



**SUMMARY TEST DATA  
ON  
HADA-D2001**

PL38220/2245

Customer: _____	Tested By: <u>J. Monley</u>
SO No: _____	Temperature: <u>+25°C</u>
Model No: <u>HADA-D2001</u>	Date: <u>10/28/22</u>
Serial No: <u>PL38220/2245</u>	Drawing No: <u>2 20201</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	<b>PMI QA3</b>
2	TSS:	-44 dBm Min @ -40°C to +85°	-45 dBm See Plot	
3	Frequency Flatness:	±0.75 dB Max	±0.10 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)	+0.46 dB  -1.54 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	-0.30 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%)	19 nS See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	109 nS See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	+108 mV +119 mV	
12	Input VSWR:	2.5:1 Max @ +23 dBm	1.19:1 See Plot	

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13	Propagation Delay:	60 ns Max	<b>40 nS</b>	<b>PMI QA3</b>
14	Power Supply:	+12 ± 1VDC @ 125 mA Max -12 ± 1VDC @ 75 mA Max	<b>90 mA 40 mA</b>	
15	Warm Up Time:	2 Minutes Max	<b>2 Minutes</b>	

\*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. Venter*

Date:

*11-14-22*



## SUMMARY TEST DATA ON HADA-D2001

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### Log Linearity and Log Accuracy @ +25°C

LOG TRANSFER WITH FREQUENCY			DC Offset= 0.108 V										RF Input Power (dBm)		
MODEL: HADA-D2001 TESTED BY: EA Vaklez TEST DATE: 11/03/22 SERIAL NO: PL38220 TEST TEMP: +25C													 PLANAR MONOLITHICS INDUSTRIES 4921 Robert J. Mathews Parkway Suite 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				
0.5 GHz	INTERCEPT (mV)	2330	360	607	860	1090	1330	1586	1821	2092	2342	Measured Value (mV)			
	SLOPE (mV/dB)	49.4	6	6	2	-5	-12	-3	-15	9	12	Error (mV)			
			0.12	0.12	0.04	-0.10	-0.24	-0.06	-0.30	0.18	0.24	LINEARITY ERROR (dB)			
			0.20	0.14	0.00	-0.20	-0.40	-0.28	-0.58	-0.16	-0.16	LOGGING ACCURACY (dB)			
												MAX MIN			
												0.24 -0.30			
												0.20 -0.58			
1 GHz	INTERCEPT (mV)	2341	373	619	863	1102	1344	1600	1835	2105	2349	Measured Value (mV)			
	SLOPE (mV/dB)	49.3	5	5	2	-6	-10	-1	-13	10	8	Error (mV)			
			0.11	0.10	0.04	-0.12	-0.21	-0.02	-0.26	0.21	0.15	LINEARITY ERROR (dB)			
			0.46	0.38	0.26	0.04	-0.12	0.00	-0.30	0.10	-0.02	LOGGING ACCURACY (dB)			
												MAX MIN			
												0.21 -0.26			
												0.46 -0.30			
2 GHz	INTERCEPT (mV)	2337	370	616	859	1098	1340	1595	1832	2099	2345	Measured Value (mV)			
	SLOPE (mV/dB)	49.3	5	5	2	-5	-10	-2	-12	9	8	Error (mV)			
			0.12	0.10	0.03	-0.12	-0.21	-0.04	-0.23	0.18	0.17	LINEARITY ERROR (dB)			
			0.40	0.32	0.18	-0.04	-0.20	-0.10	-0.36	-0.02	-0.10	LOGGING ACCURACY (dB)			
												MAX MIN			
												0.18 -0.23			
												0.40 -0.36			
Flatness +/- dB			0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	Logging Linearity vs Frequency			
Max Video Output Volts			0.37	0.62	0.86	1.10	1.34	1.60	1.84	2.11	2.35	Error (dB)			
Min Video Output Volts			0.36	0.61	0.85	1.09	1.33	1.59	1.82	2.09	2.34	MAX MIN			
												TOTAL LOG LINEARITY (dB)			
												0.24 -0.30			
												Logging Accuracy vs Frequency			
												Error (dB)			
												MAX MIN			
												TOTAL LOGGING ACCURACY (dB)			
												0.46 -0.58			

