



SUMMARY TEST DATA ON HADA-D2002

Customer: _____
 SO No: _____
 Model No: HADA-D2002
 Serial No: PL49126/2442

Tested By: D. Weinrob
 Temperature: +25° C
 Date: 10/15/2024
 Drawing No: 27620222 Rev: A1

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	0.90 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)	-0.44 dB / -0.78 dB 1.10 dB / -2.50 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	0.37 dB / -0.27 dB 0.67 dB / -0.47 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%)	24 ns See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	235 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	73 mV @ +25°c 67 mV @ -40°c 93 mV @ +85°c See Plot	



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12	Input VSWR:	3.0:1 Max @ +23 dBm	1.77:1 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 @ 100 mA -12 ± 1VDC @ 40 mA	
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. Klauing

Date: 10-16-24



SUMMARY TEST DATA ON HADA-D2002

LOG TRANSFER WITH FREQUENCY @ +25C
 MODEL: HADA-D2002
 SERIAL NO: PL49128
 TESTED BY: D. Weinrob
 DATE: 9/30/2024



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

GRAPH #1

Output Voltage Offset= 0.073 Volts

Frequency	Intercept (mV)	Slope (mV/dB)	-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)	Measured Value (mV)	Error(dB)
2 GHz	2146	49.1	370	620	873	1114	1359	1624	1864	2088	2331			
			-8	-3	4	-1	-1	18	12	-9	-12		MAX	MIN
			-0.16	-0.07	0.08	-0.01	-0.03	0.37	0.25	-0.19	-0.24		0.37	-0.24
			0.40	0.40	0.46	0.28	0.18	0.48	0.28	-0.24	-0.38		0.48	-0.38
6 GHz	2168	48.8	401	650	905	1148	1384	1649	1884	2106	2356			
			-10	-5	6	5	-3	18	9	-13	-7		MAX	MIN
			-0.20	-0.10	0.13	0.10	-0.06	0.37	0.18	-0.27	-0.15		0.37	-0.27
			1.02	1.00	1.10	0.96	0.68	0.98	0.68	0.12	0.12		1.10	0.12
10 GHz	2115	49.8	319	578	825	1064	1317	1570	1826	2061	2312			
			-5	5	4	-6	-2	2	9	-5	-2		MAX	MIN
			-0.10	0.11	0.07	-0.13	-0.04	0.04	0.19	-0.09	-0.05		0.19	-0.13
			-0.62	-0.44	-0.50	-0.72	-0.66	-0.60	-0.48	-0.78	-0.76		-0.44	-0.78
14 GHz	2133	49.2	355	610	862	1101	1343	1601	1848	2077	2324			
			-9	1	7	0	-4	8	10	-7	-6		MAX	MIN
			-0.17	0.01	0.14	0.00	-0.08	0.17	0.20	-0.15	-0.12		0.20	-0.17
			0.10	0.20	0.24	0.02	-0.14	0.02	-0.04	-0.46	-0.52		0.24	-0.52
18 GHz	2156	49.8	364	617	867	1106	1346	1607	1864	2100	2363			
			1	5	6	-4	-13	-1	7	-6	8		MAX	MIN
			0.01	0.09	0.11	-0.09	-0.27	-0.03	0.13	-0.13	0.15		0.15	-0.27
			0.28	0.34	0.34	0.12	-0.08	0.14	0.28	0.00	0.26		0.34	-0.08
Flatness +/- dB			0.831	0.730	0.811	0.851	0.679	0.801	0.588	0.456	0.517			
Max Video Output V			0.401	0.650	0.905	1.148	1.384	1.649	1.884	2.106	2.363			
Min Video Output V			0.319	0.578	0.825	1.064	1.317	1.570	1.826	2.061	2.312			

