SUMMARY TEST DATA
ON
HADA-D2001

PL31174/2105-WB

Customer:		**Tested By:**	Jerry Wade
SO No:		**Temperature:**	+25°C
Model No:	HADA-D2001	**Date:**	1/25/2021
Serial No:	PL31174/2105-WB	**Drawing No:**	27620201 **Rev:** A1

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°	**-45.5 dBm See Plot**	
3	Frequency Flatness:	±0.75 dB Max	**±0.60 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)	**+1.22 / 0.56 dB (Room Temp)** **+2.00 / -0.36 dB (Over Temp) See Plot**	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	**+0.37 / -0.23 dB (Room Temp)** **+0.53 / -0.51 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%)	**27.6 ns** **See Plot**	PMI QA3
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	**150 ns** **See Plot**	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55 / -100 mV (@ -40°C to +85°C)	**+99 mV** **+109 mV**	
12	Input VSWR:	2.5:1 Max @ +23 dBm	**1.40:1** **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	**84 mA** **41 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: 2-10-2021

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SUMMARY TEST DATA ON HADA-D2001

PL31174/2105-WB

LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: Jerry Wade
TEST DATE: 1/26/21
SERIAL NO: PL31174
TEST TEMP: +25C

Graph #1

DC Offset= 0.099 V

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Frequency		
0.5 GHz	INTERCEPT (mV)	2364
	SLOPE (mV/dB)	50.7
1 GHz	INTERCEPT (mV)	2399
	SLOPE (mV/dB)	50.4
2 GHz	INTERCEPT (mV)	2411
	SLOPE (mV/dB)	50.5
	Flatness +/- dB	
	Max Video Output Volts	
	Min Video Output Volts	

RF Input Power (dBm)	-40	-35	-30	-25	-20	-15	-10	-5	0
	340	597	837	1085	1348	1618	1850	2114	2364
	-3	-7	-4	-12	-2	14	-7	3	0
	0.07	0.14	-0.13	-0.23	-0.05	0.28	-0.14	0.07	0.00
	-0.20	-0.06	-0.26	-0.30	-0.04	0.36	0.00	0.28	0.28
	382	634	883	1128	1392	1683	1889	2150	2392
	1	0	-3	-10	3	19	-6	3	-7
	0.01	0.01	-0.06	-0.20	0.06	0.37	-0.11	0.06	-0.14
	0.64	0.68	0.66	0.55	0.86	1.22	0.78	1.00	0.84
	394	643	893	1155	1406	1671	1901	2162	2405
	-2	-3	-3	-11	-5	-17	-5	-5	-5
	0.05	-0.02	-0.07	-0.22	0.09	0.34	-0.11	0.06	-0.13
	0.83	0.79	0.85	0.79	1.12	1.42	1.02	1.24	1.10
	0.30	0.50	0.60	0.50	0.60	0.50	0.50	0.50	0.40
	0.39	0.64	0.88	1.14	1.41	1.67	1.90	2.19	2.41
	0.34	0.60	0.84	1.09	1.35	1.62	1.83	2.11	2.36

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.28	-0.23
LOGGING ACCURACY (dB)	0.36	-0.30

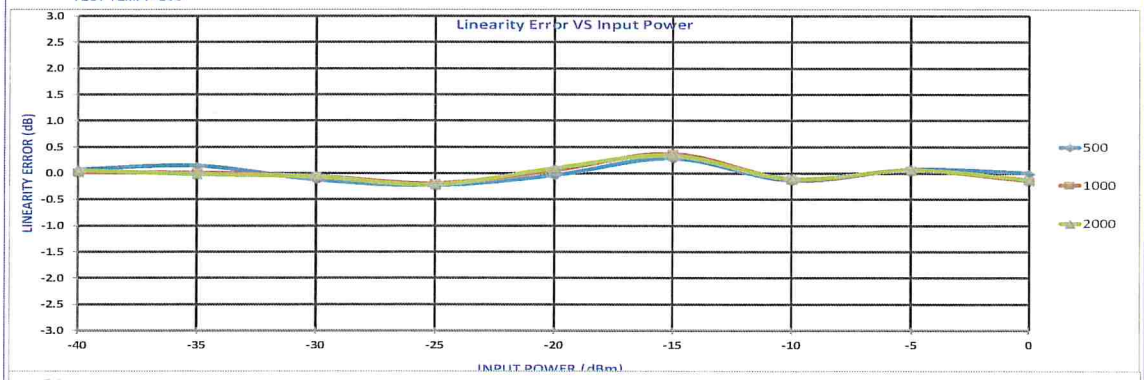
Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.37	-0.20
LOGGING ACCURACY (dB)	1.22	0.56

