Appendix B

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: Intelligent chicken coop door

Test Model: JS-02

Environmental Conditions

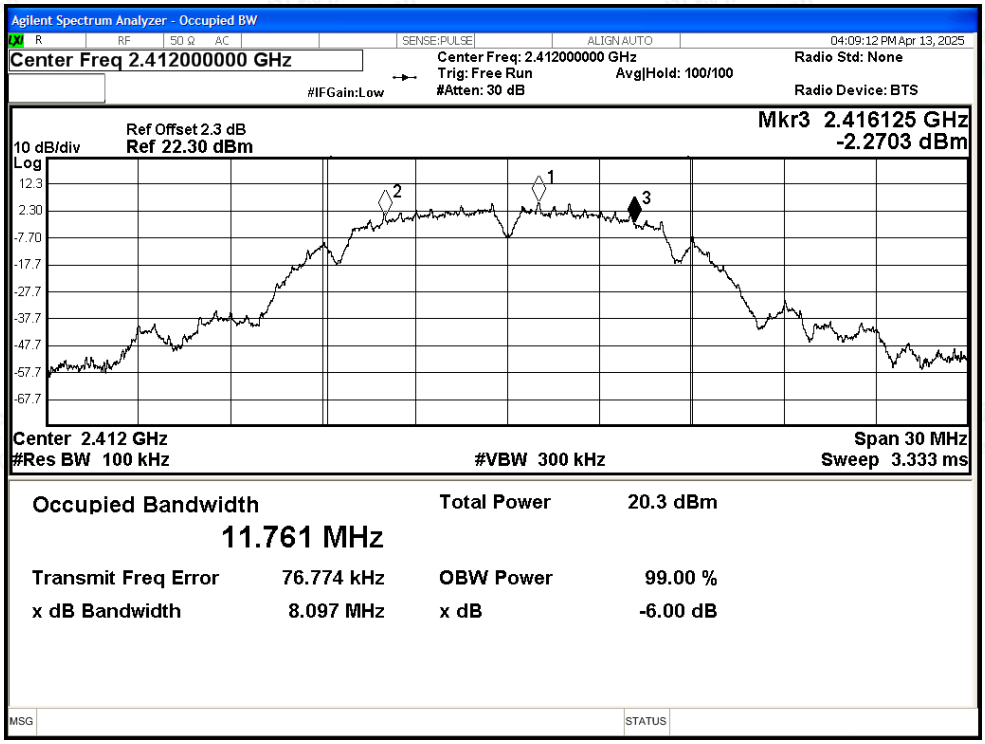
Temperature:	23.8 ° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Paddi Chen
Supervised by:	Nick Peng

B.1 -6dB Bandwidth

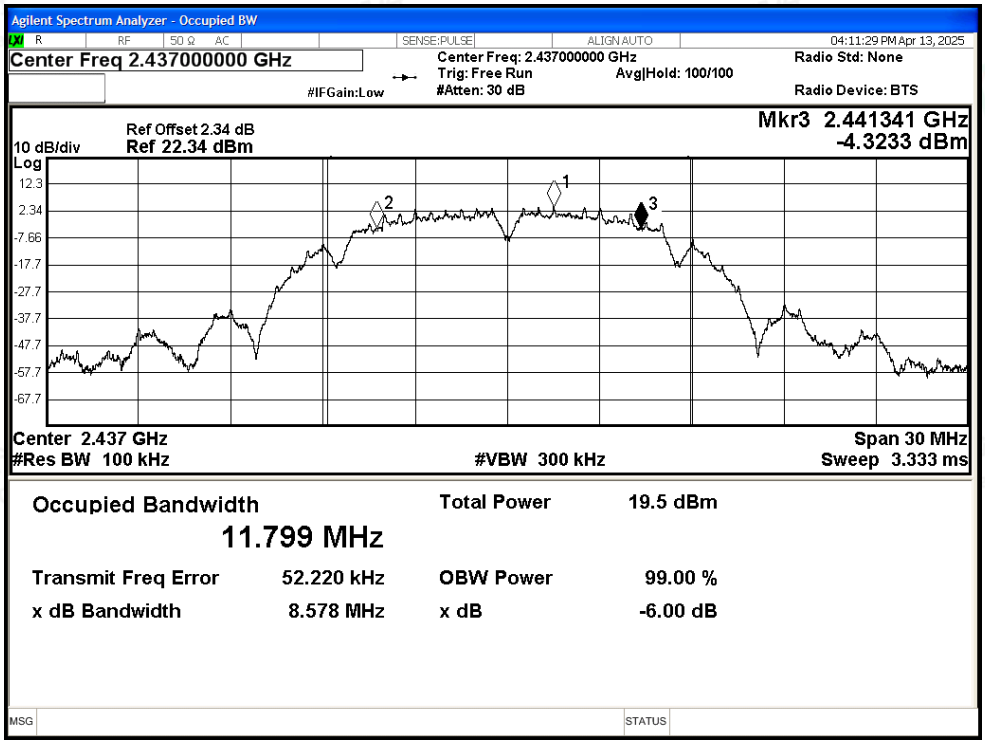
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant	8.097	>=0.5	Pass
NVNT	b	2437	Ant	8.578	>=0.5	Pass
NVNT	b	2462	Ant	7.821	>=0.5	Pass
NVNT	g	2412	Ant	15.958	>=0.5	Pass
NVNT	g	2437	Ant	16.3	>=0.5	Pass
NVNT	g	2462	Ant	16.314	>=0.5	Pass
NVNT	n20	2412	Ant	16.857	>=0.5	Pass
NVNT	n20	2437	Ant	17.022	>=0.5	Pass
NVNT	n20	2462	Ant	17.263	>=0.5	Pass
NVNT	n40	2422	Ant	35.622	>=0.5	Pass
NVNT	n40	2437	Ant	35.318	>=0.5	Pass
NVNT	n40	2452	Ant	35.469	>=0.5	Pass

Test Graphs

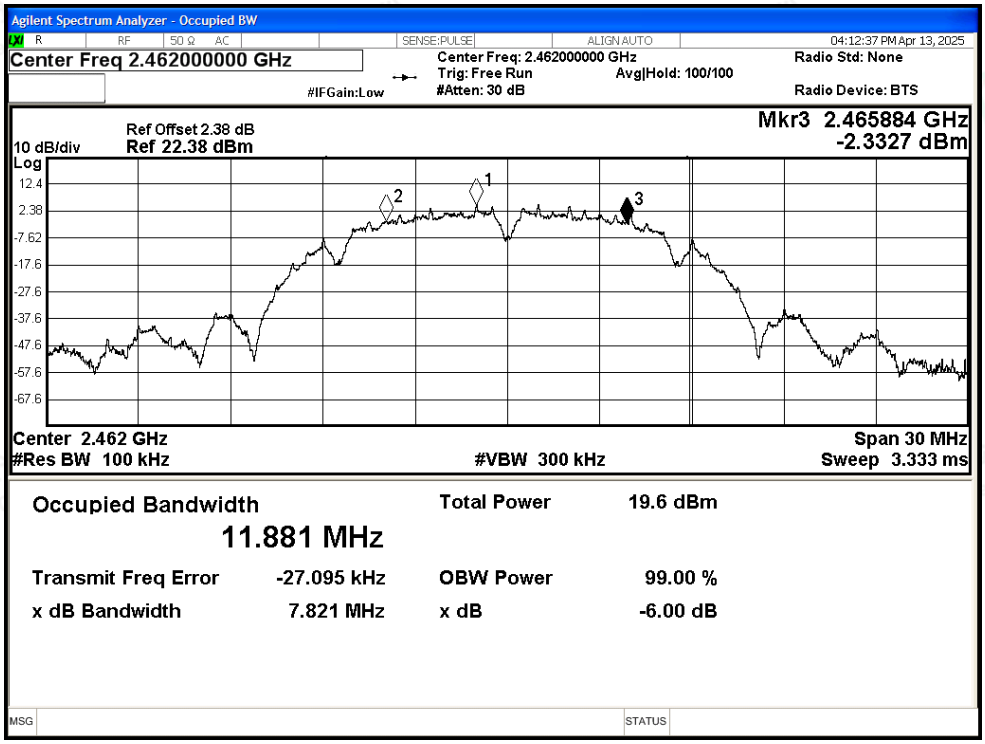
-6dB Bandwidth NVNT b 2412MHz Ant



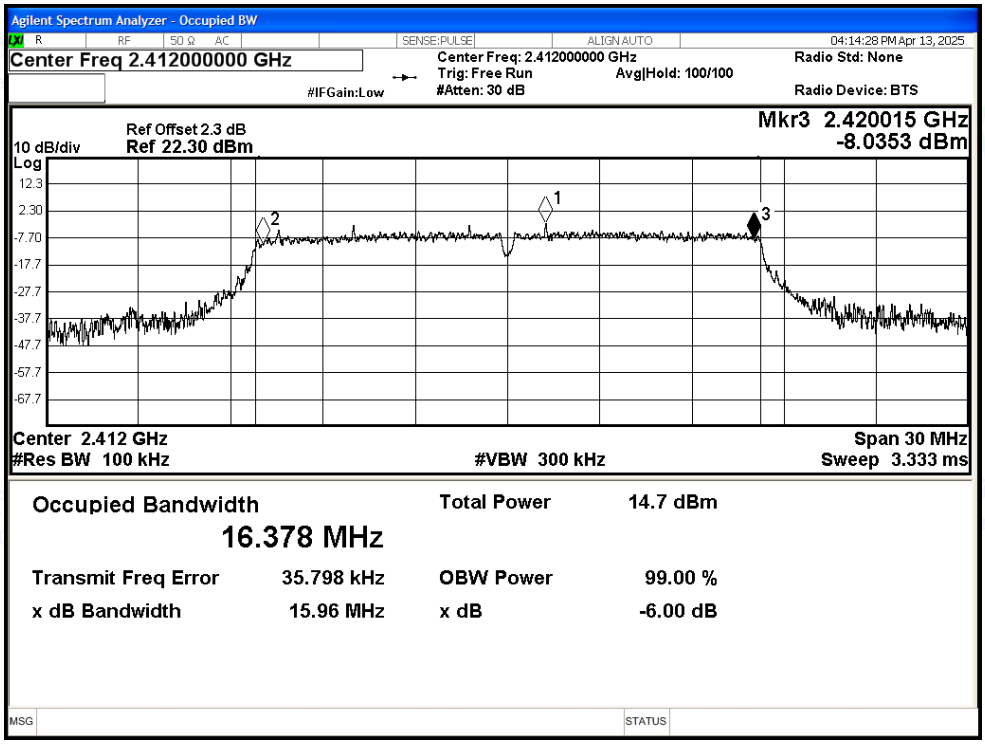
-6dB Bandwidth NVNT b 2437MHz Ant



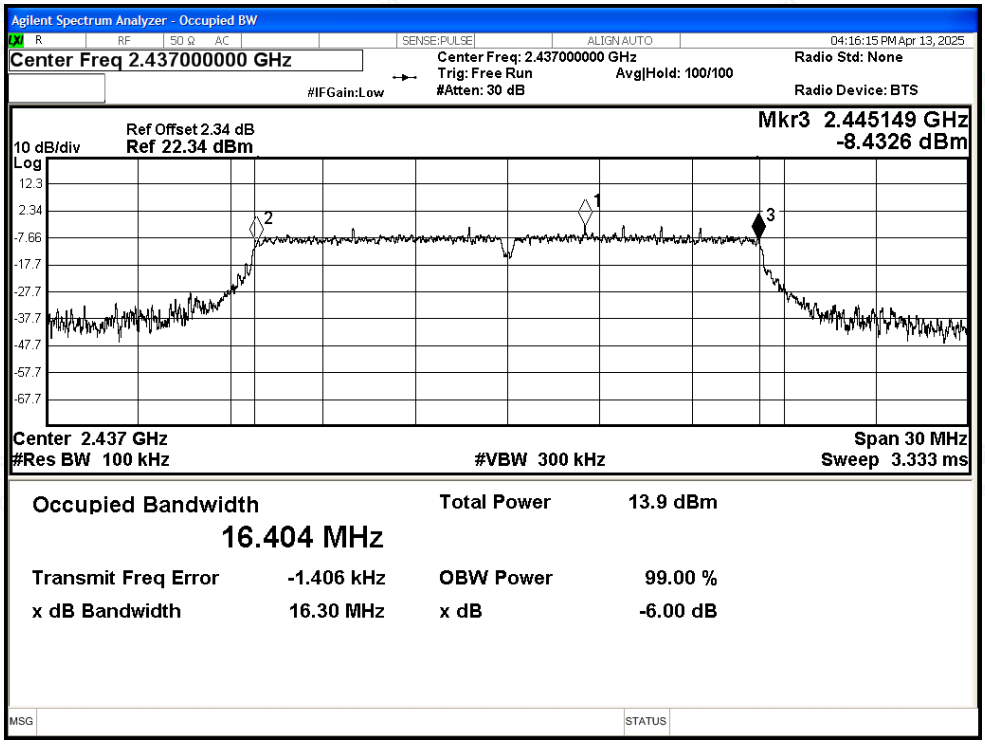
-6dB Bandwidth NVNT b 2462MHz Ant



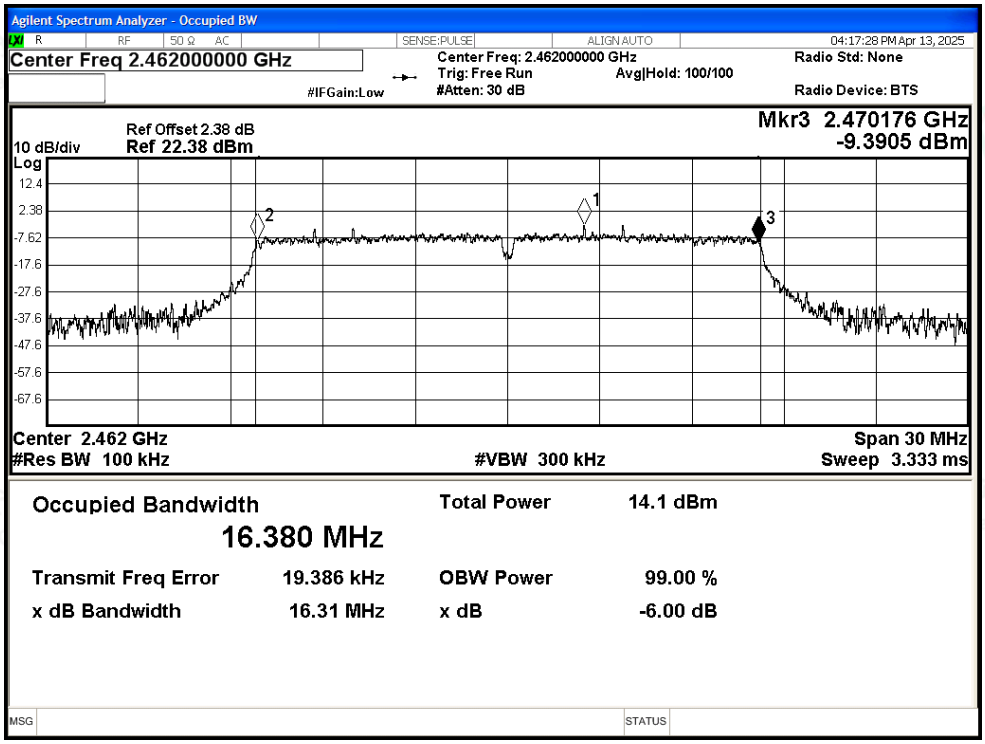
-6dB Bandwidth NVNT g 2412MHz Ant



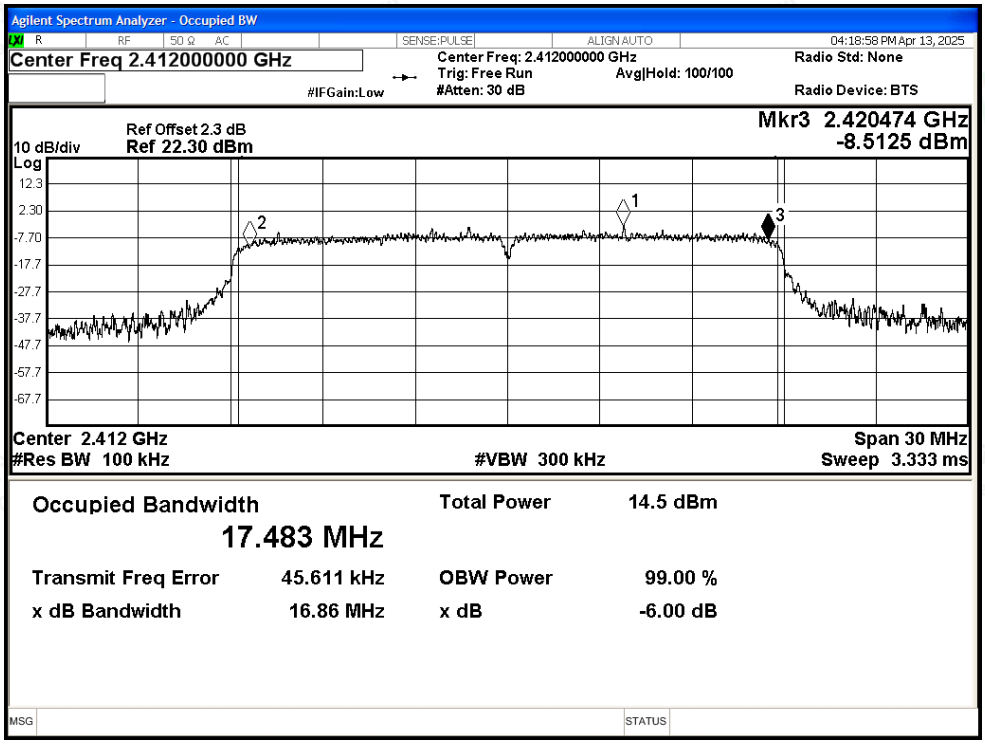
-6dB Bandwidth NVNT g 2437MHz Ant



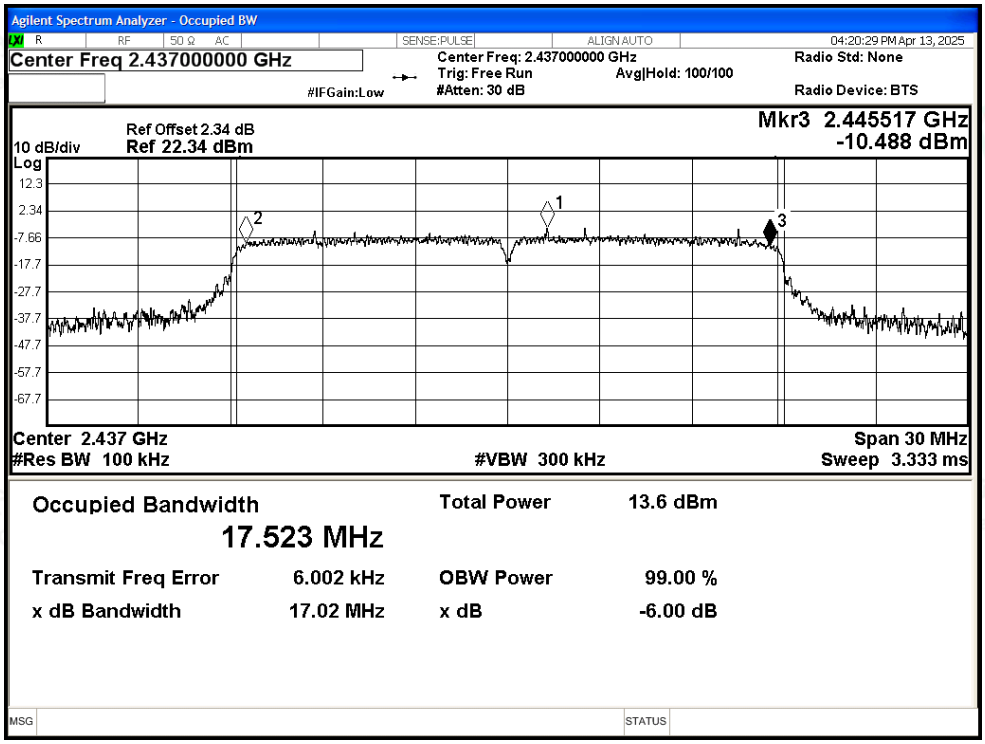
-6dB Bandwidth NVNT g 2462MHz Ant



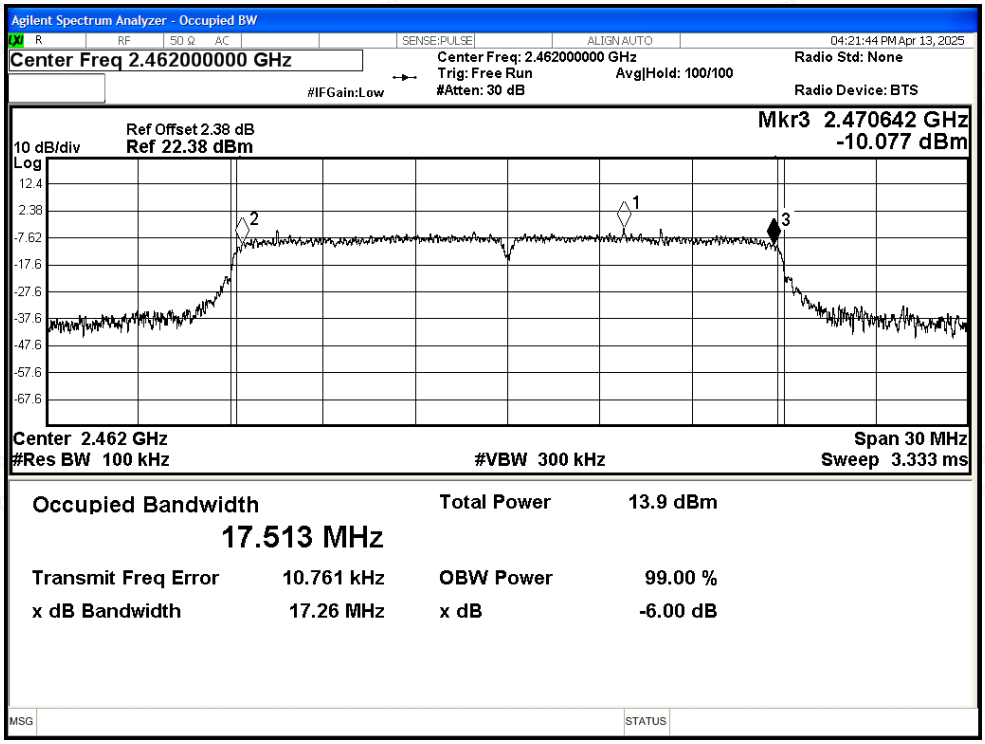
-6dB Bandwidth NVNT n20 2412MHz Ant



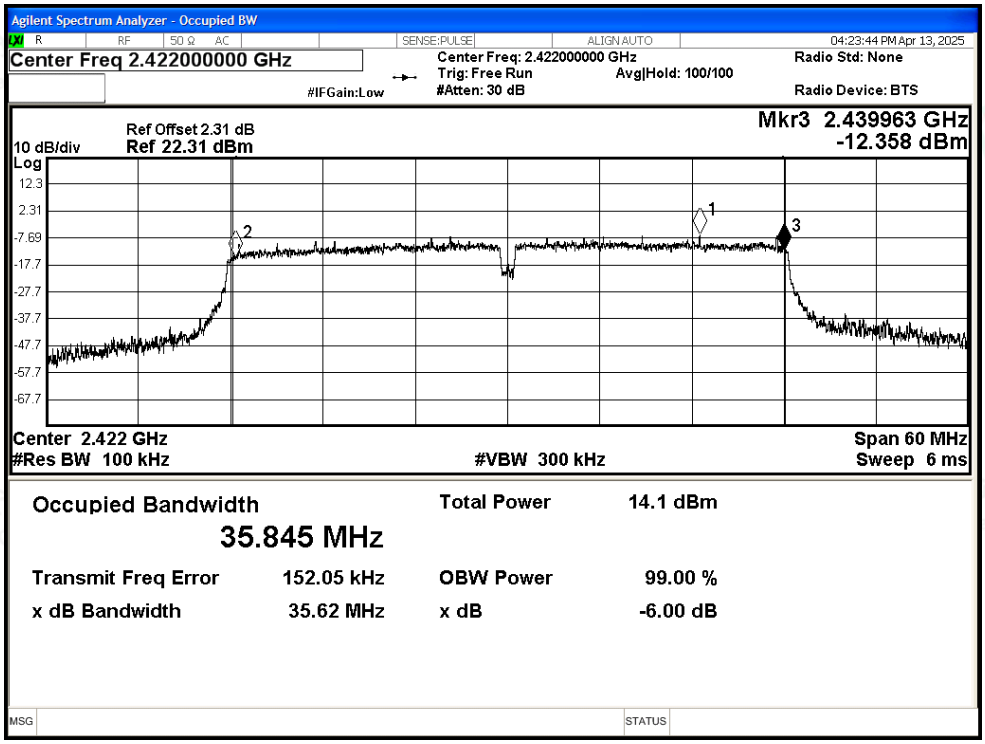
-6dB Bandwidth NVNT n20 2437MHz Ant



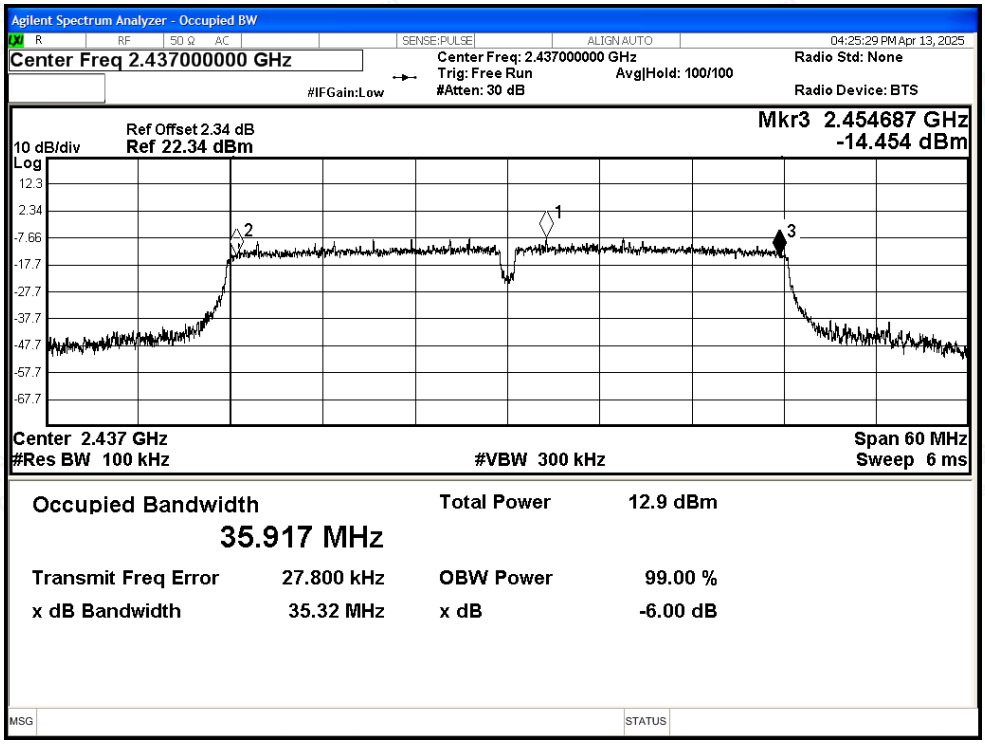
-6dB Bandwidth NVNT n20 2462MHz Ant



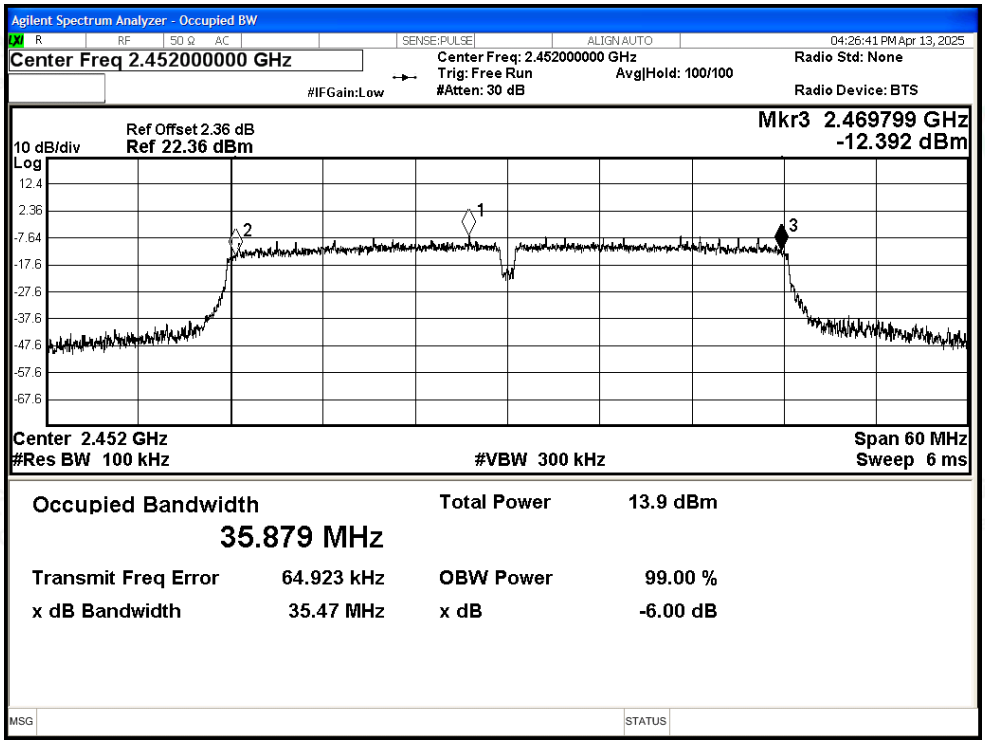
-6dB Bandwidth NVNT n40 2422MHz Ant



-6dB Bandwidth NVNT n40 2437MHz Ant



-6dB Bandwidth NVNT n40 2452MHz Ant



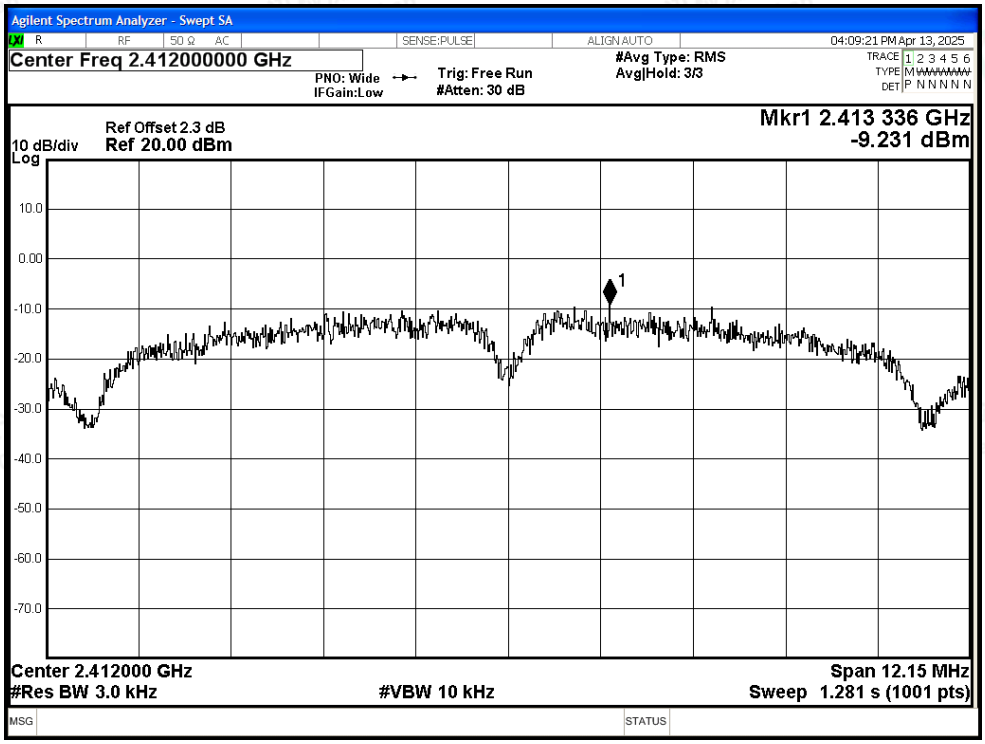
B.2 Maximum Peak Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant	15.29	30	Pass
NVNT	b	2437	Ant	14.49	30	Pass
NVNT	b	2462	Ant	14.62	30	Pass
NVNT	g	2412	Ant	13.49	30	Pass
NVNT	g	2437	Ant	12.69	30	Pass
NVNT	g	2462	Ant	12.84	30	Pass
NVNT	n20	2412	Ant	13.27	30	Pass
NVNT	n20	2437	Ant	12.37	30	Pass
NVNT	n20	2462	Ant	12.76	30	Pass
NVNT	n40	2422	Ant	12.68	30	Pass
NVNT	n40	2437	Ant	11.51	30	Pass
NVNT	n40	2452	Ant	12.37	30	Pass

