



Appendix B for 5.2GWIFI Test Data

Product Name: Portable Navigation Recorder

Test Model: A3073

Environmental Conditions

Temperature:	23.8°C
Relative Humidity:	52%
ATM Pressure:	101.0 kPa
Test Engineer:	Kevin Yang
Supervised by:	Baret Wu



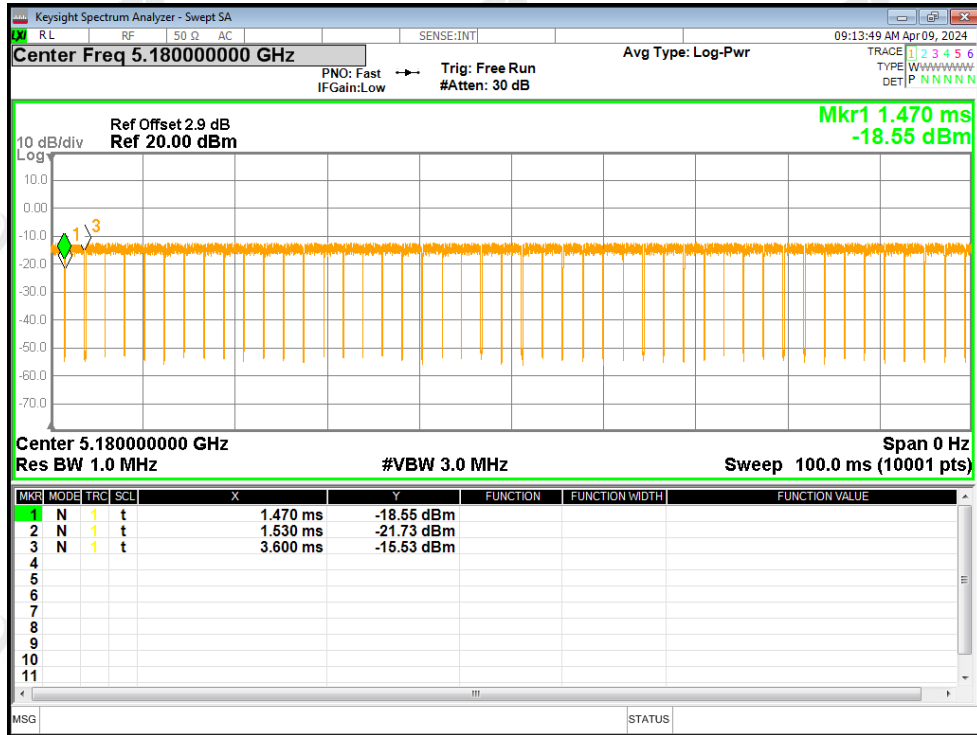
B1 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	Ant1	97.18	0.12	0.48
NVNT	a	5200	Ant1	98.1	0	0.49
NVNT	a	5240	Ant1	95.37	0.21	0.49
NVNT	n20	5180	Ant1	97.96	0.09	0.52
NVNT	n20	5200	Ant1	97.96	0.09	0.52
NVNT	n20	5240	Ant1	93.66	0.28	0.52
NVNT	n40	5190	Ant1	90	0.46	1.11
NVNT	n40	5230	Ant1	85.85	0.66	1.1

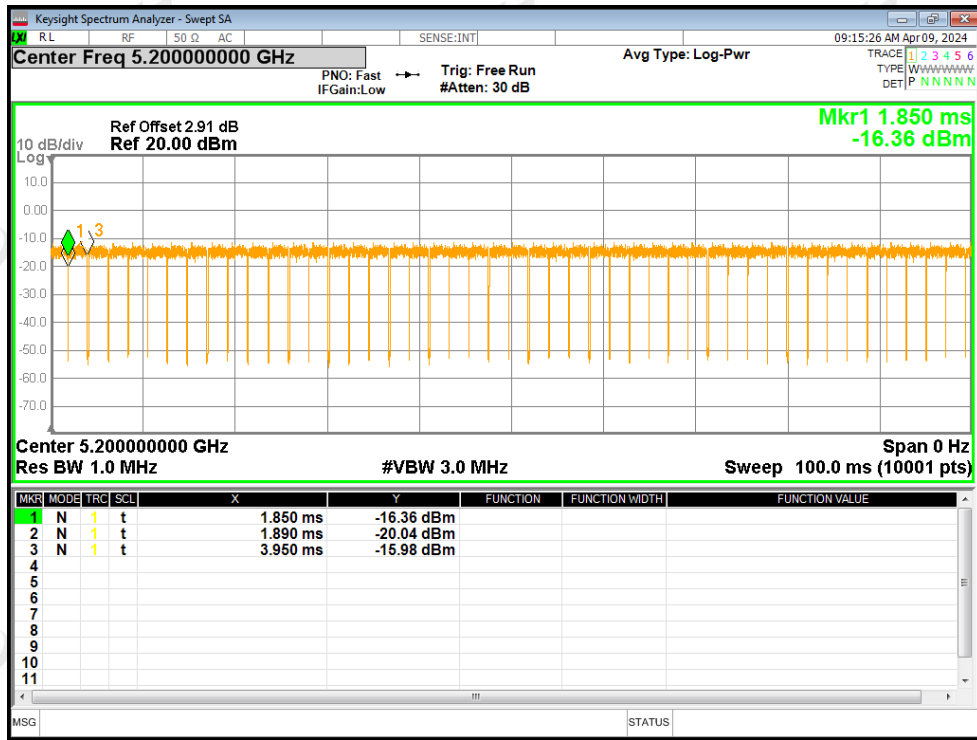


Test Graphs

Duty Cycle NVNT a 5180MHz Ant1

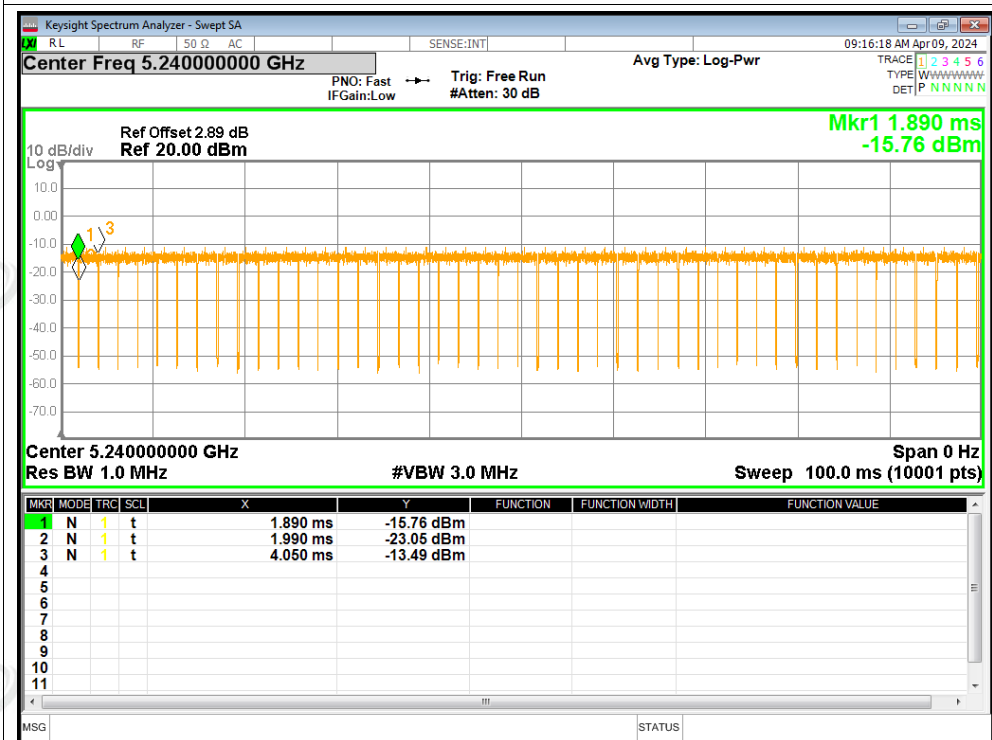


Duty Cycle NVNT a 5200MHz Ant1

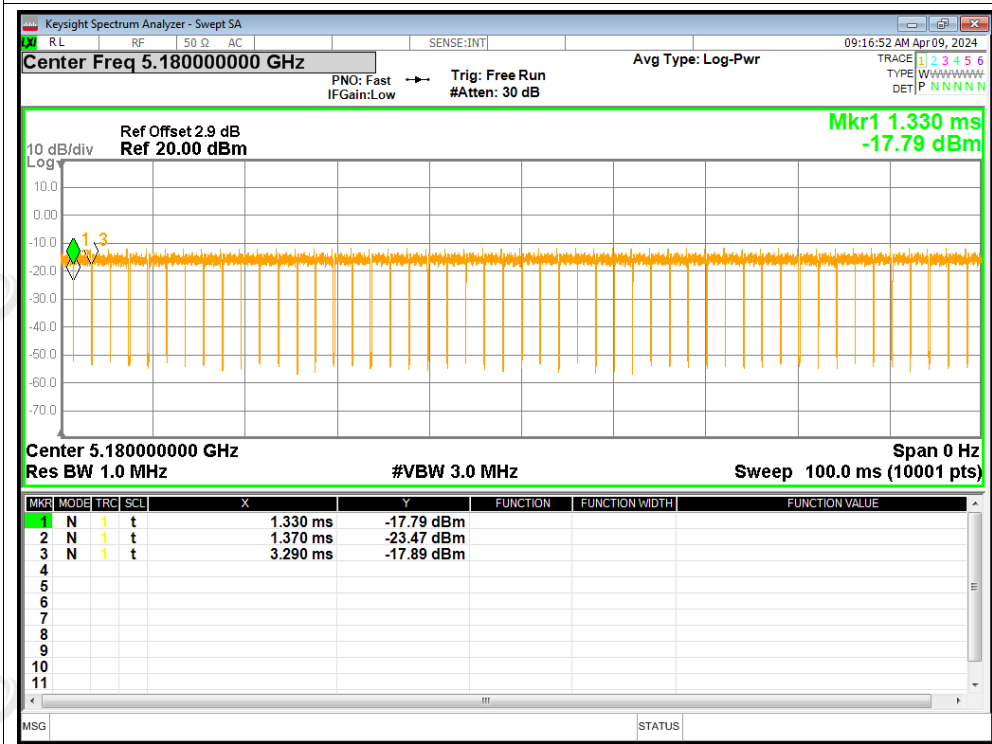




Duty Cycle NVNT a 5240MHz Ant1

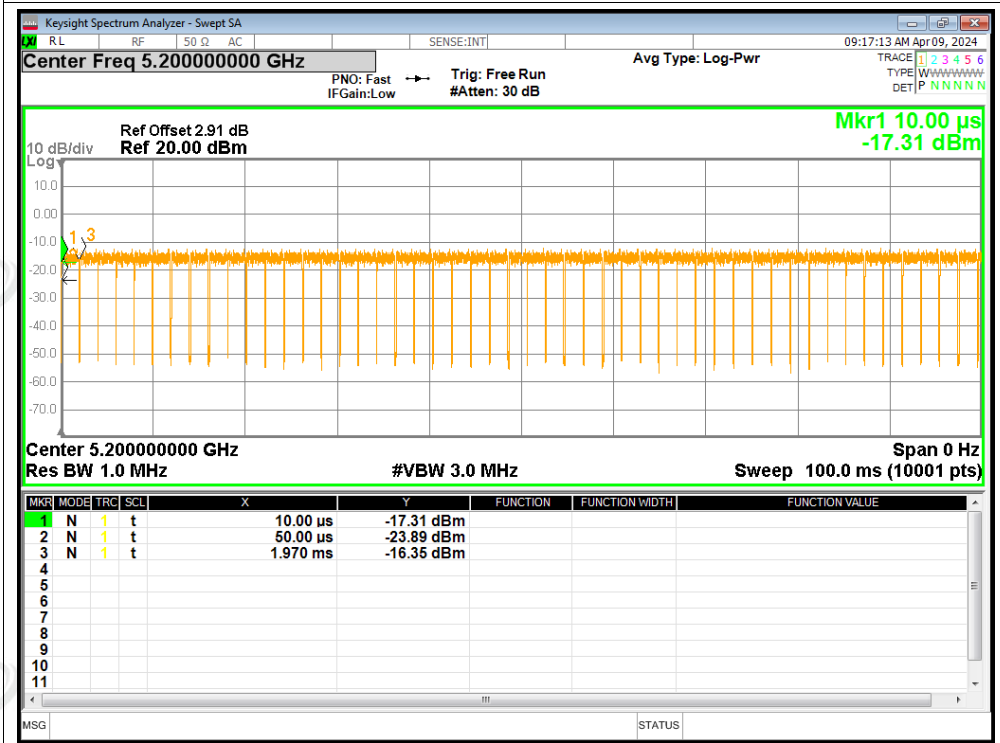


Duty Cycle NVNT n20 5180MHz Ant1

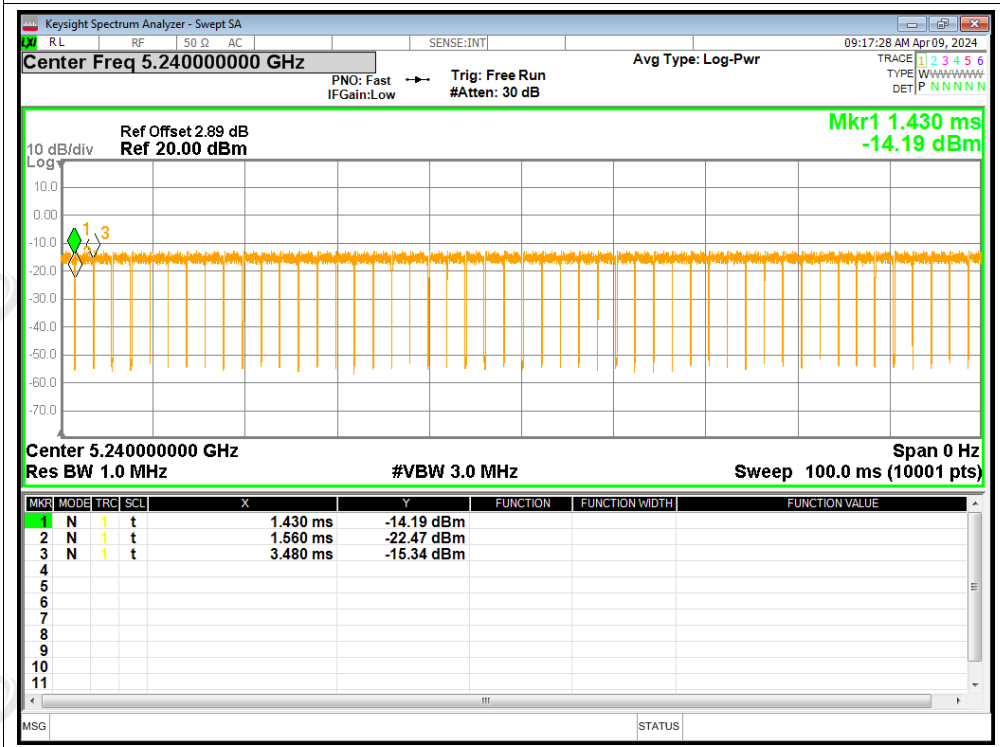




Duty Cycle NVNT n20 5200MHz Ant1

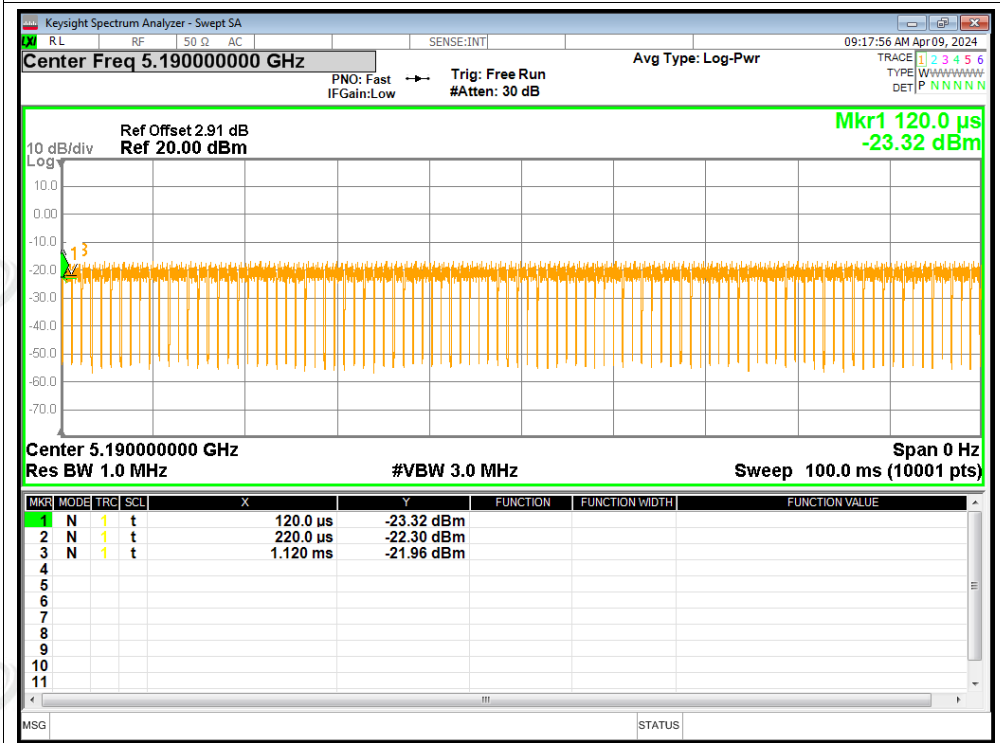


Duty Cycle NVNT n20 5240MHz Ant1





Duty Cycle NVNT n40 5190MHz Ant1



Duty Cycle NVNT n40 5230MHz Ant1





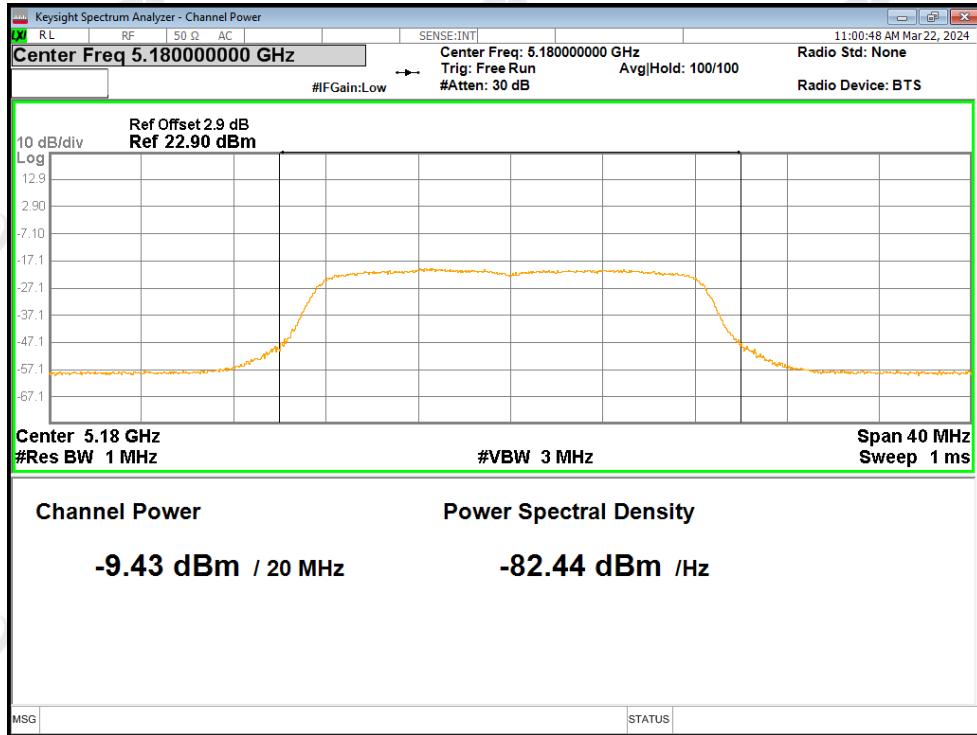
B2. Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	-8.46	24	Pass
NVNT	a	5200	Ant1	-8.22	24	Pass
NVNT	a	5240	Ant1	-7.72	24	Pass
NVNT	n20	5180	Ant1	-8.82	24	Pass
NVNT	n20	5200	Ant1	-8.54	24	Pass
NVNT	n20	5240	Ant1	-7.77	24	Pass
NVNT	n40	5190	Ant1	-6.56	24	Pass
NVNT	n40	5230	Ant1	-7.5	24	Pass

