



Appendix B

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: BDE Dual-band (2.4 and 5GHz) Wi-Fi 6 & BLE Combo Module

Test Model: BDE-BW3351NP1

Environmental Conditions

Temperature:	23.1° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Can Kun
Supervised by:	Nick Peng



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B.1 -6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	6.651	≥ 0.5	Pass
NVNT	b	2437	Ant1	6.767	≥ 0.5	Pass
NVNT	b	2462	Ant1	7.876	≥ 0.5	Pass
NVNT	g	2412	Ant1	14.825	≥ 0.5	Pass
NVNT	g	2437	Ant1	15.163	≥ 0.5	Pass
NVNT	g	2462	Ant1	14.417	≥ 0.5	Pass
NVNT	n20	2412	Ant1	15.767	≥ 0.5	Pass
NVNT	n20	2437	Ant1	13.834	≥ 0.5	Pass
NVNT	n20	2462	Ant1	16.027	≥ 0.5	Pass
NVNT	ax20	2412	Ant1	17.33	≥ 0.5	Pass
NVNT	ax20	2437	Ant1	17.153	≥ 0.5	Pass
NVNT	ax20	2462	Ant1	18.148	≥ 0.5	Pass



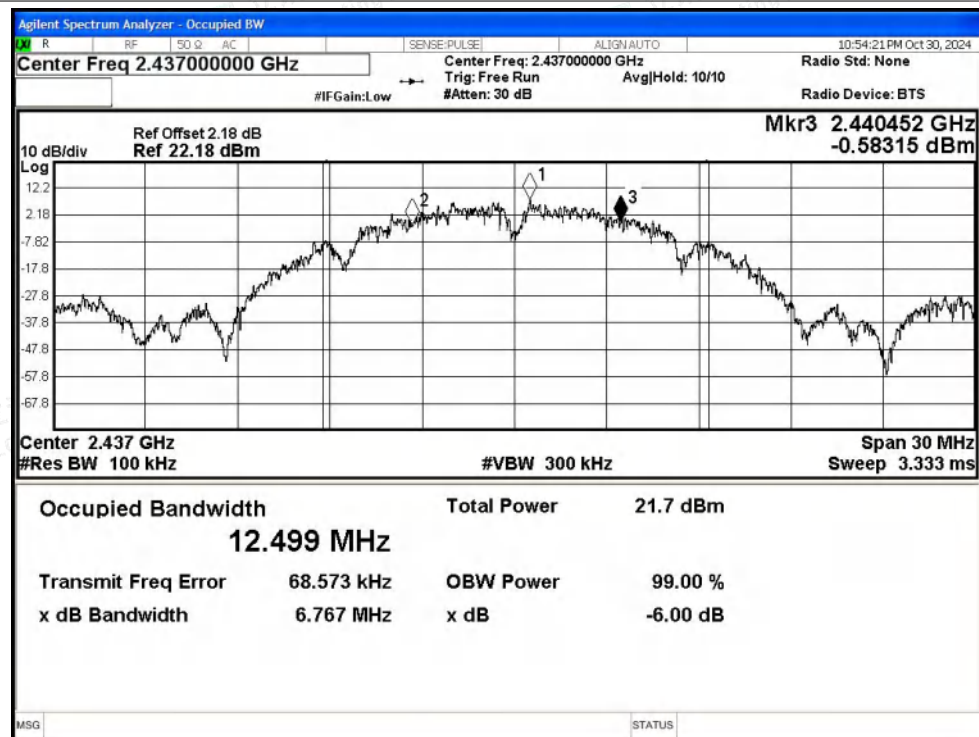


Test Graphs

-6dB Bandwidth NVNT b 2412MHz Ant1



-6dB Bandwidth NVNT b 2437MHz Ant1

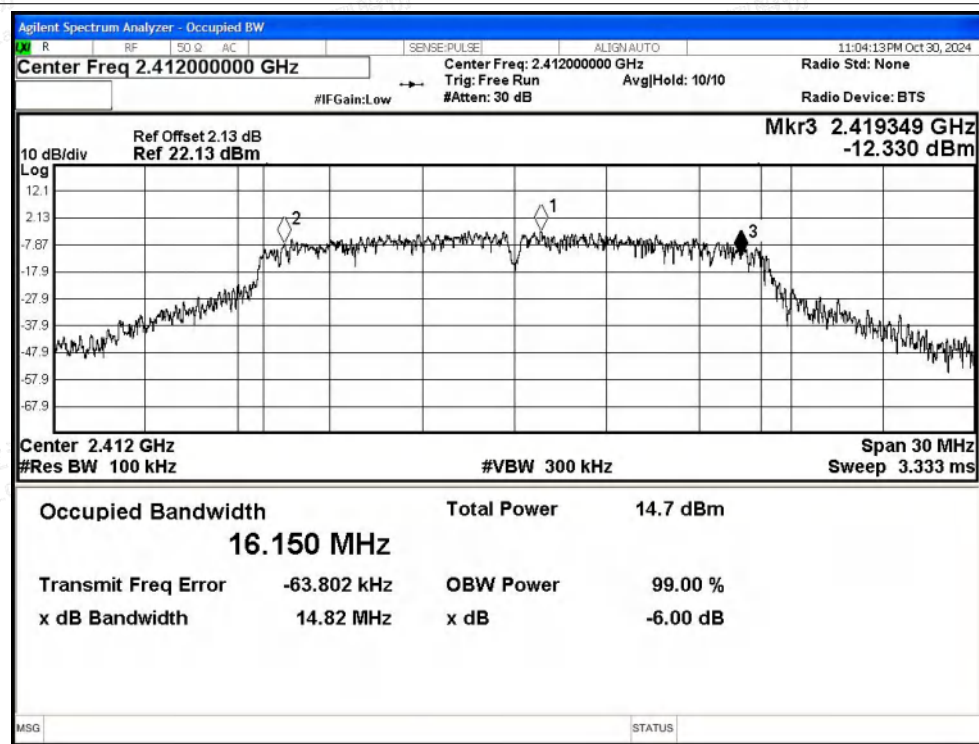




-6dB Bandwidth NVNT b 2462MHz Ant1



-6dB Bandwidth NVNT g 2412MHz Ant1



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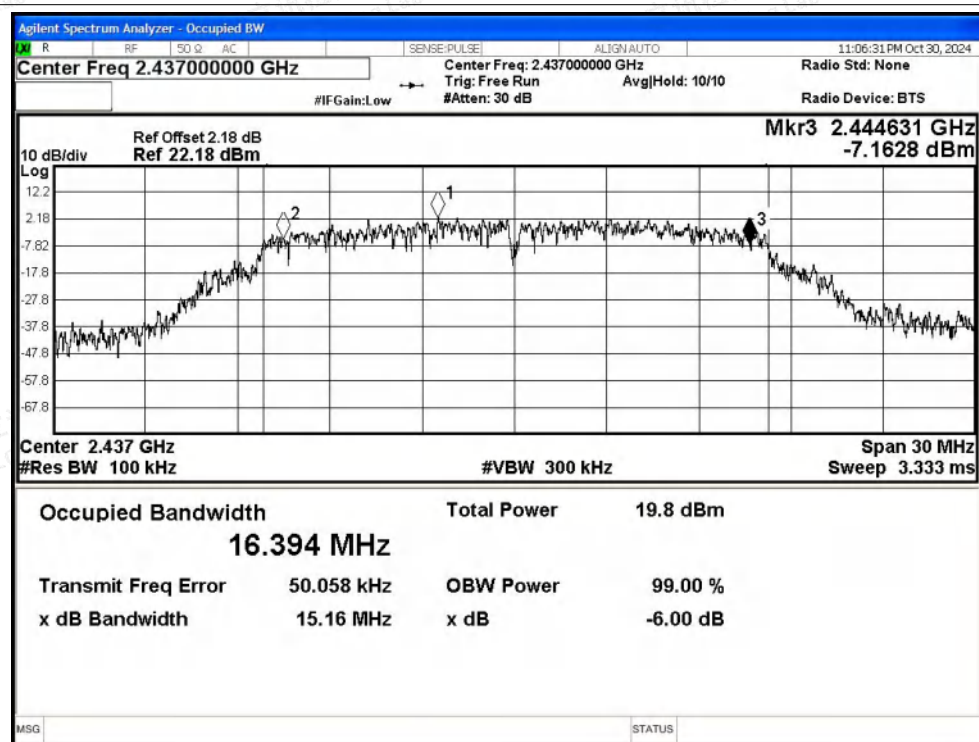
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

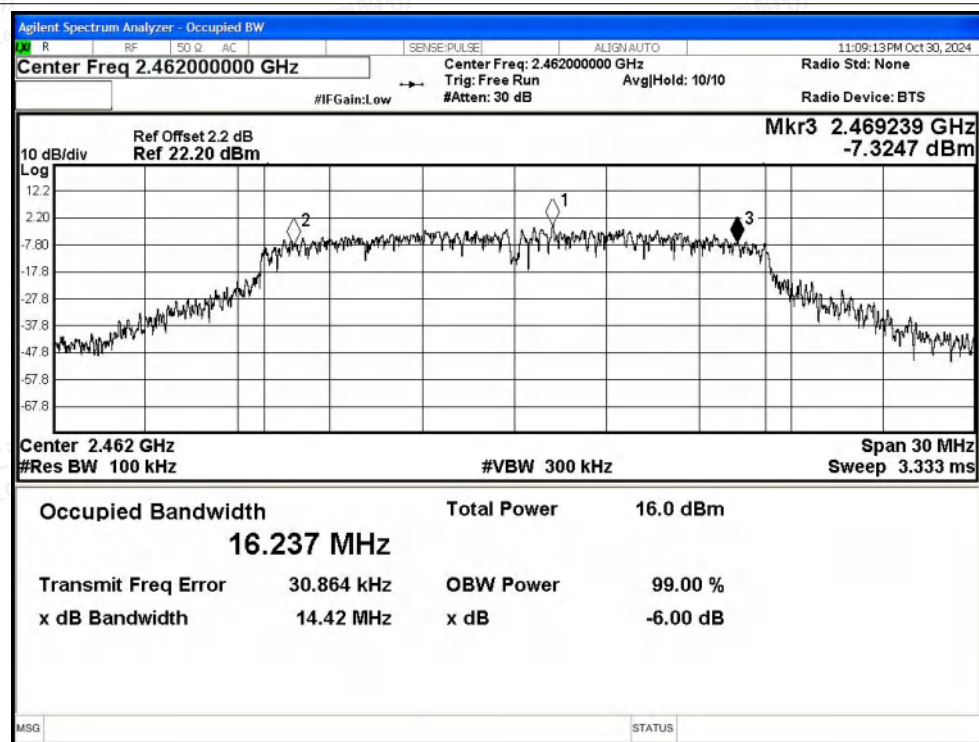
Scan code to check authenticity



-6dB Bandwidth NVNT g 2437MHz Ant1

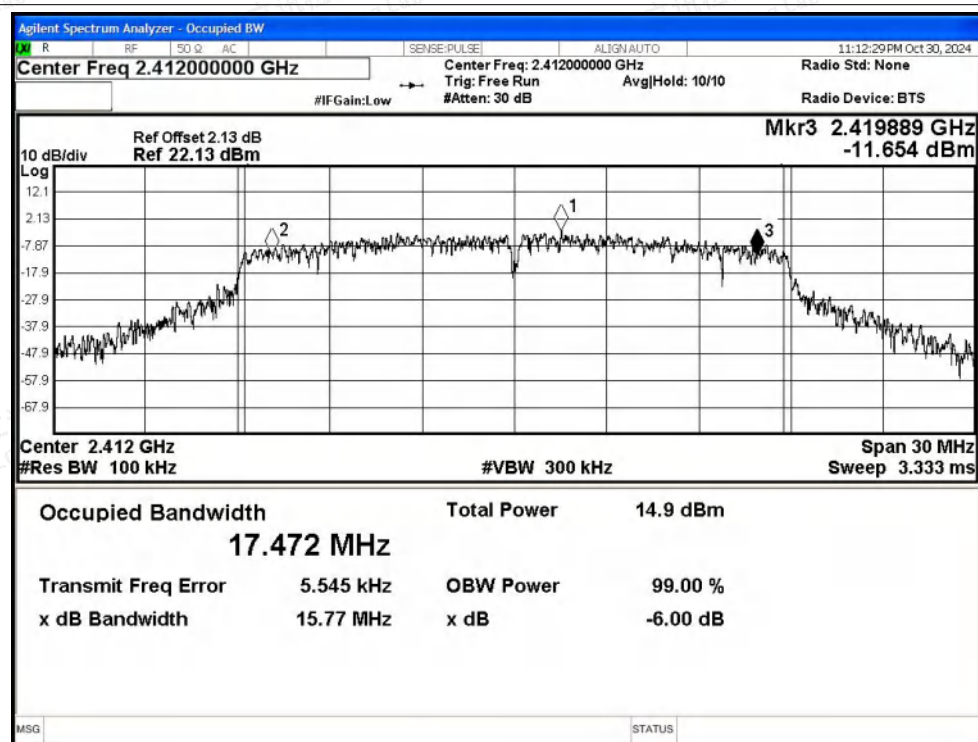


-6dB Bandwidth NVNT g 2462MHz Ant1

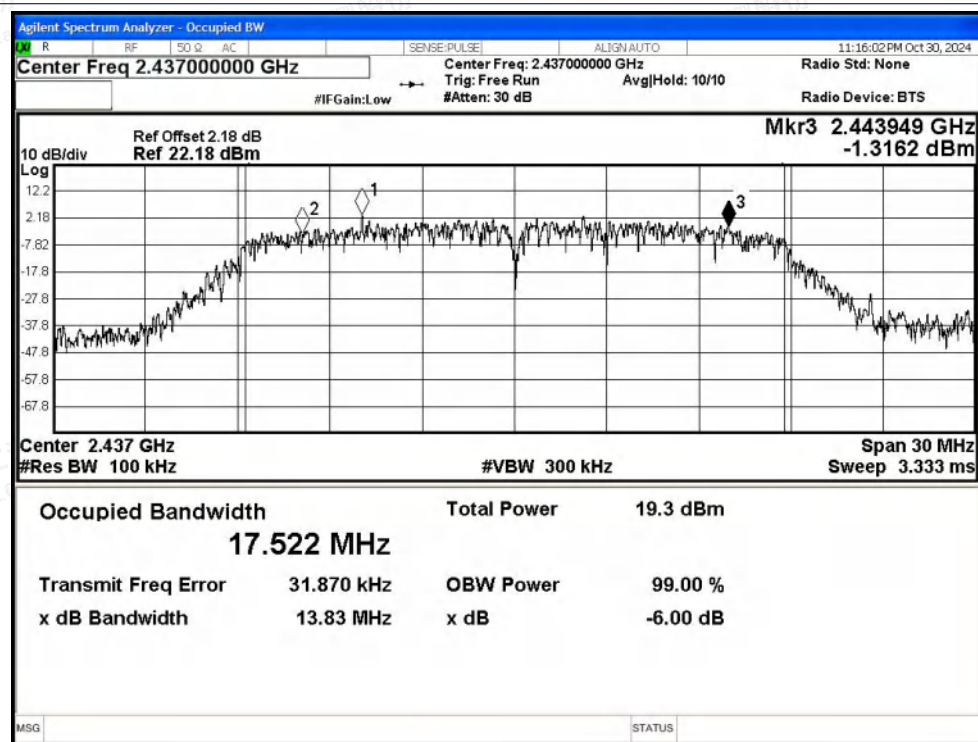




-6dB Bandwidth NVNT n20 2412MHz Ant1

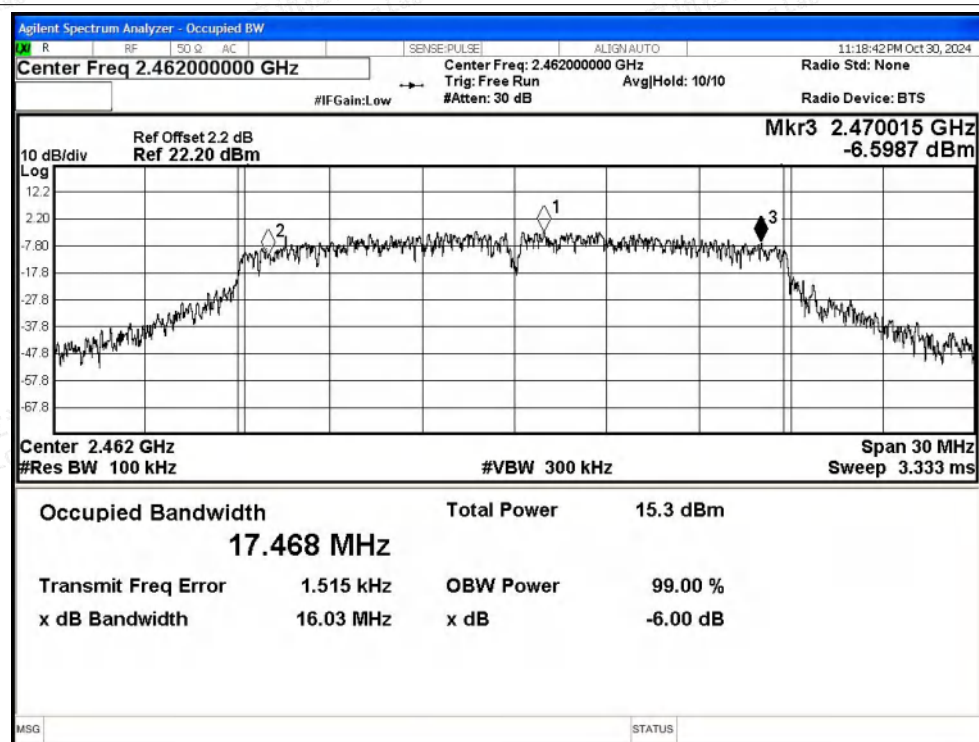


-6dB Bandwidth NVNT n20 2437MHz Ant1

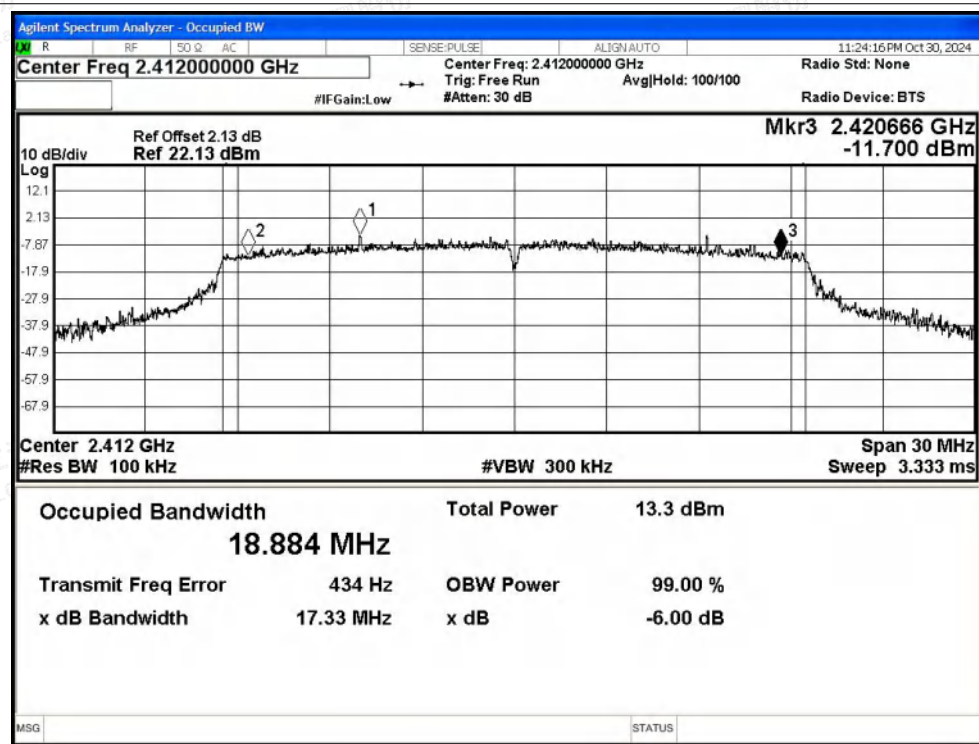




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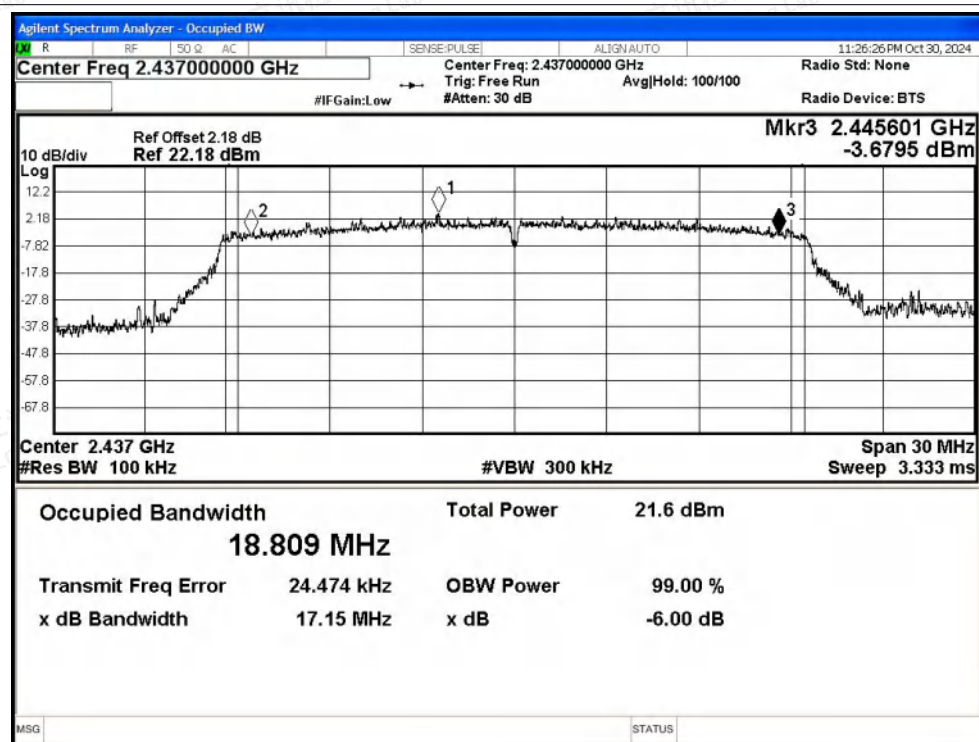


-6dB Bandwidth NVNT ax20 2412MHz Ant1

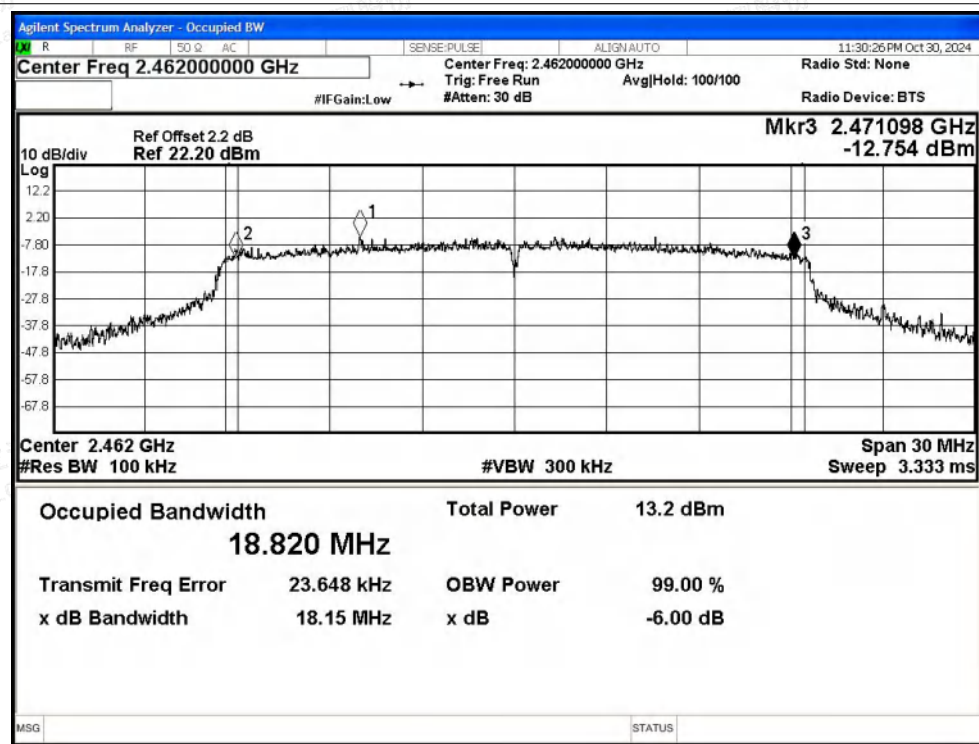




-6dB Bandwidth NVNT ax20 2437MHz Ant1



-6dB Bandwidth NVNT ax20 2462MHz Ant1





B.2 Maximum Peak Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	17.93	30	Pass
NVNT	b	2437	Ant1	18.1	30	Pass
NVNT	b	2462	Ant1	18.23	30	Pass
NVNT	g	2412	Ant1	15.33	30	Pass
NVNT	g	2437	Ant1	18.47	30	Pass
NVNT	g	2462	Ant1	15.47	30	Pass
NVNT	n20	2412	Ant1	14.18	30	Pass
NVNT	n20	2437	Ant1	18.72	30	Pass
NVNT	n20	2462	Ant1	16	30	Pass
NVNT	ax20	2412	Ant1	15.64	30	Pass
NVNT	ax20	2437	Ant1	21.09	30	Pass
NVNT	ax20	2462	Ant1	16.15	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	Ant1	-5.32	8	Pass
NVNT	b	2437	Ant1	-6.32	8	Pass
NVNT	b	2462	Ant1	-5.77	8	Pass
NVNT	g	2412	Ant1	-12.37	8	Pass
NVNT	g	2437	Ant1	-7.83	8	Pass
NVNT	g	2462	Ant1	-10.38	8	Pass
NVNT	n20	2412	Ant1	-14.08	8	Pass
NVNT	n20	2437	Ant1	-8.49	8	Pass
NVNT	n20	2462	Ant1	-13.88	8	Pass
NVNT	ax20	2412	Ant1	-14.47	8	Pass
NVNT	ax20	2437	Ant1	-9.36	8	Pass
NVNT	ax20	2462	Ant1	-13.55	8	Pass

