



Calibration Laboratory Cert: 5518.01

ISO/IEC 17025:2017 and ANSI/NCSL Z540.1-1994

Accredited Calibration Certificate

Customer Address: Rental

Order / RMA:

Certificate: A24053004DR

Product: Amplifier
 Manufacturer: The EMC Shop
 Model: 2200L
 Serial: 1012

Notes: Frequency Range: 10kHz to 12MHz
 CSV files available upon request

Date of Report: 5/30/2024
 Date of Calibration: 5/30/2024
 Next Calibration:

The next calibration date is defined by the equipment user/owner.

The above instrument was tested and found to be within the Manufacturer's specifications at the tested parameters. The results of the tests performed are held on file at The EMC Shop. The calibration was carried out in accordance with the general requirements of ISO/IEC 17025-2017 and ANSI Z-540-1 using laboratory standards which are traceable to the SI International System of Quantities through the National Institute of Standards and Technology (NIST), and or other Accredited bodies except where none exist. Tests are carried out in environmental conditions controlled to the extent appropriate to the instrument's specification. This certificate shall not be reproduced except in full without the written approval of the laboratory. The uncertainty results meet the requirements of the ISO/IEC 17025-2017 standard and ILAC Doc.P14. Statements of conformity (e.g. Pass or Fail) are made in accordance with Simple Acceptance decision rules as defined in ILAC G8 with a TUR of 4:1 or greater. The customer is responsible for considering whether the inclusion of the uncertainties shown on the certificate would prevent their use of the equipment based on their risk evaluations. Results are accredited unless annotated with an asterisk "*". The results presented are only applicable to the Model/Serial number shown above.

Ambient Conditions of Laboratory

Temperature (°C): **21**
 Relative Humidity (%): **36**

Technician: **Dan Raines**

Technician Signature: _____



Calibration Equipment				
Model	Description	Serial Number	Certificate #	Due Date
ZNB 8	Rohde&Schwarz Vect. Netw. Ana.	102017	S220805-021	8/9/2024
ZV-Z21	Calibration Kit (50Ω)	100800	0001A300706445	7/27/2024

Calibration method used: IEC 61000-4-3

Condition as found:	IN tolerance
Condition as left:	IN tolerance

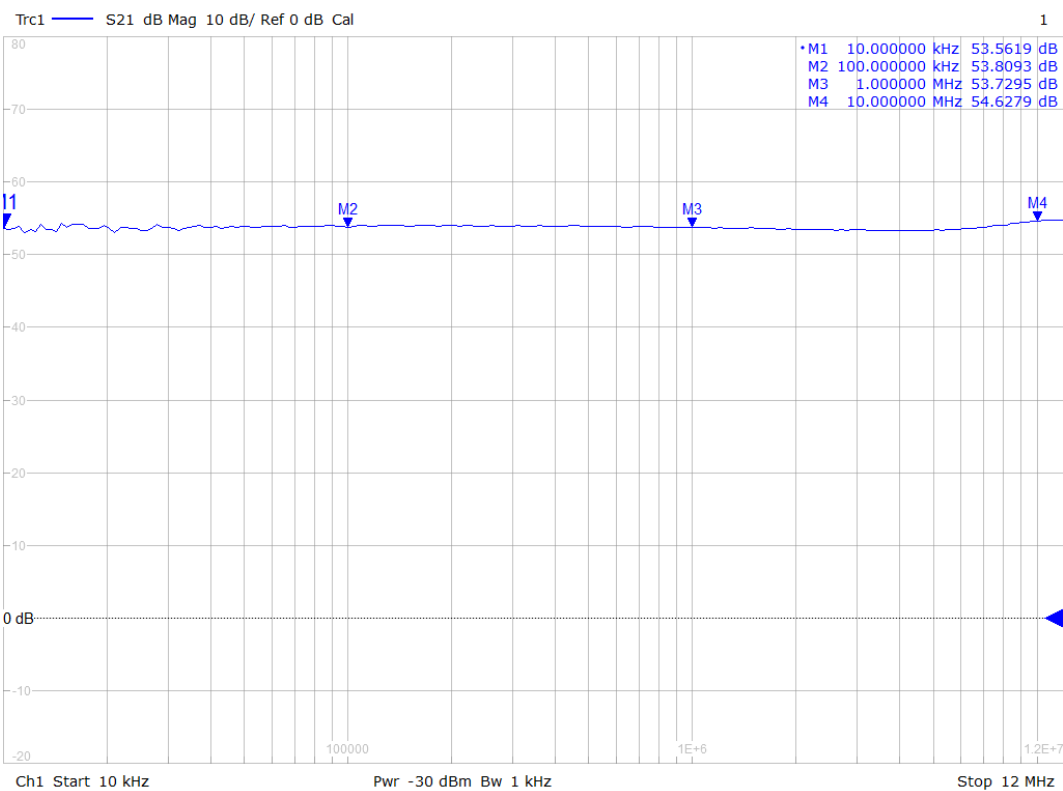
Measuring Uncertainties	
Insertion Loss	0.44 dB