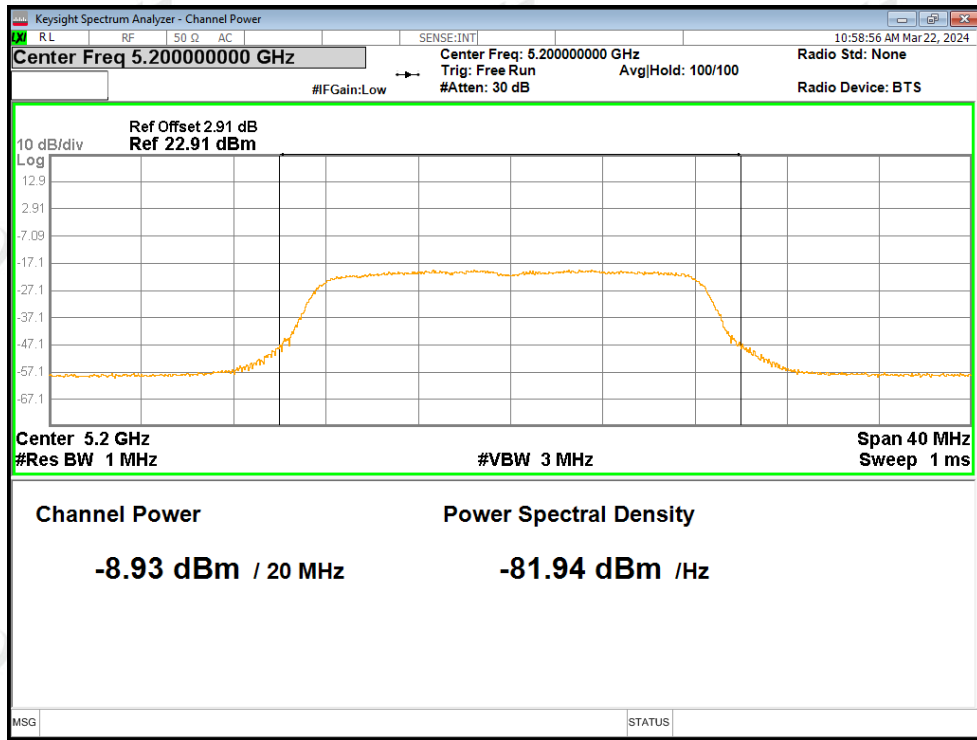


Test Graphs

Power NVNT a 5180MHz Ant1

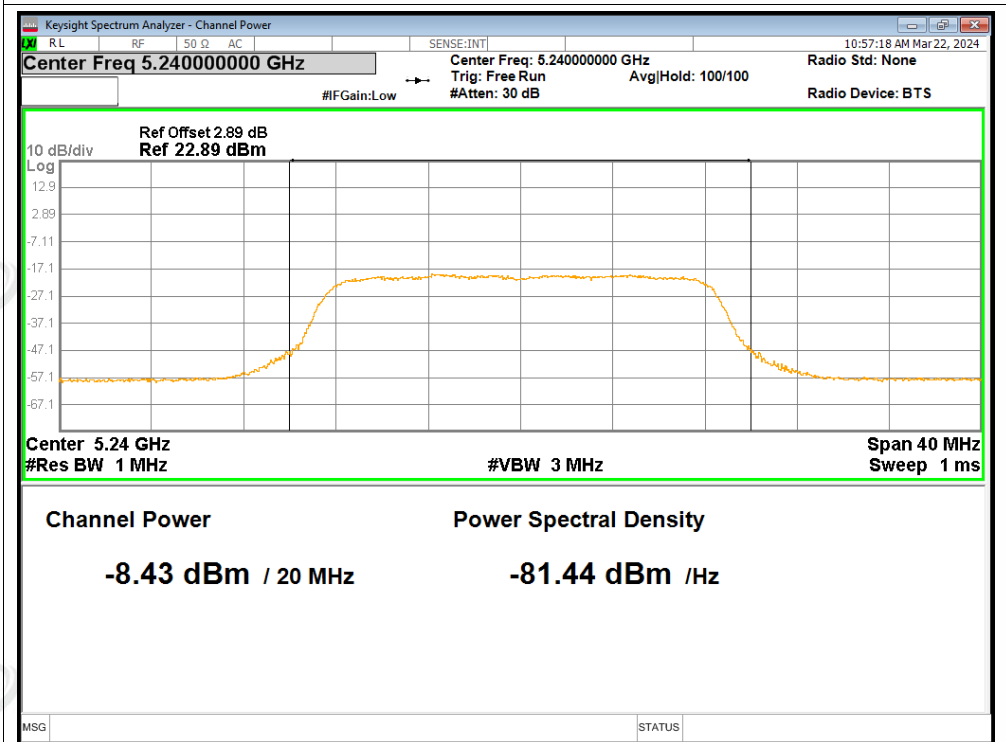


Power NVNT a 5200MHz Ant1

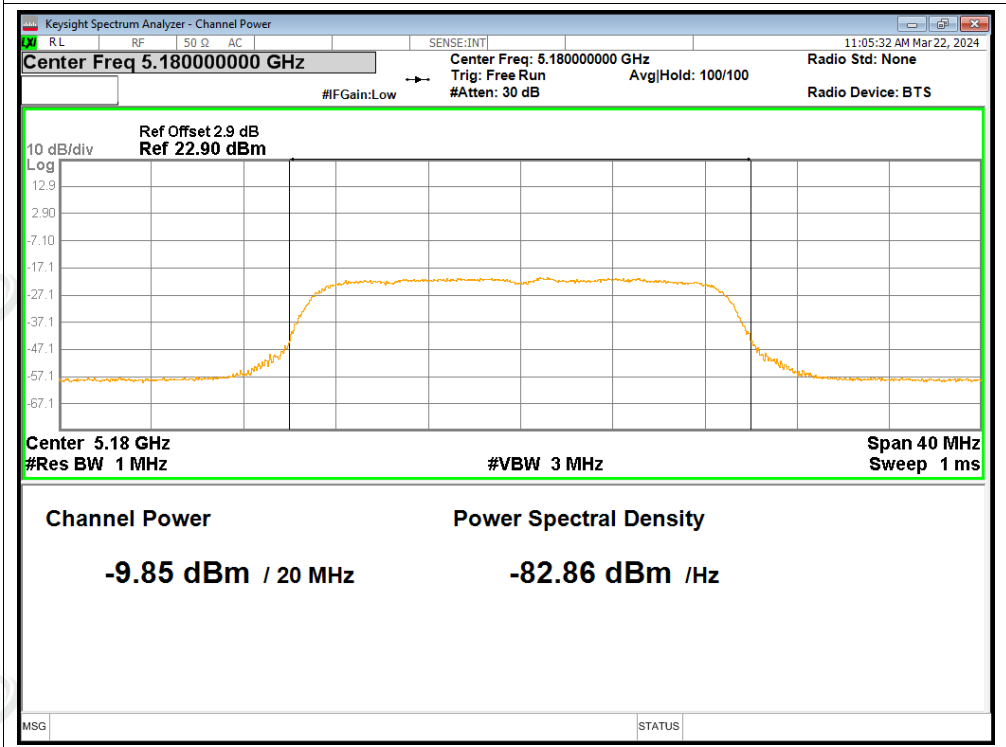




Power NVNT a 5240MHz Ant1

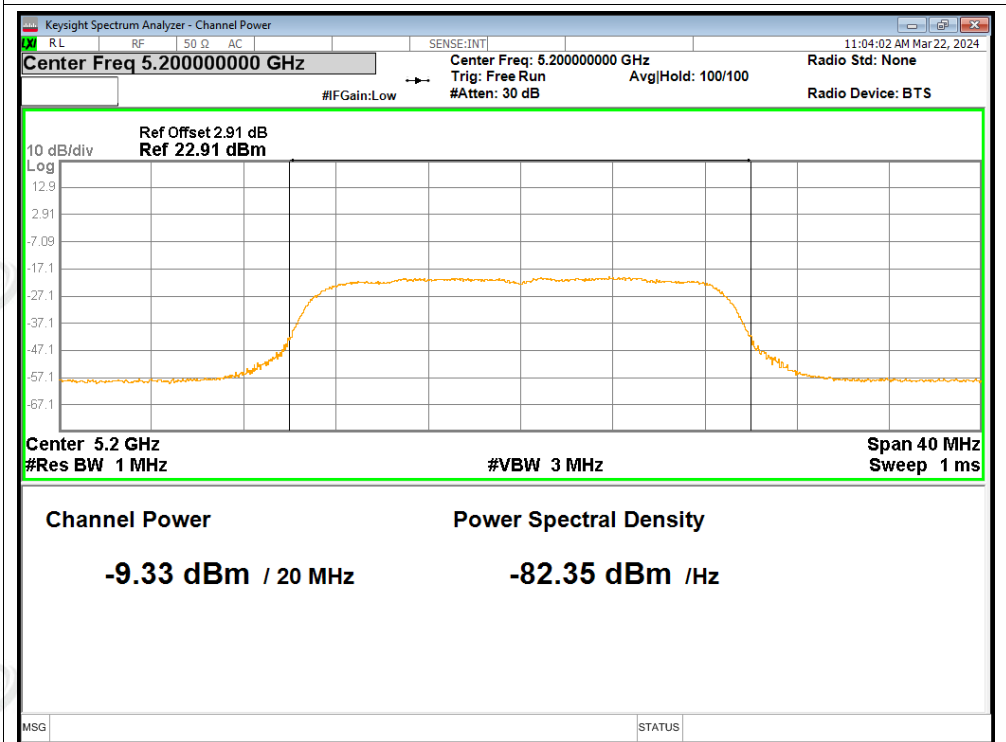


Power NVNT n20 5180MHz Ant1

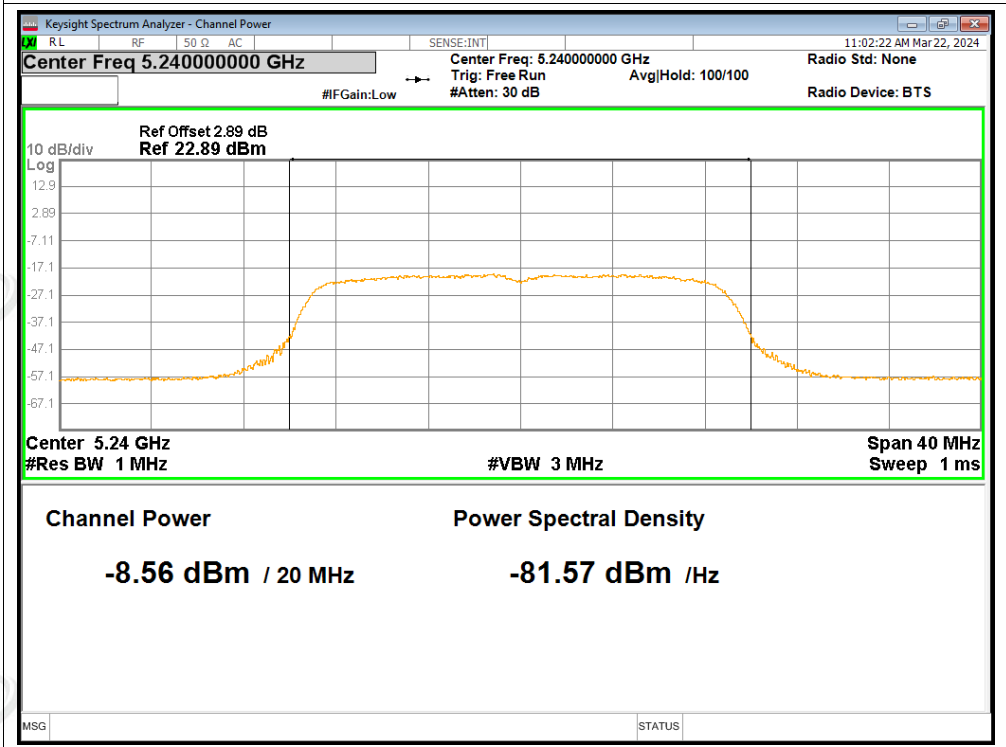




Power NVNT n20 5200MHz Ant1

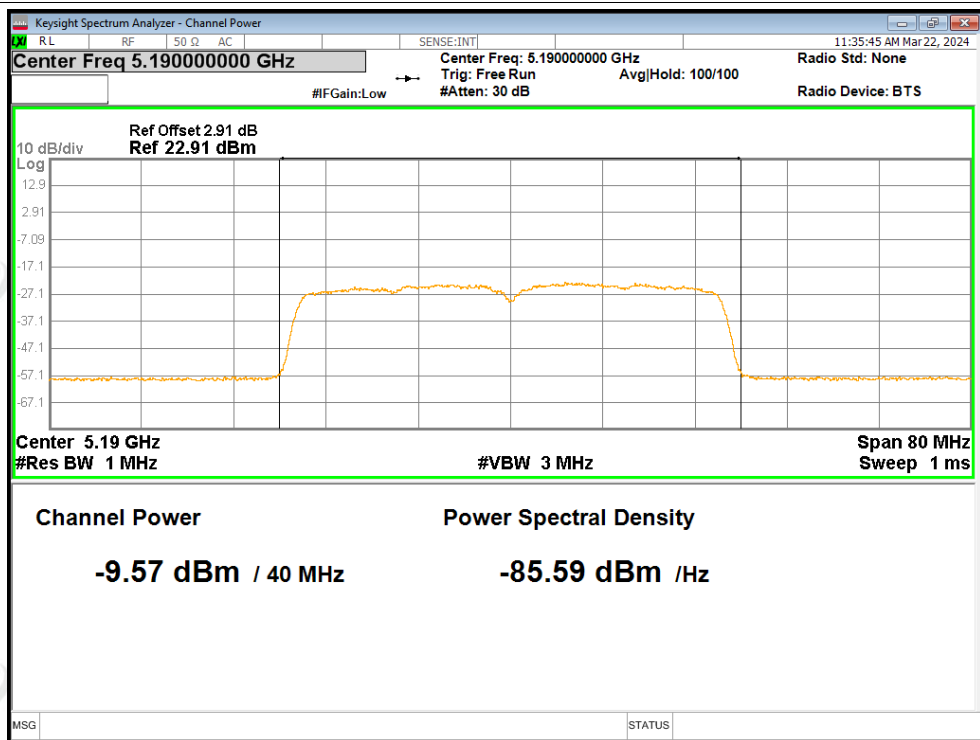


Power NVNT n20 5240MHz Ant1

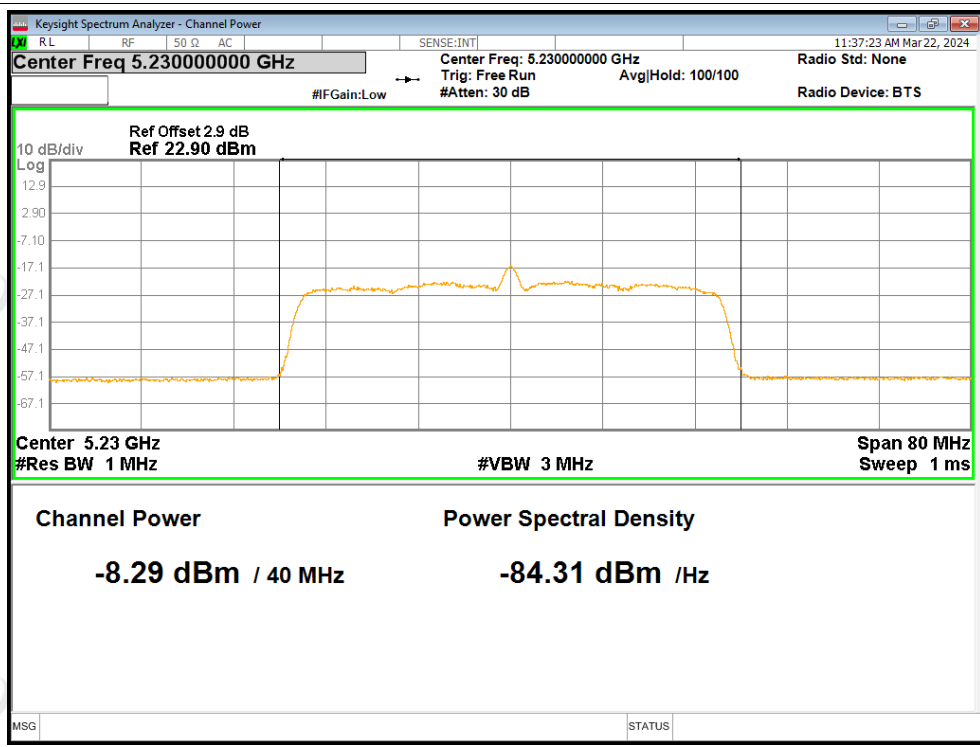




Power NVNT n40 5190MHz Ant1



Power NVNT n40 5230MHz Ant1





B3. -26dB Bandwidth

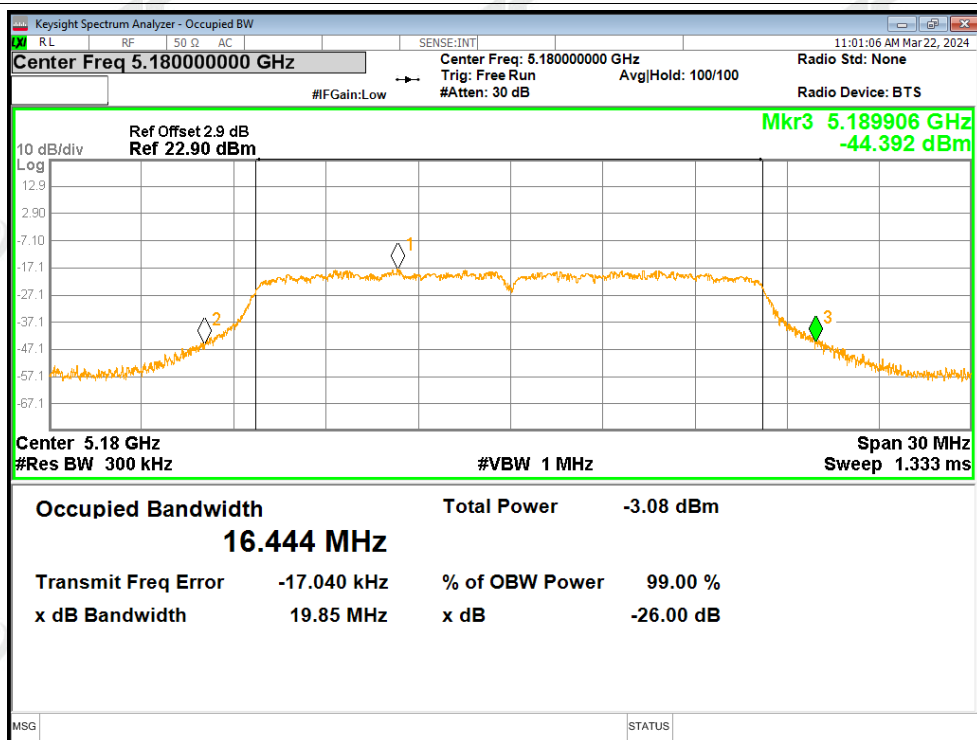
Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	Ant1	19.846	Pass
NVNT	a	5200	Ant1	19.74	Pass
NVNT	a	5240	Ant1	19.733	Pass
NVNT	n20	5180	Ant1	21.265	Pass
NVNT	n20	5200	Ant1	21.069	Pass
NVNT	n20	5240	Ant1	20.989	Pass
NVNT	n40	5190	Ant1	37.972	Pass