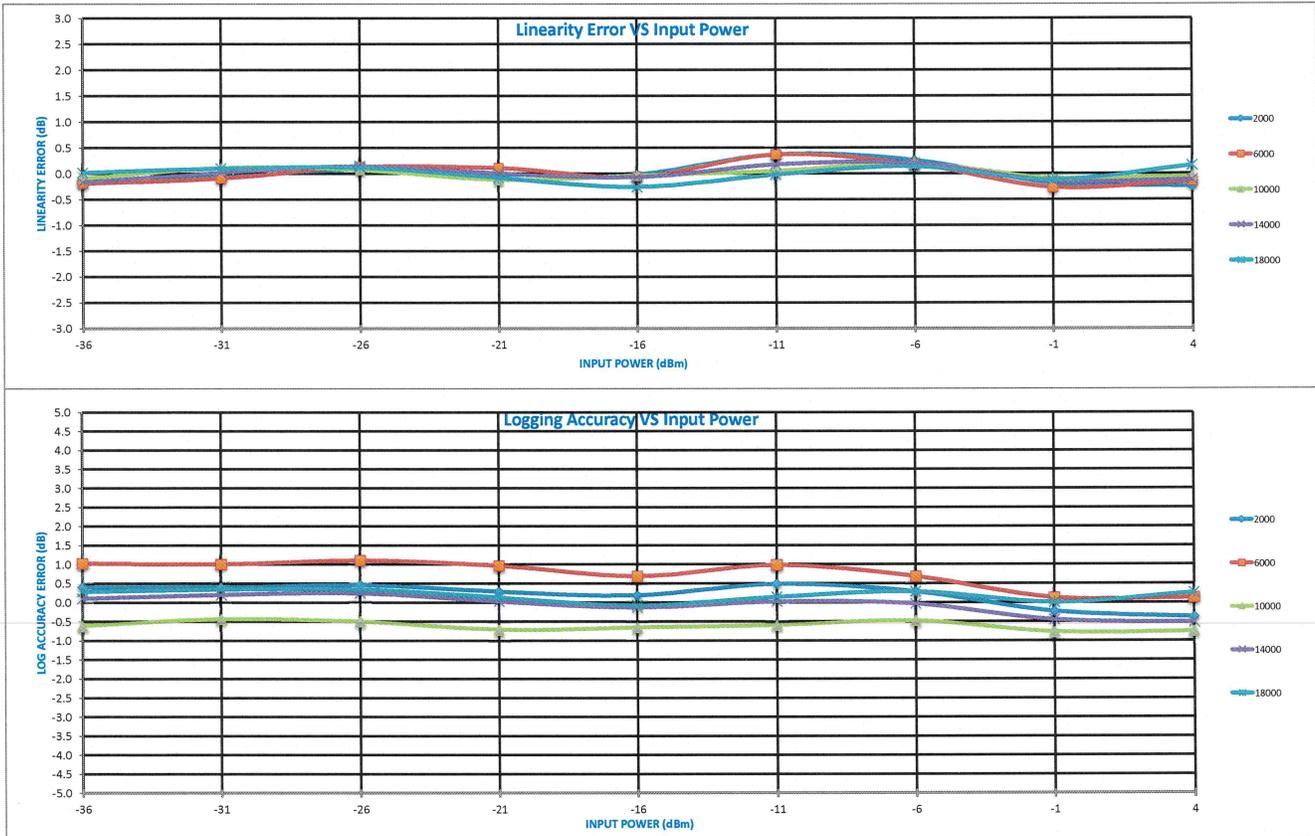
Logging Linearity vs Frequency	Error(dB)
	MAX MIN
LOGGING LINEARITY ERROR (dB)	0.37 -0.27

Logging Accuracy vs Frequency	Error(dB)
	MAX MIN
LOGGING ACCURACY ERROR (dB)	1.10 -0.78



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LOG TRANSFER WITH FREQUENCY @ +25C
MODEL: HADA-D2002
SERIAL NO: PL49128
TESTED BY: D. Weinrob





