

Appendix A for 5.2GWIFI Test Data

Product Name: Wireless Portable Monitor

Test Model: S238

Environmental Conditions

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

Duty Cycle

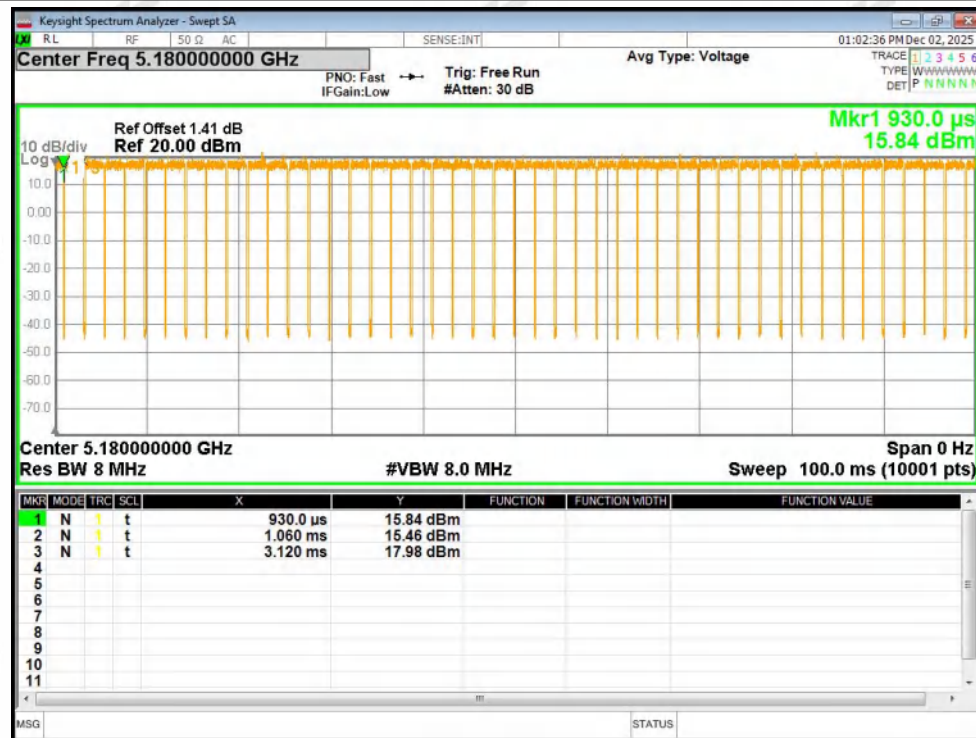
Mode	Frequency (MHz)	Antenna	T _{on} ms	T _{total} ms	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
a	5180	Ant1	2.06	2.19	94.06	0.27	0.49
a	5200	Ant1	2.06	2.23	92.38	0.34	0.49
a	5240	Ant1	2.07	2.22	93.24	0.3	0.48
n20	5180	Ant1	1.92	2.11	91	0.41	0.52
n20	5200	Ant1	1.93	2.03	94.58	0.24	0.52
n20	5240	Ant1	1.93	2.03	95.07	0.22	0.52
n40	5190	Ant1	0.94	1.10	85.45	0.68	1.06
n40	5230	Ant1	0.95	1.14	83.33	0.79	1.05

Note:

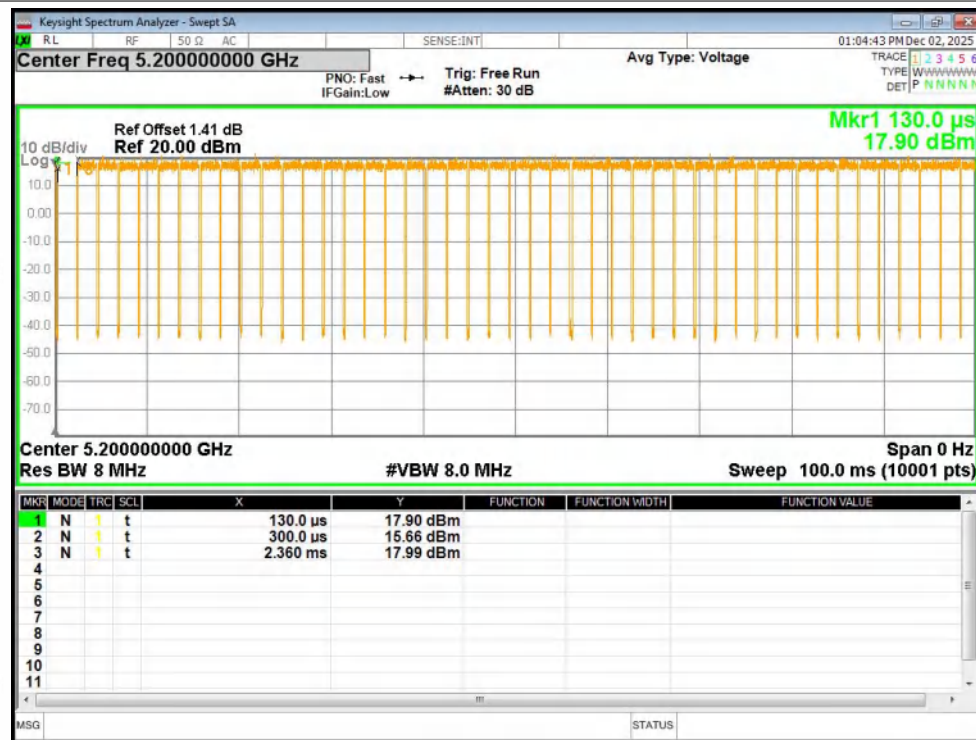
1. Duty Cycle = T_{on} / T_{total}
2. Correction Factor = $10 \log (1 / \text{Duty Cycle})$.
3. $1/T = 1/T_{on}$

Test Graphs

Duty Cycle NVNT a 5180MHz Ant1

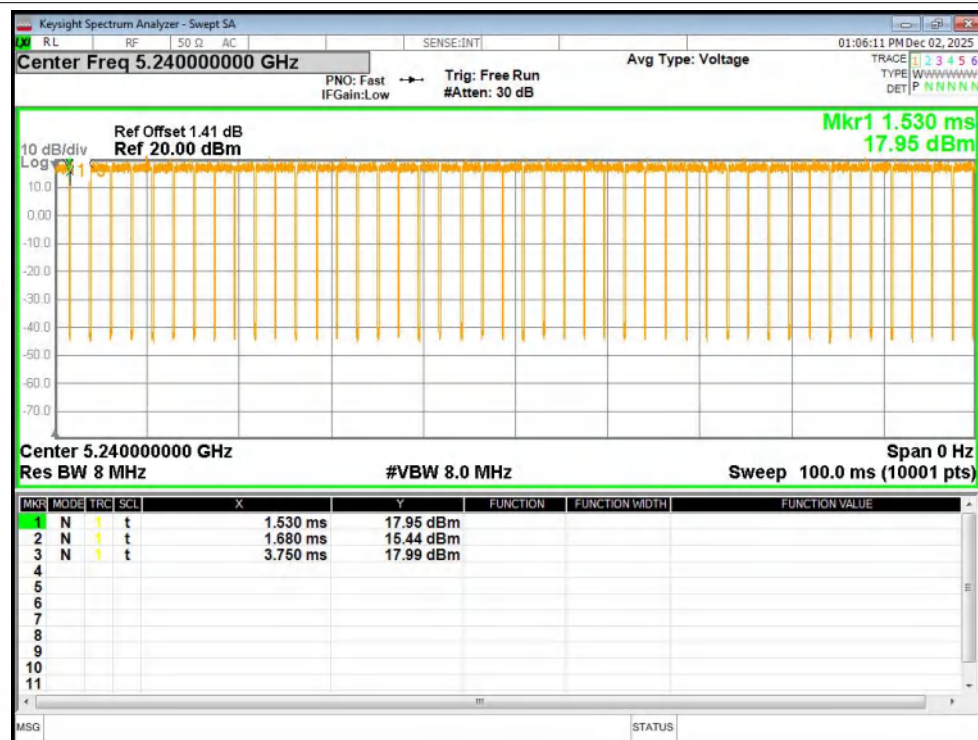


Duty Cycle NVNT a 5200MHz Ant1

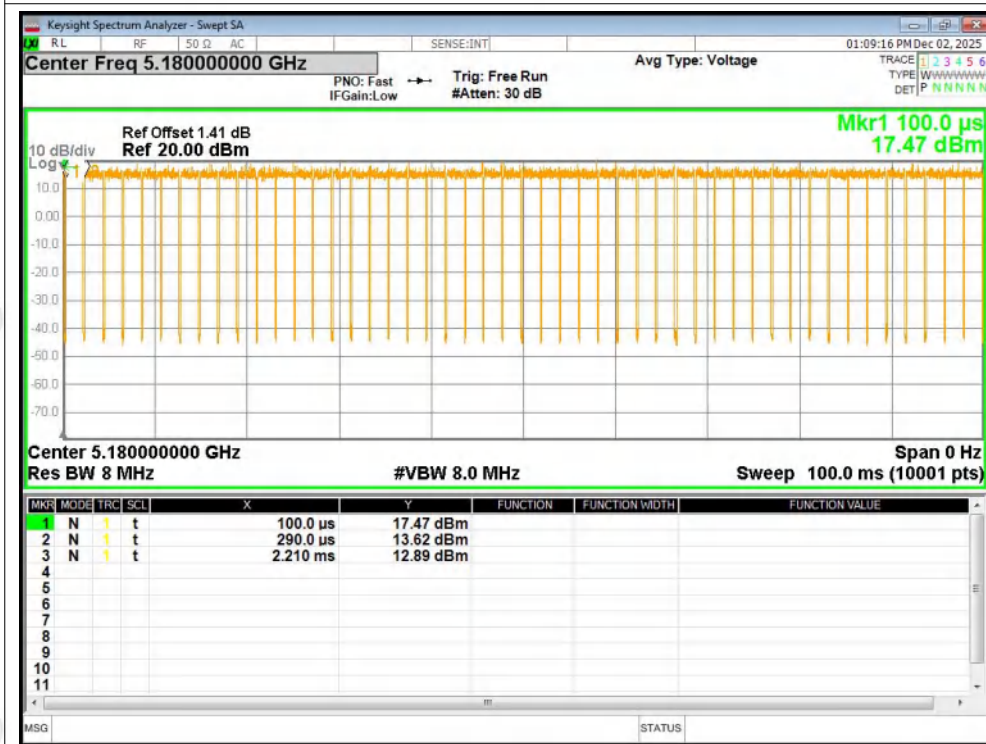




Duty Cycle NVNT a 5240MHz Ant1



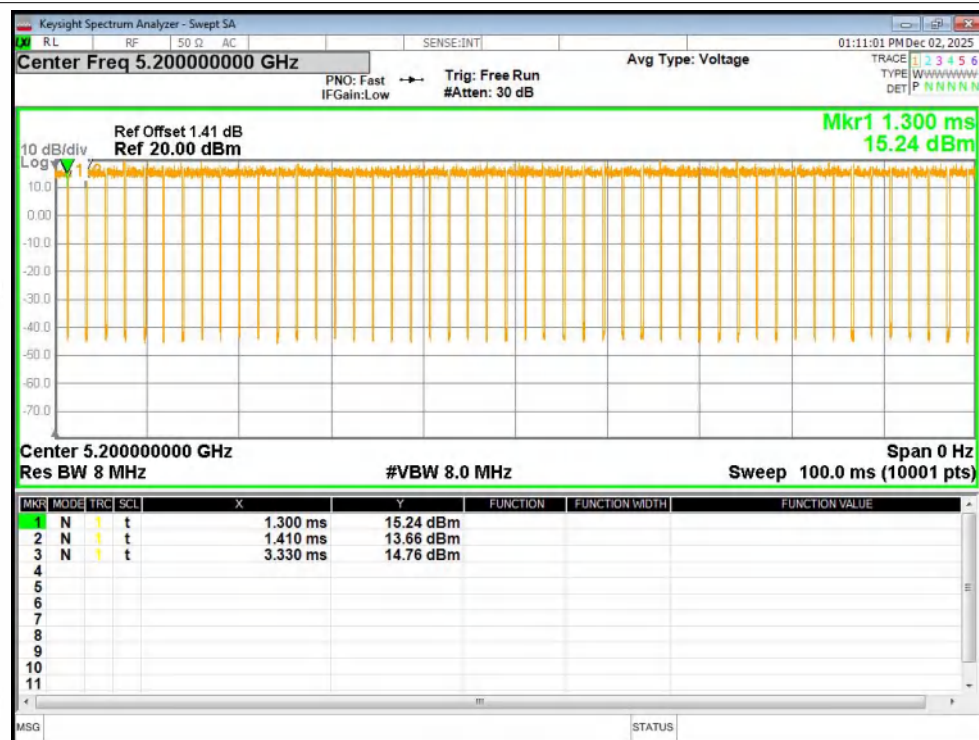
Duty Cycle NVNT n20 5180MHz Ant1



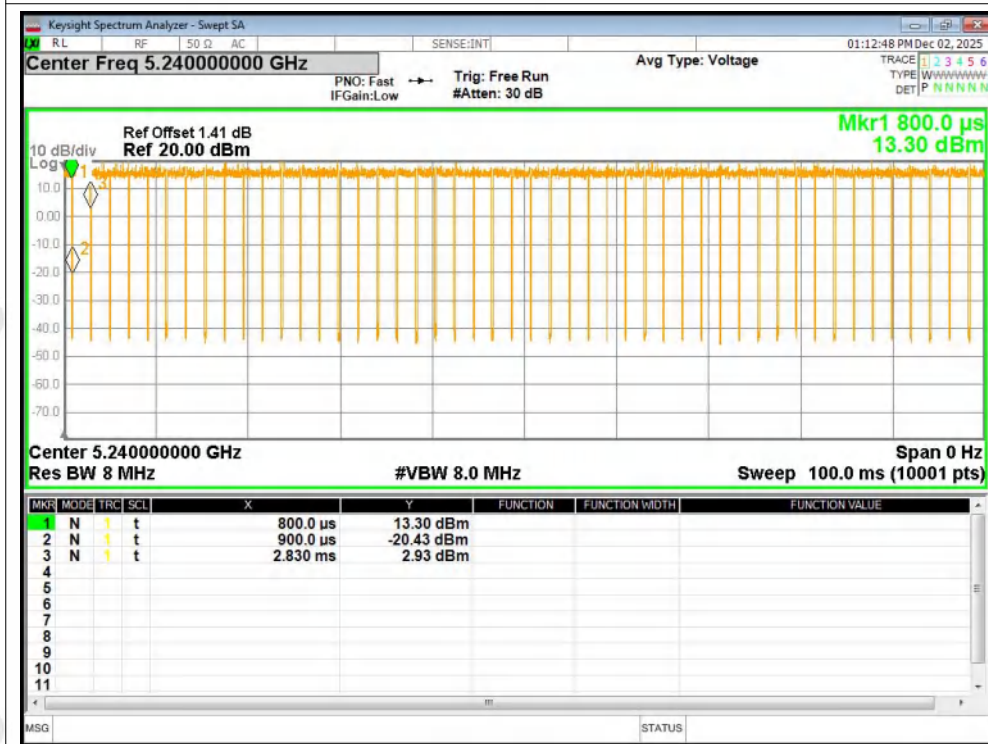


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Duty Cycle NVNT n20 5200MHz Ant1

