



**SUMMARY TEST DATA
ON
HADA-D2001**

PL31173/2105-WB

Customer: _____	Tested By: <u>Jerry Wade</u>
SO No: _____	Temperature: <u>+25°C</u>
Model No: <u>HADA-D2001</u>	Date: <u>1/26/2021</u>
Serial No: <u>PL31173/2105-WB</u>	Drawing No: <u>27620201</u> Rev: <u>A1</u>

TEST. ITEM NO	PARAMETERS	SPECIFIED VALUE	TEST RESULTS	QA QC
11	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 dBm See Plot	
3	Frequency Flatness:	±0.75 dB Max	±0.50 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)	+1.28 / 0.32 dB (Room Temp) +1.62 / -0.86 dB (Over Temp) See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	+0.36 / -0.37 dB (Room Temp) +0.37 / -0.39 dB (Over Temp) See Plot	
7	Maximum Input Power (CW):	+23 dBm	Pass	PMI QA3



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8	Duty Cycle:	100%	Pass	
9	Rise Time:	30 ns Max (10% to 90%)	28 ns See Plot	PMI QA3
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	156 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55 / -100 mV (@ -40°C to +85°C)	+98 mV +113 mV	
12	Input VSWR:	2.5:1 Max @ +23 dBm	1.33:1 See Plot	
13	Propagation Delay:	60 ns Max	40 ns See Plot	
14	Power Supply:	+12 ± 1VDC @ 125 mA Max -12 ± 1VDC @ 75 mA Max	80 mA 47 mA	
15	Warm Up Time:	2 Minutes Max	2 Minutes	PMI QA3

*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: Arthur Zimmerman Date: 2-10-21

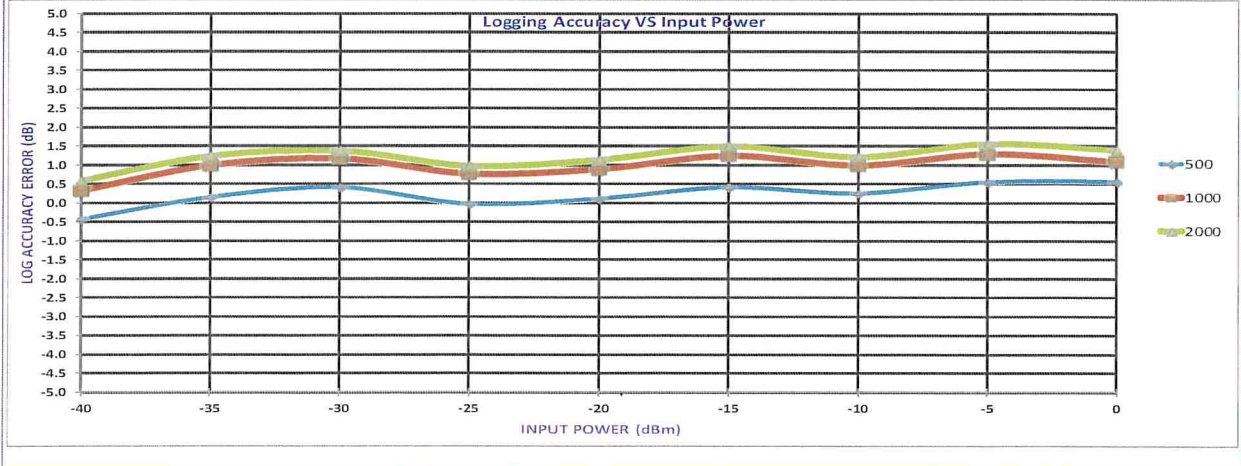
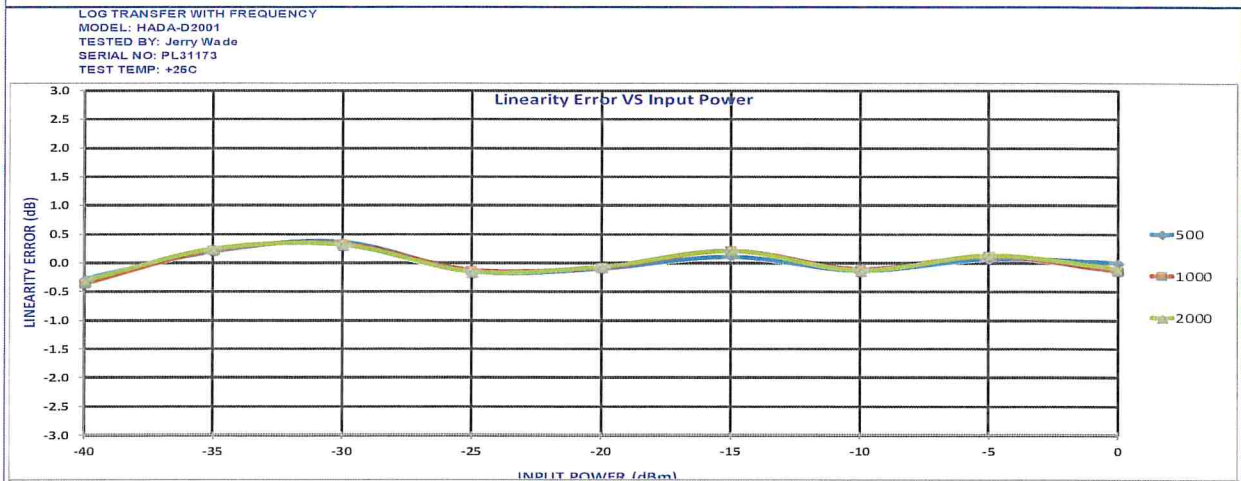
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Email: sales@pmi-rf.com



