



30-500MHz-100W

Power Amplifier Test Report

July, 2025



1. Description

This report is applicable only to the 30-500M 100W power amplifier.

Product Name: Solid-State High-Power Amplifier;

Model No.: P/N: AMT-SPA-0035-100;

Series No.: 200029301

Quantity: 1 unit

2. Inspection Basis

30-500M 100W spec.

3. Test Instruments List

No.	Equipment Name	Instrument Model	QTY	Remarks
1	VNA	E5063A	1 Set	
2	Spectrum Analyzer	N9020A	1 Set	
3	Signal Generator	SMB 100A	1 Set	

4. Specifications Test Table

No.	Technique Spec.s	Technique Spec.s	Test Result	Remarks
1	Frequency range	30-500 MHz	30-500	
2	Output power Saturation	≥ 50 dBm	≥ 52	
3	Power gain	50 ± 2 dB	50 ± 1.25	
4	Small signal gain ripple	± 3 dB	± 3	
5	ATT adjusting Range	0-30 dB	0-30	
6	ATT adjusting Step	0.5 dB	0.5	

7	Input power level (achieve saturation power)	0 dBm	0	
8	Input return loss	≤ -15 dB	≤ -23.8	
9	Harmonics @Psat	≤ -12 dBc	≤ -12.1	
10	Spurious signals	≤ -60 dBc	≤ -80	
11	Operating voltage	230 V AC	176~264	
12	Input and output RF Impedance	50 Ω	50	

5. Mechanical specification

No.	parameter	Specification	Inspection Result	Remark
1	Dimension (WxDxH)	300x180x120mm	300.2x180.2x119.8	
2	Weight	5.5 Kg maximum	5.62	
3	RF connector input	Type-N, Female	N-F	
4	RF connector output	Type-N, Female	N-F	
5	Power Supply Connector	Circular connector Type: TBD	PT02E-12-3P	
6	Control Connector	Circular connector Type: TBD	PT02E-10-6P	
7	Cooling	Forced air	Forced air	

6. Environmental characteristics

No.	parameter	Specification	Inspection Result	Remark
1	Operating temperature	-20~+55°C	Compliance	
2	Non- operating temperature	-40~+75°C	Compliance	
3	Relative Humidity	0-95%	Compliance	

7. Protections

No.	parameter	Specification	Inspection Result	Remark
1	Input overdrive	Diode limiter protection 1dB compression +15dBm	Compliance	
2	Reverse RF power	1≤VSWR<3 : normal operation (active output) 4≤VSWR<∞: shut down and send error	Compliance	
3	Temperature	T>80°C: alarming(active output) T>85°C : error (output off)	Compliance	
4	Short and open of RF Output	Shutdown	Compliance	
5	Over current	Shutdown	Compliance	
6	Over/Under voltage	Shutdown	Compliance	

8. Communication interfaces

No.	parameter	Specification	Inspection Result	Remark
1	RS-422	Serial management of Module	Compliance	
2	Interface Protocol	Reference "RS422 protocol"	Compliance	
3	Module Output Data	Forward & Reverse Power, Temp, Current, Voltage	Compliance	
4	Module Input Data	Output Desired Power, Standby, Reset, alarm level, ALC ON/OFF	Compliance	

9. Conclusion

Through the inspection of the power amplifier, the product performance specification meet the technical specifications required by the 'Power Amplifier'."



10. Test Data

10.1 +25°C Test Data

No.	parameter	Unit	Test Data										
1	Frequency	MHz	30	50	100	150	200	250	300	350	400	450	500
2	Output power@Input power level 0dBm	dBm	49.4	49	48.8	48.6	49.5	49.1	49.6	48.4	48.6	50.9	50.4
3	Power gain	dB	49.4	49	48.8	48.6	49.5	49.1	49.6	48.4	48.6	50.9	50.4
4	Power gain fluctuations	dB	± 1.25										
5	Output power Saturation	dBm	53.7	54.1	53.1	53.3	52.8	52.2	52.4	52	52.7	53.5	52.8
6	Harmonics @Psat	dBc	-12.3	-12.4	-12.1	-12.3	-15.8	-19.7	-24	-27.4	-34.2	-45.2	-38.7
7	Spurious signals	dBc	≤ -80										



