

FCC Appendix RF Test Data for BLE

FCC ID : 2BR3K-DBCAM-M52-1

Company : HK EKO ELECTRONICS LIMITED

EUT : Doorbell Camera

Model Number : M52

Report No. : CTA26042002901

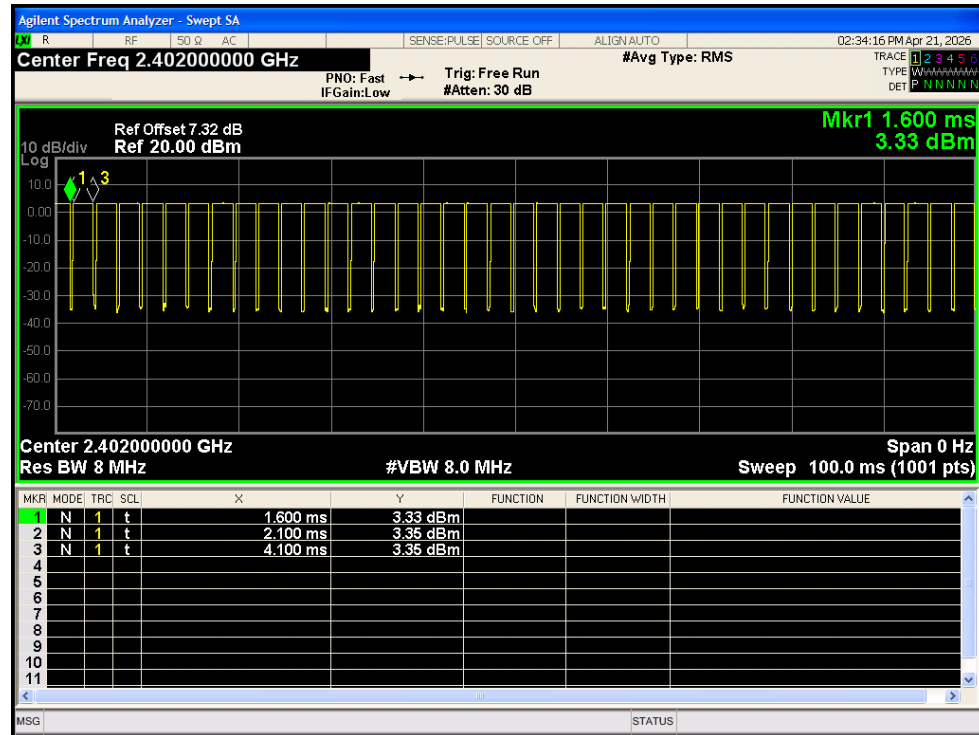
Reviewed By : Eric Wang

Duty Cycle

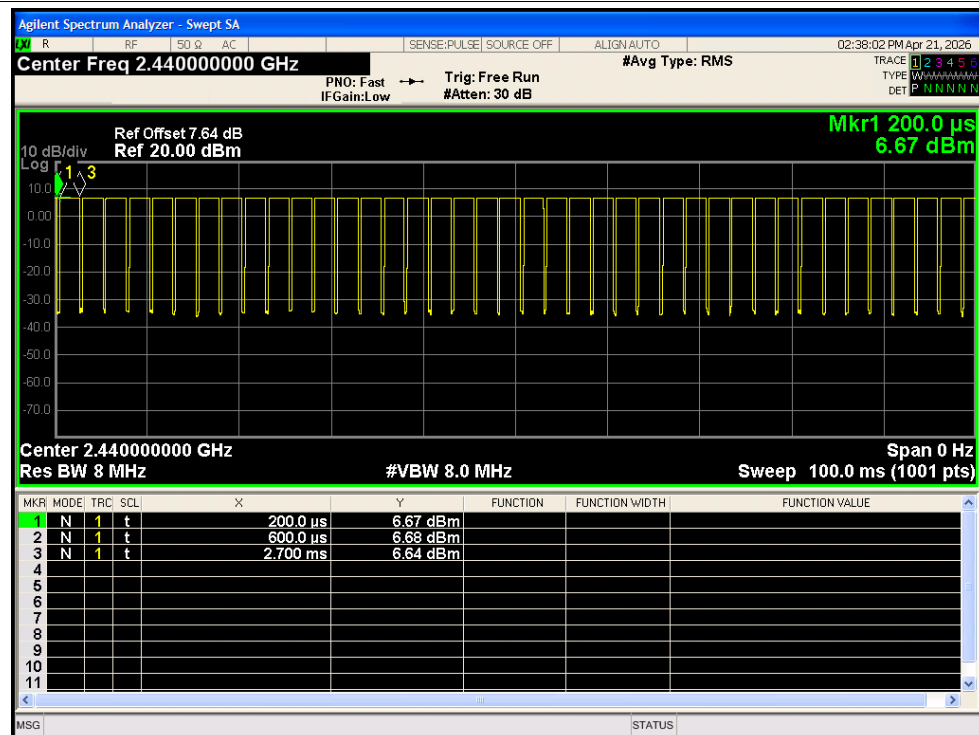
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)
NVNT	BLE 1M	2402	87.31	0.59
NVNT	BLE 1M	2440	87.11	0.60
NVNT	BLE 1M	2480	87.11	0.60
NVNT	BLE 2M	2402	60.84	2.16
NVNT	BLE 2M	2440	61.04	2.14
NVNT	BLE 2M	2480	61.04	2.14

