



**SUMMARY TEST DATA  
ON  
HADA-D2002**

Customer: _____	Tested By: <b>D. Weinrob</b>
SO No: _____	Temperature: <b>+25°C</b>
Model No: <b>HADA-D2002</b>	Date: <b>09/27/24</b>
Serial No: <b>PL47857/2439</b>	Drawing No: <b>27620222</b> Rev: <b>A1</b>

TEST. ITEM NO	PARAMETERS	SPECIFIED VALUE	TEST RESULTS	QA QC
1	Frequency Range:	2.0 GHz – 18.0 GHz	2.0 GHz – 18.0 GHz See Plot	PMI QA3
2	TSS:	-40 dBm Min @ -40°C to +85°	-41 dBm See Plot	
3	Frequency Flatness:	±1.65 dB Max	0.73 dB See Plot	
4	Input / Output Characteristics: (93 Ω)	Y = 2150 + 50X [X: Input (dBm), Y: Output (mv)]	Pass	
5	Logging Accuracy	±1.5 dB Max (@ +25°C, 10 GHz)* [-36 dBm ≤ INPUT ≤ +4 dBm] ±3.1 dB Max (Note)	-0.58 dB / -1.04 dB  0.66 dB / -2.30 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	0.29 dB / -0.30 dB 0.53 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%)	21 ns See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	125 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	96 mV @ +25°C 112 mV @ -40°C 120 mV @ +85°C See Plot	

4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597  
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12	Input VSWR:	3.0:1 Max @ +23 dBm	1.78:1 See Plot	PMI QA3
13	Propagation Delay:	60 ns Max	45 ns	
14	Power Supply:	+12 ± 1VDC @ 125 mA Max -12 ± 1VDC @ 75 mA Max	+12 ± 1VDC @ 90mA -12 ± 1VDC @ 40mA	
15	Warm Up Time:	2 Minutes Max	2 Minutes	

\*Notes: Includes Frequency Flatness. Input Power, Temperature Deviation and Deviation for DC Offset. The test shall be performed using RG-62 (or equivalent), 5 meter, 93±0.5 Ohms terminated.

QA/QC Approval:

*K. Murray*

Date:

9-30-24



## SUMMARY TEST DATA ON HADA-D2002

LOG TRANSFER WITH FREQUENCY @ +25C  
 MODEL: HADA-D2002  
 SERIAL NO: PL47857  
 TESTED BY: D. Weinrob  
 DATE: 9/26/2024



