Appendix A

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: NVR

Test Model: NVR-81216

Environmental Conditions

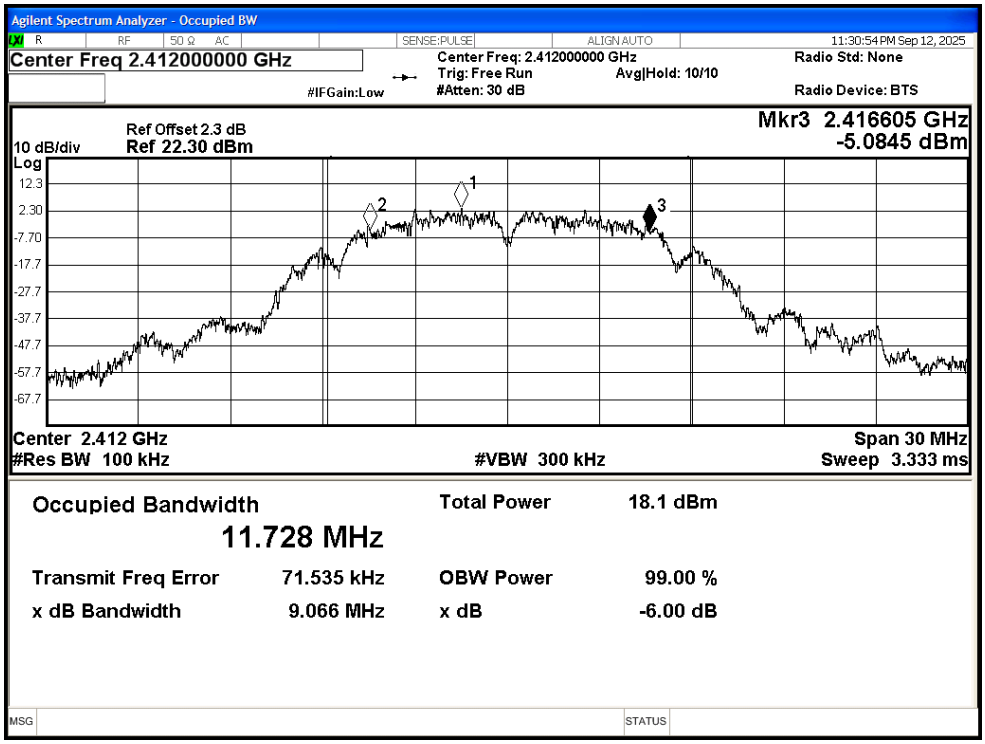
Temperature:	25.2° C
Relative Humidity:	53.9%
ATM Pressure:	100.0 kPa
Test Engineer:	Suichao Lai
Supervised by:	Yan Chen

A.1 -6dB Bandwidth

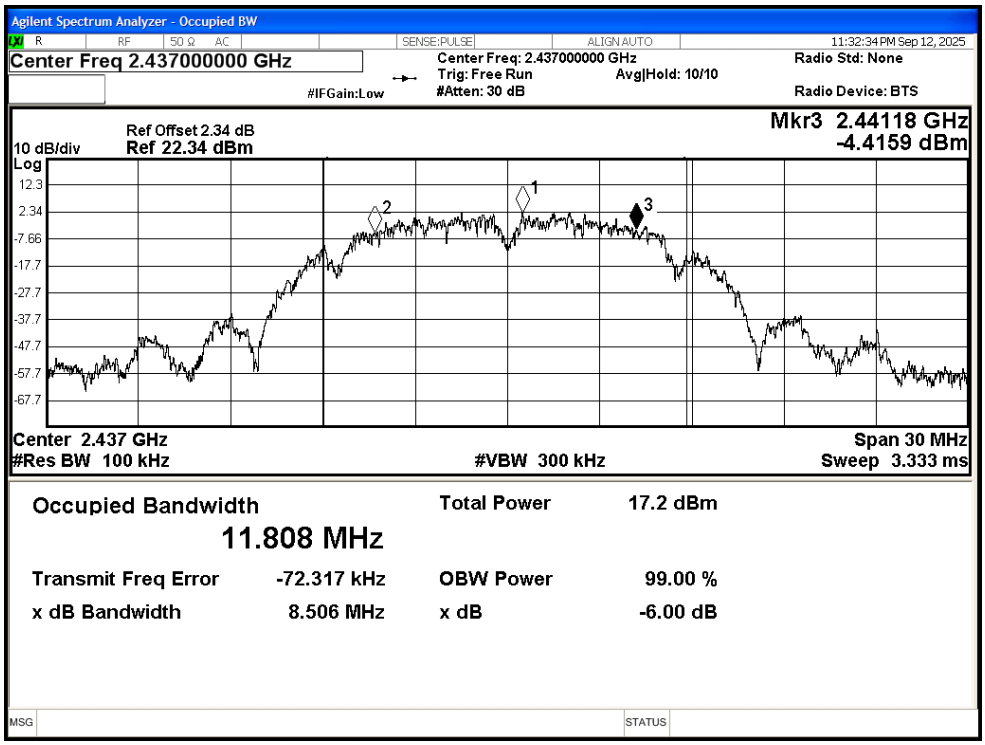
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant0	9.066	>=0.5	Pass
NVNT	b	2437	Ant0	8.506	>=0.5	Pass
NVNT	b	2462	Ant0	9.062	>=0.5	Pass
NVNT	g	2412	Ant0	16.451	>=0.5	Pass
NVNT	g	2437	Ant0	16.366	>=0.5	Pass
NVNT	g	2462	Ant0	16.507	>=0.5	Pass
NVNT	n20	2412	Ant0	17.092	>=0.5	Pass
NVNT	n20	2437	Ant0	17.445	>=0.5	Pass
NVNT	n20	2462	Ant0	17.535	>=0.5	Pass
NVNT	ax20	2412	Ant0	16.743	>=0.5	Pass
NVNT	ax20	2437	Ant0	17.081	>=0.5	Pass
NVNT	ax20	2462	Ant0	17.131	>=0.5	Pass

Test Graphs

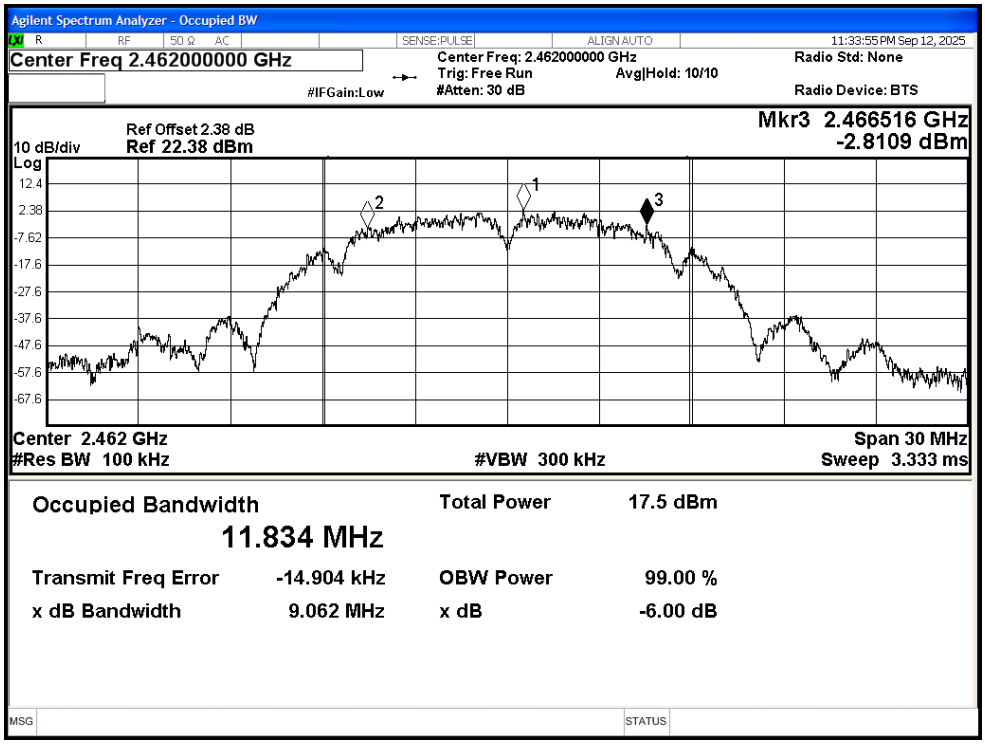
-6dB Bandwidth NVNT b 2412MHz Ant0



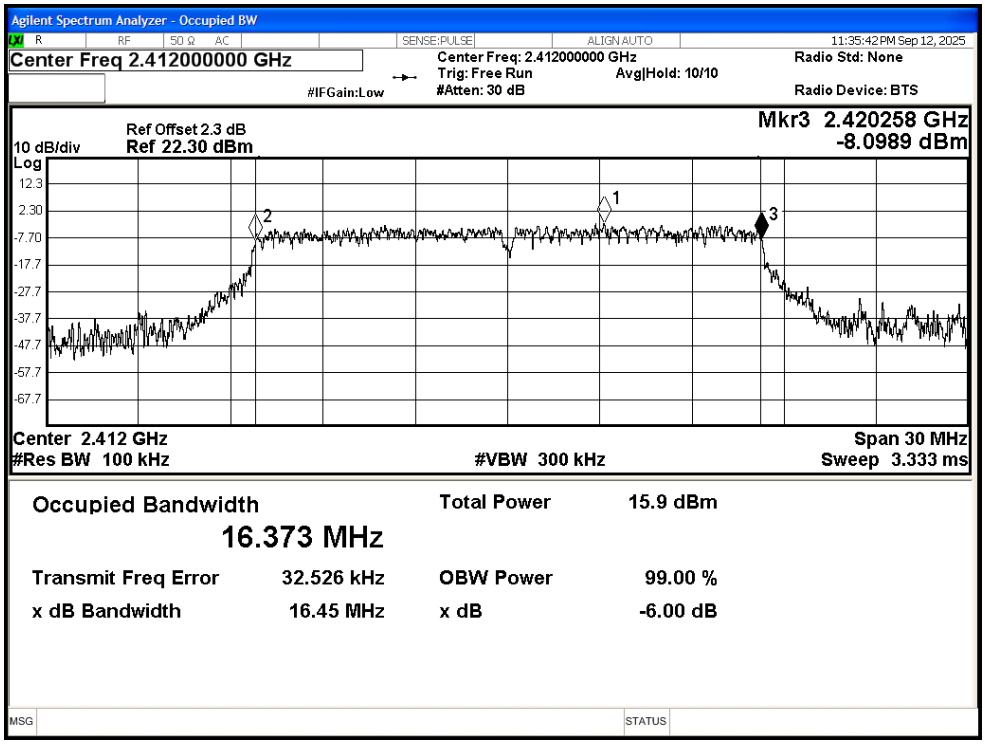
-6dB Bandwidth NVNT b 2437MHz Ant0



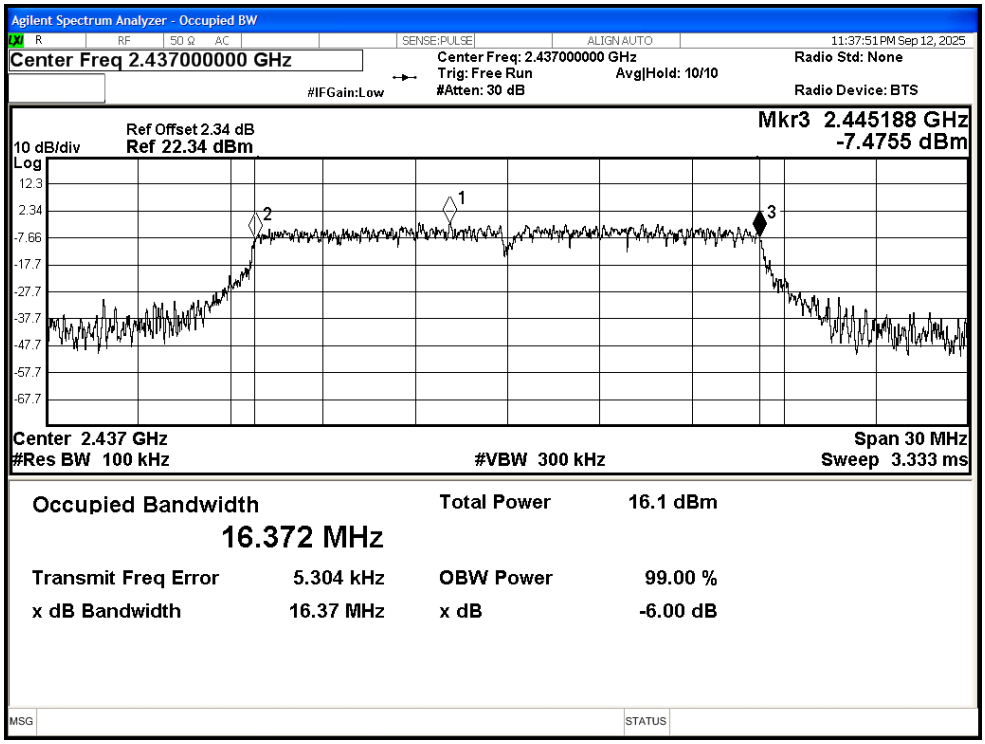
-6dB Bandwidth NVNT b 2462MHz Ant0



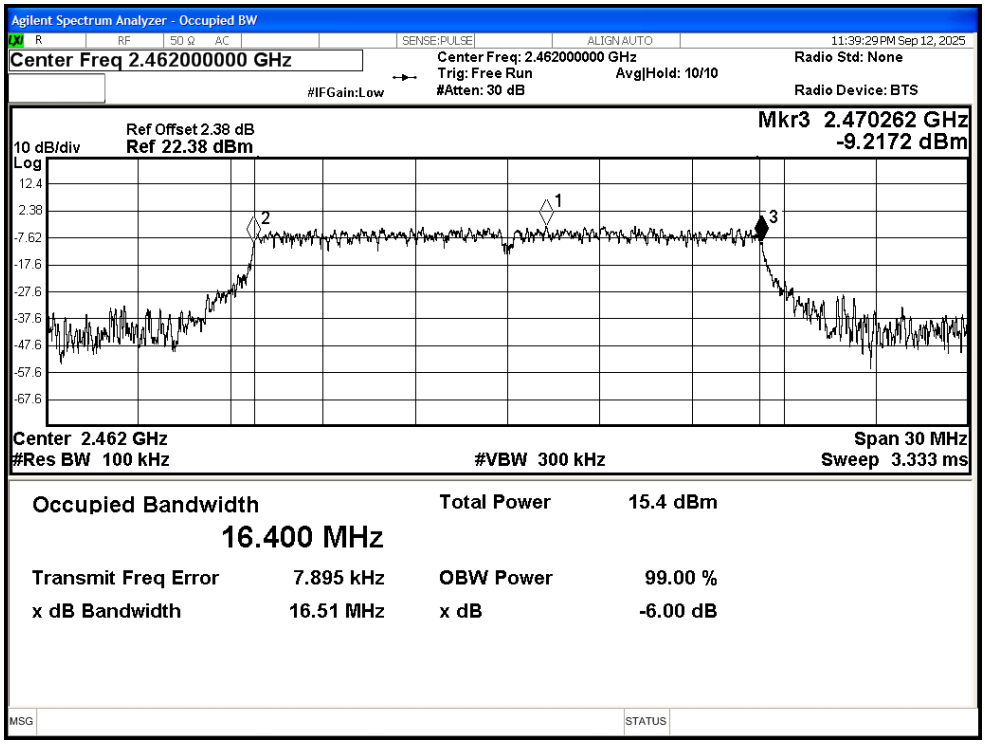
-6dB Bandwidth NVNT g 2412MHz Ant0



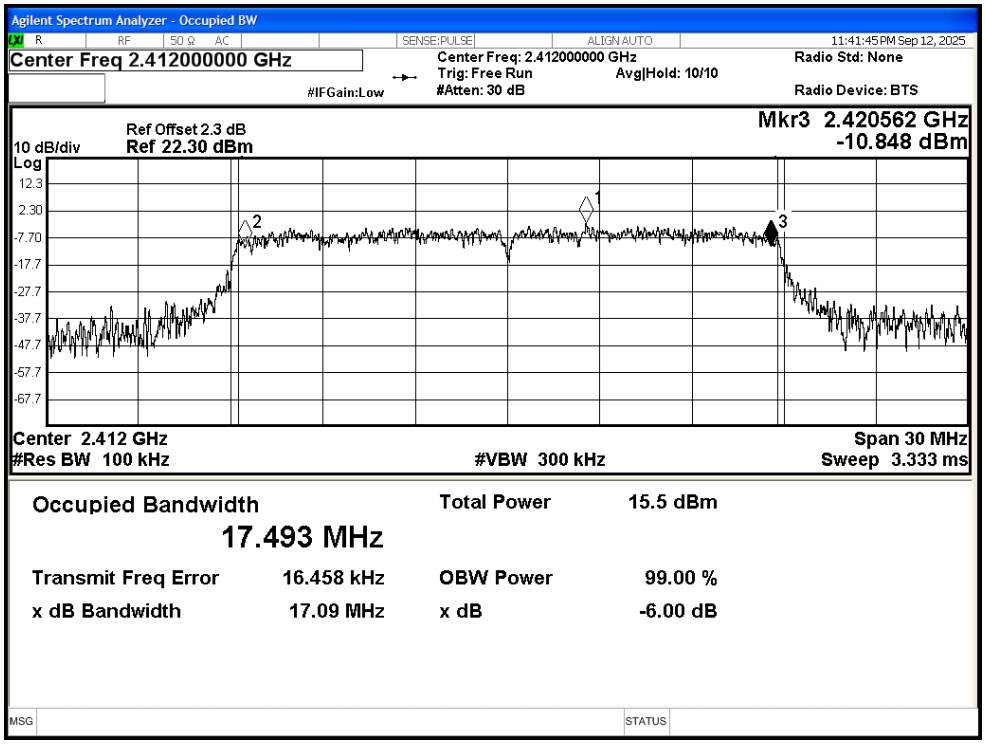
-6dB Bandwidth NVNT g 2437MHz Ant0



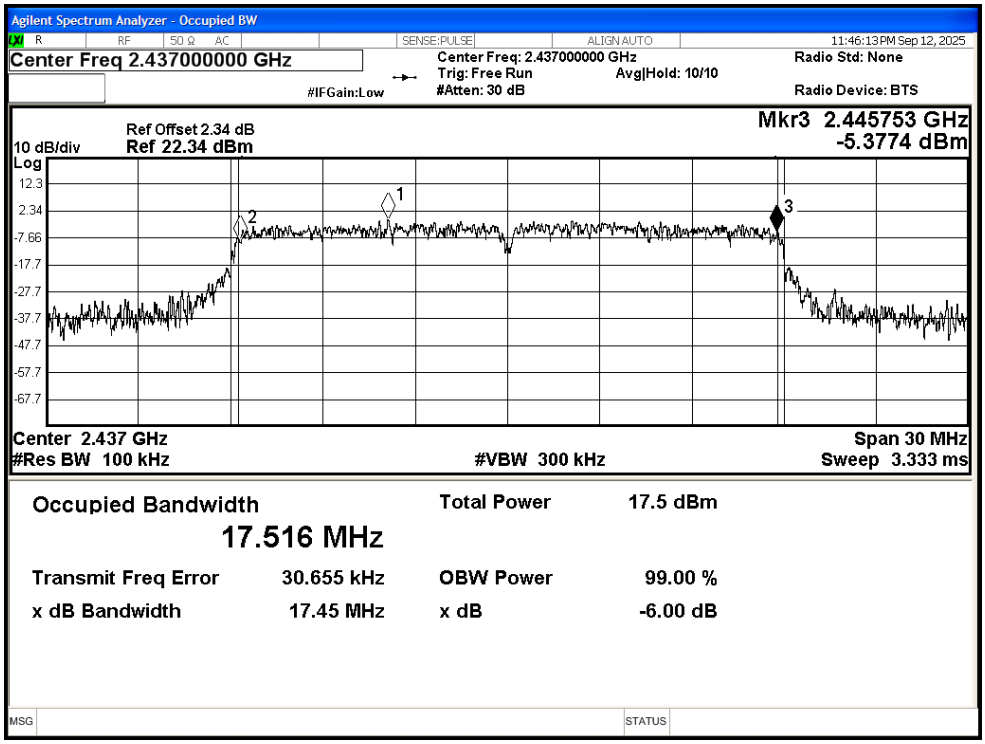
-6dB Bandwidth NVNT g 2462MHz Ant0



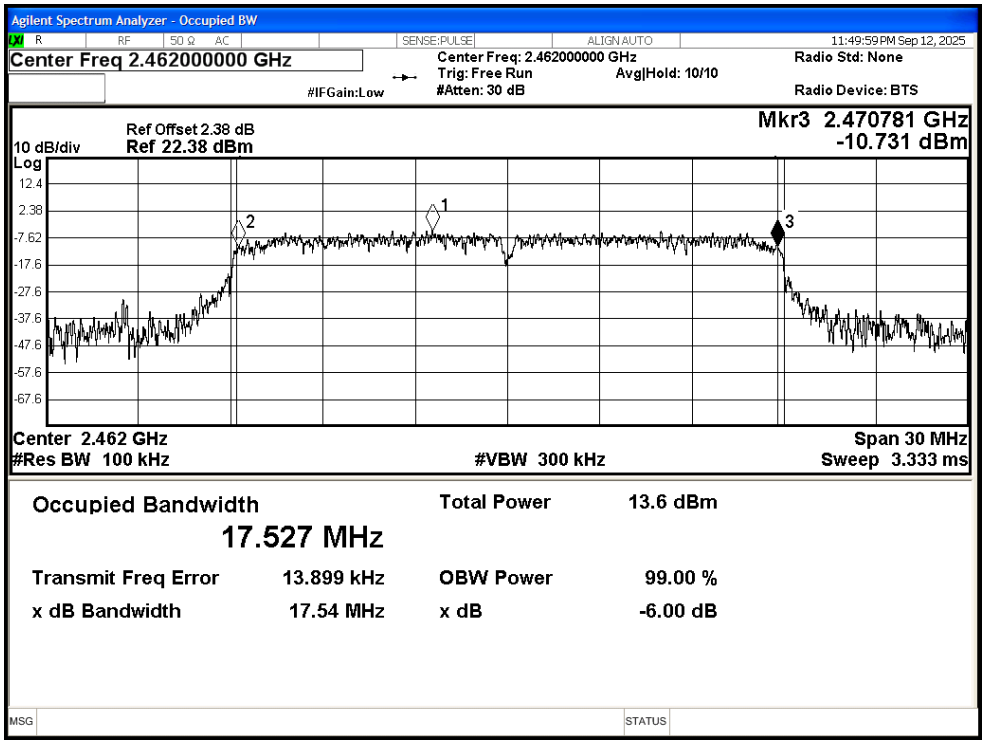
-6dB Bandwidth NVNT n20 2412MHz Ant0



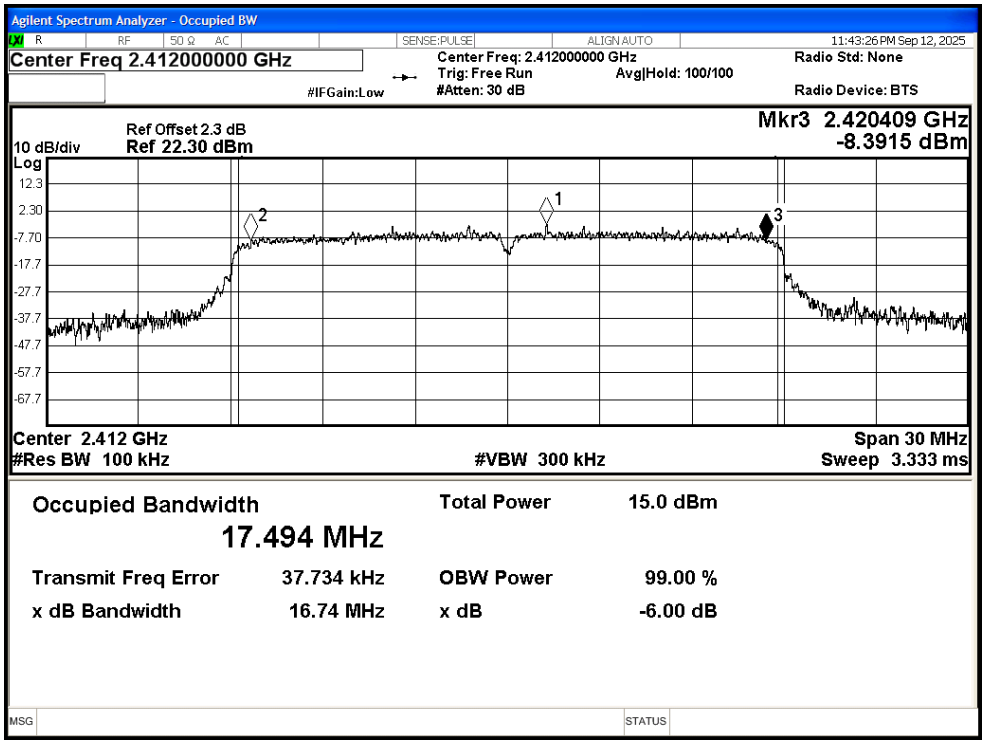
-6dB Bandwidth NVNT n20 2437MHz Ant0



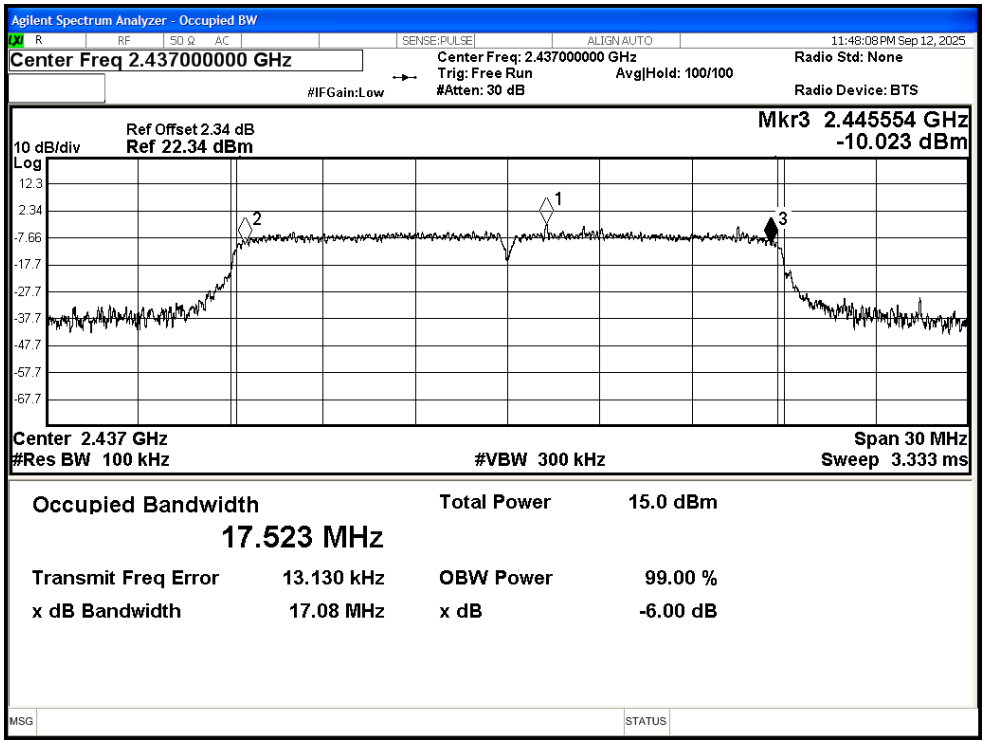
-6dB Bandwidth NVNT n20 2462MHz Ant0



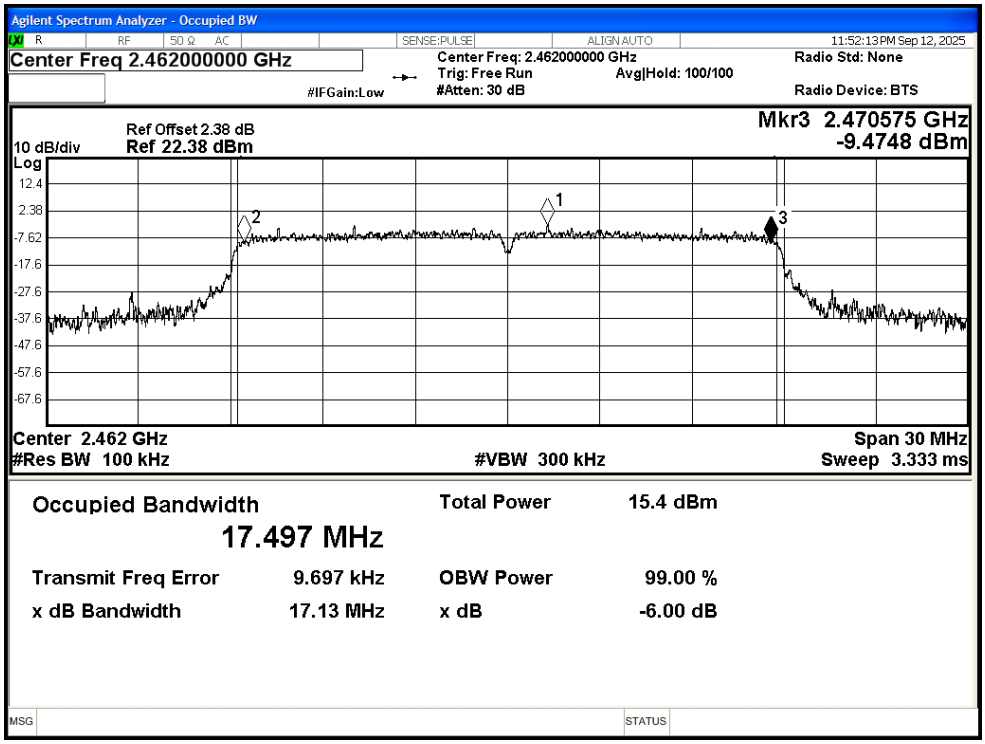
-6dB Bandwidth NVNT ax20 2412MHz Ant0



-6dB Bandwidth NVNT ax20 2437MHz Ant0



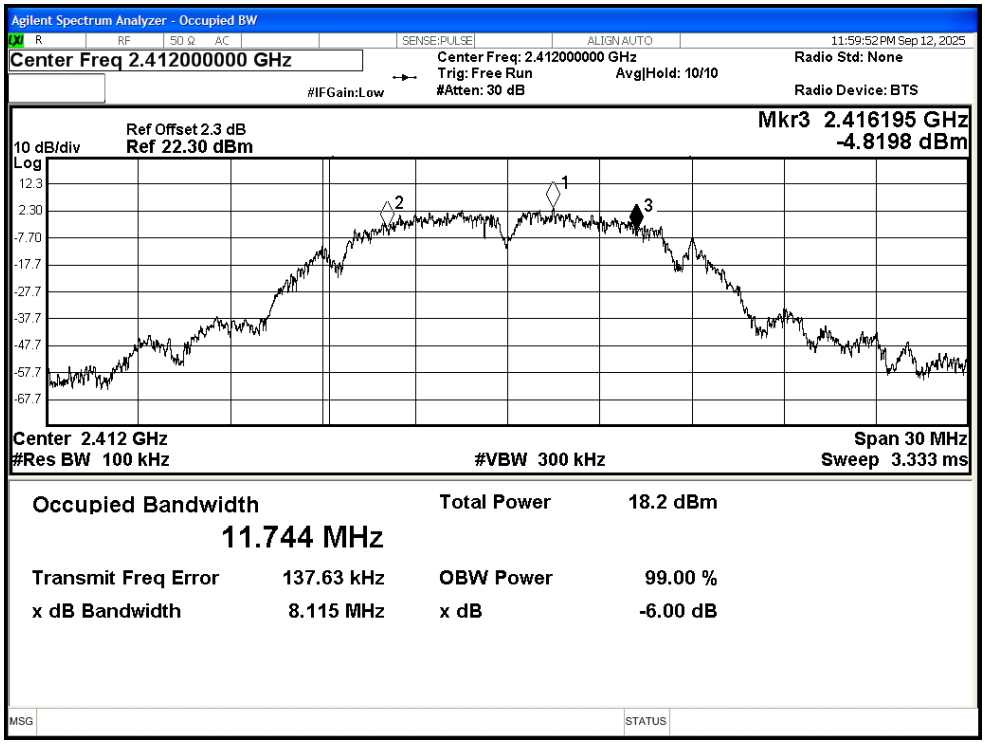
-6dB Bandwidth NVNT ax20 2462MHz Ant0



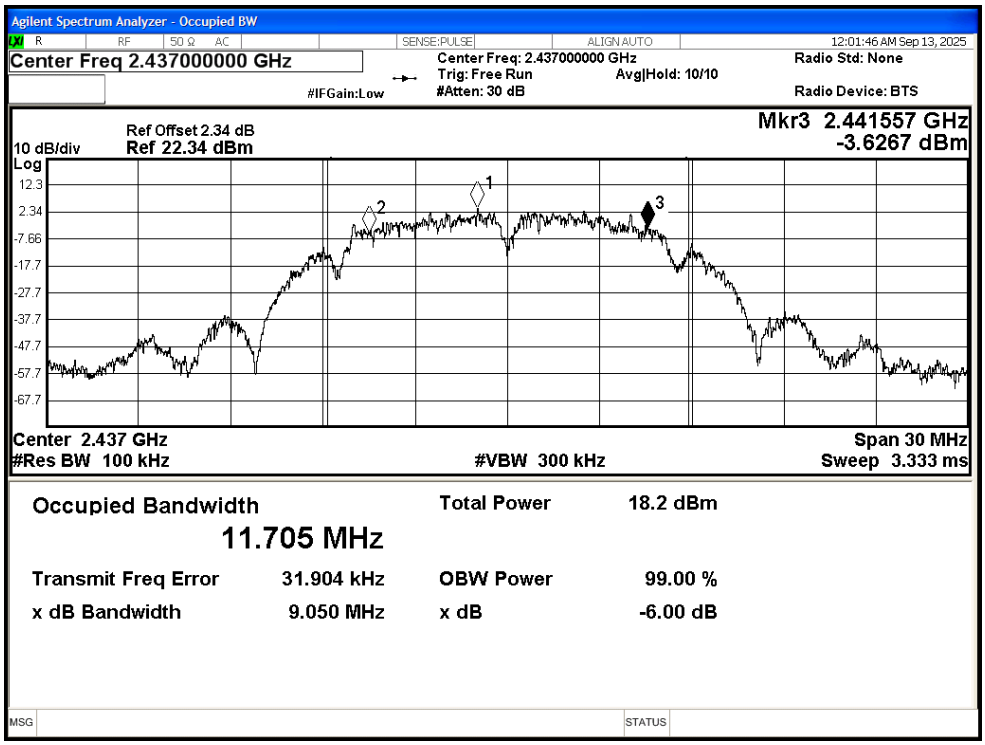
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	8.115	>=0.5	Pass
NVNT	b	2437	Ant1	9.05	>=0.5	Pass
NVNT	b	2462	Ant1	9.541	>=0.5	Pass
NVNT	g	2412	Ant1	16.459	>=0.5	Pass
NVNT	g	2437	Ant1	16.547	>=0.5	Pass
NVNT	g	2462	Ant1	16.431	>=0.5	Pass
NVNT	n20	2412	Ant1	15.566	>=0.5	Pass
NVNT	n20	2437	Ant1	17.522	>=0.5	Pass
NVNT	n20	2462	Ant1	16.128	>=0.5	Pass
NVNT	n40	2422	Ant1	35.189	>=0.5	Pass
NVNT	n40	2437	Ant1	34.885	>=0.5	Pass
NVNT	n40	2452	Ant1	35.407	>=0.5	Pass
NVNT	ax20	2412	Ant1	16.75	>=0.5	Pass
NVNT	ax20	2437	Ant1	17.546	>=0.5	Pass
NVNT	ax20	2462	Ant1	17.12	>=0.5	Pass
NVNT	ax40	2422	Ant1	35.616	>=0.5	Pass
NVNT	ax40	2437	Ant1	35.526	>=0.5	Pass
NVNT	ax40	2452	Ant1	35.222	>=0.5	Pass

