



**SUMMARY TEST DATA
ON
HADA-D2001**

PL47263/2435

Customer: _____	Tested By: <u>Joshua Monley</u>
SO No: _____	Temperature: <u>+25°C -40°C +85°C</u>
Model No: <u>HADA-D2001</u>	Date: <u>8/28/2024</u>
Serial No: <u>PL47263/2435</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	<i>PMI</i> <i>QA3</i>
2	TSS:	-44 dBm Min @ -40°C to +85°	-45.0 dBm See Plot	
3	Frequency Flatness:	±0.75 dB Max	±0.1 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)	+0.06 / -0.68 dB +0.68 / -1.96 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	+0.30 / -0.30 dB +0.44 / -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%)	27.5 ns See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	128 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	+100 mV @ +25°C +62 mV @ -40°C +71 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	

4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com



**SUMMARY TEST DATA
ON
HADA-D2001**

PL47263/2435

14	Power Supply:	+12 ± 1VDC @ 125 mA Max -12 ± 1VDC @ 75 mA Max	85 mA 40 mA	PMI QA3
15	Warm Up Time:	2 Minutes Max	2 Minutes	1

*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: *8-30-24*



**SUMMARY TEST DATA
ON
HADA-D2001**

PL47263/2435

Log Linearity and Log Accuracy @ +25°C

LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: J. Monley
TEST DATE: 08/28/2024
SERIAL NO: PL47263
TEST TEMP: +25C

Graph #1

DC Offset= 0.100 V

Frequency		
0.5 GHz	INTERCEPT (mV)	2329
	SLOPE (mV/dB)	49.9

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

2 GHz	INTERCEPT (mV)	2335
	SLOPE (mV/dB)	50.1

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	337	582	826	1066	1336	1594	1820	2079	2330
	6	1	-5	-14	6	14	-9	0	1
	0.11	0.02	-0.09	-0.29	0.12	0.29	-0.19	0.00	0.03
	-0.26	-0.36	-0.48	-0.68	-0.28	-0.12	-0.60	-0.42	-0.40
	345	590	835	1075	1345	1603	1827	2089	2336
	5	0	-4	-14	7	15	-10	2	-1
	0.10	0.01	-0.08	-0.28	0.13	0.30	-0.21	0.04	-0.01
	-0.10	-0.20	-0.30	-0.50	-0.10	0.06	-0.46	-0.22	-0.28
	338	584	827	1068	1339	1597	1825	2087	2336
	5	2	-5	-16	6	13	-9	2	1
	0.13	0.04	-0.11	-0.30	0.11	0.26	-0.19	0.05	0.02
	-0.24	-0.32	-0.46	-0.64	-0.22	-0.06	-0.52	-0.26	-0.26
	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	0.35	0.59	0.84	1.08	1.35	1.60	1.83	2.09	2.34
	0.34	0.58	0.83	1.07	1.34	1.59	1.82	2.08	2.33

RF Input Power (dBm)

Measured Value (mV)	Error(dB)
Error (mV)	MAX MIN
LINEARITY ERROR (dB)	0.29 -0.29
LOGGING ACCURACY (dB)	-0.12 -0.68

Measured Value (mV)	Error(dB)
Error (mV)	MAX MIN
LINEARITY ERROR (dB)	0.30 -0.28 x
LOGGING ACCURACY (dB)	0.06 -0.50

Measured Value (mV)	Error(dB)
Error (mV)	MAX MIN
LINEARITY ERROR (dB)	0.26 -0.30
LOGGING ACCURACY (dB)	-0.06 -0.64

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

Logging Accuracy vs Frequency	Error(dB)
	MAX MIN
TOTAL LOGGING ACCURACY (dB)	0.06 -0.68

