Ant	-32.8	-20	Pass
NVNT	BLE 2M	2480	Ant	-54.98	-20	Pass

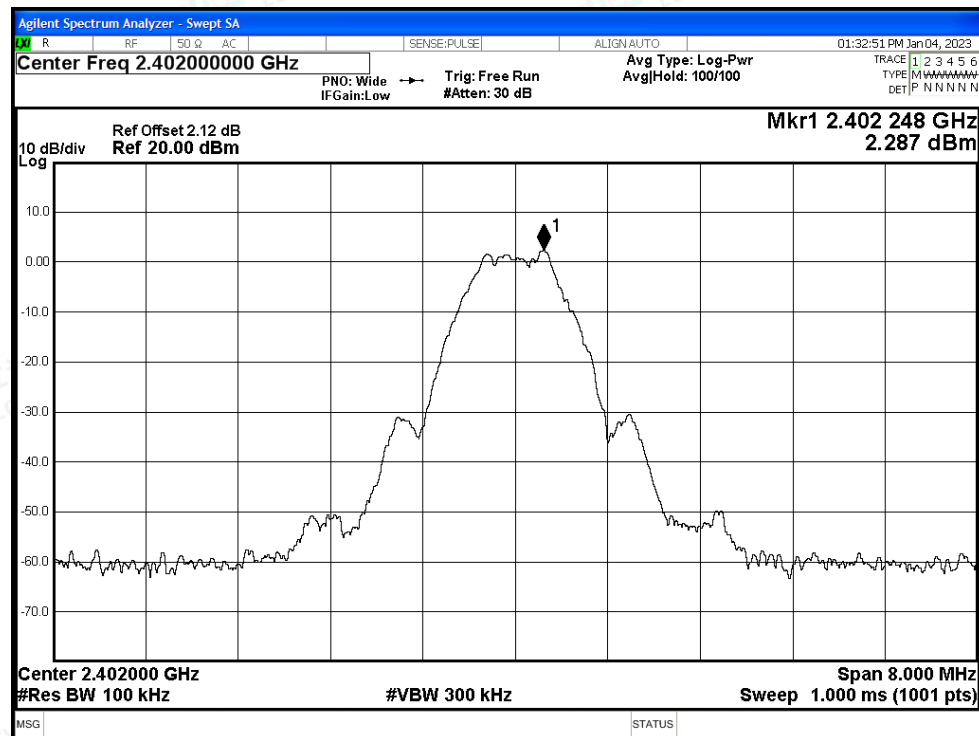


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

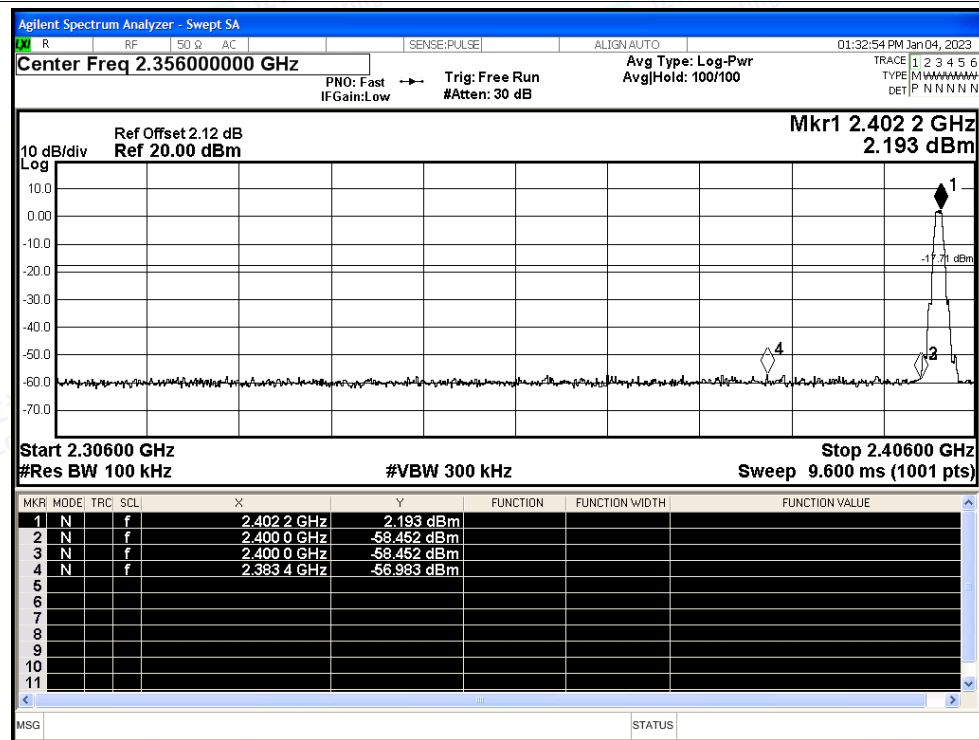


Test Graphs

Band Edge NVNT BLE 1M 2402MHz Ant Ref

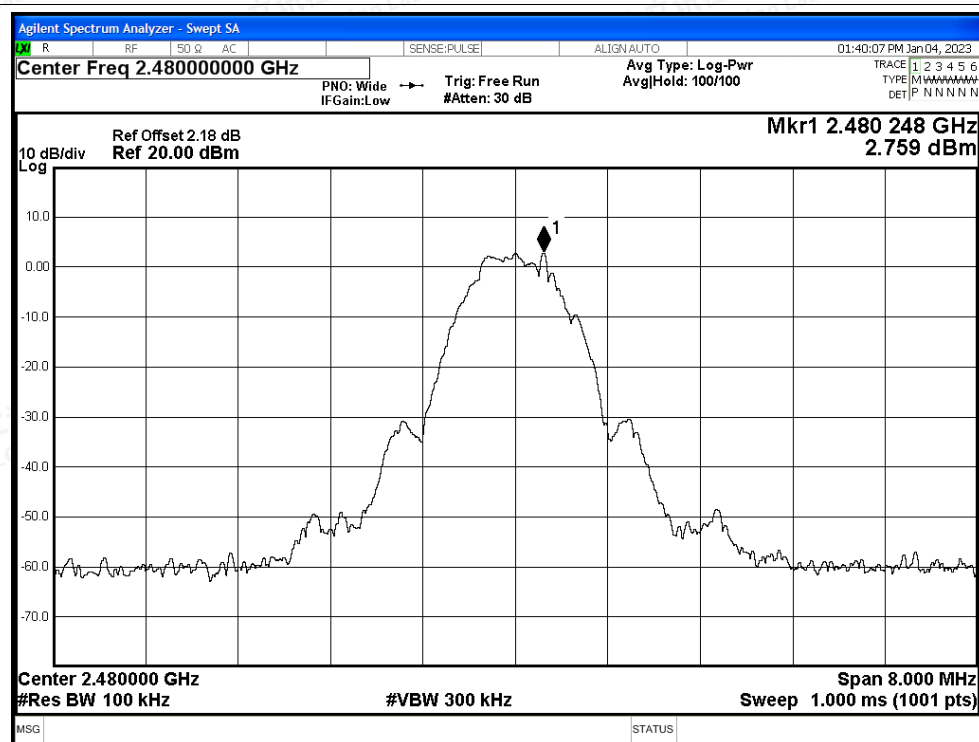


Band Edge NVNT BLE 1M 2402MHz Ant Emission

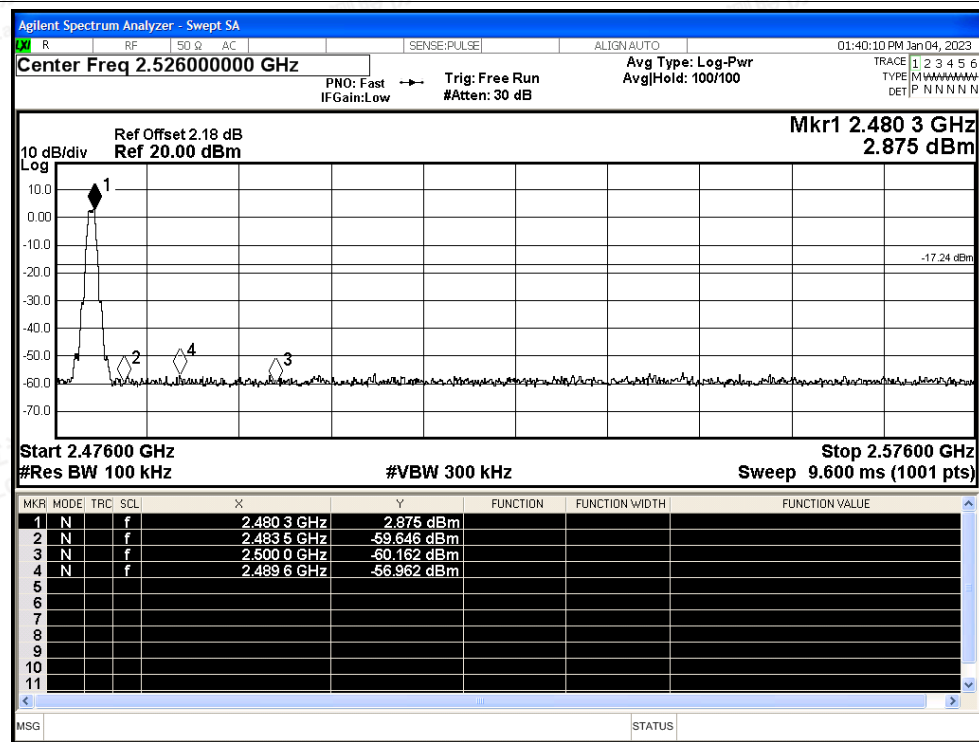




Band Edge NVNT BLE 1M 2480MHz Ant Ref



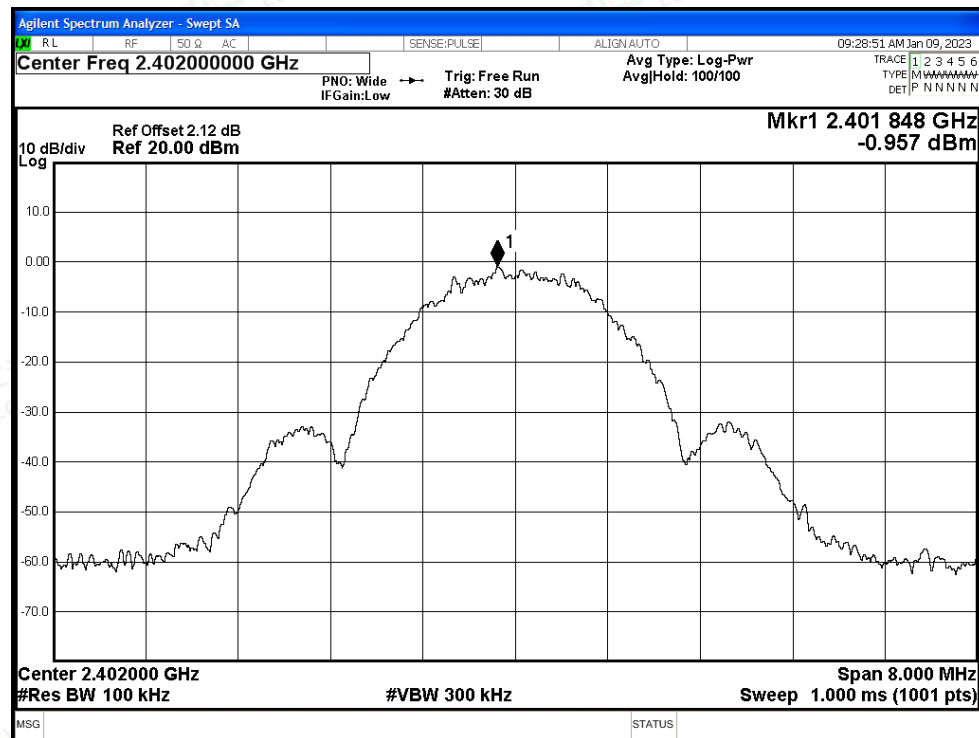
Band Edge NVNT BLE 1M 2480MHz Ant Emission



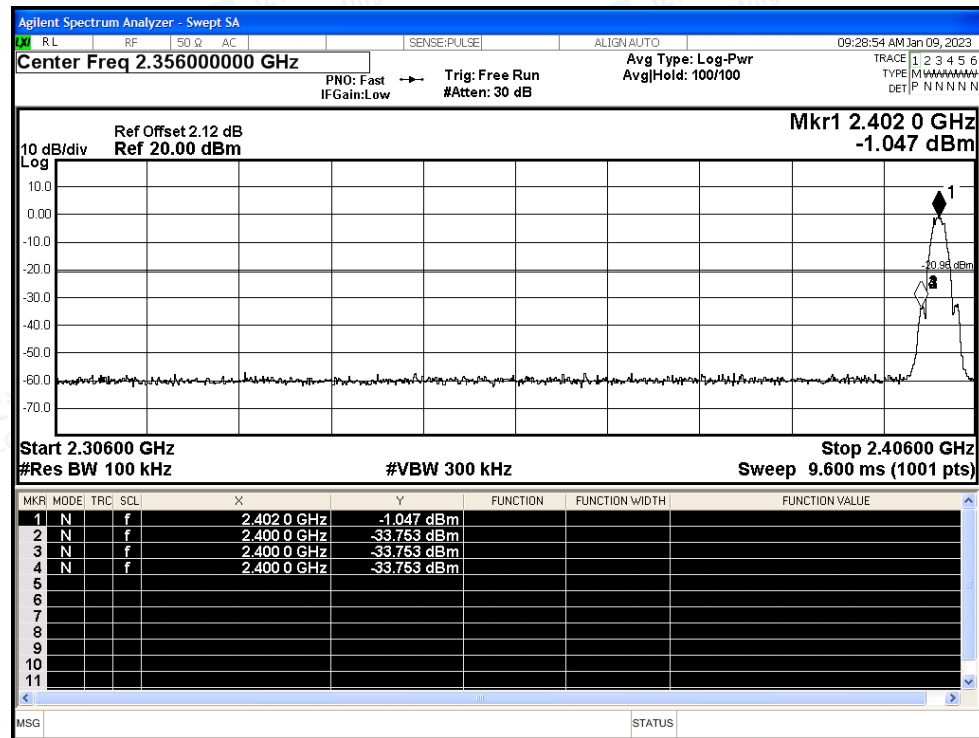