Test Graphs

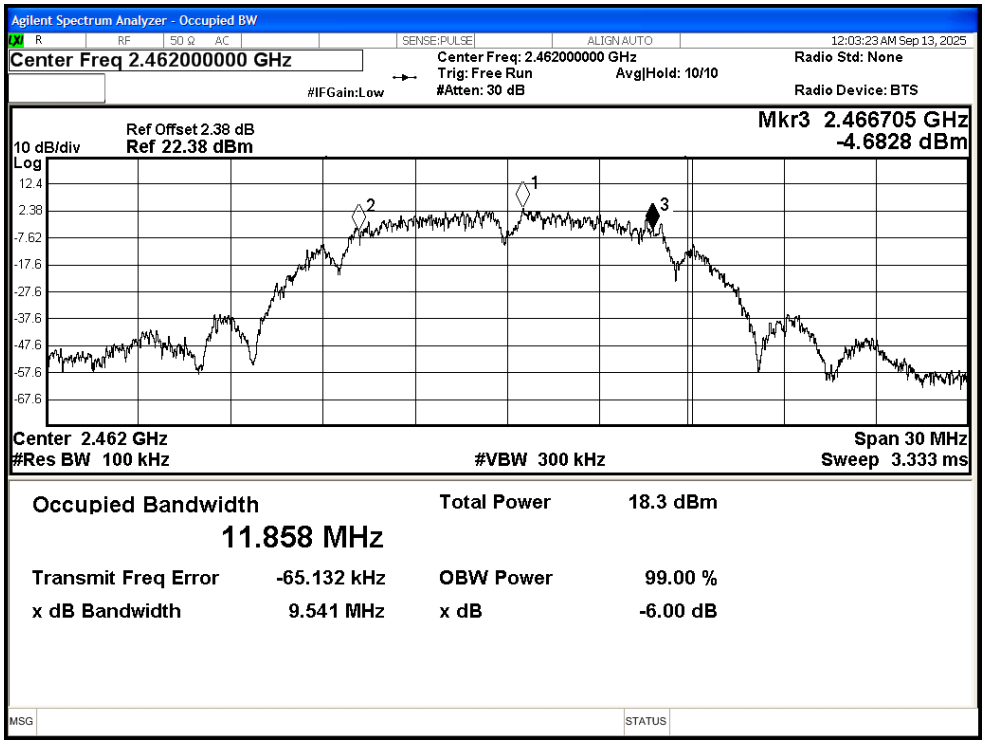
-6dB Bandwidth NVNT b 2412MHz Ant1



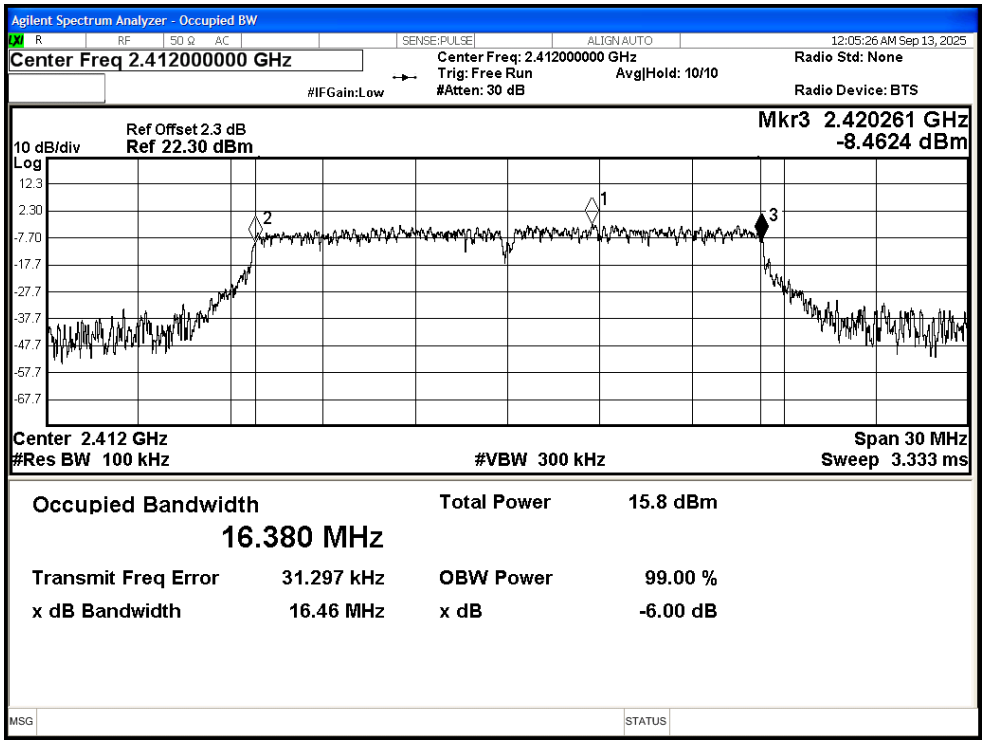
-6dB Bandwidth NVNT b 2437MHz Ant1



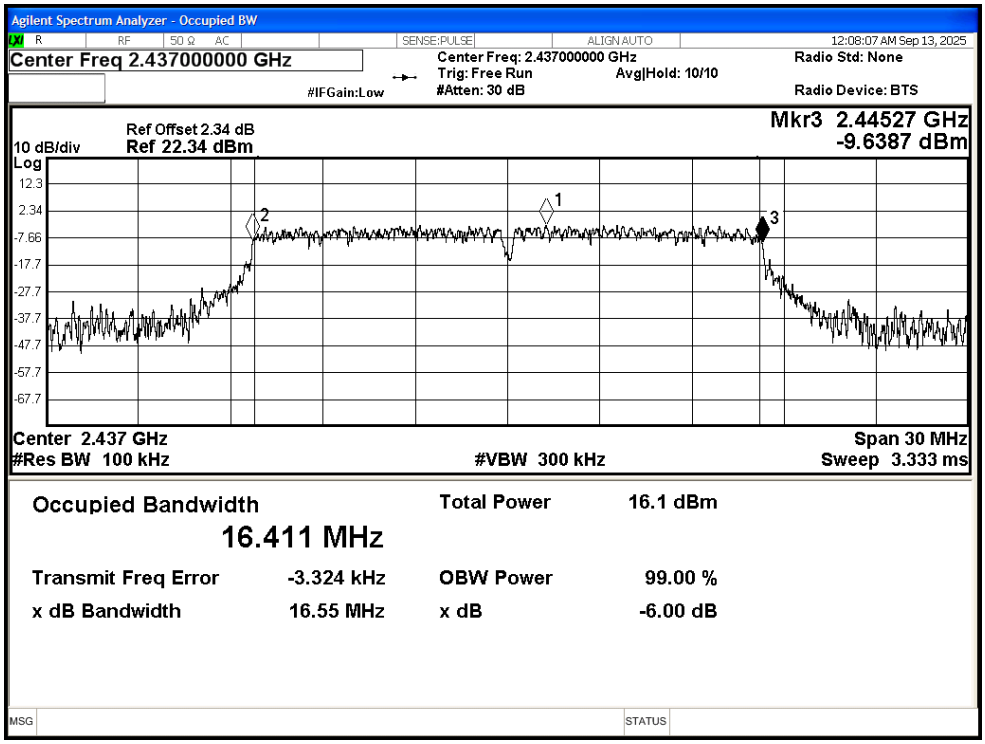
-6dB Bandwidth NVNT b 2462MHz Ant1



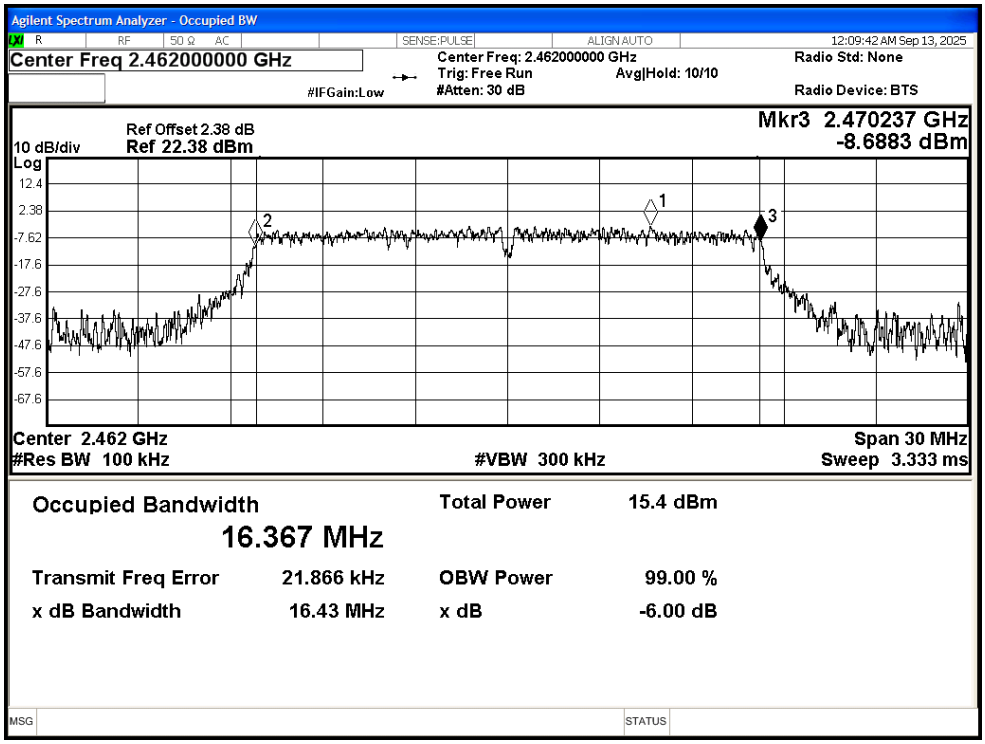
-6dB Bandwidth NVNT g 2412MHz Ant1



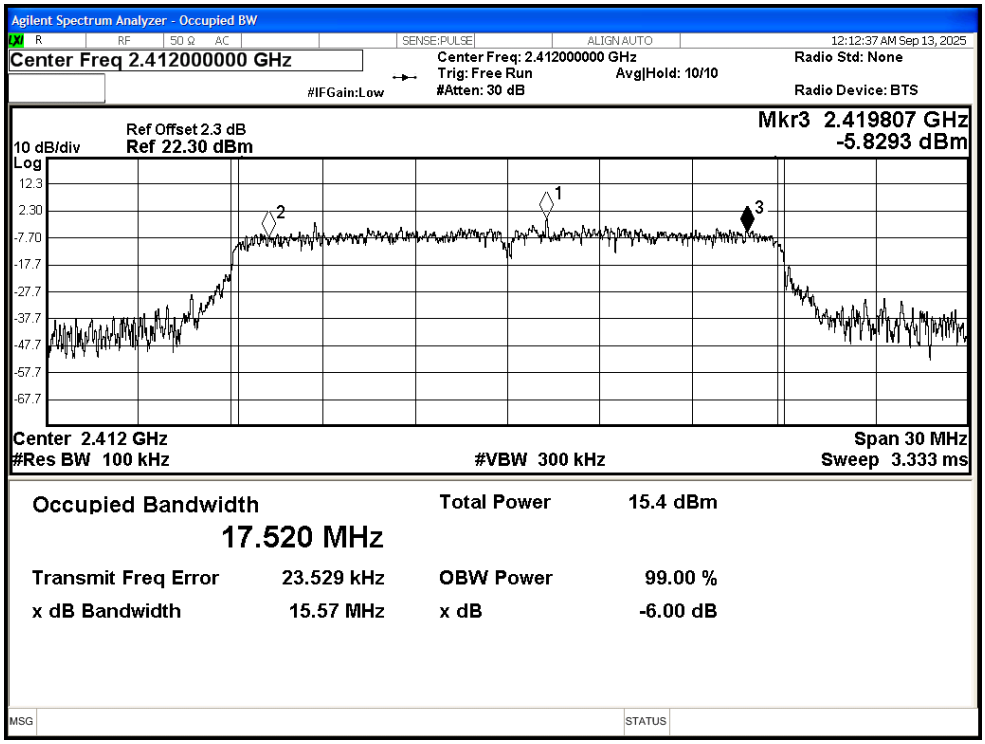
-6dB Bandwidth NVNT g 2437MHz Ant1



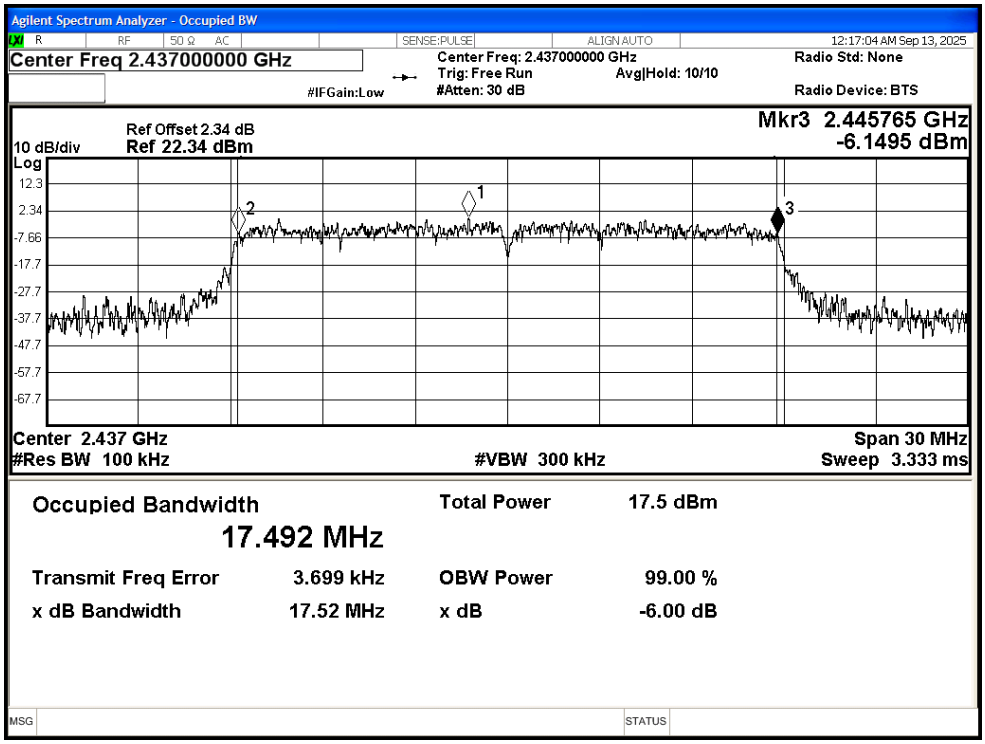
-6dB Bandwidth NVNT g 2462MHz Ant1



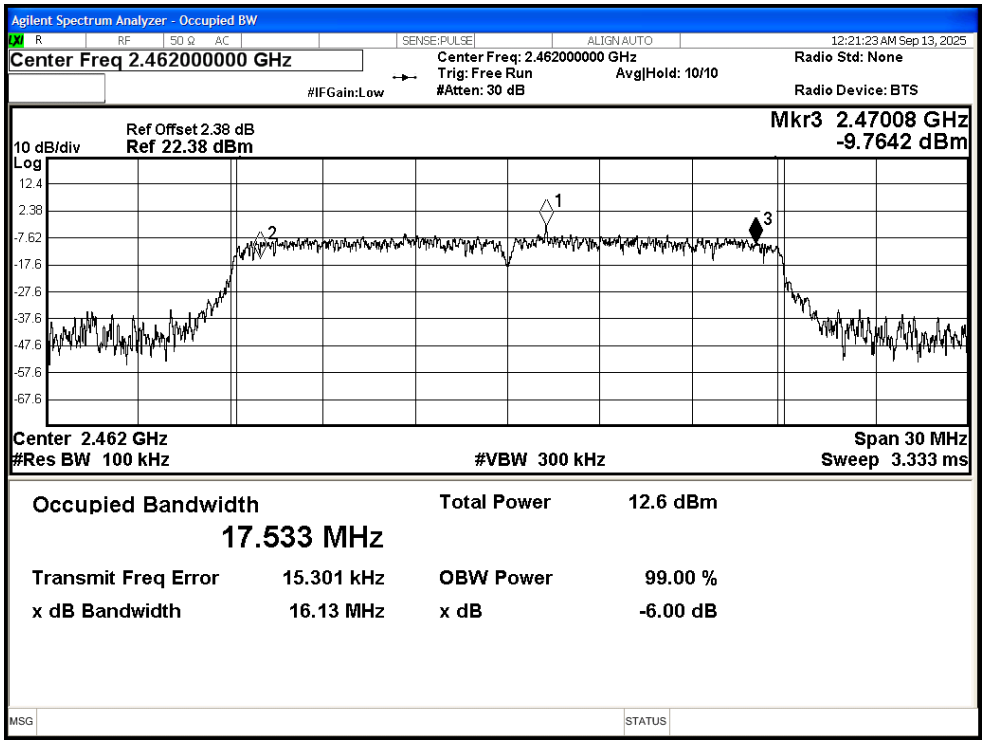
-6dB Bandwidth NVNT n20 2412MHz Ant1



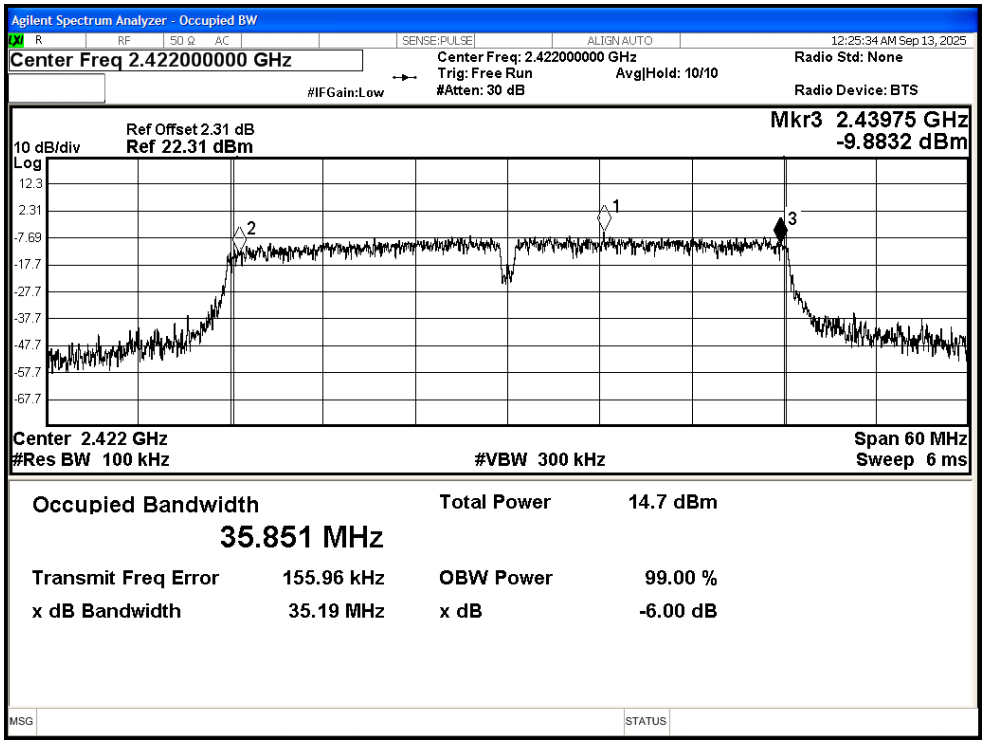
-6dB Bandwidth NVNT n20 2437MHz Ant1



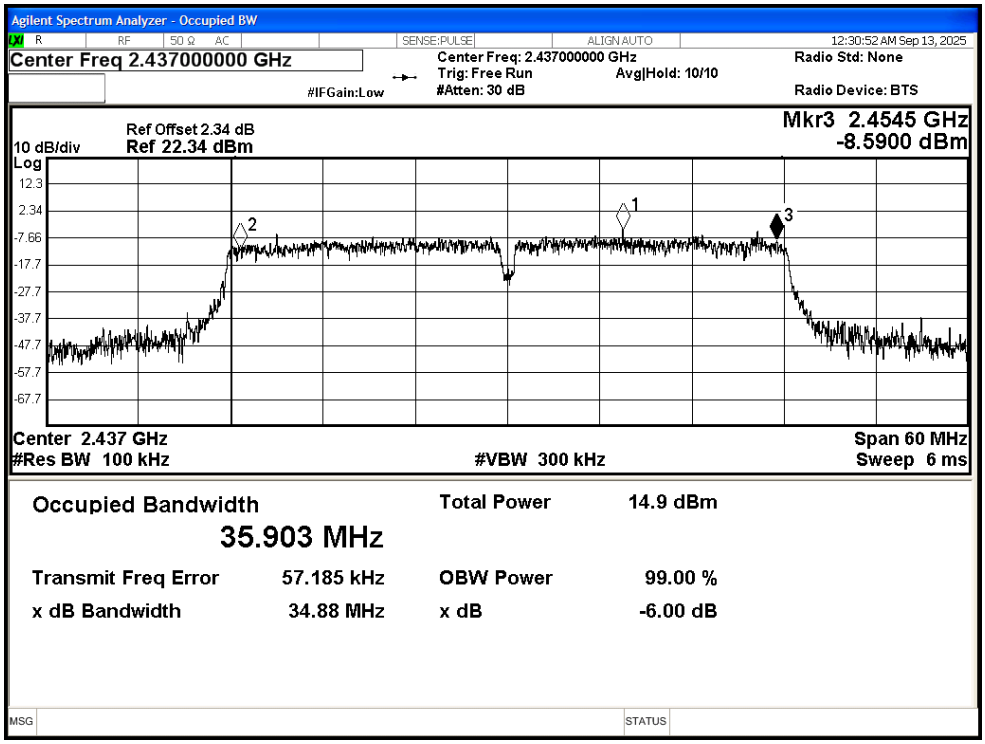
-6dB Bandwidth NVNT n20 2462MHz Ant1



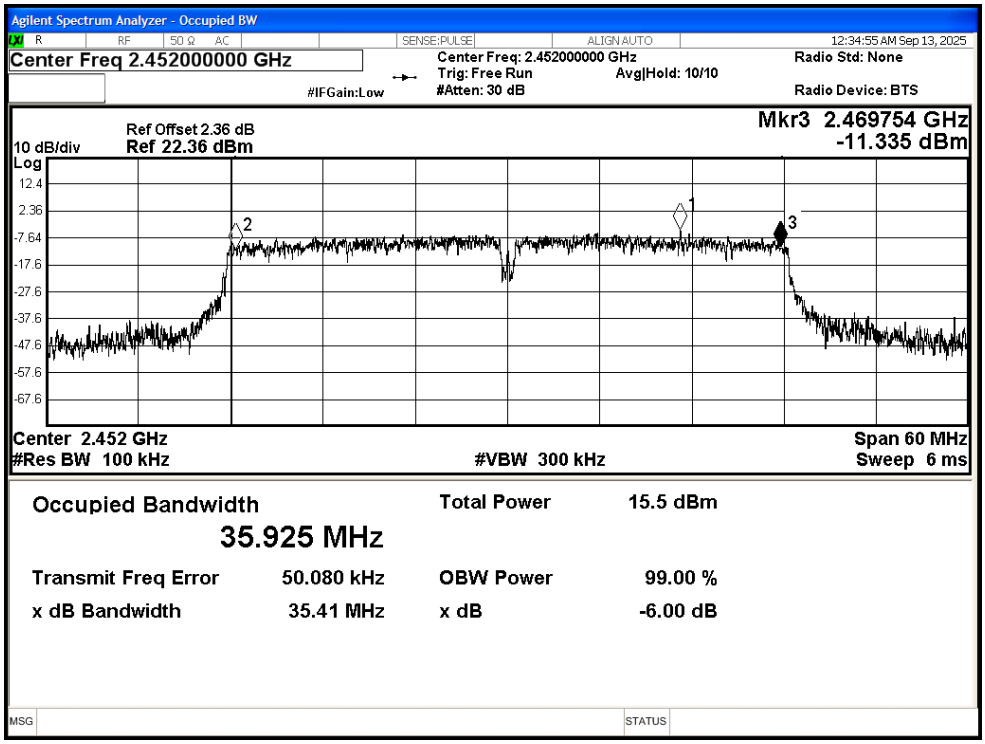
-6dB Bandwidth NVNT n40 2422MHz Ant1



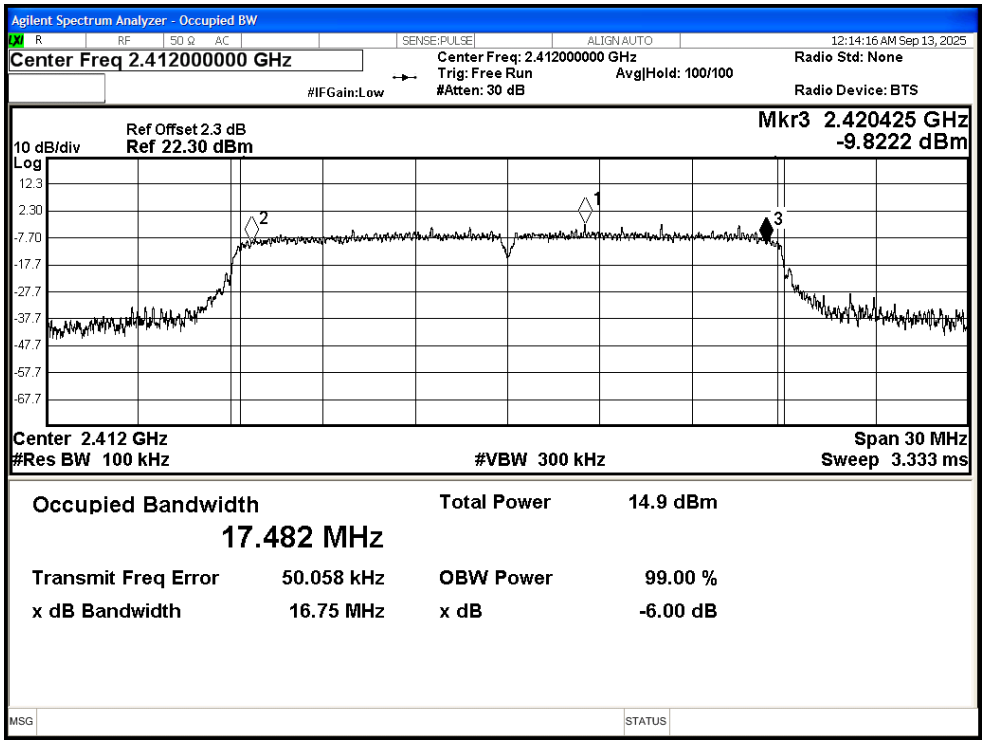
-6dB Bandwidth NVNT n40 2437MHz Ant1



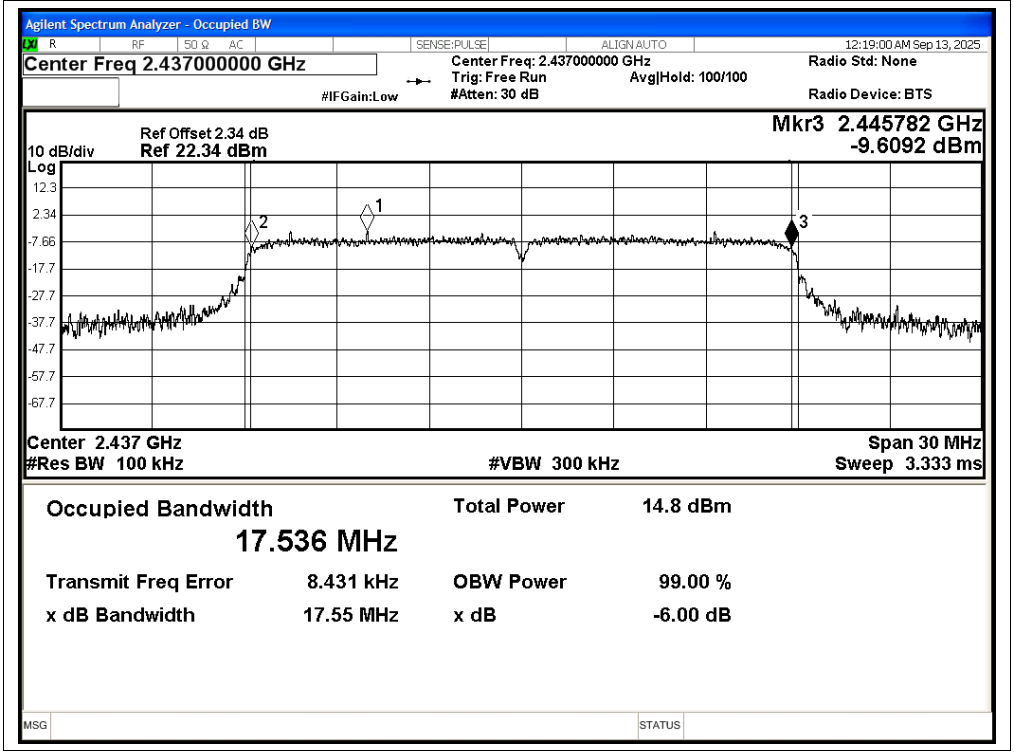
-6dB Bandwidth NVNT n40 2452MHz Ant1



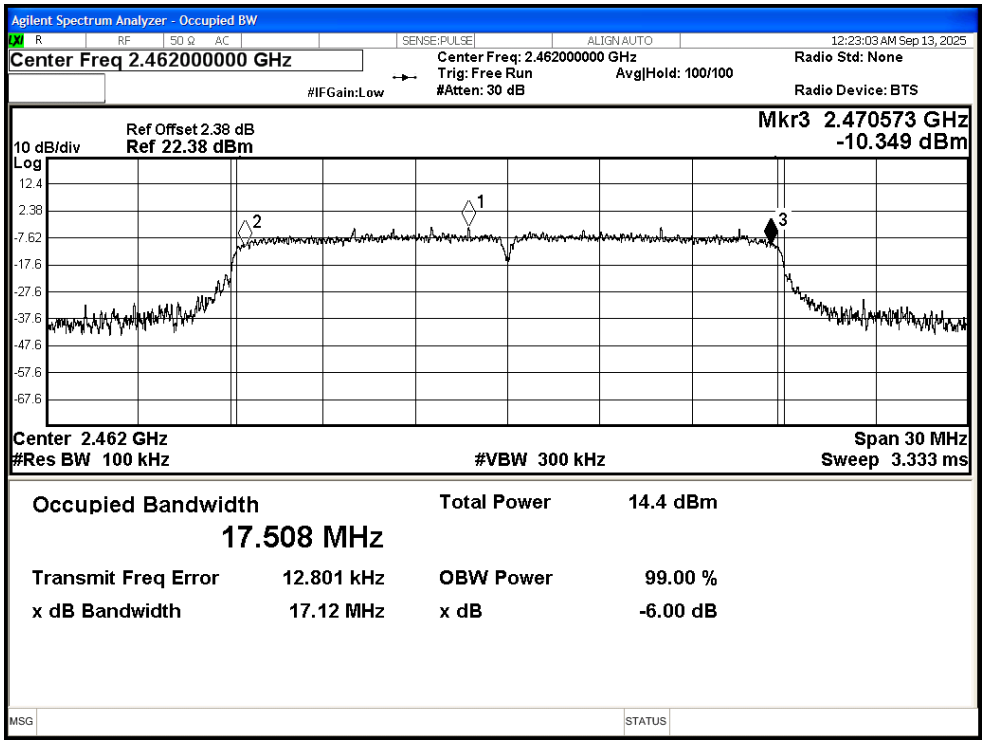
-6dB Bandwidth NVNT ax20 2412MHz Ant1



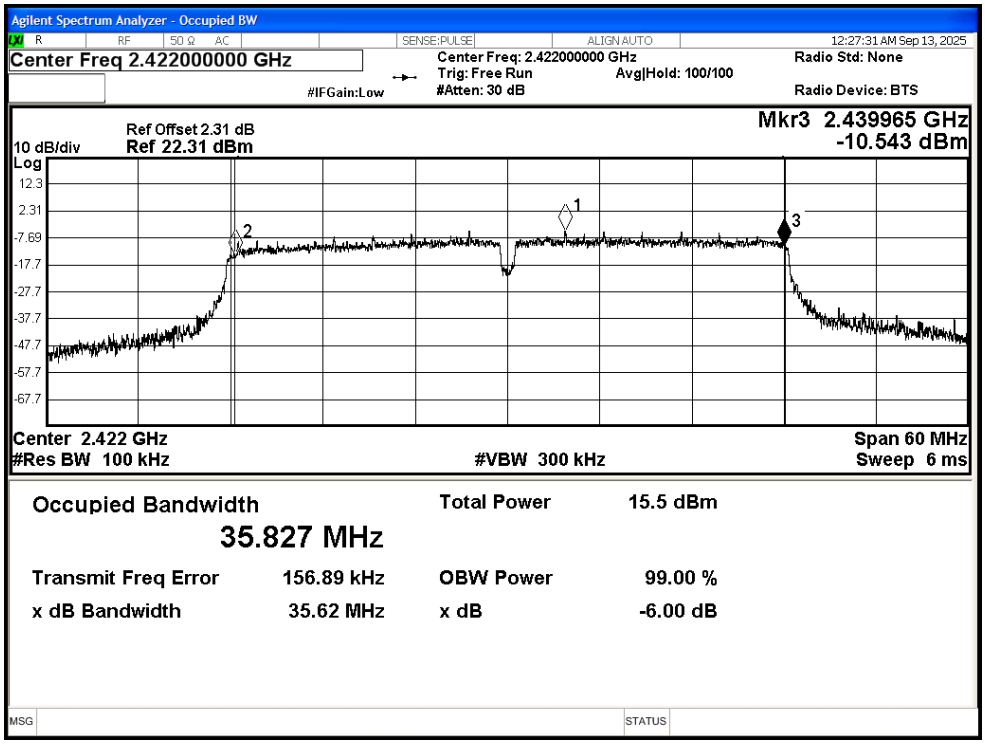
-6dB Bandwidth NVNT ax20 2437MHz Ant1



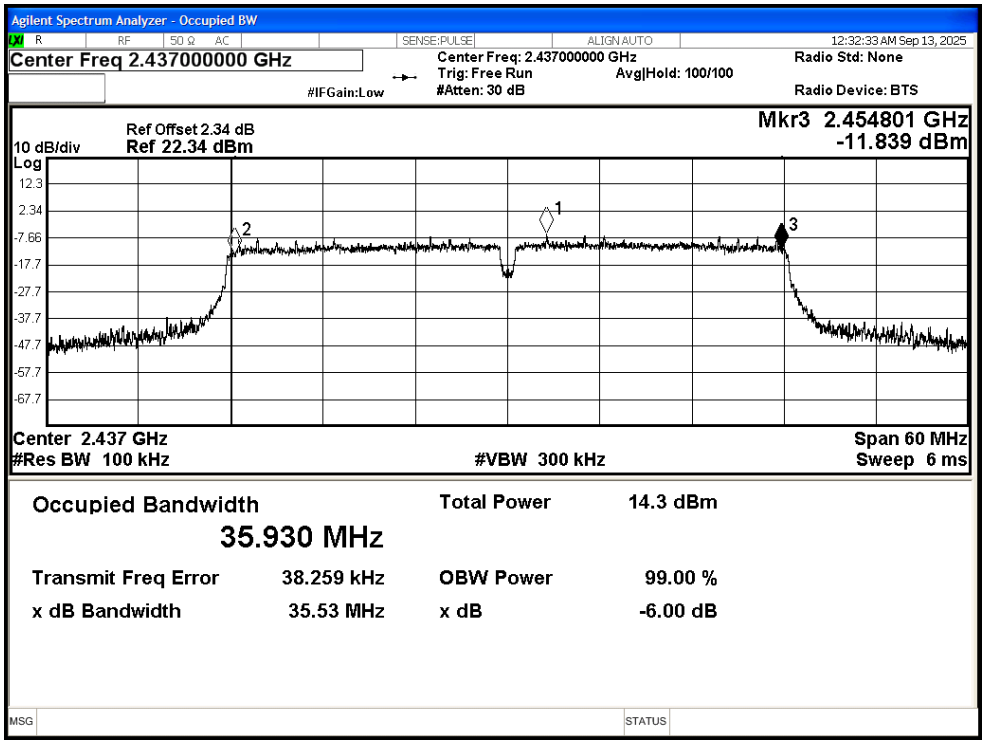
-6dB Bandwidth NVNT ax20 2462MHz Ant1



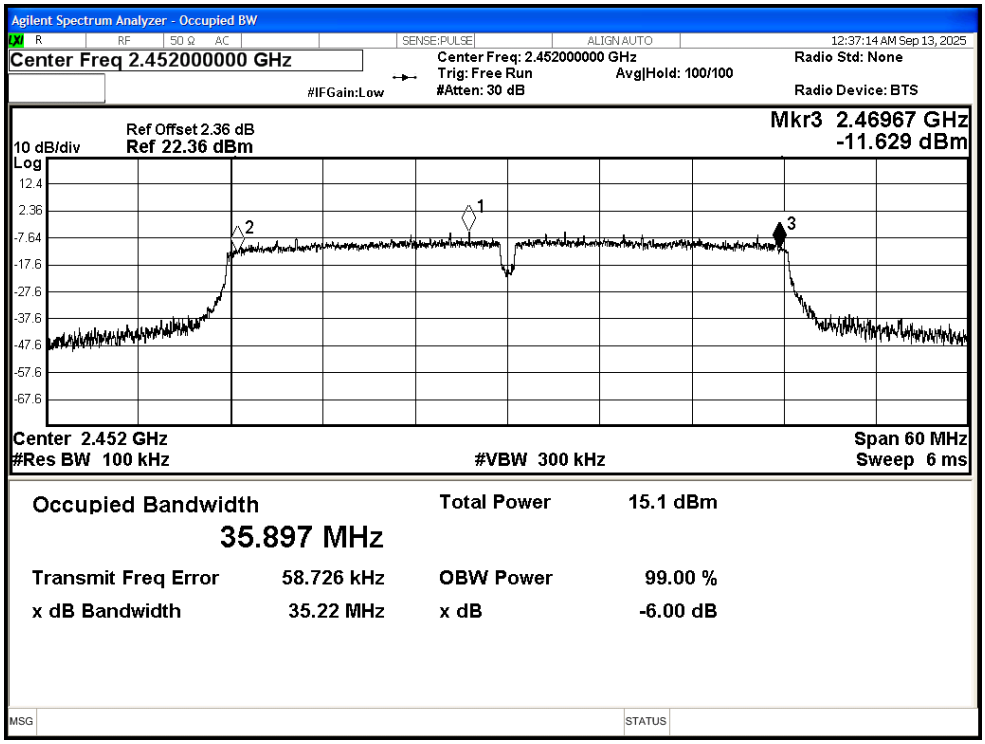
-6dB Bandwidth NVNT ax40 2422MHz Ant1



-6dB Bandwidth NVNT ax40 2437MHz Ant1



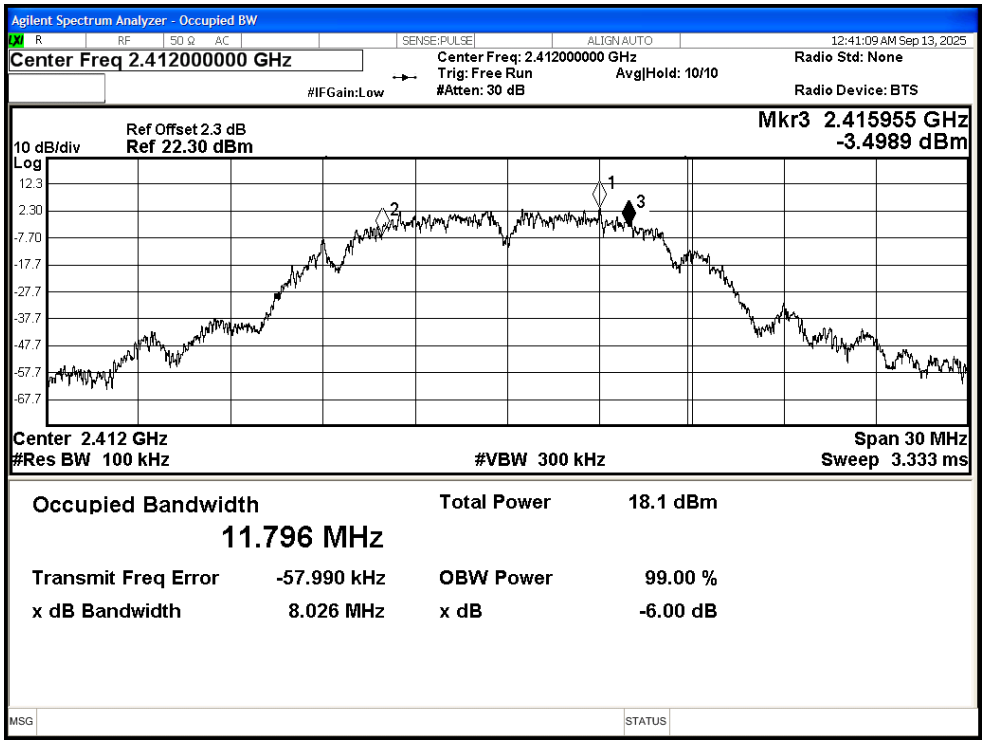
-6dB Bandwidth NVNT ax40 2452MHz Ant1



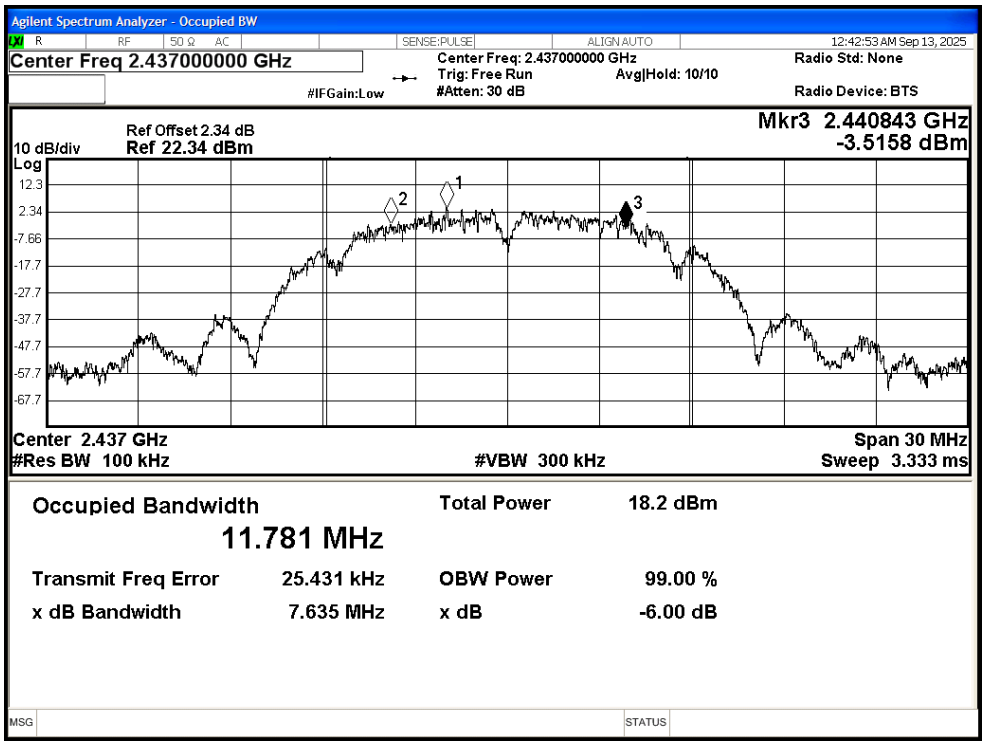
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant2	8.026	>=0.5	Pass
NVNT	b	2437	Ant2	7.635	>=0.5	Pass
NVNT	b	2462	Ant2	8.486	>=0.5	Pass
NVNT	g	2412	Ant2	16.453	>=0.5	Pass
NVNT	g	2437	Ant2	16.307	>=0.5	Pass
NVNT	g	2462	Ant2	16.307	>=0.5	Pass
NVNT	n20	2412	Ant2	17.371	>=0.5	Pass
NVNT	n20	2437	Ant2	17.125	>=0.5	Pass
NVNT	n20	2462	Ant2	17.495	>=0.5	Pass
NVNT	n40	2422	Ant2	35.002	>=0.5	Pass
NVNT	n40	2437	Ant2	35.502	>=0.5	Pass
NVNT	n40	2452	Ant2	35.737	>=0.5	Pass
NVNT	ax20	2412	Ant2	17.25	>=0.5	Pass
NVNT	ax20	2437	Ant2	17.215	>=0.5	Pass
NVNT	ax20	2462	Ant2	17.088	>=0.5	Pass
NVNT	ax40	2422	Ant2	35.584	>=0.5	Pass
NVNT	ax40	2437	Ant2	36.145	>=0.5	Pass
NVNT	ax40	2452	Ant2	34.999	>=0.5	Pass

