

Appendix A

RF Test Data for BT LE (Conducted Measurement)

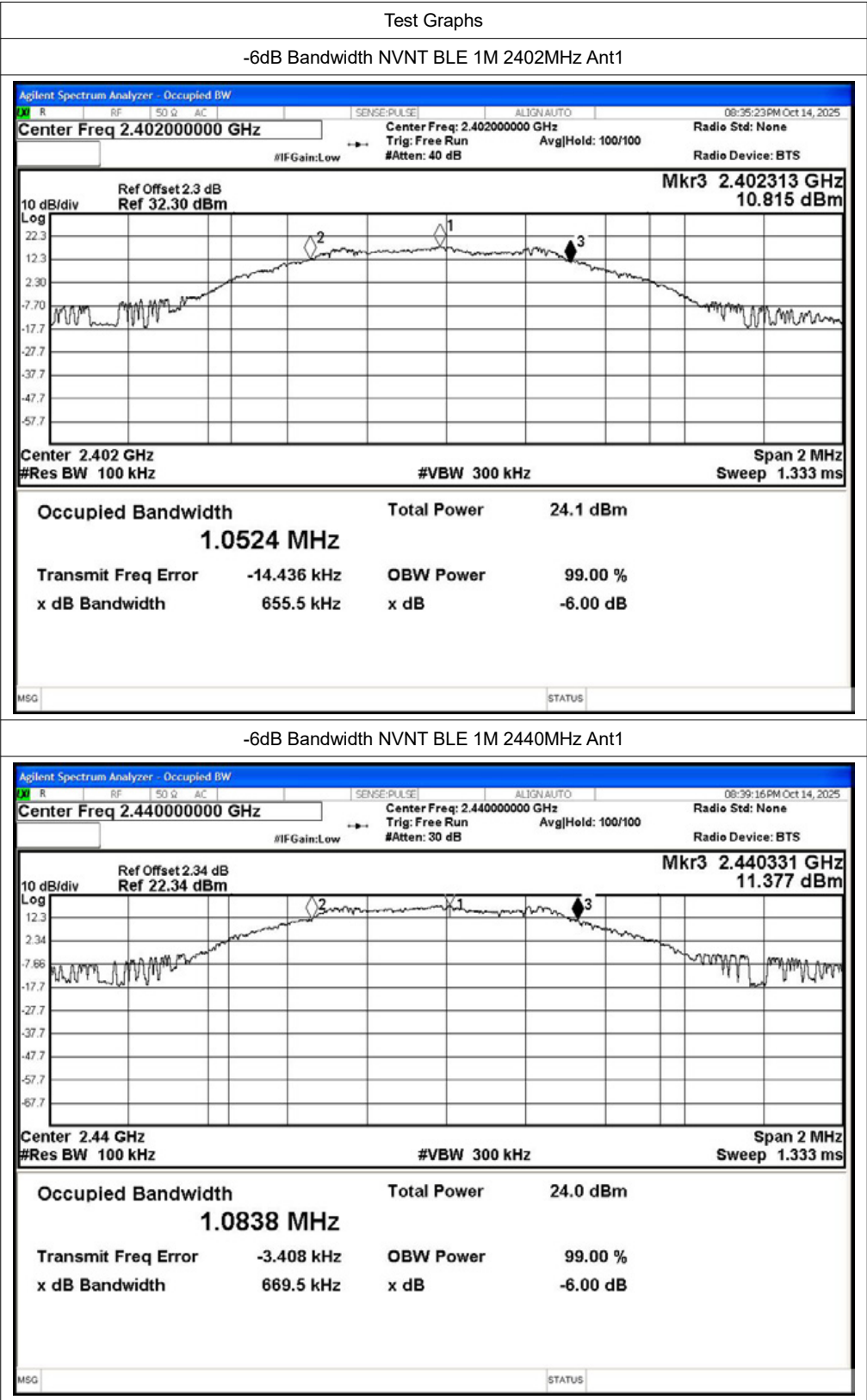
Product Name: CTCC-MGM240P-SM2-SWN
Test Model: CTCC-MGM240P-SM2-SWN

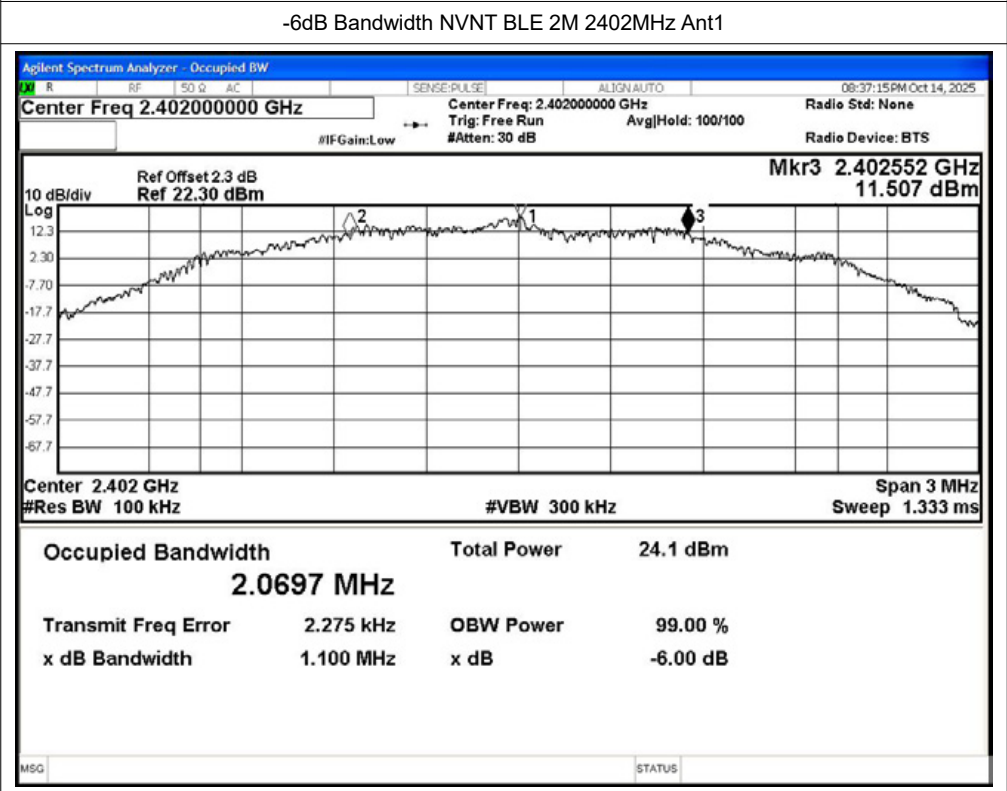
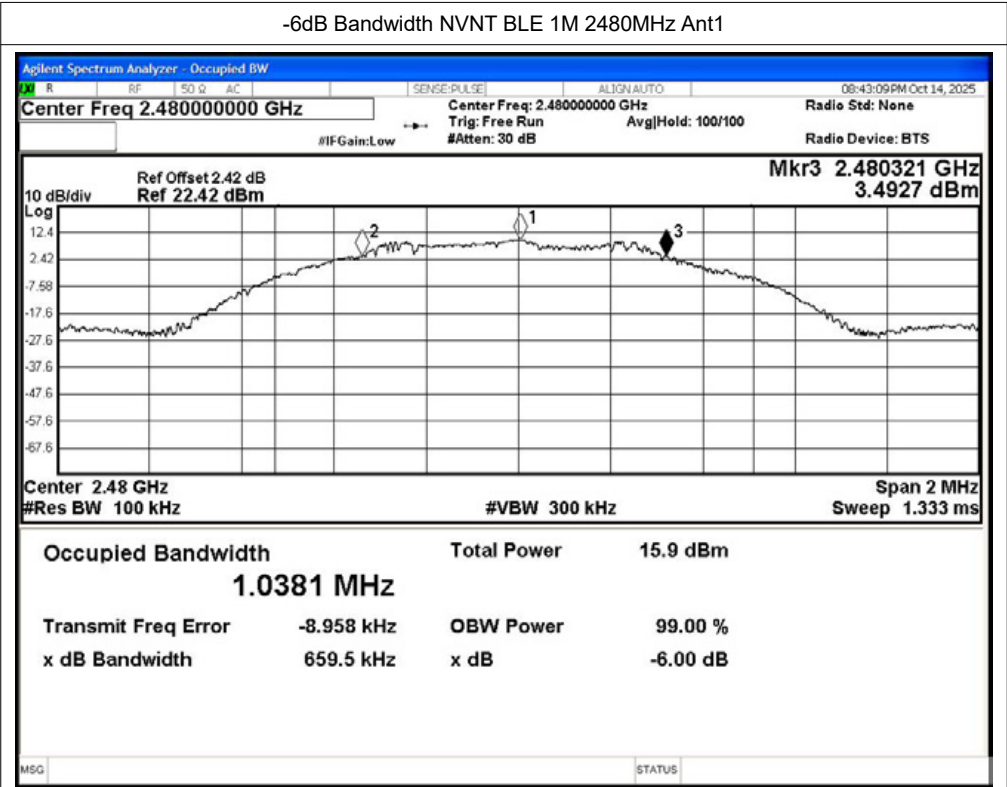
Environmental Conditions

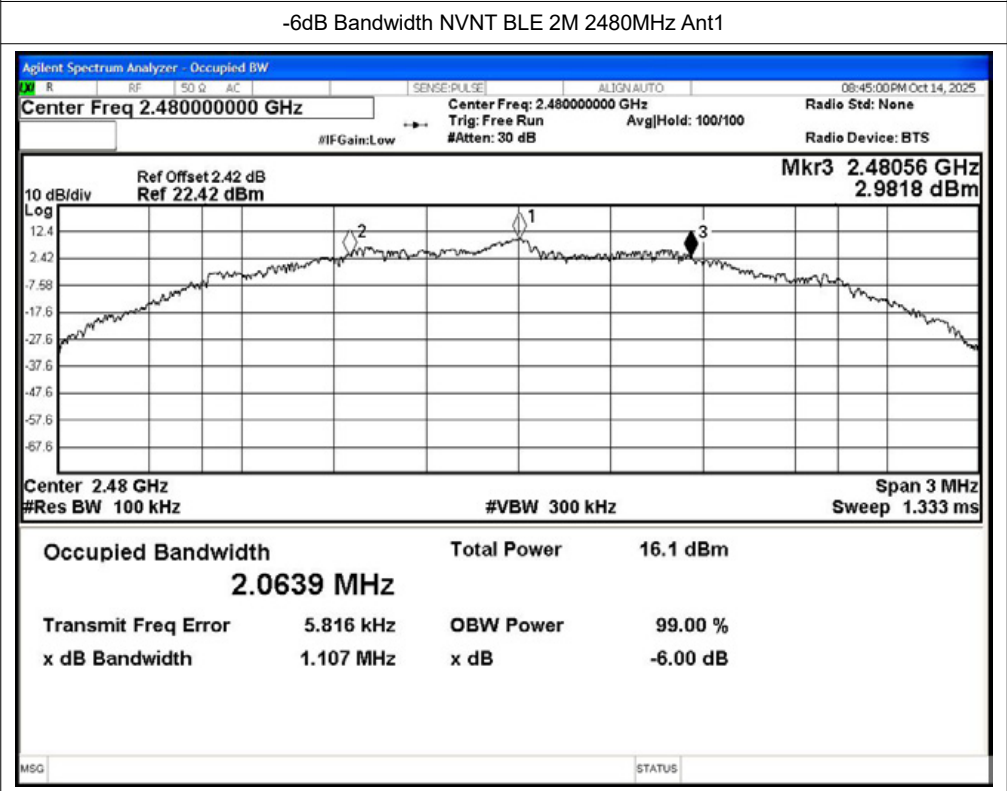
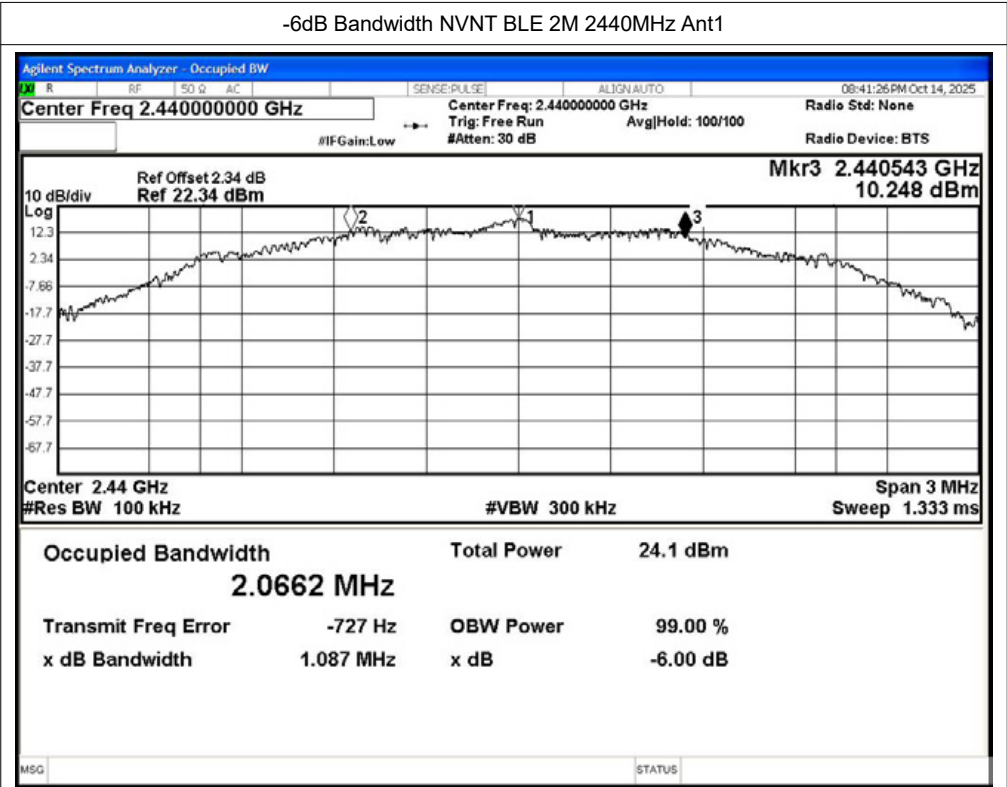
Temperature:	23.9 °C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Jone Lee
Supervised by:	Fengliu Tang