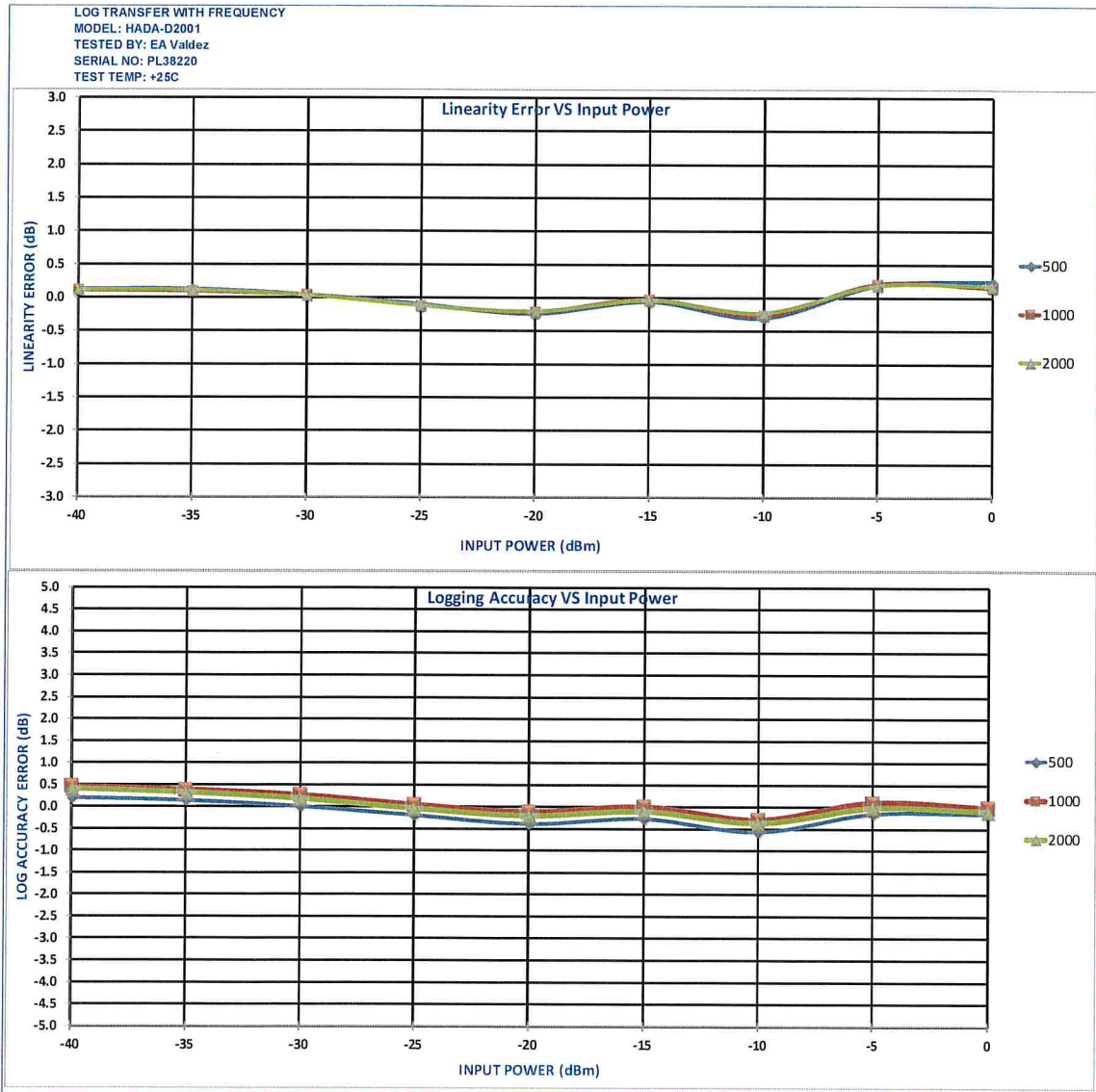
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# SUMMARY TEST DATA ON HADA-D2001

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Log Linearity and Log Accuracy @ +25°C



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**SUMMARY TEST DATA  
ON  
HADA-D2001**