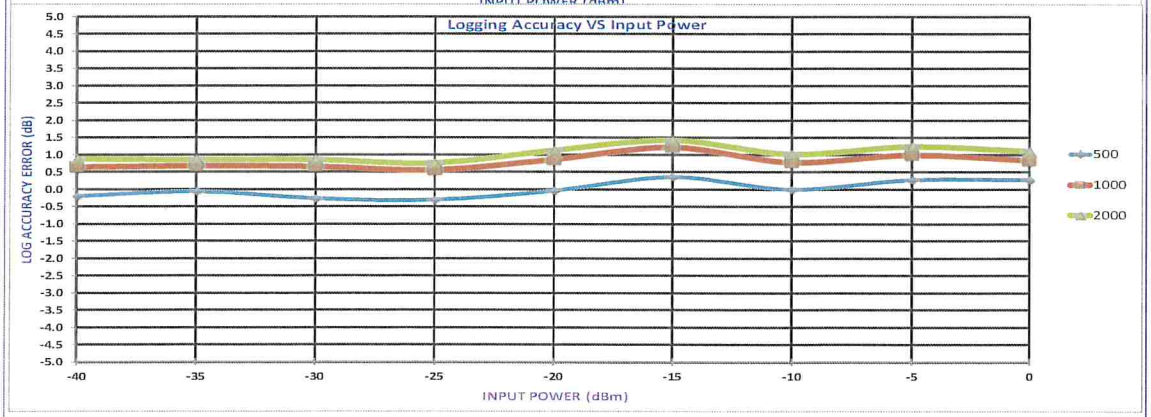
Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.34	-0.22
LOGGING ACCURACY (dB)	1.42	0.76

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.37	-0.23

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB	1.42	-0.30

LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: Jerry Wade
SERIAL NO: PL31174
TEST TEMP: +25C





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SUMMARY TEST DATA
ON
HADA-D2001

PL31174/2105-WB

LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: Jerry Wade
TEST DATE: 1/26/21
SERIAL NO: PL31174
TEST TEMP: -40C

Graph #2

DC Offset= 0.096 V

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Frequency		
0.5 GHz	INTERCEPT (mV)	2376
	SLOPE (mV/dB)	50.1
1 GHz	INTERCEPT (mV)	2411
	SLOPE (mV/dB)	49.8
2 GHz	INTERCEPT (mV)	2422
	SLOPE (mV/dB)	49.9
	Flatness +/- dB	
	Max Video Output Volts	
	Min Video Output Volts	

RF Input Power (dBm)	-40	-35	-30	-25	-20	-15	-10	-5	0
0.5 GHz	362	825	972	1116	1373	1648	1877	2129	2356
Error (mV)	-10	3	-1	-7	4	24	2	4	-20
LINEARITY ERROR (dB)	-0.19	0.06	-0.01	-0.14	0.09	0.48	0.05	0.08	-0.39
LOGGING ACCURACY (dB)	0.24	0.50	0.44	0.32	0.56	0.96	0.64	0.58	0.12
1 GHz	408	883	918	1163	1425	1690	1920	2162	2385
Error (mV)	-11	-5	1	-3	10	26	7	6	-26
LINEARITY ERROR (dB)	-0.22	-0.10	0.02	-0.06	0.20	0.53	0.15	0.01	-0.51
LOGGING ACCURACY (dB)	1.16	1.26	1.36	1.26	1.60	1.80	1.40	1.24	0.70
2 GHz	419	872	926	1172	1437	1700	1932	2171	2399
Error (mV)	-3	-6	-4	-4	12	25	3	-2	-22
LINEARITY ERROR (dB)	-0.18	-0.11	-0.02	-0.08	0.23	0.51	0.16	-0.04	-0.47
LOGGING ACCURACY (dB)	1.38	1.44	1.52	1.44	1.74	2.00	1.64	1.42	0.98
	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.40	0.40
	0.42	0.67	0.93	1.17	1.44	1.70	1.93	2.17	2.40
	0.36	0.63	0.87	1.12	1.38	1.65	1.88	2.13	2.36

Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.48	-0.39
LOGGING ACCURACY (dB)	0.96	0.12

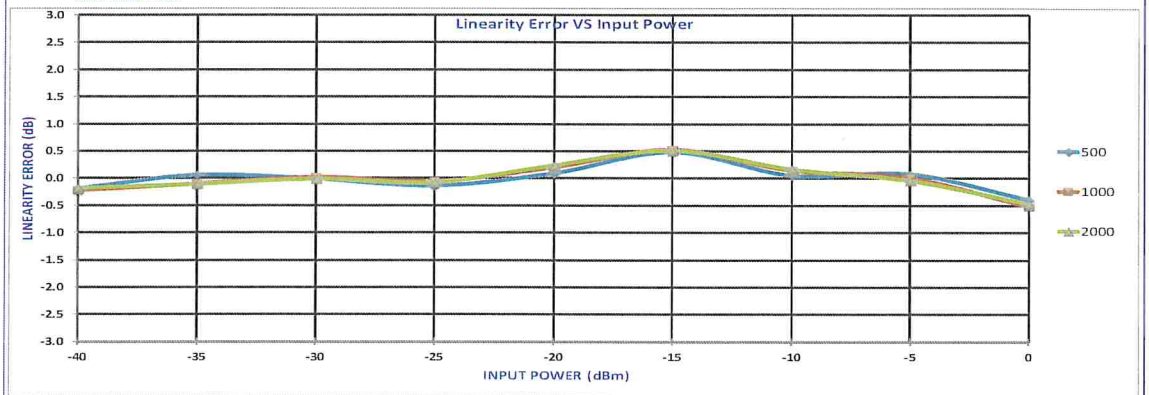
Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.53	-0.51
LOGGING ACCURACY (dB)	1.80	0.70

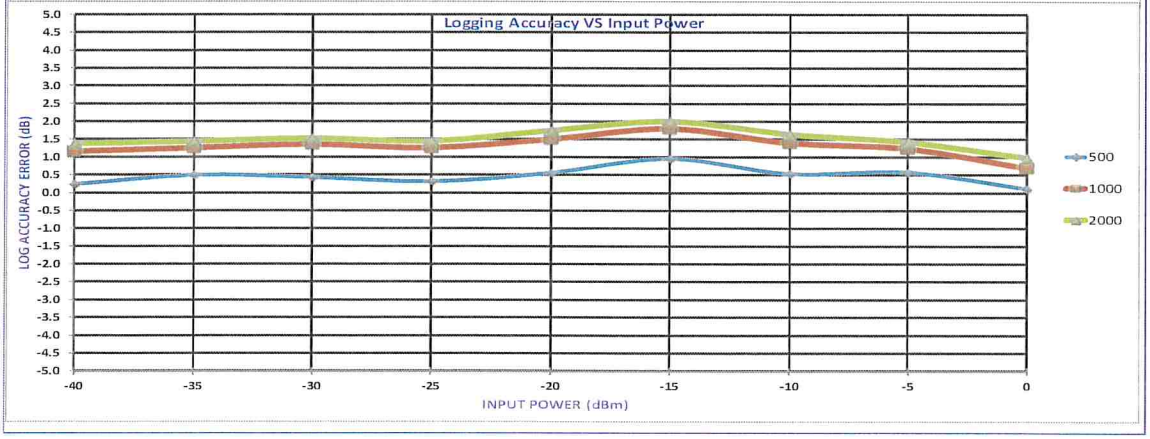
Measured Value (mV)	Error(dB)	
Error (mV)	MAX	MIN
LINEARITY ERROR (dB)	0.51	-0.47
LOGGING ACCURACY (dB)	2.00	0.98

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.53	-0.51

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB	2.00	0.12

LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: Jerry Wade
SERIAL NO: PL31174
TEST TEMP: -40C





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SUMMARY TEST DATA ON HADA-D2001

PL31174/2105-WB

LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: Jerry Wade
TEST DATE: 1/26/21
SERIAL NO: PL31174
TEST TEMP: +85C

Graph #3

DC Offset= 0.109 V

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Frequency		
0.5 GHz	INTERCEPT (mV)	2397
	SLOPE (mV/dB)	51.5
1 GHz	INTERCEPT (mV)	2435
	SLOPE (mV/dB)	51.3
2 GHz	INTERCEPT (mV)	2447
	SLOPE (mV/dB)	51.4

