

5.5-5.65GHz-2.5Kw

Power Amplifier Test Report

November, 28th, 2024



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1 Introduction

Product Name: Solid-State High-Power Amplifier Module;

Model No.: AMT-SPA5556-2500P;

Series No.: 200028655

Quantity: 1 unit

2 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	
7	Signal Generator	DG4202	1 Set	

3 Functional Specification Testing

Table 2: Functional Test Record Form

No.	Test Item	Test Result	Remarks
1	Capability for pulse signal power amplification	Compliant	
2	Amplifier has over-voltage protection, under-voltage protection, over-current protection, over-reflection protection, over-temperature protection, pulse width limit, duty cycle limit, and repetition rate protection functions	Compliant	
3	Has working status indicator light	Compliant	



4 Performance Specification Testing

4.1 Operating Frequency

Table 3: Operating Frequency Test Record Form

Test Item	Test Result	Remarks
Operating Frequency	5.5GHz-5.65GHz	
Spec. Requirement	Operating Frequency: 5.5GHz-5.65GHz	
Conclusion: Compliant		Test Date:

4.2 Rated Output Pulse Power

Table 4: Rated Output Pulse Power Test Record Form

Test Item	Test Result	Remarks
Rated Output Pulse Power	$\geq 2500W$	
Spec. Requirement	Rated Output Pulse Power: $\geq 2500W$ (64dBm)	
Conclusion: Compliant		Test Date:

4.3 Maximum Input Power

Table 5: Maximum Input Power Test Record Form

Test Item	Test Result	Remarks
Maximum Input Power	+3dBm	
Spec. Requirement	Maximum Input Power: $\leq +7dBm$	
Conclusion: Compliant		Test Date:



4.4 Power Gain

Table 6: Power Gain Test Record Form

Test Item	Test Result	Remarks
Power Gain	64.33dB-64.44dB	
Spec. Requirement	Power Gain: ≥ 57 dB	
Conclusion: Compliant		Test Date:

4.5 Power Gain Flatness

Table 7: Power Gain Flatness Test Record Form

Test Item	Test Result	Remarks
Power Gain Flatness	$\leq \pm 0.06$ dB	
Spec. Requirement	Power Gain Flatness: $\leq \pm 1.0$ dB	
Conclusion: Compliant		Test Date:

Table 8: Output Power and Power Gain Test Data

Frequency (GHz)	Input Cable Loss (dB)	Input (dBm)	Output (dBm)	Actual Power Gain (dB) (Output - Input + Cable Loss)
5.5	3.13	3	64.20	64.33
5.52	3.12	3	64.22	64.34
5.54	3.13	3	64.23	64.36
5.56	3.17	3	64.18	64.35
5.58	3.19	3	64.22	64.41
5.6	3.21	3	64.14	64.35
5.62	3.22	3	64.21	64.43
5.64	3.25	3	64.19	64.44
5.65	3.25	3	64.16	64.41

4.6 Modulation Type, Pulse Width, Duty Cycle

Table 9: Modulation Type, Pulse Width, and Duty Cycle Test Record Form

Test Item	Test Result	Remarks
Modulation Type	Drain Modulation	
Pulse Width	100uS	
Duty Cycle	10%	
Spec. Requirement	Modulation Type: Drain Modulation; Pulse Width: ≤100μS; Duty Cycle: 10%;	
Conclusion: Compliant		Test Date:

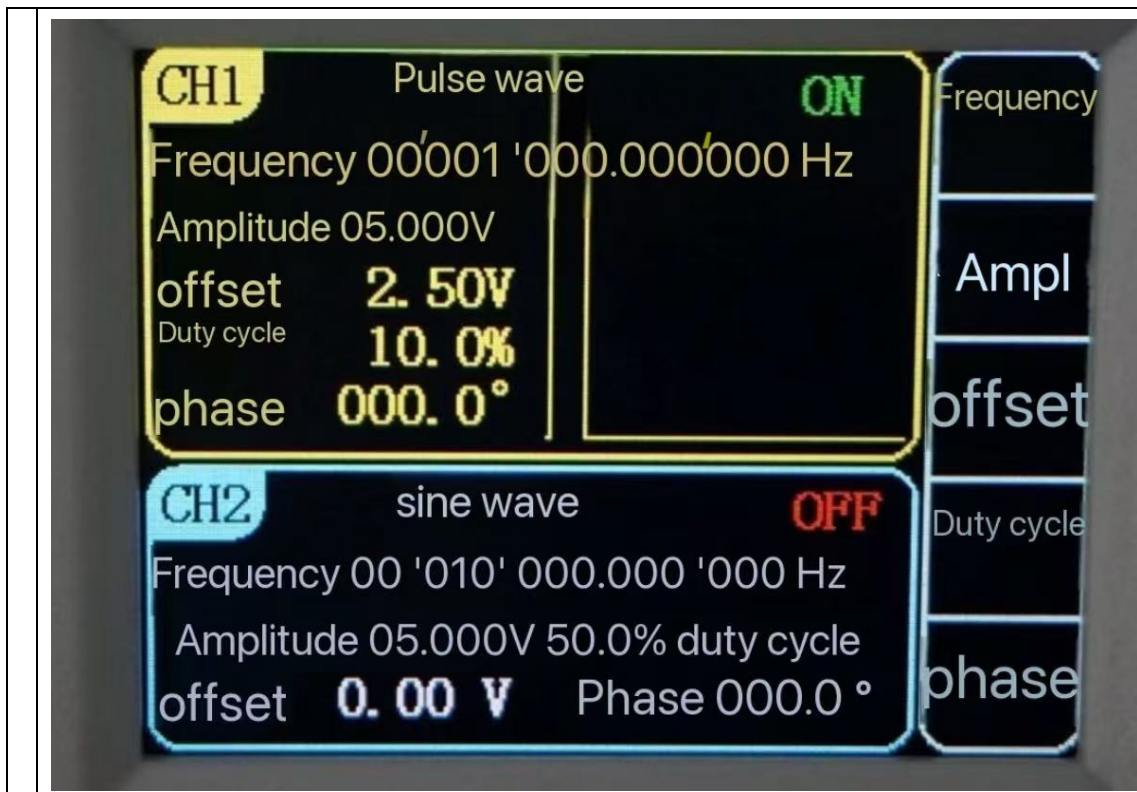


Figure 1: Duty Cycle Test Result

4.7 Modulation Pulse Rise and Fall Time

Table 10: Modulation Pulse Rise and Fall Time Test Record Form

Test Item	Test Result	Remarks
Modulation Pulse Rise and Fall Time	≤100ns	
Spec. Requirement	Modulation Pulse Rise and Fall Time: ≤100ns	
Conclusion: Compliant		Test Date:

