



Appendix C

RF Test Data for 2.4GWIFI(Conducted Measurement)

Product Name: Smart Phone

Test Model: HPPL67A

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Can Kun
Supervised by:	Nick Peng





C.1 -6dB Bandwidth

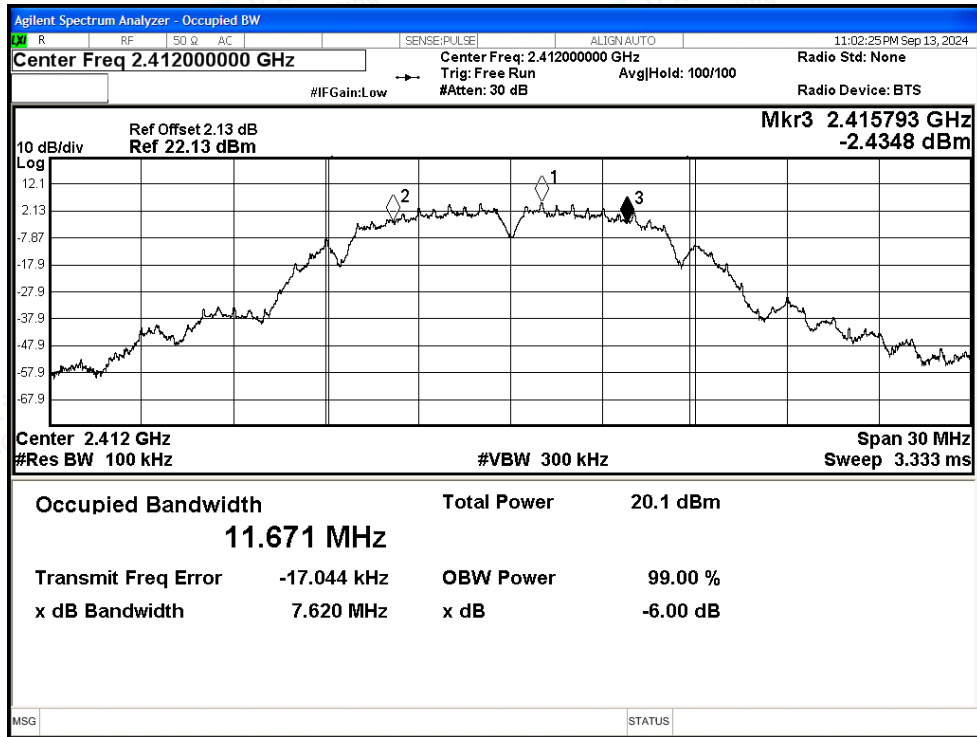
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant	7.62	≥ 0.5	Pass
NVNT	b	2437	Ant	8.592	≥ 0.5	Pass
NVNT	b	2462	Ant	7.614	≥ 0.5	Pass
NVNT	g	2412	Ant	15.904	≥ 0.5	Pass
NVNT	g	2437	Ant	16.298	≥ 0.5	Pass
NVNT	g	2462	Ant	16.305	≥ 0.5	Pass
NVNT	n20	2412	Ant	17.007	≥ 0.5	Pass
NVNT	n20	2437	Ant	17.278	≥ 0.5	Pass
NVNT	n20	2462	Ant	17.355	≥ 0.5	Pass
NVNT	n40	2422	Ant	35.601	≥ 0.5	Pass
NVNT	n40	2437	Ant	35.36	≥ 0.5	Pass
NVNT	n40	2452	Ant	34.275	≥ 0.5	Pass



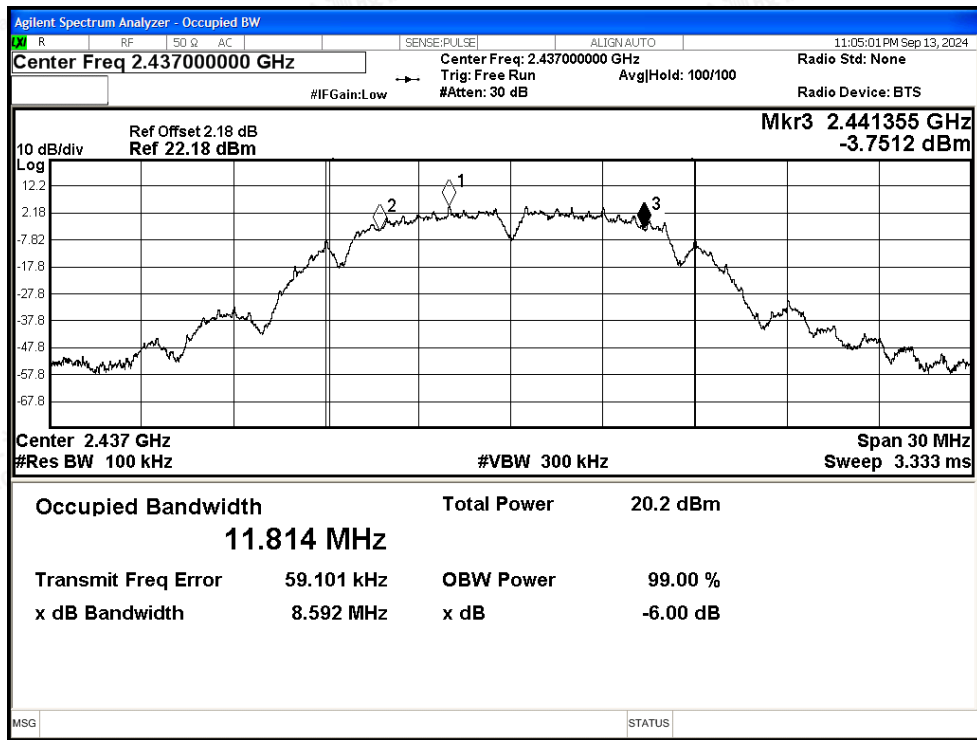


Test Graphs

-6dB Bandwidth NVNT b 2412MHz Ant



-6dB Bandwidth NVNT b 2437MHz Ant

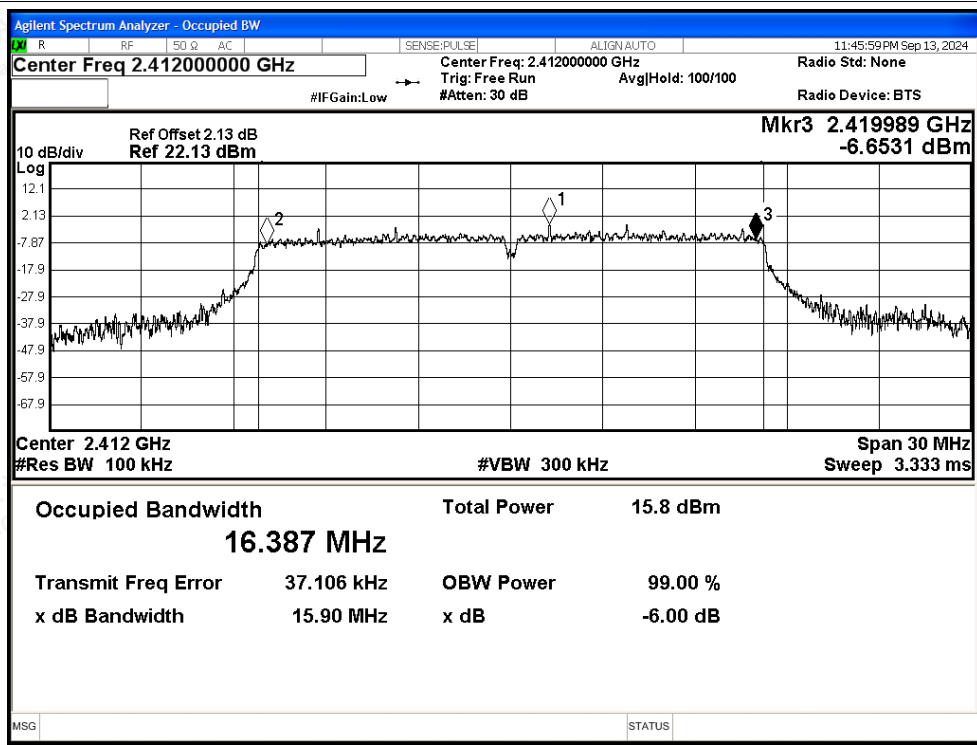




-6dB Bandwidth NVNT b 2462MHz Ant

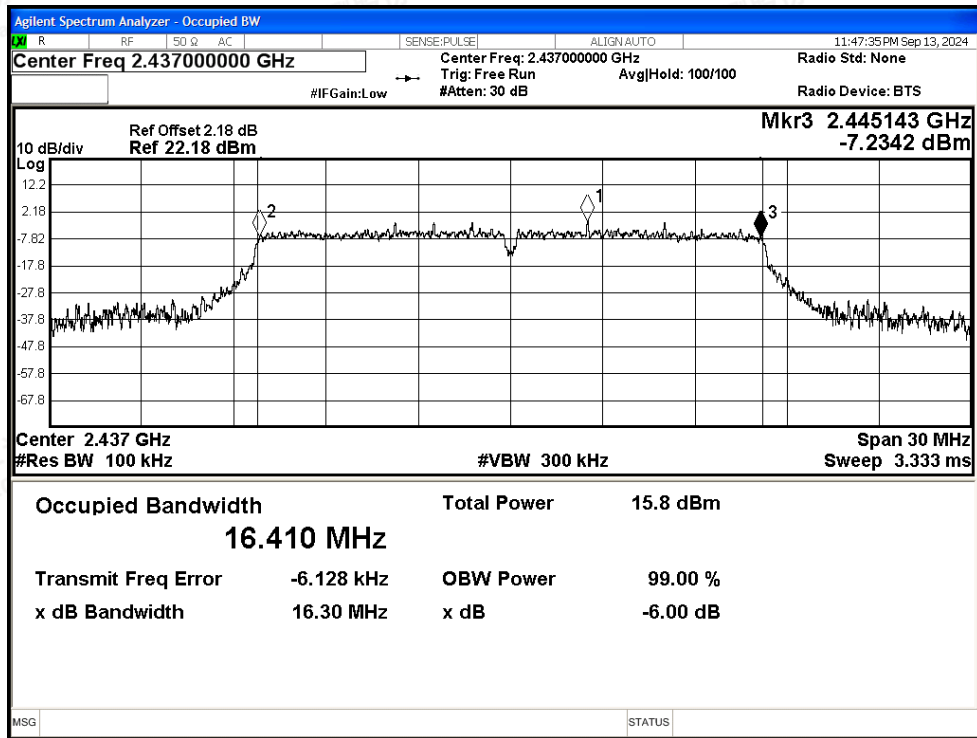


-6dB Bandwidth NVNT g 2412MHz Ant

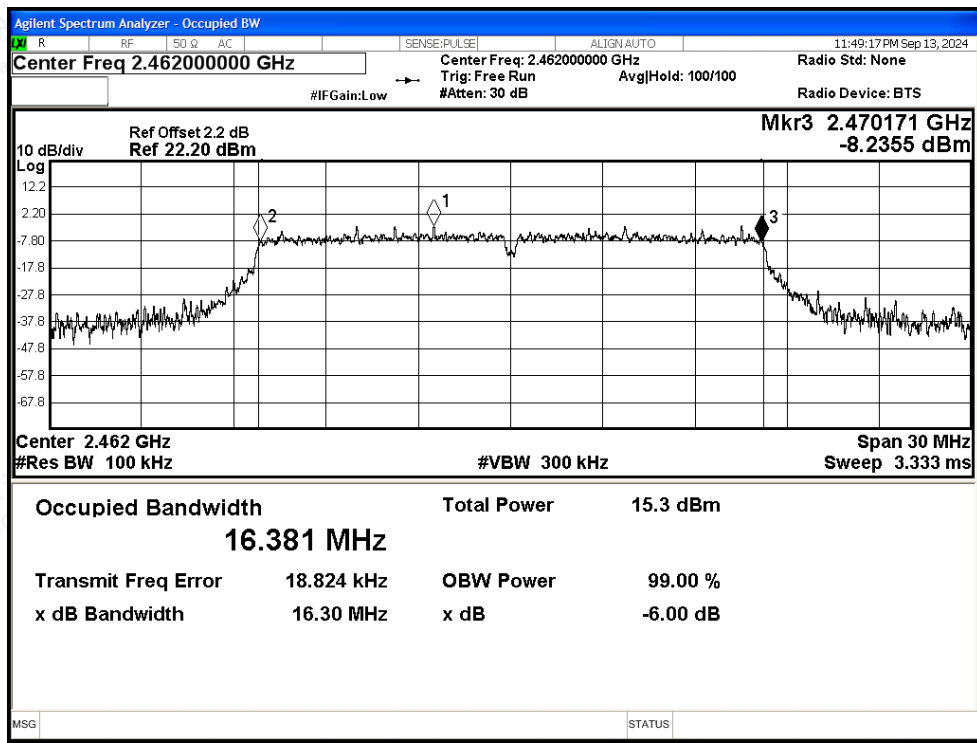




-6dB Bandwidth NVNT g 2437MHz Ant

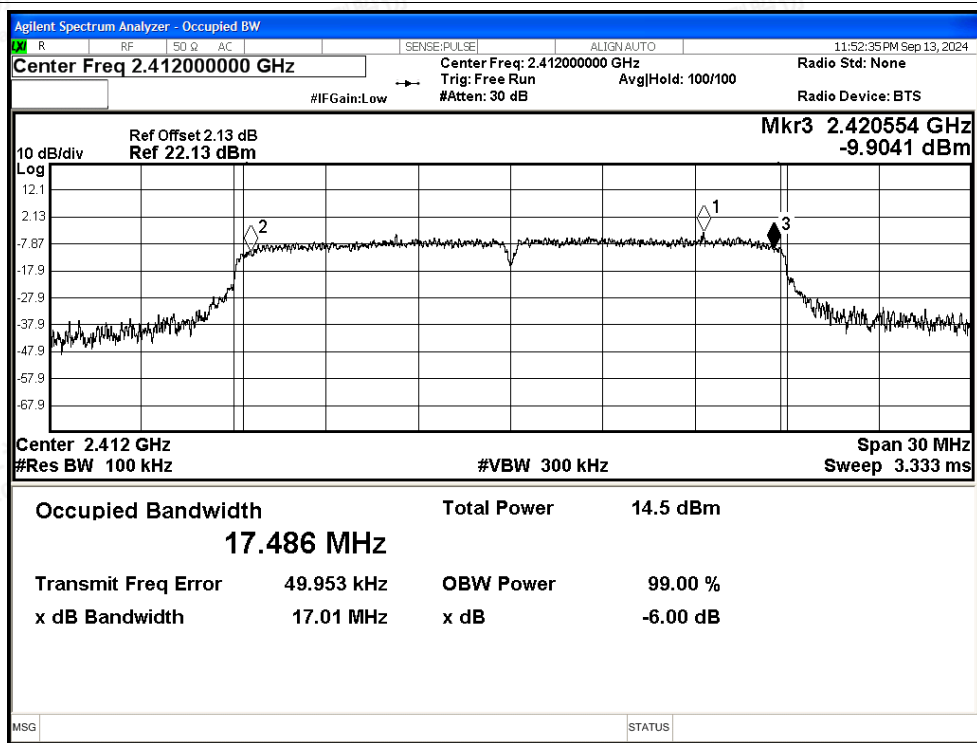


-6dB Bandwidth NVNT g 2462MHz Ant

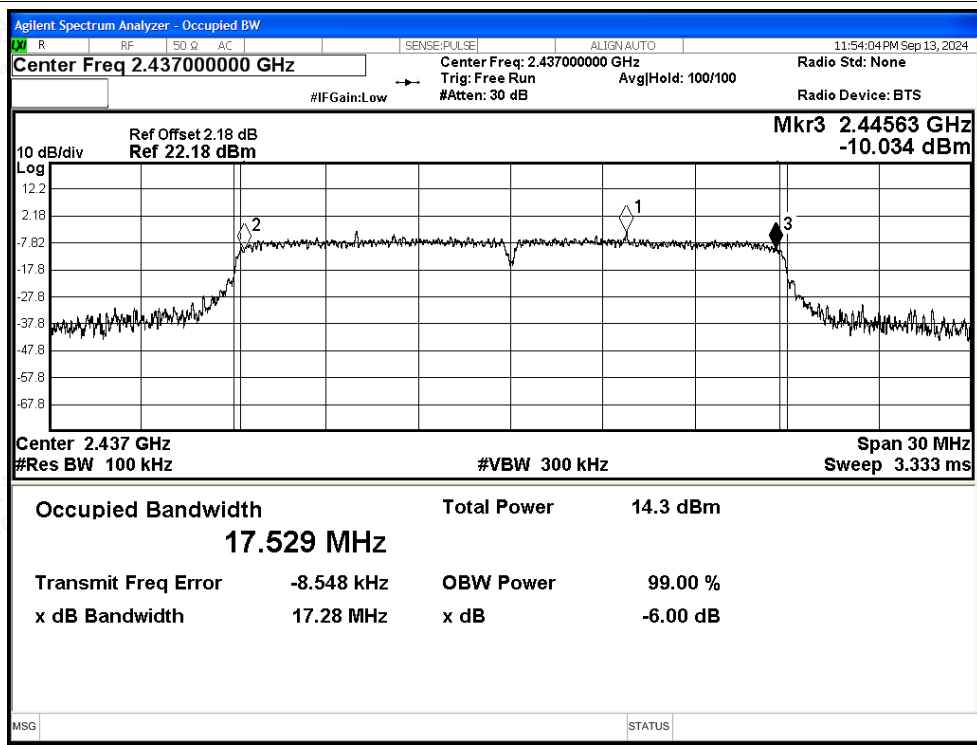




-6dB Bandwidth NVNT n20 2412MHz Ant

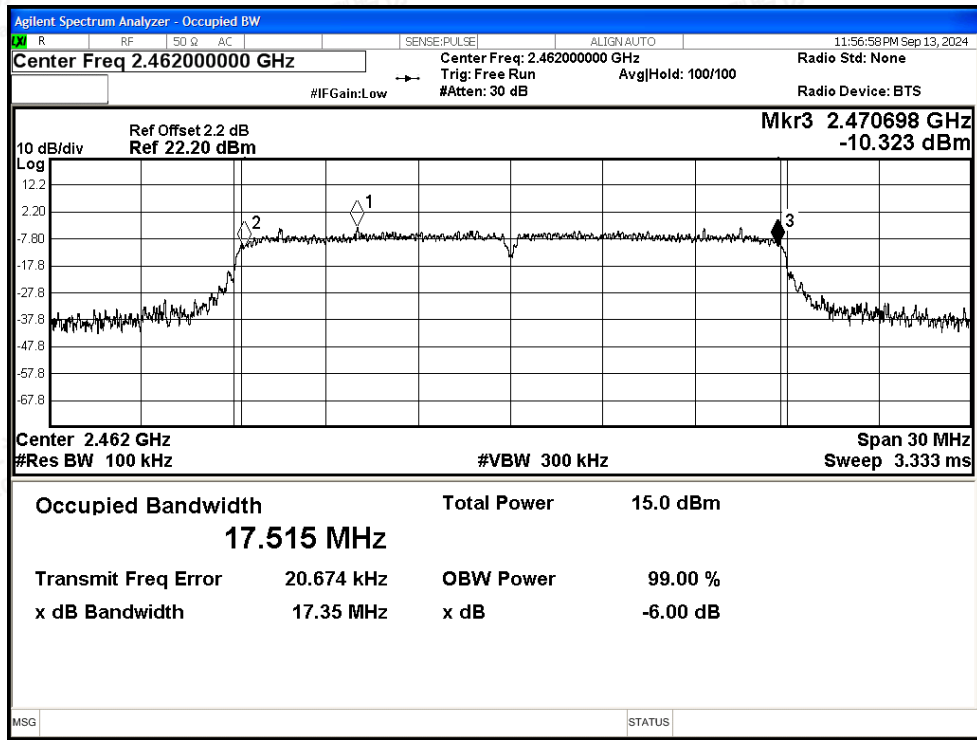


-6dB Bandwidth NVNT n20 2437MHz Ant

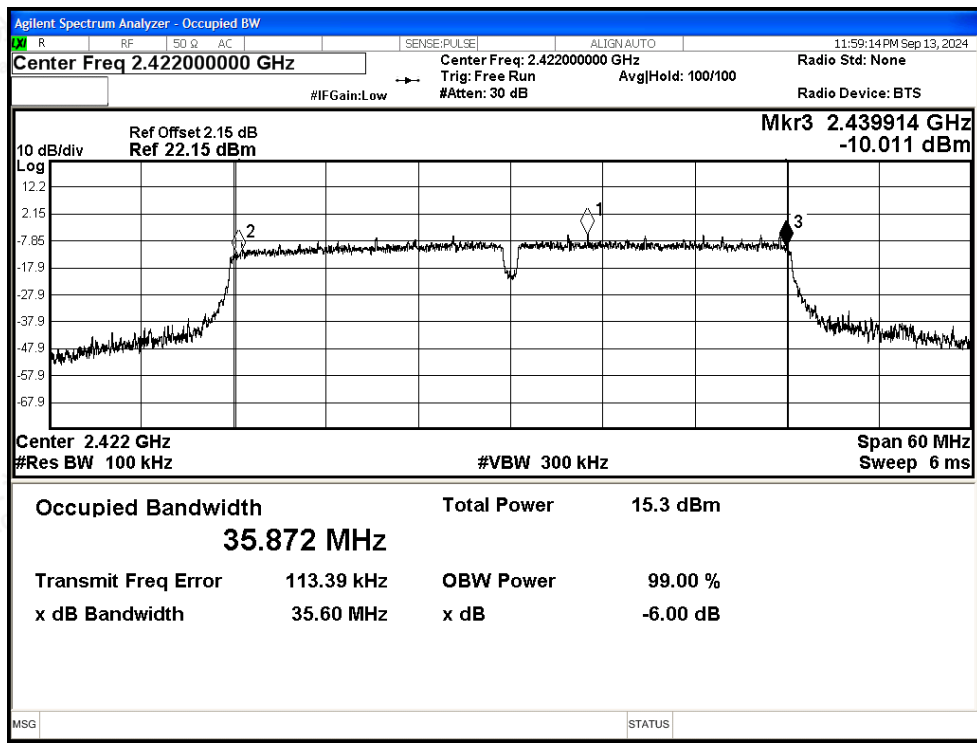




-6dB Bandwidth NVNT n20 2462MHz Ant

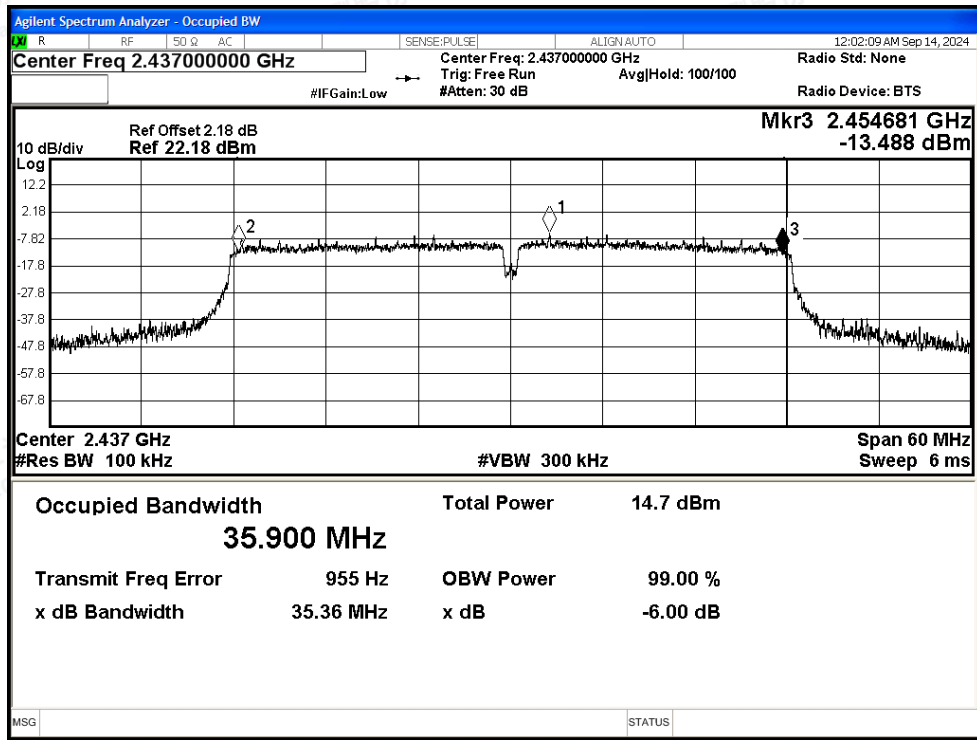


-6dB Bandwidth NVNT n40 2422MHz Ant

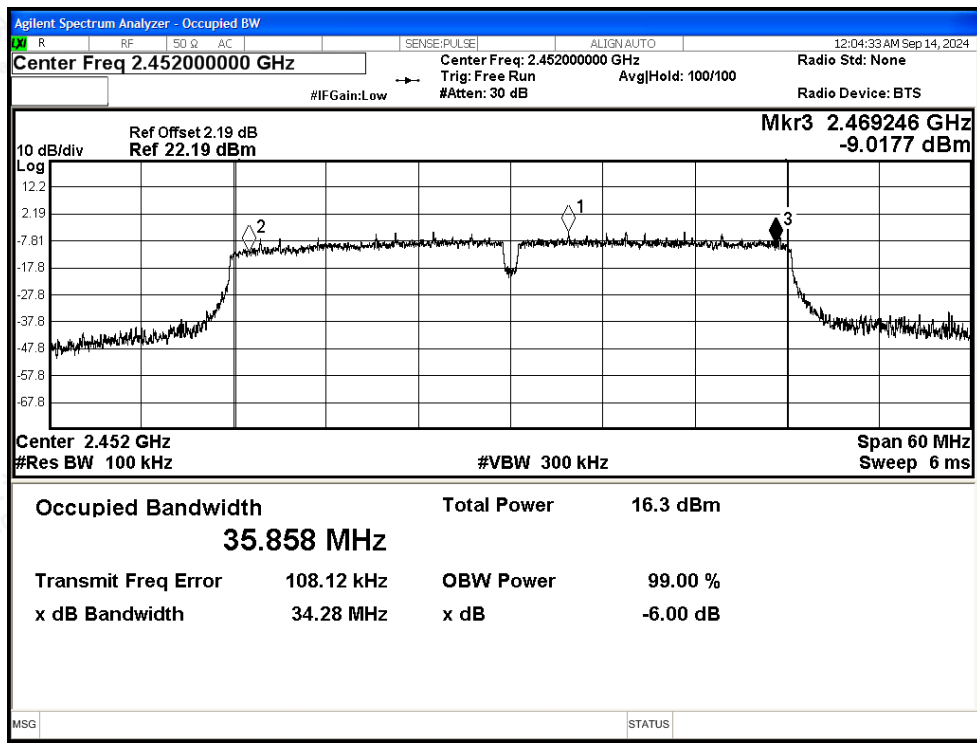




-6dB Bandwidth NVNT n40 2437MHz Ant



-6dB Bandwidth NVNT n40 2452MHz Ant





C.2 Maximum Peak Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant	15.02	30	Pass
NVNT	b	2437	Ant	15.24	30	Pass
NVNT	b	2462	Ant	15.5	30	Pass
NVNT	g	2412	Ant	14.61	30	Pass
NVNT	g	2437	Ant	14.59	30	Pass
NVNT	g	2462	Ant	14.01	30	Pass
NVNT	n20	2412	Ant	13.18	30	Pass
NVNT	n20	2437	Ant	13	30	Pass
NVNT	n20	2462	Ant	13.58	30	Pass
NVNT	n40	2422	Ant	13.66	30	Pass
NVNT	n40	2437	Ant	13.17	30	Pass
NVNT	n40	2452	Ant	14.75	30	Pass





