



**SUMMARY TEST DATA
ON
HADA-D2001**

PL45098/2413

Customer: _____	Tested By: <u>Anton L.</u>
SO No: _____	Temperature: <u>+25°C -40°C +85°C</u>
Model No: <u>HADA-D2001</u>	Date: <u>3/27/23</u>
Serial No: <u>PL45098/2413</u>	Drawing No: <u>27620201</u> Rev: <u>A1</u>

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	PMI QA3
2	TSS:	-44 dBm Min @ -40°C to +85°	-45.5 dBm See Plot	
3	Frequency Flatness:	±0.75 dB Max	±0.4 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)	+0.52 / 0.00 dB +0.82 / -1.12 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	+0.28 / -0.33 dB +0.55 / -0.41 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 ns See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	195 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	+100 mV @ +25°C +99 mV @ -40°C +121 mV @ +85°C	
12	Input VSWR:	2.5:1 Max @ +23 dBm	1.26:1 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	PMI QA3
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: *H. Luter*

Date: 3-27-24



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Log Linearity and Log Accuracy @ +25°C

DC Offset= 0.100 V

Frequency

0.5 GHz	INTERCEPT (mV)	2344
	SLOPE (mV/dB)	50.2

1 GHz	INTERCEPT (mV)	2364
	SLOPE (mV/dB)	50

2 GHz	INTERCEPT (mV)	2371
	SLOPE (mV/dB)	50.3

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	341	595	836	1076	1345	1605	1826	2085	2358
	3	7	-3	-14	4	13	-16	-8	14
	0.07	0.13	-0.06	-0.28	0.08	0.27	-0.33	-0.16	0.28
	-0.18	-0.10	-0.28	-0.48	-0.10	0.10	-0.48	-0.30	0.16
	364	616	861	1101	1368	1626	1850	2109	2372
	2	4	-2	-12	5	13	-13	-5	8
	0.04	0.07	-0.03	-0.24	0.10	0.26	-0.27	-0.09	0.16
	0.28	0.32	0.22	0.02	0.36	0.52	0.00	0.18	0.44
	365	617	861	1101	1371	1629	1854	2115	2382
	4	5	-3	-14	5	12	-15	-5	11
	0.08	0.09	-0.05	-0.28	0.10	0.23	-0.29	-0.10	0.22
	0.30	0.34	0.22	0.02	0.42	0.58	0.08	0.30	0.64
	0.20	0.20	0.20	0.20	0.30	0.20	0.30	0.30	0.20
	0.37	0.62	0.86	1.10	1.37	1.63	1.85	2.12	2.38
	0.34	0.60	0.84	1.08	1.35	1.61	1.83	2.09	2.36

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.28	-0.33
LOGGING ACCURACY (dB)	0.16	-0.48

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.26	-0.27
LOGGING ACCURACY (dB)	0.52	0.00

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.23	-0.29
LOGGING ACCURACY (dB)	0.64	0.02