Test Graphs

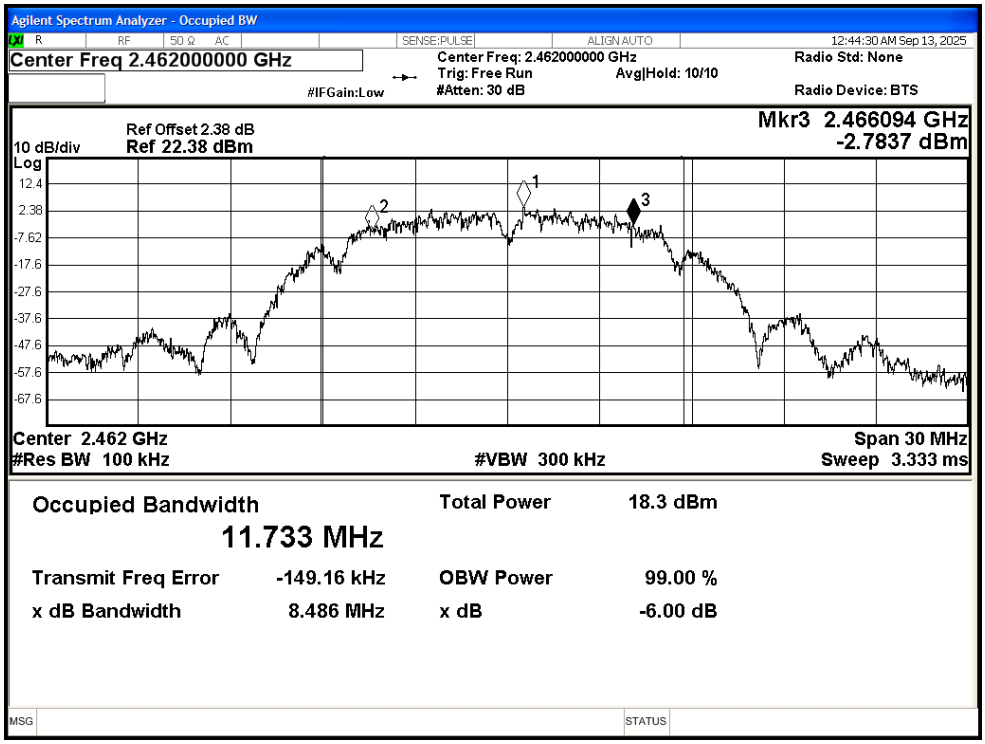
-6dB Bandwidth NVNT b 2412MHz Ant2



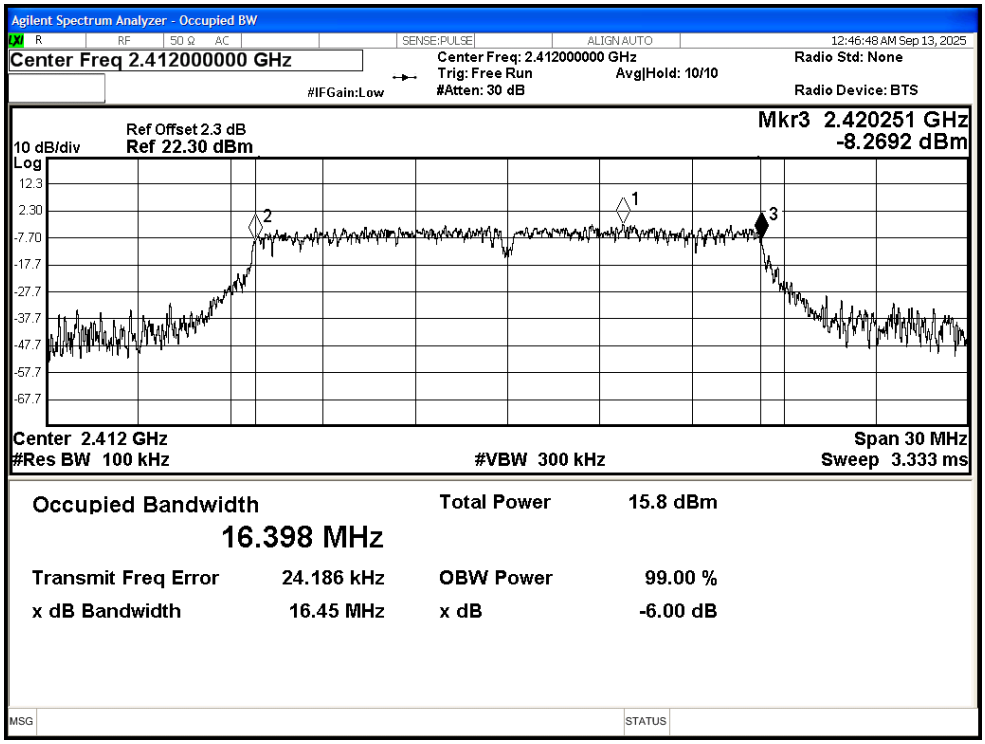
-6dB Bandwidth NVNT b 2437MHz Ant2



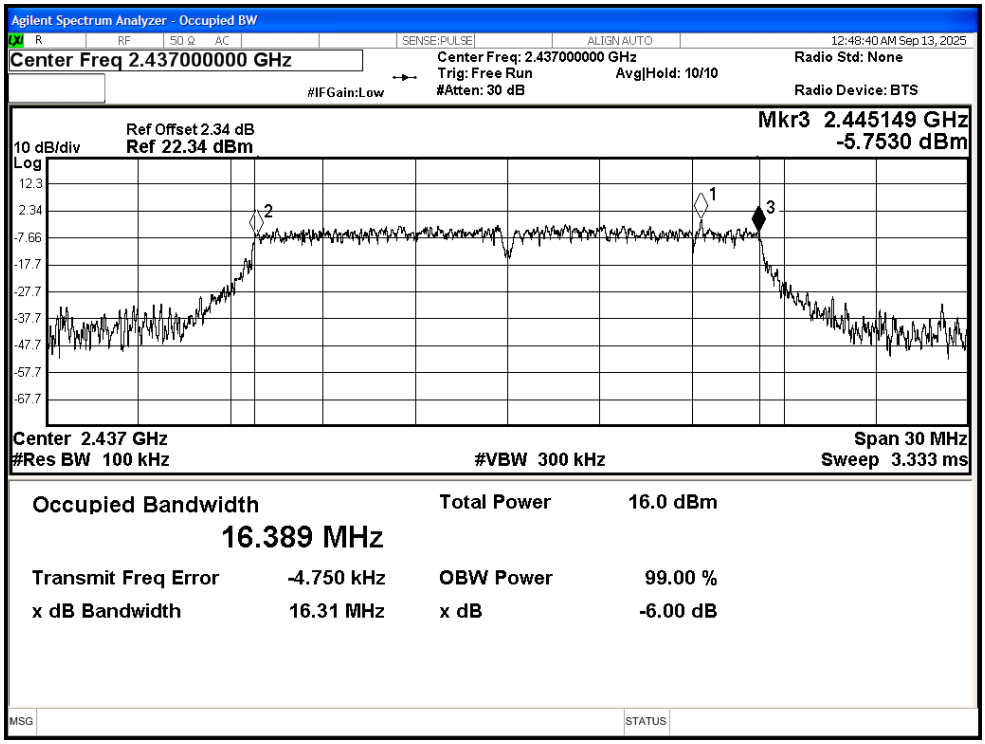
-6dB Bandwidth NVNT b 2462MHz Ant2



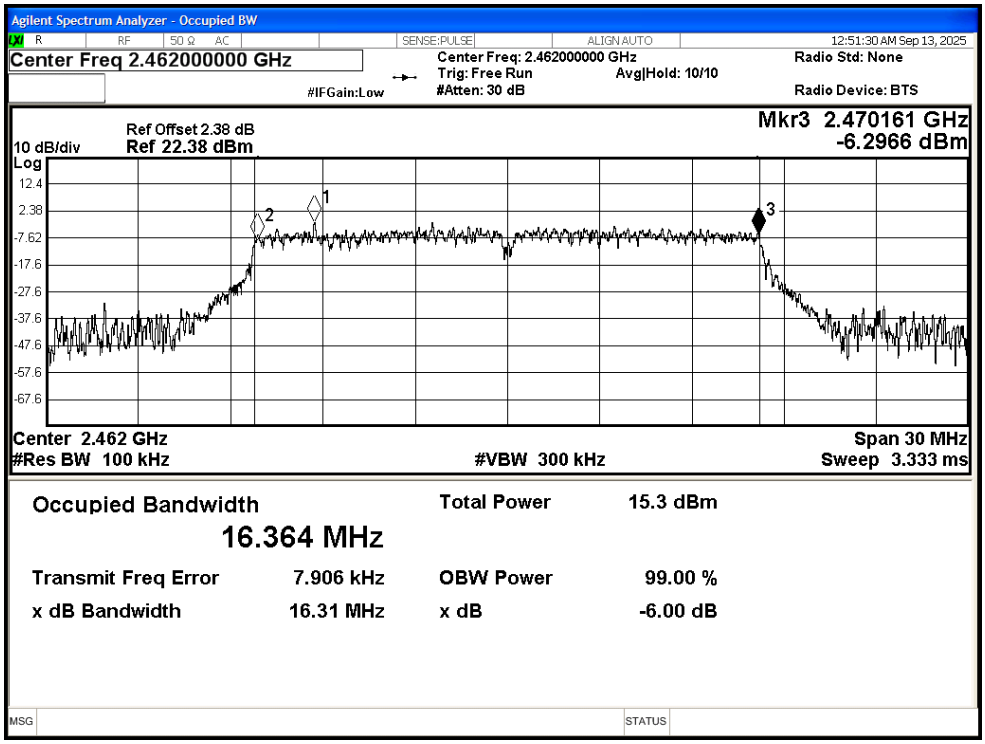
-6dB Bandwidth NVNT g 2412MHz Ant2



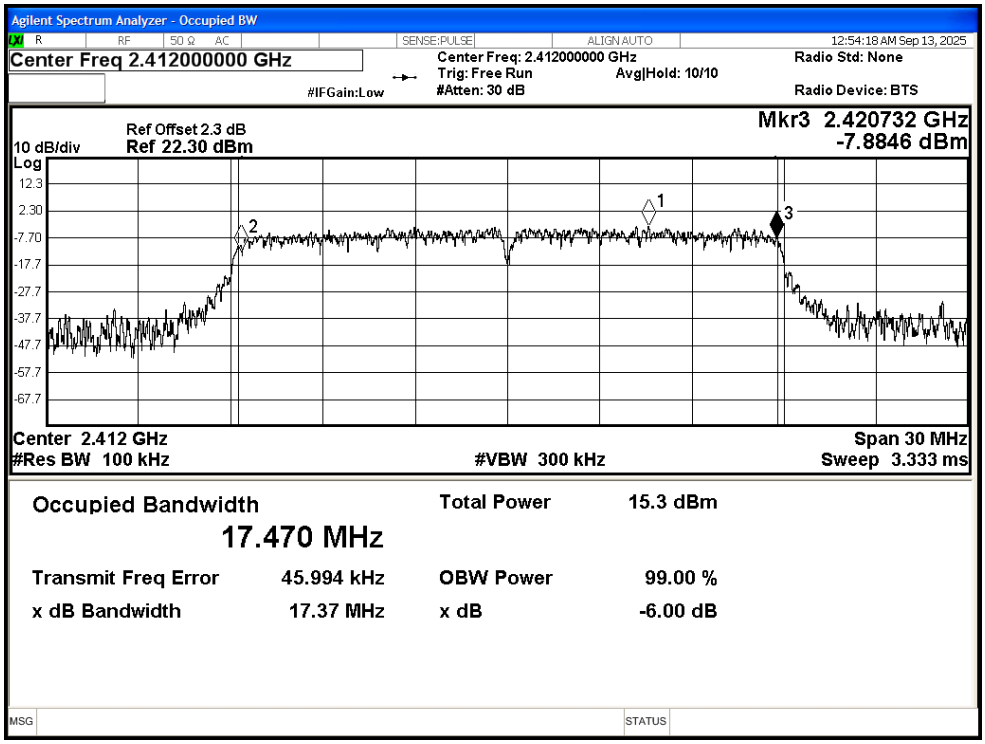
-6dB Bandwidth NVNT g 2437MHz Ant2



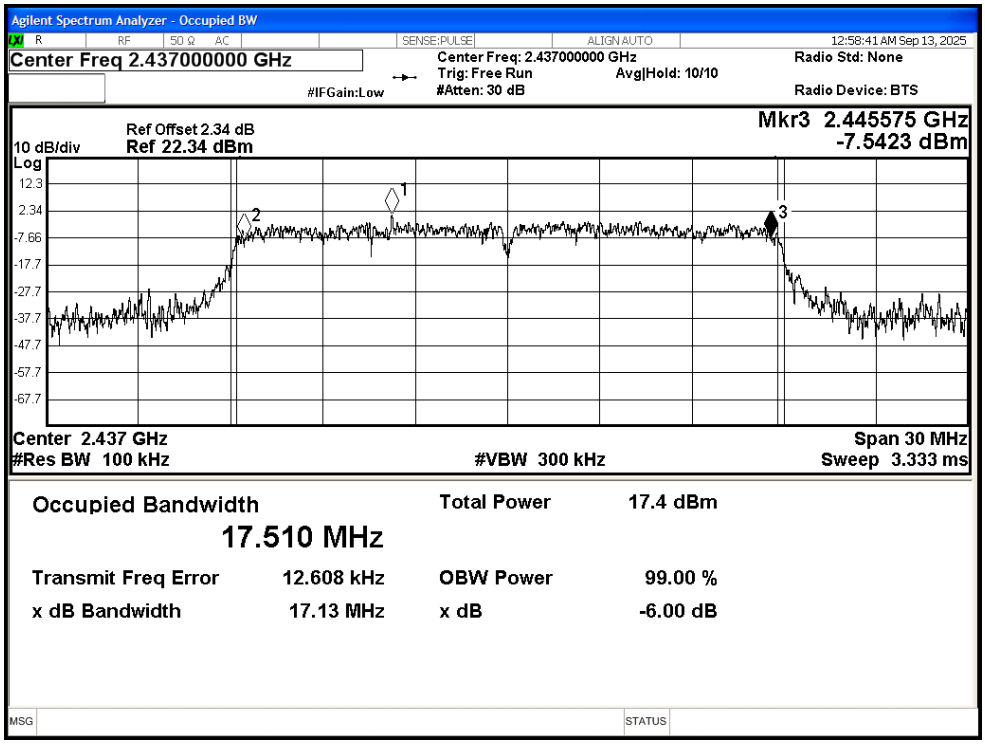
-6dB Bandwidth NVNT g 2462MHz Ant2



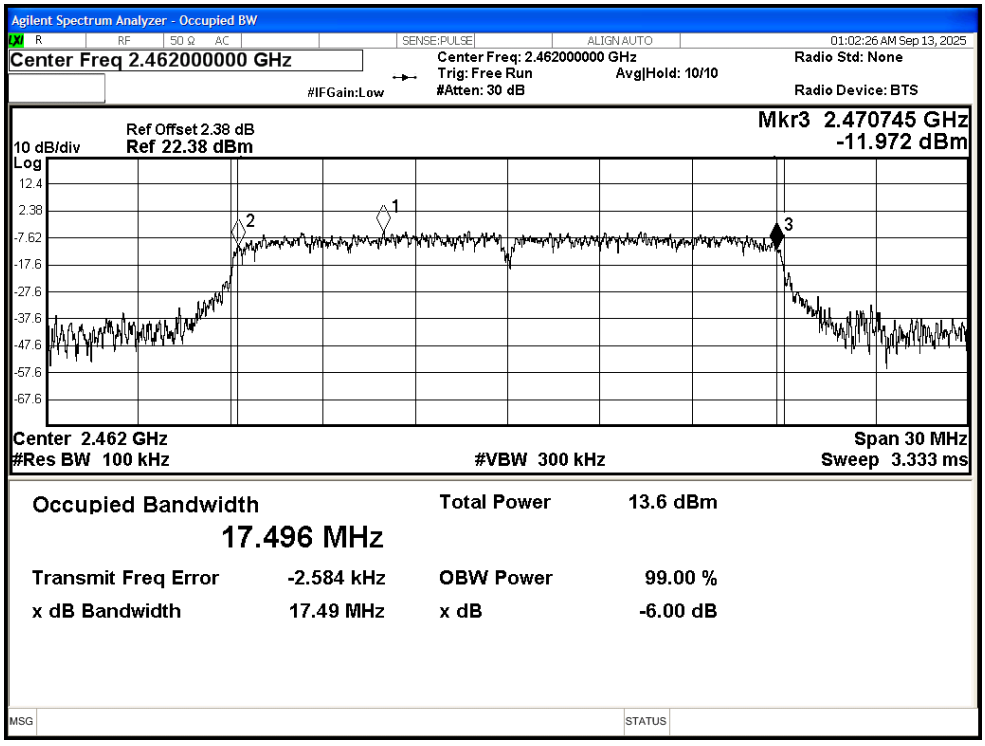
-6dB Bandwidth NVNT n20 2412MHz Ant2



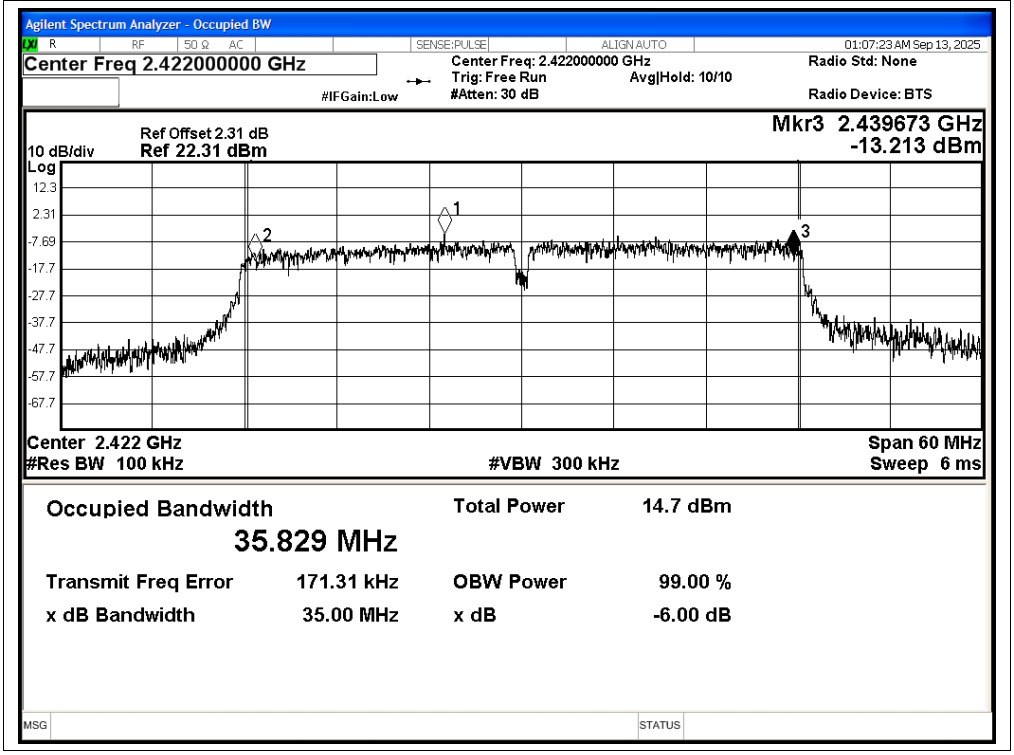
-6dB Bandwidth NVNT n20 2437MHz Ant2



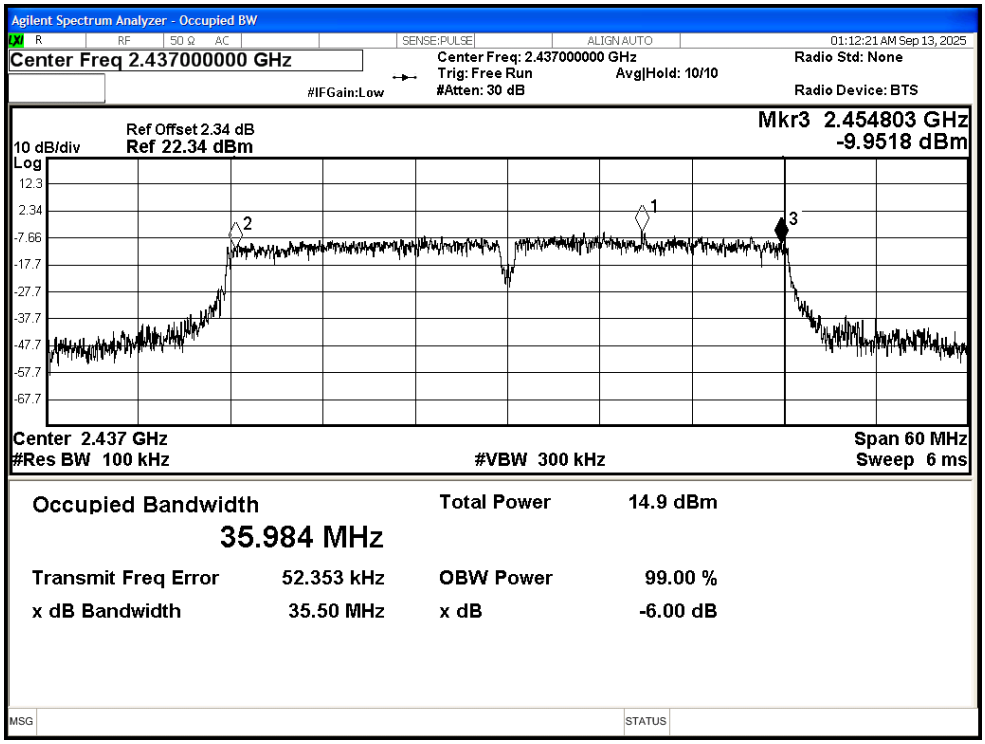
-6dB Bandwidth NVNT n20 2462MHz Ant2



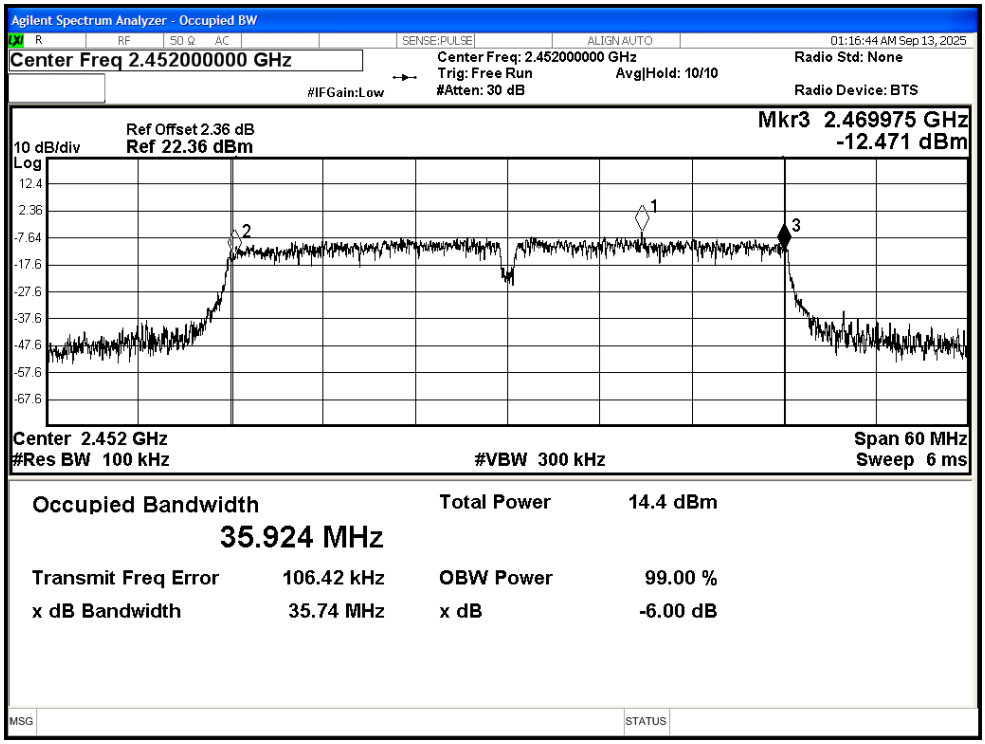
-6dB Bandwidth NVNT n40 2422MHz Ant2



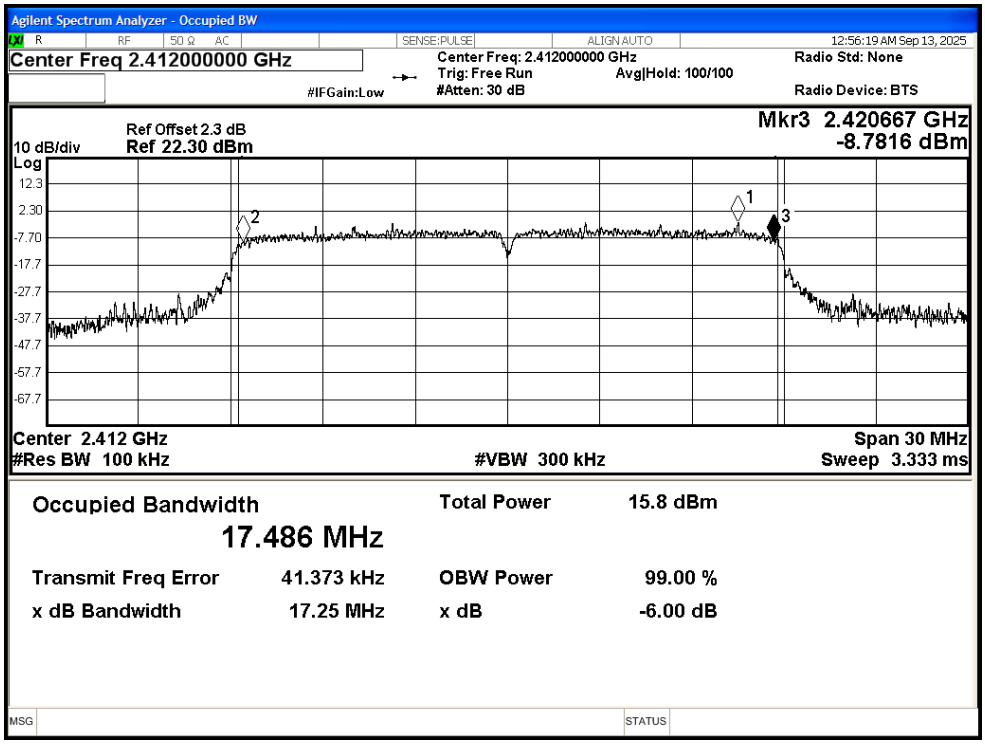
-6dB Bandwidth NVNT n40 2437MHz Ant2



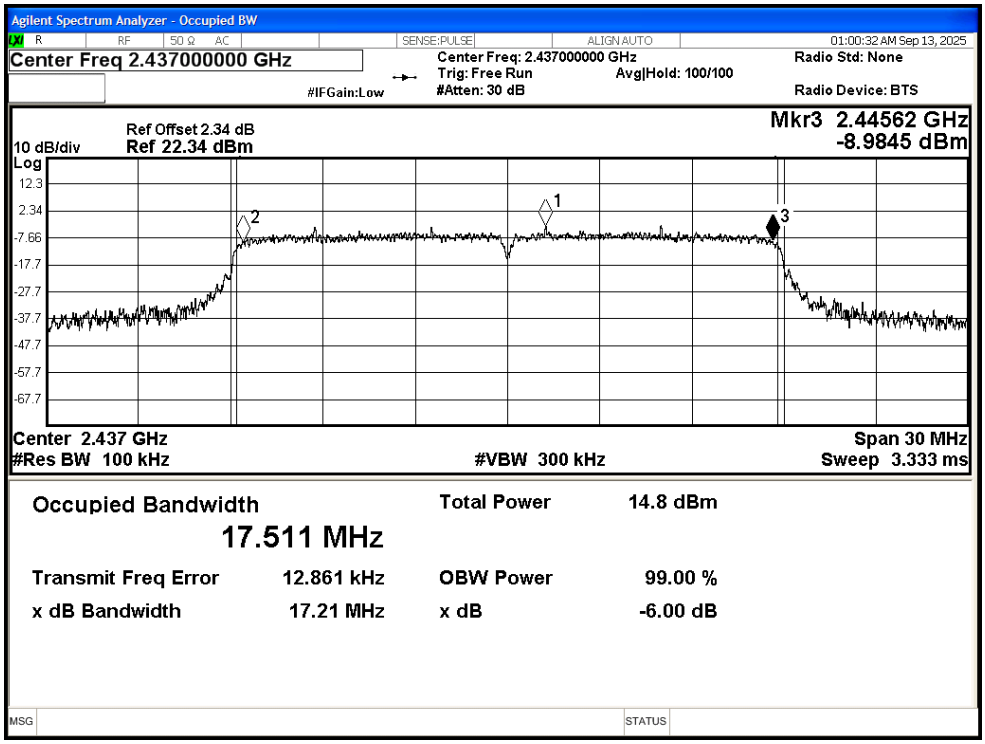
-6dB Bandwidth NVNT n40 2452MHz Ant2



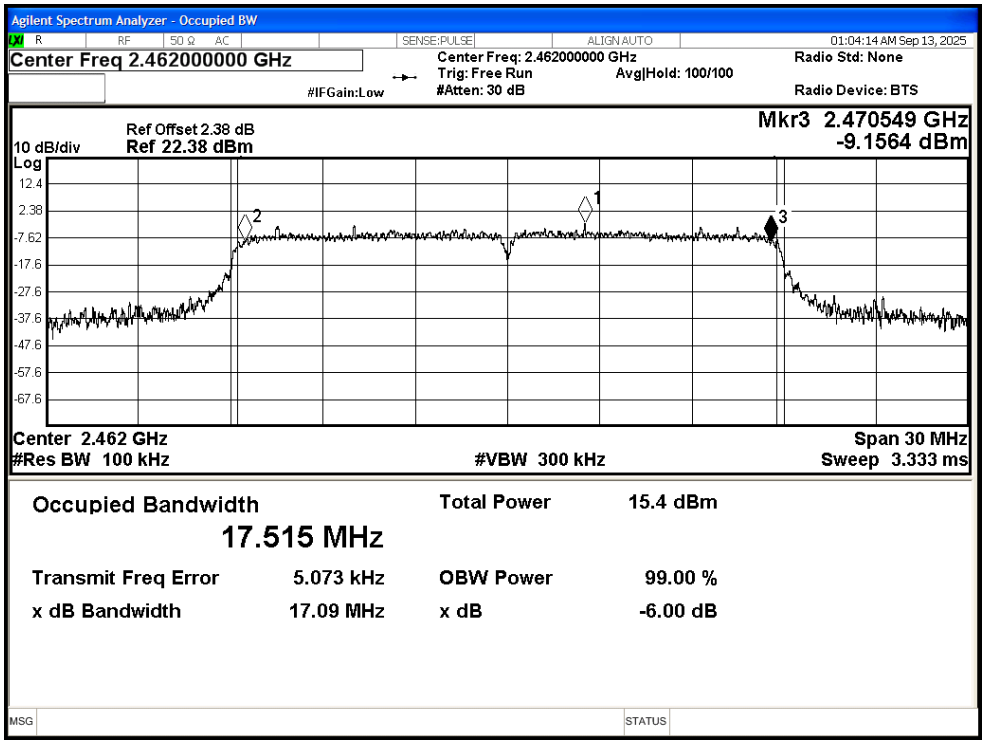
-6dB Bandwidth NVNT ax20 2412MHz Ant2



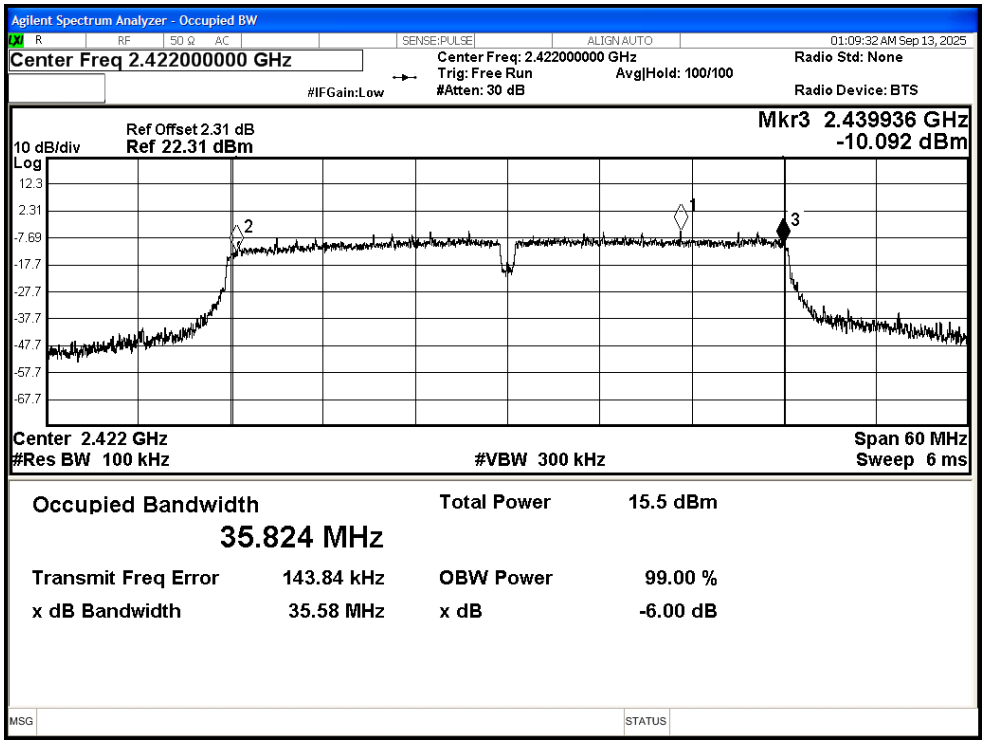
-6dB Bandwidth NVNT ax20 2437MHz Ant2



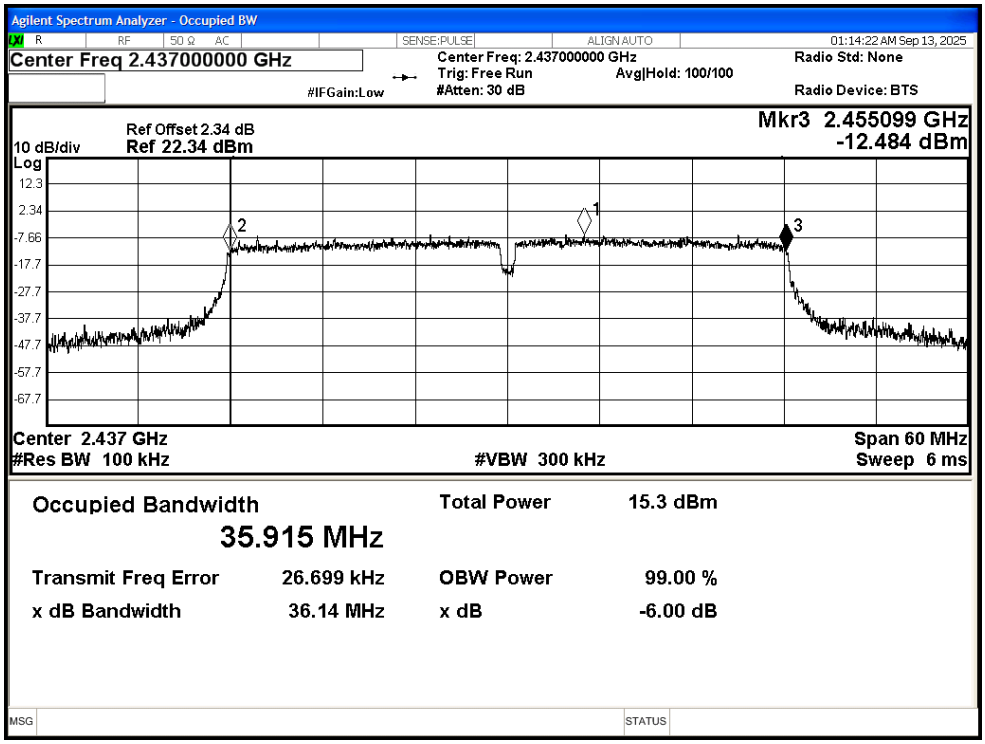
-6dB Bandwidth NVNT ax20 2462MHz Ant2



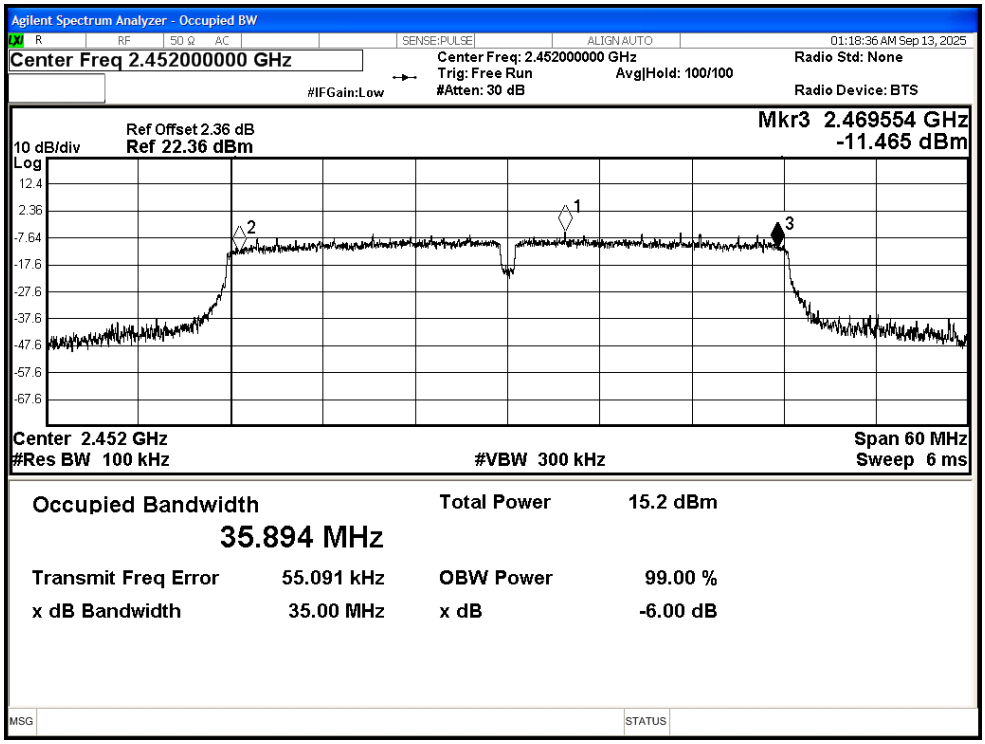
-6dB Bandwidth NVNT ax40 2422MHz Ant2



-6dB Bandwidth NVNT ax40 2437MHz Ant2



-6dB Bandwidth NVNT ax40 2452MHz Ant2



A.2 Maximum Peak Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant0	14.67	30	Pass
NVNT	b	2437	Ant0	13.61	30	Pass
NVNT	b	2462	Ant0	13.99	30	Pass
NVNT	g	2412	Ant0	14.65	30	Pass
NVNT	g	2437	Ant0	14.8	30	Pass
NVNT	g	2462	Ant0	14.09	30	Pass
NVNT	n20	2412	Ant0	13.88	30	Pass
NVNT	n20	2437	Ant0	13.23	30	Pass
NVNT	n20	2462	Ant0	14.02	30	Pass
NVNT	ax20	2412	Ant0	13.6	30	Pass
NVNT	ax20	2437	Ant0	13.53	30	Pass
NVNT	ax20	2462	Ant0	14.01	30	Pass

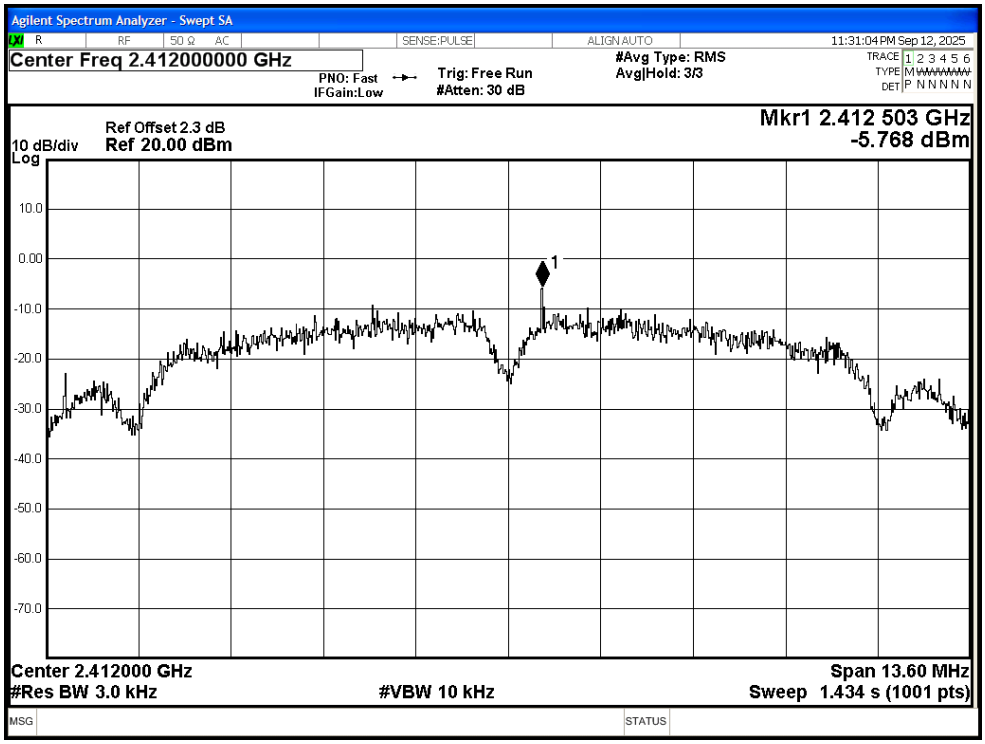
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	14.63	30	Pass
NVNT	b	2437	Ant1	14.57	30	Pass
NVNT	b	2462	Ant1	14.82	30	Pass
NVNT	g	2412	Ant1	14.58	30	Pass
NVNT	g	2437	Ant1	14.88	30	Pass
NVNT	g	2462	Ant1	14.16	30	Pass
NVNT	n20	2412	Ant1	13.76	30	Pass
NVNT	n20	2437	Ant1	13.16	30	Pass
NVNT	n20	2462	Ant1	13.07	30	Pass
NVNT	n40	2422	Ant1	13.2	30	Pass
NVNT	n40	2437	Ant1	13.1	30	Pass
NVNT	n40	2452	Ant1	13.95	30	Pass
NVNT	ax20	2412	Ant1	13.49	30	Pass
NVNT	ax20	2437	Ant1	13.55	30	Pass
NVNT	ax20	2462	Ant1	12.98	30	Pass
NVNT	ax40	2422	Ant1	13.94	30	Pass
NVNT	ax40	2437	Ant1	12.81	30	Pass
NVNT	ax40	2452	Ant1	13.64	30	Pass

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant2	14.57	30	Pass
NVNT	b	2437	Ant2	14.61	30	Pass
NVNT	b	2462	Ant2	14.81	30	Pass
NVNT	g	2412	Ant2	14.48	30	Pass
NVNT	g	2437	Ant2	14.65	30	Pass
NVNT	g	2462	Ant2	14.03	30	Pass
NVNT	n20	2412	Ant2	13.84	30	Pass
NVNT	n20	2437	Ant2	13.13	30	Pass
NVNT	n20	2462	Ant2	13.92	30	Pass
NVNT	n40	2422	Ant2	13.17	30	Pass
NVNT	n40	2437	Ant2	13.2	30	Pass
NVNT	n40	2452	Ant2	12.9	30	Pass
NVNT	ax20	2412	Ant2	14.52	30	Pass
NVNT	ax20	2437	Ant2	13.44	30	Pass
NVNT	ax20	2462	Ant2	13.95	30	Pass
NVNT	ax40	2422	Ant2	13.97	30	Pass
NVNT	ax40	2437	Ant2	13.74	30	Pass
NVNT	ax40	2452	Ant2	13.74	30	Pass

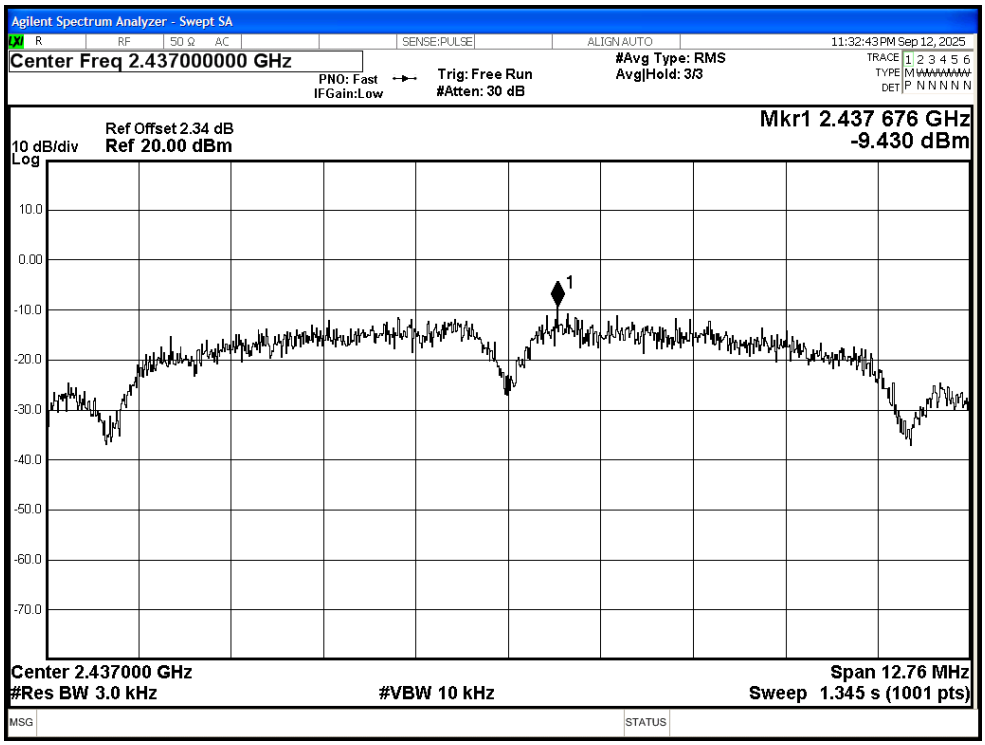
A.3 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant0	-5.77	8	Pass
NVNT	b	2437	Ant0	-9.43	8	Pass
NVNT	b	2462	Ant0	-9.21	8	Pass
NVNT	g	2412	Ant0	-14.66	8	Pass
NVNT	g	2437	Ant0	-14.07	8	Pass
NVNT	g	2462	Ant0	-14.6	8	Pass
NVNT	n20	2412	Ant0	-13.93	8	Pass
NVNT	n20	2437	Ant0	-12.76	8	Pass
NVNT	n20	2462	Ant0	-15.95	8	Pass
NVNT	ax20	2412	Ant0	-16.29	8	Pass
NVNT	ax20	2437	Ant0	-16.56	8	Pass
NVNT	ax20	2462	Ant0	-15.77	8	Pass