A.1 -6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.656	>=0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.669	>=0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.659	>=0.5	Pass
NVNT	BLE 2M	2402	Ant1	1.1	>=0.5	Pass
NVNT	BLE 2M	2440	Ant1	1.087	>=0.5	Pass
NVNT	BLE 2M	2480	Ant1	1.107	>=0.5	Pass

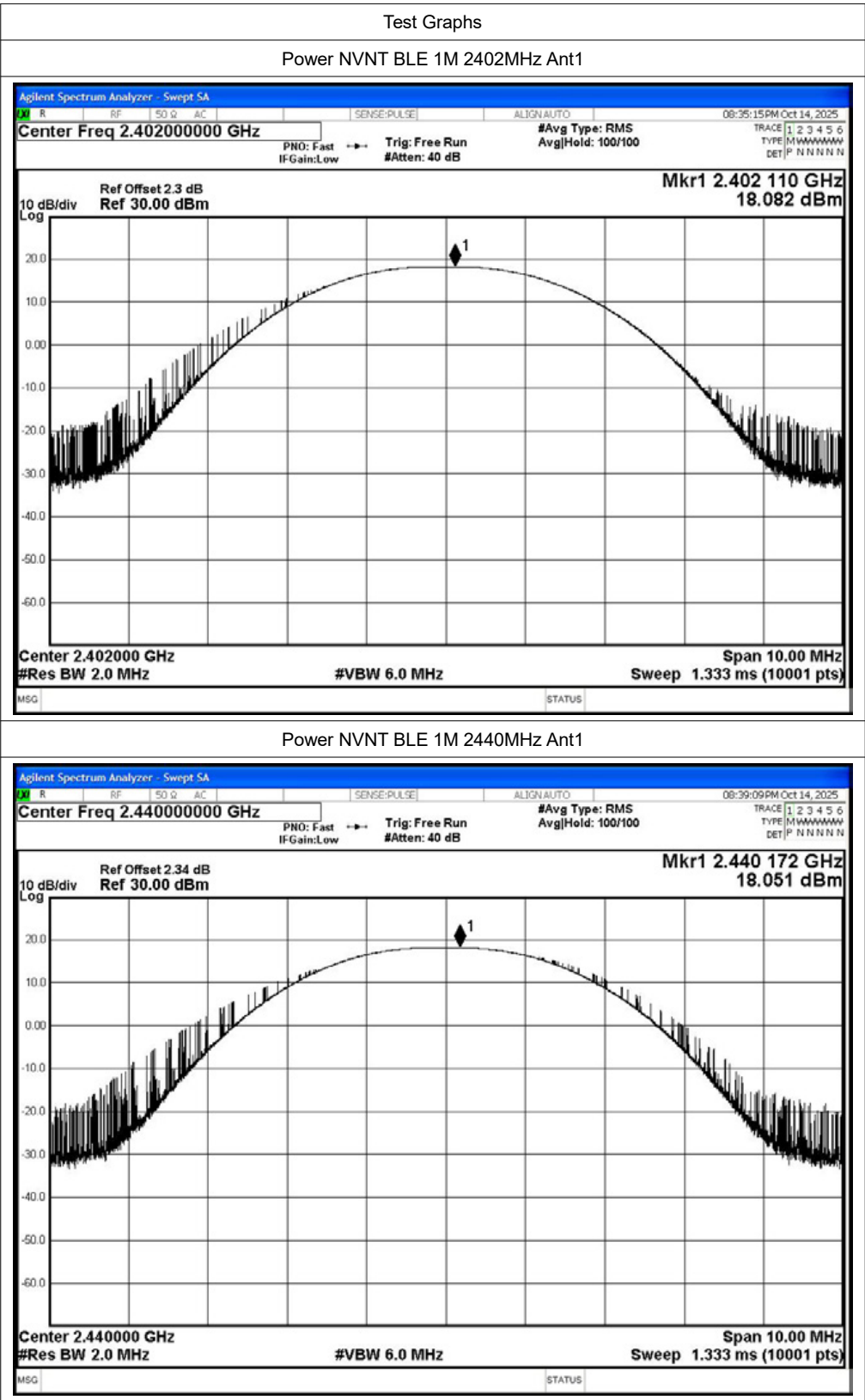




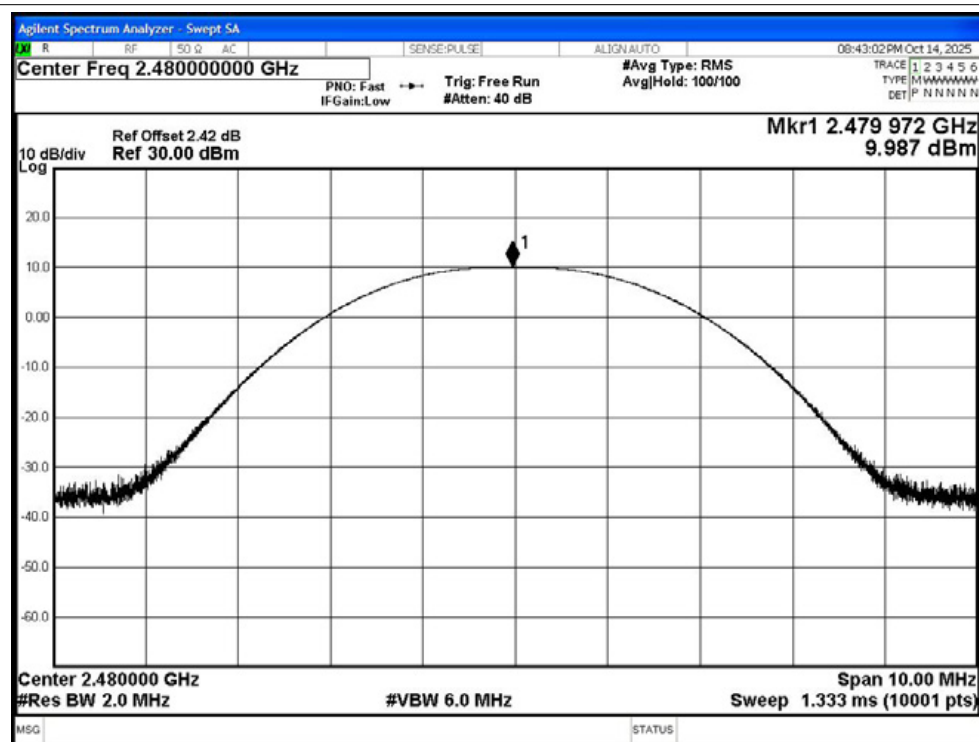


A.2 Maximum Peak Conducted Output Power

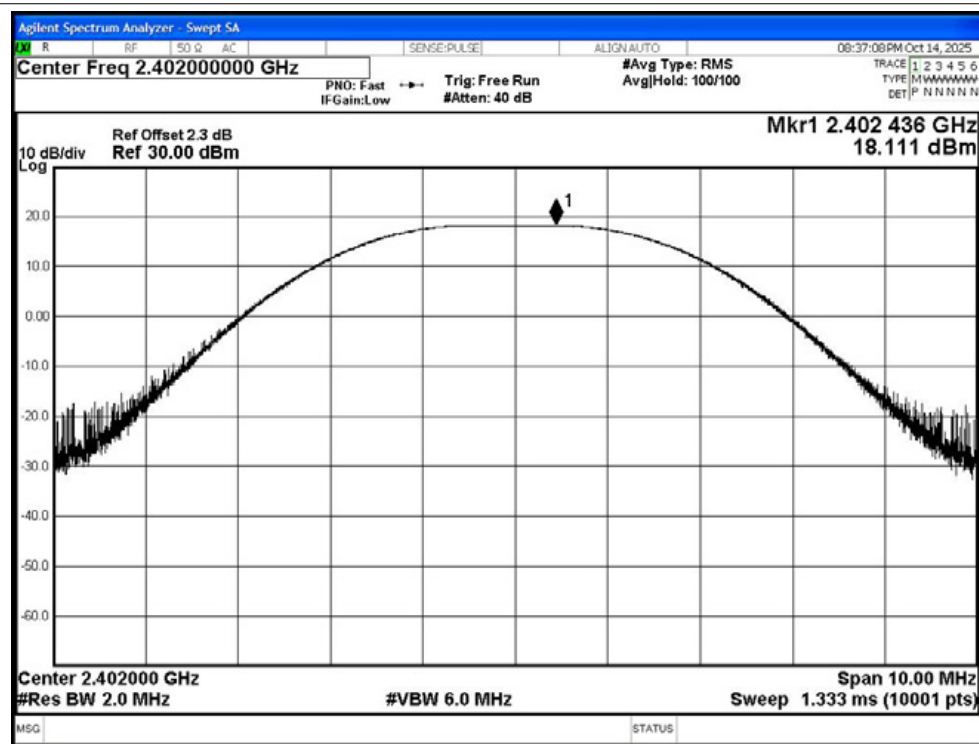
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	18.08	30	Pass
NVNT	BLE 1M	2440	Ant1	18.05	30	Pass
NVNT	BLE 1M	2480	Ant1	9.99	30	Pass
NVNT	BLE 2M	2402	Ant1	18.11	30	Pass
NVNT	BLE 2M	2440	Ant1	18.07	30	Pass
NVNT	BLE 2M	2480	Ant1	10.03	30	Pass