C.3 Maximum Power Spectral Density Level

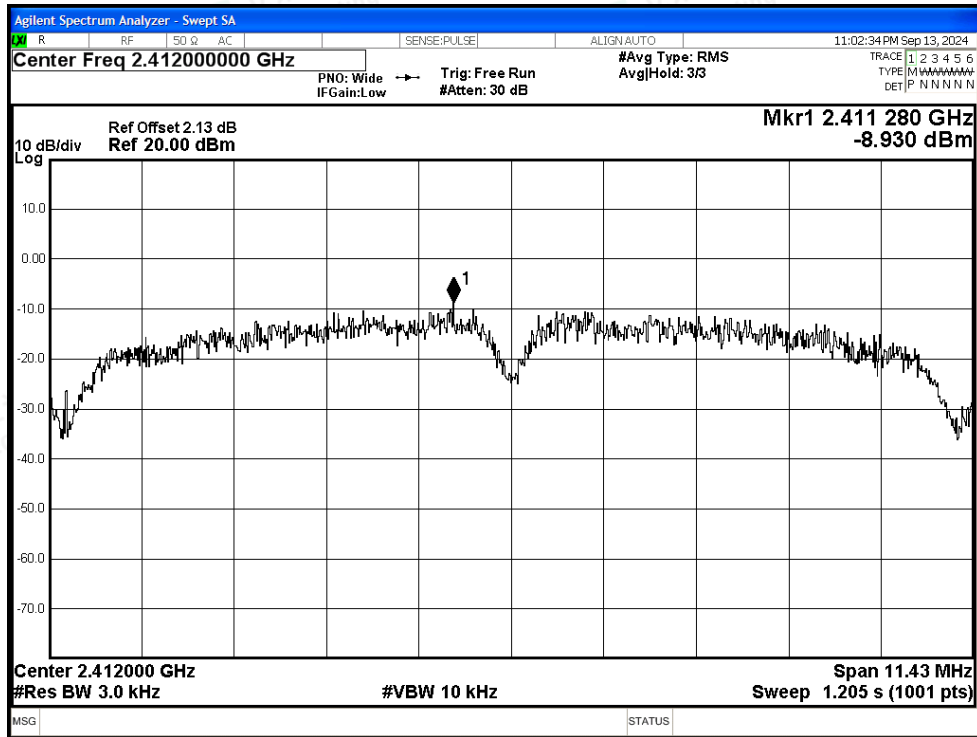
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant	-8.93	8	Pass
NVNT	b	2437	Ant	-8.29	8	Pass
NVNT	b	2462	Ant	-9.44	8	Pass
NVNT	g	2412	Ant	-15.74	8	Pass
NVNT	g	2437	Ant	-15.68	8	Pass
NVNT	g	2462	Ant	-16.22	8	Pass
NVNT	n20	2412	Ant	-16.91	8	Pass
NVNT	n20	2437	Ant	-17.94	8	Pass
NVNT	n20	2462	Ant	-16.17	8	Pass
NVNT	n40	2422	Ant	-20.03	8	Pass
NVNT	n40	2437	Ant	-20.5	8	Pass
NVNT	n40	2452	Ant	-19.1	8	Pass



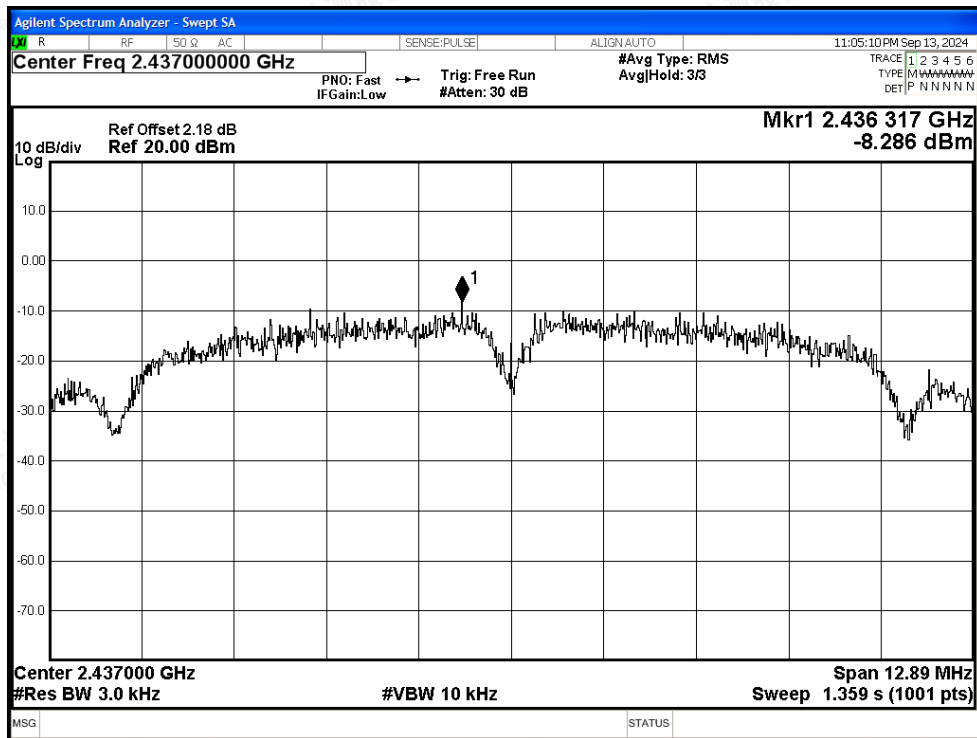


Test Graphs

PSD NVNT b 2412MHz Ant

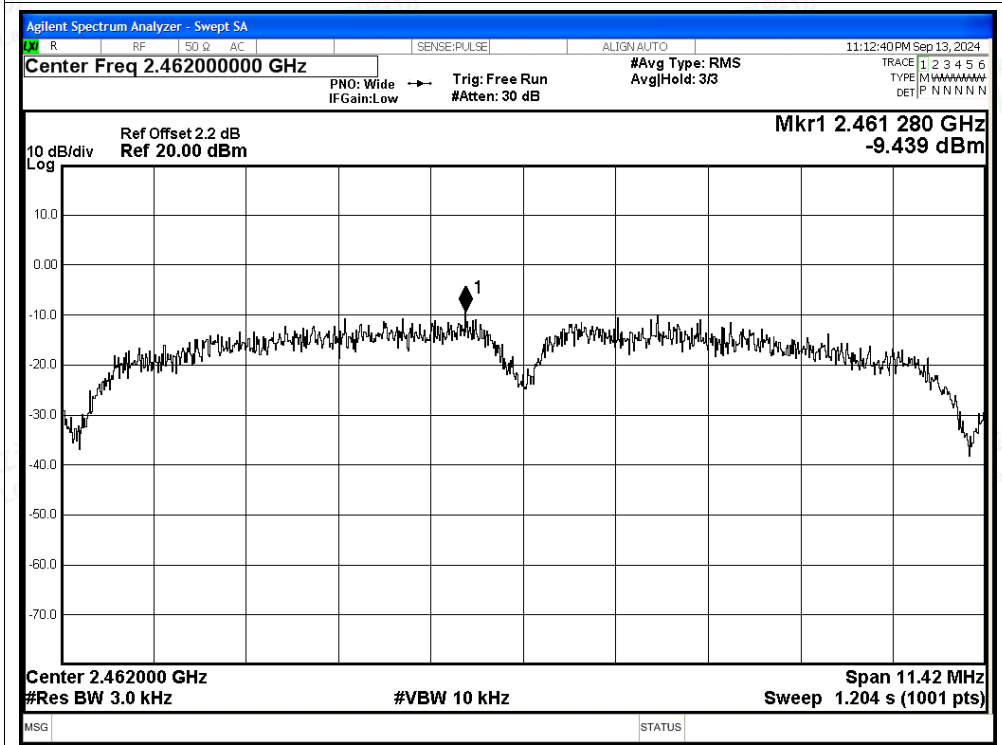


PSD NVNT b 2437MHz Ant

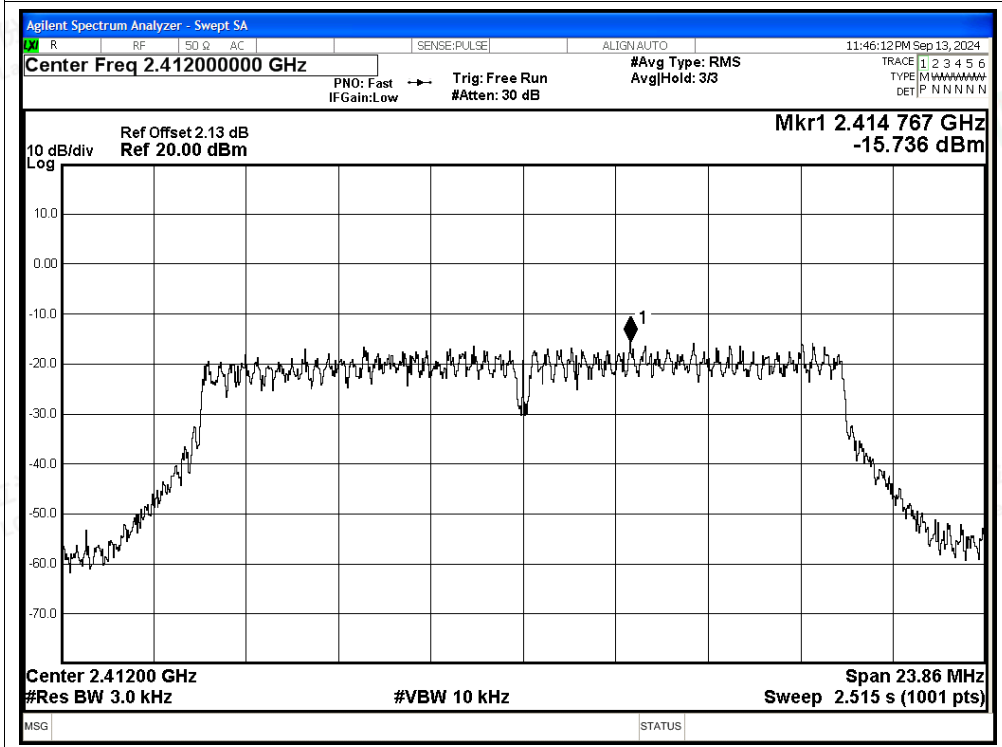




PSD NVNT b 2462MHz Ant

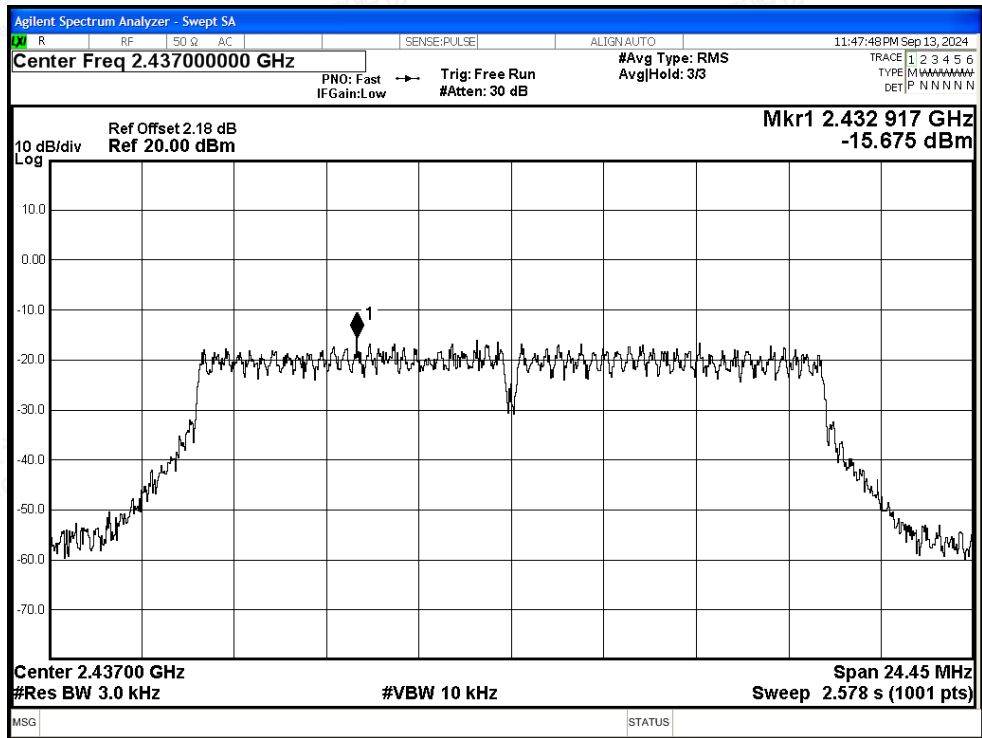


PSD NVNT g 2412MHz Ant

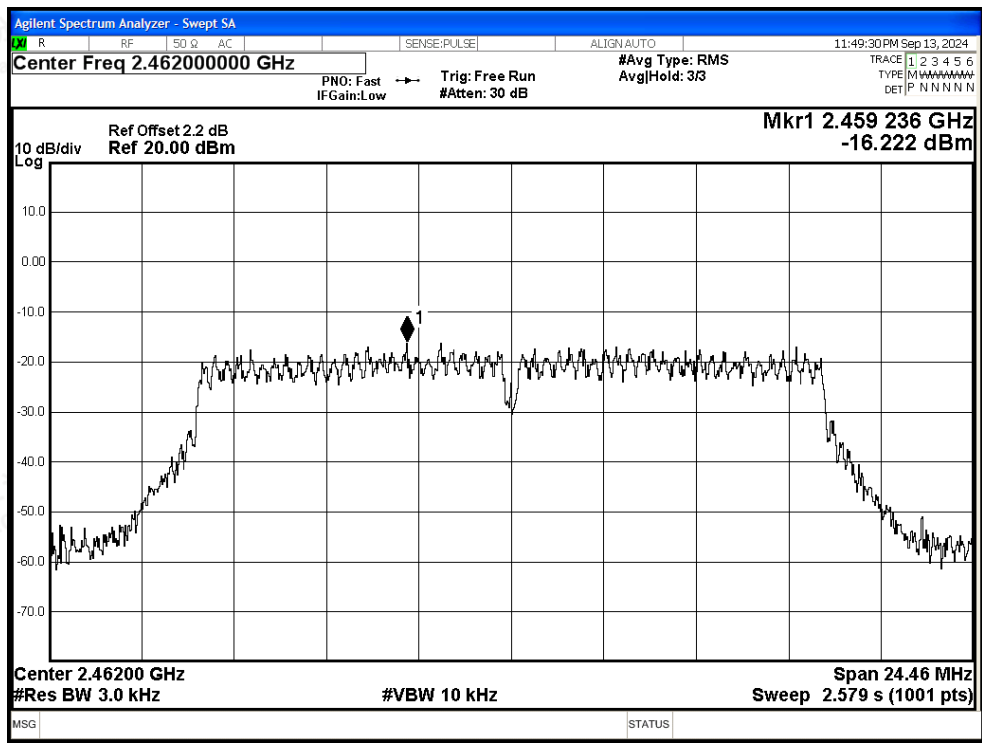


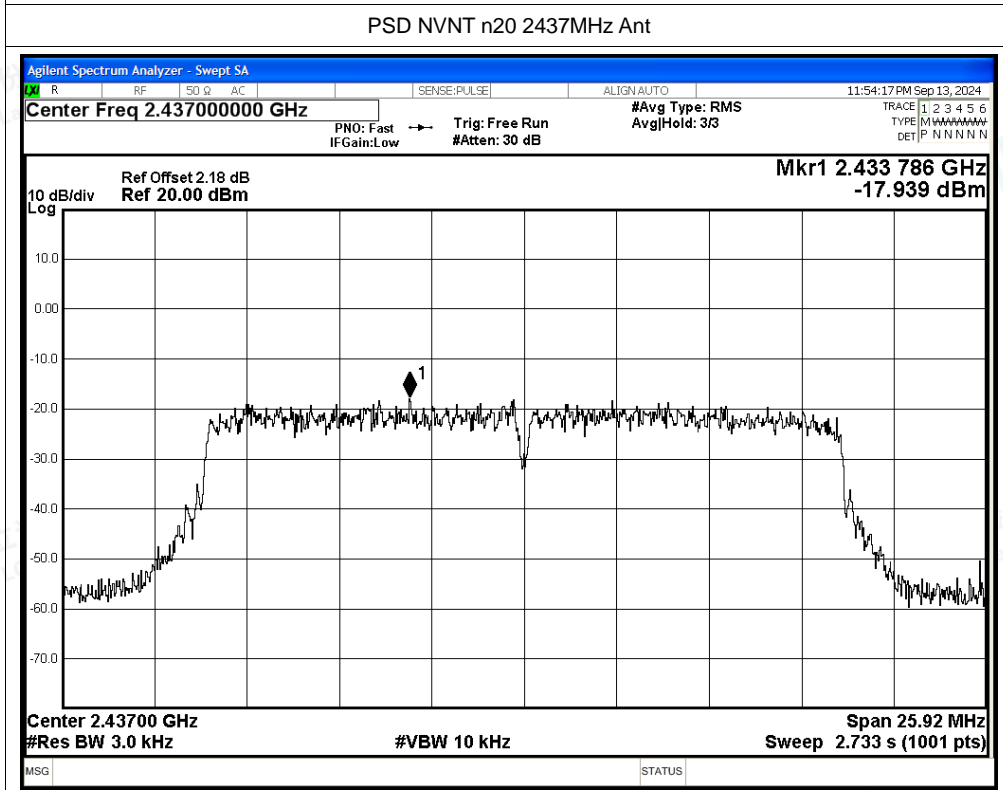
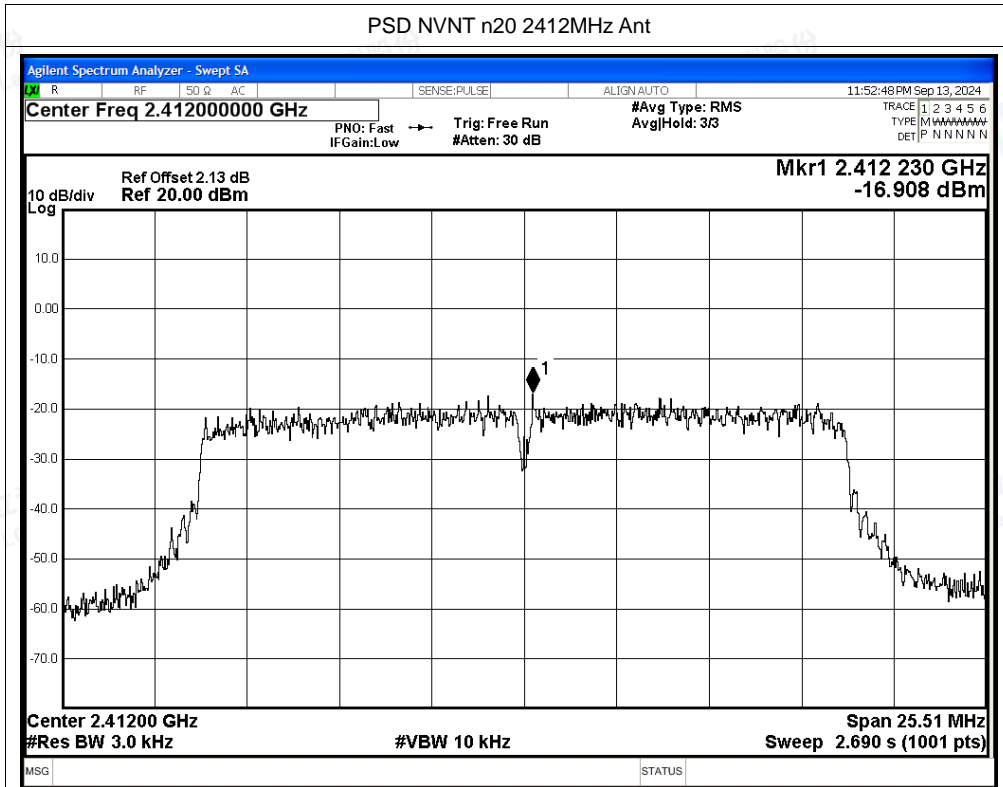