SUMMARY TEST DATA ON HADA-D2002

LOG TRANSFER WITH FREQUENCY @ -40C
 MODEL: HADA-D2002
 SERIAL NO: PL49128
 TESTED BY: D. Weinrob
 DATE: 9/30/2024



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GRAPH #2

Output Voltage Offset= 0.067 Volts

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
2 GHz	2073	48

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
6 GHz	2094	47.8

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
10 GHz	2040	48.5

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
14 GHz	2066	48.1

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
18 GHz	2072	48.6

Flatness +/- dB
Max Video Output V
Min Video Output V

	-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)
2 GHz	357	566	813	1060	1303	1577	1808	2010	2249	Measured Value (mV)
	13	-18	-12	-5	-2	32	23	-15	-16	Error (mV)
	0.26	-0.38	-0.24	-0.10	-0.04	0.67	0.48	-0.32	-0.34	MAX MIN
	0.14	-0.68	-0.74	-0.80	-0.94	-0.46	-0.84	-1.80	-2.02	LINEARITY ERROR (dB)
										LOGGING ACCURACY (dB)
										0.67 -0.38
										0.14 -2.02
6 GHz	382	595	843	1095	1330	1600	1827	2026	2273	Measured Value (mV)
	7	-19	-9	4	0	31	19	-21	-12	Error (mV)
	0.15	-0.39	-0.20	0.08	0.00	0.65	0.40	-0.43	-0.26	MAX MIN
	0.64	-0.10	-0.14	-0.10	-0.40	0.00	-0.46	-1.48	-1.54	LINEARITY ERROR (dB)
										LOGGING ACCURACY (dB)
										0.65 -0.43
										0.64 -2.50
10 GHz	314	525	769	1008	1259	1524	1771	1986	2225	Measured Value (mV)
	19	-12	-11	-14	-6	17	22	-6	-9	Error (mV)
	0.40	-0.25	-0.22	-0.29	-0.11	0.35	0.44	-0.12	-0.19	MAX MIN
	-0.72	-1.50	-1.62	-1.84	-1.82	-1.52	-1.58	-2.28	-2.50	LINEARITY ERROR (dB)
										LOGGING ACCURACY (dB)
										0.44 -0.29
										-0.72 -2.50
14 GHz	349	560	808	1053	1291	1560	1797	2005	2248	Measured Value (mV)
	13	-16	-8	-4	-6	23	20	-13	-10	Error (mV)
	0.28	-0.33	-0.17	-0.07	-0.12	0.48	0.41	-0.26	-0.20	MAX MIN
	-0.02	-0.80	-0.84	-0.94	-1.18	-0.80	-1.06	-1.90	-2.04	LINEARITY ERROR (dB)
										LOGGING ACCURACY (dB)
										0.48 -0.33
										-0.02 -2.04
18 GHz	343	554	799	1042	1281	1549	1798	2012	2268	Measured Value (mV)
	21	-11	-9	-9	-13	12	18	-11	2	Error (mV)
	0.43	-0.23	-0.19	-0.19	-0.27	0.25	0.37	-0.23	0.04	MAX MIN
	-0.14	-0.92	-1.02	-1.16	-1.38	-1.02	-1.04	-1.76	-1.64	LINEARITY ERROR (dB)
										LOGGING ACCURACY (dB)
										0.43 -0.27
										-0.14 -1.76
Flatness +/- dB	0.706	0.726	0.768	0.903	0.737	0.789	0.581	0.415	0.498	
Max Video Output V	0.382	0.595	0.843	1.095	1.330	1.600	1.827	2.026	2.273	
Min Video Output V	0.314	0.525	0.769	1.008	1.259	1.524	1.771	1.986	2.225	