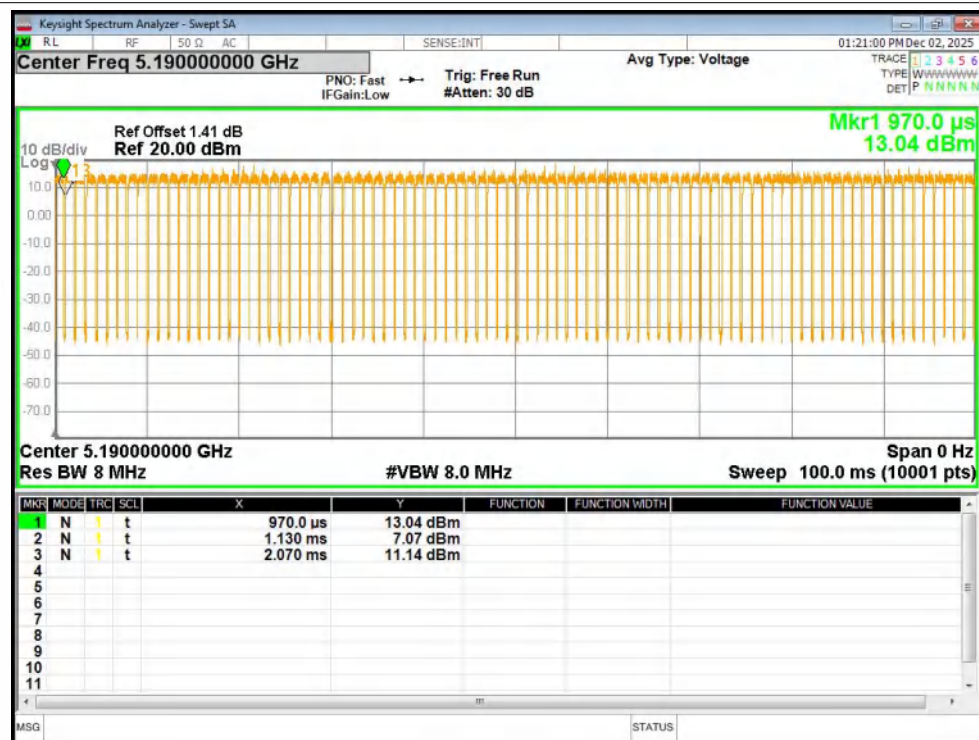


Duty Cycle NVNT n20 5240MHz Ant1

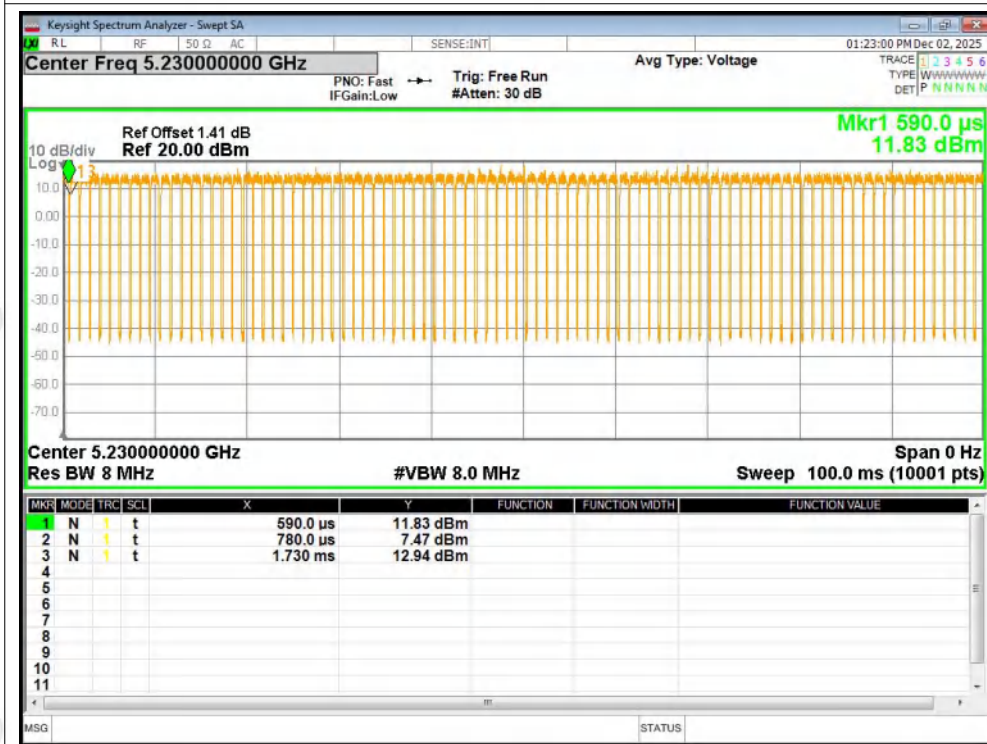




Duty Cycle NVNT n40 5190MHz Ant1



Duty Cycle NVNT n40 5230MHz Ant1



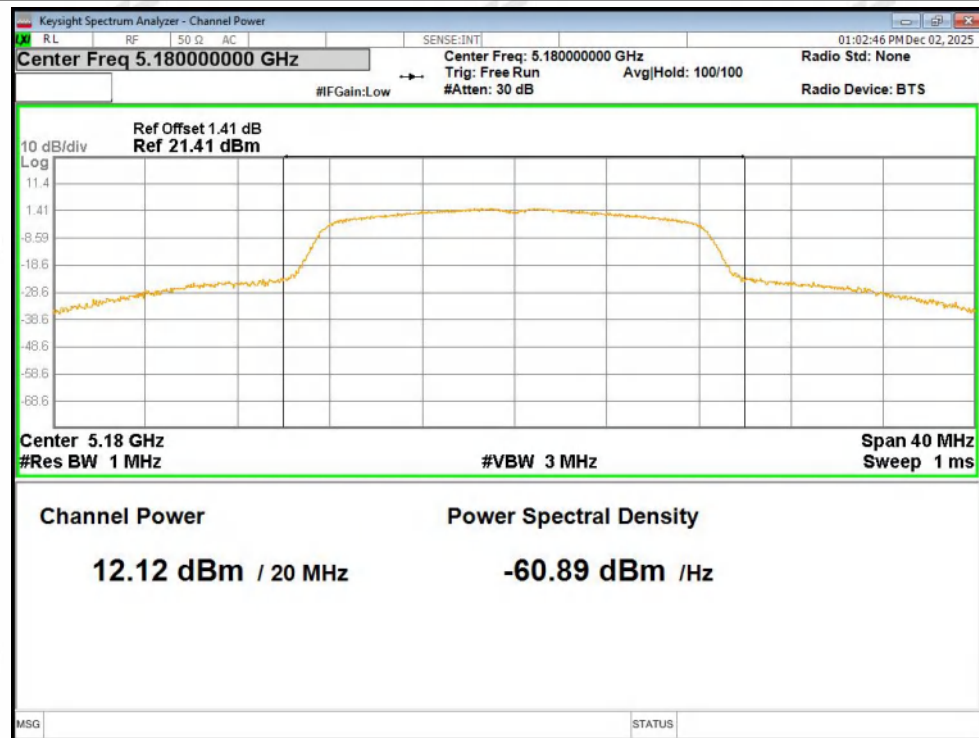
**ZHONGHAN****Maximum Conducted Output Power**

Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
a	5180	Ant1	12.12	0.27	12.39	24	Pass
a	5200	Ant1	12.12	0.34	12.46	24	Pass
a	5240	Ant1	12.38	0.3	12.68	24	Pass
n20	5180	Ant1	10.4	0.41	10.81	24	Pass
n20	5200	Ant1	10.46	0.24	10.7	24	Pass
n20	5240	Ant1	10.69	0.22	10.91	24	Pass
n40	5190	Ant1	10.29	0.68	10.97	24	Pass
n40	5230	Ant1	10.58	0.79	11.37	24	Pass

