



**SUMMARY TEST DATA
ON
HADA-D2001**

PL45094/2413

Customer: _____ Tested By: Anton L.
 SO No: _____ Temperature: +25°C -40°C +85°C
 Model No: HADA-D2001 Date: 3/27/23
 Serial No: PL45094/2413 Drawing No: 27620201 Rev: A1

TEST. ITEM NO	PARAMETERS	SPECIFIED VALUE	TEST RESULTS	QA QC
1	Frequency Range:	0.5 GHz – 2.0 GHz	0.5 GHz – 2.0 GHz See Plot	
2	TSS:	-44 dBm Min @ -40°C to +85°	-45.5 dBm See Plot	
3	Frequency Flatness:	±0.75 dB Max	±0.3 dB See Plot	
4	Input / Output Characteristics: (93 Ω)	Y = 2350 + 50X [X: Input (dBm), Y: Output (mv)]	Pass	
5	Logging Accuracy	±1.5 dB Max (@ +25°C, 1.0 GHz) [-40 dBm ≤ INPUT ≤ 0 dBm] ±2.2 dB Max (Note)	+0.68 / +0.14 dB +0.74 / -1.12 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	+0.32 / -0.39 dB +0.59 / -0.43 dB See Plot	
7	Maximum Input Power (CW):	+23 dBm	Pass	
8	Duty Cycle:	100%	Pass	
9	Rise Time:	30 ns Max (10% to 90%)	23.9 ns See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	208 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	+97 mV @ +25°C +74 mV @ -40°C +118 mV @ +85°C	
12	Input VSWR:	2.5:1 Max @ +23 dBm	1.25:1 See Plot	
13	Propagation Delay:	60 ns Max	40 ns	

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14	Power Supply:	+12 ± 1VDC @ 125 mA Max -12 ± 1VDC @ 75 mA Max	115 mA 65 mA	
15	Warm Up Time:	2 Minutes Max	2 Minutes	

*Notes: Includes Frequency Flatness. Input Power, Temperature Deviation and Deviation for DC Offset. The test shall be performed using RG-316 (or equivalent), 20cm, 93±0.5 Ohms terminated.

QA/QC Approval: *K. Hunter*

Date: 3-27-24



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Log Linearity and Log Accuracy @ +25°C

DC Offset= 0.097 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2357
	SLOPE (mV/dB)	50.3

1 GHz	INTERCEPT (mV)	2375
	SLOPE (mV/dB)	50.2

2 GHz	INTERCEPT (mV)	2375
	SLOPE (mV/dB)	50.4

Flatness +/- dB	
Max Video Output Volts	
Min Video Output Volts	

	-40	-35	-30	-25	-20	-15	-10	-5	0
	344	603	847	1087	1356	1614	1834	2096	2373
	0	7	0	-12	6	12	-20	-9	16
	0.00	0.15	0.00	-0.24	0.11	0.24	-0.39	-0.18	0.32
	-0.12	0.06	-0.06	-0.26	0.12	0.28	-0.32	-0.08	0.46
	367	624	872	1111	1378	1634	1857	2120	2384
	-2	5	2	-10	6	11	-17	-4	9
	-0.03	0.09	0.03	-0.20	0.12	0.23	-0.33	-0.09	0.18
	0.34	0.48	0.44	0.22	0.56	0.68	0.14	0.40	0.68
	360	618	864	1104	1373	1631	1854	2118	2387
	0	5	0	-12	5	11	-18	-5	12
	0.00	0.12	0.00	-0.23	0.11	0.23	-0.35	-0.11	0.23
	0.20	0.36	0.28	0.08	0.46	0.52	0.08	0.38	0.74
	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
	0.37	0.62	0.87	1.11	1.38	1.63	1.86	2.12	2.39
	0.34	0.60	0.85	1.09	1.36	1.61	1.83	2.10	2.37

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.32	-0.39
LOGGING ACCURACY (dB)	0.46	-0.32

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.23	-0.33
LOGGING ACCURACY (dB)	0.68	0.14

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.23	-0.35
LOGGING ACCURACY (dB)	0.74	0.08