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

GRAPH #1

Output Voltage Offset= 0.096 Volts

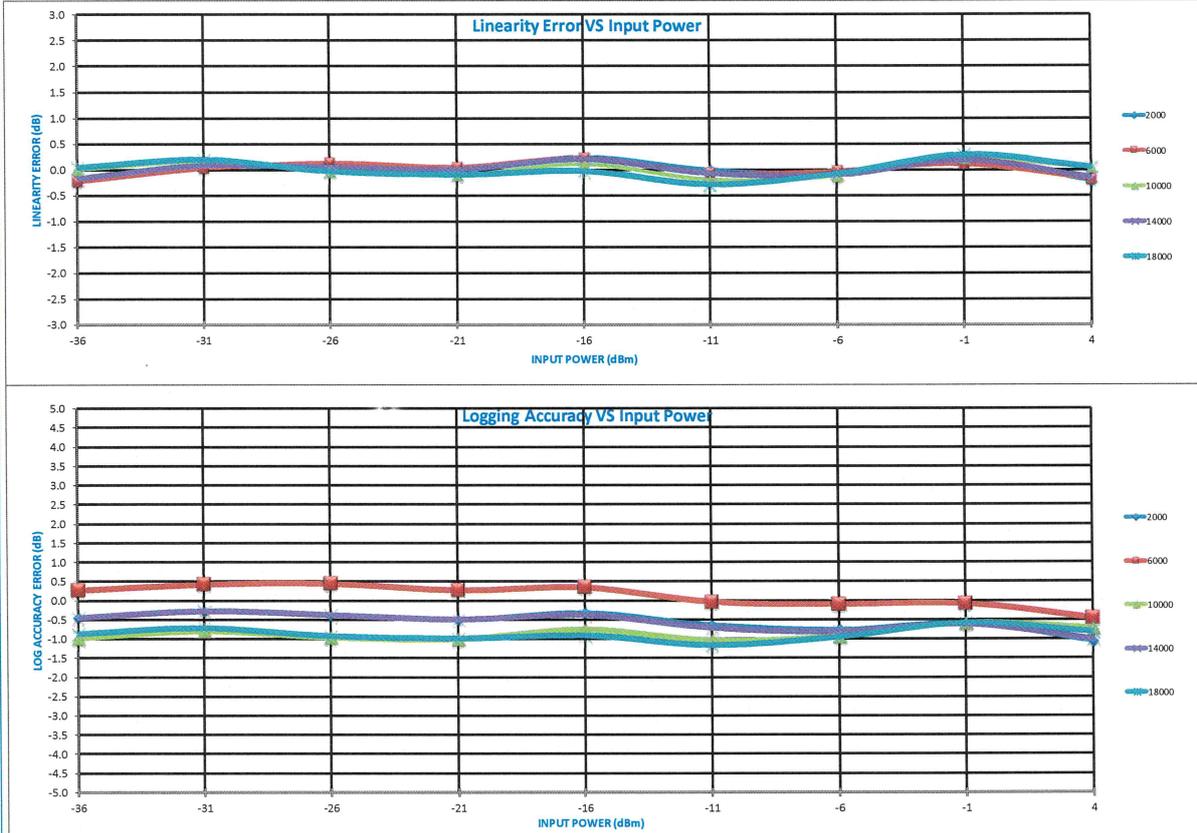
Frequency		-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)		
2 GHz	INTERCEPT (m)	328	586	830	1075	1334	1568	1812	2070	2296	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	-9	3	1	-1	12	0	-3	9	-12	Error (mV)	MAX	MIN
		-0.18	0.06	0.01	-0.02	0.24	-0.01	-0.06	0.18	-0.23	LINEARITY ERROR (dB)	0.24	-0.23
		-0.44	-0.28	-0.40	-0.50	-0.32	-0.64	-0.76	-0.60	-1.08	LOGGING ACCURACY (dB)	-0.28	-1.08
6 GHz	INTERCEPT (m)	363	621	872	1113	1367	1598	1845	2096	2327	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	-12	1	7	2	11	-3	-1	5	-10	Error (mV)	MAX	MIN
		-0.24	0.02	0.14	0.05	0.23	-0.06	-0.02	0.09	-0.20	LINEARITY ERROR (dB)	0.23	-0.24
		0.26	0.42	0.44	0.26	0.34	-0.04	-0.10	-0.08	-0.46	LOGGING ACCURACY (dB)	0.44	-0.46
10 GHz	INTERCEPT (m)	301	560	802	1050	1312	1548	1803	2071	2314	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	0	7	-2	-5	5	-10	-7	10	2	Error (mV)	MAX	MIN
		0.00	0.15	-0.04	-0.11	0.10	-0.20	-0.13	0.20	0.03	LINEARITY ERROR (dB)	0.20	-0.20
		-0.98	-0.80	-0.96	-1.00	-0.76	-1.04	-0.94	-0.58	-0.72	LOGGING ACCURACY (dB)	-0.58	-1.04
14 GHz	INTERCEPT (m)	327	586	831	1075	1331	1564	1809	2069	2299	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	-9	4	3	0	10	-4	-5	9	-8	Error (mV)	MAX	MIN
		-0.18	0.08	0.05	0.00	0.20	-0.07	-0.10	0.18	-0.16	LINEARITY ERROR (dB)	0.20	-0.16
		-0.46	-0.28	-0.38	-0.50	-0.38	-0.72	-0.82	-0.62	-1.02	LOGGING ACCURACY (dB)	-0.28	-1.02
18 GHz	INTERCEPT (m)	306	564	803	1050	1304	1541	1802	2071	2309	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	2	10	-2	-5	-2	-15	-4	14	2	Error (mV)	MAX	MIN
		0.04	0.19	-0.04	-0.10	-0.03	-0.30	-0.09	0.29	0.04	LINEARITY ERROR (dB)	0.29	-0.30
		-0.88	-0.72	-0.94	-1.00	-0.92	-1.18	-0.96	-0.58	-0.82	LOGGING ACCURACY (dB)	-0.58	-1.18
Flatness +/- dB		0.625	0.615	0.706	0.635	0.635	0.575	0.434	0.272	0.313			
Max Video Output V		0.363	0.621	0.872	1.113	1.367	1.598	1.845	2.096	2.327			
Min Video Output V		0.301	0.560	0.802	1.050	1.304	1.541	1.802	2.069	2.296			
Logging Linearity vs Frequency											Error(dB)	MAX	MIN
											LOGGING LINEARITY ERROR (dB)	0.29	-0.30
Logging Accuracy vs Frequency											Error(dB)	MAX	MIN
											LOGGING ACCURACY ERROR (dB)	0.44	-1.18

