



**SUMMARY TEST DATA
ON
HADA-D2001**

PL25747/1924

Customer: _____	Tested By: <u>J.Emperador</u>
SO No: _____	Temperature: <u>+25°C</u>
Model No: <u>HADA-D2001</u>	Date: <u>06/11/19</u>
Serial No: <u>PL25747/1924</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 QA 1
2	TSS:	-44 dBm Min @ -40°C to +85°	-46.7 dBm See Plot	
3	Frequency Flatness:	±0.75 dB Max	±0.20 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)	0.58 dB -1.96 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	0.36 dB 0.45 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%)	20.2 ns See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	139 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	95 mV 113 mV	
12	Input VSWR:	2.5:1 Max @ +23 dBm	1.26:1 See Plot	PMI QA 1

4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax:
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13	Propagation Delay:	60 ns Max	41 ns See Plot	PMI QA 1
14	Power Supply:	+12 ± 1VDC @ 125 mA Max -12 ± 1VDC @ 75 mA Max	85 mA 42 mA	
15	Warm Up Time:	2 Minutes Max	2 Minutes	PMI QA 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:  PMI QA 1 Date: 6/18/19



SUMMARY TEST DATA ON HADA-D2001

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LOG TRANSFER WITH FREQUENCY
 MODEL: HADA-D2001
 TESTED BY: J.Emperador
 TEST DATE: 06/10/19
 SERIAL NO: PL25747
 TEST TEMP: +25C

Graph #1

DC Offset= 0.095 V

PLANAR MONOLITHICS INDUSTRIES
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Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
0.5 GHz	2337	49.7
1 GHz	2356	49.7
2 GHz	2350	50.2

Flatness +/- dB	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Max Video Output Volts	0.37	0.62	0.87	1.11	1.37	1.63	1.85	2.11	2.35
Min Video Output Volts	0.35	0.60	0.84	1.08	1.35	1.61	1.83	2.09	2.34

RF Input Power (dBm)	Measured Value (mV)	Error (dB)
		MAX MIN
	LINEARITY ERROR (dB)	0.34 -0.20
	LOGGING ACCURACY (dB)	0.16 -0.40

RF Input Power (dBm)	Measured Value (mV)	Error (dB)
		MAX MIN
	LINEARITY ERROR (dB)	0.36 -0.19
	LOGGING ACCURACY (dB)	0.58 0.04

RF Input Power (dBm)	Measured Value (mV)	Error (dB)
		MAX MIN
	LINEARITY ERROR (dB)	0.24 -0.30
	LOGGING ACCURACY (dB)	0.18 -0.38

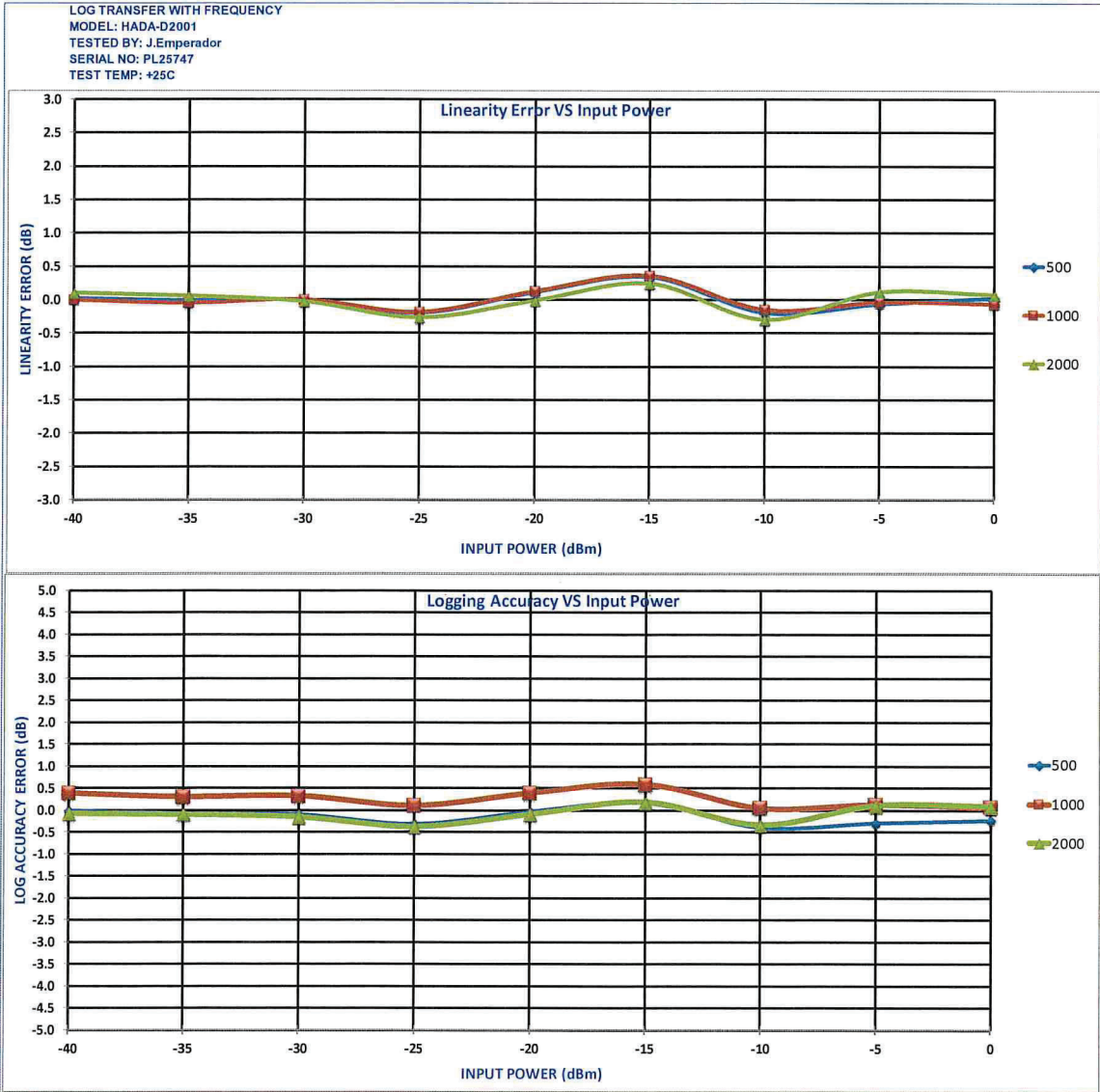
Logging Linearity vs Frequency	Error (dB)
	MAX MIN
TOTAL LOG LINEARITY (dB)	0.36 -0.30

