



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-BW3351NP2

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	Ant0	6.478	≥ 0.5	Pass
NVNT	b	2437	Ant0	6.301	≥ 0.5	Pass
NVNT	b	2462	Ant0	6.591	≥ 0.5	Pass
NVNT	g	2412	Ant0	14.361	≥ 0.5	Pass
NVNT	g	2437	Ant0	15.605	≥ 0.5	Pass
NVNT	g	2462	Ant0	15.665	≥ 0.5	Pass
NVNT	n20	2412	Ant0	16.057	≥ 0.5	Pass
NVNT	n20	2437	Ant0	15.783	≥ 0.5	Pass
NVNT	n20	2462	Ant0	15.865	≥ 0.5	Pass
NVNT	ax20	2412	Ant0	16.898	≥ 0.5	Pass
NVNT	ax20	2437	Ant0	16.774	≥ 0.5	Pass
NVNT	ax20	2462	Ant0	18.24	≥ 0.5	Pass



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Test Graphs

-6dB Bandwidth NVNT b 2412MHz Ant0



-6dB Bandwidth NVNT b 2437MHz Ant0

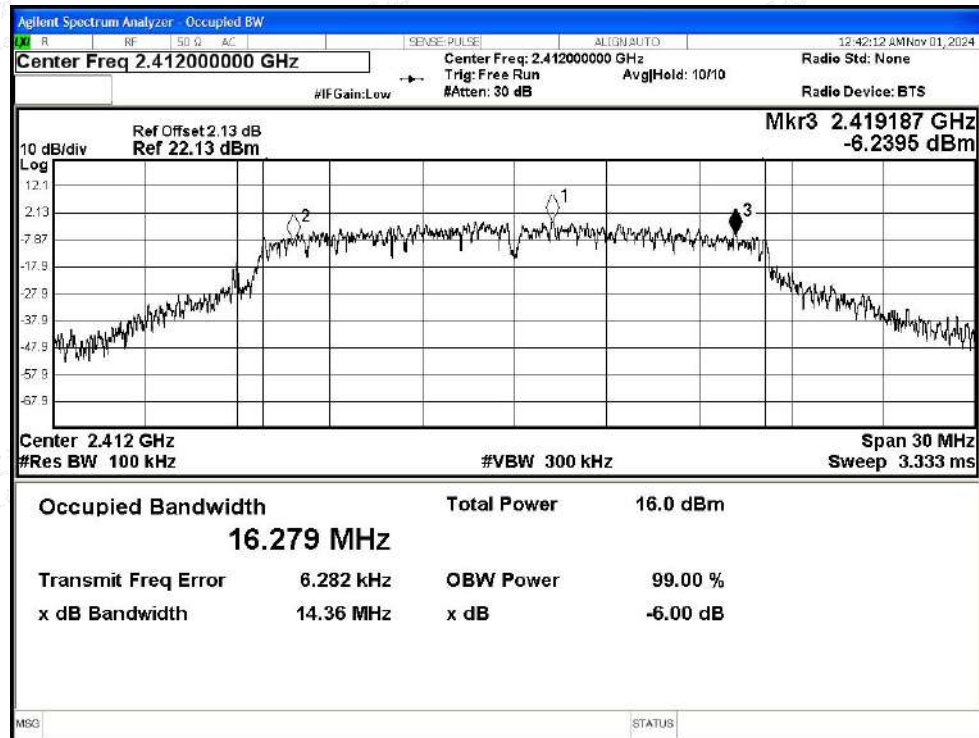




-6dB Bandwidth NVNT b 2462MHz Ant0

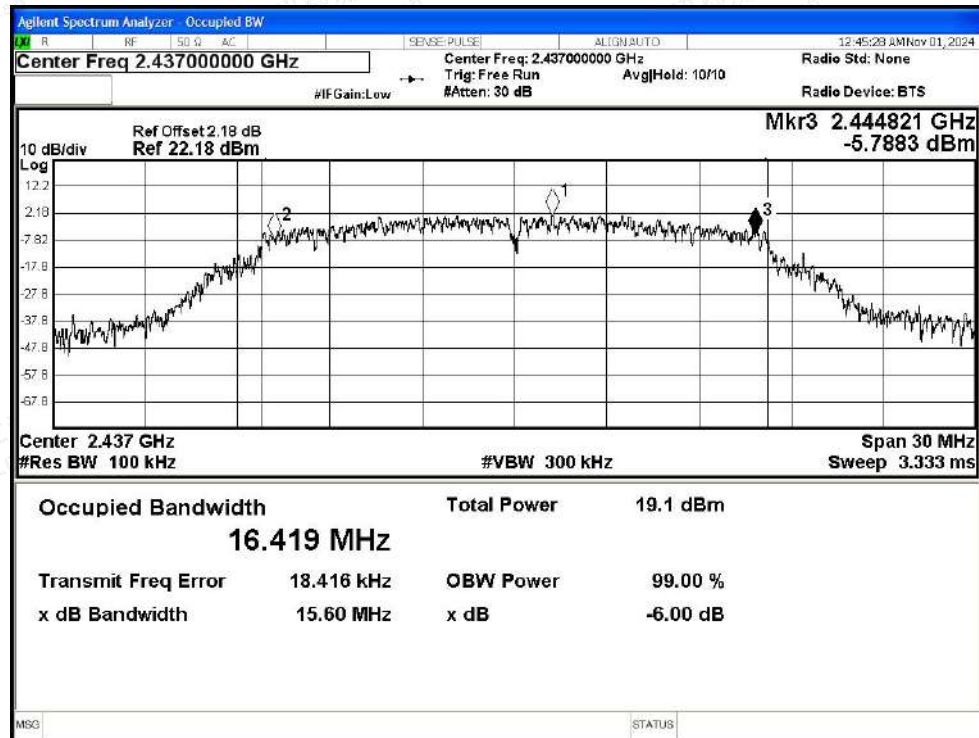


-6dB Bandwidth NVNT g 2412MHz Ant0

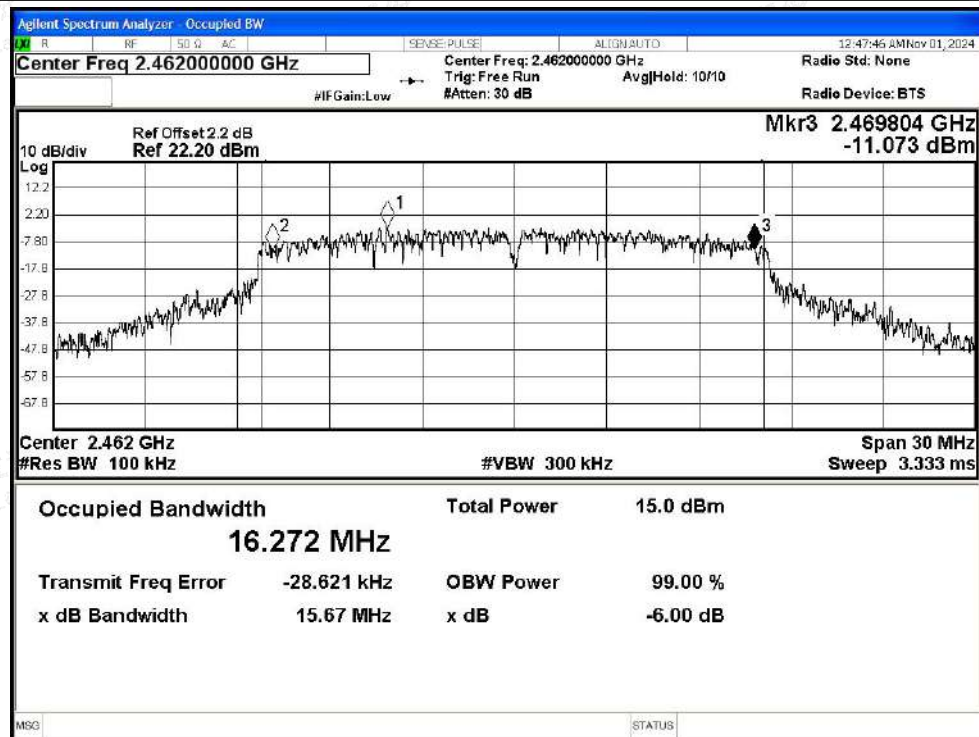




-6dB Bandwidth NVNT g 2437MHz Ant0

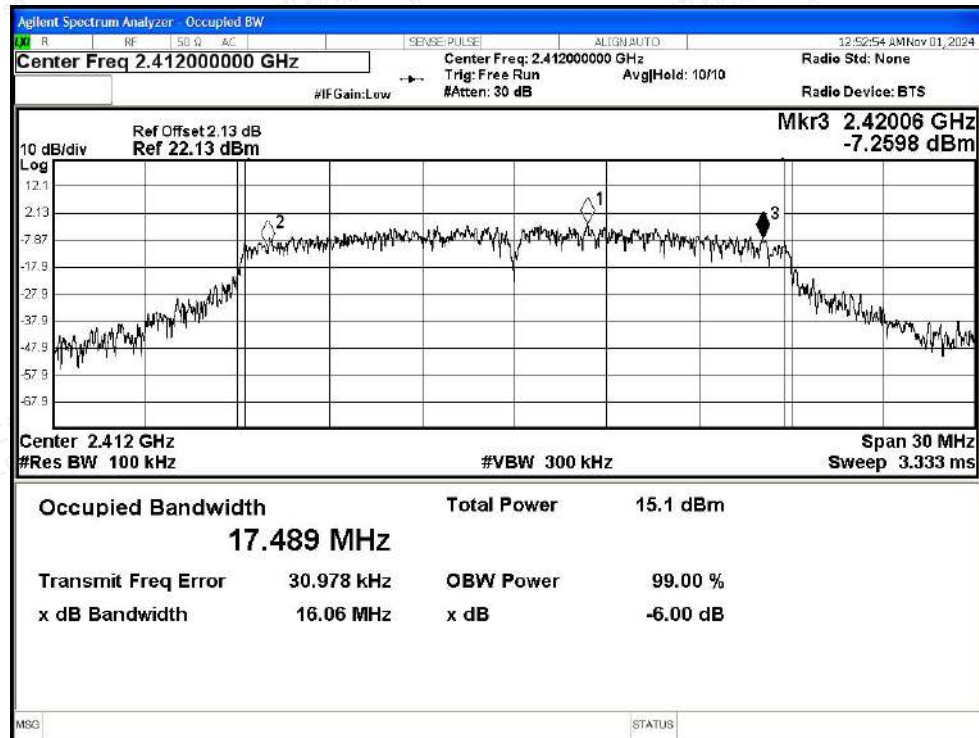


-6dB Bandwidth NVNT g 2462MHz Ant0

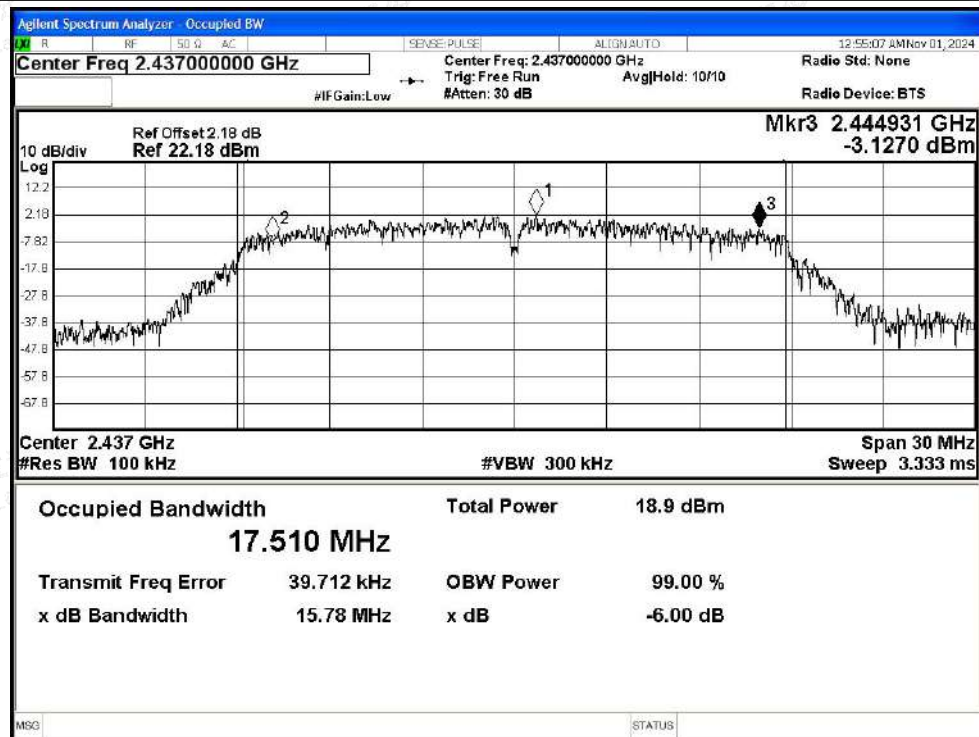




-6dB Bandwidth NVNT n20 2412MHz Ant0

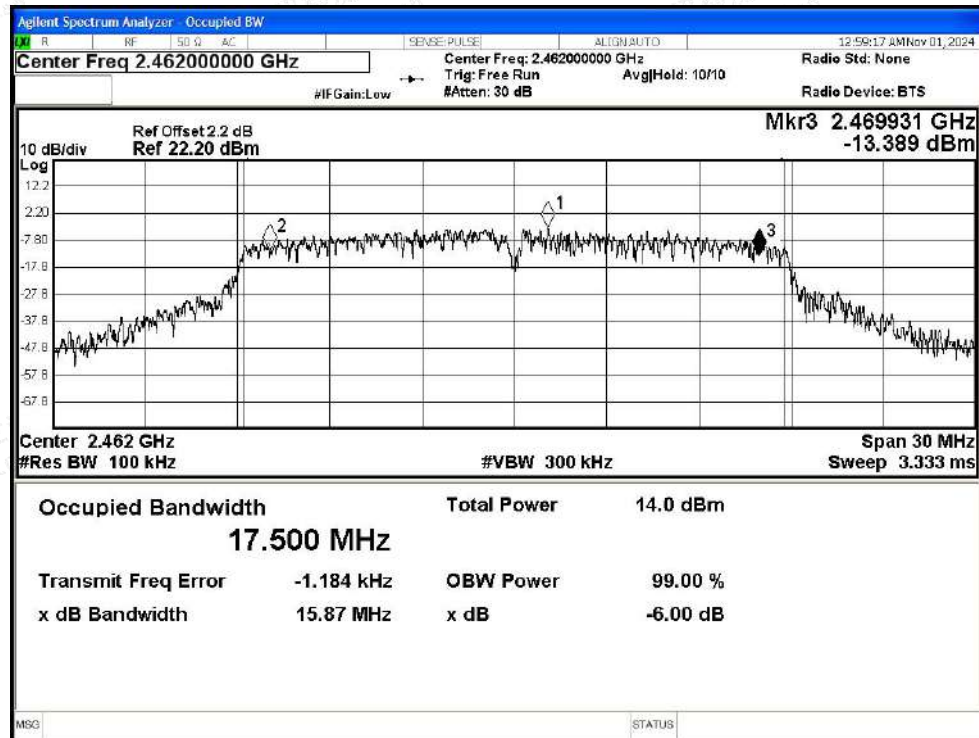


-6dB Bandwidth NVNT n20 2437MHz Ant0

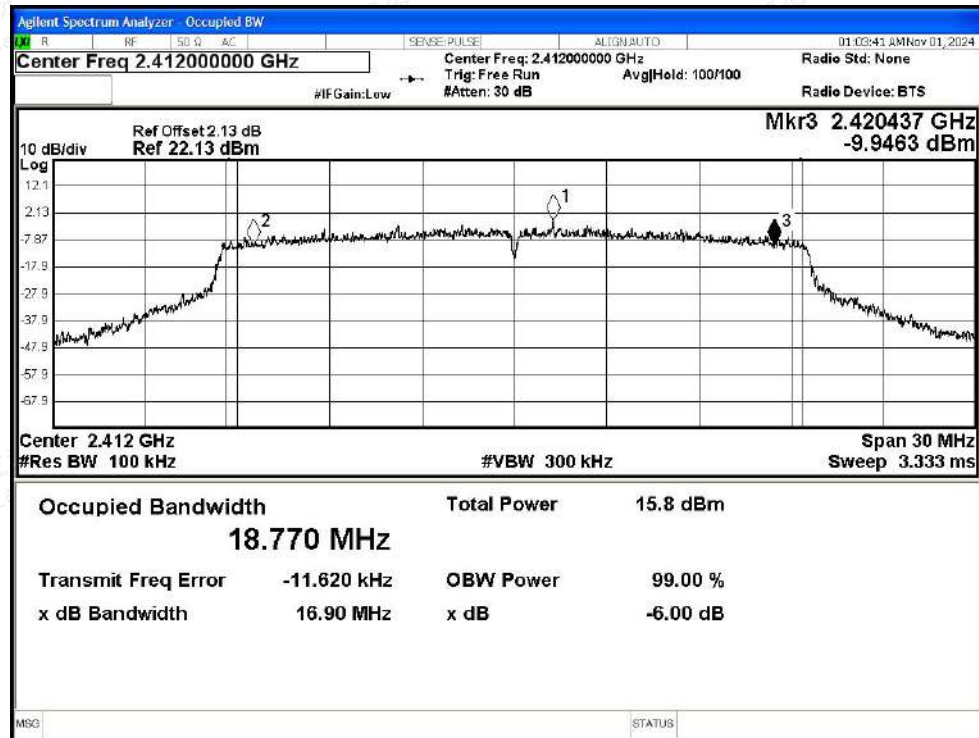




-6dB Bandwidth NVNT n20 2462MHz Ant0

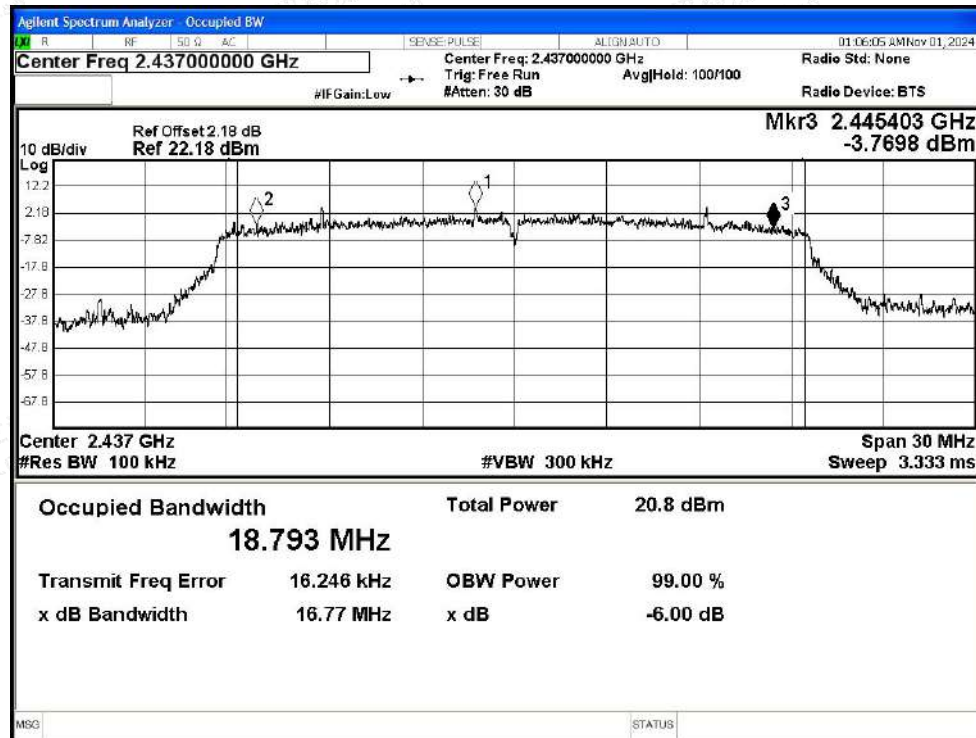


-6dB Bandwidth NVNT ax20 2412MHz Ant0

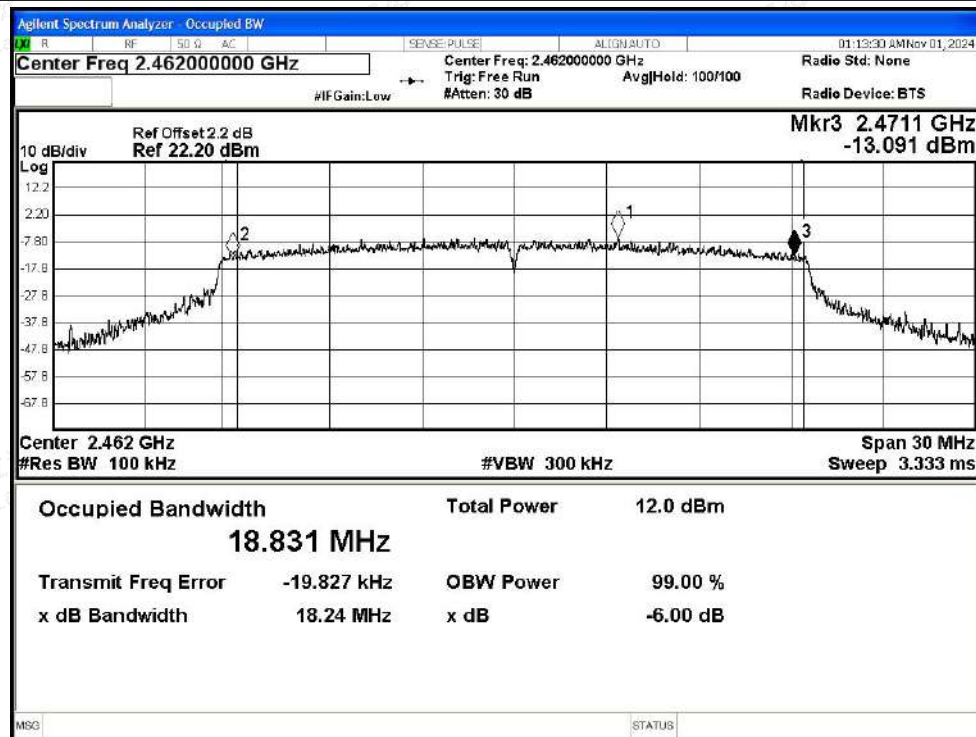




-6dB Bandwidth NVNT ax20 2437MHz Ant0



-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	6.978	≥ 0.5	Pass
NVNT	b	2437	Ant1	6.116	≥ 0.5	Pass
NVNT	b	2462	Ant1	7.123	≥ 0.5	Pass
NVNT	g	2412	Ant1	14.261	≥ 0.5	Pass
NVNT	g	2437	Ant1	15.014	≥ 0.5	Pass
NVNT	g	2462	Ant1	15.541	≥ 0.5	Pass
NVNT	n20	2412	Ant1	16.996	≥ 0.5	Pass
NVNT	n20	2437	Ant1	15.452	≥ 0.5	Pass
NVNT	n20	2462	Ant1	16.682	≥ 0.5	Pass
NVNT	ax20	2412	Ant1	18.223	≥ 0.5	Pass
NVNT	ax20	2437	Ant1	15.387	≥ 0.5	Pass
NVNT	ax20	2462	Ant1	17.671	≥ 0.5	Pass



