



## Appendix B for 5.2GWIFI Test Data

Product Name: AI box

Test Model: A3528

### Environmental Conditions

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



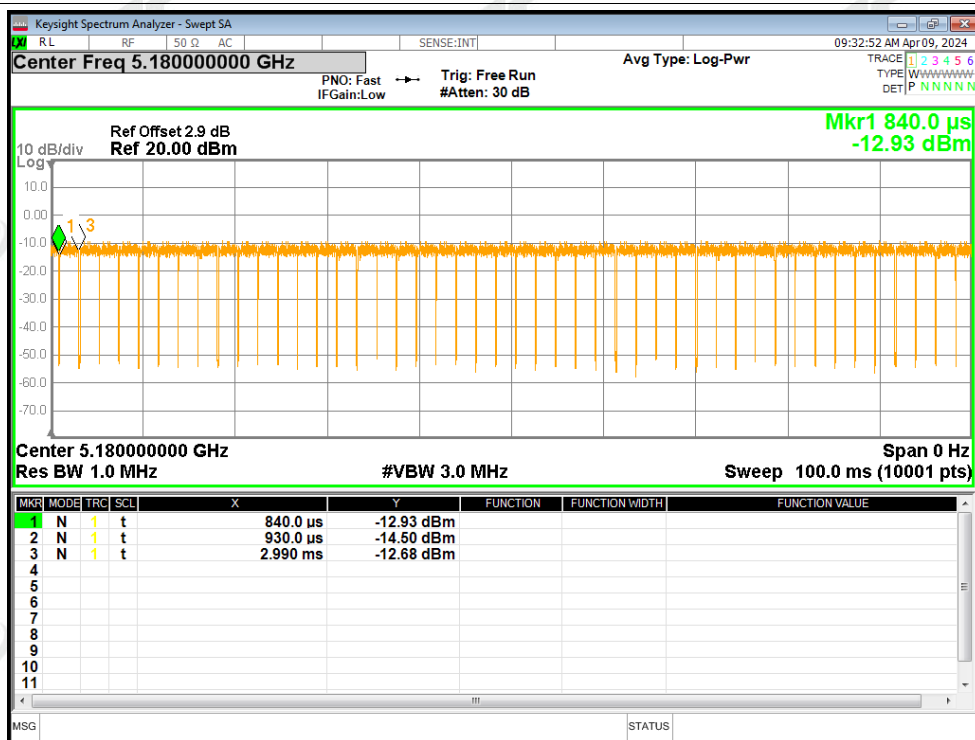
B1 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	Ant1	95.81	0.19	0.49
NVNT	a	5200	Ant1	95.37	0.21	0.49
NVNT	a	5240	Ant1	94.93	0.23	0.49
NVNT	n20	5180	Ant1	94.58	0.24	0.52
NVNT	n20	5200	Ant1	95.05	0.22	0.52
NVNT	n20	5240	Ant1	91.87	0.37	0.52
NVNT	n40	5190	Ant1	91	0.41	1.1
NVNT	n40	5230	Ant1	86.67	0.62	1.1
NVNT	ac20	5180	Ant1	93.27	0.3	0.52
NVNT	ac20	5200	Ant1	95.07	0.22	0.52
NVNT	ac20	5240	Ant1	96.5	0.15	0.52
NVNT	ac40	5190	Ant1	87.62	0.57	1.09
NVNT	ac40	5230	Ant1	86.24	0.64	1.06

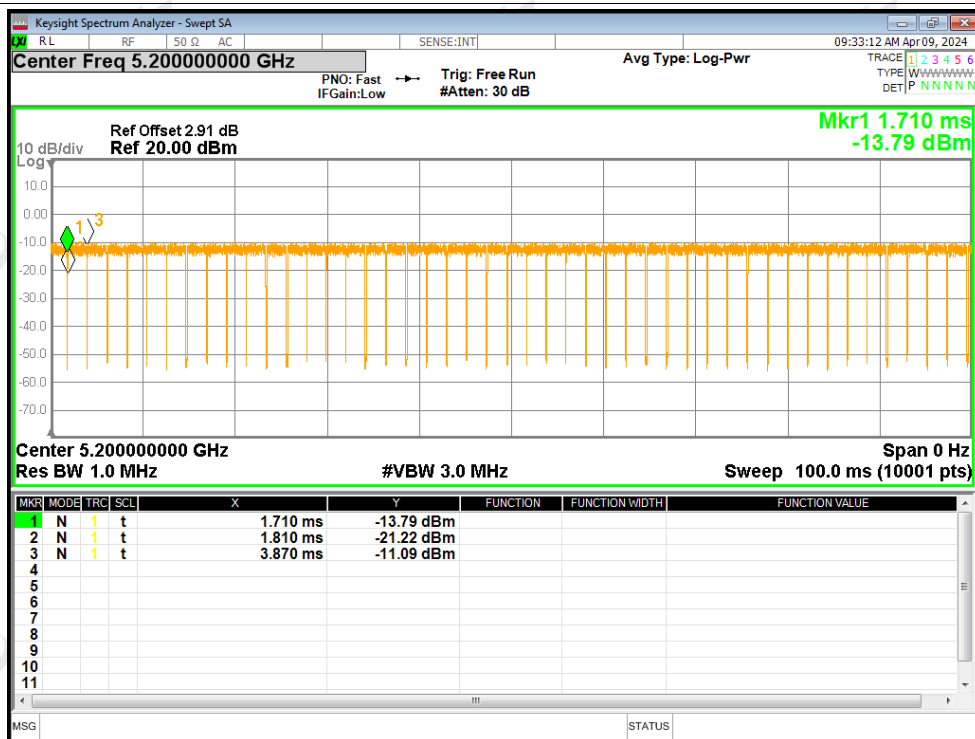


Test Graphs

Duty Cycle NVNT a 5180MHz Ant1

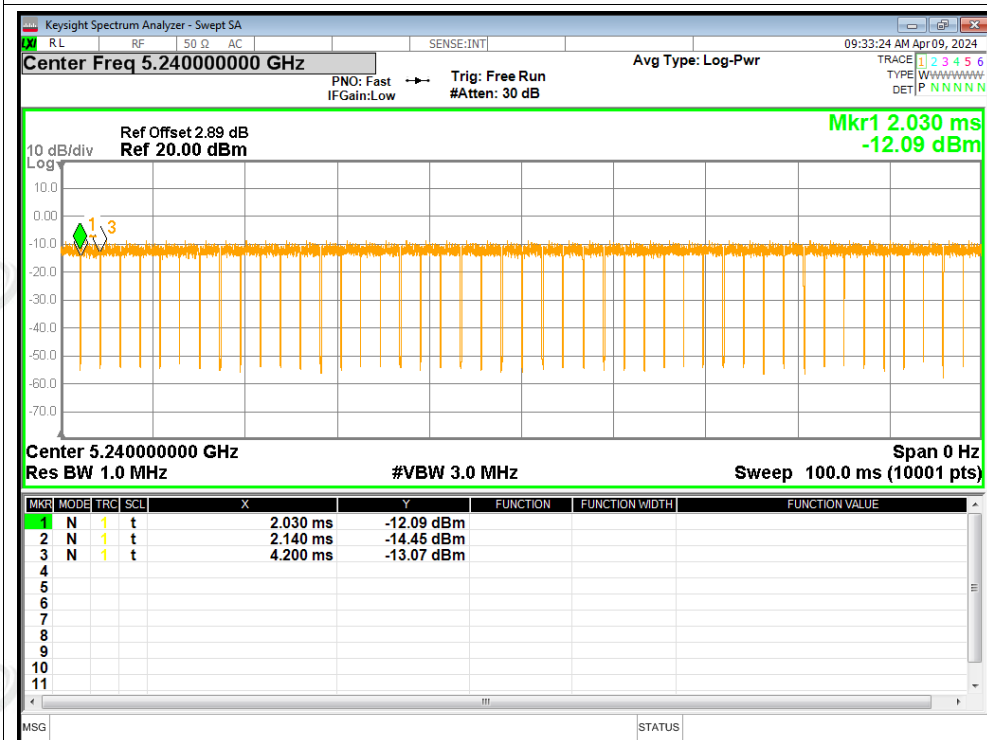


Duty Cycle NVNT a 5200MHz Ant1

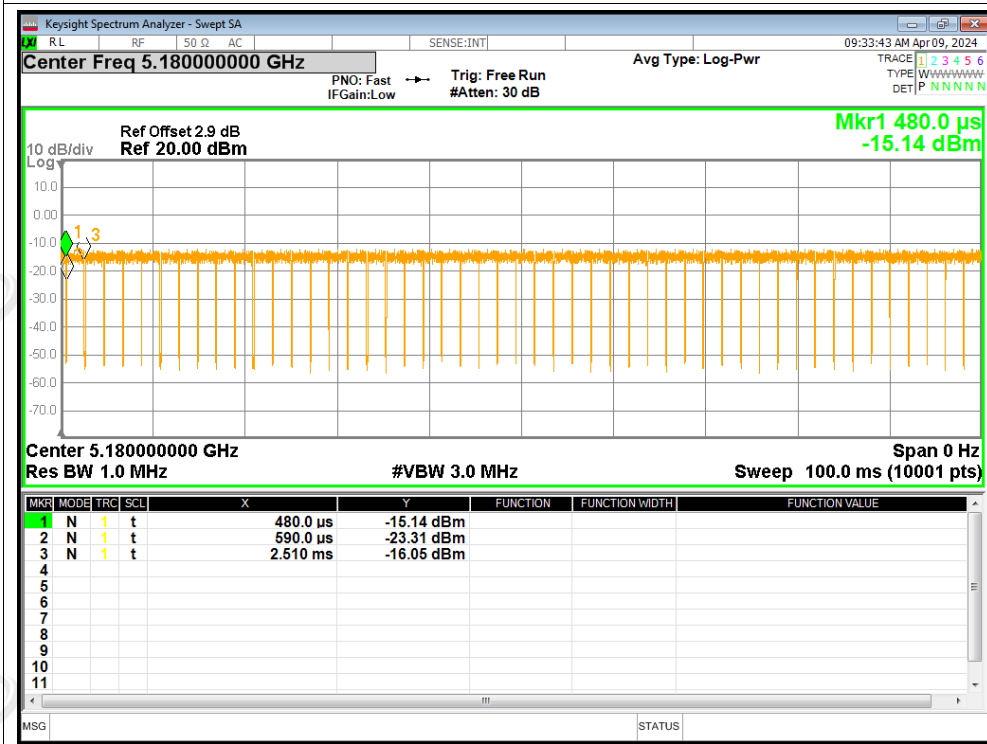




### Duty Cycle NVNT a 5240MHz Ant1

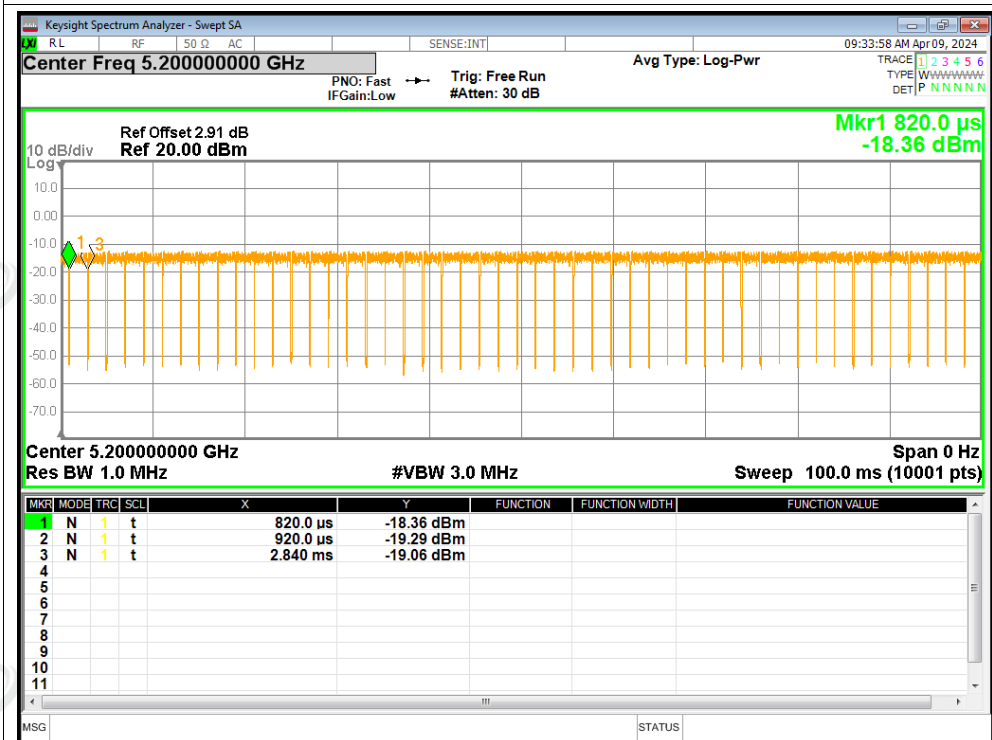


### Duty Cycle NVNT n20 5180MHz Ant1

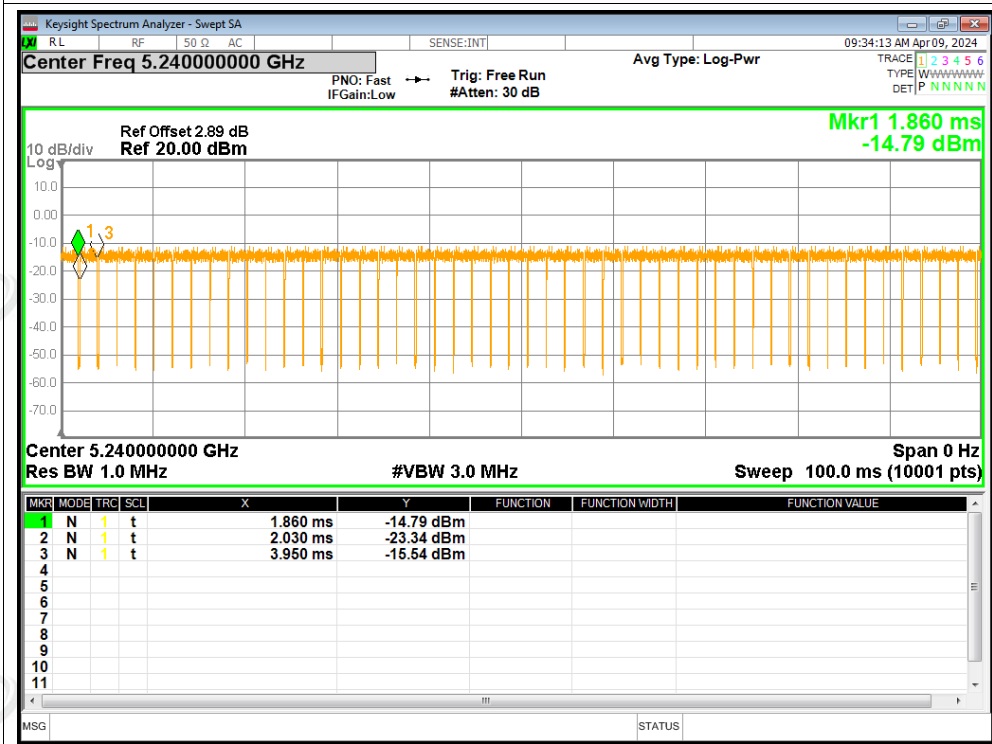




### Duty Cycle NVNT n20 5200MHz Ant1

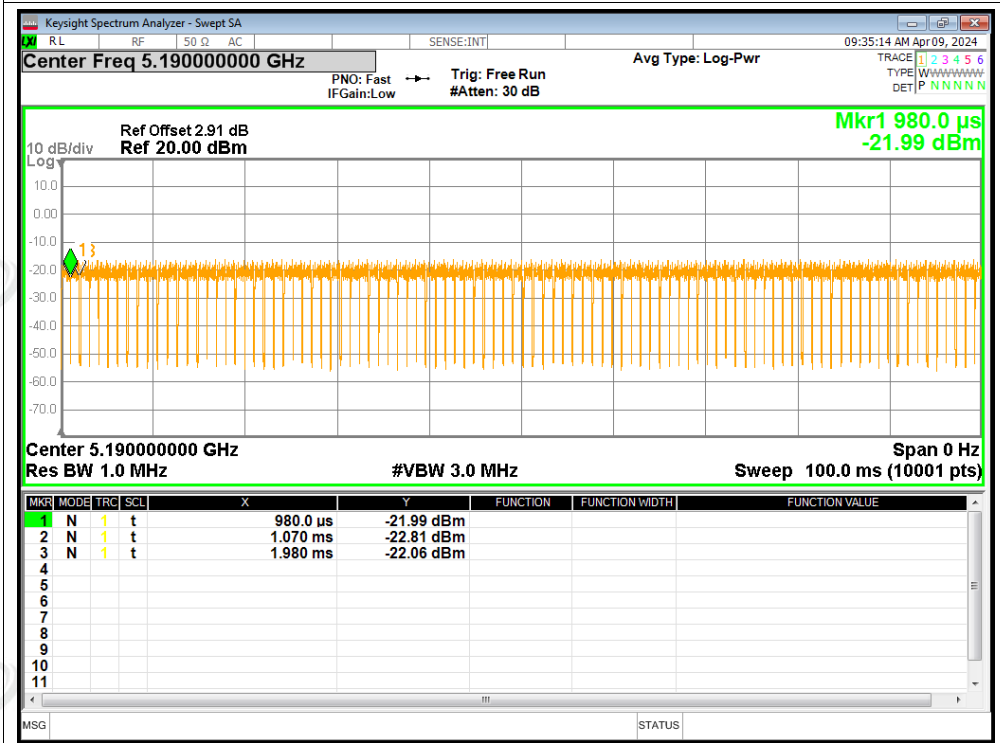


### Duty Cycle NVNT n20 5240MHz Ant1

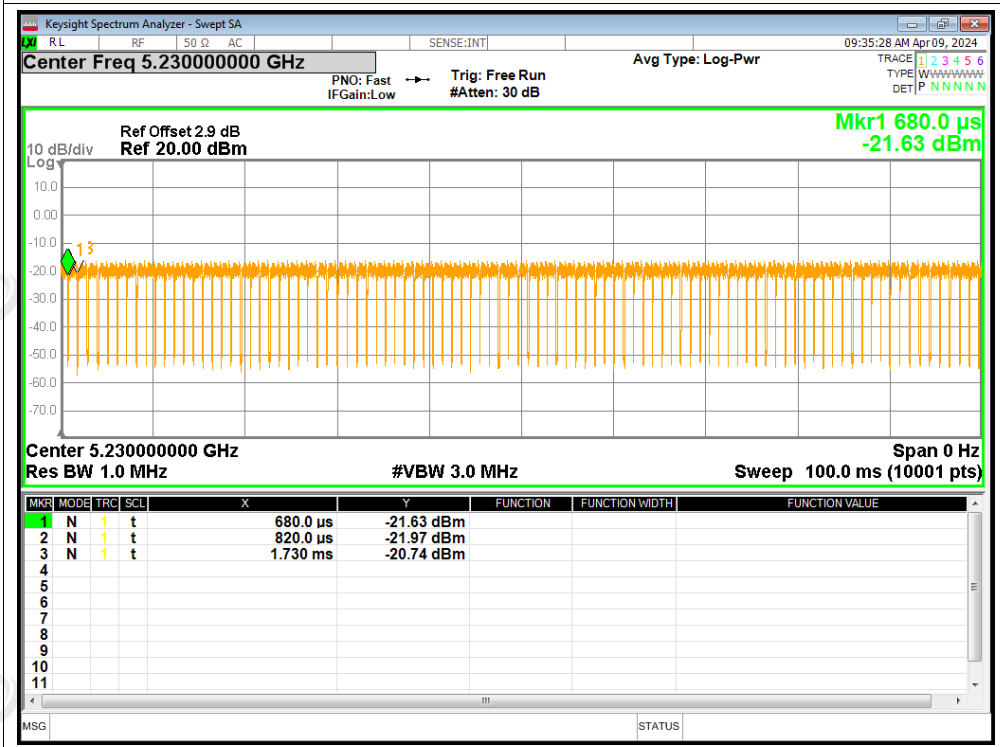




### Duty Cycle NVNT n40 5190MHz Ant1

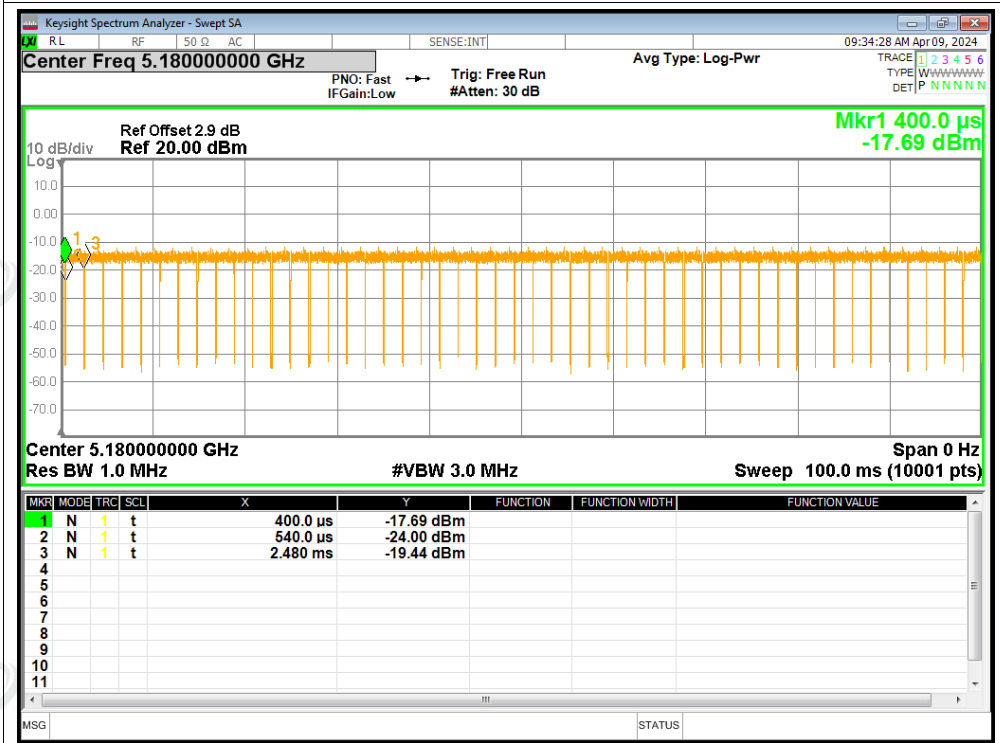


### Duty Cycle NVNT n40 5230MHz Ant1

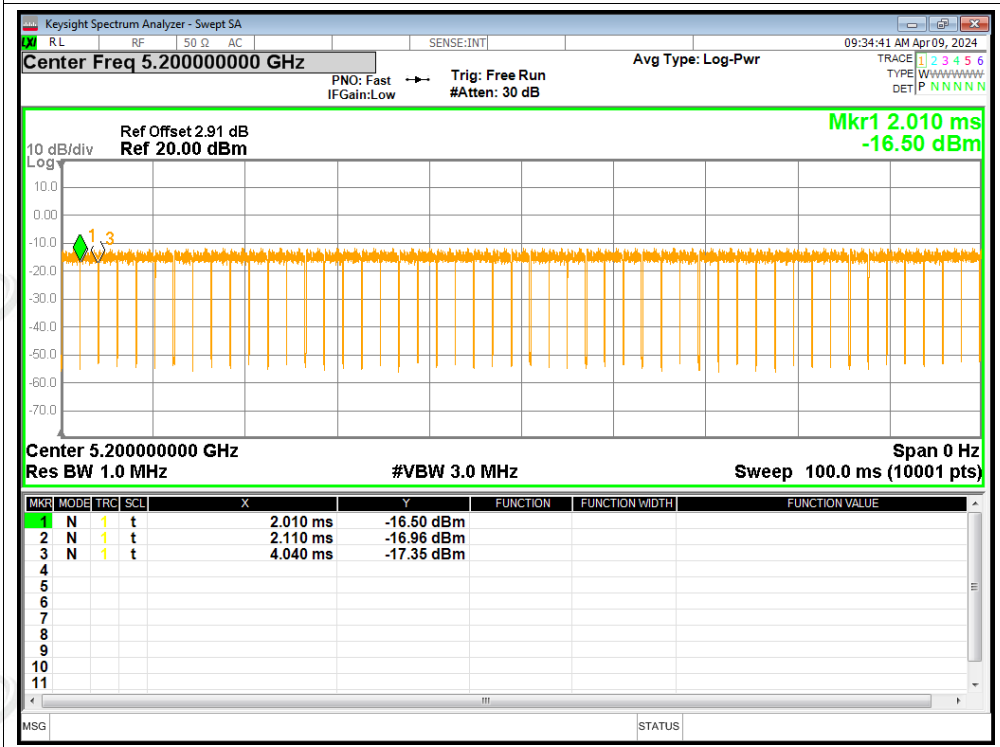




Duty Cycle NVNT ac20 5180MHz Ant1

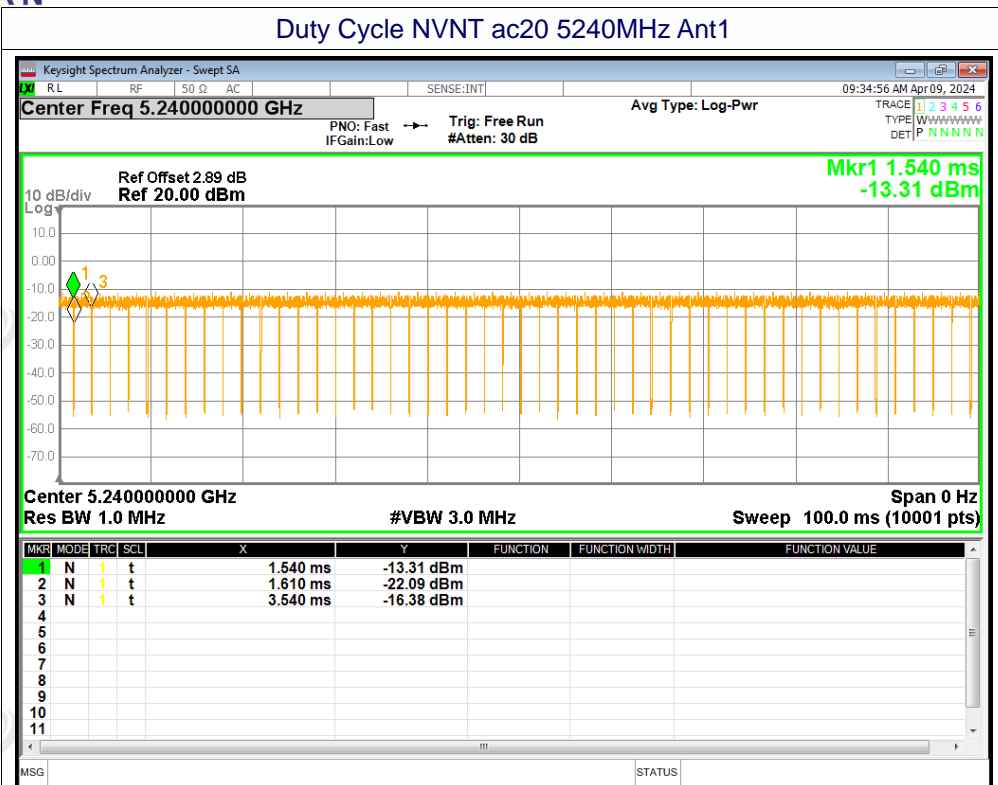


Duty Cycle NVNT ac20 5200MHz Ant1

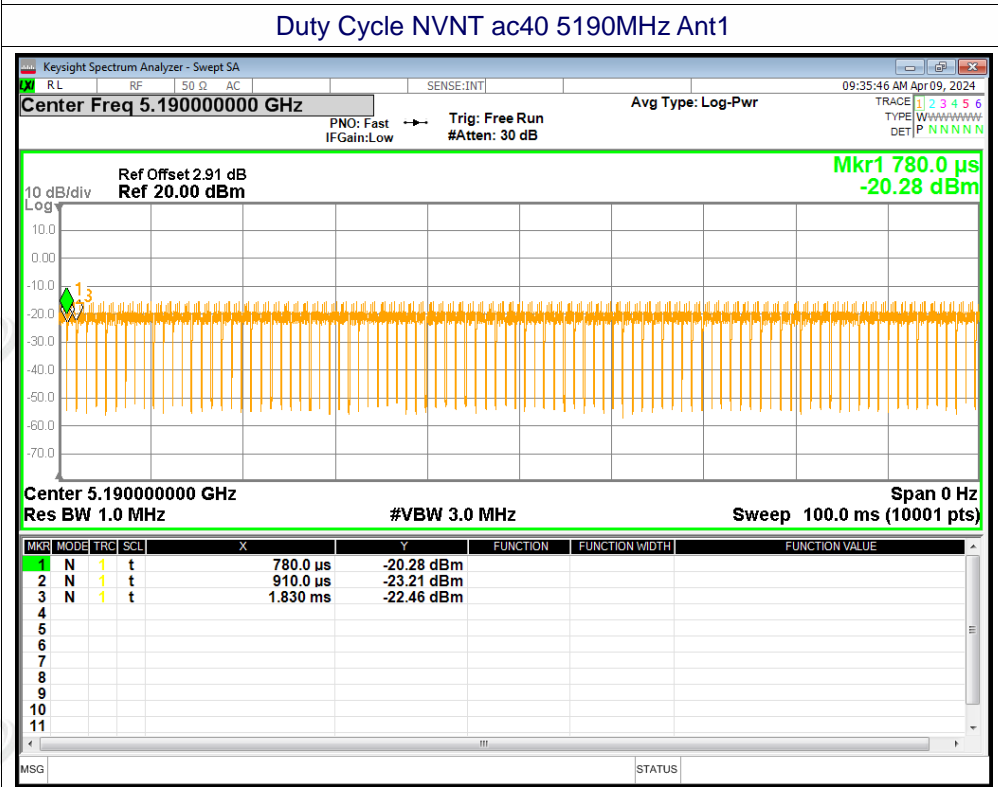




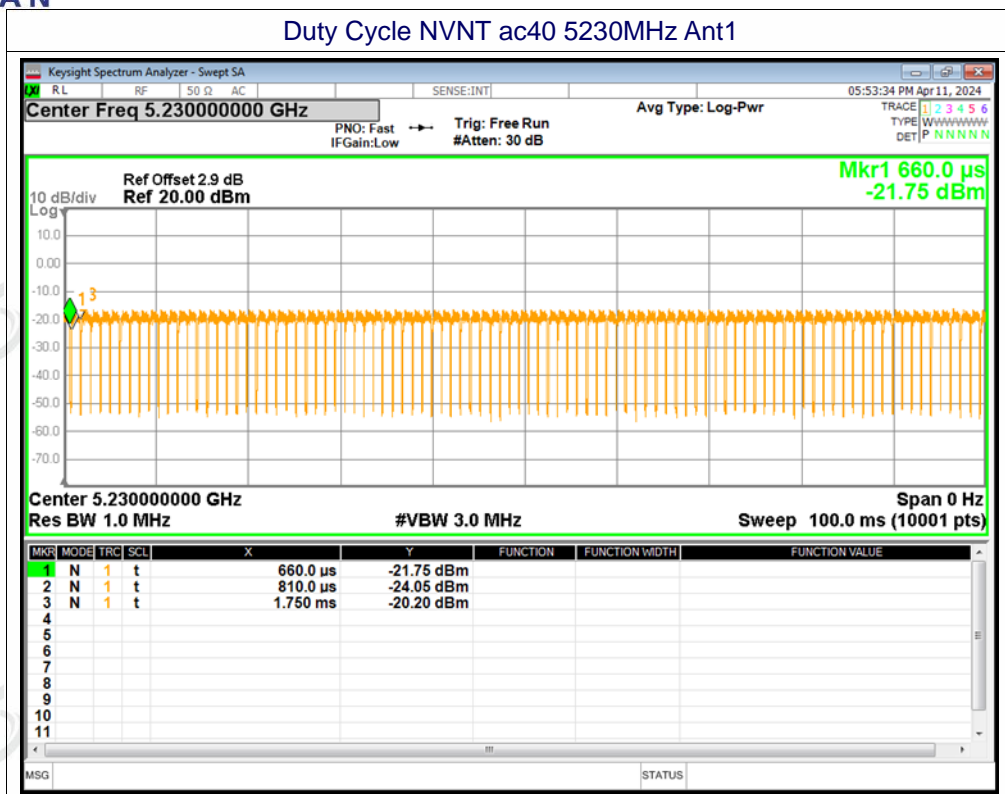
Duty Cycle NVNT ac20 5240MHz Ant1



Duty Cycle NVNT ac40 5190MHz Ant1







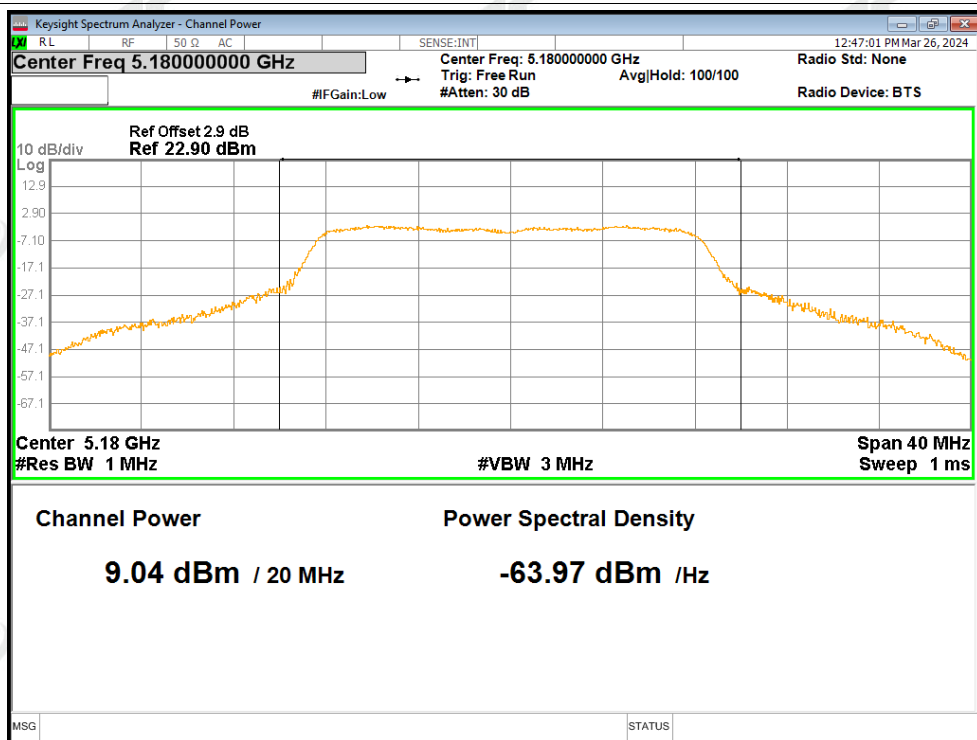
**ZHONGHAN****B2. Maximum Conducted Output Power**

Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	9.75	24	Pass
NVNT	a	5200	Ant1	9.94	24	Pass
NVNT	a	5240	Ant1	9.84	24	Pass
NVNT	n20	5180	Ant1	10.35	24	Pass
NVNT	n20	5200	Ant1	10.04	24	Pass
NVNT	n20	5240	Ant1	9.49	24	Pass
NVNT	n40	5190	Ant1	10.88	24	Pass
NVNT	n40	5230	Ant1	9.61	24	Pass
NVNT	ac20	5180	Ant1	10.14	24	Pass
NVNT	ac20	5200	Ant1	9.98	24	Pass
NVNT	ac20	5240	Ant1	9.6	24	Pass
NVNT	ac40	5190	Ant1	10.1	24	Pass
NVNT	ac40	5230	Ant1	9.85	24	Pass

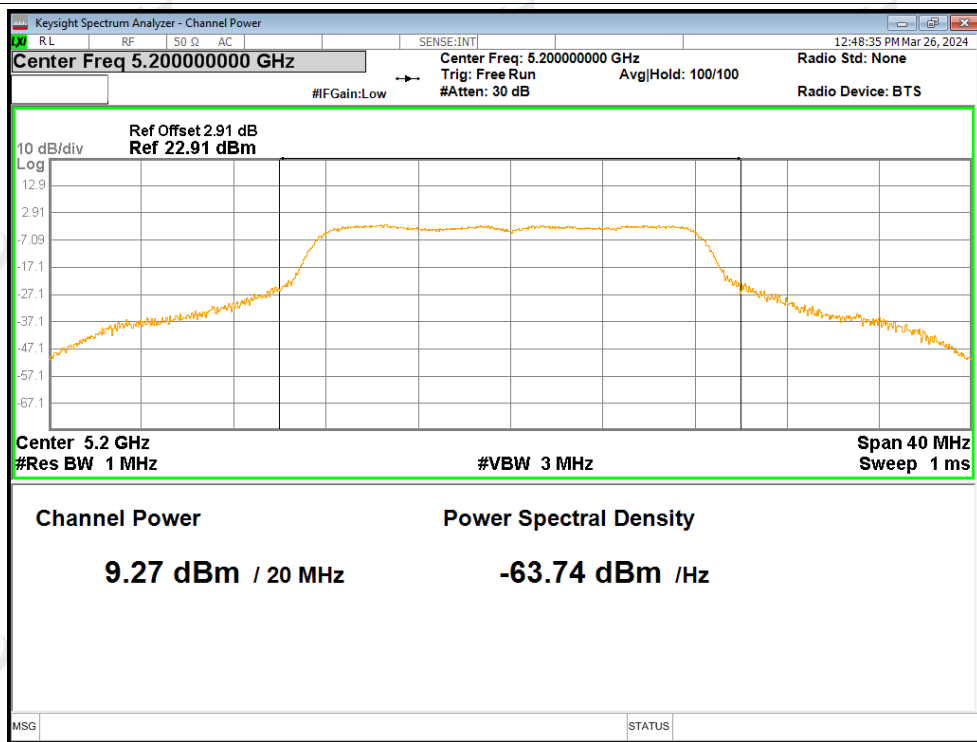


Test Graphs

Power NVNT a 5180MHz Ant1

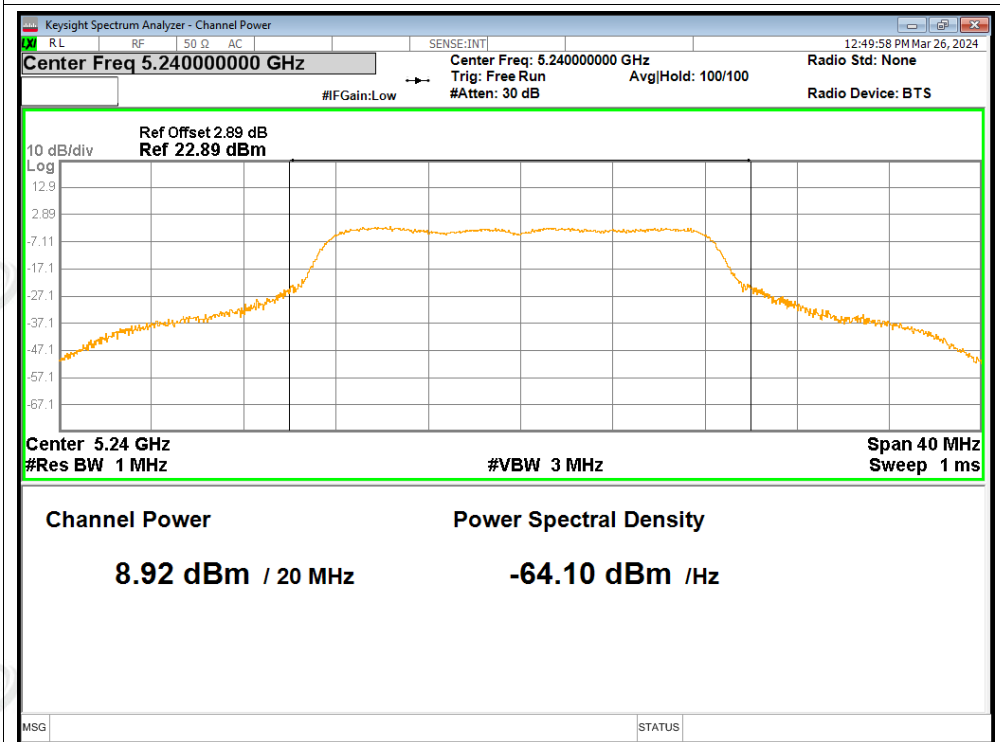


Power NVNT a 5200MHz Ant1

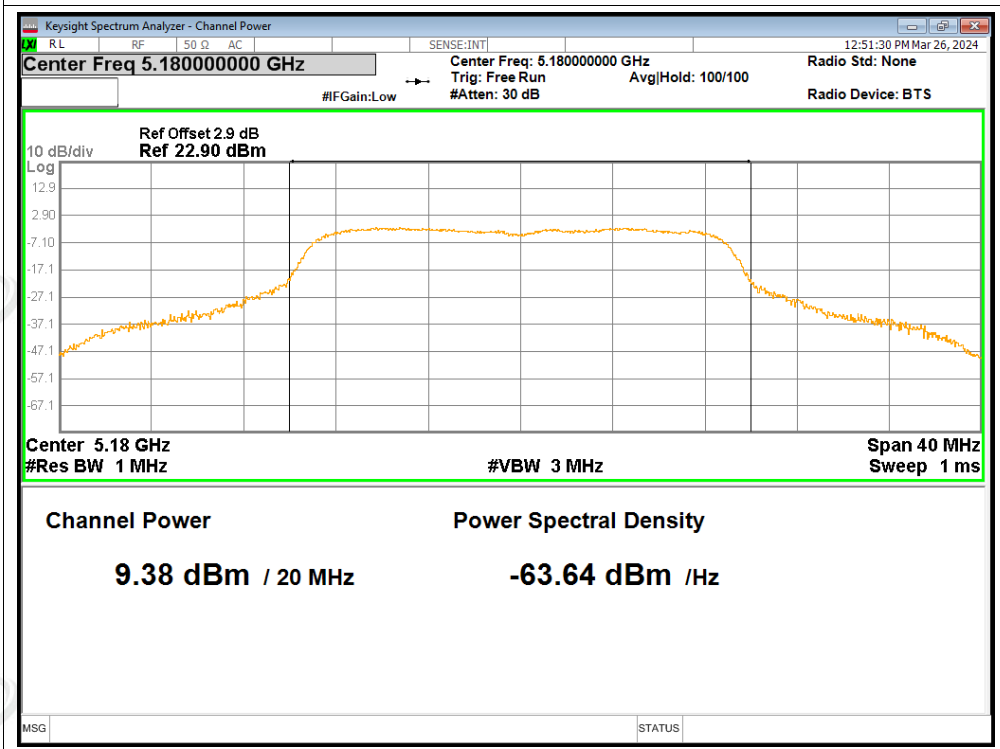




Power NVNT a 5240MHz Ant1

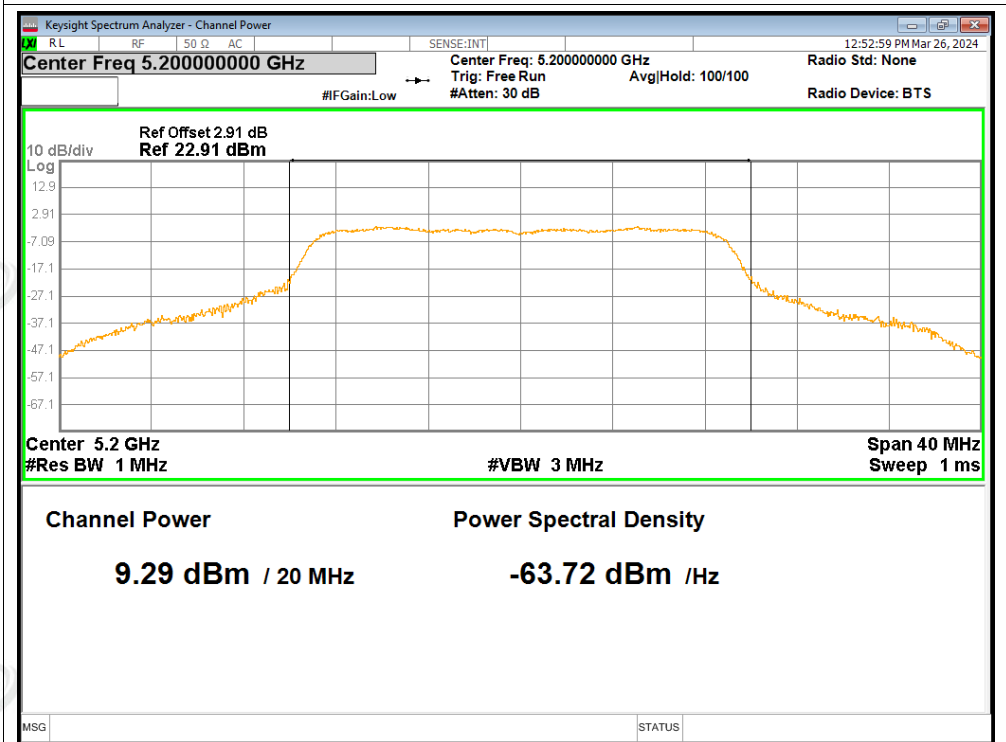


Power NVNT n20 5180MHz Ant1

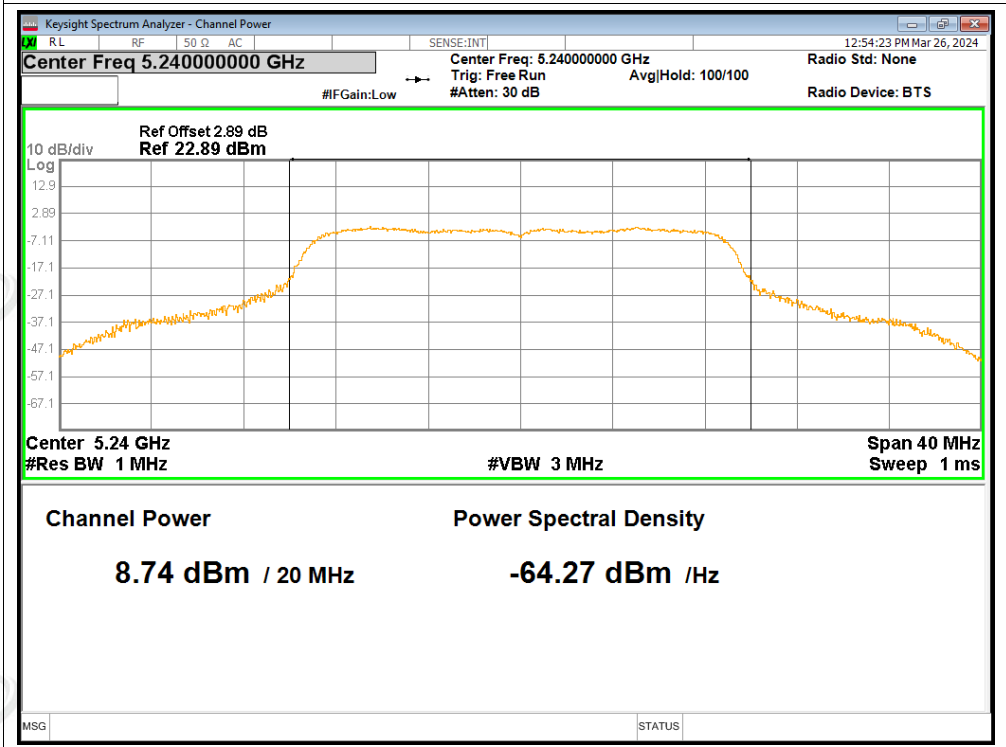




Power NVNT n20 5200MHz Ant1

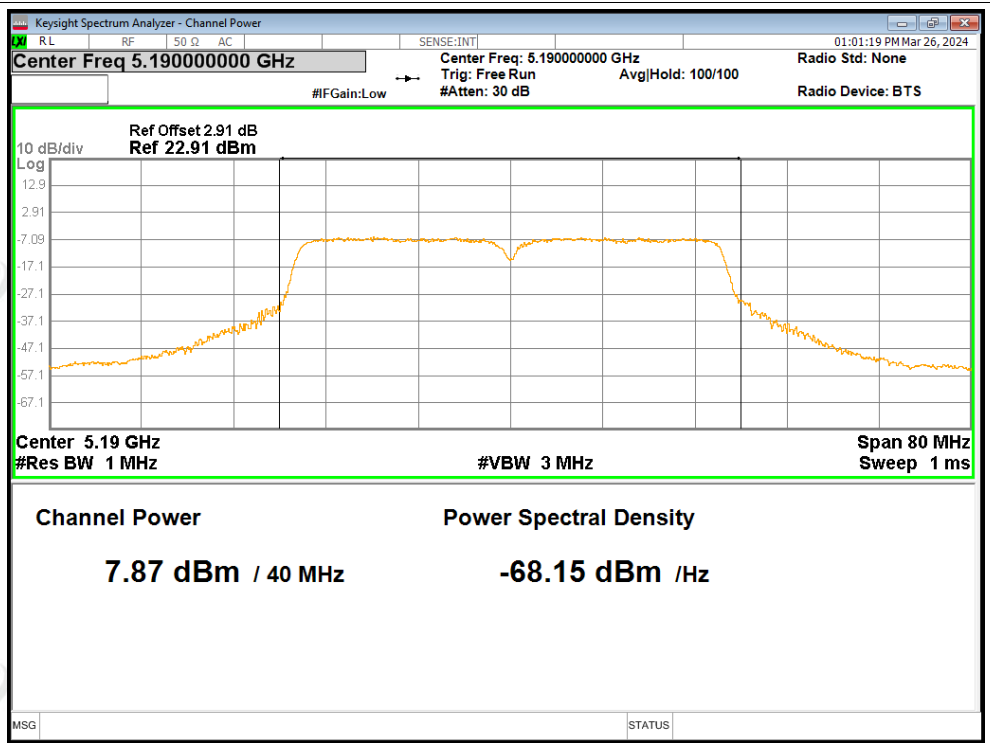


Power NVNT n20 5240MHz Ant1

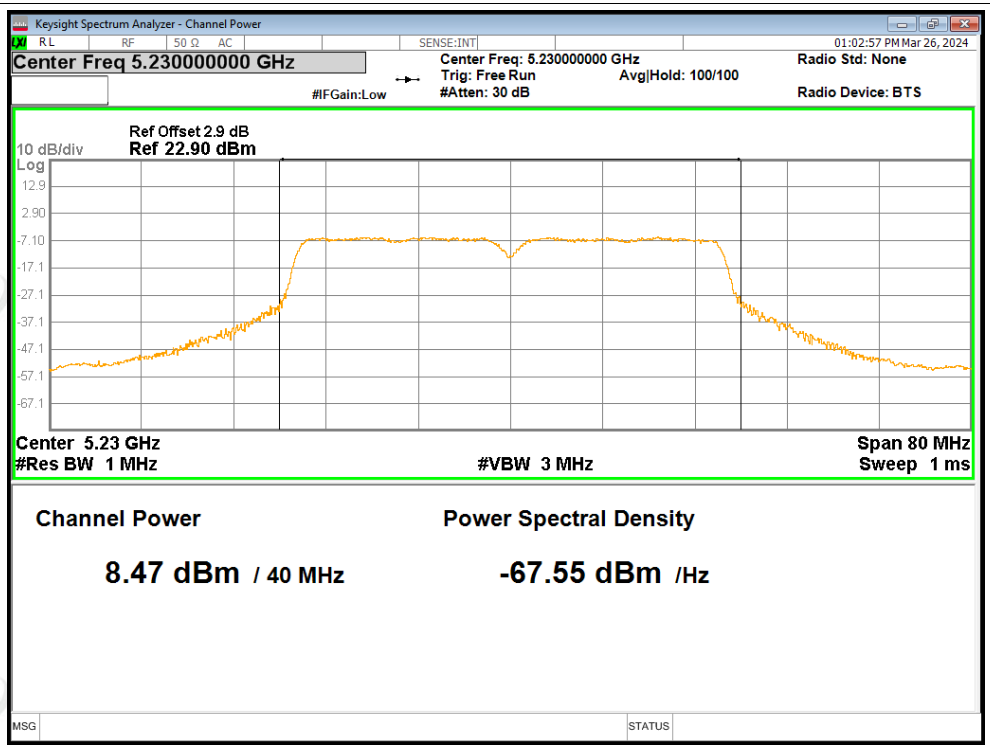




### Power NVNT n40 5190MHz Ant1

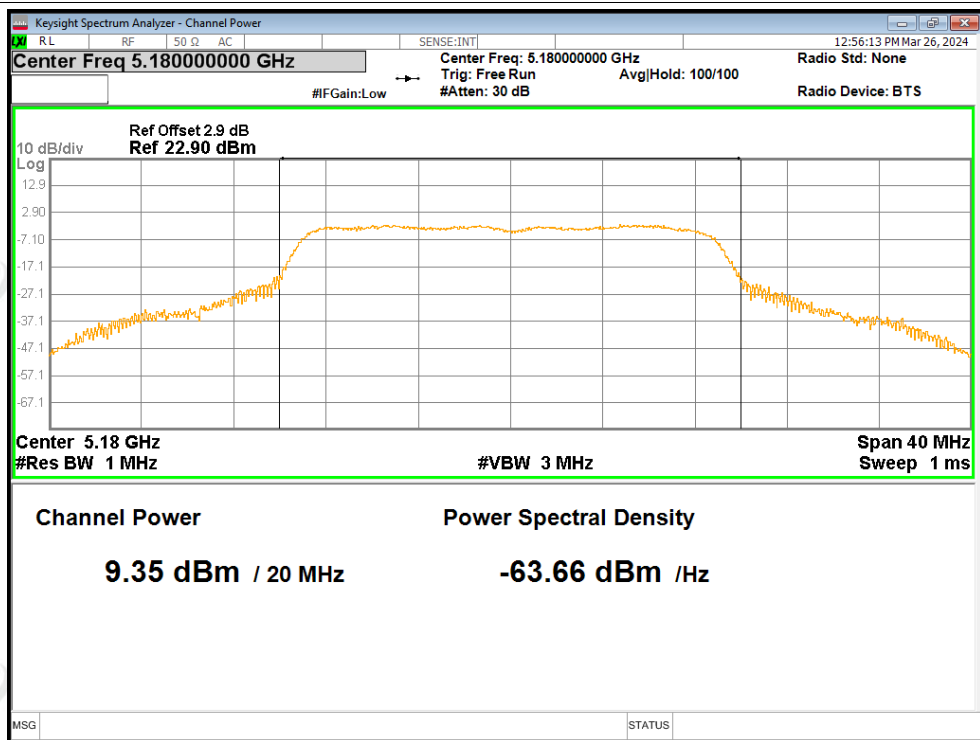


### Power NVNT n40 5230MHz Ant1

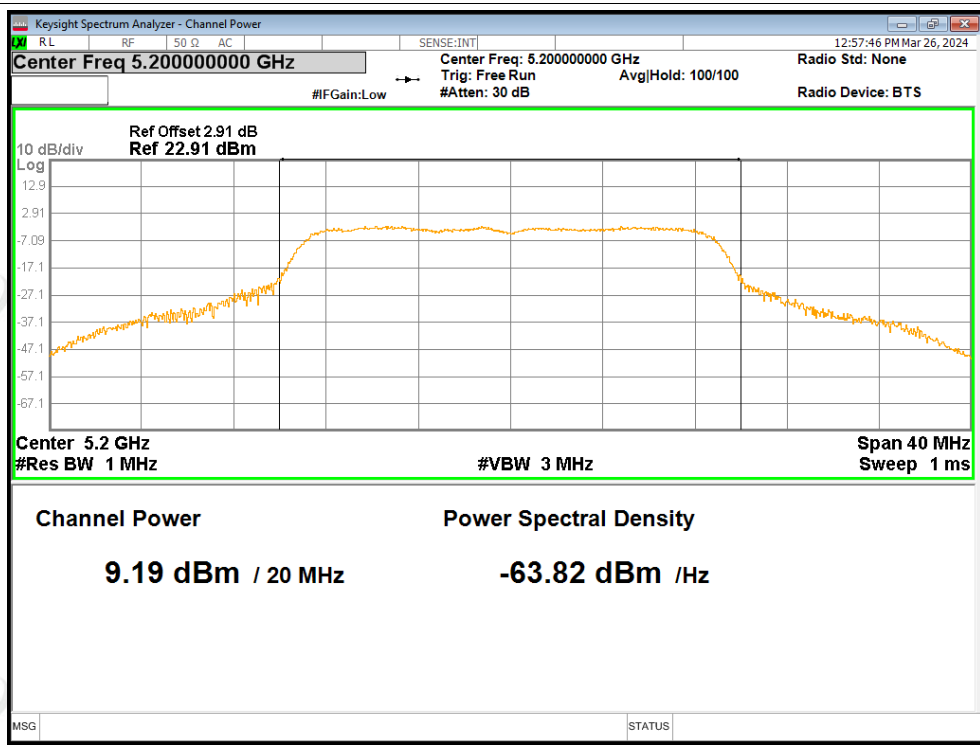




Power NVNT ac20 5180MHz Ant1

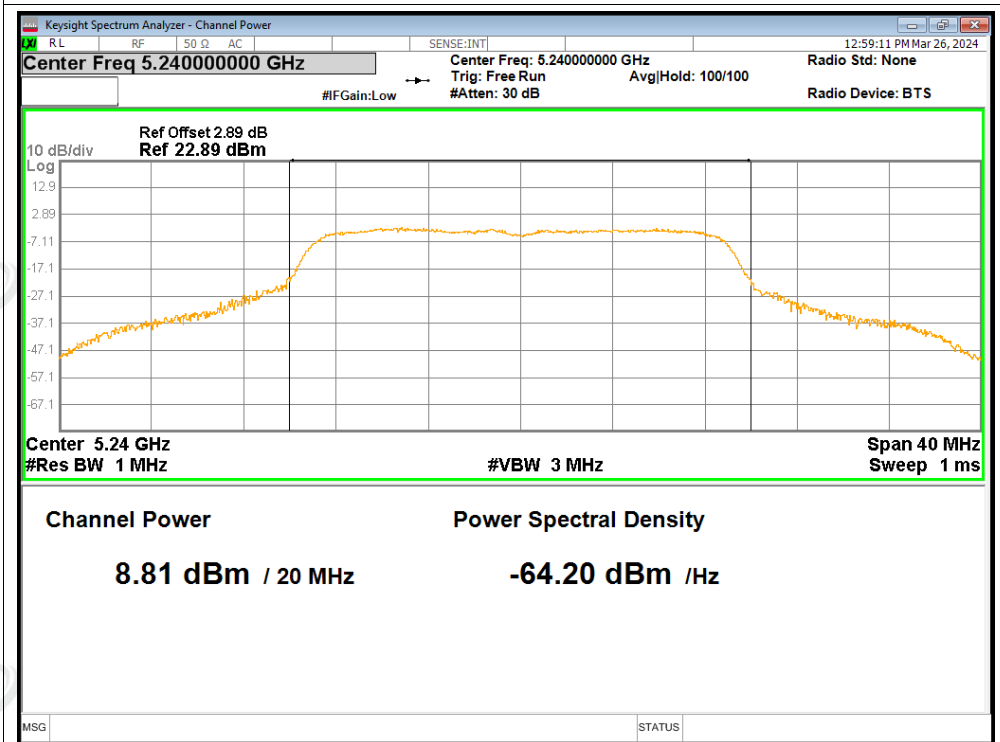


Power NVNT ac20 5200MHz Ant1

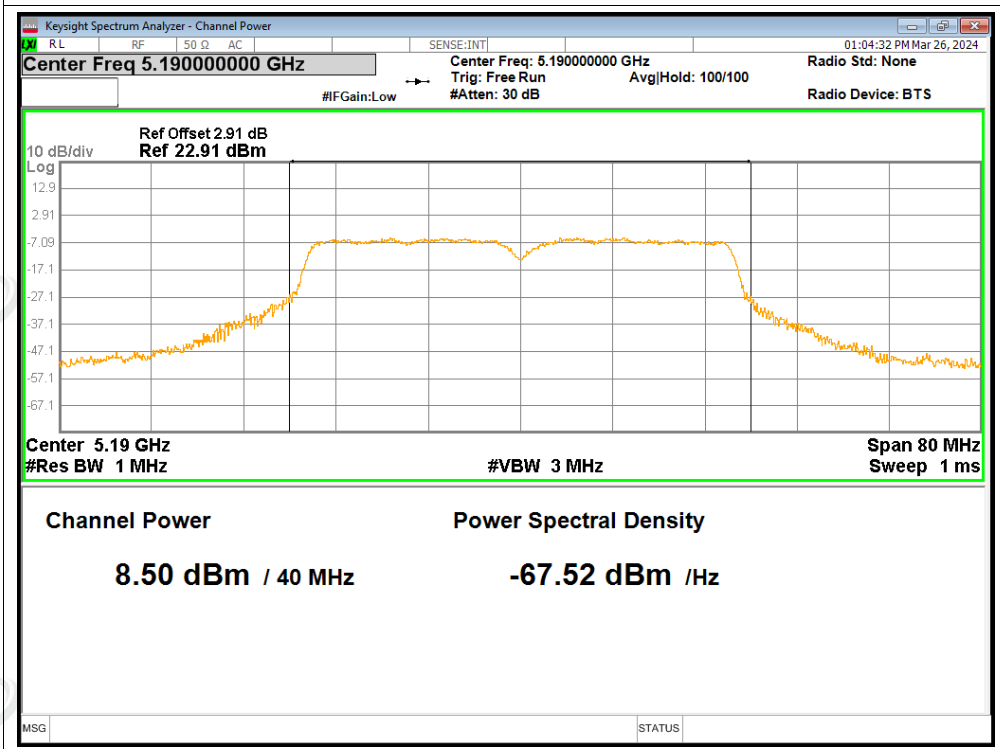




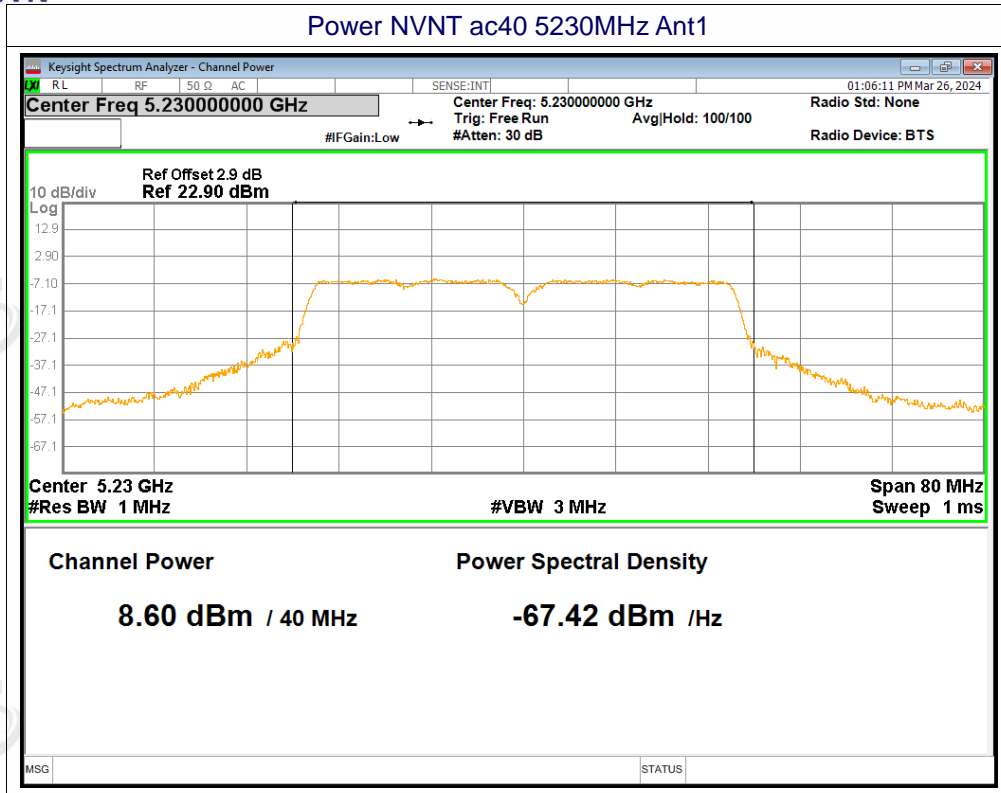
### Power NVNT ac20 5240MHz Ant1



### Power NVNT ac40 5190MHz Ant1









## ZHONGHAN

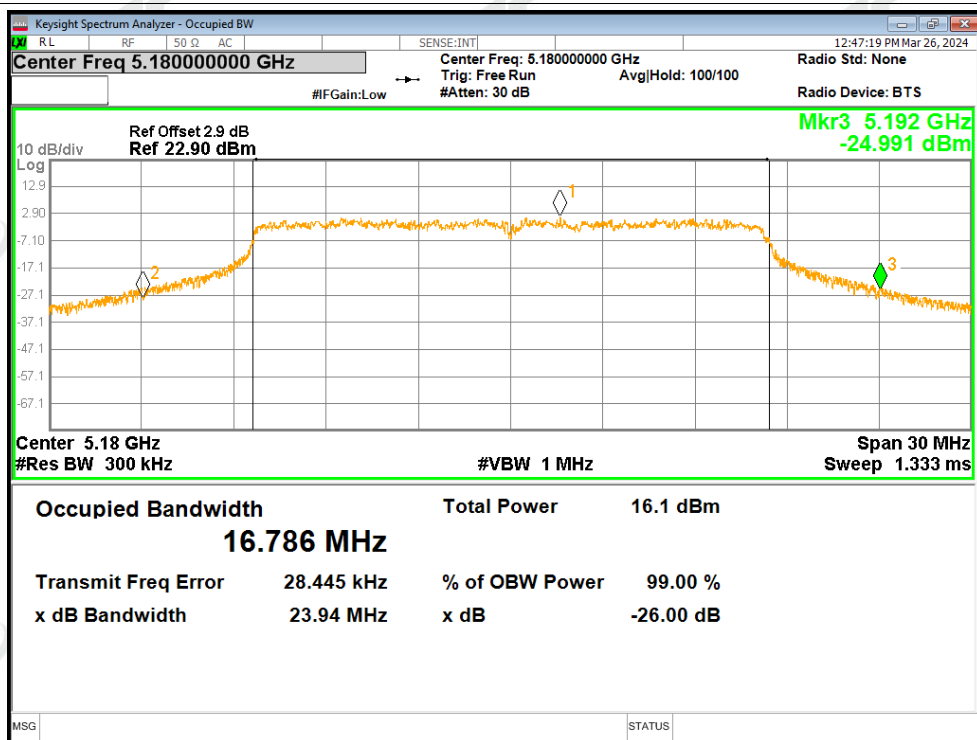
## B3. -26dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	Ant1	23.943	Pass
NVNT	a	5200	Ant1	23.174	Pass
NVNT	a	5240	Ant1	23.51	Pass
NVNT	n20	5180	Ant1	24.651	Pass
NVNT	n20	5200	Ant1	25.492	Pass
NVNT	n20	5240	Ant1	25.057	Pass
NVNT	n40	5190	Ant1	42.925	Pass
NVNT	n40	5230	Ant1	41.733	Pass
NVNT	ac20	5180	Ant1	24.633	Pass
NVNT	ac20	5200	Ant1	24.451	Pass
NVNT	ac20	5240	Ant1	26.008	Pass
NVNT	ac40	5190	Ant1	44.319	Pass
NVNT	ac40	5230	Ant1	44.643	Pass

