



**SUMMARY TEST DATA  
ON  
HADA-D2001**

PL44191/2409

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>2/26/23</u>
Serial No: <u>PL44191/2409</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	<b>0.5 GHz – 2.0 GHz See Plot</b>	<i>PMI QA3</i>
2	TSS:	-44 dBm Min @ -40°C to +85°	<b>-45.5 dBm See Plot</b>	
3	Frequency Flatness:	±0.75 dB Max	<b>±0.2 dB See Plot</b>	
4	Input / Output Characteristics: (93 Ω)	Y = 2350 + 50X [X: Input (dBm), Y: Output (mv)]	<b>Pass</b>	
5	Logging Accuracy	±1.5 dB Max (@ +25°C, 1.0 GHz) [-40 dBm ≤ INPUT ≤ 0 dBm] ±2.2 dB Max (Note)	<b>+0.46 / -0.54 dB +0.62 / -0.66 dB See Plot</b>	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	<b>+0.31 / -0.32 dB +0.58 / -0.51 dB See Plot</b>	
7	Maximum Input Power (CW):	+23 dBm	<b>Pass</b>	
8	Duty Cycle:	100%	<b>Pass</b>	
9	Rise Time:	30 ns Max (10% to 90%)	<b>24.8 ns See Plot</b>	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	<b>336 ns See Plot</b>	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	<b>+109 mV @ +25°C +72 mV @ -40°C +104 mV @ +85°C</b>	
12	Input VSWR:	2.5:1 Max @ +23 dBm	<b>1.26:0 See Plot</b>	
13	Propagation Delay:	60 ns Max	<b>40 ns</b>	

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14	Power Supply:	+12 ± 1VDC @ 125 mA Max -12 ± 1VDC @ 75 mA Max	<b>120 mA</b> <b>70 mA</b>	PMI QA3
15	Warm Up Time:	2 Minutes Max	<b>2 Minutes</b>	

\*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. Vetter* Date: 2-27-24

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## SUMMARY TEST DATA ON HADA-D2001

PL44191/2409

Log Linearity and Log Accuracy @ +25°C

DC Offset= 0.109 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2336
	SLOPE (mV/dB)	49.9

1 GHz	INTERCEPT (mV)	2347
	SLOPE (mV/dB)	49.7

2 GHz	INTERCEPT (mV)	2354
	SLOPE (mV/dB)	50

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	357	594	834	1074	1335	1595	1823	2088	2351
	15	3	-6	-16	-4	7	-15	1	15
	0.30	0.06	-0.13	-0.32	-0.08	0.13	-0.29	0.02	0.30
	0.14	-0.12	-0.32	-0.52	-0.30	-0.10	-0.54	-0.24	0.02
	373	609	852	1092	1352	1613	1837	2101	2355
	12	0	-5	-14	-2	11	-13	2	8
	0.25	0.00	-0.11	-0.27	-0.04	0.22	-0.27	0.05	0.17
	0.46	0.18	0.04	-0.16	0.04	0.26	-0.26	0.02	0.10
	371	606	850	1089	1352	1611	1842	2109	2364
	15	0	-5	-15	-3	6	-12	5	10
	0.31	0.01	-0.11	-0.32	-0.06	0.13	-0.25	0.10	0.20
	0.42	0.12	0.00	-0.22	0.04	0.22	-0.16	0.18	0.28
	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
	0.37	0.61	0.85	1.09	1.35	1.61	1.84	2.11	2.36
	0.36	0.59	0.83	1.07	1.34	1.60	1.82	2.09	2.35

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.30	-0.32
LOGGING ACCURACY (dB)	0.14	-0.54

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.25	-0.27
LOGGING ACCURACY (dB)	0.46	-0.26

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.31	-0.32
LOGGING ACCURACY (dB)	0.42	-0.22

