Appendix A

RF Test Data for LoRa 2.4G (Conducted Measurement)

Product Name: EMB-LR1280-mPCIe-4x

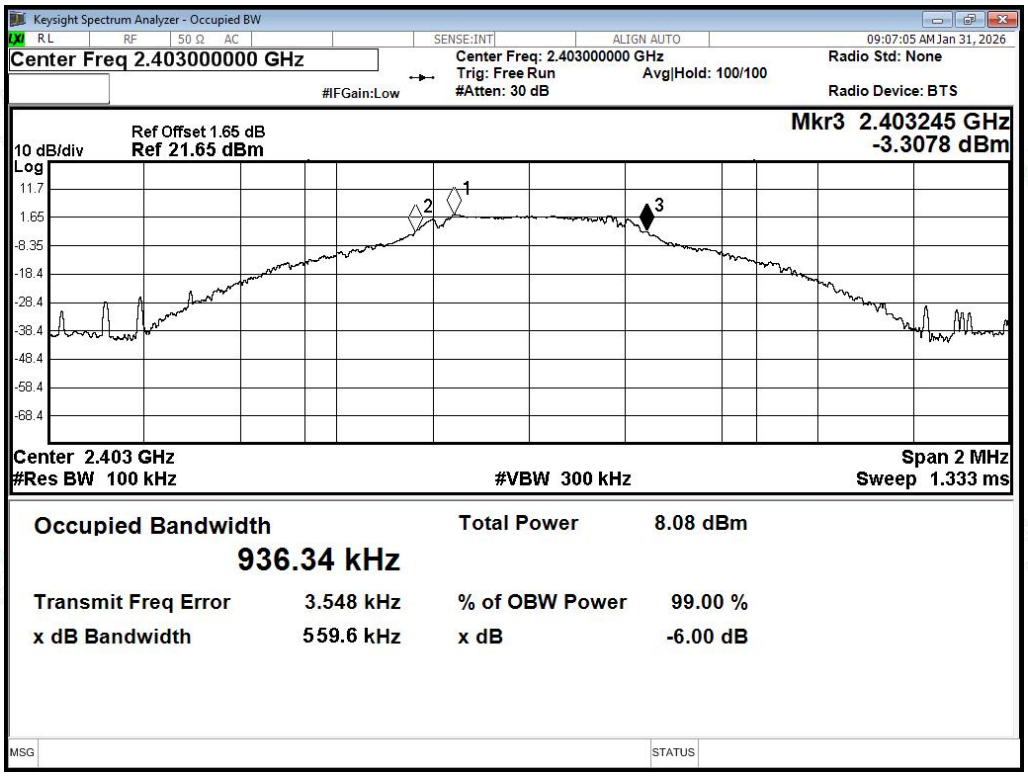
Test Model: EMB-LR1280-mPCIe-4x

Environmental Conditions

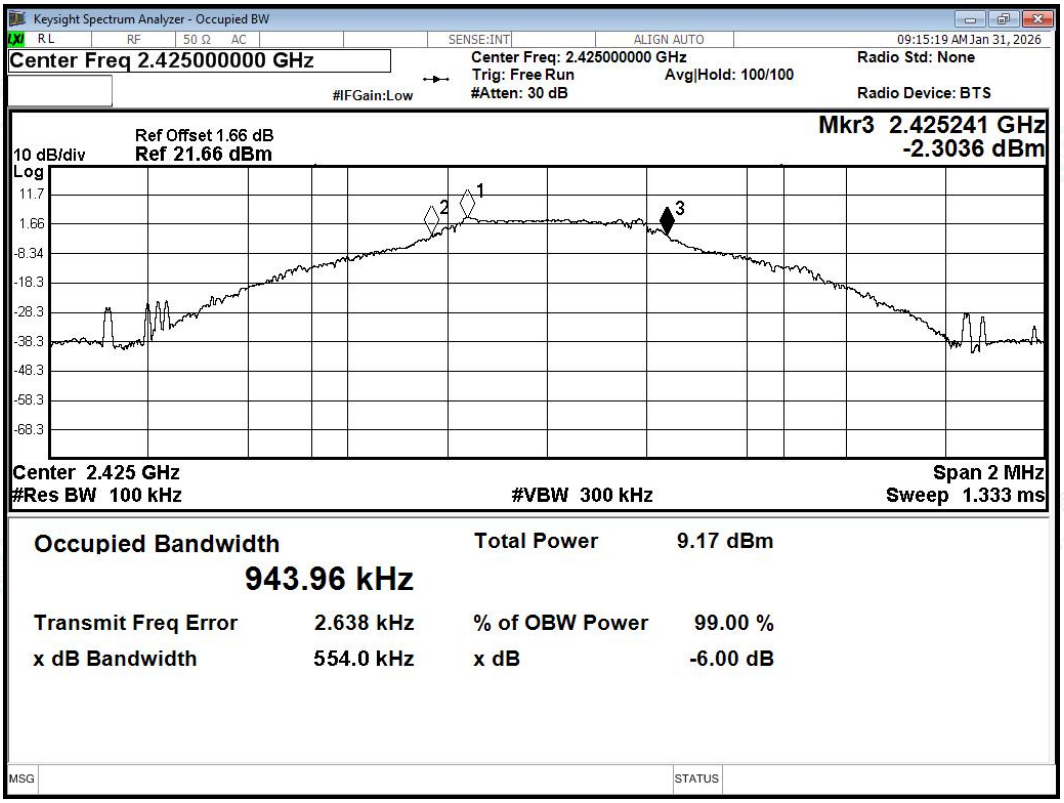
Temperature:	24.3°C
Relative Humidity:	53.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Jerry Chu
Supervised by:	Can Kun

A.1 -6dB Bandwidth

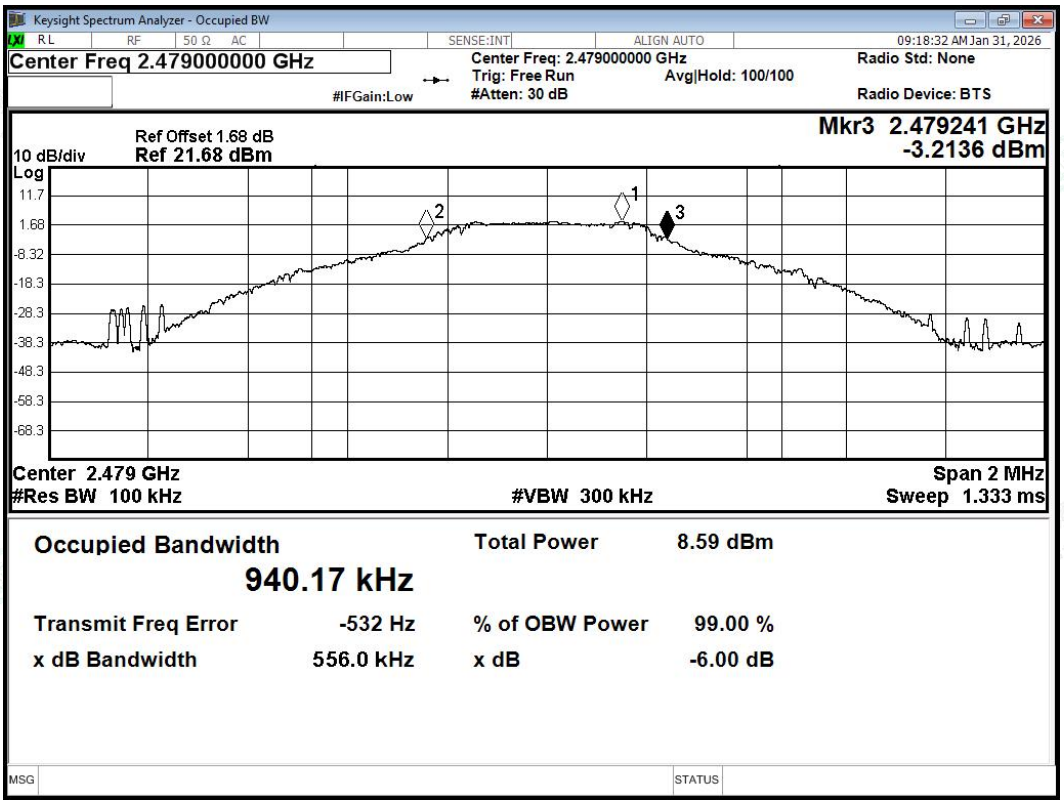
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	LoRa 2.4G	2403	Ant1	0.5596	0.5	PASS
NVNT	LoRa 2.4G	2425	Ant1	0.5540	0.5	PASS
NVNT	LoRa 2.4G	2479	Ant1	0.5560	0.5	PASS