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Test Graphs

-6dB Bandwidth NVNT b 2412MHz Ant1



-6dB Bandwidth NVNT b 2437MHz Ant1

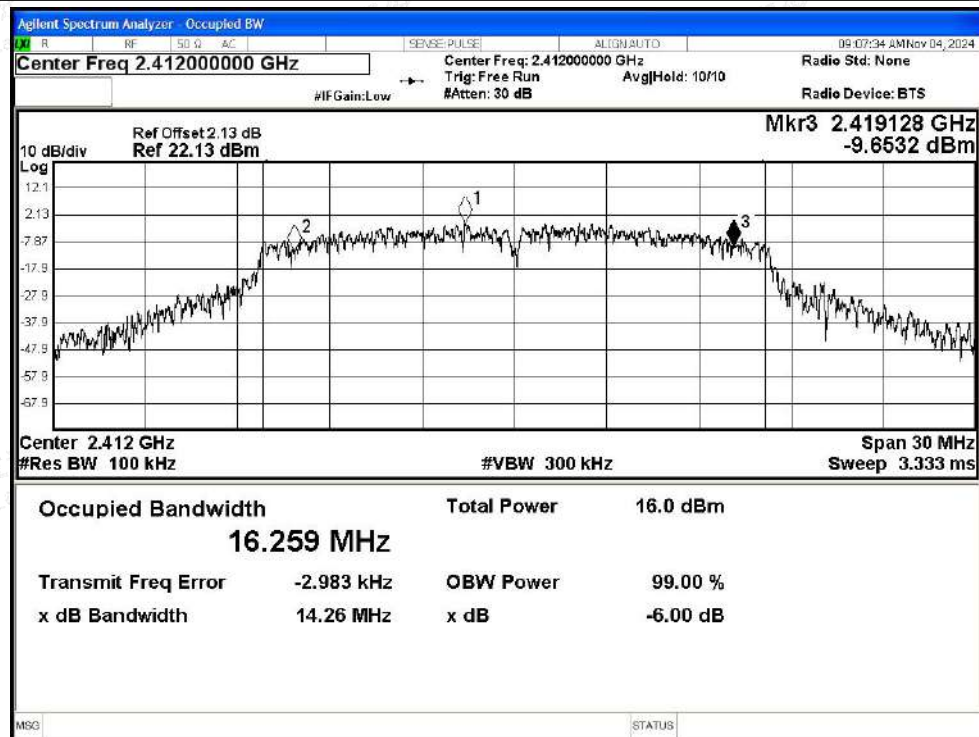




-6dB Bandwidth NVNT b 2462MHz Ant1

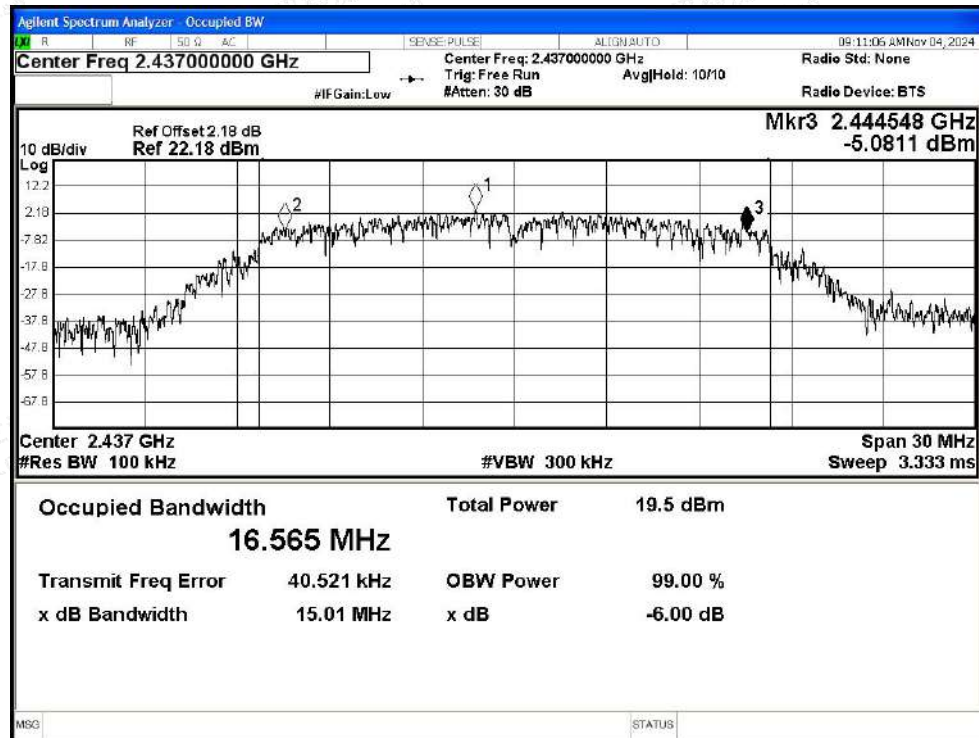


-6dB Bandwidth NVNT g 2412MHz Ant1

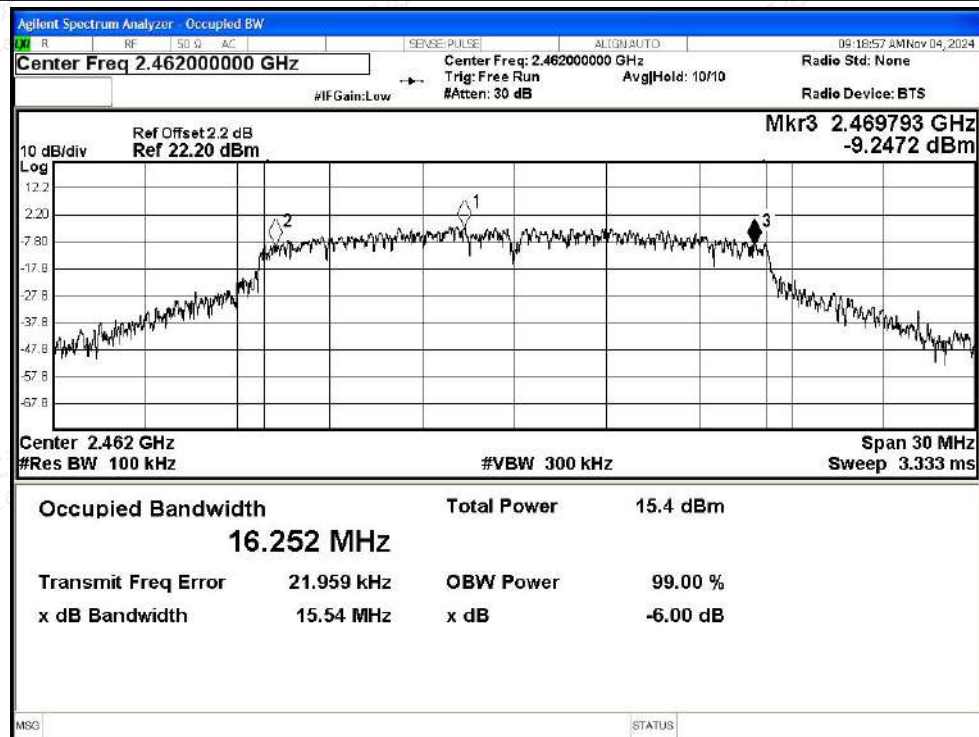




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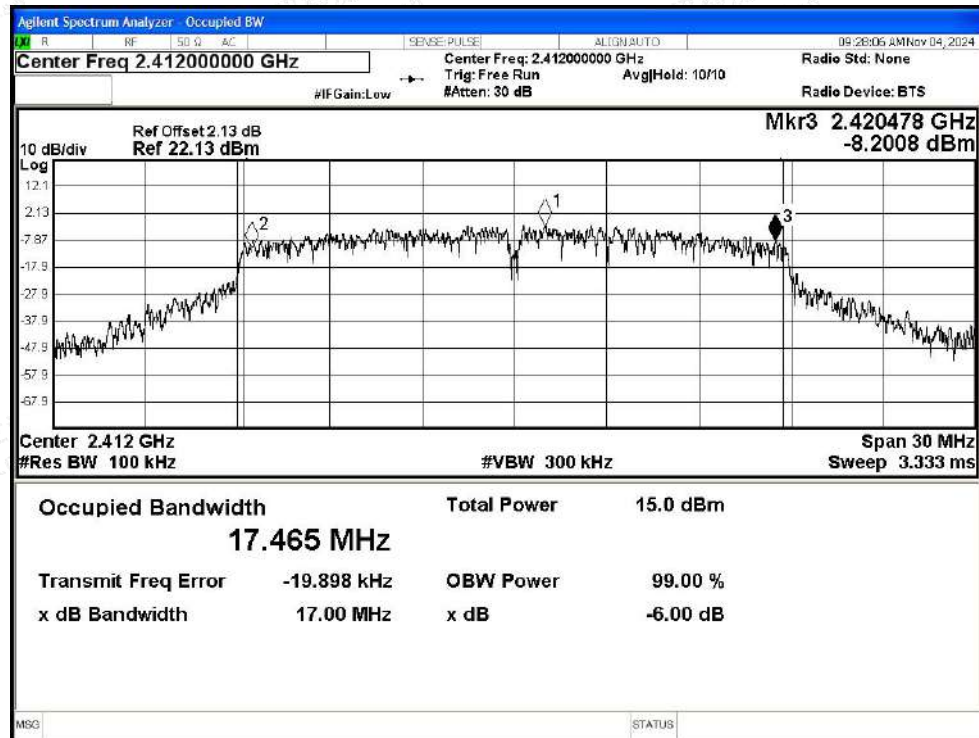


-6dB Bandwidth NVNT g 2462MHz Ant1

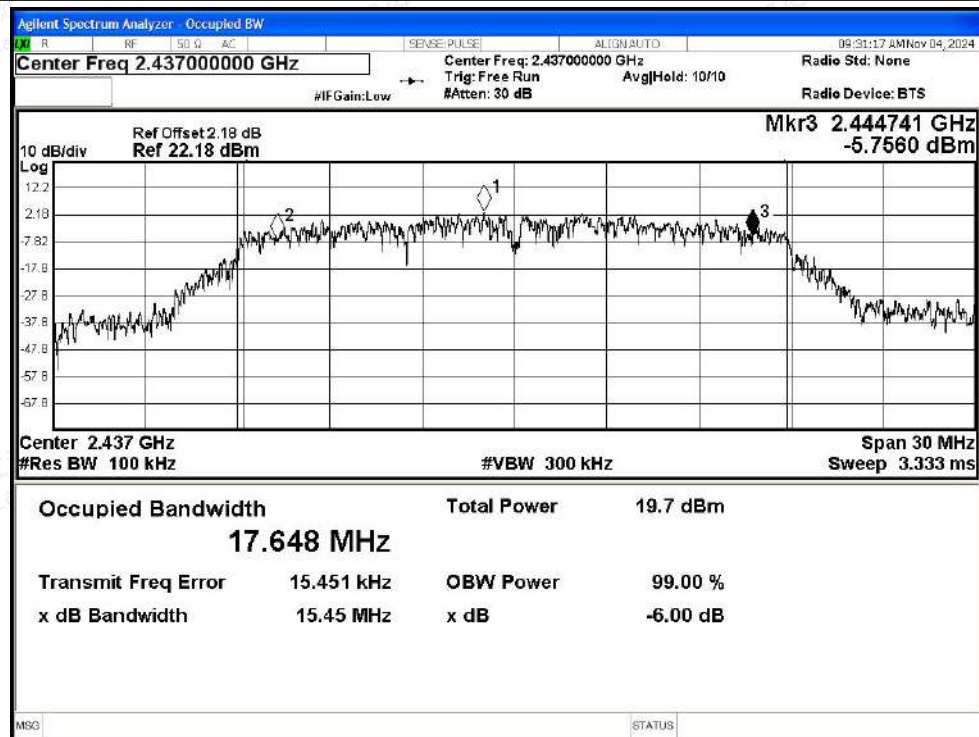




-6dB Bandwidth NVNT n20 2412MHz Ant1

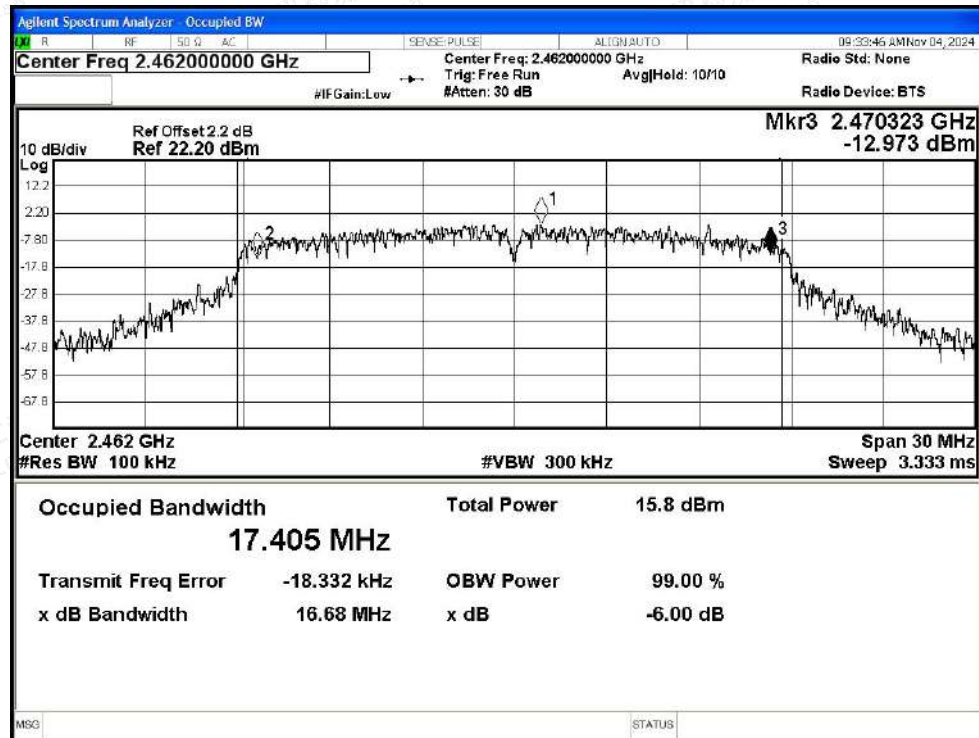


-6dB Bandwidth NVNT n20 2437MHz Ant1

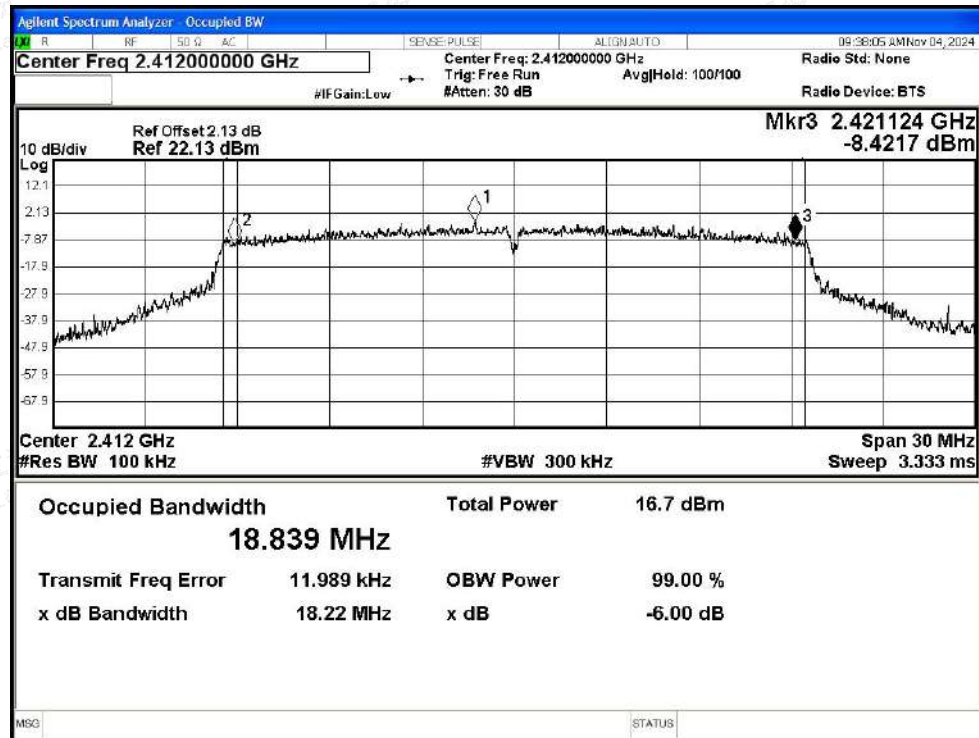




-6dB Bandwidth NVNT n20 2462MHz Ant1

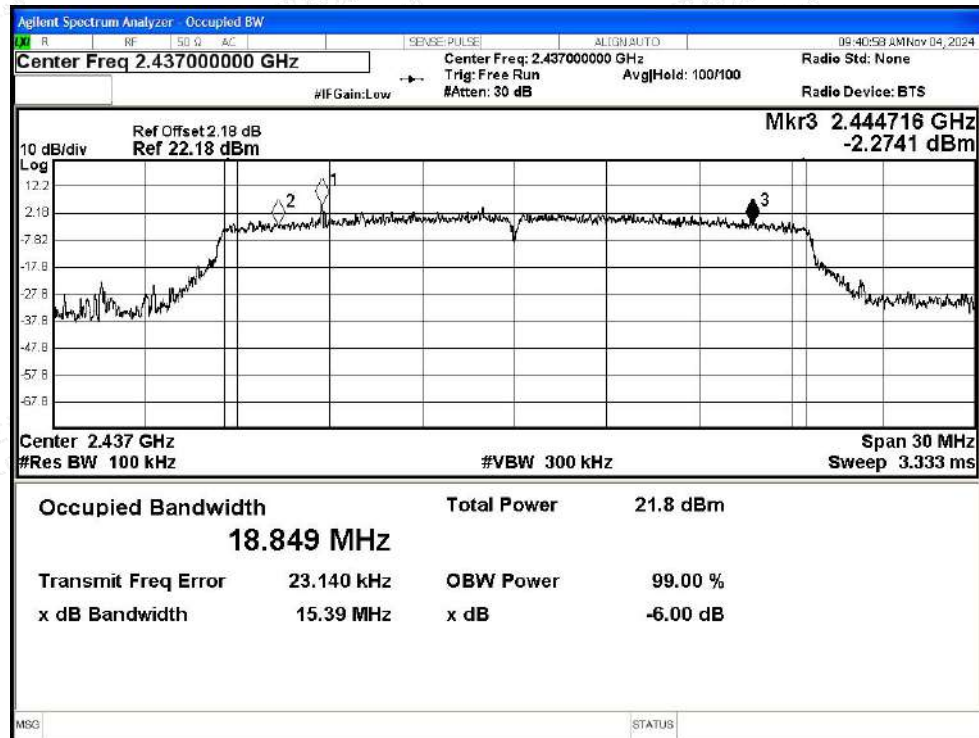


-6dB Bandwidth NVNT ax20 2412MHz Ant1

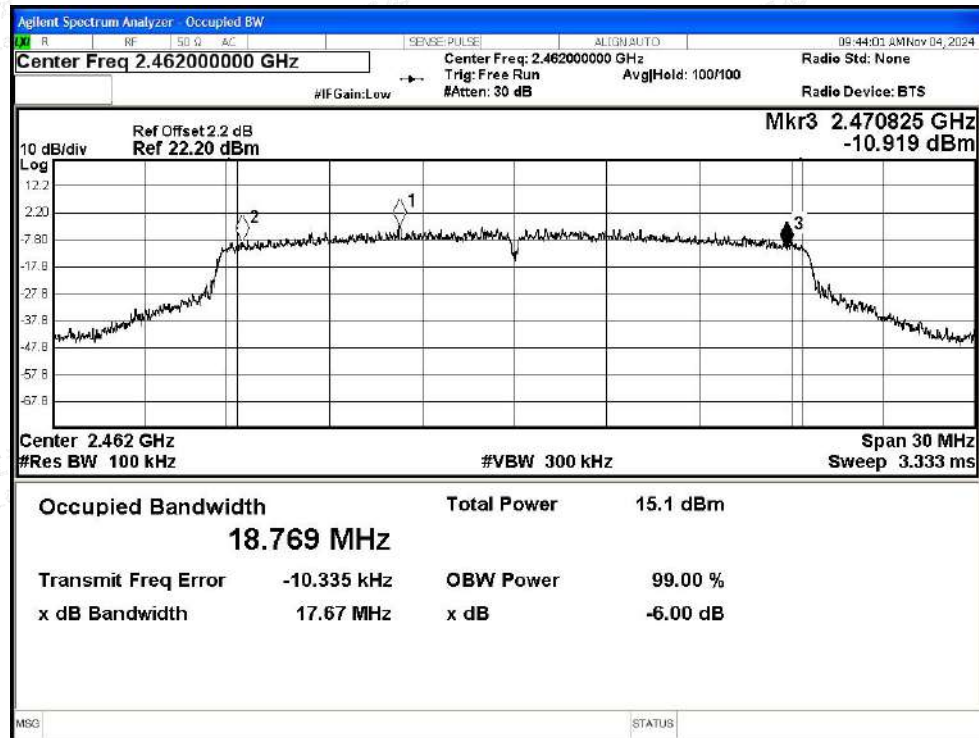




-6dB Bandwidth NVNT ax20 2437MHz Ant1



-6dB Bandwidth NVNT ax20 2462MHz Ant1





B.2 Maximum Peak Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant0	17.28	0	17.28	30	Pass
NVNT	b	2437	Ant0	17.35	0	17.35	30	Pass
NVNT	b	2462	Ant0	17.38	0	17.38	30	Pass
NVNT	g	2412	Ant0	14.72	0	14.72	30	Pass
NVNT	g	2437	Ant0	17.8	0	17.8	30	Pass
NVNT	g	2462	Ant0	15.45	0	15.45	30	Pass
NVNT	n20	2412	Ant0	15.18	0	15.18	30	Pass
NVNT	n20	2437	Ant0	17.31	0	17.31	30	Pass
NVNT	n20	2462	Ant0	17.6	0	17.6	30	Pass
NVNT	ax20	2412	Ant0	16.51	0	16.51	30	Pass
NVNT	ax20	2437	Ant0	20.22	0	20.22	30	Pass
NVNT	ax20	2462	Ant0	17.13	0	17.13	30	Pass

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	16.98	0	16.98	30	Pass
NVNT	b	2437	Ant1	17.38	0	17.38	30	Pass
NVNT	b	2462	Ant1	17.85	0	17.85	30	Pass
NVNT	g	2412	Ant1	14.79	0	14.79	30	Pass
NVNT	g	2437	Ant1	18.92	0	18.92	30	Pass
NVNT	g	2462	Ant1	15.51	0	15.51	30	Pass
NVNT	n20	2412	Ant1	15	0	15	30	Pass
NVNT	n20	2437	Ant1	18.84	0	18.84	30	Pass
NVNT	n20	2462	Ant1	17.4	0	17.4	30	Pass
NVNT	ax20	2412	Ant1	16.36	0	16.36	30	Pass
NVNT	ax20	2437	Ant1	21.06	0	21.06	30	Pass
NVNT	ax20	2462	Ant1	16.9	0	16.9	30	Pass



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B.3 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant0	-5.93	0	-5.93	8	Pass
NVNT	b	2437	Ant0	-4.83	0	-4.83	8	Pass
NVNT	b	2462	Ant0	-6.45	0	-6.45	8	Pass
NVNT	g	2412	Ant0	-10.72	0	-10.72	8	Pass
NVNT	g	2437	Ant0	-9.22	0	-9.22	8	Pass
NVNT	g	2462	Ant0	-9.34	0	-9.34	8	Pass
NVNT	n20	2412	Ant0	-10.73	0	-10.73	8	Pass
NVNT	n20	2437	Ant0	-9.82	0	-9.82	8	Pass
NVNT	n20	2462	Ant0	-10.03	0	-10.03	8	Pass
NVNT	ax20	2412	Ant0	-11.83	0	-11.83	8	Pass
NVNT	ax20	2437	Ant0	-8.46	0	-8.46	8	Pass
NVNT	ax20	2462	Ant0	-12.12	0	-12.12	8	Pass

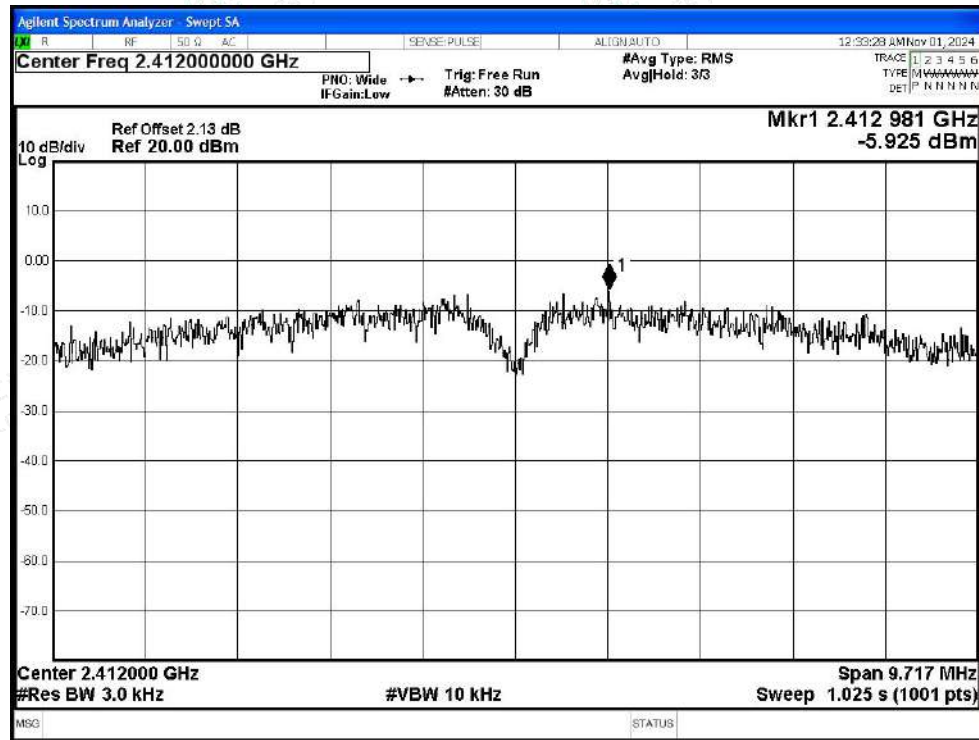


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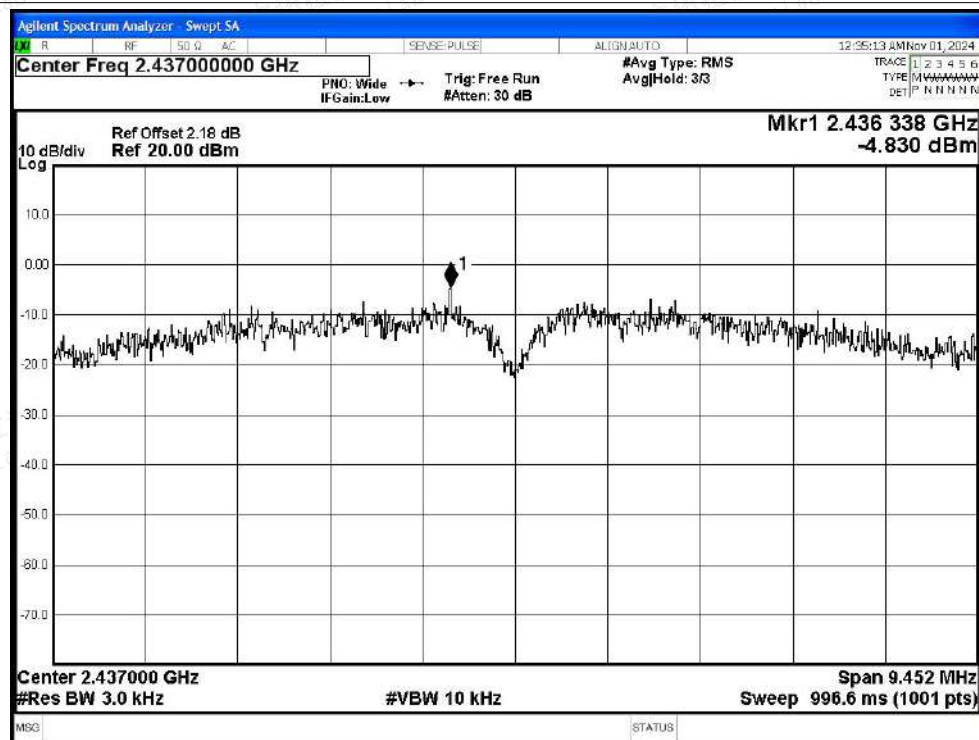