Test Graphs

Band Edge NVNT BLE 2M 2402MHz Ant Ref

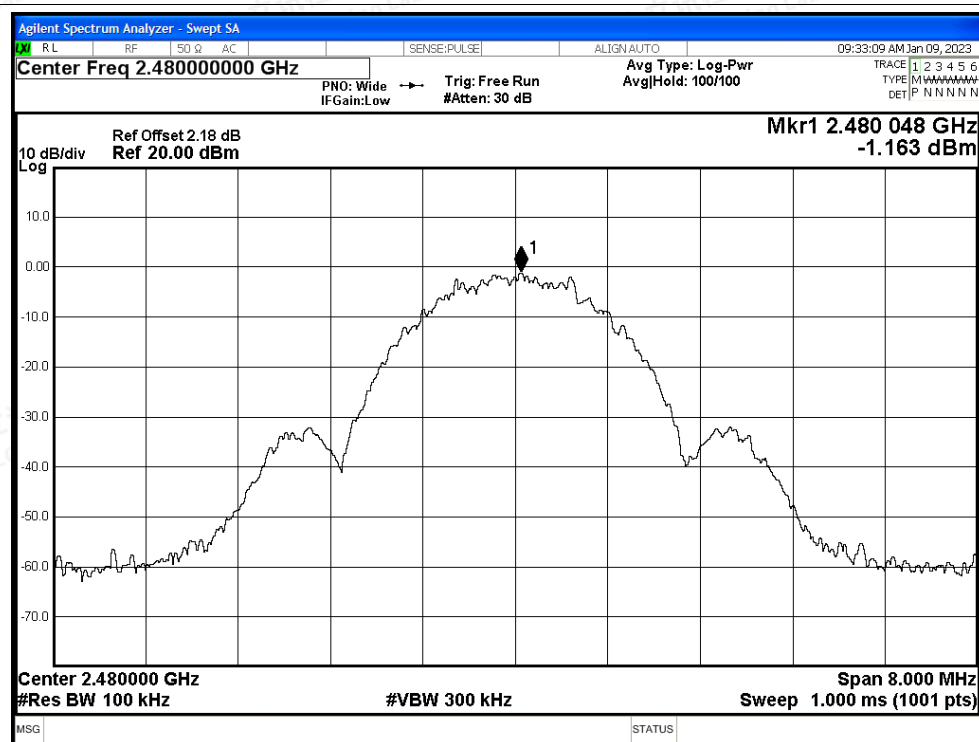


Band Edge NVNT BLE 2M 2402MHz Ant Emission

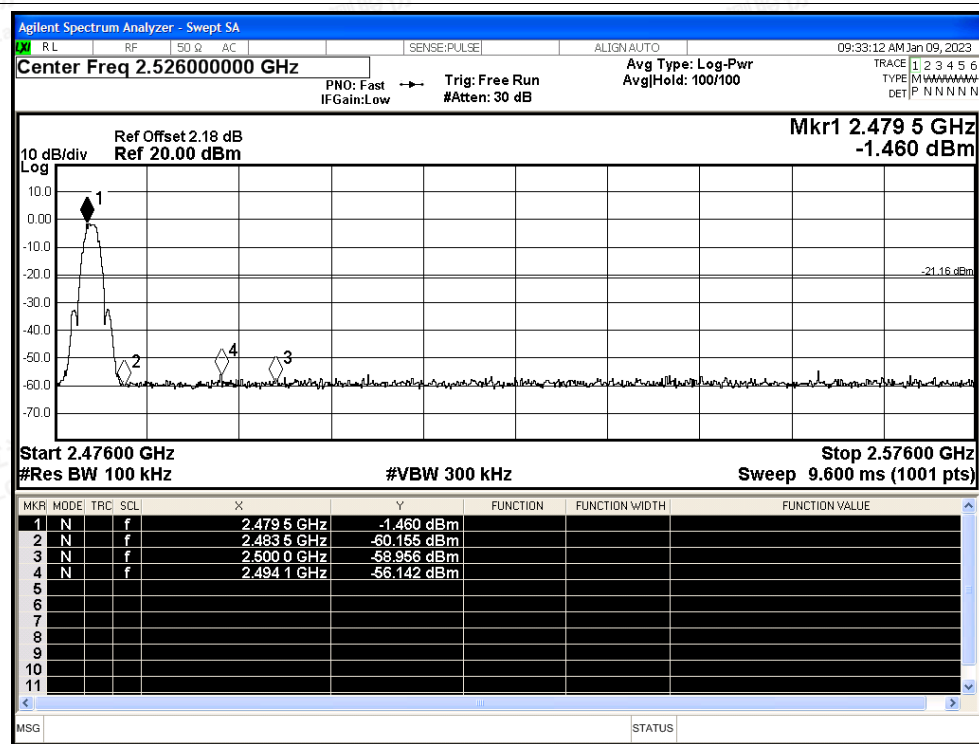




Band Edge NVNT BLE 2M 2480MHz Ant Ref



Band Edge NVNT BLE 2M 2480MHz Ant Emission





A.6 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant	-57.33	-20	Pass
NVNT	BLE 1M	2440	Ant	-57.76	-20	Pass
NVNT	BLE 1M	2480	Ant	-58.55	-20	Pass
NVNT	BLE 2M	2402	Ant	-54.82	-20	Pass
NVNT	BLE 2M	2440	Ant	-54.51	-20	Pass
NVNT	BLE 2M	2480	Ant	-54.05	-20	Pass