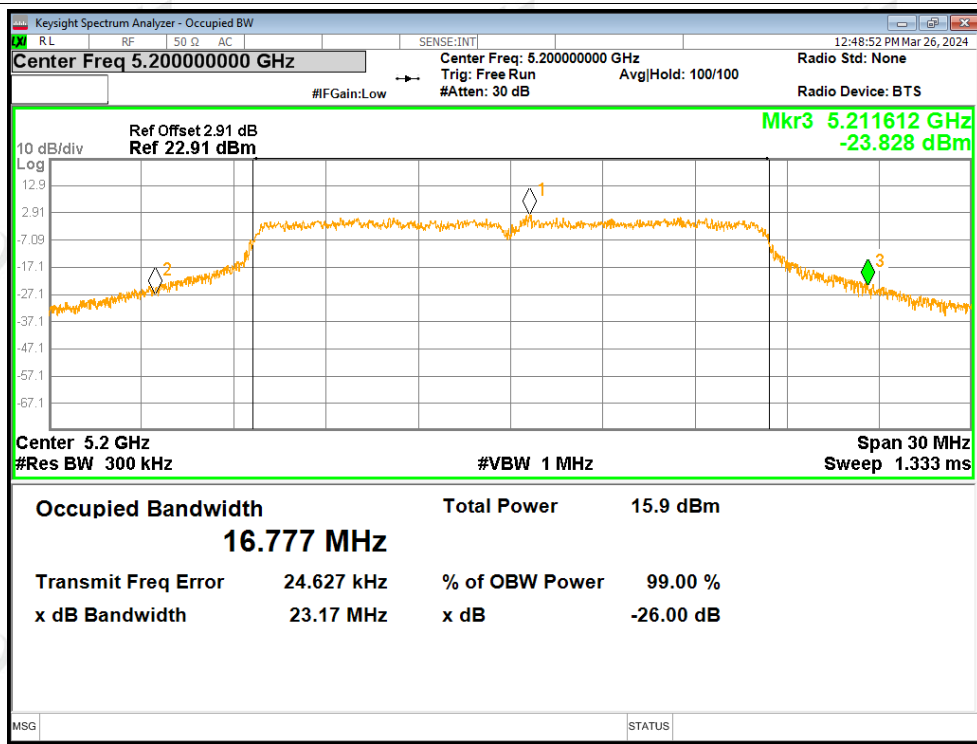


Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant1

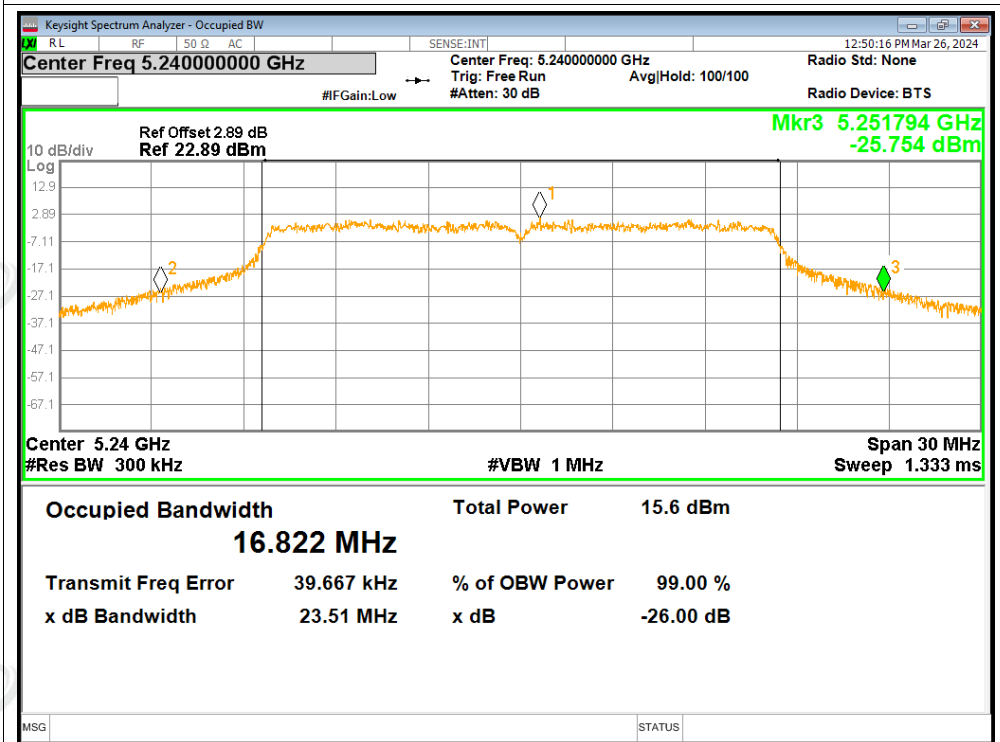


-26dB Bandwidth NVNT a 5200MHz Ant1

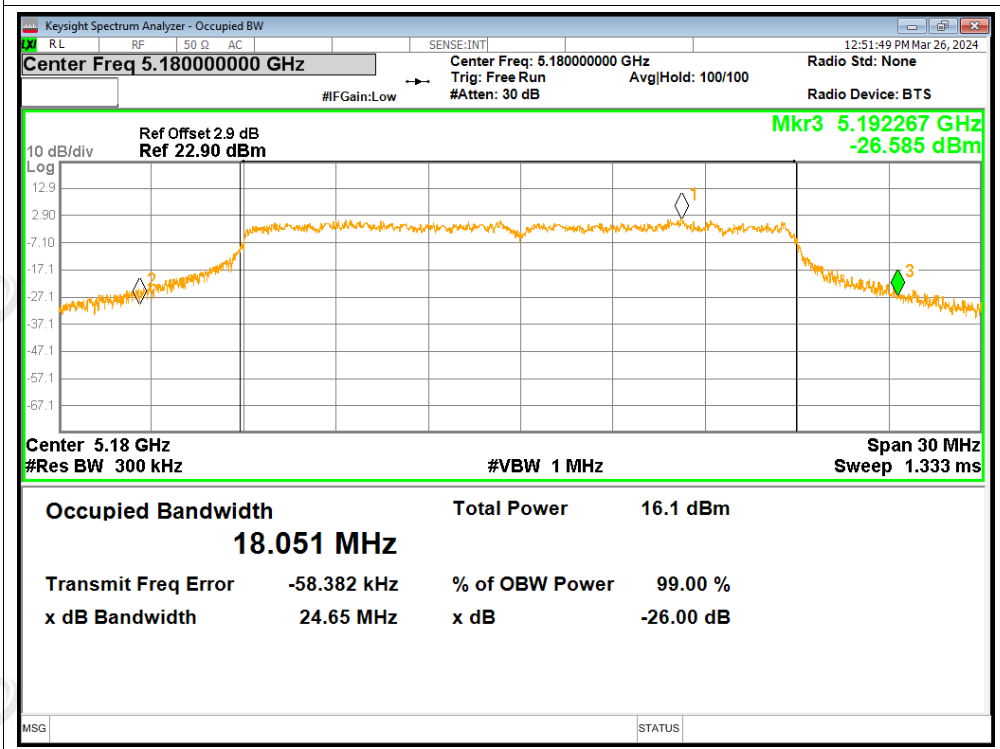




-26dB Bandwidth NVNT a 5240MHz Ant1

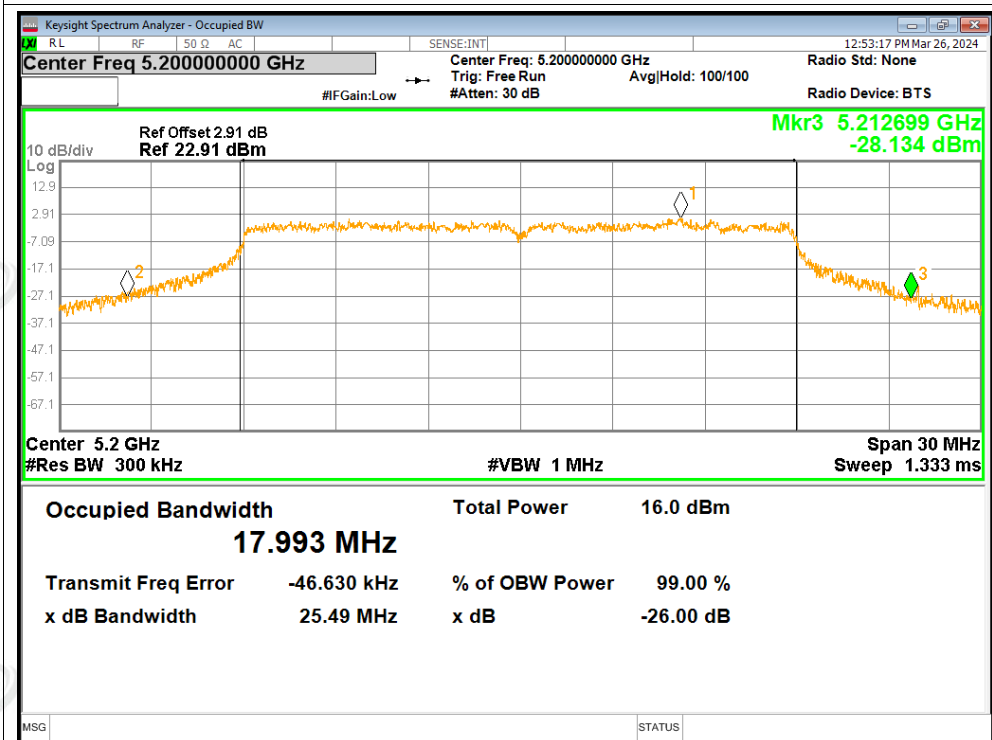


-26dB Bandwidth NVNT n20 5180MHz Ant1

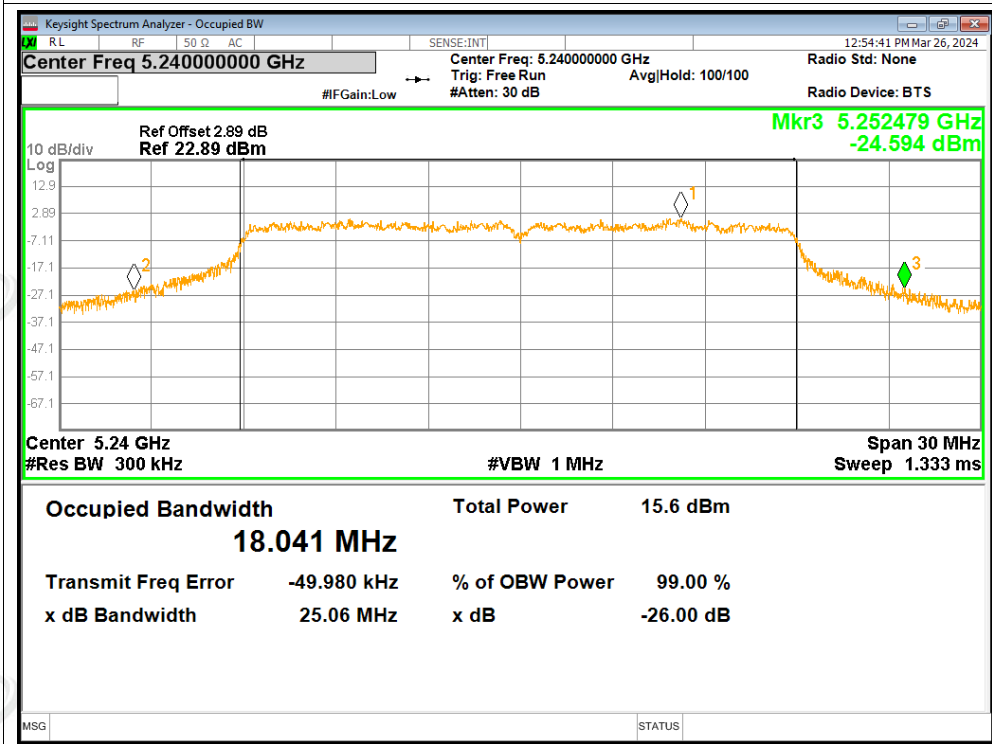




-26dB Bandwidth NVNT n20 5200MHz Ant1

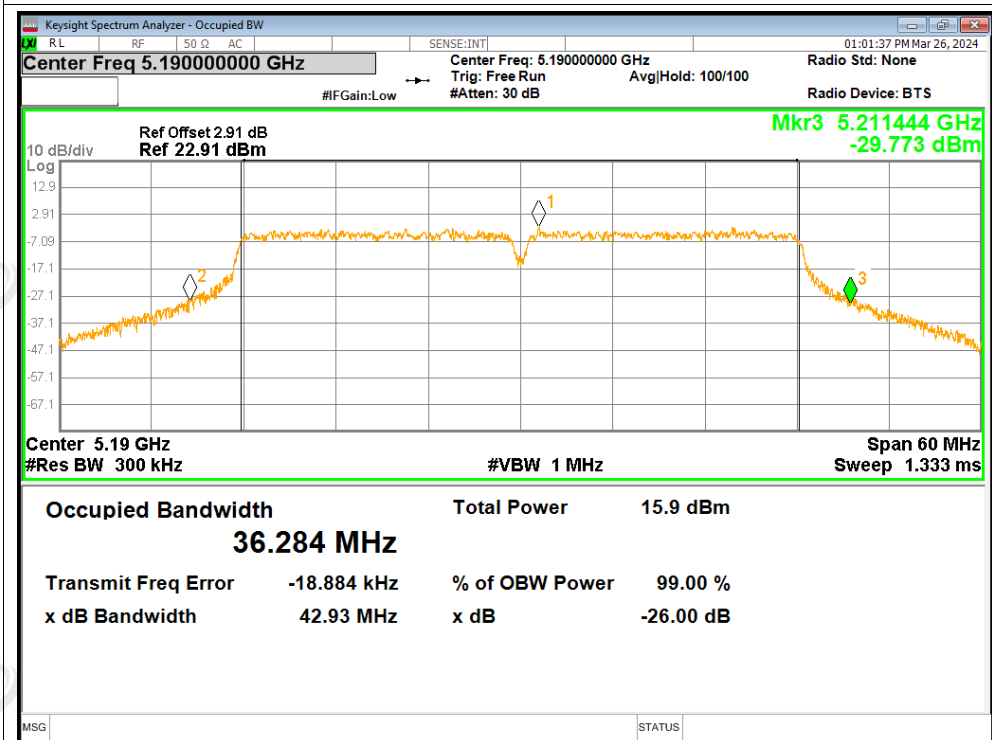


-26dB Bandwidth NVNT n20 5240MHz Ant1

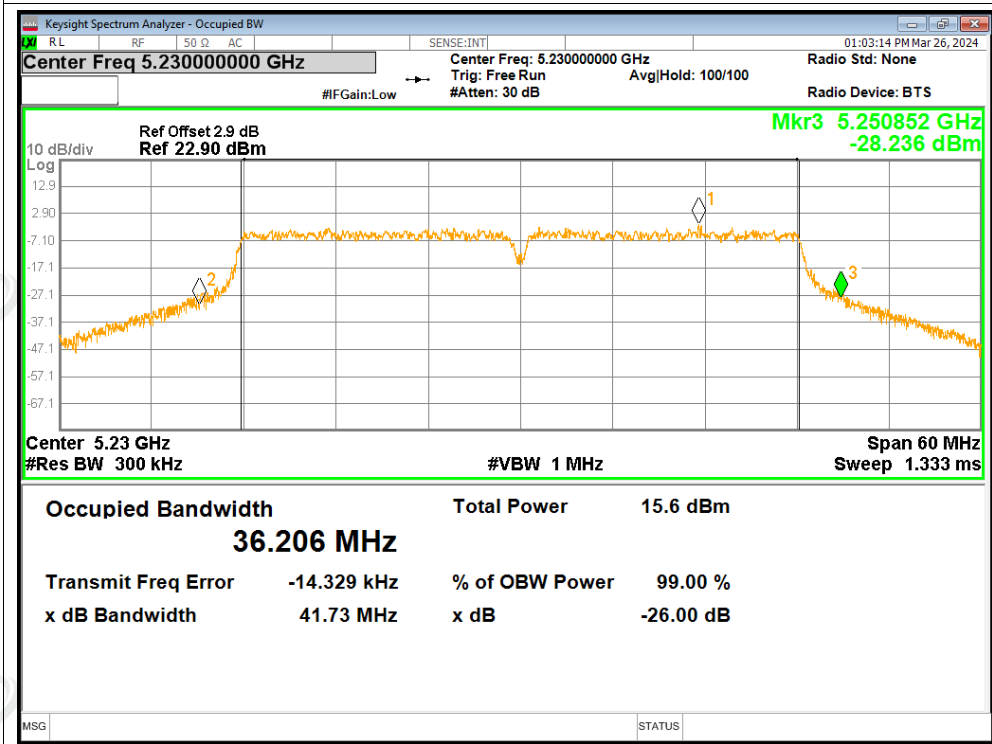




-26dB Bandwidth NVNT n40 5190MHz Ant1

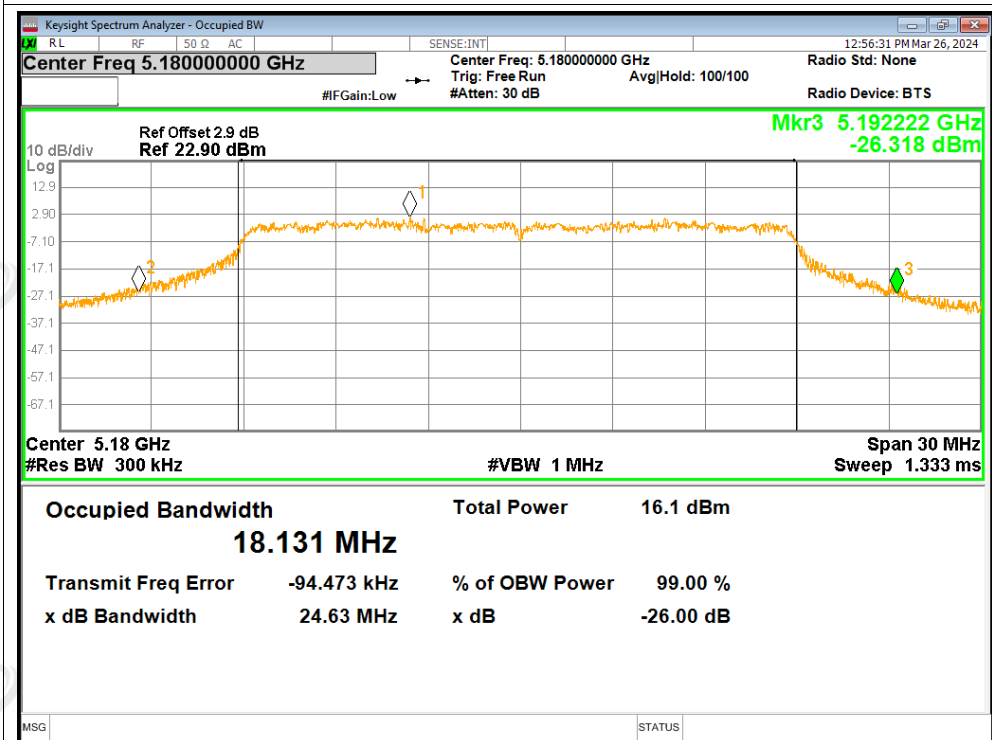


-26dB Bandwidth NVNT n40 5230MHz Ant1

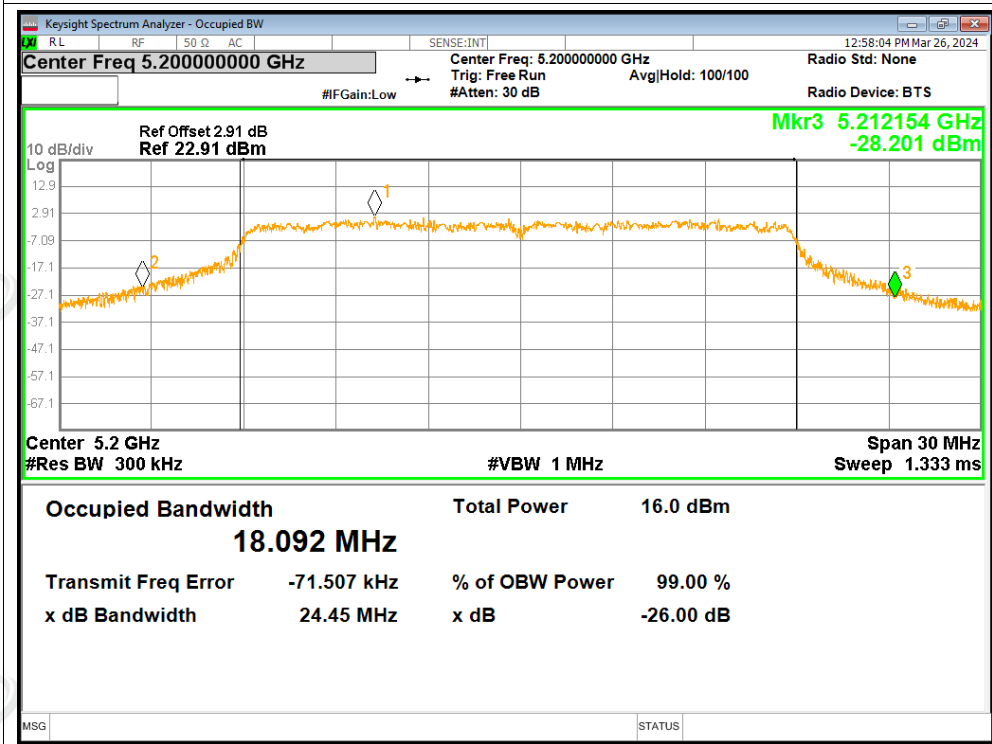




-26dB Bandwidth NVNT ac20 5180MHz Ant1

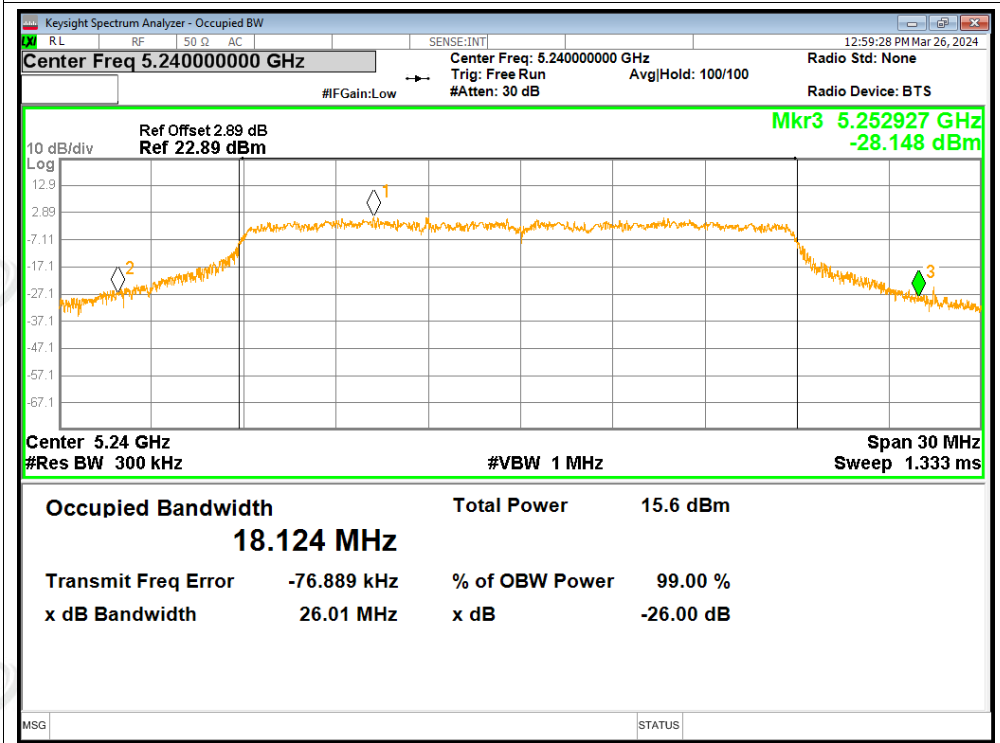


-26dB Bandwidth NVNT ac20 5200MHz Ant1

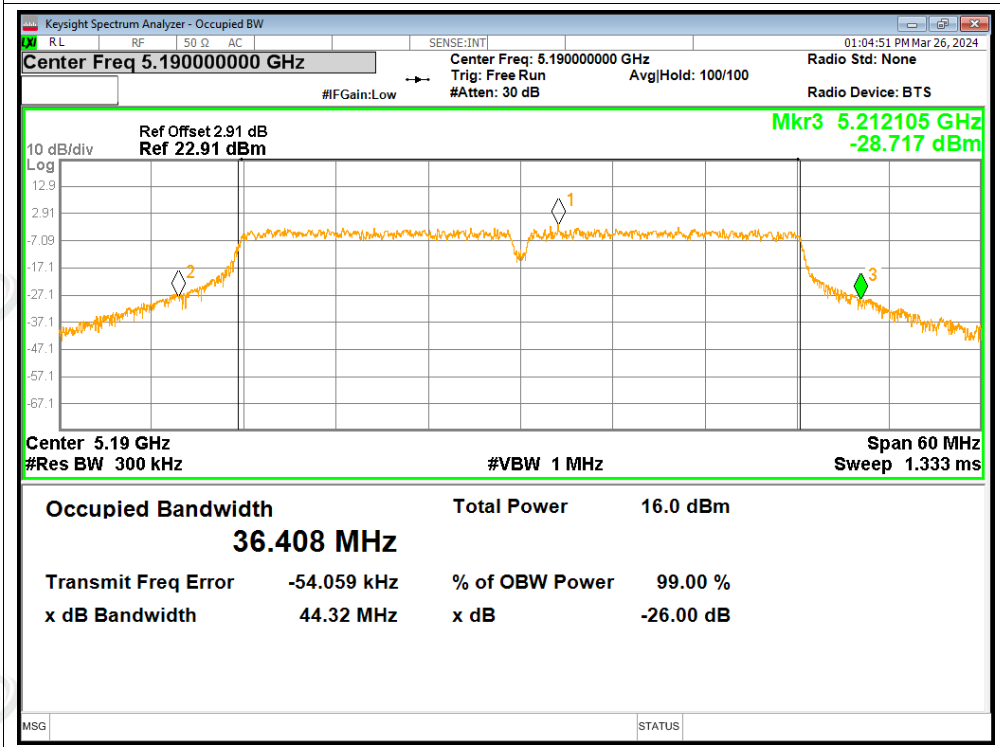




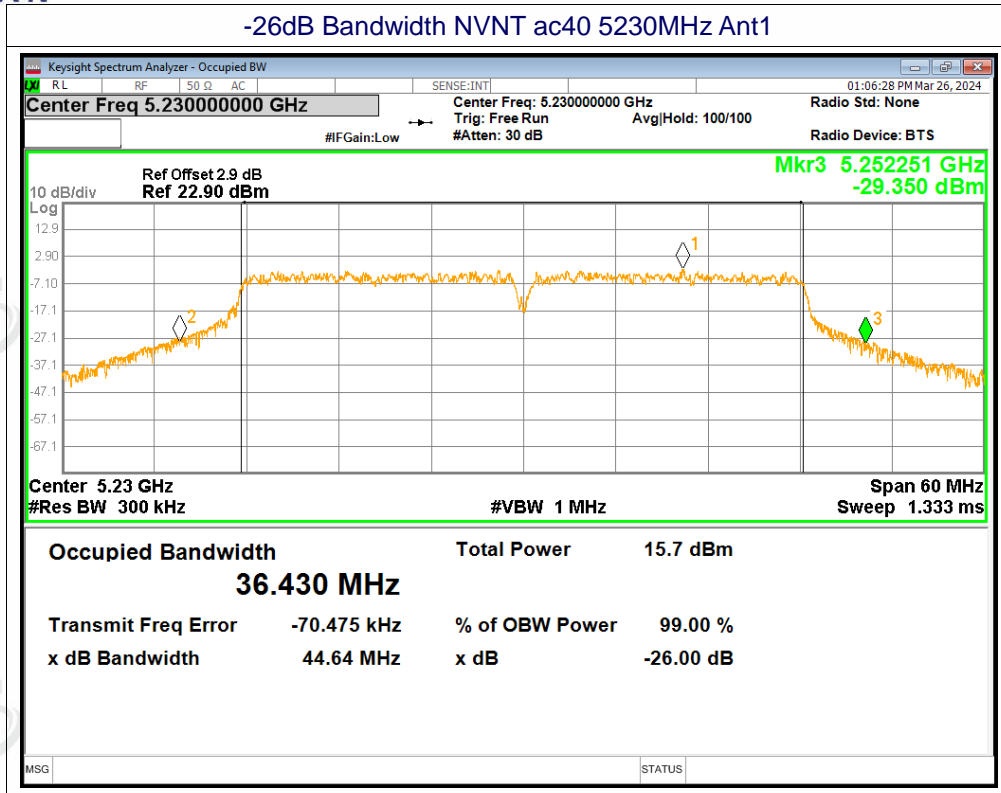
-26dB Bandwidth NVNT ac20 5240MHz Ant1



-26dB Bandwidth NVNT ac40 5190MHz Ant1







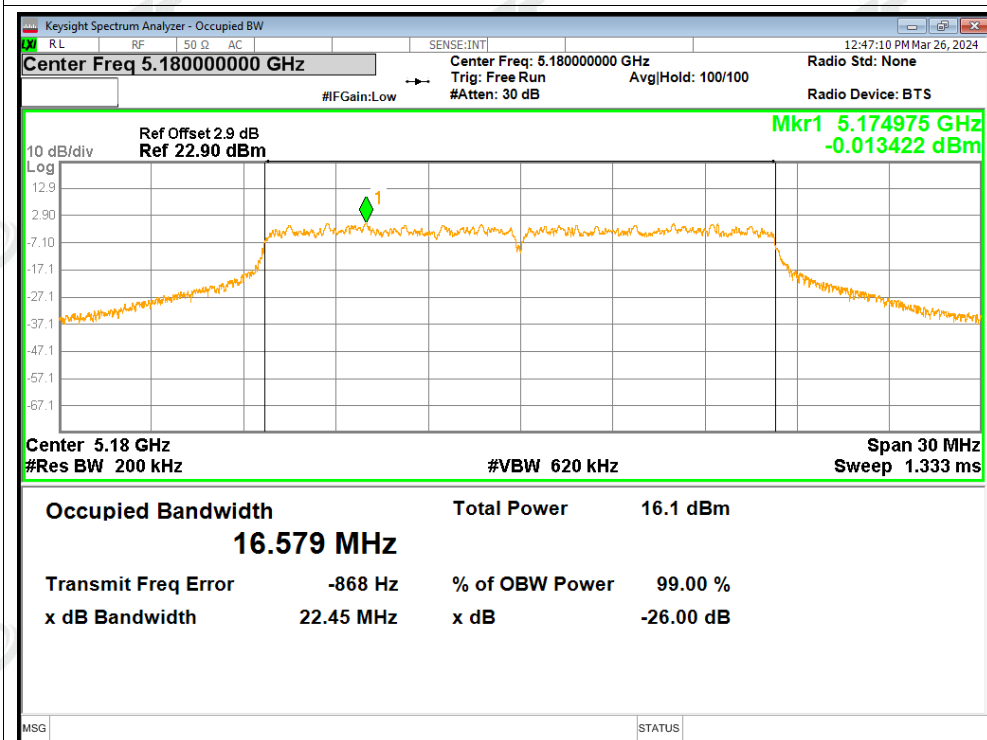
**ZHONGHAN****B4. Occupied Channel Bandwidth**

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	a	5180	Ant1	16.579
NVNT	a	5200	Ant1	16.548
NVNT	a	5240	Ant1	16.602
NVNT	n20	5180	Ant1	17.812
NVNT	n20	5200	Ant1	17.819
NVNT	n20	5240	Ant1	17.809
NVNT	n40	5190	Ant1	36.328
NVNT	n40	5230	Ant1	36.291
NVNT	ac20	5180	Ant1	17.849
NVNT	ac20	5200	Ant1	17.828
NVNT	ac20	5240	Ant1	17.85
NVNT	ac40	5190	Ant1	36.598
NVNT	ac40	5230	Ant1	36.567