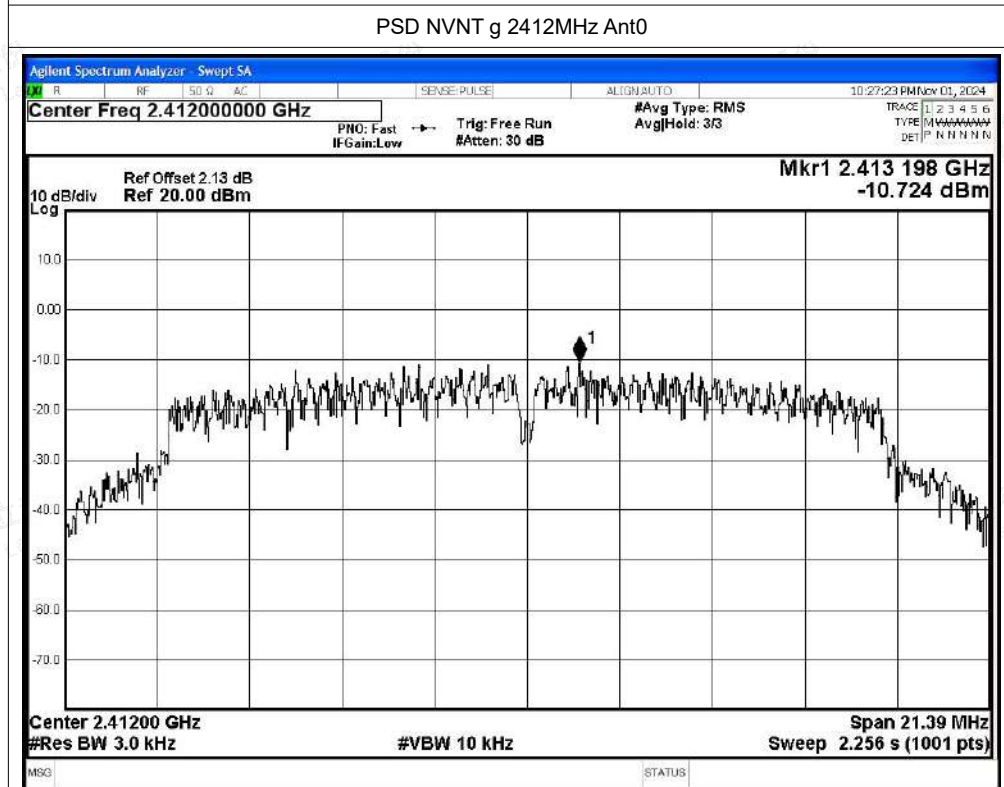
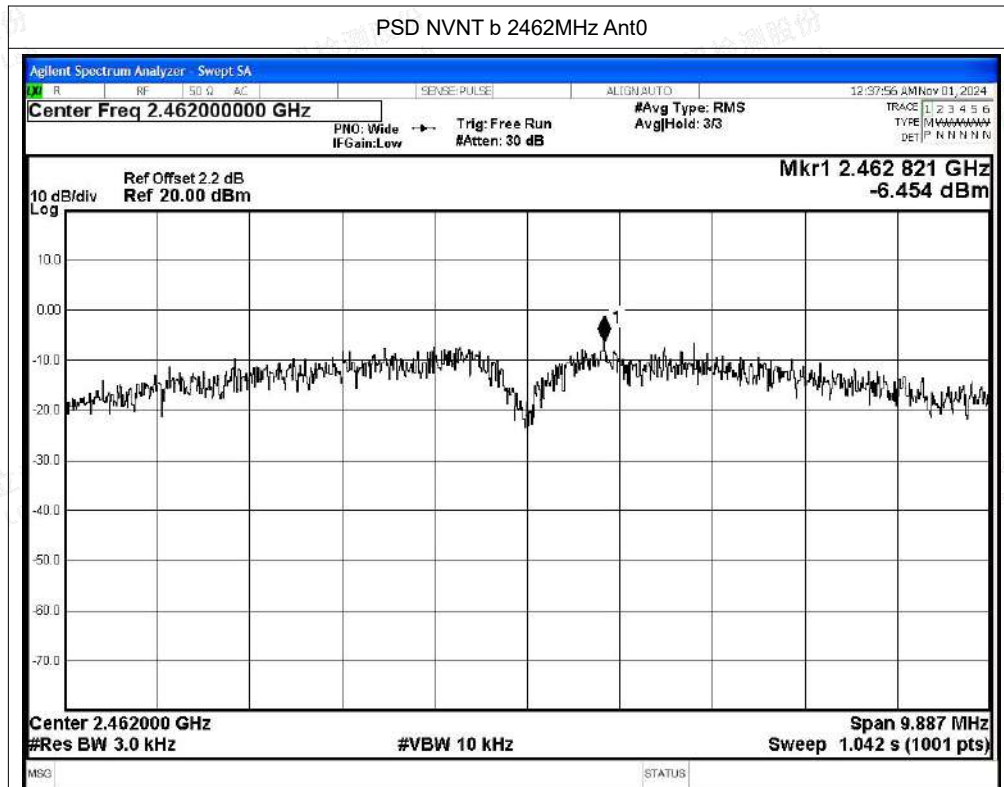
Test Graphs

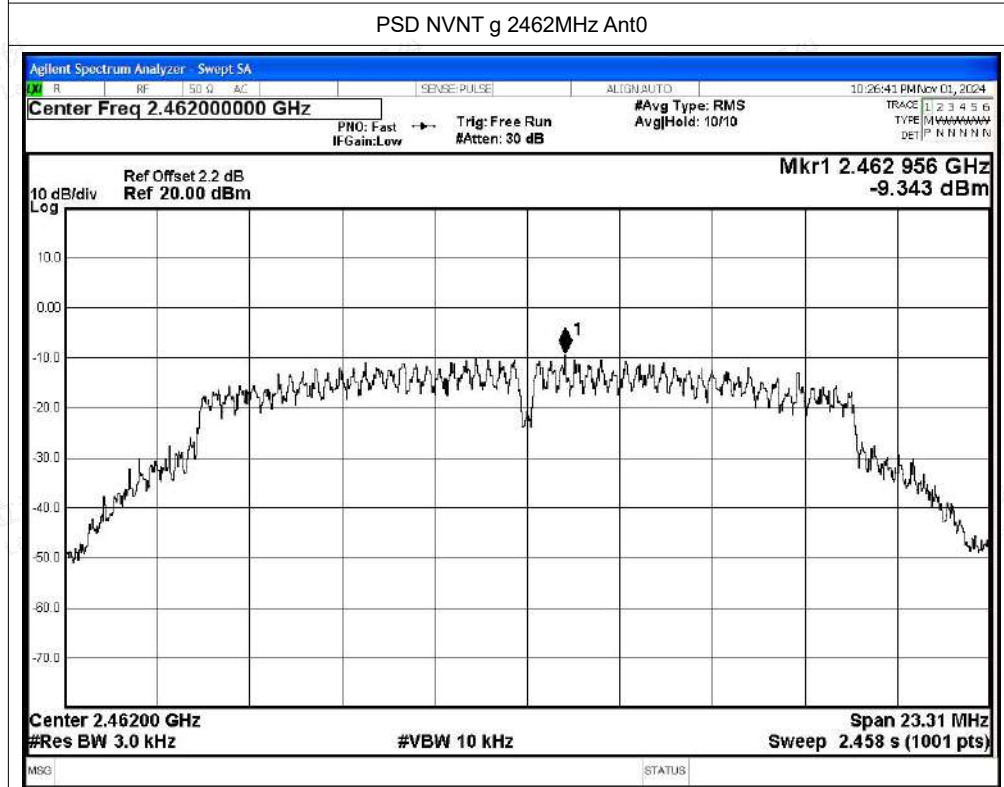
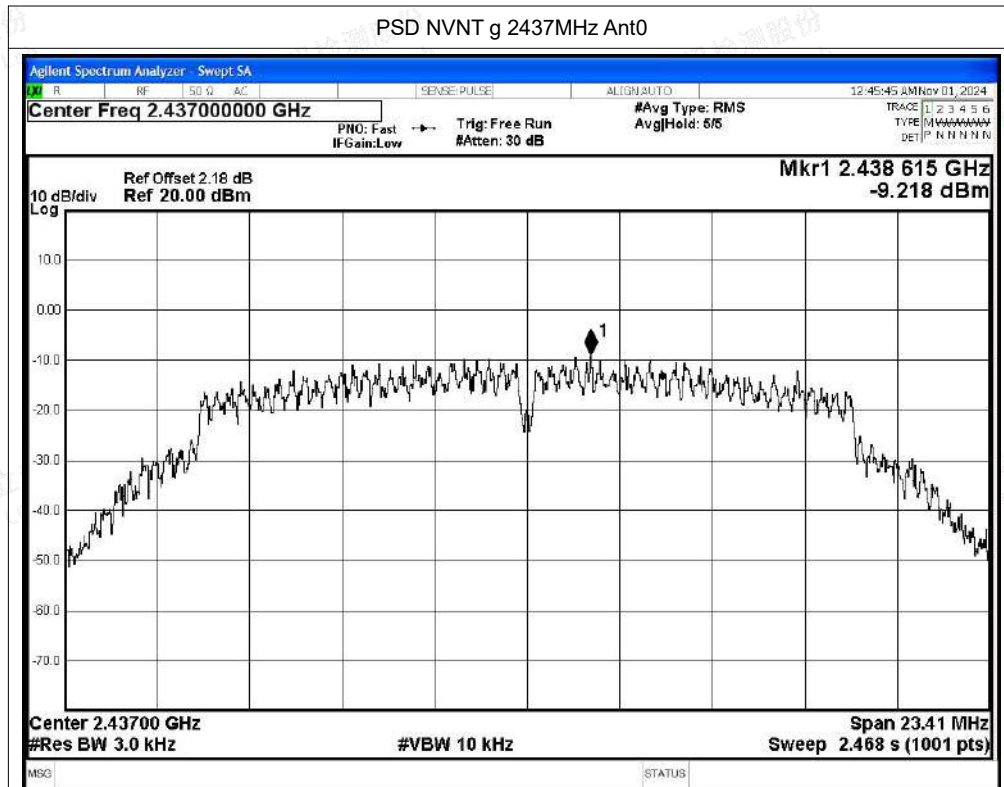
PSD NVNT b 2412MHz Ant0

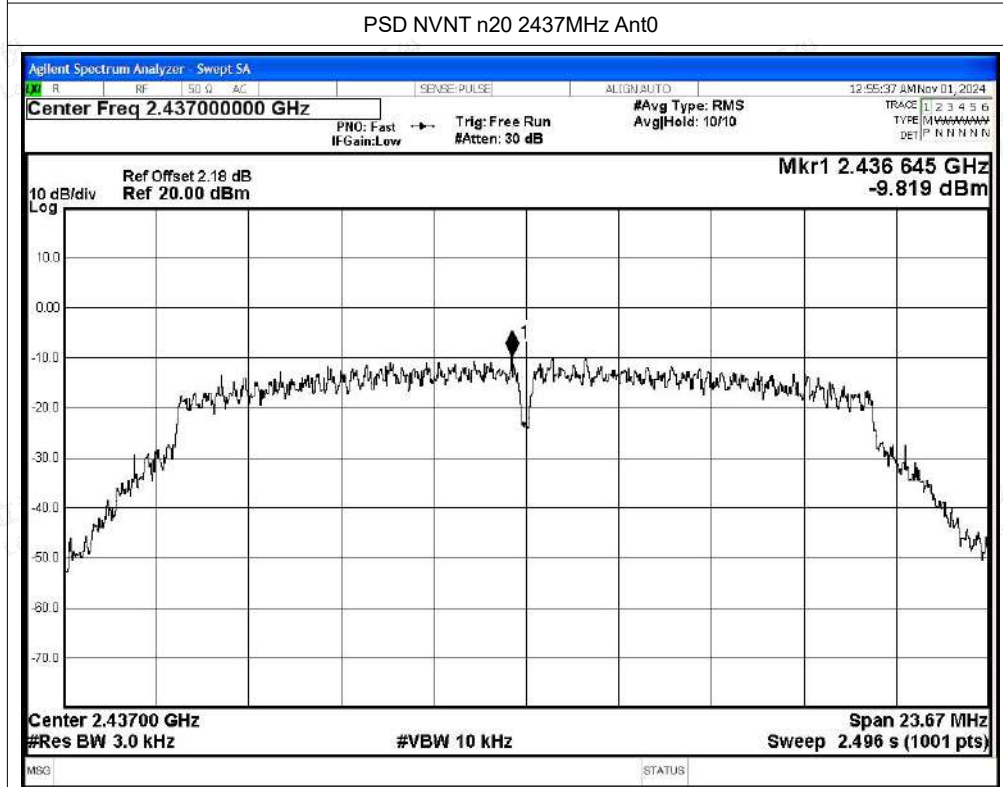
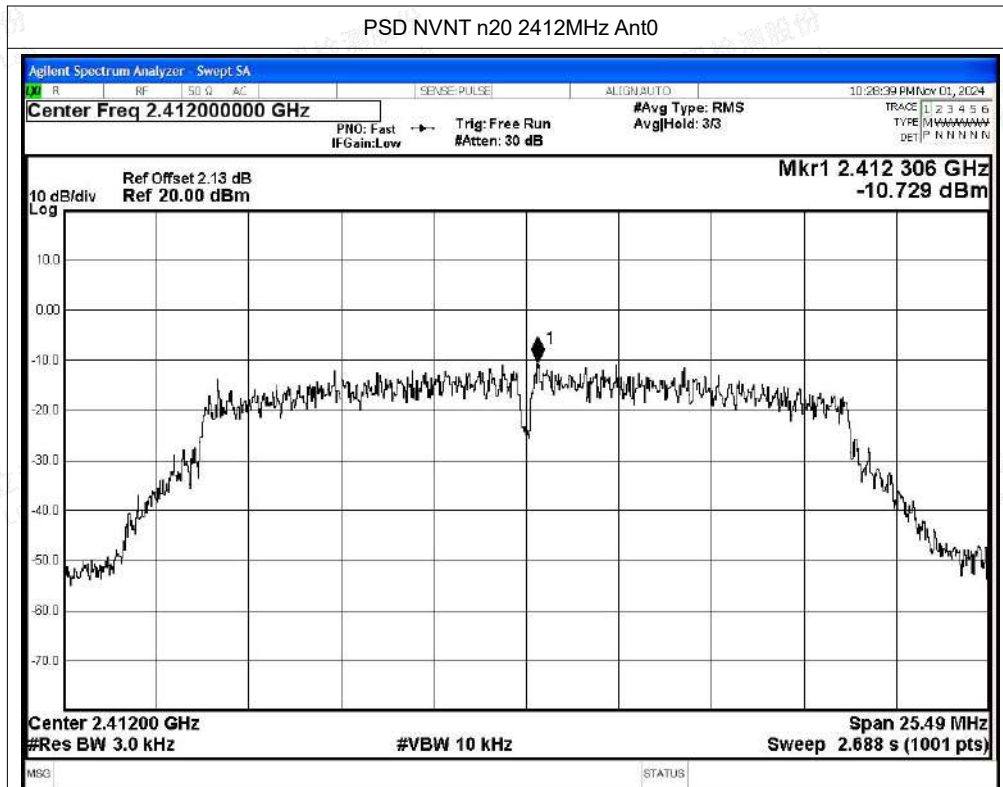


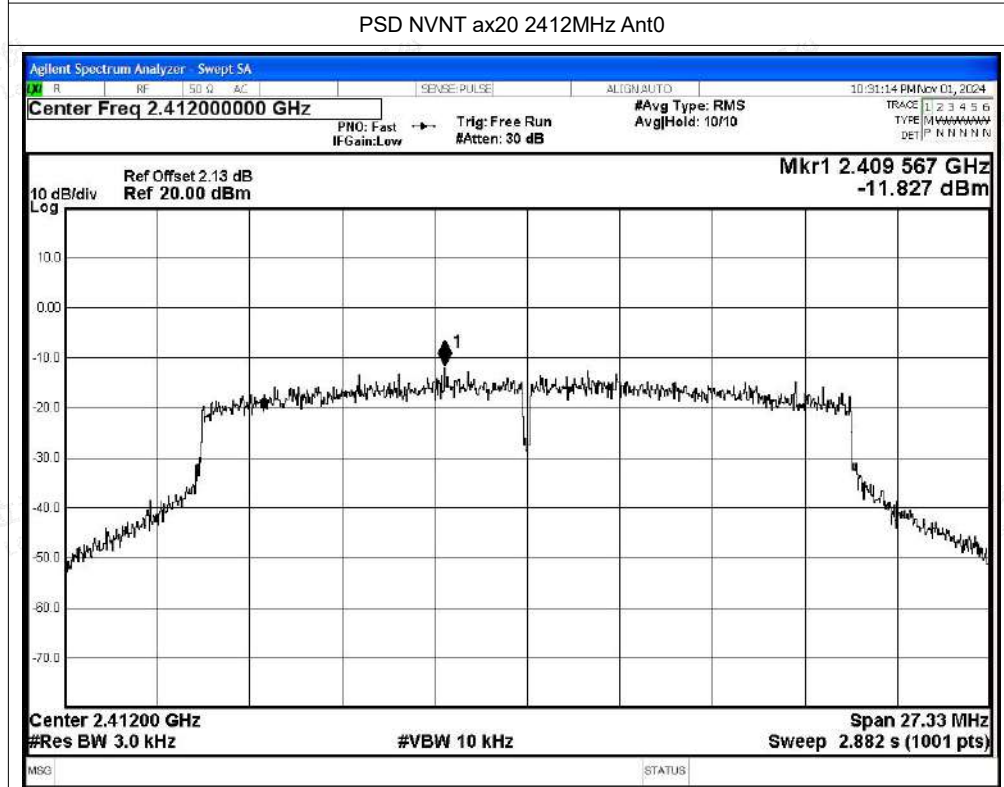
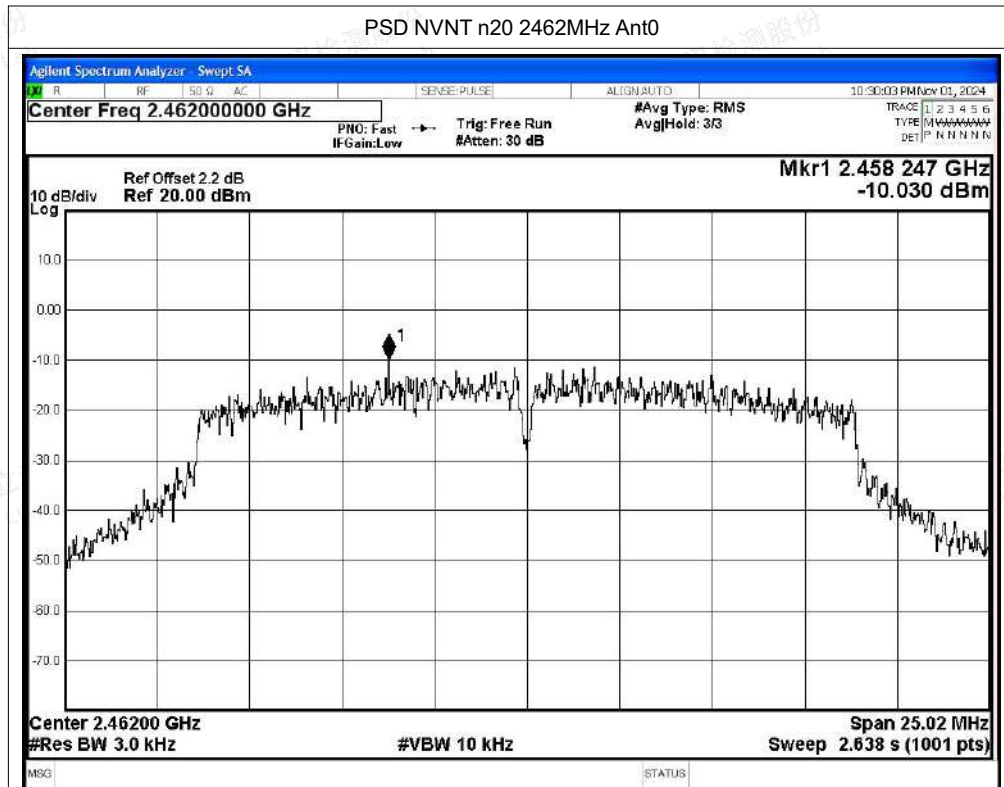
PSD NVNT b 2437MHz Ant0

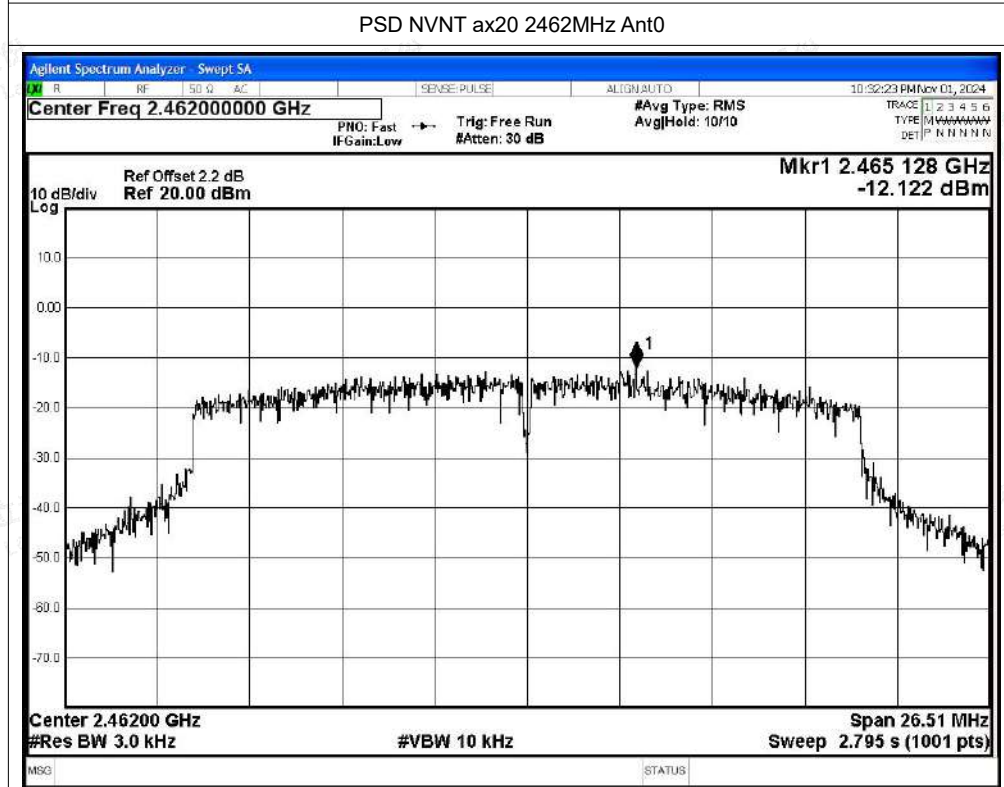
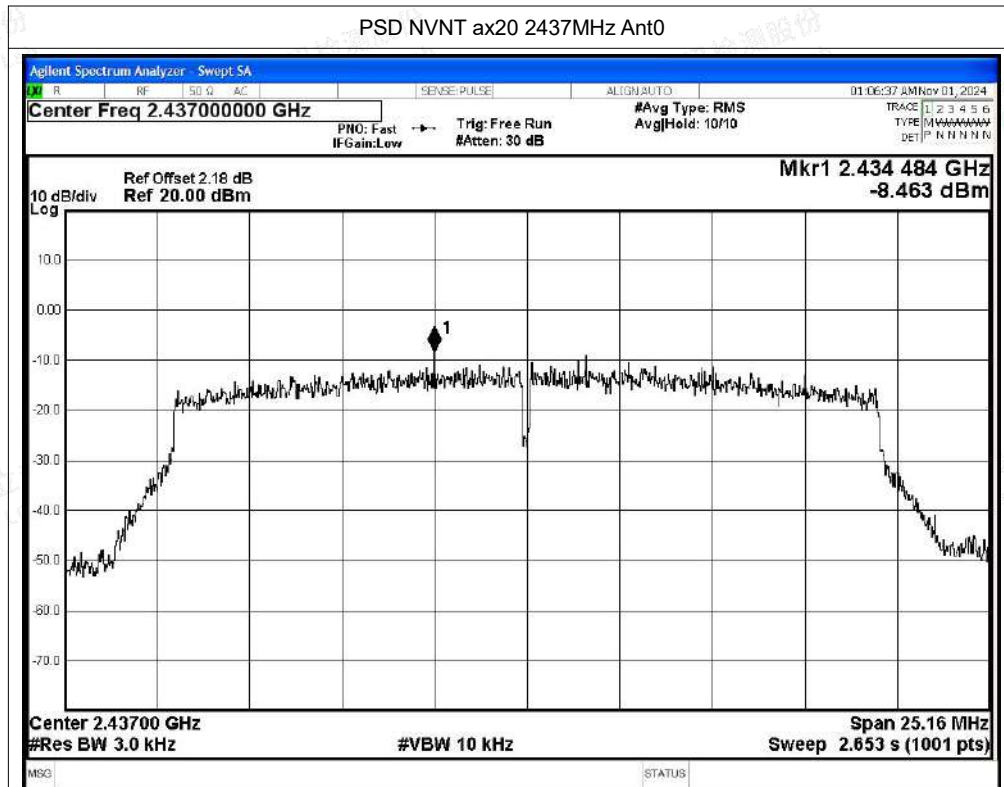














Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant1	-6.82	0	-6.82	8	Pass
NVNT	b	2437	Ant1	-6.41	0	-6.41	8	Pass
NVNT	b	2462	Ant1	-5.07	0	-5.07	8	Pass
NVNT	g	2412	Ant1	-10.05	0	-10.05	8	Pass
NVNT	g	2437	Ant1	-8.31	0	-8.31	8	Pass
NVNT	g	2462	Ant1	-7.74	0	-7.74	8	Pass
NVNT	n20	2412	Ant1	-10.51	0	-10.51	8	Pass
NVNT	n20	2437	Ant1	-8.86	0	-8.86	8	Pass
NVNT	n20	2462	Ant1	-12.33	0	-12.33	8	Pass
NVNT	ax20	2412	Ant1	-12.4	0	-12.4	8	Pass
NVNT	ax20	2437	Ant1	-9.31	0	-9.31	8	Pass
NVNT	ax20	2462	Ant1	-12.73	0	-12.73	8	Pass

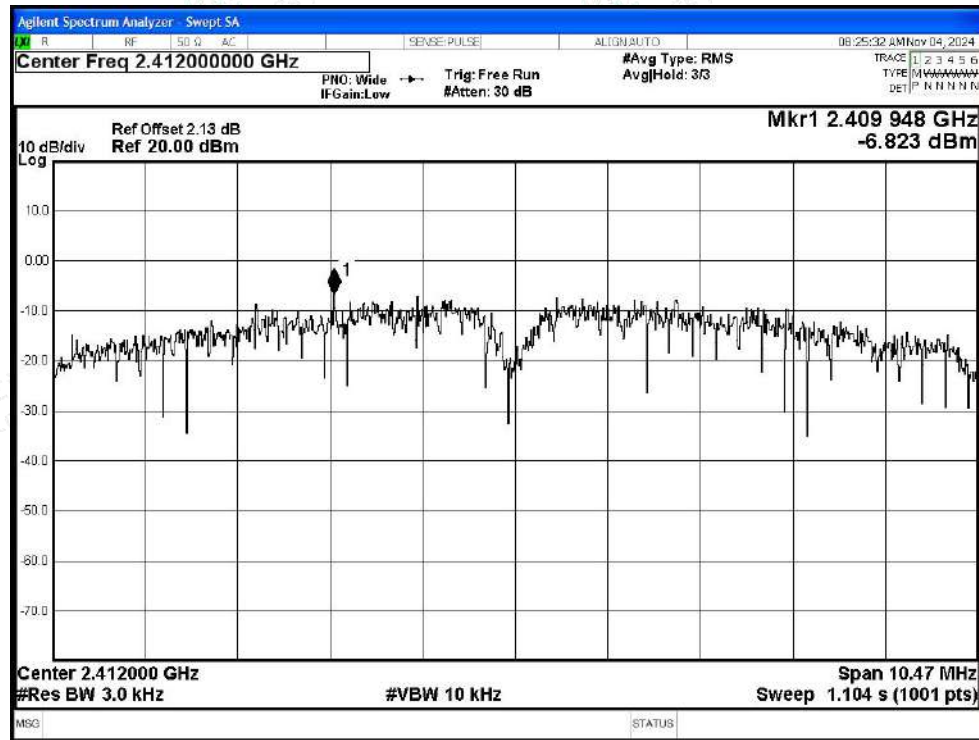


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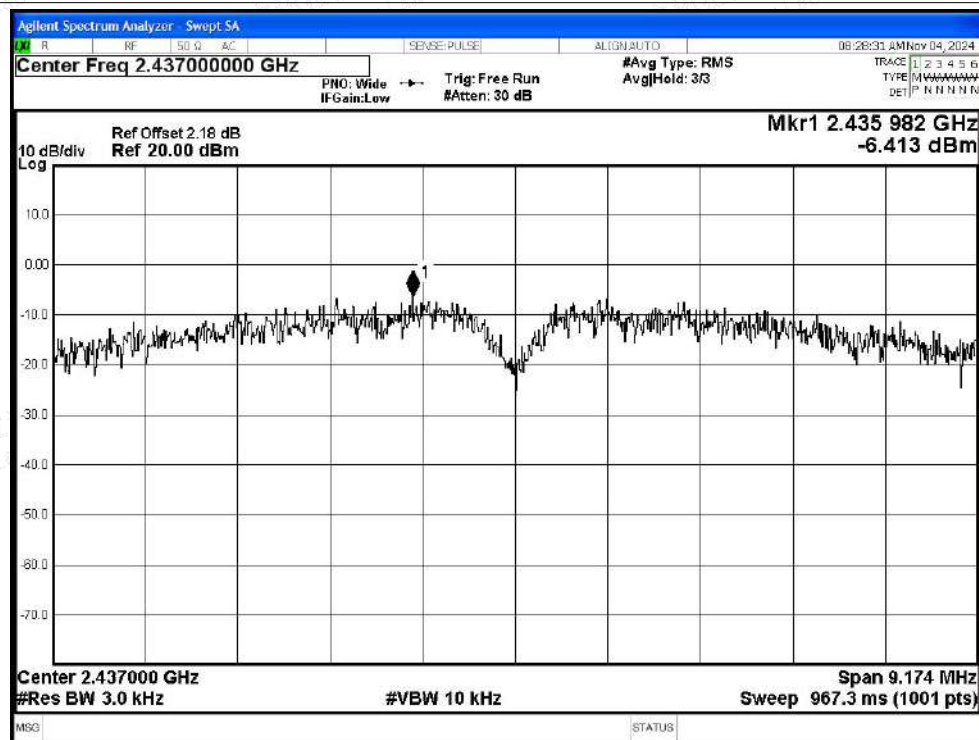