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.31	-0.32

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.46	-0.54

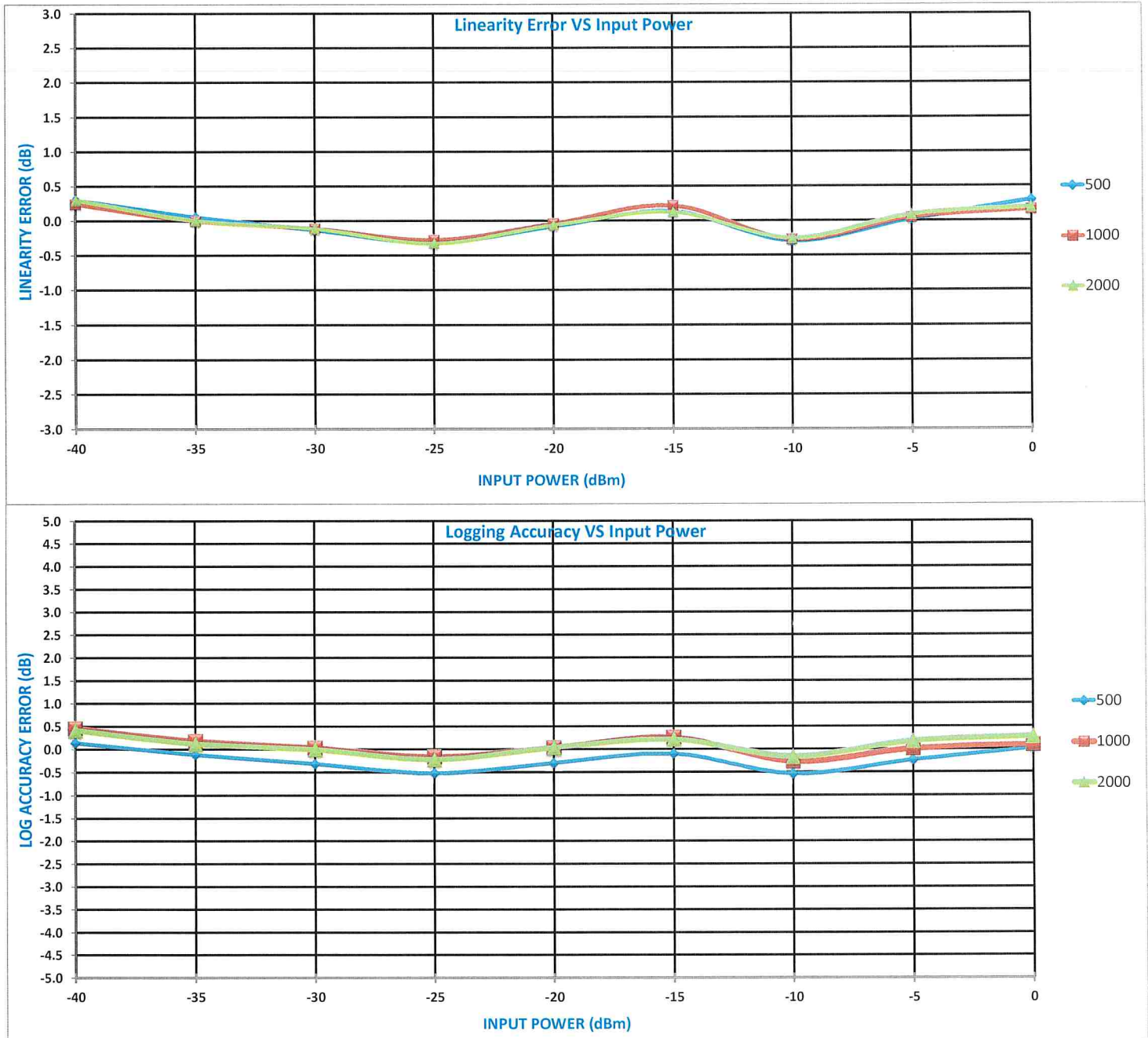
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# SUMMARY TEST DATA ON HADA-D2001

PL44191/2409

Log Linearity and Log Accuracy @ +25°C



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## SUMMARY TEST DATA ON HADA-D2001