4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597  
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## SUMMARY TEST DATA ON HADA-D2002

LOG TRANSFER WITH FREQUENCY @ +25C  
MODEL: HADA-D2002  
SERIAL NO: PL47857  
TESTED BY: D. Weinrob



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## SUMMARY TEST DATA ON HADA-D2002

LOG TRANSFER WITH FREQUENCY @ -40C  
 MODEL: HADA-D2002  
 SERIAL NO: PL47857  
 TESTED BY: D. Weinrob  
 DATE: 9/26/2024



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GRAPH #2

Output Voltage Offset= 0.112 Volts

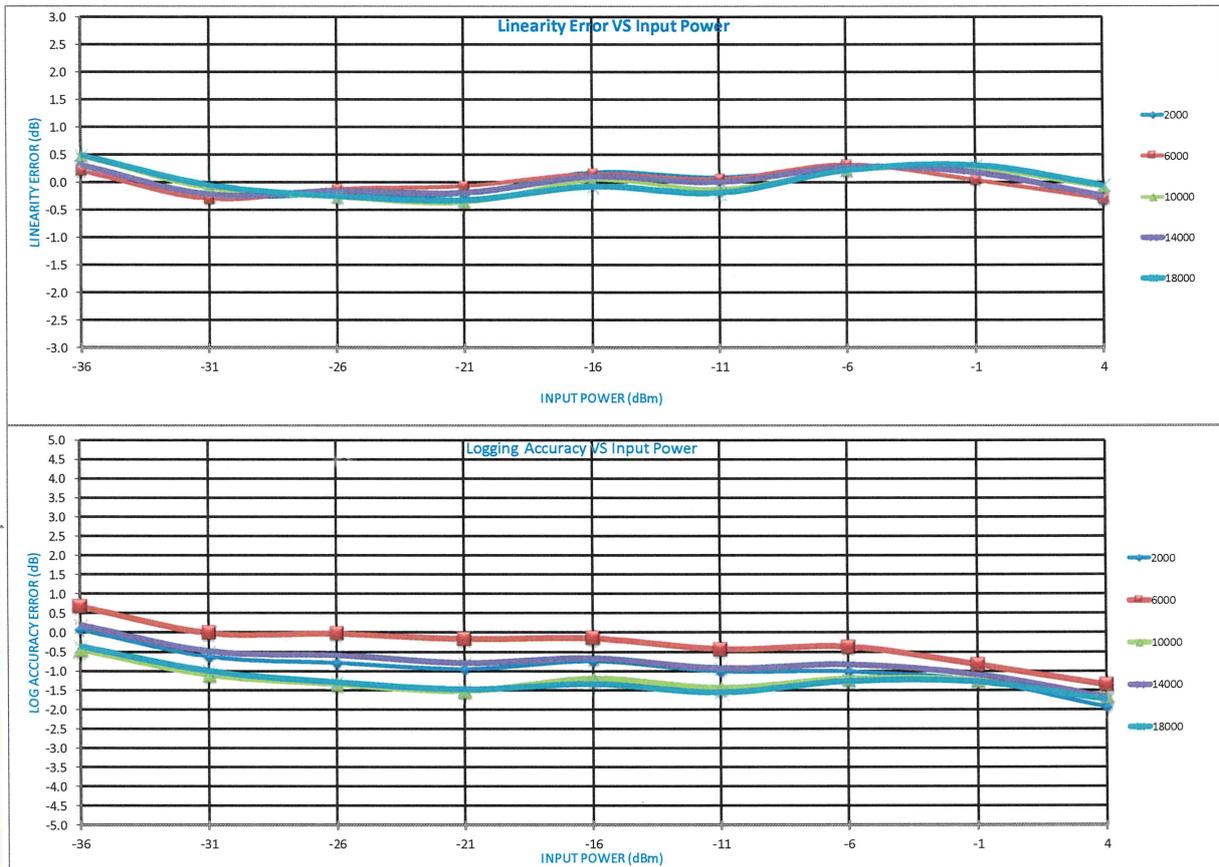
Frequency		-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)											
2 GHz	INTERCEPT (m)	2076										Measured Value (mV)	Error(dB)									
	SLOPE (mV/dB)	48.3										Error (mV)	MAX MIN									
		15	-12	-11	-10	8	4	13	9	-16	0.31	-0.24	-0.23	-0.21	0.17	0.08	0.26	0.19	-0.33	LINEARITY ERROR (dB)	0.31	-0.30
		0.06	-0.64	-0.80	-0.96	-0.76	-1.02	-1.02	-1.26	-1.94	LOGGING ACCURACY (dB)	0.06	-1.94									
6 GHz	INTERCEPT (m)	2104										Measured Value (mV)	Error(dB)									
	SLOPE (mV/dB)	48.1										Error (mV)	MAX MIN									
		383	599	848	1091	1342	1578	1831	2058	2282	0.21	-0.30	-0.12	-0.07	0.15	0.06	0.32	0.04	-0.30	LINEARITY ERROR (dB)	0.32	-0.30
		0.66	-0.02	-0.04	-0.18	-0.16	-0.44	-0.38	-0.84	-1.36	LOGGING ACCURACY (dB)	0.66	-1.36									
10 GHz	INTERCEPT (m)	2075										Measured Value (mV)	Error(dB)									