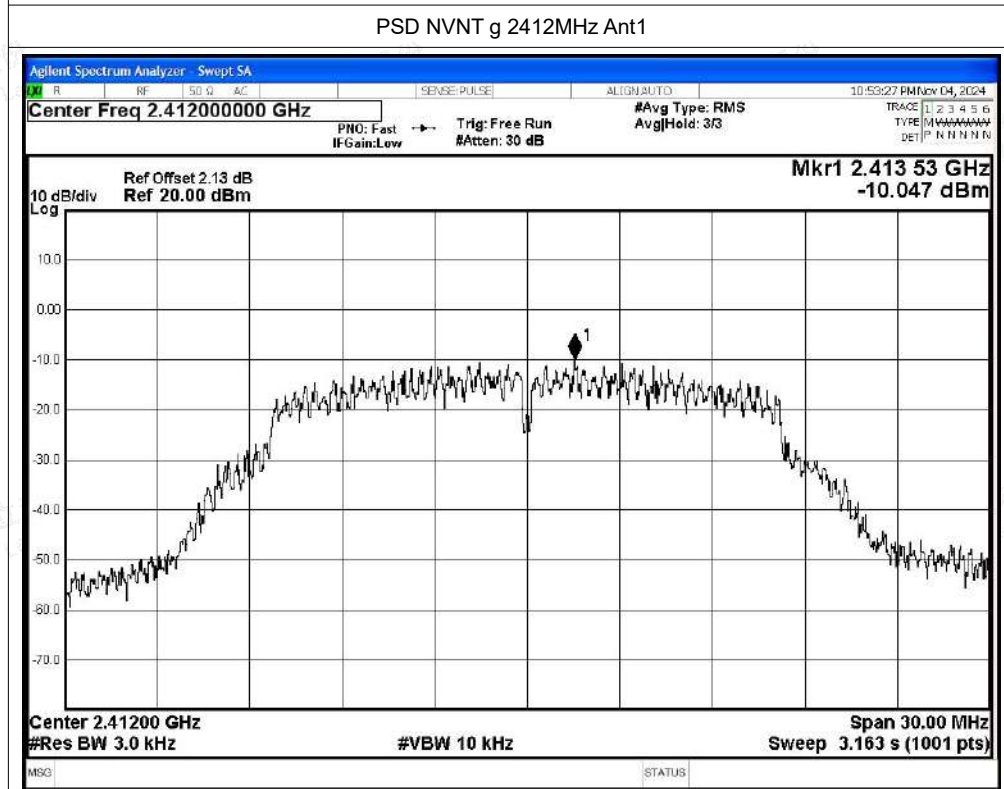
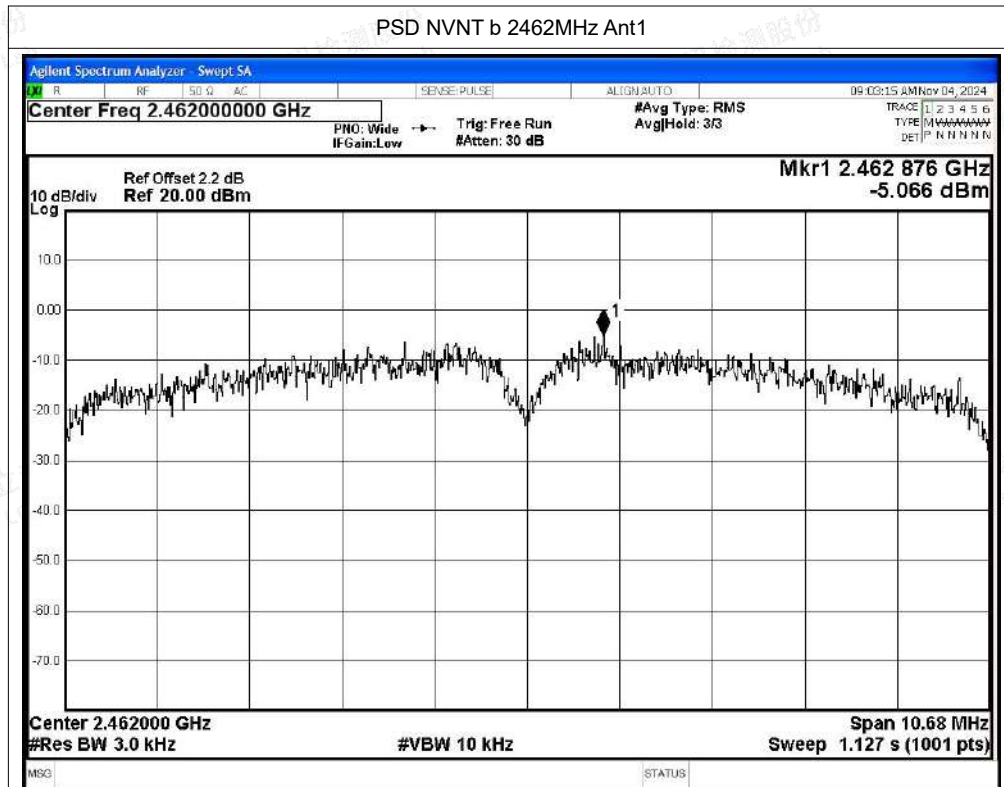
Test Graphs

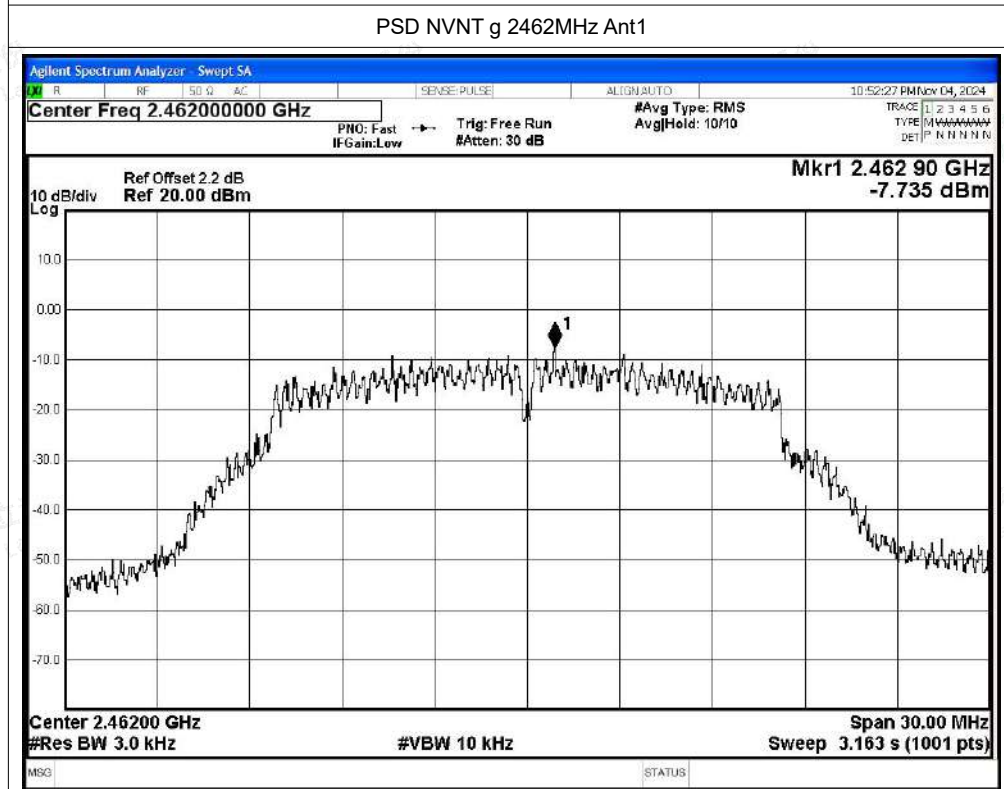
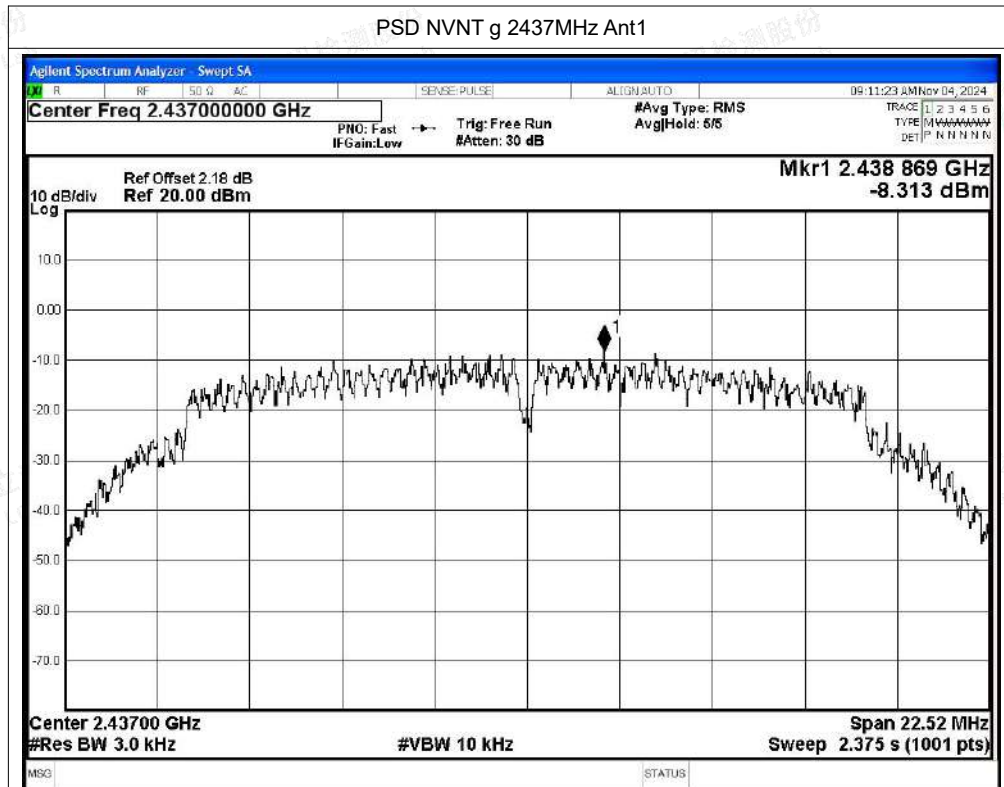
PSD NVNT b 2412MHz Ant1

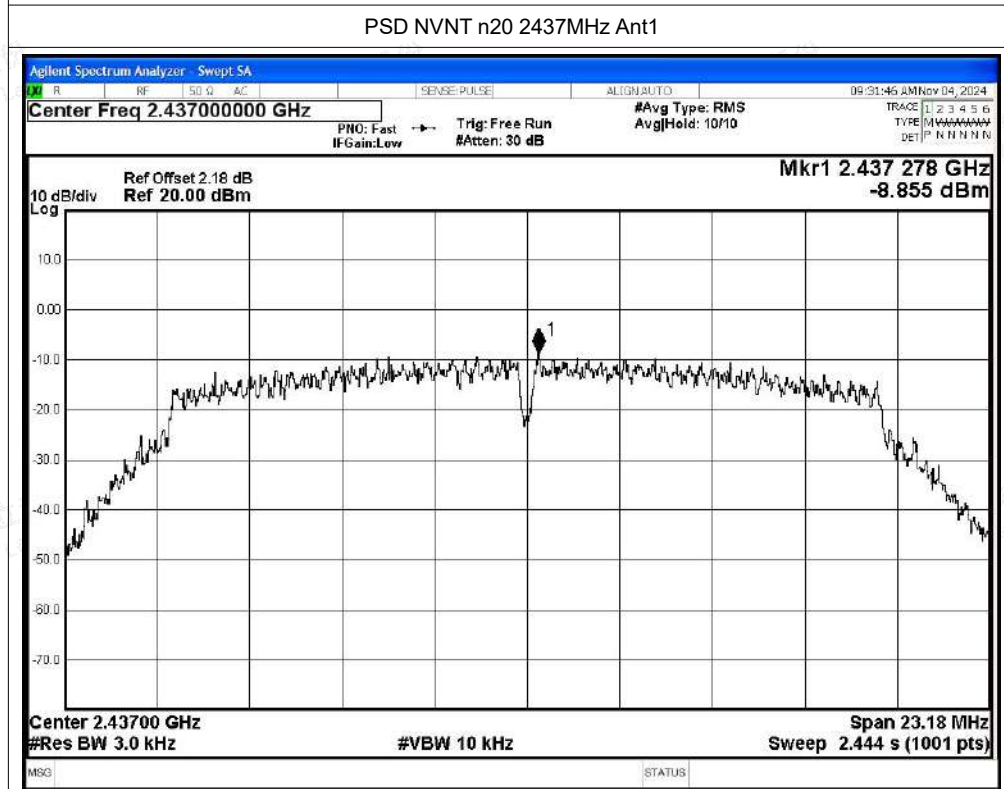
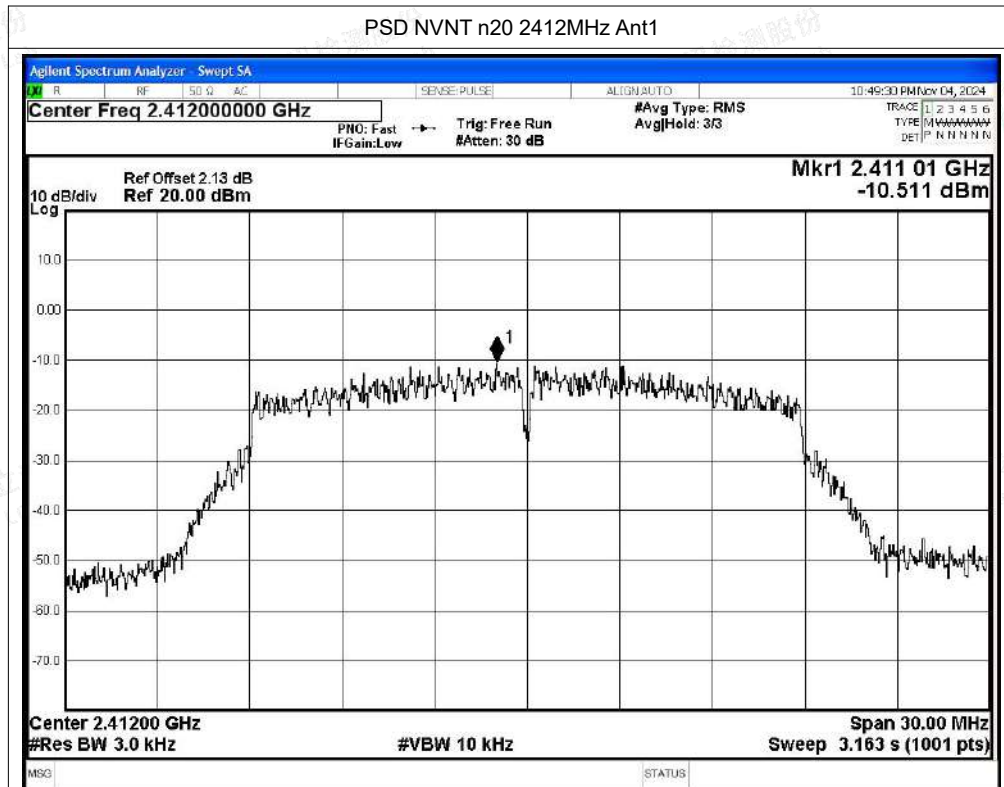


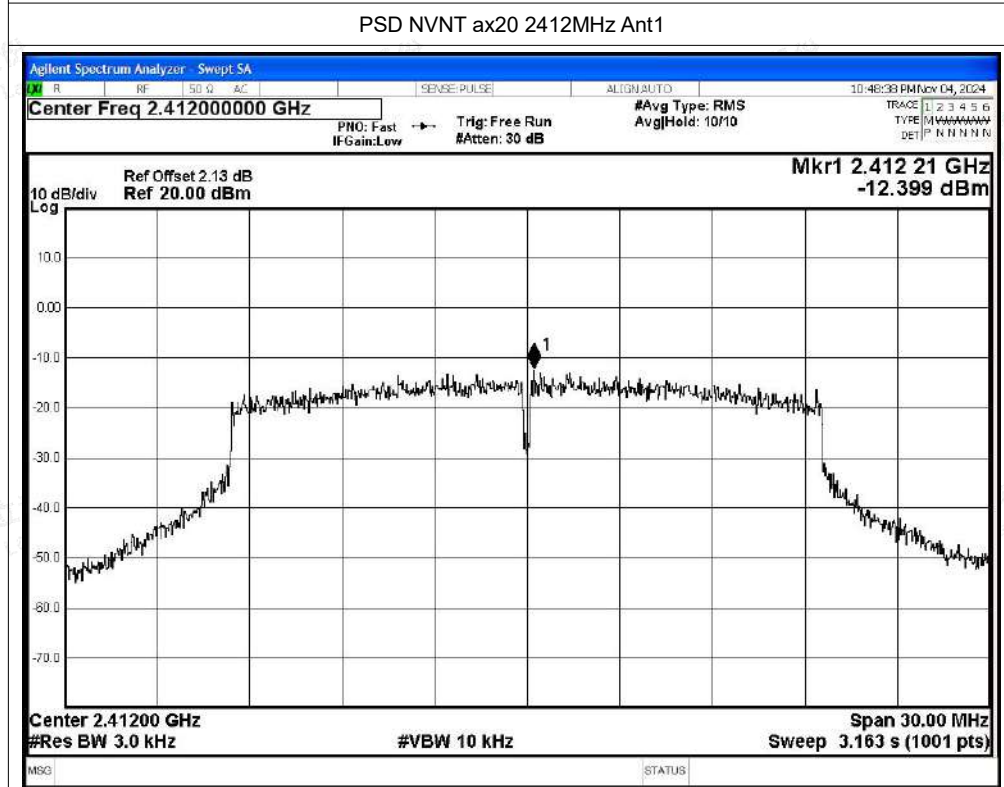
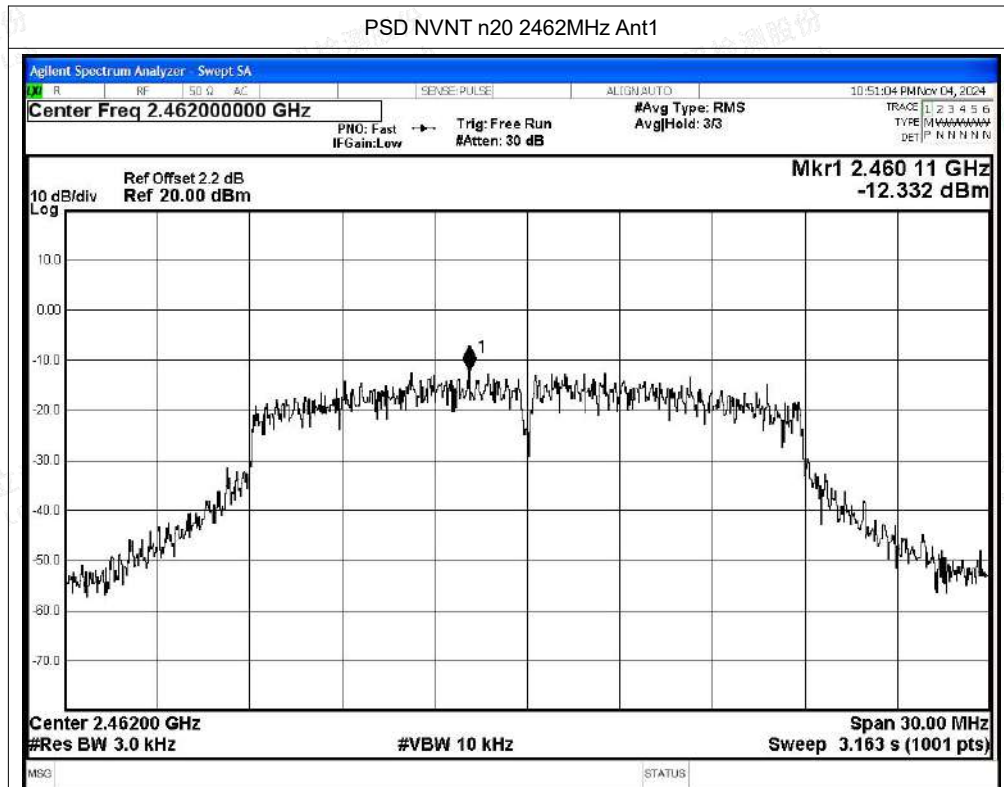
PSD NVNT b 2437MHz Ant1

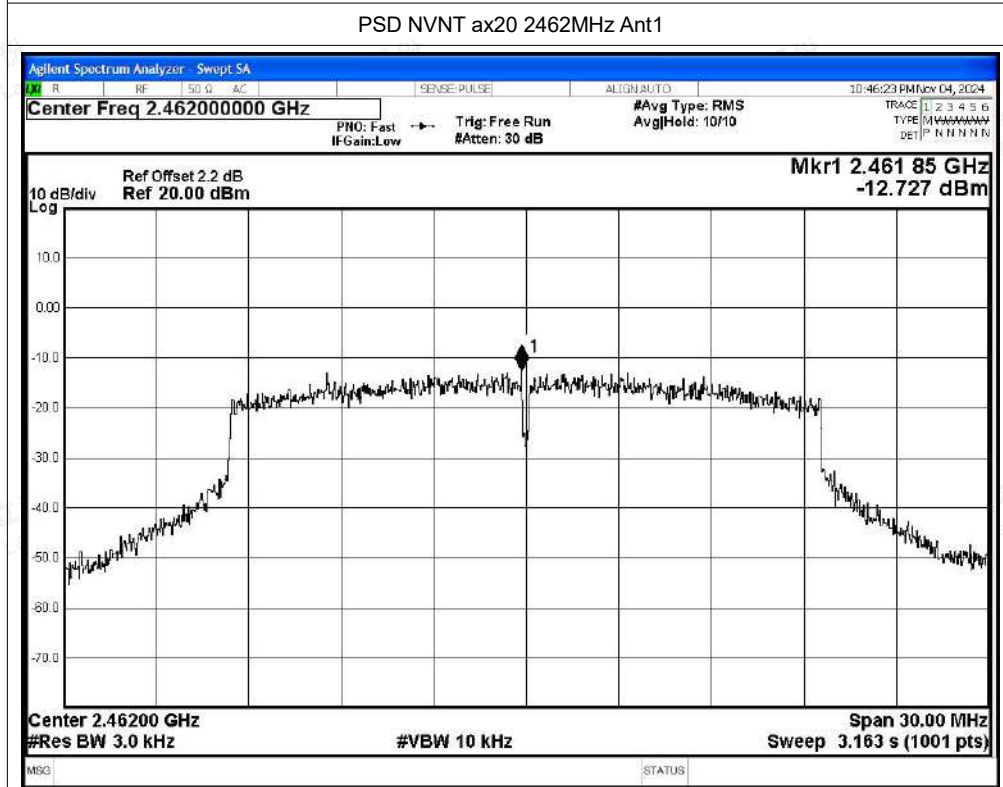
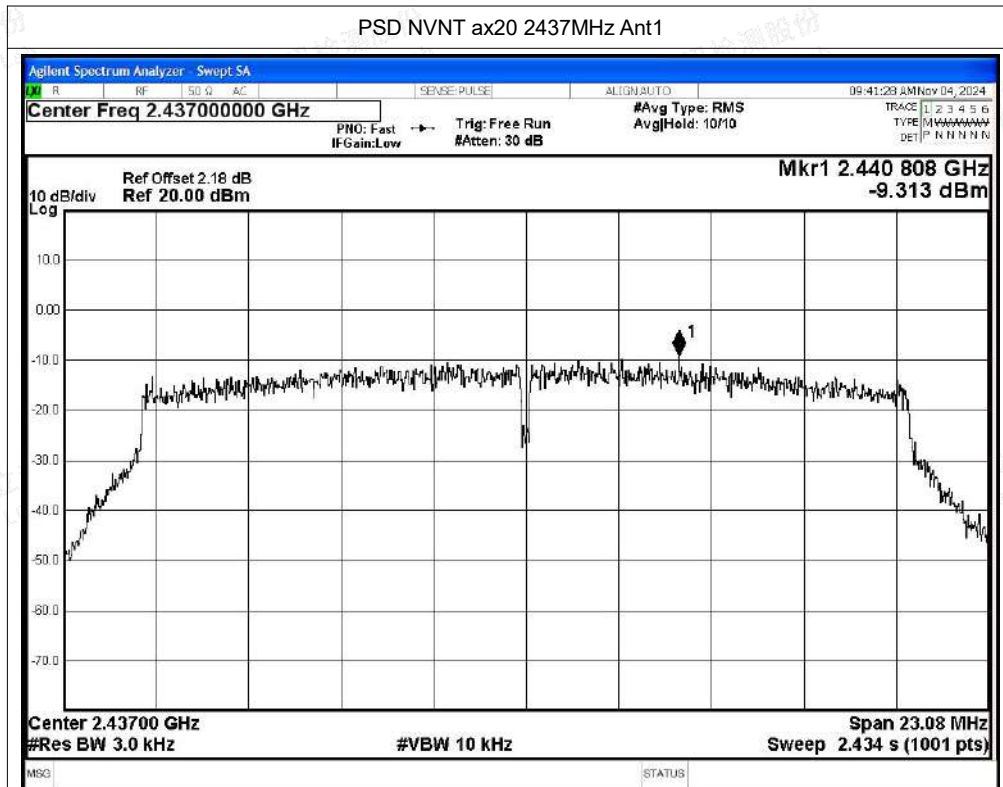