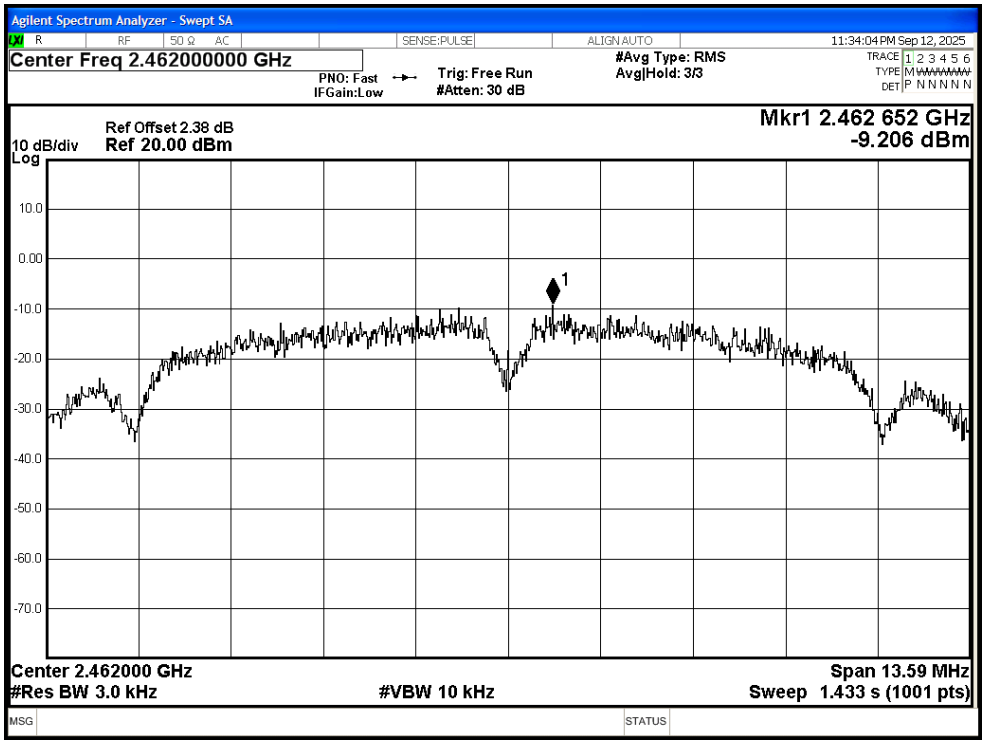
Test Graphs
PSD NVNT b 2412MHz Ant0



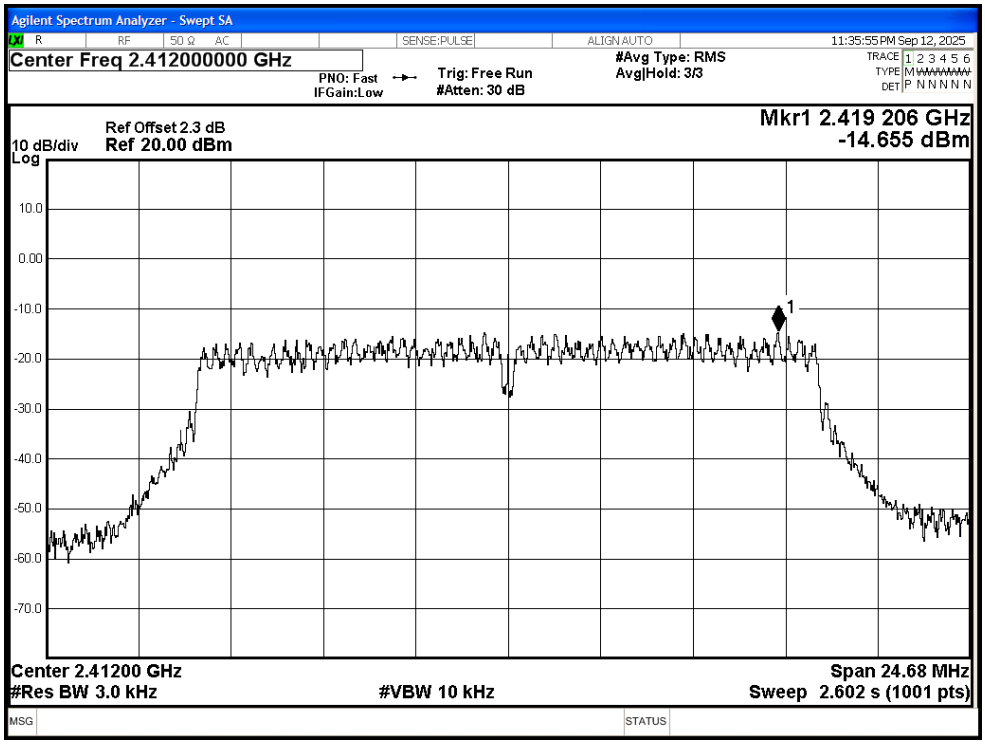
PSD NVNT b 2437MHz Ant0



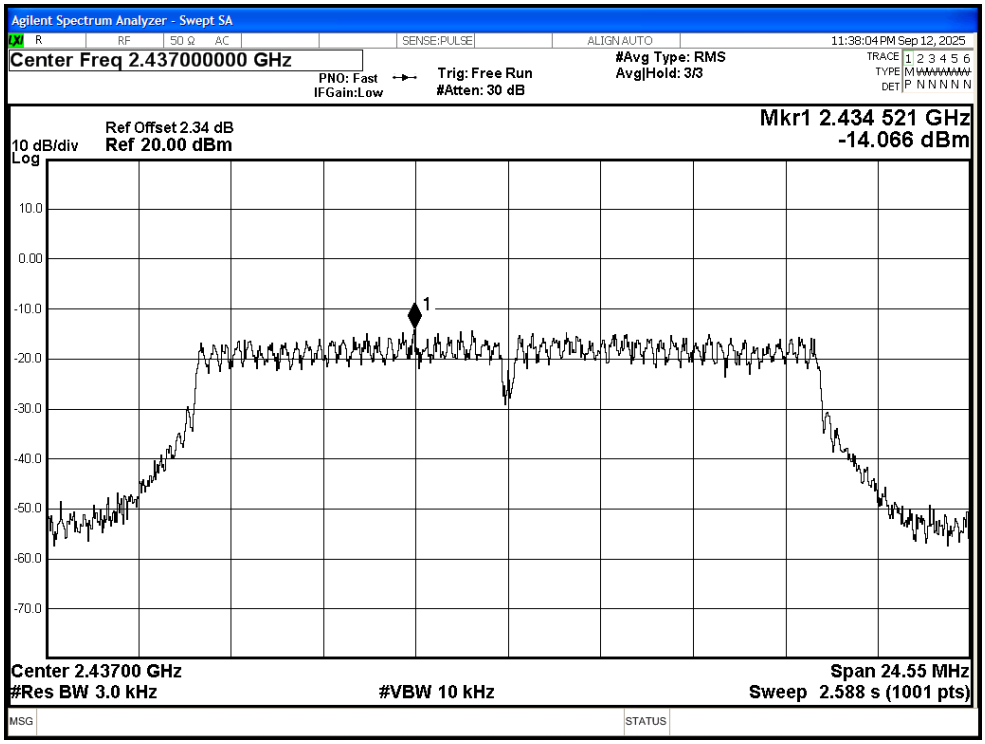
PSD NVNT b 2462MHz Ant0



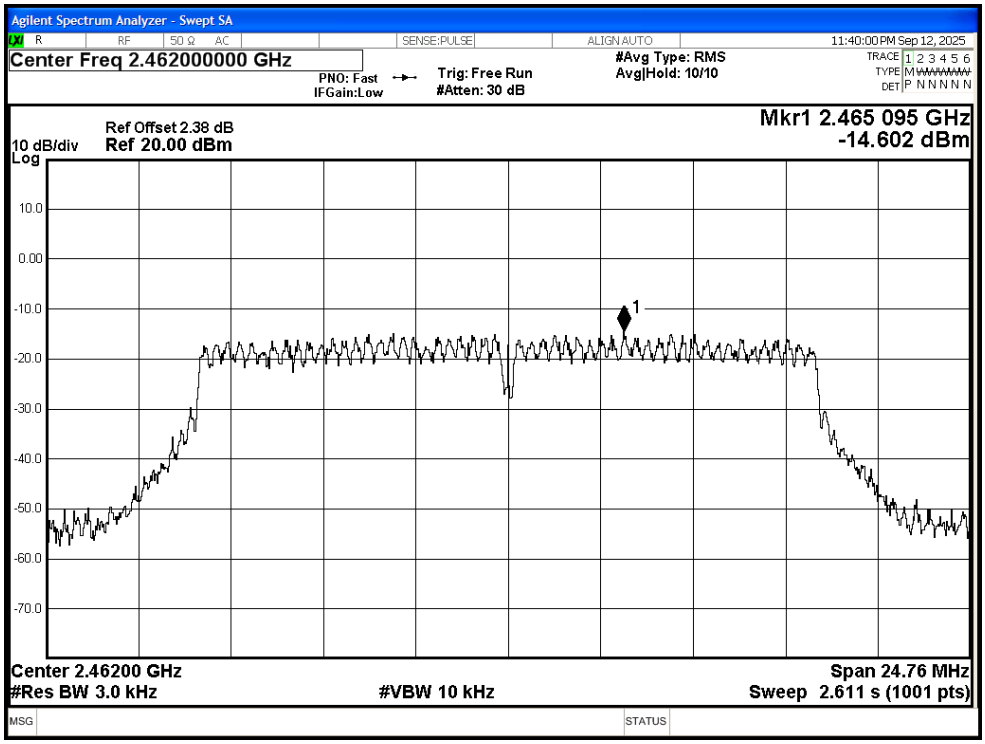
PSD NVNT g 2412MHz Ant0



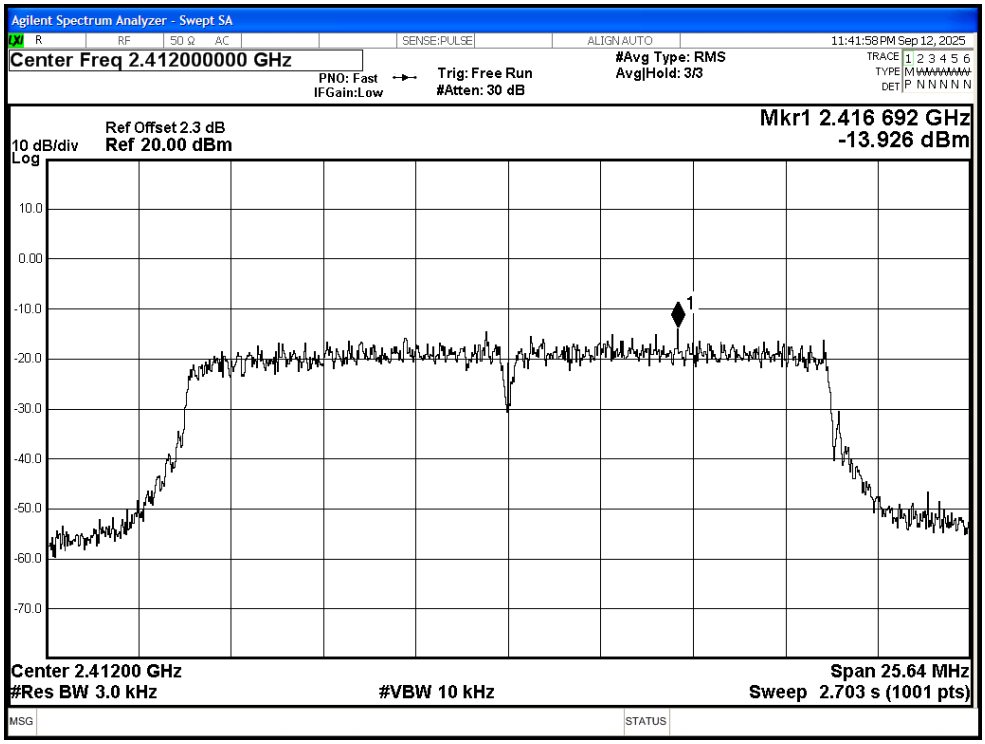
PSD NVNT g 2437MHz Ant0



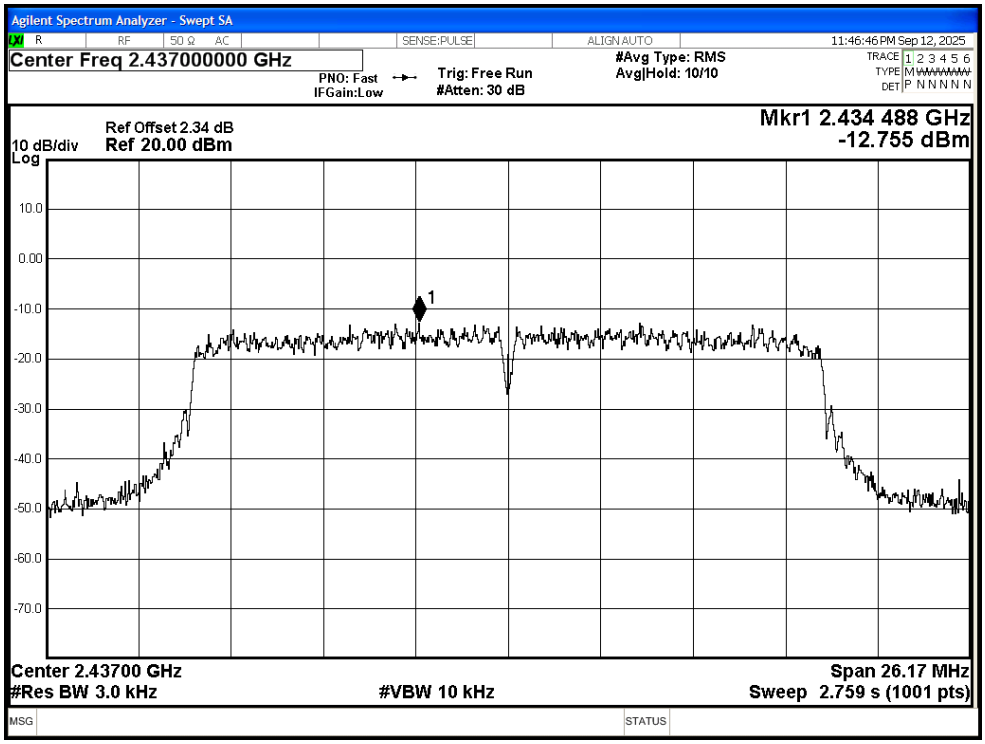
PSD NVNT g 2462MHz Ant0



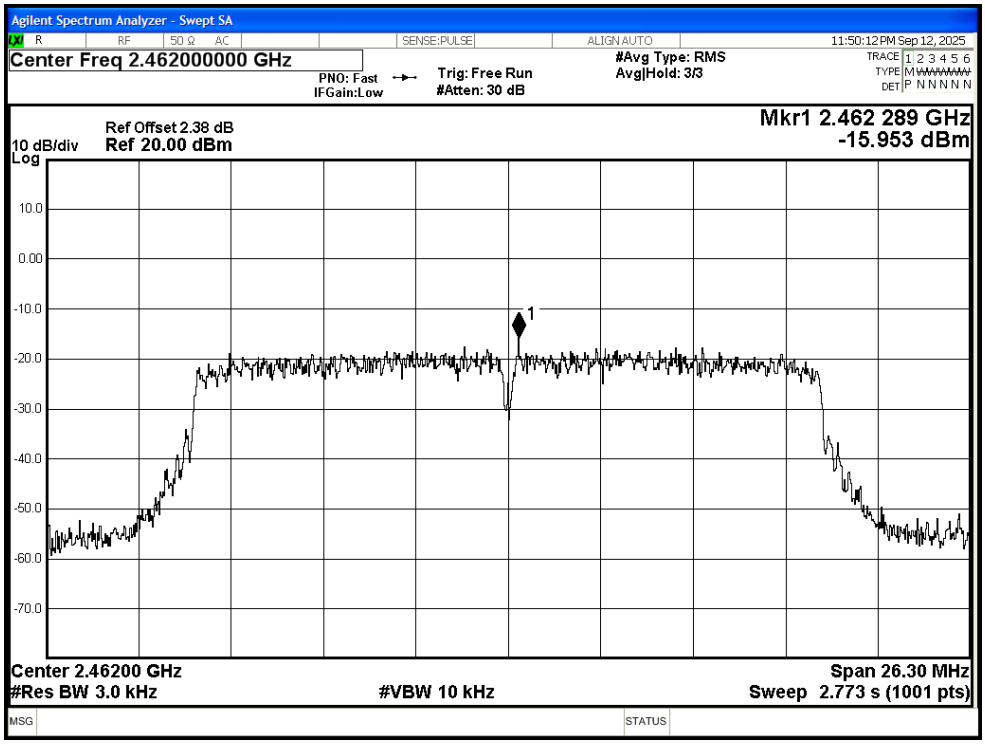
PSD NVNT n20 2412MHz Ant0



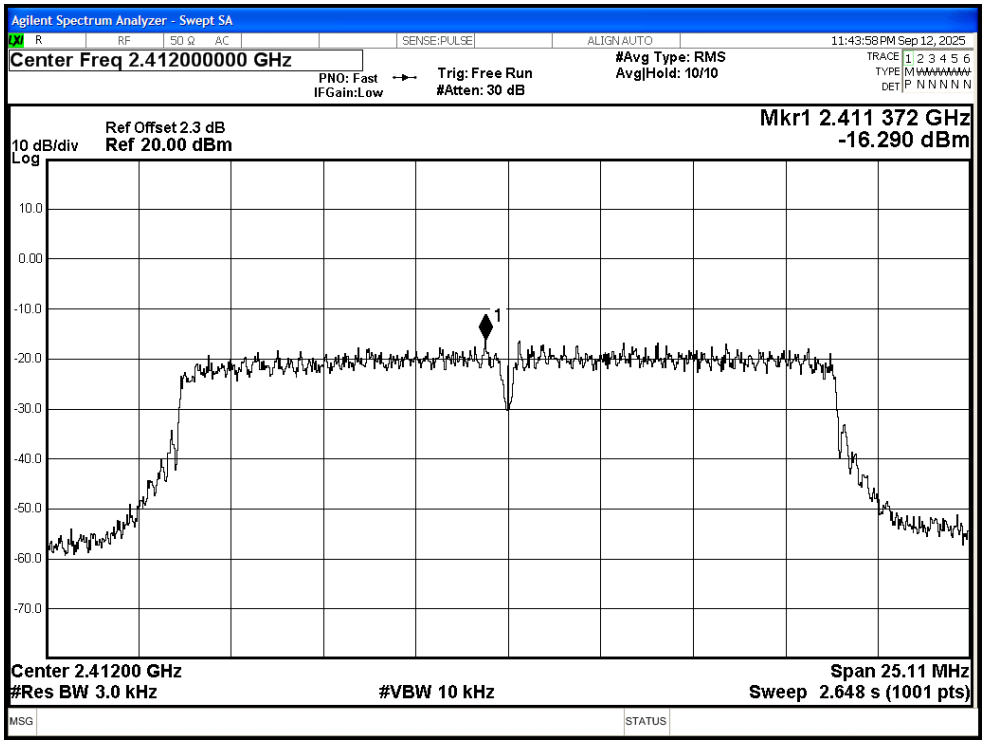
PSD NVNT n20 2437MHz Ant0



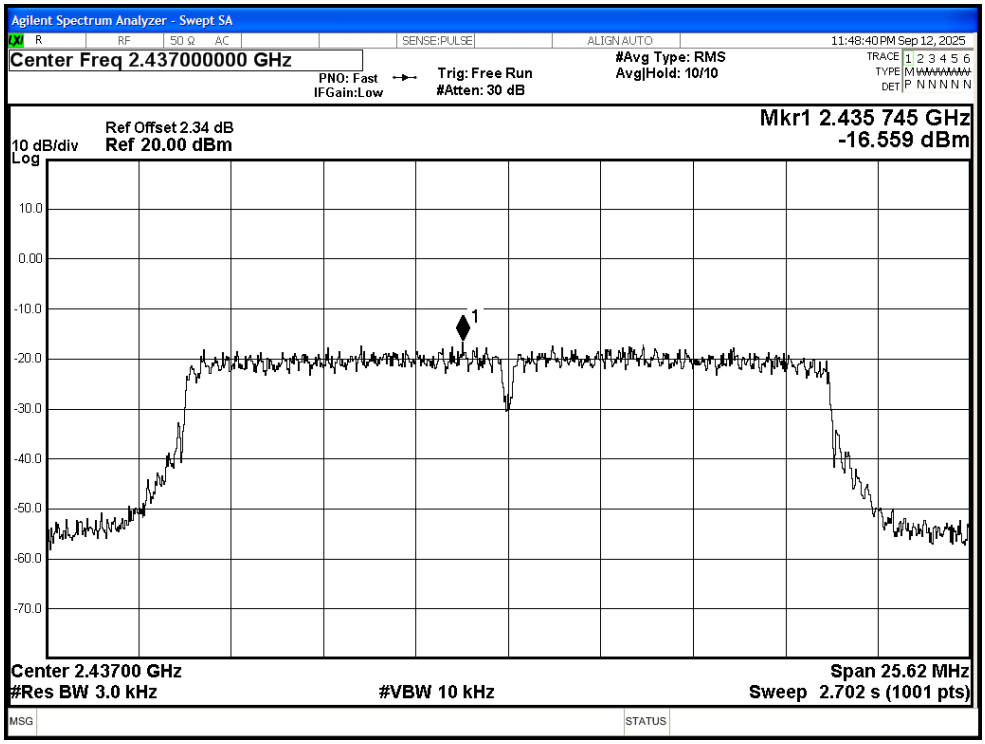
PSD NVNT n20 2462MHz Ant0



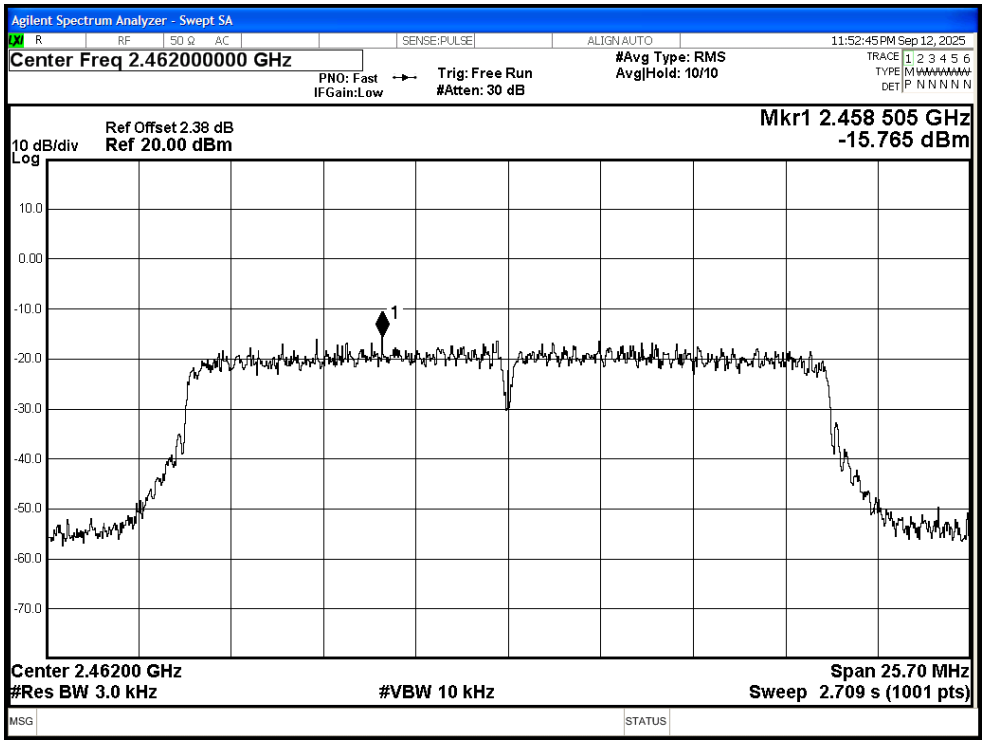
PSD NVNT ax20 2412MHz Ant0



PSD NVNT ax20 2437MHz Ant0

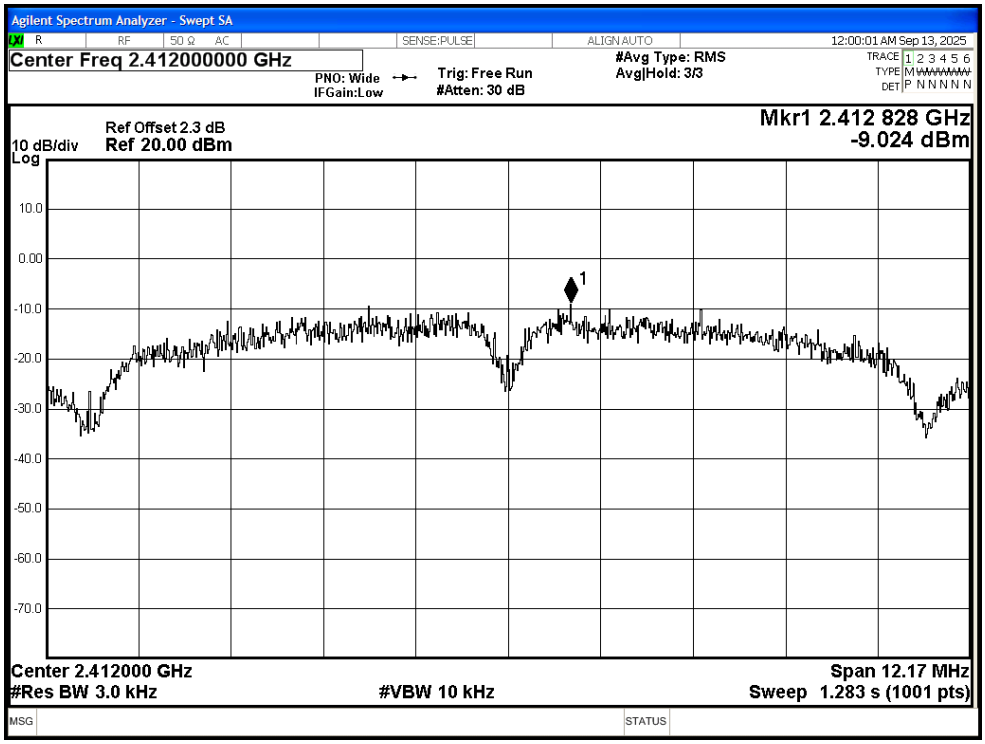


PSD NVNT ax20 2462MHz Ant0

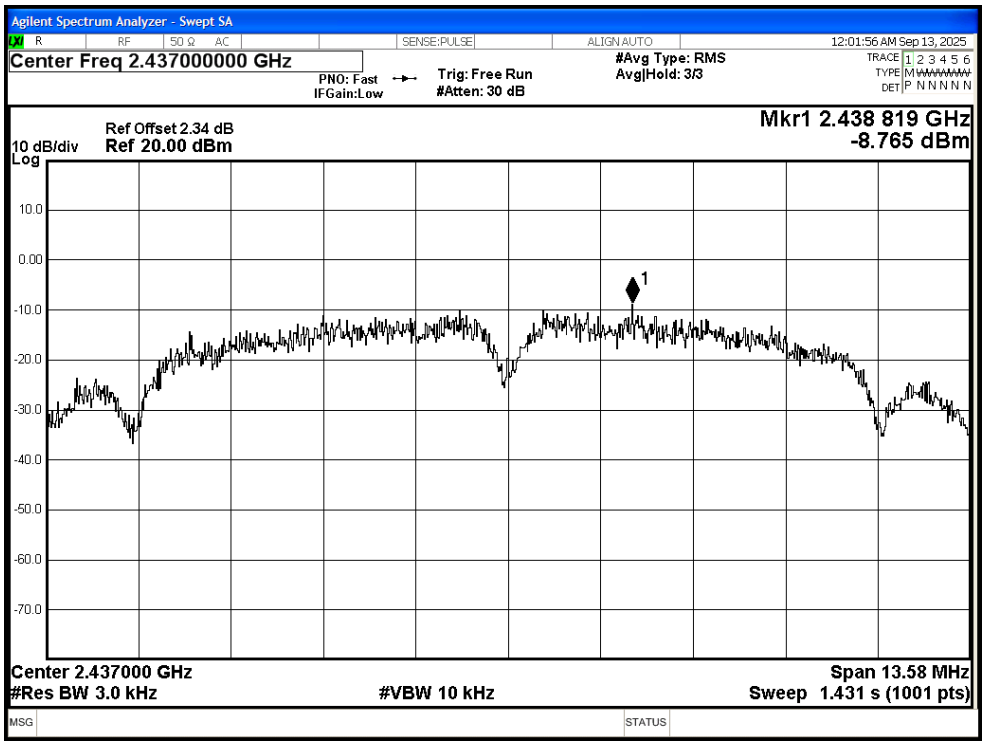


Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant1	-9.02	8	Pass
NVNT	b	2437	Ant1	-8.77	8	Pass
NVNT	b	2462	Ant1	-6.5	8	Pass
NVNT	g	2412	Ant1	-13.39	8	Pass
NVNT	g	2437	Ant1	-14.35	8	Pass
NVNT	g	2462	Ant1	-13.23	8	Pass
NVNT	n20	2412	Ant1	-14.34	8	Pass
NVNT	n20	2437	Ant1	-12.02	8	Pass
NVNT	n20	2462	Ant1	-17.35	8	Pass
NVNT	n40	2422	Ant1	-18.99	8	Pass
NVNT	n40	2437	Ant1	-16.98	8	Pass
NVNT	n40	2452	Ant1	-17.79	8	Pass
NVNT	ax20	2412	Ant1	-15.74	8	Pass
NVNT	ax20	2437	Ant1	-16.79	8	Pass
NVNT	ax20	2462	Ant1	-17.07	8	Pass
NVNT	ax40	2422	Ant1	-19.51	8	Pass
NVNT	ax40	2437	Ant1	-20.25	8	Pass
NVNT	ax40	2452	Ant1	-19.55	8	Pass