NVNT	n40	5230	Ant1	37.427	Pass



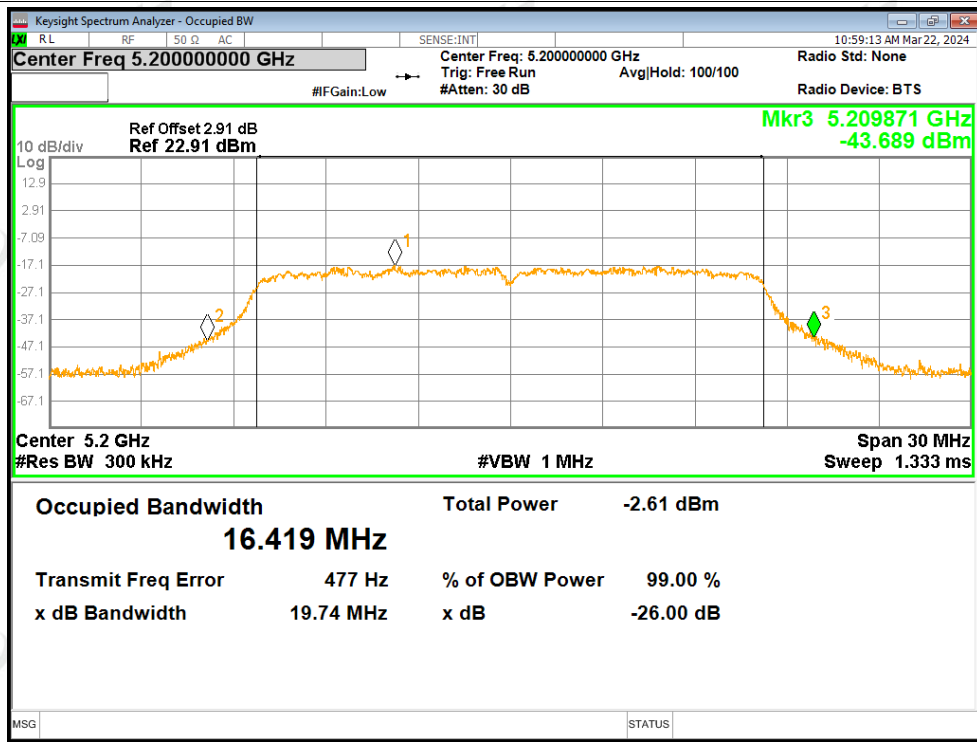


Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant1

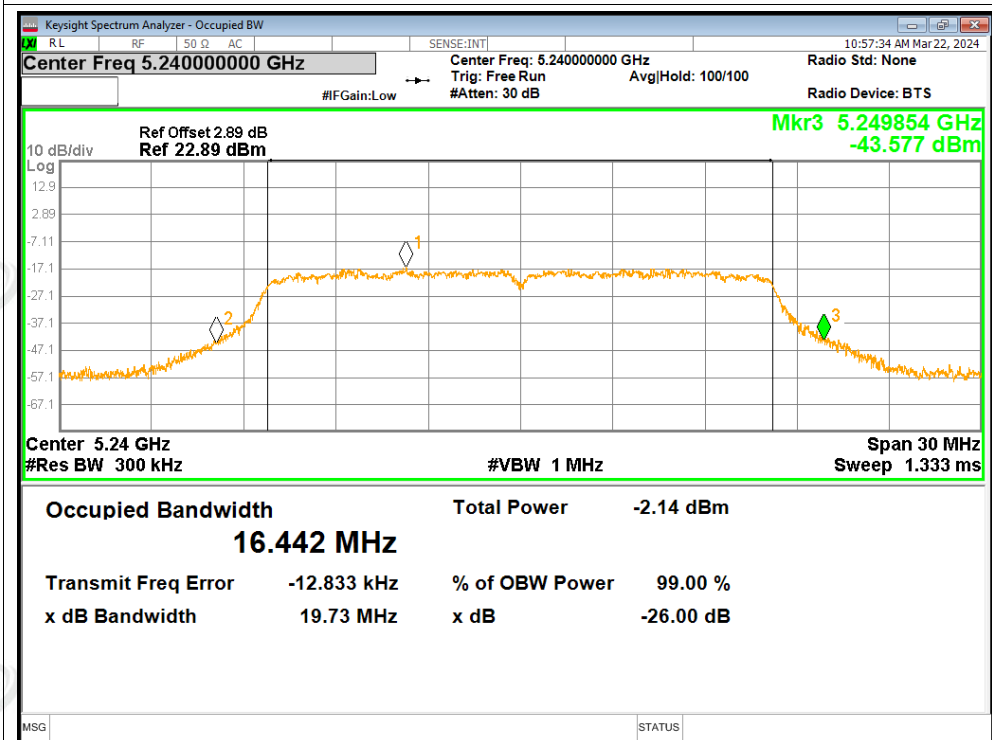


-26dB Bandwidth NVNT a 5200MHz Ant1





-26dB Bandwidth NVNT a 5240MHz Ant1



-26dB Bandwidth NVNT n20 5180MHz Ant1

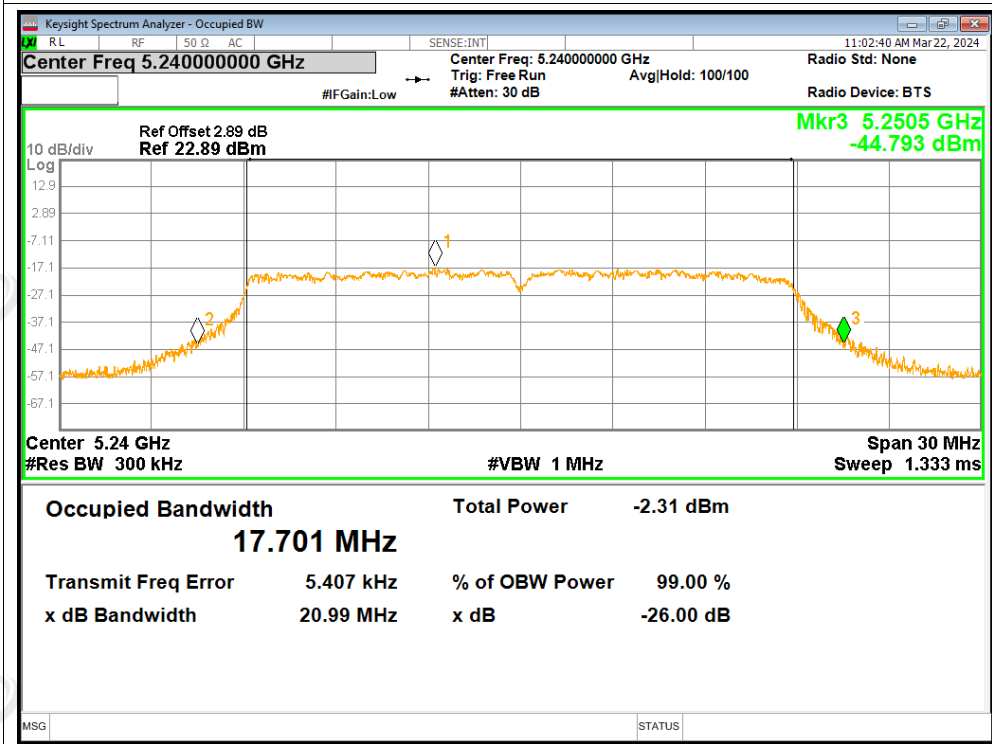




-26dB Bandwidth NVNT n20 5200MHz Ant1

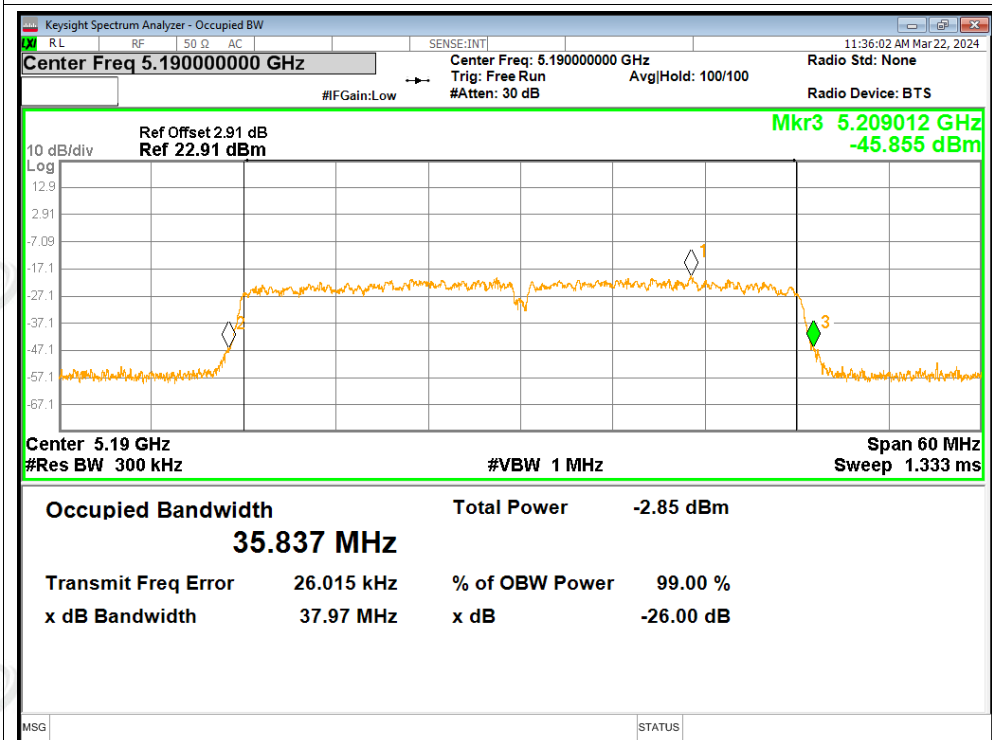


-26dB Bandwidth NVNT n20 5240MHz Ant1

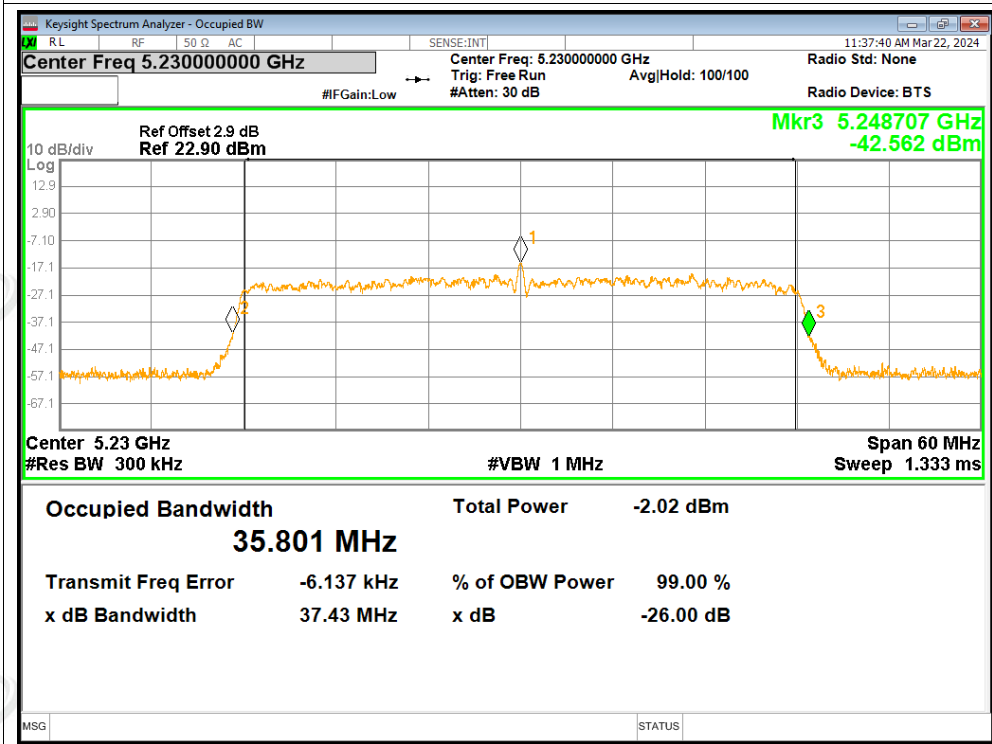




-26dB Bandwidth NVNT n40 5190MHz Ant1



-26dB Bandwidth NVNT n40 5230MHz Ant1





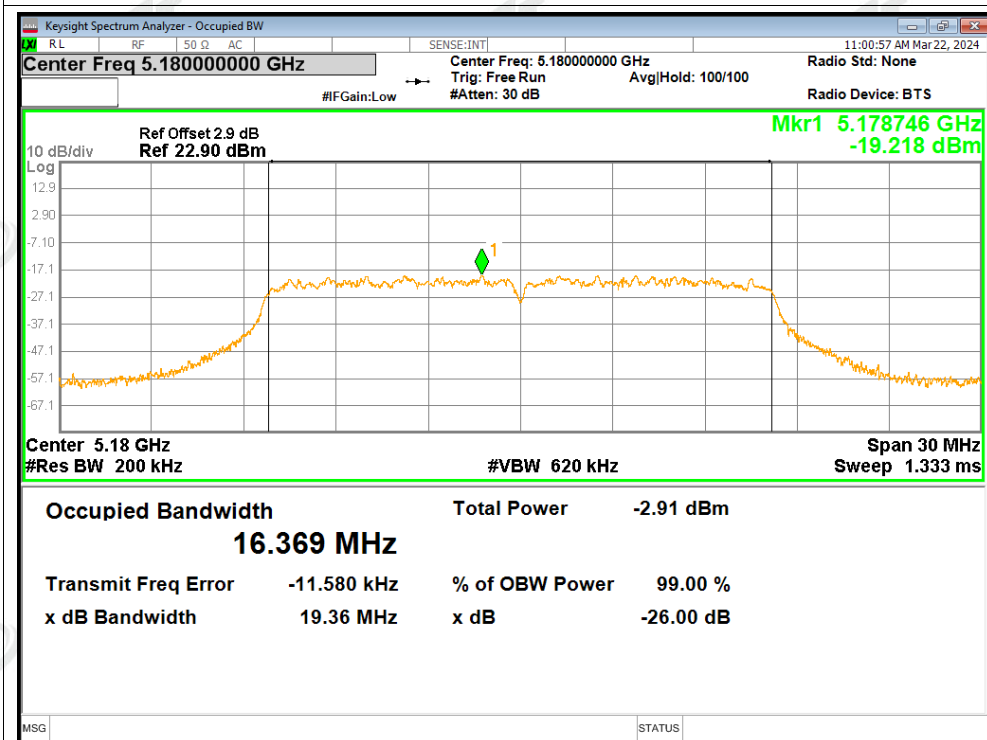
B4. Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	a	5180	Ant1	16.369
NVNT	a	5200	Ant1	16.357
NVNT	a	5240	Ant1	16.361
NVNT	n20	5180	Ant1	17.612
NVNT	n20	5200	Ant1	17.602
NVNT	n20	5240	Ant1	17.6
NVNT	n40	5190	Ant1	35.887
NVNT	n40	5230	Ant1	35.827

