



500-2000MHz-100W

Power Amplifier Test Report

July, 2025



1. Description

This report is applicable only to the 500-2000M 100W power amplifier.

Product Name: Solid-State High-Power Amplifier;

Model No.: P/N: AMT-SPA-0520-100;

Series No.: 200029302

Quantity: 1 unit

2. Inspection Basis

500-2000M 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	500-2000 MHz	500-2000	
2	Output power Saturation	≥ 50 dBm	≥ 50.1	
3	Power gain	50 ± 2 dB	50 ± 1.6	
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	≤ -12 dB	≤ -13	
9	Harmonics @Psat	≤ -12 dBc	≤ -17.2	
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	300.2x180.3x119.7	
2	Weight	5.5 Kg maximum	5.94	
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	$1 \leq VSWR < 3$: normal operation (active output) $4 \leq VSWR < \infty$: shut down and send error	Compliance	
3	Temperature	$T > 80^{\circ}\text{C}$: alarming(active output) $T > 85^{\circ}\text{C}$: 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	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
2	Output power@Input powerlevel 0dBm	dBm	49.3	50.5	50.5	50.4	51.4	50.7	50.9	50.8	50.7	51.2	51.6	51.6	51.4	52.5	51.4	51
3	Power gain	dB	49.3	50.5	50.5	50.4	51.4	50.7	50.9	50.8	50.7	51.2	51.6	51.6	51.4	52.5	51.4	51
4	Power gain fluctuations	dB	±1.6															
5	Output power Saturation	dBm	50.1	50.8	50.5	50.4	51.4	50.7	51.1	51.4	51.2	51.2	51.6	51.9	51.9	52.5	51.4	51.1
6	Harmonics @Psat	dBc	-19.8	-21.7	-17.2	-18.3	-18.3	-18.1	-21.1	-27.2	-24.3	-28.4	-28.5	-20.4	-24.7	-37.8	-32.7	-31.2
7	Spurious signals	dBc	≤-80															



10.2 -20°C Test Data

No.	Parameter	Unit	Test Data															
			500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
1	Frequency	MHz	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
2	Output power@Input powerlevel 0dBm	dBm	49.5	50.2	50.2	50.3	51	50.4	50.8	50.8	50.6	50.9	51.3	51.2	51.9	52.1	51	50.6
3	Power gain	dB	49.5	50.2	50.2	50.3	51	50.4	50.8	50.8	50.6	50.9	51.3	51.2	51.9	52.1	51	50.6
4	Power gain fluctuations	dB	±1.3															
5	Output power Saturation	dBm	51	50.5	50.2	50.3	51	50.4	50.9	51.2	50.8	51	51.5	51.5	51.9	52.1	51.2	50.6
6	Harmonics @Psat	dBc	-19.1	-19.1	-17.2	-16.6	-18.6	-18.1	-21.7	-26.9	-24.3	-25.5	-20.5	-24.7	-26.1	-34.5	-34.7	-29.7
7	Spurious signals	dBc	≤-80															