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.32	-0.39

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.74	-0.32

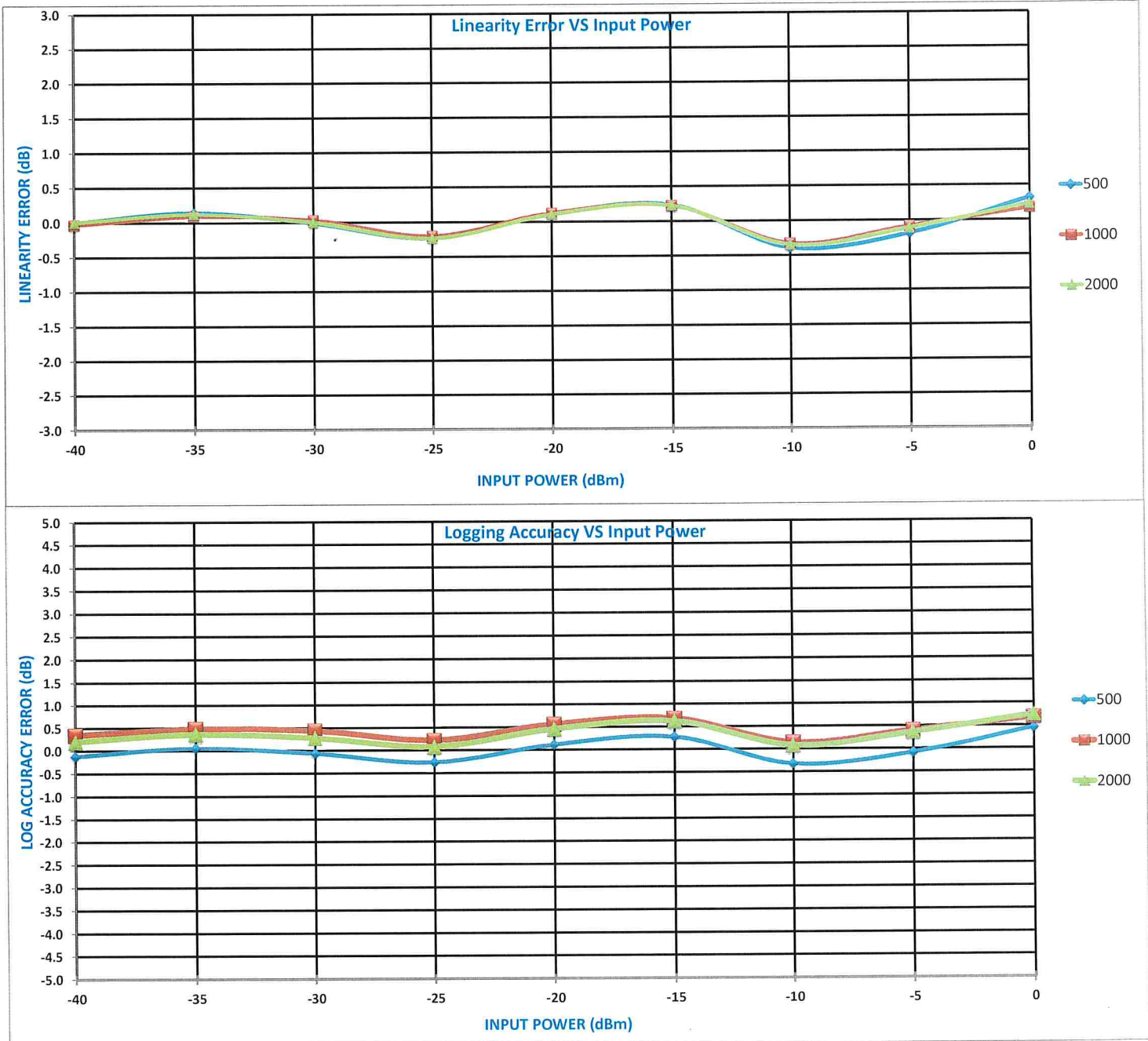
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SUMMARY TEST DATA ON HADA-D2001

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Log Linearity and Log Accuracy @ +25°C



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Log Linearity and Log Accuracy @ -40°C

