



**SUMMARY TEST DATA
ON
HADA-D2001**

PL45097/2415

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>4/9/24</u>
Serial No: <u>PL45097/2415</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	±0.2 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 / +0.06 dB +0.68 / -1.04 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	+0.39 / -0.29 dB +0.53 / -0.35 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%)	22.5 ns See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	166 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	+81 mV @ +25°C +59 mV @ -40°C +108 mV @ +85°C	
12	Input VSWR:	2.5:1 Max @ +23 dBm	1.23:1 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 70 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: *K. Luter* Date: 4-9-24



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Log Linearity and Log Accuracy @ +25°C

DC Offset= 0.081 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2357
	SLOPE (mV/dB)	50.5

1 GHz	INTERCEPT (mV)	2368
	SLOPE (mV/dB)	50.3

2 GHz	INTERCEPT (mV)	2374
	SLOPE (mV/dB)	50.4

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	336	594	841	1084	1358	1617	1838	2094	2366
	-2	4	-2	-11	10	17	-14	-11	9
	-0.03	0.08	-0.03	-0.22	0.21	0.34	-0.29	-0.22	0.17
	-0.28	-0.12	-0.18	-0.32	0.16	0.34	-0.24	-0.12	0.32
	353	610	860	1103	1376	1634	1854	2105	2371
	-5	1	0	-9	13	20	-11	-12	3
	-0.10	0.02	-0.01	-0.17	0.26	0.39	-0.23	-0.23	0.06
	0.06	0.20	0.20	0.06	0.52	0.68	0.08	0.10	0.42
	354	611	860	1104	1377	1634	1855	2112	2380
	-3	2	-1	-9	12	17	-14	-10	6
	-0.05	0.04	-0.02	-0.18	0.23	0.33	-0.29	-0.19	0.13
	0.05	0.22	0.20	0.08	0.54	0.68	0.10	0.24	0.60
	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
	0.35	0.61	0.86	1.10	1.38	1.63	1.86	2.11	2.38
	0.34	0.59	0.84	1.08	1.36	1.62	1.84	2.09	2.37

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.34	-0.29
LOGGING ACCURACY (dB)	0.34	-0.32

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.39	-0.23
LOGGING ACCURACY (dB)	0.68	0.06

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.33	-0.29
LOGGING ACCURACY (dB)	0.68	0.08

