



900 - 6000MHz - 40W Power Amplifier Test Report

Jan., 2025



Table of Contents

1	DESCRIPTION	2
2	INSPECTION BASIS	2
3	TEST PREPARATION	2
4	PERFORMANCE SPECIFICATION TESTING	3
4.1	OPERATING FREQUENCY	3
4.2	SATURATED OUTPUT POWER (PSAT)(DBM)	3
4.3	OUTPUT 1dB COMPRESSION POINT(P1DB)	4
4.4	POWER GAIN.....	5
4.5	SMALL SIGNAL GAIN FLATNESS.....	5
4.6	SPURIOUS	6
4.7	HARMONICS.....	13
4.8	IMD3	20
4.9	INPUT /OUTPUT VSWR	27
4.10	POWER CONSUMPTION.....	28
5	CONCLUSION.....	28



1 Description

The content of this report is only applicable to the power amplifier equipment developed by Acura Microwave Tech.

Product Name: Solid-State High-Power Amplifier;

Model: AMT-SPA-096-40;

Series No: 200028768;

Quantity: 1 unit

2 Inspection Basis

a) 《Power Amplifier Equipment Acceptance Outline》

b) 《Finished Unit Commissioning Standard》

Document No: ACURA-SSPA011-2018.

3 Test Preparation

Before starting the test, the following equipment and test accessories must be prepared. Details are provided in Table 3-1.

Table 1: List of Test Instruments

No.	Equipment Name	Instrument Model	QTY	Remarks
1	VNA	N5245A	1 Set	
2	Coaxial Cable Assembly	/	4 pcs	
3	Signal Generator	AT E8257D	1 Set	
4	Power Meter	NRP-Z85	1 Set	
5	Spectrum Analyzer	AT 8565EC	1 Set	
6	Directional Coupler Load Assembly	/	1 Set	



4 Performance Specification Testing

4.1 Operating Frequency

Table 4-1 Operating Frequency Test Record Form

Test Item	Spec. Requirement	Test Result
Operating Frequency	900-6000 MHz	900-6000 MHz
Conclusion	Compliant	
Inspection Personnel		
Test Date	Jan., 4 th , 2025	

4.2 Saturated Output Power

Table 4-2 Saturated Output Power Record Form

Test Item	Spec. Requirement
Saturated Output Power (P _{sat})	46dBm (40W) Typ
	Test Result
Frequency	Output/ dBm
0.9 GHz	46.08 dBm
1 GHz	46.17 dBm
1.5 GHz	46.25 dBm
2 GHz	46.01 dBm
2.5 GHz	46.17 dBm
3 GHz	46.10 dBm
3.5 GHz	46.07 dBm
4 GHz	46.20 dBm
4.5 GHz	46.16 dBm
5 GHz	46.19 dBm
5.5 GHz	46.17 dBm



6 GHz	46.06 dBm
Conclusion	Compliant
Inspection Personnel	
Test Date	Jan., 4 th , 2025

4.3 Output 1dB Compression Point(P1dB)

Table 4-3 Output 1dB Compression Point(P1dB) Record Form

Test Item	Spec. Requirement
Output 1dB Compression Point(P1dB)	41dB Typ.
Frequency	Test Result
	P1dB
0.9 GHz	45.57 dBm
1 GHz	45.94 dBm
1.5 GHz	46.06 dBm
2 GHz	45.49 dBm
2.5 GHz	43.19 dBm
3 GHz	43.26 dBm
3.5 GHz	42.95 dBm
4 GHz	43.34 dBm
4.5 GHz	43.00 dBm
5 GHz	43.33 dBm
5.5 GHz	43.18 dBm
6 GHz	43.12 dBm
Conclusion	Compliant
Inspection Personnel	
Test Date	Jan., 4 th , 2025



4.4 Power Gain

Table 4-4 Power Gain Record Form

Test Item	Spec. Requirement
Power Gain	50dB Typ.
Frequency	Test Result
0.9 GHz	55.98 dB
1 GHz	55.13 dB
1.5 GHz	57.46 dB
2 GHz	58.03 dB
2.5 GHz	56.76 dB
3 GHz	56.86 dB
3.5 GHz	55.97 dB
4 GHz	54.26 dB
4.5 GHz	55.85 dB
5 GHz	54.51 dB
5.5 GHz	53.61 dB
6 GHz	52.61 dB
Conclusion	Compliant
Inspection Personnel	
Test Date	Jan., 4 th , 2025

4.5 Small Signal Gain Flatness

Table 4-5 Small Signal Gain Flatness Record Form

Test Item	Spec. Requirement	Test Result
Gain Flatness	±3 dB Max.	±2.855 dB
Conclusion	Compliant	
Inspection Personnel		
Test Date	Jan., 4 th , 2025	



Figure 1: Gain Flatness Test Result

4.6 Spurious

Table 4-6: Spurious Test Record Form

Test Item	Spec. Requirement	Frequency	Test Result
Spurious	-60dBc Typ.	0.9 GHz	-70.66 dBc
		1 GHz	-68.33 dBc
		1.5 GHz	-64.66 dBc
		2 GHz	-65.83 dBc
		2.5 GHz	-68.17 dBc
		3 GHz	-68.50 dBc
		3.5 GHz	-68.33 dBc
		4 GHz	-72.00 dBc
		4.5 GHz	-66.67 dBc
		5 GHz	-69.94 dBc
		5.5 GHz	-69.67 dBc
6 GHz	-77.50 dBc		
Conclusion	Compliant		
Inspection Personnel			
Test Date	Jan., 4 th , 2025		