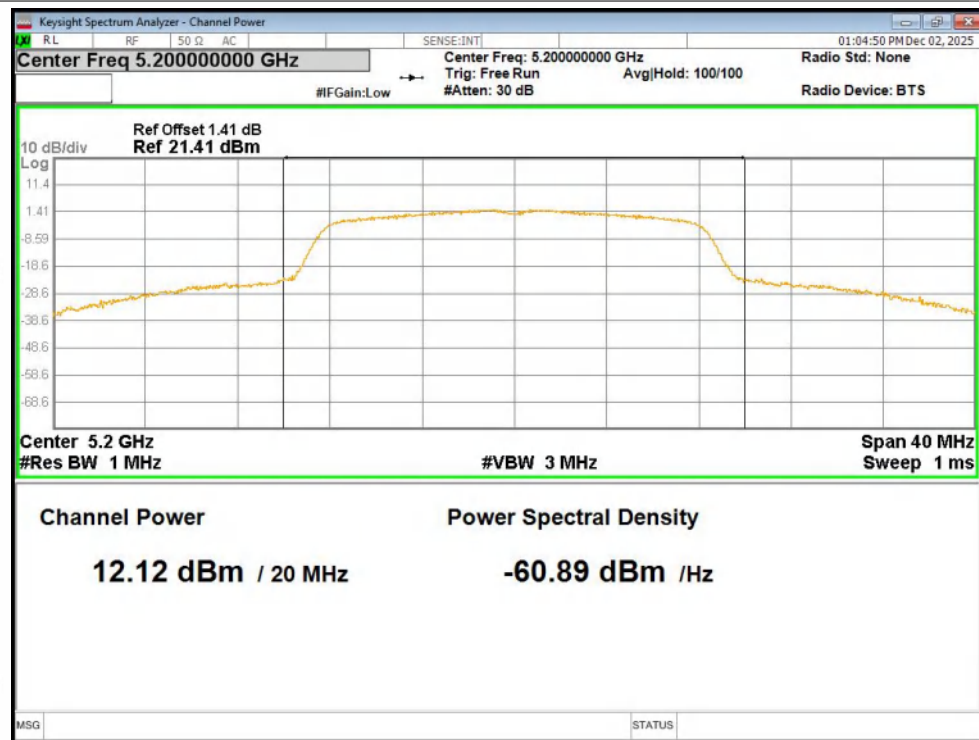


Test Graphs

Power NVNT a 5180MHz Ant1

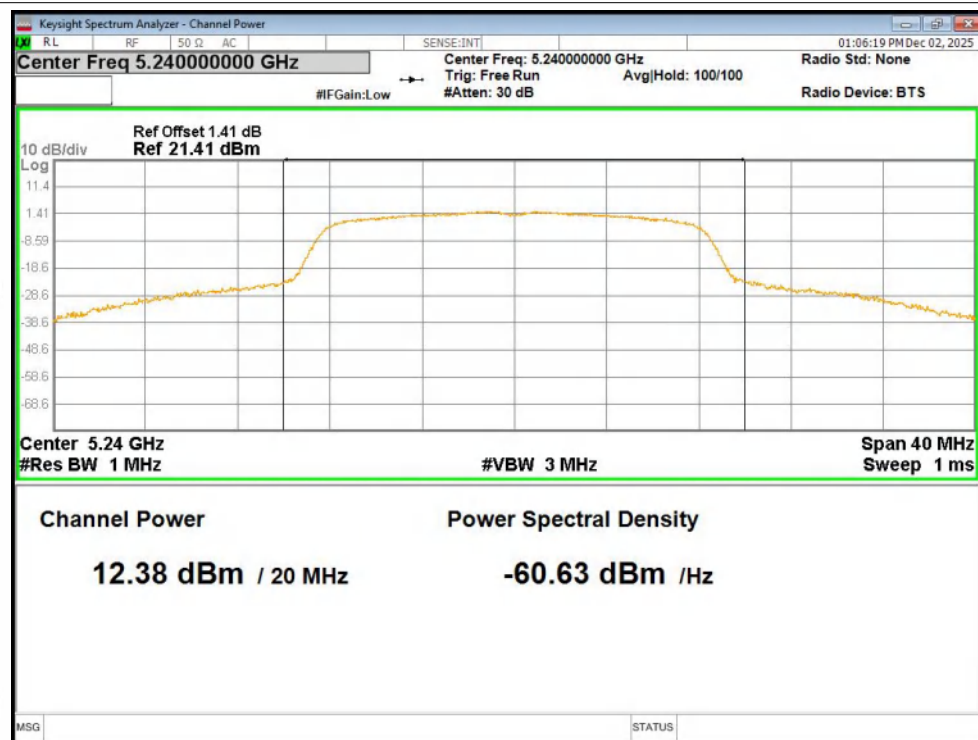


Power NVNT a 5200MHz Ant1

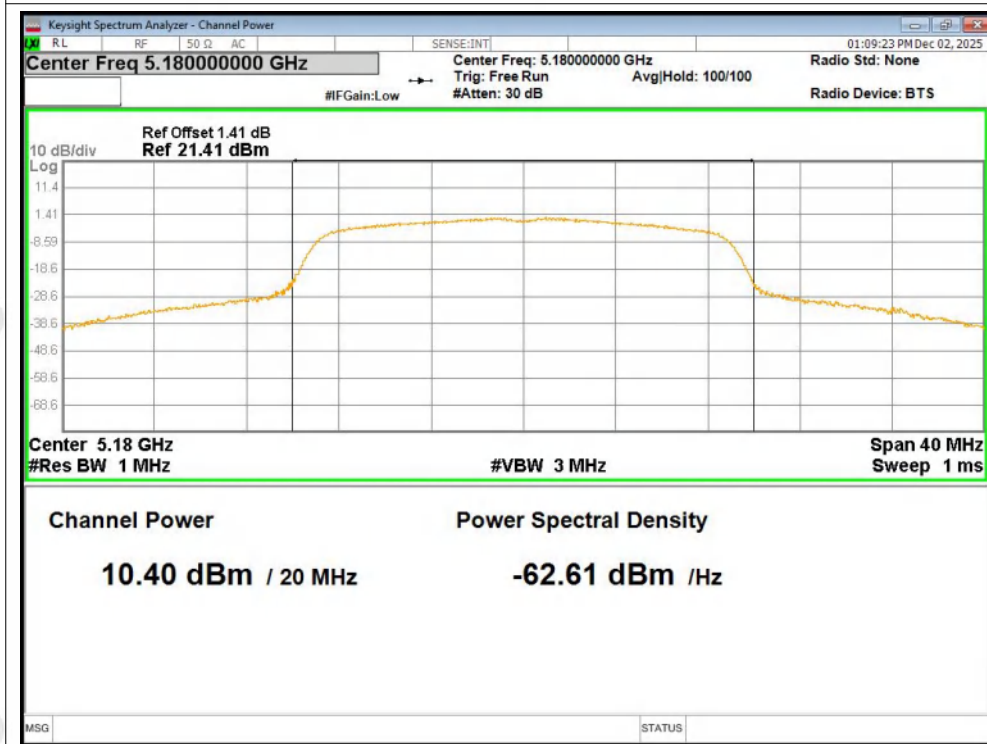




Power NVNT a 5240MHz Ant1



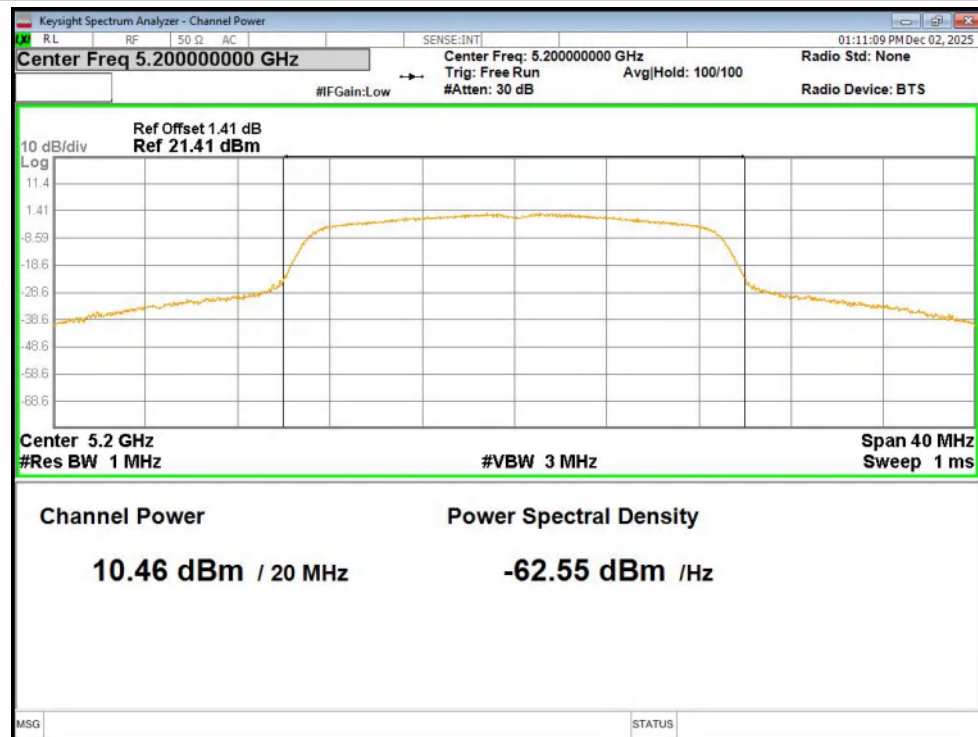
Power NVNT n20 5180MHz Ant1



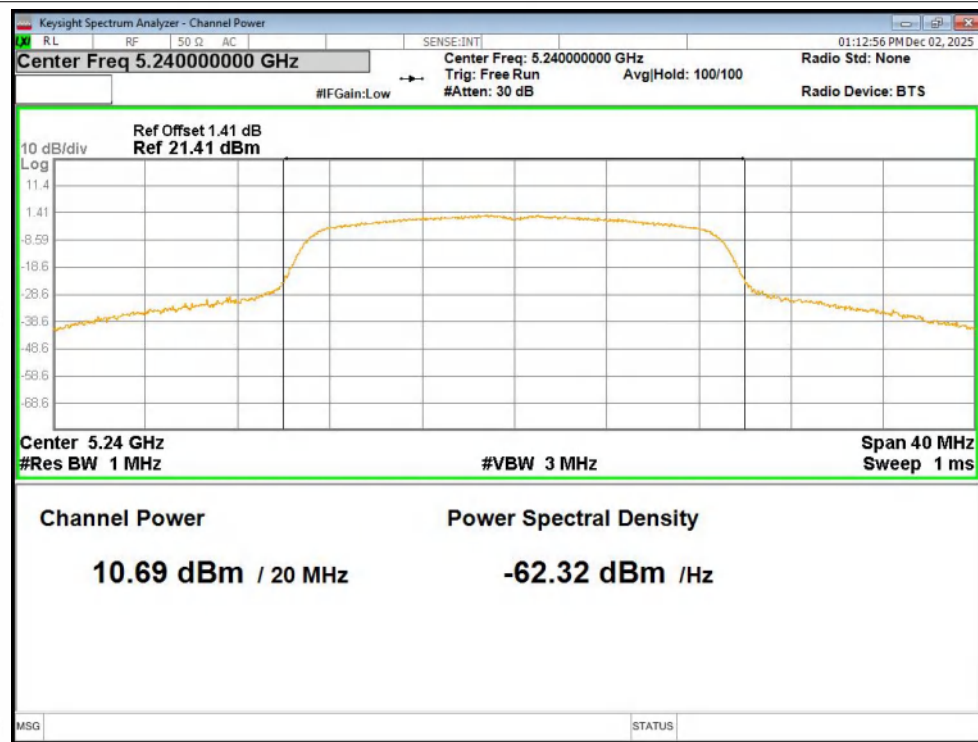


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Power NVNT n20 5200MHz Ant1

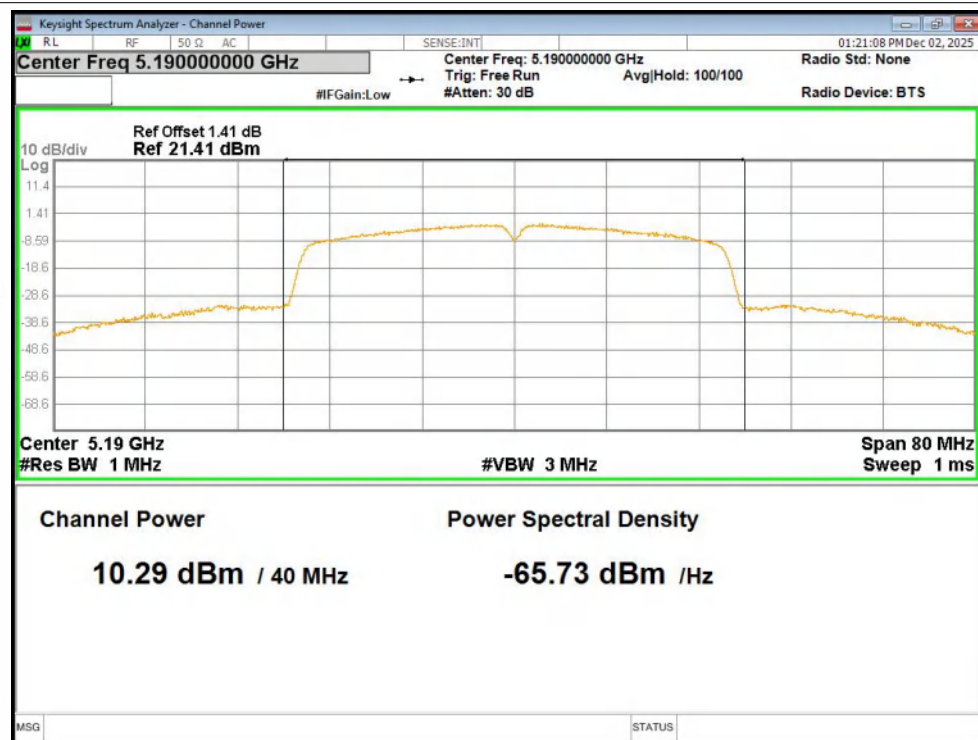


Power NVNT n20 5240MHz Ant1

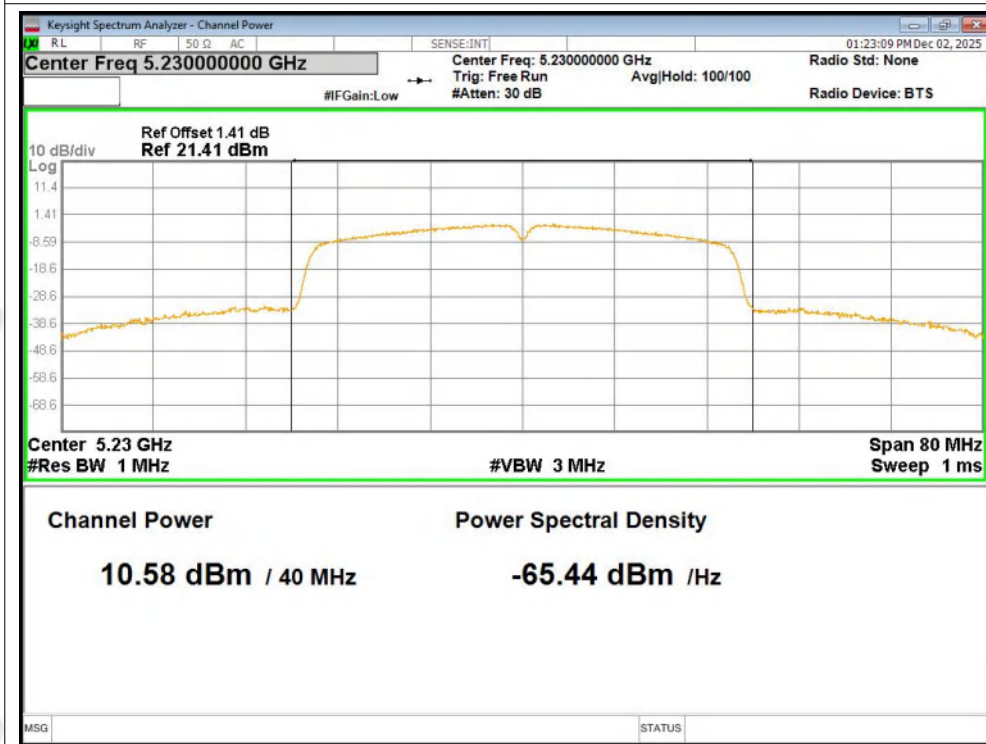




Power NVNT n40 5190MHz Ant1



Power NVNT n40 5230MHz Ant1



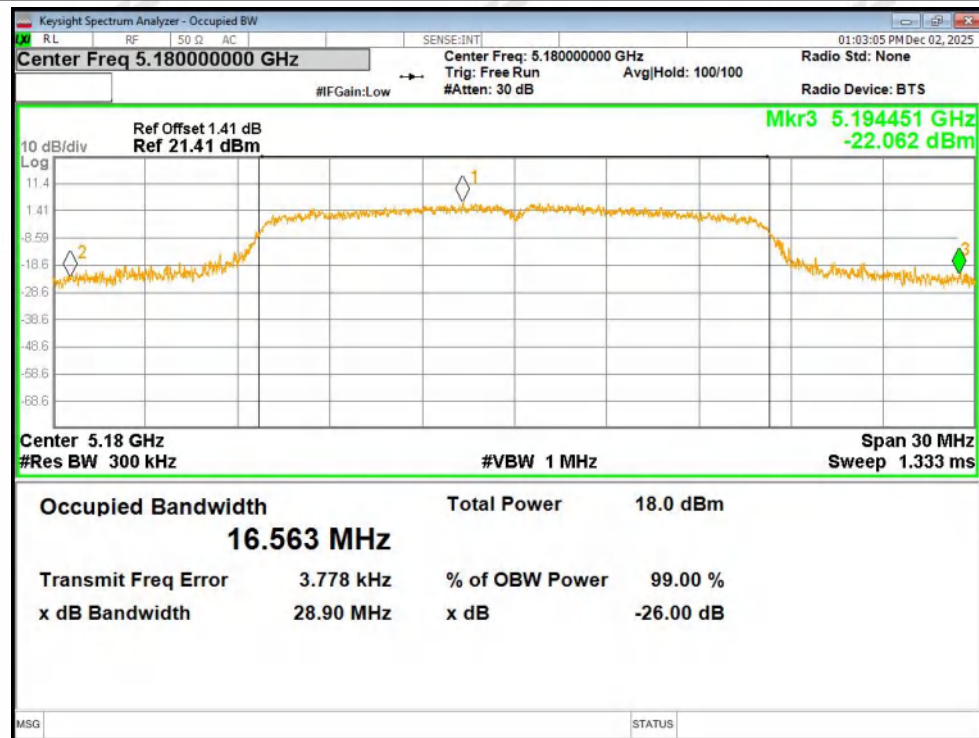
**ZHONGHAN**
-26dB Bandwidth

Condition	Mode	Frequency (MHz)	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	28.895	N/A	Pass
NVNT	a	5200	27.957	N/A	Pass
NVNT	a	5240	26.609	N/A	Pass
NVNT	n20	5180	24.332	N/A	Pass
NVNT	n20	5200	23.341	N/A	Pass
NVNT	n20	5240	21.356	N/A	Pass
NVNT	n40	5190	48.711	N/A	Pass
NVNT	n40	5230	48.881	N/A	Pass