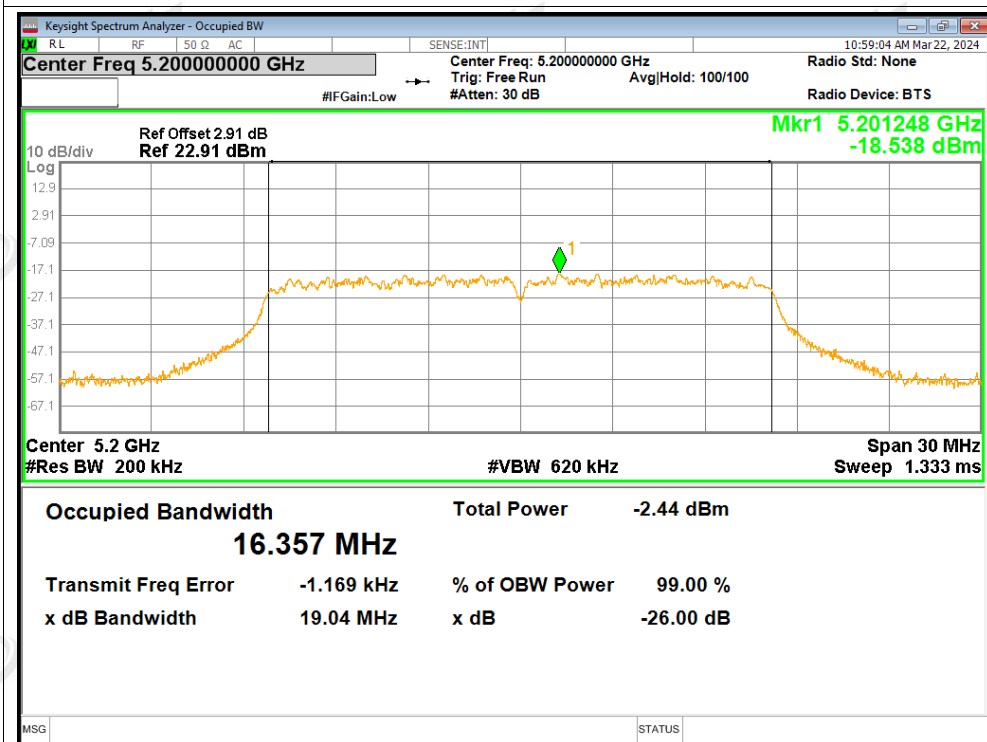


Test Graphs

OBW NVNT a 5180MHz Ant1

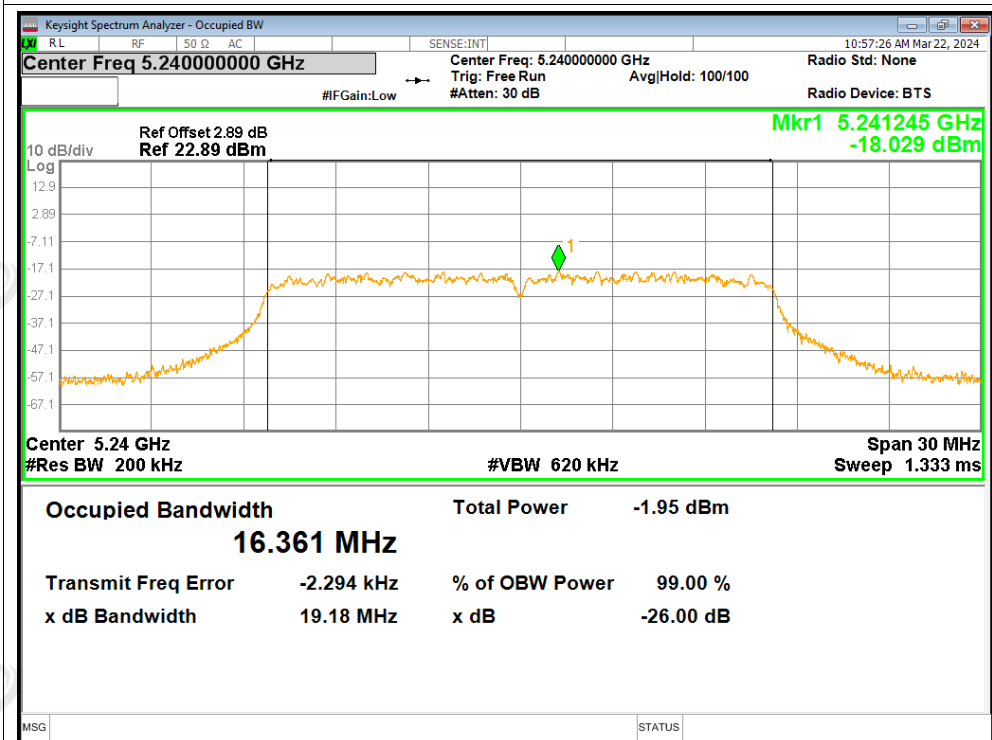


OBW NVNT a 5200MHz Ant1

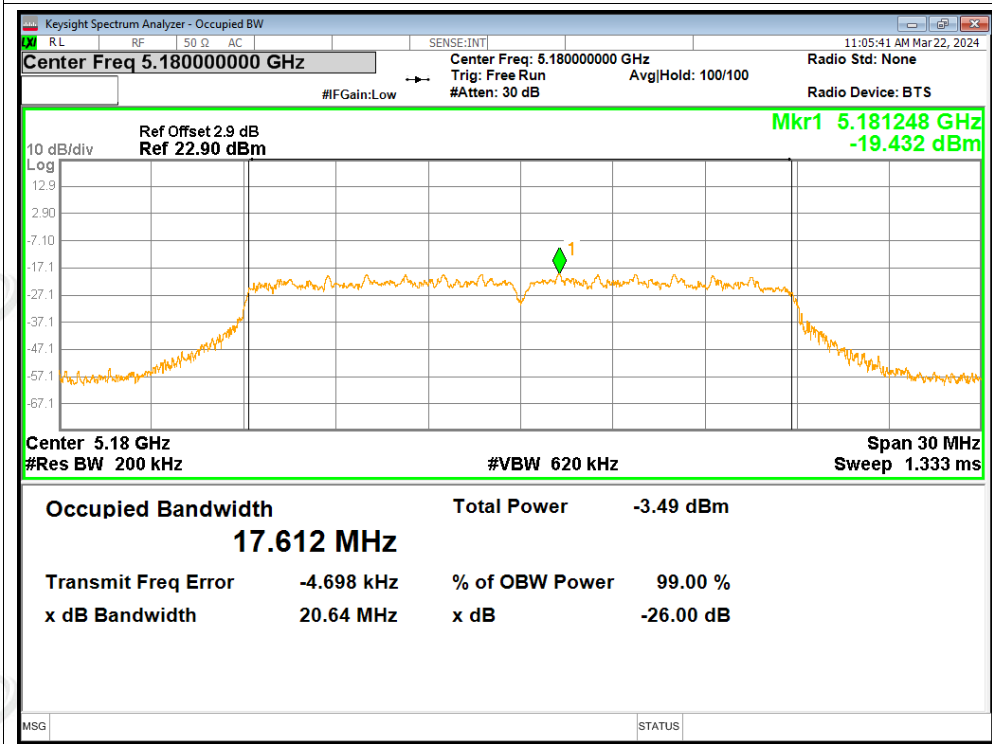




OBW NVNT a 5240MHz Ant1

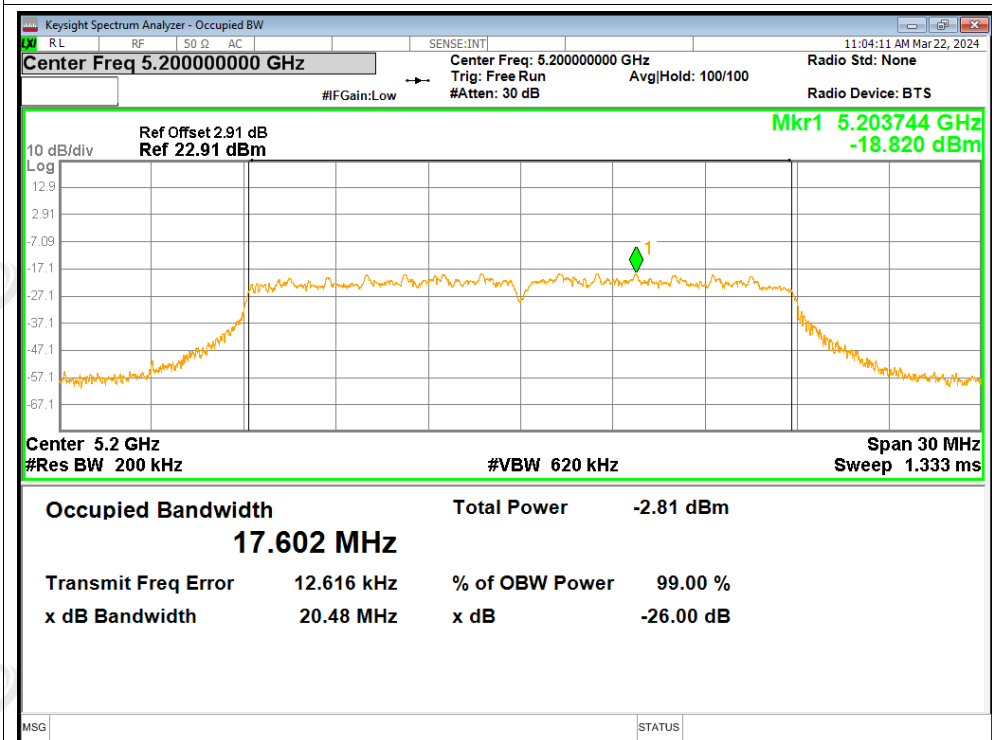


OBW NVNT n20 5180MHz Ant1

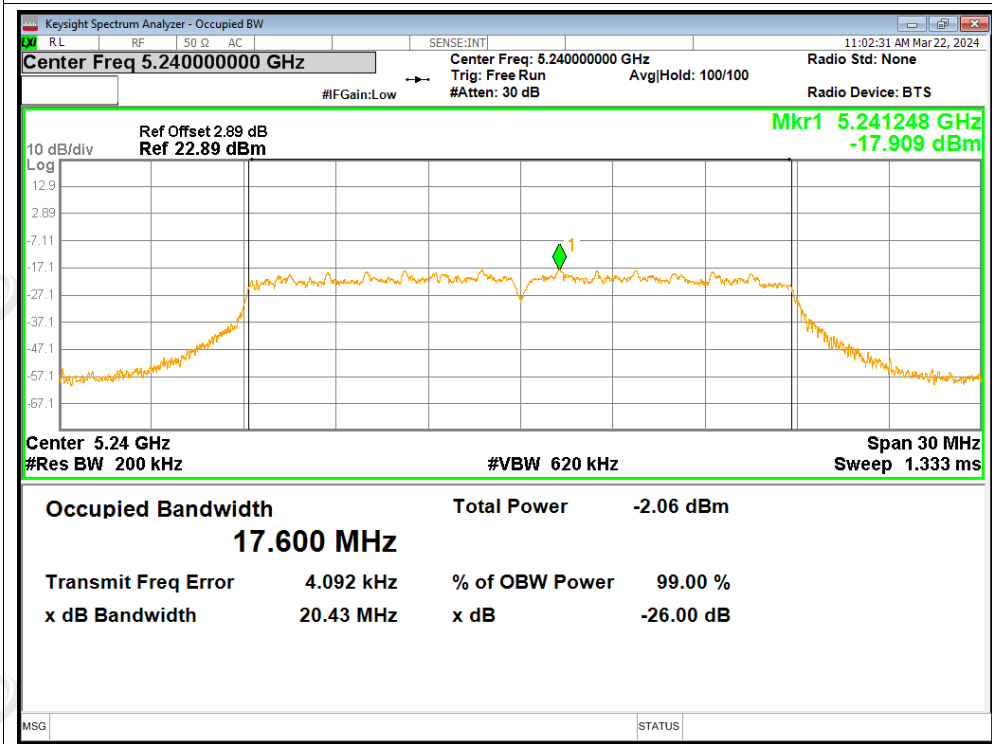




OBW NVNT n20 5200MHz Ant1

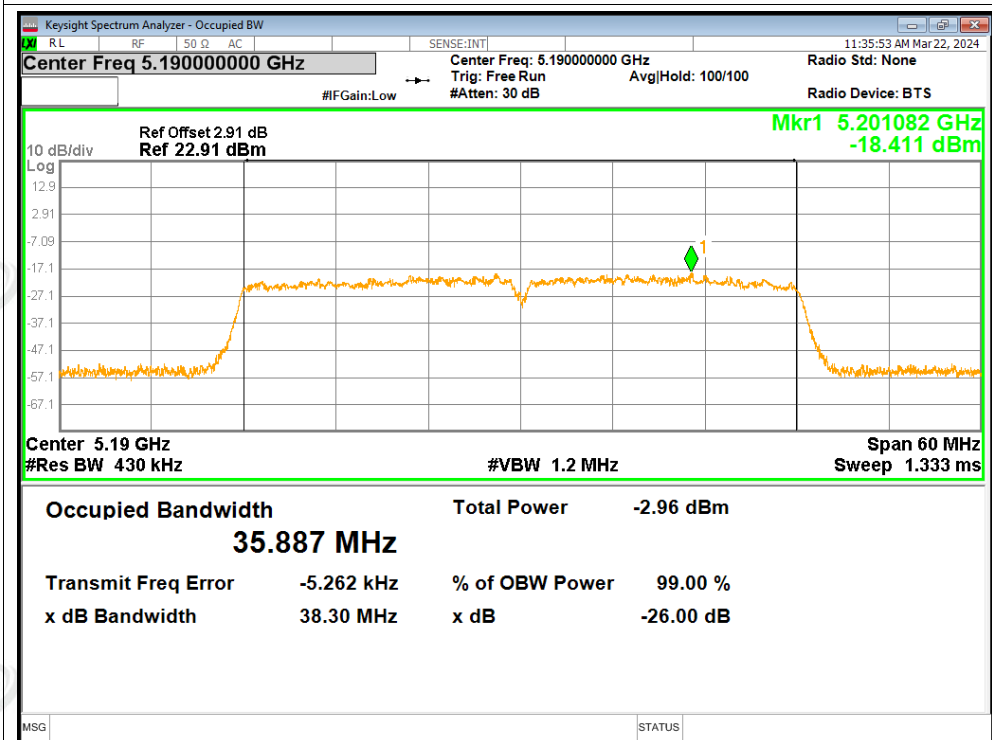


OBW NVNT n20 5240MHz Ant1

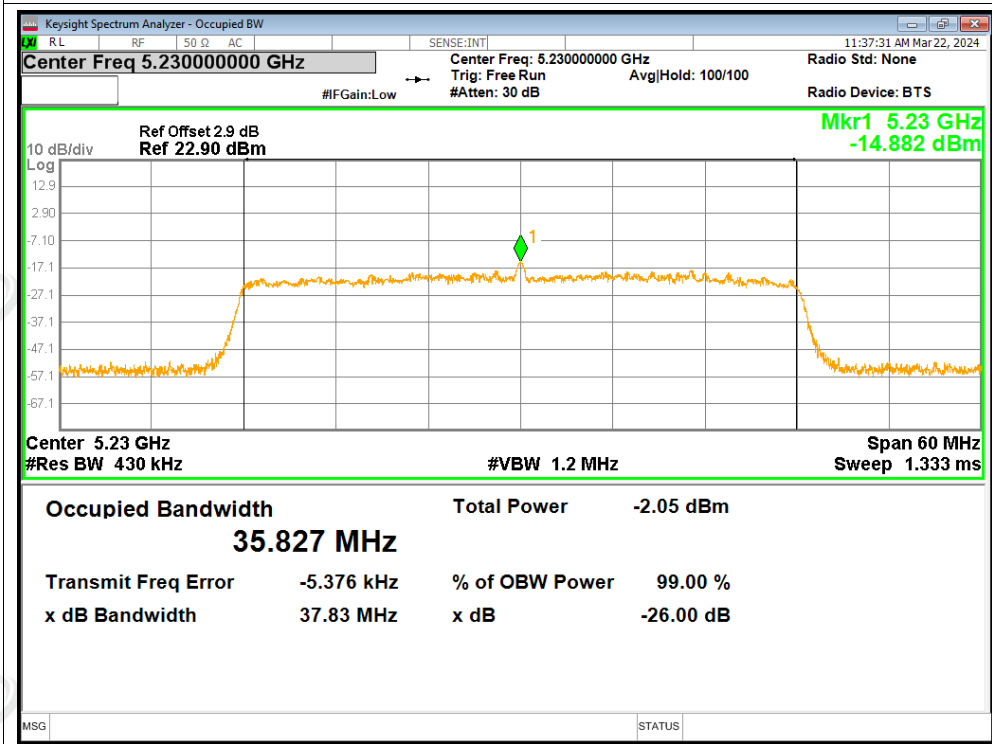




OBW NVNT n40 5190MHz Ant1



OBW NVNT n40 5230MHz Ant1





B5. Maximum Power Spectral Density Level

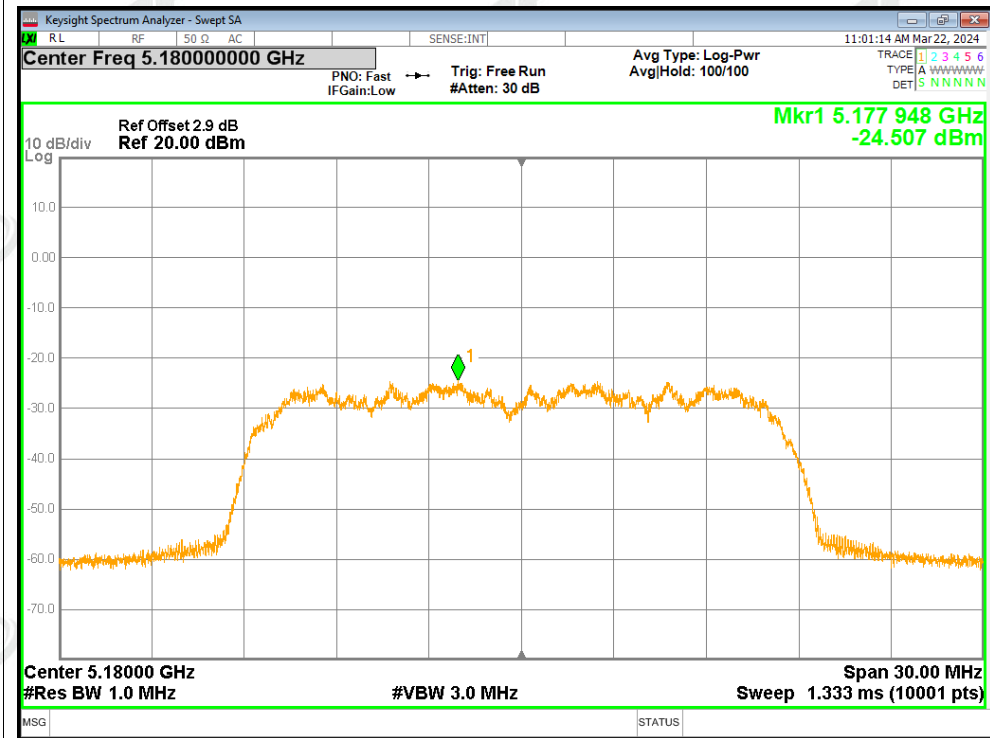
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	-24.51	0.97	-23.54	11	Pass
NVNT	a	5200	Ant1	-23.06	0.71	-22.35	11	Pass
NVNT	a	5240	Ant1	-22.75	0.71	-22.04	11	Pass
NVNT	n20	5180	Ant1	-25.13	1.03	-24.1	11	Pass
NVNT	n20	5200	Ant1	-24.14	0.79	-23.35	11	Pass
NVNT	n20	5240	Ant1	-23.35	0.79	-22.56	11	Pass
NVNT	n40	5190	Ant1	-29.89	3.01	-26.88	11	Pass
NVNT	n40	5230	Ant1	-25.09	0.79	-24.3	11	Pass