	SLOPE (mV/dB)	49.2										Error (mV)	MAX MIN									
		328	545	783	1024	1290	1528	1790	2038	2267	0.48	-0.11	-0.27	-0.37	0.04	-0.12	0.21	0.25	-0.09	LINEARITY ERROR (dB)	0.48	-0.37
		-0.44	-1.10	-1.34	-1.52	-1.20	-1.44	-1.20	-1.24	-1.66	LOGGING ACCURACY (dB)	-0.44	-1.66									
14 GHz	INTERCEPT (m)	2085										Measured Value (mV)	Error(dB)									
	SLOPE (mV/dB)	48.4										Error (mV)	MAX MIN									
		359	575	820	1060	1316	1553	1808	2045	2266	0.31	-0.23	-0.16	-0.20	0.10	0.00	0.27	0.17	-0.26	LINEARITY ERROR (dB)	0.31	-0.26
		0.18	-0.50	-0.60	-0.80	-0.68	-0.94	-0.84	-1.10	-1.68	LOGGING ACCURACY (dB)	0.18	-1.68									
18 GHz	INTERCEPT (m)	2070										Measured Value (mV)	Error(dB)									
	SLOPE (mV/dB)	48.9										Error (mV)	MAX MIN									
		332	550	785	1026	1283	1522	1787	2036	2263	0.48	-0.06	-0.26	-0.34	-0.08	-0.20	0.21	0.30	-0.06	LINEARITY ERROR (dB)	0.48	-0.34
		-0.36	-1.00	-1.30	-1.48	-1.34	-1.56	-1.26	-1.28	-1.74	LOGGING ACCURACY (dB)	-0.36	-1.74									
Flatness +/- dB	0.566	0.556	0.669	0.690	0.607	0.577	0.453	0.226	0.299													
Max Video Output V	0.383	0.599	0.848	1.091	1.342	1.578	1.831	2.058	2.282													
Min Video Output V	0.328	0.545	0.783	1.024	1.283	1.522	1.787	2.036	2.253													
Logging Linearity vs Frequency										MAX	MIN											
LOGGING LINEARITY ERROR (dB)										0.48	-0.37											
Logging Accuracy vs Frequency										MAX	MIN											
LOGGING ACCURACY ERROR (dB)										0.66	-1.94											