DC Offset= 0.074 V

Frequency

0.5 GHz	INTERCEPT (mV)	2300
	SLOPE (mV/dB)	49.3

1 GHz	INTERCEPT (mV)	2316
	SLOPE (mV/dB)	49

2 GHz	INTERCEPT (mV)	2320
	SLOPE (mV/dB)	49.2

Flatness +/- dB	
Max Video Output Volts	
Min Video Output Volts	

	-40	-35	-30	-25	-20	-15	-10	-5	0
	338	572	816	1053	1320	1576	1794	2045	2310
	10	-2	-5	-14	6	16	-13	-8	10
	0.20	-0.05	-0.10	-0.29	0.13	0.32	-0.26	-0.16	0.21
	-0.24	-0.56	-0.68	-0.94	-0.60	-0.48	-1.12	-1.10	-0.80
	362	593	841	1081	1344	1597	1821	2066	2316
	7	-7	-4	-9	8	16	-5	-5	0
	0.14	-0.15	-0.09	-0.19	0.17	0.33	-0.10	-0.11	-0.01
	0.24	-0.14	-0.18	-0.38	-0.12	-0.06	-0.58	-0.68	-0.68
	362	592	838	1078	1344	1597	1822	2069	2323
	10	-6	-6	-12	8	15	-6	-5	3
	0.20	-0.12	-0.12	-0.25	0.16	0.30	-0.13	-0.11	0.06
	0.24	-0.16	-0.24	-0.44	-0.12	-0.06	-0.56	-0.82	-0.54
	0.20	0.20	0.30	0.30	0.20	0.20	0.30	0.20	0.10
	0.36	0.59	0.84	1.08	1.34	1.60	1.82	2.07	2.32
	0.34	0.57	0.82	1.05	1.32	1.58	1.79	2.05	2.31

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.32	-0.29
LOGGING ACCURACY (dB)	-0.24	-1.12

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.33	-0.19
LOGGING ACCURACY (dB)	0.24	-0.68

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.30	-0.25
LOGGING ACCURACY (dB)	0.24	-0.62