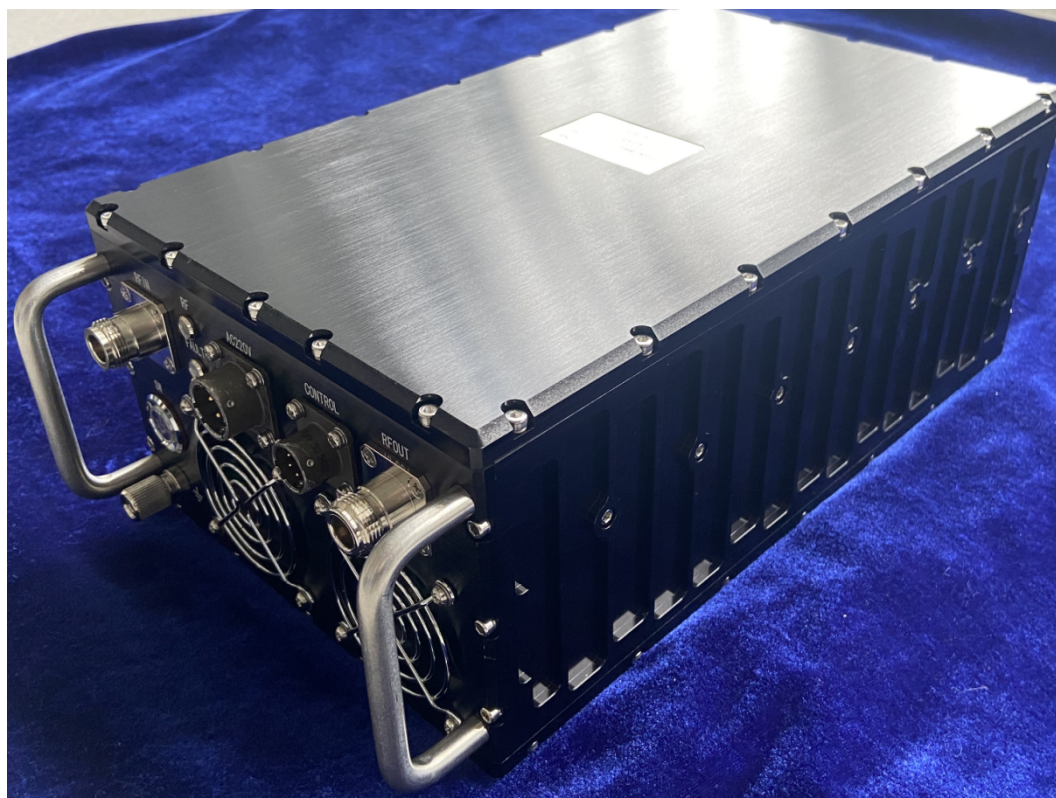


10.3 +55°C Test Data

No.	Parameter	Unit	Test Data															
			500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
1	Frequency	MHz	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
2	Output power@Input powerlevel 0dBm	dBm	48.8	49.8	50	49.9	50.8	50.2	50.1	50	50.1	50.6	50.8	51.5	51.5	51.8	50.6	50.2
3	Power gain	dB	48.8	49.8	50	49.9	50.8	50.2	50.1	50	50.1	50.6	50.8	51.5	51.5	51.8	50.6	50.2
4	Power gain fluctuations	dB	±1.5															
5	Output power Saturation	dBm	49.6	50	50	49.9	50.8	50.2	50.4	50.7	50.9	50.8	51.2	51.5	51.5	51.8	50.8	50.2
6	Harmonics @Psat	dBc	-18.4	-20	-17.6	-17.2	-17.8	-17.5	-19.2	-28.4	-25.5	-23.8	-20.7	-25	-25.1	-34.4	-33.2	-28.6
7	Spurious signals	dBc	≤-80															