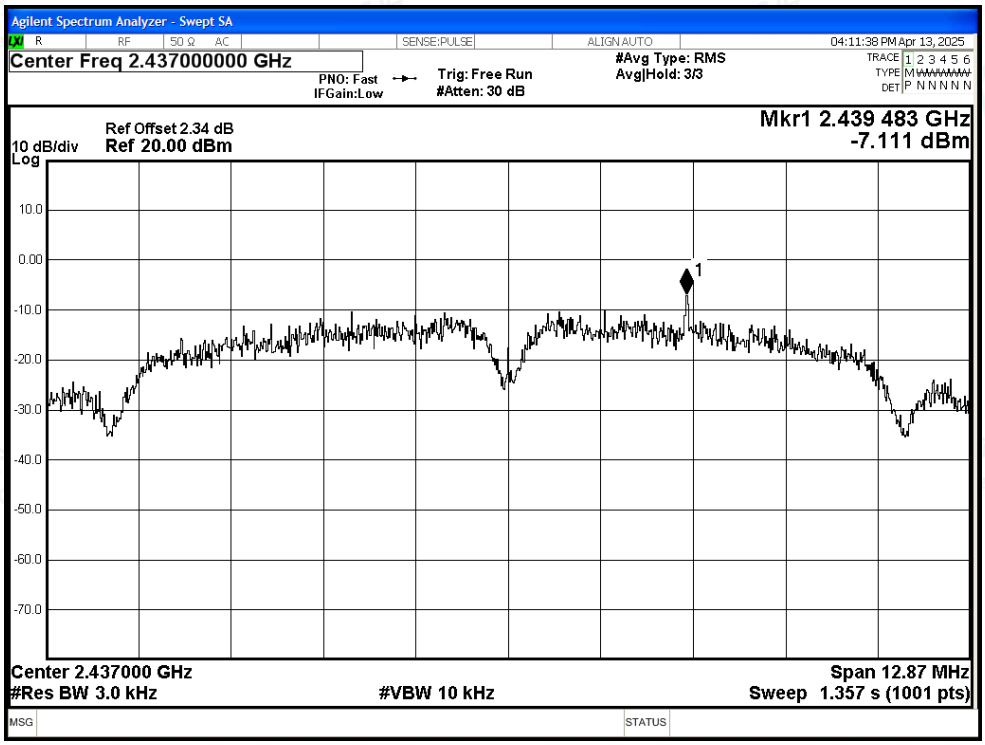
B.3 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant	-9.23	8	Pass
NVNT	b	2437	Ant	-7.11	8	Pass
NVNT	b	2462	Ant	-8.8	8	Pass
NVNT	g	2412	Ant	-16.75	8	Pass
NVNT	g	2437	Ant	-18.18	8	Pass
NVNT	g	2462	Ant	-17.67	8	Pass
NVNT	n20	2412	Ant	-17.5	8	Pass
NVNT	n20	2437	Ant	-18.38	8	Pass
NVNT	n20	2462	Ant	-16.79	8	Pass
NVNT	n40	2422	Ant	-21.51	8	Pass
NVNT	n40	2437	Ant	-22.25	8	Pass
NVNT	n40	2452	Ant	-21.17	8	Pass