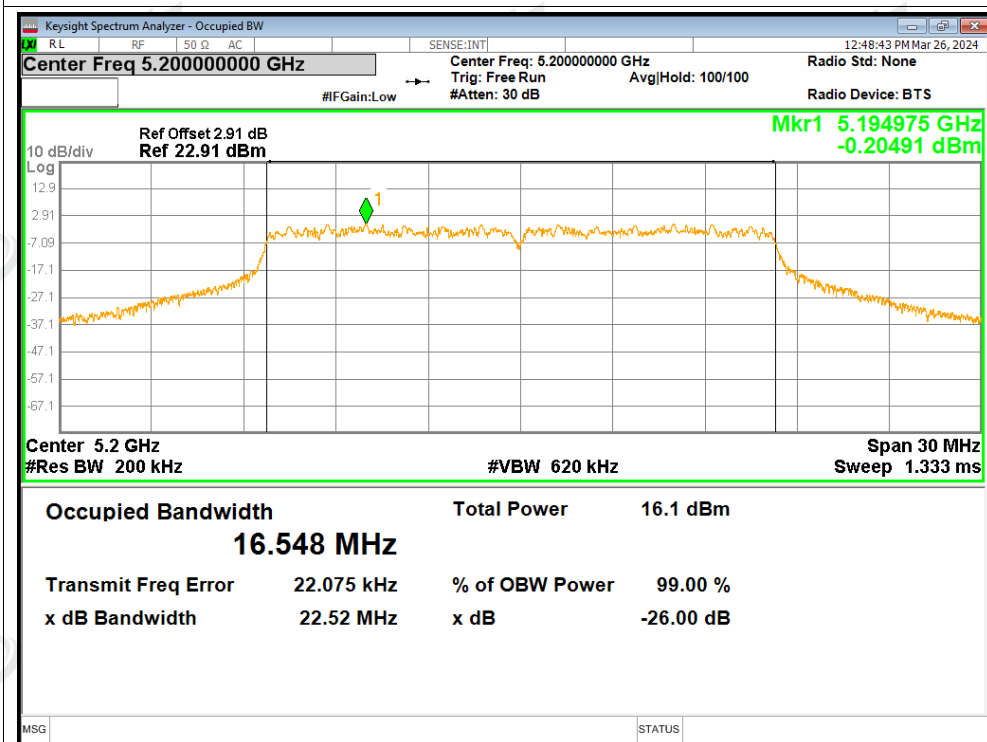


Test Graphs

OBW NVNT a 5180MHz Ant1

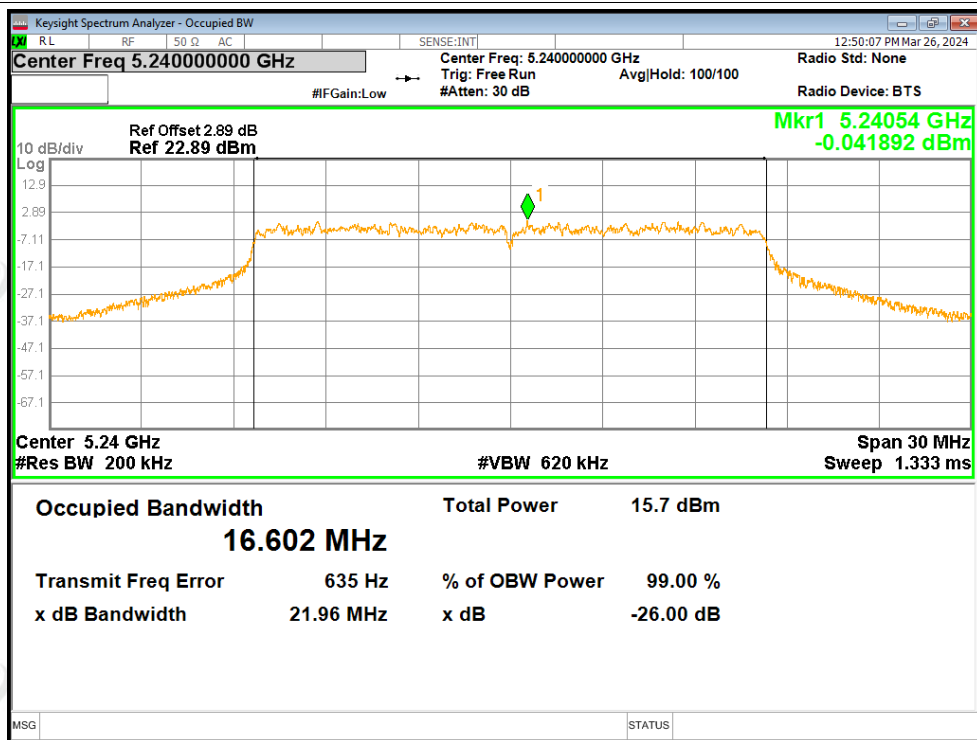


OBW NVNT a 5200MHz Ant1

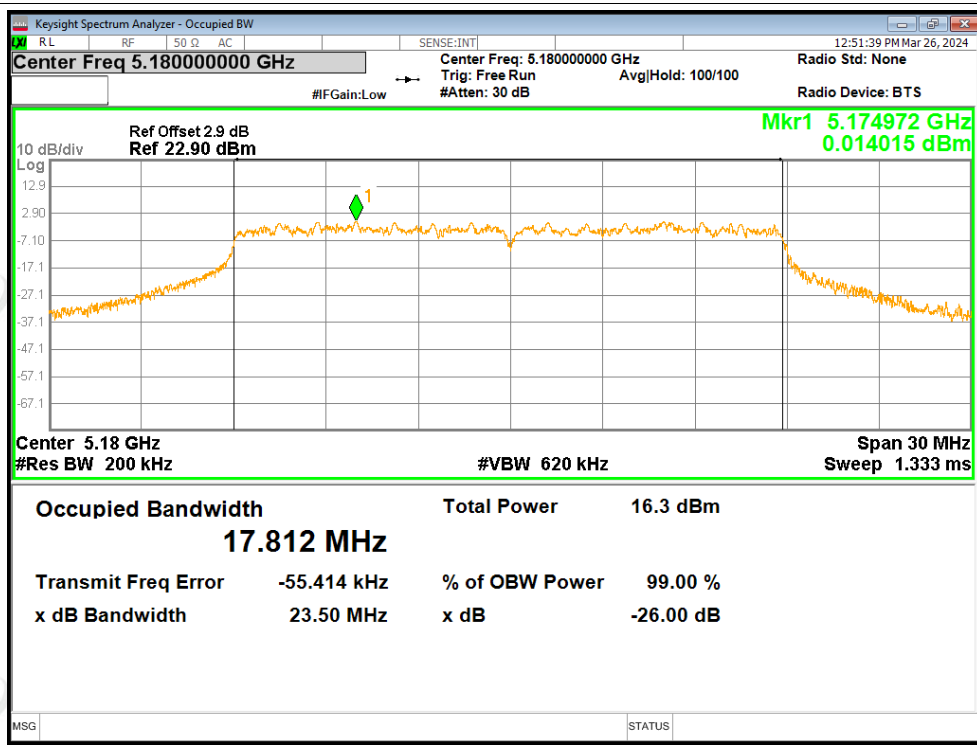




OBW NVNT a 5240MHz Ant1

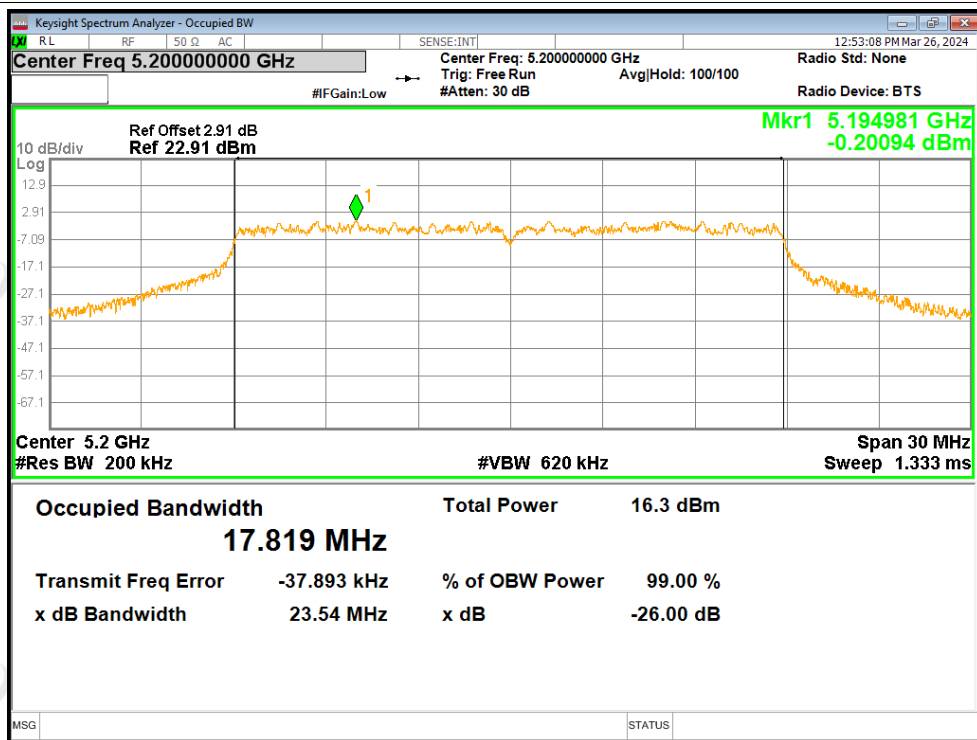


OBW NVNT n20 5180MHz Ant1

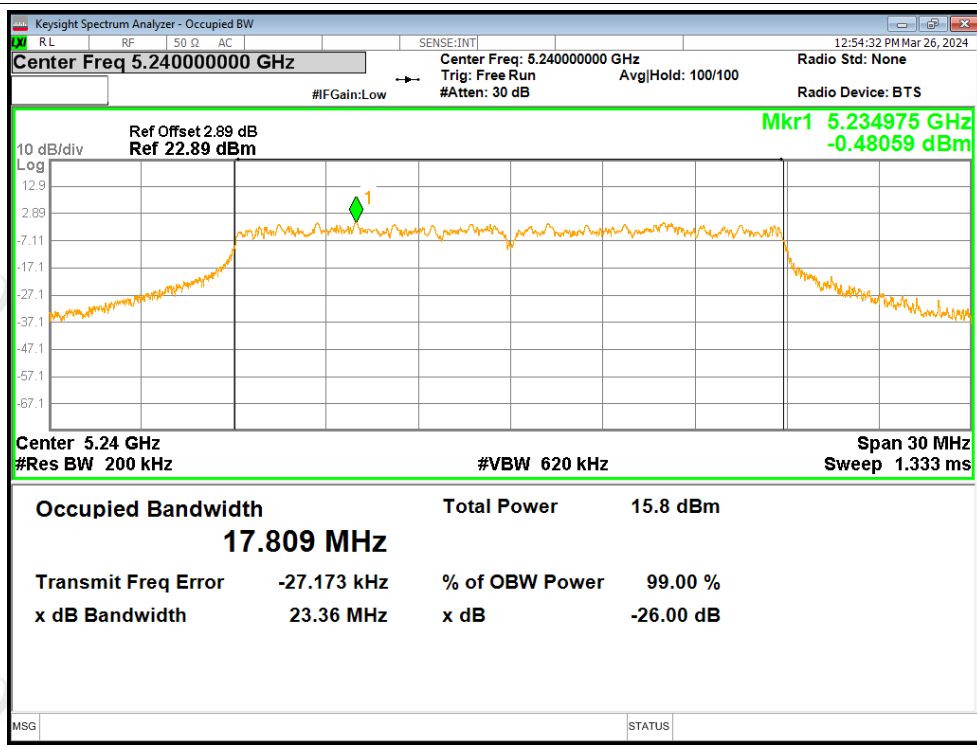




OBW NVNT n20 5200MHz Ant1

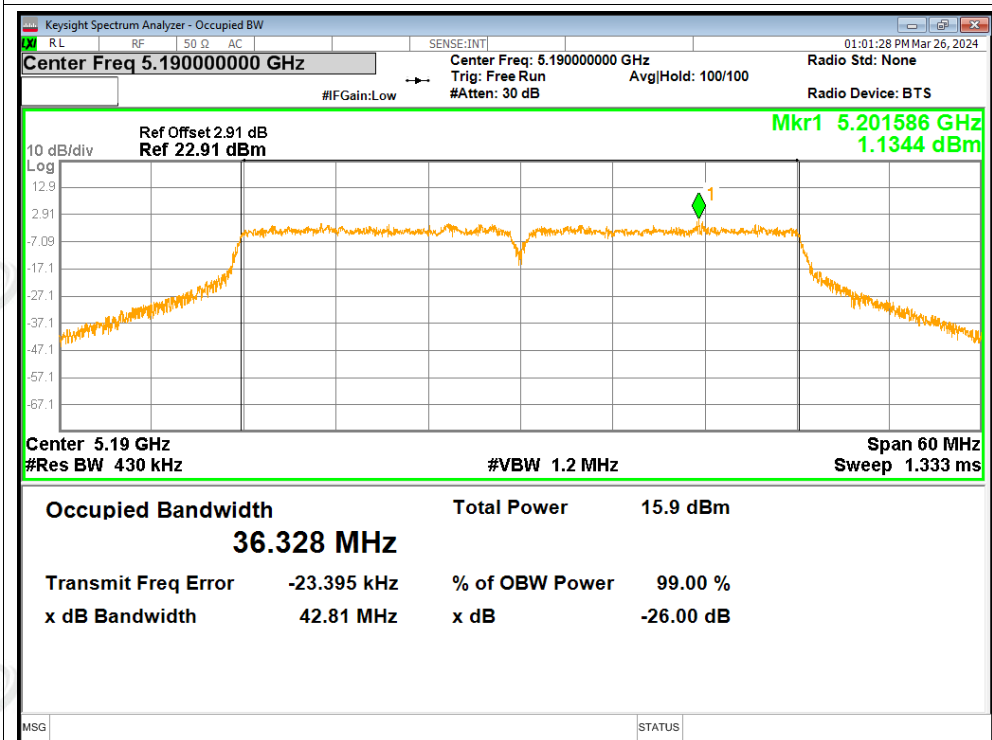


OBW NVNT n20 5240MHz Ant1

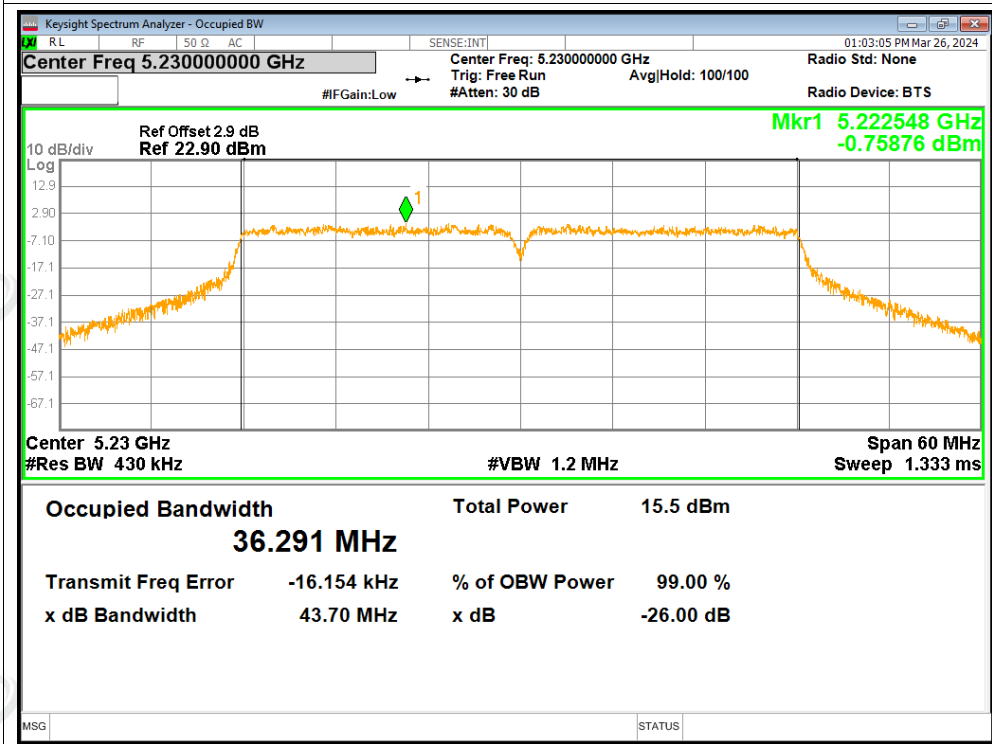




OBW NVNT n40 5190MHz Ant1

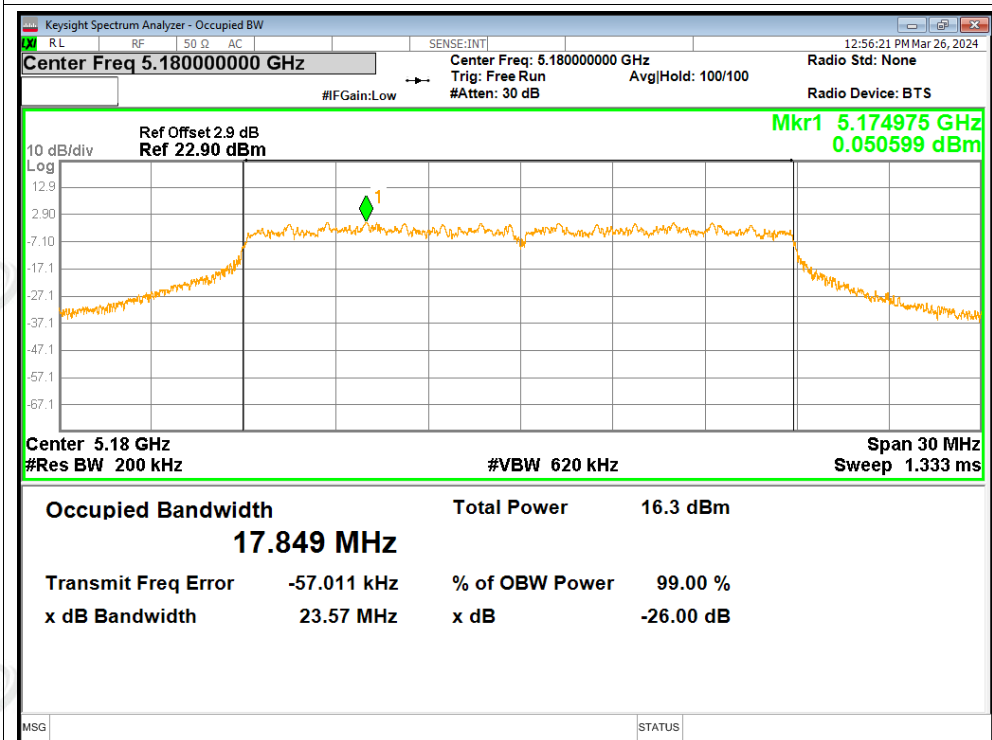


OBW NVNT n40 5230MHz Ant1

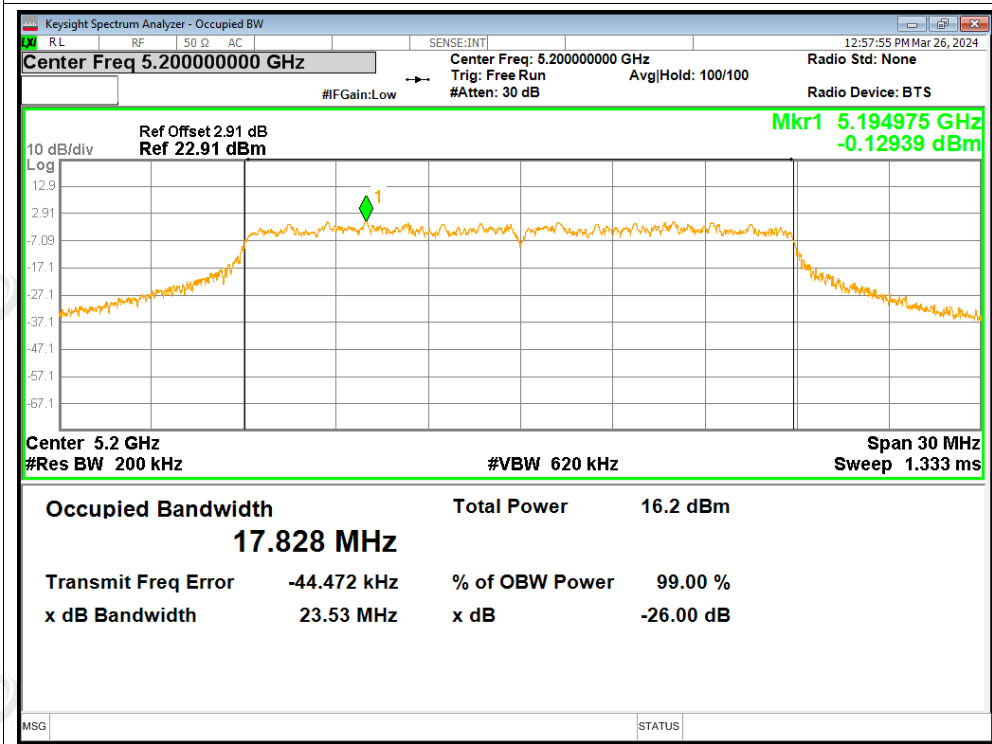




OBW NVNT ac20 5180MHz Ant1

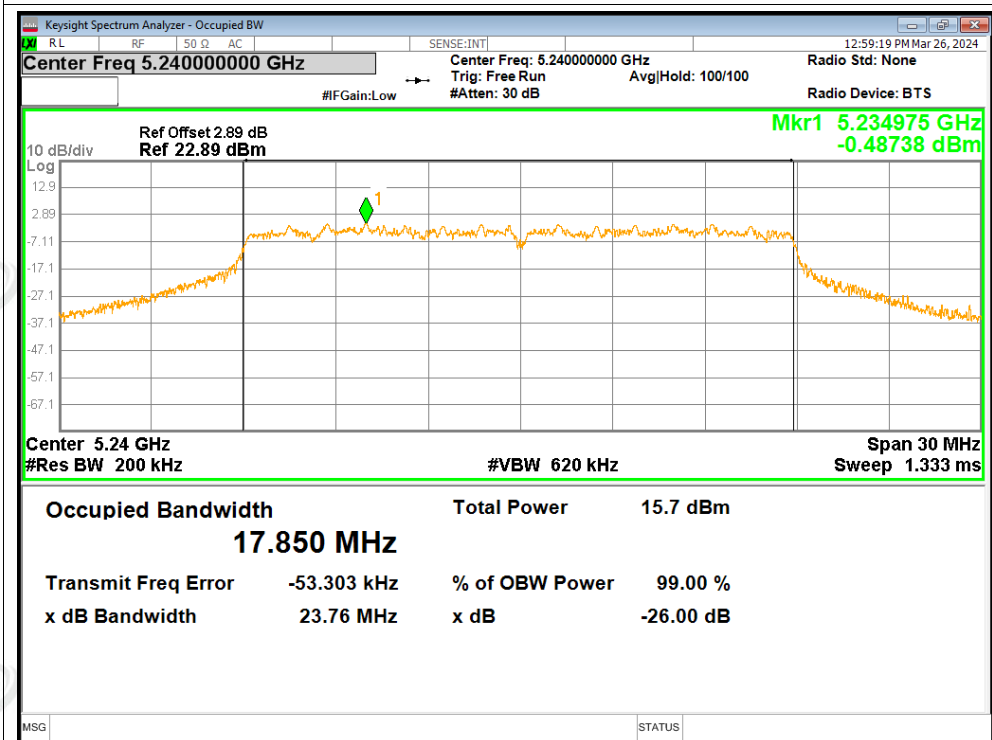


OBW NVNT ac20 5200MHz Ant1

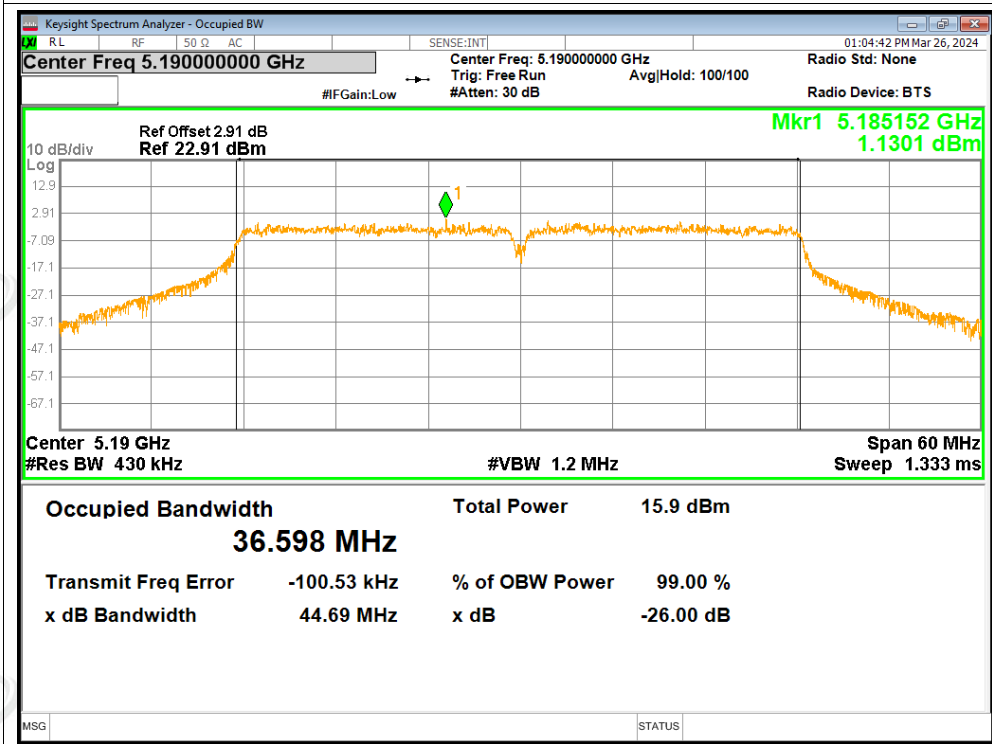




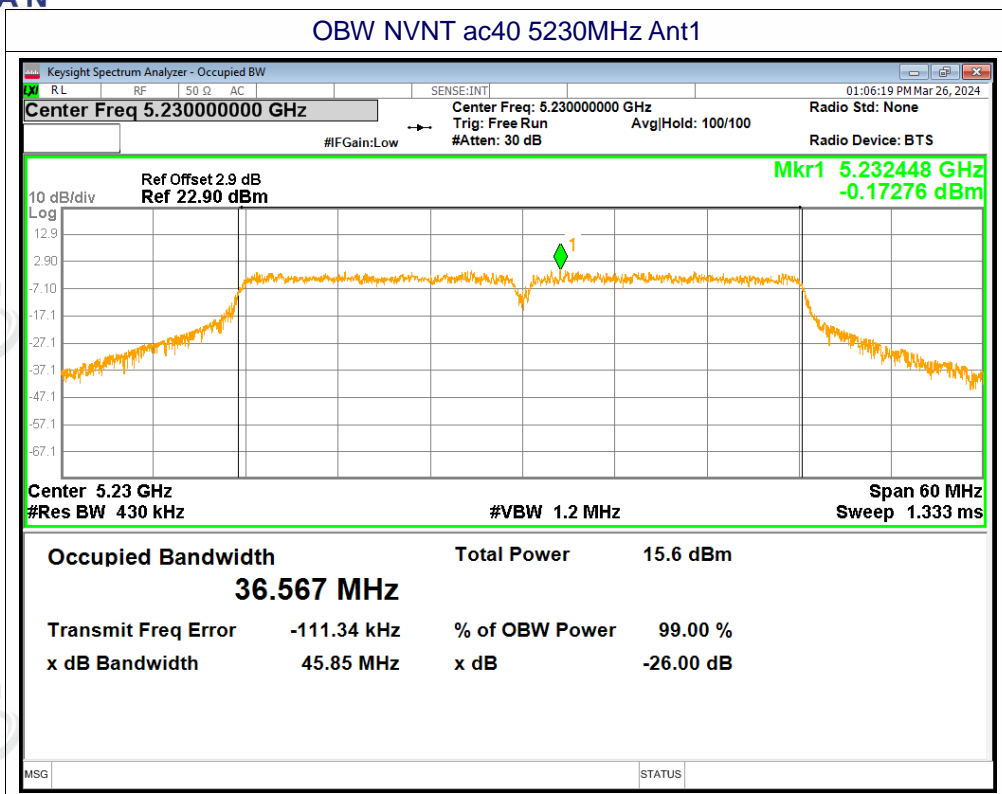
OBW NVNT ac20 5240MHz Ant1



OBW NVNT ac40 5190MHz Ant1









## ZHONGHAN

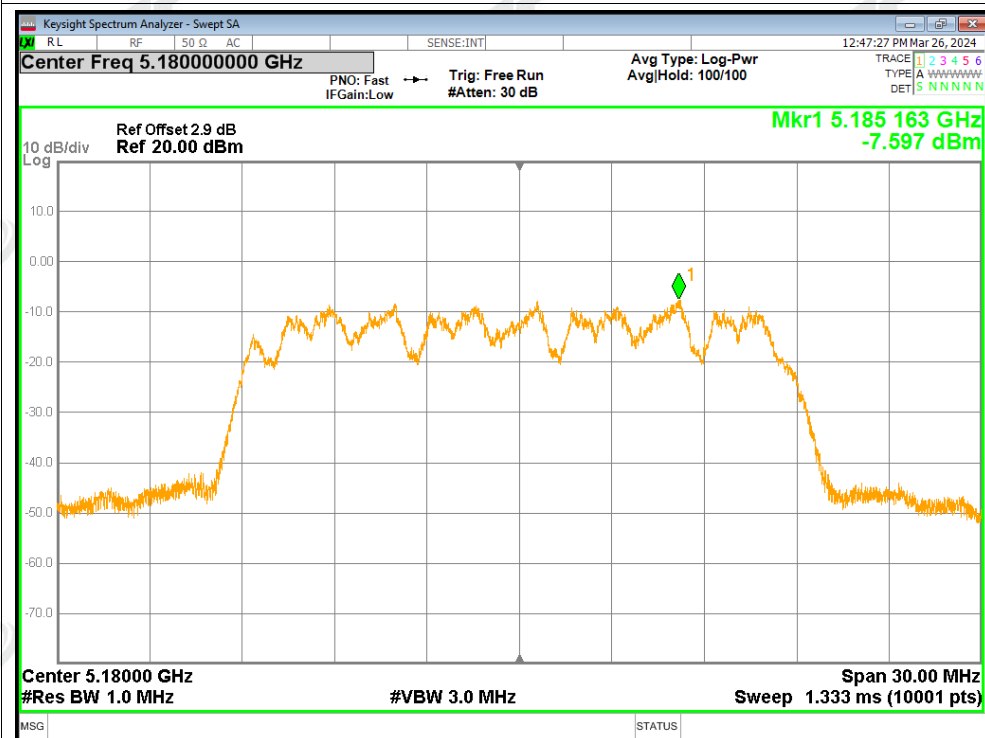
## B5. Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	-7.6	0.71	-6.89	11	Pass
NVNT	a	5200	Ant1	-7.63	0.67	-6.96	11	Pass
NVNT	a	5240	Ant1	-9.52	0.92	-8.6	11	Pass
NVNT	n20	5180	Ant1	-8.14	0.97	-7.17	11	Pass
NVNT	n20	5200	Ant1	-9.5	0.75	-8.75	11	Pass
NVNT	n20	5240	Ant1	-11.15	0.75	-10.4	11	Pass
NVNT	n40	5190	Ant1	-15.22	3.01	-12.21	11	Pass
NVNT	n40	5230	Ant1	-24.89	1.14	-23.75	11	Pass
NVNT	ac20	5180	Ant1	-9.42	0.79	-8.63	11	Pass
NVNT	ac20	5200	Ant1	-9.94	0.79	-9.15	11	Pass
NVNT	ac20	5240	Ant1	-7.37	0.79	-6.58	11	Pass
NVNT	ac40	5190	Ant1	-27.53	1.6	-25.93	11	Pass
NVNT	ac40	5230	Ant1	-30.36	1.25	-29.11	11	Pass

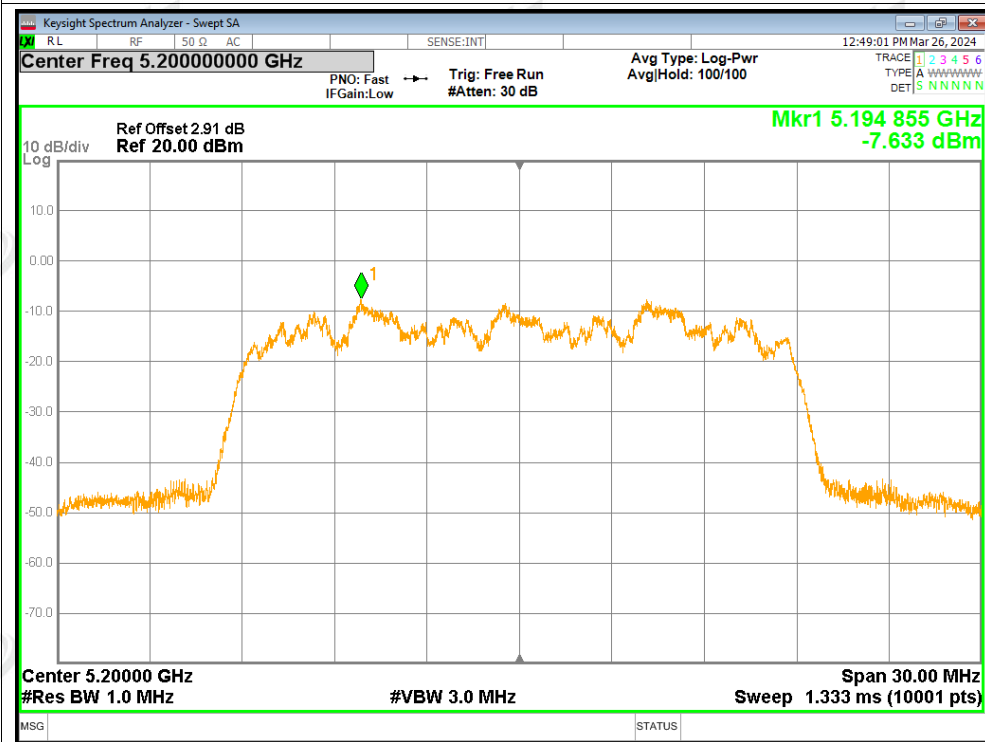


Test Graphs

PSD NVNT a 5180MHz Ant1

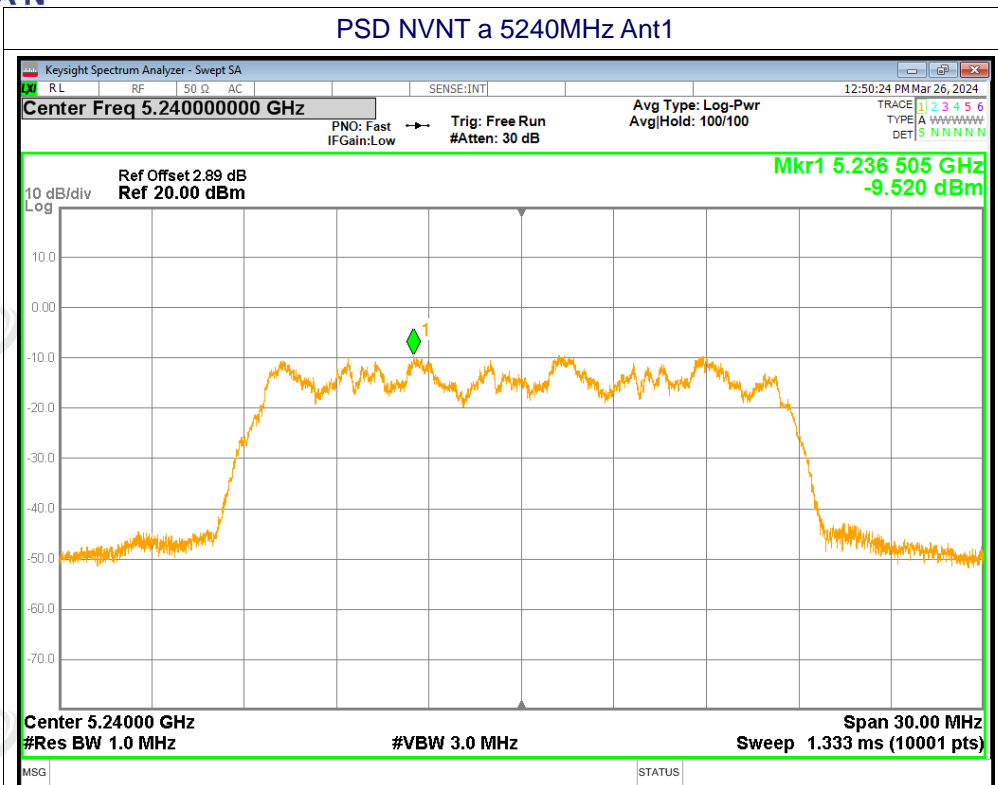


PSD NVNT a 5200MHz Ant1

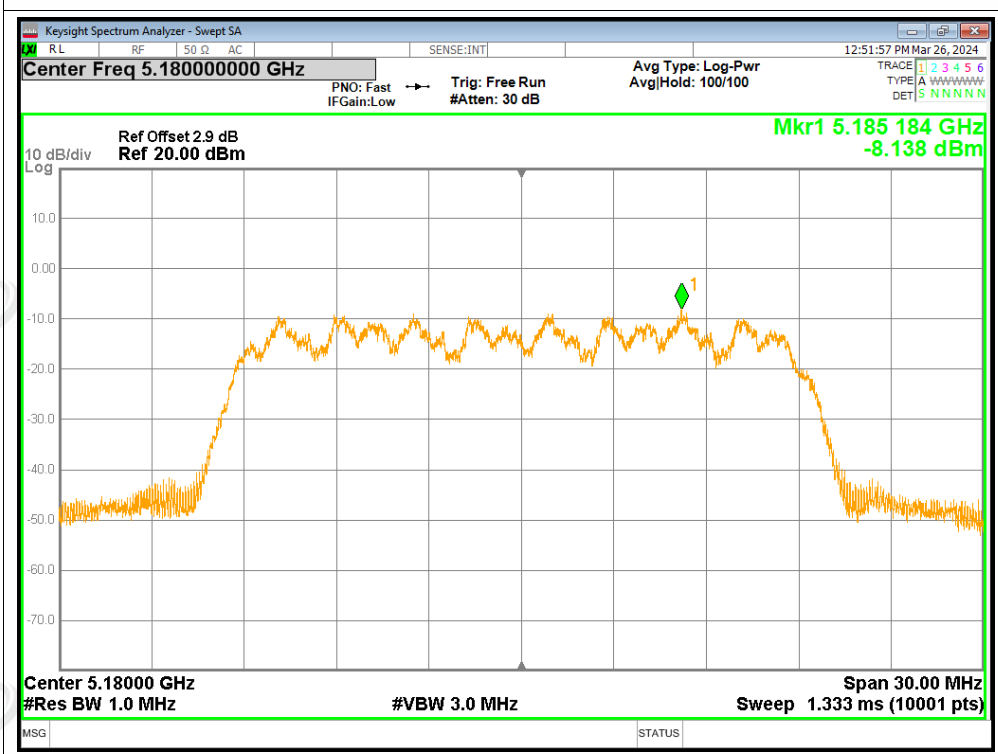


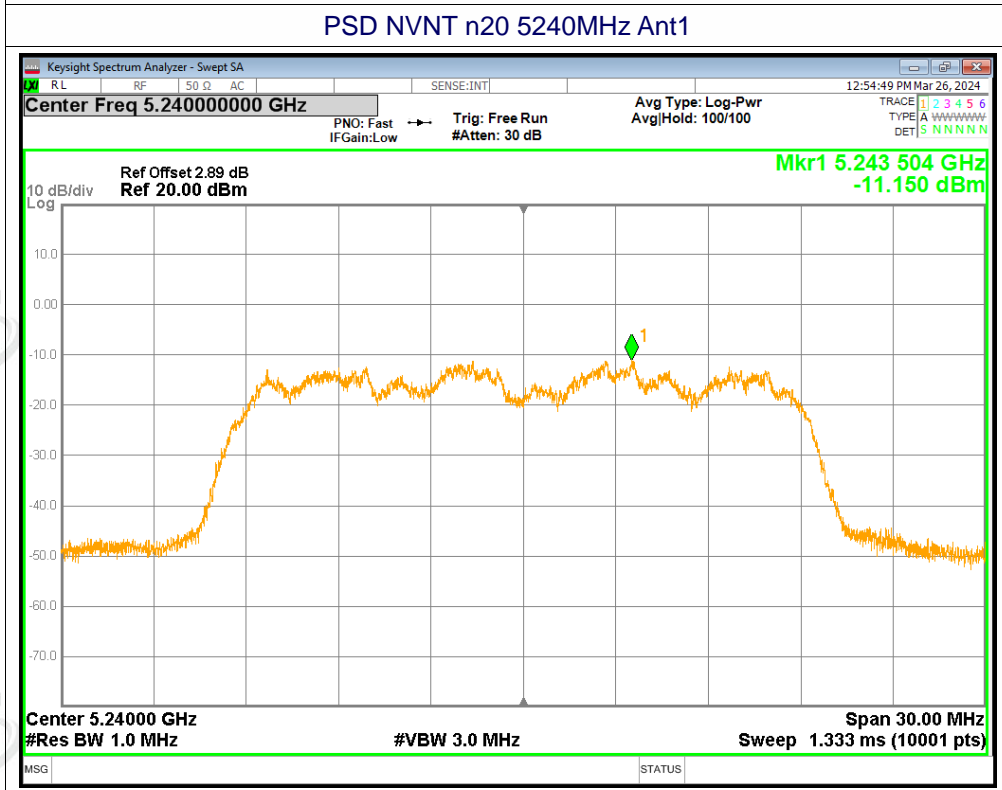
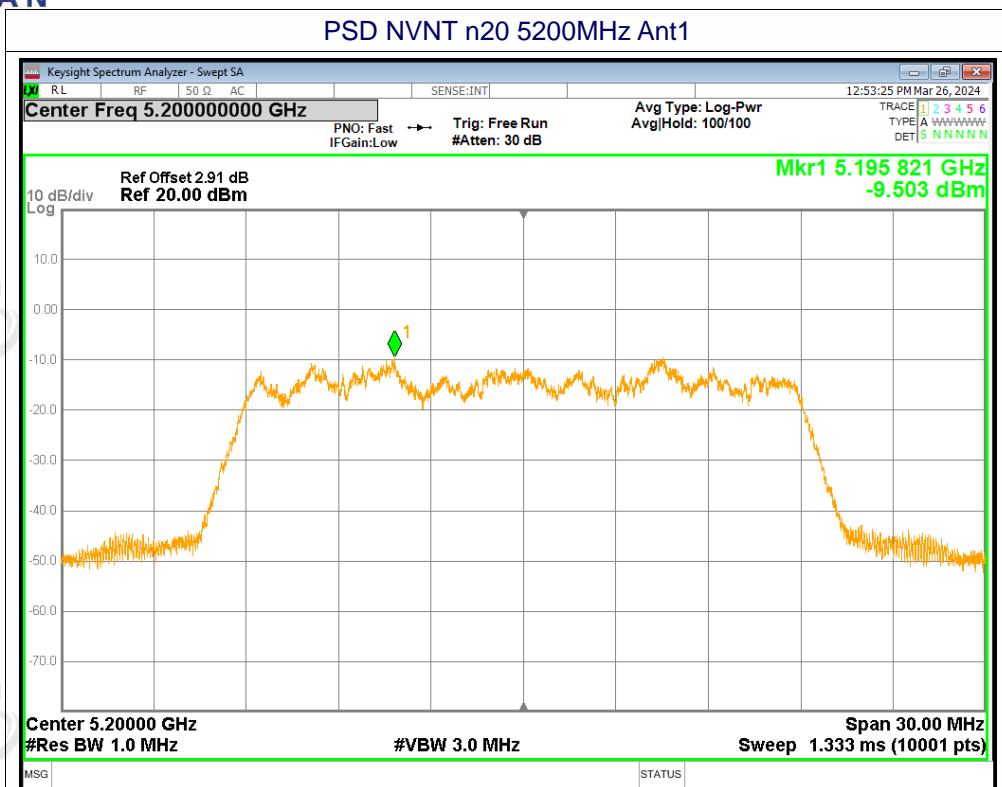