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.33	-0.29

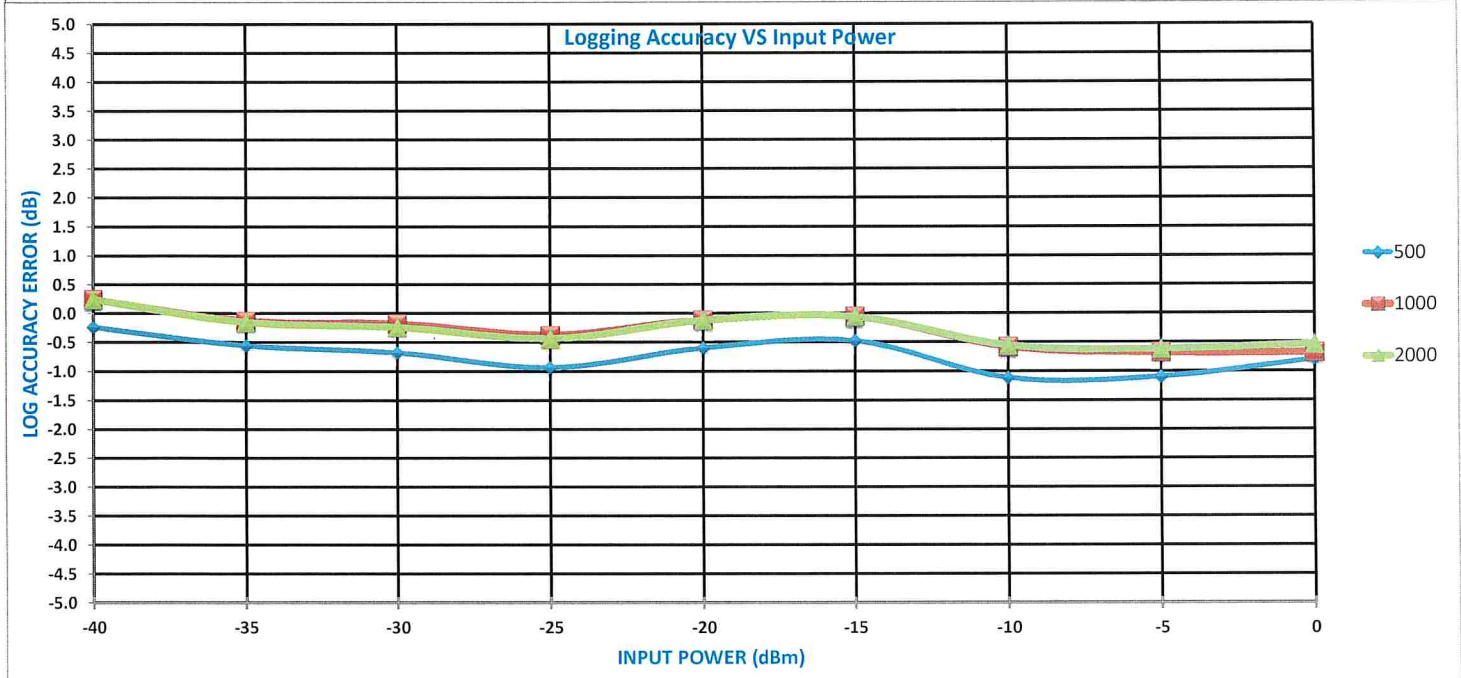
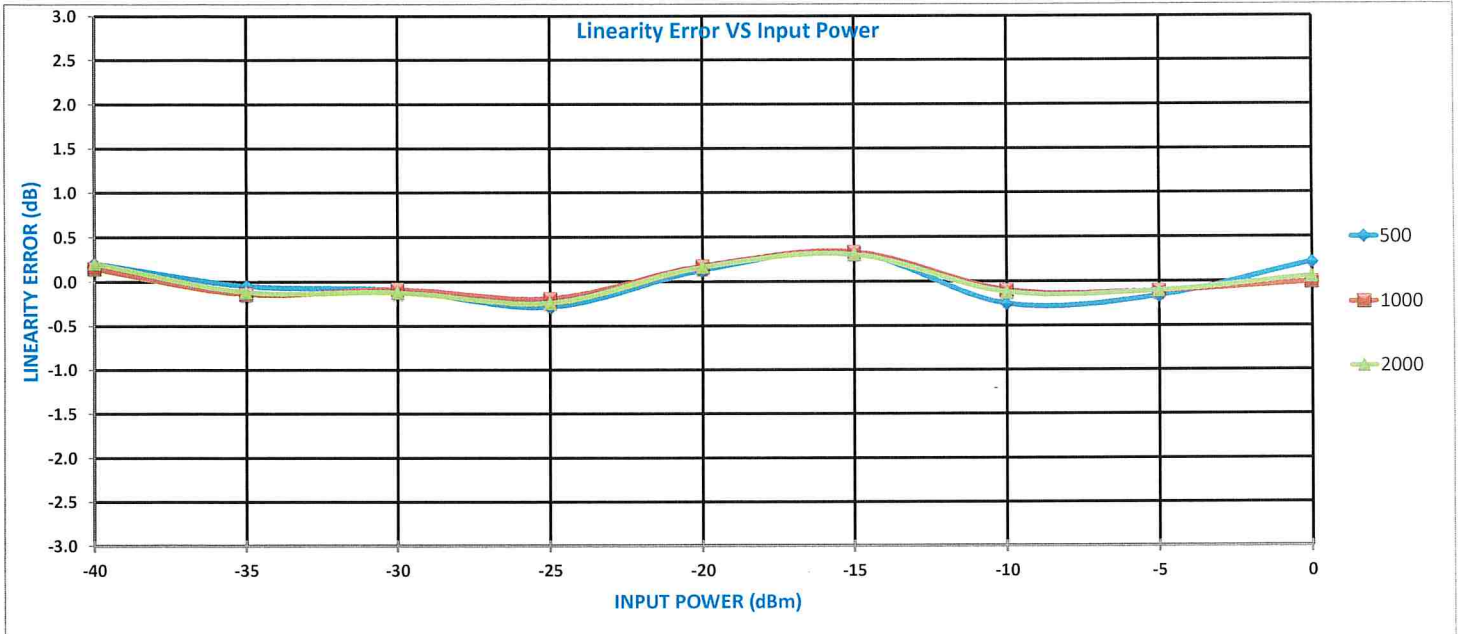
Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.24	-1.12



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Log Linearity and Log Accuracy @ -40°C



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SUMMARY TEST DATA ON HADA-D2001

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Log Linearity and Log Accuracy @ +85°C

DC Offset= 0.118 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2330
	SLOPE (mV/dB)	50.3