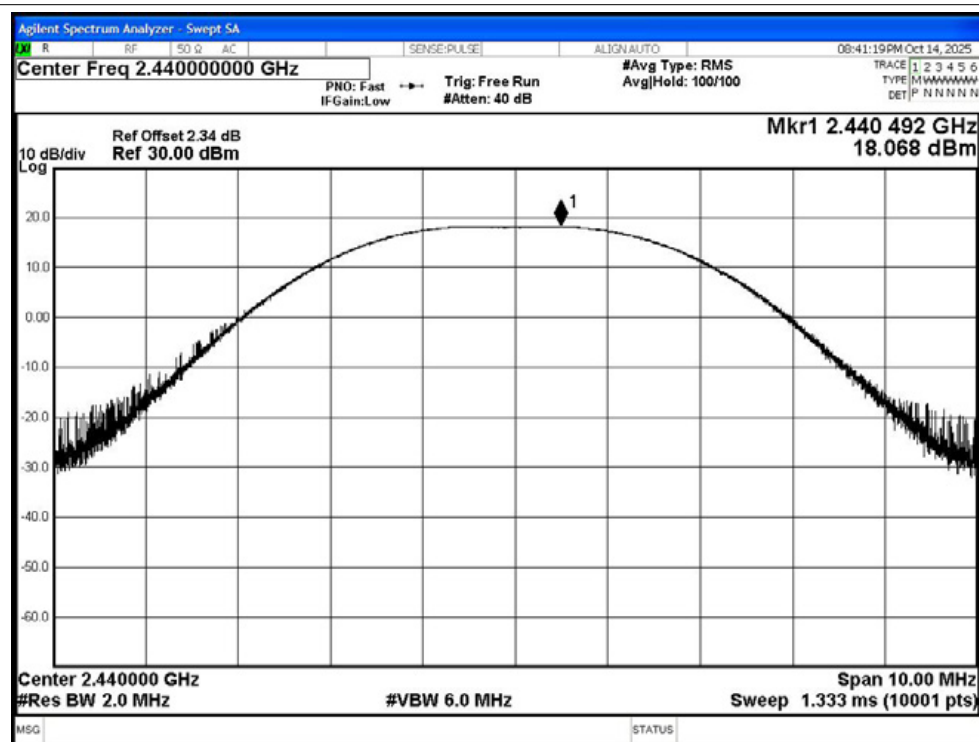
Power NVNT BLE 1M 2480MHz Ant1



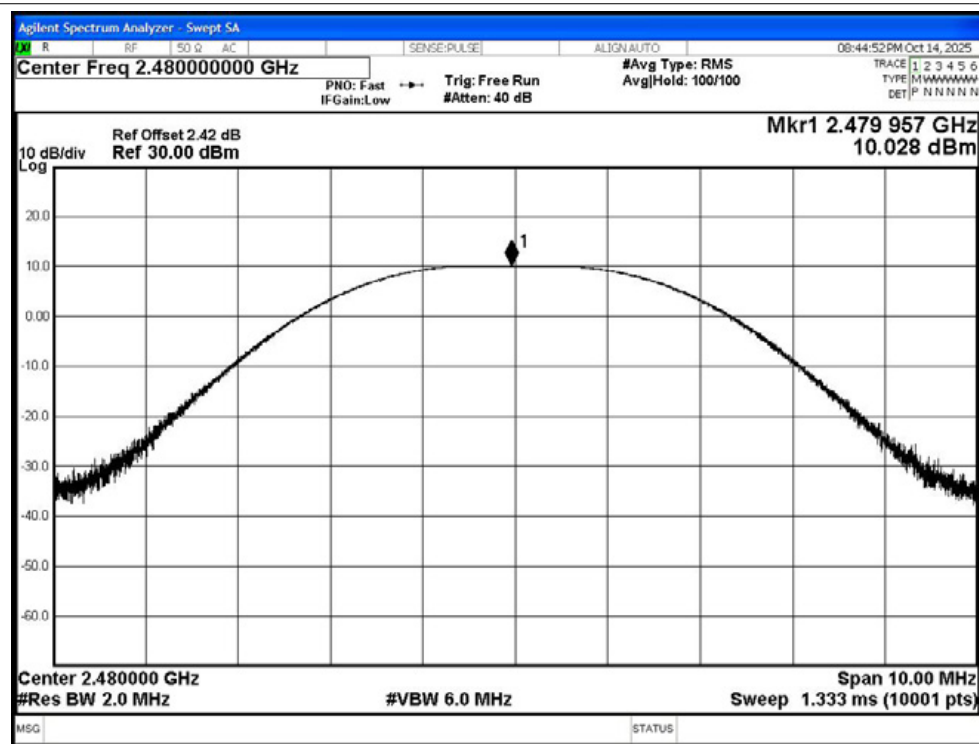
Power NVNT BLE 2M 2402MHz Ant1



Power NVNT BLE 2M 2440MHz Ant1



Power NVNT BLE 2M 2480MHz Ant1

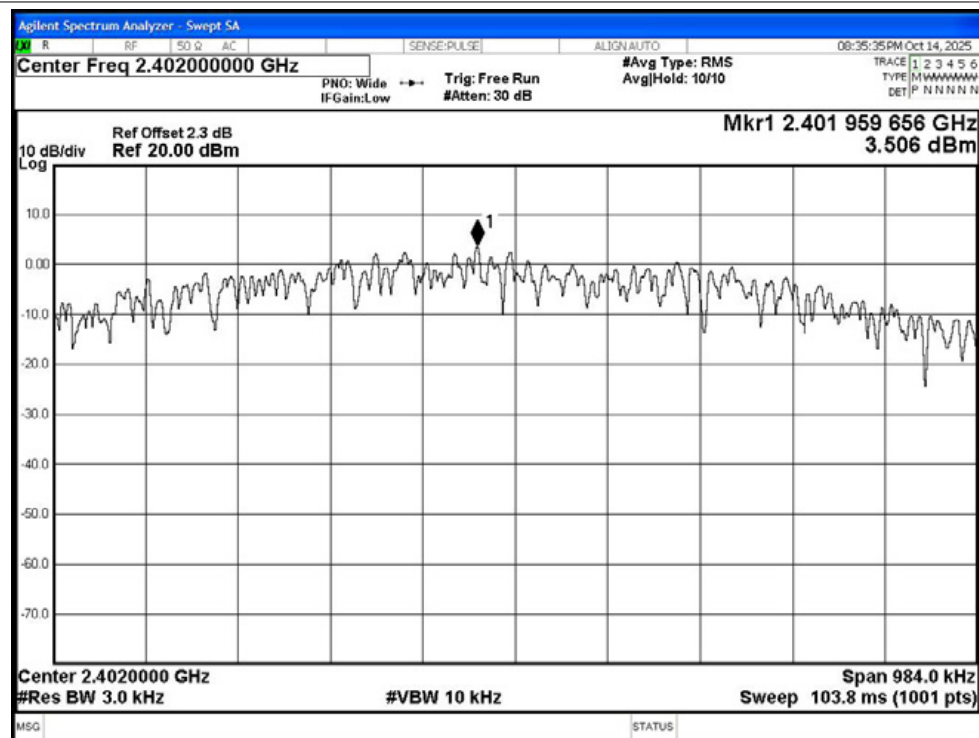


A.3 Maximum Power Spectral Density Level

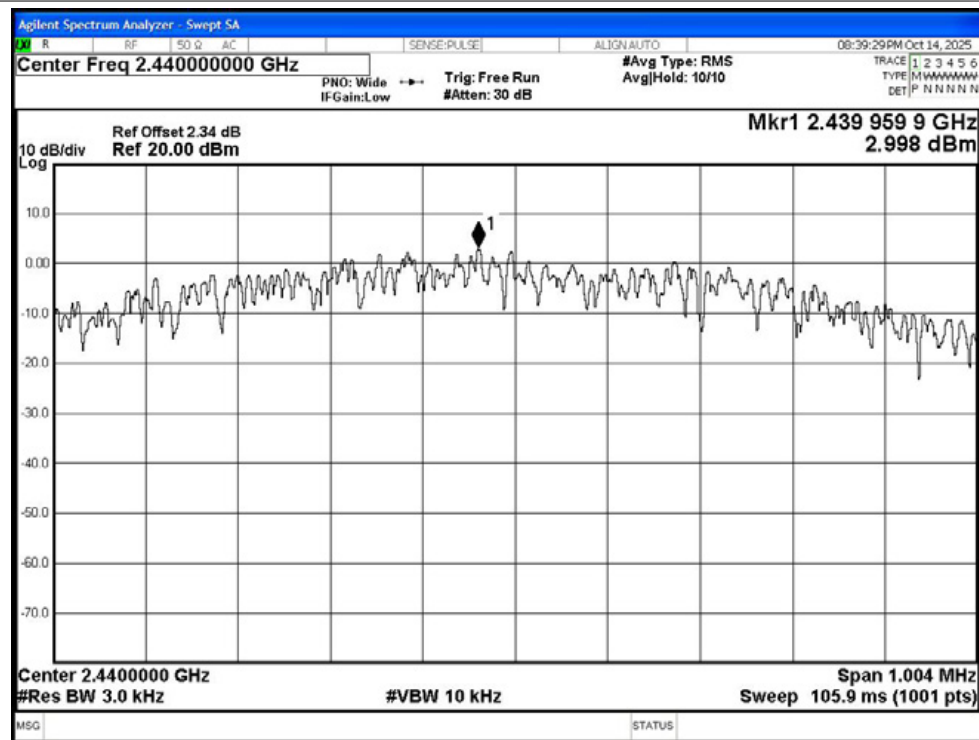
Condition	Mode	Frequency (MHz)	Antenna	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	3.51	8	Pass
NVNT	BLE 1M	2440	Ant1	3	8	Pass
NVNT	BLE 1M	2480	Ant1	-5.02	8	Pass
NVNT	BLE 2M	2402	Ant1	1.63	8	Pass
NVNT	BLE 2M	2440	Ant1	1.66	8	Pass
NVNT	BLE 2M	2480	Ant1	-7.7	8	Pass