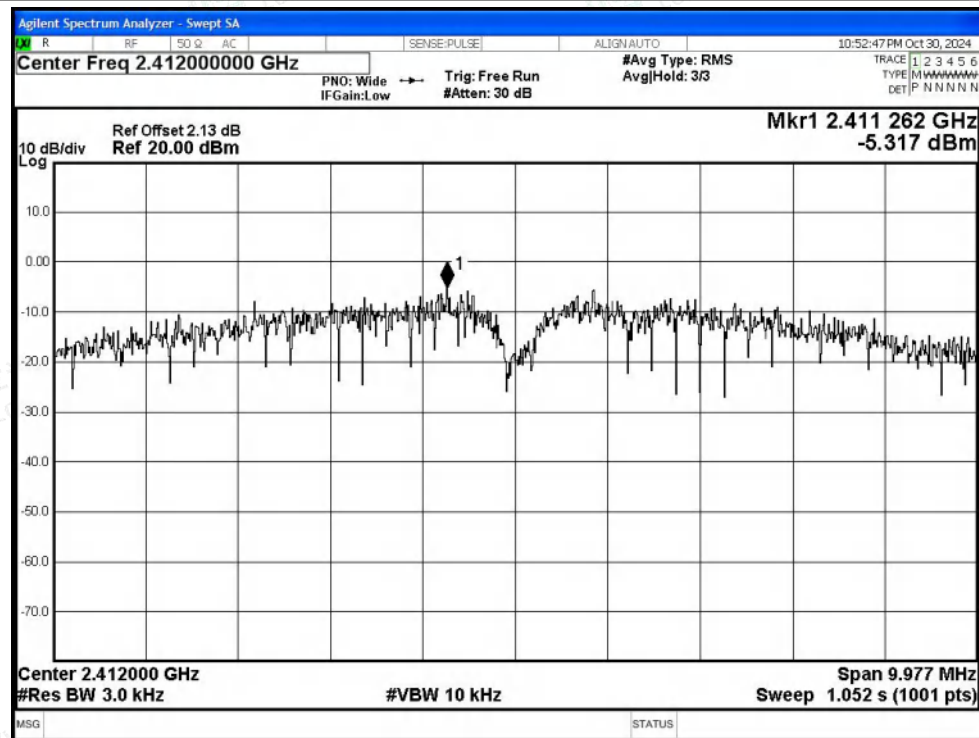


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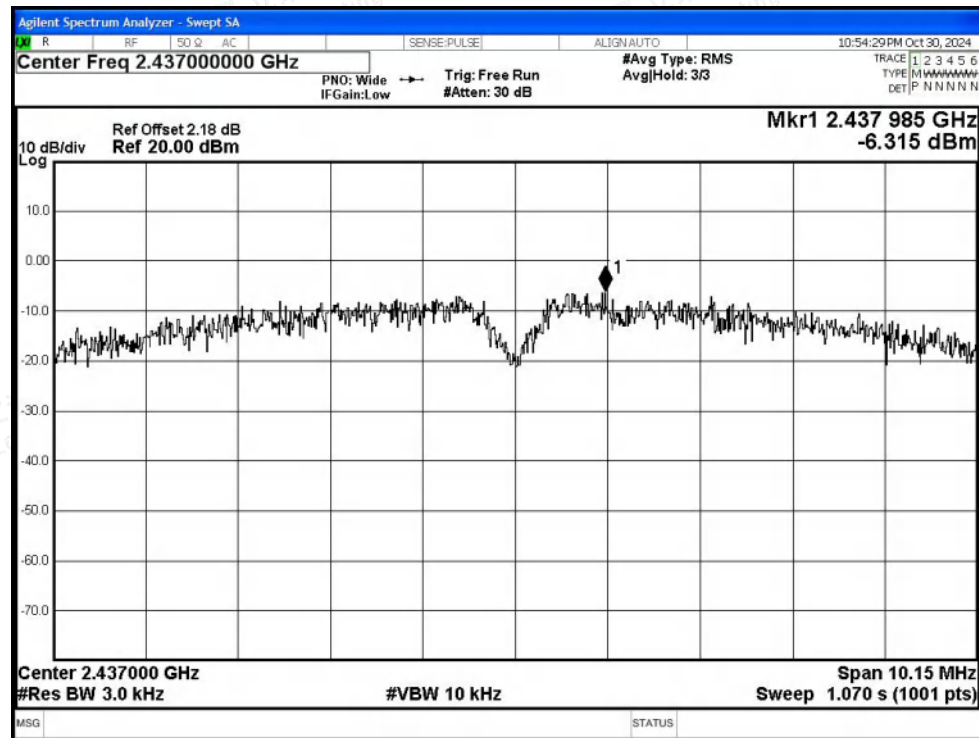


Test Graphs

PSD NVNT b 2412MHz Ant1

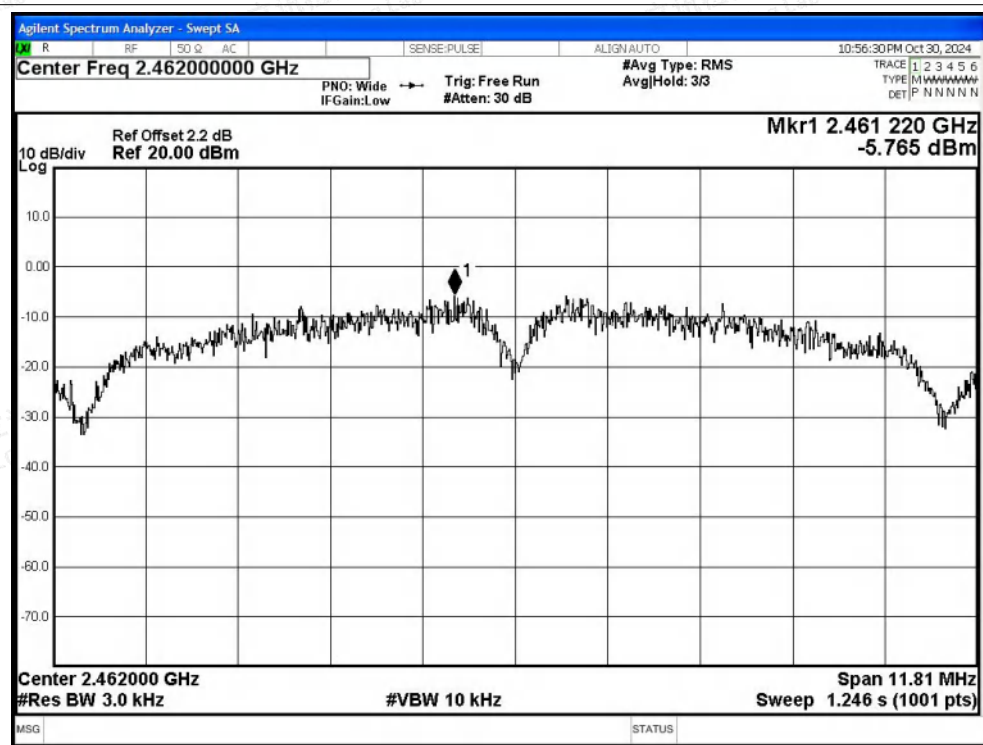


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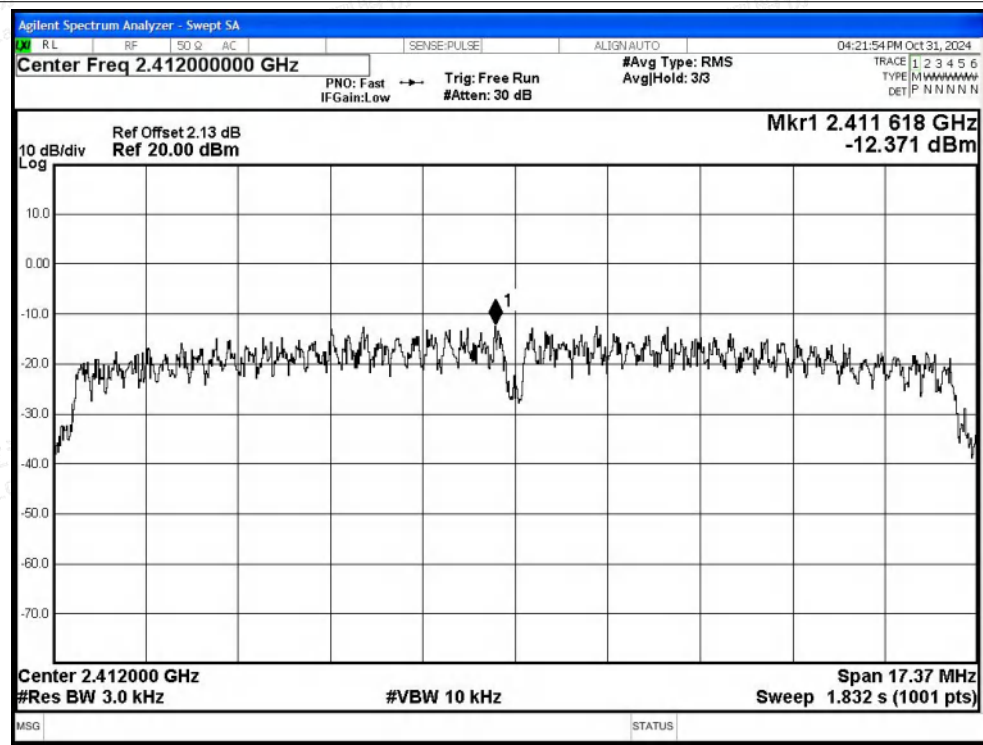




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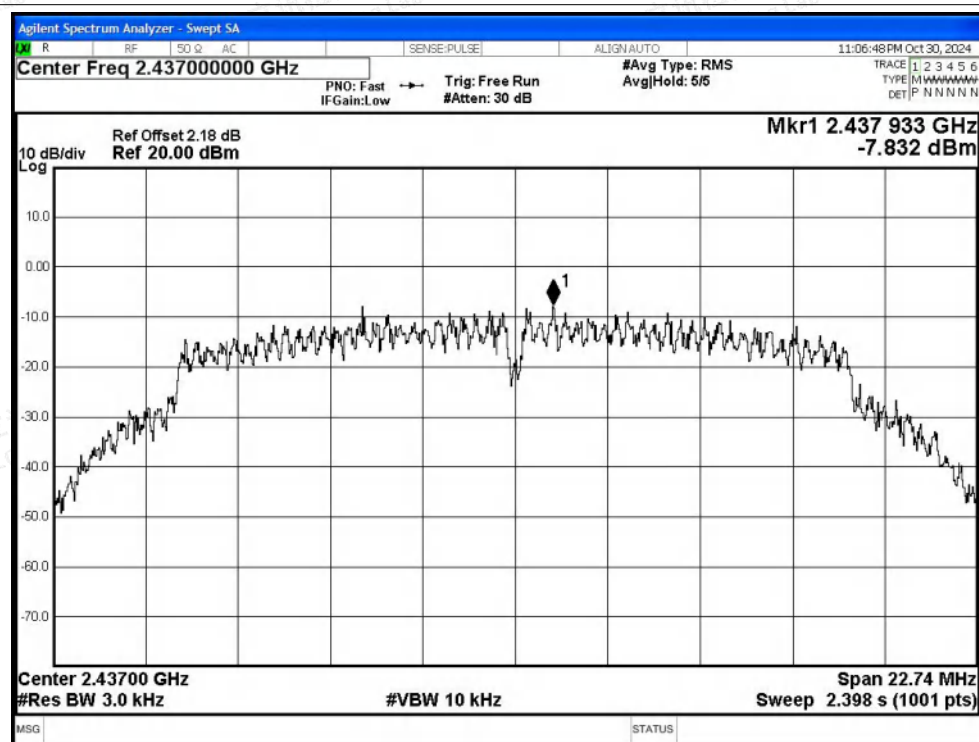


PSD NVNT g 2412MHz Ant1

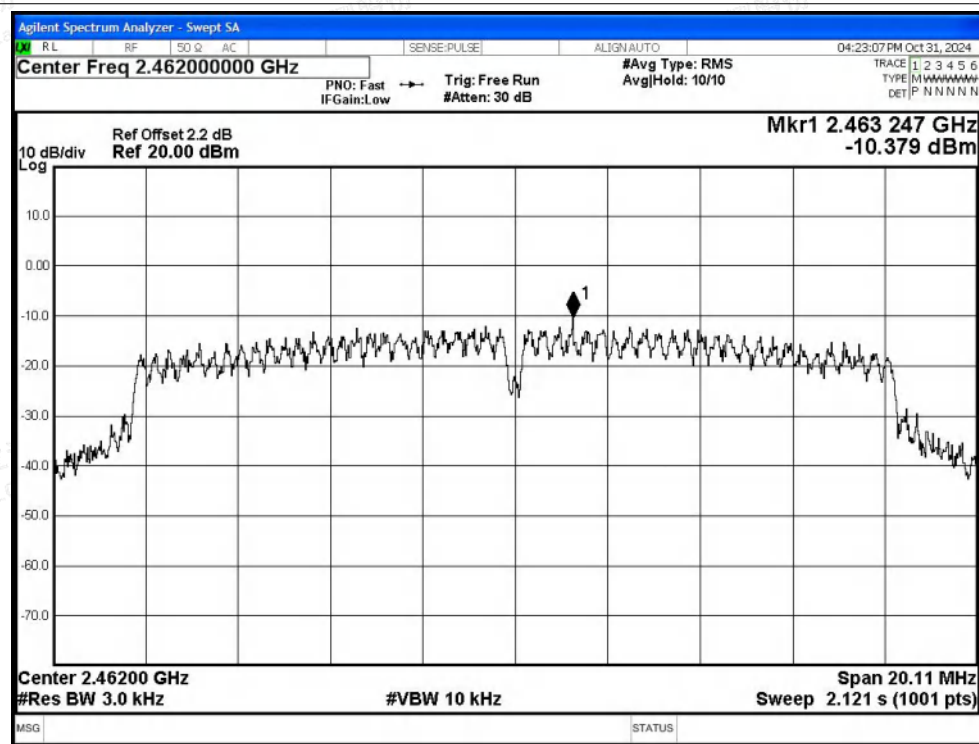


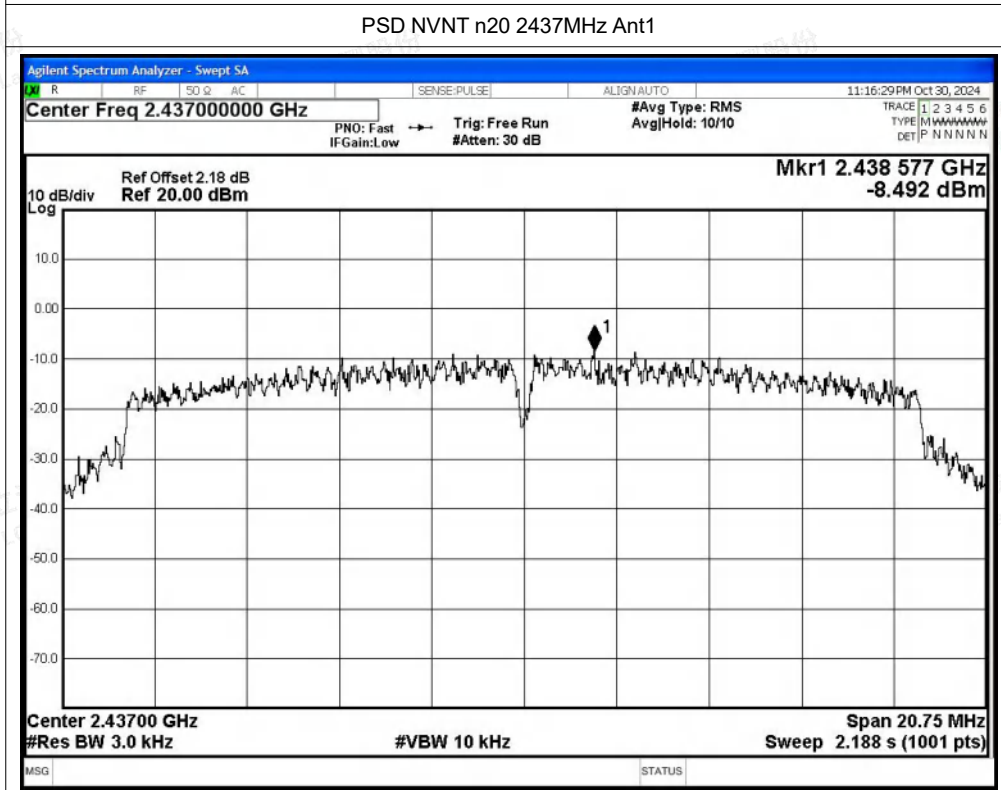
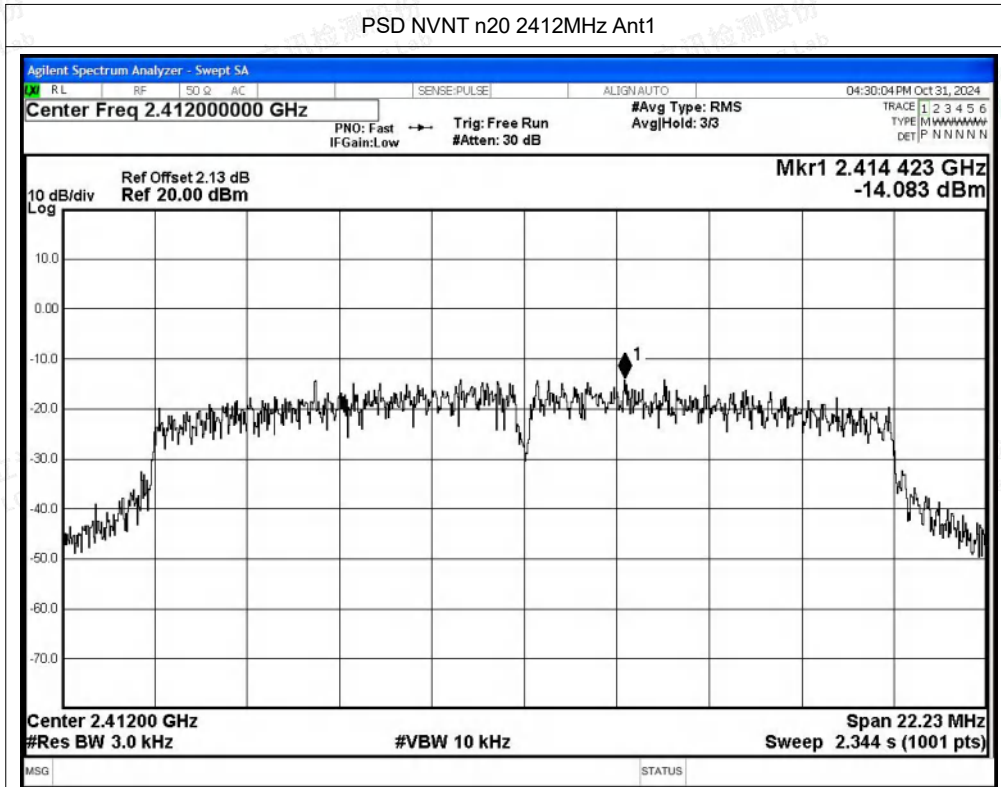


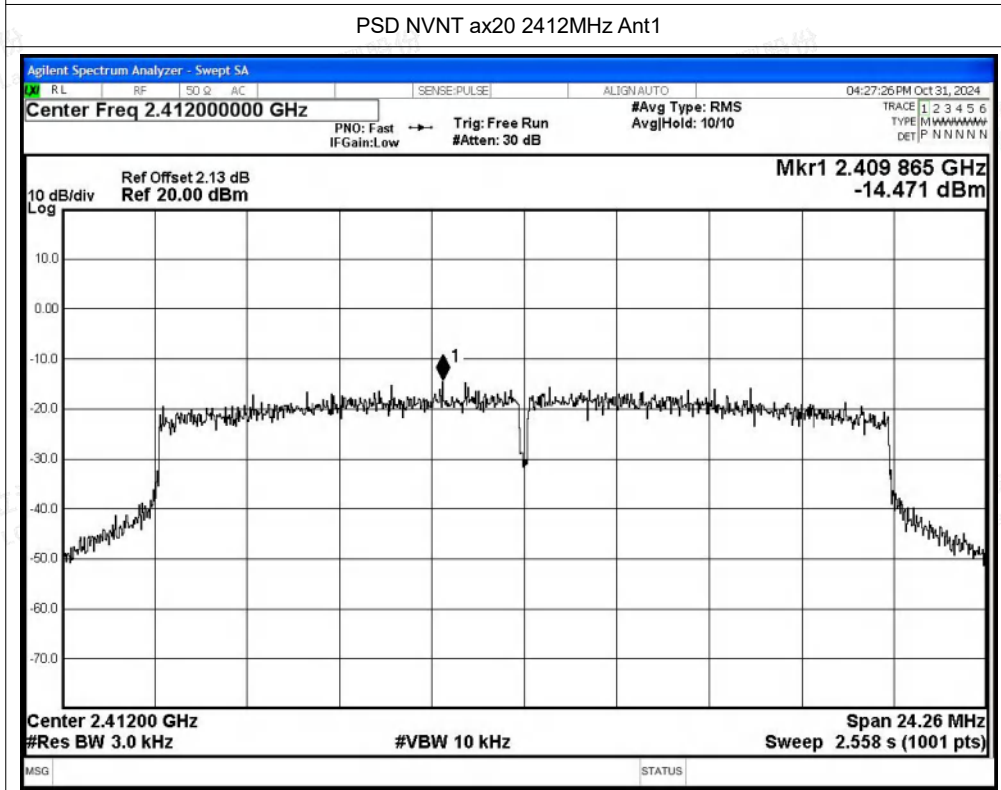
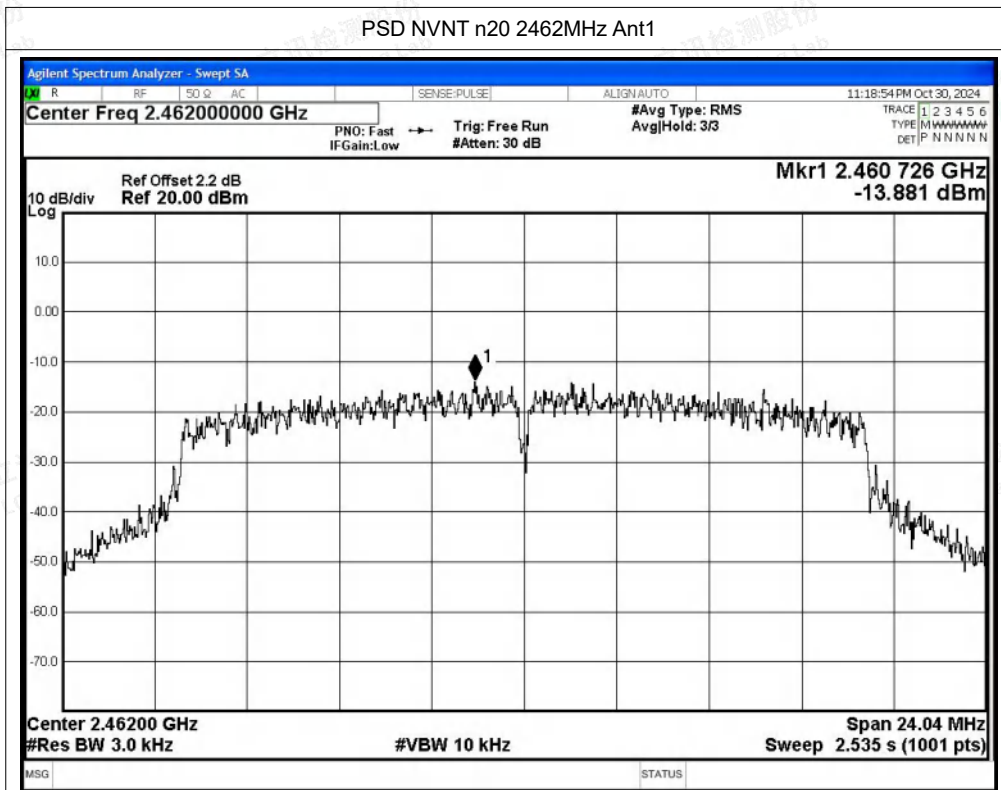
PSD NVNT g 2437MHz Ant1