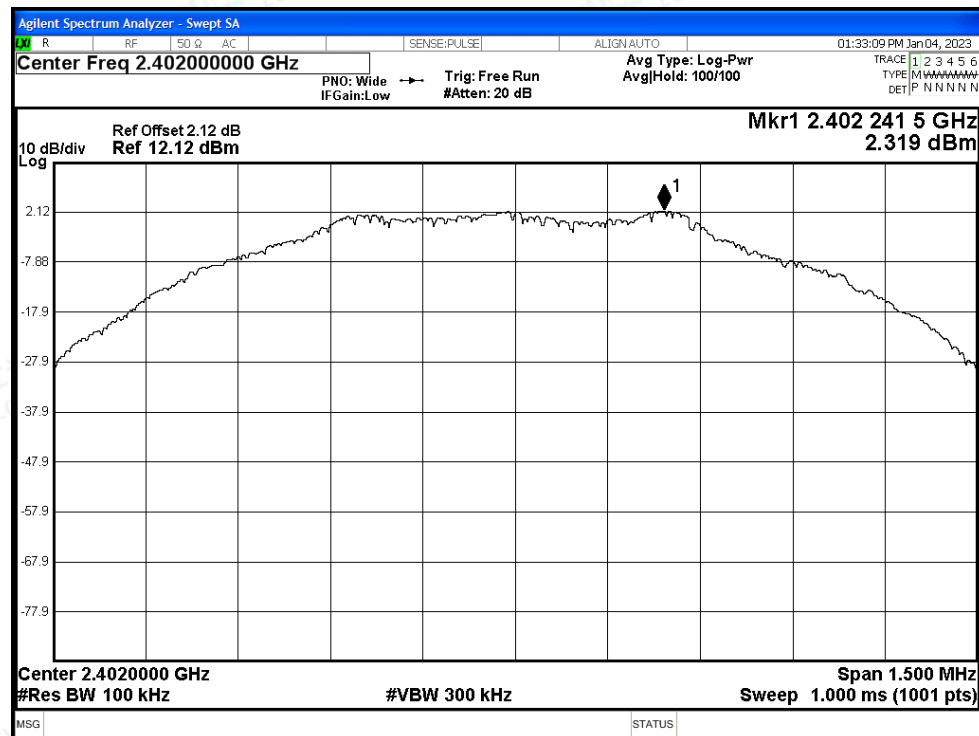


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

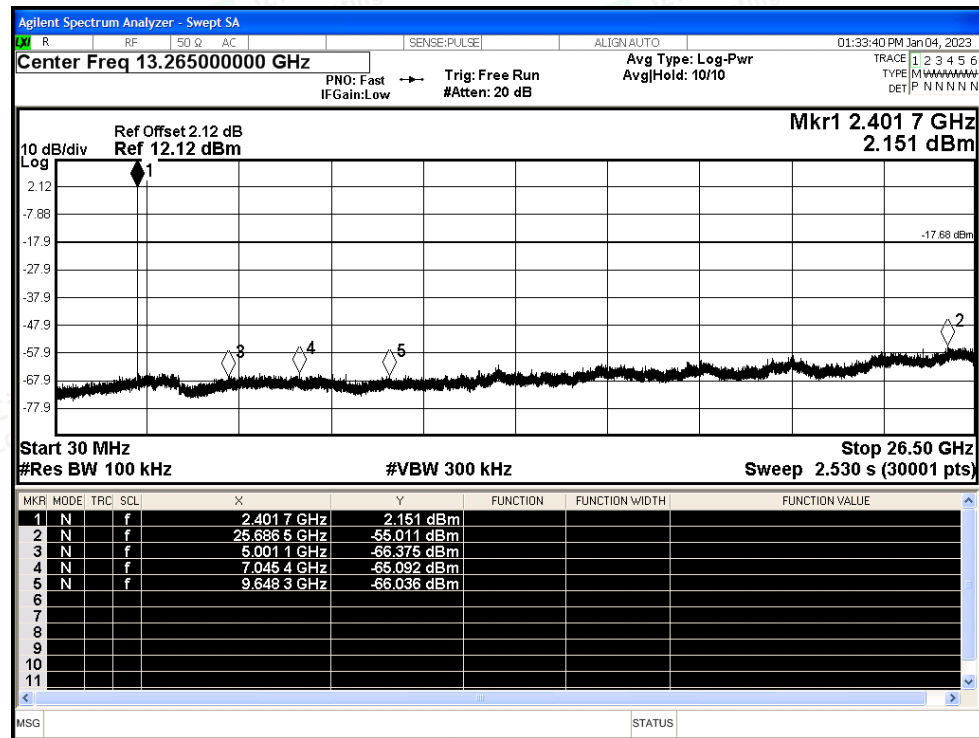


Test Graphs

Tx. Spurious NVNT BLE 1M 2402MHz Ant Ref

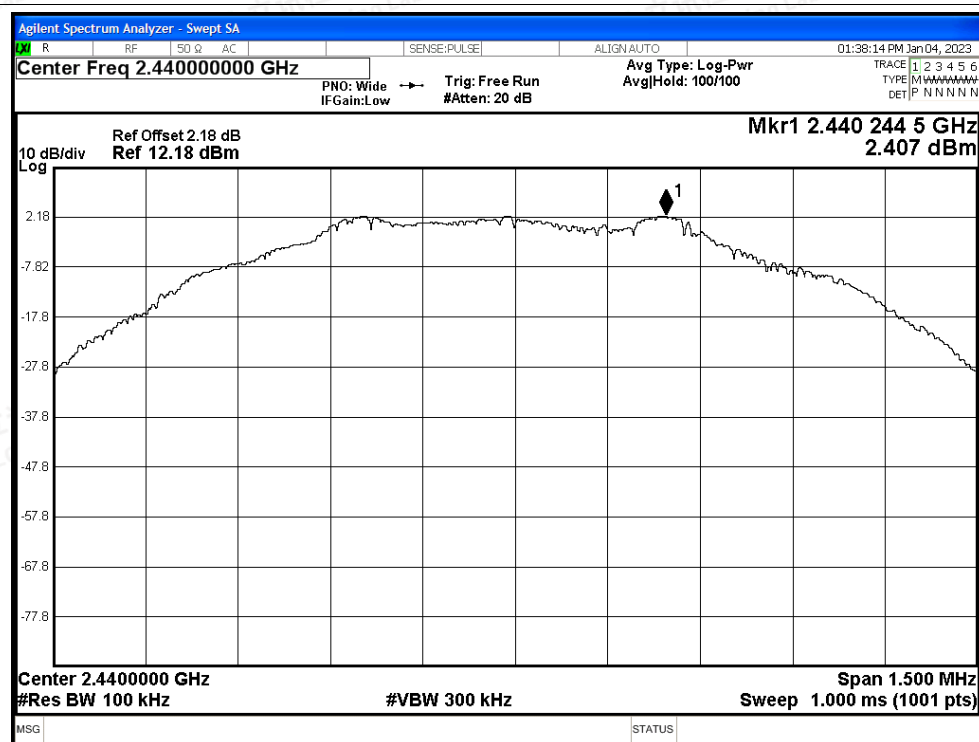


Tx. Spurious NVNT BLE 1M 2402MHz Ant Emission

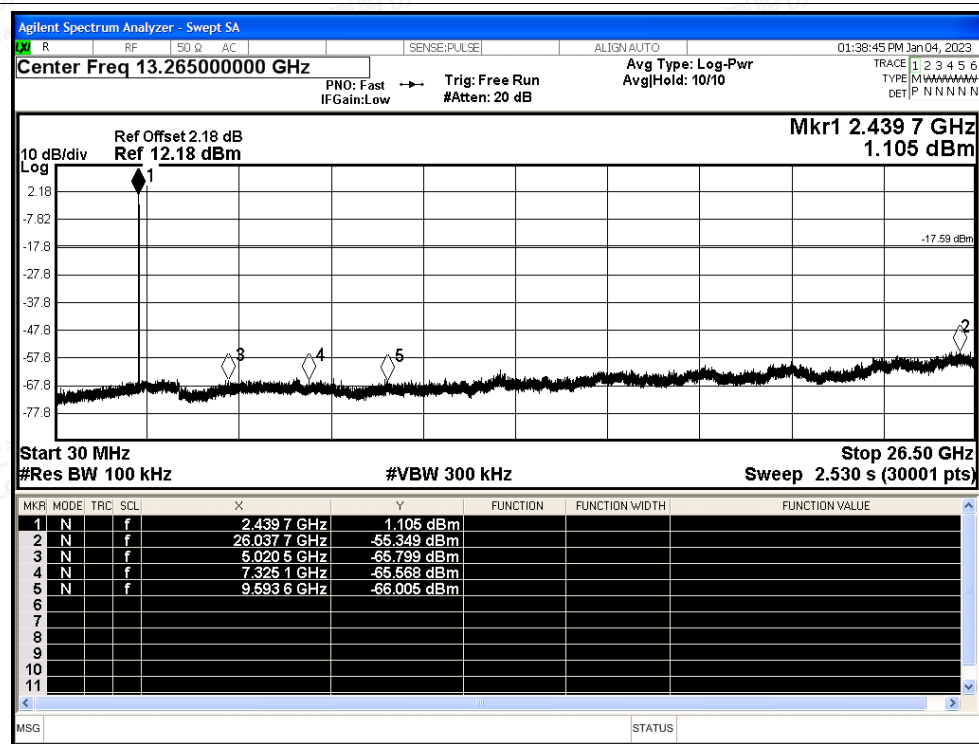