Test Graphs

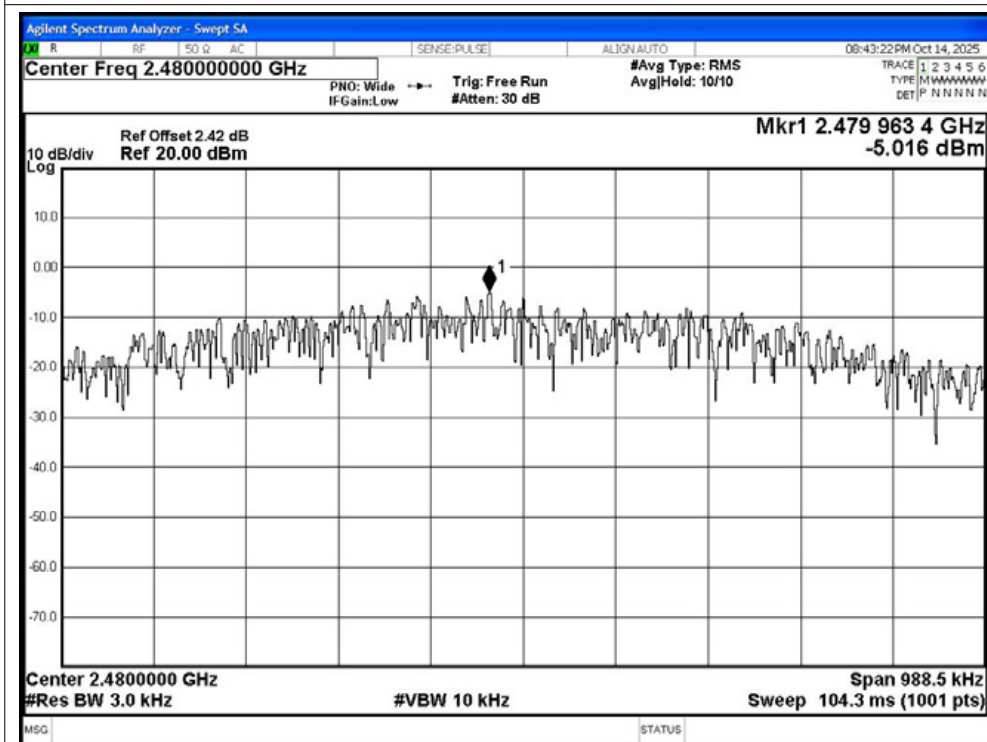
PSD NVNT BLE 1M 2402MHz Ant1



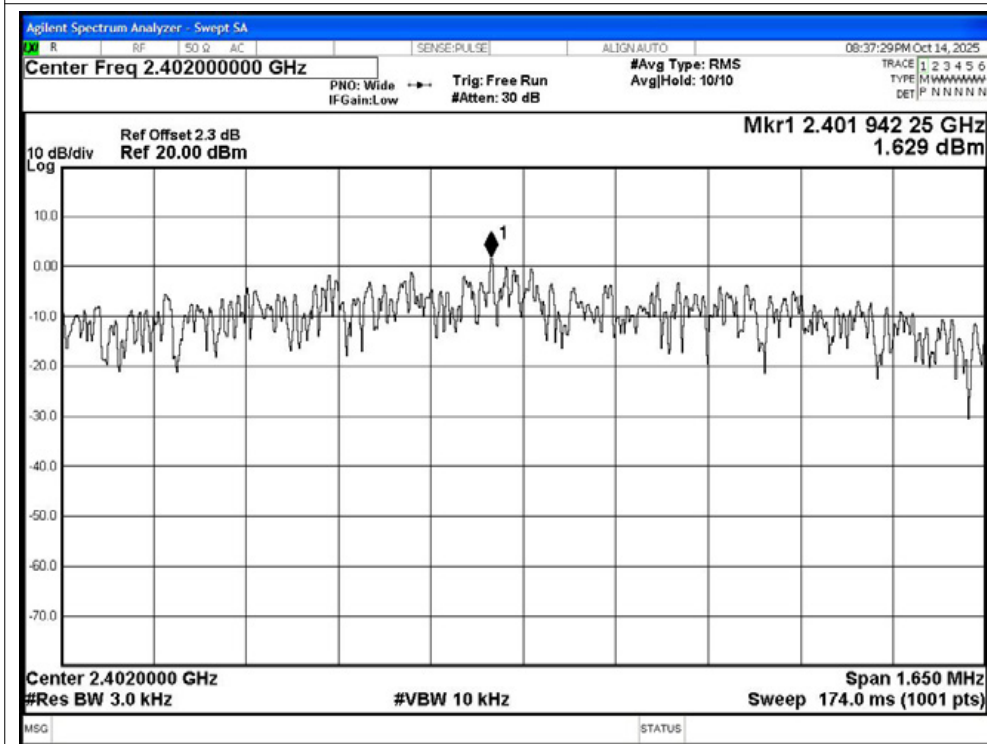
PSD NVNT BLE 1M 2440MHz Ant1



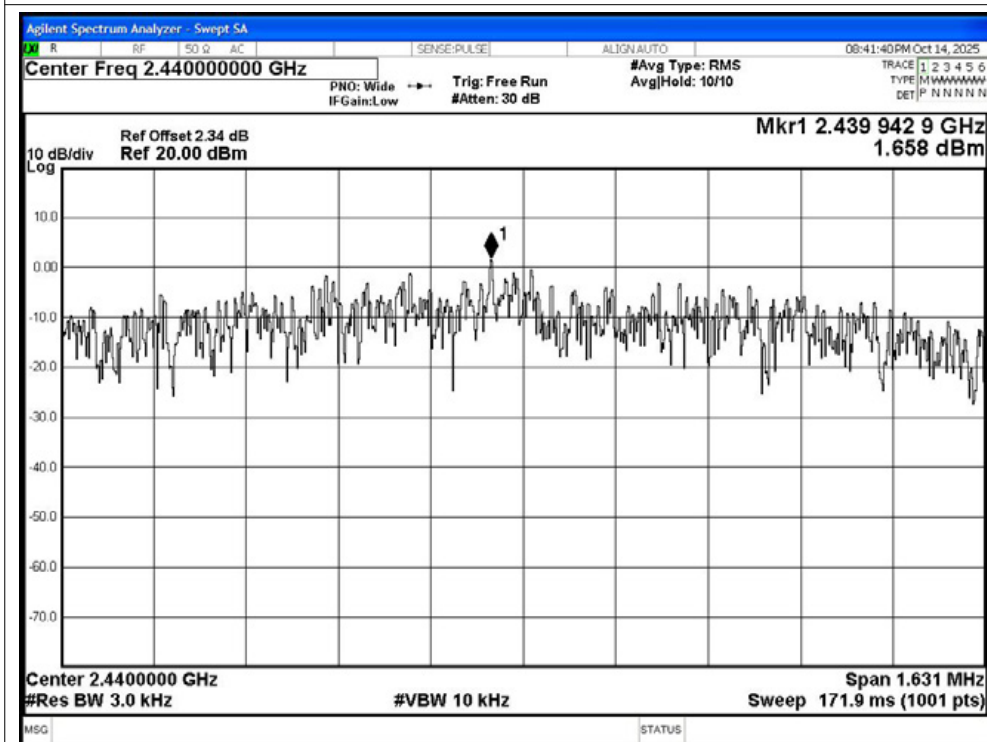
PSD NVNT BLE 1M 2480MHz Ant1



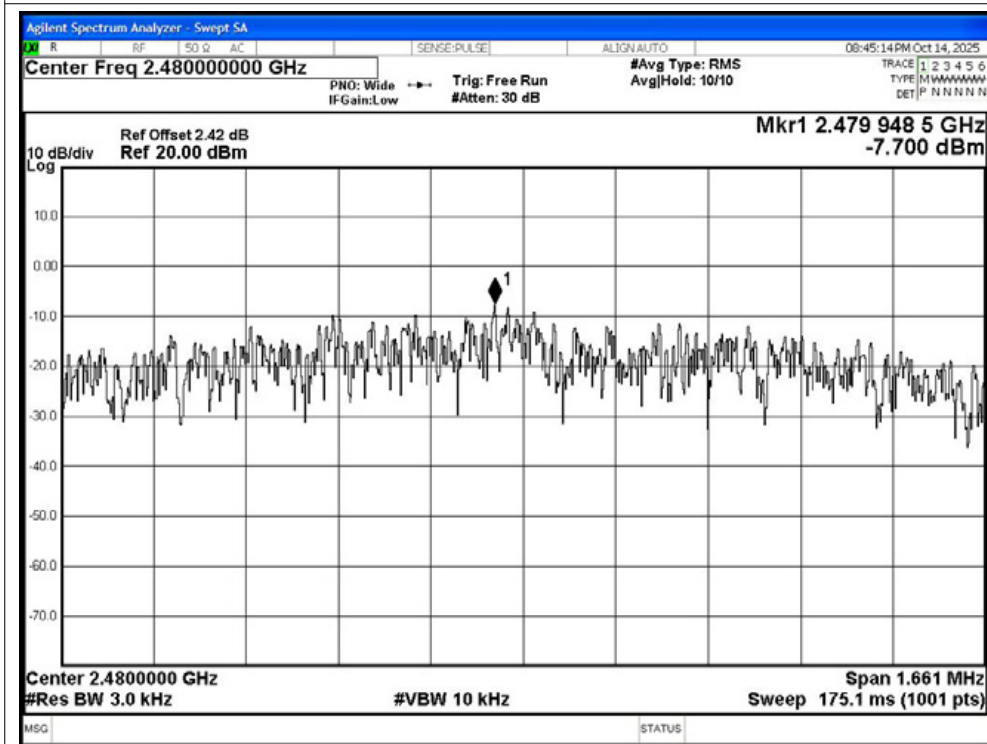
PSD NVNT BLE 2M 2402MHz Ant1



PSD NVNT BLE 2M 2440MHz Ant1

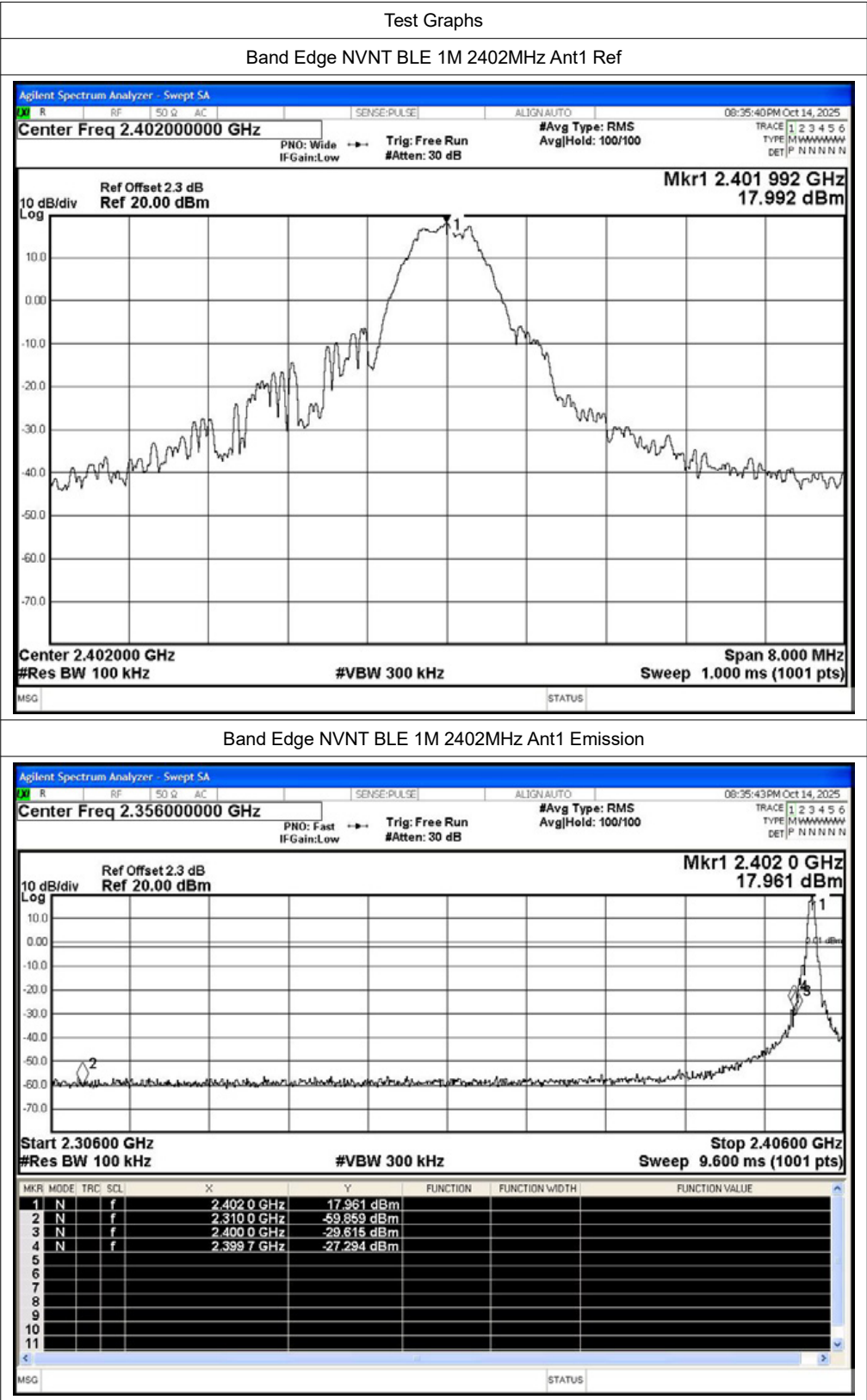