Logging Accuracy vs Frequency	Error (dB)
	MAX MIN
TOTAL LOGGING ACCURACY (dB)	0.58 -0.40



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LOG TRANSFER WITH FREQUENCY
 MODEL: HADA-D2001
 TESTED BY: J.Emperador
 TEST DATE: 06/10/19
 SERIAL NO: PL25747
 TEST TEMP: -40C

Graph #2

DC Offset= 0.113 V

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Frequency		RF Input Power (dBm)									
		-40	-35	-30	-25	-20	-15	-10	-5	0	
0.5 GHz	INTERCEPT (mV)	2259	368	580	826	1055	1310	1565	1781	2023	2252
	SLOPE (mV/dB)	47.6	14	-12	-5	-14	3	20	-2	2	-7
		0.29	-0.26	-0.09	-0.29	0.07	0.43	-0.04	0.04	0.04	-0.15
		0.36	-0.40	-0.48	-0.90	-0.80	-0.70	-1.38	-1.54	-1.96	
1 GHz	INTERCEPT (mV)	2277	386	598	846	1076	1332	1585	1804	2041	2265
	SLOPE (mV/dB)	47.6	11	-14	-4	-12	6	21	2	2	-12
		0.24	-0.30	-0.09	-0.25	0.13	0.45	0.05	0.03	0.03	-0.26
		0.72	-0.04	-0.08	-0.48	-0.36	-0.30	-0.92	-1.18	-1.70	
2 GHz	INTERCEPT (mV)	2272	369	580	825	1053	1309	1568	1786	2041	2267
	SLOPE (mV/dB)	48	19	-10	-5	-10	-2	17	-5	10	-5
		0.39	-0.21	-0.11	-0.37	-0.04	0.35	-0.11	0.20	0.20	-0.10
		0.38	-0.40	-0.50	-0.94	-0.82	-0.64	-1.28	-1.18	-1.98	
	Flatness +/- dB	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	Max Video Output Volts	0.39	0.60	0.85	1.08	1.33	1.59	1.80	2.04	2.27	
	Min Video Output Volts	0.37	0.58	0.83	1.05	1.31	1.57	1.78	2.02	2.25	

Measured Value (mV)		Error(dB)	
		MAX	MIN
Error (mV)		0.43	-0.29
LINEARITY ERROR (dB)		0.36	-1.96
LOGGING ACCURACY (dB)		0.36	-1.96

Measured Value (mV)		Error(dB)	
		MAX	MIN
Error (mV)		0.45	-0.30
LINEARITY ERROR (dB)		0.72	-1.70
LOGGING ACCURACY (dB)		0.72	-1.70

Measured Value (mV)		Error(dB)	
		MAX	MIN
Error (mV)		0.39	-0.37
LINEARITY ERROR (dB)		0.38	-1.66
LOGGING ACCURACY (dB)		0.38	-1.66

Logging Linearity vs Frequency		Error(dB)	
		MAX	MIN
TOTAL LOG LINEARITY (dB)		0.45	-0.37