4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com

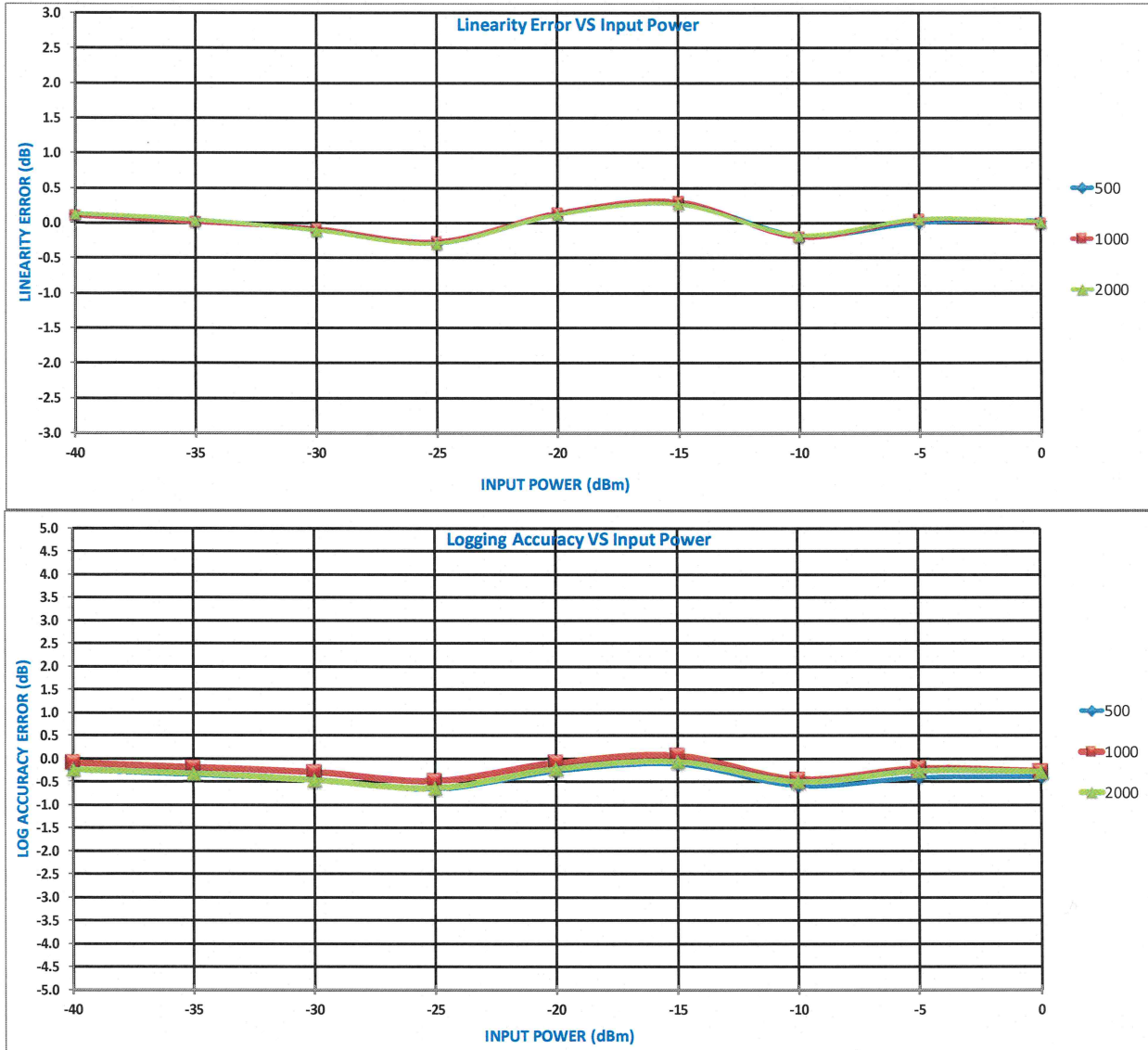


SUMMARY TEST DATA ON HADA-D2001

PL47263/2435

Log Linearity and Log Accuracy @ +25°C

LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: J. Monley
SERIAL NO: PL47263
TEST TEMP: +25C



4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com



SUMMARY TEST DATA ON HADA-D2001

PL47263/2435

Log Linearity and Log Accuracy @ -40°C

LOG TRANSFER WITH FREQUENCY
 MODEL: HADA-D2001
 TESTED BY: J. Monley
 TEST DATE: 08/28/2024
 SERIAL NO: PL47263
 TEST TEMP: -40C