PSD NVNT a 5240MHz Ant1



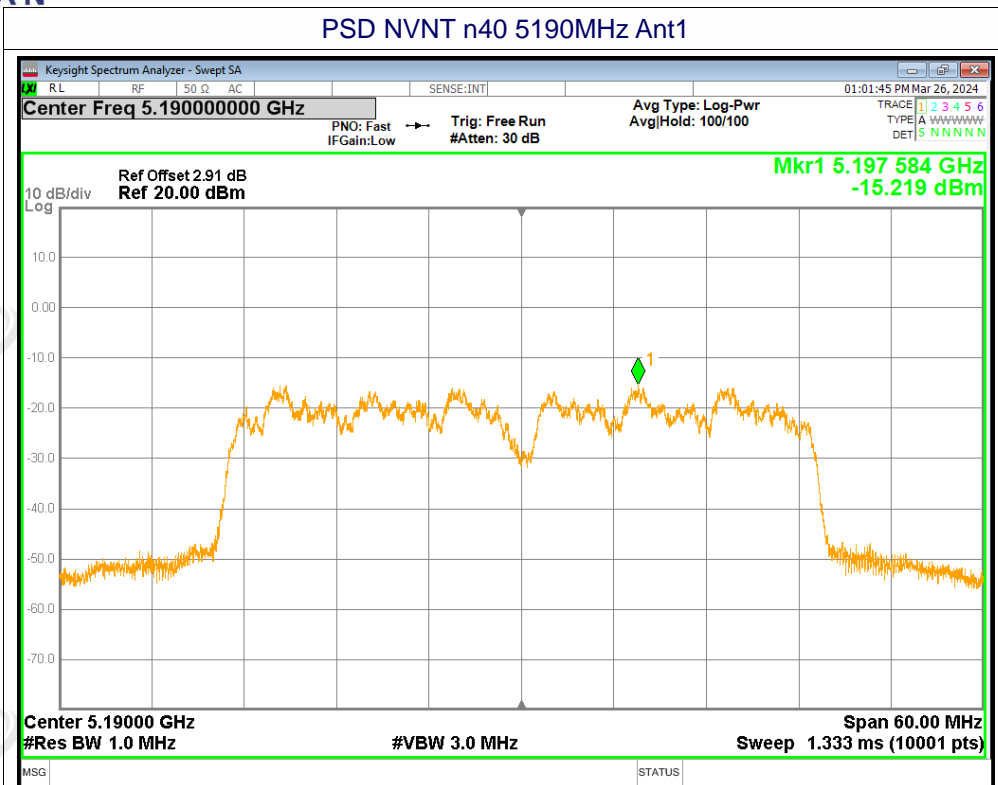
PSD NVNT n20 5180MHz Ant1



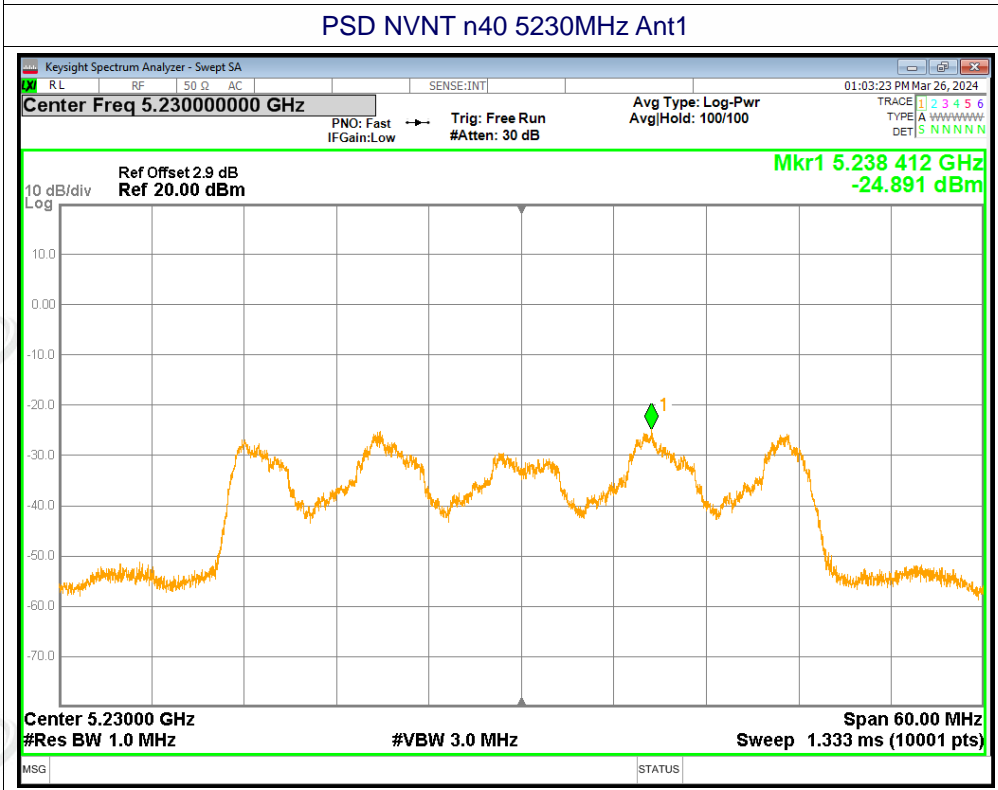




PSD NVNT n40 5190MHz Ant1

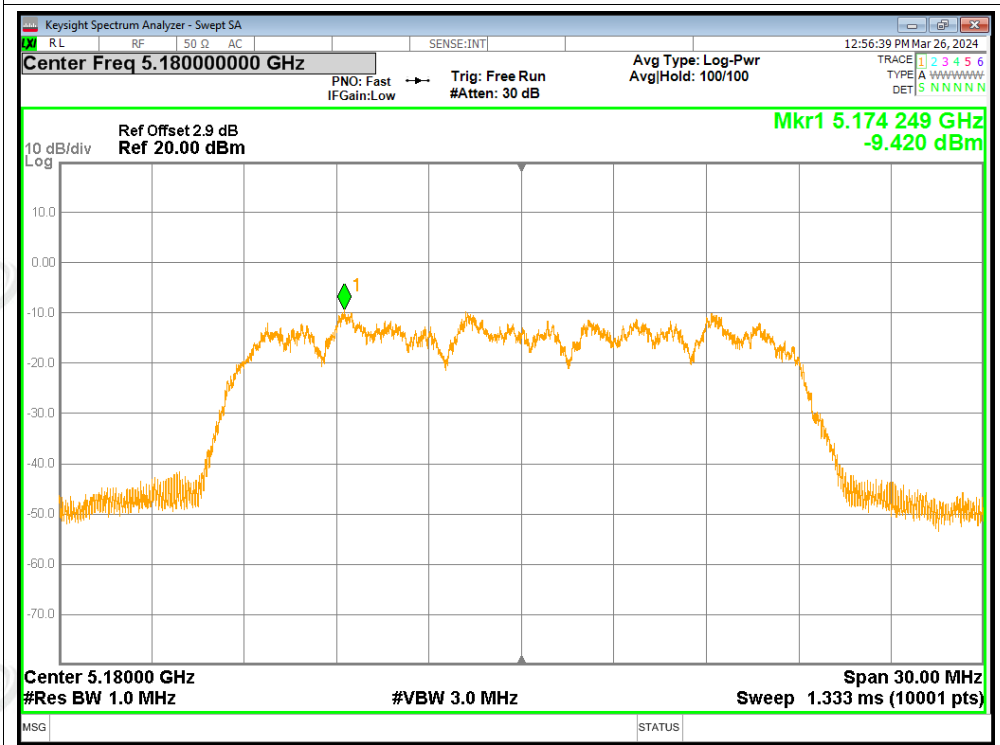


PSD NVNT n40 5230MHz Ant1

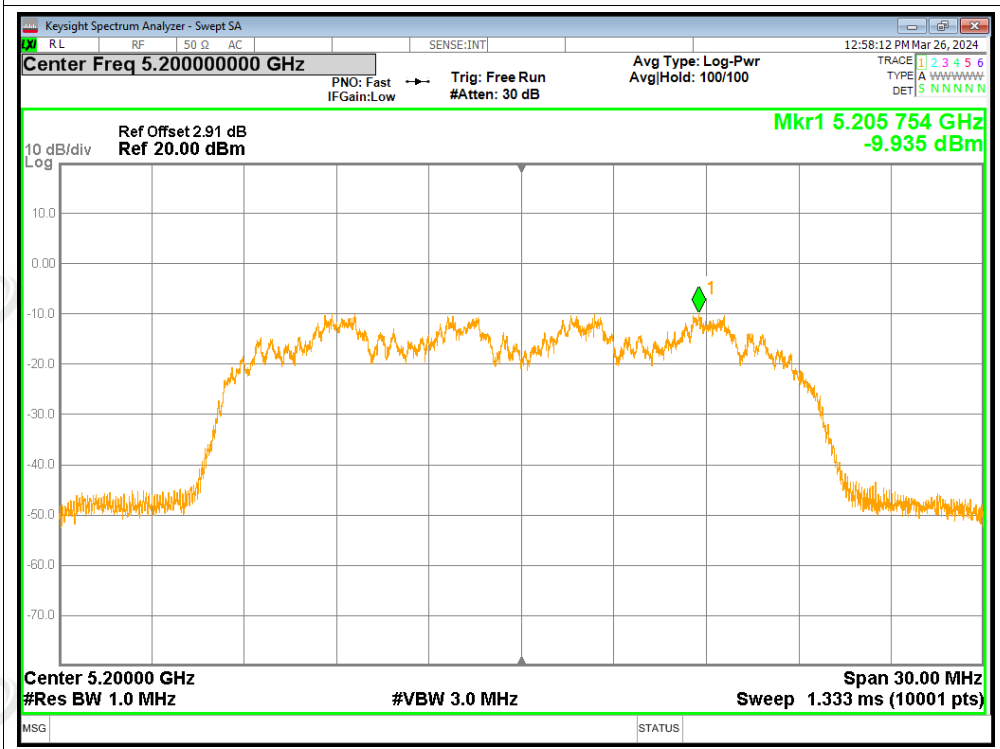




PSD NVNT ac20 5180MHz Ant1

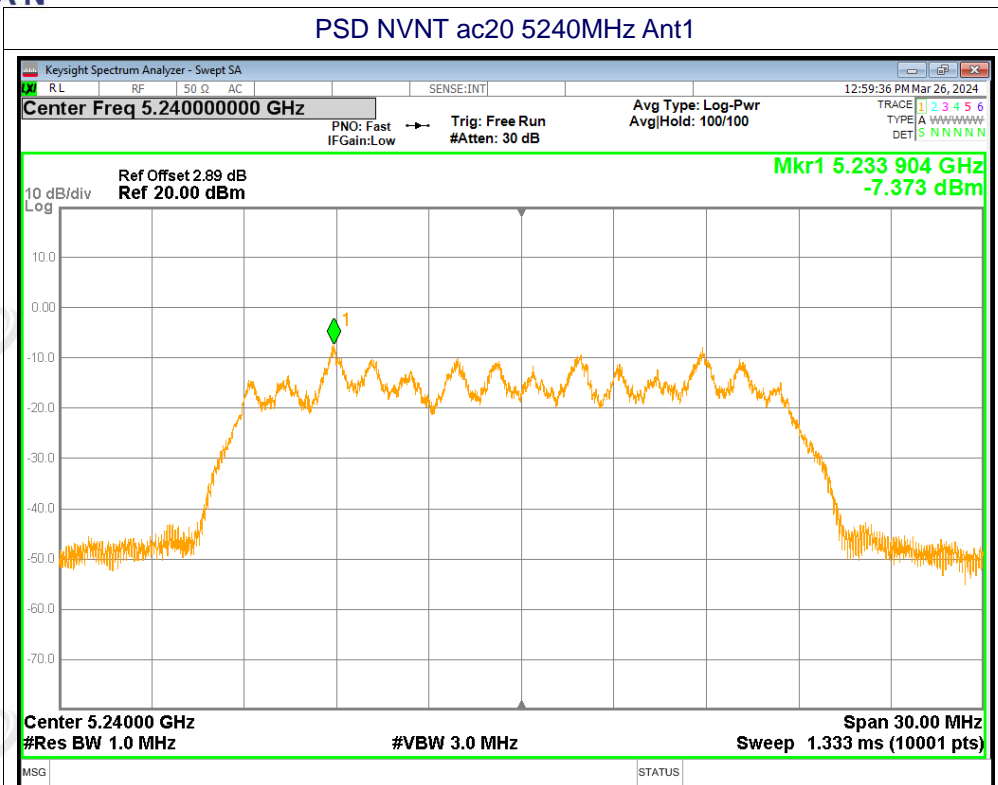


PSD NVNT ac20 5200MHz Ant1

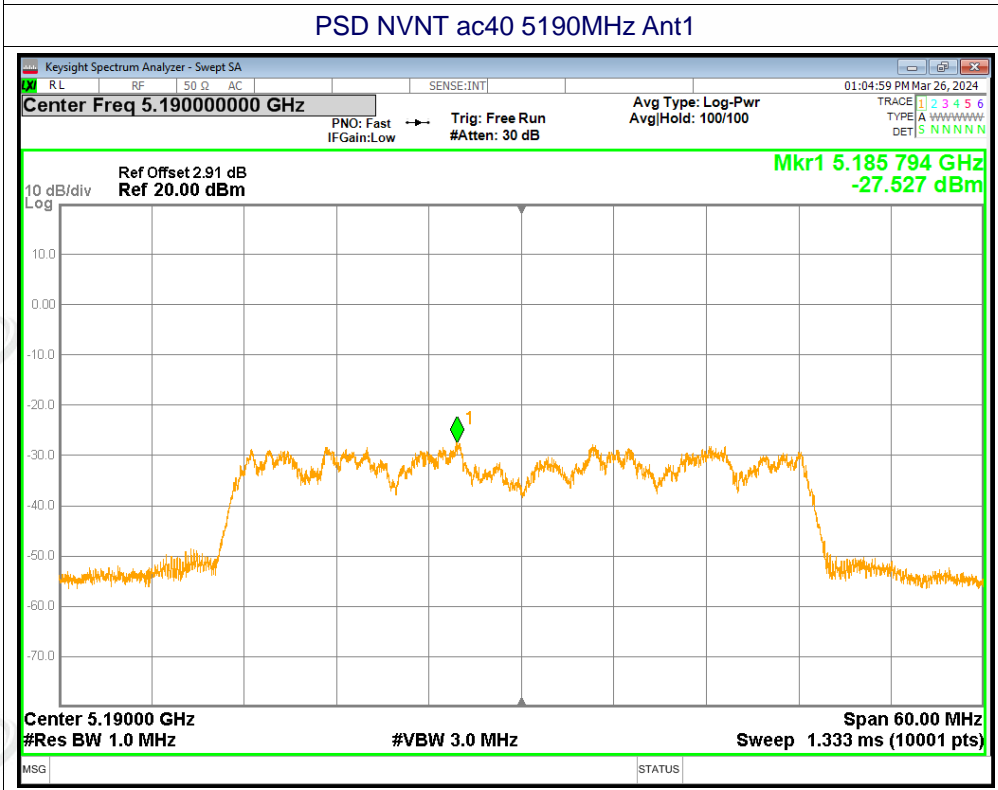




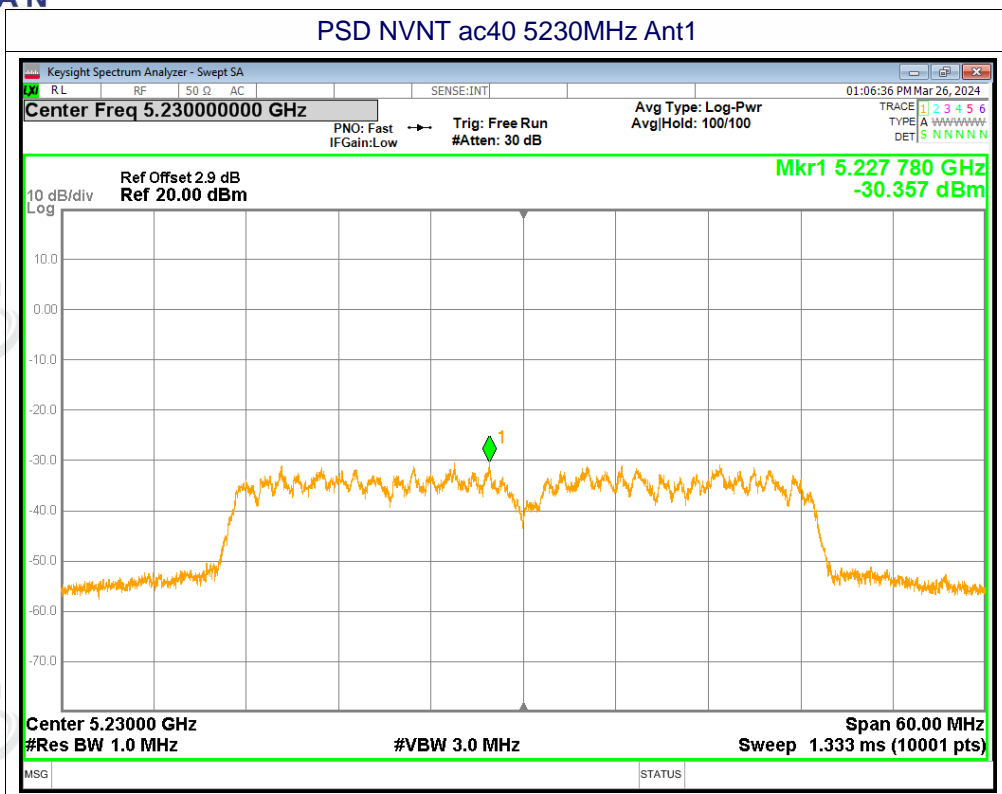
PSD NVNT ac20 5240MHz Ant1



PSD NVNT ac40 5190MHz Ant1







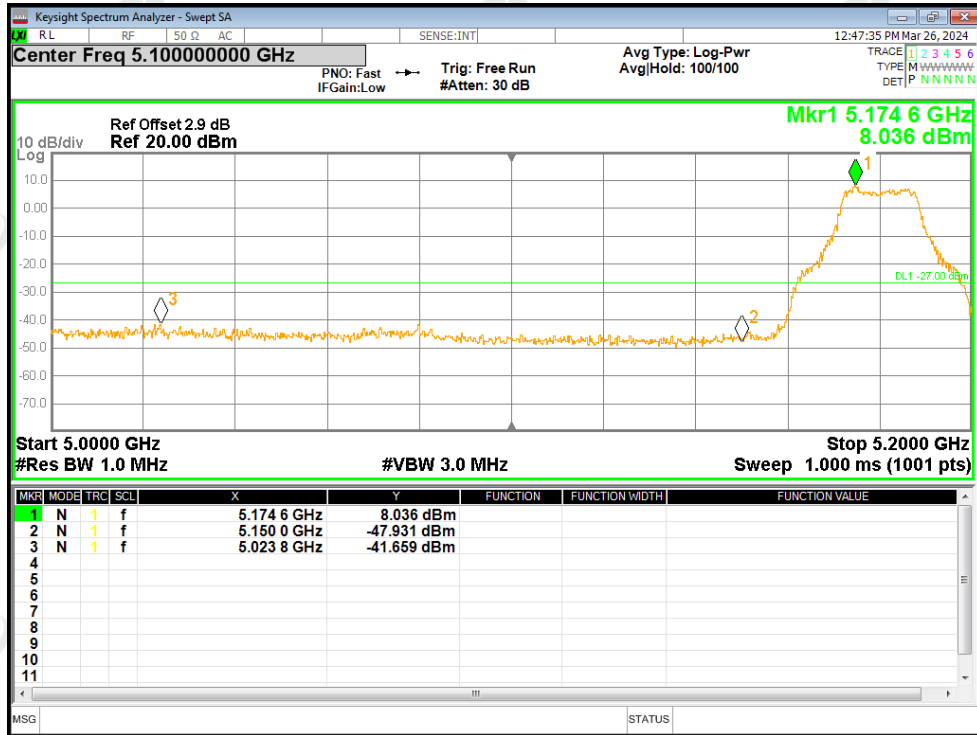
**ZHONGHAN**  
**B6. Band Edge**

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	a	5180	Ant1	-41.65	-27	Pass
NVNT	a	5240	Ant1	-43.45	-27	Pass
NVNT	n20	5180	Ant1	-40.31	-27	Pass
NVNT	n20	5240	Ant1	-43.19	-27	Pass
NVNT	n40	5190	Ant1	-41.49	-27	Pass
NVNT	n40	5230	Ant1	-43.39	-27	Pass
NVNT	ac20	5180	Ant1	-42.33	-27	Pass
NVNT	ac20	5240	Ant1	-43.8	-27	Pass
NVNT	ac40	5190	Ant1	-34.68	-27	Pass
NVNT	ac40	5230	Ant1	-44.41	-27	Pass

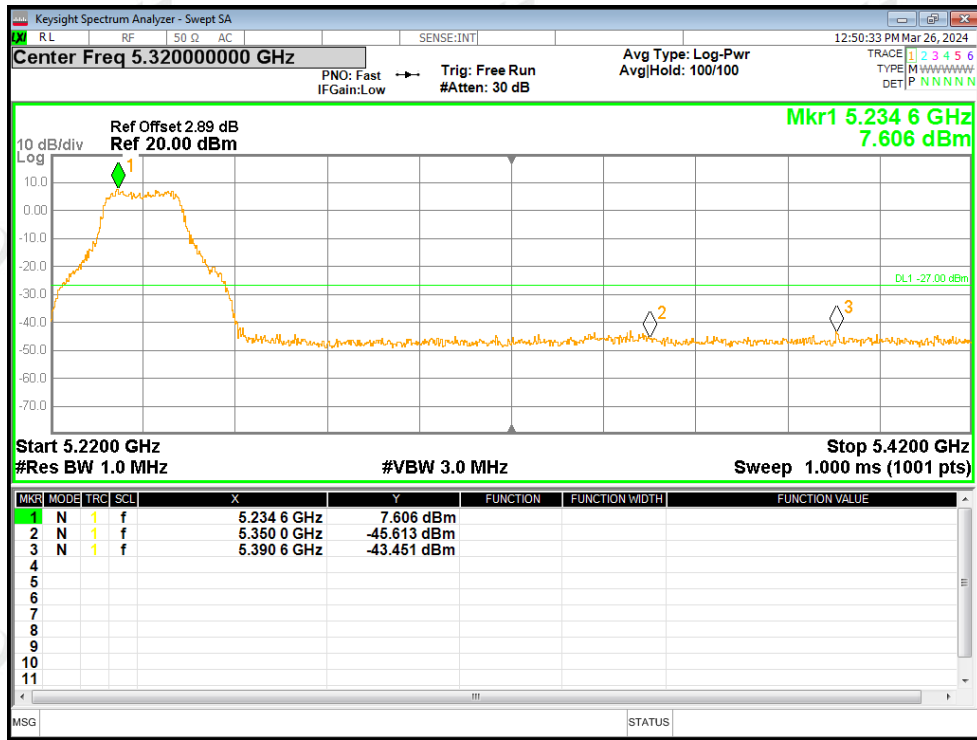


Test Graphs

Band Edge NVNT a 5180MHz Low Ant1

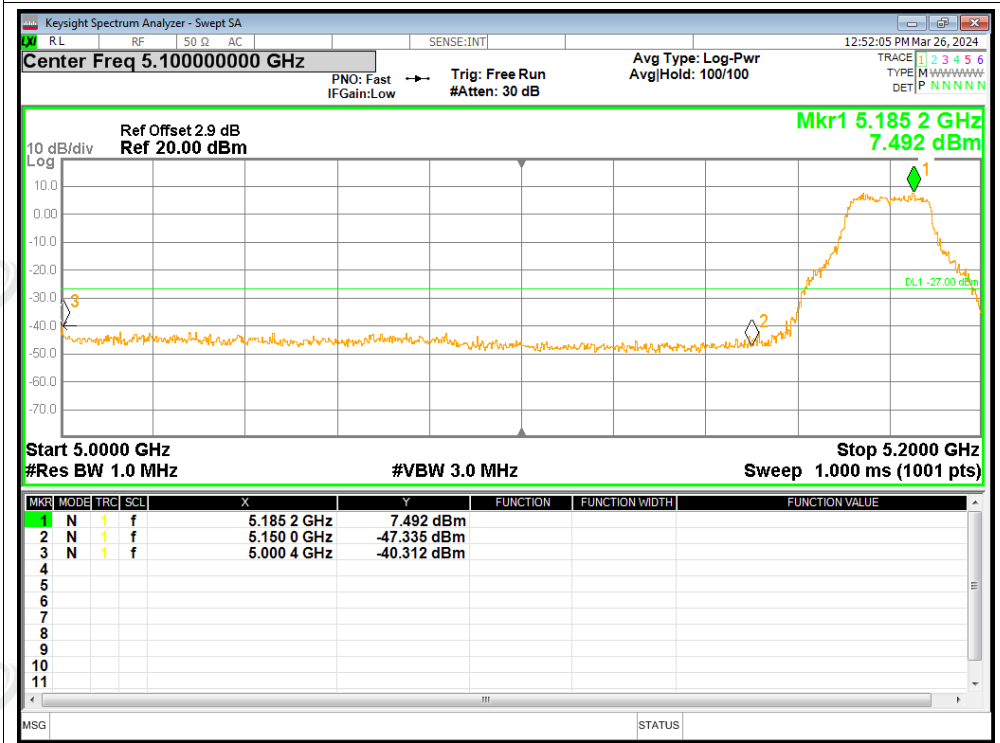


Band Edge NVNT a 5240MHz High Ant1

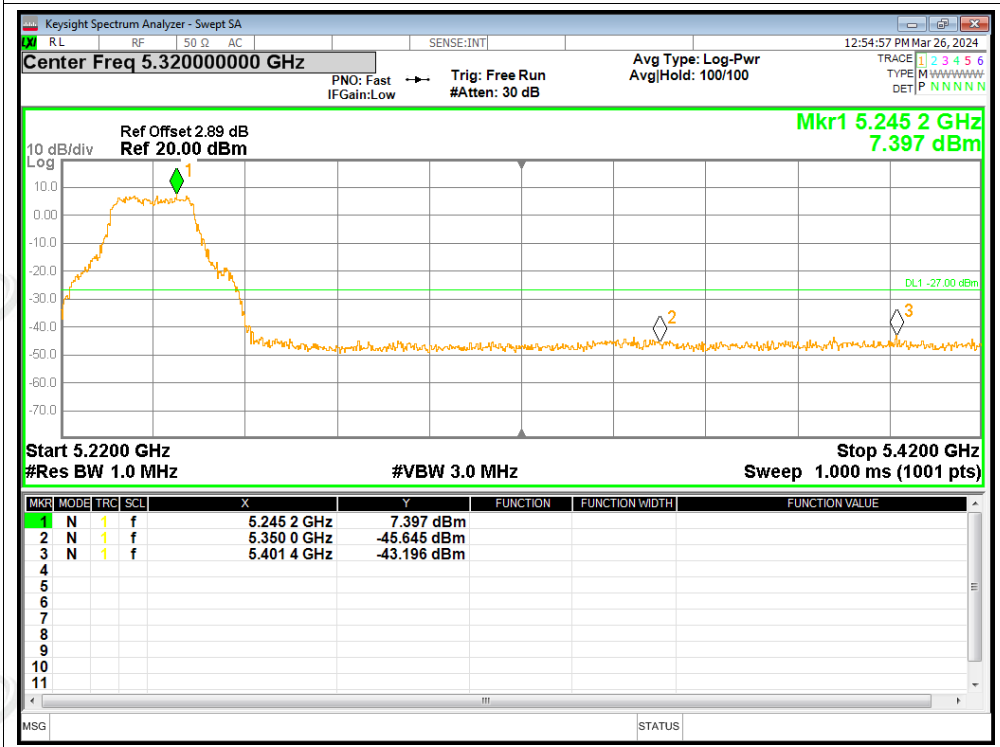




Band Edge NVNT n20 5180MHz Low Ant1

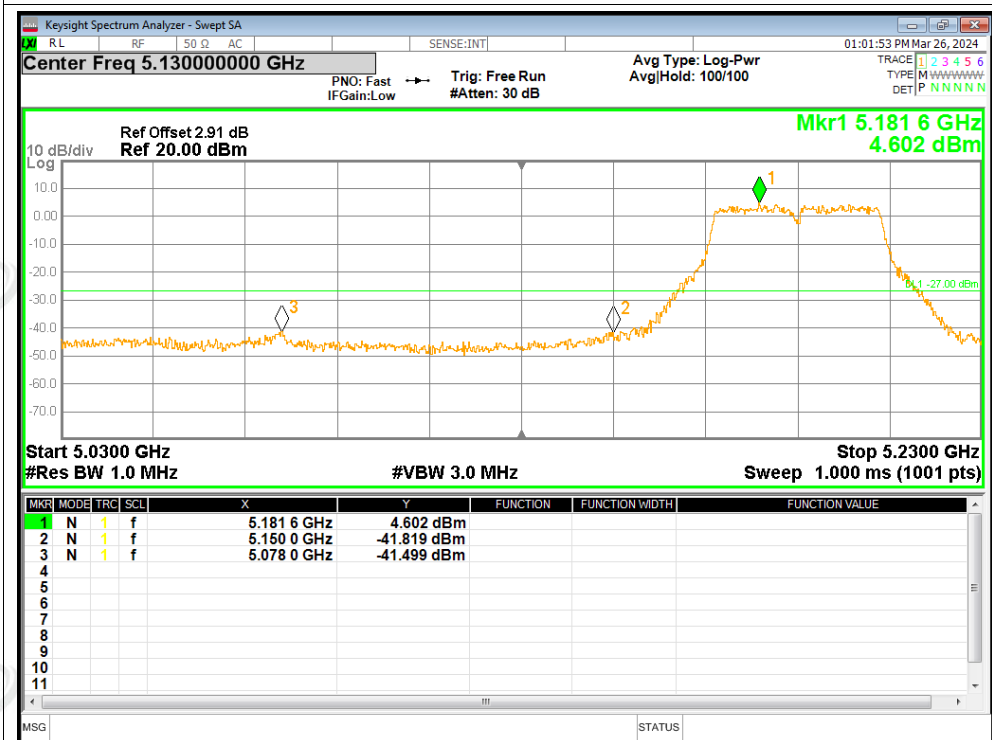


Band Edge NVNT n20 5240MHz High Ant1