PL38220/2245

**Log Linearity and Log Accuracy @ -40°C**

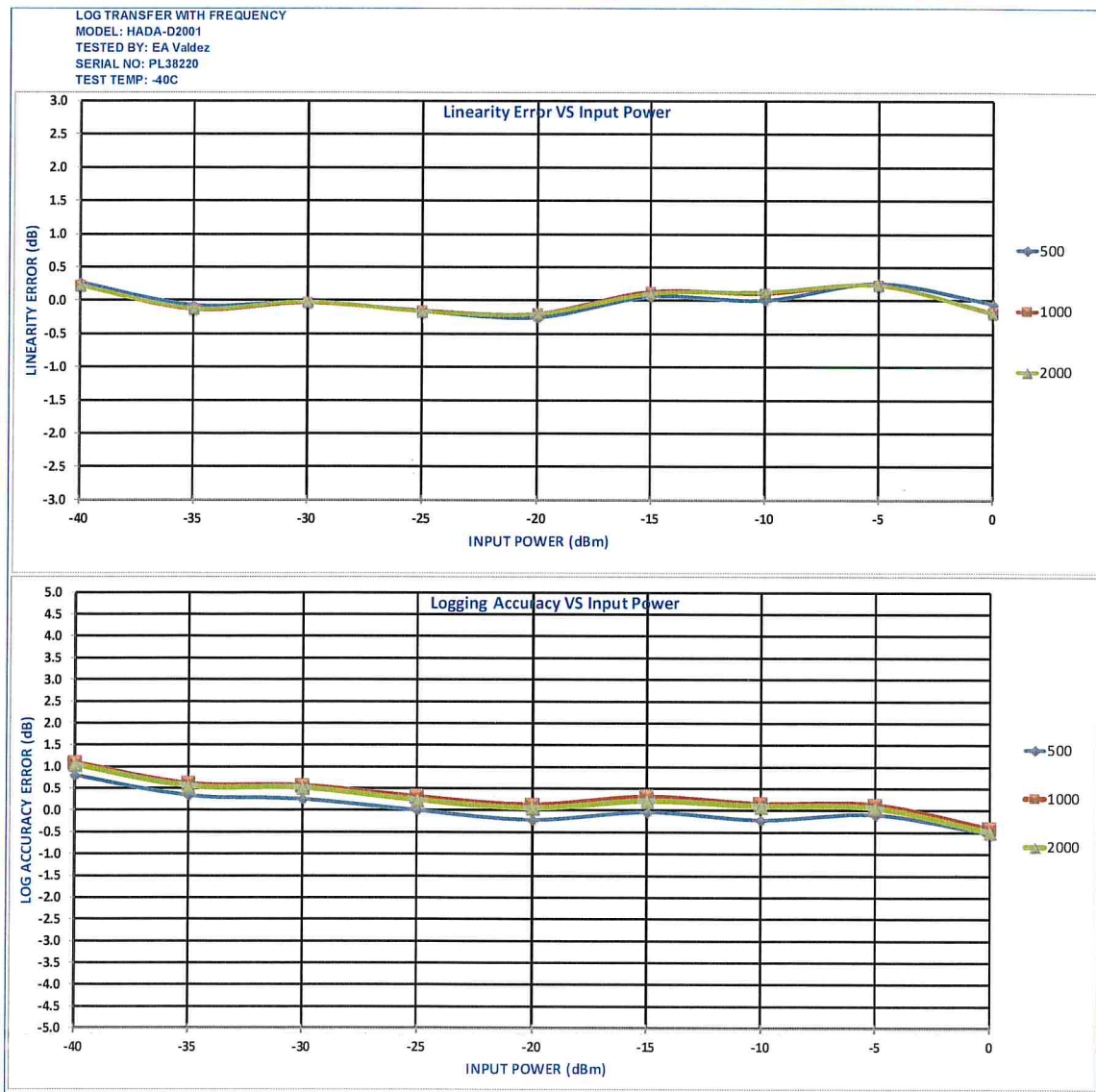
LOG TRANSFER WITH FREQUENCY			DC Offset= 0.119 V										RF Input Power (dBm)		
MODEL: HADA-D2001 TESTED BY: EA Valdez TEST DATE: 11/03/22 SERIAL NO: PL38220 TEST TEMP: -40C													PLANAR MONOLITHICS INDUSTRIES 4921 Robert J. Mathews Parkway Suit 1 El Dorado Hills, CA 95762 TEL: 916-542-1401 FAX: 916-265-2597 EMAIL: SALES@PMI-RF.COM		
Frequency			-40	-35	-30	-25	-20	-15	-10	-5	0				
0.5 GHz	INTERCEPT (mV)	2326	390	617	863	1100	1339	1598	1839	2095	2324				
	SLOPE (mV/dB)	48.7	13	-4	-1	-8	-13	3	0	12	-2				
			0.27	-0.08	-0.03	-0.16	-0.26	0.05	0.00	0.25	-0.05				
			0.80	0.34	0.26	0.00	-0.22	-0.04	-0.22	-0.10	-0.52				
1 GHz	INTERCEPT (mV)	2338	404	630	878	1115	1356	1615	1857	2106	2329				
	SLOPE (mV/dB)	48.6	11	-6	-1	-7	-10	6	5	11	-9				
			0.22	-0.13	-0.03	-0.15	-0.20	0.13	0.11	0.23	-0.18				
			1.08	0.60	0.56	0.30	0.12	0.30	0.14	0.12	-0.42				
2 GHz	INTERCEPT (mV)	2335	402	628	876	1112	1353	1611	1855	2103	2326				
	SLOPE (mV/dB)	48.6	11	-6	-1	-6	-10	6	6	11	-9				
			0.23	-0.12	-0.02	-0.16	-0.20	0.11	0.13	0.23	-0.18				
			1.04	0.56	0.52	0.24	0.06	0.22	0.10	0.06	-0.48				
Flatness +/- dB			0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.10	0.10				
Max Video Output Volts			0.40	0.63	0.88	1.12	1.36	1.62	1.86	2.11	2.33				
Min Video Output Volts			0.39	0.62	0.86	1.10	1.34	1.60	1.84	2.10	2.32				
												Measured Value (mV) Error (dB)			
												Error (mV) MAX MIN			
												LINEARITY ERROR (dB) 0.27 -0.26			
												LOGGING ACCURACY (dB) 0.80 -0.52			
												Measured Value (mV) Error (dB)			
												Error (mV) MAX MIN			
												LINEARITY ERROR (dB) 0.23 -0.20			
												LOGGING ACCURACY (dB) 1.08 -0.42			
												Measured Value (mV) Error (dB)			
												Error (mV) MAX MIN			
												LINEARITY ERROR (dB) 0.23 -0.20			
												LOGGING ACCURACY (dB) 1.04 -0.48			
												Logging Linearity vs Frequency Error (dB)			
												MAX MIN			
												TOTAL LOG LINEARITY (dB) 0.27 -0.26			
												Logging Accuracy vs Frequency Error (dB)			
												MAX MIN			
												TOTAL LOGGING ACCURACY (dB) 1.08 -0.52			