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.39	-0.29

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.68	-0.32

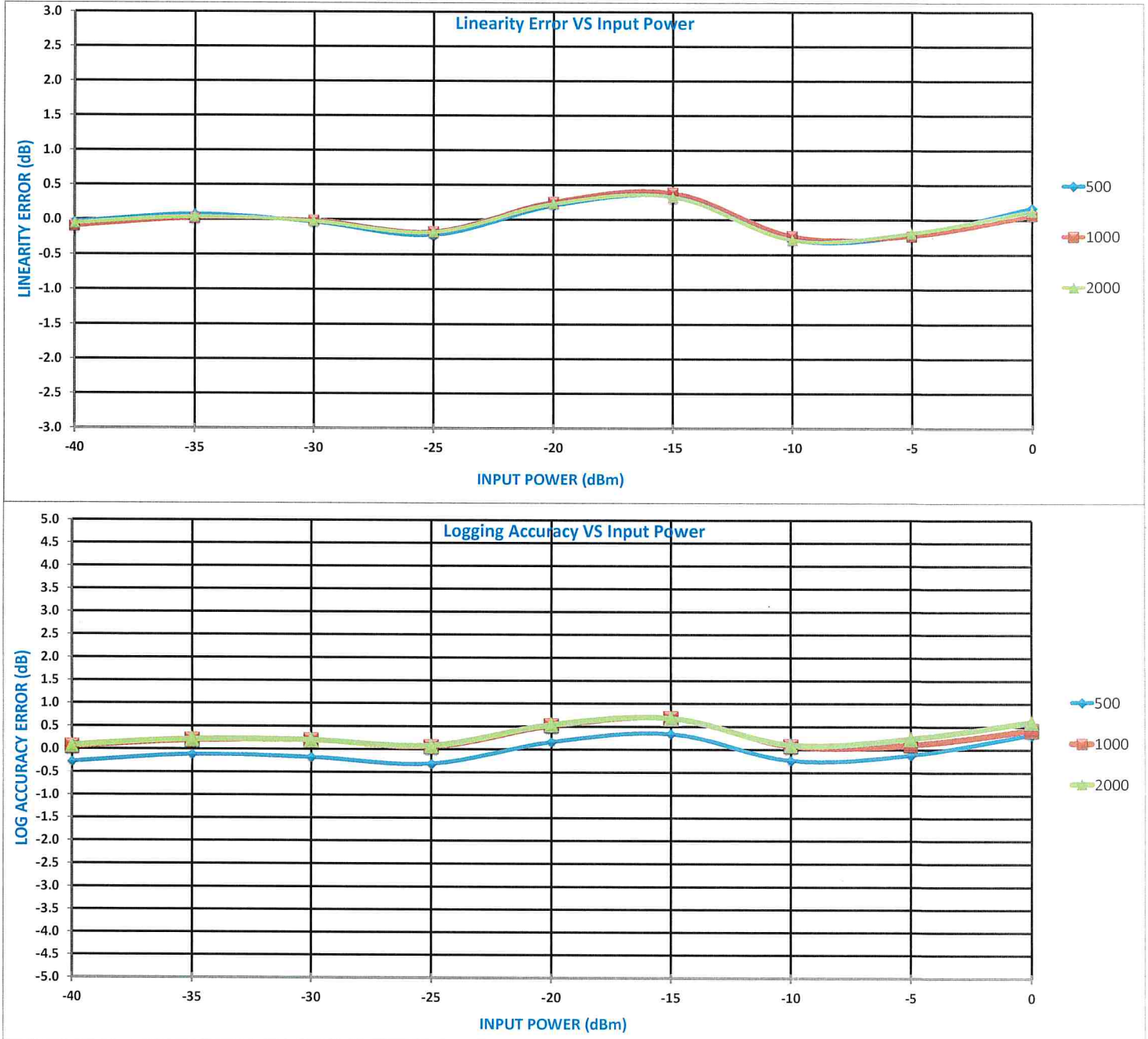
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Log Linearity and Log Accuracy @ +25°C



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Log Linearity and Log Accuracy @ -40°C

DC Offset= 0.059 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2304
	SLOPE (mV/dB)	49.5

1 GHz	INTERCEPT (mV)	2311
	SLOPE (mV/dB)	49.2

2 GHz	INTERCEPT (mV)	2312
	SLOPE (mV/dB)	49.3

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	331	565	813	1055	1328	1585	1806	2048	2300
	6	-8	-7	-12	13	23	-3	-9	-4
	0.12	-0.15	-0.14	-0.25	0.27	0.47	-0.07	-0.17	-0.08
	-0.38	-0.70	-0.74	-0.90	-0.44	-0.30	-0.88	-1.04	-1.00
	346	578	829	1072	1344	1599	1820	2055	2301
	3	-11	-6	-9	17	26	1	-10	-10
	0.06	-0.23	-0.12	-0.19	0.34	0.53	0.02	-0.21	-0.21
	-0.08	-0.44	-0.42	-0.56	-0.12	-0.02	-0.60	-0.90	-0.98
	343	575	825	1069	1340	1595	1816	2057	2305
	5	-10	-7	-8	15	23	-2	-8	-7
	0.10	-0.20	-0.13	-0.19	0.30	0.47	-0.05	-0.16	-0.14
	-0.14	-0.50	-0.50	-0.62	-0.20	-0.10	-0.68	-0.86	-0.90
	0.20	0.10	0.20	0.20	0.20	0.10	0.10	0.10	0.10
	0.35	0.58	0.83	1.07	1.34	1.60	1.82	2.06	2.31
	0.33	0.57	0.81	1.06	1.33	1.59	1.81	2.05	2.30

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.47	-0.25
LOGGING ACCURACY (dB)	-0.30	-1.04

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.53	-0.23
LOGGING ACCURACY (dB)	-0.02	-0.98

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.47	-0.20
LOGGING ACCURACY (dB)	-0.10	-0.90