Test Graphs

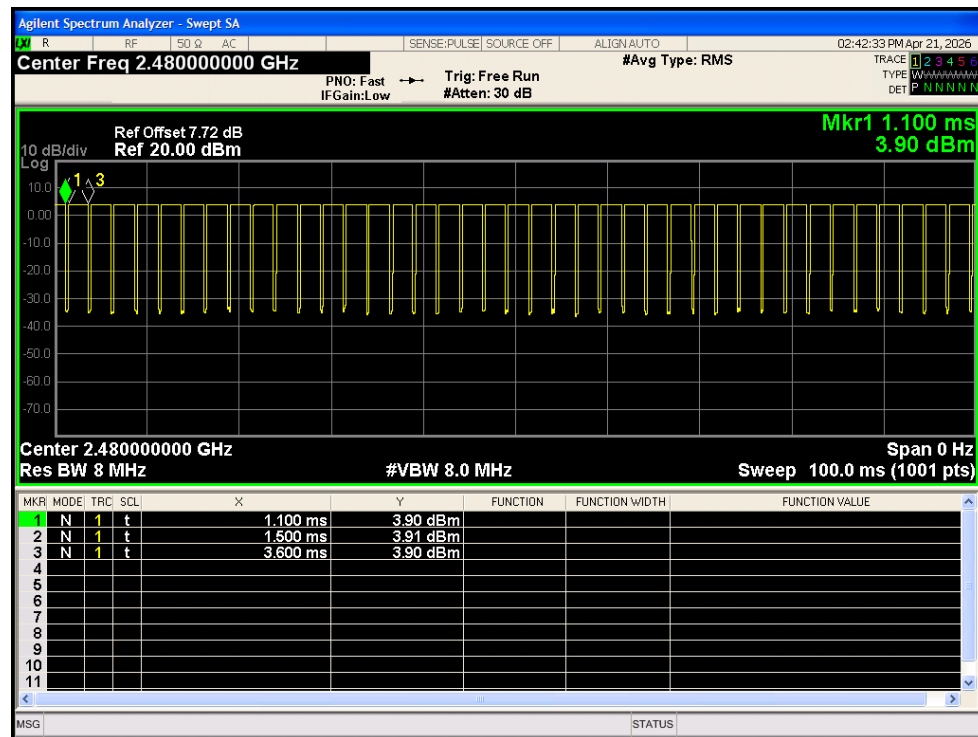
Duty Cycle NVNT BLE 1M 2402MHz



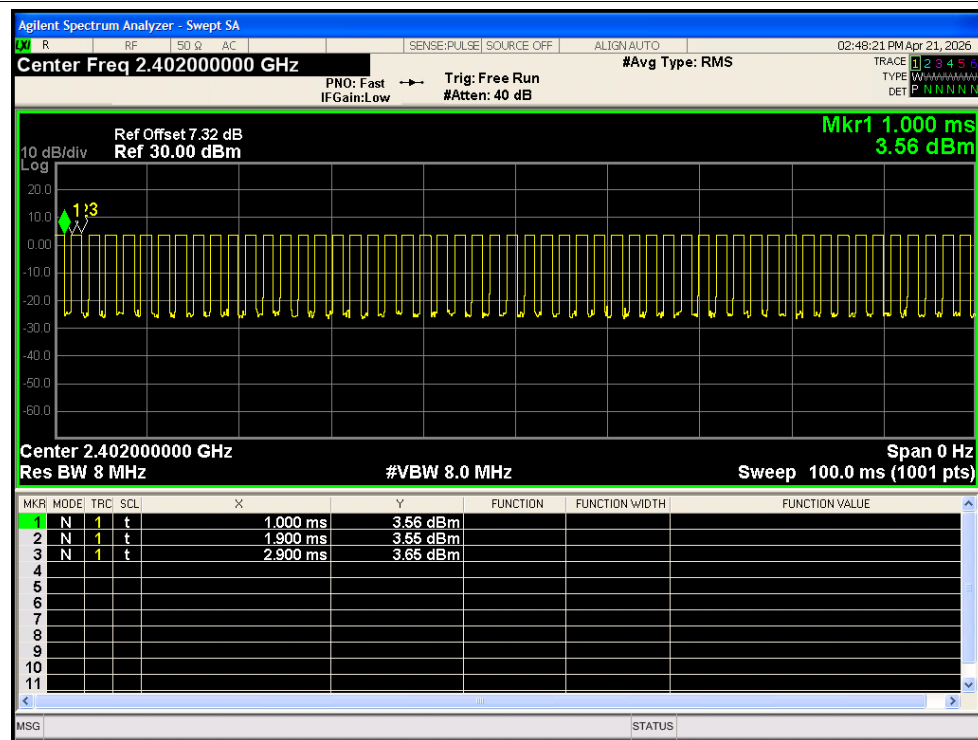
Duty Cycle NVNT BLE 1M 2440MHz



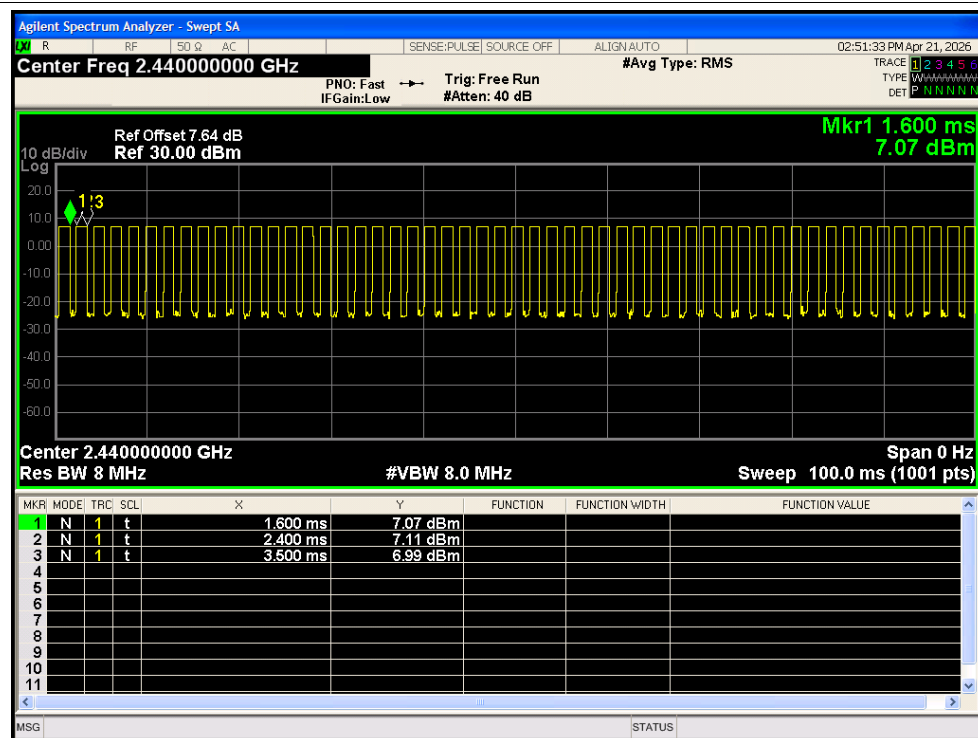
Duty Cycle NVNT BLE 1M 2480MHz



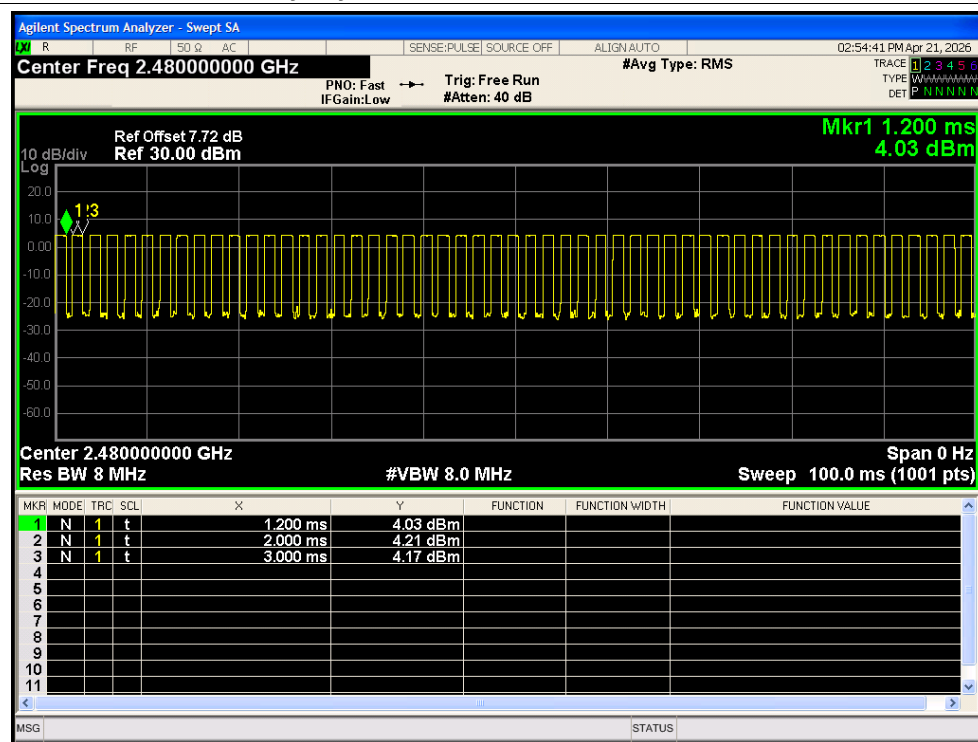
Duty Cycle NVNT BLE 2M 2402MHz



Duty Cycle NVNT BLE 2M 2440MHz



Duty Cycle NVNT BLE 2M 2480MHz

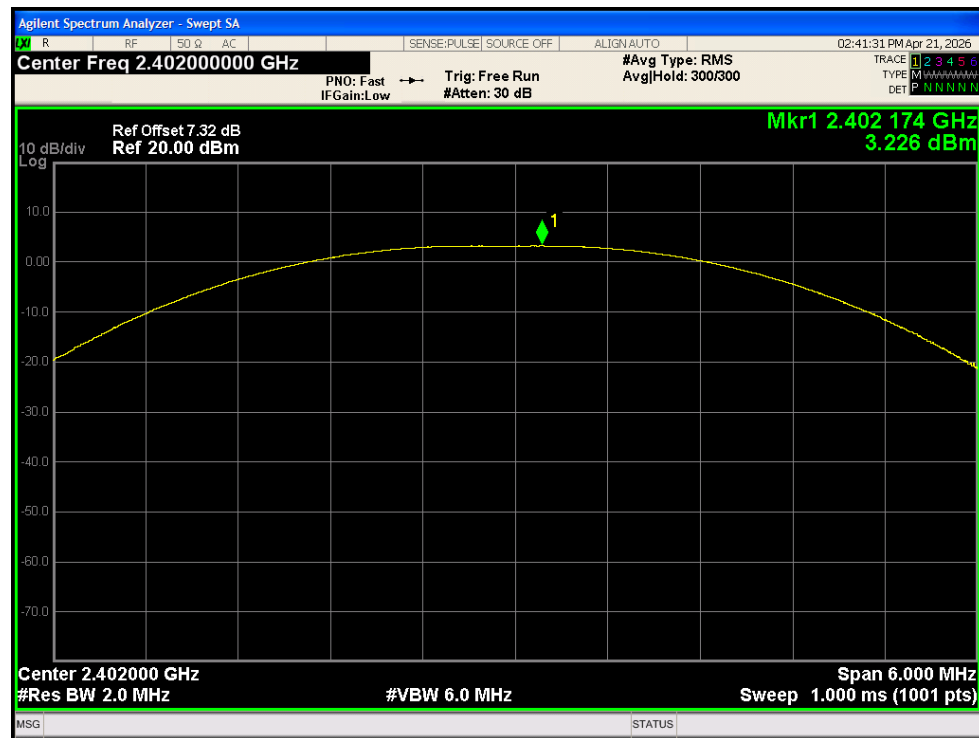


Maximum Conducted Output Power

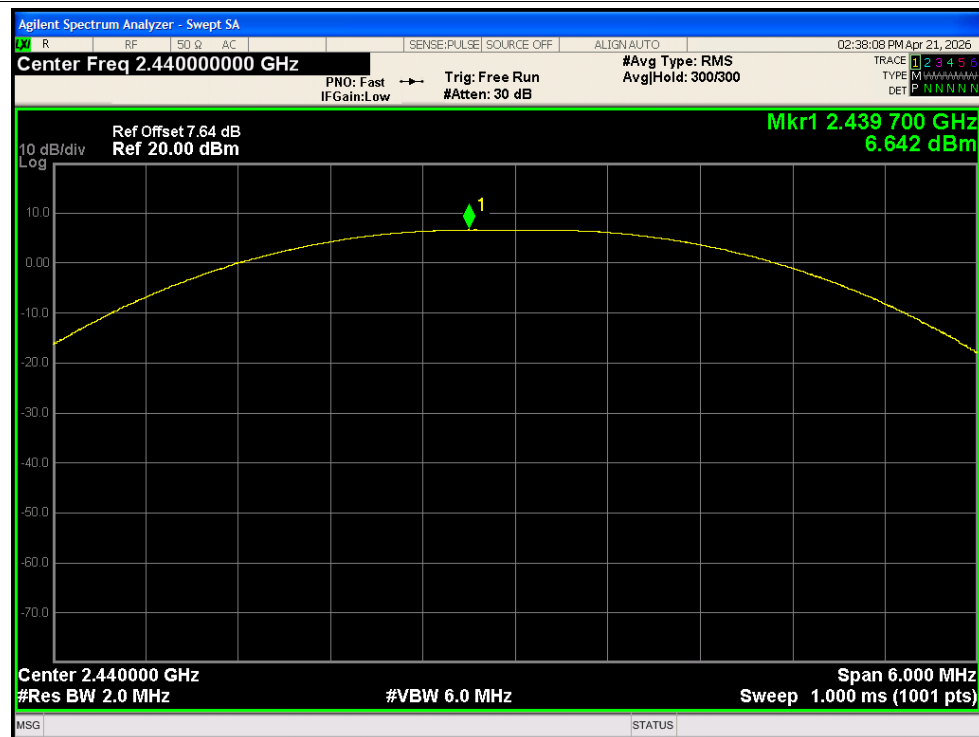
Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	3.23	30	Pass
NVNT	BLE 1M	2440	6.64	30	Pass
NVNT	BLE 1M	2480	3.91	30	Pass
NVNT	BLE 2M	2402	3.30	30	Pass
NVNT	BLE 2M	2440	6.88	30	Pass
NVNT	BLE 2M	2480	4.03	30	Pass