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LOG TRANSFER WITH FREQUENCY		Graph #1										RF Input Power (dBm)		
MODEL: HADA-D2001 TESTED BY: Jerry Wade TEST DATE: 1/28/21 SERIAL NO: PL31173 TEST TEMP: +26C		DC Offset= 0.098 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		-40	-35	-30	-25	-20	-15	-10	-5	0	Measured Value (mV)	Error (dB)		
0.5 GHz	INTERCEPT (mV)	2378	328	507	870	1098	1365	1620	1862	2127	2378	MAX	MIN	
	SLOPE (mV/dB)	60.9	-16	10	18	-8	-6	5	-7	3	0	LINEARITY ERROR (dB)	0.36	-0.29
			-0.29	0.19	0.36	-0.16	-0.11	0.10	0.40	0.24	0.64	0.66	LOGGING ACCURACY (dB)	0.66
1 GHz	INTERCEPT (mV)	2412	365	649	908	1138	1394	1662	1899	2164	2404	MAX	MIN	
	SLOPE (mV/dB)	60.7	-19	11	17	-7	-4	10	-8	9	-9	LINEARITY ERROR (dB)	0.33	-0.37
			-0.37	0.22	0.33	-0.13	-0.08	0.21	-0.12	0.11	-0.15	LOGGING ACCURACY (dB)	1.28	0.32
2 GHz	INTERCEPT (mV)	2426	379	661	918	1148	1406	1674	1910	2177	2419	MAX	MIN	
	SLOPE (mV/dB)	60.7	-17	12	16	-9	-4	10	7	6	-6	LINEARITY ERROR (dB)	0.30	-0.33
			-0.33	0.23	0.30	-0.17	-0.08	0.20	-0.15	0.12	-0.11	LOGGING ACCURACY (dB)	1.64	0.68
Flatness +/- dB		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.40	Logging Linearity vs Frequency		Error (dB)
Max Video Output Volts		0.38	0.86	0.92	1.18	1.41	1.67	1.91	2.18	2.42	TOTAL LOG LINEARITY (dB)		MAX	MIN
Min Video Output Volts		0.33	0.64	0.87	1.10	1.36	1.62	1.86	2.13	2.36	TOTAL LOGGING ACCURACY (dB)		MAX	MIN
											Logging Accuracy vs Frequency		Error (dB)	
											TOTAL LOGGING ACCURACY (dB)		MAX	MIN
													1.54	-0.44



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LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: Jerry Wade
TEST DATE: 1/26/21
SERIAL NO: PL31173
TEST TEMP: -40C

Graph #2

DC Offset= 0.110 V

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
0.5 GHz	2314	49.4
1 GHz	2346	49.2
2 GHz	2359	49.3