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.53	-0.25

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	-0.02	-1.04

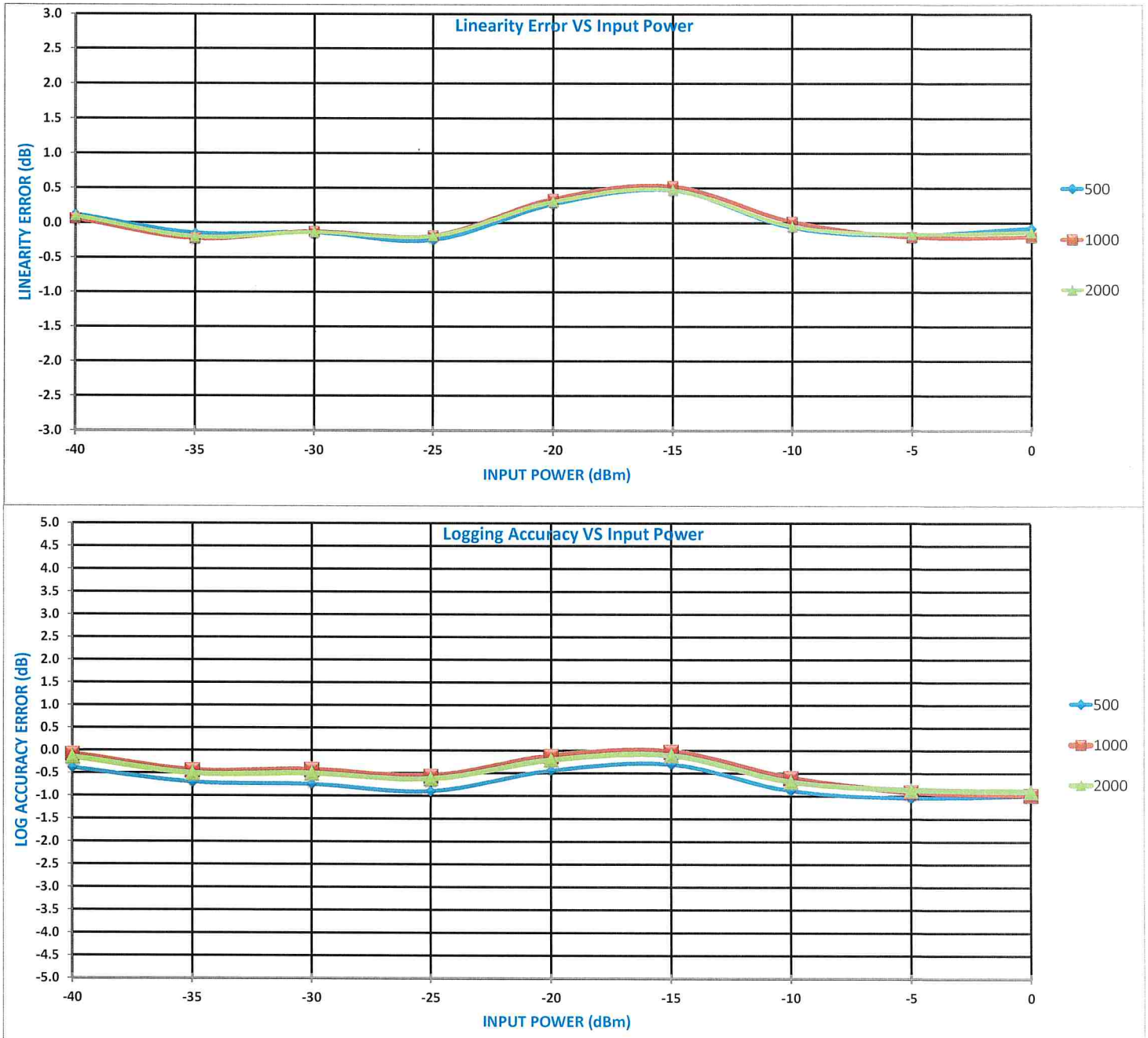
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Log Linearity and Log Accuracy @ -40°C



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Log Linearity and Log Accuracy @ +85°C