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MODEL: HADA-D2002  
SERIAL NO: PL47857  
TESTED BY: D. Weinrob



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**SUMMARY TEST DATA  
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HADA-D2002**

LOG TRANSFER WITH FREQUENCY @ +85C  
MODEL: HADA-D2002  
SERIAL NO: PL47857  
TESTED BY: D. Weinrob  
DATE: 9/26/2024



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GRAPH #3

Output Voltage Offset= 0.12 Volts

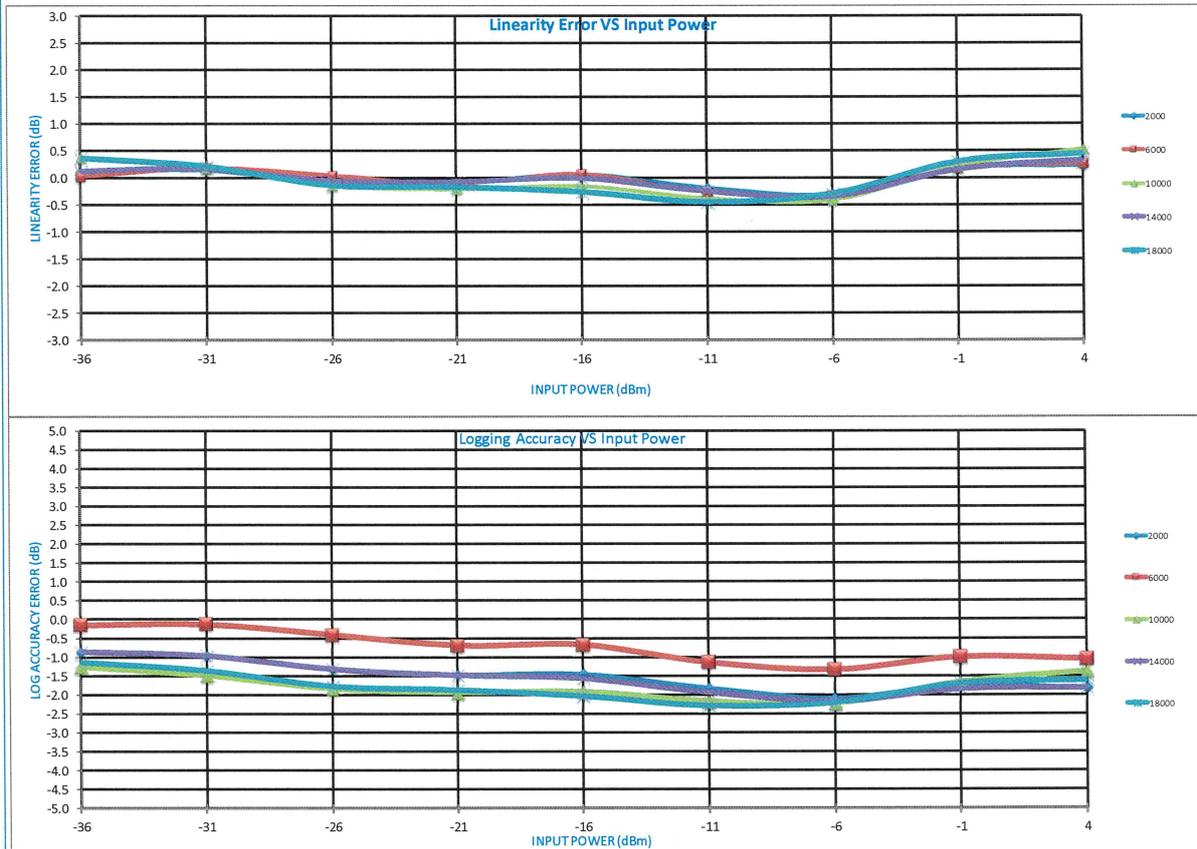
Frequency	Intercept (m)	Slope (mV/dB)	-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)	Measured Value (mV)	Error(dB)							
2 GHz	2054	48.7	307	552	784	1027	1278	1509	1746	2013	2259										
			5	7	-4	-5	3	-9	-16	8	11										
			0.11	0.14	-0.09	-0.10	0.06	-0.19	-0.32	0.17	0.22										
			-0.86	-0.96	-1.32	-1.46	-1.44	-1.82	-2.08	-1.74	-1.82										
6 GHz	2091	48.6	342	593	829	1065	1316	1543	1783	2050	2297										
			1	9	2	-5	3	-13	-16	8	12										
			0.01	0.18	0.04	-0.11	0.06	-0.27	-0.33	0.17	0.25										
			-0.16	-0.14	-0.42	-0.70	-0.68	-1.14	-1.34	-1.00	-1.06										
10 GHz	2056	49.7	287	526	758	1003	1254	1491	1738	2017	2281										
			18	9	-7	-10	-8	-19	-20	10	26										
			0.37	0.18	-0.14	-0.21	-0.15	-0.38	-0.41	0.21	0.53										
			-1.26	-1.48	-1.84	-1.94	-1.92	-2.18	-2.24	-1.66	-1.38										
14 GHz	2049	48.6	307	552	784	1026	1272	1503	1741	2008	2259										
			6	8	-3	-4	0	-12	-17	7	15										
			0.12	0.16	-0.06	-0.08	-0.01	-0.25	-0.35	0.15	0.32										
			-0.86	-0.96	-1.32	-1.48	-1.56	-1.94	-2.18	-1.84	-1.82										
18 GHz	2050	49.3	293	532	761	1006	1248	1485	1739	2015	2269										
			18	11	-7	-8	-13	-22	-15	15	22										
			0.36	0.21	-0.14	-0.17	-0.26	-0.45	-0.30	0.30	0.45										
			-1.14	-1.36	-1.78	-1.88	-2.04	-2.30	-2.22	-1.70	-1.62										
Flatness +/- dB												0.562	0.684	0.725	0.633	0.695	0.592	0.460	0.429	0.388	
												0.342	0.593	0.829	1.065	1.316	1.543	1.783	2.050	2.297	
												0.287	0.526	0.758	1.003	1.248	1.485	1.738	2.008	2.259	
												Logging Linearity vs Frequency		Error(dB)							
														MAX		MIN					
												LOGGING LINEARITY ERROR (dB)		0.53		-0.45					
												Logging Accuracy vs Frequency		Error(dB)							
														MAX		MIN					
												LOGGING ACCURACY ERROR (dB)		-0.14		-2.30					