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.28	-0.33

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.64	-0.48

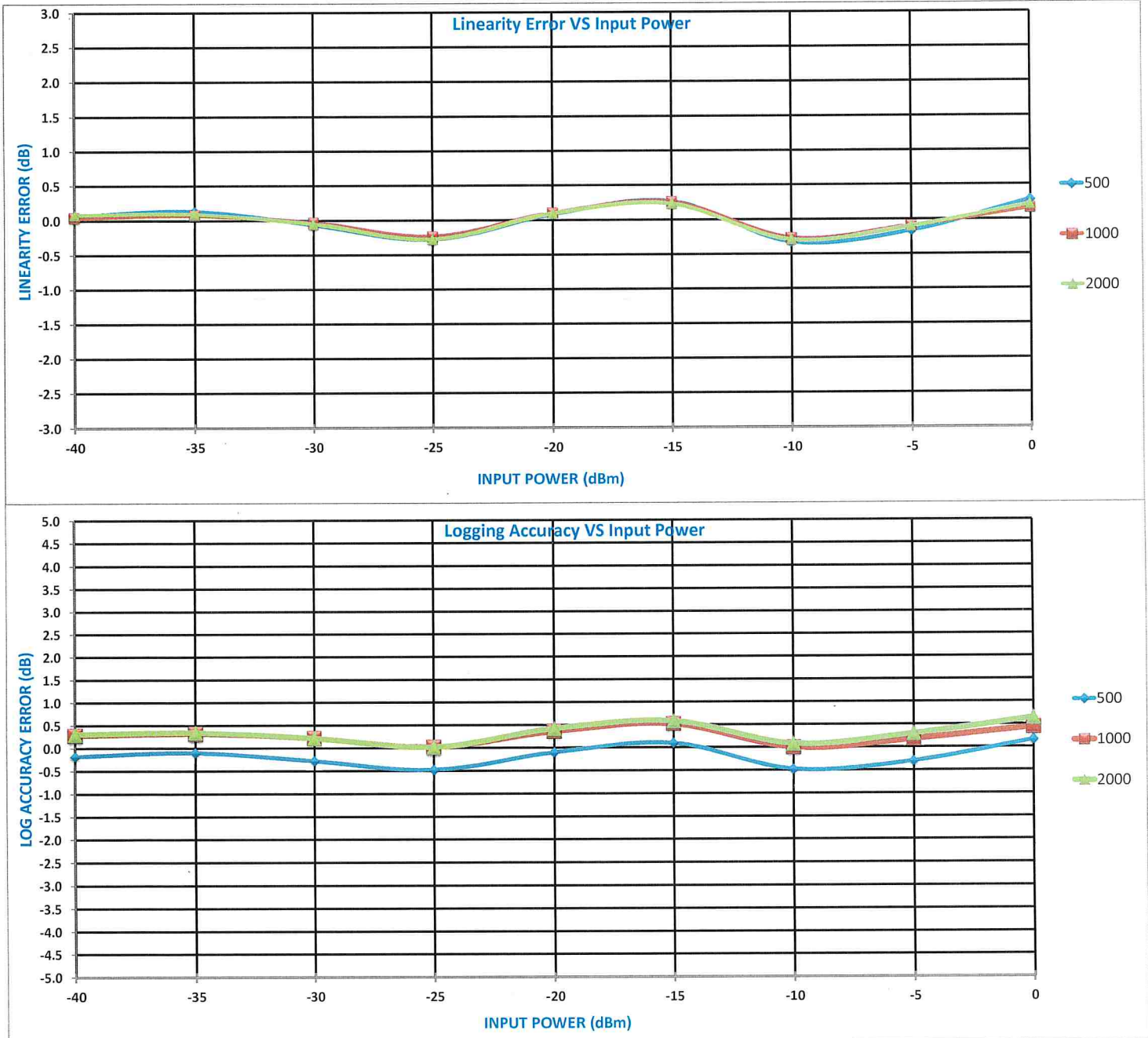
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SUMMARY TEST DATA ON HADA-D2001

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Log Linearity and Log Accuracy @ +25°C



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**SUMMARY TEST DATA
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Log Linearity and Log Accuracy @ -40°C

DC Offset= 0.099 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2293
	SLOPE (mV/dB)	49.1

1 GHz	INTERCEPT (mV)	2317
	SLOPE (mV/dB)	48.9

2 GHz	INTERCEPT (mV)	2321
	SLOPE (mV/dB)	49.1

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	349	570	810	1046	1315	1574	1795	2044	2301
	19	-5	-11	-20	3	17	-7	-4	8
	0.39	-0.11	-0.22	-0.41	0.07	0.35	-0.15	-0.08	0.15
	-0.02	-0.60	-0.80	-1.08	-0.70	-0.52	-1.10	-1.12	-0.98
	378	597	842	1081	1346	1602	1828	2071	2314
	15	-10	-9	-15	6	18	-1	-2	-3
	0.31	-0.20	-0.19	-0.30	0.13	0.36	-0.01	-0.04	-0.06
	0.56	-0.06	-0.16	-0.38	-0.08	0.04	-0.44	-0.58	-0.72
	376	595	838	1078	1345	1602	1829	2073	2321
	18	-9	-11	-16	5	17	-1	-3	0
	0.36	-0.18	-0.22	-0.33	0.11	0.35	-0.03	-0.05	0.00
	0.52	-0.13	-0.24	-0.44	-0.10	0.04	-0.32	-0.54	-0.58
	0.30	0.30	0.30	0.40	0.30	0.30	0.30	0.30	0.20
	0.38	0.60	0.84	1.08	1.35	1.60	1.83	2.07	2.32
	0.35	0.57	0.81	1.05	1.32	1.57	1.80	2.04	2.30

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.39	-0.41
LOGGING ACCURACY (dB)	-0.02	-1.12

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.36	-0.30
LOGGING ACCURACY (dB)	0.56	-0.72