1 GHz	INTERCEPT (mV)	2354
	SLOPE (mV/dB)	50.2

2 GHz	INTERCEPT (mV)	2354
	SLOPE (mV/dB)	50.4

Flatness +/- dB		
Max Video Output Volts		
Min Video Output Volts		

	-40	-35	-30	-25	-20	-15	-10	-5	0
332	581	816	1055	1324	1581	1806	2069	2360	
13	10	-6	-19	-1	5	-22	-10	30	
0.25	0.20	-0.12	-0.37	-0.02	0.09	-0.43	-0.20	0.59	
-0.36	-0.38	-0.68	-0.90	-0.52	-0.38	-0.88	-0.62	0.20	
356	606	844	1083	1350	1606	1834	2101	2374	
10	9	-4	-16	0	5	-18	-2	20	
0.19	0.17	-0.09	-0.33	-0.01	0.09	-0.37	-0.05	0.39	
0.12	0.12	-0.12	-0.34	0.00	0.12	-0.32	0.02	0.48	
349	600	837	1076	1345	1602	1830	2099	2377	
11	10	-5	-18	-1	4	-20	-3	23	
0.22	0.20	-0.10	-0.36	-0.02	0.08	-0.40	-0.06	0.45	
-0.02	0.09	-0.26	-0.46	-0.10	0.04	-0.40	-0.02	0.54	
0.20	0.20	0.30	0.30	0.30	0.20	0.30	0.30	0.20	
0.36	0.61	0.84	1.08	1.35	1.61	1.83	2.10	2.38	
0.33	0.58	0.82	1.06	1.32	1.58	1.81	2.07	2.36	

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.59	-0.43
LOGGING ACCURACY (dB)	0.20	-0.90

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.39	-0.37
LOGGING ACCURACY (dB)	0.48	-0.34

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.45	-0.40
LOGGING ACCURACY (dB)	0.54	-0.48

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.59	-0.43

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.54	-0.90

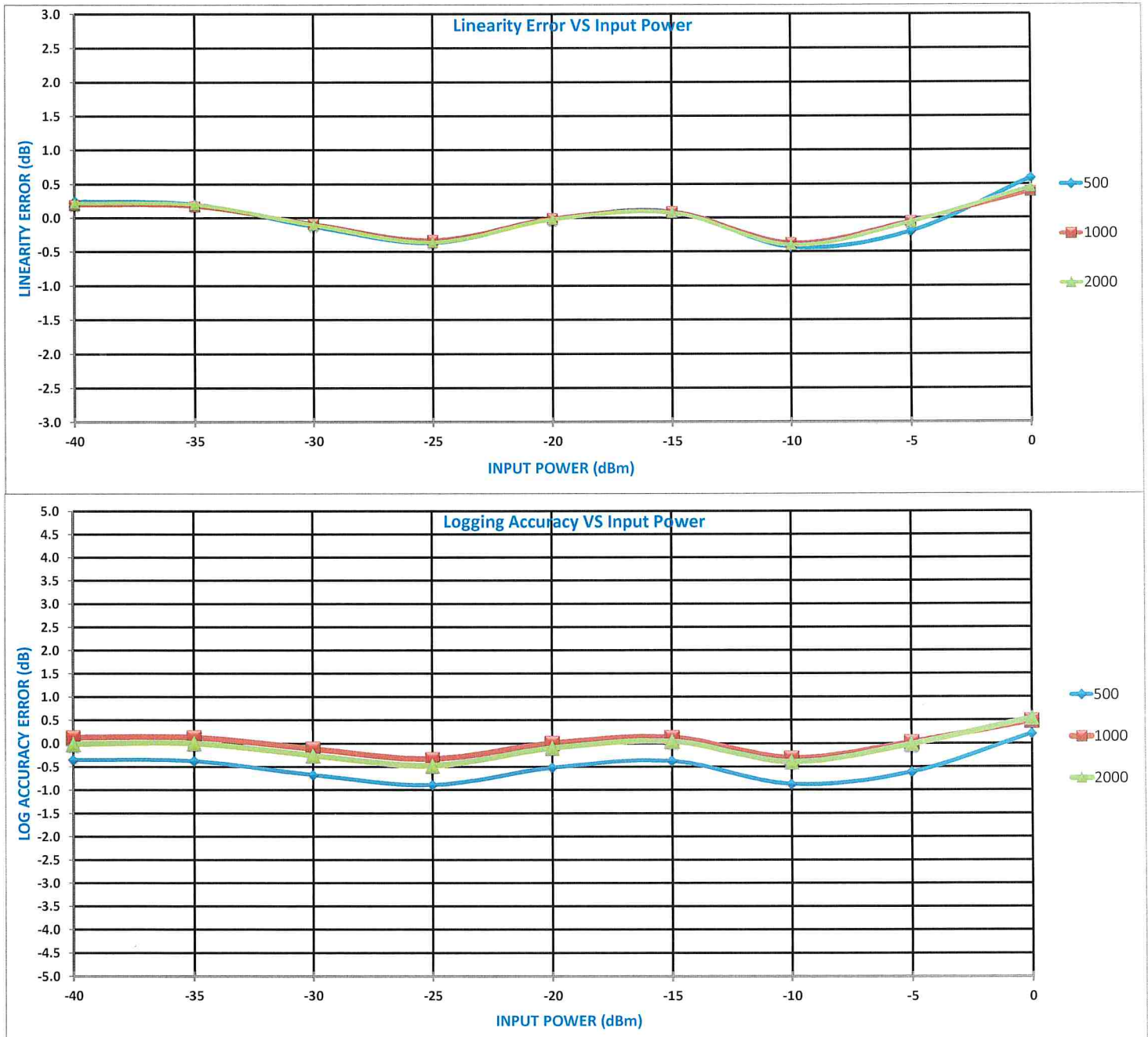
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Log Linearity and Log Accuracy @ +85°C