11. Photos (Product Visual Inspection)

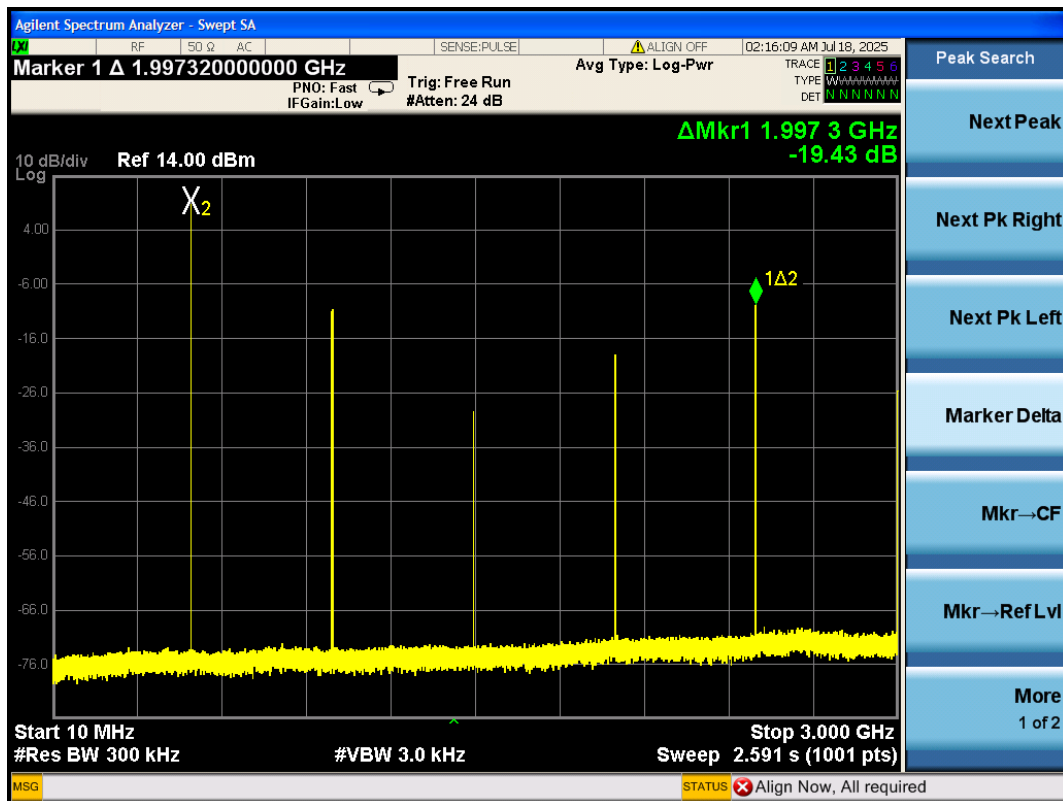
11.1 Product Visual Inspection