-6dB Bandwidth NVNT LoRa 2.4G 2403MHz Ant1



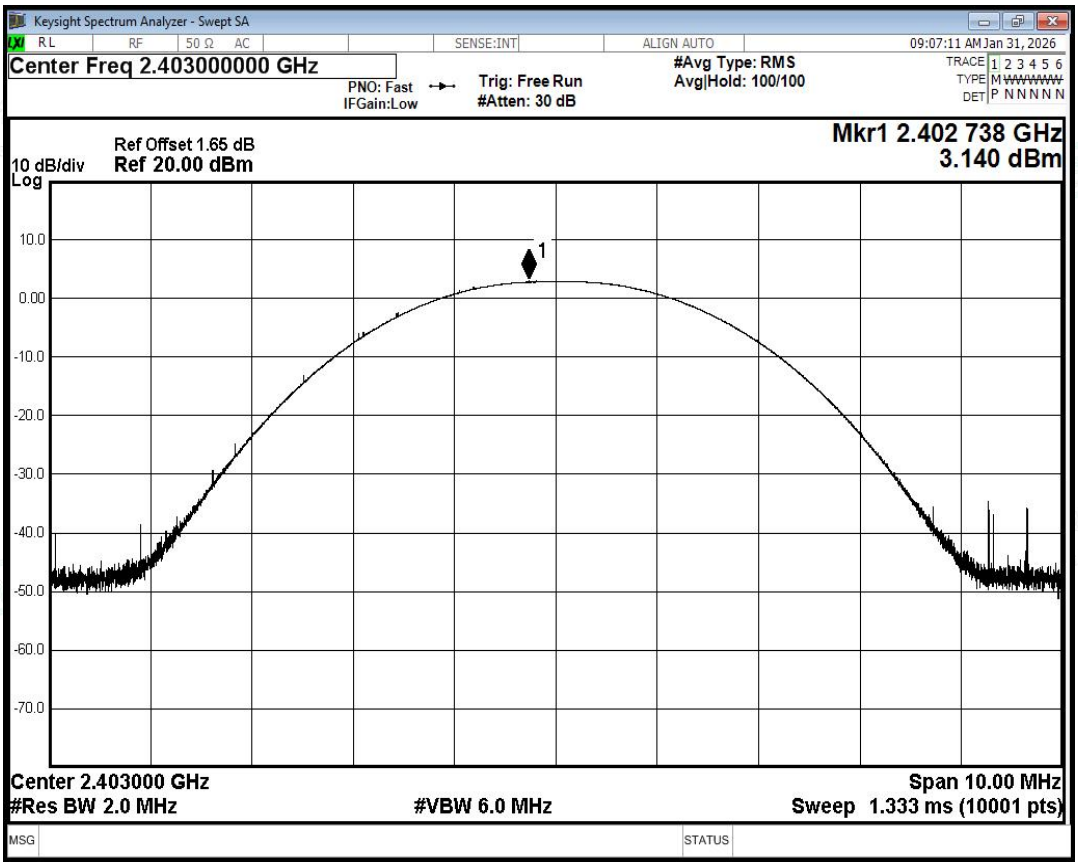
-6dB Bandwidth NVNT LoRa 2.4G 2425MHz Ant1



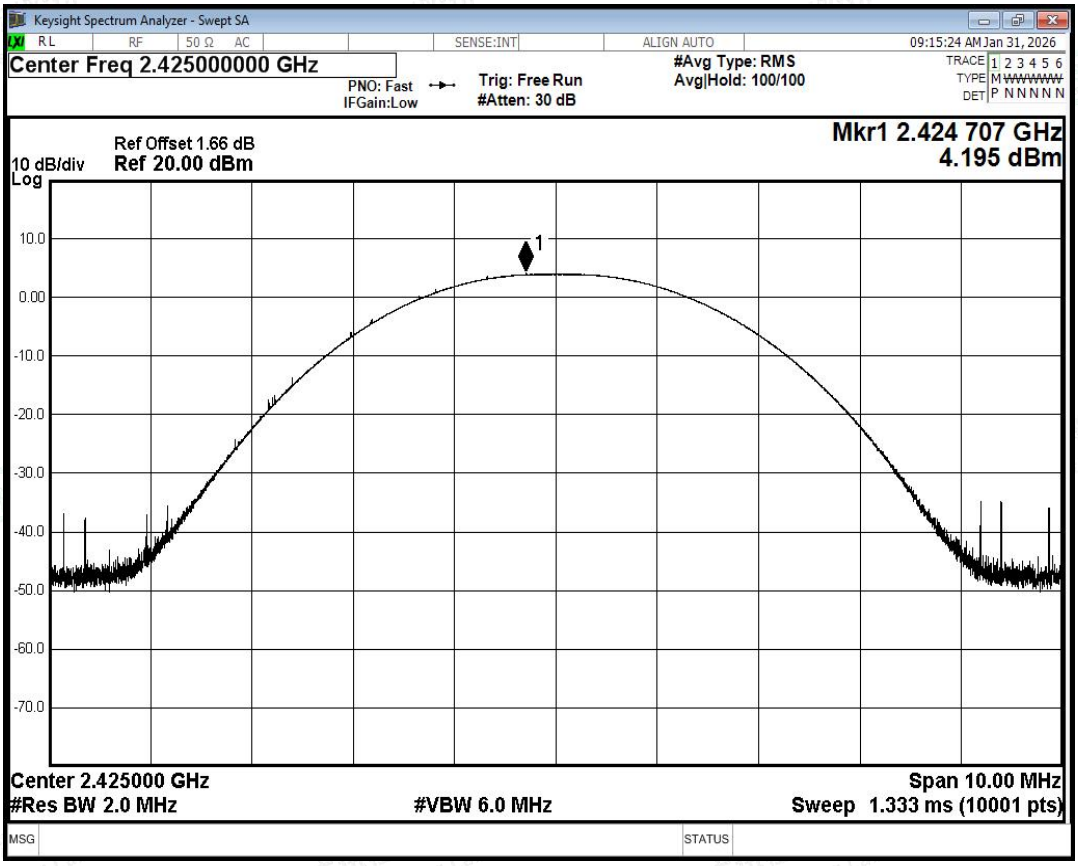
-6dB Bandwidth NVNT LoRa 2.4G 2479MHz Ant1

A.2 Maximum Peak Conducted Output Power

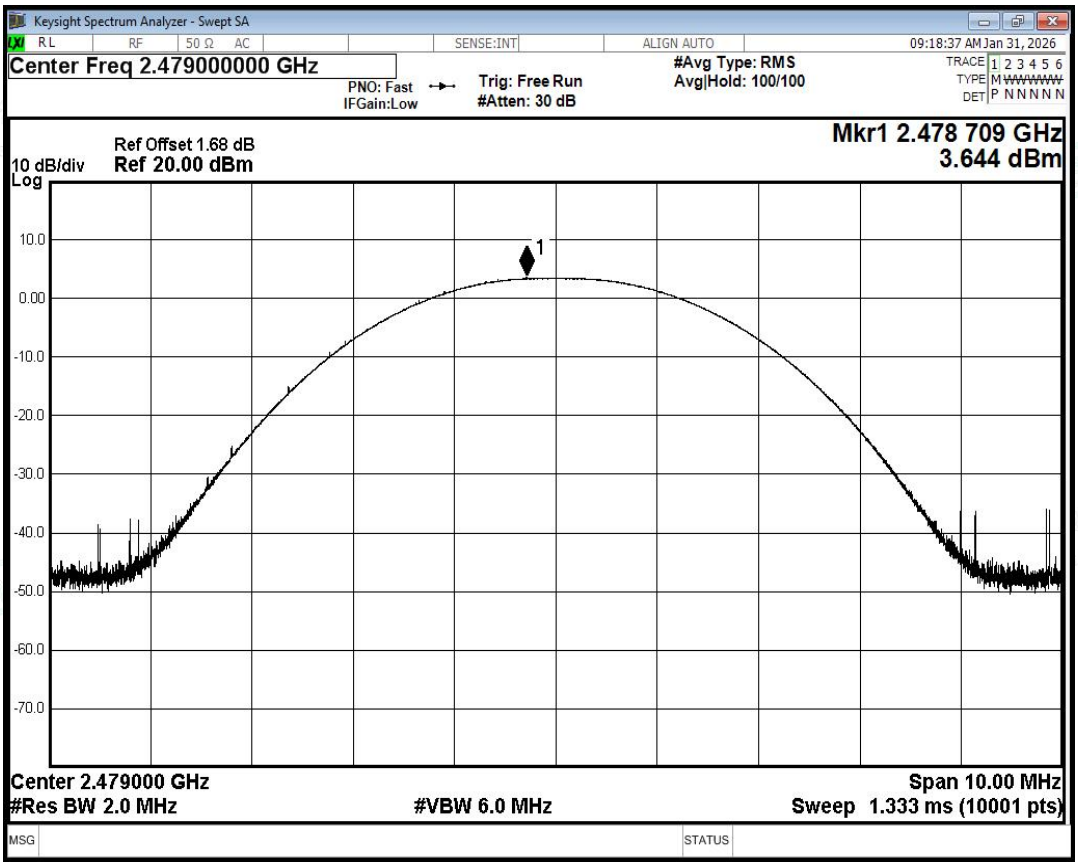
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit Conducted(dBm)	Verdict
NVNT	LoRa 2.4G	2403	Ant1	3.14	30	Pass
NVNT	LoRa 2.4G	2425	Ant1	4.2	30	Pass
NVNT	LoRa 2.4G	2479	Ant1	3.64	30	Pass