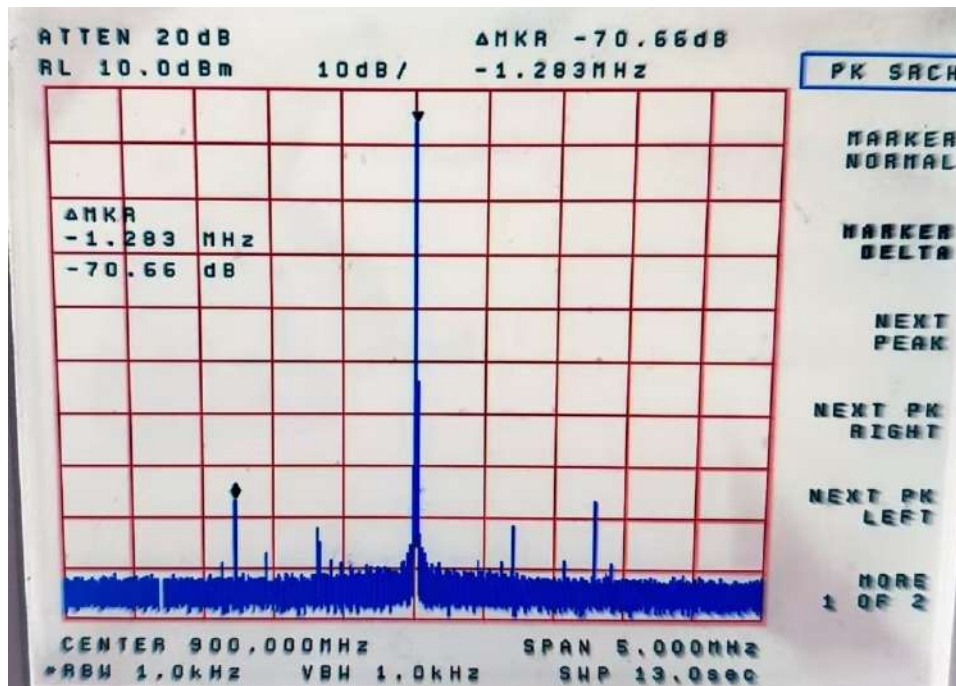


Figure2 0.9GHz Spurious Test Result

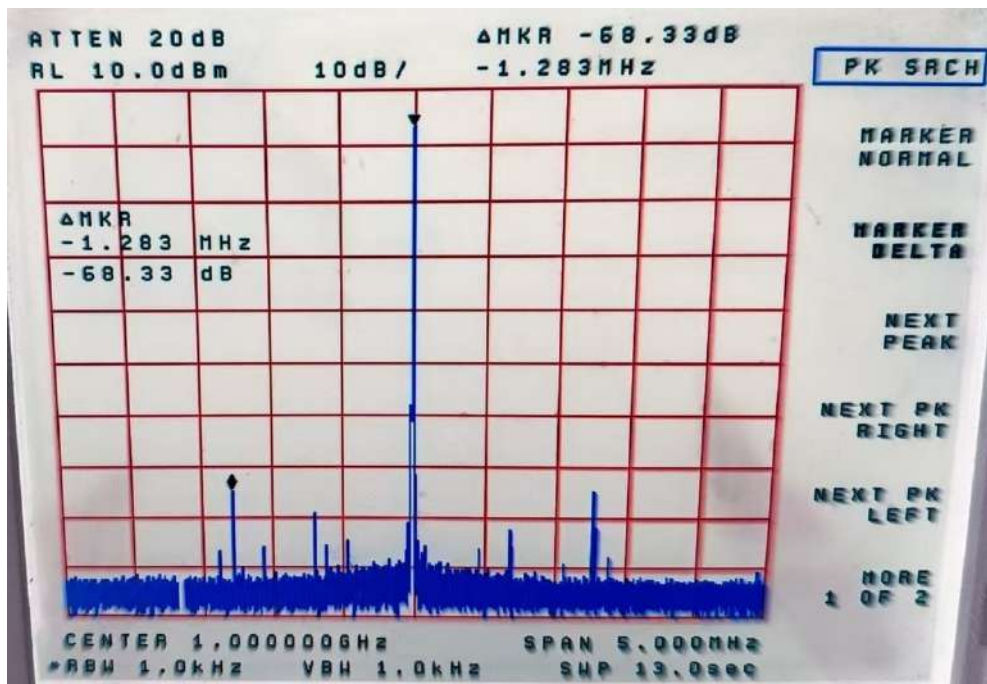


Figure 3 1.0GHz Spurious Test Result

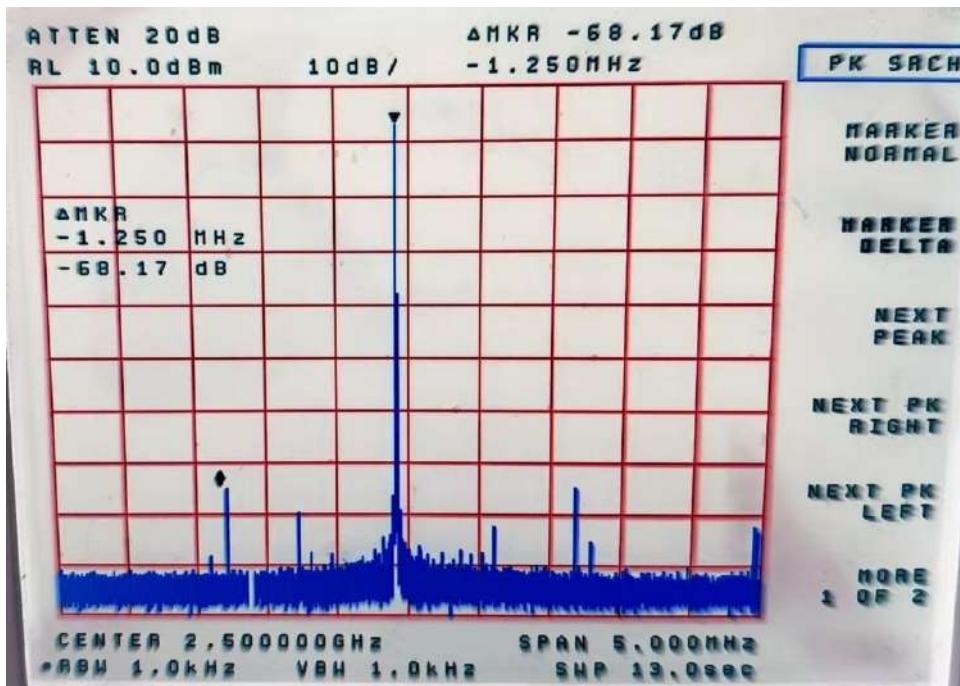


Figure 6 2.5GHz Spurious Test Result

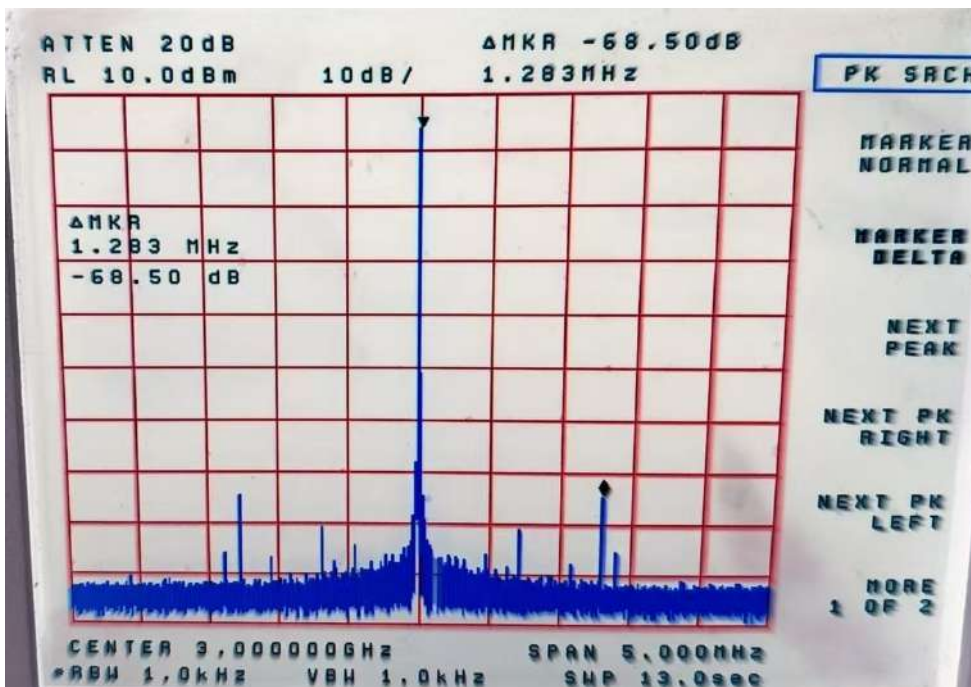


Figure 7 3.0GHz Spurious Test Result

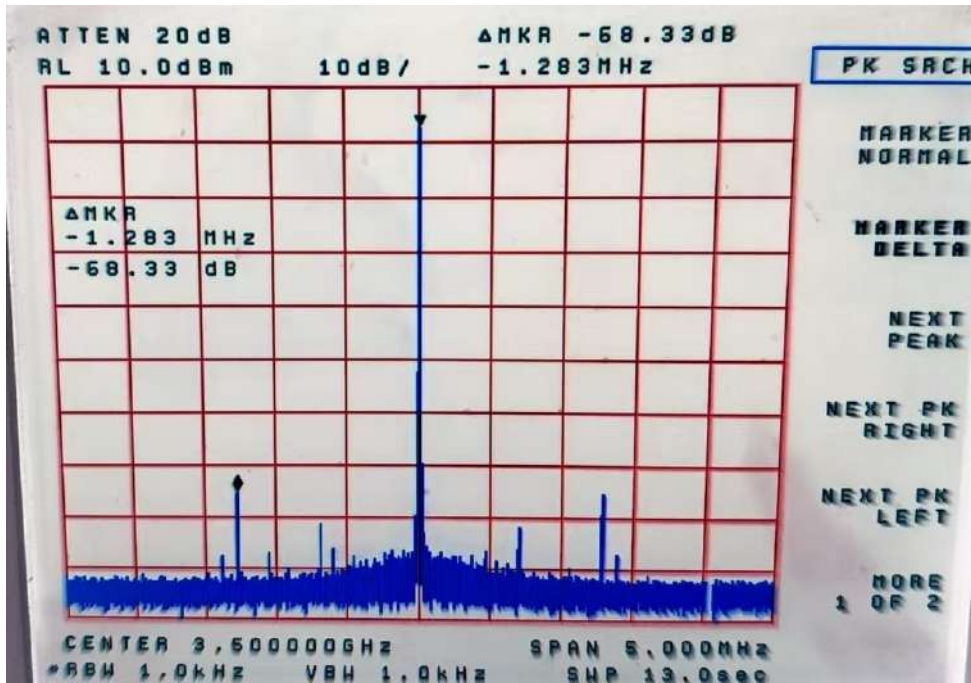


Figure 8 3.5GHz Spurious Test Result