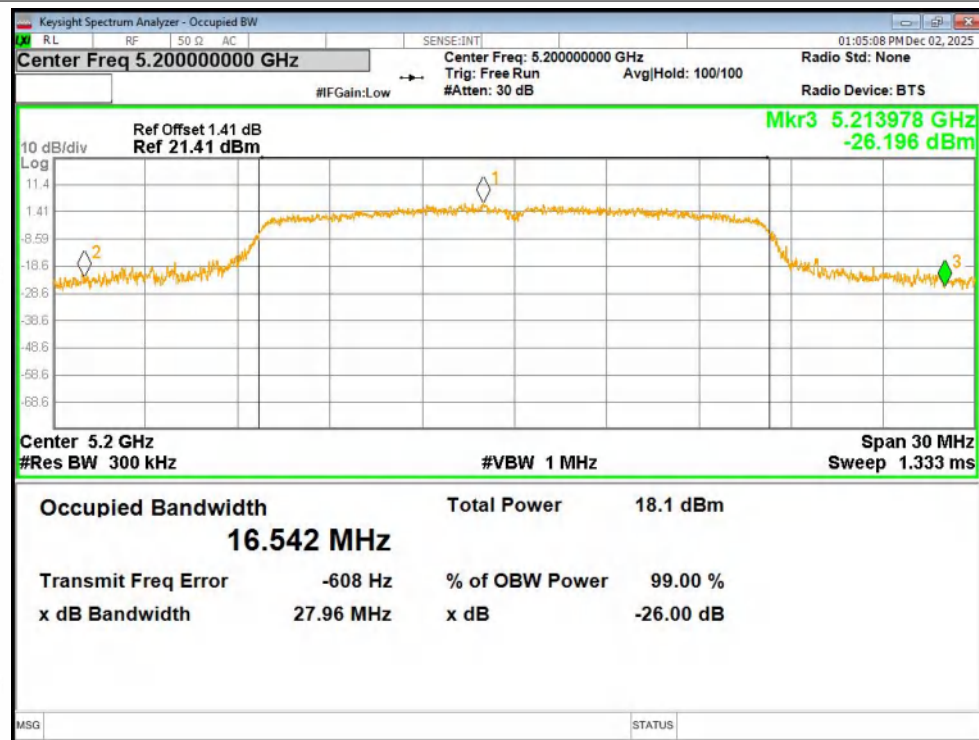


Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant1



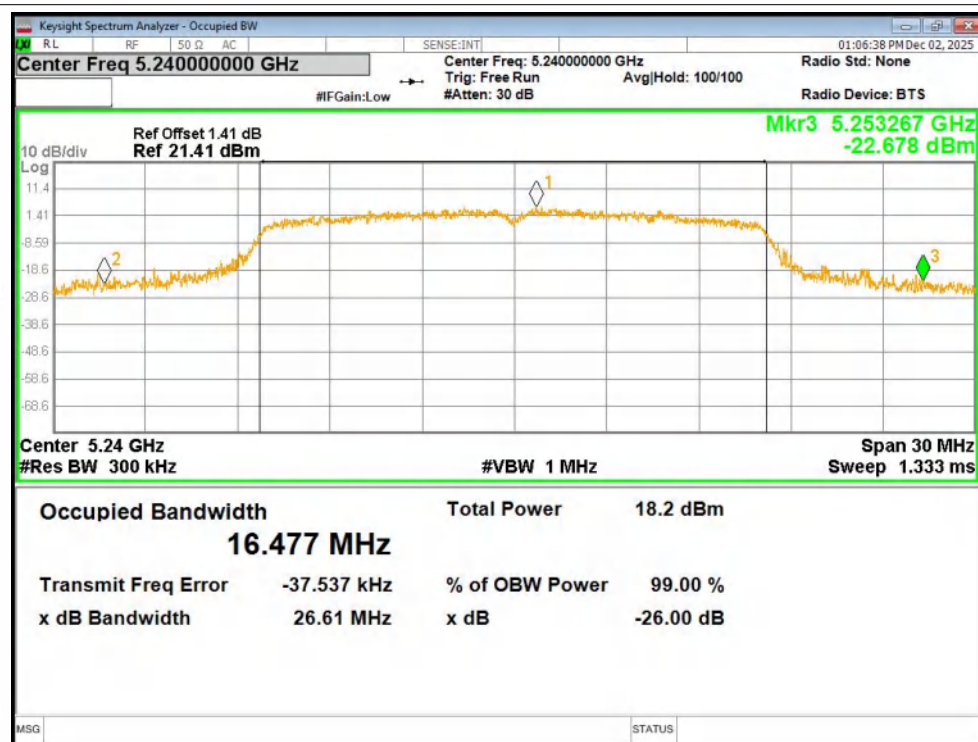
-26dB Bandwidth NVNT a 5200MHz Ant1



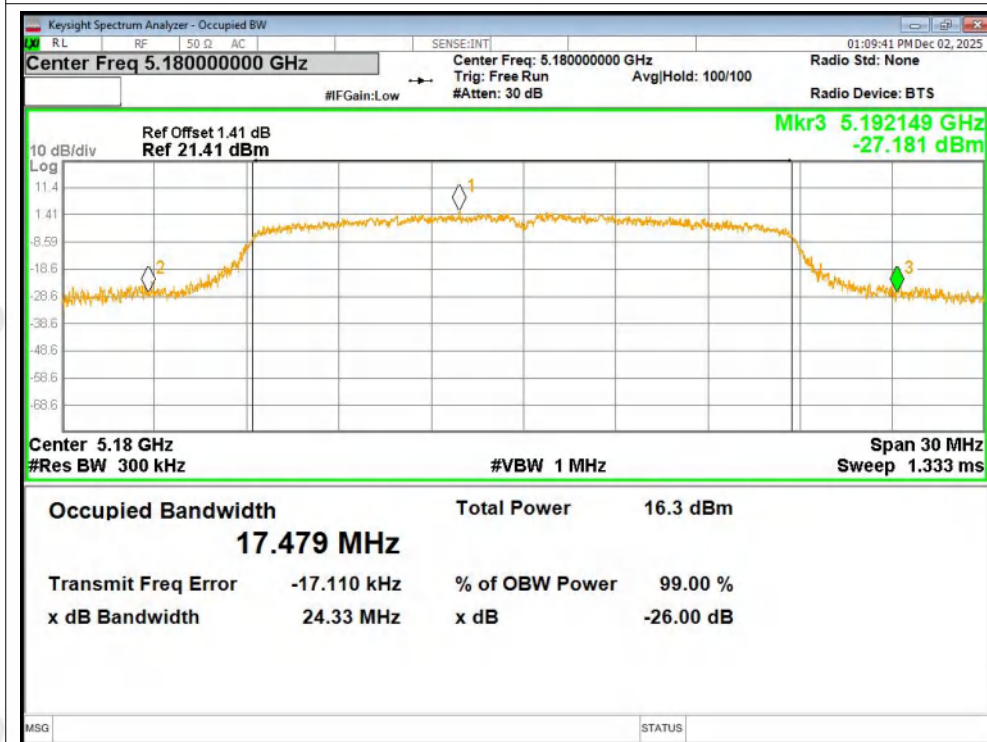


ZHONGHAN

-26dB Bandwidth NVNT a 5240MHz Ant1

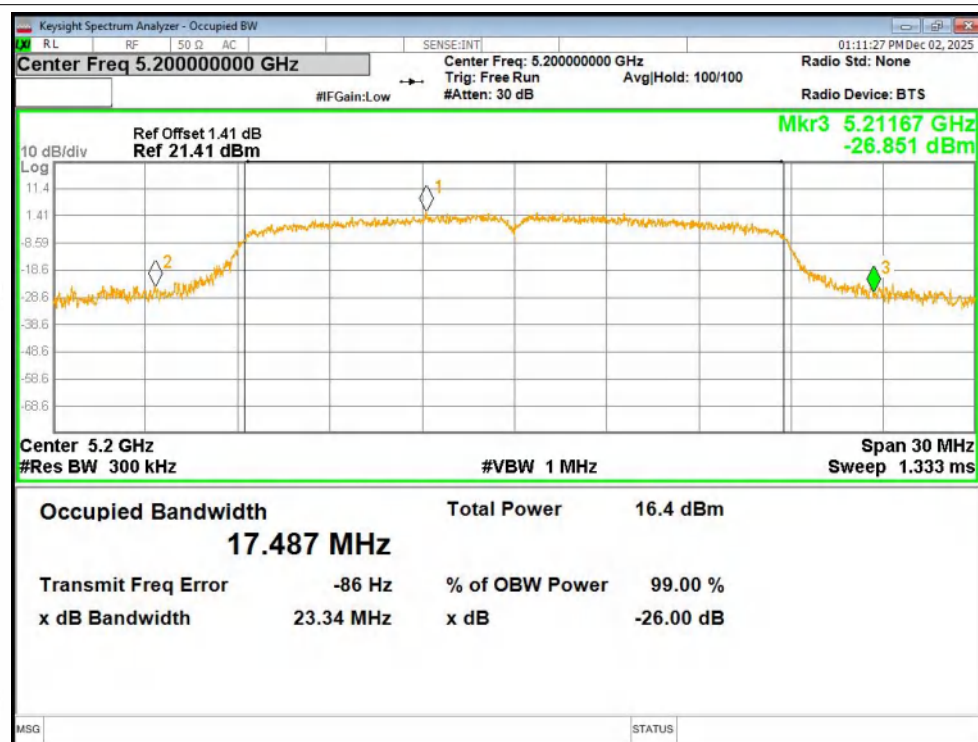


-26dB Bandwidth NVNT n20 5180MHz Ant1

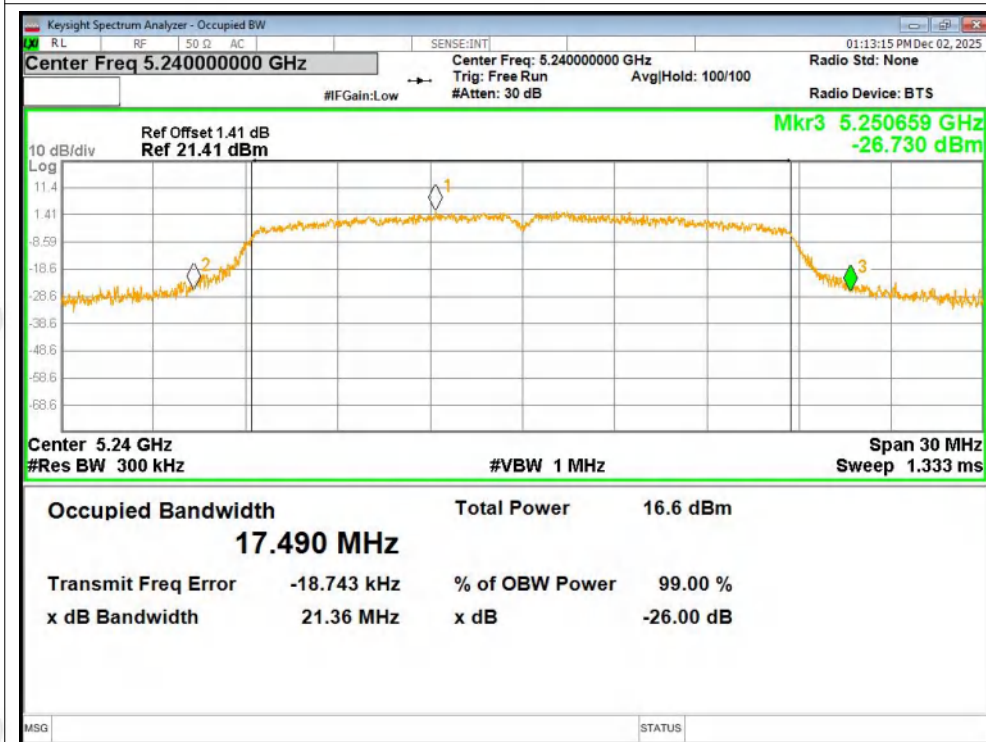




-26dB Bandwidth NVNT n20 5200MHz Ant1



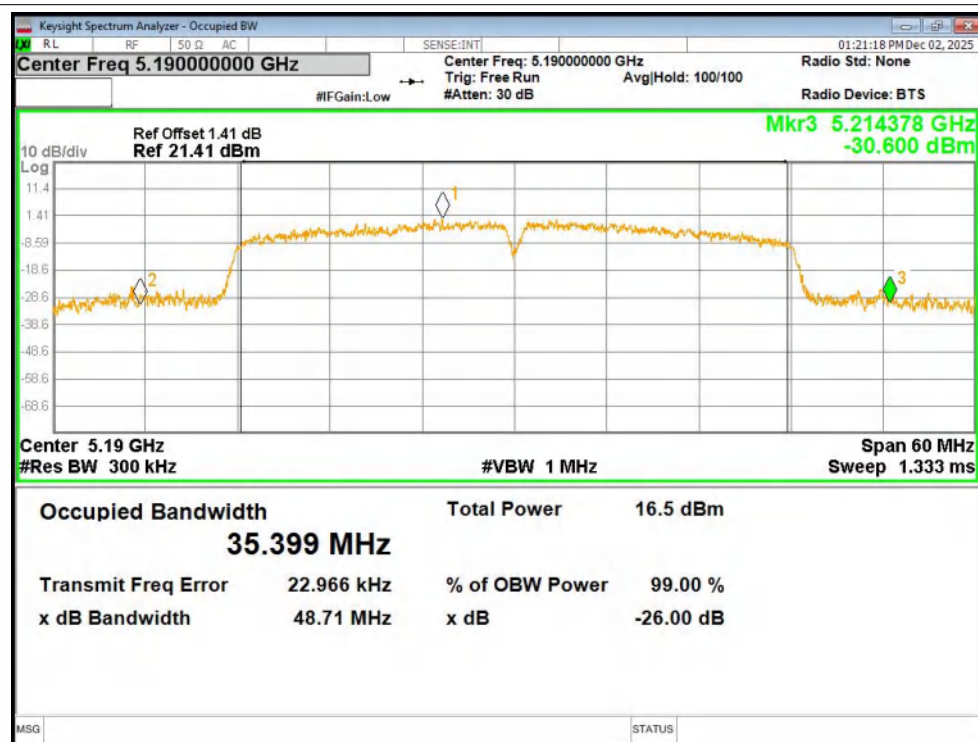
-26dB Bandwidth NVNT n20 5240MHz Ant1



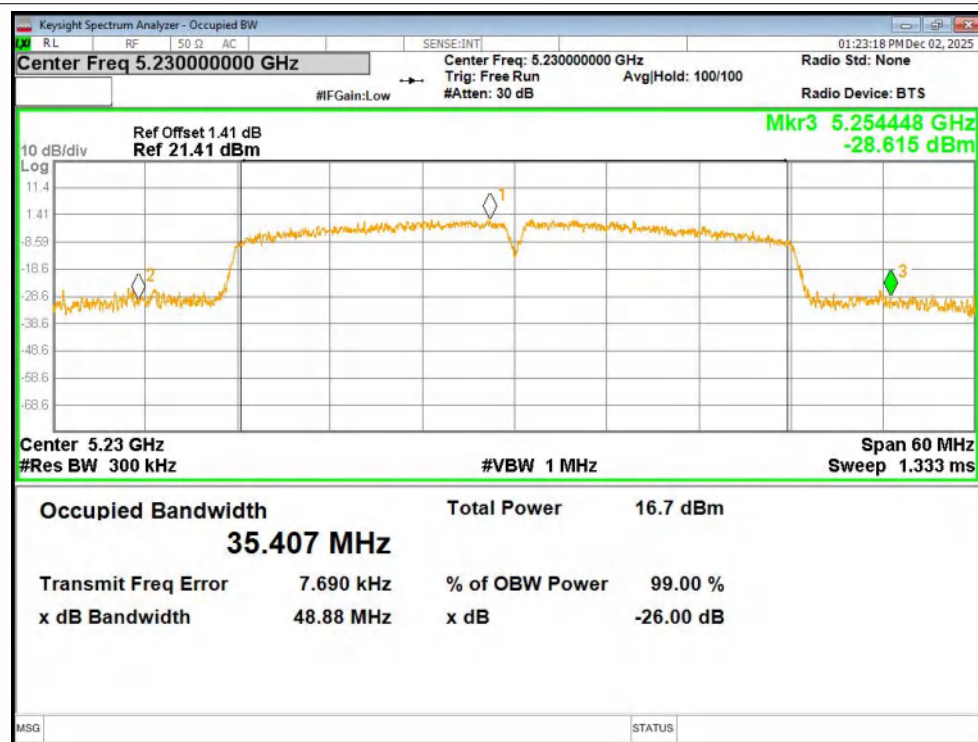


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-26dB Bandwidth NVNT n40 5190MHz Ant1



-26dB Bandwidth NVNT n40 5230MHz Ant1



**ZHONGHAN**
Occupied Channel Bandwidth

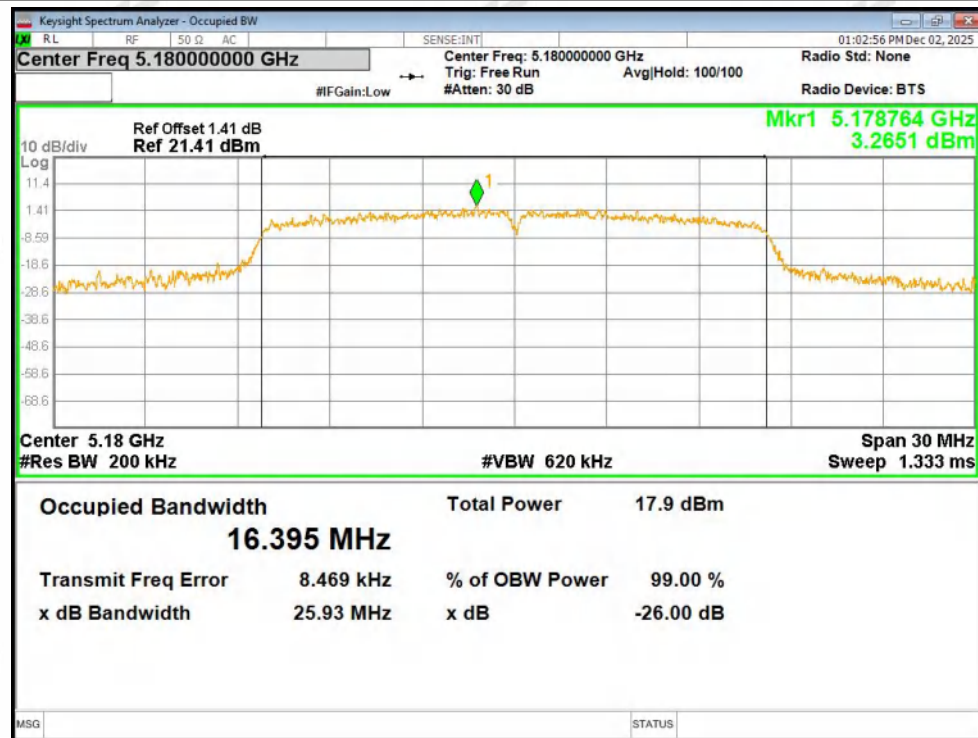
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	a	5180	Ant1	16.395
NVNT	a	5200	Ant1	16.376
NVNT	a	5240	Ant1	16.377
NVNT	n20	5180	Ant1	17.44
NVNT	n20	5200	Ant1	17.453
NVNT	n20	5240	Ant1	17.443
NVNT	n40	5190	Ant1	35.483
NVNT	n40	5230	Ant1	35.472