Peak Power NVNT LoRa 2.4G 2403MHz Ant1



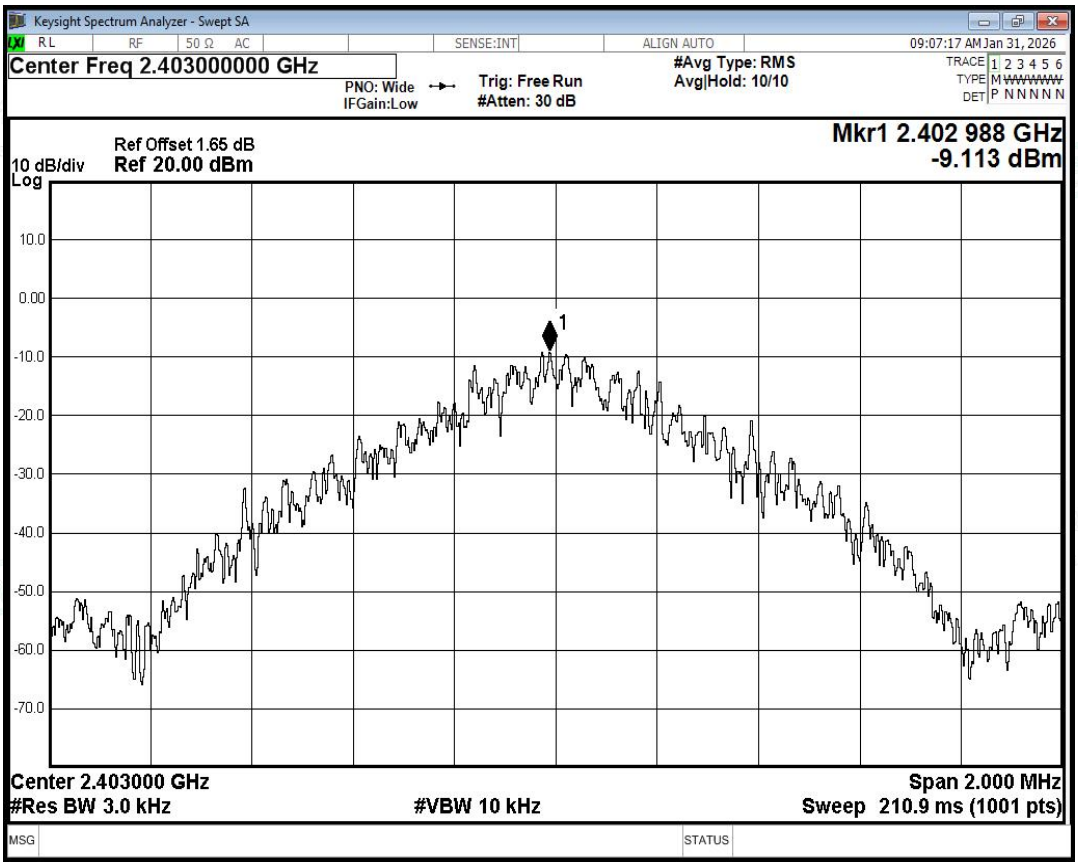
Peak Power NVNT LoRa 2.4G 2425MHz Ant1



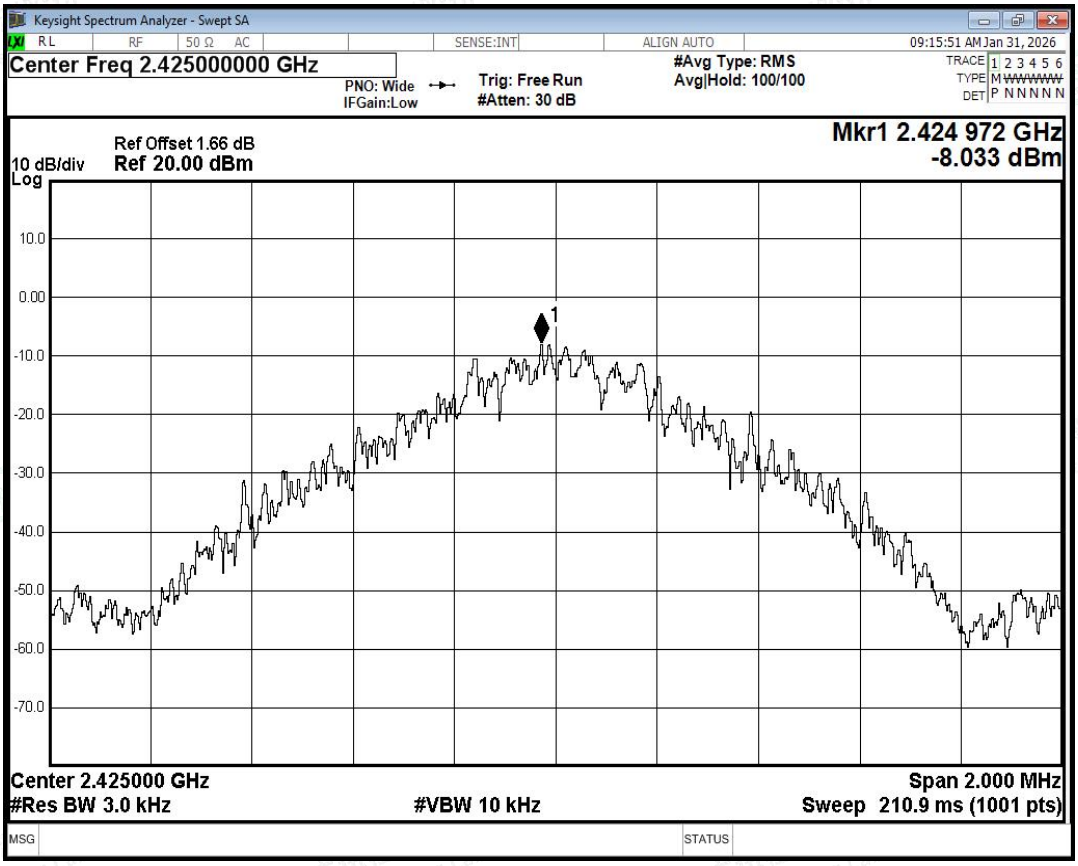
Peak Power NVNT LoRa 2.4G 2479MHz Ant1

A.3 Maximum Power Spectral Density Level

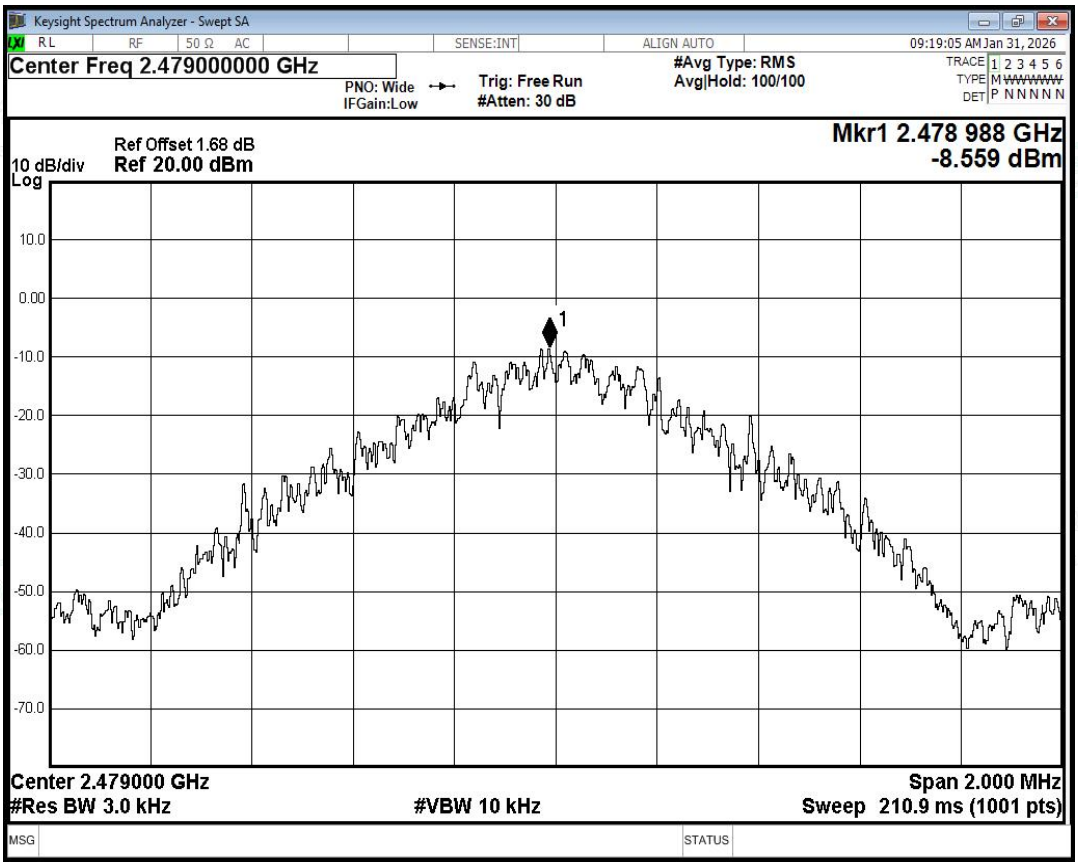
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	LoRa 2.4G	2403	Ant1	-9.11	8	Pass
NVNT	LoRa 2.4G	2425	Ant1	-8.03	8	Pass
NVNT	LoRa 2.4G	2479	Ant1	-8.56	8	Pass