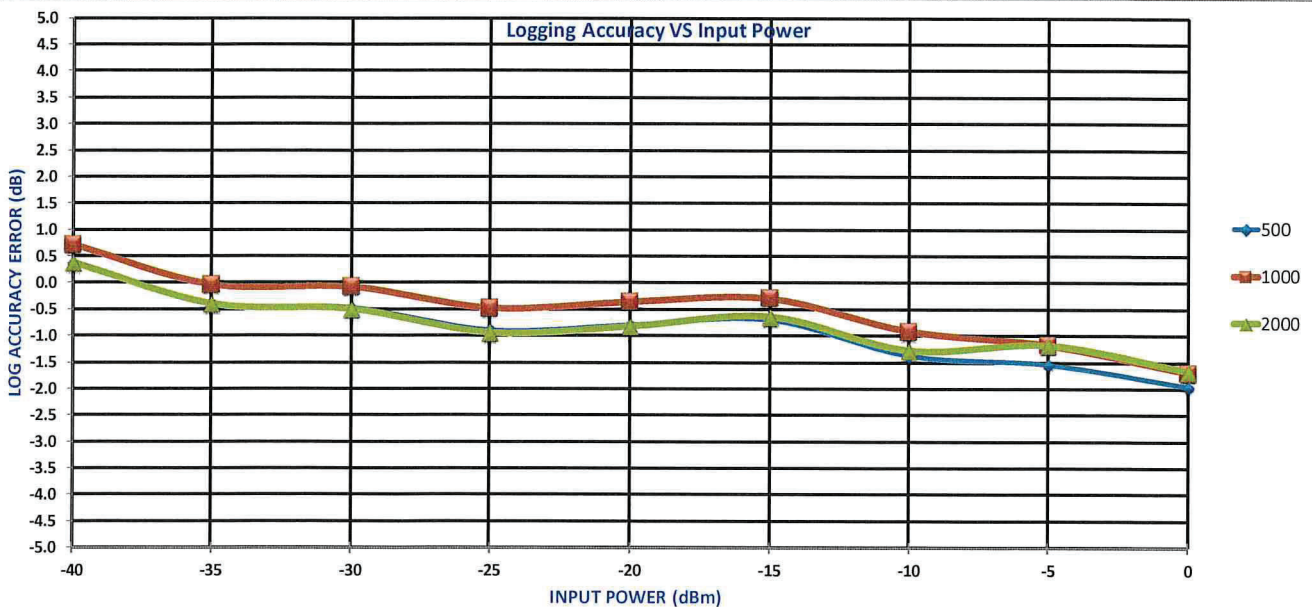
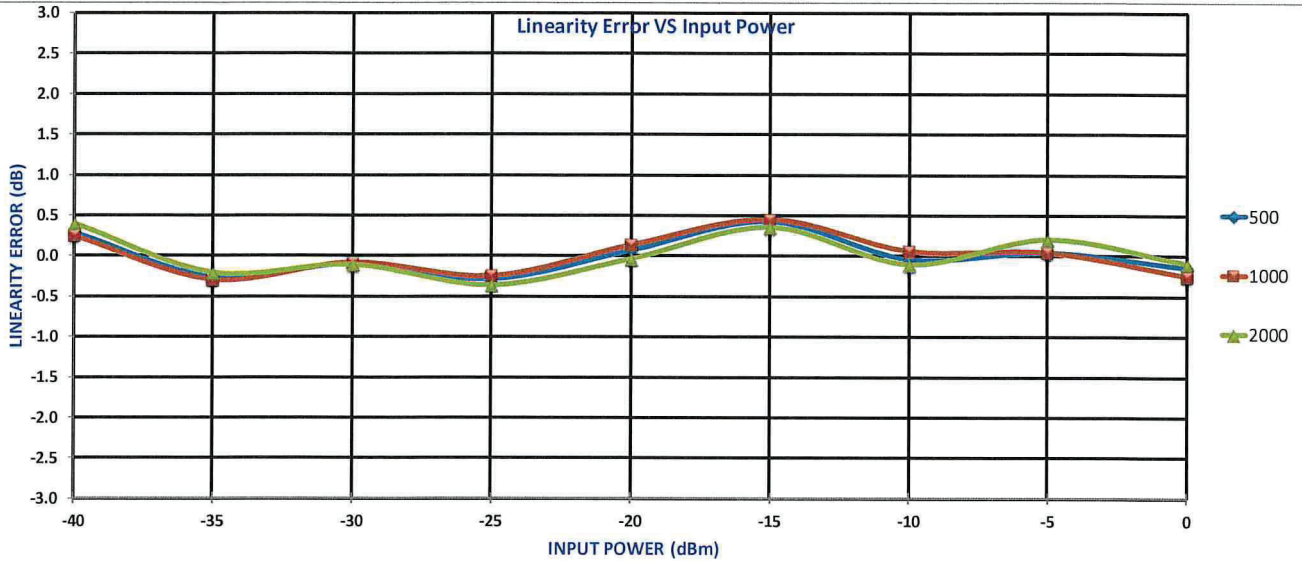
Logging Accuracy vs Frequency		Error(dB)	
		MAX	MIN
TOTAL LOGGING ACCURACY (dB)		0.72	-1.96