B.4 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant0	-35.58	-20	Pass
NVNT	b	2462	Ant0	-56.4	-20	Pass
NVNT	g	2412	Ant0	-37.05	-20	Pass
NVNT	g	2462	Ant0	-49.65	-20	Pass
NVNT	n20	2412	Ant0	-39.72	-20	Pass
NVNT	n20	2462	Ant0	-44.29	-20	Pass
NVNT	ax20	2412	Ant0	-30.24	-20	Pass
NVNT	ax20	2462	Ant0	-39.56	-20	Pass

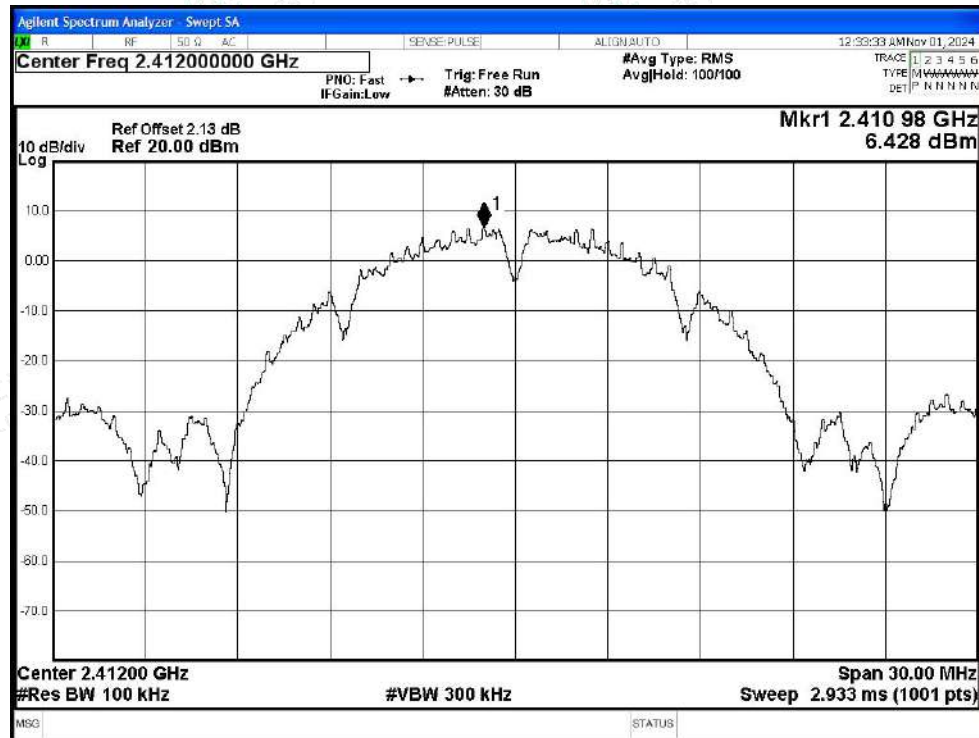


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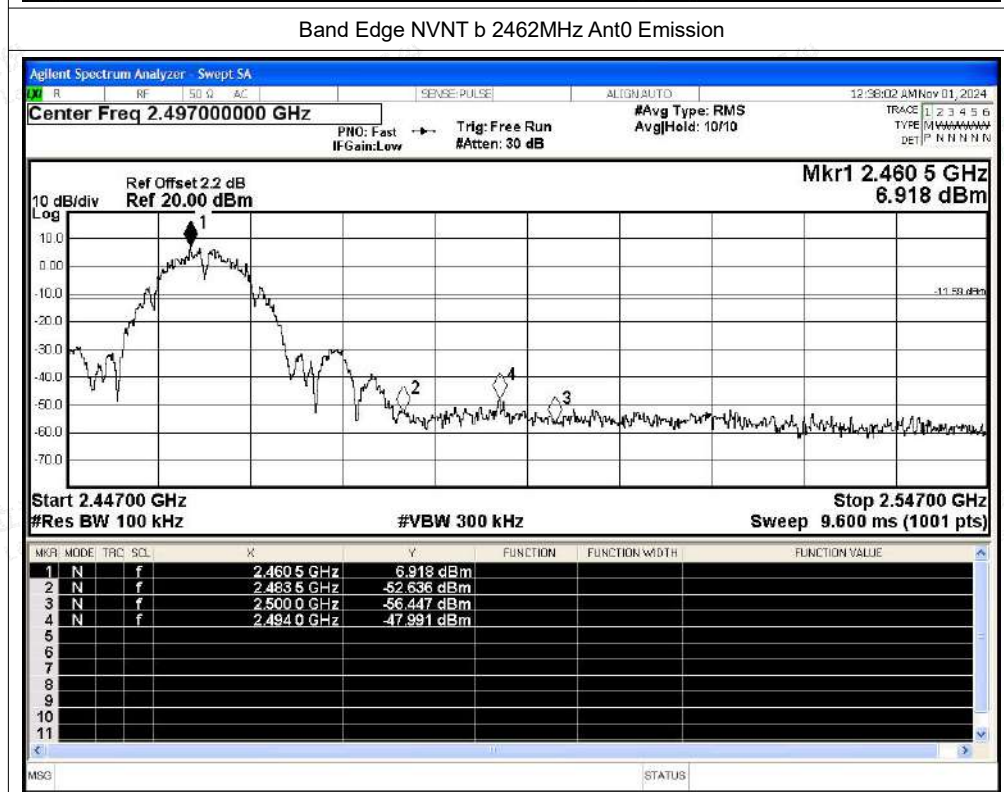
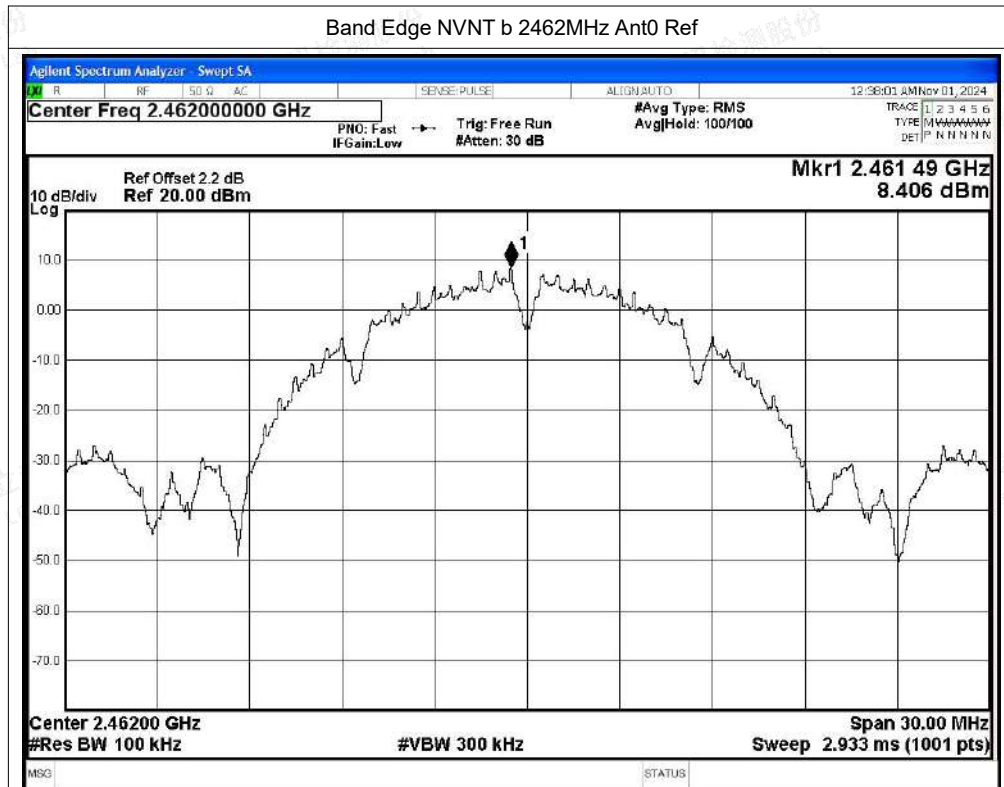
Test Graphs

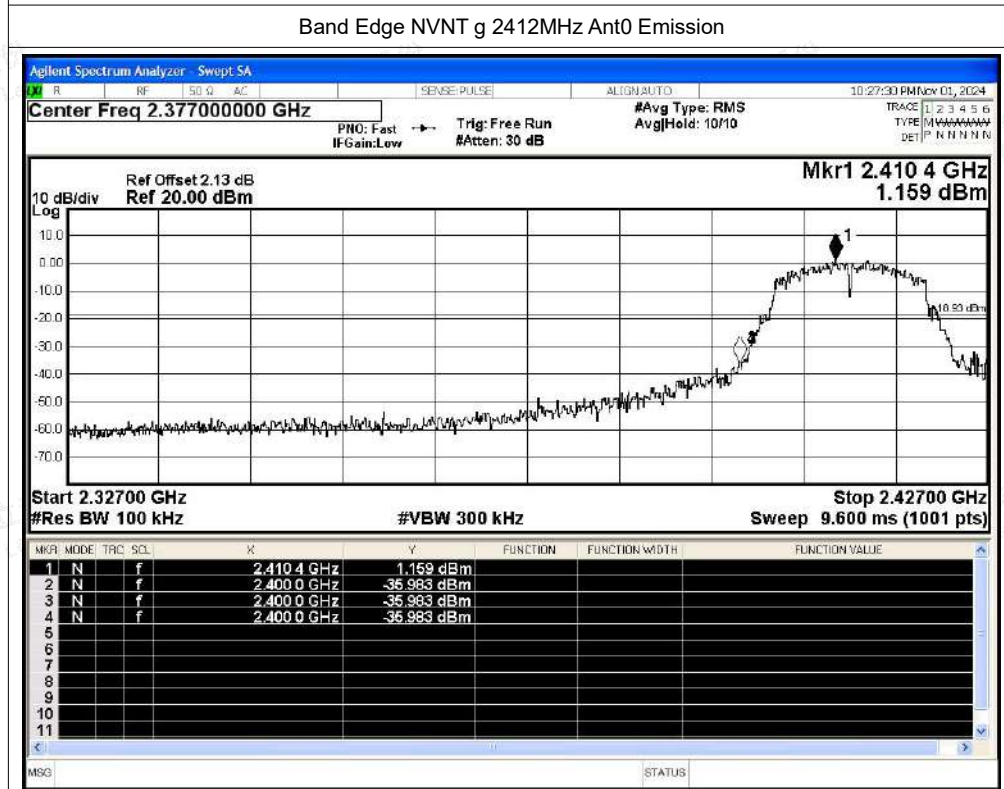
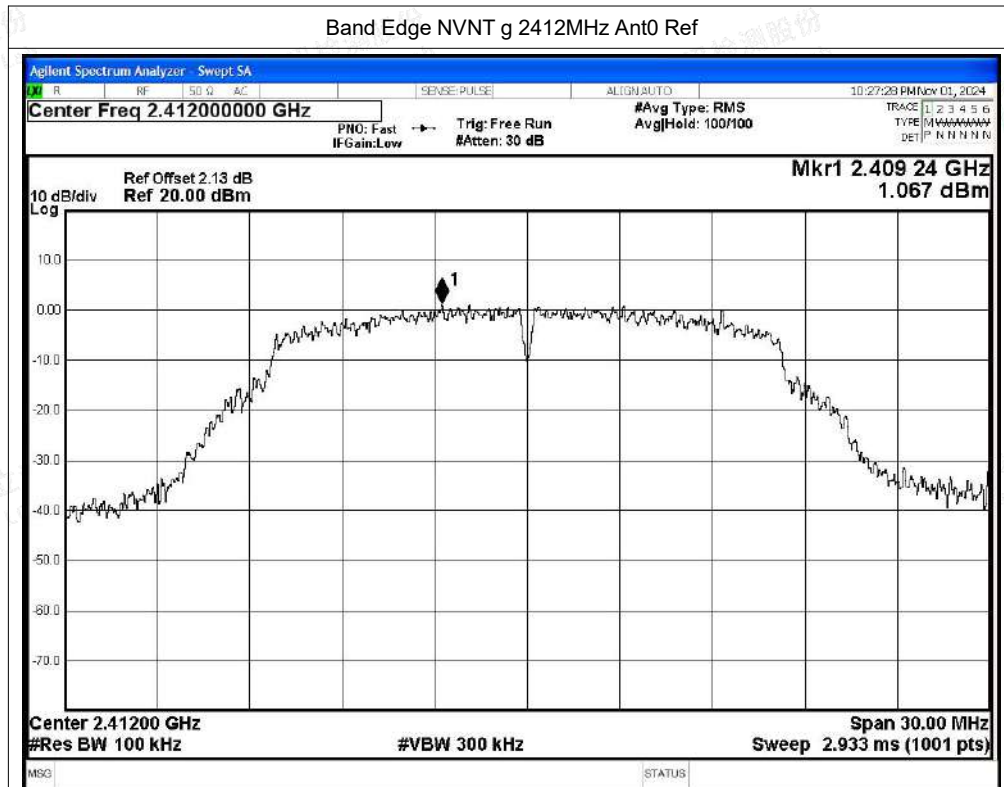
Band Edge NVNT b 2412MHz Ant0 Ref

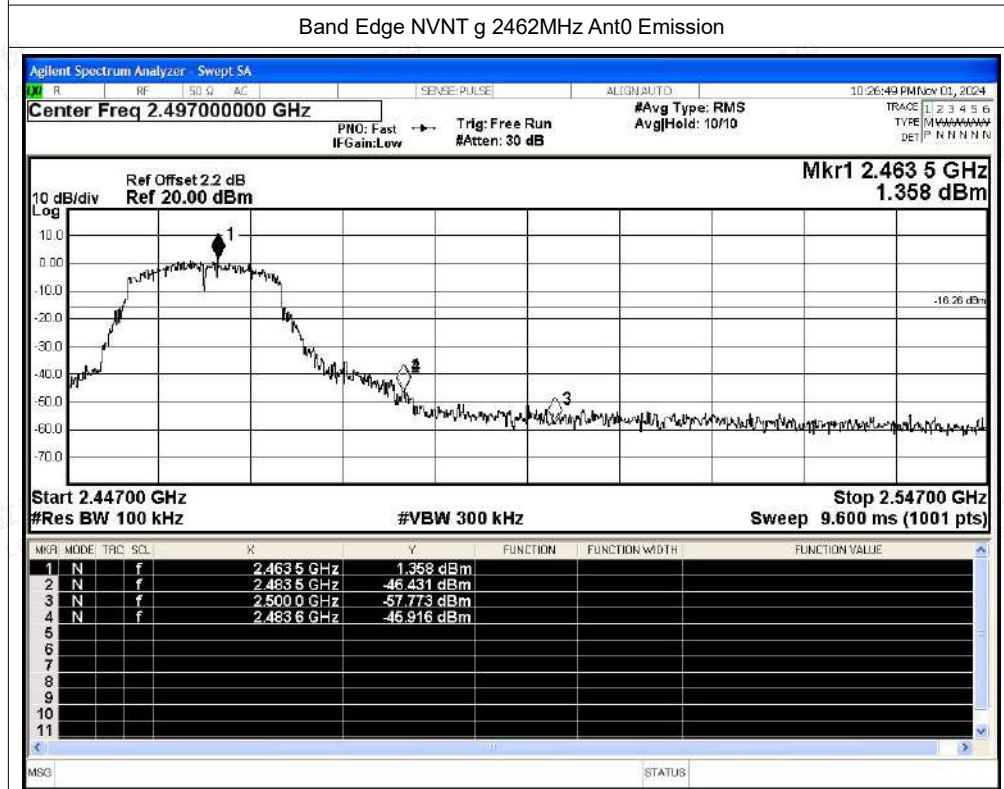
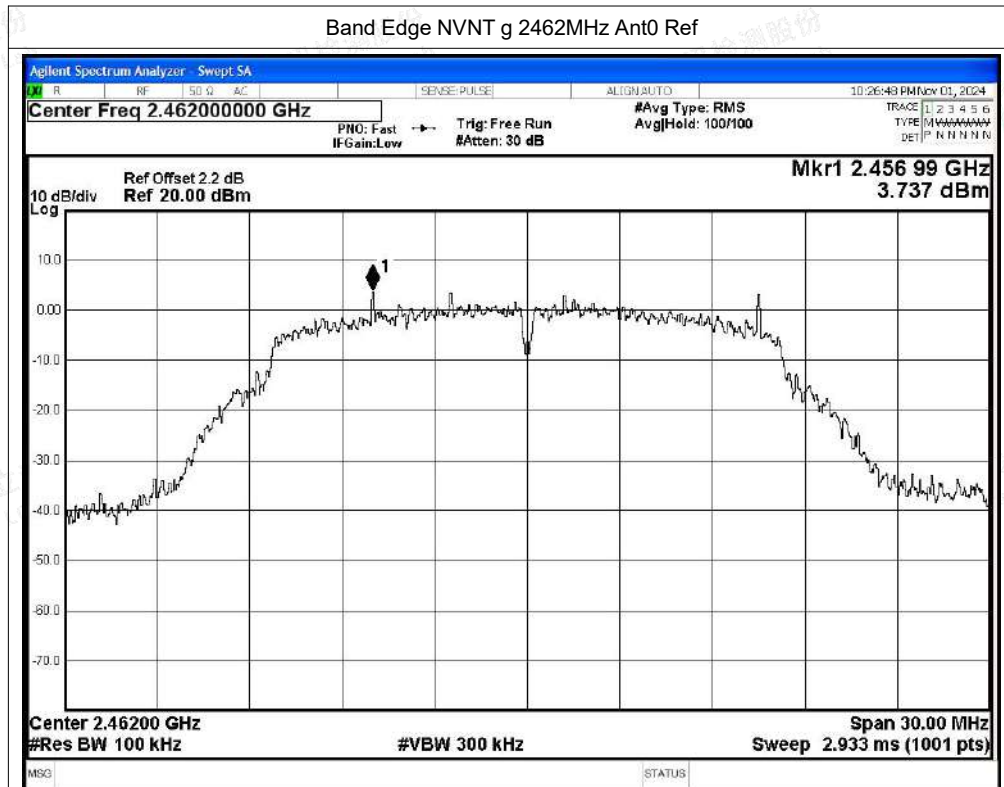


Band Edge NVNT b 2412MHz Ant0 Emission



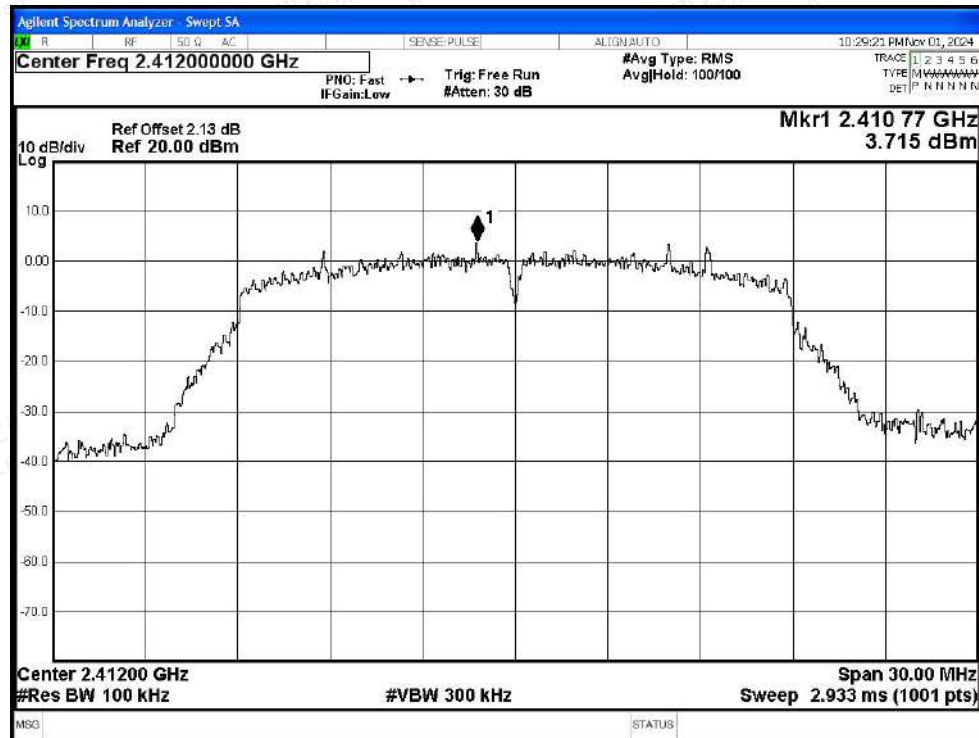




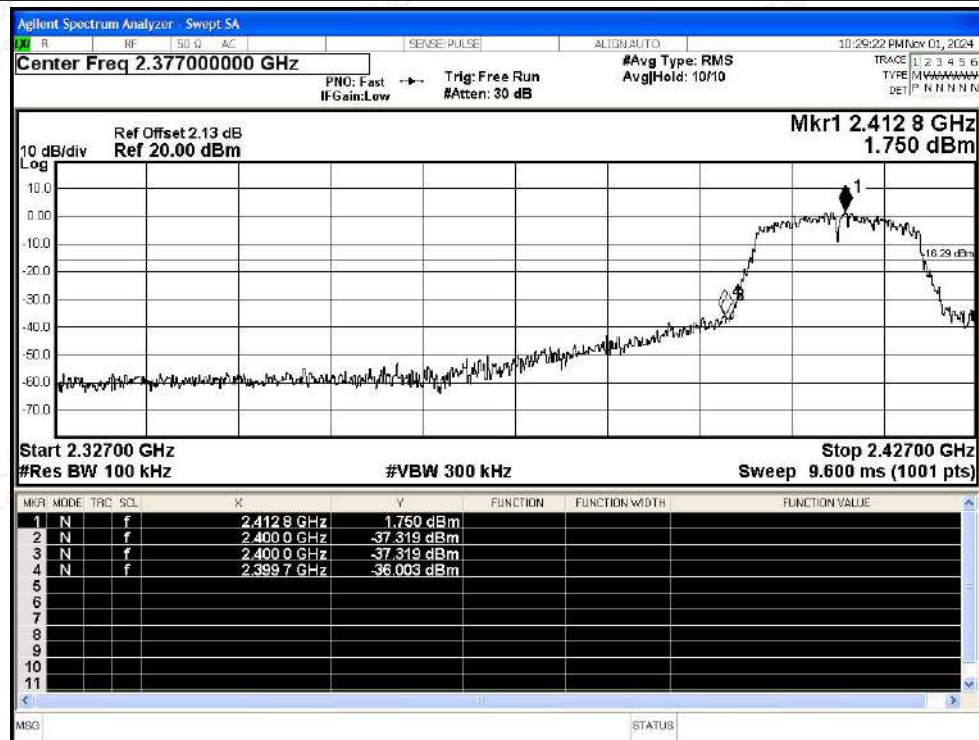


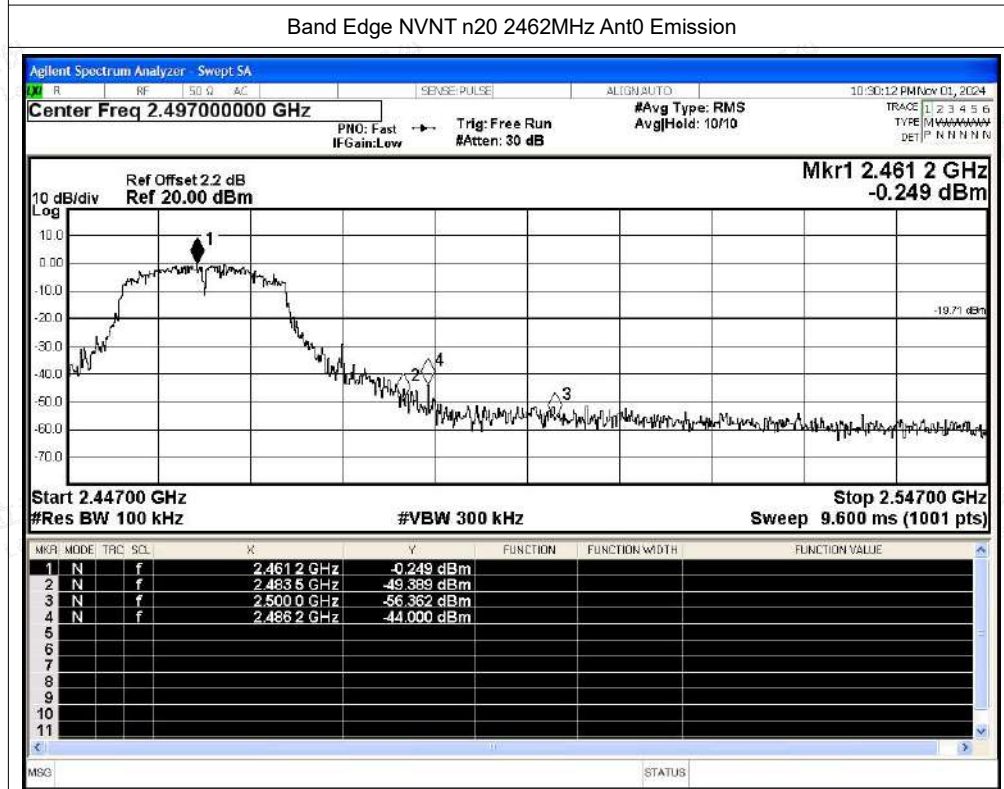
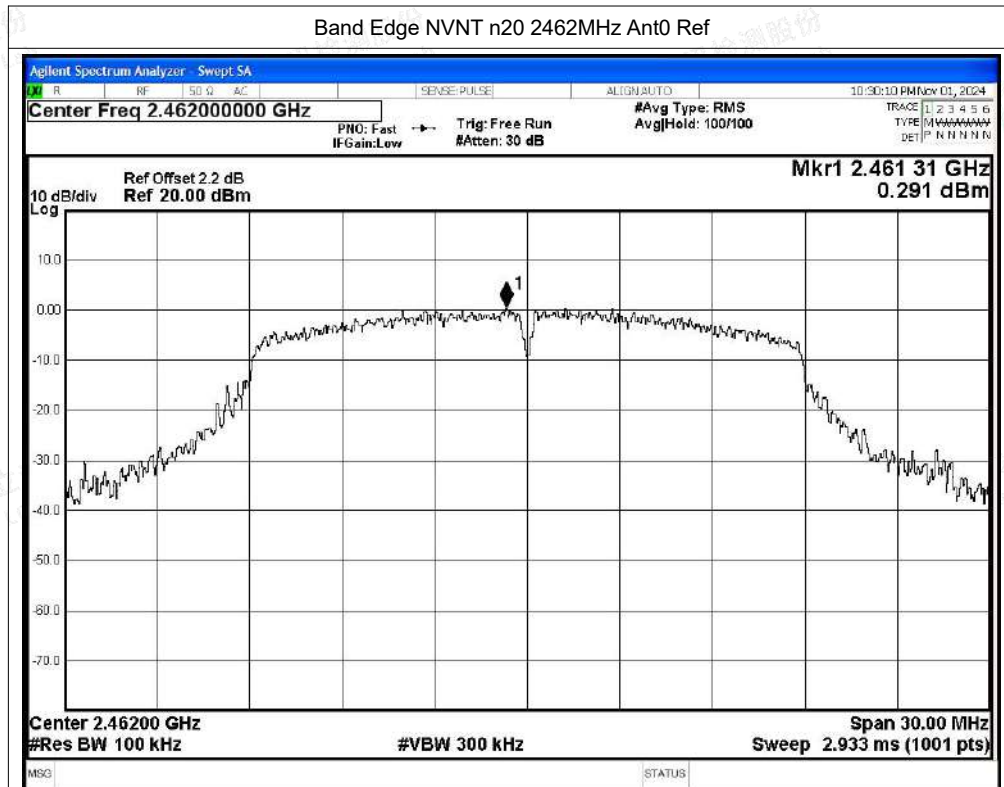