PSD NVNT LoRa 2.4G 2403MHz Ant1



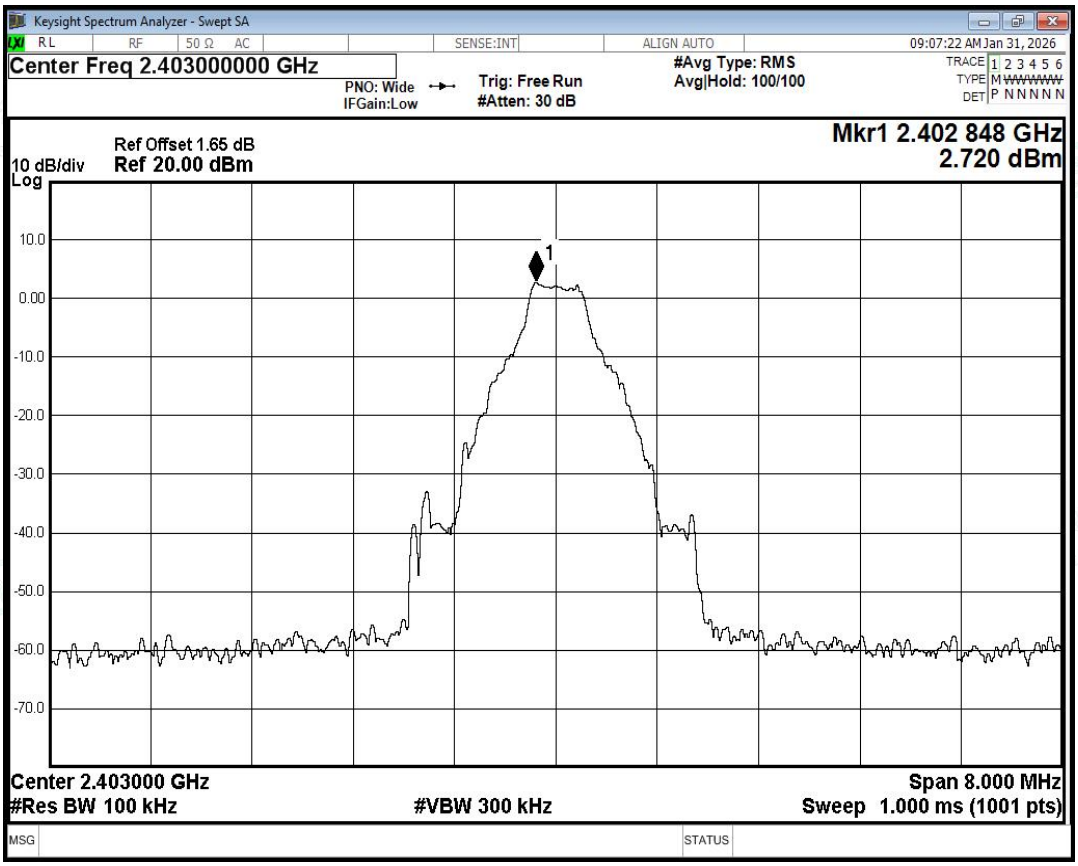
PSD NVNT LoRa 2.4G 2425MHz Ant1



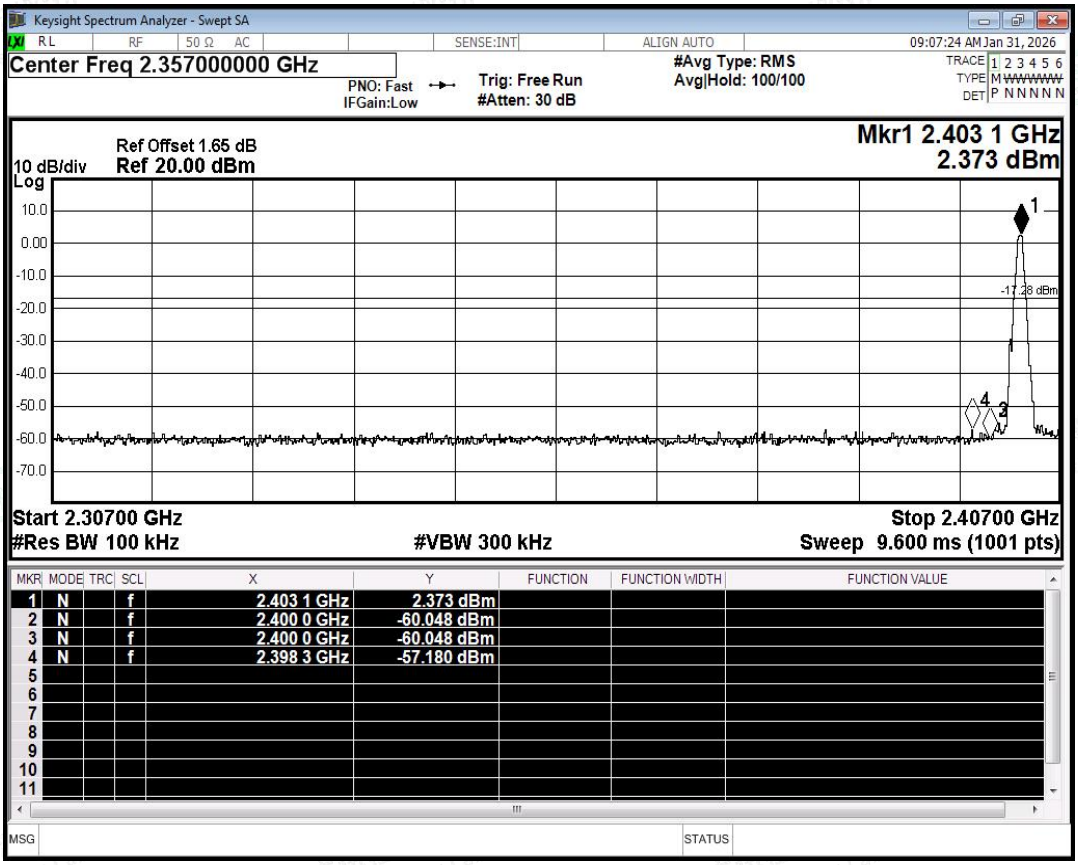
PSD NVNT LoRa 2.4G 2479MHz Ant1

A.4 Band Edge

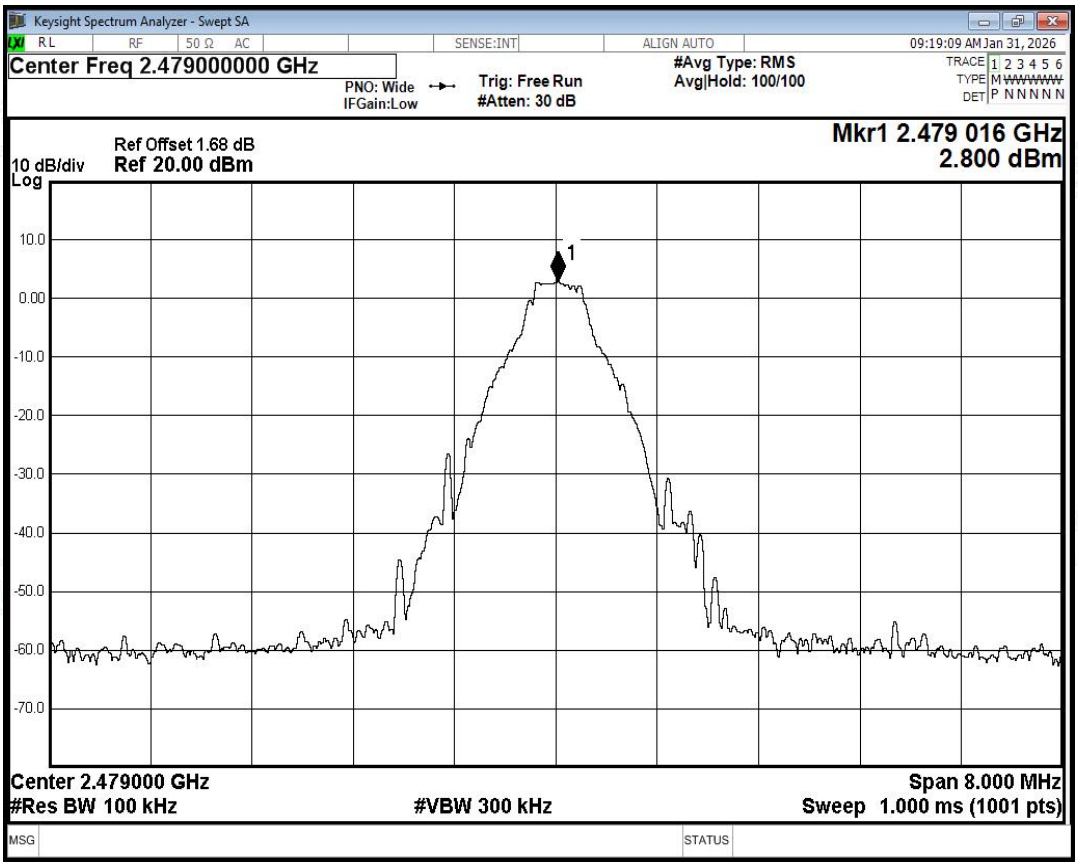
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	LoRa 2.4G	2403	Ant1	-59.9	-20	Pass
NVNT	LoRa 2.4G	2479	Ant1	-60.66	-20	Pass



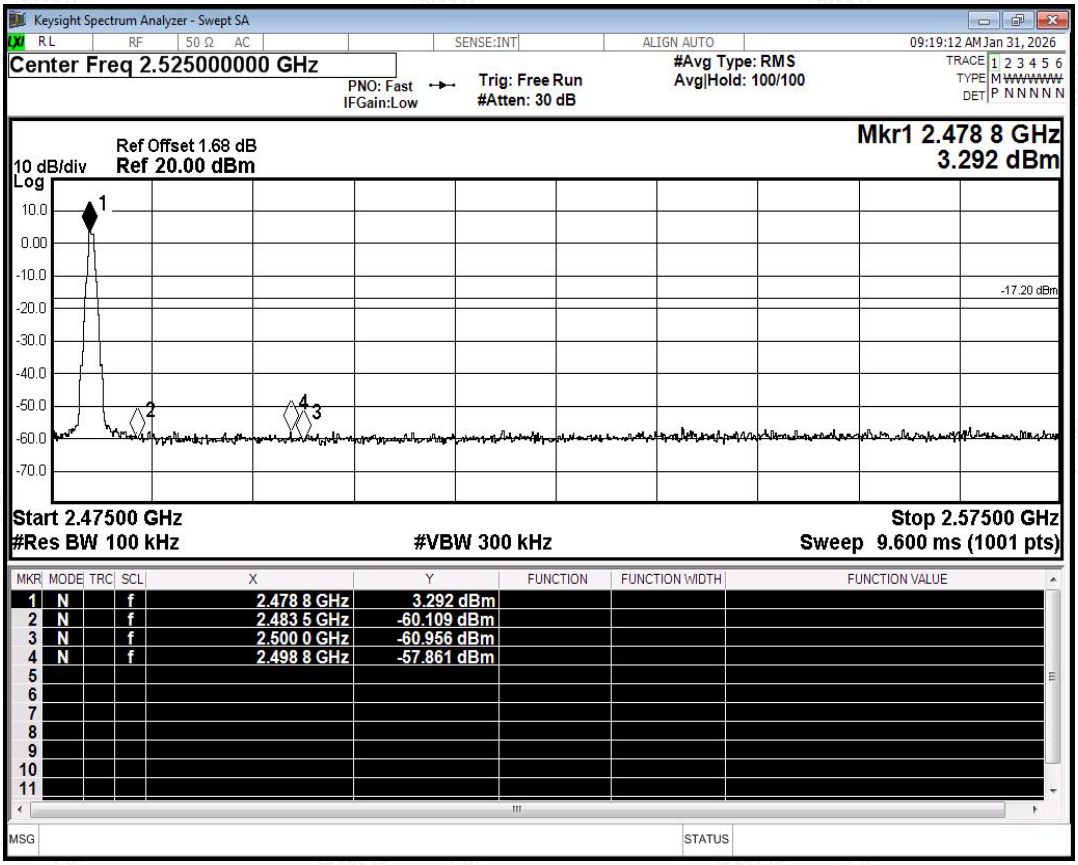
Band Edge NVNT LoRa 2.4G 2403MHz Ant1 Ref