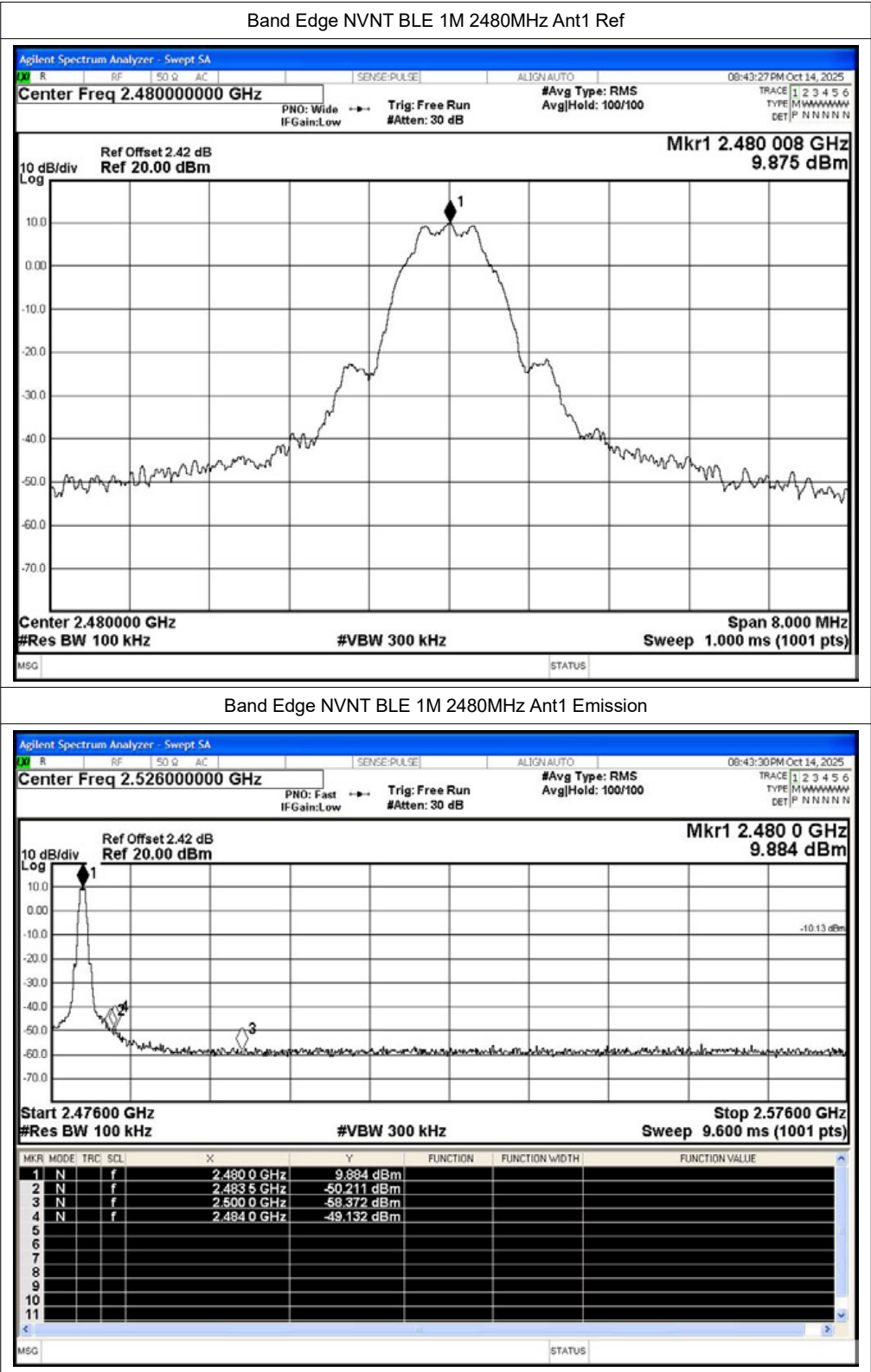
PSD NVNT BLE 2M 2480MHz Ant1

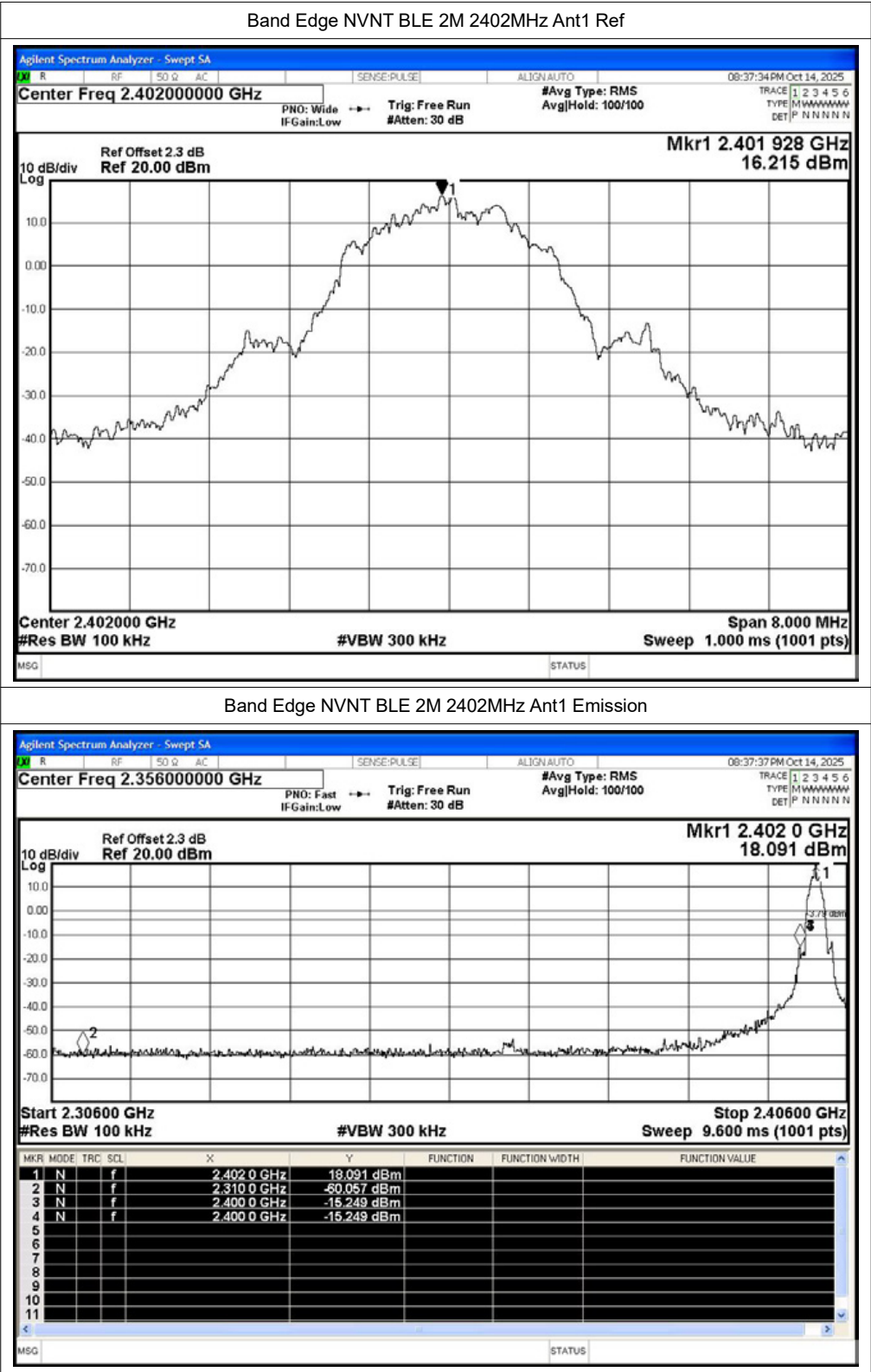


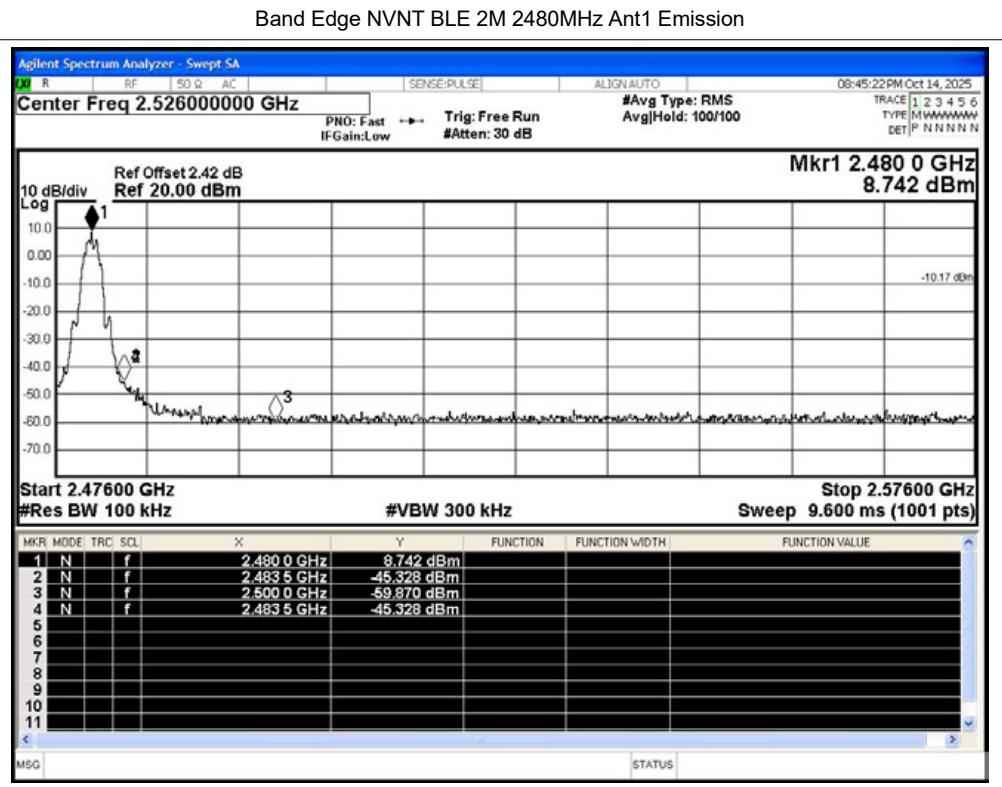
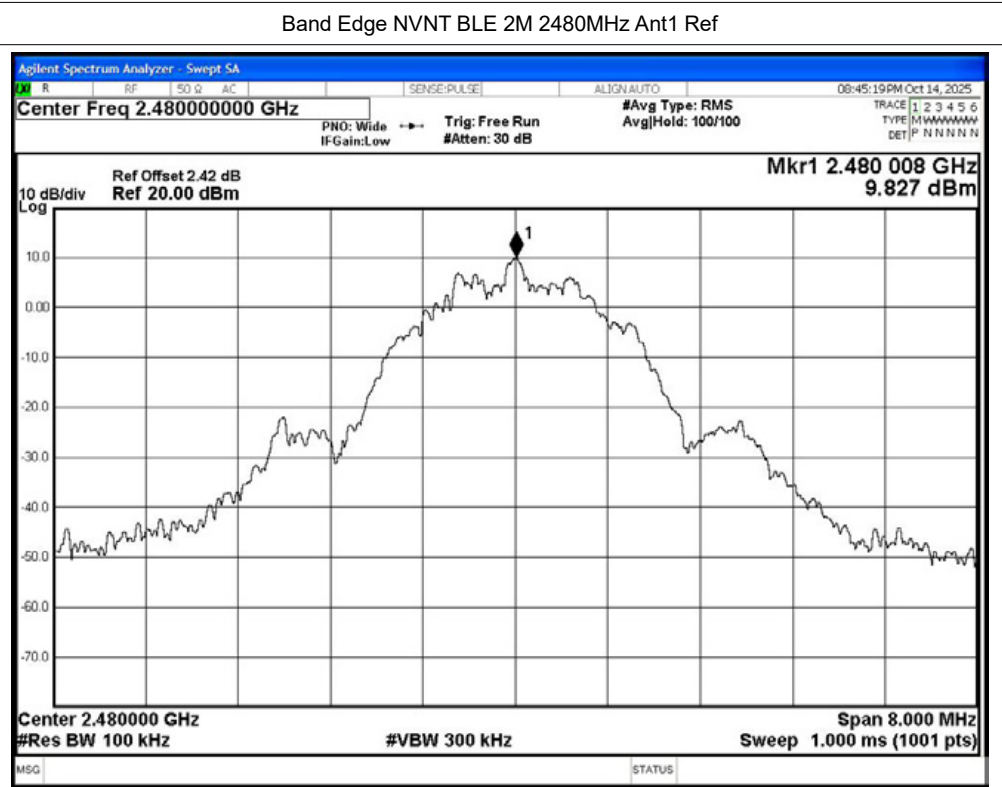
A.4 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-45.29	-20	Pass
NVNT	BLE 1M	2480	Ant1	-59.01	-20	Pass
NVNT	BLE 2M	2402	Ant1	-31.46	-20	Pass
NVNT	BLE 2M	2480	Ant1	-55.16	-20	Pass