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.36	-0.33
LOGGING ACCURACY (dB)	0.52	-0.58

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.39	-0.41

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.56	-1.12

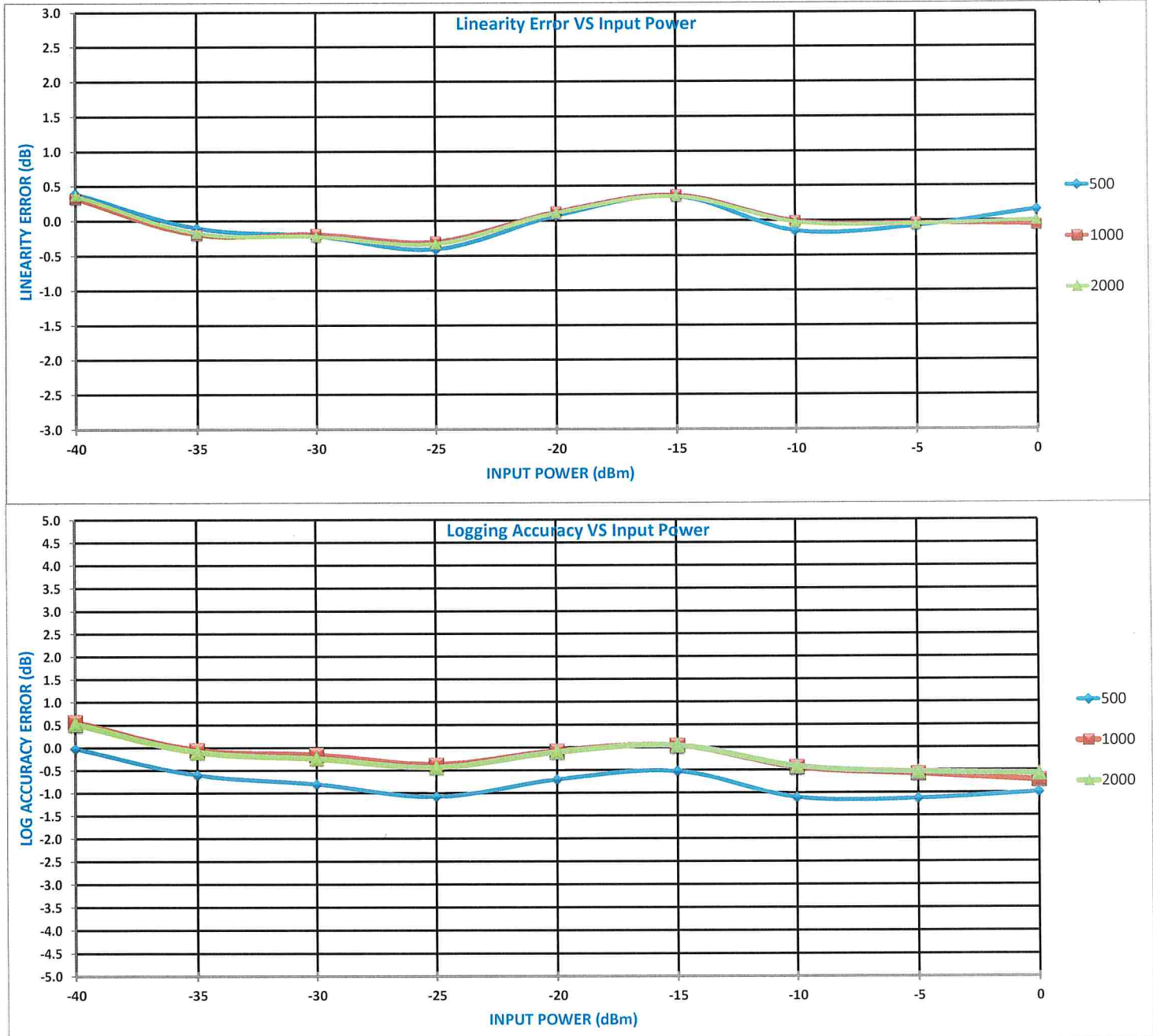
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Log Linearity and Log Accuracy @ -40°C



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SUMMARY TEST DATA ON HADA-D2001

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Log Linearity and Log Accuracy @ +85°C

DC Offset= 0.121 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2333
	SLOPE (mV/dB)	50.3