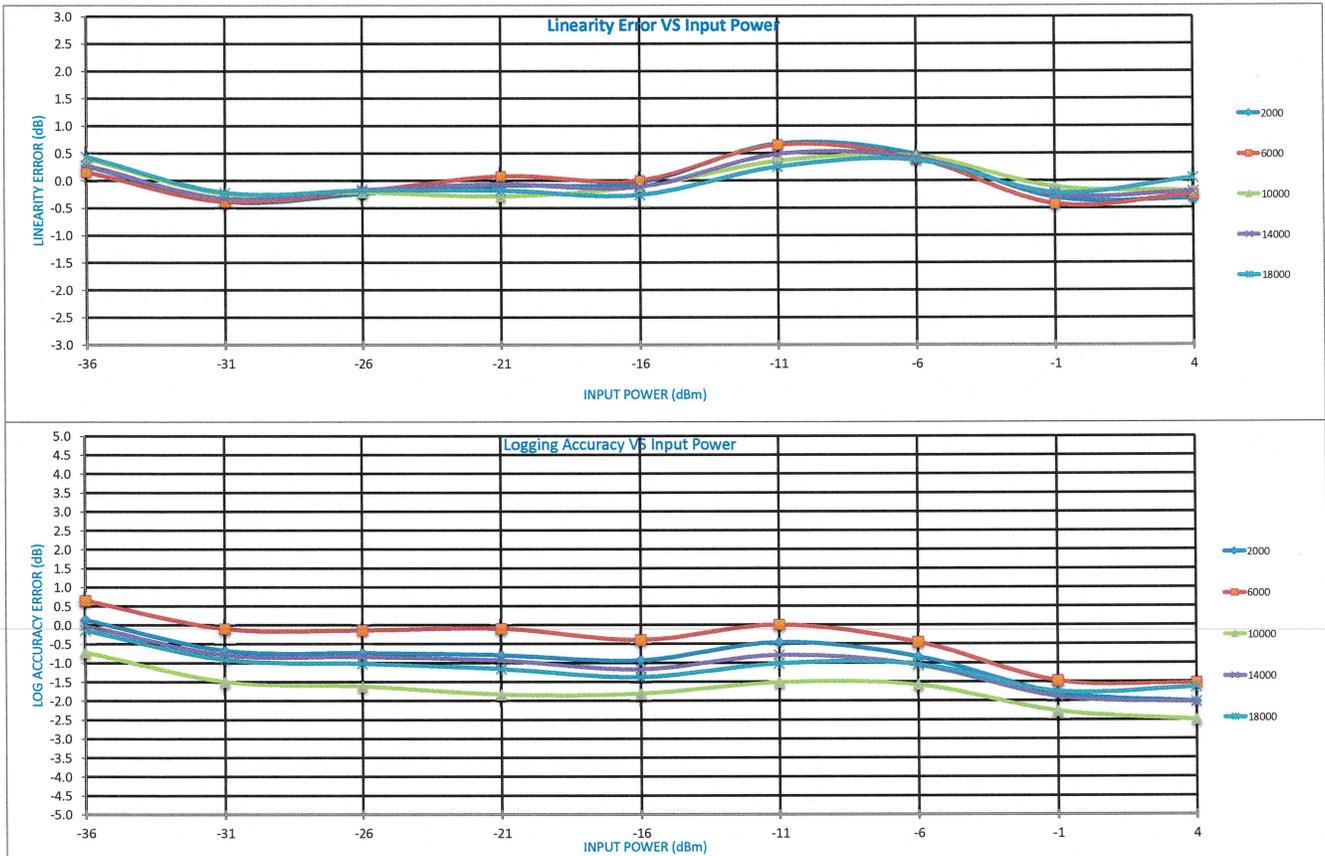
Logging Linearity vs Frequency	Error(dB)
	MAX MIN
LOGGING LINEARITY ERROR (dB)	0.67 -0.43

Logging Accuracy vs Frequency	Error(dB)
	MAX MIN
LOGGING ACCURACY ERROR (dB)	0.64 -2.50



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LOG TRANSFER WITH FREQUENCY @ -40C
MODEL: HADA-D2002
SERIAL NO: PL49128
TESTED BY: D. Weinrob