PL44191/2409

Log Linearity and Log Accuracy @ -40°C

DC Offset= 0.072 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2334
	SLOPE (mV/dB)	50.1

1 GHz	INTERCEPT (mV)	2342
	SLOPE (mV/dB)	49.7

2 GHz	INTERCEPT (mV)	2347
	SLOPE (mV/dB)	50

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
0.5 GHz	339	574	825	1072	1341	1607	1833	2087	2321
	7	-8	-8	-11	8	23	-1	3	-13
	0.14	-0.17	-0.15	-0.22	0.16	0.47	-0.02	0.06	-0.27
	-0.22	-0.52	-0.50	-0.56	-0.18	0.14	-0.34	-0.26	-0.58
1 GHz	357	592	846	1095	1361	1626	1849	2099	2317
	1	-12	-7	-6	12	29	3	5	-25
	0.02	-0.25	-0.13	-0.12	0.24	0.58	0.07	0.10	-0.51
	0.14	-0.16	-0.08	-0.10	0.22	0.52	-0.02	-0.02	-0.66
2 GHz	352	587	840	1088	1357	1622	1852	2103	2324
	4	-11	-7	-9	10	25	5	6	-23
	0.09	-0.21	-0.15	-0.19	0.20	0.50	0.10	0.12	-0.46
	0.04	-0.26	-0.20	-0.24	0.14	0.44	0.04	0.06	-0.52
Flatness +/- dB	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
Max Video Output Volts	0.36	0.59	0.85	1.10	1.36	1.63	1.85	2.10	2.32
Min Video Output Volts	0.34	0.57	0.83	1.07	1.34	1.61	1.83	2.09	2.32

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.47	-0.27
LOGGING ACCURACY (dB)	0.14	-0.58

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.58	-0.51
LOGGING ACCURACY (dB)	0.52	-0.66

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.50	-0.46
LOGGING ACCURACY (dB)	0.44	-0.52

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.58	-0.51

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.52	-0.66

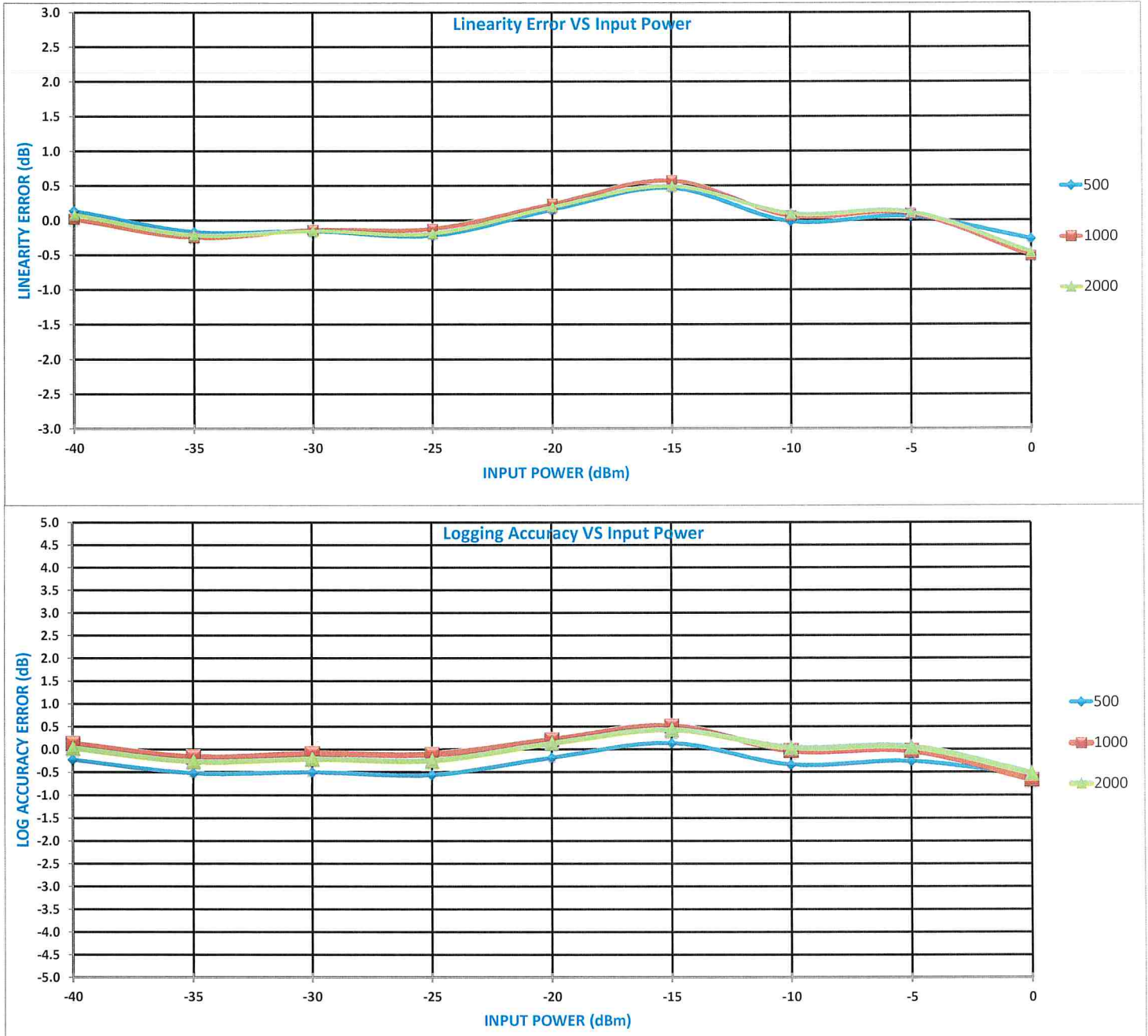
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# SUMMARY TEST DATA ON HADA-D2001