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## Log Linearity and Log Accuracy @ -40°C



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## SUMMARY TEST DATA ON HADA-D2001

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### Log Linearity and Log Accuracy @ +85°C

<p>LOG TRANSFER WITH FREQUENCY          MODEL: HADA-D2001          TESTED BY: EA Vaklez          TEST DATE: 11/04/22          SERIAL NO: PL38220          TEST TEMP: +85C</p>		<p>DC Offset= 0.059 V</p>		<p>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</p>	
<b>Frequency</b>					
<b>0.5 GHz</b>	INTERCEPT (mV)	2279			
	SLOPE (mV/dB)	49.8			
<b>1 GHz</b>	INTERCEPT (mV)	2293			
	SLOPE (mV/dB)	49.8			
<b>2 GHz</b>	INTERCEPT (mV)	2289			
	SLOPE (mV/dB)	49.8			
	Flatness +/- dB				
	Max Video Output Volts				
	Min Video Output Volts				

	-40	-35	-30	-25	-20	-15	-10	-5	0
<b>0.5 GHz</b>	280	550	790	1032	1274	1523	1758	2031	2301
	-5	16	6	-1	-8	-8	-23	1	22
	-0.10	0.31	0.13	-0.02	-0.16	-0.17	-0.45	0.02	0.44
	-1.40	-1.00	-1.20	-1.36	-1.52	-1.54	-1.84	-1.38	-0.98
<b>1 GHz</b>	294	565	805	1047	1290	1540	1773	2048	2310
	-7	15	6	-1	-7	-6	-22	4	17
	-0.14	0.31	0.12	-0.02	-0.14	-0.12	-0.44	0.08	0.34
	-1.12	-0.70	-0.90	-1.06	-1.20	-1.20	-1.54	-1.04	-0.80
<b>2 GHz</b>	292	563	803	1044	1287	1535	1771	2042	2308
	-7	16	7	-1	-7	-5	-20	2	19
	-0.13	0.31	0.13	-0.02	-0.14	-0.15	-0.41	0.03	0.38
	-1.16	-0.74	-0.94	-1.12	-1.26	-1.30	-1.58	-1.16	-0.84
	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
	0.29	0.57	0.81	1.05	1.29	1.54	1.77	2.05	2.31
	0.28	0.55	0.79	1.03	1.27	1.52	1.76	2.03	2.30

