

Appendix A for 5.2GWIFI Test Data

Product Name: Smart Calendar

Test Model: KTM-SM156

Environmental Conditions

Temperature:	25.7℃
Relative Humidity:	54.9%
ATM Pressure:	101.0 kPa
Test Engineer:	Leon Li
Supervised by:	Baret Wu

**Duty Cycle**

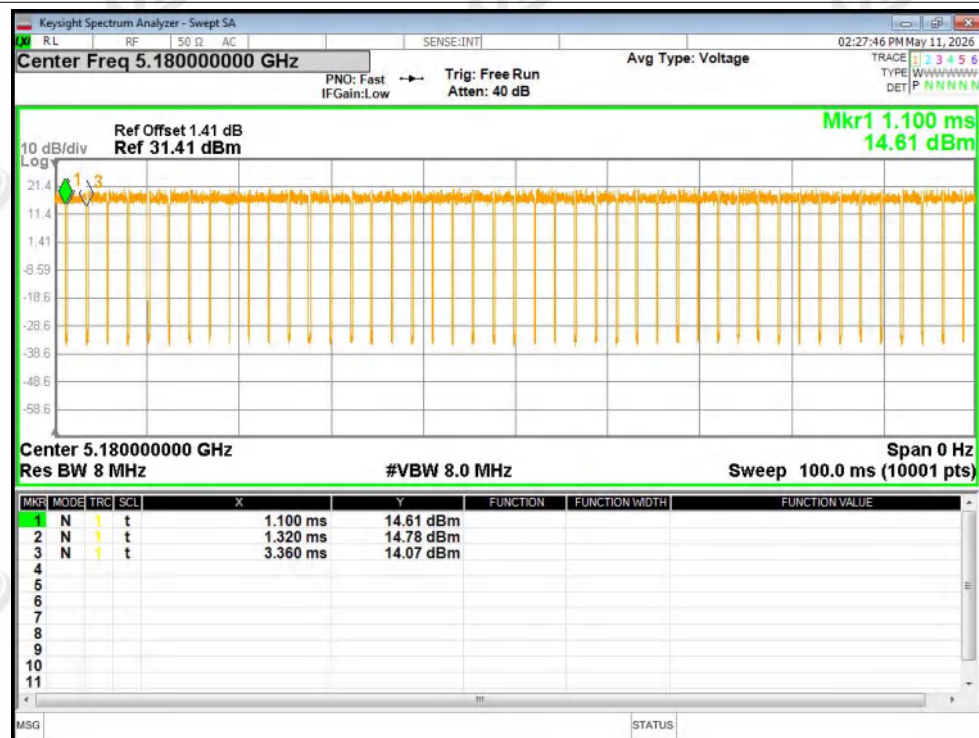
Mode	Frequency (MHz)	Antenna	T _{on} ms	T _{total} ms	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
a	5180	Ant1	2.04	2.26	90.27	0.44	0.49
a	5200	Ant1	2.04	2.13	95.77	0.19	0.49
a	5240	Ant1	2.03	2.11	96.21	0.17	0.49
n20	5180	Ant1	1.89	1.97	95.94	0.18	0.53
n20	5200	Ant1	1.89	1.96	96.43	0.16	0.53
n20	5240	Ant1	1.89	1.92	96.43	0.16	0.53
n40	5190	Ant1	0.93	1.07	86.92	0.61	1.08
n40	5230	Ant1	0.93	1.04	89.42	0.49	1.08
ac20	5180	Ant1	1.90	2.11	90.05	0.46	0.53
ac20	5200	Ant1	1.90	2.11	90.05	0.46	0.53
ac20	5240	Ant1	1.90	2.01	94.53	0.24	0.53
ac40	5190	Ant1	0.94	1.16	81.03	0.91	1.06
ac40	5230	Ant1	0.94	1.07	87.85	0.56	1.06

Note:

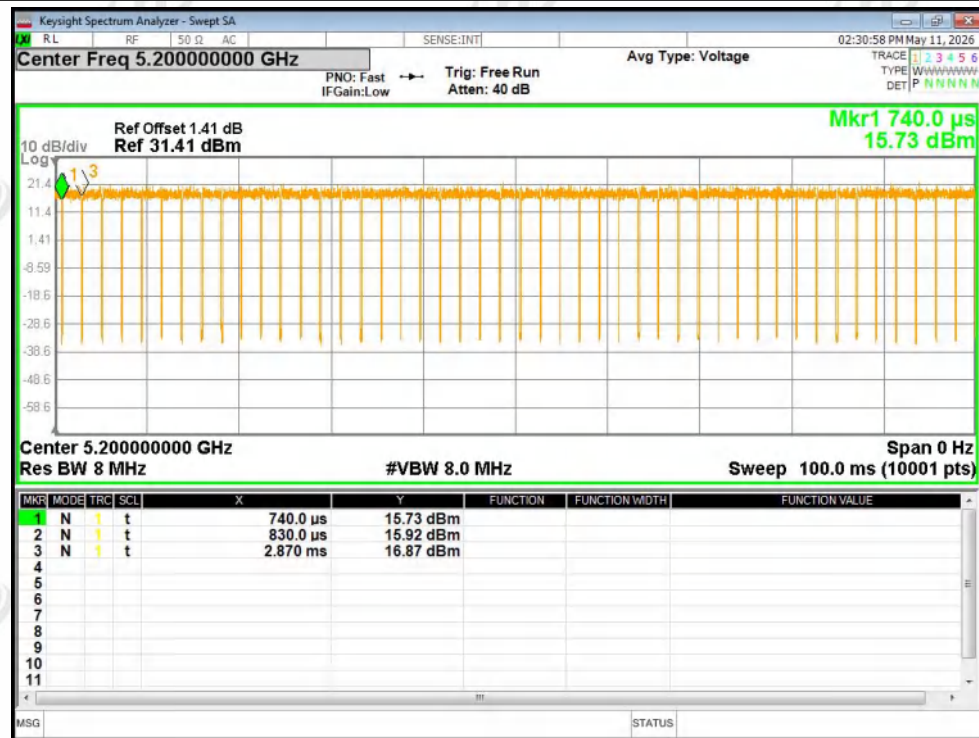
1. Duty Cycle = T_{on} / T_{total} 2. Correction Factor = $10 \log (1 / \text{Duty Cycle})$.3. $1/T = 1/T_{on}$