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95%



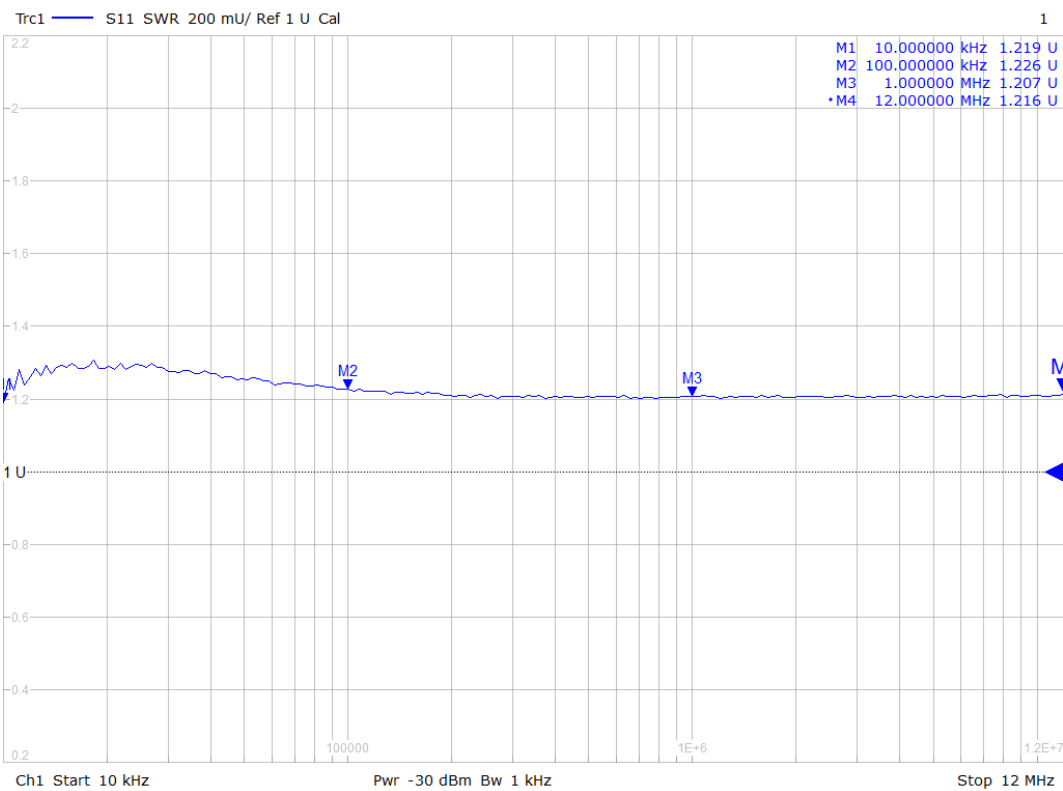
Gain Through Band

Tolerance: ≥ 50 dB



Input VSWR

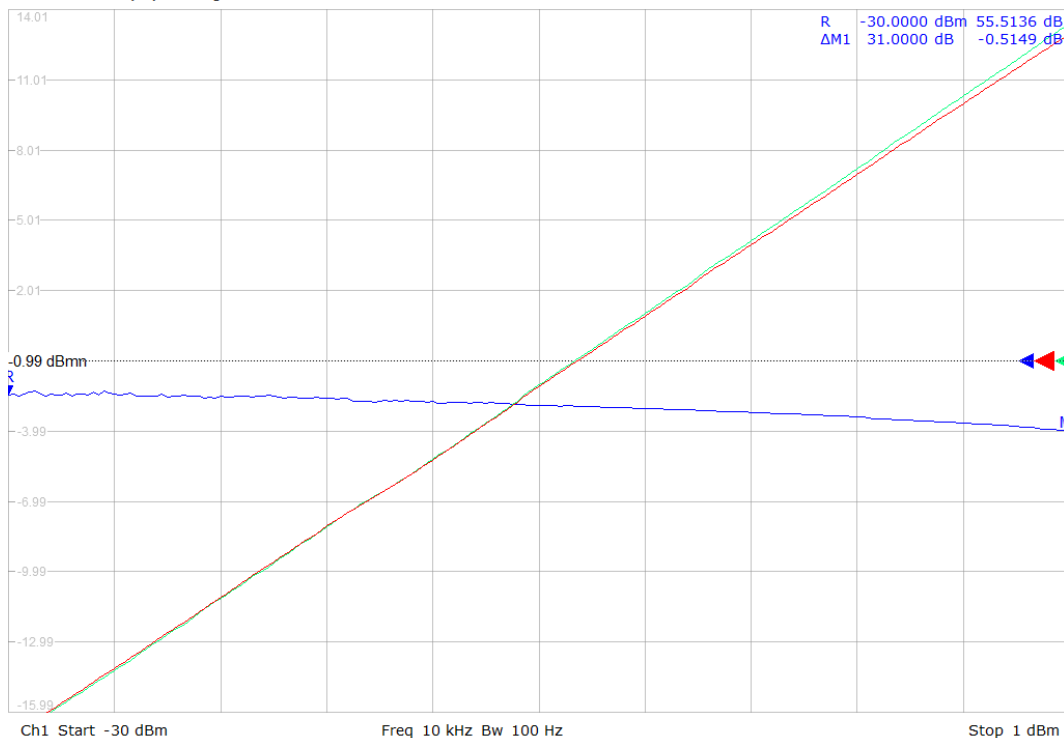
Tolerance: $\leq 1.5:1$





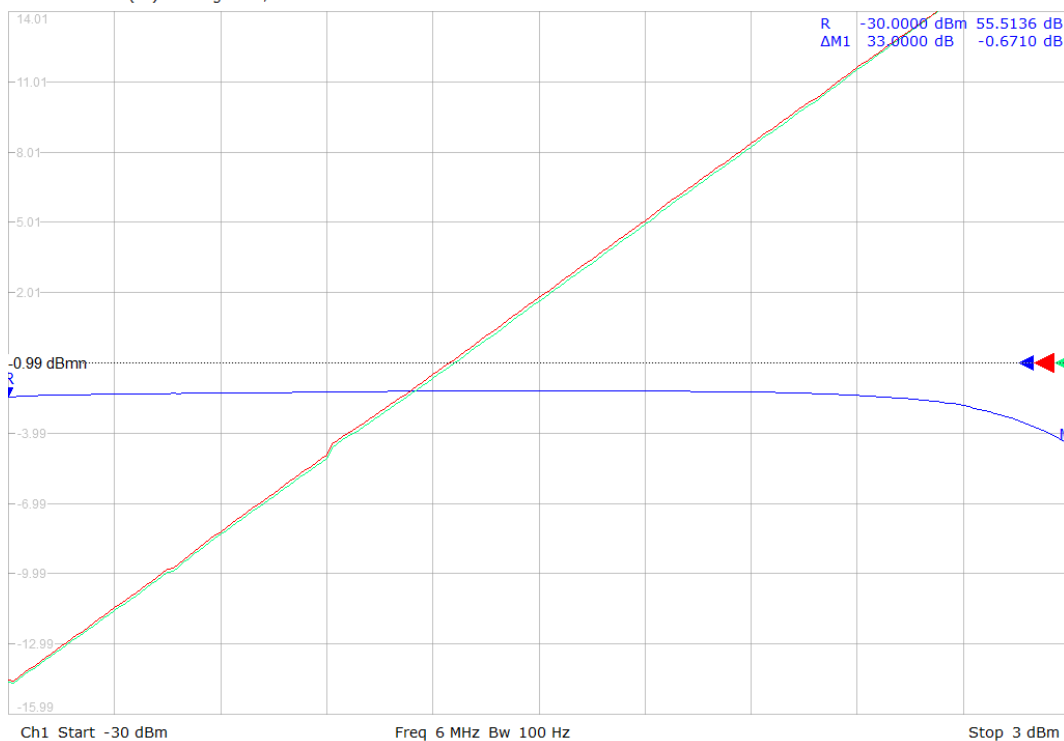
P1dB 10kHz