RF Input Power (dBm)	Error (dB)	
Measured Value (mV)	MAX	MIN
Error (mV)	0.44	-0.45
LINEARITY ERROR (dB)	0.44	-0.45
LOGGING ACCURACY (dB)	-0.98	-1.84

RF Input Power (dBm)	Error (dB)	
Measured Value (mV)	MAX	MIN
Error (mV)	0.34	-0.44
LINEARITY ERROR (dB)	0.34	-0.44
LOGGING ACCURACY (dB)	-0.70	-1.54

RF Input Power (dBm)	Error (dB)	
Measured Value (mV)	MAX	MIN
Error (mV)	0.38	-0.41
LINEARITY ERROR (dB)	0.38	-0.41
LOGGING ACCURACY (dB)	-0.74	-1.58

Logging Linearity vs Frequency	Error (dB)	
	MAX	MIN
TOTAL LOG LINEARITY (dB)	0.44	-0.45

Logging Accuracy vs Frequency	Error (dB)	
	MAX	MIN
TOTAL LOGGING ACCURACY (dB)	-0.70	-1.84

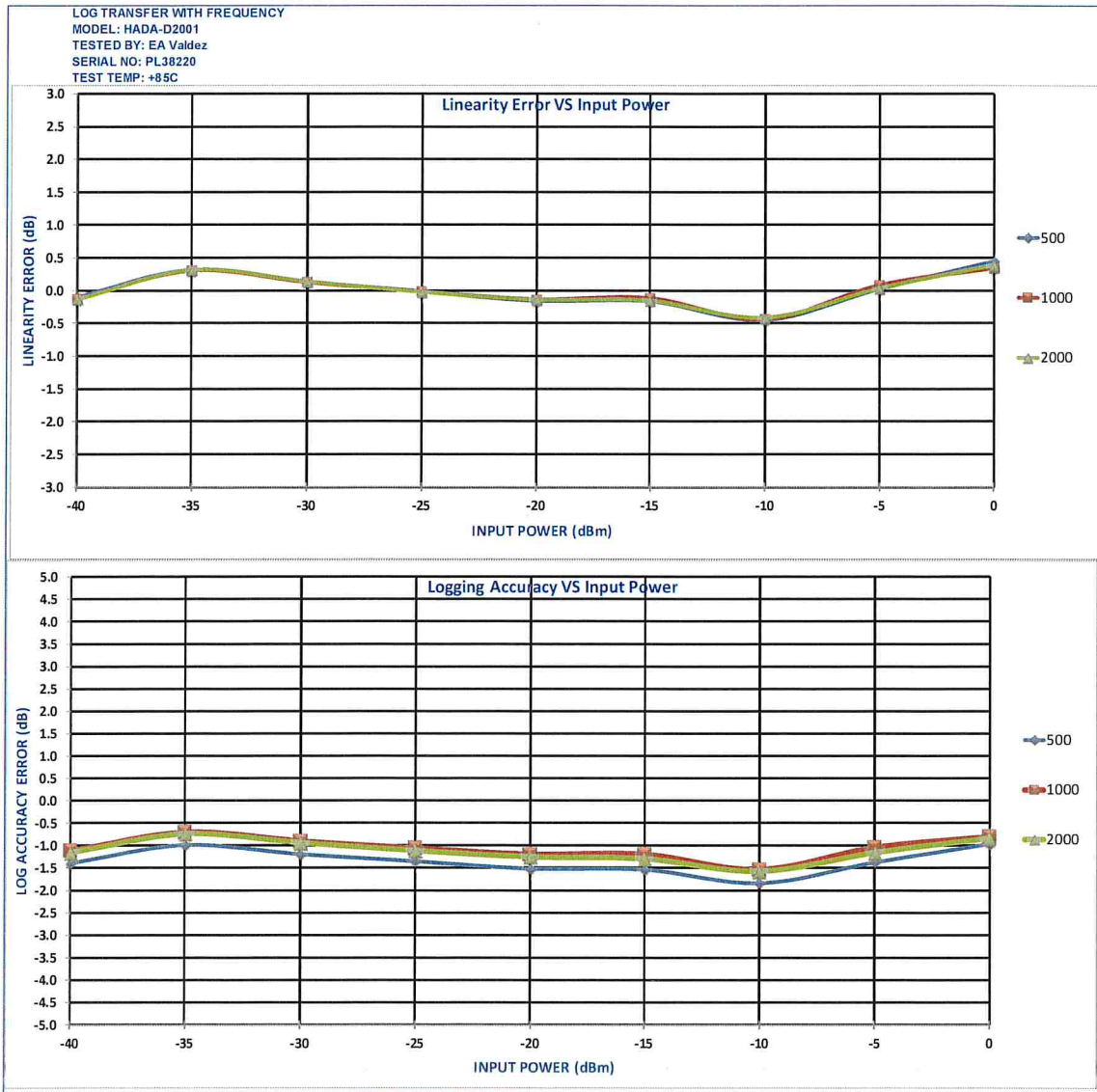
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## Log Linearity and Log Accuracy @ +85°C