Test Graphs

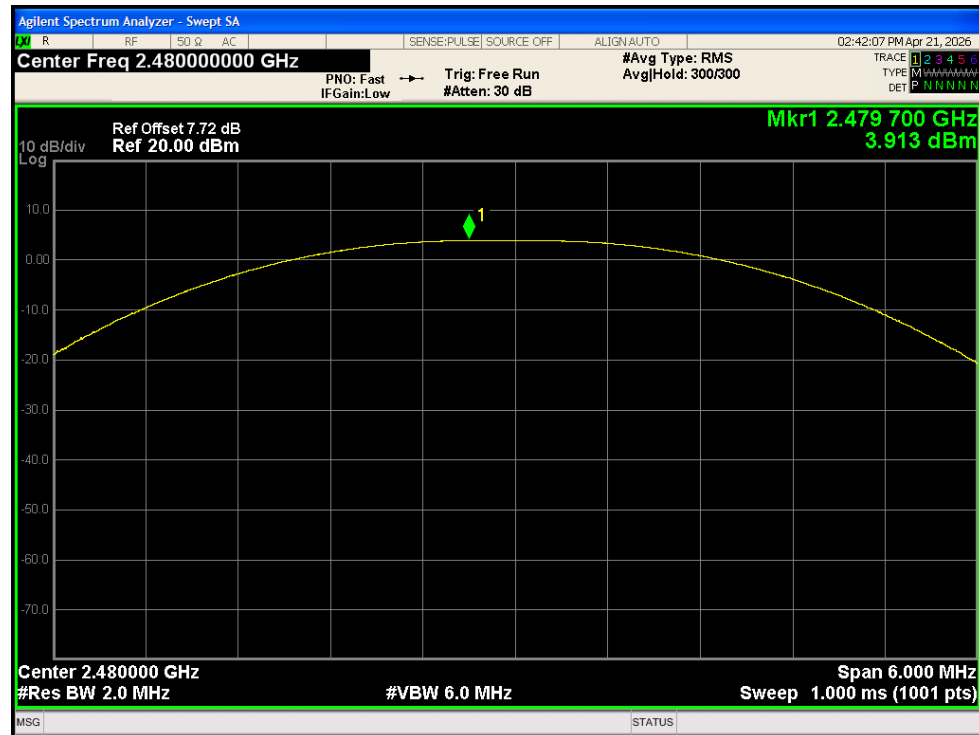
Power NVNT BLE 1M 2402MHz



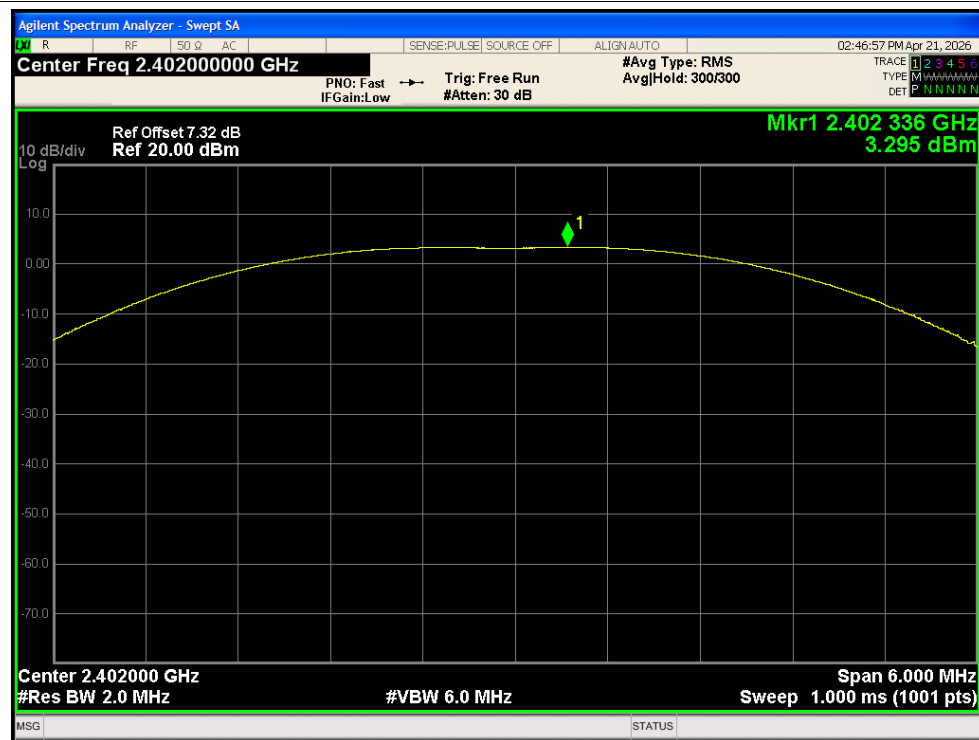
Power NVNT BLE 1M 2440MHz



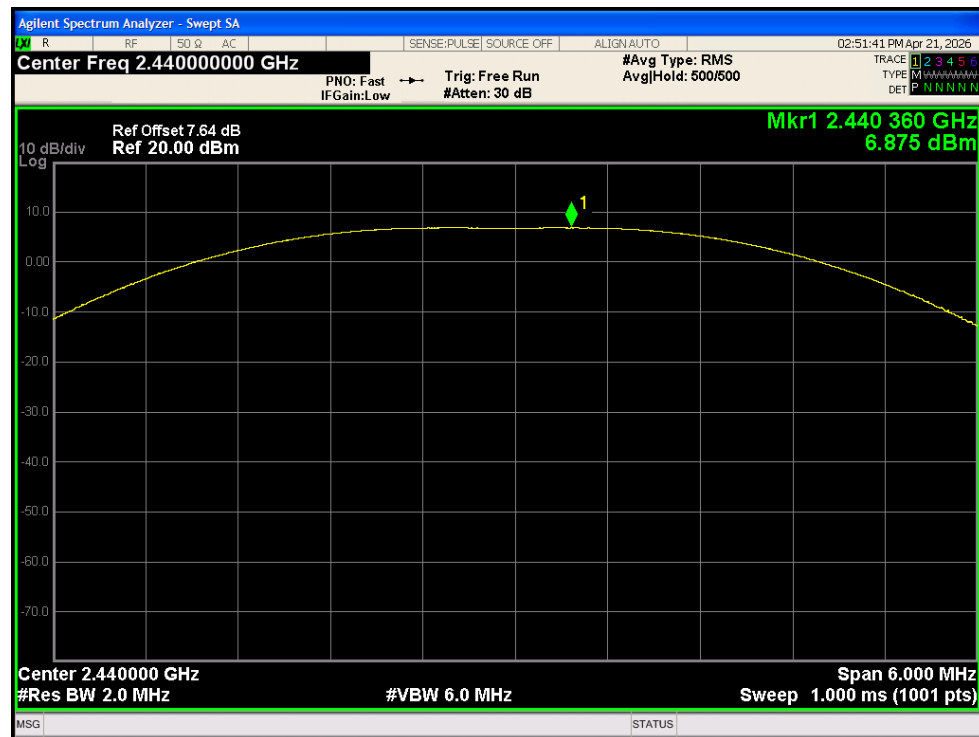
Power NVNT BLE 1M 2480MHz



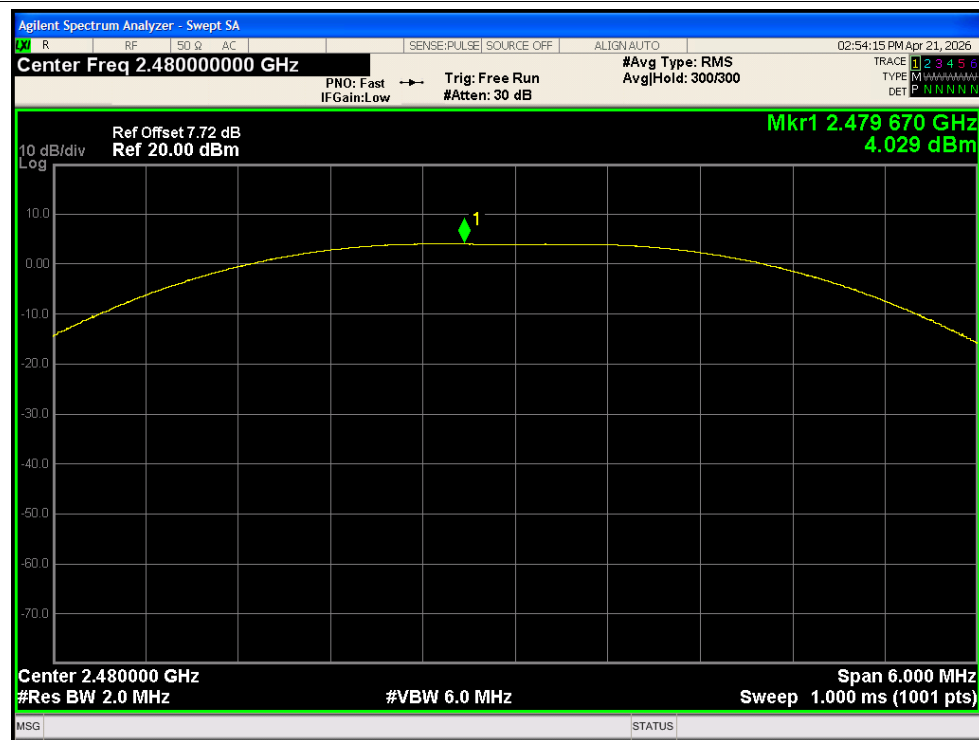
Power NVNT BLE 2M 2402MHz



Power NVNT BLE 2M 2440MHz



Power NVNT BLE 2M 2480MHz

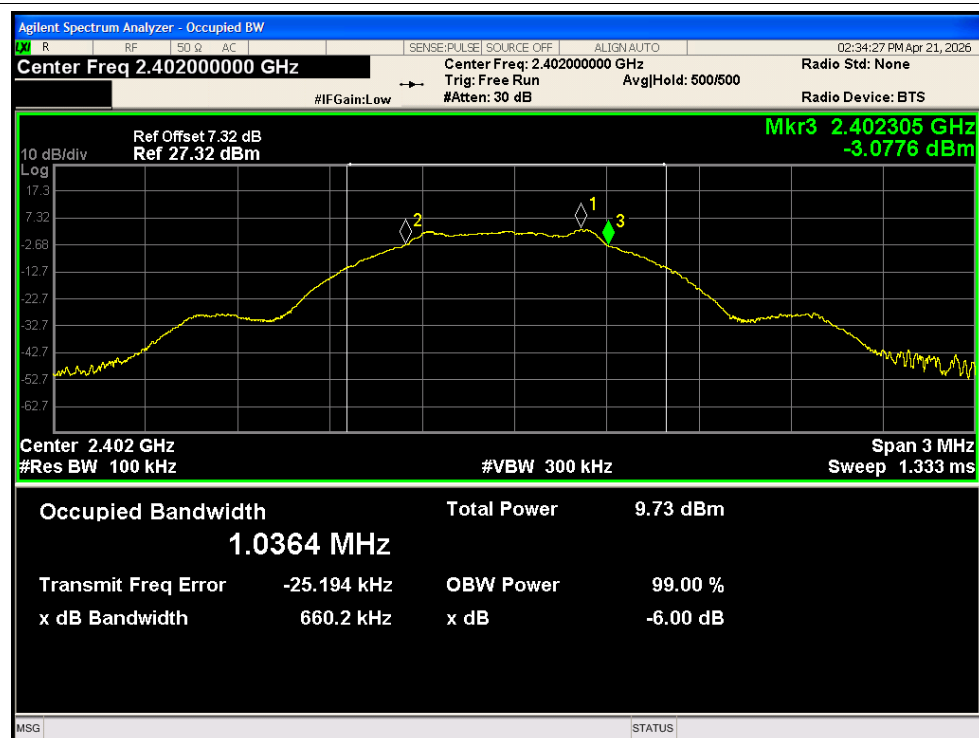


-6dB Bandwidth

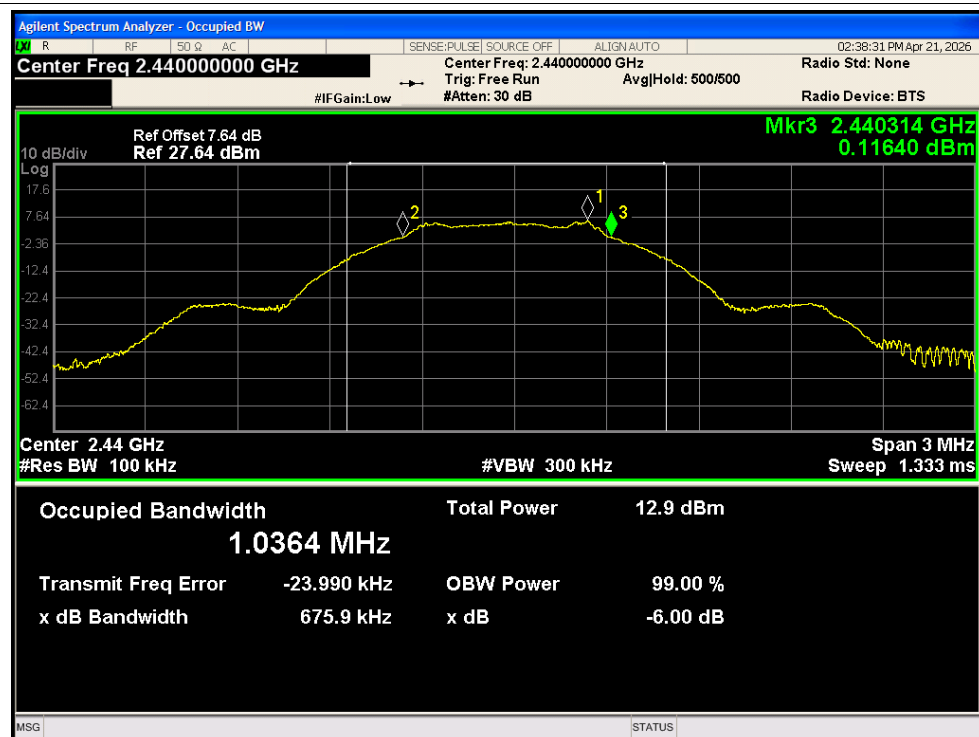
Condition	Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	0.660	0.5	Pass
NVNT	BLE 1M	2440	0.676	0.5	Pass
NVNT	BLE 1M	2480	0.660	0.5	Pass
NVNT	BLE 2M	2402	1.162	0.5	Pass
NVNT	BLE 2M	2440	1.180	0.5	Pass
NVNT	BLE 2M	2480	1.184	0.5	Pass

