



**SUMMARY TEST DATA
ON
HADA-D2001**

PL44193/2409

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>PL44193/2409</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	0.5 GHz – 2.0 GHz See Plot	PMI QA3
2	TSS:	-44 dBm Min @ -40°C to +85°	-46 dBm See Plot	
3	Frequency Flatness:	±0.75 dB Max	±0.30 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)	+0.08 / -0.88 dB +0.90 / -1.22 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	+0.34 / -0.31 dB +0.54 / -0.31 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%)	26.5 ns See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	309 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	+86 mV @ +25°C +121 mV @ -40°C +75 mV @ +85°C	
12	Input VSWR:	2.5:1 Max @ +23 dBm	1.29:0 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	120 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: *H. Kuter*

Date: 2-27-24



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Log Linearity and Log Accuracy @ +25°C

DC Offset= 0.086 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2320
	SLOPE (mV/dB)	49.9

1 GHz	INTERCEPT (mV)	2331
	SLOPE (mV/dB)	49.6

2 GHz	INTERCEPT (mV)	2337
	SLOPE (mV/dB)	49.9

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	329	577	821	1065	1327	1585	1806	2060	2335
	4	2	-3	-8	4	13	-16	-11	15
	0.08	0.05	-0.06	-0.17	0.08	0.26	-0.31	-0.22	0.29
	-0.42	-0.46	-0.58	-0.70	-0.46	-0.30	-0.88	-0.80	-0.30
	347	594	842	1085	1346	1604	1821	2075	2337
	0	-1	-1	-6	7	17	-14	-8	6
	0.00	-0.02	-0.02	-0.12	0.14	0.34	-0.28	-0.16	0.12
	-0.06	-0.12	-0.16	-0.30	-0.08	0.08	-0.58	-0.50	-0.26
	344	591	838	1081	1345	1602	1825	2081	2346
	3	5	-2	-9	6	13	-13	-7	9
	0.06	0.01	-0.04	-0.17	0.12	0.27	-0.27	-0.14	0.17
	-0.12	-0.13	-0.24	-0.38	-0.10	0.04	-0.50	-0.38	-0.08
	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
	0.35	0.59	0.84	1.09	1.35	1.60	1.83	2.08	2.35
	0.33	0.58	0.82	1.07	1.33	1.59	1.81	2.06	2.34

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.29	-0.31
LOGGING ACCURACY (dB)	-0.30	-0.88

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.34	-0.28
LOGGING ACCURACY (dB)	0.08	-0.58

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.27	-0.27
LOGGING ACCURACY (dB)	0.04	-0.50