10.2 -20°C Test Data

No.	parameter	Unit	Test Data										
			30	50	100	150	200	250	300	350	400	450	500
1	Frequency	MHz	30	50	100	150	200	250	300	350	400	450	500
2	Output power@Input powerlevel 0dBm	dBm	48.4	49.2	48.8	48.6	49.6	49.3	49.8	48.7	48.7	50.8	50.4
3	Power gain	dB	48.4	49.2	48.8	48.6	49.6	49.3	49.8	48.7	48.7	50.8	50.4
4	Power gain fluctuations	dB	±1.2										
5	Output power Saturation	dBm	53.3	53.5	52.7	52.6	52.7	52.3	52.5	52.3	52.6	53.3	52.5
6	Harmonics @Psat	dBc	-12.3	-13.1	-12.6	-11.2	-15.8	-23.7	-24.7	-27.9	-34.8	-46.1	-56.2
7	Spurious signals	dBc	≤-80										

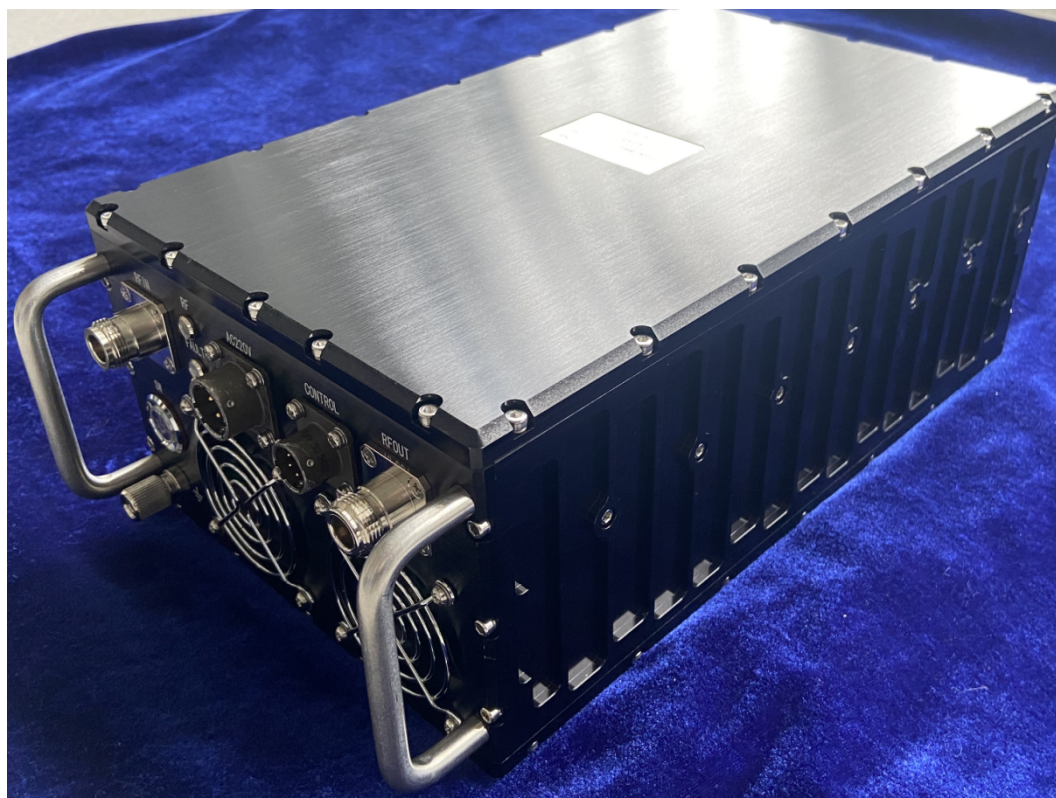


10.3 +55°C Test Data

No.	parameter	Unit	Test Data										
1	Frequency	MHz	30	50	100	150	200	250	300	350	400	450	500
2	Output power@Input powerlevel 0dBm	dBm	49.1	48.8	48.8	48.7	49.3	49	49.2	48.1	48.3	50.5	50.1
3	Power gain	dB	49.1	48.8	48.8	48.7	49.3	49	49.2	48.1	48.3	50.5	50.1
4	Power gain fluctuations	dB	±1.2										
5	Output power Saturation	dBm	52.7	53.2	52.5	52.7	52.2	51.5	51.7	51.3	51.9	52.8	52.1
6	Harmonics @Psat	dBc	-11.5	-11.9	-12.2	-11.3	-15.9	-22.7	-24.6	-28.4	-34.6	-45.2	-55
7	Spurious signals	dBc	≤-80										