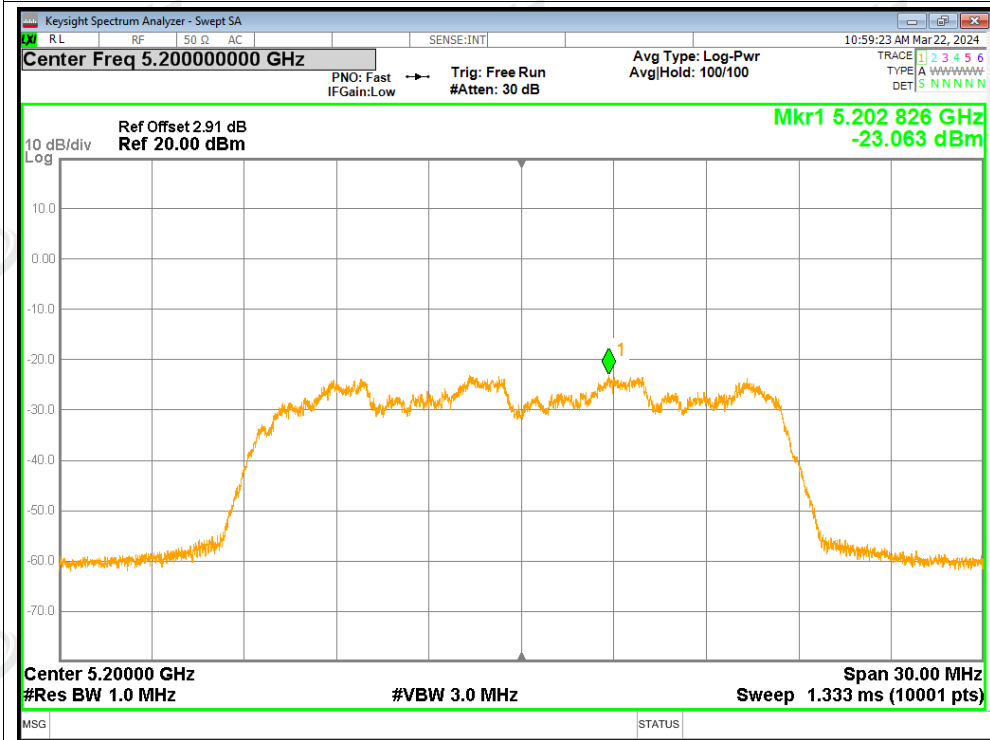


Test Graphs

PSD NVNT a 5180MHz Ant1

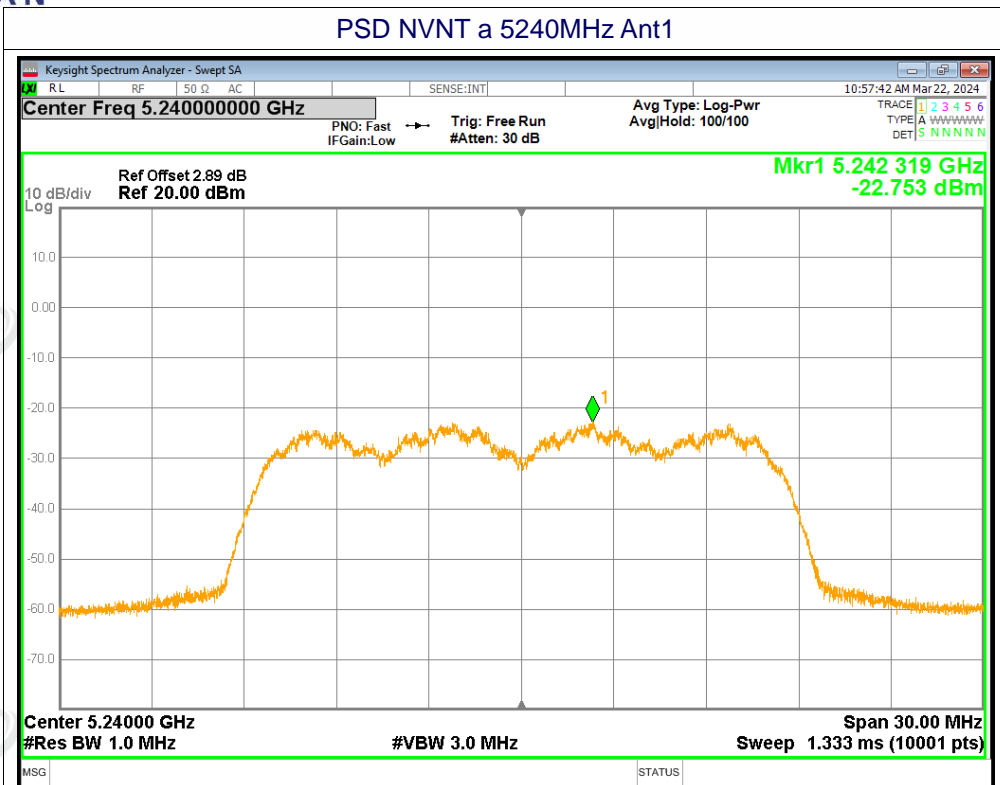


PSD NVNT a 5200MHz Ant1

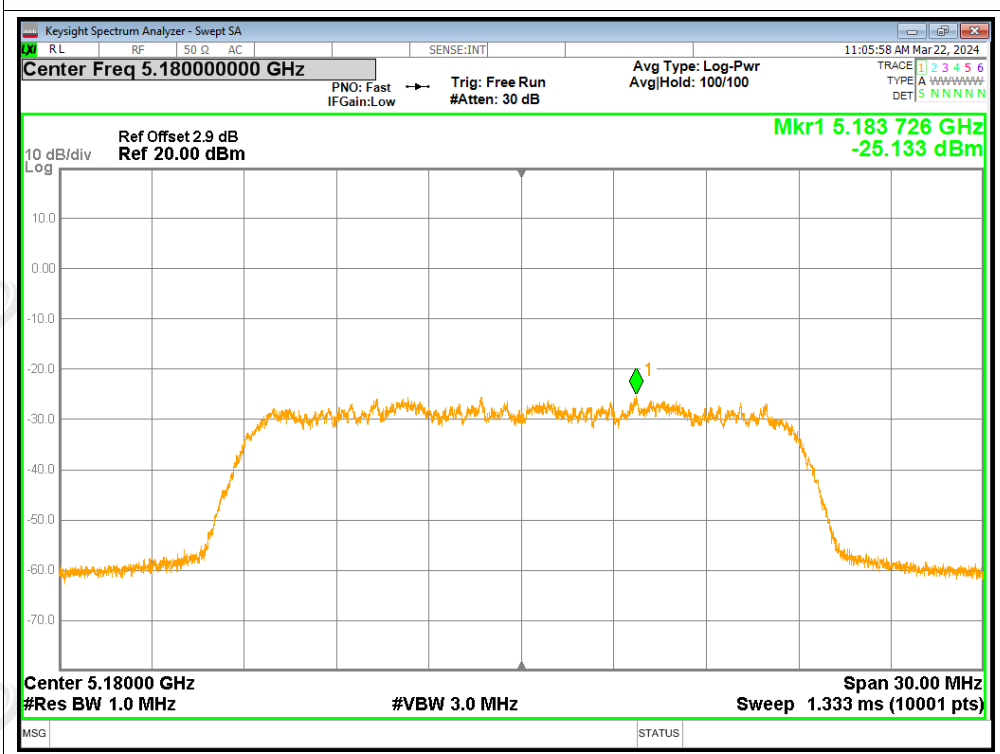




PSD NVNT a 5240MHz Ant1

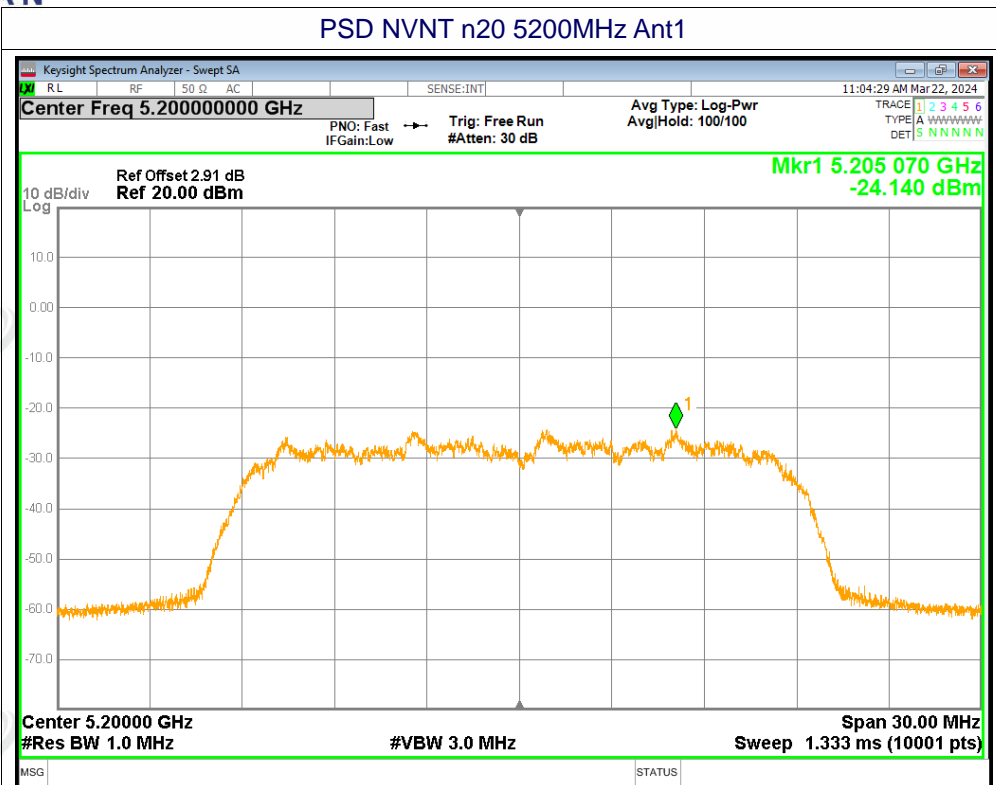


PSD NVNT n20 5180MHz Ant1

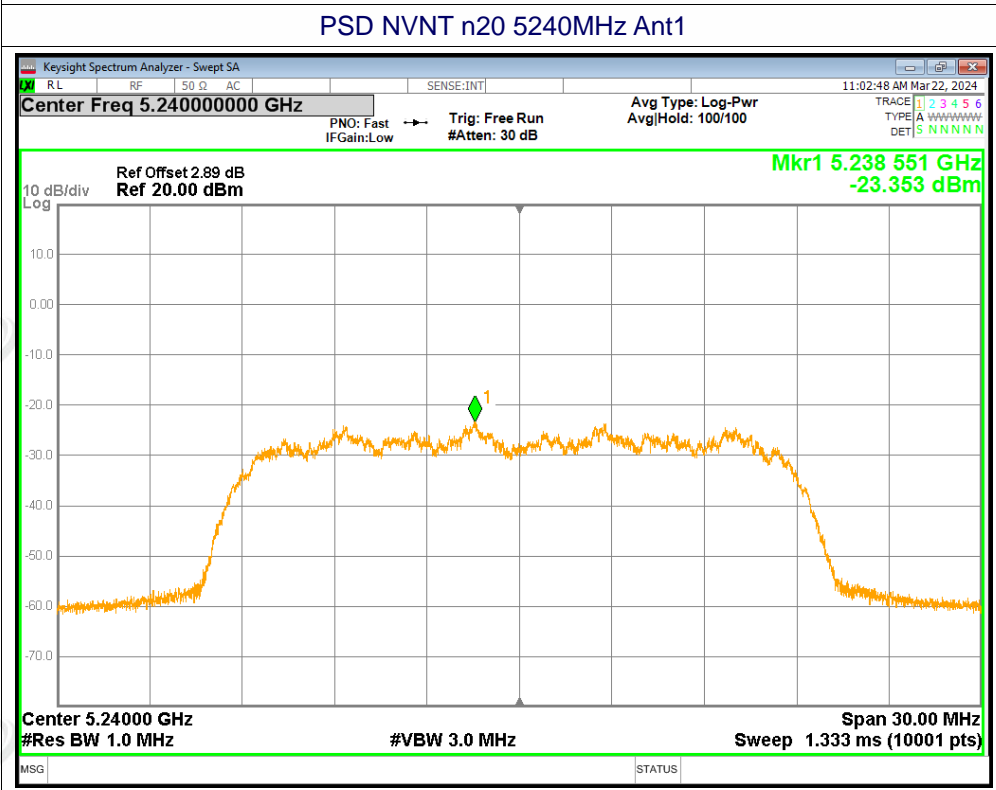




PSD NVNT n20 5200MHz Ant1

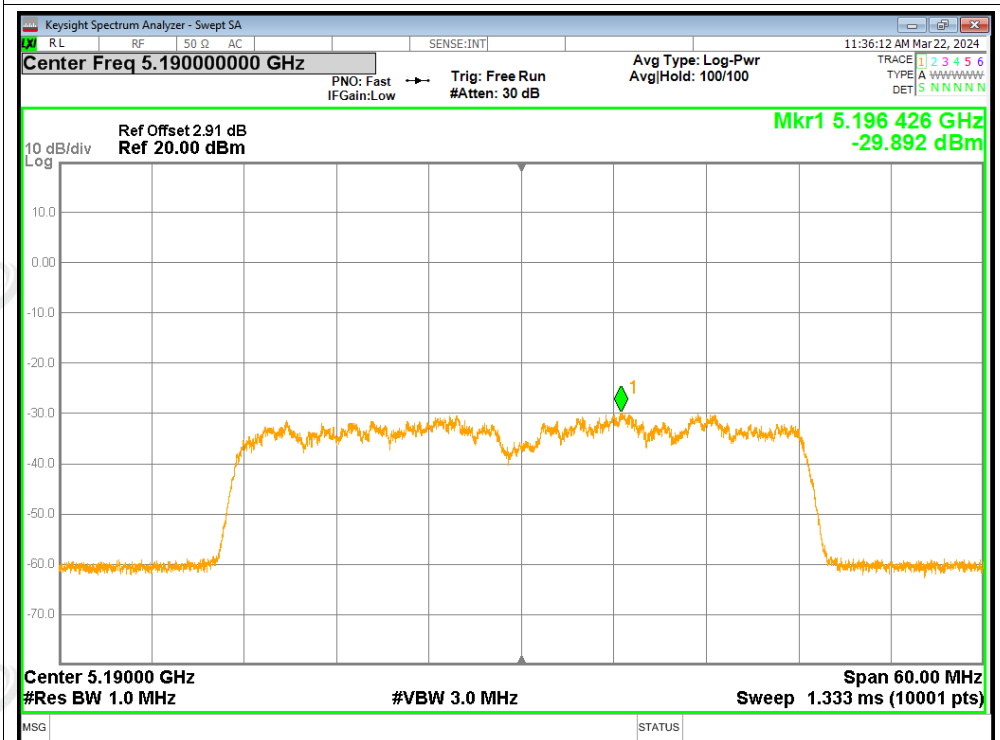


PSD NVNT n20 5240MHz Ant1

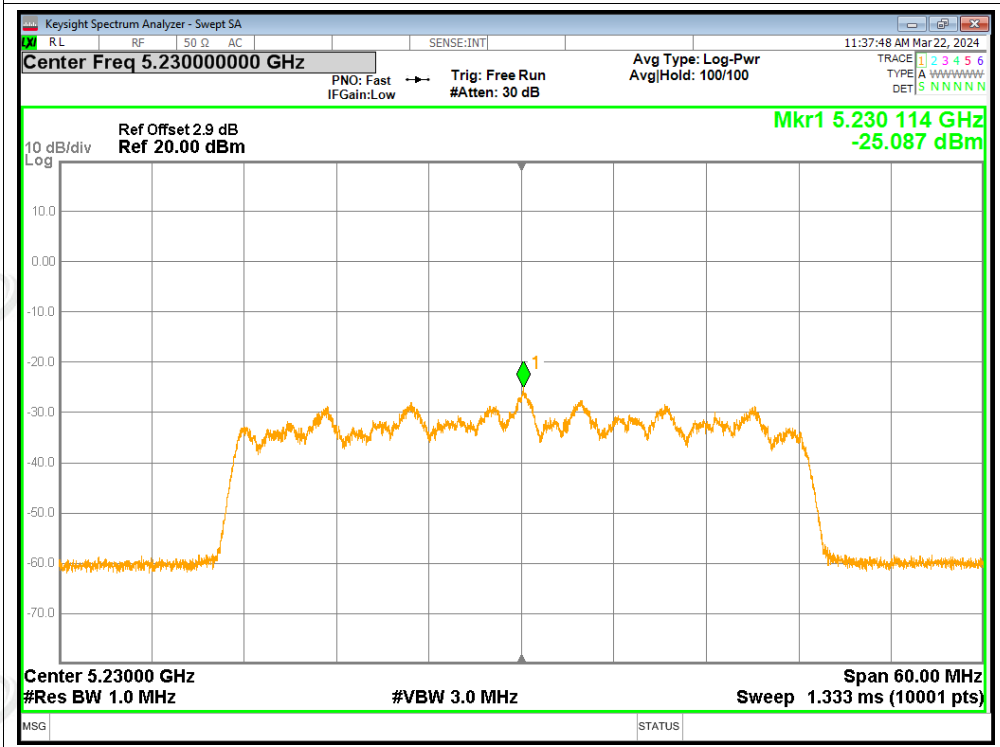




PSD NVNT n40 5190MHz Ant1



PSD NVNT n40 5230MHz Ant1





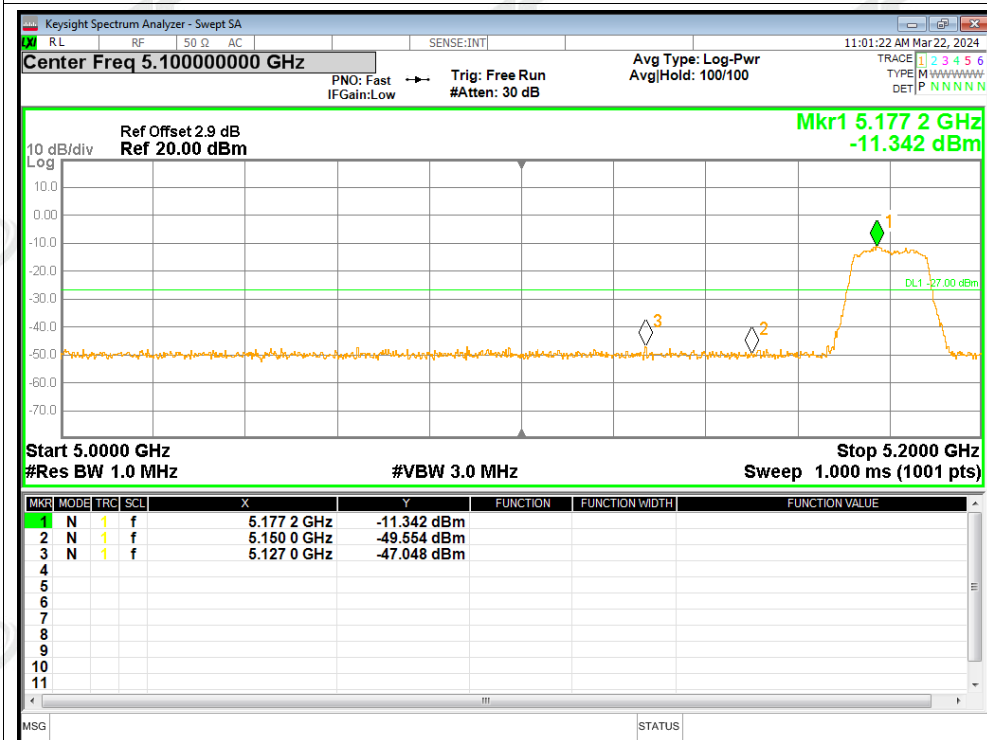
B6. Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	a	5180	Ant1	-47.04	-27	Pass
NVNT	a	5240	Ant1	-46.19	-27	Pass
NVNT	n20	5180	Ant1	-47.46	-27	Pass
NVNT	n20	5240	Ant1	-46.22	-27	Pass
NVNT	n40	5190	Ant1	-46.92	-27	Pass
NVNT	n40	5230	Ant1	-46.74	-27	Pass

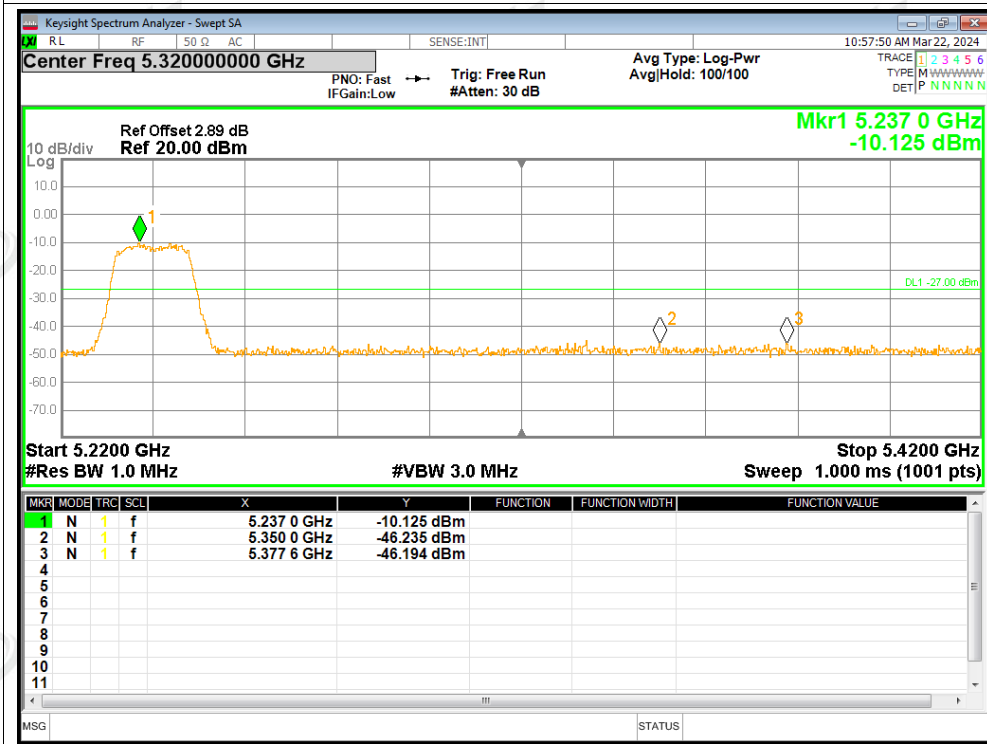


Test Graphs

Band Edge NVNT a 5180MHz Low Ant1

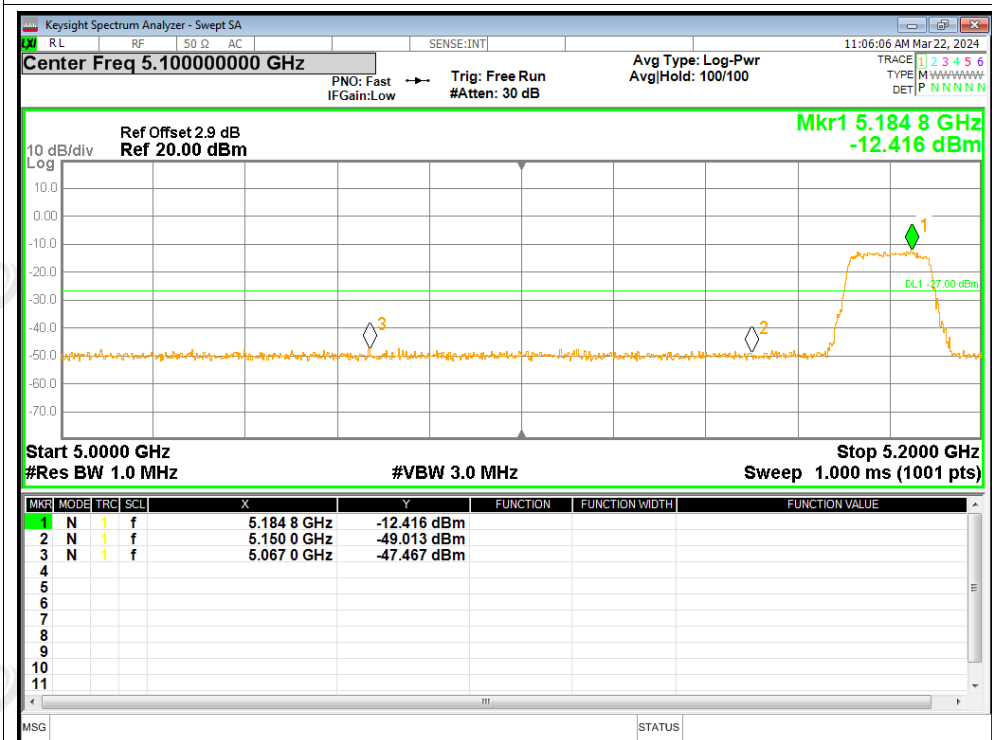


Band Edge NVNT a 5240MHz High Ant1

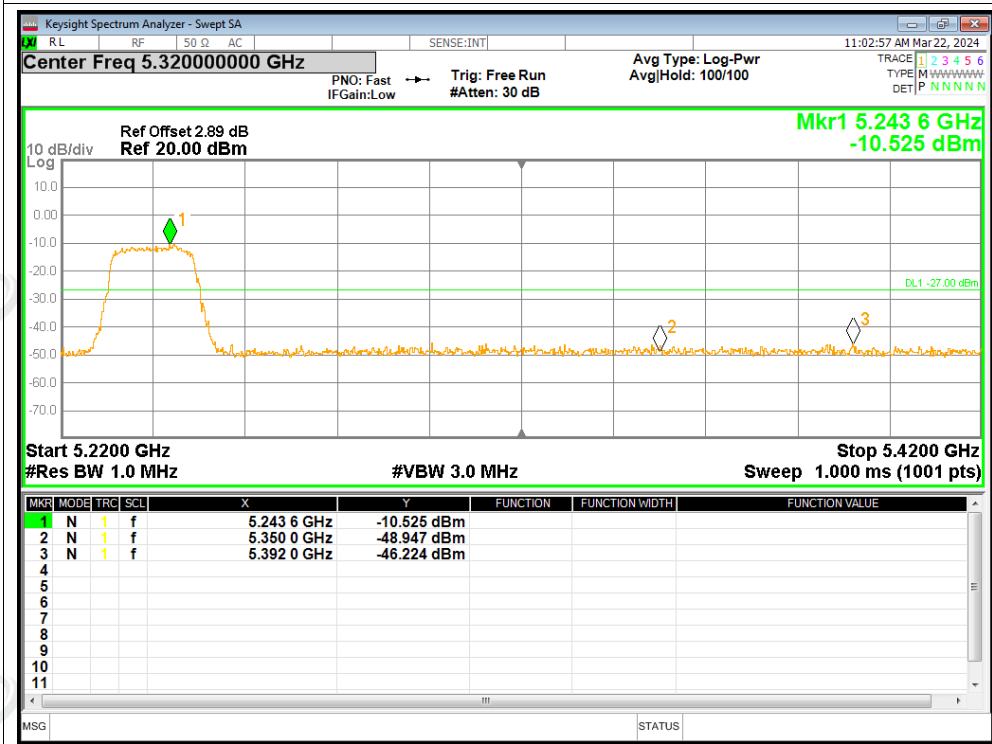




Band Edge NVNT n20 5180MHz Low Ant1

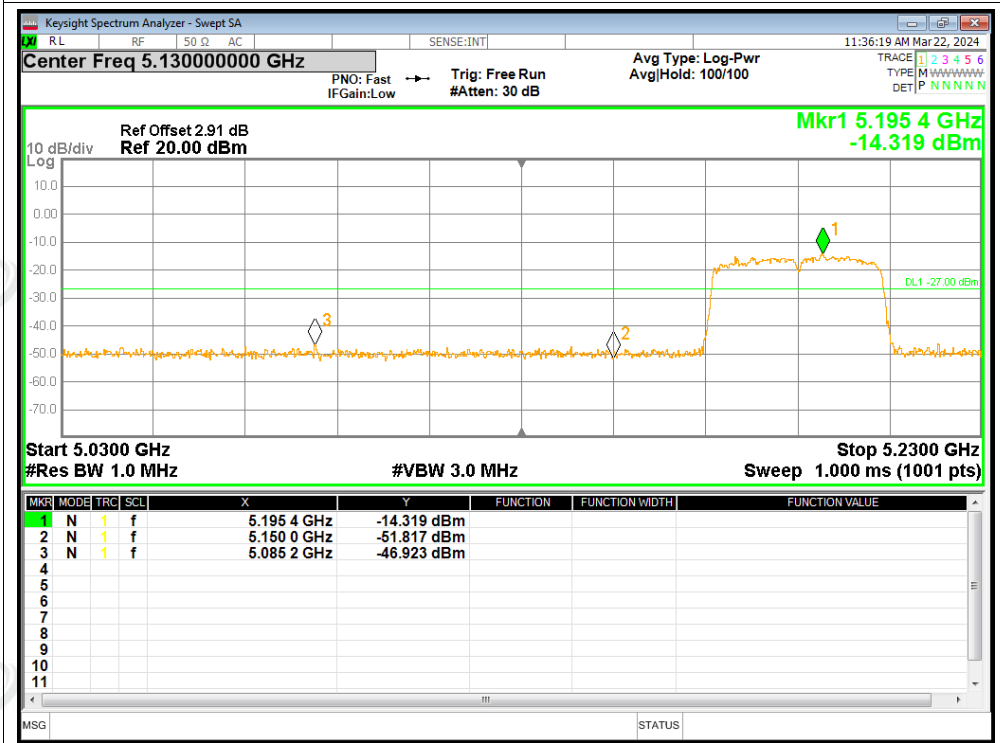


Band Edge NVNT n20 5240MHz High Ant1

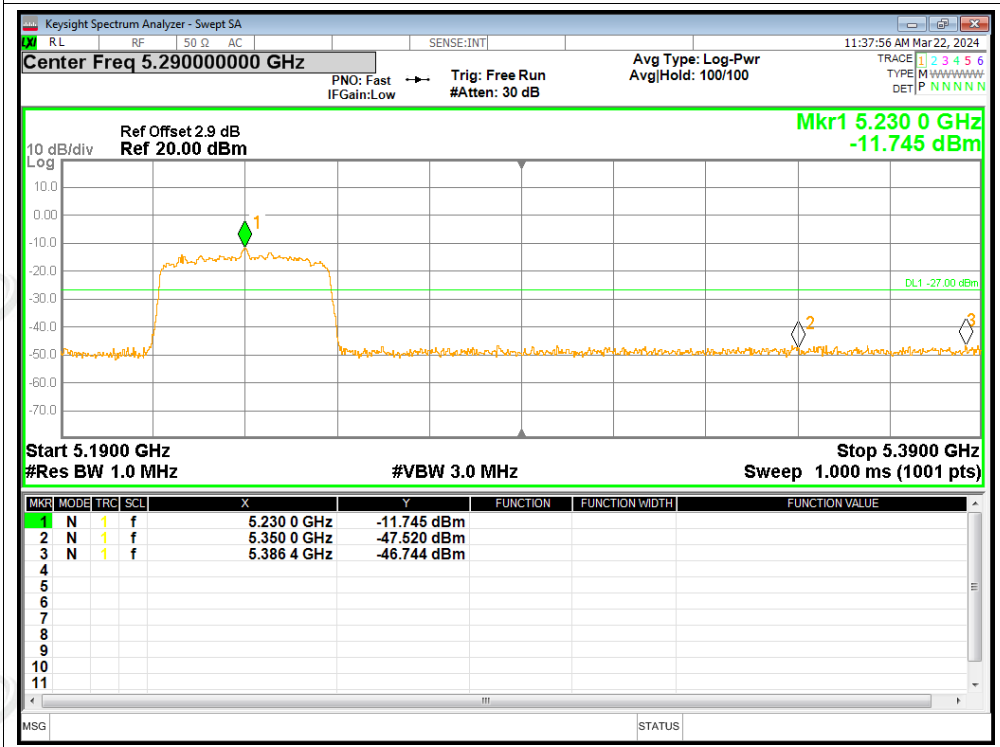




Band Edge NVNT n40 5190MHz Low Ant1



Band Edge NVNT n40 5230MHz High Ant1





B7. Frequency Stability

Voltage							
TestMode	Channel	Voltage [Vdc]	Temperature (°C)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
a	5180	NV	NT	-20000	-3.86	Within 5180-5240MHz	Pass
		LV	NT	-20000	-3.86		
		HV	NT	-20000	-3.86		
	5200	NV	NT	-20000	-3.85		
		LV	NT	-20000	-3.85		
		HV	NT	-20000	-3.85		
	5240	NV	NT	-3.82	-3.82		