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## SUMMARY TEST DATA ON HADA-D2002

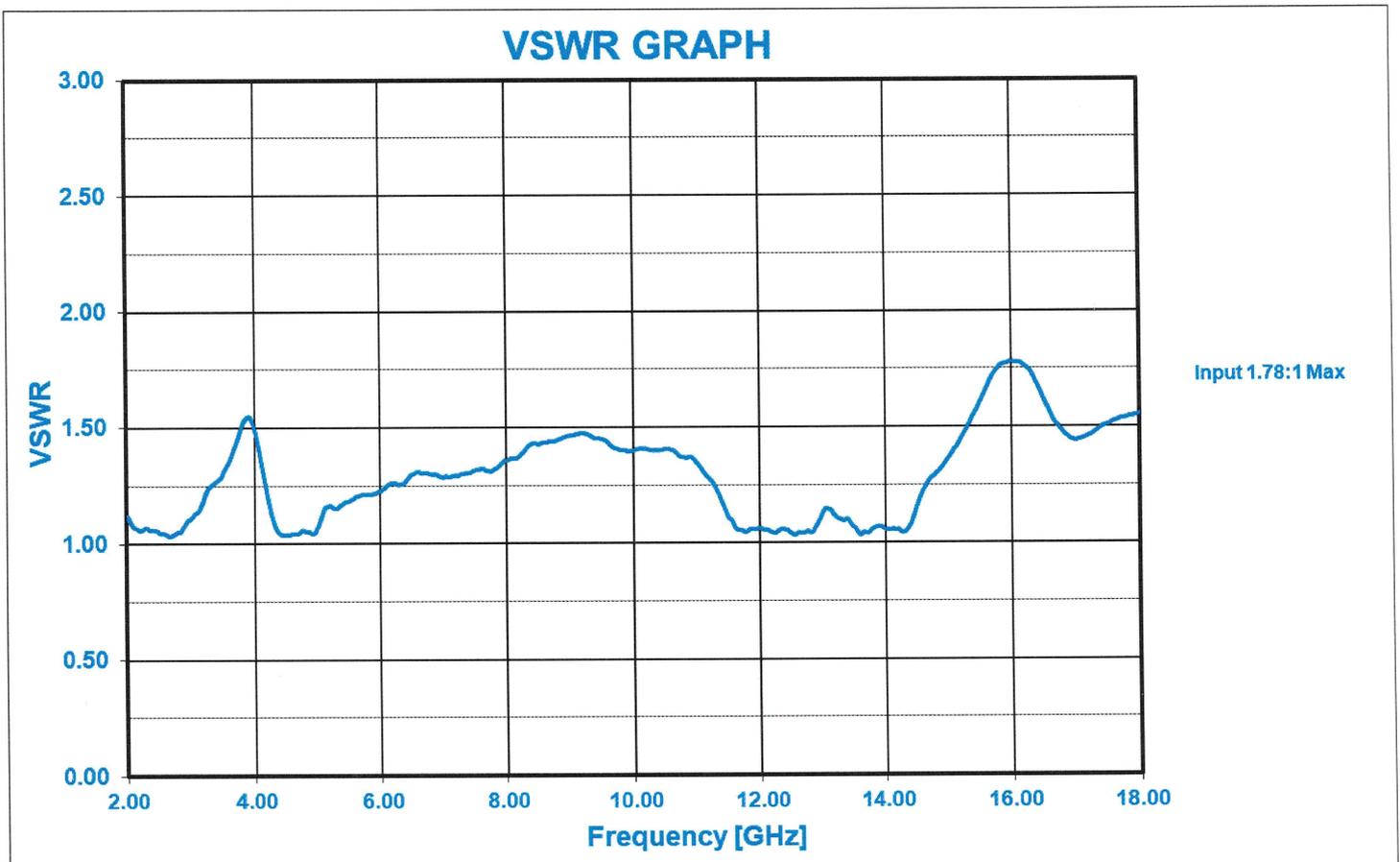
LOG TRANSFER WITH FREQUENCY @ +85C  