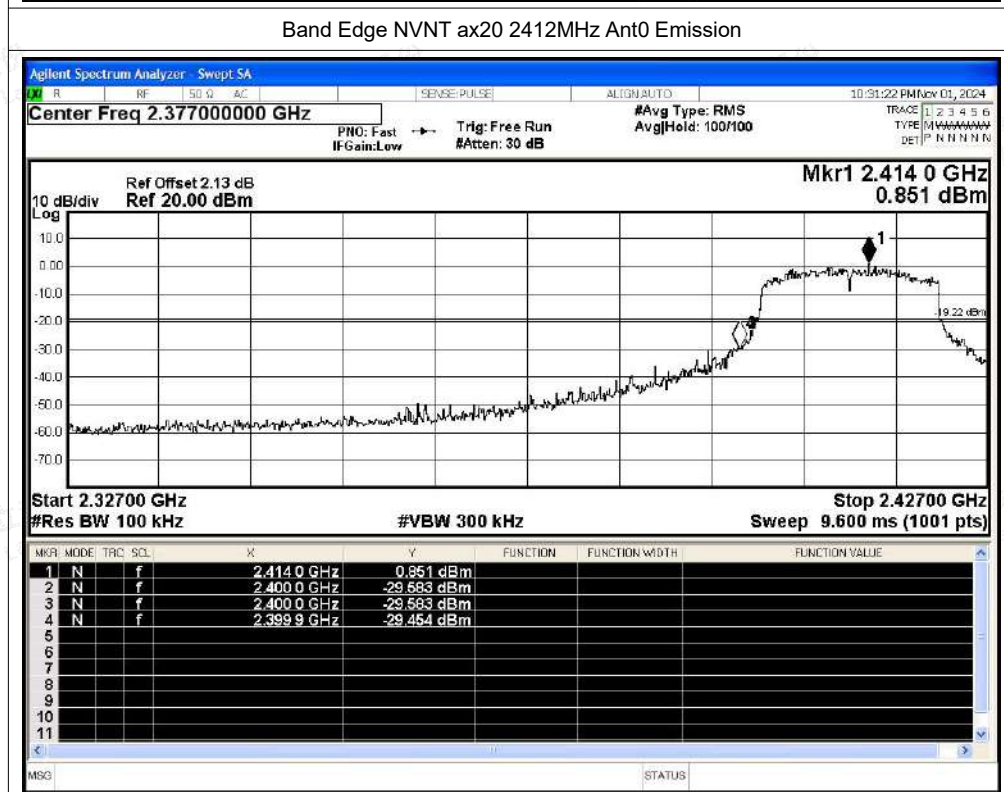
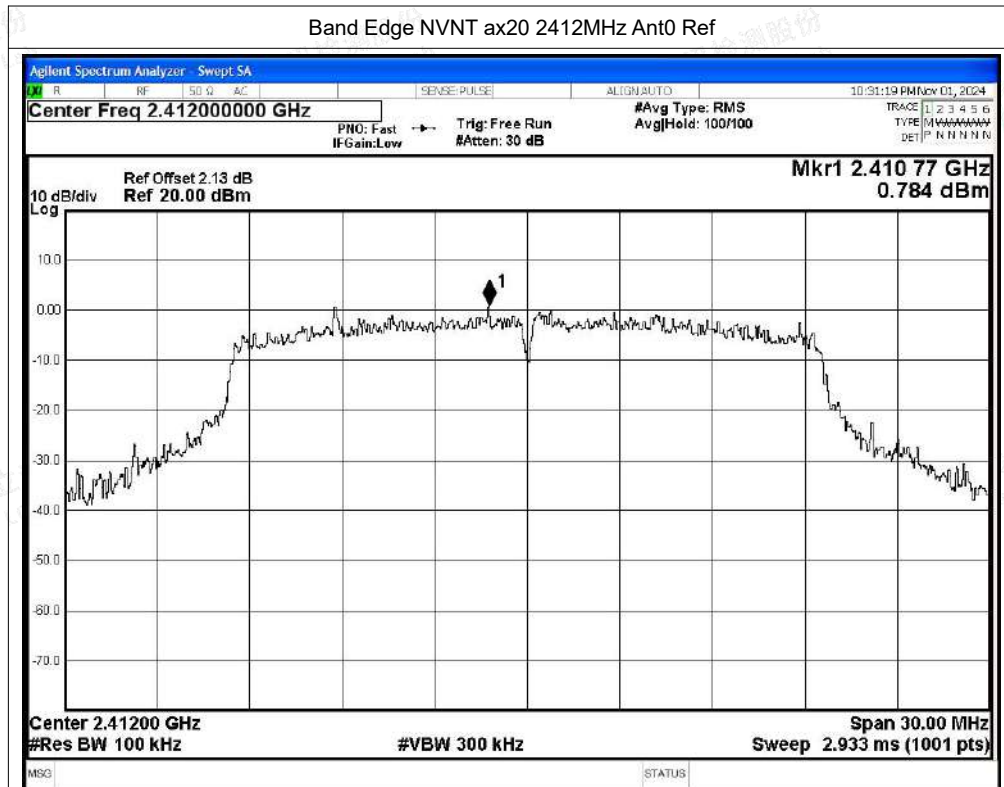
Band Edge NVNT n20 2412MHz Ant0 Ref

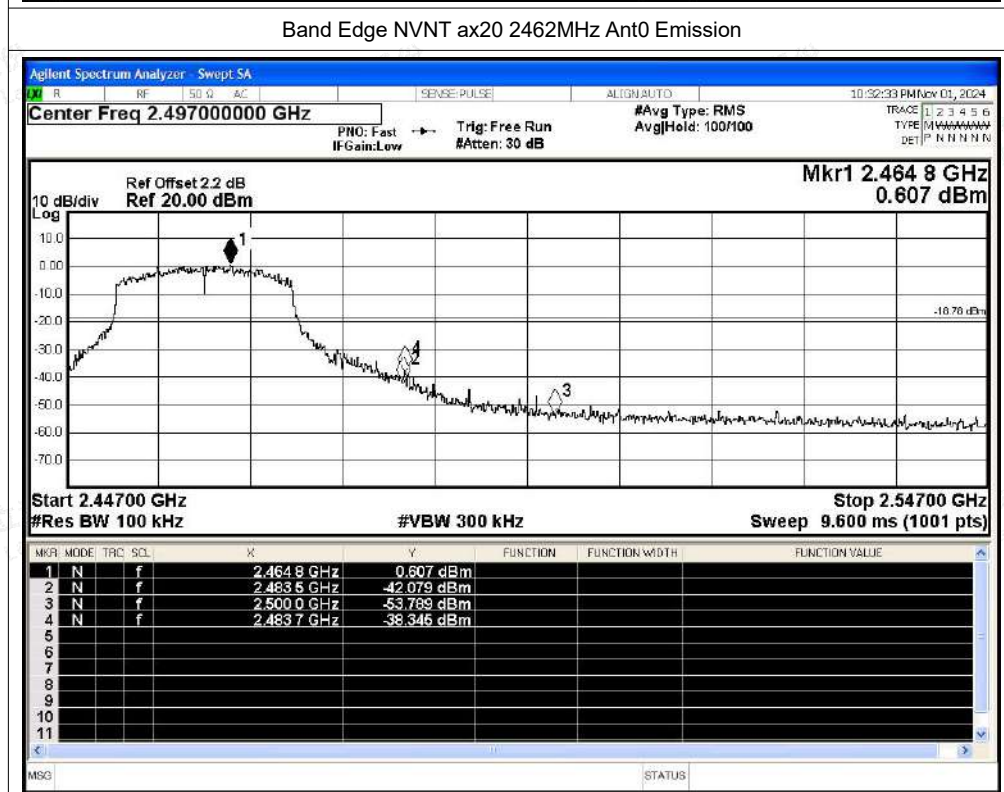
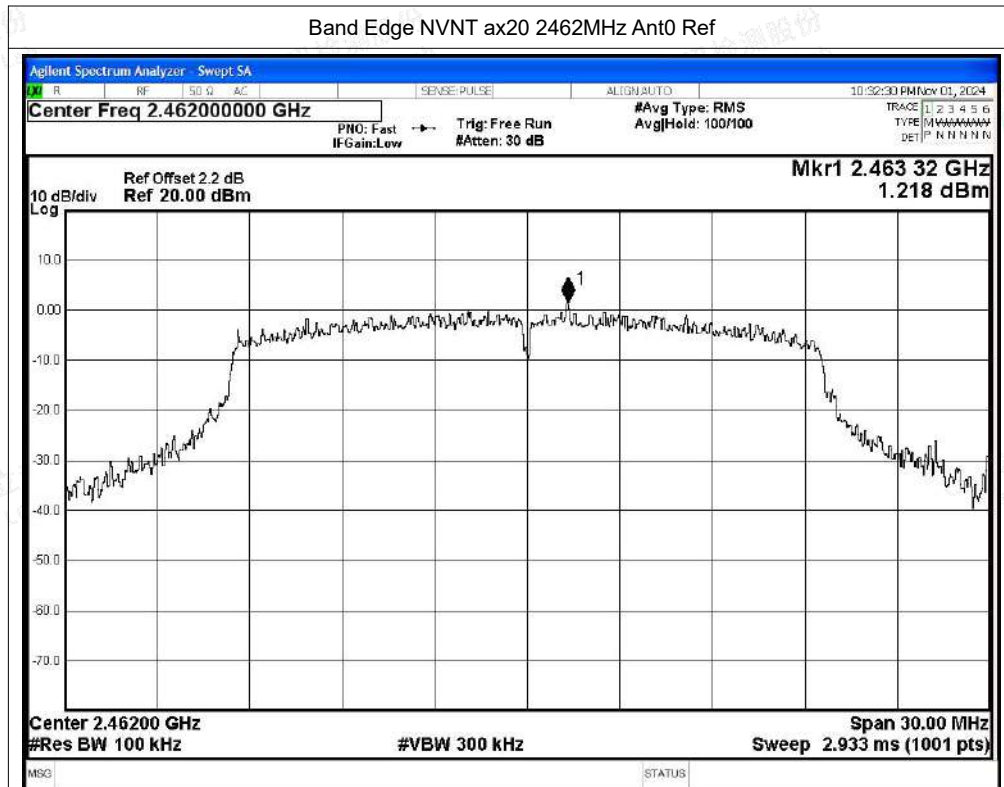


Band Edge NVNT n20 2412MHz Ant0 Emission











Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-37.1	-20	Pass
NVNT	b	2462	Ant1	-58.32	-20	Pass
NVNT	g	2412	Ant1	-37.69	-20	Pass
NVNT	g	2462	Ant1	-49.59	-20	Pass
NVNT	n20	2412	Ant1	-40.87	-20	Pass
NVNT	n20	2462	Ant1	-47.56	-20	Pass
NVNT	ax20	2412	Ant1	-29.49	-20	Pass
NVNT	ax20	2462	Ant1	-41.77	-20	Pass

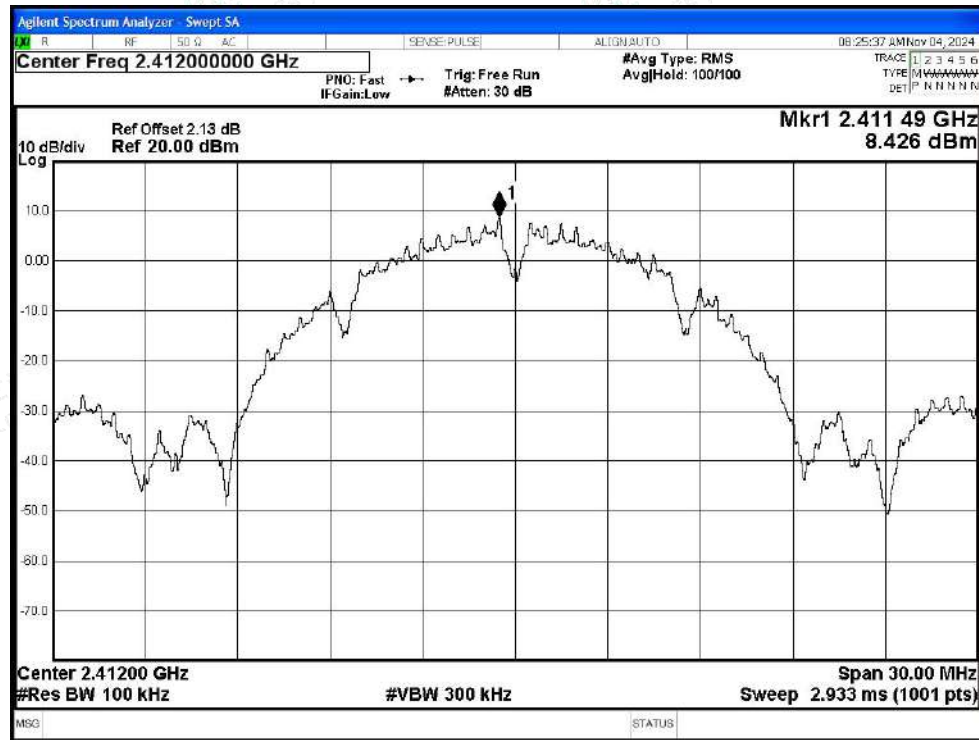


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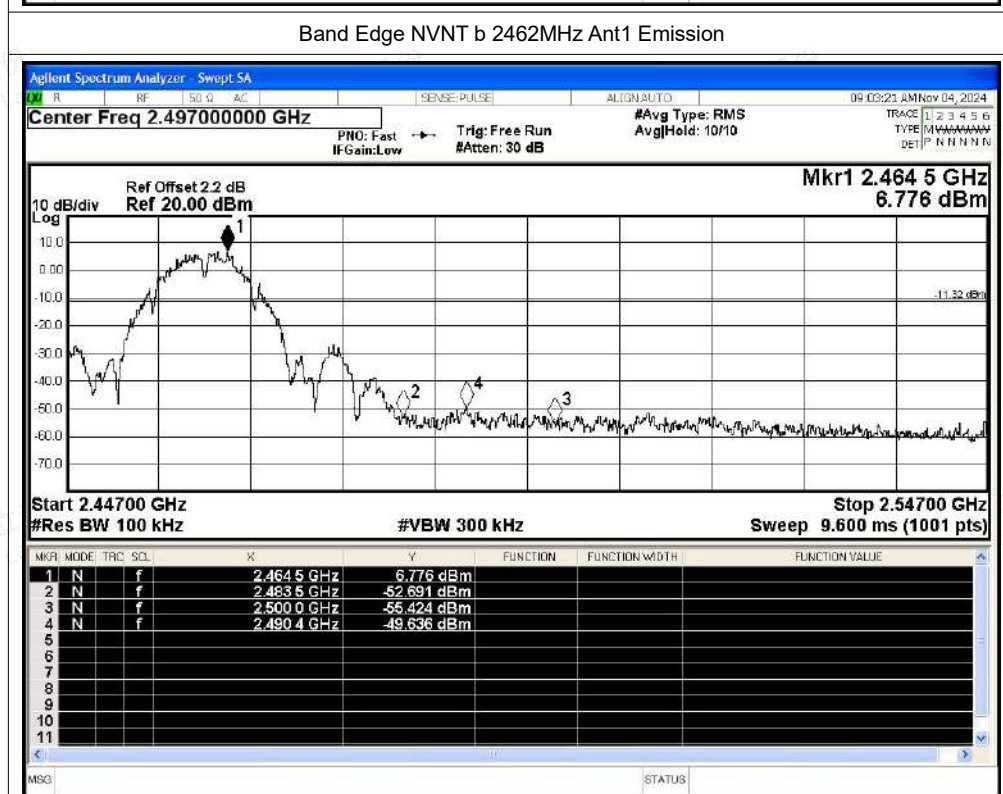
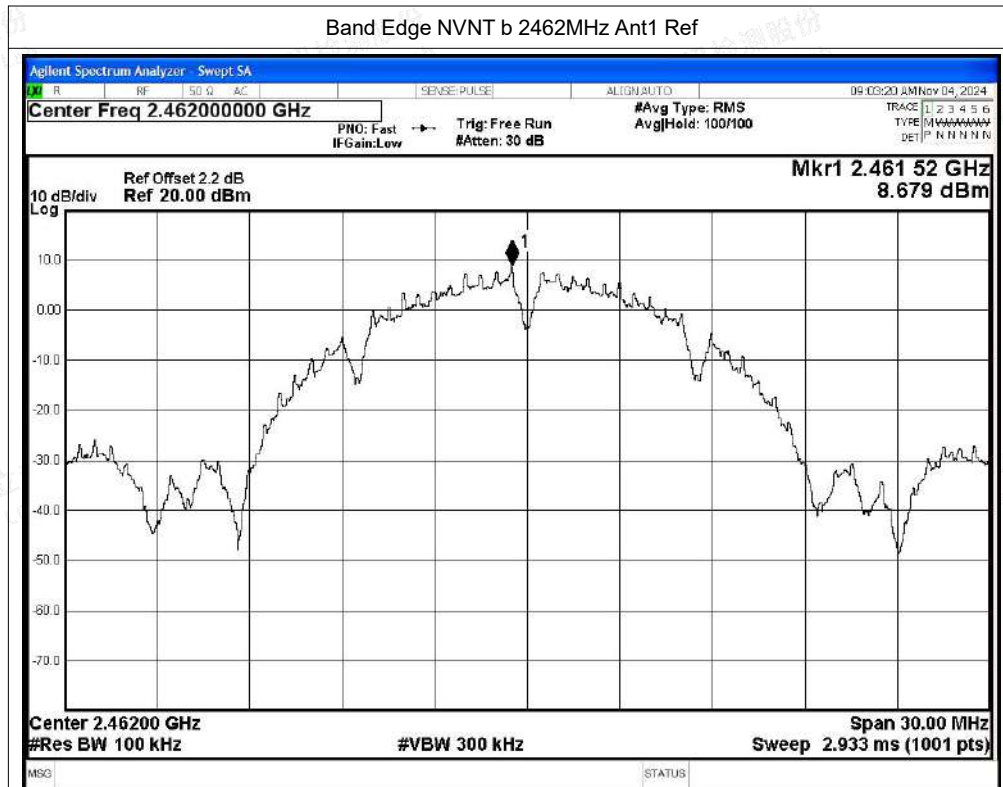
Test Graphs

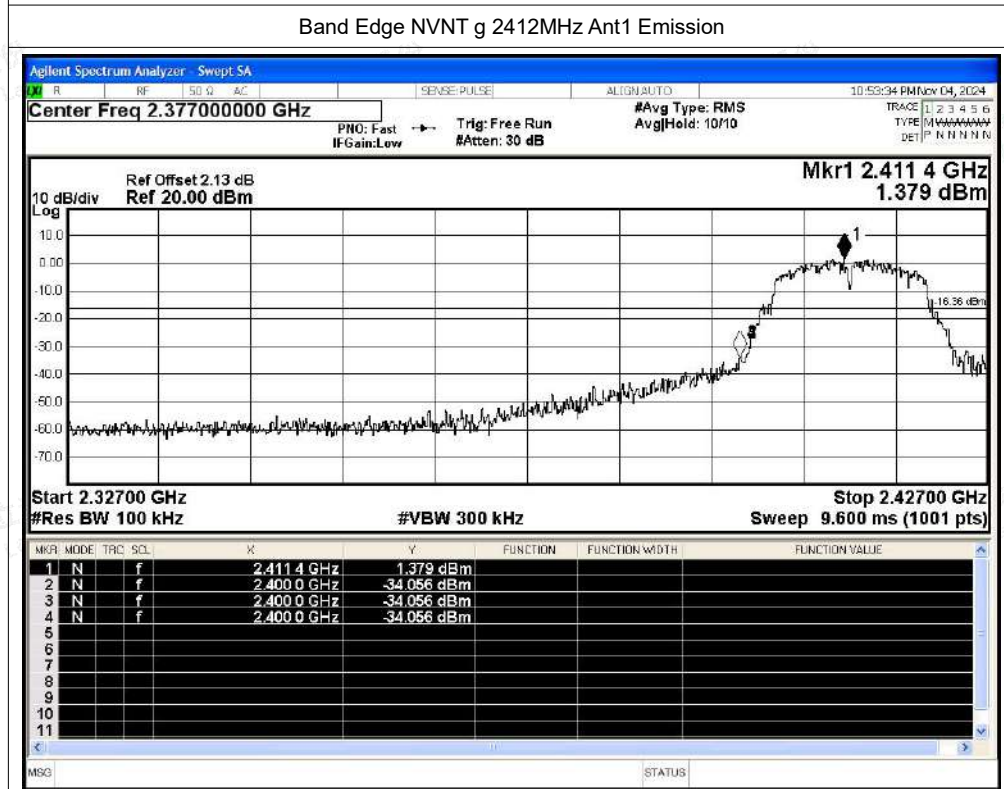
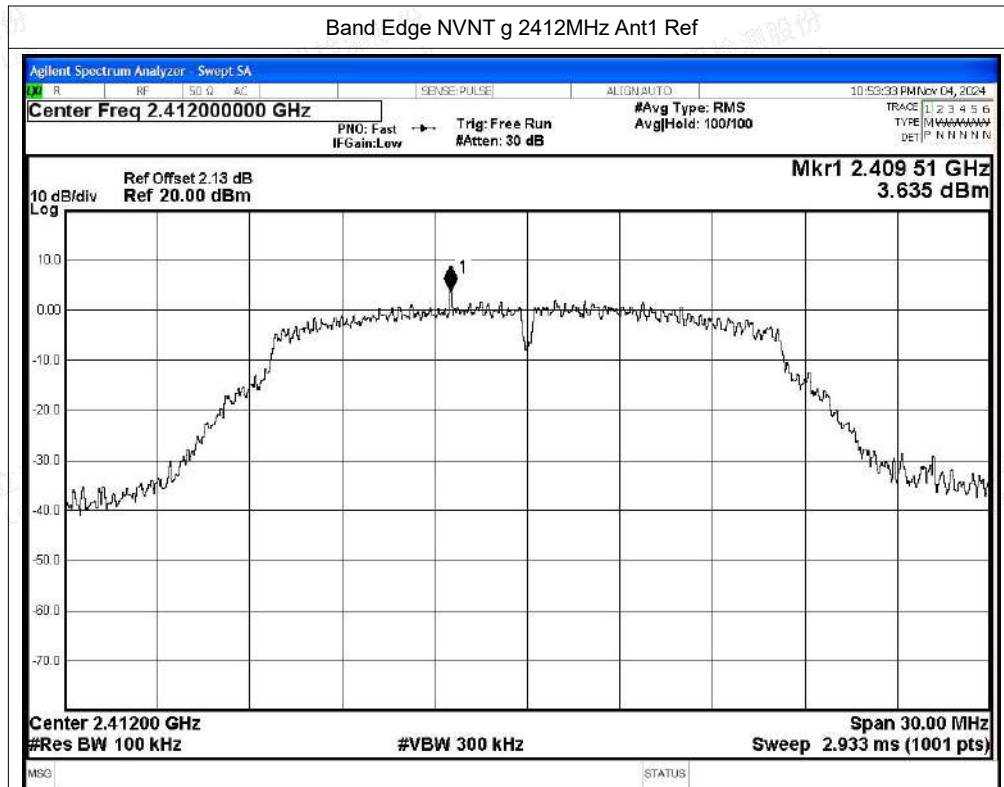
Band Edge NVNT b 2412MHz Ant1 Ref

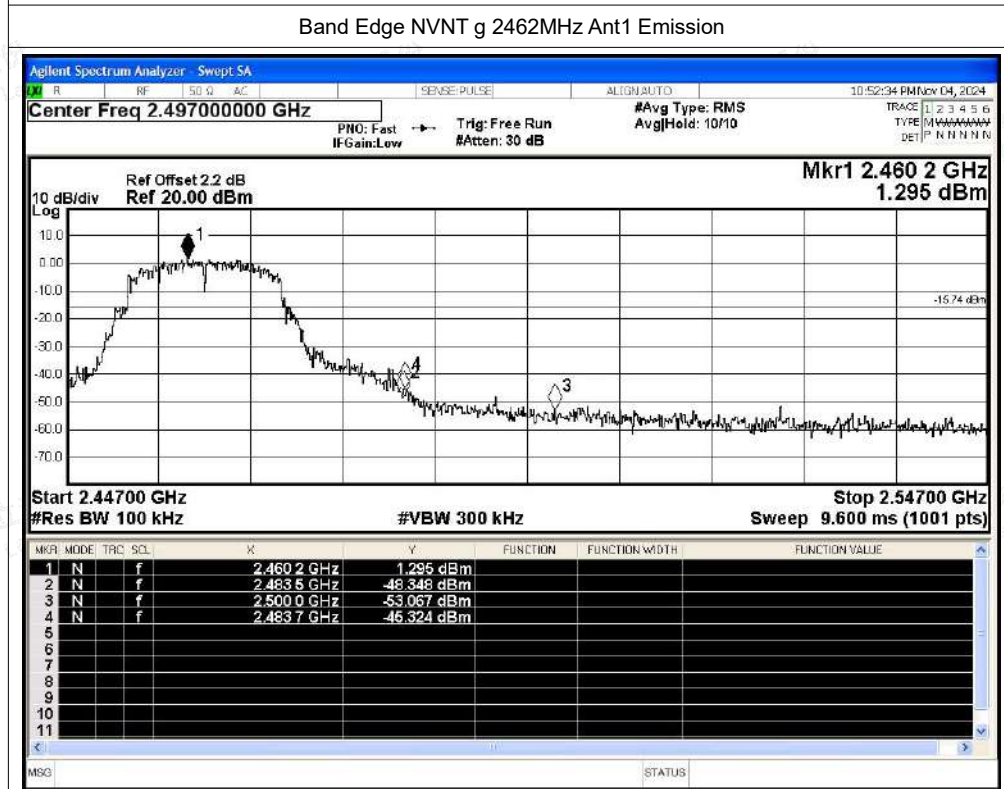
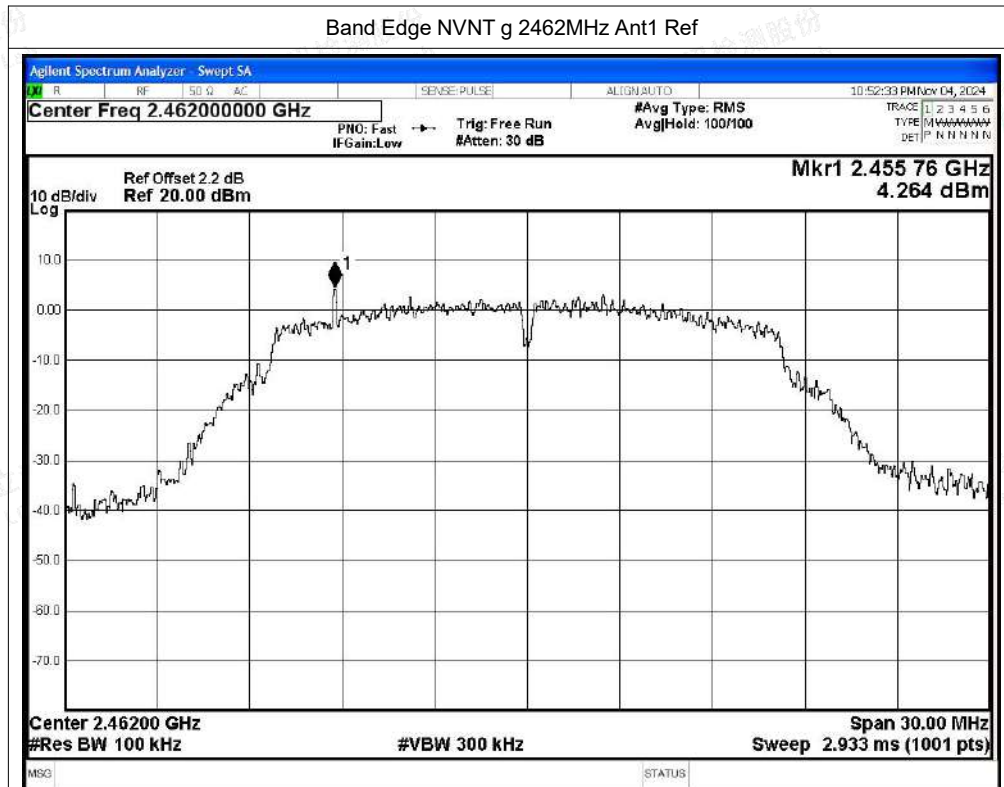