		LV	NT	-3.82	-3.82		
		HV	NT	-3.82	-3.82		
n20	5180	NV	NT	0	0	Within 5180-5240MHz	Pass
		LV	NT	0	0		
		HV	NT	0	0		
	5200	NV	NT	0	0		
		LV	NT	0	0		
		HV	NT	0	0		
	5240	NV	NT	0	0		
		LV	NT	0	0		
		HV	NT	0	0		
n40	5190	NV	NT	40000	7.71	Within 5190-5230MHz	Pass
		LV	NT	40000	7.71		
		HV	NT	40000	7.71		
	5230	NV	NT	0	0		
		LV	NT	0	0		
		HV	NT	0	0		



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Temperature							
TestMode	Channel	Voltage [Vdc]	Temperature (°C)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
a	5180	NV	-20	0	0	Within 5180-5240MHz	Pass
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	40	0	0		
		NV	60	0	0		
		NV	70	0	0		
	5200	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	40	0	0		
		NV	60	0	0		
		NV	70	0	0		
	5240	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	40	0	0		
		NV	60	0	0		
		NV	70	0	0		
N20	5180	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	40	0	0		
		NV	60	0	0		
		NV	70	0	0		
	5200	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	40	0	0		



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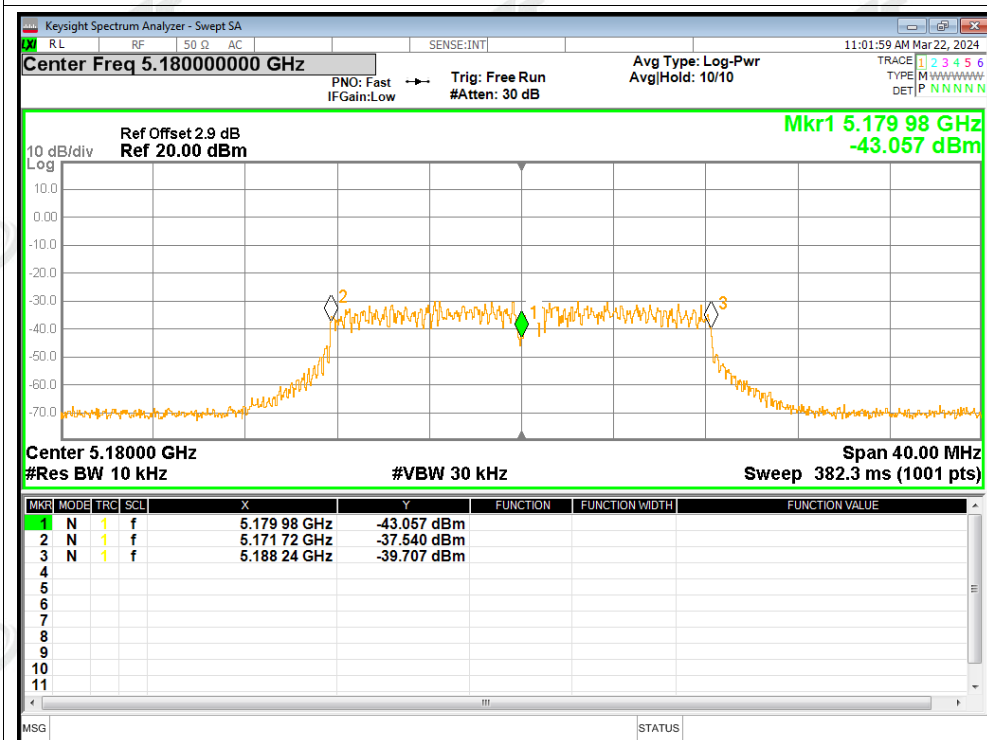
	5240	NV	60	0	0	Within 5180-5240MHz	Pass
		NV	70	0	0		
		NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	40	0	0		
		NV	60	0	0		
		NV	70	0	0		
		N40	5190	NV	-20		
NV	-10			0	0		
NV	0			0	0		
NV	20			0	0		
NV	40			0	0		
NV	60			0	0		
NV	70			0	0		
5230	NV		-20	0	0		
	NV		-10	0	0		
	NV		0	0	0		
	NV		20	0	0		
	NV		40	0	0		
	NV		60	0	0		
	NV		70	0	0		
NV	-10	0	0				

Note: Test temperature: -20° to $+70^{\circ}$. At room temperature, the test results are the worst, only reflecting the test results graphs at room temperature.