Graph #2

DC Offset= 0.062 V



PLANAR MONOLITHICS INDUSTRIES
 4921 Robert J. Mathews Parkway Suit 1
 El Dorado Hills, CA 95762
 TEL: 916-542-1401 FAX: 916-265-2597
 EMAIL: SALES@PMI-RF.COM

Frequency

0.5 GHz	INTERCEPT (mV)	2261
	SLOPE (mV/dB)	49.2

1 GHz	INTERCEPT (mV)	2269
	SLOPE (mV/dB)	49.1

2 GHz	INTERCEPT (mV)	2268
	SLOPE (mV/dB)	49.3

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
308	535	778	1016	1284	1544	1769	2020	2252	
11	-6	-9	-16	6	20	-1	4	-9	
0.22	-0.12	-0.17	-0.33	0.12	0.41	-0.02	0.09	-0.19	
-0.88	-1.30	-1.44	-1.68	-1.32	-1.12	-1.62	-1.60	-1.96	
316	544	789	1027	1296	1555	1779	2031	2254	
10	-8	-8	-16	8	22	0	7	-15	
0.19	-0.16	-0.17	-0.32	0.17	0.44	0.01	0.14	-0.31	
-0.68	-1.12	-1.22	-1.46	-1.08	-0.90	-1.42	-1.38	-1.92	
310	538	782	1020	1289	1550	1778	2029	2255	
12	-7	-9	-17	6	20	2	7	-13	
0.23	-0.14	-0.18	-0.35	0.11	0.41	0.04	0.14	-0.27	
-0.83	-1.24	-1.35	-1.60	-1.22	-1.05	-1.44	-1.42	-1.88	
0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	
0.32	0.54	0.79	1.03	1.30	1.56	1.78	2.03	2.26	
0.31	0.54	0.78	1.02	1.28	1.54	1.77	2.02	2.25	

RF Input Power (dBm)

Measured Value (mV)	Error(dB)
Error (mV)	MAX MIN
LINEARITY ERROR (dB)	0.41 -0.33
LOGGING ACCURACY (dB)	-0.88 -1.96

Measured Value (mV)	Error(dB)
Error (mV)	MAX MIN
LINEARITY ERROR (dB)	0.44 -0.32
LOGGING ACCURACY (dB)	-0.68 -1.92

Measured Value (mV)	Error(dB)
Error (mV)	MAX MIN
LINEARITY ERROR (dB)	0.41 -0.35
LOGGING ACCURACY (dB)	-0.80 -1.90

Logging Linearity vs Frequency	Error(dB)
	MAX MIN
TOTAL LOG LINEARITY (dB)	0.44 -0.35

Logging Accuracy vs Frequency	Error(dB)
	MAX MIN
TOTAL LOGGING ACCURACY (dB)	-0.88 -1.96