SUMMARY TEST DATA ON HADA-D2002

LOG TRANSFER WITH FREQUENCY @ +85C
 MODEL: HADA-D2002
 SERIAL NO: PL49128
 TESTED BY: D. Weinrob
 DATE: 9/30/2024



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GRAPH #3

Output Voltage Offset= 0.093 Volts

Frequency	Intercept (mV)	Slope (mV/dB)	-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)	Measured Value (mV)	Error(dB)
2 GHz	2073	48.8	333	562	797	1031	1279	1533	1784	2027	2278			
			18	3	-6	-16	-13	-3	4	3	10			
			0.37	0.06	-0.13	-0.34	-0.26	-0.06	0.08	0.06	0.20			
			-0.34	-0.76	-1.06	-1.38	-1.42	-1.34	-1.32	-1.46	-1.44			
6 GHz	2101	48.6	365	593	835	1069	1309	1564	1811	2054	2305			
			15	0	-1	-11	-14	-2	2	2	10			
			0.31	-0.01	-0.03	-0.22	-0.28	-0.04	0.04	0.04	0.20			
			0.30	-0.14	-0.30	-0.62	-0.82	-0.72	-0.78	-0.92	-0.90			
10 GHz	2046	49.5	289	521	750	986	1237	1481	1749	2001	2270			
			26	10	-9	-20	-17	-20	0	4	26			
			0.52	0.20	-0.17	-0.41	-0.34	-0.41	0.00	0.09	0.52			
			-1.22	-1.58	-2.00	-2.28	-2.26	-2.38	-2.02	-1.98	-1.60			
14 GHz	2053	48.8	314	546	779	1012	1257	1502	1762	2008	2267			
			19	7	-4	-16	-15	-14	2	3	18			
			0.39	0.14	-0.09	-0.32	-0.30	-0.29	0.03	0.07	0.37			
			-0.72	-1.08	-1.42	-1.76	-1.86	-1.96	-1.76	-1.84	-1.66			
18 GHz	2073	49.5	318	550	783	1016	1259	1508	1778	2033	2294			
			25	10	-5	-19	-23	-21	1	9	23			
			0.50	0.19	-0.09	-0.38	-0.47	-0.43	0.03	0.18	0.46			
			-0.64	-1.00	-1.34	-1.68	-1.82	-1.84	-1.44	-1.34	-1.12			
Flatness +/- dB			0.775	0.734	0.866	0.846	0.734	0.846	0.632	0.540	0.387			
Max Video Output V			0.365	0.593	0.835	1.069	1.309	1.564	1.811	2.054	2.305			
Min Video Output V			0.289	0.521	0.750	0.986	1.237	1.481	1.749	2.001	2.267			