PSD NVNT g 2462MHz Ant1

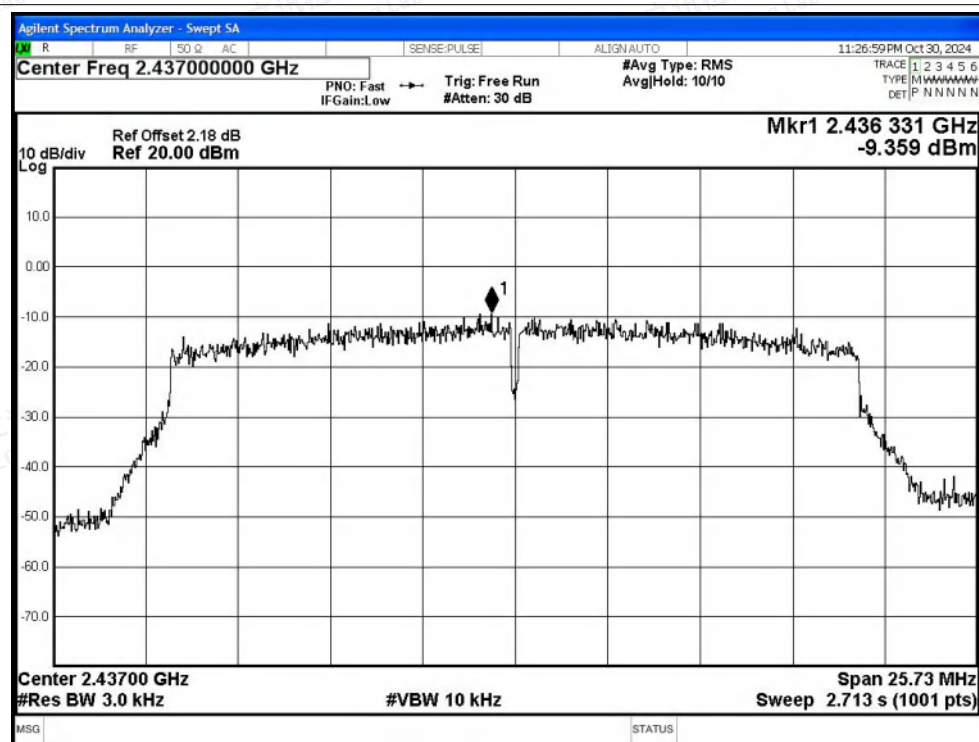




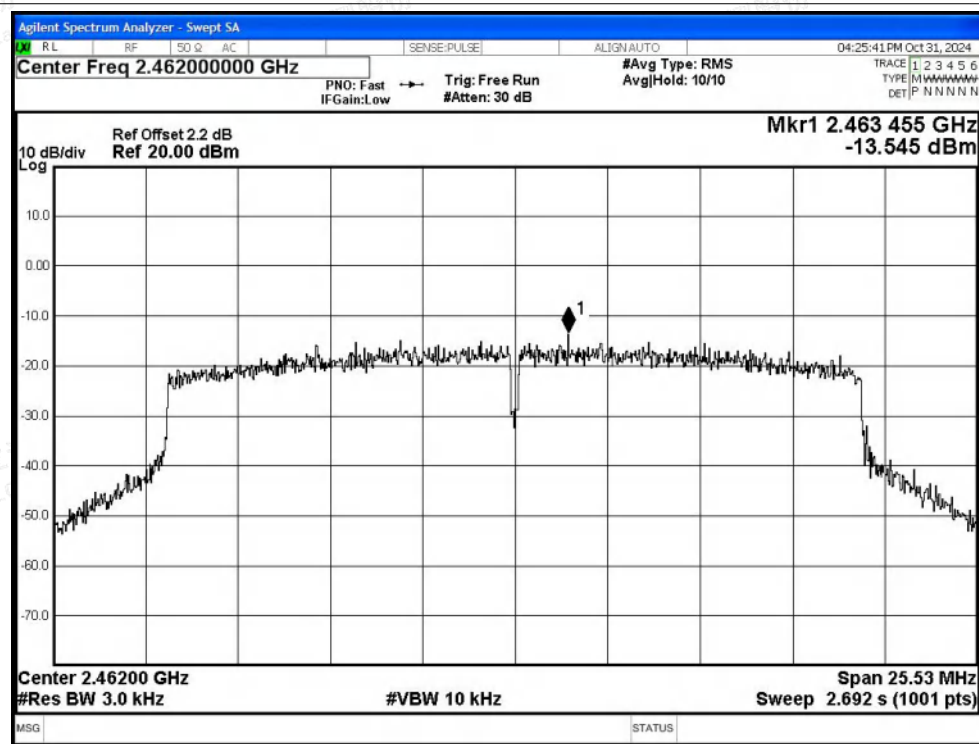




PSD NVNT ax20 2437MHz Ant1



PSD NVNT ax20 2462MHz Ant1





B.4 Band Edge

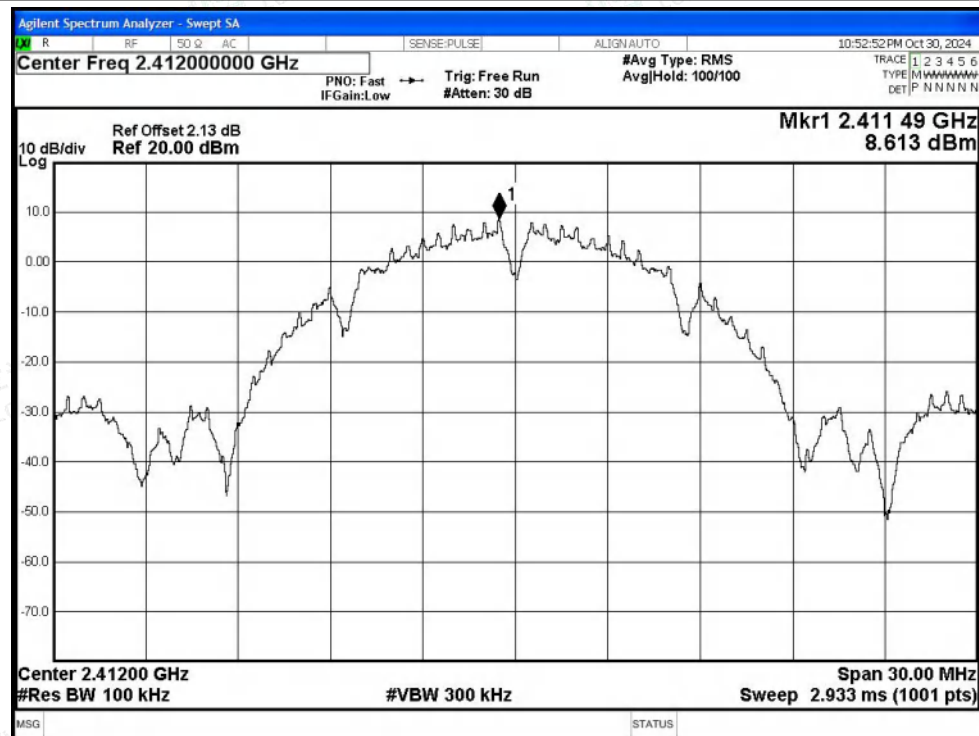
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-36.22	-20	Pass
NVNT	b	2462	Ant1	-56.09	-20	Pass
NVNT	g	2412	Ant1	-34.03	-20	Pass
NVNT	g	2462	Ant1	-49.34	-20	Pass
NVNT	n20	2412	Ant1	-34.21	-20	Pass
NVNT	n20	2462	Ant1	-48.32	-20	Pass
NVNT	ax20	2412	Ant1	-26.58	-20	Pass
NVNT	ax20	2462	Ant1	-40.76	-20	Pass



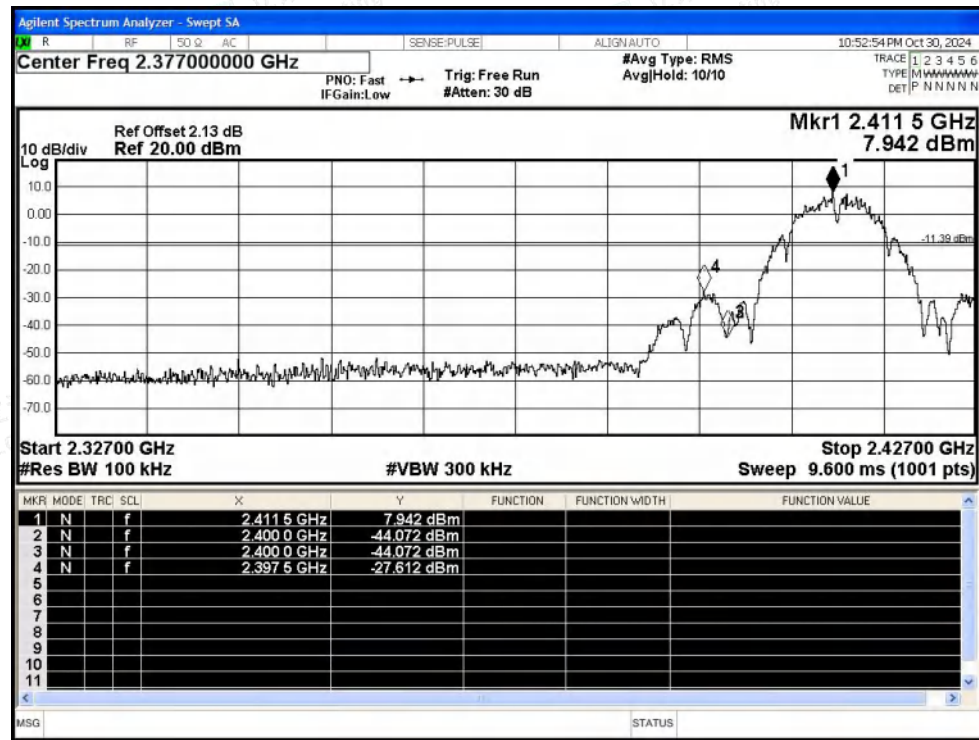


Test Graphs

Band Edge NVNT b 2412MHz Ant1 Ref

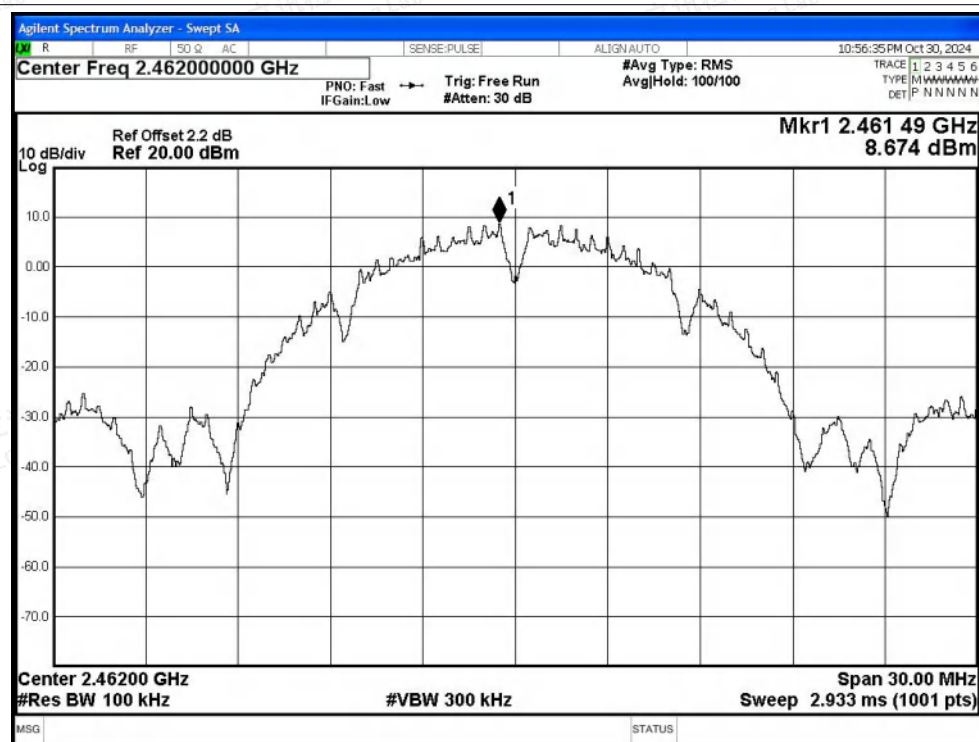


Band Edge NVNT b 2412MHz Ant1 Emission

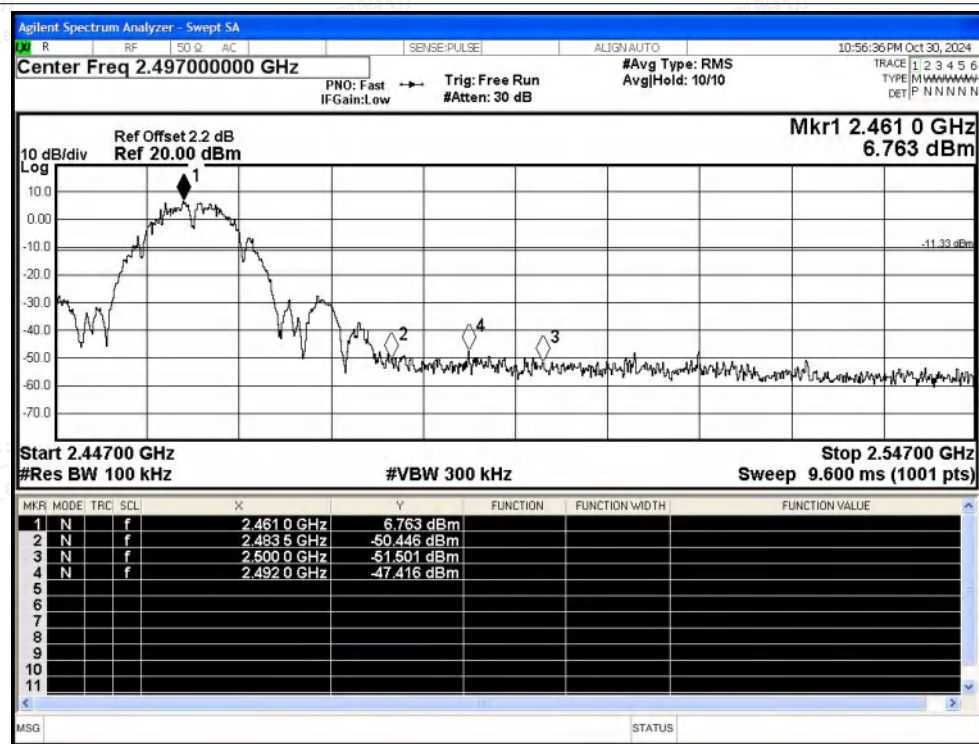




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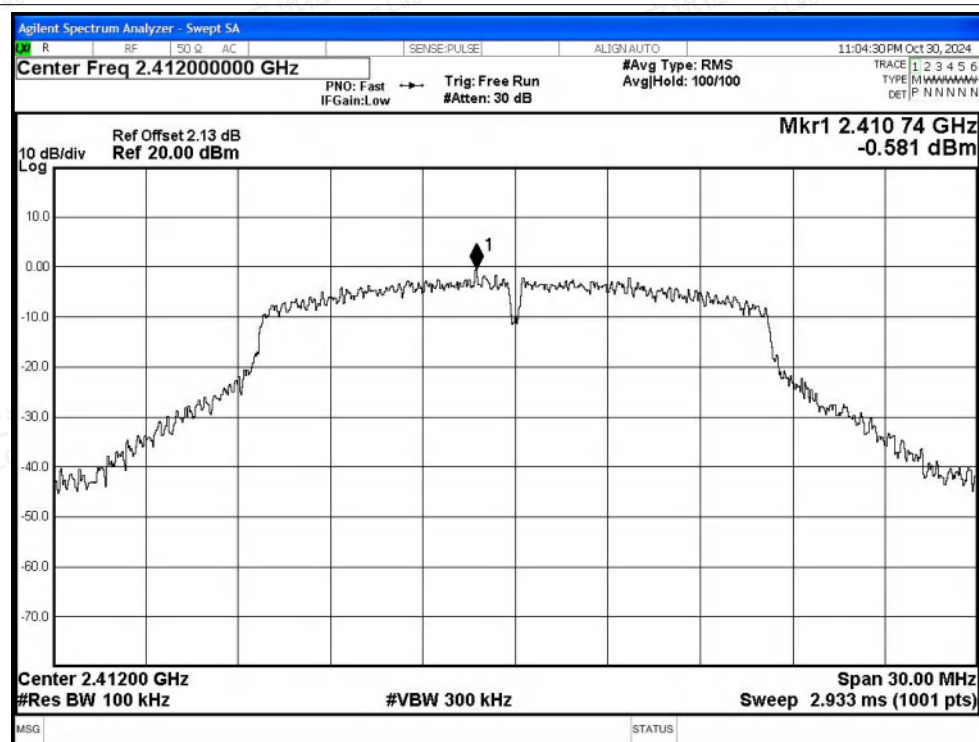


Band Edge NVNT b 2462MHz Ant1 Emission





Band Edge NVNT g 2412MHz Ant1 Ref

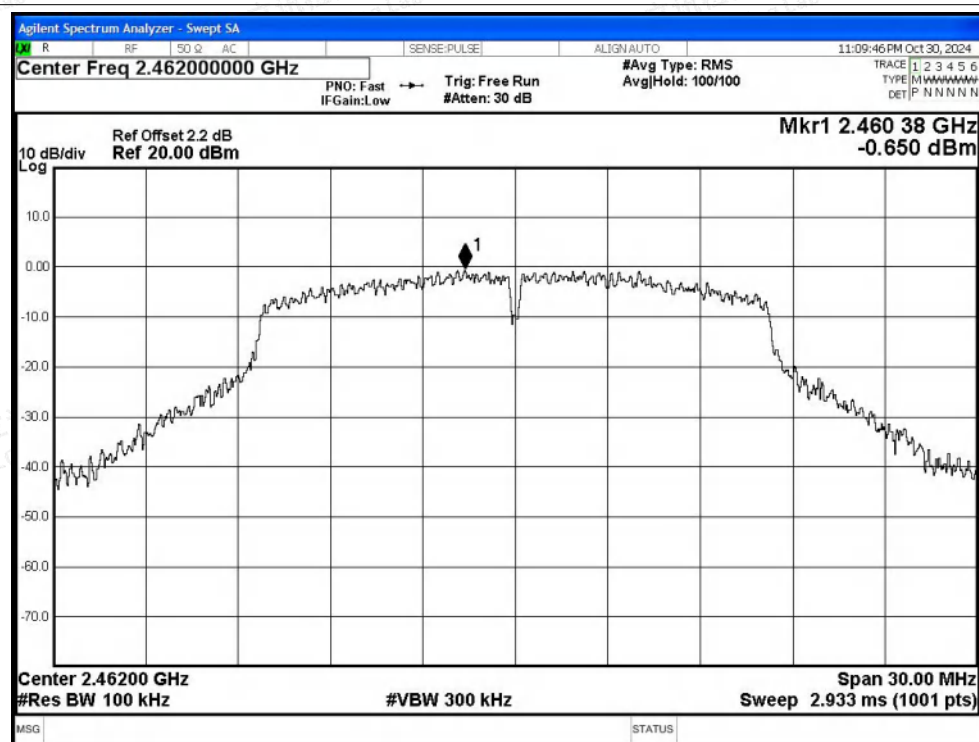


Band Edge NVNT g 2412MHz Ant1 Emission





Band Edge NVNT g 2462MHz Ant1 Ref

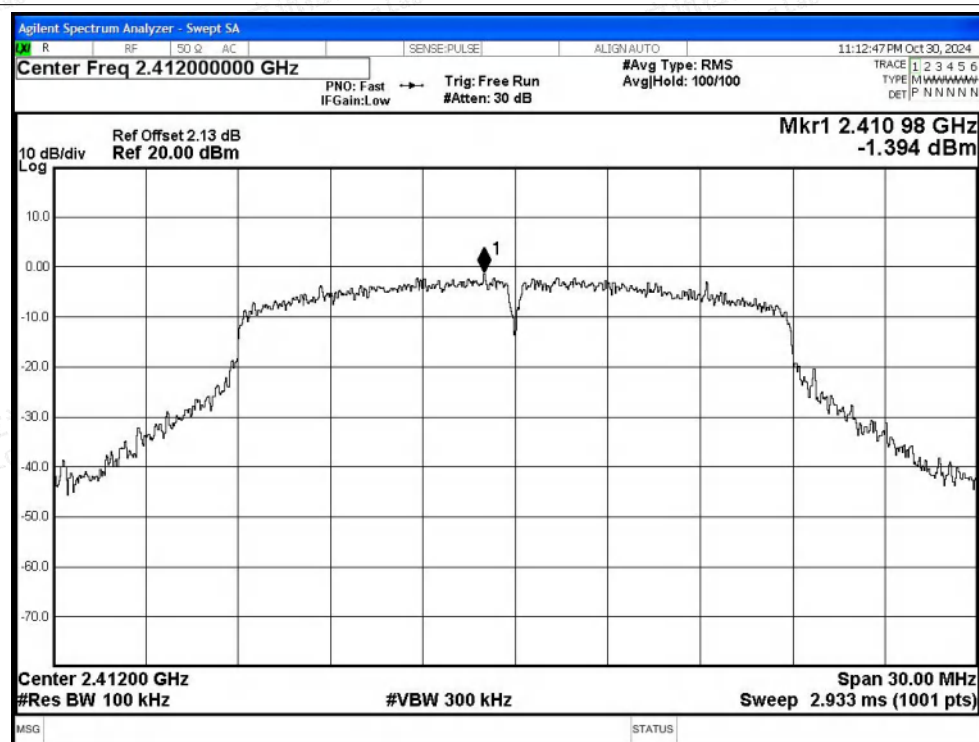


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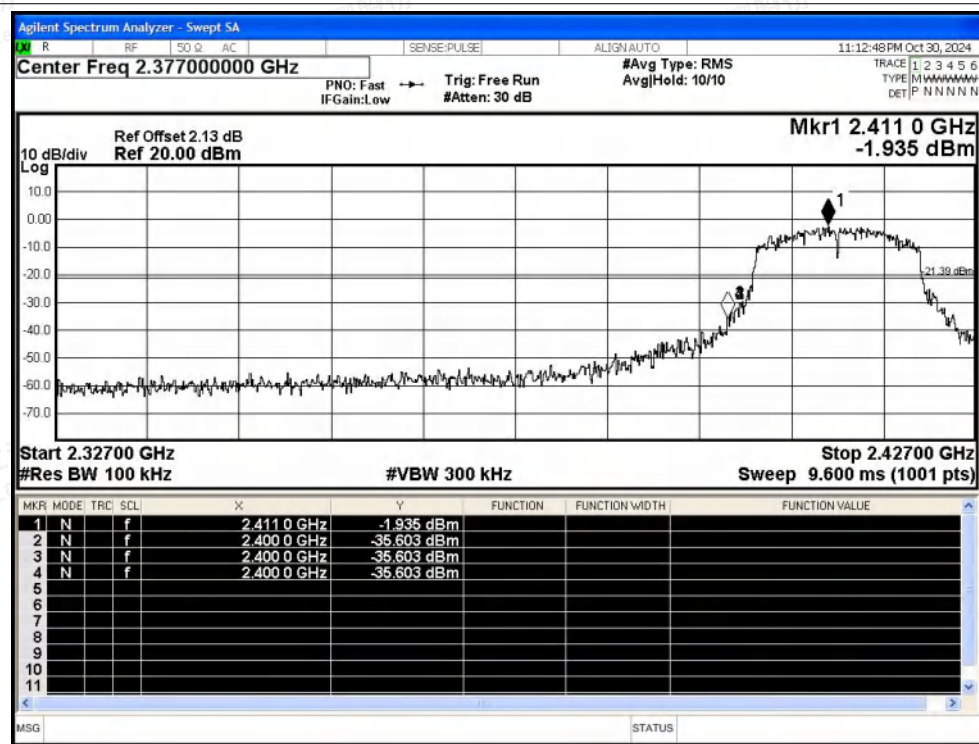