1 GHz	INTERCEPT (mV)	2363
	SLOPE (mV/dB)	50.2

2 GHz	INTERCEPT (mV)	2368
	SLOPE (mV/dB)	50.4

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	333	584	818	1058	1327	1585	1811	2070	2360
	11	11	-7	-18	0	6	-19	-11	27
	0.22	0.21	-0.13	-0.36	-0.01	0.13	-0.38	-0.22	0.55
	-0.34	-0.32	-0.64	-0.84	-0.46	-0.30	-0.78	-0.60	0.20
	361	614	852	1091	1358	1616	1842	2107	2383
	8	9	-4	-16	0	7	-19	-5	20
	0.15	0.19	-0.08	-0.32	0.00	0.13	-0.37	-0.10	0.40
	0.22	0.28	0.04	-0.18	0.16	0.32	-0.16	0.14	0.66
	361	612	850	1089	1359	1617	1844	2110	2391
	10	9	-5	-15	0	6	-20	-6	23
	0.21	0.18	-0.10	-0.36	0.00	0.11	-0.39	-0.11	0.46
	0.22	0.24	0.06	-0.22	0.18	0.34	-0.12	0.20	0.82
	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.30
	0.36	0.61	0.85	1.09	1.36	1.62	1.84	2.11	2.39
	0.33	0.58	0.82	1.06	1.33	1.59	1.81	2.07	2.36

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.55	-0.38
LOGGING ACCURACY (dB)	0.20	-0.84

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.40	-0.37
LOGGING ACCURACY (dB)	0.66	-0.18

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.46	-0.39
LOGGING ACCURACY (dB)	0.82	-0.22

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.55	-0.39

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.82	-0.84

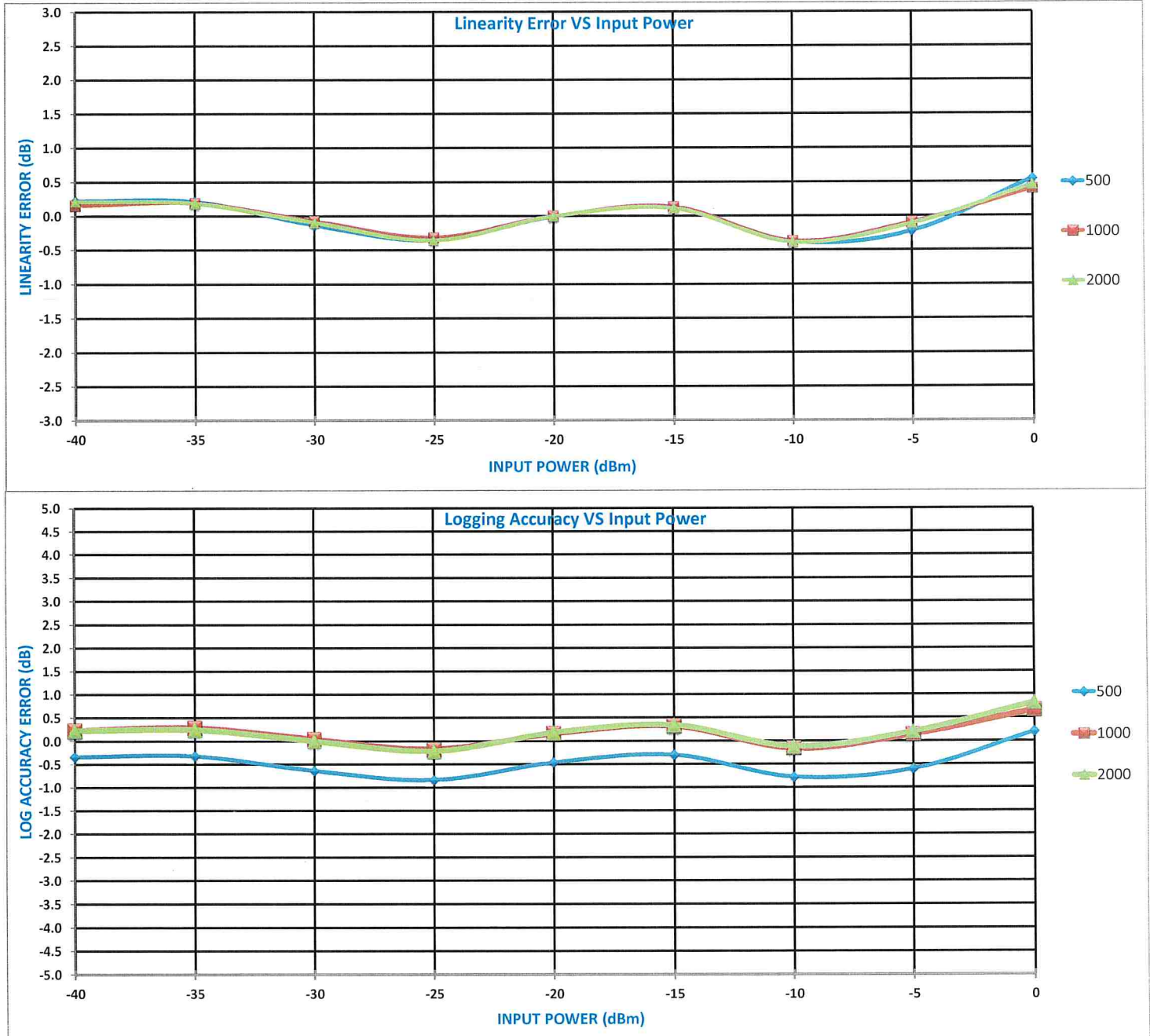
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Log Linearity and Log Accuracy @ +85°C