PSD NVNT g 2437MHz Ant



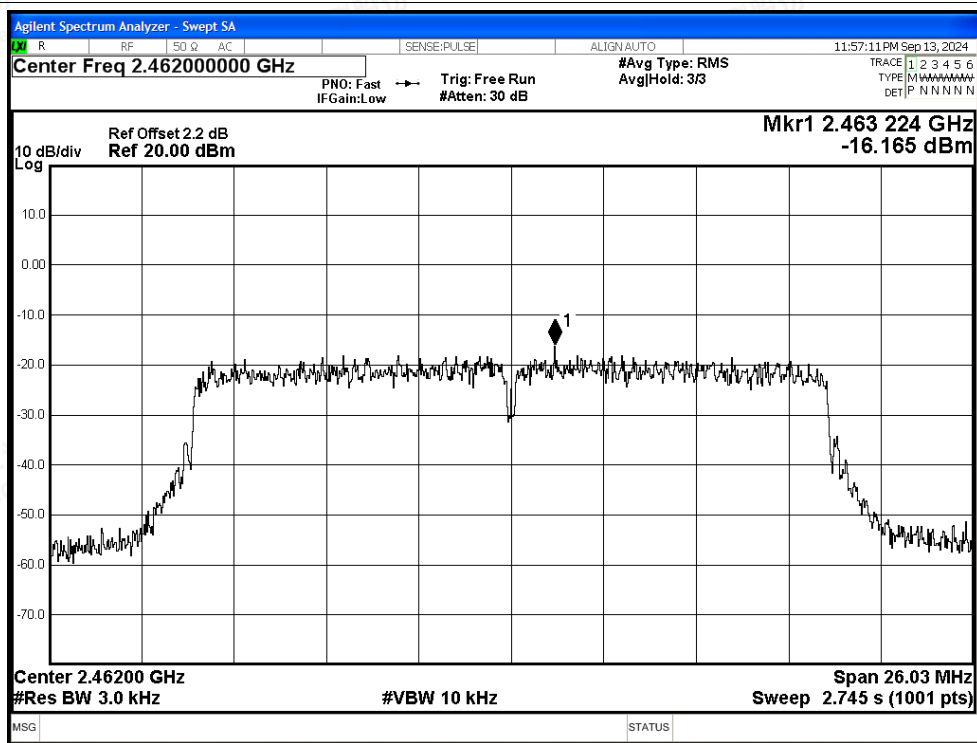
PSD NVNT g 2462MHz Ant



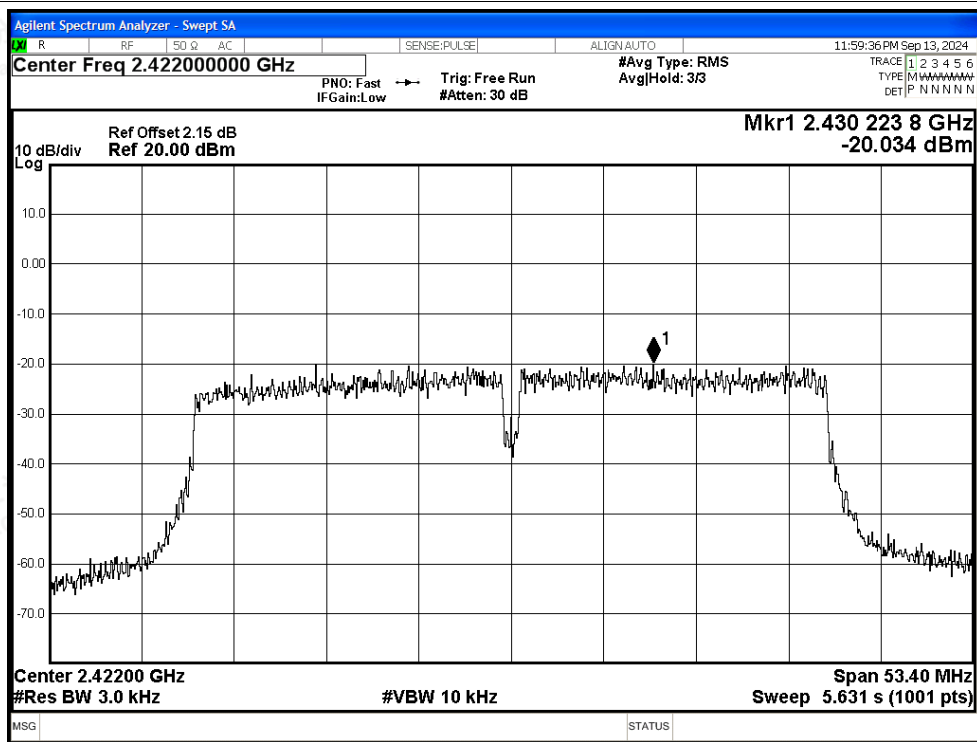




PSD NVNT n20 2462MHz Ant

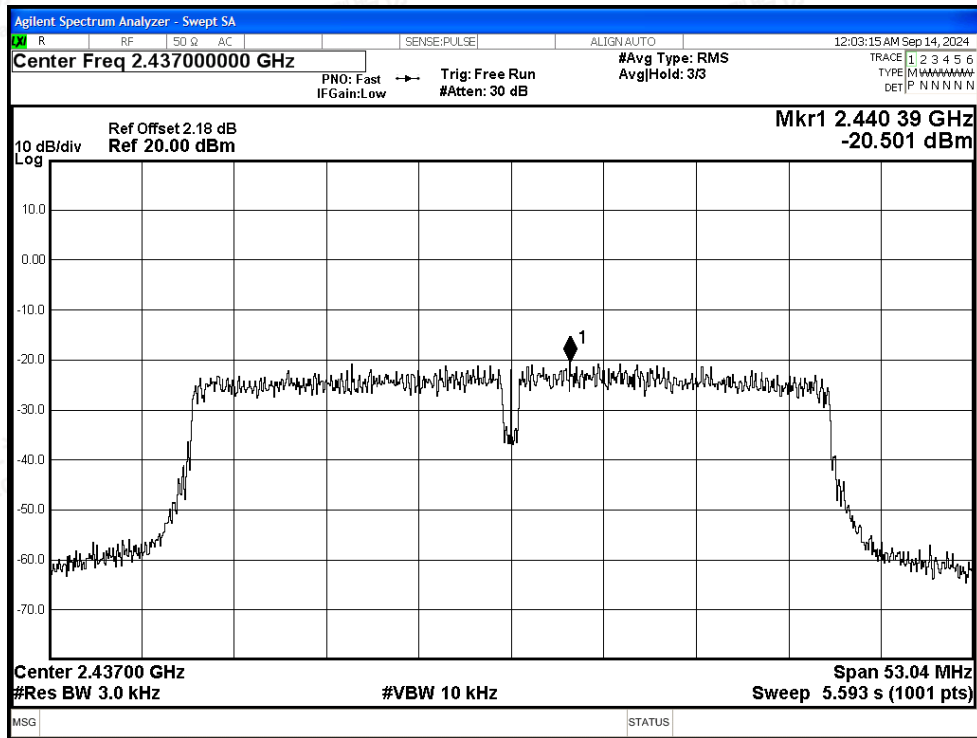


PSD NVNT n40 2422MHz Ant

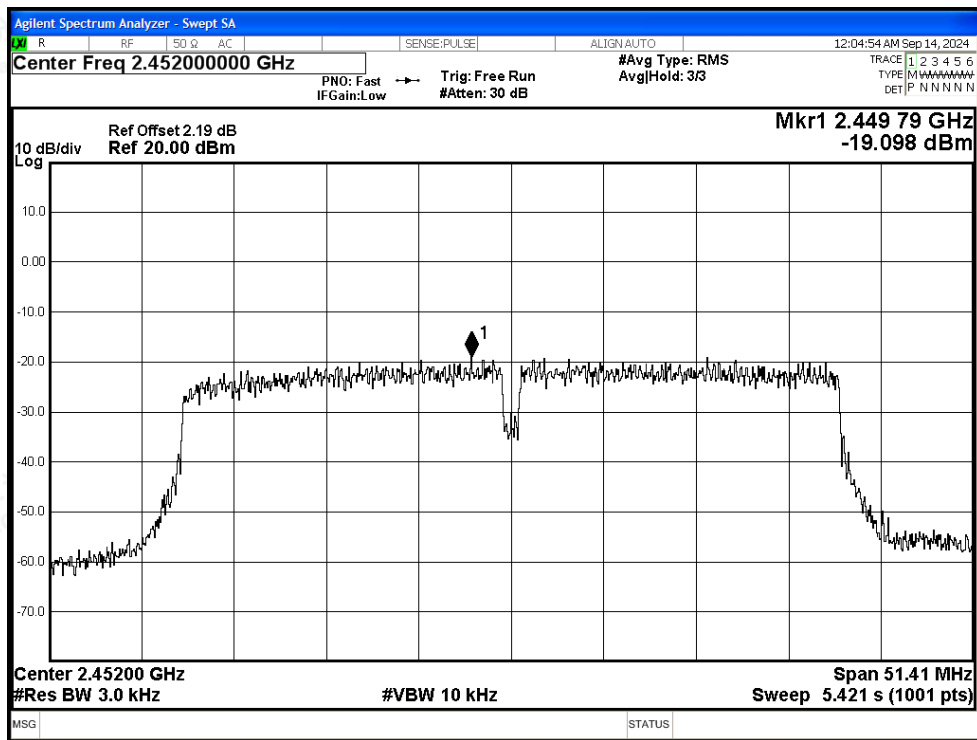




PSD NVNT n40 2437MHz Ant



PSD NVNT n40 2452MHz Ant





C.4 Band Edge

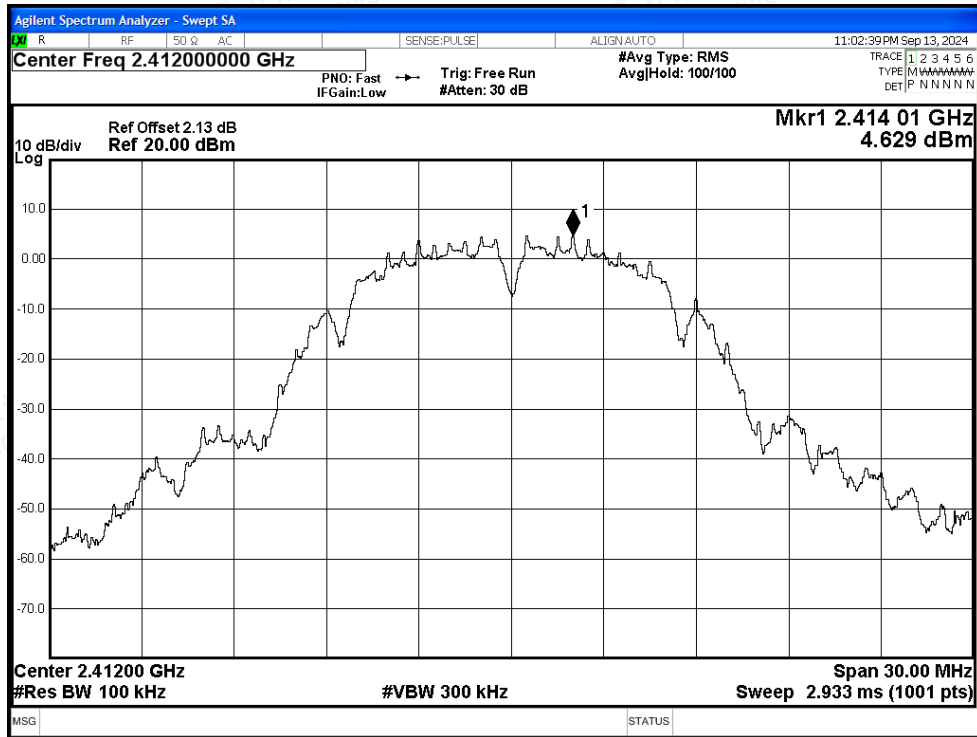
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant	-47.53	-20	Pass
NVNT	b	2462	Ant	-58.04	-20	Pass
NVNT	g	2412	Ant	-32.5	-20	Pass
NVNT	g	2462	Ant	-42.79	-20	Pass
NVNT	n20	2412	Ant	-33.79	-20	Pass
NVNT	n20	2462	Ant	-40.07	-20	Pass
NVNT	n40	2422	Ant	-33.91	-20	Pass
NVNT	n40	2452	Ant	-36.77	-20	Pass