Test Graphs

Duty Cycle NVNT a 5180MHz Ant1

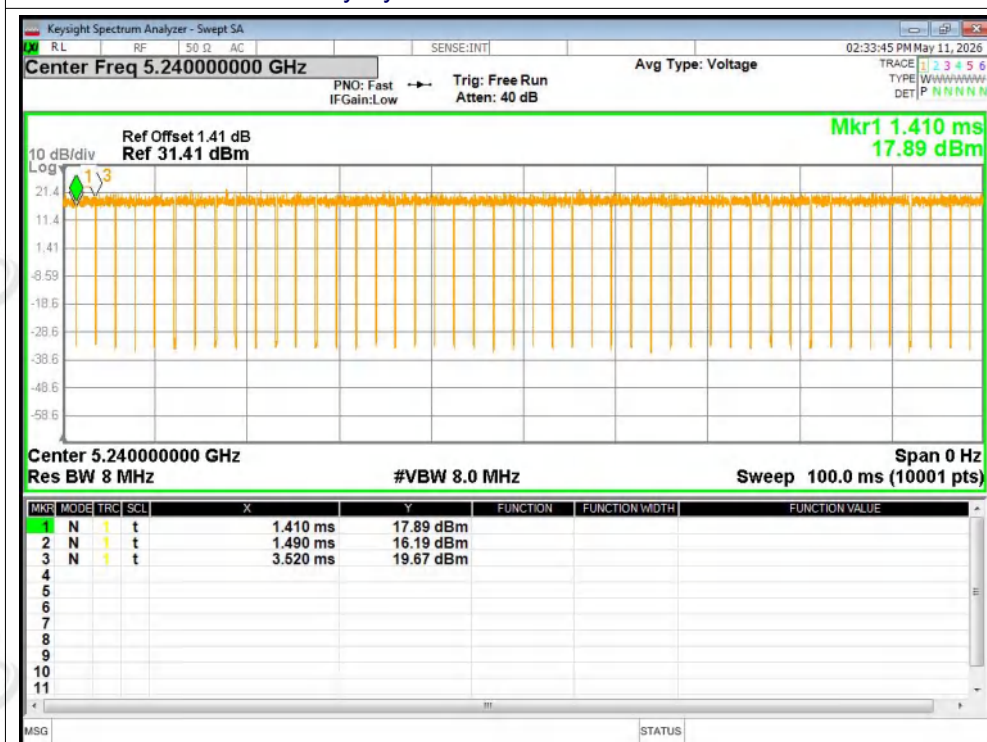


Duty Cycle NVNT a 5200MHz Ant1

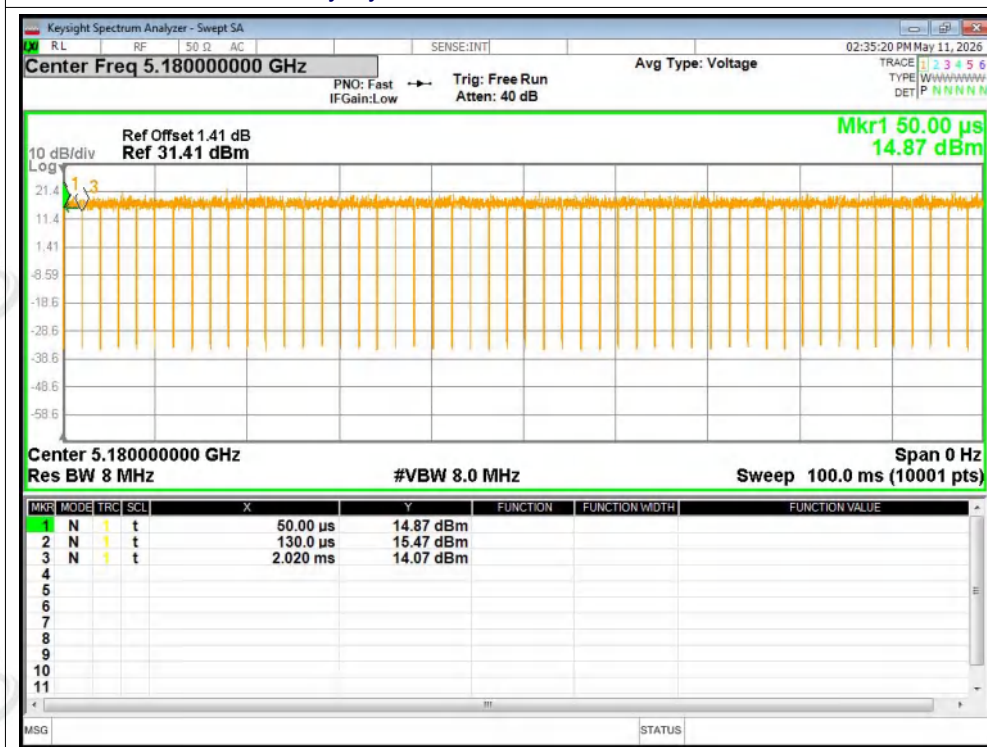




Duty Cycle NVNT a 5240MHz Ant1

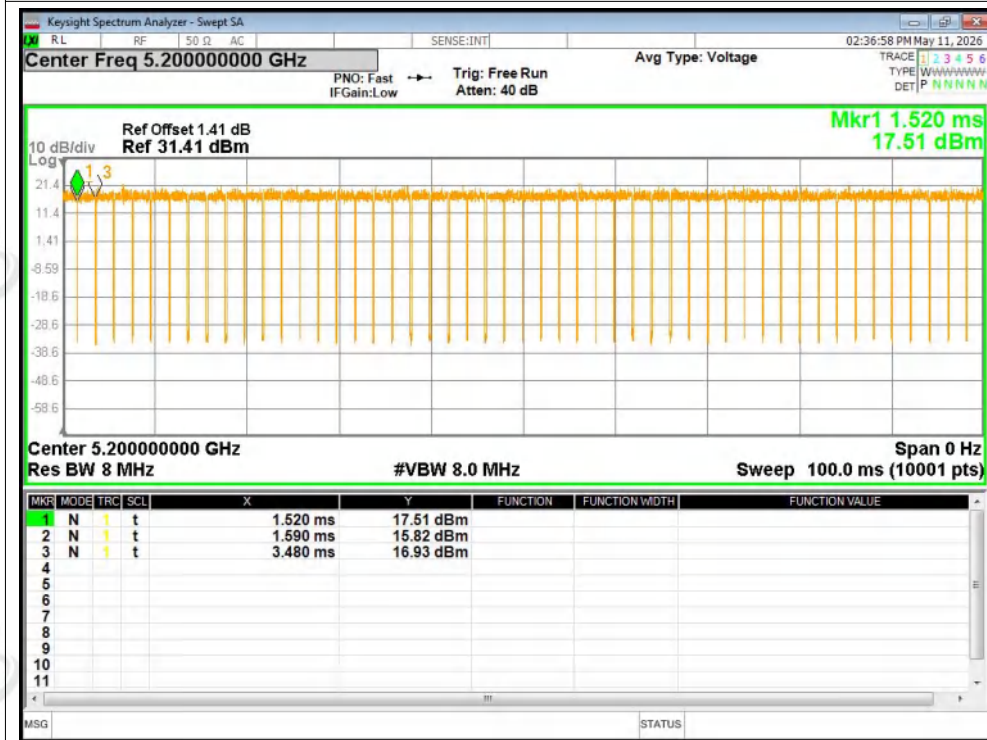


Duty Cycle NVNT n20 5180MHz Ant1

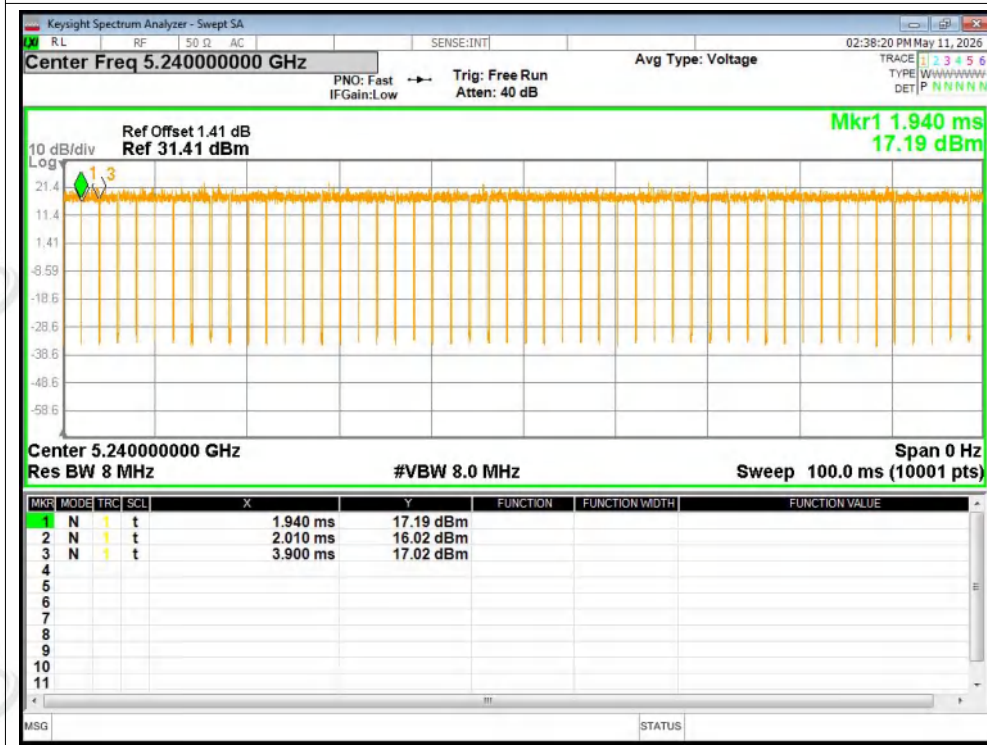




Duty Cycle NVNT n20 5200MHz Ant1

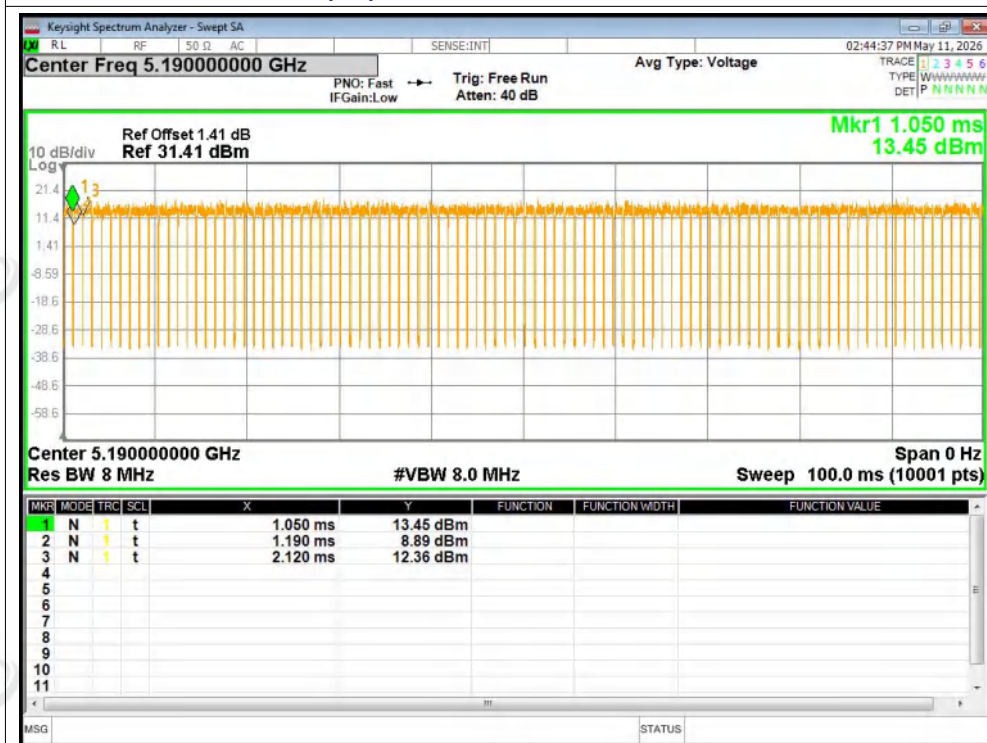


Duty Cycle NVNT n20 5240MHz Ant1

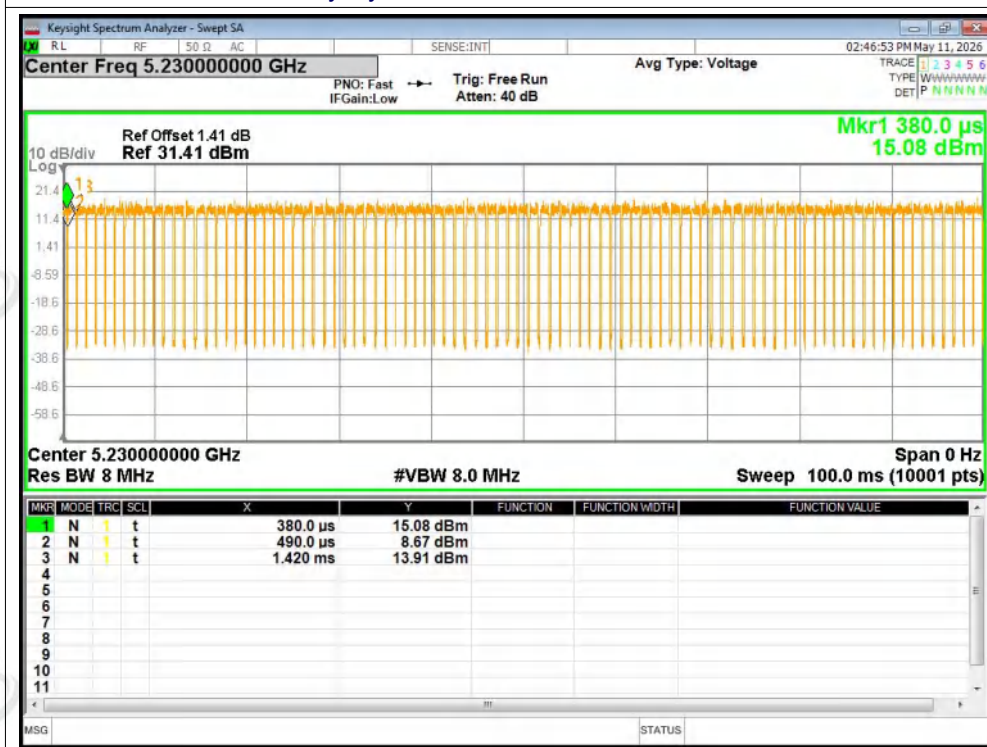




Duty Cycle NVNT n40 5190MHz Ant1

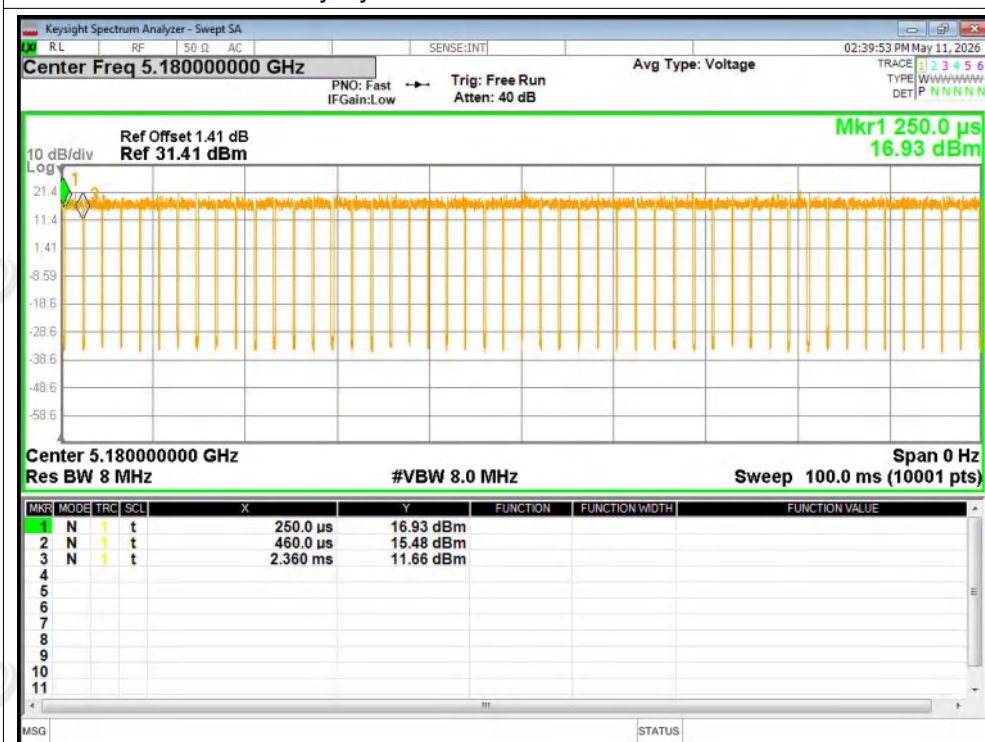


Duty Cycle NVNT n40 5230MHz Ant1

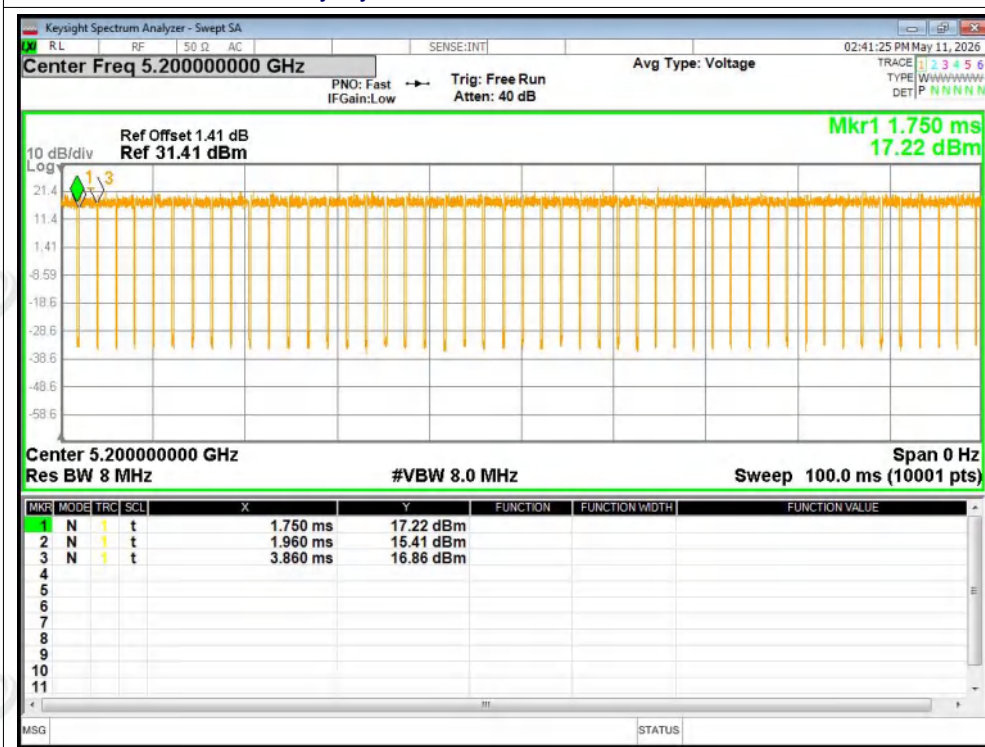




Duty Cycle NVNT ac20 5180MHz Ant1

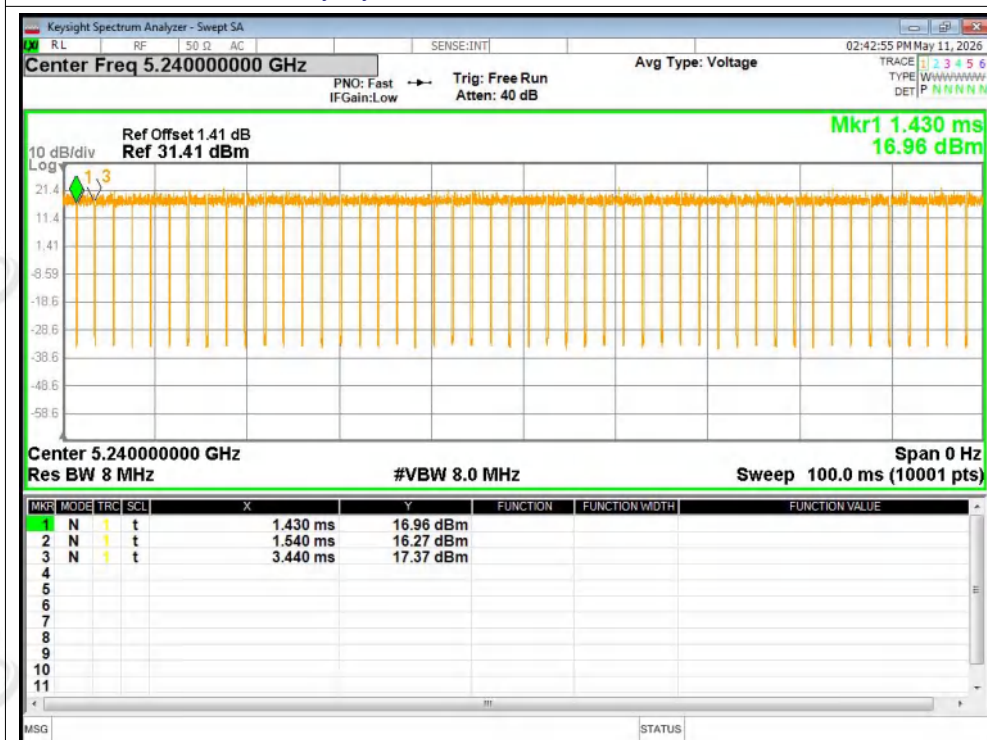


Duty Cycle NVNT ac20 5200MHz Ant1

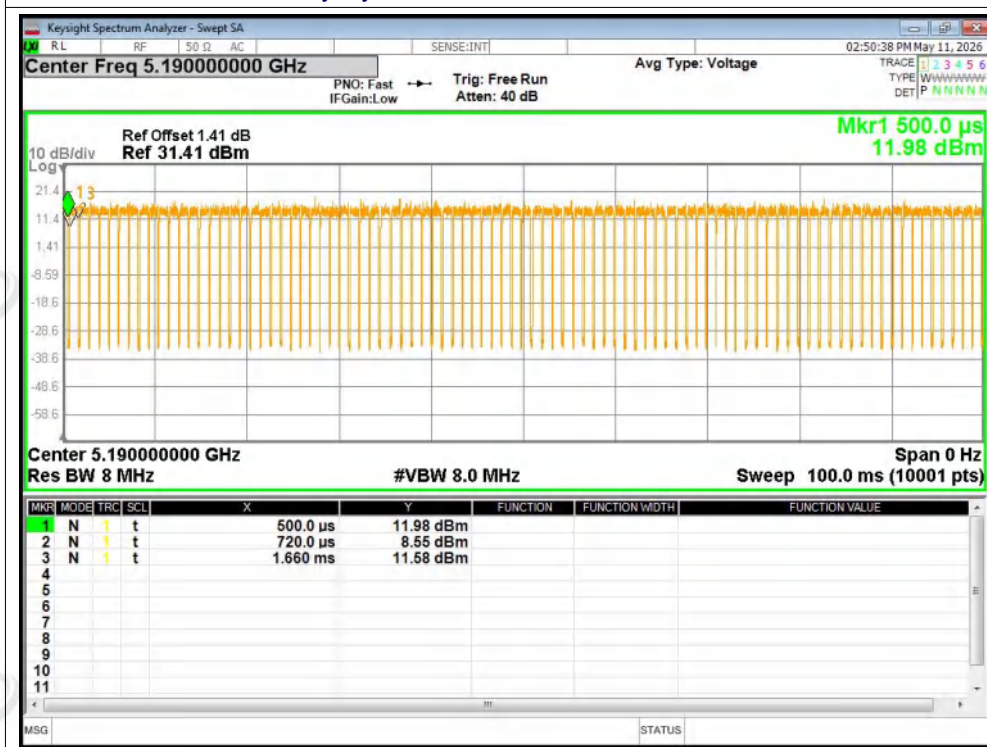


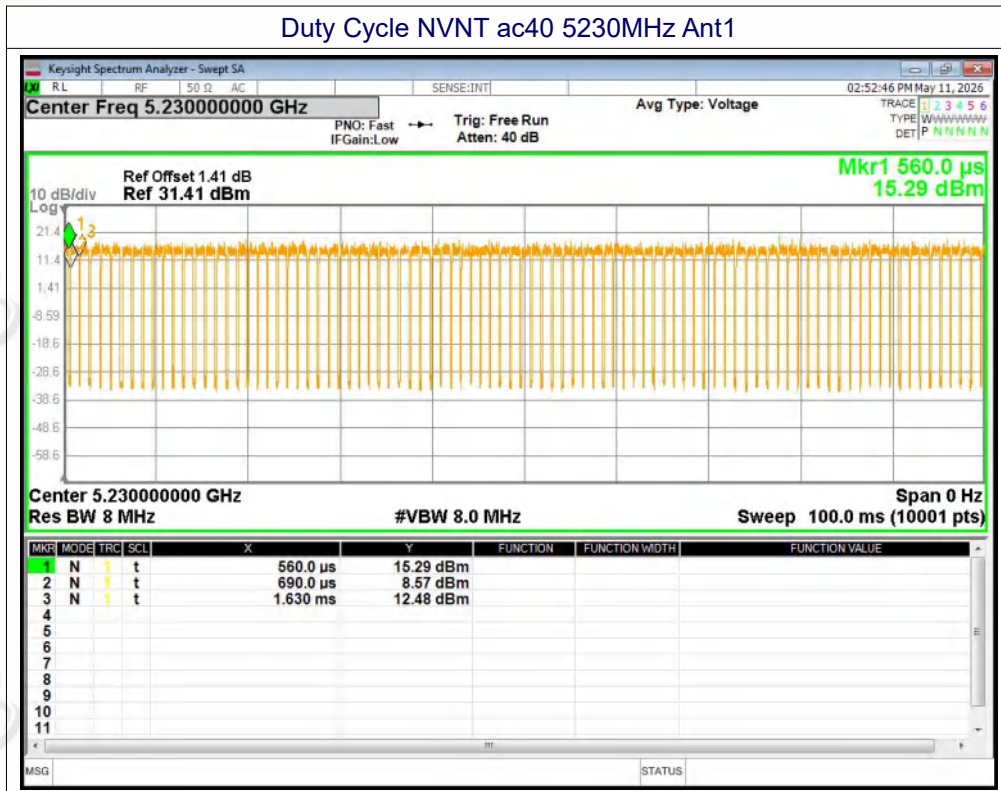


Duty Cycle NVNT ac20 5240MHz Ant1



Duty Cycle NVNT ac40 5190MHz Ant1







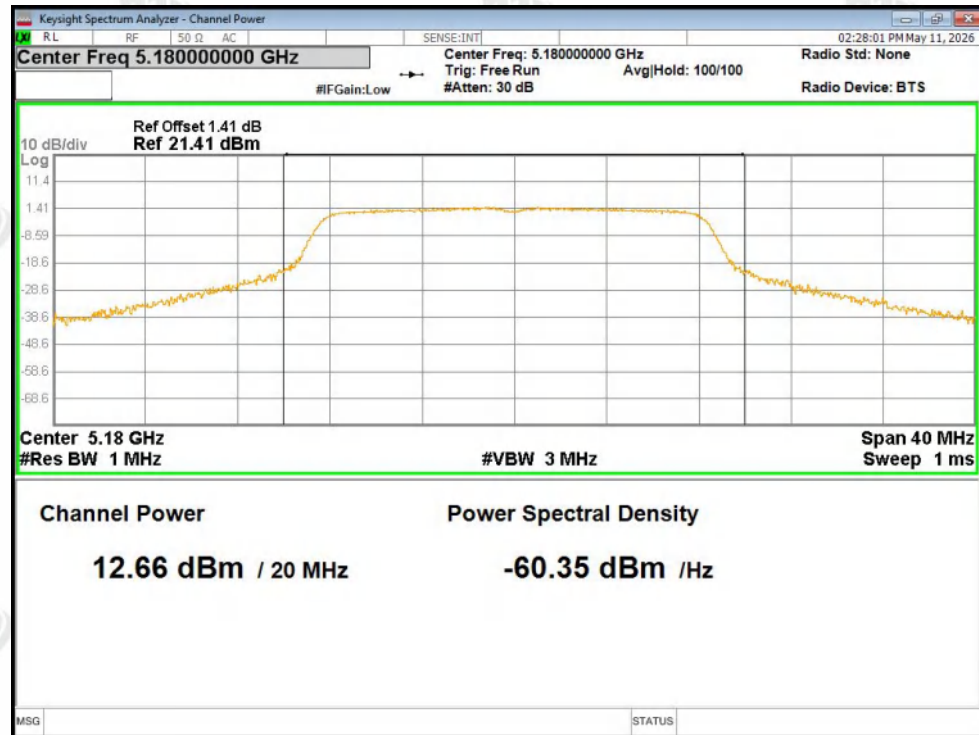
Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	12.66	0.44	13.1	24	Pass
NVNT	a	5200	Ant1	13.63	0.19	13.82	24	Pass
NVNT	a	5240	Ant1	13.81	0.17	13.98	24	Pass
NVNT	n20	5180	Ant1	12.9	0.18	13.08	24	Pass
NVNT	n20	5200	Ant1	13.48	0.16	13.64	24	Pass
NVNT	n20	5240	Ant1	13.64	0.16	13.8	24	Pass
NVNT	n40	5190	Ant1	12.72	0.61	13.33	24	Pass
NVNT	n40	5230	Ant1	13.23	0.49	13.72	24	Pass
NVNT	ac20	5180	Ant1	12.87	0.46	13.33	24	Pass
NVNT	ac20	5200	Ant1	13.38	0.46	13.84	24	Pass
NVNT	ac20	5240	Ant1	13.78	0.24	14.02	24	Pass
NVNT	ac40	5190	Ant1	12.81	0.88	13.69	24	Pass
NVNT	ac40	5230	Ant1	13.36	0	13.36	24	Pass