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.34	-0.31

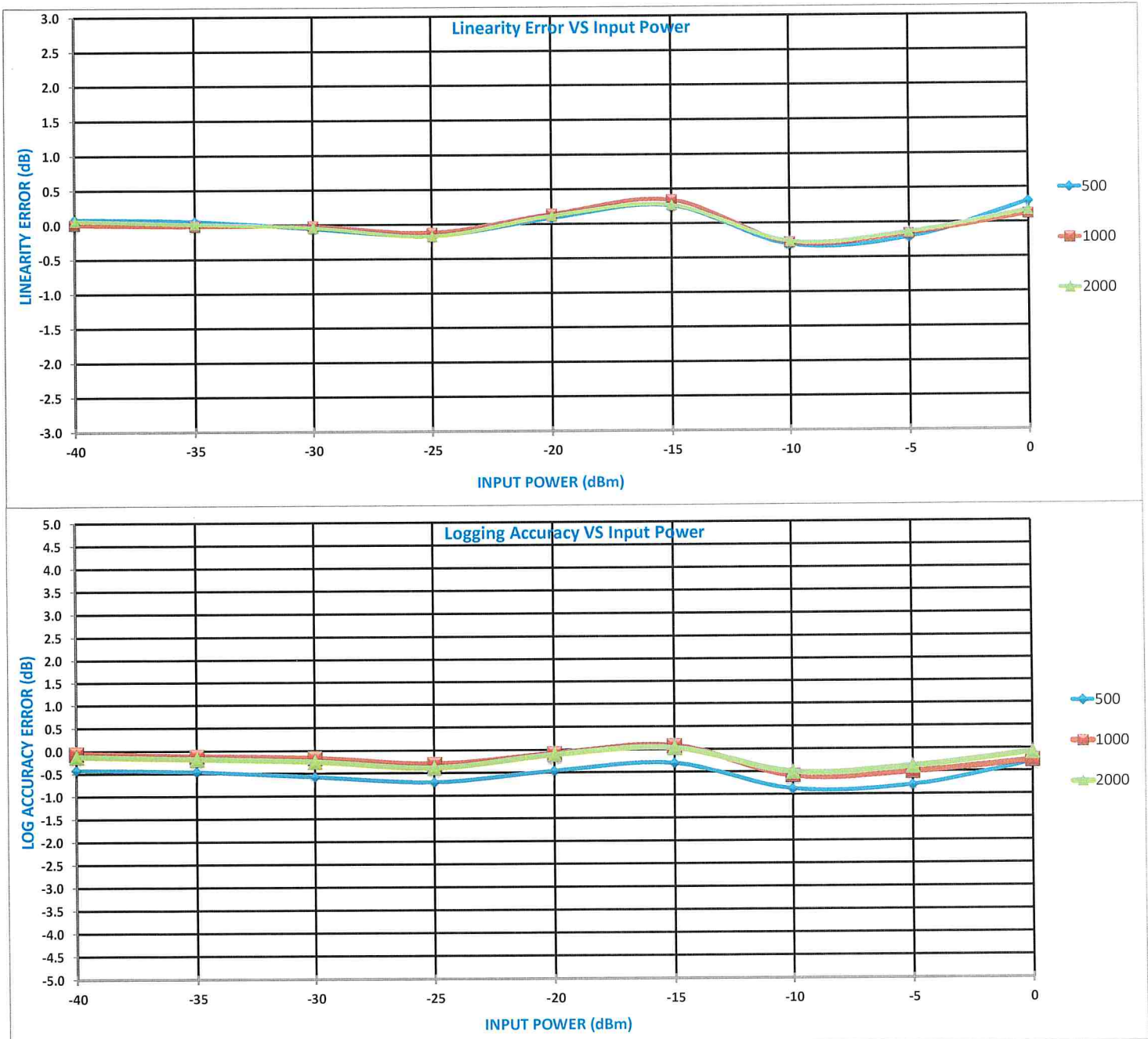
Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.08	-0.88



SUMMARY TEST DATA ON HADA-D2001

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Log Linearity and Log Accuracy @ +25°C



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SUMMARY TEST DATA ON HADA-D2001

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Log Linearity and Log Accuracy @ -40°C

DC Offset= 0.121 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2289
	SLOPE (mV/dB)	48

1 GHz	INTERCEPT (mV)	2299
	SLOPE (mV/dB)	47.6

2 GHz	INTERCEPT (mV)	2304
	SLOPE (mV/dB)	47.9

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	375	603	843	1079	1335	1588	1799	2040	2293
	7	-5	-5	-9	7	20	-9	-9	4
	0.14	-0.11	-0.11	-0.19	0.14	0.41	-0.20	-0.18	0.09
	0.50	0.06	-0.14	-0.42	-0.30	-0.24	-1.02	-1.20	-1.14
	395	622	866	1105	1357	1610	1818	2055	2289
	1	-10	-4	-3	11	26	-4	-6	-10
	0.02	-0.21	-0.09	-0.07	0.22	0.54	-0.09	-0.12	-0.20
	0.90	0.44	0.32	0.10	0.14	0.20	-0.64	-0.90	-1.22
	391	618	861	1099	1354	1607	1821	2060	2298
	4	-8	-5	-7	9	22	-4	-5	-6
	0.09	-0.17	-0.11	-0.14	0.18	0.46	-0.08	-0.09	-0.13
	0.82	0.36	0.22	-0.02	0.08	0.14	-0.58	-0.80	-1.04
	0.20	0.20	0.20	0.30	0.20	0.20	0.20	0.20	0.10
	0.40	0.62	0.87	1.11	1.36	1.61	1.82	2.06	2.30
	0.38	0.60	0.84	1.08	1.34	1.59	1.80	2.04	2.29

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.41	-0.20
LOGGING ACCURACY (dB)	0.50	-1.20

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.54	-0.21
LOGGING ACCURACY (dB)	0.90	-1.22

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.46	-0.17
LOGGING ACCURACY (dB)	0.82	-1.04