Band Edge NVNT LoRa 2.4G 2403MHz Ant1 Emission



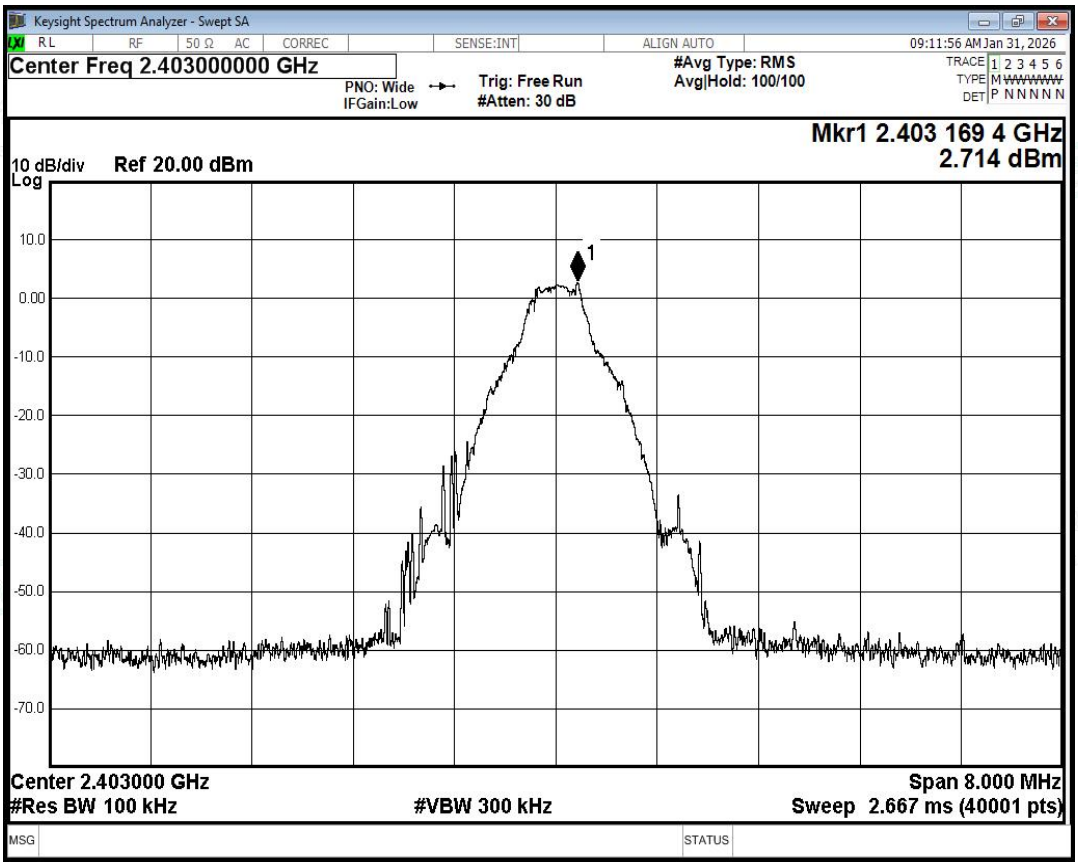
Band Edge NVNT LoRa 2.4G 2479MHz Ant1 Ref



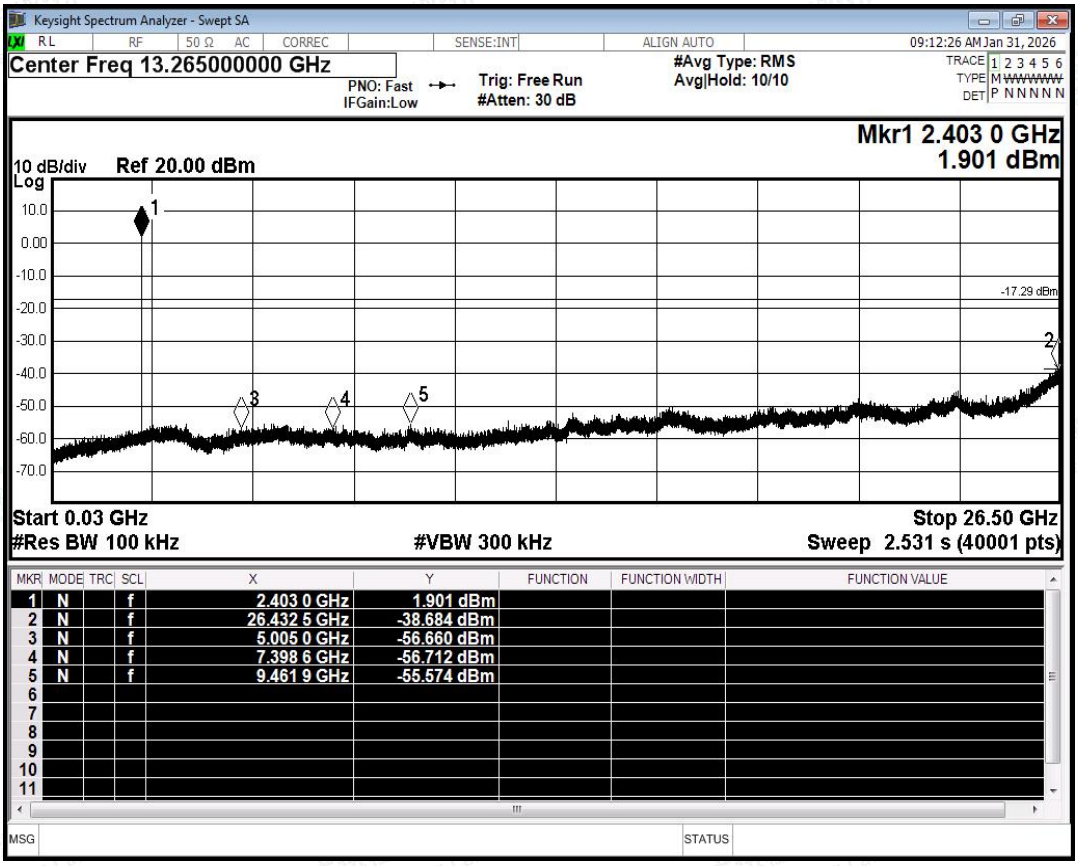
Band Edge NVNT LoRa 2.4G 2479MHz Ant1 Emission

A.5 Conducted RF Spurious Emission

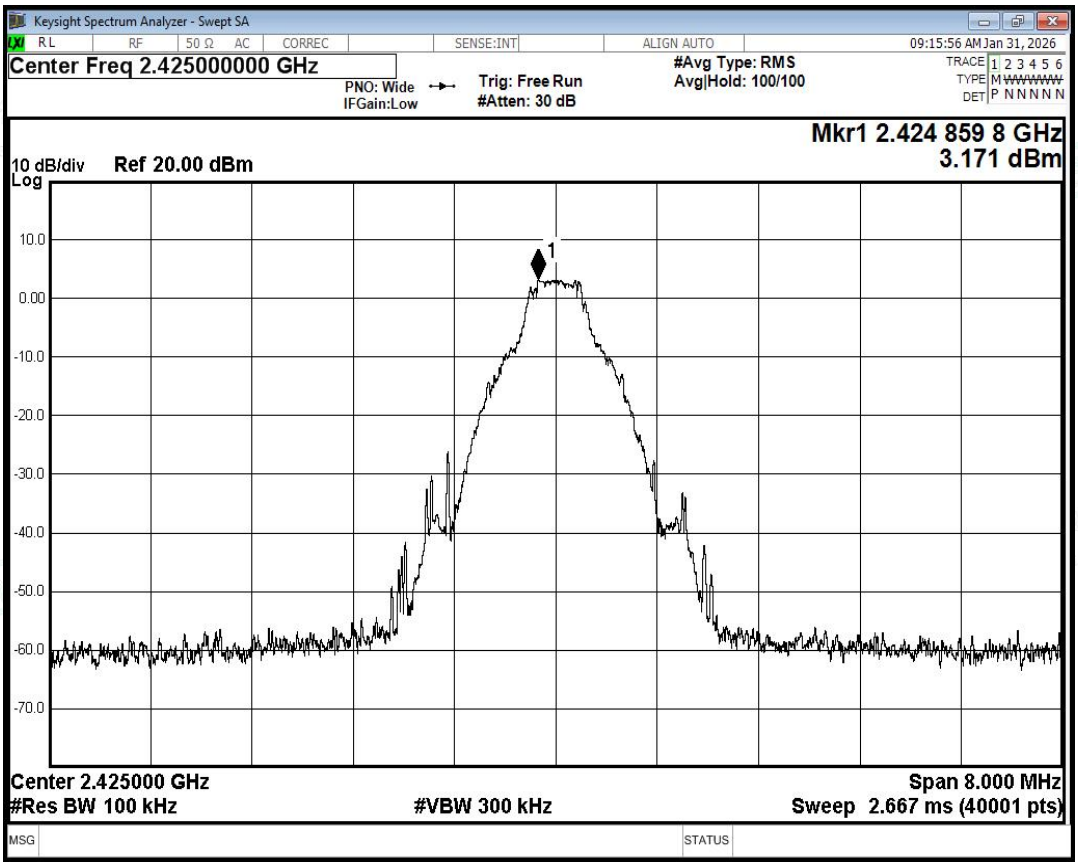
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	LoRa 2.4G	2403	Ant1	-41.39	-20	Pass
NVNT	LoRa 2.4G	2425	Ant1	-41.42	-20	Pass
NVNT	LoRa 2.4G	2479	Ant1	-42.38	-20	Pass