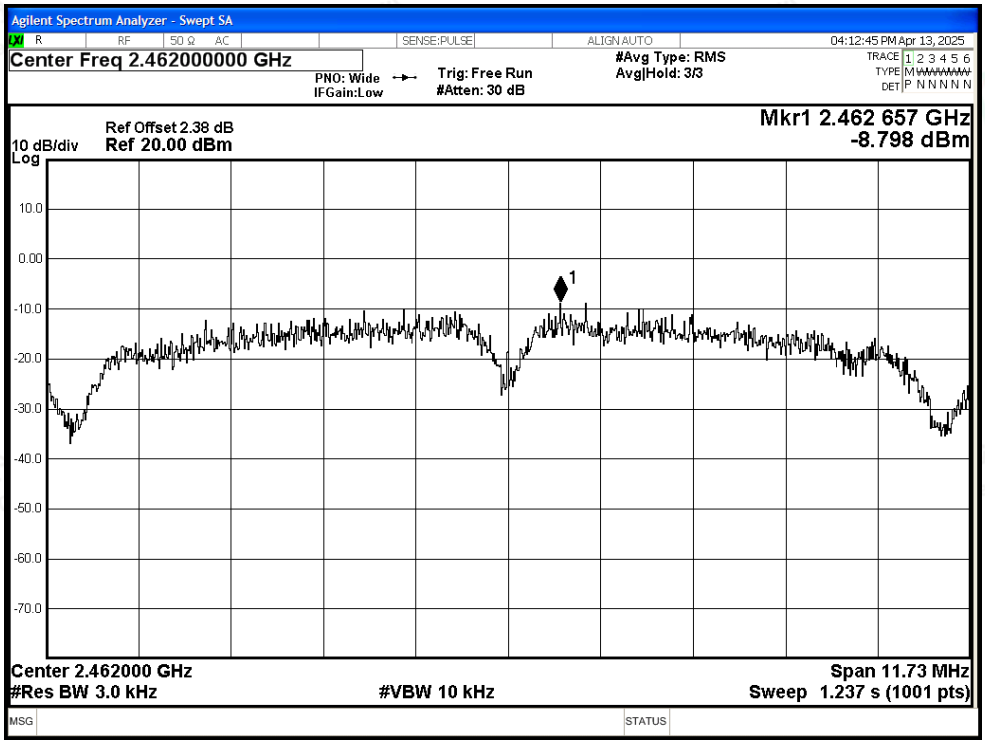
Test Graphs
PSD NVNT b 2412MHz Ant



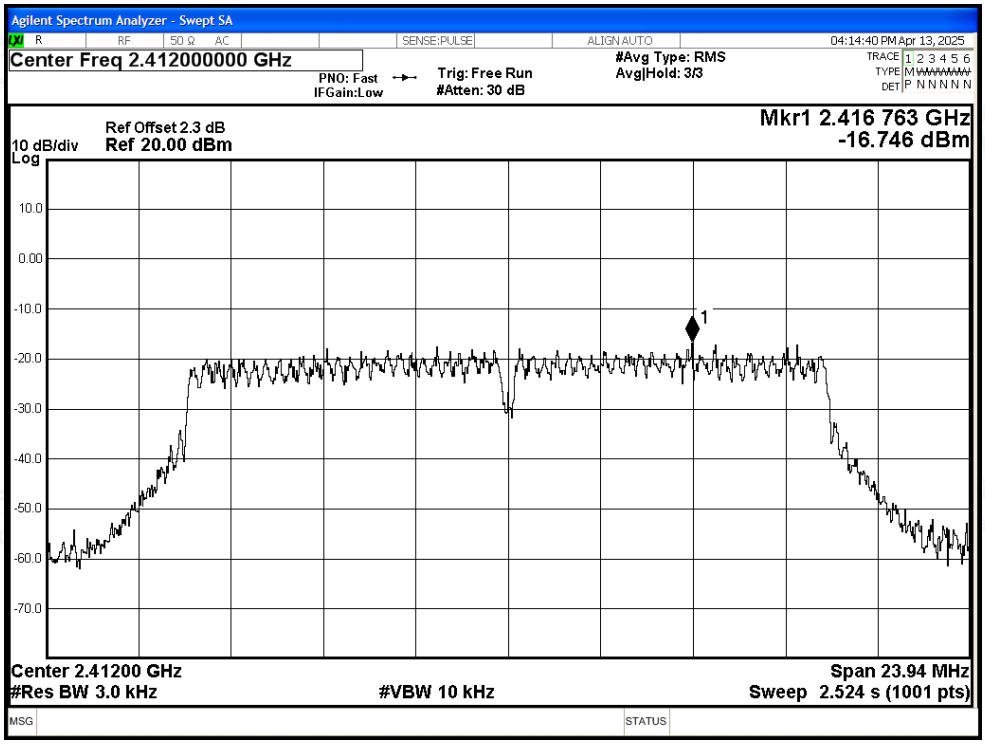
PSD NVNT b 2437MHz Ant



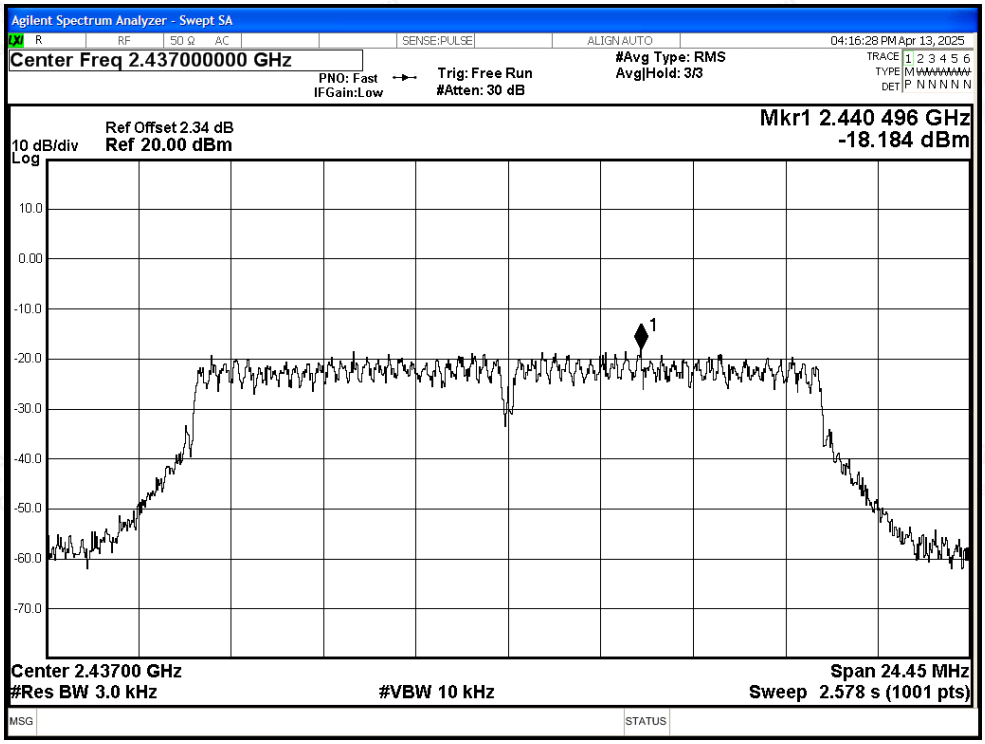
PSD NVNT b 2462MHz Ant



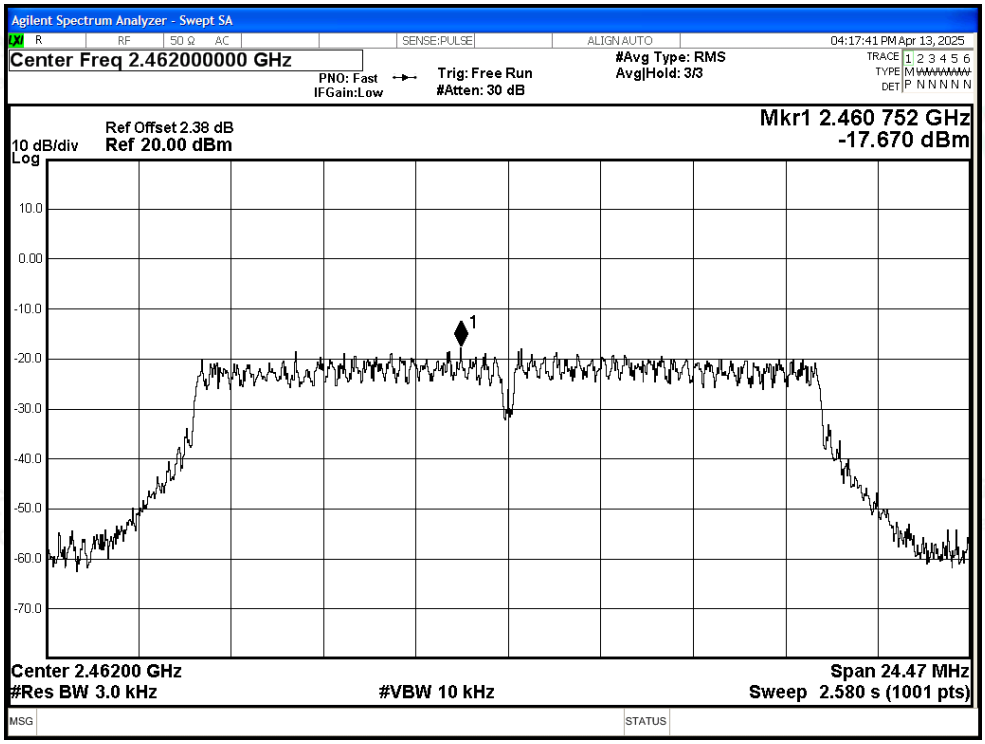
PSD NVNT g 2412MHz Ant



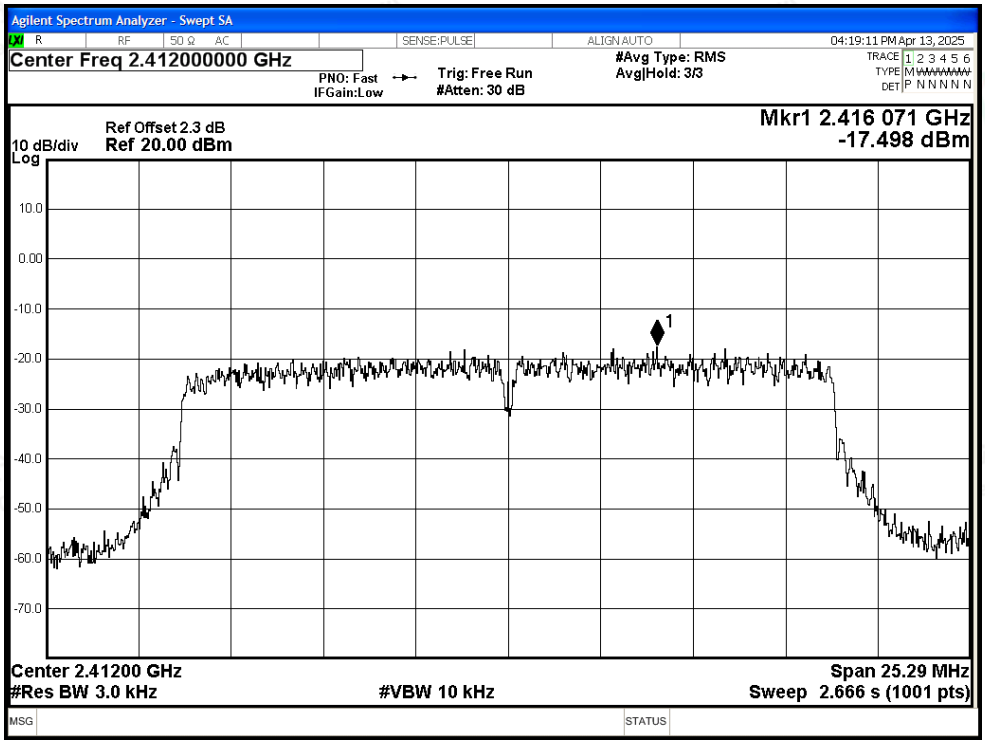
PSD NVNT g 2437MHz Ant



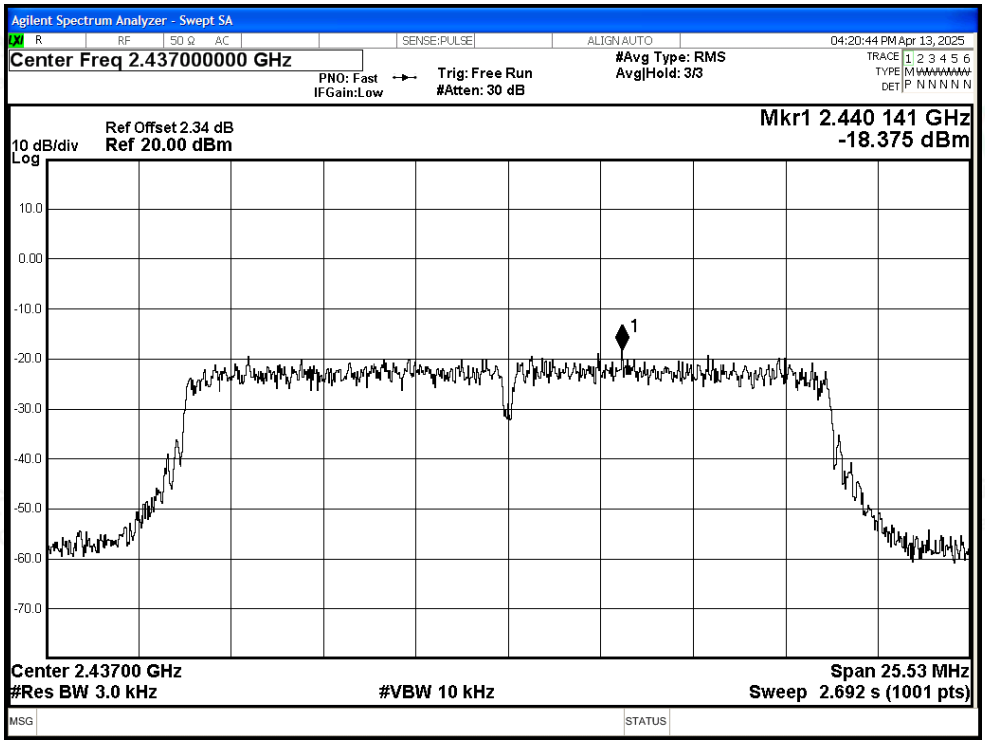
PSD NVNT g 2462MHz Ant



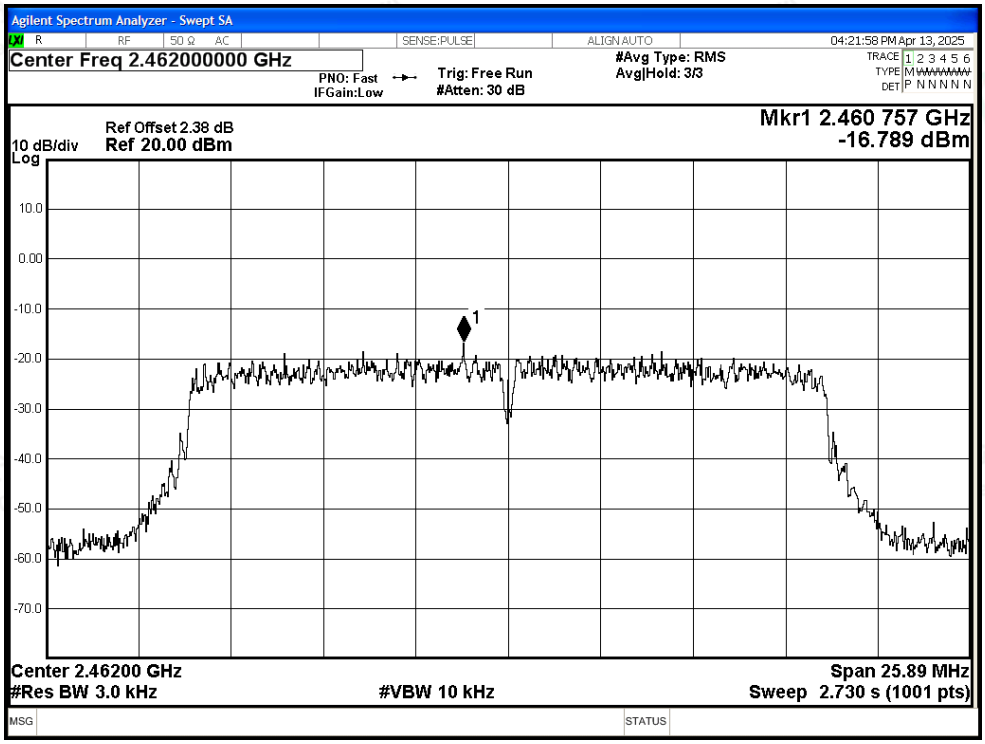
PSD NVNT n20 2412MHz Ant



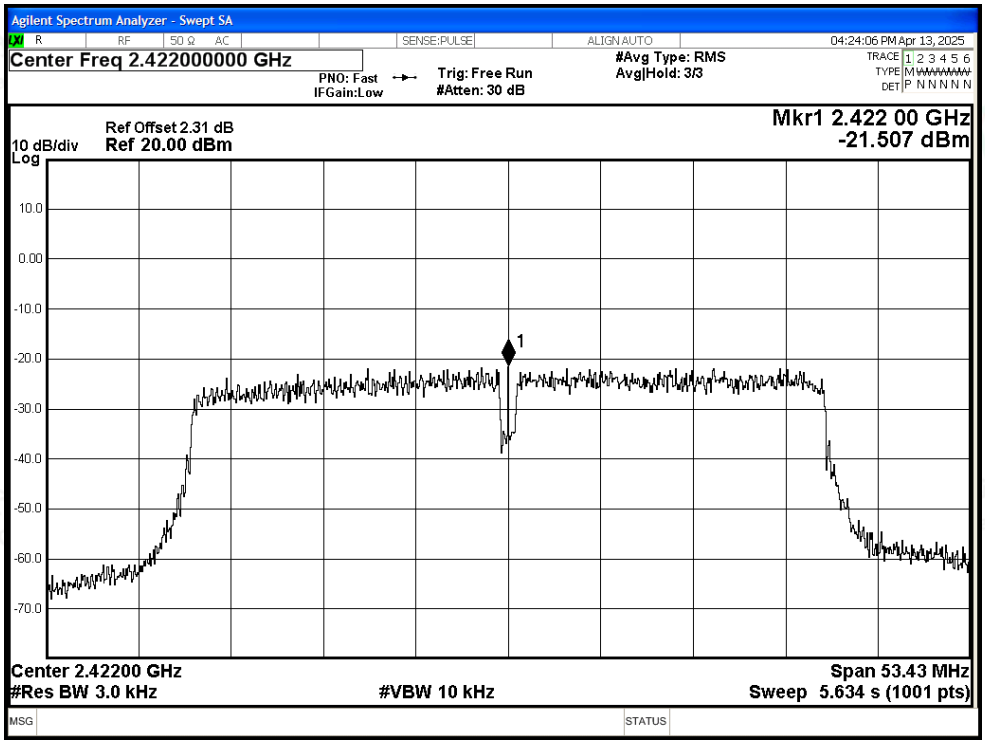
PSD NVNT n20 2437MHz Ant



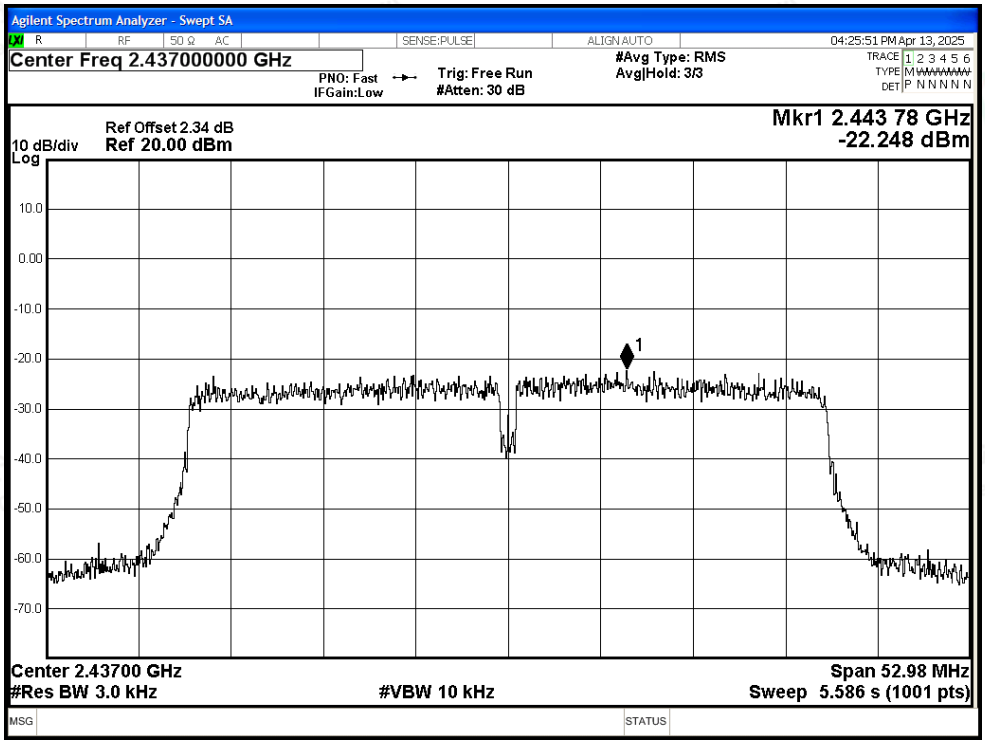
PSD NVNT n20 2462MHz Ant



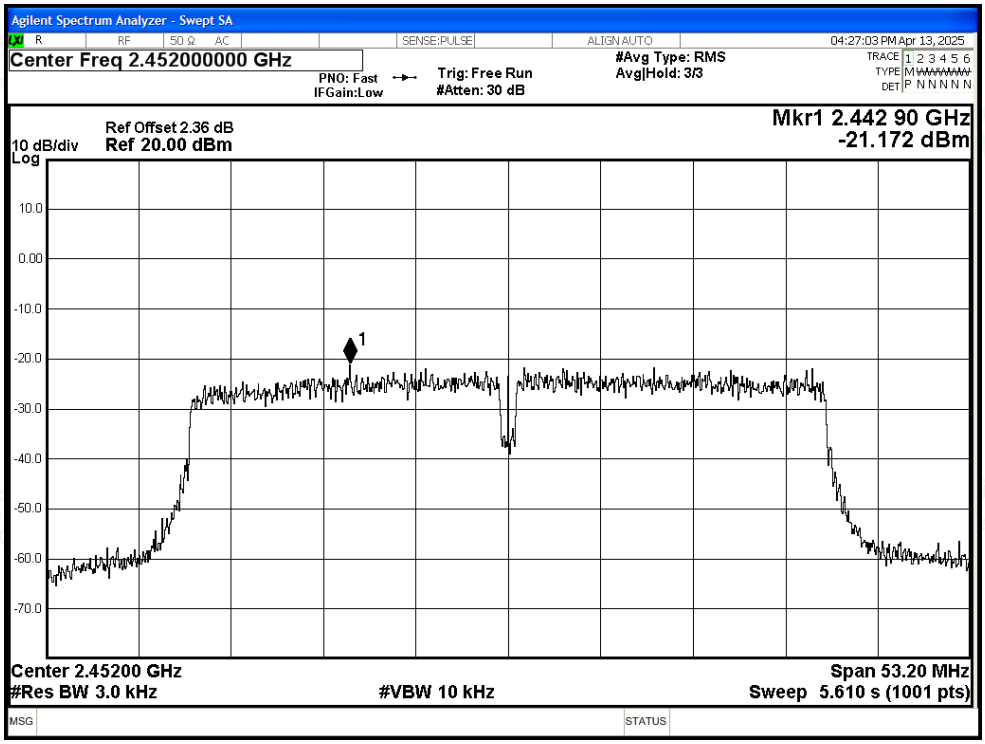
PSD NVNT n40 2422MHz Ant



PSD NVNT n40 2437MHz Ant



PSD NVNT n40 2452MHz Ant

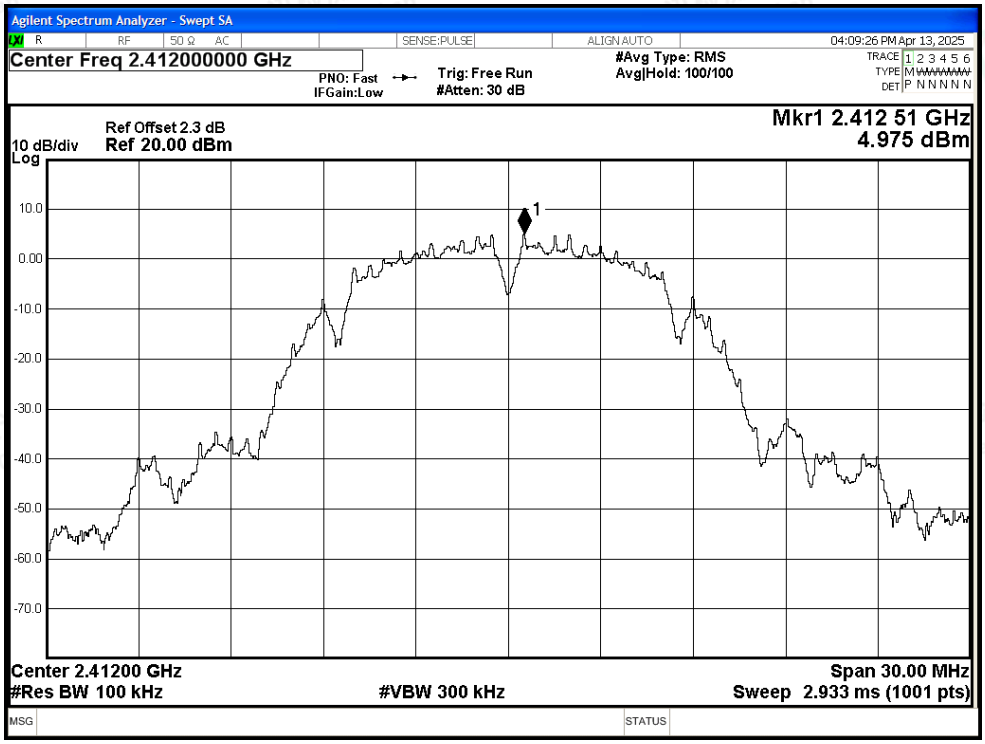


B.4 Band Edge

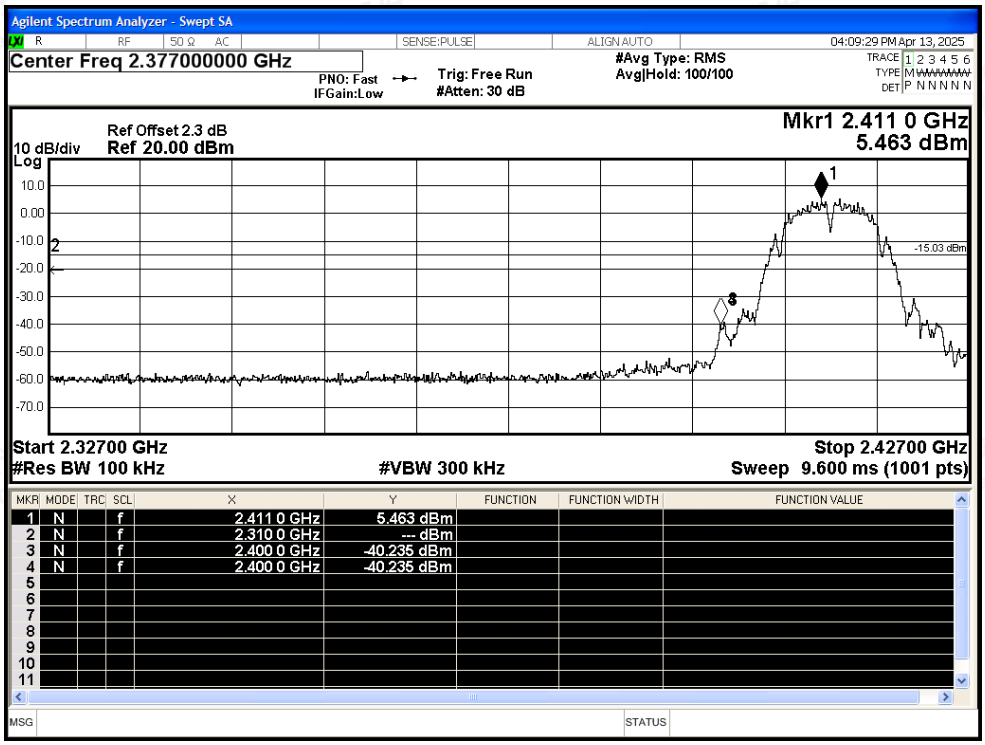
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant	-45.21	-20	Pass
NVNT	b	2462	Ant	-58.98	-20	Pass
NVNT	g	2412	Ant	-29.95	-20	Pass
NVNT	g	2462	Ant	-42.72	-20	Pass
NVNT	n20	2412	Ant	-31.23	-20	Pass
NVNT	n20	2462	Ant	-43.46	-20	Pass
NVNT	n40	2422	Ant	-35.87	-20	Pass
NVNT	n40	2452	Ant	-37.35	-20	Pass

Test Graphs

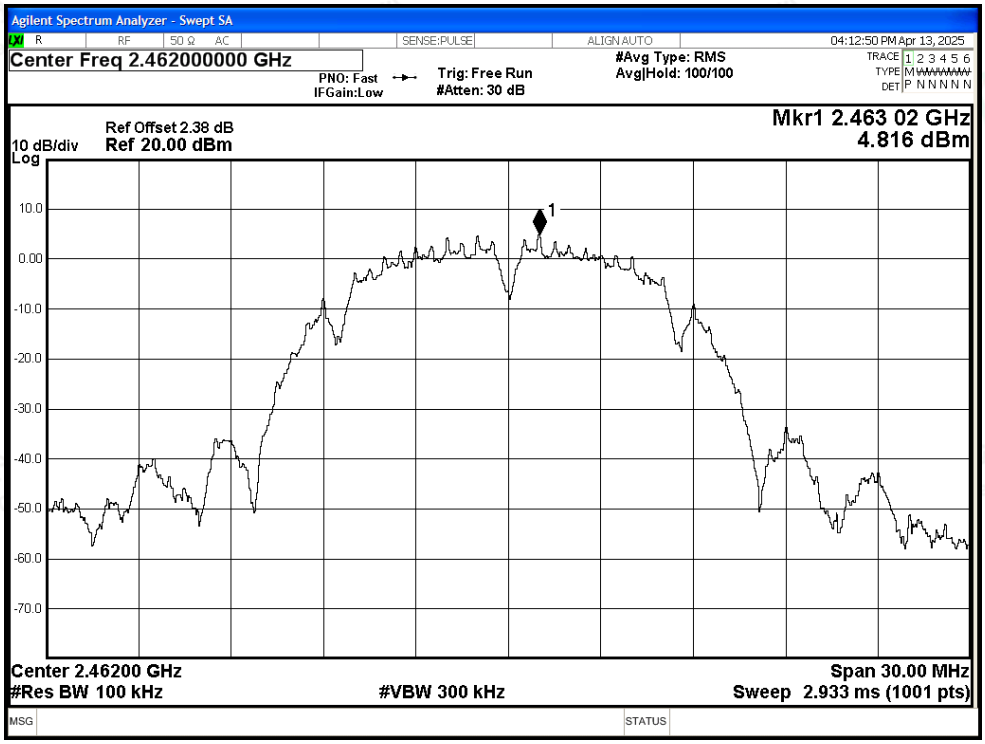
Band Edge NVNT b 2412MHz Ant Ref



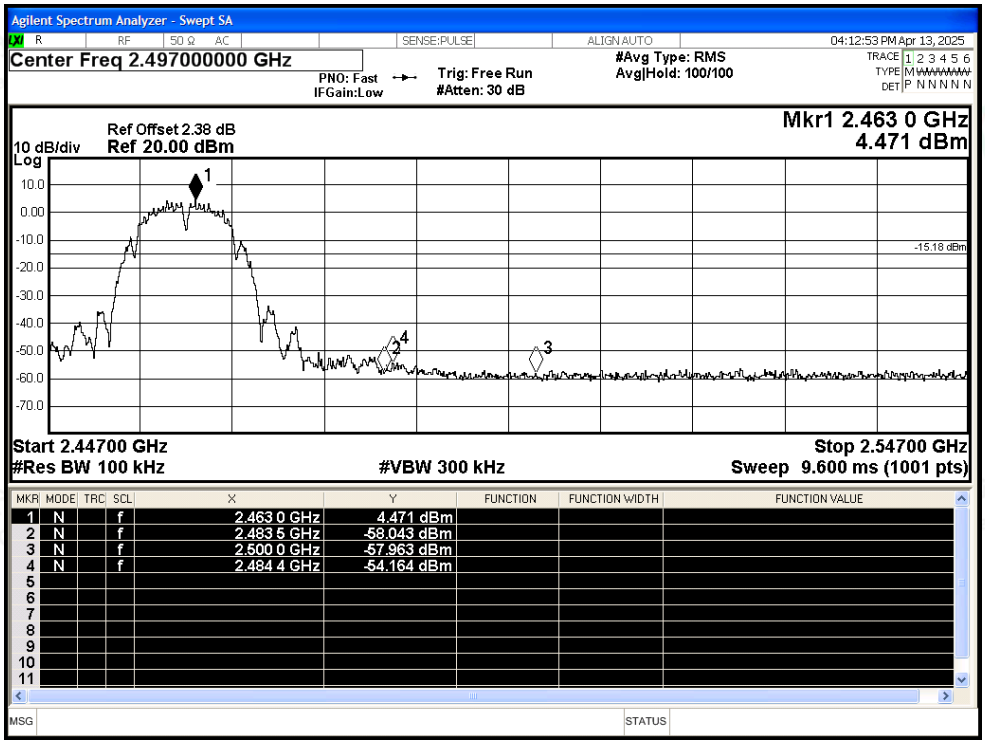
Band Edge NVNT b 2412MHz Ant Emission



Band Edge NVNT b 2462MHz Ant Ref

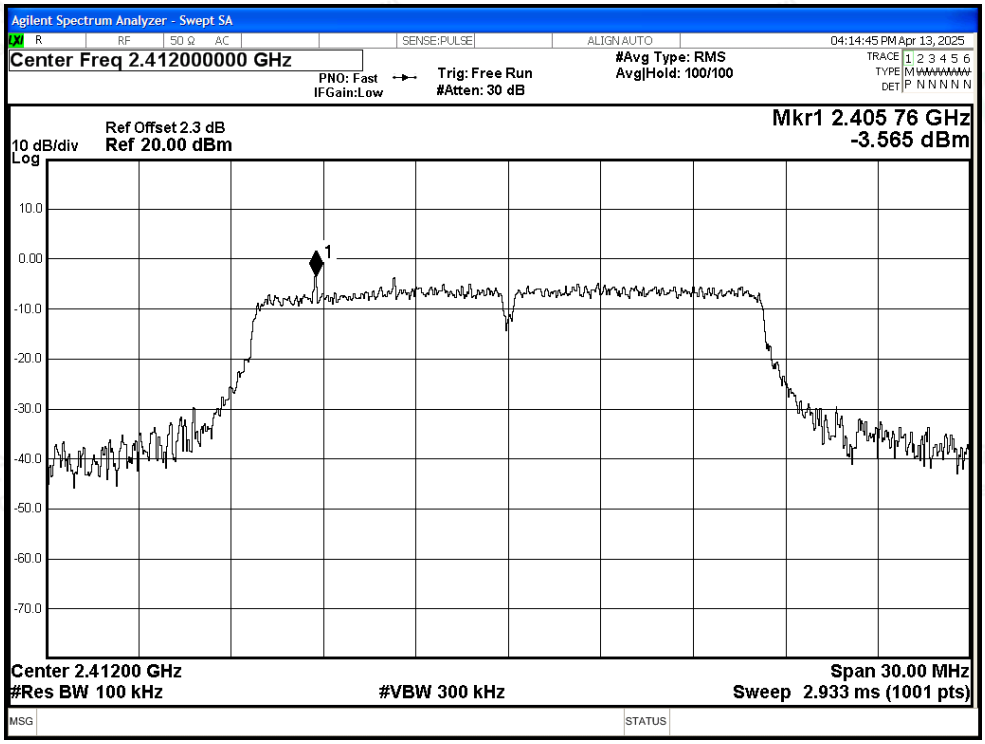


Band Edge NVNT b 2462MHz Ant Emission

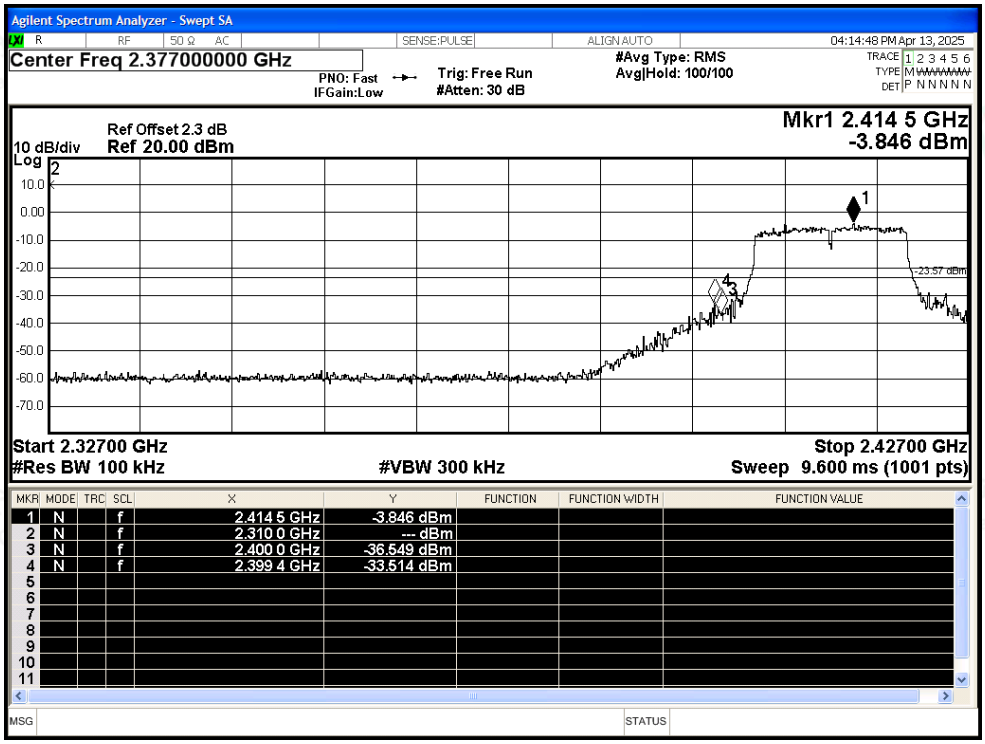


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.463 0 GHz	4.471 dBm			
2	N		f	2.483 5 GHz	-58.043 dBm			
3	N		f	2.500 0 GHz	-57.963 dBm			
4	N		f	2.484 4 GHz	-54.164 dBm			
5								
6								
7								
8								
9								
10								
11								