DC Offset= 0.108 V

Frequency

0.5 GHz	INTERCEPT (mV)	2351
	SLOPE (mV/dB)	50.6

1 GHz	INTERCEPT (mV)	2362
	SLOPE (mV/dB)	50.5

2 GHz	INTERCEPT (mV)	2364
	SLOPE (mV/dB)	50.6

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	332	587	827	1069	1342	1600	1829	2087	2371
	7	8	-5	-16	4	9	-16	-11	20
	0.13	0.16	-0.10	-0.32	0.07	0.17	-0.31	-0.21	0.40
	-0.36	-0.26	-0.46	-0.62	-0.16	0.00	-0.42	-0.26	0.42
	346	602	844	1085	1359	1617	1843	2098	2377
	3	7	-4	-15	7	12	-14	-11	15
	0.06	0.13	-0.07	-0.30	0.13	0.24	-0.28	-0.23	0.30
	-0.08	0.04	-0.12	-0.30	0.18	0.34	-0.14	-0.04	0.54
	345	600	841	1083	1357	1614	1840	2102	2383
	8	8	-4	-16	5	9	-18	-9	19
	0.11	0.15	-0.09	-0.31	0.11	0.18	-0.35	-0.18	0.37
	-0.10	0.00	-0.18	-0.34	0.14	0.28	-0.20	0.04	0.66
	0.10	0.10	0.20	0.20	0.20	0.20	0.10	0.10	0.10
	0.35	0.60	0.84	1.09	1.36	1.62	1.84	2.10	2.38
	0.33	0.59	0.83	1.07	1.34	1.60	1.83	2.09	2.37

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.40	-0.32
LOGGING ACCURACY (dB)	0.42	-0.62

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.30	-0.30
LOGGING ACCURACY (dB)	0.54	-0.30

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.37	-0.35
LOGGING ACCURACY (dB)	0.66	-0.34

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.40	-0.35

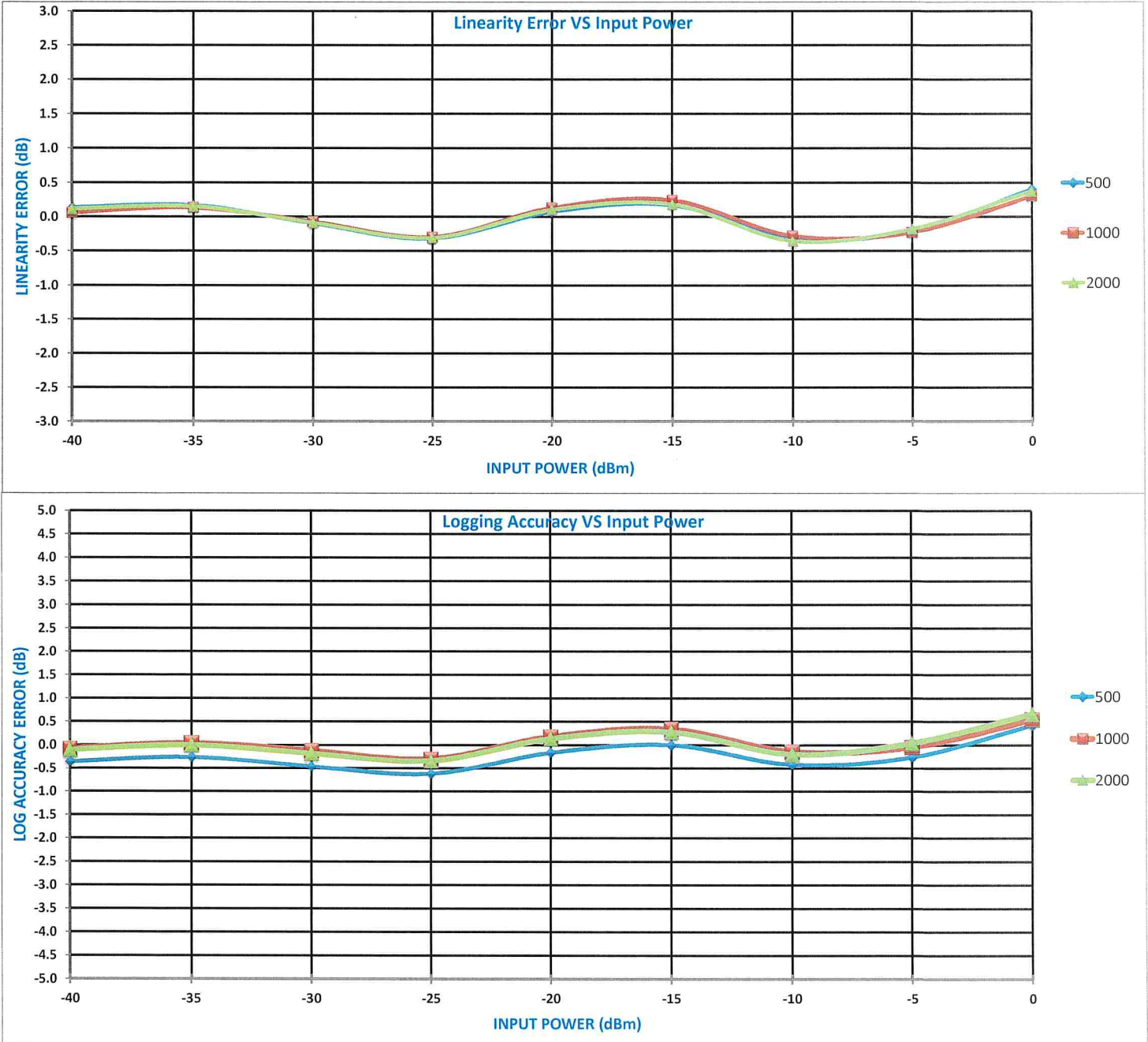
Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.66	-0.62