Trc1 — S21 dB Mag 1 dB/ Ref 56 dB Offs Trc2 — b2(P1) dB Mag 3 dB/ Ref -0.99 dBm Offs 1
 Trc3 — a1(P1) dB Mag 3 dB/ Ref -56.43 dBm Offs



P1dB 6MHz

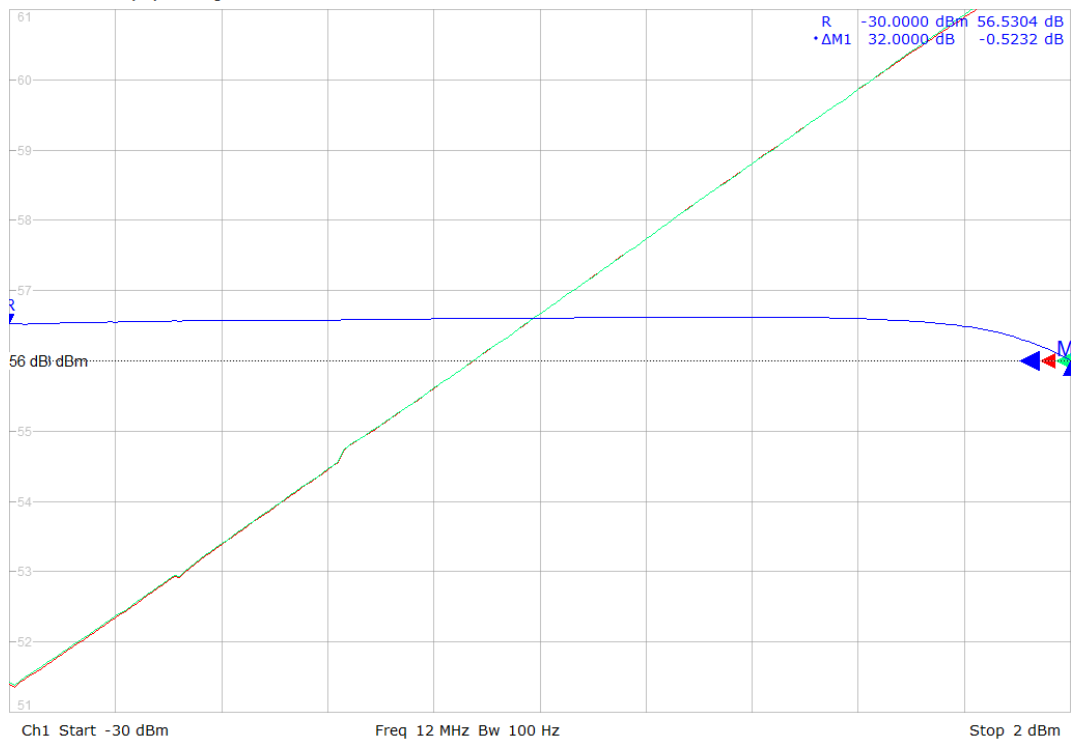
Trc1 — S21 dB Mag 1 dB/ Ref 56 dB Offs Trc2 — b2(P1) dB Mag 3 dB/ Ref -0.99 dBm Offs 1
 Trc3 — a1(P1) dB Mag 3 dB/ Ref -56.43 dBm Offs





P1dB 12MHz

Trc1 — S21 dB Mag 1 dB/ Ref 56 dB Offs Trc2 — b2(P1) dB Mag 3 dB/ Ref 0.18 dBm Offs 1
 Trc3 — a1(P1) dB Mag 3 dB/ Ref -56.43 dBm Offs



*CSV Files for Characterizations are available upon request.