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Log Linearity and Log Accuracy @ -40°C



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## SUMMARY TEST DATA ON HADA-D2001

PL44191/2409

Log Linearity and Log Accuracy @ +85°C

DC Offset= 0.104 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2360
	SLOPE (mV/dB)	50.6

1 GHz	INTERCEPT (mV)	2372
	SLOPE (mV/dB)	50.4

2 GHz	INTERCEPT (mV)	2374
	SLOPE (mV/dB)	50.6

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	329	594	839	1088	1355	1611	1846	2100	2362
	-6	6	-2	-6	8	11	-7	-6	2
	-0.11	0.12	-0.04	-0.12	0.16	0.21	-0.15	-0.13	0.05
	-0.42	-0.12	-0.22	-0.24	0.10	0.22	-0.08	0.00	0.24
	346	612	860	1107	1374	1631	1861	2117	2366
	-10	4	0	-5	10	15	-7	-3	-6
	-0.19	0.08	0.01	-0.09	0.20	0.30	-0.14	-0.06	-0.12
	-0.08	0.24	0.20	0.14	0.48	0.62	0.22	0.34	0.32
	341	606	853	1101	1370	1626	1862	2120	2368
	-7	5	-1	-7	9	12	-5	0	-5
	-0.14	0.10	-0.03	-0.13	0.18	0.24	-0.10	-0.01	-0.11
	-0.18	0.12	0.06	0.02	0.40	0.52	0.24	0.40	0.36
	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
	0.35	0.61	0.86	1.11	1.37	1.63	1.86	2.12	2.37
	0.33	0.59	0.84	1.09	1.36	1.61	1.85	2.10	2.36

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.21	-0.15
LOGGING ACCURACY (dB)	0.24	-0.42

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.30	-0.19
LOGGING ACCURACY (dB)	0.62	-0.08

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.24	-0.14
LOGGING ACCURACY (dB)	0.52	-0.18