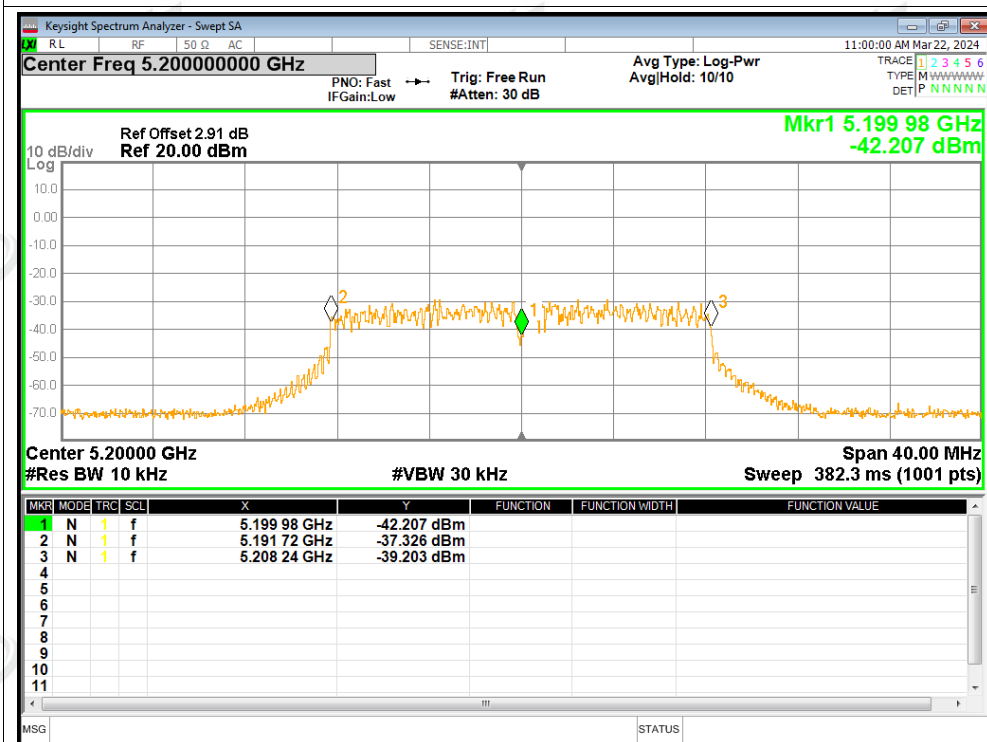


Test Graphs

Freq. Stability NVNT a 5180MHz Ant1

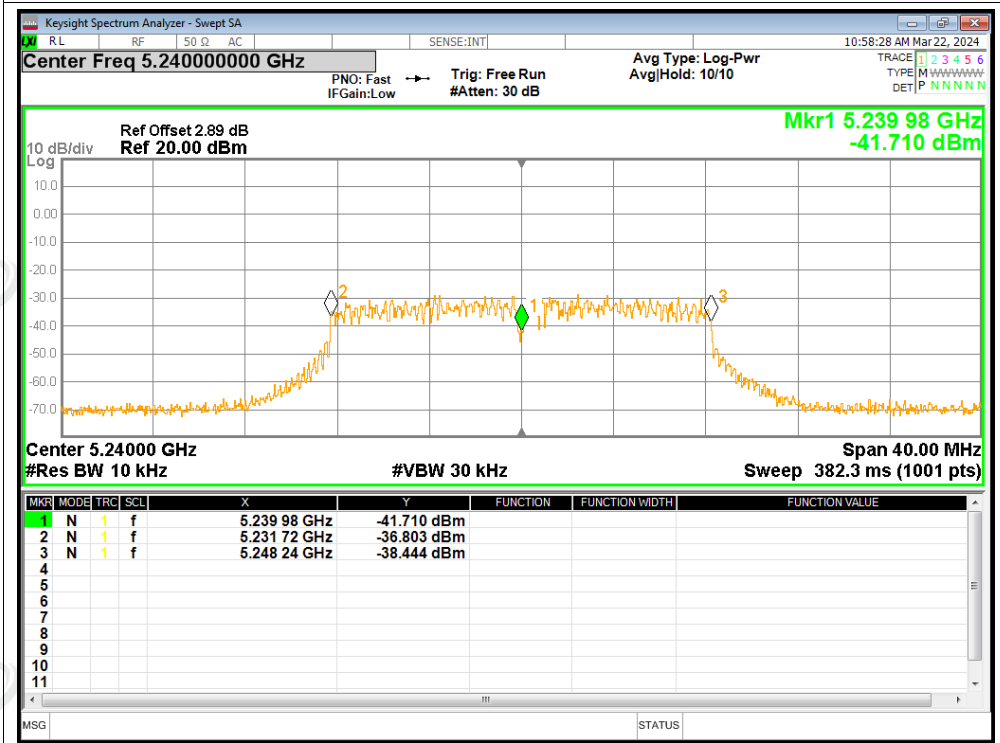


Freq. Stability NVNT a 5200MHz Ant1

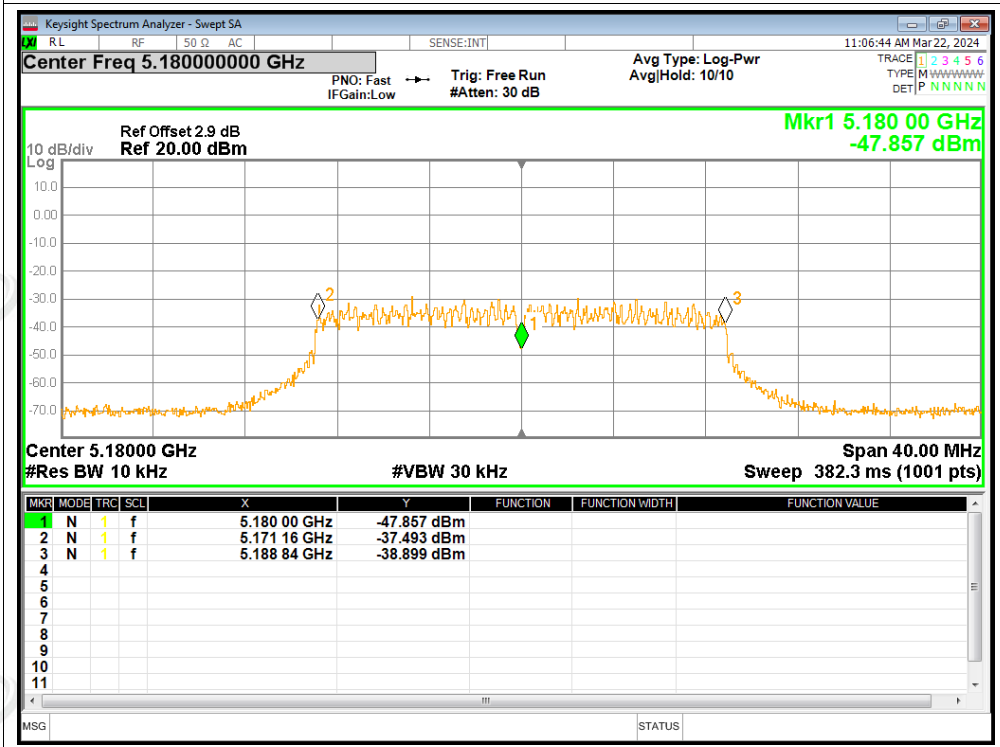




Freq. Stability NVNT a 5240MHz Ant1

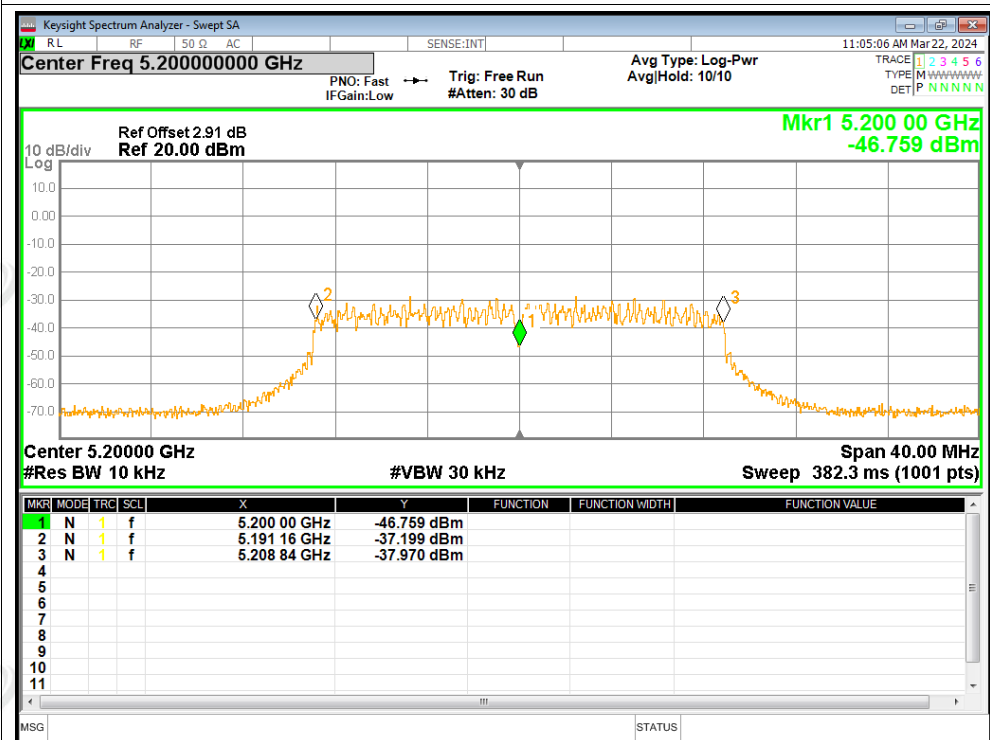


Freq. Stability NVNT n20 5180MHz Ant1

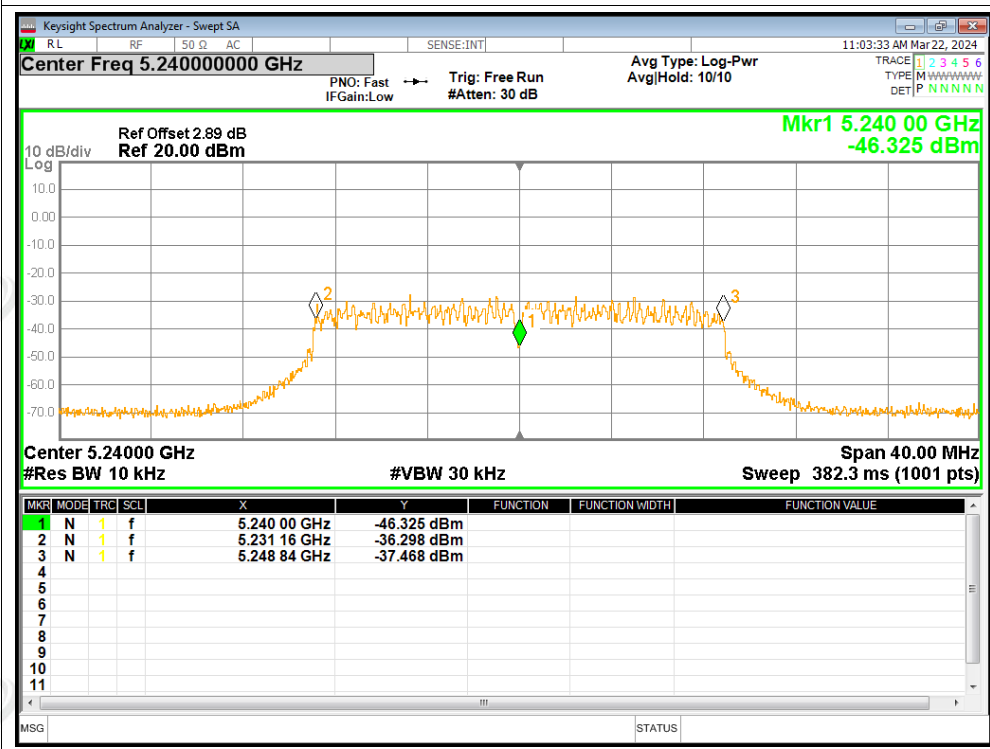




Freq. Stability NVNT n20 5200MHz Ant1

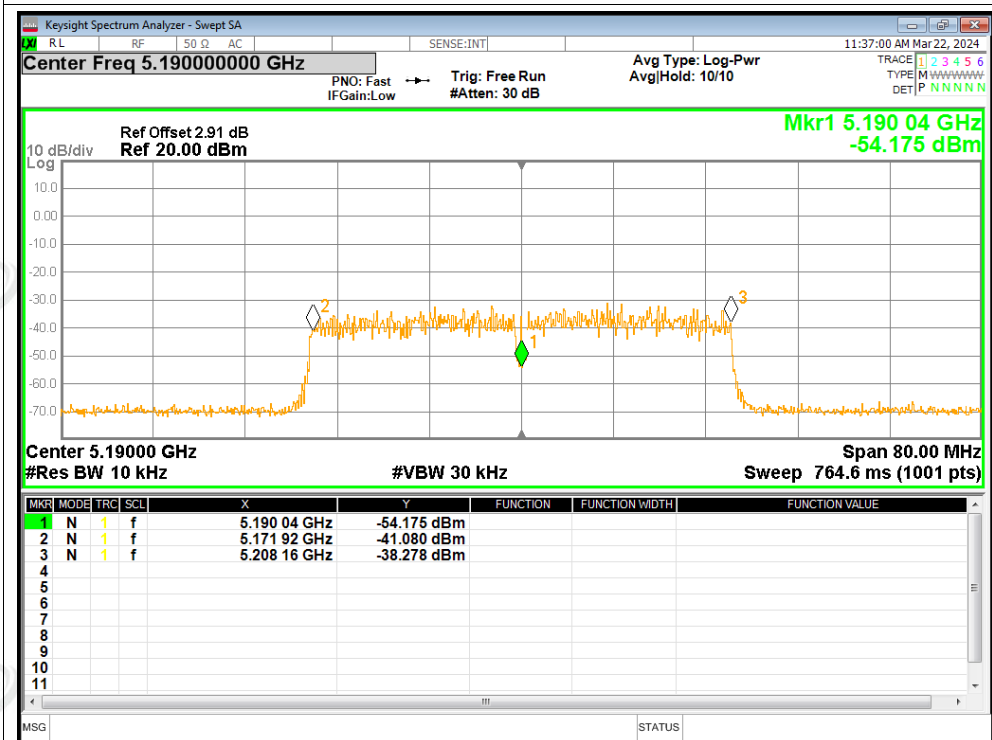


Freq. Stability NVNT n20 5240MHz Ant1

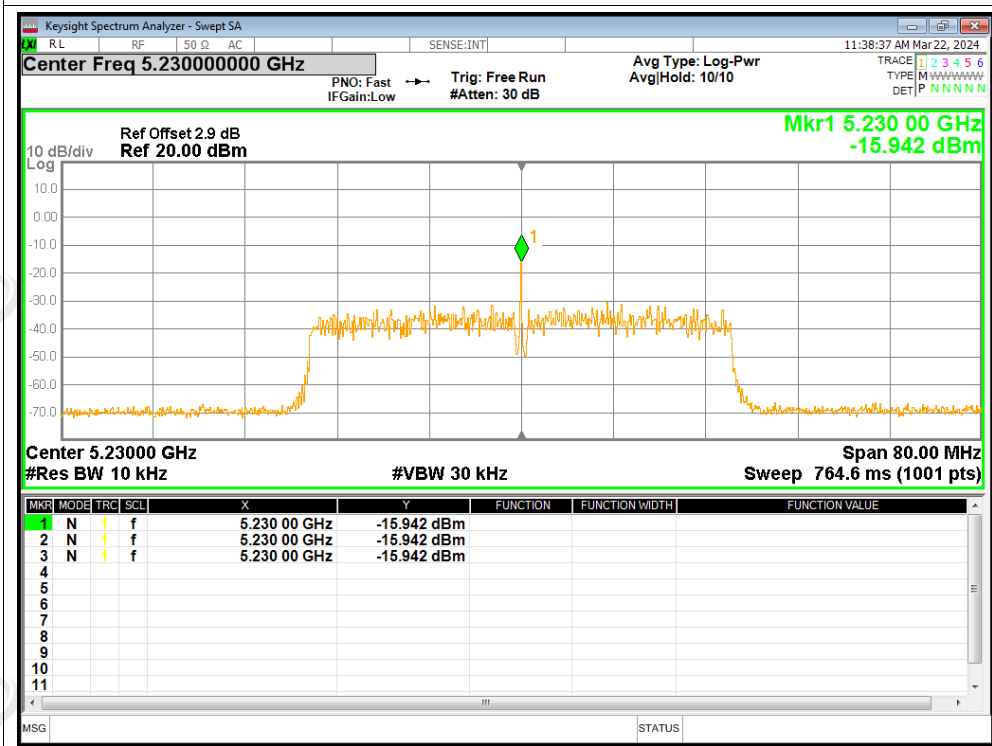




Freq. Stability NVNT n40 5190MHz Ant1



Freq. Stability NVNT n40 5230MHz Ant1





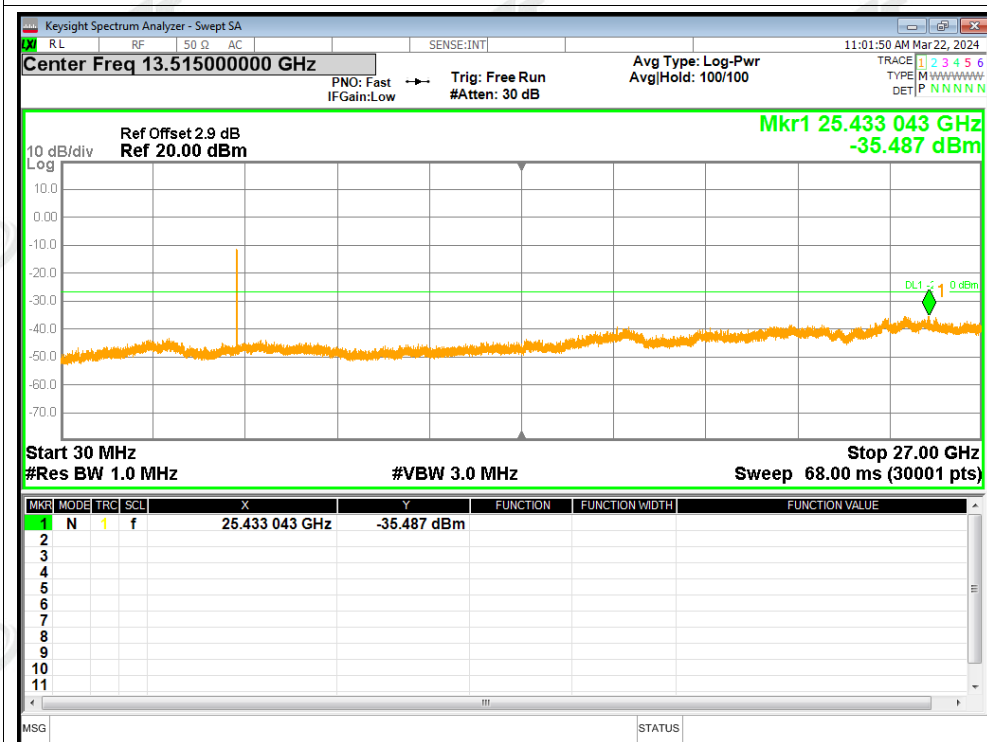
B8. Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	a	5180	Ant1	-35.48	-27	Pass
NVNT	a	5200	Ant1	-36.05	-27	Pass
NVNT	a	5240	Ant1	-35.94	-27	Pass