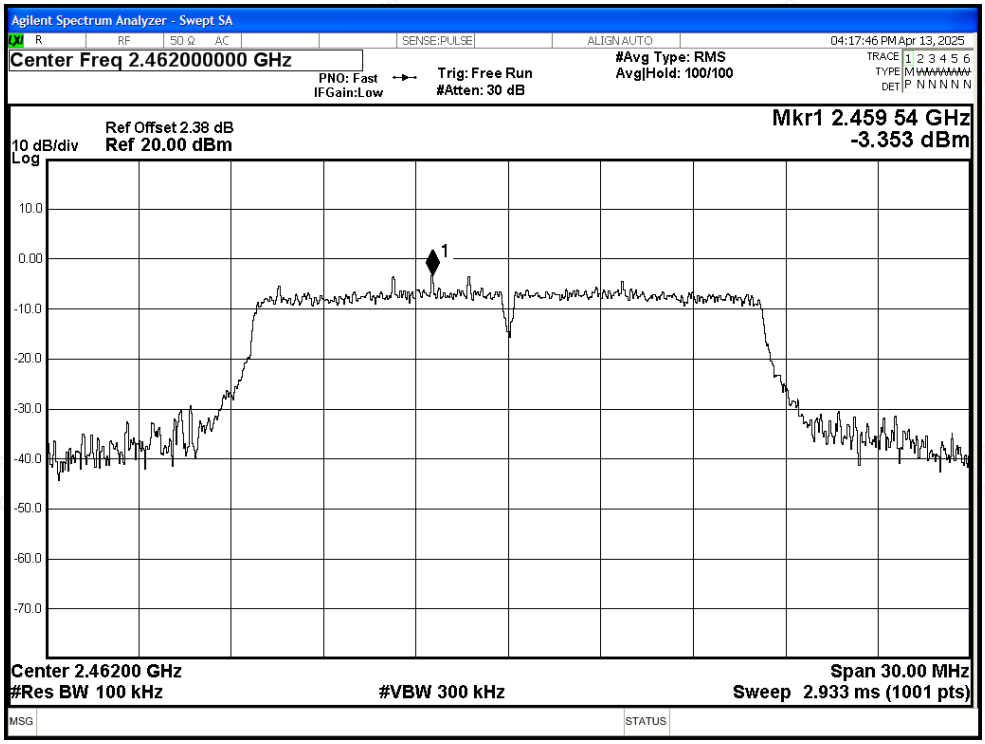
Band Edge NVNT g 2412MHz Ant Ref



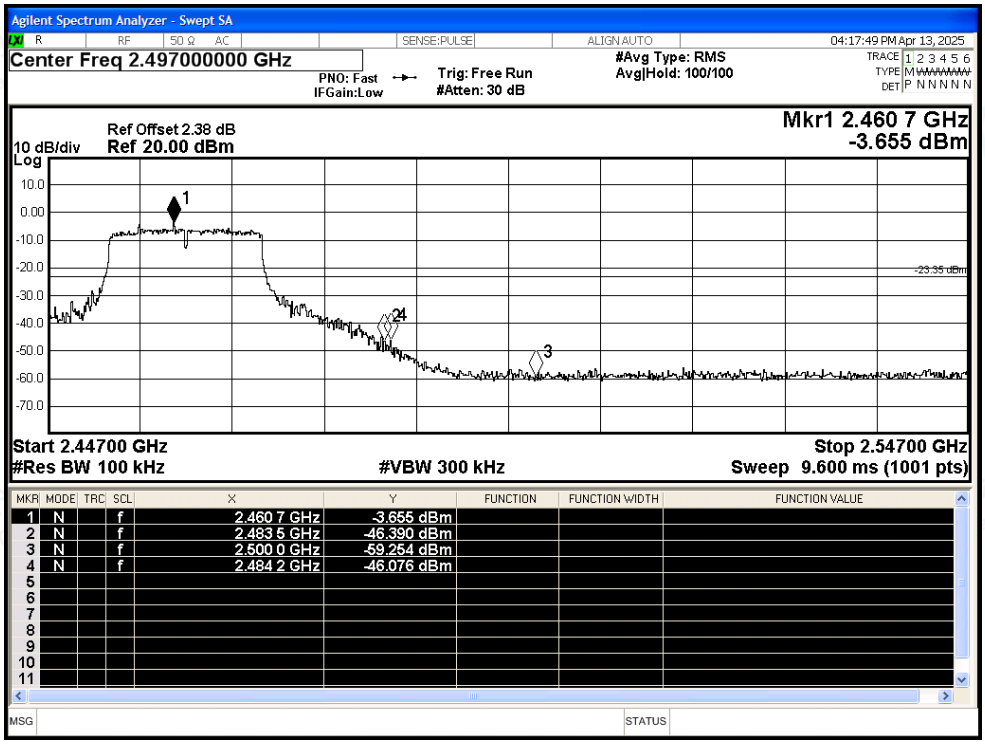
Band Edge NVNT g 2412MHz Ant Emission



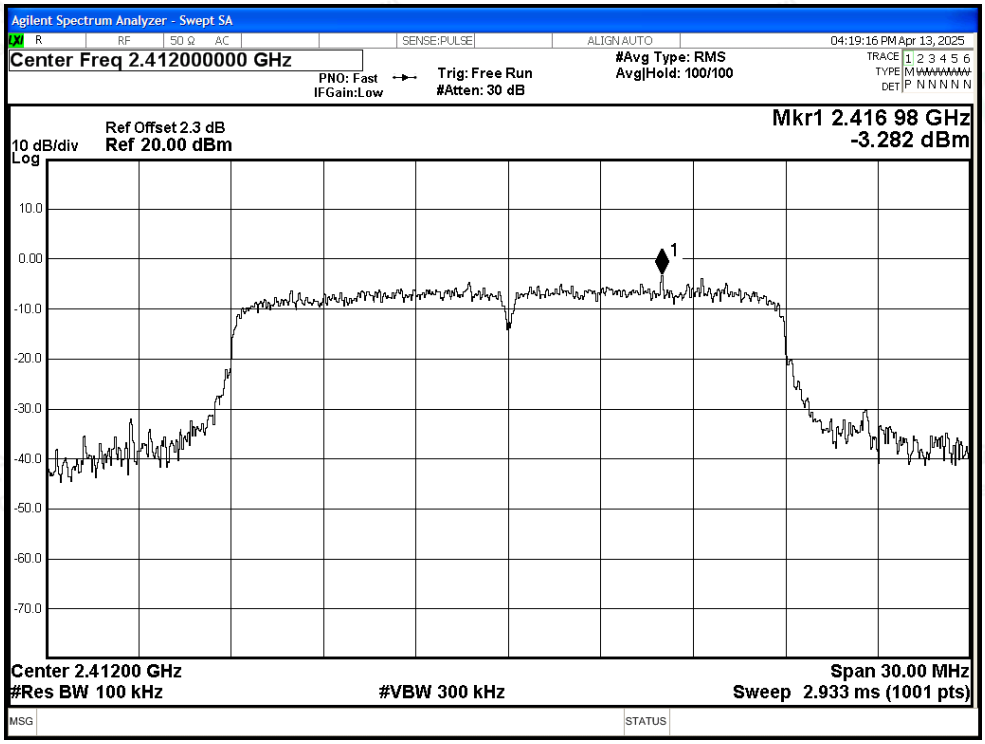
Band Edge NVNT g 2462MHz Ant Ref



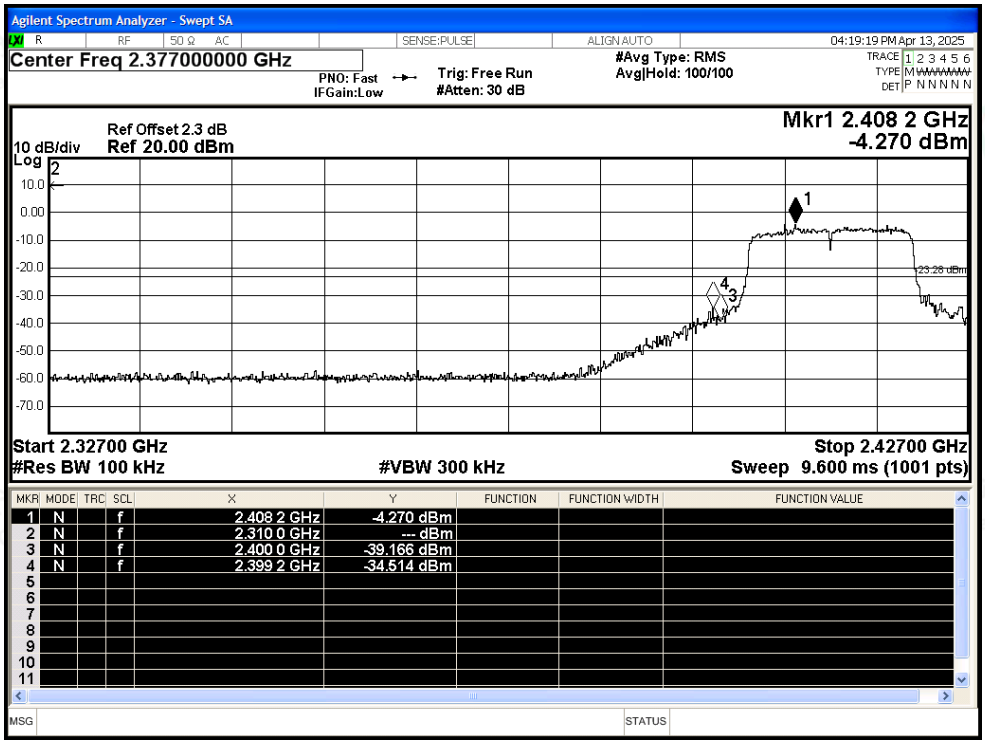
Band Edge NVNT g 2462MHz Ant Emission



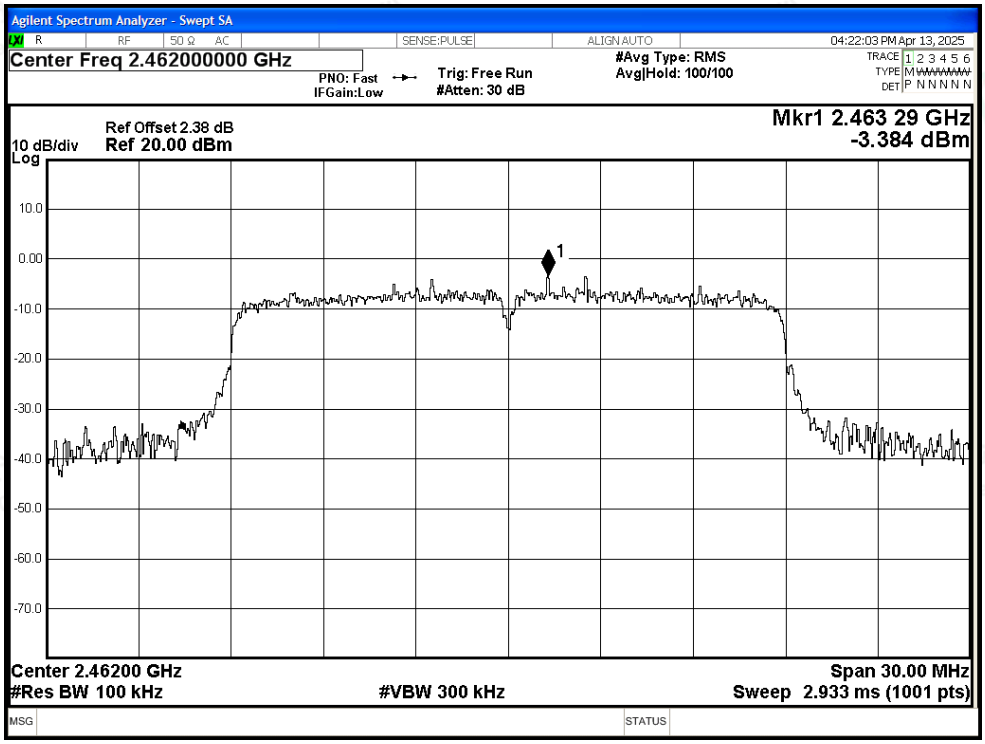
Band Edge NVNT n20 2412MHz Ant Ref



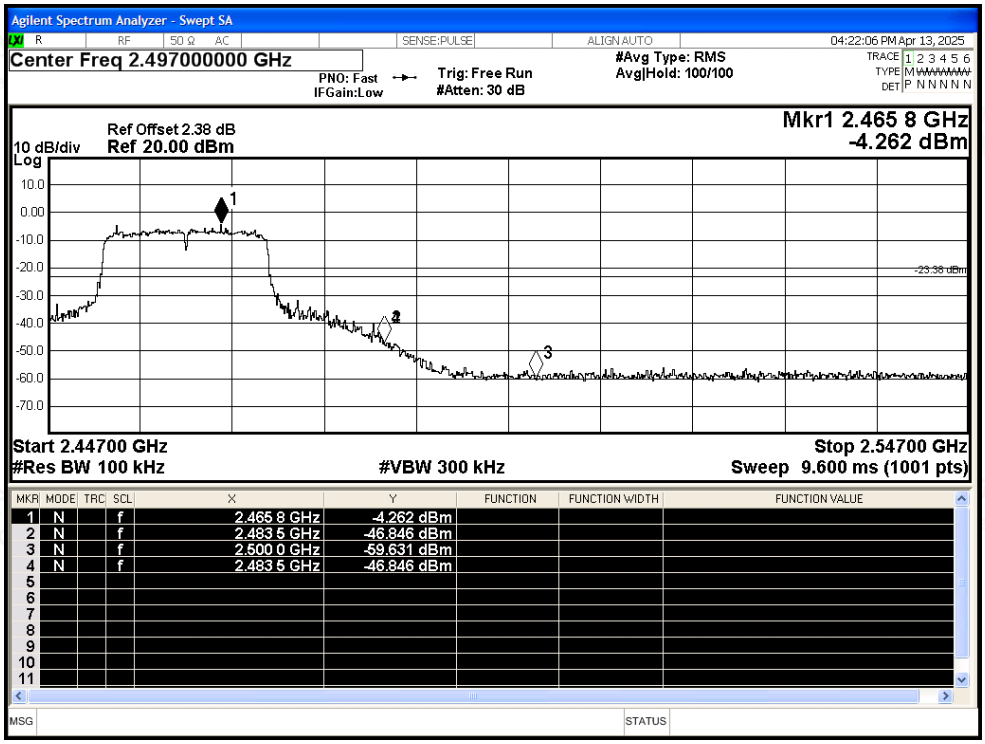
Band Edge NVNT n20 2412MHz Ant Emission



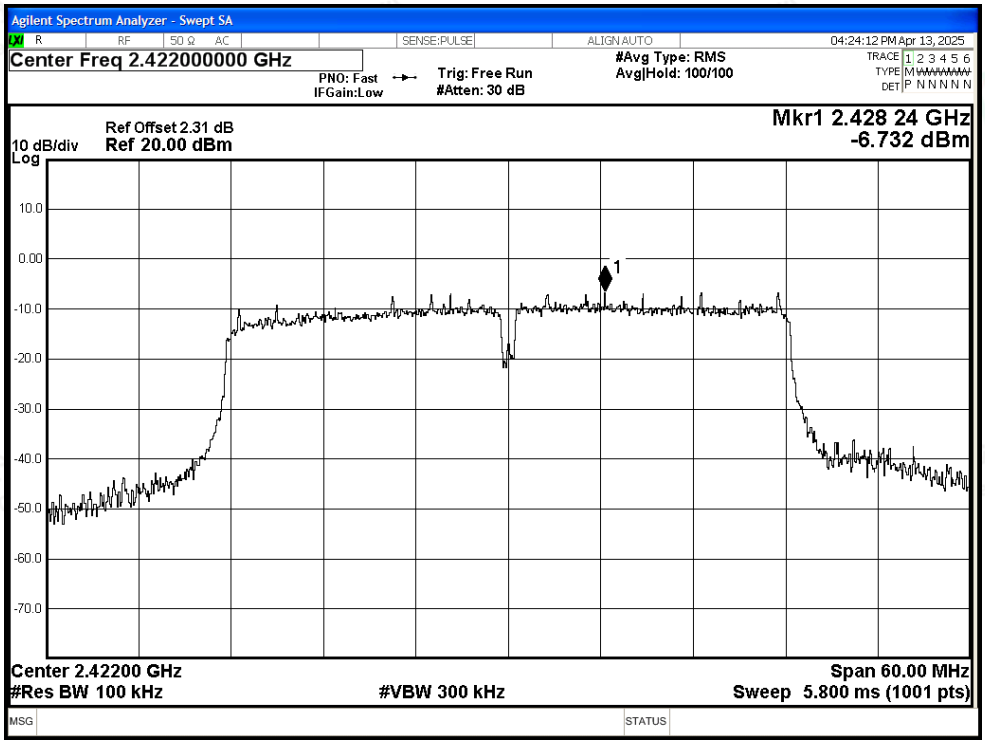
Band Edge NVNT n20 2462MHz Ant Ref



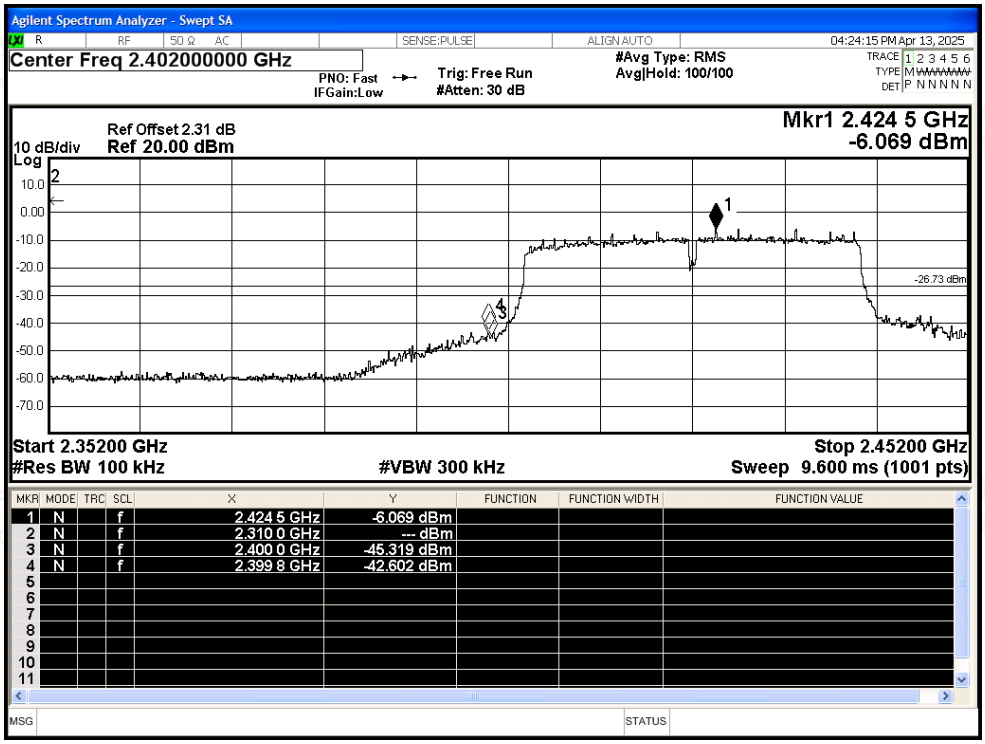
Band Edge NVNT n20 2462MHz Ant Emission



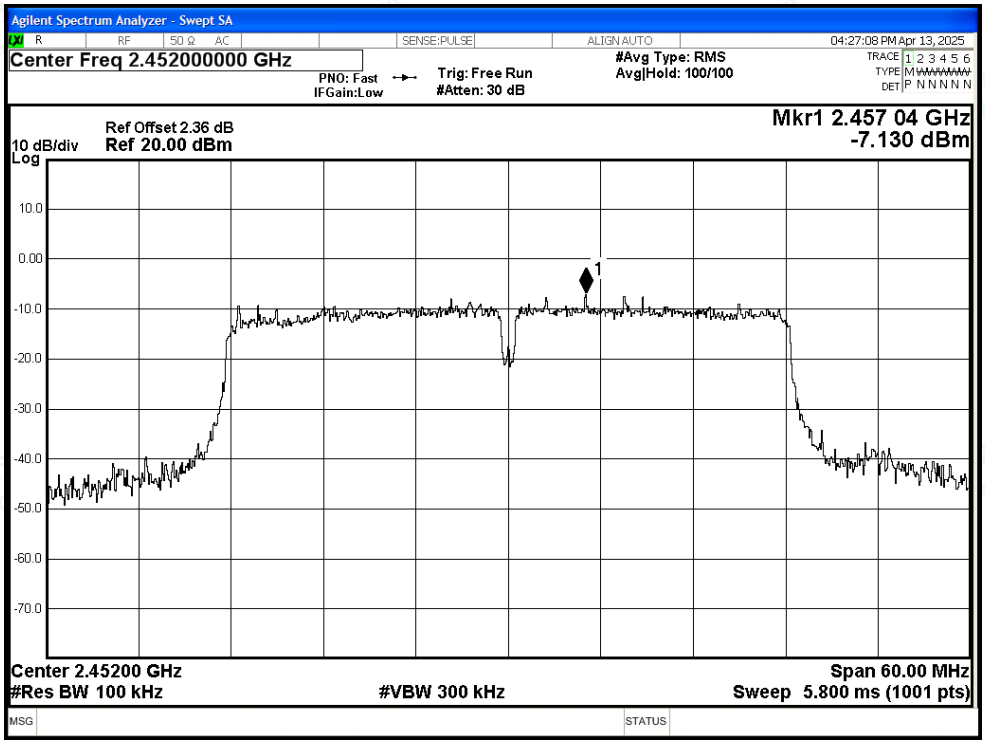
Band Edge NVNT n40 2422MHz Ant Ref



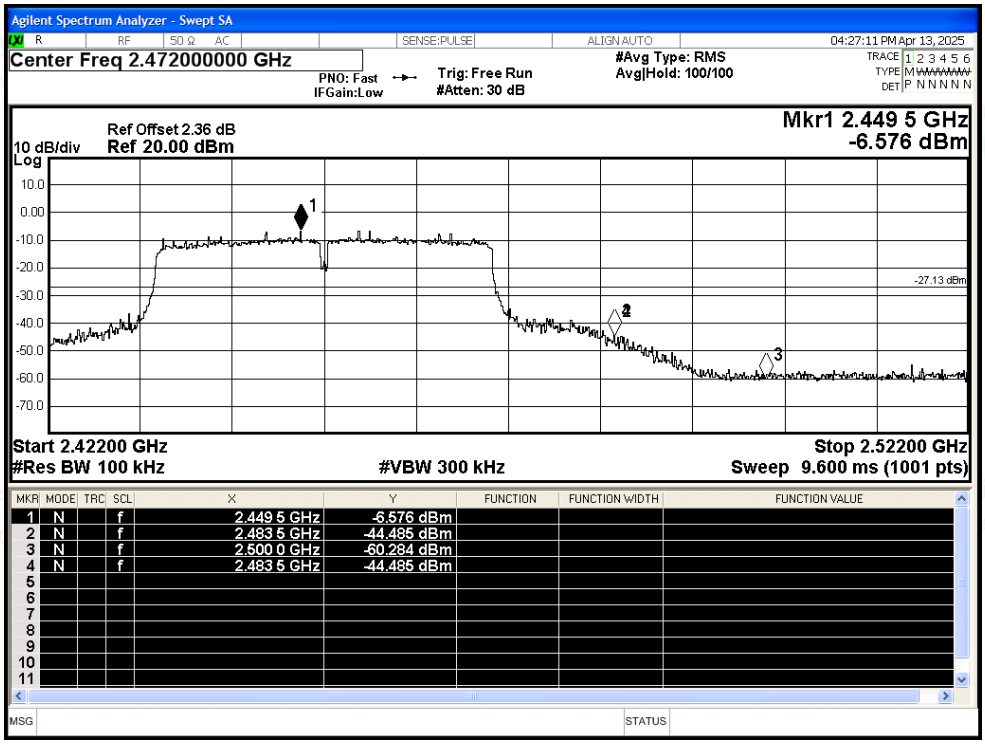
Band Edge NVNT n40 2422MHz Ant Emission



Band Edge NVNT n40 2452MHz Ant Ref



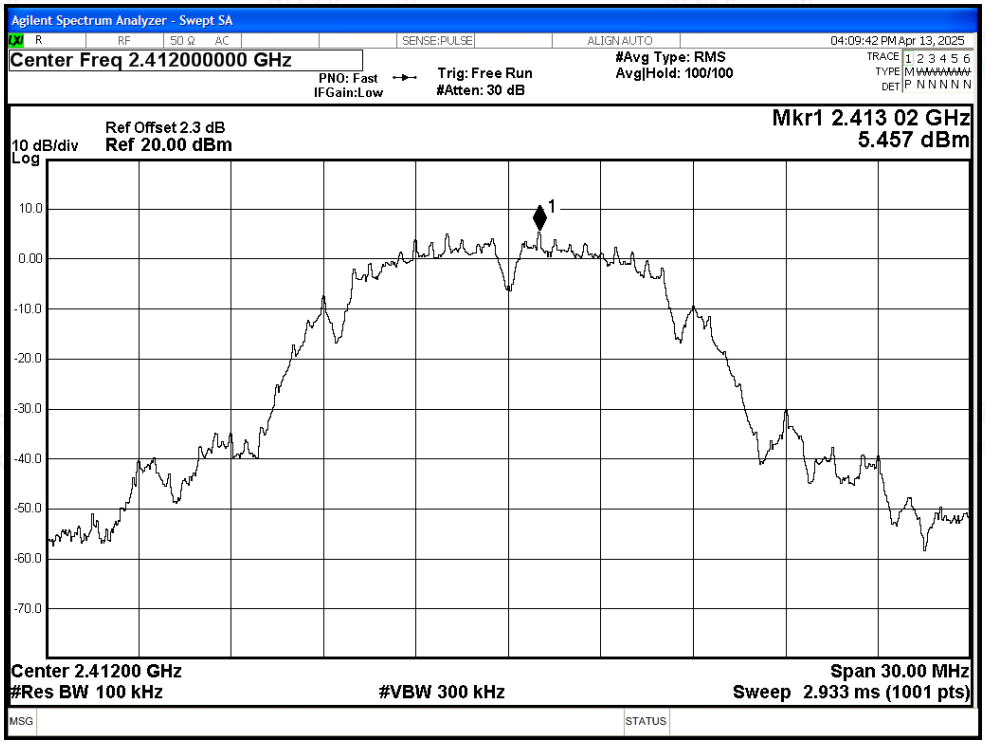
Band Edge NVNT n40 2452MHz Ant Emission



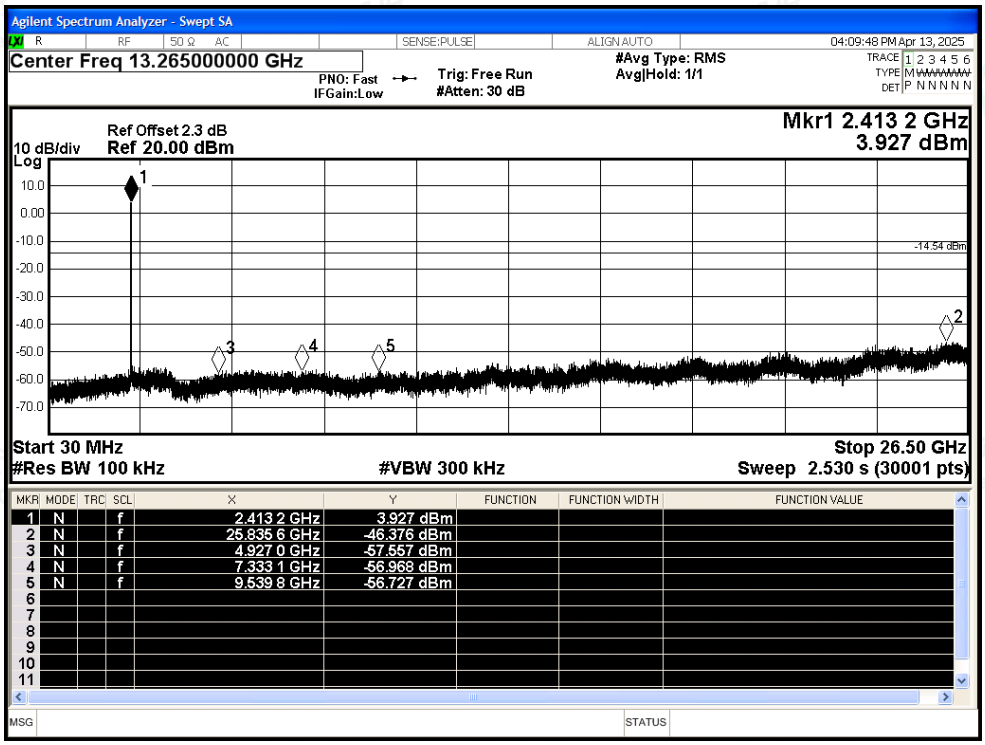
B.5 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant	-51.83	-20	Pass
NVNT	b	2437	Ant	-50.06	-20	Pass
NVNT	b	2462	Ant	-50.9	-20	Pass
NVNT	g	2412	Ant	-42.82	-20	Pass
NVNT	g	2437	Ant	-41.79	-20	Pass
NVNT	g	2462	Ant	-41.96	-20	Pass
NVNT	n20	2412	Ant	-42.48	-20	Pass
NVNT	n20	2437	Ant	-40.59	-20	Pass
NVNT	n20	2462	Ant	-42.19	-20	Pass
NVNT	n40	2422	Ant	-39.02	-20	Pass
NVNT	n40	2437	Ant	-38.04	-20	Pass
NVNT	n40	2452	Ant	-39.53	-20	Pass

Test Graphs
Tx. Spurious NVNT b 2412MHz Ant Ref

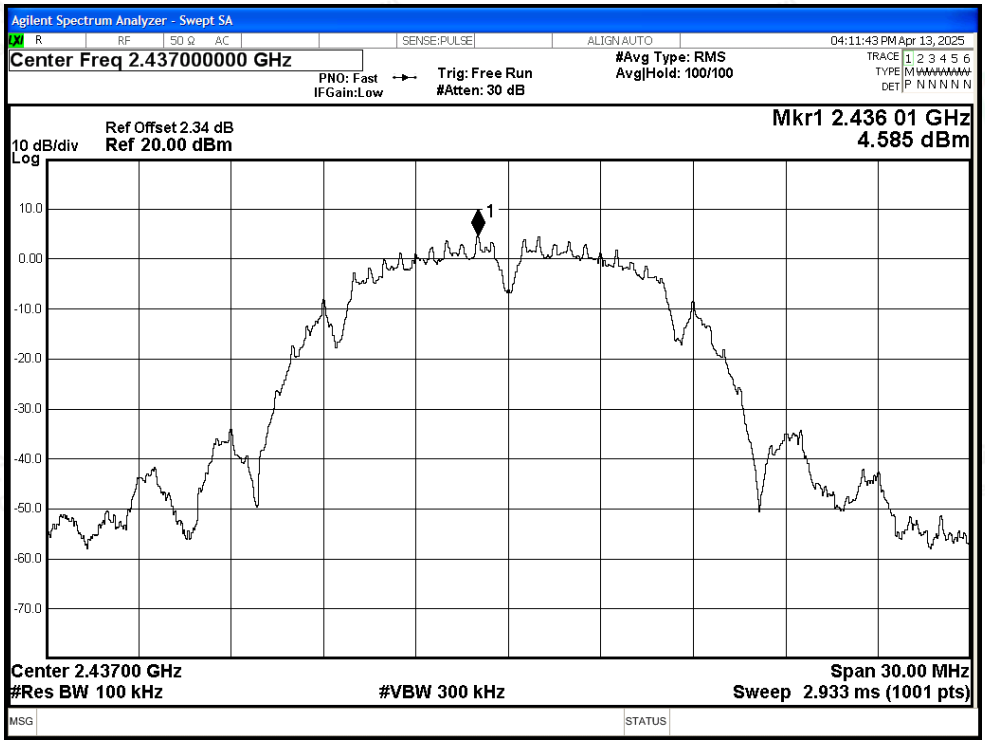


Tx. Spurious NVNT b 2412MHz Ant Emission

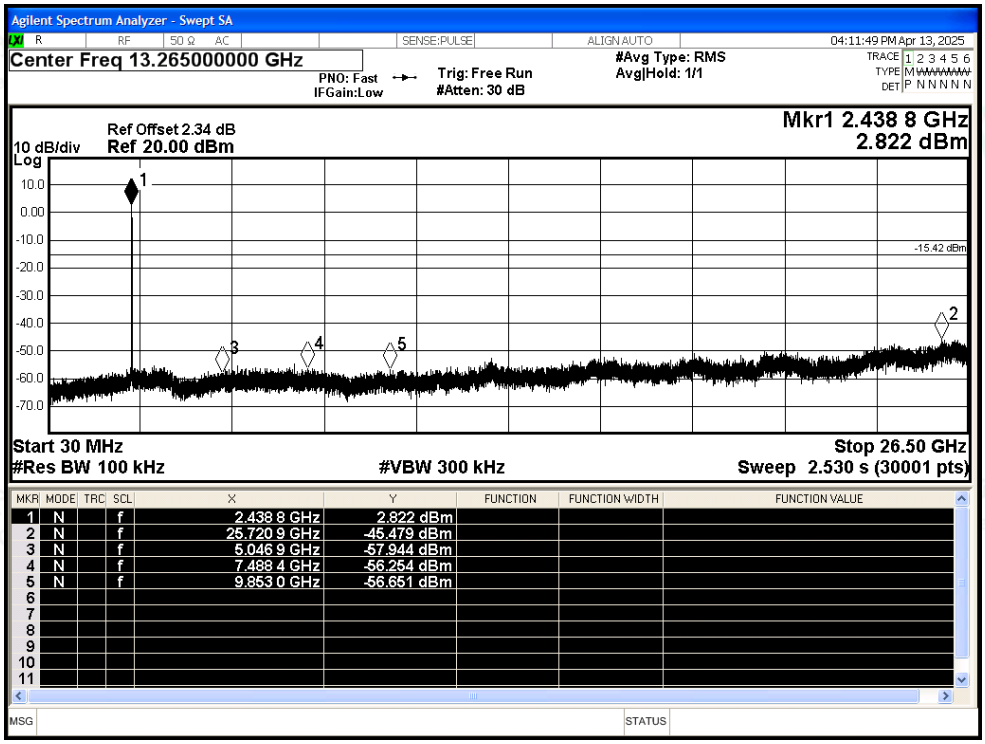


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.413 2 GHz	3.927 dBm			
2	N		f	25.835 6 GHz	-46.376 dBm			
3	N		f	4.927 0 GHz	-57.557 dBm			
4	N		f	7.333 1 GHz	-56.968 dBm			
5	N		f	9.539 8 GHz	-56.727 dBm			
6								
7								
8								
9								
10								
11								

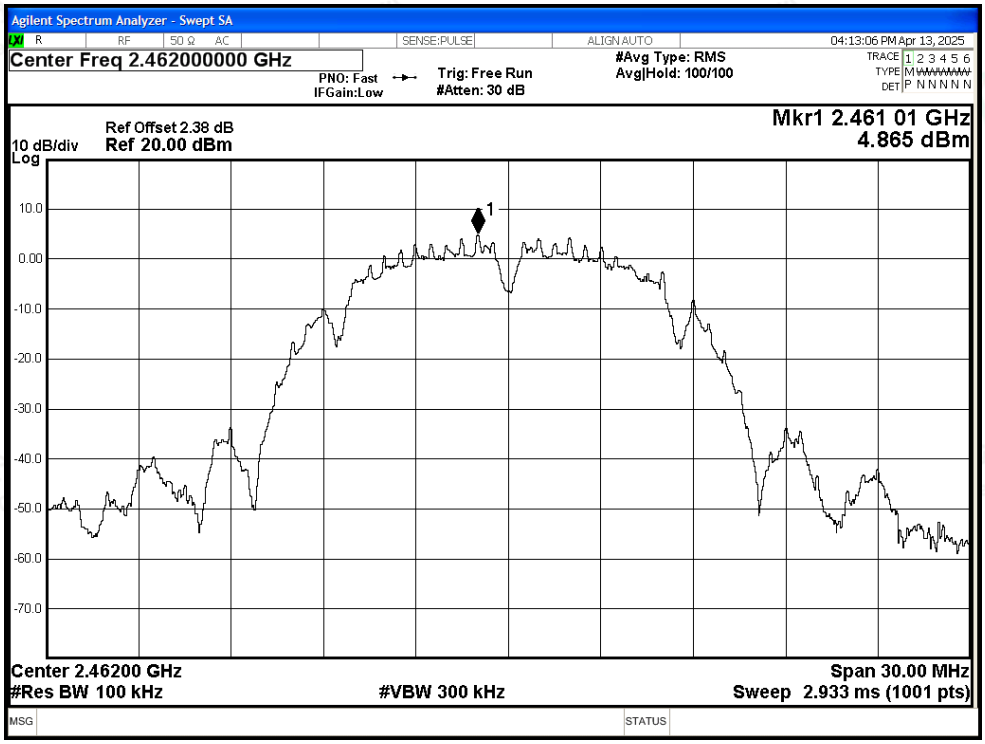
Tx. Spurious NVNT b 2437MHz Ant Ref



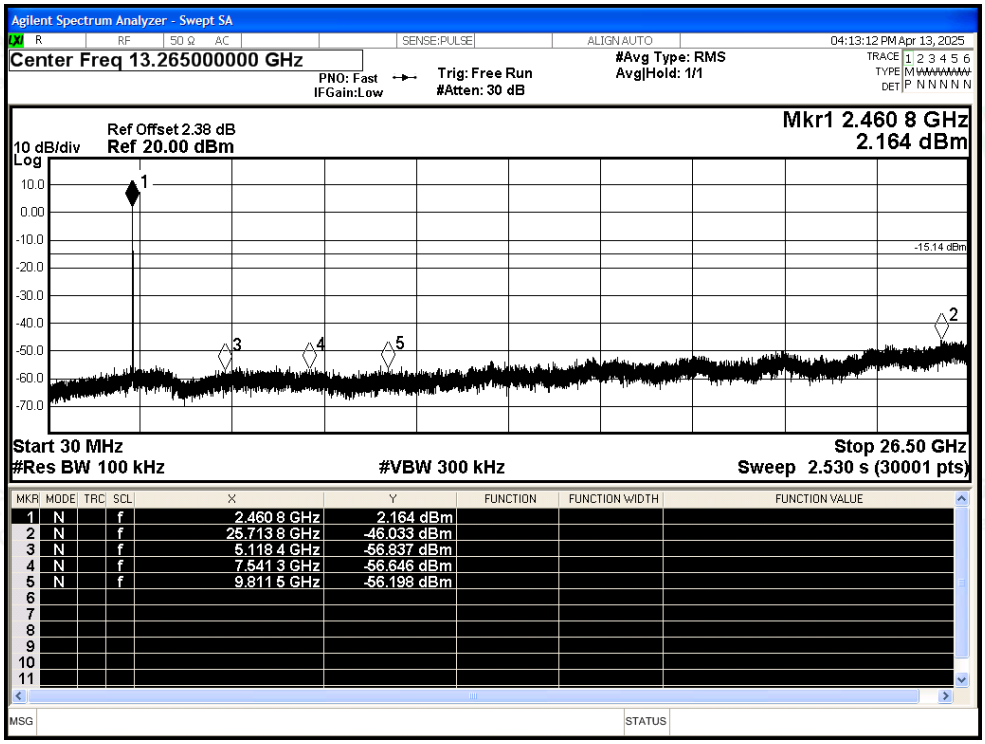
Tx. Spurious NVNT b 2437MHz Ant Emission