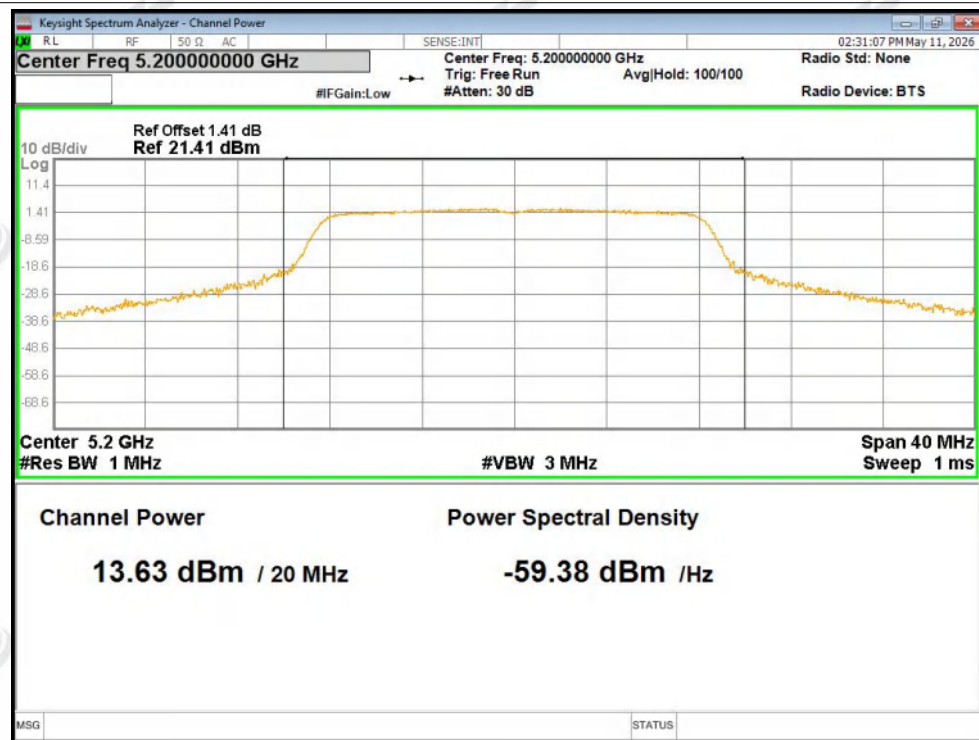


Test Graphs

Power NVNT a 5180MHz Ant1

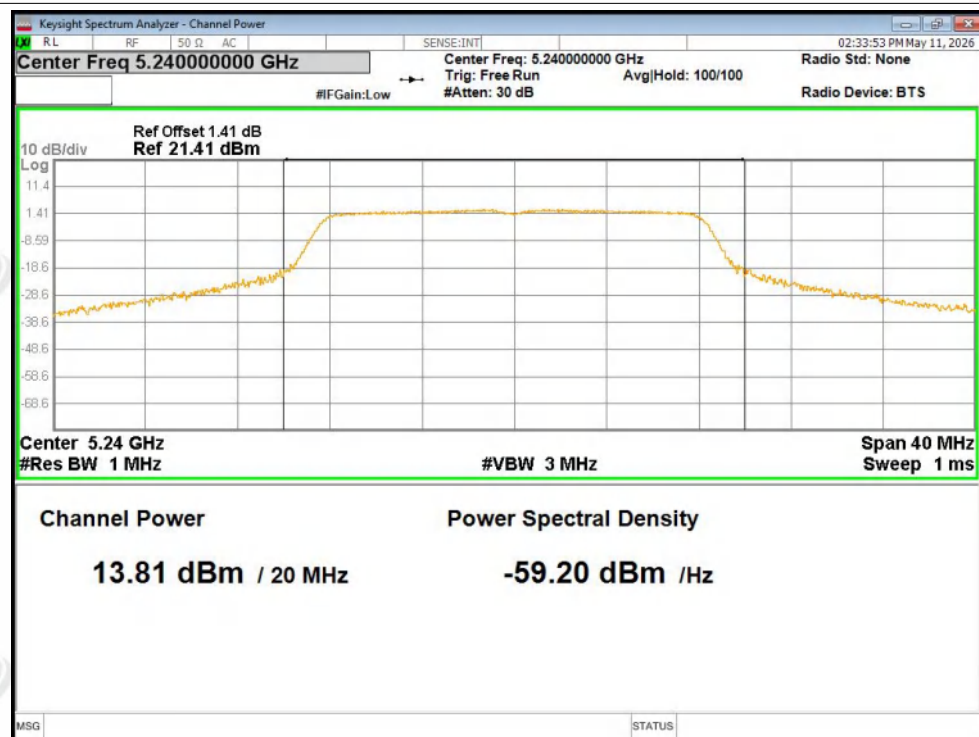


Power NVNT a 5200MHz Ant1

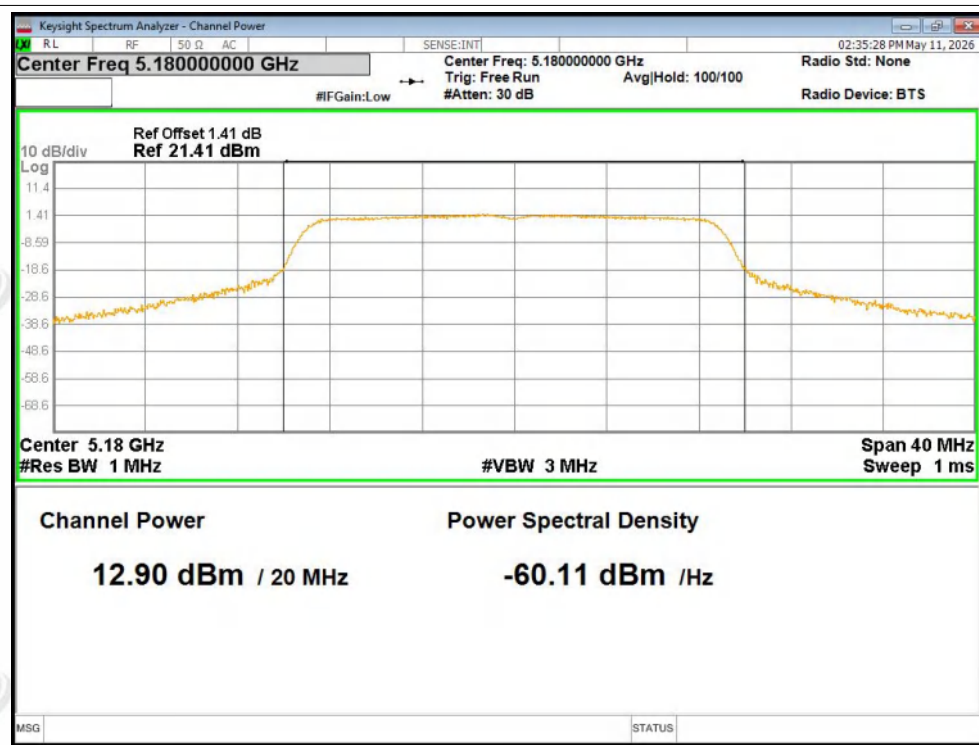




Power NVNT a 5240MHz Ant1

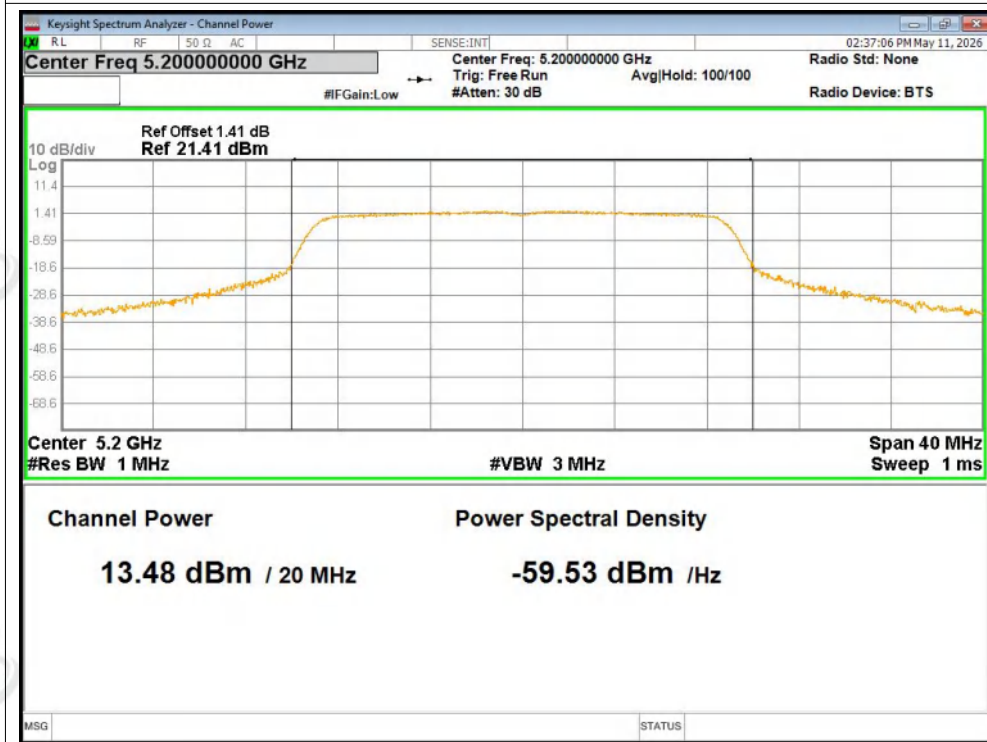


Power NVNT n20 5180MHz Ant1

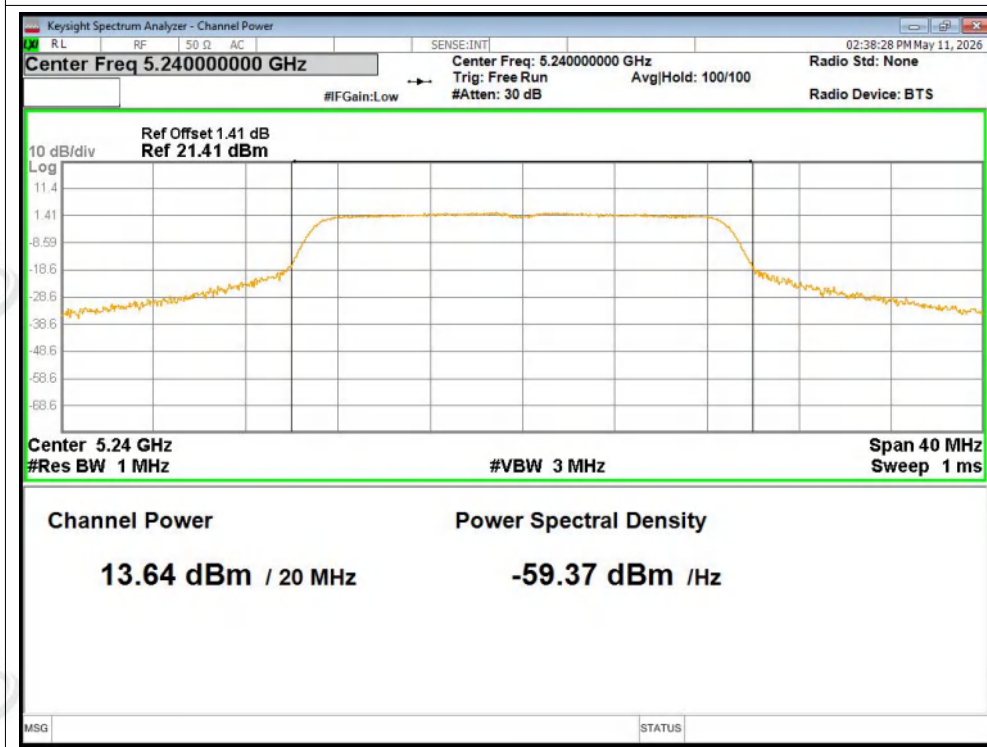




Power NVNT n20 5200MHz Ant1

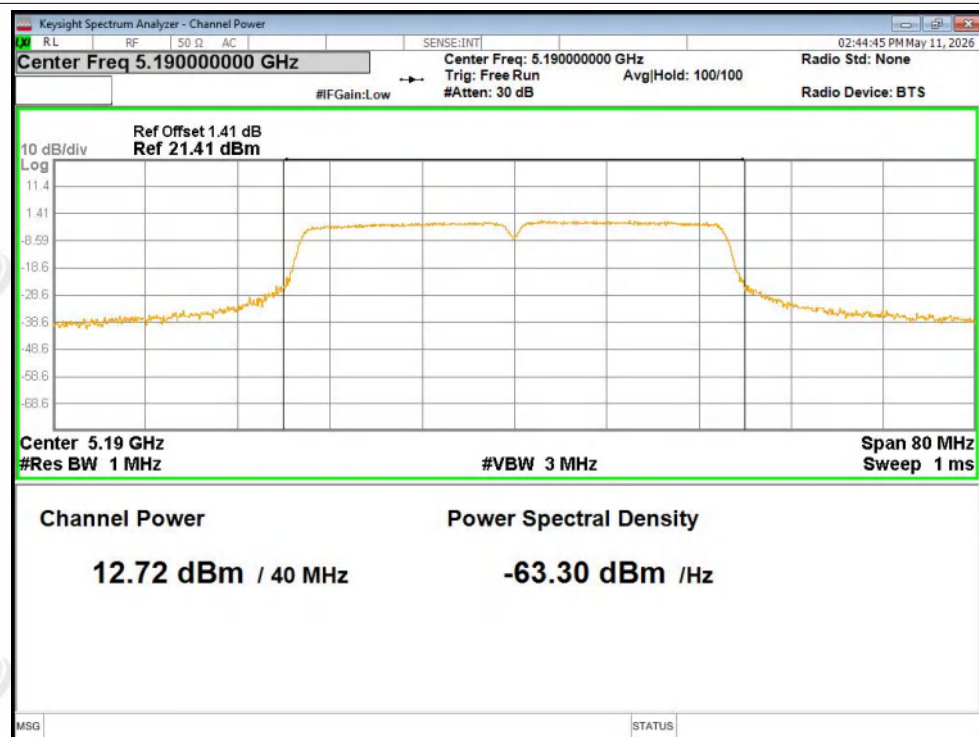


Power NVNT n20 5240MHz Ant1

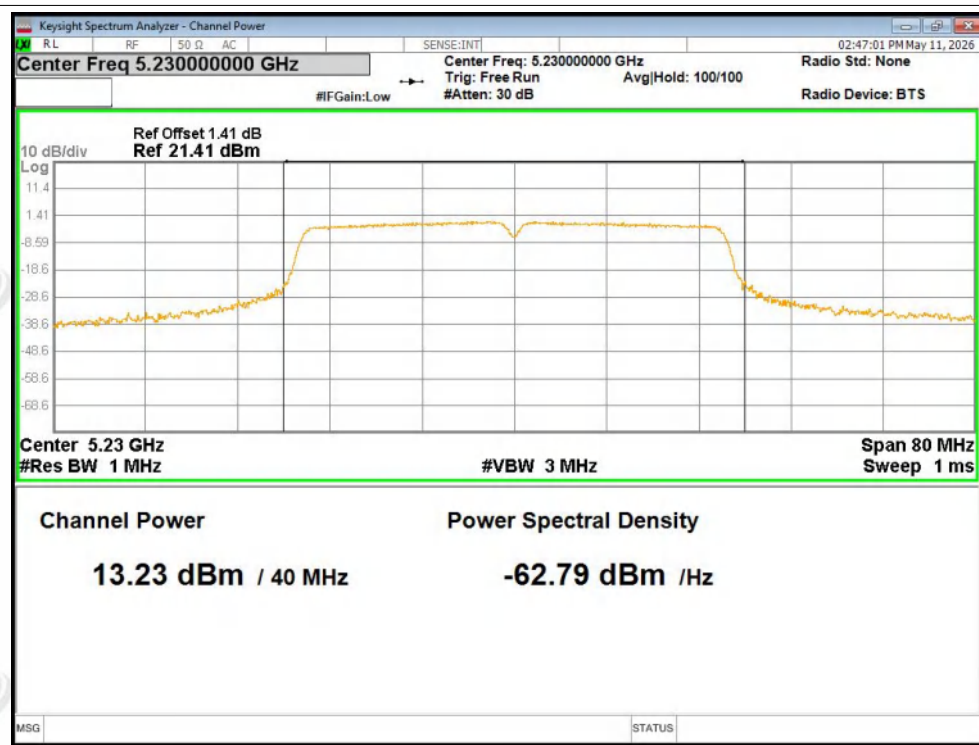




Power NVNT n40 5190MHz Ant1

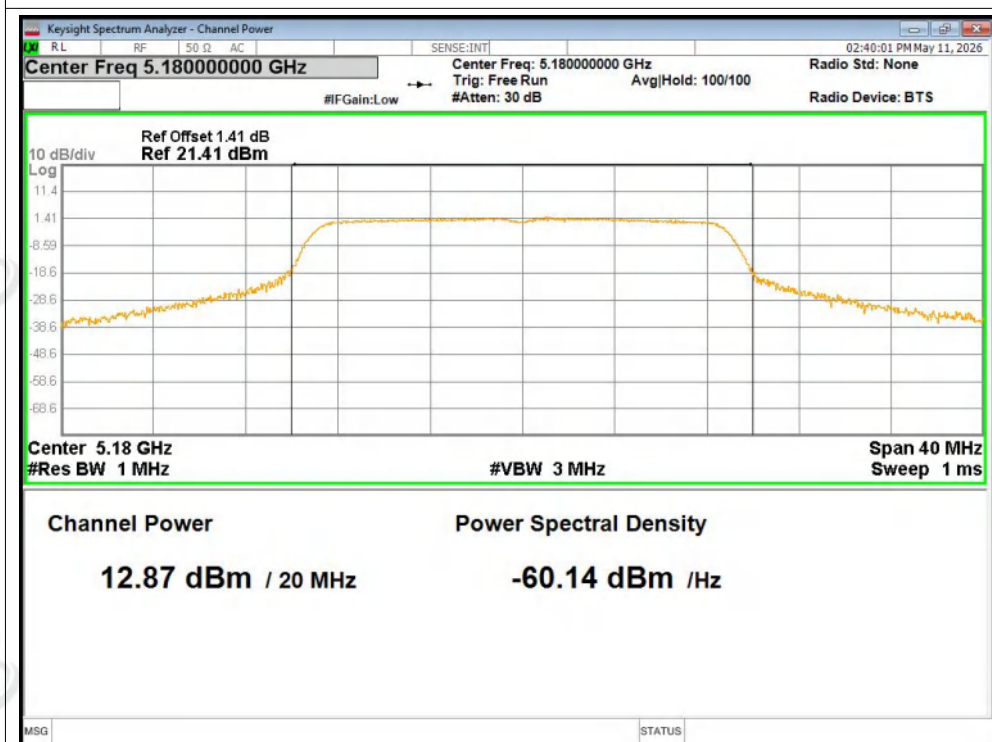


Power NVNT n40 5230MHz Ant1

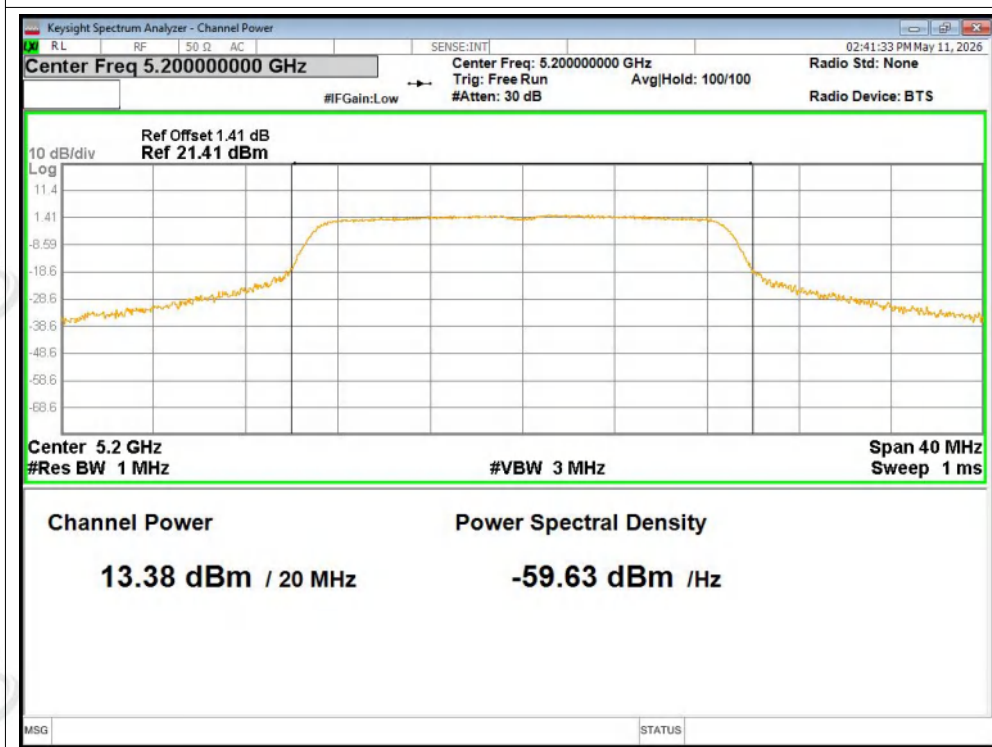




Power NVNT ac20 5180MHz Ant1

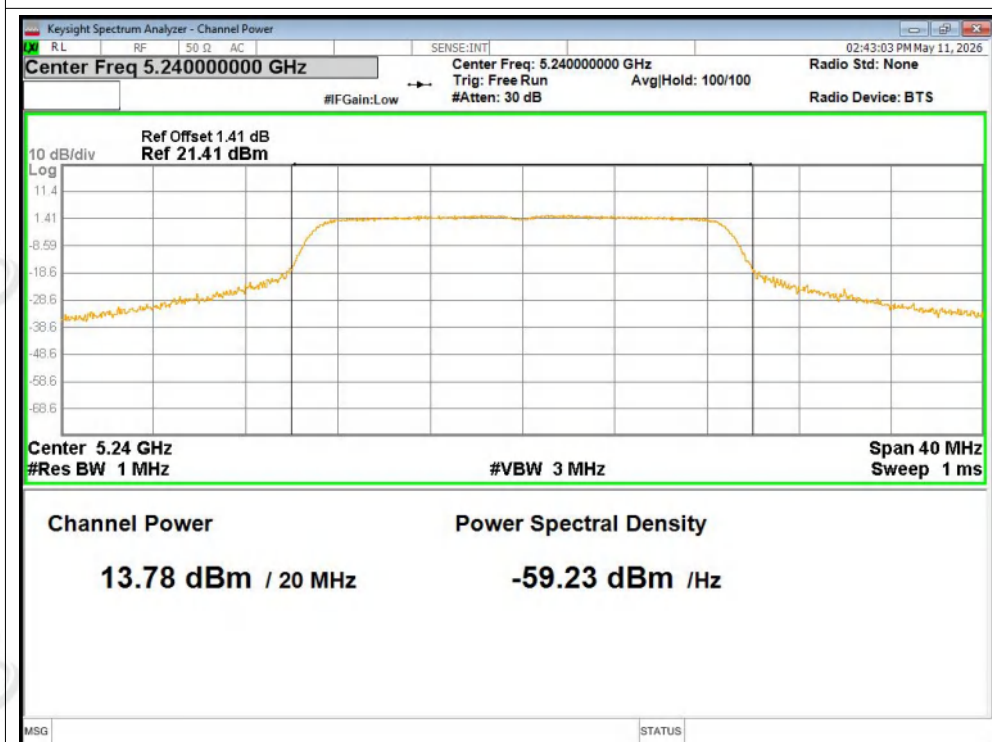


Power NVNT ac20 5200MHz Ant1

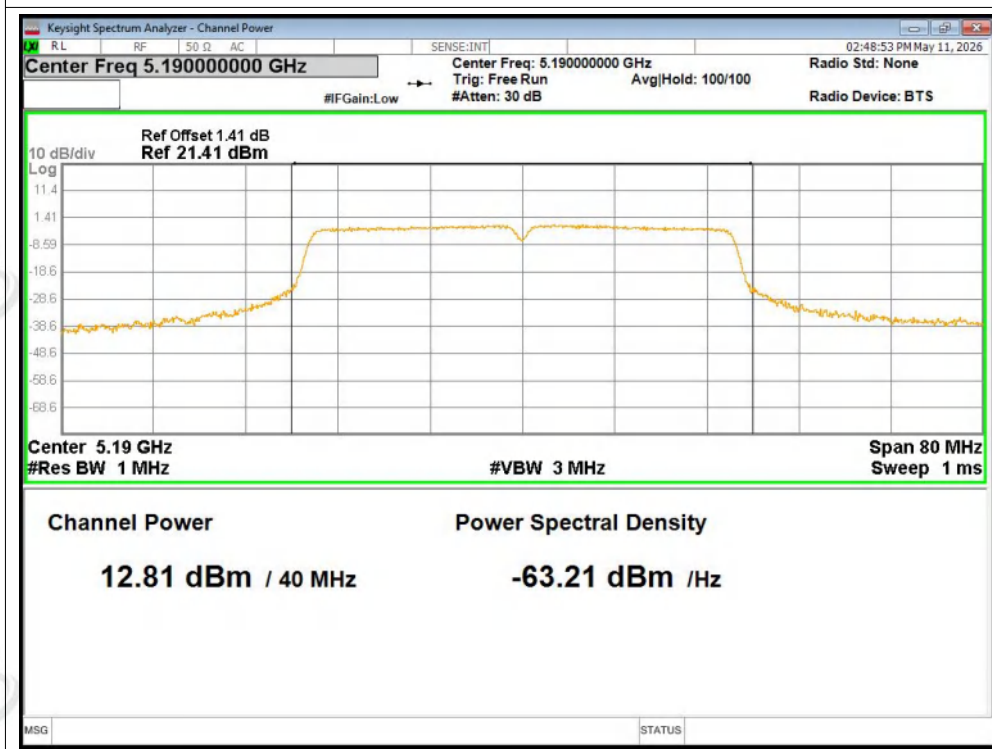


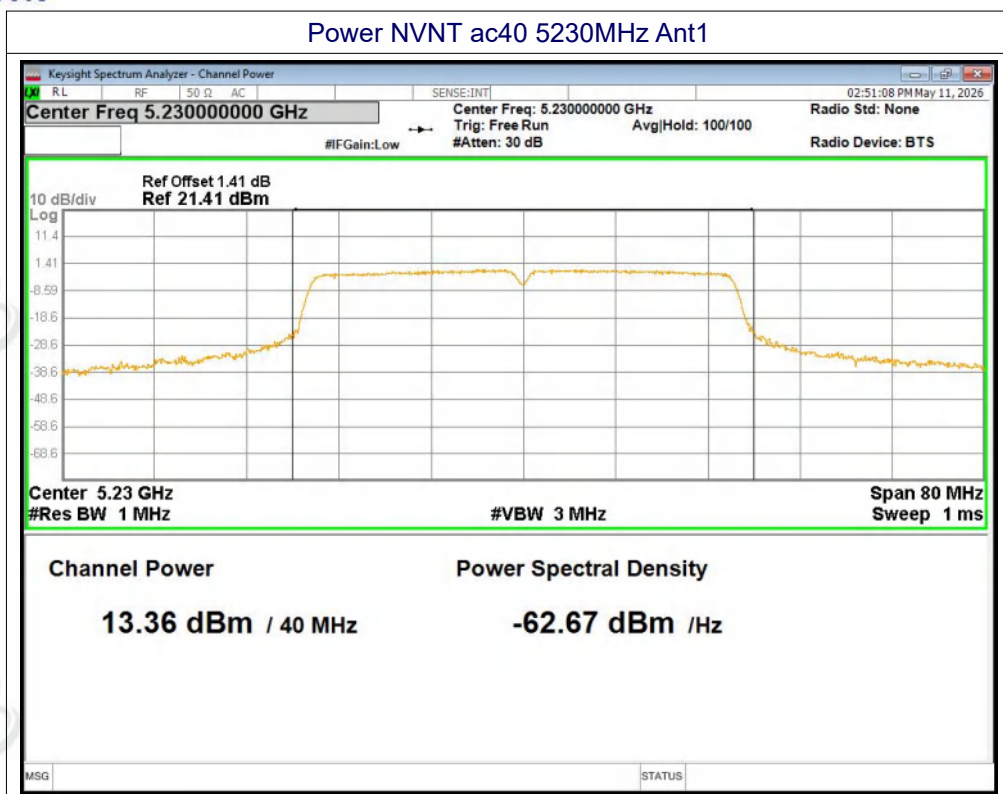


Power NVNT ac20 5240MHz Ant1



Power NVNT ac40 5190MHz Ant1





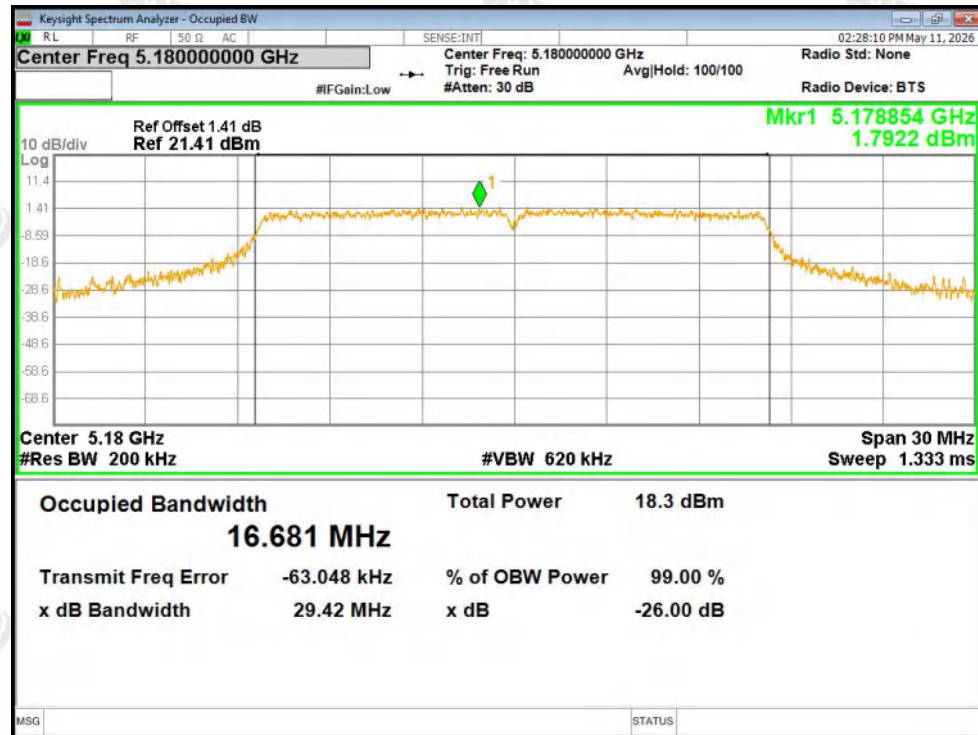
**ZHONGHAN****-26dB Bandwidth & Occupied Channel Bandwidth**

Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	99% OBW (MHz)	Verdict
NVNT	a	5180	Ant1	29.42	16.681	Pass
NVNT	a	5200	Ant1	25.8	16.669	Pass
NVNT	a	5240	Ant1	27.58	16.703	Pass
NVNT	n20	5180	Ant1	27.31	17.847	Pass
NVNT	n20	5200	Ant1	26.83	17.826	Pass
NVNT	n20	5240	Ant1	27.47	17.873	Pass
NVNT	n40	5190	Ant1	46.75	36.428	Pass
NVNT	n40	5230	Ant1	46.40	36.475	Pass
NVNT	ac20	5180	Ant1	26.73	17.865	Pass
NVNT	ac20	5200	Ant1	26.21	17.824	Pass
NVNT	ac20	5240	Ant1	27.62	17.866	Pass
NVNT	ac40	5190	Ant1	55.85	36.501	Pass
NVNT	ac40	5230	Ant1	55.47	36.444	Pass

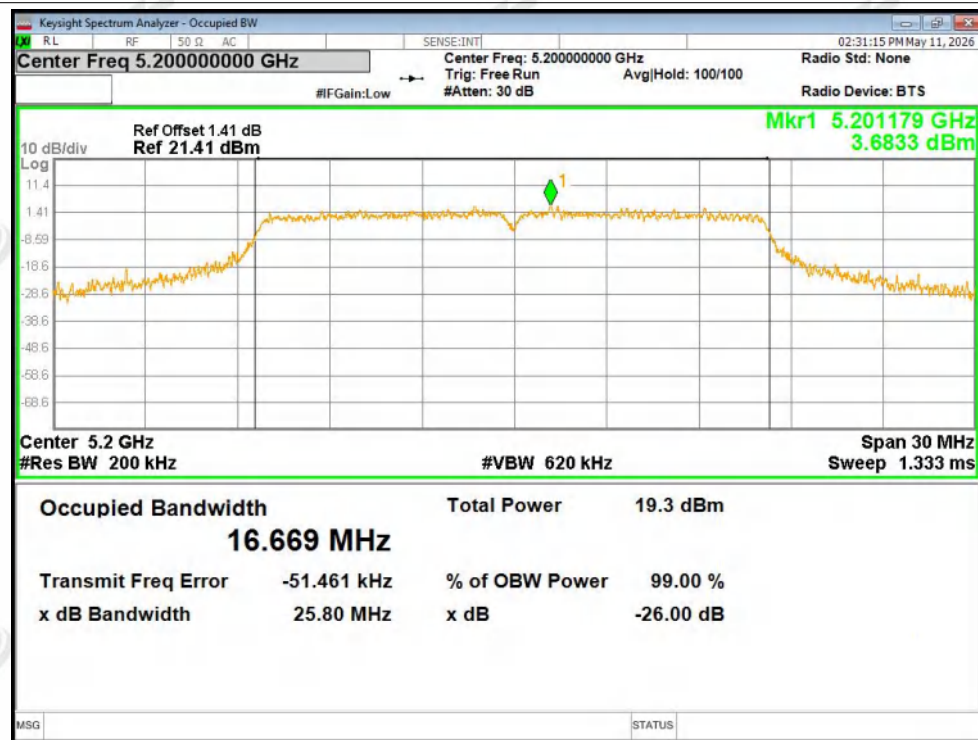


Test Graphs

OBW NVNT a 5180MHz Ant1

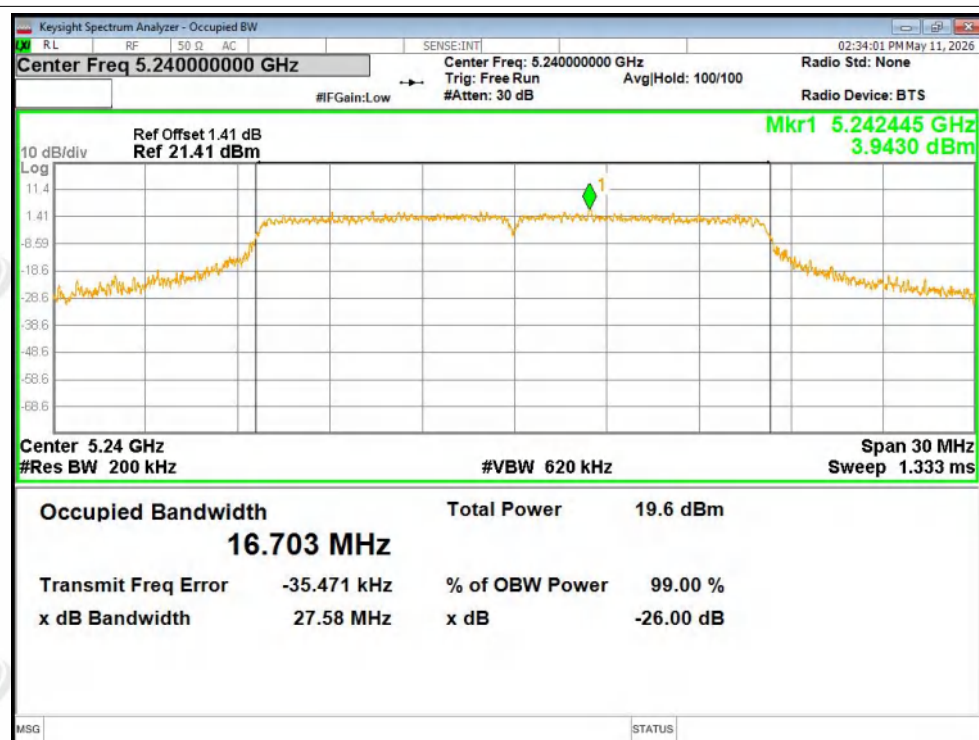


OBW NVNT a 5200MHz Ant1

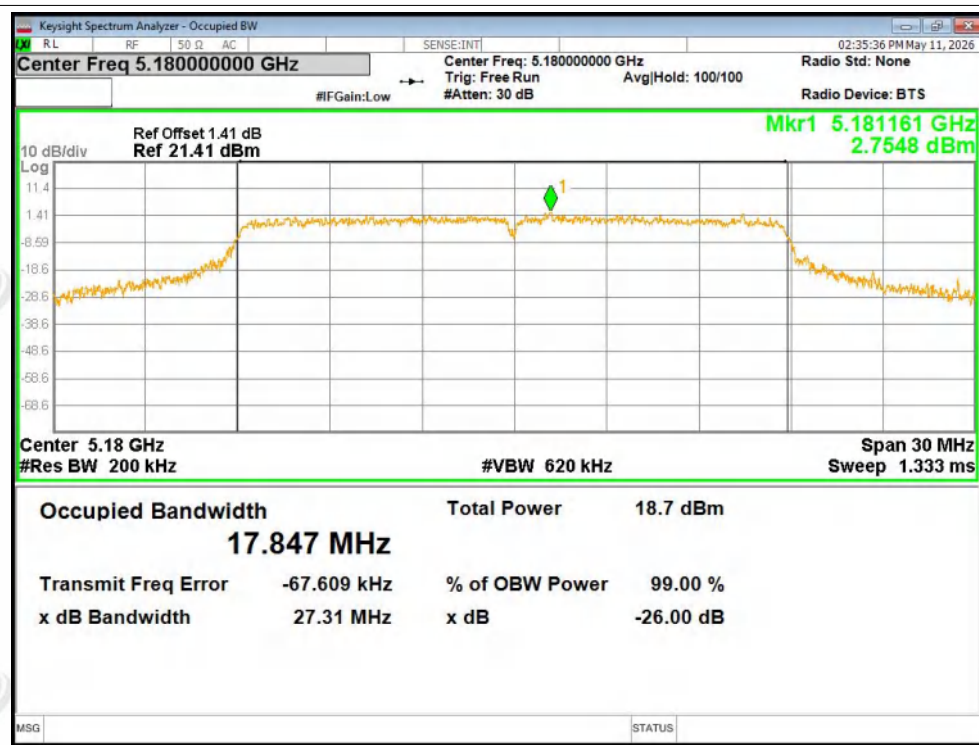




OBW NVNT a 5240MHz Ant1

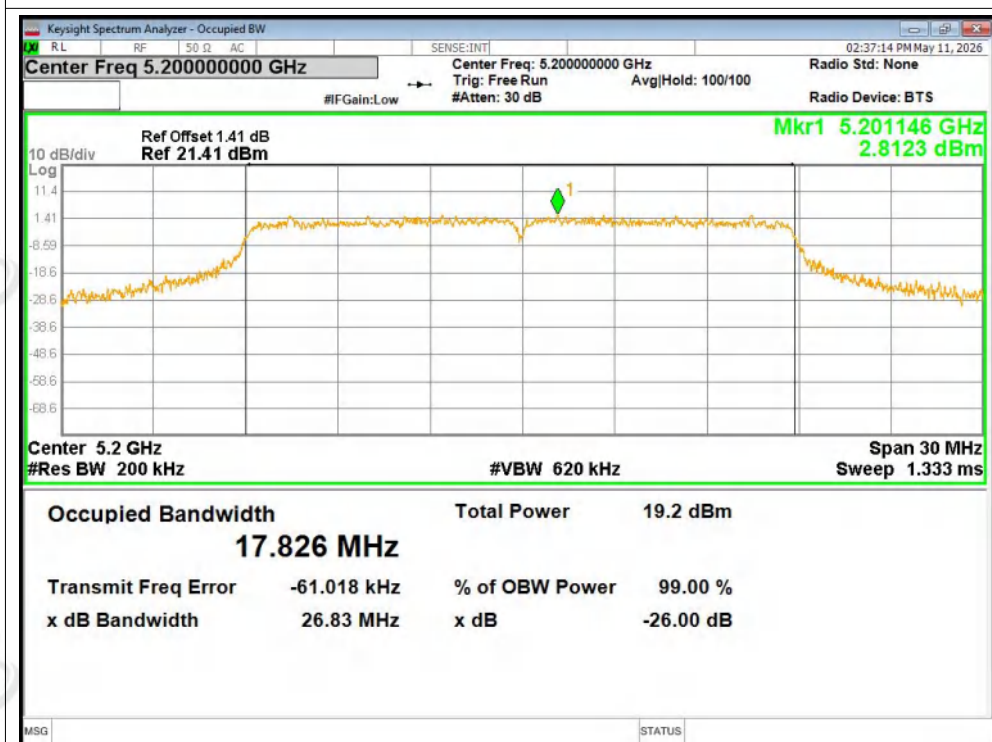


OBW NVNT n20 5180MHz Ant1

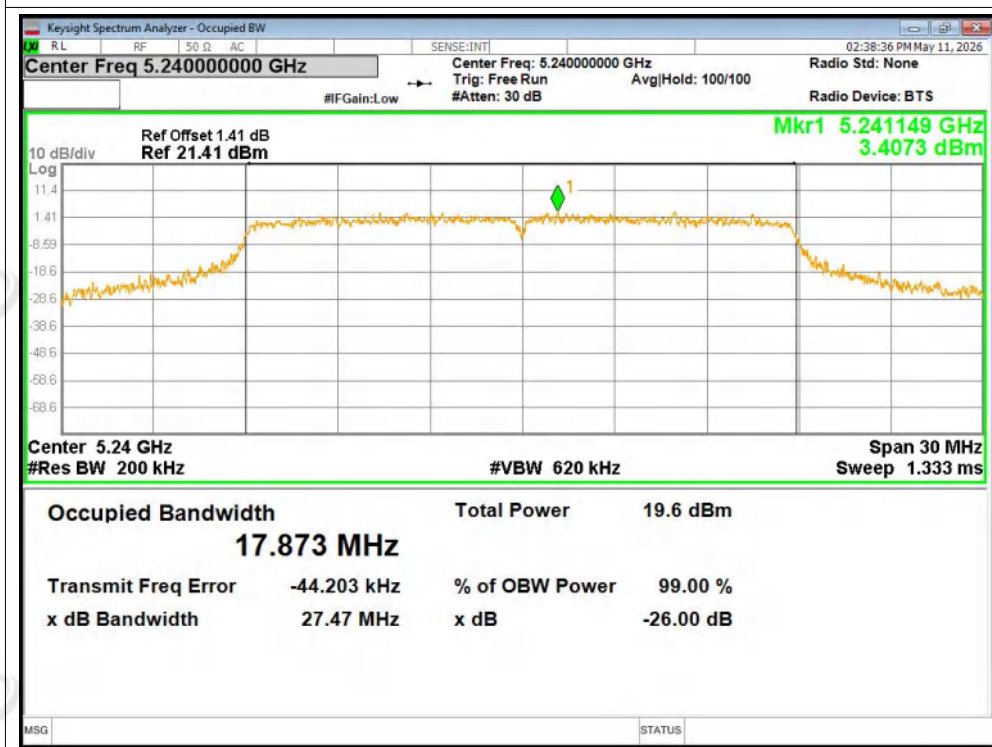




OBW NVNT n20 5200MHz Ant1

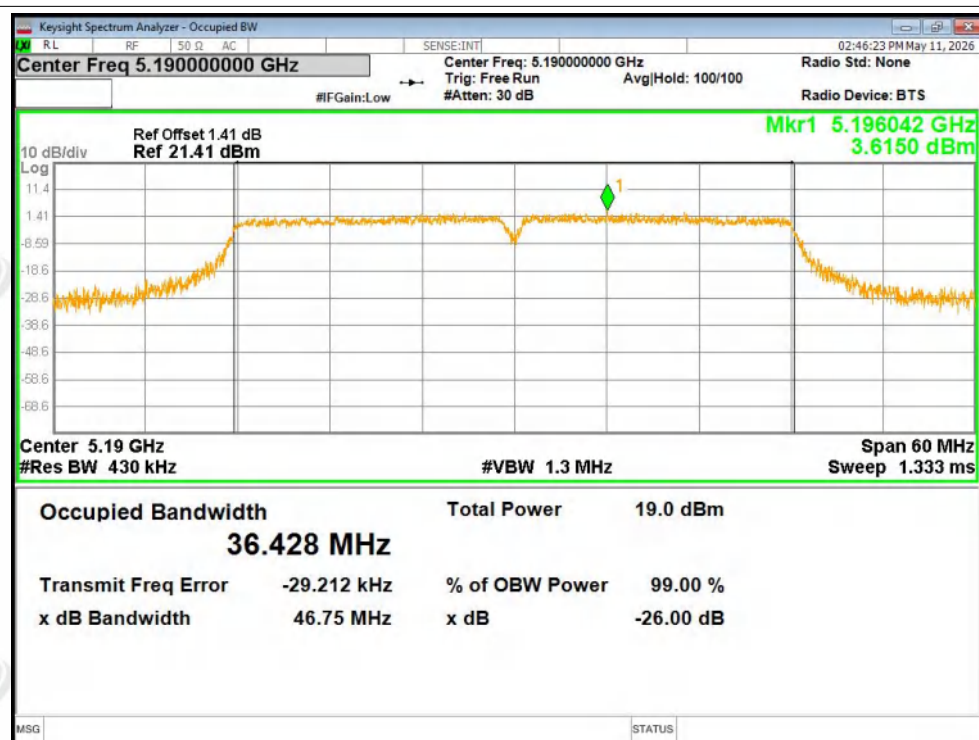


OBW NVNT n20 5240MHz Ant1

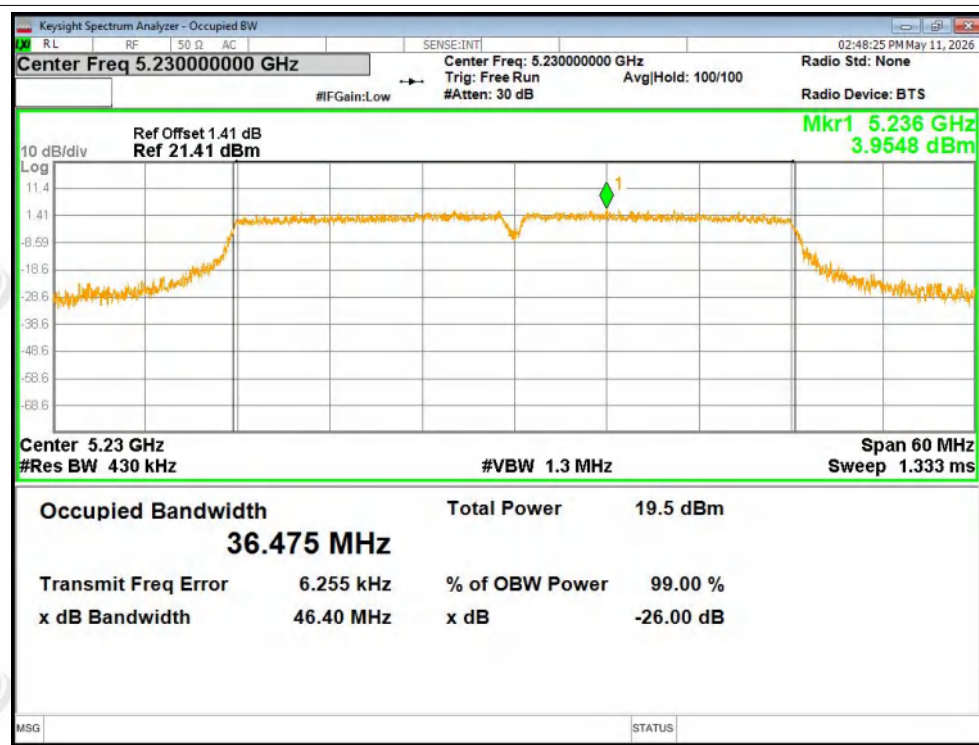