Band Edge NVNT n20 2412MHz Ant1 Ref

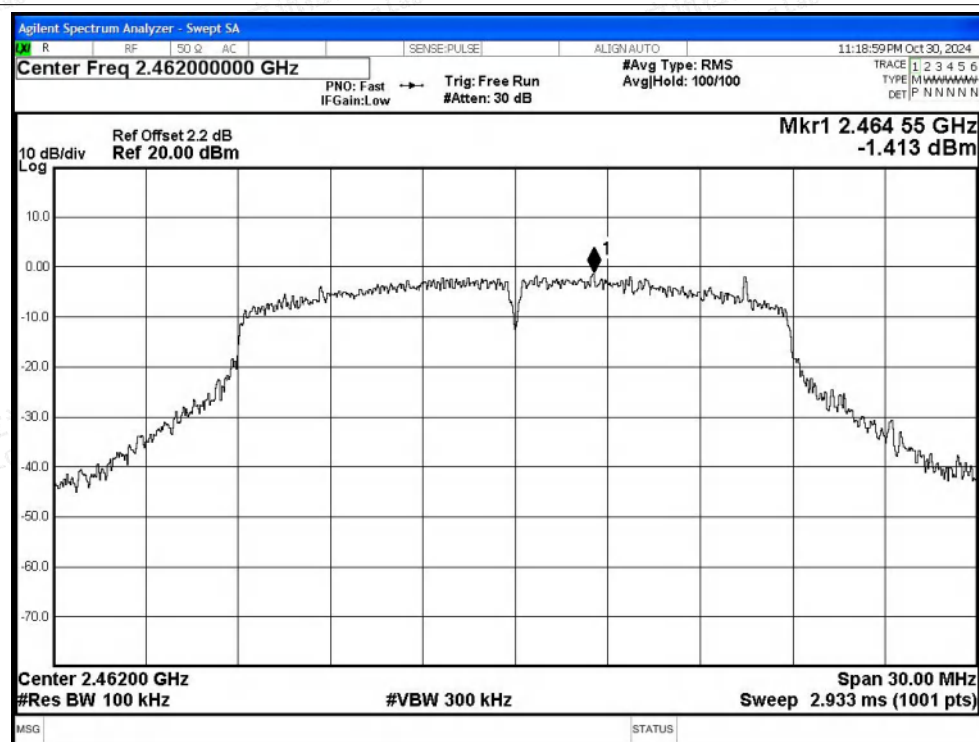


Band Edge NVNT n20 2412MHz Ant1 Emission





Band Edge NVNT n20 2462MHz Ant1 Ref

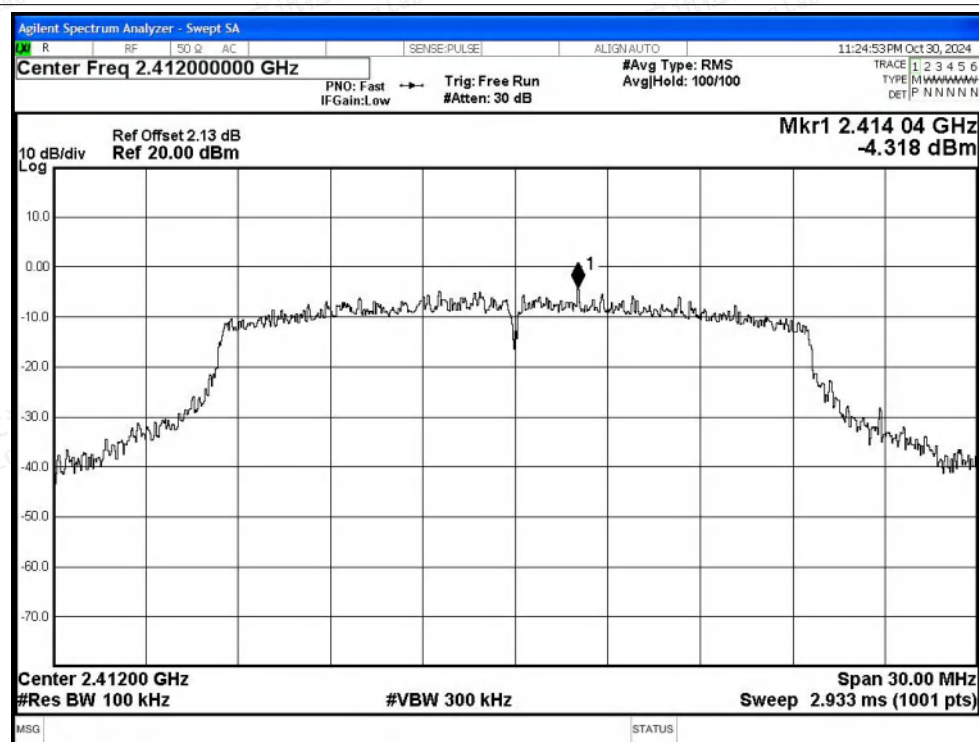


Band Edge NVNT n20 2462MHz Ant1 Emission

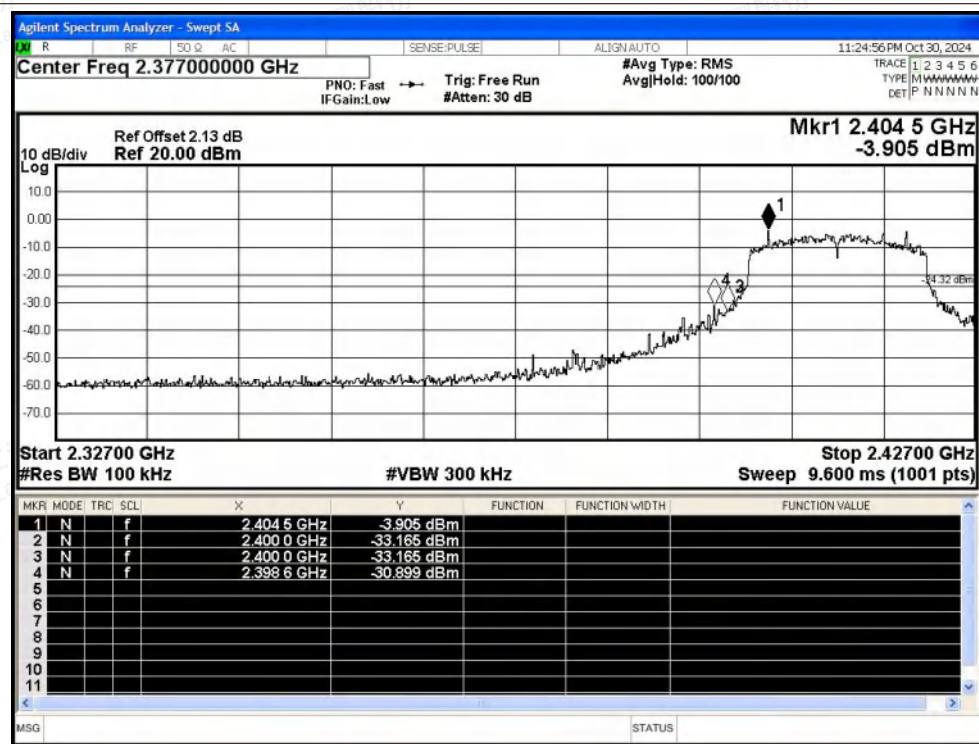




Band Edge NVNT ax20 2412MHz Ant1 Ref

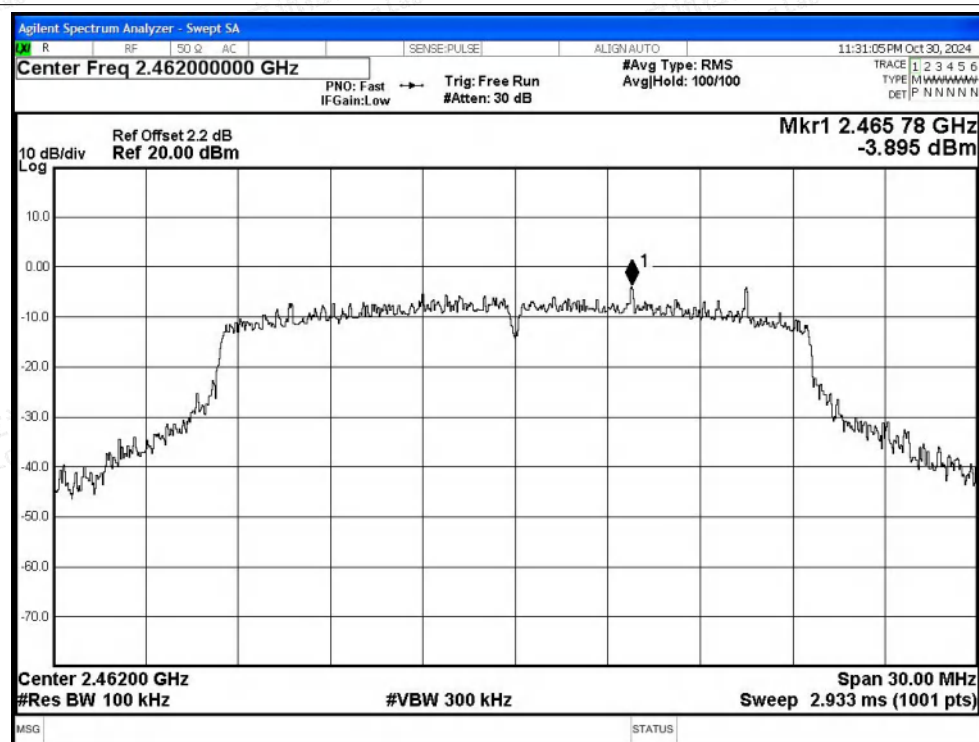


Band Edge NVNT ax20 2412MHz Ant1 Emission

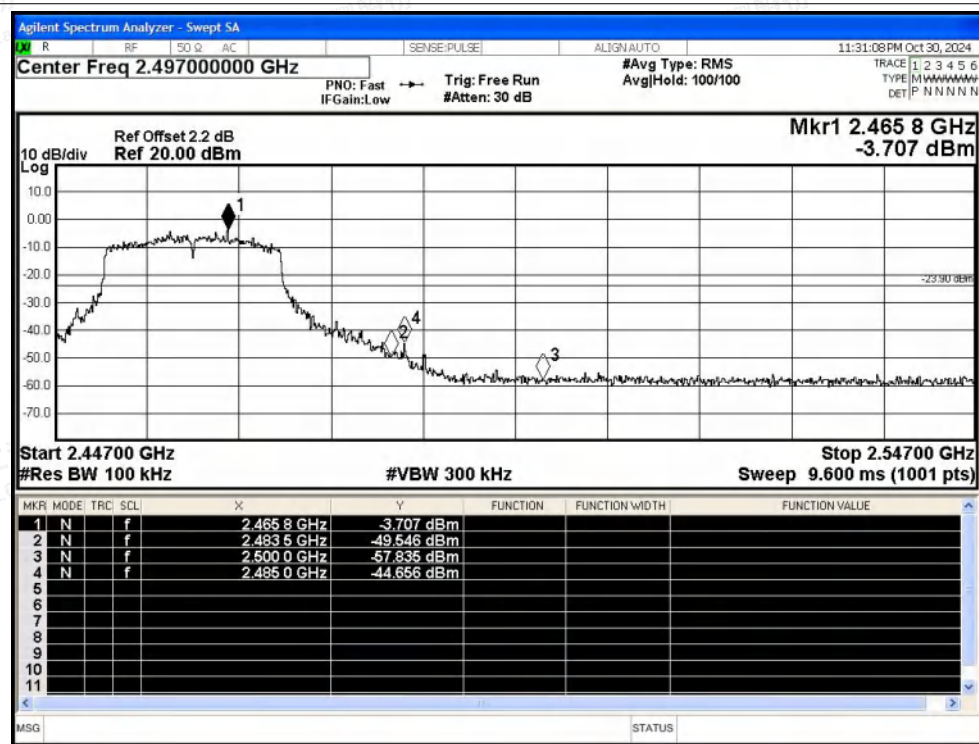




Band Edge NVNT ax20 2462MHz Ant1 Ref



Band Edge NVNT ax20 2462MHz Ant1 Emission





B.5 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-47.27	-20	Pass
NVNT	b	2437	Ant1	-48.47	-20	Pass
NVNT	b	2462	Ant1	-50.49	-20	Pass
NVNT	g	2412	Ant1	-43.53	-20	Pass
NVNT	g	2437	Ant1	-49.24	-20	Pass
NVNT	g	2462	Ant1	-44.59	-20	Pass
NVNT	n20	2412	Ant1	-44.63	-20	Pass
NVNT	n20	2437	Ant1	-48.43	-20	Pass
NVNT	n20	2462	Ant1	-45.03	-20	Pass
NVNT	ax20	2412	Ant1	-40.67	-20	Pass
NVNT	ax20	2437	Ant1	-49.74	-20	Pass
NVNT	ax20	2462	Ant1	-42.01	-20	Pass

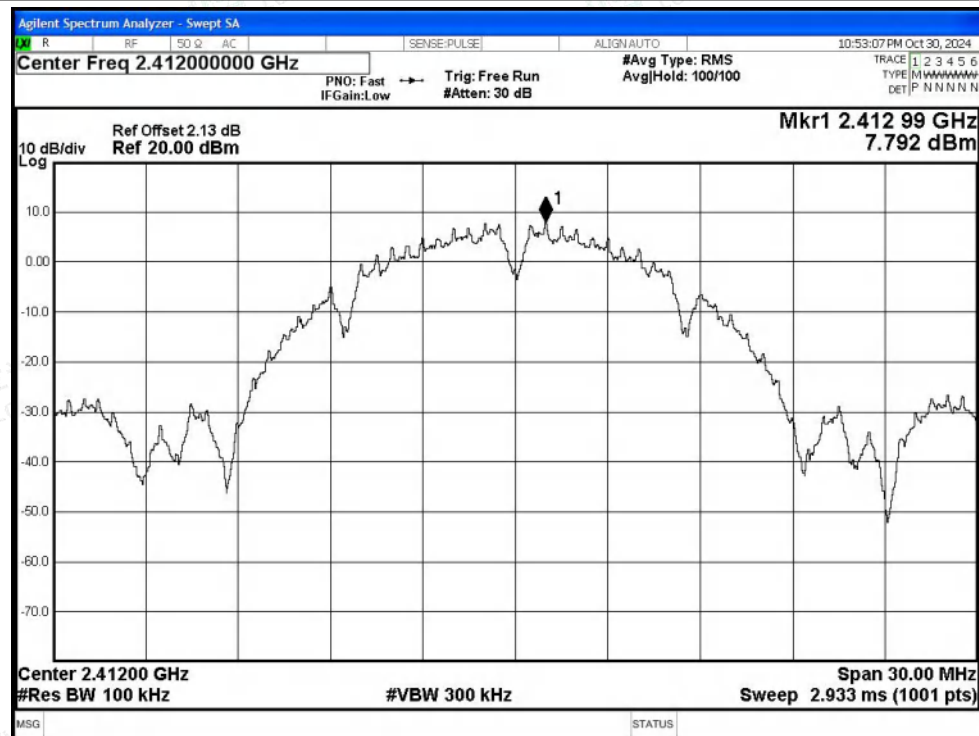


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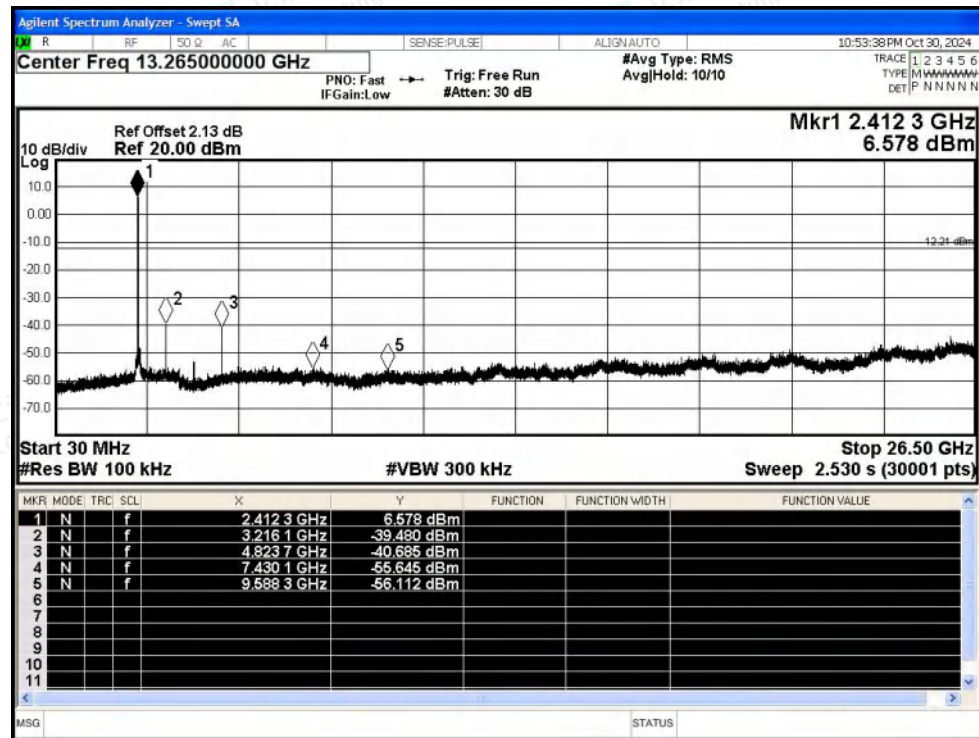


Test Graphs

Tx. Spurious NVNT b 2412MHz Ant1 Ref



Tx. Spurious NVNT b 2412MHz Ant1 Emission



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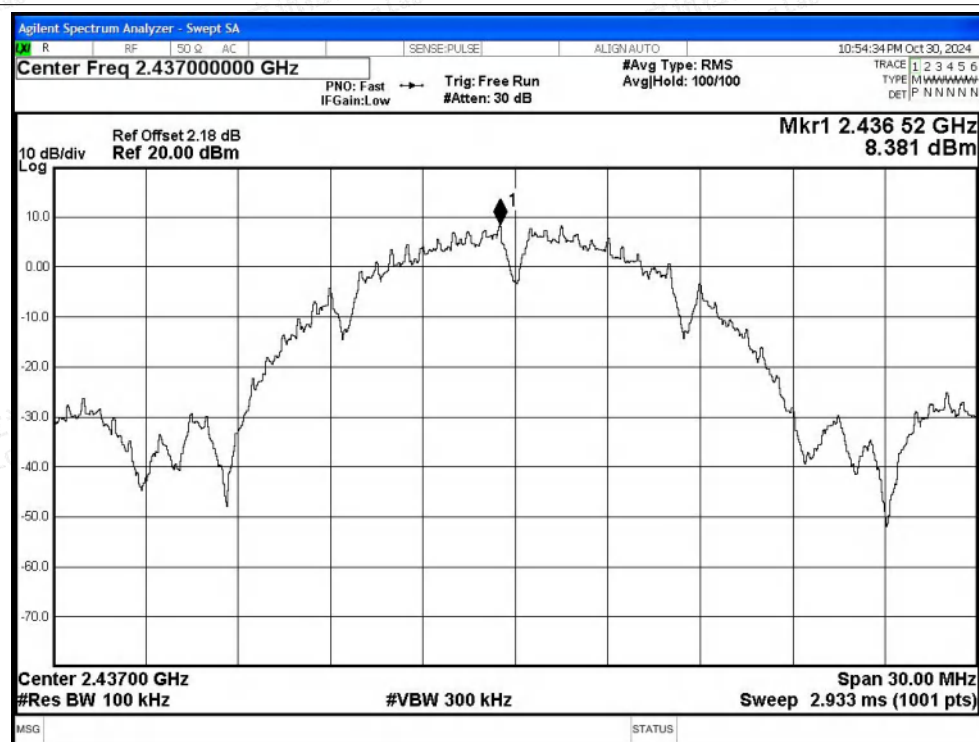
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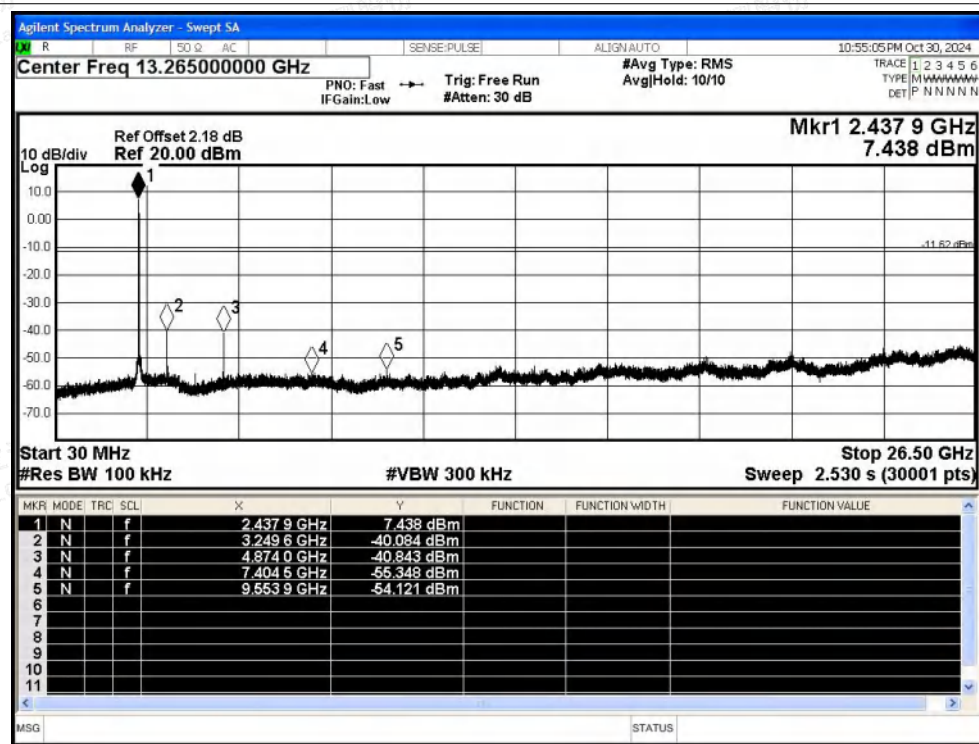
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Tx. Spurious NVNT b 2437MHz Ant1 Ref

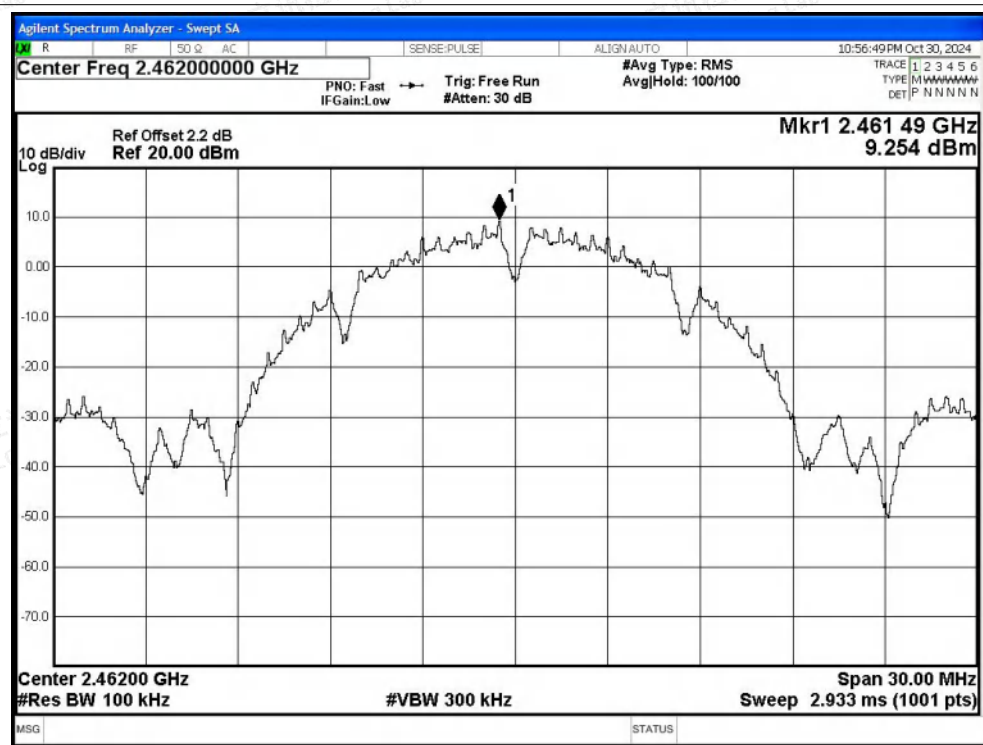


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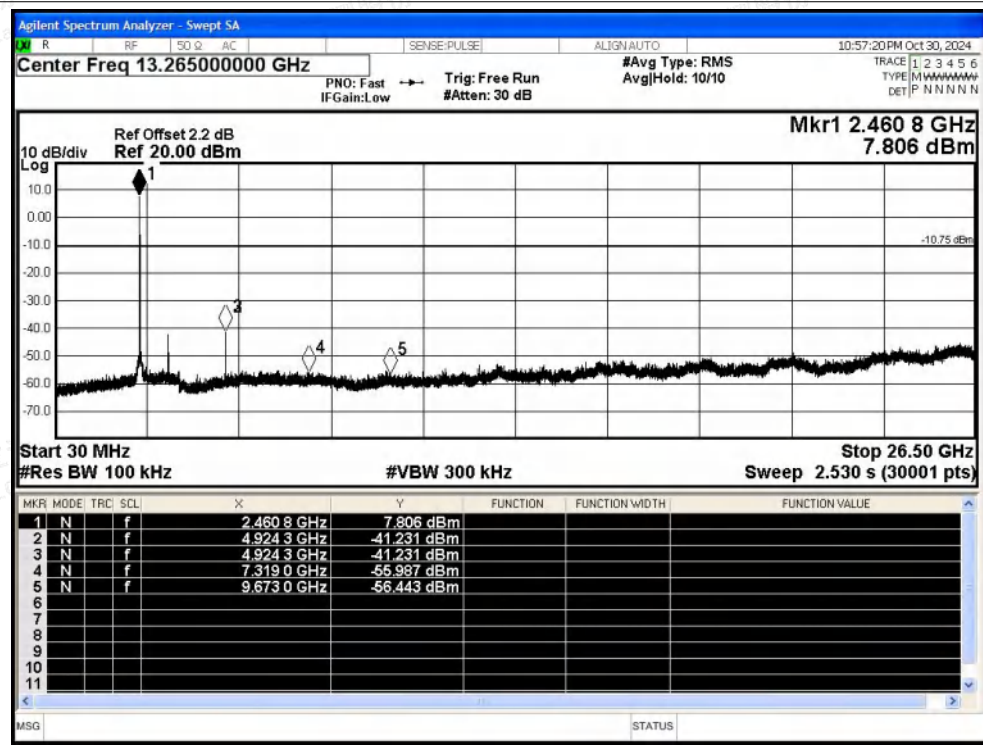




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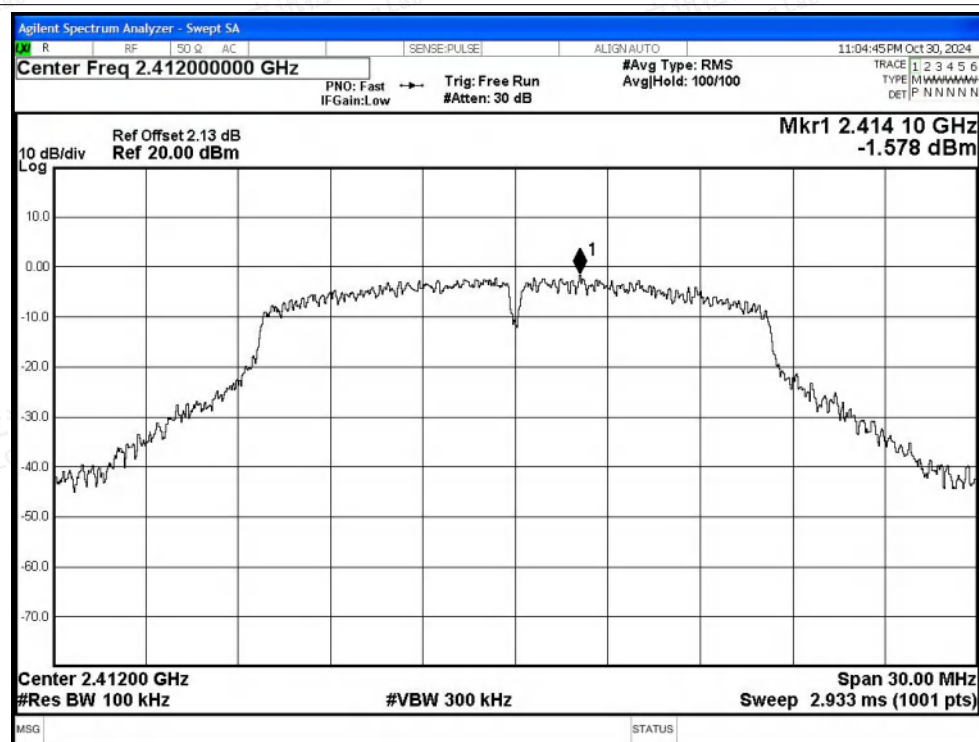


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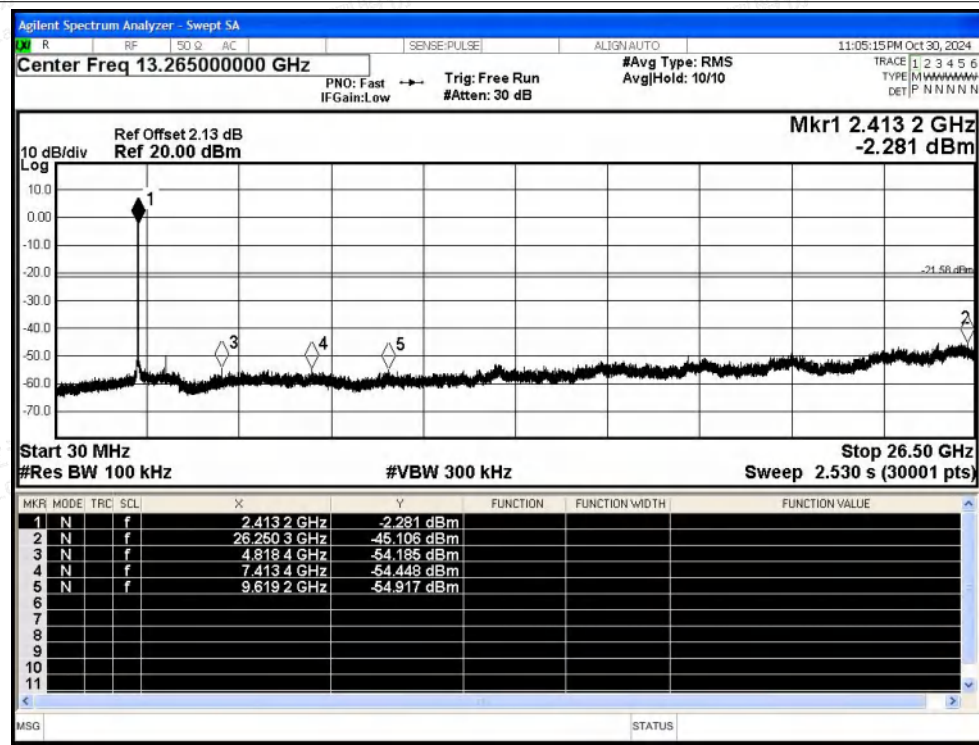