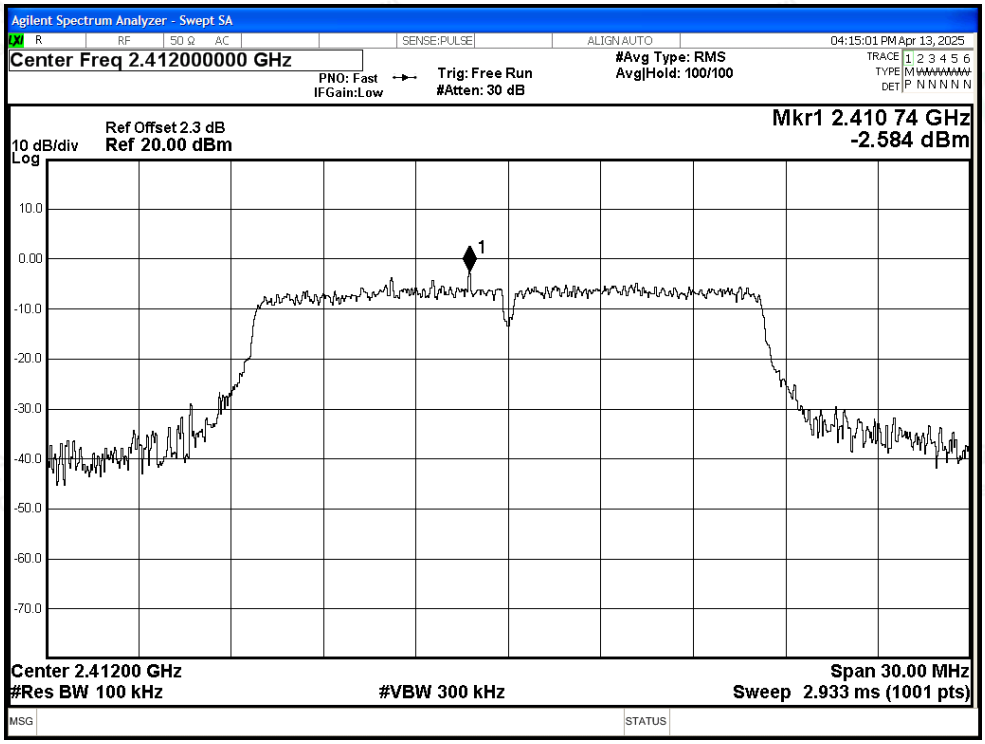
Tx. Spurious NVNT b 2462MHz Ant Ref



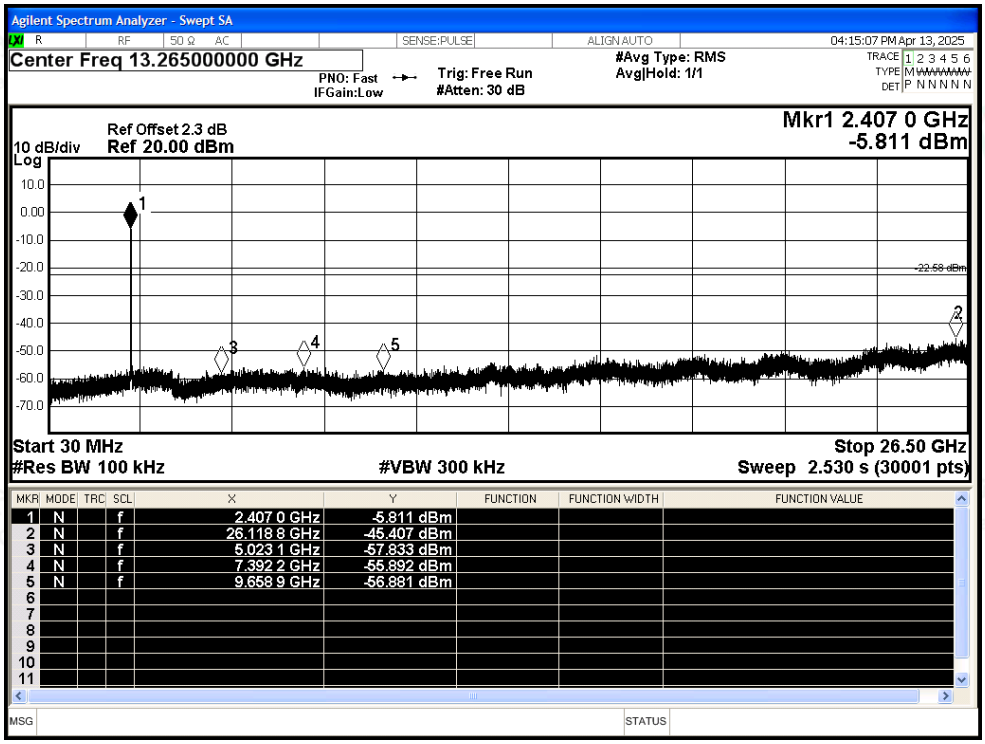
Tx. Spurious NVNT b 2462MHz Ant Emission



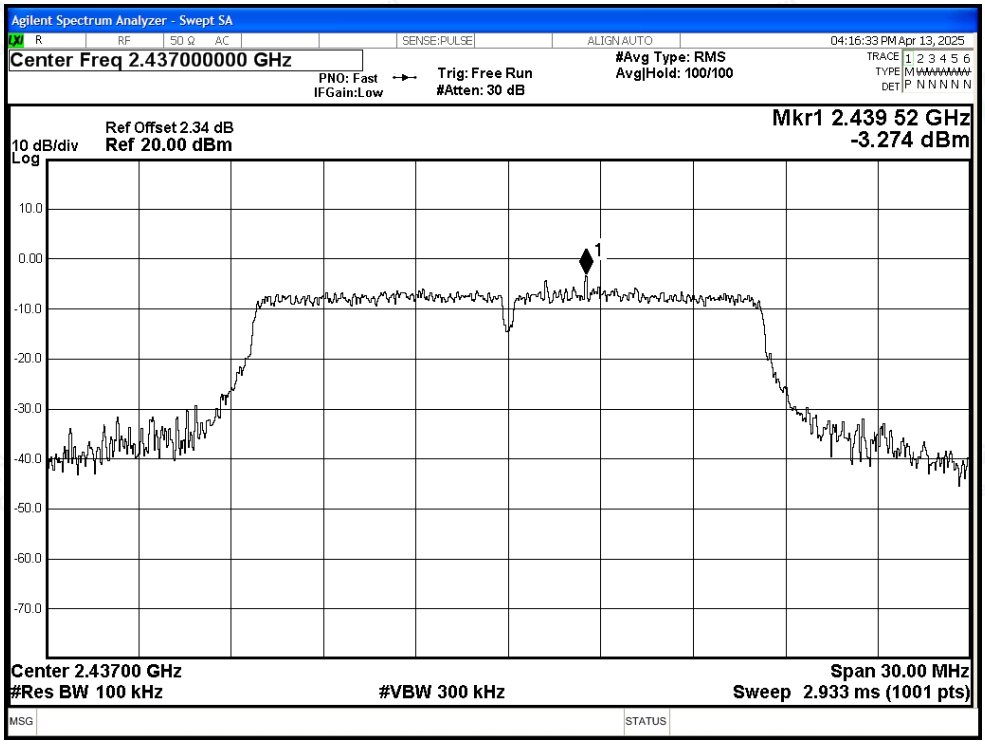
Tx. Spurious NVNT g 2412MHz Ant Ref



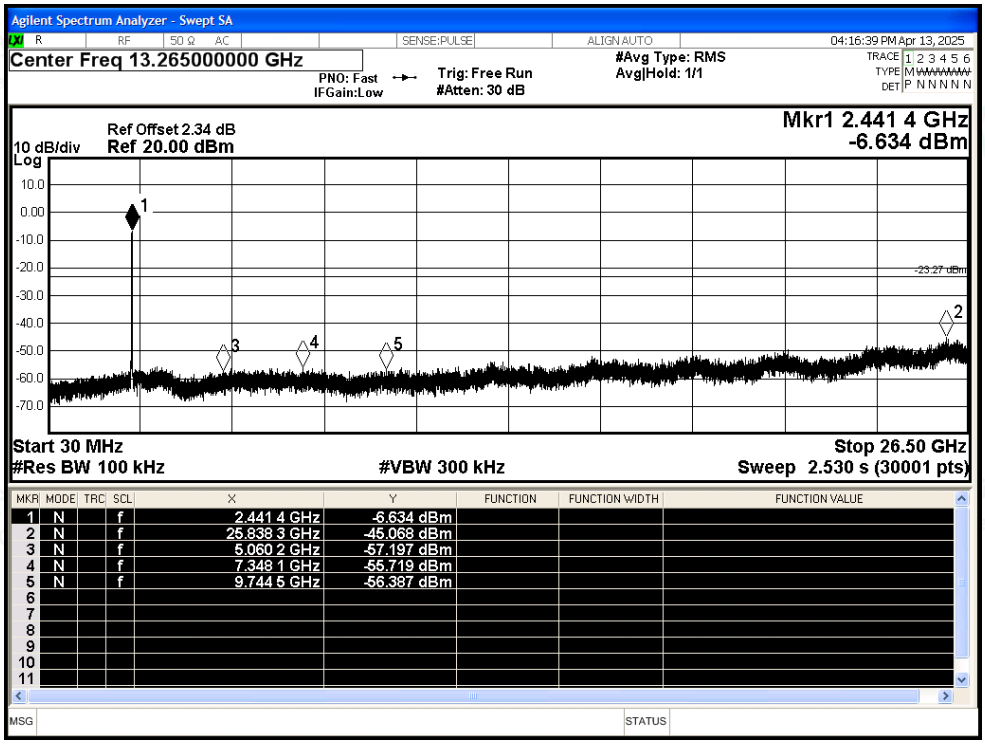
Tx. Spurious NVNT g 2412MHz Ant Emission



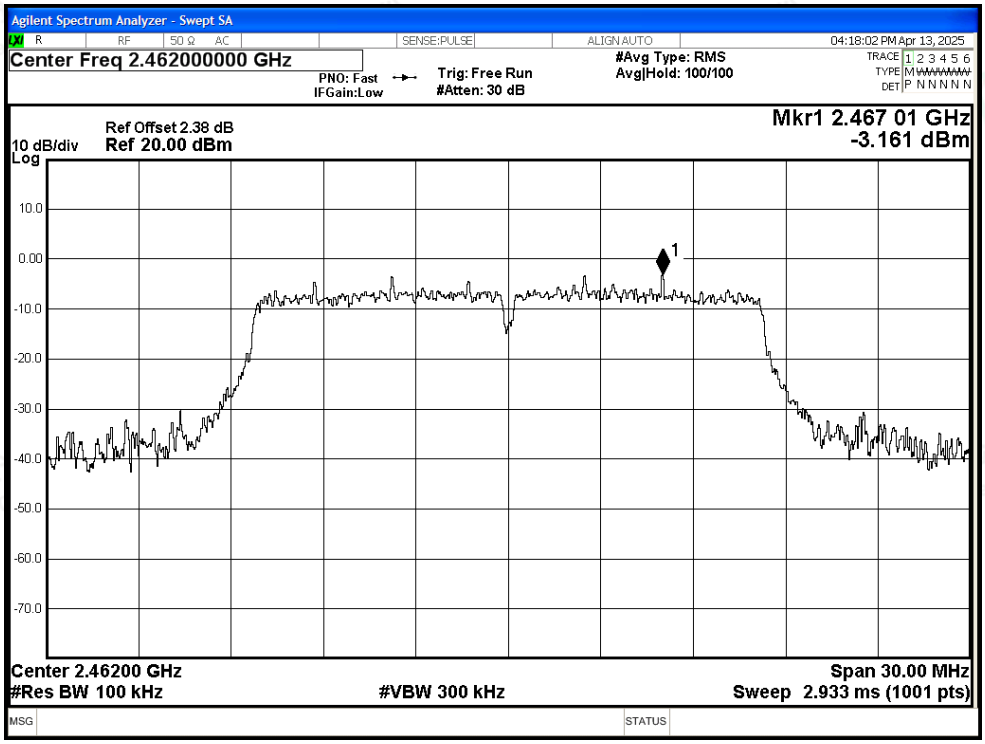
Tx. Spurious NVNT g 2437MHz Ant Ref



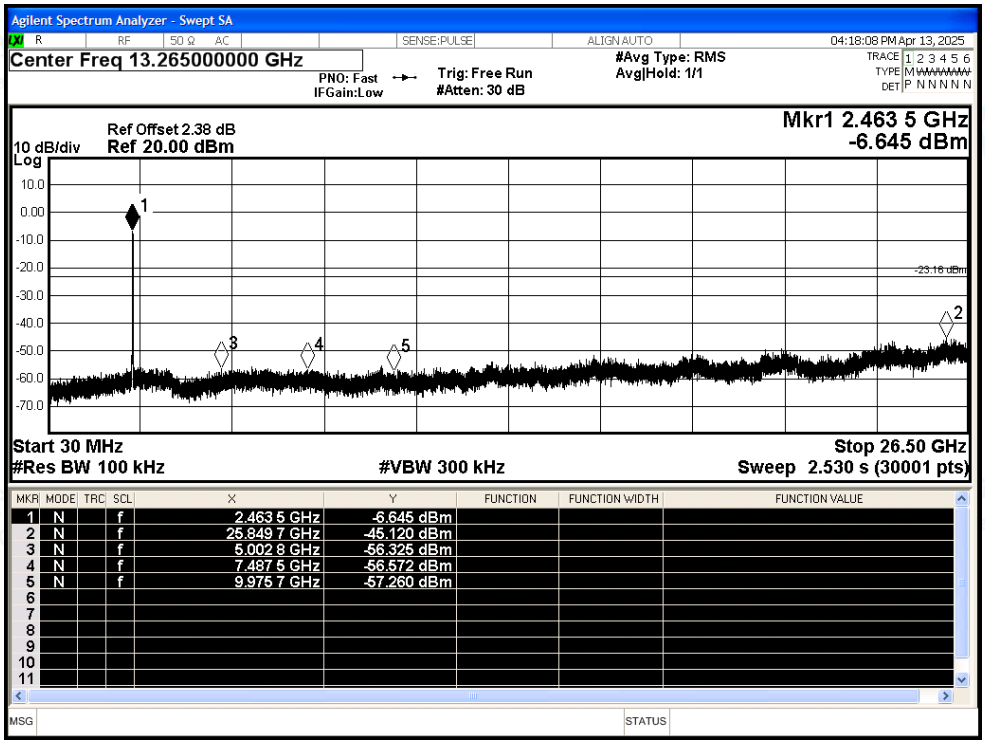
Tx. Spurious NVNT g 2437MHz Ant Emission



Tx. Spurious NVNT g 2462MHz Ant Ref

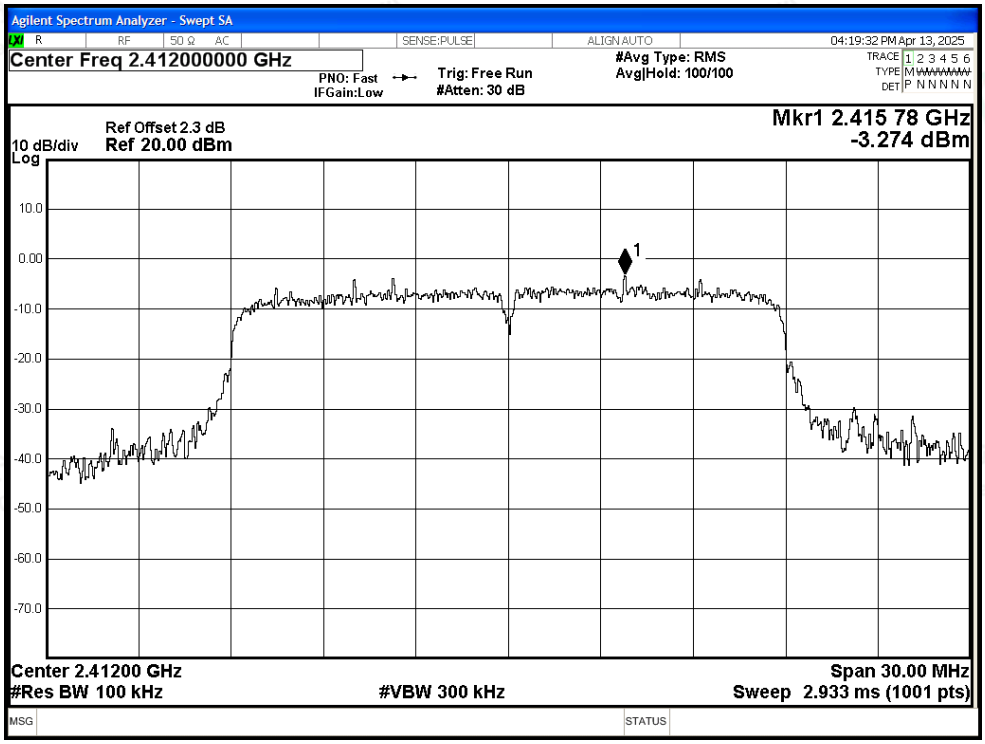


Tx. Spurious NVNT g 2462MHz Ant Emission

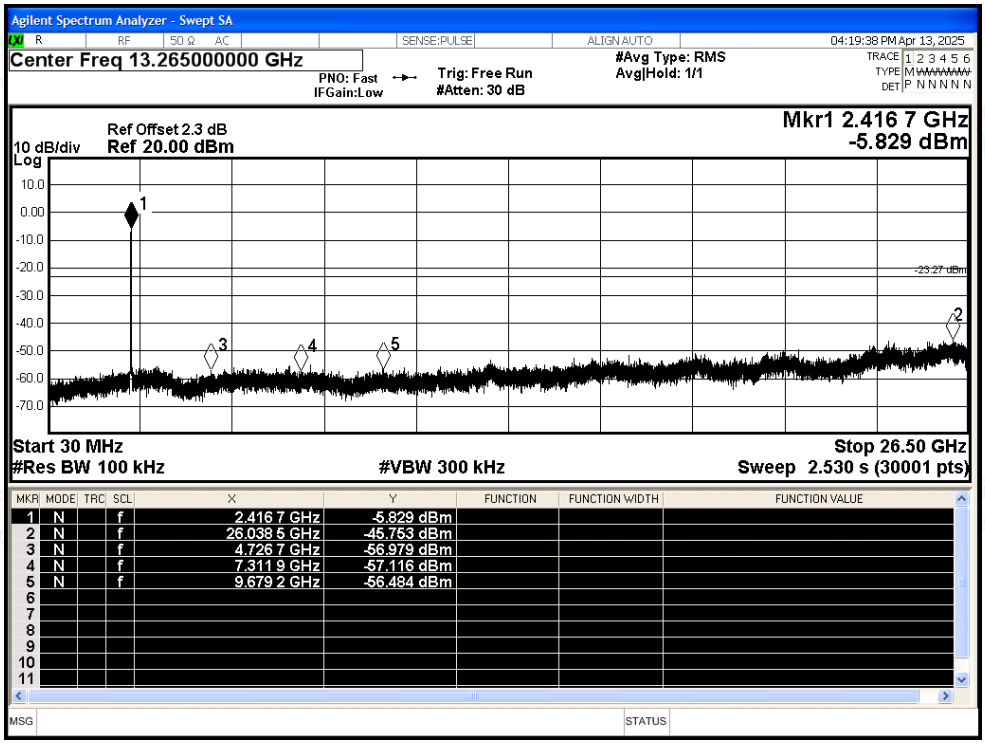


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.463 5 GHz	-6.645 dBm			
2	N		f	25.849 7 GHz	-45.120 dBm			
3	N		f	5.002 8 GHz	-56.325 dBm			
4	N		f	7.487 5 GHz	-56.572 dBm			
5	N		f	9.975 7 GHz	-57.260 dBm			
6								
7								
8								
9								
10								
11								

Tx. Spurious NVNT n20 2412MHz Ant Ref

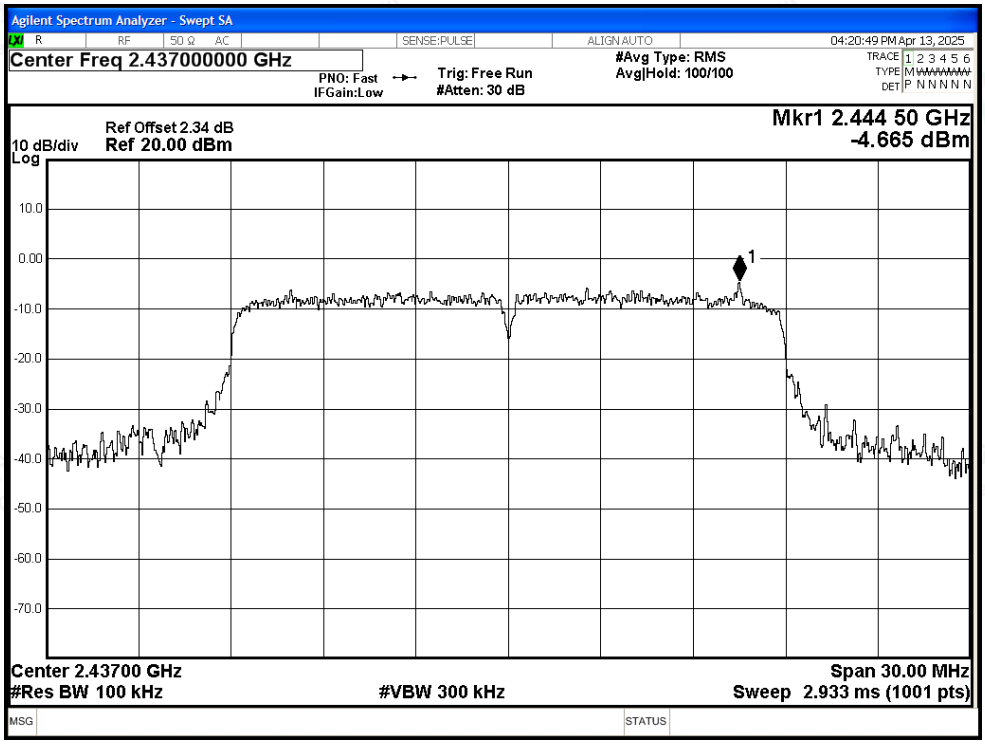


Tx. Spurious NVNT n20 2412MHz Ant Emission

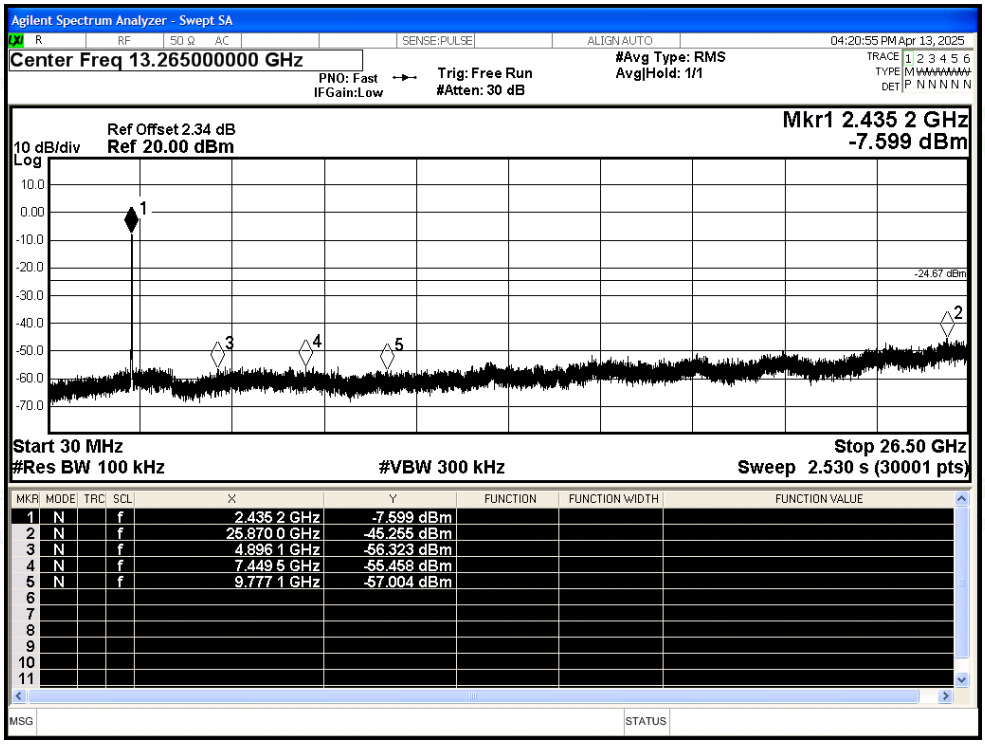


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.416 7 GHz	-5.829 dBm			
2	N		f	26.038 5 GHz	-45.753 dBm			
3	N		f	4.726 7 GHz	-56.979 dBm			
4	N		f	7.311 9 GHz	-57.116 dBm			
5	N		f	9.679 2 GHz	-56.484 dBm			
6								
7								
8								
9								
10								
11								

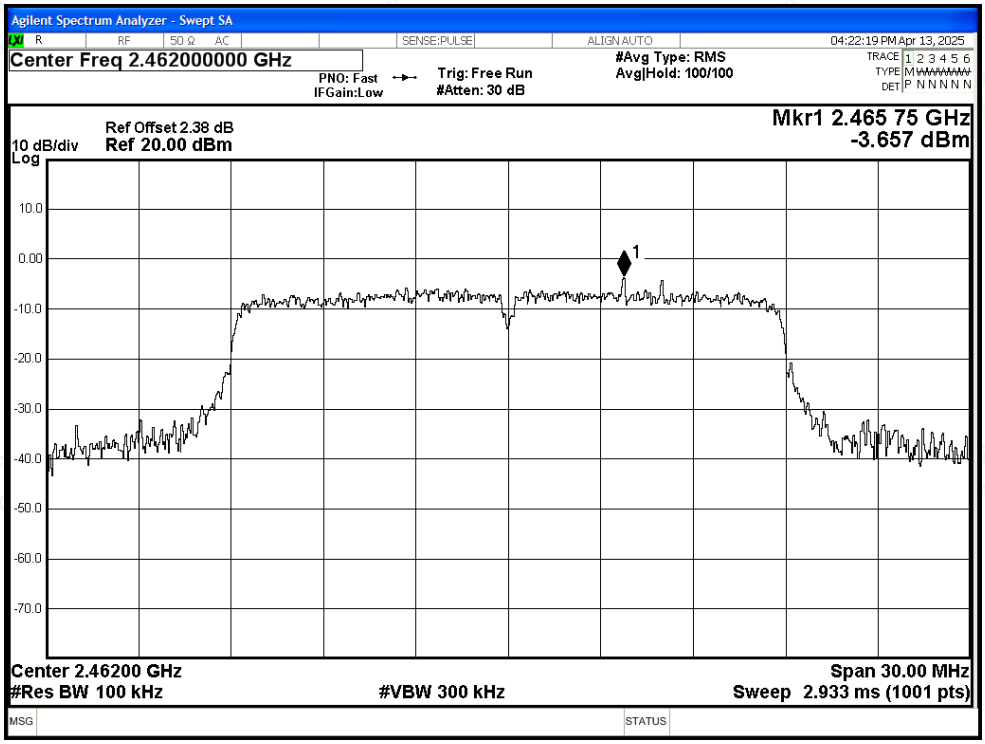
Tx. Spurious NVNT n20 2437MHz Ant Ref



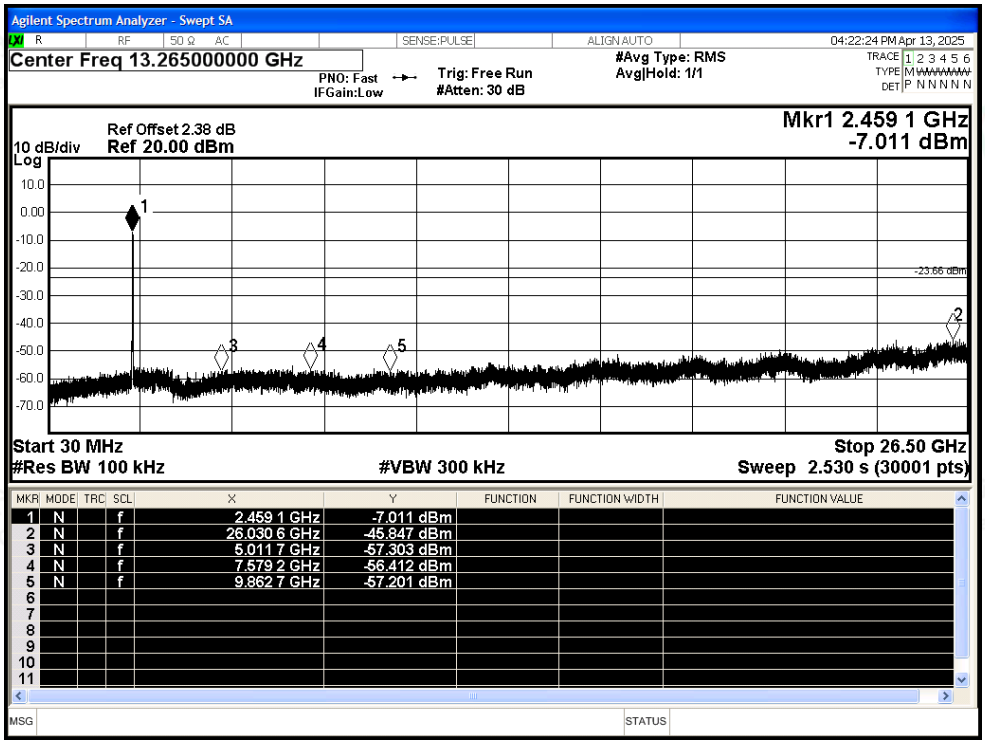
Tx. Spurious NVNT n20 2437MHz Ant Emission