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Log Linearity and Log Accuracy @ +85°C



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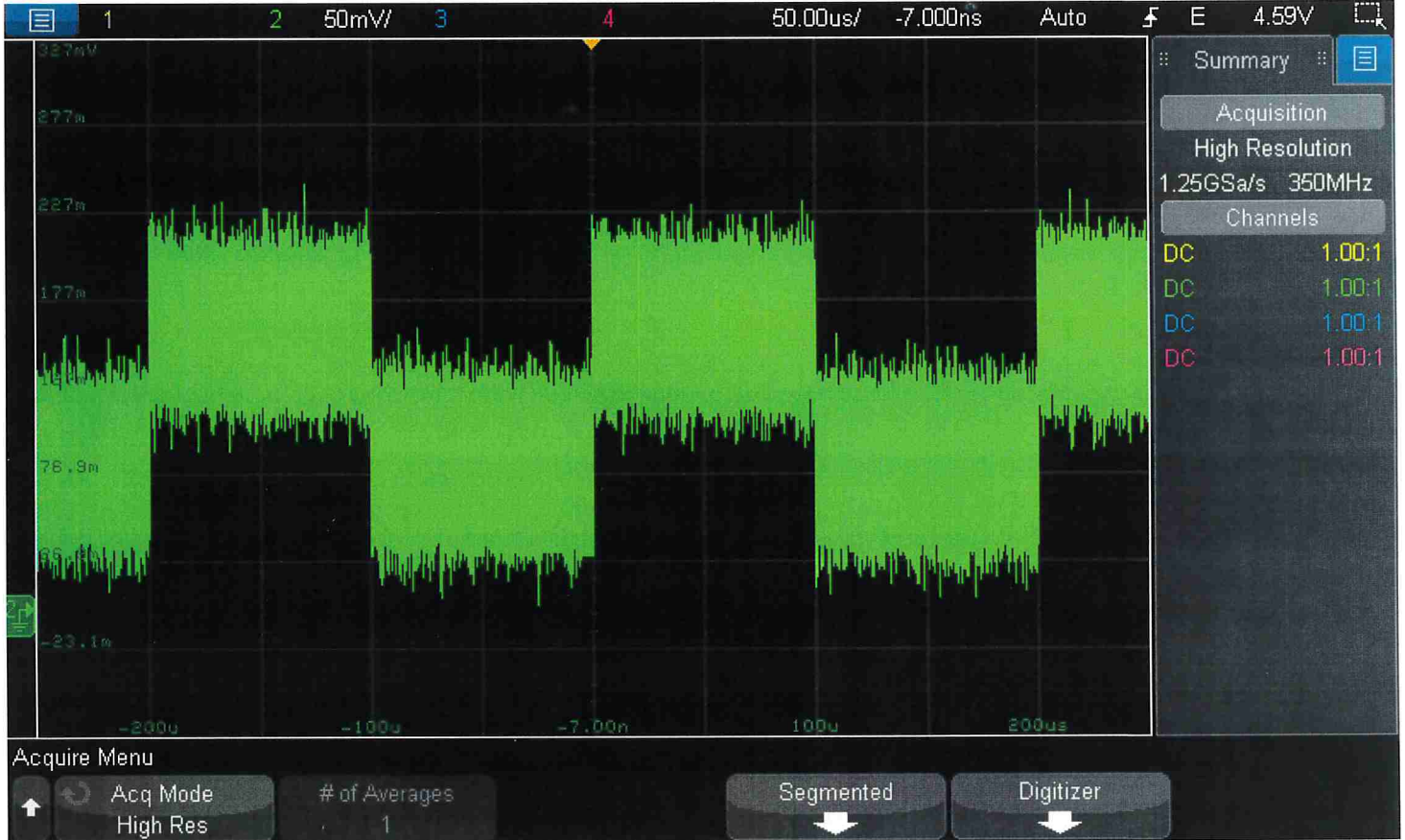
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TSS -45.5 dBm