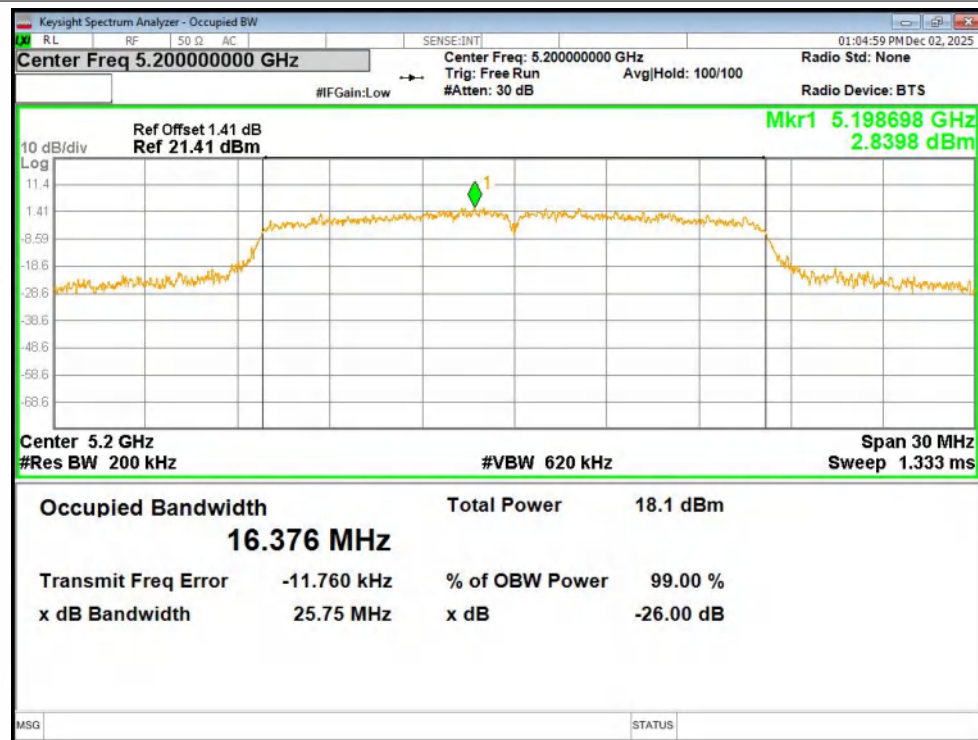
ZHONGHAN

Test Graphs

OBW NVNT a 5180MHz Ant1



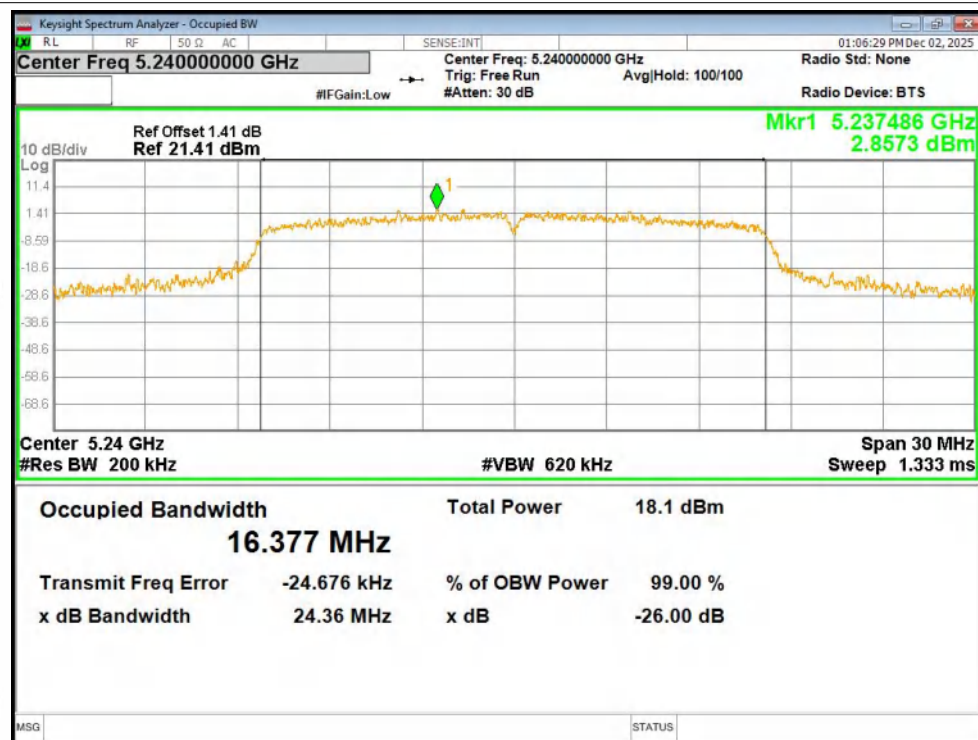
OBW NVNT a 5200MHz Ant1



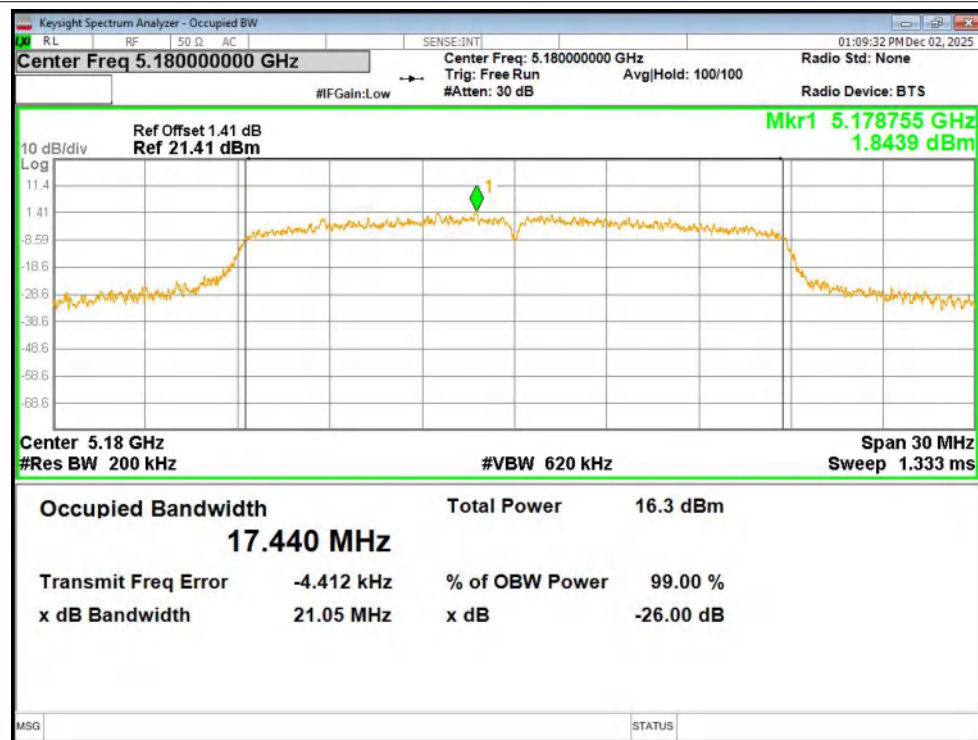


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OBW NVNT a 5240MHz Ant1



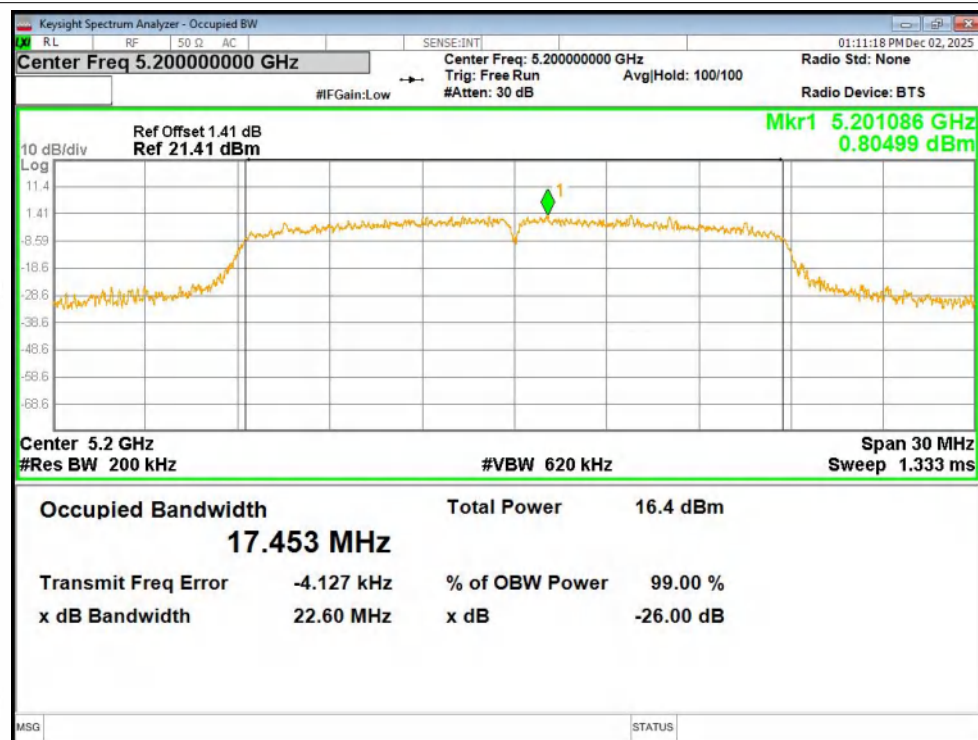
OBW NVNT n20 5180MHz Ant1



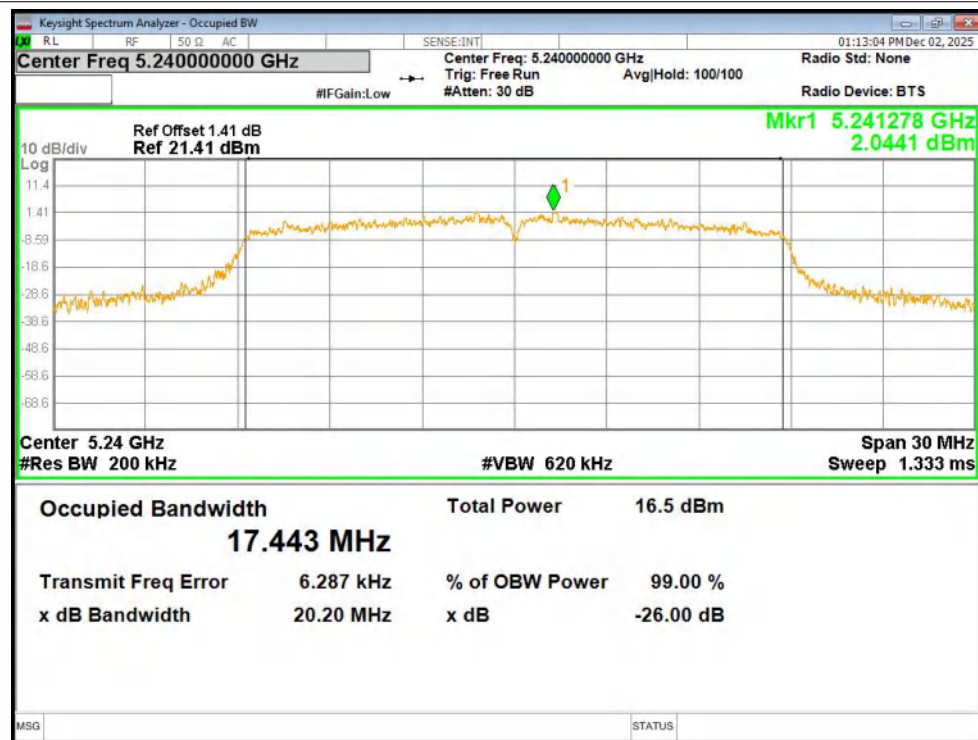


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OBW NVNT n20 5200MHz Ant1

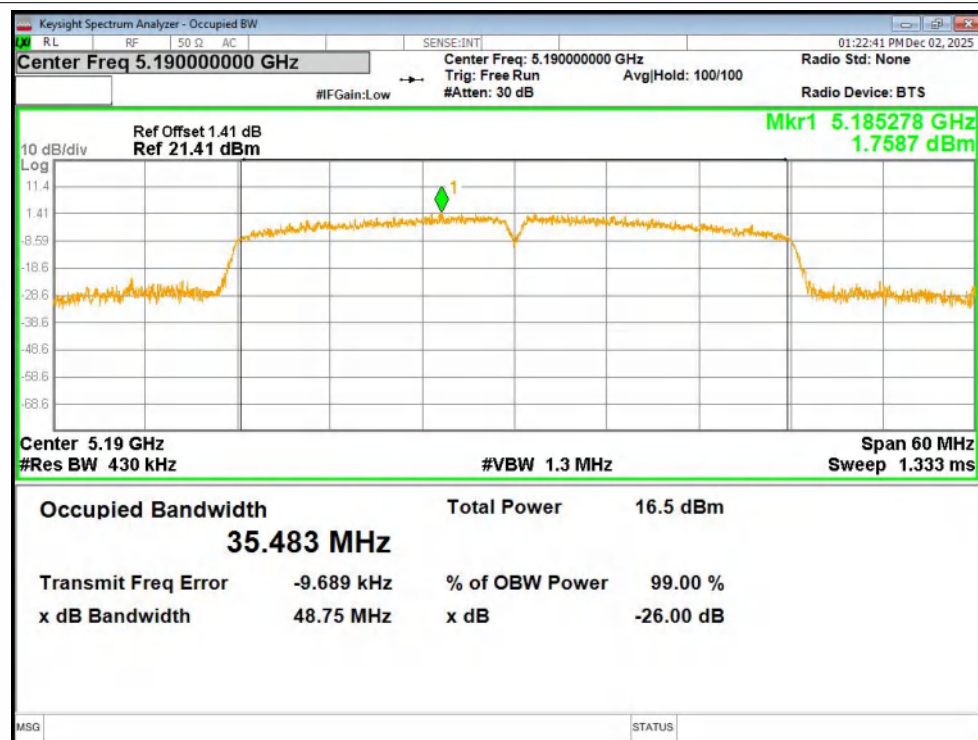


OBW NVNT n20 5240MHz Ant1

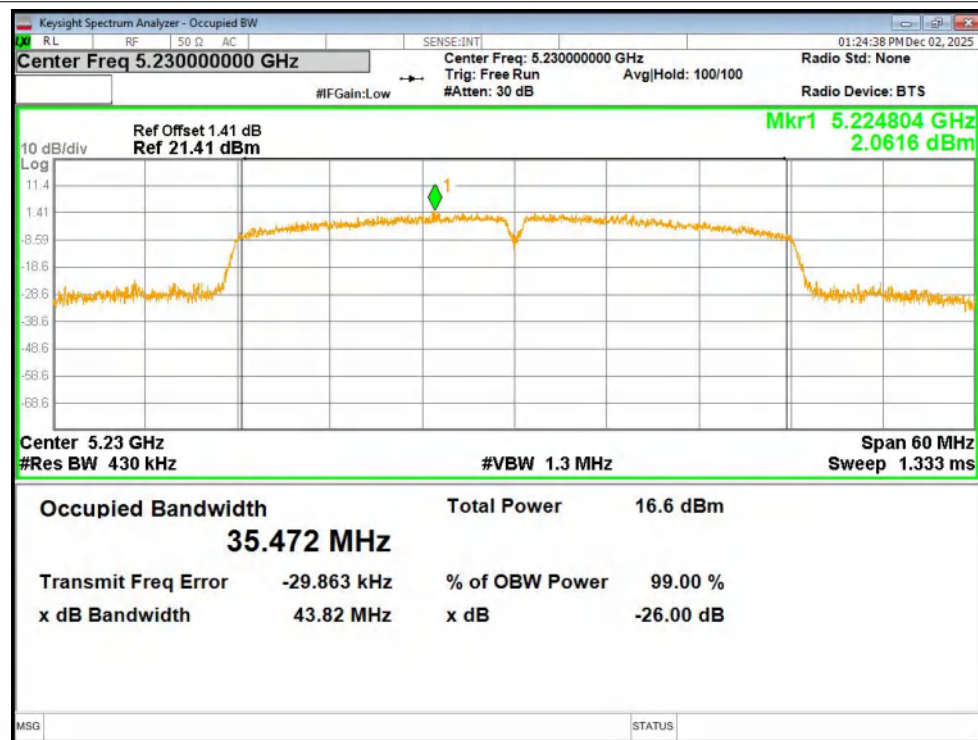




OBW NVNT n40 5190MHz Ant1



OBW NVNT n40 5230MHz Ant1

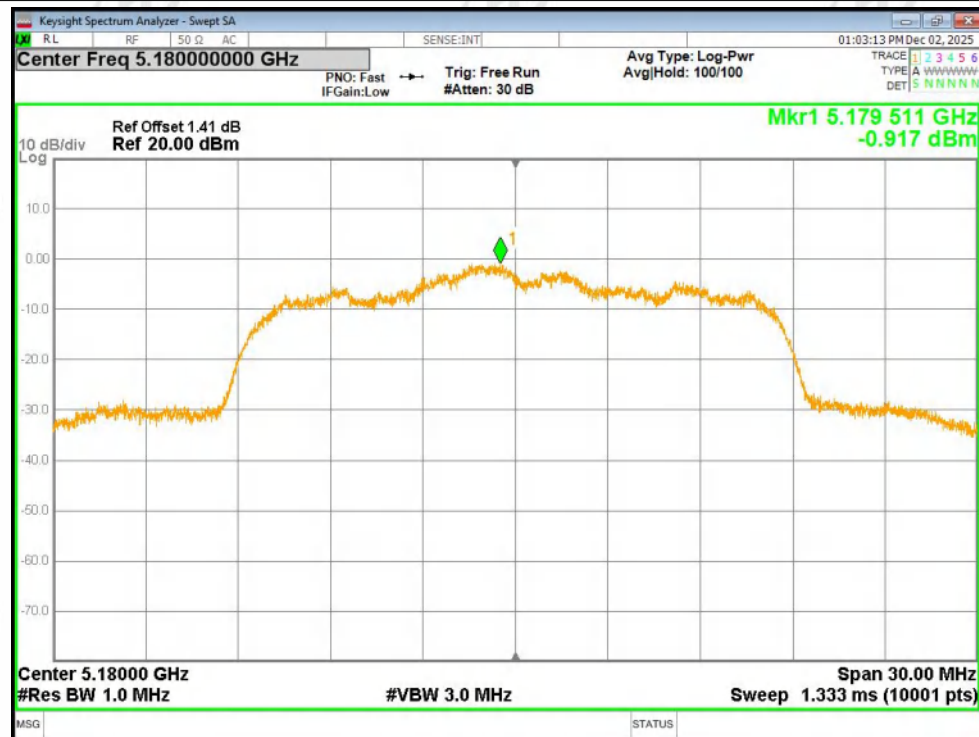


**ZHONGHAN****Maximum Power Spectral Density Level**

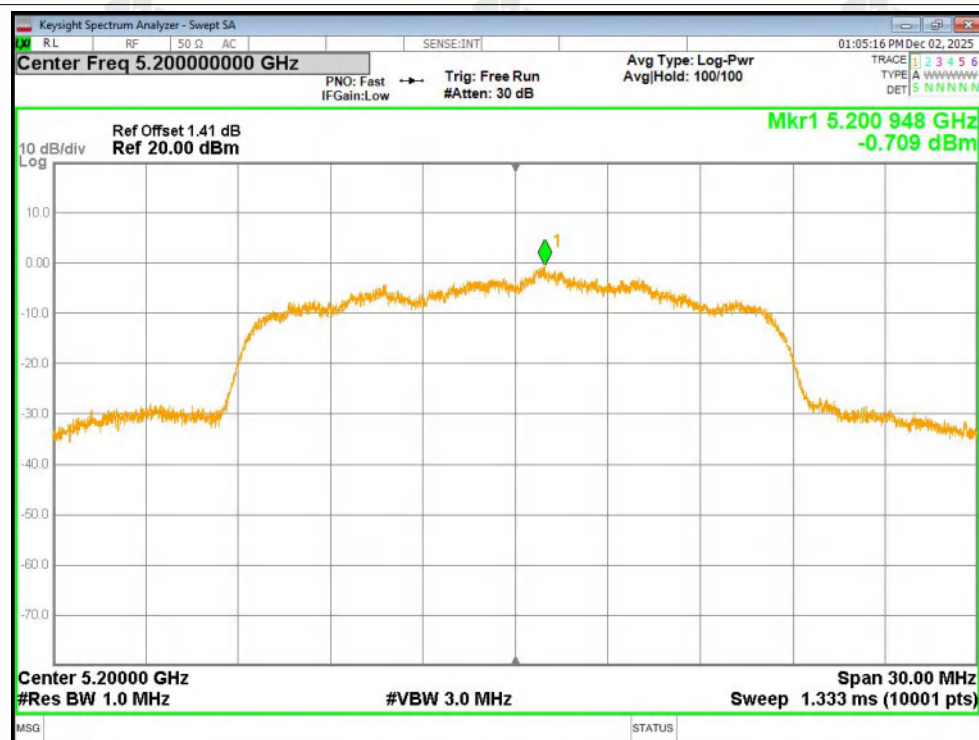
Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/MHz)	Duty Factor (dB)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
a	5180	Ant1	-0.92	0.27	-0.65	11	Pass
a	5200	Ant1	-0.71	0.34	-0.37	11	Pass
a	5240	Ant1	-1.83	0.3	-1.53	11	Pass
n20	5180	Ant1	-3.9	0.41	-3.49	11	Pass
n20	5200	Ant1	-2.42	0.24	-2.18	11	Pass
n20	5240	Ant1	-2.44	0.22	-2.22	11	Pass
n40	5190	Ant1	-11.3	0.68	-10.62	11	Pass
n40	5230	Ant1	-9.68	0.79	-8.89	11	Pass