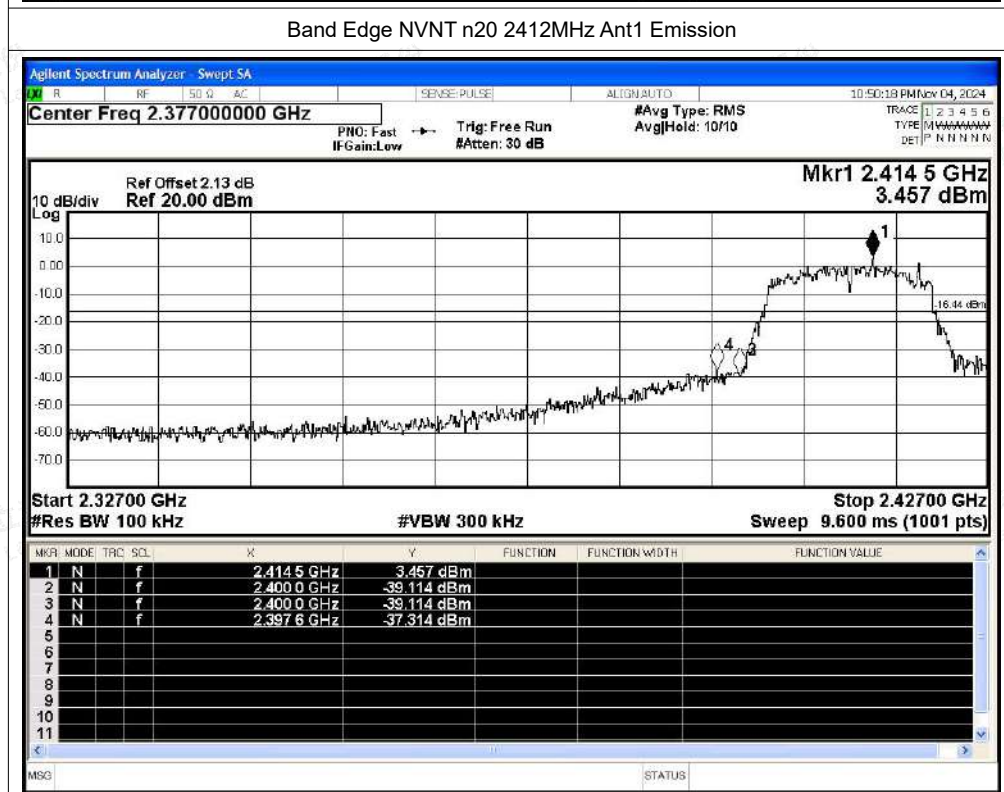
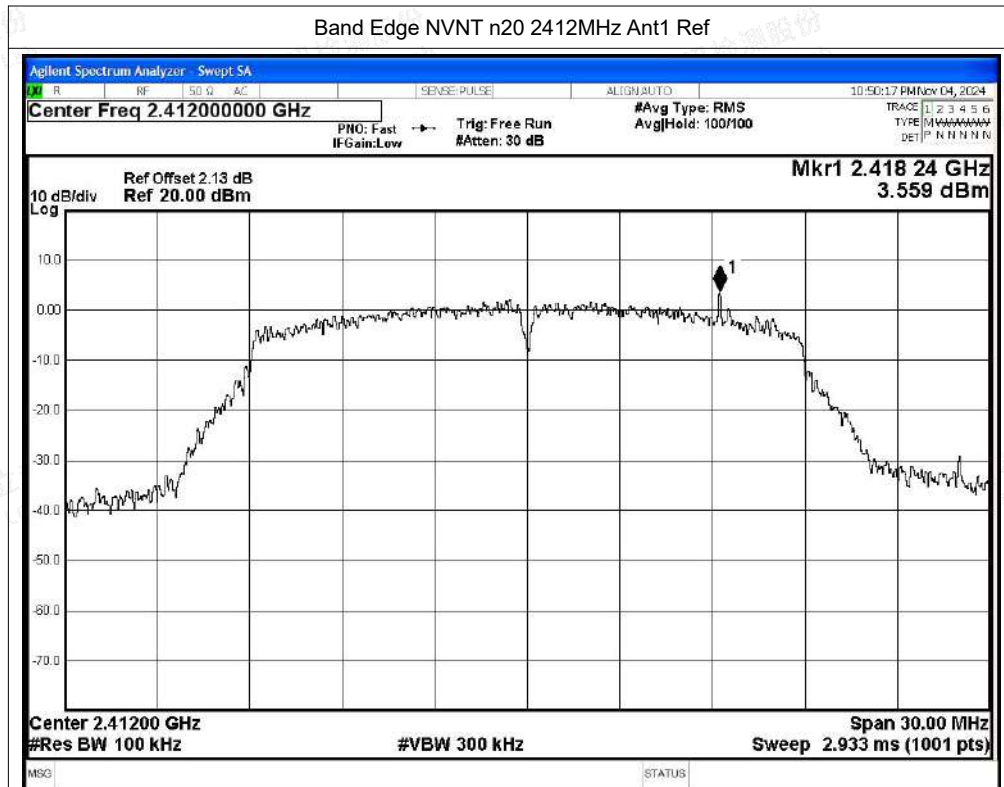
Band Edge NVNT b 2412MHz Ant1 Emission

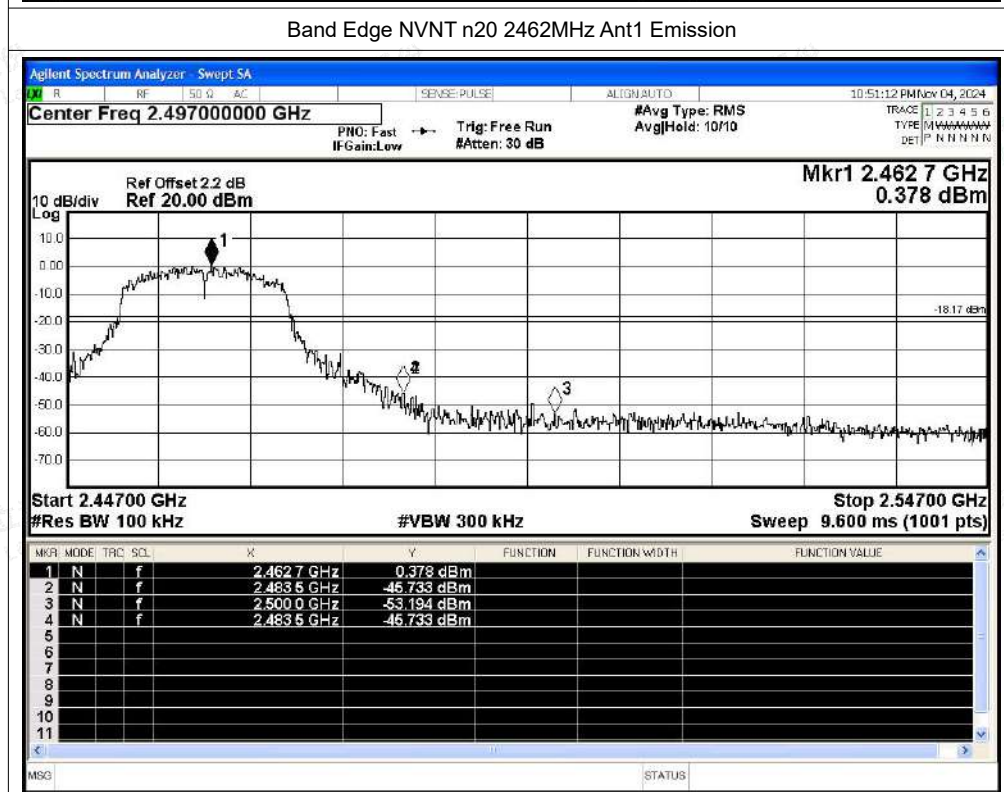
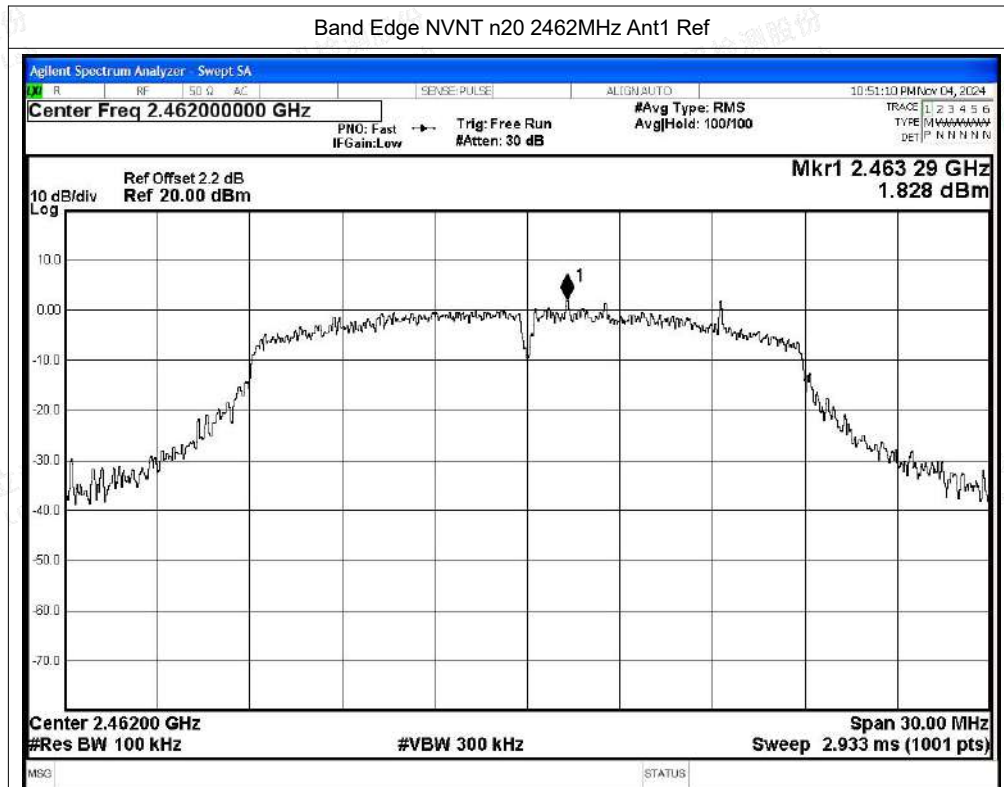


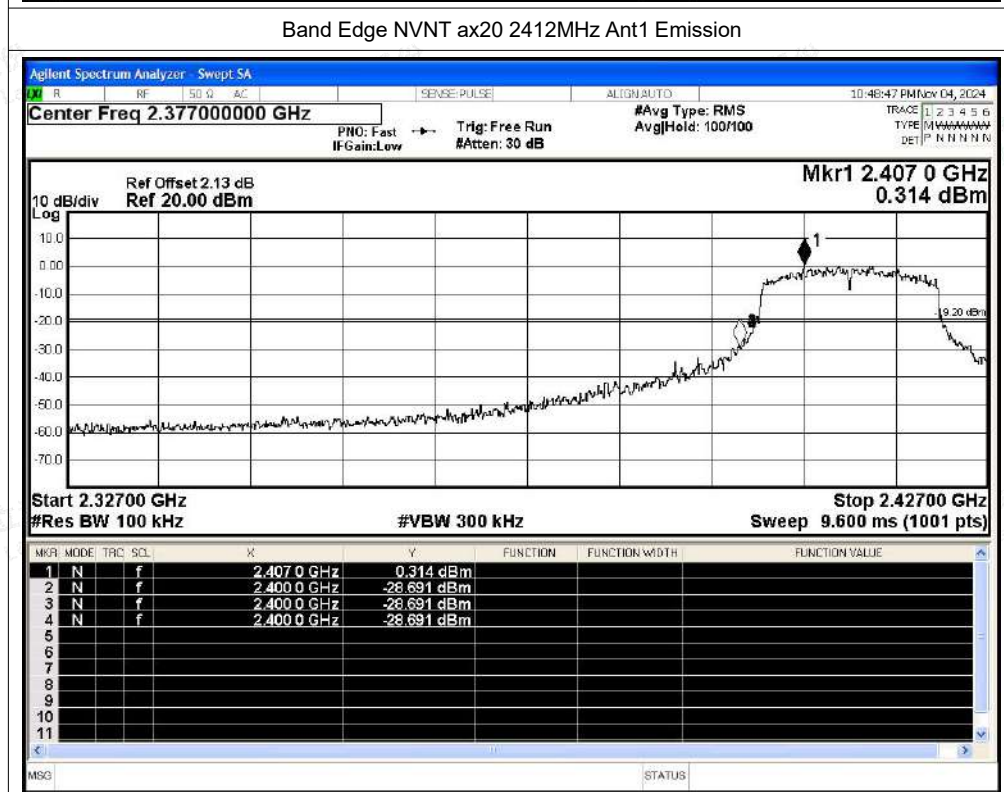
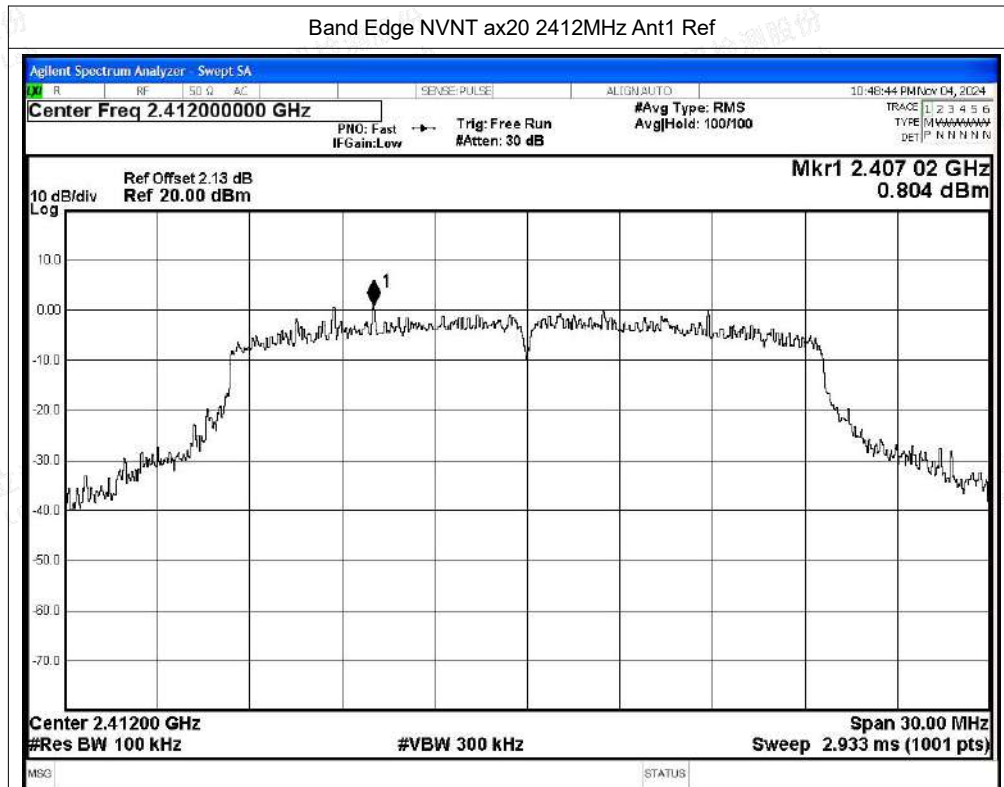


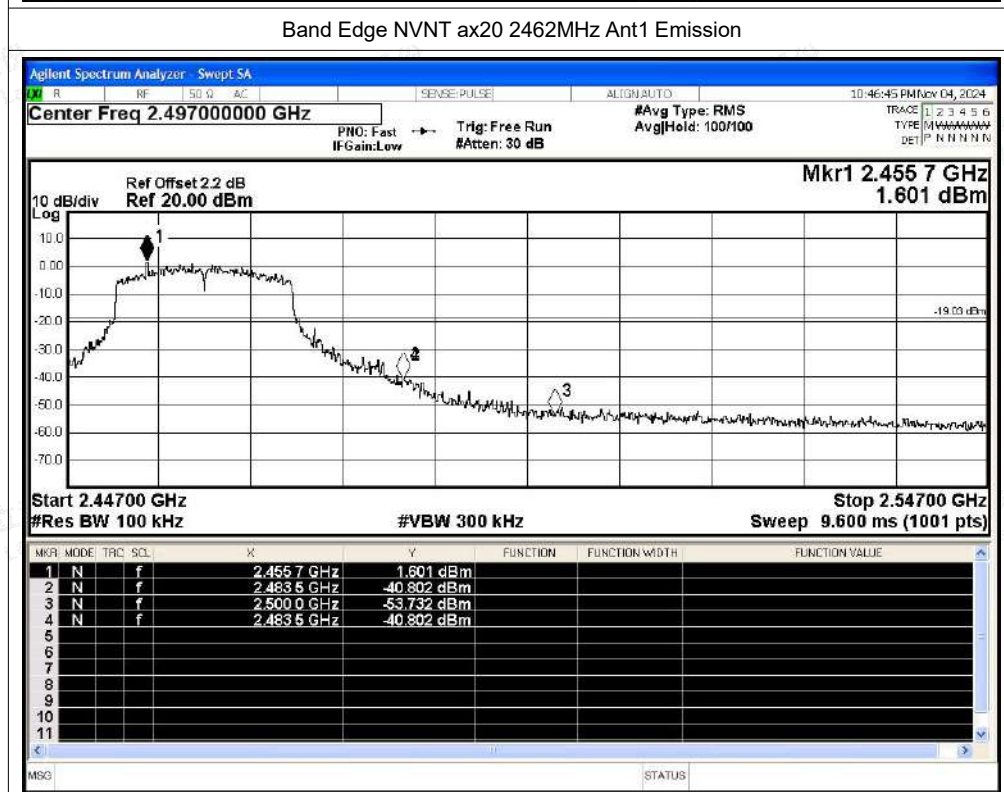
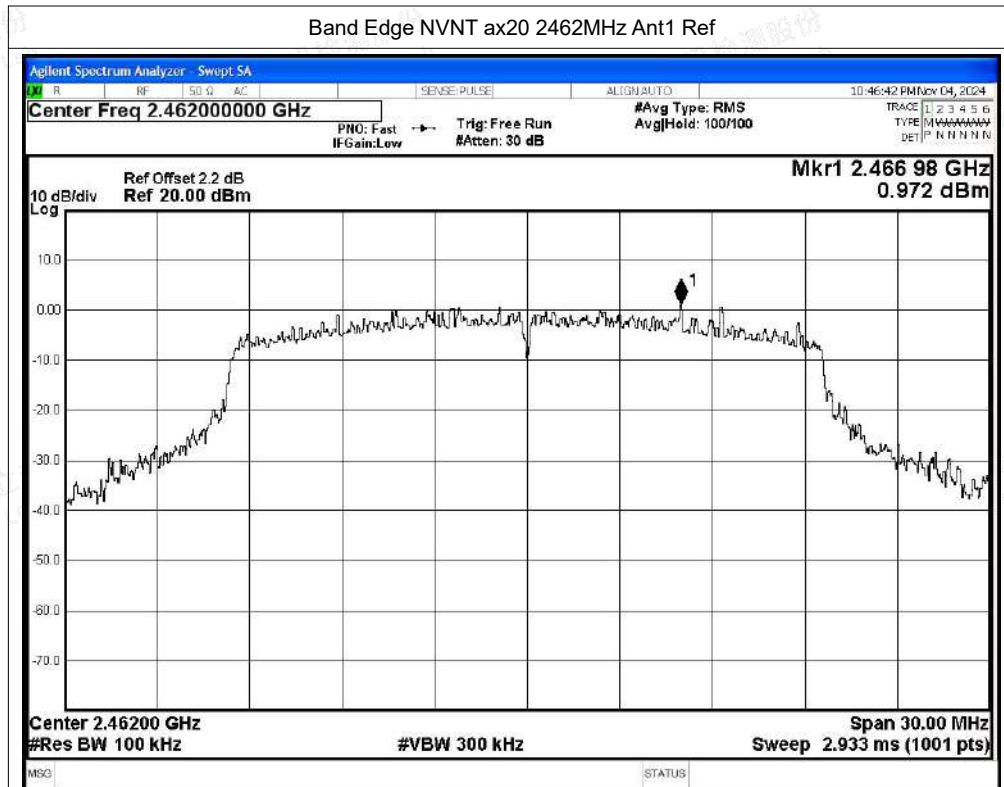














B.5 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant0	-45.69	-20	Pass
NVNT	b	2437	Ant0	-46.97	-20	Pass
NVNT	b	2462	Ant0	-48.54	-20	Pass
NVNT	g	2412	Ant0	-46.05	-20	Pass
NVNT	g	2437	Ant0	-44.69	-20	Pass
NVNT	g	2462	Ant0	-45.27	-20	Pass
NVNT	n20	2412	Ant0	-44.18	-20	Pass
NVNT	n20	2437	Ant0	-44.85	-20	Pass
NVNT	n20	2462	Ant0	-43.45	-20	Pass
NVNT	ax20	2412	Ant0	-42.8	-20	Pass
NVNT	ax20	2437	Ant0	-42.95	-20	Pass
NVNT	ax20	2462	Ant0	-39.32	-20	Pass

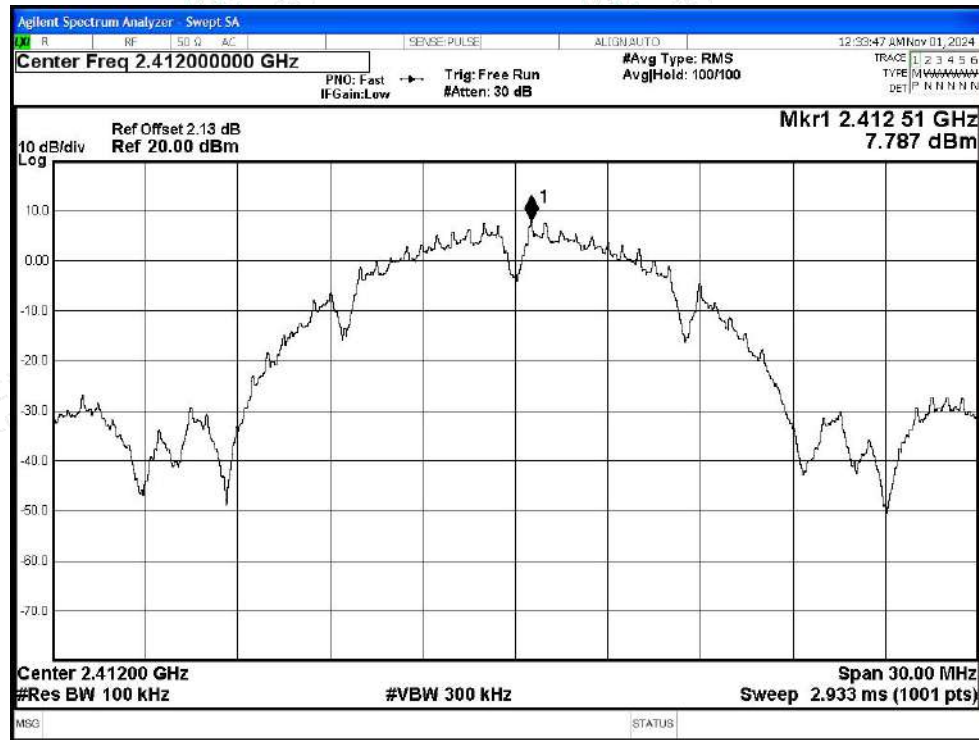


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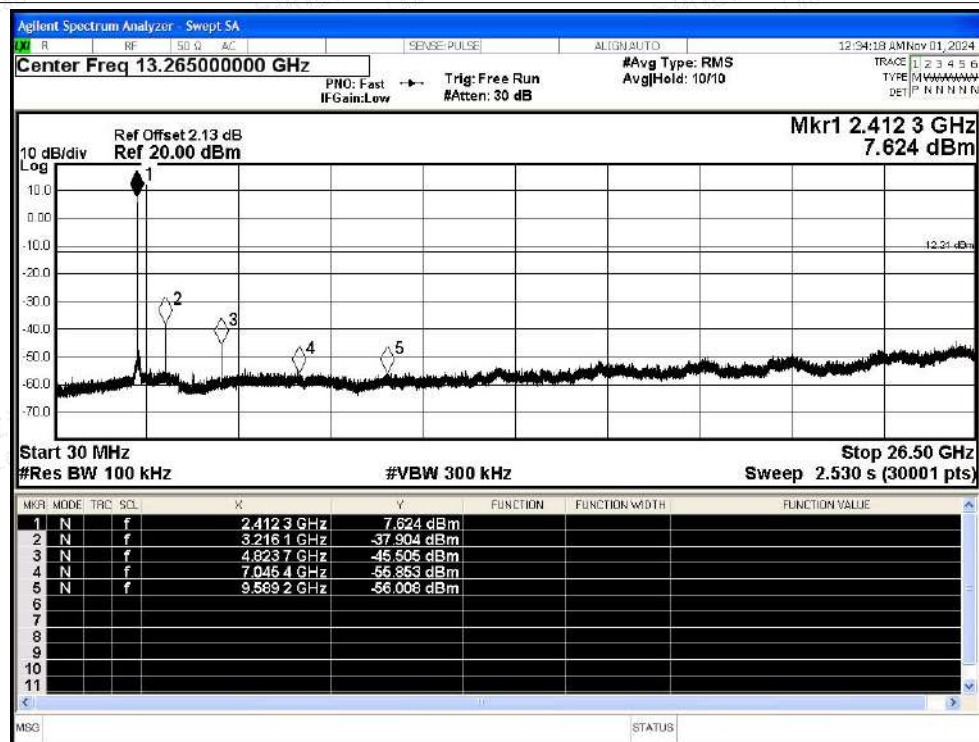