MSO-X 3034T, MY59241076, 07.50.2021102830: Mon Apr 08 12:20:39 2024



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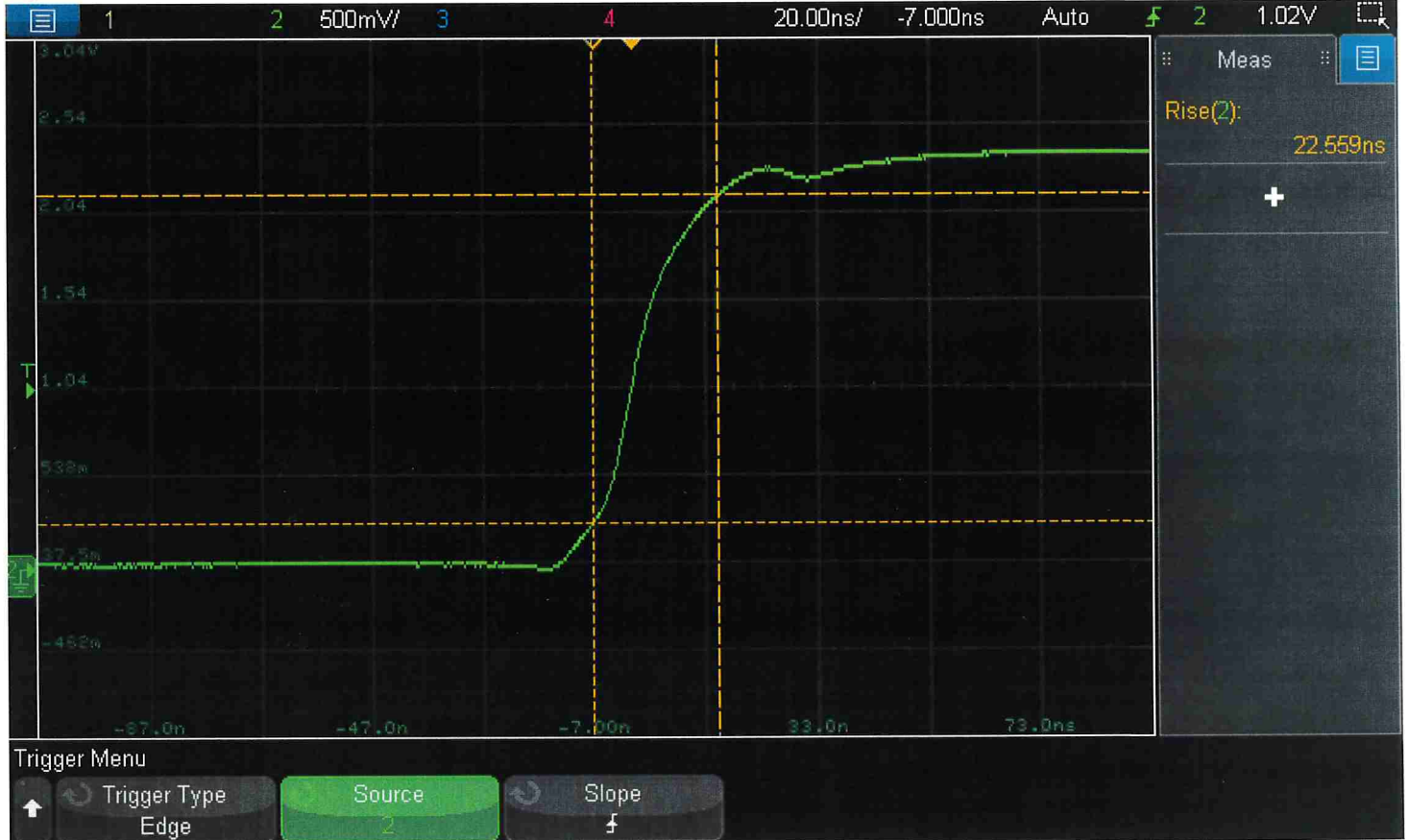
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Rise Time 22.5 ns