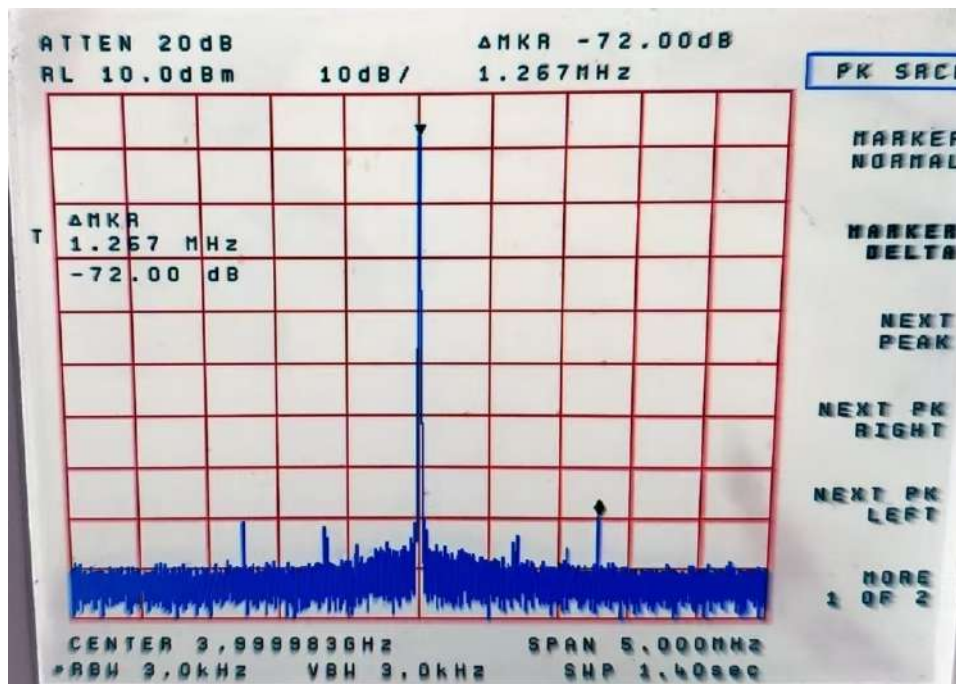


Figure 9 4.0GHz Spurious Test Result

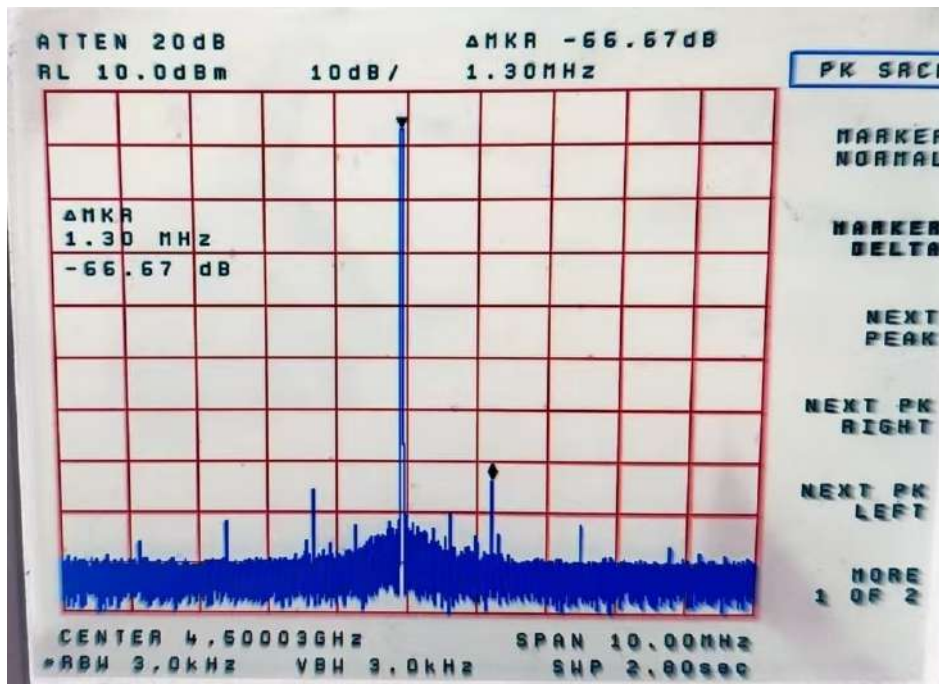


Figure 10 4.5GHz Spurious Test Result

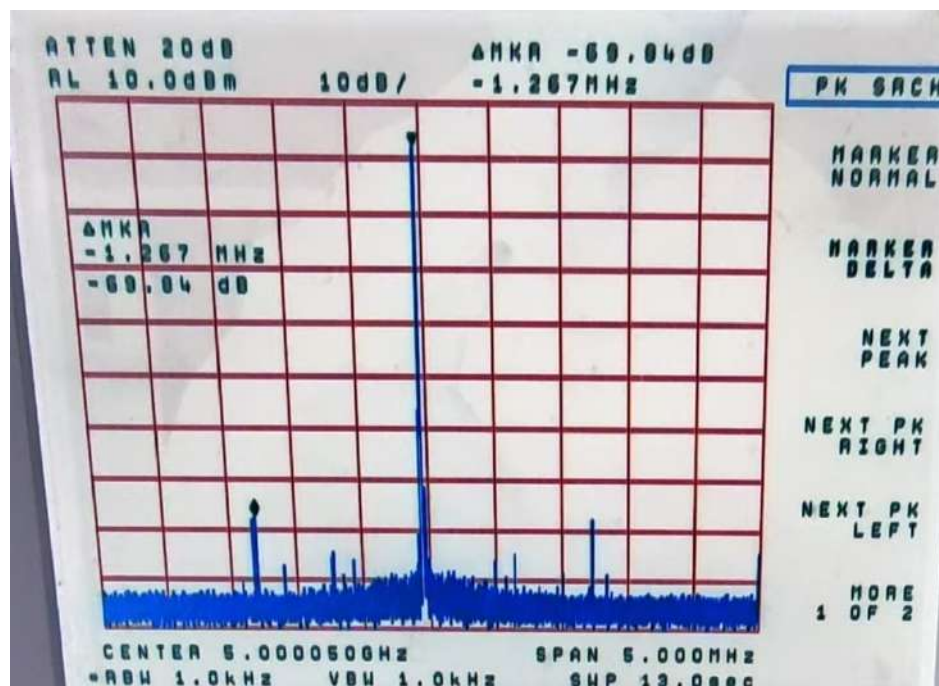


Figure 11 5.0GHz Spurious Test Result

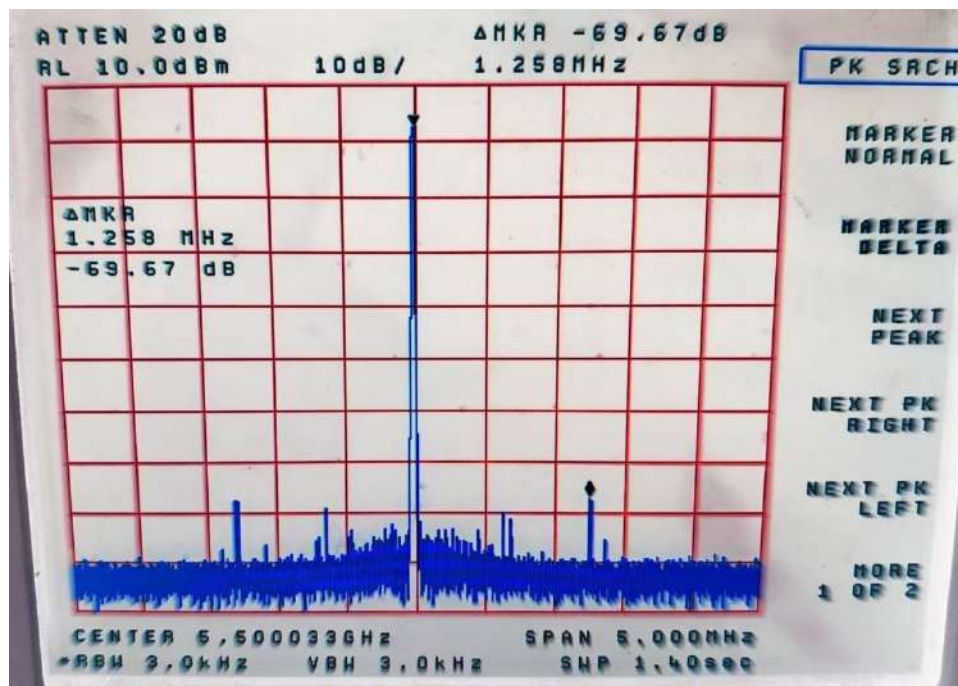


Figure 12 5.5GHz Spurious Test Result

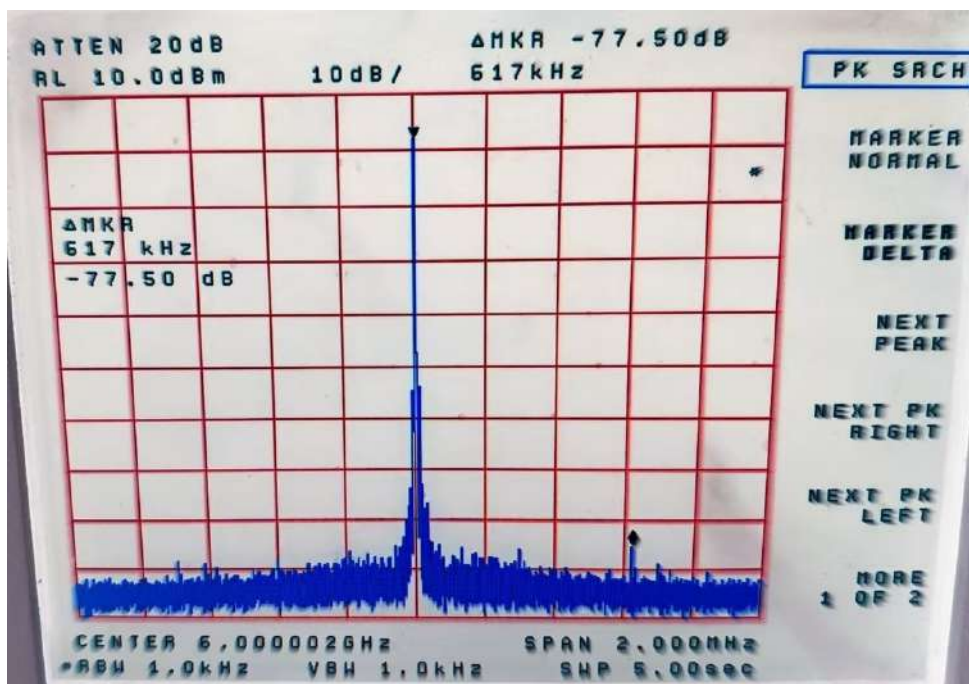


Figure 13 6.0GHz Spurious Test Result



4.7 Harmonics

Table 4-2 Harmonics Test Record Form

Test Item	Spec. Requirement	Frequency	Test Result
Harmonics	-44dBc Min. -12.6dBc Max.	0.9 GHz	-13.50 dBc
		1 GHz	-12.84 dBc
		1.5 GHz	-16.17 dBc
		2 GHz	-19.83 dBc
		2.5 GHz	-17.33 dBc
		3 GHz	-18.67 dBc
		3.5 GHz	-32.84 dBc
		4 GHz	-26.83 dBc
		4.5 GHz	-31.66 dBc
		5 GHz	-36.67 dBc
		5.5 GHz	-41.16 dBc
		6 GHz	-43.67 dBc
Conclusion	Compliant		
Inspection Personnel			
Test Date	Jan., 4 th , 2025		