11. Photos (Product Visual Inspection)

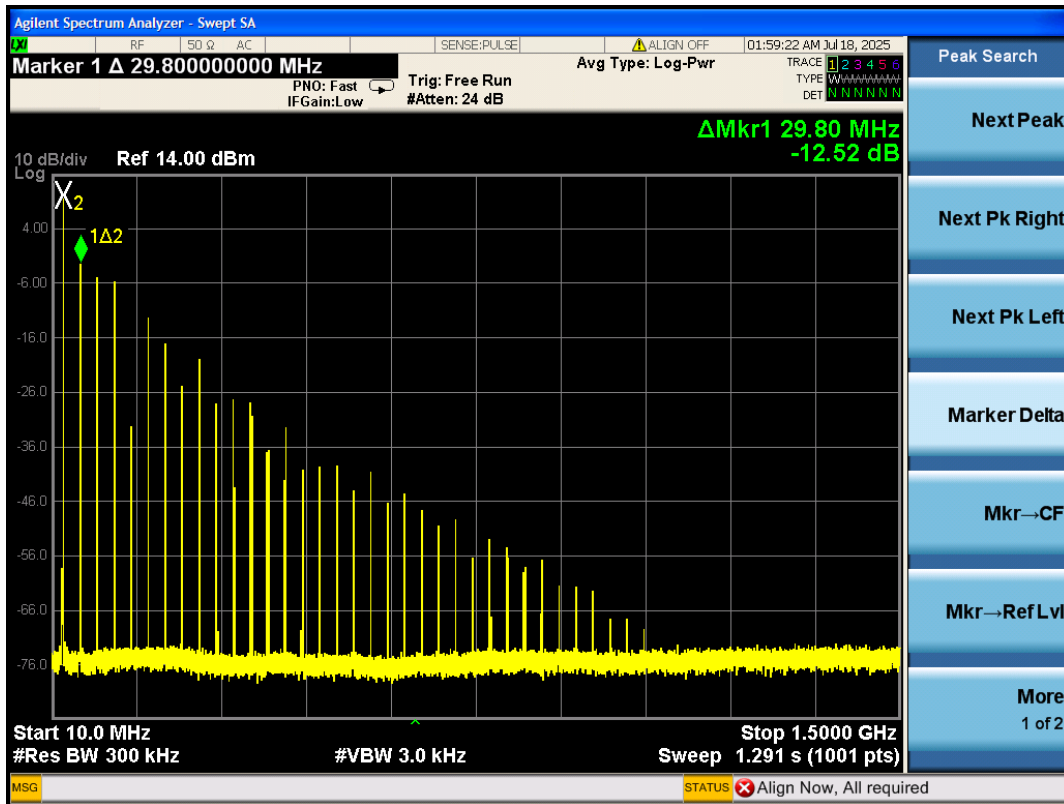
11.1 Product Visual Inspection



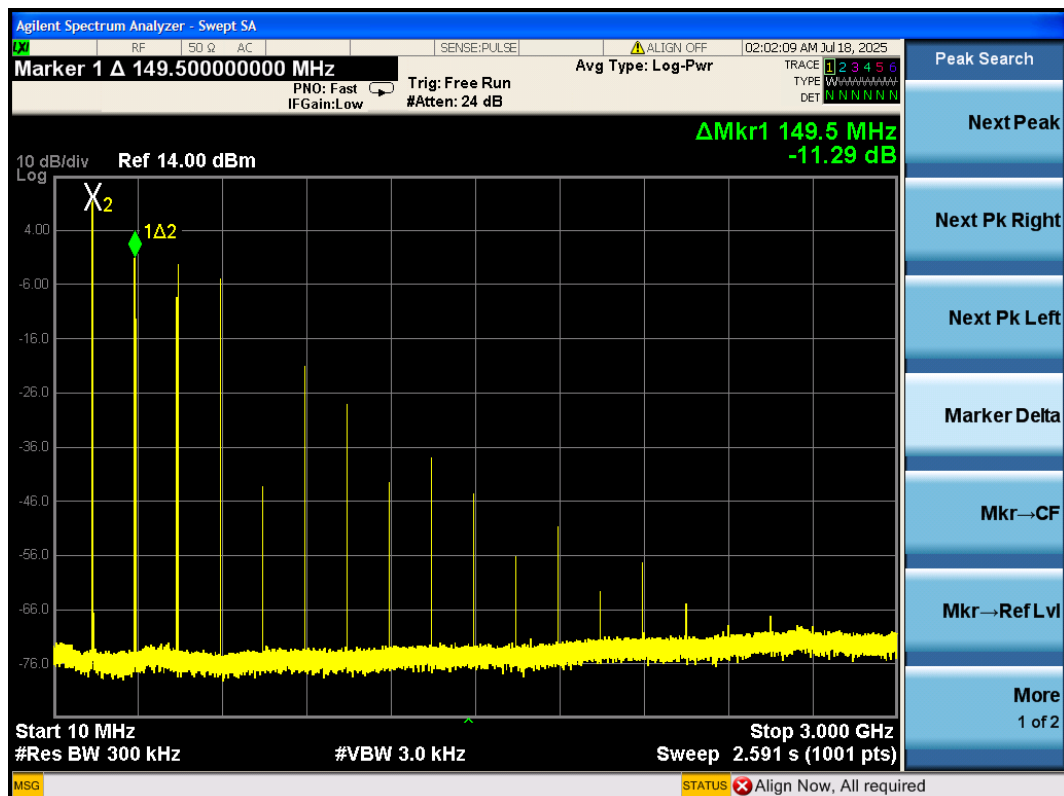


11.2 Harmonics

a. 30MHz