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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 08:43:16 2024



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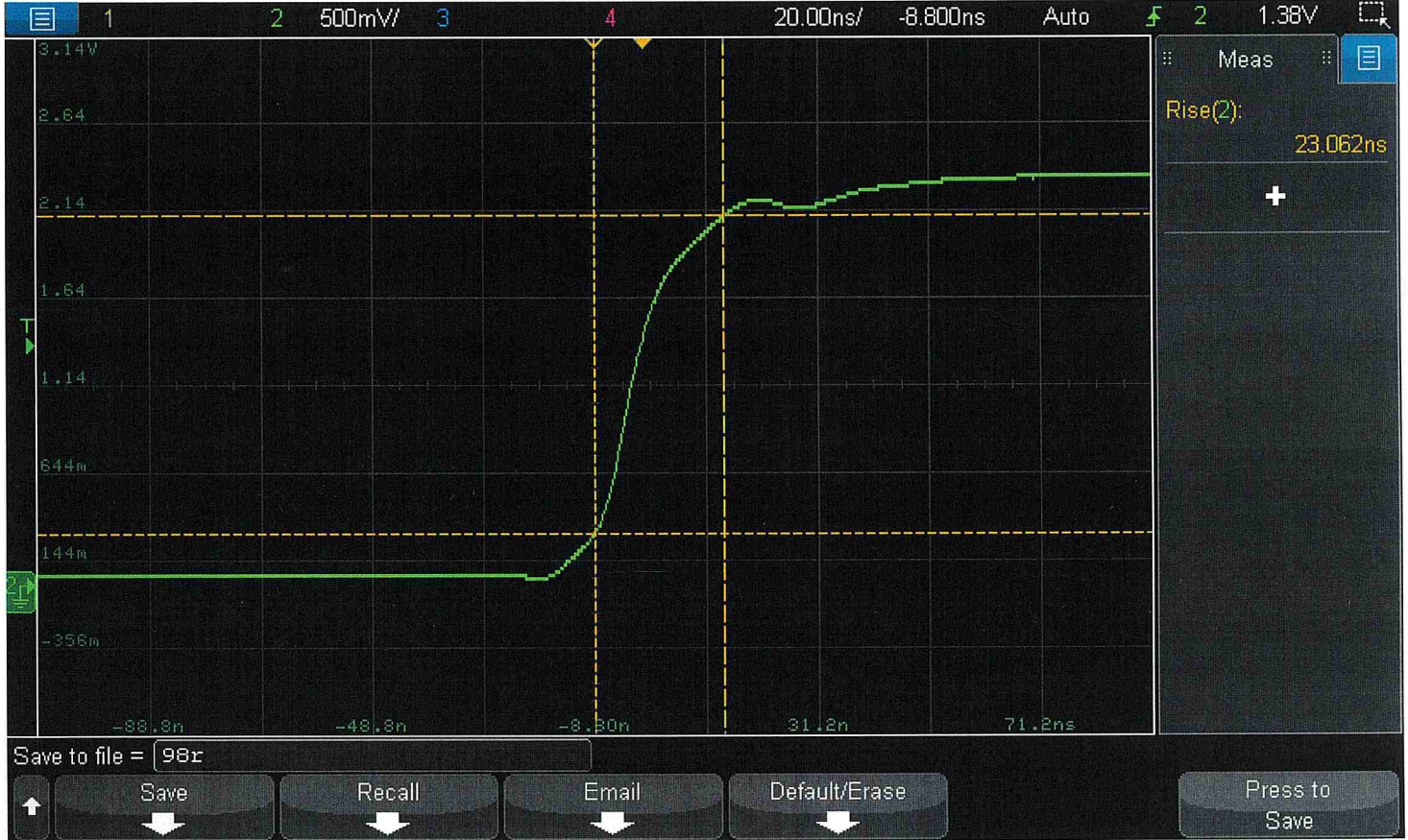
SUMMARY TEST DATA
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Rise Time 23 ns