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LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: J.Emperador
SERIAL NO: PL25747
TEST TEMP: -40C

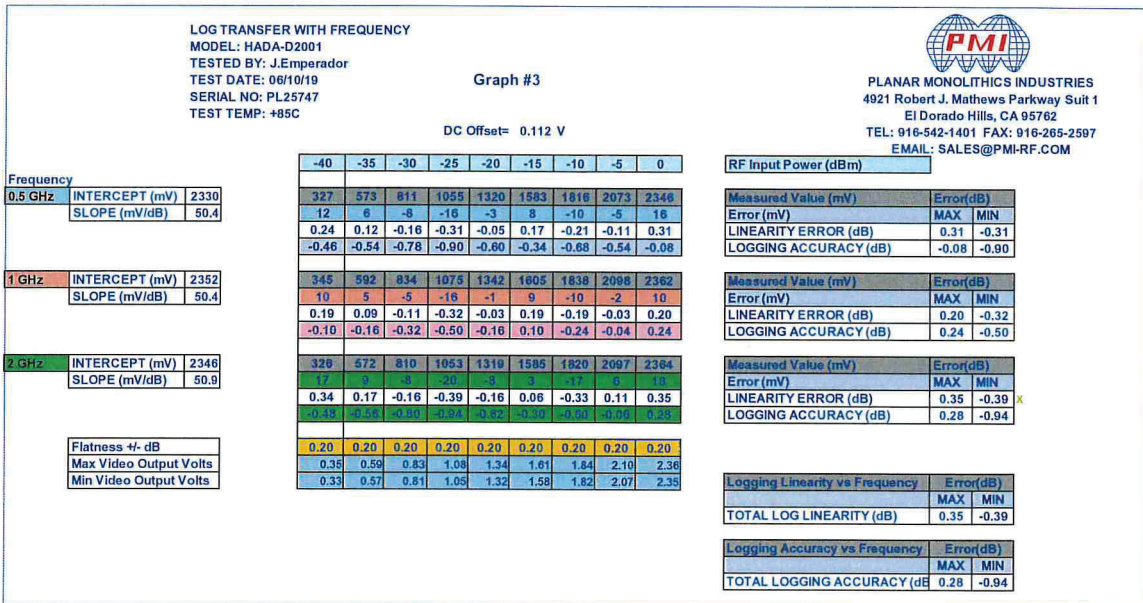