Tx. Spurious NVNT n20 2462MHz Ant Ref

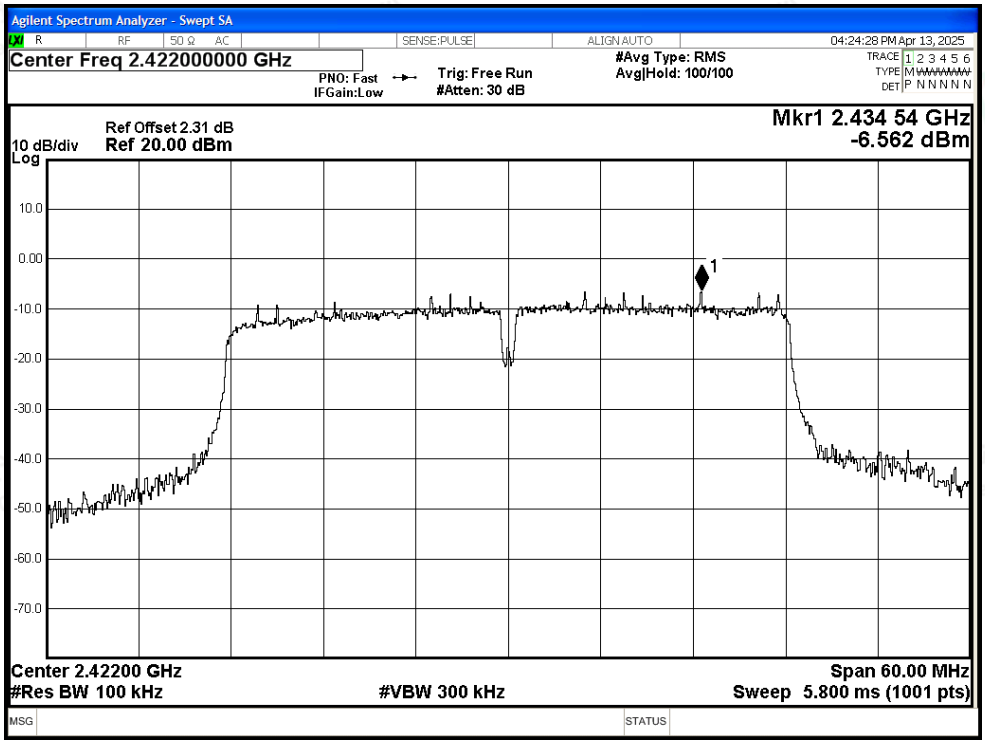


Tx. Spurious NVNT n20 2462MHz Ant Emission

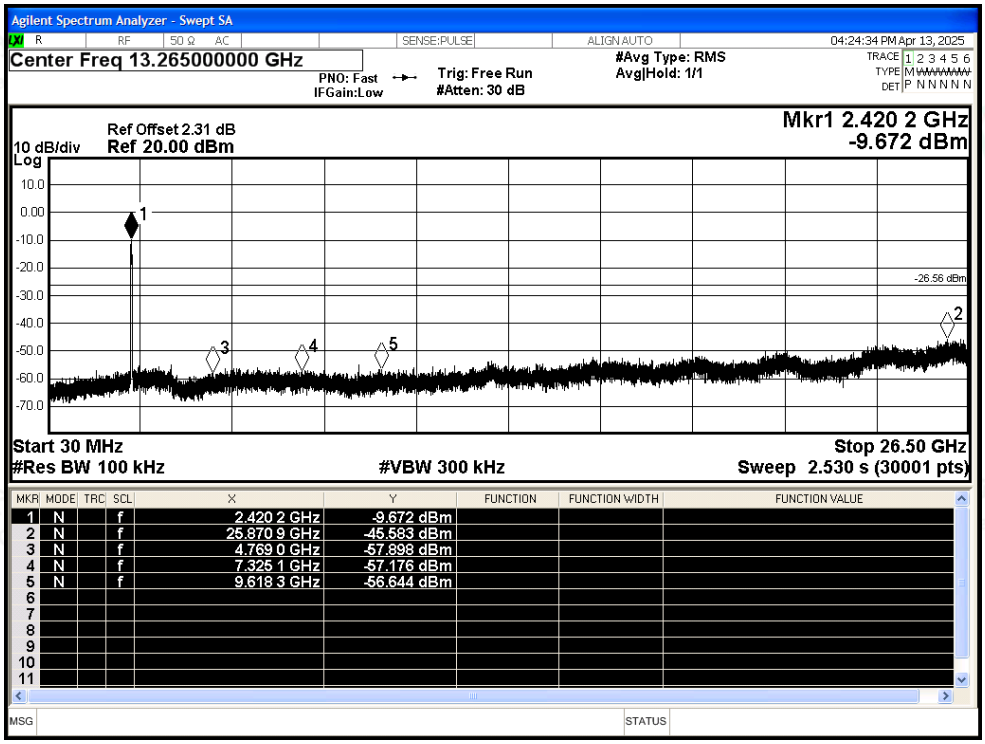


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.459 1 GHz	-7.011 dBm			
2	N		f	26.030 6 GHz	-45.847 dBm			
3	N		f	5.011 7 GHz	-57.303 dBm			
4	N		f	7.579 2 GHz	-56.412 dBm			
5	N		f	9.862 7 GHz	-57.201 dBm			
6								
7								
8								
9								
10								
11								

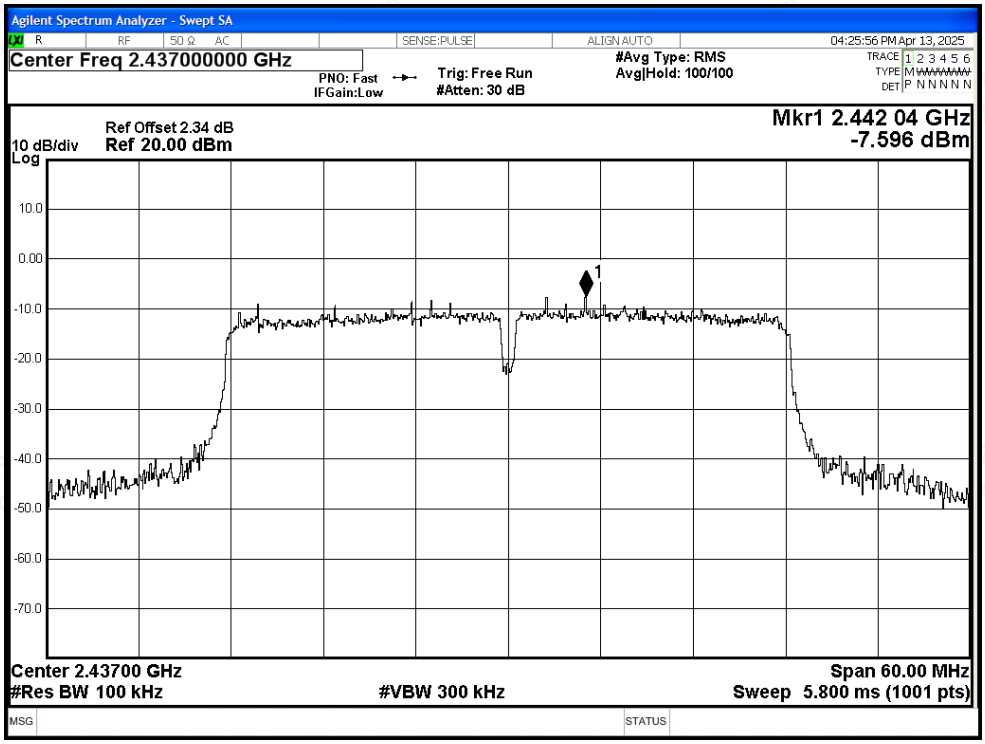
Tx. Spurious NVNT n40 2422MHz Ant Ref



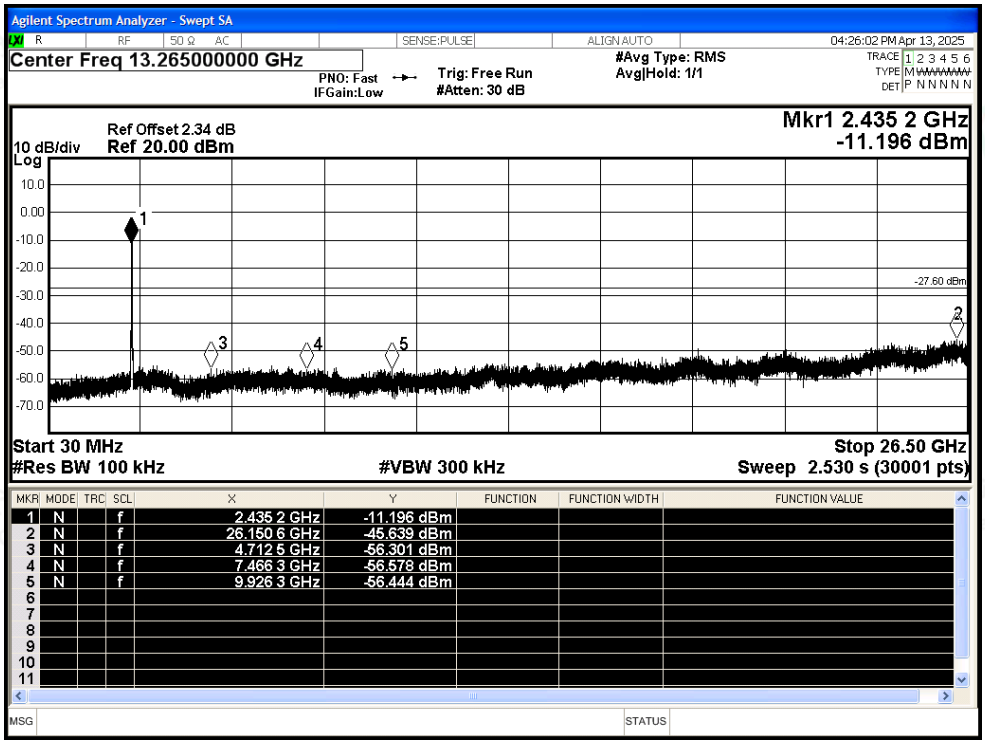
Tx. Spurious NVNT n40 2422MHz Ant Emission



Tx. Spurious NVNT n40 2437MHz Ant Ref

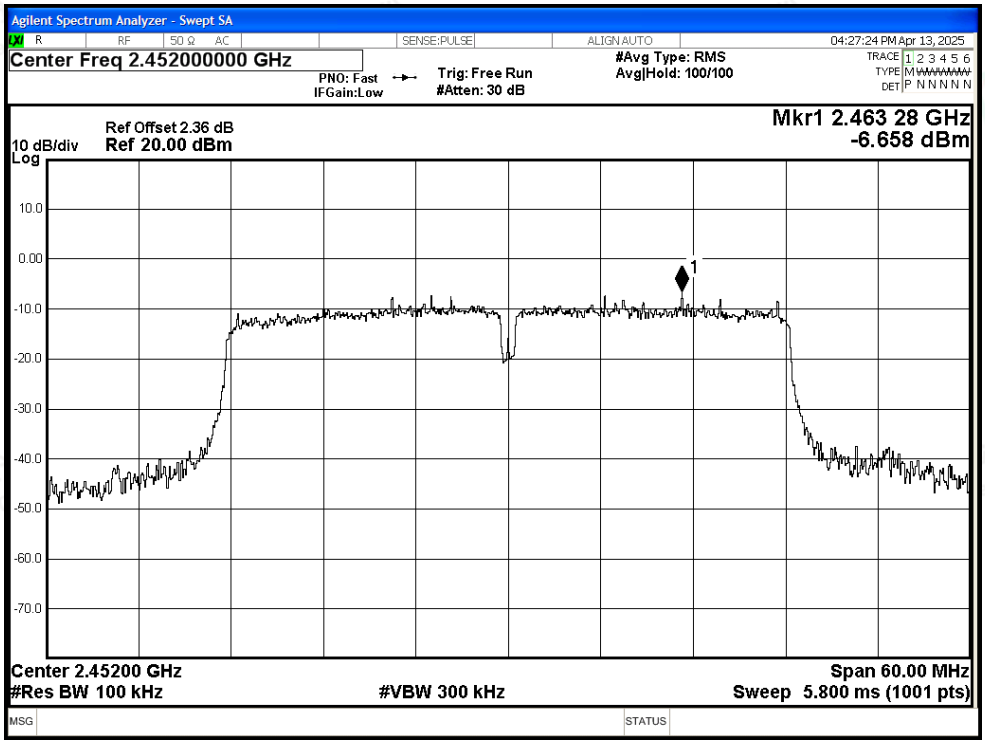


Tx. Spurious NVNT n40 2437MHz Ant Emission

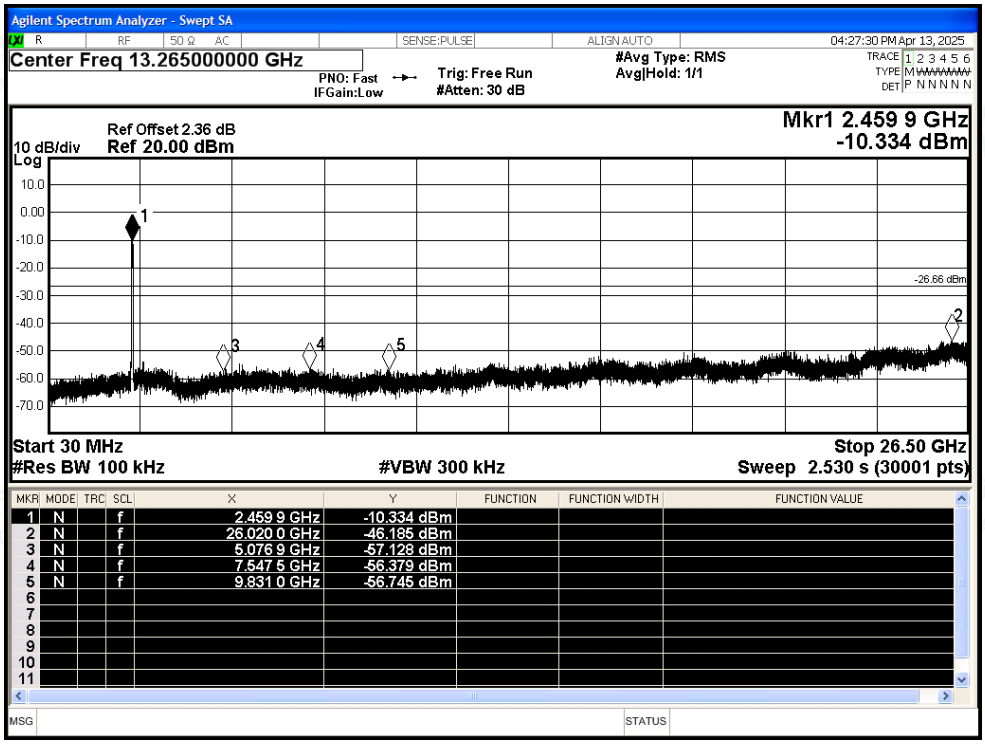


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.435 2 GHz	-11.196 dBm			
2	N		f	26.150 6 GHz	-45.639 dBm			
3	N		f	4.712 5 GHz	-56.301 dBm			
4	N		f	7.466 3 GHz	-56.578 dBm			
5	N		f	9.926 3 GHz	-56.444 dBm			
6								
7								
8								
9								
10								
11								

Tx. Spurious NVNT n40 2452MHz Ant Ref



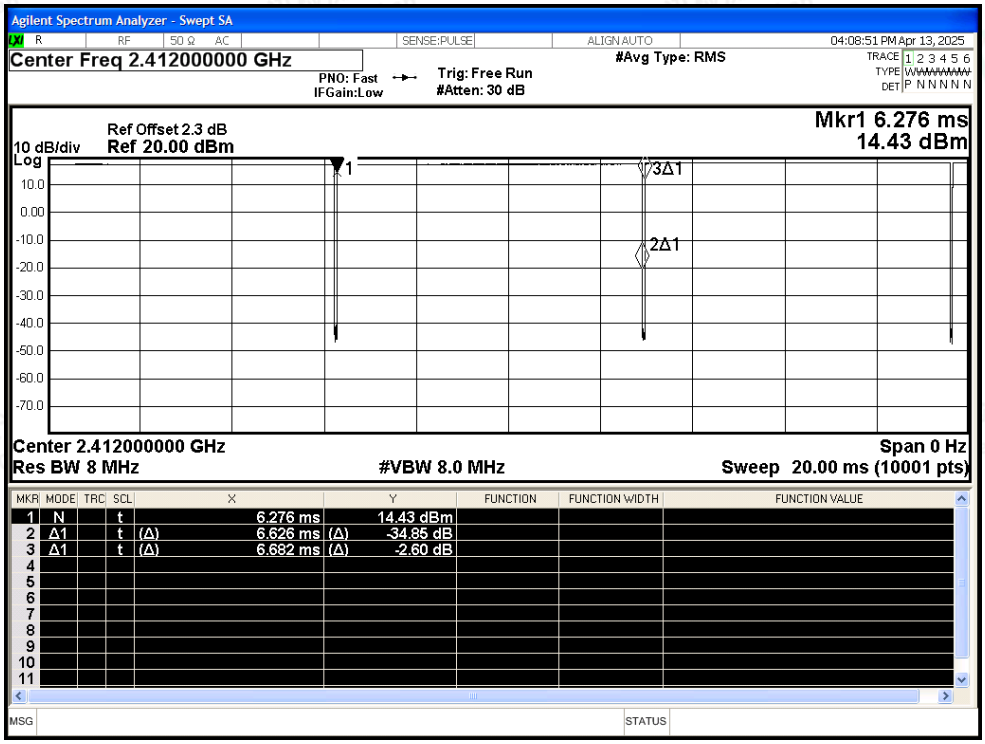
Tx. Spurious NVNT n40 2452MHz Ant Emission



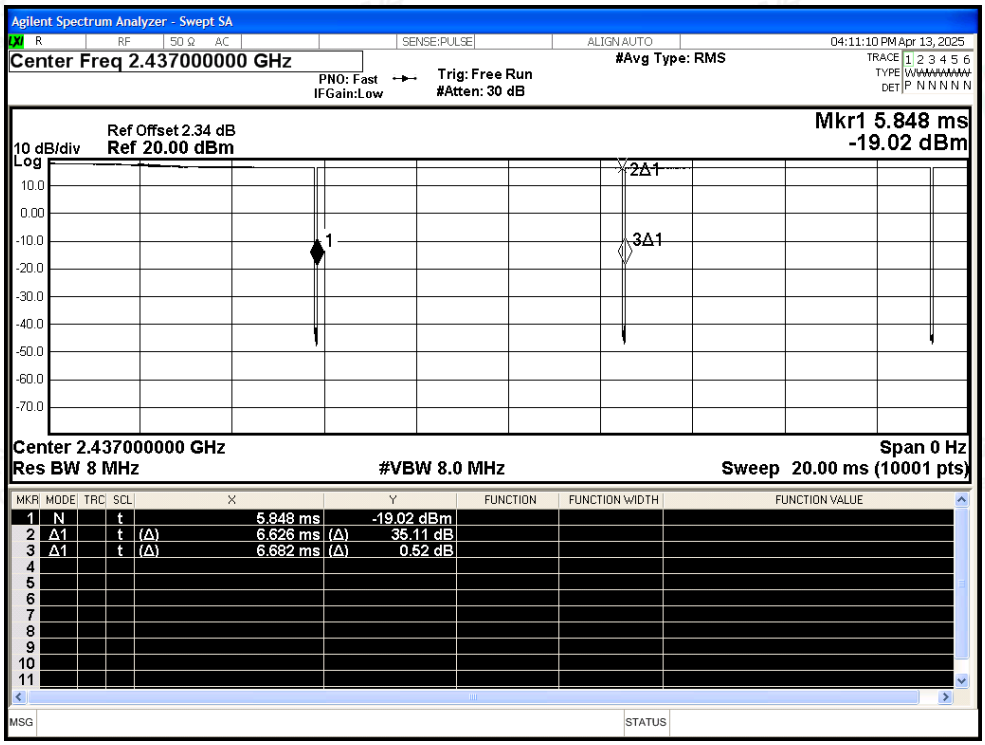
B.6 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant	99.16	0	0.15
NVNT	b	2437	Ant	99.16	0	0.15
NVNT	b	2462	Ant	99.13	0	0.15
NVNT	g	2412	Ant	98.44	0	0.25
NVNT	g	2437	Ant	98.49	0	0.25
NVNT	g	2462	Ant	98.49	0	0.25
NVNT	n20	2412	Ant	98.19	0	0.3
NVNT	n20	2437	Ant	98.14	0	0.3
NVNT	n20	2462	Ant	98.14	0	0.3
NVNT	n40	2422	Ant	96.36	0.16	0.61
NVNT	n40	2437	Ant	96.36	0.16	0.61
NVNT	n40	2452	Ant	96.36	0.16	0.61

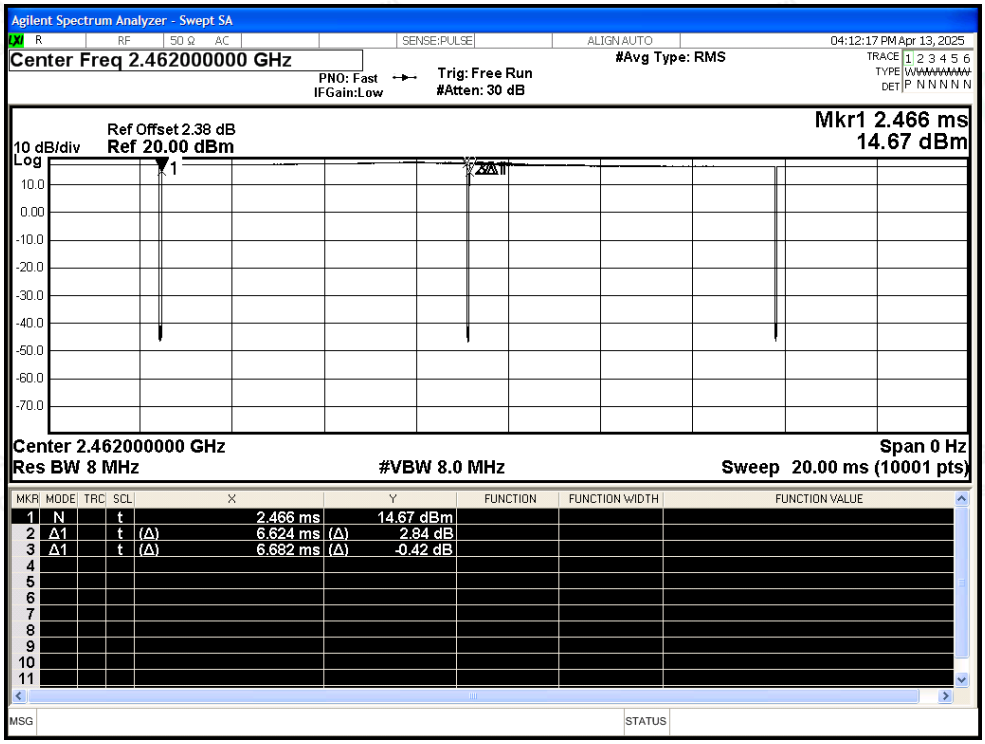
Test Graphs
Duty Cycle NVNT b 2412MHz Ant