Tx. Spurious NVNT g 2412MHz Ant1 Ref



Tx. Spurious NVNT g 2412MHz Ant1 Emission



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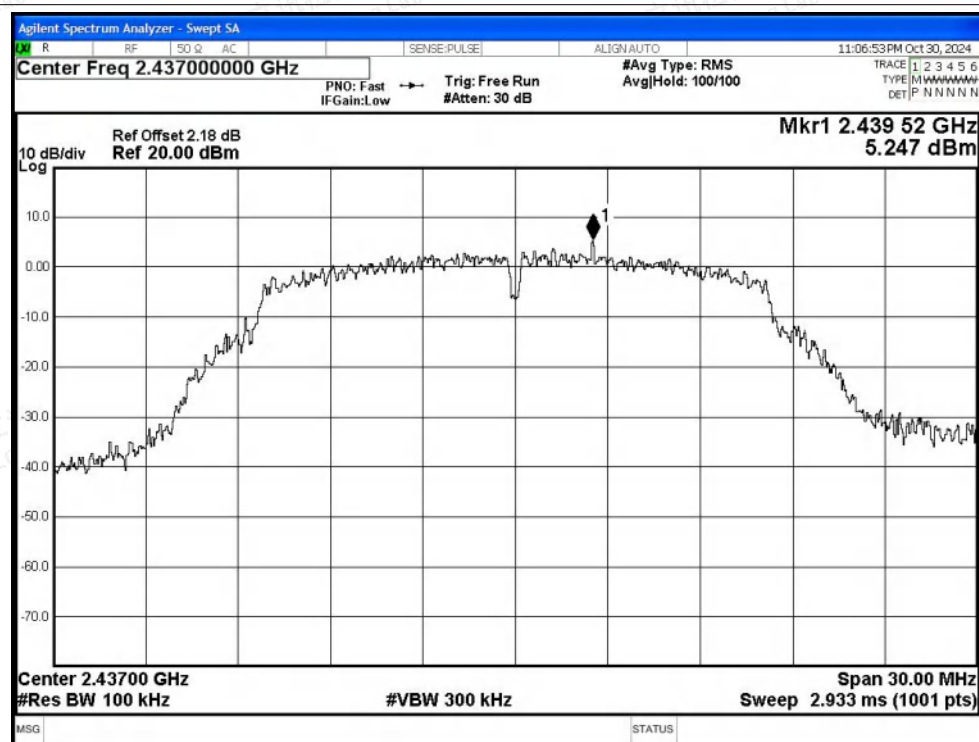
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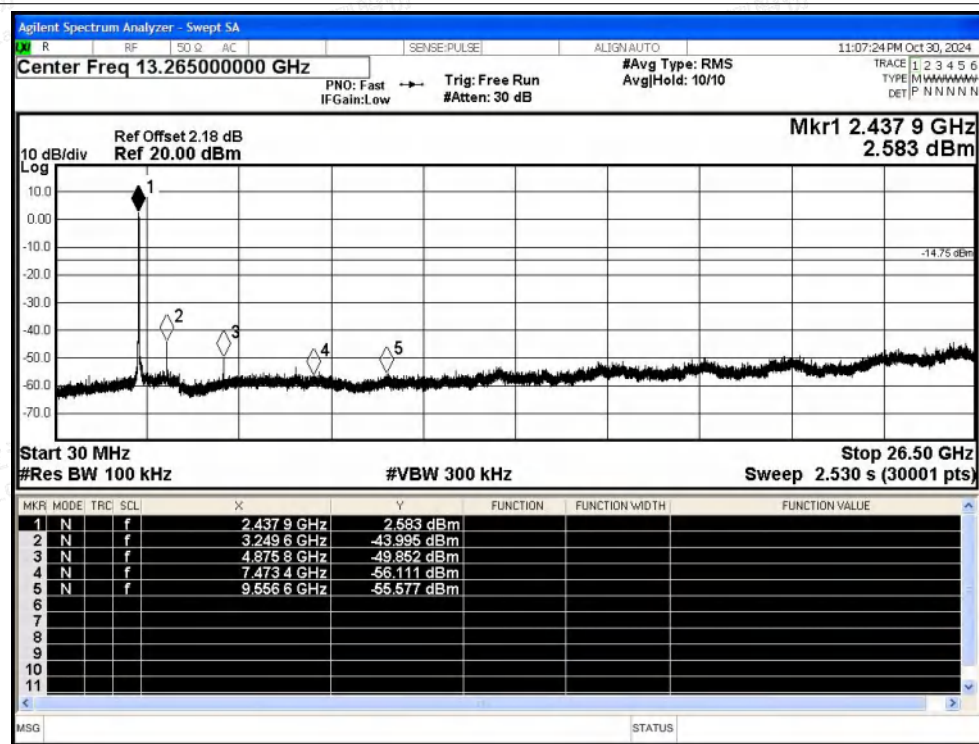
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Tx. Spurious NVNT g 2437MHz Ant1 Ref

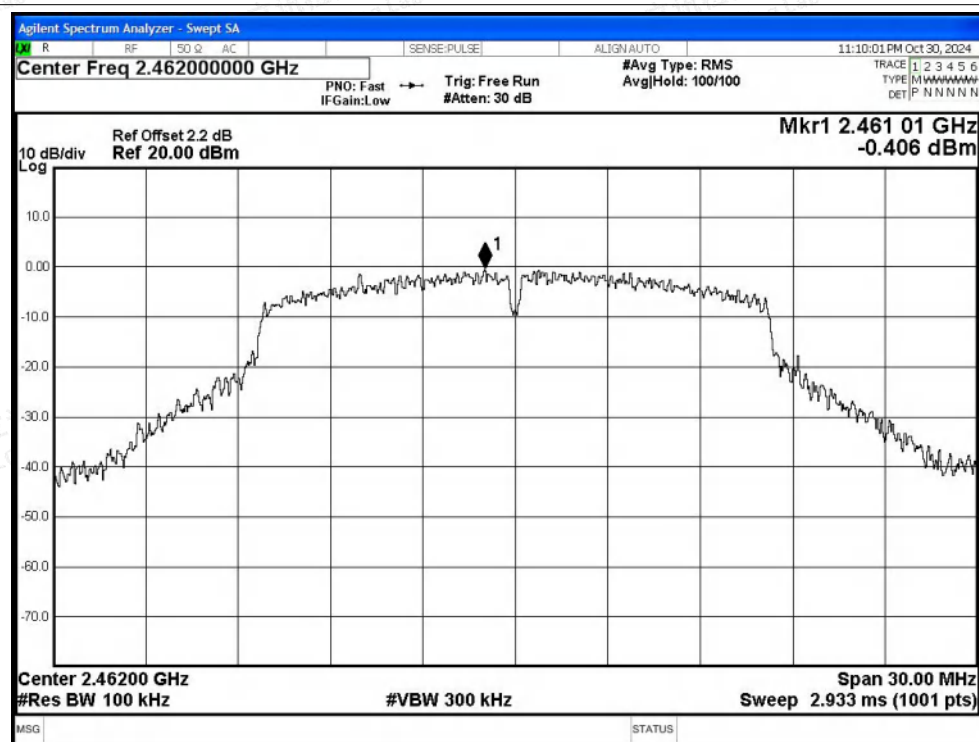


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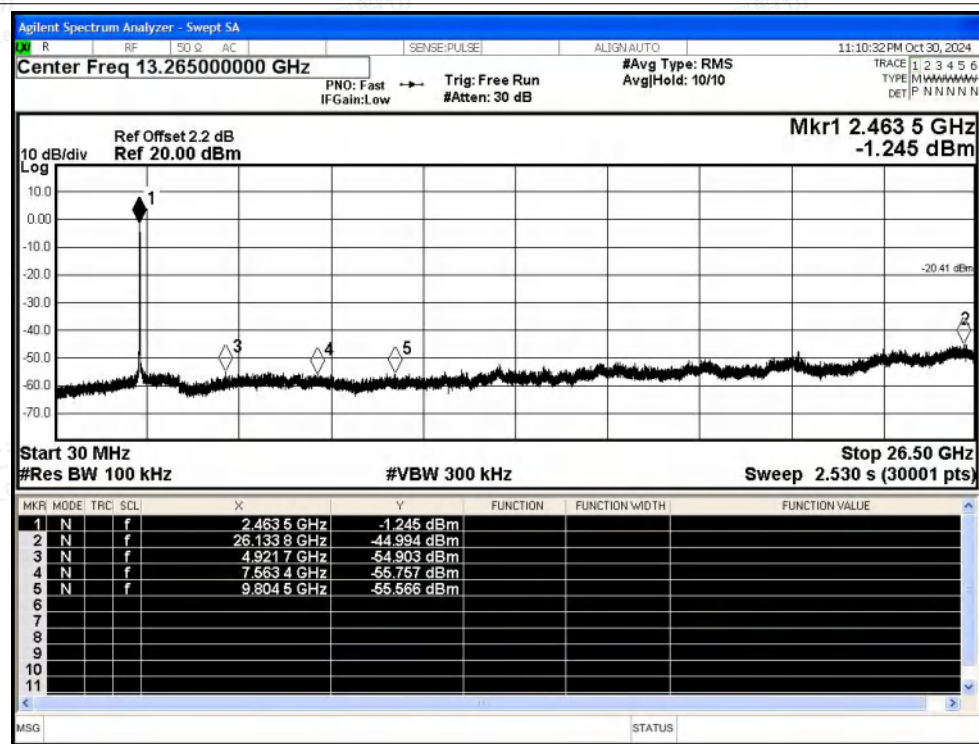




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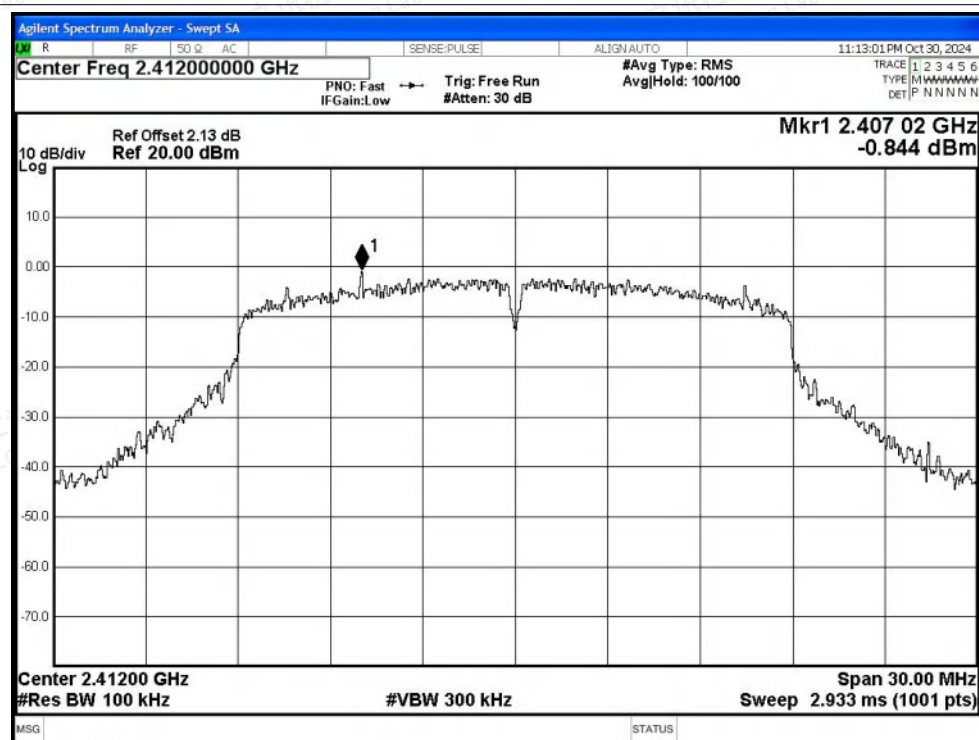


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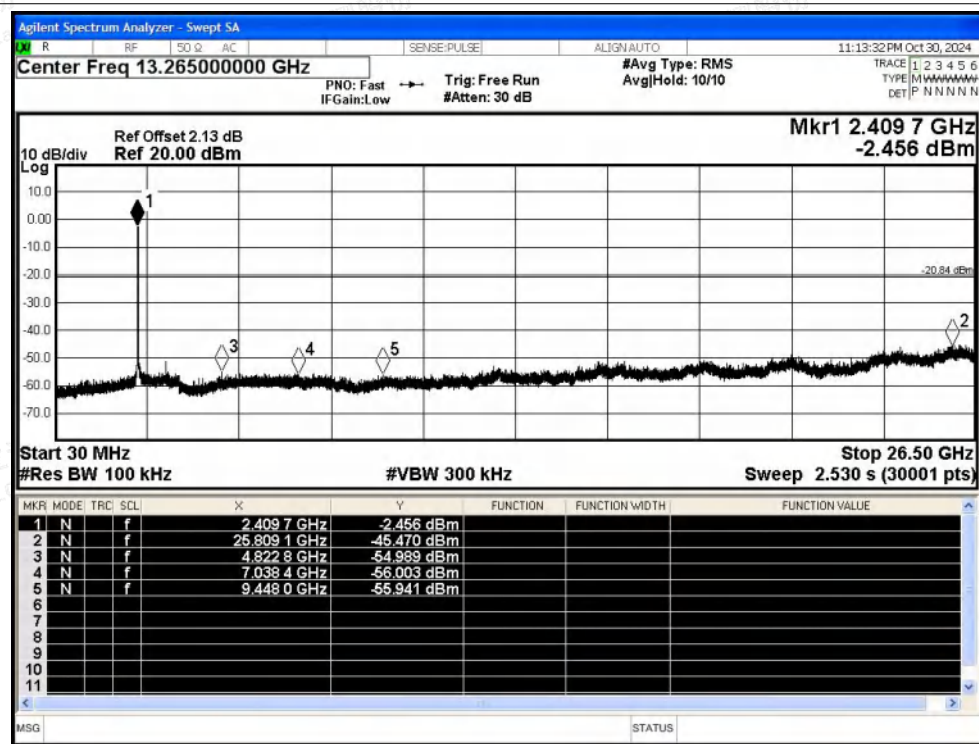




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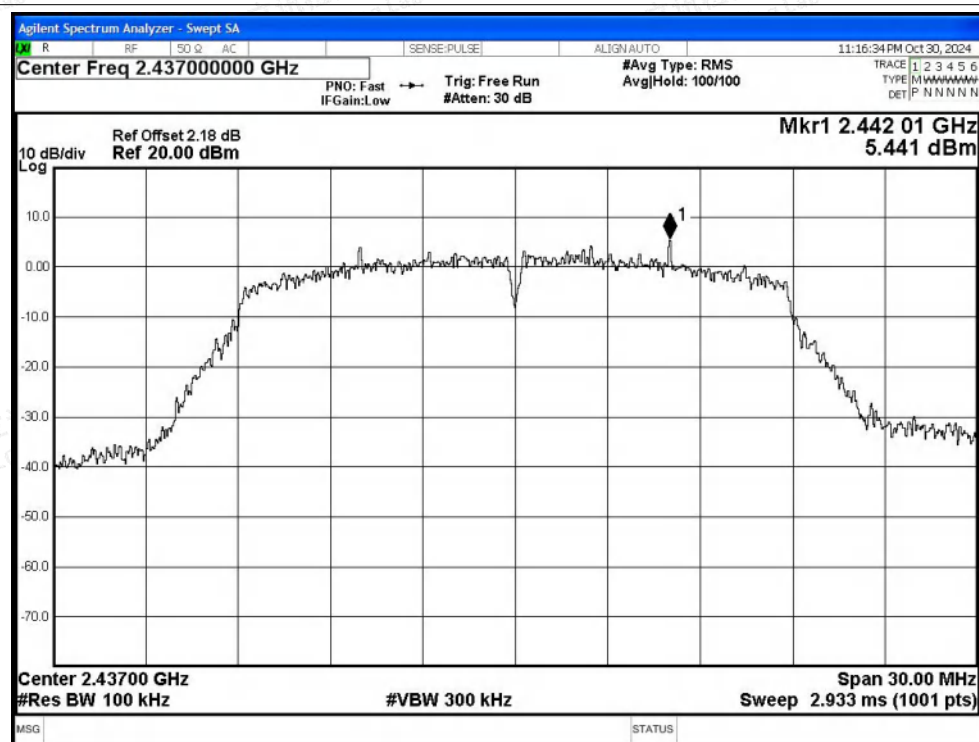


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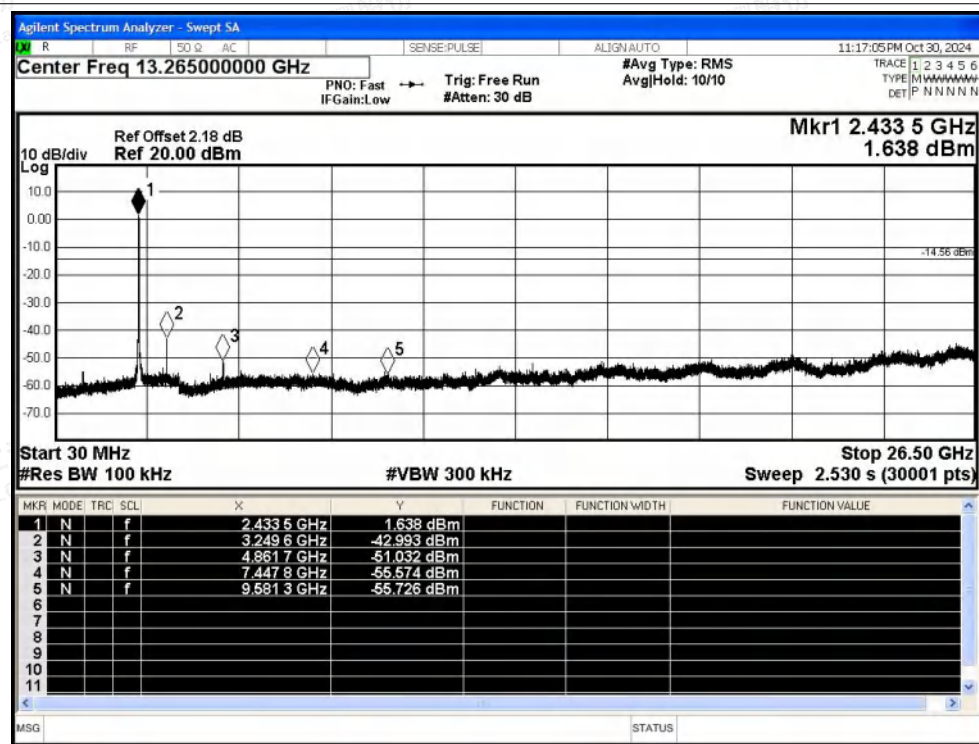




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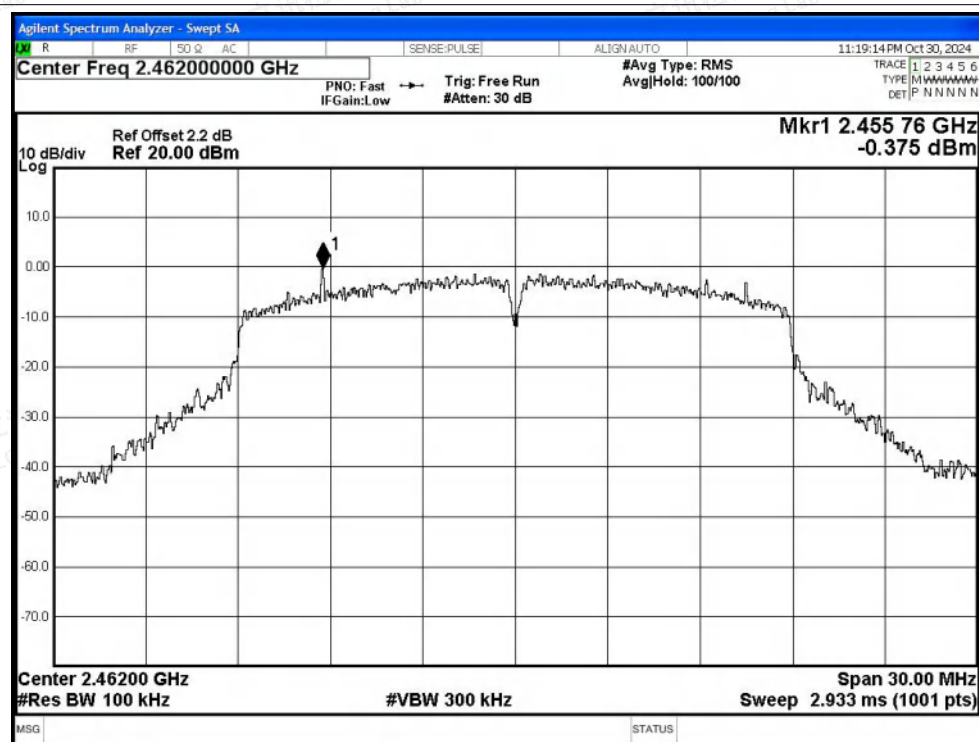


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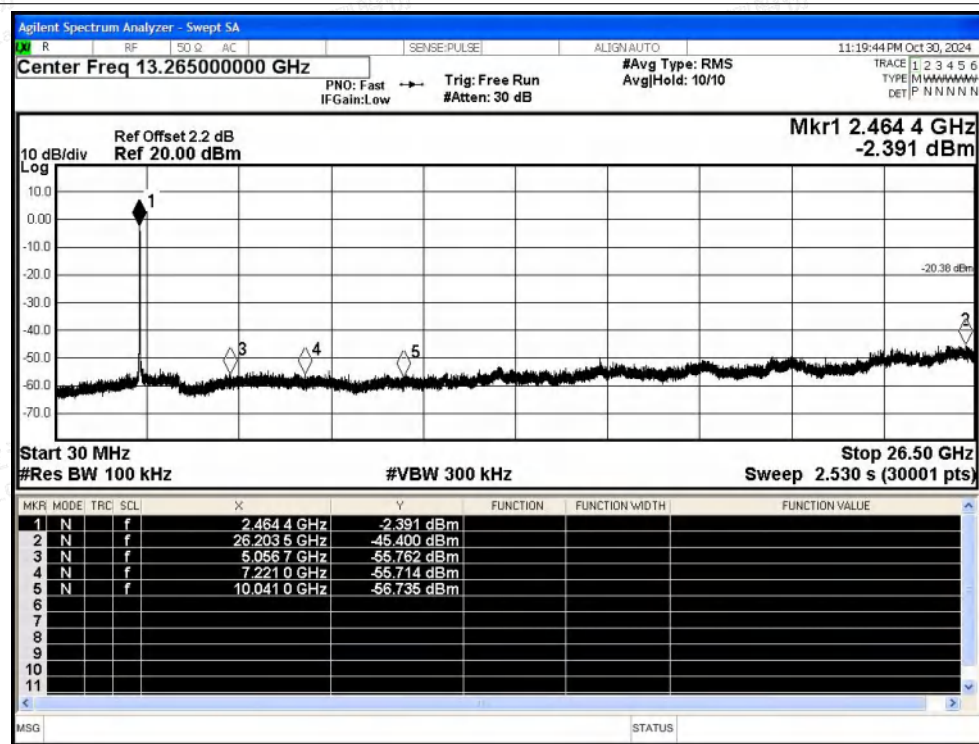




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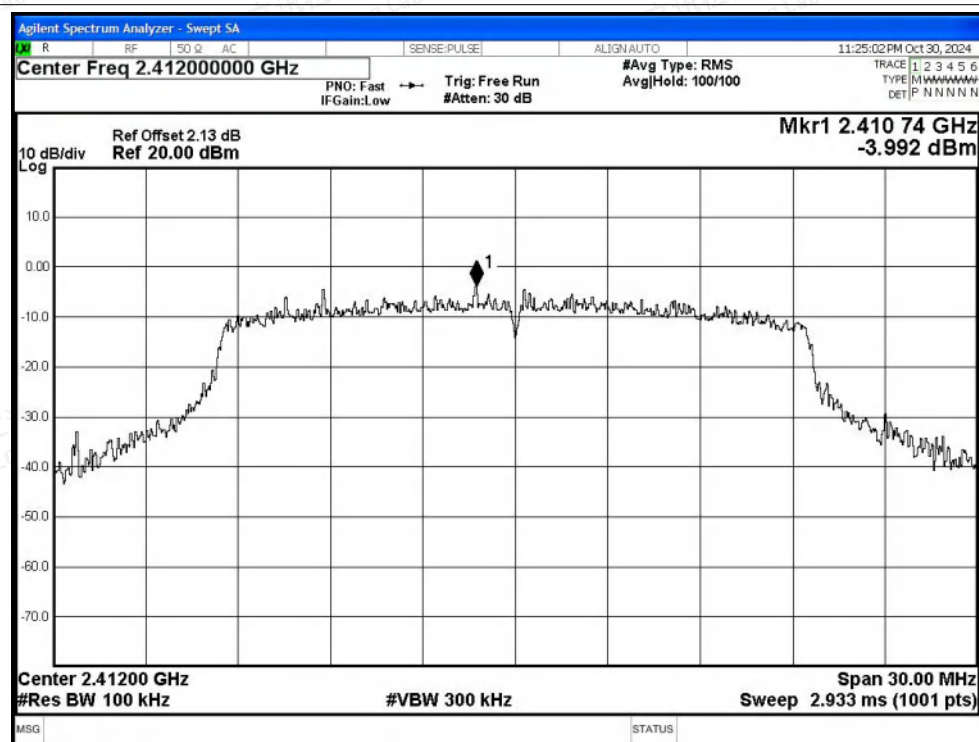


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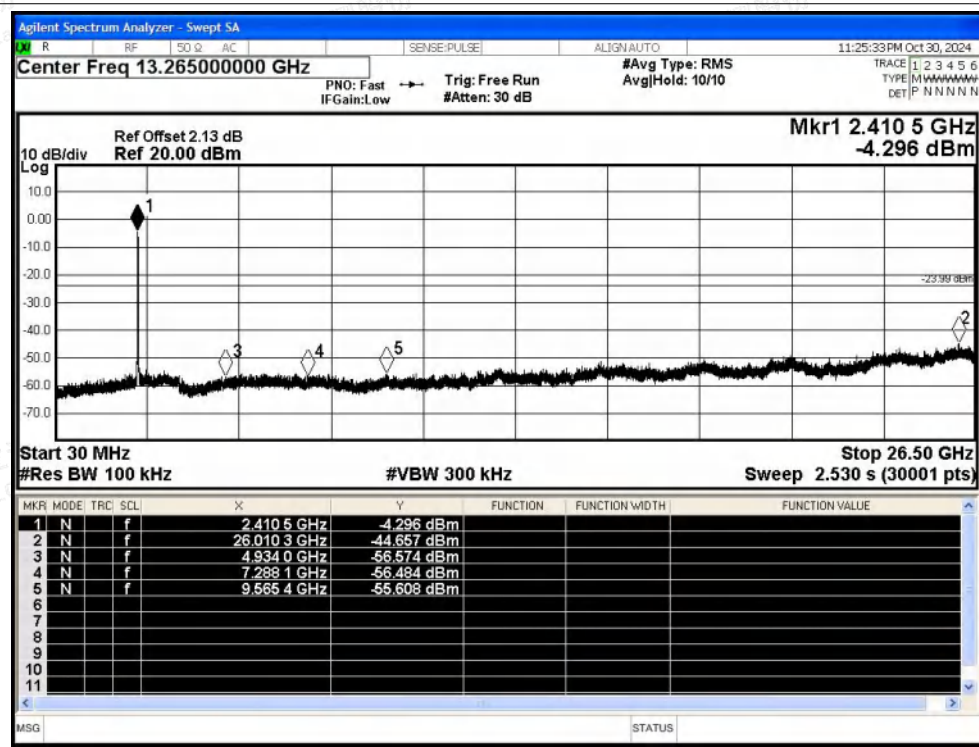




Tx. Spurious NVNT ax20 2412MHz Ant1 Ref



Tx. Spurious NVNT ax20 2412MHz Ant1 Emission



Shenzhen LCS Compliance Testing Laboratory Ltd.