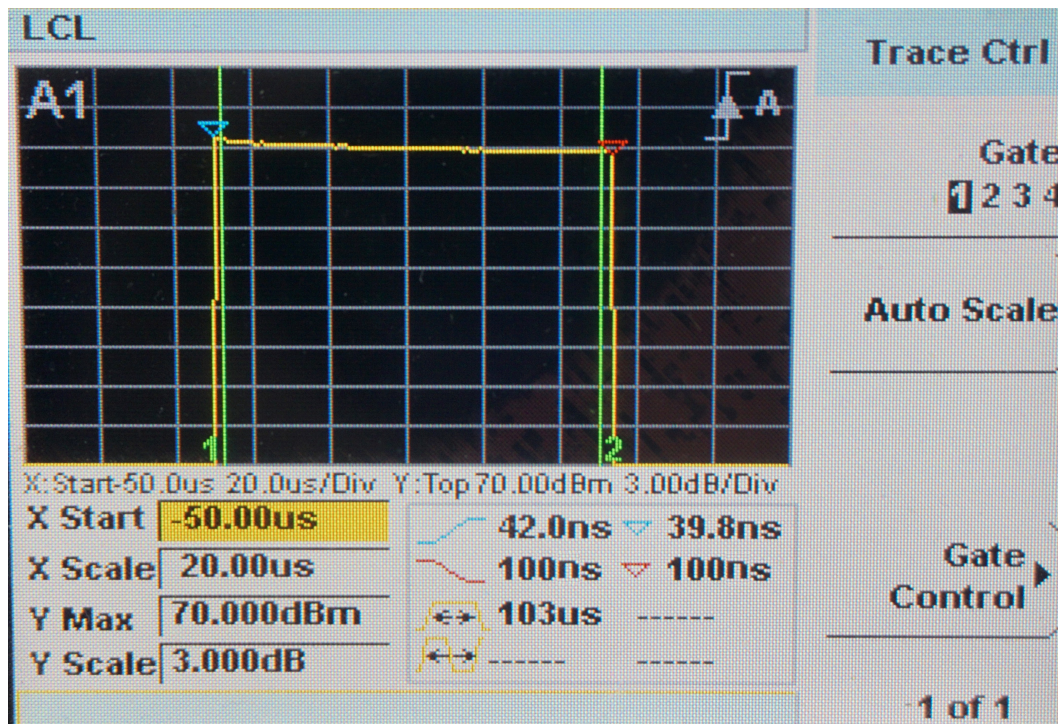


Figure 2: Modulation Pulse Rise and Fall Time Test Result

4.8 Pulse Droop

Table 11: Pulse Droop Test Record Form

Test Item	Test Result	Remarks
Pulse Droop	≤0.68dB	
Spec. Requirement	Pulse Droop: ≤1dB	
Conclusion: Compliant		Test Date:

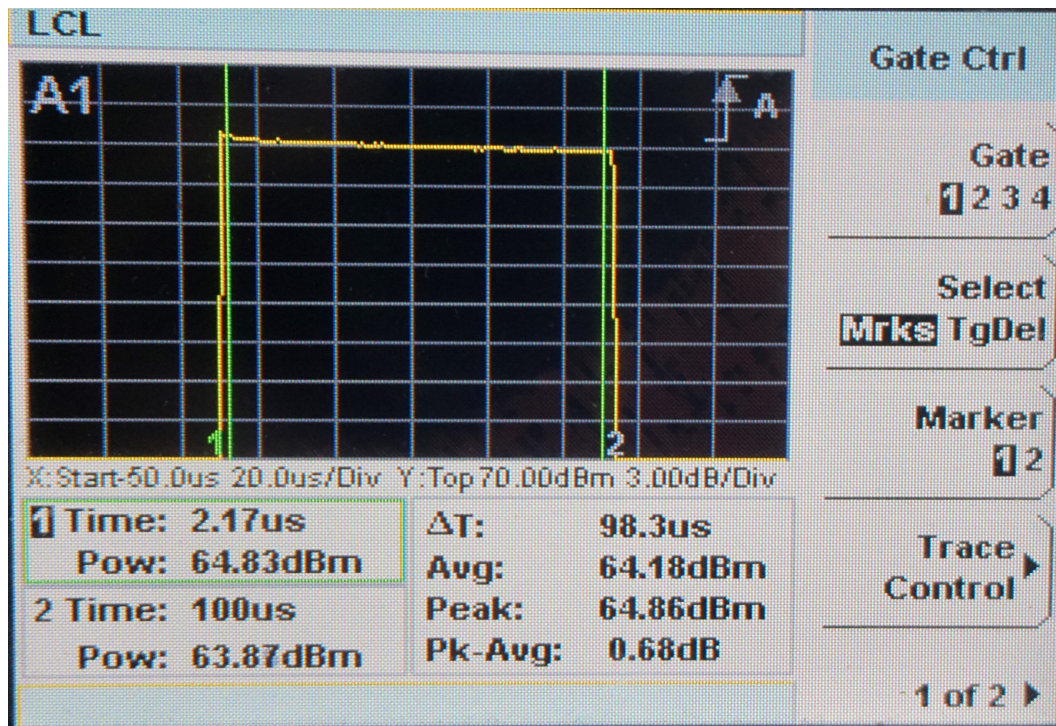


Figure 3 Pulse Droop Test Result

4.9 Input VSWR

Table 12: Input VSWR Test Record Form

Test Item	Test Result	Remarks
Input VSWR	≤1.29	
Spec. Requirement	Input VSWR: ≤1.5	
Conclusion: Compliant		Test Date:

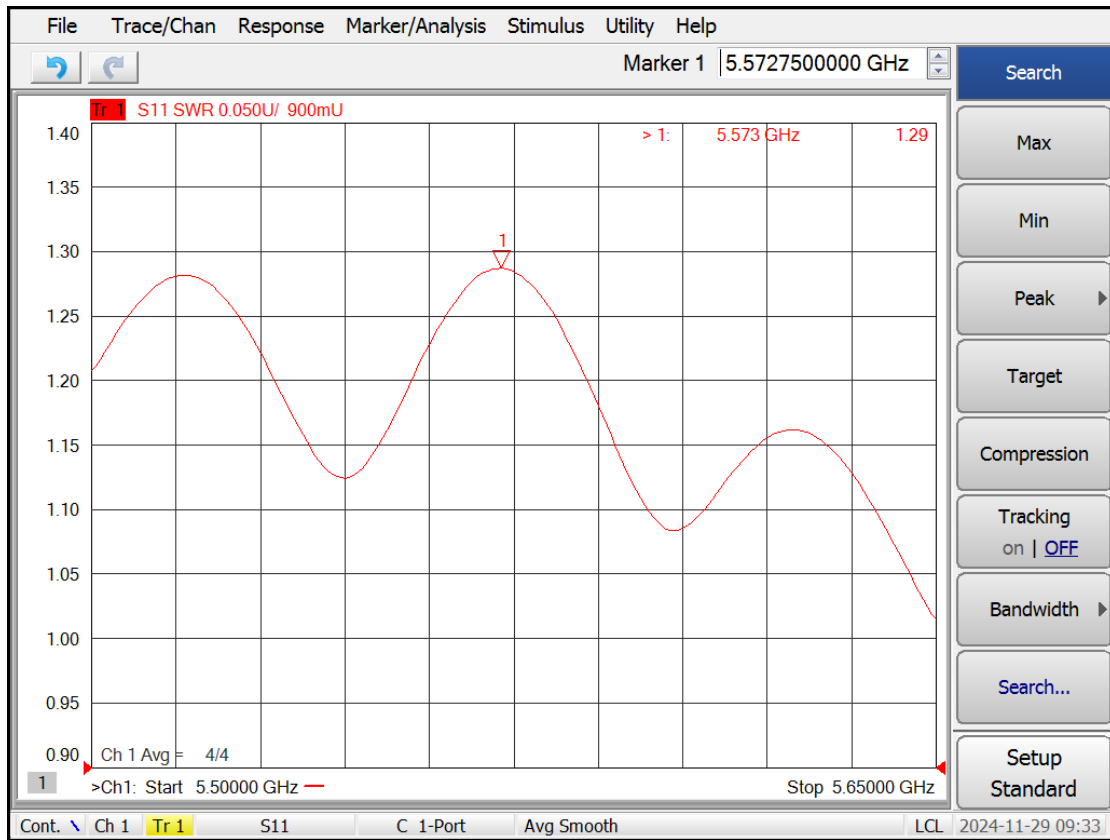


Figure 4: Input VSWR Test Result

4.10 Harmonics

Table 13: Harmonics Test Record Form

Test Item	Test Result		Remarks
	Frequency (GHz)	Harmonics(dBc)	
Harmonics	5.5	-50.21	
	5.52	-51.39	
	5.54	-53.12	
	5.56	-51.32	
	5.58	-51.73	
	5.6	-51.02	
	5.62	-50.72	
	5.64	-49.64	
	5.65	-50.19	
Spec. Requirement	Harmonics: $\leq -25\text{dBc}$		
Conclusion: Compliant		Test Date:	