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.30	-0.19

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.62	-0.42

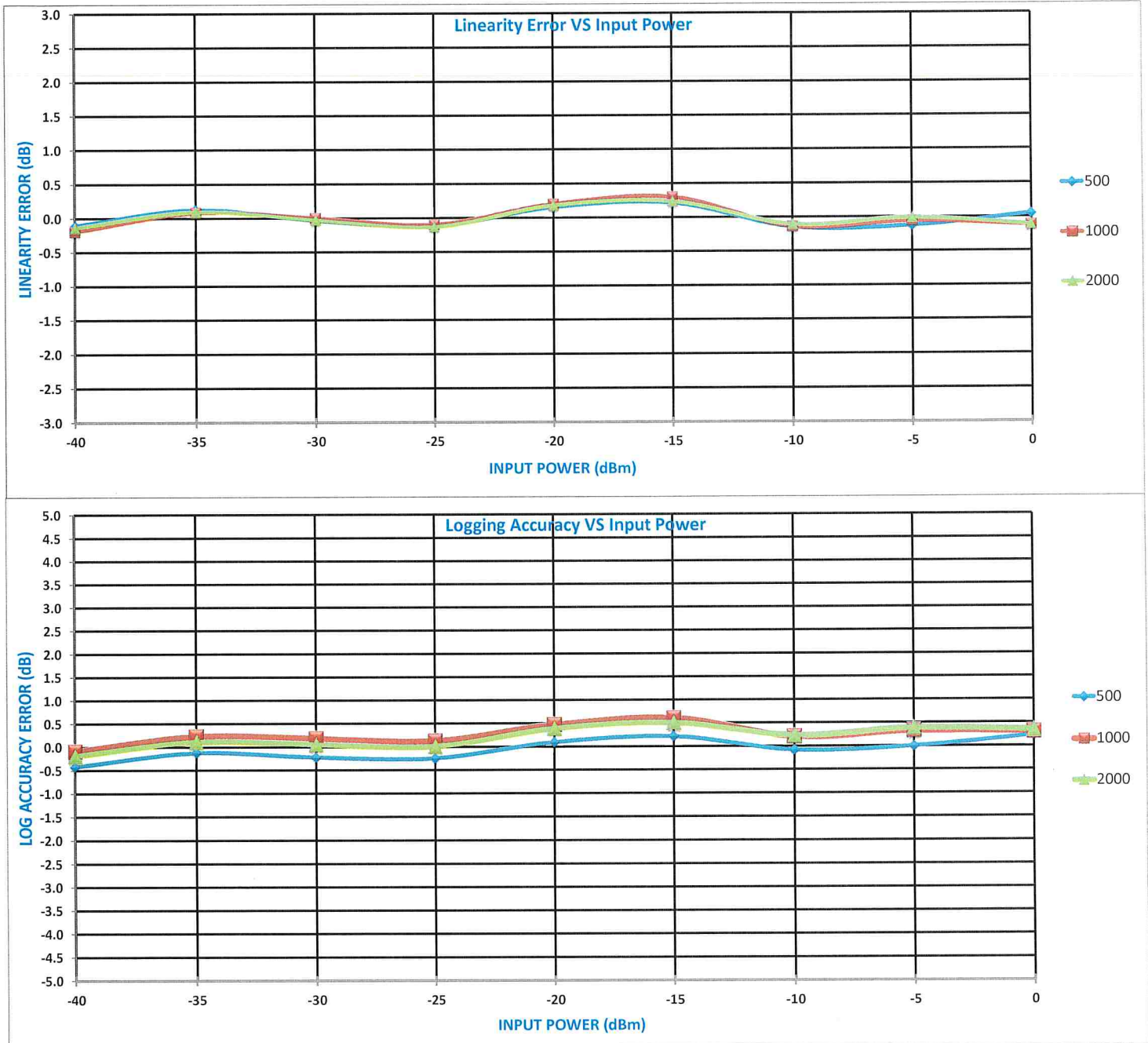
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Log Linearity and Log Accuracy @ +85°C



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**SUMMARY TEST DATA  
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PL44191/2409