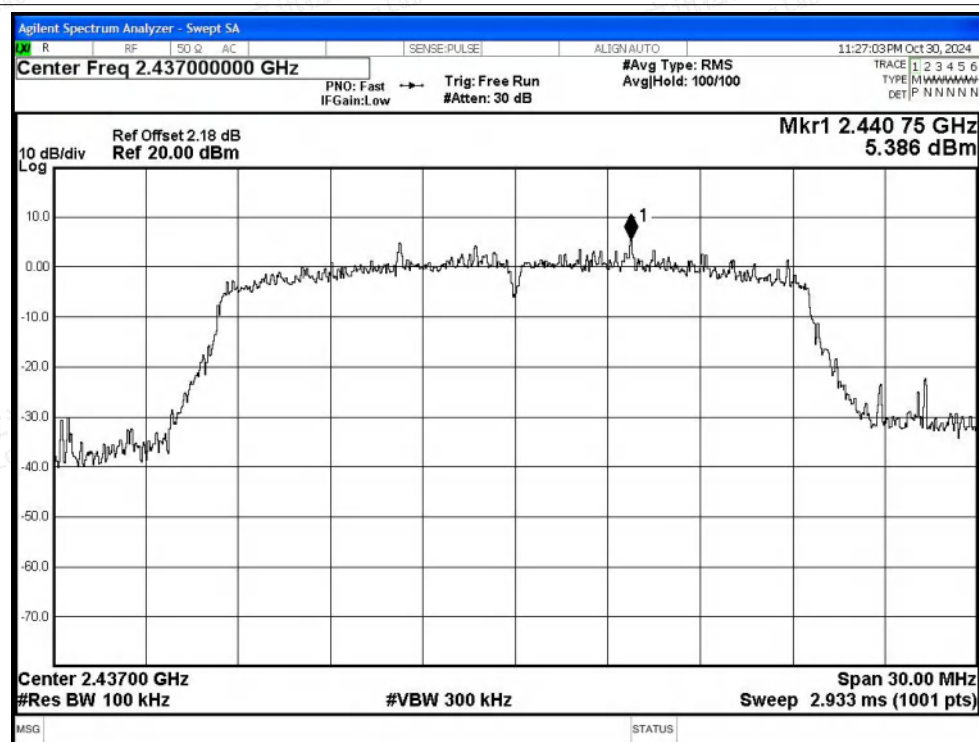
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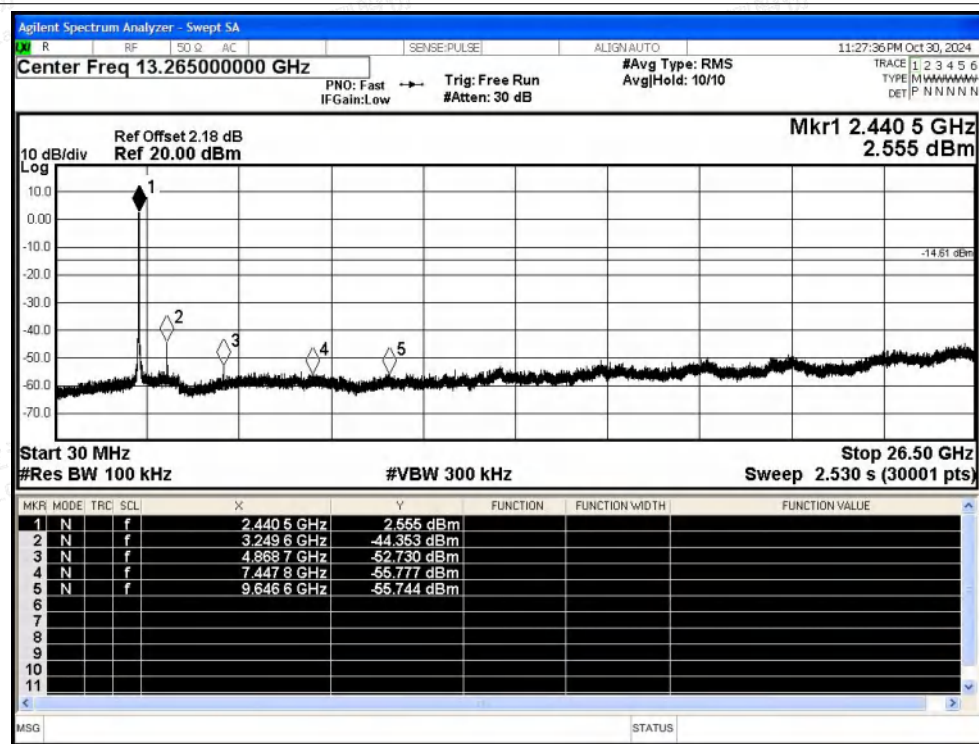
Scan code to check authenticity



Tx. Spurious NVNT ax20 2437MHz Ant1 Ref

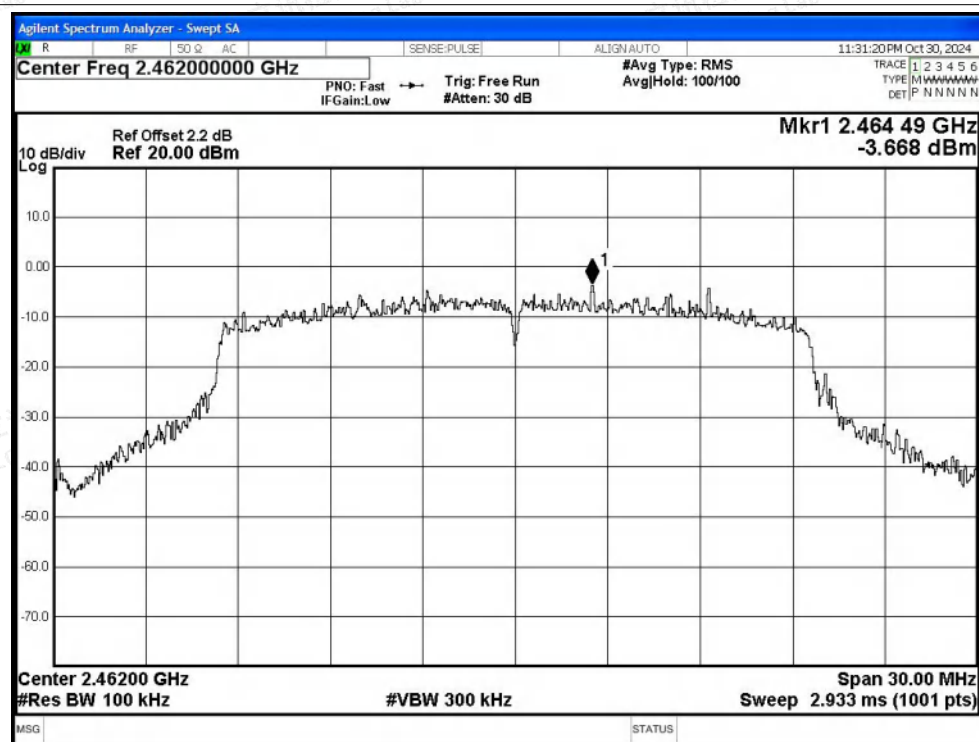


Tx. Spurious NVNT ax20 2437MHz Ant1 Emission

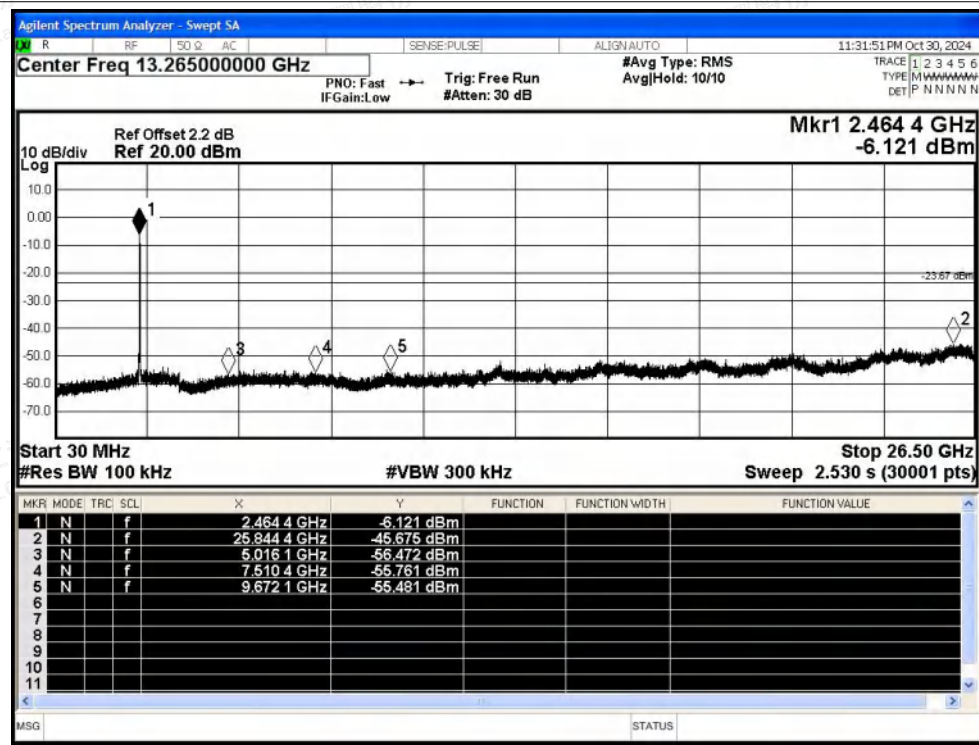




Tx. Spurious NVNT ax20 2462MHz Ant1 Ref



Tx. Spurious NVNT ax20 2462MHz Ant1 Emission



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B.6 Duty Cycle

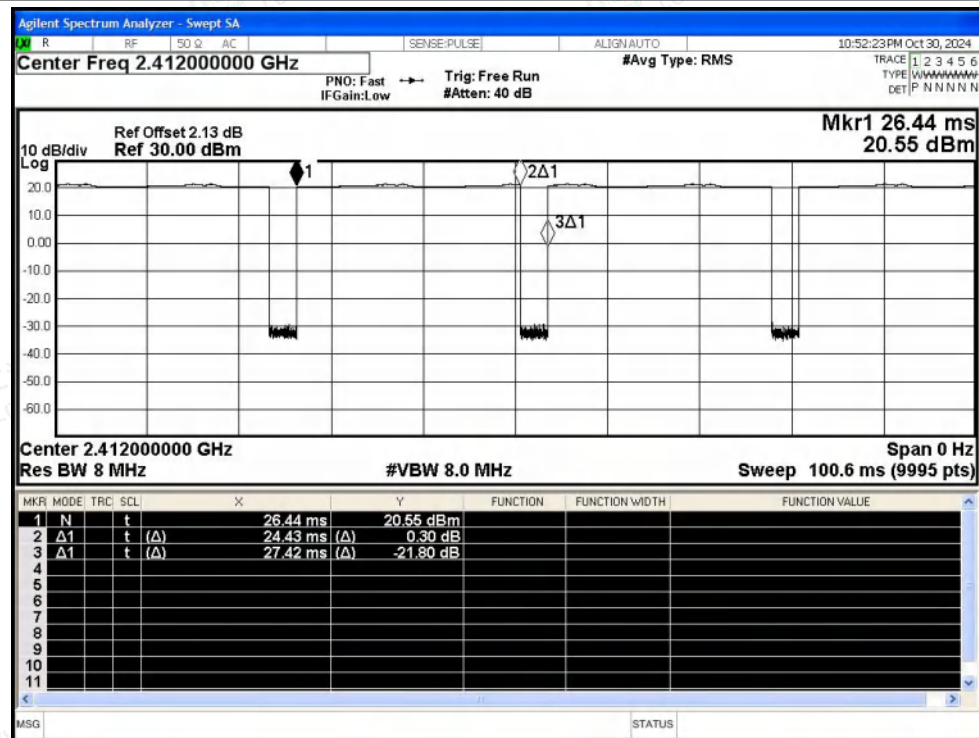
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant1	89.1	0.5	0.04
NVNT	b	2437	Ant1	89.06	0.5	0.04
NVNT	b	2462	Ant1	89.06	0.5	0.04
NVNT	g	2412	Ant1	57.5	2.4	0.25
NVNT	g	2437	Ant1	57.53	2.4	0.25
NVNT	g	2462	Ant1	57.5	2.4	0.25
NVNT	n20	2412	Ant1	53.11	2.75	0.29
NVNT	n20	2437	Ant1	53.14	2.75	0.29
NVNT	n20	2462	Ant1	53.11	2.75	0.29
NVNT	ax20	2412	Ant1	48.95	3.1	0.35
NVNT	ax20	2437	Ant1	48.95	3.1	0.35
NVNT	ax20	2462	Ant1	48.95	3.1	0.35



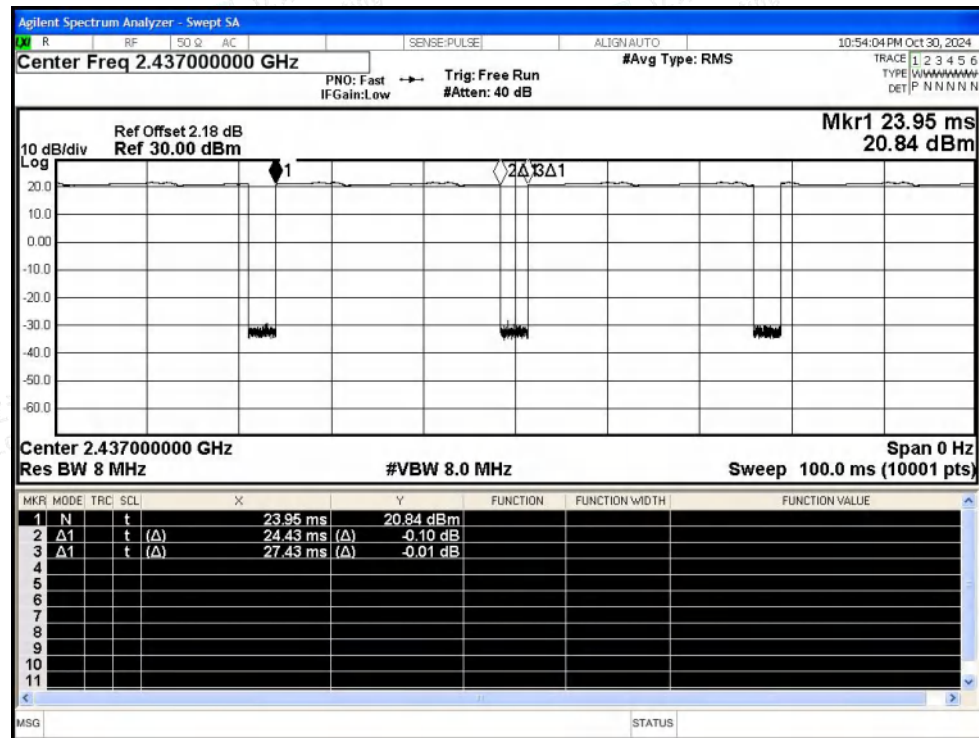


Test Graphs

Duty Cycle NVNT b 2412MHz Ant1



Duty Cycle NVNT b 2437MHz Ant1



Shenzhen LCS Compliance Testing Laboratory Ltd.

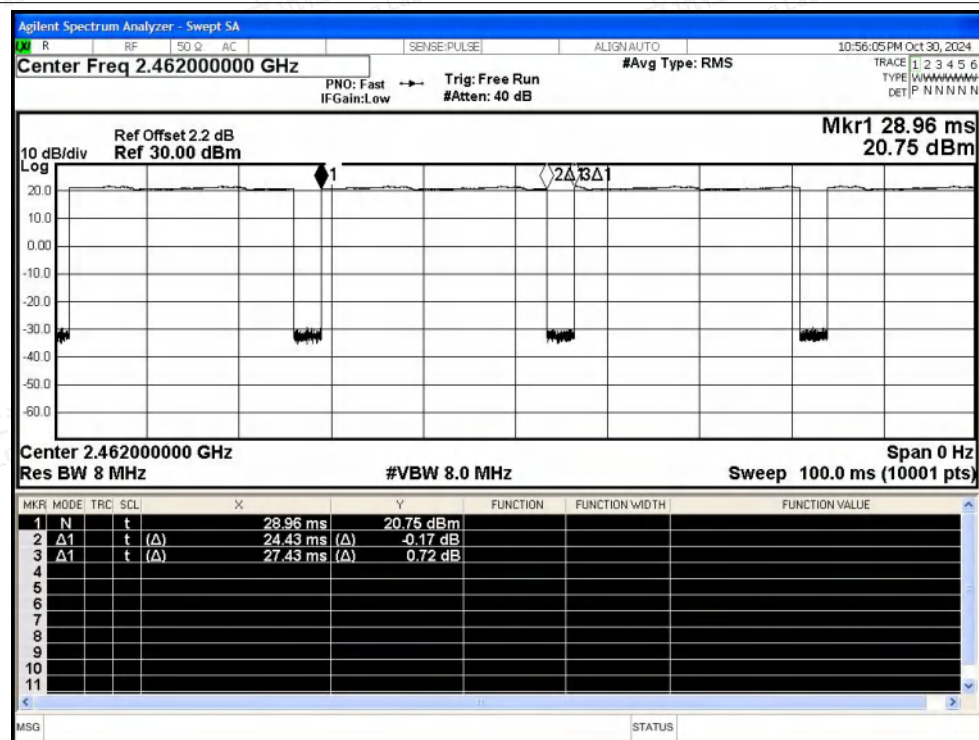
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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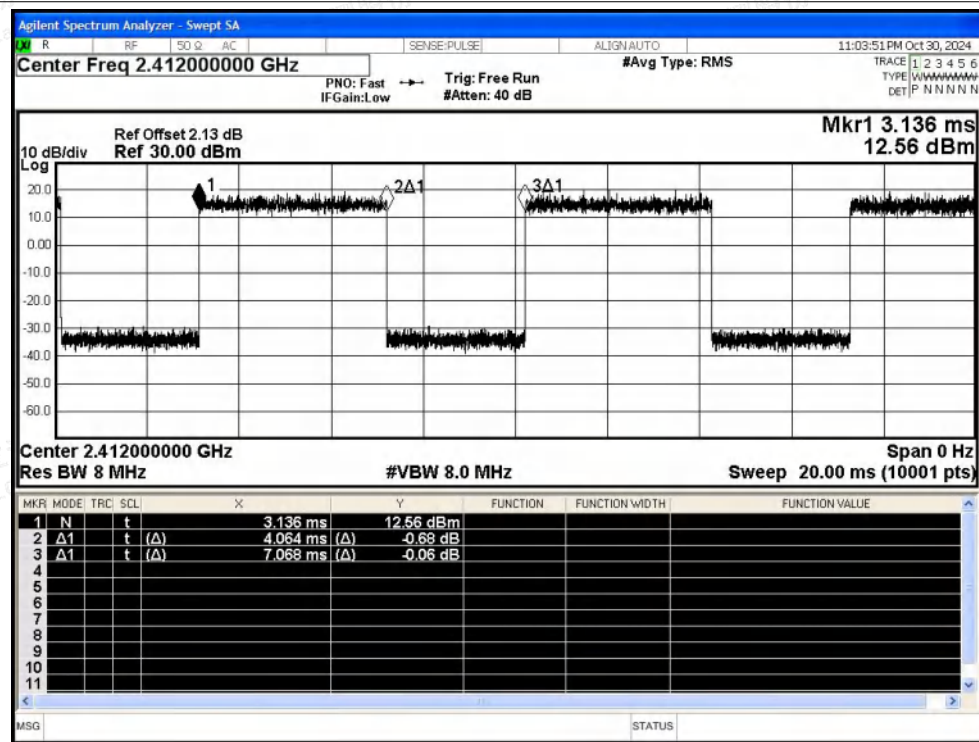
Scan code to check authenticity



Duty Cycle NVNT b 2462MHz Ant1

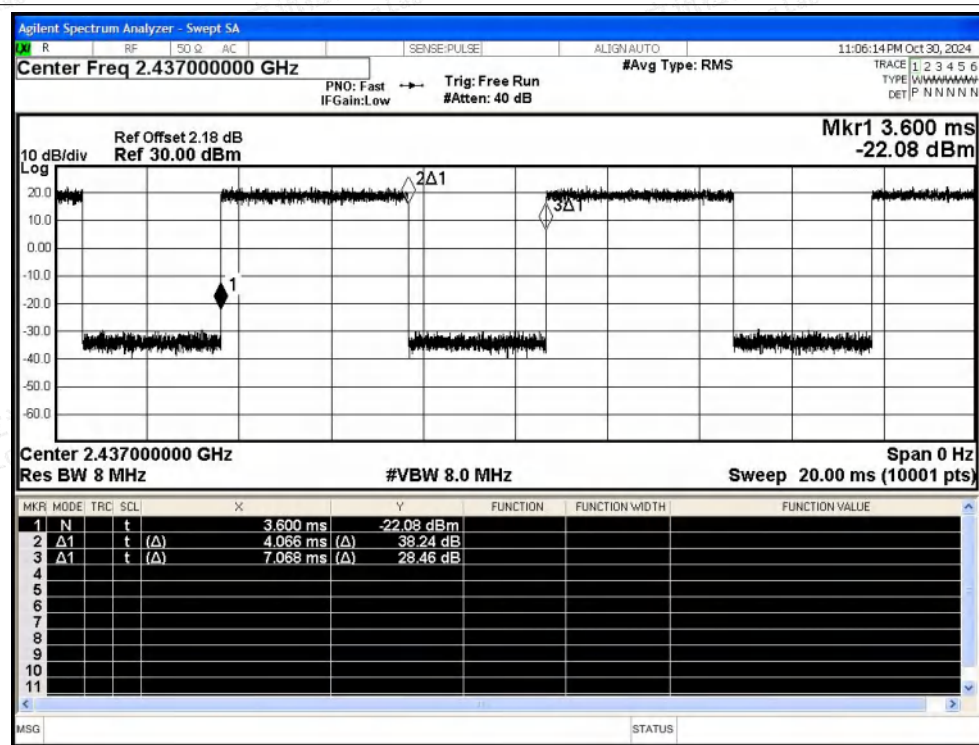


Duty Cycle NVNT g 2412MHz Ant1

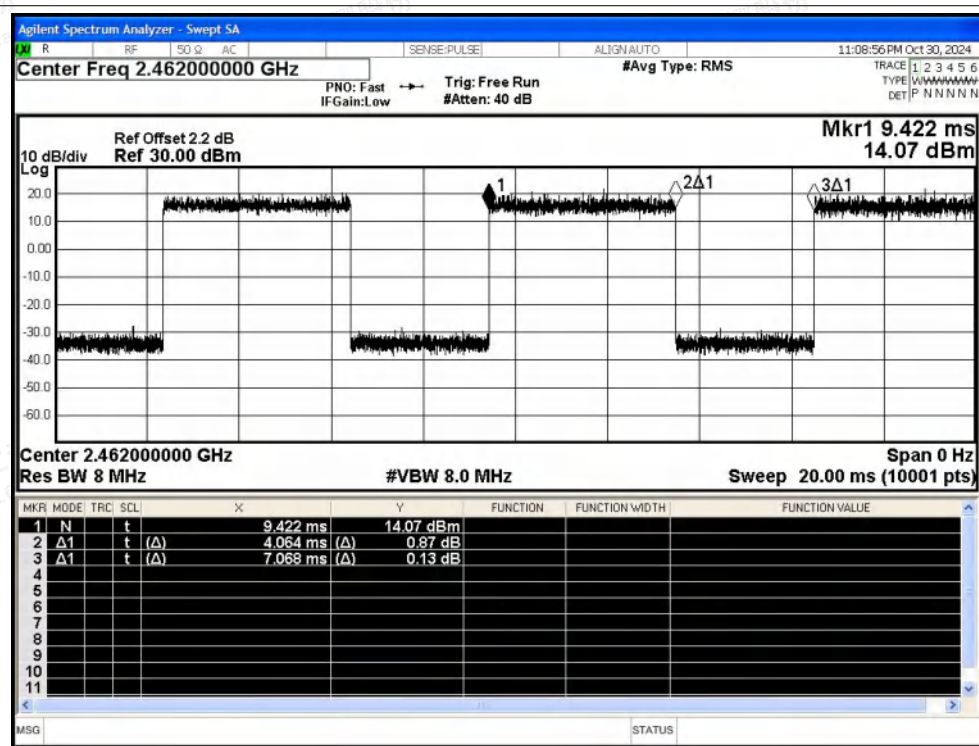




Duty Cycle NVNT g 2437MHz Ant1

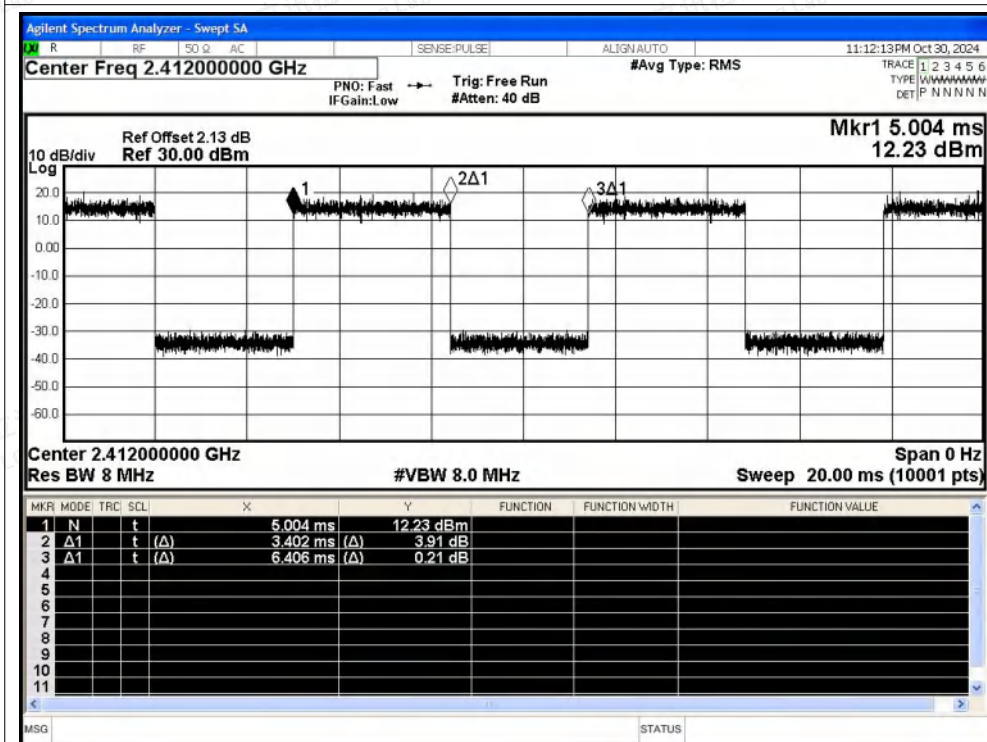


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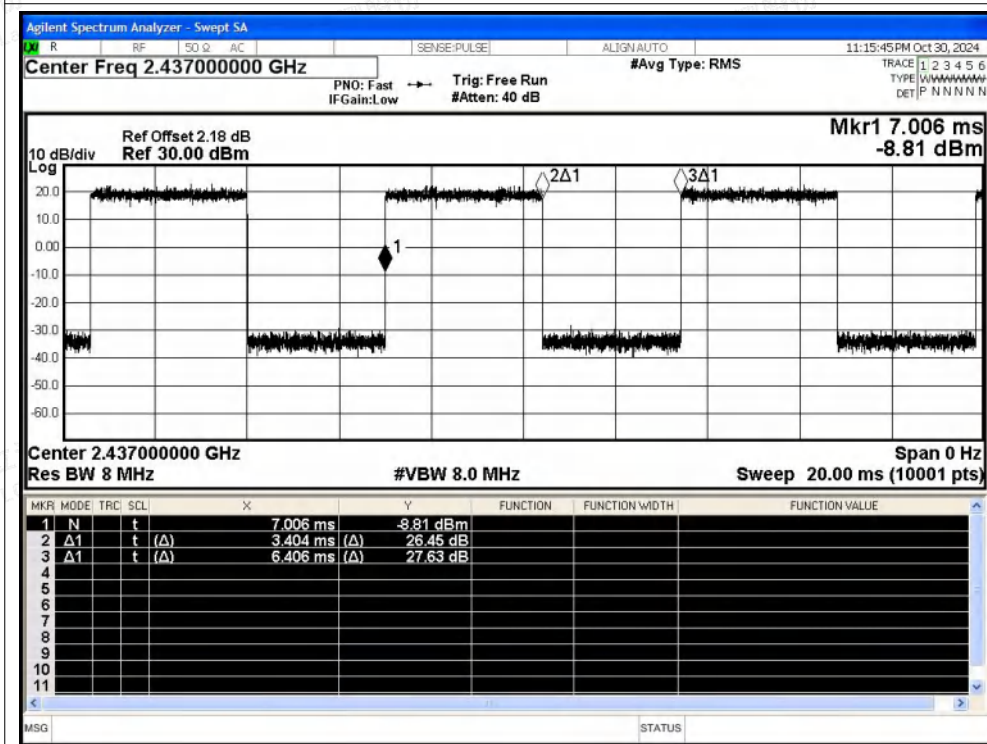