Test Graphs

PSD NVNT a 5180MHz Ant1



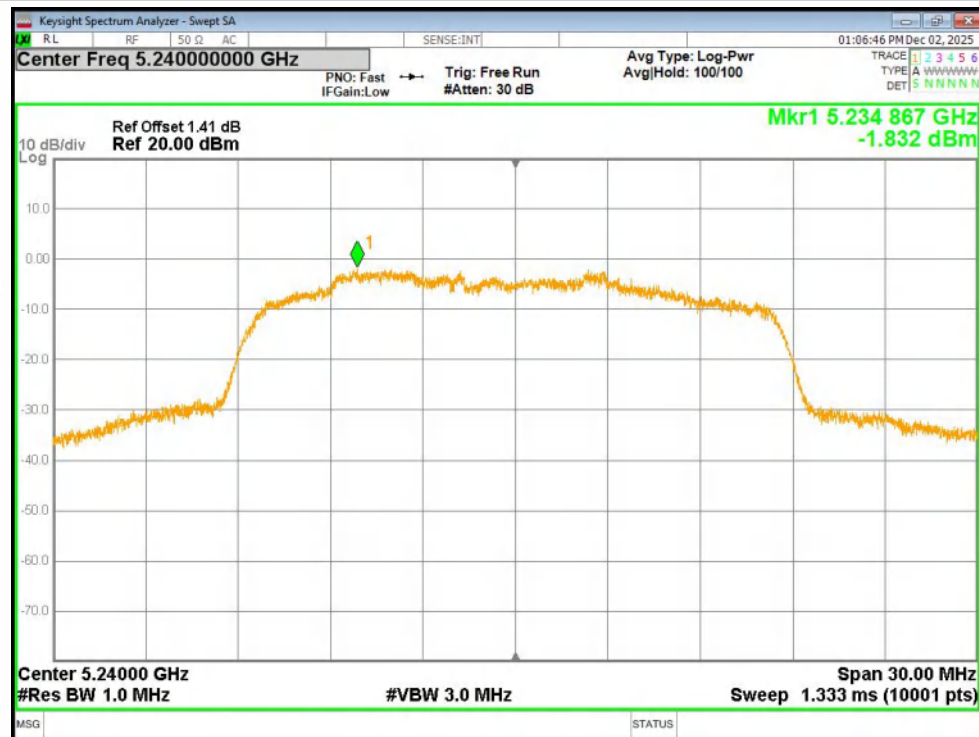
PSD NVNT a 5200MHz Ant1



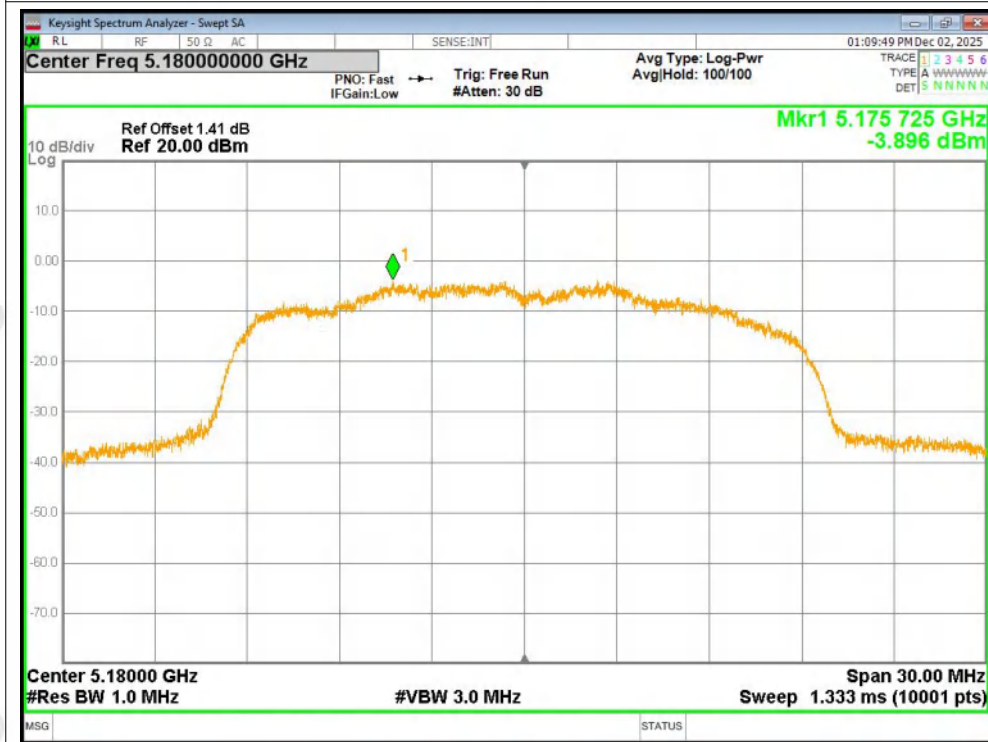


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PSD NVNT a 5240MHz Ant1



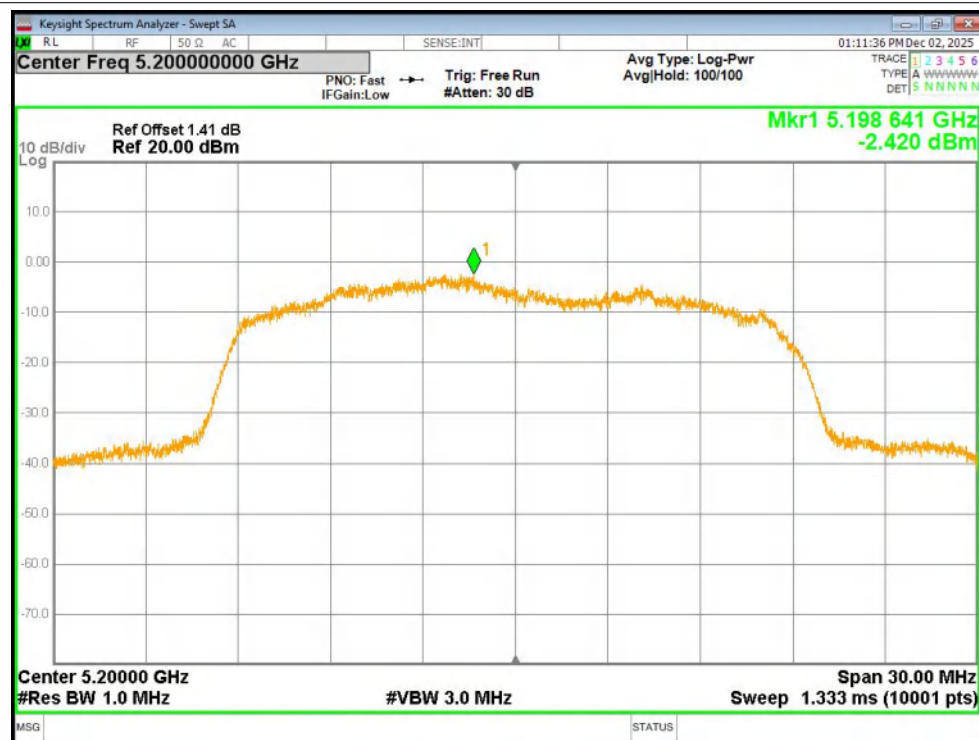
PSD NVNT n20 5180MHz Ant1



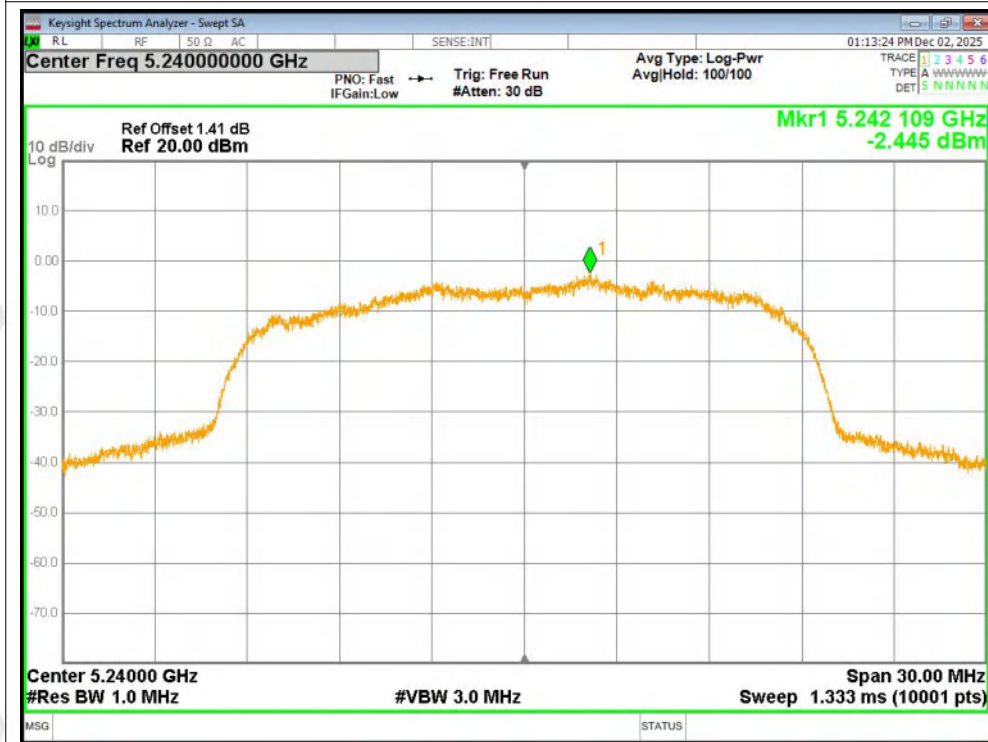


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PSD NVNT n20 5200MHz Ant1



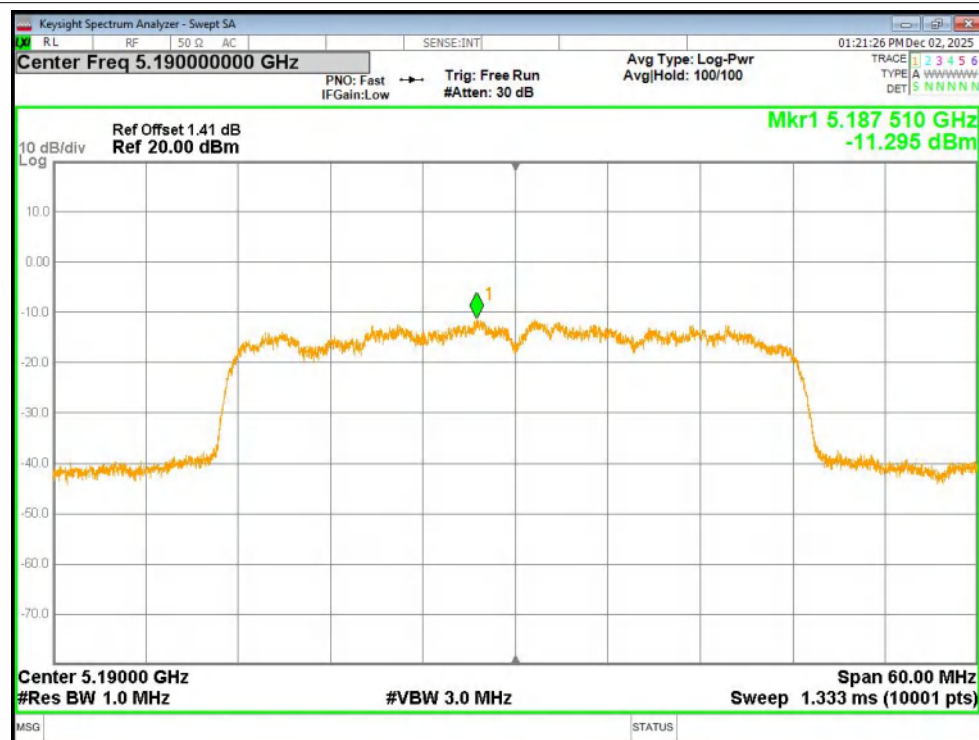
PSD NVNT n20 5240MHz Ant1



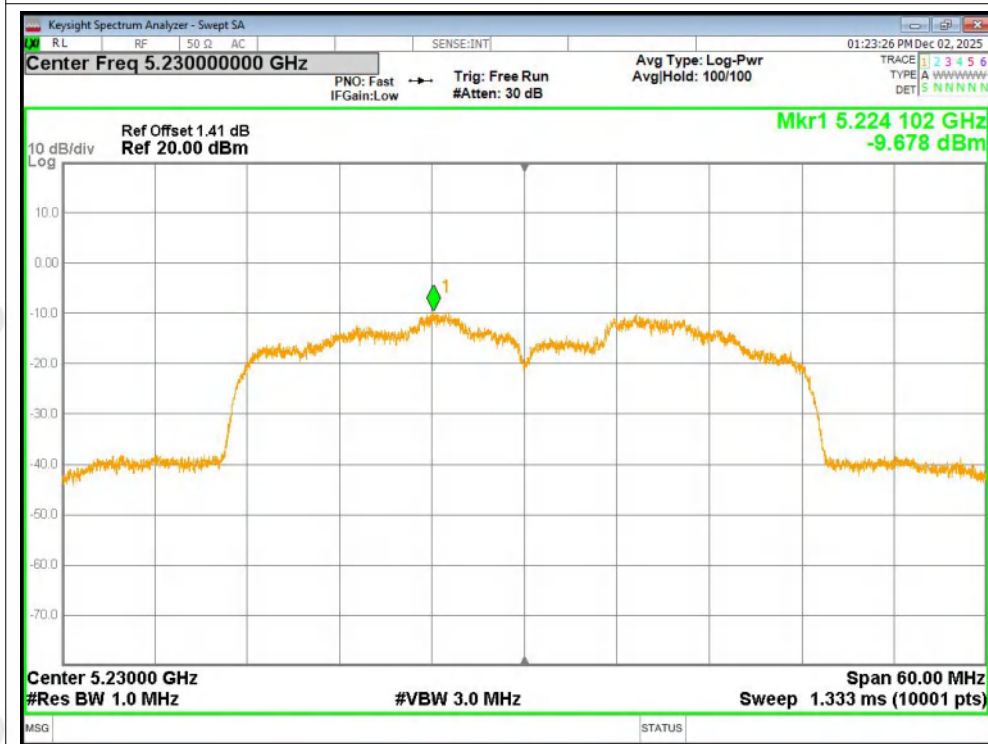


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PSD NVNT n40 5190MHz Ant1



PSD NVNT n40 5230MHz Ant1



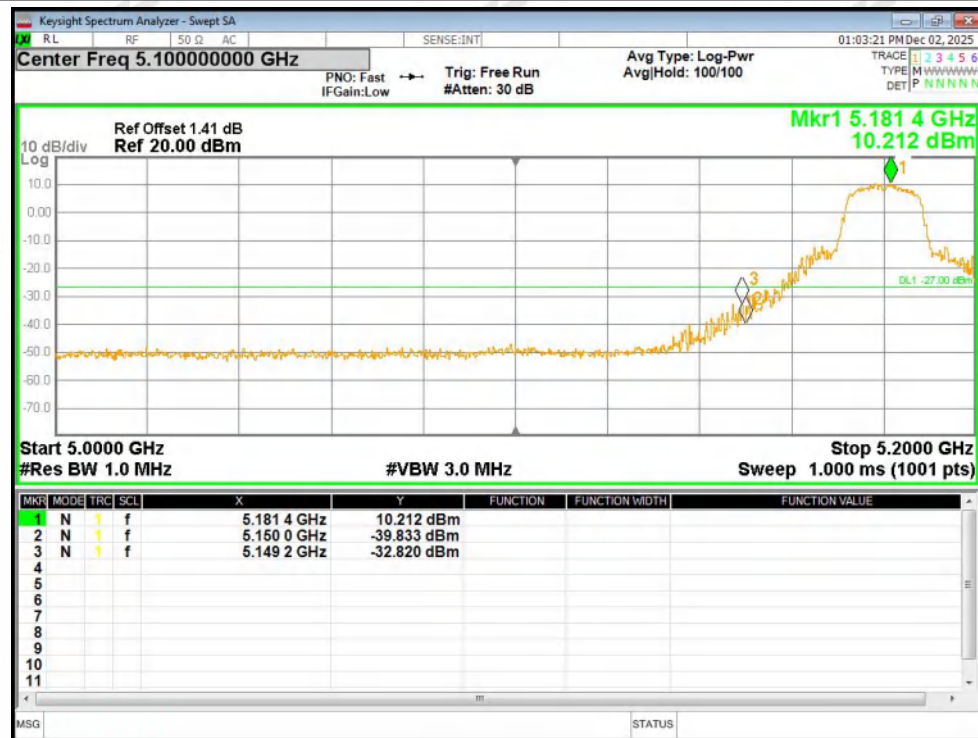
**ZHONGHAN**
Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	-32.82	-27	Pass