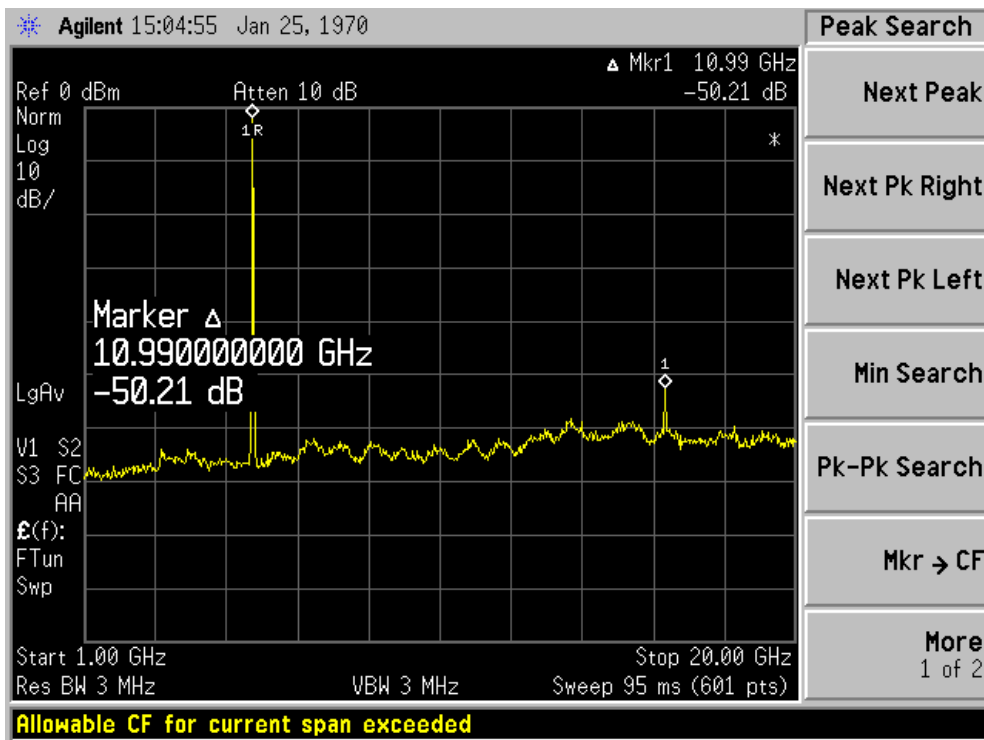


Figure 5 5.5GHz Harmonic Test Result

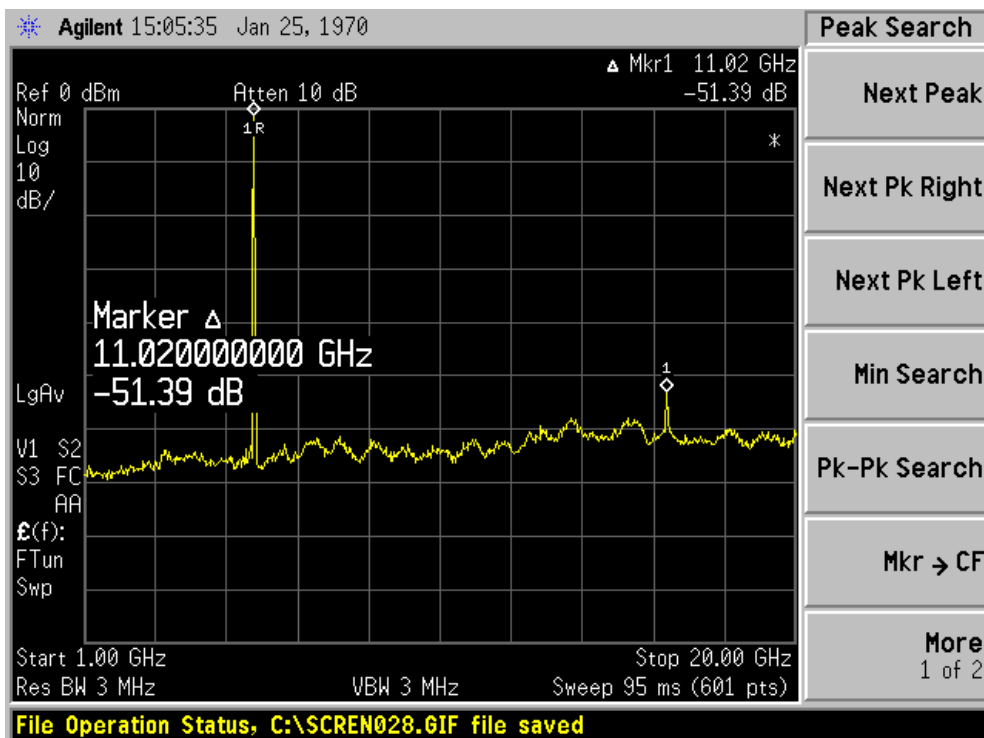


Figure 6 5.52GHz Harmonic Test Result

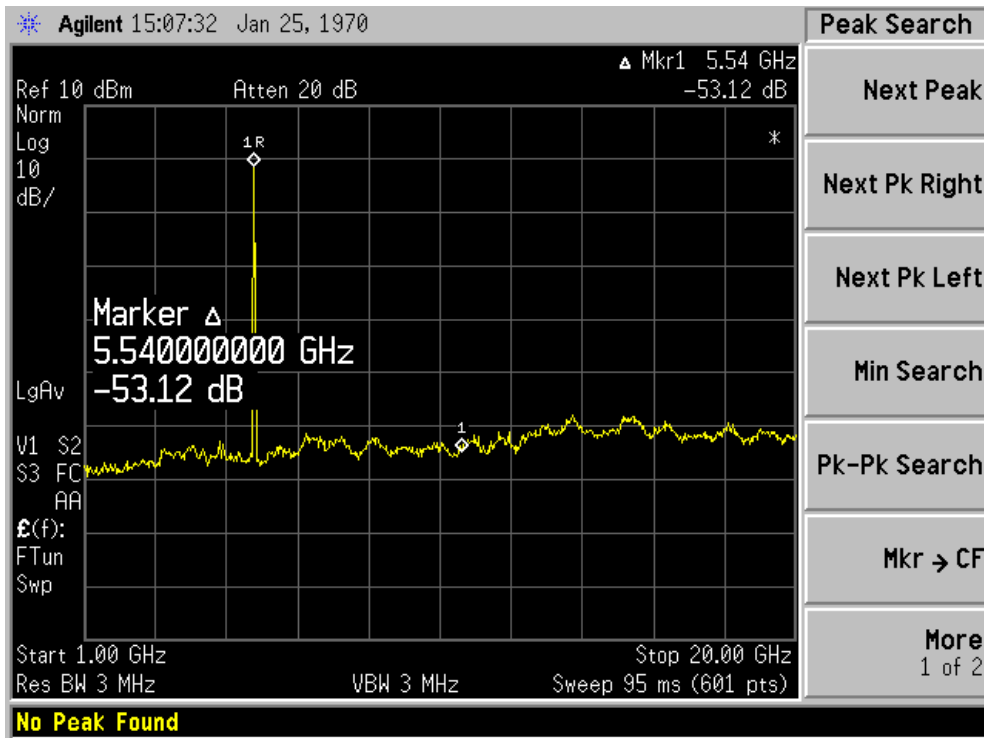


Figure 7 5.54GHz Harmonic Test Result

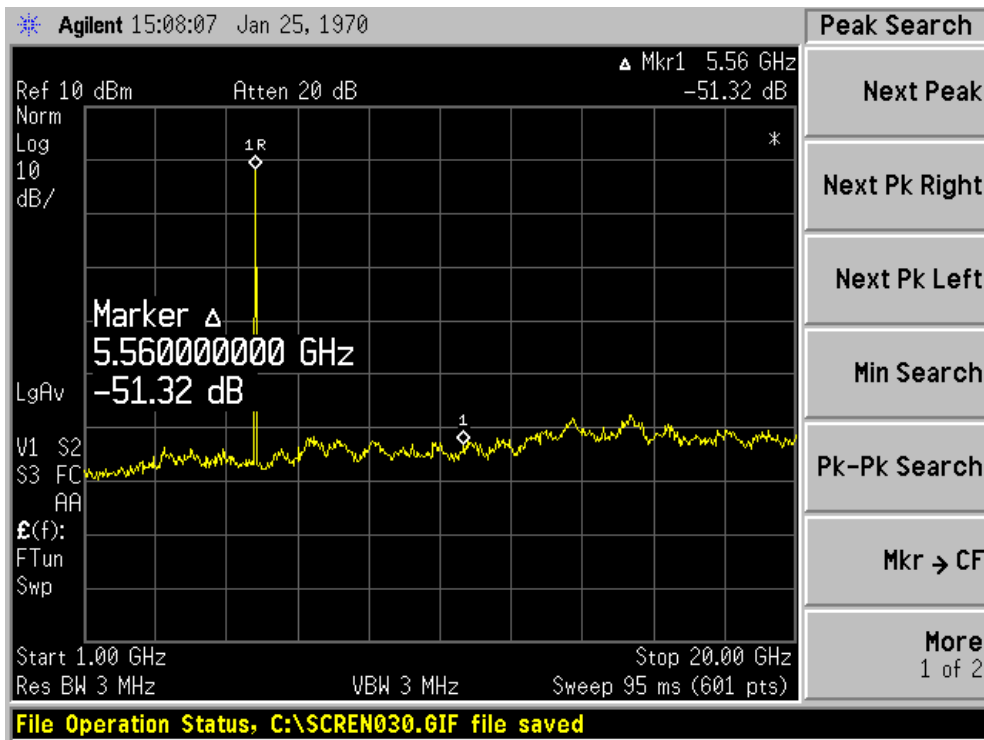


Figure 8 5.56GHz Harmonic Test Result

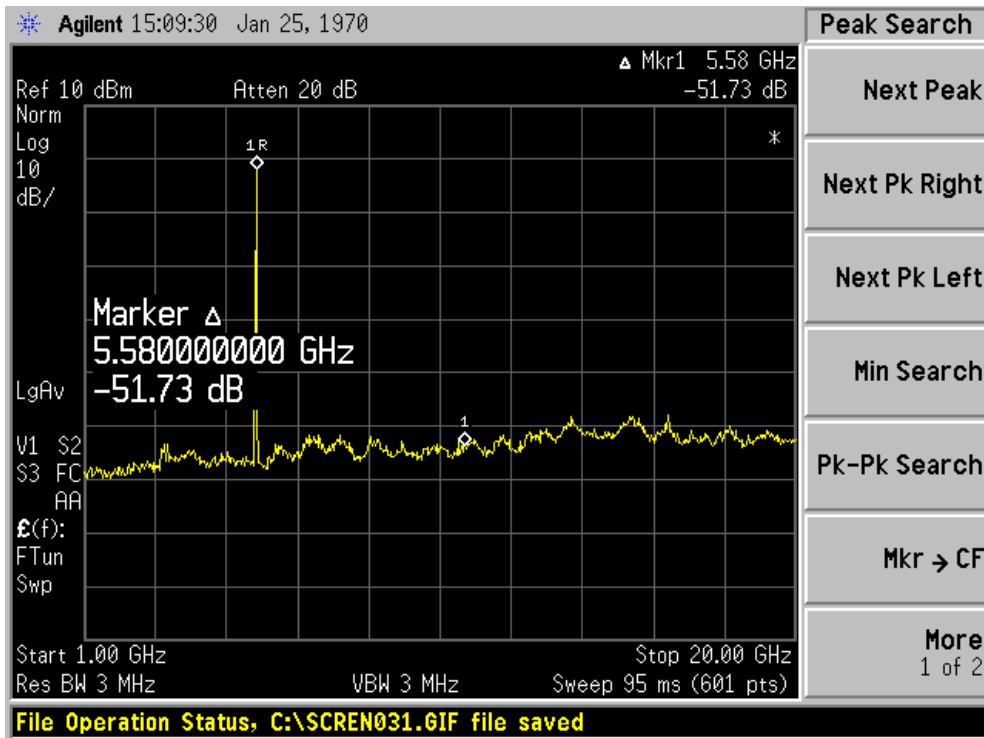