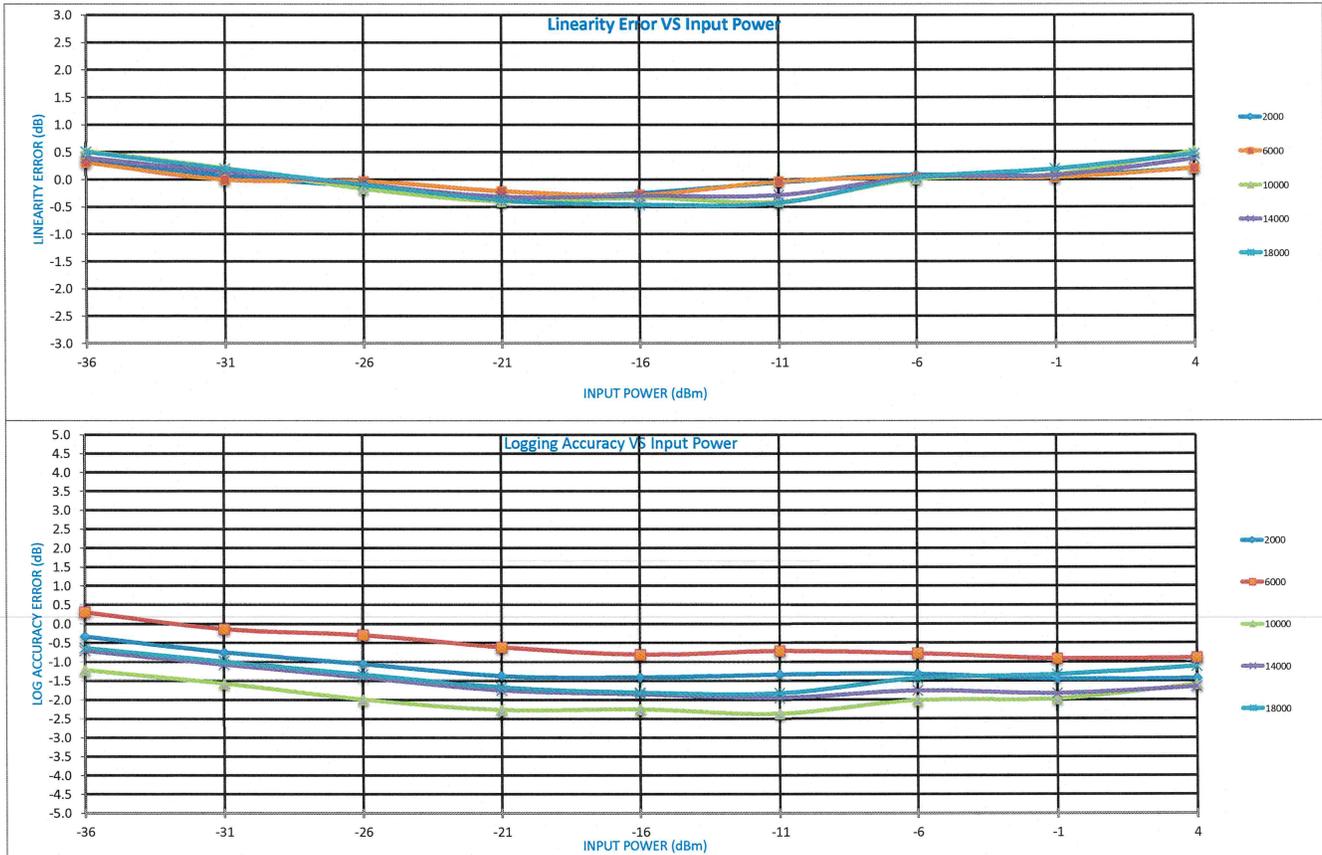
Logging Linearity vs Frequency	Error(dB)
	MAX MIN
LOGGING LINEARITY ERROR (dB)	0.52 -0.47

Logging Accuracy vs Frequency	Error(dB)
	MAX MIN
LOGGING ACCURACY ERROR (dB)	0.30 -2.38