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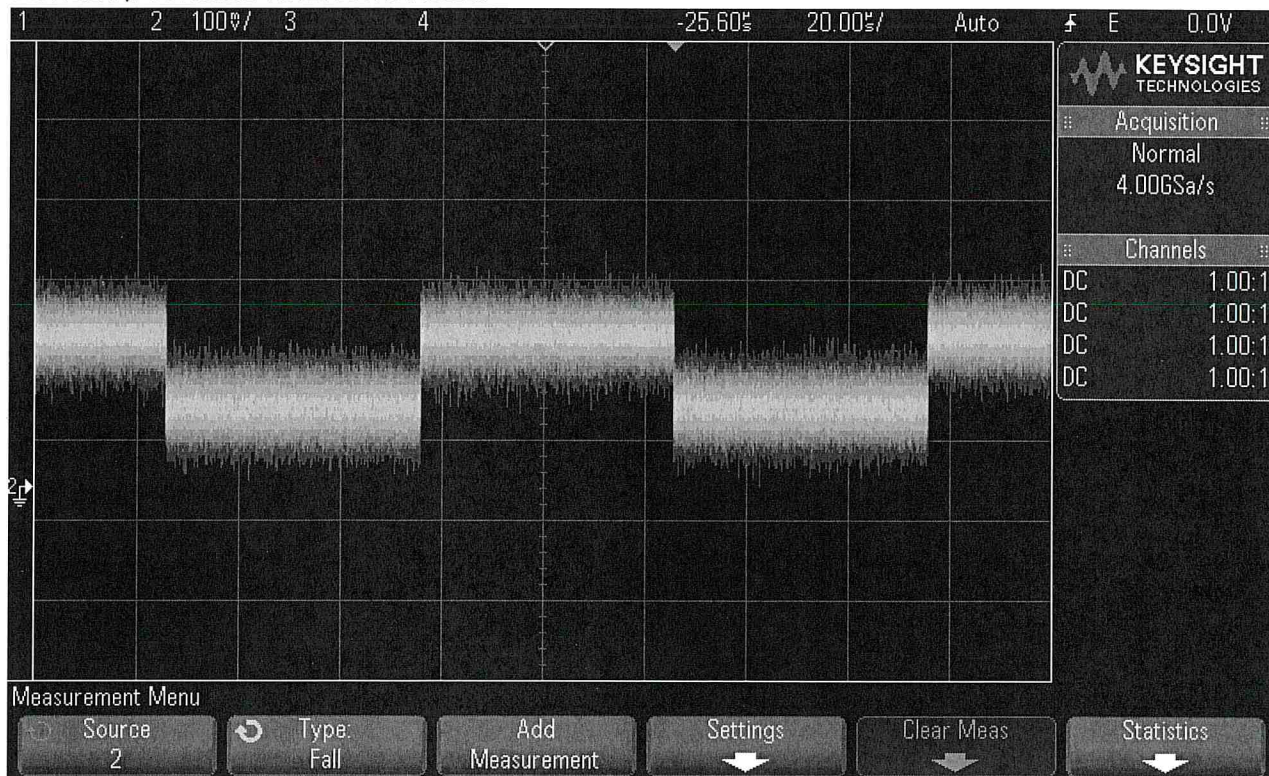