OBW NVNT n40 5190MHz Ant1

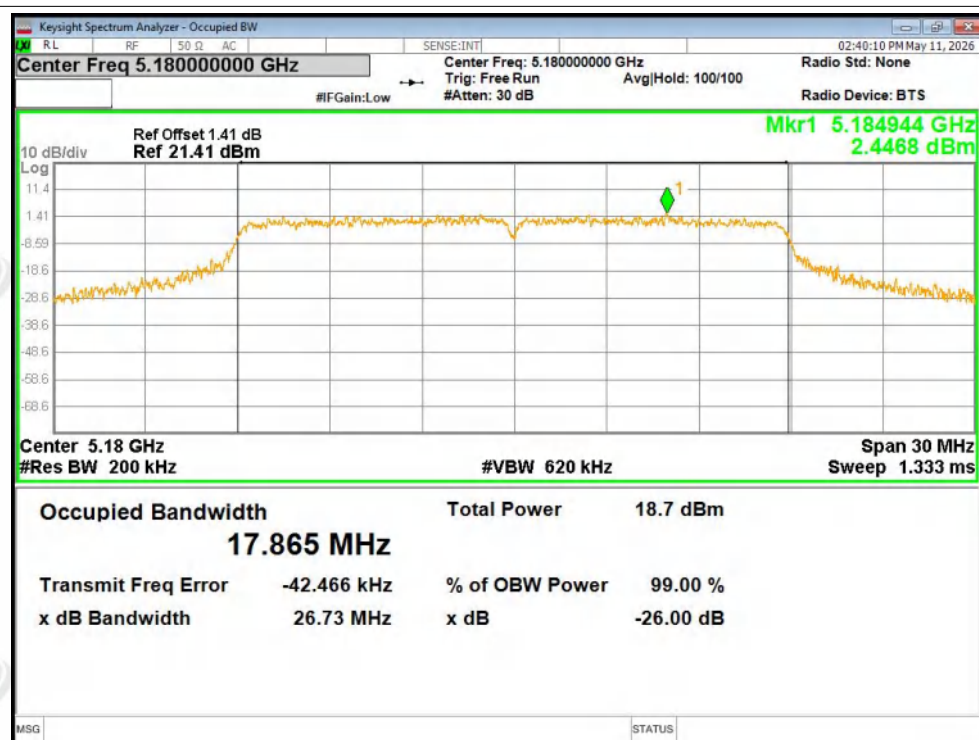


OBW NVNT n40 5230MHz Ant1

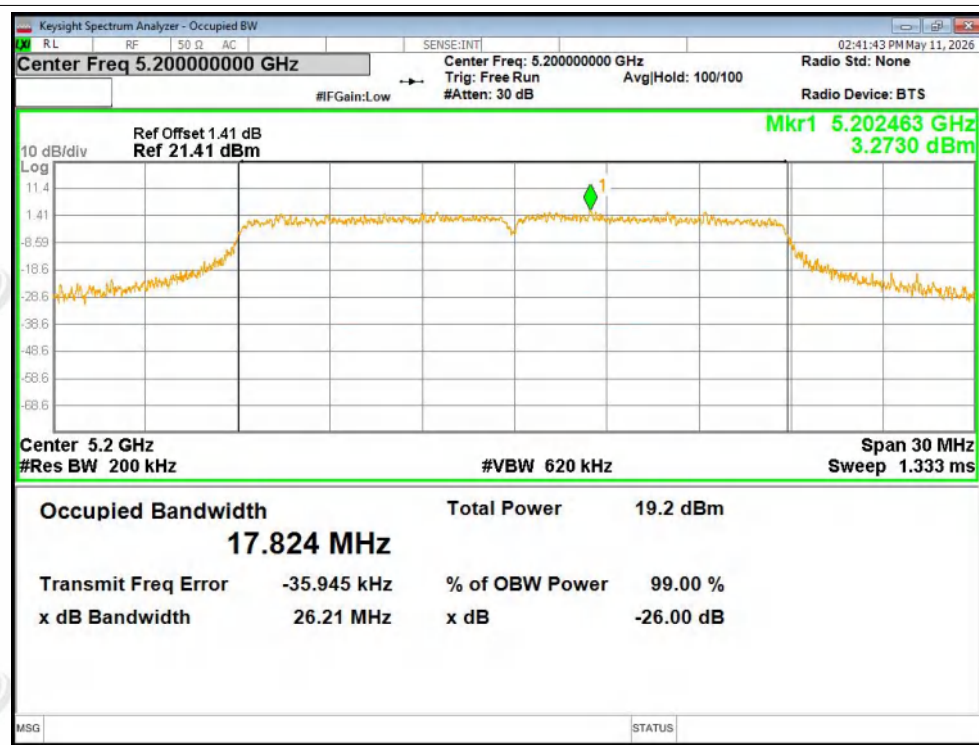




OBW NVNT ac20 5180MHz Ant1

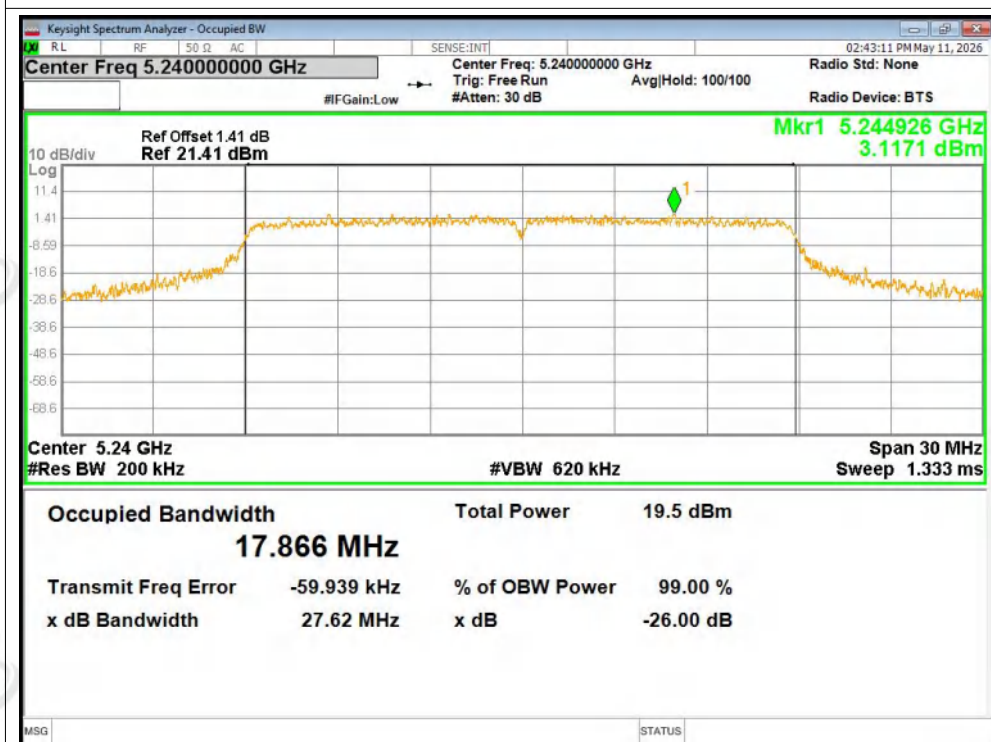


OBW NVNT ac20 5200MHz Ant1

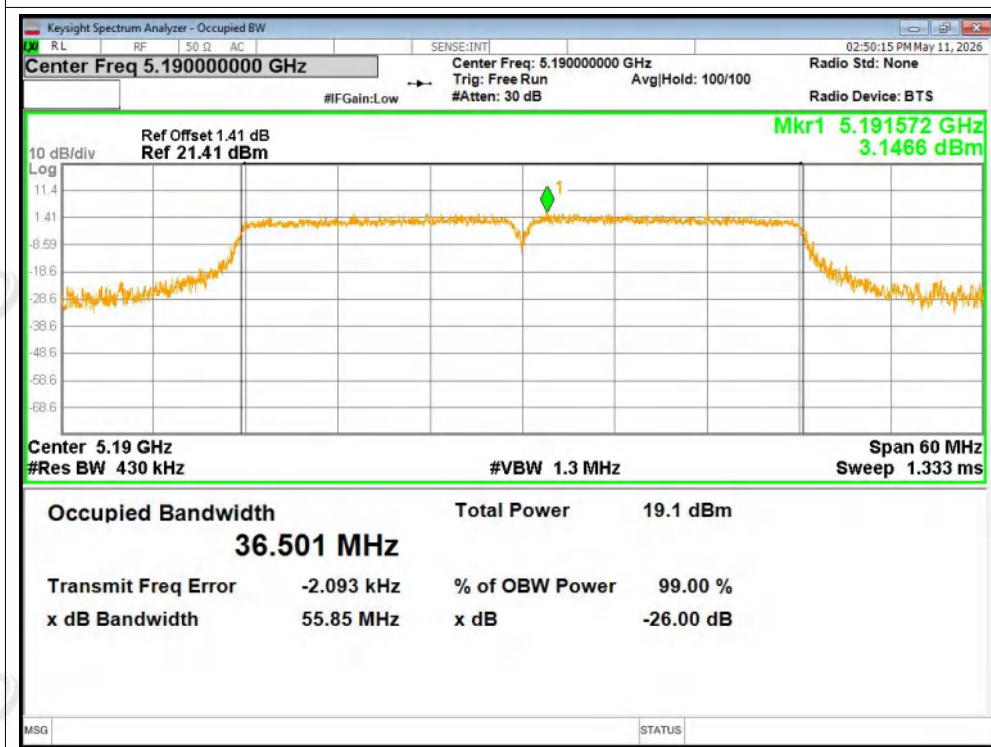




OBW NVNT ac20 5240MHz Ant1

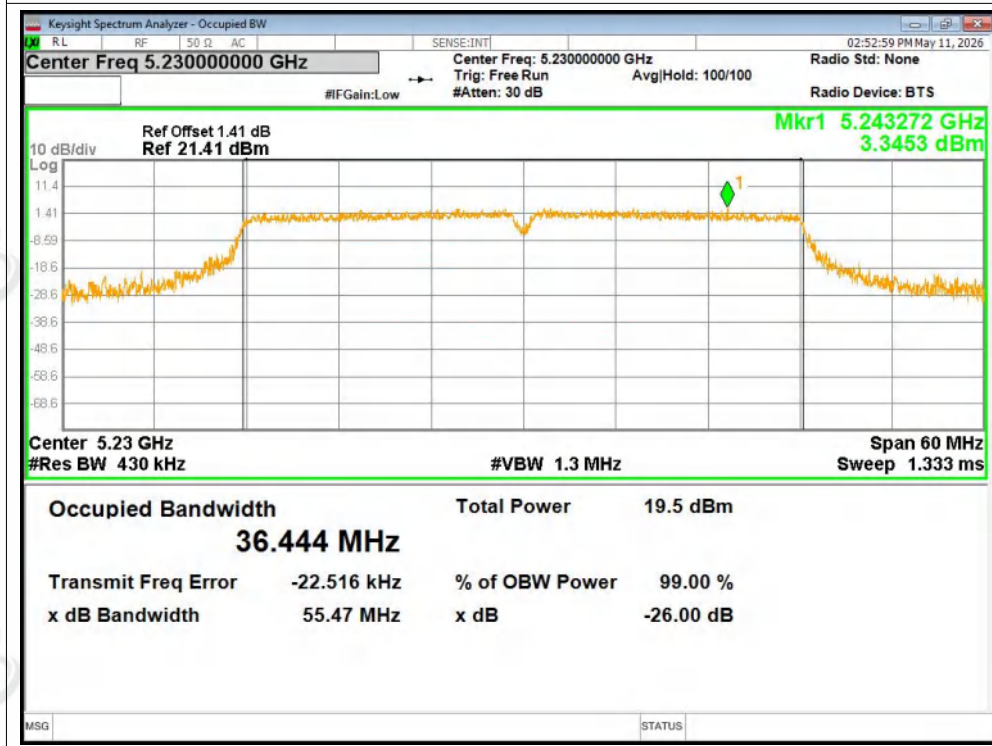


OBW NVNT ac40 5190MHz Ant1





OBW NVNT ac40 5230MHz Ant1





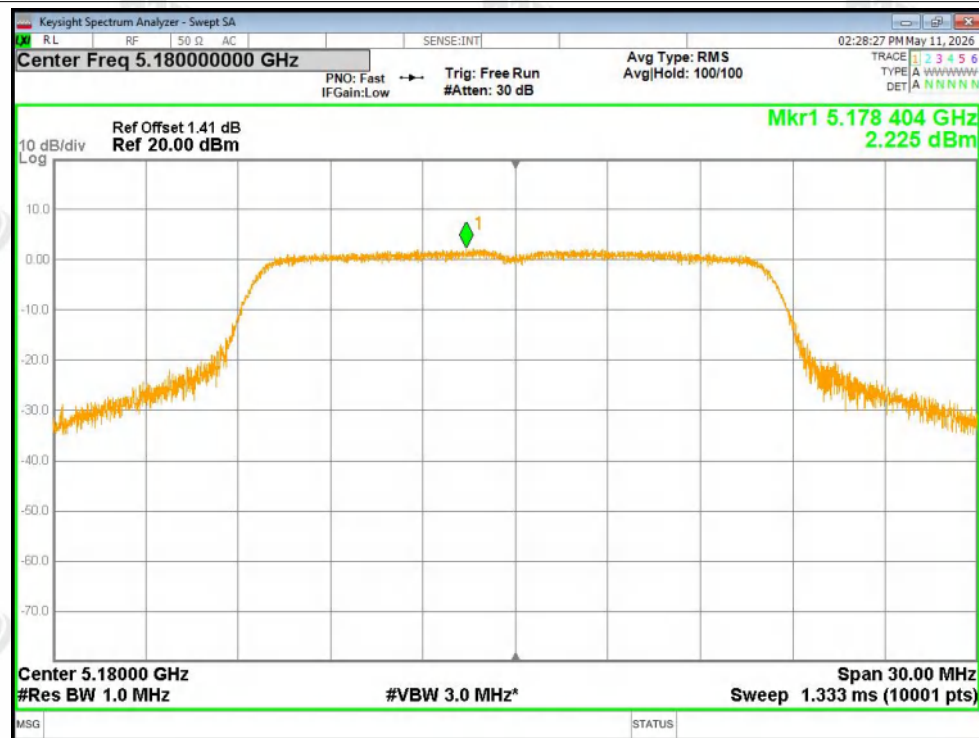
Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	2.23	0.44	2.67	11	Pass
NVNT	a	5200	Ant1	3.63	0.19	3.82	11	Pass
NVNT	a	5240	Ant1	3.81	0.17	3.98	11	Pass
NVNT	n20	5180	Ant1	2.55	0.18	2.73	11	Pass
NVNT	n20	5200	Ant1	2.89	0.16	3.05	11	Pass
NVNT	n20	5240	Ant1	3.3	0.16	3.46	11	Pass
NVNT	n40	5190	Ant1	-1.14	0.61	-0.53	11	Pass
NVNT	n40	5230	Ant1	-0.2	0.49	0.29	11	Pass
NVNT	ac20	5180	Ant1	2.27	0.46	2.73	11	Pass
NVNT	ac20	5200	Ant1	2.85	0.46	3.31	11	Pass
NVNT	ac20	5240	Ant1	3.49	0.24	3.73	11	Pass
NVNT	ac40	5190	Ant1	-1.4	0.88	-0.52	11	Pass
NVNT	ac40	5230	Ant1	-0.23	0	-0.23	11	Pass