NVNT	n20	5180	Ant1	-35.69	-27	Pass
NVNT	n20	5200	Ant1	-35.52	-27	Pass
NVNT	n20	5240	Ant1	-35.79	-27	Pass
NVNT	n40	5190	Ant1	-34.75	-27	Pass
NVNT	n40	5230	Ant1	-35.17	-27	Pass

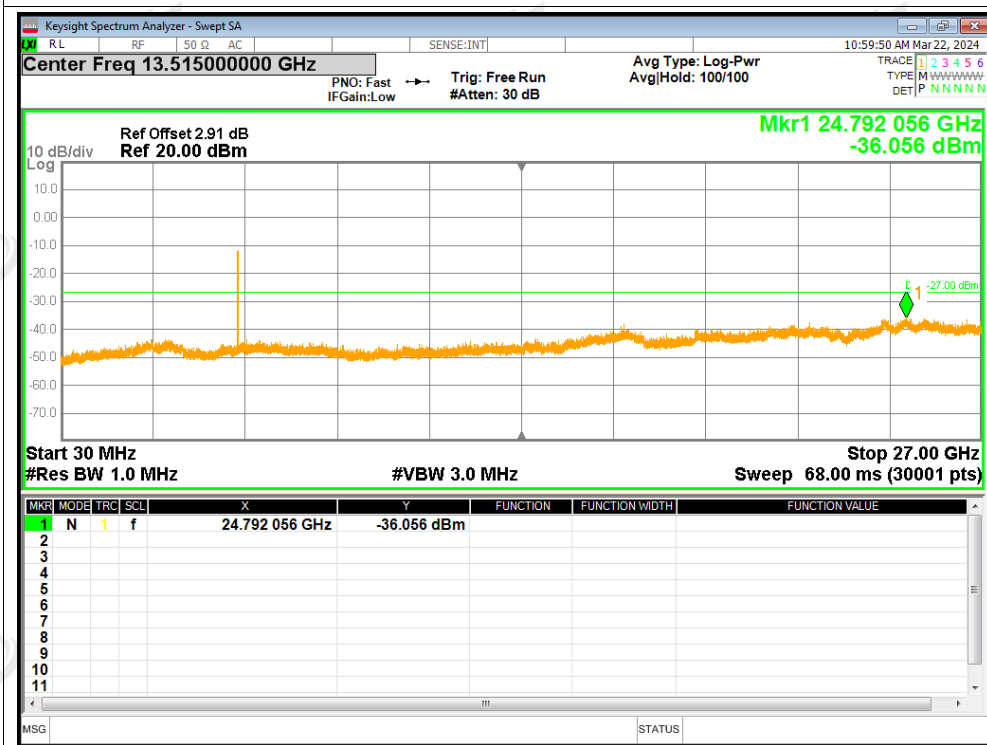


Test Graphs

Tx. Spurious NVNT a 5180MHz Ant1 Emission

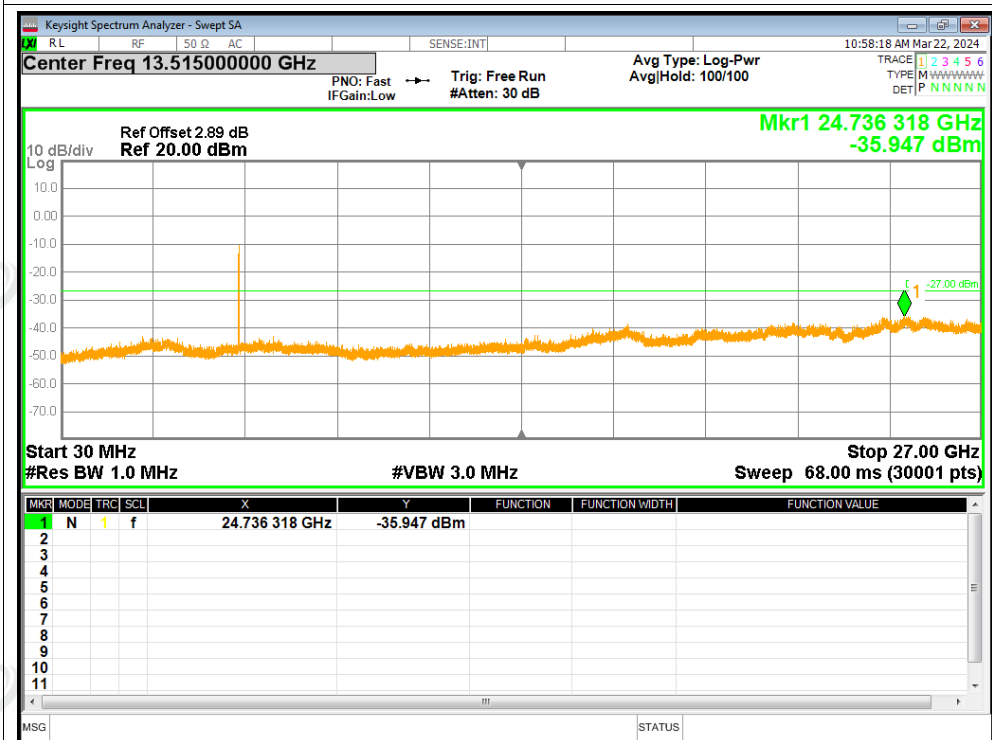


Tx. Spurious NVNT a 5200MHz Ant1 Emission

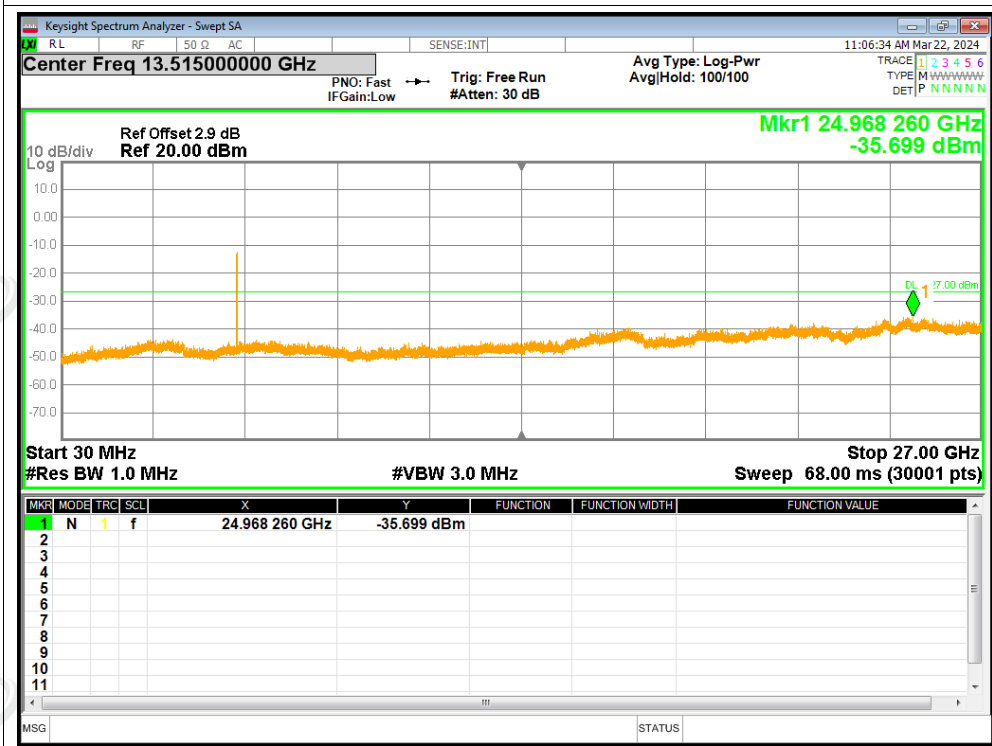




Tx. Spurious NVNT a 5240MHz Ant1 Emission

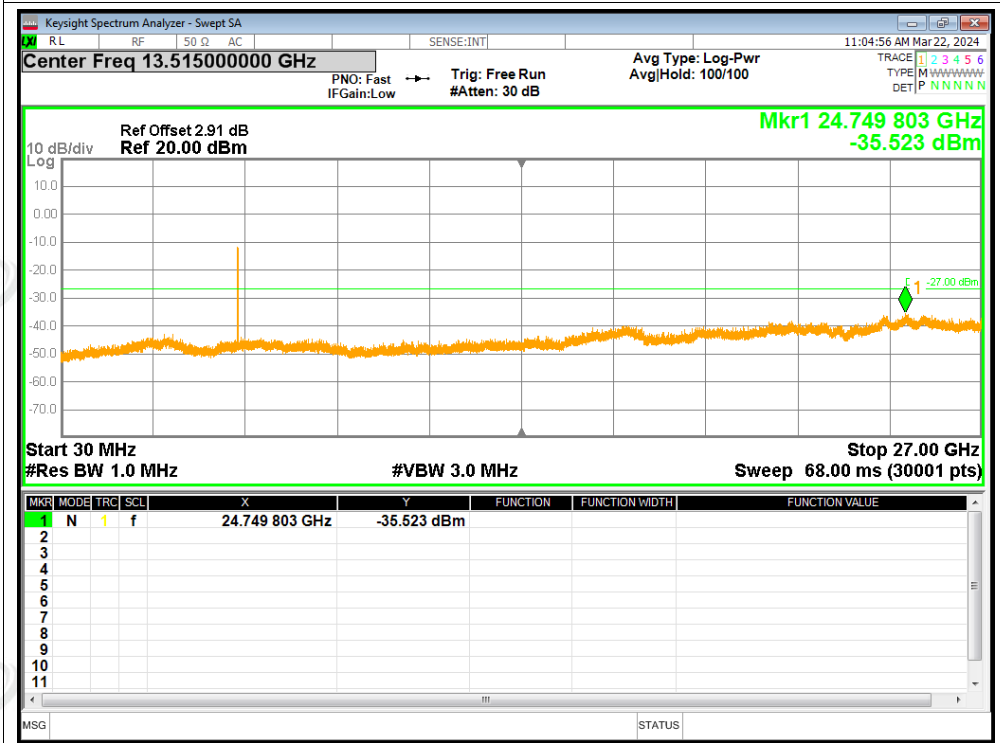


Tx. Spurious NVNT n20 5180MHz Ant1 Emission

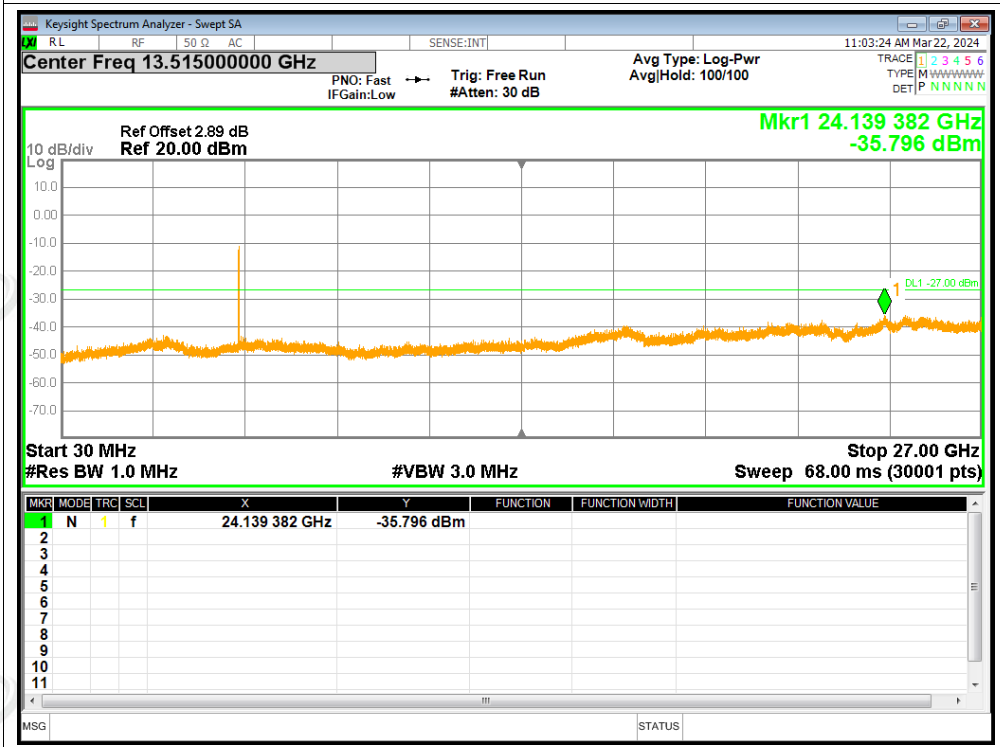




Tx. Spurious NVNT n20 5200MHz Ant1 Emission

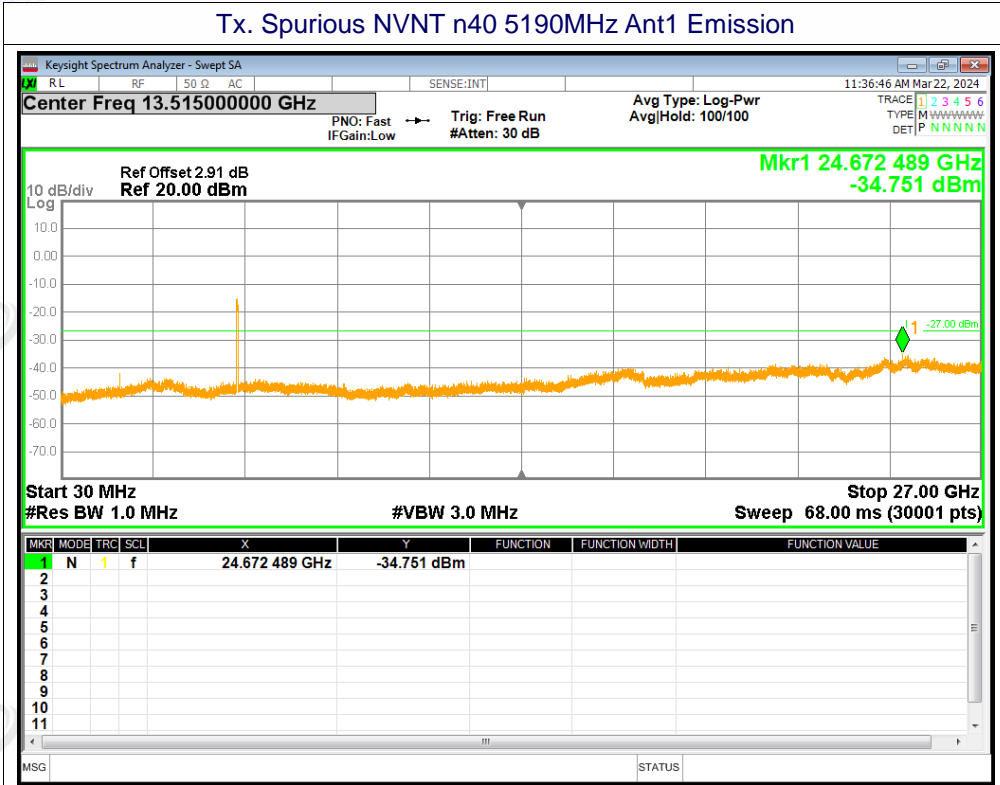


Tx. Spurious NVNT n20 5240MHz Ant1 Emission





Tx. Spurious NVNT n40 5190MHz Ant1 Emission



Tx. Spurious NVNT n40 5230MHz Ant1 Emission