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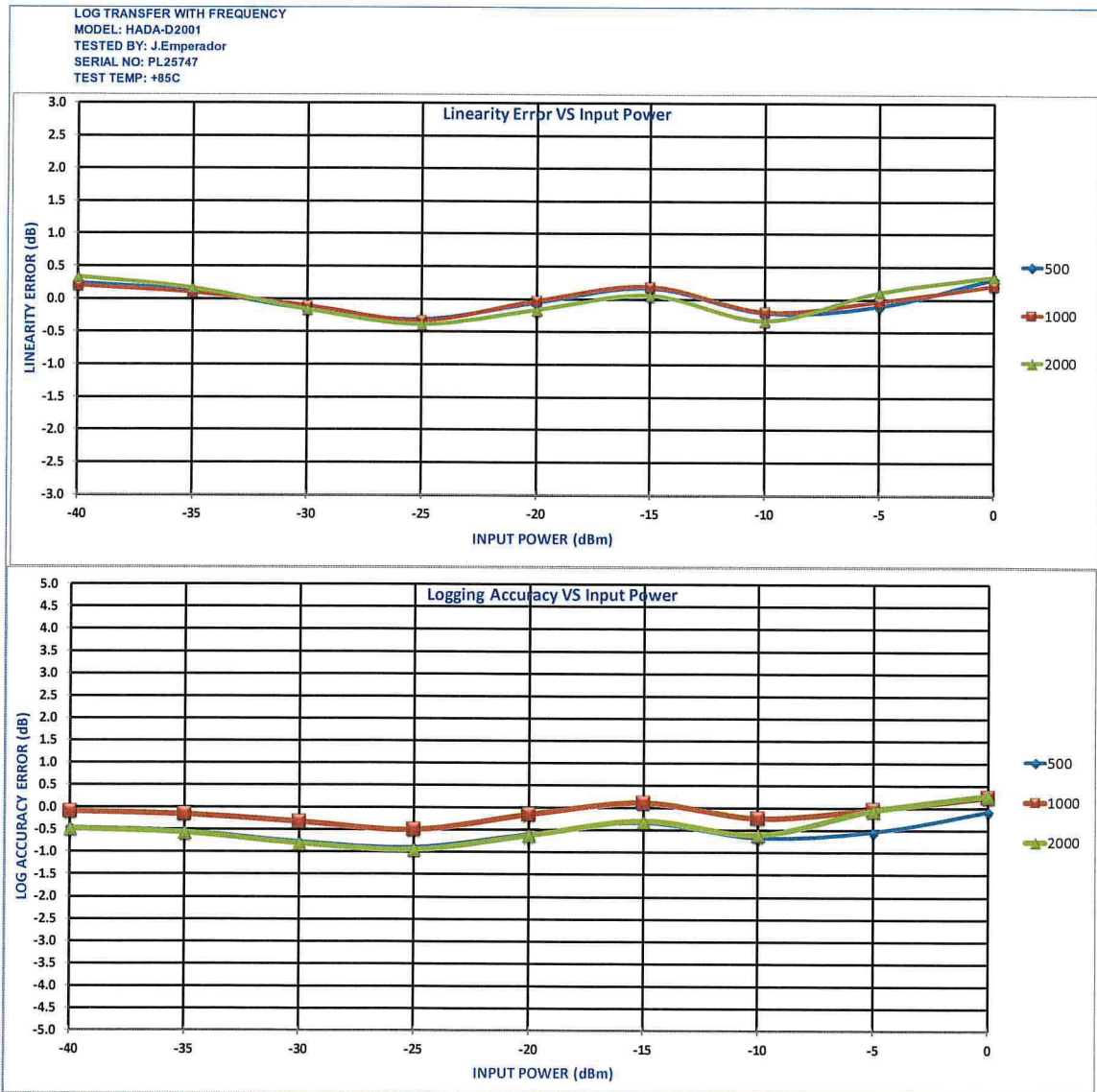
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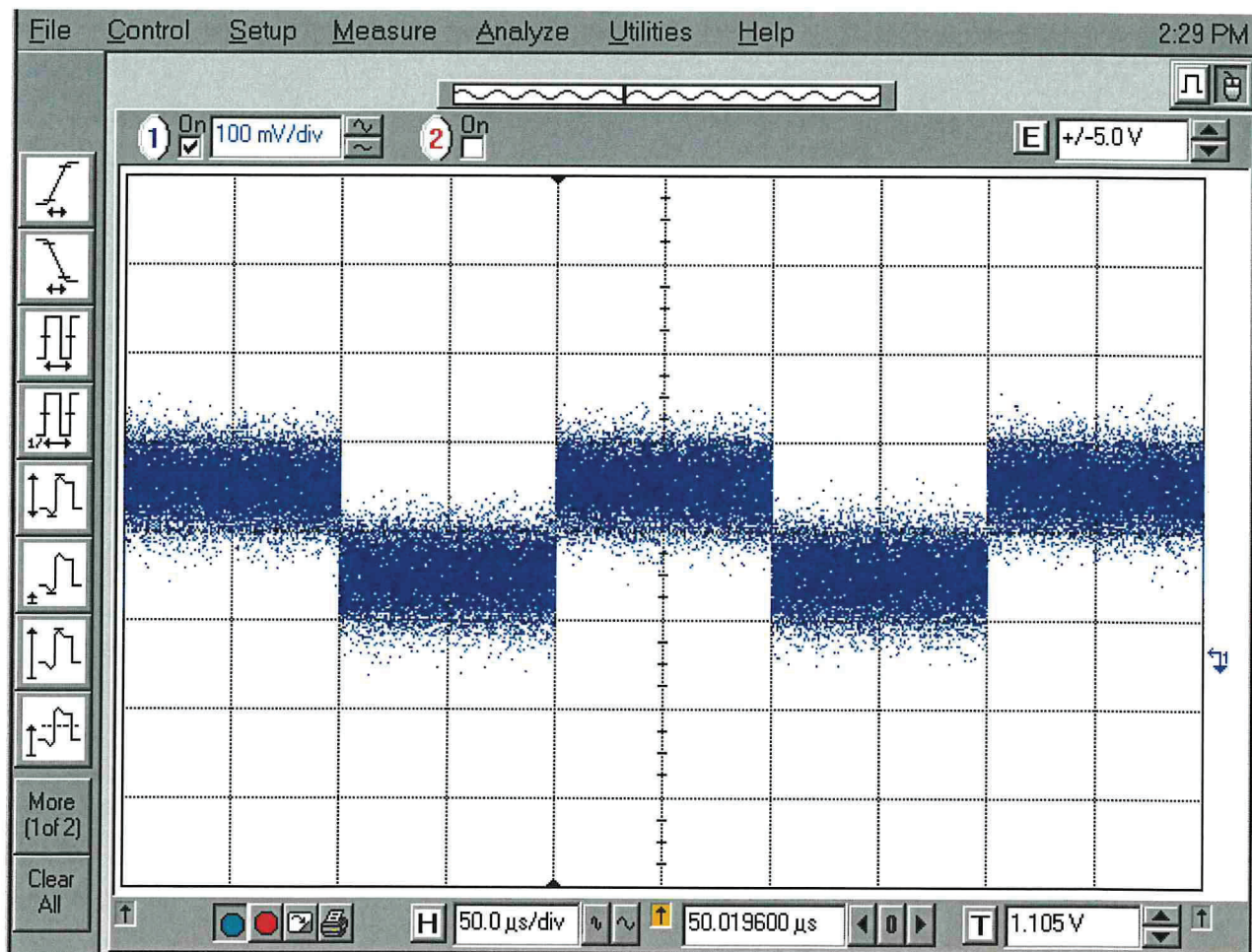