4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
 Email: sales@pmi-rf.com

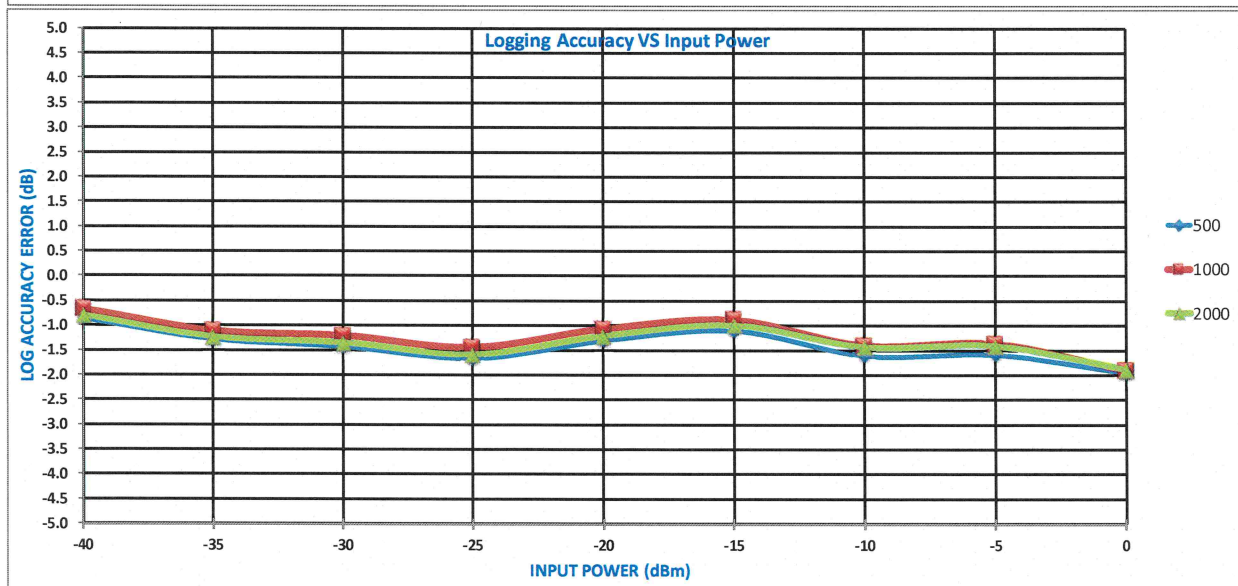
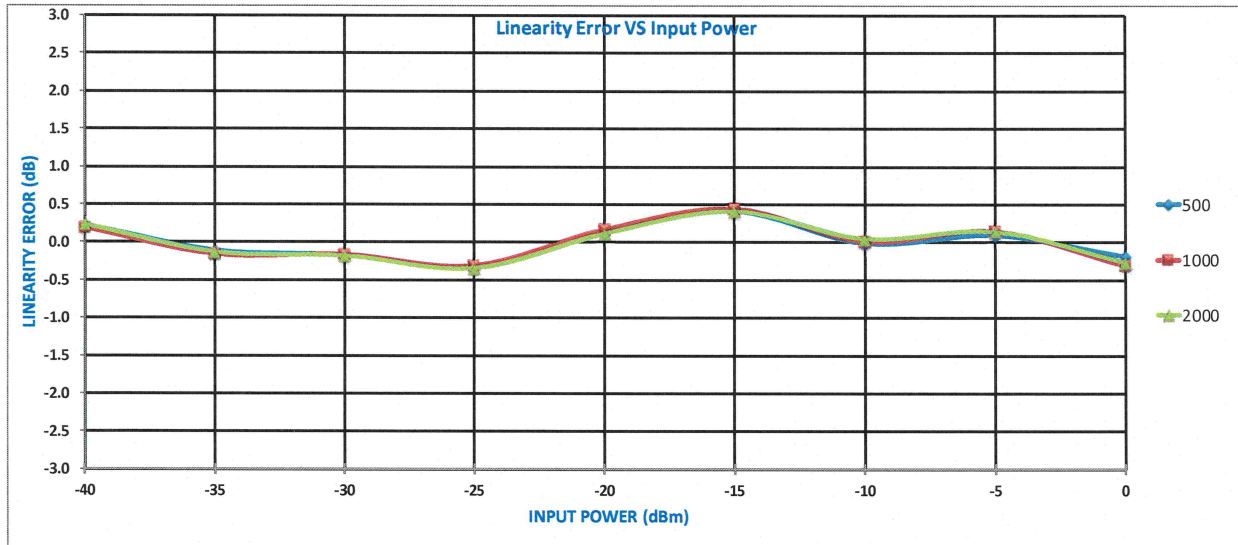


SUMMARY TEST DATA ON HADA-D2001

PL47263/2435

Log Linearity and Log Accuracy @ -40°C

LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: J. Monley
SERIAL NO: PL47263
TEST TEMP: -40C



4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax:
(916)265-2597
Email: sales@pmi-rf.com



**SUMMARY TEST DATA
ON
HADA-D2001**

PL47263/2435

Log Linearity and Log Accuracy @ +85°C

LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: J. Monley
TEST DATE: 08/28/2024
SERIAL NO: PL47263
TEST TEMP: +85C

Graph #3

DC Offset= 0.071 V



PLANAR MONOLITHICS INDUSTRIES
4921 Robert J. Mathews Parkway Suit 1
El Dorado Hills, CA 95762
TEL: 916-542-1401 FAX: 916-265-2597
EMAIL: SALES@PMI-RF.COM

