SUMMARY TEST DATA
ON
HADA-D2002

Customer: [redacted]
SO No: [redacted]
Model No: HADA-D2002
Serial No: PL49124/2442

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	**0.71 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)	**0.14 dB / -0.88 dB** **0.94 dB / -1.50 dB** **See Plot**	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	**0.37 dB / -0.36 dB** **0.55 dB / -0.61 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%)	**25 ns** **See Plot**	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	**145 ns** **See Plot**	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	**91 mV @ +25°c** **35 mV @ -40°c** **79 mV @ +85°c** **See Plot**	

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SUMMARY TEST DATA
ON
HADA-D2002

12	Input VSWR:	3.0:1 Max @ +23 dBm	**1.66:1** **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 @ 90 mA** **-12 ± 1VDC @ 50 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. Klemmer **Date:** 10-16-24

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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

GRAPH #1

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

Output Voltage Offset= 0.091 Volts

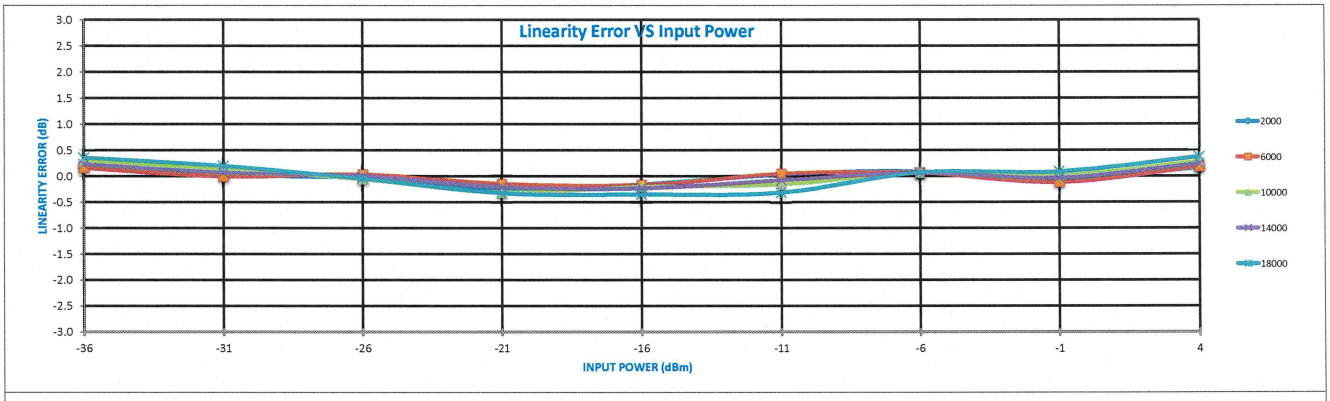
Frequency			-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)		
2 GHz	INTERCEPT (mV)	2155	357	599	847	1088	1343	1604	1858	2101	2364	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	50.2	11	1	-2	-12	-8	2	4	-4	8	Error (mV)	MAX	MIN
			0.21	0.03	-0.04	-0.24	-0.16	0.03	0.09	-0.08	0.16	LINEARITY ERROR (dB)	0.21	-0.24
			0.14	-0.02	-0.06	-0.24	-0.14	0.08	0.16	0.02	0.28	LOGGING ACCURACY (dB)	0.28	-0.24
6 GHz	INTERCEPT (mV)	2170	377	619	871	1112	1361	1622	1873	2114	2379	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	50	8	0	1	-8	-9	2	3	-6	9	Error (mV)	MAX	MIN
			0.15	-0.01	0.03	-0.15	-0.18	0.04	0.06	-0.12	0.18	LINEARITY ERROR (dB)	0.18	-0.18
			0.54	0.38	0.42	0.24	0.22	0.44	0.46	0.28	0.58	LOGGING ACCURACY (dB)	0.58	0.22
10 GHz	INTERCEPT (mV)	2140	324	571	815	1056	1316	1572	1838	2089	2357	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	50.8	14	7	-3	-16	-10	-9	3	0	14	Error (mV)	MAX	MIN
			0.28	0.14	-0.06	-0.32	-0.21	-0.17	0.06	0.00	0.28	LINEARITY ERROR (dB)	0.28	-0.32
			-0.52	-0.58	-0.70	-0.88	-0.68	-0.56	-0.24	-0.22	0.14	LOGGING ACCURACY (dB)	0.14	-0.88
14 GHz	INTERCEPT (mV)	2160	356	600	849	1090	1341	1601	1860	2107	2373	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	50.4	11	3	0	-11	-12	-4	3	-2	12	Error (mV)	MAX	MIN
			0.22	0.06	0.00	-0.22	-0.24	-0.08	0.06	-0.04	0.24	LINEARITY ERROR (dB)	0.24	-0.24
			0.12	0.00	-0.02	-0.20	-0.18	0.02	0.20	0.14	0.46	LOGGING ACCURACY (dB)	0.46	-0.20
18 GHz	INTERCEPT (mV)	2144	331	577	819	1059	1312	1568	1842	2097	2366	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	50.9	18	10	-3	-17	-18	-16	3	4	19	Error (mV)	MAX	MIN
			0.35	0.19	-0.05	-0.33	-0.36	-0.32	0.07	0.08	0.37	LINEARITY ERROR (dB)	0.37	-0.36
			-0.38	-0.46	-0.62	-0.82	-0.76	-0.64	-0.16	-0.06	0.32	LOGGING ACCURACY (dB)	0.32	-0.82
	Flatness +/- dB		0.525	0.476	0.555	0.555	0.485	0.535	0.347	0.248	0.218			
	Max Video Output V		0.377	0.619	0.871	1.112	1.361	1.622	1.873	2.114	2.379			
	Min Video Output V		0.324	0.571	0.815	1.056	1.312	1.568	1.838	2.089	2.357			