SUMMARY TEST DATA ON HADA-D2002

LOG TRANSFER WITH FREQUENCY @ +85C
MODEL: HADA-D2002
SERIAL NO: PL49128
TESTED BY: D. Weinrob

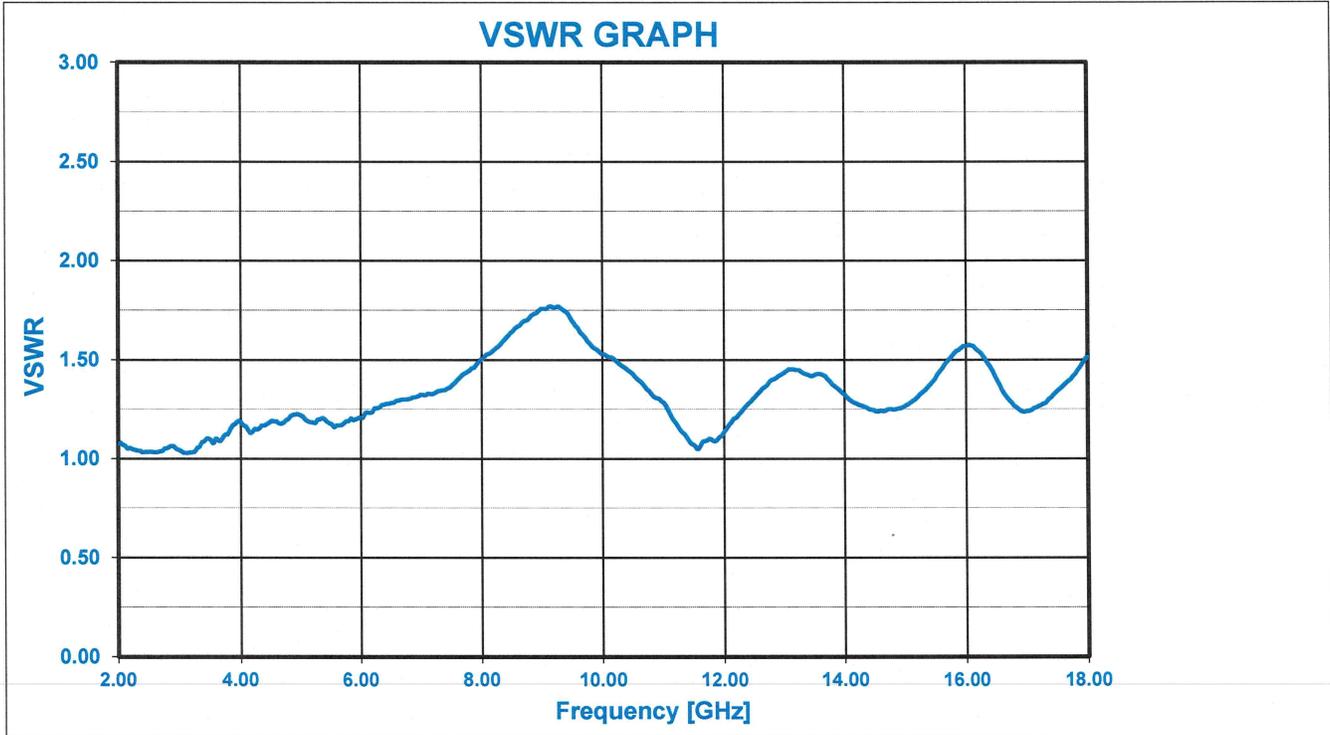




SUMMARY TEST DATA ON HADA-D2002

Model Number: HADA-D2002
Serial Number: PL49126

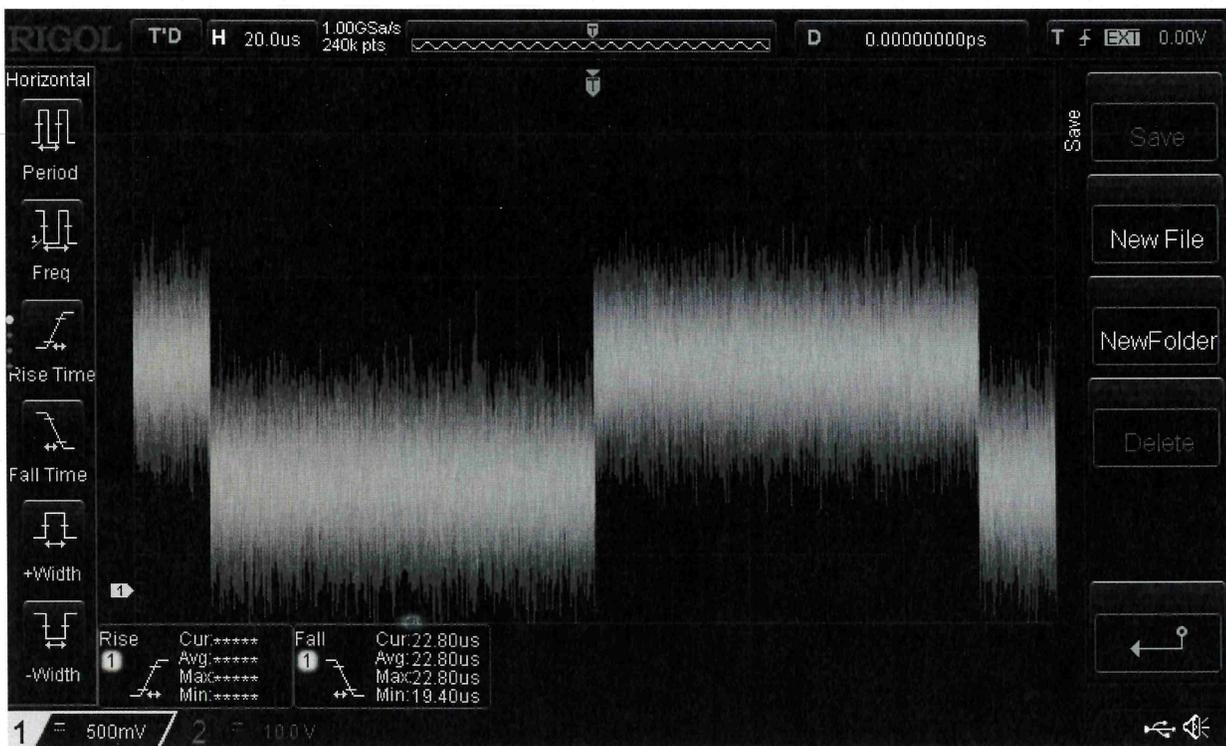
Temperature: +25C