Tx. Spurious NVNT BLE 1M 2440MHz Ant Ref

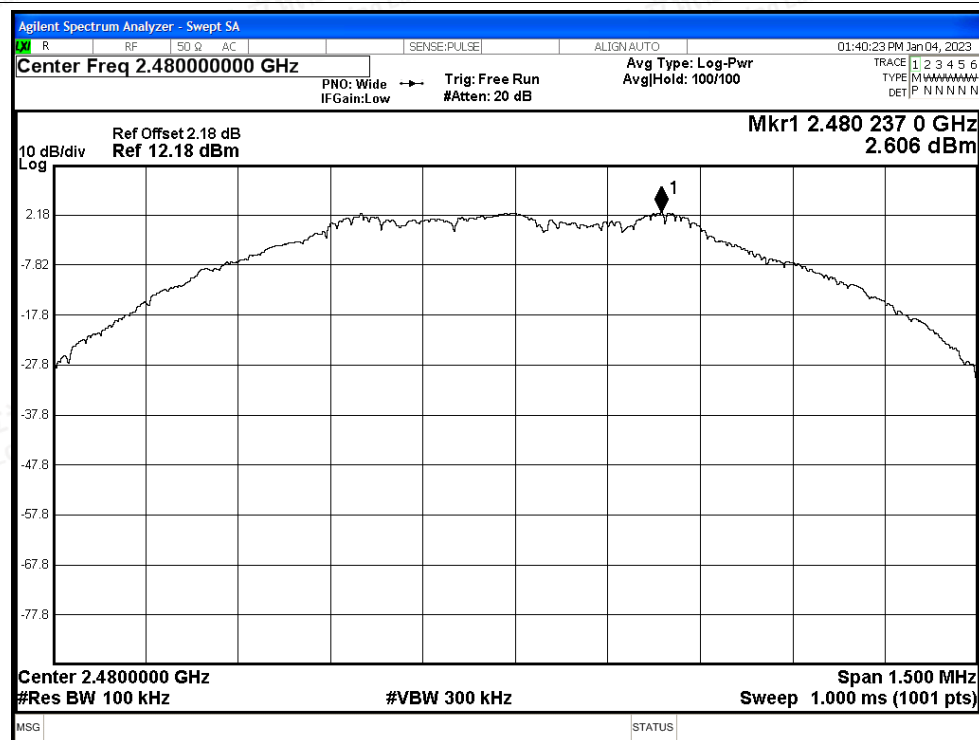


Tx. Spurious NVNT BLE 1M 2440MHz Ant Emission

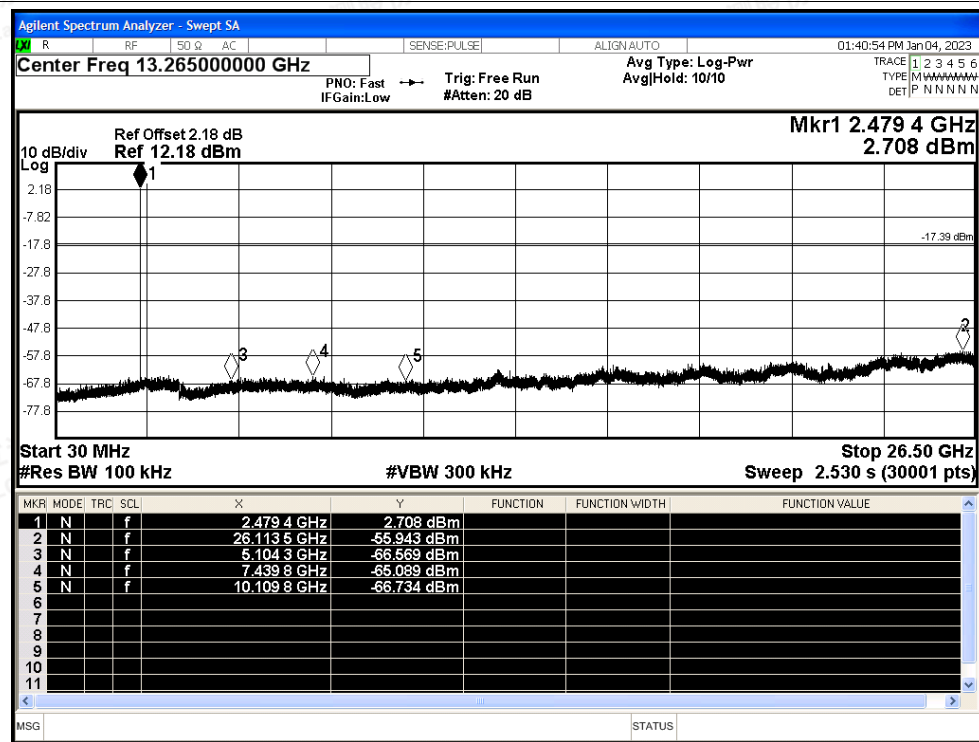




Tx. Spurious NVNT BLE 1M 2480MHz Ant Ref



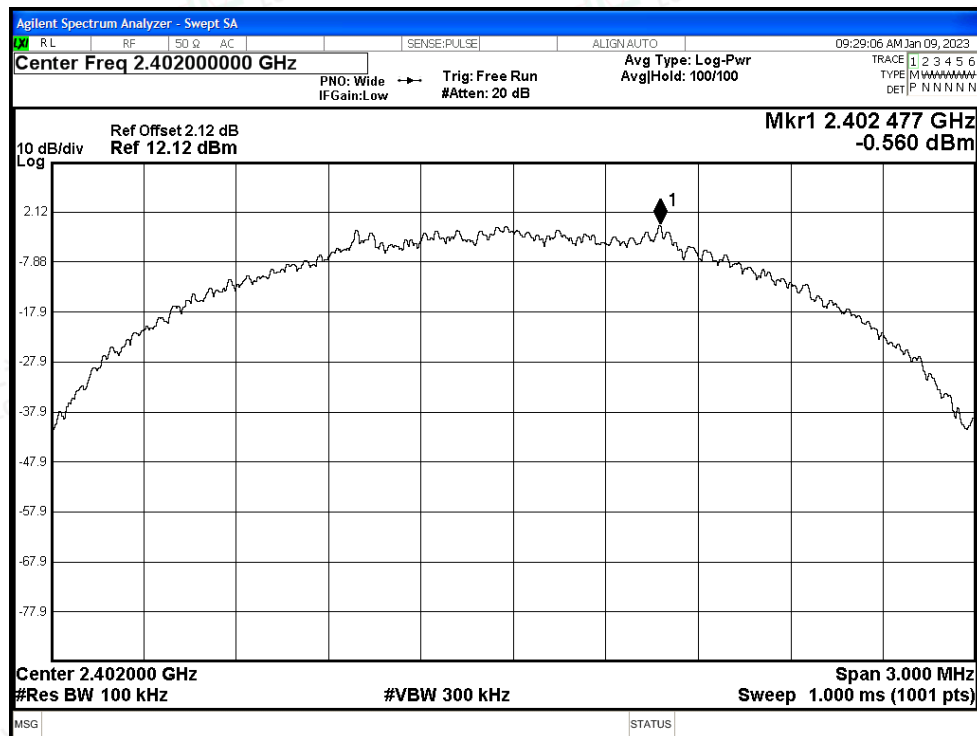
Tx. Spurious NVNT BLE 1M 2480MHz Ant Emission