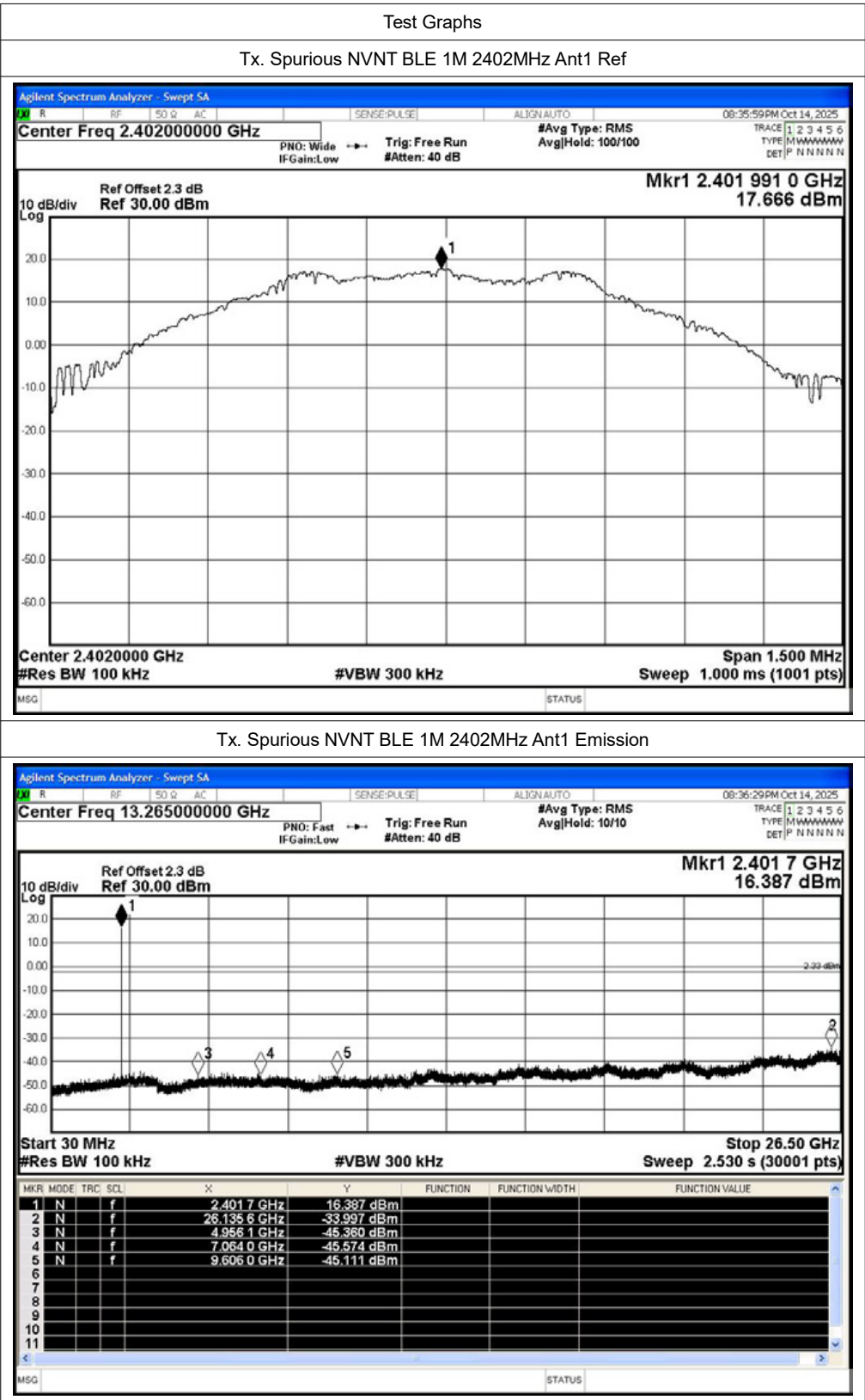


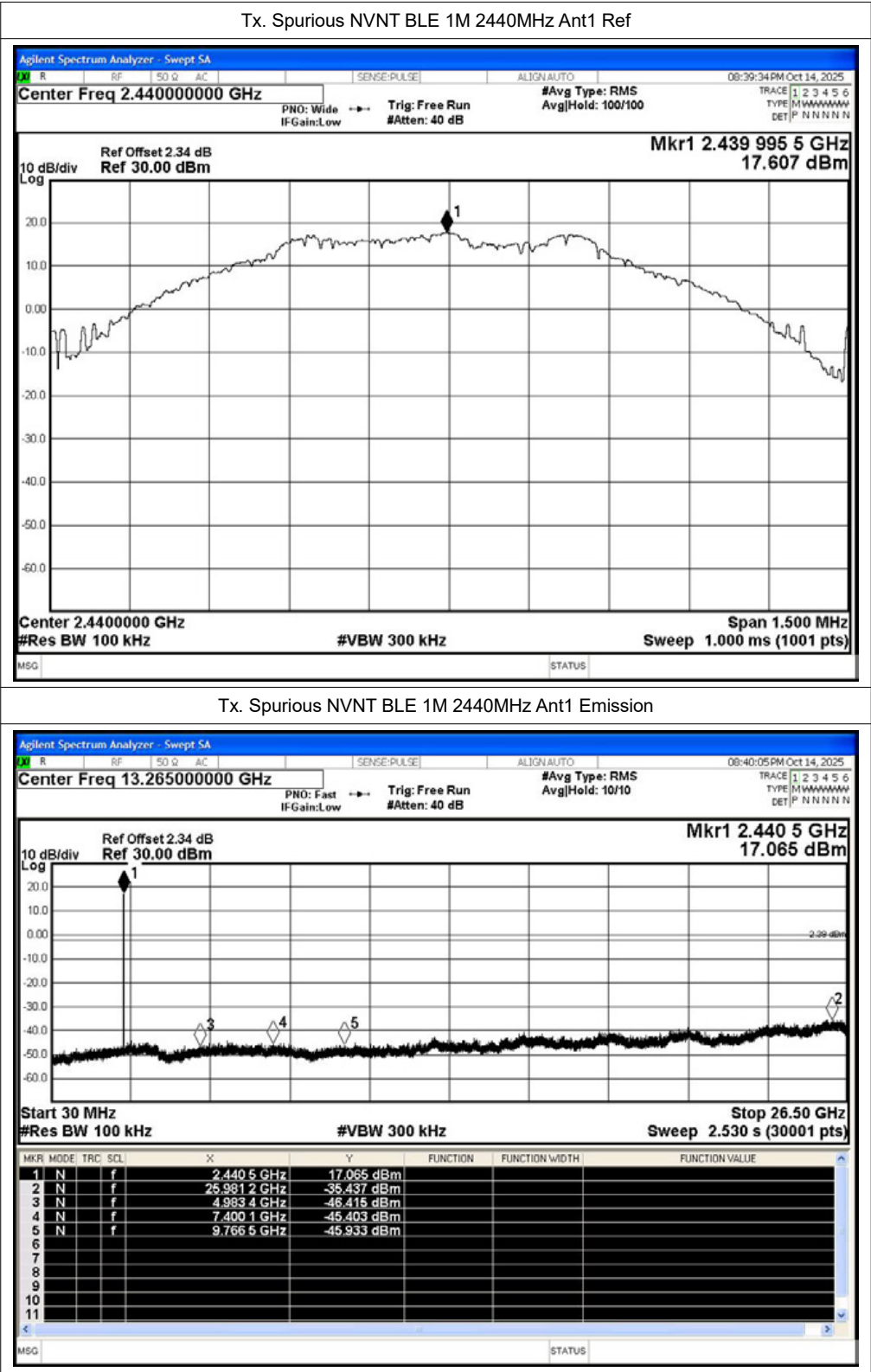


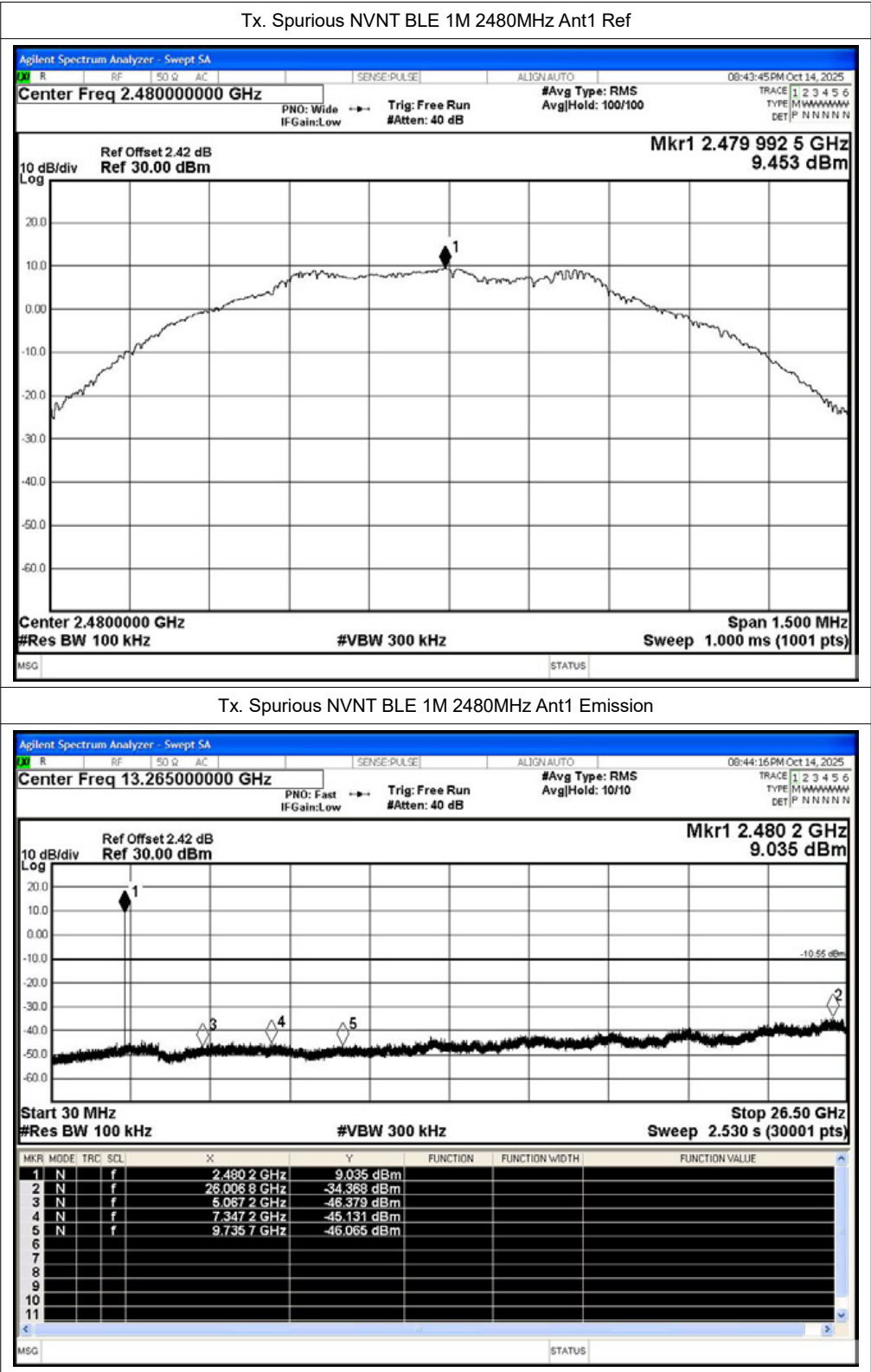


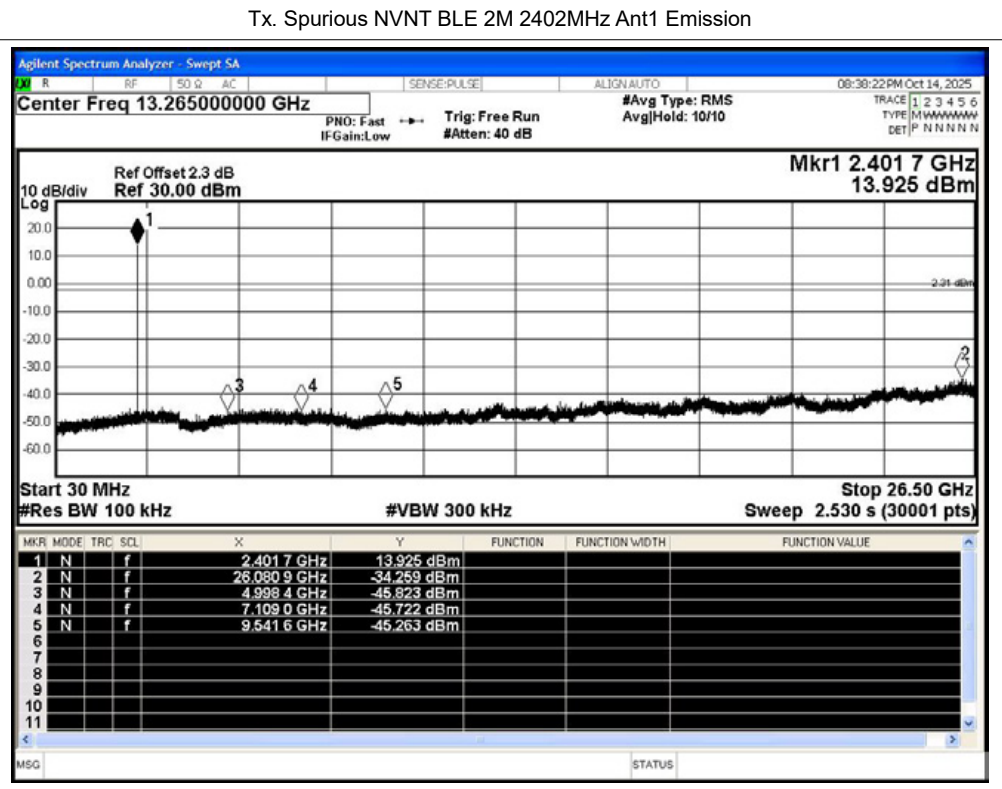
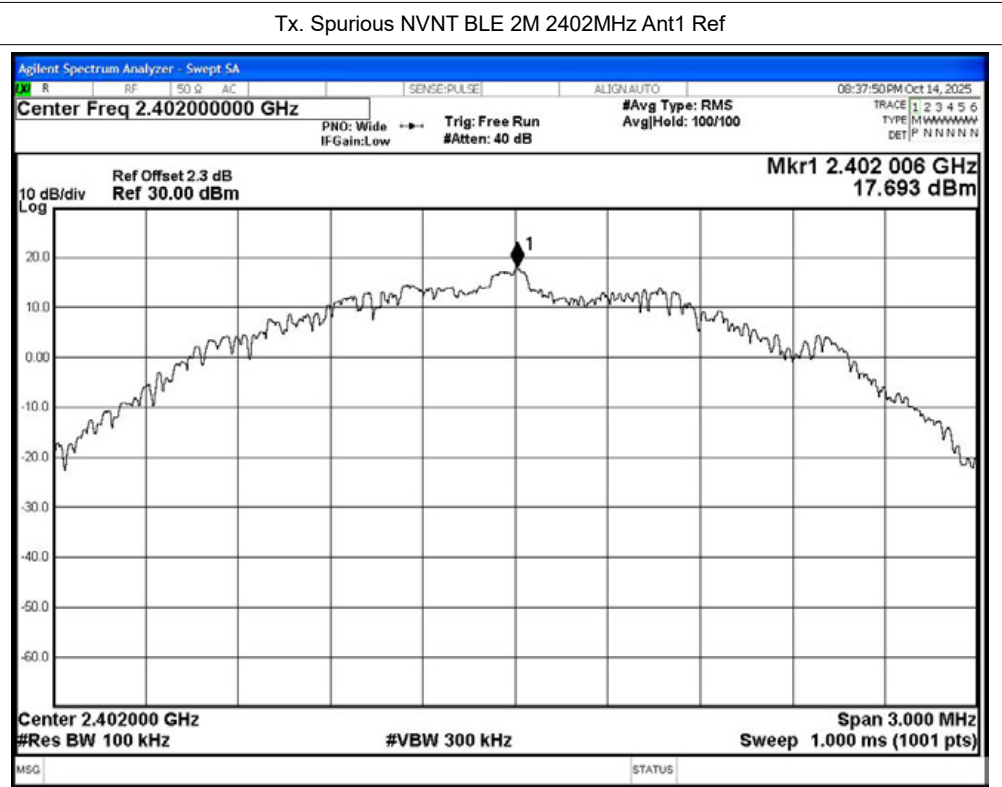
A.5 Conducted RF Spurious Emission