Test Graphs

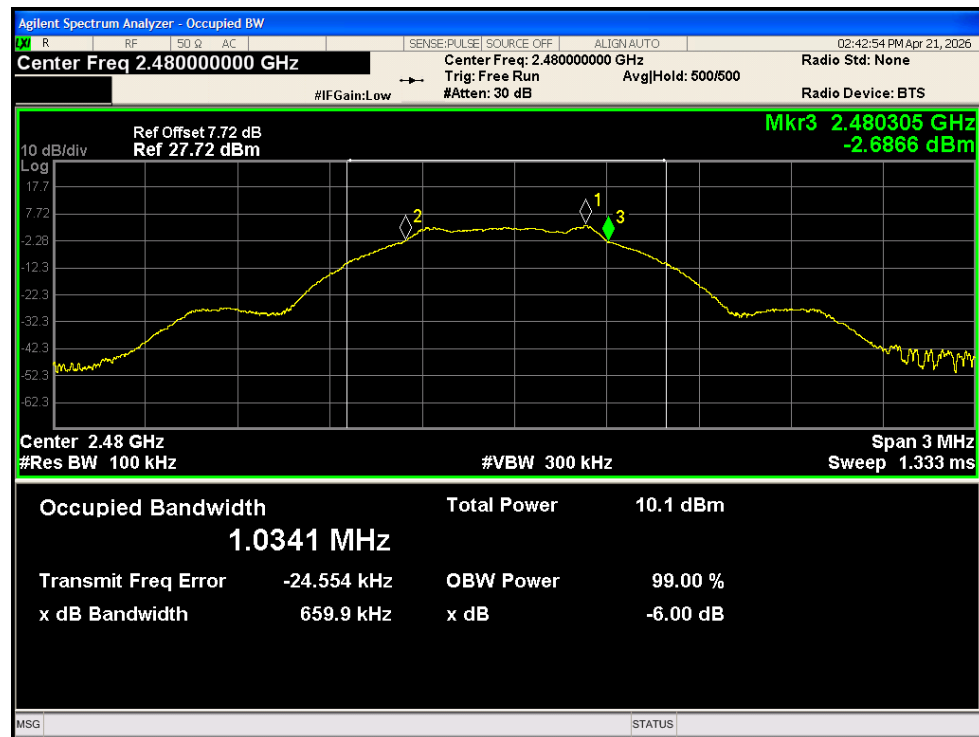
-6dB Bandwidth NVNT BLE 1M 2402MHz



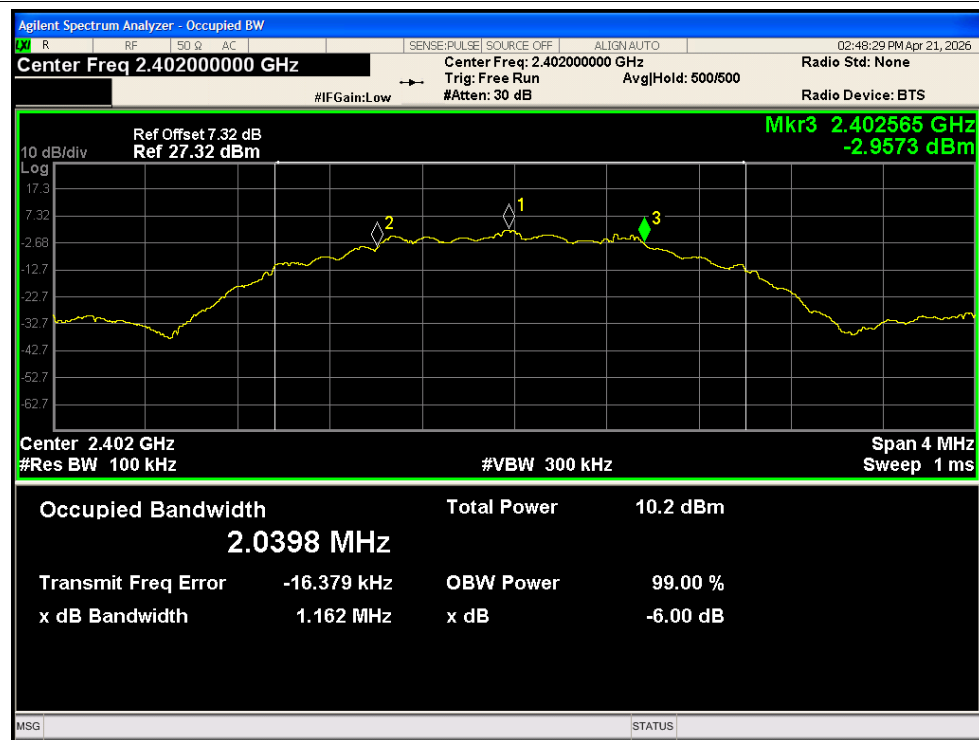
-6dB Bandwidth NVNT BLE 1M 2440MHz



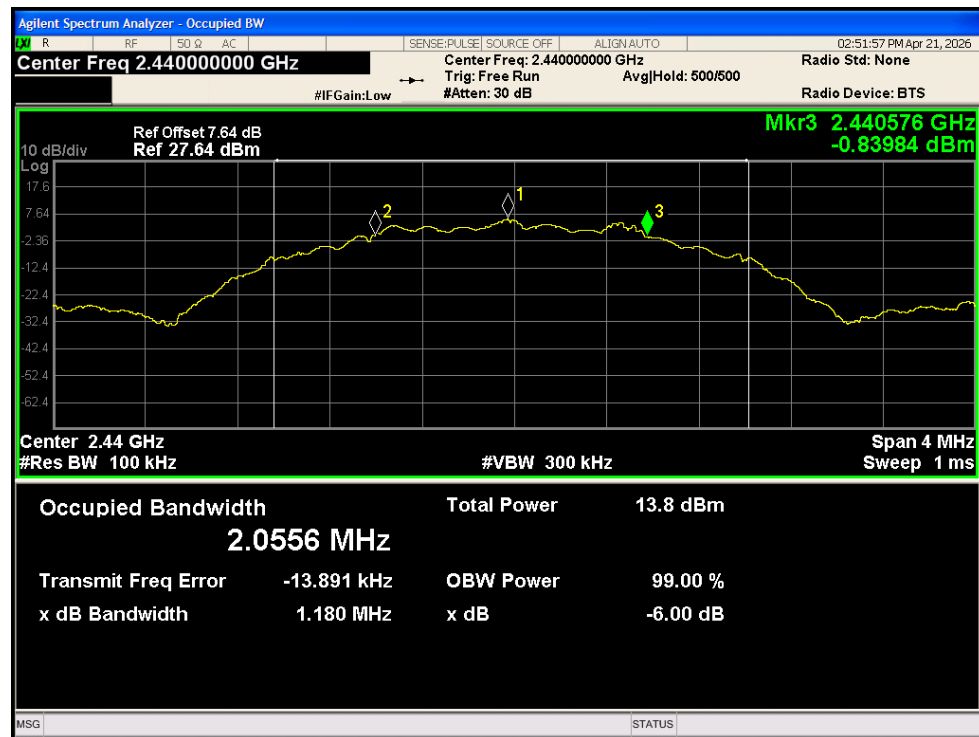
-6dB Bandwidth NVNT BLE 1M 2480MHz



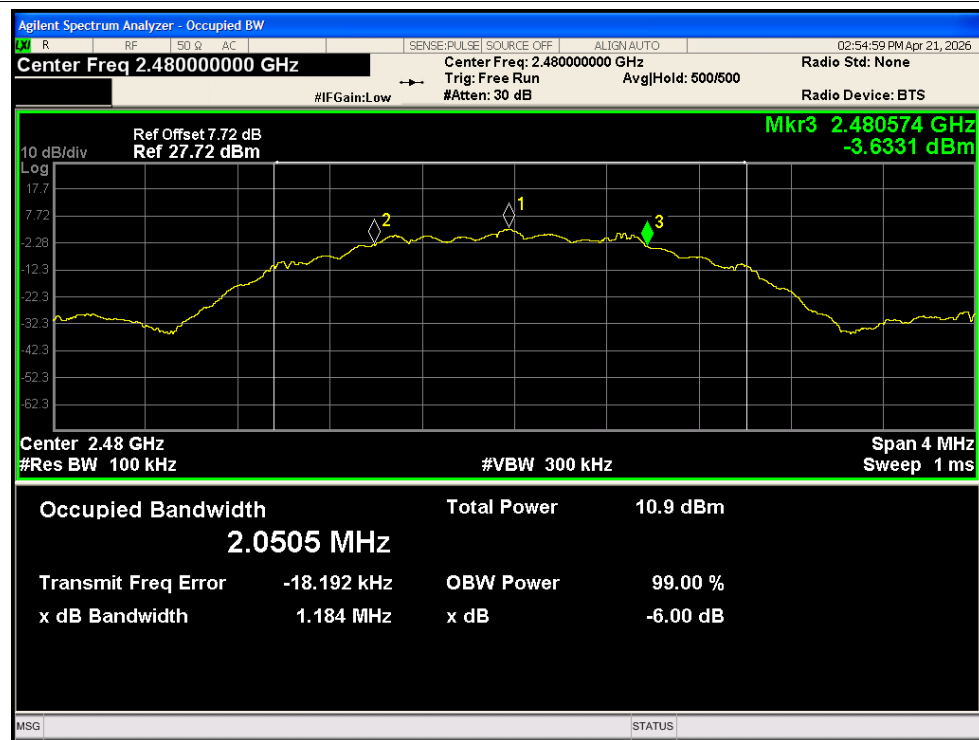
-6dB Bandwidth NVNT BLE 2M 2402MHz



-6dB Bandwidth NVNT BLE 2M 2440MHz



-6dB Bandwidth NVNT BLE 2M 2480MHz

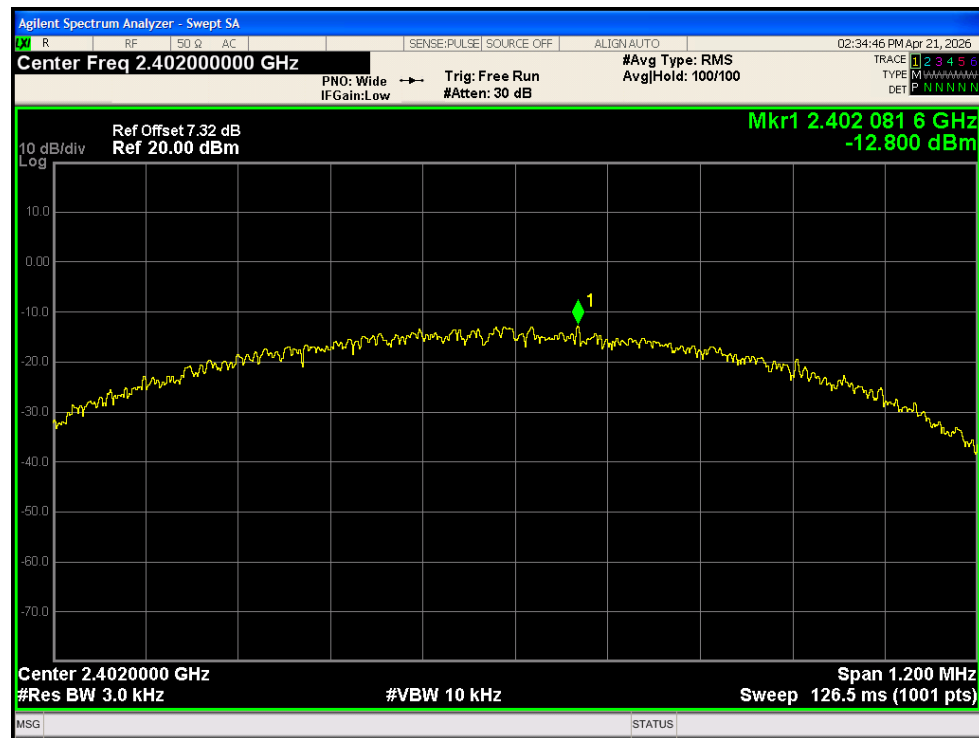


Maximum Power Spectral Density Level

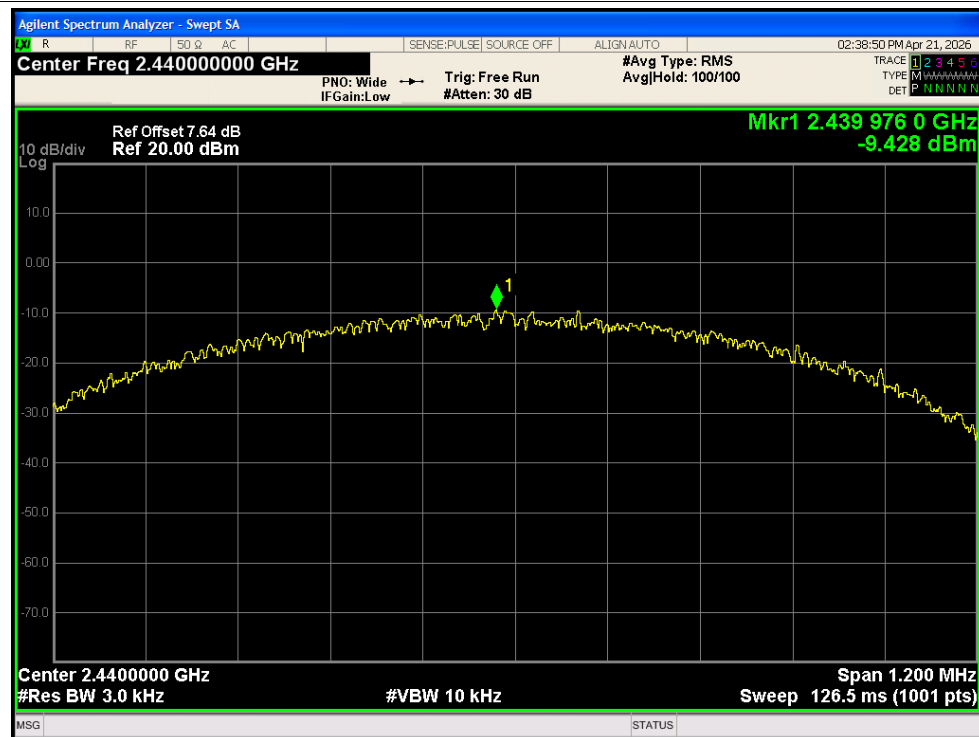
Condition	Mode	Frequency (MHz)	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	-12.80	8	Pass
NVNT	BLE 1M	2440	-9.43	8	Pass
NVNT	BLE 1M	2480	-12.34	8	Pass
NVNT	BLE 2M	2402	-15.76	8	Pass
NVNT	BLE 2M	2440	-12.15	8	Pass
NVNT	BLE 2M	2480	-15.03	8	Pass