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.54	-0.21

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.90	-1.22

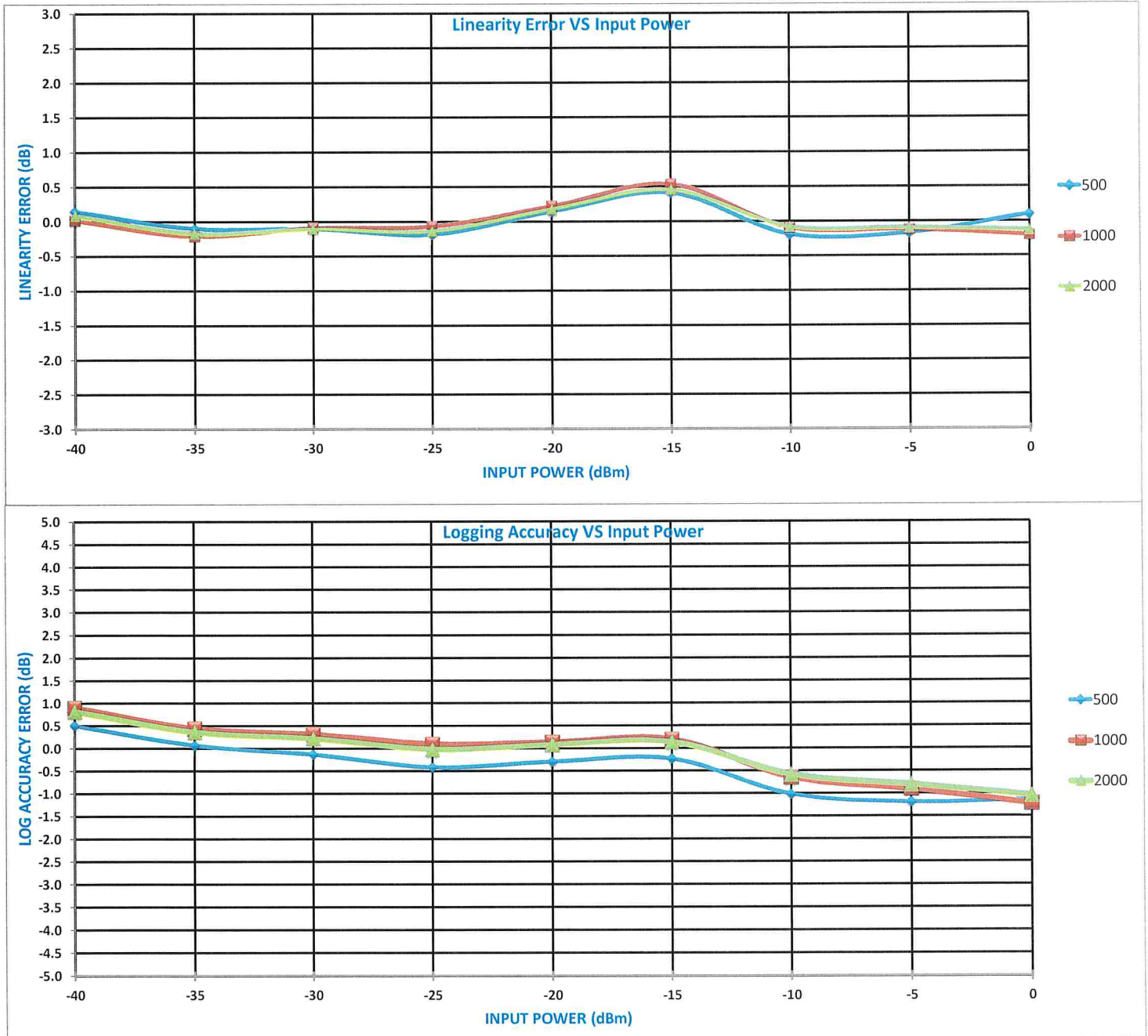
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Log Linearity and Log Accuracy @ -40°C



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Log Linearity and Log Accuracy @ +85°C

DC Offset= 0.075 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2351
	SLOPE (mV/dB)	51.2