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SUMMARY TEST DATA
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TSS -45.5 dBm



MSO-X 3034T, MY59241076, 07.50.2021102830: Tue Mar 26 08:44:33 2024



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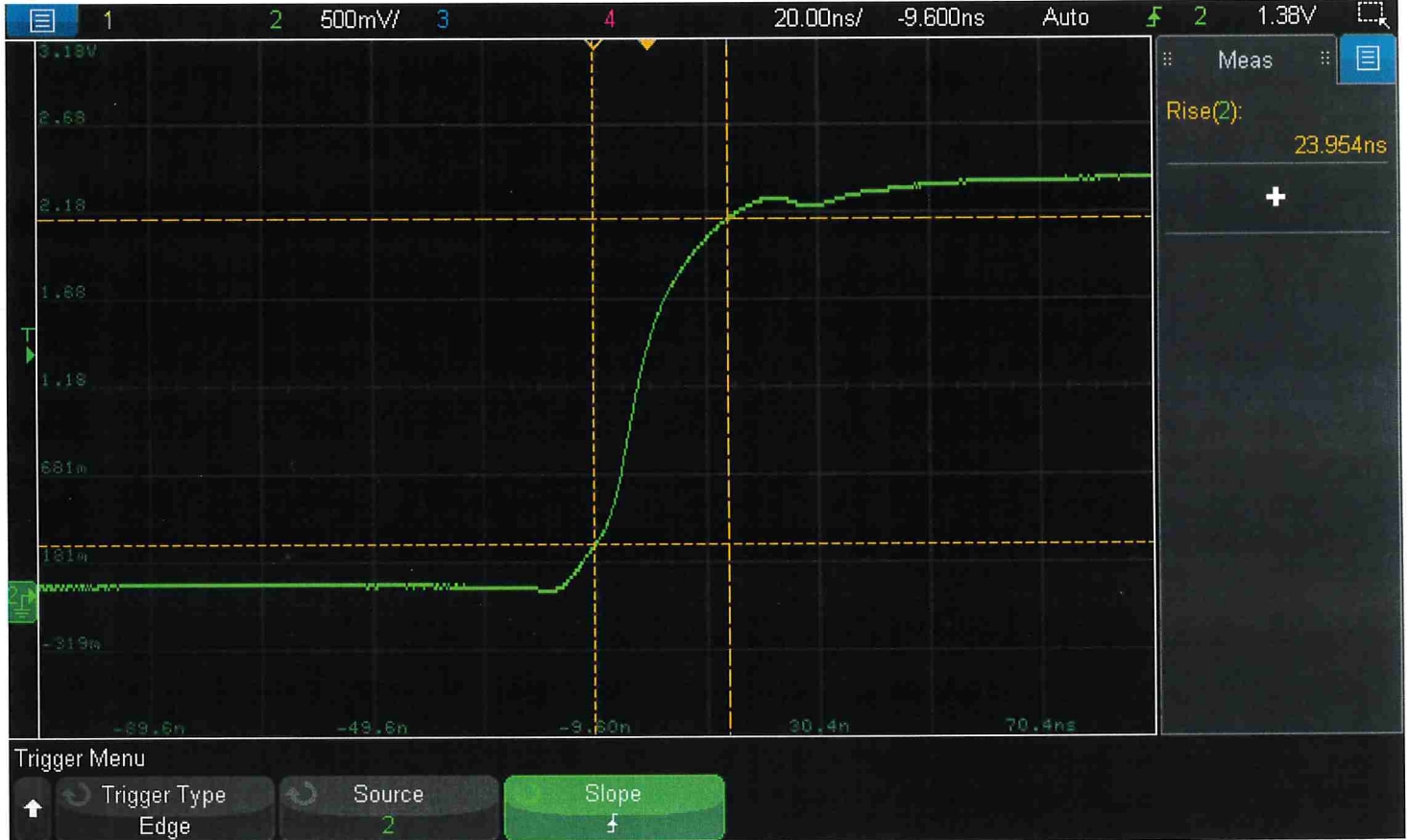
SUMMARY TEST DATA
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Rise Time 23.9 ns