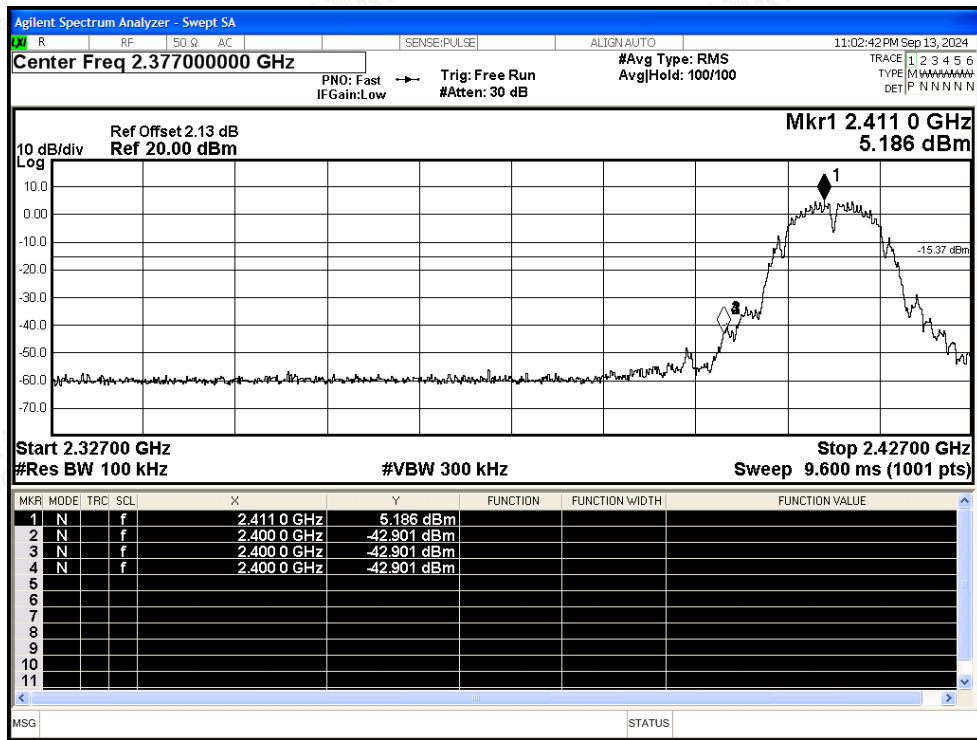


Test Graphs

Band Edge NVNT b 2412MHz Ant Ref

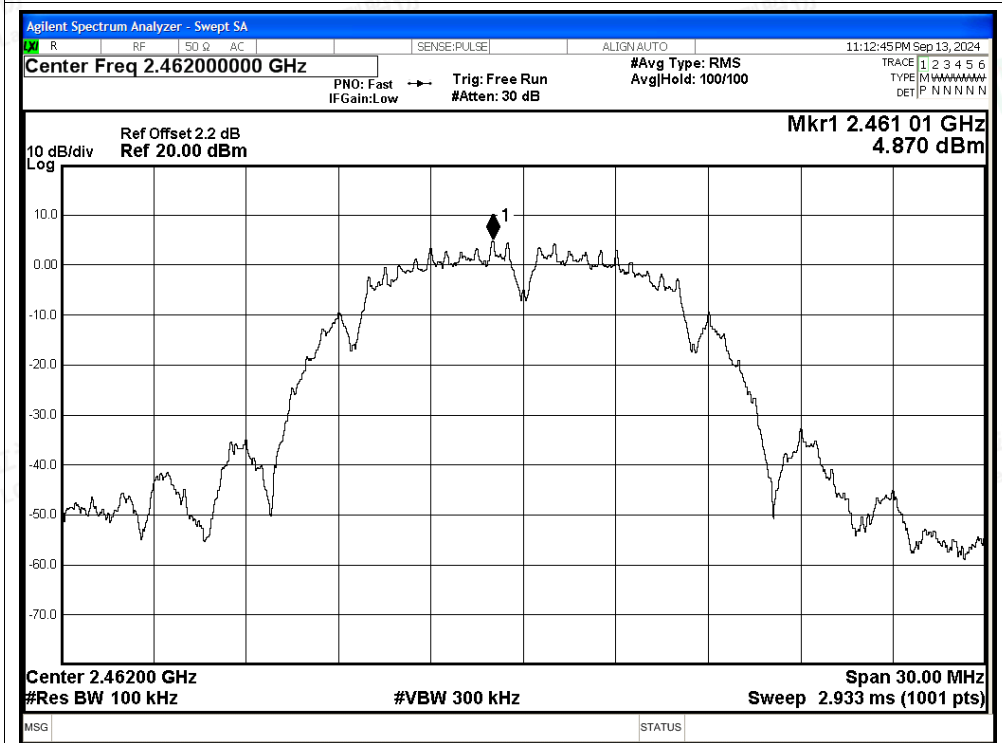


Band Edge NVNT b 2412MHz Ant Emission

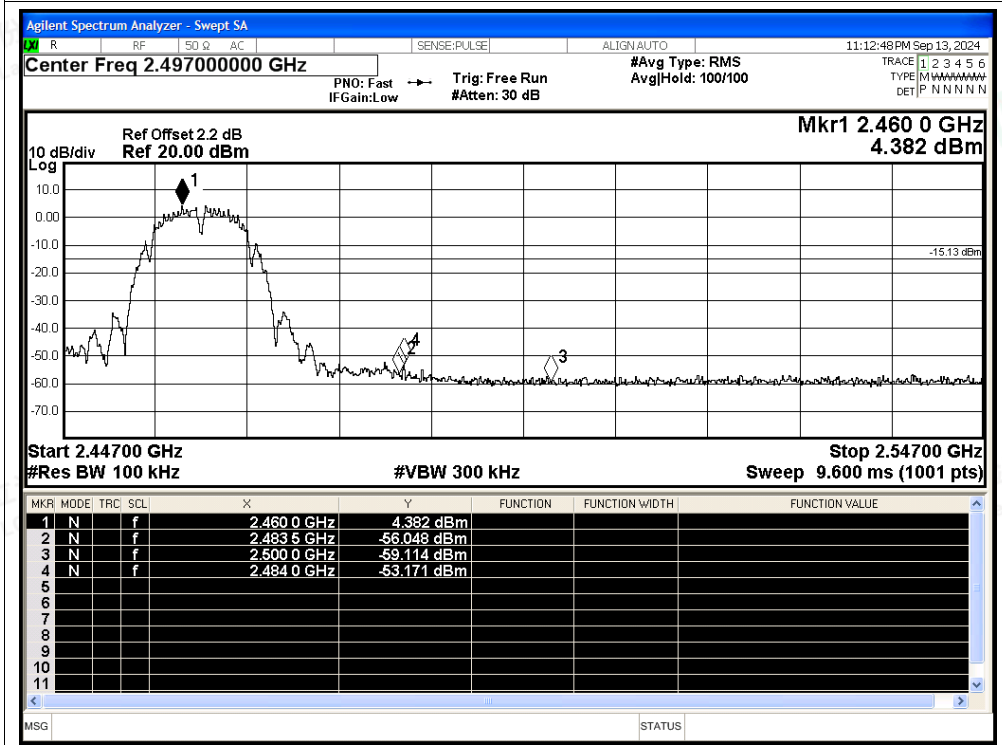




Band Edge NVNT b 2462MHz Ant Ref

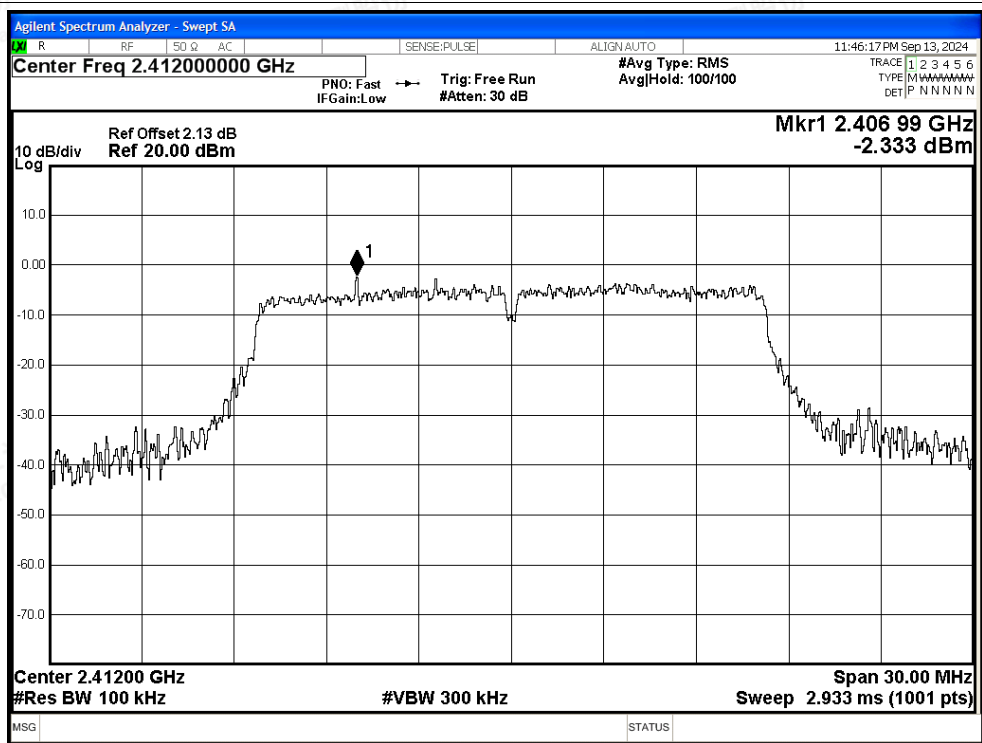


Band Edge NVNT b 2462MHz Ant Emission

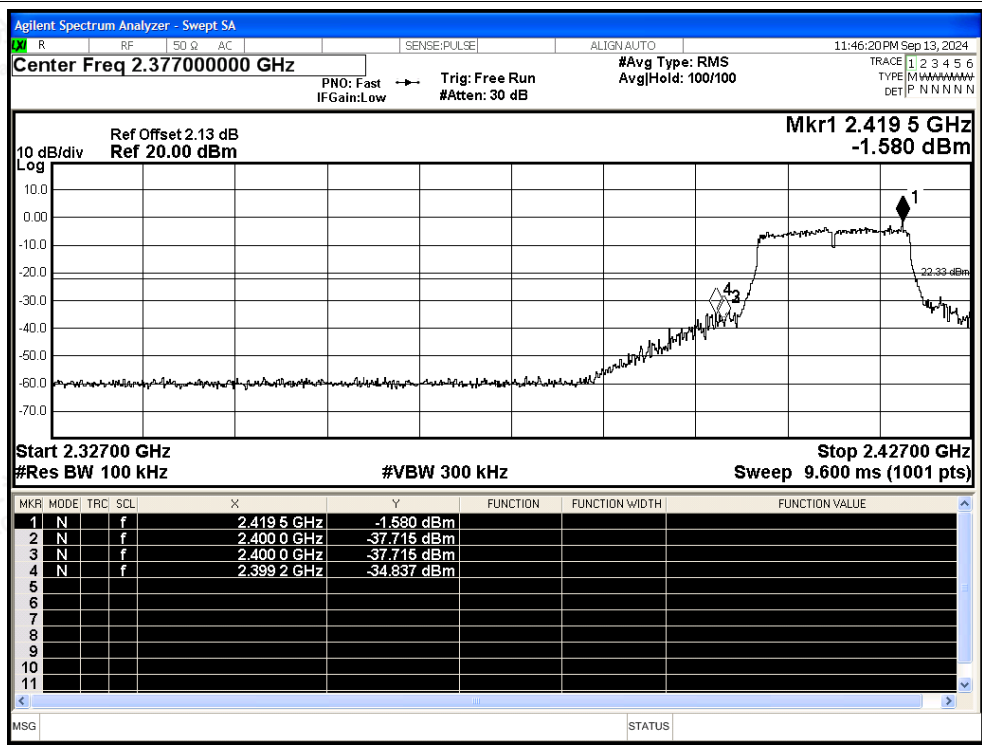




Band Edge NVNT g 2412MHz Ant Ref

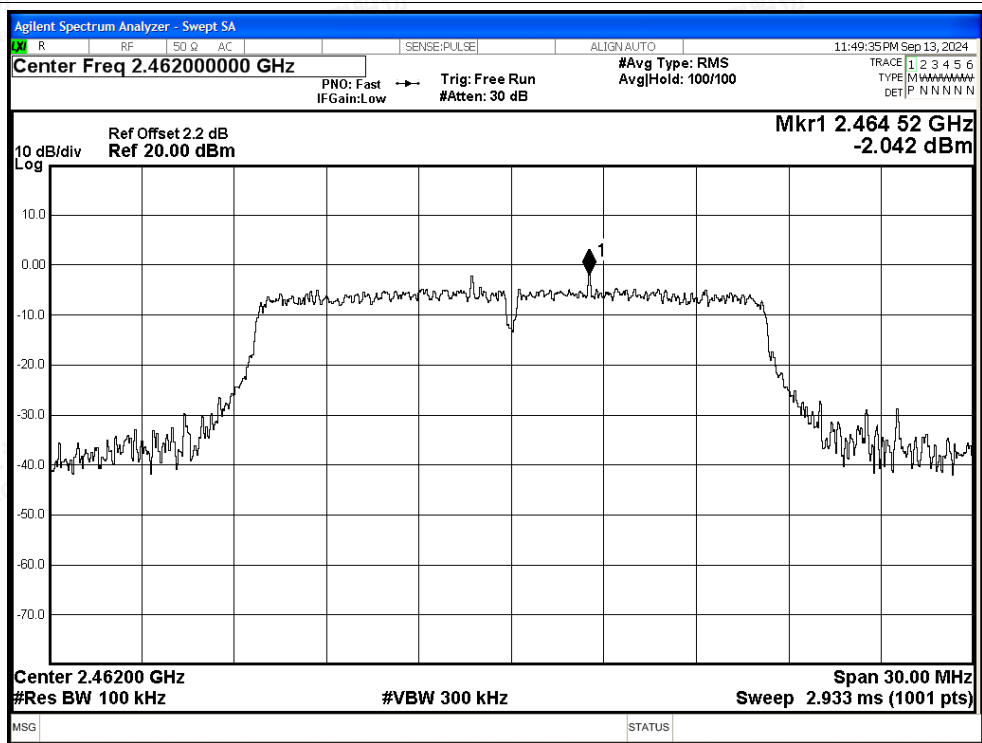


Band Edge NVNT g 2412MHz Ant Emission

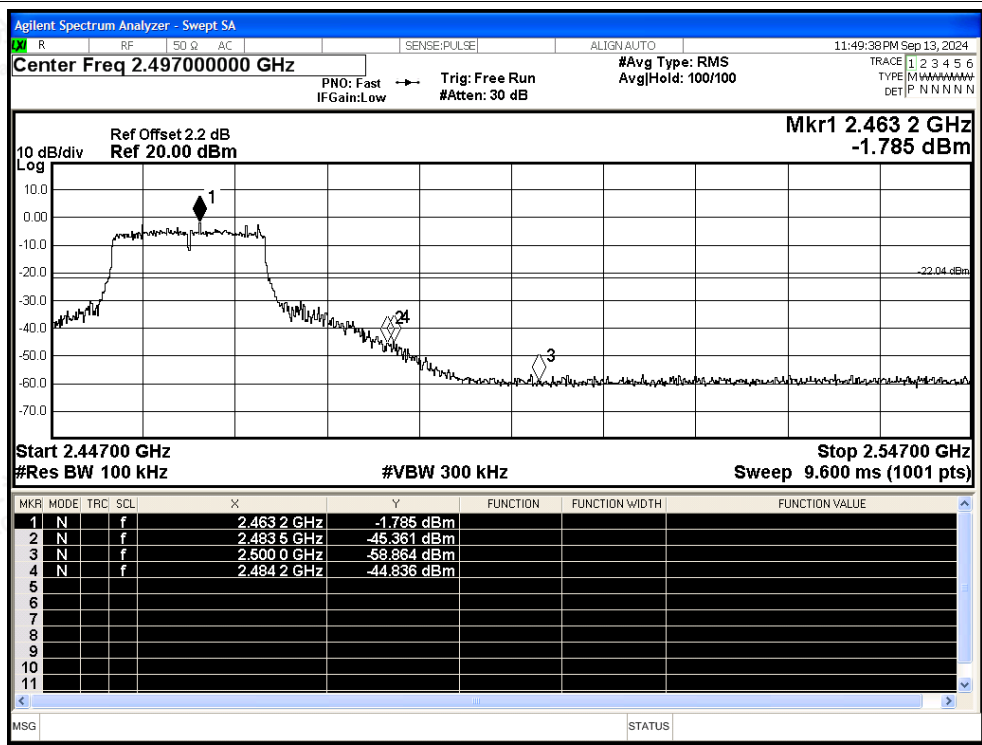




Band Edge NVNT g 2462MHz Ant Ref

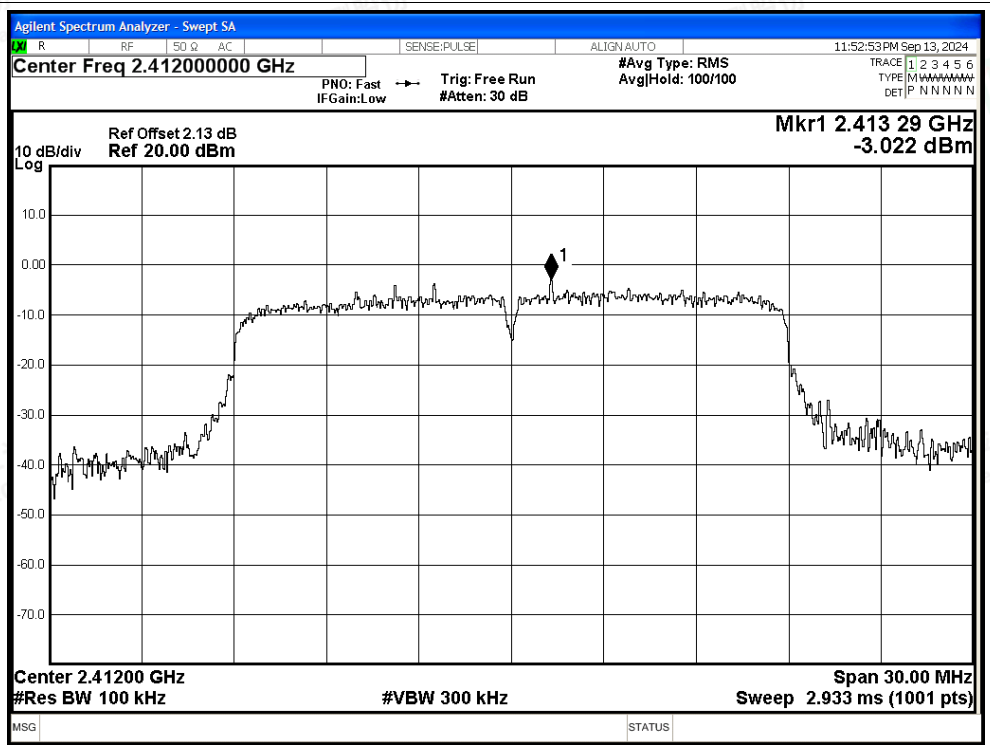


Band Edge NVNT g 2462MHz Ant Emission

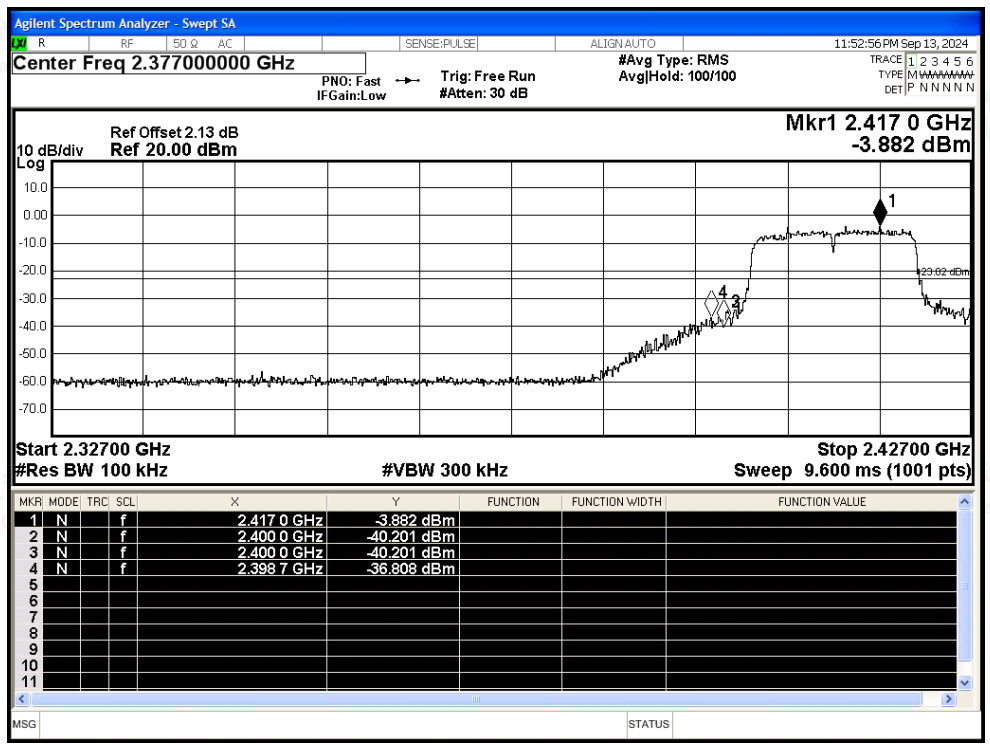




Band Edge NVNT n20 2412MHz Ant Ref

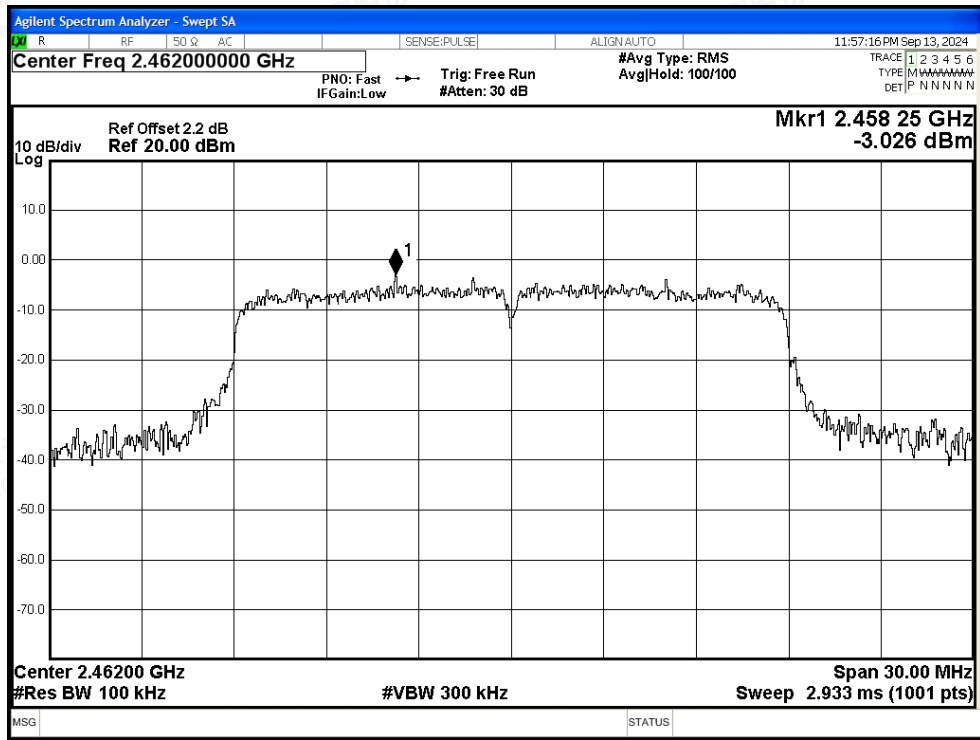


Band Edge NVNT n20 2412MHz Ant Emission

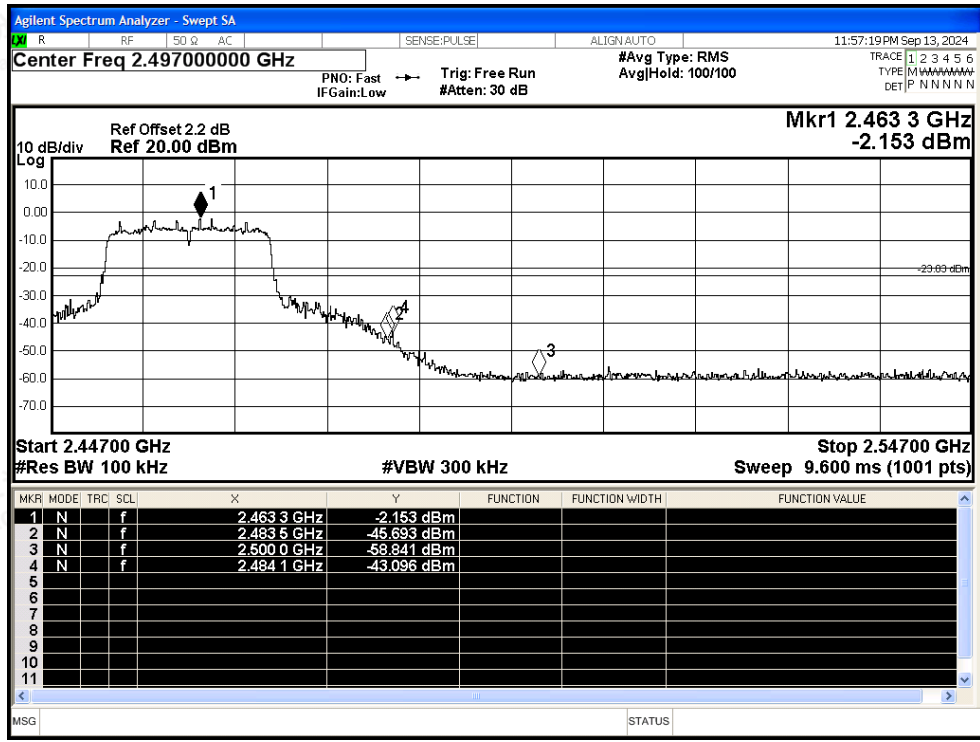




Band Edge NVNT n20 2462MHz Ant Ref

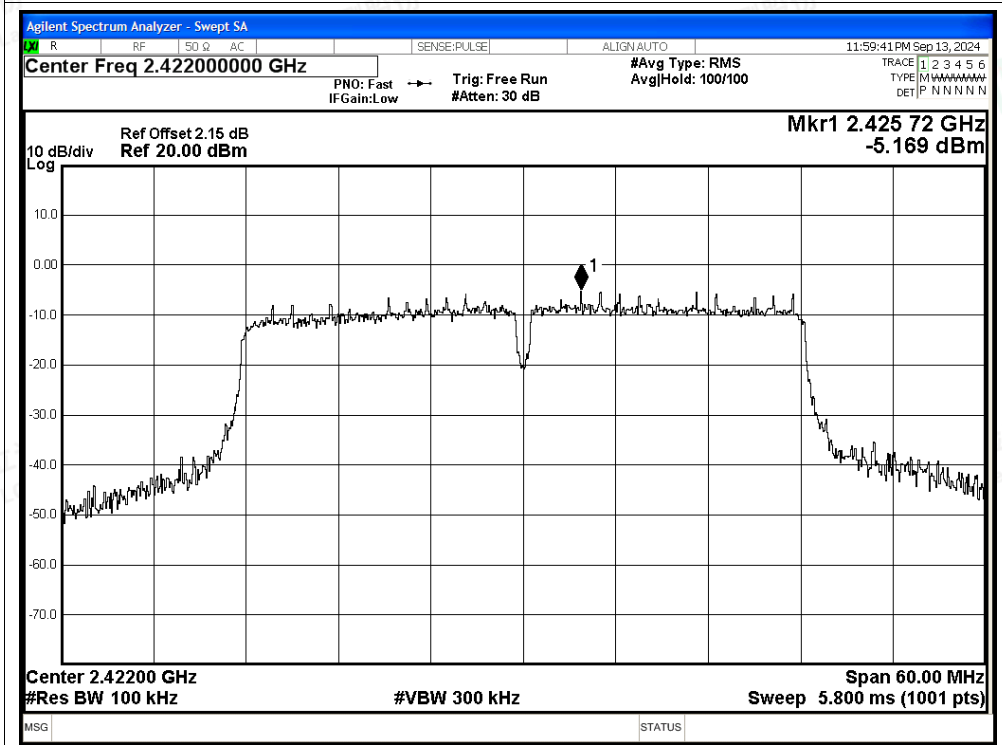


Band Edge NVNT n20 2462MHz Ant Emission

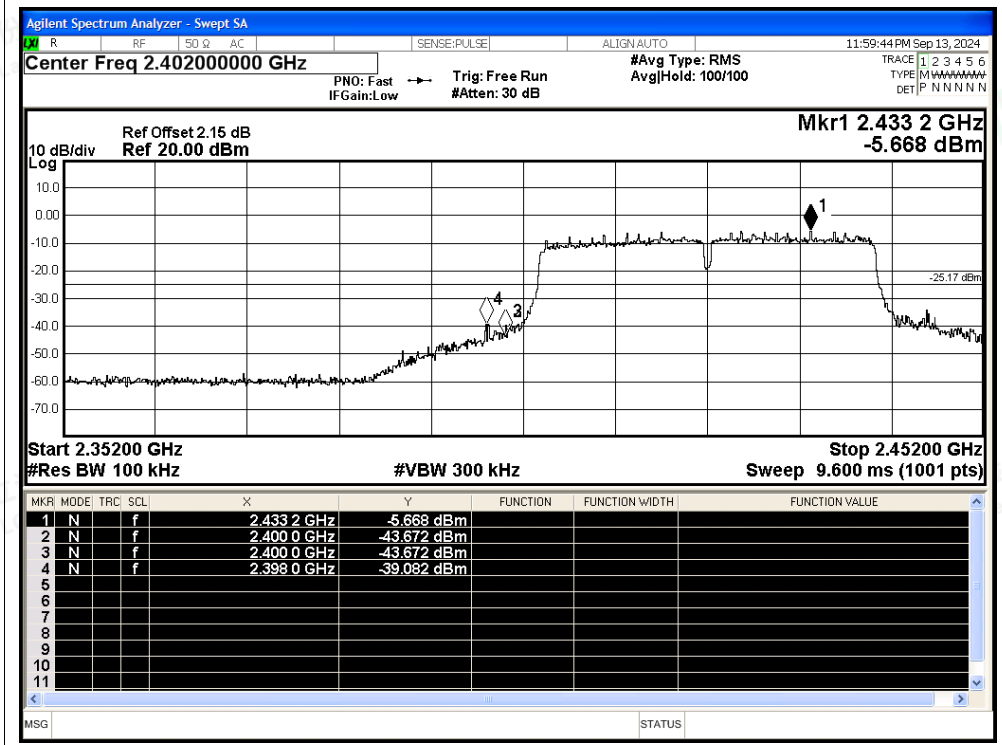




Band Edge NVNT n40 2422MHz Ant Ref

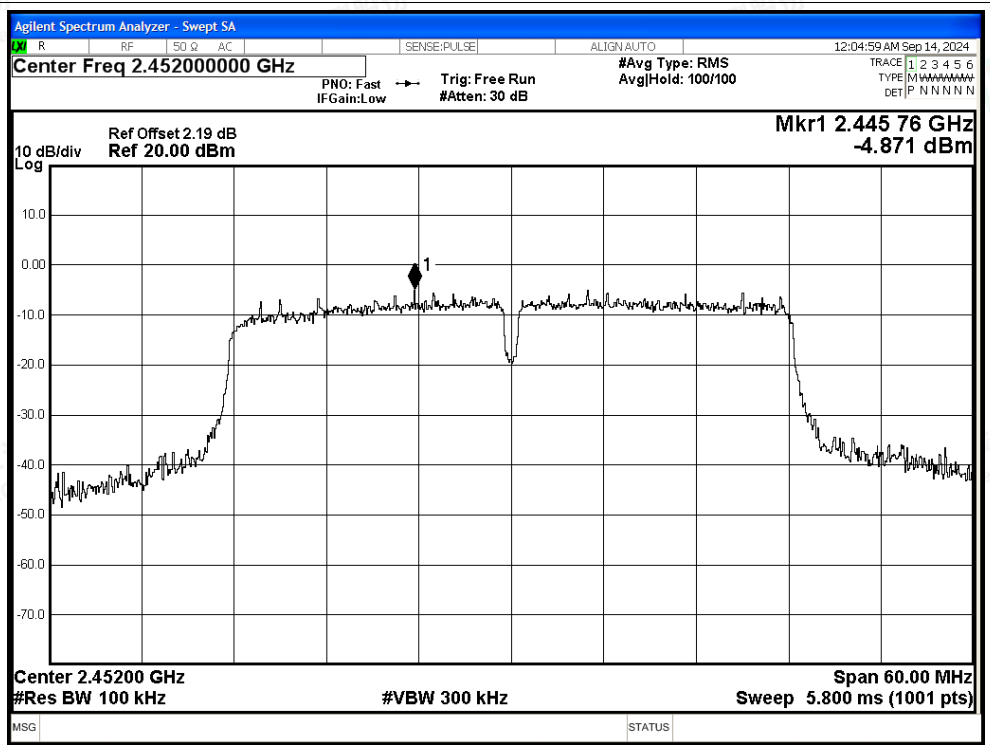


Band Edge NVNT n40 2422MHz Ant Emission

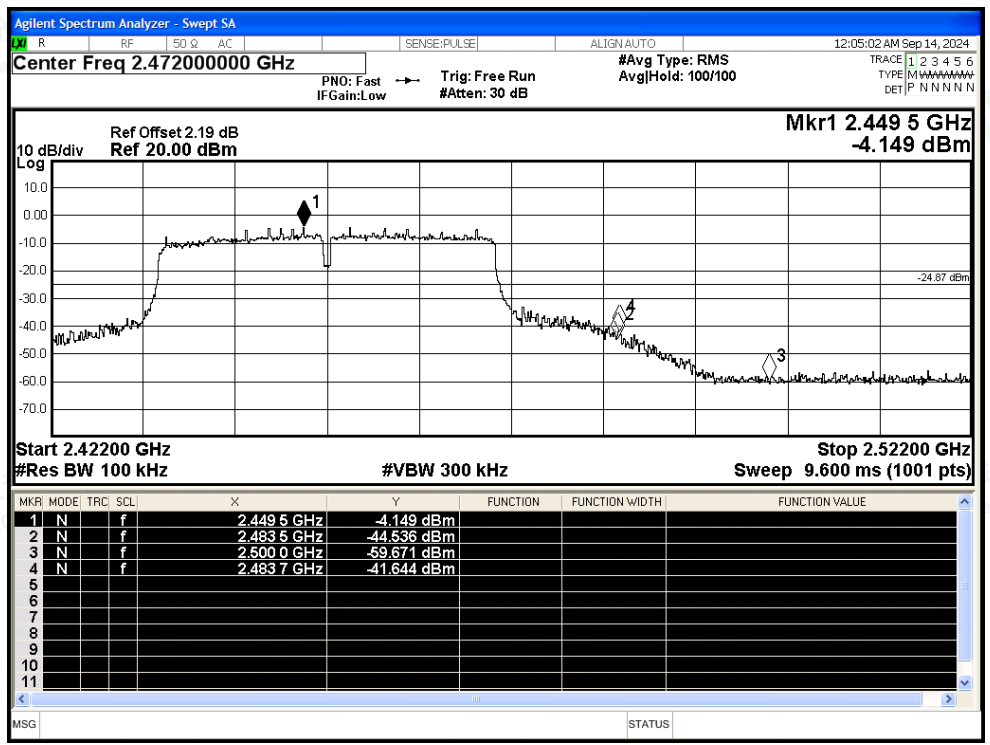




Band Edge NVNT n40 2452MHz Ant Ref



Band Edge NVNT n40 2452MHz Ant Emission





C.5 Conducted RF Spurious Emission

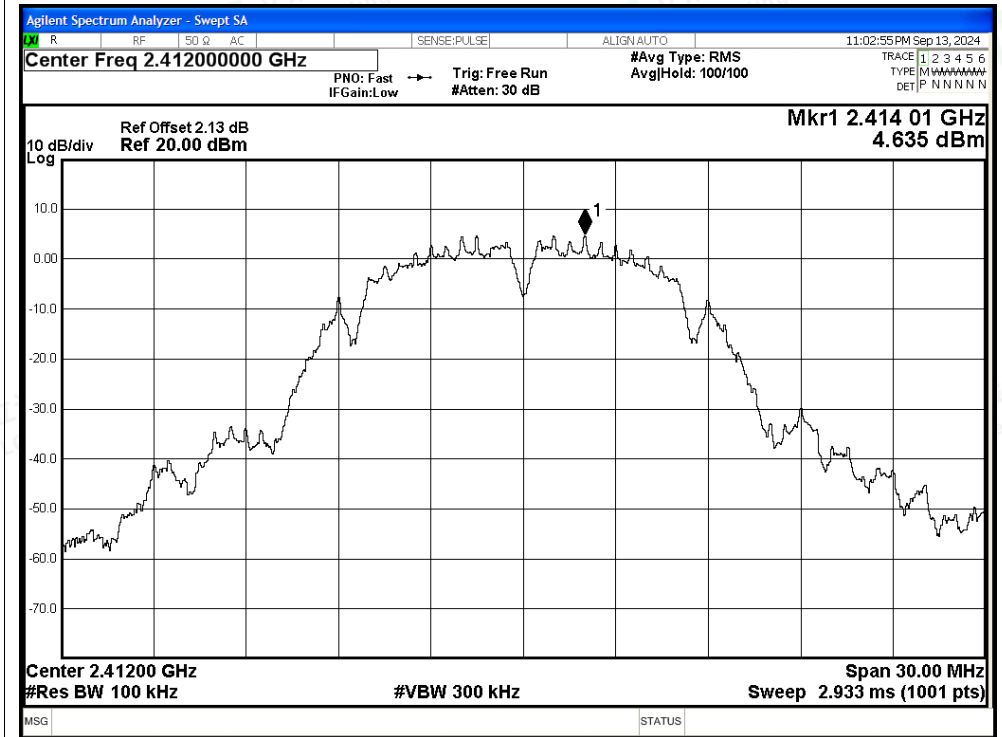
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant	-51.18	-20	Pass
NVNT	b	2437	Ant	-51.25	-20	Pass
NVNT	b	2462	Ant	-50.93	-20	Pass
NVNT	g	2412	Ant	-45.69	-20	Pass
NVNT	g	2437	Ant	-44.54	-20	Pass
NVNT	g	2462	Ant	-44.41	-20	Pass
NVNT	n20	2412	Ant	-42.85	-20	Pass
NVNT	n20	2437	Ant	-42.76	-20	Pass
NVNT	n20	2462	Ant	-43.51	-20	Pass
NVNT	n40	2422	Ant	-41.29	-20	Pass
NVNT	n40	2437	Ant	-40.88	-20	Pass
NVNT	n40	2452	Ant	-42.44	-20	Pass