1 GHz	INTERCEPT (mV)	2366
	SLOPE (mV/dB)	51

2 GHz	INTERCEPT (mV)	2370
	SLOPE (mV/dB)	51.2

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	299	568	815	1066	1335	1592	1828	2083	2363
	-5	8	-1	-6	7	8	-11	-12	12
	-0.10	0.16	-0.02	-0.11	0.14	0.17	-0.22	-0.24	0.23
	-1.02	-0.64	-0.70	-0.68	-0.30	-0.16	-0.44	-0.34	0.26
	319	589	839	1089	1357	1615	1846	2104	2369
	-9	6	1	-4	10	13	-11	-8	3
	-0.19	0.11	0.02	-0.07	0.19	0.25	-0.21	-0.15	0.05
	-0.62	-0.22	-0.22	-0.22	0.14	0.30	-0.08	0.08	0.38
	314	583	833	1083	1354	1611	1848	2108	2373
	-7	6	0	-6	9	10	-10	-6	3
	-0.13	0.12	0.00	-0.12	0.17	0.19	-0.19	-0.11	0.06
	-0.72	-0.34	-0.34	-0.34	0.08	0.22	-0.04	0.16	0.46
	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
	0.32	0.59	0.84	1.09	1.36	1.62	1.85	2.11	2.37
	0.30	0.57	0.82	1.07	1.34	1.59	1.83	2.08	2.36

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.23	-0.24
LOGGING ACCURACY (dB)	0.26	-1.02

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.25	-0.21
LOGGING ACCURACY (dB)	0.38	-0.62

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.19	-0.19
LOGGING ACCURACY (dB)	0.46	-0.72

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.25	-0.24

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	0.46	-1.02

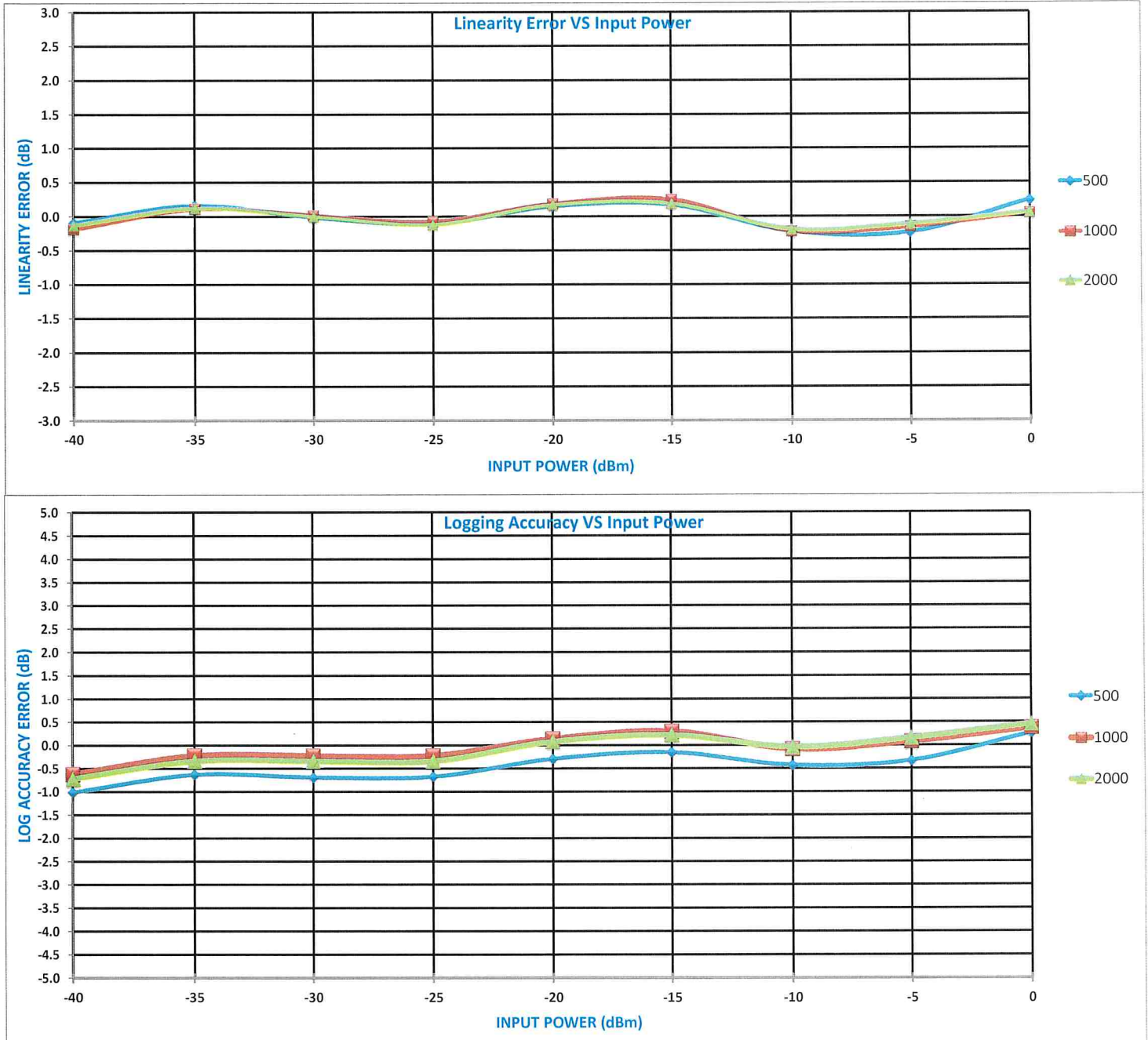
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Log Linearity and Log Accuracy @ +85°C