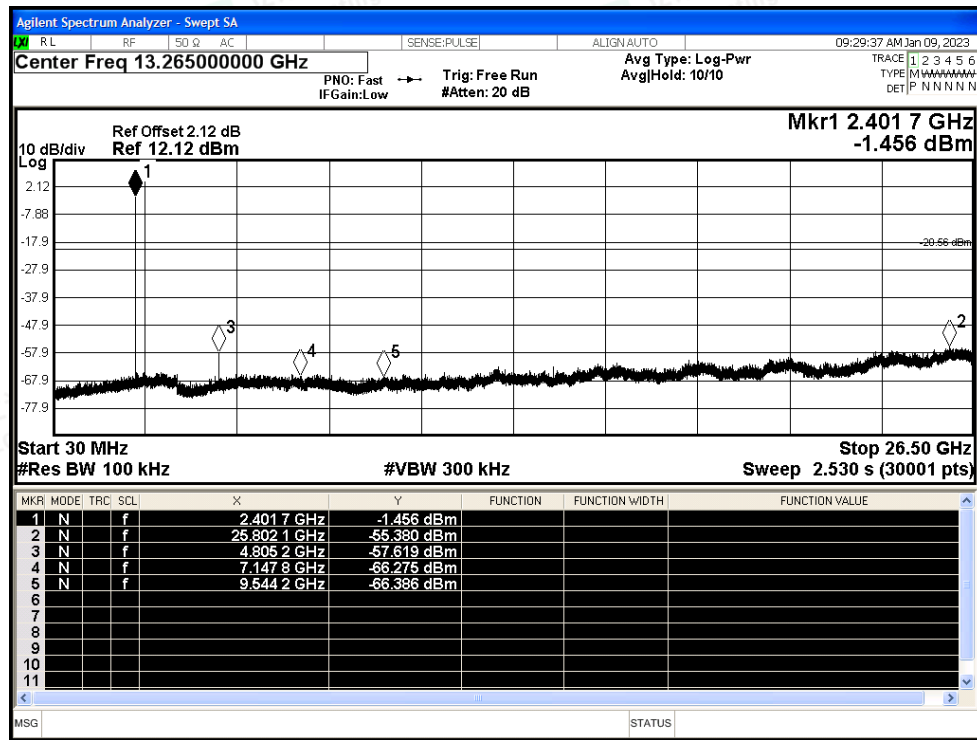


Test Graphs

Tx. Spurious NVNT BLE 2M 2402MHz Ant Ref

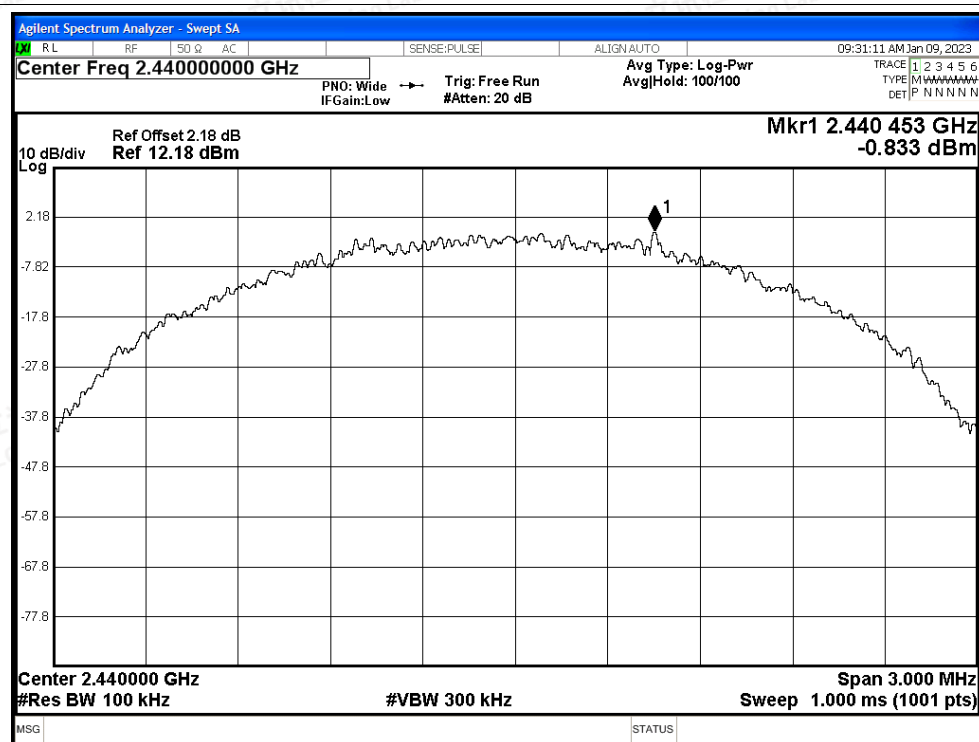


Tx. Spurious NVNT BLE 2M 2402MHz Ant Emission

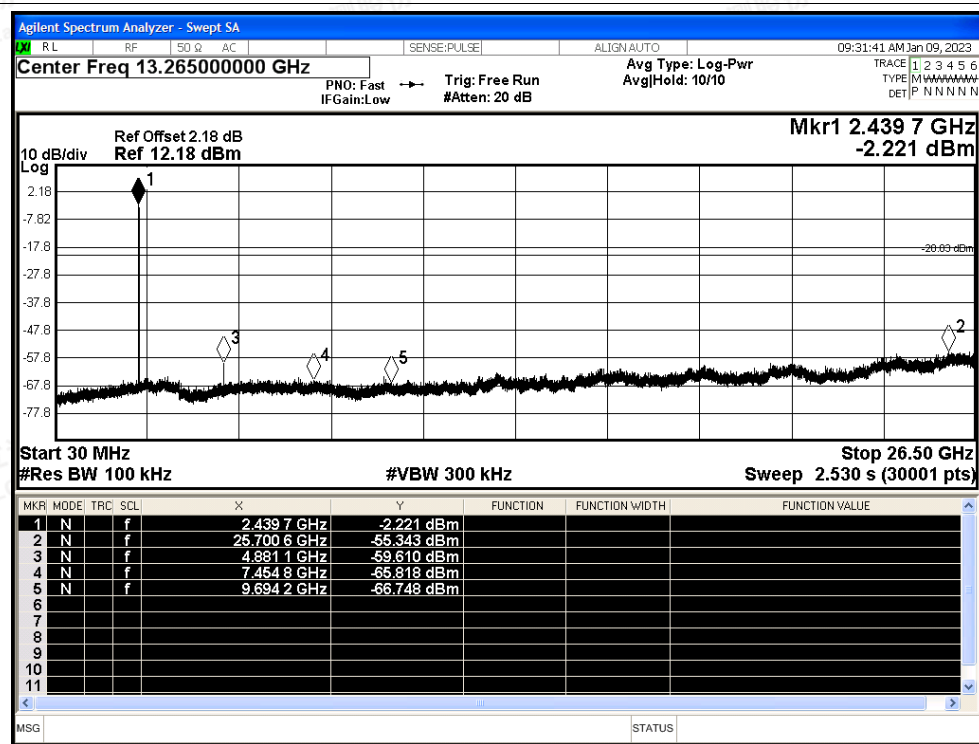




Tx. Spurious NVNT BLE 2M 2440MHz Ant Ref

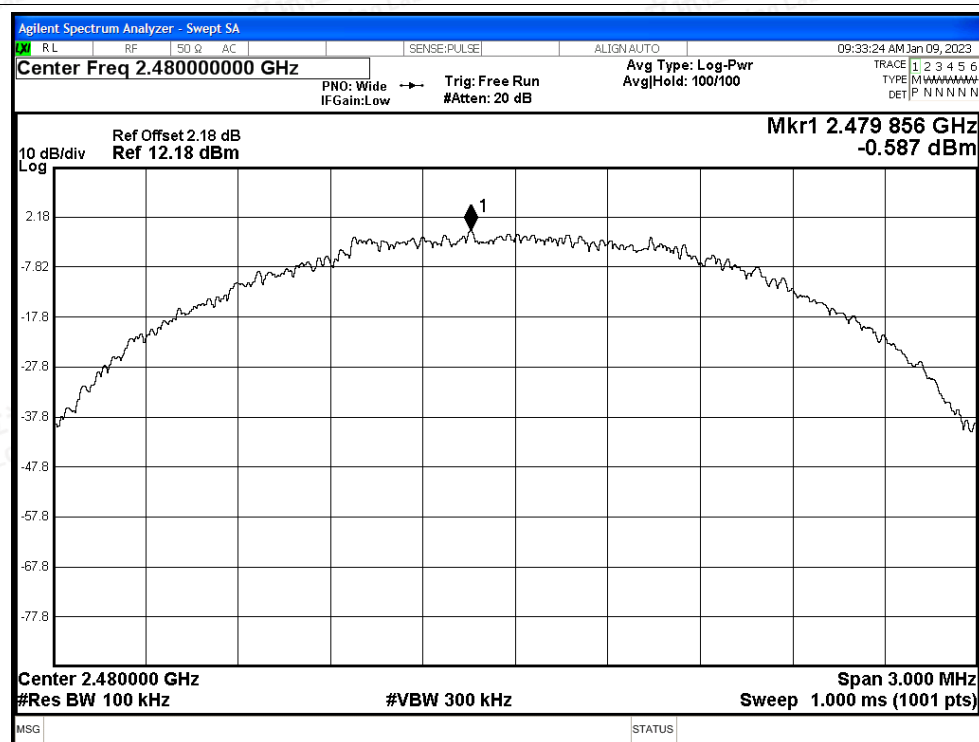


Tx. Spurious NVNT BLE 2M 2440MHz Ant Emission

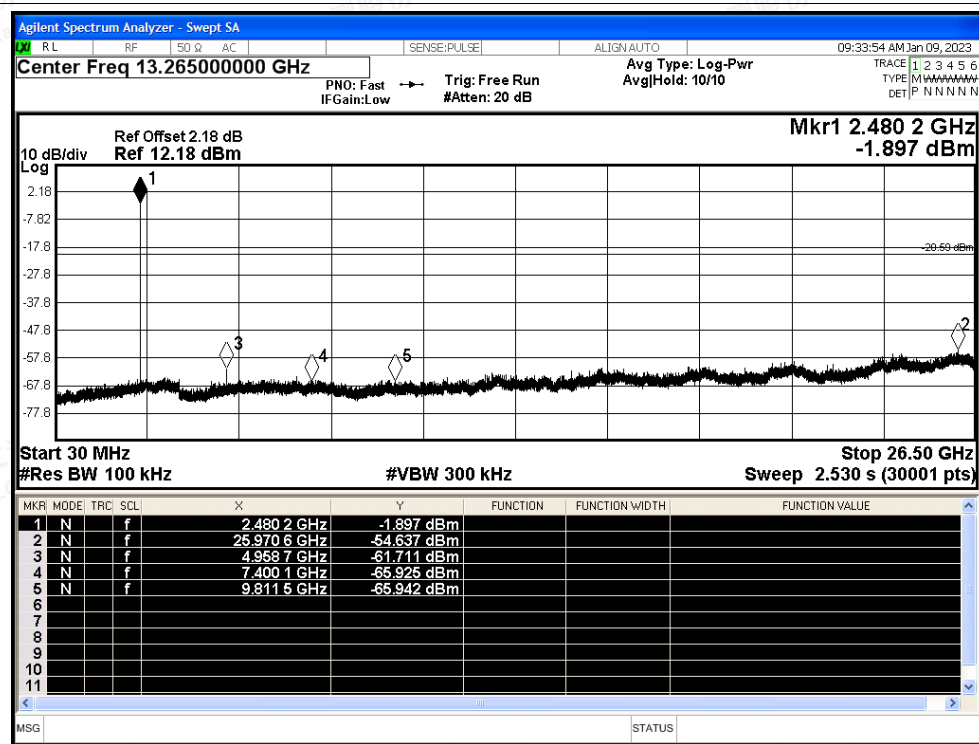




Tx. Spurious NVNT BLE 2M 2480MHz Ant Ref



Tx. Spurious NVNT BLE 2M 2480MHz Ant Emission





A.7 Duty Cycle

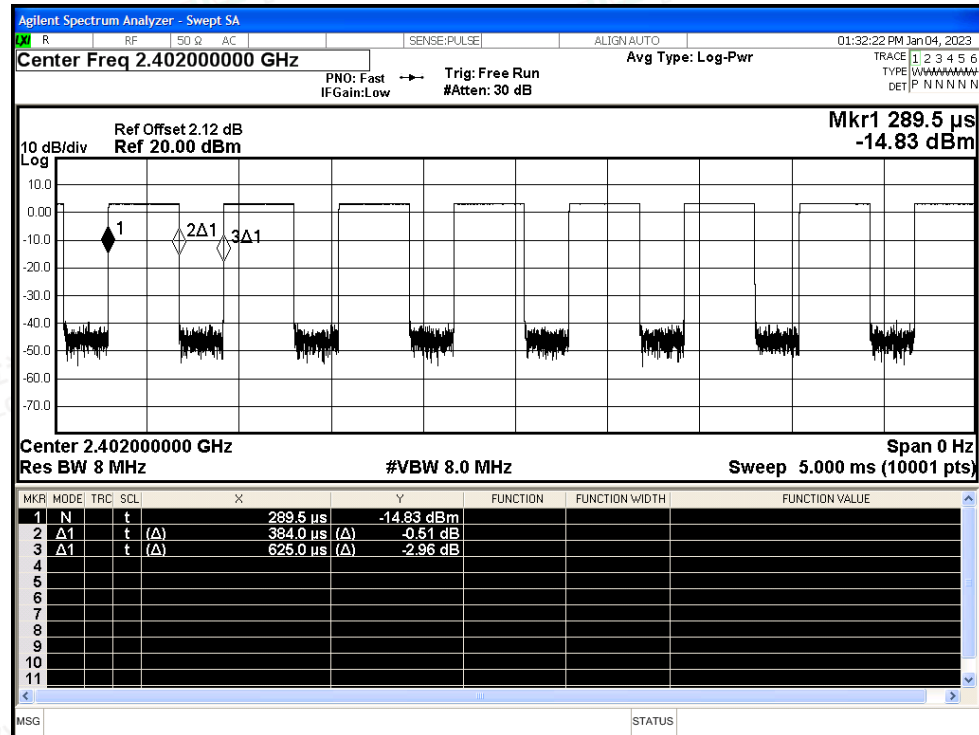
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant	61.44	2.12	2.6
NVNT	BLE 1M	2440	Ant	61.36	2.12	2.61
NVNT	BLE 1M	2480	Ant	61.44	2.12	2.6
NVNT	BLE 2M	2402	Ant	100	0	0
NVNT	BLE 2M	2440	Ant	100	0	0
NVNT	BLE 2M	2480	Ant	100	0	0