MSO-X 3034T, MY59241076, 07.50.2021102830: Mon Apr 08 12:09:05 2024



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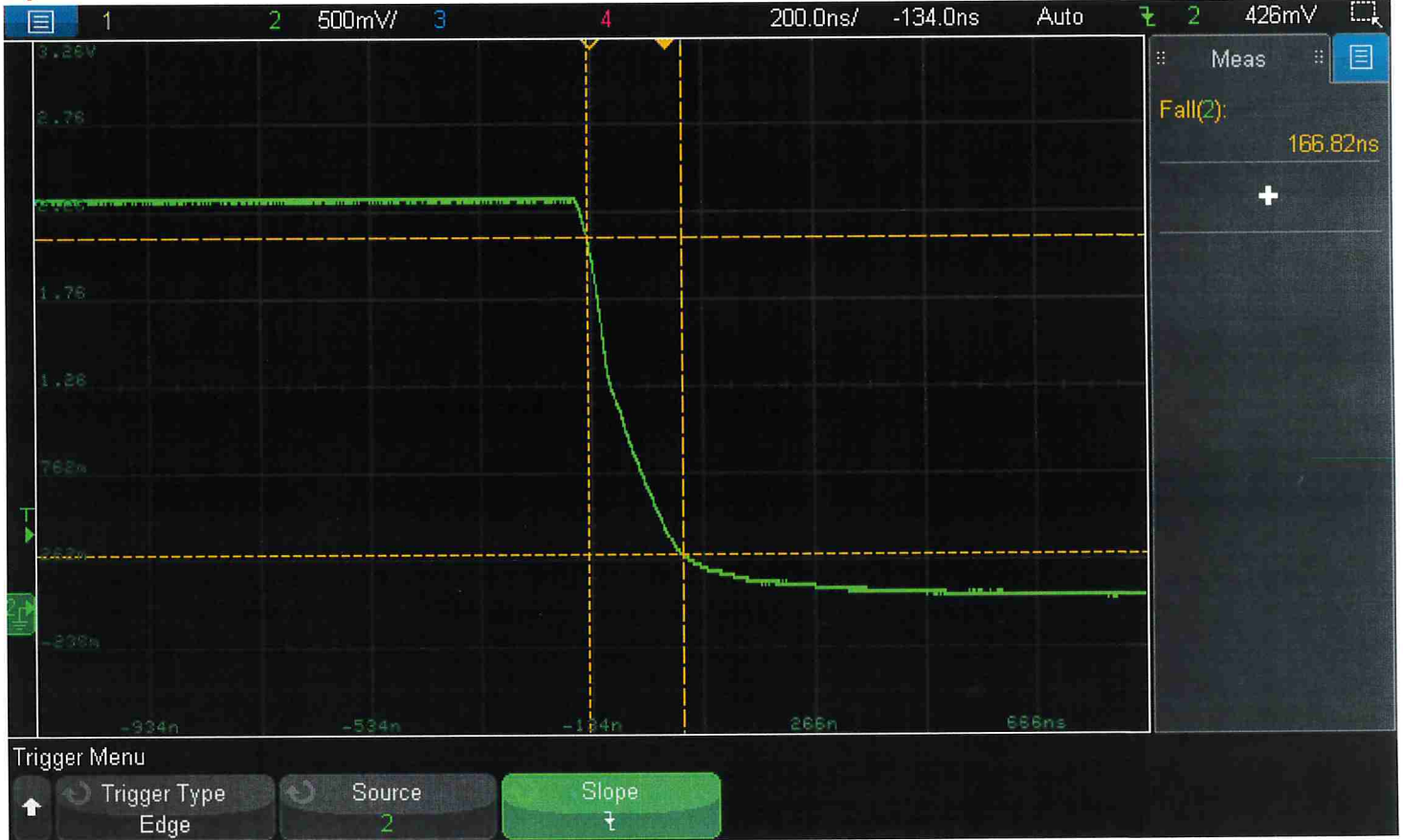
SUMMARY TEST DATA
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PL45097/2415