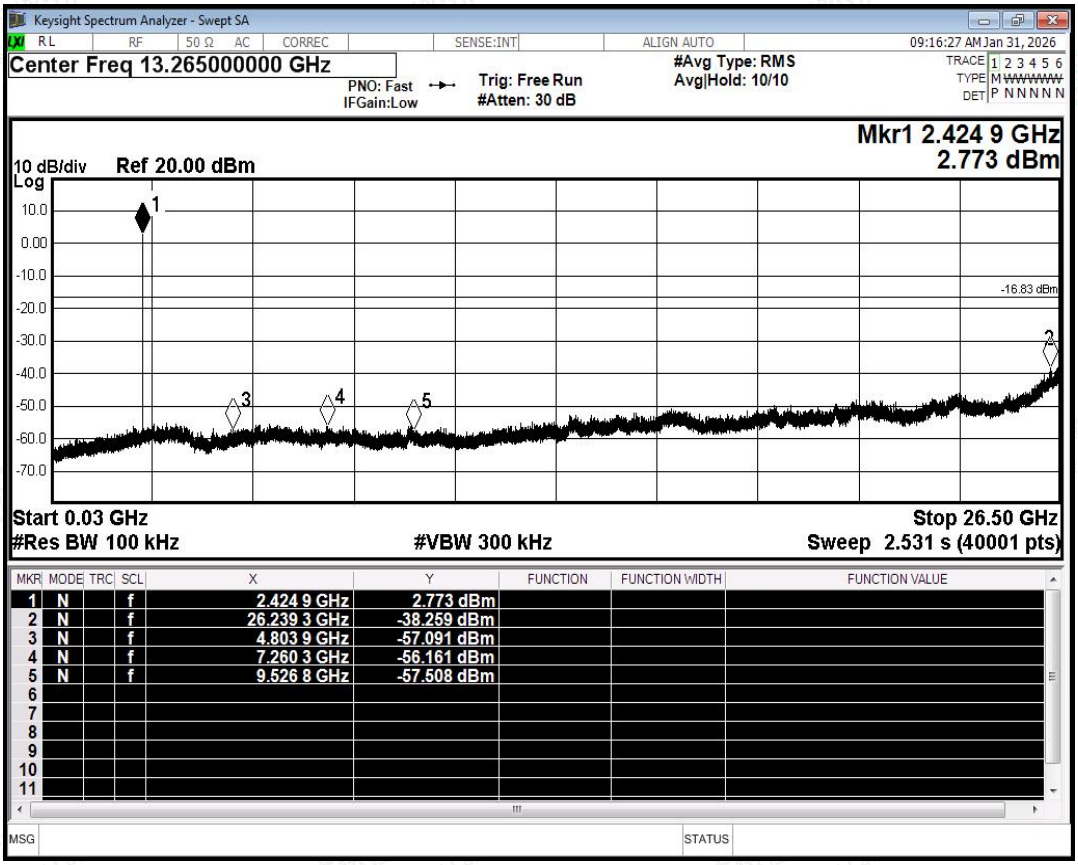
Tx. Spurious NVNT LoRa 2.4G 2403MHz Ant1 Ref



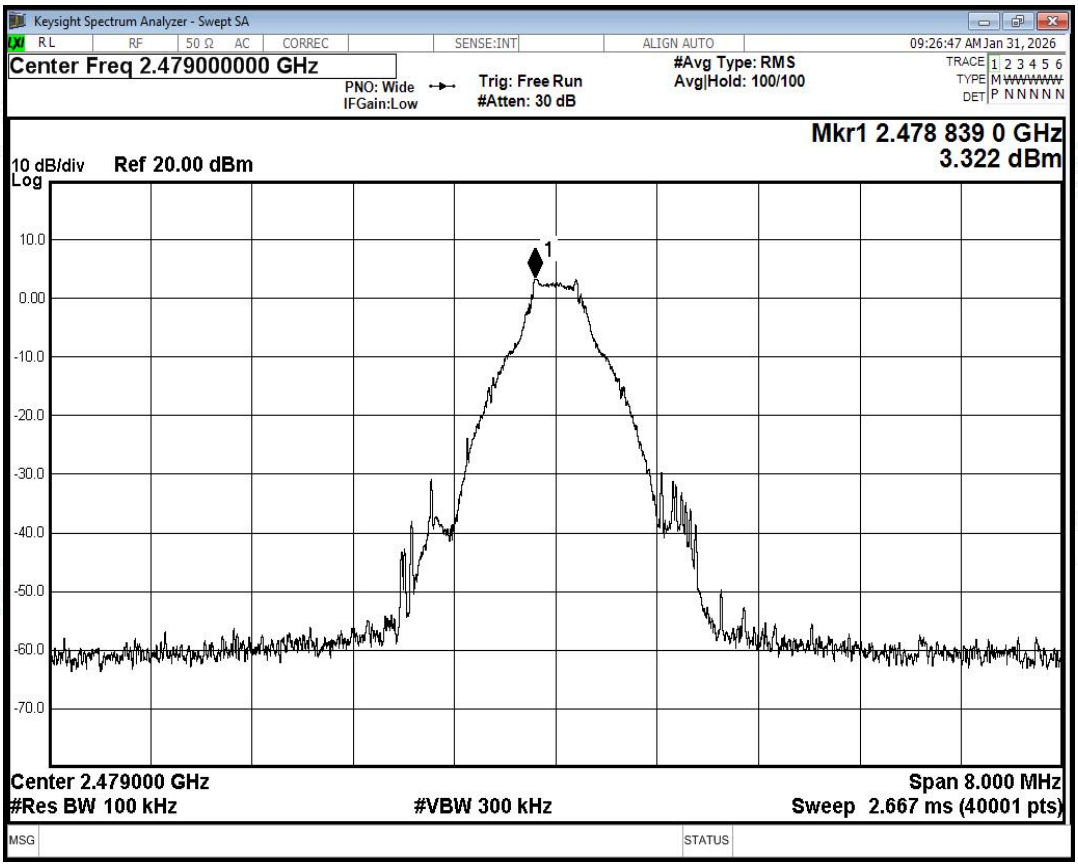
Tx. Spurious NVNT LoRa 2.4G 2403MHz Ant1 Emission



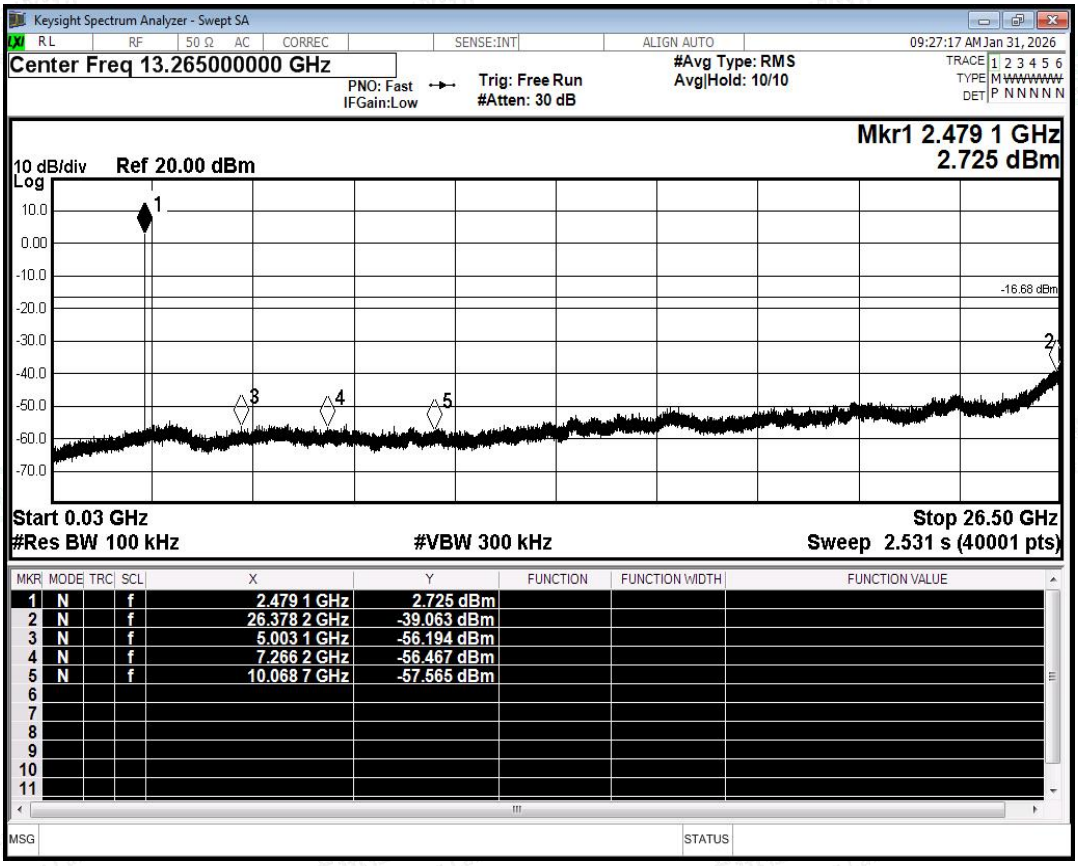
Tx. Spurious NVNT LoRa 2.4G 2425MHz Ant1 Ref