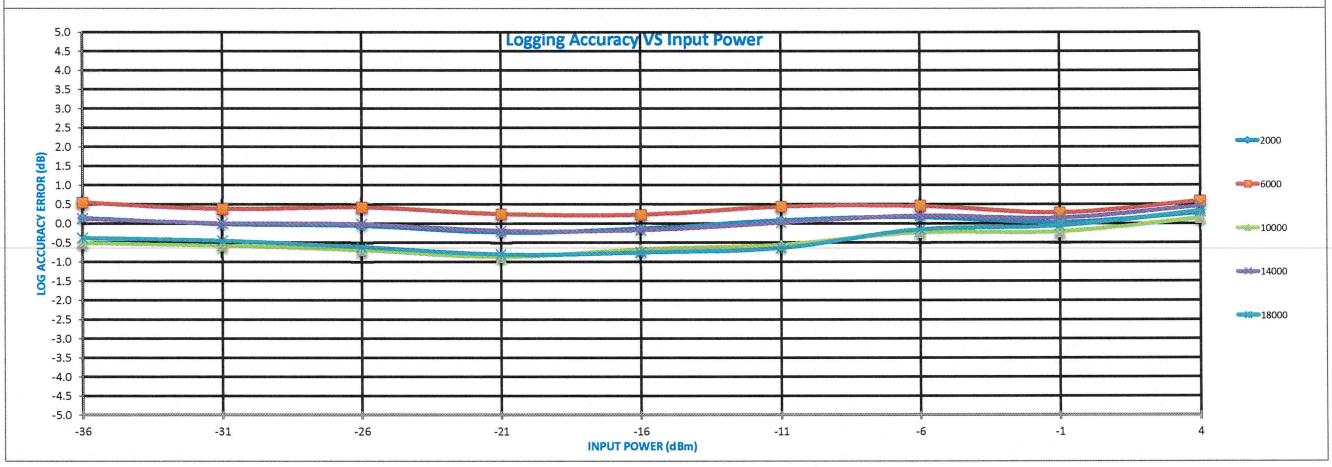
Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
LOGGING LINEARITY ERROR (dB)	0.37	-0.36

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
LOGGING ACCURACY ERROR (dB)	0.58	-0.88

SUMMARY TEST DATA
ON
HADA-D2002

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





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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