	Flatness +/- dB	Max Video Output Volts	Min Video Output Volts
0.5 GHz	0.50	0.38	0.33
1 GHz	0.50	0.66	0.61
2 GHz	0.50	0.91	0.88
	0.50	1.15	1.10
	0.50	1.42	1.37
	0.50	1.69	1.63
	0.50	1.92	1.87
	0.50	2.19	2.14
	0.40	2.45	2.40

RF Input Power (dBm)	-40	-35	-30	-25	-20	-15	-10	-5	0
0.5 GHz	332	610	852	1103	1386	1634	1872	2138	2404
	-6	14	-1	-8	-2	9	-11	-2	7
	-0.12	0.28	-0.02	-0.15	-0.04	0.17	-0.21	-0.04	0.13
	-0.36	0.20	0.04	0.06	0.32	0.68	0.44	0.76	1.08
1 GHz	973	652	900	1146	1411	1680	1911	2180	2433
	-11	11	3	-7	1	14	-11	1	-2
	-0.22	0.22	0.06	-0.14	0.03	0.28	-0.22	0.03	-0.04
	0.48	1.04	1.00	0.92	1.22	1.60	1.22	1.60	1.86
2 GHz	384	661	909	1154	1423	1690	1922	2192	2447
	-9	11	2	-9	3	13	-12	1	0
	-0.18	0.22	0.05	-0.18	0.05	0.25	-0.23	0.03	-0.01
	0.68	1.22	1.18	1.09	1.48	1.80	1.44	1.84	1.94

Measured Value (mV)	Error(dB) MAX	MIN
Error (mV)		
LINEARITY ERROR (dB)	0.28	-0.21
LOGGING ACCURACY (dB)	1.08	-0.36

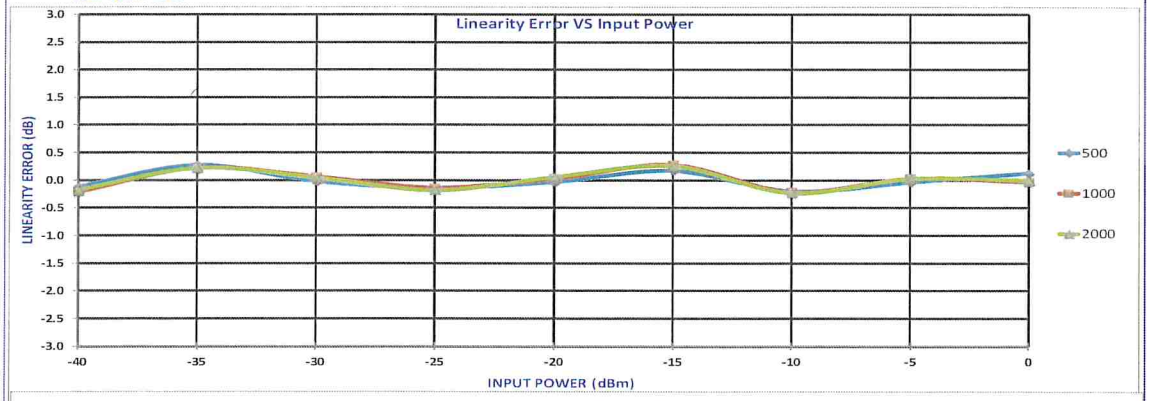
Measured Value (mV)	Error(dB) MAX	MIN
Error (mV)		
LINEARITY ERROR (dB)	0.28	-0.22
LOGGING ACCURACY (dB)	1.66	0.46