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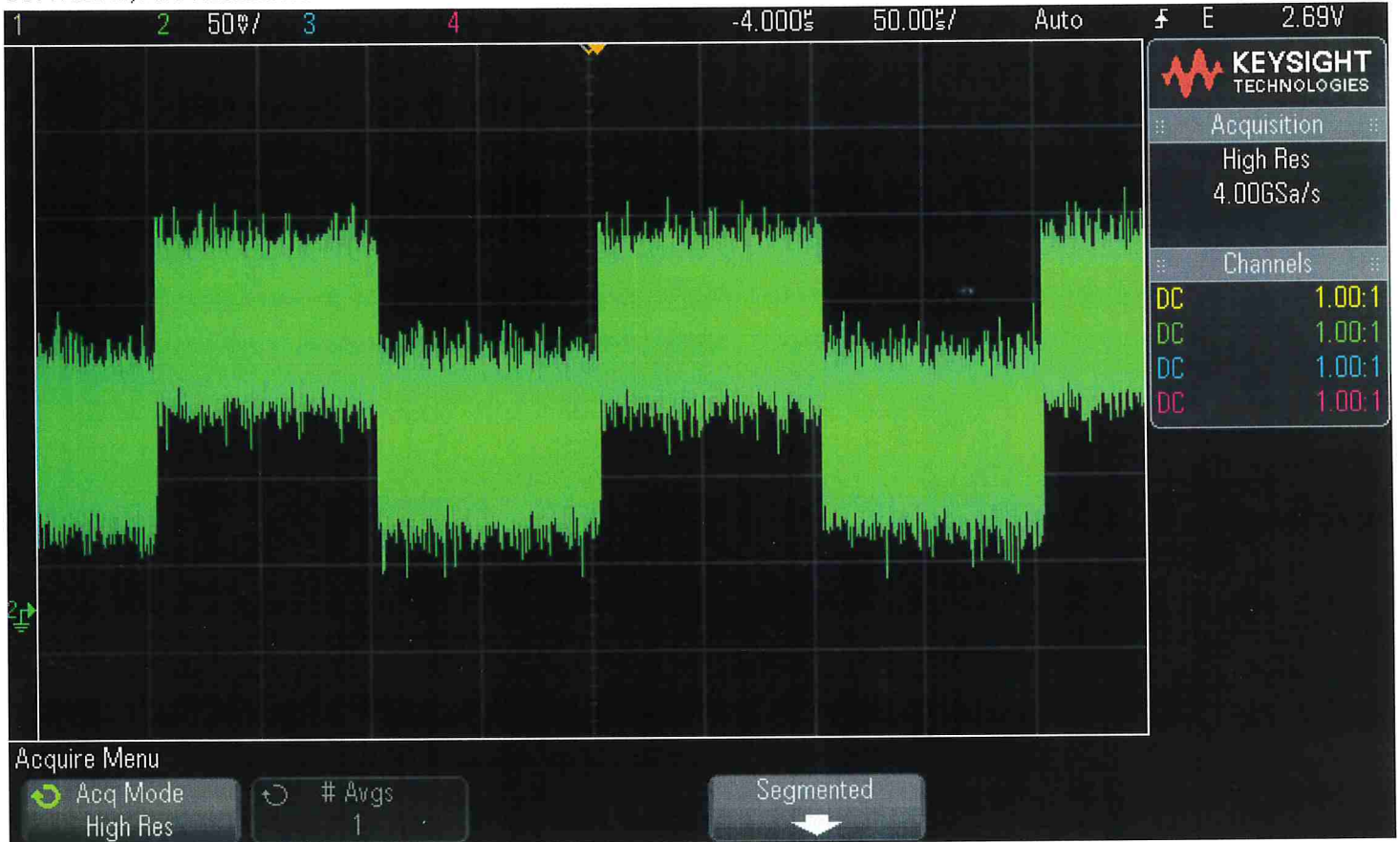