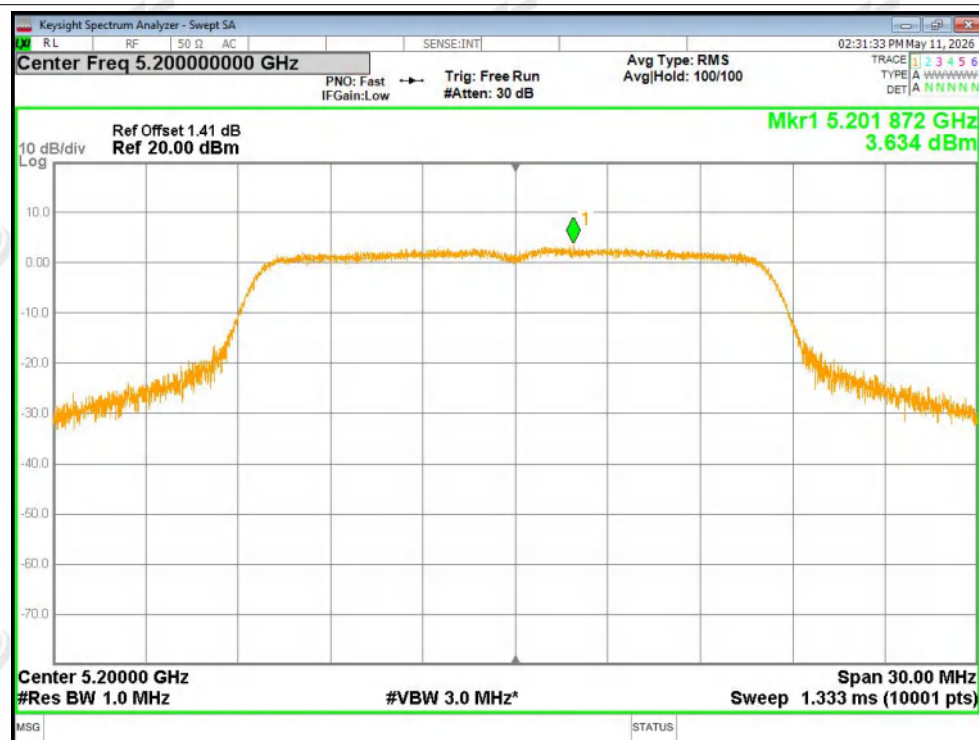


Test Graphs

PSD NVNT a 5180MHz Ant1

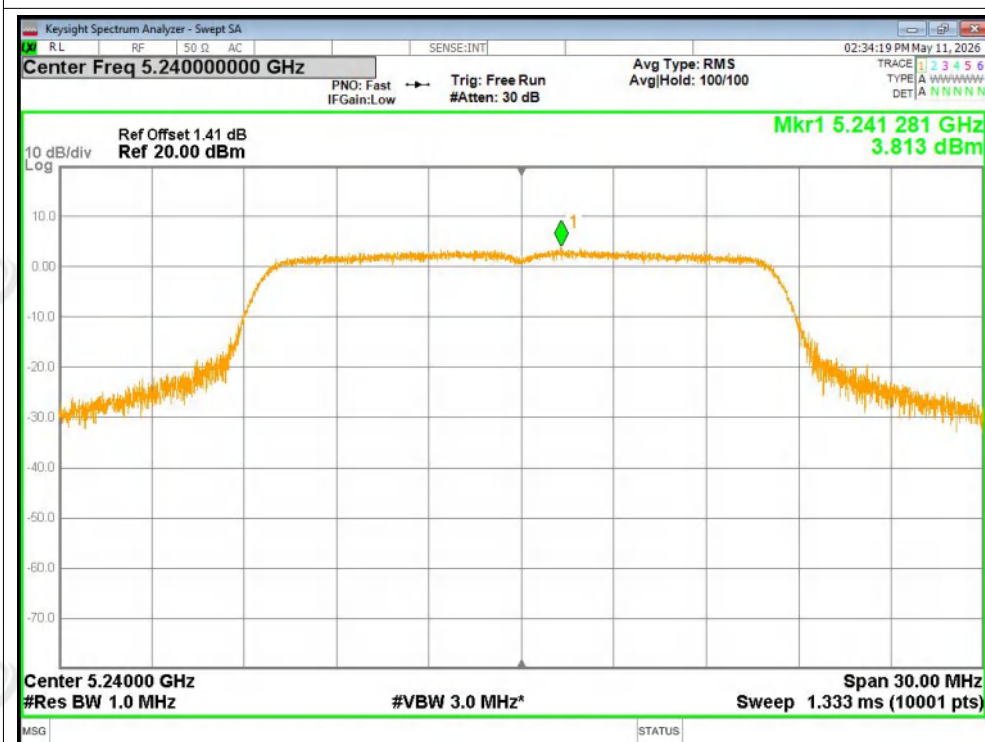


PSD NVNT a 5200MHz Ant1

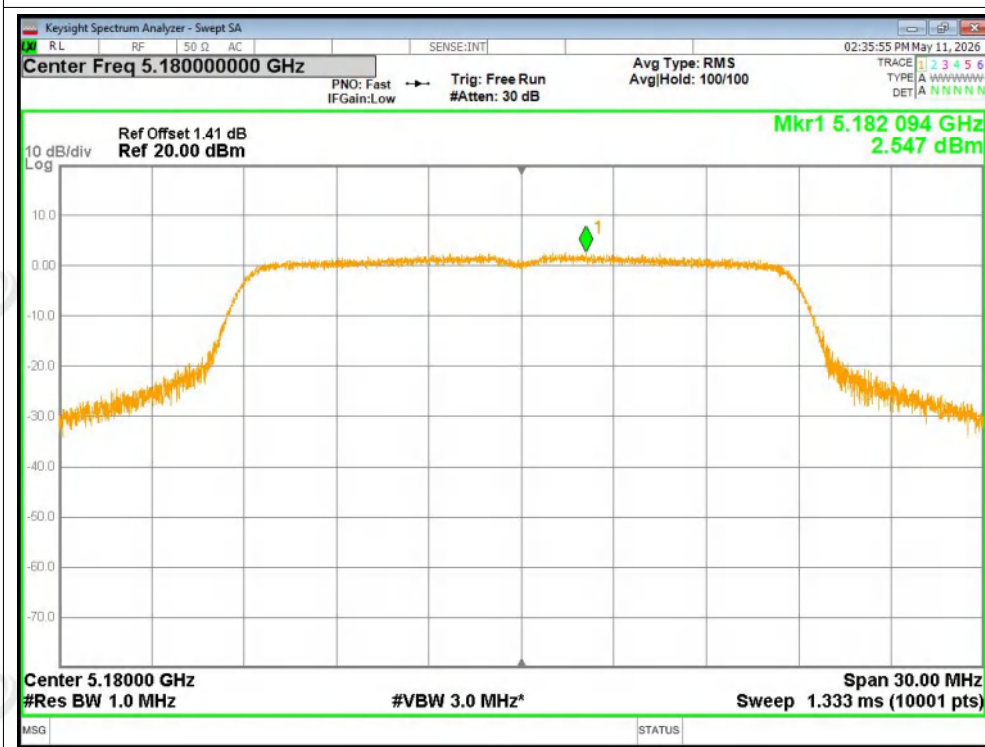




PSD NVNT a 5240MHz Ant1

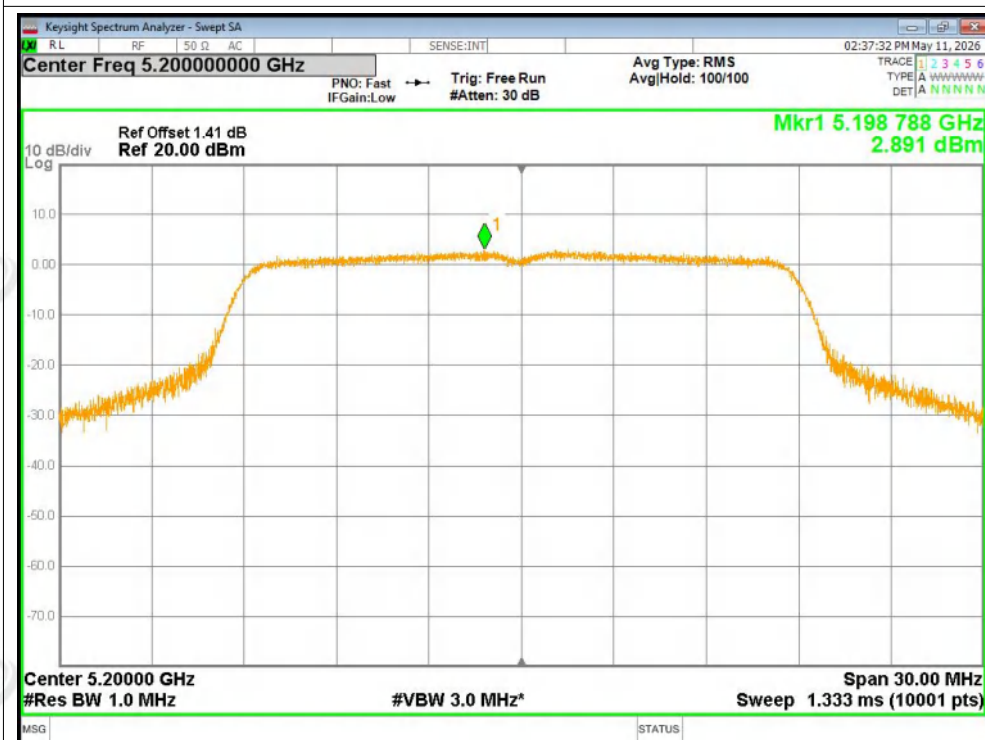


PSD NVNT n20 5180MHz Ant1

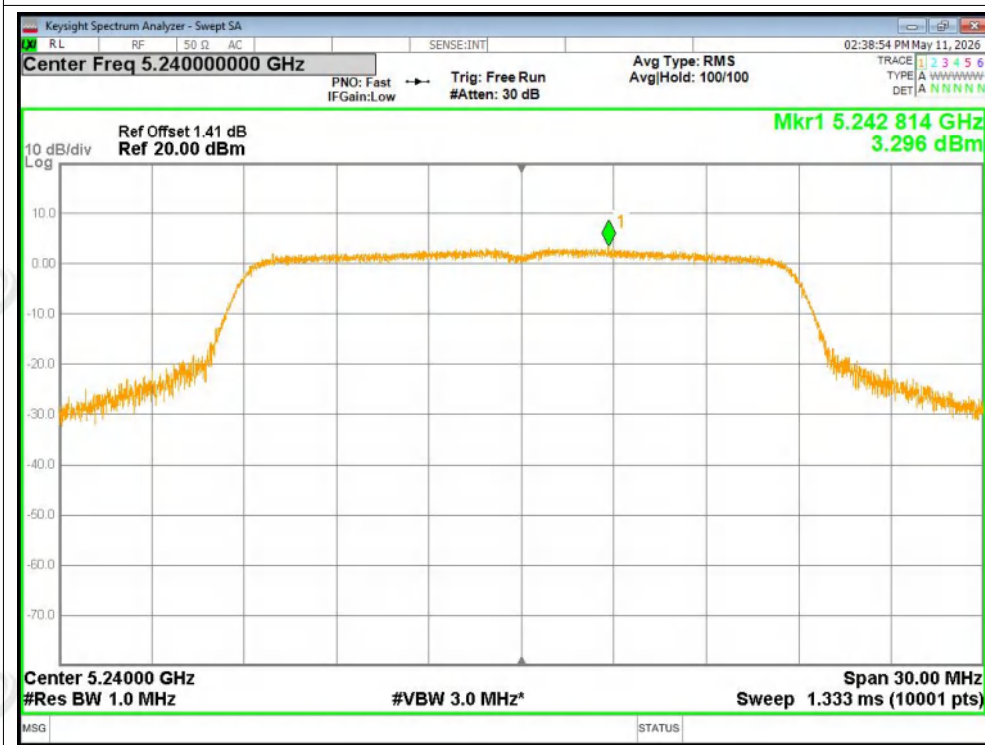




PSD NVNT n20 5200MHz Ant1

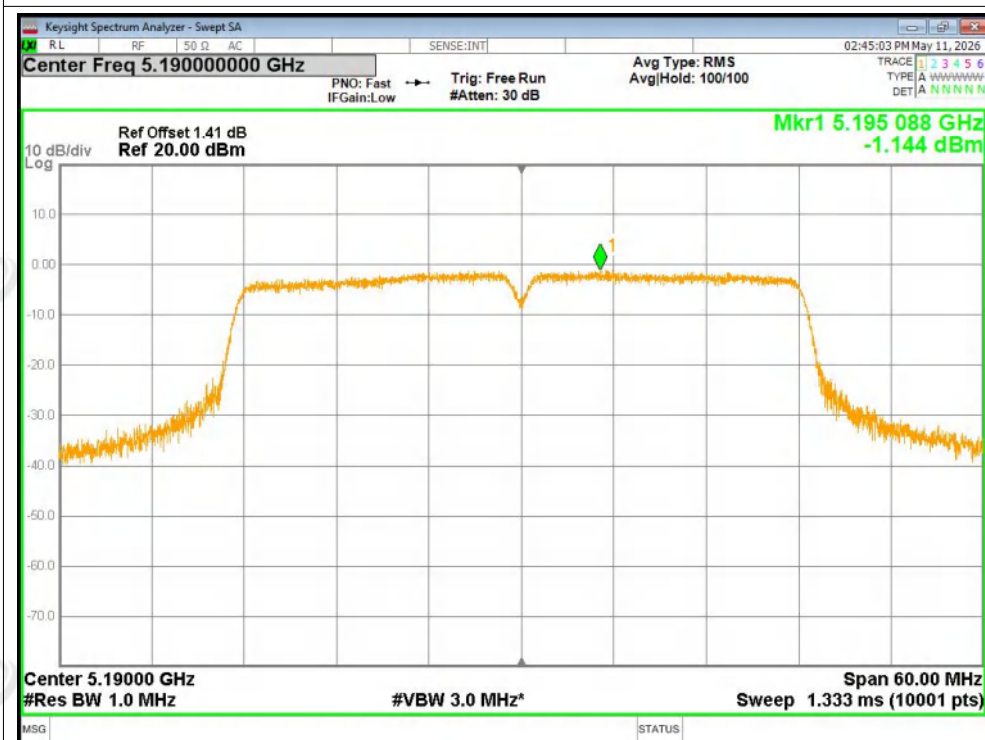


PSD NVNT n20 5240MHz Ant1

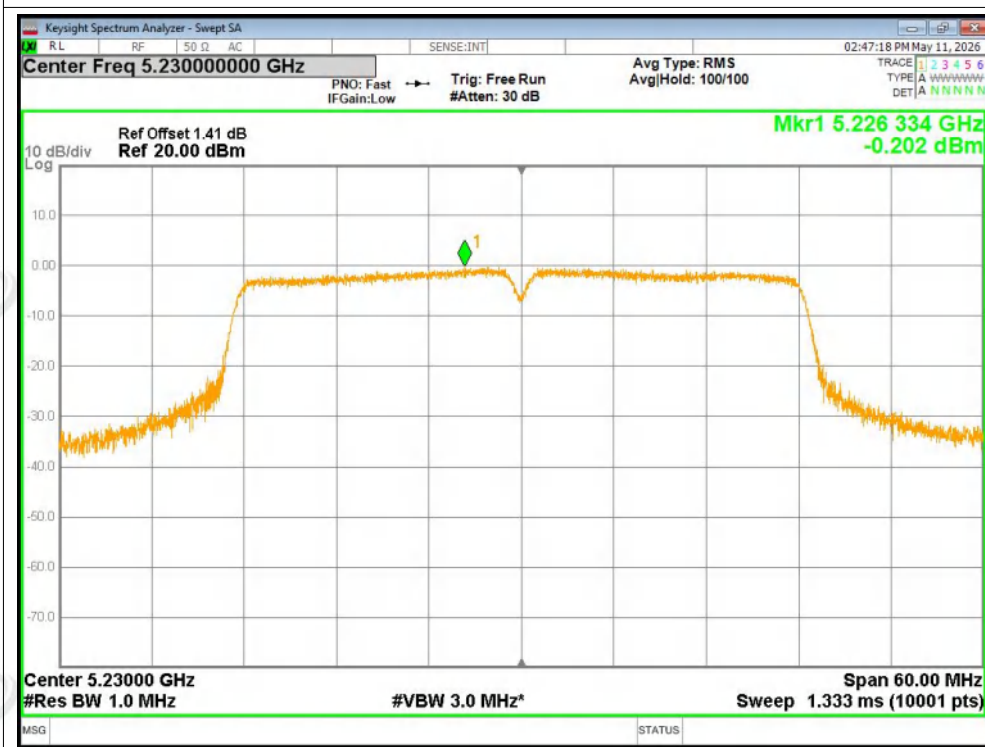




PSD NVNT n40 5190MHz Ant1

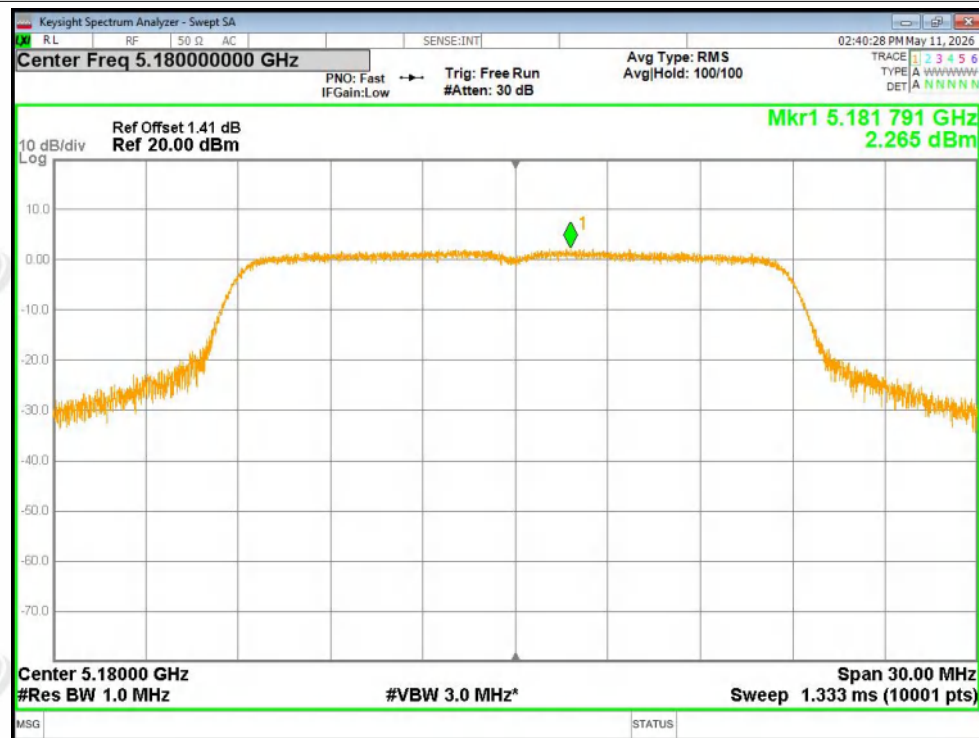


PSD NVNT n40 5230MHz Ant1

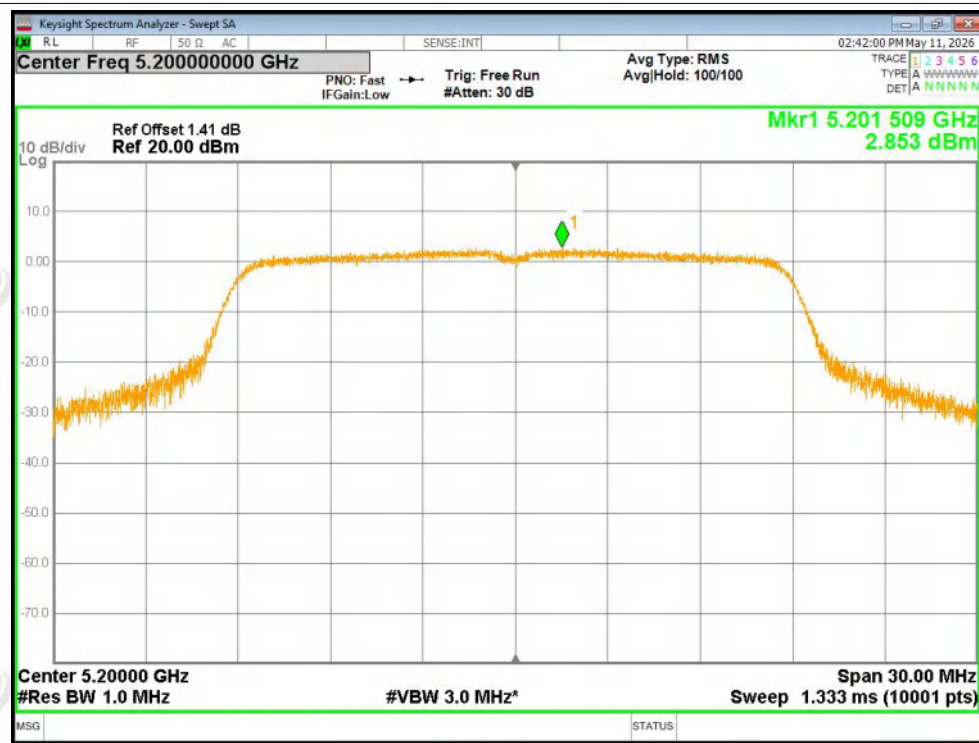




PSD NVNT ac20 5180MHz Ant1

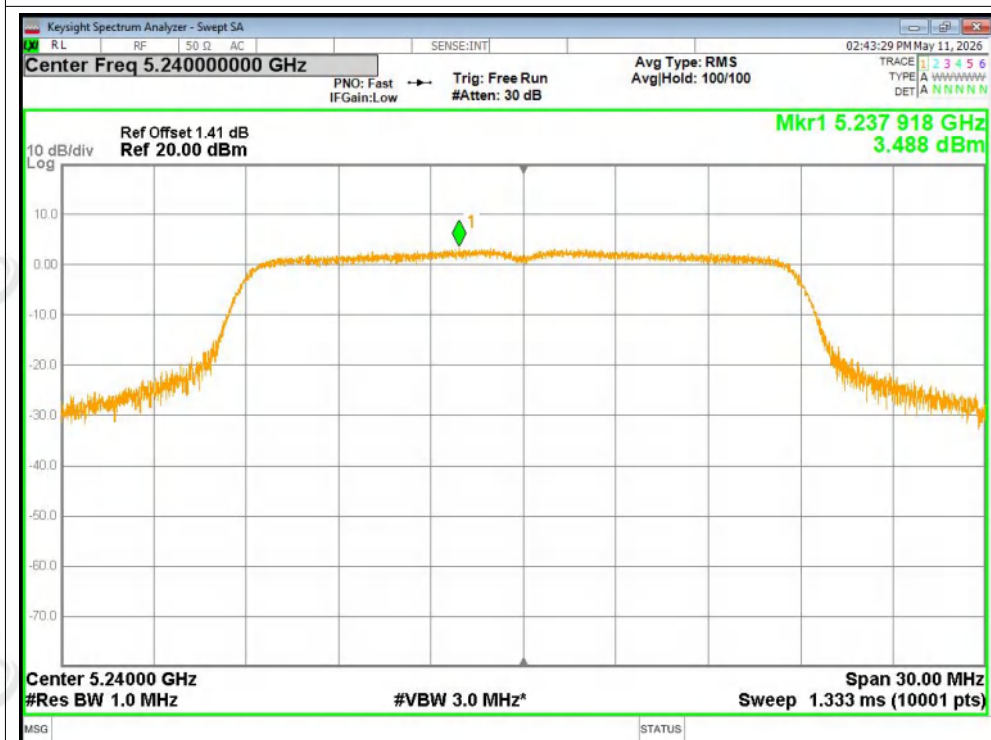


PSD NVNT ac20 5200MHz Ant1

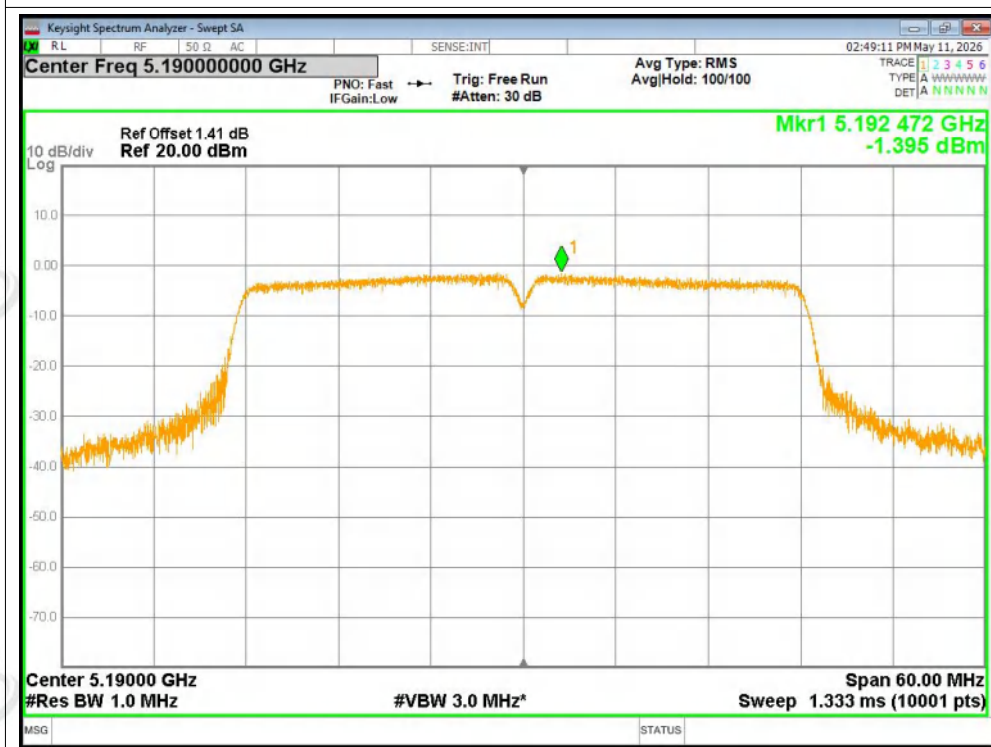




PSD NVNT ac20 5240MHz Ant1

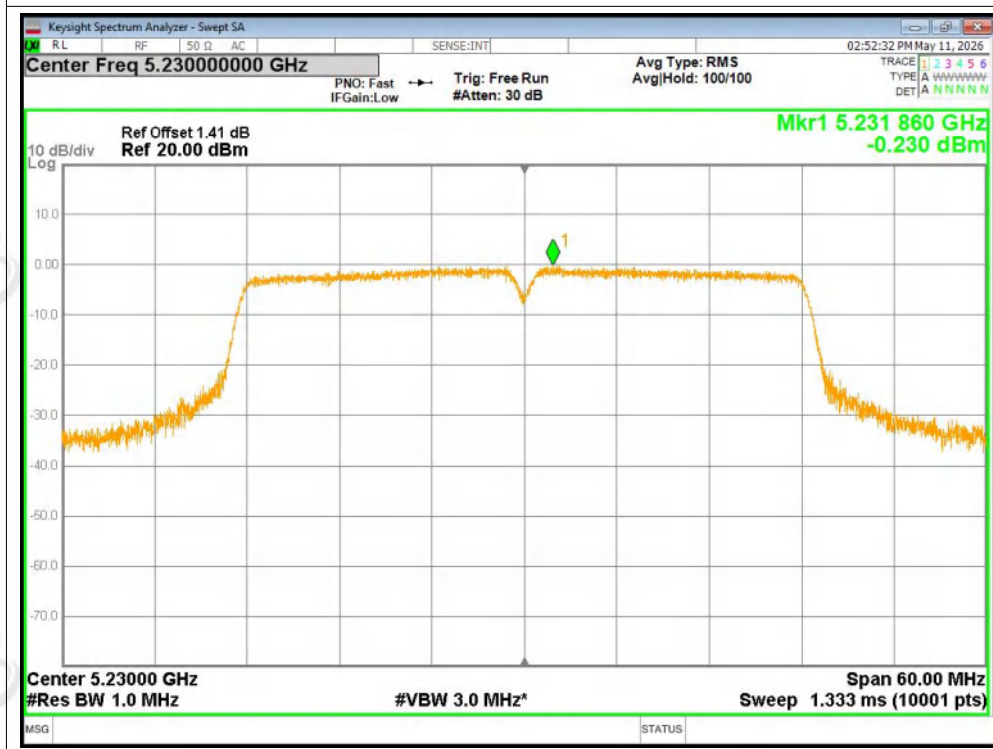


PSD NVNT ac40 5190MHz Ant1





PSD NVNT ac40 5230MHz Ant1



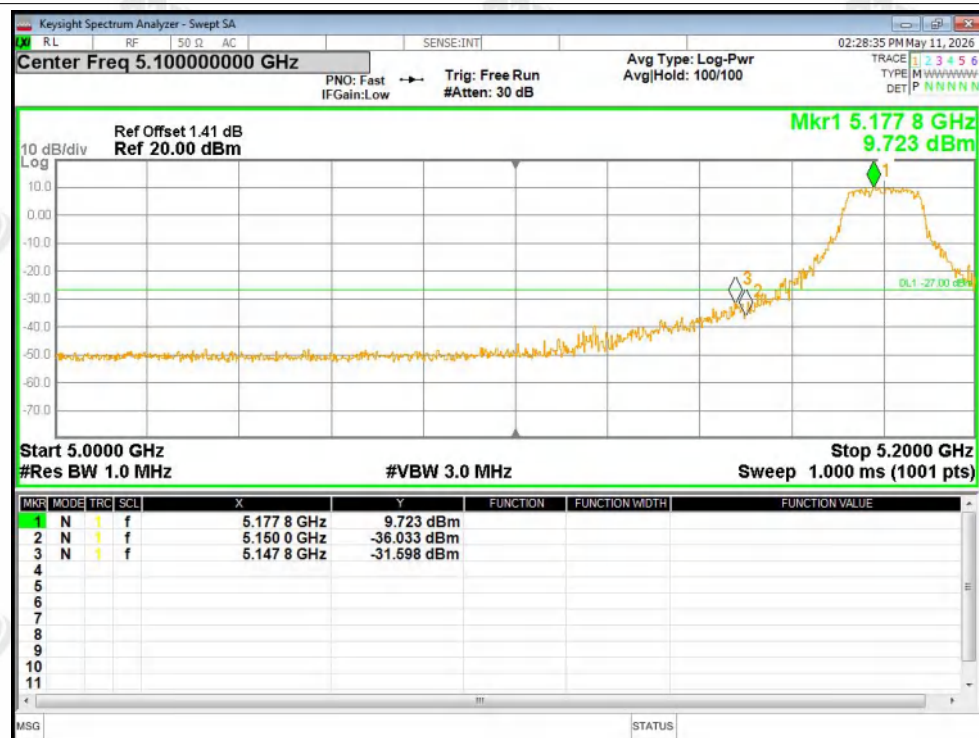
**ZHONGHAN****Band Edge**

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5180	Ant1	-31.59	-27	Pass
NVNT	a	5240	Ant1	-46.88	-27	Pass
NVNT	n20	5180	Ant1	-28.18	-27	Pass
NVNT	n20	5240	Ant1	-45.85	-27	Pass
NVNT	n40	5190	Ant1	-31.43	-27	Pass
NVNT	n40	5230	Ant1	-43.72	-27	Pass
NVNT	ac20	5180	Ant1	-28.81	-27	Pass
NVNT	ac20	5240	Ant1	-46.59	-27	Pass
NVNT	ac40	5190	Ant1	-31.32	-27	Pass
NVNT	ac40	5230	Ant1	-43.23	-27	Pass