Frequency		
0.5 GHz	INTERCEPT (mV)	2294
	SLOPE (mV/dB)	50.4

1 GHz	INTERCEPT (mV)	2306
	SLOPE (mV/dB)	50.4

2 GHz	INTERCEPT (mV)	2306
	SLOPE (mV/dB)	50.5

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

	-40	-35	-30	-25	-20	-15	-10	-5	0
	285	539	779	1021	1291	1547	1778	2037	2307
	5	7	-5	-14	4	8	-13	-5	13
	0.10	0.14	-0.09	-0.28	0.08	0.16	-0.25	-0.11	0.25
	-1.30	-1.22	-1.42	-1.58	-1.18	-1.06	-1.44	-1.26	-0.86
	295	550	791	1032	1303	1560	1789	2051	2315
	4	7	-4	-15	5	10	-13	-3	9
	0.07	0.14	-0.08	-0.29	0.09	0.19	-0.26	-0.06	0.19
	-1.10	-1.00	-1.18	-1.36	-0.94	-0.80	-1.22	-0.98	-0.70
	289	545	785	1027	1298	1555	1788	2050	2317
	6	8	-6	-15	3	7	-12	-3	11
	0.10	0.16	-0.09	-0.30	0.06	0.15	-0.24	-0.06	0.23
	-1.22	-1.10	-1.20	-1.40	-1.04	-0.90	-1.24	-1.00	-0.66
	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	0.30	0.55	0.79	1.03	1.30	1.56	1.79	2.05	2.32
	0.29	0.54	0.78	1.02	1.29	1.55	1.78	2.04	2.31

RF Input Power (dBm)

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.25	-0.28
LOGGING ACCURACY (dB)	-0.86	-1.58

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.19	-0.29
LOGGING ACCURACY (dB)	-0.70	-1.36

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.23	-0.30
LOGGING ACCURACY (dB)	-0.66	-1.46

Logging Linearity vs Frequency	Error(dB)	
TOTAL LOG LINEARITY (dB)	MAX	MIN
	0.25	-0.30

Logging Accuracy vs Frequency	Error(dB)	
TOTAL LOGGING ACCURACY (dB)	MAX	MIN
	-0.66	-1.58