Fall Time 166 ns



M50-X 3034T, MY59241076, 07.50.2021102830: Mon Apr 08 12:24:42 2024



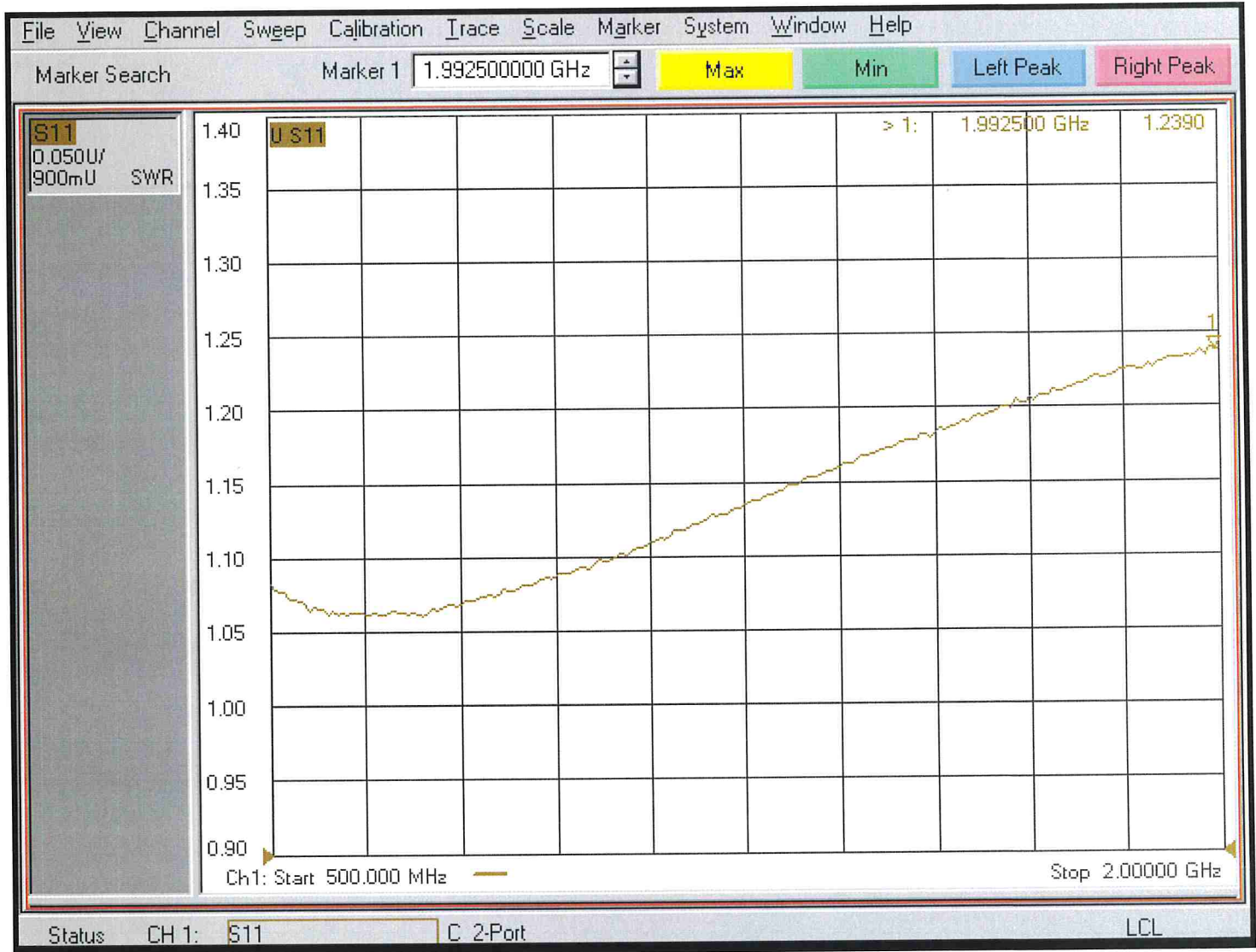
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VSWR 1.23:1



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