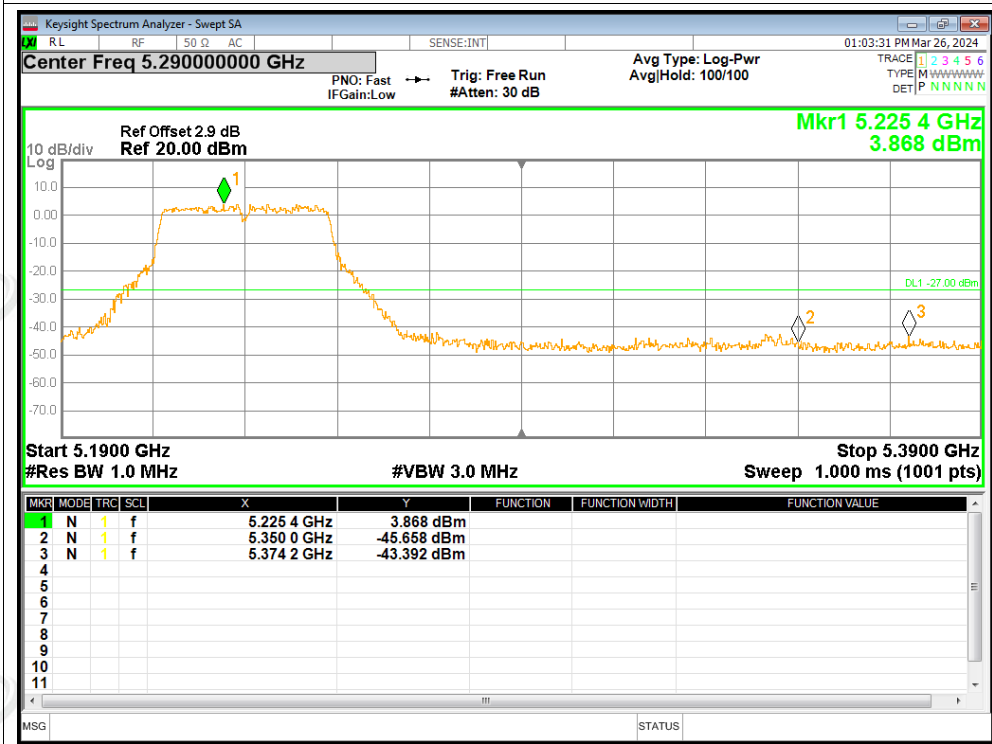




### Band Edge NVNT n40 5190MHz Low Ant1

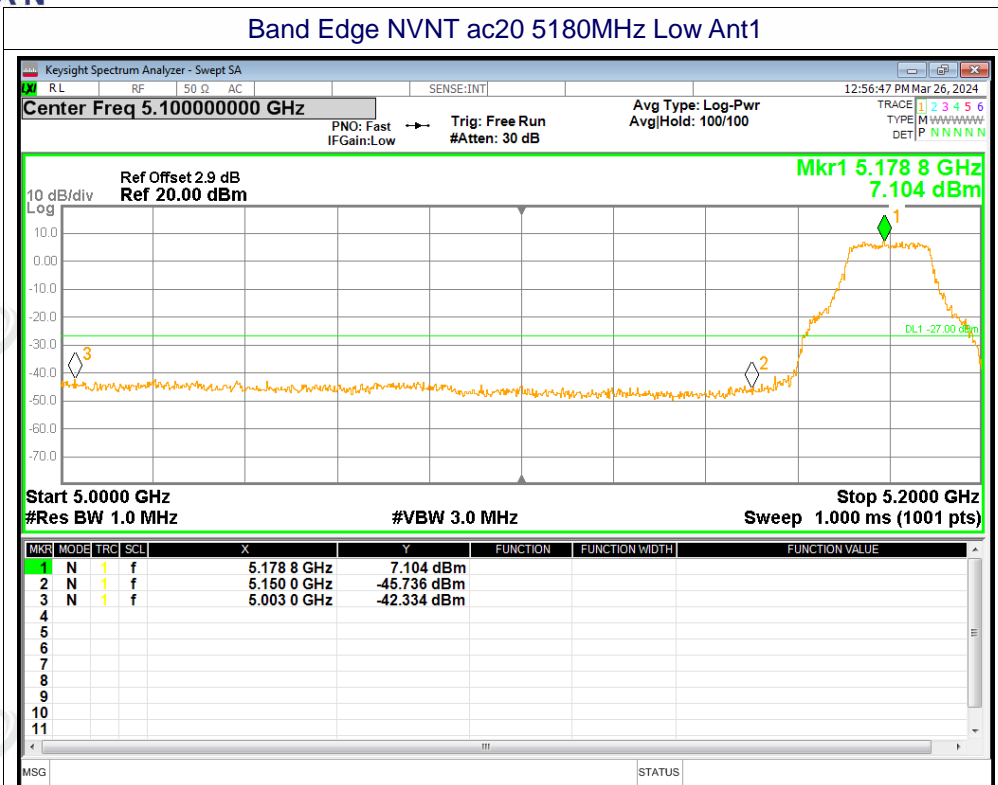


### Band Edge NVNT n40 5230MHz High Ant1

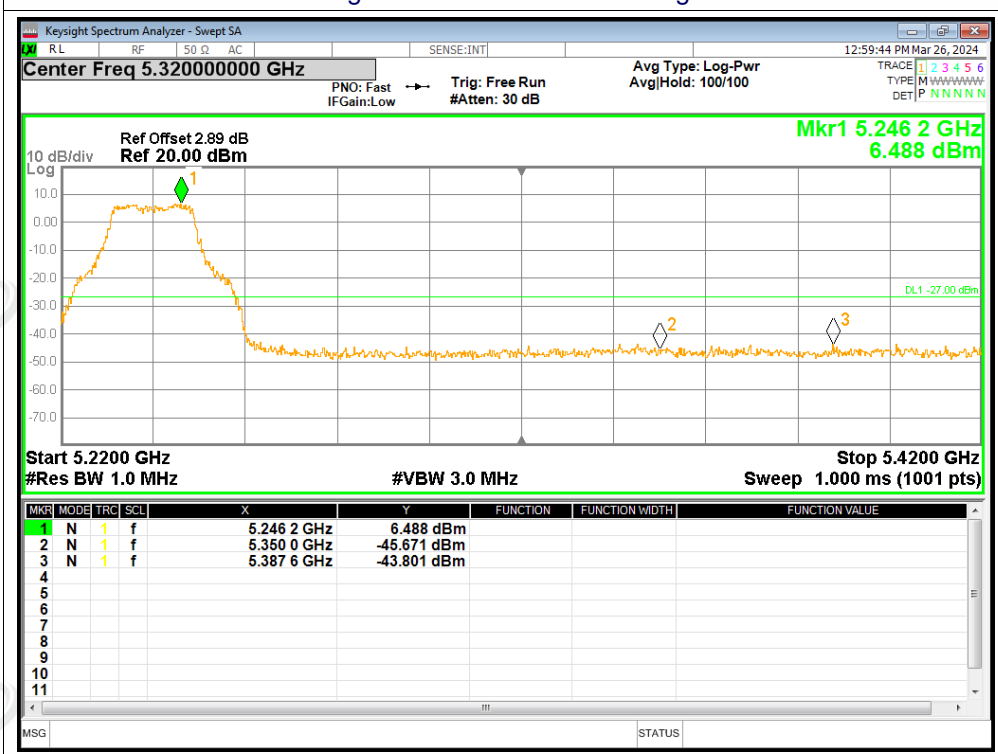




### Band Edge NVNT ac20 5180MHz Low Ant1

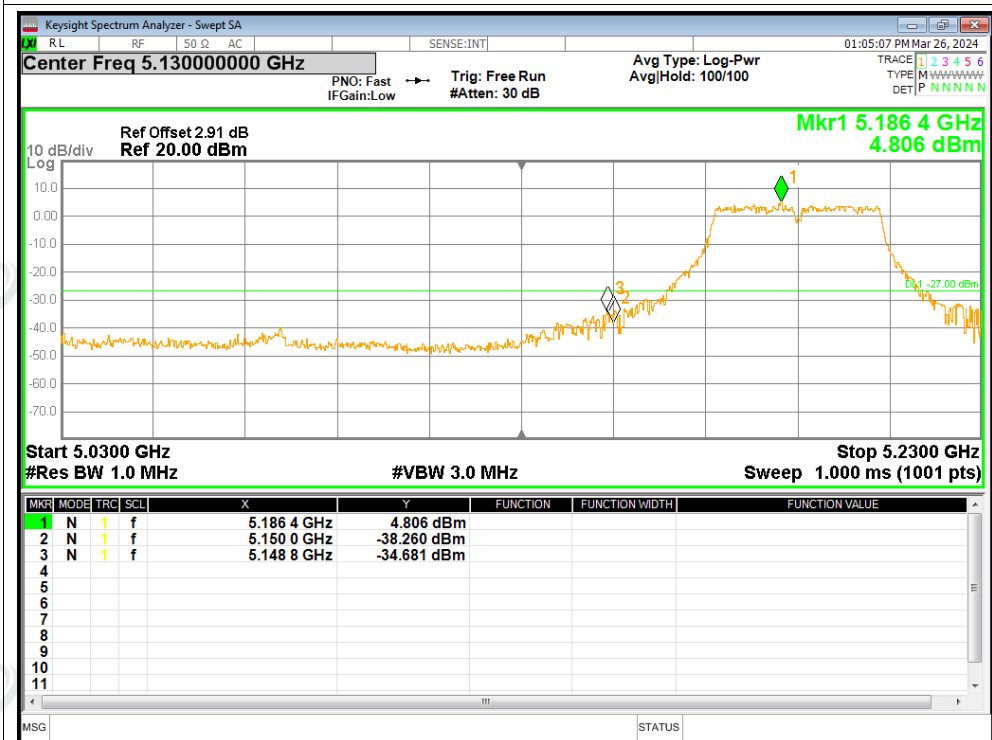


### Band Edge NVNT ac20 5240MHz High Ant1

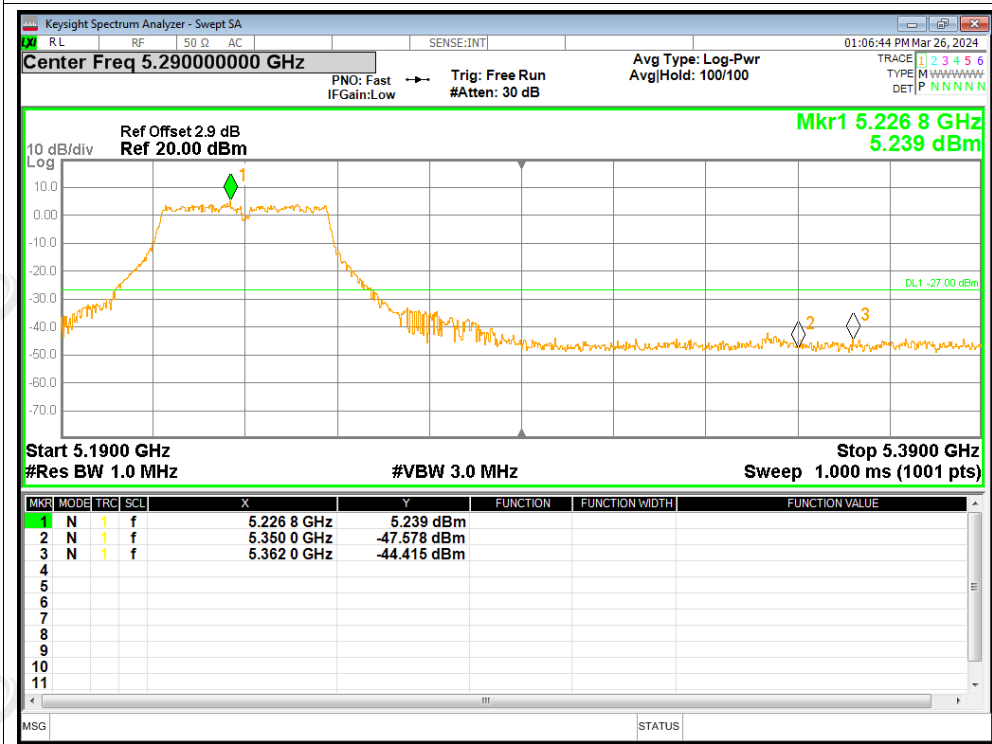




Band Edge NVNT ac40 5190MHz Low Ant1



Band Edge NVNT ac40 5230MHz High Ant1



**ZHONGHAN****B7. Frequency Stability**

Condition	Mode	Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
NVNT	a	5180	-40000	-7.72	Within 5180-5240MHz	Pass
NVNT	a	5200	-40000	-7.69		Pass
NVNT	a	5240	-40000	-7.63		Pass
NVNT	n20	5180	-20000	-3.86		Pass
NVNT	n20	5200	-40000	-7.69		Pass
NVNT	n20	5240	-40000	-7.63		Pass
NVNT	n40	5190	-80000	-15.41	Within 5190-5230MHz	Pass
NVNT	n40	5230	-40000	-7.65		Pass
NVNT	ac20	5180	-20000	-3.86	Within 5180-5240MHz	Pass
NVNT	ac20	5200	-20000	-3.85		Pass
NVNT	ac20	5240	-40000	-7.63		Pass
NVNT	ac40	5190	-80000	-15.41	Within 5190-5230MHz	Pass
NVNT	ac40	5230	-80000	-15.3		Pass

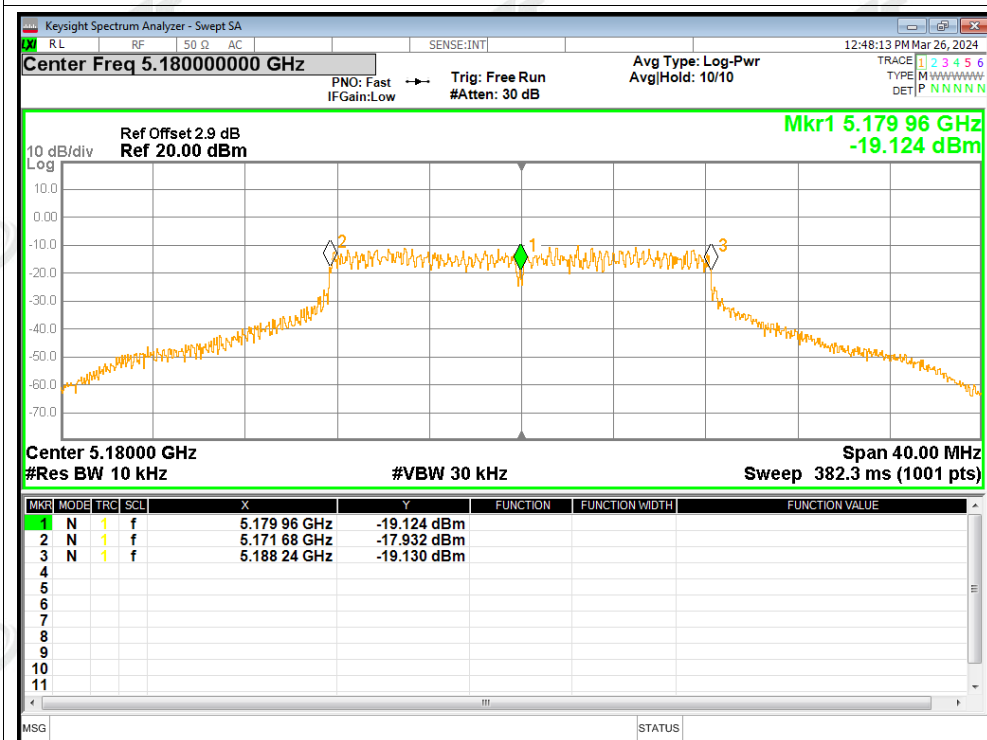
Note: Test temperature:  $-20^{\circ}$  to  $+70^{\circ}$ . At room temperature, the test results are the worst, only reflecting the test results graphs at room temperature.