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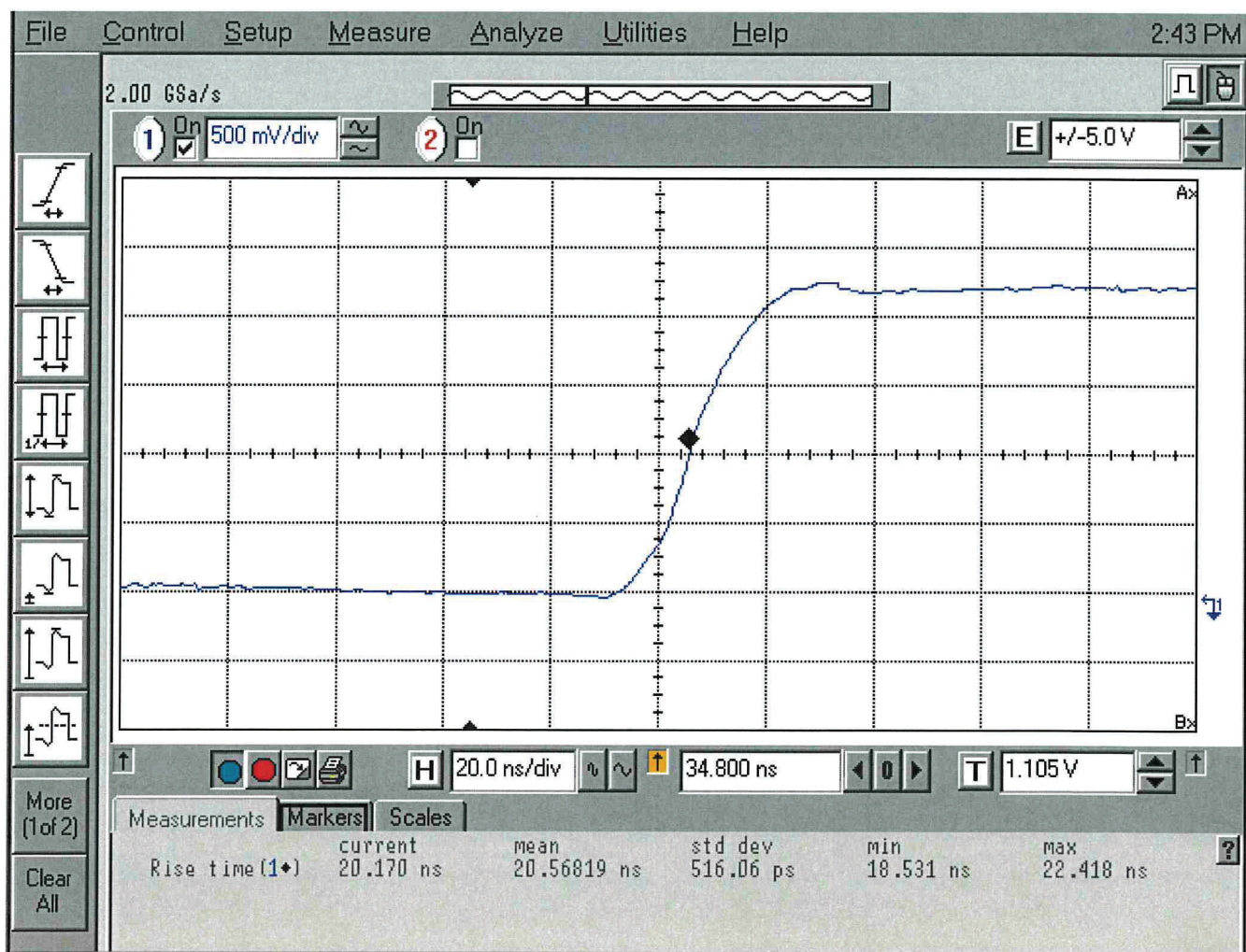