Duty Cycle NVNT n20 2412MHz Ant1

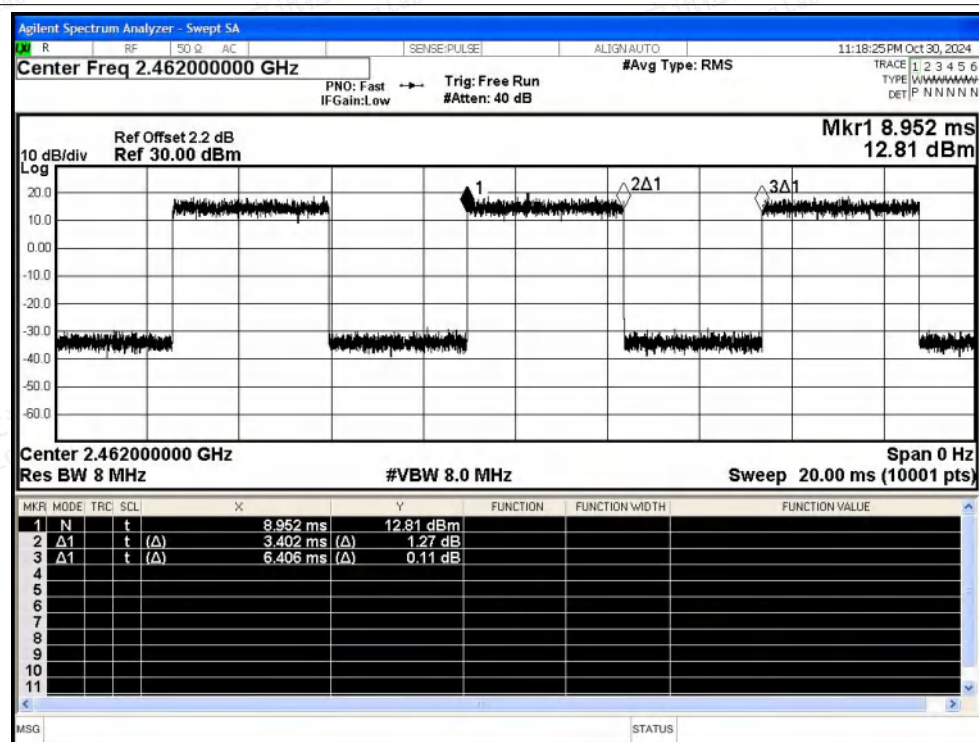


Duty Cycle NVNT n20 2437MHz Ant1

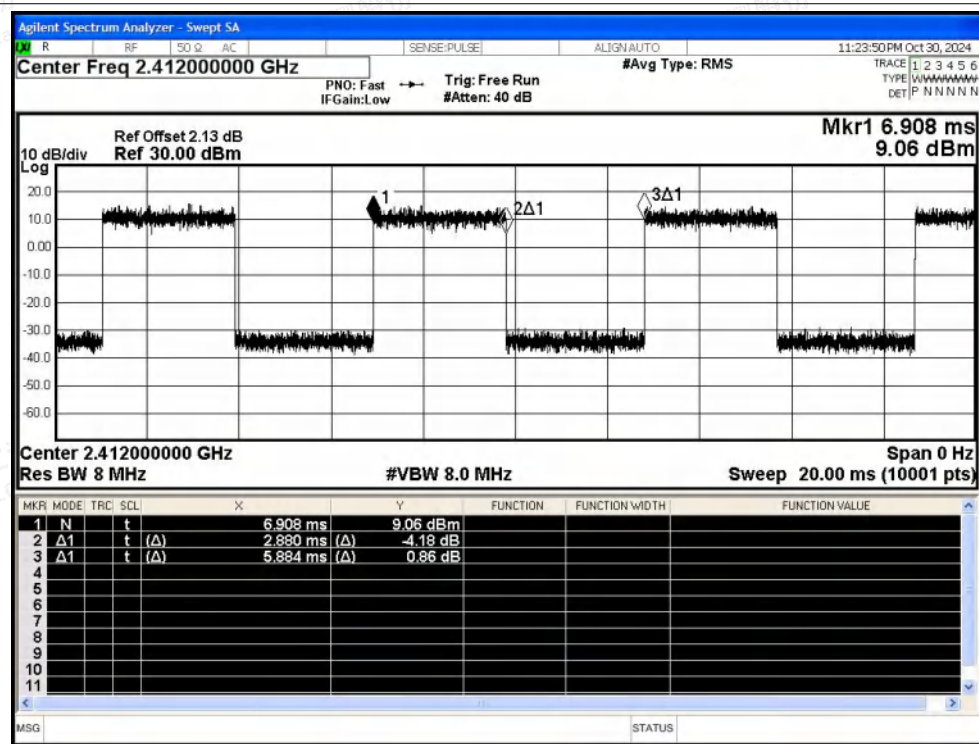




Duty Cycle NVNT n20 2462MHz Ant1

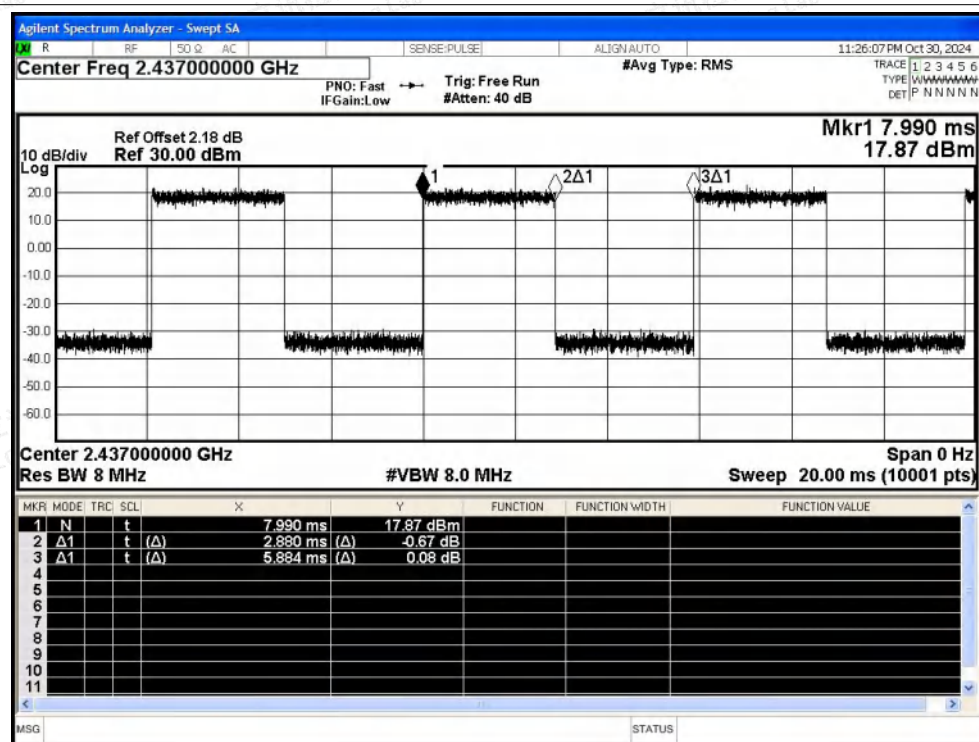


Duty Cycle NVNT ax20 2412MHz Ant1

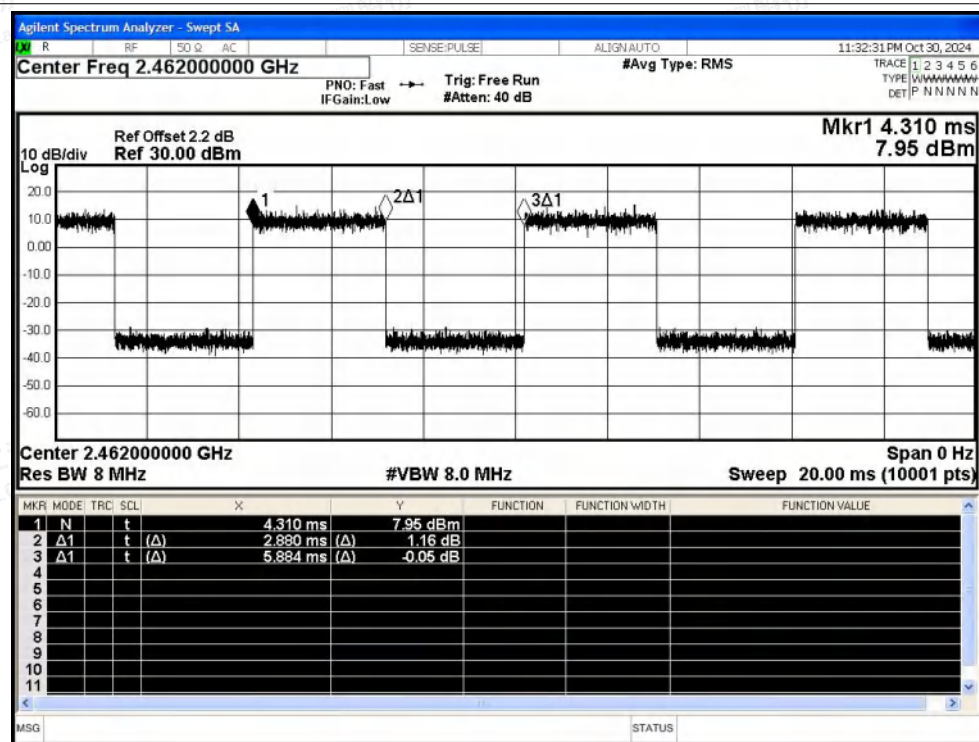




Duty Cycle NVNT ax20 2437MHz Ant1



Duty Cycle NVNT ax20 2462MHz Ant1





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	Ant1	2310	-48.92	2.7	-	49.04	Peak	74	Pass
NVNT	b	2412	Ant1	2310	-57.49	2.7	0.5	40.97	Average	54	Pass
NVNT	b	2412	Ant1	2376.807	-33.66	2.7	-	64.3	Peak	74	Pass
NVNT	b	2412	Ant1	2386.635	-49.99	2.7	0.5	48.47	Average	54	Pass
NVNT	b	2412	Ant1	2390	-44.35	2.7	-	53.61	Peak	74	Pass
NVNT	b	2412	Ant1	2390	-52.51	2.7	0.5	45.95	Average	54	Pass
NVNT	b	2462	Ant1	2483.5	-40.5	2.7	-	57.46	Peak	74	Pass
NVNT	b	2462	Ant1	2483.5	-48.06	2.7	0.5	50.4	Average	54	Pass
NVNT	b	2462	Ant1	2483.676	-33.3	2.7	-	64.66	Peak	74	Pass
NVNT	b	2462	Ant1	2483.782	-47.65	2.7	0.5	50.81	Average	54	Pass
NVNT	b	2462	Ant1	2500	-41.71	2.7	-	56.25	Peak	74	Pass
NVNT	b	2462	Ant1	2500	-51.06	2.7	0.5	47.4	Average	54	Pass
NVNT	g	2412	Ant1	2310	-50.23	2.7	-	47.73	Peak	74	Pass
NVNT	g	2412	Ant1	2310	-57.91	2.7	2.4	42.45	Average	54	Pass
NVNT	g	2412	Ant1	2387.805	-27.13	2.7	-	70.83	Peak	74	Pass
NVNT	g	2412	Ant1	2389.56	-47.26	2.7	2.4	53.1	Average	54	Pass
NVNT	g	2412	Ant1	2390	-36.23	2.7	-	61.73	Peak	74	Pass
NVNT	g	2412	Ant1	2390	-46.93	2.7	2.4	53.43	Average	54	Pass
NVNT	g	2462	Ant1	2483.5	-35.58	2.7	-	62.38	Peak	74	Pass
NVNT	g	2462	Ant1	2483.5	-47.33	2.7	2.4	53.03	Average	54	Pass
NVNT	g	2462	Ant1	2484.471	-30.24	2.7	-	67.72	Peak	74	Pass
NVNT	g	2462	Ant1	2483.517	-47.33	2.7	2.4	53.03	Average	54	Pass
NVNT	g	2462	Ant1	2500	-42.73	2.7	-	55.23	Peak	74	Pass
NVNT	g	2462	Ant1	2500	-53.11	2.7	2.4	47.25	Average	54	Pass
NVNT	n20	2412	Ant1	2310	-49.32	2.7	-	48.64	Peak	74	Pass
NVNT	n20	2412	Ant1	2310	-57.97	2.7	2.75	42.74	Average	54	Pass
NVNT	n20	2412	Ant1	2389.794	-35.21	2.7	-	62.75	Peak	74	Pass
NVNT	n20	2412	Ant1	2389.911	-48.22	2.7	2.75	52.49	Average	54	Pass
NVNT	n20	2412	Ant1	2390	-37.07	2.7	-	60.89	Peak	74	Pass
NVNT	n20	2412	Ant1	2390	-48.17	2.7	2.75	52.54	Average	54	Pass
NVNT	n20	2462	Ant1	2483.5	-37.09	2.7	-	60.87	Peak	74	Pass
NVNT	n20	2462	Ant1	2483.5	-50.17	2.7	2.75	50.54	Average	54	Pass
NVNT	n20	2462	Ant1	2483.729	-32.73	2.7	-	65.23	Peak	74	Pass
NVNT	n20	2462	Ant1	2483.729	-49.44	2.7	2.75	51.27	Average	54	Pass
NVNT	n20	2462	Ant1	2500	-44.69	2.7	-	53.27	Peak	74	Pass
NVNT	n20	2462	Ant1	2500	-53.08	2.7	2.75	47.63	Average	54	Pass





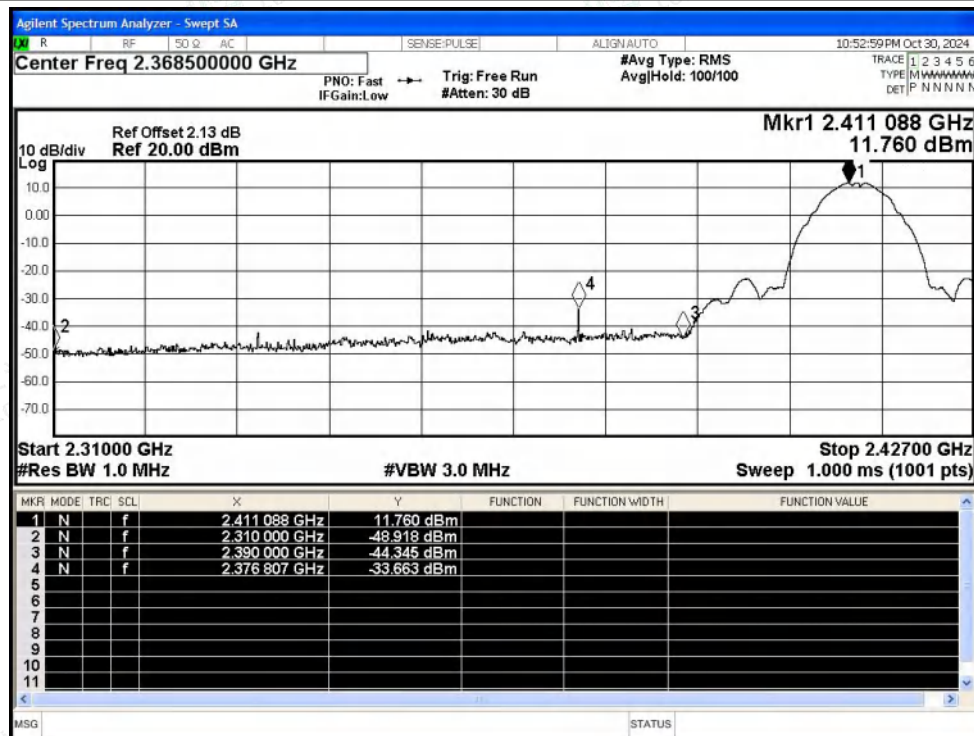
NVNT	ax20	2412	Ant1	2310	-49.43	2.7	-	48.53	Peak	74	Pass
NVNT	ax20	2412	Ant1	2310	-57.92	2.7	3.1	43.14	Average	54	Pass
NVNT	ax20	2412	Ant1	2387.337	-35.24	2.7	-	62.72	Peak	74	Pass
NVNT	ax20	2412	Ant1	2389.209	-48.94	2.7	3.1	52.12	Average	54	Pass
NVNT	ax20	2412	Ant1	2390	-36.2	2.7	-	61.76	Peak	74	Pass
NVNT	ax20	2412	Ant1	2390	-48.65	2.7	3.1	52.41	Average	54	Pass
NVNT	ax20	2462	Ant1	2483.5	-35.61	2.7	-	62.35	Peak	74	Pass
NVNT	ax20	2462	Ant1	2483.5	-48.94	2.7	3.1	52.12	Average	54	Pass
NVNT	ax20	2462	Ant1	2488.393	-32.85	2.7	-	65.11	Peak	74	Pass
NVNT	ax20	2462	Ant1	2483.835	-48.1	2.7	3.1	52.96	Average	54	Pass
NVNT	ax20	2462	Ant1	2500	-43.94	2.7	-	54.02	Peak	74	Pass
NVNT	ax20	2462	Ant1	2500	-53.79	2.7	3.1	47.27	Average	54	Pass



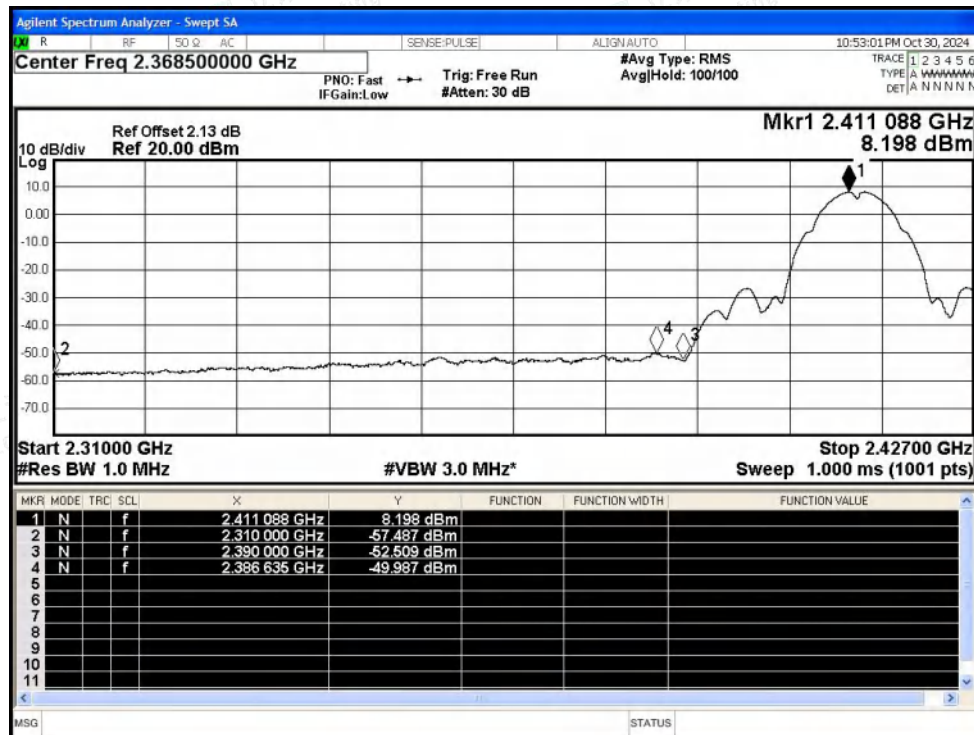


Test Graphs

Restrict Band NVNT b 2412MHz Ant1 Peak



Restrict Band NVNT b 2412MHz Ant1 Average



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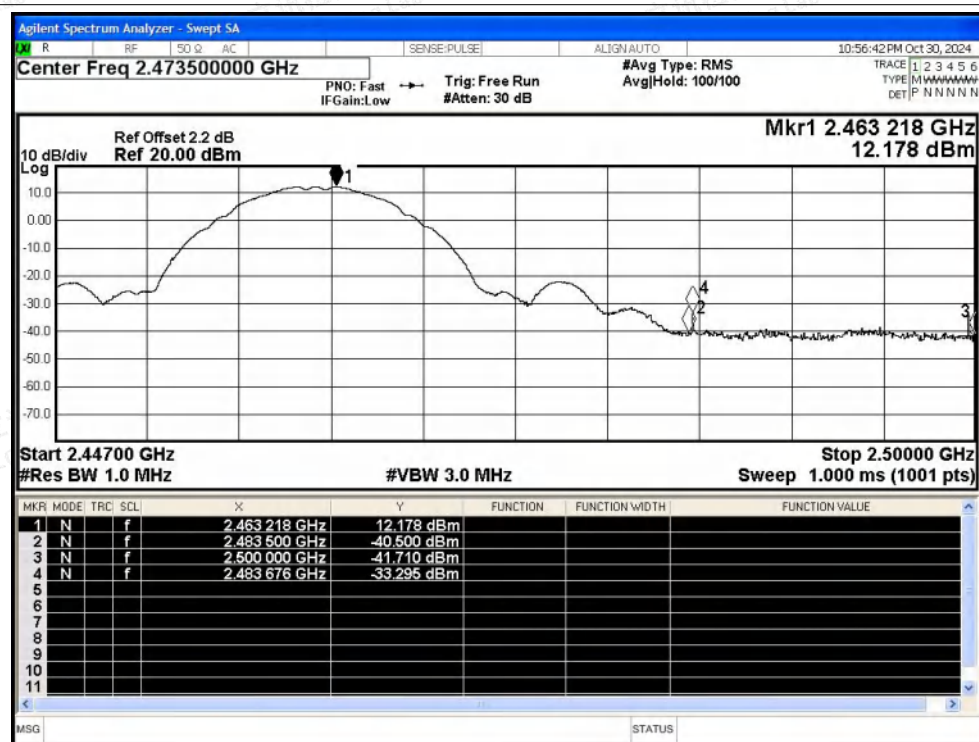
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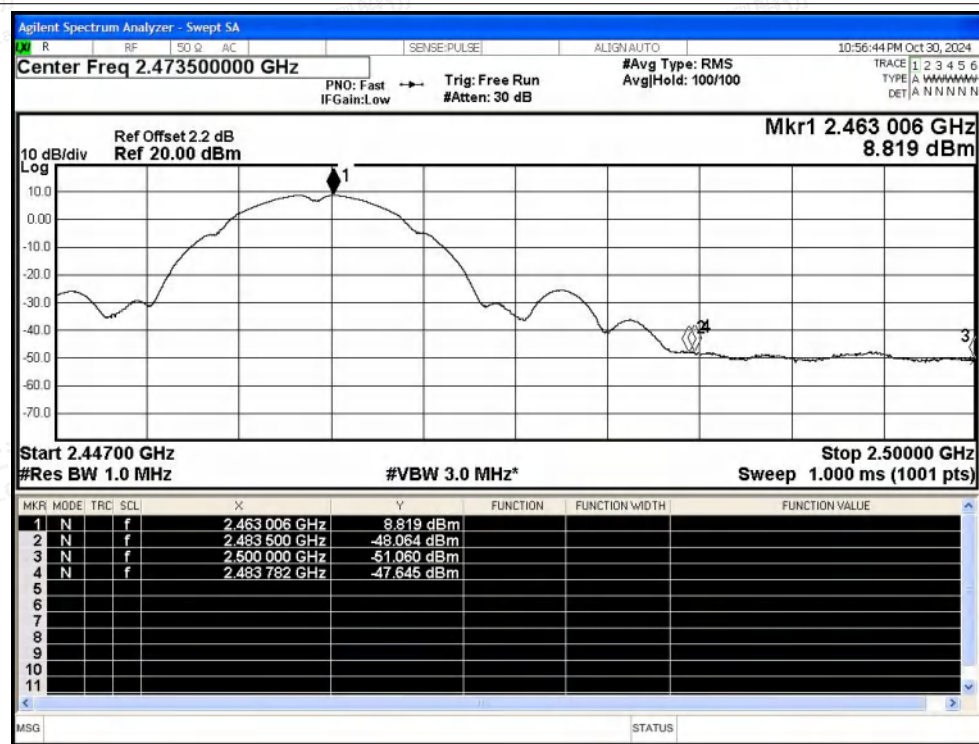
Scan code to check authenticity