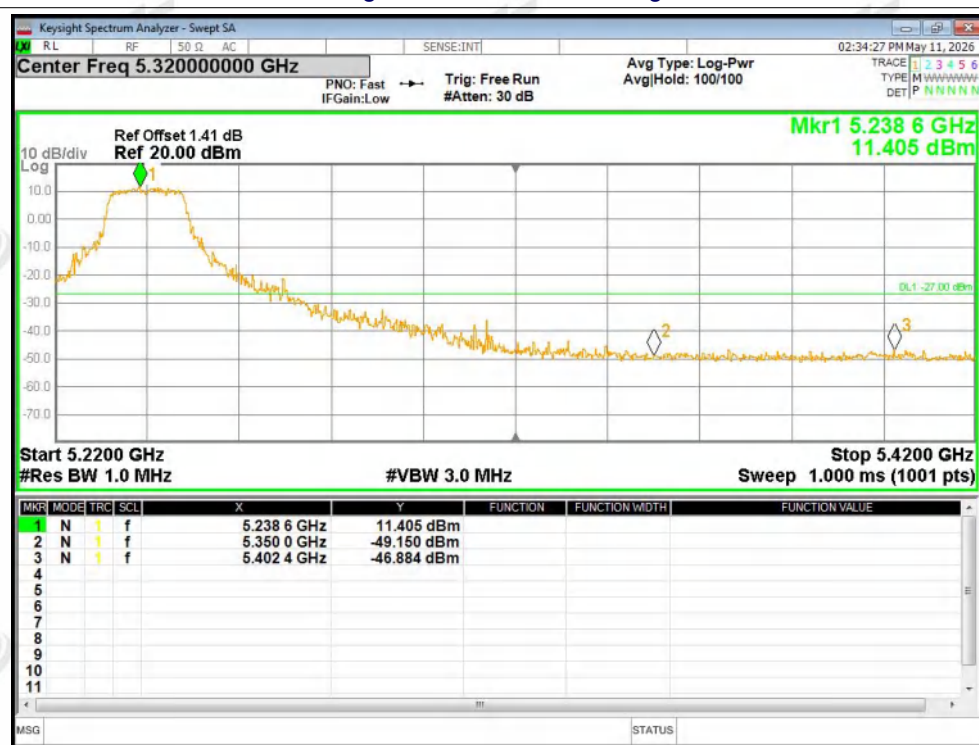


Test Graphs

Band Edge NVNT a 5180MHz Low Ant1

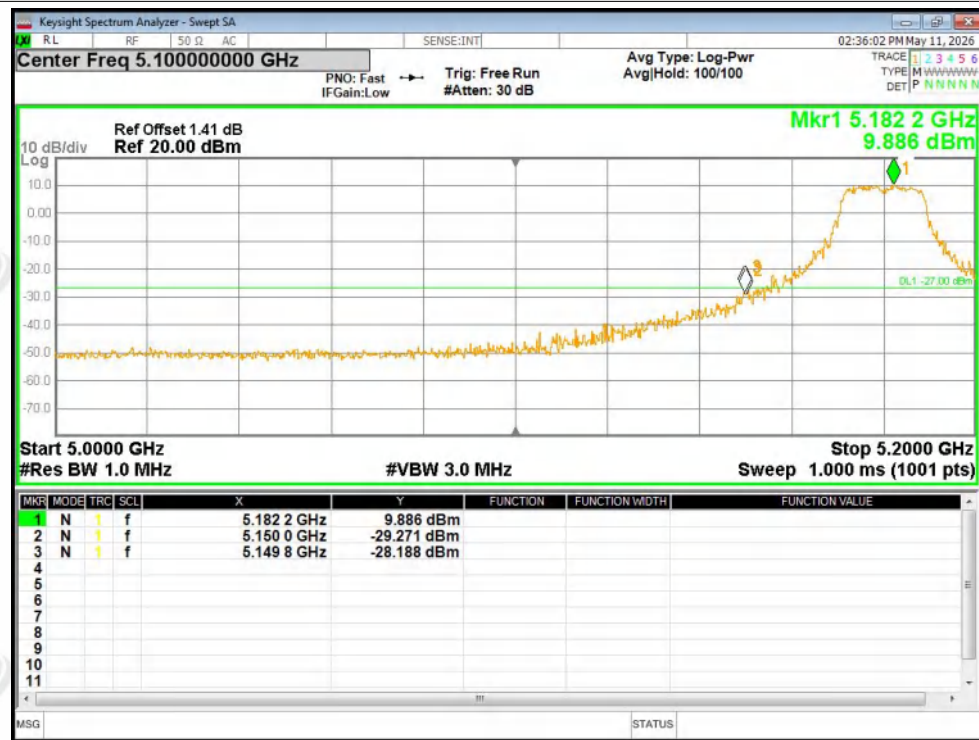


Band Edge NVNT a 5240MHz High Ant1

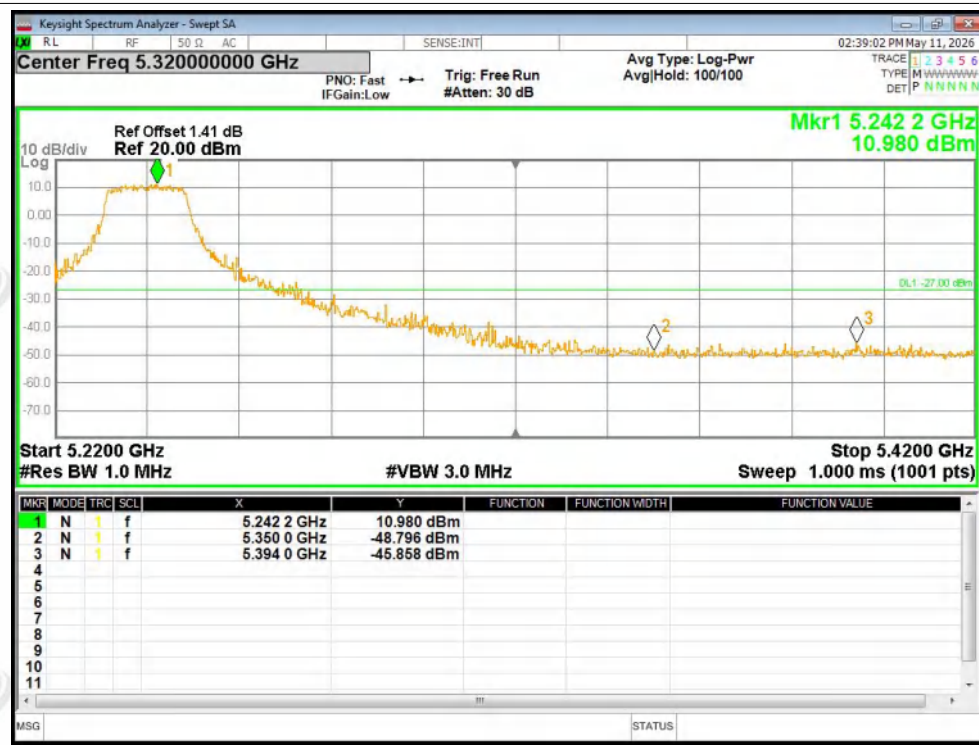




Band Edge NVNT n20 5180MHz Low Ant1

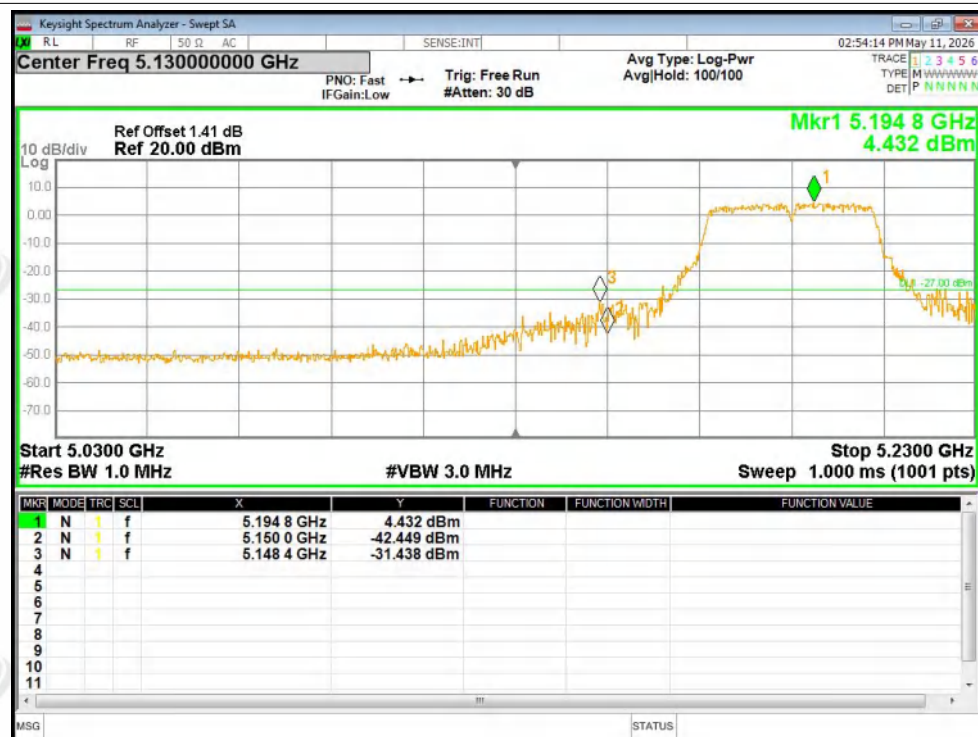


Band Edge NVNT n20 5240MHz High Ant1

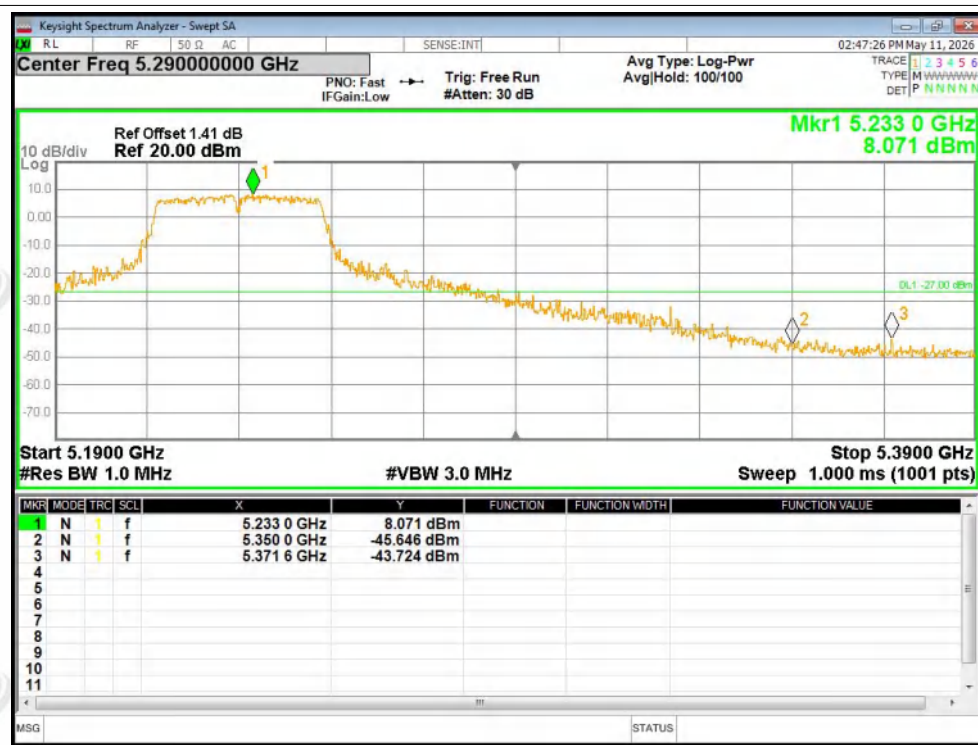




Band Edge NVNT n40 5190MHz Low Ant1

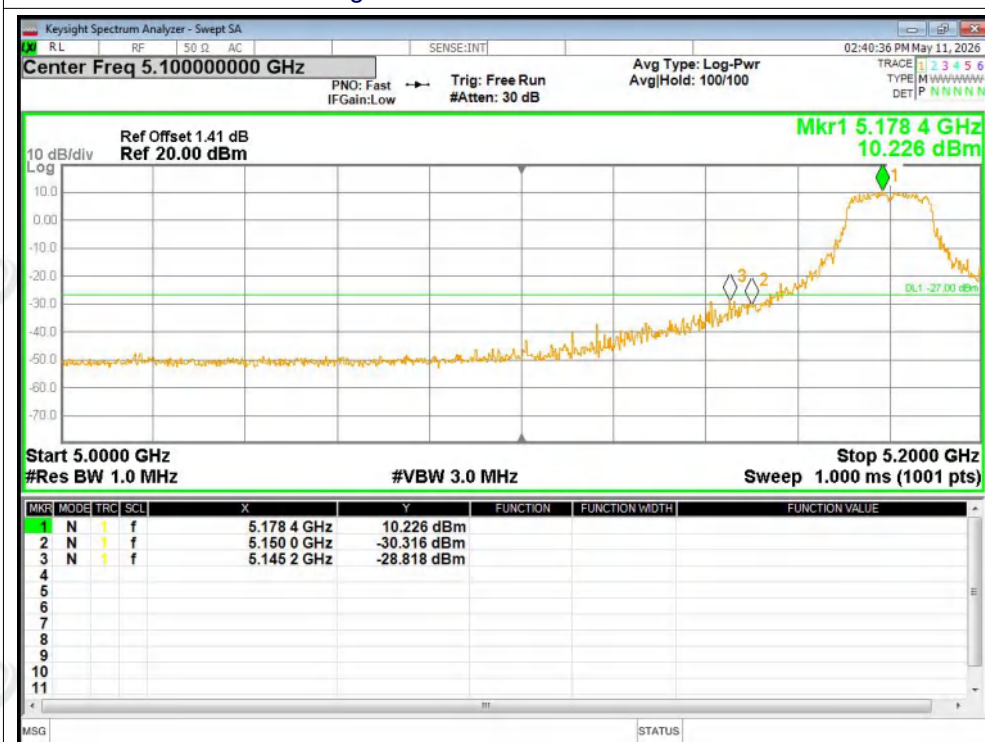


Band Edge NVNT n40 5230MHz High Ant1

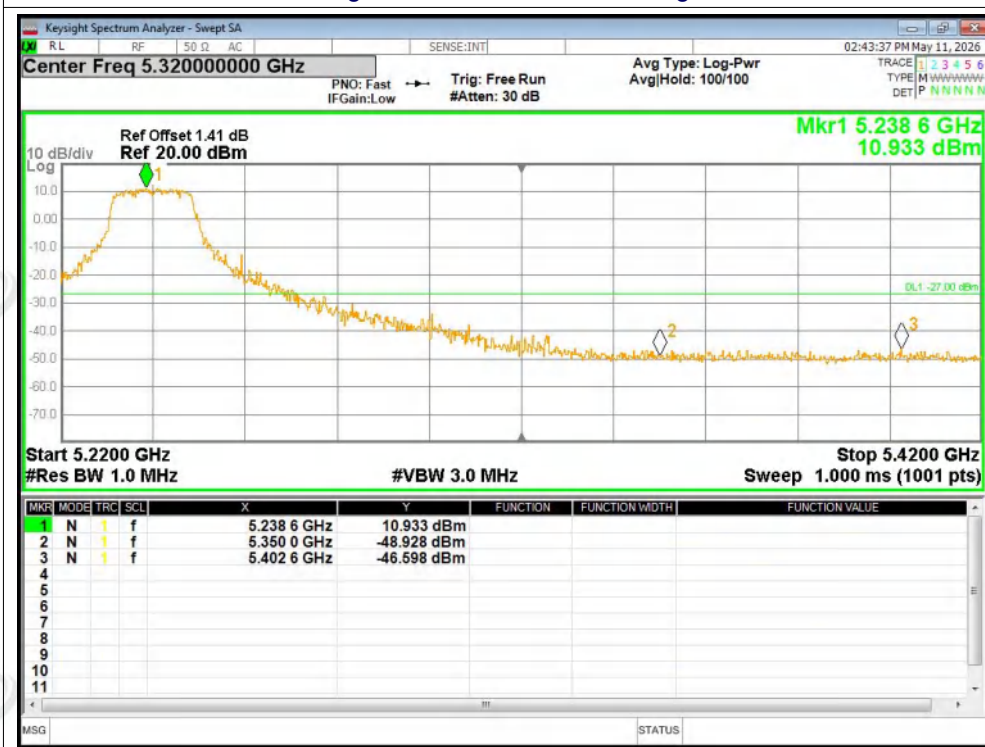




Band Edge NVNT ac20 5180MHz Low Ant1

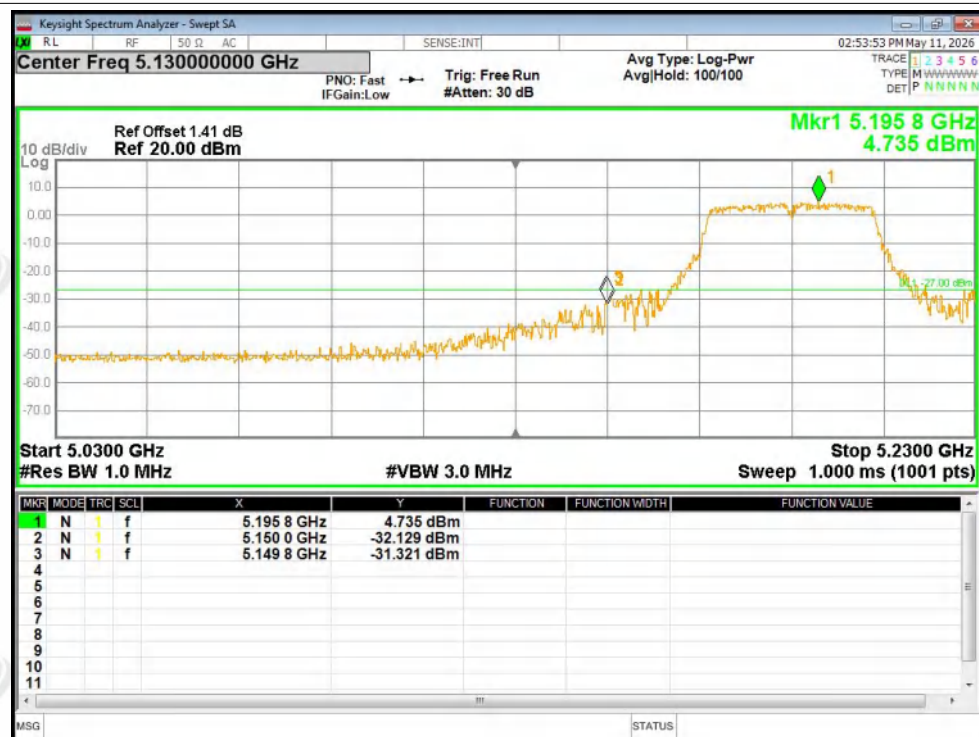


Band Edge NVNT ac20 5240MHz High Ant1





Band Edge NVNT ac40 5190MHz Low Ant1



Band Edge NVNT ac40 5230MHz High Ant1





Frequency Stability

Voltage						
Test Mode	Channel	Voltage [Vdc]	Temperature (°C)	Measured Frequency (MHz)	Limit (MHz)	Verdict
a	5180	NV	NT	5180.02	Within 5150-5250MHz	Pass
		LV	NT	5180.03		
		HV	NT	5180.01		
Temperature						
Test Mode	Channel	Voltage [Vdc]	Temperature (°C)	Measured Frequency (MHz)	Limit (MHz)	Verdict
a	5180	NV	-30	5180.03	Within 5150-5250MHz	Pass
		NV	-20	5180.04		
		NV	-10	5180.02		
		NV	0	5180.01		
		NV	10	5180.06		
		NV	20	5180.05		
		NV	30	5180.04		
		NV	40	5180.03		
		NV	50	5180.02		

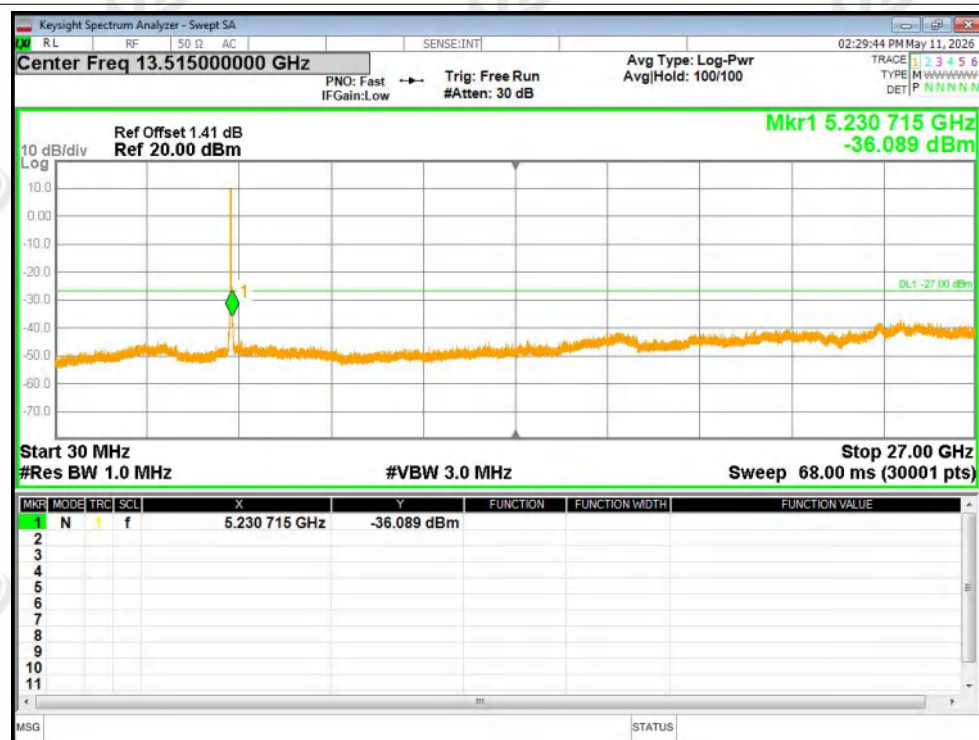
Note: Only show the worst case 802.11 a Mode 5180MHz.