TSS -45.5 dBm

DSO-X 3024A, MY54490369: Fri Feb 23 14:08:41 2024



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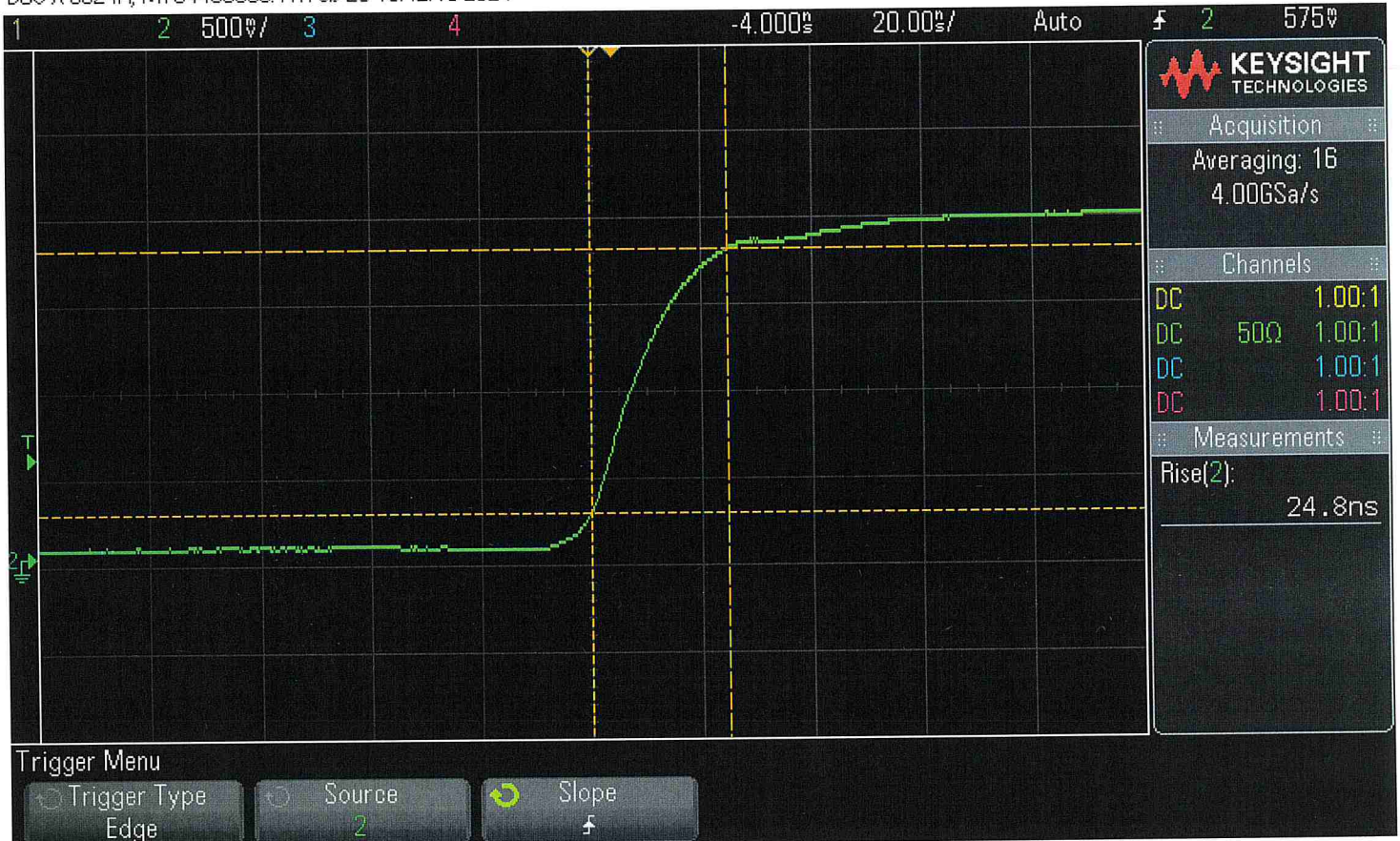