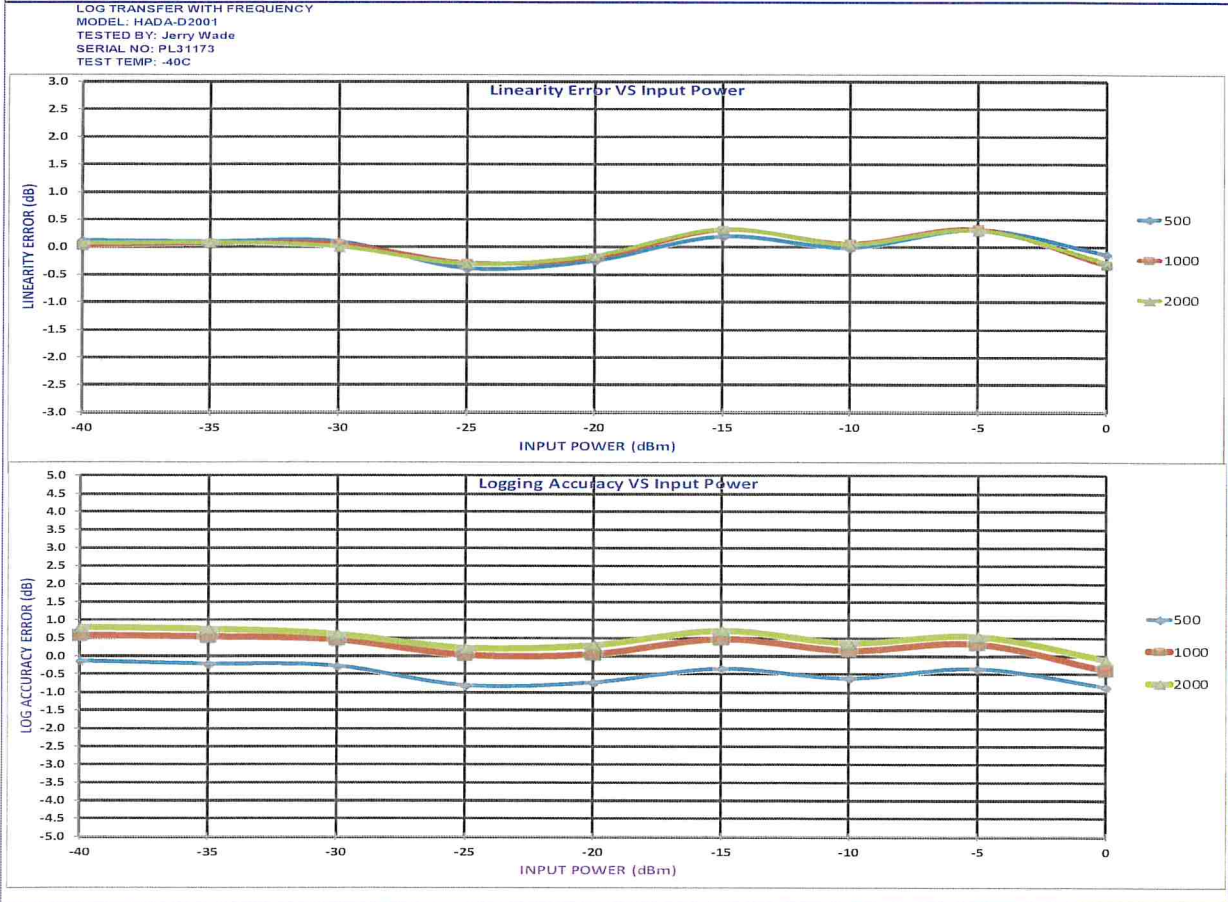
Flatness +/- dB	Max Video Output Volts	Min Video Output Volts
0.50	0.50	0.40
0.39	0.64	0.88
0.34	0.89	0.84

RF Input Power (dBm)	Measured Value (mV)	Error (dB)
343	589	838
6	5	5
0.12	0.09	0.09
-0.14	-0.22	-0.28
378	626	872
1	3	3
0.02	0.06	0.05
0.58	0.52	0.44
390	537	880
3	3	0
0.06	0.07	0.00
0.80	0.74	0.60
0.50	0.50	0.40
0.39	0.64	0.88
0.34	0.89	0.84