MSO-X 3034T, MY59241076, 07.50.2021102830: Tue Mar 26 08:14:49 2024



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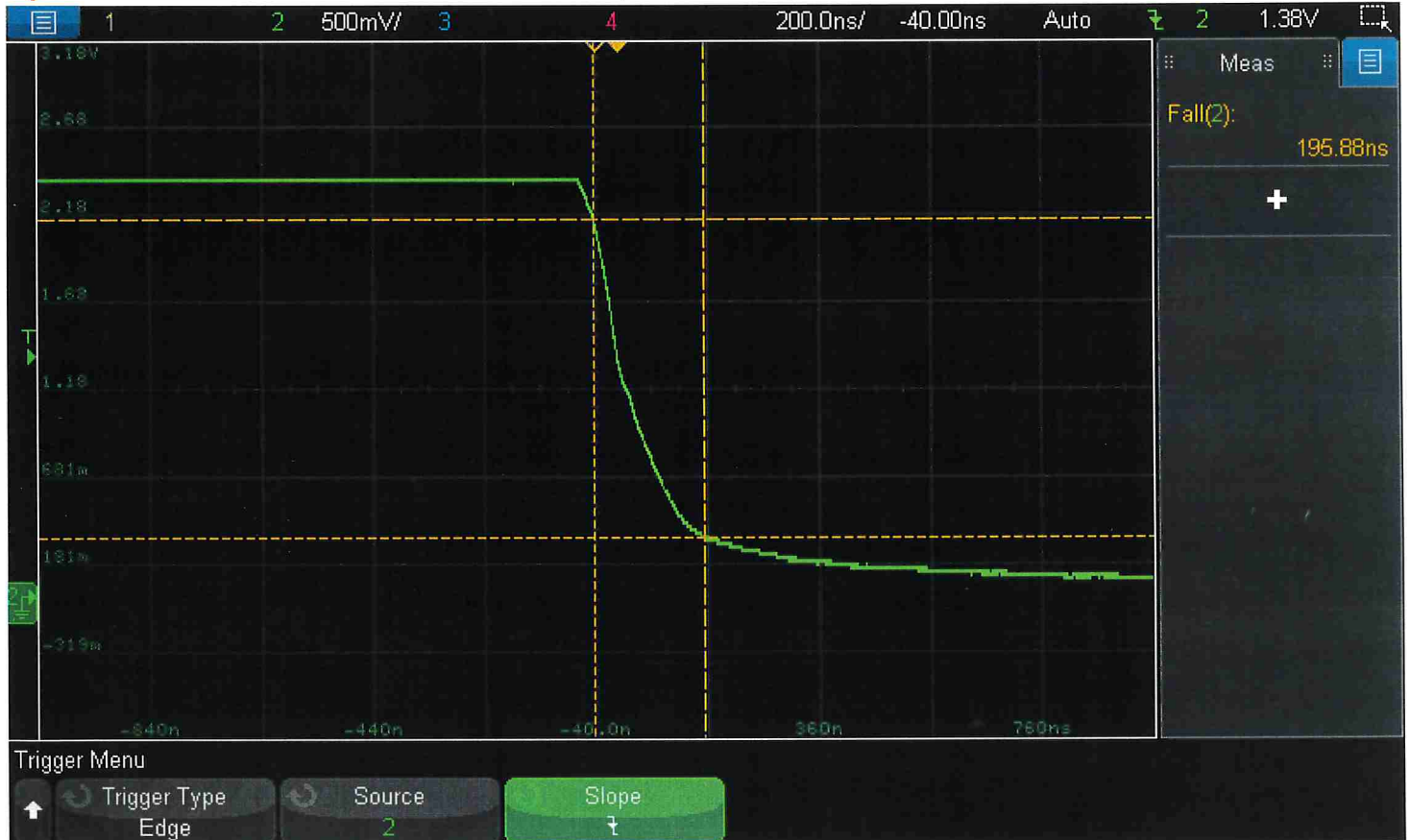
**SUMMARY TEST DATA
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PL45098/2413