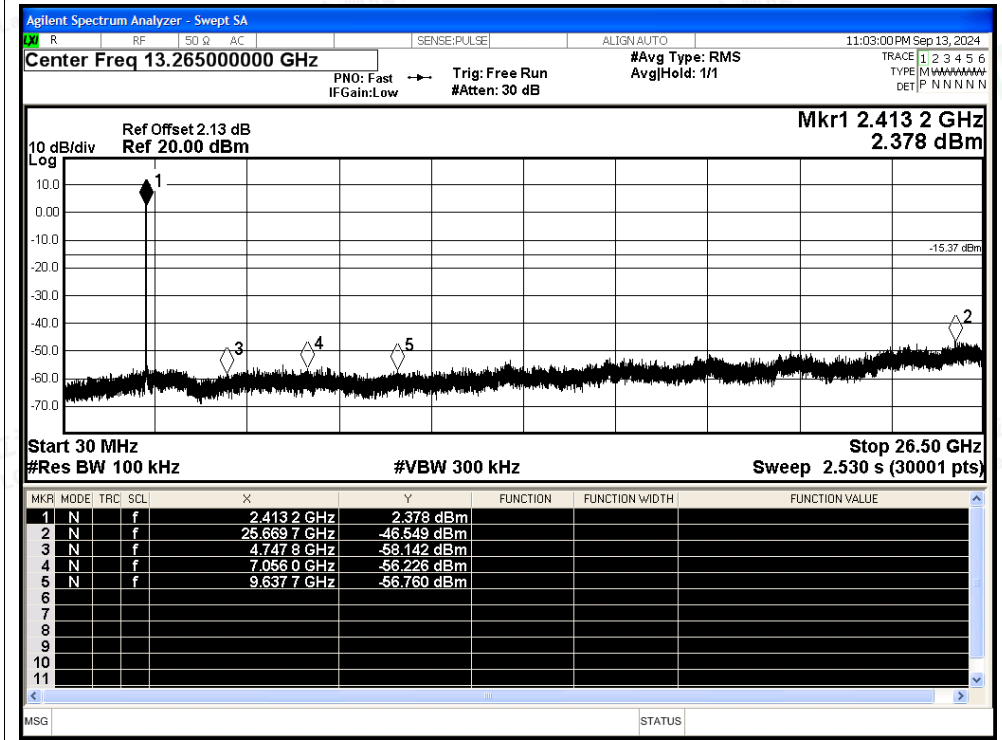


Test Graphs

Tx. Spurious NVNT b 2412MHz Ant Ref

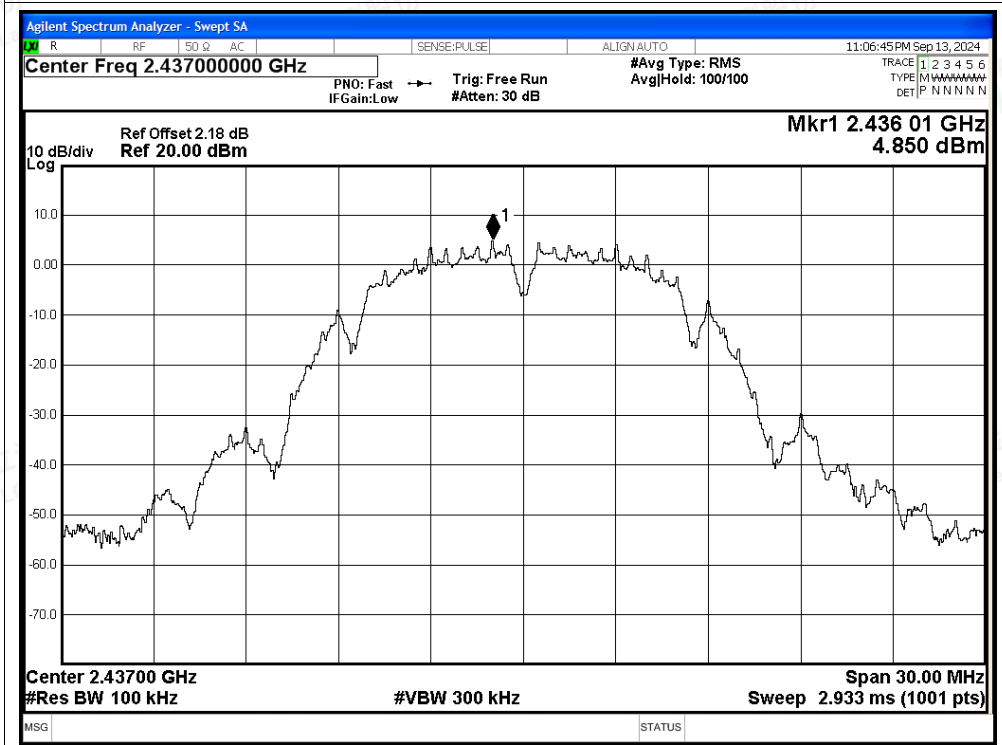


Tx. Spurious NVNT b 2412MHz Ant Emission

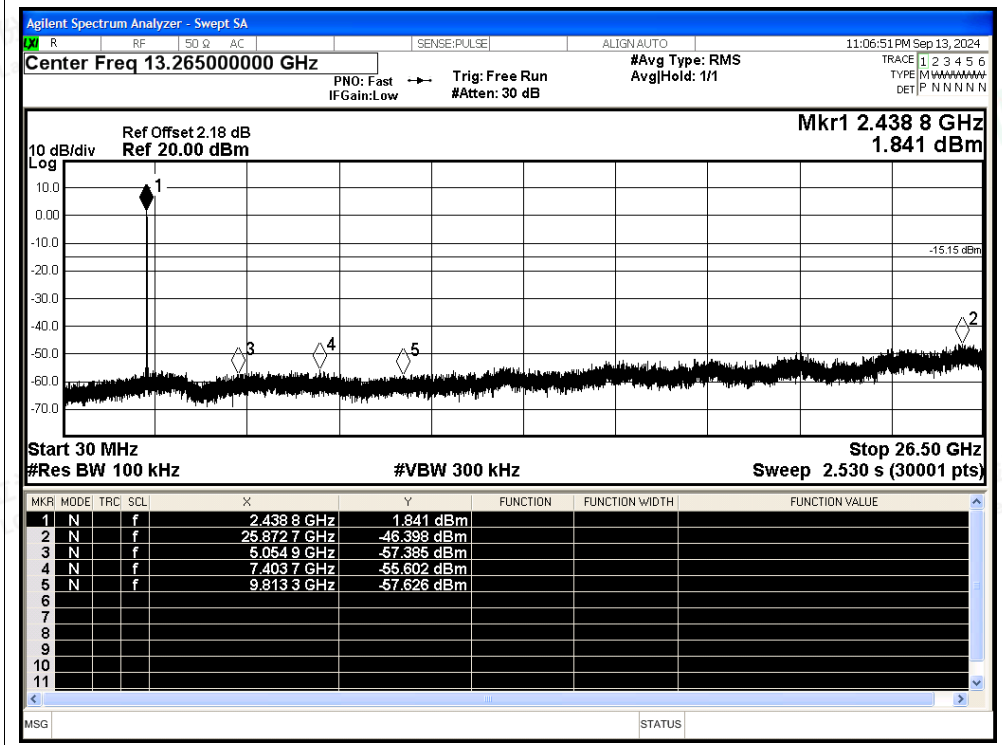




Tx. Spurious NVNT b 2437MHz Ant Ref

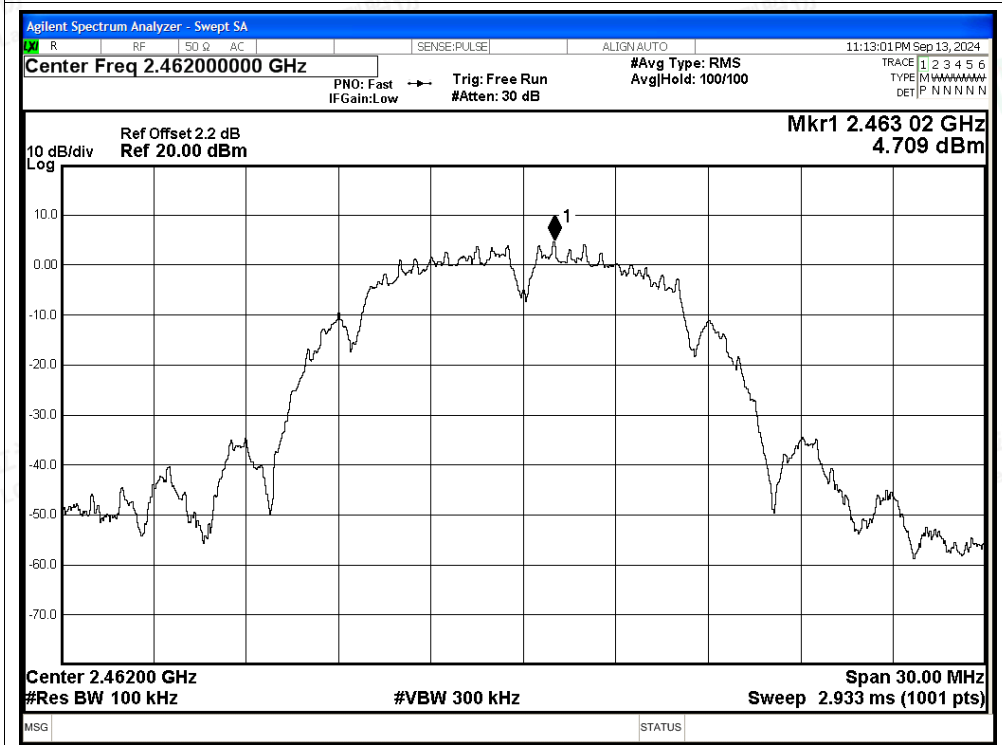


Tx. Spurious NVNT b 2437MHz Ant Emission

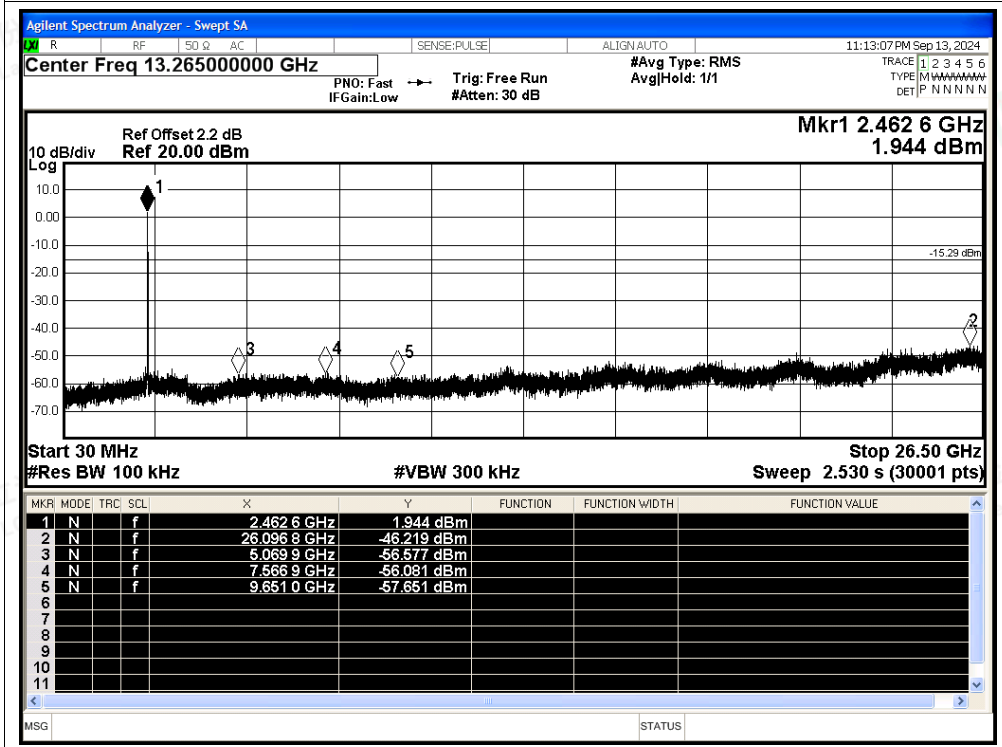




Tx. Spurious NVNT b 2462MHz Ant Ref

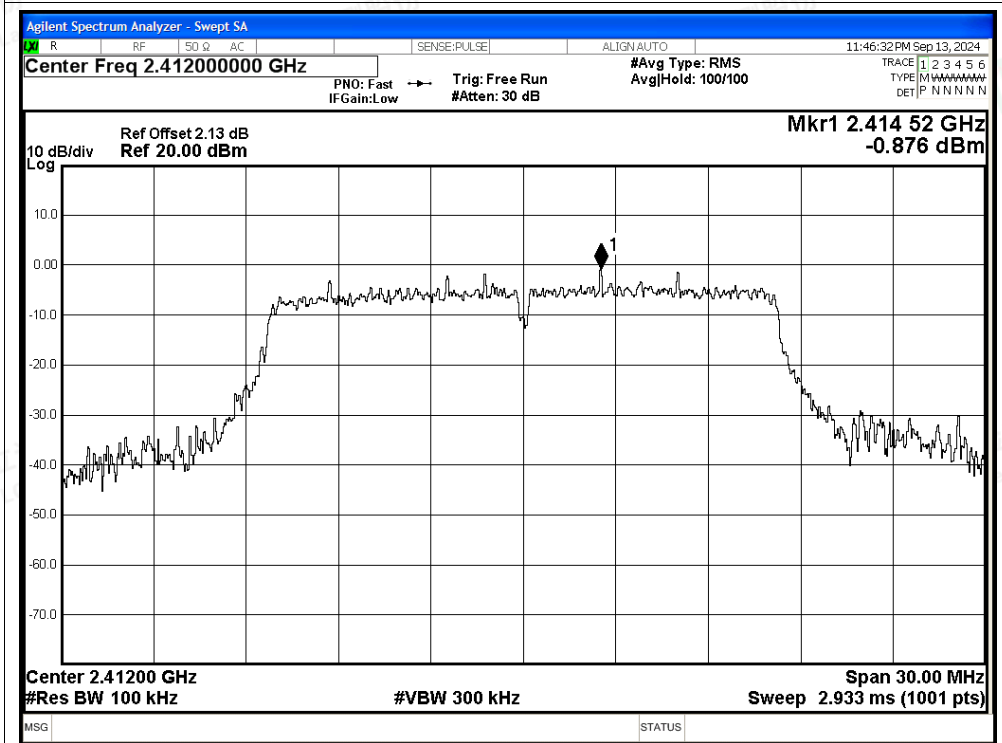


Tx. Spurious NVNT b 2462MHz Ant Emission

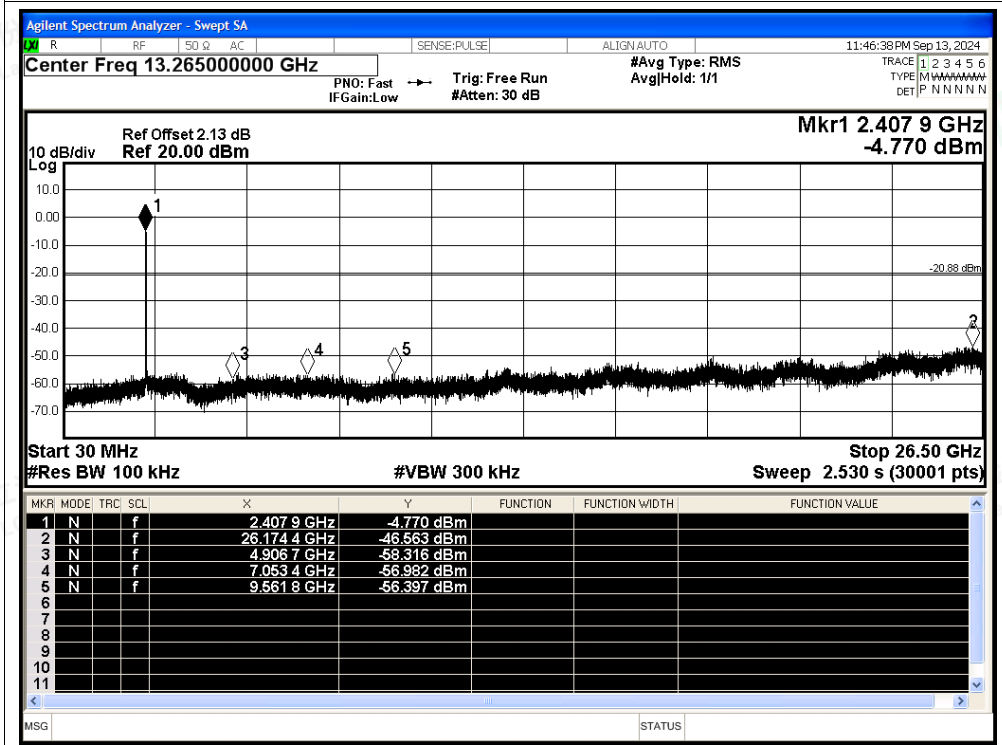




Tx. Spurious NVNT g 2412MHz Ant Ref

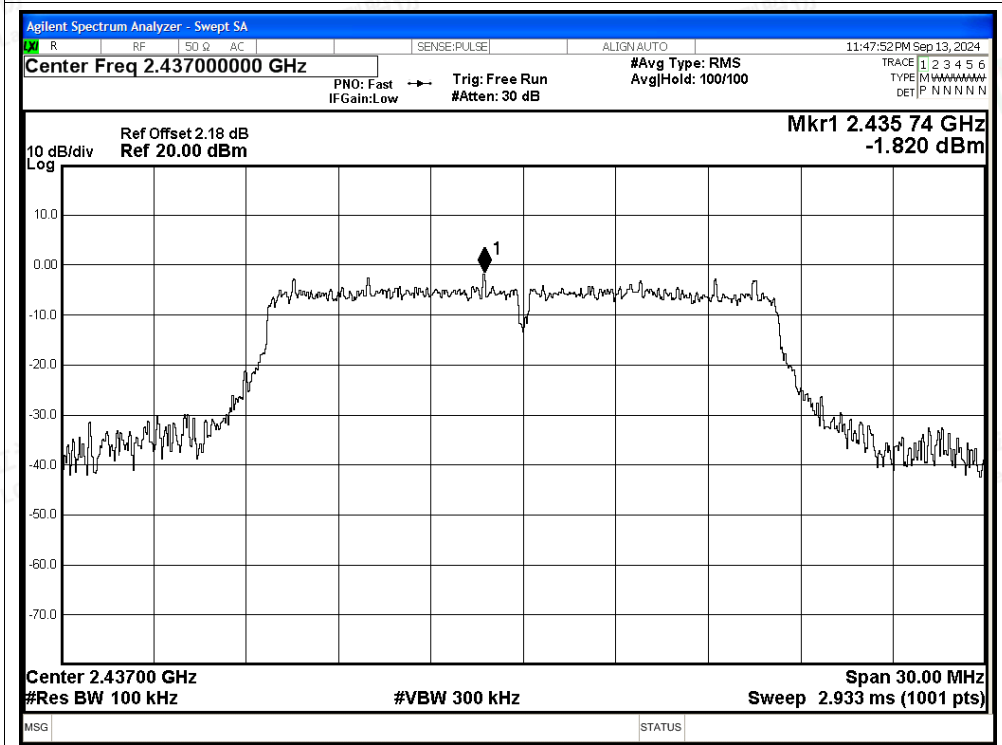


Tx. Spurious NVNT g 2412MHz Ant Emission

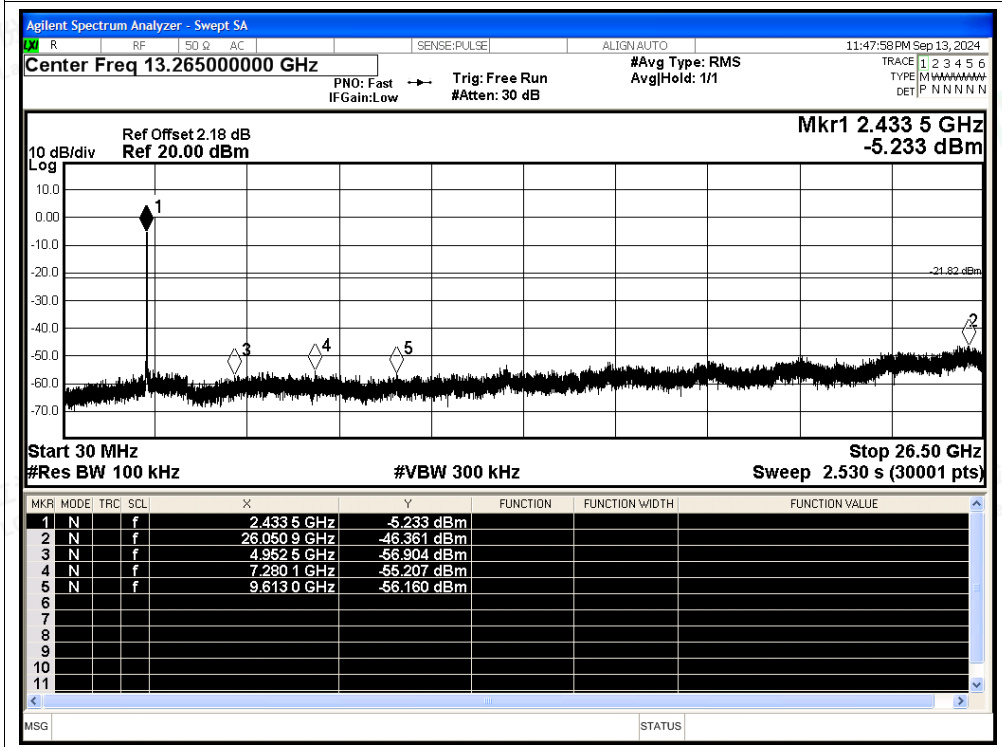




Tx. Spurious NVNT g 2437MHz Ant Ref

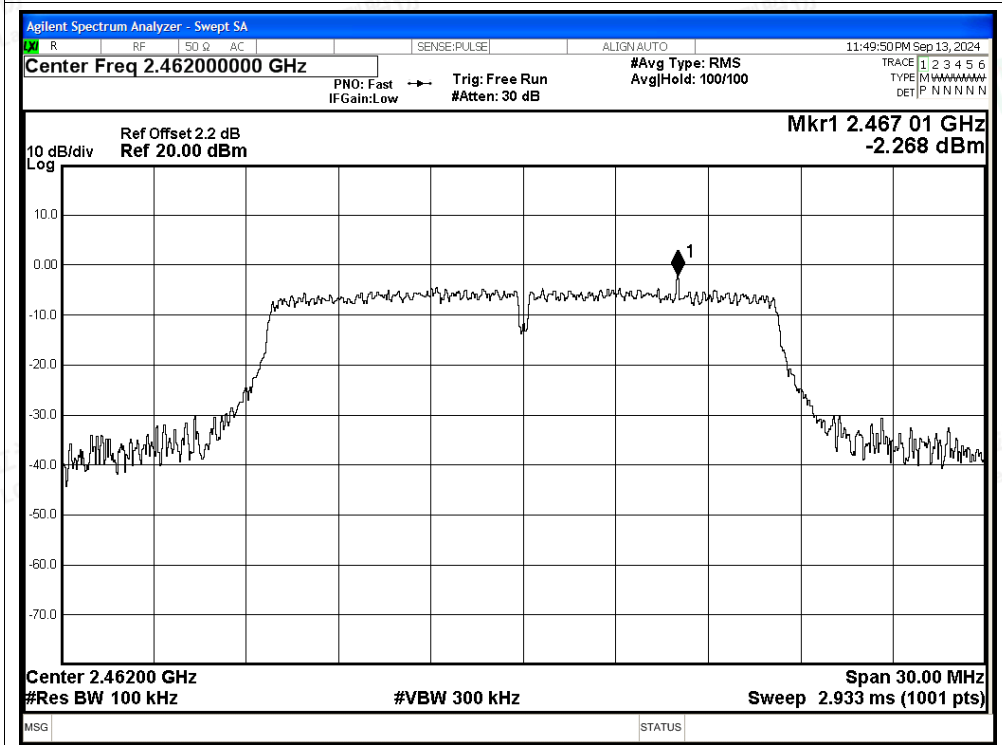


Tx. Spurious NVNT g 2437MHz Ant Emission

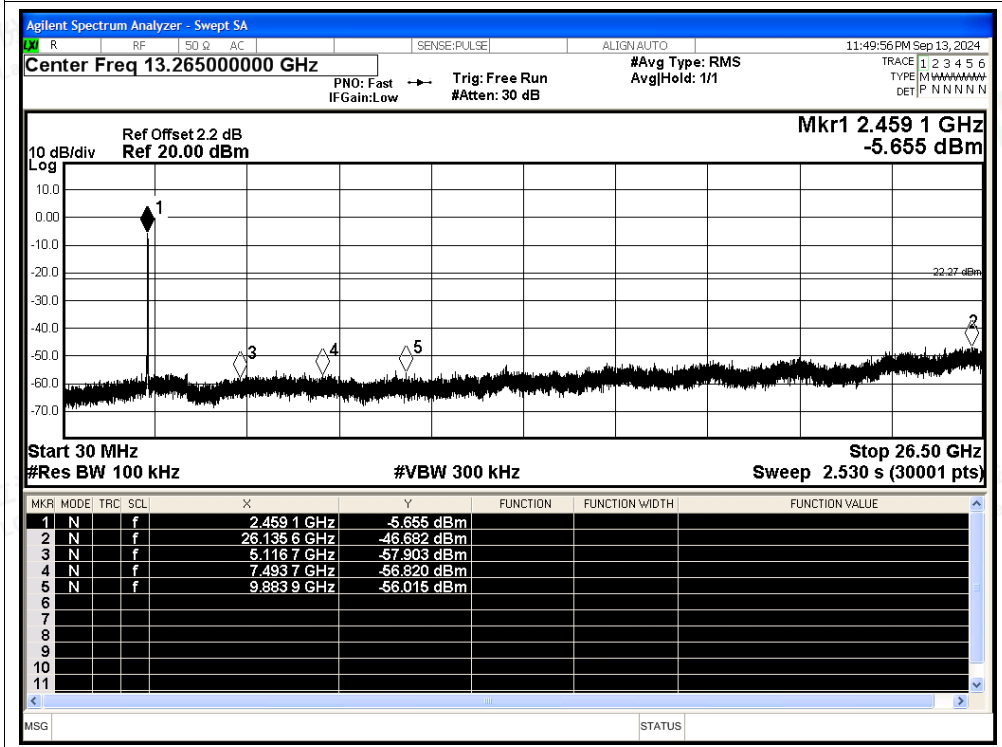




Tx. Spurious NVNT g 2462MHz Ant Ref

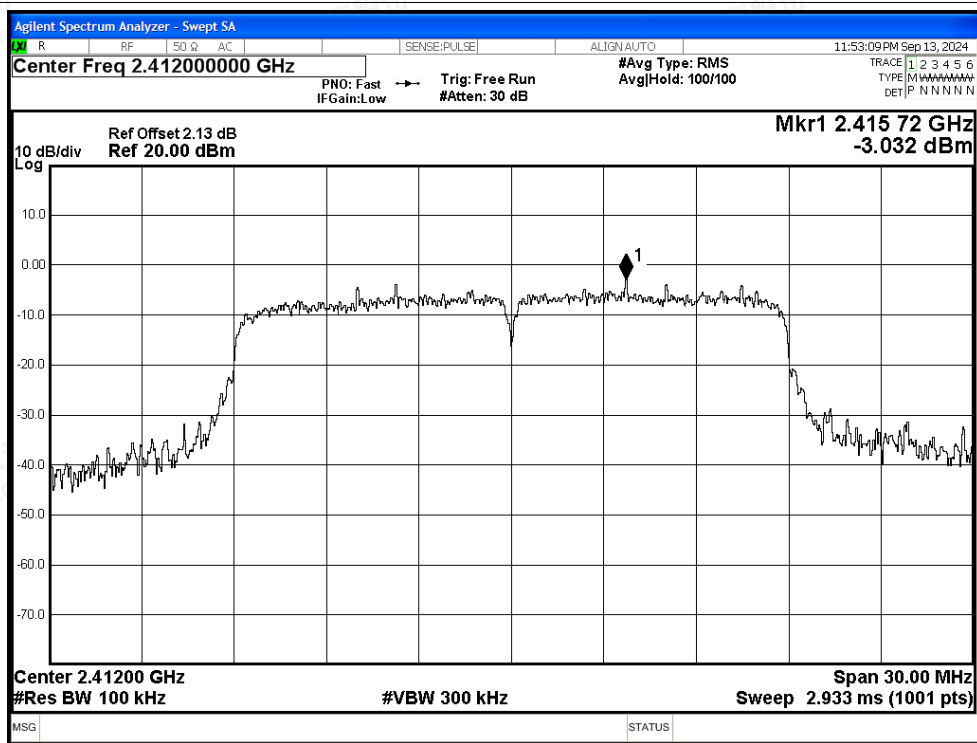


Tx. Spurious NVNT g 2462MHz Ant Emission

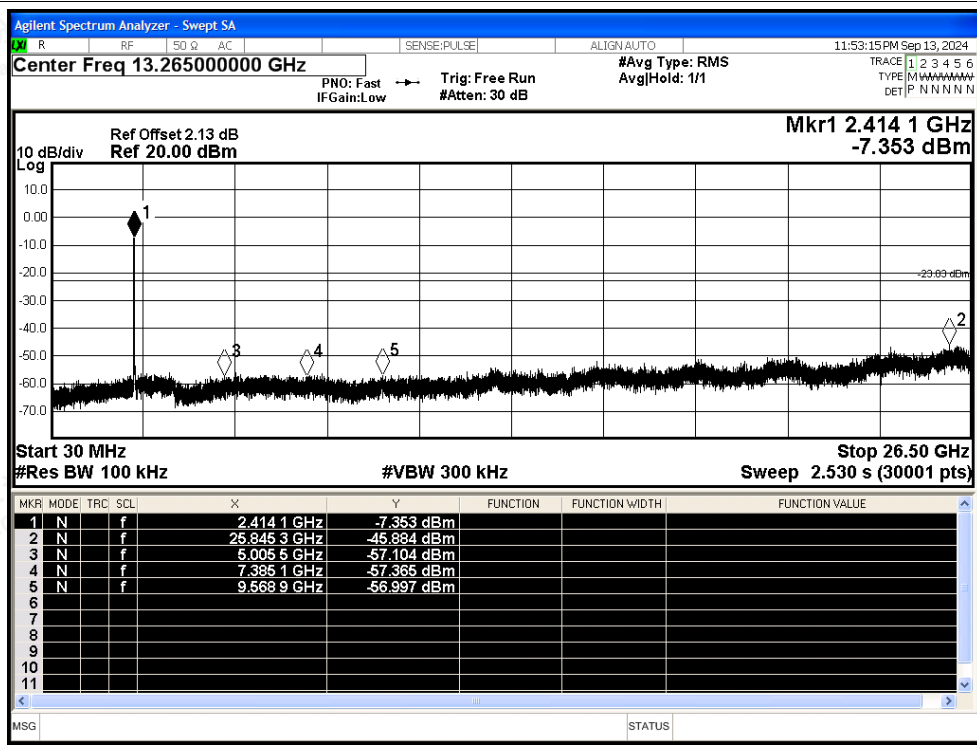




Tx. Spurious NVNT n20 2412MHz Ant Ref

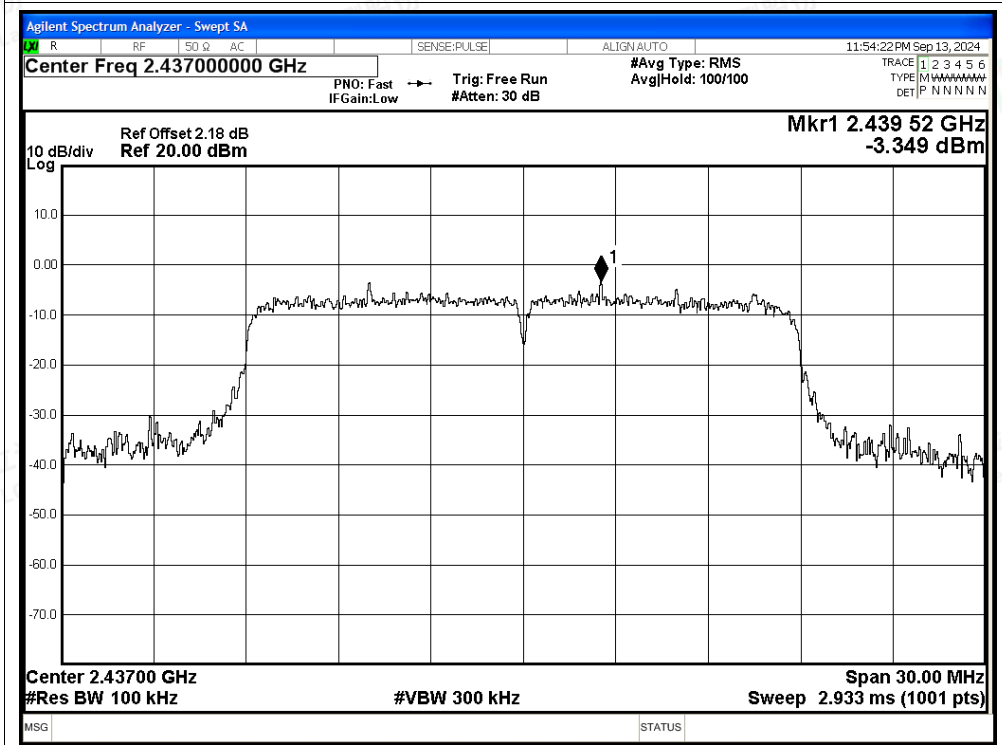


Tx. Spurious NVNT n20 2412MHz Ant Emission

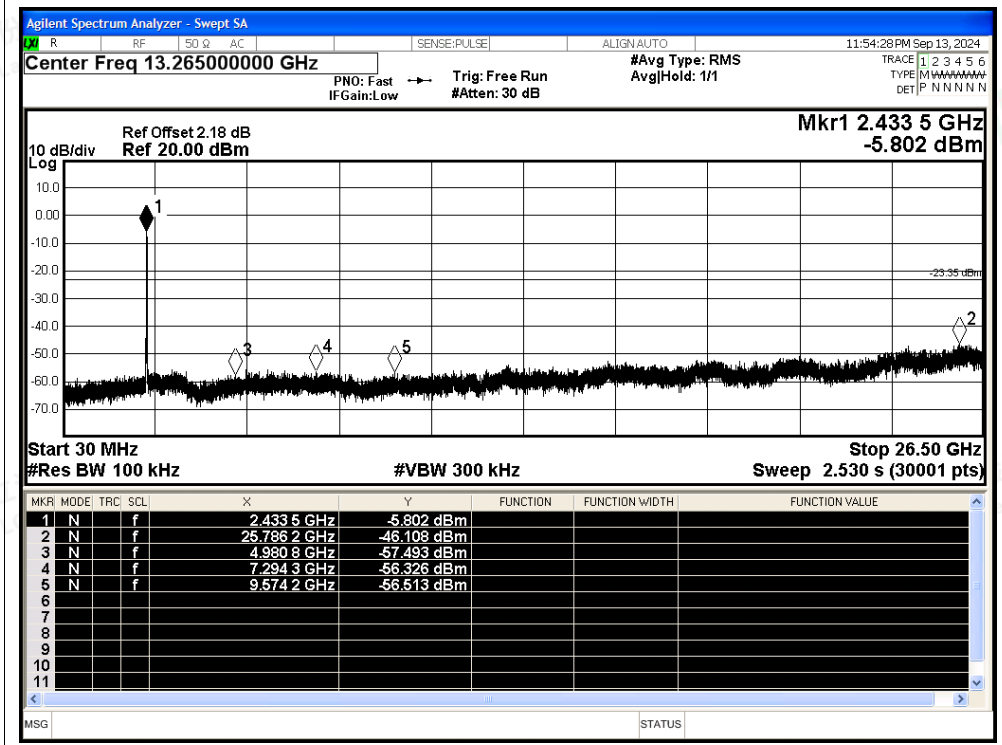