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SERIAL NO: PL47857  
TESTED BY: D. Weinrob



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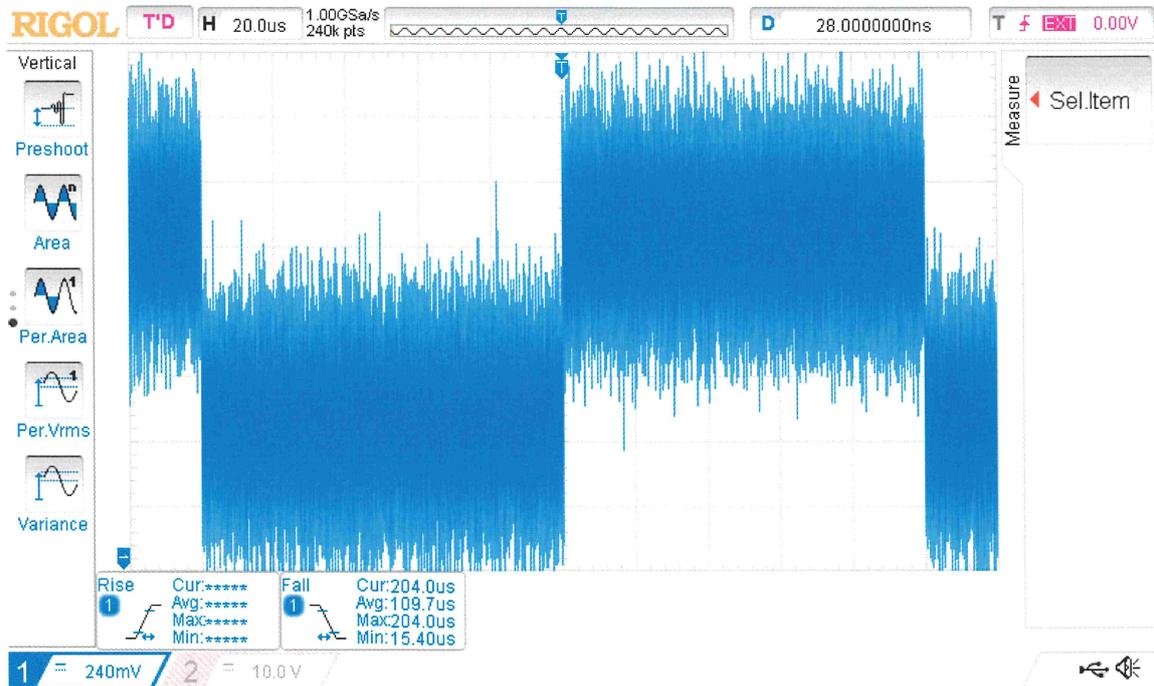