NVNT	a	5240	Ant1	-47.32	-27	Pass
NVNT	n20	5180	Ant1	-39.27	-27	Pass
NVNT	n20	5240	Ant1	-47.14	-27	Pass
NVNT	n40	5190	Ant1	-30.65	-27	Pass
NVNT	n40	5230	Ant1	-45.67	-27	Pass



Test Graphs

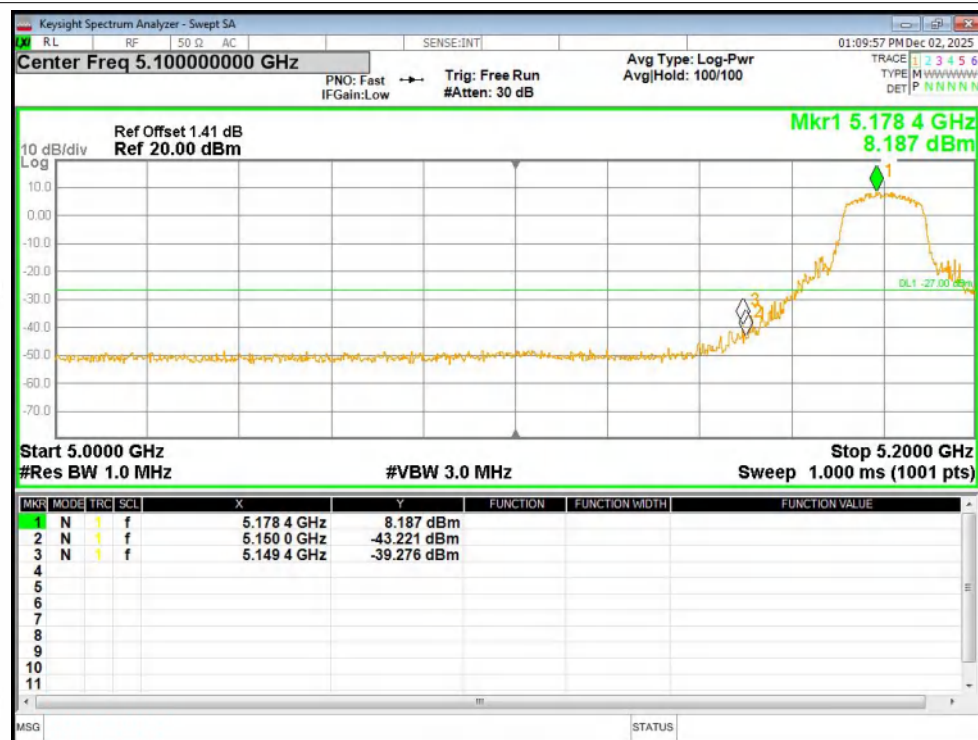
Band Edge NVNT a 5180MHz Low Ant1



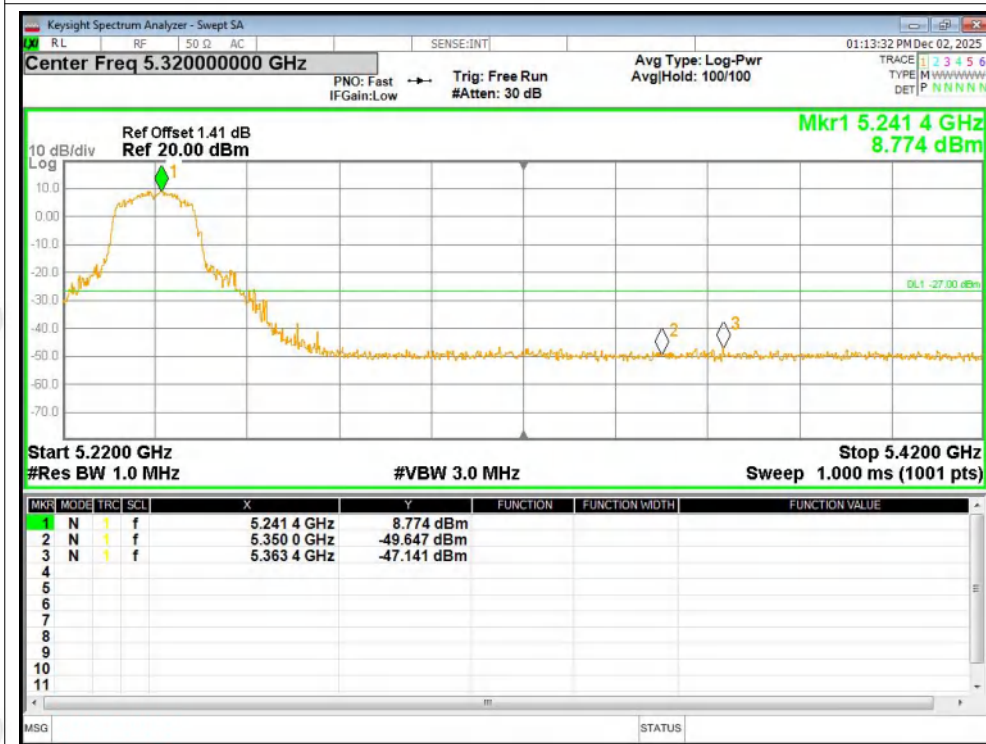
Band Edge NVNT a 5240MHz High Ant1



Band Edge NVNT n20 5180MHz Low Ant1

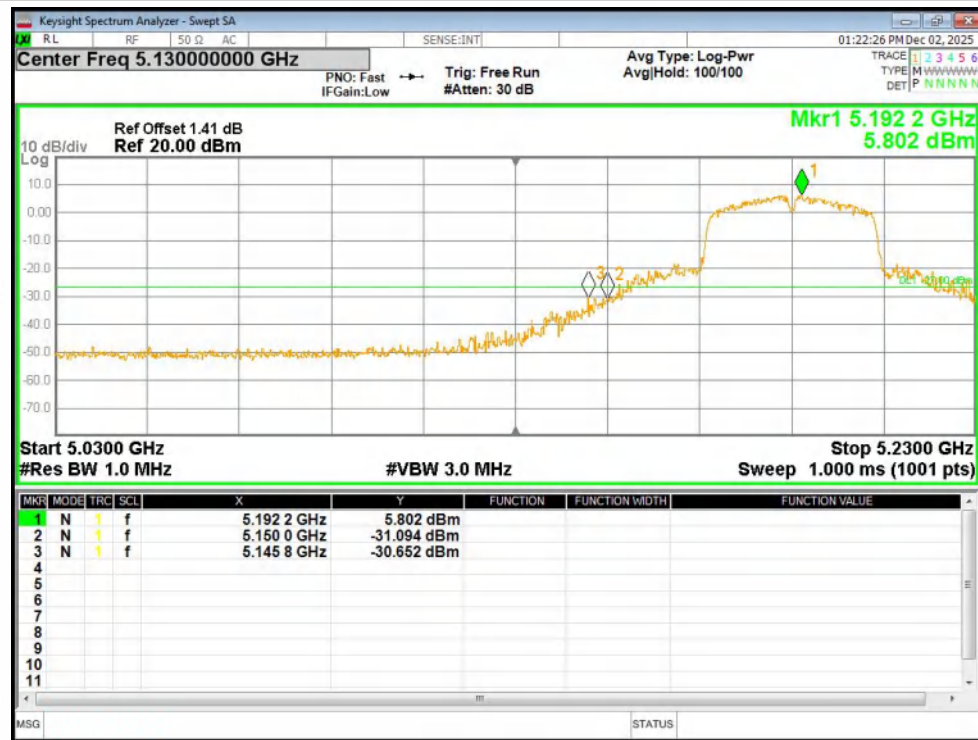


Band Edge NVNT n20 5240MHz High Ant1





Band Edge NVNT n40 5190MHz Low Ant1



Band Edge NVNT n40 5230MHz High Ant1




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Frequency Stability
Voltage

Test Mode	Channel	Voltage [Vdc]	Temperature (°C)	Measured Frequency (MHz)	Limit (MHz)	Verdict
a	5180	NV	NT	5180.08	Within 5150-5250MHz	Pass
		LV	NT	5180.04		
		HV	NT	5180.05		