GRAPH #2

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

Output Voltage Offset= 0.035 Volts

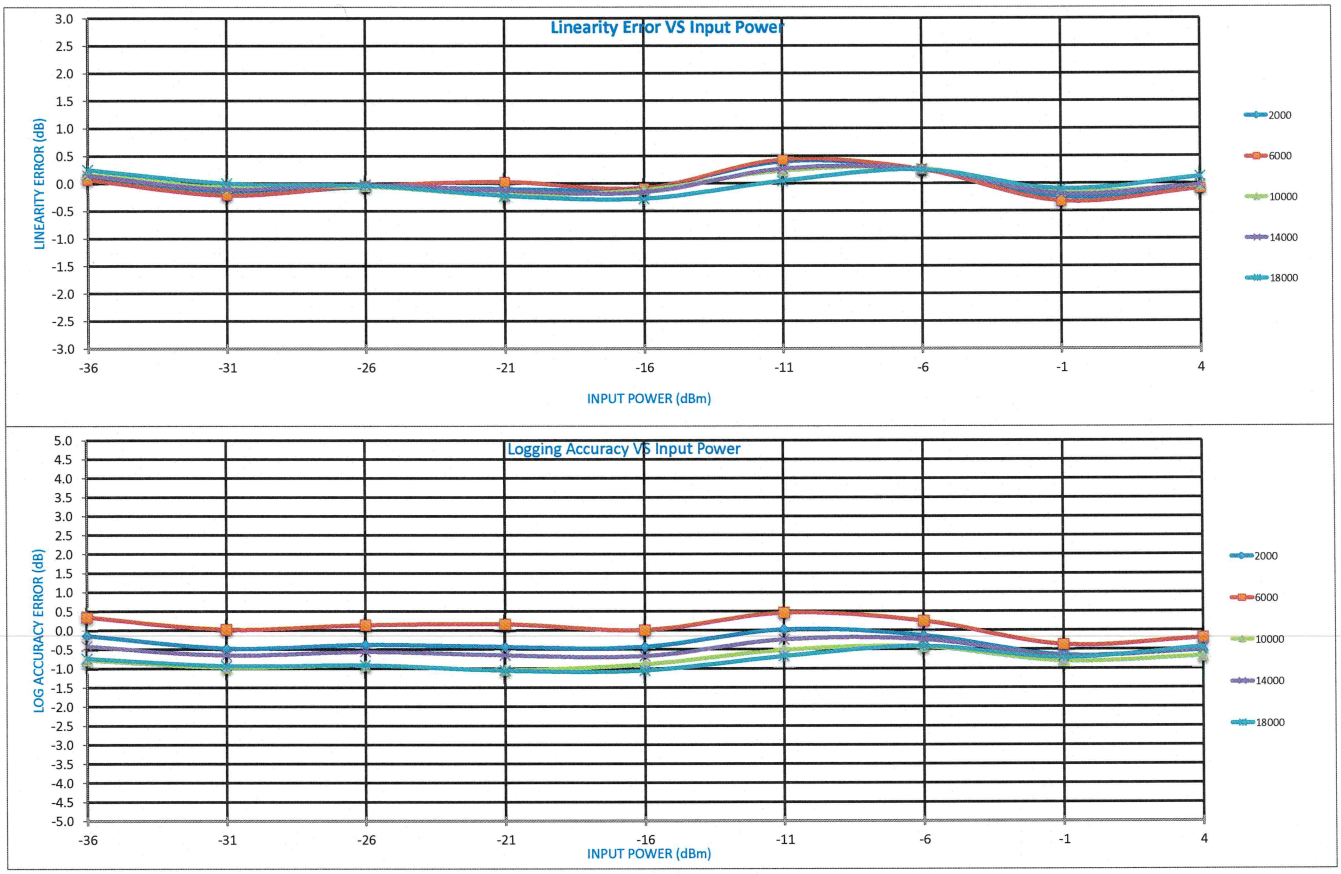
Frequency			-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)		
2 GHz	INTERCEPT (mV)	2129												
	SLOPE (mV/dB)	49.8	343	576	831	1078	1328	1601	1843	2067	2324	Measured Value (mV)	Error(dB)	
			7	-9	-3	-5	-4	20	13	-13	-5	Error (mV)	MAX	MIN
			0.14	-0.18	-0.06	-0.11	-0.09	0.39	0.25	-0.25	-0.09	LINEARITY ERROR (dB)	0.39	-0.25
			-0.14	-0.48	-0.38	-0.44	-0.44	0.02	-0.14	-0.66	-0.52	LOGGING ACCURACY (dB)	0.02	-0.66
6 GHz	INTERCEPT (mV)	2147												
	SLOPE (mV/dB)	49.5	367	601	857	1108	1350	1623	1862	2081	2340	Measured Value (mV)	Error(dB)	
			3	-10	-2	1	-4	21	12	-16	-5	Error (mV)	MAX	MIN
			0.06	-0.21	-0.04	0.03	-0.09	0.43	0.25	-0.33	-0.10	LINEARITY ERROR (dB)	0.43	-0.33
			0.34	0.02	0.14	0.16	0.00	0.46	0.24	-0.38	-0.20	LOGGING ACCURACY (dB)	0.46	-0.38
10 GHz	INTERCEPT (mV)	2117												
	SLOPE (mV/dB)	50.4	311	551	804	1048	1305	1574	1828	2059	2316	Measured Value (mV)	Error(dB)	
			8	-4	-3	-11	-6	11	13	-8	-3	Error (mV)	MAX	MIN