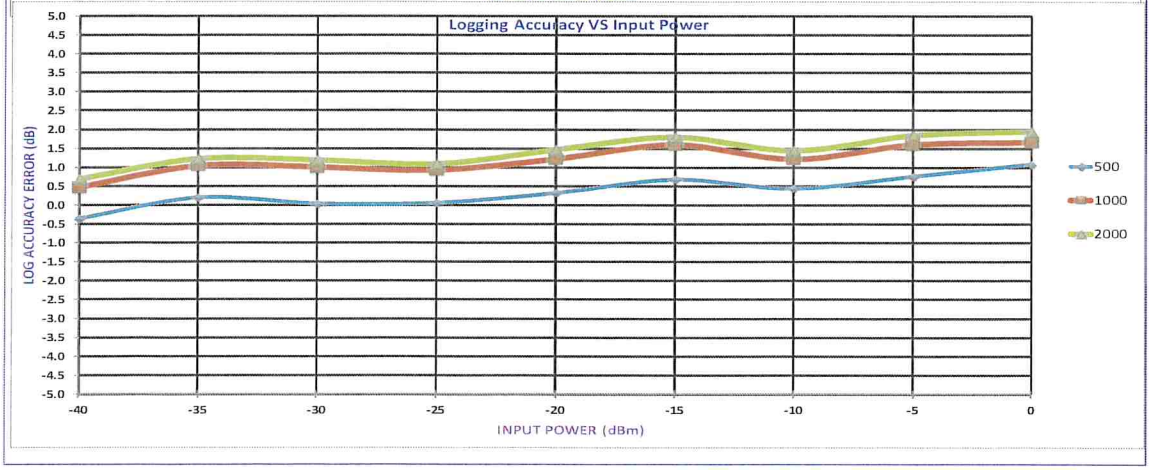
Measured Value (mV)	Error(dB) MAX	MIN
Error (mV)		
LINEARITY ERROR (dB)	0.25	-0.23
LOGGING ACCURACY (dB)	1.94	0.68

Logging Linearity vs Frequency	Error(dB) MAX	MIN
TOTAL LOG LINEARITY (dB)	0.28	-0.23

Logging Accuracy vs Frequency	Error(dB) MAX	MIN
TOTAL LOGGING ACCURACY (dB	1.94	-0.36

LOG TRANSFER WITH FREQUENCY
MODEL: HADA-D2001
TESTED BY: Jerry Wade
SERIAL NO: PL31174
TEST TEMP: +85C





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SUMMARY TEST DATA
ON
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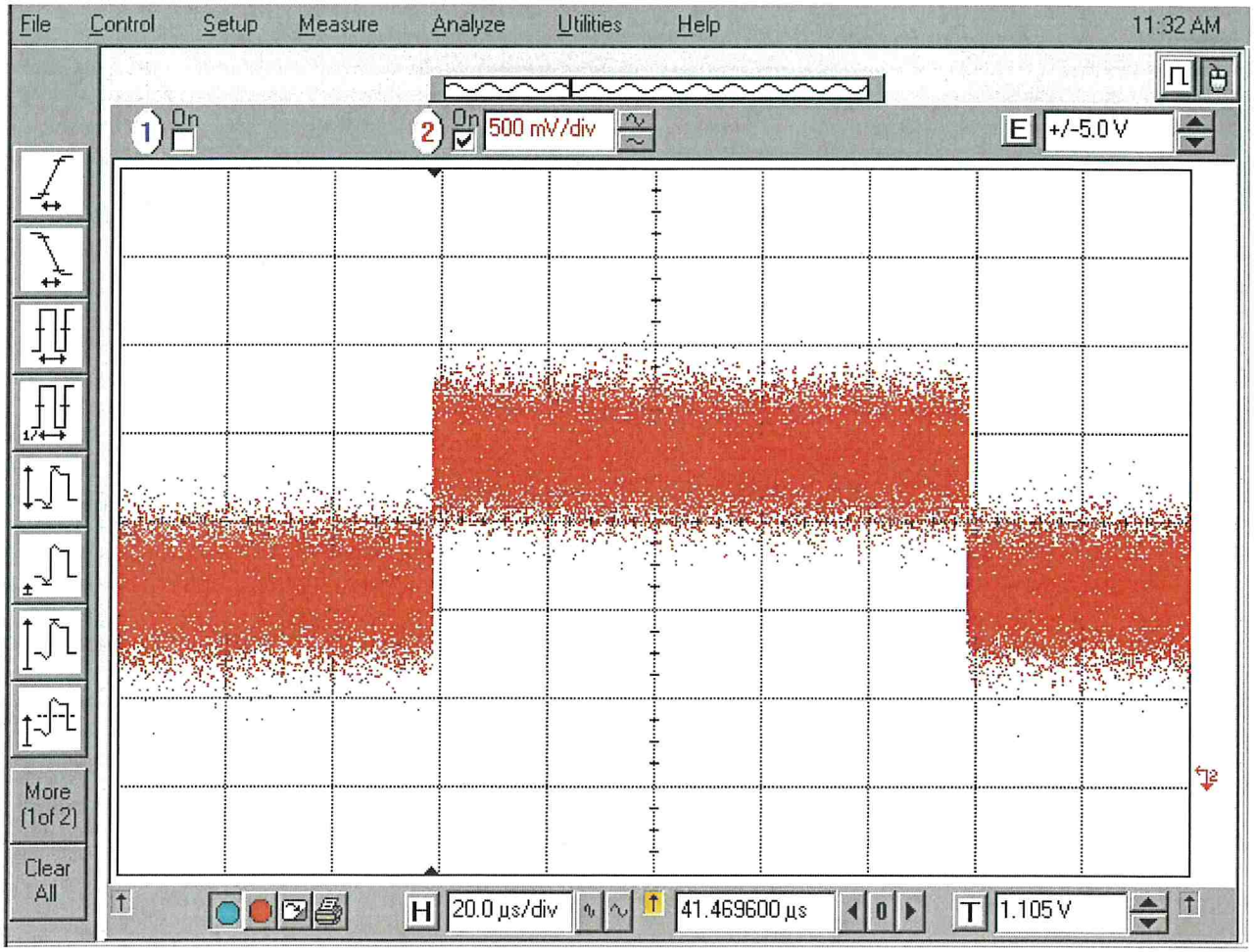
PL31174/2105-WB