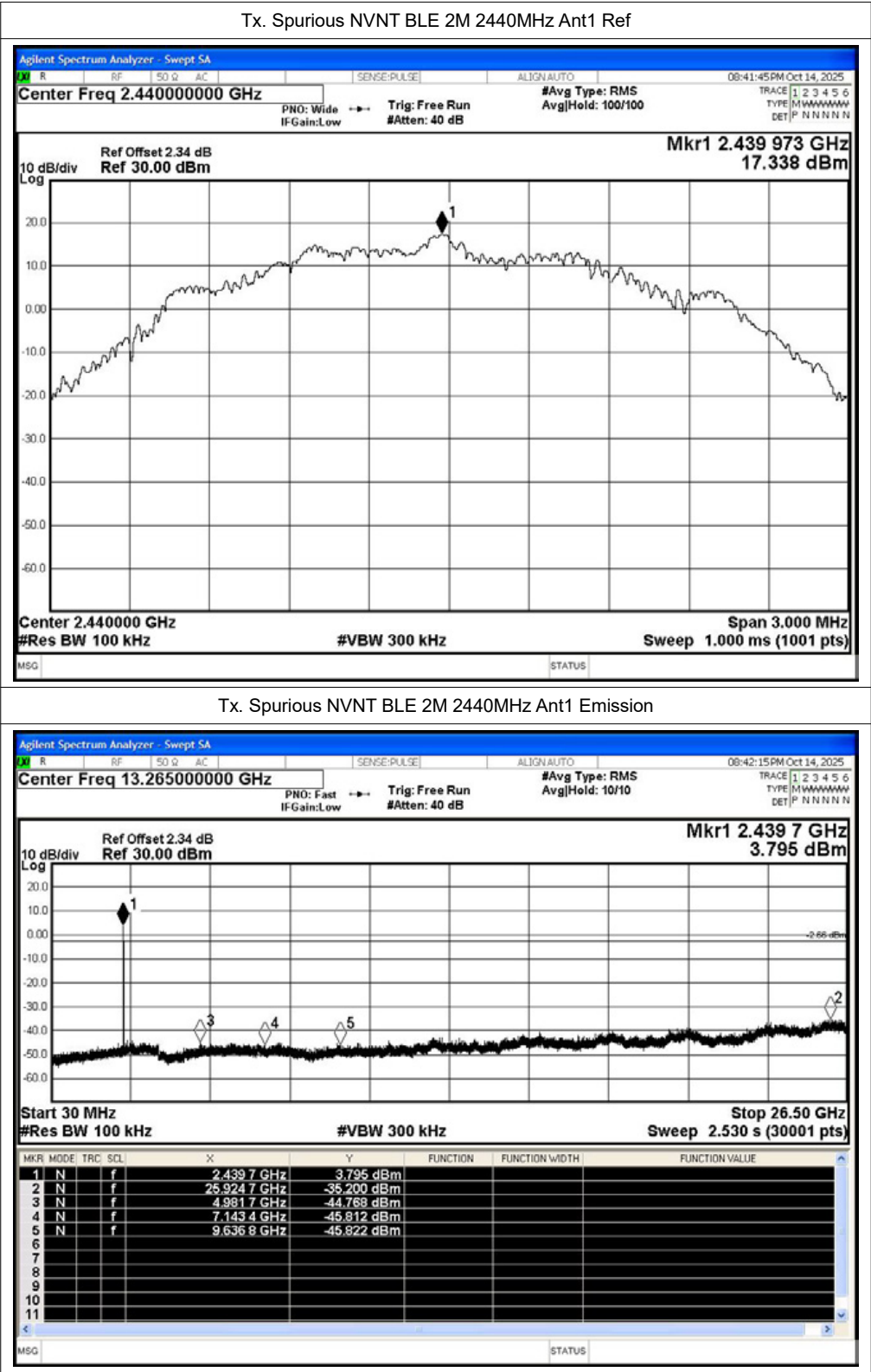
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-51.66	-20	Pass
NVNT	BLE 1M	2440	Ant1	-53.04	-20	Pass
NVNT	BLE 1M	2480	Ant1	-43.82	-20	Pass
NVNT	BLE 2M	2402	Ant1	-51.95	-20	Pass
NVNT	BLE 2M	2440	Ant1	-52.54	-20	Pass
NVNT	BLE 2M	2480	Ant1	-43.74	-20	Pass

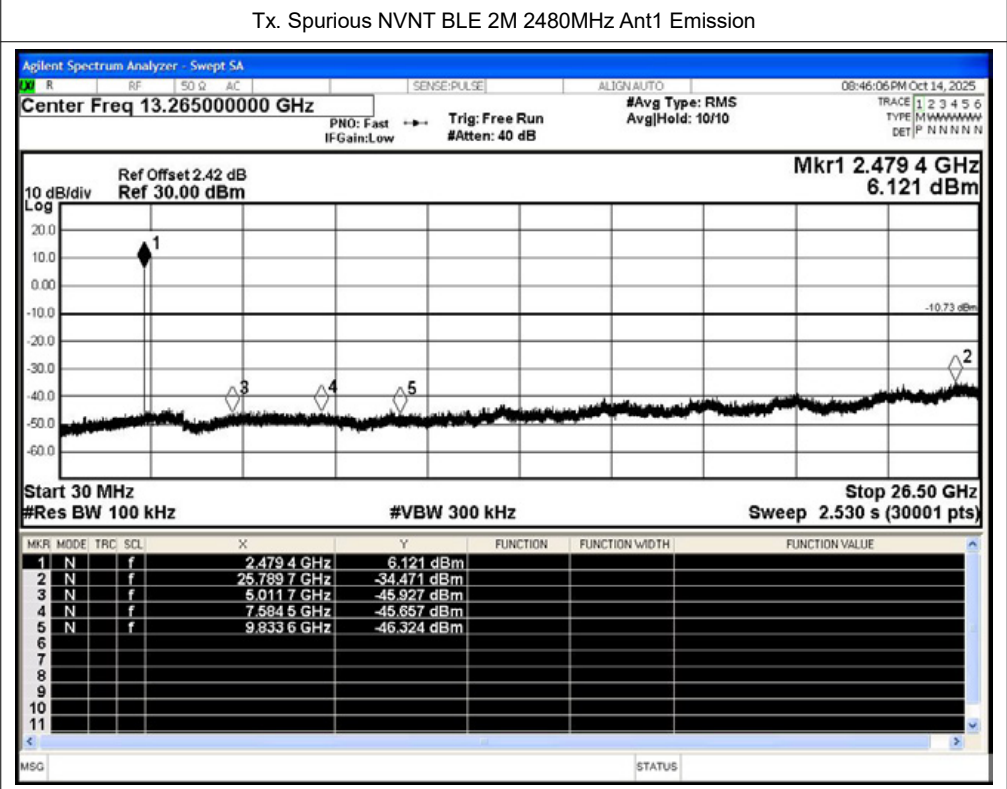
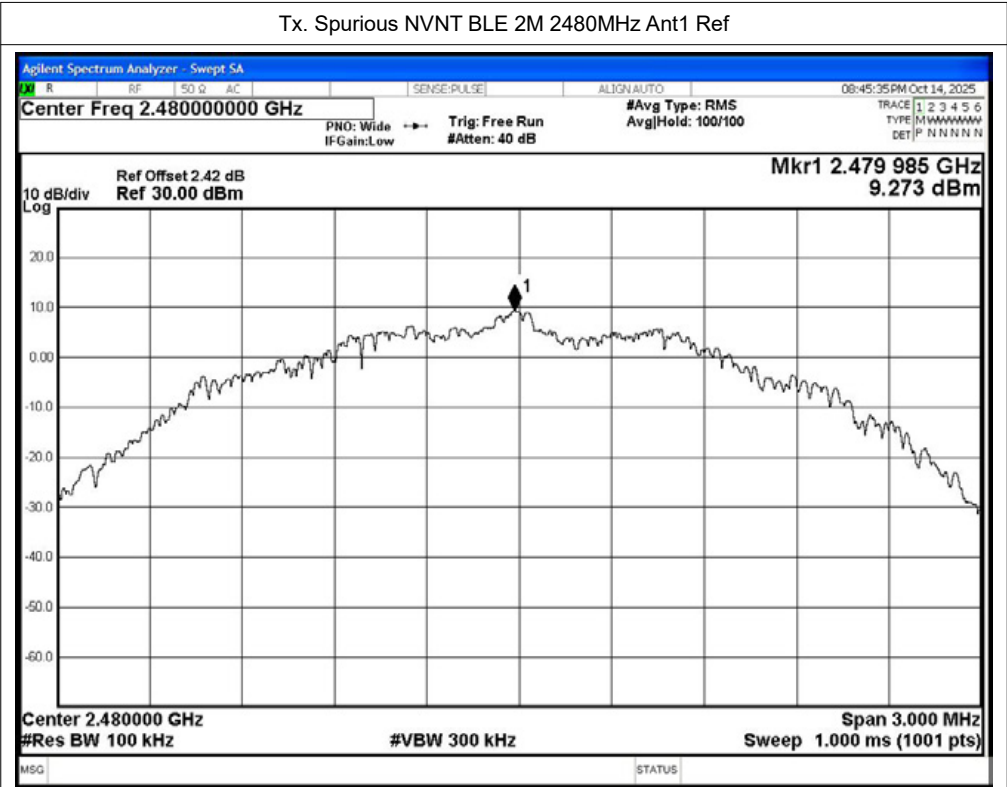