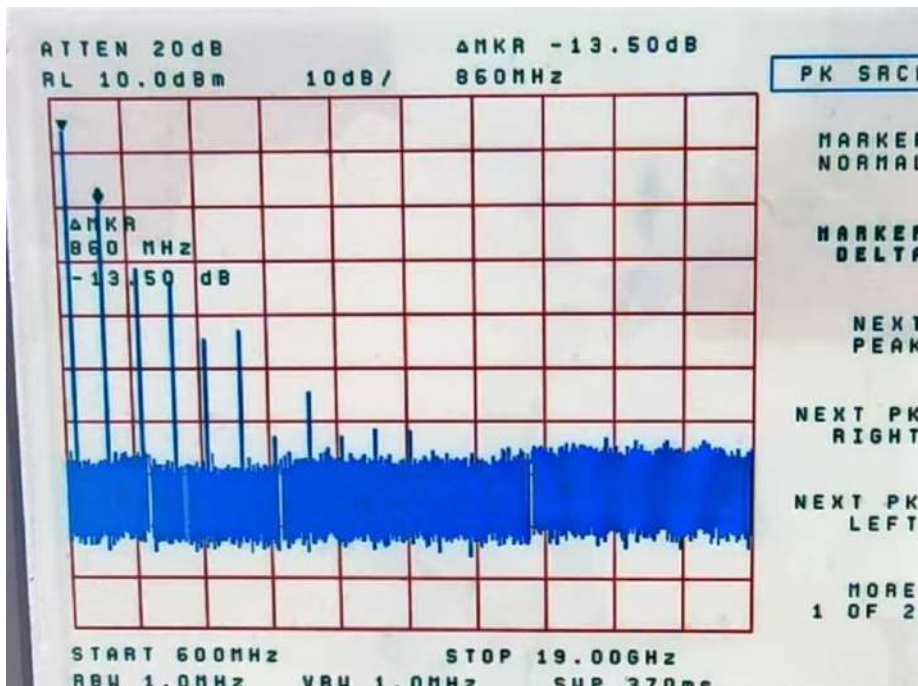


Figure 14 0.9GHz Second Harmonic Test Result

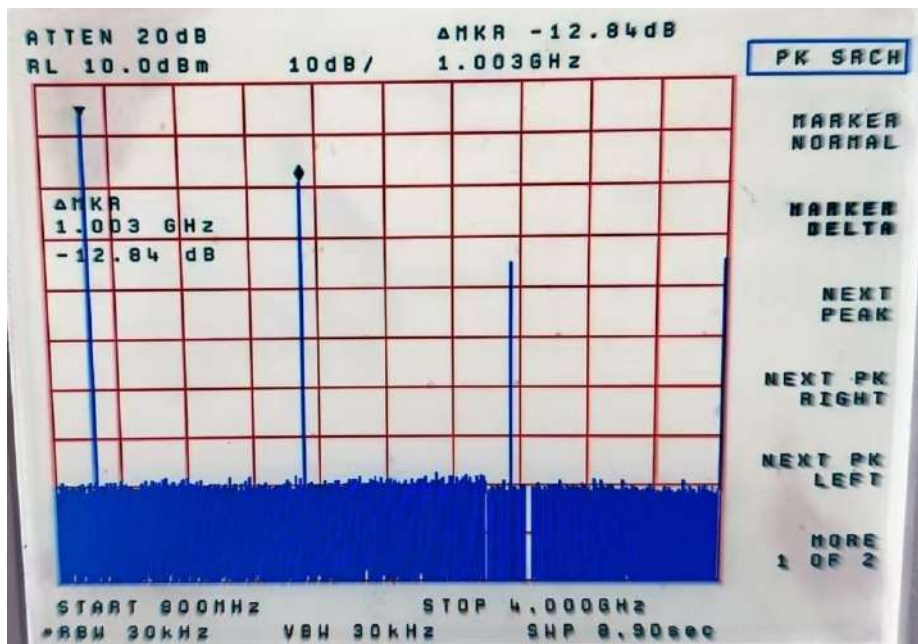


Figure 5 1.0GHz Second Harmonic Test Result

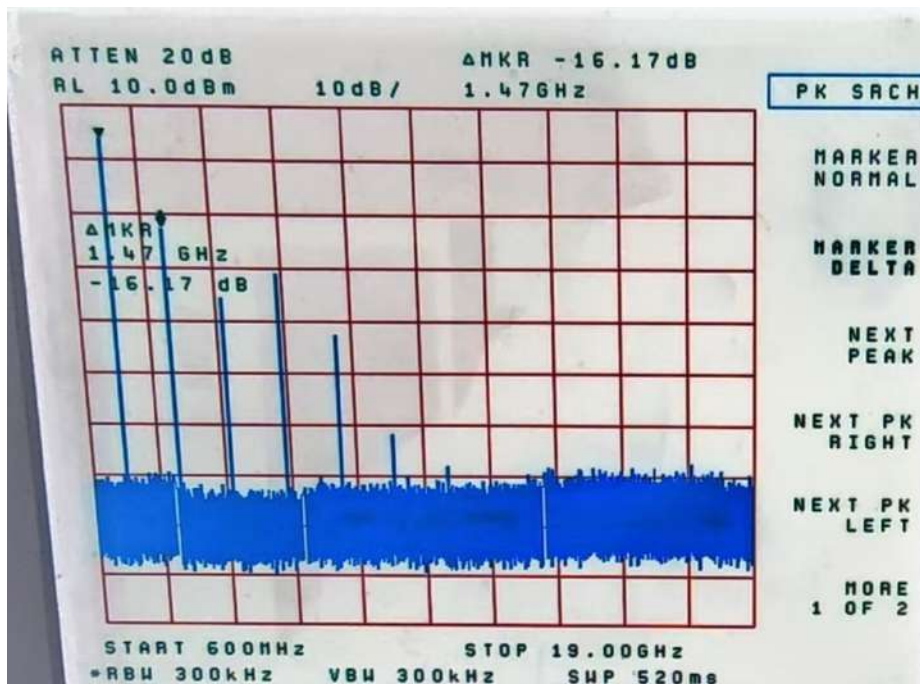


Figure 16 1.5GHz Second Harmonic Test Result

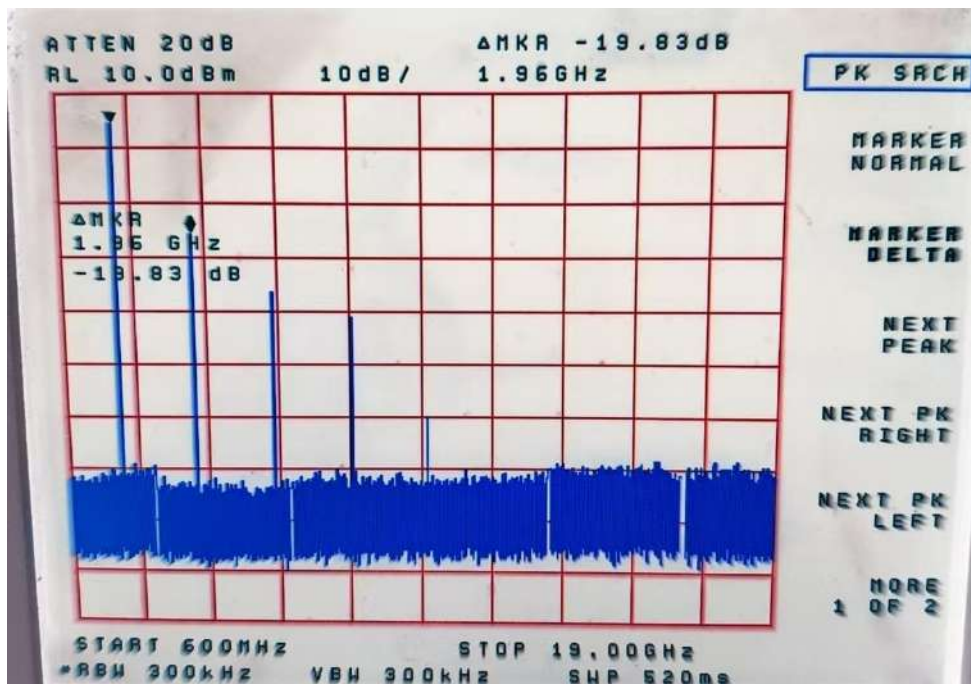


Figure 17 2.0GHz Second Harmonic Test Result

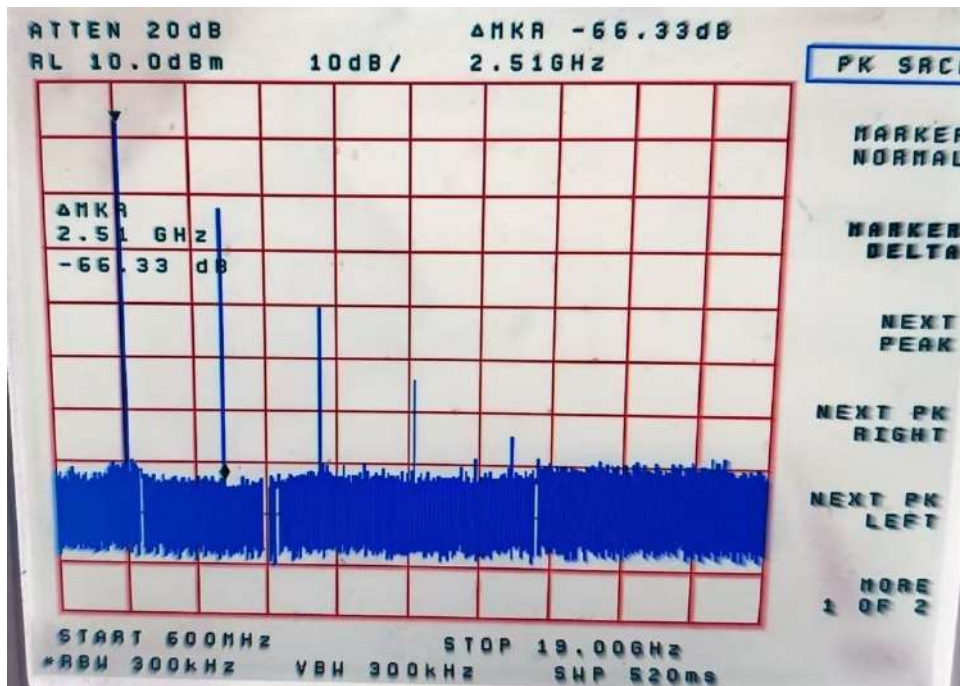


Figure 18 2.5GHz Second Harmonic Test Result