			0.16	-0.07	-0.05	-0.21	-0.11	0.23	0.27	-0.15	-0.05	LINEARITY ERROR (dB)	0.27	-0.21
			-0.78	-0.98	-0.92	-1.04	-0.90	-0.52	-0.44	-0.82	-0.68	LOGGING ACCURACY (dB)	-0.44	-1.04
14 GHz	INTERCEPT (mV)	2126												
	SLOPE (mV/dB)	50.1	329	567	822	1067	1316	1588	1838	2066	2325	Measured Value (mV)	Error(dB)	
			7	-6	-1	-7	-8	13	13	-10	-1	Error (mV)	MAX	MIN
			0.14	-0.11	-0.02	-0.13	-0.16	0.26	0.25	-0.20	-0.03	LINEARITY ERROR (dB)	0.26	-0.20
			-0.42	-0.66	-0.56	-0.66	-0.68	-0.24	-0.24	-0.68	-0.50	LOGGING ACCURACY (dB)	-0.24	-0.68
18 GHz	INTERCEPT (mV)	2120												
	SLOPE (mV/dB)	50.5	313	553	804	1047	1297	1566	1829	2064	2328	Measured Value (mV)	Error(dB)	
			13	0	-2	-12	-14	2	12	-5	6	Error (mV)	MAX	MIN
			0.25	0.00	-0.04	-0.23	-0.28	0.04	0.24	-0.11	0.12	LINEARITY ERROR (dB)	0.25	-0.28
			-0.74	-0.94	-0.92	-1.06	-1.06	-0.68	-0.42	-0.72	-0.44	LOGGING ACCURACY (dB)	-0.42	-1.06
Flatness +/- dB			0.559	0.499	0.529	0.609	0.529	0.569	0.339	0.220	0.240			
Max Video Output V			0.367	0.601	0.857	1.108	1.350	1.623	1.862	2.081	2.340			
Min Video Output V			0.311	0.551	0.804	1.047	1.297	1.566	1.828	2.059	2.316			