RF Input Power (dBm)	Measured Value (mV)	Error (dB)
1059	1313	1582
-19	-13	9
-0.39	-0.25	0.19
-0.82	-0.74	-0.36
1101	1362	1623
-15	-10	15
-0.29	-0.20	0.31
0.04	0.46	0.14
1165	1635	1868
15	2	14
0.31	0.04	0.29
0.70	0.36	0.54
1868	2127	2345
2	14	-14
0.04	0.29	-0.29
0.36	0.54	0.10
2127	2345	2345
14	-14	-14
0.29	-0.29	-0.29
0.54	0.10	0.10
2345	2345	2345
-14	-14	-14
-0.29	-0.29	-0.29
-0.10	-0.10	-0.10

Logging Linearity vs Frequency	Error (dB)
TOTAL LOG LINEARITY (dB)	0.32 -0.39

Logging Accuracy vs Frequency	Error (dB)
TOTAL LOGGING ACCURACY (dB)	0.80 -0.86



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TEST DATE: 1/26/21
SERIAL NO: PL31173
TEST TEMP: +85C

Graph #3

DC Offset= 0.113 V

RF Input Power (dBm)

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
0.6 GHz	2376	51.2
1 GHz	2411	60.9
2 GHz	2425	61

Flatness +/- dB	Max Video Output Volts	Min Video Output Volts
0.50	0.60	0.40

DC Offset	-40	-35	-30	-25	-20	-15	-10	-5	0
0.6 GHz	319	594	850	1099	1346	1605	1855	2116	2388
1 GHz	357	641	902	1130	1389	1650	1892	2157	2419
2 GHz	369	653	912	1140	1400	1655	1904	2171	2431

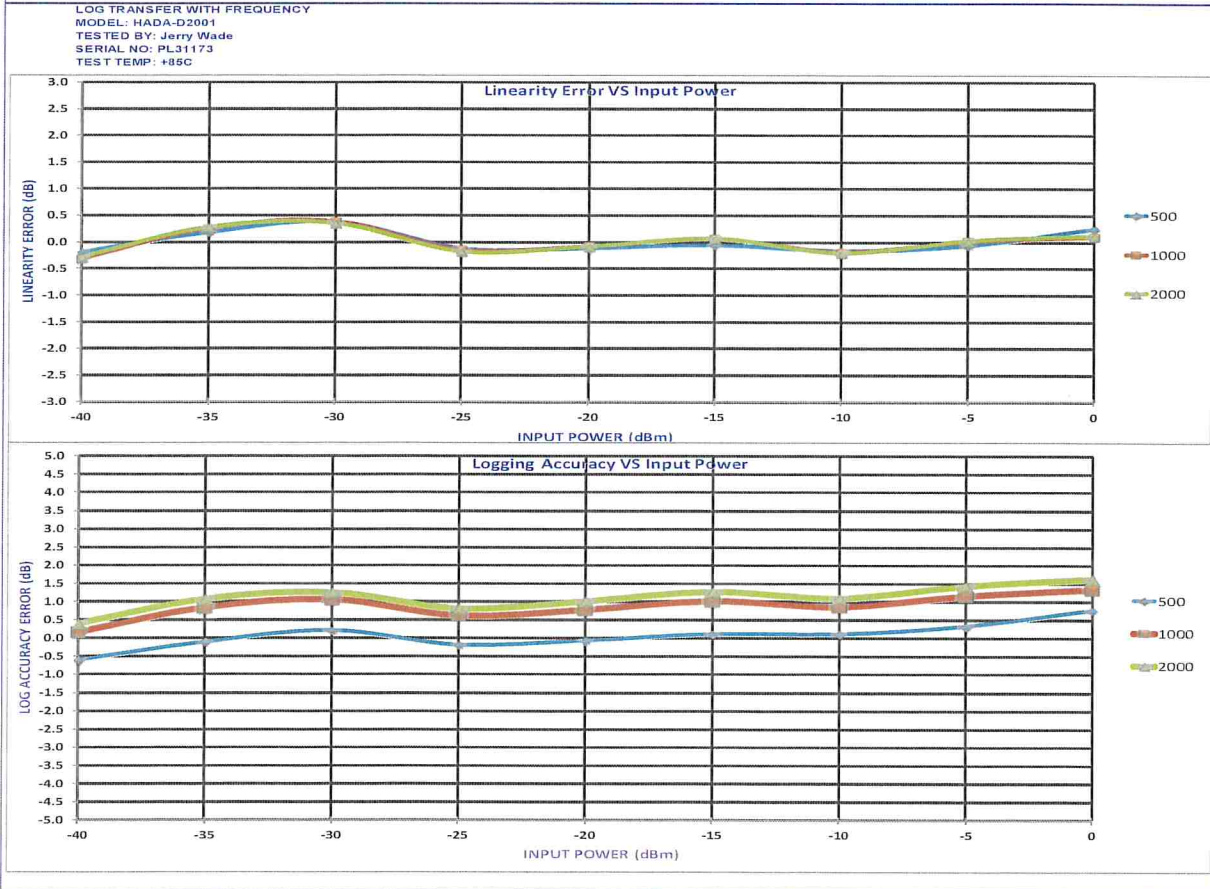
Measured Value (mV)	Error (dB)
MAX	MIN
0.37	-0.20
0.76	-0.62