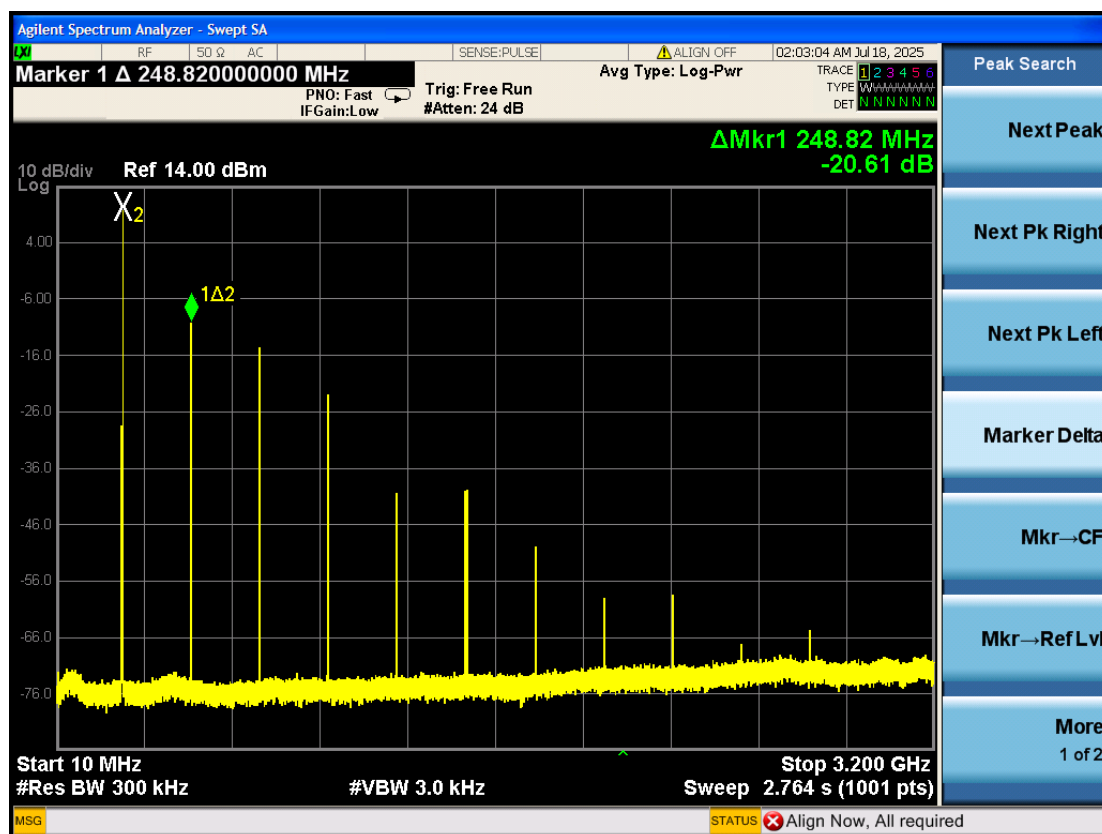


b. 150MHz

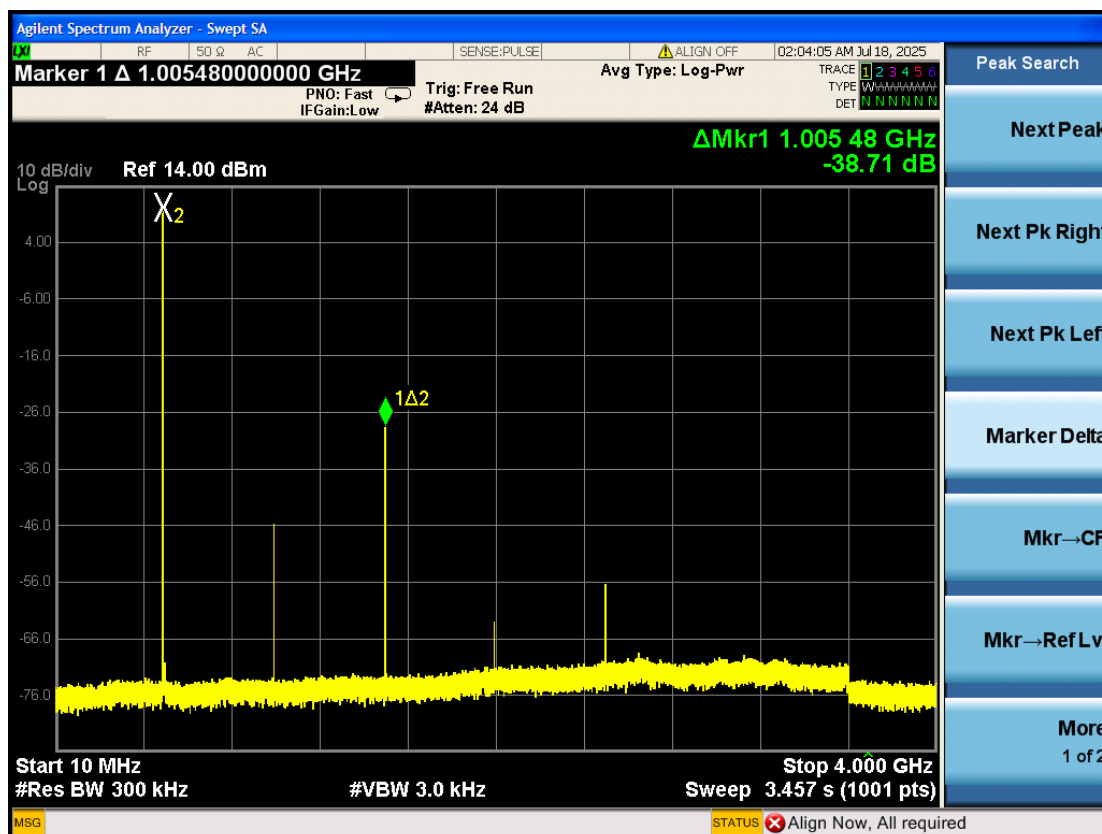




c. 250MHz



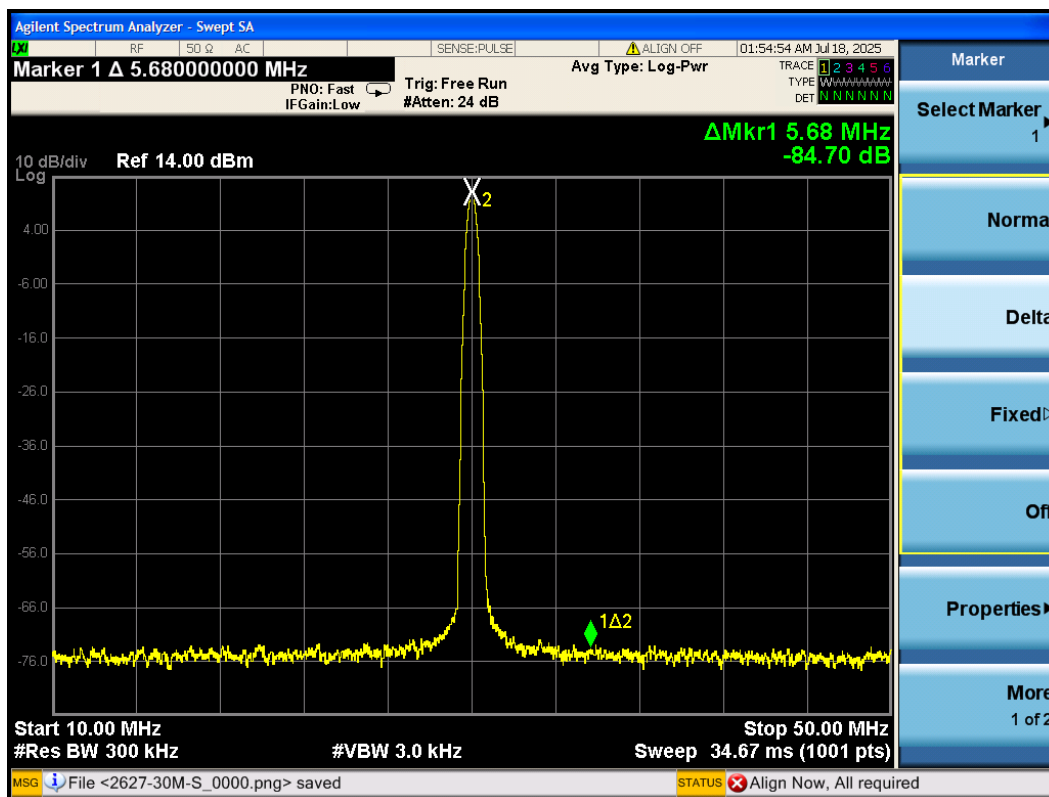
d. 500MHz



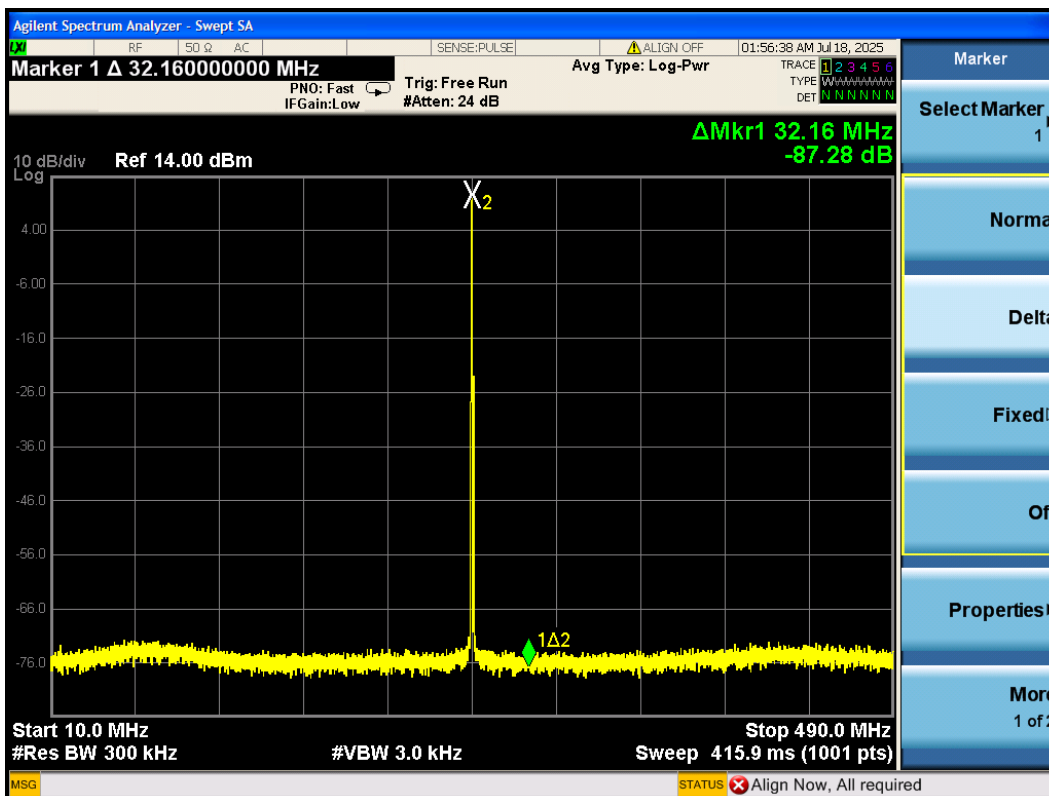