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
LOGGING LINEARITY ERROR (dB)	0.43	-0.33

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
LOGGING ACCURACY ERROR (dB)	0.46	-1.06

SUMMARY TEST DATA
ON
HADA-D2002

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



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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

GRAPH #3

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

Output Voltage Offset= 0.079 Volts

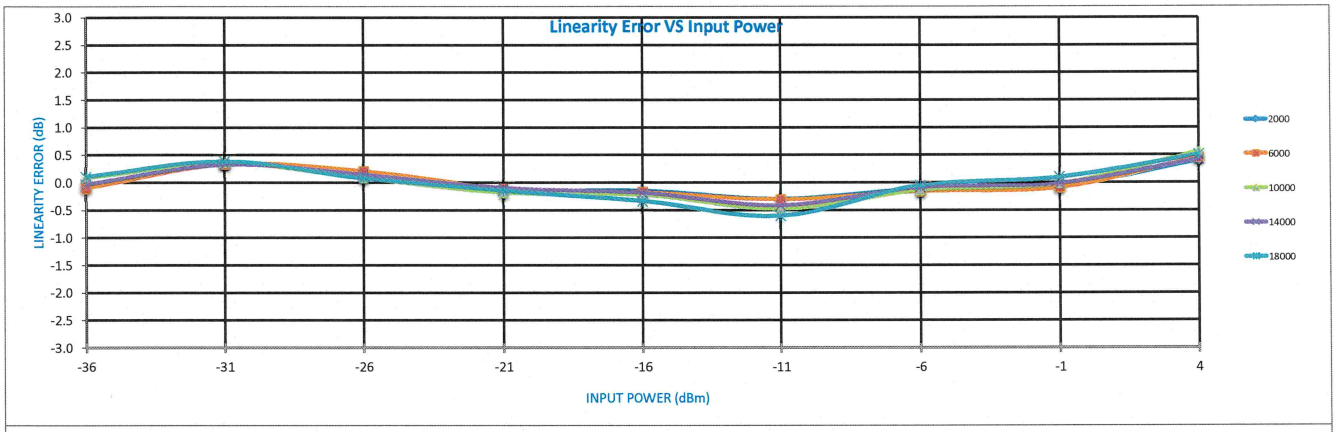
Frequency			-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)		
2 GHz	INTERCEPT (mV)	2151	313	588	833	1074	1328	1575	1839	2096	2375	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	51	-4	17	7	-7	-8	-15	-6	-4	20	Error (mV)	MAX	MIN
			-0.07	0.33	0.13	-0.14	-0.15	-0.30	-0.12	-0.08	0.40	LINEARITY ERROR (dB)	0.40	-0.30
			-0.74	-0.24	-0.34	-0.52	-0.44	-0.50	-0.22	-0.08	0.50	LOGGING ACCURACY (dB)	0.50	-0.74
6 GHz	INTERCEPT (mV)	2172	340	616	863	1101	1351	1598	1859	2116	2397	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	50.7	-6	17	10	-5	-9	-16	-8	-5	22	Error (mV)	MAX	MIN
			-0.11	0.33	0.20	-0.11	-0.18	-0.31	-0.16	-0.10	0.44	LINEARITY ERROR (dB)	0.44	-0.31
			-0.20	0.32	0.26	0.02	0.02	-0.04	0.18	0.32	0.94	LOGGING ACCURACY (dB)	0.94	-0.20
10 GHz	INTERCEPT (mV)	2134	281	553	797	1041	1297	1542	1817	2081	2369	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	51.6	4	18	4	-10	-12	-25	-8	-2	29	Error (mV)	MAX	MIN
			0.08	0.35	0.08	-0.19	-0.23	-0.48	-0.15	-0.03	0.55	LINEARITY ERROR (dB)	0.55	-0.48
			-1.38	-0.94	-1.06	-1.18	-1.06	-1.16	-0.66	-0.38	0.38	LOGGING ACCURACY (dB)	0.38	-1.38
14 GHz	INTERCEPT (mV)	2125	291	564	809	1051	1301	1544	1815	2073	2350	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	50.9	-2	17	7	-5	-10	-21	-5	-1	21	Error (mV)	MAX	MIN
			-0.04	0.32	0.14	-0.11	-0.19	-0.42	-0.09	-0.03	0.42	LINEARITY ERROR (dB)	0.42	-0.42
			-1.18	-0.72	-0.82	-0.98	-0.98	-1.12	-0.70	-0.54	0.00	LOGGING ACCURACY (dB)	0.00	-1.18
18 GHz	INTERCEPT (mV)	2121	278	549	790	1035	1282	1525	1810	2074	2352	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	51.3	5	20	4	-8	-17	-31	-3	5	26	Error (mV)	MAX	MIN
			0.10	0.38	0.08	-0.15	-0.34	-0.61	-0.05	0.09	0.50	LINEARITY ERROR (dB)	0.50	-0.61
			-1.44	-1.02	-1.20	-1.30	-1.36	-1.50	-0.80	-0.52	0.04	LOGGING ACCURACY (dB)	0.04	-1.50
	Flatness +/- dB		0.607	0.656	0.714	0.646	0.675	0.714	0.479	0.421	0.460			
	Max Video Output V		0.340	0.616	0.863	1.101	1.351	1.598	1.859	2.116	2.397			
	Min Video Output V		0.278	0.549	0.790	1.035	1.282	1.525	1.810	2.073	2.350			