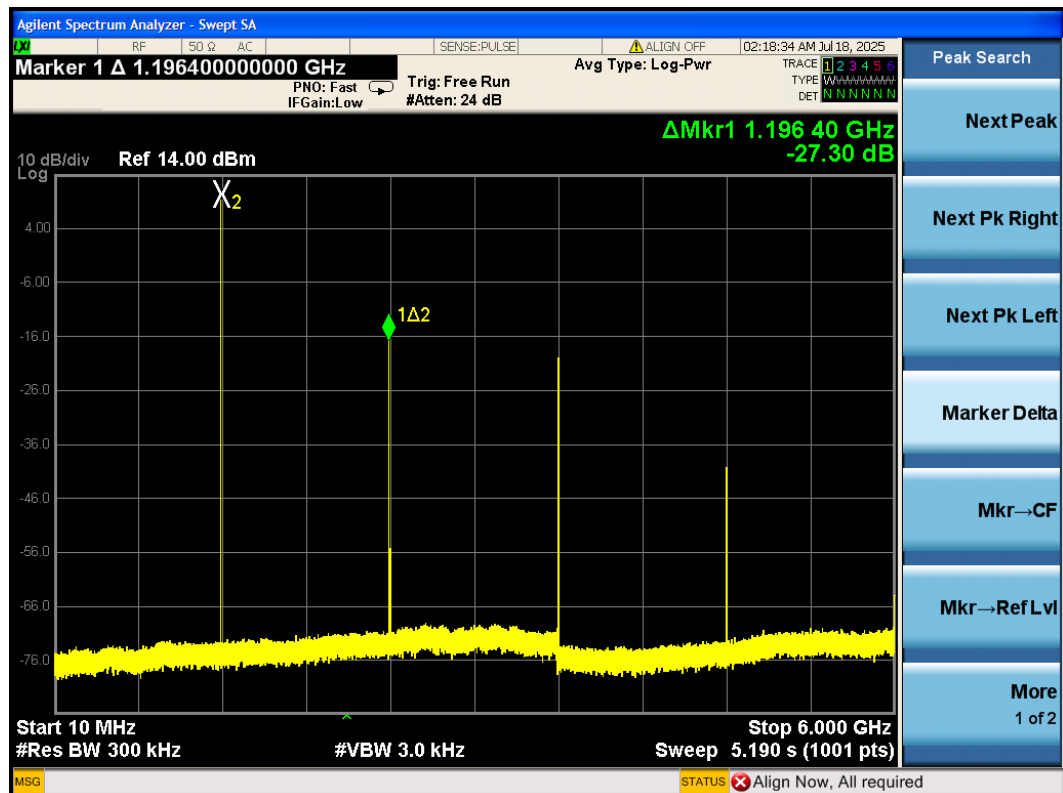


11.2 Harmonics

a. 500MHz

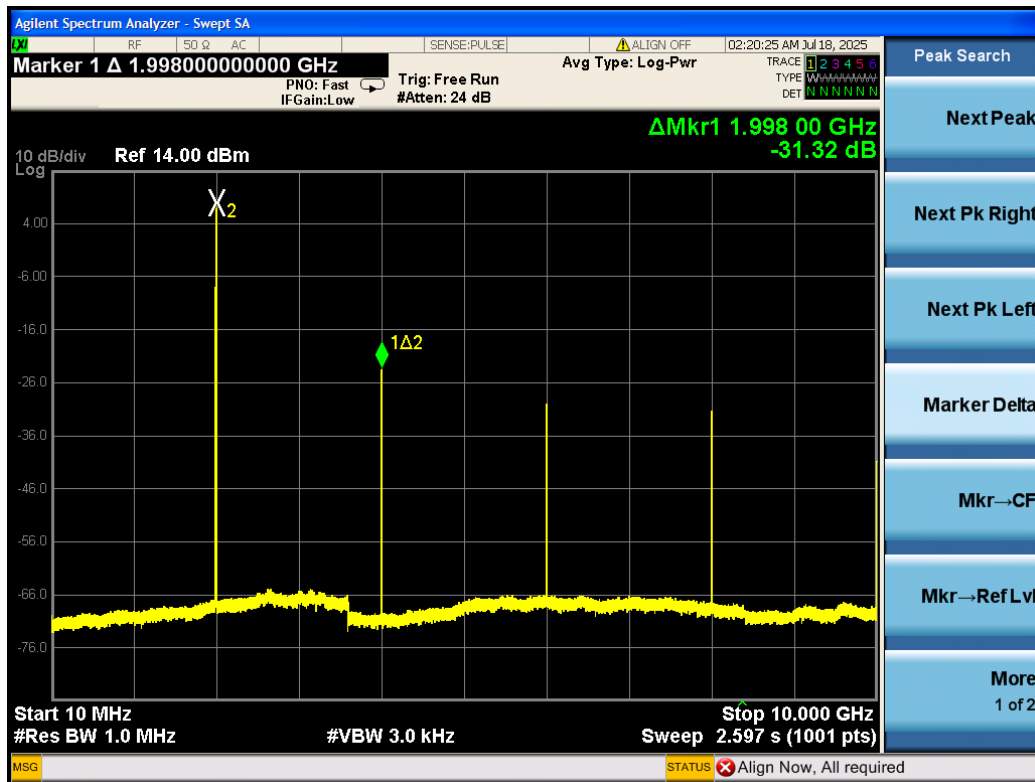


b. 1200MHz