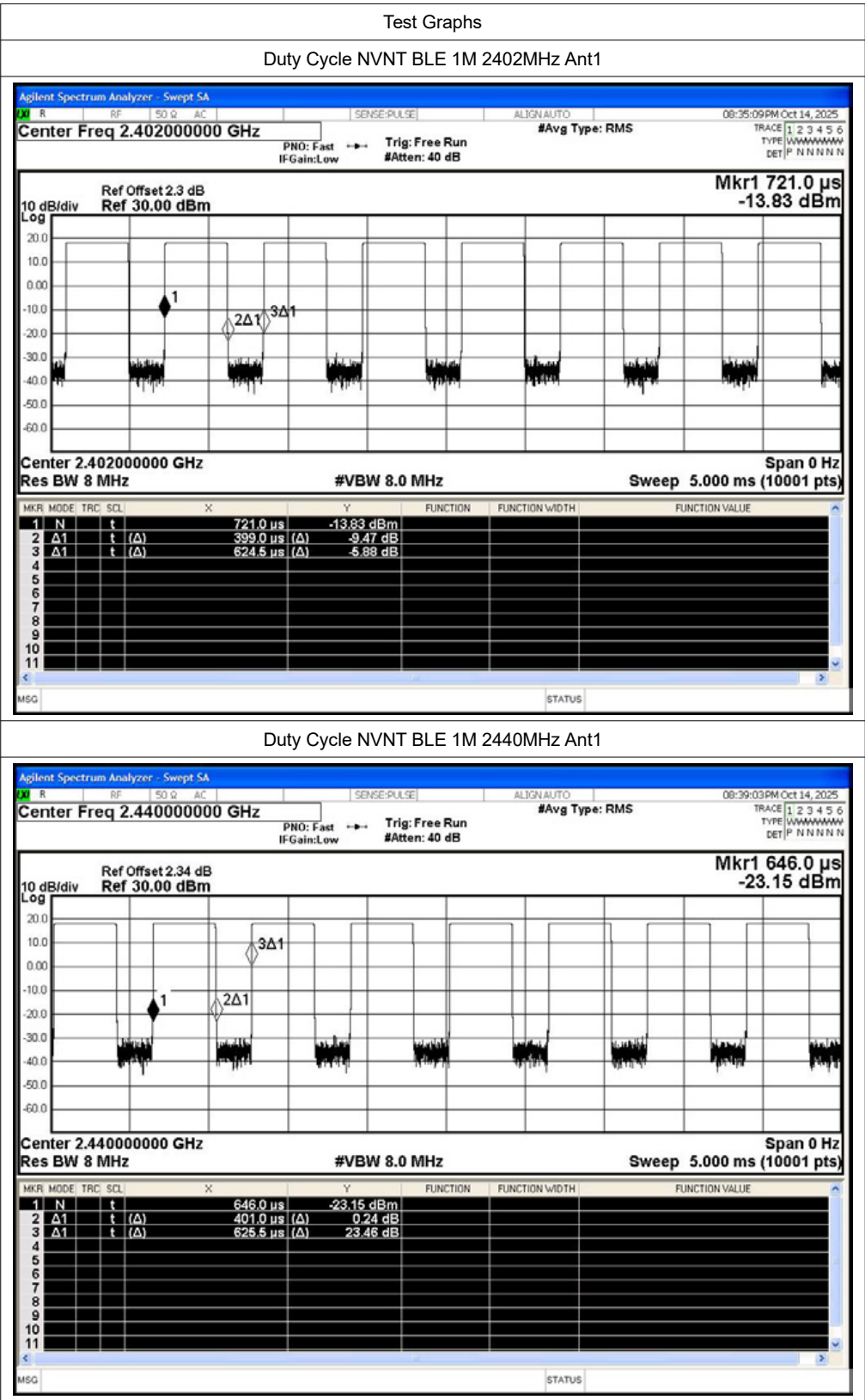




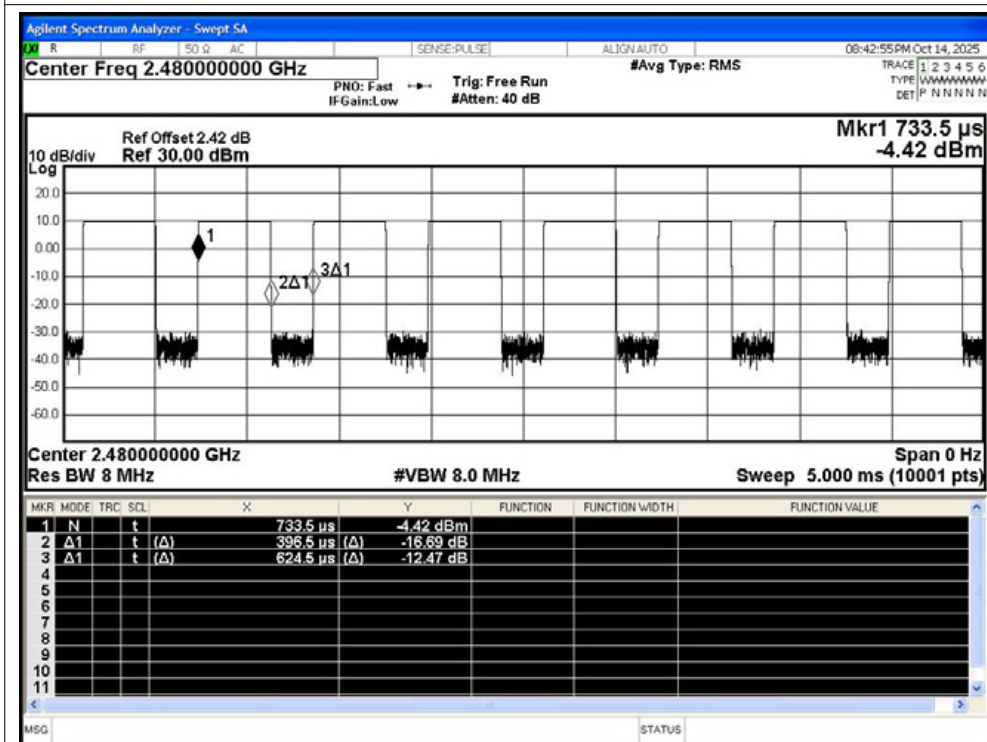


A.6 Duty Cycle

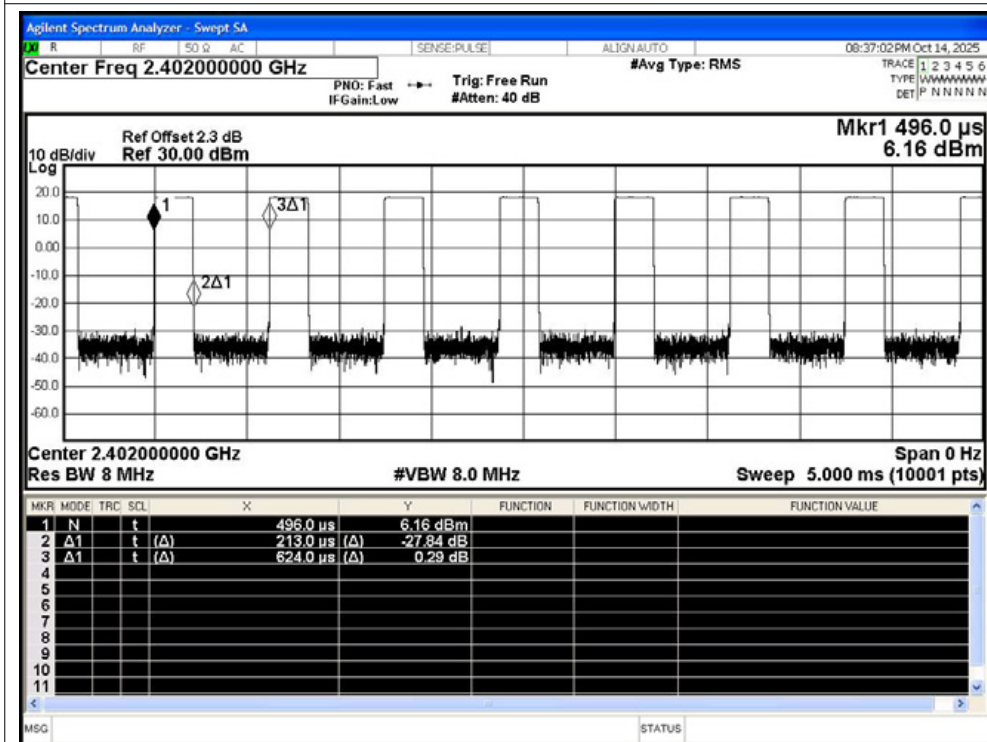
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant1	63.89	1.95	2.51
NVNT	BLE 1M	2440	Ant1	64.11	1.93	2.49
NVNT	BLE 1M	2480	Ant1	63.49	1.97	2.52
NVNT	BLE 2M	2402	Ant1	34.13	4.67	4.69
NVNT	BLE 2M	2440	Ant1	34.24	4.65	4.67
NVNT	BLE 2M	2480	Ant1	33.97	4.69	4.71

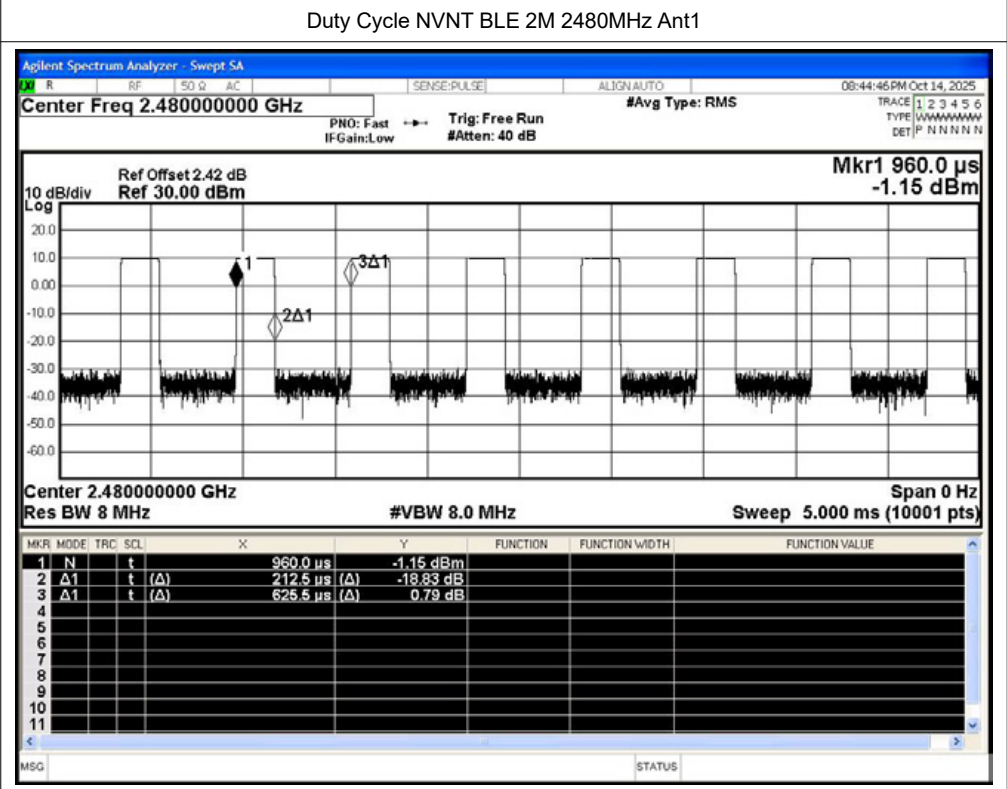
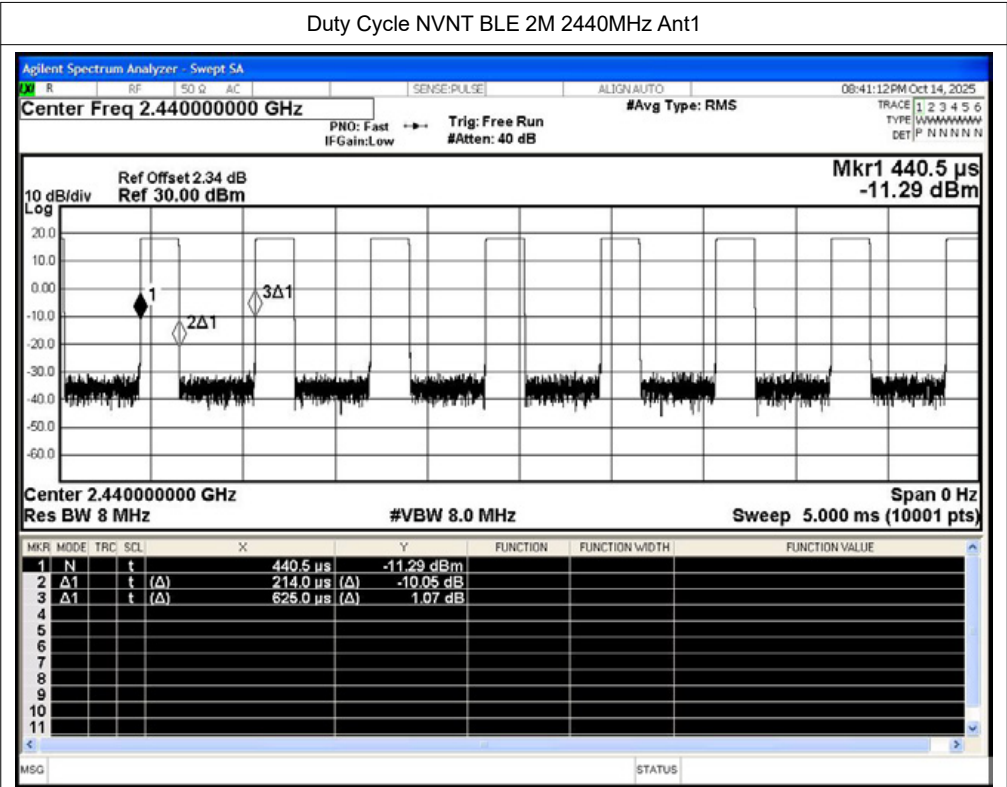


Duty Cycle NVNT BLE 1M 2480MHz Ant1



Duty Cycle NVNT BLE 2M 2402MHz Ant1





A.7 Restrict Band

Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	BLE 1M	2402	Ant1	2310	-49.62	5.23	-	50.87	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2310	-57.74	5.23	1.95	44.70	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2389.104	-40.58	5.23	-	59.91	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2389.488	-54.28	5.23	1.95	48.16	Average	54	Pass
NVNT	BLE 1M	2402	Ant1	2390	-46.08	5.23	-	54.41	Peak	74	Pass
NVNT	BLE 1M	2402	Ant1	2390	-54.6	5.23	1.95	47.84	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-39.47	5.23	-	61.02	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.5	-49.06	5.23	1.97	53.40	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2483.632	-38.7	5.23	-	61.79	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2483.512	-49.06	5.23	1.97	53.40	Average	54	Pass
NVNT	BLE 1M	2480	Ant1	2500	-49.14	5.23	-	51.35	Peak	74	Pass
NVNT	BLE 1M	2480	Ant1	2500	-57.62	5.23	1.97	44.84	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2310	-50.9	5.23	-	49.59	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2310	-57.61	5.23	4.67	47.55	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2387.184	-40.12	5.23	-	60.37	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2389.008	-53.94	5.23	4.67	51.22	Average	54	Pass
NVNT	BLE 2M	2402	Ant1	2390	-43.74	5.23	-	56.75	Peak	74	Pass
NVNT	BLE 2M	2402	Ant1	2390	-54.1	5.23	4.67	51.06	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-36.4	5.23	-	64.09	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2483.5	-52.3	5.23	4.69	52.88	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2483.536	-35.25	5.23	-	65.24	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2483.536	-52.28	5.23	4.69	52.90	Average	54	Pass
NVNT	BLE 2M	2480	Ant1	2500	-49.82	5.23	-	50.67	Peak	74	Pass
NVNT	BLE 2M	2480	Ant1	2500	-58.33	5.23	4.69	46.85	Average	54	Pass

Note: For restrict band, only max antenna gain recorded in this report