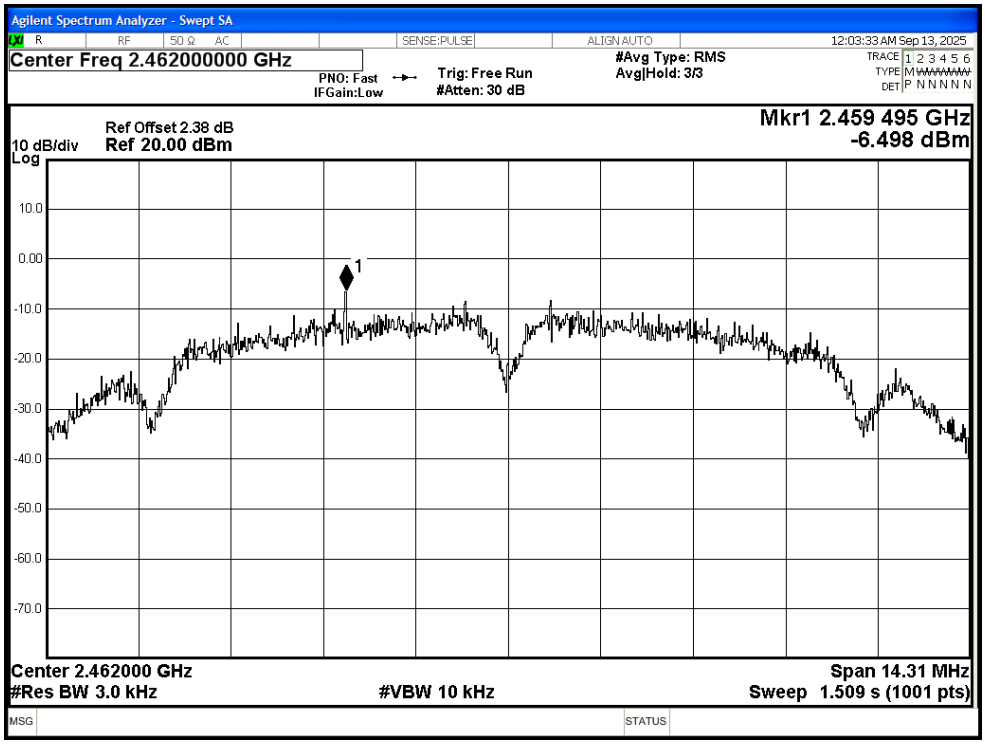
Test Graphs
PSD NVNT b 2412MHz Ant1



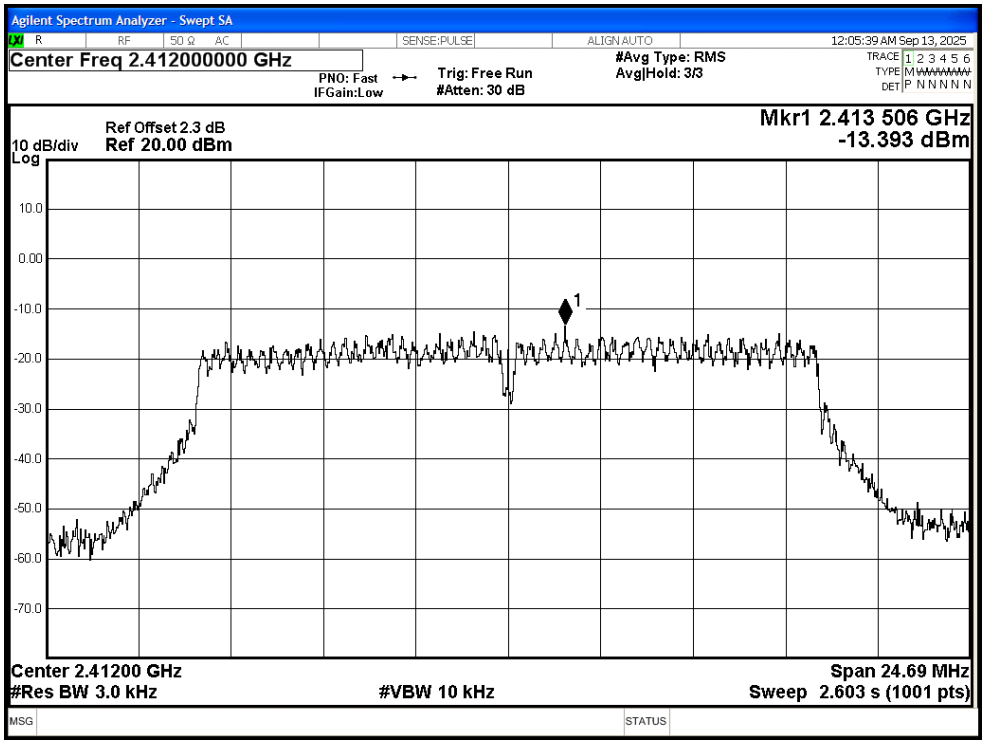
PSD NVNT b 2437MHz Ant1



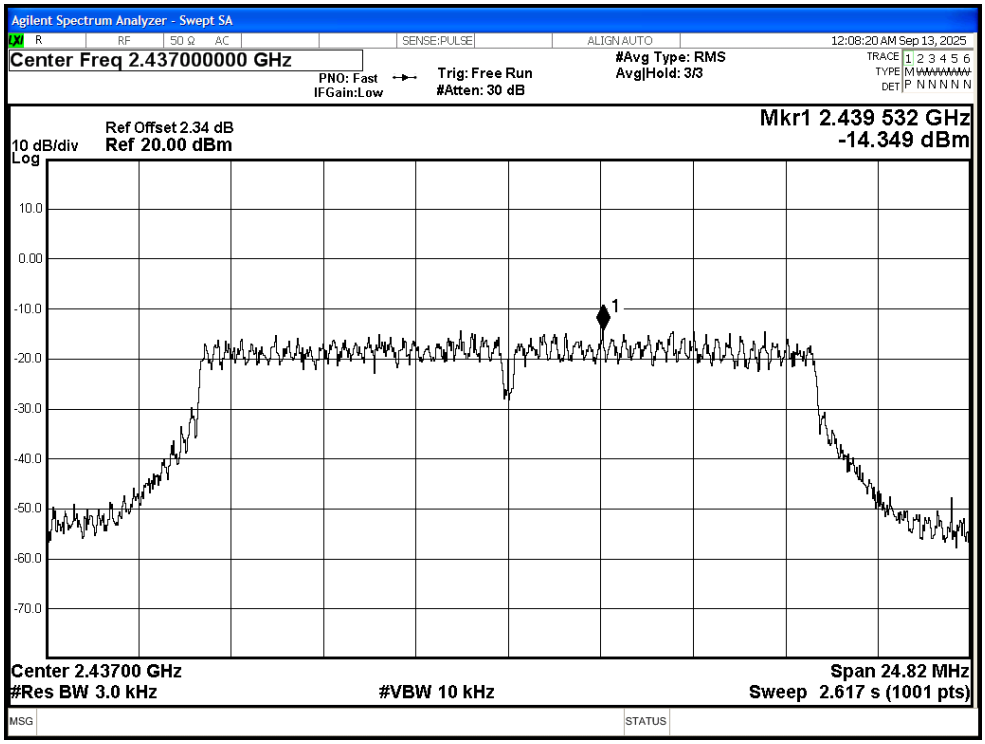
PSD NVNT b 2462MHz Ant1



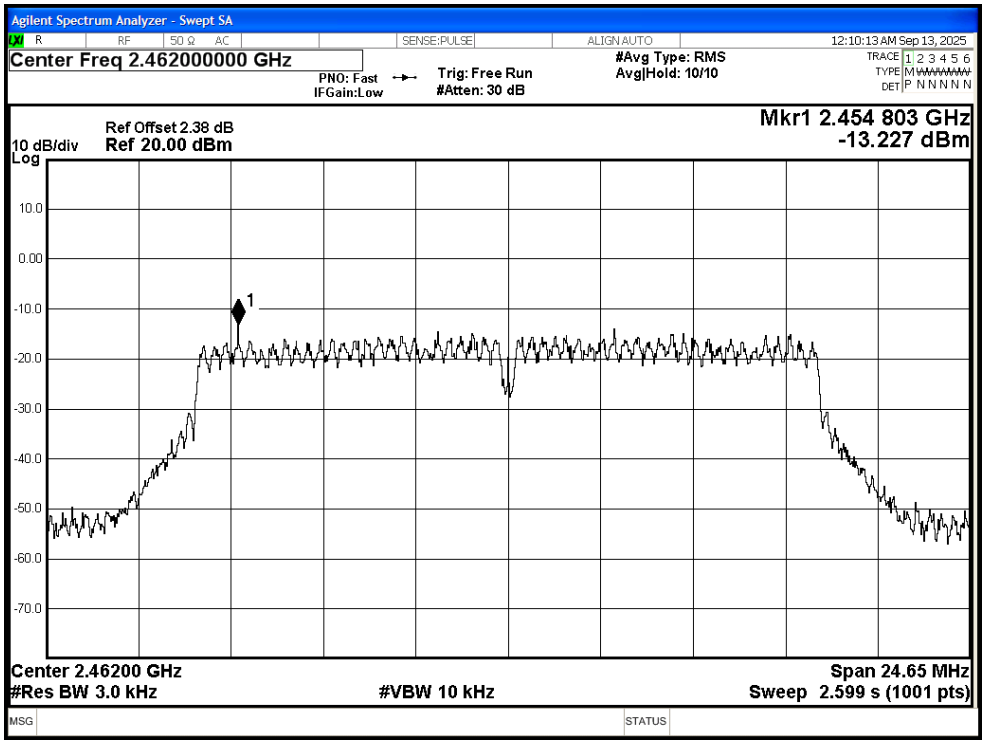
PSD NVNT g 2412MHz Ant1



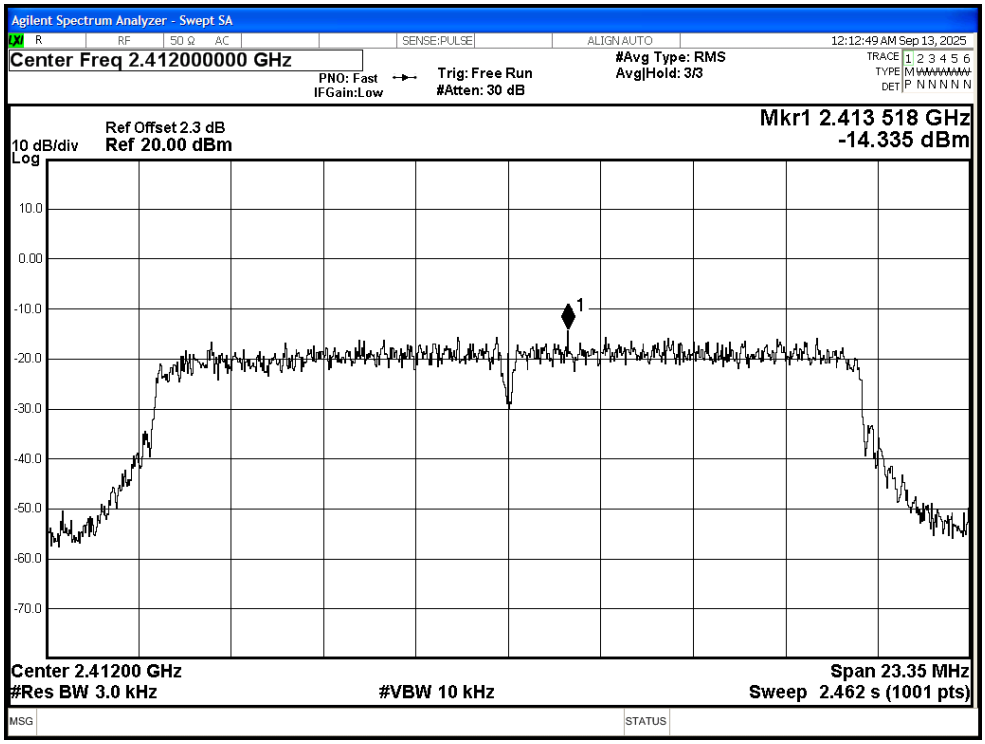
PSD NVNT g 2437MHz Ant1



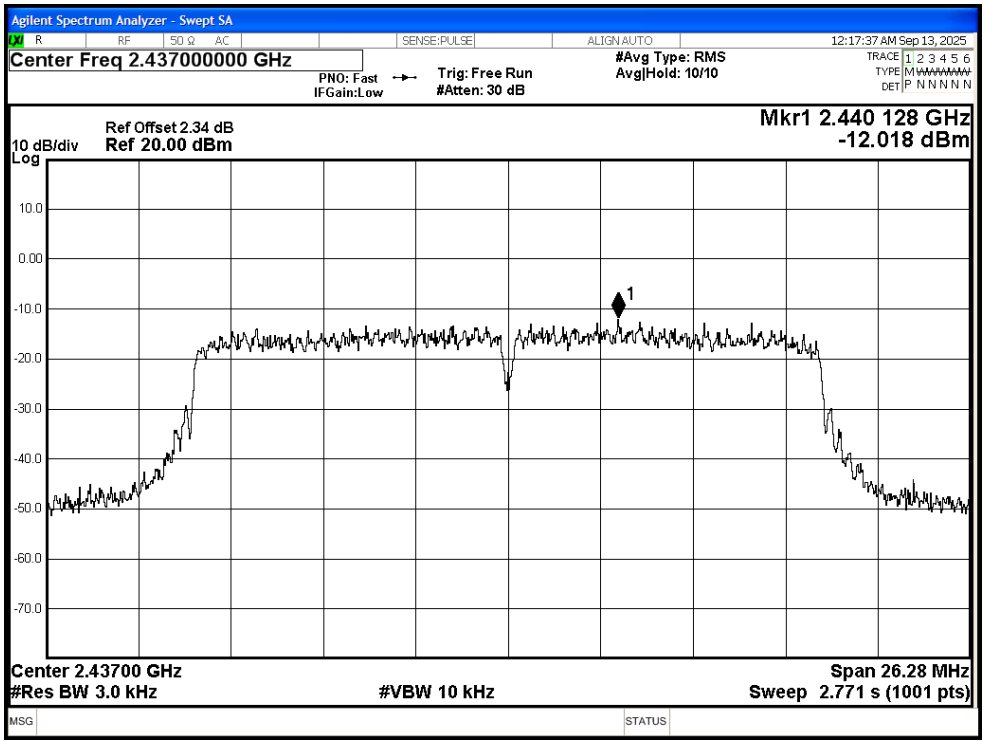
PSD NVNT g 2462MHz Ant1



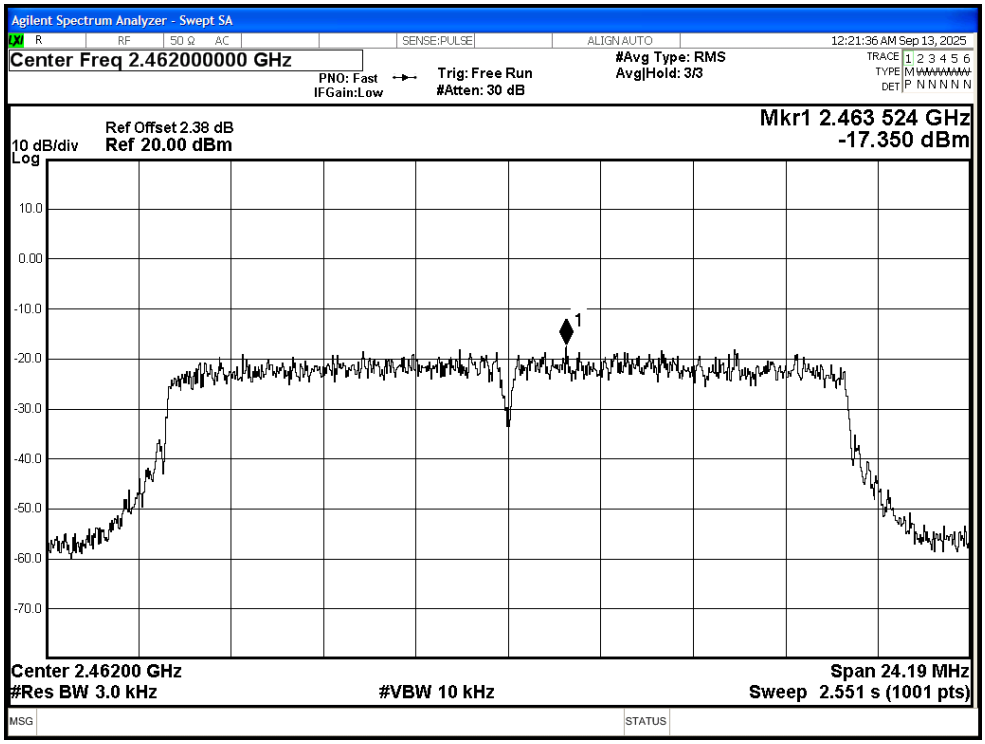
PSD NVNT n20 2412MHz Ant1



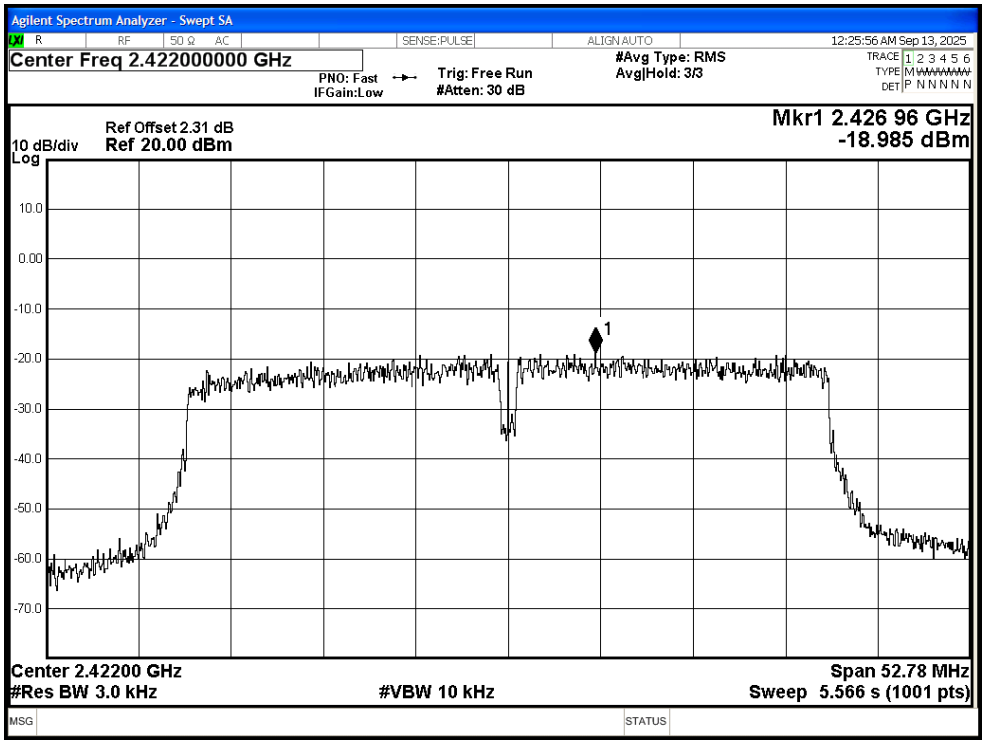
PSD NVNT n20 2437MHz Ant1



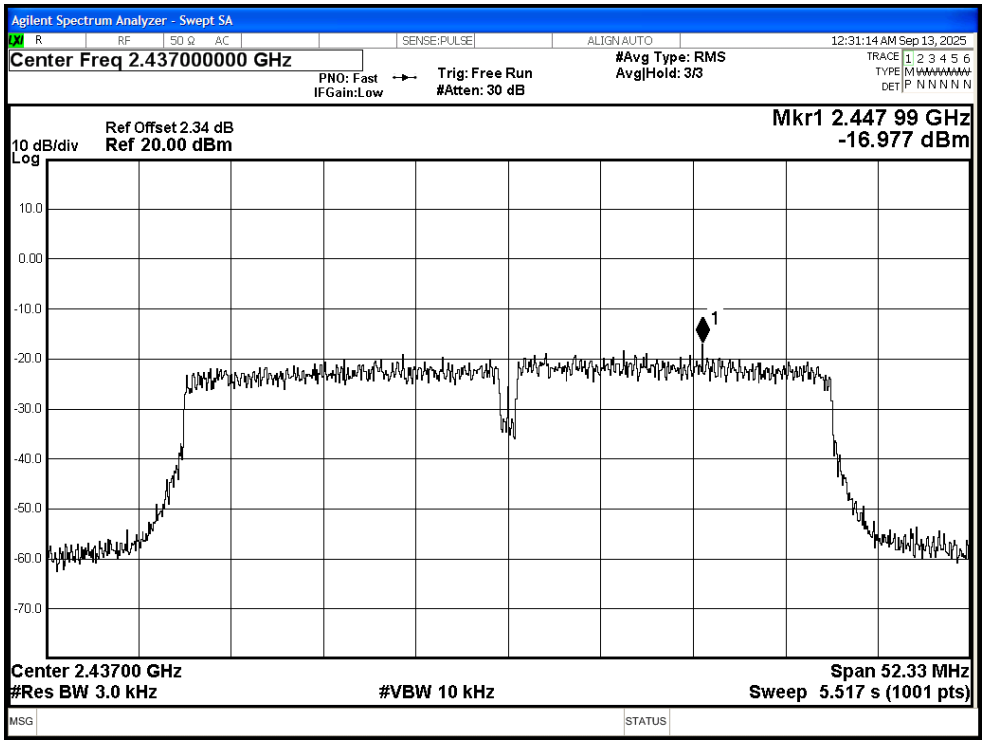
PSD NVNT n20 2462MHz Ant1



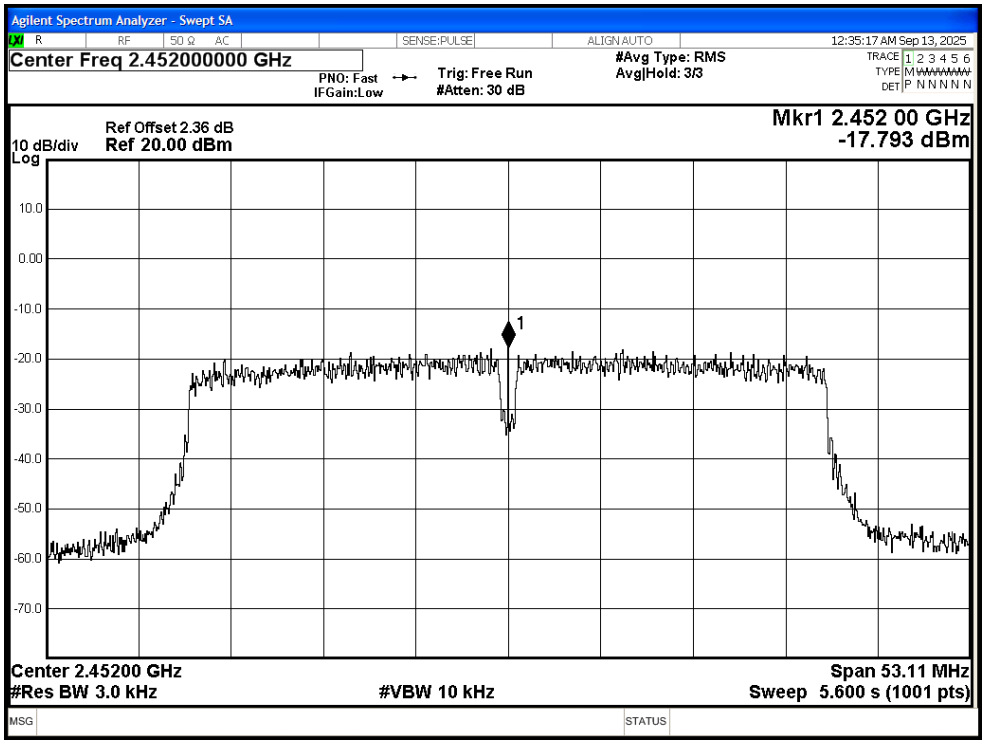
PSD NVNT n40 2422MHz Ant1



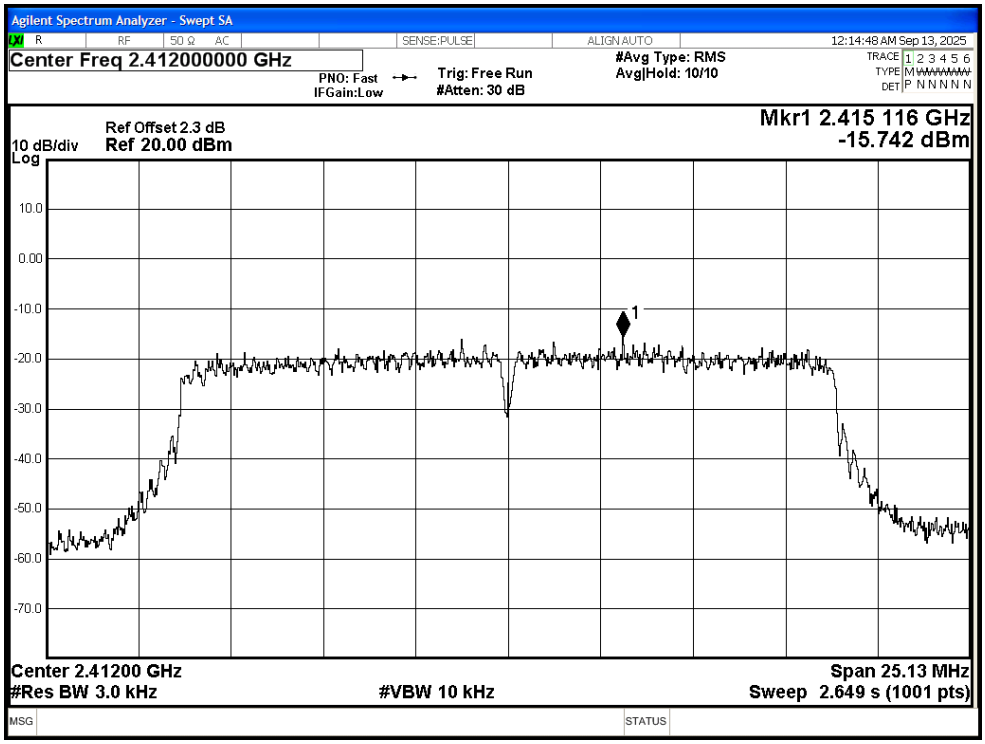
PSD NVNT n40 2437MHz Ant1



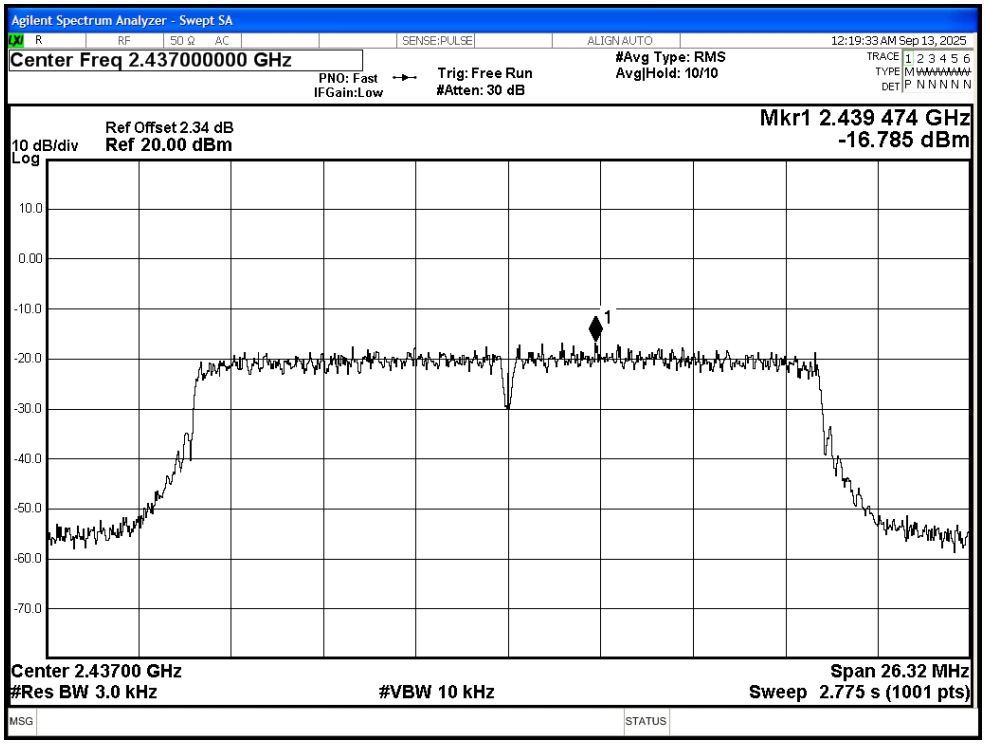
PSD NVNT n40 2452MHz Ant1



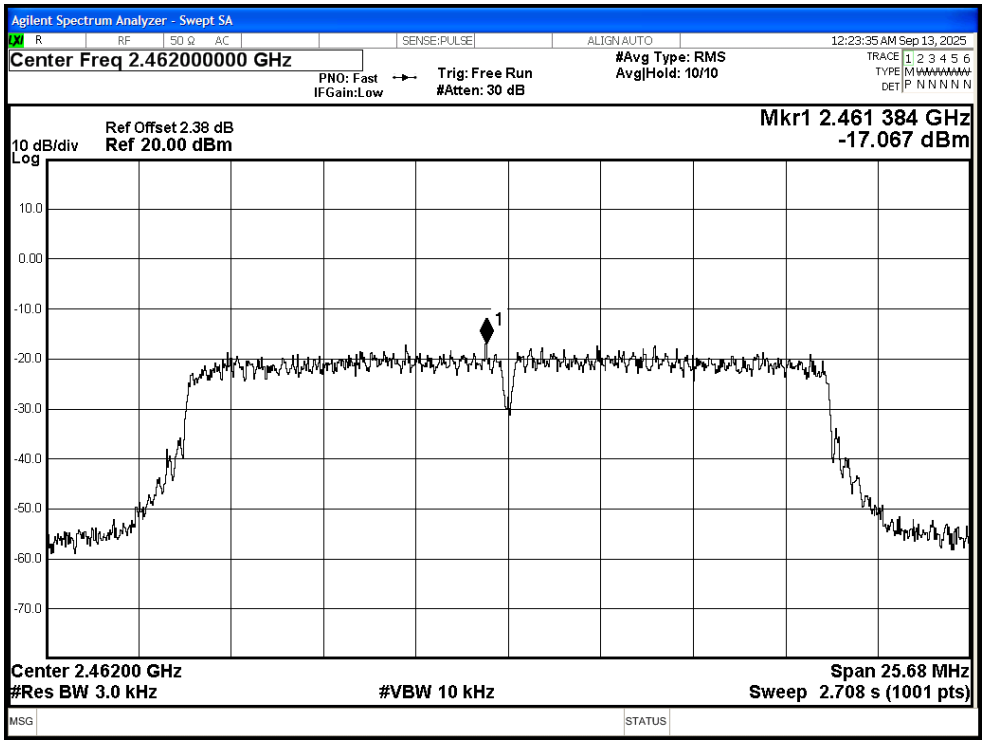
PSD NVNT ax20 2412MHz Ant1



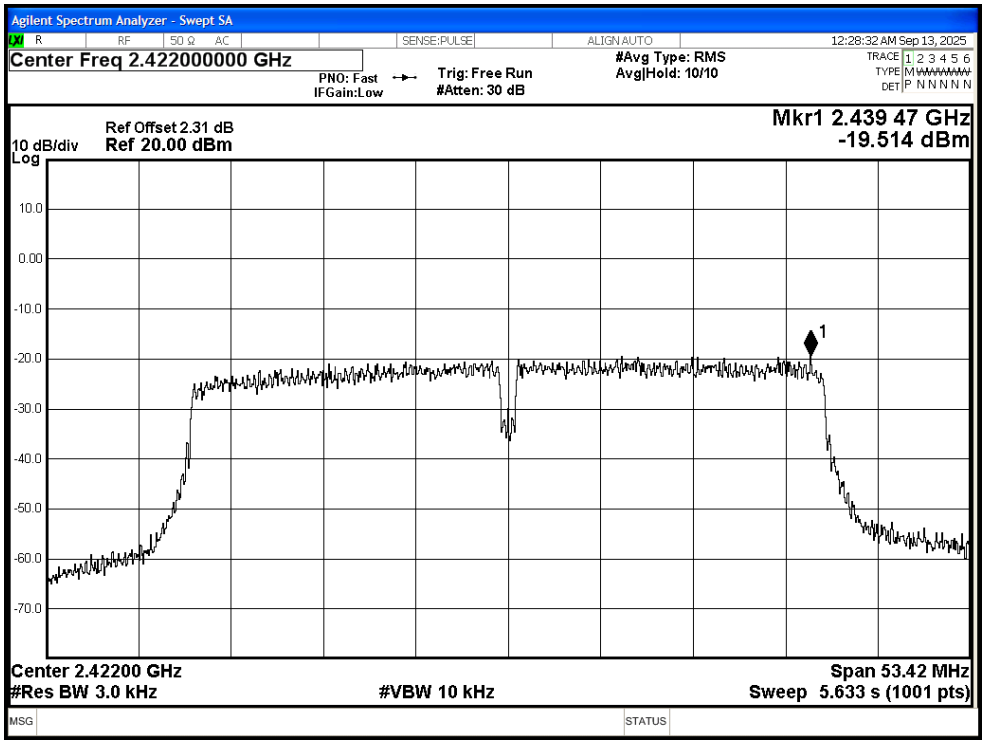
PSD NVNT ax20 2437MHz Ant1



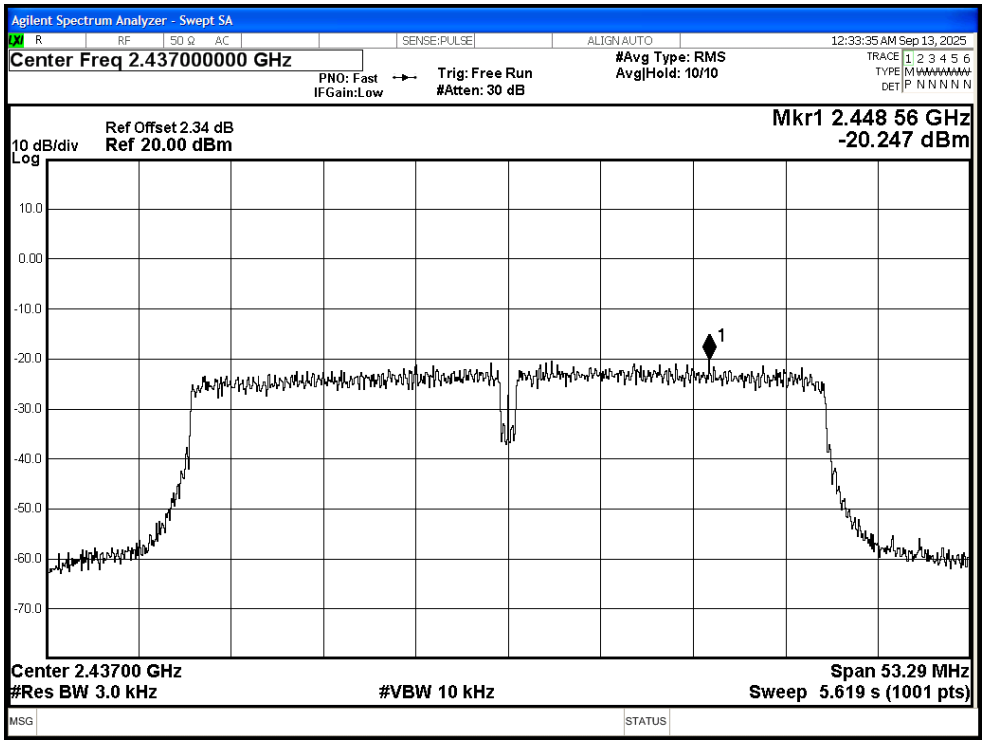
PSD NVNT ax20 2462MHz Ant1



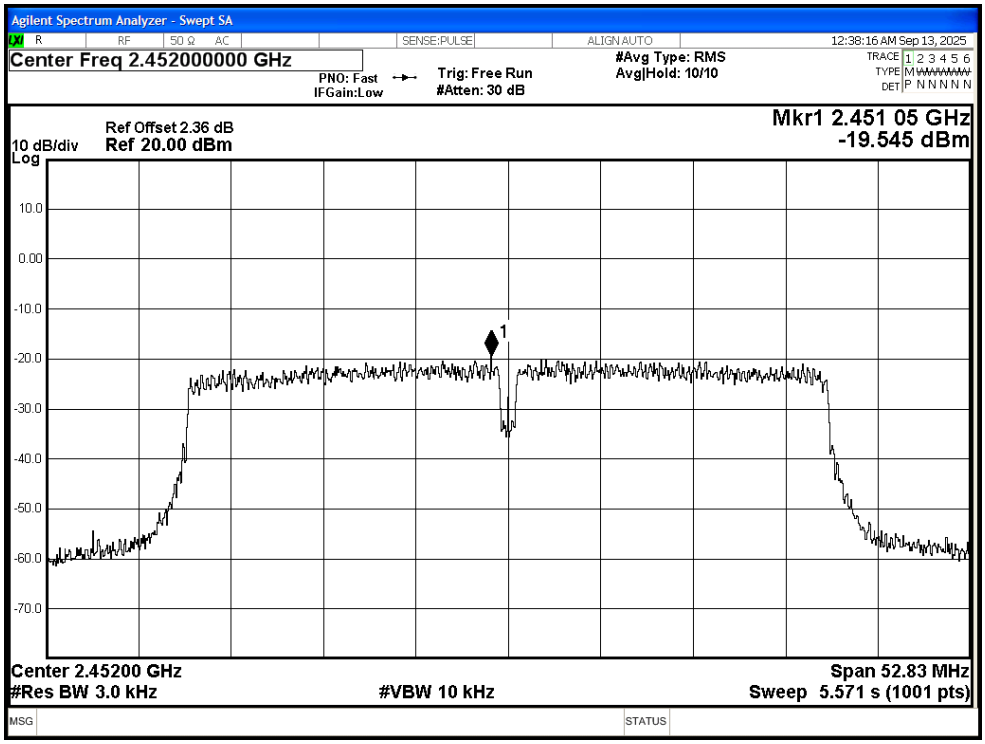
PSD NVNT ax40 2422MHz Ant1



PSD NVNT ax40 2437MHz Ant1

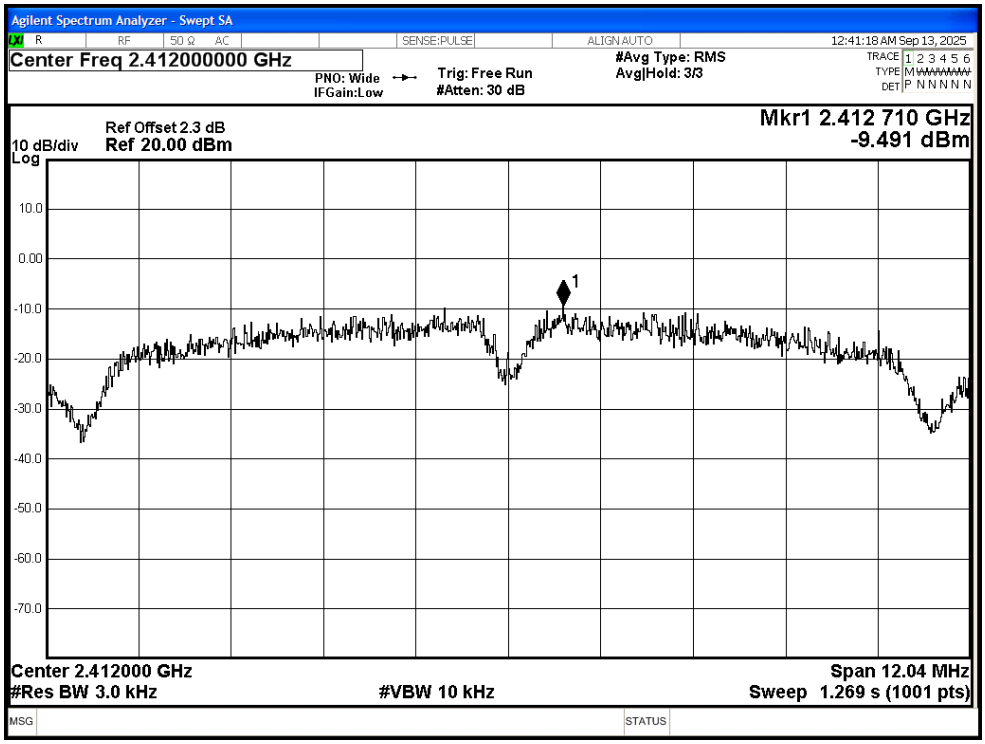


PSD NVNT ax40 2452MHz Ant1

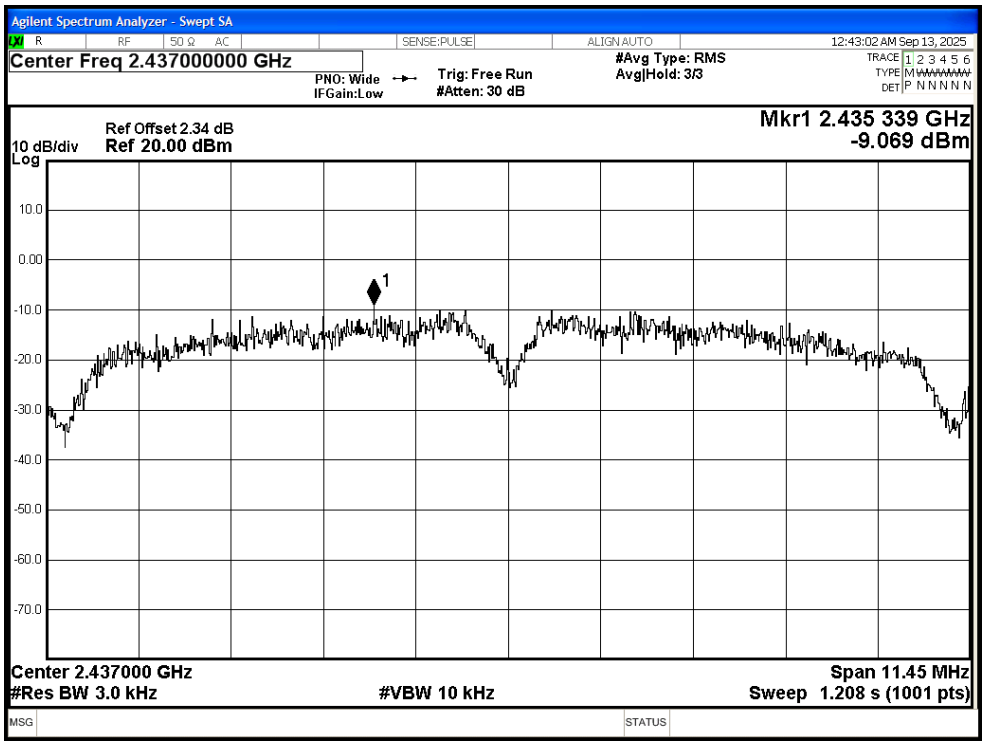


Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant2	-9.49	8	Pass
NVNT	b	2437	Ant2	-9.07	8	Pass
NVNT	b	2462	Ant2	-5.51	8	Pass
NVNT	g	2412	Ant2	-14.81	8	Pass
NVNT	g	2437	Ant2	-13.77	8	Pass
NVNT	g	2462	Ant2	-14.99	8	Pass
NVNT	n20	2412	Ant2	-15.27	8	Pass
NVNT	n20	2437	Ant2	-11.84	8	Pass
NVNT	n20	2462	Ant2	-16.19	8	Pass
NVNT	n40	2422	Ant2	-18.48	8	Pass
NVNT	n40	2437	Ant2	-18.57	8	Pass
NVNT	n40	2452	Ant2	-18.84	8	Pass
NVNT	ax20	2412	Ant2	-15.44	8	Pass
NVNT	ax20	2437	Ant2	-16.44	8	Pass
NVNT	ax20	2462	Ant2	-15.12	8	Pass
NVNT	ax40	2422	Ant2	-19.42	8	Pass
NVNT	ax40	2437	Ant2	-18.29	8	Pass
NVNT	ax40	2452	Ant2	-18.88	8	Pass

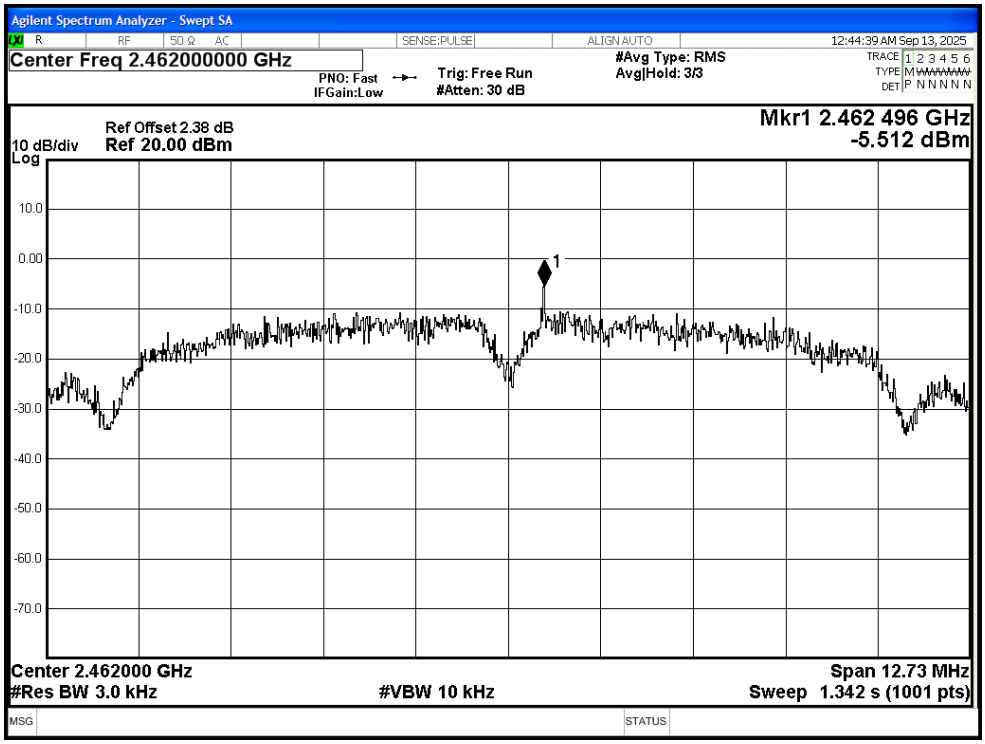
Test Graphs
PSD NVNT b 2412MHz Ant2



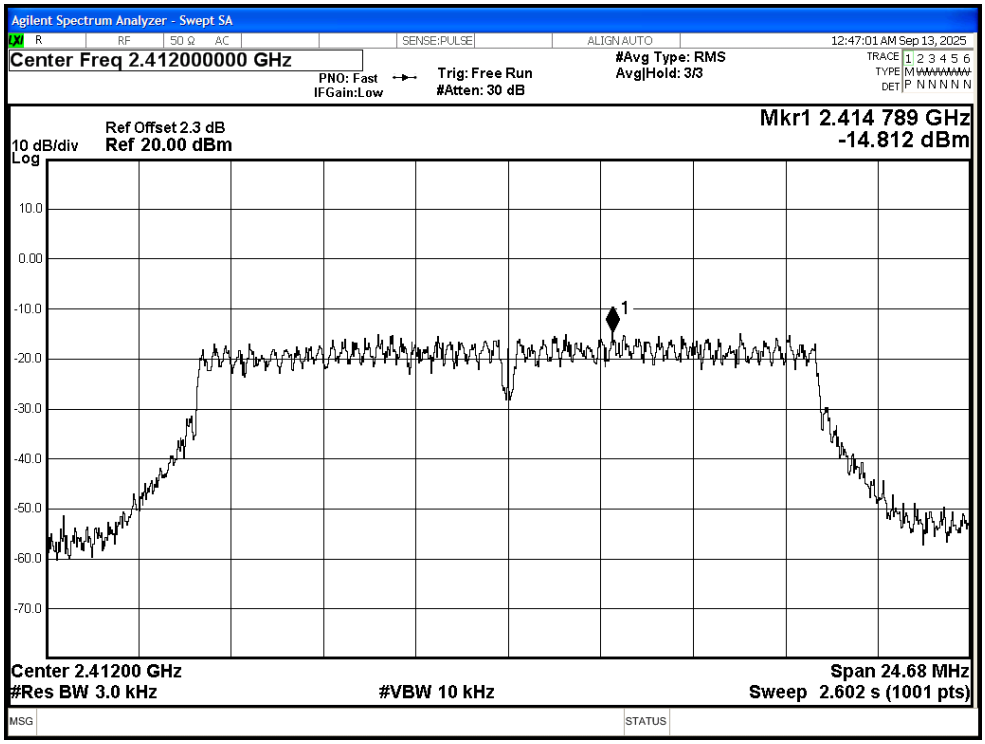
PSD NVNT b 2437MHz Ant2



PSD NVNT b 2462MHz Ant2



PSD NVNT g 2412MHz Ant2



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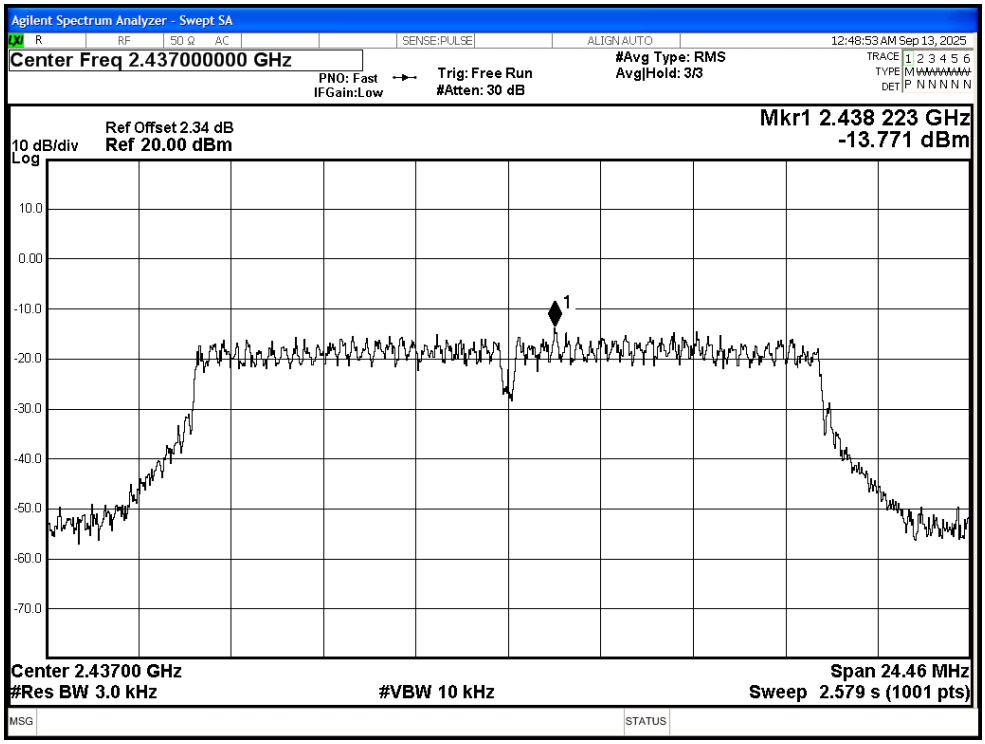

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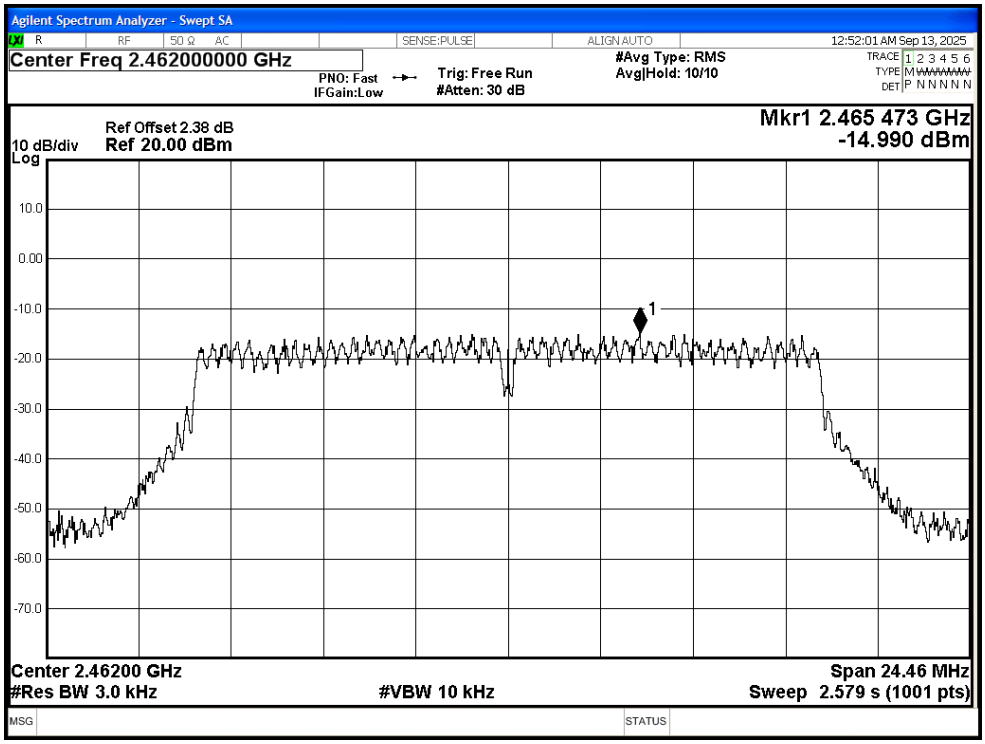

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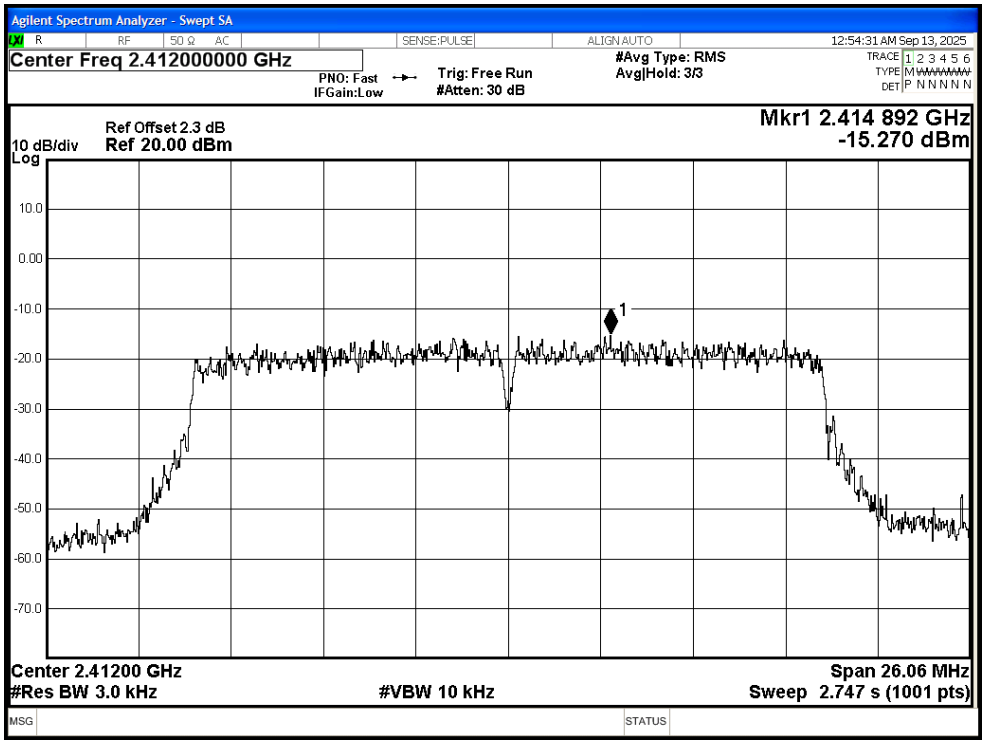

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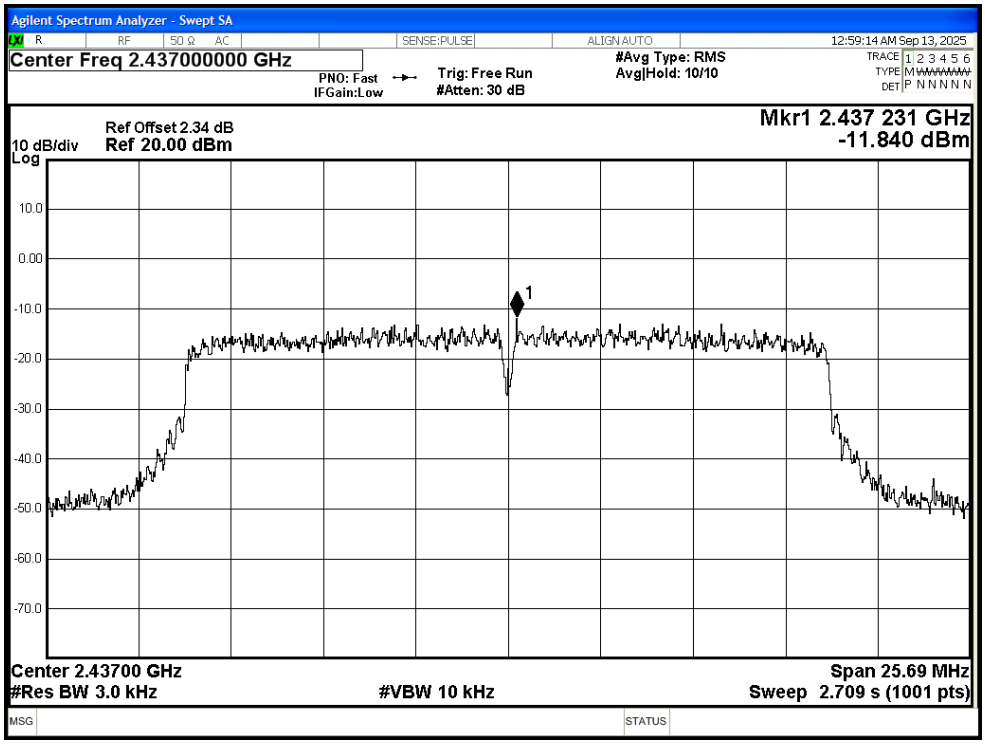
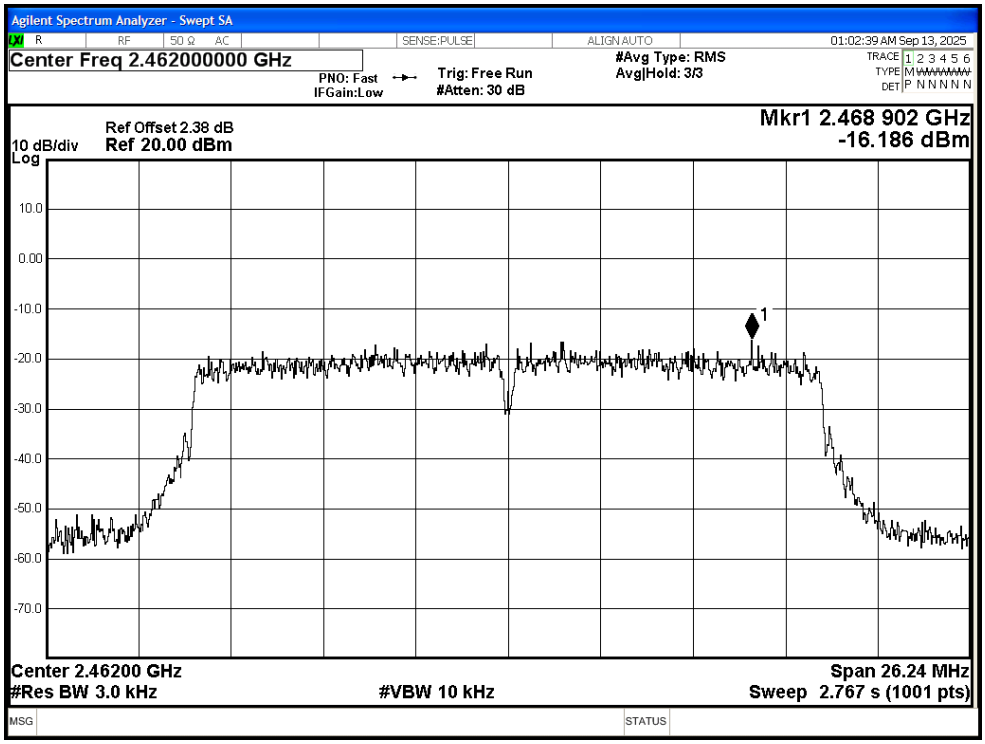


PSD NVNT n20 2462MHz Ant2



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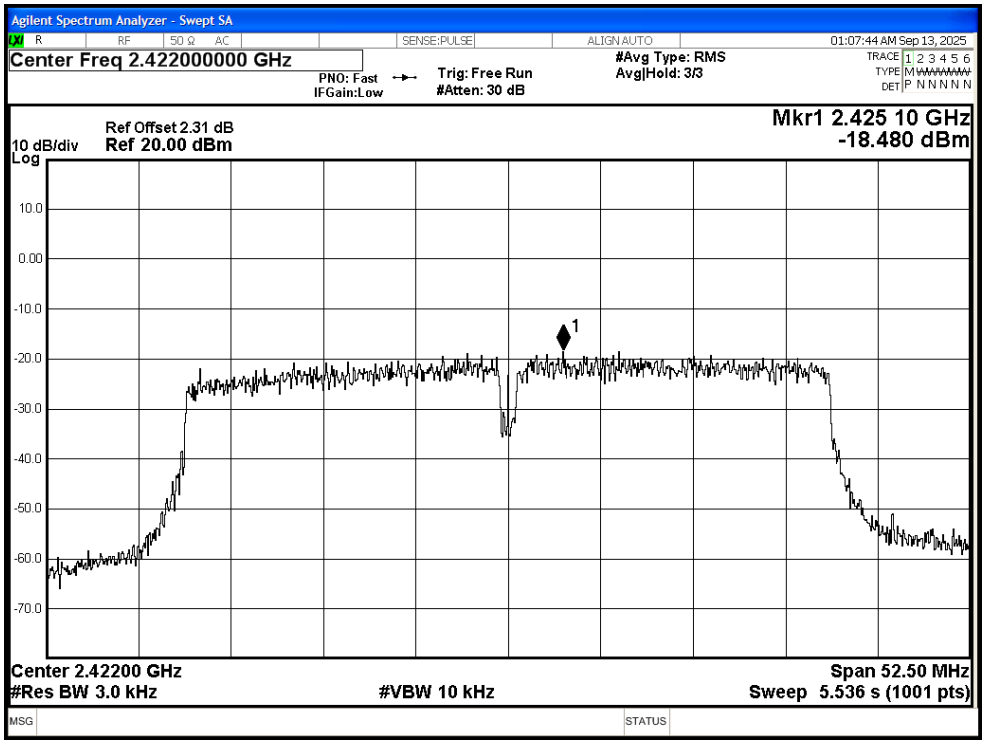
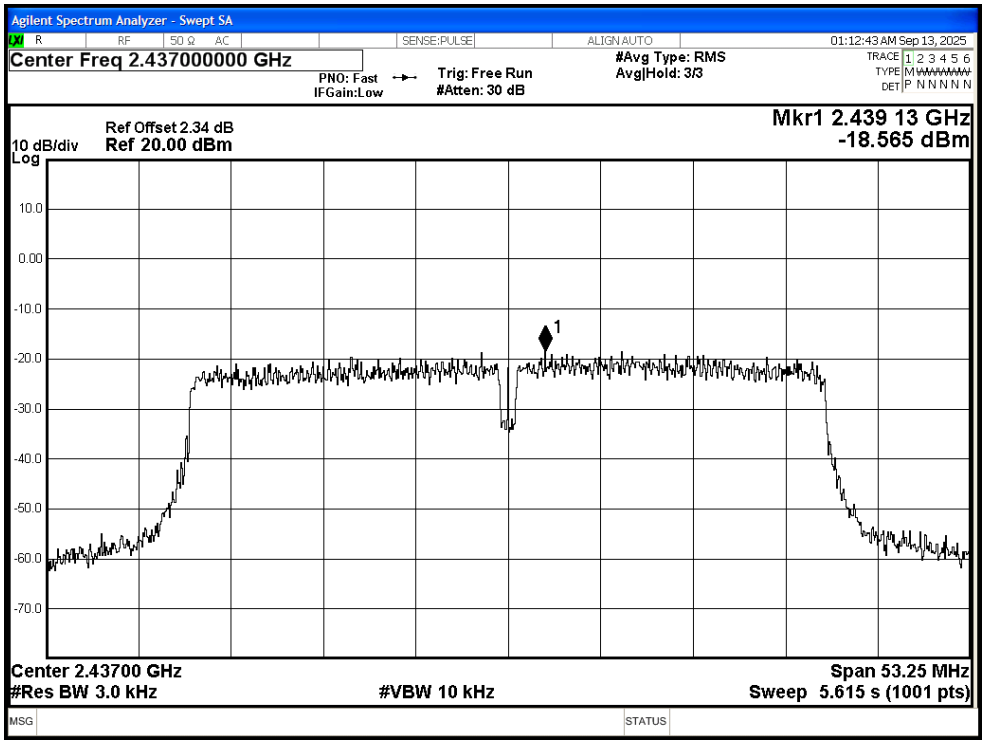


PSD NVNT n40 2437MHz Ant2



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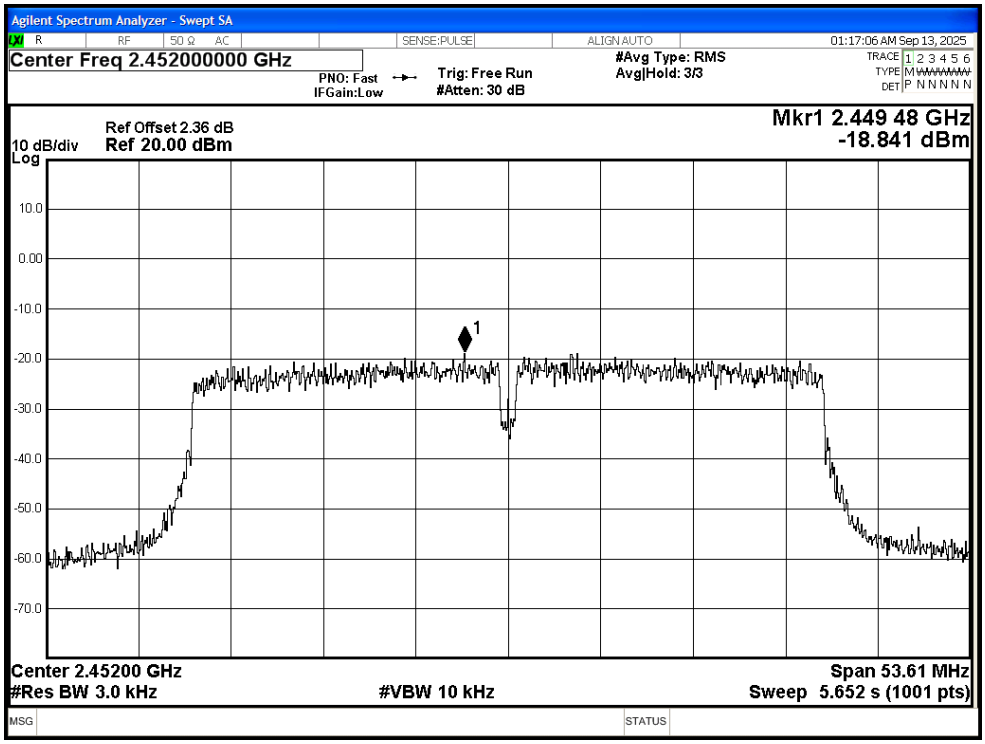
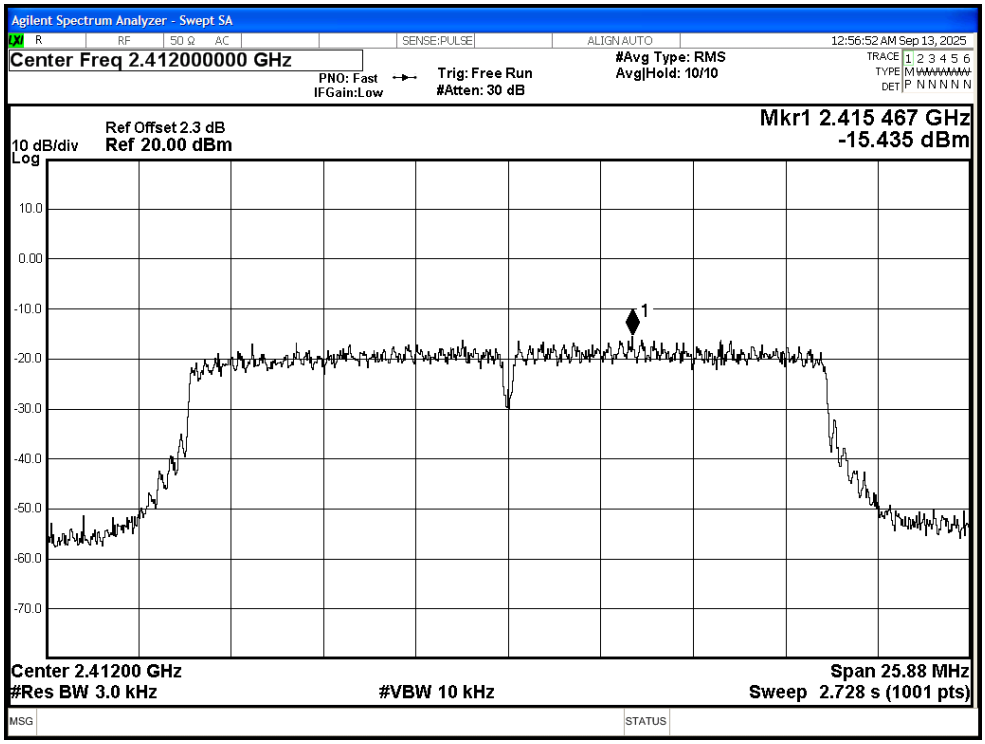


PSD NVNT ax20 2412MHz Ant2



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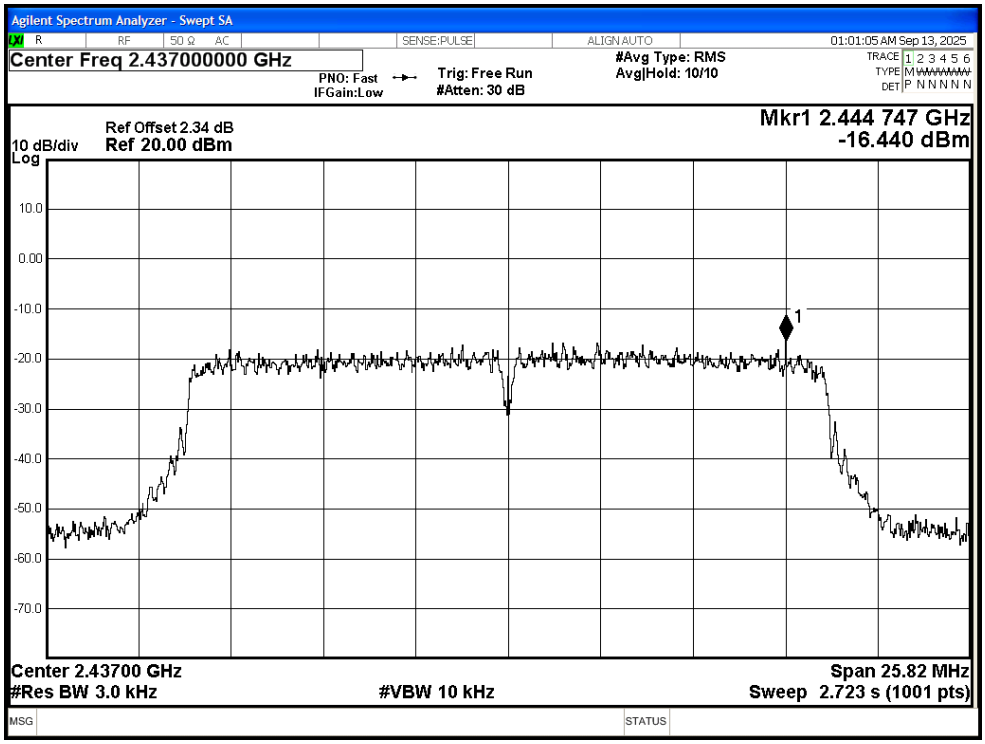

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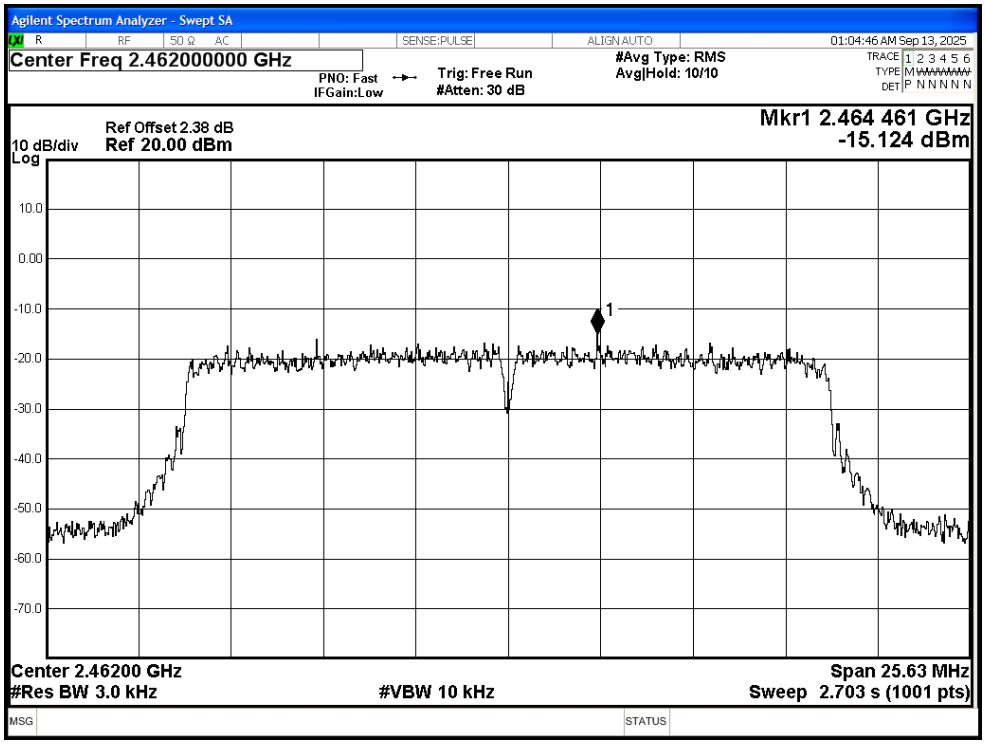
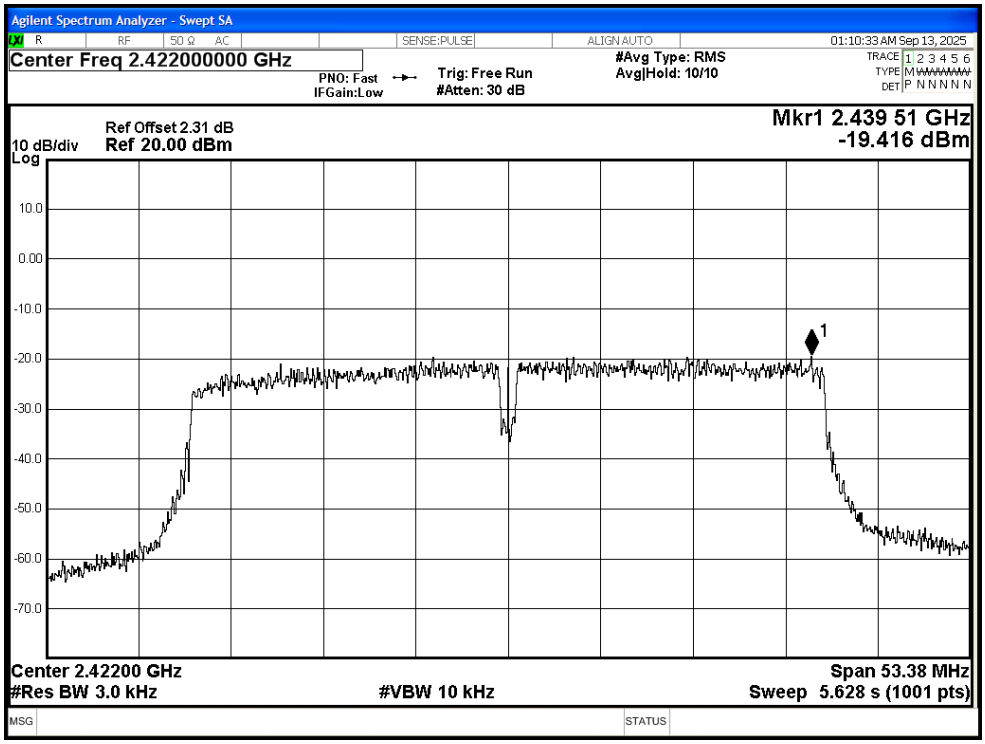
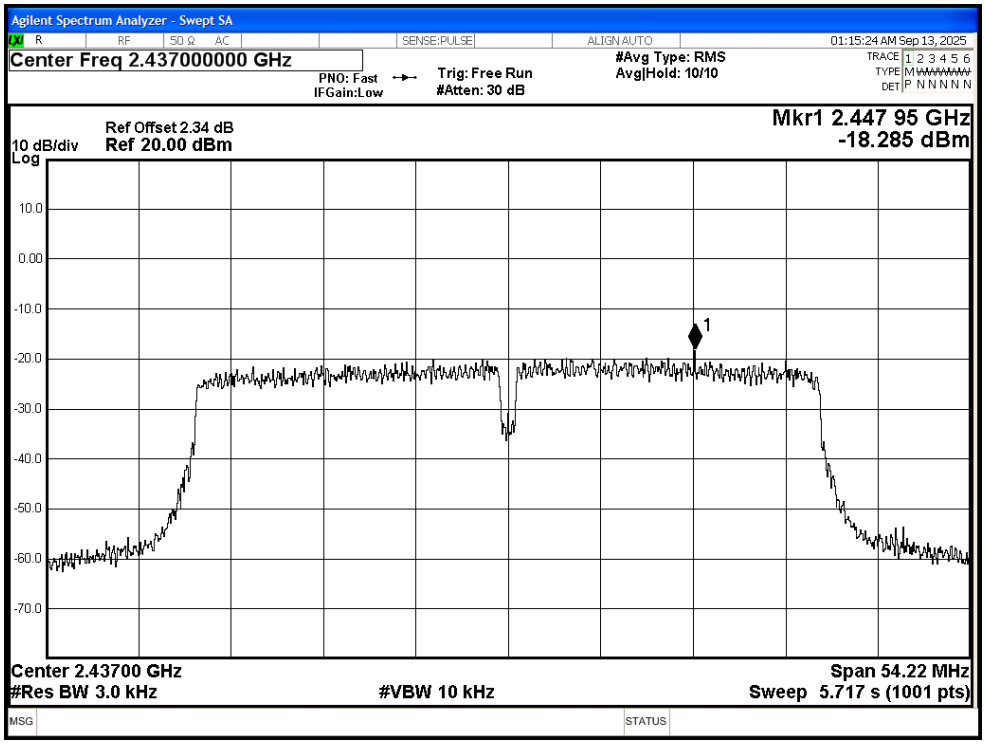


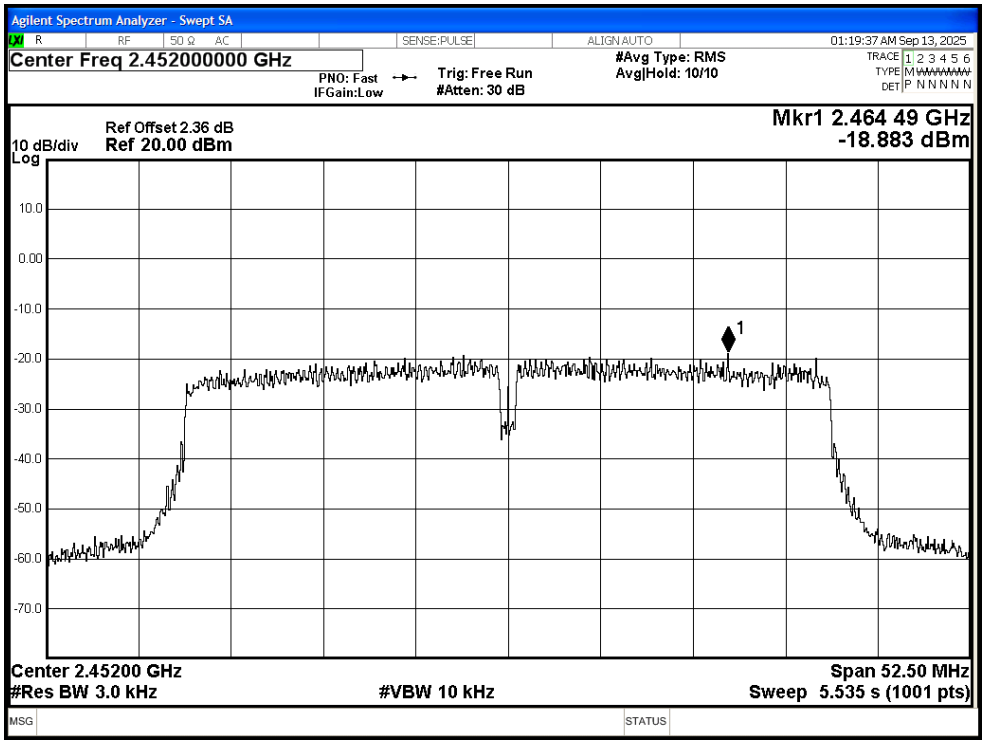
PSD NVNT ax40 2422MHz Ant2



PSD NVNT ax40 2437MHz Ant2



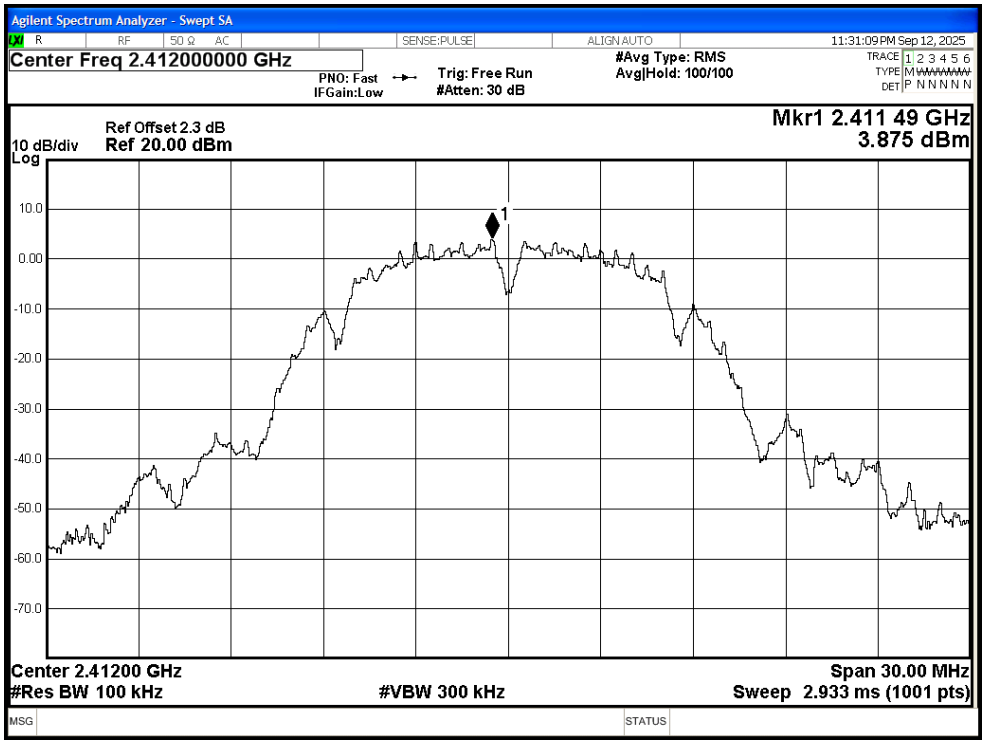
PSD NVNT ax40 2452MHz Ant2



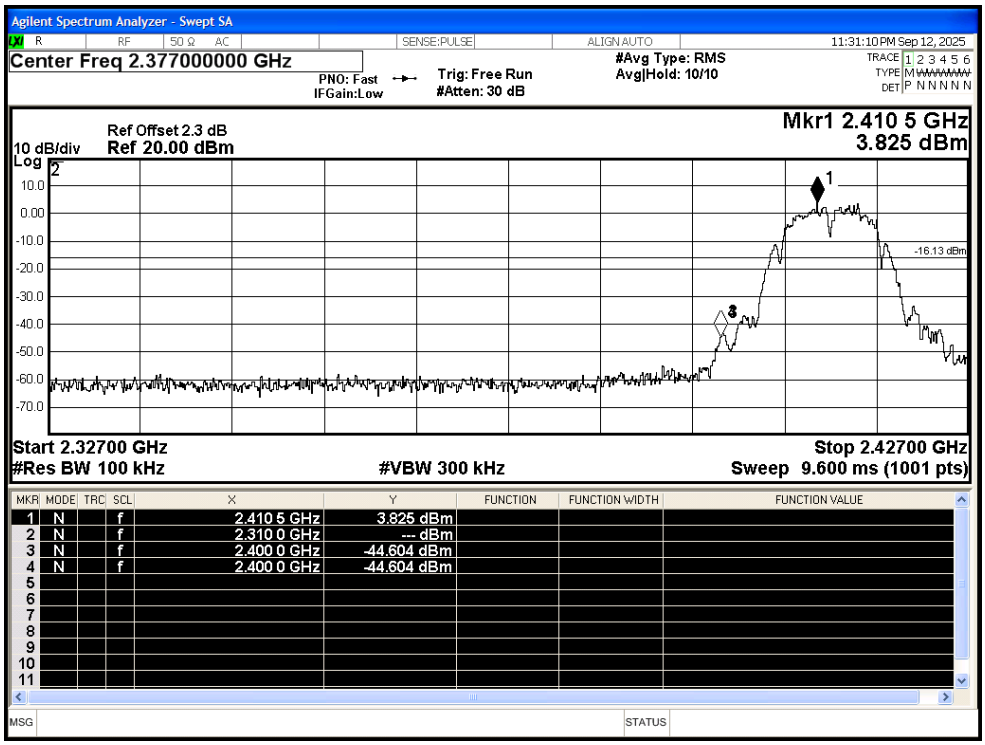
A.4 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant0	-48.48	-20	Pass
NVNT	b	2462	Ant0	-61.12	-20	Pass
NVNT	g	2412	Ant0	-34.16	-20	Pass
NVNT	g	2462	Ant0	-42.98	-20	Pass
NVNT	n20	2412	Ant0	-33	-20	Pass
NVNT	n20	2462	Ant0	-44.85	-20	Pass
NVNT	ax20	2412	Ant0	-32.52	-20	Pass
NVNT	ax20	2462	Ant0	-39.57	-20	Pass