**SUMMARY TEST DATA  
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**TSS -45 dBm**

DSO-X 3024A, MY54490369: Tue Nov 08 17:31:12 2022



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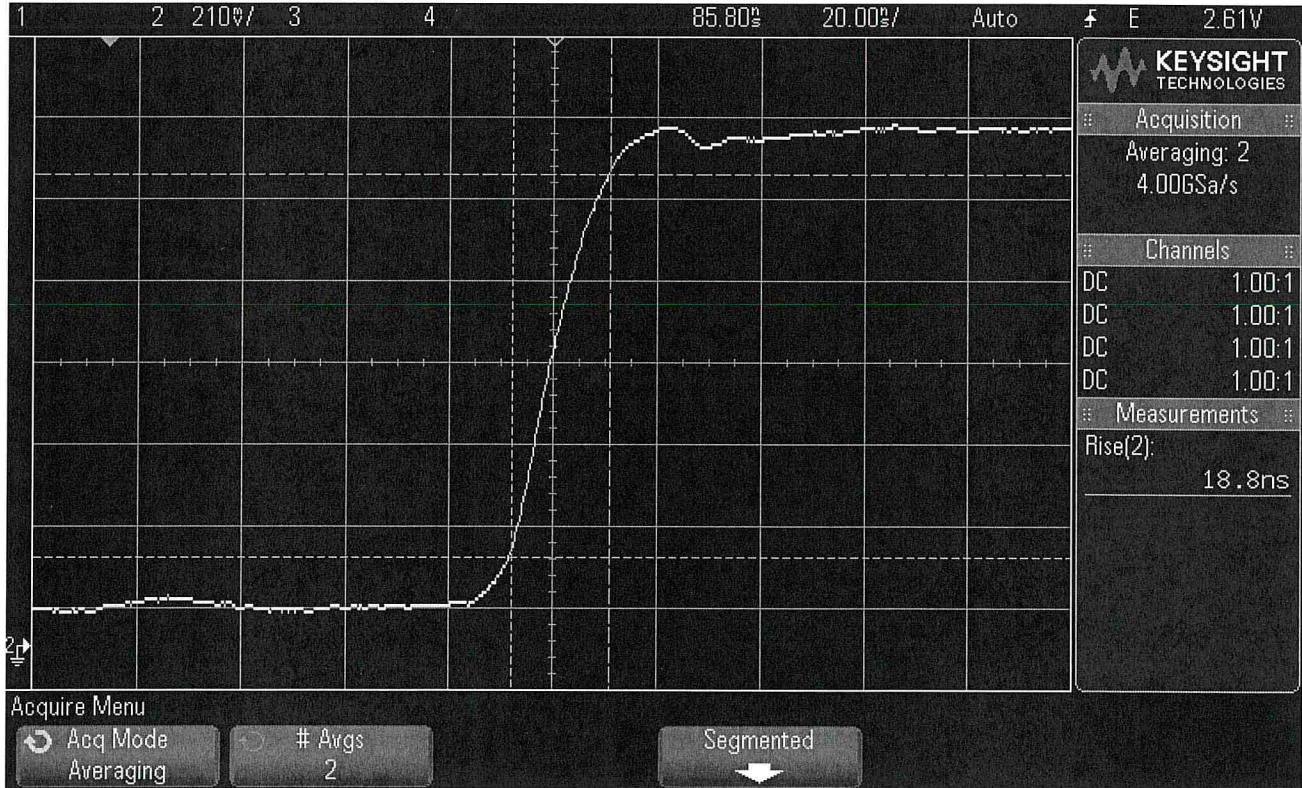


**SUMMARY TEST DATA  
ON  
HADA-D2001**

PL38220/2245

Rise Time 18.8nS

DSO-X 3024A, MY54490369: Tue Nov 08 18:37:30 2022



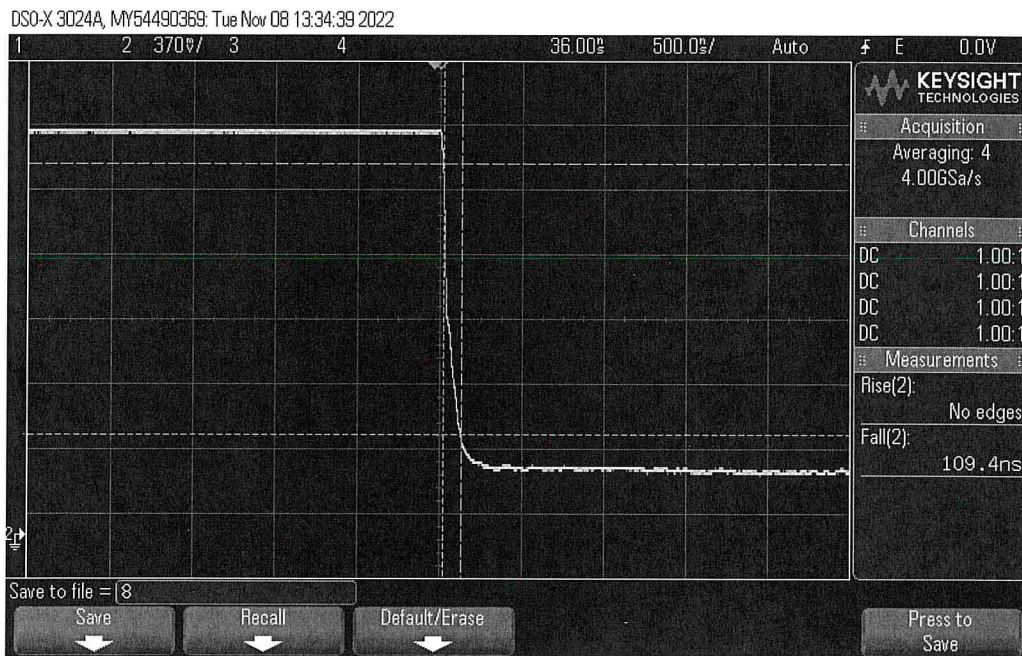
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Fall Time 109.4 nS