Tx. Spurious NVNT LoRa 2.4G 2425MHz Ant1 Emission



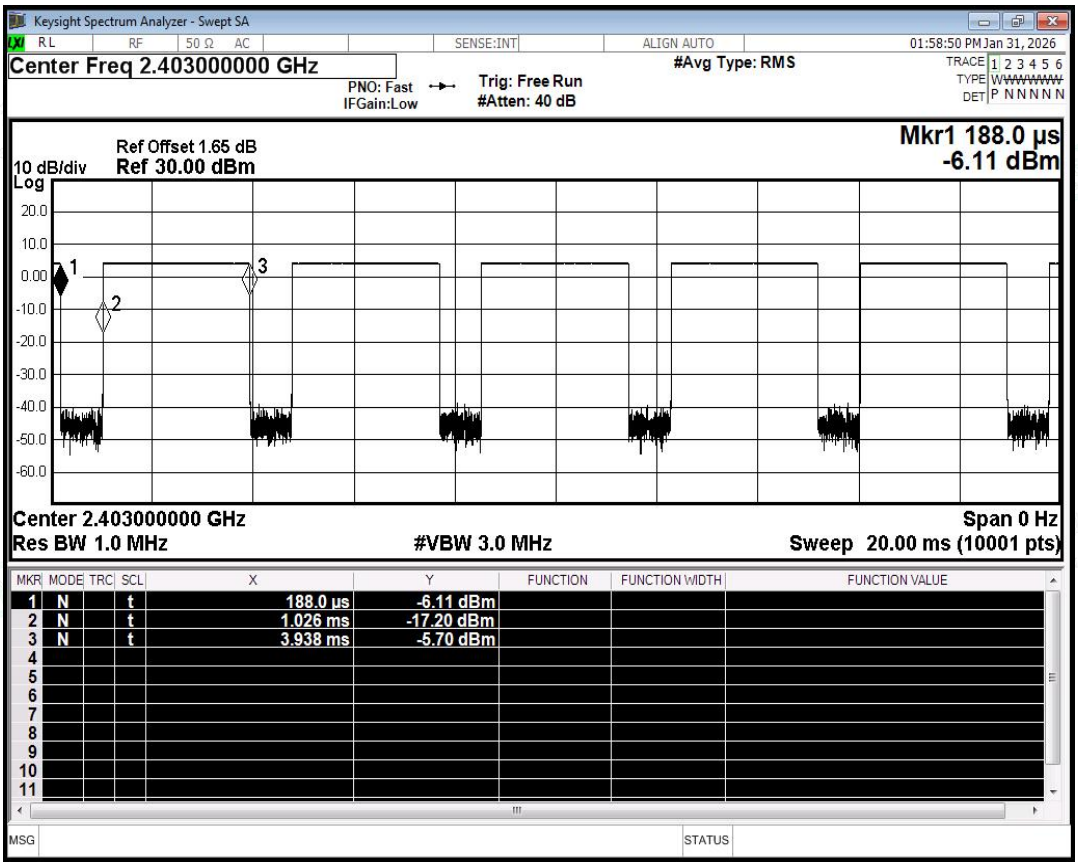
Tx. Spurious NVNT LoRa 2.4G 2479MHz Ant1 Ref



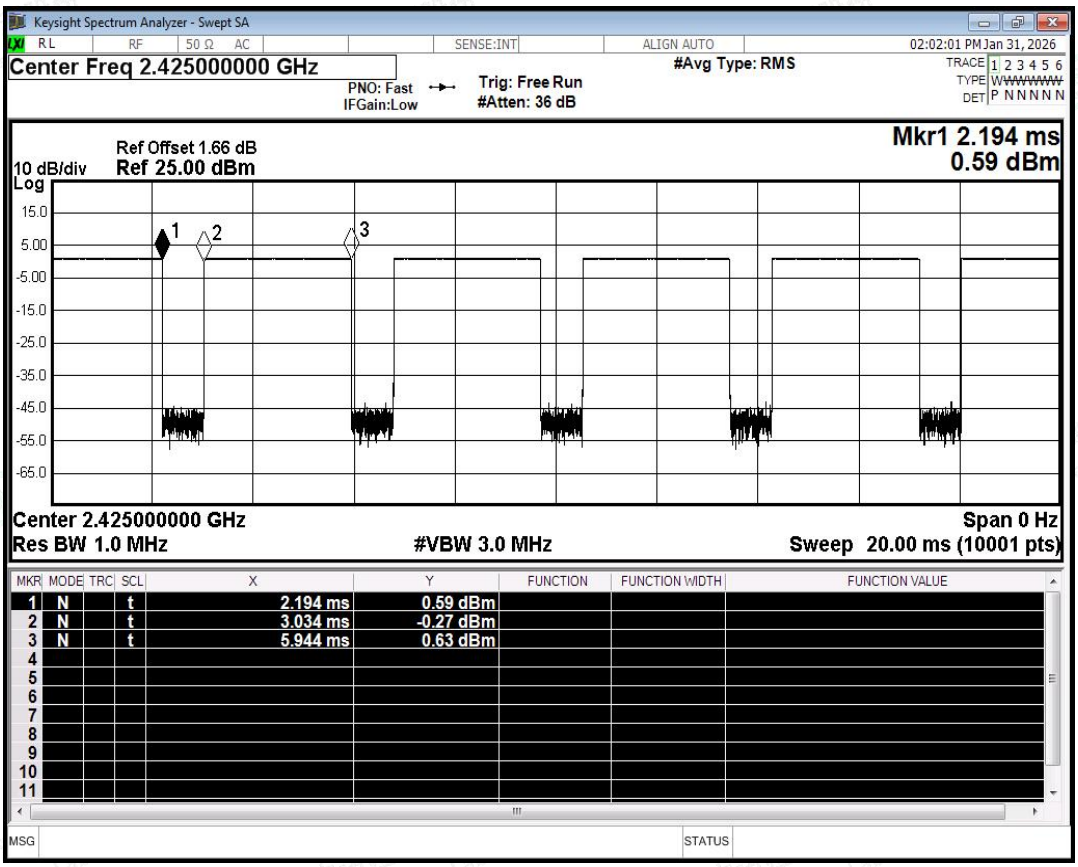
Tx. Spurious NVNT LoRa 2.4G 2479MHz Ant1 Emission

A.6 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	LoRa 2.4G	2403	Ant1	77.65	1.1	0.34
NVNT	LoRa 2.4G	2425	Ant1	77.6	1.1	0.34
NVNT	LoRa 2.4G	2479	Ant1	77.6	1.1	0.34