TSS @ -45.5 dBm



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SUMMARY TEST DATA
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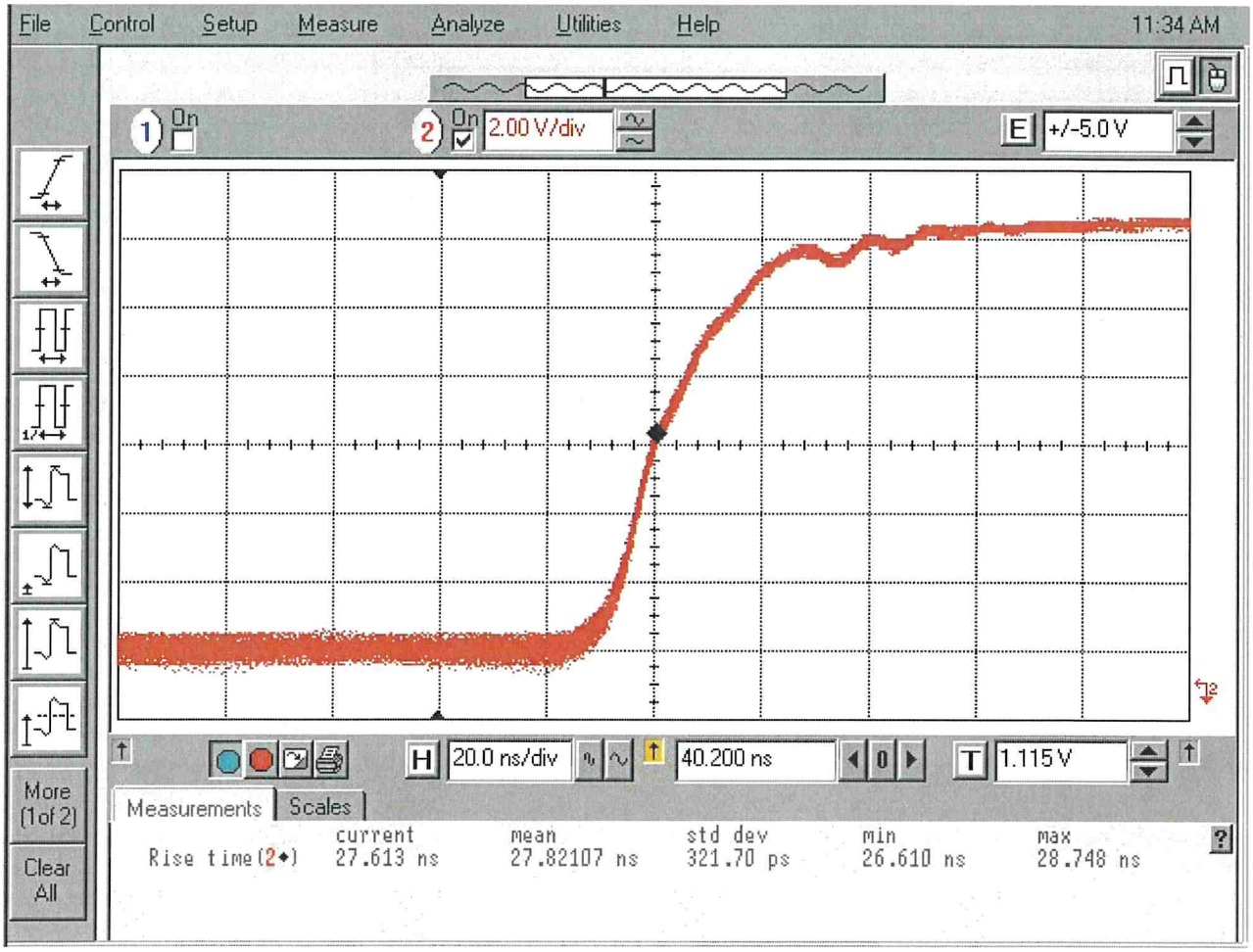
Rise Time @ 27.6 ns