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TSS -46 dBm

DSO-X 3024A, MY54490369, Fri Feb 23 14:04:16 2024



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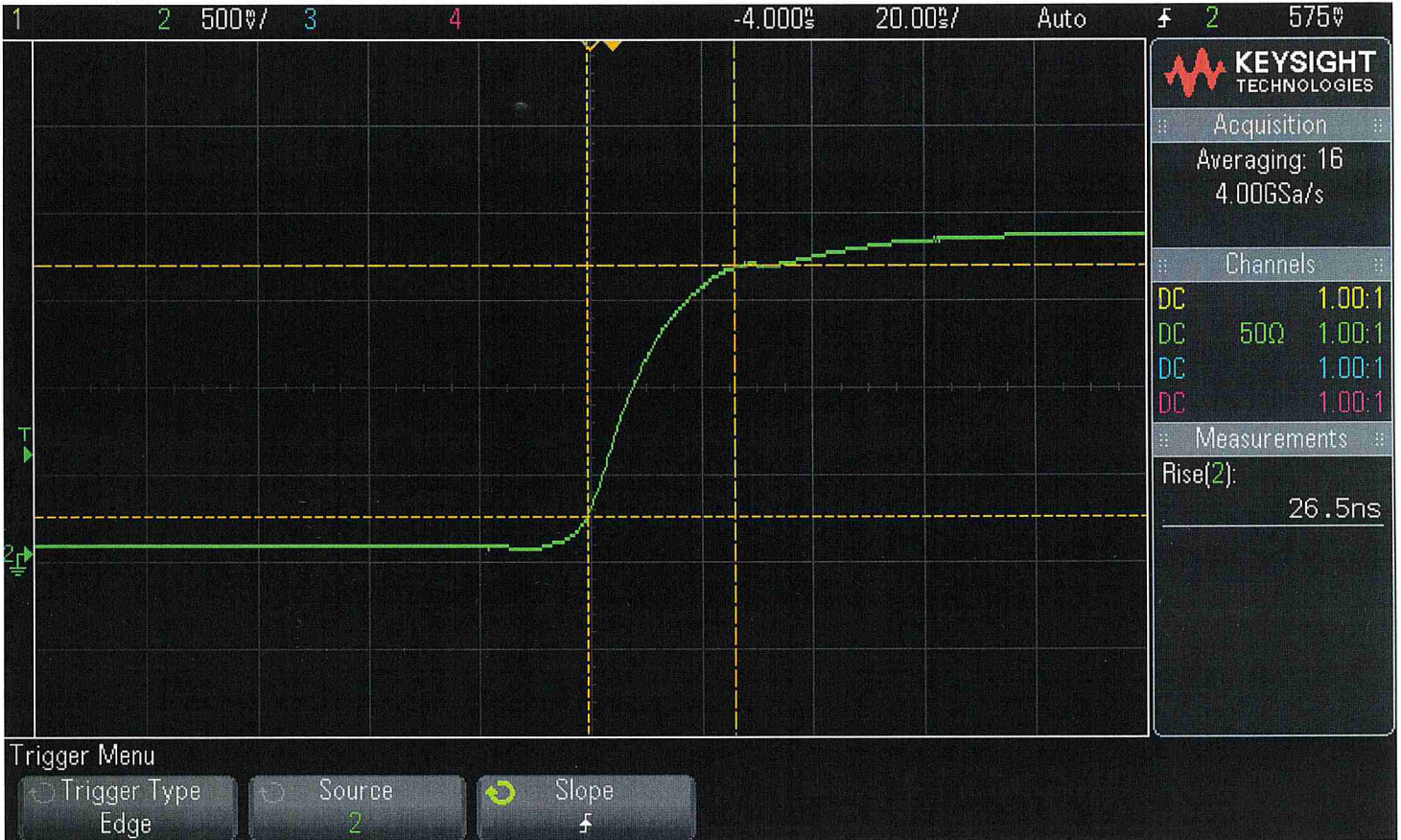