**SUMMARY TEST DATA
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HADA-D2002**

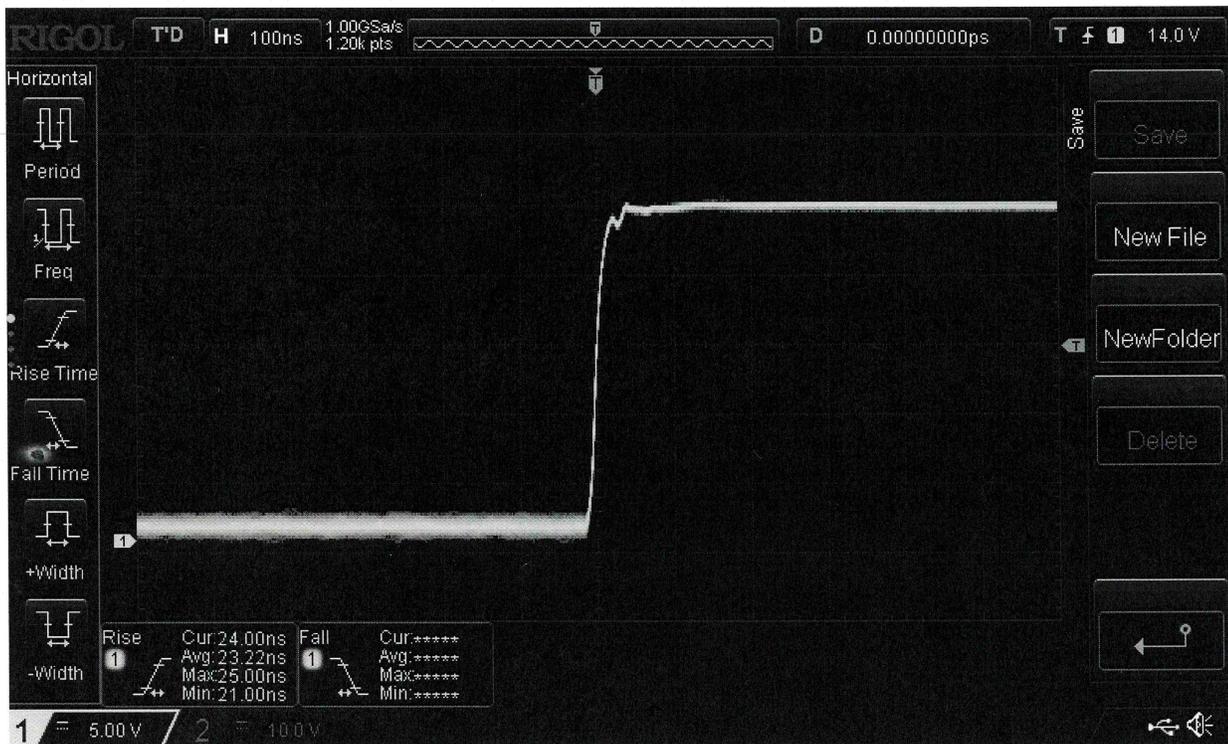
TSS = -41 dBm





**SUMMARY TEST DATA
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Rise Time = 24 ns





**SUMMARY TEST DATA
ON
HADA-D2002**

Fall Time = 235 ns