MSO-X 3034T, MY59241076, 07.50.2021102830: Tue Mar 26 08:09:09 2024



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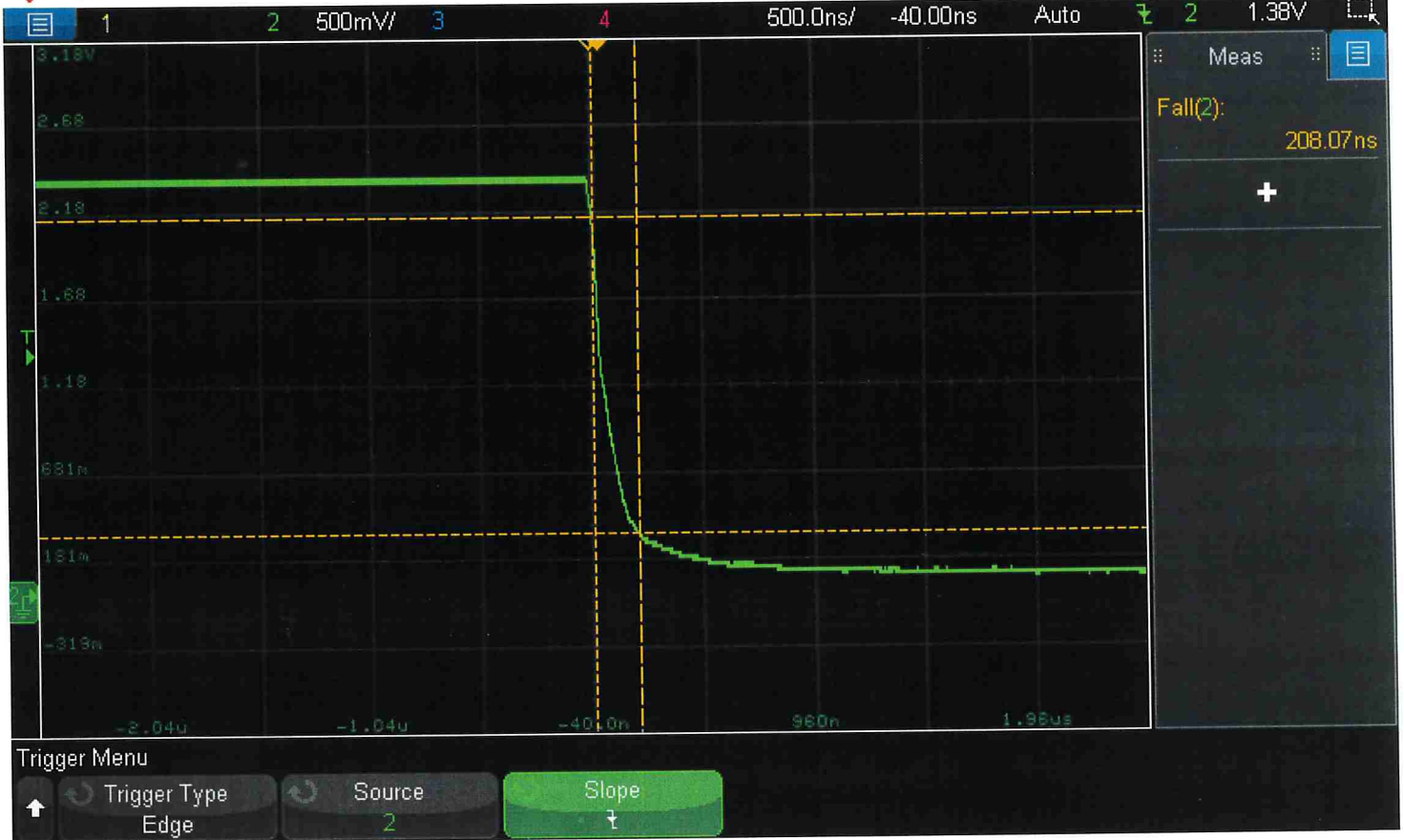
SUMMARY TEST DATA
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PL45094/2413