SUMMARY TEST DATA  
ON  
HADA-D2001

PL44191/2409

Rise Time 24.8 ns

DSO-X 3024A, MY54490369, Fri Feb 23 13:42:19 2024



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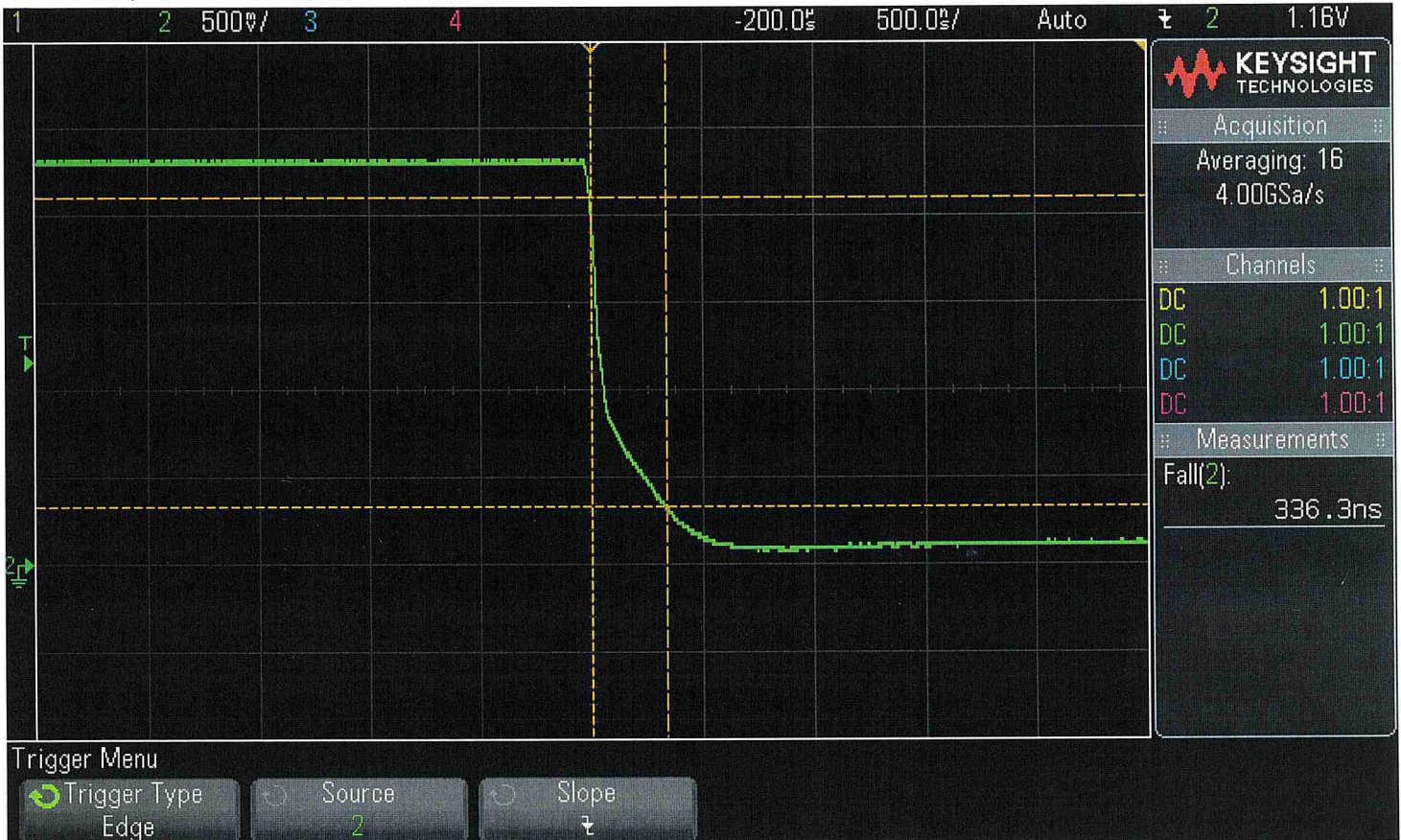