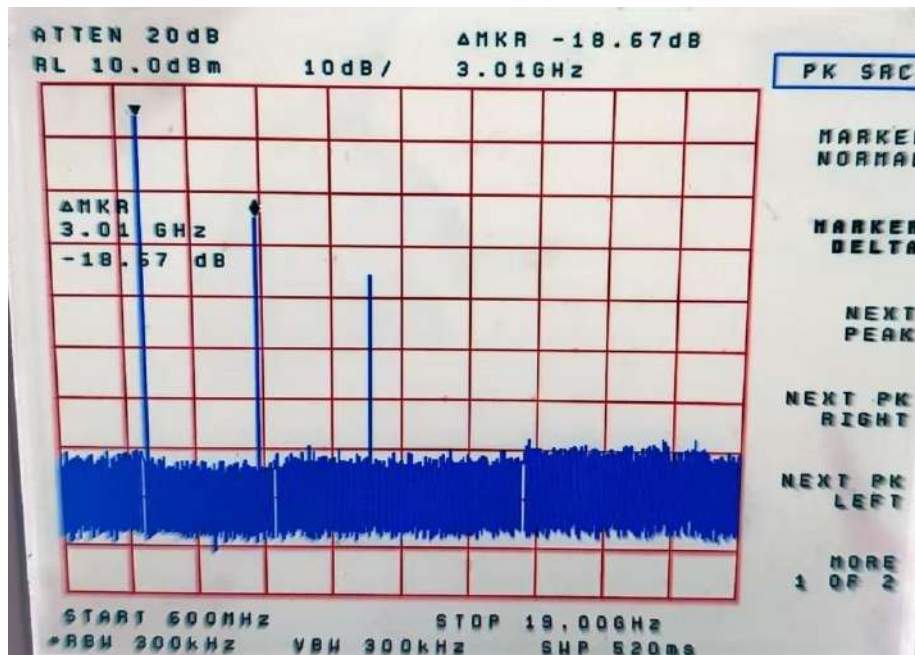


Figure 19 3.0GHz Second Harmonic Test Result

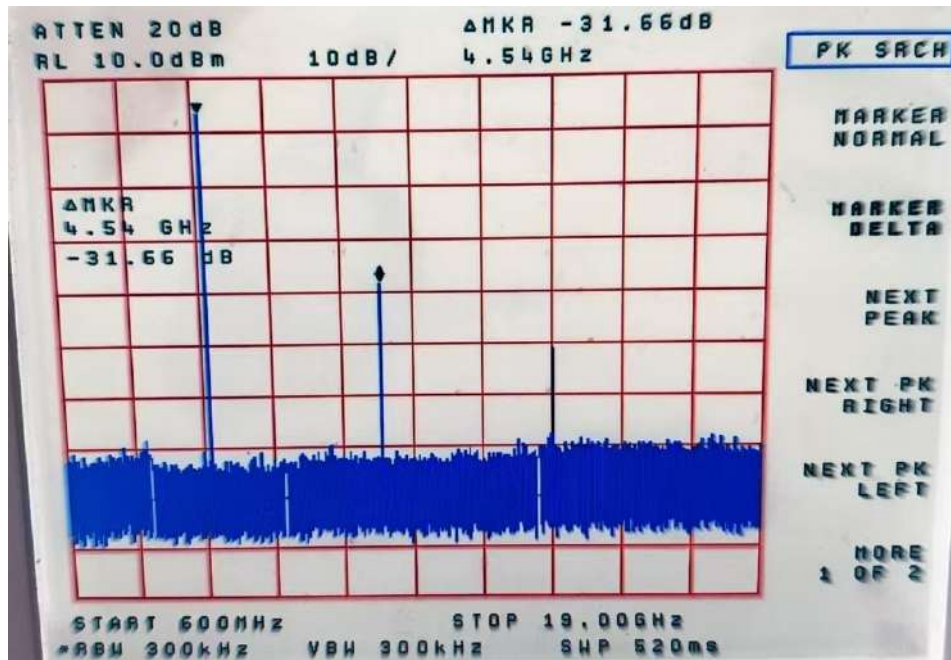


Figure 22 4.5GHz Second Harmonic Test Result

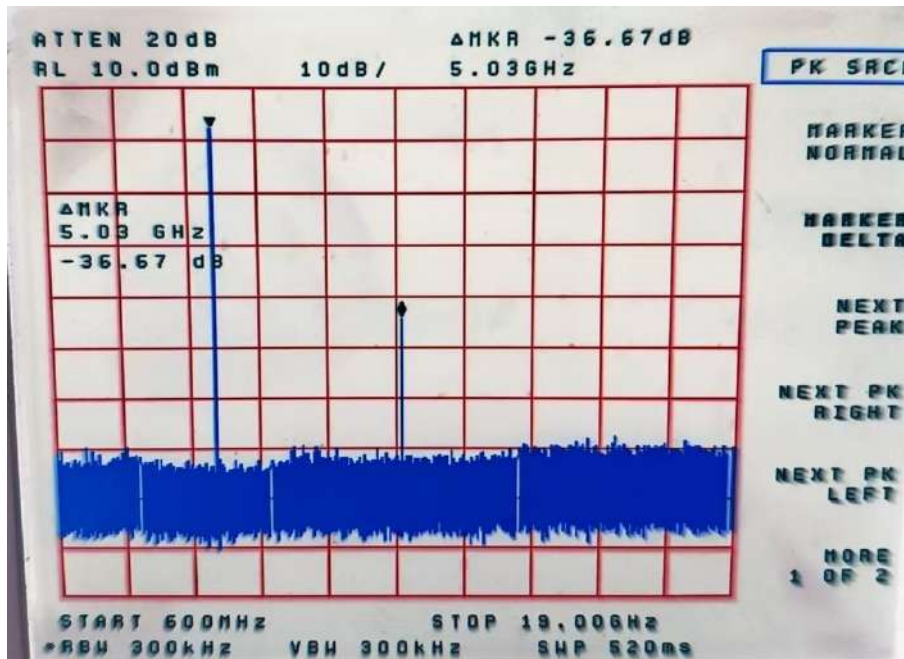


Figure 23 5.0GHz Second Harmonic Test Result

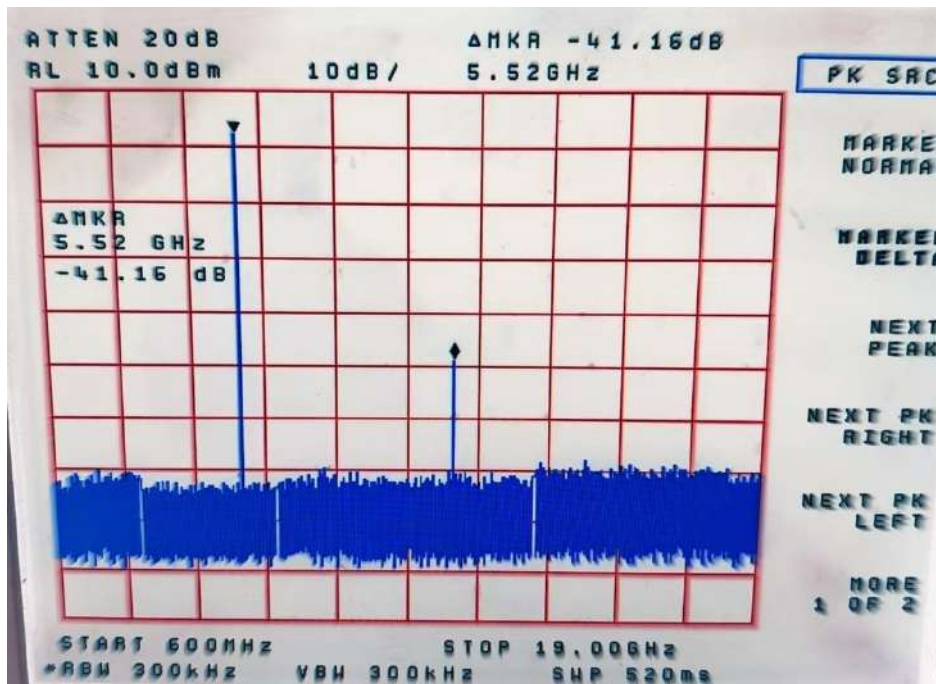


Figure 23 5.5GHz Second Harmonic Test Result

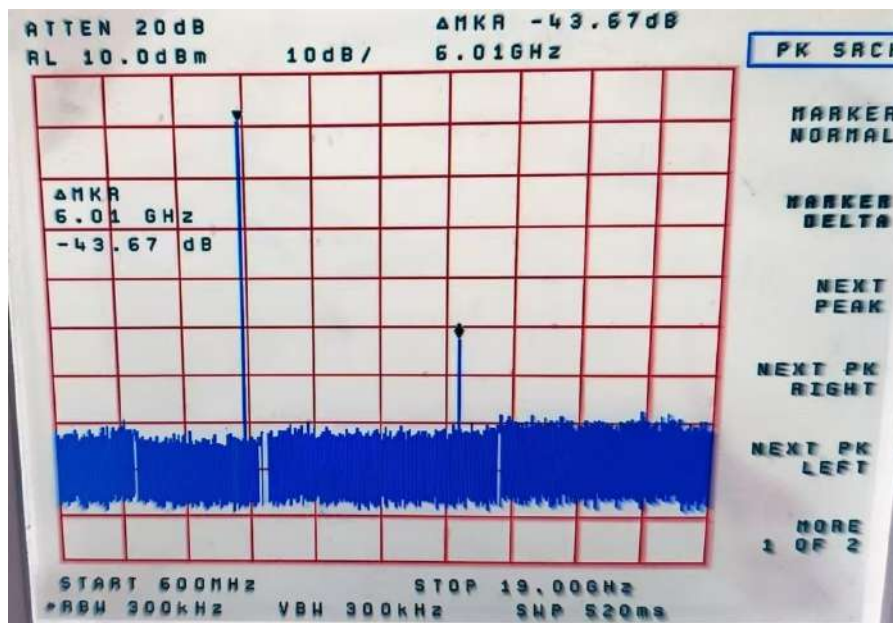


Figure 24 6.0GHz Second Harmonic Test Result



4.8 IMD3

Table 4-3 IMD3 Test Record Form

Test Item	Spec. Requirement	Frequency	Test Result
IMD3	-34 dBc Min. -27 dBc Typ. -23 dBc Max.	0.9 GHz	-27.57 dBc
		1 GHz	-27.23 dBc
		1.5 GHz	-30.87 dBc
		2 GHz	-33.79 dBc
		2.5 GHz	-25.42 dBc
		3 GHz	-29.10 dBc
		3.5 GHz	-25.83 dBc
		4 GHz	-26.45 dBc
		4.5 GHz	-26.86 dBc
		5 GHz	-25.13 dBc
		5.5 GHz	-27.20 dBc
6 GHz	-23.02 dBc		
Conclusion			
Inspection Personnel			
Test Date	Jan., 4 th , 2025		