4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com

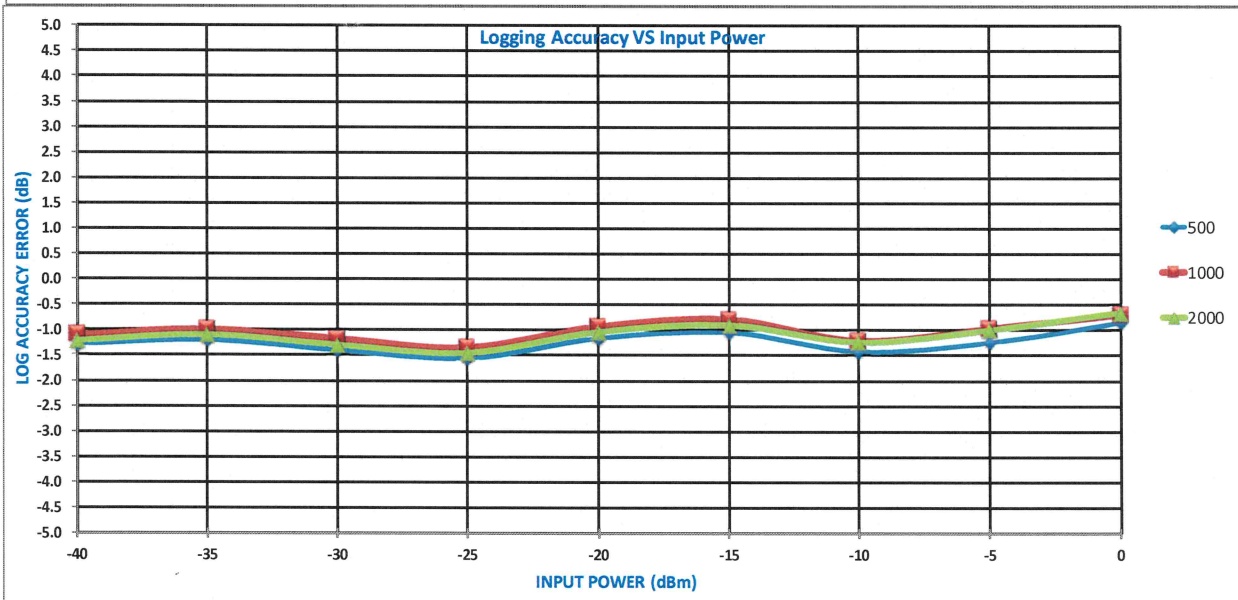
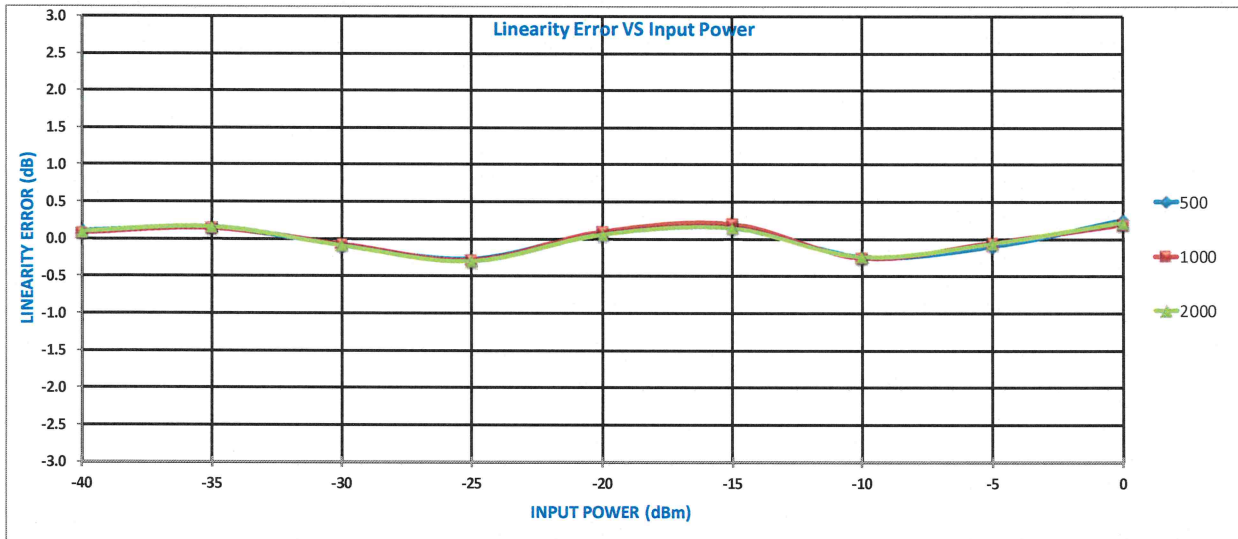


SUMMARY TEST DATA ON HADA-D2001

PL47263/2435

Log Linearity and Log Accuracy @ +85°C

LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: J. Monley
SERIAL NO: PL47263
TEST TEMP: +85C



4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax:
(916)265-2597
Email: sales@pmi-rf.com