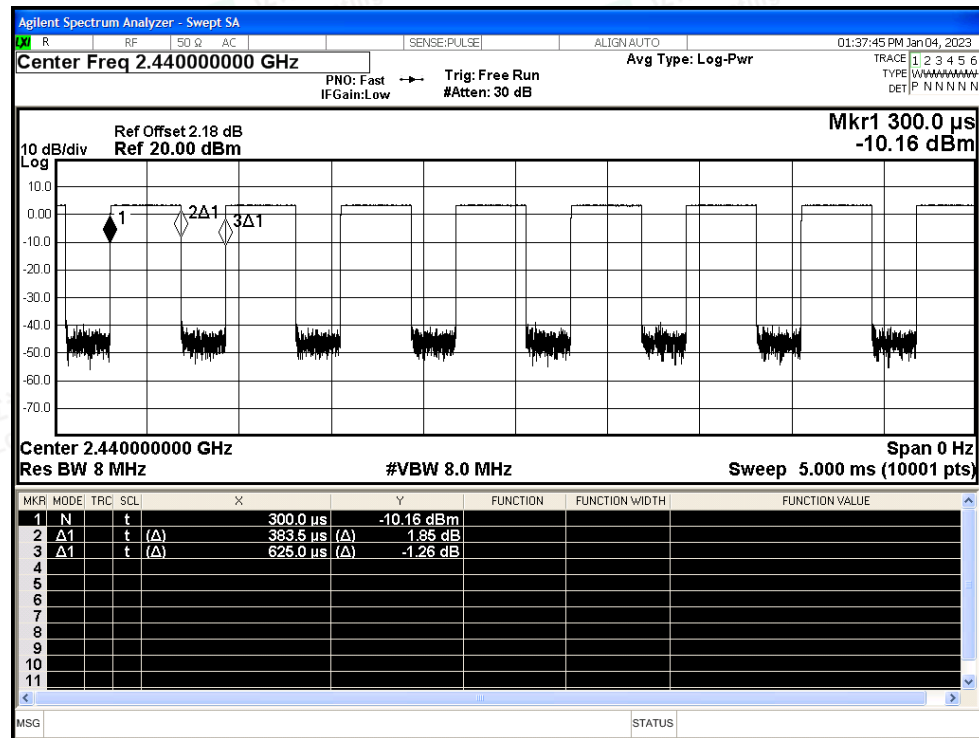


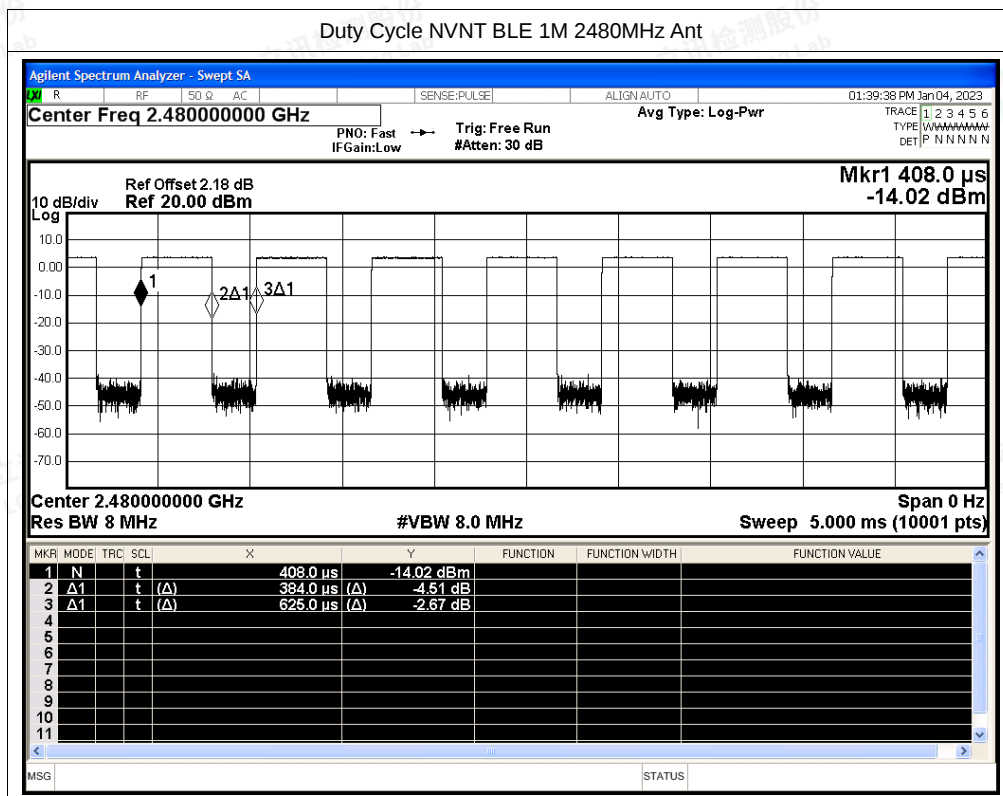
Test Graphs

Duty Cycle NVNT BLE 1M 2402MHz Ant



Duty Cycle NVNT BLE 1M 2440MHz Ant

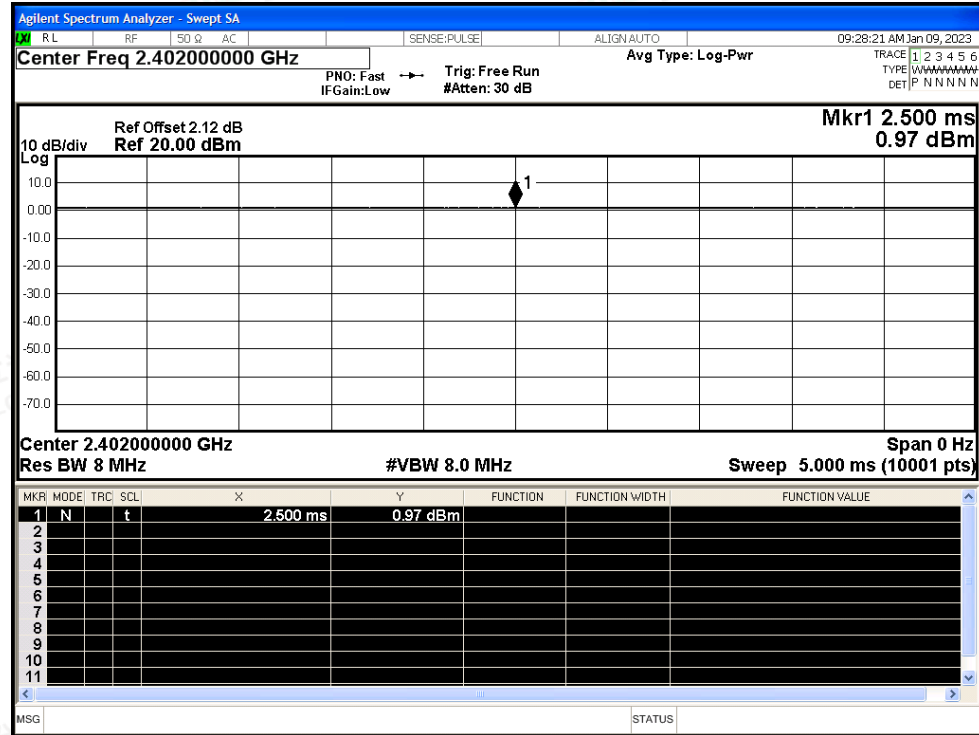




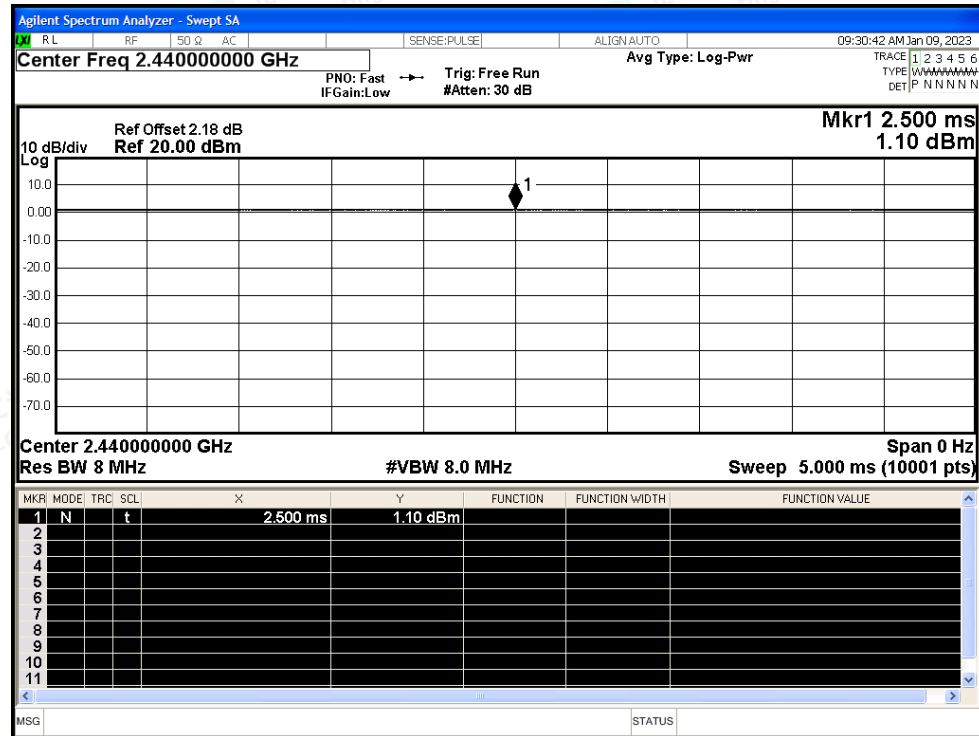


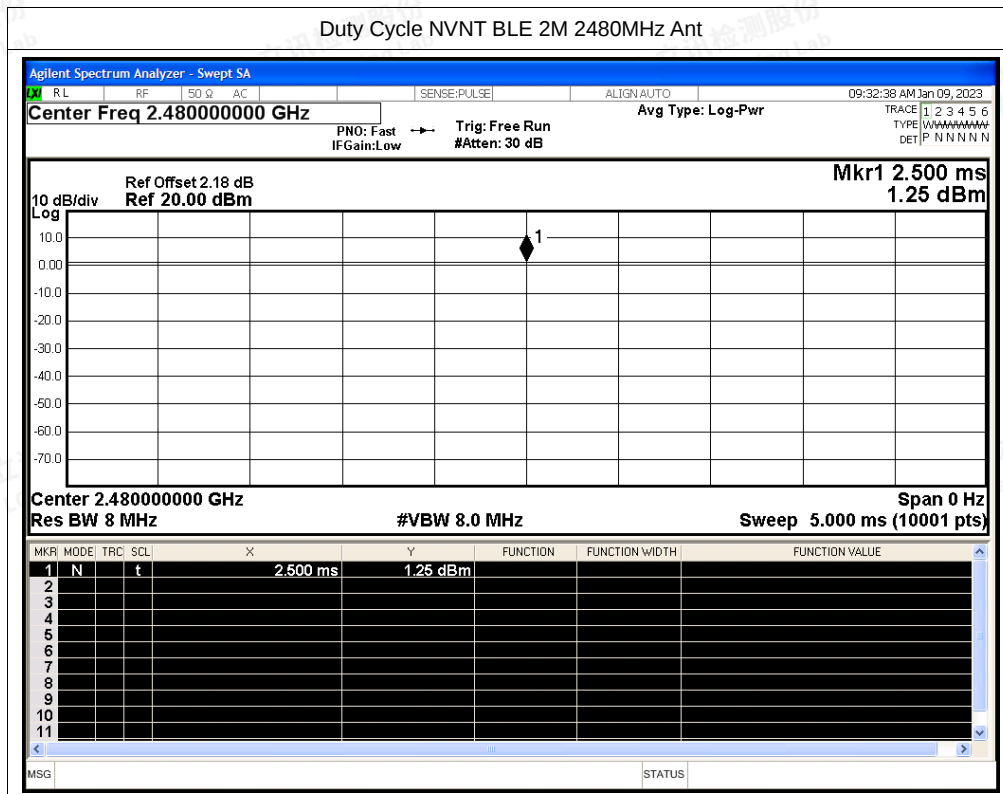
Test Graphs

Duty Cycle NVNT BLE 2M 2402MHz Ant



Duty Cycle NVNT BLE 2M 2440MHz Ant







A.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 1M	2402	Ant	2310	-50.71	3.05	47.60	Peak	74	Pass
NVNT	BLE 1M	2402	Ant	2310	-59.34	3.05	38.97	Average	54	Pass
NVNT	BLE 1M	2402	Ant	2353.008	-47.55	3.05	50.76	Peak	74	Pass
NVNT	BLE 1M	2402	Ant	2319.696	-58.86	3.05	39.45	Average	54	Pass
NVNT	BLE 1M	2402	Ant	2390	-51.26	3.05	47.05	Peak	74	Pass
NVNT	BLE 1M	2402	Ant	2390	-59.14	3.05	39.17	Average	54	Pass
NVNT	BLE 1M	2480	Ant	2483.5	-49.84	3.05	48.47	Peak	74	Pass
NVNT	BLE 1M	2480	Ant	2483.5	-58.54	3.05	39.77	Average	54	Pass
NVNT	BLE 1M	2480	Ant	2485.36	-47.07	3.05	51.24	Peak	74	Pass
NVNT	BLE 1M	2480	Ant	2483.872	-58.2	3.05	40.11	Average	54	Pass
NVNT	BLE 1M	2480	Ant	2500	-50.46	3.05	47.85	Peak	74	Pass
NVNT	BLE 1M	2480	Ant	2500	-58.92	3.05	39.39	Average	54	Pass
NVNT	BLE 2M	2402	Ant	2310	-51.68	3.05	46.63	Peak	74	Pass
NVNT	BLE 2M	2402	Ant	2310	-59.71	3.05	38.60	Average	54	Pass
NVNT	BLE 2M	2402	Ant	2359.92	-47.6	3.05	50.71	Peak	74	Pass
NVNT	BLE 2M	2402	Ant	2326.416	-58.4	3.05	39.91	Average	54	Pass
NVNT	BLE 2M	2402	Ant	2390	-50.55	3.05	47.76	Peak	74	Pass
NVNT	BLE 2M	2402	Ant	2390	-58.99	3.05	39.32	Average	54	Pass
NVNT	BLE 2M	2480	Ant	2483.5	-47.78	3.05	50.53	Peak	74	Pass
NVNT	BLE 2M	2480	Ant	2483.5	-55.78	3.05	42.53	Average	54	Pass
NVNT	BLE 2M	2480	Ant	2483.752	-46.62	3.05	51.69	Peak	74	Pass
NVNT	BLE 2M	2480	Ant	2483.512	-55.78	3.05	42.53	Average	54	Pass
NVNT	BLE 2M	2480	Ant	2500	-50.3	3.05	48.01	Peak	74	Pass
NVNT	BLE 2M	2480	Ant	2500	-58.8	3.05	39.51	Average	54	Pass