Restrict Band NVNT b 2462MHz Ant1 Peak



Restrict Band NVNT b 2462MHz Ant1 Average



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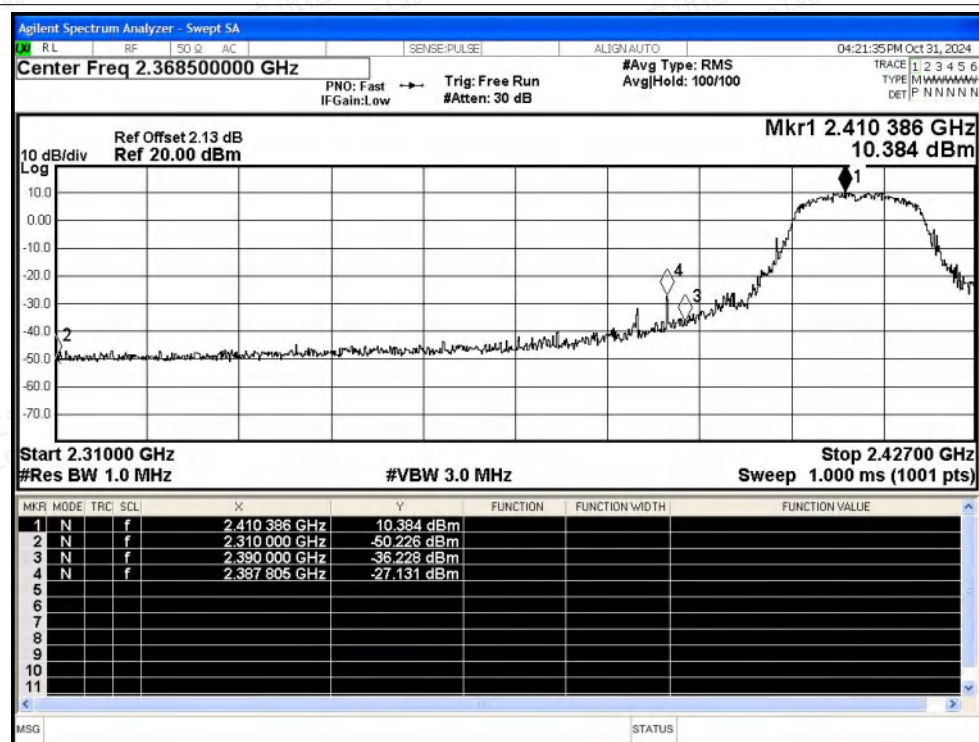
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

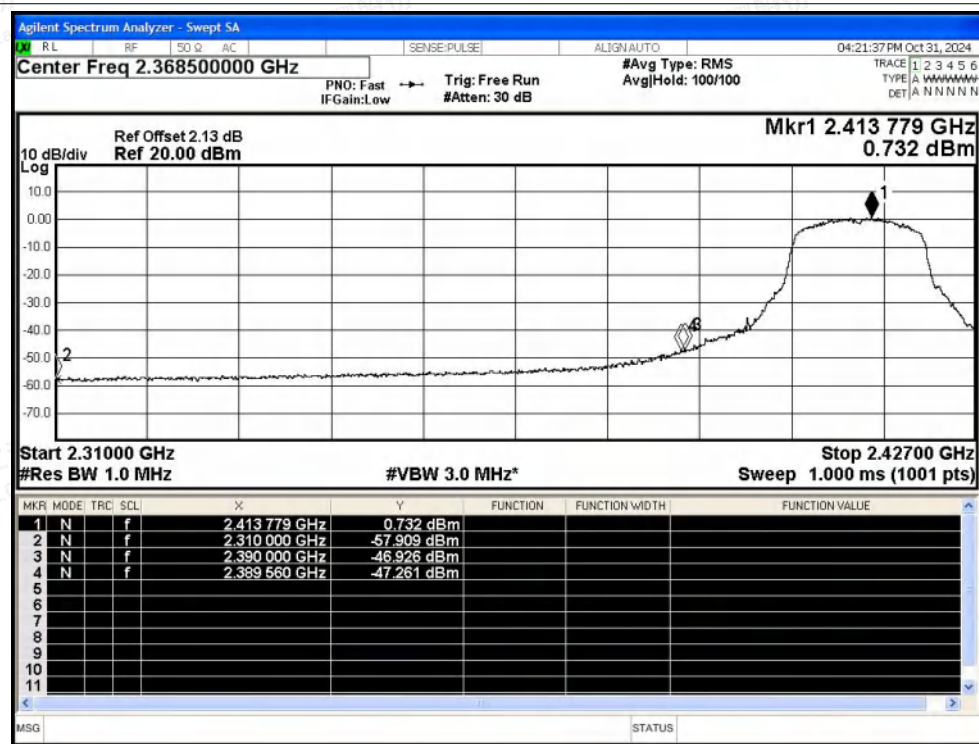
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Restrict Band NVNT g 2412MHz Ant1 Peak

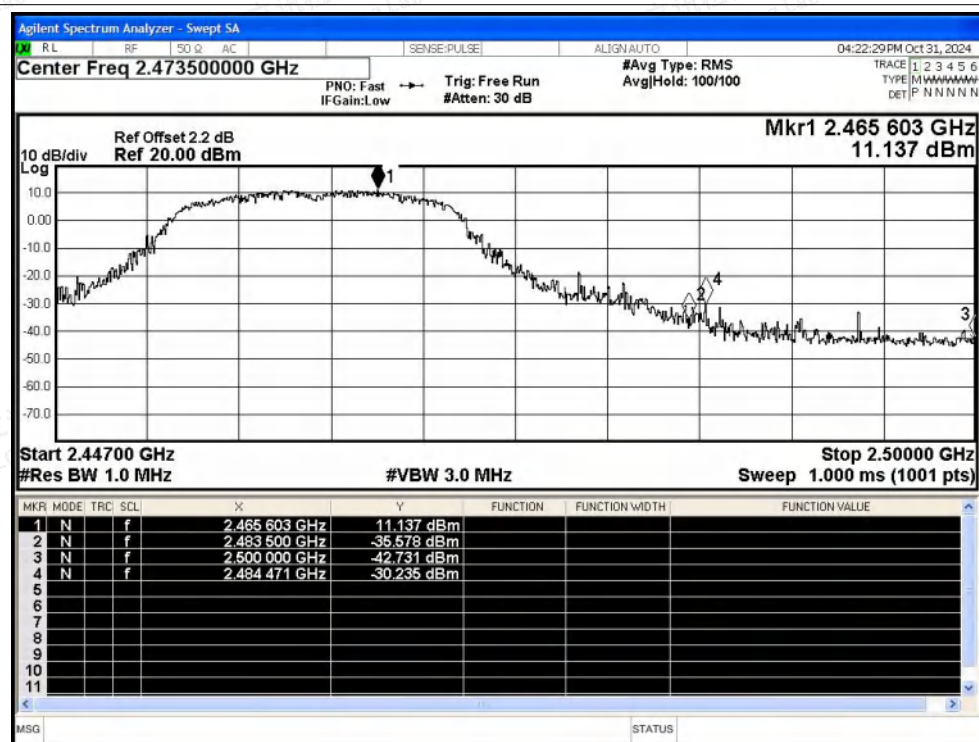


Restrict Band NVNT g 2412MHz Ant1 Average

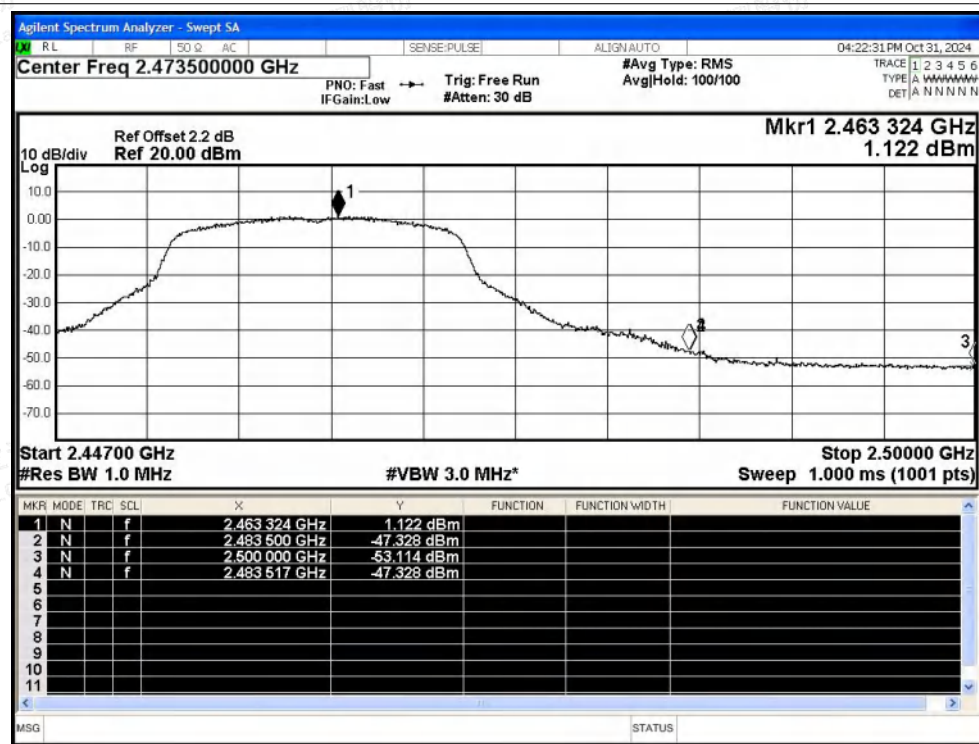




Restrict Band NVNT g 2462MHz Ant1 Peak

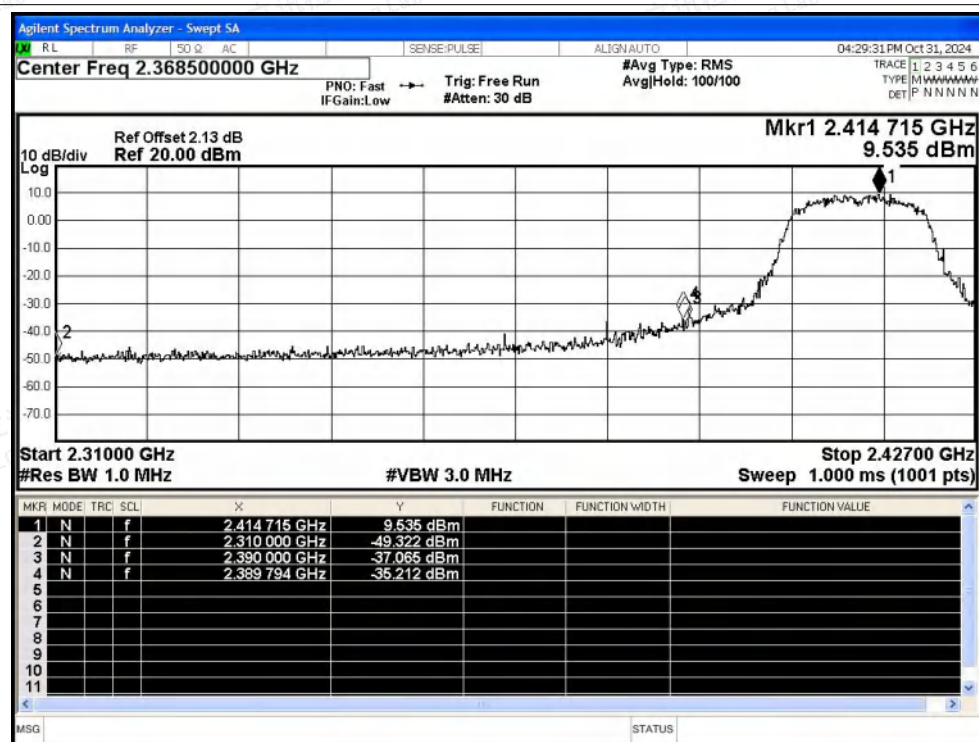


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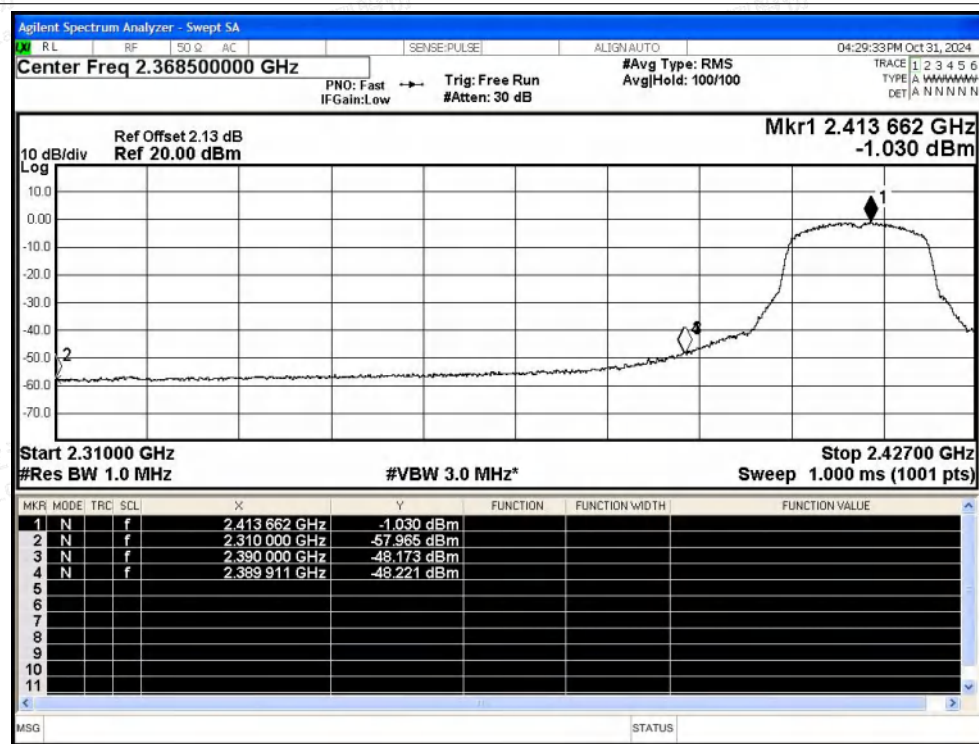




Restrict Band NVNT n20 2412MHz Ant1 Peak

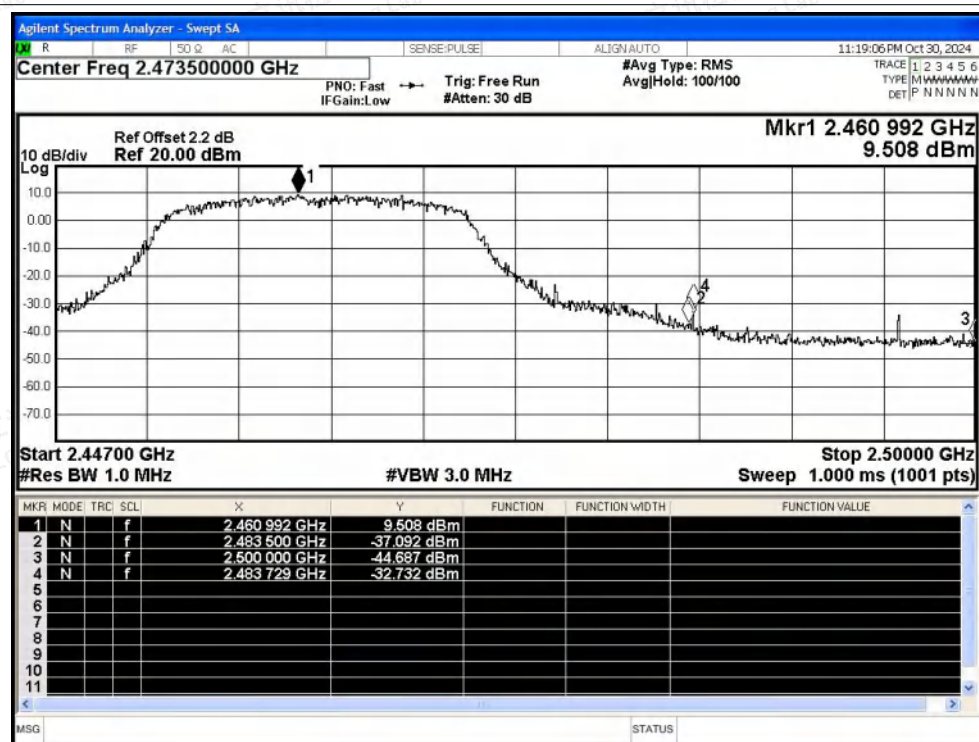


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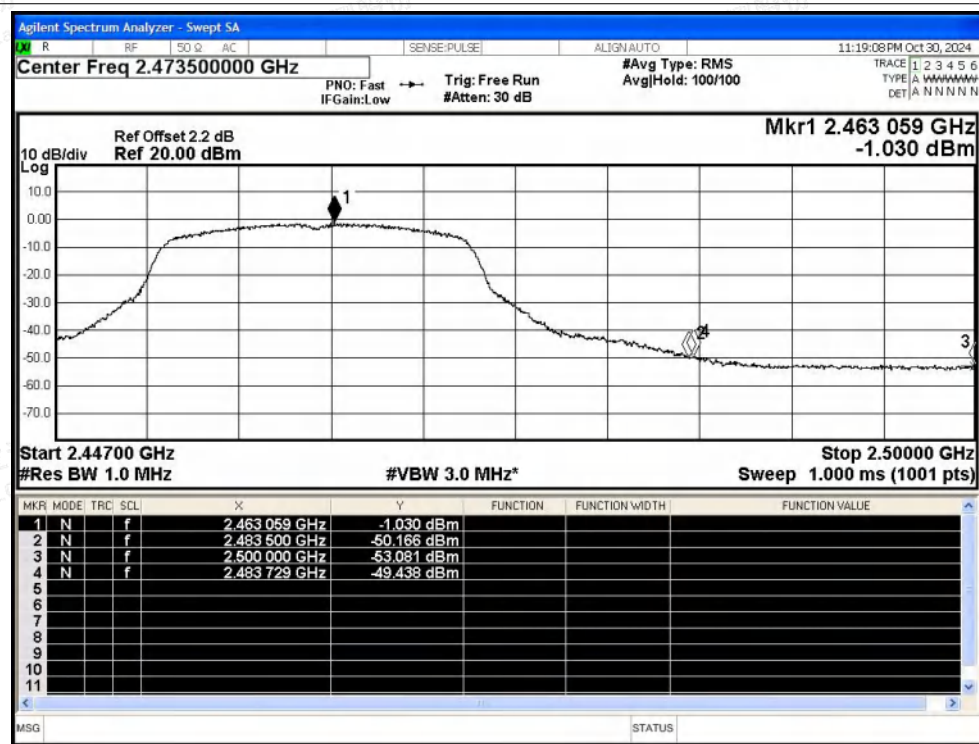




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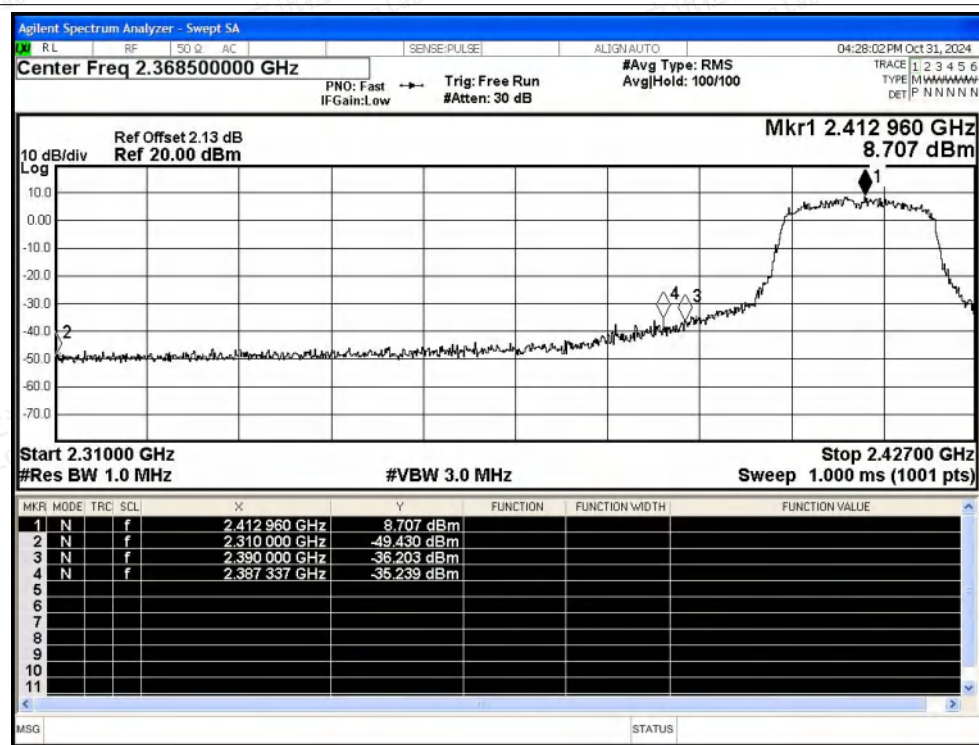


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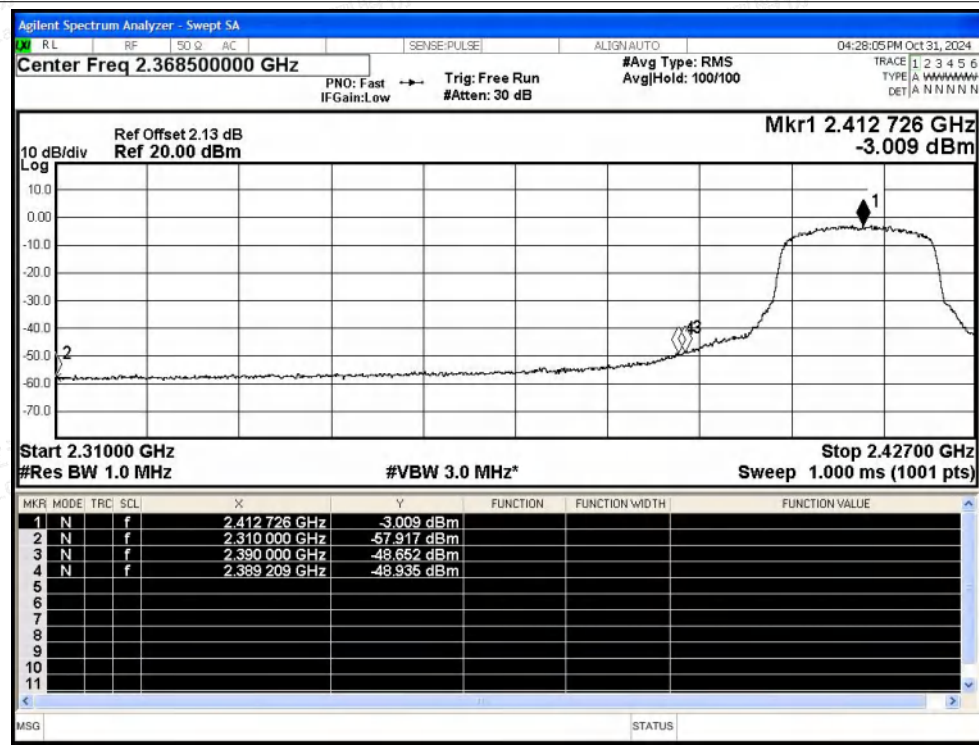




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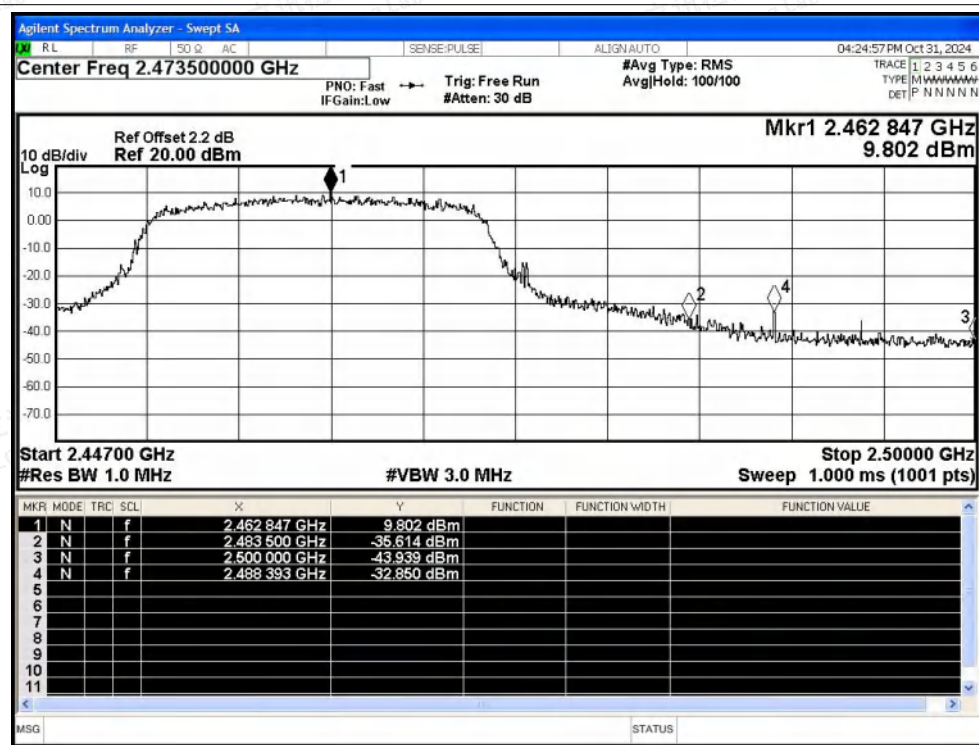


Restrict Band NVNT ax20 2412MHz Ant1 Average





Restrict Band NVNT ax20 2462MHz Ant1 Peak



Restrict Band NVNT ax20 2462MHz Ant1 Average