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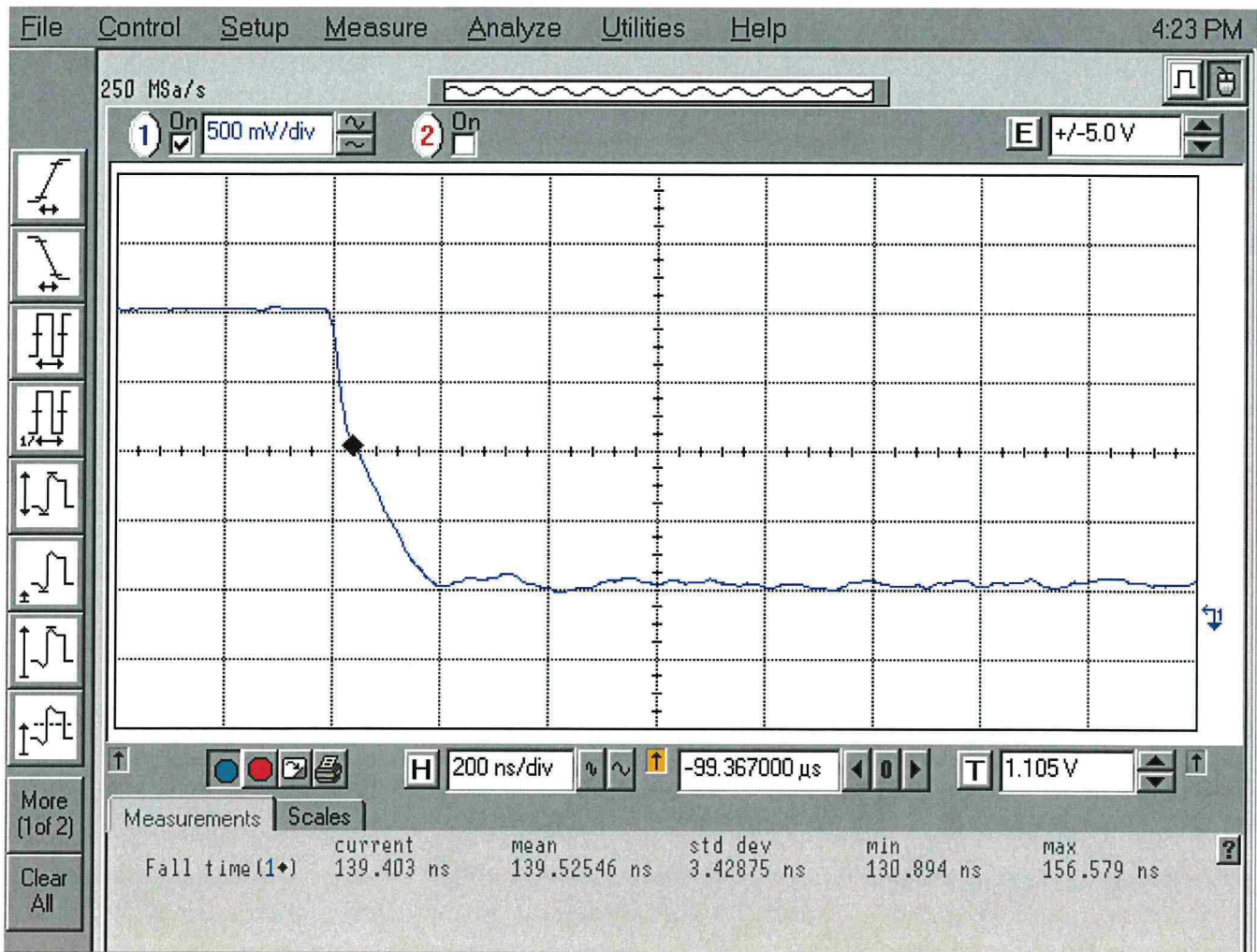


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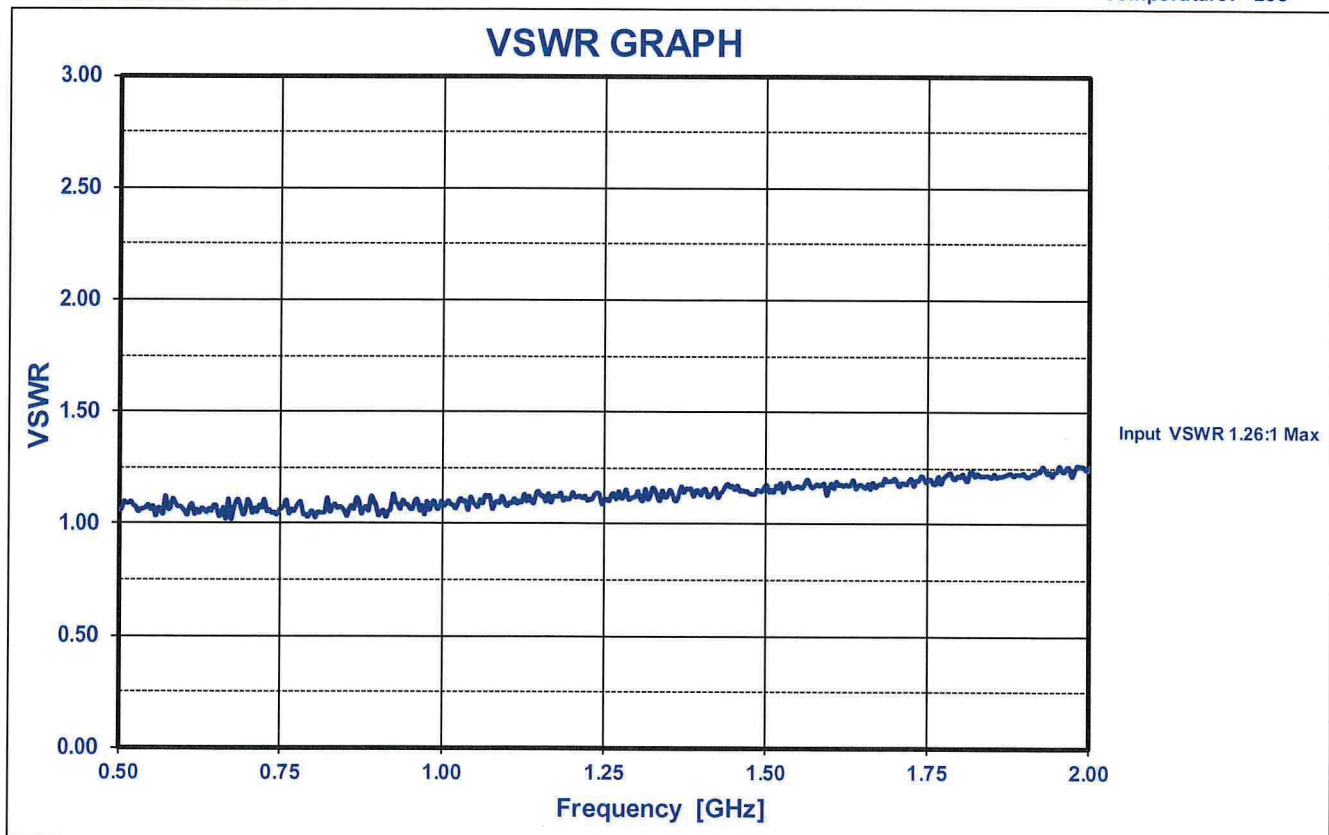