Test Graphs

Tx. Spurious NVNT b 2412MHz Ant0 Ref



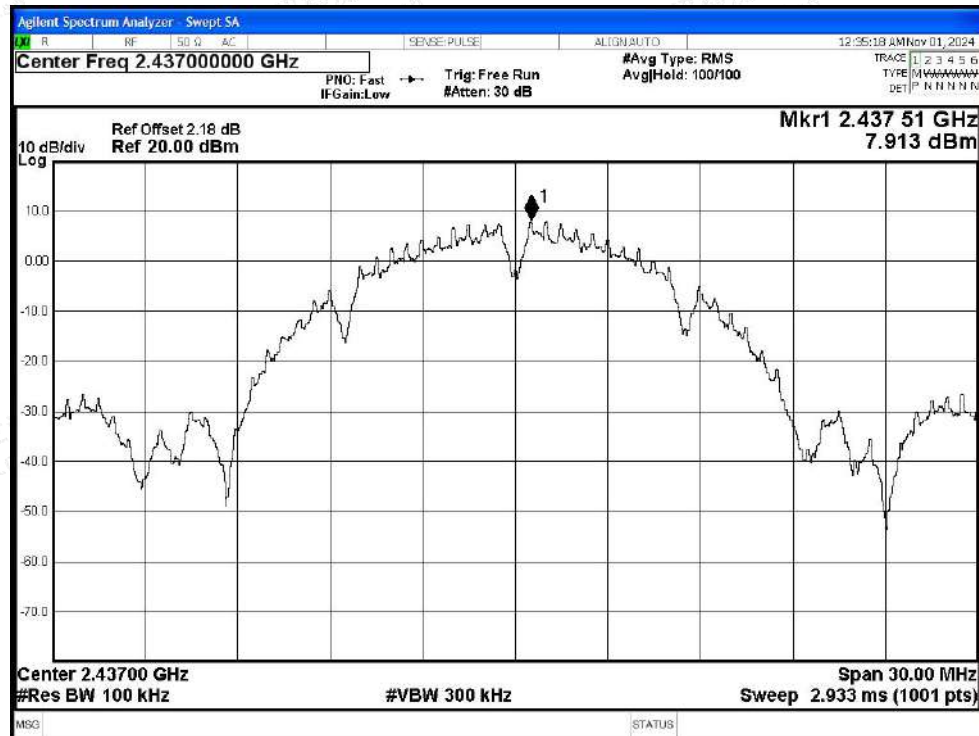
Tx. Spurious NVNT b 2412MHz Ant0 Emission



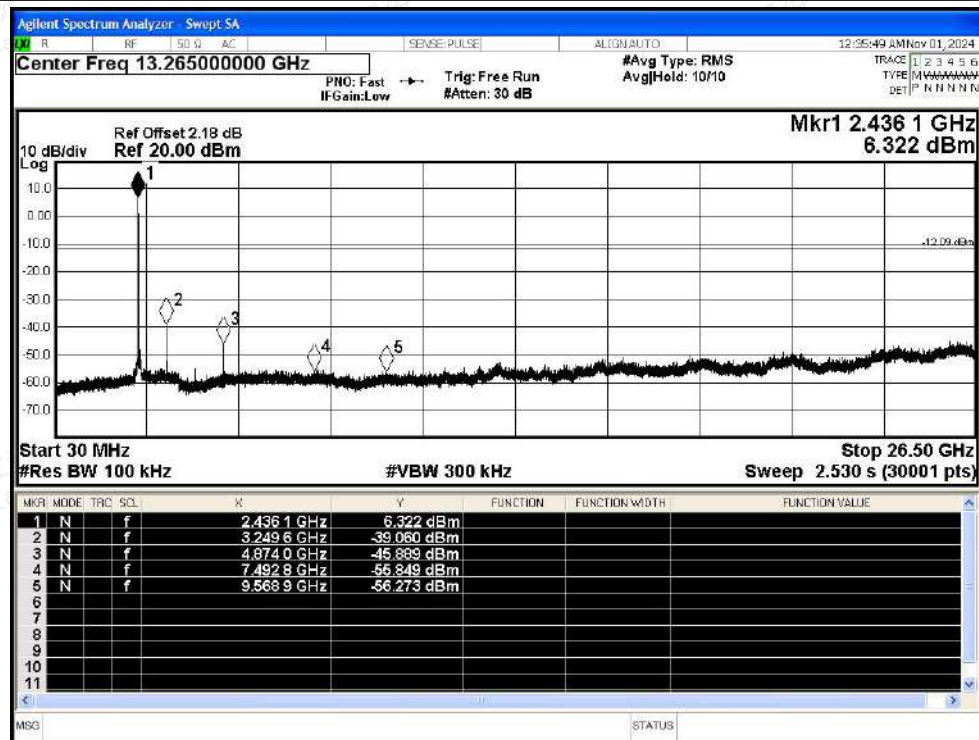
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Tx. Spurious NVNT b 2437MHz Ant0 Ref

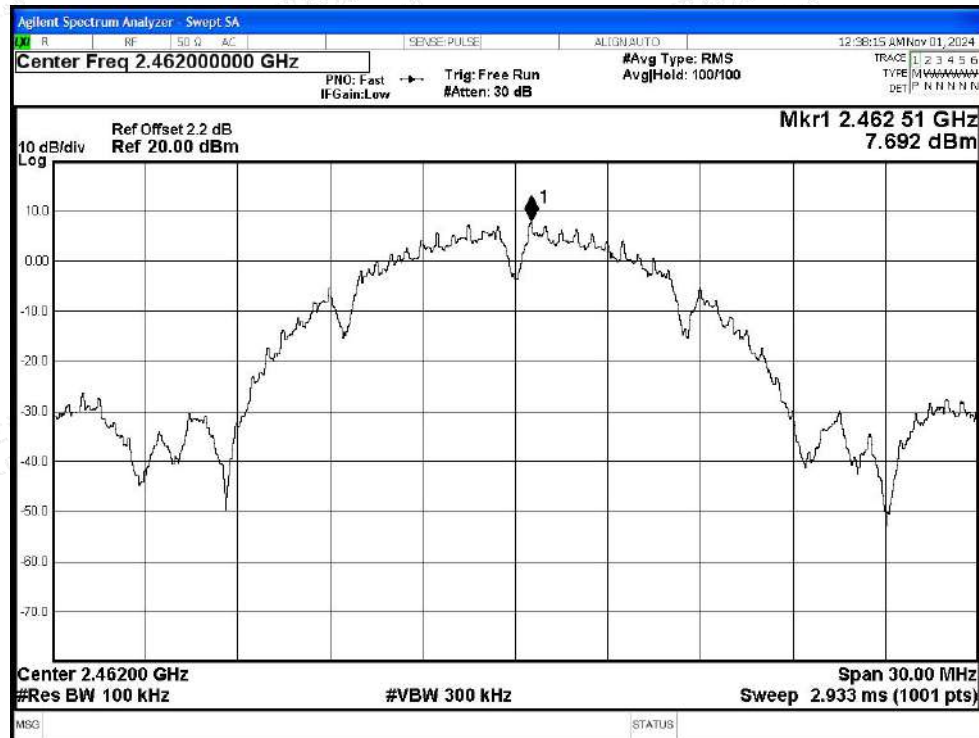


Tx. Spurious NVNT b 2437MHz Ant0 Emission

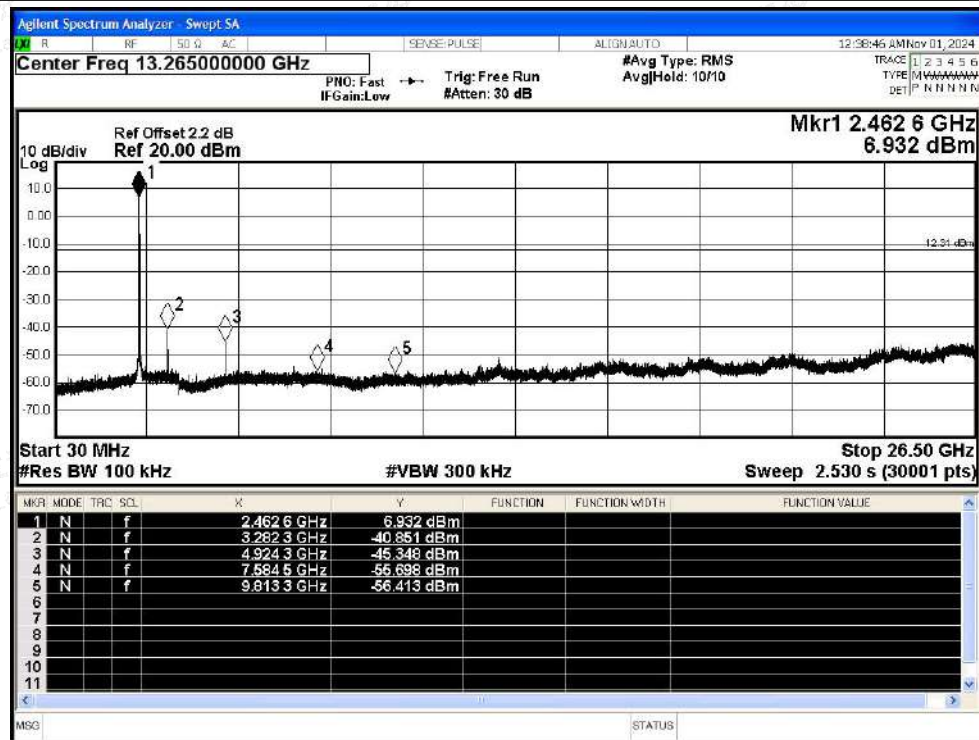




Tx. Spurious NVNT b 2462MHz Ant0 Ref

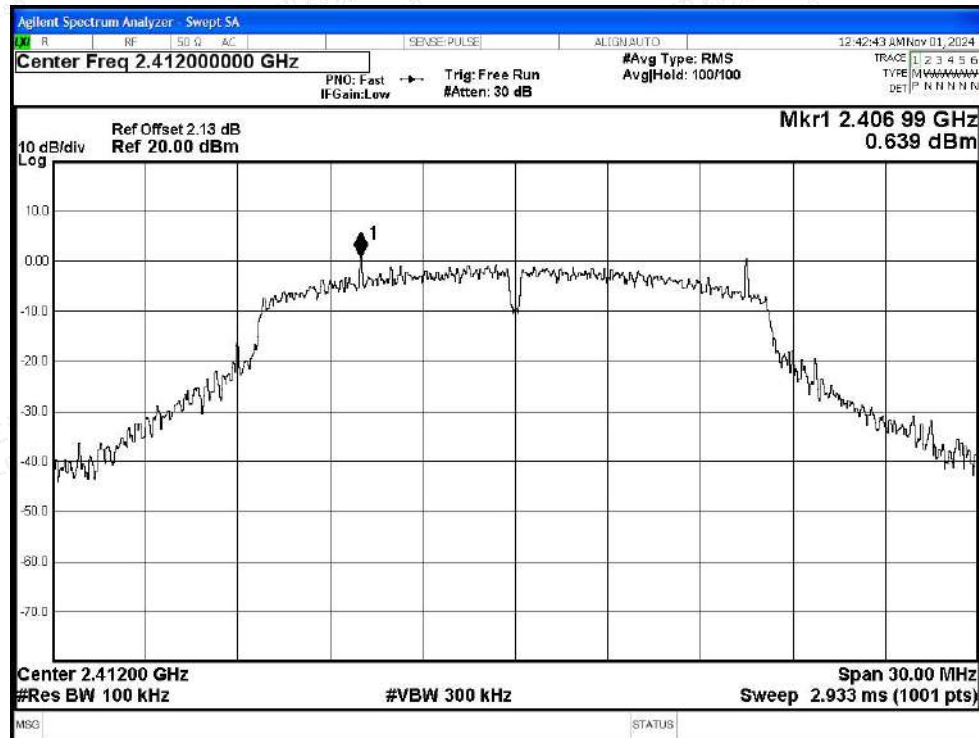


Tx. Spurious NVNT b 2462MHz Ant0 Emission

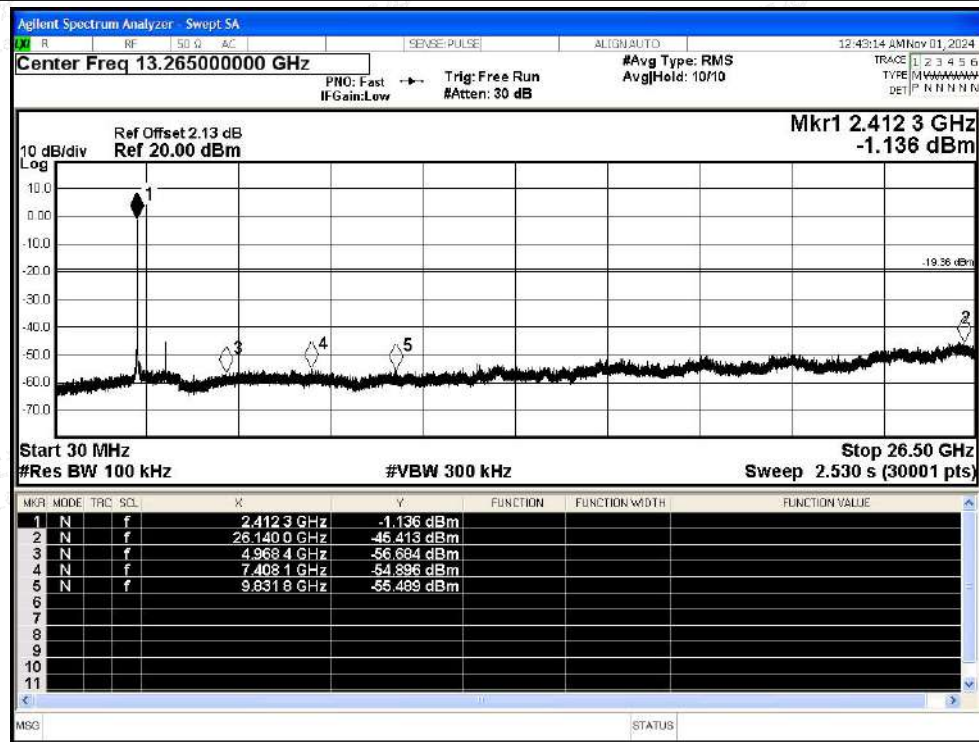




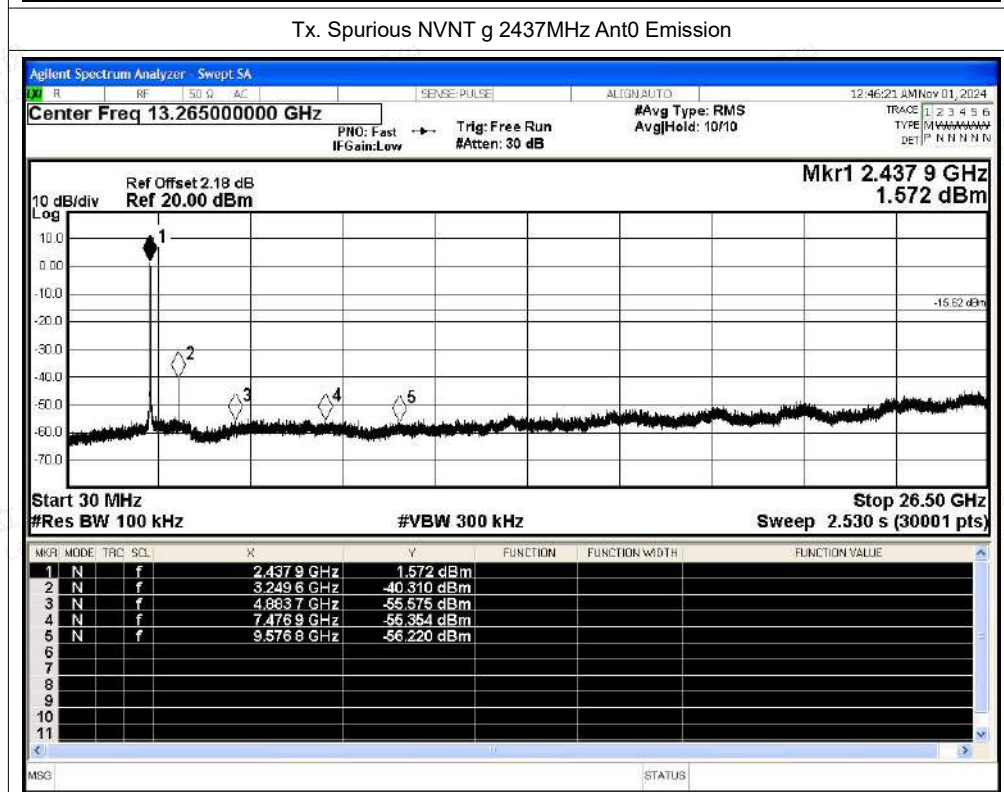
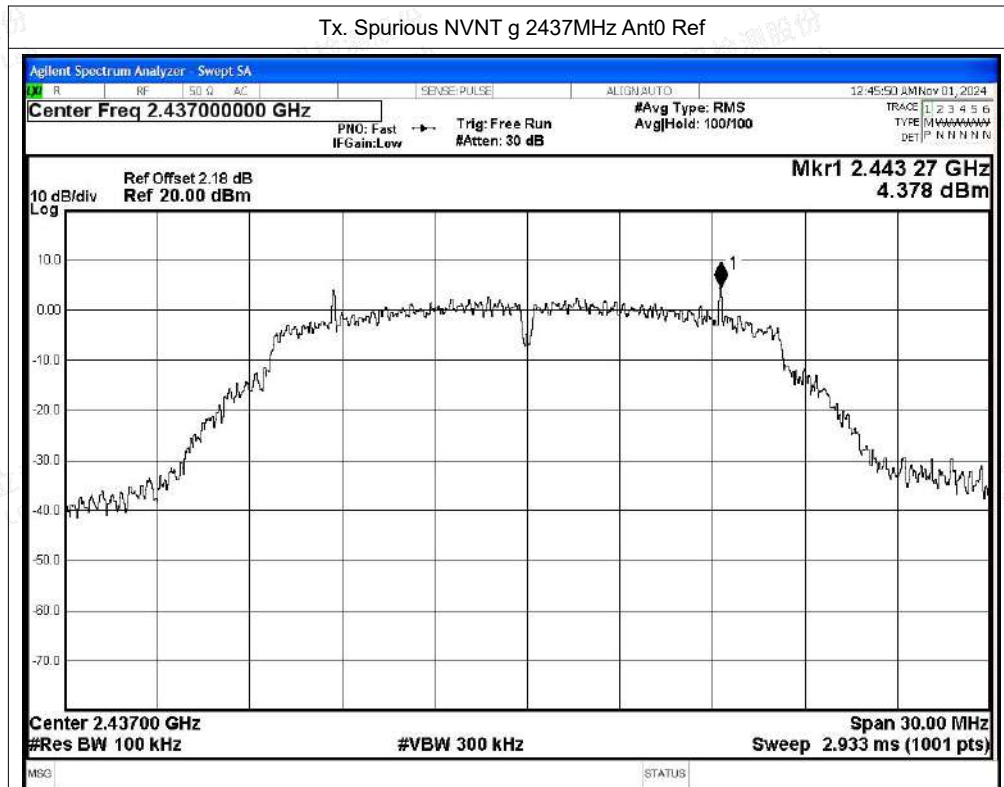
Tx. Spurious NVNT g 2412MHz Ant0 Ref



Tx. Spurious NVNT g 2412MHz Ant0 Emission

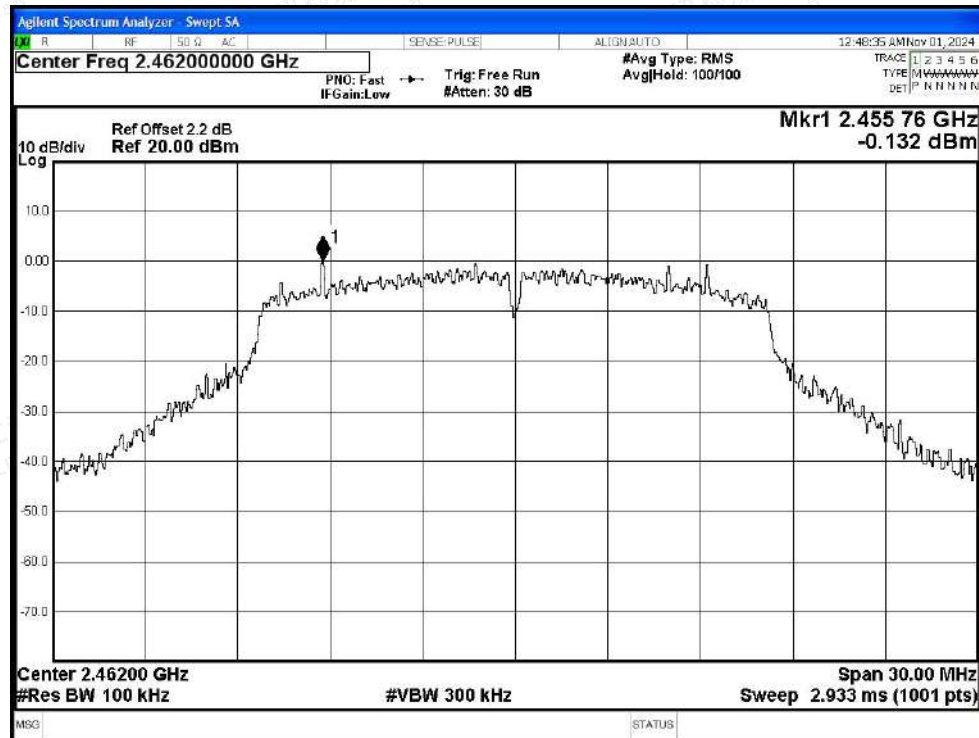


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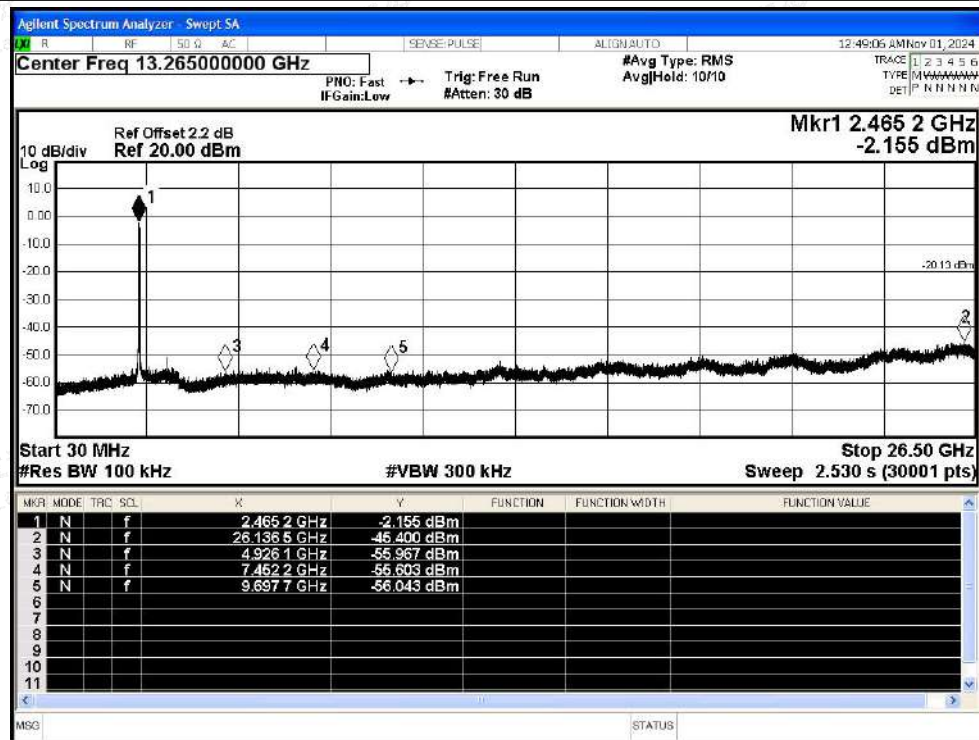




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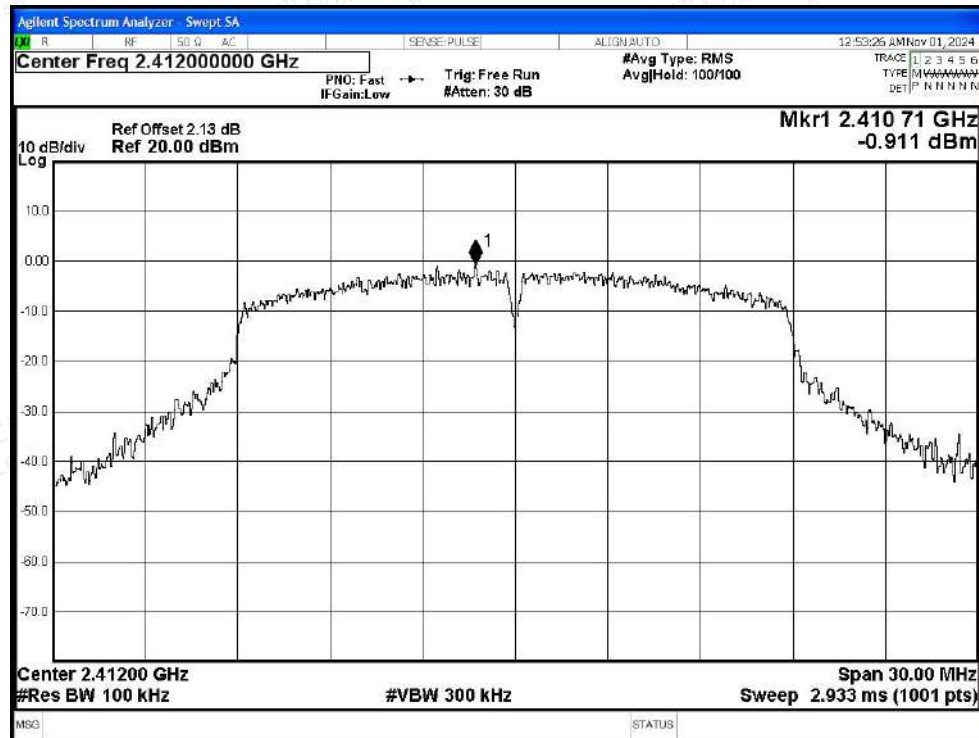


Tx. Spurious NVNT g 2462MHz Ant0 Emission





Tx. Spurious NVNT n20 2412MHz Ant0 Ref



Tx. Spurious NVNT n20 2412MHz Ant0 Emission