Measured Value (mV)	Error (dB)
MAX	MIN
0.37	-0.33
1.32	0.14

Measured Value (mV)	Error (dB)
MAX	MIN
0.34	-0.30
1.62	0.38

Logging Linearity vs Frequency	Error (dB)
MAX	MIN
0.37	-0.33

Logging Accuracy vs Frequency	Error (dB)
MAX	MIN
1.62	-0.62



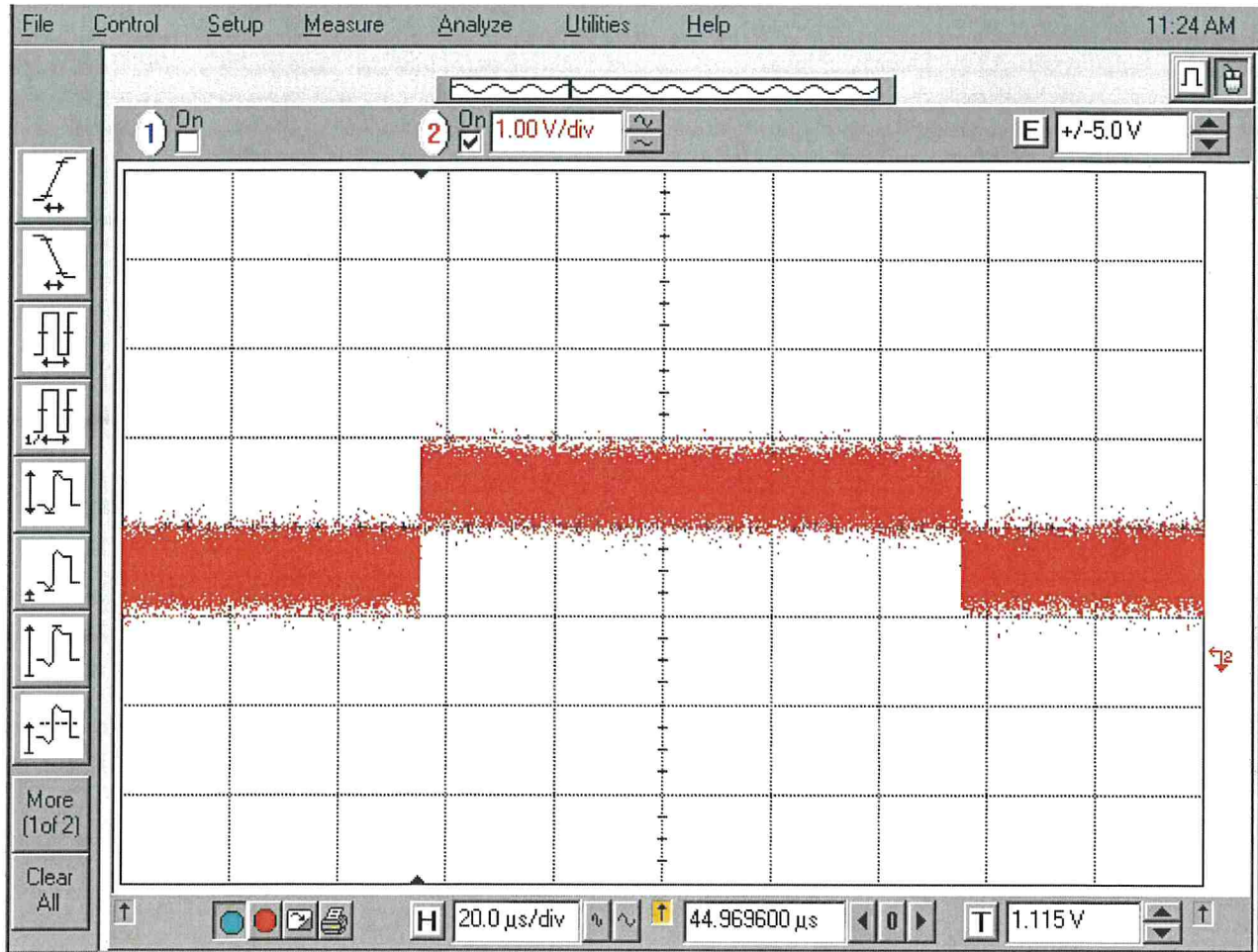
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TSS @ -45 dBm