Duty Cycle NVNT LoRa 2.4G 2403MHz Ant1

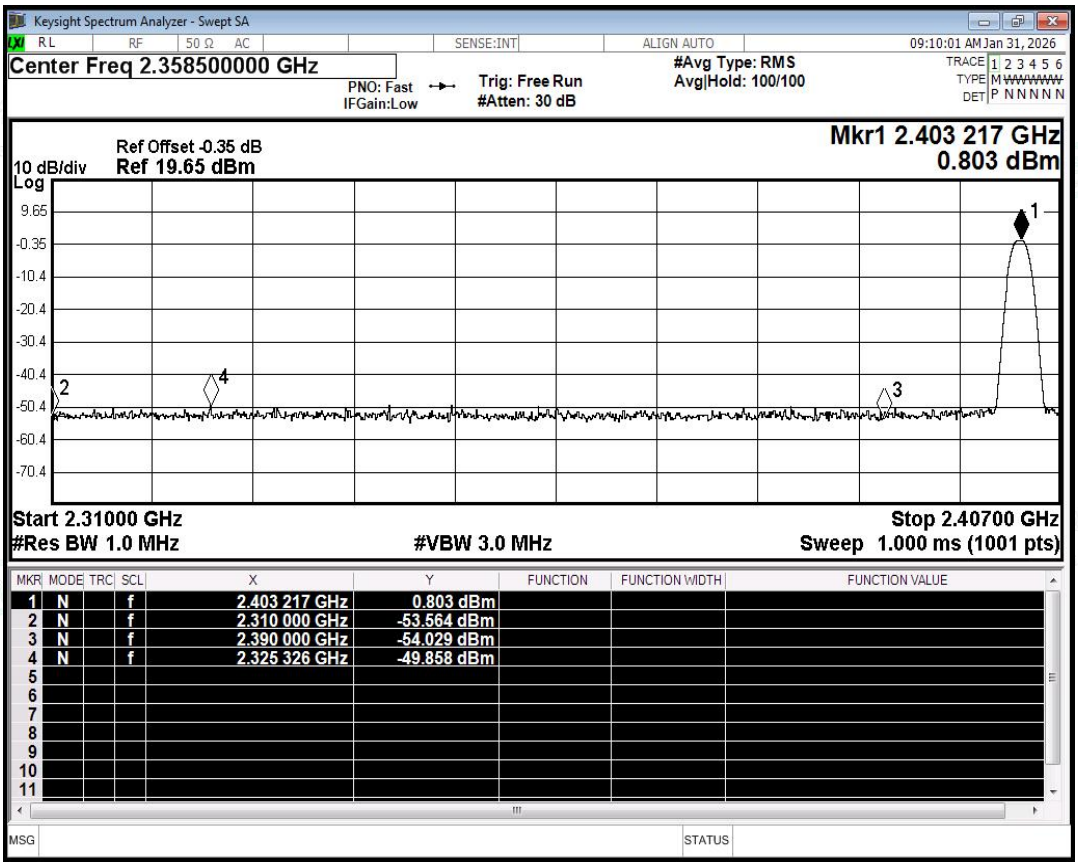


Duty Cycle NVNT LoRa 2.4G 2425MHz Ant1

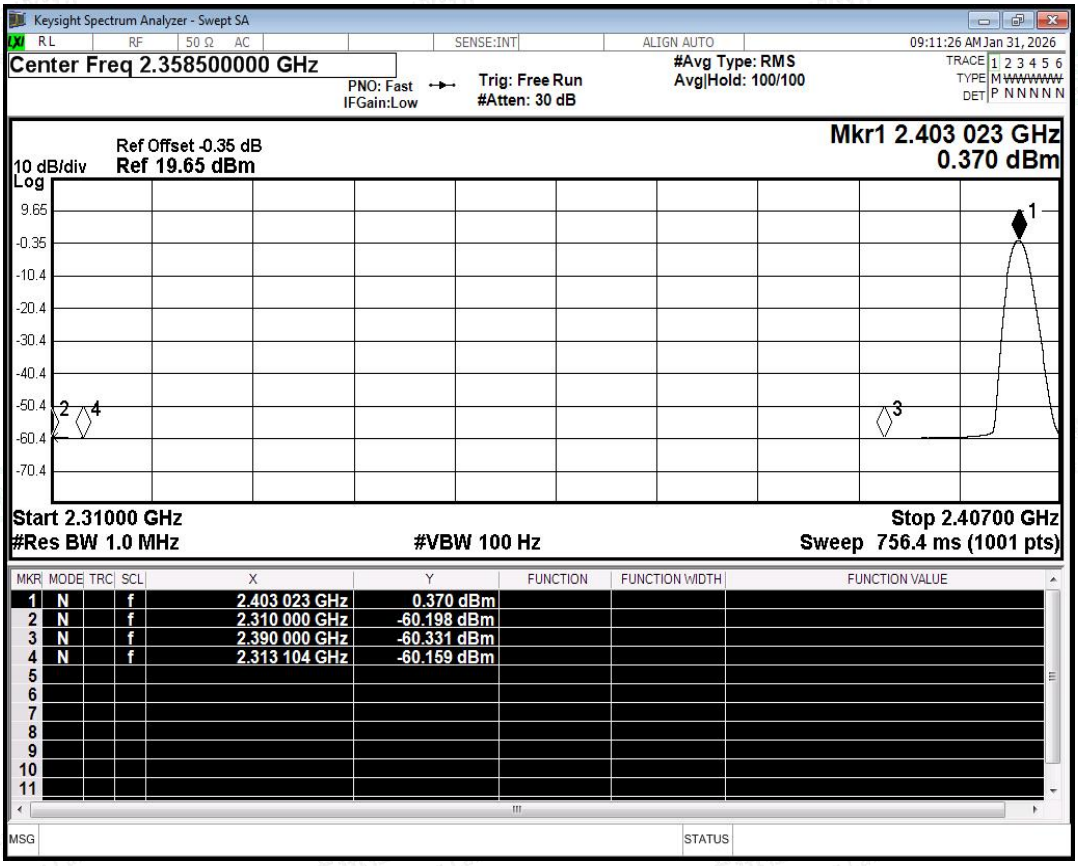
Duty Cycle NVNT LoRa 2.4G 2479MHz Ant1

A.7 Restrict Band

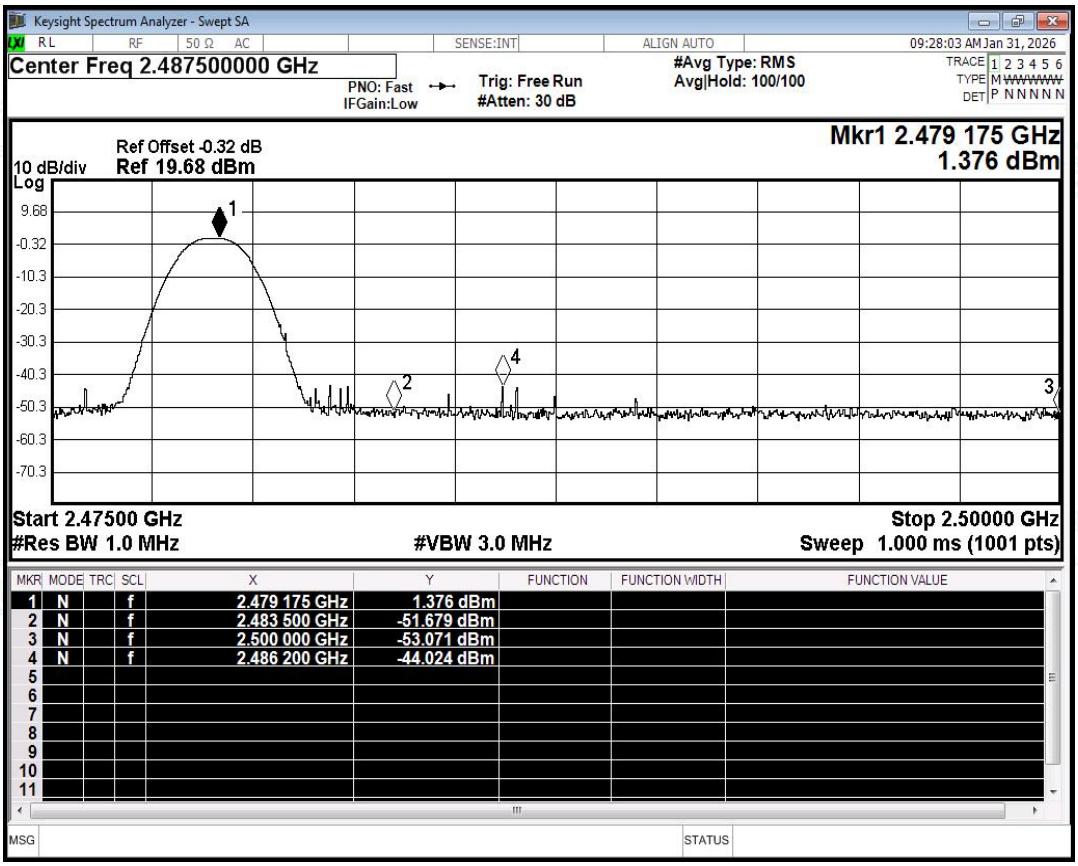
Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	LoRa 2.4G	2403	Ant1	2310	-53.56	2.10	43.80	Peak	74	Pass
NVNT	LoRa 2.4G	2403	Ant1	2310	-60.19	2.10	37.17	Average	54	Pass
NVNT	LoRa 2.4G	2403	Ant1	2325.326	-49.85	2.10	47.51	Peak	74	Pass
NVNT	LoRa 2.4G	2403	Ant1	2313.104	-60.15	2.10	37.21	Average	54	Pass
NVNT	LoRa 2.4G	2403	Ant1	2390	-54.02	2.10	43.34	Peak	74	Pass
NVNT	LoRa 2.4G	2403	Ant1	2390	-60.33	2.10	37.03	Average	54	Pass
NVNT	LoRa 2.4G	2479	Ant1	2483.5	-51.67	2.10	45.69	Peak	74	Pass
NVNT	LoRa 2.4G	2479	Ant1	2483.5	-59.37	2.10	37.99	Average	54	Pass
NVNT	LoRa 2.4G	2479	Ant1	2486.2	-44.02	2.10	53.34	Peak	74	Pass
NVNT	LoRa 2.4G	2479	Ant1	2483.5	-59.37	2.10	37.99	Average	54	Pass
NVNT	LoRa 2.4G	2479	Ant1	2500	-53.07	2.10	44.29	Peak	74	Pass
NVNT	LoRa 2.4G	2479	Ant1	2500	-60.1	2.10	37.26	Average	54	Pass



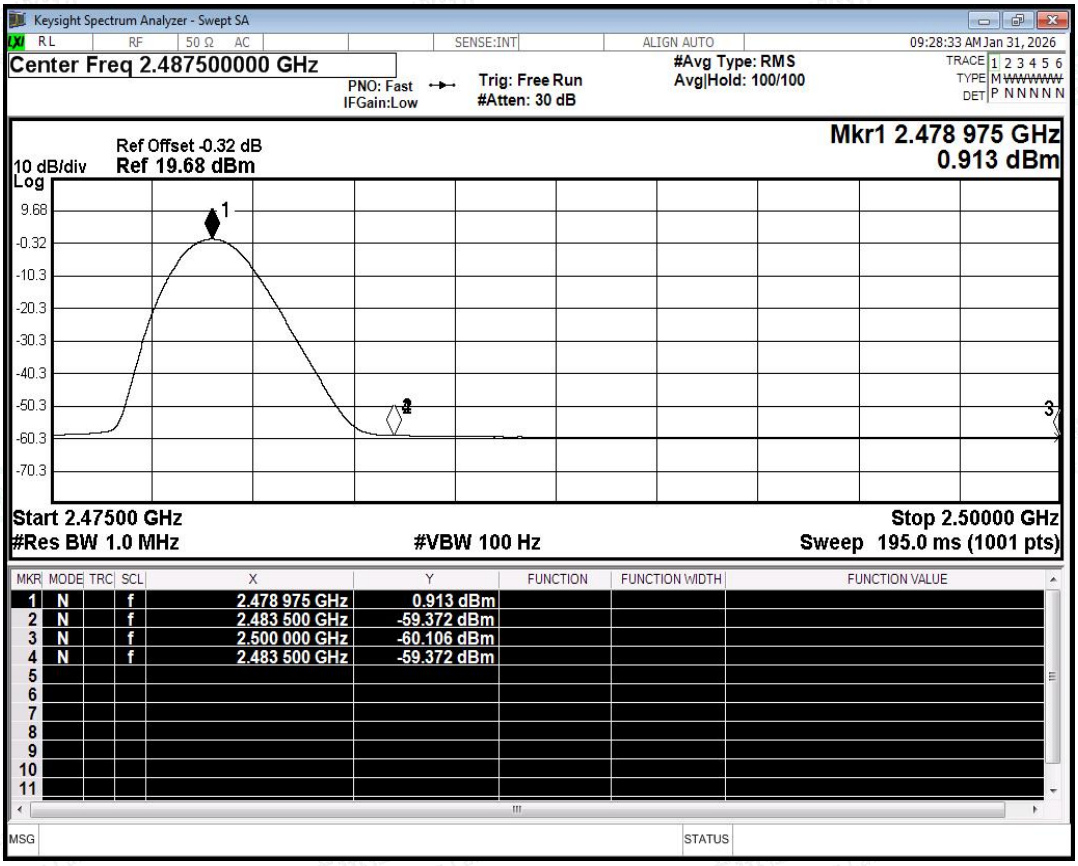
Restrict Band NVNT LoRa 2.4G 2403MHz Ant1 Peak



Restrict Band NVNT LoRa 2.4G 2403MHz Ant1 Average



Restrict Band NVNT LoRa 2.4G 2479MHz Ant1 Peak



Restrict Band NVNT LoRa 2.4G 2479MHz Ant1 Average