Temperature

Test Mode	Channel	Voltage [Vdc]	Temperature (°C)	Measured Frequency (MHz)	Limit (MHz)	Verdict
a	5180	NV	-30	5180.07	Within 5150-5250MHz	Pass
		NV	-20	5180.05		
		NV	-10	5180.01		
		NV	0	5180.02		
		NV	10	5180.05		
		NV	20	5180.01		
		NV	30	5180.04		
		NV	40	5180.05		
		NV	50	5180.06		

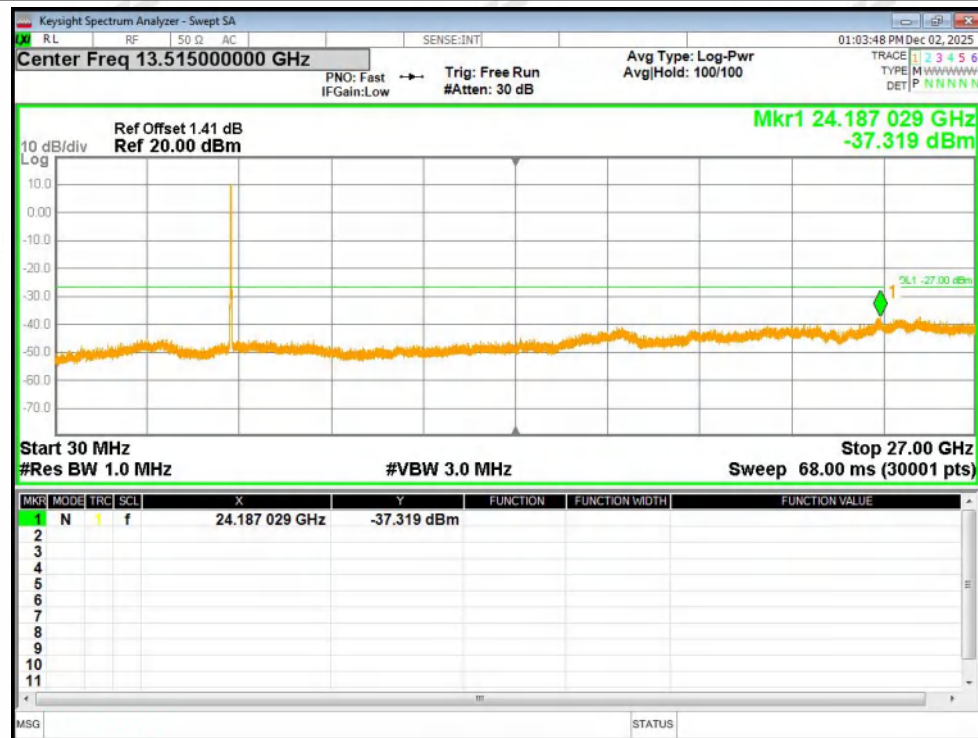
Note: Only show the worst case 802.11 a Mode 5180MHz.

Conducted RF Spurious Emission

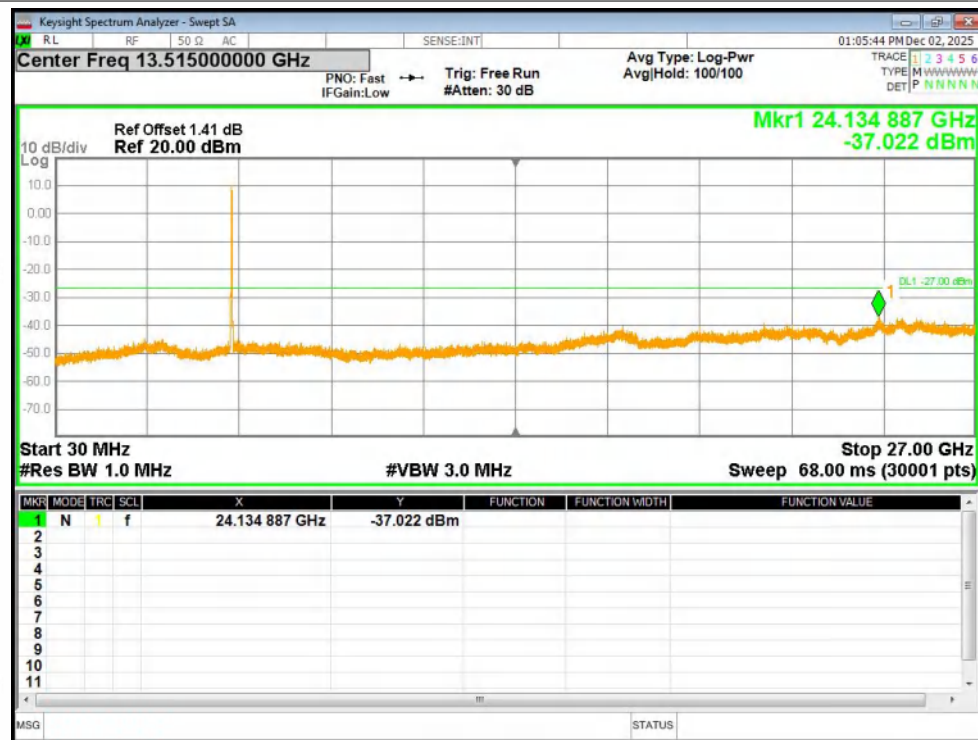
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	-37.31	-27	Pass
NVNT	a	5200	Ant1	-37.02	-27	Pass
NVNT	a	5240	Ant1	-37.21	-27	Pass
NVNT	n20	5180	Ant1	-37.42	-27	Pass
NVNT	n20	5200	Ant1	-37.34	-27	Pass
NVNT	n20	5240	Ant1	-36.92	-27	Pass
NVNT	n40	5190	Ant1	-37.01	-27	Pass
NVNT	n40	5230	Ant1	-37.01	-27	Pass

Test Graphs

Tx. Spurious NVNT a 5180MHz Ant1 Emission

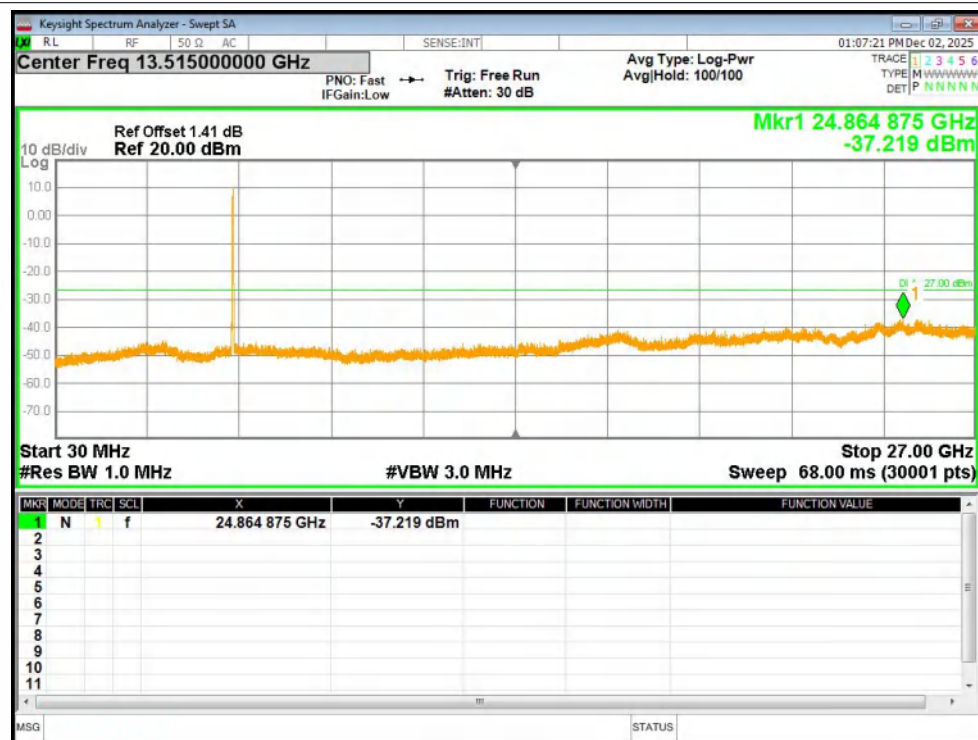


Tx. Spurious NVNT a 5200MHz Ant1 Emission

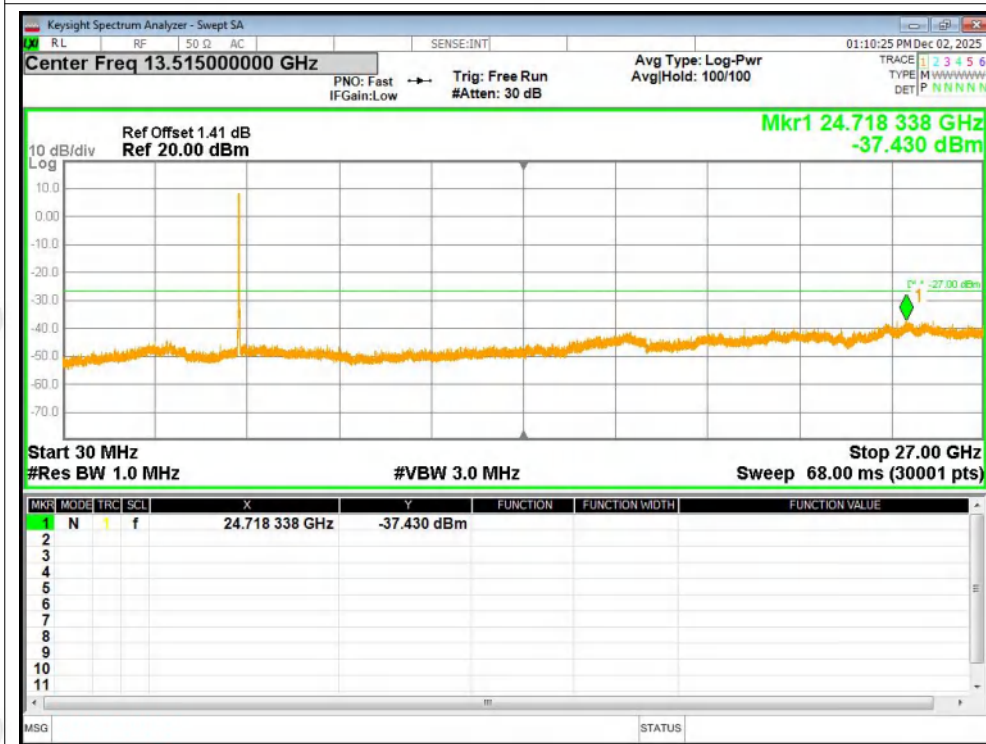




Tx. Spurious NVNT a 5240MHz Ant1 Emission



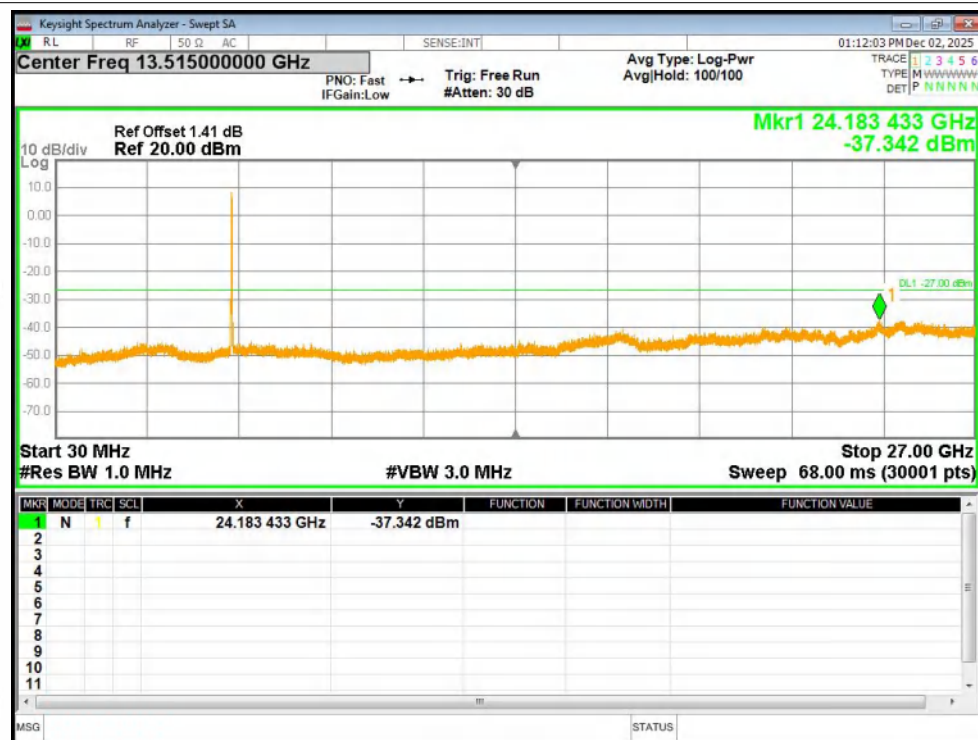
Tx. Spurious NVNT n20 5180MHz Ant1 Emission





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Tx. Spurious NVNT n20 5200MHz Ant1 Emission



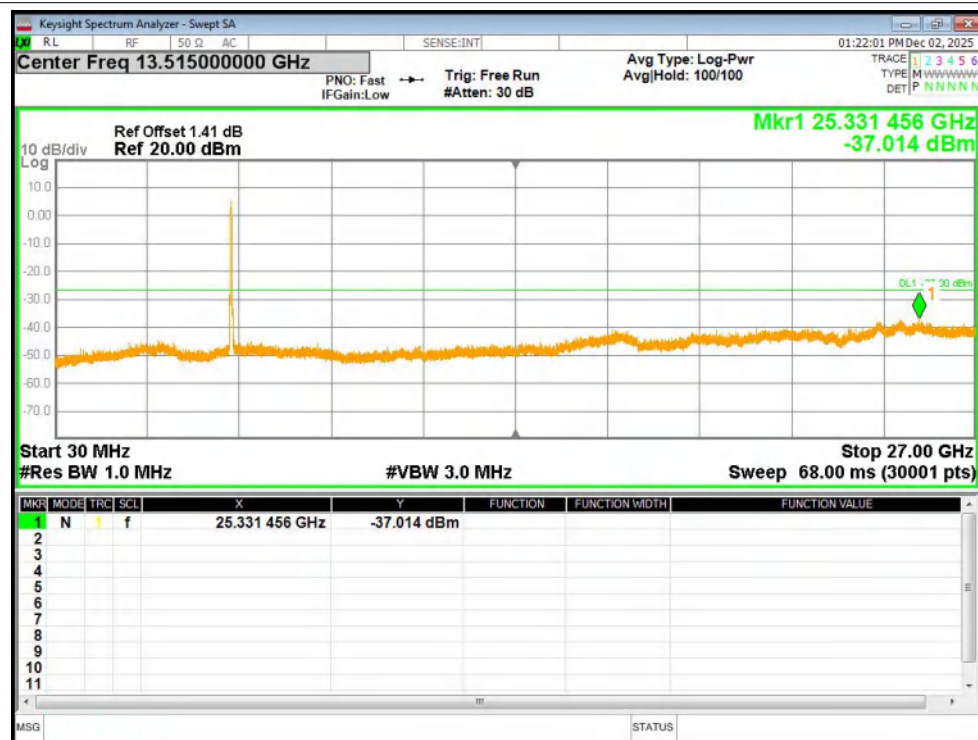
Tx. Spurious NVNT n20 5240MHz Ant1 Emission





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Tx. Spurious NVNT n40 5190MHz Ant1 Emission



Tx. Spurious NVNT n40 5230MHz Ant1 Emission