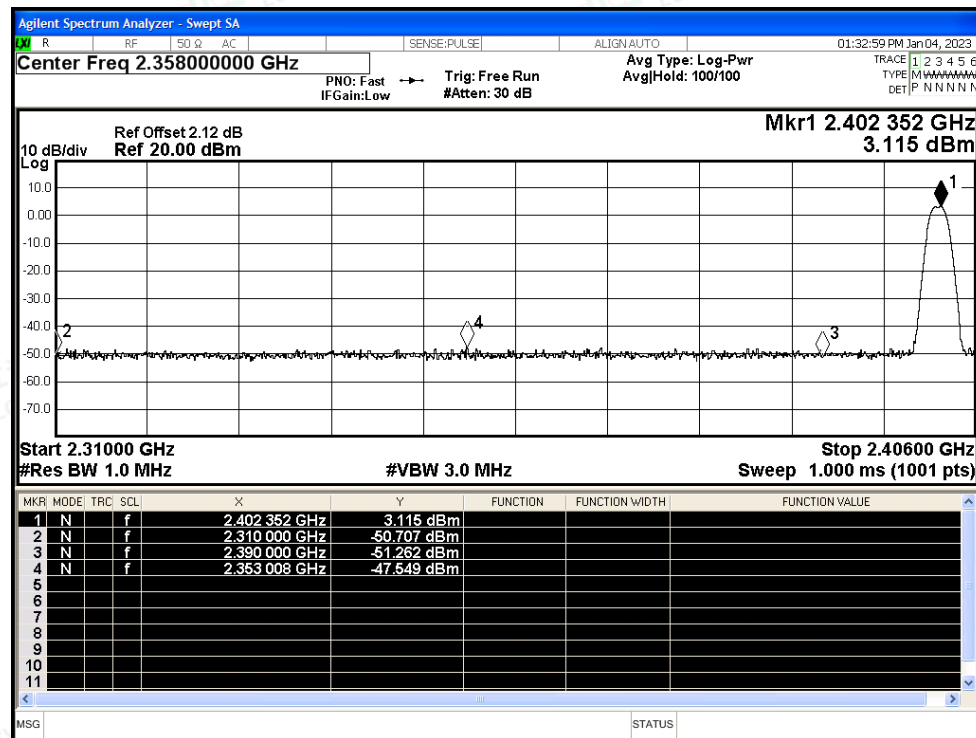


Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

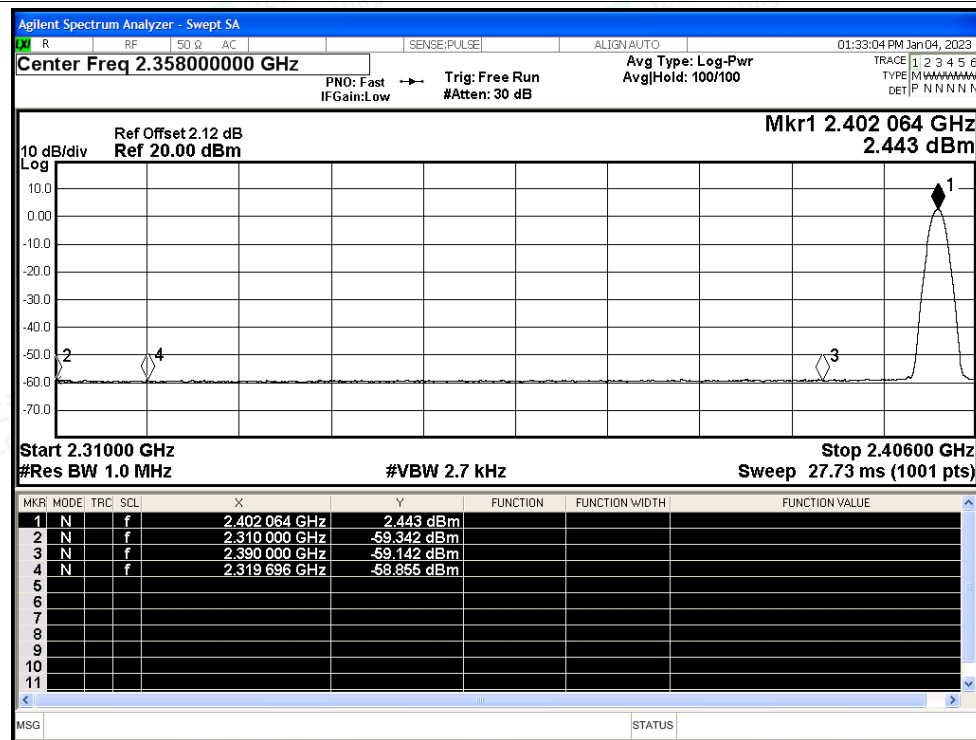


Test Graphs

Restrict Band NVNT BLE 1M 2402MHz Ant Peak

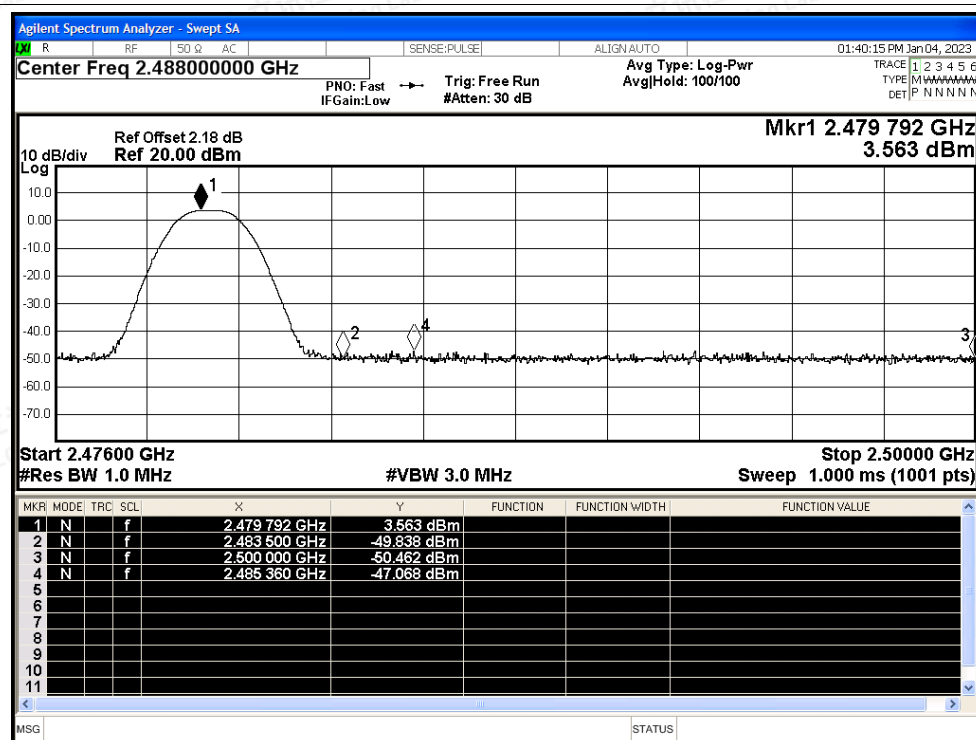


Restrict Band NVNT BLE 1M 2402MHz Ant Average

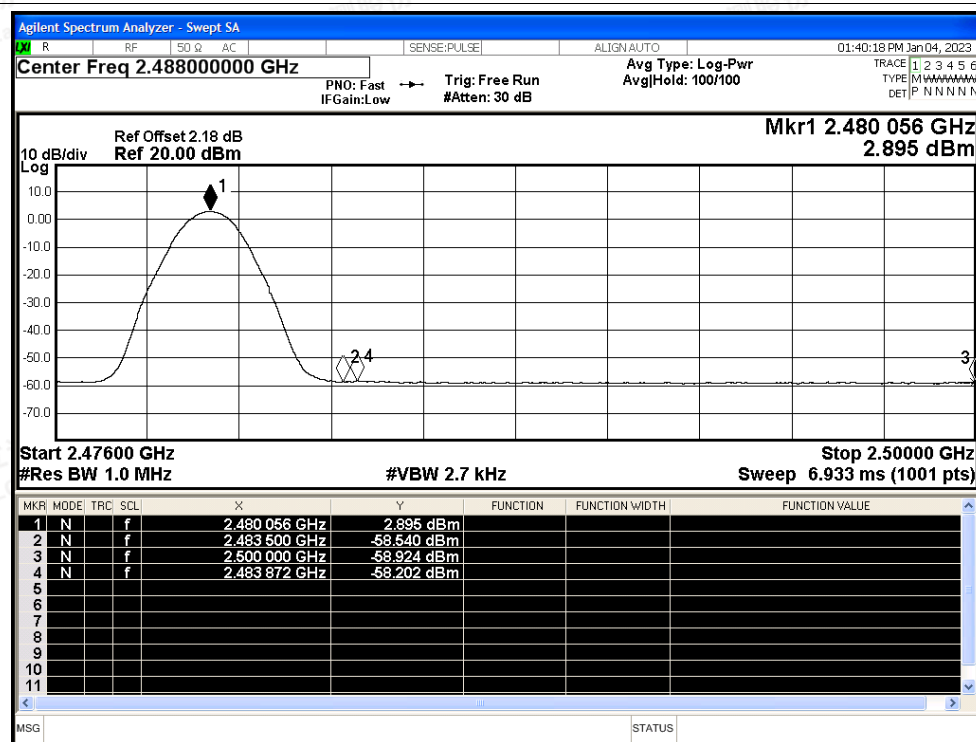




Restrict Band NVNT BLE 1M 2480MHz Ant Peak