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SUMMARY TEST DATA
ON
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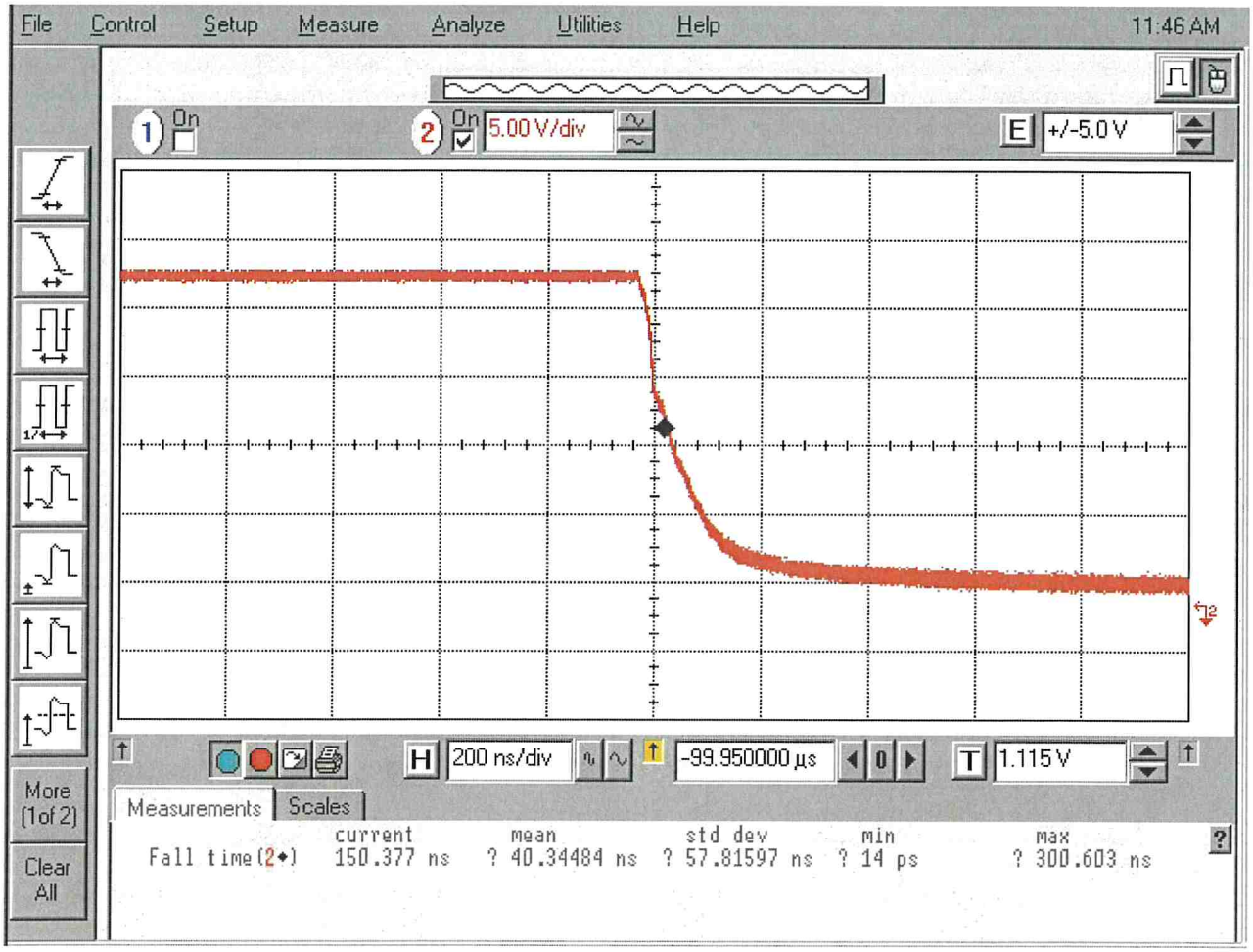
Fall Time @ 150 ns