Frequency (Hz)	Gain Through Band (dBm)	VSWR at Input (U)
10,000.0	53.56	1.24
10,360.9	53.47	1.28
10,734.8	53.68	1.25
11,122.1	53.86	1.26
11,523.5	53.06	1.30
11,939.3	53.49	1.25
12,370.2	53.24	1.28
12,816.6	54.16	1.27
13,279.1	53.44	1.29
13,758.3	53.53	1.27
14,254.7	53.21	1.28
14,769.1	54.33	1.30
15,302.1	53.71	1.30
15,854.3	54.19	1.28
16,426.4	54.22	1.30
17,019.2	54.25	1.29
17,633.3	53.61	1.30
18,269.7	53.60	1.30
18,928.9	53.61	1.28
19,612.0	54.02	1.30
20,319.7	53.67	1.28
21,053.0	53.06	1.28
21,812.7	53.80	1.29
22,599.9	53.72	1.29
23,415.4	53.58	1.29
24,260.4	53.57	1.29
25,135.9	53.39	1.28
26,042.9	53.31	1.29
26,982.7	53.56	1.29
27,956.4	54.21	1.28
28,965.2	53.81	1.28
30,010.5	53.82	1.28
31,093.5	53.58	1.28
32,215.5	53.39	1.27
33,378.0	53.56	1.27
34,582.5	53.79	1.27
35,830.5	53.91	1.27
37,123.5	53.99	1.27
38,463.1	53.74	1.27
39,851.1	53.78	1.27

41,289.2	53.92	1.27
42,779.2	53.60	1.26
44,322.9	53.75	1.26
45,922.3	53.90	1.26
47,579.5	53.76	1.25
49,296.5	53.87	1.26
51,075.4	53.96	1.26
52,918.5	53.79	1.24
54,828.1	53.76	1.25
56,806.7	53.87	1.25
58,856.6	53.90	1.25
60,980.5	53.83	1.25
63,181.1	53.93	1.24
65,461.1	54.06	1.25
67,823.3	53.80	1.24
70,270.8	53.74	1.24
72,806.6	53.89	1.24
75,433.9	53.84	1.23
78,156.0	53.91	1.24
80,976.4	53.82	1.24
83,898.5	53.91	1.24
86,926.1	53.98	1.23
90,063.0	54.09	1.23
93,313.0	53.87	1.23
96,680.3	53.89	1.23
100,169.1	53.81	1.23
103,783.9	53.96	1.23
107,529.0	54.00	1.23
111,409.4	54.08	1.22
115,429.7	53.85	1.22
119,595.1	53.95	1.22
123,910.9	54.03	1.22
128,382.3	53.99	1.22
133,015.2	54.03	1.21
137,815.2	54.05	1.22
142,788.4	54.02	1.21
147,941.1	53.87	1.22
153,279.8	53.89	1.22
158,811.0	54.00	1.21
164,541.9	54.04	1.21
170,479.6	54.07	1.21
176,631.6	54.01	1.21
183,005.6	53.93	1.21
189,609.6	54.05	1.21