Tx. Spurious NVNT n20 2437MHz Ant Ref

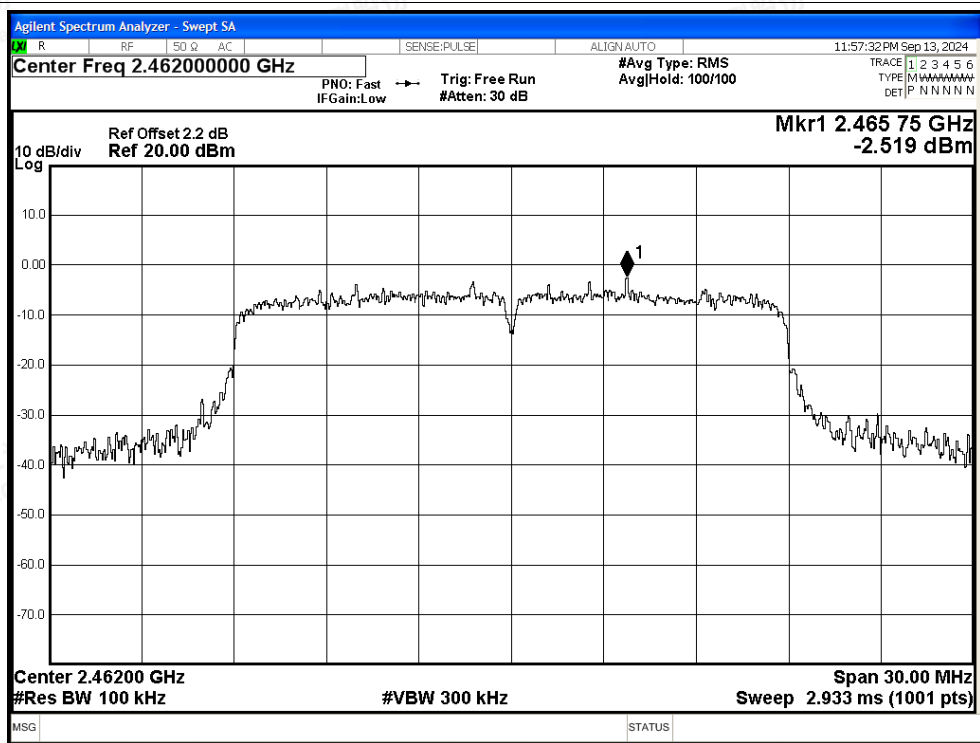


Tx. Spurious NVNT n20 2437MHz Ant Emission

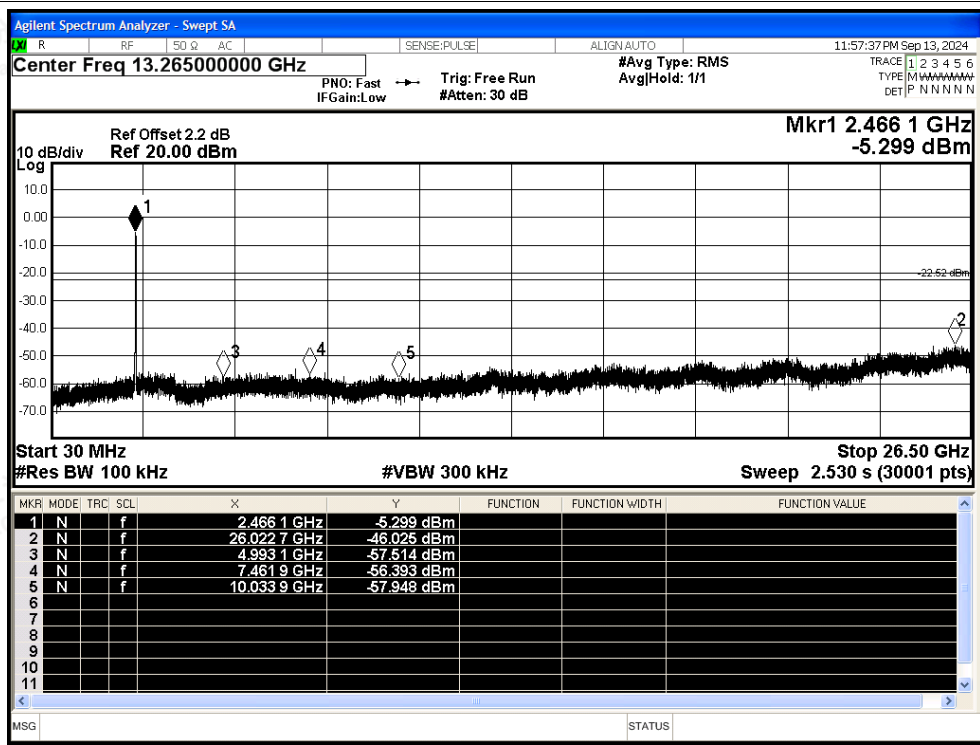




Tx. Spurious NVNT n20 2462MHz Ant Ref

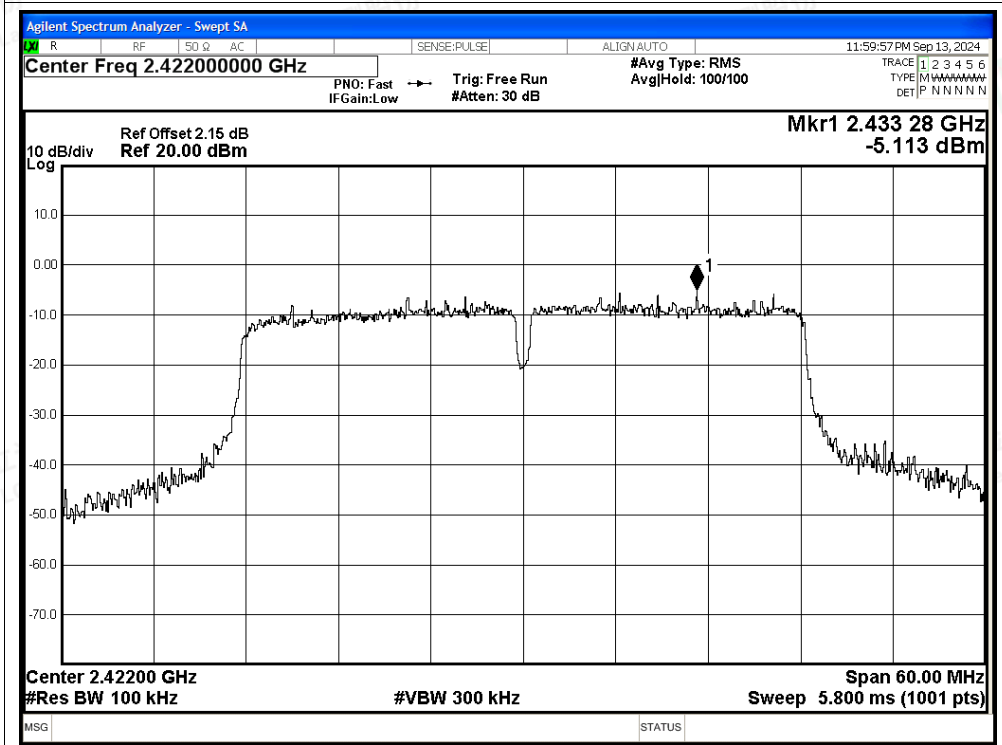


Tx. Spurious NVNT n20 2462MHz Ant Emission

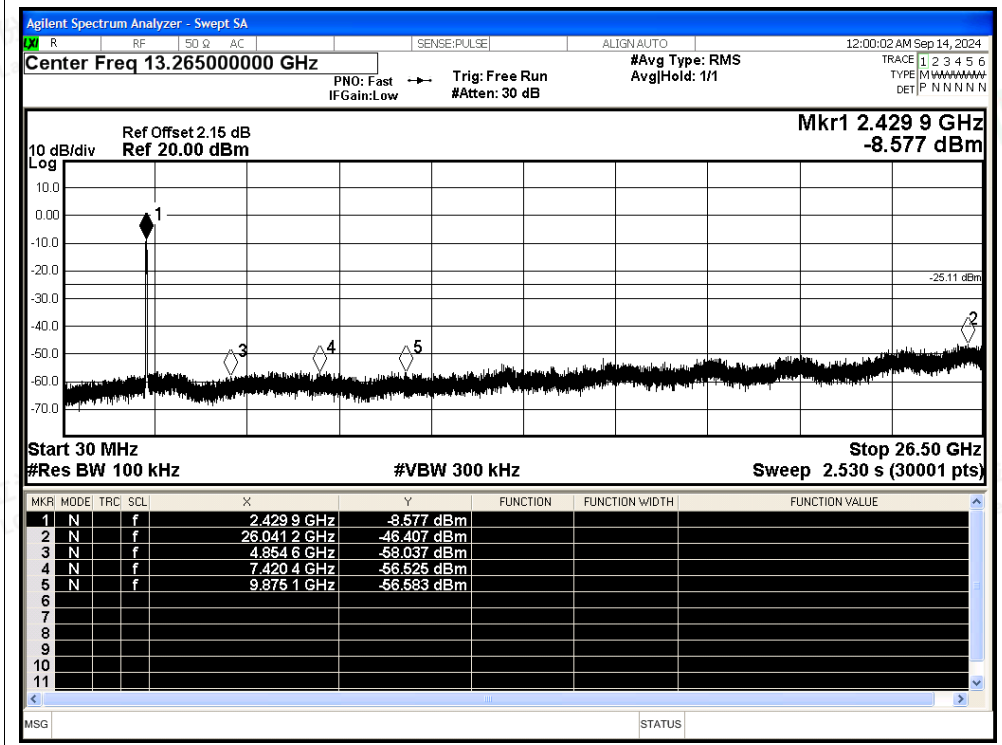




Tx. Spurious NVNT n40 2422MHz Ant Ref

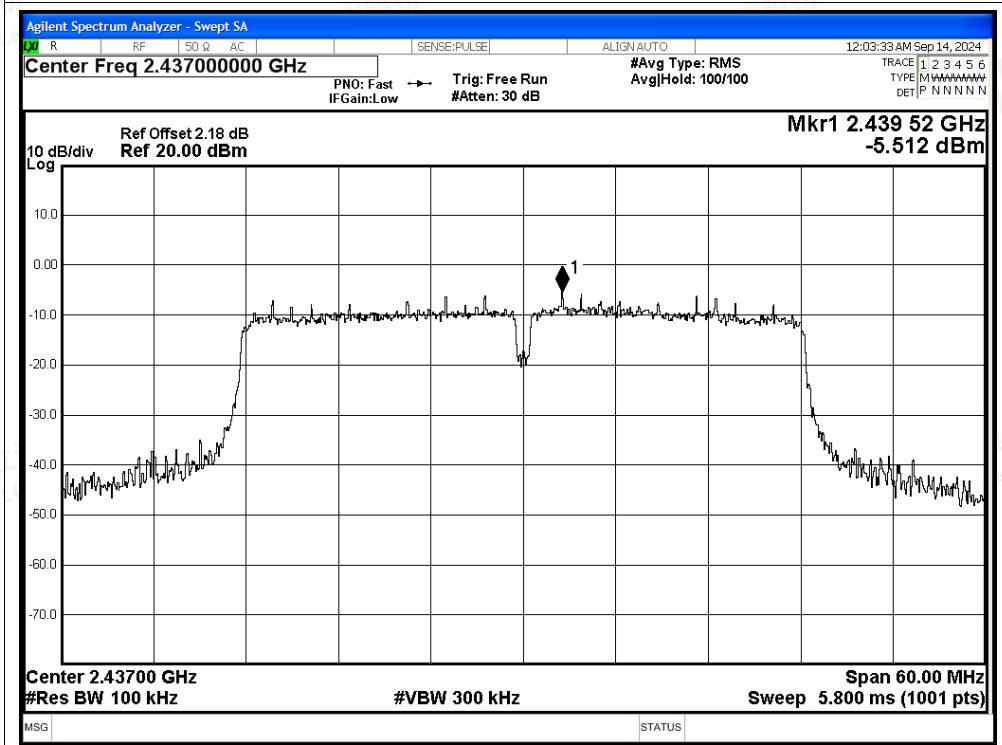


Tx. Spurious NVNT n40 2422MHz Ant Emission

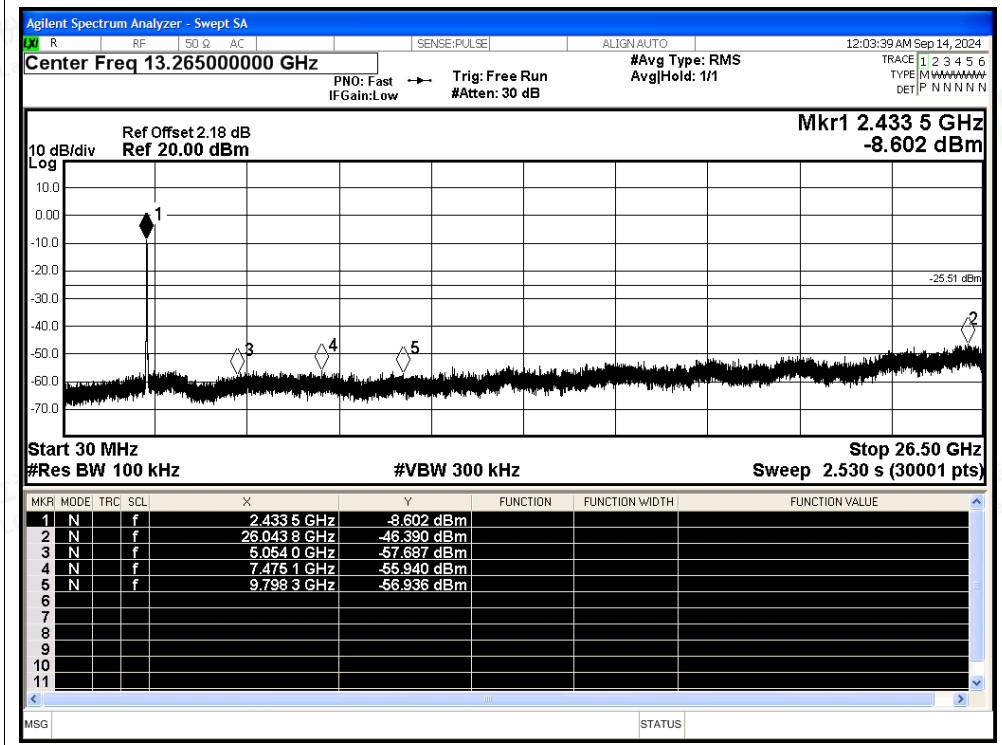




Tx. Spurious NVNT n40 2437MHz Ant Ref

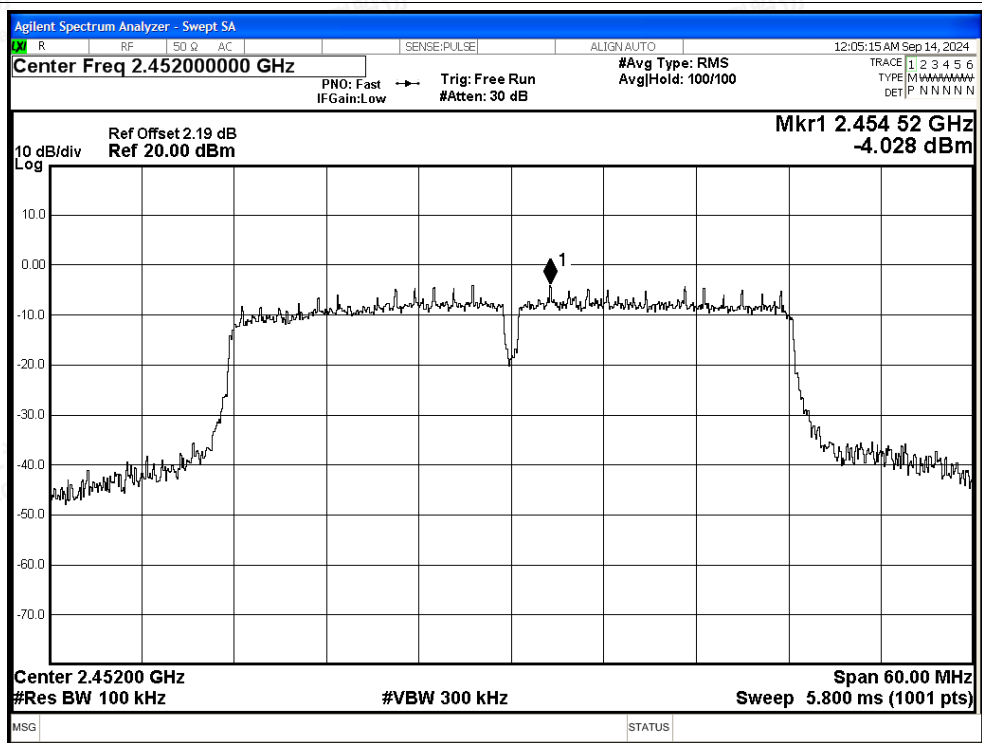


Tx. Spurious NVNT n40 2437MHz Ant Emission

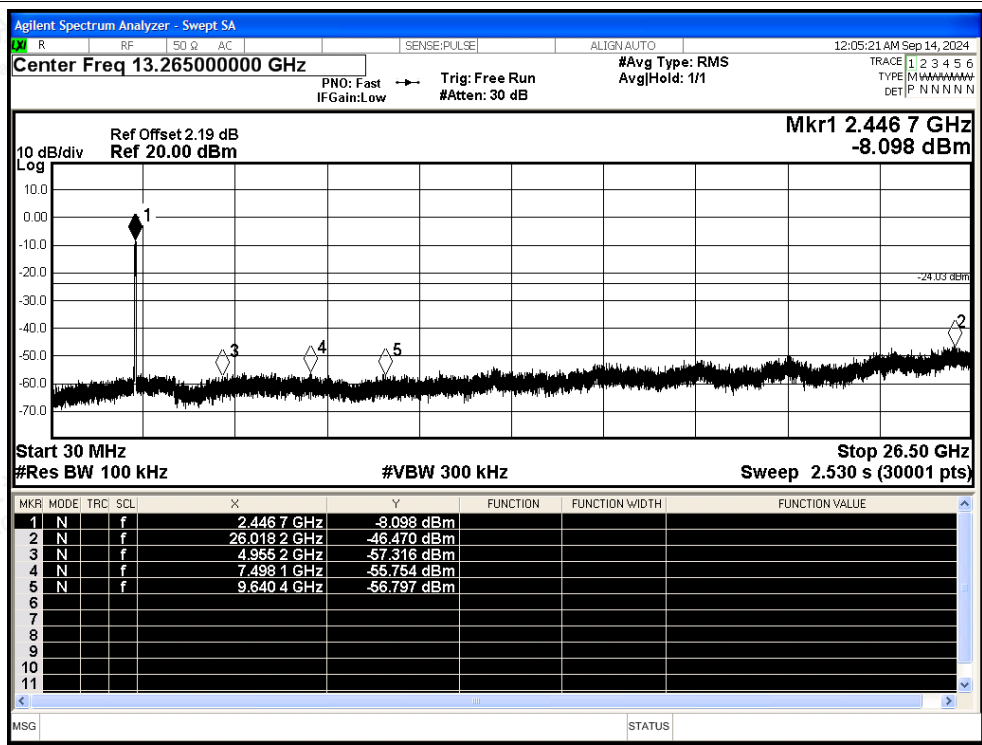




Tx. Spurious NVNT n40 2452MHz Ant Ref



Tx. Spurious NVNT n40 2452MHz Ant Emission





C.6 Duty Cycle

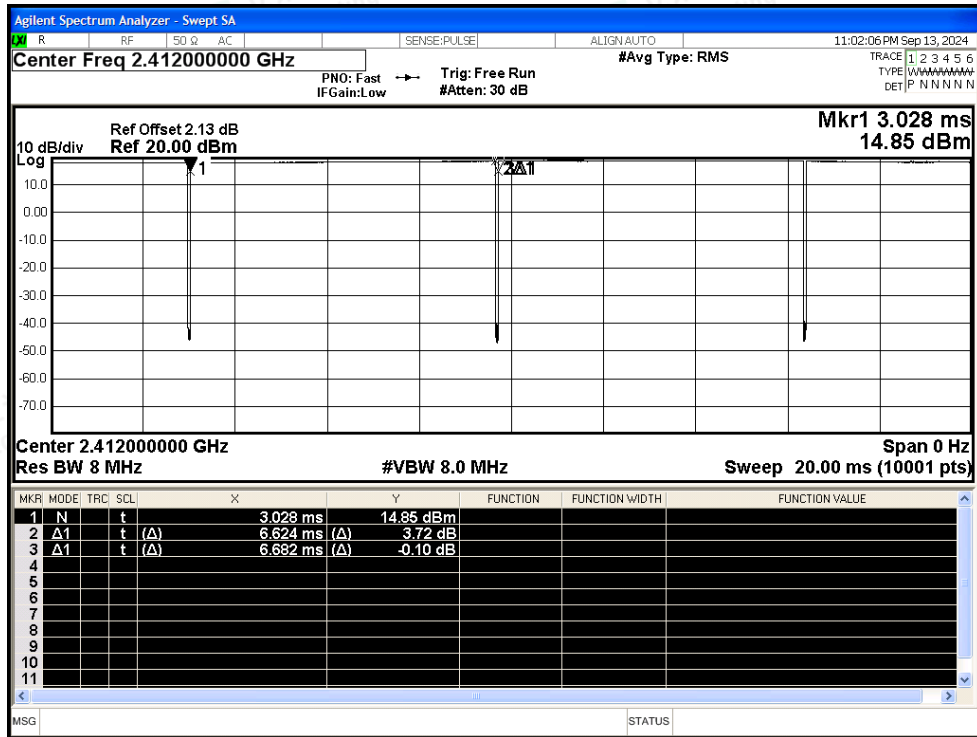
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant	99.13	0	0.15
NVNT	b	2437	Ant	99.16	0	0.15
NVNT	b	2462	Ant	99.13	0	0.15
NVNT	g	2412	Ant	97.75	0.1	0.37
NVNT	g	2437	Ant	97.75	0.1	0.37
NVNT	g	2462	Ant	97.75	0.1	0.37
NVNT	n20	2412	Ant	97.25	0.12	0.44
NVNT	n20	2437	Ant	97.33	0.12	0.44
NVNT	n20	2462	Ant	97.25	0.12	0.44
NVNT	n40	2422	Ant	94.71	0.24	0.9
NVNT	n40	2437	Ant	94.7	0.24	0.9
NVNT	n40	2452	Ant	94.71	0.24	0.9