Figure 9 5.58GHz Harmonic Test Result

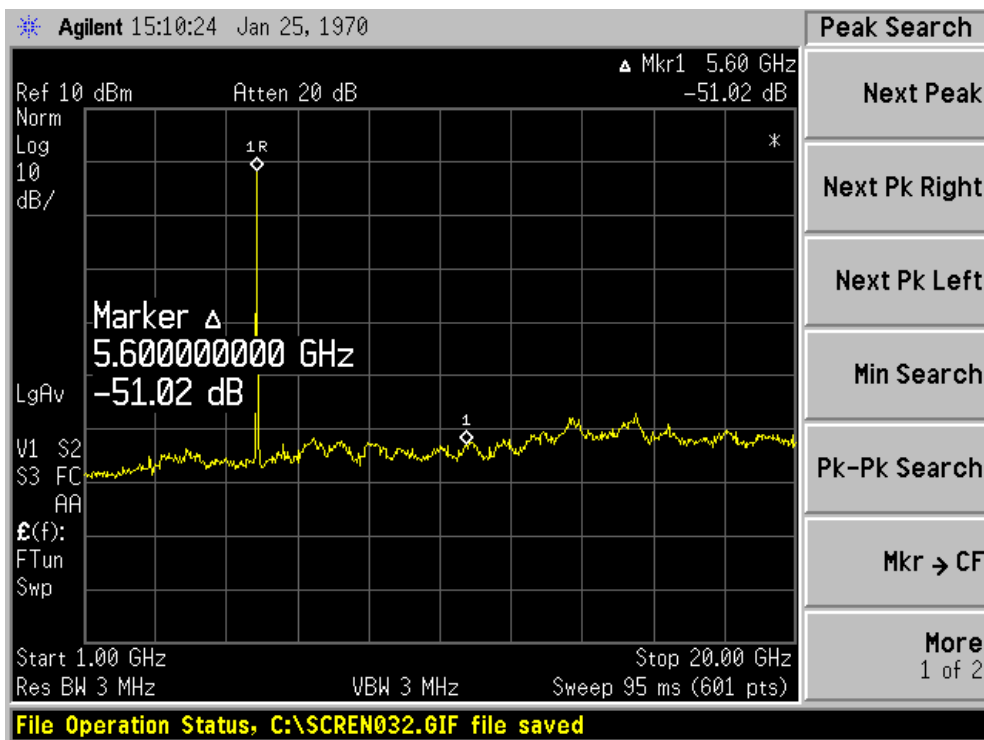


Figure 10 5.60GHz Harmonic Test Result

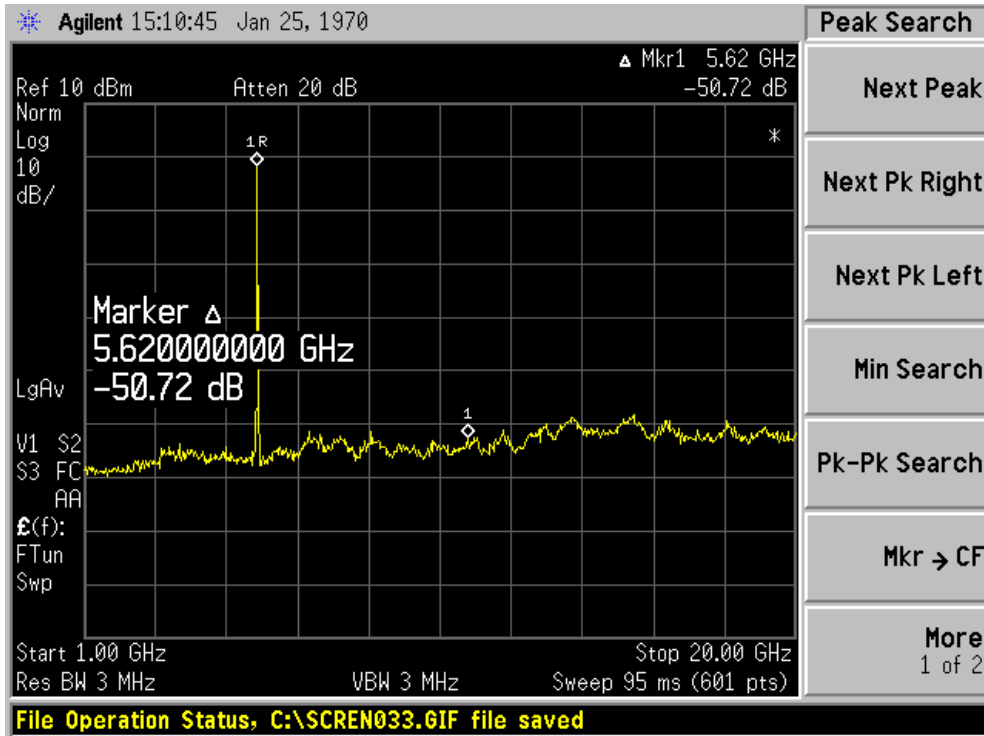


Figure 11 5.62GHz Harmonic Test Result

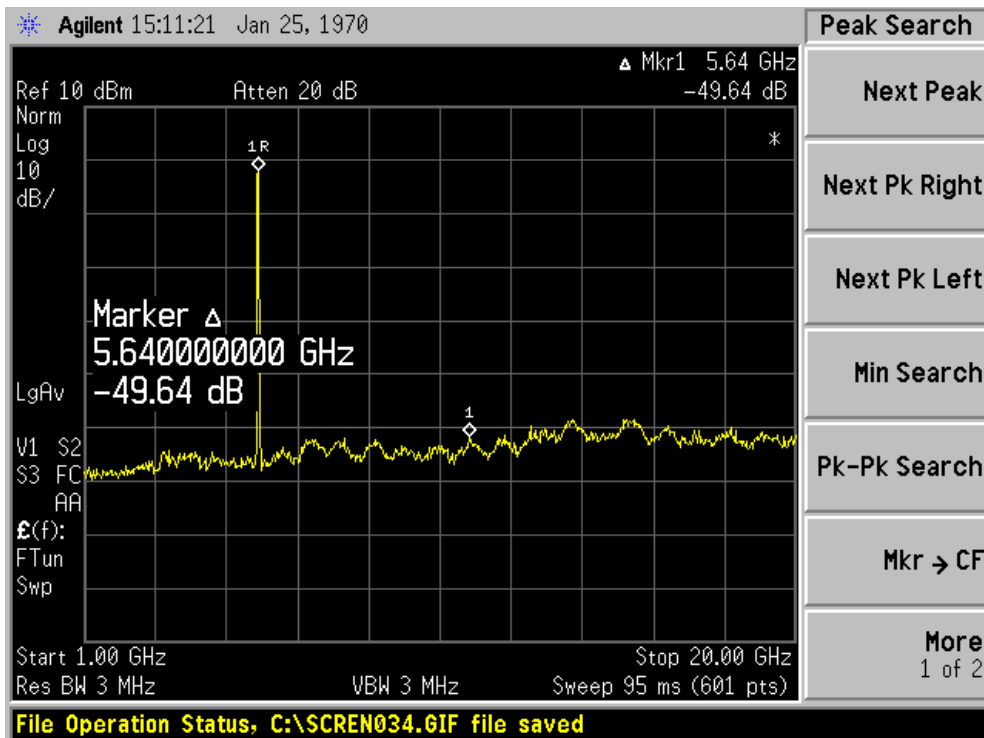


Figure 12 5.64GHz Harmonic Test Result

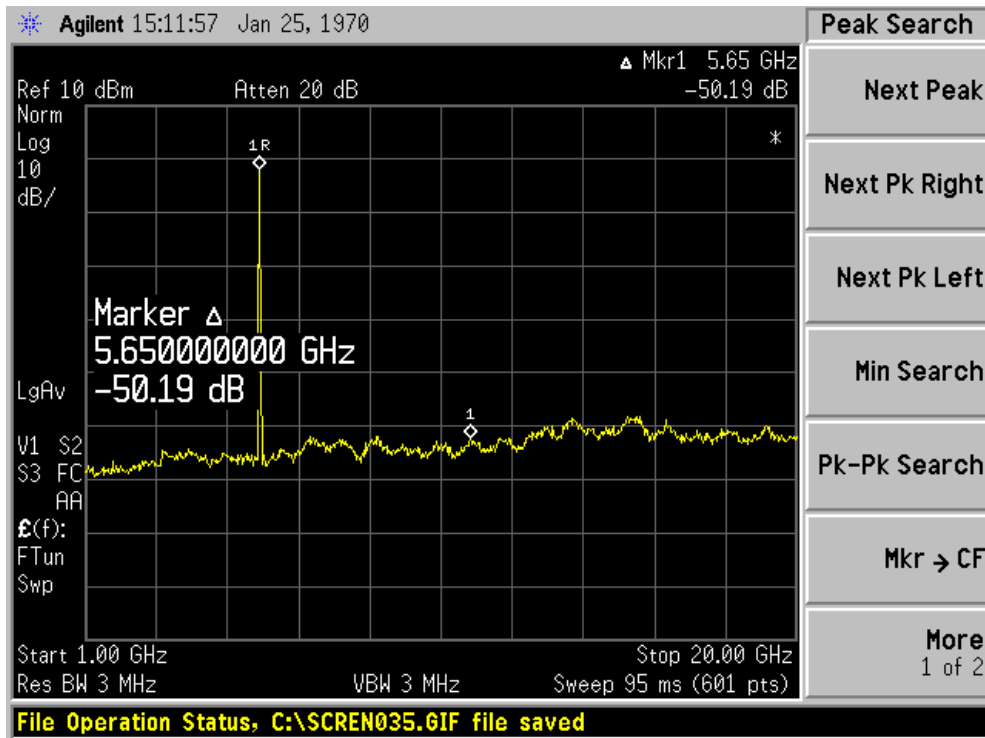


Figure 13 5.65GHz Harmonic Test Result

4.11 Spurious

Table 14: Spurious Test Record Form

Test Item	Test Result		Remarks
	Frequency (GHz)	Spurious (dBc)	
Spurious	5.50	-64.26	
	5.52	-64.00	
	5.54	-64.75	
	5.56	-64.14	
	5.58	-64.61	
	5.6	-64.63	
	5.62	-65.92	
	5.64	-65.16	
	5.65	-65.14	
Spec. Requirement	Spurious: ≤-60dBc		
Conclusion: Compliant		Test Date:	