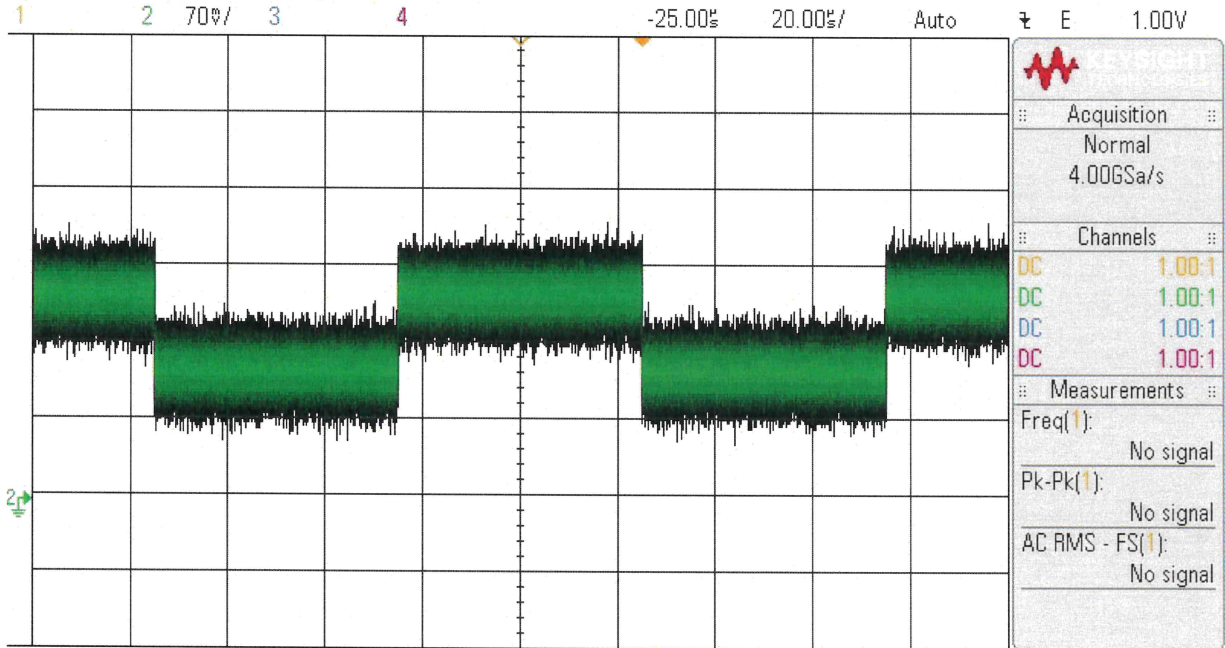


**SUMMARY TEST DATA
ON
HADA-D2001**

PL47263/2435

TSS -45.0 dBm

DSO-X 3024A, MY54490369: Wed Aug 14 10:31:31 2024



Acquire Menu

Acq Mode Normal # Avgs 8

Segmented

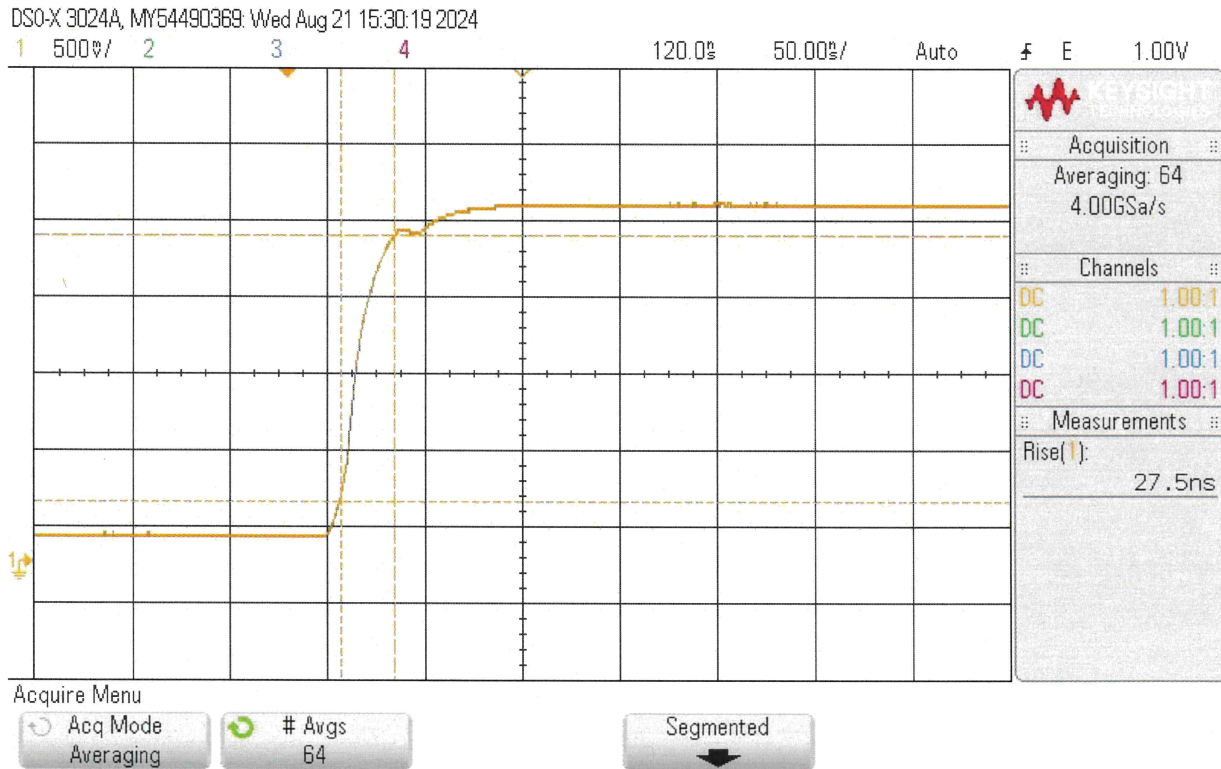
4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597 Email: sales@pmi-rf.com