**ZHONGHAN****Conducted RF Spurious Emission**

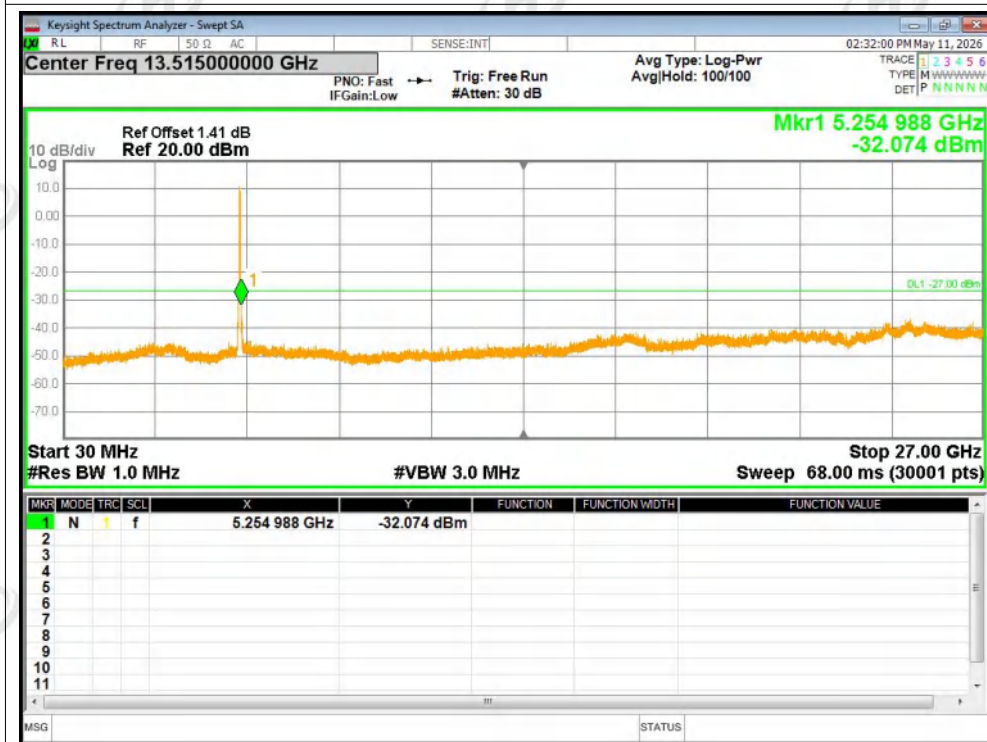
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5180	Ant1	-36.08	-27	Pass
NVNT	a	5200	Ant1	-32.07	-27	Pass
NVNT	a	5240	Ant1	-34.73	-27	Pass
NVNT	n20	5180	Ant1	-34.86	-27	Pass
NVNT	n20	5200	Ant1	-34.28	-27	Pass
NVNT	n20	5240	Ant1	-34.18	-27	Pass
NVNT	n40	5190	Ant1	-37.48	-27	Pass
NVNT	n40	5230	Ant1	-36.96	-27	Pass
NVNT	ac20	5180	Ant1	-35.09	-27	Pass
NVNT	ac20	5200	Ant1	-36.94	-27	Pass
NVNT	ac20	5240	Ant1	-31.52	-27	Pass
NVNT	ac40	5190	Ant1	-37.33	-27	Pass
NVNT	ac40	5230	Ant1	-37.62	-27	Pass

Test Graphs

Tx. Spurious NVNT a 5180MHz Ant1 Emission

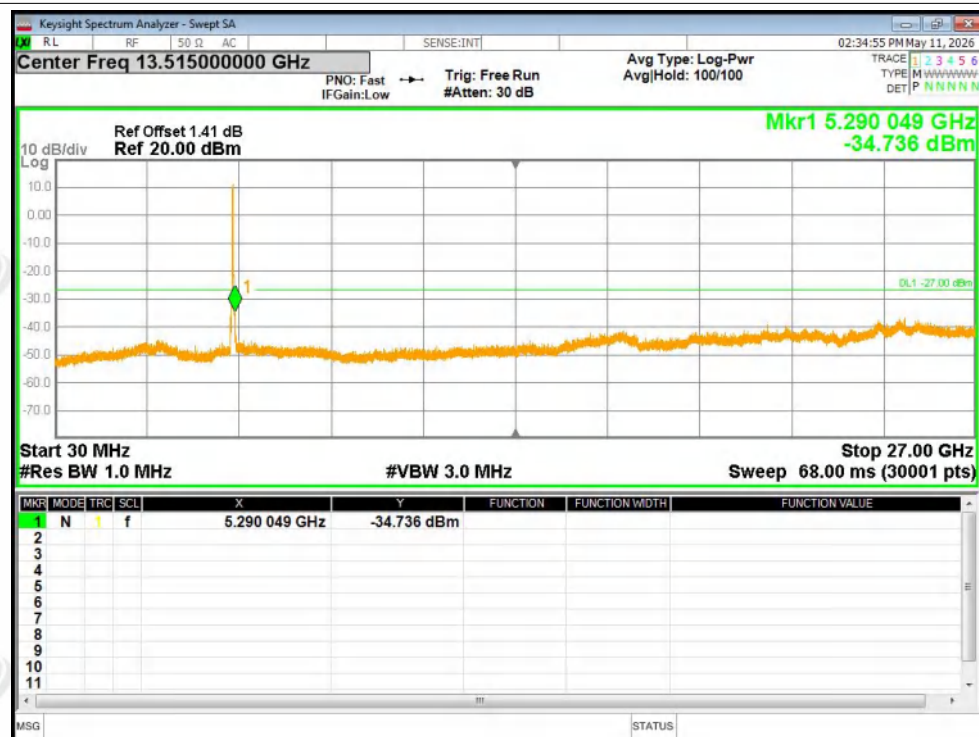


Tx. Spurious NVNT a 5200MHz Ant1 Emission

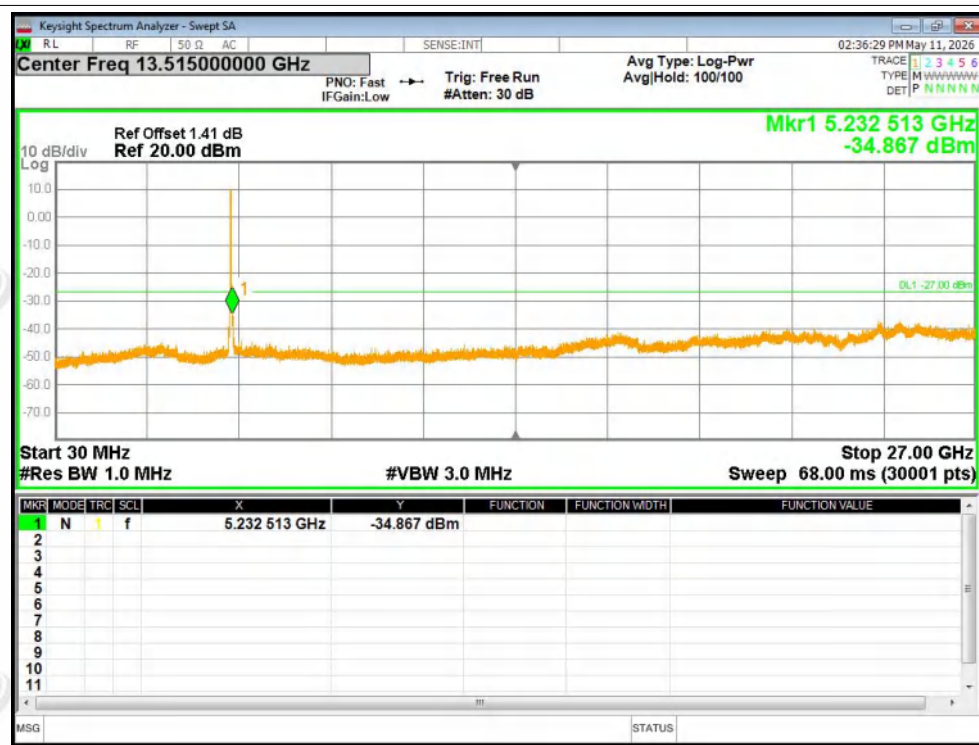




Tx. Spurious NVNT a 5240MHz Ant1 Emission

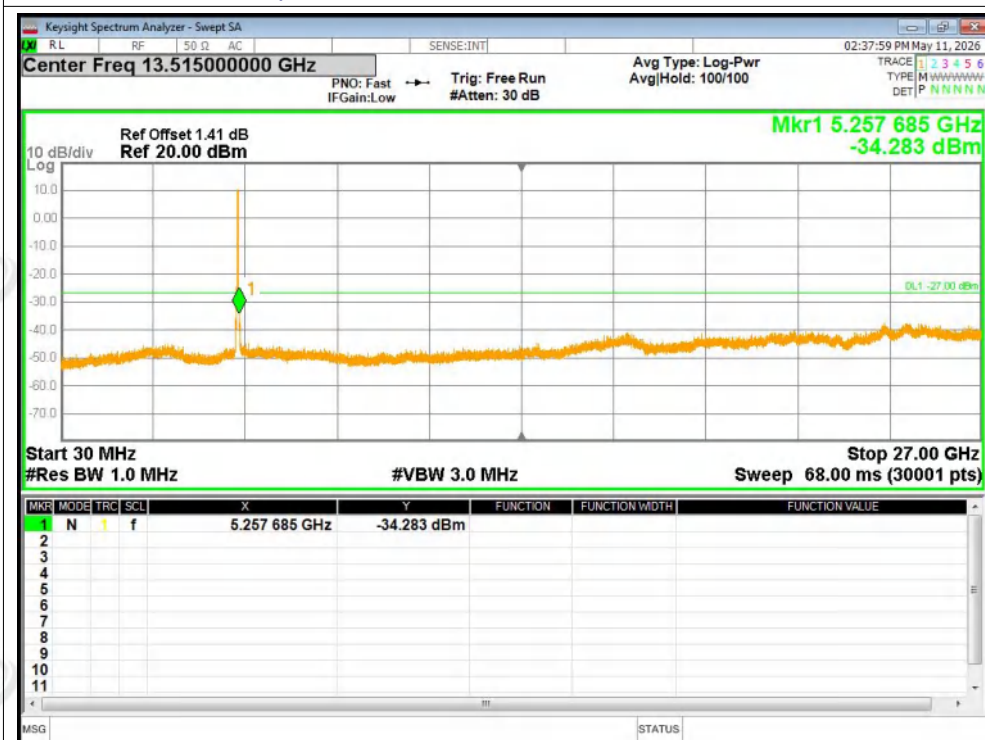


Tx. Spurious NVNT n20 5180MHz Ant1 Emission

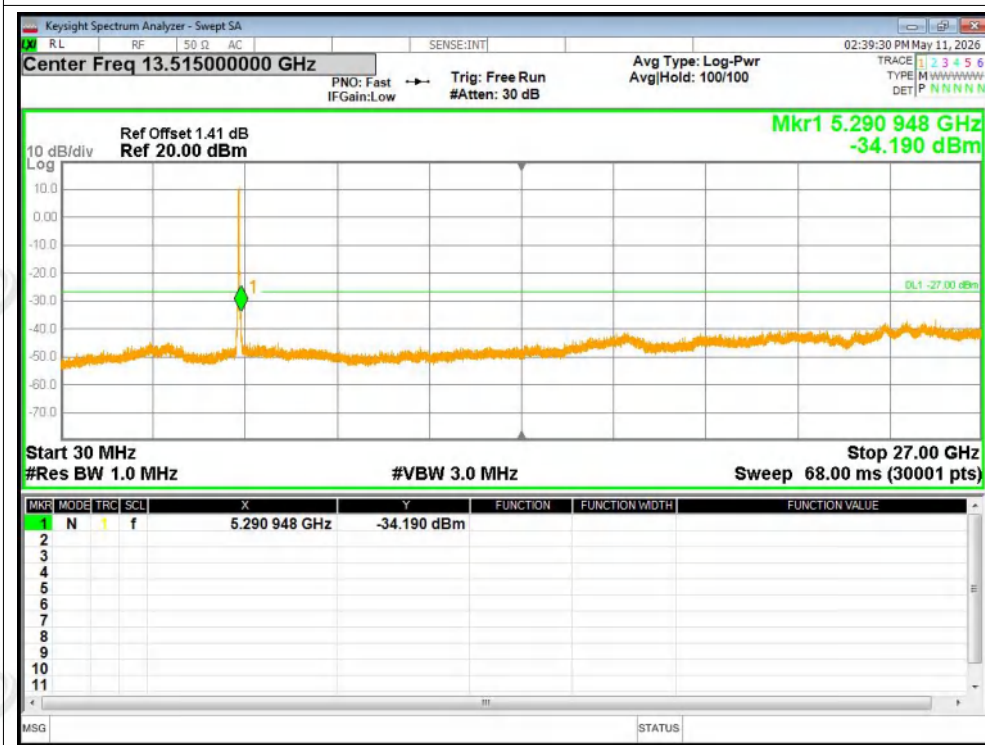




Tx. Spurious NVNT n20 5200MHz Ant1 Emission

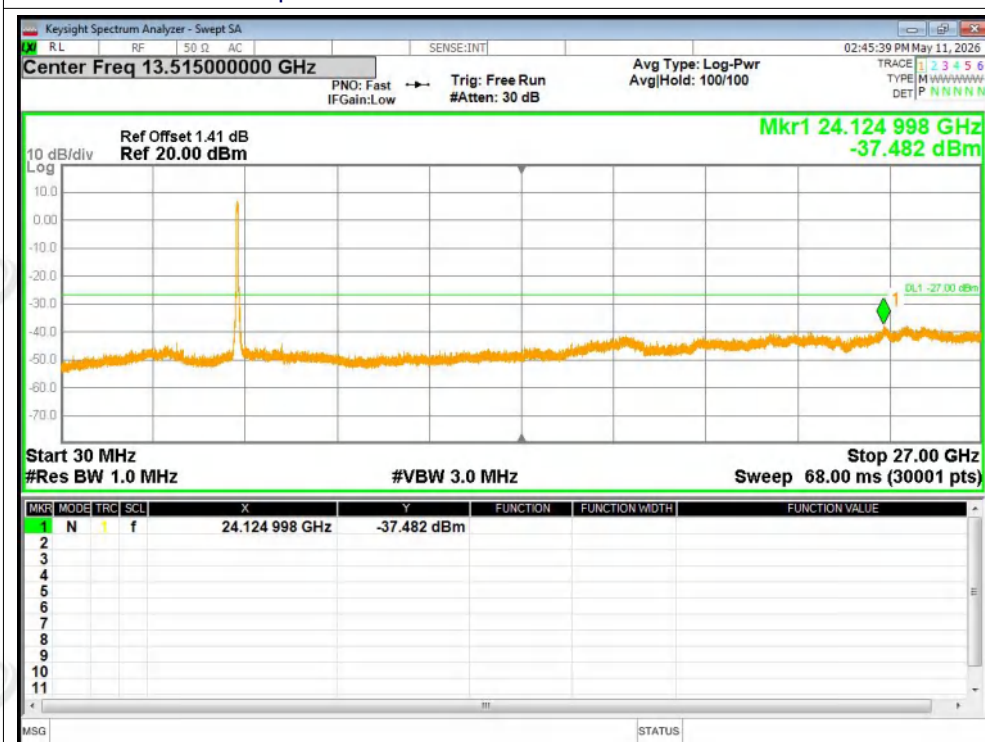


Tx. Spurious NVNT n20 5240MHz Ant1 Emission

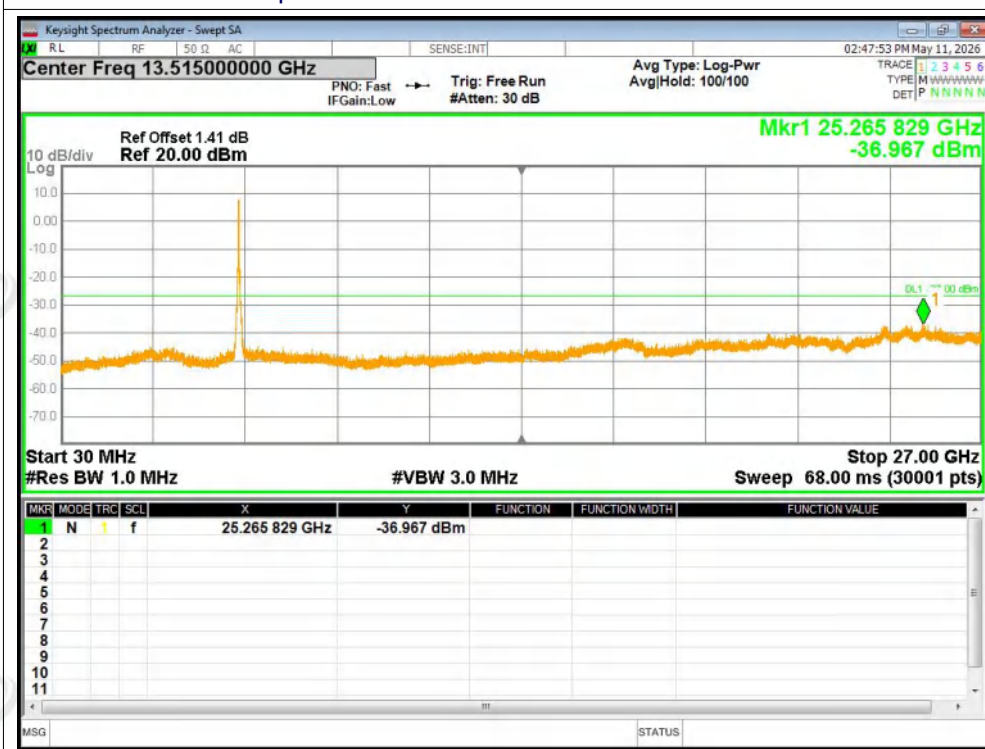




Tx. Spurious NVNT n40 5190MHz Ant1 Emission

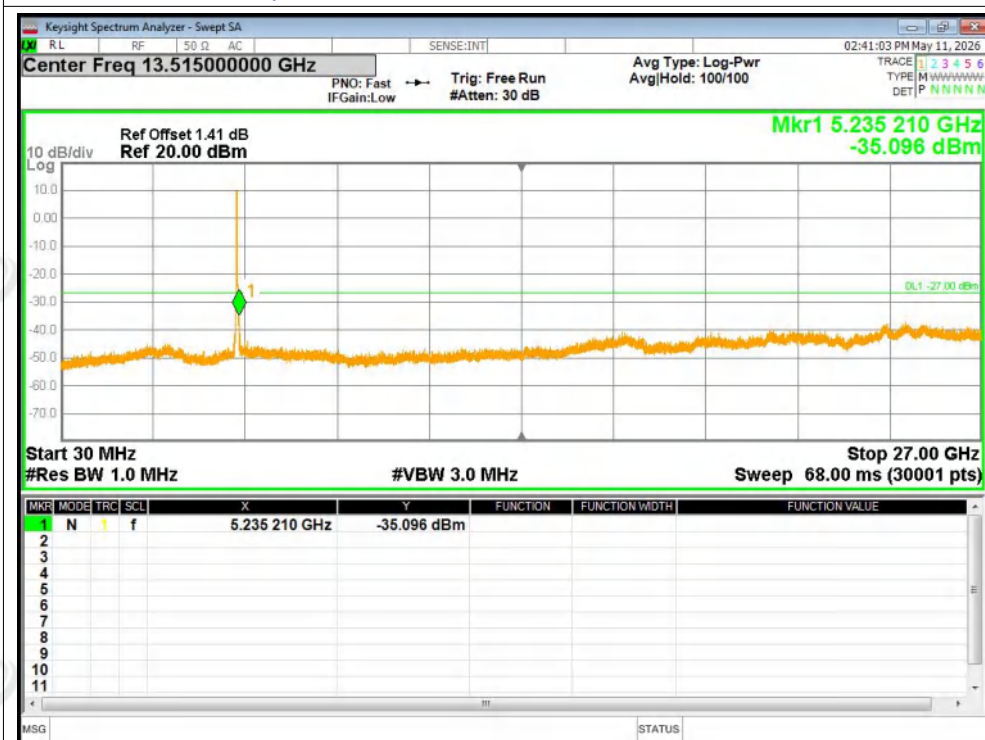


Tx. Spurious NVNT n40 5230MHz Ant1 Emission

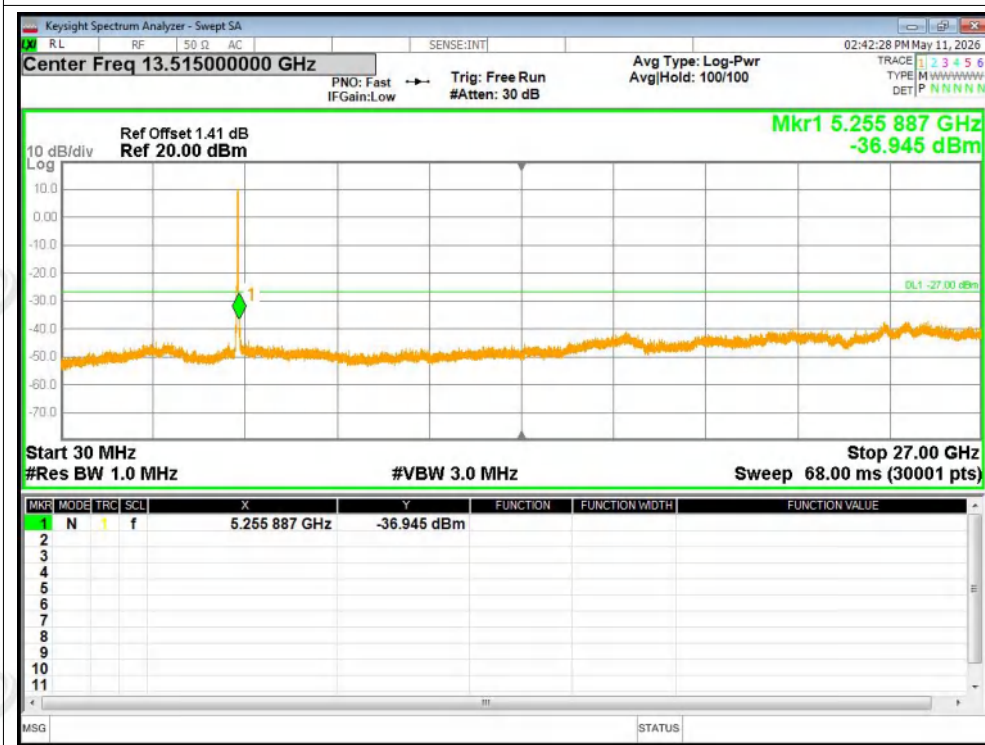




Tx. Spurious NVNT ac20 5180MHz Ant1 Emission

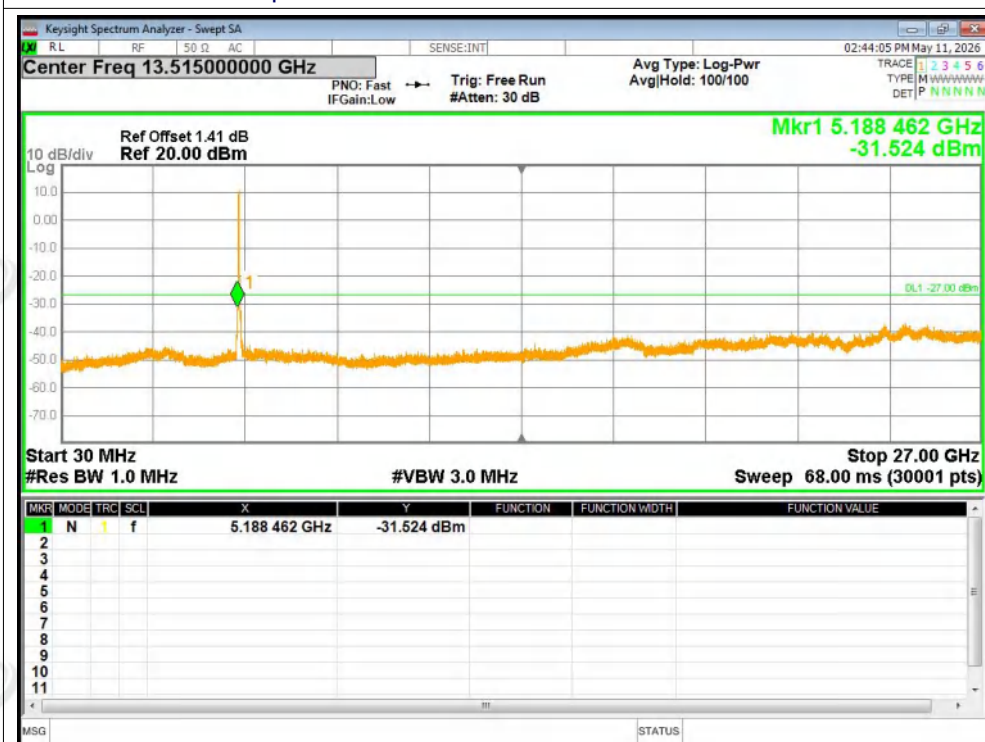


Tx. Spurious NVNT ac20 5200MHz Ant1 Emission





Tx. Spurious NVNT ac20 5240MHz Ant1 Emission



Tx. Spurious NVNT ac40 5190MHz Ant1 Emission