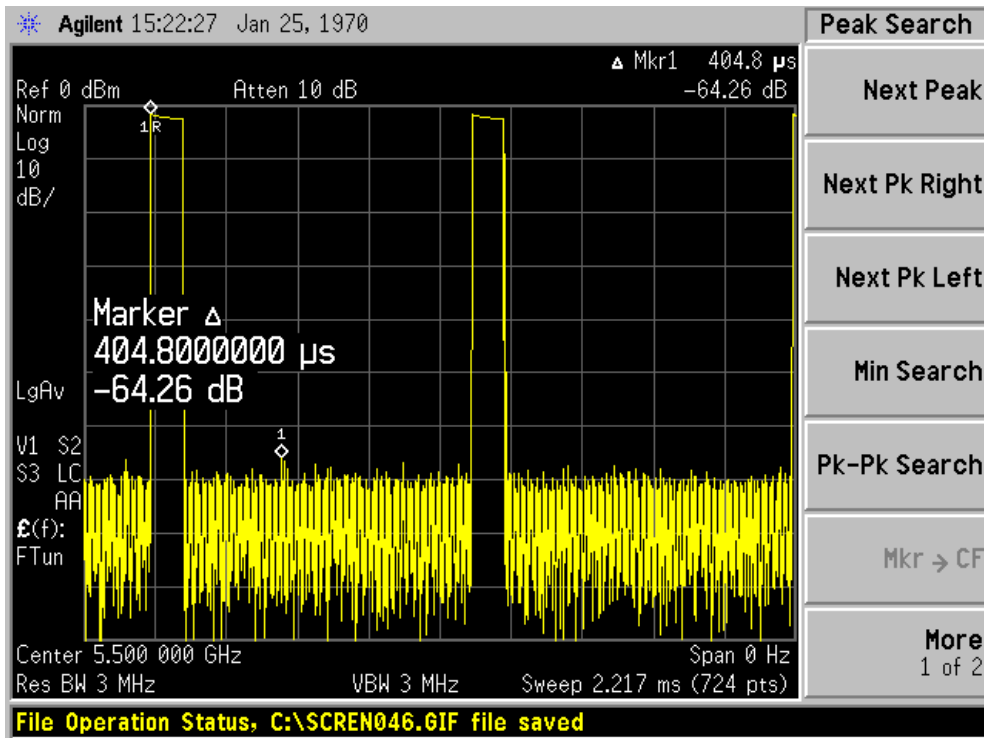


Figure 14 5.5GHz Spurious Test Result

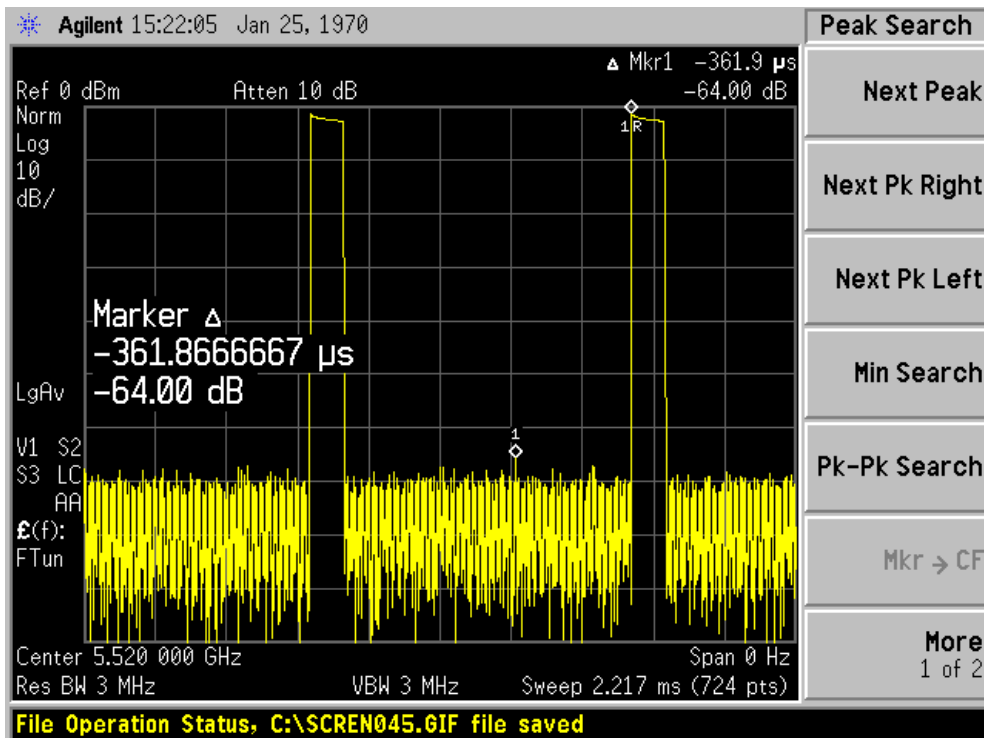


Figure 15 5.52GHz Spurious Test Result

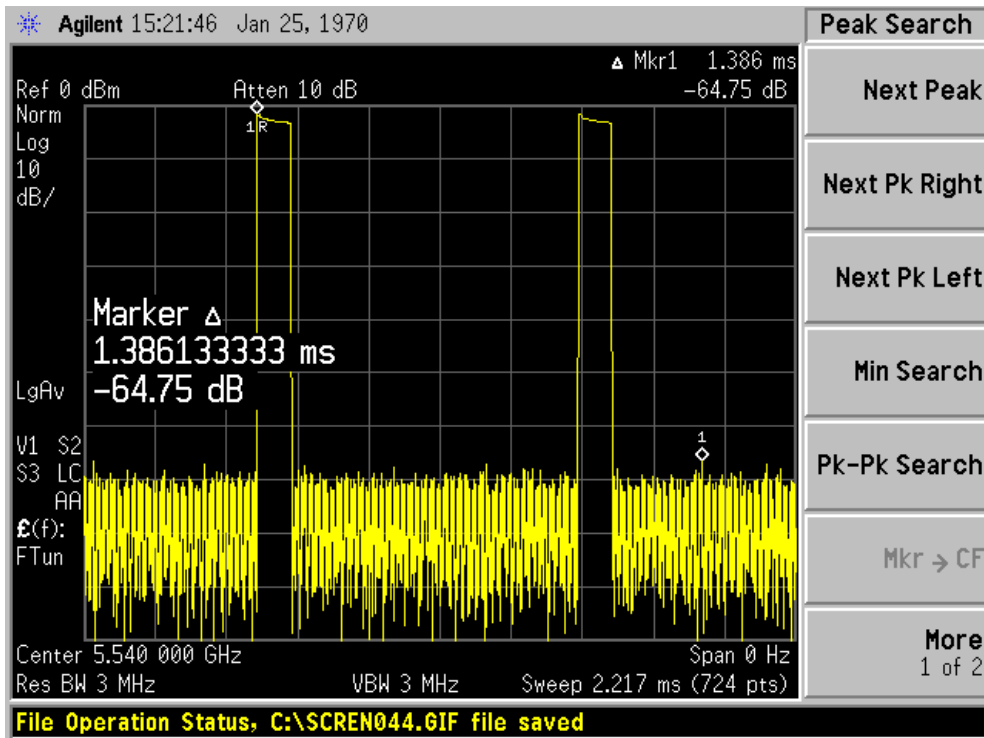


Figure 16 5.54GHz Spurious Test Result

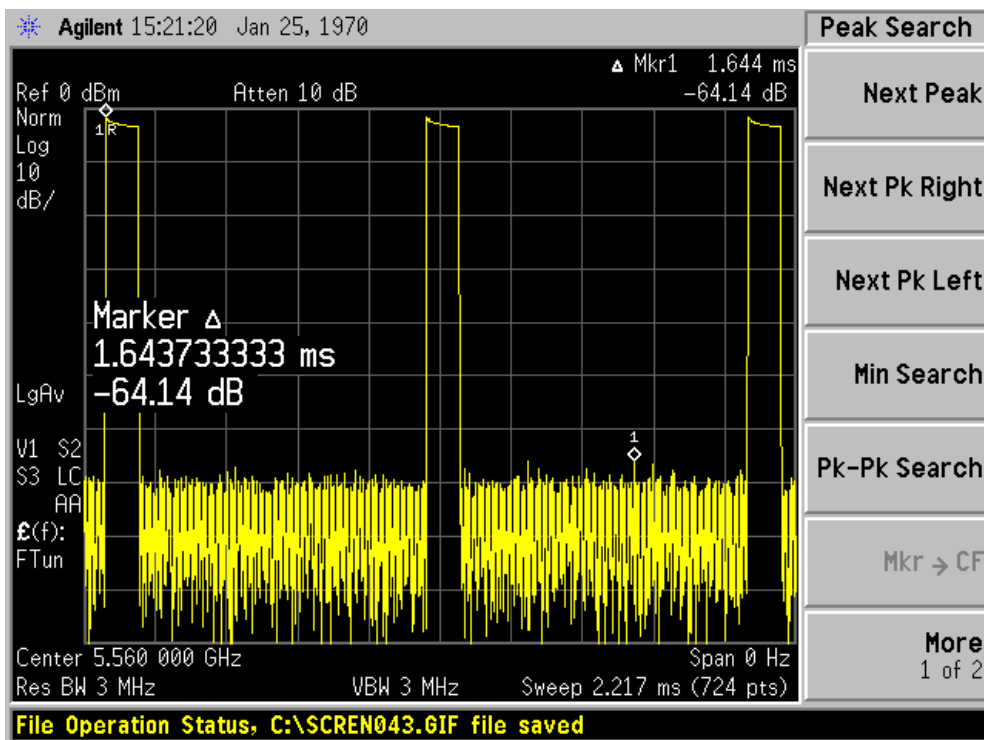


Figure 17 5.56GHz Spurious Test Result

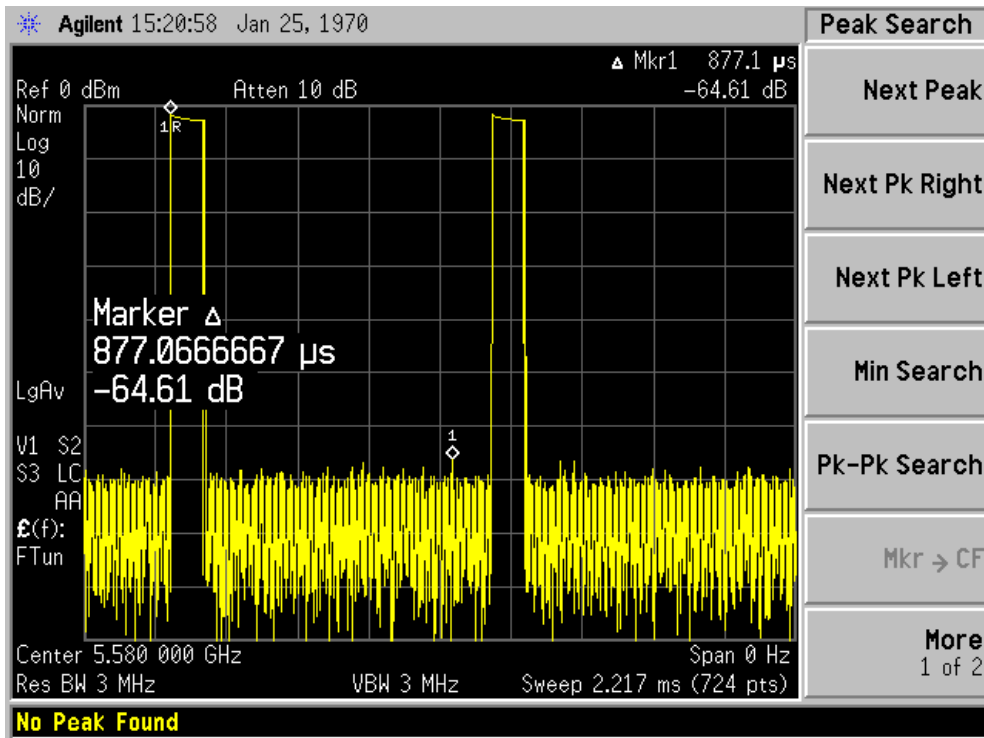


Figure 18 5.58GHz Spurious Test Result

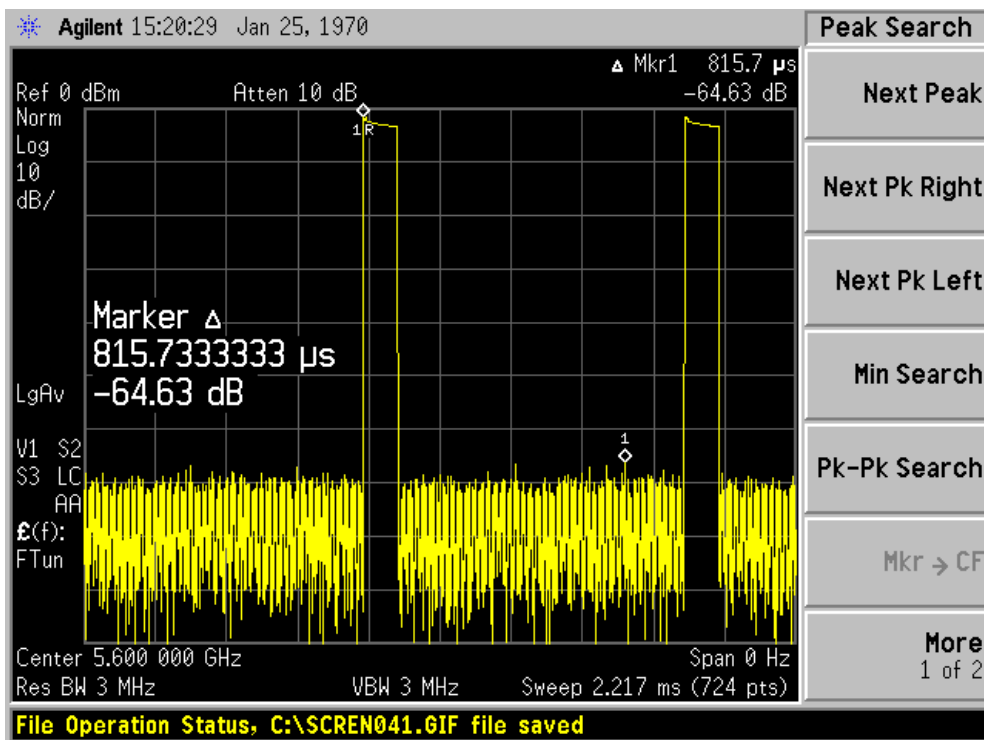


Figure 19 5.6GHz Spurious Test Result

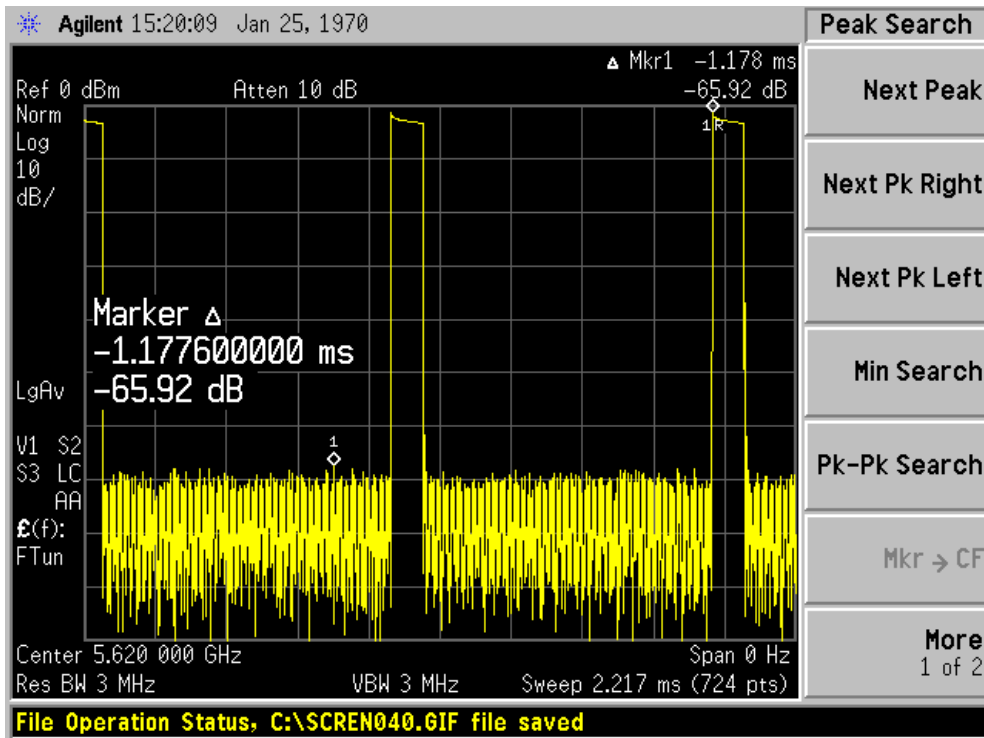