**SUMMARY TEST DATA
ON
HADA-D2001**

PL47263/2435

Rise Time

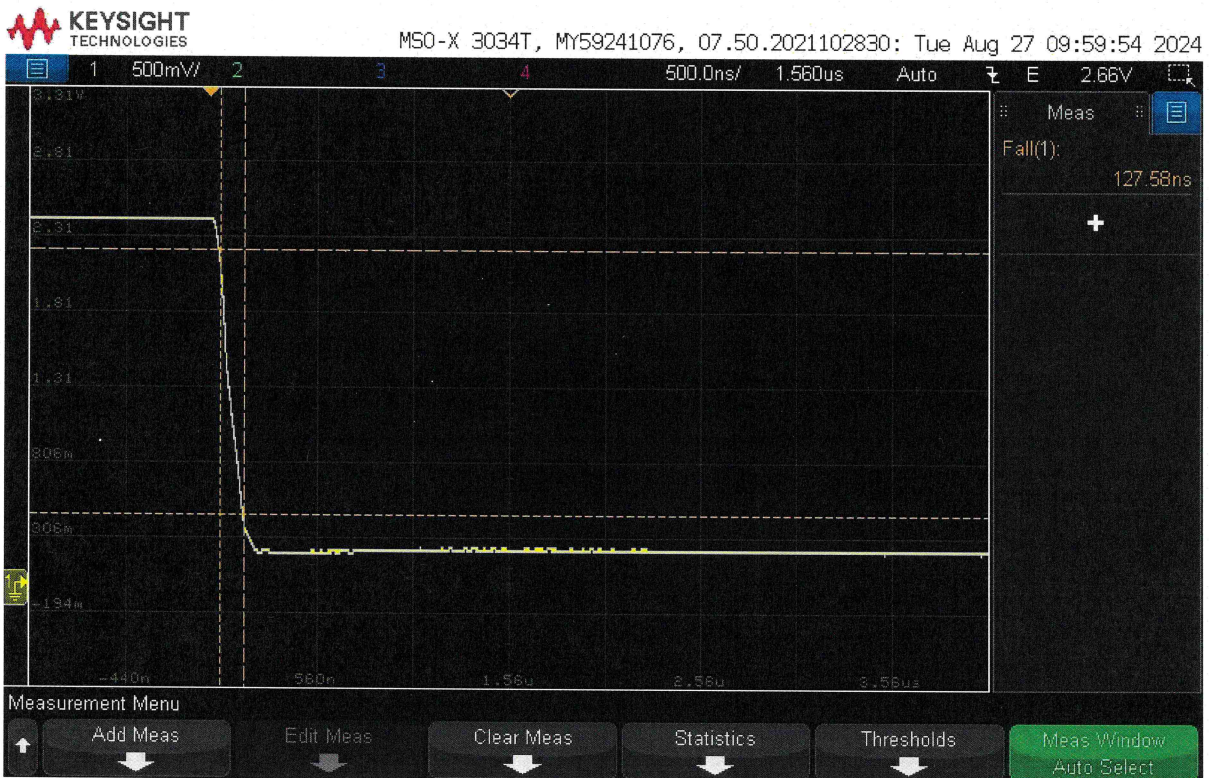




**SUMMARY TEST DATA
ON
HADA-D2001**

PL47263/2435

Fall Time



4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax:
(916)265-2597
Email: sales@pmi-rf.com



**SUMMARY TEST DATA
ON
HADA-D2001**

PL47263/2435

VSWR