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SUMMARY TEST DATA
ON
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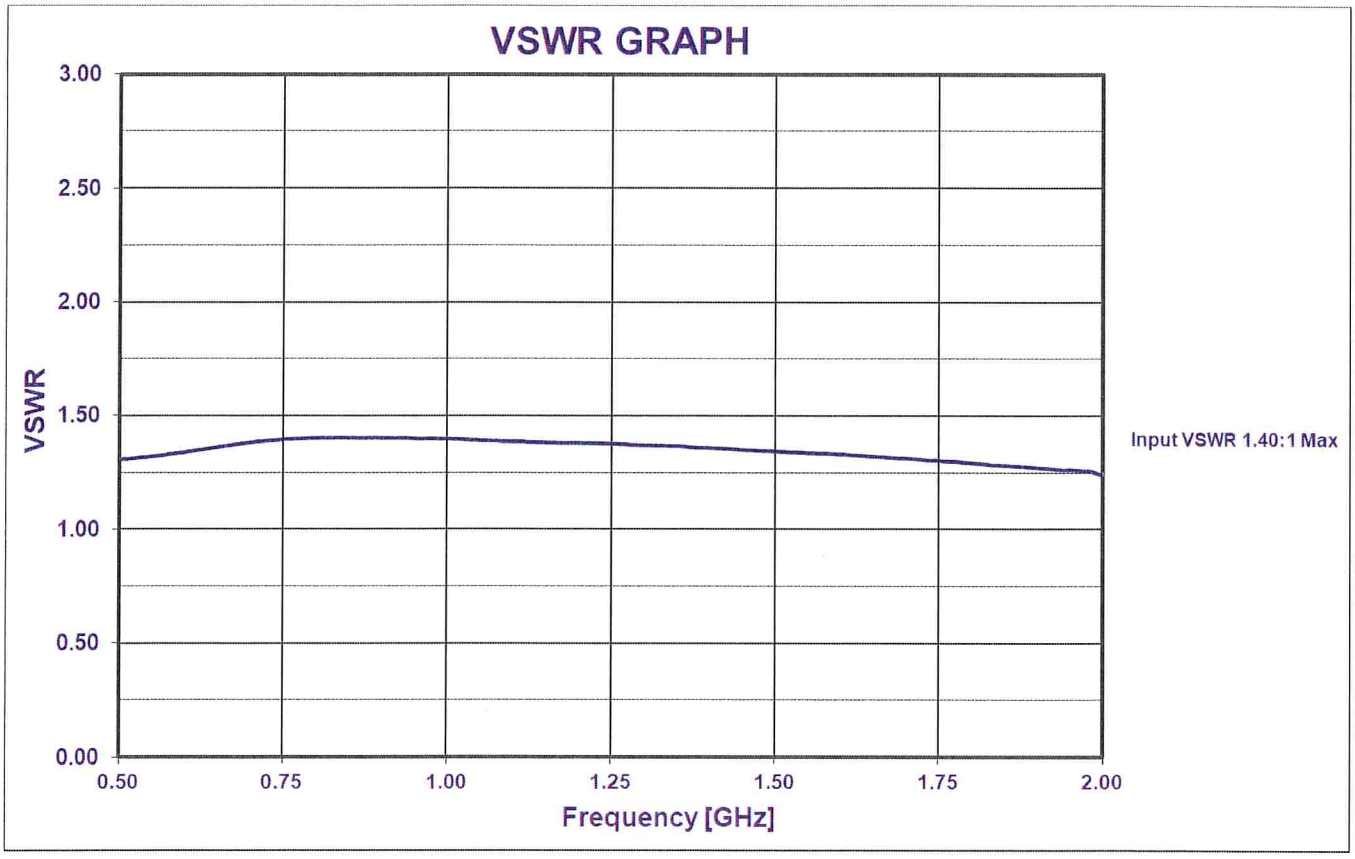
PL31174/2105-WB

VSWR @ 1.40:1



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