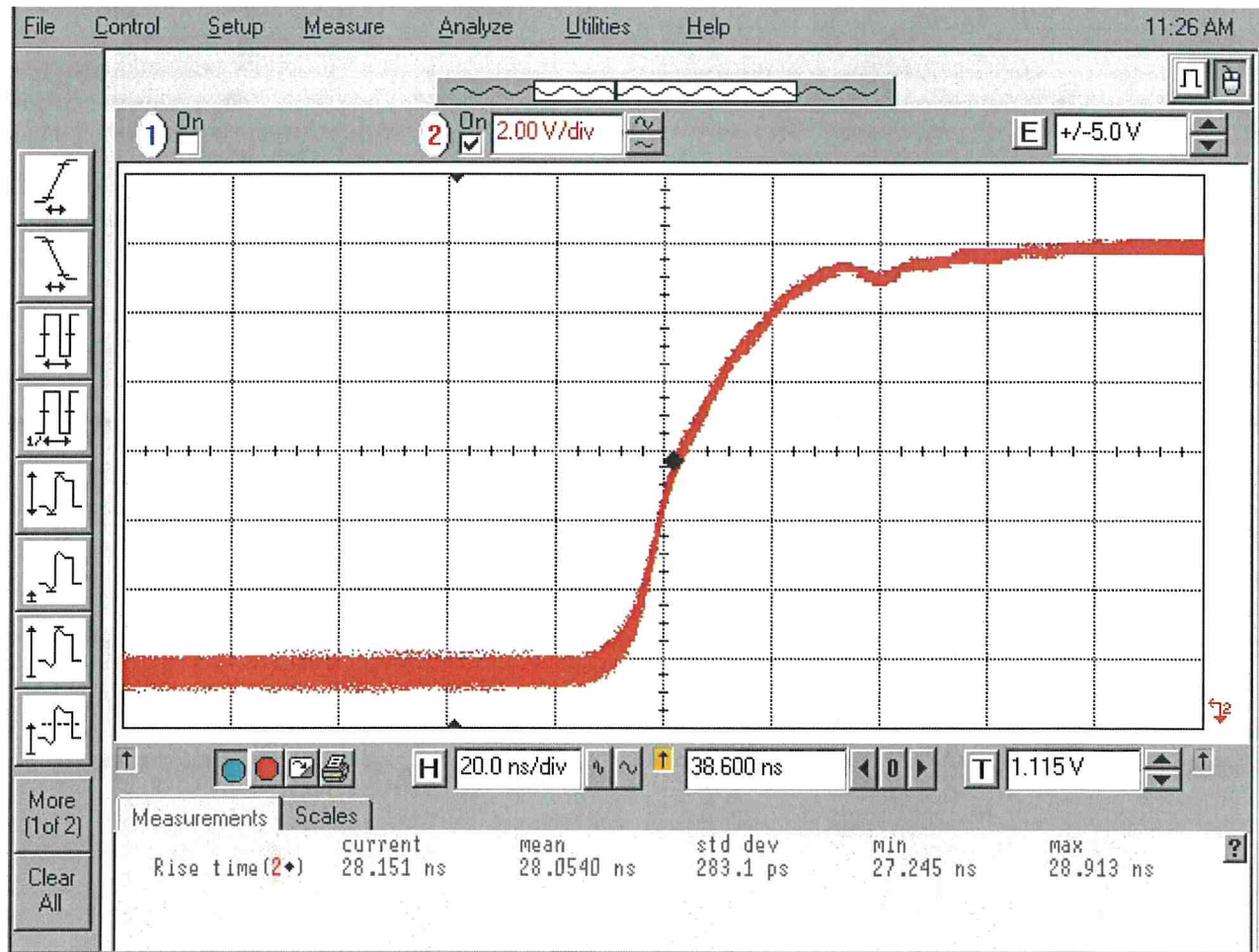
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Rise Time @ 28 ns