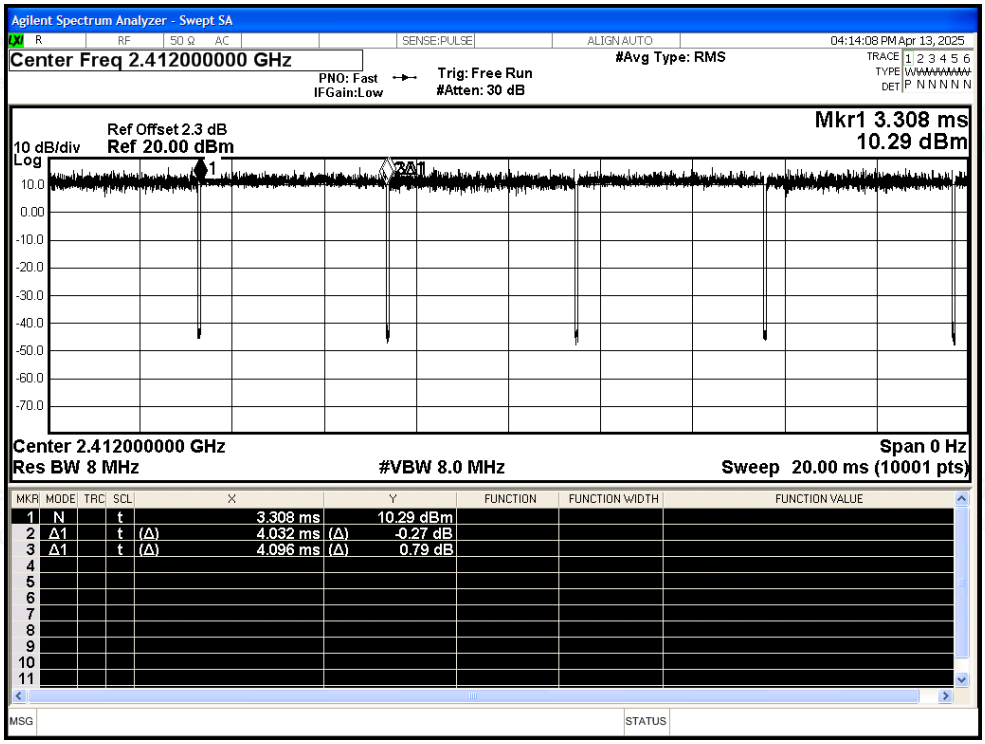
Duty Cycle NVNT b 2437MHz Ant



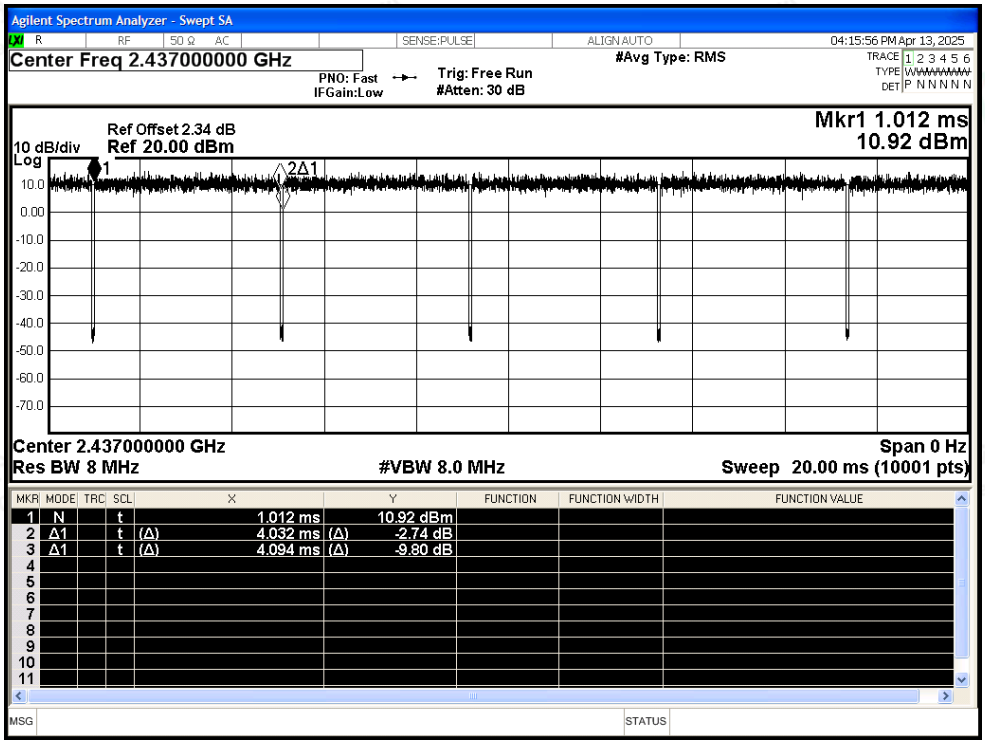
Duty Cycle NVNT b 2462MHz Ant



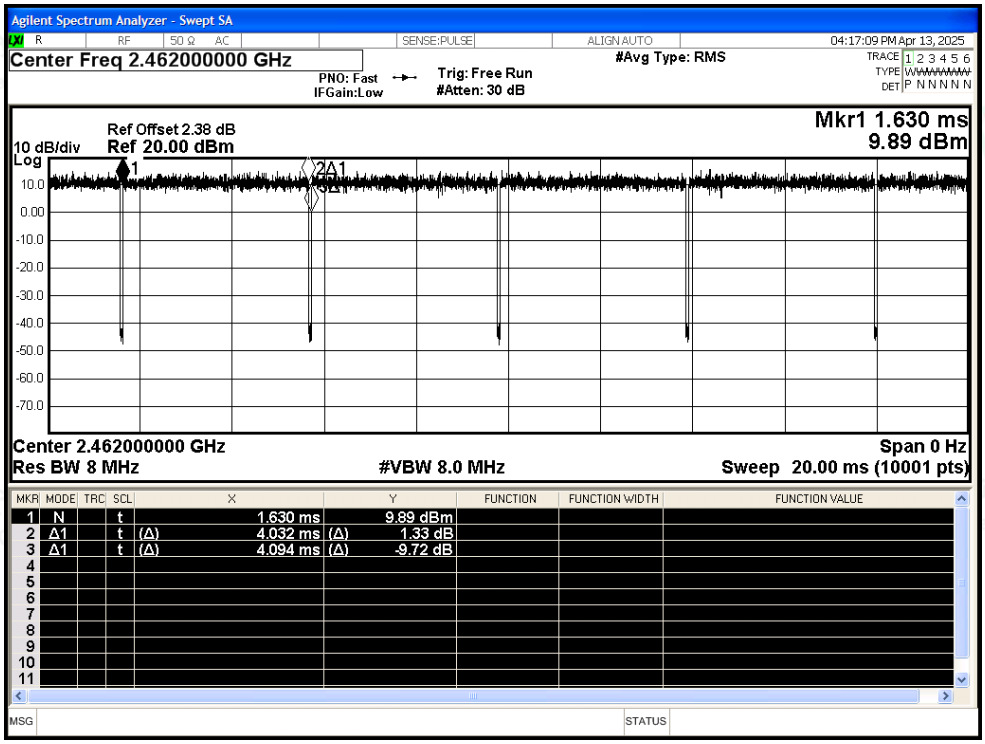
Duty Cycle NVNT g 2412MHz Ant



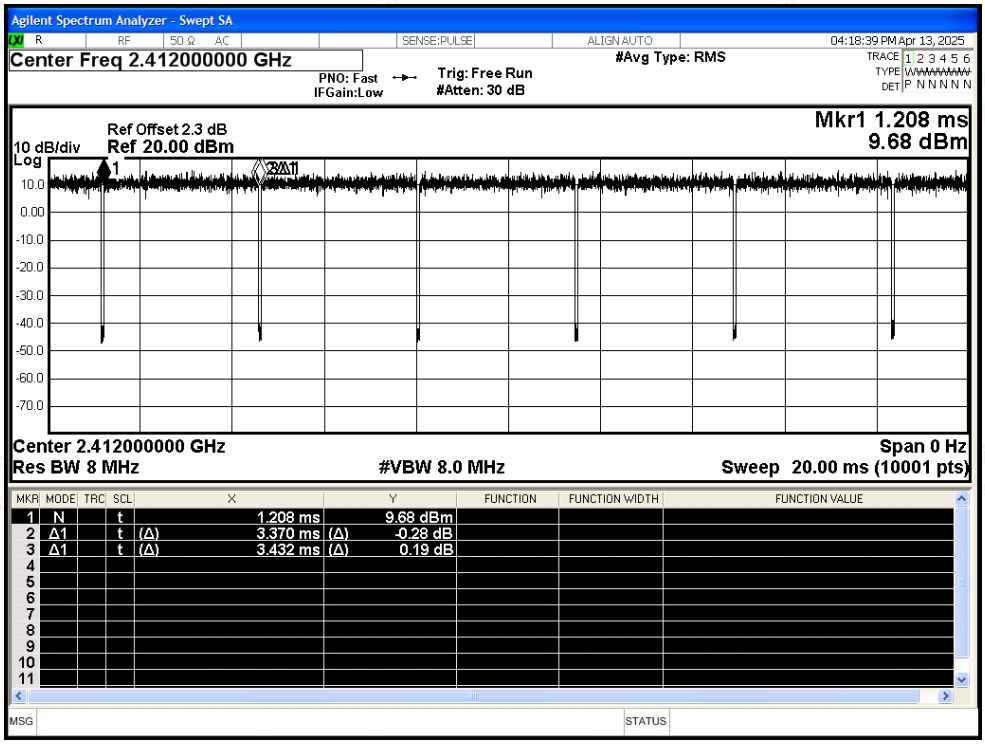
Duty Cycle NVNT g 2437MHz Ant



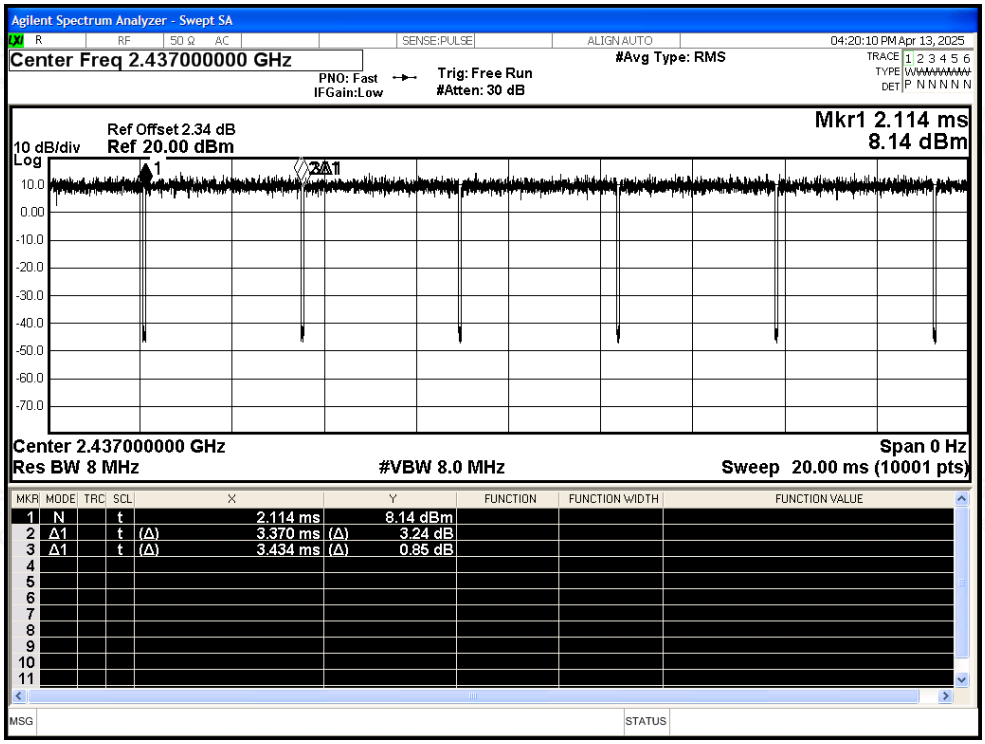
Duty Cycle NVNT g 2462MHz Ant



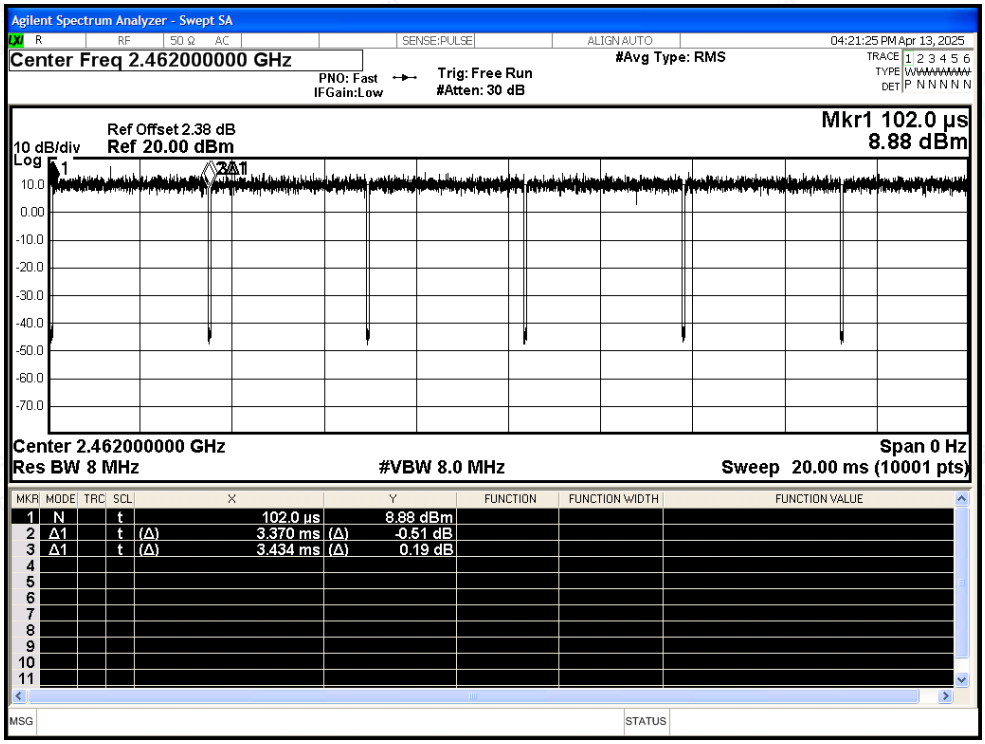
Duty Cycle NVNT n20 2412MHz Ant



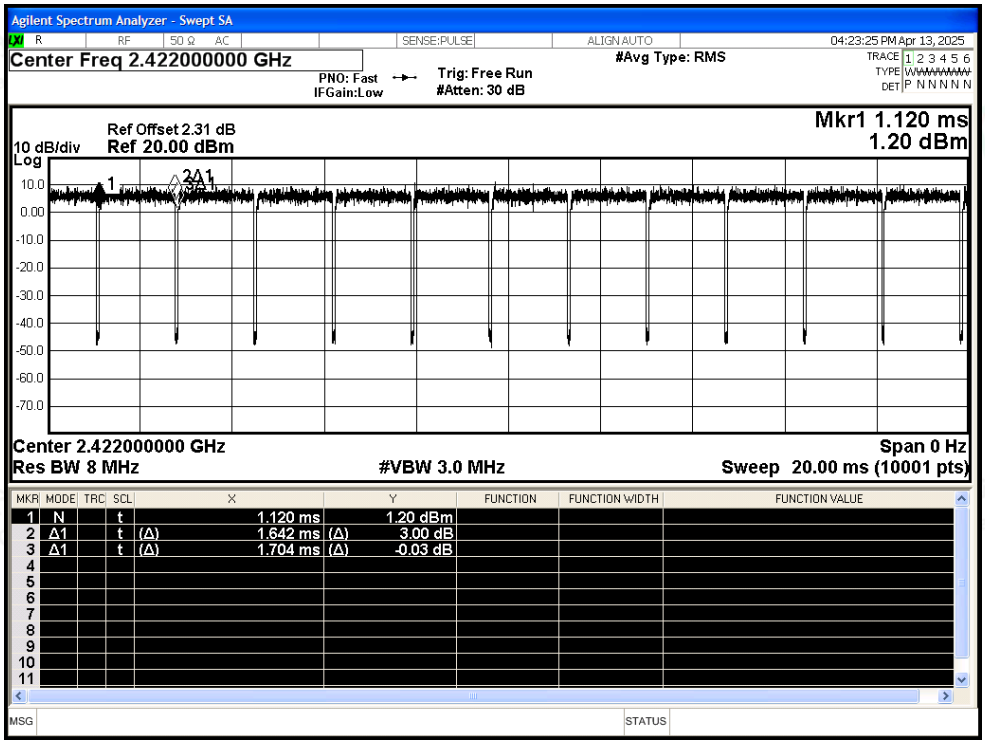
Duty Cycle NVNT n20 2437MHz Ant



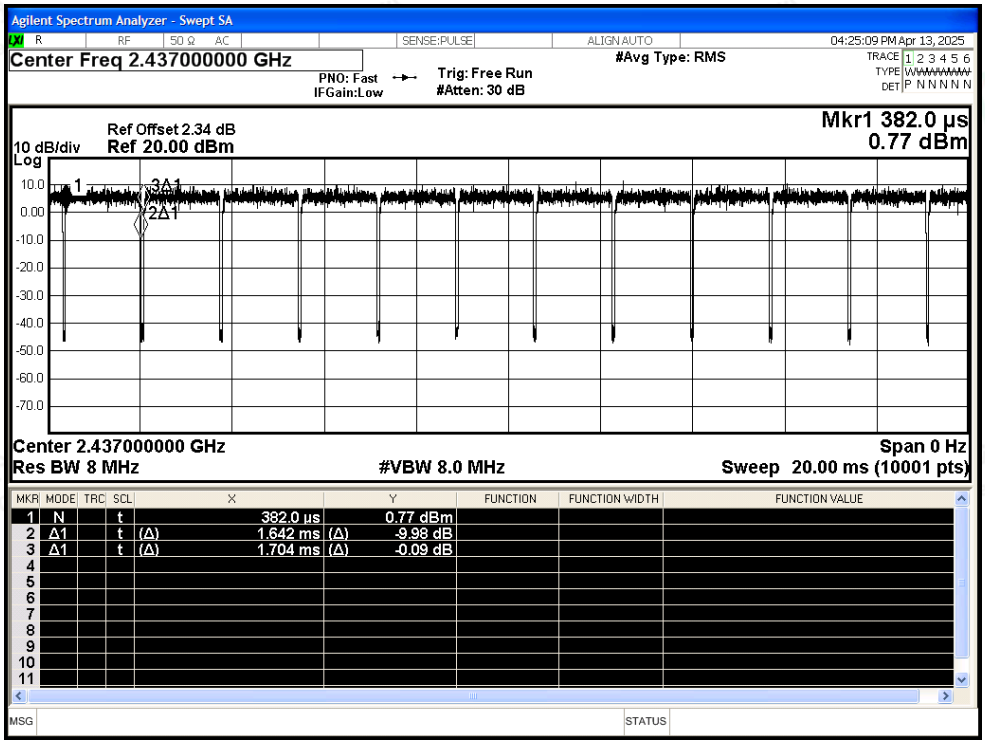
Duty Cycle NVNT n20 2462MHz Ant



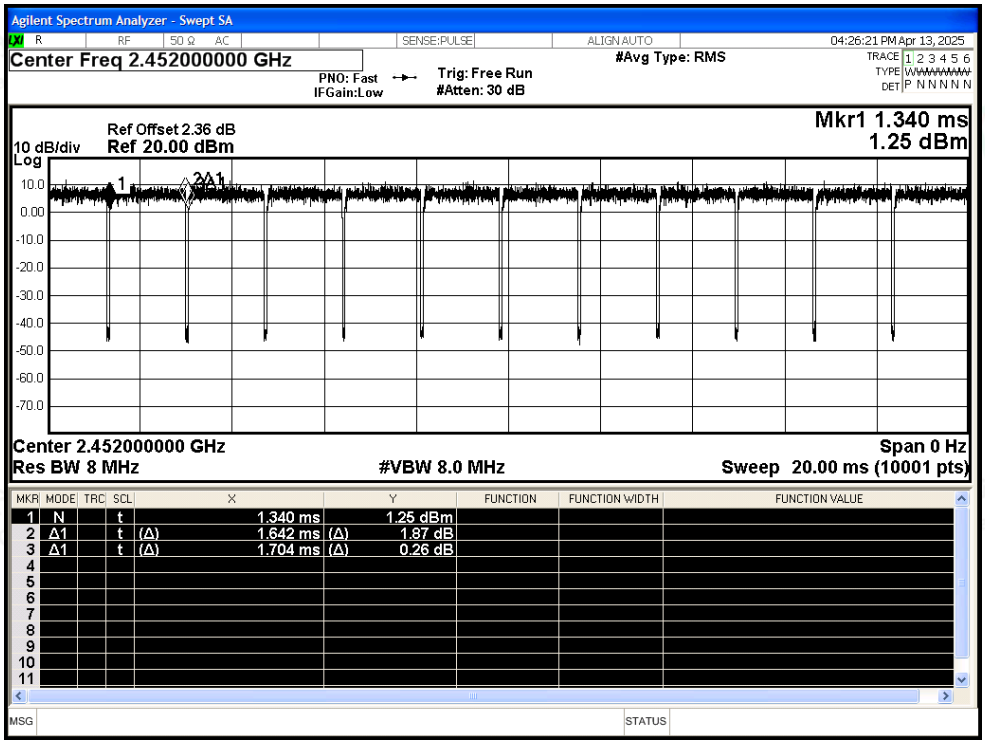
Duty Cycle NVNT n40 2422MHz Ant



Duty Cycle NVNT n40 2437MHz Ant



Duty Cycle NVNT n40 2452MHz Ant



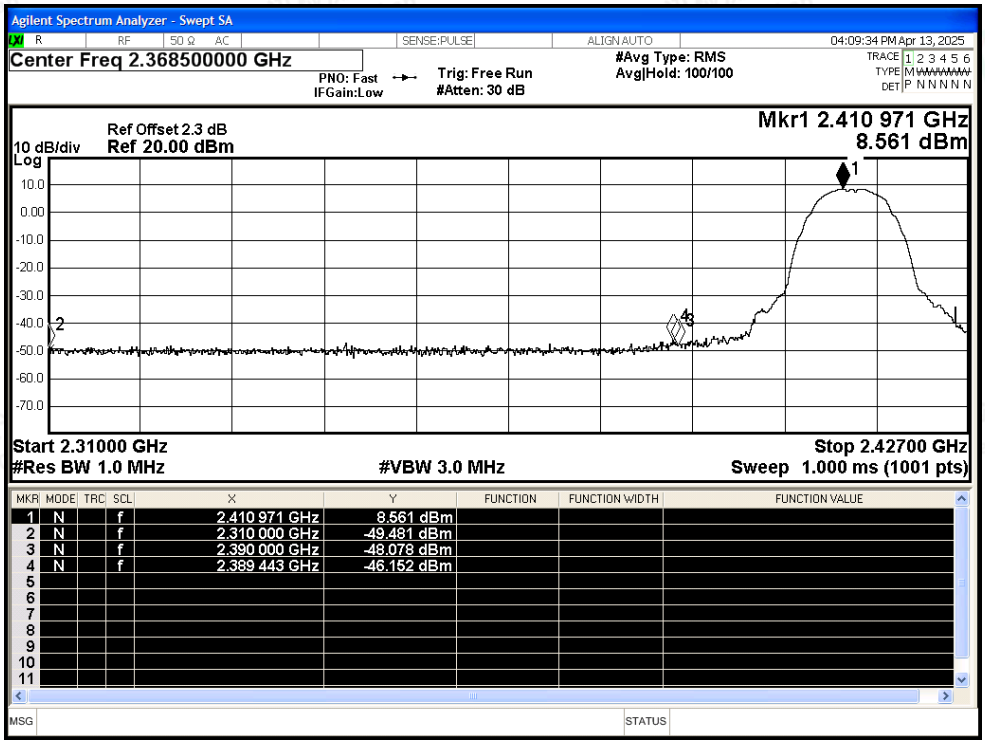
B.7 Restrict Band

Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	b	2412	Ant	2310	-49.48	2.82	-	48.60	Peak	74	Pass
NVNT	b	2412	Ant	2310	-58.15	2.82	0	39.93	Average	54	Pass
NVNT	b	2412	Ant	2389.443	-46.15	2.82	-	51.93	Peak	74	Pass
NVNT	b	2412	Ant	2389.092	-55.15	2.82	0	42.93	Average	54	Pass
NVNT	b	2412	Ant	2390	-48.08	2.82	-	50.00	Peak	74	Pass
NVNT	b	2412	Ant	2390	-55.44	2.82	0	42.64	Average	54	Pass
NVNT	b	2462	Ant	2483.5	-37.27	2.82	-	60.81	Peak	74	Pass
NVNT	b	2462	Ant	2483.5	-55.26	2.82	0	42.82	Average	54	Pass
NVNT	b	2462	Ant	2483.517	-37.27	2.82	-	60.81	Peak	74	Pass
NVNT	b	2462	Ant	2484.948	-54.07	2.82	0	44.01	Average	54	Pass
NVNT	b	2462	Ant	2500	-50.11	2.82	-	47.97	Peak	74	Pass
NVNT	b	2462	Ant	2500	-57.96	2.82	0	40.12	Average	54	Pass
NVNT	g	2412	Ant	2310	-49.05	2.82	-	49.03	Peak	74	Pass
NVNT	g	2412	Ant	2310	-58.09	2.82	0	39.99	Average	54	Pass
NVNT	g	2412	Ant	2388.975	-36.6	2.82	-	61.48	Peak	74	Pass
NVNT	g	2412	Ant	2389.209	-53.51	2.82	0	44.57	Average	54	Pass
NVNT	g	2412	Ant	2390	-39.13	2.82	-	58.95	Peak	74	Pass
NVNT	g	2412	Ant	2390	-53.23	2.82	0	44.85	Average	54	Pass
NVNT	g	2462	Ant	2483.5	-33.21	2.82	-	64.87	Peak	74	Pass
NVNT	g	2462	Ant	2483.5	-48.82	2.82	0	49.26	Average	54	Pass
NVNT	g	2462	Ant	2483.517	-33.21	2.82	-	64.87	Peak	74	Pass
NVNT	g	2462	Ant	2483.623	-48.37	2.82	0	49.71	Average	54	Pass
NVNT	g	2462	Ant	2500	-49.99	2.82	-	48.09	Peak	74	Pass
NVNT	g	2462	Ant	2500	-57.98	2.82	0	40.10	Average	54	Pass
NVNT	n20	2412	Ant	2310	-50.14	2.82	-	47.94	Peak	74	Pass
NVNT	n20	2412	Ant	2310	-58.01	2.82	0	40.07	Average	54	Pass
NVNT	n20	2412	Ant	2388.741	-37.05	2.82	-	61.03	Peak	74	Pass
NVNT	n20	2412	Ant	2389.911	-51.9	2.82	0	46.18	Average	54	Pass
NVNT	n20	2412	Ant	2390	-35.18	2.82	-	62.90	Peak	74	Pass
NVNT	n20	2412	Ant	2390	-50.83	2.82	0	47.25	Average	54	Pass
NVNT	n20	2462	Ant	2483.5	-32.74	2.82	-	65.34	Peak	74	Pass
NVNT	n20	2462	Ant	2483.5	-48.61	2.82	0	49.47	Average	54	Pass
NVNT	n20	2462	Ant	2483.888	-31.16	2.82	-	66.92	Peak	74	Pass
NVNT	n20	2462	Ant	2483.729	-48.1	2.82	0	49.98	Average	54	Pass
NVNT	n20	2462	Ant	2500	-50.71	2.82	-	47.37	Peak	74	Pass
NVNT	n20	2462	Ant	2500	-57.45	2.82	0	40.63	Average	54	Pass
NVNT	n40	2422	Ant	2310	-49.88	2.82	-	48.20	Peak	74	Pass

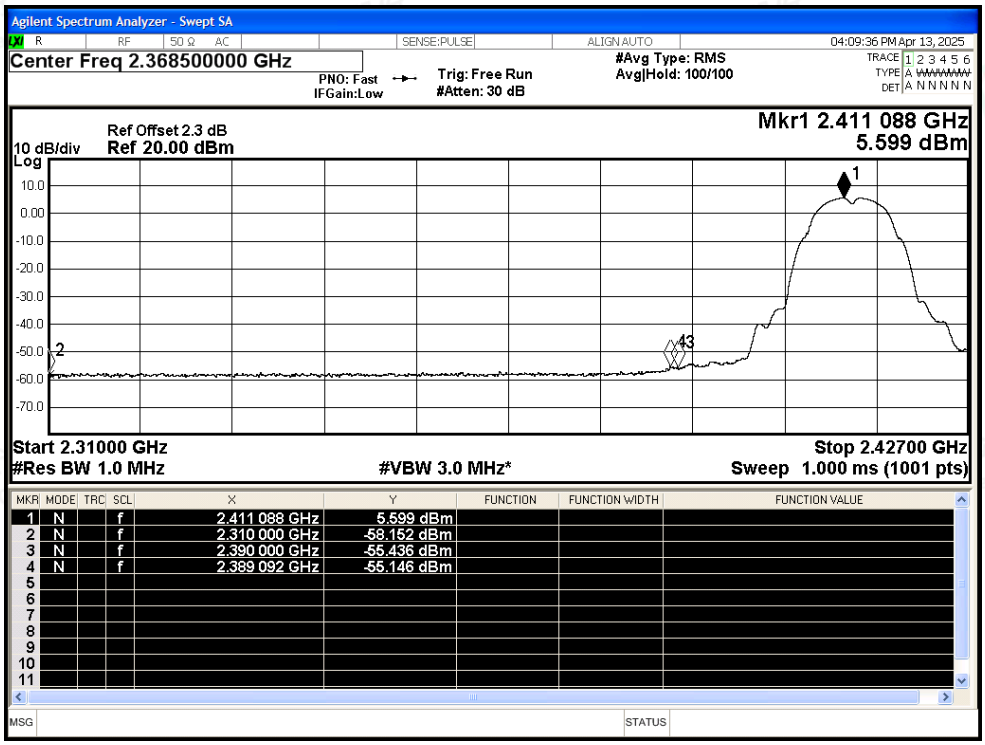
NVNT	n40	2422	Ant	2310	-58.21	2.82	0.16	40.03	Average	54	Pass
NVNT	n40	2422	Ant	2389.662	-36.69	2.82	-	61.39	Peak	74	Pass
NVNT	n40	2422	Ant	2389.946	-52.84	2.82	0.16	45.40	Average	54	Pass
NVNT	n40	2422	Ant	2390	-42.15	2.82	-	55.93	Peak	74	Pass
NVNT	n40	2422	Ant	2390	-52.84	2.82	0.16	45.40	Average	54	Pass
NVNT	n40	2452	Ant	2483.5	-31.15	2.82	-	66.93	Peak	74	Pass
NVNT	n40	2452	Ant	2483.5	-47.71	2.82	0.16	50.53	Average	54	Pass
NVNT	n40	2452	Ant	2483.854	-26.9	2.82	-	71.18	Peak	74	Pass
NVNT	n40	2452	Ant	2483.542	-46.22	2.82	0.16	52.02	Average	54	Pass
NVNT	n40	2452	Ant	2500	-50.23	2.82	-	47.85	Peak	74	Pass
NVNT	n40	2452	Ant	2500	-57.48	2.82	0.16	40.76	Average	54	Pass

Test Graphs

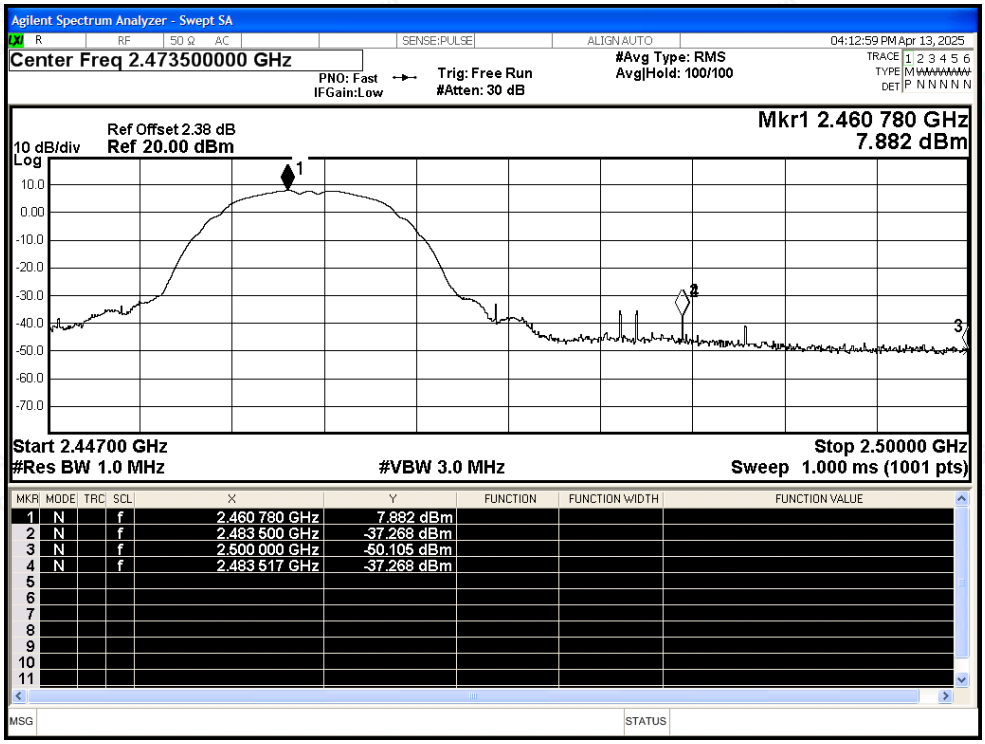
Restrict Band NVNT b 2412MHz Ant Peak



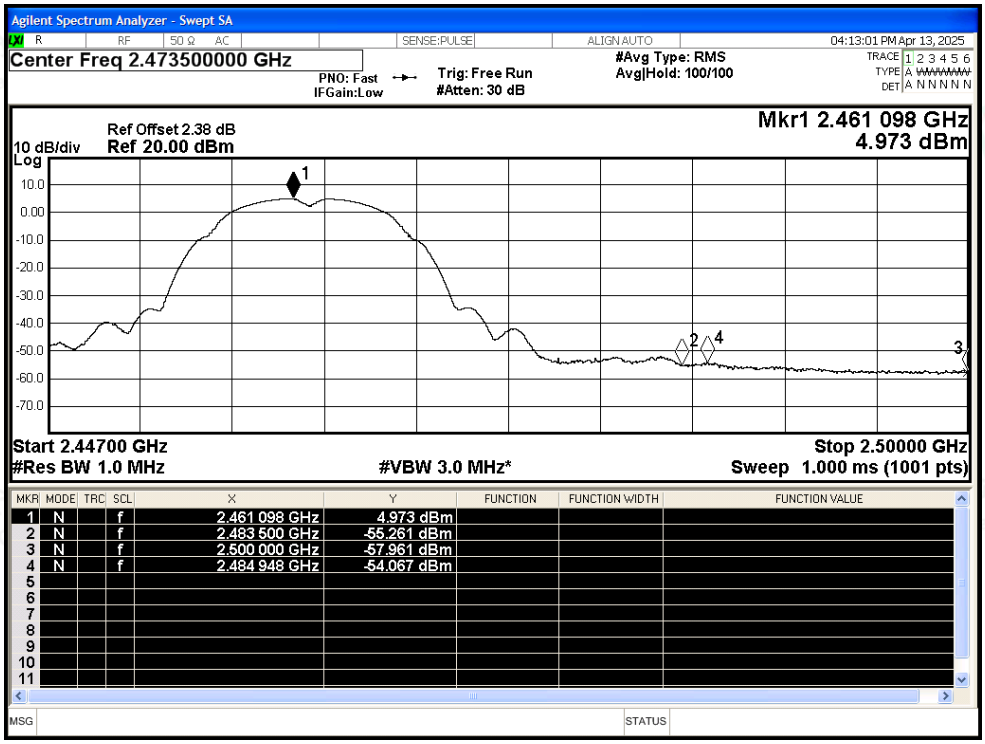
Restrict Band NVNT b 2412MHz Ant Average