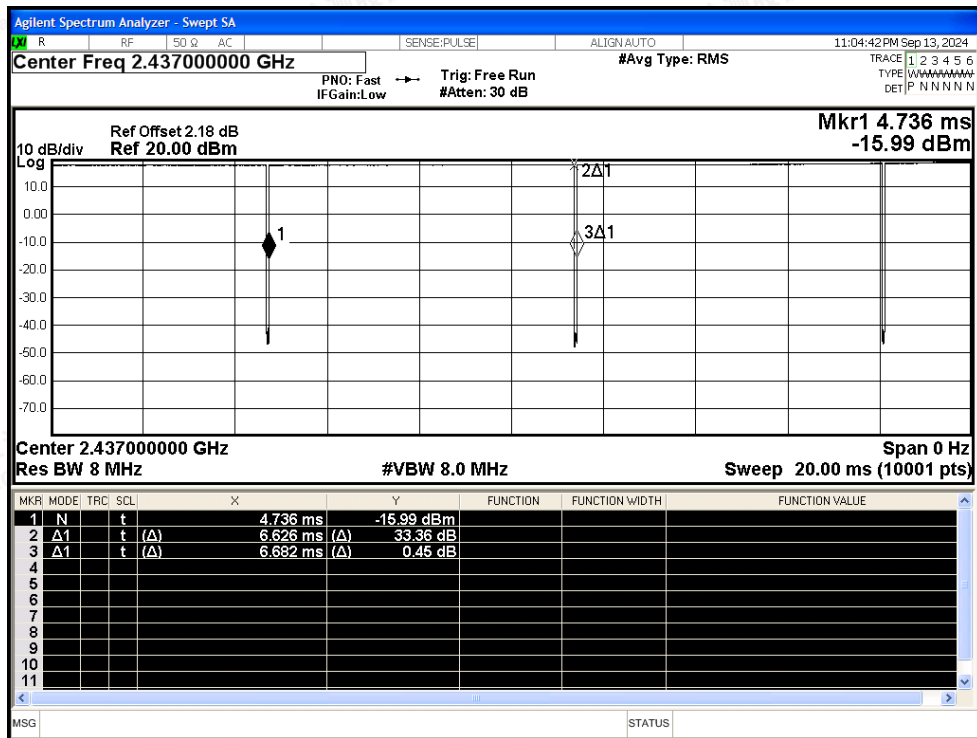


Test Graphs

Duty Cycle NVNT b 2412MHz Ant

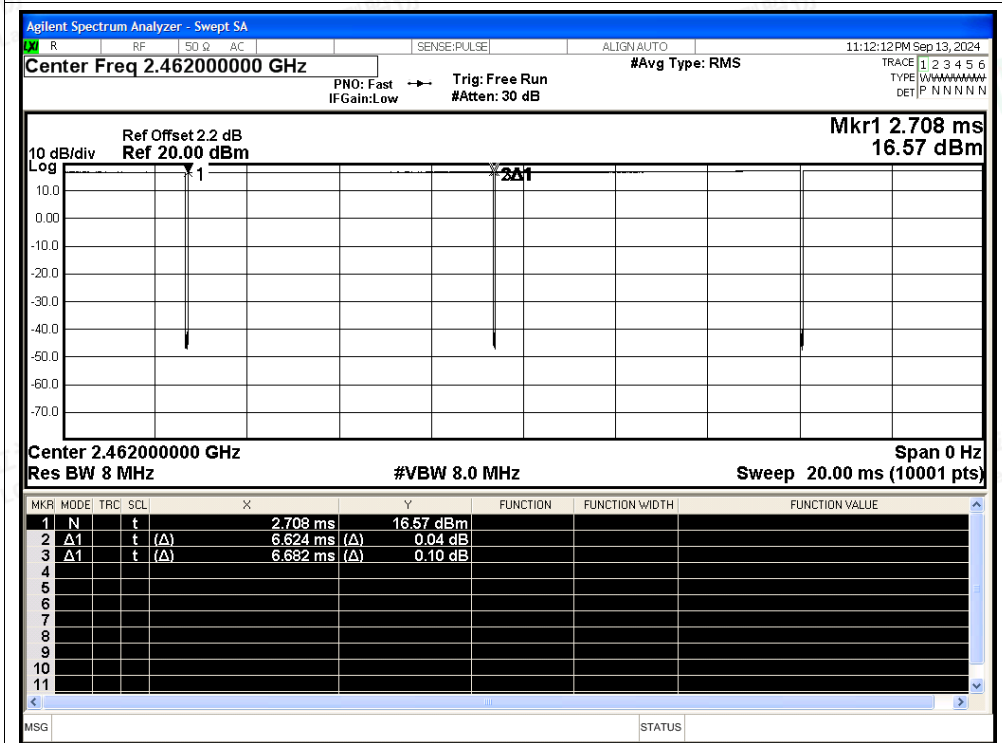


Duty Cycle NVNT b 2437MHz Ant

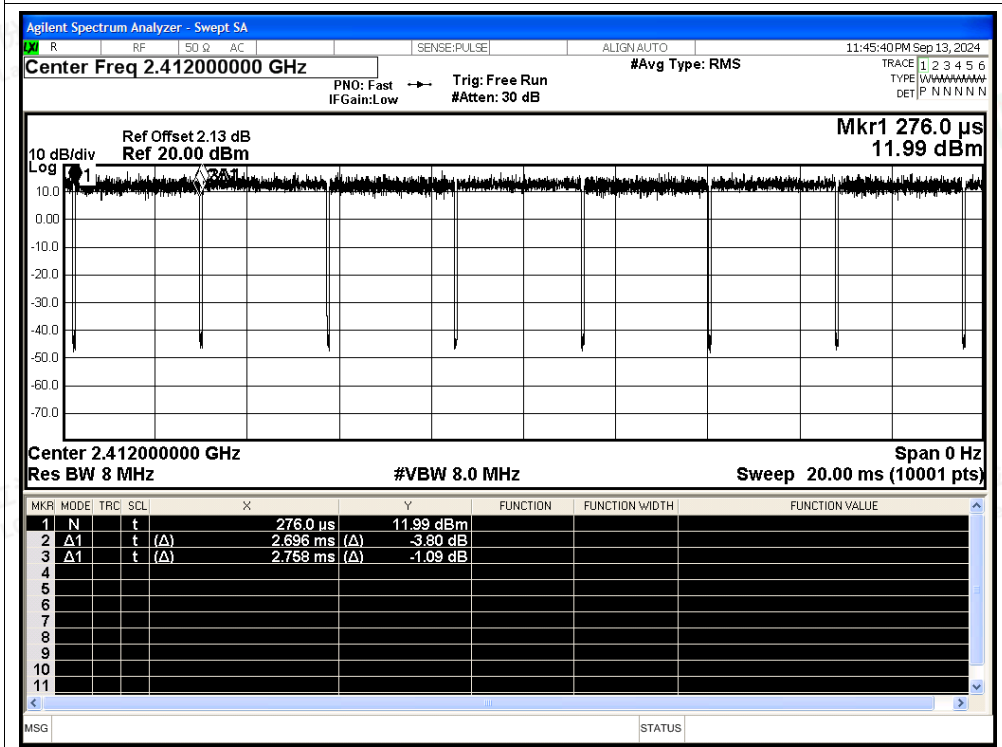




Duty Cycle NVNT b 2462MHz Ant

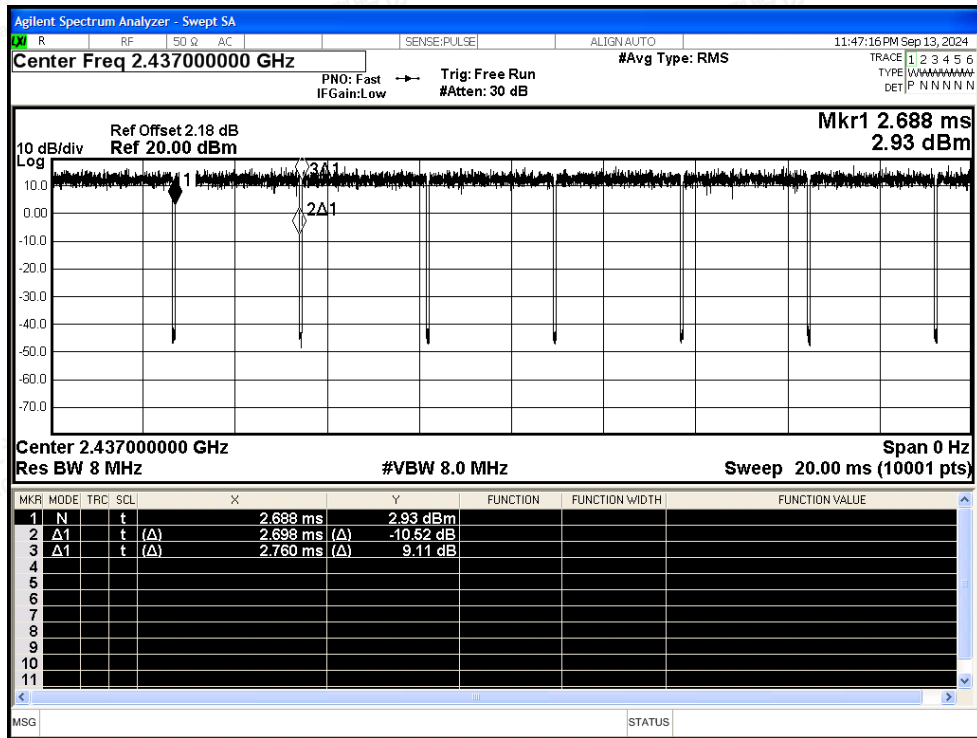


Duty Cycle NVNT g 2412MHz Ant

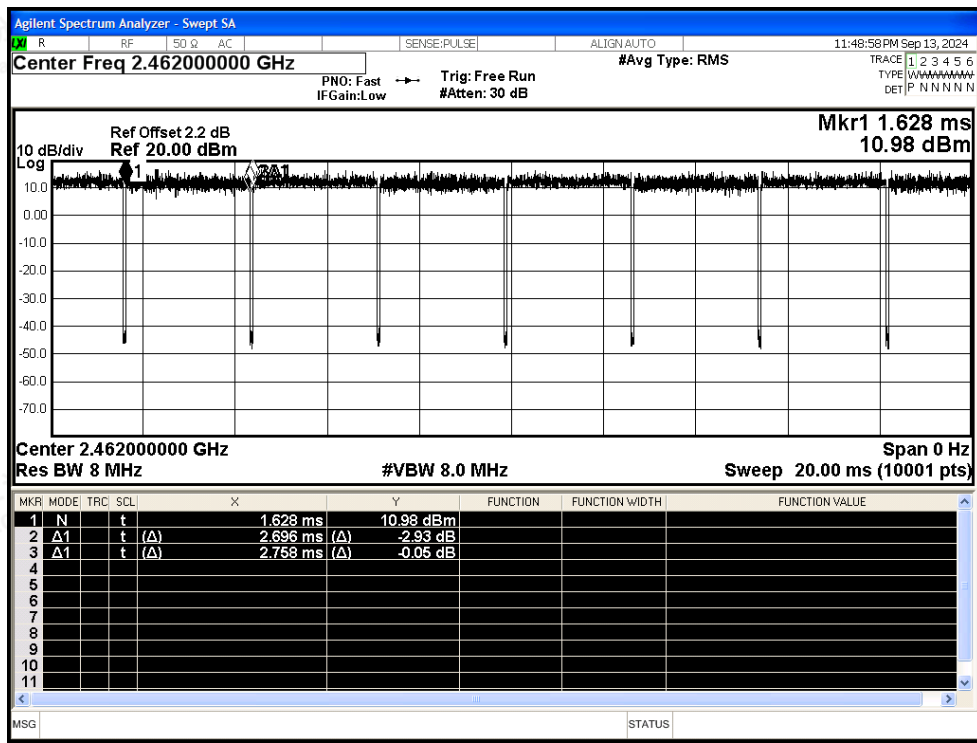




Duty Cycle NVNT g 2437MHz Ant

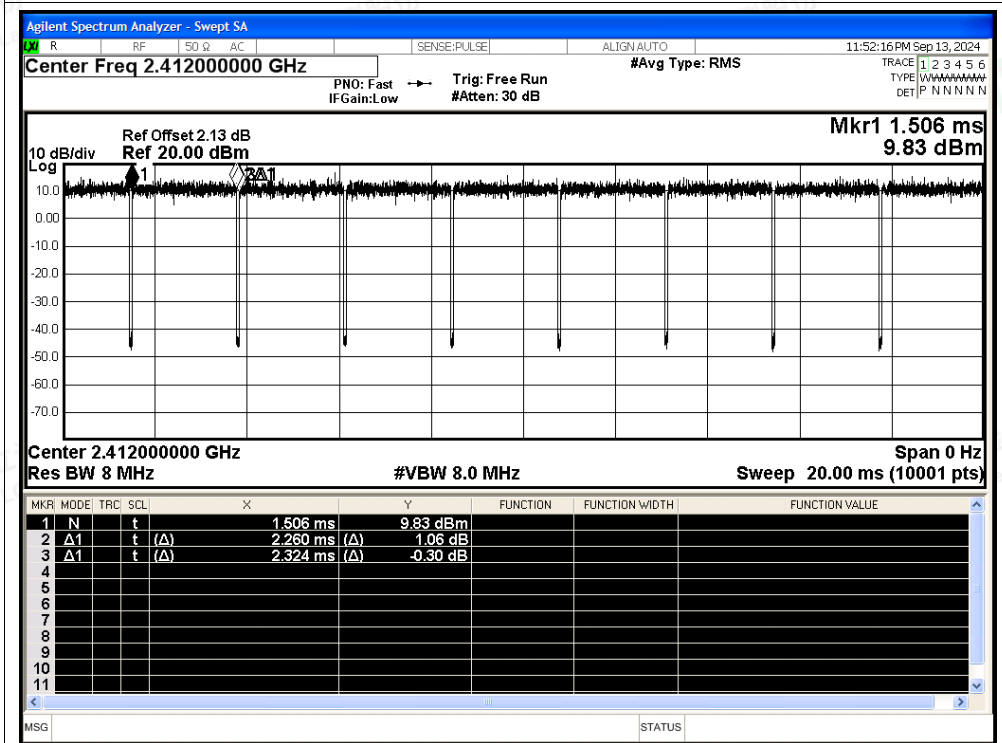


Duty Cycle NVNT g 2462MHz Ant

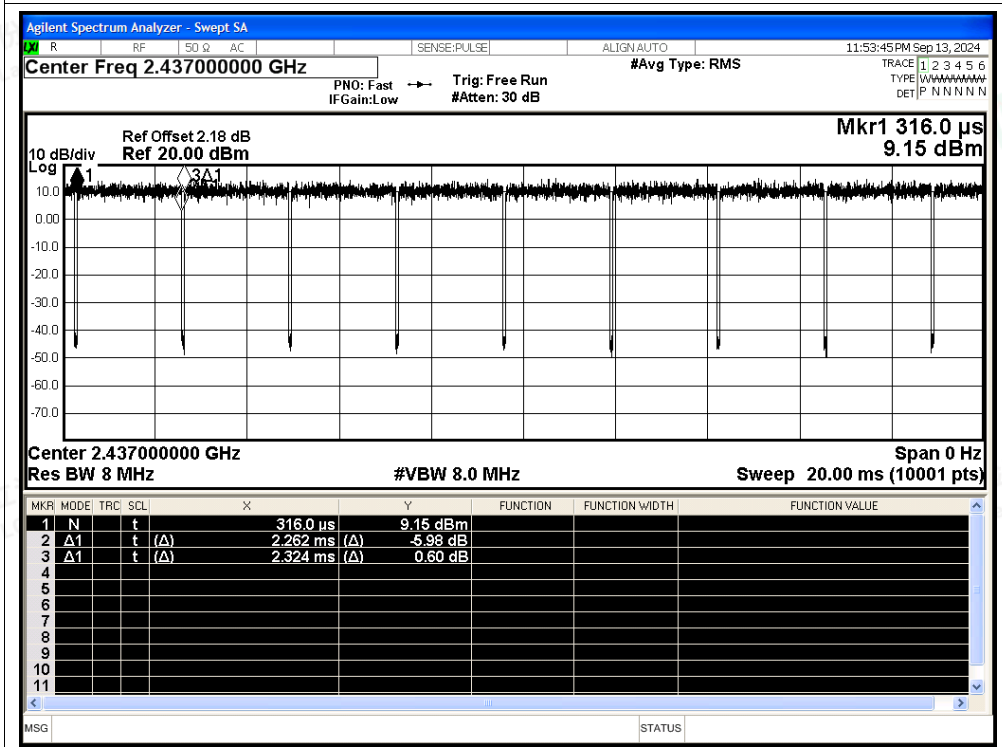


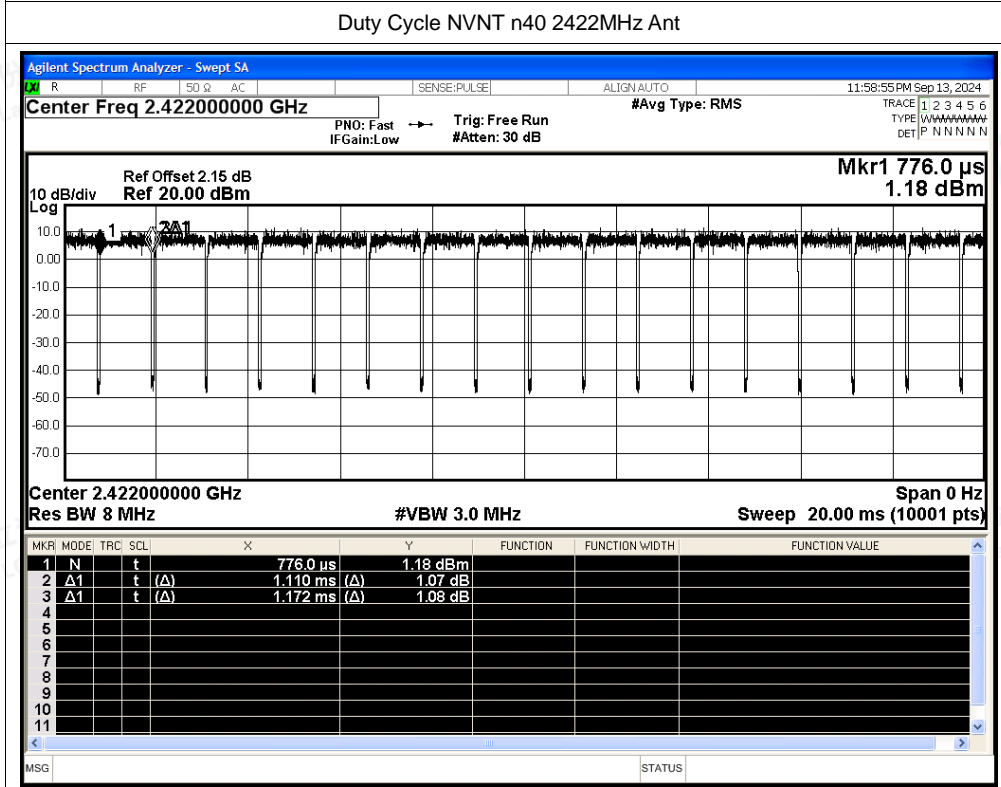
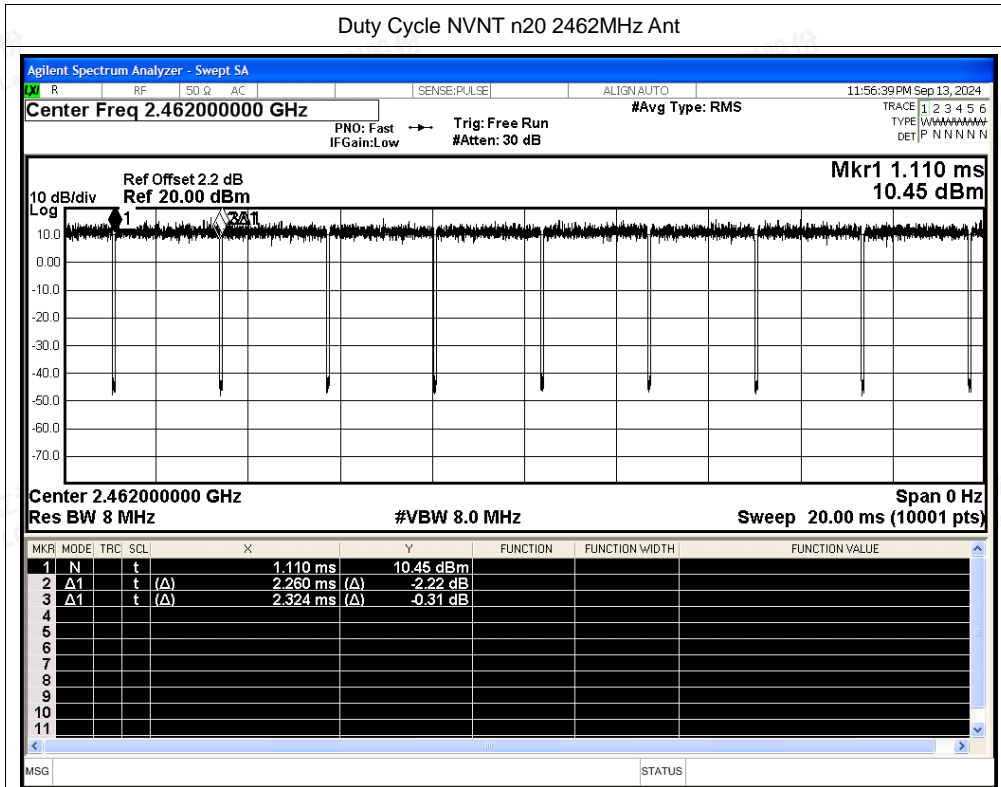


Duty Cycle NVNT n20 2412MHz Ant



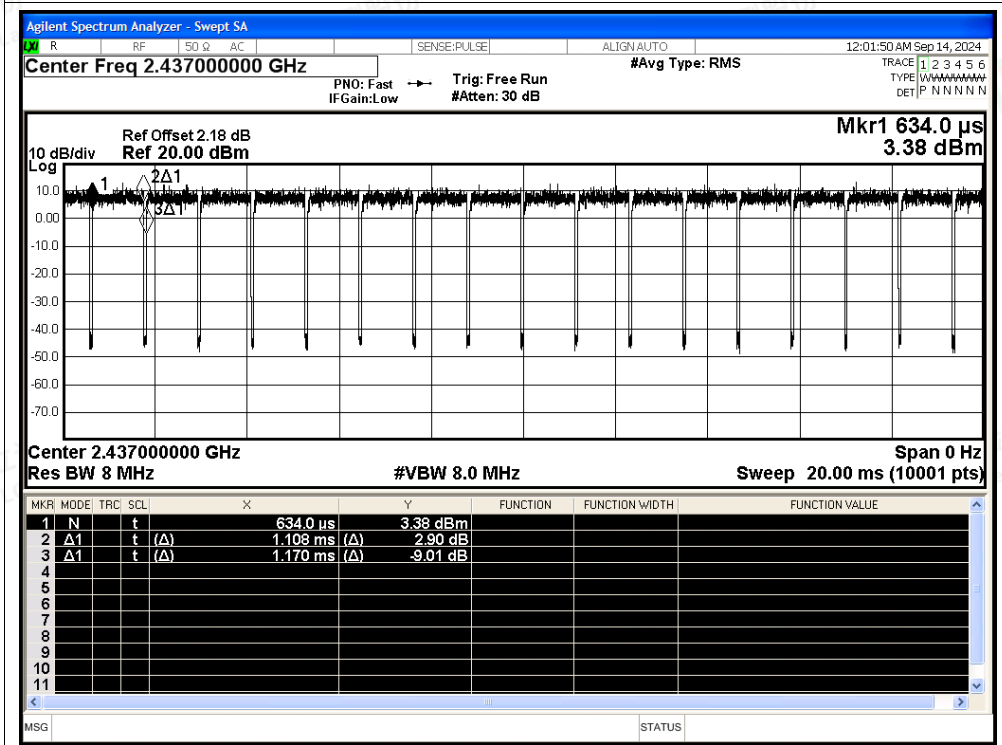
Duty Cycle NVNT n20 2437MHz Ant



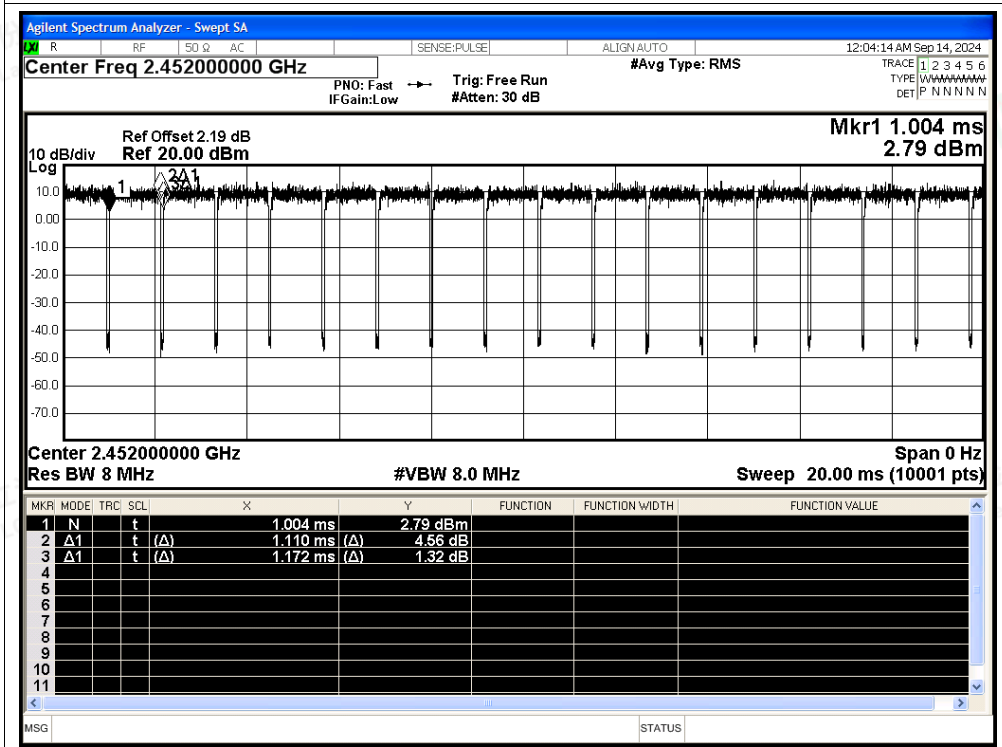




Duty Cycle NVNT n40 2437MHz Ant



Duty Cycle NVNT n40 2452MHz Ant





C.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	-51.09	2	-	46.17	Peak	74	Pass
NVNT	b	2412	Ant	2310	-58.38	2	0	38.88	Average	54	Pass
NVNT	b	2412	Ant	2377.509	-47.02	2	-	50.24	Peak	74	Pass
NVNT	b	2412	Ant	2389.911	-56.05	2	0	41.21	Average	54	Pass
NVNT	b	2412	Ant	2390	-48.24	2	-	49.02	Peak	74	Pass
NVNT	b	2412	Ant	2390	-55.93	2	0	41.33	Average	54	Pass
NVNT	b	2462	Ant	2483.5	-46.41	2	-	50.85	Peak	74	Pass
NVNT	b	2462	Ant	2483.5	-54.46	2	0	42.8	Average	54	Pass
NVNT	b	2462	Ant	2484.312	-45.44	2	-	51.82	Peak	74	Pass
NVNT	b	2462	Ant	2484.047	-54.04	2	0	43.22	Average	54	Pass
NVNT	b	2462	Ant	2500	-50.19	2	-	47.07	Peak	74	Pass
NVNT	b	2462	Ant	2500	-57.52	2	0	39.74	Average	54	Pass
NVNT	g	2412	Ant	2310	-49.07	2	-	48.19	Peak	74	Pass
NVNT	g	2412	Ant	2310	-58.48	2	0.1	38.88	Average	54	Pass
NVNT	g	2412	Ant	2389.443	-36.72	2	-	60.54	Peak	74	Pass
NVNT	g	2412	Ant	2389.209	-53.29	2	0.1	44.07	Average	54	Pass
NVNT	g	2412	Ant	2390	-39.59	2	-	57.67	Peak	74	Pass
NVNT	g	2412	Ant	2390	-52.83	2	0.1	44.53	Average	54	Pass
NVNT	g	2462	Ant	2483.5	-41.68	2	-	55.58	Peak	74	Pass
NVNT	g	2462	Ant	2483.5	-53.53	2	0.1	43.83	Average	54	Pass
NVNT	g	2462	Ant	2483.57	-36.83	2	-	60.43	Peak	74	Pass
NVNT	g	2462	Ant	2483.517	-53.53	2	0.1	43.83	Average	54	Pass
NVNT	g	2462	Ant	2500	-48.83	2	-	48.43	Peak	74	Pass
NVNT	g	2462	Ant	2500	-58.3	2	0.1	39.06	Average	54	Pass
NVNT	n20	2412	Ant	2310	-50.82	2	-	46.44	Peak	74	Pass
NVNT	n20	2412	Ant	2310	-58.43	2	0.12	38.95	Average	54	Pass
NVNT	n20	2412	Ant	2389.677	-37.64	2	-	59.62	Peak	74	Pass
NVNT	n20	2412	Ant	2389.911	-52.66	2	0.12	44.72	Average	54	Pass
NVNT	n20	2412	Ant	2390	-36.88	2	-	60.38	Peak	74	Pass
NVNT	n20	2412	Ant	2390	-52.65	2	0.12	44.73	Average	54	Pass
NVNT	n20	2462	Ant	2483.5	-40.6	2	-	56.66	Peak	74	Pass
NVNT	n20	2462	Ant	2483.5	-54.74	2	0.12	42.64	Average	54	Pass
NVNT	n20	2462	Ant	2483.782	-31.47	2	-	65.79	Peak	74	Pass
NVNT	n20	2462	Ant	2483.57	-53.6	2	0.12	43.78	Average	54	Pass
NVNT	n20	2462	Ant	2500	-50.17	2	-	47.09	Peak	74	Pass
NVNT	n20	2462	Ant	2500	-58.05	2	0.12	39.33	Average	54	Pass
NVNT	n40	2422	Ant	2310	-49.2	2	-	48.06	Peak	74	Pass
NVNT	n40	2422	Ant	2310	-58.54	2	0.24	38.96	Average	54	Pass



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Scan code to check authenticity



NVNT	n40	2422	Ant	2389.52	-39.4	2	-	57.86	Peak	74	Pass
NVNT	n40	2422	Ant	2389.946	-51.65	2	0.24	45.85	Average	54	Pass
NVNT	n40	2422	Ant	2390	-40.75	2	-	56.51	Peak	74	Pass
NVNT	n40	2422	Ant	2390	-51.65	2	0.24	45.85	Average	54	Pass
NVNT	n40	2452	Ant	2483.5	-37.6	2	-	59.66	Peak	74	Pass
NVNT	n40	2452	Ant	2483.5	-51.83	2	0.24	45.67	Average	54	Pass
NVNT	n40	2452	Ant	2484.946	-35.73	2	-	61.53	Peak	74	Pass
NVNT	n40	2452	Ant	2483.932	-52.64	2	0.24	44.86	Average	54	Pass
NVNT	n40	2452	Ant	2500	-50.46	2	-	46.8	Peak	74	Pass
NVNT	n40	2452	Ant	2500	-57.68	2	0.24	39.82	Average	54	Pass

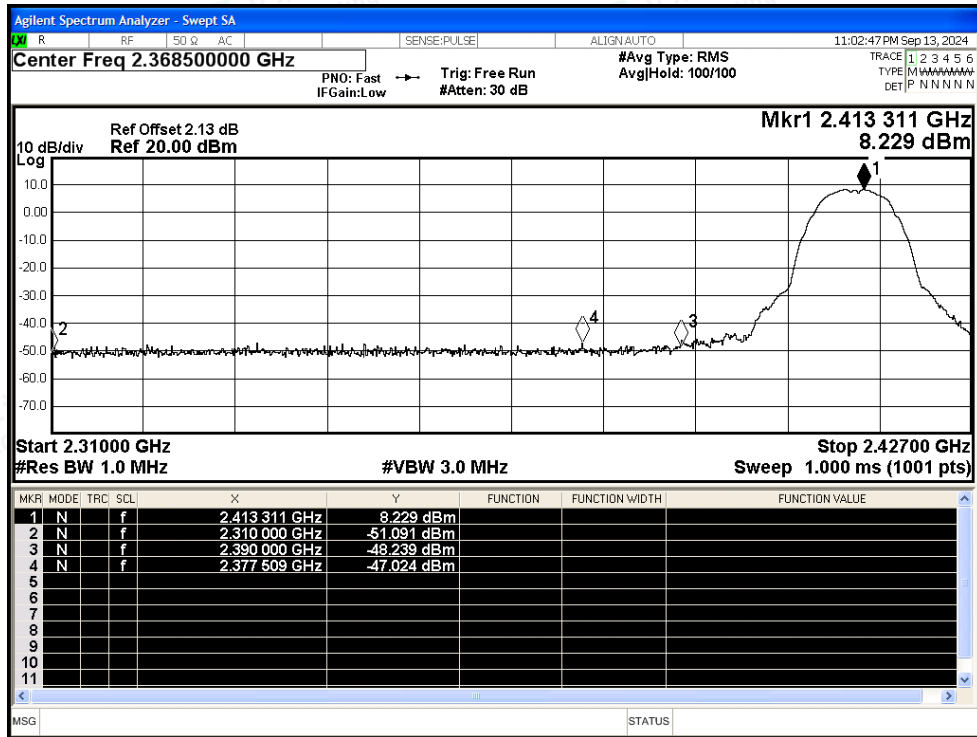


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 Scan code to check authenticity