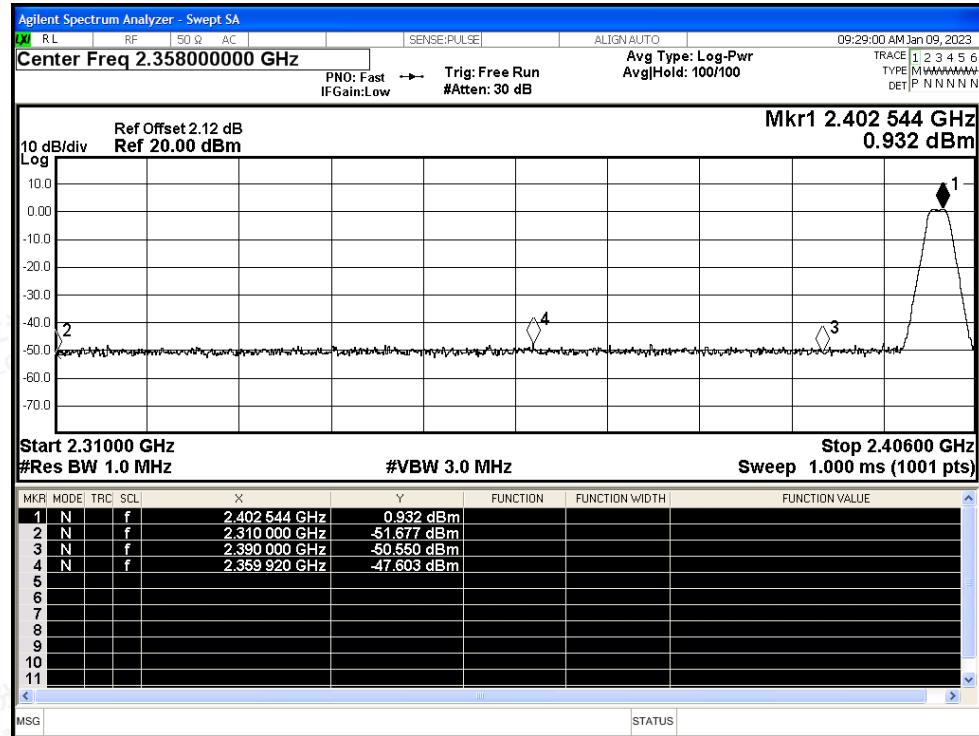
Restrict Band NVNT BLE 1M 2480MHz Ant Average



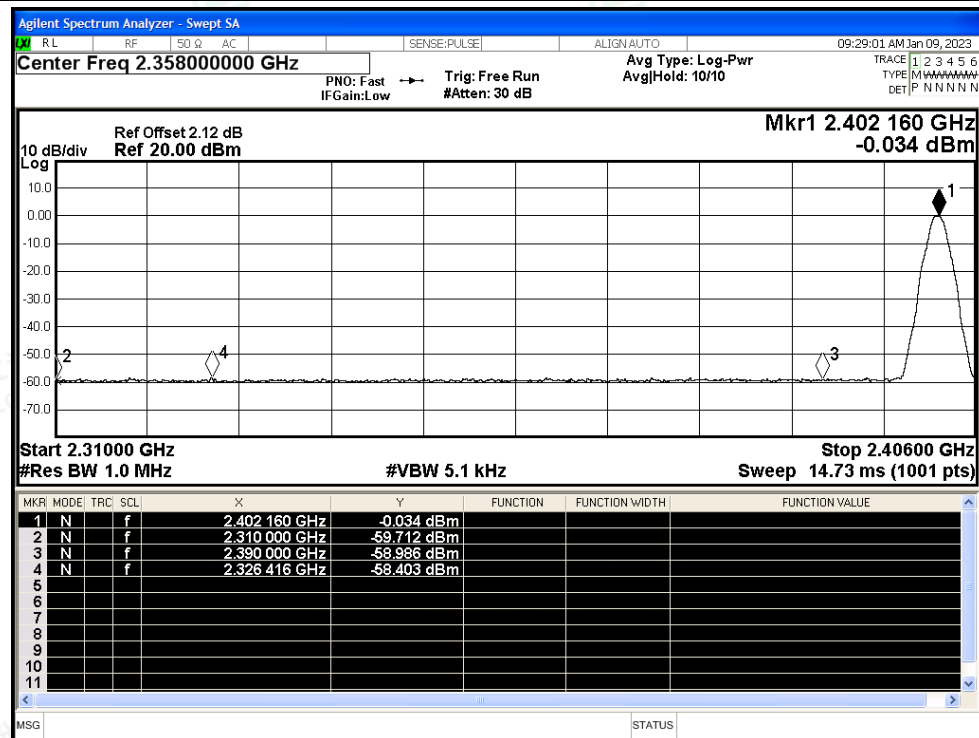


Test Graphs

Restrict Band NVNT BLE 2M 2402MHz Ant Peak

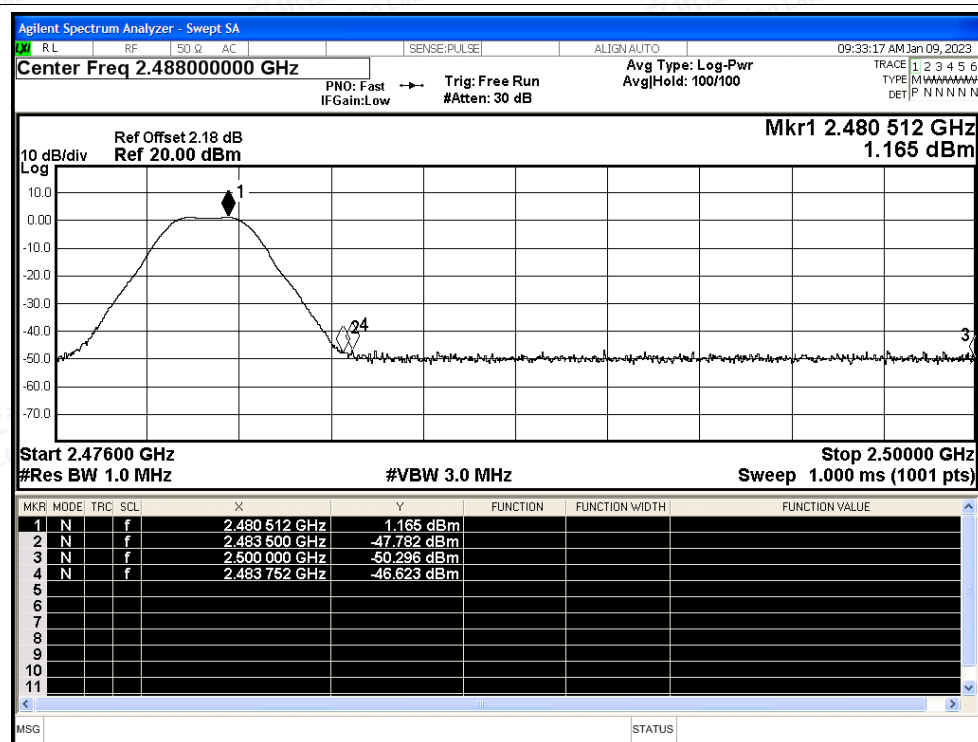


Restrict Band NVNT BLE 2M 2402MHz Ant Average





Restrict Band NVNT BLE 2M 2480MHz Ant Peak



Restrict Band NVNT BLE 2M 2480MHz Ant Average