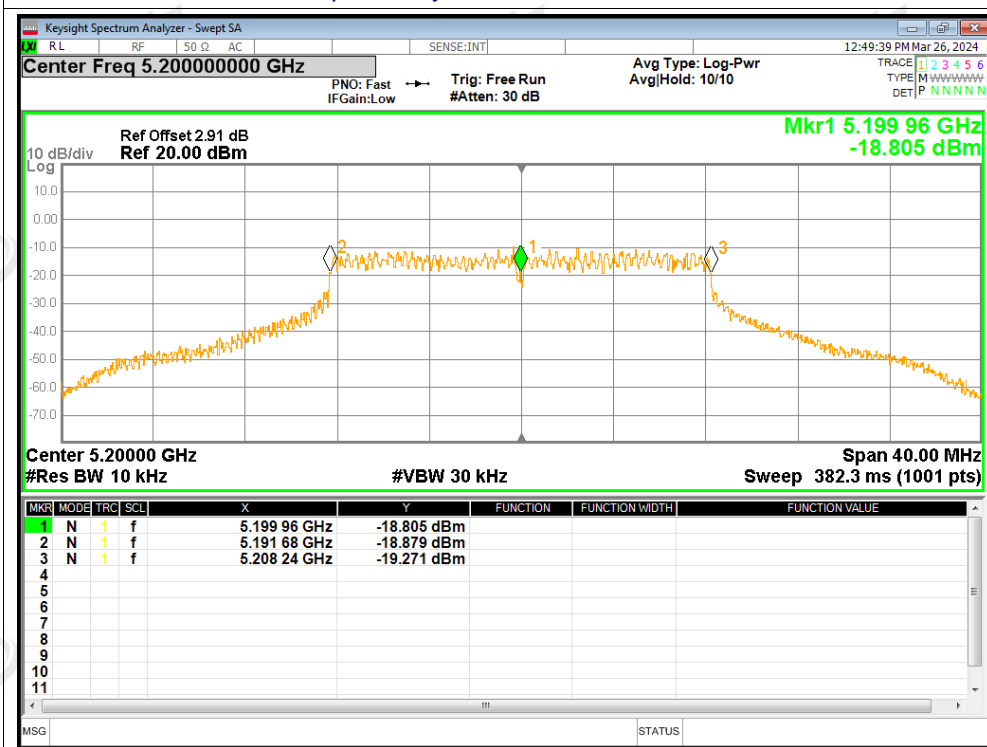


Test Graphs

Freq. Stability NVNT a 5180MHz Ant1

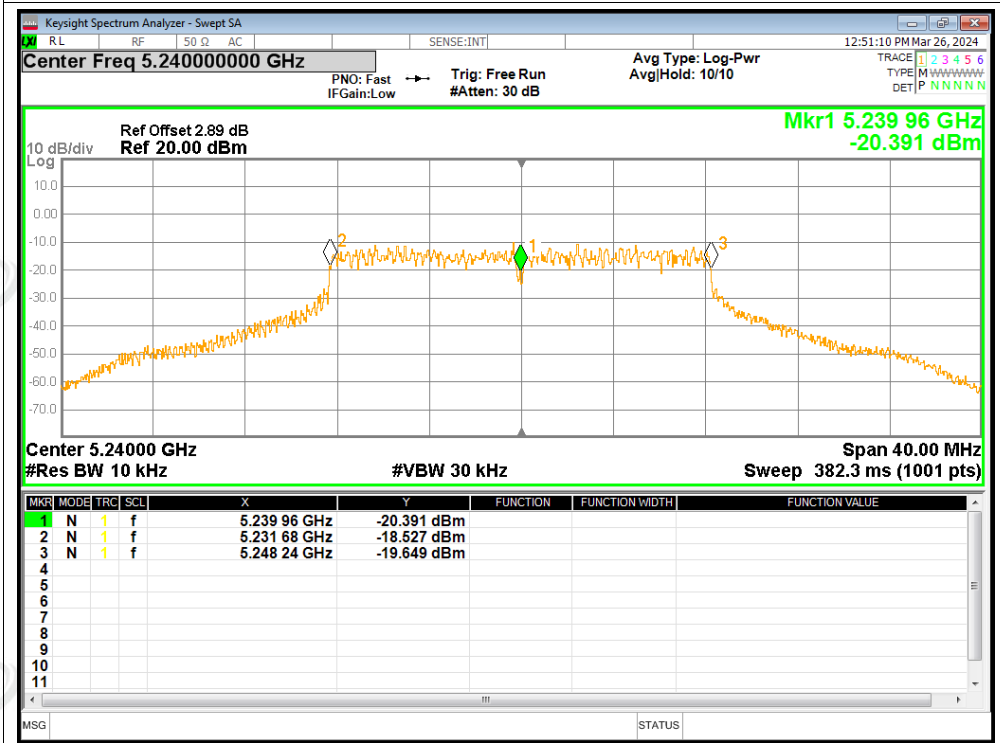


Freq. Stability NVNT a 5200MHz Ant1

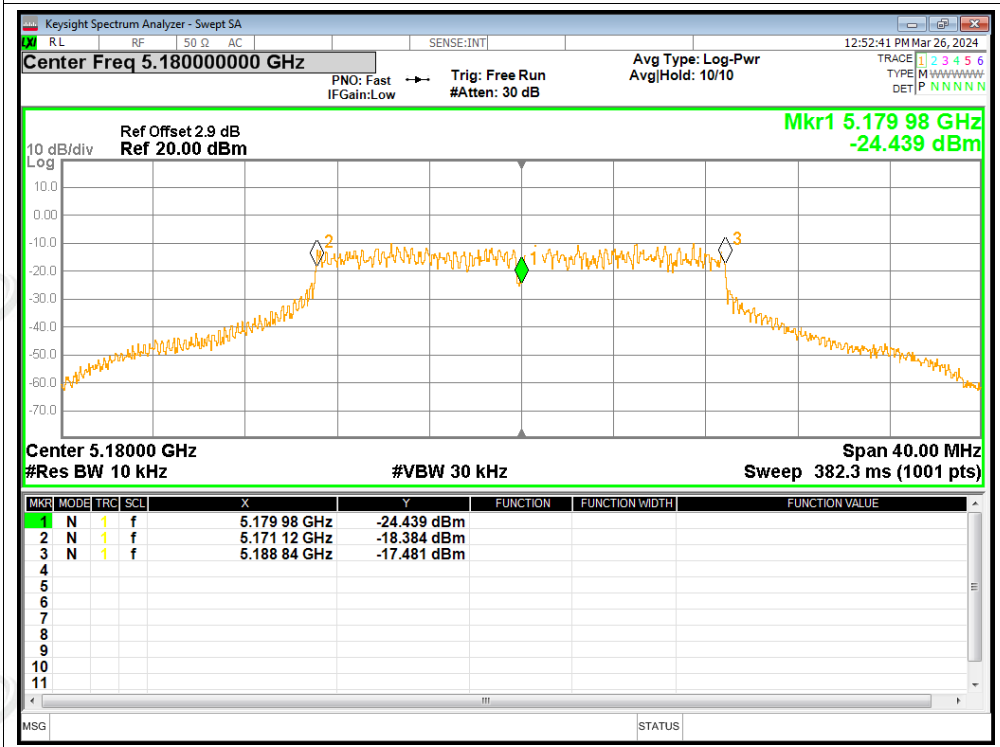




### Freq. Stability NVNT a 5240MHz Ant1

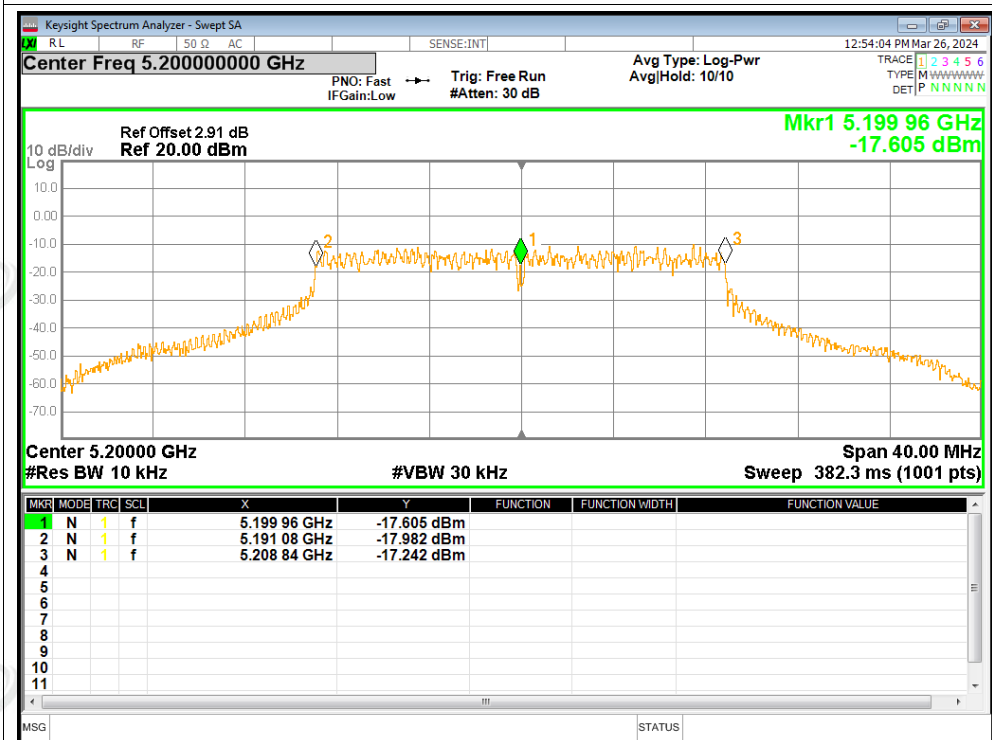


### Freq. Stability NVNT n20 5180MHz Ant1

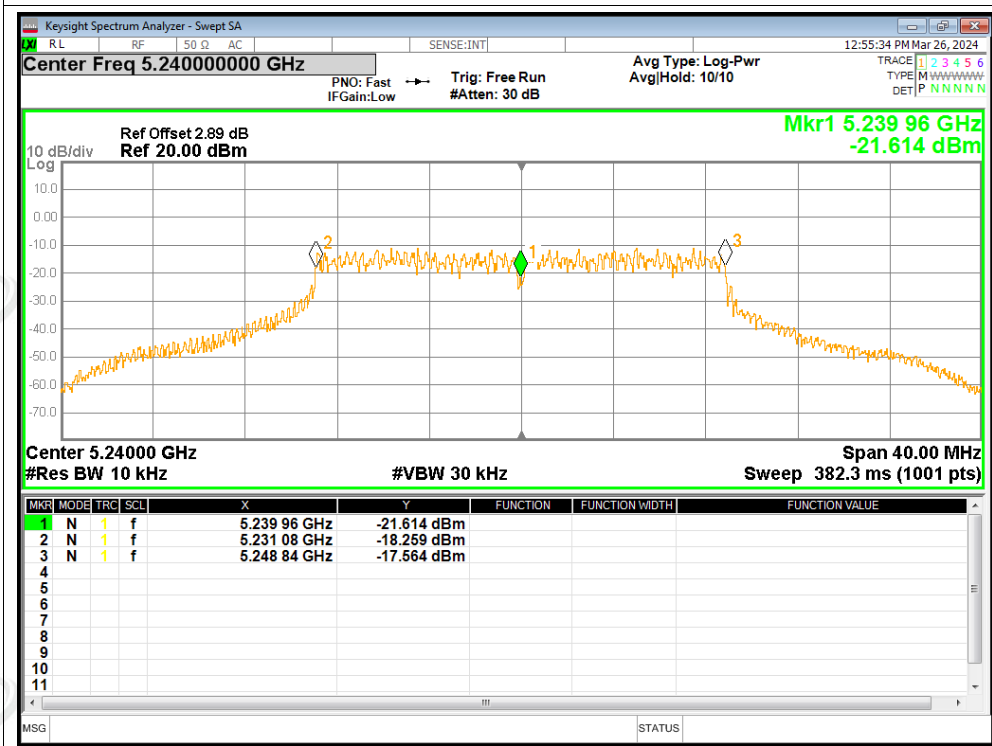




### Freq. Stability NVNT n20 5200MHz Ant1

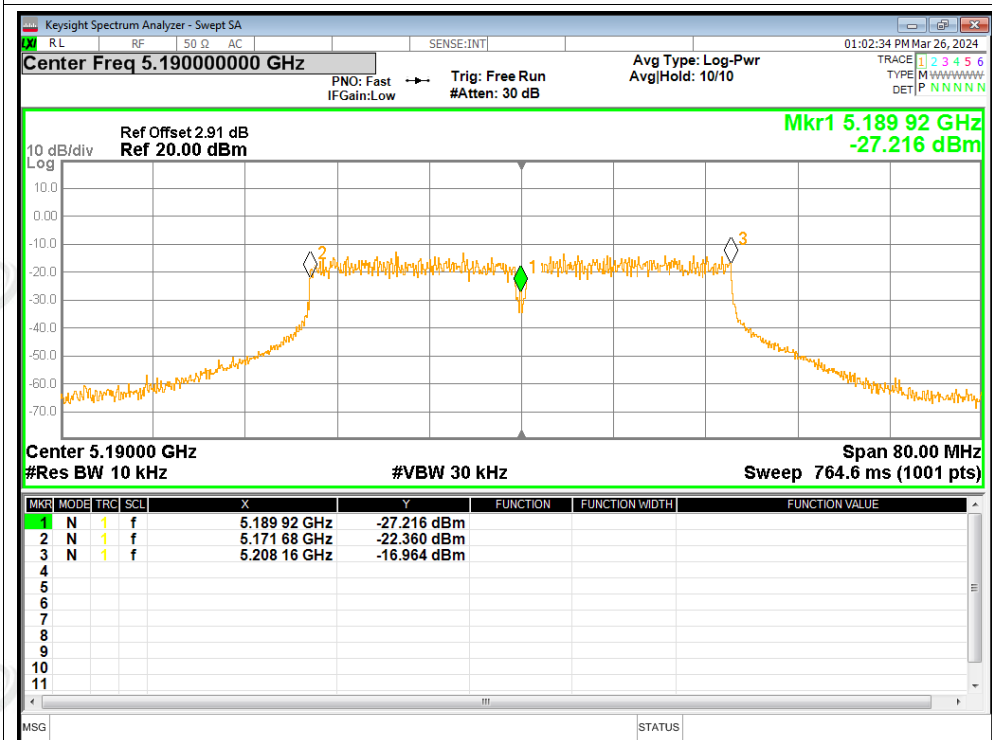


### Freq. Stability NVNT n20 5240MHz Ant1

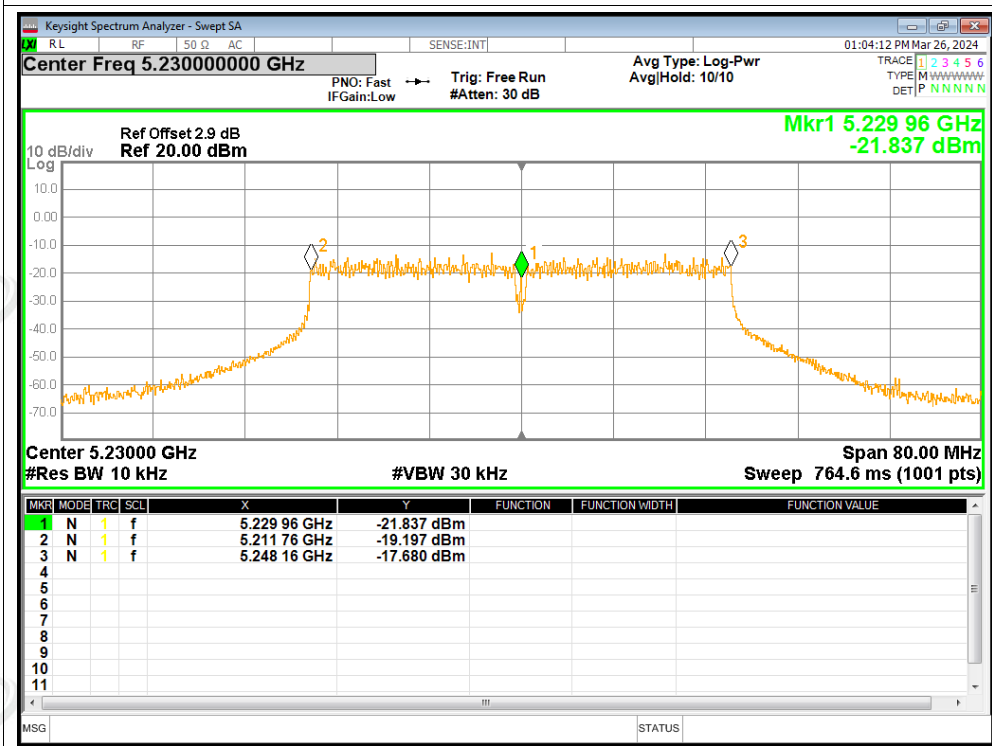




### Freq. Stability NVNT n40 5190MHz Ant1

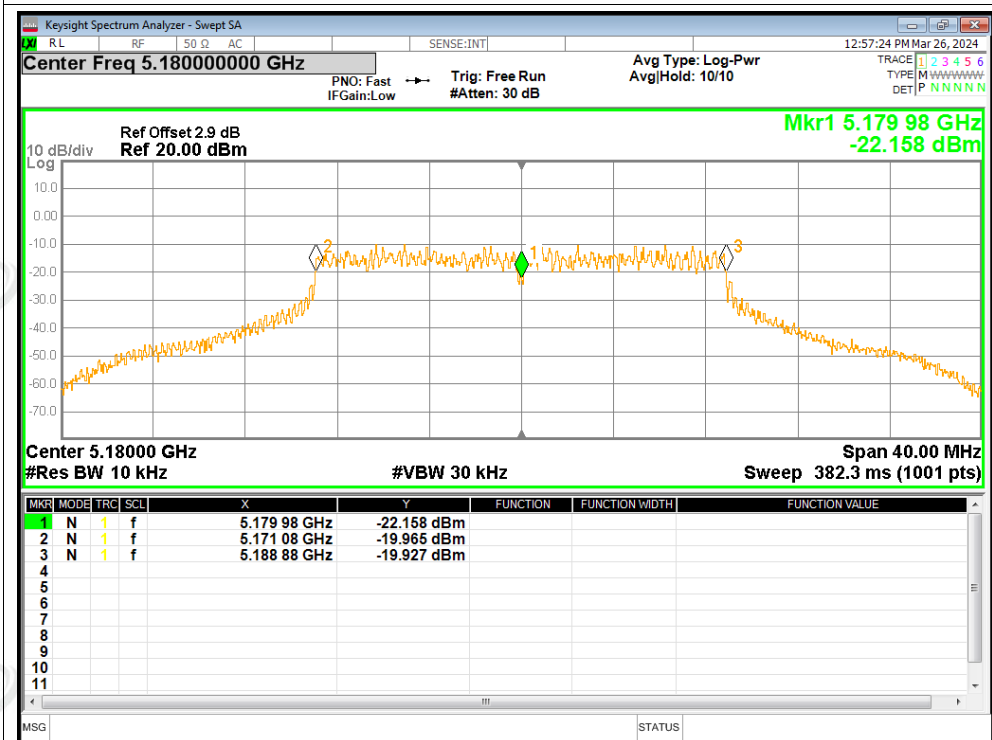


### Freq. Stability NVNT n40 5230MHz Ant1

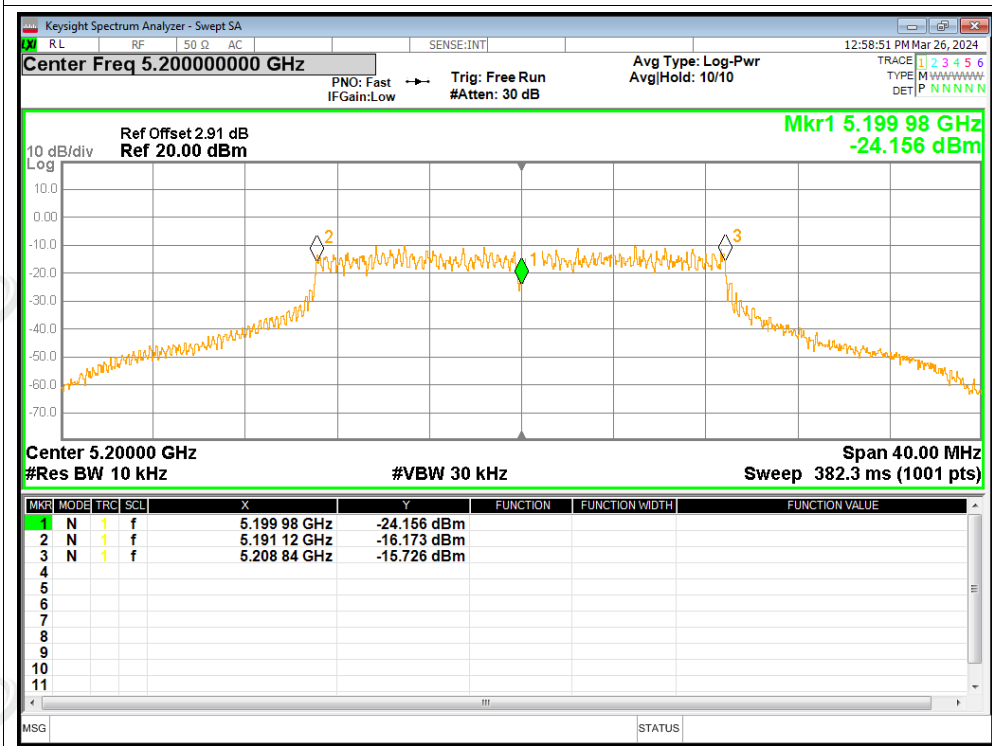




### Freq. Stability NVNT ac20 5180MHz Ant1

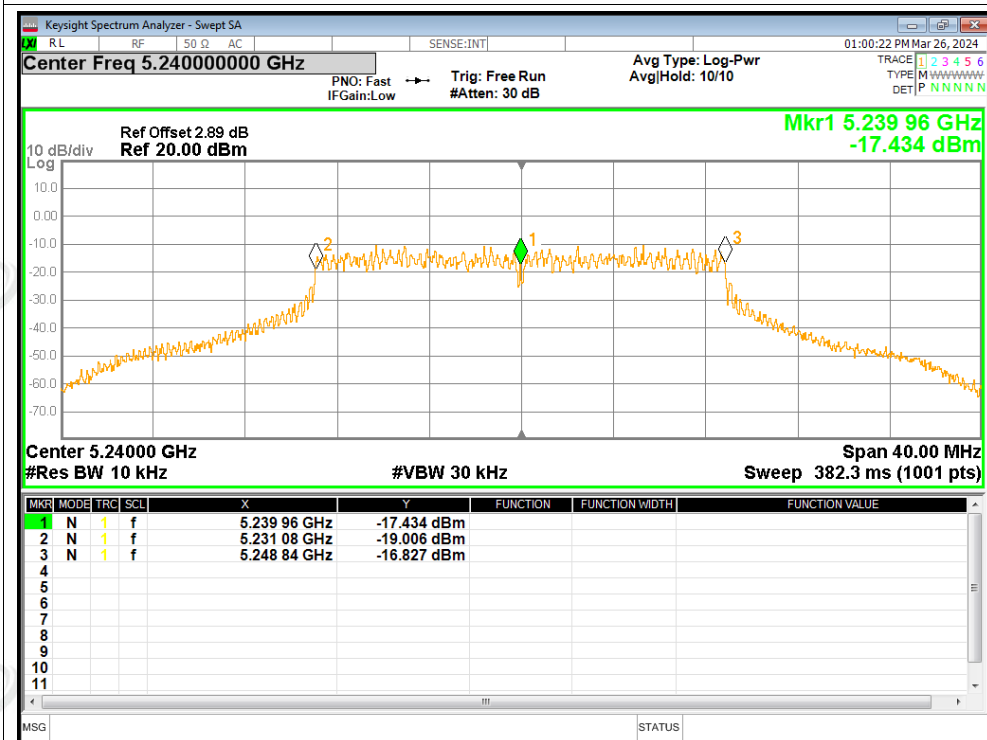


### Freq. Stability NVNT ac20 5200MHz Ant1

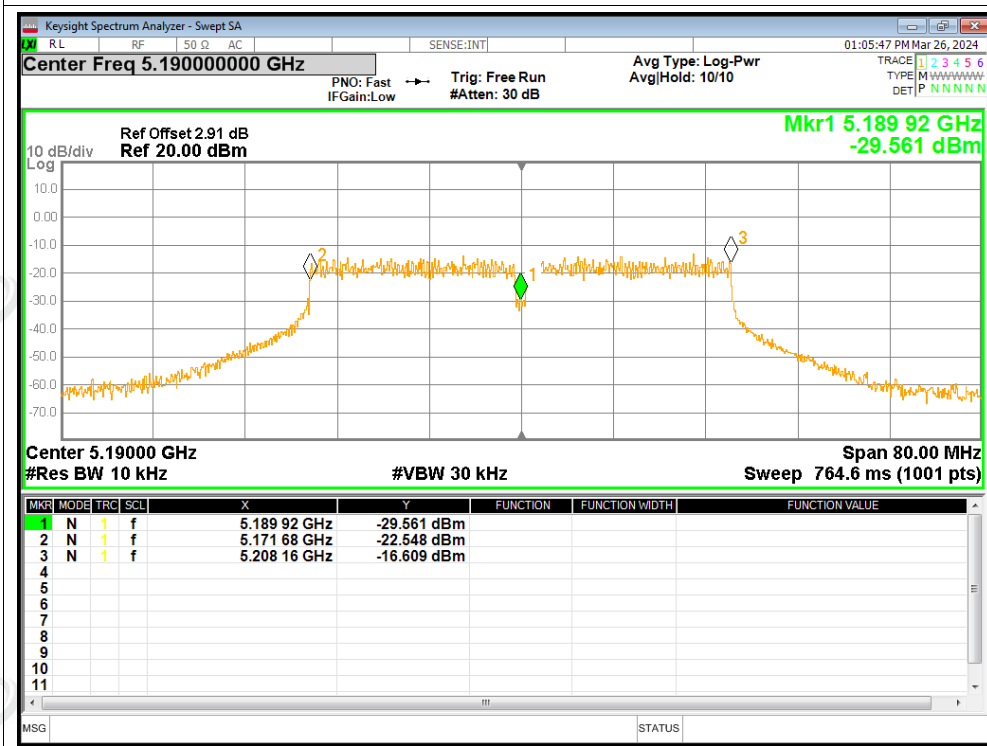


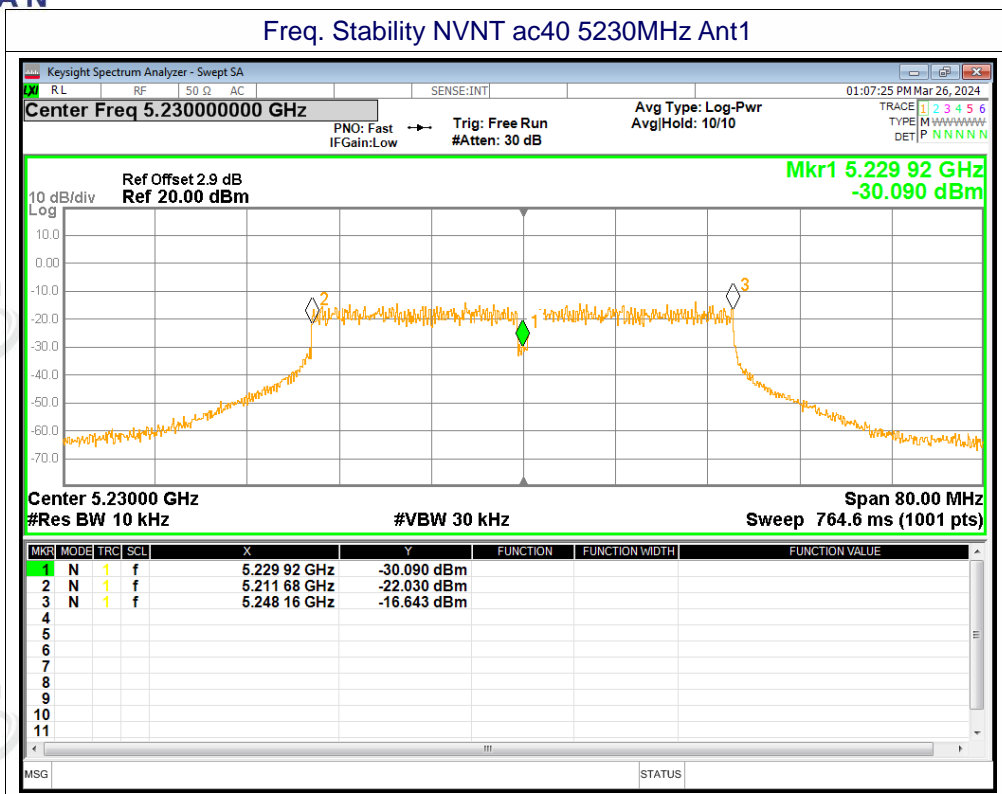


### Freq. Stability NVNT ac20 5240MHz Ant1



### Freq. Stability NVNT ac40 5190MHz Ant1







## ZHONGHAN

## B8. Conducted RF Spurious Emission

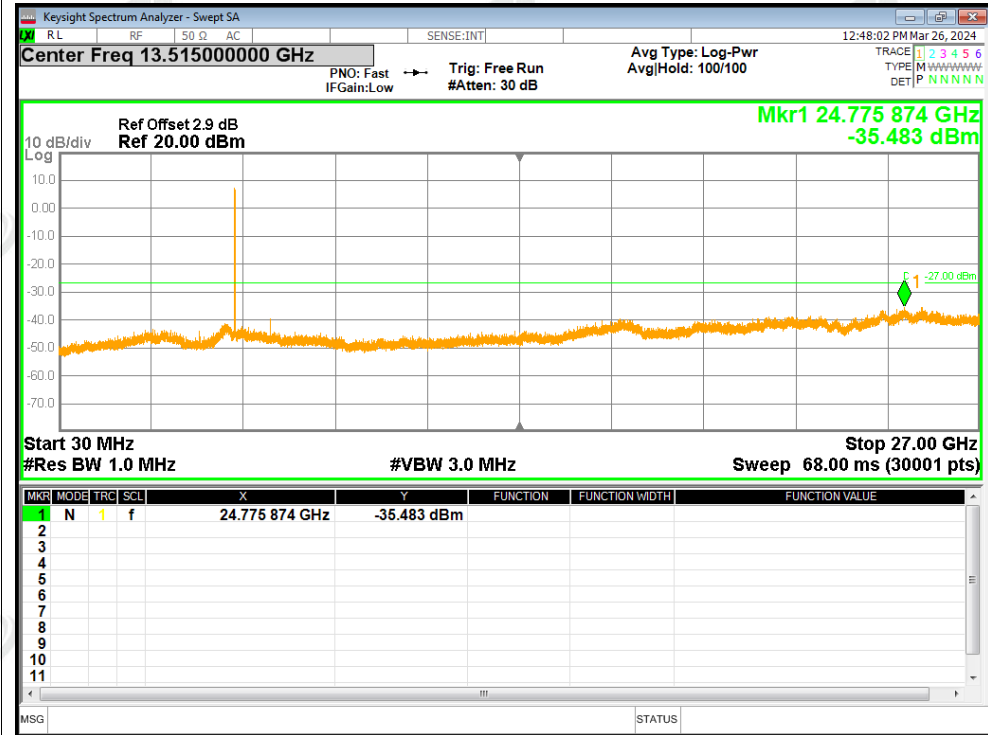
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	a	5180	Ant1	-35.48	-27	Pass
NVNT	a	5200	Ant1	-35.13	-27	Pass
NVNT	a	5240	Ant1	-35.07	-27	Pass
NVNT	n20	5180	Ant1	-35.43	-27	Pass