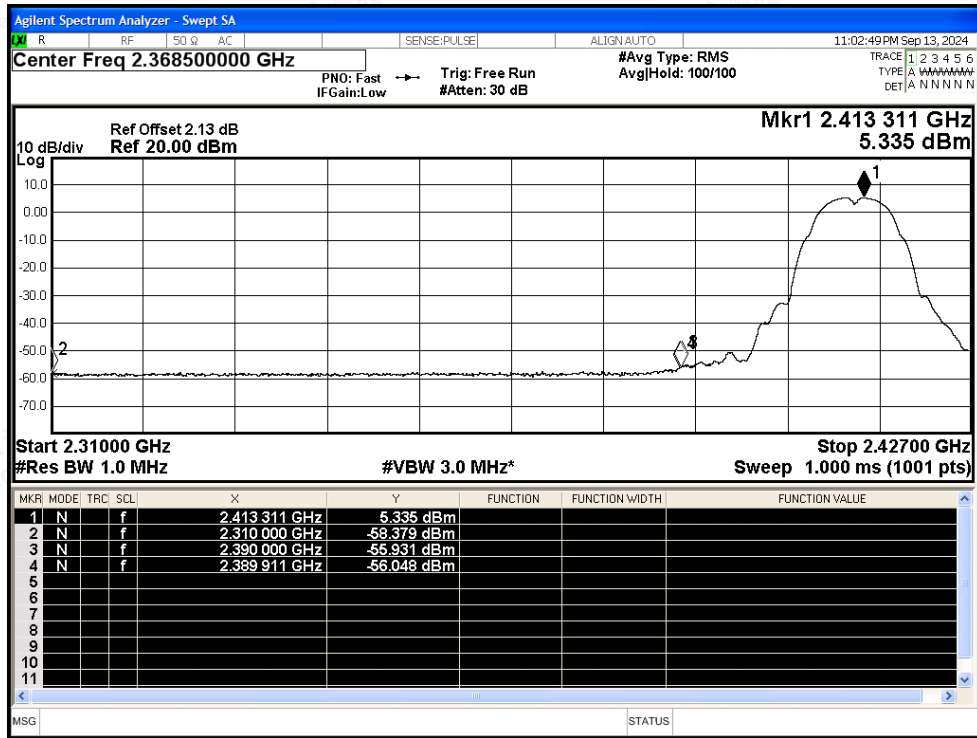


Test Graphs

Restrict Band NVNT b 2412MHz Ant Peak

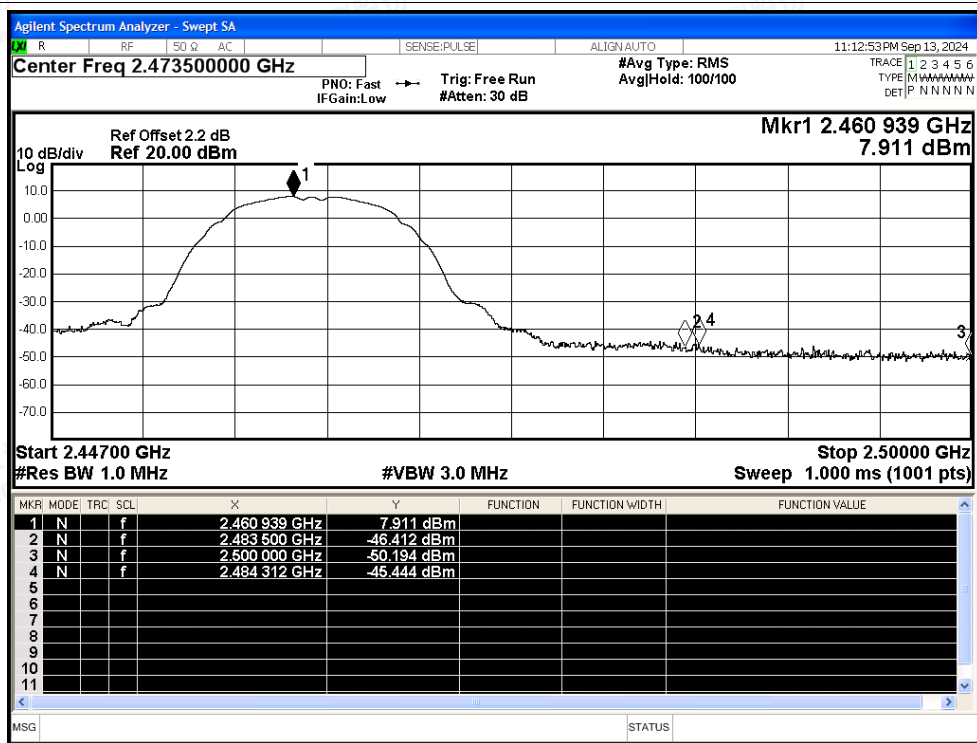


Restrict Band NVNT b 2412MHz Ant Average

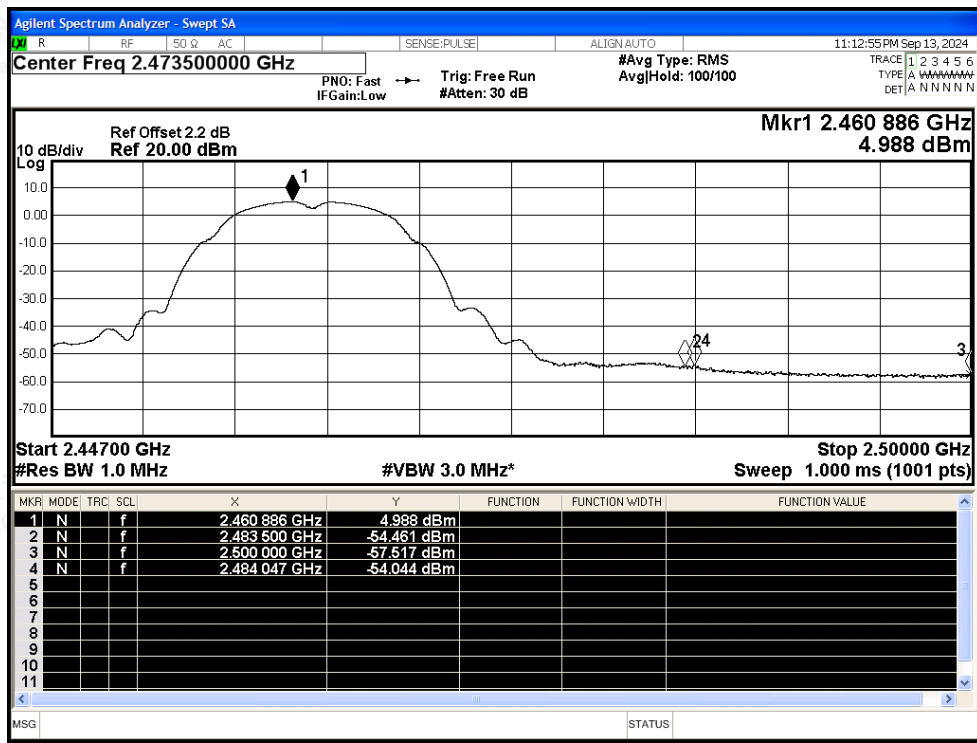




Restrict Band NVNT b 2462MHz Ant Peak



Restrict Band NVNT b 2462MHz Ant Average

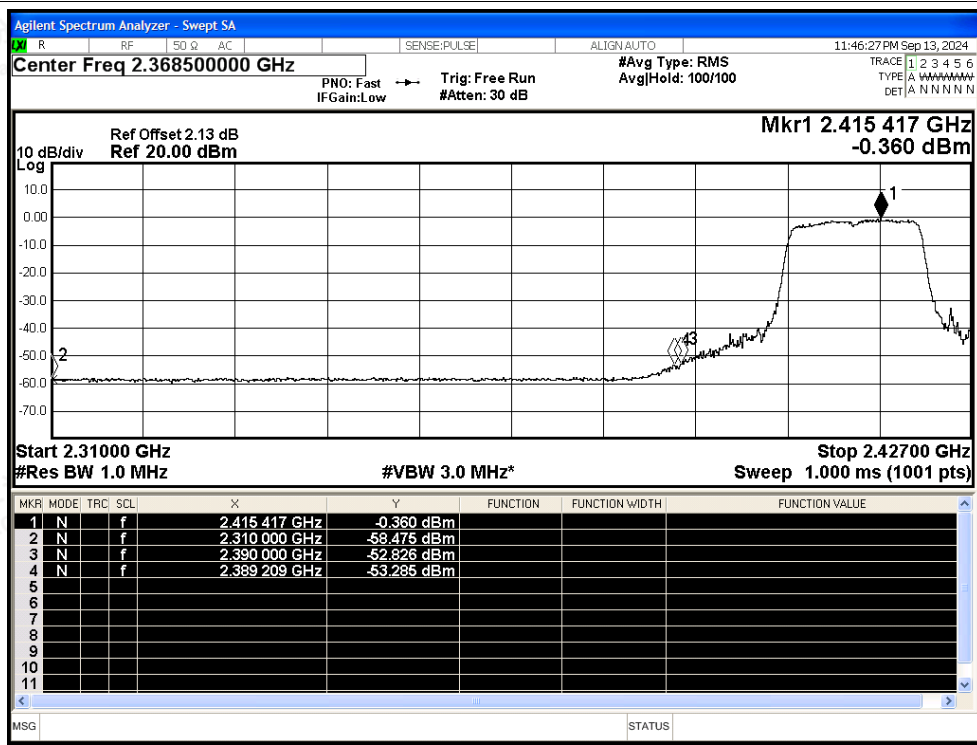




Restrict Band NVNT g 2412MHz Ant Peak

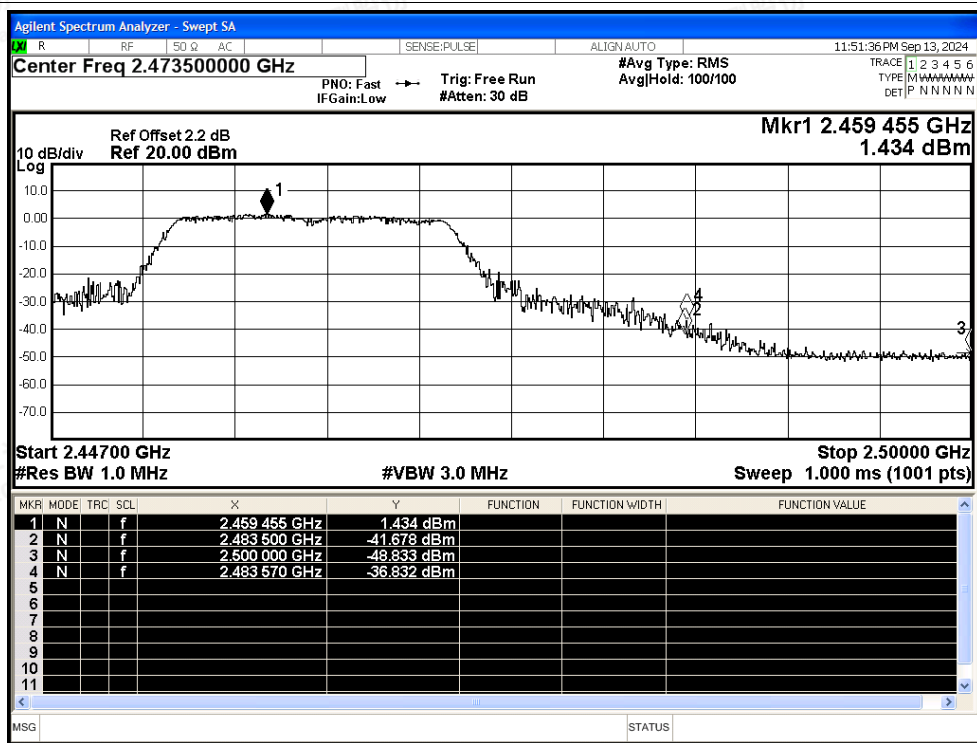


Restrict Band NVNT g 2412MHz Ant Average

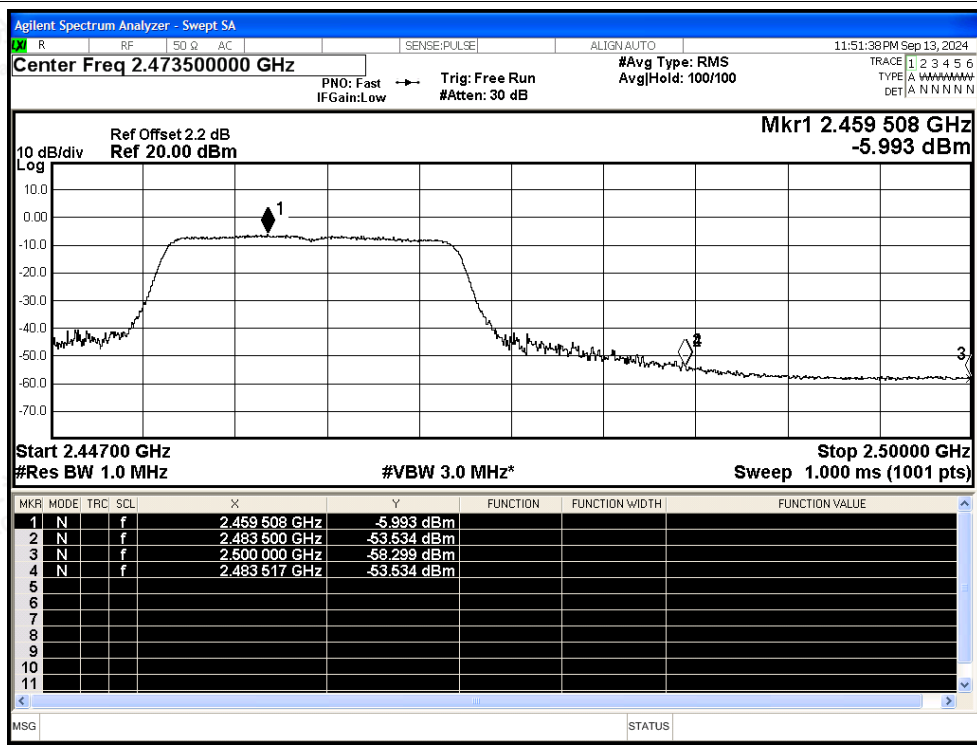




Restrict Band NVNT g 2462MHz Ant Peak

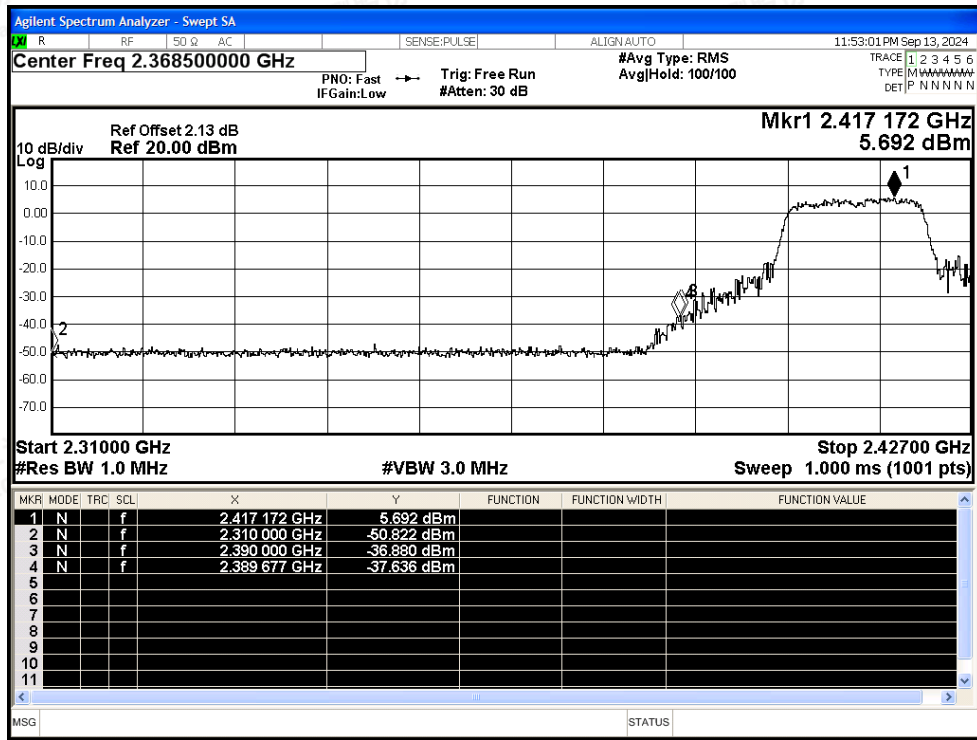


Restrict Band NVNT g 2462MHz Ant Average

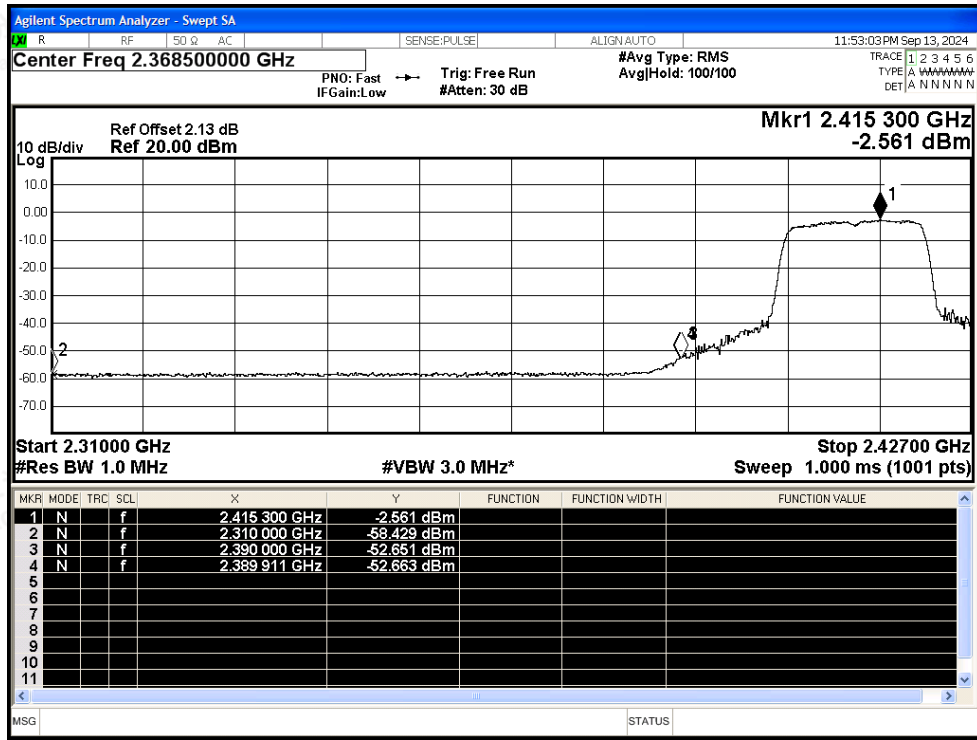




Restrict Band NVNT n20 2412MHz Ant Peak

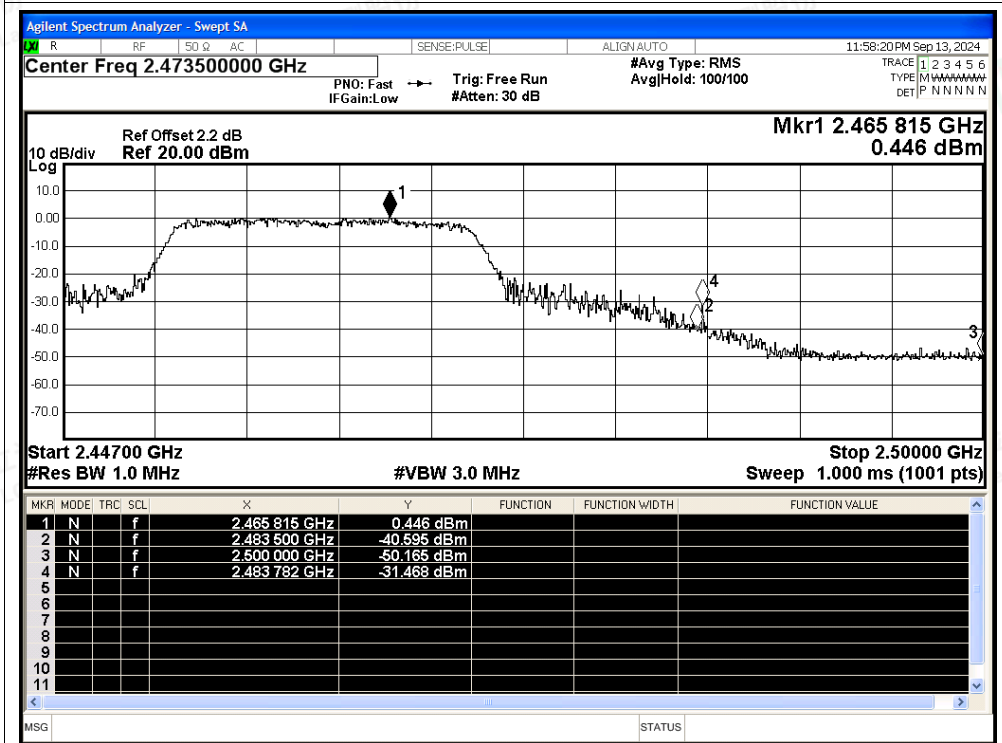


Restrict Band NVNT n20 2412MHz Ant Average

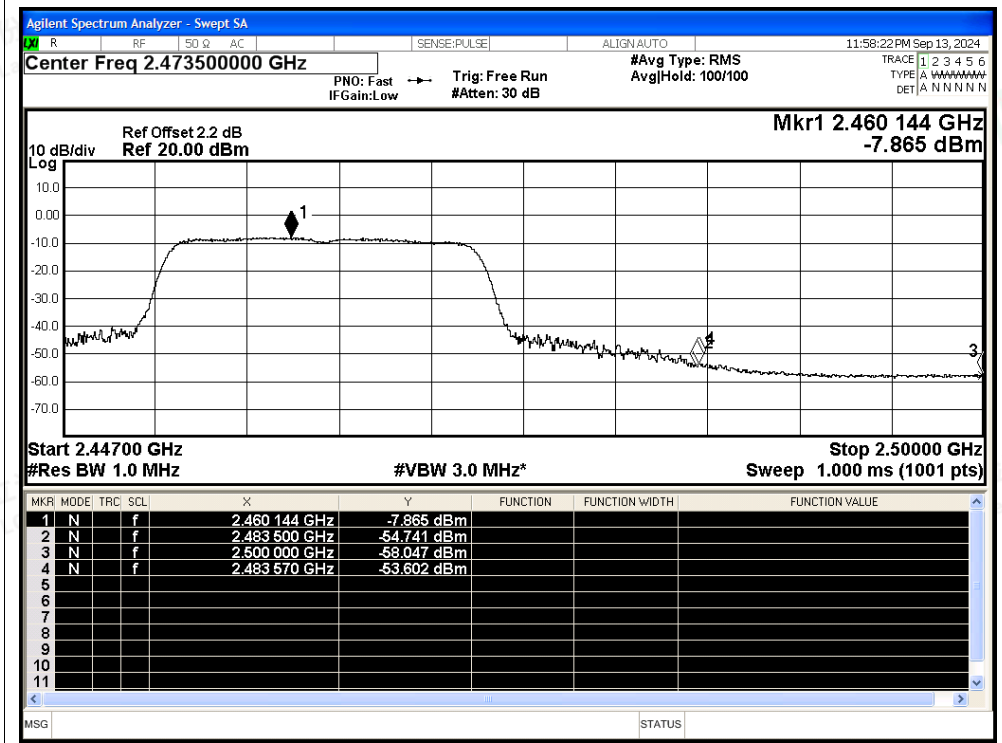




Restrict Band NVNT n20 2462MHz Ant Peak

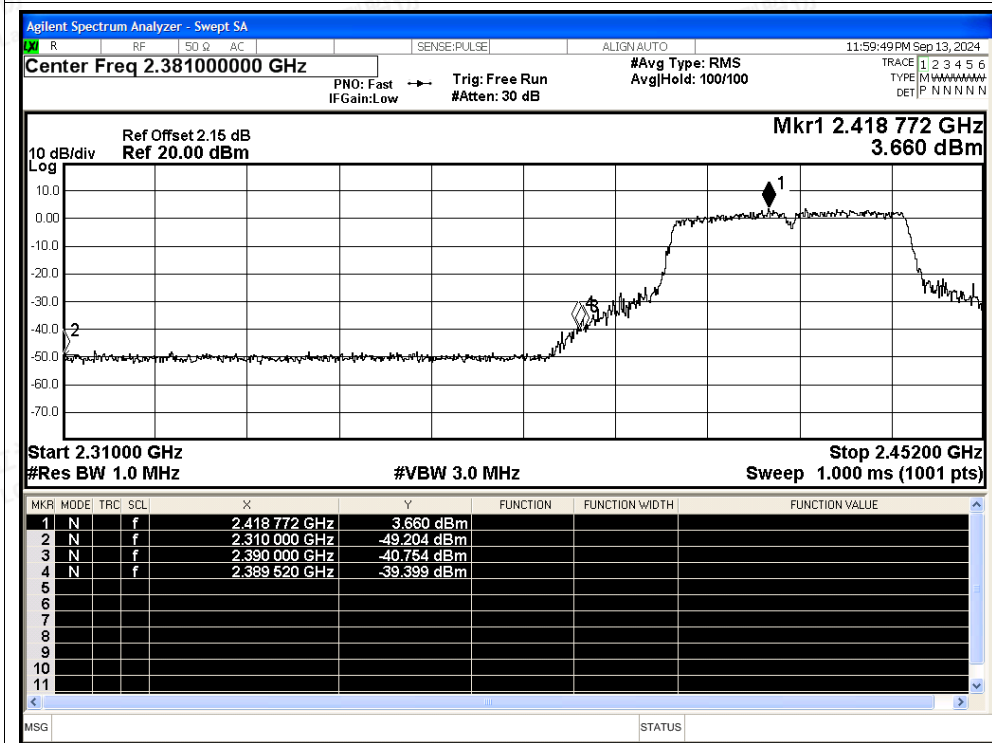


Restrict Band NVNT n20 2462MHz Ant Average

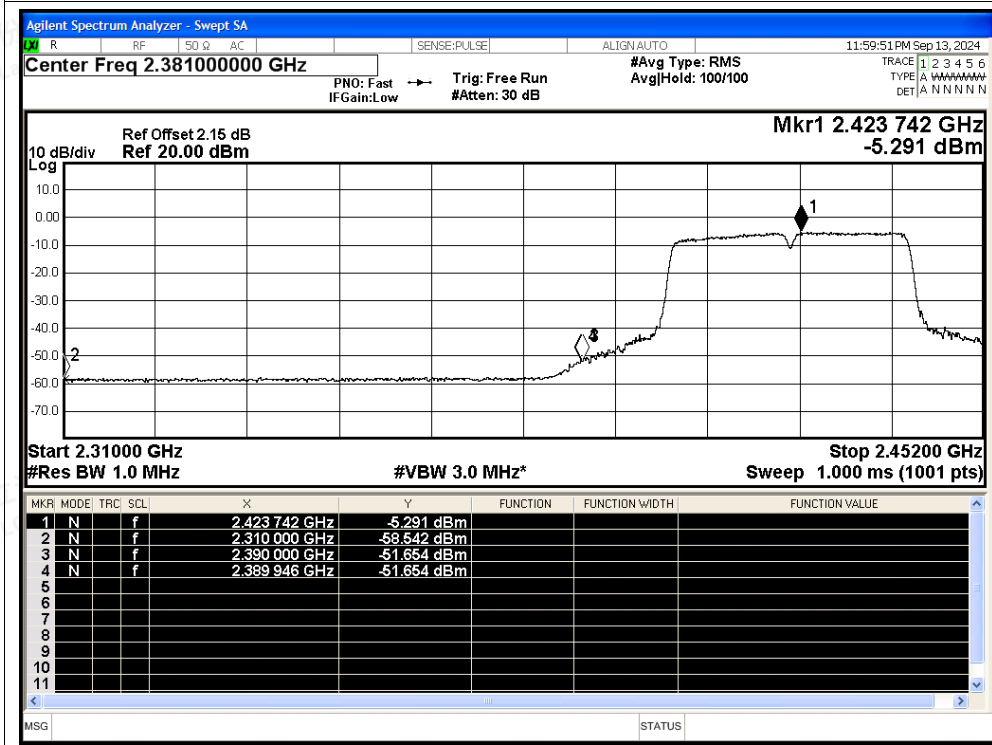




Restrict Band NVNT n40 2422MHz Ant Peak

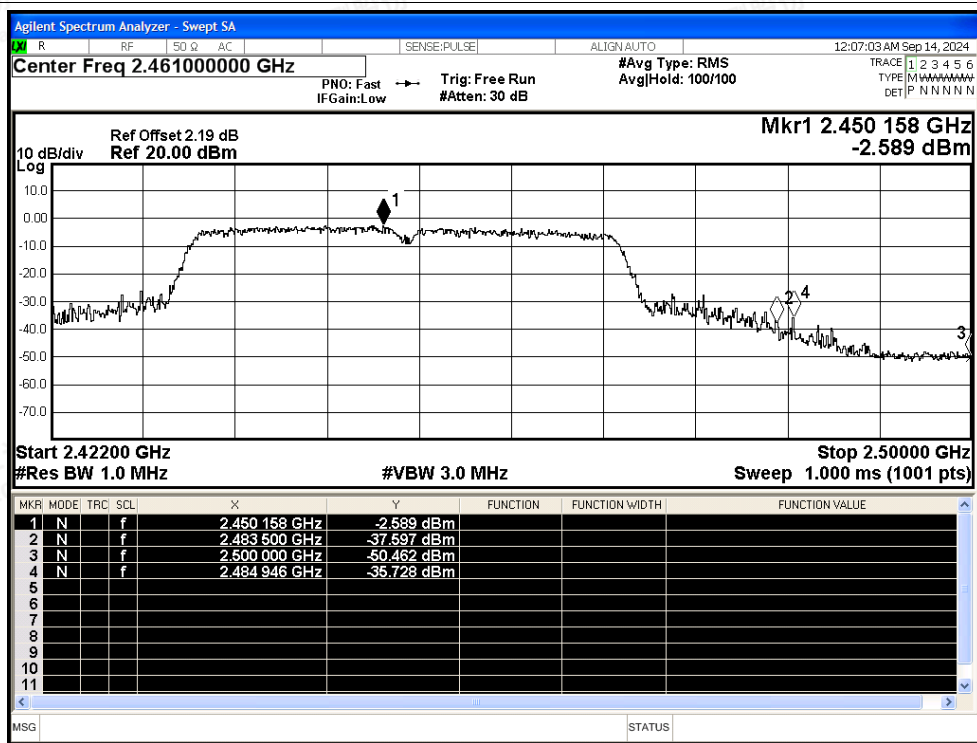


Restrict Band NVNT n40 2422MHz Ant Average





Restrict Band NVNT n40 2452MHz Ant Peak



Restrict Band NVNT n40 2452MHz Ant Average