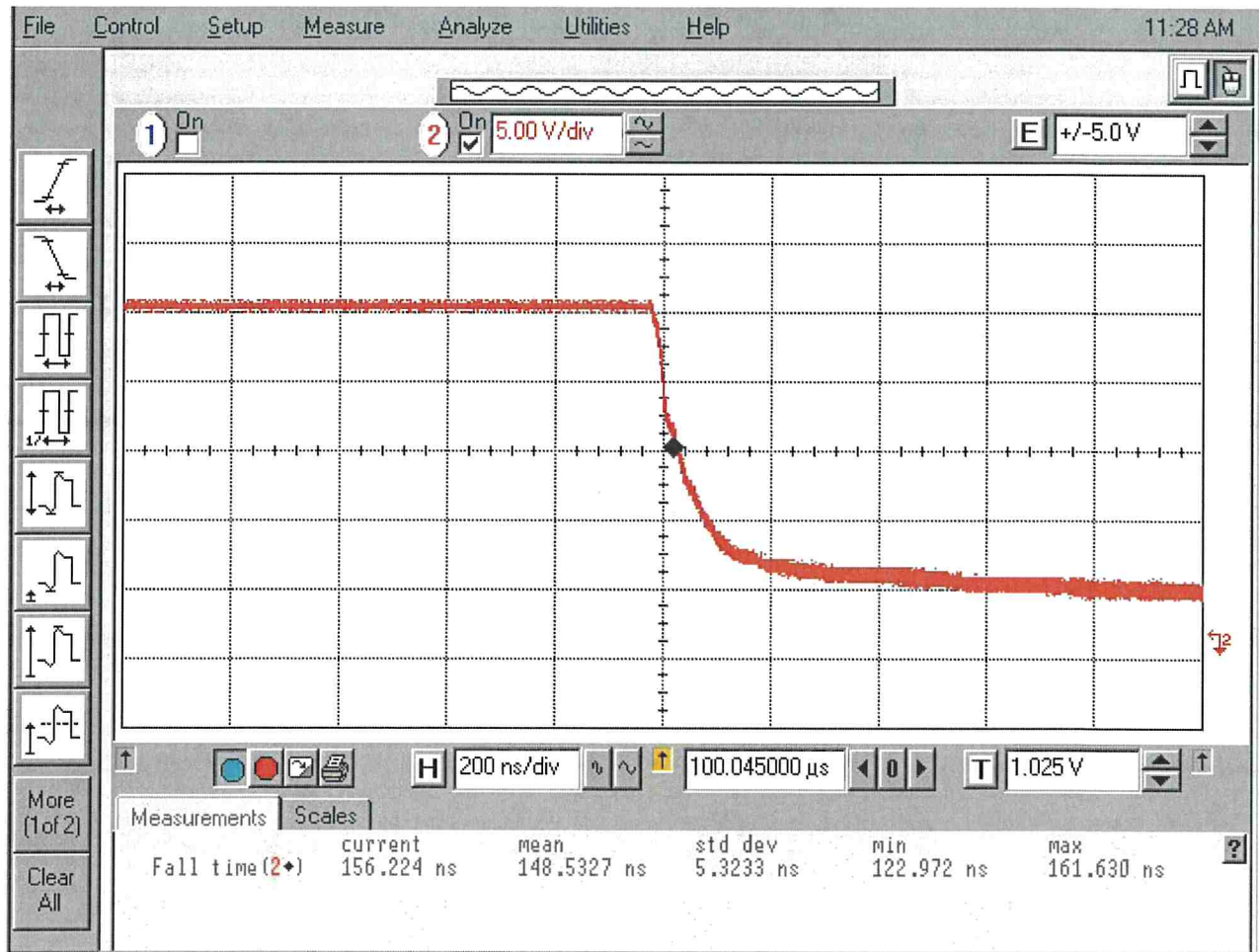
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Fall Time @ 156 ns