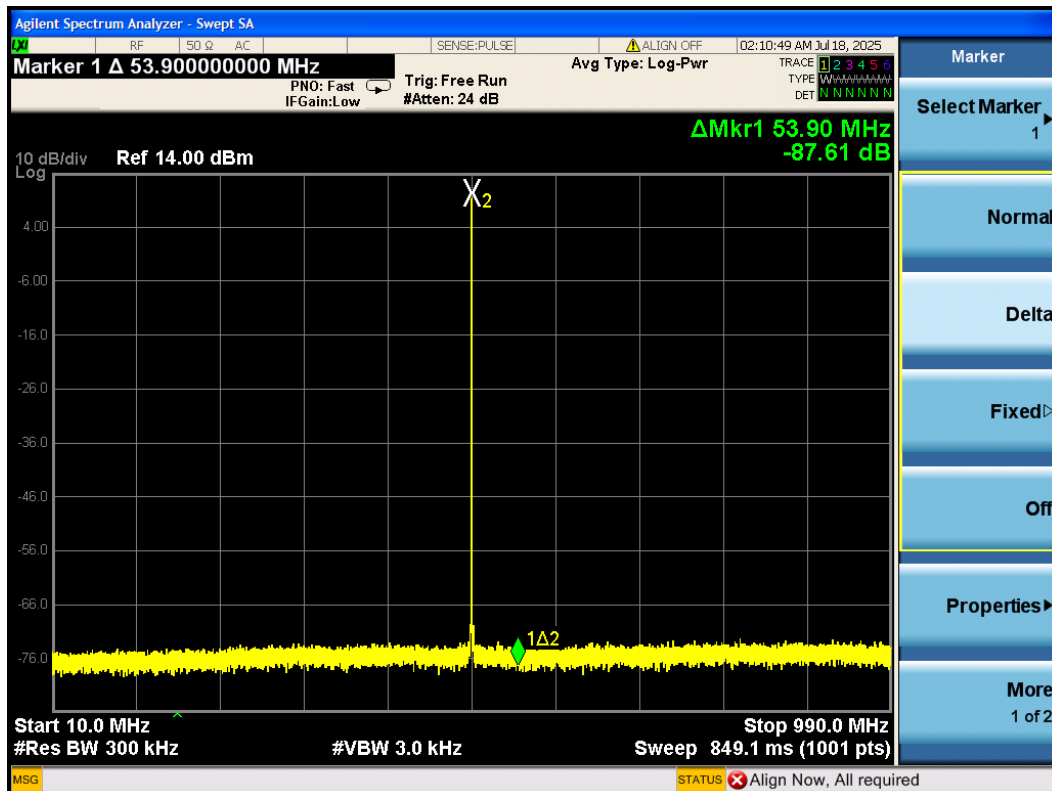


c. 2000MHz



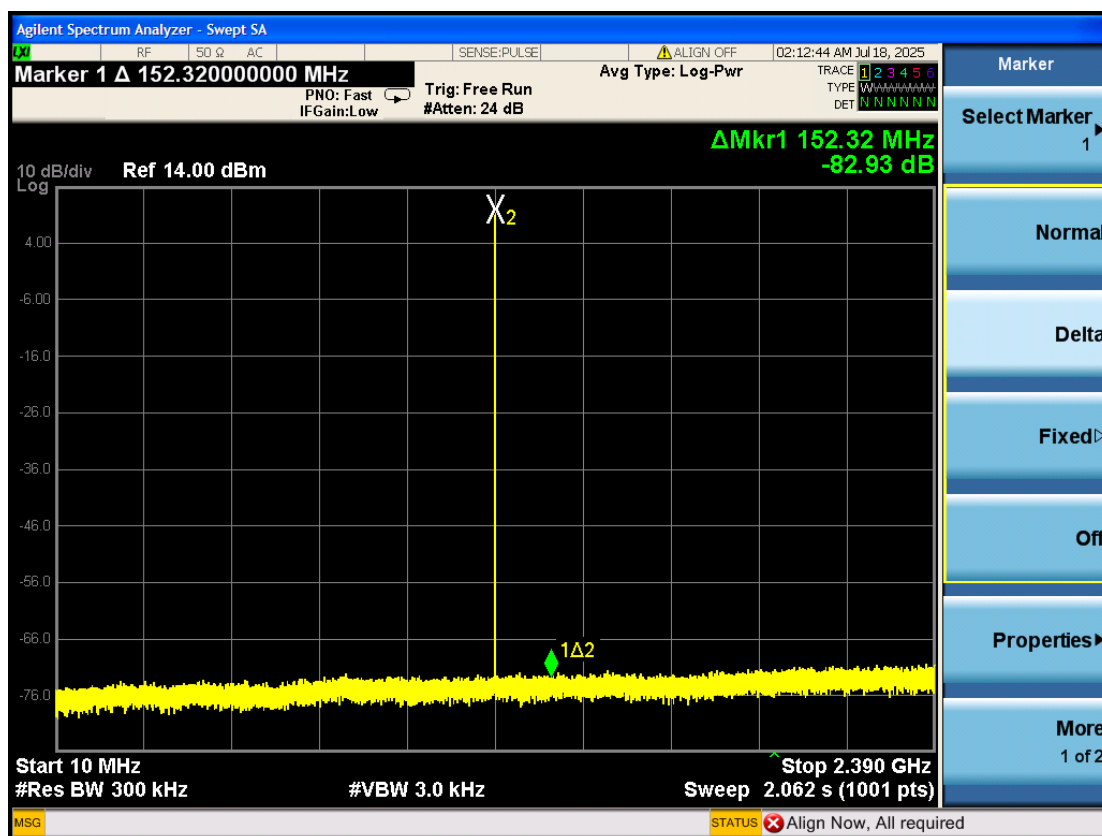
11.3 Spurious

a. 500MHz