Fall Time 208 ns



MSO-X 3034T, MY59241076, 07.50.2021102830: Tue Mar 26 08:04:28 2024



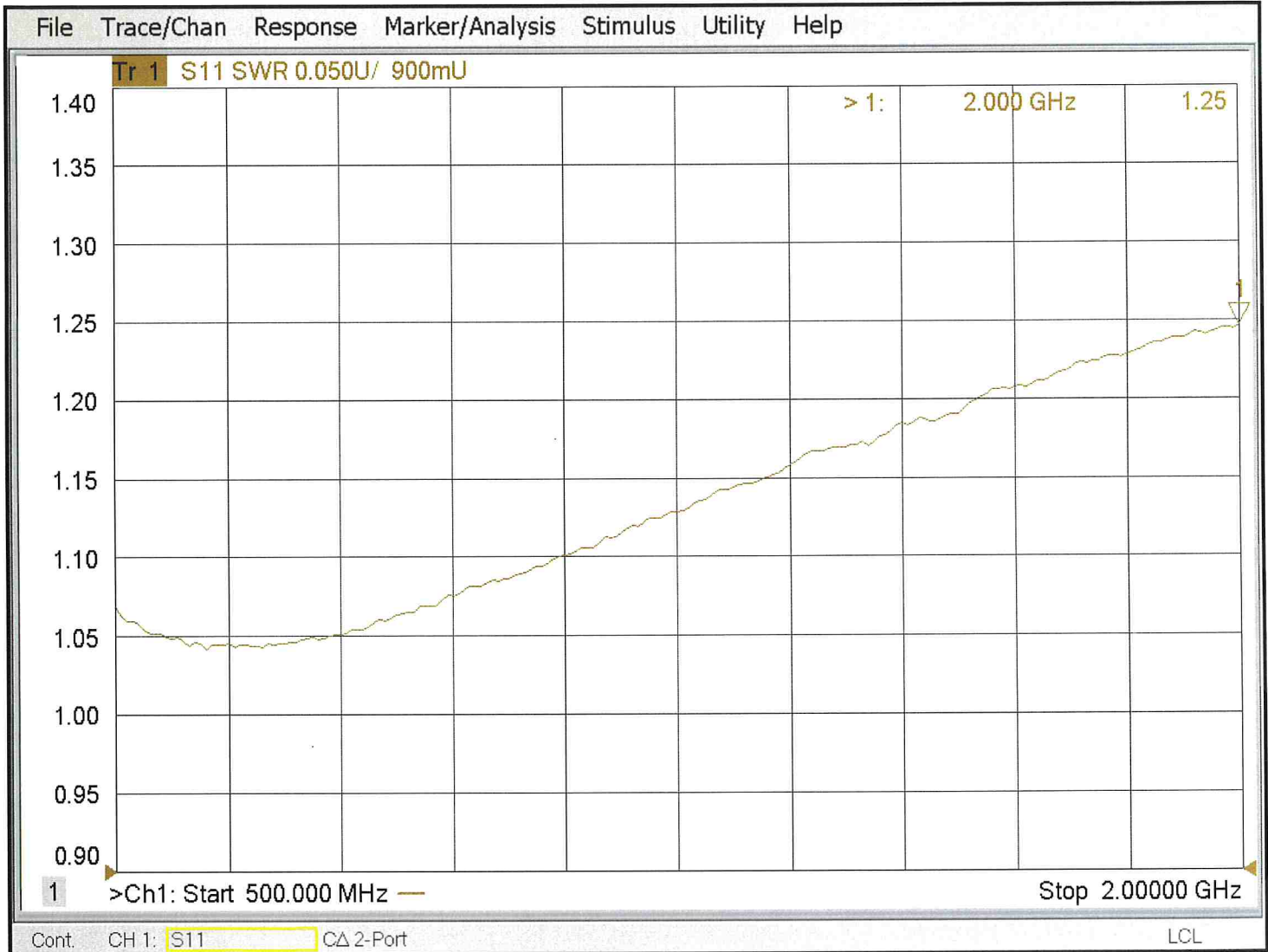
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VSWR 1.25:1



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