Figure 26 0.9GHz IMD3 Test Result



Figure 27 1.0GHz IMD3 Test Result



Figure 28 1.5GHz IMD3 Test Result

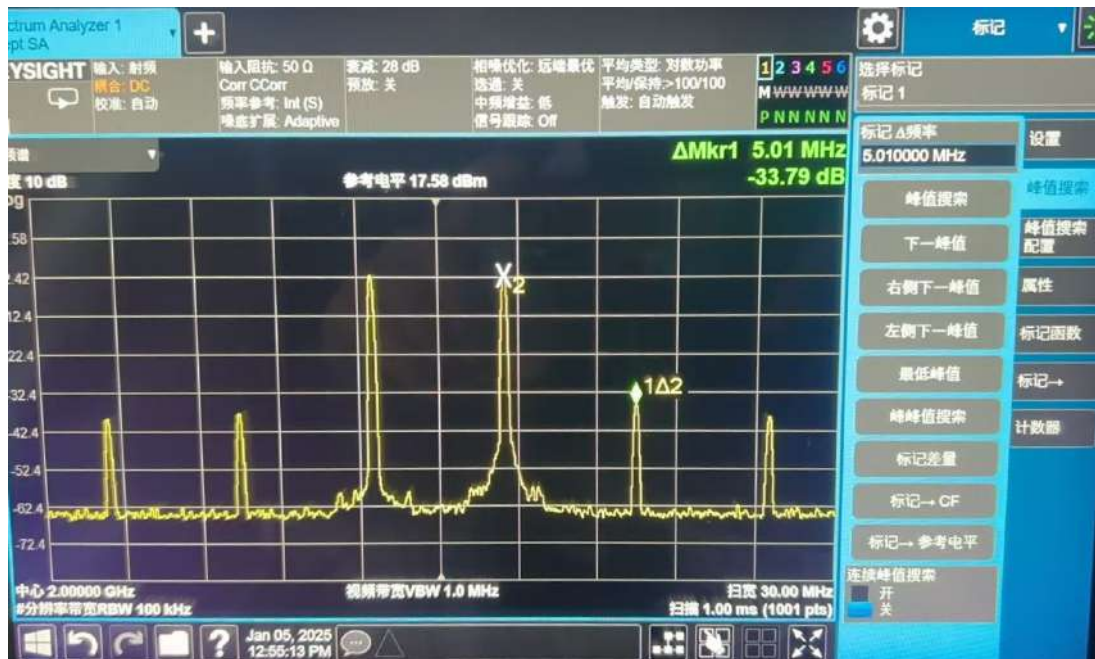


Figure 29 2.0GHz IMD3 Test Result



Figure 30 2.5GHz IMD3 Test Result



Figure 31 3.0GHz IMD3 Test Result

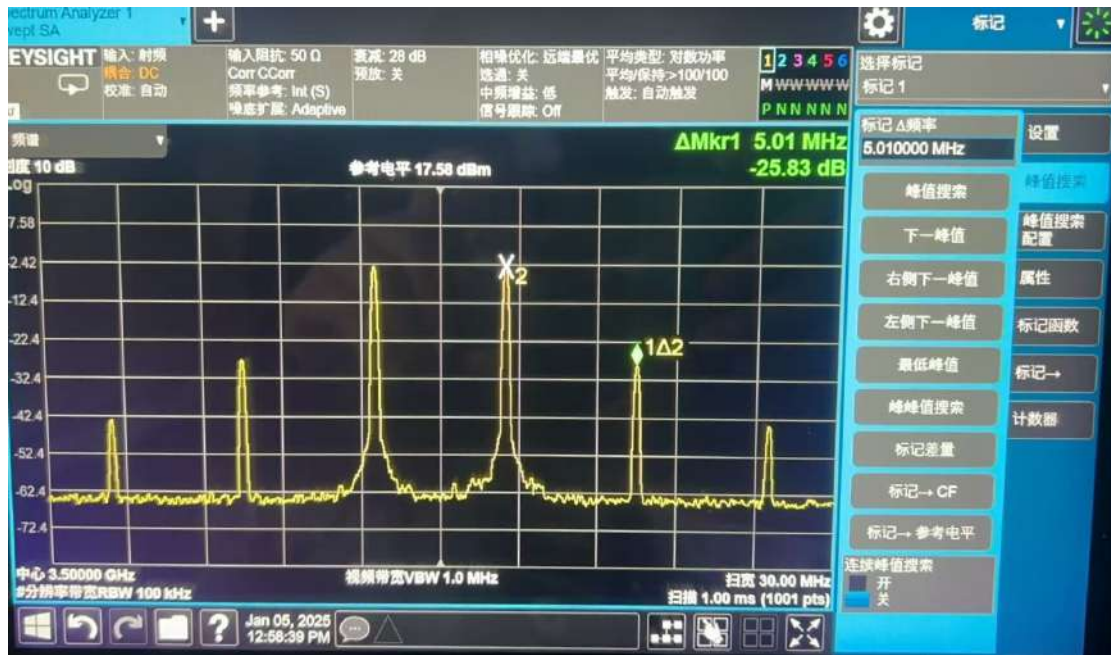


Figure 32 3.5GHz IMD3 Test Result



Figure 33 4.0GHz IMD3 Test Result



Figure 34 4.5GHz IMD3 Test Result

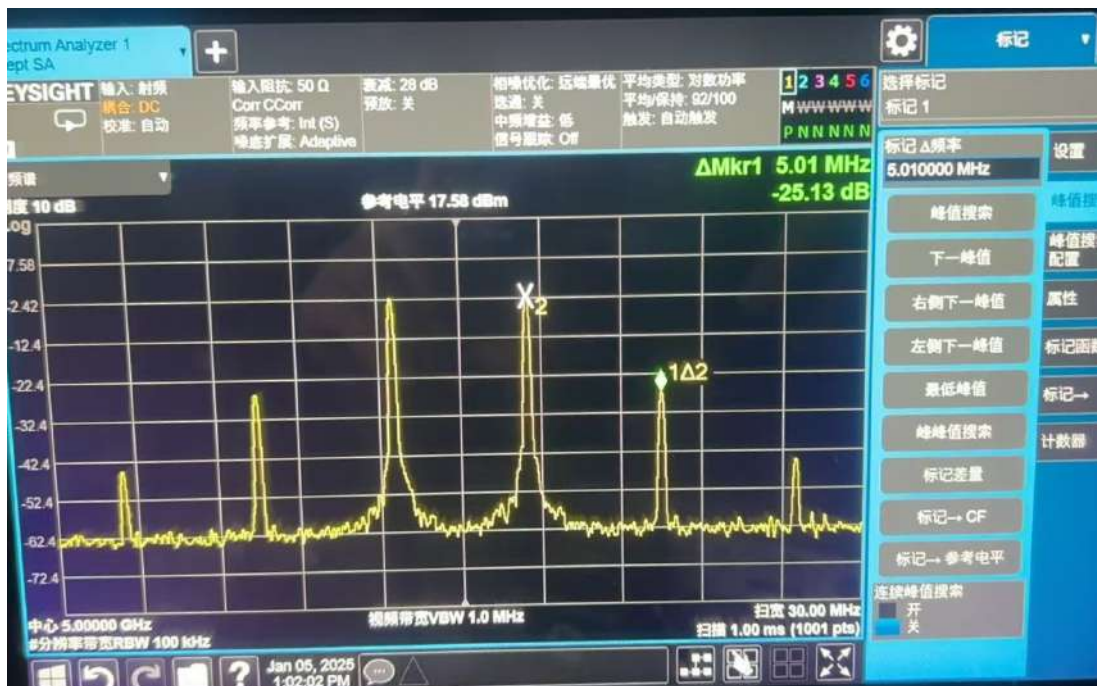


Figure 35 5.0GHz IMD3 Test Result



Figure 36 5.5GHz IMD3 Test Result



Figure 37 6.0GHz IMD3 Test Result



4.9 Input /Output VSWR

Table 4-9: Input /Output VSWR Test Record Form

Test Item	Spec. Requirement	Test Result
Input VSWR	1.5 Typ. 1.8 Max.	1.2 Typ. 1.75 Max.
Output VSWR	1.8 Typ.	1.5 Typ. 1.94 Max.
Conclusion	Compliant	
Inspection Personnel		
Test Date	Jan., 4 th , 2025	

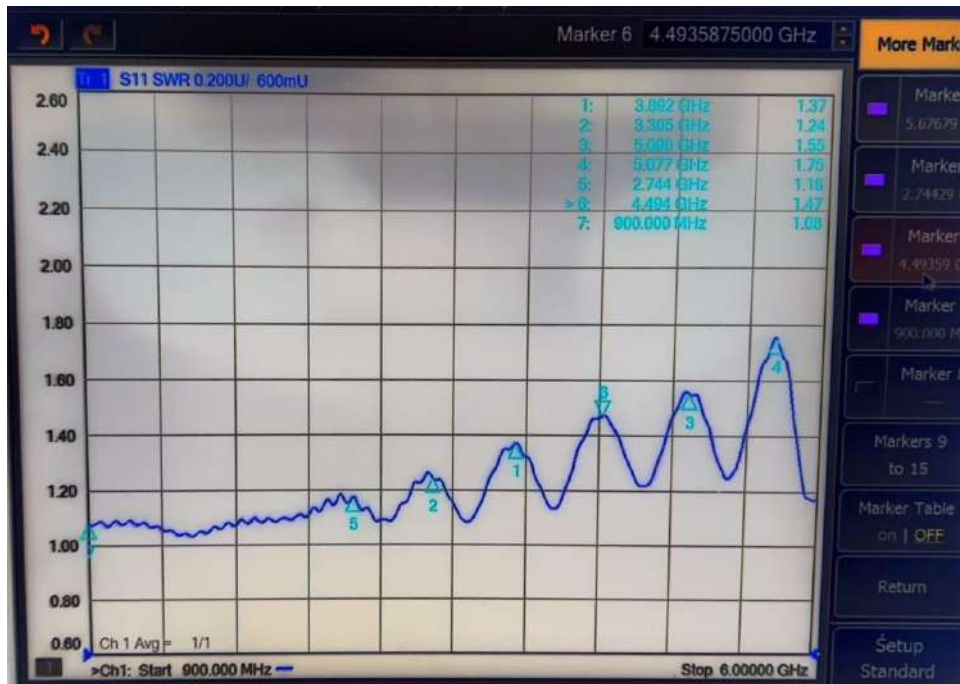


Figure 38: Input VSWR Test Result

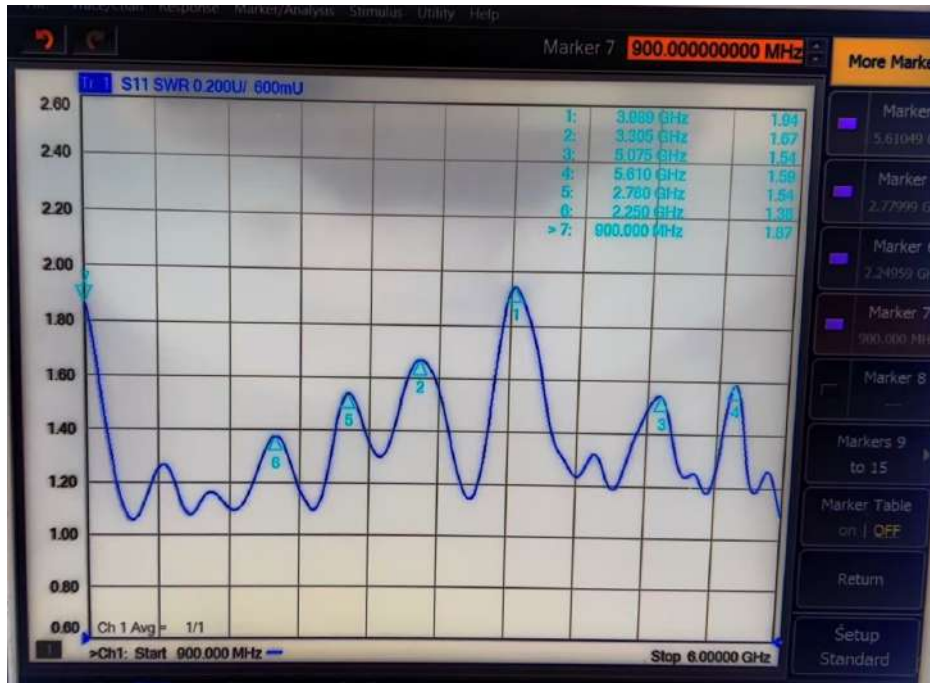


Figure 39: Output VSWR Test Result

4.10 Power Consumption

Table 4-10 Power Consumption Test Record Form

Test Item	Spec. Requirement	Test Result
Power Consumption	300w Max.	250w Max.
Conclusion	Compliant	
Inspection Personnel		
Test Date	Jan., 4 th , 2025	

5 Conclusion

Based on the comprehensive testing conducted on the solid-state high-power amplifier module, the product's performance specification fully comply with the technical specifications outlined in the "Technical Agreement for Solid-State High-Power Amplifier Modules