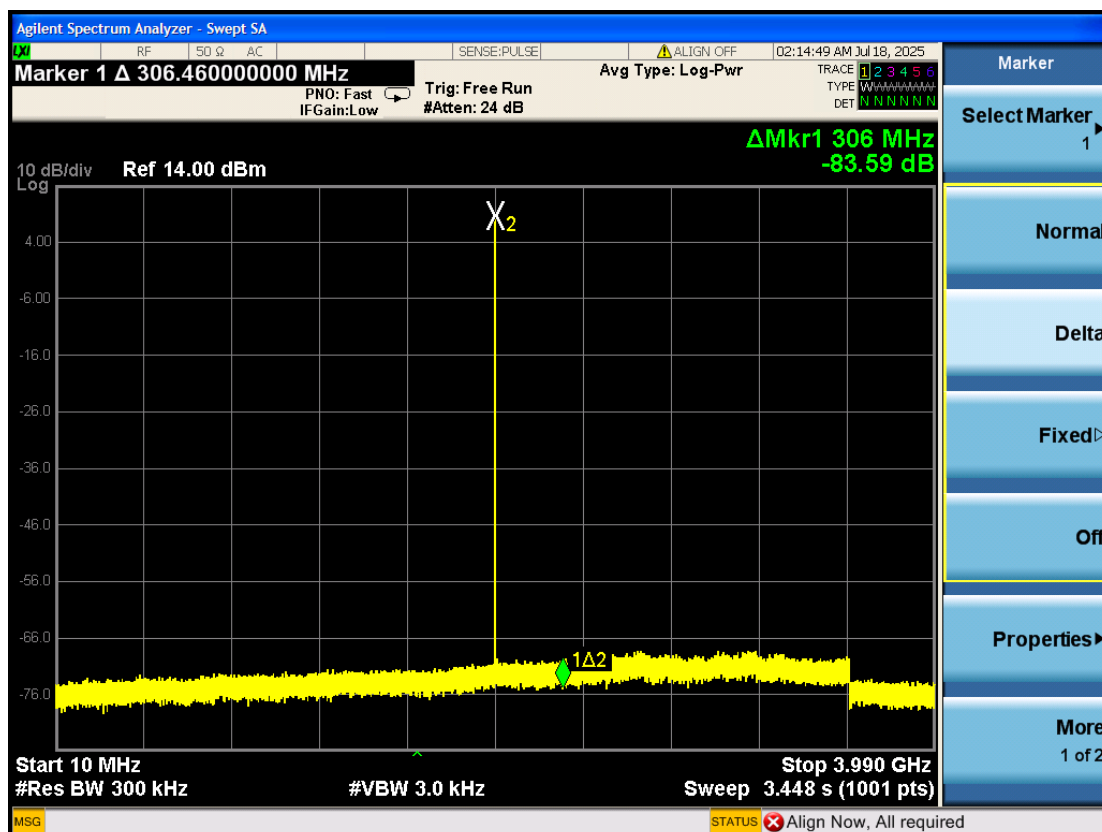




b. 1200MHz

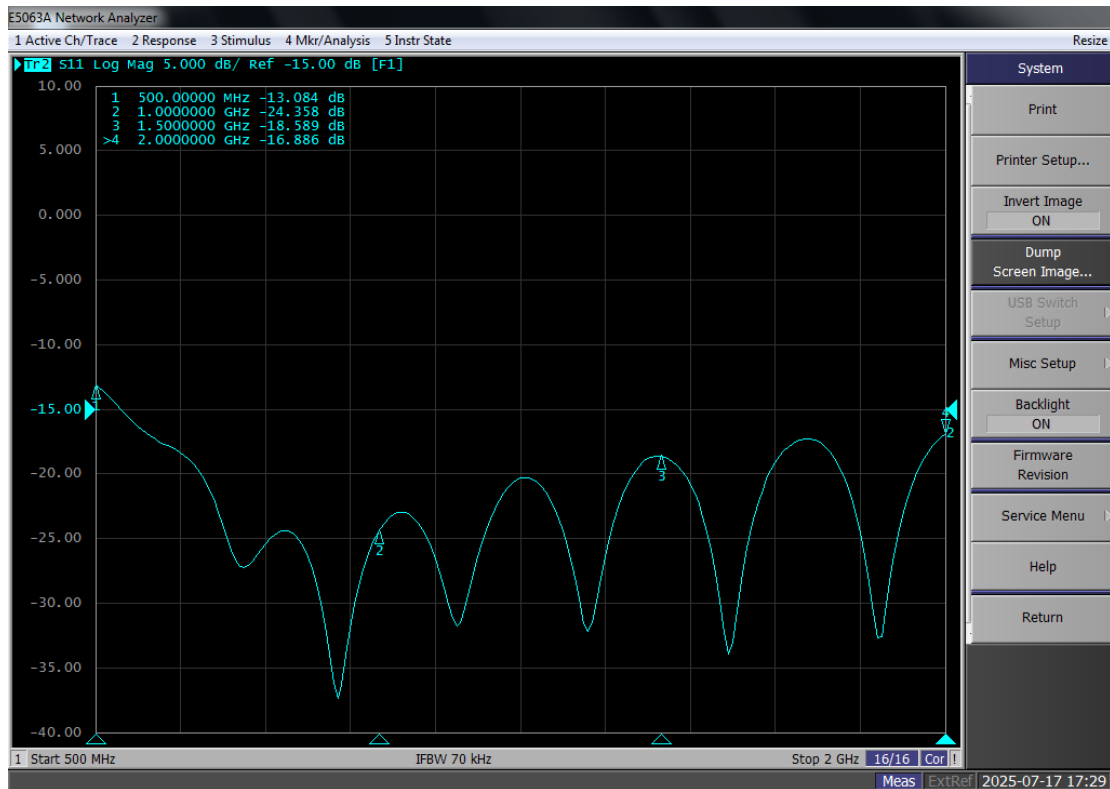


c. 2000MHz

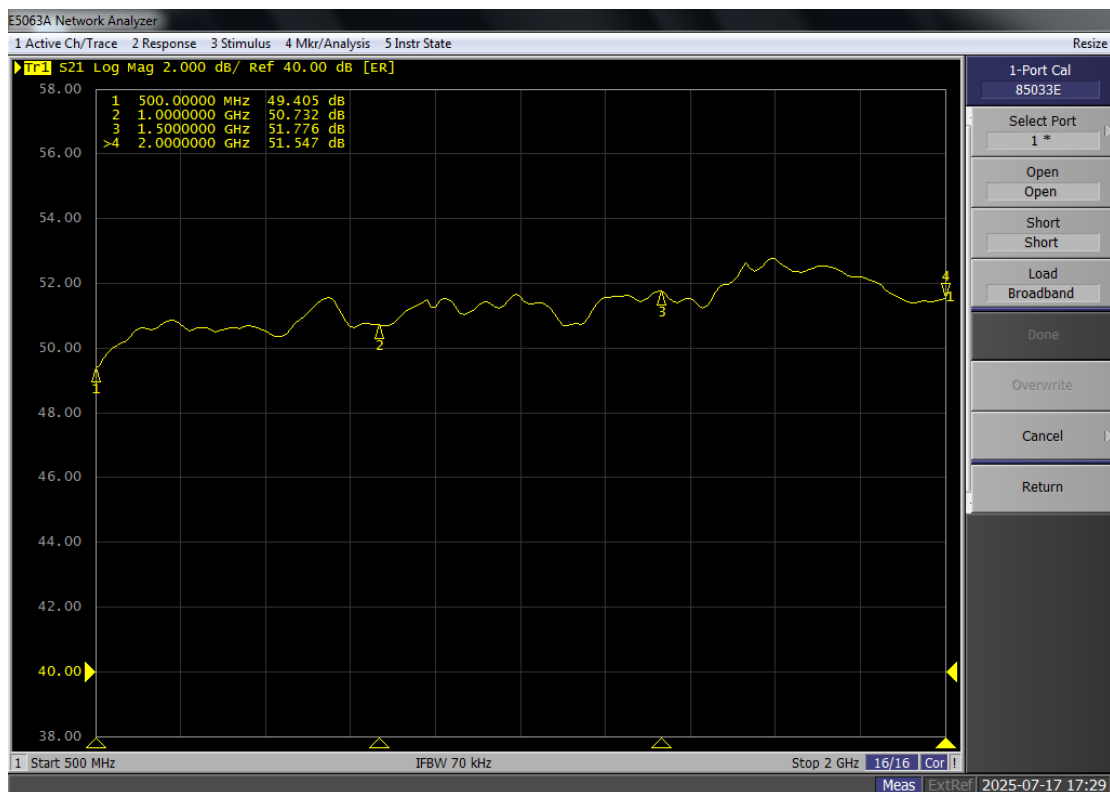




11.4 Input return loss(ALC off / Power 0dBm)



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