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Model Number: HADA-D2001
Serial Number: PL25747

Temperature: +25C



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INVOICE

Invoice #	Invoice Date	Page
00005074	6/18/2019	1

Bill To:

Mark Isbell
 Shoshin USA, Inc.
 1700 East Garry Avenue, Suite #115
 Santa Ana
 CA
 92705
 mark@shoshin.com
 949-250-4073, 949-250-9574

Ship To:

Mark Isbell
 Shoshin USA, Inc.
 1700 East Garry Avenue, Suite #115
 Santa Ana
 CA
 92705
 mark@shoshin.com
 949-250-4073, 949-250-9574

CUSTOMER PO NUMBER			TERMS			SHIP VIA			F.O.B. POINT		
4Z308H			50%Advance; 50%ship			AS PER PO			Origin		
ORDERED BY			SALES REPRESENTATIVE				ORDER DATE			CUSTOMER ID	
Mark Isbell			Cody Wenner				2/5/2019			SHOSHIN	
ORDER	LN	DL	QUANTITY		PART IDENTIFIER	DESCRIPTION	UNIT	UNIT PRICE		EXTENDED PRICE	
			ORDERED	SHIPPED				LOT / SERIAL NUMBER	COMMENTS		LOT
20190057	01	01	4.00	4.00	27320200 Lot: 061819 S/N: PL25744/1924 Lot: 061819 S/N: PL25745/1924 Lot: 061819 S/N: PL25746/1924 Lot: 061819 S/N: PL25747/1924	HADA-D2001	EA	7245.0000	\$	28980.00	
LINE ITEM TOTALS			DISCOUNT	SUB TOTAL	FREIGHT	TAXABLE AMOUNT	TAX	MISC	INVOICE TOTAL		
28,980.00			0.00	28,980.00	0.00	0.00	0.00	0.00	\$	28,980.00	



PLANAR MONOLITHICS INDUSTRIES, INC

**CERTIFICATE OF ORIGIN / MANUFACTURER'S AFFIDAVIT
CERTIFICATE OF COMPLIANCE**

#CC807-1906

Certificate of Origin / Manufacturer's Affidavit:

We hereby certify that **Planar Monolithics Industries (PMI)** is a Microwave Electronics Design and Manufacturing Company located in El Dorado Hills, California, **United States of America**, and that it is **ISO9001:2015** registered.

Certificate of Compliance:

We hereby certify that all devices either manufactured or repaired and noted upon this certificate are in conformance (except as may be waived) with applicable **Planar Monolithics Industries (PMI)** specifications, workmanship standards and/or contractual requirements as specified in the purchase order. Inspection records, test records, and/or other evidence of conformance are available for examination upon request.

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Customer: **Shoshin Corporation**
Shoshin USA, Inc.
1700 East Garry Avenue
Suite #115
Santa Ana, CA 92705

Customer Purchase Order: **4Z308H**
Sales Order#: **20190057-P-P**

LINE ITEM	MODEL NUMBER	PRODUCT DESCRIPTION	SERIAL NUMBERS	QTY
001	PMI P/N: 27320200 PMI Model No: HADA-D2001 Customer P/N: 72358201	DLVA	PL25744 - PL25747/1924	4

I hereby attest that the above statements are true and factual to the best of my knowledge and belief.

By 
J. Peacher, Quality Assurance
Email: Quality@pmi-rf.com Dated: **June 18, 2019**

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