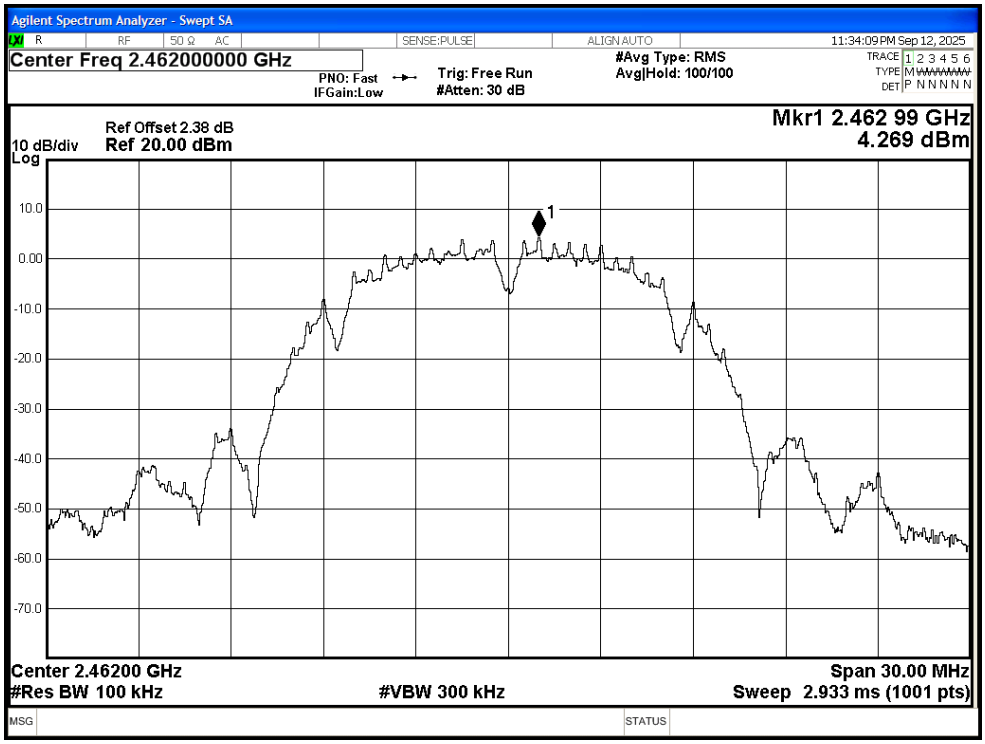
Test Graphs
Band Edge NVNT b 2412MHz Ant0 Ref



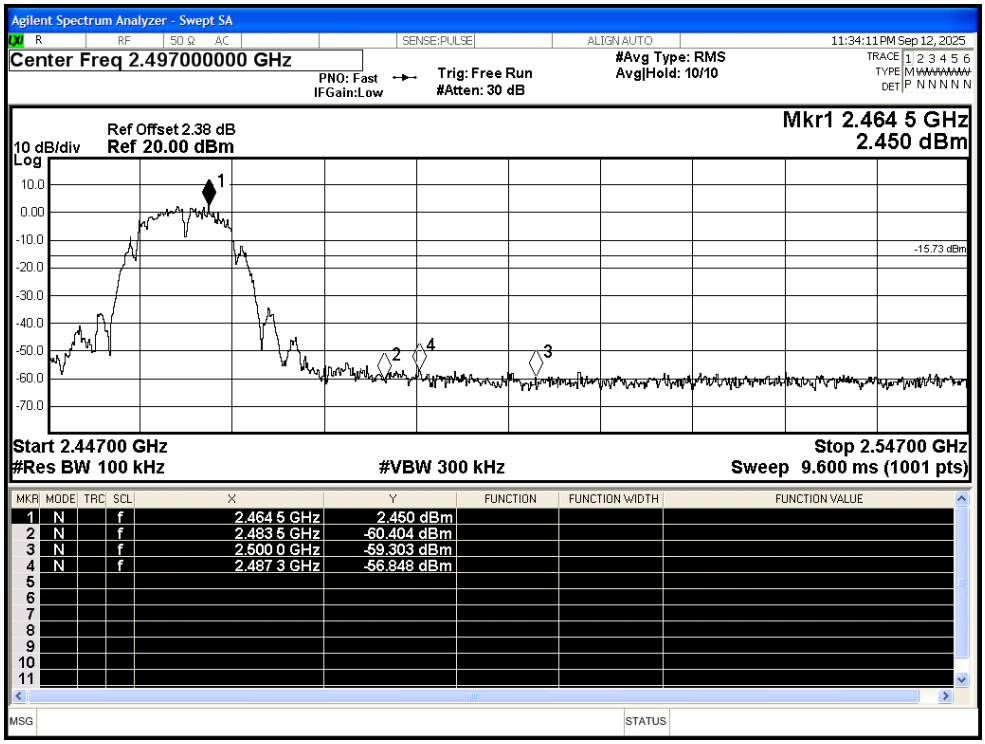
Band Edge NVNT b 2412MHz Ant0 Emission



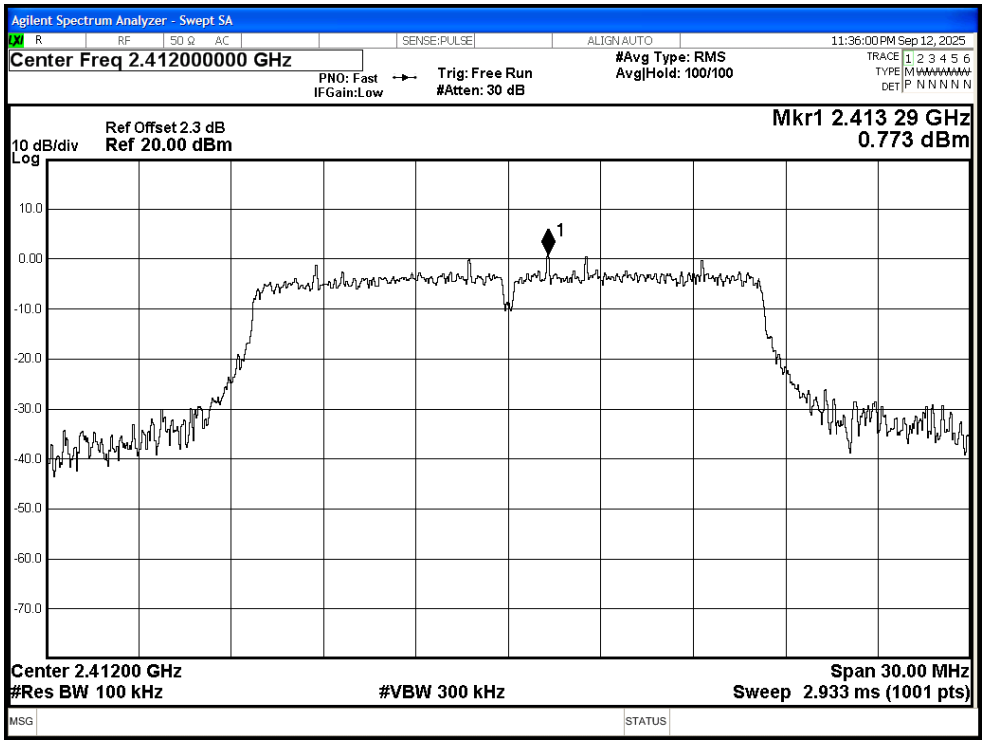
Band Edge NVNT b 2462MHz Ant0 Ref



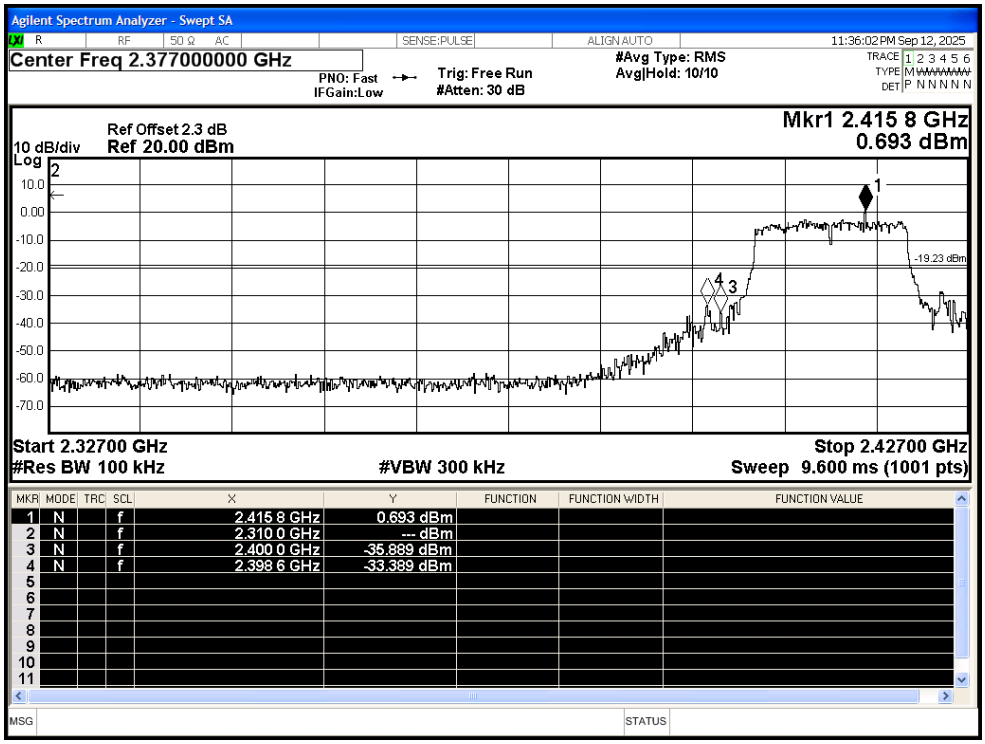
Band Edge NVNT b 2462MHz Ant0 Emission



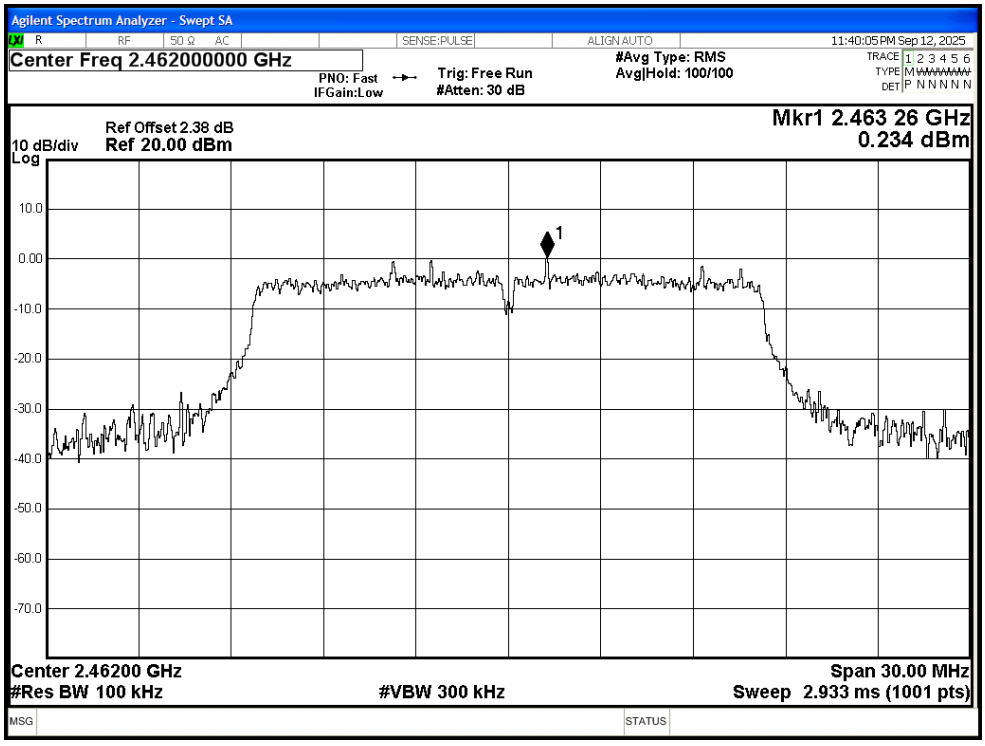
Band Edge NVNT g 2412MHz Ant0 Ref



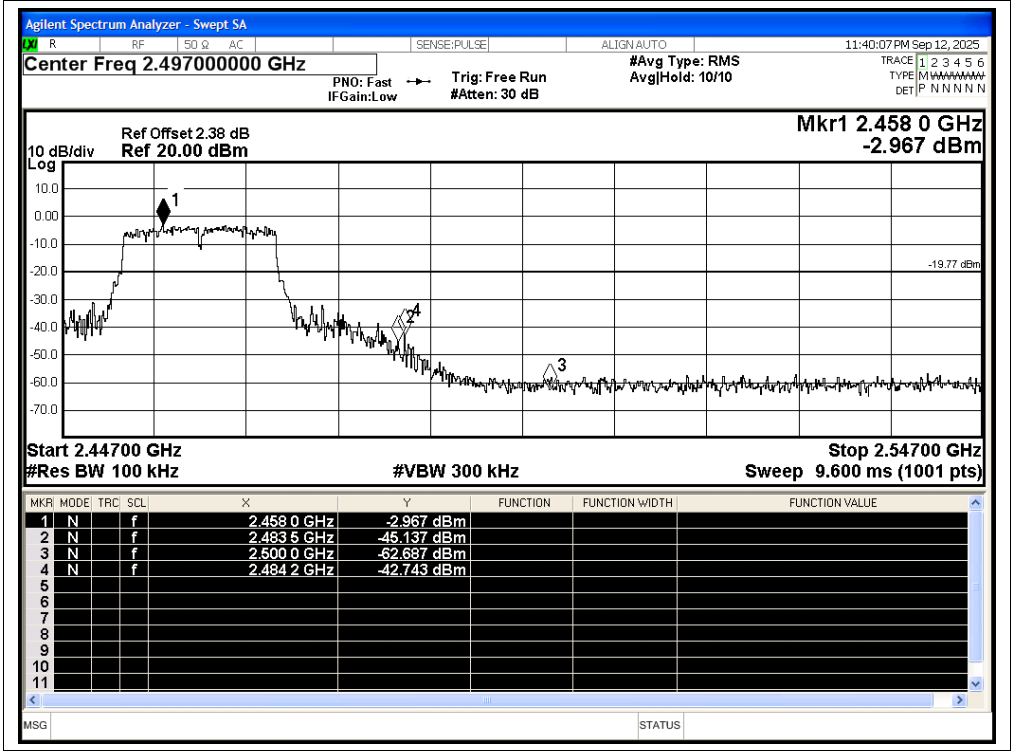
Band Edge NVNT g 2412MHz Ant0 Emission



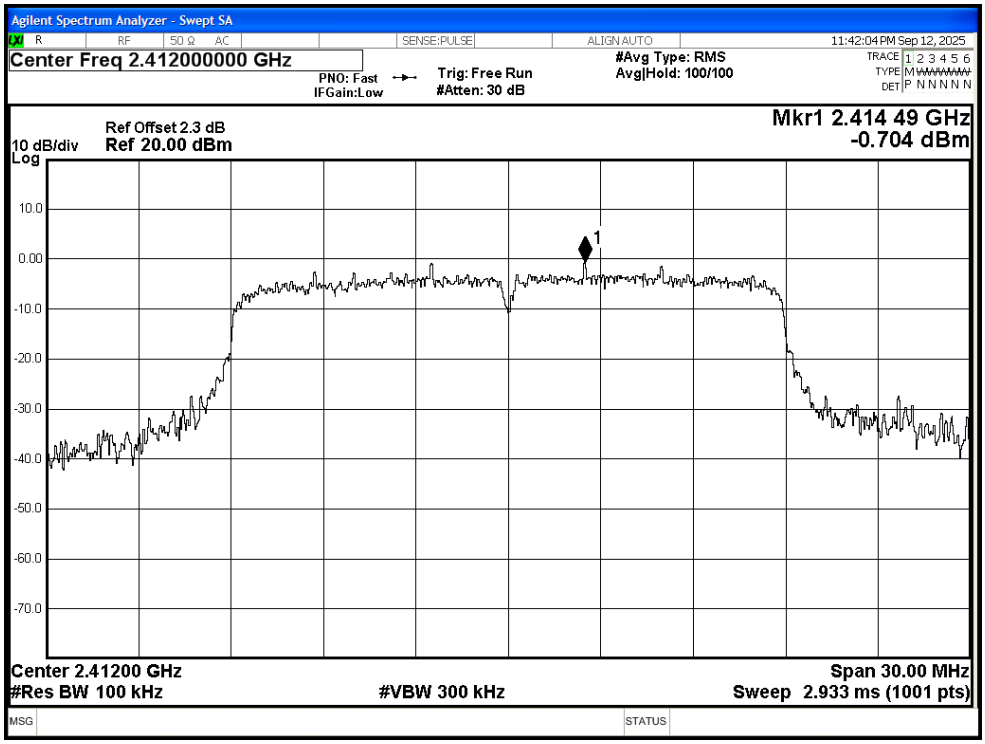
Band Edge NVNT g 2462MHz Ant0 Ref



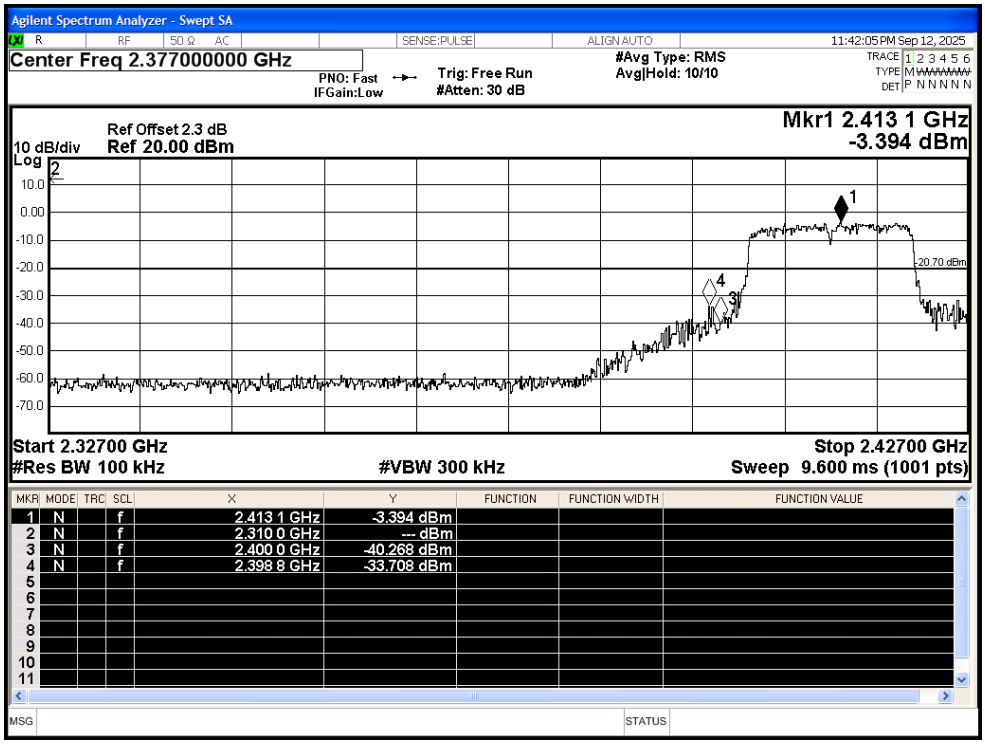
Band Edge NVNT g 2462MHz Ant0 Emission



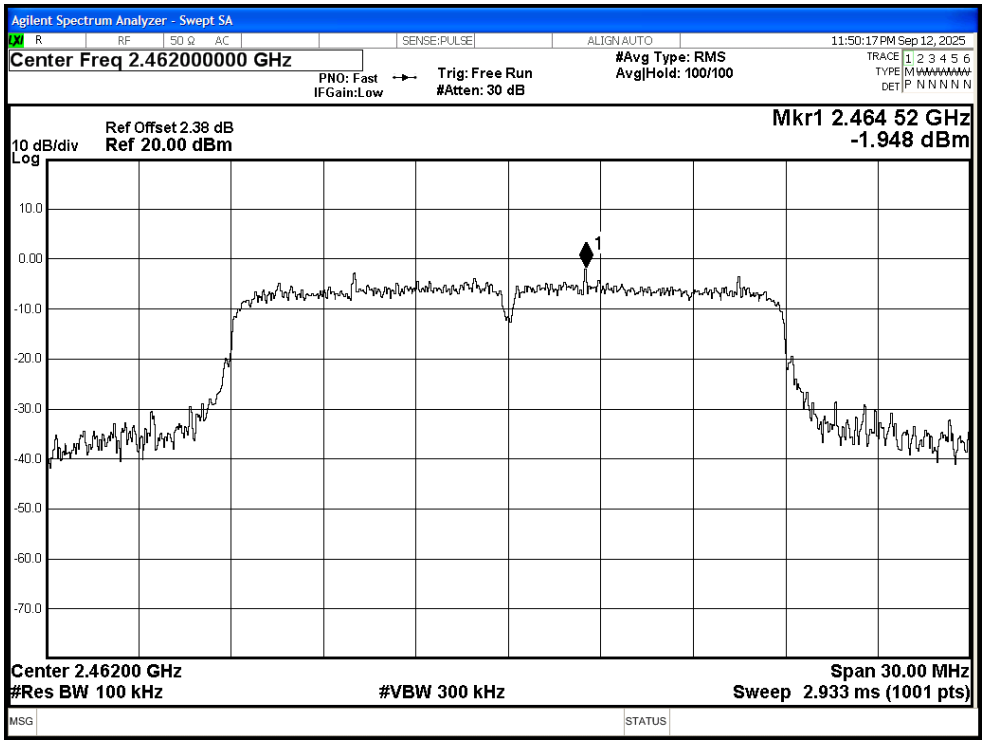
Band Edge NVNT n20 2412MHz Ant0 Ref



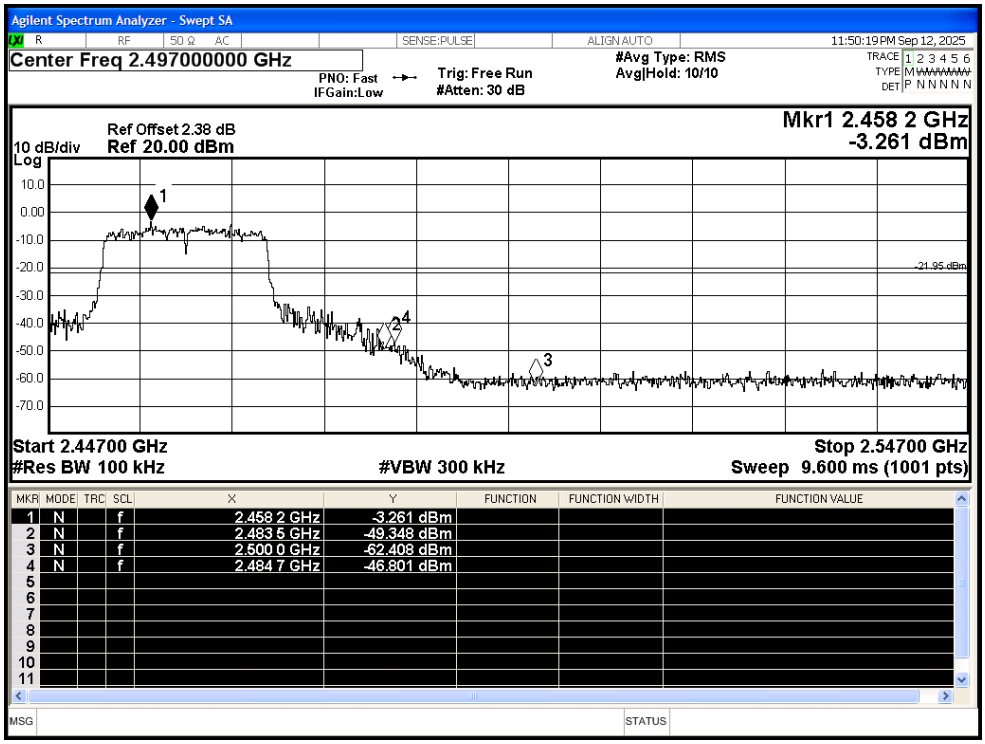
Band Edge NVNT n20 2412MHz Ant0 Emission



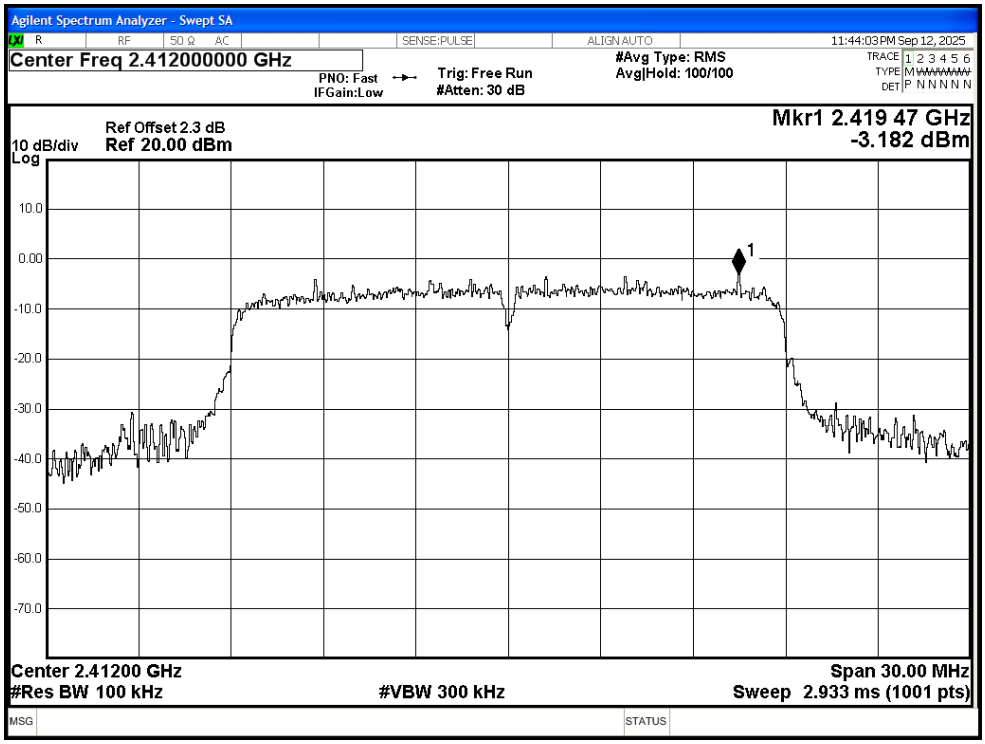
Band Edge NVNT n20 2462MHz Ant0 Ref



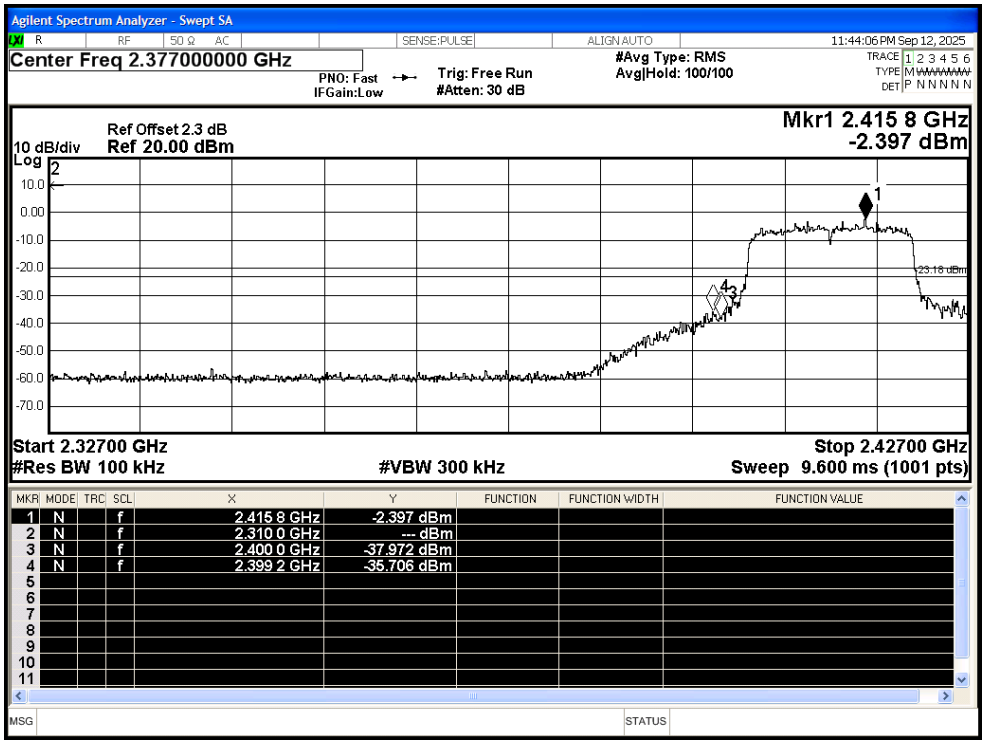
Band Edge NVNT n20 2462MHz Ant0 Emission



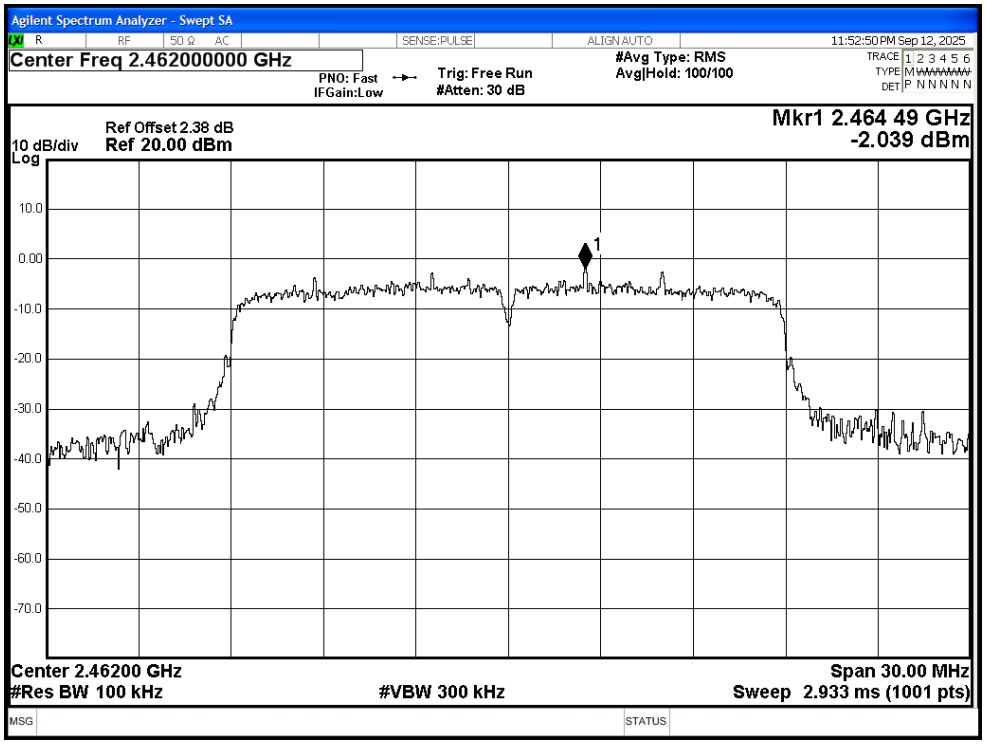
Band Edge NVNT ax20 2412MHz Ant0 Ref



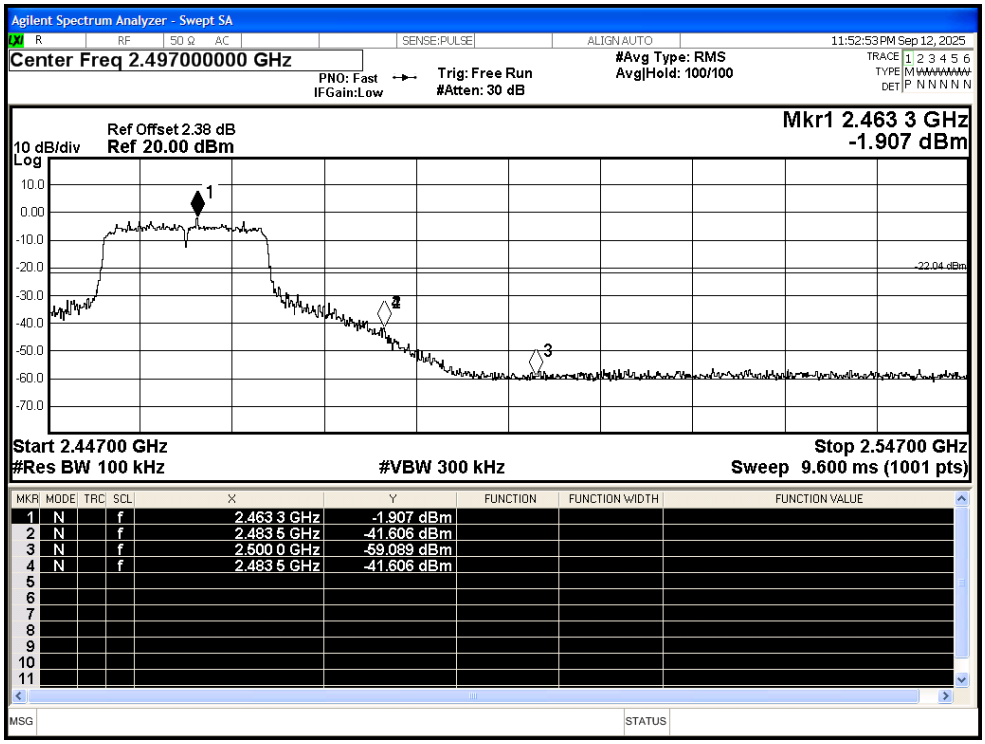
Band Edge NVNT ax20 2412MHz Ant0 Emission



Band Edge NVNT ax20 2462MHz Ant0 Ref



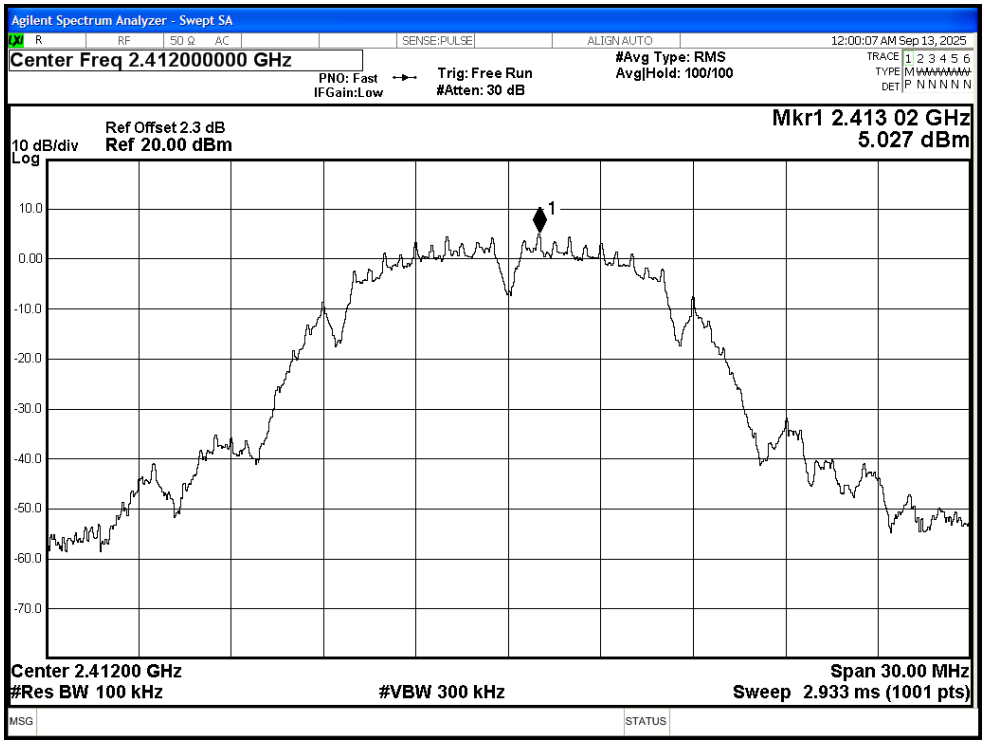
Band Edge NVNT ax20 2462MHz Ant0 Emission



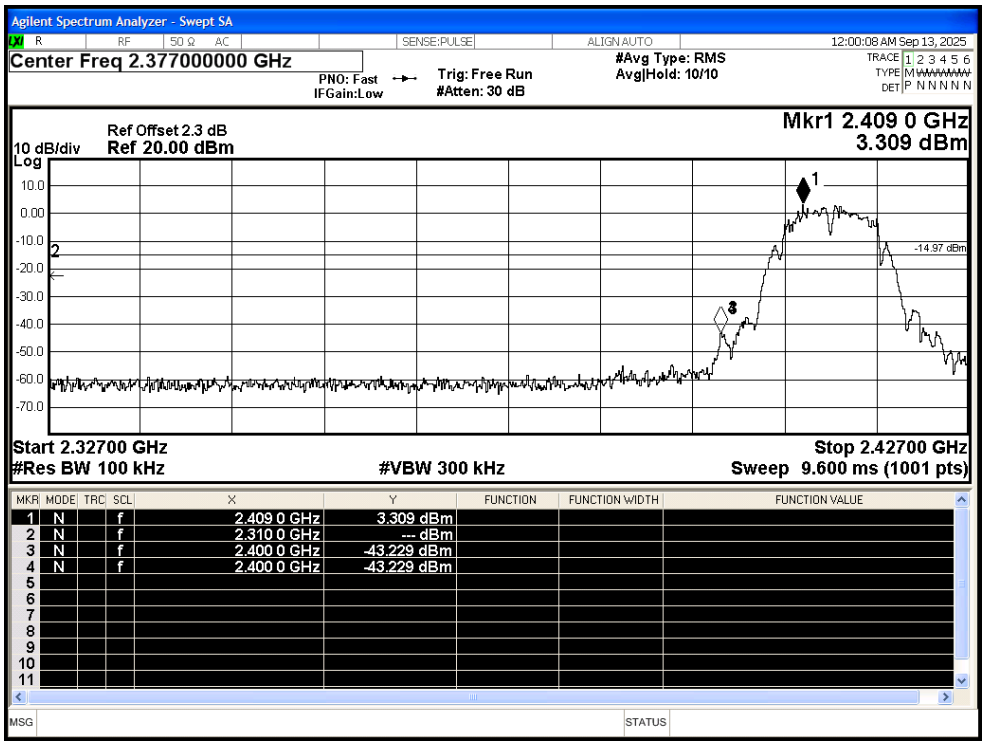
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-48.26	-20	Pass
NVNT	b	2462	Ant1	-61.52	-20	Pass
NVNT	g	2412	Ant1	-35.74	-20	Pass
NVNT	g	2462	Ant1	-44.02	-20	Pass
NVNT	n20	2412	Ant1	-35.53	-20	Pass
NVNT	n20	2462	Ant1	-44.14	-20	Pass
NVNT	n40	2422	Ant1	-36.52	-20	Pass
NVNT	n40	2452	Ant1	-39.42	-20	Pass
NVNT	ax20	2412	Ant1	-32.01	-20	Pass
NVNT	ax20	2462	Ant1	-41.22	-20	Pass
NVNT	ax40	2422	Ant1	-34.85	-20	Pass
NVNT	ax40	2452	Ant1	-39.18	-20	Pass

Test Graphs

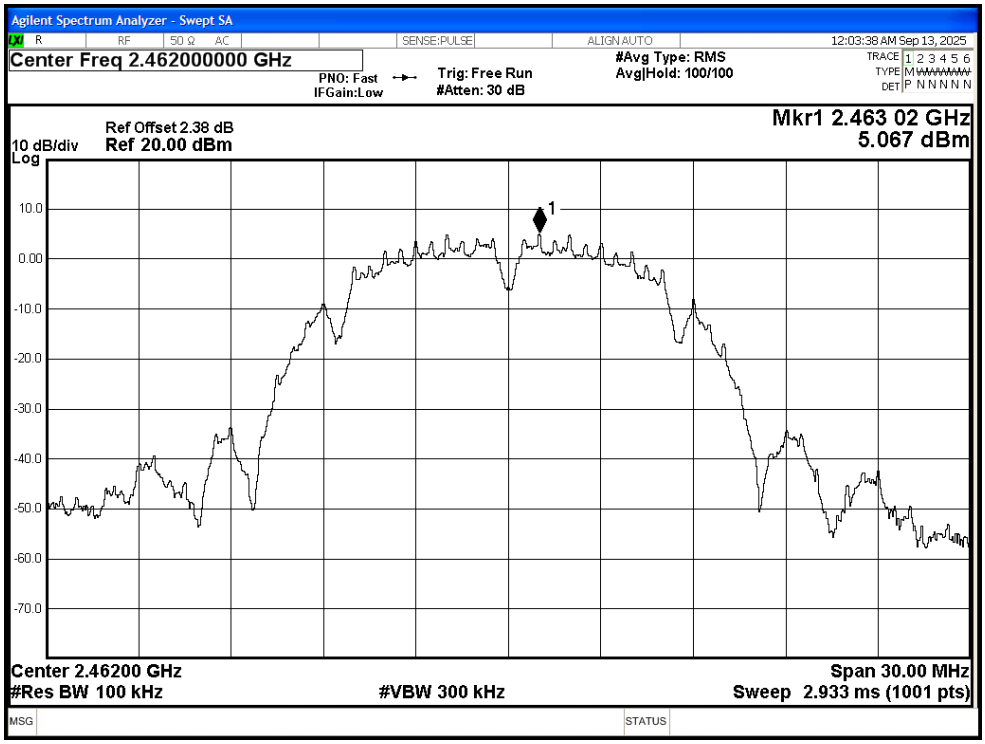
Band Edge NVNT b 2412MHz Ant1 Ref



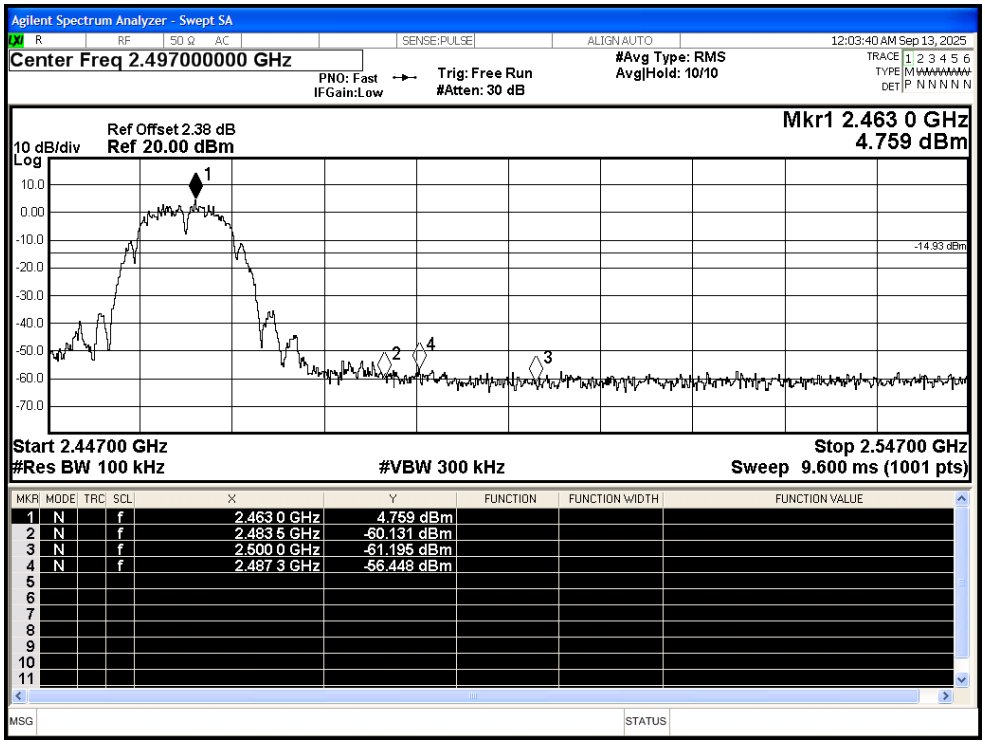
Band Edge NVNT b 2412MHz Ant1 Emission



Band Edge NVNT b 2462MHz Ant1 Ref

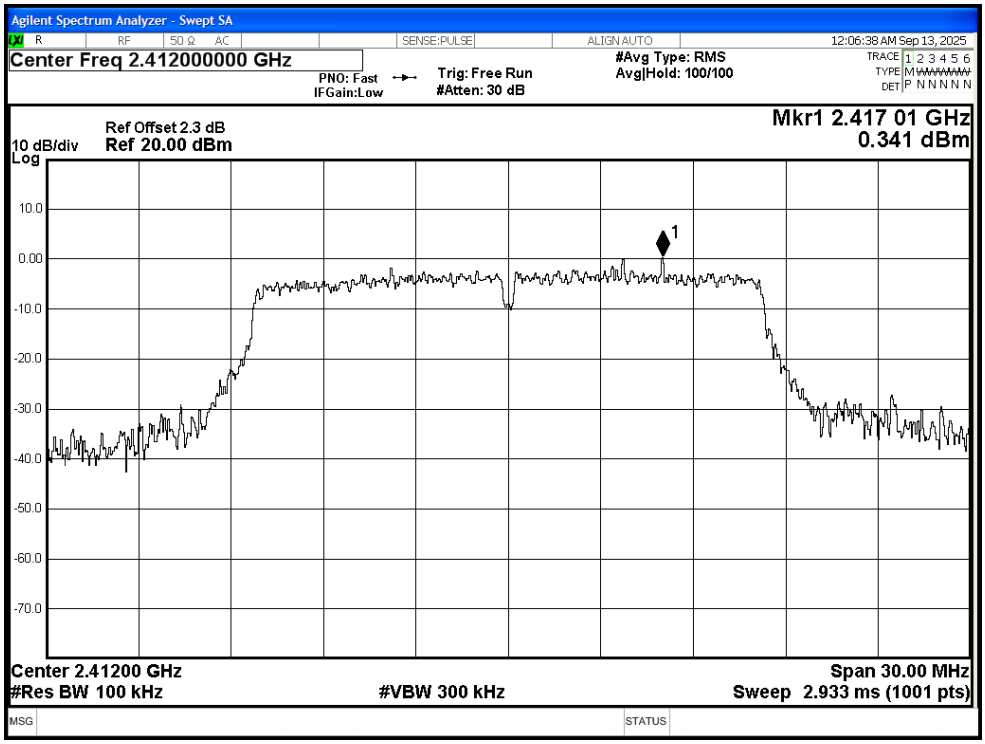


Band Edge NVNT b 2462MHz Ant1 Emission

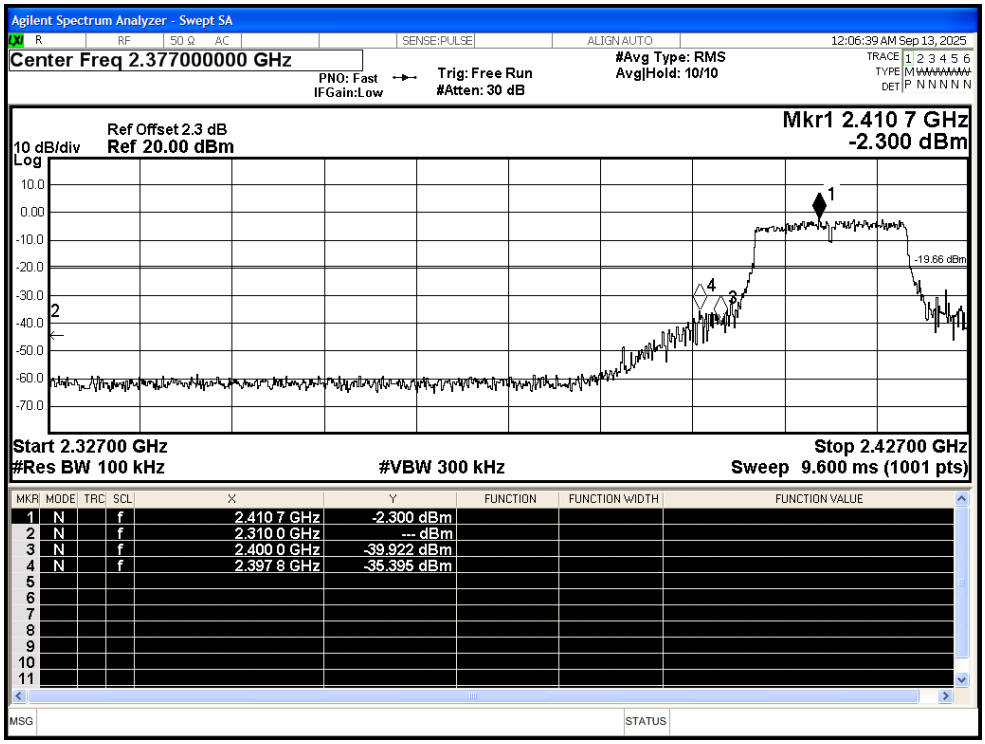


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.463 0 GHz	4.759 dBm			
2	N		f	2.483 5 GHz	-60.131 dBm			
3	N		f	2.500 0 GHz	-61.195 dBm			
4	N		f	2.487 3 GHz	-56.448 dBm			
5								
6								
7								
8								
9								
10								
11								