NVNT	n20	5200	Ant1	-35.51	-27	Pass
NVNT	n20	5240	Ant1	-35.42	-27	Pass
NVNT	n40	5190	Ant1	-35.33	-27	Pass
NVNT	n40	5230	Ant1	-35.53	-27	Pass
NVNT	ac20	5180	Ant1	-35.55	-27	Pass
NVNT	ac20	5200	Ant1	-35.58	-27	Pass
NVNT	ac20	5240	Ant1	-36.34	-27	Pass
NVNT	ac40	5190	Ant1	-35.77	-27	Pass
NVNT	ac40	5230	Ant1	-35.36	-27	Pass



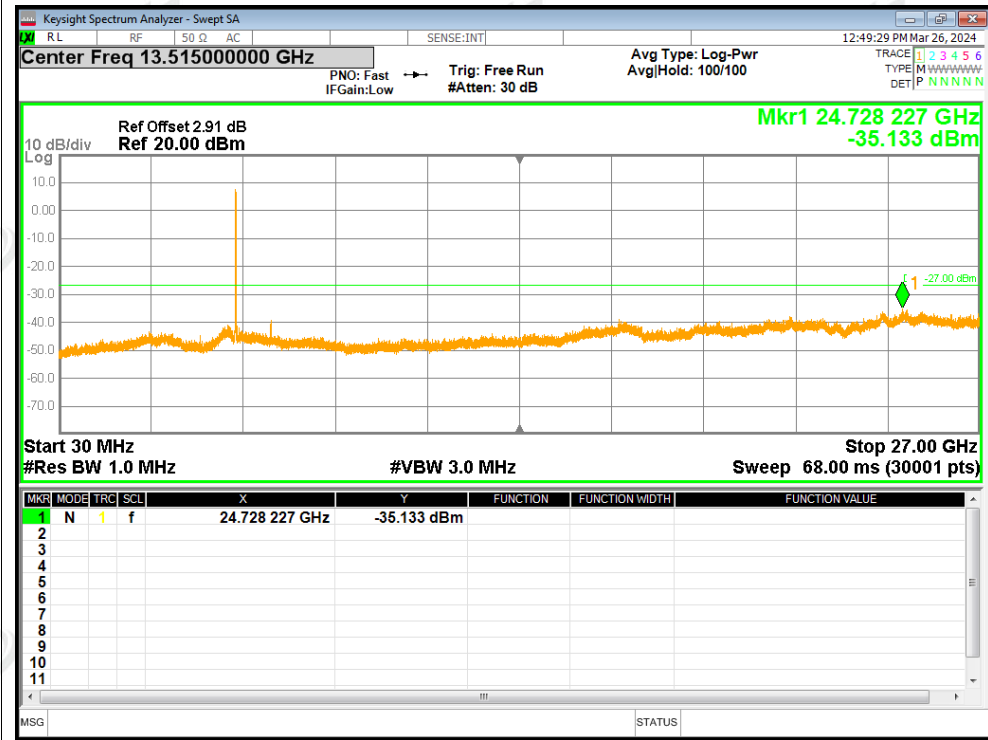


Test Graphs

Tx. Spurious NVNT a 5180MHz Ant1 Emission

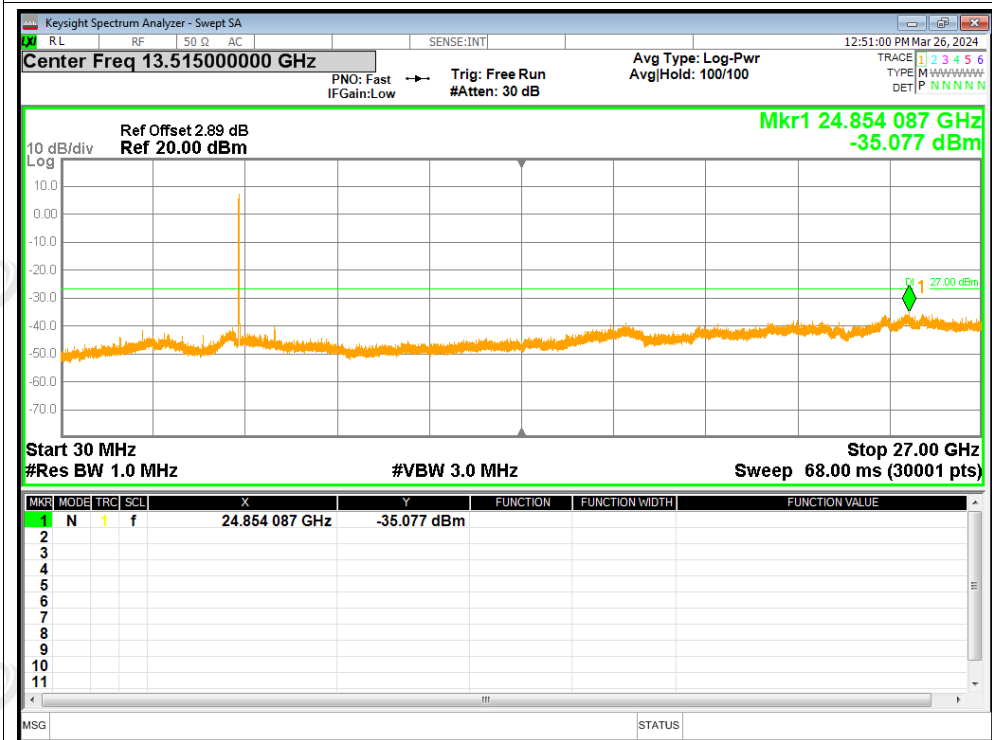


Tx. Spurious NVNT a 5200MHz Ant1 Emission

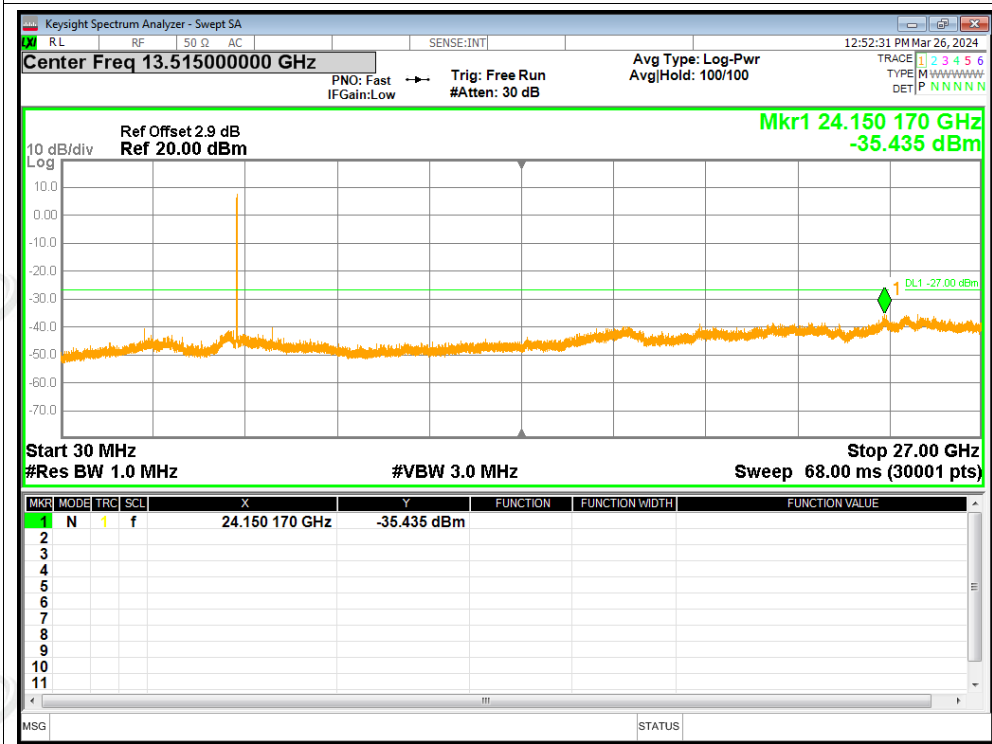




Tx. Spurious NVNT a 5240MHz Ant1 Emission

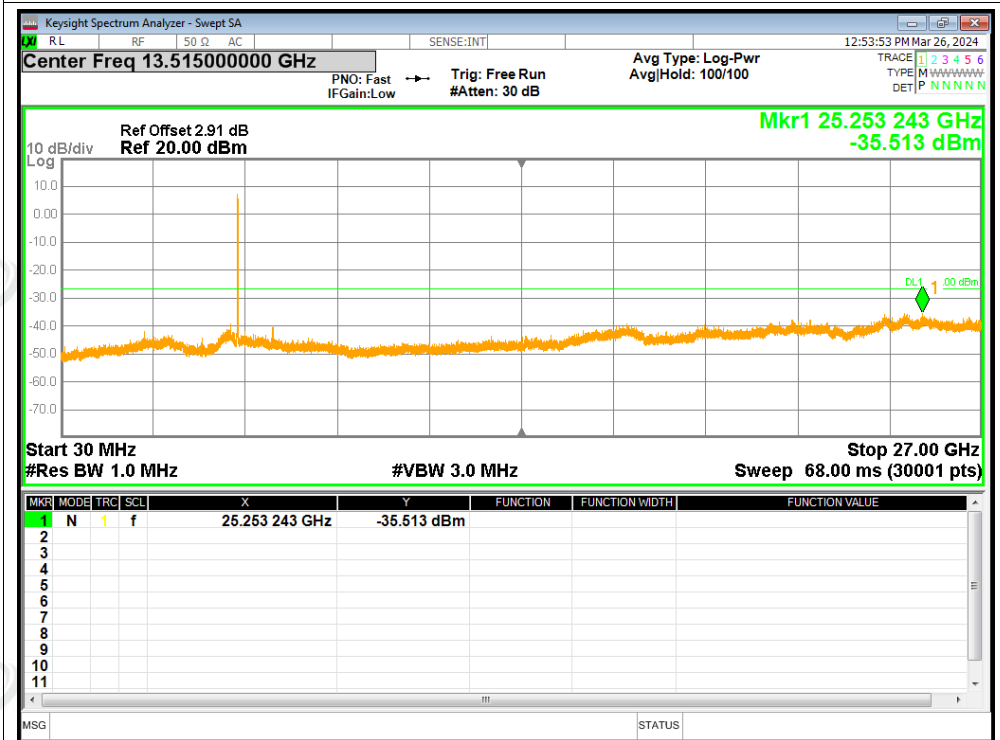


Tx. Spurious NVNT n20 5180MHz Ant1 Emission

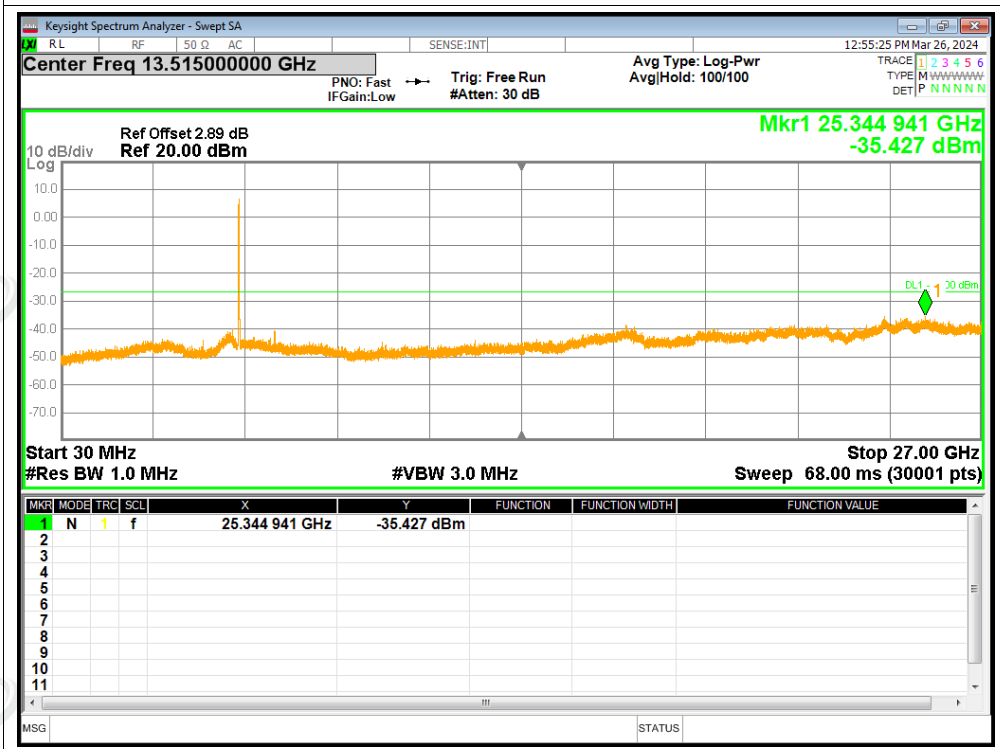




Tx. Spurious NVNT n20 5200MHz Ant1 Emission

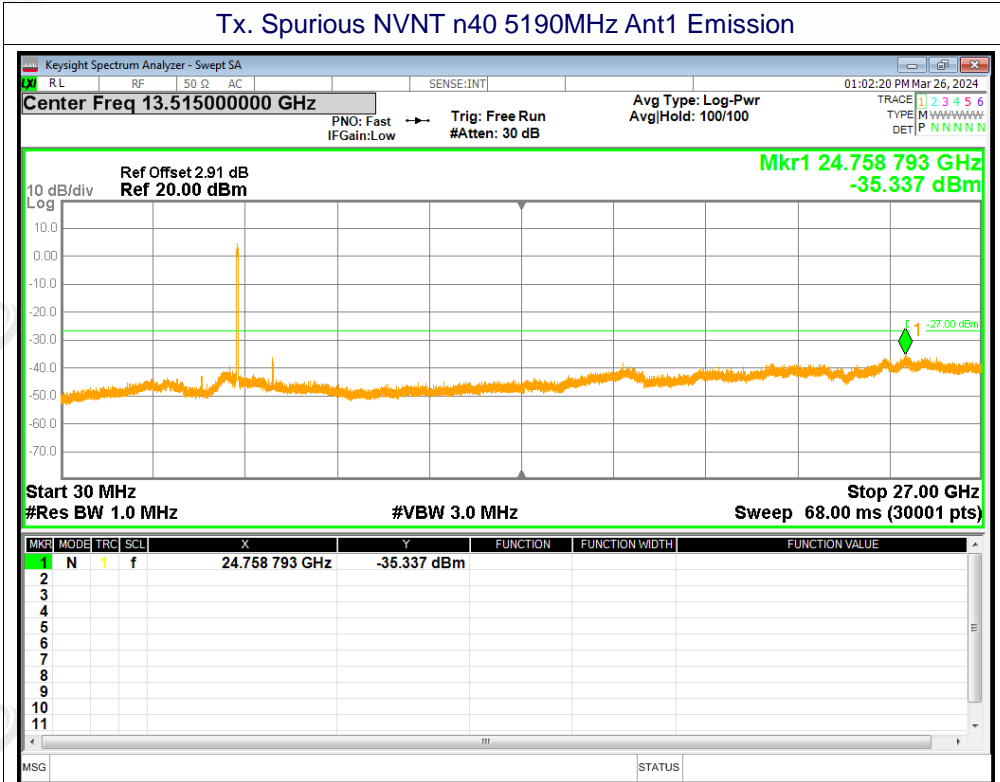


Tx. Spurious NVNT n20 5240MHz Ant1 Emission

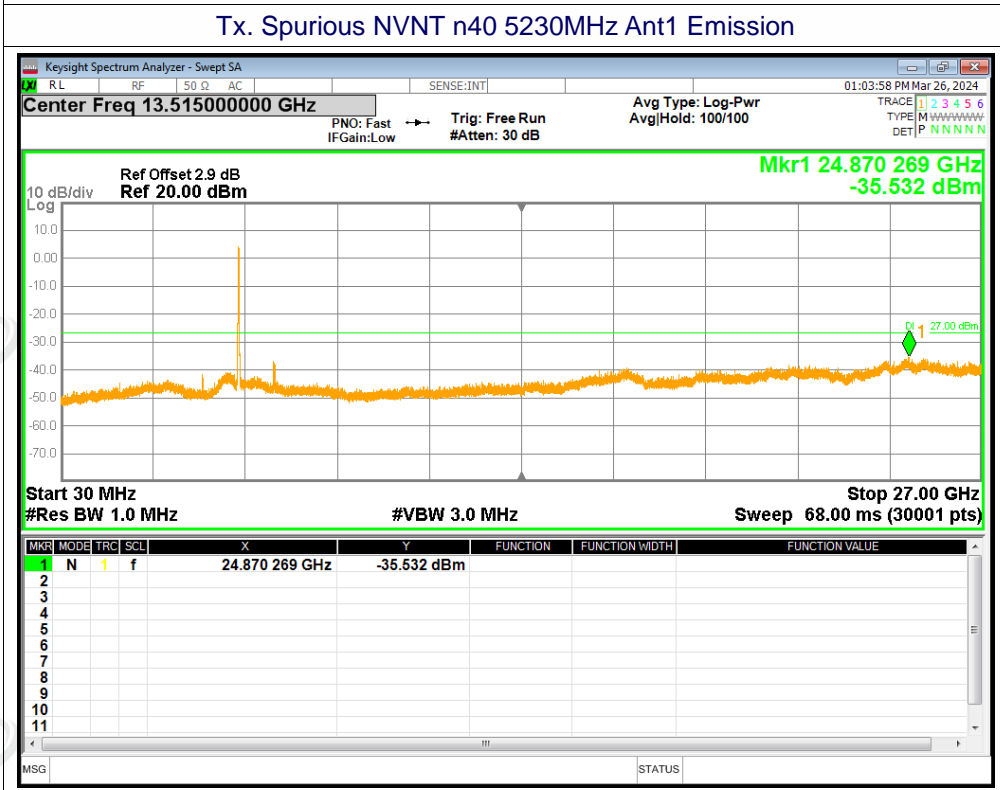




Tx. Spurious NVNT n40 5190MHz Ant1 Emission

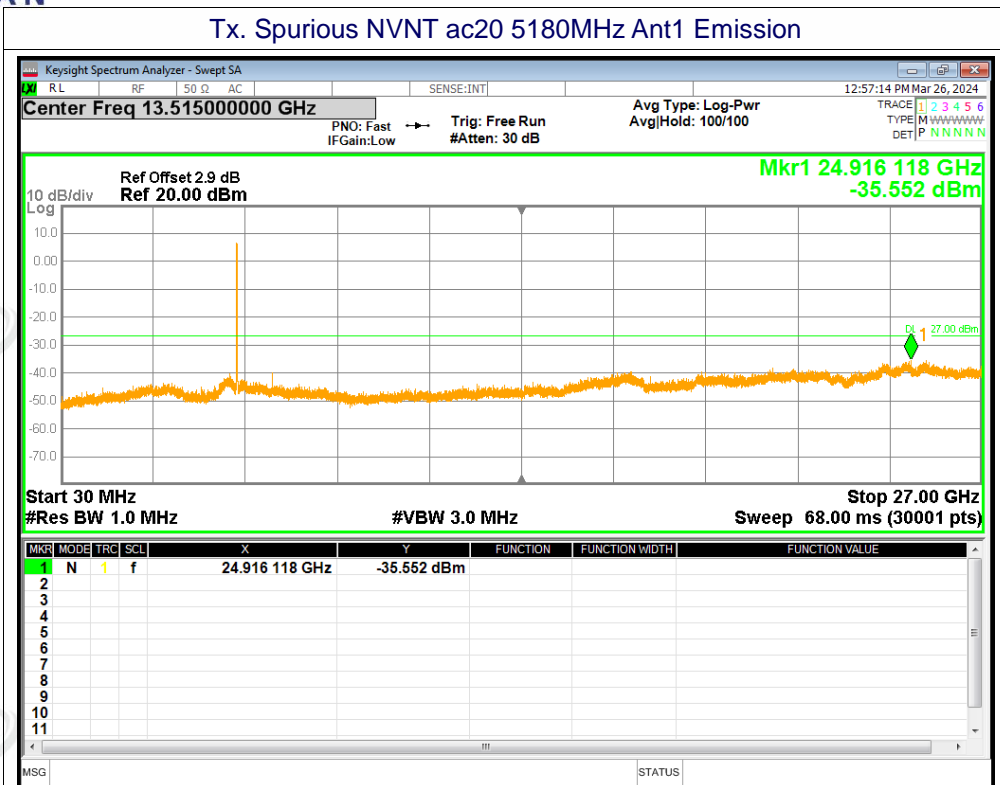


Tx. Spurious NVNT n40 5230MHz Ant1 Emission

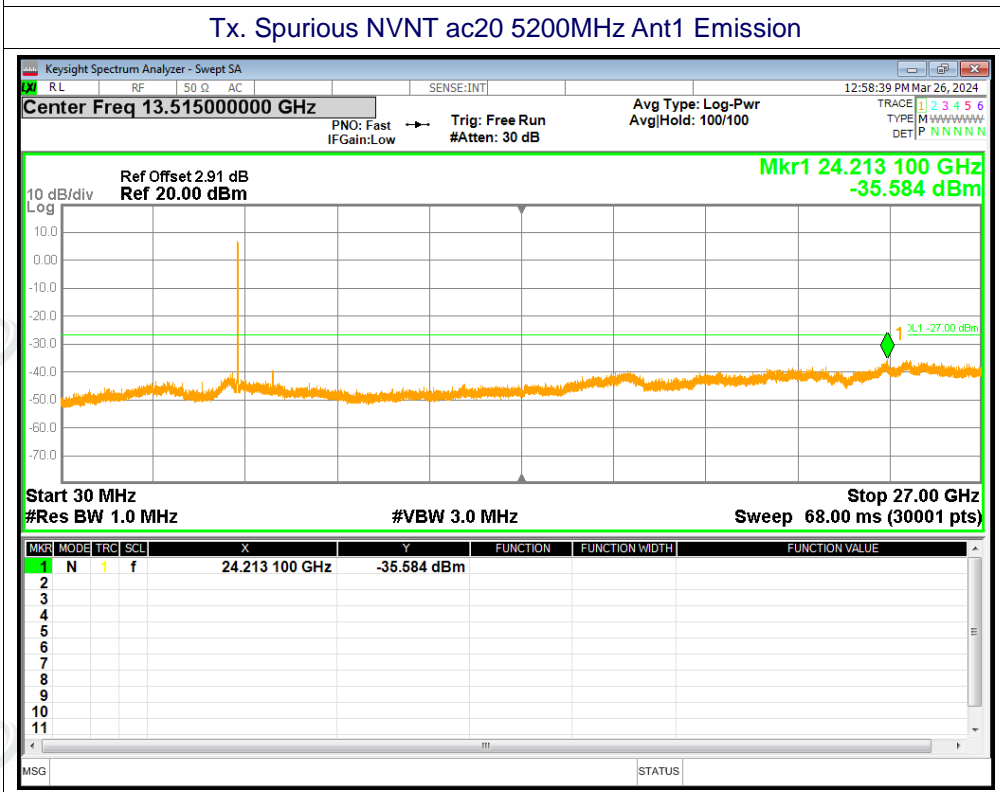




Tx. Spurious NVNT ac20 5180MHz Ant1 Emission

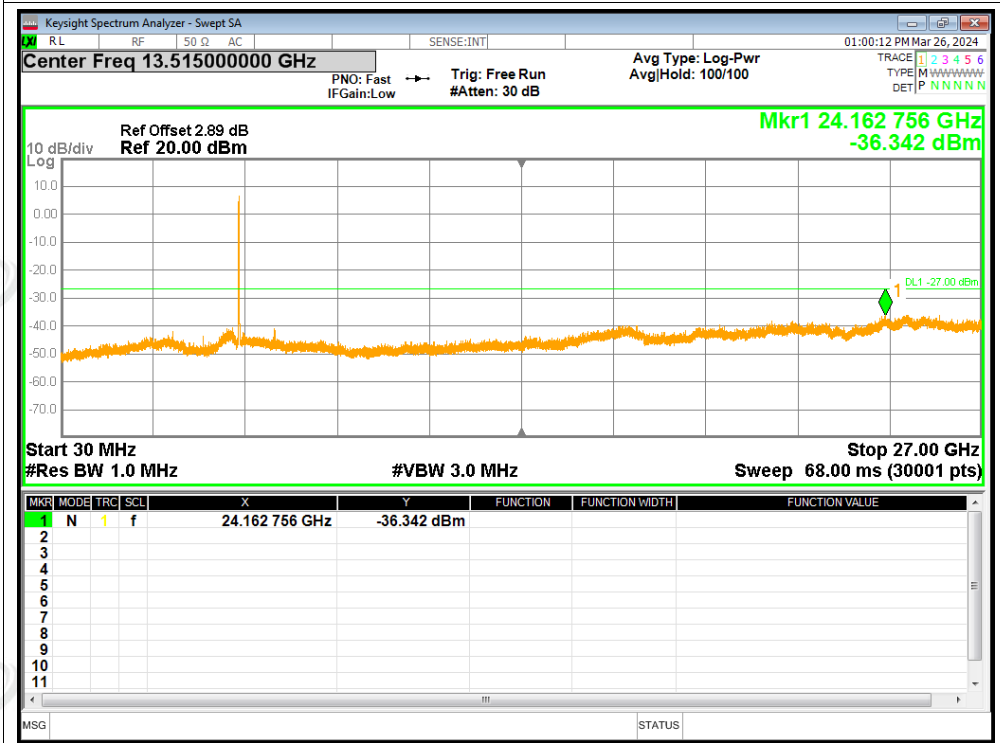


Tx. Spurious NVNT ac20 5200MHz Ant1 Emission





Tx. Spurious NVNT ac20 5240MHz Ant1 Emission



Tx. Spurious NVNT ac40 5190MHz Ant1 Emission