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Rise Time 26.5 ns

DSO-X 3024A, MY54490369, Fri Feb 23 13:45:11 2024



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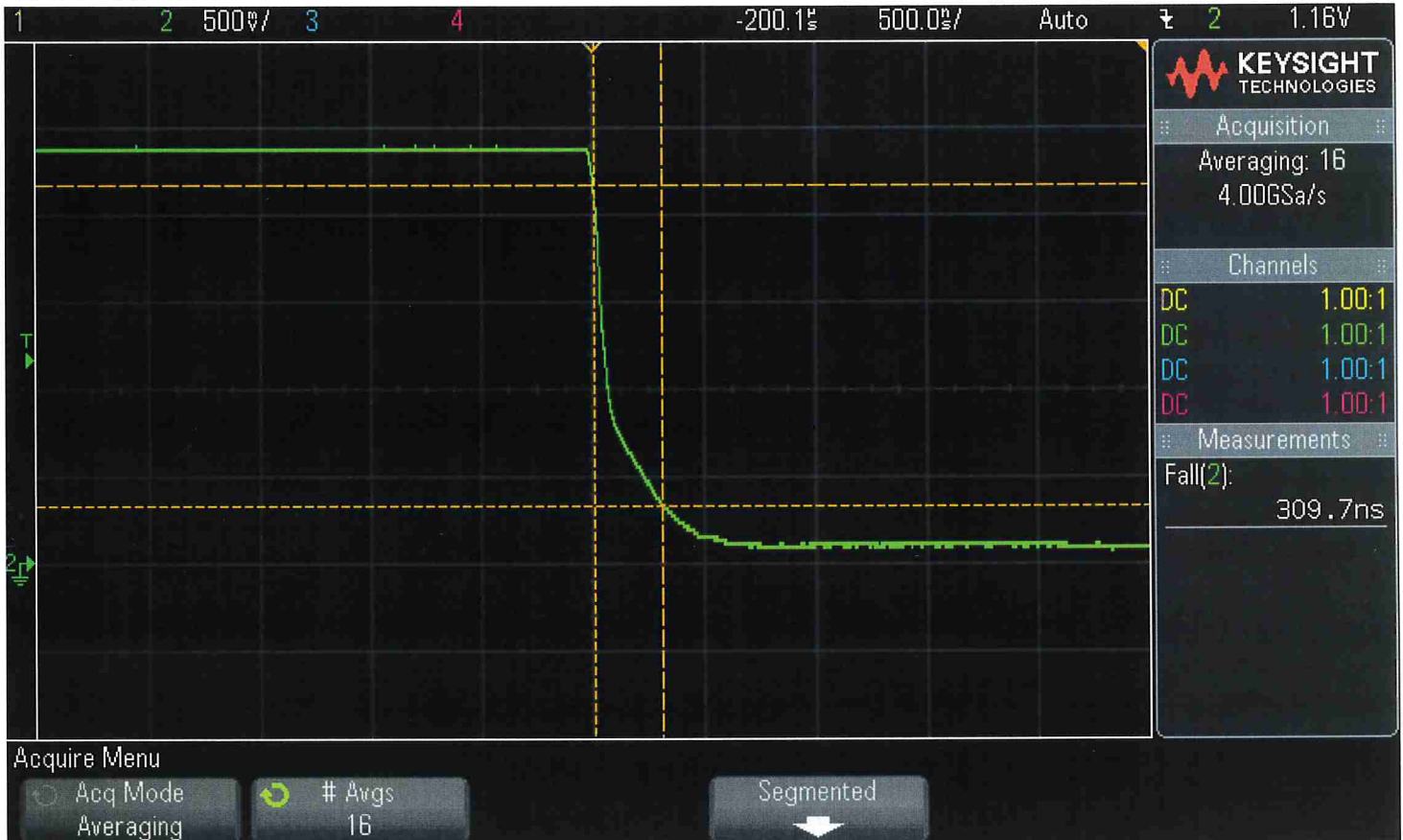


**SUMMARY TEST DATA
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PL44193/2409

Fall Time 309 ns

DSO-X 3024A, MY54490369, Fri Feb 23 14:46:02 2024



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VSWR 1.29:1