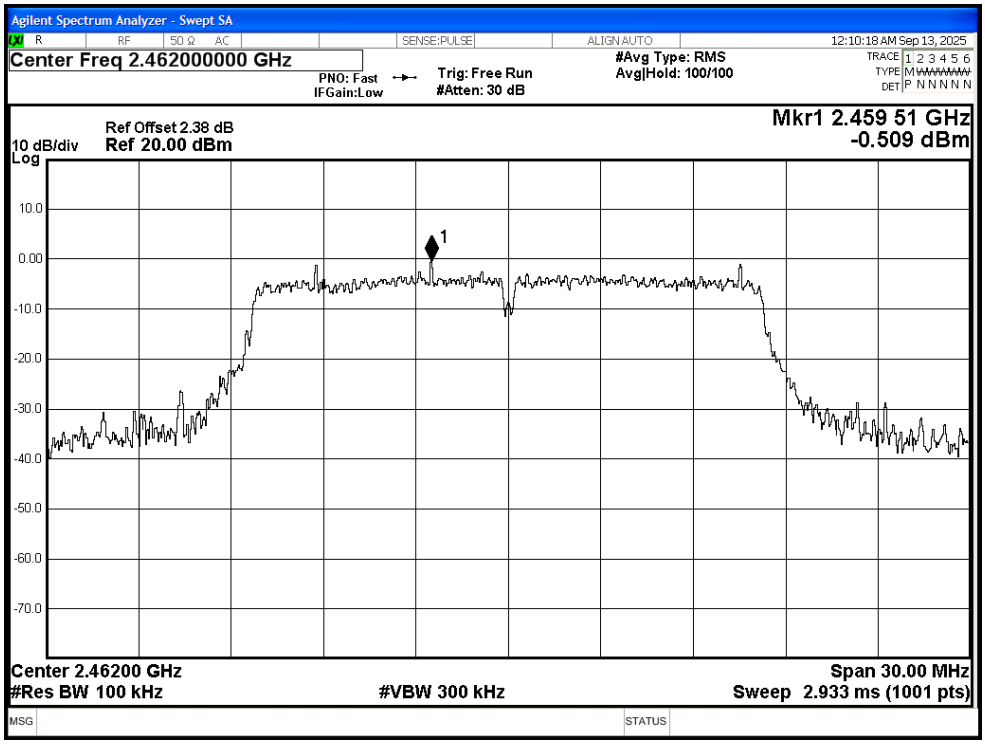
Band Edge NVNT g 2412MHz Ant1 Ref



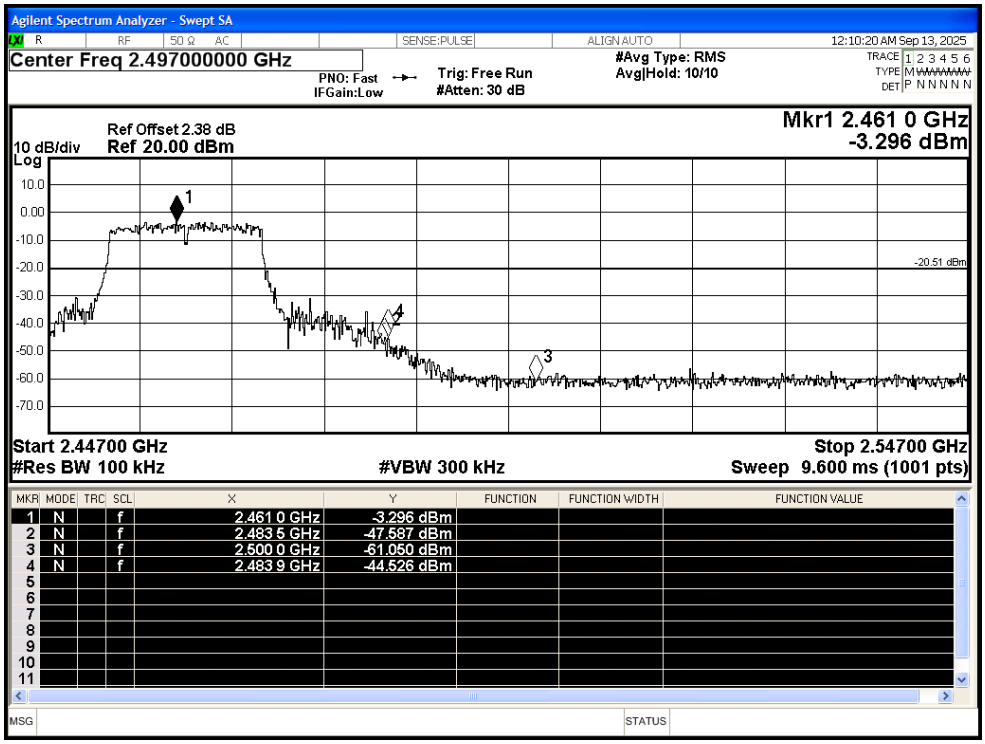
Band Edge NVNT g 2412MHz Ant1 Emission



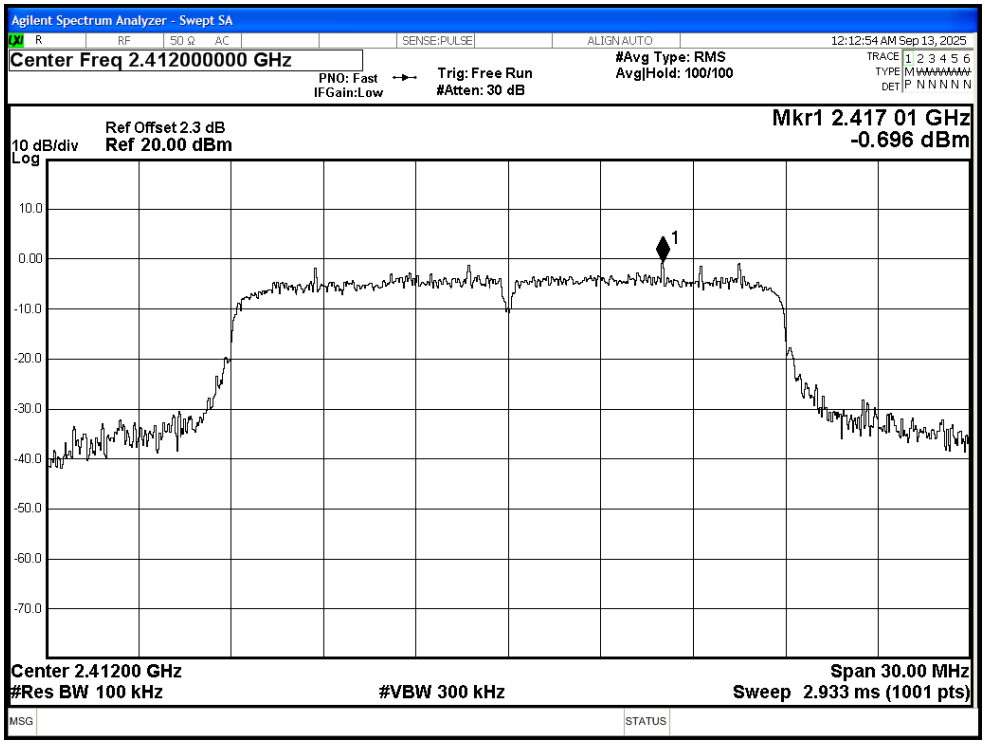
Band Edge NVNT g 2462MHz Ant1 Ref



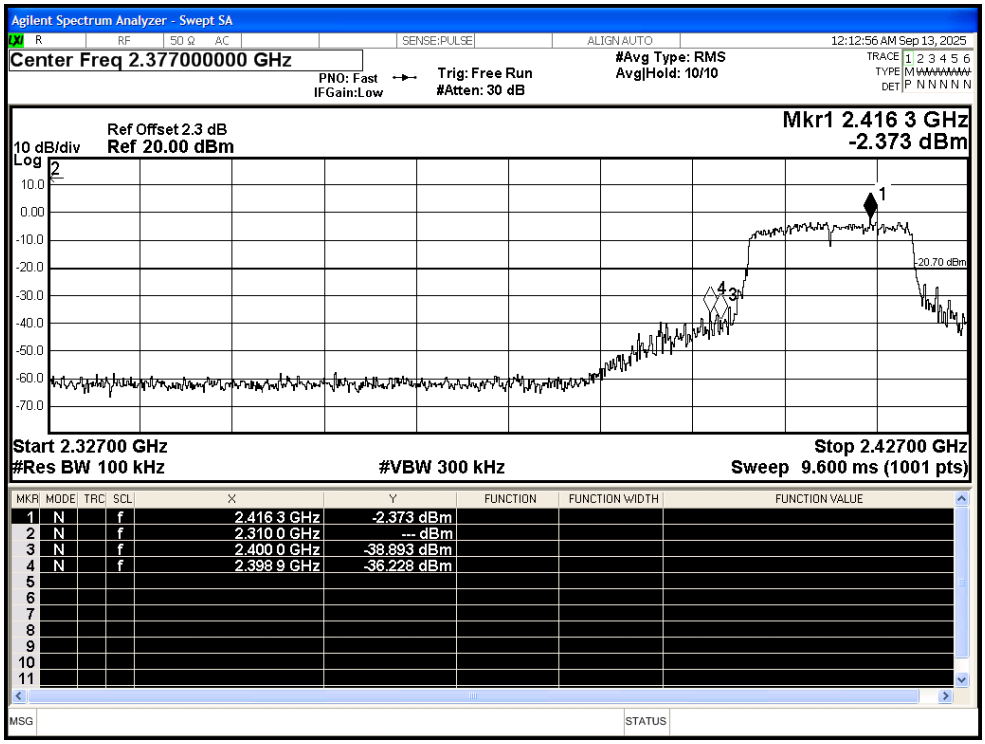
Band Edge NVNT g 2462MHz Ant1 Emission



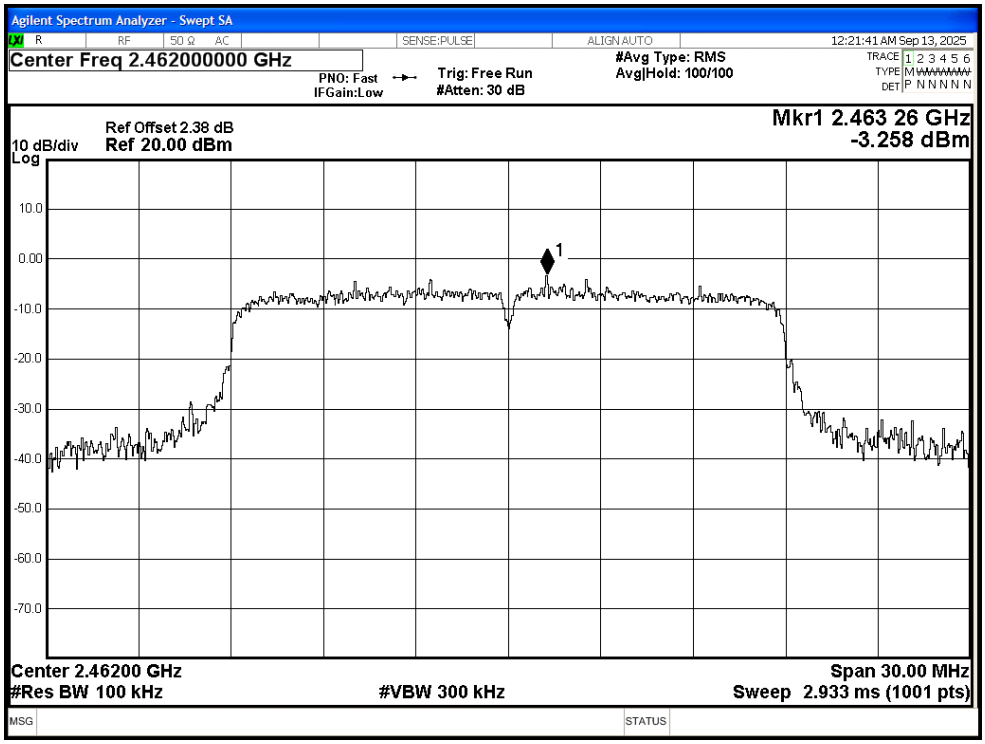
Band Edge NVNT n20 2412MHz Ant1 Ref



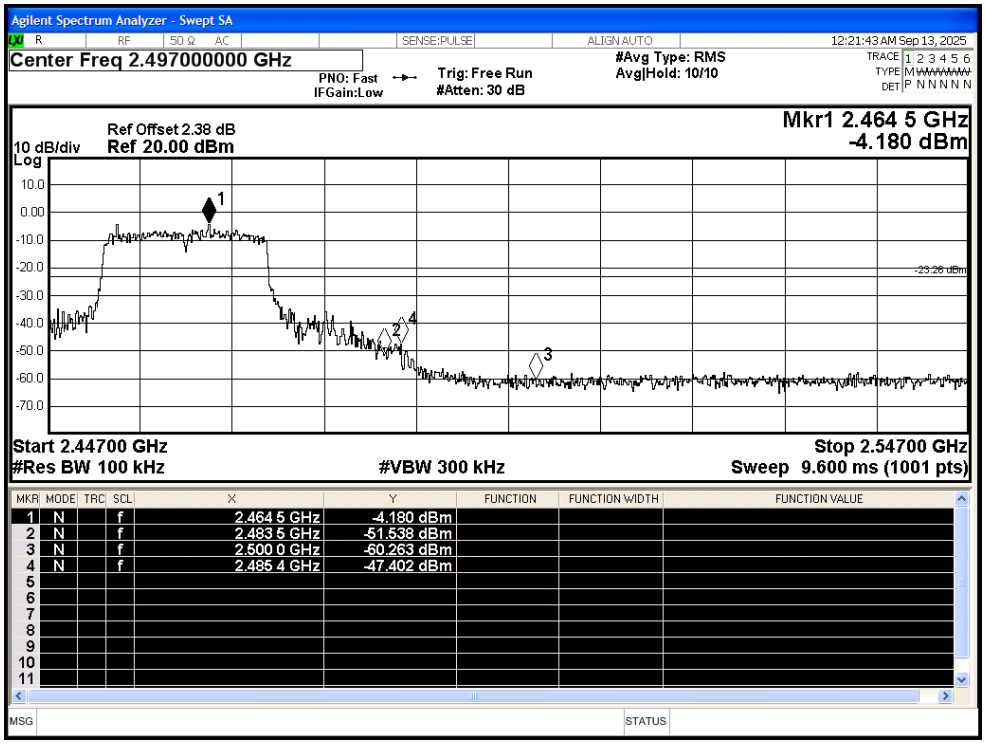
Band Edge NVNT n20 2412MHz Ant1 Emission



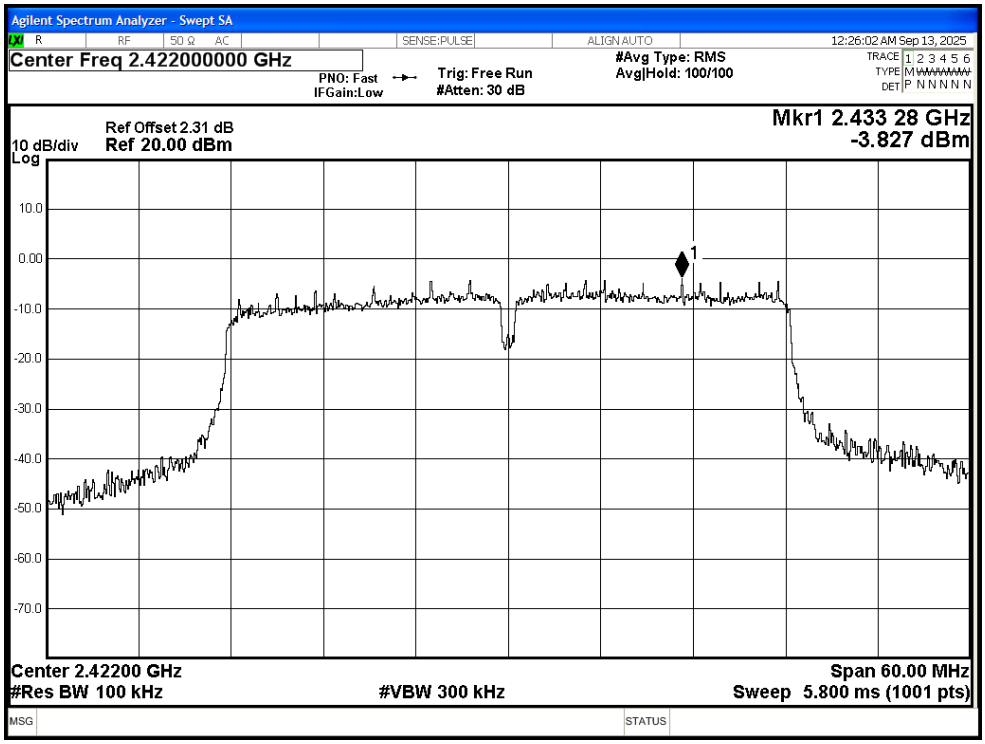
Band Edge NVNT n20 2462MHz Ant1 Ref



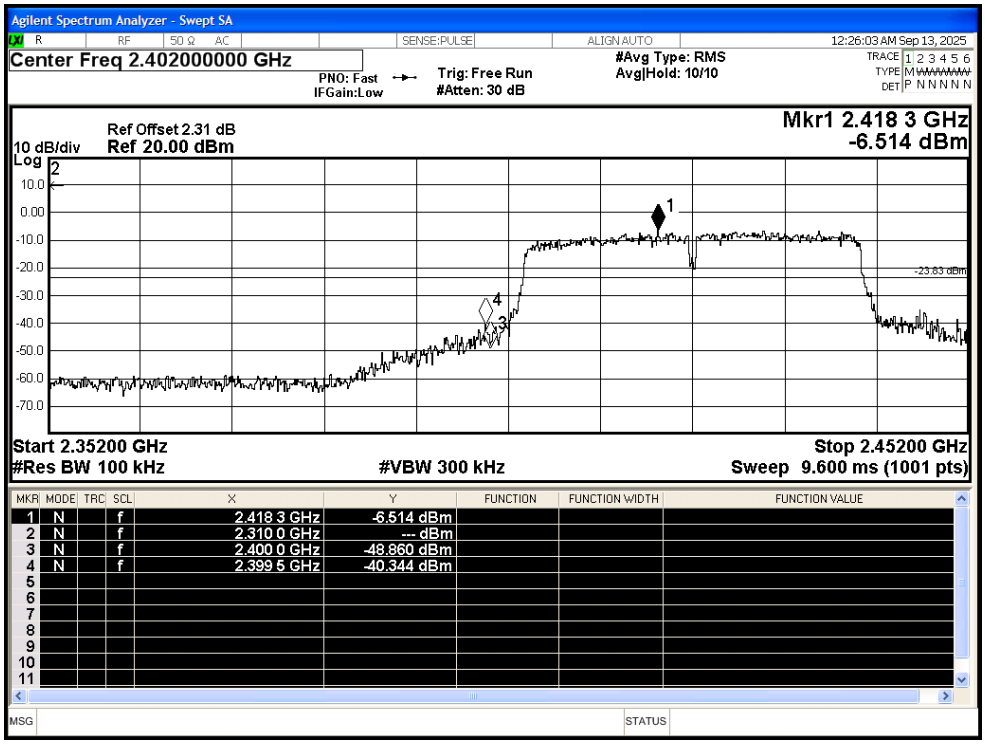
Band Edge NVNT n20 2462MHz Ant1 Emission



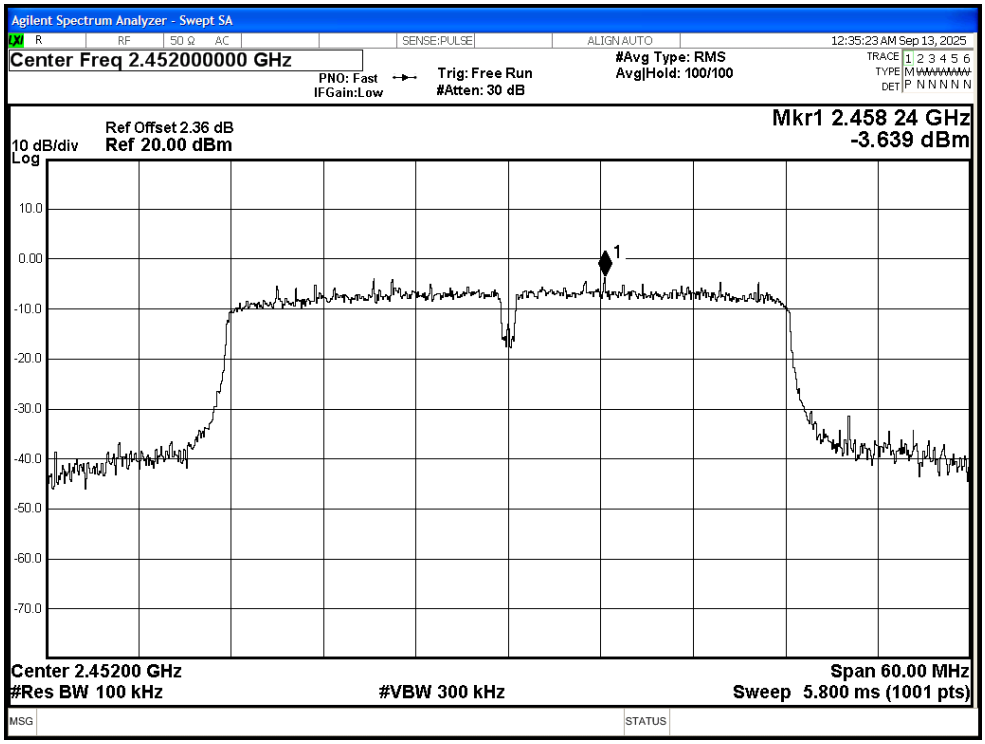
Band Edge NVNT n40 2422MHz Ant1 Ref



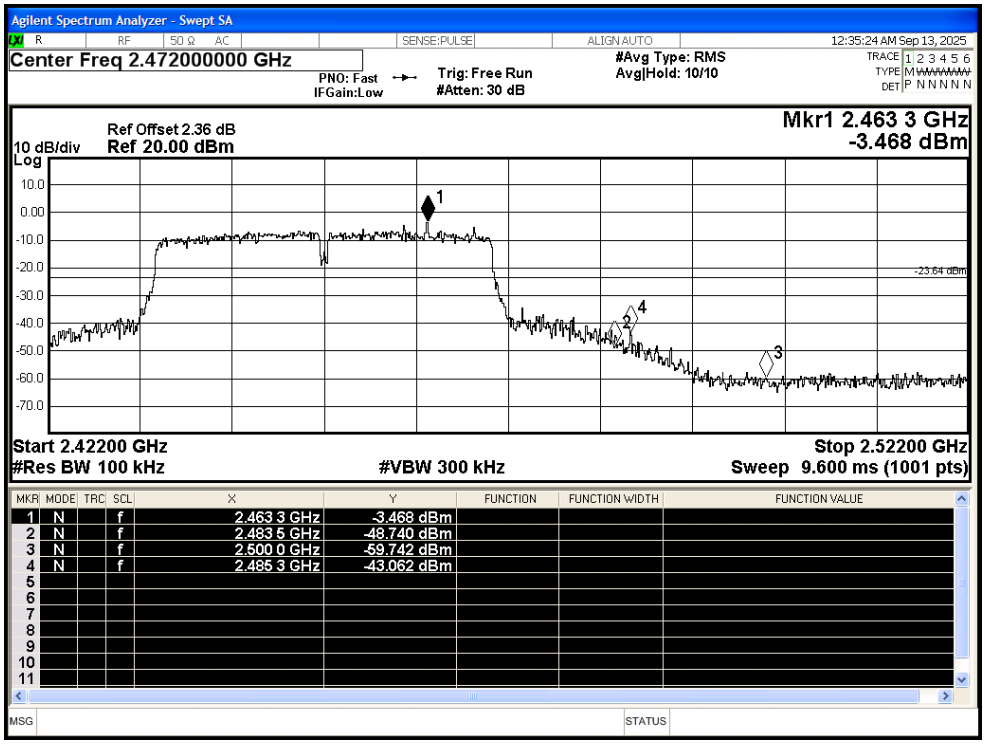
Band Edge NVNT n40 2422MHz Ant1 Emission



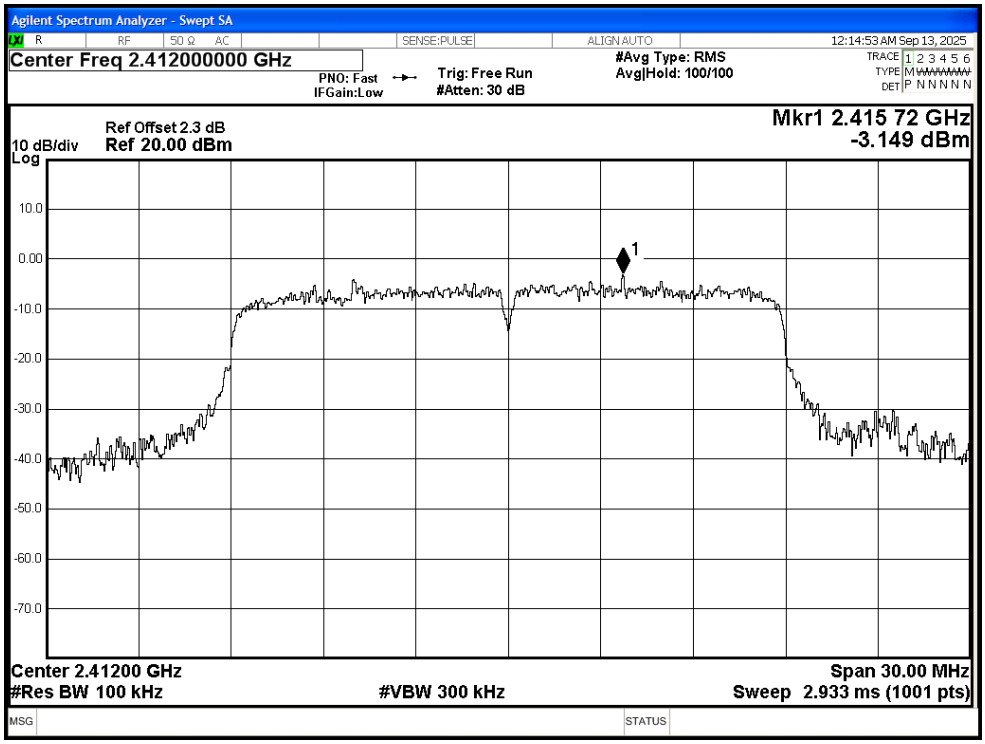
Band Edge NVNT n40 2452MHz Ant1 Ref



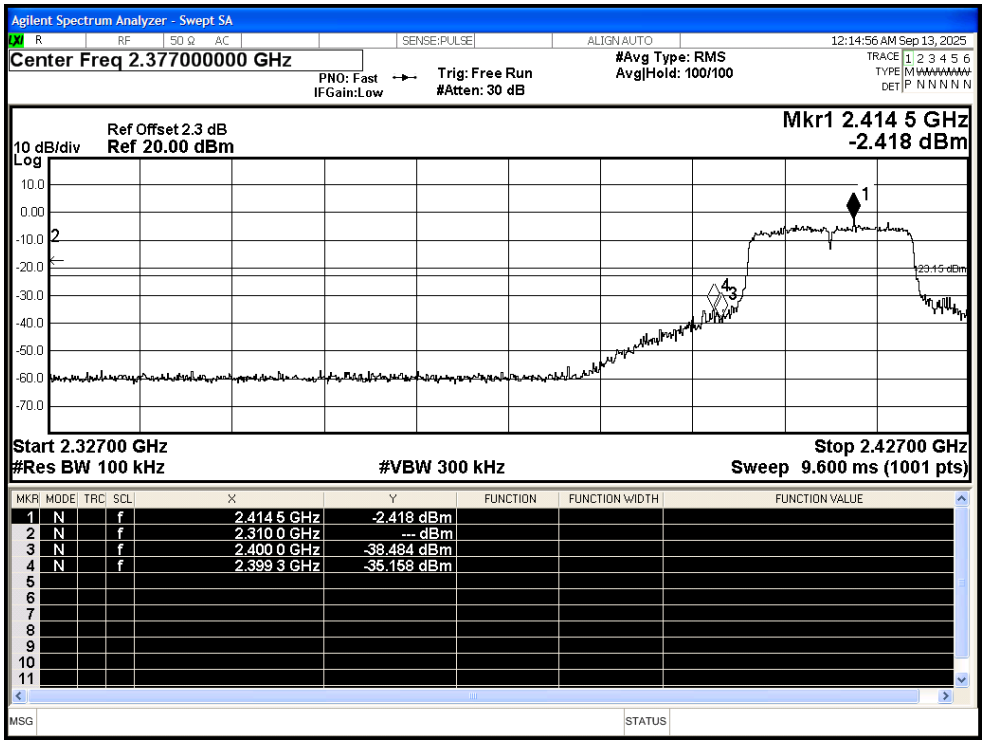
Band Edge NVNT n40 2452MHz Ant1 Emission



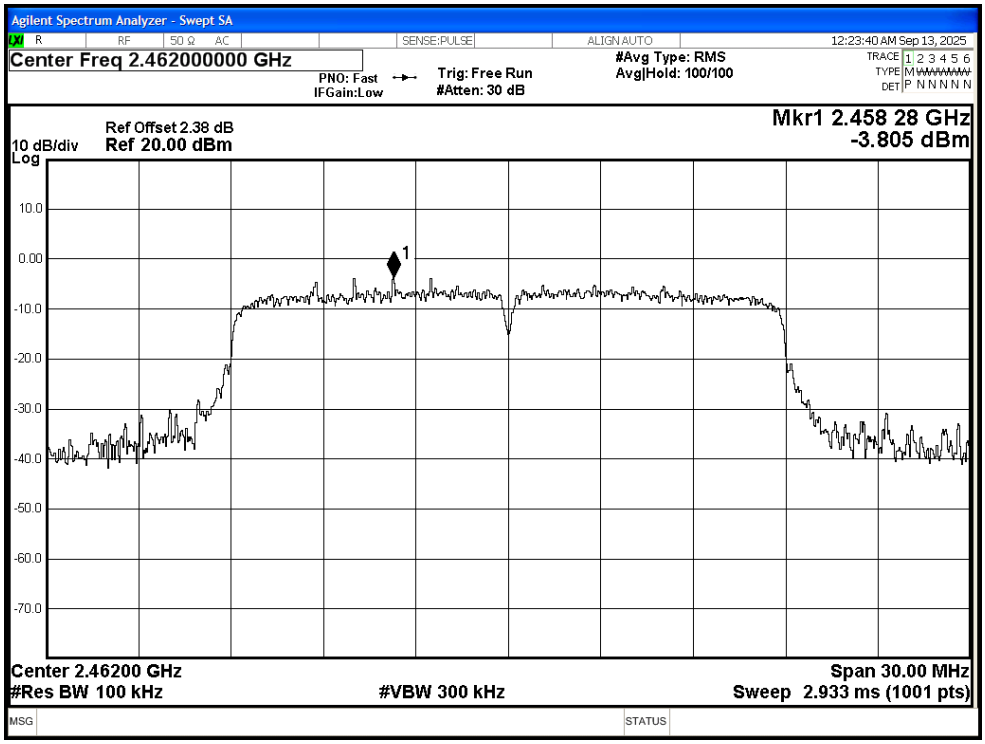
Band Edge NVNT ax20 2412MHz Ant1 Ref



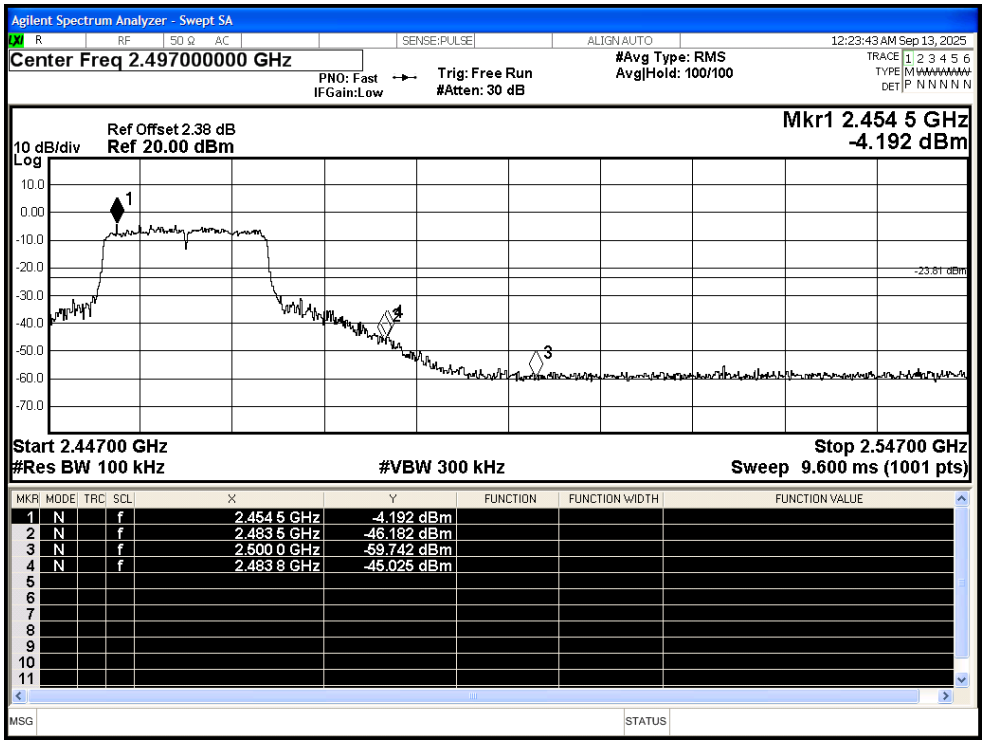
Band Edge NVNT ax20 2412MHz Ant1 Emission



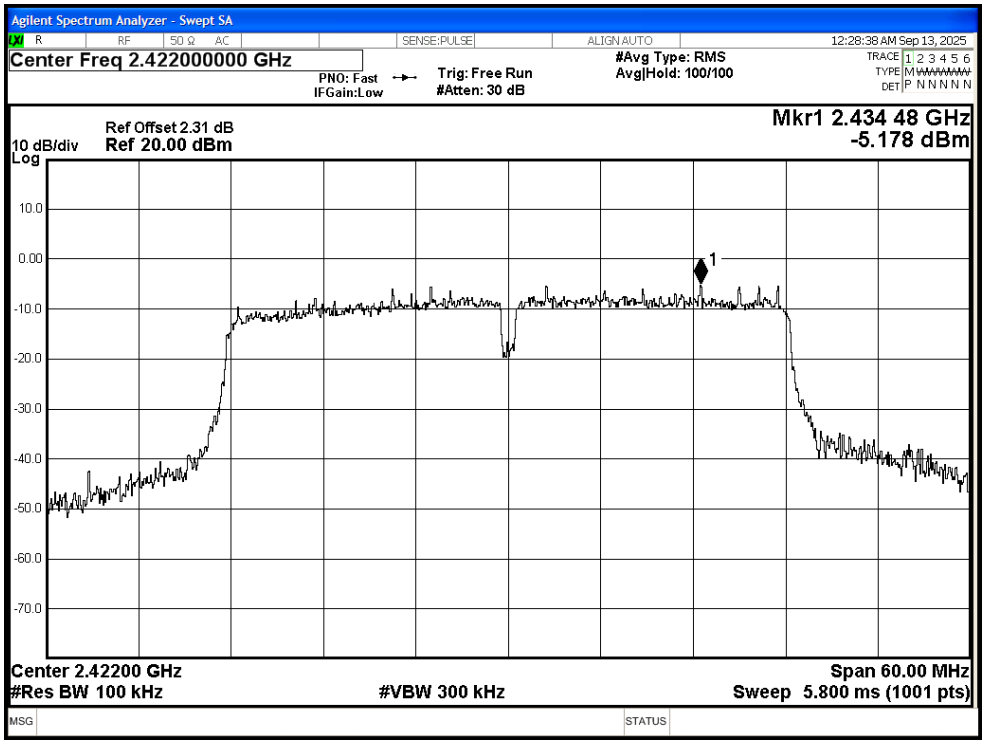
Band Edge NVNT ax20 2462MHz Ant1 Ref



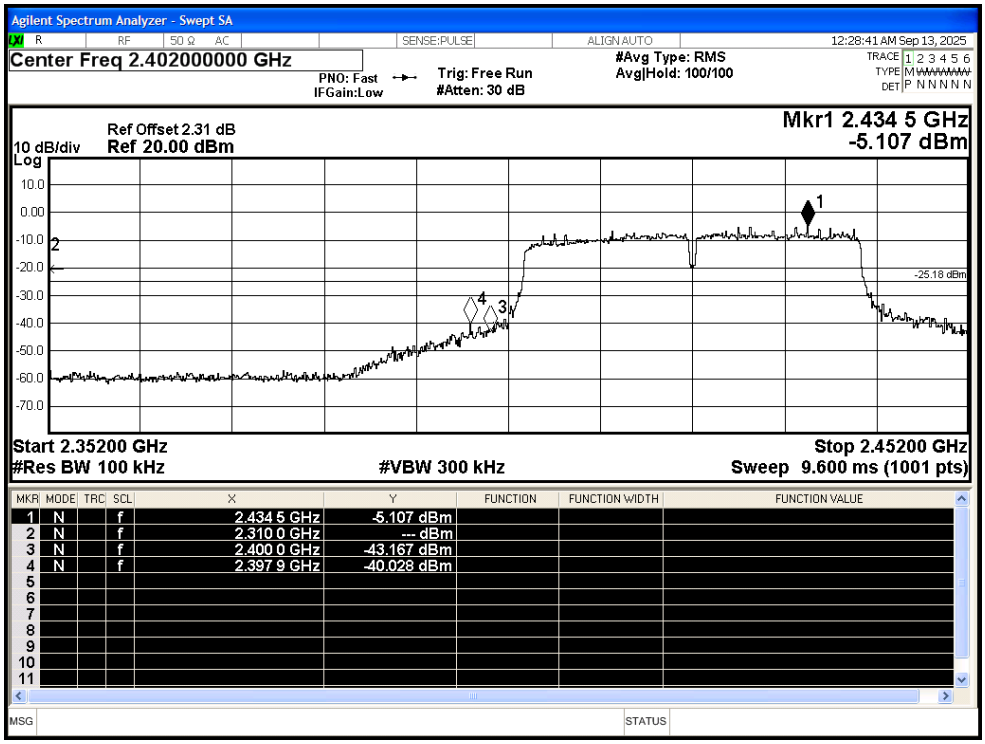
Band Edge NVNT ax20 2462MHz Ant1 Emission



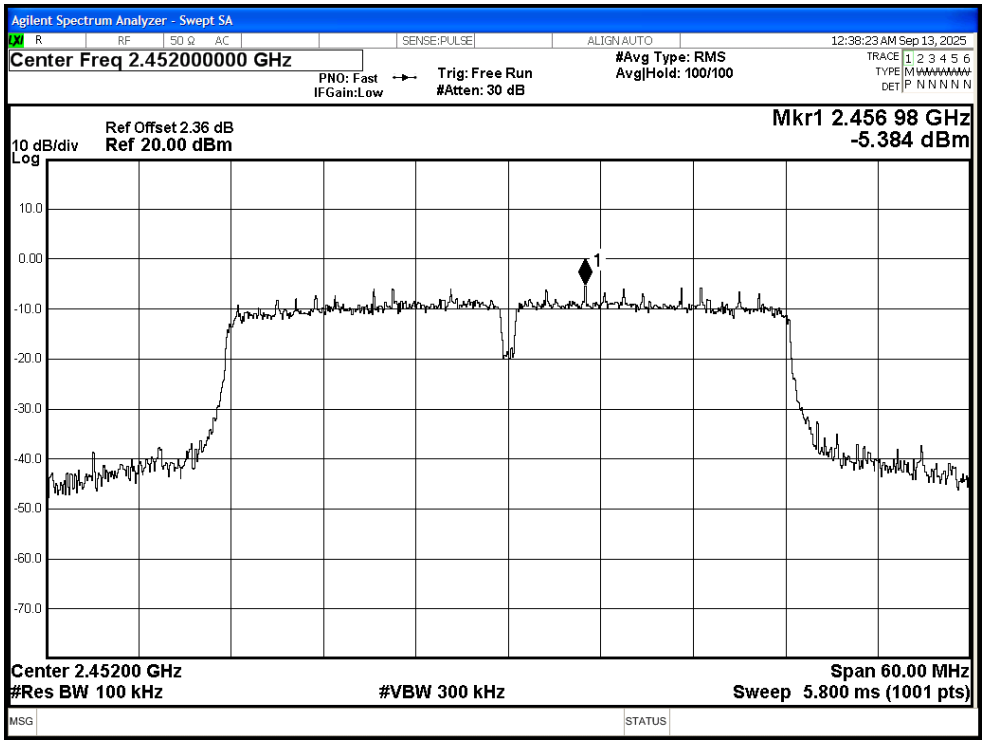
Band Edge NVNT ax40 2422MHz Ant1 Ref



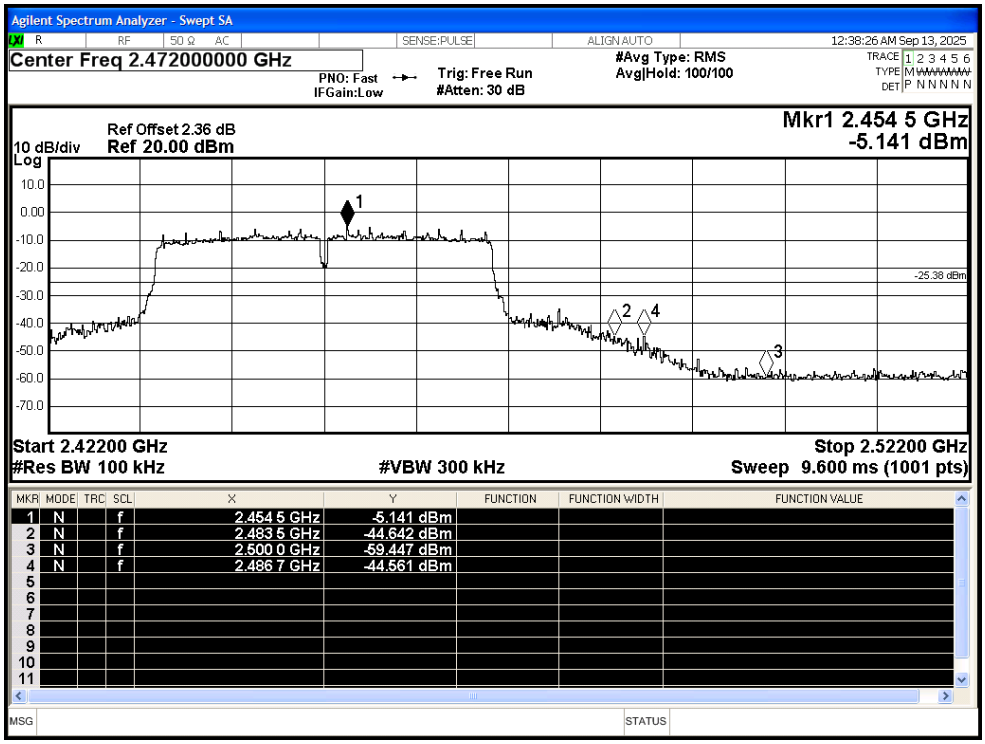
Band Edge NVNT ax40 2422MHz Ant1 Emission