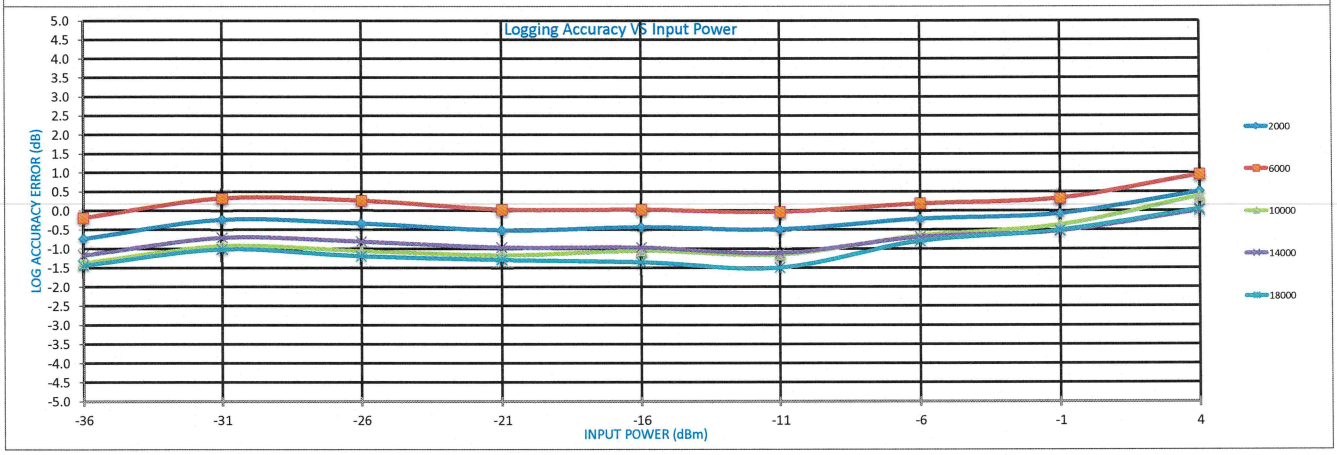
Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
LOGGING LINEARITY ERROR (dB)	0.55	-0.61

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
LOGGING ACCURACY ERROR (dB)	0.94	-1.50

SUMMARY TEST DATA
ON
HADA-D2002

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





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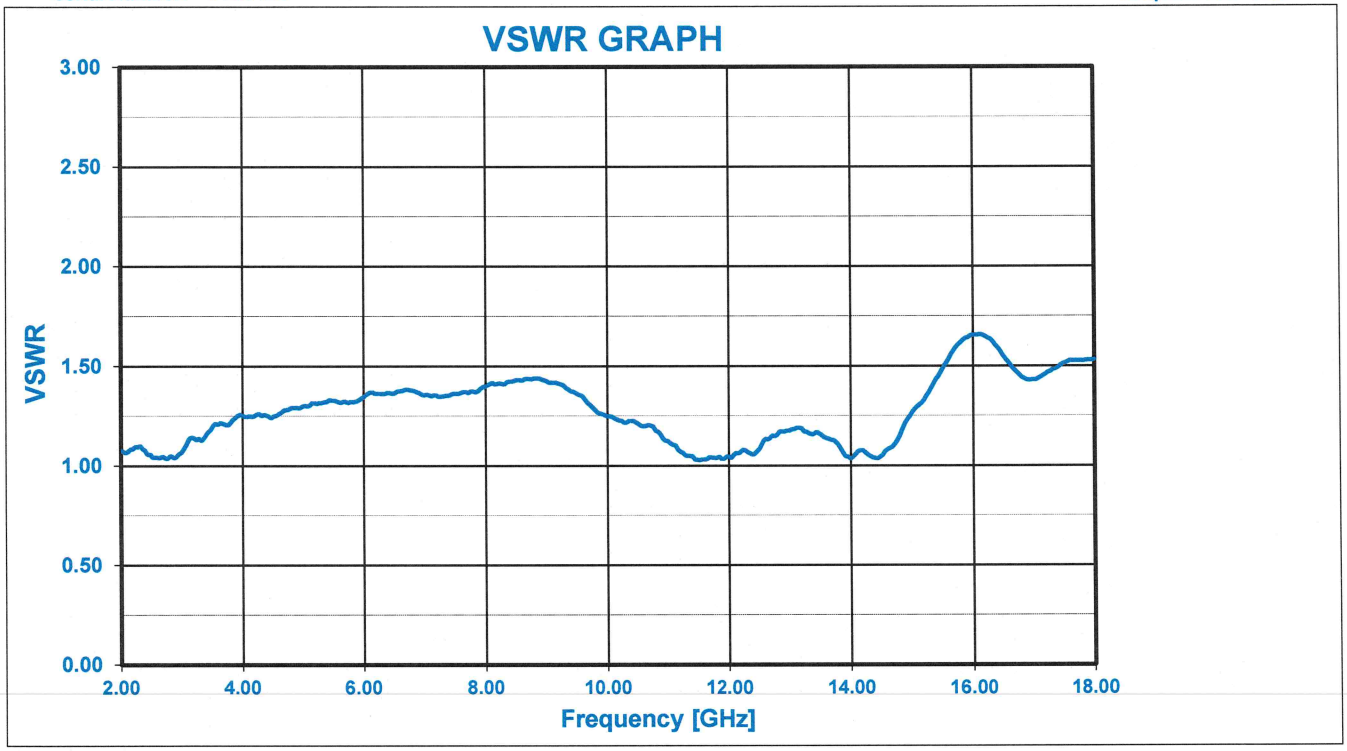
Email: sales@pmi-rf.com