11.3 Spurious

a. 30MHz

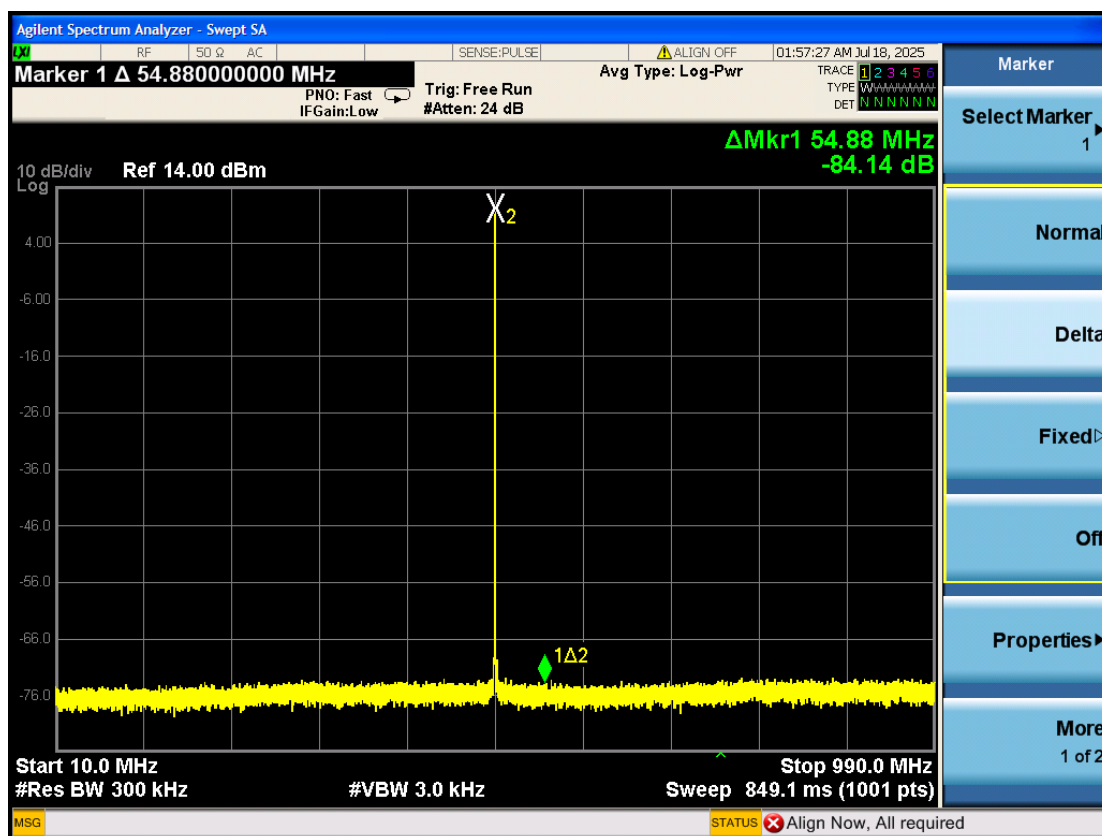


b. 250MHz

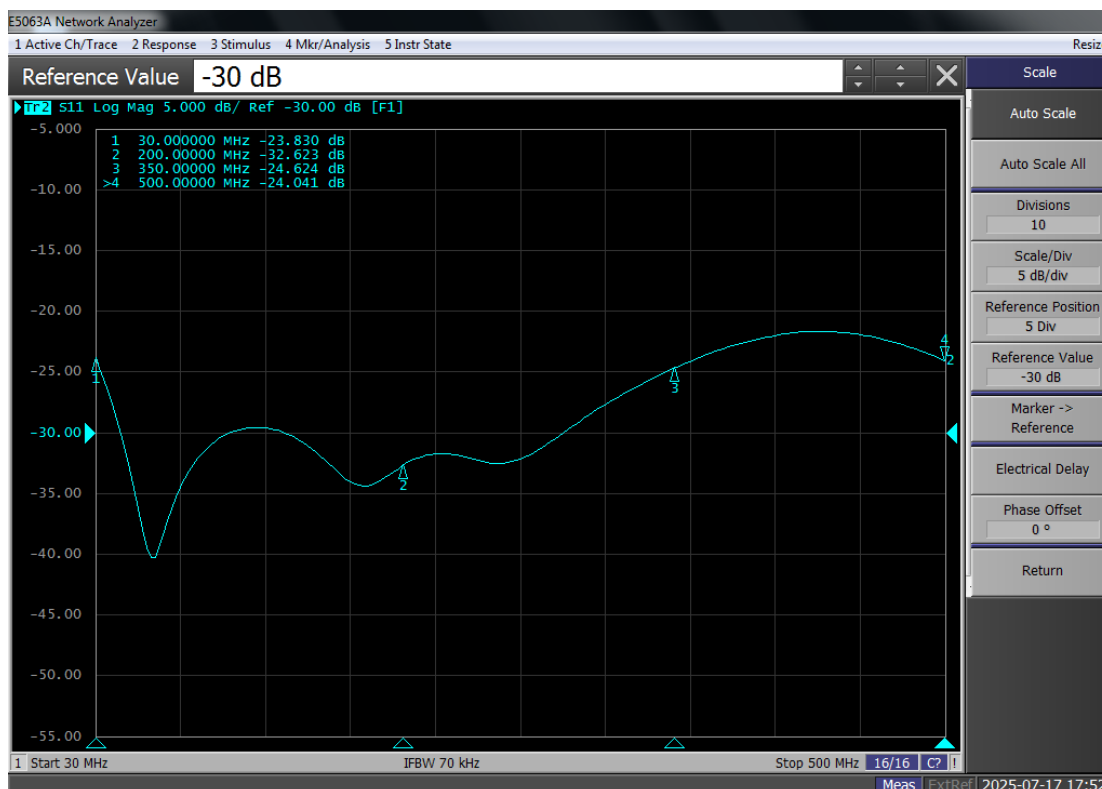




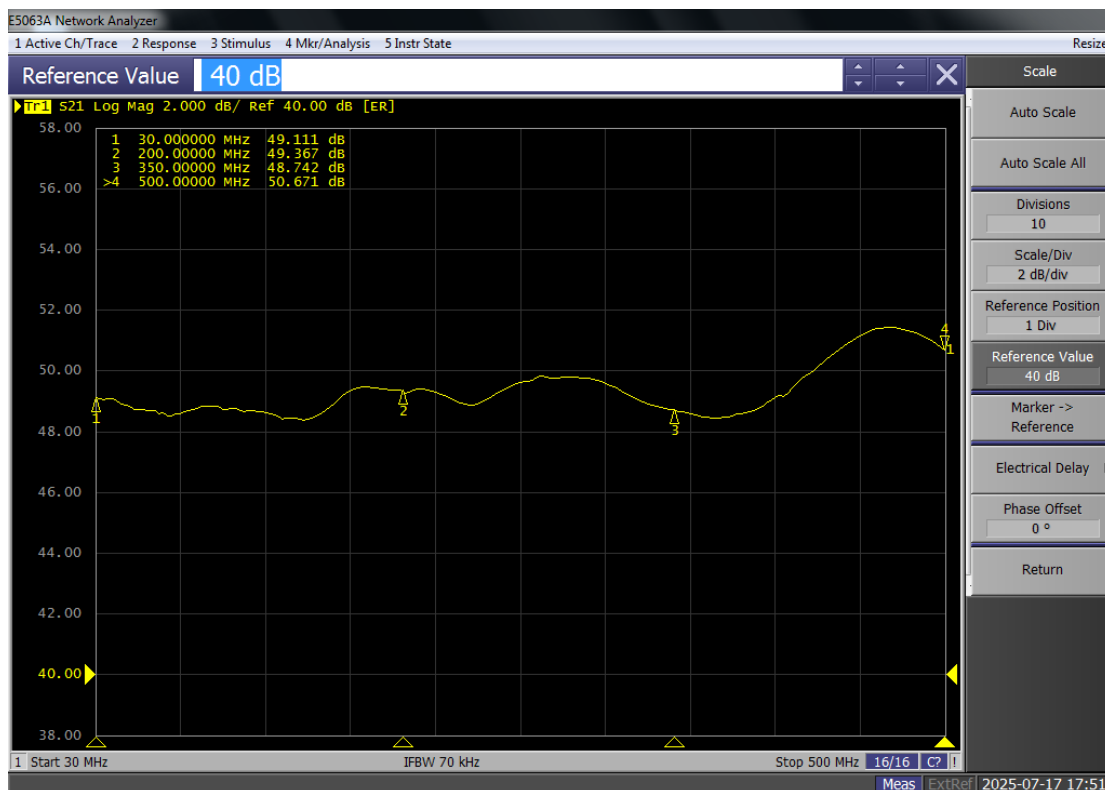
c. 500MHz



11.4 Input return loss(ALC off / Power 0dBm)



11.5 Gain(ALC off / Power 0dBm)



12. Interface definition

12.1 PT02E-12-3P definition(AC220V)

No.	parameter	Definition	Specification
1	A	L	AC live
2	B	N	AC neutral
3	C	GND	GND

12.2 PT02E-10-6P definition(CONTROL)

No.	parameter	Definition	Specification
1	A	RS422_RX+	RS422 receiver +
2	B	RS422_RX-	RS422 receiver -
3	C	RS422_TX+	RS422 transmit +



4	D	RS422_TX-	RS422 transmit -
5	E	GND	GND
6	F	RF_EN	RF Enable, TTL High: RF Enable Low or NC: RF Disable

12.2 Other

No.	Definition	Specification
1	RF	RF Enable Indicator
2	FAULT	Fault Indicator
3	SW	230 V AC Switch
4		GND