Band Edge NVNT ax40 2452MHz Ant1 Ref



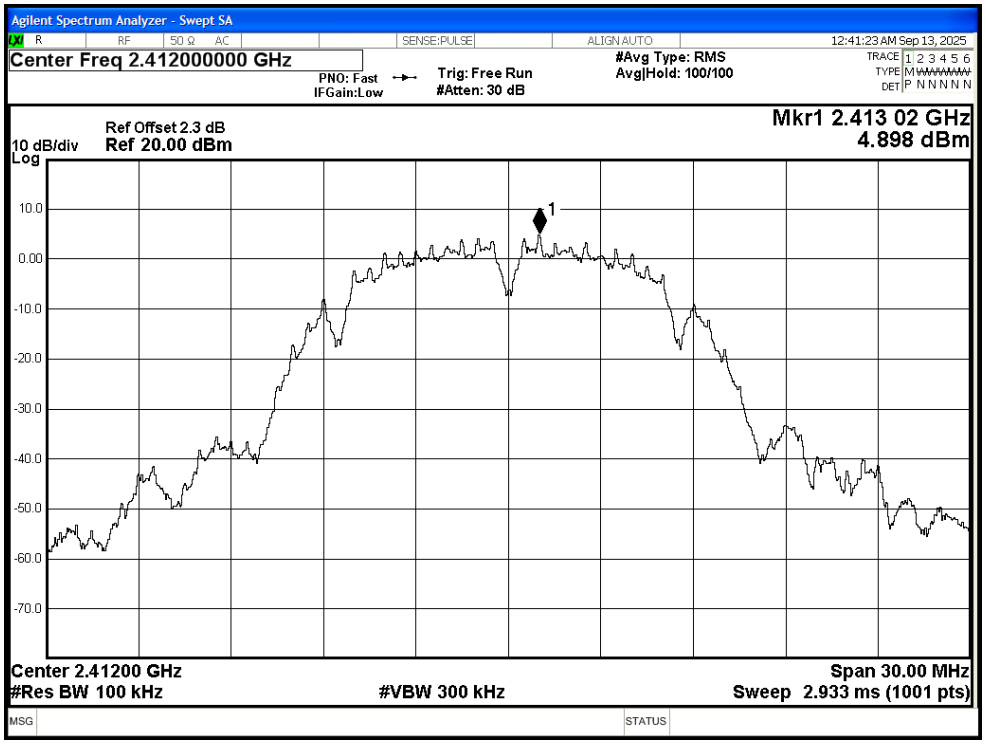
Band Edge NVNT ax40 2452MHz Ant1 Emission



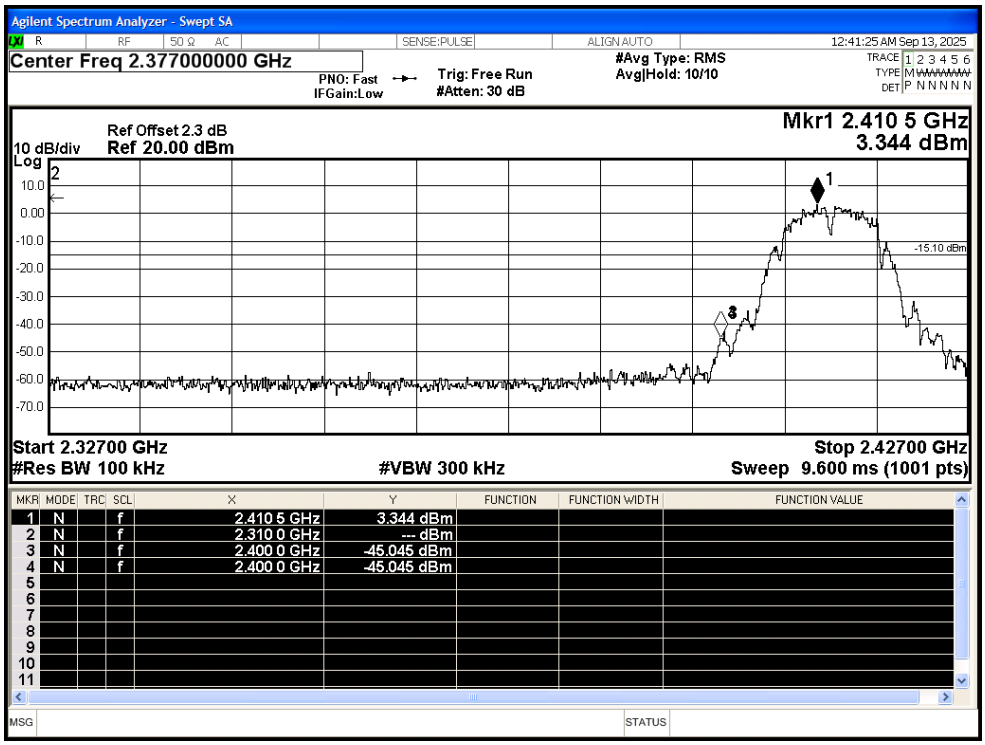
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant2	-49.94	-20	Pass
NVNT	b	2462	Ant2	-61.29	-20	Pass
NVNT	g	2412	Ant2	-35.5	-20	Pass
NVNT	g	2462	Ant2	-43.86	-20	Pass
NVNT	n20	2412	Ant2	-34.44	-20	Pass
NVNT	n20	2462	Ant2	-41.56	-20	Pass
NVNT	n40	2422	Ant2	-34.94	-20	Pass
NVNT	n40	2452	Ant2	-40.77	-20	Pass
NVNT	ax20	2412	Ant2	-31.22	-20	Pass
NVNT	ax20	2462	Ant2	-38.34	-20	Pass
NVNT	ax40	2422	Ant2	-34.74	-20	Pass
NVNT	ax40	2452	Ant2	-38.25	-20	Pass

Test Graphs

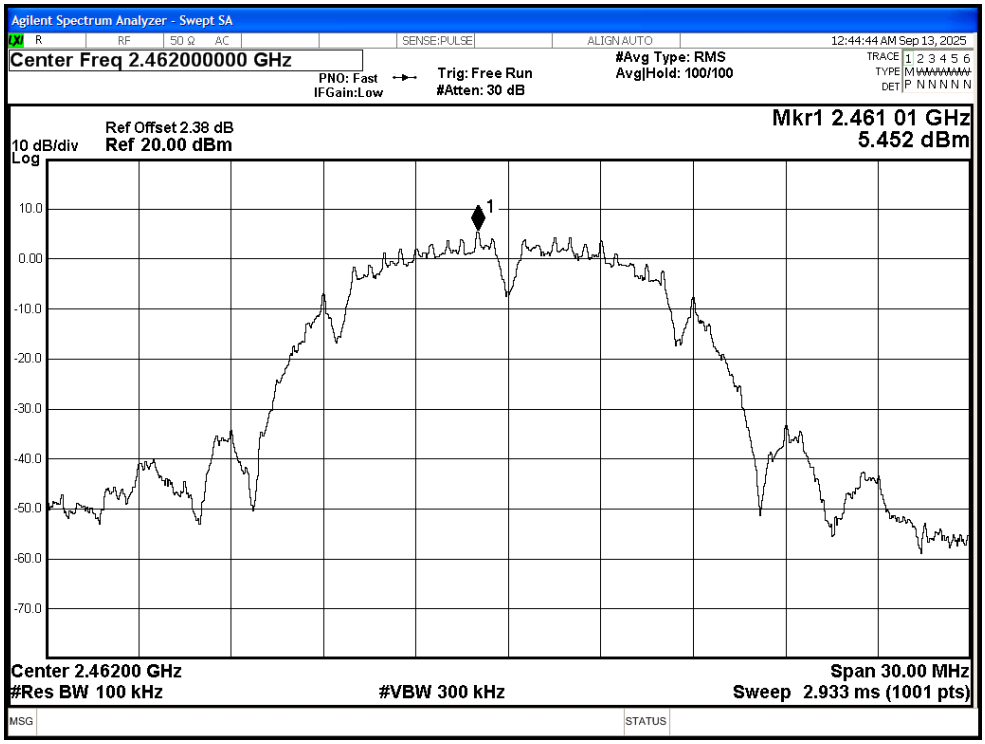
Band Edge NVNT b 2412MHz Ant2 Ref



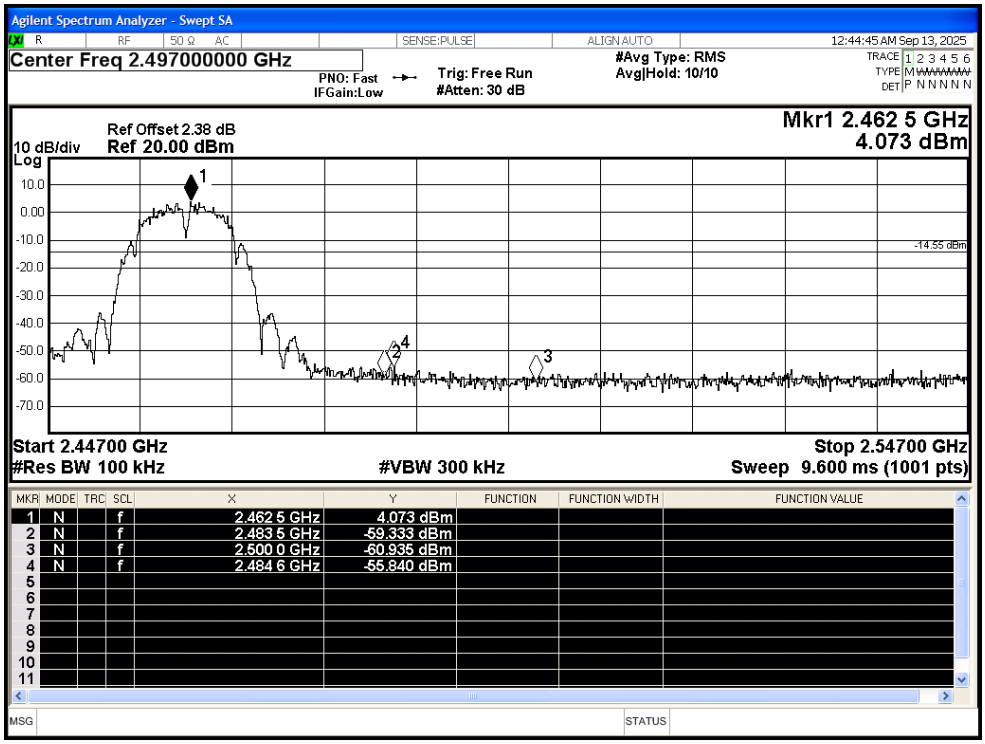
Band Edge NVNT b 2412MHz Ant2 Emission



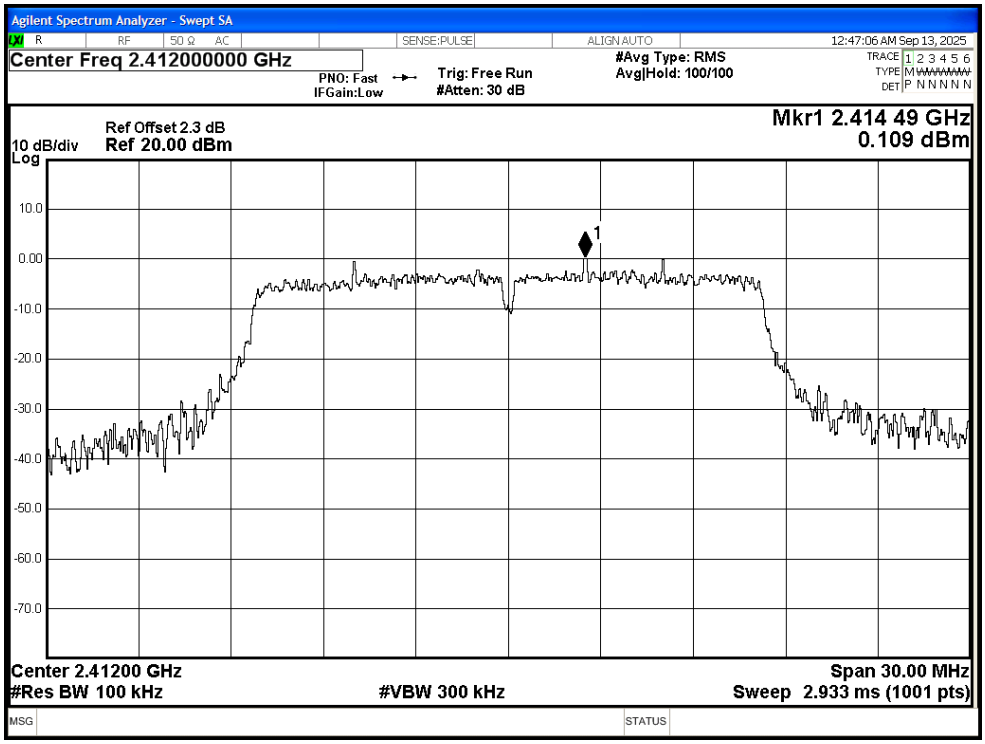
Band Edge NVNT b 2462MHz Ant2 Ref



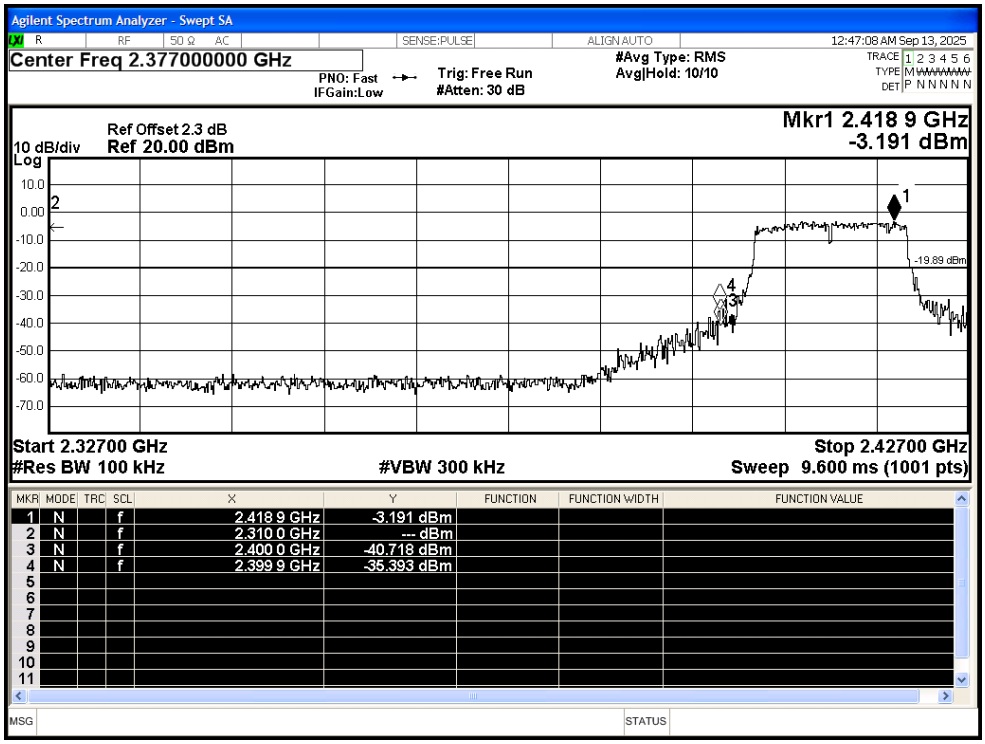
Band Edge NVNT b 2462MHz Ant2 Emission



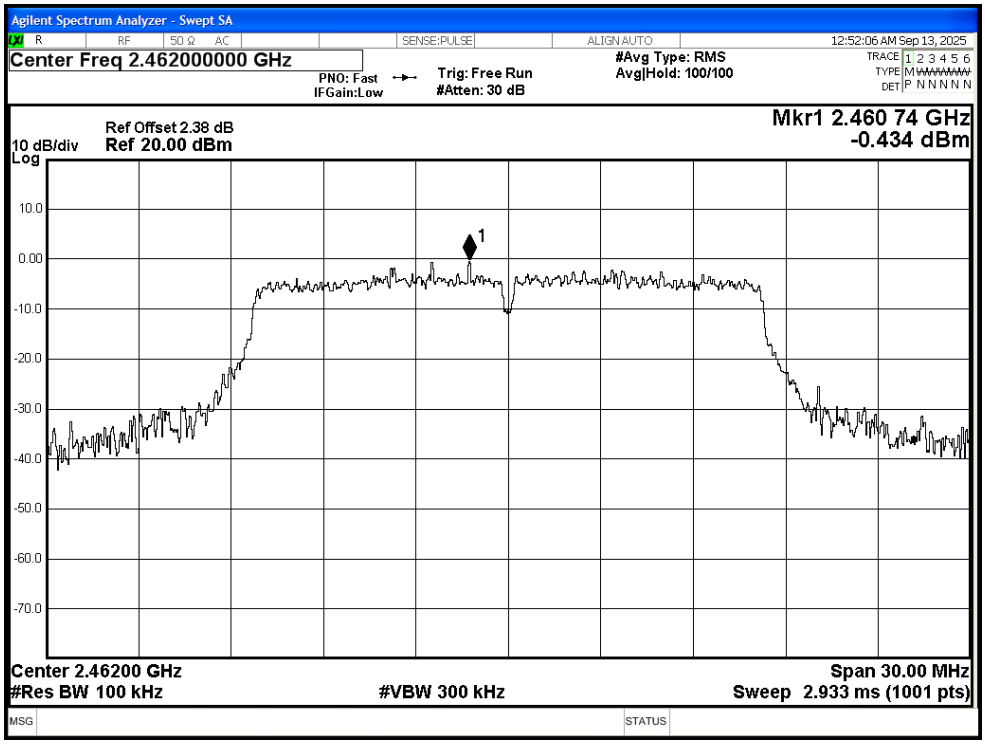
Band Edge NVNT g 2412MHz Ant2 Ref



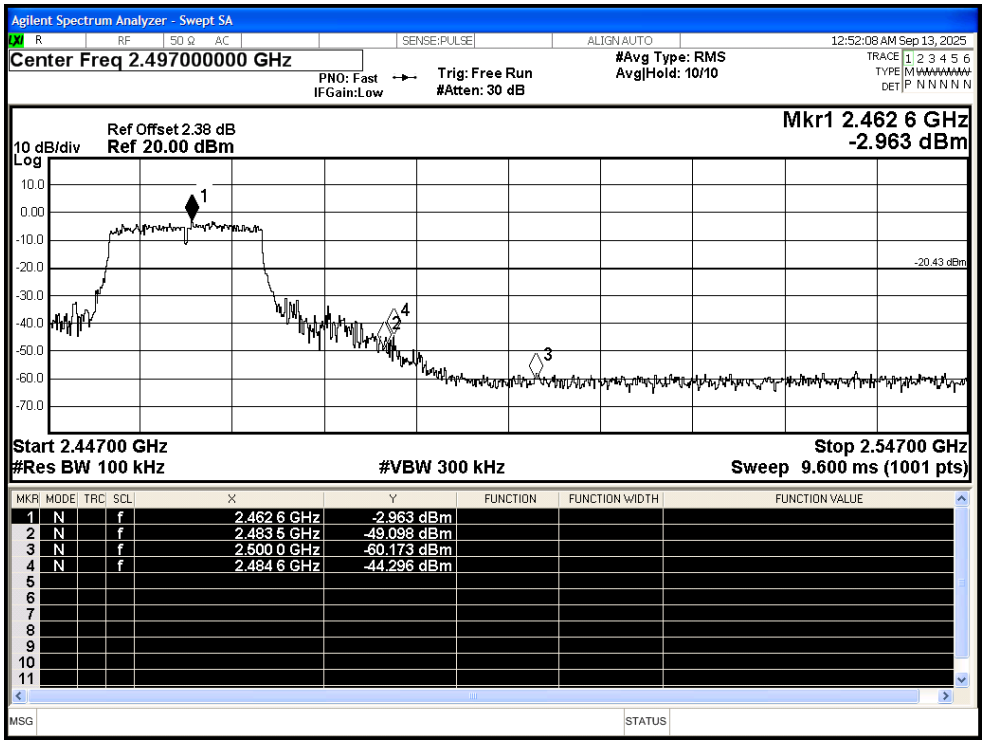
Band Edge NVNT g 2412MHz Ant2 Emission



Band Edge NVNT g 2462MHz Ant2 Ref

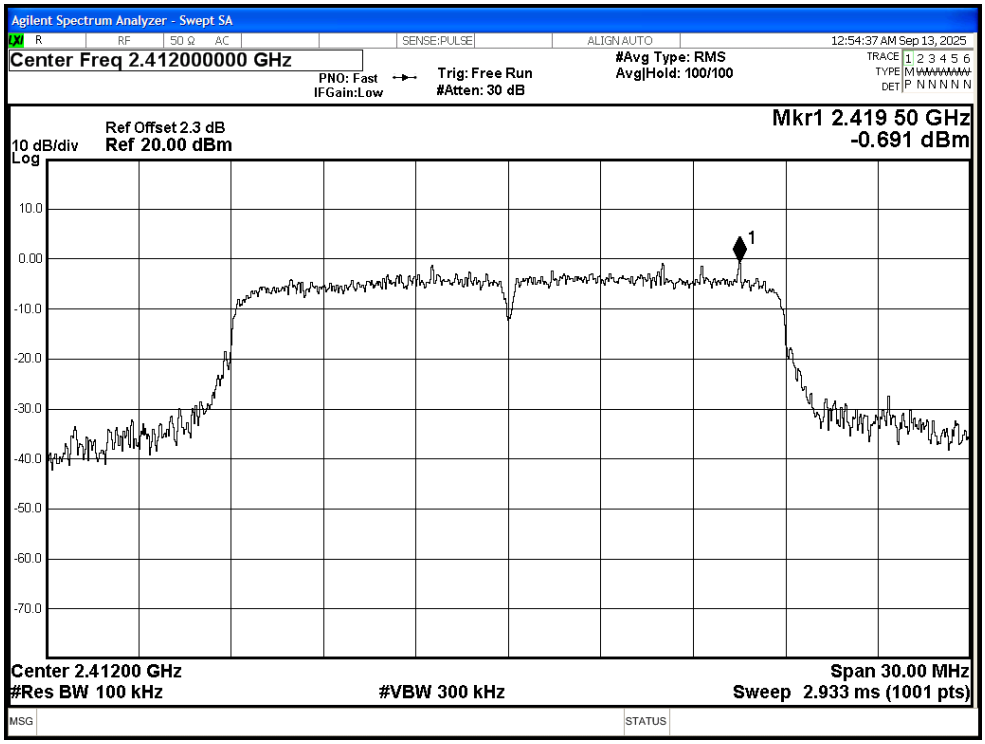


Band Edge NVNT g 2462MHz Ant2 Emission

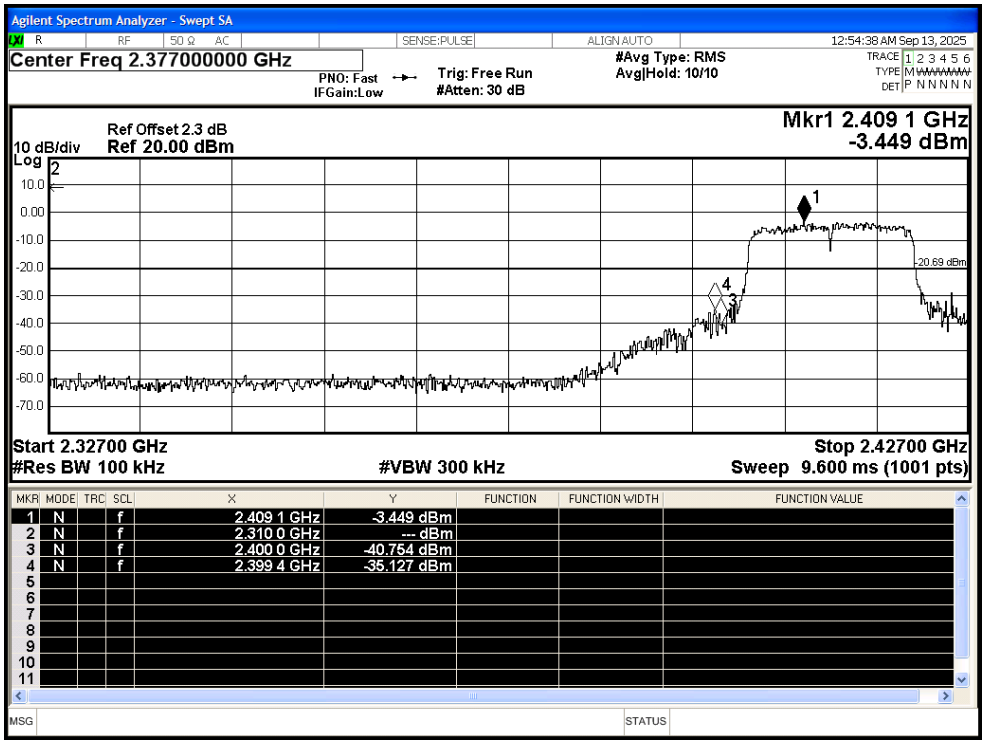


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.462 6 GHz	-2.963 dBm			
2	N		f	2.483 5 GHz	-49.098 dBm			
3	N		f	2.500 0 GHz	-60.173 dBm			
4	N		f	2.484 6 GHz	-44.296 dBm			
5								
6								
7								
8								
9								
10								
11								

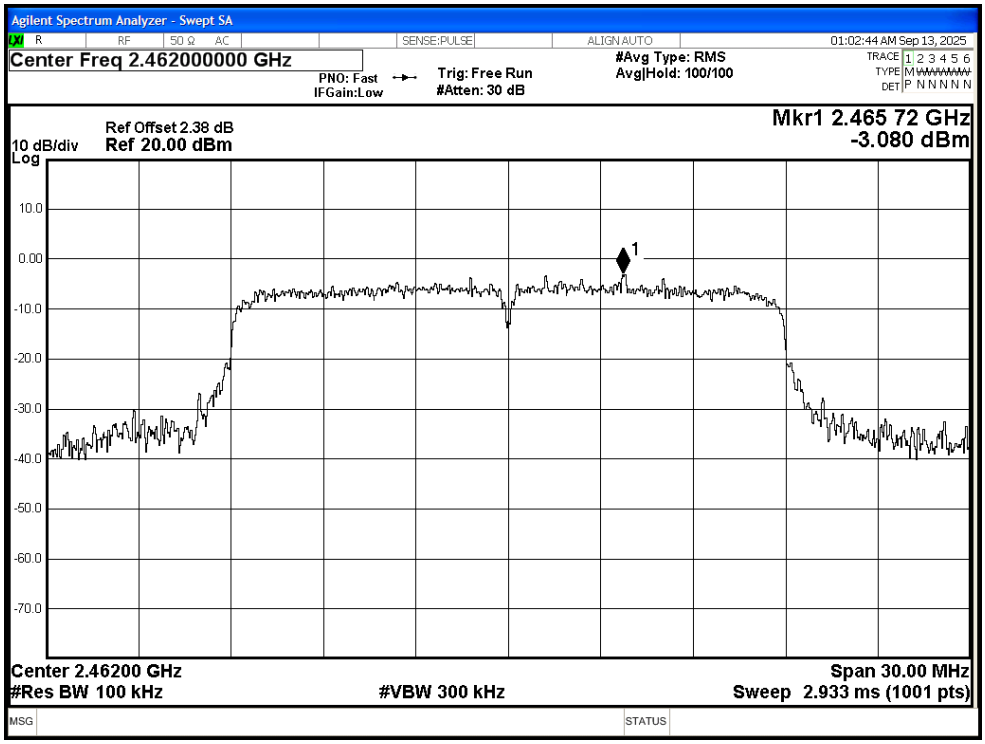
Band Edge NVNT n20 2412MHz Ant2 Ref



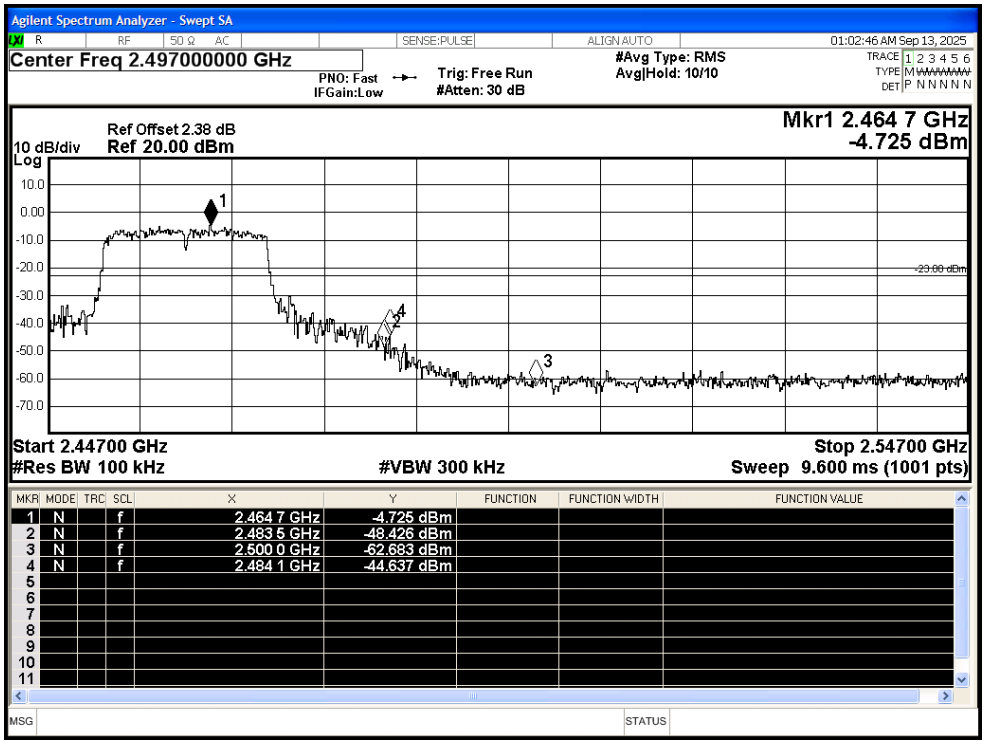
Band Edge NVNT n20 2412MHz Ant2 Emission



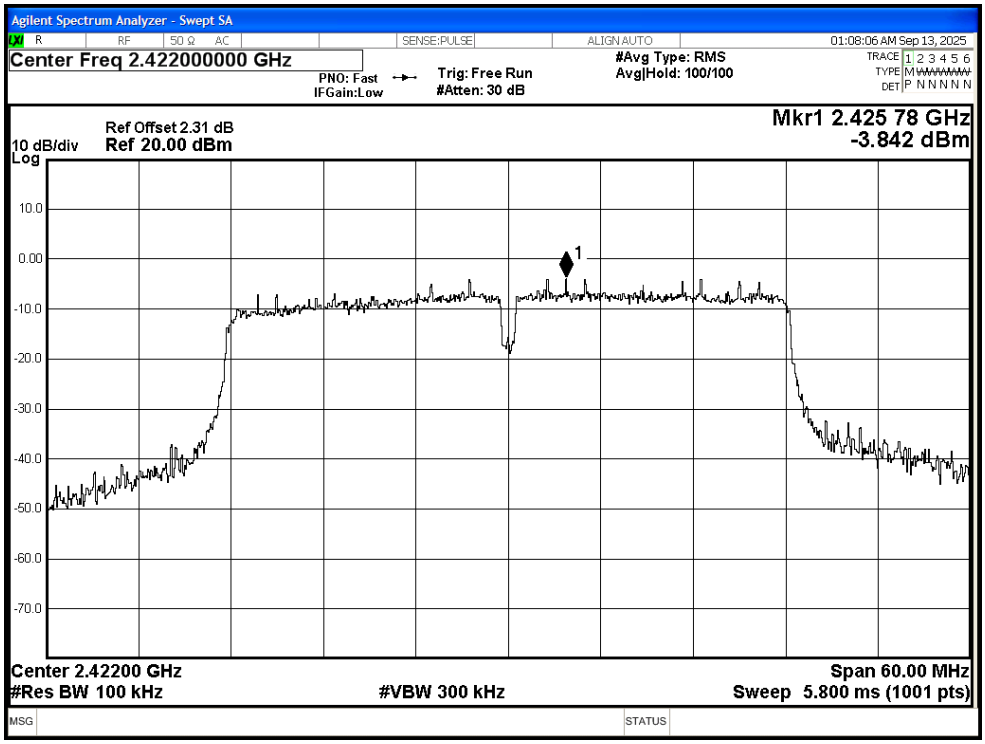
Band Edge NVNT n20 2462MHz Ant2 Ref



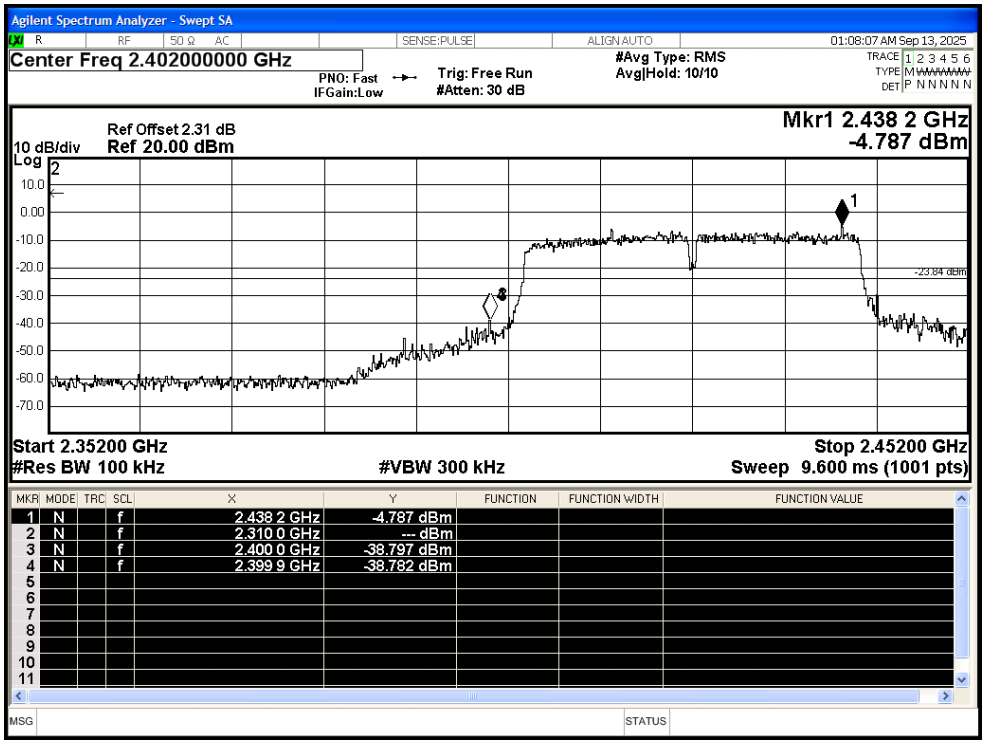
Band Edge NVNT n20 2462MHz Ant2 Emission



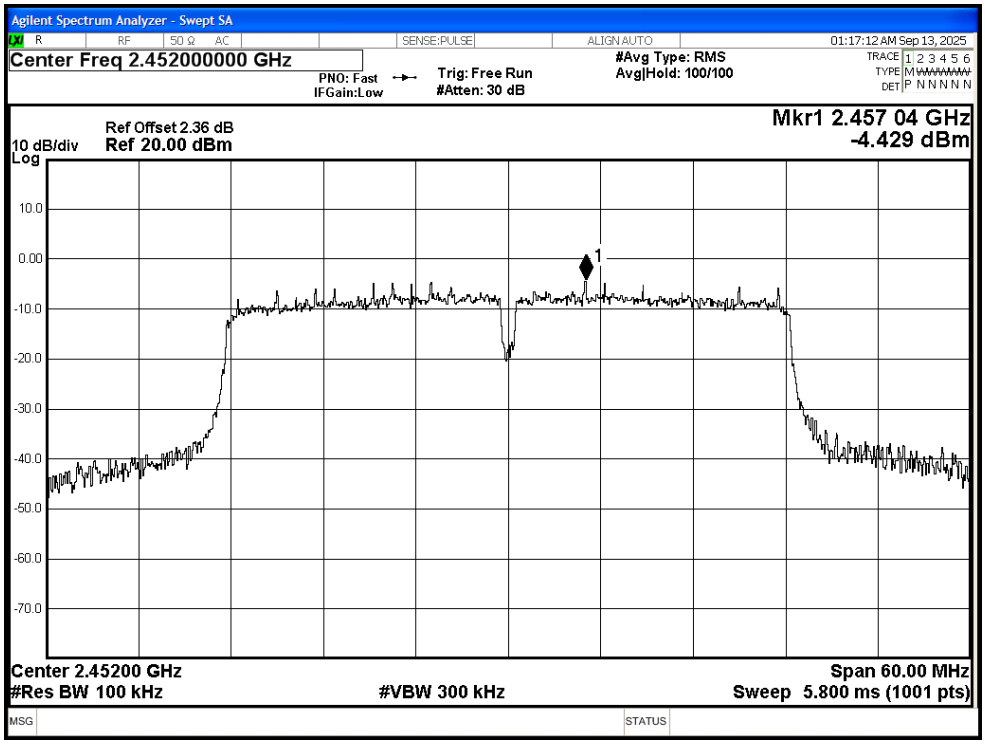
Band Edge NVNT n40 2422MHz Ant2 Ref



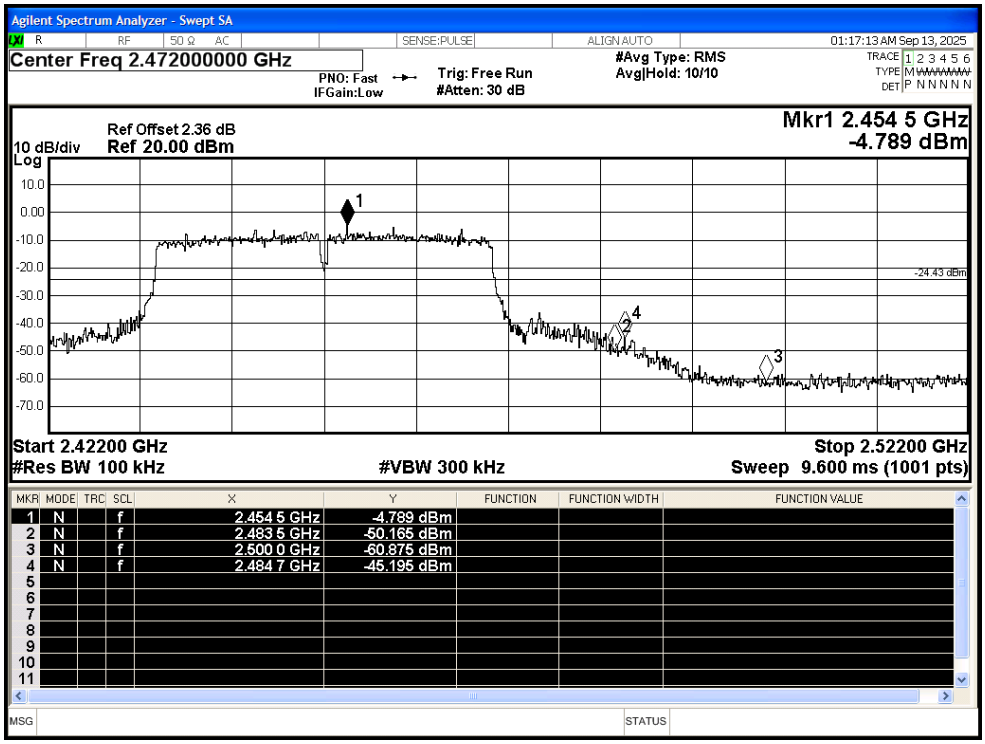
Band Edge NVNT n40 2422MHz Ant2 Emission



Band Edge NVNT n40 2452MHz Ant2 Ref



Band Edge NVNT n40 2452MHz Ant2 Emission



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
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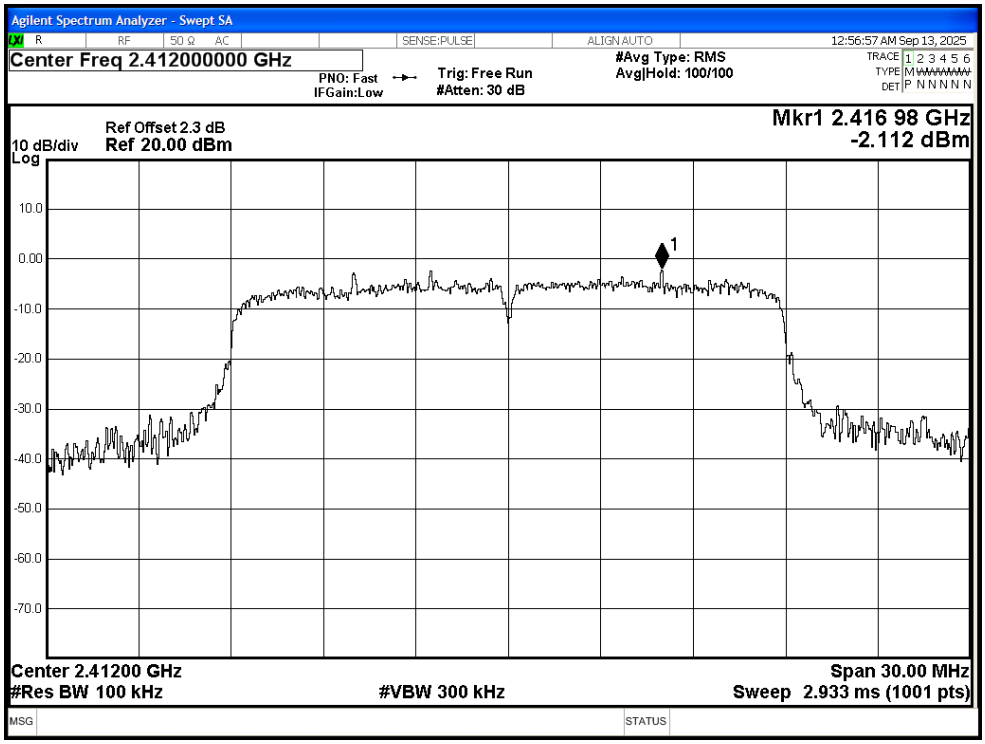
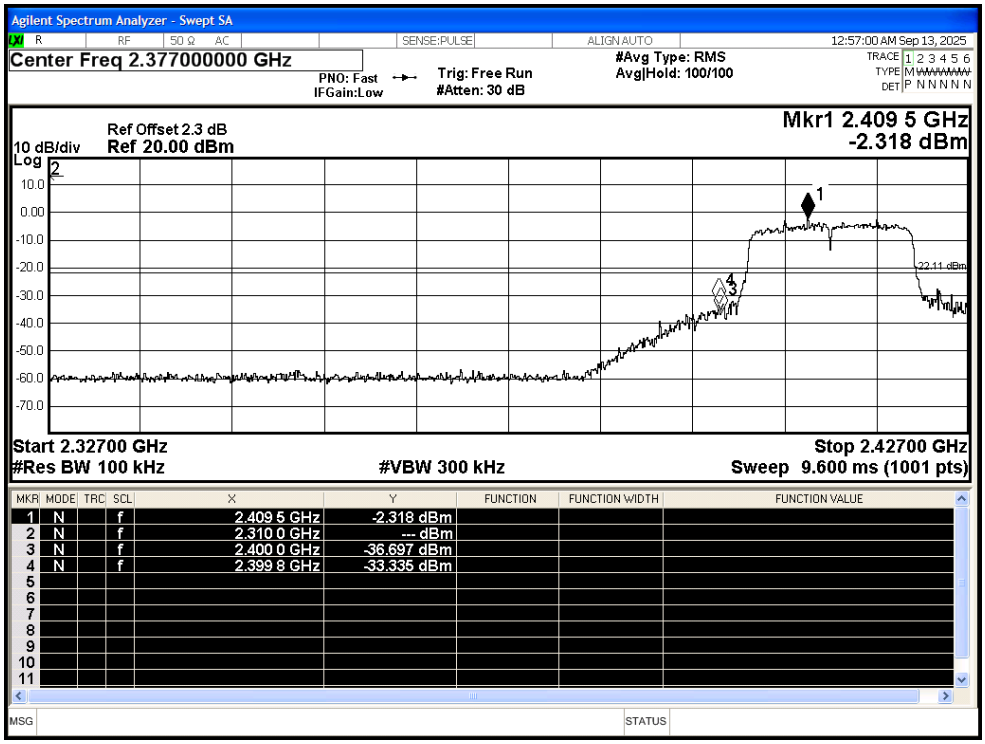
3	N		f	2.500 0 GHz	-60.875 dBm			
4	N		f	2.484 7 GHz	-45.195 dBm			
5								
6								
7								
8								
9								
10								
11								

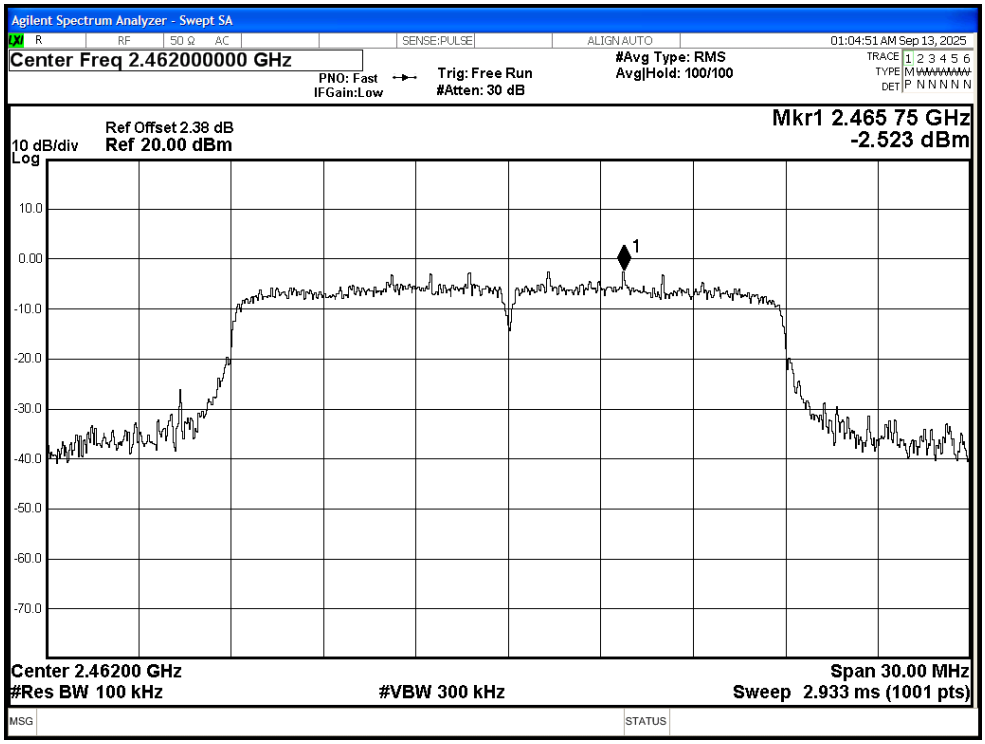
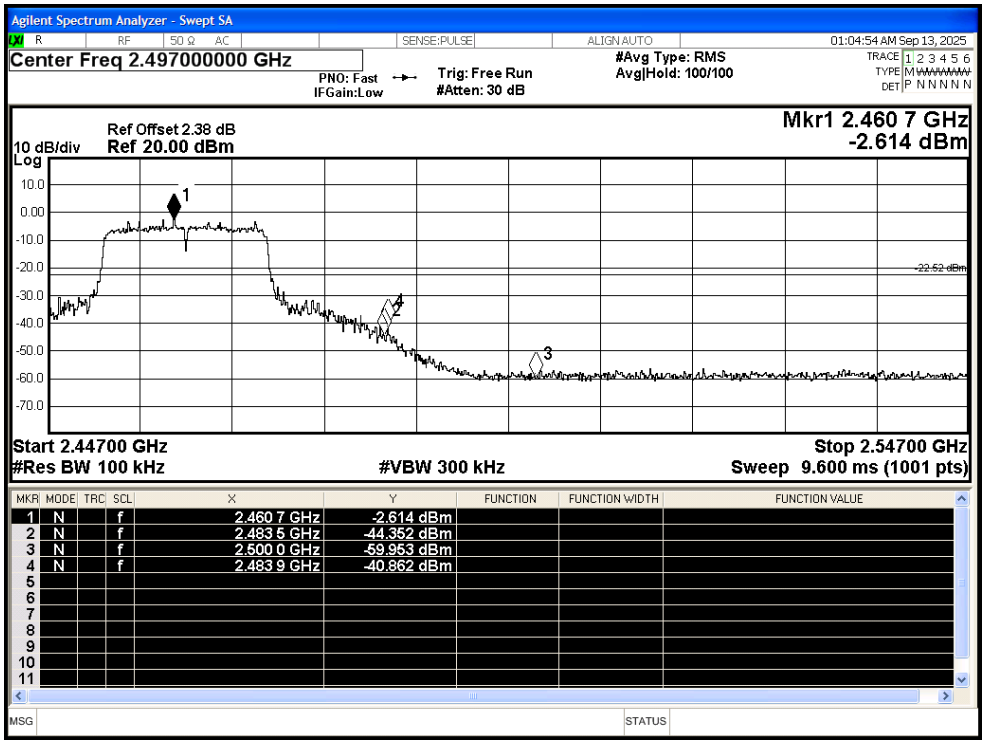
Band Edge NVNT ax20 2412MHz Ant2 Ref



Band Edge NVNT ax20 2412MHz Ant2 Emission



Band Edge NVNT ax20 2462MHz Ant2 Ref



Band Edge NVNT ax20 2462MHz Ant2 Emission