Test Graphs

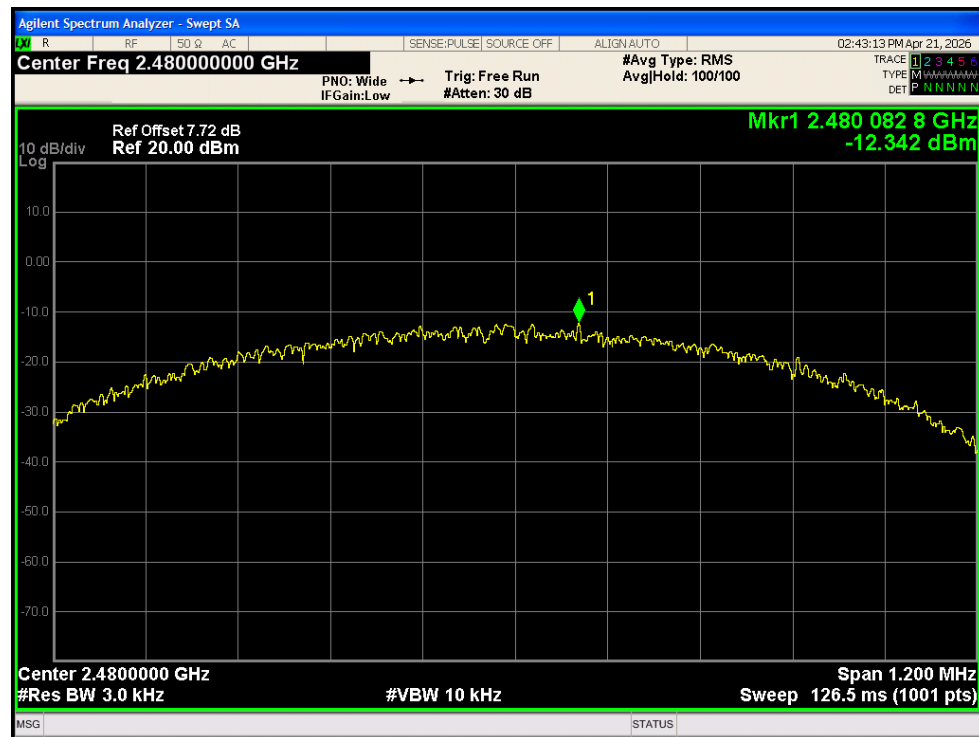
PSD NVNT BLE 1M 2402MHz



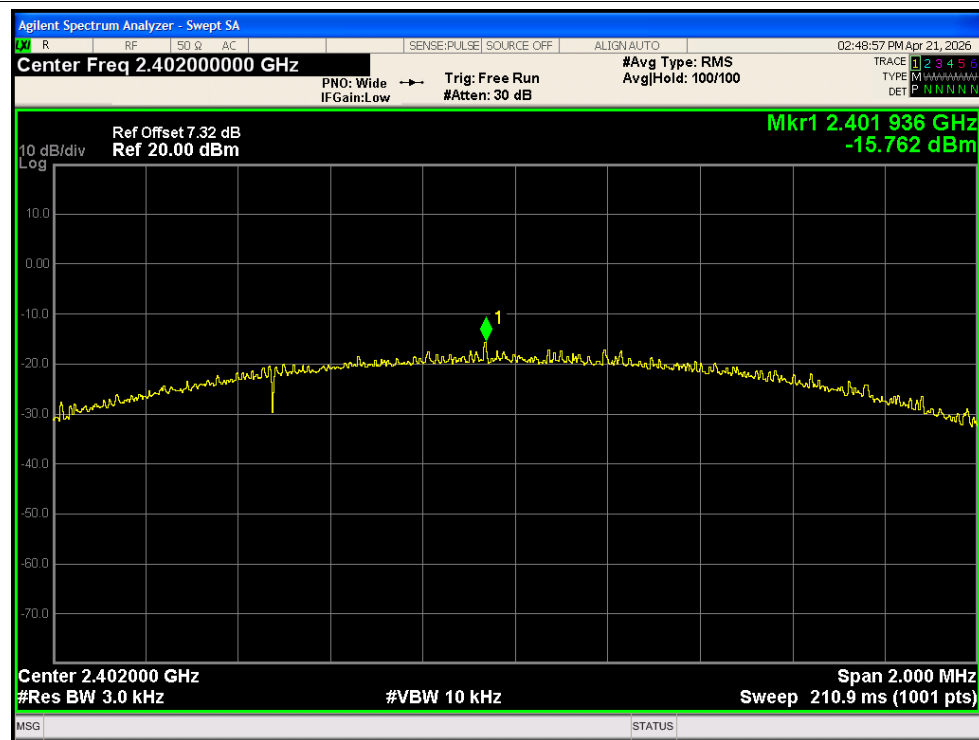
PSD NVNT BLE 1M 2440MHz



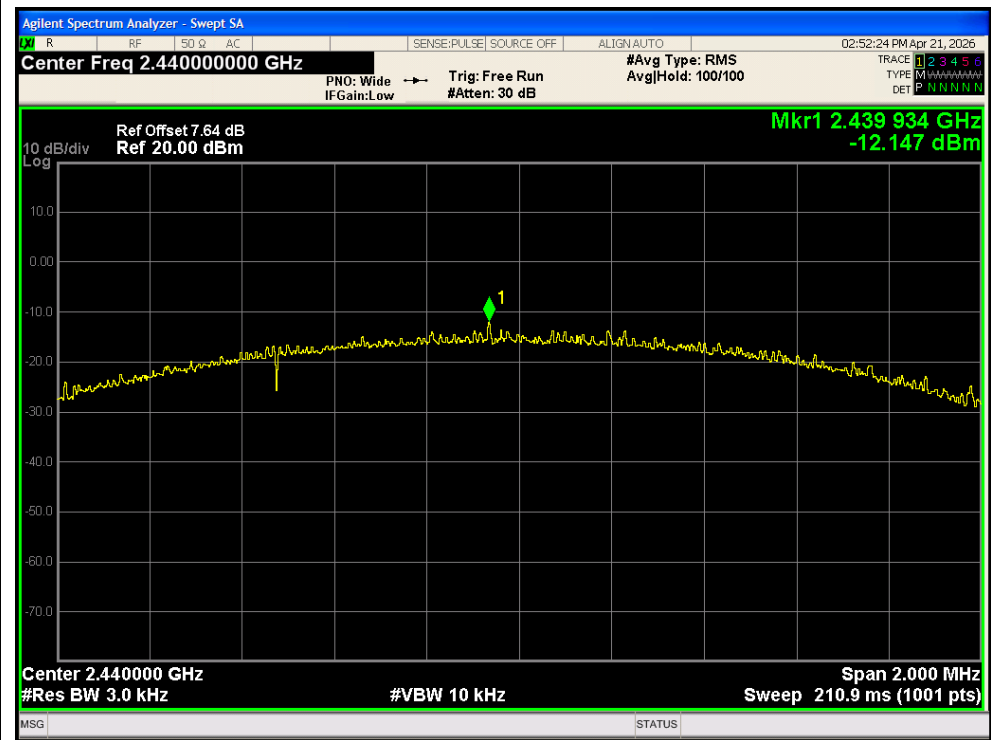
PSD NVNT BLE 1M 2480MHz



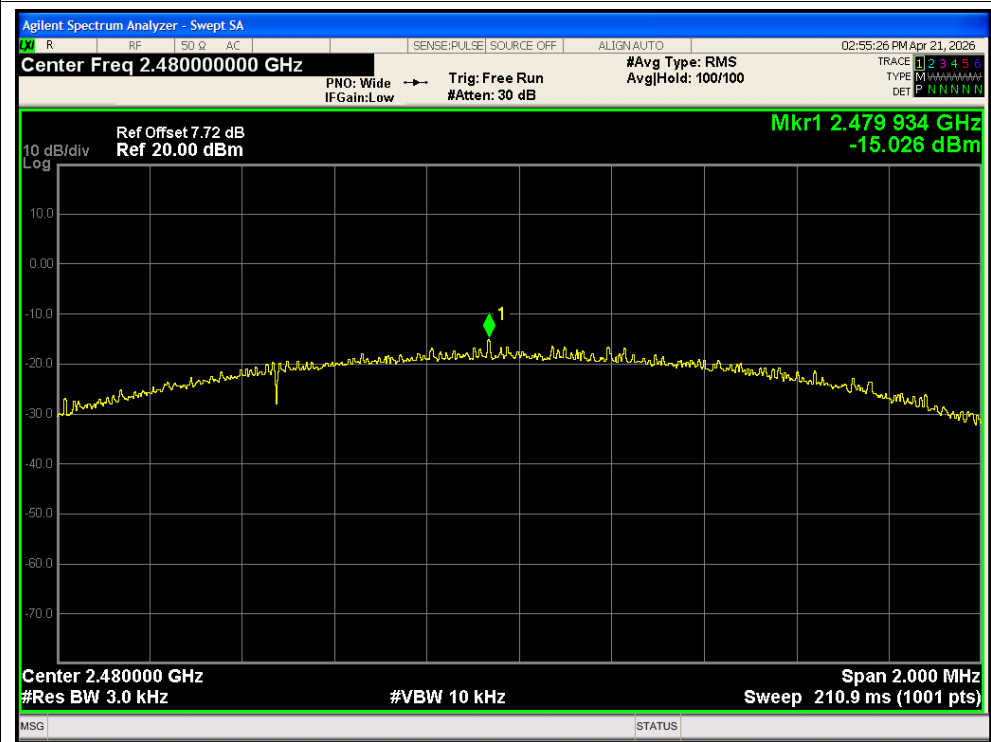
PSD NVNT BLE 2M 2402MHz



PSD NVNT BLE 2M 2440MHz



PSD NVNT BLE 2M 2480MHz

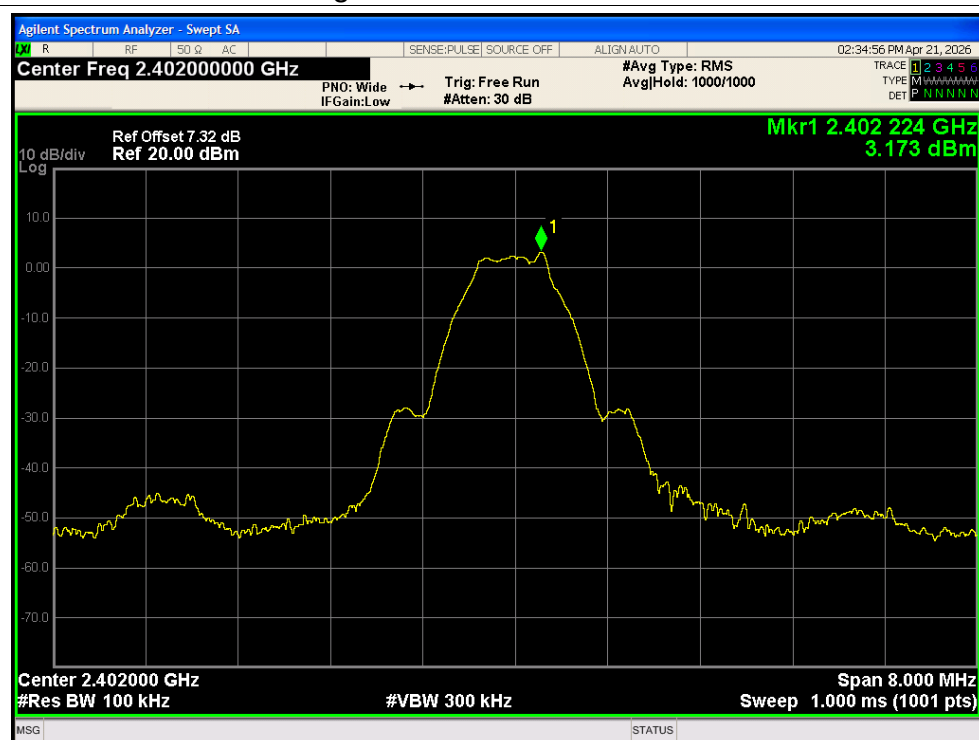


Band Edge

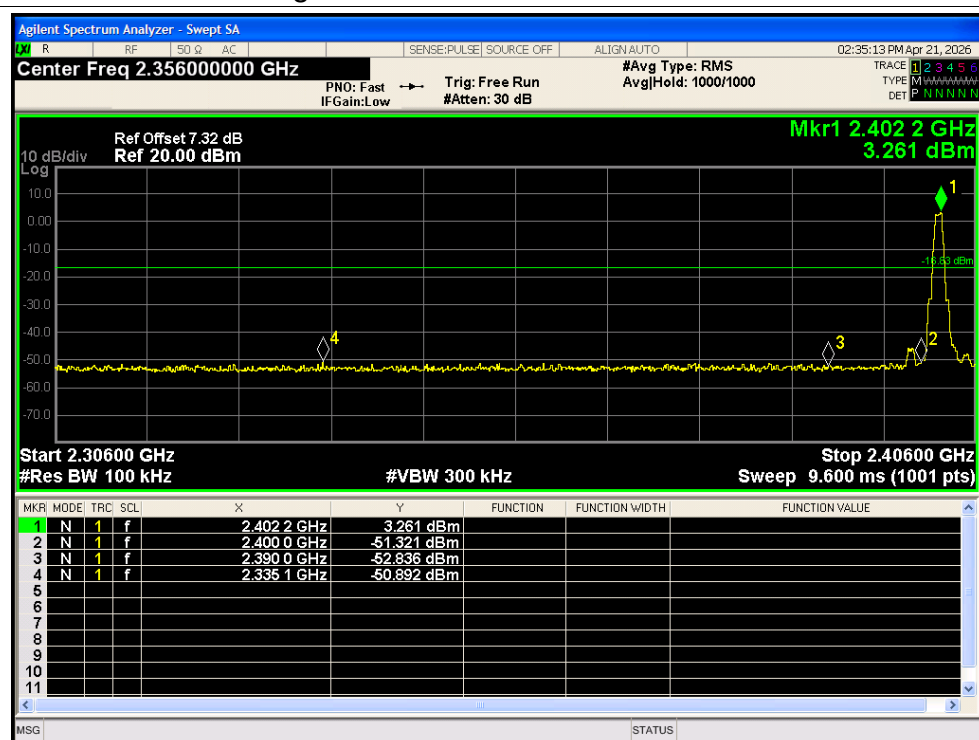
Condition	Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	-54.06	-20	Pass
NVNT	BLE 1M	2480	-53.93	-20	Pass
NVNT	BLE 2M	2402	-52.55	-20	Pass
NVNT	BLE 2M	2480	-52.26	-20	Pass