SUMMARY TEST DATA
ON
HADA-D2002

Model Number: HADA-D2002
Serial Number: PL49124

Temperature: +25C



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SUMMARY TEST DATA
ON
HADA-D2002

TSS = -41 dBm

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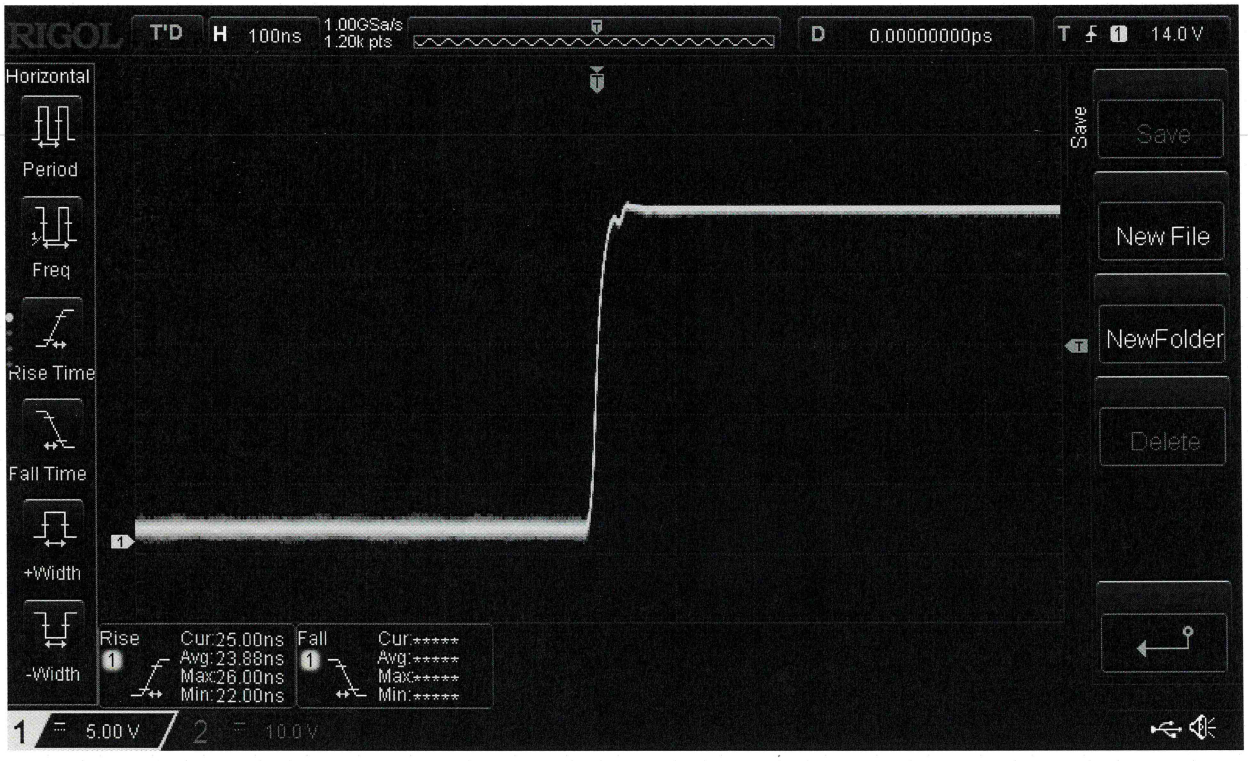
SUMMARY TEST DATA
ON
HADA-D2002