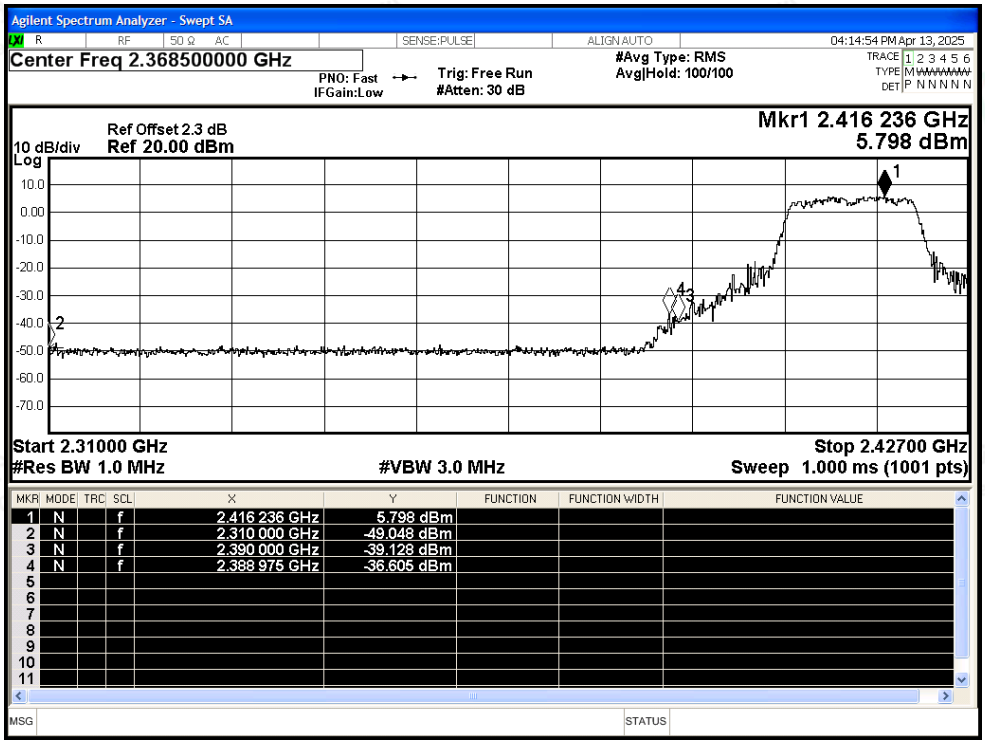
Restrict Band NVNT b 2462MHz Ant Peak



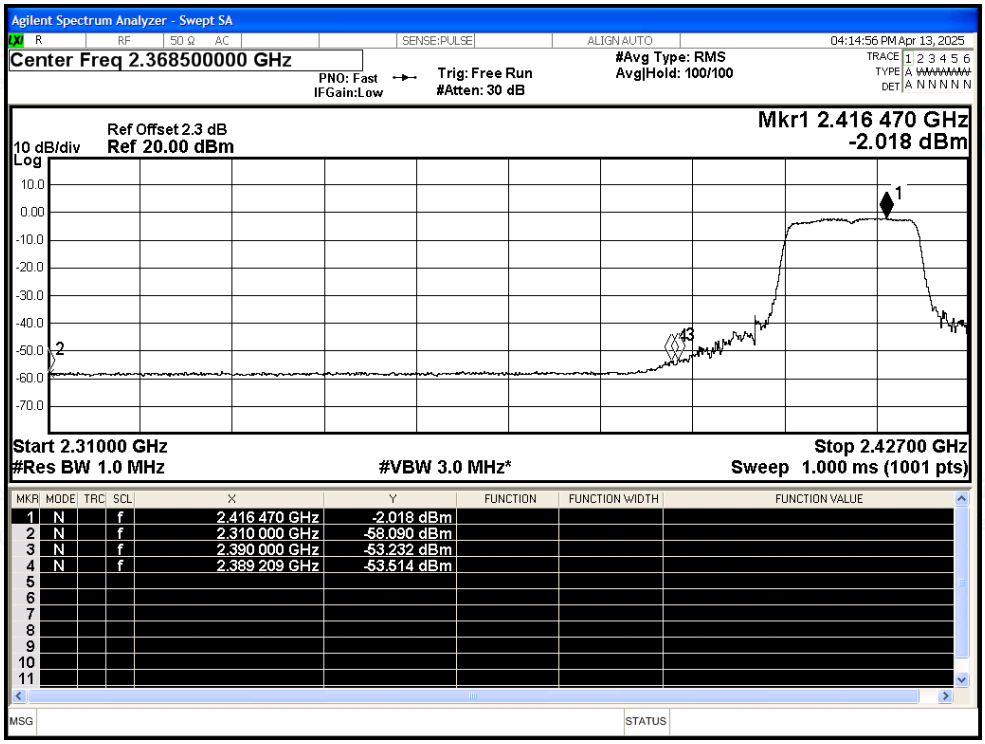
Restrict Band NVNT b 2462MHz Ant Average



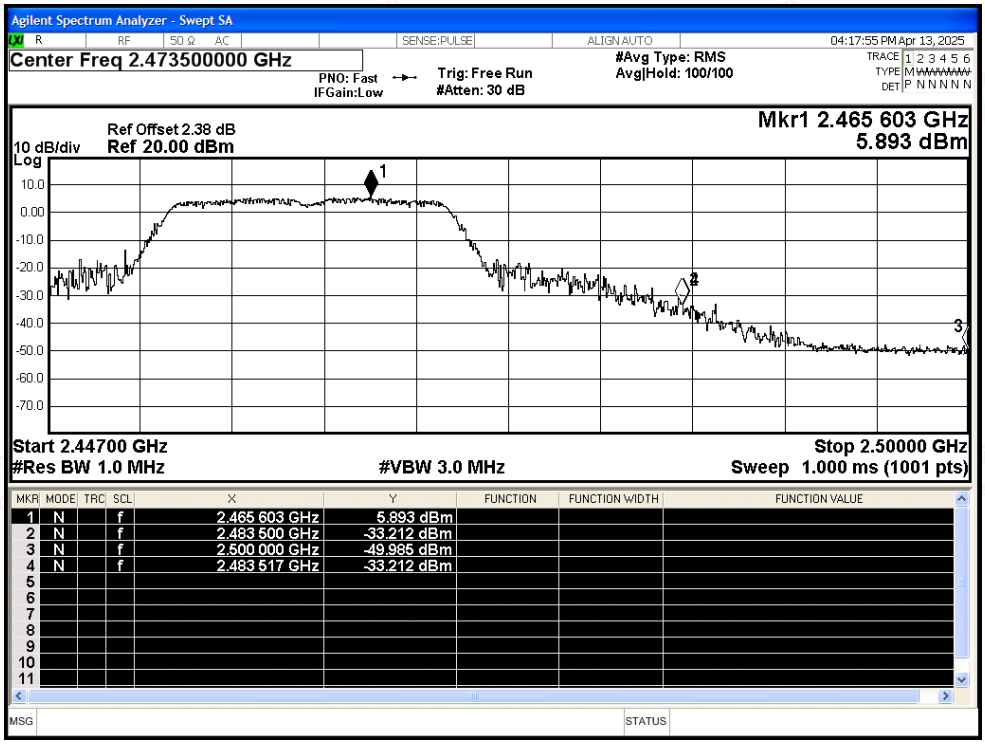
Restrict Band NVNT g 2412MHz Ant Peak



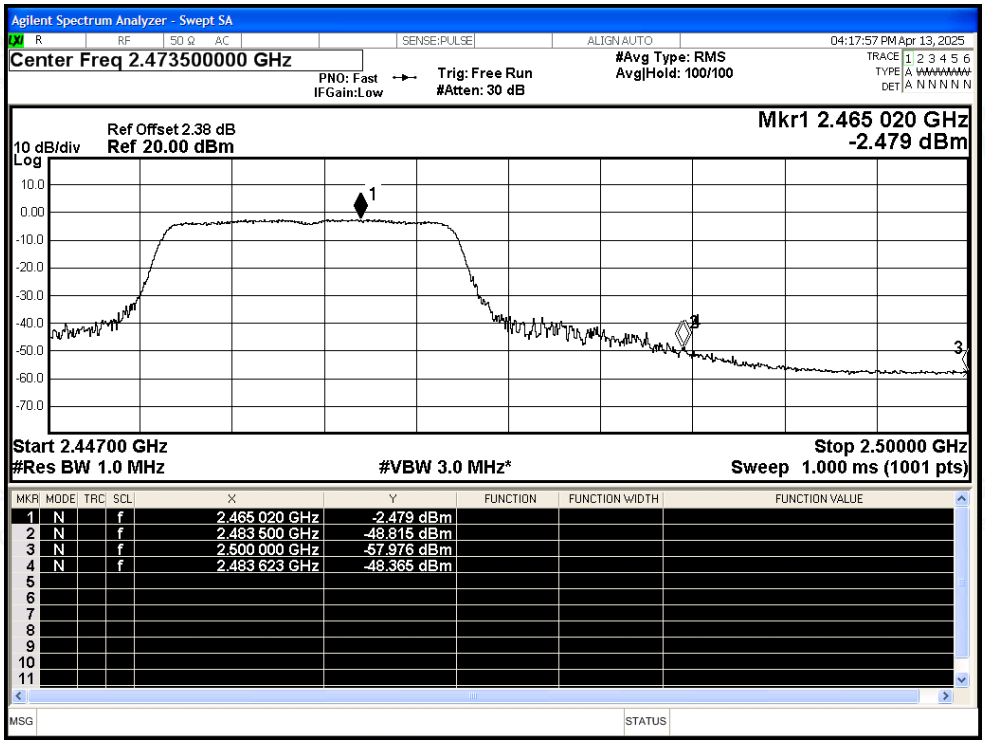
Restrict Band NVNT g 2412MHz Ant Average



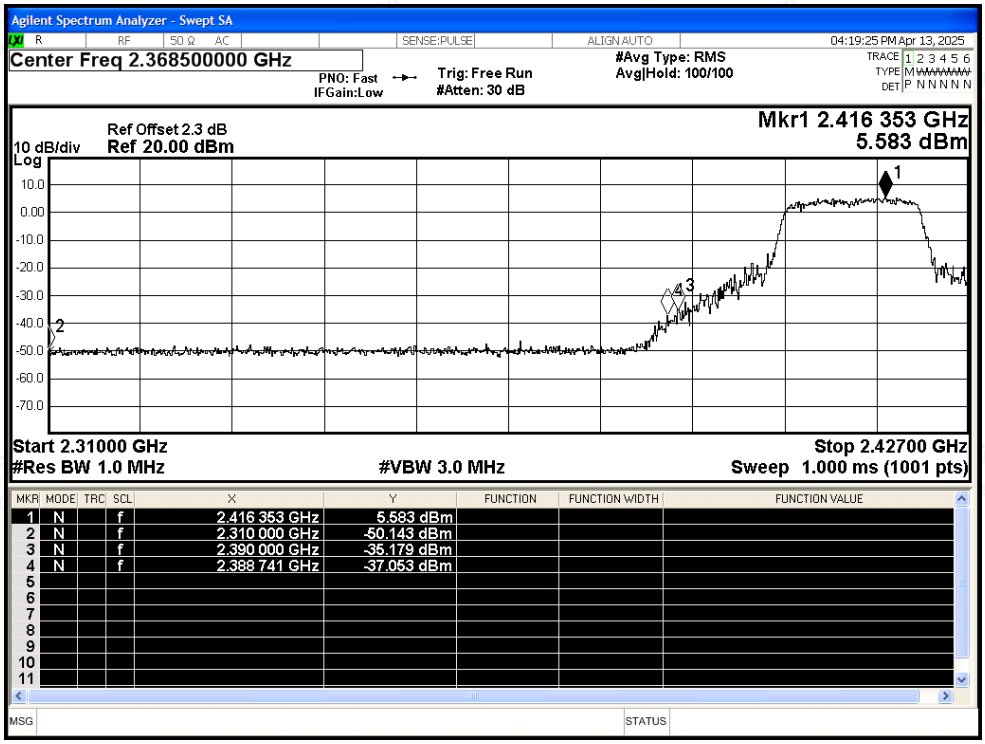
Restrict Band NVNT g 2462MHz Ant Peak



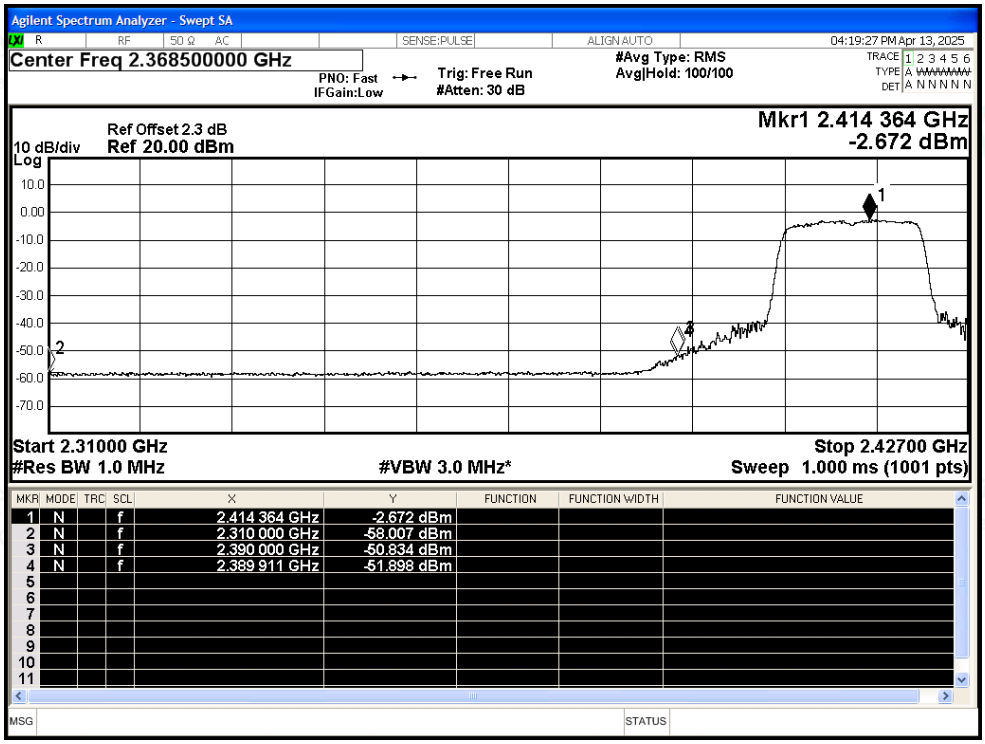
Restrict Band NVNT g 2462MHz Ant Average



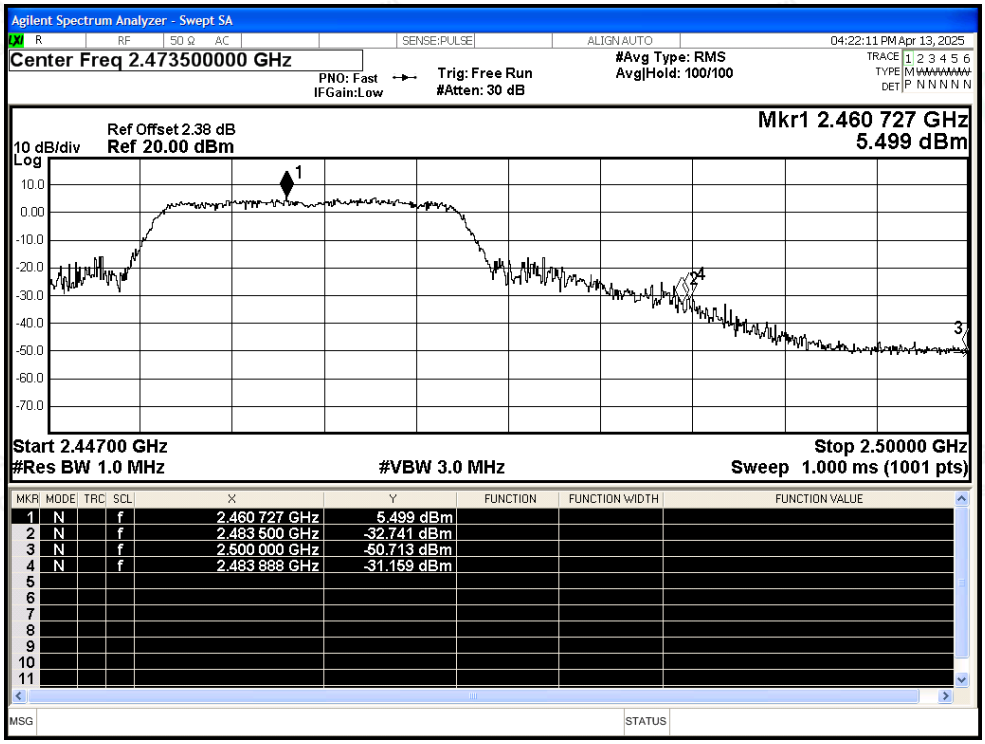
Restrict Band NVNT n20 2412MHz Ant Peak



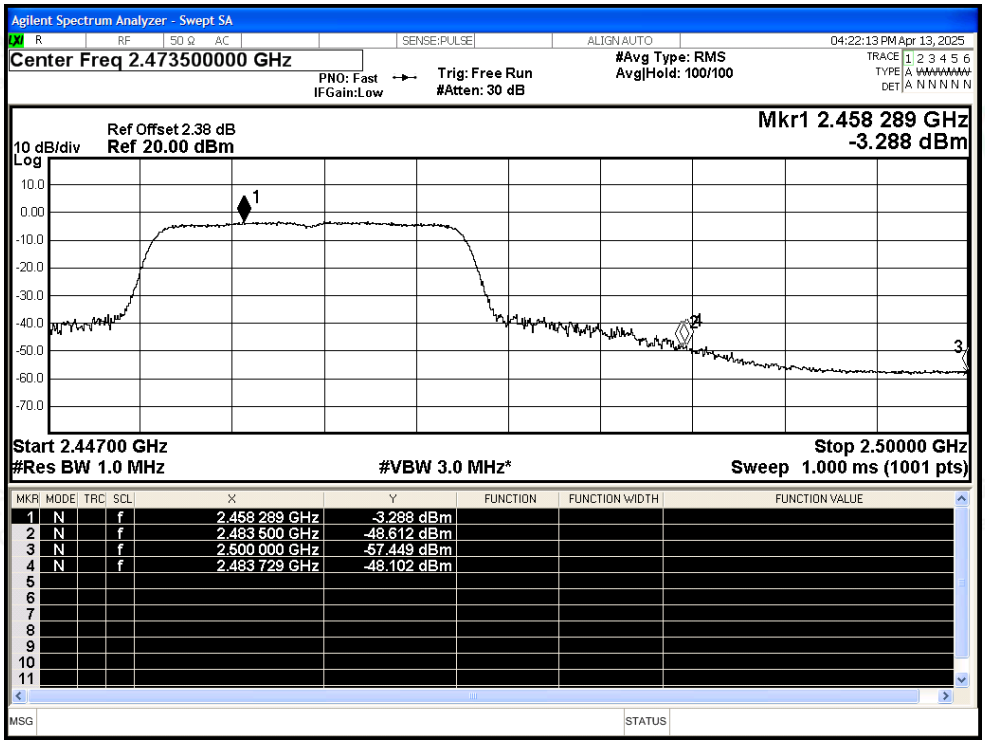
Restrict Band NVNT n20 2412MHz Ant Average



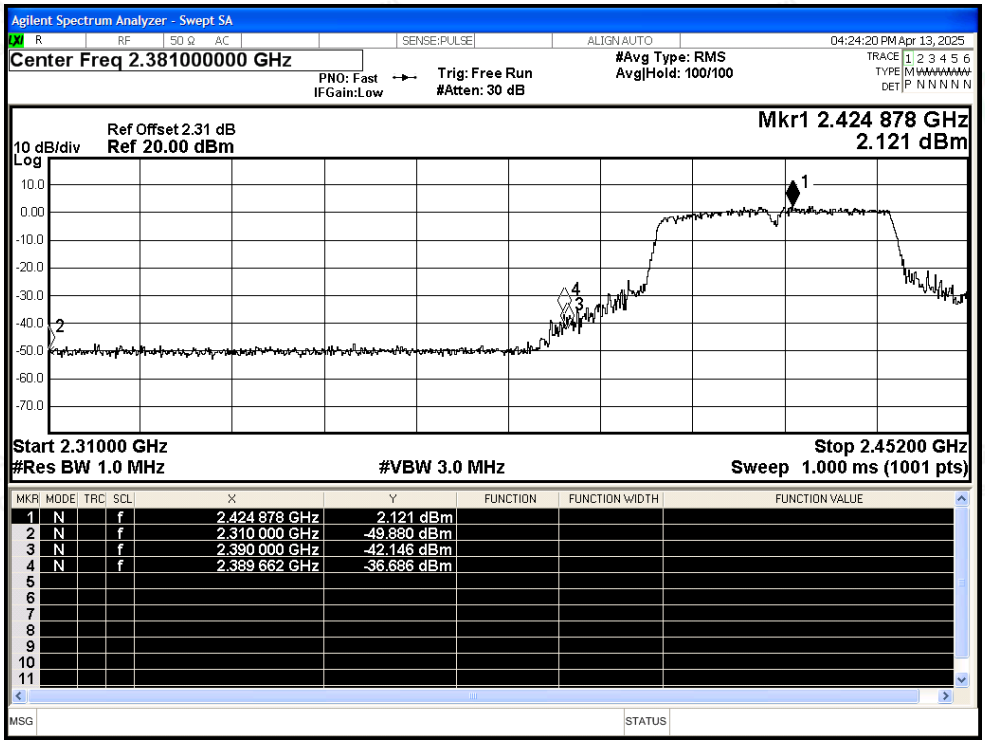
Restrict Band NVNT n20 2462MHz Ant Peak



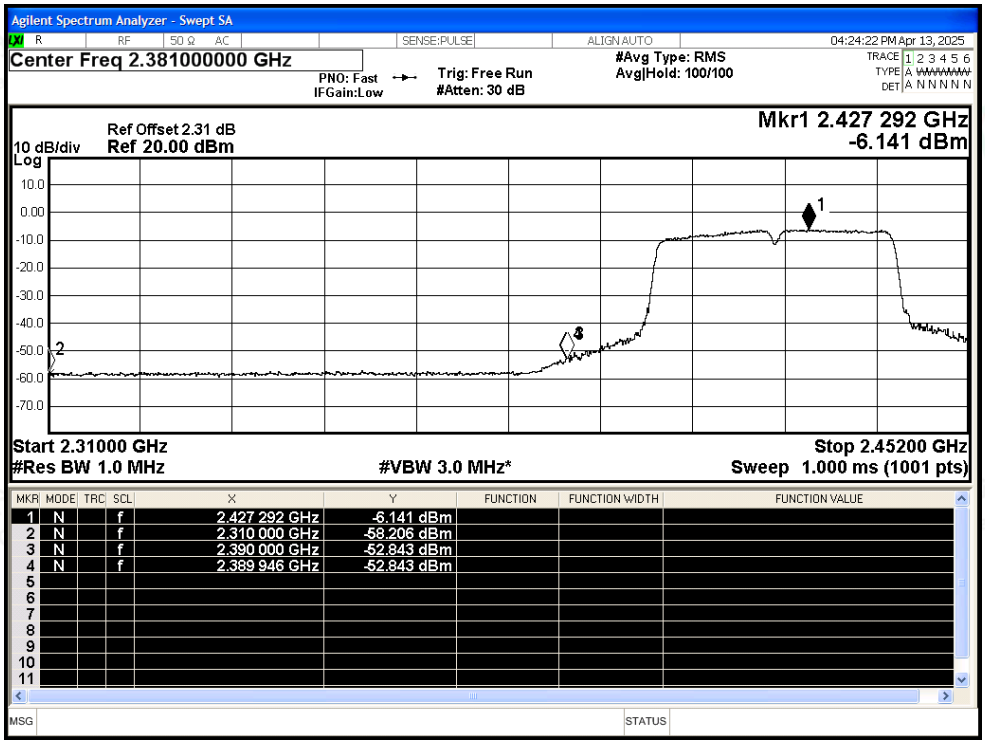
Restrict Band NVNT n20 2462MHz Ant Average



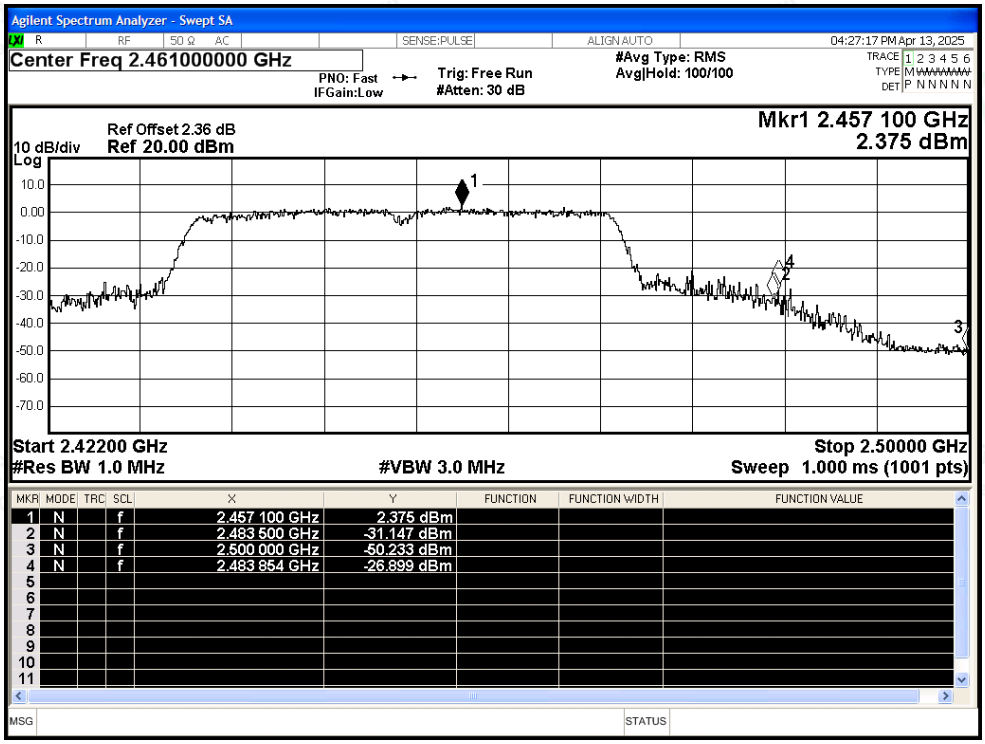
Restrict Band NVNT n40 2422MHz Ant Peak



Restrict Band NVNT n40 2422MHz Ant Average



Restrict Band NVNT n40 2452MHz Ant Peak



Restrict Band NVNT n40 2452MHz Ant Average