Test Graphs

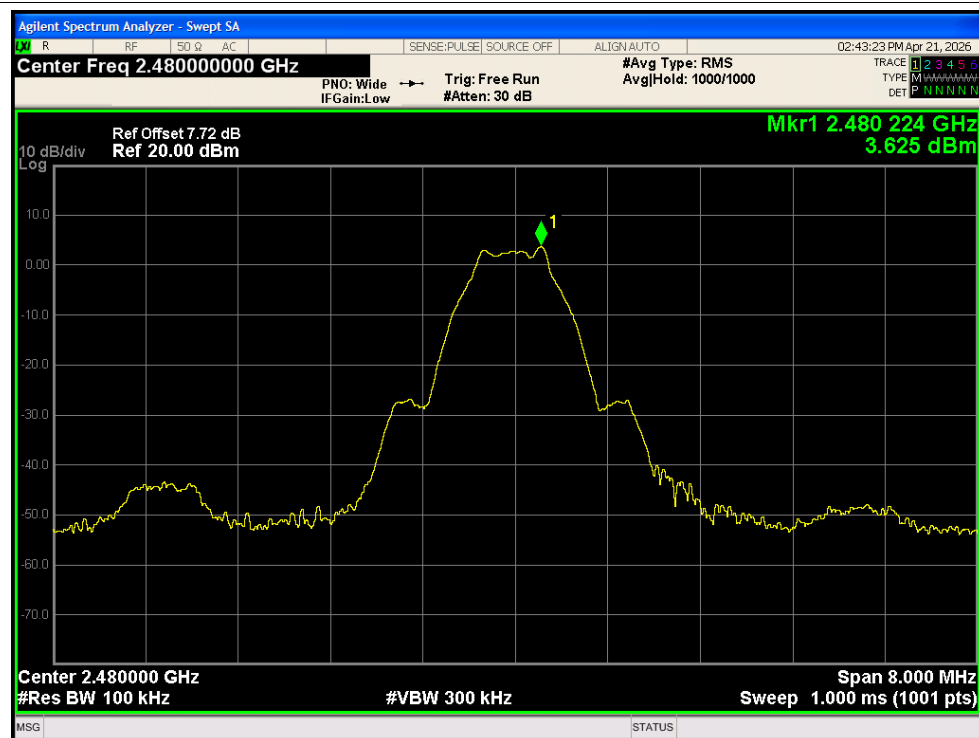
Band Edge NVNT BLE 1M 2402MHz Ref



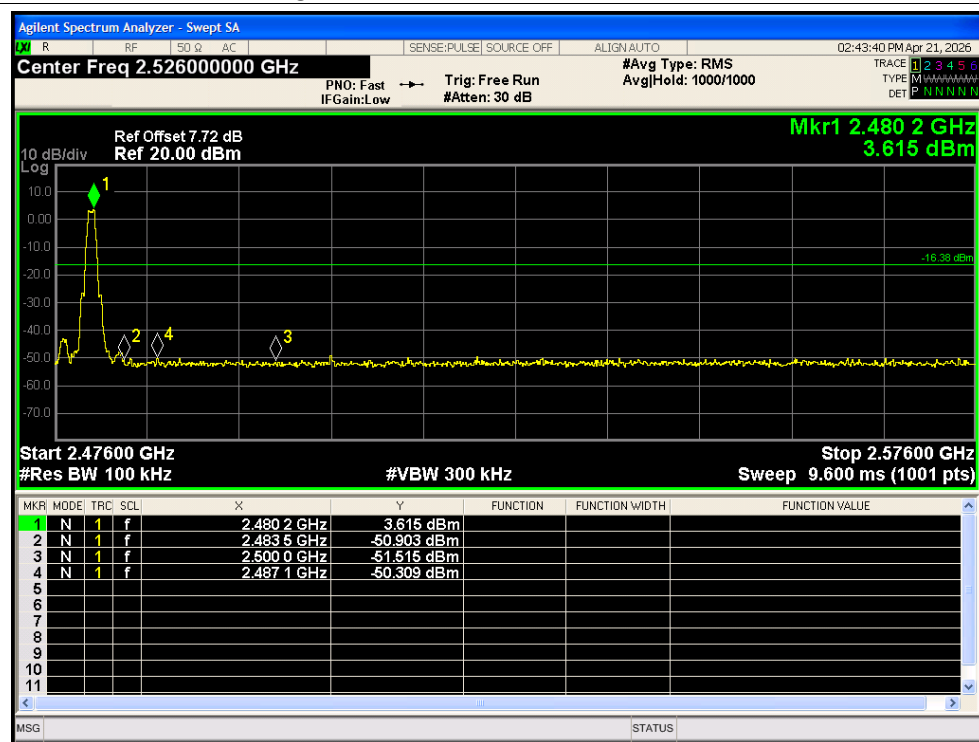
Band Edge NVNT BLE 1M 2402MHz Emission



Band Edge NVNT BLE 1M 2480MHz Ref



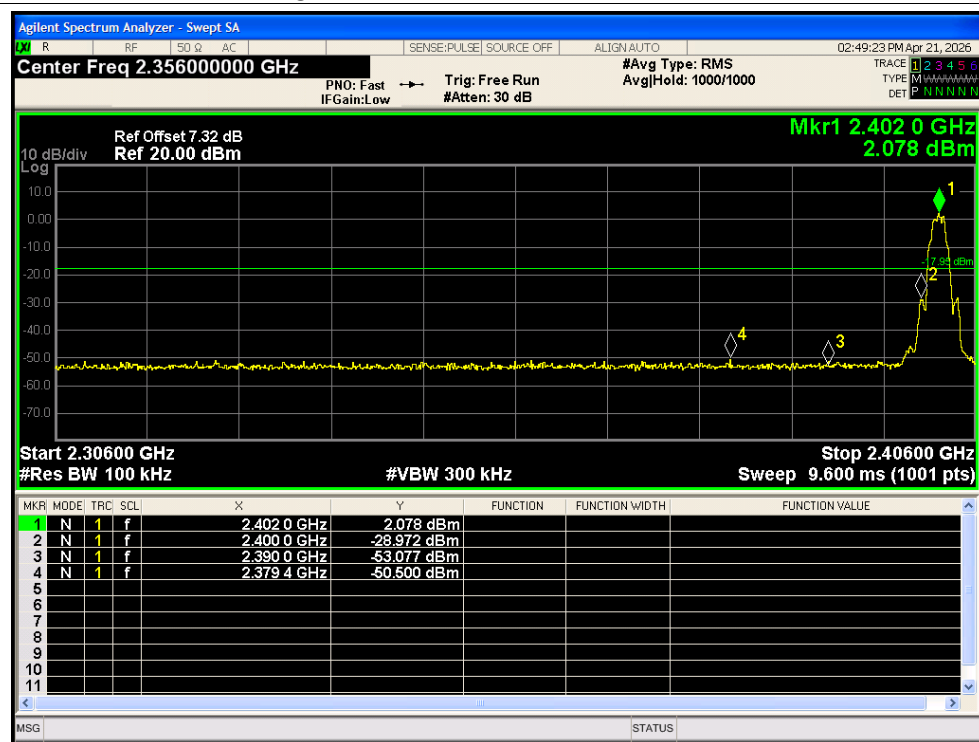
Band Edge NVNT BLE 1M 2480MHz Emission



Band Edge NVNT BLE 2M 2402MHz Ref



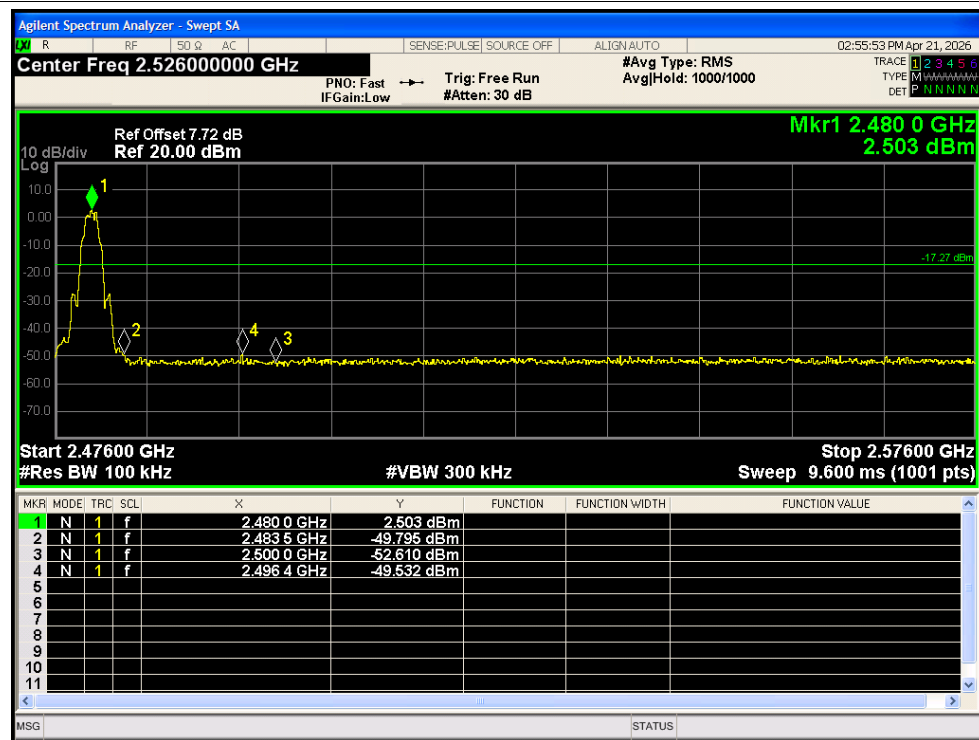
Band Edge NVNT BLE 2M 2402MHz Emission



Band Edge NVNT BLE 2M 2480MHz Ref



Band Edge NVNT BLE 2M 2480MHz Emission

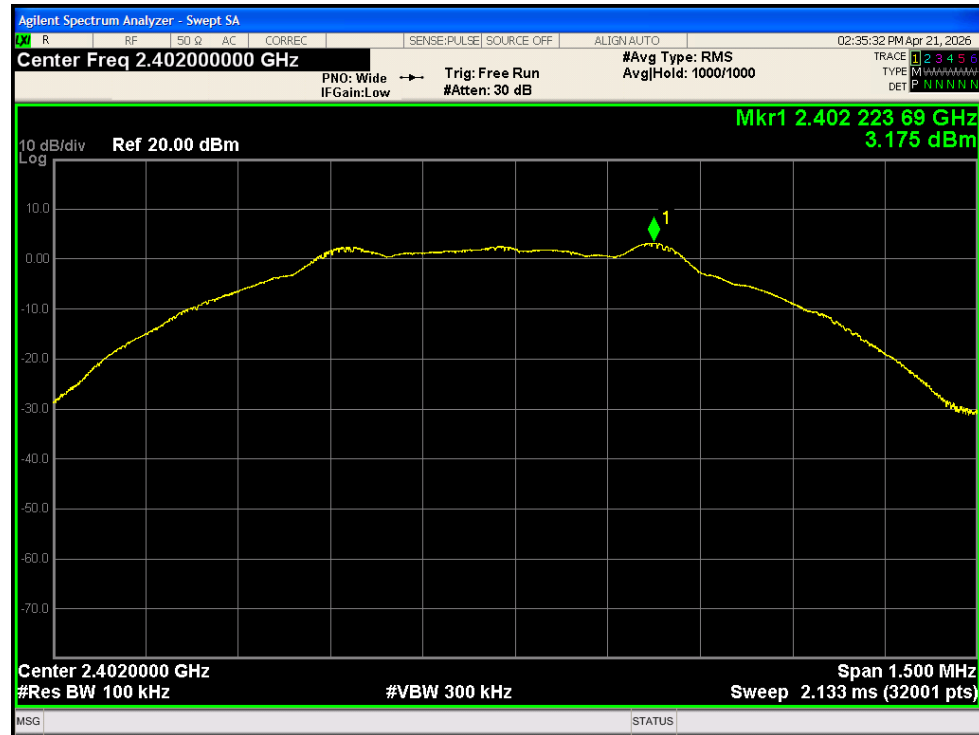


Conducted RF Spurious Emission

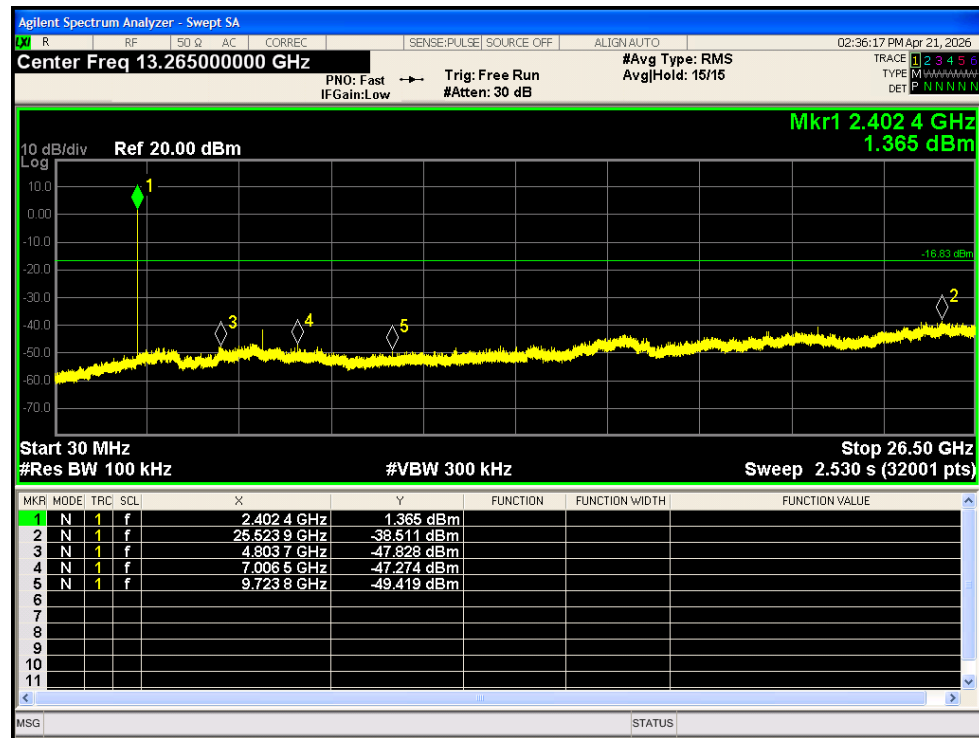
Condition	Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	-41.68	-20	Pass
NVNT	BLE 1M	2440	-44.64	-20	Pass
NVNT	BLE 1M	2480	-42.28	-20	Pass
NVNT	BLE 2M	2402	-40.79	-20	Pass
NVNT	BLE 2M	2440	-44.50	-20	Pass
NVNT	BLE 2M	2480	-41.36	-20	Pass

Test Graphs

Tx. Spurious NVNT BLE 1M 2402MHz Ref



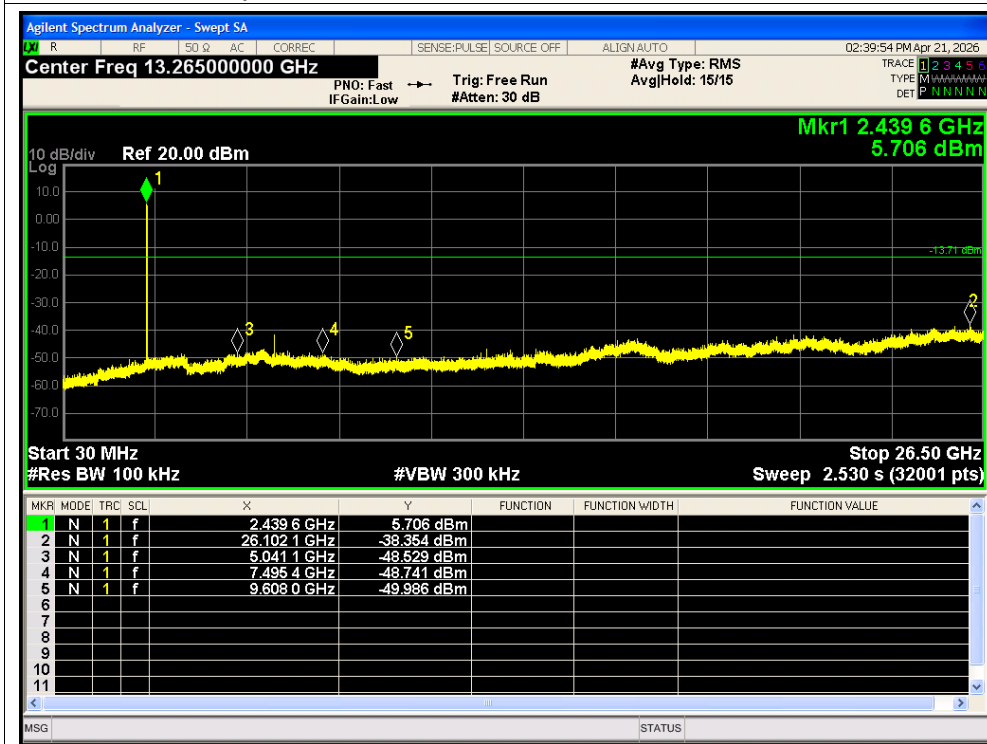
Tx. Spurious NVNT BLE 1M 2402MHz Emission



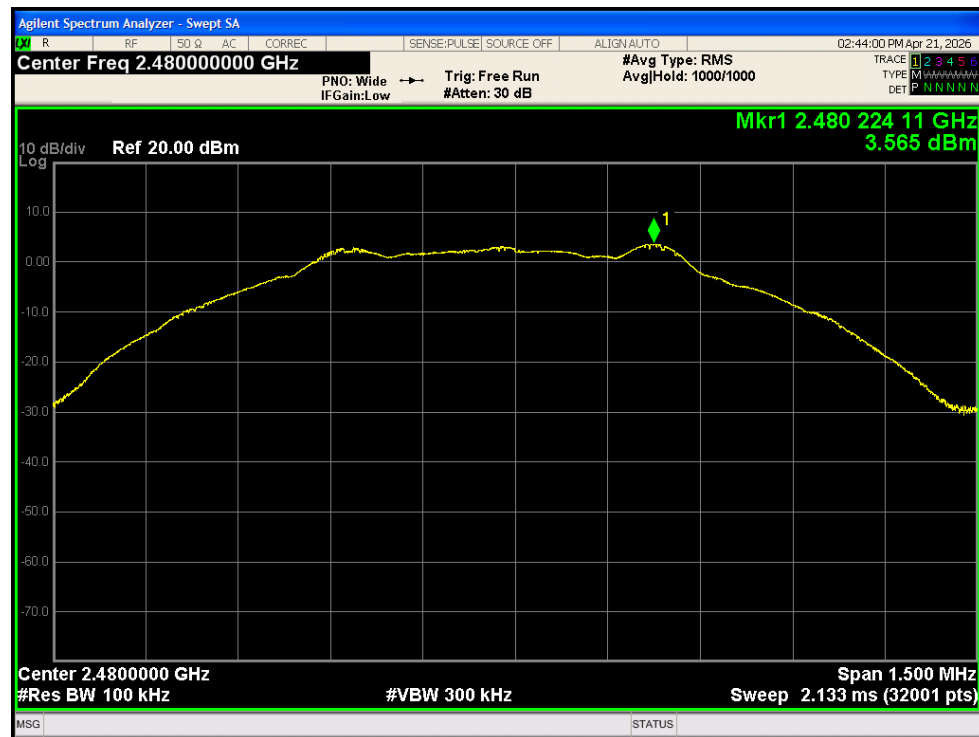
Tx. Spurious NVNT BLE 1M 2440MHz Ref



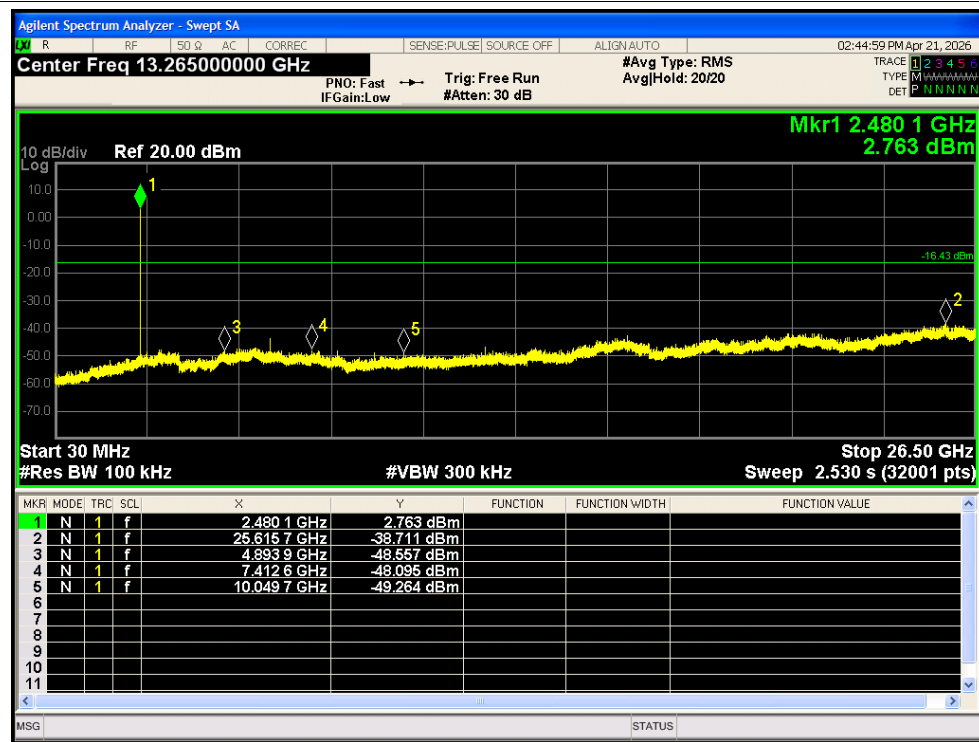
Tx. Spurious NVNT BLE 1M 2440MHz Emission