Fall Time 195 ns



MSO-X 3034T, MY59241076, 07.50.2021102830: Tue Mar 26 07:57:54 2024



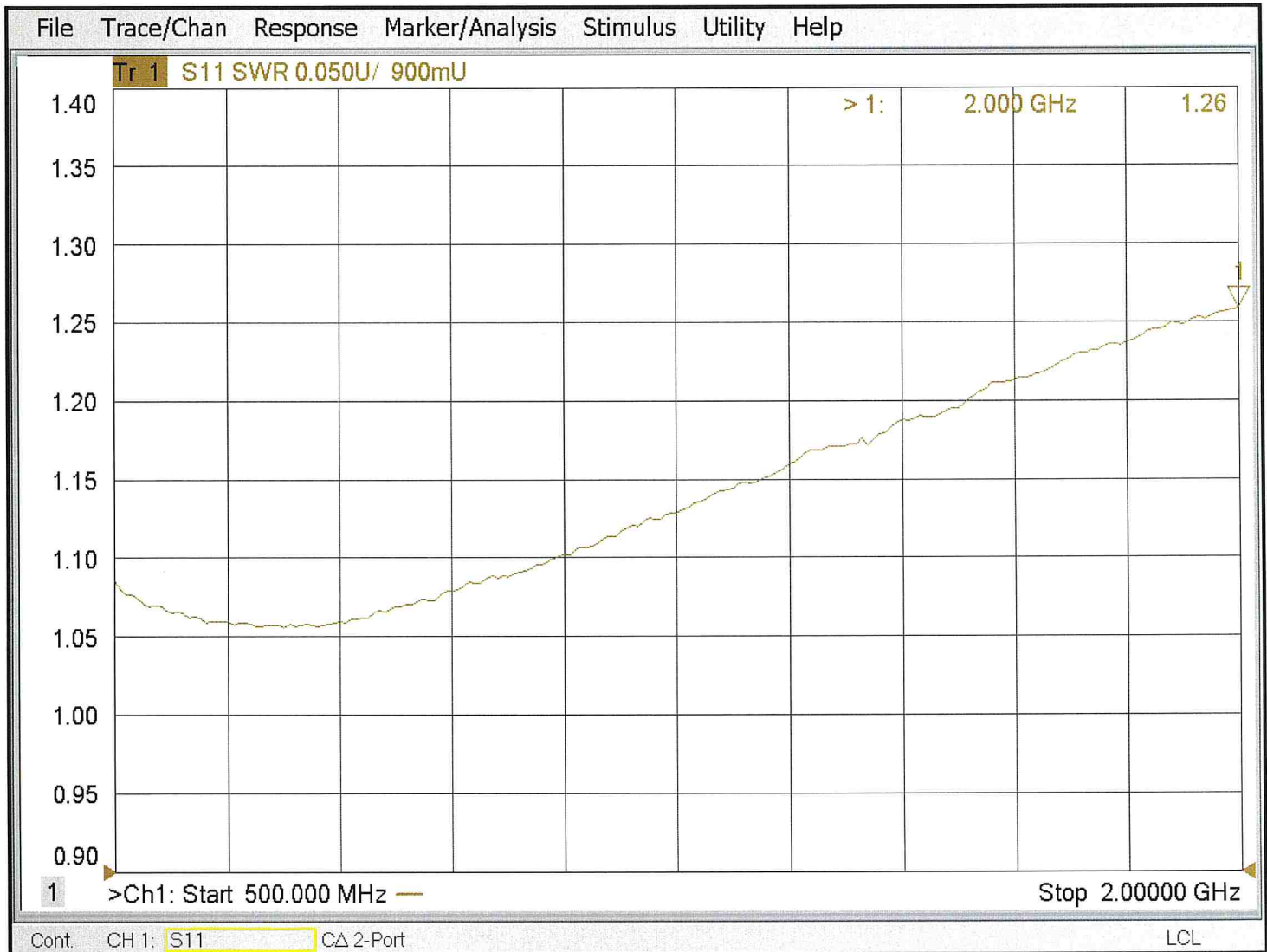
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VSWR 1.26:1



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