Figure 20 5.62GHz Spurious Test Result

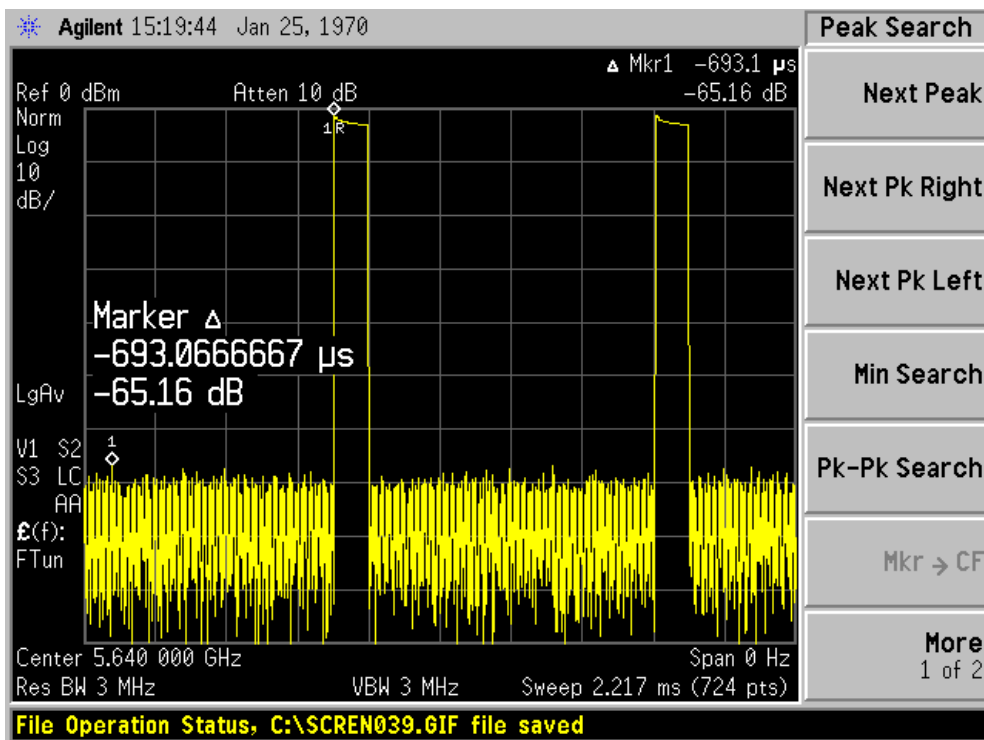


Figure 21 5.64GHz Spurious Test Result

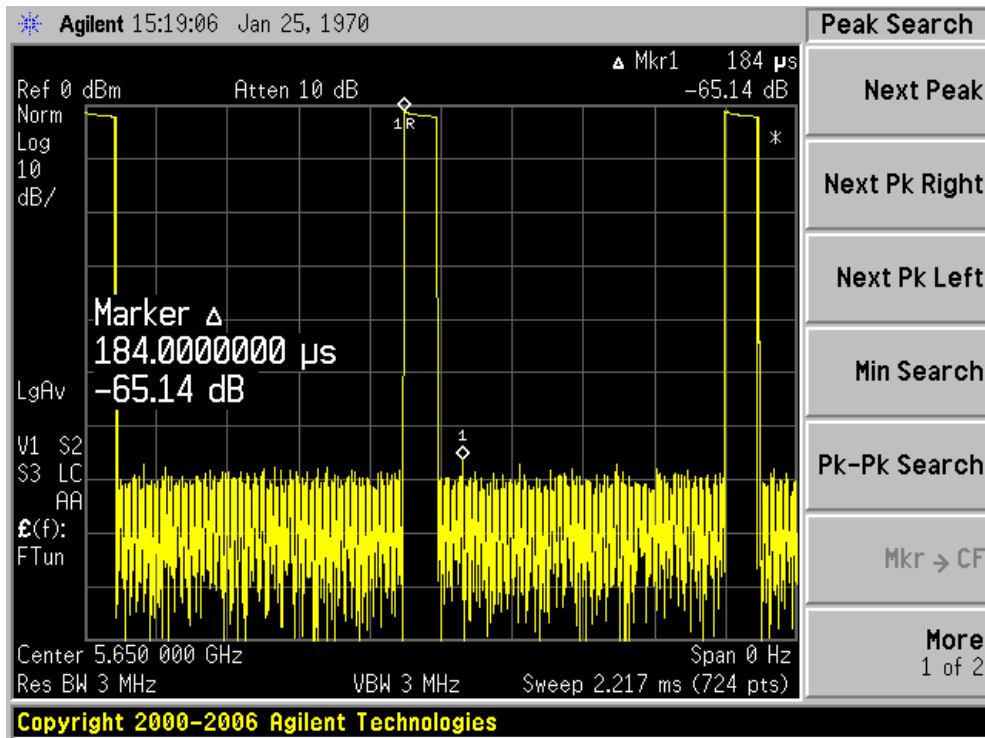


Figure 22 5.65GHz Spurious Test Result

4.12 Operating Voltage, Power Consumption

Table 15: Operating Voltage and Power Consumption Test Record Form

Test Item	Test Result	Remarks
Operating Voltage	+40V	
Power Consumption	1036W	
Spec. Requirement	Operating Voltage: +40V; Power Consumption: ≤1100W;	
Conclusion: Compliant		Test Date:

5 Interface Inspection

Table 16: Interface Inspection Record Form

No.	Interface	Interface Requirement	Inspection Result	Remarks
1	RF Input Interface	SMA	Compliant	
2	RF Output Interface	WR-159	Compliant	
3	Power Control Interface	13W6 Combo Connector	Compliant	
Conclusion:			Test Date:	



6 Additional Inspections .

Table 17: Other Items Inspection Record Form

No.	Test Item	Test Result	Remarks
1	Storage Temperature: -40°C to +70°C	Compliant	
2	Operating Temperature: -30°C to +55°C	Compliant	
Conclusion:		Test Date:	

7 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."