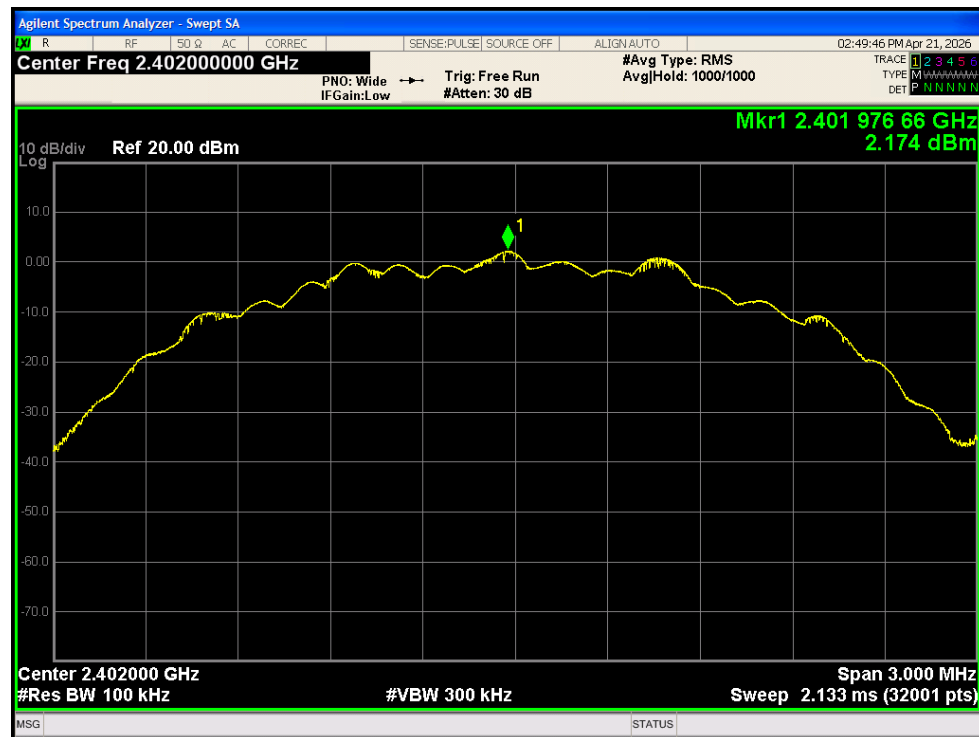
Tx. Spurious NVNT BLE 1M 2480MHz Ref



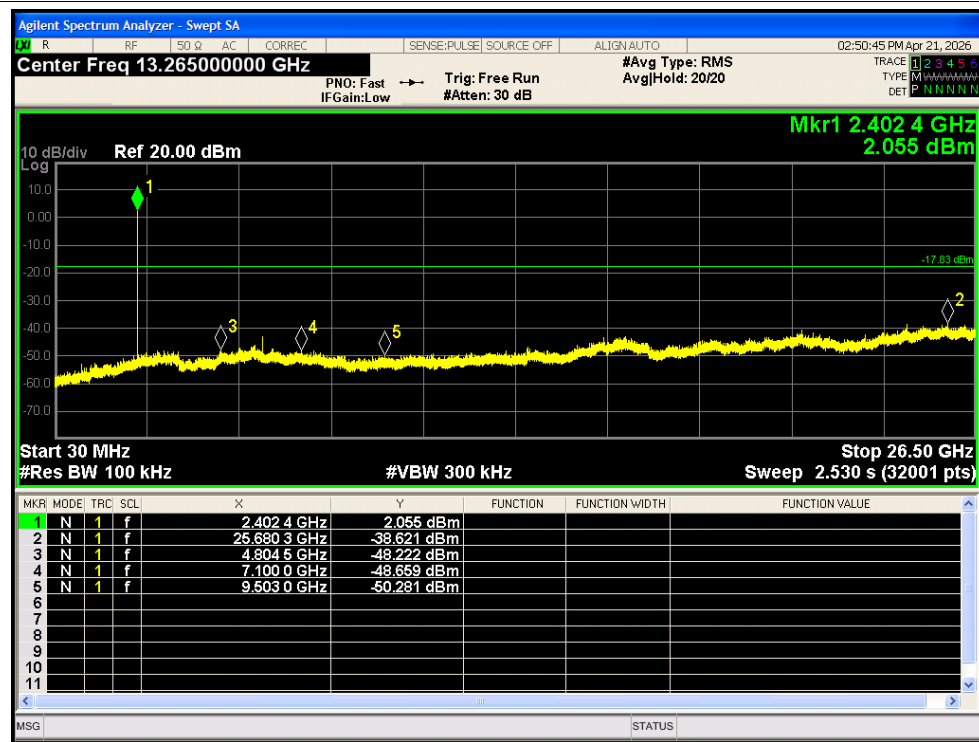
Tx. Spurious NVNT BLE 1M 2480MHz Emission



Tx. Spurious NVNT BLE 2M 2402MHz Ref



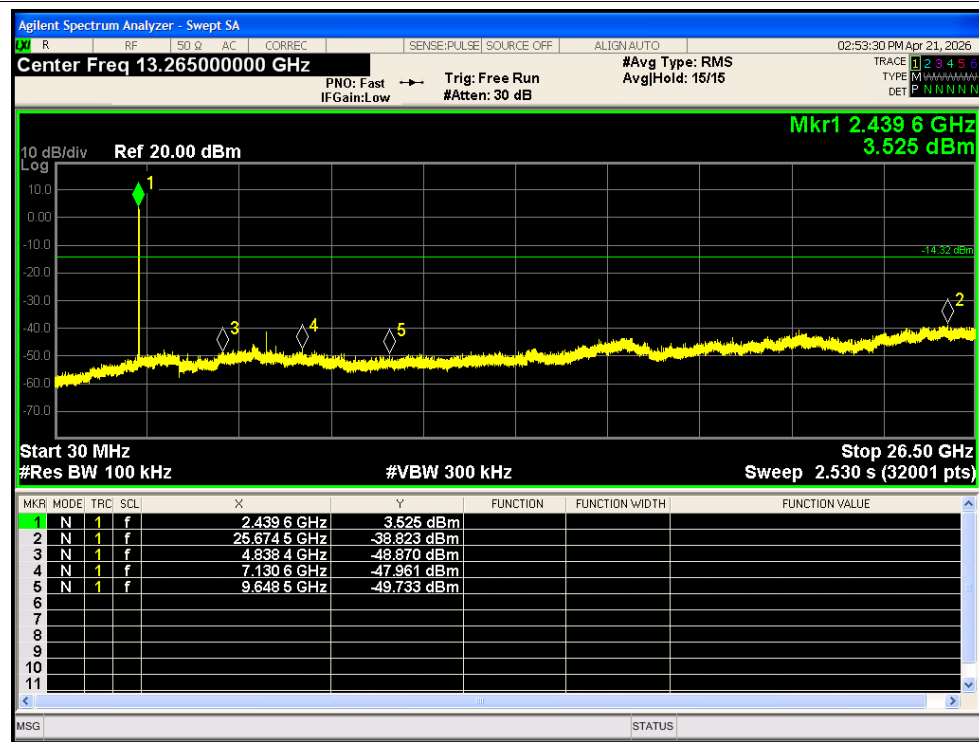
Tx. Spurious NVNT BLE 2M 2402MHz Emission



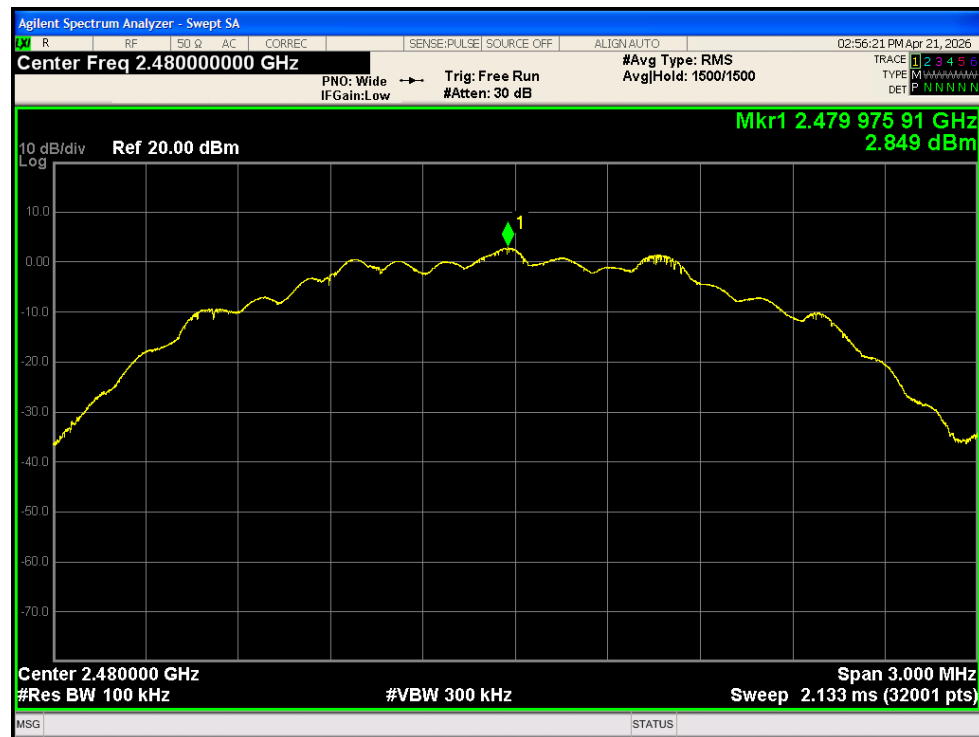
Tx. Spurious NVNT BLE 2M 2440MHz Ref



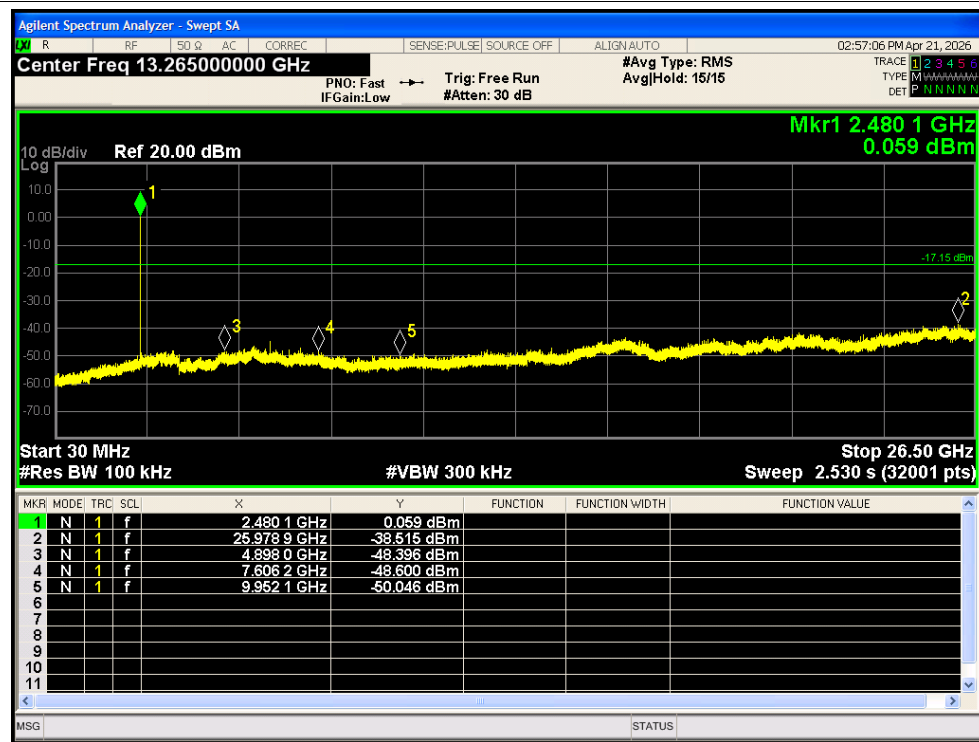
Tx. Spurious NVNT BLE 2M 2440MHz Emission



Tx. Spurious NVNT BLE 2M 2480MHz Ref



Tx. Spurious NVNT BLE 2M 2480MHz Emission



Emissions in Restricted Bands

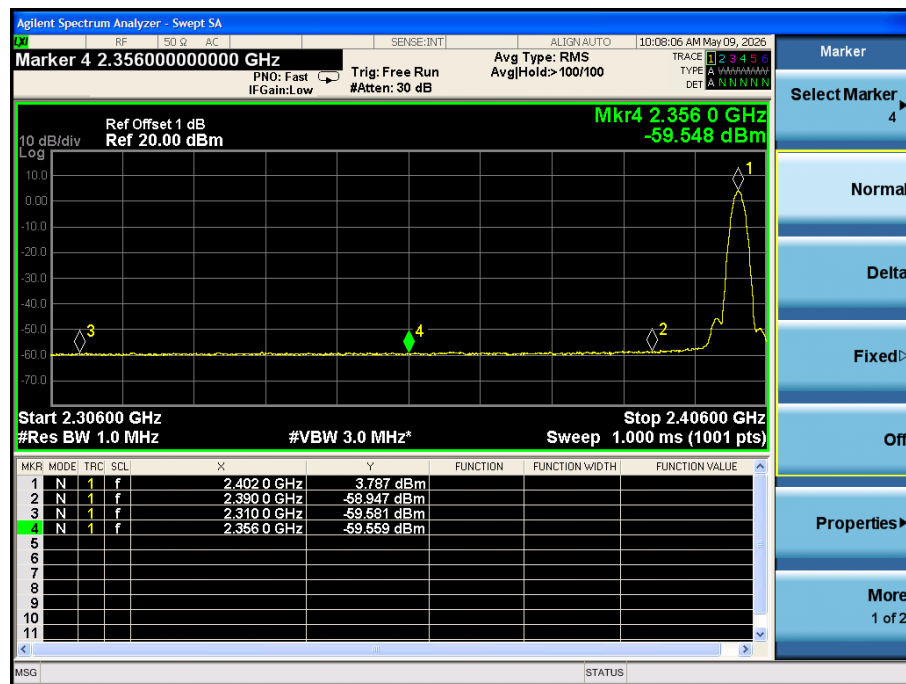
Test Mode	Ch	Freq (MHz)	Detector	Freq [MHz]	Result [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE 1M	Low	2402	AV	2310.000	-59.58	2.99	0.60	39.21	≤54	PASS
			AV	2356.000	-59.56	2.99	0.60	39.23	≤54	PASS
			AV	2390.000	-58.95	2.99	0.60	39.84	≤54	PASS
			Peak	2310.000	-47.24	2.99	0.00	50.95	≤74	PASS
			Peak	2356.000	-48.47	2.99	0.00	49.72	≤74	PASS
			Peak	2390.000	-47.50	2.99	0.00	50.69	≤74	PASS
	High	2480	AV	2483.500	-50.73	2.99	0.60	48.06	≤54	PASS
			AV	2500.000	-58.94	2.99	0.60	39.85	≤54	PASS
			AV	2525.000	-58.56	2.99	0.60	40.23	≤54	PASS
			Peak	2483.500	-39.64	2.99	0.00	58.55	≤74	PASS
			Peak	2500.000	-47.95	2.99	0.00	50.24	≤74	PASS
			Peak	2525.000	-47.10	2.99	0.00	51.09	≤74	PASS
BLE 2M	Low	2402	AV	2310.000	-59.73	2.99	2.14	40.60	≤54	PASS
			AV	2356.000	-59.38	2.99	2.14	40.95	≤54	PASS
			AV	2390.000	-59.12	2.99	2.14	41.21	≤54	PASS
			Peak	2310.000	-50.01	2.99	0.00	48.18	≤74	PASS
			Peak	2319.500	-46.76	2.99	0.00	51.43	≤74	PASS
			Peak	2390.000	-47.92	2.99	0.00	50.27	≤74	PASS
	High	2480	AV	2483.500	-50.92	2.99	2.16	49.43	≤54	PASS
			AV	2500.000	-58.44	2.99	2.16	41.91	≤54	PASS
			AV	2525.000	-58.77	2.99	2.16	41.58	≤54	PASS
			Peak	2483.500	-39.80	2.99	0.00	58.39	≤74	PASS
			Peak	2500.000	-48.66	2.99	0.00	49.53	≤74	PASS
			Peak	2519.700	-47.35	2.99	0.00	50.84	≤74	PASS

Note: 1. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a).