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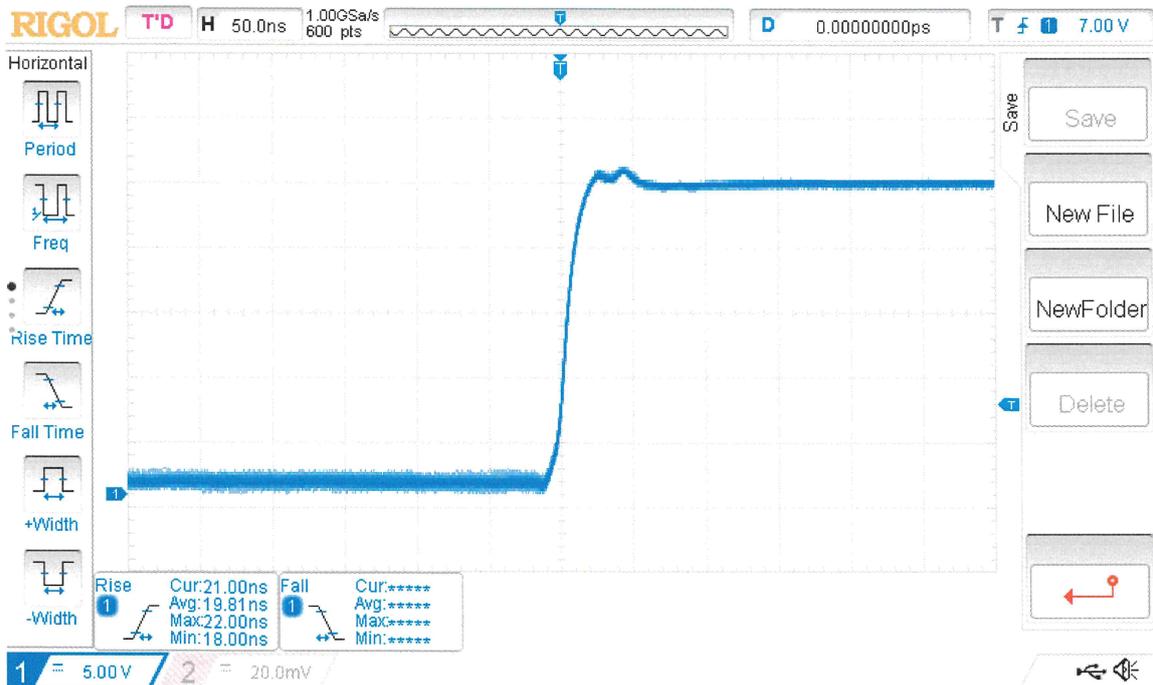
**TSS = -41 dBm**





**SUMMARY TEST DATA  
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Rise Time = 21 ns





**SUMMARY TEST DATA  
ON  
HADA-D2002**

**Fall Time = 125 ns**