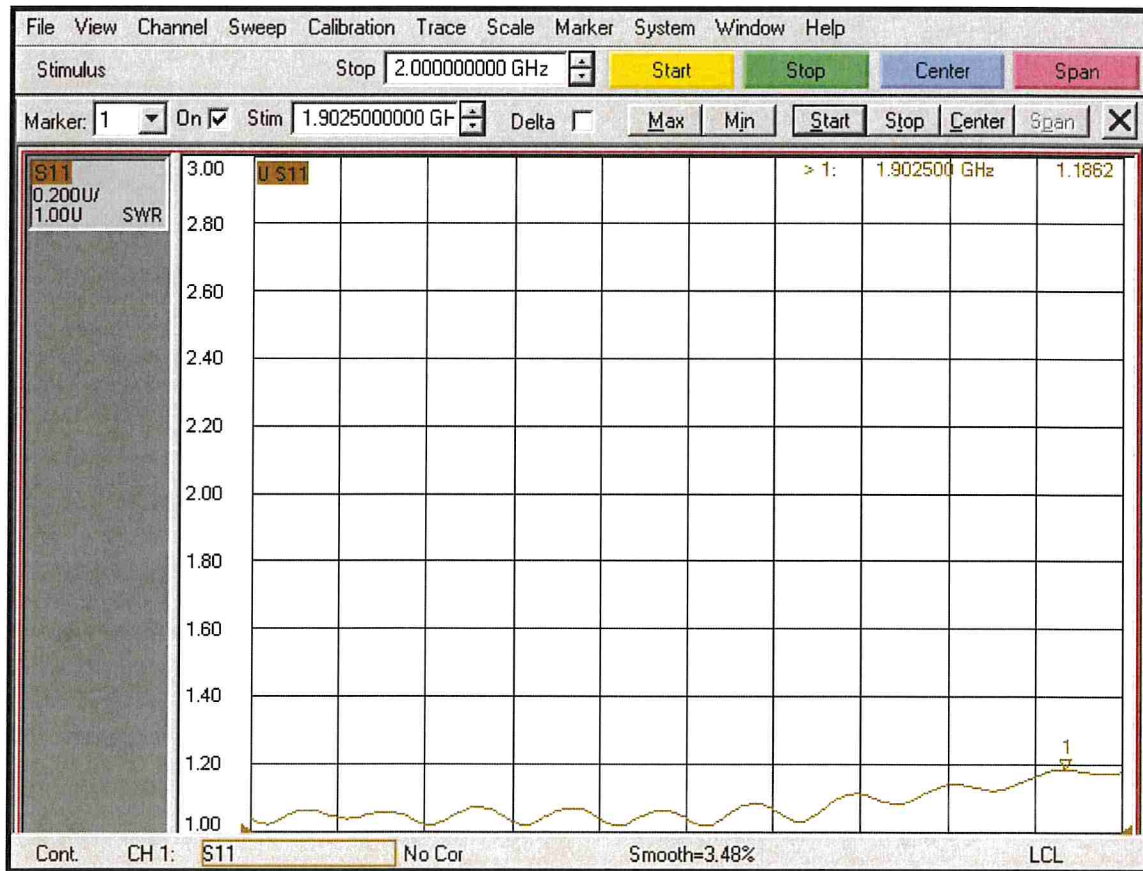
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**VSWR 1.19:1**



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