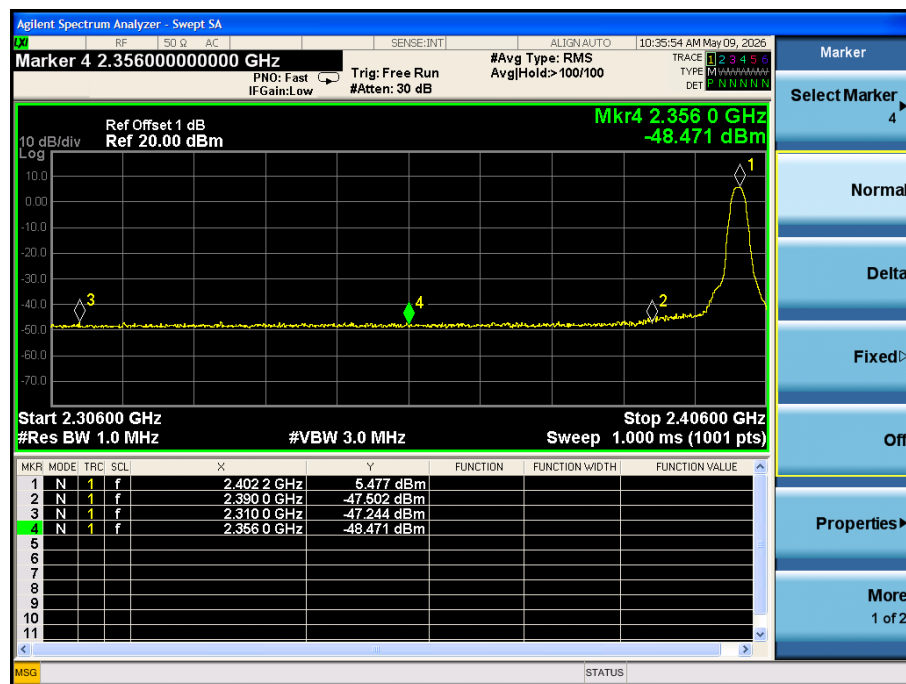
The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

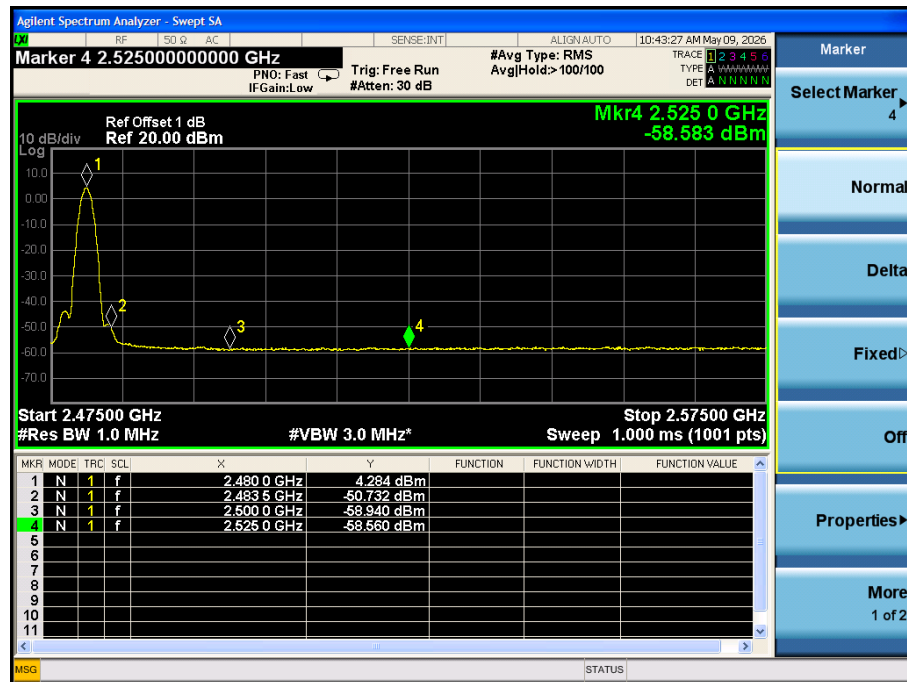
NVNT BLE 1M 2402MHz AV



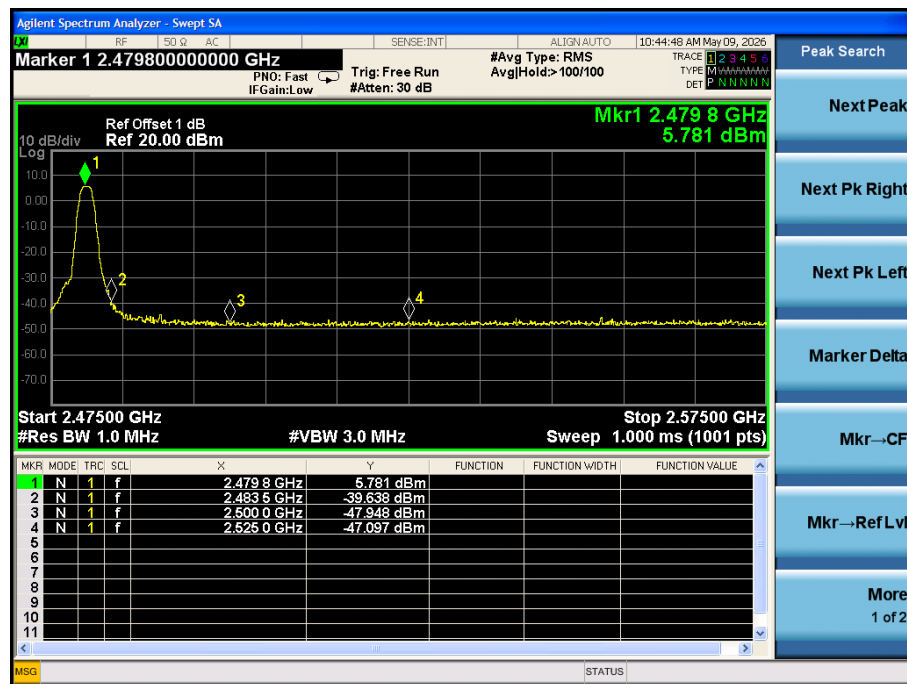
NVNT BLE 1M 2402MHz PK



NVNT BLE 1M 2480MHz AV

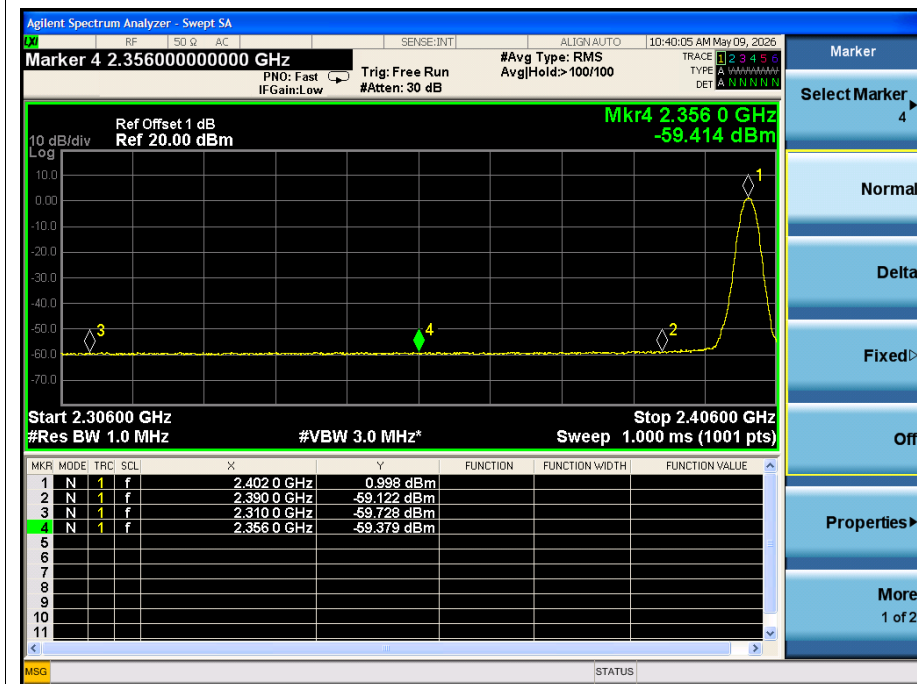


NVNT BLE 1M 2480MHz PK

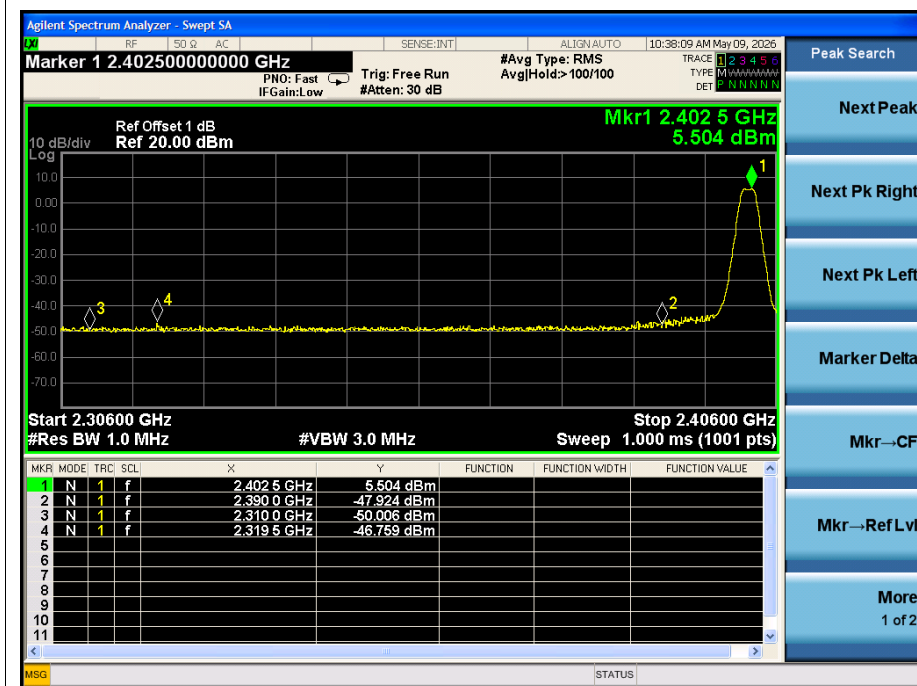


Test Graphs

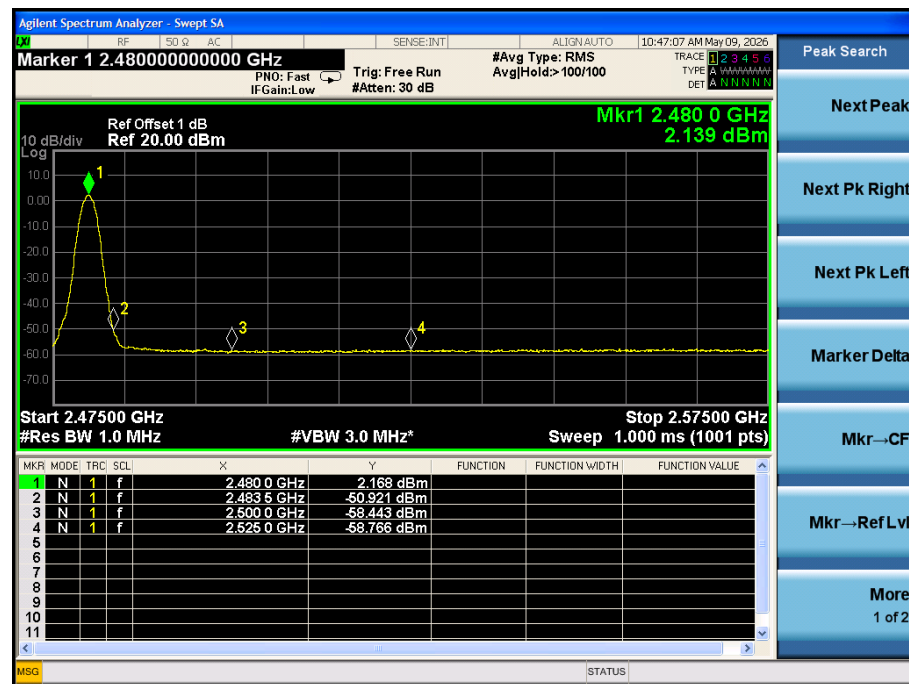
NVNT BLE 2M 2402MHz AV



NVNT BLE 2M 2402MHz PK



NVNT BLE 2M 2480MHz AV



NVNT BLE 2M 2480MHz PK