196,451.9	53.98	1.21
203,541.1	53.97	1.21
210,886.1	53.95	1.21
218,496.2	53.97	1.21
226,380.9	53.98	1.20
234,550.1	53.91	1.21
243,014.2	53.90	1.21
251,783.6	53.92	1.21
260,869.5	54.01	1.21
270,283.3	53.88	1.21
280,036.9	53.93	1.21
290,142.3	53.93	1.21
300,612.5	53.95	1.21
311,460.5	53.97	1.20
322,699.9	53.88	1.21
334,344.9	53.90	1.21
346,410.2	53.90	1.20
358,910.8	54.00	1.21
371,862.5	53.86	1.20
385,281.7	53.92	1.21
399,185.0	53.88	1.21
413,590.1	53.94	1.21
428,515.0	53.87	1.21
443,978.5	54.00	1.21
460,000.0	53.97	1.21
476,599.7	53.91	1.21
493,798.4	53.95	1.21
511,617.7	53.92	1.21
530,080.1	53.91	1.21
549,208.7	53.90	1.20
569,027.6	53.89	1.21
589,561.6	53.90	1.21
610,836.7	53.89	1.21
632,879.5	53.78	1.21
655,717.7	53.81	1.20
679,380.1	53.89	1.20
703,896.4	53.84	1.20
729,297.4	53.84	1.21
755,615.0	53.83	1.20
782,882.3	53.74	1.21
811,133.6	53.76	1.20
840,404.3	53.79	1.21
870,731.4	53.77	1.21
902,152.8	53.76	1.20

934,708.1	53.70	1.21
968,438.2	53.75	1.21
1,003,385.5	53.73	1.21
1,039,593.9	53.79	1.21
1,077,108.9	53.70	1.21
1,115,977.7	53.69	1.21
1,156,249.2	53.66	1.21
1,197,973.9	53.76	1.20
1,241,204.2	53.63	1.20
1,285,994.6	53.64	1.21
1,332,401.3	53.60	1.21
1,380,482.7	53.61	1.21
1,430,299.1	53.67	1.20
1,481,913.2	53.70	1.21
1,535,389.9	53.68	1.20
1,590,796.4	53.63	1.21
1,648,202.2	53.60	1.20
1,707,679.7	53.64	1.21
1,769,303.4	53.49	1.21
1,833,150.9	53.51	1.21
1,899,302.4	53.57	1.21
1,967,841.1	53.48	1.20
2,038,853.1	53.46	1.21
2,112,427.6	53.50	1.20
2,188,657.2	53.45	1.21
2,267,637.6	53.47	1.21
2,349,468.1	53.50	1.21
2,434,251.6	53.47	1.20
2,522,094.6	53.41	1.20
2,613,107.5	53.37	1.21
2,707,404.7	53.42	1.21
2,805,104.8	53.33	1.21
2,906,330.5	53.45	1.20
3,011,209.0	53.41	1.20
3,119,872.2	53.40	1.21
3,232,456.7	53.31	1.21
3,349,103.9	53.36	1.21
3,469,960.5	53.33	1.21
3,595,178.3	53.31	1.21
3,724,914.8	53.36	1.21
3,859,332.9	53.35	1.21
3,998,601.8	53.30	1.21
4,142,896.3	53.30	1.21
4,292,397.8	53.29	1.21

4,447,294.3	53.31	1.21
4,607,780.5	53.38	1.21
4,774,057.9	53.30	1.21
4,946,335.7	53.37	1.21
5,124,830.4	53.42	1.21
5,309,766.3	53.37	1.21
5,501,375.8	53.50	1.21
5,699,899.7	53.43	1.20
5,905,587.7	53.54	1.21
6,118,698.1	53.59	1.20
6,339,498.9	53.59	1.20
6,568,267.6	53.66	1.21
6,805,291.7	53.70	1.21
7,050,869.1	53.79	1.21
7,305,308.5	53.86	1.21
7,568,929.6	53.97	1.21
7,842,063.8	53.99	1.21
8,125,054.4	54.10	1.20
8,418,257.1	54.26	1.21
8,722,040.3	54.34	1.21
9,036,786.0	54.44	1.21
9,362,889.6	54.48	1.21
9,700,761.1	54.58	1.21
10,050,825.1	54.64	1.21
10,413,521.6	54.70	1.20
10,789,306.4	54.70	1.21
11,178,651.9	54.73	1.21
11,582,047.5	54.80	1.21
12,000,000.0	54.74	1.21

End of Calibration Report: Amplifier cert. rev. 1