**SUMMARY TEST DATA  
ON  
HADA-D2001**

PL44191/2409

Fall Time 336 ns

DSO-X 3024A, MY54490369: Mon Feb 26 10:20:50 2024



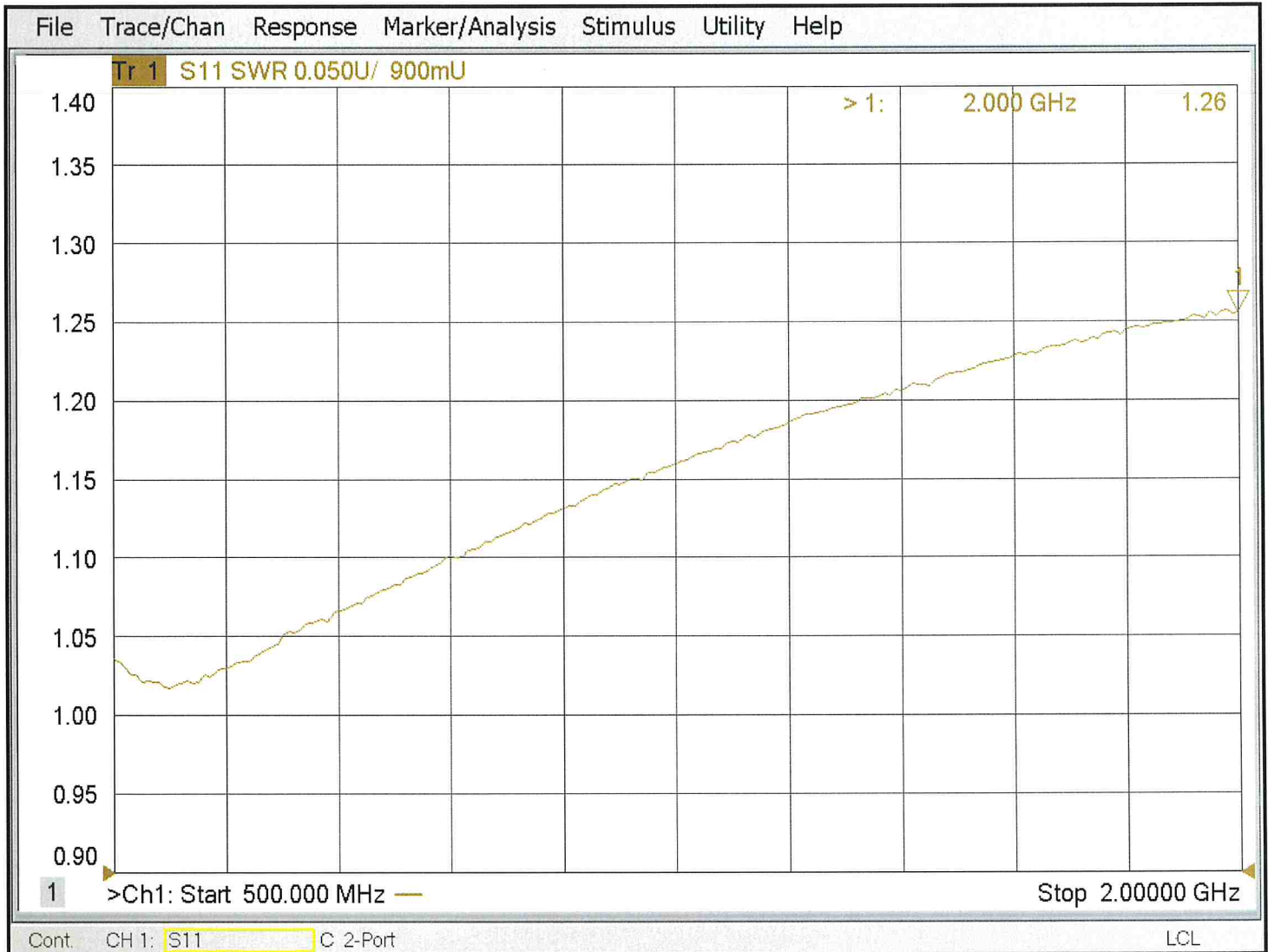
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**SUMMARY TEST DATA  
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PL44191/2409

VSWR 1.26:1



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