Rise Time = 25 ns



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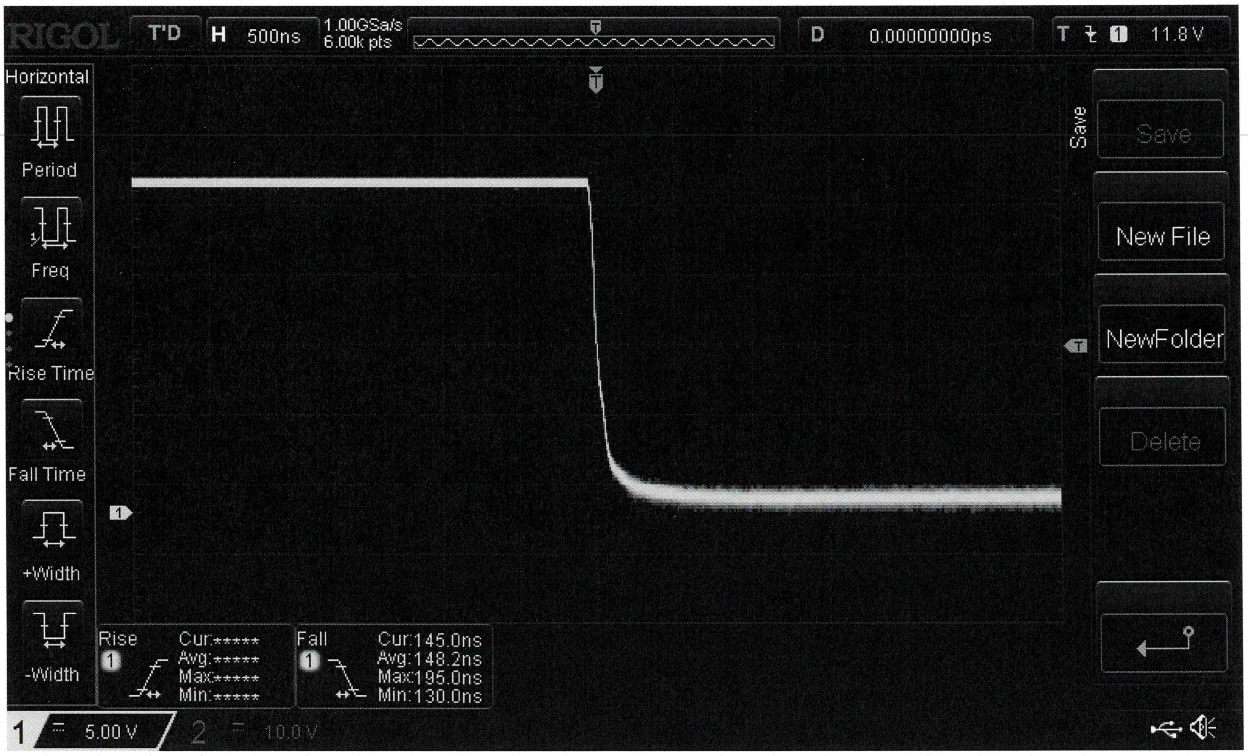
Email: sales@pmi-rf.com

SUMMARY TEST DATA
ON
HADA-D2002

Fall Time = 145 ns



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Email: sales@pmi-rf.com