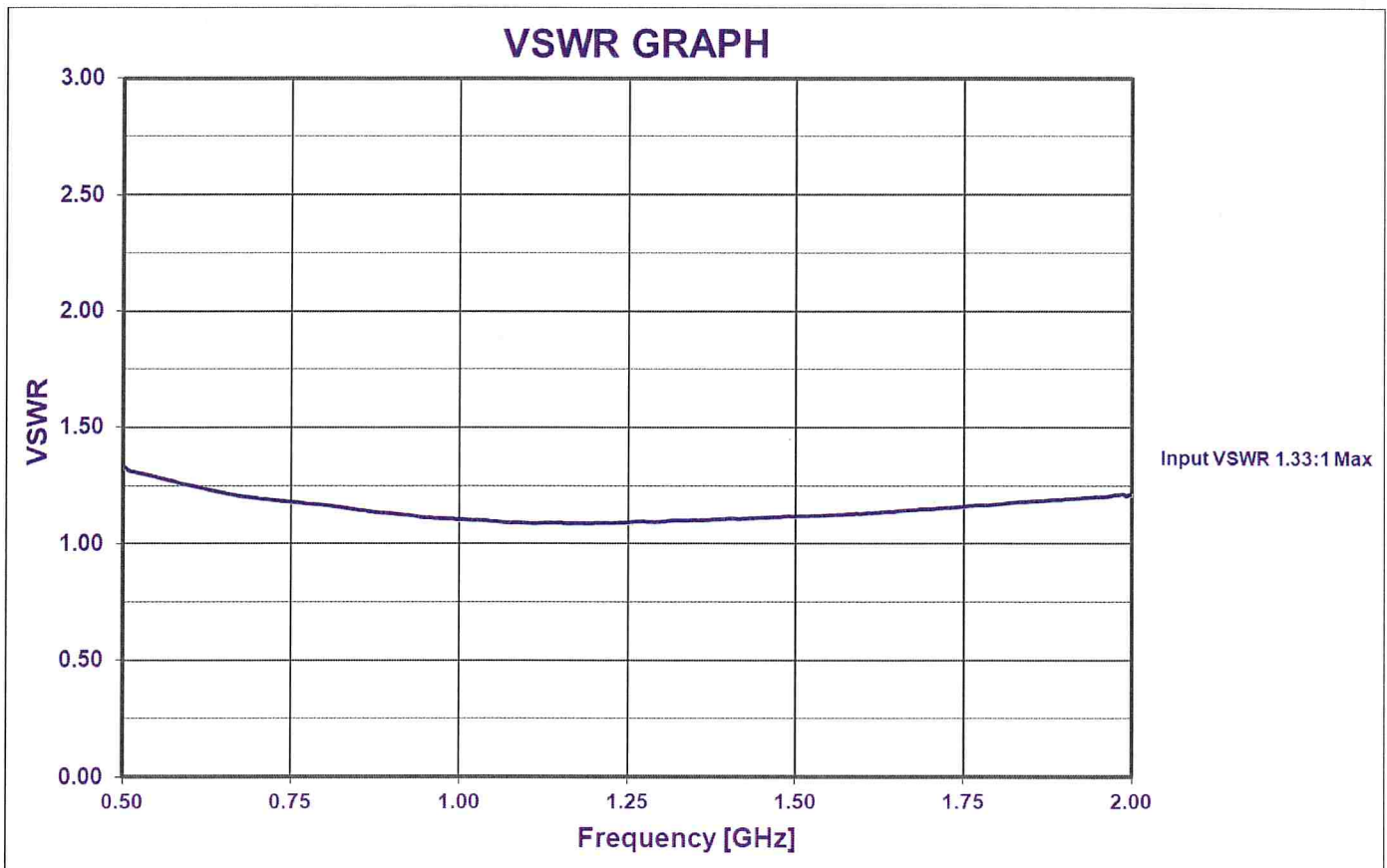
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VSWR @ 1.33:1



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